Policy Committee Meeting Agenda
Clean Water Council
April 22, 2022
9:30 a.m. – 12:30 p.m.
WebEx Only

2021 *Policy Committee: John Barten (Chair), Rich Biske, Kelly Gribauval-Hite, Raj Rajan, Victoria Reinhardt (Vice Chair), Peter Schwagerl, Phil Sterner, Jordan Vandal, and Marcie Weinandt*

9:30 Regular Business

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

9:45 Review of Priority Topics for Future or Revised Policy Statements

Water Storage: Revisit existing policy statement & recent BWSR white paper

- Rita Weaver, Chief Engineer, BWSR (confirmed)
- Water Storage: A Planning and Decision Framework (state.mn.us)

Carp & Water Quality

- Meg Duhr, Minnesota Aquatic Invasive Species Research Center (MAISRC)
- Przemek Bajer, MAISRC & Carp Solutions

10:45 BREAK

11:00 Review of Priority Topics for Future or Revised Policy Statements (continued)

Soil Health: Update on April 11th MN Office of Soil Health Forum

- Paul Gardner/John Barten/Rich Biske

Drainage: Brief Review of Past Discussions with Drainage Work Group in 2016-2017 + 2022 bill

- Paul Gardner, possibly John Barten

Private Wells: Revisiting existing policy statement on Advanced Drinking Water Protection

- Tannie Eshenaur MDH/Dan Stoddard MDA

12:00 Adjourn

- Next Meeting: June 25, 2022
- May meeting cancelled (Friday before Memorial Day)

Agenda for June 25, 2022

- **Shoreland Management**: DNR
    - Jason Moeckel (confirmed)
- **Microplastics Update**
    - David Duffey, Environmental Analysis & Groundwater Services, MPCA (invited)
    - Catherine Neuschler, Section Manager, Environmental Analysis & Outcomes, MPCA (invited)
- **Manure**
    - MPCA, MDA, U of M MCEA Conversations on N reduction strategies
- **Living Cover**: Written update on Forever Green Initiative and perennial living cover, review of existing policy recommendation: [discuss with MDA in BOC process]
    - CWC Leg Report 2016 Living Cover Recommendation.pdf
    - Working Lands Watershed Restoration Feasibility Study and Program Plan: Final Report
- **Neonicotinoids:** Review of MDA's Surface Water Pesticides of Concern
    - Dan Stoddard, MDA

Emerging issues from the Legislature of Possible Interest

- Tire-based chemicals 6-PPDq

Policy Committee Meeting Summary
Clean Water Council (Council)
March 25, 2022, 9:30 a.m. to 12:00 p.m.

Committee Members present: John Barten, Rich Biske (Chair), Raj Rajan, Victoria Reinhardt (Vice Chair), Peter Schwagerl, Jordan Vandal, Marcie Weinandt, and Phil Sterner.

Members absent: Kelly Gribauval-Hite

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
- Approve today's agenda and meeting summary, Victoria Reinhardt, seconded by Marcie Weinandt, motion approved unanimously.
- Chair and Staff Update
    - The Minnesota Agricultural Water Quality Certification Program (MAWQCP) Advisory Committee will meet on April 14 in Willmar, MN. There will be two farm visits.
    - Microplastics was of interest at the last Council meeting. Catherine Neuschler at the Minnesota Pollution Control Agency (MPCA) will update at the next Budget and Outcomes Committee (BOC) meeting.
    - The MPCA plans to bring forward a funding proposal for Clean Water Fund on PFAS. They would like to be on the meeting agenda to present to the full Council.
    - House Legacy Finance Hearing this week: Paul will present on Wednesday.
    - Other bill hearings: PFAS, chloride, SWCD funding, House CWF bill, CREP.
        - Committee members discussed the fate of the $40+ million CWF surplus for FY22-23, including the appropriations process, and that this is one-time funding that shouldn't be dedicated to ongoing spending.

Timing for Biennial Recommendations/Review of Standing Policy Platform

- Paul Gardner- Biennial recommendations need to be submitted on December 1, 2022. The council will have good draft by July and recommendations by August. There are three months to write the report. The Policy Committee has more time than that if we chose. There are seven meetings or less to draft and approve a policy platform. A timeline will be worked on accordingly.
    - Victoria Reinhardt- The process we have had worked well. I would like to see small bits at a time. Emerging issues from Legislature, such as neonicotinoids and microplastics should be addressed.
    - Rich Biske agreed. Be mindful, if we are bringing to full council it would be a busy time with Budget and Outcomes Committee (BOC) recommendations. Policy priorities complimenting BOC recommendations. Set August meeting as discussion and spend September making decisions and flushing out what you would like to move forward with.
    - Paul Gardner- June would be a good time to bring up a couple of statements – soil health or water storage. I will draft statements and I can handle two, maybe three in a month.
    - John Barten- Health concerns with drinking water took two meetings to get through full council. An August deadline is very realistic to get through full council.
    - Victoria Reinhardt- Let's shoot for June to have anything we seriously consider, and have fine-tuned and be ready to go to full council in August.
    - Rich Biske- We can have a list of priorities of what we can get a policy statement written on. The MPCA is going to be presenting on microplastics at an upcoming BOC meeting. It's complicated. Maybe council members would like to sit in on the BOC. Then we avoid duplication.
    - Let's catalog public statements committee has made.
    - Victoria Reinhardt- We haven't stated where we have influence and that is a good question. What do we do if something has been passed? Not just on this item but items in the past as well.
    - Paul Gardner- Maybe have an accomplishments section.

- Marcie Weinandt– Do I understand that policy statements not only impact legislation but impact work of the agency.
    - Paul Gardner- yes.
- Reviewed existing list.
- Tannie- There was a policy recommendation from the Council to testing private wells during property transfer. Bills in the Legislature didn't get any traction. There may have been blow-back and it may be part of the reason why our private well initiative was not funded in the last round of clean water appropriation. We need help from the policy committee to figure is there a way we can have a policy shaped around voluntary actions on the part of private well users, the broader coalitions to promote testing and find a clear path for treatment. There is expertise on the committee, and interest in taking into consideration vulnerable and low income populations. Looking forward to listening to policy on suggestions on experience here to figure out a path forward. A genuine request for help.
- Jeff Berg- On the agricultural diversification policy statement, a steering committee under Forever Green initiative was created, Forever Green research and implementation was funded under the Clean Water Fund at the University of Minnesota.
    - Victoria Reinhardt- - Example of influence and work done at our level. Raised awareness. Did a position and testified on it. Seeing it through is exciting.
    - Peter Schwagerl –Can see this will get rolled into a larger Soil Health initiative.
    - Rich Biske- Significant enough. Keeping it separate for now, but recognizing the contribution it makes to whatever we think about soil health moving forward.
- Marcie Weinandt– New to the council and new to the policy committee. Appears like Clean Water money invested in council itself, gives opportunity to tell what that investment is. Policy statements are spot on. Have to have early discussions. Ability to have meetings and discussions. Agree there needs to be a statement about the policy work and discussions that go before some of these on the ground activities. Not sure how it happens but back to buffers. Enhanced by the policy statement. Increasing vegetative cover, having it discussed at council gave weight behind it that multiple agencies were talking about it. Pat the policy committee on the back. We are seeing things progress.

Break at 10:30

Reviewing Steps for Future Policy Statements & Lining Up Committee Topics for April-June

- **Shoreland Management**: Jason from DNR available starting in May or later for deeper dive.
- **Drainage**: Discussing at BOC; looking for more project opportunities
    - John Barten– I reached out to drainage work group a few years ago and have had a couple meetings. They sent out letter requesting info and they sent some stuff back. I will send the letter to Paul so we don't revisit anything. We have met with DNR, fisheries and U of M regarding carp control. There are a couple of issues, Carp classified as a rough fish as opposed to an invasive fish, requires additional permitting steps to remove from the system in addition the statues state you can't net fish in the summertime. The U of M allow some fox nets – bait in them that only affect carp. Carp removal process requires special permits, but that takes time and money. The Policy Committee could make recommendations for the DNR to make some rule changes and potentially statute changes. Changing carp from rough fish to invasive species in statute might require legislative action. Carp have huge impact on water quality. Would like to have a meeting with DNR, U of M.
    - Marcie Weinandt- Rice Creek Watershed District has been doing carp removal for a few years and could do a quick presentation with some on the ground numbers.
    - Larry- What are the long term studies?
    - Rich Biske- Have some presentations to see if the committee would like to draft policies.

- **Soil Health**: 4/11 Minnesota Office of Soil Health Collaboration Forum:
    - If you would like to be included, Paul can work on getting you invited.
- **Water Storage**: Interagency white paper in progress.

- **Private Wells:**
  - Rich Biske- Are we ready to start drafting something?
  - Tannie- Would be happy to take the initiative.

