

Endless Summer: Iowa Water Quality, Law, and Agriculture

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Caveat: One danger in writing about water quality and agriculture's environmental impact is how willing those who resist change are to label anyone raising legitimate concerns as ill-informed and an enemy of farmers. I can already hear the professional "defenders" sharpening their attacks on me for this paper. But the sad truth is the real enemies of a healthy agricultural future for Iowa – and the nation - are those who deny the truth; who threaten and retaliate against those who raise concerns; and who are willing to obfuscate the debate with inflated claims of progress – in other words continue efforts that for over 30 years have stalled real progress in protecting our water and land. Another danger is criticizing the collective impact of agriculture can sound like an insult to those farmers and landowners who are taking action and who show the type of sound stewardship possible. I count many of these farmers as friends, and respect their love for the land. But rather than use good farmers as poster kids to show what is being done – we should instead elevate them as inspiring role models of what can be done – and ask those not acting what is your excuse?

I. What is Iowa's Agricultural Water Quality Policy?

Recent reports showing the little "progress" Iowa has made in addressing water quality¹ led me to consider - what exactly is Iowa's water quality policy when it comes to agriculture? The answer surprised me and might you. We really don't have one – if by policy we mean:

- a set of articulated standards of expected conduct,
- an identifiable goal we are striving toward,
- objective and measureable indicators of progress or compliance, and
- a widespread social recognition and acceptance of the importance of the effort, and appreciation of the expected benefits.

For all of the news coverage, political debate, lawsuits and legislation of recent years concerning water quality it might be too easy to assume otherwise but the truth is there is nothing in Iowa law that sets out a policy to protect water quality from many agricultural activities with the potential for negative impacts.

When it comes to Iowa water quality and agriculture our policy can best be summarized as hopes and wishes – an Endless Summer of better things to come – someday. Here are some examples of what Iowa law allows to take place on the land:

- you can install as much tile drainage as desired with no examination of impact additional water will have on streams;

¹ The pace of action for the NRS was the subject of a recent report from the Iowa Environmental Council (IEC), "The Slow Reality of the Nutrient Reduction Strategy," July 2019. The report noted at the current rate of adoption and funding it will take over 90 years to reach the goal of cover crops adoption, over 900 to reach the goal of installing constructed wetlands, and over 31,000 years to implement the adoption of bioreactors.

- you can farm next to the stream bank with no set back or buffers;
- you can apply as much fertilizer as can be afforded and apply vast amounts of manure to any acre;
- you can convert pasture and grasslands to crops and remove any timber, fence line trees or other habitat without restraint;
- you can allow livestock to have unlimited access to streams; and
- there is no farm level monitoring of the quality of water leaving the land (it is all for someone downstream to address);

In effect, there are no performance standards or limitations on farm based land activities that can result in water pollution – with some exceptions for manure disposal.²

The state does have a law on allowable soil loss limits³ but the county soil and water conservation districts have shown little interest or appetite for investigating possible violations. Similarly, the federal soil conservation rules may require conservation plans if you raise crops on highly erodible land or plan to, but most USDA officials give low priority to enforcing compliance with conservation rules, beyond collecting signed AD-1026 forms noting landowner promises to comply. In either case these soil conservation laws deal mostly with soil loss and are not directly related to protecting surface water quality.

When it comes to federal water quality laws, the 1972 Clean Water Act provides essentially a blanket exemption for most agricultural activities by treating them as non-point sources not subject to any permit requirements or performance standards. The same is true for Iowa's water quality laws – no provisions directly apply or restrict most farming practices that can result in water quality degradation. The main exception, as noted above are the rules relating to animal feeding operations that may require permits for construction – depending on the number and type of animals and set some guidelines for manure management. Enforcement of the livestock rules typically happens after the fact in conjunction with investigations of fish kills or when there is an overflow from a waste storage lagoon or problem with excess disposal washing into a stream.

Informed observers might ask but what about the much-discussed Iowa Nutrient Reduction Strategy, doesn't it set a policy for protecting water quality from agriculture?⁴ It may be safe to assume many Iowans believe the NRS is a water quality policy but on closer examination it does not really meet that standard. First, the NRS sets a goal of a 45% reduction in the N and P pollution leaving the state in our rivers – at some undetermined future date – a goal largely dictated by EPA as a way to address Iowa's contribution to the hypoxia zone in the Gulf, projected to reach near record size in 2019.⁵ But the NRS has little to do with the quality of water in Iowa's rivers, lakes and wells - or provide protection for Iowans who depend on these

² Iowa's extensive laws on animal feeding operations and manure management, are found in Iowa Code Chapter 459 "Animal Agriculture Compliance Act," including provisions on manure management plans, see e.g., §459.312.

³ See Iowa Code §161A.43

⁴ The Iowa Nutrient Reduction Strategy is discussed at length in sections II and IV, *infra*.

⁵ See, e.g., "'Dead Zone' Reduced by Hurricane Barry but Still 8th largest," New York Times, August 1, 2019.

waters to drink and recreate. Further the NRS has no real timeline for implementation or when the goal will be reached – and no real plan or strategy for prioritizing how to get there – or what happens if we don't, as is discussed below.

In reality, the NRS does not assign responsibility for any action to anyone – which is its ultimate flaw. Instead it is based on the idea farmers and landowners will take needed actions voluntarily to reduce water pollution and the public will provide the funding to support any changes this might require. But Iowa is only putting around \$20 million a year into a job estimated to cost billions and after six years there is little progress to show.⁶ In fact the amount of farm sourced pollution leaving the state in our rivers has increased significantly during the time the NRS has been in place, as shown by recent University of Iowa studies.⁷ The reality is the NRS in its current form is an exercise in magical thinking whose main purpose is to serve as “evidence” the state is trying to do something.

