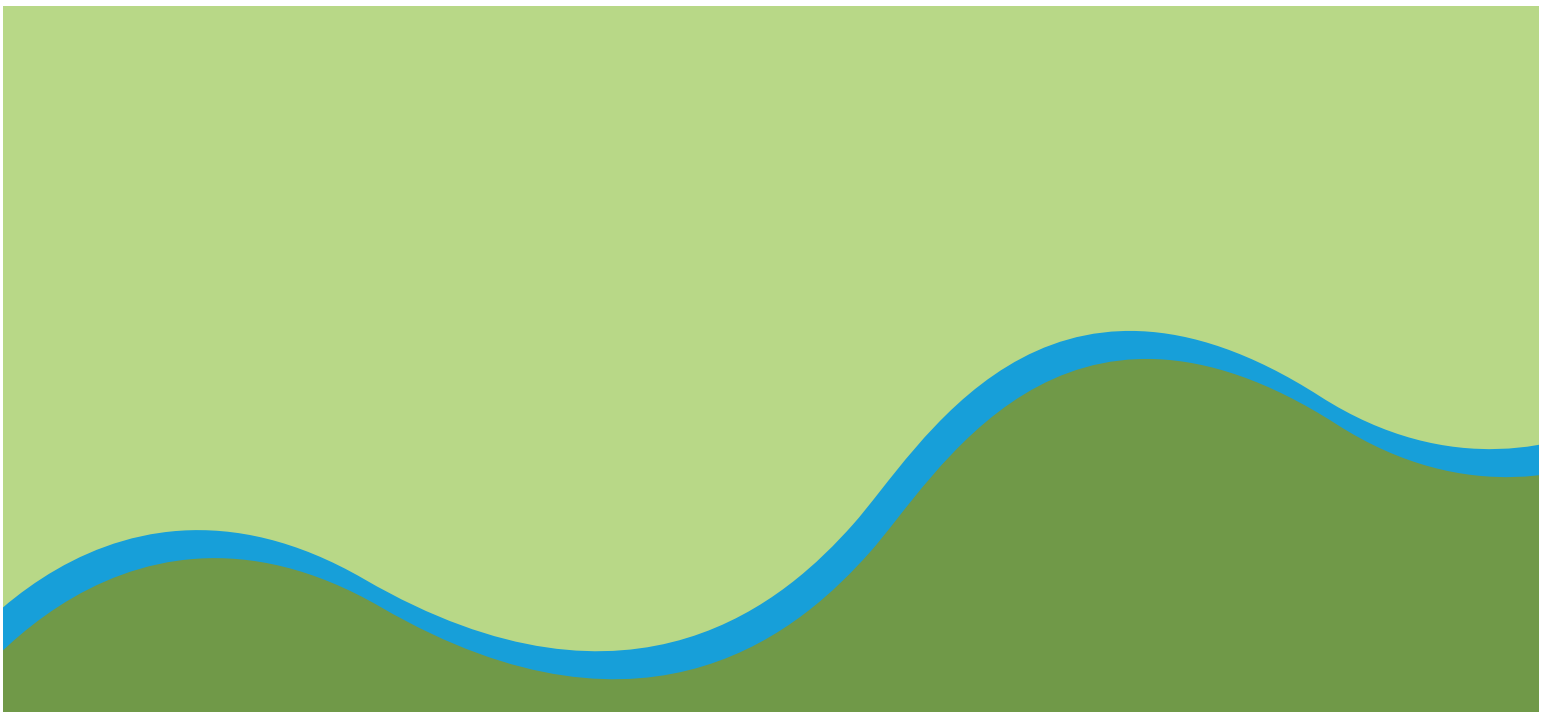


Iowa's Water Crisis — Nothing Will Change If Nothing Changes

**A Report by John Norris and The Harkin Institute
for Public Policy and Citizen Engagement**



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Foreword

The report that follows is the result of over 4,400 hours of work and is an important step towards an Iowa agricultural system that includes public health as a central consideration. In 2022, then Polk County Administrator John Norris set in motion a vision for protecting one of Iowa's most important resources: our water. Using funds from the American Rescue Plan Act, Polk County appointed a project lead and hired sixteen top scientists with broad expertise in fields such as Hydrology, Microbiology, Environmental Science, and Agricultural Engineering to provide an objective assessment of the water resources in Central Iowa. Those scientists put in 4,400 hours of work creating a remarkable report, the Central Iowa Source Water Resource Assessment (CISWRA), that provided a detailed history of Iowa's land use practices and river flows, a comprehensive assessment of the Raccoon and Des Moines Watersheds, and a diagnosis of the many challenges facing these watersheds including high nitrate levels, harmful algal blooms, waterborne pathogens, and increased risks of flooding.

The Harkin Institute for Public Policy and Citizen Engagement was honored to partner with Polk County in presenting this report to the public as part of an incredible event on August 4, 2025 that included over 600 in-person participants, over 3,000 YouTube views, countless news stories, and even its own after parties.

Following on the tremendous public interest in that report, the Harkin Institute again partnered with Senior Fellow John Norris, who hosted over sixteen hours of Zoom calls for concerned residents and experts who attended or watched the CISWRA presentation to develop policies designed to fix Iowa's deeply concerning and worsening water quality problems. As you will read below, John then synthesized that report into clear, achievable, common-sense proposals that can be used to guide legislation towards a future where Iowa can be proud of our water.

It's important to understand this report in the context of multiple issues surrounding water quality at the present moment. Many excellent groups around the state are releasing sets of recommendations for the 2026 legislative session, including groups the Harkin Institute has worked with over the past year, such as the Iowa Environmental Council, Iowa Farmers Union, Food and Water Watch, and Iowa CCI. The Harkin Institute itself is also releasing a legislative guide that makes suggestions about water quality. But the report below, though containing some suggestions about what is most urgent, is ultimately focused on a larger and longer-term question: namely, what policies need to be enacted to comprehensively address Iowa's water quality problems? It is not designed around an assessment of what can get passed by the current legislature or what steps can be taken without hearing any pushback from the corporate special interests. It simply lays out a set of policies that, if followed, would dramatically improve Iowa's waterways to protect the health of current and future generations and can provide a model for other states facing similar challenges.

I want to express my sincere thanks to the scientists who created the CISWRA report, along with their fearless and indefatigable leader, Jennifer Terry, who has since been named the Director of the Hubbel Law Center at the University of Iowa. I am also extremely grateful to the many citizens who came out for or watched the CISWRA presentation, who attended one of our Cancer Listening Sessions with Iowa Environmental Council and Iowa Farmers Union this past summer, and who sent a powerful signal that Iowans are no longer going to put up with a system that ignores the serious health risks caused by a failure to moderate the amount of nutrients and chemicals dumped onto our land and into our waterways every year. I have also been extremely impressed with the wonderful environmental, public health, and progressive farming organizations that have been extremely gracious with their time, both in the creation of this report and in doing work that helped make it possible. And most of all, a huge thank you to John Norris for choosing to take on such a massive and politically complicated issue, and for deftly navigating through dense science, legislation, and ideas to produce the excellent document you will read below.



Adam Shriver, Ph.D.

Director of Wellness and Nutrition
The Harkin Institute for Public Policy and Citizen Engagement
Connecting People and Policy

Executive Summary

Purpose and Context

Water is Iowa's most essential natural resource and fundamental to human health, agriculture, recreation, and economic vitality. While Iowa is water-rich in quantity, it is increasingly water-poor in quality. This paper presents a science-based assessment of Iowa's water crisis and offers a comprehensive set of state and federal policy recommendations, designed to protect public health, restore water quality, support farm viability, and strengthen rural communities.

The evidence is clear: voluntary approaches have failed to reduce water pollution on a large scale, and incremental reforms are insufficient. Iowa must adopt a fundamentally different approach—one that treats clean water as a public health necessity, manages water at the watershed level, addresses pollution at its source, enforces accountability, and aligns funding with these priorities.

The Evidence: Iowa's Water is Becoming Unsafe

In July 2025, Polk County released the **Central Iowa Source Water Research Assessment (CISWRA)**, the most comprehensive water quality analysis ever conducted in Iowa. Sixteen scientists spent more than 4,400 hours analyzing the Des Moines and Raccoon River watersheds, which supply drinking water to over 600,000 Iowans. The findings are unequivocal:

- By the time rainfall run-off reaches the Des Moines metro area, multiple contaminants with known public health risks have been added to surface waters.
- **Approximately 80 percent of chemical and nutrient pollution originates from agricultural practices**, primarily fertilizer, pesticide, and manure application.
- Nitrate levels in Des Moines Water Works's source waters are among the highest in the nation and frequently exceed the EPA drinking water standard of 10 mg/L NO₃ - N, requiring costly treatment.
- Additional contaminants include harmful algal toxins, PFAS, pesticides, pathogens, antibiotics, and antibiotic-resistant bacteria.
- Hundreds of Iowa waterways are classified as impaired, and public beaches are regularly closed due to contamination.

These findings are consistent with long-standing national data showing Iowa as a dominant contributor—nearly 40 percent—of nutrient pollution in the Mississippi River watershed and the resulting Gulf of Mexico hypoxic “dead zone.”

Why Current Policy Has Failed

In response to the Gulf hypoxia crisis, Iowa adopted the voluntary Nutrient Reduction Strategy (NRS) in 2013. After more than a decade, CISWRA confirms that water quality has not improved and consistently remains above safe standards.

