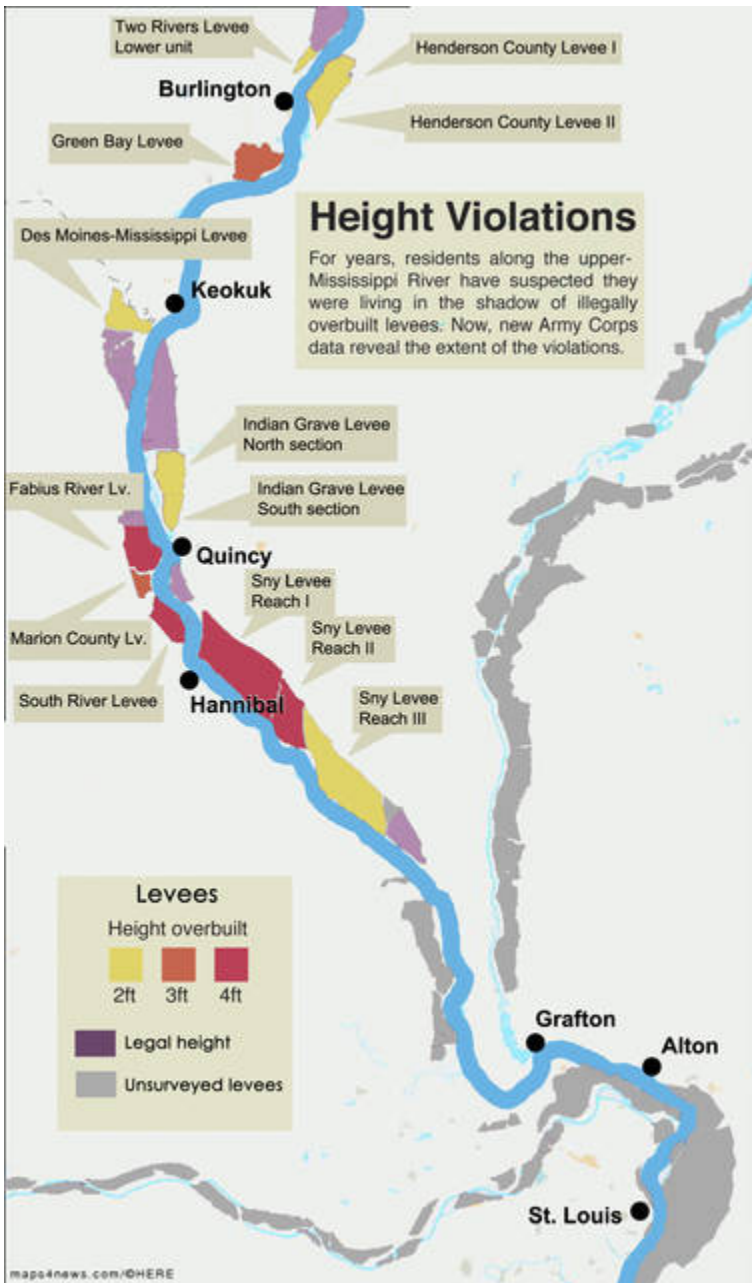


# Protection or problem? Levee heights spark debate over flood safety

## Levee heights spark debate

By Alex B. Heeb - [aheeb@civitasmedia.com](mailto:aheeb@civitasmedia.com)



*This is part one of a two part series.*

ALTON – A new survey by the Army Corps of Engineers has revealed near systemic height violations by levee districts between Alton and Burlington, Iowa, raising fears that water displacement caused by the overbuilt structures could magnify the impacts of major flooding along the Mississippi River.

The Corps is not naming the districts in violation. However, a close examination of survey charts – which remain unpublished – shows numerous examples of levees over the allowed height, some by as much as four feet.

The districts in question, all located north of Alton, appear to include seven levees in Illinois, four in Missouri and two in Iowa – 13 in total – in 10 different levee districts.

