# Can Iowa improve its water quality if it can't agree how to measure success?

**Donnelle Eller and MacKenzie Elmer , Des Moines Register** 7:23 p.m. CST November 19, 2016


*(Photo: Zach Boyden-Holmes/The Register)*

As Iowa lawmakers prepare to battle again over investing hundreds of millions of dollars to improve water quality, a new and controversial debate is looming: What measurement should the state use to determine whether that spending is working?

A big part of Iowa's efforts to improve its rivers, streams and lakes centers on farmers adopting conservation practices spelled out in the state's ambitious Nutrient Reduction Strategy, which seeks to slash nitrogen and phosphorous levels in the state's waterways by 45 percent.

But a political divide has emerged over the best way to measure the success of those improvements:

- Environmentalists, water advocates and scientists want Iowa to rely on real-time water-quality monitoring, building on the state's existing work to measure how well the state's conservation efforts are working.
- Farm groups prefer a yardstick that leans on counting how many acres of cover crops, grassed waterways and other conservation practices have been put in place, presuming that the more Iowa has, the better its water quality will be. Working with Iowa State University scientists and an industry-led nonprofit, they're working on a plan to precisely track conservation gains.

The problem is that neither method guarantees that Iowa will be able to quickly figure out whether water quality is actually improving.

The reason: Farm practices that cut nitrate and phosphorus levels likely will take more than a decade to produce results in major rivers and lakes.

Iowa could invest "tens of millions of dollars" in added water-quality monitoring and "not know a lot more than what we do now," said Bill Northey, Iowa's agriculture secretary.

**COMPLETE COVERAGE: Iowa's Water Quality Issues (/topic/57d80559-29ff-4347-9e37-9c1d38c2c7d1/)**

Moreover, he said, money spent on monitoring would take away from conservation practice investments that help improve water.

"If we only have a certain pool of dollars, taking from one has an impact on the other," Northey said.

But without a good measurement for success, persuading lawmakers to fund millions of dollars in water quality improvements could be a difficult sell.

Proposals to fund a major water-quality cleanup in Iowa have ranged from increasing the sales tax three-eighths of 1 cent to diverting projected revenue growth from an existing statewide sales tax for school infrastructure.

## 'We're tired of cheerleading'

What's beyond the dispute is that water quality in Iowa is a serious problem: Half of the rivers, streams and lakes that scientists have assessed are considered impaired.

Environmental advocates such as Josh Mandelbaum, an attorney at Environmental Law & Policy Center, are pushing hard for real-time measurements, arguing that investing in terraces, bioreactors or other water improvement practices without such measurements risks wasting years of money and effort.

"You need to actually check the water to see if the water quality is improved," Mandelbaum said.

Bill Stowe, CEO of the Des Moines Water Works, the utility suing north Iowa drainage districts (/story/money/2016/05/13/des-moines-water-works-trial-delayed-until-next-year/84322342/) over high nitrate levels, said agricultural leaders want to focus on measuring conservation practices, instead of water quality, to hide the state's lack of progress.

"We're tired of the cheerleading about minuscule gains in acres of cover crops, and ribbon cutting for biofilters," said Stowe, who calls the volunteer Nutrient Reduction Plan ineffective, since it has no deadlines to meet its goals.

The utility seeks federal oversight of drainage districts, and indirectly, farmers.

"Data is key, and we're not seeing that," he said.

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Water Works shifts how it disposes of excess nitrates

(http://www.desmoinesregister.com/story/news/investigations/readers-watchdog/2016/10/08/water-works-shifts-how-disposes-excess-nitrates/91621994/)

## Iowa's impaired waters

Iowa already is facing criticism that it isn't doing enough to protect its waterways — from failing to set limits on nutrients such as nitrate and phosphorus to providing insufficient oversight of large animal feeding operations that often are the source of manure spills.

A report last week criticized the federal government for failing to push Iowa and nine other states to take action (/story/money/agriculture/2016/11/17/epa-must-push-iowa-mississippi-river-states-cut-nutrient-pollution-report-says/93954770/) that would cut the size of the Gulf of Mexico dead zone, an area the size of Connecticut and Rhode Island that's unable to support aquatic life.

"One of the things we looked is the states' nutrient reduction strategies … and in most of them, there's no real accountability," said Matt Rota, senior policy director of the Gulf Restoration Network, one of 13 members of the Mississippi River Collaborative, which released the report.