The reasons are structural and predictable:

- Fertilizer and pesticide use have not declined; nearly five million tons of anhydrous ammonia and other non-manure fertilizers are spread and applied annually.
- Manure from more than 4,200 CAFOs is applied at volumes that exceed land assimilative capacity.
- Extensive tile drainage rapidly conveys pollutants to waterways.
- The NRS focuses primarily on “edge-of-field” practices that treat pollution after it occurs rather than preventing it at the source.
- Success is measured by whether funding is distributed for practice adoption, not by actual improvements in water quality.

Voluntary compliance without enforceable standards, however well-intentioned, has proven inadequate to protect public health or natural resources.

Core Policy Framework: A Statewide Water Strategy

The paper recommends a **statewide water management strategy**, centered on watershed-level monitoring, pollution prevention, accountability, and adaptive management. The framework rests on eight pillars.

1. Protect Public Health Through Monitoring and Transparency

Iowa should establish a comprehensive, publicly funded water monitoring system covering all watersheds, with frequent testing for nitrates, phosphorus, pesticides, pathogens, and emerging contaminants. Results should be publicly accessible and used to guide enforcement and policy decisions. Iowa should also adopt EPA-recommended

nutrient criteria for its ecoregion and measure success by improved water quality, not by program participation.

2. Address Pollution at its Source

Because agricultural practices are the dominant pollution source, policy must directly reduce excessive application of fertilizers, pesticides, and manure. Recommended actions include phasing in enforceable nutrient application limits, reforming fertilizer tax exemptions, strengthening manure management requirements, establishing buffers along waterways, restricting CAFO expansion, and modernizing the CAFO Master Matrix to reflect public health and environmental realities.

3. Reform Drainage and Tile Infrastructure

Tile drainage is a major pathway to pollution and yet remains largely unregulated. Drainage districts should be integrated into watershed management, required to meet water quality standards, subjected to oversight, and prohibited from expanding without pollution mitigation. New authority is needed to test tile outflows and establish allowable nutrient limits.

4. Invest in Research, Education, and Transition

Iowa's public universities must refocus research and education toward regenerative, diversified, and profitable farming systems that protect soil and water. This refocusing includes restoring the Leopold Center, increasing transparency around corporate-funded research, integrating sustainable agriculture into core curricula, and prioritizing market development for alternative crops and practices.

5. Build Agency Capacity

Effective water management requires adequate staffing at the Department of Natural Resources, NRCS, and watershed authorities. Iowa should establish a statewide watershed management entity, fund local coordinators, and maintain publicly accessible water data.

6. Enforce Accountability

Penalties for pollution must be meaningful and sufficient to deter violations. Enforcement capacity must match the scale of regulated industries, particularly CAFOs.

7. Honor the Iowa Water and Land Legacy Trust

Voters overwhelmingly approved of this trust in 2010. The original funding formula must be implemented as intended to support conservation, watershed protection, and outdoor recreation without shifting cleanup costs for private pollution onto taxpayers.

8. Align Funding with Responsibility

Monitoring, enforcement, research, and conservation should be funded primarily through assessments on practices and entities that generate pollution, not through taxes on drinking water. Modest fees on fall fertilizer application, CAFO livestock sales, and agricultural rental land will generate substantial, stable funding while incentivizing better practices.

Federal Alignment: Flipping the Farm Bill Paradigm

State action alone is insufficient without complementary federal reform. The report calls for Farm Bill changes that prioritize farmers, consumers, soil, and water over agribusiness interests. Key recommendations include tying crop insurance and subsidies to conservation outcomes, restricting subsidies on flood-prone land, redirecting the Conservation Reserve Program (CRP) toward permanent easements on marginal land, enforcing conservation compliance, and shifting federal policy away from overproduction toward supply management and diversified agriculture.

Conclusion: A Call to Action

Iowa's water crisis is not a mystery, nor is it inevitable. It is the predictable result of policy choices that undervalue water, externalize pollution costs, and rely on voluntary measures in the face of systemic harm.

These recommendations represent a necessary shift from tinkering at the edges to addressing root causes; from voluntary compliance to measurable accountability; from pollution cleanup to prevention; and from taxpayer burden to polluter responsibility.

Clean water is a public health imperative, an economic necessity, and a moral obligation. Without decisive legislative action commensurate with the scale of the crisis, Iowa's water quality, rural vitality, and public trust will continue to erode. With leadership and science-based policy, Iowa can chart a healthier, more prosperous future.

Participants

Following the August 4, 2026 presentation of CISWRA, a group of concerned Iowans from diverse backgrounds in farming, government, environmental science, community action, and more shared written thoughts, data, and policy proposals covering multiple areas to improve water quality. They then participated in ten meetings to develop recommendations for state and federal policies to clean up and protect our water. The group was committed to relying on science and facts, just like CISWRA, to recommend policies that will improve impact water quality but will also support family farmers and enable them to prosper.

The following people participated in sessions and agreed to have their names shared with the report.

Linda Appelgate

Pat Boddy

Matthew Borman

Judy Conlin

Treyton Damerval

Mark Dobson

Derek Eadon

Coleen Fowle

John Forbes

Liz Garst

Tom Hagen

Chris Henning

James Hepp

Joanna Hunter

Chuck Isenhardt

Kerri Johannsen

Susan Judkins

Bethany Kohoutek

Todd Mattison

Mary Ellen Miller

Bob Mulqueen

Debbie Neustadt

Matt Ohloff

Susan Pohl

Carole Reichardt

Laura Sands

Michael Schmidt

Ray Sears

Adam Shriver

Jen Sinkler

Zack Smith

Mike Tramontina

Tony Thompson

Tim Wagner

Full Report

Water is Life. Human beings can survive weeks without food, but without water, only three to five days.

Iowa is fortunate to have an abundance of water. We receive, on average, 34 inches of rainfall per year. That rainfall fills over 70,000 miles of our rivers and streams. It fills our lakes and aquifers and enriches millions of acres of cropland.

This life-sustaining water, with which we are blessed and upon which our lives depend, is now being contaminated at an increasing rate. Iowa must change. Valuing water as a life-sustaining resource will not only make Iowans healthier but will protect and preserve our water's potential to make farming more profitable and breathe new life into rural Iowa.

As Iowans, we must ask ourselves: Do we have a right to clean, safe water? What actions are we willing to take to stop the pollution of our water?

On July 1, 2025, Polk County published the Central Iowa Source Water Research Assessment (CISWRA), the most comprehensive analysis of water quality ever conducted for the Des Moines and Raccoon Rivers. The assessment was conducted because these watersheds are the source of drinking water for over 600,000 Central Iowans and for recreational use on hundreds of miles of rivers and streams and multiple lakes and reservoirs.

A team of sixteen highly respected and accomplished scientists conducted over 4,400 hours of research in compiling the assessment. The task was complex, but the objective was simple: no agenda, no bias, just inform us what is in our water and where it comes from.

The results were significant and conclusive. By the time the rainwater falling on Iowa in these two watersheds reaches Des Moines, multiple kinds of contaminants with a high risk to public health have been added to that water.

CISWRA attributes 80% of the chemicals and harmful nutrients in our water to the runoff from agricultural practices. This is not a new revelation for Iowa. Over a decade ago, Iowa was identified as the source of nearly 40 percent of the chemical and nutrient runoff from the entire Mississippi River watershed (31 states and two Canadian provinces), which has created an over 5,000 square mile "Dead Zone" in the Gulf of Mexico.

It should surprise no one that the huge presence of the

synthetic chemicals and nutrients showing up in the Gulf from Iowa are also present in our Iowa water bodies and threaten public health and aquatic life here, too.

In response to a U.S. Environmental Protection Agency requirement that Iowa reduce its pollutants in the Mississippi River in 2013, Iowa launched a voluntary Nutrient Reduction Strategy (NRS) for agriculture to reduce the contaminants that farming practices are adding to our water system. The conclusion of CISWRA is that after over a decade of the NRS, our water pollution levels have not improved, and nitrate continues to be persistent and pervasive, and may worsen in the future.¹

The CISWRA report found that the highest nitrate values nationwide are predominantly found in Iowa, particularly in the Des Moines and Raccoon River watersheds.² Nitrate levels in these source waters for Des Moines Water Works often exceed the EPA standard of 10 milligrams per liter NO₃-N(mg/L) for safe drinking water, requiring expensive filtration and treatment. Harmful algal toxins, PFAS, pesticides, microscopic disease-causing organisms, antibiotics, and antibiotic-resistant bacteria are also present in Iowa's water sources.

