

Floodplain Management Today

NEBRASKA DEPARTMENT OF NATURAL RESOURCES FLOODPLAIN SECTION

MARCH 2017

1978 Flooding in Valley

By Mitch Paine, CFM

Leading up to the weekend of March 19th, 1978, residents of Valley, just west of Omaha, grew increasingly worried about the risk of ice jams forming on the nearby Platte River. River ice was growing to nearly 4 feet thick in some areas, and late March brought an unseasonably warm spell. State officials, local emergency managers, and riverside residents watched closely as the ice started to break up into giant chunks and flow downstream.

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Then on Sunday, March 20th, the large ice chunks, some larger than cars, blocked up in a river bend just near Valley, sending a tremendous amount of water and ice racing through town and surrounding farm fields. Union Dike, built after devastating floods in 1912, was quickly breached and rendered ineffective. A volunteer firefighter, Bob Yasen, was sandbagging when the water broke through and said, “it looked like mountains of ice. The ice was jammed higher than the dike. It was like a road, a crack, like breaking your leg.”



Figure 1. Floodwaters cover the city of Valley (photo by Omaha World Herald)

Quickly, 3 - 4 feet of floodwater covered North Spruce Street, which runs through downtown. Rescue teams traversed the city in boats and amphibious vehicles to help elderly residents trapped in their homes by floodwaters. Other residents and emergency crews sandbagged vulnerable critical infrastructure to lessen the impact as waters continued to rise in town. Over 100 members of the National Guard were called in by the governor to help with the evacuations in Valley. The entire city of 1,600 was evacuated to Boys Town and

nearly all utilities were unavailable. “The water’s contaminated and soon the sewers will be backed up. The gas has also been shut off. The town isn’t fit to be lived in tonight,” said Mayor Carroll Smith, who declared a state of emergency.

Crews working with the county emergency managers dropped dynamite from helicopters in an attempt to open the channel for ice and incoming floodwaters to flow downstream. The Omaha World Herald reported on March 21st, “Frequent explosions of dynamite could be heard along the Platte River valley as evacuations were under way, giving the area a war zone atmosphere.”

Floodwaters throughout the Platte River valley from Ashland to North Bend overtopped, punctured, and destroyed many dikes and levees. In places like Ginger Cove, the floodwaters flowing over the dike inundated homes up to the second level. In other places, the overtopped dikes provided “relief valves” for floodwaters to spread out and reduce the downstream impacts.

The Union Pacific railroad between Fremont and North Bend allowed a large hole to be blasted in the railroad track embankment to allow floodwaters to escape and flow along Highway 30, offering relief to downstream communities.

Valmont Industries in Valley saw floodwaters completely deluge the plant, strewing irrigation pipes about the plant yard like matches. The company’s nearly 1,000 employees did not report to work for most of the week.

As residents started to return to Valley on that Wednesday, they came back to a myriad of challenges. Over 100 miles of roads in Douglas County alone were covered and made impassable by floodwaters. The City of Valley declared a boil order for all drinking water as the water supply system became contaminated and community officials thought the order would last up to three weeks. Residents also faced the lack of most other utilities including electricity and gas.



Figure 2. Ice floes conquer Highway 79 south of North Bend (Photo by Omaha World Herald)

In addition to services being largely unavailable, residents started to pick up the pieces of damaged homes, lost possessions, and an uncertain future. Mayor Smith said that only 29 of the 450 homes in Valley carried flood insurance and nearly every home suffered some flood damage. The Mayor said in an interview with the Omaha World Herald that he had recently purchased flood insurance, but “the policy didn’t go into effect for 15 days after I bought it. That was March 22, and the flood hit March 20.” He had to pay for all of the flood damage out of his own pocket. Many other residents encountered a similar situation, left without financial protection and having to find ways to repair using their own money.

According to the NFIP records, there were 31 flood insurance claims made in Valley and in the surrounding lake developments. Over \$200,000 in losses were paid out, nearly \$750,000 in 2017

dollars. Overall in the 1978 event, 139 claims were made with nearly \$1 million paid out, which would be \$3.74 million in 2017 dollars.

Throughout the Platte River valley, 34 homes were completely destroyed, 1,198 were damaged, and 392 mobile homes were destroyed. A disaster declaration of \$67 million was sent by then Governor Exon to President Carter, which would be over \$250 million in 2017 dollars. Nearly \$23 million of the disaster declaration involved damage to private property.



Figure 3. Water pours through Ginger Cove, a sandpit lake housing development near Valley (Photo by Omaha World Herald)

After the flooding, a number of controversies sparked, including accusations by property owners in the lake development Ginger Woods, who charged that poorly designed roads caused flooding to be worse on homes. A debate raged on whether or not a road on the edge of the development was too built too low and could have alleviated some flooding. The issue highlighted the interconnectedness of flood control structures in the area.

