



**2023**

**NORTH DAKOTA  
HAZARD MITIGATION  
ANNUAL PROGRESS REPORT**

*Making Mitigation Matter in North Dakota*

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# MAKING MITIGATION MATTER IN NORTH DAKOTA

Last winter, our State Hazard Mitigation Team packed their emergency kits (of course!), kicked the tires on our agency vehicle, washed the windows and set off on a cross-state road trip to talk to community leaders about mitigation strategies to lessen disaster impacts. Those miles on North Dakota's highways and interstates resulted in a video titled "Mitigation Matters in North Dakota." While each person's story made a strong case for mitigation, Shawn Kessel, chief operating officer and deputy commissioner for the N.D. Department of Commerce, had one which stood out. He stressed how important it is to establish partnerships and encourage collaboration for effective mitigation strategies — something our State Hazard Mitigation Team gets better at each year.

"You can't properly respond to an emergency, whether that's in a response effort or a mitigation effort, alone," he said. "You have to have partners and they need to be willing partners."

Shawn, of course, knows this from his previous experience as city administrator for the Cities of Wahpeton and Dickinson. In Wahpeton, he saw how the Red River could

harass and intimidate communities into sandbagging and flood preparation on an almost annual basis. Because its residents contended with the volatile river almost annually, the City of Wahpeton worked with the U.S. Army Corps of Engineers to develop a permanent flood protection plan. Pew Charitable Trusts has said that for every dollar spent on mitigation activities in North Dakota, an average of \$6.54 is saved. We know that Wahpeton's flood project has saved money, but it also has saved time and resources.

"... response time to a future event is so much more reduced because they have flood walls in place. They literally bring these large barriers and drop them into place and now there's protection. It takes an hour (to set up), where you never would've had that before," Kessel said. "You'd be building a levee, you'd be finding dirt, you'd be finding clay; it would take a day, a week. You'd have to have that much pre-planning. Now, because of the engineering that's involved, it takes an hour."

Attitudes about the Red River also have changed within the community, and that goal was intentional with the flood protection project. Mitigation can help revitalize areas in a

community that may have previously stoked anxiety.

“(The Red River) had become this monster that divided the North Dakota communities of Wahpeton and Breckenridge (Minnesota), and everyone was scared of it because you didn’t know if it was going to inundate your house or your business or your life,” Kessel said. “It was so regular that people began to not appreciate what a river can bring to the community in terms of vibrancy.”

To allow people to engage with the river in a different way, a walk bridge over the top of a levee was constructed. Families now can use that area for biking, jogging and fishing. There’s even an area to go tubing on the waterway. This kind of endeavor shows why mitigation matters in North Dakota. Mitigation can protect communities, make them better places to live and make residents more resilient.

### WORKING AS ONE FOR MITIGATION

This past winter in North Dakota was ranked among the most extreme in nearly 150 years of record keeping, according to the Accumulated Winter Storm Severity Index. Many communities experienced record-breaking or near record-breaking snow amounts. Dickinson broke its all-time record and Bismarck was only a fourth-inch shy of topping its all-time mark of 101.6 inches from 1996-1997. The deep snowpack covered the entire state and, eventually, it all had to melt. As the central coordinating agency for disasters in the state, the North Dakota Department of Emergency Services (NDDDES) was expecting some challenges with flooding during the spring. Mitigation came to the rescue.

The flood season would have been a more challenging response, if not for years of collaboration and planning at the local, tribal, state and federal levels. Many cities along the major tributaries, such as the Red River, have constructed flood walls, diversion projects and other projects to harden defenses and increase resiliency.

That work continues today. As you’ll read about later in this report, NDDDES was notified in August that about \$73 million in federal funds for North Dakota hazard mitigation

projects were selected for further review under FEMA’s Flood Mitigation Assistance (FMA) and Building Resilient Infrastructure and Communities (BRIC) grant programs for fiscal year 2022. About \$64 million of that federal funding is anticipated to be allocated for two FMA projects in the Bismarck-Mandan area, which will provide protection from flooding impacts for nearly 20,000 residents.

This was a significant achievement not only for our NDDDES Recovery and Mitigation Section, but also for the Cities of Bismarck and Mandan and the planners who helped develop the applications. The biggest winners were the residents of these communities, who will be better protected from potential Missouri River floodwaters for years to come. Additionally, the project will allow Flood Insurance Study maps to be modified to remove properties from the 100-year regulatory floodplain, saving homeowners on the cost of mandatory flood insurance requirements.

Further, there were two additional projects selected under FEMA’s BRIC program. These included wastewater system upgrades for the Cities of Lincoln and Fessenden and its surrounding areas. These projects will directly benefit about 9,000 North Dakotans.

As we make these incremental improvements through mitigation, our state becomes more resilient to disasters and lives are improved. We could not do this without our entire State Hazard Mitigation Team. The group touts representation, actions and participation across multiple sectors of government and various agencies. To name a few, we’ve welcomed membership from N.D. Indian Affairs; our tribal nations; N.D. Health and Human Services; N.D. Department of Water Resources; N.D. Department of Transportation; N.D. Forest Service; N.D. Department of Environmental Quality; N.D. Geological Survey; N.D. Department of Agriculture; N.D. Game and Fish; N.D. Parks and Recreation; U.S. Geological Survey; North Dakota State University Extension; and the American Red Cross, to name a few.

### PREPARING FOR THE FUTURE TODAY

Flooding obviously isn’t the only hazard we have to be



Shawn Kessel, chief operating officer and deputy commissioner for the N.D. Department of Commerce shares mitigation success stories from his time as city administrator for the Cities of Wahpeton and Dickinson, North Dakota.



The N.D. Department of Emergency Services Strategic Communications Section created the "Mitigation Matters" video to showcase local success stories about mitigation. The video was share with the State Hazard Mitigation Team, which is comprised of more than 80 local, tribal, state, federal, non-governmental and private organizations. Watch the video at: [bit.ly/46xfNMm](https://bit.ly/46xfNMm)

prepared for in North Dakota. Living in a state with extreme weather variability requires persistent planning and deliberate preparedness by our citizens. In addition to severe summer and winter weather, we also face threats from things like cyberattacks, wildfires, drought, dam failure, hazardous material releases and even space weather. More concerning is that emergencies triggered by these hazards can happen at any hour, day or night.

This past year, the State of North Dakota took steps to bolster 24/7 situational awareness, emergency readiness and coordination between local, tribal, state and federal agencies. Having accurate and more timely information is a mitigation strategy. It allows leaders to make better-informed, response-driven decisions. This is imperative saves time, and time saves lives and money.

This is why NDDDES this year began the process of standing up a Watch Center to provide a 24/7 capability and an initial all-hazards incident coordination apparatus for emergencies. This endeavor officially began in October 2022 when NDDDES hired its first Watch Center officer. Since then, we worked with lawmakers during the 68<sup>th</sup> Legislative Assembly to pursue full-time equivalent positions to staff this operation. We are on track to being fully staffed by the end of the year.

Watch Center operators will scan information day-to-day from multiple

data sources to identify actionable incidents in North Dakota. Some of these data sources would include flood gauges, road closures/incidents, Computer-Aided Dispatch (CAD), an open-source monitoring tool, weather, hazardous material incidents, camera systems, river gauges, dark web monitoring and others. This material will allow staff to quickly assess threat and incident information to either make notifications to appropriate agencies or initiate immediate response actions.

By consolidating this data, we also can leverage automation, AI and machine learning to better predict future incidents and provide rapid assessment and alerting.

What's most important about this initiative is that it will be a shared 24/7 capability for agencies in North Dakota. As the Watch Center concept grows, we will identify more opportunities and efficiencies for collaborating with our partners and stakeholders. The Watch Center will be a hub for all other state agencies requiring a 24/7 capability.

Based on past emergencies and disasters, the N.D. Department of Transportation, N.D. Department of Water Resources, N.D. Information Technology and N.D. Highway Patrol all will benefit from a shared common operating picture and information analysis.

We know that disasters are now becoming more frequent, longer in duration, more complex and more expensive. What we do ahead of time to mitigate severity becomes even more important. North Dakotans are already working together to strengthen our state to lessen impacts from disasters and to develop thoughtful mitigation strategies. Our efforts today matter most for our state's future generations as we work toward a safe, secure and resilient North Dakota.



**Darin Hanson** was appointed the Homeland Security Division Director on Jan. 10, 2022. He previously served as the Critical Infrastructure Program and Security Manager with the North Dakota State and Local Intelligence Center (NDSLIC).

Hanson holds a Bachelor of Science in Business and an MBA in Management from the University of Mary. He is a graduate of the Naval Postgraduate School's Center for Homeland Security and Defense Masters in Homeland Security Program.



# EMBRACING EXTREME CLIMATE VARIABILITY, MITIGATING POTENTIAL CLIMATE CHANGE

*By Gregory Gust, Meteorologist,  
North Dakota Department of Emergency Services  
Division of Homeland Security*

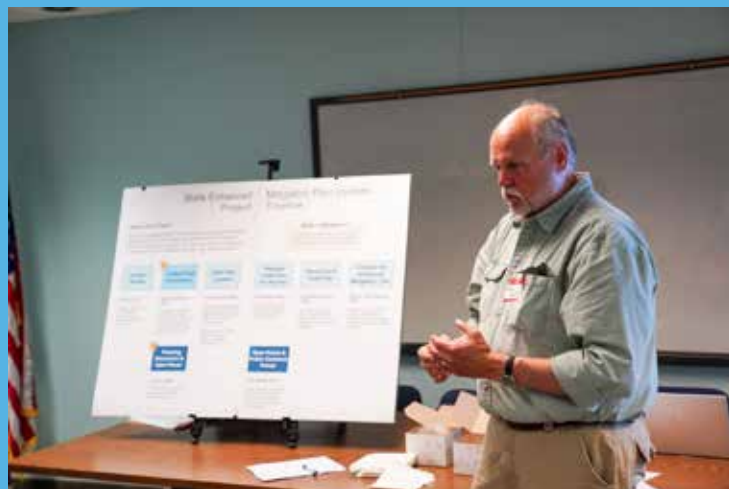
Ask any group of state residents how they would describe North Dakota's weather to people from other states or countries, and you're likely to hear, "It's so variable," "It's always changing," or "It's pretty extreme." And perhaps, "It can get really cold" but "Summers are nice!" The word "windy" may not come up as often on a first go around, but usually does after asking, "What else?" Perhaps wind is so pervasive in North Dakota that we take it for granted.

## **The Trouble with Normal, in ND it just isn't.**

The most common descriptors found in public access print describe North Dakota as having a continental climate, with cold winters and mild (sometime hot) summers, done! One may find an accompanying chart or graph of average high and low temperatures in July and January, maybe even for each month of the year, along with an average annual precipitation. It's rare to find comments on average snowfall, and rarer still to uncover how long the ground may remain covered in snow. In other words, our climate is likely to be described in very general or average terms - what is often referred to as normal. Such terminology permeates tourism brochures but also trickles into our planning documents.

From a Hazard Mitigation perspective, this is a problem! For starters, very few of our natural hazards and virtually none of our disaster declarations are the direct result of a normal July day with an average high temperature of 82°F, or a normal January day with an average low of 0°F. Throughout much of the year, the weather conditions which we actually experience on any one day are far from "average" for that day.

Instead, in July we'll often have 3-4 days with daytime highs pushing from the mid-90s towards 100°F, and with sweltering nighttime low temperatures hovering in the 80s, finally dropping into the 70s by morning. All this might often be followed abruptly by cool, cloudy, and windy days with highs barely struggling into the 60s or 70s. By the way, that



Greg Gust, staff meteorologist, visits with attendees at a mitigation open house at the Bismarck Veterans Public Library.

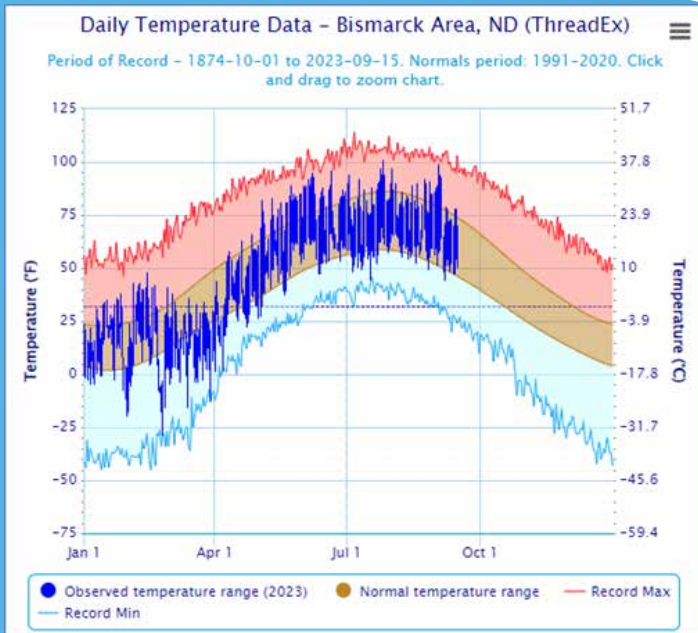
average of several days of vastly differing extreme conditions results in a climatologically average or "normal" week. And perhaps a squall-line came through in the middle of that week, with damaging downburst winds, heavy rains, hail, and maybe an embedded tornado or three!

Such a summertime heat wave may be accompanied by widespread power outages, worsening drought, wildfire breakouts, episodes of poor air quality, and maybe a spike in heat or air quality related health issues. That squall line passage which may eventually usher in a cooler and drier airmass may also result in widespread structural damages, flash flooding, crop losses, even injuries or fatalities.

The wintertime analog is heavy snow or ice, increasing winds and blizzard conditions, accompanied by steadily dropping temperatures, dropping well below zero and staying well below zero for days or even weeks on end. Actual low temperatures dropping to minus 20, minus 30, or minus 40°F, with wind chill temperatures at minus 50 to minus 80°F, or worse.



Figure 1.



Think about it: When are our transportation issues the worst? After widespread ice and/or heavy snow and/or blowing and drifting snow? And who is impacted the most by such conditions? Is it the very young, or the elderly, is it the sick or disabled? Is it those with no reliable transportation?

As a starter, ND's climate normal could be better described as a transitional phase between extremes.

In **Figure 1.**, the golden band represents the range of daily average maximum and minimum temperatures, based on the 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 temperature.

The dark blue line indicates the daily maximum and minimum temperatures from January 1 through September 15, 2023. Notice how often the daily high or low temperatures of 2023 were outside the band of "average" temperatures, with daily record low temperatures being set on February 24, March 29, and April 6. At Bismarck, the *all-time* record high temperature was 114°F, set July 6, 1936, while the *all-time* record low temperature was *minus* 45°F, set on January 13, 1916, and again on February 16, 1936. The statewide extreme maximum of 121°F (Steele ND) was also set on July 6, 1936. The extreme minimum of *minus* 60°F (Parshall ND) was on February 15, 1936, while Bismarck

only dropped to minus 42°F, on that particular day.

Why were both sets of records set in the same year, 1936? And why were so many of our local community record high and/or record low temperatures also set on or near those dates? Think "Dirty 30s" with widespread extreme drought across the Central and Northern Plains states. Because of its lower Specific Heat Capacity, dry air/soil warms and cools much more quickly than moist air/soil.

### ND Climate Variability and Extremes are among the Nation's Best, I Mean Worst!

Sorry, but coming from a background as a warning meteorologist, with several decades of having issued all kinds of public warnings for all kinds of extremes of weather, North Dakota has been a fantastic state to live and work! Every season of the year has its hazards, and the weather (climate) here is rarely boring. However, I do recognize that this also brings danger to those who are ill equipped and/or unprepared to deal with the local climate, and its inherent episodes of just plain nasty weather.

As discussed in the 2022 ND Hazard Mitigation Progress Report and illustrated by the graph in Figure 1, above, 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 of anywhere in the country. This high degree of variability, along with extremes, comes in large part from the state's location at the center of the North American continent, farthest from the modifying effects of oceans, yet subject to periodic intrusions of both bitterly cold and dry Arctic Air in the winter, and stifling hot and humid Tropical Air in the summer.

ND's range of temperature extremes is only exceeded by two states, Montana and Utah, whose high mountain observing stations have recorded markedly colder nighttime low temperatures. Other climate extremes are available from NOAA, at: [www.ncei.noaa.gov/access/monitoring/scec/records](http://www.ncei.noaa.gov/access/monitoring/scec/records).

### Will ND's Future Climate be Extremes on Steroids?

This can be a touchy subject, as we know that North Dakota's temperature has slowly but steadily risen throughout the past century and into this century, and at a current rate of 2.5F per century it's rising at a faster rate than either the national or global averages. Likewise, statewide precipitation is also rising, though this rate is somewhat less than

the national and global averages.

**Figure 3.** Illustrates the state of 20 recent model projections for a central point in North Dakota, near McClusky, though the middle of this century, based on the RCP4.5 emissions scenario. Even in this intermediate level emissions scenario, the suite of global climate models suggests that *we can expect* average temperatures to warm at an even faster rate than we're currently experiencing, with wintertime minimum temperatures warming fastest and summertime daytime maximum temperatures warming more slowly. And within this overall warming, we can also expect extreme seasonal and annual variability to persist.

In like manner, annual average precipitation is considered *likely* to continue increasing, with winter precipitation increasing most rapidly and winter's shoulder seasons of late fall and early spring showing moderate increases. Summer-time precipitation is expected to increase the least.

And in all seasons, we can expect an increase in the occurrence of more intense rainfall (or snowfall), with extreme seasonal and annual variability to persist.

**Extremes often result in Disasters, but they don't have to.**

Any severe weather event, from damaging downburst winds, hails, or tornadoes in the summer, to heavy snow, blizzards, ice storms, or extreme cold events in the winter, can be someone's disaster.

FEMA defines a disaster as an occurrence of a natural catastrophe, technological accident, or human-caused event that has resulted in severe property damage, deaths, and/or multiple injuries. Most of North Dakota's counties and tribal lands share the same list of such disasters which can impact folks at the community level all the way up to the state level.

**Figure 2.** shows the relative number of Major, or Statewide Disasters, over the past 32 years, and those counties most impacted by disaster across the nation.

**Figure 2.**

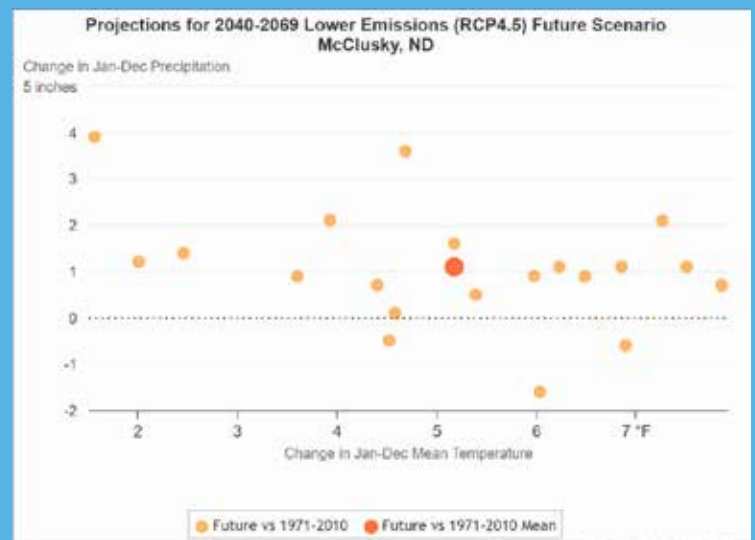
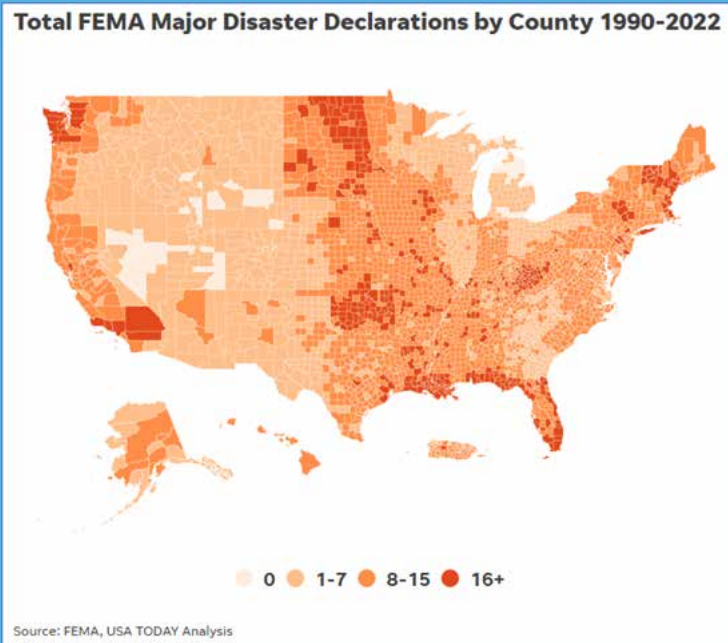


Figure 3.



As is readily apparent, North Dakota's extreme conditions often result in disastrous consequences. And with future climate conditions expected to become even more extreme, the risk for increasing damages could also increase.

But it doesn't have to.

FEMA's definition of Risk states that it's a function of the nature and magnitude of a threat, an entity's vulnerability to that threat, and the consequences that could result.

Let's presume for a moment that we can't directly influence the first part of the equation, the nature and magnitude of the threat... that our future climate will likely see an increase in size, frequency, intensity, and/or duration of various hazard conditions. Climate Adaptation is the effort we make to change our vulnerability to a threat or hazard. Hazard Mitigation is the effort we make to reduce the negative consequences of that threat or hazard.

By reducing our vulnerability to a threat, and/or reducing

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Left, a N.D. Department of Transportation equipment operator helps clear snow during a multi-day snowstorm in November 2022.

the negative consequences of a threat, we can reduce our risk relative to any increasing magnitude of that threat.

### Taking the Broader and Longer View.

North Dakota's extreme climate variability, its historic and projected propensity for rapid fluctuations between extremes in temperature and precipitation, between flood and drought, demands that state and local planners and managers alike approach future climate considerations with both a broader and a longer view.

- **Broader** in the sense that short-term climate conditions evident in neighboring counties and even adjacent states or provinces, should be considered as possible in any one North Dakota county in any future year.
- **Longer**, in that extreme conditions which may have occurred over a given area in the recent or distant past will likely be repeated and quite possibly exceeded through this century.

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.

On a more positive note, the average length of the growing season could increase by up to 12 days per century in North Dakota. Some concerns remain as to whether critically important spring rains will accompany the earlier warmth, or if late season frost will negate any earlier thaw.

Additional details are emerging as the Climate Committee for the Enhanced State Hazard Mitigation Mission Area Operations Plan digs deeply into each of the 15 identified Statewide Threats/Hazards, consults with representatives from various sectors and groups across the state, and extracts those impacts and potential mitigation actions we as a state intend to address.

# BUILDING CLIMATE LITERACY IN NORTH DAKOTA

## A joint effort between Homeland Security and State Library

By Hope Brighton, Mitigation Planner,  
N.D. Department of Emergency Services

As climate planning moves to the forefront of the public's and planners' eyes, the North Dakota Department of Emergency Services Department of Homeland Security (NDDDES-HLS) looks to find creative and accessible ways to promote awareness and education. When considering ideas to promote awareness, NDDDES-HLS looked to the North Dakota State Library System to spread awareness and education. Lexi Whitehorn, Literacy Specialist, and I worked together to formulate an accessible education plan to integrate into our communities. Through a combined effort, the climate literacy program was born. Lexi states, "Literacy just means an understanding. Combine understanding with climate and you get climate literacy – an understanding of climate and how it works," emphasizing the ultimate goal of understanding with hopes to catalyze change.

Climate change awareness and education are critical for the success of the implementation of the State Enhanced Mitigation Mission Area Operations Plan. The recently developed climate literacy kits for the ages of K-3, 3-6, Teen, and Adults provide libraries across the state the opportunity to rent the kit containing materials designed to teach reputable climate information. The literacy kits will be stored at state library facilities to be delivered to city, county, tribal, and school libraries for use at no cost. The public, tribal, or school library would then put on a course, using the provided lesson plans and book to teach a group about climate while inspiring action. Creating this accessible and reputable program is an equitable way to reach a broad audience with climate education.

This program promotes climate education for groups (K-3, 3-6, teen, adult) across the state in a free and accessible manner. Providing a resource to communities free of charge promotes awareness of climate change potentially increasing buy-in and support for NDDDES-HLS and emergency management across the state. As climate change is a growing concern and moving to the forefront of the public's eye stakeholders must think creatively to encourage all ages to understand the convoluted information being shared. Presenting information in a bite sized amount creates an equitable disasterscape through education and awareness.

Creating an equitable educational program such as this provides all North Dakotans with the opportunity to learn from high-quality educational resources. This resource can be mailed across the state or picked up from a local library giving those in rural and tribal areas access to resources that may not have previously been available. Following the course, students are encouraged to assess what actions can be taken on an individual level to mitigate or adapt to our changing climate. Inspiring change, "no matter the age, financial situation, or location, North Dakotans can make a difference; we just have to take the first step and implementing these kits in our libraries does just that," Whitehorn said. Additionally, this initiative may inspire students to pursue the field of emergency management to cast the profession into the future of climate change preparedness, response, recovery, mitigation, and adaptation in intersection with natural and manmade threats. If you are interested in holding a Climate Literacy Course in your school or local library stay tuned on [www.library.nd.gov](http://www.library.nd.gov).

This project was made possible thanks to the Department of Homeland Security Federal Emergency Management Agency (FEMA) Emergency Management Performance Grant (EMPG).



**Hope Brighton**, mitigation planning specialist and Individual Assistance officer, is from Plainview, Minnesota. She has been working for the North Dakota Department of Emergency Services for just over 2 years. She recently received an Achievement Award from the North Dakota Emergency Managers Association (NDEMA) and was elected Vice-President. Hope is also pursuing her Master of Business Administration (MBA) from the University of Mary.