In 2025, the Iowa DNR issued a record-breaking number of beach advisories driven by the highest number of E. coli advisories to date. In the 15-week summer monitoring period for 40 public beaches, the DNR issued 158 beach advisories for E. coli and 12 for microcystin (a toxin produced by blue-green algae).³

In the same period, the U.S. Army Corps of Engineers Rock Island District issued 20 advisories for E. coli on the six beaches it monitors on Iowa reservoirs.⁴

These and other contaminants landed 577 water bodies with a total of 746 impairments on DNR's 2024 Impaired Waters List submitted to the U.S. EPA.⁵ Over half the rivers and streams in Central Iowa are categorized as in either Poor or Fair condition.⁶

The failure of Iowa's NRS is not difficult to understand. Over the past 12 years, the use of fertilizer and pesticides has not been reduced. Annually, nearly five million tons of anhydrous ammonia and other non-manure fertilizers are spread, injected, or sprayed on Iowa soil. During heavy rains, it pours into our waterways from farm field runoff or through a network of thousands of miles of drainage tile.⁷ Due to climate change, these heavy rain events have increased in frequency over the past thirty years and are expected

continue to increase in the future. Over 110 million tons of manure⁸ from Iowa's over 4,200 large confined animal feeding operations (CAFOs) are spread or injected into Iowa soil, and that waste runs off the surface into our waterways or into those waterways through the drainage tile network.⁹ Iowa's number of CAFOs has more than quadrupled in the last twenty-five years.¹⁰

Except for promoting cover crops with limited success, the NRS does little else to reduce the leaching of chemicals and nutrients from cropland but instead tries to filter the polluted runoff with a series of edge-of-field practices. These "after the fact" edge-of-field practices filter only a small fraction of Iowa's agricultural acres and are costly to taxpayers.

Iowa desperately needs a real statewide water management plan. That plan should be focused on monitoring and managing our water at the watershed level.

Committee for Water Quality Policies

Following the release of CISWRA, a group of concerned Iowans from diverse backgrounds in farming, government, environmental science, community action, and more shared written thoughts, data, and policy proposals covering multiple areas to improve water quality. They then participated in ten meetings to develop recommendations for state and federal policies to clean up and protect our water. The group was committed to relying on science and facts, just like CISWRA, to recommend policies that will improve impact water quality but will also support family farmers and enable them to prosper.

The following policy recommendations begin with the top priority for the 2026 legislative session; the need to monitor our water as a fundamental state responsibility to protect Iowans from the potential negative health effects of contaminated water. That includes assessing water quality at the watershed level so the source or sources of contaminants can be better identified and addressed. A statewide water management plan is needed and would be a significant step toward ensuring the long-term health of Iowa's water.

The policy recommendations then focus on farming practices that involve spreading or injecting chemicals and nutrients on and into the soil, the biggest failure of the NRS and its misplaced focus on filtering agriculture runoff after the over application of chemicals and animal waste has occurred.

Next, the policy recommendations address the water flow from the fields and animal confinement operations. Tile drainage and time of application are two critical areas to address.

To help chart a way forward for Iowa's farmers toward better water, land stewardship, and profitability, the policy recommendations include focused research and education at our regent institutions and addressing staff shortages at the DNR and NRCS.

Enforcement and penalties need to be significantly increased and sufficient to ensure compliance and accountability. Otherwise, penalties will be thought of as just the cost of doing business.

Finally, funding for everything from monitoring to research to staffing to enforcement will be necessary and should be driven by an assessment of the practices and entities that are introducing the contaminants to Iowa's water and natural environment.

Water Quality Legislative Recommendations

Priority 1: Public Health And Water Quality Monitoring & Data Transparency

Iowa needs a public health-focused water monitoring and analysis system.

Every Iowan should have the right to safe drinking water, and every Iowan has a responsibility not to pollute Iowa's water. Overwhelming evidence confirms that we are not living up to these aspirations.

Therefore, it should be the policy of the State of Iowa that the State provides the staff, facilities, equipment, and resources to ensure all of Iowa's watersheds are regularly tested, monitored, and that the results are publicly reported. This testing and reporting must go beyond nitrates to include pesticides and other health-threatening pollutants.

Doing so will assure Iowans that their drinking water is safe; require the state to identify contamination sources and take immediate steps to protect public health; and inform better policy-making decisions.

Addendum A of this report provides a proposal that should set the minimum level of monitoring and testing of Iowa's water. The monitoring proposal states that, "the network of water quality sensors maintained by IHR-Hydroscience &

Engineering (IIHR) at the University of Iowa has untapped potential as a vital resource in protecting the public health of Iowans. For communities relying on surface water as their drinking water source and lacking nitrate removal systems, prior research at IIHR has shown that nitrate readings from the sensors accurately represent the nitrate levels in finished drinking water served to consumers.”

The proposal also recommends “expanding the capabilities of the sensor network with more advanced monitoring tools to assess water quality threats beyond nitrate. For example, sensors equipped to measure water quality parameters including turbidity (that is, the measure of a water’s clarity or haziness from suspended particles) and chlorophyll levels can be used to assess risks from bacteria and the formation of harmful algal blooms, respectively, both are surface water concerns that plague Iowa drinking water systems. Likewise, sensors that measure surrogates for dissolved organic matter can be used to anticipate the formation of harmful byproducts of chemical disinfection processes; such byproducts are regulated in drinking water for their ability to increase risks of certain forms of cancer.”

Funding for IIHR’s water quality monitoring network and its associated Iowa Water Quality Information System was cut by the Iowa Legislature in 2023 and is now partially funded by a grant from the Walton Family Foundation through June 30, 2026. Efforts to continue monitoring with private donations and other public funding are underway. Iowans should not have to rely on a “GoFundMe” approach to public health and safety. Public Health and Safety is a fundamental responsibility of the state, as well as stopping polluters of the most basic of public resources, our water.

A strong water monitoring network and communications system, at the watershed level will also enable the state to track progress on reducing chemical, animal waste, and other known pollutants. The NRS uses the deployment of practices as its measurement of success. The state needs to track the condition of our water. For success in cleaning up our water, it is the measurements that matter.

Priority 2: Nutrient Standards, CAFO Siting, Density, and Manure Management

CISWRA found that 80% of the chemicals and harmful nutrients in Iowa’s drinking water and rivers, lakes, and streams come from agricultural practices. Iowa’s water pollution crisis cannot be solved without addressing the proverbial “elephant in the room.”

Therefore, it should be the policy of the State of Iowa to reduce the use and application of synthetic chemical fertilizers, pesticides, and animal manure to a level that eliminates the runoff from these pollutants into our state’s waterways or minimizes them to a non-consequential level.

This policy should include:

- A. Repealing the sales tax exemption for anhydrous ammonia and other fertilizers applied in the fall as a disincentive and dedicating those revenues to fund water monitoring and testing, as well as research on and education about fertilizer application rates, alternative crops, and organic agriculture. It is well documented that a high percentage of fertilizer applied in the fall is not absorbed by the soil or plants and drains into our waterways.
- B. Phase in a requirement that all corn growers use the MRTN (Maximum Return to Nitrogen) level or face penalties or additional taxes if they exceed 110% of MRTN, including Manure-N.
- C. Moratorium on new CAFOs in impaired watersheds. CISWRA attributed half the chemical and nutrient pollution to animal waste runoff.
- D. Improve the regulation and enforcement of CAFOs with analysis of density and location of farm animals to align with the assimilative capacity of croplands for uptake and use of nutrients and considerations of public health.
- E. Develop a publicly available statewide digital geospatial manure database to map land inventory and implementation of manure management plans.
- F. Set a distance requirement for CAFOs, animal waste storage, or fertilizer storage from rivers and streams, and require better regulation and enforcement of containment systems for hazardous substances. In 2024, the New Cooperative COOP in Red Oak spilled 1,500 tons of liquid nitrogen in the East Nishnabotna River, killing 800,000 fish.¹¹ This requirement will help minimize the occurrence and intensity of human-caused fish kills.
- G. Disallow manure application on soils that have tested “exceptionally high” in phosphorus soil tests for five years until soils are retested.
- H. Overhaul the Master Matrix requirements for CAFOs to include:
 - CAFO manure management plans to be based on soil tests, the nutrient content of manure, the fertility needs of crops, and demonstrations that confirm

that enough acres are owned, leased, or contracted for disposal of manure;

- A five-year waste management plan submitted with the application that is consistent with waste management requirements; Owners submitting a soil test at least every five years for all land where manure is applied;
 - The DNR checking and approving the plans to ensure that plots of ground, identified by farm and tract number, listed in manure management plans, are not in other manure management plans during the same time period;
 - The public availability of waste management plans in the county and additionally uploaded for statewide digital access at the DNR;
 - Siting approval of the CAFO by both the county supervisors and DNR; and
 - Counties' authority to set greater distance requirements from homes and public places rather than be set by the state;
 - CAFO owners submitting their waste management plan and annual proof of compliance with all regulations;
 - Fees to be paid by applicants sufficient to cover all county and state administrative costs.
- I. Iowa should require a 50-foot buffer of perennial grass or trees along every river, stream, and lake to reduce chemical and nutrient runoff and soil erosion.
- J. The state should aggressively expand the use of cover crops throughout the state with research, education, and financial support. Recognizing that fertilizers, pesticides, and manure will still run off cropland even with the best application practices, cover crops are an excellent in-field practice that use nutrients that would otherwise drain into watersheds. The NRS has had limited success in advancing the use of cover crops despite growing evidence that cover crops reduce the need for fertilizer, build soil health, reduce erosion, and can increase profitability. Cover crops are also covered in the research and education policy section.

Priority 3: Drainage and Tile Discharge Accountability

A. Animal waste:

Ban spreading or spraying manure from December 1 to March 15 unless injected below the freeze line, and ban spreading or spraying on snow or frozen ground at any

date. Animal waste spread on snow or frozen ground is easily washed into watersheds during rainfall or from melting snow.

