

# WATERWAYS

A Quarterly Publication of the Iowa Drainage District Association

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## Project to clean up central Iowa watersheds unveiled at northern Polk County farm

While strides have been made in reducing soil erosion and the loss of phosphorus from the state's farmland, more needs to be done to reduce the amount of nitrogen flowing from Iowa farm fields into the state's waterways, Iowa Secretary of Agriculture Mike Naig said recently during an event to kick off the Central Iowa Water Quality Infrastructure Project.

Naig was joined by various conservation, drainage and watershed management leaders for the event, held on the Kurt Lehman farm just north of Alleman in northern Polk County.

They touted the benefits of the project, which creates a framework to streamline and ramp up the use of saturated buffers and bioreactors on the edge of farm fields in Polk and Dallas counties by simplifying the financial and construction processes for property owners.

A saturated buffer diverts the flow of runoff from existing drainage tiles so water passes through subsurface soils and vegetation, filtering it before it enters a creek or stream. The average cost of building a saturated buffer is about \$4,000.

According to the project website, 40 saturated buffers and 11 bioreactors will be added to farm fields during the first phase of the project to protect water quality and support recreation on the Des Moines and Raccoon rivers. The first phase is expected to be complete by mid-2022. The second phase has grown in size and is now expected to include another 150 sites and additional counties.

The estimated cost for phase one is \$400,000, with the Iowa Department of Agriculture and Land Stewardship funding 75% of the construction costs, and Polk County is funding 25% percent of the construction costs. The costs



Iowa Secretary of Agriculture Mike Naig, left, and John Swanson, right, Watershed Management Authority coordinator with Polk County Public Works, talk about the Central Iowa Water Quality Infrastructure Project during an event Thursday at the Kurt Lehman farm north of Alleman. *Photos by Michael Crumb*

for phase two were not available.

With a saturated buffer and Fourmile Creek as the backdrop, Naig said aggressive goals were set for phosphorus retention and nitrogen reduction in the state's Nutrient Reduction Strategy.

"Over the past several decades we've made progress in reducing phosphorus loss, but we need to double down on nitrogen," he said. "This project creates a model that allows us to speed up the pace that we're adding those practices across the state, and this project ... is impacting the residents of Polk and Dallas counties and our neighbors downstream. Other communities are watching what's happening here, and we know success here will lead to successful projects elsewhere."

Jon Hubbert, state conservationist for the U.S. Department of Agriculture's Natural Resources Conservation Service, said the project will help farmers reach their conservation goals.

Waterways is a quarterly publication of the Iowa Drainage District Association. Comments can be directed to the association at:

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## Mark your calendars

IDDA will be returning to its regular annual meeting format this December. The 2021 meeting will be Friday, December 3rd at the Best Western Starlite Village Hotel in Fort Dodge. A full agenda and registration information will be contained in our next quarterly newsletter.

## Executive Director Notes

It is mid-July as I write this. I have just about finished up my member visits for the year. IDDA is on a July 1-June 30 fiscal year so I am a little behind but hope to catch up soon. The pandemic slowed down personal visits of course so it is really good to be able to get out and visit courthouses again.

Elsewhere in this newsletter is an article about the Iowa Supreme Court putting a halt to yet another water quality lawsuit. The court said – correctly I believe – that these are issues to be addressed by the legislature, not the courts. It is clear that some environmental groups see additional regulation as the way to “solve” water quality in the state. Unable to achieve that thus far, they turn to the courts. It should not really be the purview of the courts to make policy in this area. Our country and our state are representative democracies with numerous ways to interact with those that are making laws and policy. That is the way it should be. Thankfully, so far, the courts have not put up with these end runs around the process.

## Unattributed Wisdom

The news isn’t all the news. What holds the world together is the way all those people who never made the news were inclined to live their lives.



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“The producers want to do the right thing, and this helps them to do that without too many impacts on their operations,” he said.

John Norwood, Polk County Soil and Water Conservation District commissioner, said the state’s agricultural system is unbalanced and unsustainable, and too focused on commodity production.

“Meanwhile our soils are being depleted at 10 times the rate Mother Nature provides and our drinking water, flood control reservoirs and local infrastructure ... is fouled all the way to the gulf with sediment and excess nutrients,” he said.

Nutrient runoff from farm fields is considered to be among the leading causes of a growing area in the Gulf of Mexico known as the dead zone, an area of water where oxygen levels are too low to support marine life. It’s caused every year by nitrogen and phosphorus pollution that flows into the gulf from the Mississippi River.

Norwood asked what would happen if the state adopted a new vision that is “productive, resilient, regenerative, diverse, vibrant and balanced using agricultural productivity, water management, water sovereignty, soil health and biological activities as principal measures for success.”

“What is missing?” he said. “We start with a call for action.”

Norwood said the state is up to the difficult water and soil challenges it faces.

“The challenge is one I believe Iowa farmers and Iowans are willing to accept and ones that now need to be faced,” he said.