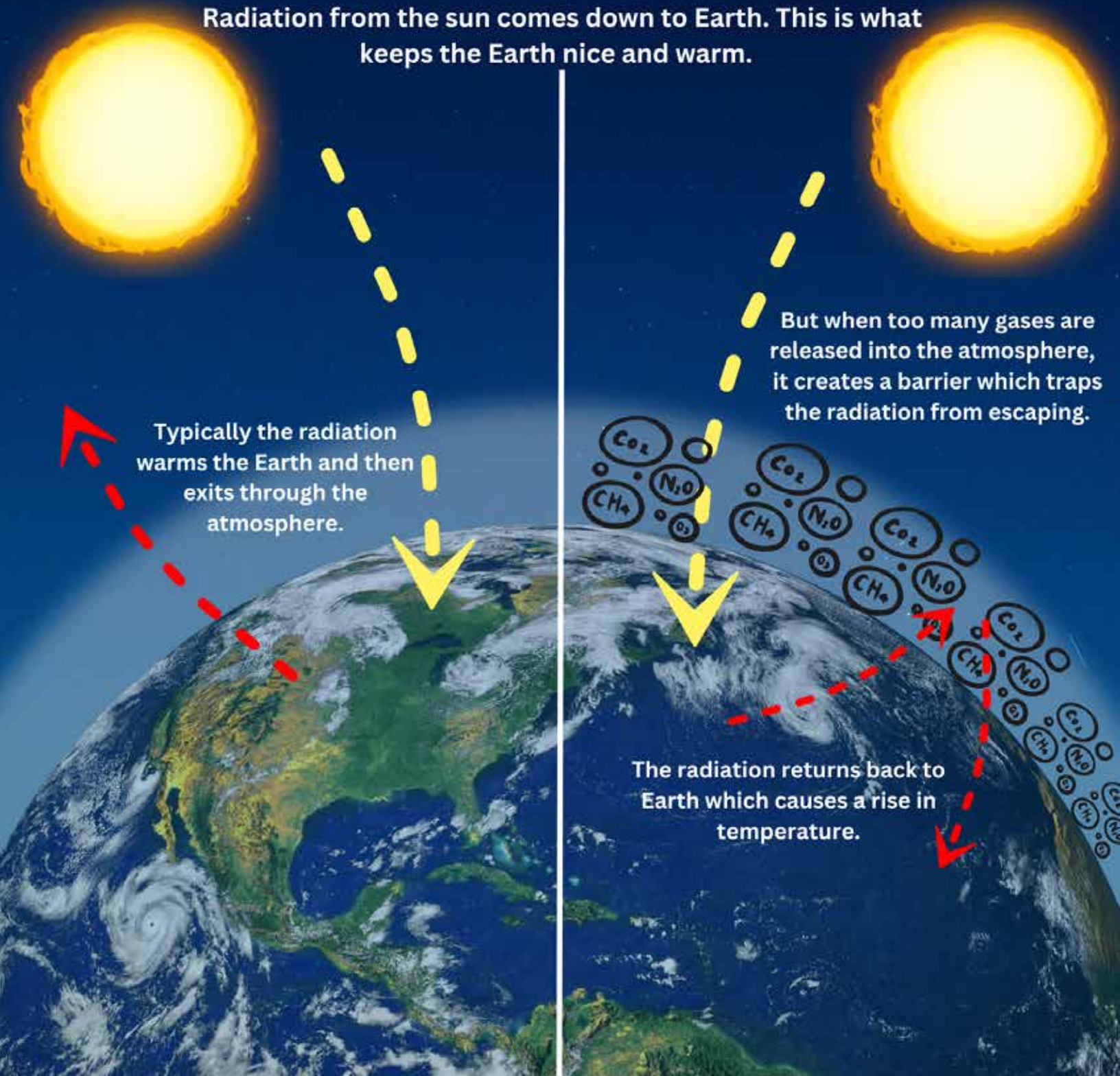
# The Greenhouse Effect

Radiation from the sun comes down to Earth. This is what keeps the Earth nice and warm.

Typically the radiation warms the Earth and then exits through the atmosphere.

But when too many gases are released into the atmosphere, it creates a barrier which traps the radiation from escaping.

The radiation returns back to Earth which causes a rise in temperature.



# GEOLOGIC MAPPING

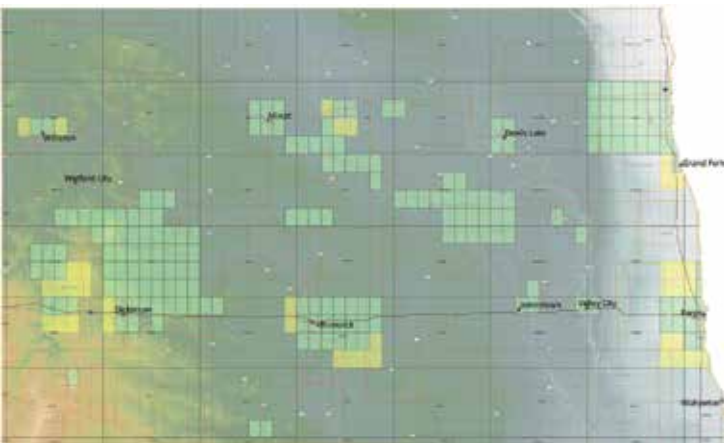
## SUPPORTS ENHANCED PLANNING AND MITIGATION EFFORTS ACROSS NORTH DAKOTA

By Fred J. Anderson, Levi Moxness, Chris Maike, Benjamin York, and Navin Thapa  
North Dakota Geological Survey

Geologic mapping has been a cornerstone of the geologic investigative work performed by the North Dakota Geological Survey (NDGS) since its creation in 1895, six years after statehood. Early geologic mapping work focused on North Dakota's general geology and coal and mineral resources. Today, the NDGS is focused on detailed (i.e., 1:24,000) scale surface geology geologic mapping in North Dakota's larger urban environments (fig. 1), and landslide hazard mapping statewide.

Over the past two decades the geologic mapping workflow and publication process has changed dramatically from mapping on paper air photos and topographic maps, with final publication as paper maps, to mapping on the desktop computer (fig. 2) with seamless viewing of mapping products on portable devices through interactive GIS map viewers.

The NDGS recently deployed a beta version of its GIS based Geologic Map Viewer which allows a user to review geologic and geohazards data such as the



**FIGURE 1.** Currently the NDGS is conducting surface geologic mapping work in the greater Fargo and Bismarck areas and in areas where promising critical minerals deposits may be found in southwestern North Dakota. Completed quadrangles are shown in green. Quadrangles in progress are shown in yellow.

location and extent of landslide areas for their specific locations of interest, even at variable scales, right on their portable devices (fig. 3). Planning and mitigation efforts are thus greatly enhanced by having several types of data and methods of access available to all users, either for basic viewing or detailed location review.

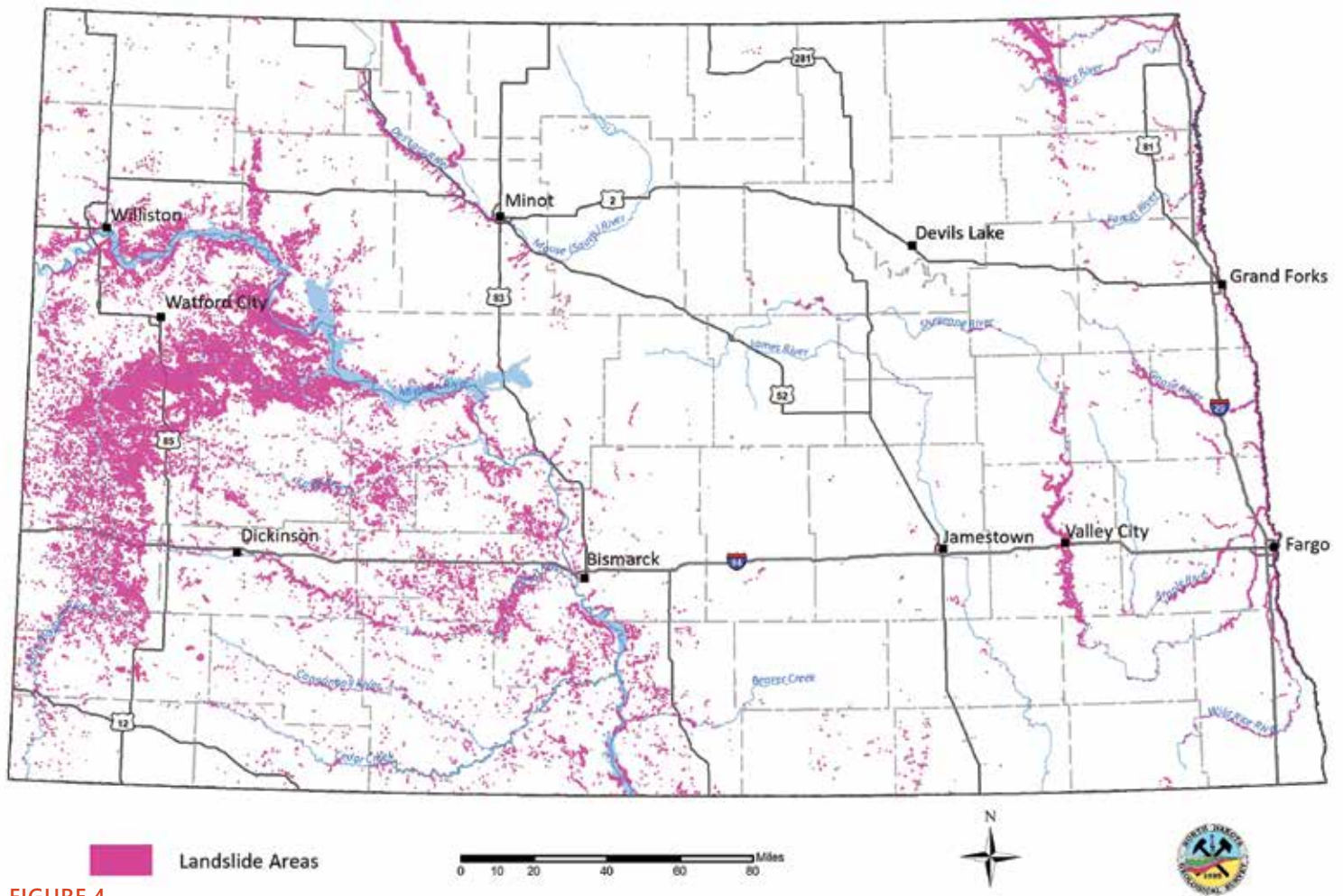
In January of 2023 the NDGS completed landslide area inventory mapping across the entire state at the detailed scale of 1:24,000. North Dakota is one of the



**FIGURE 2.** NDGS geologist Chris Maike conducting comparative analysis of landslides using two different LiDAR surface models in the GIS desktop mapping environment.



**FIGURE 3.** The NDGS Geologic Map Viewer is a recently deployed web application that provides access to numerous comprehensive geologic data sets on portable devices.



**FIGURE 4.** Landslide areas identified across North Dakota in a first of its kind statewide landslide hazard mapping survey.

first states (if not the first) in the U.S. to have completed such a survey using LiDAR elevation surface models as the base. Traditionally, these types of surveys were done with aerial photography which can make the identification of landslides in dense vegetation difficult. Using LiDAR base maps greatly increase the ability to identify features that are small or obscured by vegetation. This statewide survey identified as many as 60,000 landslide areas (fig. 4).

Keeping mitigation in mind, the NDGS has recently initiated comparative landslide area mapping in eastern North Dakota and started work in western North Dakota using two distinct LiDAR base maps collected several years apart. By comparing the elevations of the two base maps, landslide areas that have been active, within the respective period of the LiDAR collect, can be identified. This helps to identify landslide areas that may be an immediate threat to nearby transportation or energy infrastructure (fig. 5).

Geologic and geohazard mapping efforts in North Dakota continue to support energy and infrastructure development activities and provide for an enhanced understanding of the landscape for future planning and mitigation activities.



**FIGURE 5.** Landslide encroaching onto River Road north of Pioneer Park in Bismarck causing a week-long road closure in late December of 2019. Remedial efforts were estimated to cost about one million dollars. Geologist Levi Moxness can be seen in the lower right foreground piloting the NDGS drone used to capture this image.

*Geologic mapping information for the State of North Dakota can be accessed at the North Dakota Geological Survey website:*

**[www.dmr.nd.gov/ndgs](http://www.dmr.nd.gov/ndgs)**

# MITIGATION OUTREACH SUCCESS, FINDINGS

*By Hope Brighton, mitigation planner, and Katie Leitch, planner,  
N.D. Department of Emergency Services*

Mitigation planning is an all-encompassing process that collects information for integration into many other elements of planning. The foundation for planning is the process it takes to achieve a valuable, actionable product. The planning process brings all stakeholders together to inform and develop a risk reduction strategy that is used for public and private resources (FEMA, 2023).

Providing citizens with the opportunity to integrate into planning efforts allows emergency management organizations to build partnerships with citizens and organizations to better inform practices. Integrating into already existing groups provides emergency management professionals with an already interested audience, proving successful for the North Dakota Department of Emergency Services-Homeland Security (NDDes-HLS) planning staff.

## **AN EQUITABLE APPROACH**

Considering historically underserved populations and those who may be vulnerable is critical when planning for the whole community. This process begins with understanding where these groups exist within the community, such as those with access and functional needs, senior citizens, veterans, tribal members, new Americans, LGBTQ2S+, etc., and connecting with the respective agencies that may already have a foundation of trust through their service to underserved individuals. The North Dakota Department of Emergency Services Planning Section partnered with North Dakota Health and Human Services (NDHHS) Health Equity Committee to identify and reach underserved populations.

The NDHHS Health Equity Committee is a statewide committee that works to address health inequities that include social, economic, and environmental disparities while implementing strategies based on advocacy, collaboration, data, and resource alignment (NDHHS, 2022). To incorporate these strategies, the Health Equity Committee has formed Community Engagement Advisory Boards that represent LGBTQ2S+, Youth, and New Americans, Foreign Born, and Immigrants (NFI). These communities are comprised of individuals who mutually identify with specific titles and work to represent others alike in an effort to inform and develop equitable programs.

Outreach methods such as these highlight specific concerns relating to hazards. Those who participated in the NFI meeting shared that cyberattacks via phone call, otherwise known as "vishing," can be particularly devastating as many within the community do not speak English as their first language. North Dakota

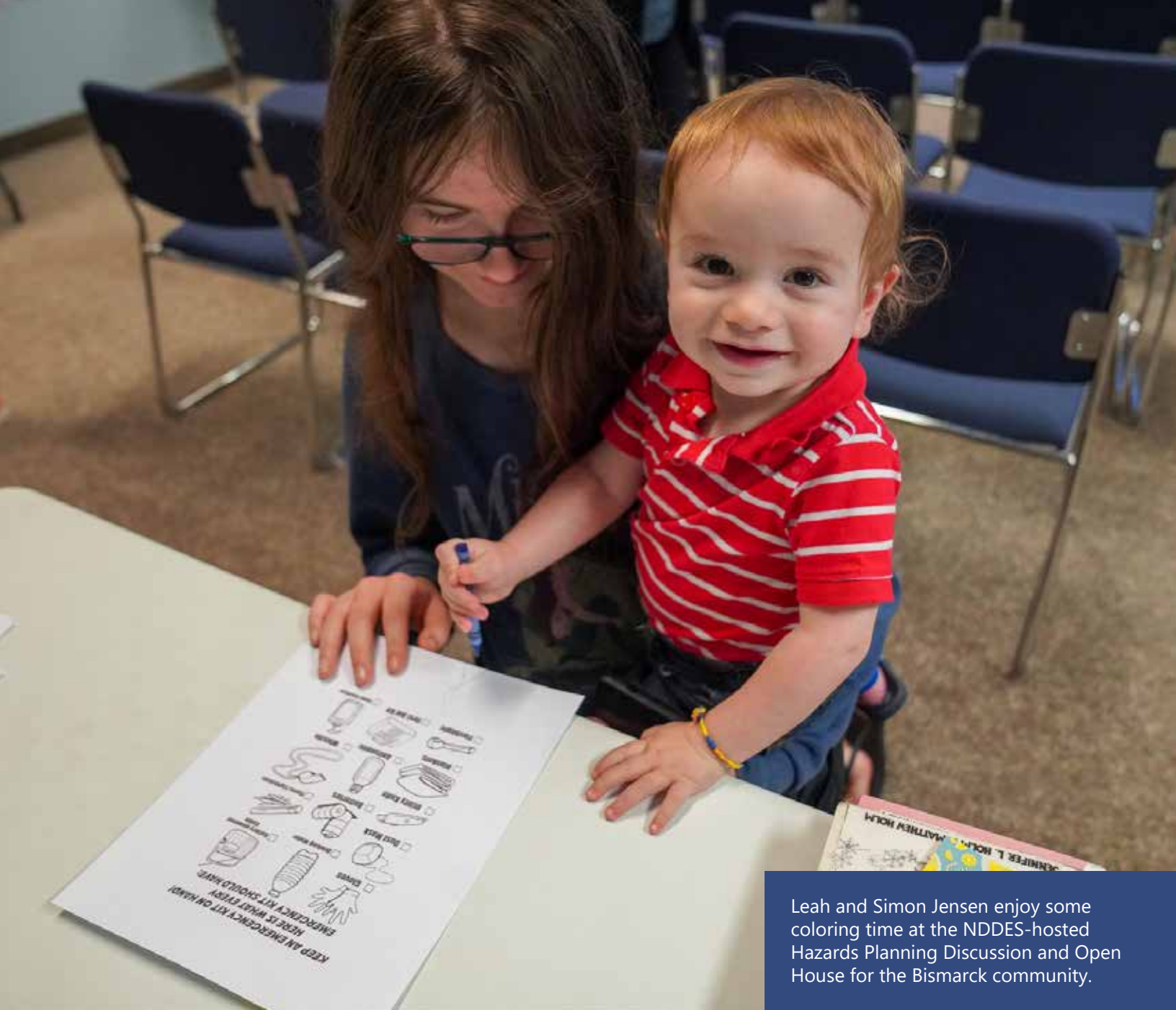
youth highlighted that many serve in local first responder groups with little mental health support provided following critical incidents. These events impact young individuals in our schools, inducing anxiety as nation-state attacks and mass shootings cover the media.

LGBTQ2S+ individuals were most concerned about a potential active shooter incident related to discrimination as well as accessing basic needs such as medical care or sheltering.

Additionally, NDDes-HLS staff had the opportunity to collaborate with staff at the North Dakota Center for Persons with Disabilities (NDCPD) located at Minot State University (MSU). NDDes-HLS provided a presentation on threats and hazards common in North Dakota and listened to concerns and recommendations from attendees representing NDCPD and their constituents. NDCPD is a statewide organization that serves the disability community and works with community providers and state and local government agencies to provide training, technical assistance, service, and information (NDCPD, 2020). Being a historically underserved population, NDCPD works on many projects that may not always be working directly with disabilities, but ultimately impacts the lives of people with disabilities for the greater good. Projects may include employment, housing, education, transportation, transition issues, etc.

*Developing strong connections within communities by inviting individuals from all walks of life, meeting them where they are, and providing an open environment for conversation can foster empathy and a strong planning foundation. Understanding how threats and hazards impact similarly or differently allows planners to view the threat landscape through a wide-angle lens.*





Leah and Simon Jensen enjoy some coloring time at the NDDes-hosted Hazards Planning Discussion and Open House for the Bismarck community.

Connecting directly and indirectly with those who have a disability provides staff with the lens to advocate for the community every day and during disasters.

The presentation highlighted that all populations and groups experience disasters differently and these differences may not always be apparent to public service or shelter staff. The presentation also brought awareness to disabilities that may not be seen externally, such as dyslexia, deafness, Alzheimer's disease, and other mental health disorders, such as anxiety or

depression. NDCPD staff brought up the importance of communication before, during, and after an incident in an understandable way while considering any mental and physical barriers. Bearing in mind the rural nature of the state of North Dakota, those living in small communities who experience impacts due to power outages or potentially lack access to critical roads may experience longer response times due to the inability to leave their homes. Implementing a registration list of potentially vulnerable adults provides the opportunity for individuals to self-identify in local distribution lists for emergency services staff; however, this may not always be available, or many may not be aware of this option.

This communication to utility companies should be clear with continuity of care plans in place with providers to organize care if there is known severe weather incoming. Additionally, evacuation or sheltering can become problematic for those with disabilities if they require a specific form of transportation. Family members, friends, neighbors, and those

who support people with access and functional needs are crucial for identifying resource needs if those individuals haven't been identified when a disaster strikes. Being an advocate for oneself and for others is critical for the success of the whole community.

Creating close relationships with partners within and outside of the state provides insights and resources during critical incidents. Utilizing the National Network of Centers for Persons with Disabilities is a resource that can be accessed for external support. Following the initial conversation and informational session, it is important to advance the relation with specific groups by inviting members to attend planning meetings, exercises, and when seeking insights, to ensure all voices are heard and considered.

Developing strong connections within communities by inviting individuals from all walks of life, meeting them where they are, and providing an open environment for conversation can foster empathy and a strong planning foundation. Including the whole community in planning meetings and exercises becomes necessary to fully understand the scope and scale of potential hazards, risks, and impacts. It is necessary when seeking insight into plans that include the whole community to give the opportunity for all to have a voice.

#### **PRIVATE AND PUBLIC PARTNERSHIP**

Considering critical infrastructure and sustaining the state's economy is a factor that NDDDES planners consider. While there are many booming areas of business, the Oil and Gas Industry continues to flourish with nearly \$42.6 billion in gross business with \$3.8 billion in state and local tax revenues according to the North Dakota Petroleum Foundation (2023). Providing jobs, tax revenue, and boosting the economy the Oil and Gas community plays a critical role in keeping North Dakota booming.

Through outreach to safety groups across the western part of the state, NDDDES-HLS staff embarked on a mission to hear the story of the Bakken.



Hope Brighton, NDDDES mitigation planning specialist, visited with members of the oil and gas community in Dickinson in July during a "Neutral Grounds" event.

Conducting outreach with several safety groups across the western part of the state provided education and insights to challenges that may be cast upon the industry. Through explaining what emergency management does and reviewing the threats and hazards, planners found valuable insights from participants. They shared concerns from fires, severe summers storms and lightning causing fires on salt water brine tanks, to drought causing measurable amounts of dust with white out conditions similar to winter events.. Considering flooding due to snow melt or dam failure with Williams County Emergency Manager Mike Smith said, "Failure of the Fort Peck Dam in Montana could have resulted in three to four feet of water in Williston," highlighting both natural and technological threats are at the forefront.

As the groups representing dedicated safety professionals, the threshold of information and data gathering was significant. In an effort to collect tangible data from the audience, NDDDES-HLS developed a survey that was guided by an accompanying presentation to conduct a *Mini Risk Assessment for the Oil and Gas Community*. This survey guided the audience through understanding likelihood, impact, and vulnerability to understand threats and hazards more comprehensively. The survey results found that out

of 17 participants, ten found severe winter weather the most hazardous. When considering threats, the results indicated cyberattack, transportation incident, and hazardous materials release were the most concerning. These findings highlight the need to consider all communities when conducting the risk assessment as all industries and individuals are impacted differently.

#### **CONCLUSION**

Gathering the whole community's input is not easy. Collaborating with partners and organizations who already have an established community has proven success for the NDDDES planning team. Understanding how threats and hazards impact similarly or differently allows planners to view the threat landscape through a wide-angle lens. Finding similarities in ranking with reasoning such as vishing attacks of underserved populations or the inability to pause drill operations due to lack of internet access or cyber difficulties provides insights that while these communities are vastly different, they commonly have similar concerns. Increasing awareness to threats and educating North Dakotans is the first step. Catalyzing conversations to provide solutions creates a more resilient environment and state as a whole. You too can have the opportunity to guide planning action! Please take the survey below to be part of something great!



# TAKE OUR SURVEY

## WHAT HAZARDS AFFECT YOUR COMMUNITY?

Collaborating with our communities to understand hazards and risks helps with creating and implementing the North Dakota Enhanced Mitigation Plan. We want to know what concerns you, whether it's flooding, wildfires or severe summer or winter storms. Consider taking a few moments to share your thoughts on hazard risk in your community and providing answers to a short survey.



SCAN ME!

<https://bit.ly/3NQEost>



# NORTH DAKOTA EARNS CONSECUTIVE ACCREDITATION

As a national leader in mitigation, it came as no surprise that State Hazard Mitigation Team (SHMT) partners aced Emergency Management Accreditation Program (EMAP) requirements for mitigation during an onsite assessment conducted May 8-12, 2023.

The unexpected occurred, however, when a team of assessors found that the State of North Dakota was preliminarily compliant with all 73 elements of the rigorous EMAP standards, a rarity for on-site assessments.

EMAP, an independent, non-profit organization, fosters excellence and accountability in emergency management programs by establishing credible standards applied in a peer review accreditation process. EMAP Standards encompass program administration and evaluation; coordination; administration and finance; laws and authorities; hazard mitigation; prevention; continuity of operations planning; operational planning; incident management; resource management; communications and warning; facilities; training; exercises; and public information.

EMAP is more than an acronym for the North Dakota Department of Emergency Services (NDDDES) and its partner agencies. It's proven to be a blueprint for success. NDDDES achieved accreditation in the early days of the program and renewed its interest in 2017 as the Emergency Management Standard evolved into an American National Standard.

The State of North Dakota attained accreditation for 2018-2023 and recently received notification of consecutive accreditation. The EMAP Commission met September 28,

2023, to officially confer consecutive accreditation after an on-site assessment concluded one day earlier than anticipated because of the high-level of organization and commitment by twenty-six partner agencies.

NDDDES views EMAP as an investment in our people and our statewide emergency management program. EMAP enhances the lives of our citizens by ensuring a coordinated emergency management program, and it promotes a "Work As one Mindset" essential to successful collaboration during our state's frequent disasters.

The state's participation in EMAP generates many benefits, such as streamlined processes that reduced duplication of effort; increased understanding of processes and resources by partners; staff familiarity with equipment operations; and continuity of operations plans that provide direction when a hazard threatens to disrupt operations.

The hazard mitigation standards helped position our state for enhanced mitigation plan status. Enhanced status ensures North Dakota is eligible to receive increased funding under the Hazard Mitigation Grant Program, based on twenty percent of the total estimated eligible Stafford Act disaster assistance following a presidentially declared disaster. That's substantial when considering if we had Enhanced status during the catastrophic 2011 flood, we would have received an additional \$53 million in hazard mitigation funding to support our efforts to make North Dakota disaster resilient.

The EMAP Standards also resulted in programmatic changes that have benefited North Dakota. When Covid disrupt-





Kathleen Donahue, deputy planning chief for the N.D. Department of Emergency Services, explains the Emergency Management Accreditation Program during an agency “All-Hands” meeting.



**Gov. Doug Burgum**

“ Year after year, the North Dakota Department of Emergency Services has successfully led our state’s whole-of-government response to natural disasters and other emergencies with the utmost professionalism and preparedness. These consecutive accreditations are a testament to the extremely high level of services provided by the DES team and their emergency management partners across our state.”

ed operations, state agencies found their continuity of operations plans to be useful tools for re-establishing essential program functions. NDDDES created a Plan Development and Maintenance Policy to ensure consistency of planning efforts and resulting products, and a New Employee Orientation Program that establishes agency wide minimum expectations and cross job awareness.

Brenda Vossler, co-accreditation manager, summarizes it well when she states: “The EMAP process has been one of growth for North Dakota. We have progressed from taking actions with the purpose of meeting standards to recognizing that our program standards and performance expectations not only meet but exceed national standards. An attitude of continuous quality improvement has become the norm.”