B. Drainage Districts (DDs):

Iowa's drainage law is over 100 years old and must be reformed to reflect modern practices and make drainage districts responsible for discharges. DDs have taxing and eminent domain authority; they should also be accountable for pollution mitigation. Reforms should include:

- i. Establishing a robust education program for DDs and an expectation or requirement for participation, and
- ii. Requiring DDs to meet water quality standards (standards to be set by the DNR) and empower DDs to make local-level decisions for establishing best management practices to meet those standards, and
- iii. Empowering drainage district boards to fund conservation practices and provide educational materials about source water protection to landowners at required drainage improvement meetings, and
- iv. Prohibiting any taxpayer dollars from paying for any drainage tile expense, and
- v. Requiring DD trustees to live in or own property in the drainage district, and
- vi. Establishing oversight of DDs by the DNR, IDALS, or newly established Watershed Management Authority and integrate DDs into the State's Water Resources Strategy and Plan, and
- vii. Modifying Drainage Code to include a credit for restored wetlands/conservation practices. Land use should be a factor in tile drainage assessments. Conservation areas, including restored wetlands, should get a tax break from tile tax assessments within DDs. and
- viii. Requiring recordkeeping of private drainage. Presently, there is no mapping of where tile drainage is installed. USDA surveys provide a total tile-drained area (13.5M acres in Iowa), but not exact locations. More drainage is now being added in places outside of drainage districts with no DD oversight, and
- ix. Requiring permits for draining large areas of land, both land within DDs and outside DDs, to prevent wetland impacts. This is critical to guard against the recent reduction of federal wetland protections,¹² and

- x. Initiating a moratorium on new drainage tile unless there is pollution mitigation added at the landowner/renter's expense so that conservation gains are not offset by adding more tile drainage, and
- xi. Removing the sales tax exemption for drain tiles and applying it toward pollution mitigation. In addition to funding DD conservation and pollution mitigation efforts, this will assist in tracking new tile installations.

C. Tile Line Testing Authority and Limits for Nitrate Concentrations:

The DNR must be given the authority and capacity to test tile outflows and set allowable nitrate limits to achieve acceptable downstream water quality. Limits for nitrate concentrations need to be established to achieve acceptable downstream nitrate levels.

Priority 4: Fund Research to Support Changes for Iowa Agriculture and Public Health

- A. Iowa universities and other public institutions must research how to diversify and increase farm income and achieve better environmental performance at farm scale. Most ISU research is focused on and is for entities that have much to gain by our current state and federal supply-inducing, over-production agricultural policies, while economic losses for Iowa farmers continue. Iowa needs public research on restoring farm profitability while also focusing on how to affordably and reliably measure soil health, with benchmarks. The research additionally needs to investigate the water quality impacts of crop diversification and the impact of shifting toward food-focused agriculture. Research must be prioritized on small grains, cover crops, alternative crops and markets, local food production, soil biology, meteorology, chemicals and coatings, sociology, and more areas to address the environmental and economic harm caused by our current high-input, high-output, low-profit farming system.
- B. Fund and expand ISU Extension's ability to prioritize assisting and partnering with farmers to capitalize on and implement new research on these sustainable, regenerative farming practices, alternative crops, local food production, and more.
- C. Direct the Iowa Board of Regents to identify a three-year plan for integrating regenerative and organic farming into the foundational curriculum for the whole of the ISU College of Agriculture and Life Sciences. Provide funding to implement the plan and monitor its progress.

- D. Iowa Regents institutions must annually publish all funding sources provided by corporations for agricultural research with a description of the research direction, objective, and results.
- E. Restore the Funding and Mission of the Leopold Center at Iowa State University.

From Iowa State University College of Agriculture and Life Sciences:

The Leopold Center was established by the Iowa Legislature as part of the Iowa Groundwater Protection Act of 1987. Its legislatively-mandated goals are to "conduct and sponsor research to identify and reduce negative environmental and socio-economic impacts of agricultural practices, assist in developing emerging alternative practices that are consistent with a sustainable agriculture," and to "partner with Iowa State University Extension and Outreach to develop an educational framework to inform the agricultural community and the general public of its findings." The code establishing the Center defines "sustainable agriculture" as follows:

"[Sustainable agriculture is] the appropriate use of crop and livestock systems and agricultural inputs supporting those activities which maintain economic and social viability while preserving the high productivity and quality of Iowa's land."

With the increasing pollution of our precious water resources, soil erosion, and the exhaustion of our soil organic matter, Iowa has never been in more need of restoring the "land ethic" Aldo Leopold established.

The Leopold Center should be held up as proof of Iowa's commitment to enable Iowa's farmers to be more diverse and economically and ecologically sustainable. With the loss of 10,000 farms over the past 25 years and the impact that has had on rural communities, it is clear that current agriculture policies and practices are not leading to a bright future for Iowa.¹³ The ever-increasing reliance on taxpayer subsidies to keep farmers "afloat" is also not sustainable.

State policy should direct the Leopold Center to prioritize efforts in market development for cover crops, small grains, and perennial food crops. The Center needs professors and instructors in genetics, agronomy,

chemistry, and other fields who are empowered and funded to develop major changes in how Iowa's farmers farm so they can be both profitable and sustainable.

State policy should also direct the Iowa Economic Development Authority to collaborate with the Leopold Center in the development of these priority markets.

- F. Fund research that is dedicated to identifying the potential links between agricultural practices, including fertilizers, pesticides, animal waste, seed coatings, and other chemicals, as well as water quality and public health, with a focus on cancer. While dramatic changes needed to the U.S. Farm Bill and other federal programs are addressed below, Iowa needs to chart a new direction for Iowa agriculture.

The number of farmers, and particularly younger farmers, looking for new ideas and direction, is increasing. They recognize that what they have today is not working, and virtually none of the research and development at Iowa's Regent Institutions and other agencies today is focused on change, but instead on more of the same at a larger scale.

There must be an "all hands-on deck" effort from the State, Board of Regents, professors and scientists, and farmers. The Iowa Economic Development Authority needs to support and fund alternative crops and agricultural systems. The research and development reward for agri-business industry investments in genetics, varieties, breeding stock, and more needs to be driven by a market for sustainable, regenerative farming, and food production.

The failure to recognize the path Iowa's agriculture is on and to take bold action to build a better future will only result in the continued decline in the number of farmers; continued soil degradation and water pollution; and a declining rural economy.

Priority 5: Watershed Governance and Agency Capacity

- A. Fund the research and development of a statewide water plan, including establishing an Iowa Watershed Management Authority.
- B. Provide the staffing level and funding needed for the Department of Natural Resources and other state agencies to support farmers' conservation practices and how farmers can meet water quality standards and requirements.
- C. Fund local, permanent, full-time watershed management coordinator positions.

- D. Publish and maintain public access to watershed maps and water quality testing results at the watershed level.

Priority 6: Enforcement, Penalties, and Compliance

- A. Penalties for chemical and manure "spills" should be established and assessed to be severe enough to reflect the value Iowa should place on clean water. The penalty level should be well above a level where it can be written off as just the cost of doing business.
- B. Provide staff levels at DNR to meet the new CAFO requirements and expectations. Current funding for CAFO inspection is \$1.2 million a year to monitor and inspect a nearly \$15 billion Iowa livestock industry that spilled manure 179 times from 2013 to 2023, killing nearly 2 million fish. The DNR fined 171 of these operations \$636,808 altogether, while Des Moines Water Works spent over \$1.4 million on operating its nitrate removal system in 2015 alone.¹⁴ Clearly, the wrong people are paying the price for pollution.

Priority 7: Fund the Iowa Water and Land Legacy (IWLL) Using the Originally Proposed Trust Fund Formula

In 2010, sixty-three percent of Iowa voters created the Natural Resources and Outdoor Recreation Trust Fund. If the legislature had respected Iowans' decision, we might not be facing the water crisis we now face. There are no more excuses.

The original formula must be honored and preserved to respect the will of Iowa voters that IWLL support Iowa's environment and recreation. That formula should not be co-opted to pay for the pollution clean-up of any business or industry, and it should not be used to shift costs for existing state programs or operations.

The support for trails, lake restoration, local conservation, natural resources, the Resource Enhancement and Protection (REAP) program, watershed protection, and conservation and water protection is even more important today than in 2010. The water crisis is impacting public health and Iowa's reputation. If Iowa is to stop our brain-drain and attract new Iowans, we must address our water crisis head-on and make better, safer outdoor recreation a priority.

Priority 8: Funding and Polluter-Pays Mechanisms

Iowans should not tax drinking water to pay for pollution when the cause has been identified. Iowa currently taxes

households and businesses a water services excise tax (~\$17 million/year) to fund water quality programs. That is flawed policy, as the groups that receive the benefits and opportunities from current practices are not also taking responsibility for mitigating the risks and harms from those practices. Below are three potential assessments or tax changes that represent a fractional cost for each CAFO owner, ag landowner, or farmer.

