

Policy Committee Meeting Agenda

Clean Water Council

January 26, 2024

9:30 a.m. – 12:00 p.m.

[WebEx Only](#)

2024 Policy Committee: John Barten, Rich Biske (Chair), Gail Cederberg, Kelly Gribauval-Hite, Victoria Reinhardt (Vice Chair), Peter Schwagerl, and Marcie Weinandt

9:30 Regular Business

- Introductions
- Approve today's agenda
- Approve minutes of previous meeting(s)
- Chair update
- Staff update

9:45 Update on Nutrient Reduction Strategy

- David Wall, MPCA

10:45 Break

11:00 Discussion on Policy for Private Wells

12:00 Adjourn

Next Meetings Options:

- Water storage pilot completion
- Soil health plan at MN Office of Soil Health
- Status of state's equity efforts
- **New Report:** Minnesota's Vanishing Natural Shorelines: A Loss that Contributes to Degraded Lake Quality + lake water quality issues in general

Policy Committee Meeting Summary
Clean Water Council (Council)
October 27, 2023, 9:30 a.m. to 12:00 p.m.

Committee Members present: Rich Biske (Chair), Gail Cederberg, Kelly Gribauval-Hite, Victoria Reinhardt (Vice Chair), Marcie Weinandt.

Members absent: John Barten and Peter Schwagerl.

Others present: Haley Byron (DNR), Jim Stark (LCC), Alex Trunnell (MN Corn Growers), Kaitlyn Bemis (MN Farm Bureau), Molly Jansen (Red River Watershed Management Board), Jan Voit (MN Watersheds), Jamie Beyer (Bois de Sioux Watershed District), Larry Baker, Jeff Peterson (UMN), Len Kramer, Melissa Mueller (UMN), Katey Pelican (UMN), Tom Gile (BWSR).

To watch the WebEx video recording of this meeting, please go to <https://www.pca.state.mn.us/clean-water-council/policy-ad-hoc-committee>, or contact [Brianna Frisch](#).

Regular Business

- Introductions
- Approval of the October 27 agenda and August 25th meeting summary, moved by Marcie Weinandt, seconded by Kelly Gribauval-Hite. Motion carries.
- Chair update
 - The Water Resource Conference took place. It would be good to review any of policy-related items.
- Staff update
 - A few Council members have asked about more equity with the Council's policies. We are open to some Council member advice on this topic. If Council members would like to hear more about this, and how to proceed on this topic.
 - **Rich Biske:** In my opinion, I think this is overdue for the Council to have more of a discussion on it. I would be good to reflect on how Clean Water Funds (CWFs) has considered it. This true for policies. It is a lens we can use to filter some of our discussions. We can be more proactive in this area. It would be good to know if we can advance in this area. Some of the agency partners have done some work, and I would look to them on this area as well.
 - **Marcie Weinandt:** The state agencies have trainings for diversity and inclusion, correct?
 - *Answer from Tannie Eshenaur, Minnesota Department of Health (MDH):* Yes, on the interagency Coordination Team (ICT) we have been spending time looking at equity. It has been led by Center for Health Equity. We could have someone from the Center for Health Equity talk with the Policy Committee.
 - *Comment from Paul Gardner:* Two years ago, I put together a catalog of areas the Council and CWFs intersect with equity. However, that is more of a starting place. Looking to see where the gaps would be a useful next step.
 - **Rich Biske:** It would be good to build on that area. All the CWFs go through state agencies as some point, so knowing where the agencies are on this topic would be helpful too. Looking into this more would be helpful, especially how it is included into best management practices.
 - **Gail Cederberg:** When we disperse CWFs to the state agencies make sure the funds are being inclusive (i.e., with vendors). The funding to work on the projects is a level of equity. We need to make sure this area is providing these kinds of opportunities.
 - **Rich Biske:** Knowing who is at the table making these decisions would be good. For newer members, policy can be many different things. This may be an area we can consider a Council policy.
 - **Kelly Gribauval-Hite:** Thinking about how we can get people to the table. Sometimes people do not know how to get to the table. Sometimes people do not have the ability to get to the table. What can we do to facilitate it? People may want to do something, but knowing the resources is important.
 - **Glenn Skuta, Minnesota Pollution Control Agency (MPCA):** This is work that happens at multiple levels. For example, for the MPCA's Watershed Restoration and Protection Strategies (WRAPS), we have developed a framework for addressing environmental justice. We could provide info or present on

this topic in the future. Also, the We Are Water program, supported by CWFs for years, works to bring forward absent narratives, so the voices of those who are not typically heard are brought into the water arena. It has been to many communities around the state. The next cohort includes two tribal host sites.

- *Paul Gardner:* In the last set of recommendations, the Council included about three pages at the end on how agencies are working with the tribes when they use the CWFs. There is a heavy emphasis on the MPCA's work with the Ojibwe Tribes. Would it be appropriate for the Council to have a larger equity section in the upcoming recommendations, like an analysis of what we are doing and where the gaps are being found. Or see how this discussion goes and where it leads? *Comment from Rich Biske:* I'm not sure. I think it needs to be more refined. There is value in describing the current state. However, sometimes it misses the growth opportunities too. I'd like to look at what is being done along with what can be done.

Draft Drainage Policy Statement (Webex 00:27:00)

- The Policy Committee has had multiple meetings on the issue of drainage to get a better understanding of water quality implications and where CWFs might be applied. There are drainage related items (i.e., WASCOBS) used in watershed-based implementation funding in addition to multi-purpose drainage management. The discussions have involved around how to accelerate progress around improving water quality from drainage systems, especially when there is an improvement occurring to use it as opportunity to include conservation elements). There has been interest in training for drainage management. We asked for feedback (informally), including from the drainage work group and drainage authorities.
- The Draft Clean Water Council Policy Statement on Drainage is included in the meeting packet.
 - The Policy Committee provided feedback in August. They were looking for more of a break up of ditches versus tile inventories, fund drainage authorities to be partners identifying opportunity for water quality while also integrating drainage into comprehensive watershed management plans, the Minnesota Ag Water Quality Certification Program (MAWQCP) could be used in areas where drainage is not a priority in 1W1P (and connect drainage engineers with the program), get a better understanding of training needs and if CWFs could be a source, and have Jeff Strock review the draft policy statement.
- Public input received to date:
 - The Drainage Work Group provided some feedback as well at their October meeting. They had some concerns on the statement. There are different perspectives on the Drainage Work Group, so they would have liked more expansive, and others wanted it less expansive. They had interest in controlled drainage.
 - The Minnesota River Collaborative also provided feedback. Len Kremer is attending the meeting today from that group. They would like to see more expansive action.
 - Comments were received from the Association of Minnesota Counties (AMC) and Watershed Districts.
 - Therefore, the feedback received was a wide range of support. Funding was supported, but more about getting projects shovel ready.

Discussion/Comments/Questions:

- Rich Biske: It is good for us to receive and review this public feedback. From those discussions, it seemed like there were some gaps. That could be an opportunity for the CWF to integrate more water quality in the planning stage, technical assistance, and pilot demonstrations.
- Jan Voit: When we first read this, the background info feels like it paints a negative picture of agriculture. Like it lays the blame of water quality and hydrological conditions on the shoulders of ag drainage, without thinking of other things that contribute. Our landscape in the state was altered for production before it became a state. Drainage now, and for the last decades, have improved systems, which have improved water quality and hydrologic systems. We want to do what we can to promote multipurpose drainage management, good BMPs on the landscape, working together in partnership with agriculture folks. We appreciate the work and funding we get from drainage management.
- Jamie Beyer, Bois de Sioux Watershed District: Two items. You need to get the counties in on these conversations, specifically the county highway engineers. This group is often left out and are working on these projects too. Second item is money. It is severely underfunded. These projects are incredibly expensive.
- Rich Biske: Are there specific changes that you would like to see? *Answer from Jan Voit:* Yes, we did. We did not send the comments because we thought it was premature in this process. I will send them to Paul.

- Marcie Weinandt: The Council recognizes the important role of drainage. So, how can we elevate conservation practices and water quality practices within the drainage projects out there? We want to understand the water quality aspect without impacting the water quality. They are state 103E Rules that need to be followed by the drainage systems, we are not looking to change anything with those. There is also a statewide drainage water workgroup that is looking at many elements. I want to urge us as the Council to stay within the water quality aspect of our charge. We can assist the drainage authorities as they pursue water quality formats. It is expensive. There are many folks involved depending on the drainage area.
- Rich Biske: These drainage projects are ongoing, so we want to help set the stage. We want to check if these opportunities exist elsewhere.
- Len Kremer, Minnesota River Collaborative: They are individuals that are volunteering to restore the hydrology in the Minnesota River Watershed. We have several environmental groups represented. Our group has a small budget, and almost everyone is volunteer. We have been working the last six years trying to work with drainage authorities and state agency folks to get drainage projects to mitigate their potential impacts. We are focusing on minimize the impacts on water quality as well as alteration and peak flows. We try to encourage as much water storage as possible to minimize discharge issues with projects. One area to focus on is the adequacy of the outlet of discharge. Many issues need addressing to restore the hydrology of the watershed. A list of issues was sent to the group, and we feel these are needed to help make progress towards this restoration of hydrology. We are ready for further discussion and input.
- Paul Gardner: Perhaps there are some ways we can slim down the statement, without messing up any intent the Council may have.
- Rich Biske: Was the Minnesota Department of Natural Resources (DNR) hiring a drainage manager? It would be good to know what is in scope or out of scope. *Answer from Tom Gile, Board of Water and Soil Resources (BWSR):* A report will come out in February on outlet adequacy. I believe it was general fund appropriations. I understand they are working on having earlier involvement in drainage, engaging in that area. *Answer from Haley Byron, DNR:* I do the drainage review work. I don't have all the answers yet. There will be a statewide position, working on early coordination with local and regional staff – Haley will still be the first point of contact. Then, it will be handed over the drainage engineer they are looking to hire. I can't confirm the funding source.
- Rich Biske: Will there be any proactive training with this position, or others? *Answer from Haley Byron, DNR:* I am not sure. I am not a part of the conversations happening with that new position.
- Next steps include a revised draft. Paul will check in with some changes with those that have provided feedback for a follow up draft of the statement.

Input on 50-Year Water Plan Scope of Work, by Jeff Peterson, Katey Pelican, Melissa Mueller (Webex 01:14:30)

- At the request of the Minnesota state Legislature, the University of Minnesota (U of M) was tasked with developing a scope, timeline, and budget (i.e., proposal) to create a Clean Water Plan for Minnesota for the next 50 years. They want to make sure the Council is aware of this project and want to engage.
- The 50-year Water Plan:
 - It is looking to provide a literature-based assessment of the current status and trends regarding the quality and quantity of all Minnesota waters (both surface and subsurface); identify gaps in the data or understanding and provide recommended action steps to address them; identify existing and potential future threats to Minnesota's waters; and to propose a road map of scenarios and policy recommendations to allow the state to proactively protect, remediate, and conserve clean water for human use and biodiversity for the next fifty years.
 - The scope of work will look at required data sets and how the U of M will obtain access; the suite of proposed analysis methods; the roles and responsibilities of project leaders, key personnel, and stakeholders; the project timeline with milestones; and a budget.
 - The U of M areas of work include:
 - Partner and community engagement
 - Continuous engagement, alignment, and gap assessment
 - Data, decision, support system, synthesis hub (all in one place for access)
 - Modeling, scenario building, and forecasting
 - Inform policy and action steps.

- The list of MN Clean Water Partners:
 - Minnesota State Departments of Agriculture, Commerce, Employment and Economic Development, Health, Natural Resources, Transportation; and the Board of Water and Soil Resources, Clean Water Council, Environmental Quality Board, Pollution Control Agency, State Climatology Office
 - Legislative committees, subcommittees, and commissions,
 - International, federal, state, and local government,
 - Regional entities like Metropolitan Council,
 - Watershed districts, watershed management organizations, soil and water conservation districts,
 - Tribes,
 - Public and private industry,
 - Nonprofits with expertise in water resources
- Questions for the Policy Committee:
 - What, if any, clean water partners are we lacking that should be included in developing the Toolkit (future funding, if available)?
 - What role does your Council, Board, or Committee play in the project?
 - How would you like us to engage with your Council, Board, or Committee?
 - What suggestions do you have to help us better serve Minnesota in the pursuit of clean water for the next fifty years?

Discussion/Comments/Questions:

- Paul Gardner: Thinking about what water could be like in Minnesota in 2075 would be liberating because the Council is shackled by the 2034 when the current Legacy Amendment expires. We do not know what will happen after that date. We have talked about generational change with some of the programs that are supported by CWFs. By 2075, I hope many of those items on small scale will have come to fruition and any regulation created by the Clean Water Act will apply to any new building and any redevelopment anywhere. Things will happen anyway, so thinking about the future has some comfort.
- Annie Felix-Gerth, BWSR: I know this project has not started yet, what kind of input are you asking?
Answer: The intent is an intensive collaborate process. We aren't sure of the pathway yet. The scope of work is large. After December 1, there will be more decisions. Mae Davenport and Bonnie Keeler are also a part of this development.
- Jim Stark: I want to bring forward are the Natural Resource Sustainability Report and the Water Sustainability Framework. *Answer:* Yes, we are looking at those.
- Rich Biske: Do you have a sense of the statutory mandates? Do you think there will be a scope issue?
Answer: One thing is to try to have a complete inventory, review the plans and mandates, because the intent is not to replace or compete, but rather incorporate all the items and synthesize the work.
- Jim Stark: Have you looked at other states? *Answer:* We are looking for models and what has helped other states in their process. Some other states have their own plans, so we could look there.
- Jason Moeckel, DNR: I would be interested in how certain we need to be about the impacts before we need to take action. The DNR thresholds reports could be reviewed, which includes how much water could you take out of the system before it is biologically impacted, and there is a lot of science behind that report. We are in the process of applying those principles when we have the information. It is still broad, thinking about technical data, before action is needed. It is a big challenge.
- Tannie Eshenaur, MDH: At the state we have many plans. We can better integrate drinking water into the resources management system. We are trying to take a systems approach. As we think about our Drinking Water Action Plan, we don't want it to die on the shelf (or digital shelf). I think a key thing to include in our action plan is accountability. It will not only have goals, strategies, and actions, but also milestones along the path (2024 to 2034) to have check-ins to measure progress along the way. Additionally, the output and outcome measures can have a dashboard. The Council asked for this report (formalized in a Legislative appropriation). The U of M has different accountability and can share things in a different way.
- Katey Pelican, U of M: If we did provide a report, how might we share that in a beneficial and comfortable role? Paul Gardner: As I talk to the public, the science does not sink in well; they need as much clarity as possible. We tend to wear people down with the science and details. Some people can even be suspicious of the science. We need to assume systems in place now will operate in the trajectory they are at (some

faster and some slower). Each generation changes their norms overtime taking advantage or the newest knowledge. I think of this report as a visioning process.

- Gail Cederberg: This is a really good idea. Maybe look back in the past when there was a lot of aggressive clean water impact, and what those effects had long-range. There is a case to be made to look behind, to help leapfrog over some things, into new ideas and technologies. I applaud the U of M.
- Glenn Skuta, MPCA: This is an opportunity to think big. Shifting big paradigms is the way to make big change. This work of water is bigger than agriculture, but greatly impacted by it. The work of agriculture is often set by the Farm Bill, and people often give up on trying to fix the Farm Bill. So, what does “fixing the Farm Bill” mean, that would transform the landscape? The vehicle fleets will be interesting to watch, fossil fuel change to electric. In the Midwest, the depend for ethanol will drop off, so there is an opportunity to adjust those acres for something else. Also, this Council really is a successor to the G16 group that crafted the Clean Water Legacy Act, which was a huge shift in how we manage our water. This Council is the stakeholder and should help shape this water plan.

