

5 Years Later: A Reflection on the 2019 Flood

By Jamie Reinke, PE, CFM

Reflecting on the fifth anniversary of the 2019 flood events, I have been considering whether we, at the Nebraska Department of Natural Resources (NeDNR), or as a state are better prepared if a similar event were to happen, or if we would be ready to respond in a more efficient manner. In some respects, it feels like the event was a lifetime ago, as our state's recovery was impacted by the magnitude of the event as well as the COVID-19 pandemic. In others it feels like the Floodplain Management staff were rotating through shifts at the State Emergency Operations Center (EOC) just yesterday and trying to deliver information and offer assistance to our National Flood Insurance Program (NFIP) communities. One thing is certain, if nothing else, we have all learned many lessons that can be applied to future flood events.

In early March 2019, I vividly recall attending National Weather Service (NWS) briefings predicting a major storm event to sweep through Nebraska. I remember conversations surrounding the projected peaks on the many stream gages in the eastern

portion of the state and feeling that it was nearly unbelievable that this prediction would soon become our reality. I still have painful images of water rescues trapped in my memory and recall terrifying accounts of the first responders' dangerous attempts to reach trapped residents. All Nebraskans reeled from the loss of life, livestock, homes, infrastructure, and livelihoods. I'm not sure these memories will fade completely, even with time. Were we prepared in 2019 to face what was ahead? I know I was not, but I also know that the Floodplain Management team rose to the challenge and did our very best to staff the EOC, to provide resources to communities, to coordinate with the Nebraska Emergency Management Agency (NEMA) and the Federal Emergency Management Agency (FEMA) to start the recovery process as soon as we were able. The recovery was not quick, nor was it painless, and recovery continues today in countless areas.

So now that we have surpassed the five-year anniversary, are we more prepared than we were in 2019? I suspect I am not in the minority to

say that I wish that we were better prepared, I wish that our communities were fully through recovery, that more mitigation projects had been implemented, and that, across the region, we would never see an event of this magnitude ever again. The reality is that disaster recovery is not linear, mitigation projects and community resilience is not achieved as quickly as anyone would like. These processes take time, resources, and persistence. We have learned lessons along the way. The Floodplain Management team is certainly more prepared to respond to a flood disaster because we have gained knowledge that only experiencing an event can teach. In 2019, we had one staff member that had spent time in the EOC. Today we have multiple people who regularly coordinate with the EOC, but who were also part of serving in the EOC during the 2019 event.

In addition, as a direct result of the 2019 event, NeDNR and NEMA partnered to obtain Hazard Mitigation Grant Program (HMGP) funds to develop and launch the **Nebraska Real-Time Flood Forecasting** (NeRFF) tool. In 2019 one of the most common requests our agency received was for inundation mapping of the areas

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2024 CRS Symposium

University of Nebraska - Omaha
Barbara Weitz Community Engagement Center
April 15 1:00 PM - 5:00 PM
April 16 8:00 AM - 12:00 PM

[Click Now to Register](#)

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Looking westerly over the City of Valley, NE. In March of 2019, the city became an island and relied on over \$3 million in Federal aid to repair streets and sewer lines.

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that were being impacted. Inundation mapping is not available at the click of a button, or it was not in 2019. Those boundaries can take hours or even days to run, now with NeRFF for 47 gaged locations we have inundation boundaries and depth information available with the click of a button for many communities. This tool is available to anyone with a computer, tablet, or smart phone allowing communities and residents to better understand their risk, to predict where flooding is likely to occur based on predicted stages, and to prepare for flood events in advance. NeRFF also contains layers including radar information from National Oceanic and Atmospheric Administration (NOAA), gage information from NeDNR, NWS and the United States Geological Survey (USGS), high resolution camera data from USGS, and much more to provide most resources that are needed during a disaster in one location. Our goal is to continue adding to this tool

and provide more inundation map coverage throughout the state.

Also, in response to the 2019 event, NeDNR was tasked with developing the **State of Nebraska Flood Hazard Mitigation Plan**. This plan contains a wealth of information which local communities can use to advance their flood mitigation efforts. Specifically, the plan contains detailed historic flood event data separated by river basin, risk statistics, mitigation ideas and resources, and funding and service providers. The benefits of this effort were many but focused primarily on increasing Nebraskan's understanding of flood risk, incorporating community concerns into future planning, giving locals a plan to build upon, and to position Nebraska and our communities to obtain more funding. Having access to this information all in one place will certainly be valuable in future flood disasters.