- A. Remove the sales tax exemption or assess a minimum \$25 per ton fee on fall fertilizer application. Doing so would create a disincentive for applying fertilizer when there is a higher risk of it entering waterways. Conservatively, this could yield between \$20 and \$50 million annually but would represent only a fraction of one percent of total annual fertilizer expense. This revenue could fund the water monitoring network, watershed management initiative, drainage district reforms, agriculture and cancer research, and more.
- B. Assess a per-head tax and per-dozen egg tax on CAFO livestock sales to fund CAFO reforms and enforcement. A 20-cent assessment per hog sold for slaughter and one penny per dozen eggs sold would yield over \$20 million annually. A comparable fee for cattle and turkeys would increase this to around \$25 million annually. This assessment would represent only .003 or three-tenths of one percent of total livestock sales. It would fully fund reform to the Master Matrix, digitization of all manure management plans, geospatial mapping and tracking of manure application, DNR staffing for enforcement of CAFOs, monitoring, and watershed management.
- C. Tax agricultural land that is rented or leased at a higher rate and allocate the additional revenue to county soil and water conservation districts for soil and water conservation initiatives and watershed management. Provide a property tax credit for the higher rate on rented or leased land for deploying in-field and edge-of-field practices such as cover crops, buffer strips, wetlands restoration, etc. Potential revenue approaching \$400 million per year would fund water quality and soil conservation measures.

Summary – State Policy Recommendations

We can't just keep tinkering around the edges. We have been doing that figuratively and literally for the past dozen years.

What is most important is changing our attitude and relationship with land and water because that relationship embodies our relationship to our families, our loved ones, and ultimately, ourselves. Those relationships are threatened because we have not valued them. We treat land like an expendable asset and streams and rivers like sewage pipes instead of the core of our ecological survival and personal health.

These policy recommendations represent a holistic approach to monitoring and safeguarding water by focusing on the biggest source of pollution and threat to public health. They start with restoring and expanding testing and monitoring. Without that, public health is at risk every day, and there is no way of measuring success.

Then, we must home in on the primary sources of pollution and the pathways to safe drinking and recreational water. With a statewide water strategy and measurable results, policies can be adapted based on evidence and sound science.

By having a statewide water strategy and plan focused on best management practices for reducing chemical and nutrient pollutants in Iowa surface waters, beginning in priority basins first and then scaling statewide by watershed, and continuously measuring results, these policies can be changed and adapted based on hard evidence and sound science.

Finally, the costs to implement these policies should be primarily assessed against the causes of pollution, with some resources dedicated to helping farmers adapt and change for a better future.

This report is a call to action to a crisis that will continue to get worse if bold actions commensurate to the scale of the crisis and threat to the public are not taken.

Federal/Farm Bill: Flipping the Paradigm

Iowa's high number of crop acres consisting of corn and soybeans, and the resulting lack of diversity in our landscape, are a major reason for the deterioration of our water quality. This two-crop agriculture system is driven by the Federal Farm Bill and ethanol mandates that currently reward primarily corn and soybean production.

Farmers are, in essence, farming the Farm Bill to survive. The Farm Bill is heavily influenced by the agriculture input industry, along with packers, processors, and shippers, for their benefit, not for the farmers'. Without a major change in federal farm programs, the loss of farmers and the chemically driven over-production of farm commodities will continue.

These policy recommendations are a starting point. More changes will be needed, but there is some low-hanging fruit that can get the change started. The most important element is recognizing that the primary beneficiaries of our Farm Bill should be farmers, rural communities, and consumers.

1. Restrict crop insurance eligibility for flood zone areas.

Crops planted in the two-year flood plain or other marginal/unsuitable land should not be eligible for crop insurance subsidies. This is one of the most nonsensical elements of the Farm Bill. Every year, farmers plant corn or soybeans on land they know has a high likelihood of flooding, resulting in low or no yield. Year after year, they farm this land at what would be a loss were it not for taxpayer subsidies making up the difference.

It only makes sense for the agriculture inputs industry because this means selling more seed, fertilizer, and equipment, and means that more supply suppresses prices for processors and grain shippers.

Planting in floodplains can have significant ecological implications, including loss of wildlife habitat and excess synthetic chemicals and nutrients in our water. Taxpayers should not be on the hook for subsidizing environmental destruction and bad economic policy.

2. Tie crop subsidies/crop insurance to the

implementation of conservation measures.

This will involve a revamp of soil loss criteria and highly erodible land measurements, as well as a change in conservation compliance standards to address soil loss.

The "highly erodible land" (HEL) designations modelled in 1985 should be updated to Iowa farmers' current reality, since most of Iowa's farmland is eroding, long-term, and at more than five tons per acre. Soil loss estimates should include gully erosion as well as sheet and rill erosion.

The first conservation target should be to tie crop insurance to the reduction of soil loss to the tolerable limit (T), now defined as five tons per acre per year. The actual soil regeneration rate is now estimated to be one-half tons per acre, per year for Iowa soils. Conservation compliance plans should be required on all soils with losses greater than the tolerable limit. Over time, T, should be reduced to the soil regeneration rate.

Allow states to add an optional provision for implementing measures to assist in meeting the state's water quality plan to provide an incentive for farmers to adopt either in-field or edge-of-field practices, or both.

Taxpayers should expect a lot more from their dollars being spent on agriculture subsidies. In Iowa, we have lost more than half our topsoil, and we have lost half the organic matter in what remains. We are already down to a quarter of the Earth's filter. Topsoil will be gone in Iowa in less than 100 years at current rates. We must armor all our soil with cover crops, terraces, waterways, buffers, diverse rotations, and perennial covers in the face of increasing weather volatility. Soil feeds us, but soil is also the filter that cleans our water.

3. Targeted Conservation Funds

Target conservation dollars to projects that will have the greatest impact on soil and water quality as identified in watershed planning.

Phase out the ten-year, whole farm Conservation Reserve Program (CRP) and target CRP for long-term or permanent easements on marginal and highly erodible land. These whole-farm ten-year CRP contracts are expensive. Taxpayer subsidies will be better spent for long-term or permanent easements on the marginal or highly erodible part of farms. This will redirect the largest conservation subsidies in Iowa

(\$400 million in 2024) to have a much bigger impact on both conservation and the overall farm and rural economy.¹⁵

4. Enforce Conservation Compliance Standards Using New Technologies.

The Conservation Compliance Program was initially enforced, but enforcement has waned to almost nothing. An enforcement program is essential and affordable with modern technologies.

NRCS offices need more staff and better technology to put this program on the ground and in a cost-effective and farmer-friendly way, just one of many ways Precision Agriculture can be a big contributor to conservation.

5. Target EQIP Funds and NRCS Efforts for Sustainable Practices

Both Environmental Quality Incentives Program (EQIP) and the (National Resources Conservation Service (NRCS) dollars and staff should be redirected away from animal confinement operations (CAFOs) and toward assisting perennial pasture, diversified cropping, and more resilient livestock operations.

Taxpayers are already bearing the external cost of CAFOs through the cost of public water systems, private well water filtration, and loss of recreational opportunities. Taxpayer dollars should not be spent on supporting the further consolidation of livestock production and unsustainable animal waste “disposal.”

6. Change the Focus to Supply Control and Away from Demand Boosting Policies

Farmers need assistance to grow other valued crops besides corn and soybeans.

Iowa’s farmland is synonymous with bounty. However, advances in agricultural sciences, digital and industrial technologies, and globalized financial systems have resulted in chronic excess commodity production and often prices that do not even cover the cost of production.

From the 1930s through the 1980s, we addressed this problem by providing incentives to control supply with land bank programs, land set-aside, and other measures. Now we try to solve the problem with incentives to boost demand with hydrocarbon additives like ethanol and biodiesel. Carbon pipeline subsidies are only the latest taxpayer-funded attempt to boost supply, along with selling aviation fuel as

a sustainable fuel source, regardless of the unsustainable row crop practices and fossil fuel consumption involved in supplying the commodity feedstocks.

Ethanol needs to be viewed as a bridge fuel, not as a permanent solution. That will require a policy strategy around a long-term transition to alternative crops. Subsidies that have been targeted to corn and other commodity crops need to begin to shift toward support for alternative crops, set at a level where farmers can make a change in what they grow without undue financial risk.

We need a Farm Bill refocused on healthy food, a sustainable environment, and strong rural communities. We will see the continued deterioration of all three, including public health, if nothing changes.

An Advocate's Guide to the Committee's Policy Recommendations

Toplines for Advocates (use these in the first 60 seconds)

- **Water is life.** Iowa's drinking and recreational waters are increasingly contaminated, and public health is at risk.
- **The best available science is clear.** The Central Iowa Source Water Research Assessment (CISWRA) found multiple high-risk contaminants and concluded that **about 80% of chemical and nutrient pollution comes from agricultural practices.**
- **The voluntary approach has failed.** After more than a decade of the Nutrient Reduction Strategy (NRS), CISWRA concludes that pollution levels consistently remain above safe standards.
- **We need a statewide water strategy and plan.** Iowa must manage water at the watershed level, measure outcomes, and focus on preventing pollution—not just filtering it after the fact.
- **These recommendations follow simple logic:**
 1. Measure what's happening to protect public health;
 2. Reduce pollution at the source;
 3. Manage how pollution moves through the landscape (tile drainage and timing);
 4. Enforce accountability; and
 5. Fund solutions by assessing pollution-causing practices while supporting farmers through the transition.

Why It Matters: Water Is Life

Human beings can survive weeks without food, but without water, only three to five days. Iowa is fortunate to have abundant water. We receive, on average, 34 inches of rainfall a year. That rainfall fills over 70,000 miles of rivers and streams, replenishes lakes and aquifers, and covers millions of acres of cropland.