Adjournment (*Webex 02:21:49*)



Minnesota Nutrient Reduction Strategy (NRS)

10-year update underway

Dave Wall - MPCA

January 26, 2024 – Clean Water Council Policy Committee



Today

Overview of nutrient issues
and our MN NRS

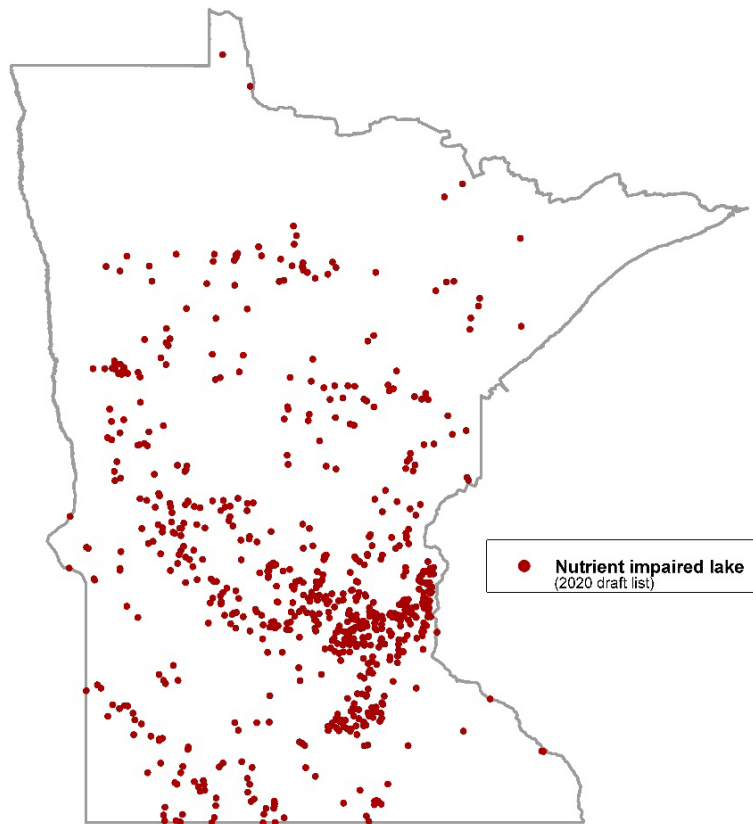
Four common questions
about making progress

2025 NRS revision process

Phosphorus - Local motivation for in-state reduction

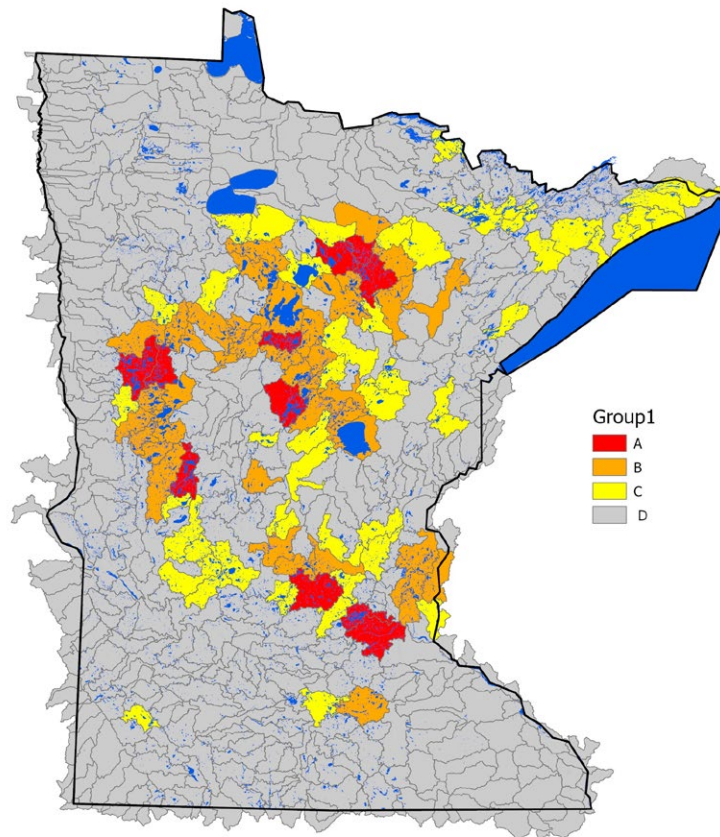
Lake eutrophication

693 lakes impaired



Phosphorus reduction

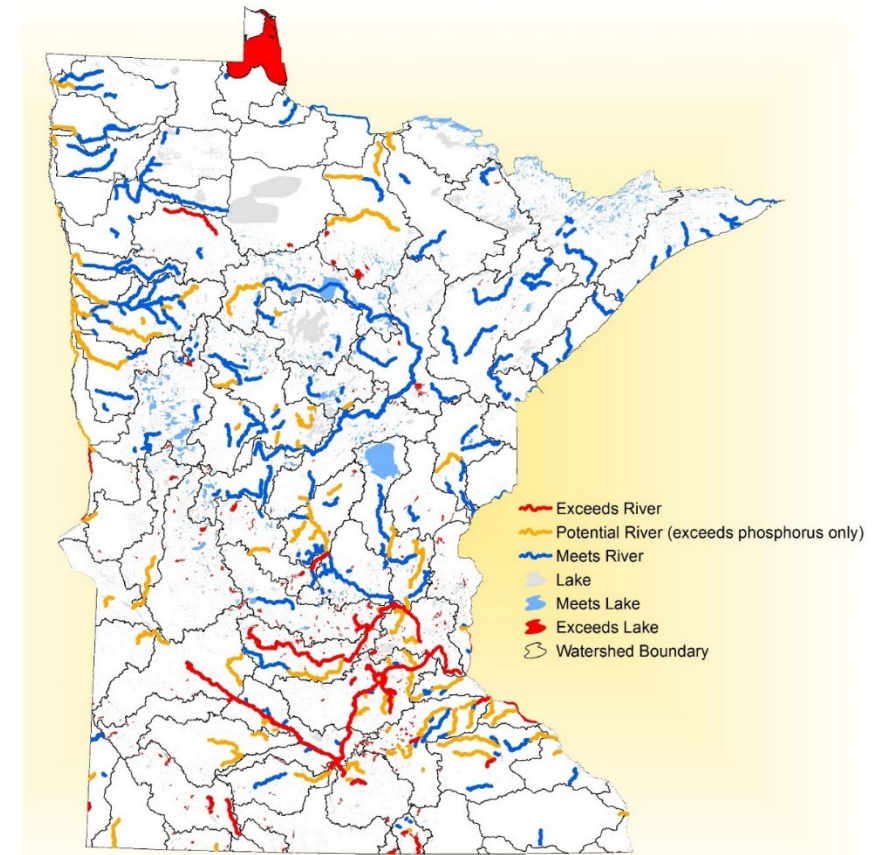
high lake benefit for \$ invested



DNR - draft

River Eutrophication

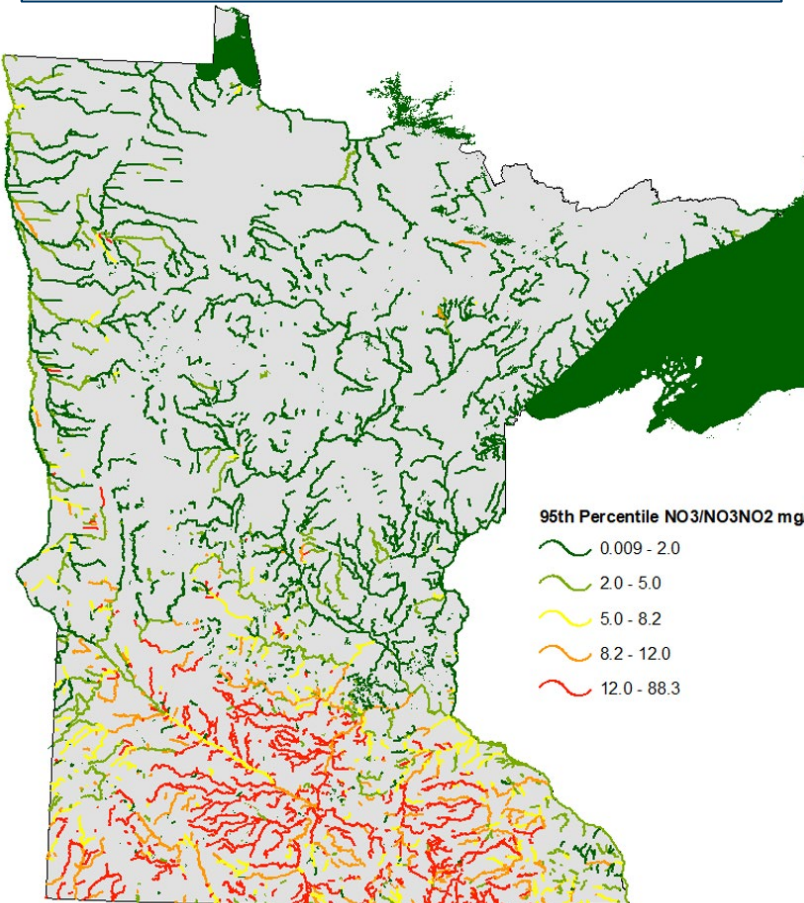
51 stream reaches impaired



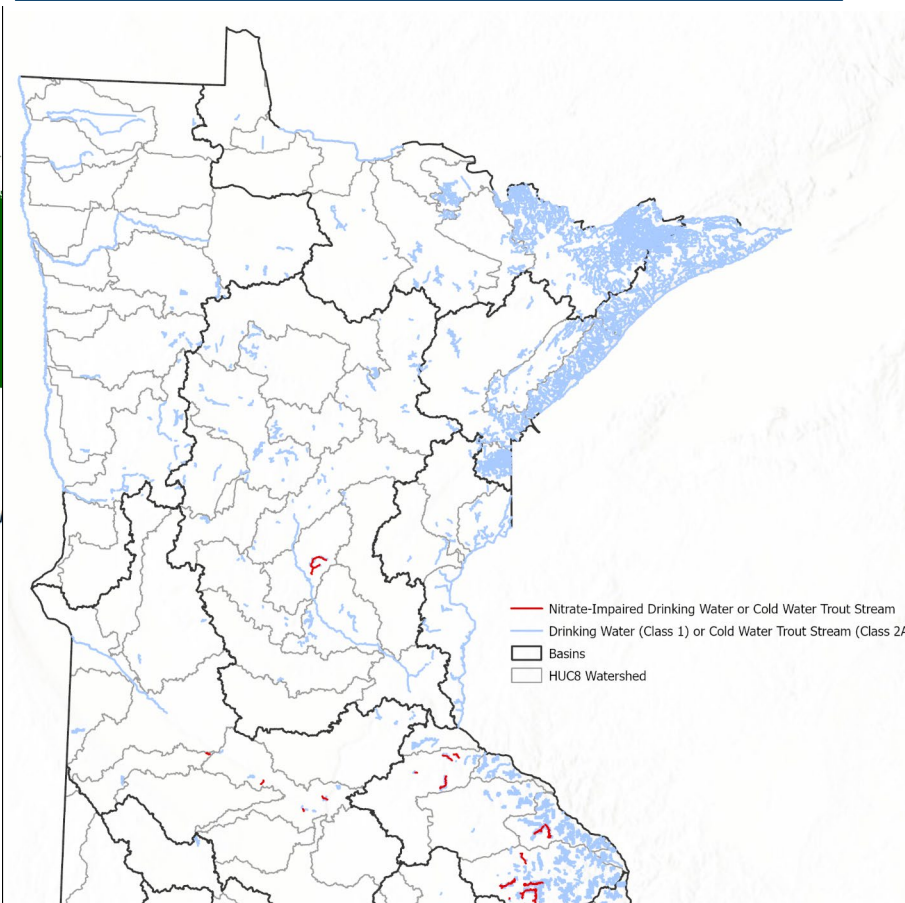
Nitrate concentrations

Local motivation due to in-state reduction needs

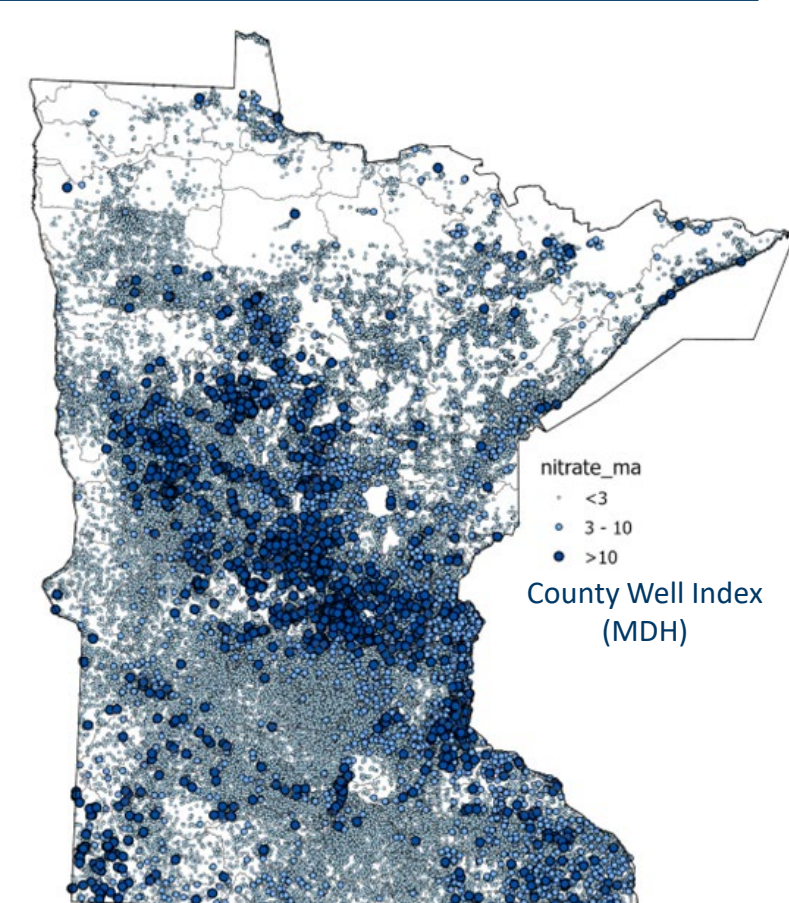
High nitrate in Southern MN streams affecting certain aquatic life



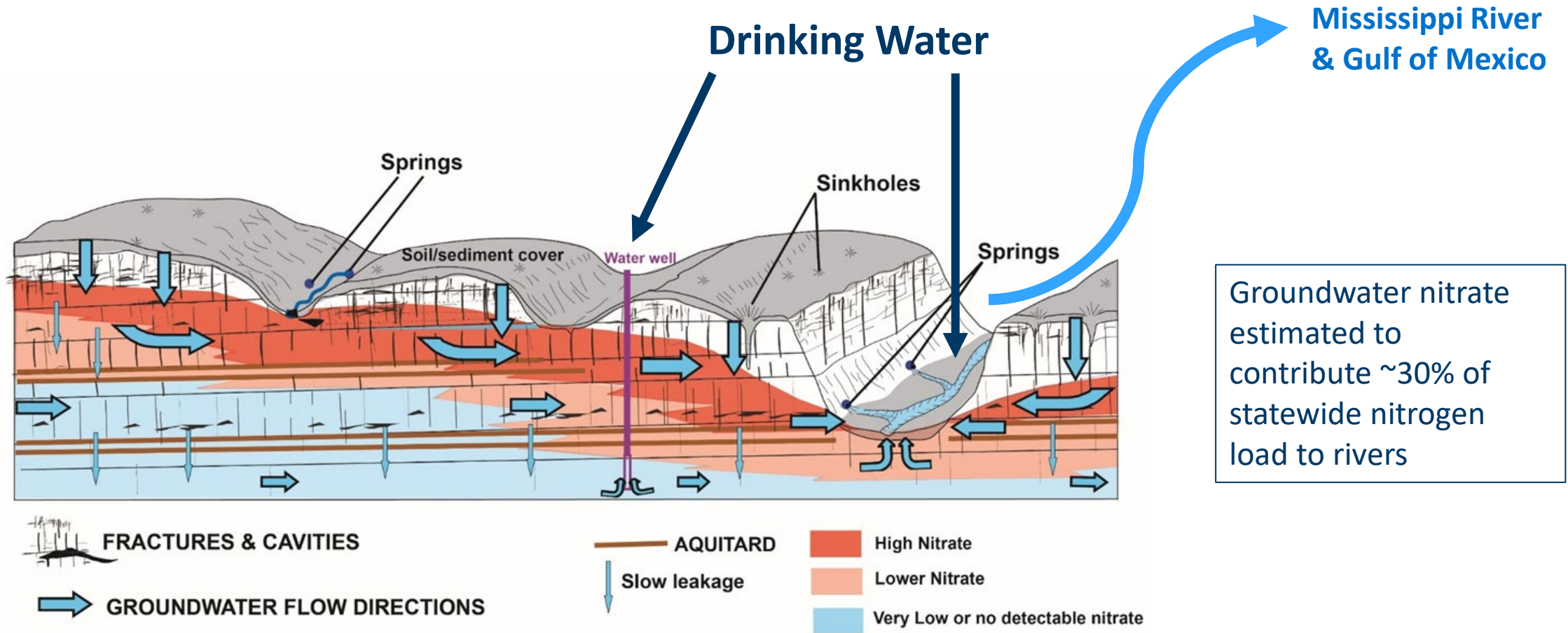
32 cold water stream reaches **impaired** for drinking water (nitrate-N >10 mg/l)