“If you modify a federal structure, you have to have permission to do so,” Scott Whitney, district flood risk manager with the Corps’ Rock Island Division, said. “(We looked at) 202 miles of mainstream levees, and out of that, 80 miles of 202 are two-to-four feet higher than they are supposed to be. That’s pretty significant.”

Whitney said the Corps is particularly concerned about collective impacts the levees could have, taken together.

The study was carried out during 2016 using GPS surveying equipment. Notably, the height additions seem to stop at Burlington, with the data indicating all levees between there and Muscatine, Iowa are in compliance.

The results are significant enough that the St. Louis Division of the Corps has decided to survey levee districts within their boundaries as well. That report is expected to take a year to complete.

### **Placing blame**

Officials with several levee districts were adamant their levees were within the authorized limits, or say they had permission from the Corps to modify the structures. Some blamed the Corps, claiming the agency overbuilt them during construction in the 1950s and 1960s, before they were handed off to local control.

“I can tell that any height that [has been added] to that levee, the Corps of Engineers has done it, and they’ve approved it,” Randy Klocke of the Marion County Drainage District said. “We have never put any sand on top of that levee. It has always been done by them and approved by them, and within the last year they’ve come up with this.”

The levee districts have fierce critics, however, who argue the changes are recent, and are putting them and their property at risk.

“It absolutely shows a disregard for state and federal law,” Al Murry, emergency management director for Pike County, Missouri, said.

Corps officials seem to agree the changes were relatively recent.

“The vast majority of these appear to have been done after the 2008 (flood) event,” Whitney said.

During that flood, in which sections of the Mississippi River just north of the Riverbend area exceeded levels of the Great Flood of 1993, emergency measures were taken to shore up the structures. After the floods, it appears some districts did not remove the extra height, Whitney said.

So far, only one levee district – the Sny Island Drainage District – has received punitive action for the levee raises. The massive levee district, which reaches from Calhoun County nearly to Quincy, operates three levees cited by Corps.

In September 2015, the Corps suspended the district from its “PL84-99” program – meaning it is no longer eligible for certain types of disaster assistance. The Corps, in a letter, stated that modifications had “encroached upon the

federally authorized project.” According to FEMA, Sny is at risk of losing its flood insurance rating as a result, which would result in significantly higher crop and structural insurance.

The suspension, however, was based on a 2014 survey. The Corps would not comment on whether the 2016 survey would result in suspensions, saying only they are sharing data with the levee districts.

Federal guidelines, however, appear to require the Corps to initiate measures to lower levees, if a violation is determined.

Whitney believes insurance may have something to do with the clamor for height. Worsening floods along the river forced FEMA to increase the height it considers an average “100 year” flood. This left some districts, which formerly had been at 100 year heights, below the new certification level, and facing the loss of cheap crop and structural insurance.

Critics, however, argue the levee districts are their own worst enemy, largely causing the increase in flood intensity.

### **A rising tide**

Communities along the river face two impacts from nearby levees, experts argue.

The first is a loss of storage capacity when floodplains are walled off from their adjacent river channels. As a result, floodwaters are unable to spread out, leaving them with one way to go – up. The higher a levee is built, the more significant the effect.

“Every inch of levee that is not protecting you is pushing flood risk from the levee-protected area to its neighbors,” Nicholas Pinter, a geoscience professor at the University of California, Davis, who conducted his original research while teaching at SIU Carbondale.

A second impact, Pinter said, comes from loss of “conveyance,” or the ability of water to move across the floodplains. The effect, he said, is the creation of a bottleneck above levees, also forcing water to rise up to several feet higher.

“People have different opinions on that, but the data is clear,” Pinter said. “Up to 90 percent of the water on an un-leveed floodplain is actually going over the floodplain. When you put a wall on it, even when it breaches it is impeding that flow.”

According to Robert Criss, a geology professor at Washington University in St. Louis, the impacts have been significant.

“Water levels now are at least 10 feet higher than they were 100 years ago (during) serious floods,” Criss said.

Criss points to river gauge data as proof. Archival data was not immediately available for Alton, but in Grafton, where the records stretch back to the 1840s, eight of the 10 worst floods events have happened since 1973 – a more than tenfold increase in the frequency of the worst events. St. Louis and Hannibal show similar trends.