The major ice jam flooding from 1978 provides today's floodplain managers and floodprone residents many lessons. First, while the Platte River may not flood very often, ice jams pose a real threat every spring and can happen with little warning. Large swaths of land can be inundated in a matter of hours and catch property owners unaware. Development decisions impose lasting consequences on current and future property owners and communities, the effects of which may only be seen in times of major flooding. During an ice jam, there is no time to question how high a home has been built above the base flood elevation. Every time someone comes in for a permit, we have the opportunity to help keep that building safer from flooding for all future residents or tenants.

Second, the 1978 flooding highlights the importance of flood insurance. While many find flood insurance to be an expensive bill to pay, flood insurance is more affordable than facing an unexpected \$60,000 repair bill after a flood. Almost every policy requires a 30-day waiting period before taking effect, largely to encourage continuous coverage and avoid having property owners sign up the day before an impending flood. As Mayor Smith, who is currently serving a second stint as mayor 40 years later, found the waiting period is an important aspect of any flood insurance policy.

Lastly, historical floods show the value and importance of floodplain management as well as the need to help our citizens understand flood risk. Floodplain managers play a role in helping get the word out about the importance of flood insurance, obtaining floodplain permits, specific flood risk in your community, and the need for being prepared. Flooding affects large swaths of communities, not just one house at a time, so ensuring the entire community is prepared is important. The City of Valley is much safer after having been through the 1978 flooding and the City today has a proactive floodplain management program. Every time our state sees flooding, we have the opportunity to learn lessons and prepare us for the next flood.

Permitting Storage Tanks

By Chuck Chase, CFM

In the December Floodplain Management Today, we focused on the definition of a building. As you should recall, a building is defined as “a walled and roofed building, *including a gas or liquid storage tank*, that is principally above ground, as well as a manufactured home.” Therefore, any gas or liquid storage tank is considered a building for floodplain management and must meet the standards for buildings.

Your local ordinance requires that all new construction and substantial improvements of non-residential buildings, including gas or liquid storage tanks, within the floodplain “...have the lowest floor (including basement) elevated to or above the base flood level or ...be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.”



Figure 4. These oil tanks are considered structures

Most storage tanks can be considered floodproofed and watertight, but they also need to be anchored to resist the effects of buoyancy. Unanchored gas or liquid fuel tanks commonly become buoyant during a flood. They damage homes and property as they float downstream. Tanks floating downstream can cause problems to public infrastructure like bridges and culverts, particularly if any catch fire or explode. In the 2015 flooding in Lincoln, the railroads were concerned about propane tanks that were found floating along the tracks, potentially causing issues to trains or other railroad infrastructure.



Figure 5. Typical anchoring system (photo used with permission from Tarantin Industries)

Fuel oil tanks can provide additional risks during a flood. If a fuel oil tank is unanchored, it can tip and release fuel oil through its vent and filler tubes. Most fuel oil tanks have a hinged filler cap and even if padlocked would allow oil to escape and water to enter the tank. Even if a fuel oil tank is anchored, it is important to ensure a screw-on cap with gasket is installed, and if the top of the tank is below the base flood elevation (BFE), the vent tube should extend to one foot above the BFE.

One of the most cost effective ways to anchor a gas or liquid fuel tank is to use a ground auger anchoring system. A 4 foot ground auger anchor has a holding strength of 5,000 lbs. Four augers and over the top straps will provide 20,000 lbs. of strength and should be more than adequate for any home propane or fuel oil tank.

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The cost of cleanup of contaminated property, well water contamination, or a basement full of fuel oil residue after a flood event can be exorbitant. In 2003, Hurricane Isabel caused major spillage and leakage of home fuel oil tanks and cost over \$15 million to clean up.