Wells exceeding nitrate drinking water standard in many parts of MN



Improving local waters will have cascading benefits for downstream waters



Headwaters state for three major drainages to oceans Phosphorus & total nitrogen load reduction needs

Lake Winnipeg & Hudson Bay



Great Lakes & Atlantic Ocean

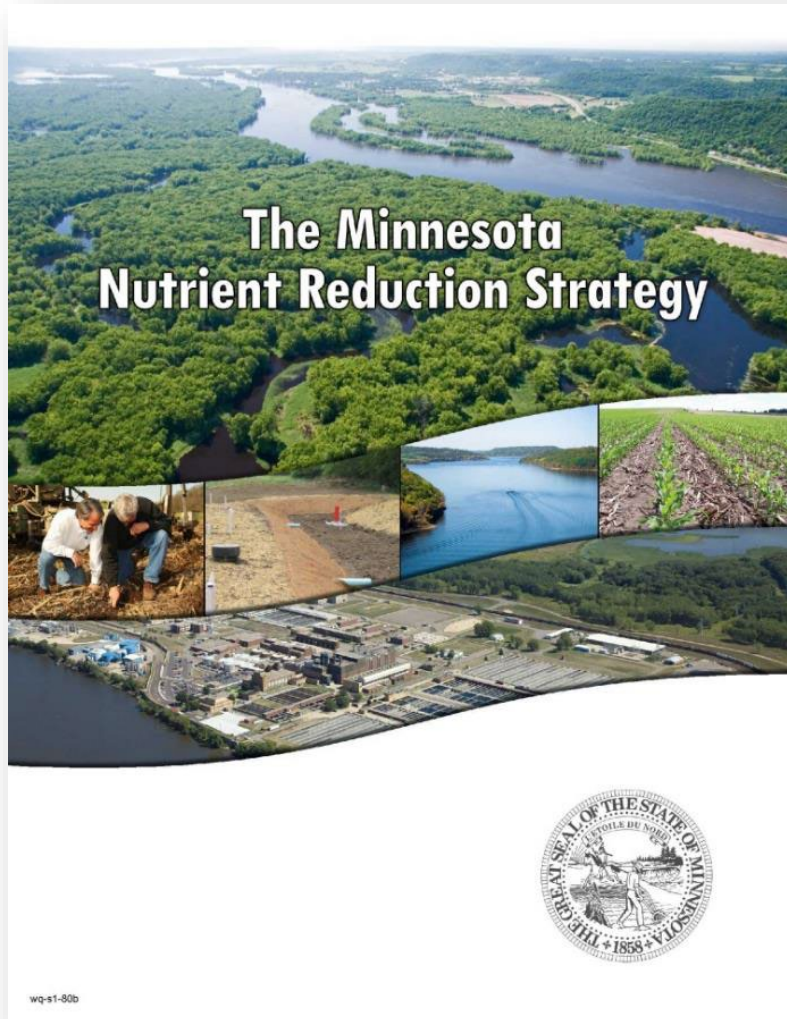
Gulf of Mexico



CONTINENTAL DIVIDES

- Great
- Laurentian
- Arctic
- St. Lawrence
- Eastern
- Great Basin

Minnesota Nutrient Reduction Strategy finalized in 2014 by 11 organizations



- Nutrient conditions in MN waters
- Causes and sources
- Goals
- Science-based solutions/practices
- Magnitude of changes on land
- Specific strategies to promote/advance
- Ways to track progress toward goals



Nutrient Reduction Strategy

State-level support

- Gov't support
 - Science
 - Goals
 - Programs
 - Tools
 - Tracking
- Private industry support



Local watershed work



Rural & urban BMP practice adoption



Improve local waters



Reduce algae
Drinking water
biological health

Improve downstream waters



Nutrient Reduction Strategy (NRS) examples of uses since 2014

1. More attention to both downstream & in-state nutrient goals
2. Wastewater nitrogen monitoring & strategies
3. TMDLs – nonpoint implementation
4. Informing other state-level plans/strategies
5. Prioritizing state programs work
6. Motivation for BMPs/living-cover (adoption & research)
7. Communicating the big picture
8. Stronger collaboration with states & provinces
9. Improved ways to track progress
10. Driver of local nitrogen reductions in waters
11. Federal \$ coming to MN

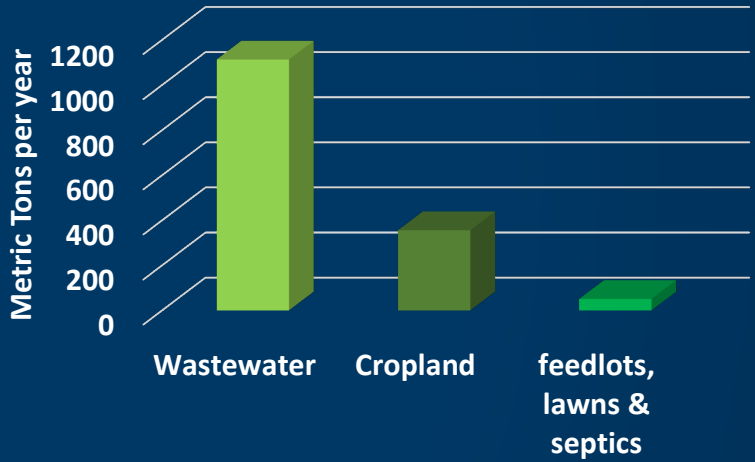
Total nitrogen and phosphorus load reduction goals



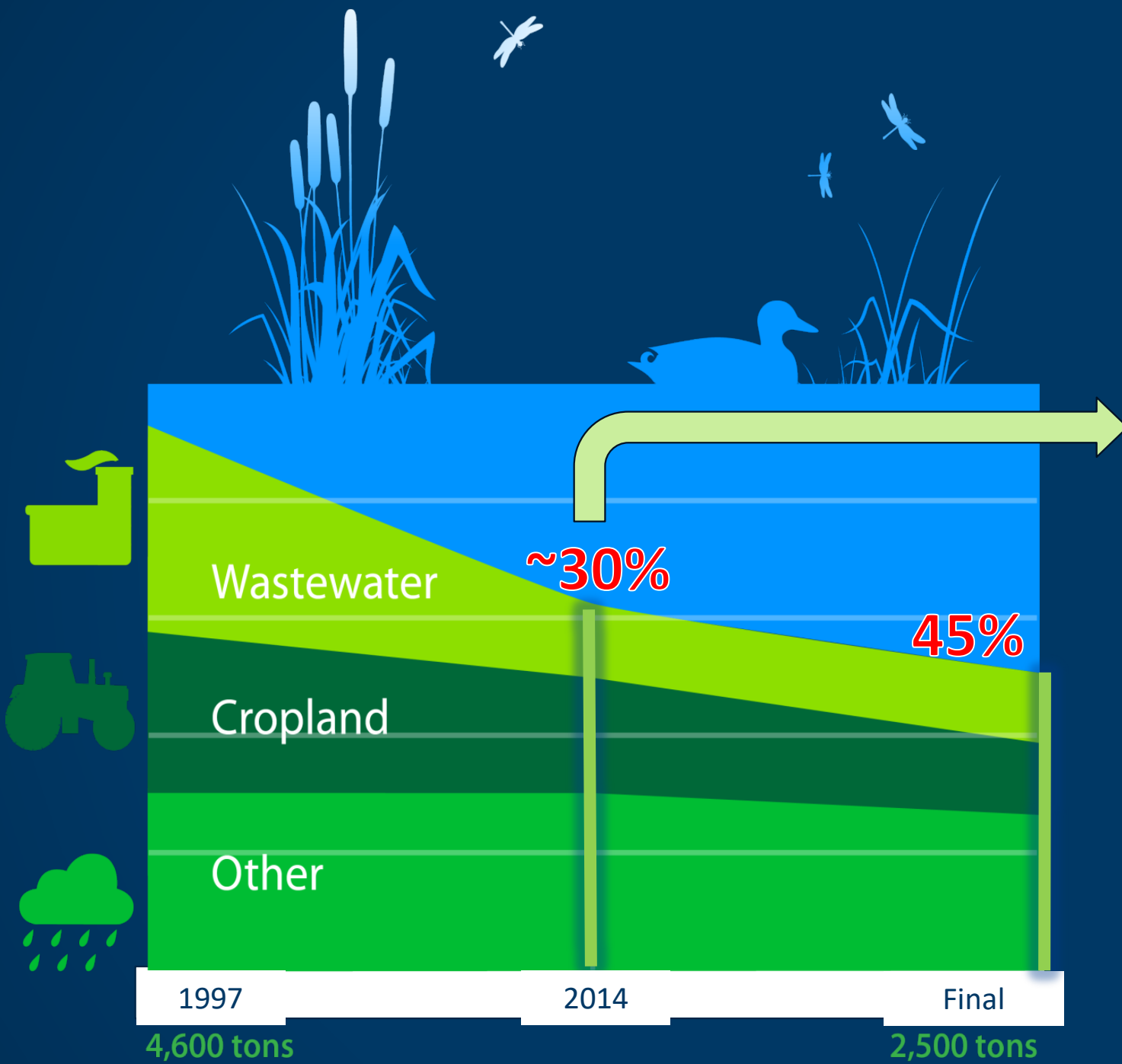
Major basin	"final" goals (~2040)
1. Mississippi River	45% Gulf Hypoxia Task Force (1980-96 baseline)
2. Red River & Lake Winnipeg	50% International Red River Watershed Bd (late 1990's baseline)
3. Lake Superior	No net increase from 1970's

Mississippi River Phosphorus

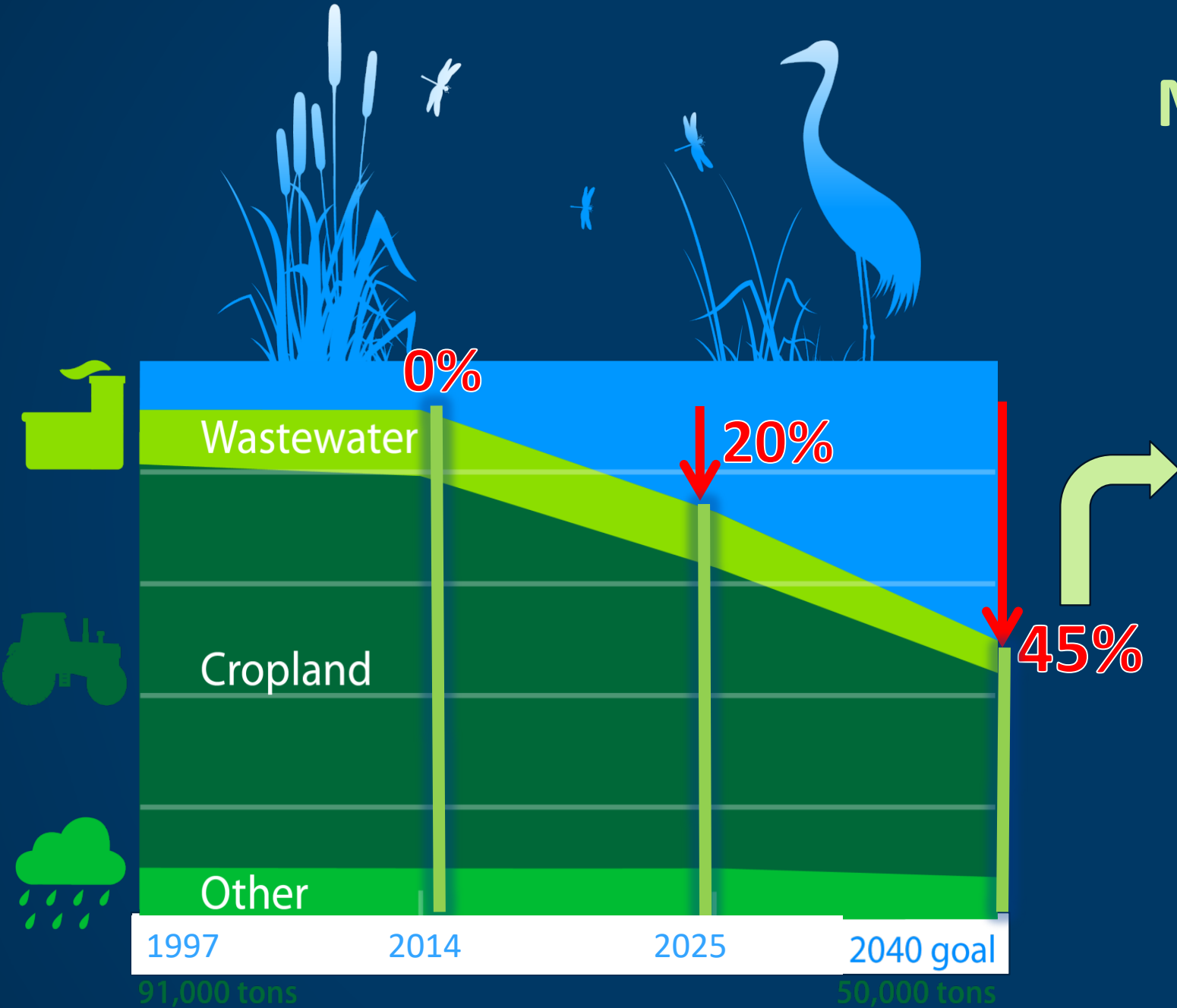
Phosphorus reduced into Mississippi River 1997-2014



Note: additional cropland P reductions documented by USDA for decades prior to 1997



Mississippi River Nitrogen



- Millions of additional Acres**
- Cover crops
 - Perennial cropping systems
 - Manure & fertilizer optimized
 - Ag-drainage water stored
- +
- Wastewater nitrogen treated