So here in a nutshell is Iowa's water quality policy for agriculture:

- no guidelines or standards
- no goals or timelines for improvement
- few identified priorities or strategies to address the sources of pollution
- limited public funding
- no use of regulatory tools, in favor of reliance on a “voluntary” approach.

Is it any wonder Iowa water quality continues to deteriorate given this policy? We essentially have a policy designed to maximize crop production from every possible acre. We are driving with our foot on the accelerator of all out production of corn and beans and only periodically tap the brakes – or in a year like 2019 when nature and a changing climate taps them for us.

The tragedy is Iowa's farmers, conservationists and public officials have the tools and approaches we need to address our water quality challenges in meaningful ways. One of the bright spots is our increasing understanding of the potential to use watersheds to organize and prioritize our work, such as reflected in the Watershed Management Authority approach.⁸ Harnessing the structure and potential of our 1600 local HUC 12 watersheds offers a way to organize and localize our efforts: to promote practices like cover crops, stream side buffers, constructed wetlands, and targeted retirement of unproductive acres to reduce nutrients entering the water.⁹ We can re-energize the county soil and water conservation districts and engage them

⁶ See, Iowa Nutrient Reduction Strategy, 2017-18 Progress Report, INRC 0016A, March 2019, prepared by IDALS, IDNR and ISU College of Agriculture and Life Sciences, at http://www.nutrientstrategy.iastate.edu/sites/default/files/documents/NRS2018AnnualReportDocs/INRS_2018_AnnualReport_PartOne_Final_R20190304_WithSummary.pdf

⁷ For a discussion of these reports, see, e.g., Donnelle Eller, “Iowa nitrogen pollution in the water getting worse despite Hundreds of millions of dollars in spending, survey shows,” Des Moines Register, June 22, 2018, which includes the statistic Iowa's contribution to the Gulf dead zone spike 47% to 618 million pounds in 2016, based on five year running averages.

⁸ See Iowa Code §466B.21, et seq. and <https://iowawatershedapproach.org> for a discussion.

⁹ At the 19th Iowa Water conference in March 2019, I my talk, “Watershed Citizenship” which explored the opportunity to use watersheds, especially HUC 12 watersheds as a mechanism to

to multiply and magnify these efforts. We can enact reasonable standards for farming practices with the potential to degrade water quality such as tiling, manure disposal, and fertilizer management to help protect water – and to support the efforts of the many farmers committed to stewardship and level the playing field so they aren't at a competitive disadvantage with those who don't take these steps. All of these are possible with better leadership, more honesty, more public support, and additional funding.

Many forces encourage us to act, not just to improve water quality but to address a range of other important challenges facing agriculture, including:

- health issues associated with water pollution such as blue green algae and microcystins;
- flooding risks and the need to increase the resiliency of towns and farms;
- the impacts of climate change and the need to integrate efforts to improve soil health and manage carbon into how we farm.¹⁰

Laws and policies designed to address these issues will help improve water quality and will improve the economic performance and social sustainability of Iowa agriculture.

II. Will Iowa's Water Ever Get Better – or Are We Fooling Ourselves?

In a recent conversation with a person directly involved in providing safe drinking water for a large number of Iowans, the person noted – very matter-of-factly – there is no reason to believe water quality in Iowa's rivers and lakes will improve appreciably in the near future. As a result, public water systems relying on surface water sources are faced with the reality of looking for other sources. The comment took me by surprise and made me ask – is there any reason to believe Iowa water quality will improve given our current economic and political situation? The following is what I came up with - not to spoil the ending, the comment is probably justified.

A) Based on what we are doing is there any reason to believe water quality will improve?

The simple answer is no, for the following reasons:

- 1) there is no reason to assume we will be farming fewer acres of corn and beans (prevented plantings in wet years like 2019 notwithstanding) or that we will use less fertilizer and pesticides;
- 2) there is no reason to think we will grow fewer livestock or poultry – or apply less manure, in fact it is more likely livestock numbers will continue to increase;
- 3) there is no reason to believe we will stop installing more drainage tile or shut off any drainage systems now in place;
- 4) there is no reason to believe we will install significantly more buffer strips or restrain from farming next to the stream banks;

deliver water quality improvements. Here is a link: <http://aglawcenter.wp.drake.edu/wp-content/uploads/sites/99/2019/03/Watershed-Citizenship.pdf>.

¹⁰ For an example of the cutting-edge work being done to allow farmers to help drive creative solutions to climate change, see, the work of Iowa Interfaith Power and Light, <https://iowaip.org/faith-farm-climate/>.

- 5) there is no reason to believe we will use less anhydrous ammonia in the fall or refrain from spreading manure whenever necessary, even on frozen ground; and
- 6) there is no reason to assume the weather will get less volatile, instead the potential is for more flooding and large-scale rain events.

B) What could possibly change to improve the future of water quality?

There are several possible developments that could change the picture:

- 1) adopting cover crops on more acres, but while farmer interest in this practice is increasing, the rate of adoption appears to slowing;
- 2) we could install more CREP wetlands¹¹ and use them to clean more significant portions of HUC 12 watersheds, but they are expensive and farmer and landowner interest in installing them is limited;
- 3) drainage districts could develop and implement water quality protection plans as part of their operation, but given the court rulings in the Des Moines Waterworks lawsuit the legal argument will be they don't have the authority to do such things.

Even though these ideas show promise few are headed in the right direction.

C) What else could happen in the farm and food policy world to lead to changes in how we address water quality?

