The Gavins Point Dam in South Dakota was at the heart of a difficult decision during recent flooding along the Missouri River. The New York Times

The Fight to Tame a Swelling River With Dams That May Be Outmatched by Climate Change

Along the Missouri, John Remus controls a network of dams that dictates the fate of millions. ‘It was not designed to handle this.’

By Tyler J. Kelley

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There were no good choices for John Remus, yet he had to choose.

Should he try to hold back the surging Missouri River but risk destroying a major dam, potentially releasing a 45-foot wall of water? Or should he relieve the pressure by opening the spillway, purposely adding to the flooding of towns, homes and farmland for hundreds of miles.

Flood damage in Hamburg, Iowa.

Steve and Roxanne Adkins trying to save belongings from their flooded home near Hamburg

Mr. Remus controls an extraordinary machine — the dams built decades ago to tame a river system that drains parts of 10 states and two Canadian provinces. But it was designed for a different era, a time before climate change and the extreme weather it can bring.

"It's human nature to think we are masters of our environment, the lords of creation," said Mr. Remus, who works for the United States Army Corps of Engineers. But there are limits, he said. And the storm last week that caused him so much trouble was beyond what his network of dams can control.

"It was not designed to handle this," he said.

The storm, the "bomb cyclone" that struck the upper Midwest, dumped its rain onto frozen soil, which acted less like dirt and more like concrete. Instead of being absorbed, water from the rain and melted snow raced straight into the Missouri River and its tributaries.

John Remus operates the six dams built years ago to manage the Missouri River.

Devastating flooding hit Missouri, Iowa, Kansas and Nebraska. Near Omaha, one-third of Offutt Air Force Base was inundated, including a runway. One Missouri River tributary, the Little Sioux River, rose almost 16 feet in one day.

And early last Thursday, the Niobrara River smashed through the nearly century-old Spencer Dam while pushing huge chunks of ice downriver. By the end of the day, the Niobrara and other tributaries had filled the reservoir behind the Gavins Point Dam, near Yankton, South Dakota, and Mr. Remus faced his decision.

Gavins Point is relatively small, not designed to hold back that kind of inflow. But losing the dam would be catastrophic.

The Gavins Point Dam, where Mr. Remus opened the floodgates to avoid damaging the structure.

To save Gavins Point, he ordered its spillways opened. At its peak, 100,000 cubic feet of water per second, the same as Niagara Falls, poured into a river already surging toward record heights.

“We filled up our bucket, and the spigot kept running,” Mr. Remus said. The results of last week’s storm are still evident: As of Wednesday, at least three people had been killed and there were emergency declarations in four states.

Few people hold sway over as much water as Mr. Remus, the chief of the Army Corps’ Missouri River Basin Water Management Division. He operates six massive dams that help shape and define a river stretching more than 2,000 miles through the American heartland.

His decisions affect the lives of countless communities and ecosystems — the cities, factories and power plants that draw water from the river; the endangered species that nest on its sandbars; the farmers who cultivate its floodplains.

Often, their interests conflict. “You’re not going to make them happy,” he said, “but you can provide them with an explanation.”

An imposingly large man with a neat mustache, Mr. Remus, 59, grew up in Western Nebraska and speaks deliberately. In his tidy, windowless office in Omaha, the main feature is a tabletop map of roughly half the United States. Over the course of several interviews, he discussed his work and said the Corps had not looked at climate change from a planning perspective.

“Scientists say that, in the Missouri Basin, we’ll be spending more time at each end of the spectrum — longer and more severe floods, longer and more severe droughts,” Mr. Remus said. And this year, he had “nothing but bad options.”

A 2012 report on climate change in the Missouri River Basin, commissioned by the Bureau of Reclamation (the Corps’ western equivalent) predicted by the middle of this century a roughly 6 percent average annual increase in upper-basin runoff and a bit more than a 10 percent increase in the lower river.