Emerging Issues from the Legislature of Possible Interest:

- Microplastics
- Tire-based chemicals
  - Paul Gardner has a video he can share regarding this topic.
- Neonicotinoids

- Rich Biske- Have a discussion on those that we have vetted already that we are interested in putting a statement around. I want to be mindful of time and capacity of how many policy statements we can do.
- Victoria Reinhardt- sounds like there is so much going on with carp we could have a draft. I would like to see a speaker on microplastics, carp, and tires. I would like to have an update on the Forever Green things.
- John Barten- I would like to have Meg Duhr from the MN Aquatic Invasive Species Research Center and John Sisler from DNR. , Brad, the fisheries chief from DNR could come. They could give specific details on what part of the statutes would need to be modified. We would like the language pretty tight so they go about it the correct way. They may be able to provide language. The University people have sent the stats with the changes they would like to see and DNR looked at them agreed.
- Rich Biske- Is there enough context to set the water quality purpose for doing it? Might be a helpful context once the statement is drafted.
- John Barten- There is someone who has done a lot of this work in the past. They can talk about what water quality improvements we can expect if you have carp control and carp removal and then long term control. He has really good data to show the correlation, having worked done metro area lakes, we recognize you can't reach water quality standards unless we can deal with internal loading a lot of which is carp.
- Paul Gardner – We don't want to lose momentum on the five items but we would like more info on emerging items. In April we can discuss lessons learned from private well pilot, presentations on carp, and plastics.
- Rich Biske- Private well presentations were great. Are we ready to take the existing info and draft something for discussion?
  - Tannie- I would be happy to work with committee. I feel the urgency and there are two bills, one passed unanimously and the other had one negative comment. One is for private organization to do well testing and to move into treatment for about 1 million a year. The other is about 40 million a year. We have the attention of the legislature. We need to take a step by step. Tannie: It would be helpful if we gave a little of water scape, and to revisit that and include overall prospective on the status of private wells then open to committees input and discussion.
  - Paul Gardner - Would it help to have Jeff Broberg at the MN Well Owners Association.
  - Tannie- It depends how much time we have. There are other groups that are interested. MNWOO and Water Resource Center, Water Quality Association, and Water Well Association for well drillers.
  - Jim Stark- There are differences of opinion on how private well testing should be done. It would be good to have discussion internally before we pull in other groups.
  - Paul Gardner– April agenda is covered. For May, we can check with Jason on a Shoreland Management follow-up. We'll have had the first office of Soil Health forum, and we can give an update on that for the soil health statement situation.
  - Rich Biske- There was a lot of activity last session and even more this session into May. We can make a general statement as it aligns to Council priorities. Wait on soil health as it shakes out too.
  - Dan Stoddard (MDA)- MDA has done a lot of work on the neonicotinoids. In 2016, we did a special registration review- had research scientists, pick hot topics for pesticides and dive in deep on how it is an issue or managed in Minnesota. Generated a report with legislative recommendations. I'll send a link. It would be insightful. Clean Water Funds helped to do that. They find them and declared two as surface water pesticide concerns. Working on BMPs minimizing impacts.
  - Rich Biske- We can move it back further but I'm interested in BMPs and land management practices. It would help reduce risk of pesticide contamination.

- Dan Stoddard (MDA)- We'd be ready to talk about it whenever the committee is ready, we've done good background work that would be very informative. https://www.mda.state.mn.us/surface-water-pesticides-concern; https://www.mda.state.mn.us/sites/default/files/inline-files/neonicreviewrpt2016.pdf (link from chat).
- John Barten- Are you following the results of the DNR deer spleens and following up with the DNR?
- Dan Stoddard (MDA)- Yes, they are watching it.
- Rich Biske- Did we find a place for Microplastics?
- Paul Gardner- update in April. I have plenty for April and May and will work on the agenda.
- Rich Biske- Are there particular questions that we want to inform potential speakers to cover?
- Marcie Weinandt- Emerging issues are coming up, may be state agencies are now looking at through their own process of discovery. Other items that agencies are looking at policy changes that need to occur for us to best do our work and protect waters. Seems like we are ahead of the curve on some of these issues. Now there are specific changes in policies that need to occur. Quick and dirty, like a policy change in carp. And policies that take a little more – like drainage.
- Rich Biske- Some of these have multiple benefits. Some will move forward without council's recommendation.
- Paul Gardner– One thing that isn't on the list is manure. It came out of ranking process this winter. We don't have any thoughts on this yet. Will talk with Glenn on how to set up that discussion.
- Marcie Weinandt- Will we resume in person or virtual?
- Paul Gardner - We can meet in person at the next meeting, if we wish to do that. If you are new, we can get you MPCA parking info. We can feed you or run until noon. It would be a Hybrid type of meeting.
- Victoria Reinhardt- The fact that we can get things done with this option (web-ex) is good. I love seeing people in person but if we can get done what we need to get done – we can help the environment with not going to the physical meeting. Unless we need to come in for some reason. We get more participation by virtual meetings. I think we should continue this way unless we can't.
- Rich Biske-I like this flexibility but let's continue having Web-ex meetings unless we need a working session. For now we will keep it web-ex.
- Paul Gardner There isn't anything prohibiting anyone from coming into office. I will have web-ex running.
- Marcie Weinandt- The water storage draft was put in chat. https://bwsr.state.mn.us/sites/default/files/2022-02/WaterStorage%20Feb2022FinalDraft_1.pdf
- Rich Biske- we adjourn.

BWSR Water Storage Update
Clean Water Council Policy Committee Meeting
4/22/22

A. Current Efforts

- 1W1P and WBIF
  - All 1W1P require some type of storage goal (see attached summary)
  - WBIF can be used to help meet those goals
- Water Quality and Storage Program (see attached fact sheet)
  - $1M FY22
  - RFP closed April 4th
  - 7 applications received, total request almost $4M
  - Grants will be awarded June 2022

B. Immediate Future Efforts

- FY23 $1M funding to Water Quality and Storage Program
- Potential additional funding from the legislature
- Addressing "the gap" between 1W1Ps and feasibility studies (required for the water storage program)
  - PTMApp – improvements underway to enhance functionality relating to watershed modeling and project targeting, estimating the hydrograph for projects
- LCCMR Application still may be funded
  - In example watersheds we'd work through the framework for choosing storage locations and implementing storage.
  - If we are not chosen for funding we will likely revise and resubmit this year.
- RCPP AFA Application – Climate Resilient Agricultural Watersheds
  - $8.0 million USDA matched by $8.0 million State Funds
  - Project will focus on smaller HUC12 size areas within three 1W1P planning areas (Cedar River, Yellow Medicine River, and Cannon River)
  - This application will pilot the expansion and enhancement of water storage, creating a model for allocating water storage and water quality goals, engaging farmers/landowners, acquiring necessary land rights and initiating and constructing projects at a scale capable of addressing local resource concerns of excess water, water quality degradation, and degradation of fish and wildlife habitat.

- The three focus areas will allow us to better measure progress towards our goals.

C. Longer Term Future Efforts

- Model evaluations for drainage projects – how can we measure the water quality benefits of storage and storage BMPs?
- Local partner capacity – do we have enough staff for landowner marketing and technical capacity-project/watershed modeling and practice design?
- Measure outcomes – how can we best demonstrate the effects of our efforts?
- Water reuse – can we tie irrigation to our water storage projects so we lessen the need for groundwater use?
- Connection to/relationship with 103E drainage projects – how can we create incentives to add storage to drainage projects?

BOARD OF WATER AND SOIL RESOURCES

Water Quality and Storage Pilot Program

Background and Guidance

Spring 2022

Program Purpose and Requirements

The Water Quality and Storage Pilot Program grants will establish storage practices across Minnesota with priority given to the Minnesota River basin and the Lower Mississippi River basin. Eligible activities must result in a reduction to peak flow rates and/or volumes to demonstrate a decrease in downstream flooding, water quality improvement or related public benefits, or to mitigate climate change impacts.

- Current RFP provides up to $1,000,000 available for eligible applications
- 25% non-state match required, 50%,40%, 10% payment schedule
- The area of interest, determined by the applicant, must be identified at the time of application
- Applicants must provide pre-project and post-project hydrographs for the critical 100-year and 10-year storm events at the area of interest and the next downstream HUC12 outlet.
- All grants must be completed by December 31, 2024.
- Application deadline is April 4, 2022 at 4:30 p.m.

Permitting

The applicant is responsible for obtaining and complying with all permits necessary to execute the project. If applicable, successful applicants will be required to provide sufficient documentation prior to work plan approval that the project expects to receive or has received all necessary federal, state, and local permits and meets all water quality rules, including those that apply to the utilization of an existing water body as a water quality treatment device. **Applicants are strongly encouraged to contact the appropriate regulatory agencies early in the grant application development process to ensure potential projects can meet all applicable regulatory requirements.**

BOARD OF WATER AND SOIL RESOURCES

Funding Priorities and Ranking

Priority for funding will be given to projects that meet the following criteria (in order of priority):

- Project is located in the Minnesota River basin or the Lower Mississippi River basin in Minnesota (as required by Mn Statute 103F.05 Subd.2 (b)).
- The applicant shows they are taking a comprehensive approach to flow and volume reduction in the watershed, by implementing soil health or other conservation practices.
- Practices that show higher levels of flood protection, water quality improvement, etc.
- Practices that demonstrate reduction in flood potential, water quality improvement, AND mitigation for climate change.
- Evidence of project installment readiness, which may include local letters of intent from government partners, evidence of support from willing landowners, and permitting agencies have been consulted regarding project permitability.

Ineligible Activities

- Proposed activities that do not demonstrate a reduction in the hydrograph peak or volume at an area of interest.
- Activities that are multi-phase, multi-year storage systems (i.e. – the project must not rely on components that will be constructed at a later time in order to get the reduction in peak flow rates and/or volumes).
- Maintenance or repair of existing structures/storage projects.
- Activities that would negatively affect drinking water.
- Activities needed to meet the minimum requirements of Chapter 103E or MS4 plans.
- Feasibility studies and/or hydrology and hydraulic modeling are not eligible during the pilot phase of this program.
- Activities that are constructed as part of 103E proceedings will not be eligible during the pilot phase of this program

Eligible Practices

Examples of eligible practices include, but are not limited to:

- Ponds without permanent pools (Dry detention ponds)
- Ponds with permanent pools (Wet detention ponds)
- Water and Sediment Control Basins (WASCOBs)
- Wetland construction or restorations
- Improvements or retrofits of existing storage areas to increase storage capacity or retention time

Project lifespan must be at least **25 years**, and the applicant must have a plan for project maintenance.