- 1) There could be a significant increase in federal spending on land retirement programs like the CRP and a redirection of federal conservation policy to address water quality. But this is costly and politically unpopular.
- 2) The farm economy could suffer an economic collapse, as threatened now by our foolish trade war, resulting in significant acres not being planted. Hopefully it won't take a farm crisis for us to change and even if one happened there is little reason to assume most land wouldn't be farmed by someone.
- 3) The ethanol sector could falter and the demand for corn could drop significantly, but the federal government is committed to a corn-based ethanol future.
- 4) More farms could diversify their planting from corn and soybeans to raise grass, pasture, hemp, small grains and other crops – though there is little reason to expect markets for these will develop quickly.
- 5) Other agricultural institutions like banks, landlords, and crop buyers could demand more attention be given to water quality as part of their business expectations with farmers, but there is currently little economic or political motivation for such changes.
- 6) Government agencies could more strictly enforce existing regulations on manure management plans, conservation compliance, and soil loss limits, but there is little political support for such a shift.
- 7) The Iowa Legislature and state agencies could enact environmental laws and regulations requiring more attention to water quality and soil loss, such as defining what is a point source and regulating new tiling, but the political climate makes such changes unlikely.

¹¹ For information about the Conservation Reserve Enhancement Program or CREP, see e.g., <https://iowaagriculture.gov/water-resources-bureau/iowa-conservation-reserve-enhancement-program-crep>

- 8) There could be an increase in human health concerns tied to the levels of nitrates in the water and health issue from toxins, and combined these could lead the public to support more aggressive actions.
- 9) Similarly, public health concerns related to water quality, odors and related issues could lead to support for local restrictions on livestock operations and changes in rules on siting and manure handling.
- 10) There could be changes in consumer demand supporting more sustainable agriculture, for example increasing private conservation initiatives (PCI),¹² such as demand for crops grown to support clean water, or alternative “meat” products.

Of these ten ideas, none are likely to happen anytime soon (and some would have unintended and disruptive consequences if they did) because:

- they are too costly or face opposition from industry
- they would be too disruptive economically
- they lack public and political support for action
- they lack a legal basis or authority and no legislative support to implement, and
- they require significant changes in consumer attitudes and the retail food sector.

Even if these circumstances shift, these possible changes won’t happen in a vacuum but instead play out in a political and economic environment where powerful vested interests – from farm groups to the agricultural industry – would resist any efforts to change public policy. Having said that, some changes may be more “natural” than political, e.g., climate change and increased flooding, or establishing links between health concerns and water quality, and as a result may be by their nature harder to resist through traditional political channels.

D) What does this mean for anyone expecting changes or improvements in water quality?

The main conclusion is changes are unlikely to happen anytime soon and any change will be slow and largely shaped by agricultural interests. The minimal level of public funds now being put into addressing water quality and conservation shows the limited appeal and priority given to the issues. Even if Iowa devotes significantly more funding to the efforts – such as through the passage of the sales tax increase to fund natural resource protection,¹³ any improvements may be slow in coming because the state lacks any clear strategy or plan for improving water quality. As discussed in the next section, the Nutrient Reduction Strategy is inadequate with no priorities or

¹² For a discussion of PCI or private conservation initiatives, see the discussion in the Center report, in Section VII.

¹³ In 2010 Iowa voters passed a constitutional amendment, adding Art. VII, section 10 to establish a natural resources and outdoor recreation trust fund. The law passed to implement this fund is found at Iowa Code Chap. 461, which details the formula for how the funds in the trust are to be used. The trust is to be funded with the next 3/8 cent increase in the Iowa sales tax, but no increase has yet to be enacted. It is estimated such an increase would generate over \$200 million annually for natural resources protection. Efforts to encourage the Iowa legislature to increase the sales tax, are often referred to as the IWILL campaign, for “Iowa Water Land and Legacy,” the name used to support passage of the 2010 amendment.

plan for implementation – and the existing institutional structure to use the funds, as currently lead by most county soil and water conservation districts is not prepared to handle any significant scaling up of efforts. Our willingness to harness the potential of watersheds as a vehicle for change offers some promise but efforts to date are limited. In summary, there is lots of talk about wanting water quality to improve but little is in place to support getting to the goal.

III. Understanding the Iowa Nutrient Reduction Strategy

The purpose of the NRS was to set out a plan for trying to address water quality issues, in particular the movement of nutrients into Iowa rivers and streams which finds its way down to the Gulf of Mexico. The development of a state plan like this was required under a 2012 EPA ruling to address the Gulf Hypoxia zone. The plan was developed largely by scientists at Iowa State University and officials with the Iowa Department of Agriculture and Land Stewardship. Public officials from the Iowa Department of Natural Resources were given less opportunity to be involved, but some farm groups most notably the Iowa Farm Bureau Federation played a large role in developing the NRS.

The NRS sets goals for reducing the nutrients entering Iowa's rivers and streams by 45% with 41% of the reduction from nonpoint sources such as agricultural land and 4% of the reduction from point sources such as municipal sewage treatment plants. The NRS used a series of scenarios reflecting various levels of changes in farming practices – for example planting cover crops - and based on scientific and economic models used those to predict the changes that might occur in nutrients moving into the water. Then based on the different scenarios the NRS sets out possible strategies for how these goals could be reached. The NRS also projects what the costs might be to implement the strategies.

The goal is the 45% reduction but the issue of how it is to be measured and when it is to be achieved was somewhat mysterious. Five years after the NRS was adopted the Iowa Legislature finally established the time period to be used to establish the baseline - the period from 1980-1996.¹⁴ The choice of period reaching back almost 40 years raises questions about its relevance to the actual level of nutrient loss happening in agriculture of this era. In addition, the NRS contains no timelines or objective measures for determining how progress might be made. The NRS does not involve any proposal relating to monitoring water and specifically is based on the illogical premise there is no possible role to be played by regulations in implementing the NRS.

