Leadership for Midwestern Watersheds
8th Annual Gathering
Measuring Progress towards Environmental, Social and Economic Outcomes
November 8-9, 2018
Winona State University, Winona, MN
Compiled by American Farmland Trust 11/14/18

Executive Summary

Background: *Since 2011, the Leadership for Midwestern Watersheds (LMW) meetings annually bring together watershed managers from the Upper Mississippi River Basin to discuss issues and challenges for their projects and support a "community of practice." The Sand County Foundation, American Farmland Trust, Iowa Soybean Association and the North Central Region Water Network have been involved in organizing, hosting and facilitating the workshops. Meetings utilize a facilitated discussion format with presentations followed by small group discussions. Financial support comes from the McKnight Foundation and state and federal agencies provide guidance. The focus of this year's meeting was "Measuring Progress Towards Environmental, Social, and Economic Outcomes."*

Workshop Summary:

Finding ways to quantify the outcomes of watershed projects can be challenging. The World Resources Institute set out in 2015 to showcase watershed projects that resulted in documented water quality improvements and only found only six (https://www.farmland.org/initiatives/water-quality-targeting-success-stories) . However, the work summarized by the LMW participants below shows that watershed projects have made significant progress towards improving how we measure environmental, social and economic outcomes.

The importance of partnerships*: The Upper Macoupin Creek project in Illinois, supported by the Resource Conservation Partnership Program (RCPP), developed a 54-page Measurement Evaluation Plan that is continually updated (contact mperez@farmland.org for a copy). It helps them track practices, awareness and understanding of water quality issues in the watershed, prioritize subwatersheds, monitor changes in water quality and document economic outcomes. Step one for Macoupin was forming a watershed partnership with a wide spectrum of partners. In a similar manner, the Cedar River Watershed Project in Minnesota brought together many partners including key retailers in the watershed and the MN Agricultural Water Quality Certification Program. This helps the project increase its access to all landowners by leveraging trust levels with various partners. For the retailers, the project provides an opportunity for farmers to tell their stories, helps them utilize technology to understand sustainability, uncovers opportunities for new service offerings and help connect growers to the food industry and to customers.*

Social indicators*: To track social indicators, the Social Indicators for Planning and Evaluation Systems (SIPES) provides a handbook for watershed projects and a toolbox (SIDMA) that can help establish awareness, attitude, constraints, capacity and behavior (https://iwr.msu.edu/sidma/Home.aspx). The LMW participants felt that social metrics can help projects target their education efforts, expand networking opportunities, identify barriers and how to overcome them, improve awareness of practices and improve the ability to measure change over time. Challenges includes short grant times, the time and money used to support advisory committees, the possibility of participation bias in surveys, a growing distrust of government agencies and the importance of partnering with consultants and retailers to do surveys while making sure the questions stay focused.*

***Environmental indicators**: To track environmental indicators and improve targeting, several projects are turning to GIS precision agriculture decision support tools. The Upper Macoupin Creek project developed a watershed and field modeling tool with Northwater Consulting that can help them run "what if" scenarios with farmers. The Cedar River Watershed project uses the CSF Truterra Insights engine to show farmers how they can change practices and change their scores. Mark McConnel and his graduate students (University of Georgia) use the data from precision ag yield monitors to show farmers where they are losing money (usually field edges), where they are making money and what the optimal economic placement of conservation practices looks like.*

***Economic indicators**: Many of the LMW participants are starting to use economic metrics which they hope can help farmers begin to shift their focus from yields to profitability. They face numerous challenges including a focus on short term gains rather than long term benefits, the lack of any reward for "good behavior" and the challenge of incorporating the value of time into the equation. And making linkages between environmental, social and economic metrics can help projects answer the "what's in it for me" question. For example, one watershed found that trout fish counts in streams resonated with the public. Another found that bacterial counts in water were important. By linking water quality to measurable benefits, projects were able to reach all sorts of groups.*

