Mississippi and Infrastructure

- Map: The Mississippi River Watershed
- Post Reprint: A Current of Worry Down the Mississippi
- Role Play: An Infrastructure Dilemma
Post reporter Todd C. Frankel and photojournalist Michael Williamson took up the assignment to cover the “Mississippi River watershed — the third-largest in the world — that drains an area of about 1.2 million square miles, including all or part of 31 states and two Canadian provinces.”

This was Williamson’s first extensive north-south road trip; his 7,200-mile journey followed the Mississippi River, zigzagging across bridges, capturing people, land and water. While the river is about 2,300 miles, he explained, “The river is the state line in most places, so if you drive the river north to south to see the western side you must start all over and travel south to north to see the states on the eastern side.”

Frankel provides the many perspectives on the needs for more than $7 billion in infrastructure repair and updating, the many uses for business and recreation, and interwoven projects to try to manage the waters.

The Mighty Mississippi is one of America’s great infrastructures that must receive attention — however you view it — a great water park, the spine of American, an essential transportation road or Old Man River.
THE MISSISSIPPI RIVER WATERSHED

Waters from 31 states drain into the Mississippi, changing the color of the river from deep blue in its headwaters in Minnesota to an earthy brown as it approaches the Gulf of Mexico.

Source: U.S. Geological Survey
A Current of Worry Down the Mississippi

A tour of its infrastructure reveals struggles for control along a river that resists taming, full of questions about its present, its future and the price of preserving a lifeline

By Todd C. Frankel  |  Along the Mississippi River
Photographs by Michael Williamson  |  March 14, 2018

ALONG THE RIVER
The Mississippi runs the spine of America, touching 10 states and draining waters from 21 more, a vast waterway with a rich mythology, a sometimes powerful beauty and an always alarming propensity to flood.

Nearly 30 locks and dams hold back water in the river’s upper reaches. Every river bend to the south is lined by concrete to slow the water’s corrosive force. Levees corset thousands of miles of riverbanks and 170 bridges run above. All of this infrastructure is aimed at permitting barge traffic and protecting farms and cities. Most of it is decrepit.

Now, with President Trump’s push for a $1.5 trillion infrastructure plan, there are hopes of billions to fix up the Mississippi. But there are clashes over which projects to pursue, and no agreement on how to pay for any of it.

A move to tame one portion of the river can create chaos for people somewhere else along its 2,350-mile path, and in that precarious balance is the key to understanding the competing interests and enduring problems that vex the entire country.

“To understand America at this time,” says R.D. James, a Missouri farmer and new Army assistant secretary overseeing its Corps of Engineers, “you have to understand the river.”

At the same time, it’s clear that the river itself has changed. “It doesn’t behave like it used to,” said John Carlin, a towboat pilot who has worked the Hannibal, Mo., riverfront for more than 40 years. “Seems like it doesn’t take much to get out of control.”

Now, the Mississippi is flooding again. Last week, after a deluge of late-winter rain, the Corps opened a massive floodway just above New Orleans, an emergency relief valve that it has been forced to use with
increasingly regularity — three times in just the last seven years.

Infrastructure is a bureaucratic word, a way of describing human efforts to impose order on nature. More than almost anything government does, the effects of the infrastructure it builds can be felt for generations. Earth is moved. Water redirected. Tunnels dug. Roads paved. It is man’s hubris on naked display. Sometimes, the infrastructure turns out to be the enemy, and that fact makes the people working and living along the Mississippi wary of the promises coming from Washington.

Some river watchers perked up when Trump mentioned “waterways across our land” as part of his infrastructure target list during his recent State of the Union speech. That sounded like good news. But Trump’s plan mostly scales back the government’s long-running role in charting the Mississippi’s course, calling for more private investment and less federal oversight along the river.

That, many here say, will create a host of new problems.

“It’s disappointing,” said Mike Toohey, president of the Waterways Council, a barge industry group, echoing the reaction of many people who use the river. “We’re running on an interstate of water. And we’re always being overlooked.”

The trouble with controlling the Mississippi today is that it has evolved into three different river systems.

The Upper Mississippi is a string of slack-water pools held behind dams, with water so placid that water skiing was invented there in 1922.

The middle portion is a mishmash of wing dikes and arched chevrons — man-made structures to “train” the river. Here, it is artificially narrowed, only half as wide in St. Louis as it was in the early 1800s.