The scenarios examined to reach the NRS goals, use a variety of conservation and farming practices to project potential improvements in water quality, including such practices as: planting of cover crops, the use of N inhibitors with the application of fertilizer, the movement of water from tile drained fields through constructed wetlands, and the widespread use of bioreactors. The various scenarios are given different costs and rates of adoption depending on which combination of practices might be use. There is no actual policy or plan for where or how any farmers or landowner would decide to implement any specific practice. Instead the

¹⁴ The codification of parts of the NRS was set out in the 2018 legislation SF 512. Discussed in section VI, *infra*.

implementation is based on providing education to landowners and farmers about practices and expecting them to adopt them voluntarily over time.

When it was first developed the NRS was simply a report or plan developed by ISU and the state and endorsed by the state agencies. It had no legal status and was not a regulation or an official government action. That changed in 2018 when the Iowa Legislature enacted SF 512, a new water quality bill codifying the NRS and making it an official statement of Iowa law. The effect of putting the NRS in the Code is to elevate it as official state policy, however the law allows the possibility of future changes in the Strategy, an opportunity discussed in Section IX.

The issue of funding is an important question because depending on the scenario being used the annual cost of the NRS could be hundreds of millions a year with a total cost of up to \$4 billion – as well as annual costs to maintain practices. Regardless of which scenario is used or the practices involved the costs of addressing Iowa’s water quality issues will be significant. However, the state funding to implement the plan still amounts to less than \$20 million a year and state leaders have opposed plans to generate additional funds – such as raising the sales tax to fund the Natural Resources Trust Fund, as discussed in footnote 13. This program would provide as much as \$100 million a year in funding for soil and water conservation efforts like implementing the NRS. In addition to the state funds, the money from some of the USDA conservation programs can be considered as helpful in implementing aspects of the NRS. However, large federal land retirement programs like the Conservation Reserve Program were not designed primarily to address water quality and have at most a marginal relation to the NRS. If public money is not provided then funding for the NRS will come from landowners.

The major limitation with the NRS is while it is based on science there is very little in it that is an actual strategy to implement the science and there is little in it to work as a policy to see the NRS is implemented in a timely manner. Part of the resistance to including any policy provisions is the opposition many farm and political groups have to any use of a regulatory approach to address water quality.

The future of the NRS is largely still to be written. Relatively little actual progress has been made under the NRS if the issue is how are farming practices changing or how has water quality improved. There are examples of progress, most notably the number of acres of cover crops planted in the state has increased – although is it still less than 5% of what is projected as needed under the NRS. There have also been many more meetings held about the NRS and officials are quick to point our surveys show more people have heard about it. But after six years there is relatively little to show directly tied to the NRS. Unfortunately, during this same period studies show the amount of nutrients leaving Iowa in our rivers and streams has doubled – meaning water quality is not improving and Iowa’s contributions to the Gulf Hypoxia problem are not getting better.

IV. The Challenge of Talking about Implementing the NRS

The NRS has been in place now for six years and embedded in the Iowa Code for two. Even so, it is difficult to identify any direct – or even indirect – effects attributable to it, especially on the question of whether it is having any appreciable impact on water quality. Its supporters are

quick to deflect any comments about the lack of progress, casting the observations as unfair and premature because it is “too soon” to expect any results.¹⁵ Leaving aside the question of when is the appropriate time to expect any evidence of progress, it appears the more fundamental issue is in the nature of the NRS itself. The reality is there is nothing to actually implement – because the NRS does not include any specific plan of action. It does not establish any expected conduct on the part of either individual farmers or landowners – or for public institutions like the county soil and water conservation districts. It does not establish any timelines or methods to prioritize where funds might be spent or even the watersheds to be addressed first. The most that can be said for the NRS is that IDALS and IDNR are expected to use available state funds, such as from the Water Quality Initiative¹⁶, to fund pilot projects. Many projects will promote practices identified in NRS scenarios, such as planting cover crops.

The lack of any plan for implementation may in part explain why officials at Iowa State University responsible for managing the NRS have chosen to use what they call a “logic model” to document the progress for the NRS. This model is based on examining activities in four categories: Inputs, Human, Land, and Water – and is reflected in reporting on such things as how many meetings were held in a year on the NRS, how many people attended, and what surveys show as to individuals awareness of the NRS.¹⁷

Calling something a logic model gives it a patina of legitimacy but is it fair to ask if the label is more reflective of social science jargon than it is logical? From a practical standpoint given the magnitude of Iowa’s water quality problems and the task identified in the NRS of a 45 percent reduction in nutrients leaving the state, a more “logical” model might include:

- identifying the watersheds and water bodies where the most significant nutrient losses are occurring,
- prioritizing these watersheds for action,
- inventorying the available tools such as public funding and institutional structures,
- actual monitoring of water quality to see if funded practices are having an effect, and
- developing a strategy to focus on the most significant water quality issues.

Using a “logic” model such as this would create the opportunity to establish a baseline of performance and measure the possible improvements in water quality. The current “implementation” model, if it is even fair to characterize it as such, seems more like a generational effort at education and changing attitudes rather than an effort to change farming and land management practices for the purpose of protecting water quality. The lengthy time frames needed to achieve results at the present pace, was the subject of a recent report from the

¹⁵ See e.g., Erin Jordan, “Slow progress means Iowa water quality goals hundreds or even thousands of years away, environmental group says,” *Cedar Rapids Gazette*, July 16, 2019, quoting Iowa Secretary of Agriculture Mike Naig, “It is unfair to suggest we’re going to continue to implement conservation practices at the pace we are today.”