Payments for land protection including easement payment (temporary, perpetual, or flowage), pre-title acquisition payments, property acquisition costs, survey, title, and recording fees are eligible expenses under this grant. Total state easement payment rates, shall not exceed regular 2018 Reinvest in Minnesota (RIM) rates if the easement will be used as match.

Eligible activities include construction costs, project development, grant management, and administration. Technical and engineering assistance necessary for design of these practices is essential and may be included in the project cost.

Definitions

Area of Interest – Area defined by the applicant which has flooding issues, water quality issues, or climate vulnerabilities. Applicant is responsible for defining the extent of their concerns at the area of interest to help reviewers understand how the proposed project or practices will improve conditions.

Critical 100-year (or 10-year) Event – this is the event that will result in the highest peak flow rate and/or volume at the area of interest. The 24-hour rainfall is often considered, but the critical event may have a longer time period or may be a snowmelt event.

Water Storage Goals in Comprehensive Watershed Management Plans

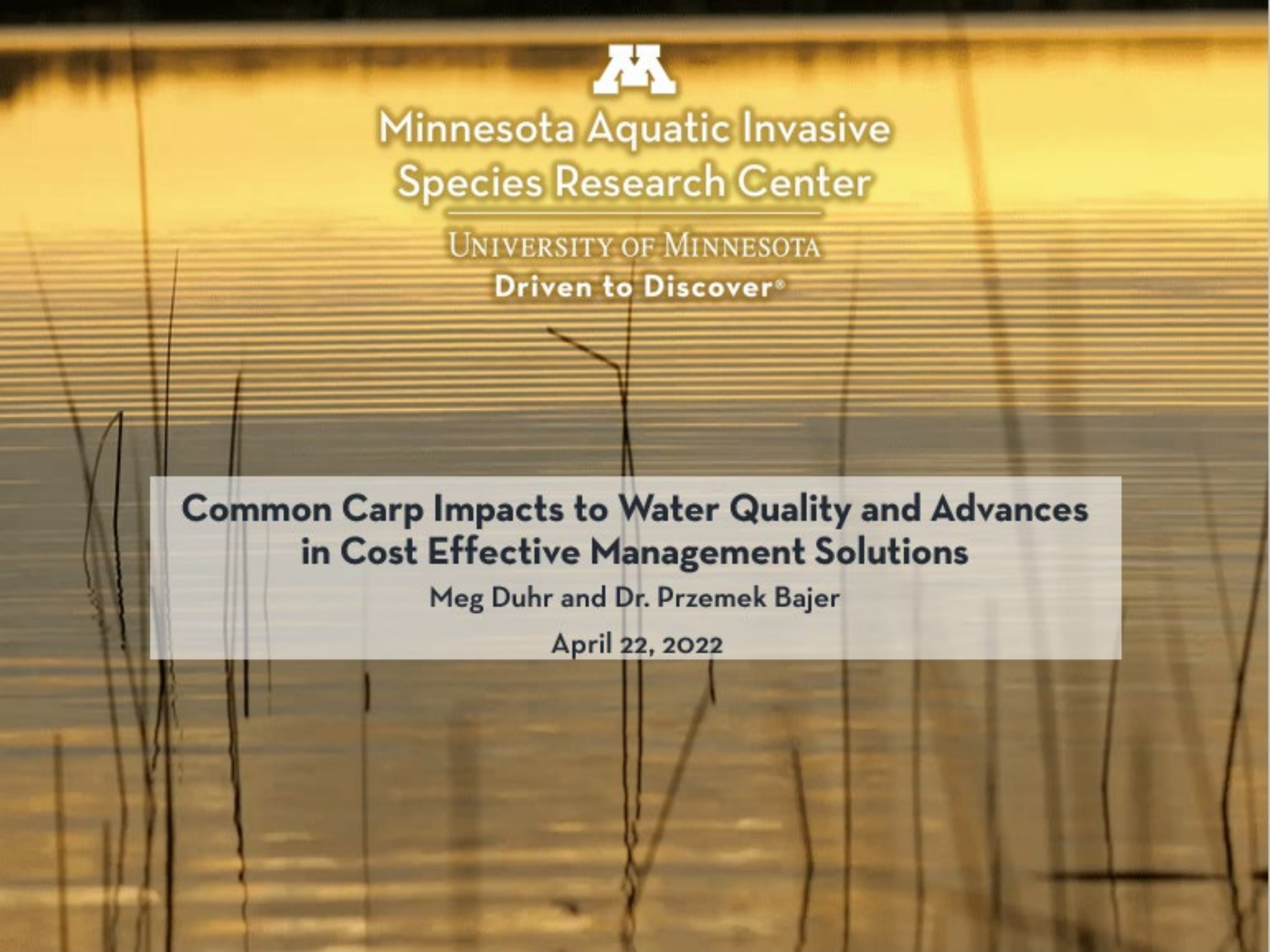
This document is a compilation of goals related to water storage in comprehensive watershed management plans developed through BWSR's One Watershed, One Plan program. Some plans articulated both a short term goal (10-year time frame) and a long term goal (a.k.a. desired future condition). If not stated, assume the goal is short-term.

Start Year	Planning Boundary	Water Storage Goal
		Northwest - Red River
2017	Bois de Sioux/Mustinka	**10 year goal:** Achieve progress towards long-term goal through implementation of Redpath Controlled Flood Impoundment Project and small-scale storage to mitigate impacts of altered hydrology. **Long Term:** A total of 78,903 acre-feet of additional water storage is achieved (see the plan for acre-feet by planning region).
2017	Buffalo-Red River	**10 year goal:** 42,750 acre feet (approx. 0.45 inches) of runoff volume reduction (25% of each planning region's long term goal). **Long Term:** 171,000 Acre-Feet (approx. 1.79 inches) of runoff volume reduction.
2014	Red Lake River	**10 year goal:** 10,000 Ac-ft of gated storage in distributed detention basins
2016	Thief River	Reduce annual runoff by 1.5 inch over the entire watershed.
2018	Two Rivers Plus	**10 year goal:** 1/4 inch runoff reduction in high priority planning zones (7 of 11 zones); 1/8 inch runoff reduction in medium priority planning zones (4 of 11 zones). {Total of 17,931 acre-feet. See p. 71 for planning zone goals} **Long Term:** Protect agricultural land from flooding for up to a 10-year runoff event • Protect cities and farmsteads for up to a 100-year runoff event • Provide 40,000-acre feet of storage within the Two Rivers Watershed District • Provide 5,700-acre feet of storage within the Joe River Watershed District • Maintain minimum flow 20 cubic CFS on S. Branch Two Rivers and 10 CFS on M. Branch Two Rivers during low flow periods
2018	Wild Rice - Marsh River	**10 year goal:** Achieve 25% of the altered hydrology analysis goal within the priority areas (10,750 acre-feet). The Altered Hydrology analysis resulted in an average storage goal of 0.4 inches across the watershed (approximately 43,000 acre-feet). **Long Term Goal:** Achieve storage goals from WRWD Expanded Distributed Detention Strategy aimed at providing the WRWD contribution to the Red River Basin Commission's 20% flow reduction goals specified in the LTFS Basin wide Flow Reduction Strategy (300,000 acre-feet).

Northeast – Superior / Rainy		
2016	Lake of the Woods	**10 year goal:** Achieve progress towards a water retention goal of 1/8" of water across the watershed, or 3,668 total acre-feet of additional water retention (not including the Northwest Angle (NWA)). **Long Term Goal:** Achieve progress towards a water retention goal of 1/4" of water across the watershed, or 7,335 total acre-feet of additional water retention (not including the NWA). Long-term water retention goal may be refined as watershed water retention data gaps are filled through implementation actions.
2014	Lake Superior North	Promote a stormwater management approach that emphasizes the retention of the first 1.1 inches of runoff volume for unrestricted sites and 0.55 inches of volume for restricted sites, to promote the maintenances, restoration and/or rehabilitation of natural hydrologic functions to create a more resilient landscape.
2018	Nemadji	Increase water storage by 1,174 acre-feet through wetland and floodplain restoration.
North Central – Upper Mississippi		
2016	Leech Lake River	Maintain an average annual discharge of 747,000 acre-feet at the Federal Dam, Ball Park, MN.
2018	Mississippi River Headwaters	Maintain the Mississippi River Headwaters Watershed mean annual discharge of 2,579 - 2,777 acre feet per day.
2015	North Fork Crow River	**10 Year Goal:** Interim volume reduction goal for the watershed is a 0.5 inch reduction in runoff depth on average across the watershed. **Long Term Goal:** meet altered hydrology mitigation goal of reducing runoff depth 0.75 inches across the watershed. (translates to 59,320 acre feet of storage across the watershed)
2017	Pine River	Maintain an average discharge of 306,945 acre-feet at the pour point of the Pine River Watershed.
2018	Redeye River	Maintain the current average monitored discharge relative to climate norms of 368,196 acre-feet at the pour point of the watershed.
2018	Rum River*	**10 Year Goal:** Implement actions that prevent increased surface water runoff and provide 100 acre-feet of storage over the life of the plan. To prevent flooding, erosion, and water quality degradation, there will be no net increase in discharge from each management zone. **Long Term Goal:** 5-year average water rate and volume have not increased (relative to precipitation) at the Anoka Dam on the Rum River.
2017	Sauk River	**10 Year Goal:** Maintain current average annual discharge relative to precipitation. Subwatershed water storage goals totaling 14,066 acre-feet. **Long Term Goal:** Sauk River Watershed runoff at the USGS gage in St. Cloud is less than or equal to the increase in precipitation.
Southeast – Lower Mississippi		
2016	Cannon River	**Interim Goal:** In the interim, the 10-year Volume Reduction Goal in the Cannon River at Welch is 35,733 acre-feet. **Long Term Goal:** Decrease the rate and volume of water that contributes to flooding of downstream communities to limit property damage and protect public safety by establishing water storage goals based on the results of the Long-Term Flood Evaluation Study which will be conducted in the first five years of the Plan.
2016	Cedar - Wapsipinicon River	Increase average runoff retention by increasing watershed storage by 0.25 inches (~9,600 acre-feet)