Revising NRS to reflect many new developments



BMP science

BMP adoption acreages

River monitoring

River trends analyses

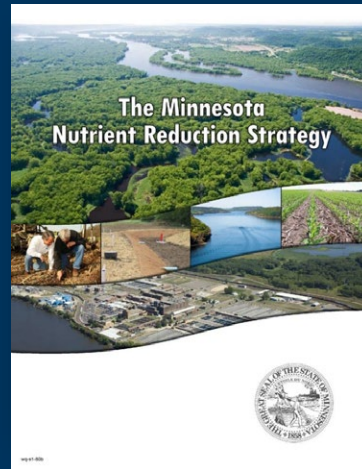
Tools & models

Nutrient-reducing programs

Local watershed strategies & plans

Federal funding

NRS revisions funded by Federal BIL GHP



2014
Original strategy



2020
Progress report



2025
Revised strategy

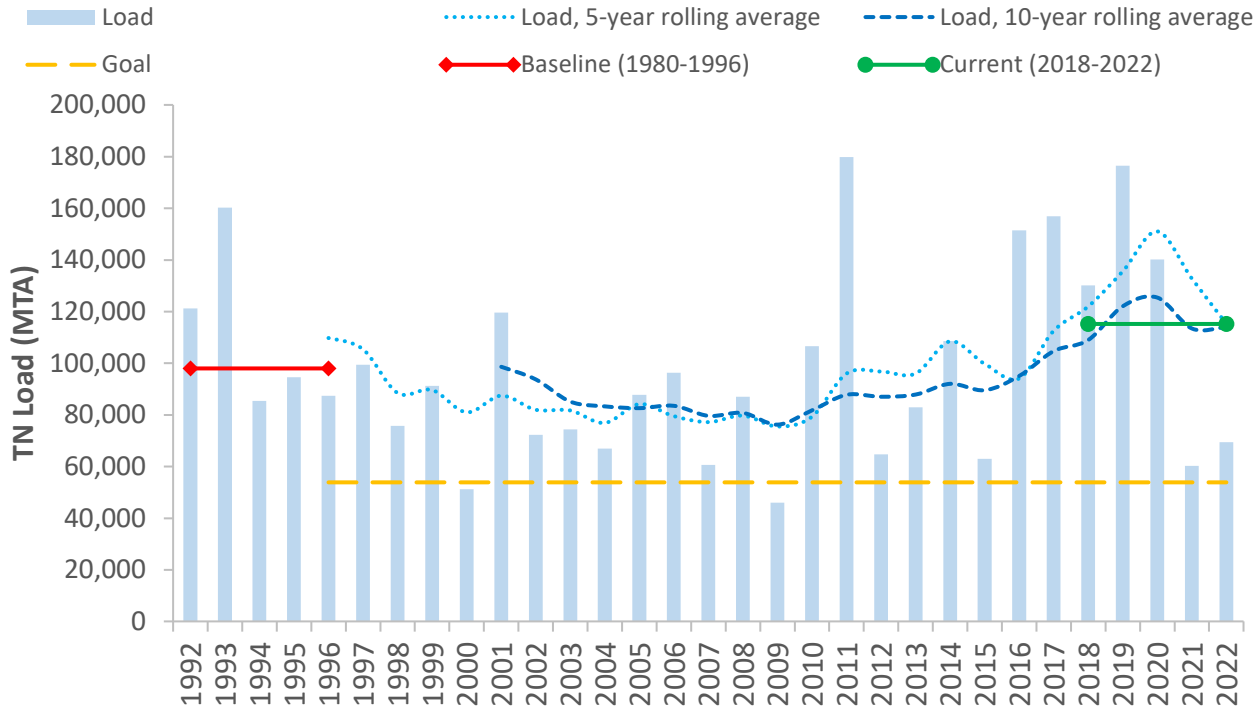


Four common NRS questions answering for the NRS revision

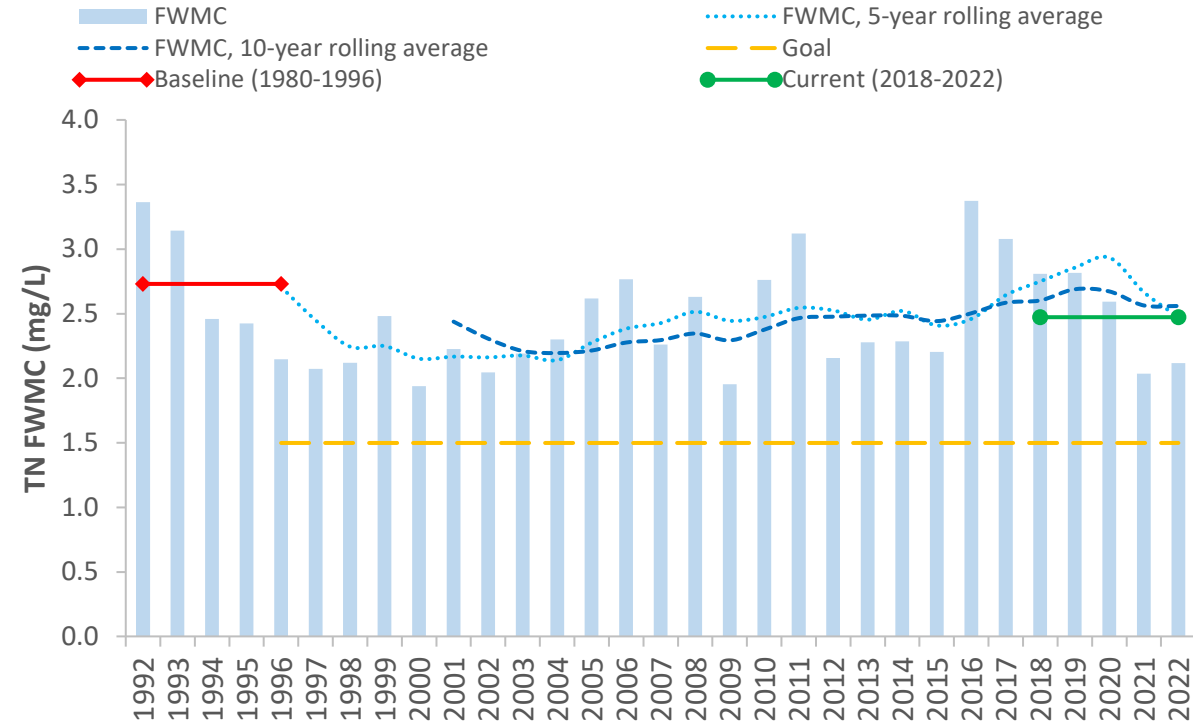
1. How much progress are we making toward our in-stream state-line goals?
2. Are we getting enough change on the land to produce the needed load reductions?
3. Are state-level programs/support sufficient for driving enough changes on the land?
4. What else will be helpful for getting to the goal line by 2040?

Mississippi River LaCrosse (L&D 7) – total nitrogen

Nitrogen loads – increased since baseline
(not accounting for river flow variability)



Nitrogen FWMC (loads/flows)
simple way to adjust for river flow variability



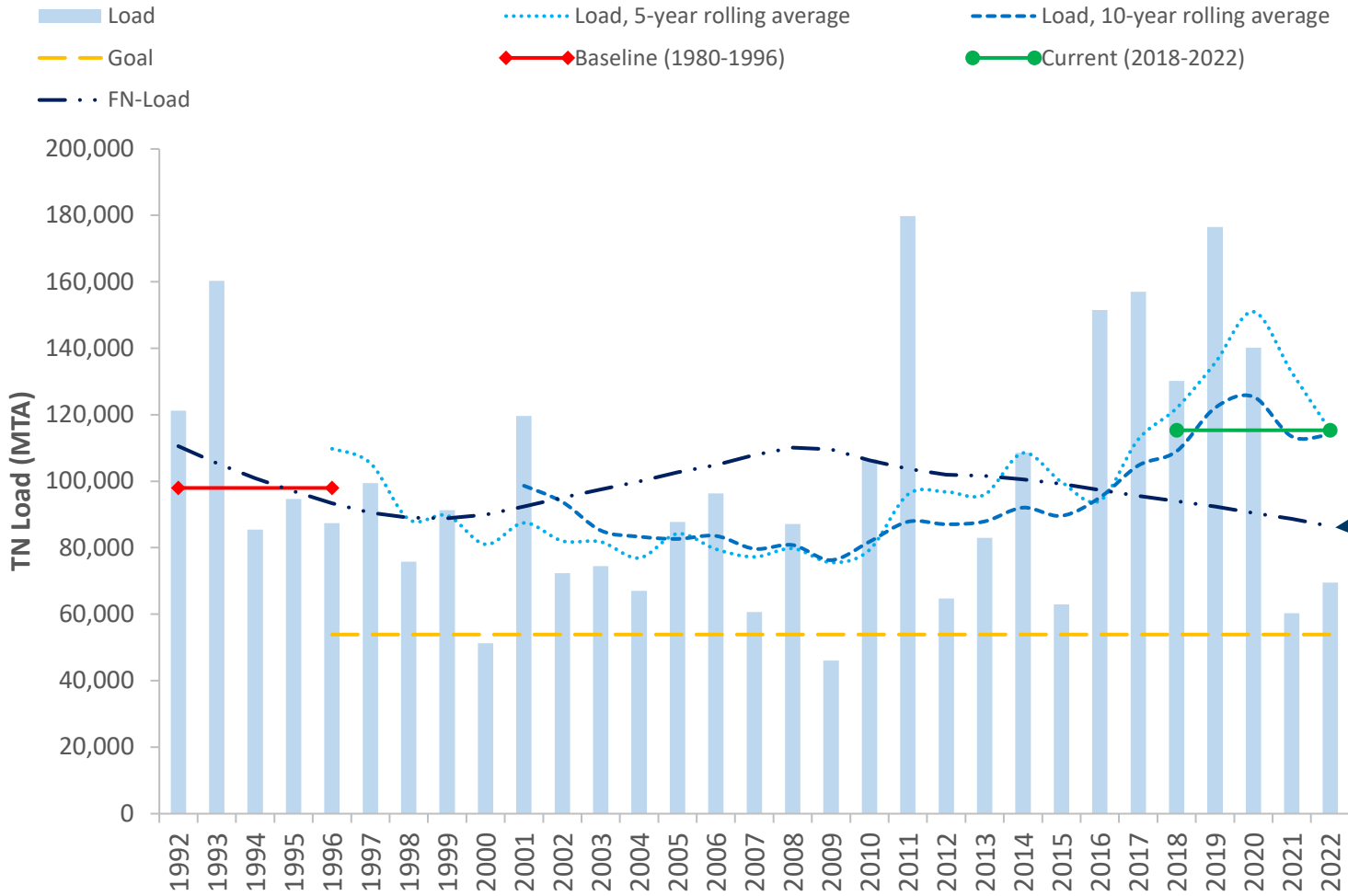
Water Quality Trend options

- Non-Flow-Adjusted Trends
 - The overall trends resulting from both natural (i.e. weather) and human impacts on concentrations and flow
- Flow-Adjusted Trends (related to “flow-normalized”)
 - The trends removing impact of river flow variabilities
- Why Flow-Adjusted Trends?
 - Directly link to the changes caused by pollution sources and control projects/BMPs
 - Can be used to assess efficiencies of pollution control measures



Modified from Metropolitan Council (Wang)

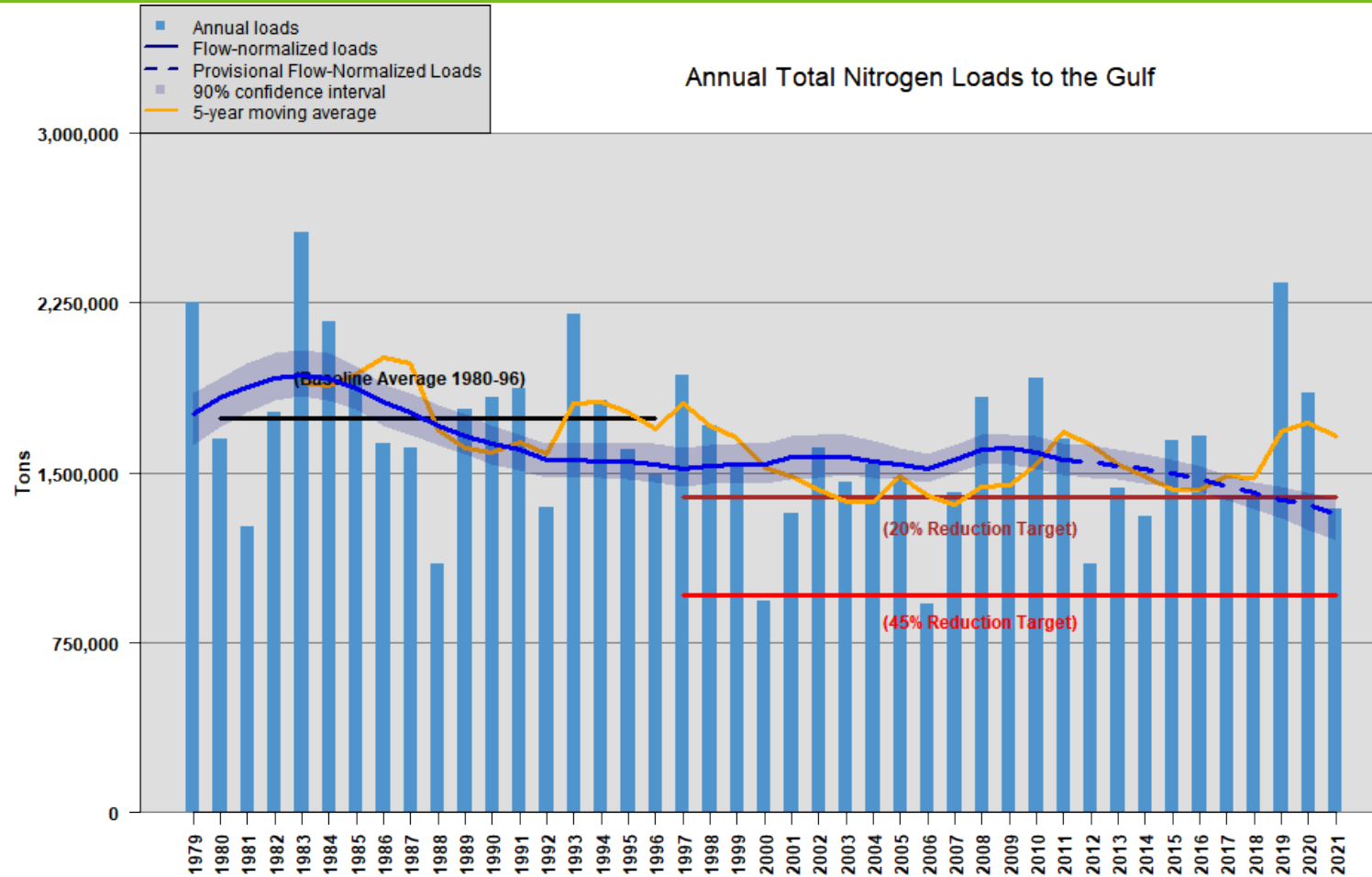
Nitrogen - flow-normalized statistical trends (dark blue line) Mississippi River La Crosse



The statistical flow-normalized load (flux) has declined since 2009

Preliminary WRTDS modeling by USGS

TN loads at Gulf of Mexico show similar story as La Crosse trends But MN has much more phosphorus reduction



Note: 26% provisional reduction in Mississippi River attributed to action in the watersheds

Trend start period	Trend end year	Trend, in percent change	Lower 90% confidence interval	Upper 90% confidence interval	Trend attributed to changes in streamflow	Trend attributed to other changes in the watershed
1980-1996	2021	-23%	-32%	-19%	3%	-26%

La Crosse Load changes baseline compared to recent years ending 2022

Mississippi River La Crosse	% change Load avgs 1980-96 to 2018-22	% change load/flow FWMC avgs 1980-96 to 2018-22	WRTDS flow- normalized load 1980-96 to 2022	WRTDS flow- normalized concentration 1980-96 to 2022	HSPF modeled load analysis MN watersheds	low vs high flow analysis 1980-96 to 2013-2022
Nitrogen (total)	+18%	-7%	-12%	-18%	TBD	TBD
Phosphorus (total)	+5%	-21%	-22%	-30%	TBD	TBD

Trends that adjust for flow
variability showing improvement...
But time will tell more.

Other Mississippi River Basin sites being analyzed:

- Mississippi River Red Wing (Met Council)
- Mississippi River Anoka (Met Council)
- Minnesota River Jordan (Met Council)
- Cedar, Des Moines, Missouri HUC8s in MN (MPCA)

How much progress are we making toward state-line goals in Mississippi River?