This life-sustaining water, with which we are blessed and upon which our lives depend, is now being contaminated at an increasing rate. We must make a change. Valuing water

as a life-sustaining resource will not only make Iowans healthier; the changes necessary to protect and preserve our water also have the potential to make farming more profitable for generations to come, which will breathe new life into rural Iowa.

As Iowans, we must ask ourselves: **Do we have a right to clean, safe water—and what actions are we willing to take to stop polluting our water?**

The Science and the Wake-Up Call: CISWRA

On July 1, 2025, Polk County published the **Central Iowa Source Water Research Assessment (CISWRA)**, the most comprehensive research analysis ever done in Iowa on water quality. The assessment focused on the Des Moines and Raccoon River watersheds because they supply drinking water to over 600,000 (nearly 20% of the state's population!) Central Iowans and support recreation across hundreds of miles of rivers and streams and multiple lakes and reservoirs.

A team of sixteen highly respected scientists conducted over 4,400 hours of research. The task was complex, but the objective was simple: **no agenda, no bias— just inform us what is in our water and where it comes from.**

The results were scientifically significant and conclusive. By the time the water falling on Iowa in these two watersheds reaches Des Moines, **multiple contaminants with high public health risk have been added to that water.**

Scientists attribute **80% of chemical and nutrient pollution** in our water to agricultural practices. This is not a new revelation. Over a decade ago, Iowa was identified as a major contributor—nearly 40%—of chemical and nutrient runoff in the Mississippi River watershed, contributing to the Gulf of Mexico dead zone.

It should surprise no one that chemicals and nutrients showing up in the Gulf are also present in Iowa's own waterbodies, threatening public health and aquatic life here, too.

Why Current Policy Has Failed: The Limits of Voluntary Action

In response to the U.S. Environmental Protection Agency's requirement that Iowa address the pollution we are contributing to the Gulf Dead Zone, Iowa launched a **voluntary Nutrient Reduction Strategy (NRS)** in 2013. CISWRA concludes that after over a decade of the NRS, **pollution levels have consistently remained above safe standards.**

Nitrate levels in the source waters of Des Moines Water Works are among the highest in the nation and often exceed the EPA standard of 10 mg/L for safe drinking water, requiring expensive treatment. Harmful algal toxins, PFAS, pesticides, disease-causing organisms, antibiotics, and antibiotic-resistant bacteria are also present in Iowa's water sources.

Public beaches are often closed because of E. coli, microcystin, and other contaminants. More than 500 Iowa water bodies are consistently on the EPA list of impaired waterways, and half the rivers and streams in Central Iowa are categorized as in either Poor or Fair condition.

The failure of the NRS is not difficult to understand. Over the past 12 years, fertilizer and pesticide use has not been reduced. Annually, nearly five million tons of anhydrous ammonia and other non-manure fertilizers are applied, and during heavy rains, it pours into waterways through field run-off and thousands of miles of drainage tile. Annually, over **110 million tons** of manure from Iowa CAFOs are spread or injected into soil, and that waste runs off into waterways directly or through tile drainage.

Except for promoting cover crops with limited success, the NRS does little to reduce leaching from cropland. Instead, it attempts to filter polluted runoff with edge-of-field practices. These "after-the-fact" practices cover only a fraction of acres and come at a high cost to taxpayers.

Iowa needs a statewide water strategy focused on monitoring and managing water at the watershed level. We cannot manage what we do not measure, and we cannot solve this crisis without addressing the dominant pollution sources and pathways.

The Committee and the Purpose of These Recommendations

Following the release of CISWRA, a volunteer committee of concerned Iowans—representing farming, government, environmental science, community action, and more—developed state and federal recommendations to protect Iowa's life-sustaining resource.

Participants committed themselves to relying on science and facts—like those in CISWRA itself—and to recommending policies that would directly improve water quality while **supporting family farmers and enabling them to prosper.**

These recommendations are designed to help activists explain to legislators:

- **Why these policies are necessary** (public health and measurable failure of the status quo),
- **How they work** (monitoring, standards, incentives, enforcement, and funding), and
- **Why they will succeed** (outcome-based measurement, source control, and accountability).

Water Quality Policies & Recommendations

Toplines for Policymakers (use these as "the ask")

1. Restore and expand statewide water monitoring to protect public health and measure success.
2. Reduce pollution at the source by aligning fertilizer, pesticide, and manure application with agronomic needs and land capacity.
3. Reform tile drainage and drainage districts so that a major pollution pathway is accountable and managed.
4. Invest in research, education, and markets that help farmers diversify and transition to profitable stewardship.
5. Staff DNR and watershed management adequately to implement the plan.
6. Make enforcement and penalties real—clean water must not be optional.
7. Fully fund IWLL as voters intended, without shifting private cleanup costs to taxpayers.

8. Fund the overall strategy through assessments on pollution-causing practices, while supporting farmers through transition.

1. Monitoring & Testing to Protect Public Health

Why it matters

Monitoring is the foundation of public health. Without it, Iowa cannot reliably warn communities, locate sources of contamination, or prove whether policies are working.

How it works

Iowa needs a public health–focused water monitoring and analysis system.

Every Iowan should have the right to safe drinking water, and every Iowan has a responsibility not to pollute Iowa's water. Overwhelming evidence confirms that we are not living up to these obligations.

Therefore, it should be the policy of the State of Iowa that the state provide staff, facilities, equipment, and resources to ensure all watersheds are regularly tested, monitored, and publicly reported. This testing and reporting must go beyond nitrates to include pesticides and other health-threatening pollutants.

Appendix A proposes a minimum statewide monitoring level, noting that the IIHR sensor network has untapped potential to protect public health. For communities relying on surface water and lacking nitrate removal, prior research shows sensor nitrate readings accurately represent nitrate levels in finished drinking water.

The proposal recommends expanding sensors beyond nitrate to include tools for turbidity, chlorophyll, and surrogates for dissolved organic matter, helping anticipate bacteria risks, harmful algal blooms, and disinfection byproducts linked to cancer risk.

Funding for IIHR's water quality monitoring network, and its associated Iowa Water Quality Information System, was cut by the Legislature in 2023. Iowans should not have to rely on a "GoFundMe" approach to public health and safety. Public health and safety are fundamental state responsibilities.

A strong monitoring system also enables Iowa to track real progress. The NRS measures success by deployment of practices. **Iowa needs to measure the condition of its water. Clean water is the outcome that matters.**

Why it will succeed

Because it creates a statewide baseline, makes results public, and allows Iowa to target solutions where they will have a measurable impact. It also shifts Iowa from "we tried" to "we measured—and learned."

2. Address the Source of Contamination: Over-application of Fertilizers, Pesticides, and Animal Waste

Why it matters

CISWRA found 80% of chemicals and harmful nutrients are from agricultural practices. Iowa's water crisis cannot be solved without addressing the dominant source.

How it works

It should be state policy to reduce synthetic fertilizers, pesticides, and manure application to levels that eliminate or minimize runoff into waterways.

This includes:

- a. **Remove fall fertilizer tax exemptions** (anhydrous ammonia and other fall-applied fertilizers) as a disincentive and dedicate revenues to monitoring, research, and education. Fall applications have a high likelihood of draining into waterways before plants can use it.
- b. **Phase in MRTN requirements** (Maximum Return to Nitrogen). MRTN aligns application with agronomic need; penalties or additional taxes would apply for exceeding 110% of MRTN (including manure-N).
- c. **Moratorium on new CAFOs** until waterways are unimpaired.
- d. **Strengthen CAFO regulation and the Master Matrix** so manure management is tied to soil tests, manure nutrient content, crop needs, and proof of adequate acres for disposal; prevent double-counting of acres across plans; create statewide geospatial mapping; make plans publicly accessible; require siting approval by county supervisors and DNR; require annual proof of compliance; and ensure fees cover administrative costs.
- e. **Require 50-foot buffers** of perennial grass or trees along waterways to reduce runoff and erosion.
- f. **Expand cover crops** with research, education, and financial

support. Even with best application practices, nutrients run off. Cover crops capture nutrients, build soil health, reduce erosion, and increase profitability for the long term.

Why it will succeed

Because it targets the source instead of treating symptoms. It reduces waste, protects drinking water, and realigns incentives so farmers are rewarded for practices that keep nutrients in the field and out of waterways.

3. Water Drainage and Tile: Integrate Pollution Pathways into Watershed Management

Why it matters

Tile drainage rapidly moves nutrients and pollutants into waterways. If Iowa ignores these pathways, conservation gains will be offset by continued uncontrolled discharge.

How it works

Animal waste timing

Ban spreading or spraying manure from December 1 to March 15 unless injected below the freeze line, and prohibit spreading on snow or frozen ground at any date.

Drainage districts (DDs)

Iowa's drainage law is over 100 years old and must be reformed to reflect modern practices and make drainage districts responsible for discharges. DDs have taxing and eminent domain authority; they should also be accountable for pollution mitigation.

Reforms include: education requirements; water quality standards set by DNR; authority for DDs to fund conservation and not apply DD fees to restored wetland acres; no taxpayer dollars for tile expenses; residency/property requirements for trustees; agency oversight; recordkeeping and mapping of private drainage; permitting to protect wetlands; moratorium on new tile without mitigation; and removal of tile tax exemptions to fund mitigation and track installations.