2018	Greater Zumbro River	**10 Year Goal:** increasing watershed storage (i.e., retention) by 22,000 acre-feet (equivalent to 0.25 inches of runoff over the watershed), establishing subwatershed-specific storage and peak flow goals based on modeling results, characterizing flood risk in un-modeled portions of the watershed, and managing and restoring floodplain areas to reduce risk to structures and infrastructure. **Long Term Goals:** reducing runoff and increasing storage within the planning area, mitigating increases in peak flows in streams, and reducing flood risk to structures and major infrastructure. These long-term goals are consistent with Zumbro WRAPS, Mississippi River-Lake Pepin WRAPS, and local resource management plans.
2014	Root River	**10 Year Goal:** Sediment Reduction Strategy for reducing two year peak discharge by 25% by 2030 - volume for the 2- year, 24-hour runoff event used as a temporary surrogate for peak discharge
2018	Shell Rock River/Winnebago*	**10 Year Goal:** Implement projects that store 6,247 acre-feet. **Long Term Goal:** reduce peak stream flows by 15% in the Shell Rock River Watershed and 20% in the Winnebago River Watershed (goals referenced in the WRAPS reports).
Southwest – Minnesota River and Missouri River		
2018	Hawk Creek-Middle MN	**10 Year Goal:** Reduce average annual runoff by 0.25 inches (total of 8,296 acre-feet in four priority areas: Upper Hawk Creek, Beaver Creek, Chetomba Creek, and Fort Ridgely Creek). **Long Term Goal:** Work to achieve no net increase in existing runoff volumes to the Minnesota River from changes in land use or land use practices for non-priority subwatersheds
2016	Missouri River Basin	**10 Year Goal:** Achieve 0.1 inches of water storage across the watershed, or 9,510 acre-feet of storage across the watershed. **Long Term Goal:** Achieve 0.5 inches of water storage across the watershed, or 47,550 acre-feet of storage across the watershed.
2016	Pomme de Terre River	• Reduce annual runoff volume by 3,527 acre-feet at the outlet of the Pomme de Terre River watershed. • No increase in runoff from public water basins during peak run-off periods.
2017	Watonwan River	• Achieve 0.10 inches of water runoff reduction across the watershed, or 4,327 acre-feet of runoff reduction by implementation of targeted PTMApp practices across the watershed • Achieve 4% watershed-wide reduction in peak and annual streamflow, defined as the 10-year target in the WRW WRAPS
2014	Yellow Medicine River	• Add 1,000 acre-feet of new stormwater storage • No net increase in highest annual peak flows • 3% increase in dry season base flow
East Central - Metro		
2017	Lower St. Croix River	0.16 inches or 7,900 acre-feet across the entire watershed

**plan submitted to BWSR as of March 10, 2022 but not yet approved by the BWSR board.*



Minnesota Aquatic Invasive Species Research Center

University of Minnesota

Driven to Discover®

Common Carp Impacts to Water Quality and Advances in Cost Effective Management Solutions

Meg Duhr and Dr. Przemek Bajer

April 22, 2022

Common Carp

- Benthic omnivores
- Long-lived
- Early maturity and highly fecund
- Tolerant of highly degraded and disturbed environments
- Minimal predation pressure in its invaded range

Carp exclosure demonstration
Lake Wingra, Wisconsin, 2007
(Lathrop, Liebl, and Welke)

- Inside exclosure: carp removed, clear water state, aquatic macrophytes present, sediment consolidated by rooted plants and lack of carp disturbance
- Outside exclosure: high carp biomass, turbid state, low to no aquatic macrophytes, high levels of suspended sediment, nutrients mobilized into water column, increased severity and prevalence of algae blooms

MINNESOTA AQUATIC INVASIVE SPECIES RESEARCH CENTER

How do carp negatively impact water quality?

Direct effects:

- Feeding activity constantly resuspends sediments and nutrients into the water column
- Carp herbivory leads to major declines in diversity and abundance of aquatic macrophytes
- Carp excretions increase nutrient loading and facilitate algae production

Indirect effects:

- Turbid state further reduces aquatic macrophytes and increases sediment resuspension
- Habitat degradation and loss for myriad plant, fish, wildlife, and zooplankton species results in loss of ecosystem services provided by these organisms
- Nutrients in water column enhance conditions for algae growth

MINNESOTA AQUATIC INVASIVE SPECIES RESEARCH CENTER

Scientists design new way to remove invasive carp from Rice Creek

They used an "electric fence for fish" to remove more than 10,000 carp during last year's spring spawning season.

By Shannon Prather Star Tribune | APRIL 18, 2022 — 10:33AM

PROVIDED BY CARP SOLUTIONS

An invasive carp removed from Rice Creek in New Brighton.

"We will not meet our water quality goals for these lakes without managing carp."

-Matt Kocian,
Rice Creek Watershed District

CARP SOLUTIONS

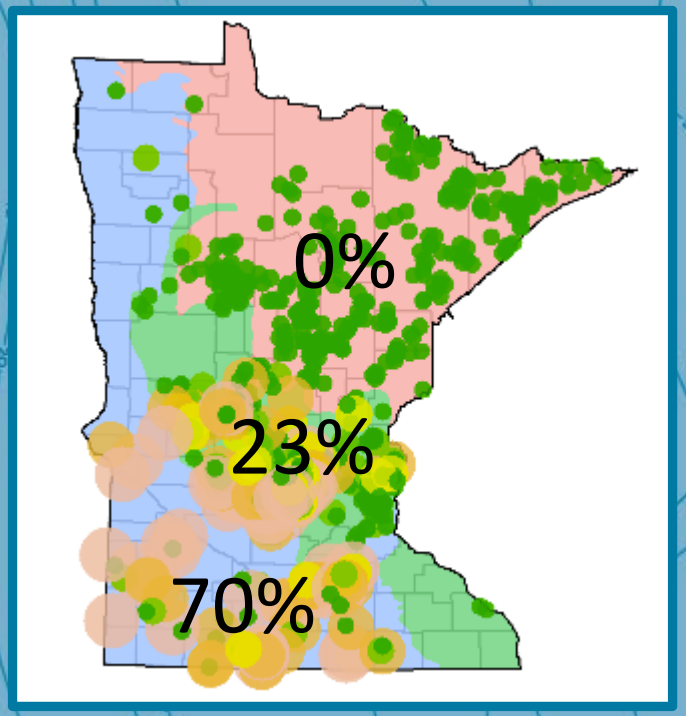
MINNESOTA AQUATIC INVASIVE SPECIES RESEARCH CENTER

Common carp research at the U of M and MAISRC

- Characterizing impacts to lake ecosystems and water quality
- Understanding life history weaknesses to develop targeted and cost-effective removal methods
- Assessing the role of egg predation by bluegill sunfish in carp suppression
- Understanding carp social patterns and behavior to enhance removal tools
- Assessing the potential of a naturalized, species-specific pathogen for carp biocontrol
- Assessing the potential of genetic biocontrol methods

Minnesota Aquatic Invasive Species Research Center

Common Carp
Broadly distributed invasive fish in MN.