***What's working:** Watershed project case studies show: 1) the value of intensive monitoring in small subwatersheds to develop science-based information about agricultural practices and water quality. In the Root River Field to Stream Partnership in Minnesota, over an eight-year period they recorded runoff about 20 times a year but only one to two of the runoff events accounted for most of the runoff. Over 80 percent of all field losses occurred in March, April, May and June. About 43 percent of the runoff occurred when soils were frozen. The messaging in the watershed is now "Is your farm ready for the next big rain;" and 2) the value of reaching out to absentee landowners. In the Headwaters of the North Raccoon River Watershed project in Iowa, they prioritized outreach to out of state landowners through hand-written letters and reaching out to face book relatives and emphasized the need for edge of field practices (primarily bioreactors and saturated buffers). The landowners responded by planning and/or completing 33 installations. The Lower Skunk River Watershed project in Iowa started with community meetings, one-on-one discussions, small group meetings and large groups to decide what motivated conservation. In Southeast Iowa, they employed two models (the Agricultural Conservation Planning Framework (ACPF) and the Revised Universal Soil Loss Equation (RUSLE) to identify priority acres and then they walked the creek where most of the acres were located. They found 46 tiles and eight were suitable for a saturated buffer. In the Working Lands Watershed Restoration Program in Minnesota, a detailed plan to incentivize perennial crops includes cover crops and downplays biofuels with the goal to convert 30 percent of marginal lands to perennial crops and 40 percent to cover crops.*

***State support**: The state of Iowa has several agencies (Iowa Flood Center, Iowa Nutrient Center, Iowa Geologic Survey) focused on water quality and flood risk. The Iowa Watershed Approach recently received a $97 million a national flooding resilience grant from the Housing and Urban Development Agency (HUD) that covers extensive planning and monitoring and places project coordinators in each of the targeted watersheds. The data goes into the Iowa Flood Information and Iowa Water Quality Information Systems. They are expanding these systems to form a new water information system for the Upper Mississippi (a three-year project). Monitoring is showing that the five-year average of nitrate loads leaving Iowa has risen by 70 percent. The alarming rise reflects the installation of a lot more drainage tile in the last few years plus an expansion in hog production. Almost all of the nitrate is coming from tiles.*

In Minnesota, the "One Watershed, One Plan" sets out a robust stakeholder process connected to local work planning and provides a framework for the prioritization work required by the locally led process.

***Agency Updates**: State and federal agency colleagues highlighted the USDA Natural Resources Conservation Service (NRCS) 9 step planning process that includes follow-up and determining outcomes (https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=nrcs144p2_015695), offered encouraging words about a renewed emphasis on RCPP in the farm bill and detailed a significant focus on watershed planning and assessment for the National Water Quality Initiative (NWQ)I and Mississippi River Basin Initiative (MRBI) in FY19-23. Internally, NRCS is measuring progress using the Conservation Effects Assessment Project (CEAP) framework and using the NRCS CEAP Conservation Benefits Identifier CCBI) to rank fields by their potential for soil and water quality gains from additional conservation. They are doing metrics across a number of projects.*

*"**A-ha" moments for participants**: Finally, participants catalogued their "a-ha" moments from the workshop including taking full advantage of the state level certification programs, investing in watershed readiness (social baselines, metrics), exploring the huge diversity of resources, ideas, partners across state boundaries, tying metrics to what a community needs, taking more time to do effective outreach, doing a better job of utilizing the private sector (e.g. environmental markets), looking at both density and intensity, expanding partnerships to achieve goals and picking watersheds that have the best social capacity to complete a project.*

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THURSDAY, NOVEMBER 8

Welcome – *Craig Ficenec, Program Director, Sand County Foundation*
Sand County Foundation is a non-governmental conservation organization based in Wisconsin that focuses largely on agriculture and water quality. The other meeting planners/partners are AFT, University of Wisconsin Extension and Iowa Soybean. The funding is provided by the McKnight Foundation. We consider LMW as a community of practice. Coordinating and leading watershed projects is a profession. This is our eighth meeting and the first in Minnesota. We held the first meeting in LaCrosse, Wisconsin in 2011. Each meeting focuses on a different theme. We make sure these meetings provide a lot of networking time, facilitated discussions, and attendance by USDA NRCS (to discuss federal programs). This is a professional exchange opportunity for everyone.

Introductions – all participants
First everyone leading specific watershed projects stood up and introduced themselves and their watersheds (about half of the participants). Next, the participants who are providing support services or serving broader roles for watersheds projects introduced themselves.

Measuring economic, social, and environmental outcomes in the Upper Macoupin Creek. RCPP Project (IL) – *Kris Reynolds, Midwest Deputy Director, American Farmland Trust*

This project started with three Hydrologic Unit Code (HUC)12 watersheds in the Upper Macoupin Creek watershed (HUC8) as part of the Mississippi River Basin Initiative (MRBS) and has now expanded to include additional HUC12s. [note: A HUC8 subbasin averages 700 square miles and a HUC12 subwatershed averages 40 square miles (10,000-40,000 acres)]. The project has a watershed plan (54 pages) that they can mail to you if you request it. They have established seven outcomes for the project and are trying to track these outcomes through the Measurement Evaluation Plan (MEP) ((contact mperez@farmland.org for a copy).