Preliminary indications

- When normalized for river flow variability, nitrogen and phosphorus both showing potential improvement
 - More phosphorus progress achieved since the baseline compared to nitrogen
 - Most of the progress during past 10-15 years
- Higher precipitation & river flows have worked against our total load progress (when not normalized for flow)
- On a trajectory to achieve 2025 milestone (flow-normalized loads), but won't know until 2027-28
 - A long ways to go before reaching 2040 goals
- Many more years needed to assess the real progress beyond:
 - Climate variability and change
 - Legacy nutrients and lag-times
 - Monitoring and load-modeling uncertainties

Red River Emerson load changes baseline compared to recent years ending 2022



Red River Emerson	% change load avgs 1980-96 to 2018-22	% change load/flow (FWMC) 1980-96 to 2018-22	WRTDS flow-normalized load trend 1980-96 to 2022	HSPF modeled load analyses (MN only)	low & high flow period progress comparison
Nitrogen	-16%	-21%	TBD	TBD	TBD
Phosphorus	+13%	+6%	TBD	TBD	TBD

Preliminary indicators – subject to change

- More progress since baseline period with nitrogen than phosphorus
 - Potential improvements/reductions with nitrogen loads
- River flow variability is highly influential and flow-normalized trend modeling will tell us more

Other northern MN sites being analyzed:

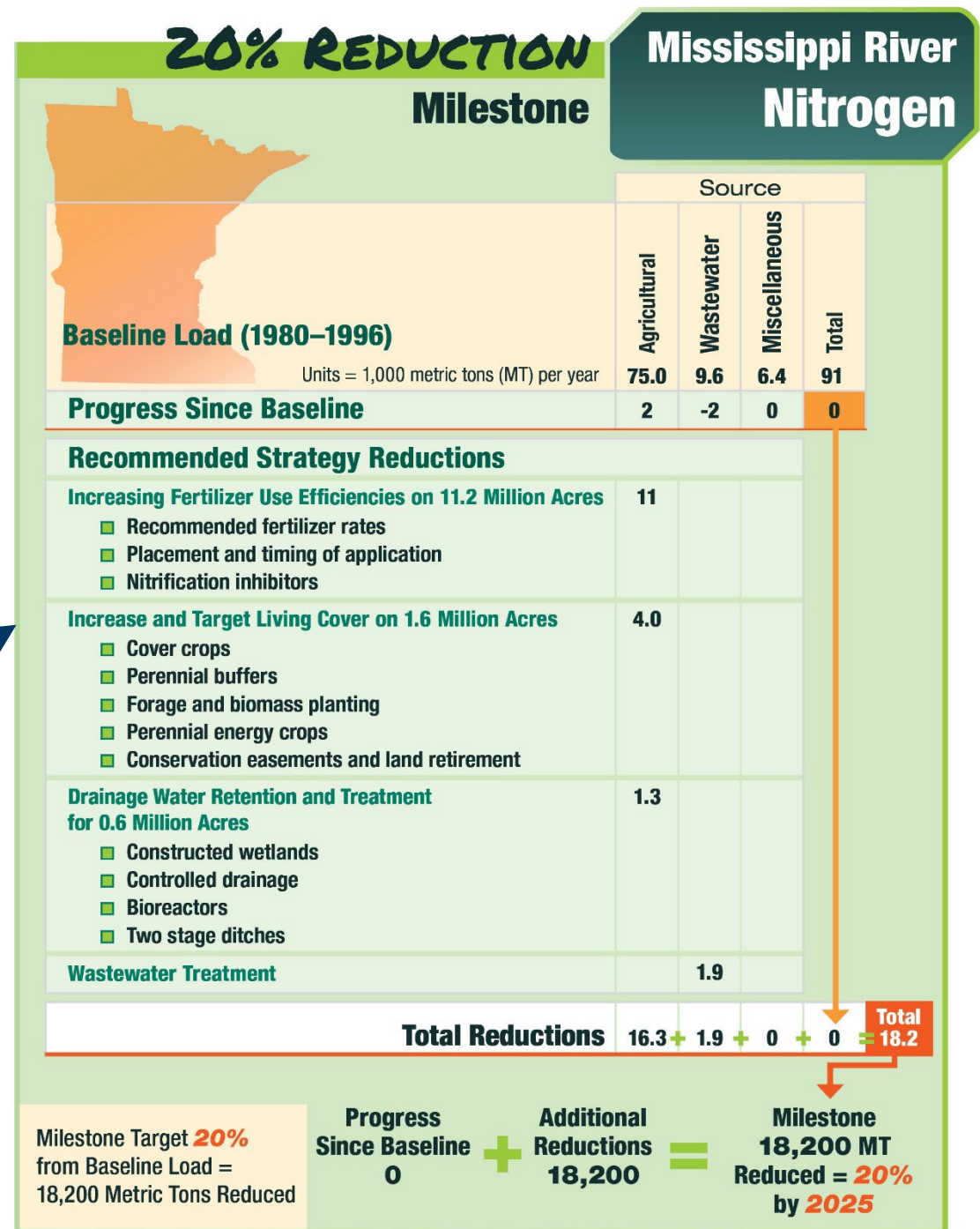
- Red River Grand Forks (MPCA)
- St. Louis River (decreasing trends - USGS)
- Rainy River (MPCA)
- Nemadji River (MPCA)

Four common NRS questions answering for the NRS revision

1. How much progress are we making toward our in-stream state-line goals?
2. Are we getting enough change on the land to produce the needed load reductions?
3. Are state-level programs/support sufficient for driving enough changes on the land?
4. What else will be helpful for getting to the goal line by 2040?

2014 example scenario

BMP scenario to achieve milestone nitrogen goal in Mississippi River



BMP adoption tracking tool – gov't program BMPs 2004-2022

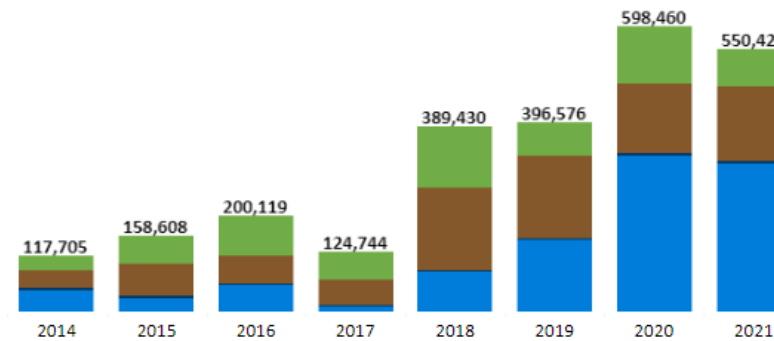
Minnesota Nutrient Reduction Strategy BMP Summary by [MPCA Data Services](#)



Summary | View individual best management practices | View government programs | Table of all best management practices | Methods and assumptions

New Acres of Best Management Practices (BMPs) Completed each year through government programs

Hover over chart for more detail



Living cover (627,203 acres total)

Practices that reduce nutrient and soil loss by keeping plants growing continuously, including the Fall and Spring months. Common practices include cover crops and conservation cover.

Cropland erosion control (861,239 acres total)

Designed to reduce runoff and soil losses. This group consists primarily of farming practices that leave crop residue on the surface or structural practices that reduce or capture runoff and eroded soil.

Drainage water retention and treatment (30,223 acres total)

Practices designed to slow down waters leaving tile-drained landscapes or otherwise treat tile-waters for nutrient removal prior to entering streams. Wetland restoration and controlled drainage management are the most common practices, but other emerging practices include saturated buffers and bioreactors.

Nutrient management (1,017,400 acres total)

Managing the amount, form, placement, and timing of nutrient and soil amendments such that nutrients are used most efficiently by the crops, at the same time minimizing leaching and runoff to surface and ground water.

You can find this tracking tool at MPCA's NRS web site

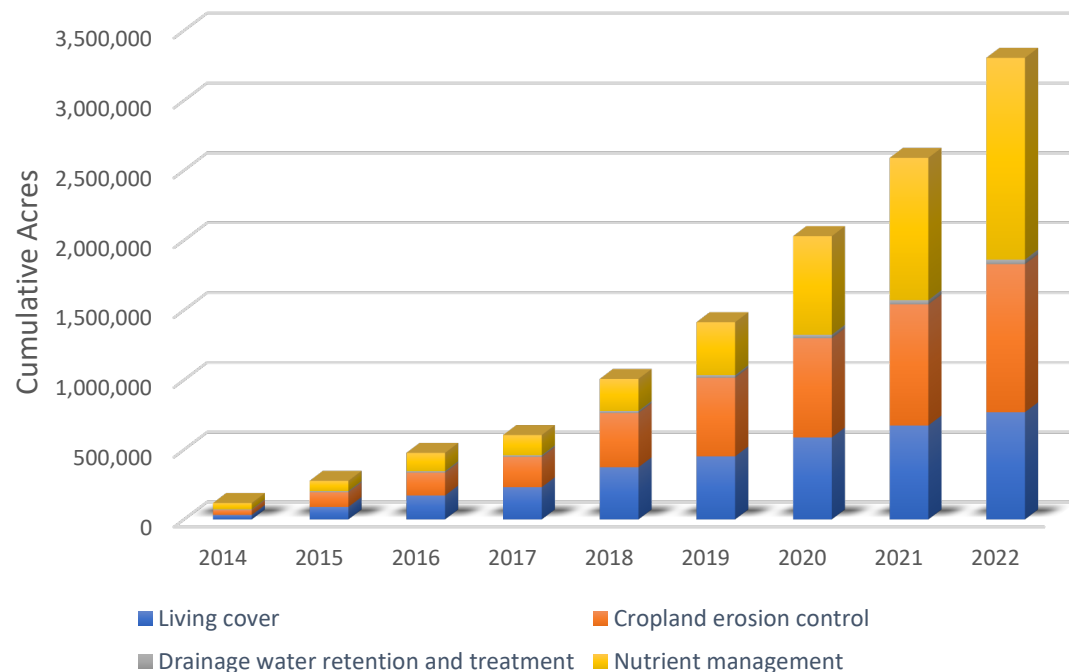
- Acres affected each year since 2004
- Individual BMPs and categories of practices
- State and federal programs funding each practice

[Minnesota Nutrient Reduction Strategy BMP Summary | Tableau Public](#)

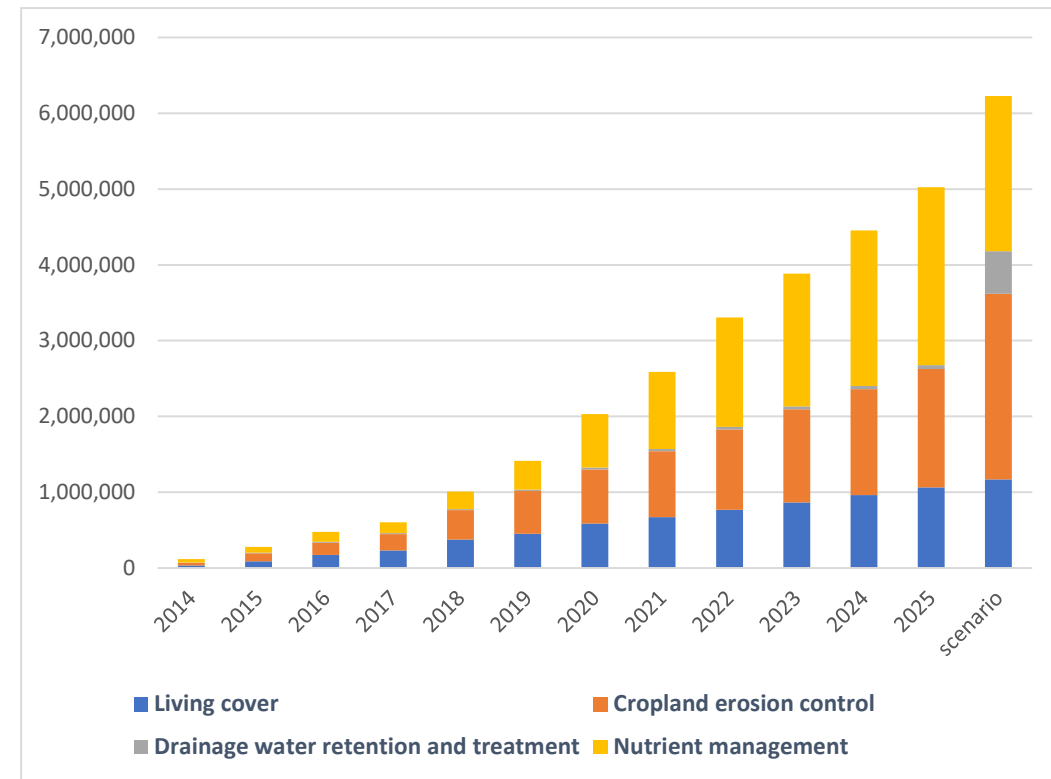
Newly adopted best management practices through government programs

Preliminary indicators – subject to change

Cumulative Acres of Best Management Practices Completed each year through government programs 2014-2022

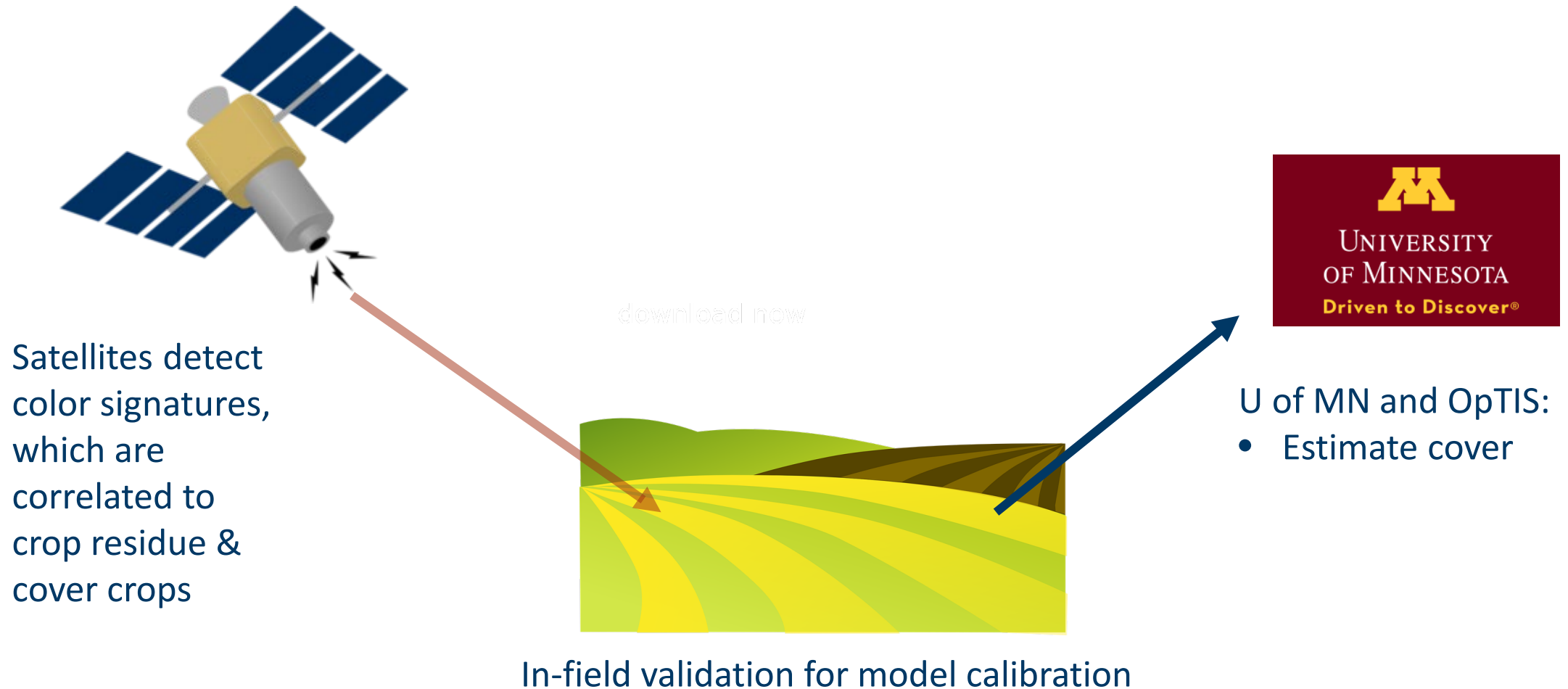


Projected cumulative BMP adoption statewide through gov't programs – compared to NRS scenario



Right bar NRS “scenario” only represents gov’t program BMPs. To meet NRS overall scenario, considerable private adoption needed: Living cover 50%, Erosion control 50%, Drainage BMPs 10%, Fertilizer effic. 70%

New technologies now enable assessing total adoption during a given year (crop residue/cover crops)