The Nebraska Silver Jackets team, which the Floodplain Management

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You Can Protect Endangered Species with the NFIP

By Adele Phillips, CFM

Our floodplains provide both seasonal and permanent homes to many important plant and animal species whose populations are at risk. Development in our floodplains can easily cause negative impacts on at-risk species through the destruction or modification of critical habitat. How can a floodplain administrator help protect endangered species? Both Nebraska and FEMA have developed tools to help an administrator evaluate their decisions.

State Tools

The Nebraska Game and Parks Commission (NGPC) has responsibility for protecting endangered and threatened species under authority of the Nongame and Endangered Species Conservation Act (NESCA) (Neb. Rev. Stat. § 37-801 to 37-811). Under NESCA, it is unlawful (except as provided in law) to export, take, possess, process, sell or offer for sale, deliver, carry, transport, or ship any species listed

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Due to habitat loss and over-trapping, River Otters were extirpated from Nebraska by 1904. In the late 1980s, the NGPC began a reintroduction program, and the state's river otter population is relatively secure. However, habitat loss remains an issue. Photo courtesy NGPC.



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team is actively involved in, has been able to capitalize on the partnerships to consolidate several key resources for communities to access or use in future studies or planning efforts. The first is the **High-Water Marks Interactive Web Map**. Not only was the team able to include the high-water marks that were collected for the 2019 event, but older events, including conversion of some paper records, were included in the map. The team obtained funds to add to the high-water mark signage throughout the state and the sign locations are also identified creating a platform containing statewide high-water mark resources in one location. The signs also serve as a historical marker of past flood events, thereby increasing flood awareness to the community and visitors alike.

The Silver Jackets team also produced the **Nebraska Flood Mitigation History Web Map and Story Map**, after the 2019 flood, which compiles mitigation project history dating back to at least 2000. The project data collection included project type, cost, project partners, funding source, and other valuable

data to include in an interactive map that is searchable allowing communities to see the variety of flood mitigation projects that have been funded and how. Ideally, this resource will serve to assist with brainstorming mitigation project ideas that may benefit communities throughout the state, and we intend to update the project list regularly. The story map walks users through the project and how to use the interactive map.

Lastly, as flooding was occurring in 2019, the Floodplain Management team knew communities would need a guide for the process of conducting substantial damage estimates on a larger scale than we had previously seen. We did not have an established manual to guide floodplain administrators through this process. The team compiled a document in a matter of hours based on what other FEMA Region 7 states were using but knew we would need to tailor this resource to Nebraska community's needs in the immediate aftermath of a hazard event. NeDNR

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as endangered or threatened. NGPC reviews projects pursuant to NESCA and offers technical assistance and coordination to avoid and minimize impacts to state-listed endangered and threatened species.

Environmental Review Website

To help project proponents evaluate the threat development may pose and request a project review, NGPC has developed an Environmental Review website, **located here**. At this site, project proponents will find several resources, such as:

- Project impact evaluation checklists
- Sensitive habitat maps
- Guidelines for avoiding, minimizing, and mitigating impacts, and
- Environmental review request information.

Conservation and Environmental Review Tool (CERT)

NGPC has created an automated review tool called the Conservation and Environmental Review Tool (CERT). This tool allows project proponents to create a project map and submit information to help project proponents determine if they need further consultation with NGPC. The tool may be found here: **cert.outdoornebraska.gov**

Note that the CERT review only covers state-listed species. Under the Endangered Species Act (ESA), plant and animal species may be listed as either endangered or threatened. "Endangered" means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened" means a species is likely to become endangered within

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Ice was a major contributing factor to the damages caused by the March 2019 flooding. Here, ice has flowed onto Highway 12, west of the Village of Niobrara. Highway 12 repairs in the region are still incomplete.

Floodplainers Network in Broken Bow

By Elijah Kaufman

The NeDNR Floodplain Management Division hosted the 2nd Annual Floodplain Day in Broken Bow, Nebraska on Thursday, February 22. Floodplain administrators, planning and zoning officials, community clerks, and emergency managers attended from every corner of Nebraska to celebrate the importance of sound floodplain management, to learn about the resources available to them from other local, State, and Federal partners, and to study the intricacies and challenges of floodplain administration. This conference-like event also served as an excellent networking opportunity for floodplain administrators to discuss their experiences with one another. More often than not, nods of agreement would spread across the room as challenges, frustrations, and successes were expressed during discussions or questions for presenters.

