Drayton Takes a Stand Against Future Floods

The city of Drayton fights to keep floodwaters at bay during record flooding in 1997. Photo courtesy City of Drayton.

What does a small town do when its master sanitary lift station—critical to protecting public health—is in danger of falling into a river?

Move it, of course. And the farther from harm's way, the better.

That's what the City of Drayton, North Dakota, did to get ahead of a problem that has steadily worsened over the years. Its riverbank, slowly but surely, is collapsing.

What makes it such a problem is that the eastern edge of the city is on that riverbank, which is composed of such poor soil that it actually "slips" down toward the river about 35 feet below. Various engineering analyses have described the soil consistency as "pudding" or "like toothpaste," according to city officials.

The danger doesn't stop there. Drayton, located about 35 miles south of the Canadian border, also is subjected to frequent flooding by the Red River of the North—a northward-flowing river that marks the boundary between North Dakota and Minnesota.

Because the river's headwaters are in the southern part of the state, which thaws first in the spring, northern communities like Drayton often flood when the flow hits still-frozen waters,

causing the river to overflow its banks. Runoff locally and from nearby tributaries often hits the Red River about the same time, increasing the water levels. Since 1980, there have been 10 recorded flood events in Drayton.

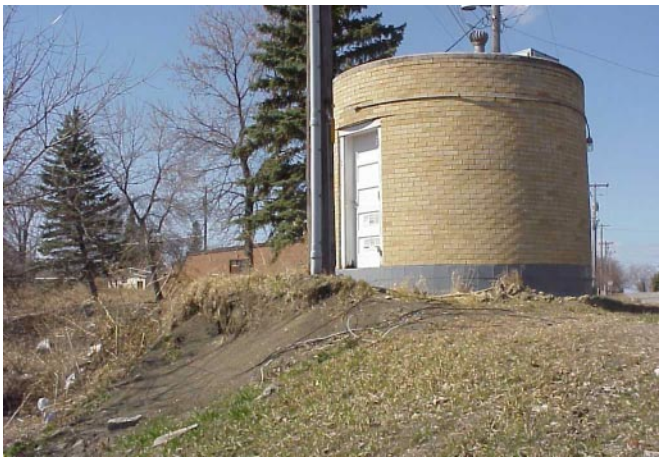
As a result, the city has mounted an aggressive effort to remove properties along Drayton's eastern side—both to stabilize the riverbank by removing the weight of the buildings, which some say hastens the slippage, and to reduce future flood damages.

The lift station is one such example. When record flooding in the spring of 1997 began to subside, the city found that the lift, housed in a round, one-story brick building, was in even greater peril than before.

"Our master lift was hanging right on the riverbank," said Carol Gardner, Drayton city auditor. "In the 1997 flood, we did manage to keep it dry but it was encircled with eight feet of sandbags."

Moving Lift Station to Safety

Eager to eliminate the danger of losing the lift station—either from flooding or from further riverbank collapse—and to improve floodfighting capabilities, the city decided to build a new master lift in an area that could be better protected.



The old master lift station sits dangerously close to the edge of the riverbank.

The city purchased a corner residential lot about two blocks from the river, and in September 1999, the lift station was put on line. The $320,000 project was funded with part of a special 1997 disaster grant to Pembina County from the U.S. Department of Housing and Urban Development, with disaster-related Community Development Block Grants and with local money generated by a $3 monthly charge on residential and commercial water and sewer bills.

"To be better prepared for the next flood we had to get that lift station off the riverbank," Gardner said. "Moving it was something we wanted to do so we didn't have to worry in the future and with it out of that original spot, we can now take emergency protective measures to protect the whole town. Where it was before actually threatened the whole town because there wasn't room anymore to build a dike."

Now when floods threaten, the lift station itself can be better protected—either by an emergency dike for the whole town or by building a ring dike around the lift station itself. The old lift station will be demolished after pumping equipment is removed.

Eliminating Other Trouble Spots

The city has gone after other "trouble spots" as well, Gardner said, such as the east side of its Main Street, which also is starting to shift and settle in places because of the soil instability.

From there, the city purchased and subsequently removed a six-unit apartment building, a dental clinic, an old creamery and a hardware store. The properties were damaged in the 1997 flood because they were on the wet side of an emergency dike, which had to be built in front of the buildings to be on firm-enough ground.

Additionally, seven residences north of the downtown but also along the river, were purchased because they, too, were in repetitive-flood areas that were difficult for the city to protect, Gardner said.

Now, after both buyouts, all that remains is open space—thereby eliminating future flood damages and improving the city's ability to fight a flood. The land also is now deed-restricted in accordance with the buyout requirements so that future building there cannot occur. The restriction, designed to protect lives and property, helps eliminate spending public and private money to repair structures that are likely to flood over and over again.

The $569,000 buyout was funded in large part by the state-managed Hazard Mitigation Grant Program (HMGP), which provides money for selected projects that will reduce or prevent future disaster damages. The state's money for the program comes from the Federal Emergency Management Agency as part of a presidential disaster declaration. HMGP funds can be used to pay 75 percent of eligible costs on approved projects. The remaining 25 percent must come from non-federal sources such as state, local or private funds.

For this buyout, the federal share provided $426,752 and the state paid $56,900. The remaining $85,350 came from the city.

Waging Battles to Win the War

These disaster-resistance actions represent just a part of what Drayton has done for more than 20 years in an effort to win the war so often waged by the Red River.

A new master lift station has been built away from the river in an area that now can be better protected from flooding. Removing the old lift station from the edge of the riverbank also enables the city to construct temporary dikes to keep floodwaters getting into town.

- In the late 1970s, special flapgates were installed in culverts west of Interstate 29, which borders the city's western side, to block overland flooding from getting to Drayton. The interstate itself sits high enough to hold back much of the overland water, but without the culvert protection, water could still get into Drayton. The flapgates, still in place today, continue to protect the town, city officials say.

- Since 1980, when the city first adopted a local floodplain ordinance, new development and substantial improvements to existing structures in the 100-year floodplain, have been restricted. About one-fourth of Drayton is in the 100-year floodplain; a significantly greater part of the city is in a 500-year designated floodplain.

- The city participates in the National Flood Insurance Program, enabling its residents and business owners to purchase flood insurance to cover property and contents. Drayton joined the program in 1974.

- In 1984, the city formed a Flood Hazard Mitigation Committee to develop a long-range plan that would outline the steps needed to lessen the impact of future flooding. Since then, many of these actions, such as property buyouts and protection or relocation of critical facilities, have been taken. The plan is being updated for 2001.

- A new, more flexible water intake pipe was installed in 1995 so that shifting soils wouldn't break the pipe as had happened before. The intake pipe draws water from the Red River and feeds it to the city's water plant for treatment and re-distribution throughout town.

- The city continues to investigate ways to stabilize the riverbank so the encroachment won't further compromise its borders.

Plans for 2001 include relocating the city's secondary lift station in southeast Drayton away from the river, and buying out another group of flood-prone residential properties, Gardner said.

In the meantime, the city will continue its efforts to improve Drayton's resistance to the effects of natural disasters, Gardner says. It is an increasingly important task in light of predictions that a wet cycle, which has plagued central and eastern North Dakota since the early 1990s, may continue.

"The thought is to continue to remove structures that cannot be protected and are involved with the unstable riverbank," Gardner said. "It may take a little bit of time, but at this point all we can do is get out of the way of the riverbank and the flooding river."