AFT hopes to quantify outcomes as part of the Resources Conservation Partnership Program (RCPP) which stresses the importance of measuring results beyond the acres of conservation adopted.
- Farmers want to know what conservation gets them and provides to others.
- Watershed residents what to know they can enjoy their natural resources.
- Future generations can enjoy nature
- Congress and the public want to know what we're achieving – you can't manage what you can't measure

Challenges for this watershed include:
- 2015 IL Nutrient Loss Reduction Strategy (NLRS) calls for 25 percent in total phosphorus (TP) and a 15 percent reduction in nitrate-N by 2025. Macoupin Creek is one of the three highest P-yielding watersheds in Illinois.

- Macoupin (HUC8) is not a priority for N loss (5-10 lbs/acre/year). It has rolling topography so not much tile-drained cropland. About 20 percent of the land is forested.
- There is a long history of conservation in the watershed (e.g. 14 EPA 319 projects between 1994-2016). The Total Maximum Daily Load (TMDL) implementation plan was developed in 2007 and focused on lakes. The RCPP, started in 2017, goes through 2022 and builds on a MRBI project started in 2015. It involves six HUC12s with the Macoupin watershed.

The first step was to form a watershed partnership with a wide spectrum of partners supporting the project (city, state, federal, NGOs, university, for profits and foundations). The steering committee has 17 members including eight farmers, two local retail partners and the Macoupin county NRCS/Soil and Water Conservation District (SWCD). The goals of the UMC RCPP project include

- Improve awareness and understanding of water quality issues
- Increase conservation activity in the watershed by 40 percent
- Improve farm profitability
- Reduce ephemeral gully erosion by 50 percent
- No application of commercial fertilizer or manure on snow covered or frozen ground
- All livestock manure effectively stored
- Achieve 25 percent reduction of P loads and 15 percent reduction in N-Nitrate loads

The project has a UMCP MEP (54 pages) that is continually updated. Quantifying outcomes is really hard and messy.

- USGS-IL doing instream monitoring (upstream, downstream) weekly grab samples since July 2017. We're "chasing" the storms.
- In-stream monitoring in five sub-watersheds on a monthly basis (may consider going to weekly sampling, storm sampling but probably not in all of them).
- Now have lots of data but haven't analyzed it yet.

For modeling, the project evaluated a lot of models and chose a watershed and field modeling tool by Northwater Consulting. It is similar to the Soil and Water Assessment Tool (SWAT) but they have traversed and mapped the whole watershed, identifying over 12,000 gullies, streams, 1,200 lakes, reservoirs, farm ponds, wetlands and over 2,000 sediment basins and other BMPs. Per acre estimates with the model show that the watershed loses 1.02 lb P/acre and 10.54 lb N/acre. It allows the project to prioritize the subwatersheds where the losses are occurring. It also allows analyses at the field level so they can target conservation practices to where the greatest losses are occurring in-field. They can then run a "what if" scenario with the farmer that can show what various conservation practices (like cover crops) can do. The tool also helps them track practices, providing an interface they can use with audiences that masks location.

To track practices (increase conservation goal by 40 percent):

- Reach 279 people (4 percent% of 650 farmers) – have reached half of this goal already
- Maybe 40 percent of acres (34,000 acres) under soil health practices
    - Hit spending goals – is it being spent in the best way?
        - RCPP CSP
        - RCPP EQIP
    - Retail partners focused on variable rate technology (VRT), soil testing and strip-till but it is hard getting data from them

- Conducting tillage transect surveys to track types of tillage. The UMC project area is behind state no-till corn and no-till soybean adoption rates. Now providing more technical assistance to encourage conservation tillage.

- Also exploring alternative practice goals and thinking about options if RCPP EQIP funds are insufficient. Trying to address what is causing the gullies in the first place (prioritizing cover crops, no till, nutrient management).

Social indicators: improve awareness and understanding of water quality issues

- In-person interviews (75 farmers), mailed surveys, FSA in-office surveys, exit surveys at meetings
    - Half of 195 farmers are aware of IL NLRS and that Macoupin is one of the highest P loss watershed
    - Most farmers report high self-knowledge but they see a disconnect with the transect survey
    - They do say they have a personal responsibility to improve water quality and all agree we can reach the goals if everyone participates
    - On barriers, they cite cost, right equipment, time, etc.