# WHAT IS NATURE-BASED MITIGATION?

*By Katie Leitch, planner, and Hope Brighton, mitigation planner, N.D. Department of Emergency Services*

As disaster conditions worsen and mitigation practices evolve, the methods that are used to adapt must be modified as well. Practices that work with the natural landscape have proven to promote resilience. "Nature-based solutions are sustainable planning, design, management, and engineering practices that weave natural features or processes into the built environment to promote adaptation to resilience... Nature-based solutions offer significant benefits, monetary and otherwise, often at a lower cost than more traditional infrastructure. These benefits include economic growth, green jobs, increased property values, and improvements to public health, including better disease outcomes and reduced injuries and loss of life," states the Federal Emergency Management Agency (FEMA). Nature-based mitigation has become ever more important in today's landscape.

In a world of limited resources, sustainable options can foster a more resilient North Dakota. Actions are being taken statewide to minimize our footprint while enhancing our environmental surroundings. Nature-based solutions can help defend our communities from the impacts of an ever-evolving climate. These solutions can be cost-effective and lessen the impacts of drought, riverine and urban drainage flooding, heatwaves, stormwater runoff, and geologic hazards. Not only are there environmental benefits, but there are also additional social and community benefits as well such as improved water quality, improved air quality, healthier wildlife habitats, increased property value, improved property tax base, cooler localized temperatures, improved public health, green jobs, and added recreational space (FEMA, 2021). Providing our environment with the resources it needs while protecting our communities creates effective, sustainable solutions.

Working with our natural environment instead of against it can create cohabitation rather than increasing susceptibility to impacts on landscapes and wildlife. Nature-based mitigation provides intersectional benefits when thinking of mitigation and climate adaptation. As our environment shifts around us, being flexible and adaptable during times of uncertainty and change will



Above, staff from the N.D. Parks and Recreation conduct reseeded operations. Right, restoration at Grahms Island State Park are depicted.

be the key to success. These practices include a wide range of activities that can include large projects such as floodplain and wetland restoration or can happen at the household level by utilizing sustainable practices such as promoting pollinators by planting native, pollinator-friendly gardens, using rain barrels, or installing permeable pavement to allow rainfall to soak into the soils. Nature-Based Mitigation in North Dakota Several land use practices qualify as nature-based mitigation. When considering watersheds there are several ways to mitigate and preserve beauty. As highlighted by FEMA (2021) land conservation, greenways, wetland restoration and protection, stormwater parks, and floodplain restoration are all watershed-scale nature-based mitigation actions. Throughout the Red River Valley, several projects like these have already been implemented. One of these projects is the 2,200 Acre Greenway in Grand Forks, ND. The Greenway features several parks, a campground, two golf courses, disc golf courses, shore bank fishing sites, and over 20 miles of multi-purpose trails for recreators (The Greenway, 2020). Not only does the Greenway protect the community, but it also provides a positive space for citizens to connect and enjoy the waterway. Increasing community involvement when implementing nature-based items encourages homeowners to explore sustainable practices at the household level.

Additional nature-based mitigation that can be seen in North Dakota is shelterbelts. Shelterbelts are a line of

trees/foliage that protect an area from strong winds or erosion, specifically farm fields. Shelterbelts are a natural way to protect one's physical home, crops, and livestock. Transportation also benefits from shelterbelts as they create a barrier to winds, being a prominent feature of North Dakota's environmental conditions. Safety increases as wind speeds decrease from the use of these natural barriers, which is critical for moving our economic dependencies.

Shelterbelts require meaningful maintenance and planning with the caveat being, "There are a limited number of tree species appropriate for planting in specific parts of the state," according to North Dakota State University (NDSU) Extension. NDSU Extension worked to develop a project to identify potential new tree species for conservation plantings throughout the state. With the assistance of local Soil Conservation Districts and landowners, sites were located and inventoried to determine if specific species would be appropriate. Shelterbelts can consist of deciduous and coniferous trees and/or shrub species. Around the world, trees and shrubs have been highly documented as important honeybee resources, especially during the spring (NDSU Central Grasslands Research Center, 2020). Diversifying plant production through land-use changes can support our local pollinators and food producers that guide our agricultural needs.

Furthermore, stormwater management system practices around the state have been supporting collaborative, nature-focused initiatives. The City of Bismarck has been working within their Stormwater Plan and Stormwater Management Ordinance to promote, preserve, and enhance the natural resources for their communities.



Stormwater management practices and studies work to minimize conflicts and encourage compatibility between land disturbance, development activities, and environmentally sensitive issues (i.e., land, water, habitat, etc.). This will protect nearby properties from water and wind erosion by utilizing best management practices. Stormwater can move and transfer pollutants throughout our ground and water systems, otherwise known as runoff. Runoff can be seen through snowmelt, heavy rain, flooding and meltwater from hail. This creates the potential for pollutants to soak and infiltrate into the ground, settle on pavement, or move to waterbodies (wetlands, rivers, lakes) nearby creating toxic watersheds. Water is a critical resource to all, and unmanaged stormwater systems can increase risks to health and water quality, especially in drought-prone areas. According to Title 14.1 for the City of Bismarck, stormwater management is the "application of Best Management Practices (BMPs) to mitigate adverse impacts to stormwater quality and quantity, prevent sediments and other pollutants from entering surface or groundwater, source controls; and treatment of run-off to reduce pollution." Implementing best practices and developing a plan can support the long-term sustainability goals of a critical resource.

When considering the threats and hazards cast upon the state, planners work to find solutions that mitigate several hazards. Conservation of prairies and wetlands does just that! State agencies including the N.D. Forest Service, N.D. Parks and Recreation, and N.D. Game and Fish take a multi-faceted approach to conservation. Native prairie plants have deep root systems that absorb extensive amounts of water while holding the surrounding soils in place. This can mitigate drought, flood, land erosion, and sustain high water quality through filtration, while also providing animal and plant habitat creating a multitude of benefits by conserving wetlands and prairies. The U.S. Fish and Wildlife Service partnered with the ND Game and Fish to restore wetlands to their original state. Local landowners Chad and Jennifer Kunz restored a wetland on their property to promote waterfowl wildlife, plants, and the natural filtration of groundwater (ND Game and Fish, 2020). Wetlands can be restored by installing ditch plugs, screw gates, stop logs, or other structures.

The geographic nature of the state allows for many types of wetlands, those restoring must be mindful of the diverse complexities of wetland types highlighting the need to plant native vegetation and strong land management practices to derive the best outcomes (ND Game and Fish, 2020). As for the prairie, the ND Parks and Recreation Department's Natural Resource Division is dedicated to restoring our natural lands including



Big Bluestem restoration at Cross Ranch State Park.

those at Fort Stevenson, Icelandic, Lake Sakakawea, Turtle River, and Cross Ranch State Parks, etc. There are 14 major State Parks in North Dakota, with the new addition this year being Pembina Gorge State Park in the northeast. Of these parks, 50% have undergone restoration, becoming a well-established prairie. Within these parks, there are 3 main types of prairies including tall grass, wet meadow, and the most common in the state being mixed grass prairies. To bring back a well-established prairie, it takes an extensive amount of time, planning, and coordination to create a high diversity yield. Each complex restoration project has its own specific plan to ensure it is successful through the process. Seed species are hand-picked by subject matter experts for each individual location based on what will flower depending on environmental factors. With only two localized companies that provide specific prairie seeds, based out of Bismarck and Fargo, it is expensive, but because of the successful partnership with ND Game and Fish (NDGF), NDGF provides total funding for restoration through their Outdoor Heritage Fund. Collaborative efforts are the key to largescale success.

Furthermore, personnel visit restoration sites for maintenance and upkeep while also verifying that seeds have successfully germinated and flourished. Combating invasive and noxious weed species has become the main goal to protect the native plants. Utilizing multiple managing methods can set invasive species back, and one effective method is prescribed wildfire every three to five years. "This overall work increases the abundance of native plants and ecological diversity to enhance habitats," states N.D. Parks and Recreation's Natural Resources Division Chief, Kathleen Duttenhefner. Kathleen has been with the department for



**Katie Leitch**, *planning specialist*, is from Fergus Falls, Minnesota. She has been working for the North Dakota Department of Emergency Services for just over 2 years. She graduated from North Dakota State University with a bachelor's degree in Emergency Management and a Natural Resource Management minor, with continued education in Geographic Information Systems through Bismarck State College (BSC), and recently finishing the National Emergency Management Basic Academy.

roughly 30 years, and she noted that she has seen these areas go from a sparse landscape with limited diversity that have transitioned into an area thriving with abundant plant and animal populations. The diverse habitat that was created provides important resources for animals and insects (ND Parks and Recreation, 2023). These prairies host pollinators that provide the backbone of agriculture and food production. Pollinators are essential for ecological survival function, of the 1,400 crop plants grown across the United States almost 80% require pollination by animals such as bees, butterflies, and moths (USDA, 2023). If you are interested in learning more about prairie restoration projects, you can visit these parks and see the work in action yourself! Some state parks have informational/interoperative, onsite panels throughout that explain localized actions and what management practices have been completed. Keeping these lands wild promotes resiliency while enhancing the longevity of resources.

Nature based mitigation practices aligned with research brings a multitude of benefits to North Dakota. Increasing resiliency to natural hazards by using flexible and adaptable strategies allows mitigation efforts to be effective long into the future, empowering our communities and ecosystems to thrive benefits our environment. Through everyday data-based decision making, communities work to increase water and air quality, physical and mental health safety, supporting agriculture by hosting native pollinators that increase food security, reducing erosion due to water or wind, etc. Synchronizing activities alongside the natural environment regularly promotes healthy communities before, during, and after disasters. These natural spaces host diverse species types down to the micro level (soil, water, and air). Moving toward nature-based mitigation efforts encourages adaptability, provides holistic benefits and disaster resiliency.







# STATE EMERGENCY OPERATIONS CENTER ENSURES SAFER NORTH DAKOTA

In keeping with its vision to provide a safe, secure and resilient state, the North Dakota Department of Emergency Services (NDDDES) collaborates with a broad base of public and private organizations to ensure all-hazards response readiness.

The State Emergency Operations Center (SEOC) provides 24/7 response coordination with its partners to ensure timely delivery of required resources and assets; compiles initial damage assessment information; evaluates information to determine the potential for state and federal declarations; and produces and distributes documents and reports useful to emergency and disaster operations.

The SEOC staff coordinated many responses during the time frame of July 1, 2022, and June 30, 2023, including 1,082 hazardous materials incidents reported through the State's Unified Spill Reporting System (Hazconnect). NDDDES staff has coordinated state response for a number of wildland fires, hazardous materials spills, potable water shortages, missing persons, public alerts, downed/missing aircraft, train derailments, flooding, severe winter storms, tornadoes, power outages, hail, rain and high-wind storms that produced significant property damage and threatened lives.

Following is a list of key response efforts:

## **Wyndmere Train Derailment (Richland County)**

- On March 26, 2023, a Canadian Pacific Railroad train derailed approximately 2 ½ miles southeast of Wyndmere in Richland County.
- 31 cars of a 70-car train derailed. Some of the cars contained hazardous materials including propylene, ethylene glycol and liquid asphalt.
- 4 cars filled with liquid asphalt and 2 cars filled with ethylene glycol spilled part of their loads. 1 propylene car sustained a small puncture and released vapor which hazmat teams mitigated.



North Dakotans were faced with a challenging winter from 2022-2023, as many areas saw record snowfall amounts, as well as power outages. When the spring months came, there was concern for widespread flooding. Dry soils absorbed much of the saturation, but some areas still dealt with localized flooding.

- Response included Canadian Pacific, regional hazmat teams, environmental teams, local responders to include fire and law enforcement along with North Dakota Department of Environmental Quality (NDDEQ) staff who monitored cleanup efforts.

#### **Spring Flood Preparedness Activities**

- The SEOC coordinated various flood preparedness and response efforts due to spring flooding.
- The state entered spring looking at a delayed melt and concerns for a fast melt, ice jams, rain on top of melt. However, dry soils absorbed a lot of the melt.
- Western North Dakota experienced a rapid warmup with 70 degree temperature resulting in a quick melt and ice jams. Central and eastern North Dakota experienced a much gentler melt.

- The SEOC was activated (Level 2) for a couple of weeks.
- A Presidential Disaster Declaration was granted for 21 counties in response to spring flooding that occurred between April 1, 2023, and May 6, 2023, resulting in over \$5 million in estimated damages.

#### **Winter Storm Responses**

November 9-11, 2022

- A Colorado low impacted central and southeast North Dakota.
- Record snowfall fell, road closures occurred, and downed powerlines/poles resulted in outages to thousands.
- Bismarck received 17.1 inches (almost double our previous record of 9.1 inches).
- A Presidential Disaster Declaration was granted for 7 counties in response to record breaking snowfall to central North Dakota and ice accumulations in southeast North Dakota that impacted transportation and severely damaged electrical infrastructure costing more than \$1.7 million.

December 12-15, 2022

- 1 – 2 feet of snow impacted much of North Dakota.
- The storm resulted in heavy snow, power outages, road closures (at one point all major interstates and highways closed) and no travel advisories throughout the entire state.

December 22-23, 2022

- Blizzard conditions once again resulted in road closures and impacted holiday travel.

# BUILDING RESILIENCE IN NORTH DAKOTA

## STATE'S ONGOING EFFORTS IN HAZARD MITIGATION

By Carl Meyer, hazard mitigation specialist,  
N.D. Department of Emergency Services

From its vibrant "Main Street" communities to its expansive landscapes, North Dakota has been steadfastly enhancing its culture of resiliency and preparedness through the diligent implementation of mitigation projects and comprehensive planning.

Spearheading these efforts is the State Hazard Mitigation Team (SHMT), a dynamic force committed to bolstering the state's resilience in the face of potential hazards. The cornerstone of their approach lies in leveraging funding support from FEMA's Hazard Mitigation Assistance (HMA) grant programs, encompassing the Building Resilient Infrastructure and Communities (BRIC) initiative (formerly known as Pre-Disaster Mitigation), Flood Mitigation Assistance (FMA), and the Hazard Mitigation Grant Program (HMGP). These invaluable programs provide critical financial aid to communities, facilitating the execution of mitigation projects by covering up to 75% of project costs. Notably, the state goes beyond federal assistance by adding an extra 10% to HMGP grants, reducing the local share to a mere 15%. This collaborative framework, involving state, regional, and local stakeholders, has repeatedly yielded successful mitigation outcomes.

### **A Resilient Journey: Impactful Mitigation Efforts**

Since 1997, North Dakota has invested a substantial \$301,533,544.64 into hazard mitigation endeavors. Remarkably, these investments have yielded a 6:1 return on investment, as reported by FEMA through the National Institute of Building Sciences. This translates to over a billion dollars saved, while concurrently enhancing the safeguarding of lives and property across the state. These impactful projects have left an indelible mark on communities of all sizes. Recent endeavors include:

**University of Mary Slope Stabilization:** The completion of Phase I of this project has paved the way for Phase II. With a focus on stabilizing the hill on which the University of Mary sits, this initiative safeguards vital infrastructure and the well-being of students and staff alike.

**ND Resilient Infrastructure Project:** Fargo Pump Station Flood Mitigation: Currently underway, this project addresses a gap in the existing flood protection infrastructure near



A slope stabilization project at the University of Mary in Bismarck has commenced its second phase which will focus on strengthening the hill on which the college sits.

the Red River Pump Station. Its goal is to shield the water treatment plant and other flood-prone areas within Fargo.

### **City of Fargo Wastewater Treatment Plant**

**Flood Protection Plan:** In progress, this project is crafting a permanent flood protection solution for the wastewater facility. It employs a combination of earthen levees and floodwalls, replacing past temporary measures that were both time-consuming and costly.

### **Dynamic Application of HMGP Funds**

The utilization of HMGP funds has propelled a plethora of mitigation activities throughout the state. These funds, originating from flooding and severe weather events (DR-4553-ND, DR-4565-ND, DR-4613-ND, DR-4660-ND), have served a variety of purposes:

**Diverse Project Portfolio:** DR-4553-ND (2020 Flooding) HMGP funds have fueled thirteen distinct projects, amounting to \$1,654,933.48. DR-4565-ND (2020 Severe Storms and Flooding) and DR-4613-ND (2021 Severe Storm, Straight-line Winds and Flooding) dollars have enabled another four projects, totaling \$957,007.76. Meanwhile, DR-4660-ND (2022 Severe Winter Storm and Flooding) HMGP funds will

power projects up to \$12,173,220.00, including the Garrison Water Intake and North Dakota State Parks Storm Shelters projects.

**Enhancing Safety Infrastructure:**

Funds have facilitated the construction of storm shelters in areas lacking such protective measures. Early warning sirens have been installed in communities previously without, enhancing disaster preparedness.

**Critical Facility Empowerment:**

Emergency generators have found their place in essential facilities like fire stations, health clinics, community shelters, and law enforcement stations, fortifying their ability to weather crises.

**Space Weather and Beyond:**

The State of North Dakota became the first state in the nation to prepare a robust evaluation of the risk and vulnerability to its electrical power infrastructure from an emergency management perspective. The Electrical System Resiliency Annex to the State of North Dakota Enhanced Mitigation Mission Area Operations Plan evaluated the risk and vulnerability to its electrical power infrastructure from the emergency management perspective. Hazards and threats range from the more prevalent natural hazards (i.e., flood, severe winter weather, severe summer weather) to geomagnetic disturbances (GMD) associated with space weather (caused by heightened activity like coronal mass ejections [CME] from the sun), and include the threat associated with man-made electromagnetic pulses (EMP) generated by nuclear weapons that have exploded in the atmosphere.

**FMA and**

**Unique Mitigation Solutions:** The Flood Mitigation Assistance (FMA) initiative has been harnessed to eliminate the risk of repetitive flood damage to structures.

**Engineering a Safer North Dakota:**

Advance Assistance projects (now



More projects this year included a newly installed emergency siren in Glen Ullin (top) and the Red River Pump Station in Fargo.

known as Project Scoping projects under BRIC) empower communities to address their distinctive mitigation needs by conducting studies and crafting tailored plans.

**Empowering the Future: Grant Funding Opportunities**

The North Dakota Department of Emergency Services (NDDDES) has recently announced the availability of grant funding through two Hazard Mitigation Assistance programs: Flood Mitigation Assistance (FMA) and Building Resilient Infrastructure and Communities (BRIC). BRIC has replaced

the Pre-Disaster Mitigation Grant (PDM) Program. Prospective applicants have until December 15, 2023, to submit their applications for these programs. For further information, interested parties can reach out to key contacts within NDDDES, including Carl Meyer (701-328-8108 or carlmeyer@nd.gov), Todd Joersz (701-328-8261 or tjoersz@nd.gov), and Justin Messner (701-328-8107 or jmessner@nd.gov). In the ongoing pursuit of a more resilient North Dakota, the State Hazard Mitigation Team remains dedicated to building a stronger and smarter future for all its residents.

## FINAL REPORT: 2018-2023 Mitigation Action Implementation

The North Dakota Department of Emergency Services (NDDDES) staff expresses its gratitude to the State Hazard Mitigation Team (SHMT) for building the 2019 *State of North Dakota Enhanced Mitigation Mission Area Operations Plan (Enhanced Mitigation MAOP)* and then ensuring it remains viable during the past five years.

Because of the SHMT's commitment to mitigation, the State of North Dakota became the first state in Federal Emergency Management Agency (FEMA) VIII to achieve enhanced status for its mitigation strategy.

The following listing of mitigation action updates reflects the high level of commitment by the SHMT to building a safer, more disaster resilient North Dakota. As evidenced by the report:

- Partners made substantial progress with implementation of mitigation actions.
- SHMT members made course revisions to the scope of mitigation actions, adapting to changing operating environments, funding opportunities and new directives. **These additions are noted in red** in the Action Statement and Action Strategy/Development columns on the following pages.
- As projects developed, SHMT members expanded the scope of projects and welcomed new organizations. **The additions of new agencies are in red.**

Please also note that three agency name changes occurred since plan adoption in 2019:

- The creation of the **North Dakota Department of Environmental Quality**, formerly with the North Dakota Department of Health, on April 29, 2021.
- The North Dakota State Water Commission became the **Department of Water Resources** on August 1, 2021.
- The North Dakota Department of Health and the North Dakota Department of Human Services merged into one agency, **North Dakota Health and Human Services** on September 1, 2022.

Because of the SHMT's commitment to mitigation, the State of North Dakota became the first state in Federal Emergency Management Agency (FEMA) VIII to achieve enhanced status for its mitigation strategy. At the time of publication, SHMT members were providing data and sharing insights for the *2024-2029 Enhanced Mitigation Mission Area Operations Plan*.

Action ID #	Action Title	Action Statement	Action/Strategy Description	Final Cumulative Report
<b>Local Plans and Regulations</b>				
2019-1	Mitigation Planning	Provide technical and financial assistance to local and tribal jurisdictions developing or updating multi-hazard mitigation plans (MHMPs); and assist communities with other mitigation-related planning initiatives.	All local and tribal jurisdictions are encouraged to develop and adopt mitigation plans that fulfill the requirements of the Disaster Mitigation Act of 2000, enhance community resiliency, and meet the needs of the jurisdictions. <b>This action also calls for the State Hazard Mitigation Team (SHMT) to continue its Community Coffee initiative, collaborating with local and tribal mitigation planning teams to elicit public feedback on hazards, threats, risks, vulnerabilities, and mitigation actions.</b>	<p><b>ND Department of Emergency Services (NDES):</b></p> <ul style="list-style-type: none"> <li>• Conducted a G318 Hazard Mitigation Planning Workshop in June 2023, in collaboration with FEMA and Fargo/West Fargo/Cass County Emergency Management. The course discussed newly revised federal planning requirements and a tour of the Fargo Diversion project.</li> <li>• Reviewed and approved multiple plans to ensure compliance with federal standards. Collaborated with FEMA on four reviews, as required by the Program Administration by State (PASD) agreement.</li> <li>• Coordinated with the NDES Strategic Communications staff to develop a video, Mitigation Matters, underscoring the importance of mitigation education and mitigation implementation: <a href="https://youtu.be/Rbs-PNFN6Ik?si=IAvLKeungAclppPu">https://youtu.be/Rbs-PNFN6Ik?si=IAvLKeungAclppPu</a>.</li> <li>• Conducted a series of Mitigation Plan Developers Meetings attended by more than 60 participants as follows:               <ul style="list-style-type: none"> <li>○ Coordinated with FEMA on 8/24/2022 to review newly revised federal planning requirements.</li> <li>○ Presented "They Work! Building Codes and Zoning Ordinances" on October 6, 2022, featuring presentations by the ND Department of Commerce, ND Fire Marshal, DWR, ND Planning Association and FEMA.</li> <li>○ Coordinated with the ND Department of Water Resources (DWR) and FEMA to conduct a 2/27/2023 mitigation plan developers meeting to address the basics of flooding; the National Flood insurance Program; RiskMAP; repetitive loss; and how to reduce risk and empower community leaders.</li> </ul> </li> <li>• Conducted outreach to various community groups in collaboration with the ND Health and Health Equity Committee to meet with, New Americans/Foreign Born/Immigrants, youth, LGBTQ2S+, tribes, seniors, oil workers, students, and the Minot State University Center for Persons with Disabilities. Findings from these discussions will be integrated into the planning process, threat &amp; hazard profiles, and mitigation strategy.</li> </ul>

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				<ul style="list-style-type: none"> <li>• Presented on North Dakota's approach to climate change analysis during the FEMA Region 8 Climate Adaptation Seminar.</li> <li>• Collaborated on revisions to the state mitigation plan's baseline climate assessment with a National Weather Service meteorologist for his master's degree in emergency management.</li> <li>• Conducting a study of the impacts of natural hazards on the state's electrical system.</li> <li>• Conducted training on plan review for new NDDDES staff; broadened level of mitigation planning expertise.</li> <li>• Developed an online mitigation status map for use by partners (NDDDES GIS staff): <a href="#">MHMP Status Dashboard</a>.</li> <li>• Participated in several local and tribal mitigation planning meetings either virtually or in person to provide technical assistance with plan development.</li> <li>• Initiated a series of mitigation plan developers' meetings focused on best practices and promotion of available resources through the State Hazard Mitigation Team (SHMT) partners.</li> <li>• Participated in local and state policy mitigation plan policies webinars.</li> <li>• Participated in the National Climate Assessment Northern Great Plains Engagement Workshop, shared North Dakota's perspective on climate change.</li> <li>• Conducted G235 Emergency Planning class – Nov. 15-18, 2021.</li> <li>• Supported a regional G318 Hazard Mitigation Planning Workshop by FEMA Region VIII during March-April 2021 with a Hazard Identification and Risk Assessment presentation.</li> <li>• Promoted best practices and technical assistance during 7/1/2020-6/30/2021 during multiple mitigation plan reviews under the Program Administration by State (PAS) Pilot Project.</li> <li>• Collaborated with the ND Health and Human Services, Office of Health Equity, on July 15, 2020, to broaden the definition of vulnerable populations.</li> <li>• Developed a risk assessment tracker based upon data from local and tribal MHMPs.</li> <li>• Developed a project tracker listing all projects identified in local and tribal MHMPs.</li> </ul>



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				<ul style="list-style-type: none"> <li>• Conducted a G318 Hazard Mitigation Workshop and tour of mitigation project sites in Fargo in September 2019 in collaboration with Fargo-Cass County Emergency Management, Federal Emergency Management Agency.</li> <li>• Held five Community Coffees in 2019 with new Americans, North Dakota State University (NDSU) students, seniors, first responders, and local hazard mitigation teams in collaboration with Emergency Managers from Fargo/Cass, Dickey, Stark and Morton County Emergency Management; Lutheran Social Services; NDSU; and KLJ Engineering.</li> <li>• Assisted emergency managers in the completion of local Threat and Hazard Identification and Risk Assessments (THIRAs).</li> <li>• Conducted 4 regional training sessions on how to complete the THIRA tool.</li> </ul> <p><b>ND Forest Service:</b></p> <ul style="list-style-type: none"> <li>• Provided annual cost-share grant program opportunity for rural fire departments to build fire protection and prevention capabilities. Program provided over \$300,000 to over 40 individual fire departments every year. Continuing.</li> <li>• Provided wildland fire specific training to over 300 North Dakota firefighters each year. Continuing.</li> <li>• Provided municipal tree inventories and emerald ash borer (EAB) mitigation plans to 100 communities. Continuing.</li> <li>• Provided cost-share assistance to communities preparing for and diversifying tree species ahead of the arrival of EAB. Continuing.</li> <li>• Prepared training materials for and trained natural resource professionals, city staffs, and the public in EAB identification, mitigation options and management. Continuing.</li> <li>• Participated in DES statewide mitigation planning through collaborative meetings. Continuing.</li> <li>• Two staff members completed Forest Climate Adaptation Planning training through the Northern Institute of Applied Climate Science. Continuing.</li> <li>• Continue to provide technical and cost-share assistance for rural windbreak renovations improving species diversity and mitigating EAB. Continuing.</li> </ul> <p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>• Ongoing: Participated and contributed to the statewide mitigation plan through collaborative meetings.</li> </ul>