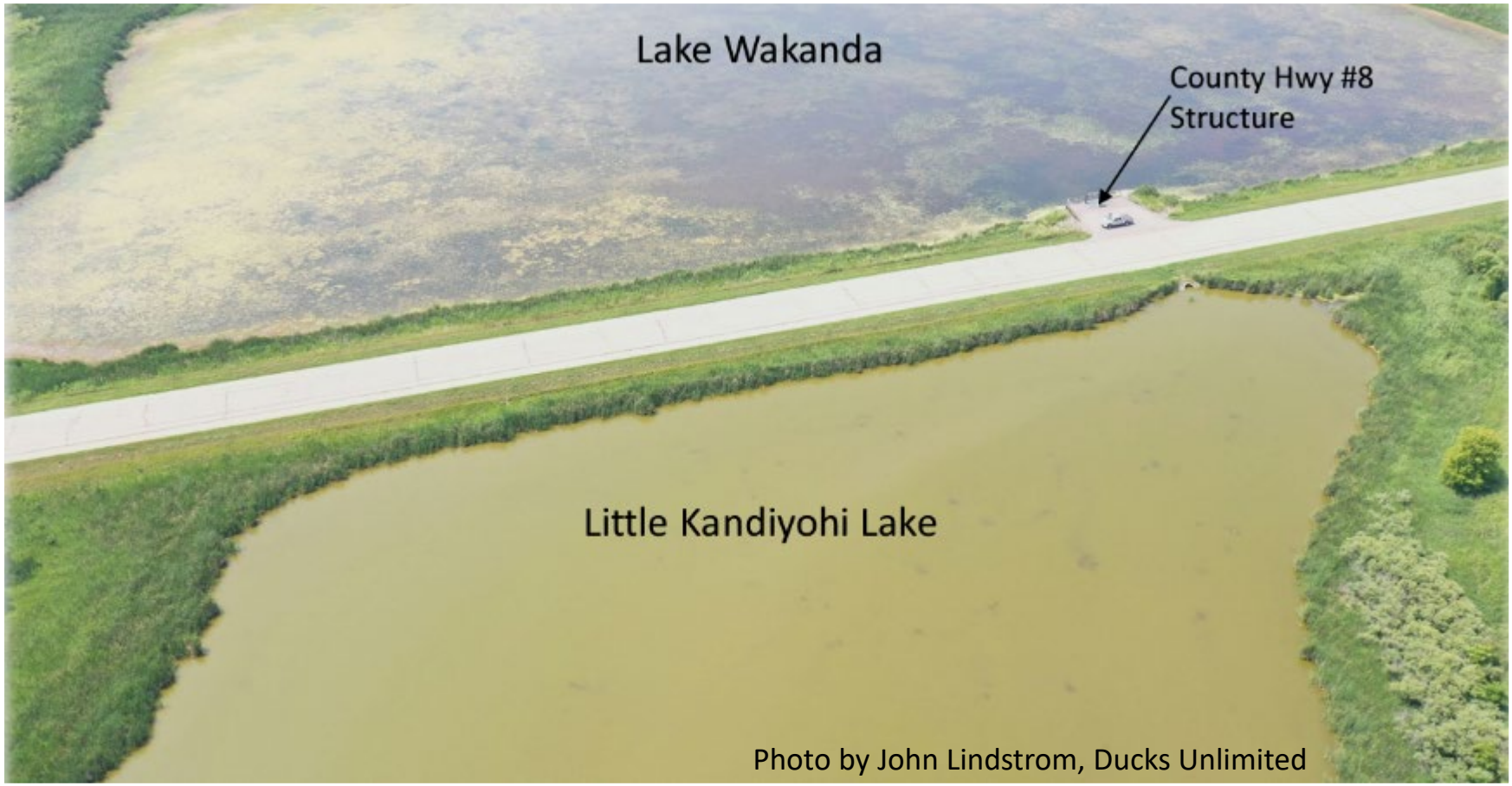


Photo by John Lindstrom, Ducks Unlimited

Carp management can be an effective tool for restoring water quality

Ventura Marsh, Iowa (John Downing)

Minnesota Aquatic Invasive Species Research Center

Current state of carp management:

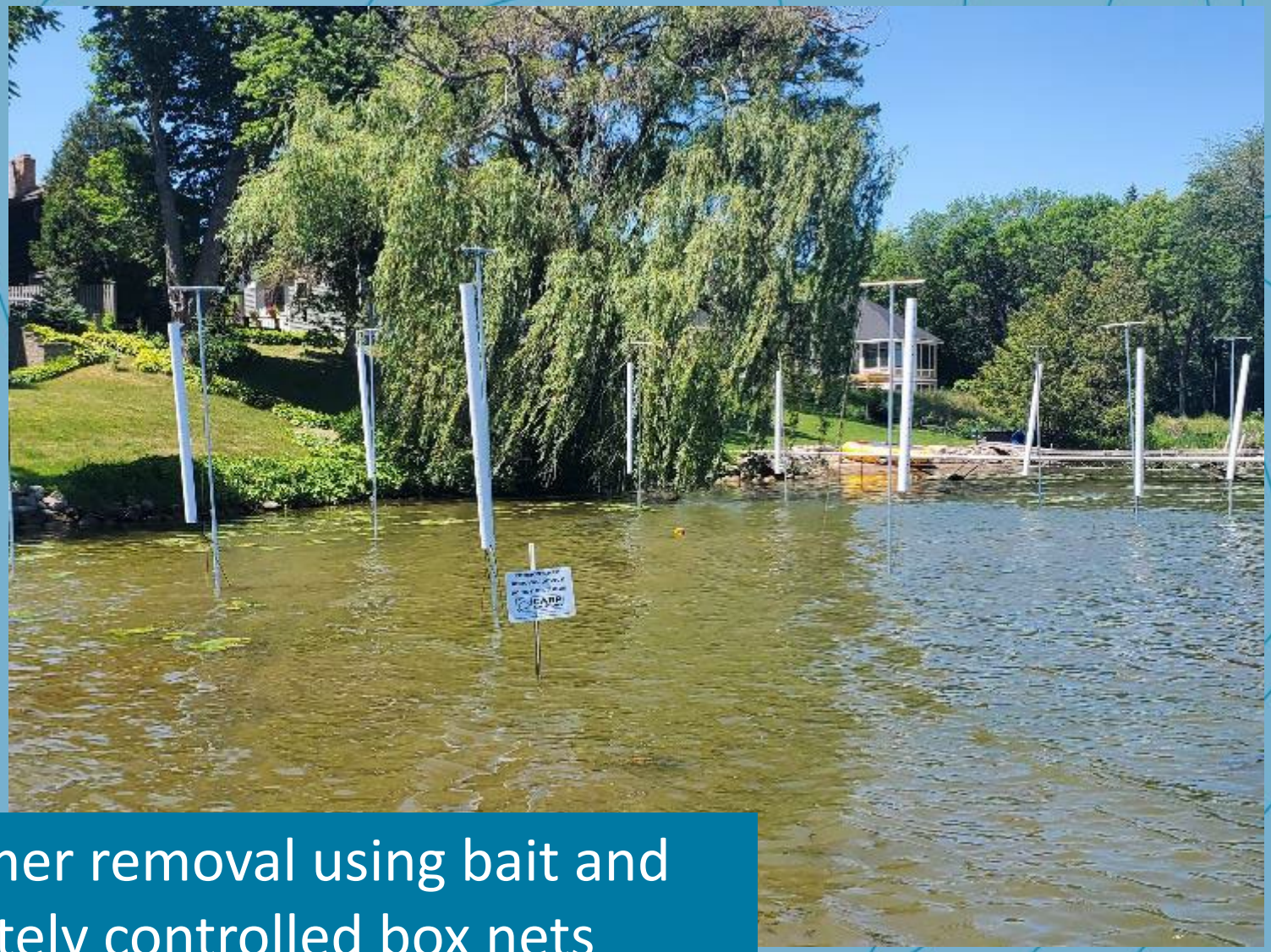
- Water drawdowns
- Rotenone treatments
- Commercial netting

MINNESOTA AQUATIC INVASIVE SPECIES RESEARCH CENTER

New technologies: Common Carp Spawning Migrations

Carp are directed into a trap

Removal with conveyers to reduce labor cost



Summer removal using bait and remotely controlled box nets

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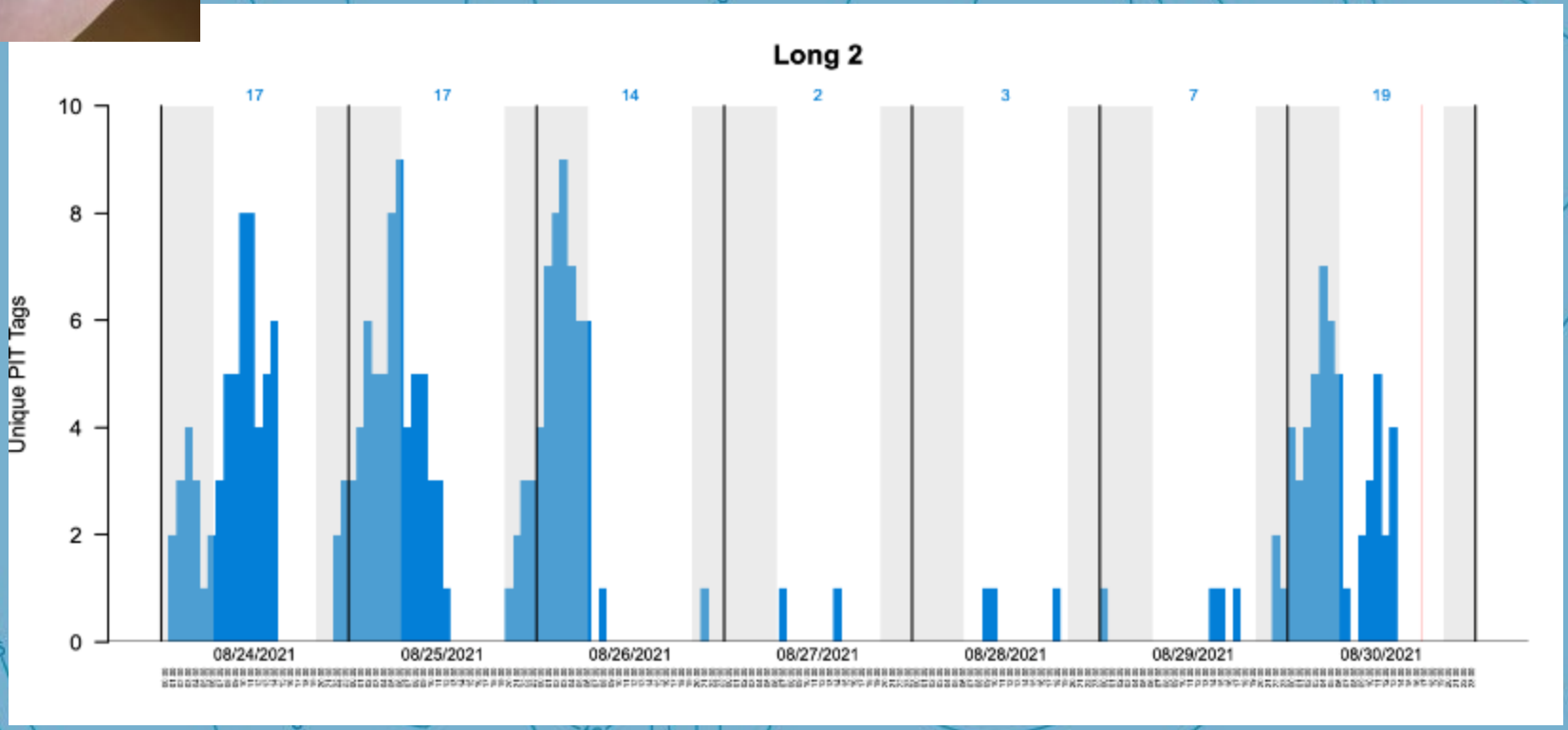
Monitoring carp activity online using microchip tags



Removing carp from nets--typically 30-50% of the population removed in one season

Integrated Carp Management: What would it look like?