The Missouri Basin had more runoff from rain and snow last year than all but two years since record-keeping began in 1898. “Is that normal variation?” he asked, or “are we working our way to a new normal?”

“Something’s changing, what that is exactly. …” he said, trailing off.

Flooding near Bartlett, Iowa, last year. This past week, levees like the one to the right breached.

Whose Needs Come First?

Mr. Remus's stewardship of the river is guided by a 432-page document, the Master Manual, which lays out the eight congressionally authorized purposes he must balance. They are flood control, river navigation, hydroelectric power, irrigation, water supply, water quality, recreation (such as fishing or boating), and the preservation of endangered species.

One problem with that: The Master Manual does not explicitly tell Mr. Remus which is more important. Thus the eight purposes exist in a near constant state of tension.

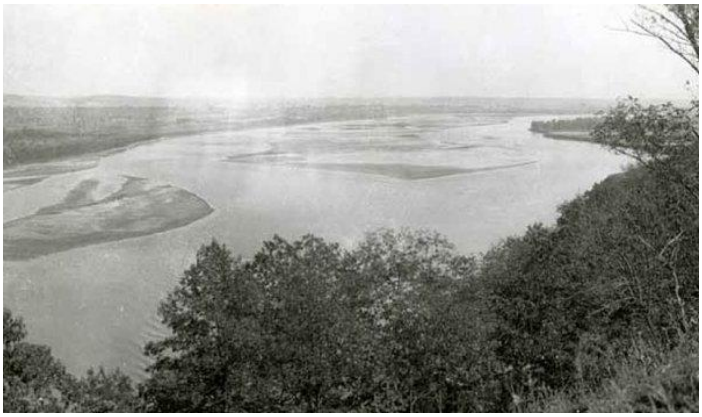
"You can't say that you serve all of them equally," Mr. Remus said. The word he clings to is "balance." But when extreme flooding looms, he said, "the balance goes away."

Then, all that matters is flood control.

For millenniums, the Missouri was a wide, sinuous river. Passage was treacherous and steamboats frequently sank in the shallows. The river flooded in the spring, and you could walk across it in the fall.

After the devastating dust bowl years of the 1930s and a series of severe floods in the early 1940s, Congress decided to do something. It was the era of big dams. Across America, landscapes were being rearranged to suit human needs.

Over time, the broad, shallow river was transformed into a deep, narrower channel more conducive to the river shipping business, in the process creating new land along the banks.



The Missouri River in 1934, wide and meandering

The river in 1946, narrowed by dikes

Levees were built near the new channel to prevent flooding and farmers were offered the new land at low cost. According to the Corps, 522,000 acres of floodplain and river habitat were converted to farmland or otherwise lost.

While farmland in some places was being created, elsewhere it was being submerged behind immense dams and their vast new reservoirs. Some 350,000 acres of that land belonged to Native Americans.

Faith Spotted Eagle, a 70-year-old tribal elder and activist from the Yankton Sioux Reservation in South Dakota, said she remembers as a child having to leave her family's home in the village of White Swan, now beneath 140 feet of water at the bottom of Lake Francis Case, a reservoir created by the Fort Randall Dam.

The Yankton never consented to their land being submerged. In 2002 the tribe was paid $23 million for the 2,851 acres that were affected in the 1950s, and is still fighting for compensation for hundreds of additional acres it says have since been eroded away.

"It's all loss, loss, loss," she said.

Erosion caused by floods on the Yankton Reservation in South Dakota.

For the federal government, though, it was worth it.

Downtown Kansas City and Omaha have not flooded since the dams went in. Cheap hydroelectric power is abundant. With the river in check, the economy grew.

Battle at the Levees

Early last Thursday, floodwaters near Bartlett, Iowa, overtopped a levee north of David Lueth's house. The Sheriff ordered an evacuation. Mr. Lueth, 61 years old, disregarded the order.