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				<p><b>ND State Fire Marshal:</b></p> <ul style="list-style-type: none"> <li>• Support and attend all planning sessions with NDDDES.</li> </ul> <p><b>NDSU Extension:</b></p> <ul style="list-style-type: none"> <li>• Hosted drought planning webinar series for ranchers, which had 140 live and 1,306 video views.</li> <li>• Contributed to a regional Collaborative Drought Based Scenario Planning Guide and helped facilitate a workshop on the guide.</li> <li>• Participated and contributed to the statewide mitigation plan through collaborative meetings.</li> <li>• Extension specialists and agents have been providing educational resources and technical assistance to local and tribal mitigation planning teams to understand hazard and threat impacts on the agricultural industry and communities.</li> </ul> <p><b>ND Department of Agriculture and Animal Health Division:</b></p> <ul style="list-style-type: none"> <li>• Conducted a day-long workshop given to 20 veterinarians and state response partners at an annual veterinary reserve corps meeting during February 2022, a collaborative initiative between NDDDES and NDDA/BOAH.</li> <li>• Implemented a OneHealth approach to Highly Pathogenic Avian Influenza (HPAI) response among state, county and local authorities.</li> <li>• Participated in a Multi-State Partnership annual meeting Security in Agriculture.</li> <li>• Attended a table-top exercise by Southern Agriculture and Animal Disaster Response Alliance Foreign Animal Disease (SAADRA FAD) Safe Exercise (remote/virtual participation).</li> <li>• Expanding or changing ranges of pests and pathogens influenced in part by climate change.</li> <li>• Epizootic Hemorrhagic Disease (EHD): deer, elk, bison, cattle, provided outreach/education and diagnostic support to North Dakota Stockmen's Association, veterinarians, other state agencies partners, county Extension and FSA; working through the process to update species eligible for indemnity.</li> <li>• Vesicular Stomatitis: highly influenced by climate conditions and regions typically impacted have changed over time; seeing new incursions in new species in new locations and changing seasonality of patterns.</li> <li>• Ticks: Asian long horned tick (alpha gal) health department and veterinarians:</li> </ul>

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				<ul style="list-style-type: none"> <li>• Cyber:                             <ul style="list-style-type: none"> <li>○ Actively engaged in state level disaster recovery planning, firewall testing of information systems and database.</li> <li>○ Participated in national information sharing events agricultural incursions and vulnerabilities.</li> <li>○ Veterinary reserve corps training included cyber awareness.</li> </ul> </li> <li>• Support and promote Secure Food Supply (SFS) plans, created enrollment form and streamlined process for veterinarians to assist producers developing SFS plans</li> <li>• National Poultry Improvement Plan biosecurity plans review before, during, after HPAI.</li> <li>• Enrolling producers into US SHIP (Swine Health Improvement Plan), which includes biosecurity planning, animal disease traceability standards and building capacity and capabilities for electronic records sharing during outbreaks.</li> <li>• Served as break-out room facilitators of an Animal Search and Rescue (ASAR) emergency shelter planning workshop of a County Emergency Manager (EM), Voluntary Organizations Active in Disaster (VOAD) and animal control from Minnesota and North Dakota in Nov 2020.</li> <li>• Support and promote Secure Food Supply plans, National Poultry Improvement Plan biosecurity plans and pilot Swine Health Improvement Plan to effect disease and disaster mitigation at the producer level.</li> <li>• Conducted a review of the infectious diseases annex for the Hettinger County Hazard Mitigation Team.</li> <li>• Participate in a number of county Mitigation Planning processes to review and support county processes.</li> <li>• <b>ND Department of Transportation (DOT):</b> <ul style="list-style-type: none"> <li>• Completed the State Freight and Rail Plan in January 2023; implementation is pending.</li> <li>• Participated and contributed in four quadrant meetings in October 2021 on risk and resiliency for the State Freight and Rail Plan. Feedback was received from County and Tribal Emergency Planners, NDDDES, USACE and FEMA.</li> <li>• Provided feedback on the Roads Acting as Dams (RAAD) portions of the Spirit Lake MHMP.</li> </ul> </li> </ul>

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				<p><b>ND Geological Survey:</b></p> <ul style="list-style-type: none"> <li>Reviewed the geologic hazard profile for the Rolette County Hazard Mitigation Team.</li> </ul> <p><b>North Dakota Stockmen's Association:</b></p> <ul style="list-style-type: none"> <li>Provided cattle truck rollover protocol instruction to various law enforcement agencies.</li> </ul>
2019-2	Hazard Mitigation Planning Toolbox	Develop a web-based Hazard Mitigation Planning Toolbox.	This action supports State, local, and tribal planning teams by providing links to hazard- and threat-related information and mitigation-related webinars; guidance for developing plans that involve the Whole Community; information on the State's building code program; and development of reference guidance.	<p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>Completed the web-based Hazard Mitigation Planning Toolbox: <a href="https://www.des.nd.gov/planning">https://www.des.nd.gov/planning</a></li> <li>Resumed efforts to identify and establish a database of resources after the COVID-19 response.</li> <li>Initiated development of the North Dakota Reference Guide: Key Hazard Mitigation Planning Considerations.</li> <li>Developed and implemented a process for tracking hazard- and threat-related informational links. Project still under development.</li> </ul>
2019-3	Building Codes and Zoning Ordinances	Encourage local jurisdictions to develop and update building codes and zoning ordinances.	Building codes and zoning ordinances promote mitigation principles by outlining requirements and restrictions to keep communities safer. Examples include: <ul style="list-style-type: none"> <li>Floodplain ordinances</li> <li>Defensible space (fire prevention)</li> </ul>	<p><b>North Dakota Planning Association:</b></p> <ul style="list-style-type: none"> <li>Presented "Building Codes in Rural North Dakota" during the October 6, 2022, Mitigation Plan Developers Meeting.</li> <li>Educate individuals, legislators, and planning professionals on the importance of planning and contemporary planning best practices, partner with those with a passion toward community-based efforts in planning and related fields, and advocate for the future success of communities through good policy and plan-making.</li> <li>Continuing to educate City and County planners on zoning and encourage all entities to update their Zoning Ordinances and Comprehensive Plans.</li> </ul>

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			<ul style="list-style-type: none"> <li>• Snow load building requirements</li> </ul>	<p><b>NDDES:</b></p> <ul style="list-style-type: none"> <li>• Emphasized importance of building codes and zoning ordinances during a G318 Hazard Mitigation Workshop in Fargo in 2023.</li> <li>• Also held a plan developer's meeting dealing with building code and zoning ordinances.</li> </ul> <p><b>ND Department of Commerce:</b></p> <ul style="list-style-type: none"> <li>• Presented "State of ND Building Code As We Know Them" during the October 6, 2022, Mitigation Plan Developers Meeting.</li> <li>• Continue to encourage local and tribal planning teams to consider adding mitigation actions directed at reviewing/enhancing building codes and zoning ordinances, as part of technical assistance efforts.</li> </ul> <p><b>ND Fire Marshal's Office:</b></p> <ul style="list-style-type: none"> <li>• Presented "Understanding Fire Codes and the Value in Reviewing Them" during the October 6, 2022, Mitigation Plan Developers Meeting.</li> </ul> <p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>• Presented the "Importance of NFIP Standards and the Intersection of Building Codes" during the October 6, 2022, Mitigation Plan Developers Meeting.</li> </ul>
2019-4	Cultural and Historical Preservation	Promote the participation of cultural and historical preservation organizations in the planning process.	<p>This Whole Community action calls for leveraging the expertise of cultural and historical preservation organizations when: 1) <b>analyzing risk and vulnerability;</b> and 2) <b>identifying mitigation measures designed to protect cultural and historical resources.</b></p>	<p><b>NDDES &amp; State Historical Society:</b></p> <ul style="list-style-type: none"> <li>• Conducted EHP Reviews on all preparedness projects.</li> <li>• Conducted a meeting with a Federal Emergency Management Agency (FEMA) partner to discuss potential training/integration opportunities. COVID-19 response postponed efforts.</li> </ul> <p><b>State Historical Society of ND:</b></p> <ul style="list-style-type: none"> <li>• Worked closely with environmental and local groups to protect cultural resources in planning the Mouse River Enhanced Flood Protection Project.</li> <li>• Worked closely with project proponents and siting authorities to protect cultural resources during energy development and grid security upgrades.</li> <li>• Published the <a href="#">Historic Preservation in North Dakota, 2022-2027: A Statewide Comprehensive Plan</a> in December 2021.</li> <li>• Worked closely with environmental and agricultural groups to protect cultural resources in planning drought mitigation.</li> </ul>

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				<p><b>NDSU Extension:</b></p> <ul style="list-style-type: none"> <li>As part of response to events in 2019, 2020, and 2021, Extension staff members have developed educational materials on mitigation measures to preserve historical and cultural resources for response and recovery workers and citizens.</li> </ul> <p><b>ND National Guard (NDNG):</b></p> <ul style="list-style-type: none"> <li>Continues cultural and historical preservation assessments on land used for training or operated by the NDNG.</li> </ul>
<b>Planning Integration</b>				
2019-5	Basin-wide Water Management Development and Management Planning	Conduct comprehensive basin-wide watershed management water management and development planning in the five major basins in North Dakota.	This action ensures comprehensive basin-wide water development planning in the <del>seven-eight</del> major basins in North Dakota – <del>the</del> (upper and lower Missouri River Basins; <del>the</del> James River Basin; <del>the</del> Mouse River Basin; <del>the</del> Red River Basin; Little Missouri; Upper Heart and Upper Cannonball River Basin; and the Devils Lake Basin. – <del>to allow for</del> This process supports a more consistent and collaborative approach to flood and drought mitigation <del>plans and projects particularly in</del> large population	<p><b>Department of Water Resources (DWR):</b></p> <ul style="list-style-type: none"> <li>The DWR entered into an agreement with the U.S. Geological Survey (USGS) to evaluate seepage on the Souris River. The Souris River Seepage Study evaluated how drought conditions affected reservoir releases on the Souris River for the purpose of informing future operations. This is complete. Field work for this study was conducted in 2021 and the study was published in 2022.</li> <li>The DWR has entered into an agreement with the USGS to evaluate low flows on the Red River of the North. The objective of this study is to build knowledge of the historical and potential future flow conditions on the Red River, estimate how much changes in land cover and land use have influenced low flows, estimate how much hydroclimatic shifts and long-term persistence have influenced low flows, assess the degree of risk for extreme low flow conditions, and evaluate differences between flow minimums and established flow needs. The final report is expected by the end of 2023.</li> <li>The DWR has continued its agreement with the USGS to monitor water quality and flow on the Sheyenne River. This monitoring is conducted to better understand the effects of operating the Devils Lake Emergency Outlets on the Sheyenne River.</li> <li>The DWR provides funding and technical assistance for basin-wide water and land management planning. This has included assistance to Joint Water Resource Boards (JWRBs).</li> <li>On a biennial basis, the DWR completes a Water Development Plan. As required by NDCC 61-02-01.3, the DWR shall develop and maintain a comprehensive water development plan that includes a water project inventory. The last Water Development Plan was completed in January 2023.</li> </ul>

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			<p><b>areas.</b> Looking at the issues that face the basins from a regional and watershed perspective rather than through single jurisdictions typically results in a more favorable and thorough plan of action.</p>	<ul style="list-style-type: none"> <li>• Also see Souris Basin Dams Mitigation Action.</li> <li><b>US Army Corps of Engineers (USACE) – St. Paul District:</b> <ul style="list-style-type: none"> <li>• St. Paul District, in cooperation with the Red River Basin Commission, the North Dakota Joint Water Resources Commission and the Minnesota Red River Watershed Management Board, completed a Basin-wide Comprehensive Watershed Management Plan for the Red River of the North in 2018. The Plan defines goals and roles for multiple agencies.</li> </ul> </li> <li><b>US Army Corps of Engineers (USACE) – Omaha District:</b> <ul style="list-style-type: none"> <li>• Publish the Missouri River mainstem System 2021-2022 Annual Operating Plan by December 2021. This document outlines both flood risk reduction and water conservation activities for the Missouri River mainstem.</li> <li>• Plans are underway to make USACE Emergency Action Plan inundation maps and updated comprehensive dam database publicly available in the <u>National Inventory of Dams</u> by the end of 2021. Will include summaries of best available risk information and inundation scenarios, including water depth and arrival times and life loss and property impact estimates.</li> </ul> </li> </ul>
2019-6	Local Master/ Comprehensive Planning	Encourage local zoning and planning boards and commissions to develop and maintain master and/or comprehensive plans.	Analyses of local and tribal mitigation plans indicate local master and comprehensive plans are outdated in many communities. This action supports development of these plans as vehicles to regulate development in hazard-prone areas. Hazard mitigation becomes much more cost effective when handled before structures and infrastructure are	<p><b>NDDes and ND Department of Commerce:</b></p> <ul style="list-style-type: none"> <li>• Supported an initiative by the ND Department of Commerce to promote comprehensive planning during the October 2020 Main Street Summit.</li> </ul> <p><b>North Dakota Planning Association:</b></p> <ul style="list-style-type: none"> <li>• Educate individuals, legislators, and planning professionals on the importance of planning and contemporary planning best practices, partner with those with a passion toward community-based efforts in planning and related fields, and advocate for the future success of communities through good policy and plan-making.</li> <li>• Continuing to educate City and County planners on zoning and encourage all entities to update their Zoning Ordinances and Comprehensive Plans.</li> </ul> <p><b>ND State Fire Marshal:</b></p> <ul style="list-style-type: none"> <li>• Updated the fire code to the 2018 Edition to remain current and match the building, residential and other State codes.</li> <li>• Notified local fire authorities of the State fire code and gave access to updates.</li> <li>• Participated in the Building, Residential and other State code adoption processes run by the Dept. of Commerce.</li> </ul>

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			placed in hazard-prone areas.	<ul style="list-style-type: none"> <li>• Meet with local fire chiefs and Emergency Managers to discuss local issues.</li> <li>• Approximately 40 fire departments visited in 40 different counties.</li> <li>• Met with approximately 5 Emergency Managers.</li> <li>• Meet with local fire chiefs and Emergency Managers to discuss local issues.</li> <li>• Emails sent to County Emergency Managers (EMs) requesting invitation to meetings.</li> <li>• Attended three County EM meetings.</li> <li>• Approximately 50 local fire chief visits were conducted.</li> </ul> <p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>• Continuing work on flood risk reduction investigations for the City of Zap (Mercer County) and Rice Lake (Emmons County).</li> <li>• The DWR provides funding and technical assistance for basin-wide water and land management planning. This has included assistance to Joint Water Resource Boards.</li> <li>• On a biennial basis, the Department of Water Resources completes a Water Development Plan. As required by NDCC 61-02-01.3, the Department of Water Resources shall develop and maintain a comprehensive water development plan that includes a water project inventory. The last Water Development Plan was completed in January 2023.</li> <li>• Completed flood risk reduction investigation for the City of Strasburg (Emmons County).</li> <li>• Completed flood risk reduction investigation for Spiritwood Lake (Stutsman County).</li> </ul>
2019-7	Integration of Mitigation and Comprehensive Planning	Promote integration of mitigation and comprehensive plans.	Integration of both mitigation and comprehensive planning will link mitigation strategies with a community's vision, goals, objectives, policies and strategies for future growth and development.	<p><b>ND Housing Finance Agency (NDHFA):</b></p> <ul style="list-style-type: none"> <li>• Supported an initiative by the ND Department of Commerce to promote affordable housing programs during the October 2020 Main Street Summit.</li> <li>• Active participant in the Rural Housing Taskforce which consisted of local and state government entities, the private sector and nonprofits to identify and remove barriers to enhancing housing in rural North Dakota.</li> <li>• Administered the National Disaster Resilience Program's Resilient Homebuyer Program in partnership with the Minot Disaster Recovery Program. Since 2018, \$4.5 million in federal funds were distributed to 76 households that were impacted by the 2011 flood.</li> </ul>



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				<ul style="list-style-type: none"> <li>• Participated in the Expanding Access to Homeownership in North Dakota webinar hosted by FDIC and HUD.</li> <li>• Participated at the Turtle Mountain Housing Authority's Housing Summit in Belcourt, ND.</li> <li>• Conducted internal crisis management exercises with staff.</li> <li>• NDHFA published the North Dakota 2020 Current State of Housing. The study focused on the affordability of single and multifamily housing, the impacts of COVID-19, and housing challenges faced by vulnerable populations in 2020. <a href="http://www.ndhfa.org/wp-content/uploads/2020/11/CurrentStateofHousing">www.ndhfa.org/wp-content/uploads/2020/11/CurrentStateofHousing</a>.</li> </ul> <p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>• Conducted G235 Emergency Planning class – Nov. 15-18, 2021.</li> <li>• NDDDES, FEMA, and the City of Fargo conducted a meeting on implementation of FEMA Integrated Preparedness Program.</li> </ul> <p><b>NDDDES and ND Department of Commerce:</b></p> <ul style="list-style-type: none"> <li>• NDDDES and FEMA supported the 2019 Main Street ND Summit attended by more than 1,400 community leaders, students and stakeholders. NDDDES organized a panel on community resilience and using a "whole-of-community" approach when recovering from disasters with speakers from Paradise, CA; Dubuque, IA; FEMA Region VIII; and NDDDES. Speakers included: Melissa Schuster, Paradise Town Council member, California; Deron Muehring, Dubuque civil engineer, Iowa; Logan Sand, FEMA community planner; and Justin Messner, NDDDES disaster recovery chief.</li> <li>• NDDDES, Grand Forks Emergency Management and FEMA participated in the 2019 Main Street Summit as panelists, emphasizing the importance of hazard mitigation planning as an investment in communities and the importance to integrate mitigation with other planning initiatives such as comprehensive and land use plans.</li> <li>• SHMT partners who supported the 2019 Main Street Summit included North Dakota's: State Library, Forest Service, Health and Human Services, Job Service, North Dakota State University Extension, NDHI, Game and Fish Department, Housing Finance Agency, Workforce Safety and Insurance, Department of Transportation, Public Finance Authority, Information Technology</li> </ul>

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				<p>Department, Department of Parks and Recreation, Department of Water Resources, Department of Agriculture, Office of Management and Budget, and NDDDES.</p> <p><b>ND Department of Agriculture, Board of Animal Health:</b></p> <ul style="list-style-type: none"> <li>▪ Interagency review of animal health disease response annex planned and after-action items identified in multiagency hotwash to be incorporated as well as references to documents and processes of external/partner agencies that are integral to effective response (carcass management, truck rollover, etc.)</li> <li>▪ Collaborated with ND Health and Human Services Emergency Preparedness and Response (NDHHS/EPR) cooperative inventory effort (personal protective equipment, vaccine distribution planning, Foot and Mouth Disease) and integration of plans.</li> <li>▪ Worked with ND Health and Human Services on sample submission (courier) and resource allocation (field deployments).</li> <li>▪ Conducted strategic national veterinary stockpile resource management planning with ND Health and Human Services.</li> </ul>
2019-8	Firewise and Community Wildfire Protection Plan (CWPP)	Promote the Firewise and CWPP program.	ND Forest Service (NDFS) provides financial and technical assistance regarding CWPPs. These plans specifically address mitigation for wildland fires and may be required for jurisdictions to receive wildfire mitigation funding. This action calls for integrating data from the CWPPs into mitigation plans and leveraging mitigation plan data to inform the CWPPs.	<p><b>ND Forest Service and ND State Fire Marshal (NDSFM):</b></p> <ul style="list-style-type: none"> <li>▪ Continued to collaborate on promotion of Firewise and Community Wildfire Protection Plans (CWPPs). Continuing.</li> <li>▪ Promote state web portal for fire reporting. Approximately 282 fire departments are reporting fires through the portal. Continuing.</li> </ul> <p><b>ND National Guard:</b></p> <ul style="list-style-type: none"> <li>• Continues to support the ND Forest Service and state with fire mitigation initiatives, utilizing Red Card certified ground and aviation crews.</li> </ul> <p><b>ND Forest Service, Bureau of Indian Affairs</b></p> <ul style="list-style-type: none"> <li>• NDFS and BIA collaborate to mitigate wildfire threats through prepositioning firefighting resources during high fire danger, share fire suppression resources during a fire emergency, assist with firefighter training, and provide resources to achieve fuels mitigation work as requested.</li> </ul>

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2019-9	Debris Management Plans	Support the development of local and tribal debris management plans.	Debris management plans help mitigate potential public health impacts following a disaster. This action requires facilitating education, planning, and developing tools to properly address debris management.	<p><b>ND Department of Environmental Quality (NDDEQ):</b></p> <ul style="list-style-type: none"> <li>The NDDEQ Solid Waste Program conducted annual operator training in January and February 2020 and January and February 2021 (two sessions each year) for landfill operators which included information on debris management from disasters.</li> <li>The NDDEQ Solid Waste Program conducted annual operator training in January and February 2019 and January and February 2020 for landfill operators which included information on debris management from disasters. The Solid Waste Program also held online workshops on July 23, 2020, and July 28, 2020, related to debris management from disasters for inert landfills.</li> </ul> <p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>NDDDES developed a template for debris management for local and tribal communities to adapt to their needs.</li> </ul> <p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>DWR may provide up to 50% cost-share on snagging and clearing projects which includes removal of trees and associated debris within or along the channel of a natural watercourse.</li> </ul>
2019-10	Disaster Recovery Planning Toolbox	Develop a web-based Disaster Recovery Planning <del>Toolbox</del> resources that promotes community resiliency.	This action promotes a Whole Community approach to pre- and post-disaster planning by providing planning and programmatic resources. The web page will provide information on land use strategies; hardening of critical infrastructure; protecting environmental and cultural resources; sustainability; and revitalization of the	<p><b>NDSU Extension:</b></p> <ul style="list-style-type: none"> <li>Aided in development of the 2021 Drought and Fire Resource Guide.</li> <li>Provided an overview of guide to local Extension agents to use in providing support to those in their communities.</li> </ul> <p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>Initiated revisions to the Disaster Recovery Mission Area Operations Plan and Operations Guide to update processes, partners, resources, and tasks.</li> <li>Developed Drought Recovery resource databases in 2021 for elected officials and for the public, posted on NDRresponse: <a href="#">2021 Drought and Fire Resource Guide</a>.</li> <li>Continued efforts to identify and establish a database of resources.</li> <li>Developed and implemented a process for recovery informational links. Project still under development.</li> </ul>

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			economy; and social and natural environment systems.	
2019-11	Dam Emergency Action Plans (EAP)	Review EAPs to ensure these plans address actions to reduce the potential consequences of dam failure.	Dam owners are required to develop, update, and periodically test EAPs for all high and medium hazard dams under NDCC 61-03-25. This action reduces both the risk of dam failure and potential consequences if a failure were to occur.	<p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>Efforts continue to track and maintain copies of existing EAPs and ensure compliance with NDCC 61-03-25 are ongoing. Approximately 94% of high hazard dams and 79% of medium hazard dams have an EAP. Not all of these EAPs are up-to-date.</li> </ul> <p><b>Bureau of Indian Affairs:</b></p> <ul style="list-style-type: none"> <li>BIA staff members have been working with Standing Rock Sioux Reservation and the Spirit Lake Nation to update EAPs.</li> </ul> <p><b>U.S. Bureau of Reclamation:</b></p> <ul style="list-style-type: none"> <li>Heart Butte Safety of Dams Modification is currently in design. Anticipated construction in 2025 and 2026.</li> <li>Conducted 2023 yearly EAP orientation exercises for Dickinson Dam on March 29, 2023; Heart Butte Dam on March 29; Jamestown Dam on March 22, 2023.</li> <li><b>Conducted annual site inspections for Dickinson Dam on 8/9/23; Heart Butte dam scheduled for 8/31/23; Jamestown Dam periodic review scheduled for 9/2/23.</b></li> <li>Conducted 2022 yearly EAP (Emergency Action Plan) orientation exercises for Dickinson Dam on March 18, 2022; Heart Butte Dam on March 29, 2022; and Jamestown Dam on March 16, 2022.</li> <li>Conducted 2022 Functional EAP exercise for Jamestown Dam from May to July 2021 yearly EAP (Emergency Action Plan) orientation exercises for Dickinson Dam on March 24, 2021; Heart Butte Dam on March 10, 2021, and Jamestown Dam on March 5, 2021.</li> <li>Conducted the 2022 yearly Dam inspections: Dickinson Dam on September 1, 2022; Heart Butte Dam on August 31, 2022; and Jamestown Dam on September 12, 2022.</li> <li>Conducted the yearly EAP orientation exercises for Dickinson Dam (February 26, 2020); Jamestown Dam (March 11, 2020) and Heart Butte Dam (March 3, 2020).</li> </ul>

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				<ul style="list-style-type: none"> <li>• Conducted EAP orientations at Dickinson on March 19, 2019; Heart Butte on March 21, 2019; and Jamestown on May 4, 2019.</li> <li>• Conducted a comprehensive review by the Technical Service staff at Jamestown on July 10, 2019. Held an annual site inspection by area office personnel at Dickinson on June 25, 2019; and Jamestown on July 10, 2019.</li> <li>• Conducted EAP orientations at Jamestown on February 20, 2018; Dickinson on February 28, 2018; and Heart Butte on March 1, 2018.</li> <li>• Held comprehensive reviews by the Technical Service staff at Heart Butte on September 12, 2018; and Dickinson on September 13, 2018. Held an annual site inspection by area office personnel at Jamestown on August 7, 2018.</li> </ul> <p><b><i>US Army Corps of Engineers – Omaha District:</i></b></p> <ul style="list-style-type: none"> <li>• Modification for Pipestem – redesign and construct new spillway - in design, construction anticipated to begin in 2022.</li> <li>• Dam Safety Modification Study (DSMS) for Garrison – ongoing.</li> <li>• DSMS for Snake Creek – initiating fall 2021</li> <li>• Issue Evaluation Study (IES) for Oahe – ongoing (dam itself is in SD but reservoir extends into ND).</li> <li>• No EAPs were updated during this time period; however, plans are underway to make USACE Emergency Action Plan inundation maps and updated comprehensive dam database publicly available in the <u>National Inventory of Dams</u> by end of 2021. Will include summaries of best available risk information and inundation scenarios, including water depth and arrival times and life loss and property impact estimates.</li> </ul> <p><b><i>US Army Corps of Engineers -- St. Paul District:</i></b></p> <ul style="list-style-type: none"> <li>• Dam Safety manager updates the EAPs for dams in the St. Paul District inventory (Baldhill and Homme), These two dams are in the queue for EAP updates and orientation exercises.</li> <li>• Specific to the Devils Lake construction; most of the project documentation has been completed. The As-Built Drawings, Updated Design Documentation Reports, Operations &amp; Maintenance Manuals, and EAP have been provided to the City of Devils Lake. The Levee System Evaluation Report, documenting certification of the project, was submitted to FEMA in May 2020. Only a few minor items of documentation remain such as finalizing the instrumentation report.</li> </ul>