The truly fearsome Mississippi doesn’t start until the confluence with the Ohio River at Cairo, Ill., where the water emerges like a monster on par with the Amazon or Congo rivers. The Mississippi then runs to the Gulf of Mexico, hidden behind an extensive levee system built after the Great Flood of 1927, a disaster that displaced 1 percent of the country’s population as levees fell like toppled dominoes.

That flood’s legacy still guides how the river is controlled today.

The Army Corps of Engineers oversees most of the river’s infrastructure and runs it with a battle general’s intent. It’s the Corps that operates the locks and dams, that built the levee system in the Lower Mississippi; it maintains the tools used to control the water levels.
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throughout and regulates levees farther north.

But a growing number of critics say the Corps’ flood-fighting efforts make flooding worse.

“It’s like fighting the moon,” said Robert Criss, a hydrogeologist at Washington University in St. Louis, who studies the river running just a few miles from his office door. “It’s stupid to fight.”

And it can look like a losing battle.

In the past seven years, the Mississippi River Valley has been hit with 100-, 200- and 500-year floods — ones that had a 1 percent or less chance of happening in each timespan — that caused damages of more than $50 billion. Disasters along the river “have become persistent and systemic,” noted a group representing 75 cities from 10 states in a report last year.

The White House response sketched out in Trump’s infrastructure plan is inadequate, said the group, the Mississippi River Cities and Towns Initiative. It actually makes it harder to fund new flood protections by slashing the federal government’s project cost-sharing from the current 50 to 80 percent down to 20 percent, said Colin Wellenkamp, the group’s executive director. So for every $1 in federal funds, local and state governments would need to chip in $4.

“That’s interesting,” Wellenkamp said dryly. “How are we going to be saddled with that?”

The group is also worried that the White House’s proposed budget cuts would kill off other federal programs that already pay for river infrastructure, such as a Transportation Department grant program that has spent $162 million in recent years to help pay for new bridges, ports and riverfront improvements.

Meanwhile, historic river crests are falling like home-run records during Major League Baseball’s steroids era. In Hannibal, Mo., where people have been recording river heights since Mark Twain’s time, four of the top 10 crests have come in the past decade.

In Brainerd, Minn., it’s five of the top 10.

In Natchez, Miss., it’s three of 10 — and this week, they’re bracing to record another.

“You can call it climate change, but whatever you call it, things are changing,” said Maj. Gen. Michael Wehr, who oversaw the Corps’ operations on the river until being promoted last year to be second in command at the Corps’ headquarters in Washington.

Said Norma Jean Mattei, a University of New Orleans civil engineer and member of the Mississippi River Commission, which oversees how the Corps runs the river, “We’ve got to modify how we manage the river.”

But Criss considers the Corps and its use of river infrastructure to be one of the problems.

“The water has nowhere to go,” he said.

You don’t flood out your neighbors. It’s one of the unwritten rules of the river.

Just the accusation is enough to spark a fistfight. But people had long suspected that the levees across from Hannibal, Mo., were too tall, making the flooding worse for neighbors downstream.

So a crew from the Corps came out two years ago in ATVs, riding along 200 miles of riverbanks to measure levee heights. The Corps found that the walls were 2 to 3 feet taller than the agency allows in many spots, stretching from Burlington, Iowa, down almost to St. Louis.

The Hannibal-area levees belong to Sny Island — an Illinois drainage district so carefully maintained that it has flooded only once in 110 years, a point of pride for vigilant farmers and volunteers there.

But today, the Sny’s levees frighten...
people such as Nancy Guyton, who leads a group accusing the district of breaking with long-held tradition.

“If they get away with this,” Guyton warned recently, “they’re going to ruin the river.”

She and her husband own a small farm outside Annada, Mo. They have lived through several major river floods. But now the water seems high all the time.

Now, Guyton was sitting in Calvin’s Restaurant in tiny Eolia, Mo., with Mark Harvey, another member of the group Neighbors of the Mississippi, which represents residents of three counties downriver of the Sny.

Harvey is not a farmer. He’s not going to lose any crops if the river floods.

But he is the superintendent of Pike County schools. He knows that flooded farmland is worthless. He sees the Sny’s levees as a threat to buying textbooks and paying teachers.

“You can’t just build a wall and say to heck with it,” Harvey said.

In an office across the river, Mike Reed sounded offended.

Reed runs the Sny levee district from New Canton, Ill., a town tucked next to a limestone bluff that served as the riverbank eons ago. Today, the river is six miles away — across some of the most fertile farmland in the world — and kept there by a levee wall.

Reed said Sny farmers and residents felt as if they’d been “smeared” by the Corps.

