# **Implementing Watershed-Scale Flood Mitigation Projects**

## Grand Island, Nebraska



### **QUICK FACTS**

Population <sup>1</sup>
Flood-Related Disaster <sup>2</sup>
% of City Properties at Risk <sup>3</sup>
Avg. Cost of Flood Insurance Per Household <sup>4</sup> \$1,424
FEMA Community Rating
System Score (2019) <sup>5</sup> Not a participant





## CHALLENGES

rains. The city's geography, including its flat terrain and multiple rivers, lends itself to watershed-scale, regional logistical challenges. To be successful, the project team in Grand Island had to prioritize project management skills, build support in multiple communities, and



### **LESSONS LEARNED**

#### Watershed-scale projects require proactive, sustained communication.

The Upper Prairie - Silver - Moores project ran into several unexpected challenges, including cost increases and contamination cleanup. Project leaders credited their monthly stakeholder meeting for helping to overcome these barriers and raise additional revenues.

#### **Communities benefit when their** local projects are supported by regional and state partners.

Nebraska's natural resources districts are unique. They are organized around river basins and supported through a property tax, both of which strengthen their capacity to coordinate watershed-scale projects. The Central Platte Natural Resources District has been an important partner for planning and implementing mitigation projects that decrease flood risk in Grand Island.

#### Strong project teams are needed to respond to community input and identify the right solution.

When Grand Island residents objected to a mitigation plan proposed by the U.S. Army Corps of Engineers, the Central Platte Natural Resources District advocated on behalf of the community. The district was willing to go to bat for the community, refusing funding that did not meet their needs and reimagining the project to address community concerns.

#### **OVERVIEW**

Rainstorms cause flooding on the Wood River and Upper Prairie - Silver - Moores creeks in and around Grand Island. During a major flood in 2005, seven inches of rain fell in less than eight hours, leading to dozens of home evacuations in Grand Island and millions of dollars in damages throughout the county.

Grand Island has addressed its flood risk by participating in regional, watershed-scale projects, two of which are the Wood River Diversion project and—the most recent one—the Upper Prairie - Silver - Moores project.

Funding Highlights: Upper Prairie - Silver - Moores Project	
Local	State
\$671,000 (Hall County)	\$14.8 million (Natural Resources Commission)
\$335,000 (Merrick County)	
\$6.2 million (Grand Island)	
\$6.2 million (CPNRD)	

#### **GRAND ISLAND BENEFITS FROM TWO WATERSHED-SCALE FLOOD PROJECTS**

#### 1. The Wood River Diversion Project

The Wood River Diversion project was a collaboration between the U.S. Army Corps of Engineers, the Nebraska Department of Natural Resources, the Central Platte Natural Resources District, Hall and Merrick counties, the City of Central City, and the City of Grand Island. It consists predominantly of small levees, as well as a flood control gate with a low levee that diverts water six miles to the Platte River to protect the southern part of Grand Island. The 2005 flood occurred shortly after the project's completion and illustrated its value. While the project cost \$15.5 million to construct, it prevented an estimated \$23 million in damages in just this one flood event.<sup>6</sup>

#### 2. Upper Prairie - Silver - Moores Project

In 2004 the Central Platte Natural Resources District, the City of Grand Island, and two counties signed an interlocal agreement to build the Upper Prairie -Silver - Moores project. The project included a series of dry dams, a levee, and water detention cells. The project is designed to hold a massive amount of water, approximately 5,000 acre feet. Project planning and hydrology analysis began in 2002 with construction beginning in 2007. The majority of the project was completed by 2019, though additional projects are ongoing.

#### NEBRASKA'S INNOVATIVE RIVER-BASIN NATURAL RESOURCE DISTRICTS ADDRESS LOCAL NEEDS

The Central Platte Natural Resources District is one of 23 natural resources districts in Nebraska.<sup>7</sup> These districts are unique in that they are organized by river basins and cover large geographic regions. Other states typically organize their conservation or watershed districts along county lines, making it harder to negotiate watershed-scale projects. Nebraska's natural resource districts are also tax-funded and locally controlled, increasing their accountability to local taxpayers.

For example, in the Upper Prairie - Silver - Moores project, the relationship between the Central Platte Natural Resources District and the community resulted in substantial changes to the project design. The U.S. Army Corps of Engineers originally offered to help fund a version of the project in which channels would be widened to flood farmland.



#### Flood Control Stroll public outreach event

As part of its flood mitigation work, the Central Platte Natural Resources District conducts public outreach about flood risk and mitigation project benefits. For the Upper Prairie - Silver - Moores project, the Natural Resources District hosted a "Flood Control Stroll" event in June 2019. The event started at Wave Pizza Company where residents picked up their punch cards and learned about flood risks. They then meandered through town, stopping at participating businesses to get their cards punched and sample flood-themed food and drinks. The event ended at Prairie Pride Brewery with live music and a raffle for people who collected all six punches during the stroll. The event was a creative way to help community members understand the purpose and benefits of the Upper Prairie - Silver - Moores project while also enjoying local music, art, and food.