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				<p>While preparing the final documents it was discovered that the 17<sup>th</sup> Street ponding area hydraulic analysis had not been updated to the same storm event as the other ponding areas. Doing so would result in a larger floodplain footprint that would potentially impact residential homes. Rather than increase the footprint of the ponding area, the decision was made to excavate the existing pond and install a small pump station. The excavation is nearing completion with the pump station scheduled to be completed in late fall/early winter 2021-22. Also, USACE considers Devils Lake a hybrid levee system, designed as a dam in many ways. But it is in the National Levee System Inventory, not the dam inventory. It does not have a dam number. This is added for clarification.</p> <p><b>Natural Resources Conservation Service:</b></p> <ul style="list-style-type: none"> <li>• Dam assessments were completed for three high hazard dams: Mott, English Coulee, and Upper Turtle River Dam 5 (to be completed 12/20). These included development of updated dam breach hydraulic modeling; which will inform future EAP updates.</li> <li>• Dam assessments were initiated at Mott, English Coulee, and Upper Turtle River Dam 5 (to be completed 12/20).</li> </ul> <p><b>ND Department of Emergency Services:</b></p> <ul style="list-style-type: none"> <li>• Staff participated in yearly EAP exercise orientations.</li> </ul> <p><b>ND Game and Fish Department was removed from mitigation action at agency's request since the agency addresses fisheries behind the dams and not EAP development.</b></p>
<b>Studies and Application of Technology</b>				
2019-12	Dam Rehabilitation <b>New Action Added in 2020</b>	Rehabilitate aging dams that do not meet current dam safety criteria.	Reconstruction or decommissioning of dams that have dam safety deficiencies. This action calls for reducing the risk of dam failure and potential consequences if a failure were to occur.	<p><b>Natural Resources Conservation Service:</b></p> <ul style="list-style-type: none"> <li>• Rehabilitation planning for Matecjek, Fordville, Bylin, Senator Young, Olson, Bourbanis, and Larimore dams is ongoing.</li> </ul> <p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>• During the 7/1/2022-6/30/2023 timeframe, the DWR issued construction permits for the modification of seven existing dams, including modification of two low-head dams.</li> <li>• Continue to provide cost-share for the repair, rehabilitation, or removal of dams with safety deficiencies.</li> </ul>

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				<ul style="list-style-type: none"> <li>Maintains an inventory of known low-head dams in the state and provides cost-share to mitigate associated dangers.</li> </ul>
<p><b>Please note: The following action numbers from the 2018 mitigation plan were adjusted in keeping with the additional action above.</b></p>				
2019-13	Geographic Information Systems (GIS) Data Improvement/ Data Creation	Identify and enact GIS Improvements or Data Creation.	<p>This action promotes collaboration with the North Dakota Geographic Information Systems Technical Committee (GISTC) and the SHMT to share data in support of the development of State, local, and tribal mitigation plans. This includes interagency sharing of GIS data for inundation mapping, and geologic mapping data.</p> <p>Additionally, the action calls for resolving identified gaps in GIS data, if feasible. It requires an evaluation of the feasibility and sustainability for the appropriate steward agency to undertake</p>	<p><b>ND Information Technology:</b></p> <ul style="list-style-type: none"> <li>Continue to make State Agency GIS data available for viewing, downloading, and web streaming via the <a href="#">State's GIS Hub</a>, the <a href="#">Hub Data Portal</a> (newly upgraded to Esri's Open Data sharing solution) and enterprise database solutions (upgraded to SQL).</li> <li>Developed a statewide parcel program, comprised of contiguous rural property boundaries and taxation information. With funding provided by the ND legislature and collaboration with local county and tribal governments. Aggregation of locally maintained property information is now available to aid in planning and mitigation efforts.</li> </ul> <p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>ND QL2 LiDAR statewide acquisition is nearing completion. The emphasis in DWR collection efforts has been on creating a continuous Quality Level 2 dataset across the state with consistent standards, data deliverables and data quality. The DWR dissemination services are delivering all of Phases 7, 8, 9, 10 (collected through our partnerships with FEMA and the NRCS-Bismarck), along with USGS collected 3DEP data. This now comprises roughly 85% of the state. The funding is in place to finish the last 10,000 sq miles and plans are in place to complete the collection as early as this coming Fall (2023) with final data delivery in the Spring of 2024. It is anticipated that these data will form the basis for an upgrade to the Base Level Engineering (BLE) data which was created by the DWR in cooperation with FEMA to create the North Dakota Risk Assessment Map Service (NDRAM). Building footprints derived from the statewide QL2 LiDAR will also be incorporated into the NDRAM platform.</li> <li>In addition to the QL2 LiDAR collection efforts, QL1 data collection for the 25 largest cities in North Dakota has commenced and is a cooperative effort between the DWR and FEMA through the use of North Dakota FEMA state grant</li> </ul>

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			prior to the next plan update cycle.	<p>funds. These data will quadruple the number of points per square meter giving much more detail on the ground for these corporate city limits.</p> <ul style="list-style-type: none"> <li>• In addition to the LiDAR data and building footprints, a 15cm (6 inch) statewide aerial photography collect is currently taking place (Summer 2023). This is the second collection of statewide 15cm aerial photography contract started in 2021 using FEMA state grant funds for North Dakota. These data are expected to be online and available for use in the Spring of 2024.</li> <li>• Through collaboration with FEMA, DWR has created a publicly accessible <a href="#"><u>ND Risk Assessment Map Service</u></a>.</li> </ul> <p><b>ND Department of Emergency Services:</b></p> <ul style="list-style-type: none"> <li>• Is nearing completion of statewide NG 9-1-1 GIS dataset buildout and implementation. (Includes; Site Structure Address Points, Road Centerlines, Emergency Response Zones). 45 of the 53 county jurisdiction are complete and loaded for 911 service providers.</li> <li>• During COVID identified and facilitated numerous dataset maintenance and creation via collaboration with other state agencies. Including, Local Public Health Units, Hospitals and Educational Institutions.</li> </ul> <p><b>ND State Fire Marshal:</b></p> <ul style="list-style-type: none"> <li>• Share fire department coverage updates with NDDDES/ND State Radio/ND Information Technology to increase accuracy of response GIS maps.</li> <li>• Built software capable of sharing coverage updates. Need to get NDDDES login to extract data updates.</li> </ul> <p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>• Due to COVID-19 along with local public health and the statewide response teams continuous work in the response; no additional training has been scheduled.</li> </ul> <p><b>ND Department of Environmental Quality, ND Health and Human Services, NDDDES:</b></p> <ul style="list-style-type: none"> <li>• These GISTC member agencies cooperated to update trauma centers, hospital, nursing homes, skilled nursing homes and other facilities regulated by NDHHS for COVID response and tracking. Benefits included continued interagency coordination and sharing of geospatial data allows for rapid response. Gap identified included maintenance of NDHHS geospatial data.</li> </ul> <p><b>ND Forest Service:</b></p>



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				<ul style="list-style-type: none"> <li>• Created high-resolution tree cover map for 53 counties, through USDA Forest Service Great Plains Initiative II.</li> <li>• Created map of highly erodible cropped soils as potential strategic locations for windbreaks to mitigate climate effects. Windbreak efforts continue in collaboration with Soil Conservation Districts and NRCS.</li> </ul> <p><b>ND Department of Agriculture:</b></p> <ul style="list-style-type: none"> <li>• NDDA has continued to develop its GIS platforms across the Commissioner’s program areas to help ensure that information is available for department and community use. This platform was integral to surveillance and response of HPAI.</li> <li>• The USAHERDS database is being used to manage state response to HPAI and captures brucellosis, tuberculosis, CVI movement data, test charts.</li> <li>• No-trust environment and state-designed firewalls defended against attempted incursion.</li> <li>• In 2020, Animal Health division procured USAHERDS that includes premises mapping and incident mapping capabilities. The agency’s expanding data set coupled with GIS can inform planning and response priorities.</li> <li>• NDDA has continued to develop its GIS platforms across the Commissioner’s program areas to help ensure that information is available for department and community use. This includes increased data on local food map, staff added attributes for vendors that allow visitors to the map to see layers displaying producers that sell certain types of foods at a local or regional level.</li> </ul> <p><b>ND Department of Transportation:</b></p> <ul style="list-style-type: none"> <li>• Updates continue, in accordance with 23 CFR 667, with efforts by NDDOT to created GIS point and line layers to help evaluate resiliency of state and federal aid county roads damaged and permanently repaired due to multiple Emergency Relief events.</li> <li>• NDDOT also maps landside areas for state highways.</li> </ul> <p><b>ND National Guard:</b></p> <ul style="list-style-type: none"> <li>• Continues to provide GIS and mapping capability in support of an NDDDES request.</li> </ul> <p><i>*Please note: Department of Mineral Resources, ND Geological Survey, was originally included in this list. However, mapping tasks for the agency appear below.</i></p>

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2019-14	Geologic Mapping	Promote geologic mapping efforts.	<p>Surface geologic mapping activities continue to focus on North Dakota's urban areas with current mapping projects being conducted in the greater Bismarck-Mandan and Fargo areas. Geologic hazards (landslide areas) mapping continues to focus in the most landslide prone areas in western North Dakota where mapping has not been completed. Updating of older mapping work is also being conducted with the inclusion of recently available Light Detection and Ranging (LiDAR) elevation data and contemporary aerial imagery products. <b>The Survey has initiated Comparative Landslide Mapping in eastern North Dakota which identifies areas of continued landslide</b></p>	<p><b>ND Geological Survey:</b></p> <ul style="list-style-type: none"> <li>• Completed 250 24K comparative landslide area maps in eastern North Dakota.</li> <li>• Completed statewide landslide inventory mapping at the detailed (1:24,000) scale using LiDAR base maps resulting in the completion of 1,464 24K maps and shapefiles. Approximately 60,000 landslide features identified: <a href="https://www.dmr.nd.gov/ndgs/landslides/">https://www.dmr.nd.gov/ndgs/landslides/</a></li> <li>• Completed seven new county scale (1:125K) landslide area map compilations and associated data sets for ready use by the county level EM and planning communities.</li> <li>• Created a new NDGS GIS Geologic Map Online Viewer (beta) which merges and delivers previously disparate geologic mapping data into one place for ready review and mapping.</li> <li>• Comparative landslide mapping at the detailed 1:24,000 scale is ongoing in eastern North Dakota and will begin to move into western North Dakota based on the availability of repeat LiDAR surveys.</li> <li>• Statewide landslide inventory mapping at the detailed 1:24,000 scale for North Dakota is completed.</li> <li>• County scale (1:125,000) landslide map compilation and data products creation (GIS shapefiles) is ongoing.</li> <li>• NDGS GIS Geologic Map Online Viewer is an ongoing project that will continually be updated as new geologic mapping data becomes available.</li> <li>• Completed 60 1:24,000 Comparative Landslide Area Maps for the Pembina Gorge and Red River Valley Corridor. Numerous active landslide areas have been identified with this initial mapping work.</li> <li>• Conducted a virtual presentation to county Emergency Managers (EMs) on the NDGS Landslide Mapping Program and highlighted the availability of new county wide landslide map and data products and upcoming comparative mapping projects.</li> <li>• Continuing to update older landslide maps with LiDAR data in the landslide prone portions of western North Dakota. To date, the NDGS has mapped over 45,000 landslide areas.</li> </ul>

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			<p>movement through the differencing and comparison of repeat LiDAR surveys.</p>	<ul style="list-style-type: none"> <li>Completed landslide mapping in all 1,464 1:24,000 quadrangles across North Dakota. So far, the Survey has mapped over 34,000 landslides: <a href="https://www.dmr.nd.gov/ndgs/landslides/">https://www.dmr.nd.gov/ndgs/landslides/</a>  <i>We believe we are the first state to accomplish this task at the detailed mapping scale of 1:24,000.</i></li> <li>Older landslide maps continue to be updated with LiDAR elevation data sets, adding significantly to the number of landslides mapped statewide.</li> <li>Completed all 1,464 1:24,000 scale LiDAR elevation quadrangles and all 61 1:100,00 scale LiDAR sheets providing full coverage of easily accessible detailed elevation maps and data sets across the entire state. Raster files and pdfs are available at: <a href="https://www.dmr.nd.gov/ndgs/lidar/">https://www.dmr.nd.gov/ndgs/lidar/</a></li> <li>Completed 508 1:24,000 scale landslide maps in landslide prone areas in western North Dakota and along major hydrologic corridors in the rest of the state including the Sheyenne and Red River Valleys with current coverage of 75 % (1,100 of 1,467 quads) of the state. So far, the Survey has mapped 30,186 landslides: <a href="https://www.dmr.nd.gov/ndgs/landslides/">https://www.dmr.nd.gov/ndgs/landslides/</a></li> <li>Completed 1,164 1:24,000 scale LiDAR elevation quadrangles providing full coverage of easily accessible detailed elevation maps and data sets across the entire state. Raster files and pdfs are available for all 1467 quadrangles: <a href="https://www.dmr.nd.gov/ndgs/lidar/">https://www.dmr.nd.gov/ndgs/lidar/</a></li> </ul>
2019-15	Losses Avoided	Conduct a comprehensive losses avoided study.	<p>This action calls for developing a Losses Avoided Committee to determine criteria and conduct a statewide loss avoidance study as funding allows. The study would encompass project level information from the different mitigation partner agencies in order to catalog and analyze projects,</p>	<p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>The DWR has an economist on staff evaluating benefits and costs of flood hazard reduction projects as needed.</li> </ul> <p><b>ND Department of Transportation:</b></p> <ul style="list-style-type: none"> <li>Updates continue, in accordance with 23 CFR 667, with efforts by NDDOT to create GIS point and line layers to help evaluate resiliency of state and federal aid county roads damaged and permanently repaired due to multiple Emergency Relief events.</li> </ul> <p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>Plans are under development to identify SHMT partners with interest to support a Losses Avoided Committee.</li> <li>NDDDES is pursuing a grant for a losses avoided analysis, conducted in partnership with SHMT members.</li> </ul>

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			<p>determine potential damages and benefits, and provide a narrative for each identified project to determine its general effectiveness in mitigating damages.</p>	<p><b>Natural Resource Conservation Service:</b></p> <ul style="list-style-type: none"> <li>Economic analysis work to quantify flood damage reduction benefits completed for Matecjek, Fordville, Bylin, Senator Young, Olson, Bourbanis, and Larimore dams as a part of the planning process to bring them into compliance with current dam safety criteria.</li> </ul> <p><b>US Army Corps of Engineers – Omaha District:</b></p> <ul style="list-style-type: none"> <li>Accreditation occurred for the Williston Levee.</li> <li>Plans are underway to make USACE Emergency Action Plan inundation maps and updated comprehensive dam database publicly available in the <u>National Inventory of Dams</u> by end of 2021. Will include summaries of best available risk information and inundation scenarios, including water depth and arrival times and life loss and property impact estimates.</li> </ul> <p><b>US Army Corps of Engineers – St. Paul District:</b></p> <ul style="list-style-type: none"> <li>Every January the Corps of Engineers prepares a Damages Prevented spreadsheet that lists all the projects we designed. It includes cumulative damages prevented since construction, the current year’s damages and cumulative damages including the current year. The information is provided to Headquarters.</li> <li>The Annual Flood Damages Prevented Report to Congress (Appendix G) is available for the fiscal year around April/May each year. Previous reports are also available for the past 10 years. <i>Contact St. Paul District staff Mr. Chandra Pathak to get copies via email.</i> His team is currently working on the website where these reports would be available in future years. However, the website is not completed and not yet available.</li> </ul>
2019-16	North Dakota Silver Jackets	Provide flood risk mitigation measures throughout North Dakota with hydrologic studies	The North Dakota Silver Jackets program fosters a Federal and State interagency approach to reduce the threat, vulnerability, and consequence of flooding. It is led by the DWR with	<p><b>ND Department of Water Resources:</b>  <b>July 2022 to June 30, 2023 report:</b></p> <ul style="list-style-type: none"> <li>Conducted our annual Silver Jacket meeting March 16-17, 2023 at NDDDES.                         <ul style="list-style-type: none"> <li>Collaborated with ND Silver Jacket partners to continue ongoing initiatives.</li> <li>Reviewed potential opportunities and submitted funding requests through various partners.</li> <li>Supported agency efforts to maintain and enhance flood risk mitigation projects.</li> </ul> </li> <li>ND Risk Assessment Map (NDRAM) Enhancement is ongoing:</li> </ul>

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		and related flood risk reduction projects.	membership including the St. Paul Corps, Omaha Corps, USGS, United States USFWS, NRCS, NWS, FEMA Region VIII, NDDDES, and NDGS. The program promotes flood risk reduction and awareness through identification, development and implementation of selected projects and measures with a goal of reducing the threat and impact of flooding in North Dakota.	<ul style="list-style-type: none"> <li>○ The Department of Water Resources and ND Silver Jackets are working with the Omaha Army Corps of Engineers and FEMA Region VIII to incorporate the Corps Building Structure Database along with their Damage Curve Data to the DWR's current NDRAM platform. This project was approved in October of 2020 and is currently pending final review and approval by DWR. Upon completion, this project will assist federal and state agencies in identifying both the flood risk and associated damages, and costs in selected counties and communities throughout ND.</li> <li>• Missouri River Basin Non-Stationarity Study is ongoing:               <ul style="list-style-type: none"> <li>○ The DWR and ND Silver Jackets are partnering with the USGS and the Omaha Corps of Engineers to determine the impact of changing precipitation and hydrology on the Missouri River Basin. This is a multi-year effort with our participation beginning in Spring 2020 with completion projected in October 2024.</li> </ul> </li> <li>• Discharge-Frequency Curve Updates on the Mouse River at the Sherwood, ND and Westhope, ND Gages is ongoing:               <ul style="list-style-type: none"> <li>○ The ND Silver Jackets requested this project from the St. Paul Corps in Spring of 2020 and is currently pending final review with completion expected by June 2024. This project will update the discharge-frequency curves at Sherwood and Westhope and allow for better flood forecasting throughout the Mouse River Basin.</li> </ul> </li> <li>• Mouse River Basin Flood Inundation Mapping Project is ongoing:               <ul style="list-style-type: none"> <li>○ This ND Silver Jacket project has been ongoing since 2016 as a multi-year project with 4 Phases (Phases 1 through 3 include the Mouse River Basin and Phase 4 includes a portion of the Des Lacs River). Currently all 4 phases, models and mapping have been reviewed and submitted to the NWS and NOAA for final approval and implementation on the Souris River Basin NWS Advanced Hydrologic Prediction Service (AHPS) Web Sites. Upon completion this data will be provided to the Souris River Joint Board and viewable on the NWS AHPS web sites for the Mouse River Basin. This will allow all users to identify their location in the vicinity of the Mouse River Basin and determine their risks of flooding based upon current conditions. Projected completion is January 2024.</li> </ul> </li> </ul>

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				<ul style="list-style-type: none"> <li>• Red River Basin (RRB) Gage Datum Change from NGVD29 to NAVD88 has recently been completed:               <ul style="list-style-type: none"> <li>○ The ND Silver Jackets requested this project from the St. Paul Corps in the Spring of 2020 and has currently been completed. The United State Geologic Survey (USGS) was assisting in this effort and with Federal Funding was tasked to update all USGS Gages from NGVD29 to NAVD88 with completion by October 2022. The goal was to survey all the existing RRB gages and convert them from NGVD29 to NAVD88, while still maintaining the NGVD29 elevation data for use as needed – the USGS completed this effort in the Summer of 2022.</li> </ul> </li> <li>• Souris River Basin (SRB) Soil Temperature and Moisture Gage Project is ongoing:               <ul style="list-style-type: none"> <li>○ The ND Silver Jackets requested this Project with the St. Paul Corps in the Spring of 2020. In the Fall of 2020, the DWR Atmospheric Resources Division committed to placing 6 DWR PRESENS gages (Precipitation, Soil Moisture and Temperature gages) in 10 of the SRB priority locations as identified with the SRJB, USGS, St Paul Corp, DWR ARB Division, and the NWS. Currently the DWR has installed 5 of the 6 DWR PRESENS gages and in June 2023 committed to installing 4 more additional gages to match the 10 previously identified priority sites. Final site approval and installation for the 4 remaining gages is pending with completion expected by October 2024. This project will help local, state and federal officials with better data for Flood Forecasting in the Souris River Basin.</li> </ul> </li> <li>• Medora Flood Risk Reduction Study is ongoing:               <ul style="list-style-type: none"> <li>○ This project was requested by the ND Silver Jackets and DWR from the Omaha Corps in support of the City of Medora due to ongoing Flood Risk Reduction efforts to better identify the risk of flooding in the City due to the Little Missouri River. This study was requested in December 2021 and approved by the Corps in October 2022. Currently the Hydrology phase has been completed with Hydraulic modeling underway – projected project completion in October 2024.</li> </ul> </li> <li>• Red River (RR) Bathymetry Project is ongoing:</li> </ul>

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				<ul style="list-style-type: none"> <li>○ This Project was requested by the ND Silver Jackets and DWR from the St Paul Corps in March of 2022 and approved that summer. It is currently funded and under contract with the St Paul Corps and was scheduled to begin with collection in the Summer of 2023 but has been postponed to the Summer of 2024 due to unforeseen resource constraints. Projected project completion is expected by January 2025. This project will provide for updated Bathymetry Data for the Red River from the ND / SD border to the Canadian border and help provide for better flood risk reduction data in one of the most flood impacted basins in ND.</li> <li>● ND Flood History Project is ongoing:             <ul style="list-style-type: none"> <li>○ This project was requested by the ND Silver Jackets and ND DWR from the Omaha Corps in July of 2022 and approved in October of 2022. A similar project was recently completed in SD to capture past and current historical floods and portray this data, to include pictures and written accounts, on a ND Mapping Platform. This platform will be developed by the DWR and housed within the DWR map services suite on the DWR web site. This project is currently underway with projected completion in October 2024.</li> </ul> </li> <li>● USGS ND Statewide Flood Frequency Analysis Project is ongoing:             <ul style="list-style-type: none"> <li>○ This project was requested through the ND Silver Jackets and DWR to the USGS. The first phase of this effort was approved in December of 2022 by the DWR for Funding and Contracting. Phase 2 of this effort was approved for funding and contracting in February of 2023 by the DWR and scheduled to begin in August of 2023. The project is projected for completion by January 2026.</li> </ul> </li> <li>● USGS Stream Stats and Regression Equation Methodology Update Projects: Currently pending initiation:             <ul style="list-style-type: none"> <li>○ These projects were requested through the ND Silver Jackets and DWR to the USGS. The DWR approved funding for both these efforts in February of 2023. The Stream Stats Project is projected to begin in October 2023 with completion in October 2027. The Regression Equation Update is scheduled to begin in July 2025 with completion in October 2027.</li> </ul> </li> </ul>

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				<ul style="list-style-type: none"> <li>• <b><u>See the Silver Jackets article in the North Dakota Hazard Mitigation Plan annual report for the 2020-2021 Updates. <a href="#">North Dakota Hazard Mitigation Progress Report 2021.</a></u></b></li> <li>• Collaborated with ND Silver Jacket partners to continue ongoing initiatives through to completion.</li> <li>• Reviewed potential opportunities and submitted funding requests through various partners.</li> <li>• Supported agency efforts to maintain and enhance flood risk mitigation projects.</li> <li>• ND Statewide Probable Maximum Precipitation (PMP) Analysis has been completed.                         <ul style="list-style-type: none"> <li>○ The DWR approved funding for this study in Fall of 2018 and the study was initiated with support from the ND Silver Jackets in Spring 2019. The study was completed by Applied Weather Associates in May 2021.</li> </ul> </li> <li>• ND QL2 LiDAR Acquisition is continuing.                         <ul style="list-style-type: none"> <li>○ In previous reports, DWR acquired LiDAR for the entire state and it is available to all federal, state and public entities through the Department of Water Resources website. This project is ongoing with current funding being provided from FEMA Region VIII and the Natural Resources Conservation Service (NRCS). Our current focus is updating the current LiDAR in the Red River Basin from Quality Level III to Quality Level II, a significant enhancement.</li> </ul> </li> <li>• ND Risk Assessment Map (NDRAM) Enhancement is ongoing.                         <ul style="list-style-type: none"> <li>○ The Department of Water Resources and ND Silver Jackets are working with the Omaha Corps of Engineers and FEMA Region VIII to include the Corps Building Structure Database along with their Damage Curve Data to the DWR's current NDRAM platform. This project was submitted in Spring of 2020 and if approved will assist federal and state agencies in identifying both the flood risk and associated damages to selected areas.</li> </ul> </li> <li>• Missouri River Basin Non-Stationarity Study is ongoing.                         <ul style="list-style-type: none"> <li>○ The DWR and ND Silver Jackets are partnering with the United States Geological Survey (USGS) and the Omaha Corps of Engineers to determine the impact of changing precipitation and hydrology on the</li> </ul> </li> </ul>



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				<p>Missouri River Basin. This is a multi-year effort with our participation beginning in Spring 2020.</p> <ul style="list-style-type: none"> <li>• Discharge-Frequency Curve Updates on the Mouse River at the Sherwood, ND and Westhope, ND gages is ongoing.                             <ul style="list-style-type: none"> <li>○ The ND Silver Jackets requested this project from the St. Paul Corps in Spring of 2020 and is currently pending approval. If approved, this project will update the discharge-frequency curves at Sherwood and Westhope and allow for better flood forecasting throughout the Mouse River Basin.</li> </ul> </li> <li>• Mouse River Basin Flood Inundation Mapping is ongoing.                             <ul style="list-style-type: none"> <li>○ This ND Silver Jacket project has been ongoing since 2016. Phase 1 through 3 includes the Mouse River Basin and we just started Phase IV (Oct. 2019) to include a portion of the Des Lacs River. Upon completion (Spring 2021) this report was provided to the Souris River Joint Board and published on the National Weather Service's (NWS) Advanced Hydrologic Prediction Service (AHPS) web portal. This will allow all users to identify their location in the vicinity of the Mouse River Basin and determine their risks of flooding based upon current conditions.</li> </ul> </li> <li>• Red River Basin (RRB) Gage Datum Change from '29 to '88 is ongoing.                             <ul style="list-style-type: none"> <li>○ The ND Silver Jackets requested this project from the St. Paul Corps in the Spring of 2020. The goal is to survey all the existing RRB gages and convert them from NVD '29 to '88. Upon completion all the USGS RRB gages will then report flow elevations in both '29 and '88 to prevent confusion within the Basin. Currently all new FEMA flood plain maps are being published in NVD '88, so this project would allow for similar data to be made available when property owners look at their FEMA map compared to the USGS gage sites.</li> </ul> </li> <li>• Souris River Basin (SRB) Soil Temperature and Moisture Gage Study is ongoing.                             <ul style="list-style-type: none"> <li>○ The ND Silver Jackets requested the St. Paul Corps conduct this study in the Spring of 2020. The study would analyze the best locations throughout the SRB to place temperature and soil moisture gages to better determine the flood risk and reduce the risk of flooding.</li> </ul> </li> </ul>