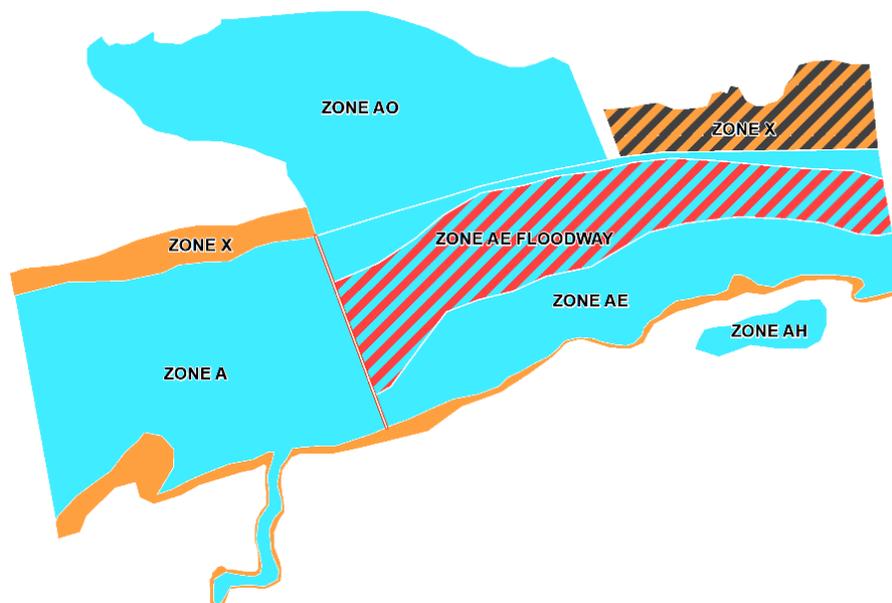
Floodplain administrators play an important role in ensuring any gas or liquid storage tank is installed as safely as possible. By treating them as buildings, storage tanks will have to be floodproofed and anchored, which will make them safer. Having all storage tanks anchored means less debris and damage during flood events.

Resources:

- [“Anchor Fuel Tanks,”](#) FEMA Publication
- [“Anchoring Home Fuel Tanks,”](#) Video created by FEMA

NeDNR Interactive Map Changing Look

Starting in April, the [NeDNR Floodplain Interactive Map](#) will be changing the look of the floodplain layers to be more in line with the FEMA standards for displaying flood zones on Flood Insurance Rate Maps. Our existing look shows flood fringe areas in various shades of blue, the floodway as pink, and the 0.2% annual chance flood zones as yellowish. Starting soon, the flood zone layers will look like the image below.



The floodway will be shown with a hashed red area, while the Zone X Protected by Levee will be shown with a hashed black area. The various A Zones will not be distinguished with different colors, but the user will be able to click on the zones to display their labels.

By changing to this color scheme, we will better integrate with the style of the new Flood Insurance Rate

Maps. It also means changes to the backend, which will mean faster loading maps. Please let your citizens or stakeholders know about the changes to the look of our map.

If you have any questions, please do not hesitate to contact any of the NeDNR staff.

2017 Marks 50 Years of Floodplain Management

By Mitch Paine, CFM

This year, we celebrate 50 years of floodplain management in the state and remember back to when the Nebraska Legislature enshrined into law the need for floodplain management to keep our communities safer from flooding.

The Nebraska Legislature passed the Nebraska Floodplain Regulations Act in 1967, as LB893, which predates the establishment of the National Flood Insurance Program in 1968. The Act established the authority for floodplain management in the Soil and Water Conservation Commission, the predecessor to NeDNR. The Act directed the Commission to create a floodplain management program, to establish minimum standards for land use regulations in floodplains, and to create flood maps. The Act also instructed the Commission to provide assistance to local governments and other government entities.

LB893 acknowledged the importance of floodplain management and consisted of three parts. The first part stated that the Commission should delineate floodplains of all watercourses and evaluate the potential for flooding. The second part directed the formulation, administration, and enforcement of regulations based on collected technical data. The third part of the Act included a requirement to continuously update and revise regulations when new data becomes available or physical conditions change.

The Commission adopted specific objectives for its activities:

- Preventing loss of life and property damage
- Reducing public emergency spending
- Encouraging cautious development of areas within floodplains
- Preventing structures built that would increase flood heights
- Protecting landowners and potential buyers from purchasing particularly vulnerable property in a high flood hazard area
- Minimizing development that would require expensive protective measures like reservoirs and levees
- Counteracting the impediments to community growth caused by flooding history

The responsibility for enforcement of floodplain regulations rests largely in local political jurisdictions under the Act, but the state often stepped in and issued floodplain development permits in the absence of local action in the early years. Additionally, the Commission gave responsibility to local governments to educate their citizens about flood hazards as well as to prepare plans for their jurisdictions.

In 1972, as the state reorganized the many soil and water conservation districts, reclamation districts, irrigation districts, mosquito abatement districts, and others into the 24 natural resources districts, and the Soil and Water Conservation Commission became the Natural Resources Commission. The Natural Resources Commission existed alongside the Department of Water Resources, which at the time held the responsibility for water rights for irrigation, power, and other purposes. The DWR had permitting responsibility for floodplain development permits.