¹⁶ See, e.g., <https://www.cleanwateriowa.org/water-quality-initiative>

¹⁷ See, Iowa Nutrient Reduction Strategy, 2017-18 Progress Report, INRC 0016A, March 2019, prepared by IDALS, IDNR and ISU College of Agriculture and Life Sciences, and “The Logic Model Approach” at p. 7.

Iowa Environmental Council (IEC), “The Slow Reality of the Nutrient Reduction Strategy,” July 2019.¹⁸ The report noted it will take over 90 years to reach the goal of cover crops adoption, over 900 to reach the goal of installing constructed wetlands, and over 31,000 years to implement the adoption of bioreactors.

V. What is the “Policy” in the Nutrient Reduction Strategy?

One can find the original documents detailing the Iowa Nutrient Reduction Strategy, including the updated December 2017 version on the NRS website.¹⁹ The Introduction from the original May 2013 version includes this line:

“The strategy outlines voluntary efforts to reduce nutrients in surface water from both point sources, such as wastewater treatment plants and industrial facilities, and nonpoint sources, including farm fields and urban areas, in a scientific, *reasonable*, and cost-effective manner.” [italics are mine, as it is not clear what an “unreasonable” manner would be? This same passage appears in first part of the Executive Summary.]

If there is any policy or strategy in the NRS it is found in the 28-page document titled Executive Summary and Section 1 Policy Considerations and Strategy. The Executive Summary notes the Strategy identifies 8 strategic elements:

“In this document, steps are outlined to prioritize watersheds and limited resources, improve the effectiveness of current state programs, and increase voluntary efforts to reduce nutrient loading.”

This is a key promise which raises at least 2 questions: 1) how does the Strategy do this, e.g. is this the work of the Water Resources Coordinating Council (WRCC)²⁰ and 2) is this process actually being used to identify priorities and make decisions on spending, such as where to put CREP wetlands? Answering these two questions requires examining exactly what the NRS said it would do and what is actually happening at IDALS and IDNR as to implementation.

The Executive Summary on page 2 states:

“The strategy harnesses the collaborative initiatives and capacity of Iowa agricultural organizations, ag businesses and farmers toward implementation of nonpoint source management practices to improve Iowa water and soil quality.”

Again, this is an important claim but it raises several questions, including: 1) has such an effort to “harness” these forces actually been made (or is being made) and if so, how and 2) what are the examples or results?

¹⁸ The report can be found here,

<https://www.iaenvironment.org/webres/File/NRS%20Summary%20Report.pdf>

¹⁹ See, <http://www.nutrientstrategy.iastate.edu/documents>

²⁰ See Iowa Code, §466B.3 for the description of the WRCC.

On page 3, the Executive Summary includes a section titled “Nonpoint source policy” and in the third paragraph it reads:

“Iowa is a national and global leader in the production of food and renewable fuels, so a goal of this strategy is to make Iowa an equal national and global leader in addressing the environmental and conservation needs associated with food and renewable fuel production.”

This is a bold (and historically significant) goal to set, but stating it raises several questions relating to: 1) how well are we doing and, 2) if the NRS is so slow in getting underway, e.g. the Logic Model idea, and if Iowa’s nutrient exports continue to increase significantly as U of I data indicates, how can we plausibly make this claim?

The document also gives a detailed history of the EPA efforts relating to the Hypoxia issue and the debate about its desire for states to adopt numeric criteria – which Iowa resisted and continues to, although other states have adopted them.²¹

At the bottom of page 9, a key paragraph appears to be the original source of the “no role for regulations” premise central to the NRS. It reads:

“Despite what some believe, there are few “win-win” situations, and those associated with nutrient inputs will not get Iowa to currently targeted water quality goals. Reaching these goals will come at considerable efforts and costs, and therefore, it is imperative to be sure the practices promoted will secure these goals; and furthermore, that reaching these goals will result in the anticipated benefits. But it will be difficult given the variable nature of weather and Iowa’s modified landscape, major reasons why many say a regulatory approach on nonpoint sources is not likely to achieve aggressive water quality outcomes.”

This is quite a paragraph and it raises a significant number of questions:

- 1) it is not clear what the water quality goal being referred to is, but if it is the 45% reduction goal the NRS never articulates what the “anticipated benefits” for reaching it are? [further, the correlation between meeting a Hypoxia related goal as in the NRS and in improving the water quality Iowan’s experience is unclear]
- 2) who are the “many” being referred to in the last sentence?
- 3) why or how does variable weather or a modified landscape effect the possible use of regulations? and
- 4) how did the desire to achieve “aggressive” water quality outcomes become the standard in this section, when there has never been a reference to aggressive anything elsewhere in the Strategy?

Ironically, if you actually wanted to achieve “aggressive” outcomes, then a regulatory approach is exactly what you would use!

Section 1.4 of the NRS refers to the work of the WRCC. It includes this statement:

²¹ See e.g., page 9

“The Water Resources Coordinating Council shall annually evaluate whether the Iowa Nutrient Reduction Strategy needs to be reviewed and updates. This evaluation shall be included in the annual report.”²²

Based on this provision it would appear any proposal to amend or update the NRS could be initiated by proposing (or petitioning) it to the WRCC. One legal question is what is the status of the WRCC in terms of applying the Iowa Administrative Procedures Act rulemaking process? The Strategy notes the WRCC in 2013 selected nine HUC 8 watersheds as initial priority areas – and allowed for HUC 12 projects within them. The key questions it raises are has the WRCC added to this original list of nine HUC 8 watersheds and are these watersheds actually being used by IDALS and IDNR in selecting Water Quality Initiative (WQI) projects?