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				<ul style="list-style-type: none"> <li>Medora Flood Risk Reduction Study: (ongoing)</li> <li>Red River (RR) Bathymetry Project: (ongoing)</li> <li>ND Flood History Project: (pending approval)</li> </ul> <p><b>US Army Corps of Engineers – Omaha District:</b></p> <ul style="list-style-type: none"> <li>Conducted a Baseline Engineering (BLE) study.</li> </ul>
2019-17	Souris Basin Dams	Analyze operating agreements for the Souris River Dam.	As part of flood mitigation efforts, the International Joint Commission is reviewing operating agreement for the Souris River Dams. This <del>three-year study, due in 2020,</del> involves agencies and the public from North Dakota, Saskatchewan, and Manitoba. The IJC appointed a Study Board to oversee the study.	<p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>Collaborated with partners to complete data analysis, develop recommendations to present to the International Joint Commission and conducted public hearings.</li> <li>Provided work-in-kind for various technical and administrative tasks.</li> <li>Assisted with facilitation of workshops with advisory groups.</li> <li>Participated on the Resource and Agency Advisory Groups, including being co-chair.</li> <li>This study was completed in 2022 when the IJC submitted the final report and recommendations to the US and Canadian Governments.</li> <li>Even with the study complete, any modification to dam operations and the international agreement would have to be approved by the US and Canadian Governments. No changes to operations have occurred yet. Conflicts between the two countries arose during the study and subsequent IJC changes to the International Souris River Board. Resolving these conflicts and agreeing to any operational changes are ongoing.</li> </ul> <p><b>N.D. Departments of Emergency Services, Health and Human Services, Transportation, Agriculture, Game and Fish, U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers and the U.S. Geological Survey:</b></p> <ul style="list-style-type: none"> <li>Completed work on the Souris River Study in 2022.</li> <li>Provided data analysis to the Resource Agency Advisory Group.</li> <li>Participated in workshops and meetings; sharing data and recommendations.</li> </ul>
2019-18	Drought Contingency Plans	Encourage rural and regional water suppliers to develop drought	This action prepares water suppliers and farmers for potential drought conditions by developing priorities for water use during drought.	<p><b>ND Department of Agriculture:</b></p> <ul style="list-style-type: none"> <li>Served as a lead agency for the Drought Multi-Agency Coordination System; provided assistance to producers and local and tribal mitigation planning teams.</li> </ul> <p><b>ND Department of Commerce</b></p> <ul style="list-style-type: none"> <li>Prepare to consult with subject matter experts on water supply issues.</li> </ul> <p><b>National Weather Service:</b></p>

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		contingency plans.		<ul style="list-style-type: none"> <li>• On a weekly basis, collaborated with the ND State Climatologist (NDSCO) on suggested updates to the U.S. Drought Monitor. On a bi-monthly basis collaborated the same with the Canadian Drought Monitor.</li> <li>• Based on the US Drought Monitor, by the middle of May 2022, no part of North Dakota remained in D2 drought. As a result, the last Drought Briefing from the National Weather Service was issued on May 31, 2022.</li> <li>• Supported the Command and General Staff Calls for Drought and Fire, and also supported the Wildfire Readiness Level calls.</li> <li>• Also issued Drought Information Statements: (<a href="https://www.drought.gov/drought-information-statements">https://www.drought.gov/drought-information-statements</a>) and Drought Briefings (<a href="https://www.weather.gov/media/bis/BIS_drought_briefing.pdf">https://www.weather.gov/media/bis/BIS_drought_briefing.pdf</a>)</li> </ul> <p><b>State Climate Office:</b></p> <ul style="list-style-type: none"> <li>• Analyzed drought conditions, developed reports and provided briefings to the State Drought Unified Command and to the Agriculture Disaster Network team.</li> <li>• Developed analyses for the Governor's presidential request letters.</li> <li>• Featured drought analysis on the Climate Office newsletters.</li> </ul> <p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>• Administered and managed the Drought Disaster Livestock Water Supply Assistance Program (Program). The Program provides financial relief to livestock producers experiencing water supply problems caused by drought. <i>See more in the "Drought Mitigation" Action Title.</i></li> </ul> <p><b>US Army Corps of Engineers – St. Paul District:</b></p> <ul style="list-style-type: none"> <li>• Published the Missouri River mainstem System 2021-2022 Annual Operating Plan by December 2021. This document outlines both flood risk reduction and water conservation activities for the Missouri River mainstem.</li> </ul> <p><b>NDSU Extension:</b></p> <ul style="list-style-type: none"> <li>• Developed guidelines for collecting and submitting water samples for laboratory analysis.</li> <li>• Extension specialists and agents have been providing educational resources and technical assistance related to water quality.</li> <li>• Developed educational program focused on livestock water quality that provided screening of livestock water sources impacted by drought.</li> </ul> <p><b>ND Department of Environmental Quality:</b></p>

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				<ul style="list-style-type: none"> <li>Promoted and provided training to assist drinking water systems of all sizes perform Vulnerability Assessments and develop Emergency Response Plans.</li> </ul> <p><b>North Dakota Stockmen's Association:</b></p> <ul style="list-style-type: none"> <li>Developed and disseminated informational resources about drought contingency planning and resources to livestock producers and decision-makers.</li> </ul>
2019-19	Hazardous Materials Flow Study – <b>Project Completed</b>	Assist local and tribal jurisdictions with hazardous materials planning.	NDDES has commissioned a hazardous materials flow study that, once complete, will provide insights into volume and nature of hazardous materials movement into, out of, and within North Dakota. Data from the study will also help local leaders with land and traffic planning, zoning, and mitigation plans.	<p><b>NDDES:</b></p> <ul style="list-style-type: none"> <li>A website has been created by NDIT to host the flow study data for ease of access to relevant stakeholders.</li> <li>Completed statewide Flow Study. With Hazardous Materials Emergency Preparedness (HMEP) dollars NDDES conducted a Flow Study across the state. Individual counties have access to data about what hazardous materials are traveling through or being stored in their counties; identify geographic areas (roads, train routes, pipelines) which are at risk of experiencing an accident/spill; identification of populations, public and private facilities which may be impacted by accidents/spills. The counties can take this information on helping mitigate impacts by identify mitigation actions to prevent spills from occurring in those areas (e.g., reduced speeds).</li> </ul>
<b>Structural Projects and Infrastructure Resiliency</b>				
2019-20	Tornado Safe Rooms and Shelters	Support the establishment of tornado safe rooms and shelters.	NDDES has been working with local and tribal communities to promote the use of safe rooms and shelters. These rooms and shelters protect the public from injury or death caused by tornadoes and other high wind events.	<p><b>NDDES:</b></p> <ul style="list-style-type: none"> <li>Tornado Shelter applications for Homme Dam Recreation area, Stump Lake recreation area, and Silver Lake Recreation area have been submitted to FEMA. (repetitive)</li> <li>Tornado Shelter projects have been completed in the City of Elgin, Steele County, LaMoure County, and Cavalier County. Tornado shelter projects have been awarded to the Stump Lake recreation area, Silver Lake recreation area, and Mountrail County.</li> <li>(addressed above)Promoted storm shelters as a focal project type for the former Pre-Disaster Mitigation grant cycle. Building Resilient Infrastructure and Communities</li> </ul>

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				<ul style="list-style-type: none"> <li>Shelters were previously awarded in McKenzie County and in the City of Beulah.</li> </ul>
2019-21	Flood Mitigation Measures	Support the implementation of flood mitigation measures at the local and tribal level.	<p>This action places priority on flood mitigation projects for Special Flood Hazard Areas. This action encompasses projects that prevent damage to structures, such as critical facilities and homes, bank stabilization, bank armoring, acquisitions, floodwalls, and relocation of critical facilities (such as lift stations).</p> <p><b>There are flood mitigation projects outside of the Special Flood Hazard areas that protect homes, businesses, government buildings, and roads in rural areas of the state.</b></p>	<p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>The State of North Dakota directs the majority of state funding for flood damage reduction projects through the DWR budget, and cost-share program.</li> <li>The 2023 Legislative Assembly provided \$14 million for various types of flood damage reduction projects, \$76.1 million for the Mouse River Enhanced Flood Protection Project, \$13.2 million for Valley City flood protection, and \$12.3 million for Mandan flood protection. Portions of \$10.5 million designated for "General Water" projects could also be approved for floodwater retention-related studies and projects.</li> <li>The 2021 Legislative assembly provided \$48 million for various types of flood damage reduction projects, \$435 million for the Fargo-Moorhead Area Diversion Project, and \$74.5 million for the Mouse River Enhanced Flood Protection Project.</li> <li>The DWR budget bill following the 2019 Legislative Assembly included \$197 million in authority for state cost-share toward flood damage reduction projects.</li> <li>DWR has an economist on staff evaluating benefits and costs of flood mitigation projects as needed.</li> </ul> <p><b>NDDes:</b></p> <ul style="list-style-type: none"> <li>Flood Mitigation projects are in the process of being completed in the City of Fargo for the protection of its Wastewater Treatment Plant and the Raw Water Pump Station. A Flood Mitigation project has been awarded in the City of Grand Forks for the protection of a neighborhood from storm water.</li> </ul> <p><b>Natural Resource Conservation Service:</b></p> <ul style="list-style-type: none"> <li>Emergency response to mitigate damage to Bourbanis Dam during May 2021 flood event is in progress.</li> <li>Final engineering design in progress with Cass for a 2.2-mile levee to protect the community of Amenia.</li> <li>Planning in progress with the Park River JWRD for a 2,590 ac-ft off channel retention project to protect rural homes, roads, and the community of Crystal.</li> </ul>

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				<ul style="list-style-type: none"> <li>• Planning in progress with the Pembina WRD for a channel stabilization project on the Tongue River, to halt massive erosion that is impacting Renwick Dam (provides flood protection to the City of Cavalier).</li> <li>• Planning in progress with Cass Joint WRD for a 2,863 ac-ft off channel retention project that will protect rural roads and homes in the Upper Maple River watershed.</li> <li>• Planning in progress with Sargent WRD for a 2,561 ac-ft off channel retention project that will protect rural roads and homes in the Shortfoot Creek watershed.</li> <li>• Planning in progress with Richland WRD for an off-channel retention project to protect rural roads and homes in the Antelope Creek watershed.</li> </ul> <p><b>US Army Corps of Engineers – St. Paul District:</b></p> <ul style="list-style-type: none"> <li>• Published the Missouri River mainstem System 2021-2022 Annual Operating Plan by December 2021. This document outlined both flood risk reduction and water conservation activities for the Missouri River mainstem.</li> </ul>
2019-22	Floodproofing Critical Facilities	Promote flood proofing activities to protect critical facilities, utility infrastructure, government buildings, and residential structures.	Floodproofing measures include anchoring buildings and tanks, reinforcement of walls with water resistant materials, installing watertight doors and windows, sealing basements and walls to prevent seepage, installing permanent pumps, installing backflow prevention valves on utilities, elevating utility systems and other equipment, and taking measures to protect water and sewer	<p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>• Flood Mitigation projects are in the process of being completed in the City of Fargo for the protection of its Wastewater Treatment Plant and the Raw Water Pump Station. A Flood Mitigation project has been awarded in the City of Grand Forks for the protection of a neighborhood from storm water.</li> <li>• Mitigation staff has promoted the concept during meetings with potential Hazard Mitigation Assistance applicants.</li> </ul> <p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>• DWR evaluates the efficiency of infrastructure floodproofing to ensure public expenditures return sufficient benefits to the state’s taxpayers for the investment to be considered through the cost-share program.</li> </ul> <p><b>ND Department of Environmental Quality:</b></p> <ul style="list-style-type: none"> <li>• Promoted and provided training to assist drinking water systems of all sizes perform Vulnerability Assessments and develop Emergency Response Plans.</li> </ul>

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			systems from floodwaters <b>Note – not all floodproofing measures are eligible for the DWR cost-share assistance.</b>	
2019-23	Power Redundancy at Critical Facilities	Encourage redundancies within power systems.	This action ensures continued emphasis on back-up generators or alternative solutions of emergency power until the service is restored for critical facilities, special needs facilities, utility infrastructure, and emergency shelters. Alternative solutions may include solar panels.	<p><b>NDDES:</b></p> <ul style="list-style-type: none"> <li>• Conducted a series of Operation Staple Puller exercises, a scenario, a cyber-attack on the electric power grid as follows: <ul style="list-style-type: none"> <li>○ 06/27/2022 - Operation Staple Puller Tabletop</li> <li>○ 09/27/2022 - Operation Staple Puller Part II Seminar</li> <li>○ 10/29/2022 - Operation Staple Puller Part IV Tabletop</li> <li>○ 11/01/2022 - Operation Staple Puller Part III Workshop</li> <li>○ 11/19/2022 - Operation Staple Puller Part V Functional</li> <li>○ 01/06/2023 - Operation Staple Puller Part VI Functional</li> <li>○ 03/09/2023 - Operation Staple Puller Part VII Tabletop</li> <li>○ 03/10/2023 - Operation Staple Puller Part VIII Functional</li> <li>○ 06/08/2023 – Operation Staple Puller IX Full Scale (Complex Coordinated Attack)</li> </ul> </li> <li>• Conducted MGT-345 Disaster Management for Electric Power Systems Mar. 29-30, 2022.</li> <li>• Projects have been awarded to install emergency back-up generators at the Stanley Lift Station and Kulm Water Tower.</li> <li>• Back-up generators have been awarded to 25 Fire Halls/Law Enforcement Centers throughout the state of North Dakota.</li> <li>• Central Valley Health in Jamestown and the City of Jamestown Main Lift station both installed emergency back-up generators.</li> <li>• City of Mandan was awarded a project to install back-up generators at two of their lift stations.</li> </ul> <p><b>ND Association of Rural Electric Cooperatives (NDAREC):</b> The following actions are continuing:</p>

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				<ul style="list-style-type: none"> <li>○ Further adoption of smart meters more accurately predict &amp; identify outages, thereby reducing outage response times and durations.</li> <li>○ Additional smart devices such as substation circuit breakers and line reclosers offer improved visibility of the electrical system via SCADA, enabling more automation and system diagnostics.</li> <li>○ Advanced modeling tools help identify overloaded equipment before failures occur.</li> <li>○ NDAREC members install backup generators in critical areas as well have generators available for outages.</li> <li>○ Electric cooperatives continue to add solar panels to the system.</li> <li>○ Underground power lines are routinely added to the system, especially in high-risk areas, while redundancy is built into the system.</li> </ul> <p><b>ND Department of Environmental Quality:</b></p> <ul style="list-style-type: none"> <li>● Promoted and provided training to assist drinking water systems of all sizes perform Vulnerability Assessments and develop Emergency Response Plans.</li> </ul> <p><b>State and Local Intelligence Center:</b></p> <ul style="list-style-type: none"> <li>● Continue outreach with Critical Facilities/ Sectors concerning threats, hazards and risks, and promote information/ intelligence sharing.</li> </ul> <p><b>US Department of Homeland Security:</b></p> <ul style="list-style-type: none"> <li>● CISA (Cybersecurity and Infrastructure Security Agency) is now the operational component under the US Department of Homeland Security for all cybersecurity and infrastructure security preparedness, prevention, mitigation and recovery.</li> </ul> <p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>● Purchased a 625 kva generator, two 800,000 BTU heating units and four 25 tonne air conditioning units for medical facilities.</li> </ul>
2019-24	Electric Infrastructure Protection	Promote electrical infrastructure mitigation measures.	This activity would primarily occur through the burial of electrical power lines but also include other electrical mitigation activities, including redundancies of the power grid.	<p><b>NDDes:</b></p> <ul style="list-style-type: none"> <li>● Initiated a study of how natural hazards have the potential to adversely impact the state's electrical grid.</li> <li>● Conducted MGT-345 Disaster Management for Electric Power Systems Mar. 29-30, 2022.</li> <li>● Conducted Operation Staple Puller tabletop exercise – scenario, a cyber attack on the electric power grid June 27, 2022.</li> </ul>



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				<ul style="list-style-type: none"> <li>• Providing conference Chair and sponsorship for CyberCon, a cyber and infrastructure protection conference</li> </ul> <p><b>ND Association of Rural Electric Cooperatives:</b></p> <ul style="list-style-type: none"> <li>• The following actions are continuing:               <ul style="list-style-type: none"> <li>○ Distribution-voltage automatic transfer switches for critical loads allow for substation sources to automatically transfer without operator interaction in the event of a single substation outage.</li> <li>○ Investments in new or substation expansions allow for additional capacity to serve new loads while also backfeeding other substations in the event of a system contingency.</li> <li>○ NDAREC members continue to add under power ground lines, retire overhead power lines and replace them with underground powerlines especially in high risk areas. Redundancy is built into the system and is expanded upon when feasible.</li> </ul> </li> </ul> <p><b>State and Local Intelligence Center:</b></p> <ul style="list-style-type: none"> <li>• Continue outreach with Critical Facilities/ Sectors concerning threats, hazards and risks, and promote information/ intelligence sharing.</li> </ul> <p><b>US Department of Homeland Security:</b></p> <ul style="list-style-type: none"> <li>• Conducted outreach with Critical Facilities/ Sectors concerning threats, hazards and risks, and promote information/ intelligence sharing.</li> </ul>
2019-25	Outdoor Warning Systems -	Support installation and update of outdoor warning systems.	Local and tribal mitigation plans identify outdoor warning systems as a priority mitigation action for the state's communities. Federal, state, local, tribal, and territorial alerting authorities can use Integrated Public Alert and Warning System (IPAWS) and integrate local systems that use	<p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>• Projects for early warning sirens for the City of Berlin and the City of St. Thomas and the City of Glen Ullin have been awarded by FEMA.</li> <li>• Projects to install early warning sirens in the City of St. Johns and the Peace Garden have been completed. Projects have been awarded to install early warning sirens in the City of Cando, City of Bisbee, Beaver Lake State Park, Bowman County Haley Dam Campground, and Rolette County.</li> <li>• Applications for three early warning sirens for the City of Bismarck and the City of Minnewaukan have been awarded by FEMA.</li> <li>• City of Mott was awarded a project to install an additional early warning siren by the County Fairgrounds and update the current siren.</li> <li>• Projects completed as follows:</li> </ul>

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			<p>Common Alerting Protocol standards with the IPAWS infrastructure. IPAWS provides public safety officials with an effective way to alert and warn the public about serious emergencies using the Emergency Alert System (EAS), Wireless Emergency Alerts (WEA), the National Oceanic and Atmospheric Administration (NOAA) Weather Radio, and other public alerting systems from a single interface.</p>	<ul style="list-style-type: none"> <li>• The Preparedness Section awarded 33 projects totaling \$579,332 through the State Homeland Security Program Grants for long range hailing and warning devices; and systems, public notification and warning. Recipients included: Argusville Fire Department District; Park River Fire Department; Minot Public Works Department: counties of Grant, Logan, McLean and Rolette; and Cities of Fredonia, and Gackle in Logan County; Cities of Christine, Hankinson, Lidgerwood, Mantador and Wahpeton in Richland County; City of Hope in Steele County; and Cities of Fessenden, Hurdsfield and Sykeston in Wells County.</li> </ul> <p><b>City, County, Tribal Emergency Management:</b></p> <ul style="list-style-type: none"> <li>• Stutsman County Law Enforcement Center provides monthly testing of the outdoor warning sirens for LaMoure County and others to ensure their operation.</li> <li>• LaMoure County does also support various communication methods and have an IPAWS vendor.</li> </ul>
2019-26	Emergency Notification Systems	Procure and implement all-hazards emergency notification systems.	<p>NDDES supports federal, state, local, and tribal agencies with the update and installation of emergency notification systems to include next generation interaction 911, phones, smart TVs, and smart message boards.</p>	<p><b>NDDES and the North Dakota Association of Counties:</b></p> <ul style="list-style-type: none"> <li>• Project completed: <ul style="list-style-type: none"> <li>○ Collaborating on development of the next generation 911 project. Project Complete (March 2022). Use 911 Grant funds from NHTSA to fund three projects: Next Generation 911 Geographic Information Systems, Internet Protocol (IP) Aggregation for Originating Service Providers, and a Recorder/Logger .</li> </ul> </li> </ul> <p><b>City, County, Tribal Emergency Management:</b></p> <ul style="list-style-type: none"> <li>• LaMoure County does support various communication methods including IPAWS, telephone emergency alert system, telephone text mass message to first responders, and social media.</li> </ul>

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2019-27	Dam Status Review	Periodically review dam status, conditions, designs, permitting of new dams; encourage owners to maintain and repair dams.	This would improve North Dakota's State Dam Safety Program to reduce the risk of dam failure and reduce the potential consequences if a failure were to occur.	<p><b>Bureau of Indian Affairs:</b></p> <ul style="list-style-type: none"> <li>• Conducted rehabilitation work on both the Belcourt and Gordon Dams on the Turtle Mountain Band of Chippewa Reservation.</li> <li>• Conducted routine maintenance of 10 levees/Roads Acting as Dams at Spirit Lake Nation.</li> <li>• Ensured routine maintenance on Prairie Dam and Standing Rock Dam #1.</li> <li>• Conducted a comprehensive review of Standing Rock Dam #1 in 2022.</li> </ul> <p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>• Definitions of dam hazard classifications were updated in ND Administrative Code 89-08-01. A <i>Hazard Classification and Legacy Dams Policy</i> was finalized.</li> <li>• Draft updated dam design standards were released for public review and comment.</li> <li>• <b>Refer to the Dam Safety Article in 2021 annual report.</b></li> <li>• Prior Report: A statewide study to update Probable Maximum Precipitation (PMP) values used in dam design was completed and interim guidance for use of the study results was published.</li> <li>• DWR has a prioritized inventory of known low-head dams in the state and provides cost-share funding to mitigate specific hazard effects or remove the structures.</li> </ul> <p><b>US Bureau of Reclamation:</b></p> <ul style="list-style-type: none"> <li>• PR (Periodic Review) scheduled for Jamestown Dam on September 13, 2023.</li> <li>• Held ASI (Annual Site Inspections) on Dickinson Dam August 9, 2023; and Heart Butte Dam scheduled for August 31, 2023.</li> <li>• Held PR (Periodic Review) on Dickinson Dam August 31, 2022 and Heart Butte Dam on September 1, 2022.</li> <li>• Held ASI (Annual Site Inspections) on: Jamestown Dam, September 12, 2022.</li> <li>• Held ASI (Annual Site Inspections) on: Dickinson Dam, May 12, 2021; Heart Butte Dam, May 19th, 2021; and Jamestown Dam, August 4, 2021</li> <li>• Reclamation conducted the annual site inspection (ASI) for Dickinson Dam (July 15, 2020); Jamestown Dam (August 11, 2020) and Heart Butte Dam (July 16, 2020)</li> </ul>

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				<p><b><i>US Army Corps of Engineers – Omaha District:</i></b></p> <ul style="list-style-type: none"> <li>• All USACE dams in North Dakota were inspected during the past year in accordance with the dam safety program requirements. Annual Inspection for Garrison Dam and Snake Creek Embankments the week of 16 September 2021 and the Annual Inspections for the Williston Levee and Pipestem Dam were performed the week of 20 September 2021. A Periodic Inspection of Bowman-Haley Dam was completed the week of 10 May 2021. Risk reduction studies are ongoing at Snake Creek, Garrison, and Pipestem Dams. Construction to modify the Pipestem spillway is anticipated to begin in 2023. Williston Levee is currently being accredited by FEMA under the National Flood Insurance Program.</li> <li>• Plans are underway to make USACE Emergency Action Plan inundation maps and updated comprehensive dam database publicly available in the <u>National Inventory of Dams</u> by end of 2021. Will include summaries of best available risk information and inundation scenarios, including water depth and arrival times and life loss and property impact estimates.</li> </ul> <p><b><i>US Army Corps of Engineers – St. Paul District:</i></b></p> <ul style="list-style-type: none"> <li>• The Corps conducted the 5-year periodic inspection at Homme on 12 August 2020, and Baldhill on 15 August 2018.</li> </ul> <p><b><i>ND Game and Fish Department:</i></b></p> <ul style="list-style-type: none"> <li>• Worked with Department of Water Resources for dam safety inspections. Game and Fish Department typically manages fisheries behind the dams.</li> </ul> <p><b><i>ND Department of Mineral Resources, ND Geological Survey:</i></b></p> <ul style="list-style-type: none"> <li>• Available to review the location of all dams against existing landslide mapping in order to identify potential areas of concern.</li> </ul> <p><b><i>Natural Resources Conservation Service:</i></b></p> <ul style="list-style-type: none"> <li>• No progress to report during this time period.</li> <li>• NRCS completed inspections on 16 dams in 2021 and 24 dams in 2020 currently under Operations &amp; Management (O&amp;M) agreements and invited owners or their representatives to join our staff in the field so that needed maintenance and repairs could be discussed on site. Followed up with letters documenting recommendations.</li> </ul>