It said Iowa's nutrient pollution problems are "significant and getting worse, and in many cases approaching crisis levels."



**Limnologist Kyle Skoff pulls a crayfish from the Volga River as the state hygienic lab conducts a biological assessment Wednesday, Aug. 17, 2016.** *(Photo: Zach Boyden-Holmes/The Register)*

Iowa Department of Natural Resources data show that 6,372 miles of Iowa's rivers and streams struggling with too much bacteria, animal waste spills or other pollution.

And another 78,990 acres of lakes and reservoirs are plagued with algae, sediment or other problems.

But the true scope of the problem isn't clear. Iowa has assessed only 12 percent of its 72,000 miles of river and streams and about half of its 202,200 acres of lakes and reservoirs, primarily because of budget constraints.

"I'm amazed that we don't know more than we do about Iowa's water quality," said Tom Buman, CEO of Agren, a Carroll company that helps farmers assess and build conservation practices.

"It bothers me, with as much public money that we've put into conservation, that we can't paint a clearer picture of where we're at."

Funding for conservation can come from several sources, including farmers. State leaders, for example, estimate more than $120 million was invested in

conservation through federal, state and private sources last year.

That excludes about $220 million state farmers through the federal Conservation Reserve Program.

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**Limnologists and educators from the state hygienic lab use an electric generator to shock and count fish during a biological assessment on the Volga River Wednesday, Aug. 17, 2016.** *(Photo: Zach Boyden-Holmes/The Register)*

## The true scope of the problem

State natural resources leaders argue that the impaired waters list — lakes or rivers that fail to meet guidelines for swimming or fishing, for example — is often misrepresented.

The number of rivers, streams and lakes added to the impaired list in 2014 increased nearly 20 percent, primarily because more lakes, rivers and streams were assessed, said Bill Ehm, who leads DNR's environmental protection division.

But that doesn't mean Iowa's water quality is getting worse, Ehm said. Rather, Iowa just knows more about existing conditions, he said.

He also said the EPA no longer looks at the severity of the impairment. For example, in 2010, 75 percent of Iowa's waters were considered slightly to moderately impaired, and 25 percent were considered severely impaired.

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Report: Iowa, states failing to cut nutrient pollution without EPA push
(http://www.desmoinesregister.com/story/money/agriculture/2016/11/17/epa-must-push-iowa-mississippi-river-states-cut-nutrient-pollution-report-says/93954770/)

And because of Iowa's limited funding, waterways come onto the impaired list faster than the state can address them.

Lakes, rivers and streams that require a restoration plan often sit on the list until the strategy is written. Then they can move onto a long line needing for improvements.

Ehm, who gives Iowa's waters a "C," acknowledges problems. But he contends the state and its many partners are making improvements.

"Iowa has gone from having seven to 42 trout springs that are naturally reproducing," Ehm said. "We've taken lakes off the impaired waters list.

"We've had areas where we've been very effective."

## Figuring out what's in place

Iowa is collecting data about public and private investment into cover crops, bioreactors and wetlands, as well as measuring farmers' knowledge about the Nutrient Reduction Strategy and their attendance at field days, conference and other events to learn about them.

DNR and other state agencies, using satellite data, are mapping grassed waterways, buffers and terraces that can help farm and water experts determine where conservation practices are in place and where they're needed across Iowa's 30 million farm acres.

In a busy cafe in downtown Des Moines, Adam Schnieders walks through a "logic model" developed to measure how well farmers are adopting conservation practices that cut nitrogen and phosphorus in Iowa's waterways.

"It's hard to set a time frame to meet the goals if you don't know where you're starting," said Schnieders, DNR's water quality coordinator.

At the same time, an industry-backed group called the Iowa Nutrient Research and Education Council is working with local elevators, fertilizer companies and other agribusinesses to develop a database about existing farming and conservation practices.

That includes everything from reduced tillage to timing and rates of fertilizer use, said Shawn Richmond, environmental technology director at the Agribusiness Association of Iowa, the group that formed the education center.

ISU will provide the Nutrient Research and Education Council $750,000 over three years to develop the database, information that will be audited by a third party. Richmond said the information will be confidential and aggregated so individual farmers aren't identified.

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(http://www.desmoinesregister.com/story/money/agriculture/2016/06/16/battle-between-farming-environment-plays-out-north-raccoon-river/85041518/)

Mandelbaum, the environmental lawyer, said he's concerned that the bundled data will give Iowans too little information about where conservation practices are most needed.