Under the plan, sophisticated mapping tools that look at topography, stream bank height and soil types will identify project sites that will have the biggest impact on water quality. There will also be concerted efforts to reach out to farmers and landowners along Fourmile, Mud, Camp, Spring and Walnut creeks to encourage them to participate.

It also works to create a simplified funding structure and temporary construction easement payment, making it easier for landowners to participate.

A key element of the plan is “identifying multiple edge-of-field practice sites in one county to make it easier and more attractive for contractors to bid on the project, reducing the overall project costs,” the project’s website stated.

John Swanson, Watershed Management Authority coordinator with the Polk County Public Works Department, said he knows it may be a hard sell for some landowners who have been listening to water improvement arguments for decades.

“With this project, we tried to come up with a new pitch and say we want to work with you, we’ve hit all those hurdles in the past five years, let’s change things up, and that’s got us to where we are today, bringing a strong team together. And at the end of the day we’re ready to ramp it up,” he said.

Funding partners involved in the project include the Iowa Department of Agriculture and Land Stewardship, Polk County, USDA-NRCS, the city of Des Moines, the

Agricultural Drainage Management Coalition and the Polk Soil and Water Conservation District.

Water improvement efforts also received a boost this year from the Legislature, which approved a 10-year extension of the state’s Water Quality Fund, adding \$329 million for water quality efforts through 2039, Naig said.

In comments made to the Business Record after the event, Naig said efforts to clean up the state’s waterways through edge-of-field practices like saturated buffers and wetlands will be a long-term venture.

“We’ve got a long history of conservation in Iowa as it relates to preventing soil erosion, and that’s taken us decades to get to where we want to be with that,” he said. “We need to apply the same kind of focus to addressing nitrogen. This is really one of those first projects where we see a coordinated effort, in a targeted area in this particular watershed, and when you start to get to that kind of scale in a smaller watershed you can see impact in the water. This is reducing the amount of nitrate flowing in the stream, and that has an impact downstream.”

He said the program will have to expand to more property owners and communities statewide for its true impact to be seen.

“It’s going to take us a lot of time and resources, but that’s what we’re all focused on right now, how do we accelerate and get more done in focused areas like this,” Naig said. “When you see change on the land, you’ll see the change in the water you want to see.” *Source – Michael Crumb, Iowa Business Record*

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# Court puts Halt to Water Lawsuit

DES MOINES, Iowa (AP) — A sharply divided Iowa Supreme Court has stopped a lawsuit aimed at reducing the flow of fertilizer and hog farm waste into the state's river and streams, finding that limiting pollution from farms was a political matter and not one for the courts.

The 4-3 decision handed a significant defeat to environmental groups hoping to get the chance to prove that Iowa should scrap its voluntary farm pollution policy, order new mandatory limits on nitrogen and phosphorous pollution and stop construction of new hog barns.

It is the latest court rejection of an attempt to force the nation's leading corn and pork producing state to clean up farm pollutants from its major rivers that provide drinking water to hundreds of thousands of Iowans.

The lawsuit, which was brought by Iowa Citizens for Community Improvement and Food & Water Watch, contended that unregulated farm pollution is violating the rights of citizens to clean water in the Raccoon River for recreational and drinking water use.

It said a legal concept that precedes Iowa statehood — the public trust doctrine — should apply to this case and require the state to ensure that citizens have a useable Raccoon River untainted by excess pollution caused by farm runoff of fertilizer and animal manure.

A state judge ruled in 2019 that the environmental groups sufficiently demonstrated that they suffered injury because the river's untreated water is too polluted to enjoy recreationally or aesthetically. The state appealed the ruling and asked the court to dismiss the lawsuit.

Four of the court's conservative justices said the environmental groups didn't show that the state's actions had caused a concrete injury the courts could fix. They also said the public trust doctrine historically hasn't been used to solve a problem as complex as the environmental issues raised, and that the issues at the heart of the case were political questions that would fall to the Legislature to settle.

"There is not enough here to demonstrate that a favorable outcome in this case is likely to redress the plaintiffs' alleged reduced ability to kayak, swim, or enjoy views of

the Raccoon River, or would save them money on drinking water. The plaintiffs' claims must therefore be dismissed for lack of standing," Justice Edward Mansfield wrote for the majority.

He said the Des Moines Water Works would have better standing to sue, but he pointed out that the utility already did so and lost a 2017 federal court case that was also dismissed.

The utility filed a brief with the state Supreme Court saying it was pursuing the development of alternate sources of water but that its long-range plans involve the implementation of new treatment technologies that would cost customers tens of millions of dollars.

"DMWW's decision to invest millions of dollars in treatment infrastructure to contend with nutrient pollution in the Des Moines and Raccoon Rivers should reveal the magnitude of the water quality problem in Iowa," the utility wrote.

The Iowa attorney general's office declined to comment immediately on the ruling.

The plaintiffs said in a statement that they were considering all of their options.

"The fight for clean water in Iowa is far from over," they said. "Until further action is taken, industrial agricultural runoff will continue to pollute the river unimpeded, and Iowans' right to clean water will remain a right without a remedy."