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2019-28	Protect Communication Sites	Retrofit communication sites to mitigate risk of threats and hazards.	Mitigation of potential losses of critical communications requires retrofitting sites with protective security measures, which include installing guy wires and ensuring system redundancies through satellites, portable towers, and new technology devices.	<p><b>State and Local Intelligence Center:</b></p> <ul style="list-style-type: none"> <li>Continue outreach with Critical Facilities/ Sectors concerning threats, hazards, and risks and promote information/ intelligence sharing.</li> </ul> <p><b>US Department of Homeland Security:</b></p> <ul style="list-style-type: none"> <li>Provide recommendations on retrofits to ensure resiliency.</li> </ul> <p><b>ND Department of Transportation:</b></p> <ul style="list-style-type: none"> <li>NDDOT reinstalled fencing around new sites and has an on-board monitoring system that does notifications/alerts if the premises are entered without authorization or if the site goes down.</li> <li>NDDOT installed fencing around our new sites and have an on-board monitoring system that does notifications/alerts if the premises are entered without authorization or if the site goes down.</li> </ul> <p><b>ND Information Technology</b></p> <ul style="list-style-type: none"> <li>NDIT's primary and secondary data centers are separate facilities with high security and redundant systems. Critical technologies identified for communication are setup with high availability to ensure limited disruption and most are cloud-based solutions.</li> </ul>
2019-29	Secure Electronic Systems	Procure and install secure electronic systems.	This action focuses on protecting data by employing next generation firewalls and implementing industry best practices. This action promotes adoption of processes that promote secure electronic systems.	<p><b>State and Local Intelligence Center:</b></p> <ul style="list-style-type: none"> <li>Continue outreach with Critical Facilities/ Sectors concerning threats, hazards and risks. and promote information/ intelligence sharing.</li> </ul> <p><b>Cybersecurity and Infrastructure Agency:</b></p> <ul style="list-style-type: none"> <li>CISA (Cybersecurity and Infrastructure Security Agency) is now the operational component under the U.S. Department of Homeland Security for all cybersecurity and infrastructure security preparedness, prevention, mitigation and recovery.</li> </ul> <p><b>ND Information Technology</b></p> <ul style="list-style-type: none"> <li>NDIT employs several measures to ensure electronic systems are secure including a zero-trust architecture and third-party monitoring systems.</li> <li>In addition, NDIT's Security team has developed strong response plans, proactively monitors network traffic and threat landscape, conducts third-party risk assessments on vendors who host/process State data, and provides awareness and education to ND citizens and State employees.</li> </ul>

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2019-30	Transportation Engineering and Systems	Improve transportation infrastructure to reduce transportation accidents and prevent mass casualty and hazardous material release incidents.	This action will be completed through engineering, including the design of subsequent roads, railways, and barriers. Managed transportation through the implementation of hazardous truck routes and bypasses may prevent hazardous material releases, particularly in populated areas. Regulations related to railway speeds could reduce the probability of accidents in urban areas and provide consistency across the state. Additional considerations could be given to those communities experiencing growth or development in industries requiring heavy use of the transportation systems. This outreach/ education would also include adversarial (e.g.,	<p><b>ND Department of Transportation:</b></p> <ul style="list-style-type: none"> <li>• NDDOT is pursuing an interstate snow and resiliency plan of combined snow and ice control strategies and principles to include technology, equipment, and procedures to improve the snow and ice control along the 570 miles of Interstate 29 (I-29) and Interstate 94 (I- 94).</li> <li>• NDDOT has been awarded: <ul style="list-style-type: none"> <li>○ \$30M Railroad Crossing Elimination Program (RCE) grade separation at Demers Ave/42nd St in Grand Forks -- partnership between BNSF, NDDOT and City of the Grand Forks</li> <li>○ \$9.85M RAISE Grant Funding for North Dakota</li> <li>○ Tribal Trail Connections Project</li> <li>○ \$18.57M RAISE Grant Funding for BIA Route 6 Reconstruction and Preservation Project</li> <li>○ Funding will be awarded after signed agreement is in place, all projects are continuing.</li> </ul> </li> <li>• Projects are continuing as follows: <ul style="list-style-type: none"> <li>○ A \$550,000 Rebuilding American Infrastructure with Sustainability and Equity (RAISE) planning grant for the design of a Traffic Management Center (TMC) to utilize Smart Corridor Technology.</li> <li>○ Received \$22 million from the 2020 Better Utilizing Investments to Leverage Development (BUILD) grant to upgrade 12 sites. The competitive grant, awarded through the U.S. Department of Transportation (USDOT), is designed to repair, rebuild and revitalize transportation systems across America.</li> </ul> </li> </ul> <p><b>State and Local Intelligence Center:</b></p> <ul style="list-style-type: none"> <li>• Continue outreach with Critical Facilities/ Sectors concerning threats, hazards, and risks and promote information/ intelligence sharing.</li> </ul> <p><b>ND Aeronautics Commission:</b></p> <ul style="list-style-type: none"> <li>• The North Dakota Aeronautics Commission supports aviation activities in the state through communication with state, local, and Federal Aviation Association (FAA) officials, congressional offices, and national aviation groups. The commission is responsible for administering North Dakota's laws in regard to the registration of aircraft, aircraft dealers, aerial applicators, and the collection of aircraft excise tax. The Aeronautics Commission provides grant funding for</li> </ul>

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			<p>Homegrown Violent Extremist (HVE), Terrorism, Hacktivists) threats (purposed or imminent).</p>	<p>airport infrastructure projects and manages aviation education initiatives and programs throughout the state. The office also provides airport planning services, helps to maintain the state's Automated Weather Observation Systems (AWOS), and provides airport inspections for the general aviation airports.</p> <ul style="list-style-type: none"> <li>The Aeronautics Commission also works to maintain and update publicized planning documents to help maintain and grow North Dakota's aviation transportation system. Statewide airport capital improvement plans, aviation economic impact studies, airport directories, state aviation system plans, and pavement condition index studies are a few examples of these documents.</li> <li>Specifically in FY 2021, the state and local entities were successful in leveraging approximately \$53 million from the Federal Airport Improvement Program for airport projects within North Dakota. The ND Aeronautics Commission also allocated and administered approximately \$10 million of state grant allocations. Additionally, the agency also completed work on a statewide pavement condition study that provided an updated inventory and cost benefit analysis of approximately 60 million square feet of pavement at ND's public-use airports.</li> <li>Also in FY 2021, the North Dakota Aeronautics Commission licensed 41 aircraft dealers and 95 aerial applicators. Additionally, 1,823 state aircraft registrations were processed for airworthy aircraft within the state of North Dakota.</li> </ul> <p><b>ND Department of Mineral Resources, ND Geological Survey:</b></p> <ul style="list-style-type: none"> <li>Supported NDDOT with analysis of locations where slope issues have been of concern in the past.</li> </ul>
2019-31	Snow Fences	Support the development of natural and artificial snow fences at the local and tribal levels.	Several local and tribal mitigation plans identify snow fences as a strategy. Enactment of this action will require emphasis on obtaining sources of funding for Snow Fences since state funding sources	<p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>Continue to provide guidance to local and tribal mitigation planning teams to identify areas where snow fences are needed.</li> </ul> <p><b>ND Forest Service:</b></p> <ul style="list-style-type: none"> <li>Incentives for living Snow Fences are available through the Environmental Quality Incentives Program (EQIP) administered by USDA NRCS and through the ND Statewide Conservation Tree Planting Initiative. Technical assistance is available from NDFS or local Soil Conservation Districts.</li> </ul> <p><b>ND Department of Transportation:</b></p> <ul style="list-style-type: none"> <li>District Offices continue to plant Living Snow Fences along state highways along state highways to reduce snow buildup.</li> </ul>

Action ID #	Action Title	Action Statement	Action/Strategy Description	Final Cumulative Report
			are no longer available.	
2019-32	Drought Mitigation	Identify and implement drought mitigation strategies.	This action requires implementation of programs and projects that mitigate water supply shortages for domestic, rural, municipal, industrial, and agricultural uses; and assist vulnerable populations with heat induced health risks; promotes crop insurance and drought-resistant farming practices.	<p><b><i>NDSU State Climate Office:</i></b></p> <ul style="list-style-type: none"> <li>• Provide in-depth analysis of current drought conditions and outlooks during ND Ag Disaster Response bi-weekly calls and for the State Drought Multi-Agency Coordination System.</li> <li>• Shared analysis for the Governor's disaster declarations of drought and other weather conditions to provide incident-specific data and to discuss long-term impacts of North Dakota's recent drought and other disasters.</li> </ul> <p><b><i>ND Department of Agriculture:</i></b></p> <ul style="list-style-type: none"> <li>• The Commissioner developed with ND Information Technology a software to allow submission of requests related to drought impacts on feed transportation. This system built in dynamics will allow future data collection if additional Emergency Programs are authorized.</li> </ul> <p><b><i>ND Department of Water Resources:</i></b></p> <ul style="list-style-type: none"> <li>• The DWR manages the Drought Disaster Livestock Water Supply Assistance Program as outlined in NDAC Chapter 89-11. This Program was last activated in April 2021 and remained open until September 1, 2022. This Program provides 50% cost-share, with up to \$4,500 per project to help livestock producers install long term sustainable water supplies for their cattle in times of severe drought. Eligible projects include new water wells, rural water system connections, pipeline extensions, pasture taps and associated works, labor, and materials and equipment rentals for work completed by the producer to develop new water supply projects. The Program must be activated by the State Water Commission (SWC), which determines beginning and end dates. Funds can only disburse for water supply projects in counties that the Governor has declared to be a drought disaster area for purposes of the program. During the last 2021 activation 1,216 projects were completed by 826 producers with state cost-share of \$4.8 million.</li> <li>• The DWR has entered into an agreement with the USGS to evaluate seepage on the Souris River. The Souris River Seepage Study evaluated how drought conditions affect reservoir releases on the Souris River for the purpose of informing future operations. As stated under the status update for Basin-wide</li> </ul>



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				<p>Water Development and Management Planning, this study was completed in 2022.</p> <p><b>ND Department of Environmental Quality:</b></p> <ul style="list-style-type: none"> <li>Promote and provide training to assist drinking water systems of all sizes perform Vulnerability Assessments and develop Emergency Response Plans.</li> </ul> <p><b>ND Department of Transportation, ND Department of Commerce, NDDDES, NDSU State Climate Office, ND Department of Agriculture, National Weather Service:</b></p> <ul style="list-style-type: none"> <li>SHMT partners collaborated on assessments of drought conditions during 2019-2021 and potential mitigation strategies.</li> </ul> <p><b>NDSU Extension Service:</b></p> <ul style="list-style-type: none"> <li>Develop educational resources and curriculum on drought planning and mitigation, and disseminate information through webinars, meetings, articles and interviews.</li> <li>Provide technical support to farmers and ranchers impacted by drought to aid in identifying drought related hazards and develop mitigation strategies.</li> <li>Lead the bi-weekly ND Agriculture Disaster Response meetings to evaluate disaster impacts on the agricultural community, including drought and drought mitigation measures.</li> </ul> <p><b>US Army Corps of Engineers – Omaha District:</b></p> <ul style="list-style-type: none"> <li>Publish the Missouri River mainstem System 2021-2022 Annual Operating Plan by December 2021. This document outlines both flood risk reduction and water conservation activities for the Missouri River mainstem.</li> </ul> <p><b>North Dakota Stockmen’s Association:</b></p> <ul style="list-style-type: none"> <li>Developed and disseminated informational resources about drought contingency planning and resources to livestock producers and decision-makers.</li> <li>Tallied and analyzed livestock sale and travel information through brand inspection documents to assess culling and relocation and provided information to decision-makers and livestock producers.</li> </ul>
2019-33	Hazardous Fuels Reduction	Identify potential areas or communities that may be	The action will support Firewise concepts and Community Wildfire Protection Plan by	<p><b>ND Forest Service:</b></p> <ul style="list-style-type: none"> <li>The ND Forest Service continues to collaborate with state, federal and local partners on a hazardous fuels reduction strategy for areas of concern within North Dakota. Continuing</li> </ul>

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		adversely affected by excessive fuel loading and create partnerships to mitigate hazardous fuels.	creating a more resilient landscape with communities that are protected from catastrophic wildfires.	<ul style="list-style-type: none"> <li>Continue to target 100 acres of hazardous fuels in the ponderosa pine stand in western North Dakota yearly. The ponderosa pine hazard fuel mitigation site is within a 1000-acre area representing the northeastern most extent of ponderosa pine in North America and one of two native pine areas in North Dakota. The mitigation site includes both private and federal lands. The project provides risk mitigation by removing hazardous fuel thus providing a higher degree of protection to communities and homes that may be at risk. Continuing</li> </ul>
2019-34	Hazardous Materials Storage and Disposal	Promote and enforce safe handling, storage, and disposal of hazardous materials.		<p><b>ND Department of Agriculture:</b></p> <ul style="list-style-type: none"> <li>The Commissioner continued to support unused Hazardous Materials collection using Project Safe Send, this project provided a transportation vendor in several ND cities for drop of unused chemicals to prevent spillage or other impacts.</li> </ul> <p><b>ND Department of Environmental Quality:</b></p> <ul style="list-style-type: none"> <li>The department updated fact sheets and web site information to provide information on safe handling, storage and disposal of hazardous material.</li> <li>The department updated rules and retargeted inspection to increase staff presence in the field.</li> </ul> <p><b>State and Local Intelligence Center:</b></p> <ul style="list-style-type: none"> <li>Continue outreach with Critical Facilities/ Sectors concerning threats, hazards, and risks and promote information/ intelligence sharing.</li> </ul> <p><b>ND State Fire Marshal:</b></p> <ul style="list-style-type: none"> <li>Continue to work with other State Agencies to identify and inspect sites storing hazardous materials in excess of maximum allowable quantities and ensure compliance with state adopted codes such as the North Dakota State Fire Code.</li> <li>Added State Fire Marshal to this action as ensuring fire code compliance is a critical point of HAZMAT storage safety.</li> </ul> <p><b>ND National Guard</b></p> <ul style="list-style-type: none"> <li>Provide training and ensure safe handling, storage and disposal of hazardous materials at all sites operated by the NDNG.</li> </ul> <p><b>NDSU Extension</b></p> <ul style="list-style-type: none"> <li>Provide educational resources on Spill Prevention Control and Countermeasures for petroleum storage.</li> </ul>

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<b>Education and Outreach</b>				
2019-35	Insurance Moonshots	Encourage homeowners to purchase insurance.	<p>This action supports FEMA's goal of doubling the number of properties covered by flood insurance by 2022. Education will be key to ensuring citizens understand their level of threat, types of insurance are available. This action requires educating several different industries in order to convey the message. The State National Flood Insurance Program (NFIP) Coordinator will work with the State Insurance Commission on setting up workshops. The State NFIP Coordinator will continue to hold training with specific target markets (e.g., Emergency Managers, Realtors, Floodplain Administrators, Public)</p>	<p><b>ND Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>• Continue to promote the NFIP, Community Rating System (CRS) and RiskMAP programs and provide guidance to communities who participate in the NFIP and the CRS to ensure their achievement in the flood loss objectives under the NFIP.</li> <li>• The NFIP Coordinator made arrangements with FEMA to host Insurance Agent Trainings across the state. In person trainings were held in Minot on April 18th and Fargo on April 20<sup>th</sup>. Two additional virtual trainings were held on April 25 and May 4 2023. A total of 135 individuals attended the trainings. Attendees included insurance agents and local floodplain administrators.</li> <li>• During 7 Community Assistance Visits in the spring of 2023, the NFIP Coordinator promoted the CRS system and encouraged communities to assist homeowners with securing flood insurance.</li> <li>• During technical assistance requests from communities, the NFIP Coordinator educated floodplain administrators on proper floodplain management.</li> </ul> <p><b>City, County, Tribal Emergency Management:</b></p> <ul style="list-style-type: none"> <li>• LaMoure County held a public meeting prior to Spring Flooding to encourage knowledge of the NDRAM product to show flood prone areas and encourage flood insurance. The DWR, NWS, and USACE also attended.</li> </ul>

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			annually as funding becomes available.	
2019-36	NFIP, RiskMap and CRS Program	Promote the NFIP, CRS, and RiskMAP program and provide guidance to communities who participate in the NFIP and CRS Program to ensure their achievement in the flood loss objectives under the NFIP.	<p>This action provides guidance to communities who participate in the NFIP to ensure their achievement in the flood loss objectives under the NFIP. This is accomplished by providing technical assistance, evaluating community performance, implementing NFIP floodplain management activities, and strengthening community floodplain management expertise. Communities that go beyond the minimum federal standards are eligible to join the CRS. Through this program, communities are becoming more flood resilient and property owners are rewarded with discounts on their</p>	<p><b>ND Department of Water Resources:</b>  <b>See the NDRAM article in the 2021 annual report.</b></p> <ul style="list-style-type: none"> <li>Promote the NFIP, CRS, and RiskMAP programs and provide guidance to communities who participate in the NFIP and the CRS to ensure their achievement in the flood loss objectives under the NFIP.</li> <li>As noted above, The NFIP Coordinator promotes the NFIP, CRS, and RiskMAP programs whenever possible when communicating with communities.</li> <li>During 7 Community Assistance Visits and 17 Community Assistance Contacts in the spring of 2023, the NFIP Coordinator promoted the NDRAM Tool. The NFIP Coordinator demonstrated the NDRAM Tool and how the Tool can be used within their community.</li> <li>During technical assistance requests from communities, the NFIP Coordinator educated floodplain administrators on the NDRAM Tool and how the tool can be used within their community.</li> </ul> <p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>Utilizing the RiskMap program to support our benefit cost analyses for NDDDES Hazard Mitigation projects.</li> </ul> <p><b>NDDDES and Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>Promoted use of RiskMAP as a tool for local and tribal planning teams during the Plan Developers Meeting in February 2023.</li> <li>Promoted use of RiskMap as a tool for local and tribal planning teams during the first plan developers meeting in March 2021.</li> </ul> <p><b>ND Insurance Department</b></p> <ul style="list-style-type: none"> <li>Promoted flood insurance via our social media channels and media interviews (See <a href="#">NewsDakota</a> and <a href="#">KFYR</a>)</li> <li>Facilitated learning sessions for licensed agents to become better educated on selling flood insurance to consumers.</li> </ul>

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			<p>NFIP flood insurance premium. RiskMAP provides high quality flood maps and information, tools to better assess the risk from flooding, and planning and outreach support to communities to help them take action to reduce, or mitigate, flood risk.</p>	
2019-37	StormReady Program	Promote use of NOAA's National Weather Service's StormReady Program.	<p>The StormReady program will help mitigate the impacts of storms by giving communities the communication and safety skills needed to save lives and property, before and during the event. StormReady helps community leaders and emergency managers strengthen local safety programs.</p>	<p><b>National Weather Service:</b></p> <ul style="list-style-type: none"> <li>The NWS expanded membership significantly in Storm Ready and now 42 counties, 36 communities, 1 Tribal Nation, and 4 universities.</li> <li><i>The NWS continues to promote the Weather Ready Nation Ambassador initiative.</i> Website: <a href="https://www.weather.gov/wrn/ambassadors">https://www.weather.gov/wrn/ambassadors</a></li> <li>The NWS continues to promote StormReady. Website: <a href="https://www.weather.gov/stormready/nd-sr">https://www.weather.gov/stormready/nd-sr</a>. Currently 30 counties, 29 communities, 1 tribal nation and four universities are recognized as StormReady.</li> </ul> <p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>Encourage participation in the StormReady program through mitigation plan reviews and through agency outreach and education efforts.</li> </ul> <p><b>City, County, Tribal Emergency Management:</b></p> <ul style="list-style-type: none"> <li>LaMoure County encourages StormReady as NWS has attended and taught at the county agricultural safety days for elementary students and Weather Warn classes for the public.</li> </ul>
2019-38	Cyber Security Threats Education	Educate and support the Whole Community on ways to	<p>An attack can impact business revenue, services offered by state, local, or tribal governments and</p>	<p><b>ND Information Technology (NDIT):</b></p> <ul style="list-style-type: none"> <li>North Dakota Citizen Skills for All was launched in July 2022 and provides free training for all ND citizens to expand their cyber skills.</li> </ul>

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		mitigate cyber threats affecting personal, private, and state security and other sensitive information.	other organizations, and the functionality of infrastructure and other physical systems. North Dakota has placed a higher priority on building prevention systems and countermeasures to mitigate the impacts of this hazard, but the prevalence and varied approaches of cyberattacks means that this remains a threat.	<ul style="list-style-type: none"> <li>• Expanded Cyber Madness, a competition to develop skills in detecting and responding to cyber threats, to include both high schools and middle schools.</li> <li>• Launched Defend ND (defend.nd.gov) website to provide resources to citizens on how they can protect against cyber-attacks. The site includes a personal security risk and vulnerability assessment.</li> <li>• Activities continued by NDIIT as follows: <ul style="list-style-type: none"> <li>○ Continue to lead and evolve the JC-SOC, a joint cyber security operations center, with multiple states to share information.</li> <li>○ Coordinated and participated in public cyber awareness campaigns, including public speaking engagements, conferences, and events.</li> <li>○ Committee member of BSC CyberCon (ND Cybersecurity Conference)</li> <li>○ Members of the Cyber Intelligence Network, Election-ISAC, MS-ISAC and many others.</li> <li>○ The NDDDES Preparedness Section issued several awards for IT personnel to attend Cyber Security training.</li> <li>○ National Cyber Security Awareness Month</li> <li>○ Career Fair and Career Days</li> </ul> </li> </ul> <p><b><i>ND Information Technology and State and Local Intelligence Center:</i></b></p> <ul style="list-style-type: none"> <li>• 43 Public Speaking Presentations</li> <li>• Created and participated in CyberMadness, a High School competition to show skills in detecting and responding to cyber threats</li> <li>• Created JCSOC, a Joint Cyber Security Operations Center with multiple States to share information</li> <li>• The NDDDES Preparedness Section issued several awards for IT personnel to attend Cyber Security training.</li> <li>• Cyber Public Awareness Campaigns: includes public speaking, conferences and events</li> <li>• 25 Public Speaking Presentations</li> <li>• Committee Members of BSC CyberCon and <ul style="list-style-type: none"> <li>○ ND Cybersecurity Conference</li> <li>○ VCSU Youth Tech Day</li> </ul> </li> <li>• Members of K-20W (cyber education initiative)</li> <li>• SANS GirlsGoCyberStart</li> <li>• Air Force CyberPatriot</li> </ul>

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				<ul style="list-style-type: none"> <li>• Cybershield</li> <li>• Members of the Cyber Intelligence Network, Election-ISAC, MS-ISAC and many others.</li> <li>• Joint Security Operations Command</li> <li>• Misinformation/Disinformation Campaigns</li> <li>• NDResponse website Cybersecurity and Fraud Information</li> <li>• National Cyber Security Awareness Month</li> <li>• Career Fair and Career Days</li> </ul> <p><b>State and Local Intelligence Center:</b></p> <ul style="list-style-type: none"> <li>• Activities by the SLIC continue as follows:             <ul style="list-style-type: none"> <li>○ NDDDES Preparedness Section provided funding to NDIT to staff a Cyber Analyst within the SLIC.</li> <li>○ Staff serve as conference Chair at CyberCon promoting infrastructure and cyber security.</li> <li>○ Outreach continues with Critical Facilities/ Sectors concerning threats, hazards, and risks and promote information/ intelligence sharing.</li> </ul> </li> </ul> <p><b>NDDDES:</b></p> <ul style="list-style-type: none"> <li>• Conducted MGT-345 Disaster Management for Electric Power Systems Mar. 29-30, 2022</li> <li>• Conducted Operation Staple Puller tabletop exercise – scenario was a cyber-attack on the electric power grid June 27, 2022 .</li> <li>• NDDDES provided funding to support Cyber Madness. This is State high school tournament for high school students be educated and compete by solving cyber challenges. Ongoing project, but funding no longer provided (NDIT and private companies are sponsoring now).</li> <li>• Providing conference Chair and sponsorship for CyberCon, a cyber and infrastructure protection conference. Chairmanship complete, continue to sponsor CyberCon.</li> </ul> <p><b>North Dakota National Guard (NDNG):</b></p> <ul style="list-style-type: none"> <li>• Providing board member and student sponsorship for the Bismarck State College CyberCon conference.</li> </ul>

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				<ul style="list-style-type: none"> <li>• Providing qualified Servicemembers through the CISA Assessment Evaluation and Standardization program able to perform cyber risk assessments for governmental agencies.</li> <li>• Participation in multiple Cyber exercises with military and industry partners that provide training and increased the states posture for Cyber incident response.</li> <li>• Continuous training provided to all NDNG servicemembers in general Cyber awareness and specific Cyber hygiene topics.</li> <li>• Provided speakers at multiple community Cyber events.</li> </ul>
2019-39	Public Education and Outreach	Develop and implement an all-hazard and all-threat public education and outreach program.	<p>This program would include:</p> <ul style="list-style-type: none"> <li>• Engaging media and social media during hazardous awareness months, prior to spring flooding, and other seasonal weather hazards.</li> <li>• Providing education about the potential consequences of geomagnetic and solar storms in addition to radio blackouts.</li> <li>• Encouraging personal mitigation measures for property and community.</li> <li>• Promoting educational activities designed to protect the public, including weather spotter training, adversarial threat training and</li> </ul>	<p><b>North Dakota Stockmen's Association:</b></p> <ul style="list-style-type: none"> <li>• Developed and disseminated informational resources about drought, extreme heat, blizzards, animal health and farm stress to decision-makers and livestock producers.</li> <li>• Conducted media interviews to expand reach of information.</li> </ul> <p><b>NDDDES, ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>• Conducted numerous press briefings, townhall meetings and other outreach to provide up-to-date and accurate information on vaccine safety and effectiveness, mask efficacy, safe therapies and other COVID-19 mitigation strategies.</li> <li>• Led collaborative efforts to develop an Immigrant and Immigrant Communities Outreach and Support Strategy, designed to act as a guiding document for COVID-19 response and recovery efforts targeting the immigrant community.</li> </ul> <p><b>National Weather Service:</b></p> <ul style="list-style-type: none"> <li>• NWS Grand Forks and Bismarck offices held in person SKYWARN training sessions with a total of 313 people attended through the Bismarck NWS, and 160 through the Grand Forks NWS. Grand Forks NWS also conducted two online classes with 91 participants from both North Dakota and Minnesota.</li> <li>• NWS continues to provide education and outreach both in person and via social media - Facebook and Twitter along with our webpages: <a href="http://weather.gov/fgf">weather.gov/fgf</a> and <a href="http://weather.gov/bis">weather.gov/bis</a>.</li> <li>• The NWS has returned to doing in person outreach with schools and civic organizations. We have also coordinated outreach with the NDDDES Strategic Communications Chief. This includes providing weather /water education and outreach material on the ND Response Website and social media channels.</li> <li>• NWS Grand Forks and Bismarck offices held virtual SKYWARN training sessions in the spring of 2021.</li> </ul>