Instead, he rushed to move 1,000 bushels of soybeans stored in a bin beside his house. If the beans got wet, they would rot.

The sky was blue and trumpeter swans flew overhead, a beautiful day, he said. But Mr. Lueth was near tears. Water from the Bartlett breach was rolling his way. At the prospect of leaving his home and farm, he said: "I was physically sick this morning. Threw up twice."

It reminded him vividly of what happened eight years ago, in the great flood of 2011. Then, another nearby levee was almost completely destroyed. It cost him his life savings, $100,000, to restore his land.

To Mr. Remus, 2011's destructive flood represented a rare opportunity to rethink the Missouri River levee system to accommodate more floodwater. The easiest way to do that would be to move levees away from the river, making the flood plain bigger.

He took his argument to the local board that oversaw the destroyed levee. Faced with the costs of rebuilding their levee practically from scratch, he reasoned, they might be willing to move it back.

Leo Ettleman, 64, was at those meetings and said he remembers saying, "John, we can't afford it," to which he says Mr. Remus replied: "Can you afford floods?" (Mr. Remus said he didn't recall the conversation.)

Mr. Remus's effort largely failed. The levee was set back some, but not nearly as much as the Corps had proposed.

Flooding near David Lueth's property in September.

Farmers vs. Plovers

Today the whole episode stands as a case study in how difficult it can be for Mr. Remus to balance everyone's needs. The levee's rebuilding was followed by years of litigation in which the Corps was accused of prioritizing wildlife at the expense of flood control.

The plaintiffs alleged that Mr. Remus's predecessor would have prevented flooding if she had not favored the threatened and endangered species. Last March, a federal judge agreed and found the government liable for flood damage dating back to 2007.

Listed as threatened since 1986, piping plovers nest above the waterline on sandbars. The puffy, migratory beach dwellers once were plentiful, but as the river changed, the birds became scarce.

And last year along the Missouri, the plovers were a clear loser. Mr. Remus had to release floodwaters building behind the dams just as mating pairs of plovers were tending their eggs near the water's edge.

On a humid morning last summer, Jessica Archer took five "Area Closed" signs from a small boat and threw them clattering onto the sand. A no-nonsense 26-year-old from a small Iowa town, she was part of a team of Army Corps biologists counting plovers as well as endangered interior least terns.

When a fellow biologist picked up two signs instead of one, Ms. Archer snapped at her — "put one down," she said — but she wasn't upset about the signs. She was frustrated that they probably wouldn't be able to save two plover nests they had just discovered.

She had good reason to think that. Mr. Remus was, in fact, opening the floodgates upriver.

"It's a bad year for the birds," he had said in an interview just a few days earlier.

Last year was the third-wettest year in the Missouri Basin since record-keeping began in 1898.

Mr. Remus said that both he and his predecessor (who declined to be interviewed) managed the river strictly according to the Master Manual, their bible of river management.

But last year, something had to give. In 2018, only 27 percent of plover and tern nests survived.

The River Closes In

This past Friday, Mr. Lueth was melancholy as he lingered in his home. It was, he said, "like leaving your child at the I.C.U."

By Monday, the sadness had turned to anger. Why should he, his neighbors, and the towns of Bartlett and Hamburg, be the ones flooded?

He was certain Mr. Remus could have done more. What about people upstream, "Why don't they take the damage?" he said. If the Gavins Point Dam wasn't helping, let it fail.

Weather like this, storms that exceed the system's ability to manage flooding, is clearly a problem. "Whether it's global warming, or a tilt in the earth. …" Mr. Lueth said, leaving his thought unfinished. "It's time to change, now."

If the government wants his land for a spillway or a new dam, he said, they can have it. Just pay him fair market value, $8,000 to $9,000 an acre.

On Monday, Mr. Lueth was helping a friend move some farming equipment to higher ground when they paused, he said, to watch hundreds of deer race across a flooded field, chased from the woods by high water. On Tuesday, Mr. Lueth lost his home.