“Why are they going after us?” Reed said. “Why are we made to look like a rogue levee district that raised its levees in the dark of night?”

The Corps says its position is simple. Some levees have soared past their federally authorized levels, with most of the height added after a major flood in 2008.

“Theyir levees have been altered without careful evaluation and no permission,” said Scott Whitney,
flood risk manager for the Corps’ Rock Island District.

A couple of feet might not sound like much. But every inch of levee height pushes floodwaters from one place to another. With levees blocking the river from its natural flood plain, the water has only one place to go: up.

The Corps can’t force a levee district to lower its levees. It can only stop paying for levee repairs. Each state regulates its levees — and the Mississippi touches 10 different states.

“The science is clear,” said Nicholas Pinter, associate director at the Center for Watershed Sciences of the University of California at Davis, who has extensively studied flood risks on the Mississippi. “When one levee district builds bigger levees, it increases the size and magnitude of flooding across the river, 10 miles up and down, too.”

Pinter said he was surprised that so many levee districts were building walls that are clearly too tall.

“The Sny is one of the players in what I would call levee wars,” Pinter said. “And to have it springing up there is puzzling and unnerving. We thought the levee wars” featuring sabotage and gun-toting safety patrols “were a thing of the past.”

Reed said if the Sny district is forced to lower levees, it would lose its 100-year flood rating, meaning the Federal Emergency Management Agency would no longer consider the area to have protection from a once-in-a-century flood. Insurance premiums would skyrocket and the value of Sny farmland would plummet to half the current $12,000 an acre, “which would be devastating.”

Trump’s infrastructure plan proposes reducing the Corps’ role in monitoring levee heights. The plan also proposes stripping the Corps of authority for some levees in the name of reducing costs and complexity. That’s good news for districts looking to raise their levees unfettered. It’s bad news for neighbors hoping the federal government continues to referee disputes along the river.

Guyton and other small groups dotting the riverbanks are alarmed. They say they wouldn’t be able to keep up if flood protection becomes a race to see who can build the biggest.

“This would be a disaster,” Guyton said.

LOCKED IN UNCERTAINTY

Efforts to control the river start way up north, including at a lock and dam that once gave Minneapolis bragging rights as the river’s “Head of Navigation.” This is where the river that begins as a trickle in Upper Minnesota crashes like a white-water
fist into a 50-foot limestone gorge, all under the lonely gaze of lockmaster Mike DeRusha.

He loves this view. It might be the most dramatic on the entire Mississippi. DeRusha stands at the wide windows of a brick control tower atop the lock and dam at Upper St. Anthony Falls. He used to have 12 workers with him here. They kept this Corps facility humming 24 hours a day for boats and barges to pass around the falls. Today, DeRusha is the last man left.

The official reason this lock closed three years ago was worries about invasive Asian carp swimming their way further north and using the lock to get around the falls. But that wasn’t the real culprit. Instead, the extraordinary decision to mothball a major piece of infrastructure illustrates how much the Mississippi’s role in American life has changed.

“Minneapolis decided to give up on a dream its predecessors fought so hard for — to be the economic bookend to New Orleans,” said river historian John Anfinson. “But they have new dreams now.”

Minneapolis is powered today by health care and corporate headquarters for giants including Target. The shuttered brick mills next to the falls are now sought-after lofts and condos. Planners look at the Corps’ control tower, built in 1967, and see an event space. Shutting down the lock, they argue, would speed the river’s transformation from industrial waterway to recreational asset.

The lock at Upper St. Anthony Falls was the first one closed on the Mississippi — and it sent a shudder down the river.

Now, the Corps is studying whether to close two more nearby locks — perhaps even pulling out the concrete and steel, returning the river to something approaching its wild state.

This is the barge industry’s worst fear, especially if this idea spreads.

“We’re not happy about it,” said Russell Eichman, a consultant for the barge trade group Upper Mississippi...
Waterway Association. “It might set a precedent.”

The 29 locks and dams on the Upper Mississippi were not built for flood control. They were built for barges. The river drops 420 feet in the 670 miles between the first and last lock, so barges need the staircase of locks and dams for navigation.

Barges move 300 million tons of goods a year on the Mississippi — a number that has remained mostly flat since 2000. Still, it’s the route for 60 percent of U.S. grain exports. And a single barge can transport the equivalent of 60 to 70 tractor trailers — a bragging point you’ll hear within five minutes of talking with the industry or the Corps.

The barge industry argues that ending shipping on the river would result in epic highway traffic jams.