In 1982, both the Natural Resources Commission and the Department of Water Resources introduced floodplain management bills into the Legislature, via state senators. The following year, Senators Wagner and Peterson introduced LB35, which made the Natural Resources

Commission the lead agency on floodplain management. The Commission was granted authority to coordinate floodplain management activities, conduct educational outreach, provide technical assistance to local governments, prepare maps, adopt minimum standards for local floodplain regulations, and serve as the primary repository for flood data. The Department of Water Resources was given authority to regulate counties that had not been mapped. The new system, as prescribed by LB35, streamlined floodplain management and better complied with the NFIP and other federal programs. In introducing the bill, Senator Wagner explained to the committee that the bill was based on four principles:

- Maps showing where flood hazards are located are the cornerstone of effective floodplain management. Maps must then be made available to the public.
- Cities, villages, and counties should participate in the National Flood Insurance Program to protect property with flood insurance.
- The State should provide information and should encourage the implementation of local floodplain management programs and regulations.
- Planning and construction of state-owned facilities should serve as examples of proper floodplain management practices.

The bill passed and signed by then Governor Kerrey in 1983. Essentially, under the 1967 law, the state thought that flood maps could be created relatively quickly for all parts of the state and then communities would be eager to adopt regulations based on the maps. Unfortunately, the map production involved more work than expected and only a small percentage of the state was mapped by the 1980's. Communities also were not keen on implementing additional regulations. The state had stepped in and regulated development in floodplains in mapped communities, but realized that the program was more effective if local jurisdictions took the role on themselves. LB35 acknowledged that and provided for full local control of floodplain management programs and state entities stepped back to study flood risk and provide technical assistance to communities. This technical assistance helped communities implement their local floodplain management regulations. After this legislation, the rate of participation in the National Flood Insurance Program increased and by the end of the 1990's, over 300 communities had joined the program.

In 2000, LB900 was passed to merge the Natural Resources Commission and the Department of Water Resources into one agency, the Department of Natural Resources. The bill maintained the Commission, made up of 16 members, and gave the responsibility of floodplain management to the director of NeDNR and the agency's staff.

Today, NeDNR continues to map floodplains, provide technical assistance, and coordinate the NFIP at the state level. Nebraska has 409 participating communities that have agreed to manage development in their floodplains. The relationship between NeDNR, local governments, other state agencies, and federal agencies continue to grow stronger to support our floodplain management programs throughout the state for the next 50 years.

Mark Your Calendar

If you have questions about any of these opportunities, please contact Chuck Chase or Mitch Paine.

ASFPM National Conference 2017

The Association of State Floodplain Managers will be holding their National Conference next year in Kansas City, Missouri from April 30 – May 5, 2017. This is a great opportunity for everyone in Nebraska to attend the prime flood conference. Attendees will hear from FEMA HQ staff, can learn from local floodplain administrators from around the country, and network with flood professionals from all over the world.

To learn more about the conference and to register, click here: www.asfpmconference.org.

Basic Floodplain Management Workshop – South Sioux City; Tuesday, April 25th

The Nebraska Department of Natural Resources will be holding their Basic Floodplain Management Course from 8:30-noon. It will be held at the in South Sioux City Law Enforcement Center, 701 West 29th Street. This basic course will cover the permit process, map reading, and elevation certificates. This is a great opportunity for new floodplain administrators to learn the basics of floodplain management. It is also a great refresher for floodplain administrators who desire a basic refresher.

Advanced Topics in Floodplain Management Workshop – South Sioux City; Tuesday, April 25th

The Nebraska Department of Natural Resources will be holding their Advanced Topics in Floodplain Management Course from 1:00-4:30pm on April 25. It will be held at the in South Sioux City Law Enforcement Center, 701 West 29th Street. This advanced course will provide in-depth discussion of pertinent technical bulletins, substantial improvements, and substantial damage. It will also have a forum of special topics. This course is a good opportunity to go beyond the basics in your understanding of the NFIP.

To register for the Basic or Advanced course send your name, organization, phone, and e-mail address to: chuck.chase@nebraska.gov or call 402-471-9422

NeFSMA Annual Conference 2017

The Nebraska Floodplain and Stormwater Managers Association will host their annual conference on Thursday, July 13th at the Lied Lodge & Conference Center in Nebraska City. There will be many opportunities for floodplain management training, CFM credits, and networking with other professionals in floodplain management. Please visit www.nefsma.com for more information.

National Flood Insurance Program Training Videos

NFIP Training courses for insurance agents, claims adjusters, surveyors and community officials are being offered through the FEMA Emergency Management Institute (EMI) Independent Study (IS) Program. IS courses are open and free to anyone. Floodplain administrators may find these videos helpful.

The Independent Study catalog is available at <http://training.fema.gov/is/crslist.aspx> . Course exams require a FEMA Student Identification (SID) Number, which can be obtained at <https://cdp.dhs.gov/femasid> .

WANT MORE INFORMATION?



Visit NeDNR's Floodplain Website at
<http://dnr.nebraska.gov/fpm>



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