The day consisted of presentations from FEMA Region 7, Nebraska

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Attendees gather round for the table top exercise at Floodplain Day. The exercise presented a flooding scenario from the City of Ogallala, based off of an actual flood event that occurred there in 2002.

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the foreseeable future. States have their own ESA-type laws, so species can have differing risk statuses at the federal and state levels.

FEMA Tools

In consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), FEMA has developed the NFIP's Endangered Species Act (ESA) Section 7(a)(1) Conservation Action Program to help communities protect habitat essential for threatened and endangered species and enjoy the benefits of naturally functioning floodplains. The NFIP ESA Conservation Action Program has three components for promoting the conservation of listed species and their habitats.

Floodplains and Wildlife Conservation Webpage

The goal of the webpage is to build awareness among communities around the benefits of threatened and endangered species and habitat conservation for improving natural functions of floodplains. You can explore the website here:

<https://www.fema.gov/floodplain-management/wildlife-conservation>

FRESH Web Map

Communities can use the Flood Risk and Endangered Species Habitat (FRESH) web-based mapping tool to help communities identify where floodplains and the habitats of threatened and endangered species coincide. To access the map, go to:

<https://www.fema.gov/floodplain-management/wildlife-conservation/fresh-mapping-tool>

Community Rating System (CRS) Credit

FEMA developed two new sub-elements within CRS to incentivize activities that benefit natural floodplain functions and improve conditions for threatened and endangered species and their habitats. CRS communities can get

credits for the developing floodplain species assessments (FSAs) and floodplain species plans (FSPs) in the existing Activity 510. FSAs and FSPs complement the suite of other CRS activities that credit communities' efforts to preserve natural floodplain functions.

We advise you, our floodplain administrators, to require project applicants to utilize the above resources and provide you with the documentation as part of your floodplain management practice. The resources are easy to use, quick, and they will help you cover your bases when it comes to protecting our natural resources. Please don't hesitate to reach out to us with questions. ■

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has since completed the **Substantial Damage Assessment Handbook** to be immediately available to communities as the need arises. The handbook is reviewed and updated annually, and additional resources are being prepared for communities each year.

While we hope these resources never need to be tested, with their availability in the event of a flood disaster, I am confident that the Floodplain Management team and the communities we serve are better prepared than we were in 2019. The Floodplain Management team is prepared to assist communities through training, technical assistance, and providing updated information throughout the state at any time throughout the year. However, we do not intend to maintain the status quo, we will continue to look for ways to better serve our state, our communities, and other partners to establish a state that is more resilient to flood events in the future. We envision a future where all Nebraskans and their communities are **#NebraskaReady** before a flood, rather than **#NebraskaStrong** after. I hope you will join us in our efforts. ■

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Emergency Management Agency, Nebraska Silver Jackets, US Army Corps of Engineers - Omaha District, National Weather Service - North Platte, Nebraska Department of Environment and Energy, Nebraska Game and Parks Commission, Hall County Emergency Management, and Jefferson County Emergency Management. After these presentations, NeDNR hosted an emergency management tabletop exercise designed following FEMA's Homeland Security Exercise and Evaluation Program.

Thank You

Thank you to those who made the trip to Broken Bow for sharing your perspectives and for dedicating your time to learning about floodplain management. We hope to see you all again next year.

We would also like to extend a "thank you" to our partners for providing their invaluable insight into other aspects of floodplain management not always directly addressed by NeDNR.

One last "thank you" goes to the City of Broken Bow for allowing NeDNR to host the event in their Municipal Building Auditorium. The setting provided a roomy and efficient venue for this event, and we could not have asked for better accommodations.

If your community is interested in hosting the 3rd Annual Floodplain Day in early 2025, please reach out to Michele.York@Nebraska.gov. ■

Your Suggestions Welcome!

What common permitting situations you have experienced in your community and would like to see discussed in the NeDNR Floodplain newsletter?