What the river needs, barge boosters say, is to make the Mississippi’s locks bigger and better. Most were built in the 1930s and expected to last 50 years. They can’t accommodate huge, modern barge flotillas. When a lock breaks, the river can be closed for days or weeks.

“This a huge issue for the U.S. to compete on the world market from a transportation standpoint,” said Rodney Weinzierl of the Illinois Corn Growers Association.

The barge industry thought it scored a major win in 2007 when Congress authorized the doubling in size of seven locks — five on the Mississippi, two on the Illinois River. The price tag was more than $2 billion. But Congress never funded it.

So they were excited by Trump’s talk of infrastructure spending — and alarmed by his proposal for paying for it. Trump and others have hinted that they might use private-public partnerships. Companies would invest in new projects and charge user fees. It’s commonly referred to as “P3.” Barge companies hate P3.

“If you were to go with P3 to build a lock and dam and start charging a toll, then you’re going to bankrupt operators,” said Toohey of the Waterways Council.

Barges pay nothing to go through locks now. No one does. The locks are run in the public interest.

In Minneapolis, the veteran lockmaster DeRusha, who plans to retire this year, knows he probably won’t be here to see what becomes of his old workplace.

“I just hope the site remains and it’s an asset,” DeRusha said. “It’s a jewel.”

Locks and levees are the most obvious infrastructure on the river. But concrete matting is the most common.

There are 1,000 miles of it covering every river bend south of Cairo, Ill., to the Gulf of Mexico. Most of it is unseen, hidden below the waterline.

The Mississippi moves with such force that it eats away at its outer bends. Unimpeded, the river could move hundreds of feet a year. The concrete mats are engineered to keep the river in its place. In the 1800s, sudden changes in the river’s path altered the fortunes of towns. A river city that nearly became

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**In the Know**

Asset  
Barge  
Corrosive  
Crest  
Decrepit  
Deluge  
Eons  
Epic  
Flotilla  
Hubris  
Hydrogeologist  
Infrastructure  
Invasive  
Levee  
Locks  
Navigation  
Precedent  
Public interest  
Sabotage  
Systemic  
Tether  
Unfettered  
Unimpeded  
Vent (verb)  
Vigilant  
Wary  
Waterway
Mississippi’s capital, Rodney, today is a ghost town because the river shifted.

“It’s a never-ending problem,” said Joel Brown, the Corps’ chief of river operations for the Vicksburg district. “The river wants to move. Most of what we’re doing is just slowing the process.”

The Corps’ main tool in this fight is called the mat-sinking unit.

Now, in the fog and rain of summer, it looked like something out of a steampunk fever dream. The giant barge near Eudora, Ark., was crawling with more than 150 men — many wearing yellow raincoats, some in orange life vests, all in gray hard hats.

Every few minutes, with no warning, the floor became a rolling carpet of concrete blocks. The men needed to fasten together these blocks with copper wires before they rolled off the barge and into the river. The only things keeping the crew from being swept away were quick feet and a single wire about waist-high at the edge.

Armoring of the Mississippi’s bends began in the late 1800s. Willow branches were tethered into mattresses and sunk to the bottom. In the 1930s, the Corps switched to concrete. In the work known as revetment, little has changed since.

But the river is so strong that even the concrete blocks last only 50 years. The mat-sinking unit just replaces old blocks during low-water season — or what passes for low water these days.

But it’s good work. Workers can earn almost a year’s salary in four months.

Ed Adcock, chief of revetment for the Corps’ Vicksburg district, watched recently as the crew rolled out sheet after sheet of new concrete mats. “This whole thing will be pretty much automated soon,” he said.

It’s true. The Corps is building a new mat-sinking unit called Armor One. Robots, not humans, will do most of the work.

FATHOMING FUNDING

Not far from the mat-sinking unit, on a stifling summer day in Vicksburg, Miss., more than 100 people climbed aboard the nation’s largest towboat, the M/V Mississippi, and took refuge in the air conditioning of the vessel’s ornate meeting room.

Twice a year, this towboat turns into a floating hotel and conference center to allow the public to vent to the seven people with power to chart the river’s future.

The Mississippi River Commission is an unusual creature. It’s a mix of military officials and civilians appointed by the president. It has been staging week-long river inspection trips since shortly after it was created in 1879 — and its ability to control the river has been doubted.
almost as long. Mark Twain noted in 1883 that “ten thousand River Commissions, with the mines of the world at their back, cannot tame that lawless stream, cannot curb it or confine it, cannot say to it, Go here, or Go there, and make it obey.”