Hannibal, which saw its floodwall completed just in time to ride out the 1993 flood, has been a source of concern for Pinter, who has studied the impacts of the adjacent Sny Levee system. The research, he said, indicates Hannibal is located at a chokepoint, making it the most impacted location along the Sny.

Computer models indicate river levels near the city swell eight feet higher during 1993 magnitude floods than they would under natural conditions. With the city surviving the 1993 flood with just 2.2 feet of floodwall remaining, any additional height added to the Sny could endanger the city, he said.

“Frankly I remain a little surprised that residents and leaders of Hannibal are not more concerned and aware about what is happening on the other side of the river,” Pinter said. “Why are some of the neighboring communities a little bit complacent about all this? You look out on a sunny, dry day across the river, a levee going higher than it was, higher than maybe it is legally authorized to be. Every time a new levee goes in or a levee increases in height, every inch of that is exporting flood risk, and you can’t see flood risk.”

Flood risk is not just upstream or across from levees, Pinter added, but also occurs downstream due to the loss of floodplain storage. This leaves Grafton, which lies between the overbuilt northern levees and newer St. Louis levees potentially in the crosshairs during a major flood event.

“We’ve made the rivers into monsters by thinking we are going to control them,” Criss said. “You can see it at Grafton.”

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POSTED ON [APRIL 23, 2017](#) BY [ALTON TELEGRAPH](#)

# Legislating levees: the push for deregulation along the Mississippi

## The regulation debate

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Many smaller levee systems do not get the attention that the industrial levee surrounding vast parts of the Metro East have received, like this area near the foot of Henry Street in Alton. Sections of the levee have been completely rebuilt with concrete walls buried below ground on the river side to prevent underseepage and boils. Over the last two years massive amounts of maintenance has been performed on area's entire levee system.

John Badman | The Telegraph

***Editor's note: This is the second part of the two-part series that began last Sunday, April 16.***

ALTON — A recent, unpublished survey by the Army Corps of Engineers identifies as many as 13 levees across 10 different levee districts between Alton and Burlington, Iowa, that are seemingly out of compliance with laws put in place governing levee heights.

The philosophy that spurs that legislation has critics and supporters, and the fight for the future of levee regulation is currently being waged at the state level.

### **An Ideological Divide**

The controversy over levee building appears to stem from two different approaches to river management – those who think the river can be engineered and brought under control, and others who believe it is the height of human hubris to attempt to subjugate such a large river, particularly during giant floods.

Gregory Drainage District, located in northern Missouri, operates one of the few levees the Corps study said was within height limits. Howard Higbee, president of the district, said the debate carries back well over a century, famously causing friction between James Eads – the engineer responsible for the Eads Bridge in St. Louis – and another engineer, Andrew Humphreys.

“(Eads) knew the river by instinct and being on it and diving it his whole life,” Higbee said. “Humphreys knew it from a mathematical point of view. They had two different opinions on how to handle the river.”

The divide persists today. A group called Neighbors of the Mississippi – which primarily represents stakeholders in Missouri’s St. Charles, Lincoln and Pike counties – advocates for what they call “equitable heights” for levees and enforcement of existing laws. According to Al Murry, emergency management director for Pike County, Missouri, land on their section of the river is harder to defend with levees due to geography, especially their towns.

Nancy Guyton, who helps Neighbors of the Mississippi with legislative issues, also worries about the impact building their levees higher could have on places like Grafton, Alton and St. Charles.

“These levee districts are out of hand, they are out of control, and they need to be reined in,” she said. “It bothers me that they make rules and regulations and people are allowed to break them. Why make laws if you going to let them break them? It isn’t fair to those of us that follow the rules.”

The Upper Mississippi, Illinois & Missouri Rivers Association (UMIMRA) represents the other side of the issue, and lobbies for aggressive levee building. All ten levee districts identified from the Corps report are UMIMRA members. Four of those districts have members on UMIMRA’s executive board, according to its website, making up a third of its 12 members.