Tile-line testing authority

The DNR must be given the authority and capacity to test tile outflows and set allowable nitrate limits to achieve acceptable downstream water quality.

Why it will succeed

Because it brings a major driver of water pollution into the same accountability framework as the rest of watershed management. Without this authority, Iowa is managing

around the problem instead of managing the system.

4. Research and Education to Support a Profitable Transition

Why it matters

Farmers need viable pathways to change practices without losing profitability. Iowa's institutions must help lead that transition with public-interest research and education.

How it works

Prioritize research on soil health measurement, diversified cropping, small grains, cover crops, alternative markets, local food production, and links between agricultural inputs and public health outcomes (including cancer). Direct the Regents to integrate regenerative and organic farming into the core curriculum. Publish corporate funding transparency. Restore the Leopold Center's mission and funding, and align Iowa Economic Development Authority (IEDA) market development with stewardship-based agriculture.

Why it will succeed

Because farmers need tools, markets, and knowledge—not just mandates. This builds the support system that makes policy change durable.

5. Staffing and Watershed Management Capacity

Why it matters

A statewide plan without staffing is a promise without implementation.

How it works

Fund the development of a statewide water plan and an Iowa Watershed Management Authority. Provide adequate staffing at DNR and other agencies. Fund permanent, full-time watershed coordinators. Maintain public access to watershed maps and water quality data.

Why it will succeed

Because it creates the institutional capacity to manage water as a statewide responsibility—consistent, measurable, and transparent.

6. Enforcement and Penalties Must Be Real

Why it matters

If penalties are cheaper than compliance, then penalties

will be thought of as nominal fees – just another cost of doing business the same old way.

How it works

Set and assess penalties for chemical and manure spills at levels that reflect the value Iowa places on clean water. Increase DNR staffing sufficiently to implement stronger CAFO requirements.

Why it will succeed

Because it changes incentives: compliance becomes the economically rational choice.

7. Fund the Iowa Water and Land Legacy (IWLL) as Voters Intended

Why it matters

In 2010, 63% of Iowa voters created the Natural Resources and Outdoor Recreation Trust Fund. If the Legislature had honored that decision, Iowa might not have faced this crisis today.

How it works

Honor the original trust fund formula. Do not co-opt IWLL to subsidize private pollution cleanup or replace existing state operations. Prioritize trails, lake restoration, conservation, Resource Enhancement and Protection (REAP) program, watershed protection, and natural resources.

Why it will succeed

Because it fulfills the will of voters and provides a long-term, stable funding base for conservation and recreation that improves public trust and Iowa's quality of life.

8. Funding Must Come from Assessments on Pollution-Causing Practices

Why it matters

Iowans should not tax drinking water to pay for pollution when the cause has been identified. Iowa currently taxes households and businesses a water services excise tax (~\$17 million/year) to fund water quality programs. That is flawed policy, as the groups that receive the benefits and opportunities from current practices are not also taking responsibility for mitigating the risks and harms from those practices.

How it works

Assessments/tax changes that represent a fractional cost

include:

- a. **Remove the sales tax exemption or assess a minimum of \$25/ton fee on fall fertilizer** to disincentivize high-risk timing and fund monitoring, watershed management, and drainage reforms.
- b. **Per-head livestock and per-dozen egg assessments** to fund CAFO reforms, digitization of plans, mapping, enforcement, monitoring, and watershed management.
- c. **Tax rented agricultural land based on market value, like other rental commercial property**, with credits for verified conservation practices—potentially enabling significant conservation investment at the county scale.

Why it will succeed

Because it aligns costs with causes, creates stable funding, and supports transition—rather than forcing households to finance pollution cleanup through their water bills.

Summary — State Policy Recommendations

We can't just keep tinkering around the edges. We have been doing that figuratively and literally for the past dozen years.

What is most important is changing our attitude and relationship with land and water because that relationship embodies our relationship to our families, our loved ones, and ultimately, ourselves. Those relationships are threatened because we have not valued them. We treat land like an expendable asset and streams and rivers like sewage pipes instead of as the core of our ecological survival and personal health.

These policy recommendations represent a holistic approach to monitoring and safeguarding water by focusing on the biggest source of pollution and threat to public health. They start with restoring and expanding testing and monitoring. Without that, public health is at risk every day, and there is no way of measuring success.

Then, we must home in on the primary sources of pollution and the pathways to safe drinking and recreational water. With a statewide water strategy and measurable results, policies can be adapted based on evidence and sound science.

Finally, the costs to implement these policies should be primarily assessed against the causes of pollution, with some resources dedicated to helping farmers adapt and change for a better future.

This report is a call to action to a crisis that will continue to worsen if bold actions commensurate to the scale of the threat are not taken.

Federal/Farm Bill — Flipping the Paradigm (for advocate conversations)

Toplines

State action is essential, but federal policy drives many incentives that shape Iowa agriculture. These recommendations outline “low-hanging fruit” that can begin shifting a Farm Bill currently set up to benefit the agri-business industry to one that benefits farmers, consumers, public health, and a sustainable environment.

1. Restrict crop insurance eligibility for flood zones and marginal land.
2. Tie crop insurance and subsidies to conservation measures that reduce soil loss to tolerable levels
3. Shift the Conservation Reserve Program (CRP) away from expensive whole-farm ten-year contracts toward long-term/permanent easements on marginal and highly erodible land.
4. Enforce conservation compliance using modern technologies.
5. Redirect the Environmental Quality Incentives Program (EQIP) and Natural Resources Conservation Service (NRCS) support away from concentrated animal feeding operations (CAFOs) and toward sustainable, diversified practices.
6. Change the focus to supply control and away from demand-boosting policies that reward overproduction, extract wealth from farmers, and externalize environmental costs.

Why it will succeed

It changes incentives at the national scale, so farmers are not forced into systems that degrade soil, pollute water, and squeeze farm profitability.

Policymaker Briefing

The Bottom Line

Iowa's water is increasingly unsafe for drinking and recreation. The most comprehensive water study ever conducted in the state shows that **voluntary approaches have failed** and pollution is worsening. This package of policies is **science-based, measurable, and fair**—protecting public health, supporting farmers, protecting public health, and holding polluters accountable.

Why This Matters

Iowa's water is increasingly unsafe for drinking and recreation. The most comprehensive water study ever conducted in the state shows that **voluntary approaches have failed** and pollution is worsening. This package of policies is **science-based, measurable, and fair**—protecting public health, supporting farmers, protecting public health, and holding polluters accountable.

- **Water is life.** Humans can survive weeks without food, but only days without clean water.
- Iowa has abundant water, yet **nitrates, bacteria, pesticides, PFAS, and algal toxins** are contaminating drinking water and closing beaches.
- Over **600,000 Central Iowans** rely on watersheds that are now contaminated with chronic pollution.
- Iowa contributes nearly **40% of the nutrient pollution** flowing into the Mississippi River and the Gulf of Mexico Dead Zone.
- After more than a decade of the **voluntary Nutrient Reduction Strategy**, pollution levels are still **consistently above safe standards**.

Public health, rural vitality, the economy, and Iowa's reputation are all at stake.

What the Science Shows

- The Central Iowa Source Water Research Assessment (CISWRA), conducted by sixteen **independent scientists** over **4,400 hours**, found that:

80% of chemical and nutrient pollution comes from agricultural practices.

Tile drainage and field runoff rapidly move fertilizers and manure into rivers and drinking-water sources.

Current policies measure success by how much

money is spent on deployment of edge-of-field *practices*, not by *clean water achieved*.

What Needs to Change

1. Monitor What Matters

- Restore and expand funding to our **state-funded, public-health-focused water monitoring system** at the watershed level.
- Expand testing beyond nitrate to include pesticides, bacteria, algal toxins, and other health threats
- Measure **actual water quality outcomes**, not just program participation.

We can't manage what you don't measure.

2. Address Pollution at Its Source

- Reduce overapplication of fertilizers, pesticides, and manure.
- Require fertilizer use to align with crop needs (MRTN standards).
- Pause new CAFOs and strengthen oversight until water quality improves.
- Require buffers, limit manure applications to align with the assimilative capacity of crop land for uptake and use of nutrients, and strengthen siting rules.

Filtering pollution after it happens is expensive and ineffective.

3. Fix Drainage Accountability

- Reform outdated drainage laws so drainage districts are responsible for pollution they convey.
- Require permits, mitigation, and water-quality standards for tile drainage.
- Establish authority at the DNR to **test tile outlets** and set allowable nitrate limits.

Drainage is a major pollution pathway and currently unaccountable.

4. Support Farmers for Long-Term Success

- Invest in independent research, education, and staffing at ISU, DNR, and NRCS.

- Restore the Leopold Center to help farmers transition to profitable, sustainable systems.
- Focus on soil health, diversified crops, and regenerative practices.

Clean water and farm profitability can go together.

How We Pay for It

- Stop taxing drinking water to clean up pollution.
- Fund solutions through **assessments on practices that cause contamination**, including:
 - Fall fertilizer application fees
 - Modest per head CAFO assessments
 - Fair taxation of rented agricultural land

Those responsible for the pollution and who directly profit from the current practices should pay—not families and communities.