Craig Cox, senior vice president for agriculture and natural resources at Environmental Working Group, agreed.

"There’s a tremendous resistance to document what’s going on farmers’ fields in a way that would help us all understand how far we have to go — what’s being done, what's working or what's not working," said Cox, who leads the Washington, D.C., group's Midwest office in Ames.

Iowa farmers have received $4.4 billion over 20 years through federal conservation programs, the Environmental Working Group's database shows. But taxpayers have little idea how long those practices remain in place — or how effective they are, Cox said.

"If you're just adding up the numbers, they aren't terribly meaningful," he said.

**Limnologist Todd Hubbard of the state hygienic lab conducts a biological assessment on the Volga River Wednesday, Aug. 17, 2016.** *(Photo: Zach Boyden-Holmes/The Register)*

## Measuring river flows

Experts agree the state deserves credit for the monitoring they're doing now. They'd just like to see more.

In northeast Iowa late this summer, a shock of white underbellies shot to the surface of the Volga River as scientists scrambled to flip the fish into a small boat tugging a generator.

Limnologists from the University of Iowa's Hygienic Laboratory spent their summer taking measurements on Iowa waterways, data that will be cataloged and uploaded into a public website as part of the state's water-quality monitoring program.

Mike Birmingham, a wader-clad limnologist, measured the flow of the river and the slope of its banks and counted fly larvae and crayfish and scraped algae from rocks with a fine tool to send it back to the lab.

A river's biodiversity is one of the best indicators of health. "The amount of algae that collects on rocks can indicate a higher level of nitrates," Birmingham said.



**Limnologists and educators from the state hygienic lab use an electric generator to shock and count fish during a biological assessment on the Volga River Wednesday, Aug. 17, 2016.** *(Photo: Zach Boyden-Holmes/The Register)*

The scientists conduct biological monitoring at 70 small rivers and streams across Iowa each year.

“At least for the biological monitoring, I’d say we’re holding steady,” Birmingham said. “I don’t think we have a lot of grossly polluted streams.”

The state also monitors water quality through a network of 60 fixed stations that have been in place for about 15 years on mostly large interior rivers. And it tests for E. coli and other contaminants on about three-dozen large lakes.

The U.S. Geological Survey, the U.S. Corps of Engineers, the University of Iowa's IIHR — Hydroscience & Engineering, and others also are monitoring the state's waters.

Iowa DNR, the university and the state ag department submitted a supplemental Nutrient Reduction Strategy report in August that calls for a technical group be formed to assess gaps in nutrient monitoring and recommend improvements.

The report also calls for assessing the nutrients leaving Iowa for the Gulf of Mexico each year.

## No extra money for monitoring

With a budget that's been frozen for a decade, Iowa's Department of Natural Resources has put together a new strategy to beef up the state's water-quality monitoring.

Some proposed changes will cost little money. But expanding the work — from increased analysis to expanded testing in smaller streams — could cost up to $3.4 million annually.

The agency, however, has been told not to expect a budget increase next year.

Iowa spends little on water monitoring compared with some of its neighbors. Minnesota, which has a dedicated sales tax for clean water, for example, spends about $20 million annually on water-quality assessment and monitoring.

Iowa's draft strategy recommends no added monitoring in small watersheds, where the Nutrient Reduction Strategy's effectiveness will first emerge.


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The North Raccoon: A river of controversy and undiscovered beauty

(http://www.desmoinesregister.com/story/money/agriculture/2016/06/16/north-raccoon-river-controversy-and-undiscovered-beauty/85039642/?from=global&sessionKey=&autologin=)


Scientists estimate it could take five to 10 years before nitrogen and phosphorus reductions show up in small watersheds, and two to three times longer in big watersheds such as the Raccoon River.

Northey, Iowa's ag secretary, said groups leading individual watershed projects across the state are monitoring local streams and lakes, giving farmers, scientists and others information about how well conservation practices are working.

"It's partly measuring water, but it's also measuring the activity that we know will have water quality benefits," he said.

But Stowe, the Des Moines Water Works CEO, said the state's water-quality monitoring efforts are disjointed at best.

"We still continue to see alarmingly high nitrate concentrations in the Des Moines and Raccoon rivers," he said. "We've had a record number of beach advisories at state beaches. …

"But what we hear is 'Everything is great.'"

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