Many UMIMRA members are critical of claims levees export significant flood impacts, and cite testimony from Gary Dyhouse, a retired Corps engineer who has been a perennial critic of Washington University geology professor Robert Criss and Nicholas Pinter, a geoscience professor at the University of California, Davis. Dyhouse claims, among other things, that the danger to Hannibal is severely overblown.

“The Sny levee does not harm Hannibal,” Dyhouse said, in a letter provided by Sny officials.

Dyhouse, in an interview, argued that because the Sny Levee is still slightly lower than Hannibal’s floodwall, the Sny would fail first, taking pressure off the town.

Aaron Baker, UMIMRA’s executive director, said flood protection rests with the individual community, and as such, it is a community’s responsibility to keep its constituents safe.

“We don’t want any of our neighbors to flood, but at the same time folks have to take it upon themselves to control their own destiny and invest in infrastructure that protects them from flooding,” Baker said. “Our members can’t help it that they have made that investment and other haven’t.”

“To someone who says that, I don’t think that is very neighborly to flood someone downstream or potentially increase flow frequencies downstream, just in the desire to be self-preserving,” Mark Harvey, chairman of Neighbors of the Mississippi, said. “At that point, you’re basically saying every man for himself. Anyone who says that is not truly interested in a fair, equitable and systematic comprehensive plan for the river.”

### **The Push for Deregulation**

The issue has found its way Washington, where Michael Klinger, a levee engineer and chairman of UMIMRA’s board, submitted written Congressional testimony last month asking lawmakers to make retroactively legalizing the overbuilt levees easier. The levees districts – which are governed by the act of Congress that originally authorized their construction, with some later modification allowed – currently must demonstrate that heightening will “not be injurious to the public interest.”

In testimony, Klinger said “the authorized elevation was more of a minimum elevation” instead of an upper boundary, and that local levee districts were free to build as high as they want once in control of the levee.

Melissa Samet, a lawyer with the National Wildlife Federation, and an expert on levee law, disagreed.

“I think it is very clear that the (levee) authorization(s) was not a minimum elevation,” she said, after examining the original Congressional approval for several of the affected levees.

In Illinois, which governs its own floodplains and requires permits – in addition to federal permission – before structures in them can be modified, then-state Rep. Jill Tracy led the charge in recent years to deregulate levees, introducing House bills in 2013 and 2014 to allow for additional levee height. That bill was defeated, in part due to lobbying from Neighbors of the Mississippi, and strong rebuke from then-Attorney General of Missouri Chris Koster.

“I have serious concerns with those provisions,” Koster said in a 2013 letter to Tracy. “As you’re likely aware, adjusting levees on one side of the river has a direct and substantial impact on the levees on the other side of the river... Accordingly, I respectfully request that you amend this legislation to exclude any adjustment to the levees along the Mississippi River.”

Tracy, who is now an Illinois state Senator, was successful, however, in passing a nonbinding 2014 resolution, which the Illinois DNR has taken as a directive to issue new rules making it easier to obtain state permits. The rules are currently under consideration.

This worries Guyton, who calls it an “under the table” way to retroactively approve overbuilt levees. A lawsuit may be the only solution, Guyton said.

Higbee, who said he had heard rumors about illegally overbuilt levee for years before the Corps report was released, takes a middle ground, saying levees are necessary on the river, but beyond a certain height and concentration become counterproductive. While Higbee appreciates the protection afforded by the Gregory Levee, he disagrees with a common argument held by big levee advocates – that the entire floodplain can be kept dry all the time if levees are sufficiently tall.

“Anybody that assumes that, I think, is a fool,” Higbee said.

Officers for the Gregory Drainage District, he added, have been very careful to keep their levee at the legal height to avoid the consequences of a suspension.

“We hope everybody will stay within the standards that the Corps allows,” Higbee said. “It’s more fair for everybody. I know everybody would like to raise their levees if they had the funding. Not that that’s a good solution. You can’t contain a river with just levee raises.”

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