Winter

Spring

Summer

Can a sustainable economy be created?

In many lakes, 60-70% carp biomass needs to be removed annually

Example: 1,000 acre lake in Southern MN
Carp biomass 500 lbs./acre
~300,000 lbs. carp needs to be harvested annually
Annual cost $225,000 ($0.70/lbs.)
Crew of 6, at least 2 lakes per year to be sustainable

Costs & Benefits

- 1,500 lbs. P removed with carp biomass
- Cost $303/1 kg Phosphorus
- Improved water quality and habitat
  -Reduction in TP by 100 ug/L
- Cost reduced to $200/1 kg P
- Potential compost or fertilizer production ($0.2/1 lb. carp)
  -Additional $60,000 in savings

Comparable costs for other phosphorus removal strategies

TABLE 3. ESTIMATED ANNUAL COST OF PHOSPHORUS REMOVED THROUGH HARVESTING, ALUM TREATMENT, AND WATERSHED BEST MANAGEMENT PRACTICES (BMPS) USED BY THE RAMSEY–WASHINGTON METRO WATERSHED DISTRICT BETWEEN 1990 AND 2014. FOR BMPS, PROJECT ENGINEERING, DESIGN, AND CONSTRUCTION EXPENDITURES WERE ADJUSTED TO 2014 DOLLARS, AND COSTS WERE CONSIDERED OVER A 35-YR LIFE SPAN. LAND PRICES ARE NOT INCLUDED IN THESE CALCULATIONS. TOTAL PHOSPHORUS (TP) REMOVED BY BMPS WAS ESTIMATED BY THE P8 URBAN CATCHMENT MODEL OR THE MINNESOTA STORMWATER MANUAL'S MINIMAL IMPACT DESIGN STANDARDS MODEL. COSTS WERE ROUNDED TO THE NEAREST $100. NA, NOT APPLICABLE.

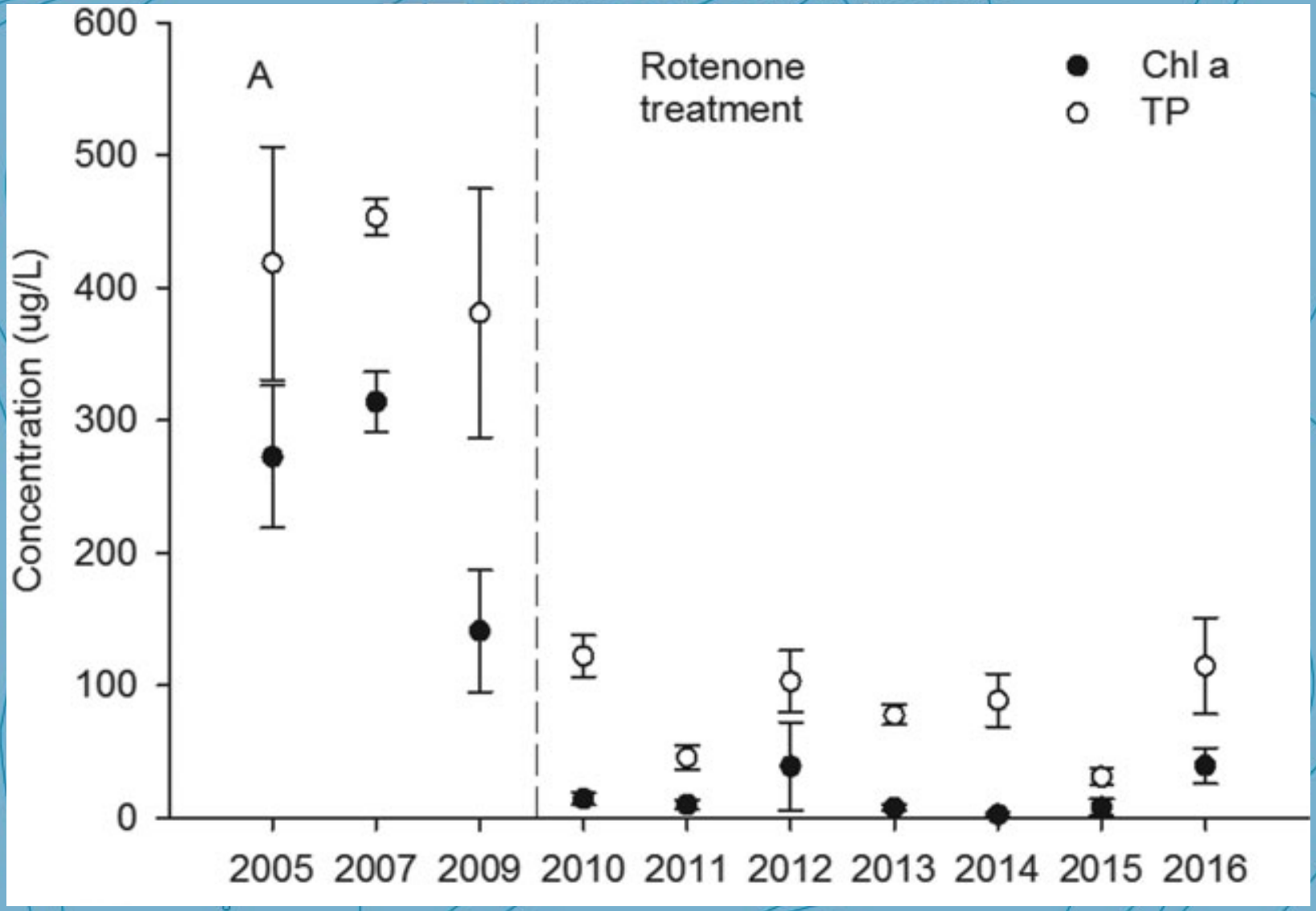
Method	TP Removal Cost (US Dollars kg^{-1})	Std. Dev.	No. of Projects
In-lake practice			
Alum treatment (Kohlman)	$480	na	1
Harvesting	$670	na	1
Watershed BMP			
Alum injection into storm water	$2,800	na	1
Storm-water ponds	$3,000	$3,900	9
Iron-enhanced sand infiltration	$7,400	$6,200	2
Tree trenches	$10,700	na	1
Rain gardens	$20,500	$13,900	146
Pervious pavement	$49,800	$39,300	9

MINNESOTA AQUATIC INVASIVE SPECIES RESEARCH CENTER

Statewide funding for water quality

- Clean Water Legacy Amendment (Clean Water Fund)
  - $261 Million in 2021
- Other sources (Watershed Districts, etc.)
- 10% of that would allow for sustainable management of 100 lakes 1,000 acres in size each!

Engaging citizens in carp management



Pickerel Lake, Albert Lea, MN

Minnesota Aquatic Invasive Species Research Center

Thank you!

Stay in touch:

Dr. Przemek Bajer: bajer003@umn.edu

Meg Duhr: mduhr@umn.edu

Other resources:

- https://maisrc.umn.edu/common-carp
- http://carpsolutionsmn.com/

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

CARP SOLUTIONS

Private Wells in Minnesota

Frieda von Qualen, Strategic Initiatives Coordinator

Tannie Eshenaur, Manager

Water Policy Center

April 22, 2022

DEPARTMENT OF HEALTH

CLEAN WATER LAND & LEGACY AMENDMENT

2016 Policy Rec: Advancing Drinking Water Protection

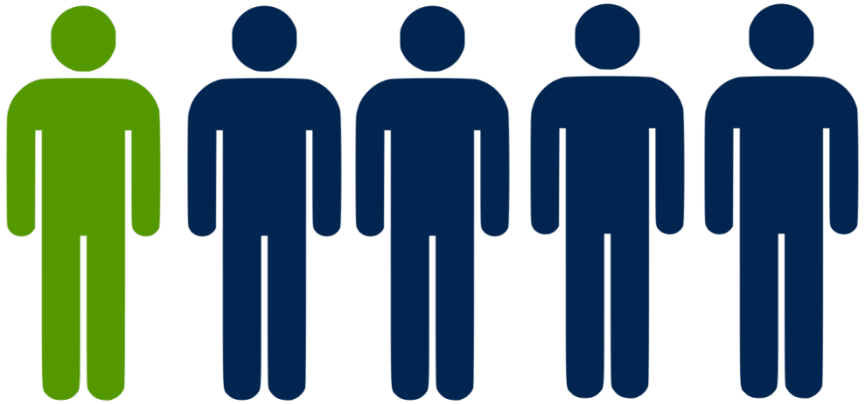
Background

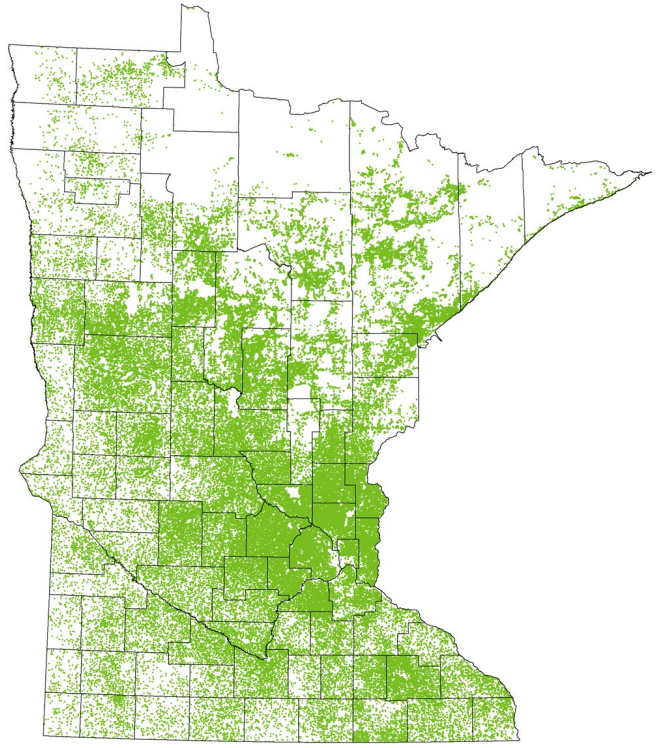
In the spirit of the Clean Water, Land and Legacy Amendment's call to protect our sources of drinking water, the State of Minnesota should take concrete steps to assess and address potential threats to safe drinking water. This assessment of drinking water needs and challenges should identify regulatory, technological, and behavioral barriers, and translate emerging science into protective public health policy and action. This approach should be flexible - to address threats at any point from source water to taps in home - and focused to lead to specific and timely interventions by the state, water utilities, and other partners.