Please send suggestions to Adele Phillips at Adele.Phillips@Nebraska.gov

2024 CRS Symposium Comes to Omaha

FEMA's Region 7 states--Iowa, Kansas, Missouri, and Nebraska--are hosting the 2024 Community Rating System (CRS) Symposium on April 15 from 1:00pm-5:00pm and April 16 from 8:00am-12:00pm. The Symposium will feature introductory and advanced sessions on various CRS topics, including information on the benefits of CRS participation, obtaining additional points for credited activities, and promoting floodplain management to various stakeholders. Communities may attend virtually or in-person at the University of Nebraska - Omaha Barbara Weitz Community Engagement Center. To register, visit the NeDNR Training and Workshops Page here: <https://dnr.nebraska.gov/floodplain/training-and-workshops>

Regulating Your Floodplain Using 2D Data

By Deanna Ringenberg, PE, CFM

NeDNR is now using 2-Dimensional modeling methods for all new floodplain mapping projects. 2D floodplain mapping creates flood risk maps that allow the natural flow of water in two dimensions, and unlike previous methods considers the terrain of the entire watershed. This provides a more detailed and accurate picture of where flood risk exists within a watershed.

NeDNR is producing Base Level Engineering (BLE) and effective maps using this method. BLE uses best available data to create maps that are not for regulatory NFIP purposes but can be used to plan development and understand risk. These maps can be updated in the future to develop effective maps.

Effective 2D maps can be used the same way as effective maps that have been issued in the past. Effective 2D maps can be used to determine if property is in the floodplain and Base Flood Elevations (BFE) for these areas can be requested by the floodplain administrator from the NeDNR at no cost. Effective maps that were created using the old 1D method will continue to be valid unless a mapping project is finished.

2D Zone AE will continue to include floodways but cross sections will be replaced with BFE lines. In the Flood Insurance Study, a floodway data

table will be provided but a profile will not. Elevations in Zone AE can be determined from the BFE lines or from the model directly. These areas will still need no rise certifications for development in the floodway.

BLE and effective 2D maps will be available to view on our website, ne.gov/go/floodriskmap, and our staff is always available to help citizens and officials interpret our maps. ■

Riverine Flooding is the nation's 3rd costliest natural disaster.

[Find an Insurance Provider](#)



Training and Events

04.23 - .25 ■

L0105 Public Information Basics

8:00 AM - 5:00 PM
Ponca Tribe of Nebraska Offices
Lincoln, NE

This course introduces participants to Public Information Officer (PIO) duties along with basic information about the Integrated Public Alert and Warning System (IPAWS). The PIO topics covered include: communication tools and resources encompassing social media; effective communication; preparing the community through outreach and other means; and communication in an incident. The IPAWS topics covered include: system structure, and preparing alert and protocol messages. The classroom course features exercises to reinforce knowledge and build basic skills. To learn more, visit this [link](#).

05.21 - .22 & 07.18 - .19 ■

2024 Tools of Floodplain Management

Day 1: 1:00 PM - 5:00 PM
Day 2: 8:00 AM - 3:00 PM
Jefferson City, MO

The 2024 Tools of Floodplain Management workshop is a 2-day course designed for floodplain administrators. It covers various important issues as well as day-to-day activities, incorporating updated NFIP information and forms. This course is designed to provide basic knowledge of the National Flood Insurance Program (NFIP). We recommend that those wishing to take the Certified Floodplain Managers (CFM) exam complete the Tools of Floodplain Management workshop prior to taking the CFM exam. There is no registration fee and this course has been approved for 9 Continuing Education Credits (CECs) for Certified Floodplain Managers. For more information visit this [link](#).

05.14 □

Substantial Damage Estimation Overview

9:00 AM - 10:00 AM

This virtual class is for officials responsible for conducting or delegating substantial damage assessments after flooding or any other damage to structure in the floodplain. This class will give an introduction and overview of FEMA's Substantial Damage Estimator software and how it can be used to produce consistent, organized, and defensible damage assessments. To learn more, visit this [link](#).

06.23 - .27 ■ □

2024 ASFPM Conference

Salt Lake City, UT

Join the Association of State Floodplain Managers (ASFPM) at the world's largest and most comprehensive floodplain management conference. This year marks the 48th annual conference and features more than 200 presentations on mapping, mitigation, and NFIP related topics. You can register to attend in-person or virtually. Don't miss NeDNR staff who will be presenting there! For more information visit this [link](#).

Save the Date



2024 NeFMSA Annual Conference

July 17 - 18, 2024
Younes Conference Center
Kearney, NE

To learn more, visit this [link](#).

April

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May

Su	M	Tu	W	Th	F	Sa
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		.21	.22			

June

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.23	.24	.25	.26	.27		

Want More Information?

Visit the NeDNR Floodplain Management website at: <https://dnr.nebraska.gov/floodplain>

Check out our Interactive Floodplain map at: <http://ne.gov/go/floodriskmap>

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