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			<p>Community Emergency Response Team (CERT).</p> <ul style="list-style-type: none"> <li>• Providing the public information to make informed decisions about how to prevent infections or infestations or avoid spreading diseases.</li> </ul>	<ul style="list-style-type: none"> <li>• NWS continued to hold SKYWARN spotter classes, though COVID-19 did have an impact on those in 2020. NWS continued to provide education and outreach via social media - Facebook and Twitter along with our webpages: <a href="http://weather.gov/bis">weather.gov/bis</a> and <a href="http://weather.gov/fqf">weather.gov/fqf</a>.</li> </ul> <p><b>State and Local Intelligence Center:</b></p> <ul style="list-style-type: none"> <li>• Outreach continues with Critical Facilities/ Sectors concerning threats, hazards, and risks and promote information/ intelligence sharing.</li> </ul> <p><b>US Department of Homeland Security:</b></p> <ul style="list-style-type: none"> <li>• Promoted education and outreach regarding critical facilities and sectors, collaborating with SLIC staff regarding information and intelligence sharing with the private and public sectors.</li> </ul> <p><b>ND Department of Environmental Quality:</b></p> <ul style="list-style-type: none"> <li>• The department updated fact sheets and web site information to provide information on various hazard, but especially those related to flooding.</li> </ul> <p><b>ND Department of Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>• Extensive outreach and educational efforts underway due to the COVID-19 response.</li> <li>• Multiple news releases on various non-COVID-19 health risks, including rabies, foodborne illness, west Nile virus, vaccinations, vector borne diseases.</li> <li>• Multiple health alerts sent to health care providers and other stakeholders regarding significant public health issues such as COVID-19, vaping injuries, congenital syphilis, hepatitis A, pertussis and other health threats.</li> </ul> <p><b>ND State Fire Marshal:</b></p> <ul style="list-style-type: none"> <li>• Continue to coordinate with other agencies and participate in fire safety public education projects: <ul style="list-style-type: none"> <li>○ Fire safety week in October each year</li> <li>○ Arson awareness week Spring each year</li> <li>○ Back to school fire safety</li> <li>○ Smoke alarm installation campaigns</li> <li>○ Childcare fire safety</li> </ul> </li> </ul> <p><b>City, County, Tribal Emergency Management:</b></p> <ul style="list-style-type: none"> <li>• LaMoure County encourages preparedness through county website postings, public meetings and press releases in local papers.</li> </ul>

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				<p><b>American Red Cross (ARC):</b></p> <ul style="list-style-type: none"> <li>Continue to conduct the Sound the Alarm (STA) annually at a determined location. The ARC works with the local mayor, emergency managers, fire departments and other partners. COVID-19 disrupted plans in 2020; however, ARC encouraged clients to request individual alarms, at no cost, on its website: <a href="https://www.redcross.org/sound-the-alarm.html">https://www.redcross.org/sound-the-alarm.html</a></li> <li>Provides Pillowcase Project, another preparedness program, to schools with 2-5 graders or any youth program. The ARC educates youth about the potential for disasters and what items they should take with them while escaping/getting out, placing those items in their pillowcases. The ARC provides workbooks/scenarios, making them aware of the various dangers.</li> </ul> <p><b>ND Forest Service:</b></p> <ul style="list-style-type: none"> <li>Continued to coordinate and conduct seasonally appropriate wildfire prevention outreach and education campaigns using a variety of media. Most resources available via the ND Response website.</li> <li>Continued to conduct seasonally appropriate wildfire prevention outreach and education campaigns using a variety of media. ?</li> </ul> <p><b>Department of Water Resources:</b></p> <ul style="list-style-type: none"> <li>The DWR manages a Water Education Program. The North Dakota Water Education Program enhances public knowledge and awareness about water resources.</li> <li>Programming efforts include water science, conservation, and best management practices, and demonstrate how water interacts with humans and the natural environment.</li> <li>Many of the programs are presented using online, indoor, and outdoor educational experiences and the dissemination of classroom ready teaching aids.</li> </ul> <p><b>NDSU Extension</b></p> <ul style="list-style-type: none"> <li>Develop educational resources and curriculum, and disseminate information through webinars, meetings, articles and interviews related to drought, flooding, building agricultural resilience, enhancing community resilience, and stress and mental health.</li> <li>Provide technical support to farmers and ranchers impacted by hazards and develop mitigation strategies.</li> </ul>

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				<p>and life loss and property impact estimates. USACE will provide briefings to the State of North Dakota Dam Safety and local emergency response agencies on the release of this mapping. Press releases will be used to inform the public.</p> <p><b>US Army Corps of Engineers – St. Paul District:</b></p> <ul style="list-style-type: none"> <li>The National Inventory of Dams (<a href="https://nid.sec.usace.army.mil/">https://nid.sec.usace.army.mil/</a>) is being updated to include a risk summary for USACE dams. Baldhill was due to be posted at the time of printing.</li> </ul> <p><b>Note: ND Game and Fish Department was incorrectly tasked here.</b></p>
<b>Worker Safety and Public Health Protection</b>				
2019-41	Medical Surge	Increase the capacity to provide acute and long-term care for people with infectious diseases.	This action increases the capacity within communities to provide acute and long-term care for people with infectious diseases, including comfort care. Medical surge is labor and cost intensive as well as resource and space intensive. Shortages of qualified healthcare workers and medical supplies or equipment will be a challenge.	<p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>Established systems to assist with and provide COVID-19 vaccinations in areas where additional resources are needed,</li> <li>Establish system to provide support for COVID-19 diagnostic testing and screening.</li> <li>Established two medical surge facilities in response to COVID-19,</li> <li>Established Healthcare Associated Infections (HAI) work team to assist LTC with infection prevention and case management in response to COVID-19.</li> <li>Provided a system to assist with staffing shortages resulting from staff being furloughed related to COVID-19,</li> <li>Providing PPE to providers from the state medical cache for the COVID-19 response.</li> </ul>
2019-42	Community Health and Safety Resiliency	Increase safety and health of workers, first responders and new Americans.	The action emphasizes efforts to promote safety and health measures designed to protect workers, first responders and new Americans. These	<p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>Established and systems for the allocation of mpox vaccine and vaccinations.</li> <li>Modifications to the immunization information system to accommodate inventory tracking and reporting for both COVID-19 and mpox vaccines.</li> <li>Coordinate with local public health and communities to deliver mpox vaccinations to high-risk groups.</li> <li>Established systems for the safe delivery of COVID-19 vaccines.</li> </ul>

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			<p>initiatives include, but are not limited to, safety training, risk management training, public health screening, and assistance for new Americans.</p>	<ul style="list-style-type: none"> <li>• Established systems for the rapid placement of monoclonal antibodies/antivirals or other therapeutics where they are needed or requested.</li> <li>• Coordinate wrap-around services for individuals in isolation or quarantine.</li> <li>• Health screenings have increased for response employees and partners for the COVID-19 response. Staff working in the field who anticipate close contact with high-risk individuals are required to be swabbed/tested weekly. During orientation, new staff are directed in proper Personal Protective Equipment (PPE) donning and doffing and are fit tested for N95 respirators.</li> <li>• Established testing sites in locations to increase accessibility to COVID-19 testing,</li> <li>• Implement, coordinate and promote testing availability for emerging pathogens (mpox).</li> <li>• Working with agricultural officials on highly pathogenic avian influenza (HPAI) mitigation efforts.</li> </ul> <p><b>ND Workforce Safety and Insurance:</b></p> <ul style="list-style-type: none"> <li>• Continue to offer organizations such as political subdivisions, civic groups, churches, etc., with volunteers to establish a volunteer policy to provide coverage for volunteers.</li> <li>• WSI also promotes the health, safety, and well-being of employees by providing the following professional safety services:                         <ul style="list-style-type: none"> <li>○ Promoting safety</li> <li>○ Developing safety courses, plans, and programs</li> <li>○ Responding to safety complaints</li> <li>○ Responding to requests for technical assistance</li> <li>○ Conducting courtesy walk-through inspections</li> <li>○ Providing general safety consultations</li> <li>○ Conducting accident and hazard investigations</li> <li>○ Providing internal risk management services and</li> <li>○ Training and education</li> </ul> </li> </ul> <p><b>City, County, Tribal Emergency Management:</b></p> <ul style="list-style-type: none"> <li>• LaMoure County employees participate in the Wellness Program through the Public Employees Retirement System (PERS) and offers employees a free health screening annually.</li> </ul>

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				<p><b>Risk Management Division:</b></p> <ul style="list-style-type: none"> <li>Continuity of Operation Plans were modified to reflect the remote work that was implemented during COVID.</li> </ul> <p><b>ND Department of Transportation:</b></p> <ul style="list-style-type: none"> <li>During COVID-19, NDDOT conducted extra cleaning at Rest Areas, transported medical supplies, collected donated medical supplies, signed for Covid test sites, and provided aircraft support.</li> <li>NDDOT set up a temporary staging site at the Alexander Henry Rest Area in 2021 on I-29 to provide COVID-19 vaccinations to motorists and, in particular, Canadian truckers entering the United States.</li> </ul> <p><b>ND Department of Emergency Services:</b></p> <ul style="list-style-type: none"> <li>Provided synchronized and timely messaging from state agencies though Joint Information Center.</li> <li>Maintain NDResponse online and social platforms to share emergency information with the public, as well as traditional media outreach.</li> </ul>
2019-43	Vaccination	Promote vaccinating the <del>affected</del> -at risk population to induce active immunity to a disease and develop herd immunity or slow disease progression.	Promote vaccinations to prevent and control diseases and stop outbreaks in both humans and animals. It is the best tool for preventing disease in people and animals. Vaccines are not available for all diseases. Vaccines may be in short supply. It may take six months or longer to produce influenza and foot-and-mouth disease (FMD) vaccines specific for an outbreak.	<p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>Preparations and coordination to receive allocations of mpox vaccine from the SNS.</li> <li>Enrolled providers and educated providers to administer mpox vaccine.</li> <li>Refocusing efforts to getting childhood vaccination rates up to date by working with community partners.</li> <li>Role out of COVID-19 vaccinations, tracking of breakthrough cases, implementation of third COVID vaccine doses, planning for COVID-19 booster doses.</li> <li>Extensive work with the Legislature to preserve vaccination laws and defeat bills that would ban vaccination requirements.</li> <li>Established storage, handling and distribution systems for the safe storage and handling of COVID-19 vaccine, including ultra-cold storage capacity.</li> <li>Provided human resources for the COVID-19 vaccine campaign.</li> <li>In progress due to COVID-19.</li> <li>Achieved 90% vaccination coverage for HPV vaccination in adolescents.</li> <li>Nearing 95% rate for school age children on required school vaccinations.</li> </ul>

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			<p>Vaccination programs are labor and resource intensive. Record keeping for the purposes of tracking can be labor intensive.</p>	<ul style="list-style-type: none"> <li>• Ensured post-exposure prophylaxis and vaccination of people who may have been exposed to rabies,</li> </ul> <p><b>ND Department of Agriculture, Division of Animal Health:</b></p> <ul style="list-style-type: none"> <li>• Animal Health conducted two planning workshops, with practicing veterinarians, NDSU Extension and the Veterinary Diagnostic Laboratory representatives to explore capabilities, capacities, and resource gaps in the event of a national or state-wide Foreign Animal Disease (FAD) vaccination campaign. The plan that was created at this workshop was then tested during a multi-state, multi-agency tabletop exercise in May 2020.</li> </ul> <p><b>ND Stockmen's Association</b></p> <ul style="list-style-type: none"> <li>• Coordinate a vaccination information program with the ND Stockmen's Association Feeder Council.</li> </ul> <p><b>US Animal and Plant Inspection Service (APHIS) Veterinary Services (VS)</b></p> <ul style="list-style-type: none"> <li>• Co-conducted a modified tabletop FMD vaccination exercise with the State veterinarians and reserve corps veterinarians in January 2022.</li> <li>• Collaborating with the state in updating its draft FMD vaccination plan and putting to paper its ASF response plan.</li> </ul>
2019-44	Disease and syndromic surveillance	Enact the system collection of the occurrence of disease or disease syndrome.	<p>Surveillance enables the more rapid detection of outbreaks and capable of providing consistent data for comparison over time or by population. Disease reporting is not always timely and may occur after an outbreak has started. It requires cooperation from several areas of the health care industry. There may also be delays due to</p>	<p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>• Data modernization efforts is underway in several areas including electronic case reporting, Reportable Conditions Knowledge Management System (RCKMS), death investigations and linkages of the immunization information system to the electronic disease surveillance system.</li> <li>• Upgrade completed to the disease reporting system (Maven).</li> <li>• Discontinued the use of Dynamics 365 for COVID case investigation and contact tracing.</li> <li>• Continuous upgrades to Dynamics 365 application for COVID data relating to both community testing and case investigations.</li> <li>• The COVID-19 response has shown significant improvement in data collection and analysis. These processes will undergo evaluation for future outbreaks.</li> <li>• Implemented new syndrome definitions to better understand the scope of COVID-19 case distribution in the state.</li> </ul> <p><b>NDSU Extension:</b></p> <ul style="list-style-type: none"> <li>• Developed educational resources and curriculum and disseminated information to individuals with poultry during the HPAI outbreak in spring 2022.</li> </ul>

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			<p>disagreements over or lack of funds available for indemnity payments.</p>	<ul style="list-style-type: none"> <li>• Extension agents aided the ND Department of Agriculture in completing surveillance within the control zones in their counties during the Highly Pathogenic Avian Influenza outbreak in spring 2022.</li> </ul> <p><b>ND Department of Agriculture:</b></p> <ul style="list-style-type: none"> <li>• Animal Health conducted two planning workshops, with practicing veterinarians, NDSU Extension and the Veterinary Diagnostic Laboratory representatives to explore capabilities, capacities, and resource gaps in the event of a national or state-wide Foreign Animal Disease (FAD) vaccination campaign. The plan that was created at this workshop was then tested during a multi-state, multi-agency tabletop exercise in May 2020.</li> <li>• Assisted veterinarians with lab costs associated with testing for unusual disease investigations.             <ul style="list-style-type: none"> <li>▪ Influenza -- Sars-Co-V-2</li> <li>▪ RHDV2 (WS, NDG&amp;F) -- Rabies</li> <li>▪ EHD/BT -- Anthrax</li> </ul> </li> <li>• USAHERDS software included tests and accessions module to better map and monitor spatial disease events over time. Provide health inspections of all attendees at the North Dakota State Fair along with educational efforts to exclude, identify or prevent the spread of infectious diseases of animals, animal owners and spectators. Promoted water and feed testing to prevent and mitigate drought-associated diseases.</li> <li>• Assisted veterinarians with lab costs associated with testing for unusual disease investigations.</li> </ul> <p><b>APHIS VS</b></p> <ul style="list-style-type: none"> <li>• Disseminated information to producers, accredited private veterinarians, animal haulers, and the public on HPAI and ASF concerns.</li> <li>• Reported HPAI surveillance information/numbers to National VS staff and poultry specialists for their use.</li> <li>• Fielded and followed up on sick bird calls made directly to VS and completed field epi reports.</li> </ul>
2019-45	Chemopr ophylaxis	Give people or animals who may have been exposed to a	Chemoprophylaxis can be effective in preventing and controlling disease	<p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>• Updated anthrax resources in Spring 2020.</li> <li>• Guidance issued to providers for prophylaxis for close contacts to COVID cases using monoclonal antibodies.</li> </ul>

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		disease-causing agent an antibiotic, antifungal or antiviral medication to prevent illness.	and outbreaks in both human and animal populations.	<ul style="list-style-type: none"> <li>• In response to three meningococcal cases, provided recommendations and follow up to assure close contacts received chemoprophylaxis.</li> </ul> <p><b>ND Department of Agriculture:</b></p> <ul style="list-style-type: none"> <li>• Coordinate with local, state and federal partners for diseases such as Anthrax for resource information and appropriate use of this process to vaccinate,</li> </ul> <p><b>APHIS VS</b></p> <ul style="list-style-type: none"> <li>• Educate VS staff on availability of antivirals for human use provided in the NVS, should they be needed.</li> </ul>
2019-46	Disease and Infestation Prevention and Control Technical Assistance	Providing technical information to health care professionals, agronomists, vector control boards or others.	<p>The action requires education regarding the regulation pertaining to importation, diagnosis, treatment and management of people, animals or plants relating to the prevention and control of diseases or infestations, including infection prevention. This action focuses on providing the latest science on diagnosis and management of diseases and infestations. It can be difficult to reach all providers with information. Information and best-practice recommendations may be conflicting or not</p>	<p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>• Increasing genomic surveillance for enteric pathogens, SARS-CoV-2.</li> <li>• Provided guidance to health care providers on assessing risk for mpox, appropriate specimen collection and disease reporting.</li> <li>• Issued notification to providers on the emergence of mpox.</li> <li>• State public health laboratory hardening mpox testing capability.</li> <li>• Disease Investigators trained to conduct mpox investigations, contact tracing and to coordinate post-exposure prophylaxis, as indicated.</li> <li>• Division of Immunization prepared for mpox vaccine allocations into the state from the Strategic National Stockpile (SNS.)</li> <li>• Continued mitigation efforts for COVID-19. Scaled up mitigation for a third wave in the fall of 2021.</li> <li>• Lab is conducting whole genome sequencing on COVID positive specimens to identify variants.</li> <li>• Breakthrough cases and reinfections are being tracked.</li> <li>• Technical assistance provided to schools, child care, institutes of higher education, employers/businesses and health care facilities on implementation of COVID-19 preventive measures and response to cases.</li> <li>• Enacted quarantine orders for international travelers in response to COVID-19. (Subsequently lifted in September 2020)</li> </ul> <p><b>ND Department of Agriculture:</b></p> <ul style="list-style-type: none"> <li>• The Animal Health Division is expanding partnerships and providing technical support to ND Stockmen's Association (NDSA), ND Veterinary Medical Association (NDVMA) and industry associations including Farmed Cervid and</li> </ul>



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			available when responding to novel or emerging threats.	<p>Captive Elk for CWD prevention and control, and cattle associations on Animal Disease Traceability (AD)T efforts and Bovine tuberculosis (TB) eradication.</p> <ul style="list-style-type: none"> <li>• Coordinate Import/Export certification and Health Certificates along with Animal Health Control Programs, leafy spurge flea beetle collection for control of Leafy Spurge, and outreach on potential invasive pests like Emerald Ash Borer.</li> </ul> <p><b>NDSU Extension:</b></p> <ul style="list-style-type: none"> <li>• Developed educational resources and curriculum and disseminate information about Highly Pathogenic Avian Influenza and poultry biosecurity during the Highly Pathogenic Avian Influenza outbreak in spring 2022.</li> <li>• Provided professional development to specialist to better equip NDSU Extension to support preparedness and response effort for disaster involving animal mortalities.</li> <li>• Provided expertise and public education on the identification, diagnosis, remediation and prevention of anthrax in animals, and prevent exposure and transmission to people.</li> </ul> <p><b>APHIS VS</b></p> <ul style="list-style-type: none"> <li>• Provide VS guidance/policy support on HPAI and program diseases when communicating with state partners, private veterinary practitioners, the general public, and other stakeholders.</li> <li>• Conduct continuing education presentations on a variety of zoonotic and/or emerging diseases.</li> </ul>
2019-47	Isolation and Quarantine	Separate people, animals or produce who are ill or are contaminated or that may have been exposed from the general population.	Isolation and quarantine are effective for selected situations only and used more extensively in animal health and sometimes in plant health. The action requires human resources to ensure compliance and to provide humane living conditions, and such,	<p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>• Disease investigators trained on isolation and quarantine recommendations for mpox.</li> <li>• Worked with local public health as needed to isolate infectious disease cases as warranted.</li> <li>• Scaled up efforts for case work, including isolation and quarantine in response to the delta variant and the anticipated fall increase in cases.</li> <li>• Implemented policy and procedures for isolation and quarantine of people diagnosed with or exposed to COVID-19.</li> <li>• Hired and trained a team of case investigators and contact tracers to assist with operationalizing isolation and quarantine activities.</li> </ul>

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			is labor and resource intensive. It may require providing a specific location for isolation or quarantine. May require considerable work determining if animals or people have been infected or exposed.	<p><b>ND Department of Agriculture:</b></p> <ul style="list-style-type: none"> <li>Enacted Highly Pathogenic Avian Influenza (HPAI) preparations with state stakeholder groups to significantly improve response by clarifying roles and responsibilities, agency leads/contacts; training on equipment, pre-staging of assets across state and across agency, pre-identified communication channels, agency documentation needs, notifications.</li> <li>Leveraged USDA's early warning system (WS wildlife surveillance to give us a head-start on planning</li> <li>Quarantine animals or plants upon investigation as appropriate until disease risks are mitigated.</li> </ul> <p><b>ND Department of Environmental Quality:</b></p> <ul style="list-style-type: none"> <li>The department worked with other agencies on methods of proper animal disposal.</li> </ul> <p><b>APHIS VS</b></p> <ul style="list-style-type: none"> <li>Work with State partners, industry, and other stakeholders to enact HPAI preparations and response plans.</li> <li>Follow up with affected premises to ensure quarantines/fallow periods are being observed.</li> </ul>
2019-48	Social Distancing	Provide community or population-based strategies to reduce events that lead to crowding during an infectious disease outbreak.	Examples include canceling public events, canceling classes, encouraging sick people to stay at home and discouraging non-essential travel. This is less labor intensive than other mitigation strategies. These measures may result in economic impacts such as canceling concerts or sporting events or closing retail	<p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>Numerous news releases and press conferences regarding social distancing, including some state level policies requiring distance education, closing of non-essential businesses and prohibiting larger gatherings.</li> <li>Enacted the following measures:             <ul style="list-style-type: none"> <li>Waiting rooms: Chairs placed at 6 ft. distance.</li> <li>Hand sanitizer station deployed.</li> <li>Screening process implemented at all Human Service Centers, State Hospital and Life Skills and Transition Center.</li> <li>Joint office space: Installed plexiglass health barriers at staff desks.</li> <li>Mandated PPE use for all staff and clients when in healthcare facilities.</li> <li>Developed PPE use guide.</li> <li>Implemented C-OVID19 home visit guidelines.</li> <li>Completed numerous 'Teams' trainings with staff on screening, PPE use and Preventative Measures.</li> </ul> </li> </ul>

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			<p>centers. Closing daycares and schools can create workforce problems as parents are forced to stay at home with children. From an animal health perspective, this might include closing auction markets, agricultural fairs, and competitions. Closing markets creates possible humane concerns during stop movements. Generally, not enforceable unless there is a legal order issued.</p>	<ul style="list-style-type: none"> <li>○ C-19 Transport Guidelines.</li> </ul> <p><b>ND Department of Agriculture: Removed from mitigation action at agency's request.</b></p>
2019-49	Depopulation of ill or exposed animals or plants	Used to control animal and plant diseases, this is the process of removing ill and/or exposed animals or plants through euthanasia or other methods.	<p>Depopulation is effective in eliminating ill animals or plants, or those that pose a risk for transmitting disease. However, it can be labor and resource intensive, and it often has an economic impact on the producer. Social outcry or poor public acceptance is another concern. Depopulation</p>	<p><b>ND Health and Human Services:</b></p> <ul style="list-style-type: none"> <li>• Worked with the Department of Agriculture on numbers <i>Brucella canis</i> situations in the state.</li> </ul> <p><b>ND Department of Agriculture:</b></p> <ul style="list-style-type: none"> <li>• Conducted mortality management symposium.</li> <li>• Worked with NDSU Extension and the NDDEQ on disposal planning pre HPAI.</li> <li>• Participated in USDA/state cooperative process depopulation exercises.</li> <li>• Supported a county/NDDDES foam drill.</li> <li>• Established memorandum of understanding (MOU)/Memorandum of Agreement regarding staging of resources with NDDOT and NDDES.</li> <li>• Updated and reviewed MOUs with Federal Agencies with regards to depopulation and indemnity.</li> </ul>

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			<p>may also lead to decreased protein availability in the food supply.</p>	<p><b><i>NDSU Extension:</i></b></p> <ul style="list-style-type: none"> <li>• Provided expertise and public education on the disposal of animal carcasses contaminated with anthrax spores and highly pathogenic avian influenza.</li> </ul> <p><b><i>ND Game and Fish Department:</i></b></p> <ul style="list-style-type: none"> <li>• Assisted with lethal removal of feral swine.</li> <li>• Euthanized rabies-vector species with history of human exposure.</li> </ul> <p><b><i>APHIS VS</i></b></p> <ul style="list-style-type: none"> <li>• Performed animal depopulation activities (poultry, cervids, cattle)</li> <li>• Participated in a workshop on depopulation/mortality. management/disposal put on by National VS and industry.</li> <li>• Provided financial indemnity for depopulation and disposal activities, making it more likely that the public would disclose disease events.</li> <li>• Performed carcass and contaminated materials disposal in compliance with state and local regulations.</li> </ul>
2019-50	Control plant disease and infestation	Spray or apply insecticides/ fungicides/ pesticides/ herbicides/ larvicides.	<p>This action is used to control plant diseases and infestations. In some cases of animal and human disease spread by ticks, mosquitoes, or other vectors. It is effective if applied appropriately. Larvicides used to control mosquitoes tend to be more specific in their targets. This can be labor intensive, is not effective in eliminating the problem completely, and not always target specific.</p>	<p><b><i>ND Health and Human Services:</i></b></p> <ul style="list-style-type: none"> <li>• Tick surveillance conducted looking for various species of ticks associated with disease transmission.</li> <li>• Testing ticks for human pathogens.</li> <li>• Mosquito surveillance for west Nile virus and other arboviruses.</li> </ul> <p><b><i>ND Department of Agriculture:</i></b></p> <ul style="list-style-type: none"> <li>• Continue to administer regulatory and non-regulatory pesticide programs; regulate agricultural and non-agricultural pesticide dealers, distributors and users.</li> <li>• Issues periodic news releases to provide guidance to the public regarding safe pesticides and approvals of herbicides.</li> </ul> <p><b><i>ND Game and Fish Department:</i></b></p> <ul style="list-style-type: none"> <li>• Surveys were taken on numerous lakes and Aquatic Nuisance Species were observed in 4 waterbodies. The public was notified, and rules were posted in various places.</li> </ul> <p><b><i>ND Department of Environmental Quality:</i></b></p> <ul style="list-style-type: none"> <li>• Department reviews requests for aerial applications over populated areas. Review includes checking that the aerial applicator plans to use appropriate</li> </ul>

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				<p>product and equipment for work being done as well as the steps they plan to take to notify the public of the activity.</p> <p><b>NDSU Extension:</b></p> <ul style="list-style-type: none"> <li>• Develop and disseminate education materials on crop diseases and management of crop diseases.</li> <li>• Conduct integrated pest management surveys to monitor pest populations. Develop and disseminate information on treatment thresholds and treatment options.</li> <li>• Develop and disseminate educational materials on noxious and invasive plant identification, characteristics and management.</li> </ul>
2019-51	<p>Genetic Modification –  <b>Action Withdrawn by the ND Department of Agriculture and NDDDES for further revision during the next update cycle</b></p>	<p>Used mostly in helping to control plant diseases and pests. This involves the development of hybrid plants that are resistant to common diseases.</p>	<p>Genetic modification is very effective in preventing known diseases. Social acceptance of genetically modified organisms (GMOs) is conflicted along with poor public perception, time, resource, and labor intensive. New technology may cost producers more to implement. One disease may be replaced by another to which the plant is still susceptible.</p>	<p><b>ND Department of Agriculture:</b></p> <ul style="list-style-type: none"> <li>• Recommended discontinuation of this mitigation action along with NDDDES Planning Staff.</li> </ul>

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