4. Develop a comprehensive, systematic approach for periodic testing of the water quality of private wells including the notification of testing results and education on possible actions. Examples for consideration may include:

   - The testing of private wells providing drinking water at property transfer and notification of testing results to buyers.
   - Periodic testing of private wells providing drinking water to rental properties and requiring notification of the results before rental property owners can rent to new tenants or enter into new lease agreements.

1.2 Million Private Well Users

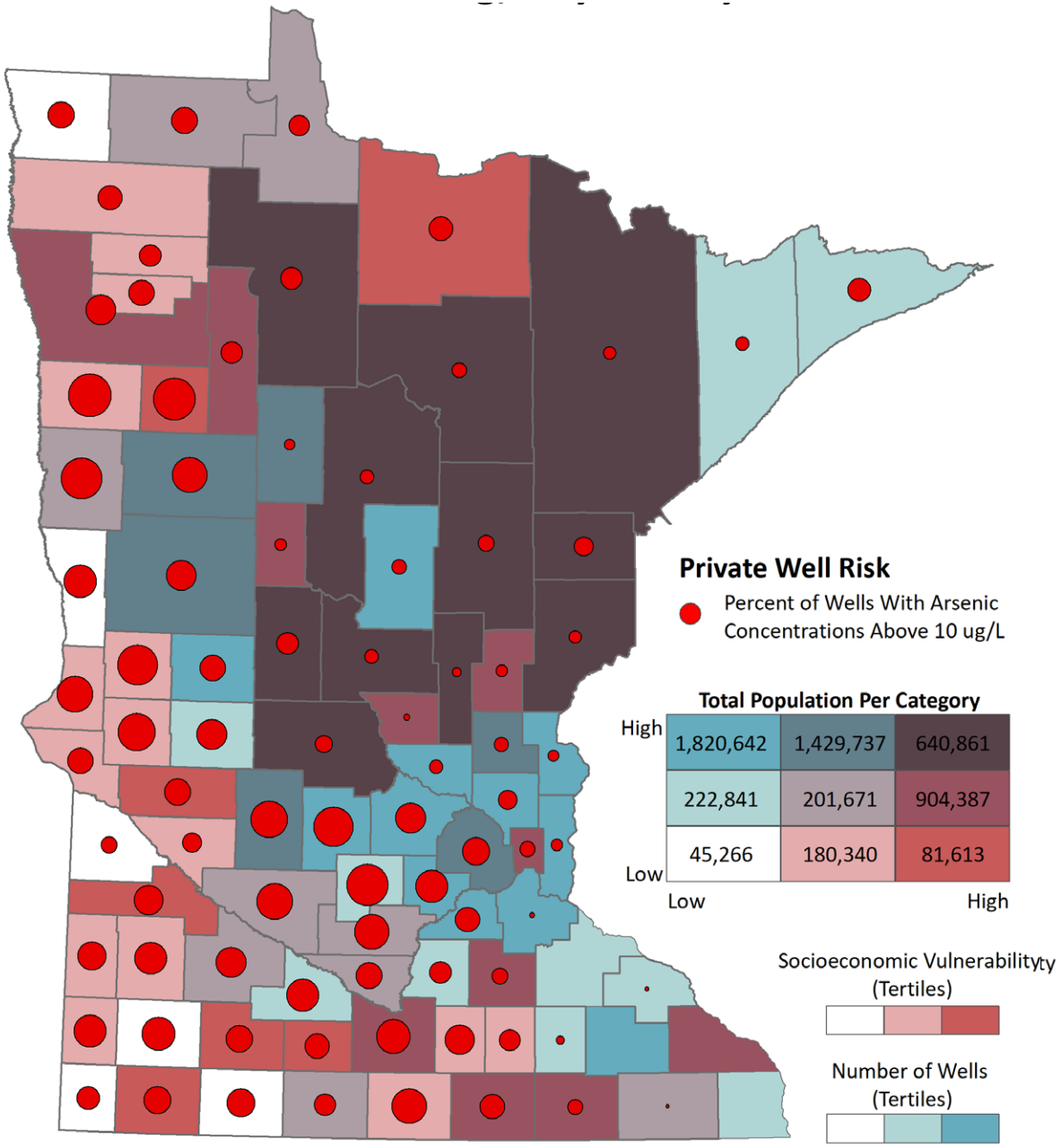




About 1 in 5 Minnesotans get their drinking water from a private well.

Disparities in Safeguards Over the Lifespan

Phase	Construction	Regular testing to ensure safe drinking water	Treatment to address contaminants	Protecting source waters	Funding for construction, treatment, repair, sealing	Well sealing
Public Water System	✓	✓	✓	✓	✓	✓
Private Well	✓	Initial well water test 			Disparate grant and loan programs that cover some issues	✓



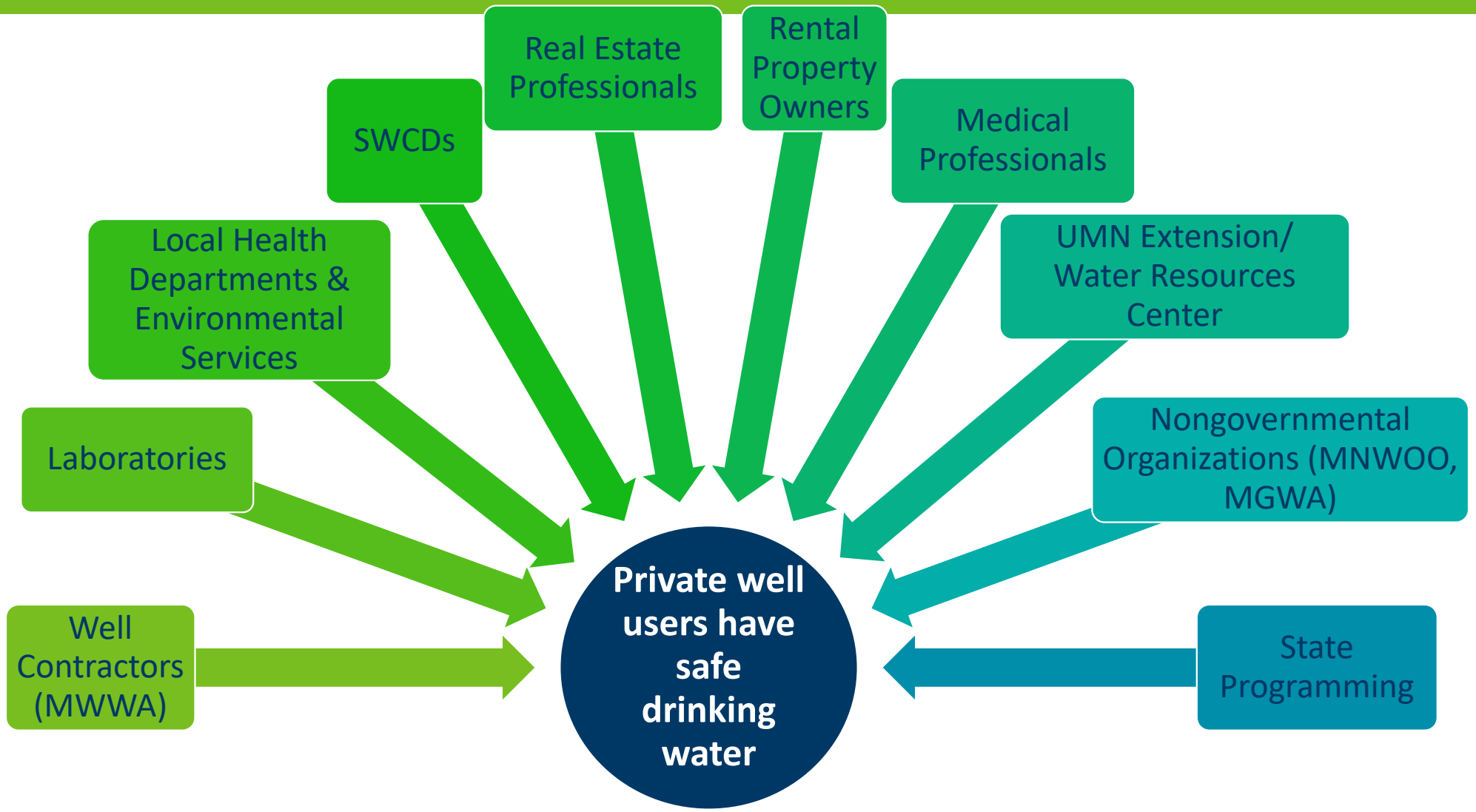
Number of Wells, Socioeconomic Vulnerability, and Arsenic Concentration