Why This Will Work

- It is **science-based, measurable, and enforceable**.
- It focuses on **outcomes—clean water—not good intentions**.
- It aligns public health, environmental protection, and agricultural resilience.
- It creates accountability while giving farmers the tools to succeed.
- As a matter of fairness, those who directly profit from current practices should also bear some responsibility in mitigating the harms and risks of those practices.

The Choice

We can continue tinkering around the edges and watch water quality decline—or we can act at the scale of the crisis.

Nothing will change if nothing changes.

Top 5 Responses to Policymaker Questions

For Advocates Meeting with Decision-Makers

1. “Why do we need new policies? Don’t we already have the Nutrient Reduction Strategy?”

Short answer:

Because it’s not working.

Longer answer:

The Nutrient Reduction Strategy is voluntary and measures success by practices installed, not by clean water achieved. After more than a decade, the most comprehensive water study ever done in Iowa showed that pollution levels consistently remain above safe standards. The science is clear: voluntary measures alone are insufficient to protect public health. This proposal builds on what we’ve learned and shifts the focus to **measurable water quality outcomes**.

2. “Isn’t this just anti-farmer regulation?”

Short answer:

No — it’s both pro-farmer and pro-public health.

Longer answer:

Farmers are not the enemy; they are essential partners. These policies pair accountability with **research, education, technical assistance, and funding** to help farmers succeed. Clean water and farm profitability are not opposing goals. In fact, soil health, nutrient efficiency, and diversified farming systems reduce input costs and improve longterm resilience for farmers.

3. “Why focus so much on agriculture?”

Short answer:

Because that’s where the science points.

Longer answer:

Independent scientists found that **80% of chemical and nutrient pollution** in Iowa’s waters comes from agricultural practices. If we ignore the primary source of pollution, we

cannot solve the problem. These recommendations focus on **reducing pollution at the source**, which is more effective and far less expensive than trying to clean it up after the fact. They do not mean we should ignore other sources of pollution, including urban sewer systems and residential water use.

4. “Won’t these recommendations hurt Iowa’s economy or make us less competitive?”

Short answer:

Dirty water is already hurting our economy.

Longer answer:

Unsafe drinking water, closed beaches, lost recreation, and declining rural communities carry enormous economic costs. Communities are already paying for expensive water treatment, health impacts, and lost opportunities. Many people concerned with these issues are leaving Iowa or refraining from moving here—especially those with young families. These policies protect Iowa’s reputation, attract families and businesses, and invest in a farming future that is economically sustainable, not dependent on ever-increasing taxpayer subsidies.

5. “How do we pay for all this?”

Short answer:

By stopping the practice of taxing drinking water to clean up pollution.

Longer answer:

Iowans currently pay through water bills while the sources of pollution are largely unassessed. These recommendations fund solutions through **modest assessments on practices that cause contamination**, such as fall fertilizer application and CAFO production. The costs of prevention are small compared to the public expense of inaction and are paired with assistance to help farmers adapt.

Closing Advocate Line

This isn’t about ideology. It’s about science, public health, fairness, and Iowa’s future. We know what’s in our water, where it comes from, and what will work. Now we need policies that match the scale of the problem. Iowans have solved big problems in the past. There’s no reason that we can’t come together to solve this one.

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Wellness and Nutrition Policy

The Harkin Institute advances inclusive, evidence-based public policy by connecting research, civic learning, and diverse lived experiences. We provide access to trusted information and empower robust civic engagement to promote the public good.

The Wellness and Nutrition division of the Harkin Institute promotes a sustainable agricultural system intrinsically linked to public health, where practices enhance water and soil quality, further diverse and healthy food options, and contribute to the overall wellness of our society.

Major funding for The Harkin Institute's Office of Wellness and Nutrition Policy has been provided by Veronica Lack and The Sukup Family Foundation.

About The Harkin Institute

The Harkin Institute for Public Policy & Citizen Engagement is a nonpartisan policy research institution focused on the main policy areas that shaped Senator Tom Harkin's career: people with disabilities, retirement security, and wellness and nutrition.

Vision: A future where everyone has equal access to opportunity, well-being, and dignity.

Mission: The Harkin Institute advances inclusive, evidence-based public policy by connecting research, civic learning, and diverse lived experiences. We provide access to trusted information and empower robust civic engagement to promote the public good.

Legacy: We are inspired by Tom and Ruth Harkin's decades of public service. Their enduring legacy demonstrates that all of us are interconnected, bound together in a single circle of inclusion, with no one left out.

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Endnotes

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Addendum: Promoting the Public Health of Iowans through Real-Time Water Quality Monitoring

A Proposal by IIHR-Hydroscience & Engineering (IIHR)

A strategic initiative for statewide water safety and source water protection.

INTRODUCTION AND RATIONALE

The network of water quality sensors maintained by **IIHR-Hydroscience & Engineering (IIHR)** has untapped potential as a vital resource in protecting the public health of Iowans. For communities relying on surface water as their drinking water source and lacking nitrate removal systems, prior research at IIHR has shown that nitrate readings from the sensors accurately represent the nitrate levels in finished drinking water served to consumers (Jones et al., Water Sci. Technol., 2020).

Accordingly, the sensor network can be used by water providers to assess, in real-time, the quality and future vulnerability of their supply, particularly in response to weather-driven events that can result in high nitrate levels. Moreover, readings from the sensors could also be valuable tools in epidemiological studies because they provide a high-resolution measurement of exposure to drinking water nitrate in these communities over time.

Expanding Capabilities

There also remain opportunities to expand the capabilities of the sensor network with more advanced monitoring tools to assess water quality threats beyond nitrate:

- **Turbidity:** Measurements of water clarity can assess risks from bacteria.
- **Chlorophyll:** Levels can be used to assess risks from the formation of harmful algal blooms.
- **Dissolved Organic Matter Surrogates:** Used to anticipate the formation of harmful byproducts of chemical disinfection processes, which are regulated for their ability to increase risks of certain forms of cancer.

PROPOSED WORK

The proposed work will increase the impact of the sensor network maintained by IIHR to promote the public health of Iowans and expand the number of Iowans directly benefiting from real-time water quality monitoring.

1. Strategic Expansion of Nitrate Monitoring

We propose to strategically expand the IIHR sensor network to include real-time nitrate monitoring upstream of Iowa communities using surface water and/or groundwater under the influence of surface water as their primary drinking water source.

Motivation: Strategically placing sensors sufficiently upstream of source water intakes used by Community Water Systems (CWS) will provide utilities a useful early-warning tool for anticipating source-water issues arising from nitrate leaching events. These sensors will also provide a highly temporally resolved measurement of drinking water nitrate exposure for consumers, helping to fill data gaps left by limited compliance sampling requirements.

Approach: Using a combination of existing and newly acquired Nitratax sensors, we will deploy sensors upstream of Iowa CWS. This effort will close coverage gaps for nitrate monitoring, while providing water providers and consumers access to real-time water quality information relevant to the safety of their drinking water.

2. Deployment of Advanced Water Quality Sensors

In high priority drinking water sources, we will deploy advanced water quality sensors able to measure a broader range of drinking water quality threats beyond nitrate.

Motivation: While nitrate dominates public perception, other threats leave consumers vulnerable. Bacteria represent the primary cause of surface water impairment in Iowa. Furthermore, harmful algal blooms (HABs) generate toxic microcystins and are becoming more frequent. Agricultural runoff also leads to high loadings of dissolved organic matter, a precursor to cancer-causing byproducts during disinfection.

Approach: In six high priority surface water sources, we will deploy advanced sensing devices (e.g., EXO2s Multiparameter Sonde) to measure:

- **Turbidity:** A surrogate for bacteria like E. coli and particulate phosphorus (P) and nitrogen (N).
- **Phycobilin and Chlorophyll (PC):** A surrogate for total algae and blue-green algae.
- **Fluorescent Dissolved Organic Matter (fDOM):** A measure of precursors for disinfection byproducts.

Proposed Locations: Saylorville reservoir, Rathbun Lake, downstream of Lake Red Rock, upstream of the Iowa City water treatment plant, upstream of the Cedar Rapids water treatment plant, and upstream of the Des Moines Water Works on the Raccoon River.

COMMUNITY WATER SYSTEMS ANALYSIS

The following table provides data on Community Water Systems (CWS) relying on surface water or groundwater under the influence of surface water as their primary drinking source.

CWS Name	Population Served	Primary Source
DES MOINES WATER WORKS	246,055	SWP
CEDAR RAPIDS WATER DEPARTMENT	141,831	GU
ANKENY, CITY OF	76,207	SWP
IOWA CITY WATER DEPARTMENT	68,753	SW
WEST DES MOINES WATER WORKS	68,723	SWP
URBANDALE WATER UTILITY	45,605	SWP
RATHBUN REGIONAL WATER ASSN	33,000	SW
WAUKEE WATER SUPPLY	31,823	SWP
UNIVERSITY WATER SYSTEM	26,684	SW
OTTUMWA WATER WORKS	25,529	SW
JOHNSTON MUNICIPAL WATER SUPPLY	24,064	SWP
SIRWA #2 (CRESTON)	20,793	SW
WARREN WATER DISTRICT	20,095	SWP
CLIVE WATER DEPARTMENT	19,010	SWP

BUDGETARY NEED

In addition to the annual operating budget of **\$600,000** for the statewide water quality monitoring program, this public-health focused monitoring and analysis would require an additional **\$400,000**.