Justices Brent Appel, Christopher McDonald and Dana Oxley would have allowed the environmental groups' case to proceed to trial.

Oxley said the court majority's "dismissive characterization of the plaintiffs' requested declaratory relief as too general rings hollow." She said if a court struck down the state's current voluntary pollution strategy for farmers, the state could impose mandatory regulations on farmers that would provide relief to the plaintiffs that meets constitutional standards.

The Raccoon River is a 31-mile tributary of the Des Moines River and is a primary source of drinking water for about 500,000 central Iowa customers of the Des Moines Water Works. The utility's nitrate removal system was one of the largest in the world when it was built in 1992.

Iowa is the nation's leading pork producer, with about 24 million pigs on farms that discharge billions of gallons of liquid manure into the environment every year. The state also is the nation's leading producer of corn, which requires significant amounts of nitrogen fertilizer to thrive.



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# Study shows Constructed Wetlands are best Protection for Ag Runoff into Waterways

By Megan Schilling, *Successful Farming*

A new study finds wetlands constructed along waterways are the most cost-effective way to reduce nitrate and sediment loads in large streams and rivers. Rather than focusing on individual farms, the research suggests conservation efforts using wetlands should be implemented at the watershed scale.

The study, led by Amy Hansen, assistant professor of civil, environmental & architectural engineering at KU, utilized computer modeling to examine the Le Sueur River Basin in southern Minnesota, a watershed subject to runoff from intense agricultural production of corn and soybeans.

“Excessive nitrate or sediment affect local fish populations, the amount of money we have to spend to treat drinking water, and there’s a downstream effect also,” says Hansen. “Our rivers integrate what’s happening across the landscape, so that location that you love to go and fish or swim — whether that continues to be a great place to fish or swim has a lot to do with the choices that people are making farther upstream. Excess pollution goes to a water body downstream like a reservoir or the ocean and causes algal blooms or hypoxic or ‘dead zones.’ The dead zone in the northern Gulf of Mexico is directly correlated with nitrate that comes from the Mississippi River Basin.”

The research team compared potential watershed approaches to improving water quality, such as cutting runoff from farms and adding wetlands, then gauged the economic costs of each.

Because most methods rely on voluntary participation by individual farms and are implemented by a patchwork of different agencies, the researchers found they’re less effective.

“Currently, there’s individual management or conservation practices, and those include cover crop, high-precision fertilizer application, reduced tillage, constructed wetlands, and ravine tip management. Those are some of the different practices we considered,” Hansen says. “But management of non-point sources is voluntary in the U.S. through incentive programs, and the scale these conservation practices are often considered at is the individual farmer when a coordinated approach is much more effective. In a way, it’s like a recycling program where you’re saying, ‘Anyone recycling one thing is better than no one recycling.’ This is true, some recycling is better than no recycling, but a coordinated approach will save money and be more effective.”

Continued on page 6 ▶

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# Constructed Wetlands

Hansen and her teams found constructed wetlands are the most effective of these practices, especially if the size and location are evaluated at the scale of a watershed. The KU researcher said wetlands do two things well: they slow down water as it heads toward streams and rivers and contain vegetation and microbes that can process nutrients used as fertilizer on crops.

“Microbes and plants within wetlands are actually removing the nitrate from the water,” Hansen says. “With sediment, on the other hand, what the fluvial wetlands are doing is holding water back during these high flows — and by holding that water back you’re getting lower peak stream flows, which is reducing the amount of near channel sediment that’s being transported downstream.”

“This work would not have been possible without the diverse expertise and perspective of the team composed of hydrologists, ecologists, geomorphologists, biogeochemists, social scientists, and environmental economists,” says Efi Foufoula-Georgiou, the lead principal investigator on the project from the University of California-Irvine. “The sustained NSF support allowed us to take a fresh view of the problem and take the time needed to collect extensive field data, build new models, and engage with stakeholders. We hope that our results will affect policy and management as the clock ticks to meet the water quality targets of the state.”

A key aspect of the new study focuses on the economics of implementing small, shallow fluvial wetlands and stabilizing ravines. According to the investigators, such measures were clearly more cost-effective than field management. But the researchers found the performance of wetlands required optimal placement, and often cost-effective wetlands can be too expensive for a single farm or one agency to put in place.

The PNAS paper concludes that a comprehensive strategy must address an entire watershed as a system, combining funds from different programs and agencies and pinpointing locations for fluvial wetlands that will lead to the greatest reduction in nitrates and sediments reaching waterways.

“This work shows that we can’t make real progress toward our goals for improving water quality in agricultural areas with more of a business-as-usual approach,” says study co-author Jacques Finlay, a professor in the College of Biological Sciences at the University of Minnesota. “Instead, conservation actions, and the investments that support them, can be more effective if they consider the interactions that underlie the source of water pollution and how different management options influence them.” *Editor’s Note – IDDA has partnered with the IDALS since 2006 to support the CREP program which constructs targeted nitrate removal wetlands.*



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