Private Well User Realities Vary

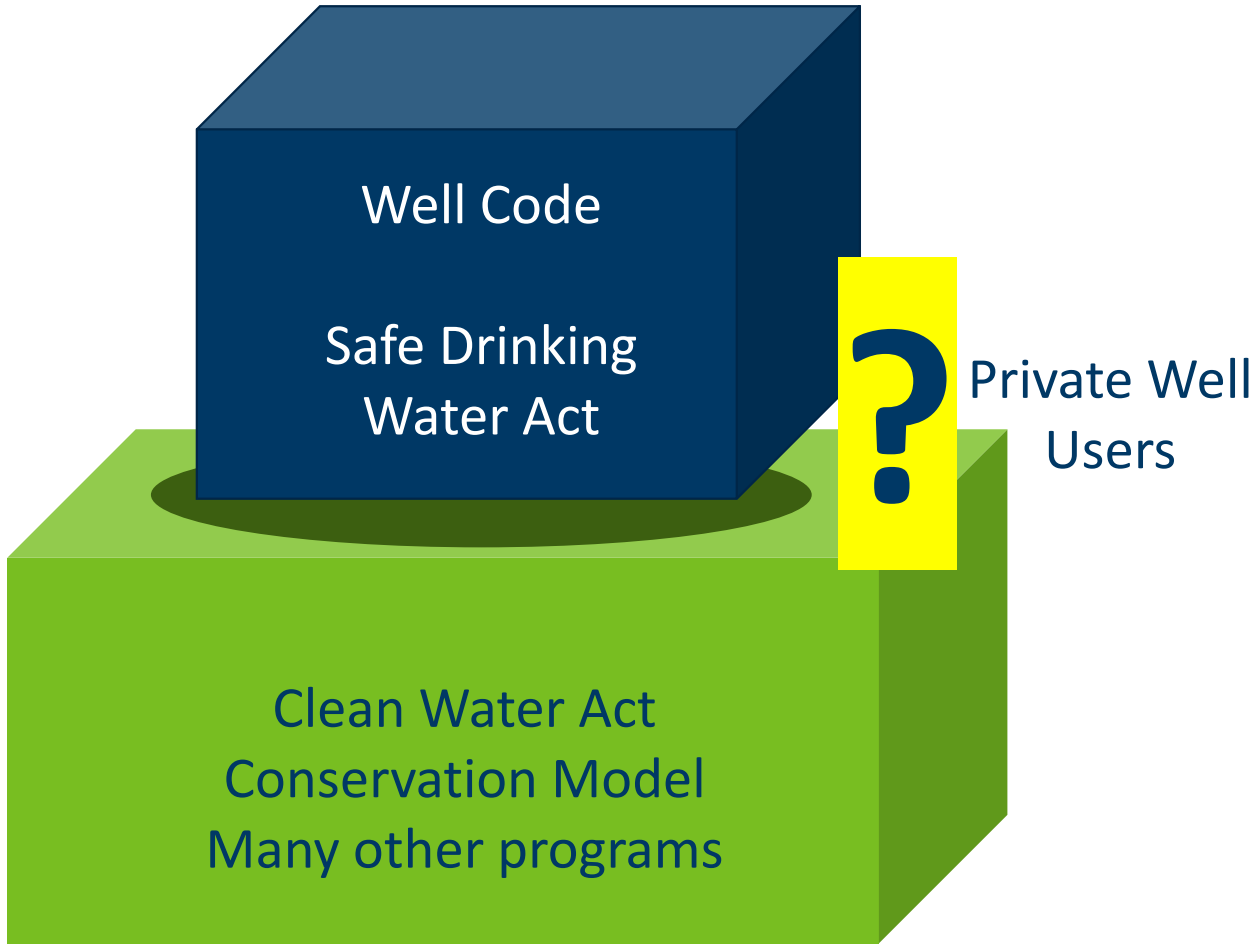
CDC Socioeconomic Vulnerability

- Below poverty
- Unemployed
- No high school diploma

Key Partners

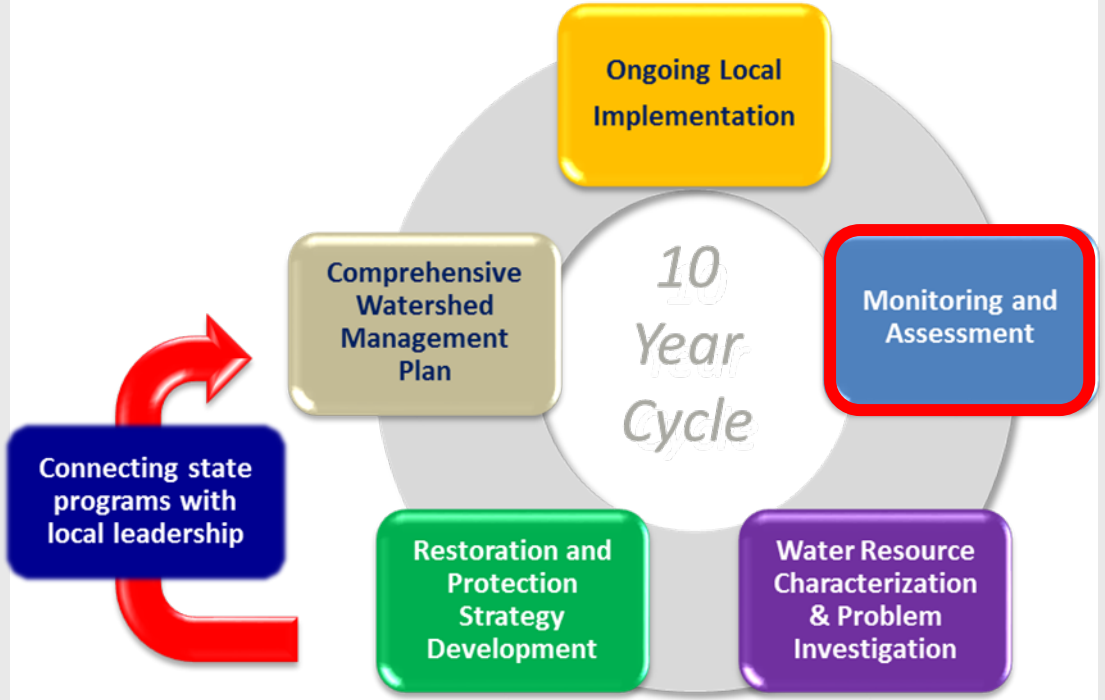


Challenge: Law and Policy Gaps



- CWA, SDWA, Well Code, NFMP, Conservation, and other approaches provide partial protections, still are gaps
- No formal CWC stakeholder seat for public health (SWCDs, cities, counties, townships are parallels)
- Can 1W1P "carry the water" for all local water resource management?
  - Evolving: drinking water now a required element, cities now recognized as eligible partners…private well users?
  - 5-year midpoint an opportunity to evaluate

Challenge: Gaps in our Water Management Framework



- Patchwork of groundwater monitoring efforts
- Only use existing data, no parallel to the Intensive Watershed Monitoring (2 yrs on 10 yr cycle)
- Local partners want GW monitoring; not eligible activity
- Monitoring gap limits next steps

Challenge: Current Actions Compared to Public Health Burden

~12%

~144,000 private well users have **arsenic** above 10 µg/L

- Carcinogen across all ages
- Health effects below public drinking water standard

~5%

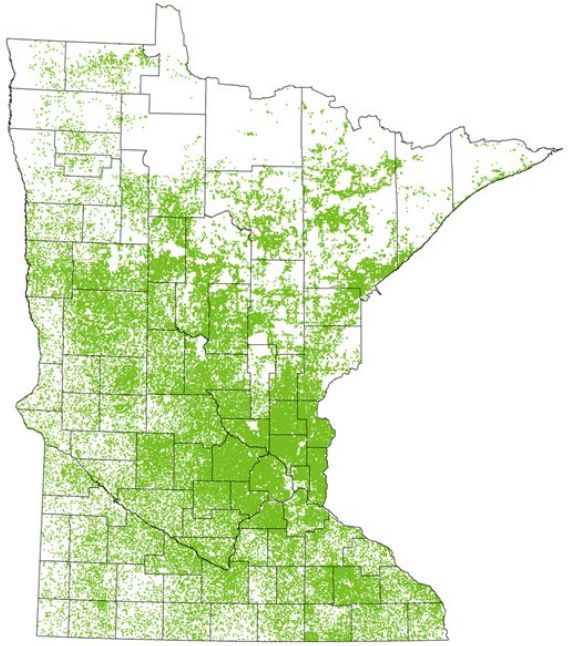
~60,000 private well users have **nitrate** above 10 mg/L

- Infants < 1 yr fed water or formula made with water
- Other age impacts uncertain

Solutions: Voluntary Approach

Public will

+



Practical scale

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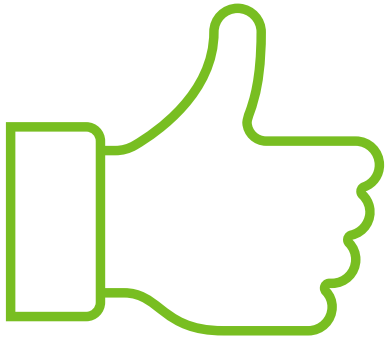

Voluntary

Potential Solutions: Local Partnership and Capacity Building

- Trust and credibility, key influencers are local
  - Well contractors, medical providers, realtors, water testing labs, rental property owners
- Strengthen local systems, build in capacity and sustainability
  - SWCDs and local public health, UM Ext and WRC connections to local partners
- Two pilot grants in process, different approaches, same partners
- Already being replicated in grant requests, Accelerated Implementation Grants/GRAPS
- New partners? Nongovernmental organizations (MNWOO and MGWA and ?)
- SSTS program model; simple, flexible, and effective
- Shift option of testing at sale to county ordinance?

Was this helpful?
Questions?

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