The Strategy notes the WRCC is to determine the watershed goals and “coordinate development of measures of success and relate them to watershed improvement based upon a set of mutually agreed indicators.”²³ This raises the question of whether this actually happened? The idea of performance indicators to measure improvements would appear to be a more direct form of monitoring that the approach being forwarded now under the Logic Model approach.

VI. Understanding Iowa’s 2018 Water Quality Law

After a lengthy debate but no final action in the 2017 session, the Iowa General Assembly early in the 2018 session passed SF 512 considered to be a major step forward in Iowa’s water quality debate.²⁴ The law may provide as much as \$282 million over the next 12 years, with \$156 million allocated for agriculture and \$126 million in funding for city projects is \$126 million. The funding begins slowly with only \$2 million allocated for agriculture in the first several years, but the amount grows to \$15 million a year after that. The law does not provide any new sources of state revenue for use with water quality, but instead redirects an existing tax on metered drinking water, now going into the general fund, and gambling revenues, now being used to pay the costs of bonds, funds that would otherwise go to the infrastructure fund. As noted \$156 million is allocated to agriculture, primarily through IDALS, for the establishment of a water quality financing program.

One primary purposes of the 2018 law was to codify the Nutrient Reduction Strategy (NRS), which until then had no legal status other than being a plan referred to by state officials. The 2018 law includes a definition of the NRS and refers to it as the basis for establishing the goals and uses of funds allocated.²⁵ One issue raised by this reliance is the assumption implementation of the NRS has been effective to date. This idea is open to question, based on reviewing the 5-year annual report provided by the officials implementing the NRS.²⁶

²² See p. 18.

²³ See p. 19.

²⁴ Acts of the 2018 Iowa General Assembly, Chapter 1001, codified in various sections of the Iowa Code,

²⁵ See Iowa Code §455B.171 (10A).

²⁶ See IDALS, IDNR, ISU College of Agriculture, “Iowa Nutrient Reduction Strategy: Annual Progress Report, INRC 0015 December 2017.

To the extent the NRS suffers from a lack of goals, timelines, and other forms of measurement— as well as the unscientific reliance on voluntary measures alone for implementation – the decision to allocate all new agricultural funding to its implementation may simply magnify those flaws. The law does not include any provisions relating to monitoring of water quality or testing to see if projects are effective. The law only requires an annual report to the legislature of what activities were funded based on HUC 8 watersheds.

IDALS issues an annual public report concerning its activities in relation to water quality, which provides general information about the watershed projects being funded and other uses of money.²⁷ However, there is no requirement that any public information be provided about how the funds are spent. Somewhat more puzzling is the fact the law contains a specific confidentiality provision prohibiting the release of any information concerning how the money is spent or on which land. The provision reads: “(7) Any information obtained by the division identifying a person holding a legal interest in agricultural land or specific agricultural land shall be a confidential record under section 22.7.”²⁸

There is little in the law requiring IDALS to prioritize the allocation of funds to watersheds or areas identified as most in need of attention. Similar to the NRS, the new law does not include any provisions for timelines or goals for measuring progress on improving water quality. However, the law does provide an answer to a major question left unanswered since development of the NRS - the standard against which progress is to be measured. The key premise of the NRS is the idea the state will reduce the loading of nutrients into the waters of the state by 45% of which 41% is to come from agriculture. But it is impossible to determine if progress is being made to reach a goal unless this is a standard to calculate the reduction against. Surprisingly, until 2018 no one had been to answer what that number was. The 2018 law provided an answer – at least in some ways. The law reads:

To evaluate the progress achieved over time towards the goals of the Iowa nutrient reduction strategy, as defined in section 455B.171, and the United States environmental protection agency gulf hypoxia action plan, the baseline condition shall be calculated for the time period from 1980 to 1996.²⁹

As is apparent, this provision does not establish a set number but instead uses a period beginning almost 40 years ago – at a time when nutrient losses to Iowa’s waters were much lower – to establish the time period for the subsequent determination of a percentage reduction. In the 2017 NRS Progress report noted above, data concerning the increase in N exports from Iowa fields is not promising. When the NRS was begun 2011 it was estimated Iowa exported 297,246 tons of N but by 2016 the number had increased to 525,654 tons.³⁰

²⁷ See, e.g., footnote 6 supra.

²⁸ Iowa Code “§466B.43.

²⁹ Iowa Code §455B.177 (3).

³⁰ See Table 9, page 48.

Early in the 2018 session a number of political leaders noted passage of SF 512 was just the start and additional legislation was planned. At the end of the session the Legislature passed HF 2440 referred to as the water quality “clean-up” bill. The law made several minor changes to SF 512 such as simplifying references to the NRS but made no significant changes in policy, with one exception. In a somewhat unexplained and unexpected provision, the original SF 512 identified entities eligible to participate in the new IDALS water quality financial assistance program, and noted drainage districts established under chapter 468 “shall utilize the installation of edge-of-field infrastructure as described in section 466B.43.” The inclusion of this provision was somewhat puzzling because one of the key legal premises argued successfully by the drainage districts in the Des Moines Waterworks litigation is they are not required to address water quality issues and do not have the legal authority to do so. Given this fact it is perhaps not surprising that HF 2440 repealed the provision mentioning drainage districts so any confusion it may have caused about Iowa drainage districts having legal authority to address water quality were resolved, at least for those who do not believe Iowa Code 468 “Levee and Drainage Districts and Improvements” does not already include such authority.³¹

VII. Drake University Issues Guide for Farmers and Landowners on Navigating Public Programs to Improve Water Quality

In April 2018, the Agricultural Law Center released a new report “How to Improve Water Quality on Iowa Farms: A Step-by-Step Guide for Navigating Conservation Programs for Farmers and Landowners.”³² Our goal was to make it easier for Iowa farmers and landowners to understand the public cost-sharing programs available to protect our soil and water. The Guide was developed under a 2017 grant from the Leopold Center at ISU, now being coordinated by the Iowa Nutrient Center. Our premise in preparing the guide was if we expect farmers and landowners to use public programs to protect soil and water, it is important to take the mystery out of how to apply.