But they continue to try. Near the end of a journey from Missouri to Louisiana, here came Delbert Hosemann, Mississippi’s secretary of state, to politely ask the commission to stop dumping floodwater into his home state during big floods — a typical plea that highlights the river’s eternal conflicts.

The commission already had heard from a hunter complaining that backwater flooding was getting worse. A local politician complained that her suburbanized rural county — cotton tops turned into rooftops — was seeing 100-year floods every few months.

The commission oversees how the Corps runs the system of levees and emergency floodways in the Lower Mississippi. Launched after the devastating 1927 flood, the Mississippi River and Tributaries Project represented a change from controlling the river with “levees only” toward using levees and floodways that could be opened to relieve pressure. In 2011, the project successfully digested the largest flood ever recorded on the lower river. Floodways were opened, but no levees were breached.

The Corps said billions of dollars in losses were avoided.

It’s considered one of the most successful infrastructure projects in the nation’s history.

But it’s still not completed. At least $7 billion more is needed, supporters say, for works including raising the height along 370 miles of levees and flood walls. They’ve been making their case for years. Others want to fund different projects — putting the first floodways on the Upper Mississippi or expanding locks or undertaking a total rethinking of how the river is managed.

And no one knows from where the money for any of this will come. Trump’s infrastructure plan offers few specifics. It’s hard to imagine a private company helping pay for taller levees without an obvious way to profit from them.

The arguments continue, and the tools for holding back the water get older and weaker as the river rages on.

“One who knows the Mississippi will promptly aver—not aloud, but to himself—that ten thousand River Commissions, with the mines of the world at their back, cannot tame that lawless stream, cannot curb it or confine it, cannot say to it, Go here, or Go there, and make it obey; cannot save a shore which it has sentenced; cannot bar its path with an obstruction which it will not tear down, dance over, and laugh at.”

— Mark Twain, *Life on the Mississippi*
Role Play

An Infrastructure Dilemma

“To understand America at this time, you have to understand the river.”

Read “A Current of Worry Down the Mississippi.” Answer on your own paper and discuss the following questions.

1. Read the map. Name the 10 states that the Mississippi River touches.

2. The Mississippi River can be considered three different river systems. Name each and summarize the main features of each.

3. What is infrastructure? Name five aspects of the Mississippi River infrastructure.

4. Which organization has the main duty of overseeing the entire river’s infrastructure? Give three examples of the work it does.

5. What role has the Department of Transportation played in improving river infrastructure?

6. Flooding is a centuries-old problem. What has been done to manage flood damage?

7. Read the informational graphic A Staircase of Locks and Dams. What do you learn about the geography, topography and physical aspects of the Mississippi River? Why are locks needed? What is the purpose of having dams?

8. What are the benefits and the drawbacks of each state taking responsibility for the Mississippi along its borders?

9. Why is federal cost-sharing essential?

10. What is the make-up of the Mississippi River Commission? What is the role of the Commission?

11. It is estimated that at least $7 billion is needed for works. Give four examples of projects needed or problems to be solved along the Mississippi.

12. If funding is approved, which projects would you recommend to pursue first?
“You don’t flood out your neighbors.”

Post reporter Todd Frankel states that a “move to tame one portion of the river can create chaos for people somewhere else along its 2,350-mile path.” Below are listed people and organizations that are affected by decisions made to solve problems, to alter its flow or create new activities on the Mississippi River.

Select one of the individuals to role play or an organization to represent.

Read the Post article “A Current of Worry Down the Mississippi” to locate what is said by or about you.

• Do additional reading to learn more about your position on issues involving preserving and securing the Mississippi’s banks, watershed and its benefits.

• Why is your project important to you? To your community? To the whole Mississippi River?

• With whom do you agree on the problem to be solved, but disagree on the proposed solution?

• With which individuals might you form an informal alliance to get your project funded?

• How will your project affect those who live and work north or south of you?

**Individuals**

- Barge company owner
- Citizen activist
- Civil engineer
- Director, levee district
- Engineer
- Farmer
- Flood risk, manager
- Hydrogeologist
- Lockmaster
- Member of the U.S. Congress
- School superintendent
- Scientist
- Target executive
- Towboat captain

**Organizations**

- Army Corps of Engineers
- Center for the Watershed Sciences, UCal-Davis
- Federal Emergency Management Agency
- Illinois Corn Growers Association
- Mississippi River Cities and Towns Initiative
- Mississippi River Commission
- Neighbors of the Mississippi
- Sny Island
- Upper Mississippi Waterway Association
- U.S. Department of Transportation
- Waterways Council