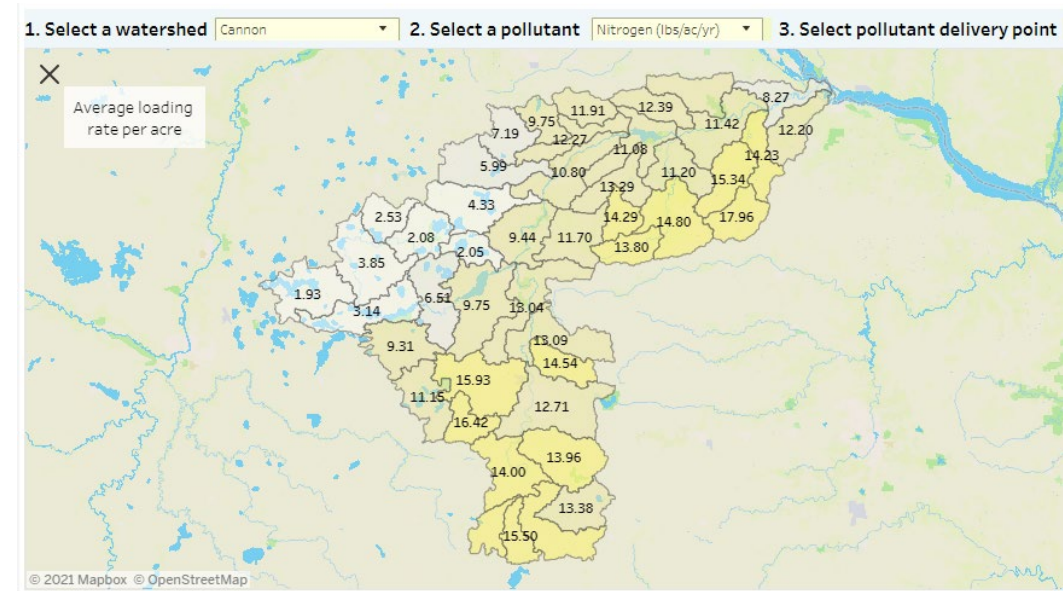
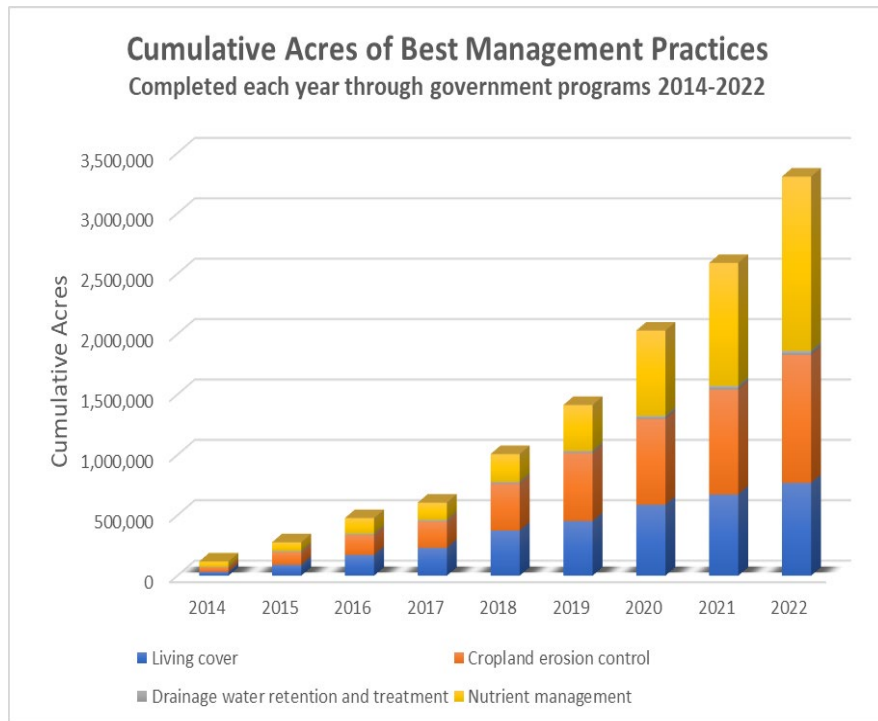


How much nutrient load reduction is expected from individual and collective BMPs?

Lands adding BMPs (2014-22)

Model river nutrient load reductions from BMPs

Watershed Pollutant Load Reduction Calculator Tool



<https://public.tableau.com/app/profile/mpca.data.services/viz/WatershedPollutantLoadReductionCalculator/WatershedPollutantLoadReductionCalculator>

Currently updating BMP science for NRS revision



UNIVERSITY OF MINNESOTA

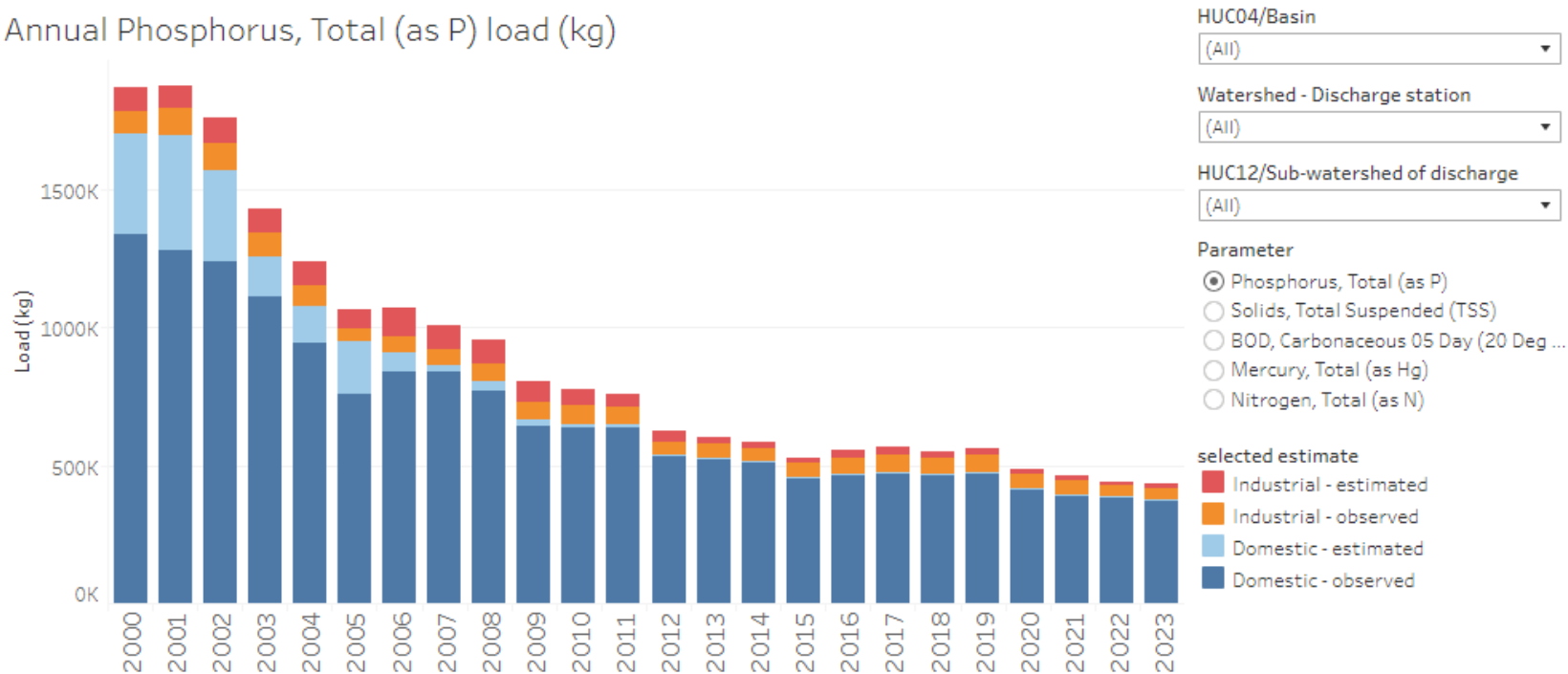
- Update BMP nutrient reduction efficiencies for each practice
- Evaluate potential for new acreages of BMP adoption
- Identify best practices for nutrients and other co-benefits
- Quantify additional BMP needs



Wastewater nutrient discharges are closely monitored and tracked

[Introduction](#) |
 [Watershed summary](#) |
 [Facility totals](#) |
 [Watershed detail](#) |
 [Annual flow by facility type](#) |
 [Flow and Conc](#) |
 [Facility load](#) |
 [Facility calc table](#)

Annual Phosphorus, Total (as P) load (kg)

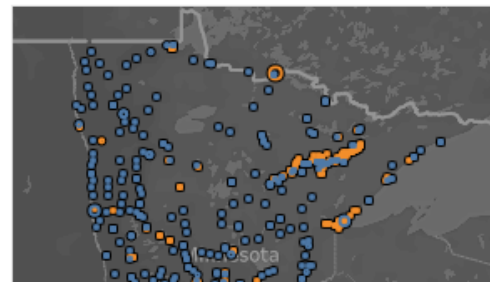


<https://tableaup.pca.state.mn.us/#/views/Wastewaterpollutantloads/Watershedsummary?:iid=1>

Phosphorus, Total (as P) loads by facility type

Y.	Total	Domestic - observed	Domestic - estimated	Industrial - observed	Industrial - estimated
2023	432,300	372,430	1,316	40,573	17,981
2022	443,221	384,825	907	40,765	16,724
2021	462,973	392,580	460	54,324	15,608
2020	486,451	417,157	350	50,275	18,669
2019	560,303	472,364	1,044	67,455	19,441

Includes data through 10-2023



Summary of changes on the land progress

- Gov't programs on a trajectory to make significant progress toward NRS scenario by 2025
- We need additional metrics to evaluate combined gov't and private adoption
 - Account for acres returning back (after gov't contract expires)
 - Tracking fertilizer and manure practices
- We are falling short of milestone scenario in a few areas
 - Drainage water storage and treatment
 - Wastewater nitrogen reduction
- Private adoption outside of gov't programs is important

Four common NRS questions answering for the NRS revision

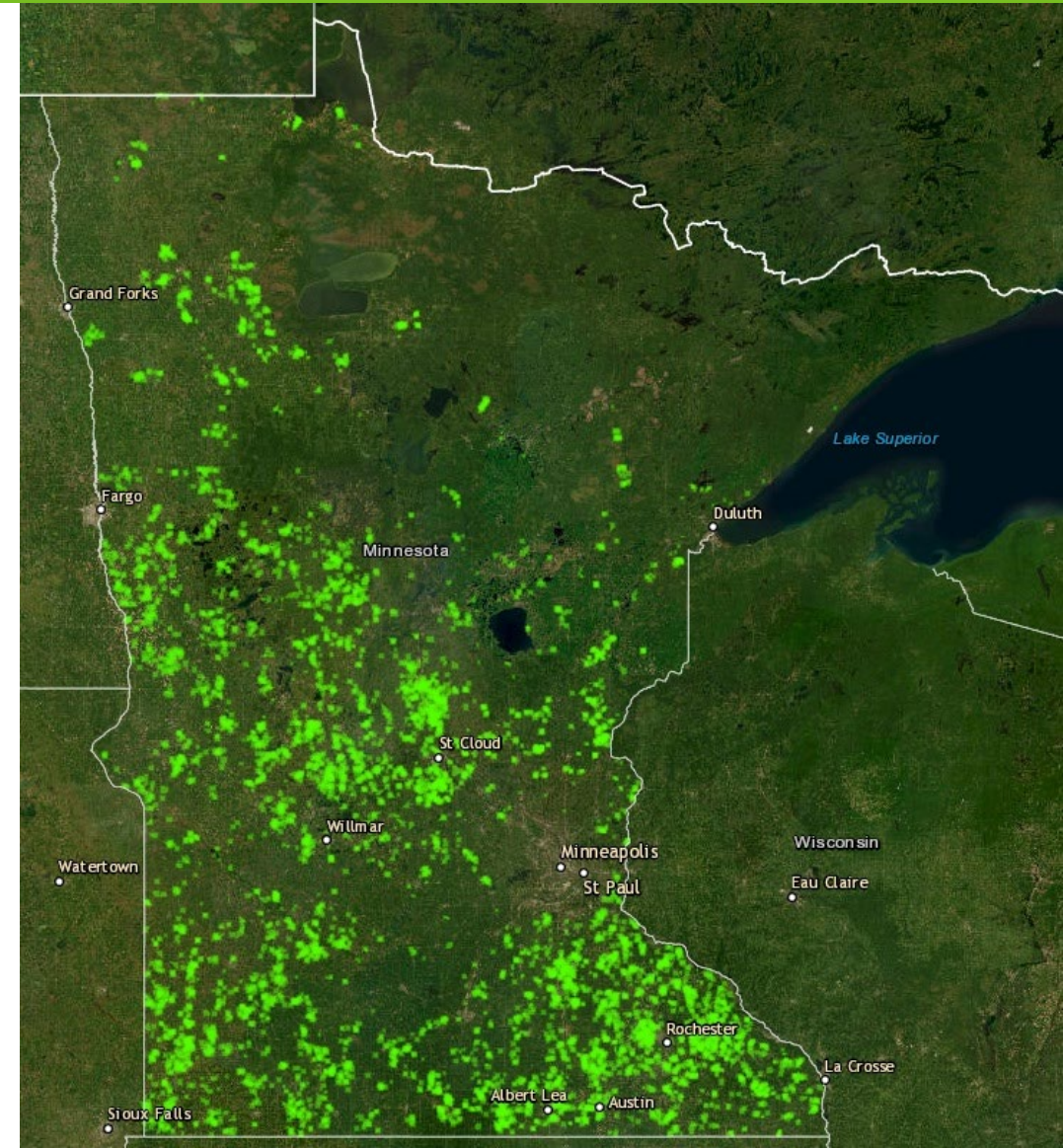
1. How much progress are we making toward our in-stream state-line goals?
2. Are we getting enough change on the land to produce the needed load reductions?
3. Are state-level programs/support sufficient for driving enough changes on the land?
4. What else will be helpful for getting to the goal line by 2040?