Matt Russell, who helped create the Guide in his role as the Resilient Agriculture Coordinator with Drake, noted “Iowa has a wide range of programs to assist those interested in putting conservation on the land, but being able to understand who administers the programs and the process for applying can be confusing.” The Guide examines the programs in two ways: first, the discussion describes various types of conservation and water quality practices available – such as cover crops or installing grass waterway, and lists which financial assistance programs offered by federal or state agencies can help support each practice. Secondly, the report takes a detailed look at federal and state conservation and water quality programs to explain how they actually work for interested farmers and landowners.

Popular federal efforts such as the Conservation Stewardship Program (CSP), the Environmental Quality Incentives Program (EQIP) and the Conservation Reserve Program (CRP) are explained in detail. Similarly, the various state cost sharing programs such as the Water Quality Initiative,

³¹ See, e.g., Iowa Code §468.1.

³² The 65-page report is available and can be downloaded from the Center’s web site at: aglawcenter.wp.drake.edu/wp-content/uploads/sites/99/2018/05/Guide-on-How-to-Improve-Water-Quality-on-Iowa-Farms-5-8-18.pdf.

the financial incentives for soil erosion control, and the state water quality revolving fund are explained, including how they are administered. One unique feature of the Guide is for each program a set of questions are addressed, including: who is eligible, how one applies, what documents are required, how selections are made, how practices are implemented, how payments happen, and how programs are enforced.

The Guide explains how programs are often administered by county Soil and Water Conservation Districts. The Guide gives suggestions for working with the districts, especially the value of developing a personal relation with the conservation professionals so an effective plan can be developed for the farm. The final section of the Guide addresses Private Conservation Initiatives, which some people feel are a possible supplement to public conservation efforts. These are typically programs where a private business involved with food or agriculture works with farmers to implement a soil or water conservation project. The Guide is the first effort to evaluate and discuss the potential of these programs to provide additional support for soil and water conservation. A case study of how one Iowa farm is using public and private programs to improve soil health and water quality shows this potential.

VIII. Recent News Articles Illustrate Our Problems

Two stories in the Sunday June 23, 2019, Des Moines Register poignantly captured our situation in Iowa concerning water quality and public health – and reflect the attitudes and actors keeping us from making progress. First, a front-page story by Donnelle Eller, “Nitrates may be tied to cancer, says study,” detailed a new scientific report on the relation between cancer and the levels of nitrates found in drinking water. The peer-reviewed study quantified the health impacts of drinking water high in nitrates – a subject of concern in Iowa for decades – and indicates Iowans may experience as many as 300 extra cases of cancer each year.³³ The second story that day was the Register’s editorial “Iowa is No. 1 at No. 2” responding to recent work by Chris Jones, a water scientist at the University of Iowa, documenting the amounts of animal wastes produced – and disposed of – in Iowa. In a March 2019 blog titled “Iowa’s Real Population,” Jones, who has established himself as a leading source for creative and honest analysis of Iowa’s water quality, reported the wastes produced by all the livestock in Iowa gives us the population equivalent of over 165 million people – a density similar to Bangladesh.³⁴

The stories were of special interest to me because I am retiring after 36 years directing the Agricultural Law Center at Drake University to become an Emeritus professor. In teaching my course on Environmental Regulation of Agriculture for over 30 years many topics were drawn from current events in Iowa. As a result, my files are a comprehensive timeline of Iowa’s debates on many topics – like regulation of livestock and manure disposal – and our over 30 years of efforts to address water quality. The stories from June 23rd reveal our situation may be getting worse and the potential health impacts are greater than perhaps we even want to imagine.

³³ See, <https://www.sciencedirect.com/science/article/pii/S001393511930218X>

³⁴ https://www.ihr.uiowa.edu/cjones/iowas-real-population/?doing_wp_cron=1565632691.3799800872802734375000

Consider the situation with livestock and how we handle their wastes. We have steadily increased the animals in Iowa – mostly pigs and broilers – and have increased the amount of wastes produced. But when it comes to how we dispose of the wastes we have effectively placed no limits on the amounts that can be applied per acre – and studies indicate most producers who have manure do not account for its nutrient value when buying and applying fertilizer – but instead purchase and apply commercial nitrogen at prescribed levels. Chris Jones at the University of Iowa has documented this reality in other research – and the effect is we have excess nitrates finding the way into the water – as well as the other toxins and human health risks present in animal wastes.³⁵

When it comes to nitrates in drinking water, a key issue is whether the current safe drinking standards of 10 ppm is adequate or should be lowered. New studies like the one reported raise significant concerns about the health impacts – especially in elevated cancer risks – of drinking water with even the approved level of nitrates contamination. Our situation is more frightening because many people in rural Iowa drink from shallow wells they have never tested for nitrates. The magnitude of our health risk is largely unmeasured. It appears we are happy to poison ourselves slowly if it is easier than facing difficult choices and actions required to change today.