However, this would have resulted in losses for the agricultural community, and the community did not support it. In response, the Central Platte Natural Resources District rejected the project design and the Corps withdrew their funding. The district then redesigned the project to better address local concerns. They constructed detention cells to regulate flows, allowing the streams to run at higher levels for longer rather than shorter, more extreme bursts of water.

Importantly, the Central Platte Natural Resources District has the staff and funding capacity to plan and implement strategic flood mitigation projects at the watershed scale, as well as build support in the 30 municipalities it serves. The district also conducts public outreach about flood risk. Its coordination improves trust amongst stakeholders and helps ensure that communities downstream from projects will not be disproportionately harmed.

# WATERSHED-SCALE PROJECTS REQUIRE FLEXIBILITY AND PROACTIVE COMMUNICATION

While watershed-scale projects may protect more people and substantially reduce flood risks, they also encounter unique challenges. Regional projects cross jurisdictional boundaries and thus involve complex networks of local, state, and federal partners, as well as a host of consultants. As a project's scope and scale increase, so do unexpected challenges and costs.

For example, construction of the Wood River Diversion was delayed by a regulatory shift at the U.S. Army Corps of Engineers. After major flooding on the Red River, the Corps required new projects to meet a 500-year flood standard rather than the previous 100-year standard. The Wood River Diversion had to be redesigned. Delays like this are common in larger, regional projects, requiring project teams to be flexible and accommodate changes in plans. In another example, the Upper Prairie–Moores–Silver project underestimated the costs of fuel for earthwork and land acquisition. The project was also delayed for two years when the detention cell that the county had purchased from the Corps needed to be properly cleared of hazardous materials. These factors substantially increased the budget and required the project team to secure additional funding.

Proactive, regularly scheduled communication among partners can facilitate creative problem-solving. Although networking is time-consuming, it pays dividends when unexpected challenges arise. In the Upper Prairie–Moores–Silver project, the Central Platte Natural Resources District convened monthly meetings over the 15-year course of the project's construction, ensuring that everyone was kept apprised of developments. The strong relationships built during these meetings were identified by participants as a major contributor to the project's success, as the project team was able to manage expectations, work around construction delays, and use the network to find additional funding for unexpected costs.

It is critical to have effective governance structures and communication strategies in place for mitigation projects, especially for larger, watershed-scale projects. When unexpected challenges occur, trust and effective communication help communities creatively solve problems and overcome barriers.



## Complex projects have shifting stakeholders

The Upper Prairie - Silver - Moores project involved a mix of local, state, and federal government partners and a host of consultants. Since many flood mitigation projects take decades to plan, fund, and construct, this network of stakeholders including regulators, funders, project managers, and beneficiaries—is constantly evolving.

For instance, in the Upper Prairie -Silver - Moores project, the U.S. Army Corps of Engineers was originally a key stakeholder and funder. However, when the Corps' plans were dismissed by local stakeholders, they withdrew their support. The stakeholder map shifted in response.

Understanding a project's complex map of stakeholders is key for creating a proactive, inclusive communication plan. Stakeholders can be kept in the loop through regularly scheduled meetings, newsletters, and email and/or phone communications. On-site tours are also very effective at helping stakeholders understand the importance of projects and its challenges.

#### LEARN MORE ABOUT GRAND ISLAND'S FLOOD MITIGATION EFFORTS

Upper Prairie/Silver/Moores Creek Flood Control Project (Northwest Flood Control) https://www.grand-island.com/departments/public-works/engineering/2019-plannedprojects/upper-prairie-silver-moores-creek-flood-control-project-northwest-flood-control

Central Platte Natural Resource District <a href="http://cpnrd.org/flood-control/">http://cpnrd.org/flood-control/</a>

Flood Risk Reduction for Grand Island, Nebraska https://www.floodsafe-cpnrd.org/

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#### **THIS REPORT IS PART OF A SERIES**

This case study is part of a series entitled *Building for the Future: Five Midwestern Communities Reduce Flood Risk.* 

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Models of conservation districts in the United States

Nearly 3,000 conservation districts throughout the United States are tasked with managing natural resources, including water, soil, forests, and wildlife. Conservation districts are established by state law and have various names, from soil and water conservation districts to land conservation committees. Since districts are unique to each state, they also vary in design and structure, funding, authority, and capacity.

Nebraska's natural resources districts are unique because they are organized around river basin lines instead of county lines, and every corner of Nebraska is included in a district.<sup>7</sup> The districts were formed through legislation passed in 1969, which consolidated 154 special purpose resource districts—which often had competing goals—into 24 streamlined natural resources districts.<sup>8</sup> Additional merging later resulted in 23 districts. The districts are funded through property taxes and have a variety of programs including flood control, soil erosion, groundwater management, and others.

At the state level, the Nebraska Association of Resources Districts helps coordinate the work of the 23 districts. Nebraska's natural resources districts are generally seen as a higher-capacity form of conservation district because they have a stable source of funding and strong local authority.