Minnesota has multiple programs driving improvements

Minnesota Agricultural Water Quality Certification Program

1 million + acres

October 27, 2023




More than 33 programs advanced between 2014 and 2020


Nutrients in water

August 2020

5-year Progress Report on Minnesota's Nutrient Reduction Strategy



mi MINNESOTA POLLUTION CONTROL AGENCY



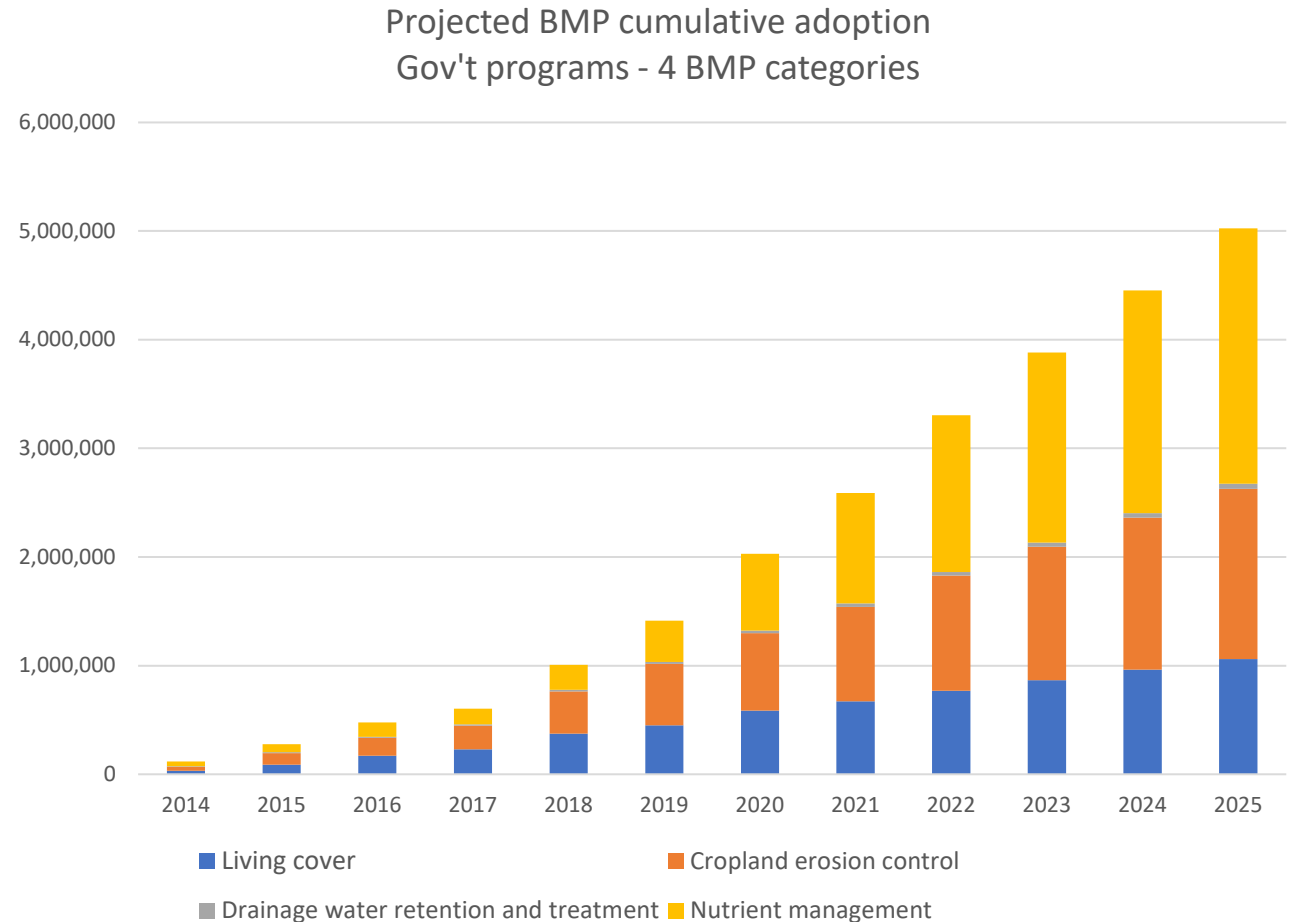
Education, Outreach and Research	Voluntary Programs	Regulatory Programs	Watershed Partnerships and Tools
<ul style="list-style-type: none"> • Nitrogen Smart training for farmers and farm-advisors • Annual nutrient management and conservation tillage conferences • Forever Green Initiative • Discovery Farms • Minnesota Office of Soil Health • Guidance manuals for agricultural best management practices, drainage, urban stormwater management • Conservation professionals training and certification • Nutrient Management Initiative • Center for Changing Landscapes 	<ul style="list-style-type: none"> • Minnesota Agricultural Water Quality Certification • 4R Certification led by private industry (cropland nutrient management) • Red River Basin Initiative and Red River Valley Drainage Water Management • Minnesota Conservation Reserve Enhancement Program • Board of Water and Soil Resources Cover Crop Demonstration Program • Clean Water Fund – increases for BMP implementation • Point – nonpoint trading • Reinvest in Minnesota • Multi-purpose drainage water management 	<ul style="list-style-type: none"> • Municipal and Industrial Wastewater Program • Groundwater Protection Rule (Nitrogen Fertilizer) • Minnesota Riparian Buffer Law • Feedlot and land application of manure rules and program • Urban Stormwater Runoff Program • Subsurface Sewage Treatment Program 	<ul style="list-style-type: none"> • Watershed Restoration and Protection Strategies (WRAPS) in over 50 HUC-8 watersheds • One Watershed, One Plan (1W1P) Program • Groundwater Restoration and Protection Strategies • Watershed Conservation Planning Initiative • Small focus watersheds – Federal Section 319 Program (20 watersheds) • Guidance on Lake Protection for WRAPS and 1W1P • National Water Quality Initiative and Mississippi River Basin Healthy Watershed Initiative • Watershed-based Funding Implementation Program • Root River Field to Stream Partnership



Currently assessing approaches to scale-up BMP adoption Led by MDA



- Evaluate social/human dimensions
- Assess existing programs
- Consider alternative approaches
- Seek stakeholder input
- Bring recommendations to Steering Team for discussion



MDA identifying successful conservation adoption programs

32 unique existing programs noted so far

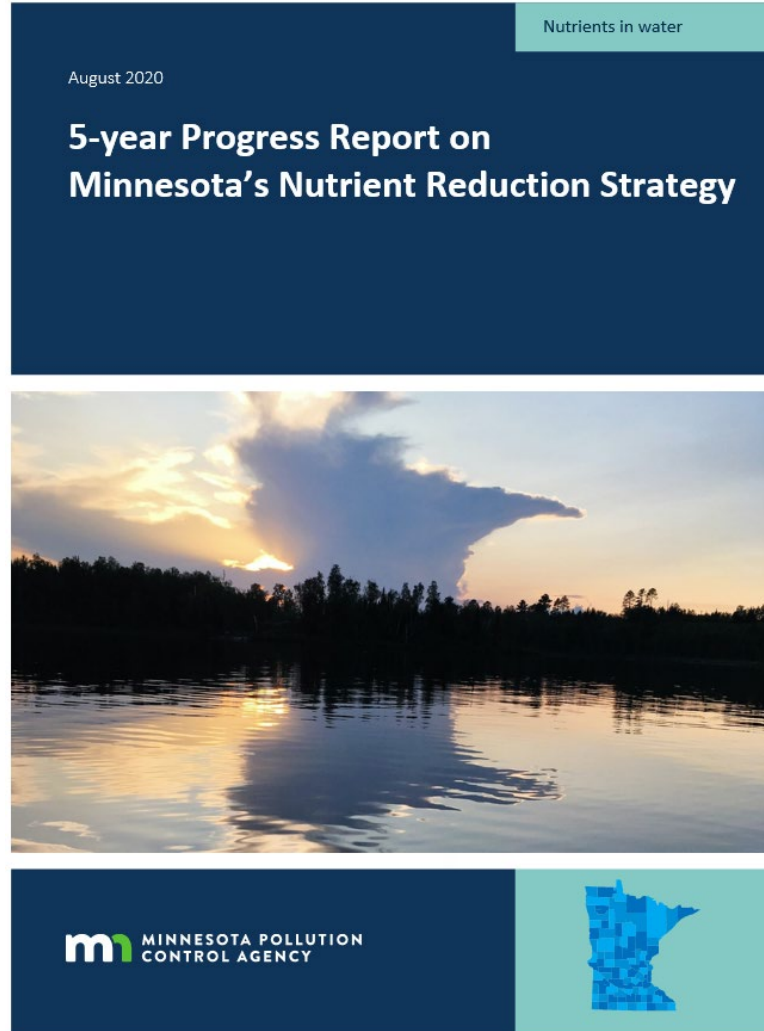
- 19 exclusive to Minnesota
- 27 include Minnesota
- 5 led by a SWCD (others have SWCD as partners)
- 14 lead by state or federal government
- 13 lead by a company or non-profit

Effort Name	Where Initiated
Root River Field to Stream Partnership	Root River Watershed in Minnesota
Olmstead County Soil Health	Olmstead County, Minnesota
Central Iowa Blitz Project (batch and build)	Iowa - Polk and Dallas Counties
Minnesota Agricultural Water Quality Certification Program	Minnesota
Cover Crop Business Accelerator	Iowa
Fall Cover for Spring Savings	Illinois
Cooperatives for Climate	Minnesota
Conservation Agronomist	Multiple
Climate Smart Farms Project	Minnesota
Soil and Water Outcomes Fund	Multi-state
IRA funds – large dollars with some challenges	National
Soil Health Financial Assistance Program Grants	Minnesota
Wilkin County Soil Health Demonstration	Minnesota
MN Corn Innovation Grants	Minnesota
Implementation Grants	Minnesota
One Watershed, One Plan	Minnesota
Irrigation RCPP	Minnesota
Cedar River Source Water Partnership RCPP	Iowa
The Conservation Infrastructure Initiative	Iowa
Sustainability Cover Crop Initiative	Iowa, Minnesota, Nebraska, Missouri
Sustainable Soy Cover Crop Program	Iowa (and surrounding states)
N Rate Risk Protection Program	Iowa and surrounding states
Stearns County Cover Crop Program	Stearns County, MN
Saving Tomorrow's Agricultural Resources (STAR) Program	National
SWCD	Minnesota
Farmers Protecting Rice Creek	Rice County, MN
Minnesota Extension	Minnesota
Oatly	Minnesota, Iowa
We Are Water MN	Minnesota
Nitrogen Fertilizer Management Plan	Minnesota
Groundwater Protection Rule	Minnesota
Buffer Law	Minnesota

Four common NRS questions answering for the NRS revision

1. How much progress are we making toward our in-stream state-line goals?
2. Are we getting enough change on the land to produce the needed load reductions?
3. Are state-level programs/support sufficient for driving enough changes on the land?
 - Tremendous progress during past decade – advancing programs
 - New climate-smart programs/funding will help nutrients
 - Evaluating sufficiency of suite of existing and advancing programs
4. What else will be helpful for getting to the goal line by 2040?

NRS 5-year progress report identified needed areas of focus



More emphasis needed:

- Multiple benefits of nutrient practices
- Social/human dimension
 - Understand barriers & opportunities to scaling-up adoption
- Cropland BMP Science
 - Updating most effective practice combinations
- Wastewater Nitrogen Treatment
 - Optimize both N & P levels

Six ongoing focused work areas of NRS revision subteams

1. **Ag BMP science** - knowing best practices & how many more acres
2. **Ag BMP adoption** – approaches to scale-up
3. **Urban nutrients** – wastewater N & stormwater P
4. **River load goals & priority areas** – updated & defined
5. **Watershed Approach** – integrate with NRS, support & tools
6. **Progress tracking** – metrics, system & dashboard

Ag BMP science

Ag BMP adoption

Wastewater N

Update load goals

Watershed connect

Progress tracking

Learning from our watersheds to inform NRS ...also assessing local watershed support needs

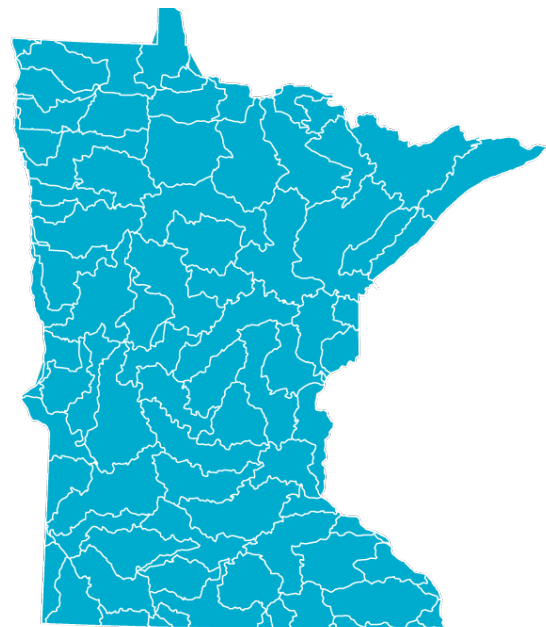
Large basins



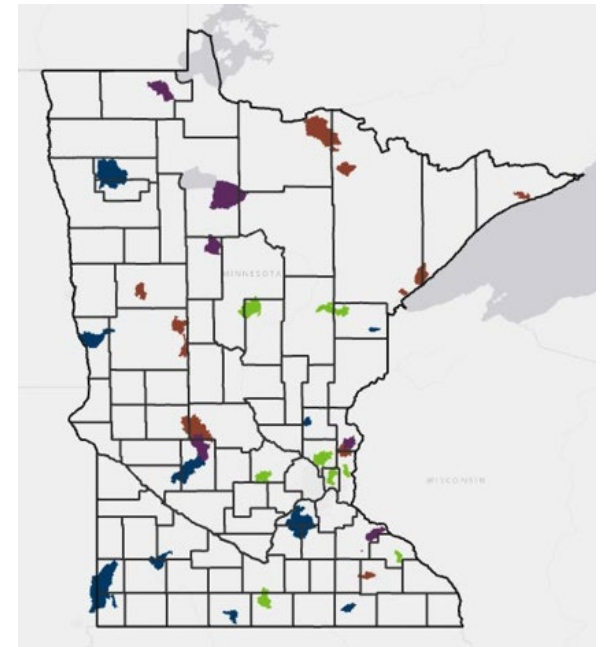
Minnesota's HUC8
watershed approach



Subwatershed
projects



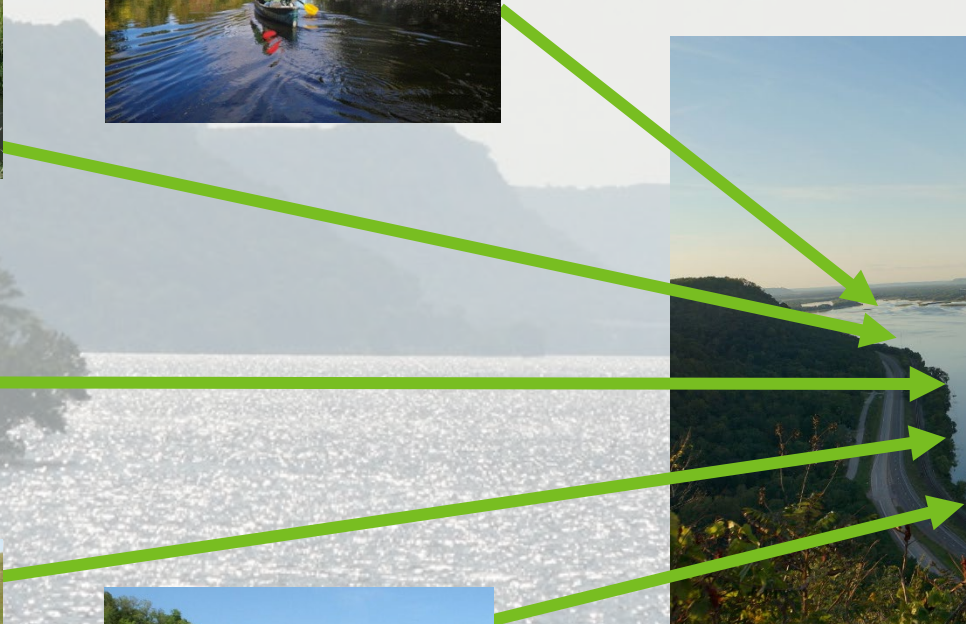
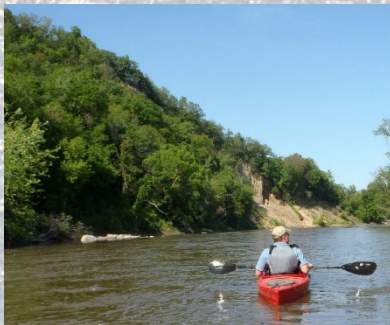
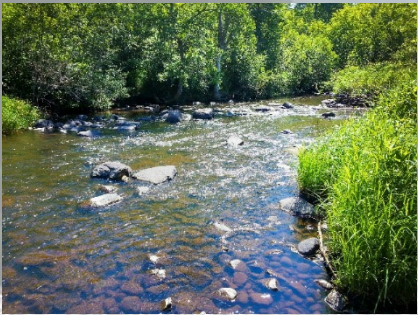
80 WRAPS ~60 1W1P



35 small-scale 319 projects

+ others

We are going to need each watershed to do its part



HUC8 watershed nutrient load reductions to meet state-line goals

Watershed nutrient loads

2022 (Interim)

Watershed nutrient loads to accomplish Minnesota's Nutrient Reduction Strategy Goals