A common feature reflected in many of the stories - those from June 23rd and collectively over the last 30 years - is how the “objections” or defenses made for agriculture are the same and the institutions behind them never change. For decades, the Iowa Farm Bureau has played a leading role with a steady campaign of delay, deflection, denial and even deception to resist legislation and rule-making to protect Iowa’s water, land, and natural resources.

It is impressive how people are happy to claim no one cares more than farmers about water quality and claim progress is being made - when the reality is it is unclear how many do care and if the claims of progress are hollow or even non-existent. If we were serious about addressing water quality we could actually solve it – but the fact our waters continue to degrade may reveal the true situation. It is clear many people do not care when any “problems” happen out of sight, downstream and are someone else’s – or when the potential harm is “uncertain.” This is the moral hazard we face - expecting others downstream – like the shrimpers in the Gulf or water customers in Des Moines, to pay the costs imposed by our “common” farming practices. Unless we address this moral hazard, it threatens to lock us into a pattern of anti-social behavior and fuels resistance to any efforts to change our approach.

Instead of taking real actions, some people are happy to report impressive sounding numbers – like the claim Iowa now has 760,000 acres of cover crops or that we spent \$500 million in 2018 to address water quality – when the context and truth tell a different story. It is nice we have slowly increased the acres of cover crops but we have 26 million acres of cropland in Iowa and even the Nutrient Reduction Strategy projects we need over 14 million acres of cover crops to meet our goals. At this pace, the NRS might yield results in generations, as the recent report from the Iowa Environmental Council shows. Rather than brag about the 760,000 acres shouldn’t we be asking the vast majority of other farmers and landowners what they are waiting for? Similarly, the claim we spent \$500 million to address water quality last year is wildly

³⁵ See, e.g., <https://www.iuhr.uiowa.edu/cjones/surplus/>

inflated and includes \$300 million spent on Conservation Reserve Program (CRP) rental payments. The CRP is a valuable program but it is not focused on water quality. The truth is the state of Iowa spends around \$20 million in real funding for water quality practices – or less than a dollar an acre. Is it any wonder our progress is illusive?

IX. Conclusion: Why a NRS 2.0 is Needed

As discussed above, my view is the current efforts in Iowa to use the NRS as the basis for improving our water quality are destined for a slow, faltering, and probably unsatisfactory future unless changes are made. What I believe is needed is to enhance the NRS by adding a section exploring the full range of options available to the state, including the use of regulatory approaches to improve our water - in other words a NRS 2.0. The idea of a NRS 2.0 is to develop what I call “The Missing Link” – the actual policy section for implementing the strategy. Here are reasons why such a study is needed:

First, the NRS is asymmetrical, all science and little policy – and is destined to fail on the issue of implementation, if the plan is based solely on education and voluntary adoption.

Second, public frustration will increase over time over the lack of progress with the NRS which will combine to increase the likelihood of other legal actions such as regulatory efforts and litigation (see e.g., the public trust doctrine suit filed in state court by ICCI and Food and Water Watch) and declining public support for agriculture and the NRS.

Third, if agriculture expects the public to put significantly more funding in the NRS, such as through the passage of IWILL, then the public will rightfully expect some assurance the funds are being used wisely and the progress is being monitored.

Fourth, Iowans deserve to have cleaner water and to have an effective water quality policy. If significant public and private investments are to be made for recreational programs based on using the waters, such as the planned central Iowa water trails project, then programs to improve the water of the water and reduce health risks from it must be in place. If the NRS is to be the foundation for the state water policy then the NRS needs to reflect a more comprehensive strategy to actually improve water quality.

Assumptions about NRS 2.0 “Missing Link” Study

1. It is a legitimate exercise with the goal of actually trying to improve Iowa’s water quality, rather than being designed to give the appearance of activity while really being an effort to delay any required action.
2. The state will make use of existing legal and institutional tools to implement the work, such as the county soil and water conservation districts, the watershed management authorities, soil loss limits, and the existence of drainage districts.
3. The plan will use sound social science such as the appropriate role of regulation to achieve public goals, rather than being built on an anti-regulatory ideological bias.
4. When the state provides additional funding for water quality, such as the passage of the IWILL sales tax increase, the public will expect there to be in place a system and the

capacity to use the money effectively, such as requiring SWCD to use HUC 12 watershed plans and to require monitoring of installed practices.

5. To be effective, any plan needs to have identifiable goals, measurable indicators of progress and methods to prioritize efforts.
6. The plan will include the consideration of animal wastes and livestock production, in developing projects to address water quality.
7. It is important to have broad and widespread participation by land owners and farmers – and public institutions, in all counties and watersheds.
8. The plan will establish expected standards of water quality stewardship, both to increase the effectiveness of the efforts and to protect the economic interests of those farmers who voluntarily take action from the negative impact of free riders and those who do not.
9. The plan will look to useful examples of efforts from neighboring states, such as the nutrient management plans required in Ohio, and the use of buffer strips in Minnesota, to identify potential policies and programs to be used to protect water quality in Iowa.
10. The plan will utilize the local HUC 12 watersheds as a vehicle to organize farmers and landowners, establish priorities and to implement practices.

If the idea is for the NRS to utilize the calculations of possible reductions in nutrient loss made in the various scenarios, then the strategy and policy needs to reflect how these practices can be deployed at scale. Any measurements or calculations of the “progress and gains” made under the NRS must also include a reflection of the net gain that considers any increases in nutrient loss through other changes in agricultural practices during the time period involved.

In the months ahead, Iowa policy makers will have several opportunities to consider how to improve our efforts to protect our land and water. One is to increase the state’s sales tax to generate funds to help provide cost sharing for farm level practices and increase staffing for watershed projects. A second is to consider the ideas being developed in the Missing Link project suggested here.