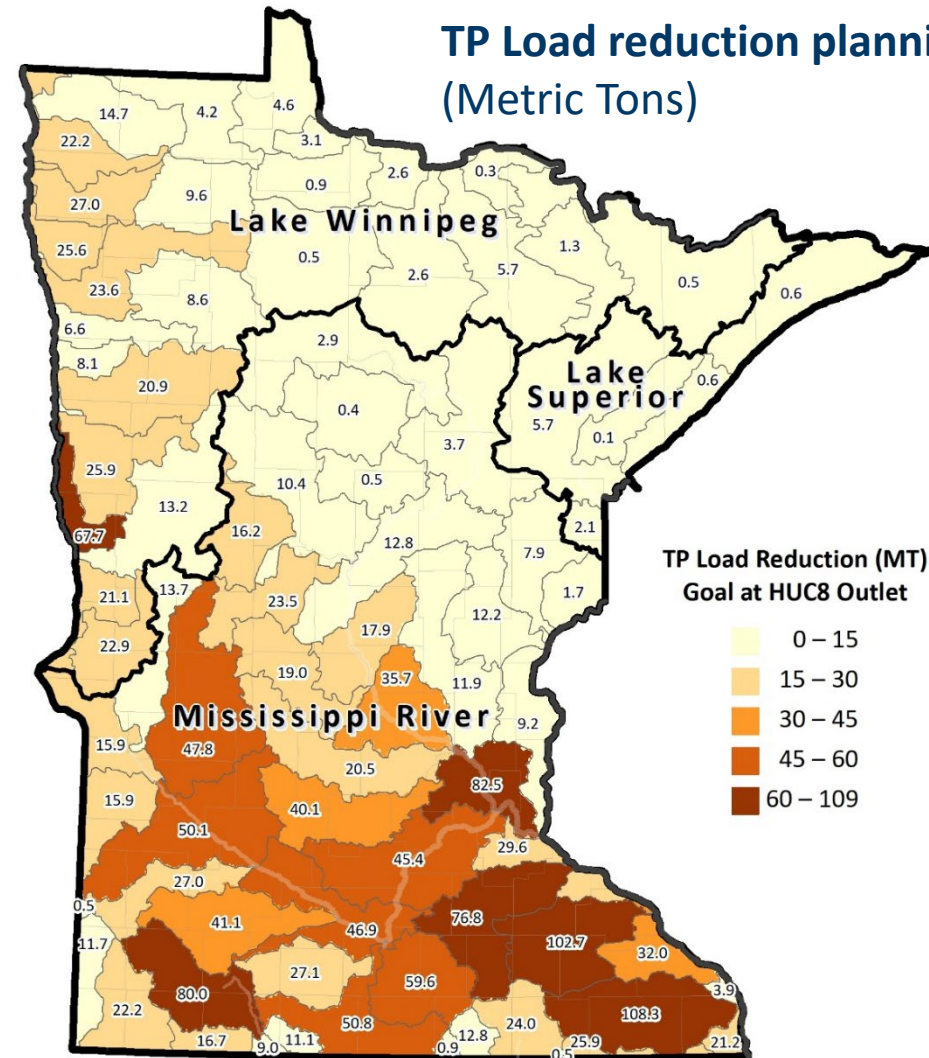
Interim Guidance for Watershed Strategies and Planning



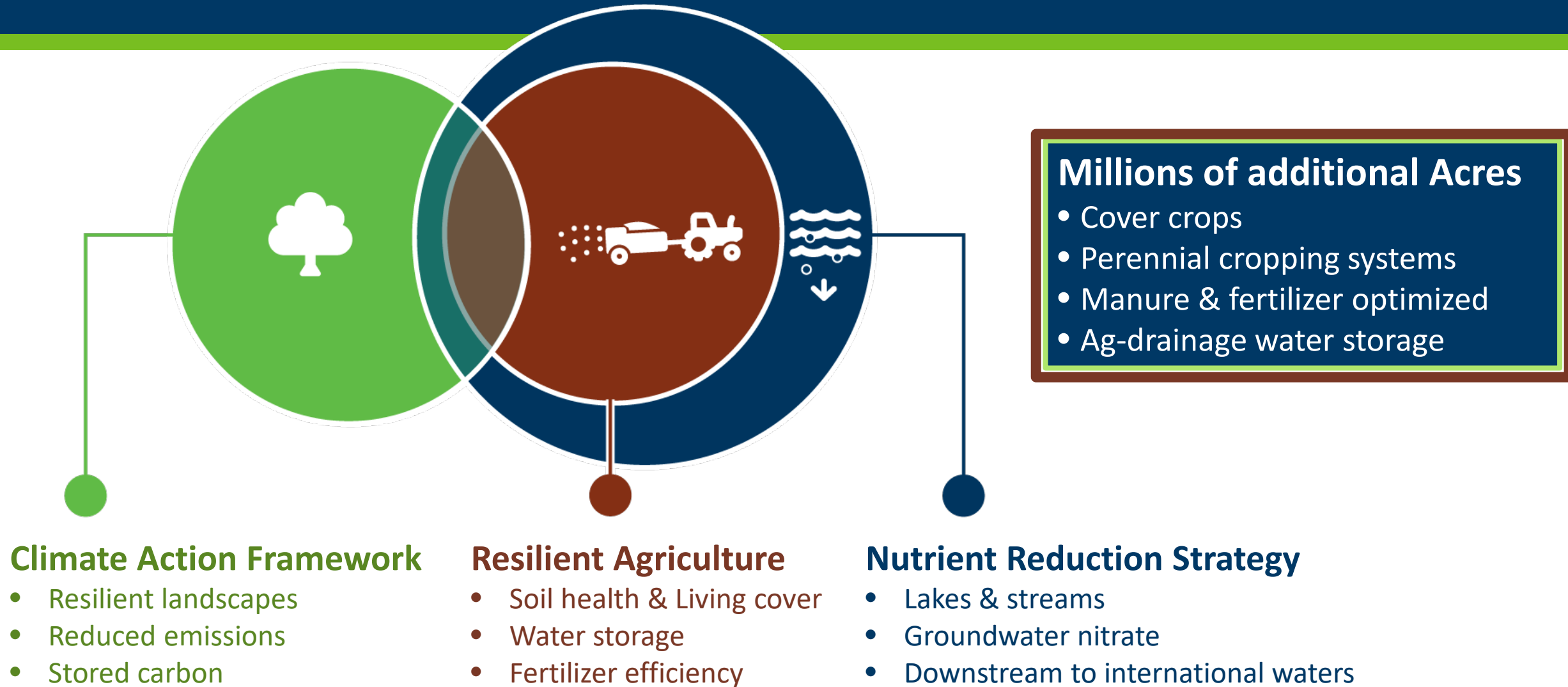
m MINNESOTA POLLUTION CONTROL AGENCY



TP Load reduction planning targets (Metric Tons)



New climate-smart agricultural practices also reduce nutrient loss

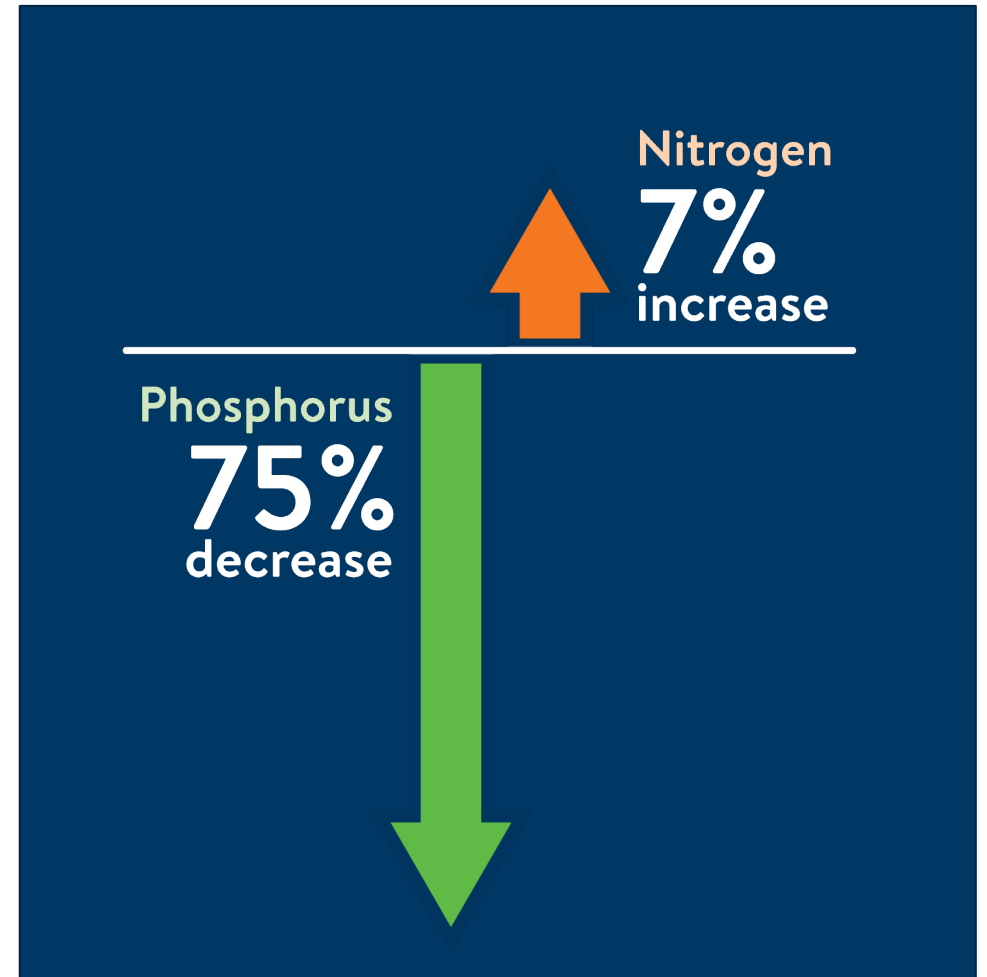


Wastewater nitrogen work for NRS revision

- Identify highest priority facilities for nitrogen reduction
- Examine successful case studies in northern climates
- Wastewater nitrogen management plan template

Note: MPCA is working concurrently on a wastewater nitrogen permitting strategy

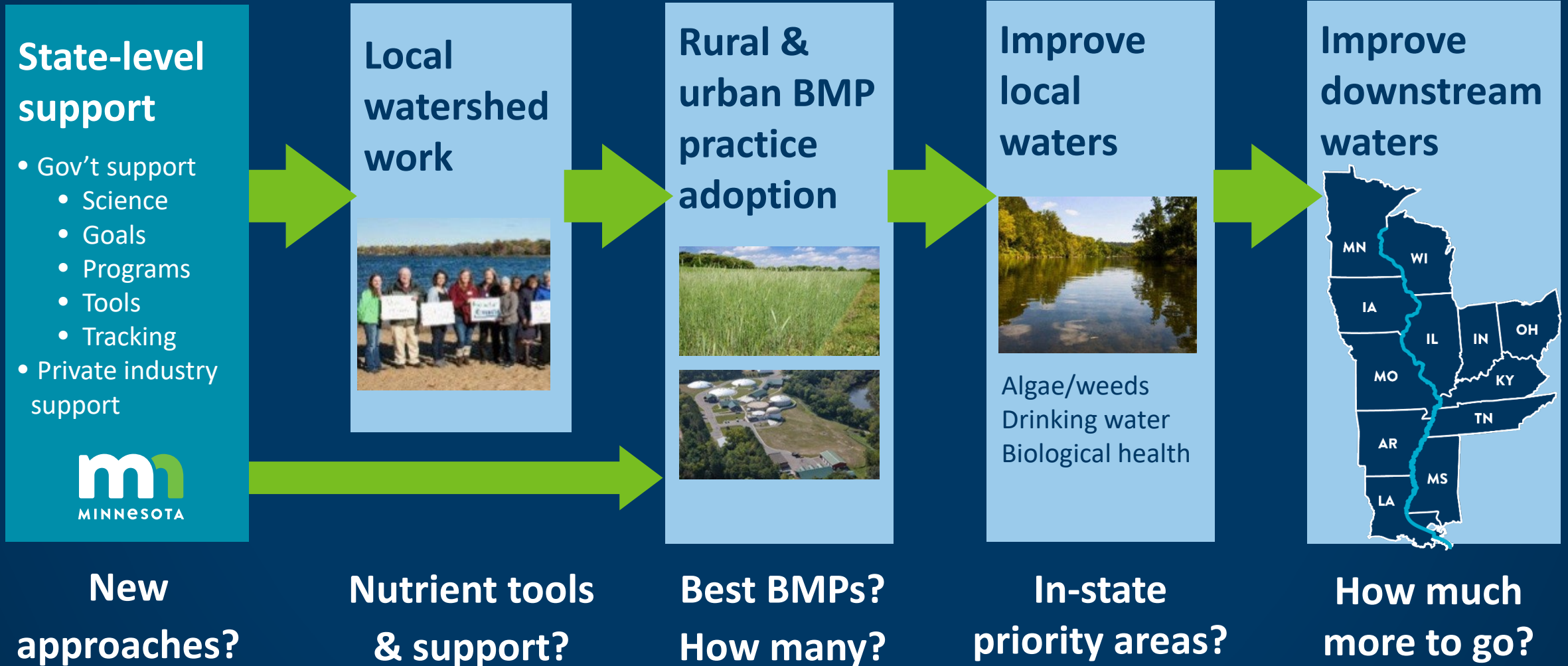
Other MPCA-led programs also evaluating ways to achieve further nutrient reduction (i.e. feedlots, stormwater)



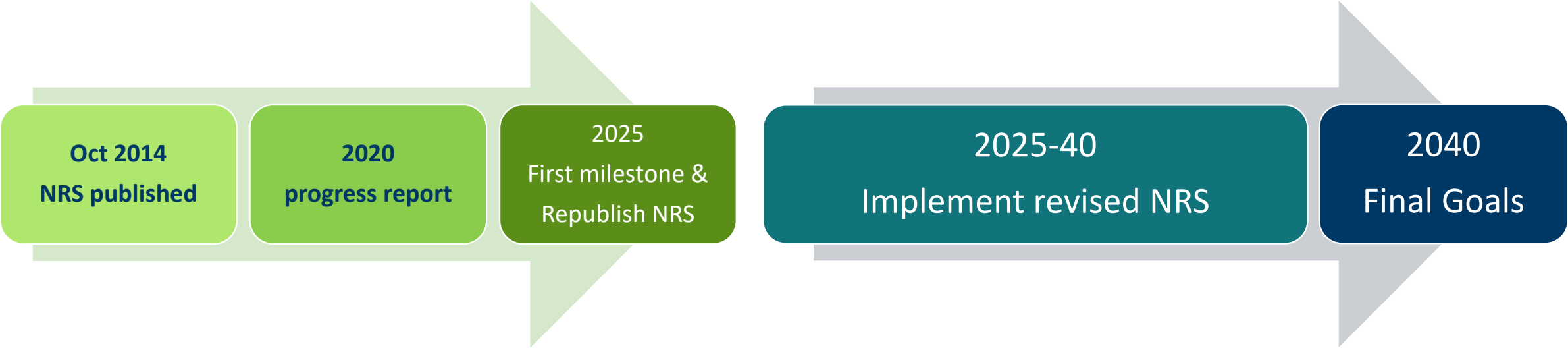
NRS Revision Steering Team Leadership from 10 organizations

Organization	Original Steering Team 2012-14	5-year Progress report 2019-20	NRS Revision 2023-25
MPCA	Rebecca Flood	Shannon Lotthammer Katrina Kessler, Glenn Skuta	Dana Vanderbosch, Glenn Skuta
BWSR	Steve Woods	John Jaschke, Doug Thomas	John Jaschke, Justin Hanson
MDA	Greg Buzicky	Dan Stoddard	Margaret Wagner, Joshua Stamper
U of MN	Mike Schmitt	Mike Schmitt	Mike Schmitt, Jeff Peterson
Met Council	Leisa Thompson	Sam Paske	Sam Paske
DNR	Steve Hirsch, Steve Colvin	Steve Colvin	Katie Smith
EQB		Katie Pratt, Erik Dahl	Catherine Neuschler
MDH	Tom Hogan (w/Steve Robertson)	Tom Hogan (w/Steve Robertson)	Tom Hogan, Steve Robertson
NRCS	Don Baloun	Carissa Spencer	Ryan Galbreath
USGS	Jim Stark	Rochelle Nustad	Lisa Reynolds Fogarty

Nutrient Reduction Strategy revision



NRS timeline



In Conclusion

- Minnesota needs nitrogen and phosphorus reductions to:
 - Improve in-state waters
 - Keep commitments to our downstream neighbors
- Much progress has been made during first 10 years of NRS
 - But revisions, updates and improvements are needed
- 2023-25 NRS revision process - working together on:
 - Remaining load reduction needs
 - Update BMP science
 - Find new approaches to scale-up adoption
 - Advance wastewater nitrogen reduction
 - Integrate NRS with local watershed work
 - Improve dashboards for showing progress
- Stakeholders and public involvement at various stages



<https://www.pca.state.mn.us/air-water-land-climate/reducing-nutrients-in-waters>



Thank you!

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