Economic outcomes

- Plan to get names of farmers adopting conservation practices from RCPP funds and ask simple questions
- Other efforts are also underway in the watershed (Precision Conservation Management (PCM) partnership, new Conservation Innovation Grant CIG) effort focused on cover crop adoption)

Q&A:
Q: What do you mean by reduced till versus mulch till?
A: Percent of residue left and how many tillage passes were completed
Q: In Iowa, we have more no till/cover crops in hilly areas – why is Macoupin so different?
A: This watershed has treated visual erosion with structural practices but not management practices. The soil is tight, retains water, can cause problems in the Spring. There are also a lot of problems with weeds and farmers have gone back to tillage to handle weed pressure.
Q: We work with local retailers, they have lots of data from VRT that we've been able to access. Why are you having problems getting data?
A: The retailers are giving us information on strip till adoption (which was their stated match contribution for the RCPP project) but it has been difficult to get additional information.
Q: We find that people are willing to participate but don't want to advertise their participation in a project. Are you finding the same challenge with your practice adoption signage?
A: We provide signs that identify cover crops, etc. just to identify these practices, not necessary linked to getting funding from the project.
Q: On social indicators, we can do metrics but are you going to try to link these back to water quality results?
A: We haven't even thought about this yet. We have used the information to determine if we are "preaching to the choir." We've been able to show our committee that we are reaching new folks.

Tracking social dimensions in watershed projects - *Ken Genskow, Professor and Extension Specialist, University of Wisconsin-Madison*

Focusing on social dimensions of watershed projects – there are no easy answers.
Outline of social dimensions concepts

- We're attempting to influence conservation behaviors primarily through voluntary and persuasive methods to increase capacity, lead to more action
- There is a chain of logic to influencing conservation behaviors e.g. reduce stresses to improve and protect water quality, use water quality practices, consider underlying social capacity, etc. Understanding the chain of logic helps you decide what to measure.

What do we know about behavior change?

- First, they make a decision to behave (behavioral intent) that is influenced by their attitude toward the behavior, social norms (e.g. what do others do, do they accept that behavior, is there social pressure?) and perceived behavioral control (do they know how to do this?) and then they act
- Diffusion of innovations (Rogers) – knowledge then persuasion then decision then implementation and then confirmation (also diffusion curve with innovators – 2.5 percent, early adopters 13.5 percent, early majority 34 percent, late majority 34 percent and laggards 16 percent). Community leaders are more likely to be early adopters or early majority
- Willingness to behave e.g. already prone to do something, they see the self-interest and can be educated) or not yet convinced (need to see benefits, can use marketing), or resistant to behave (don't see, disagree with benefits – need some other more powerful motivation like regulation)

Comes down to motivation and ability. Patterson et al 2008. *Influencer.*

- Focus on key/vital behaviors
- Message and messenger
- More than words

To influence behavior – at the personal level, make it desirable for them and find some way to change whatever is limiting them. Beyond this, there are social factors (e.g. establish the practice as a norm, use peer pressure, increase numbers), structural changes (supporting by rewards and accountability) and a supportive environment (technical assistance)
People respond differently

- Convey reason for behavior change
- Understand constraints and motivations
- Provide education, financial, technical and cultural support
- Address inertia and apathy
- Consider trust issues

Social Indicators (Social Indicators for Planning and Evaluation Systems SIPES)

- Seven steps: review project plan, collect and enter pre-project survey data, review data and refine
- Social indicators include social norms, constraints, values, knowledge, awareness, capacity, attitudes, skills, social norms
- SIPES focuses on awareness (water quality pollutants and sources, management practices), constraints, attitudes, capacity

<u>Before collecting social indicators</u>:

- What are the specific nonpoint source (NPS) problems this project is trying to address?
- What are the critical areas that contribute to the problem?
- Who are the target audiences for the NPS problems?
- What actions do you want the target audience to take regarding the NPS problems?

A lot of this is survey-driven:
Awareness

- Awareness of consequences of pollutants
- Awareness of pollutant types
- Awareness of pollutant sources
- Awareness of appropriate practices (general and key practices)

Attitude

- General water-related attitudes (personal impact, value or importance, farm or household impact economics vs water quality, sense of personal action)
- Willingness to take action to improve water quality

Constraints

- General constraints to behavior change
- Constraints to adopting key practices

Capacity

- Increase capacity to leverage resources in critical areas
- Resource leveraged by grant recipient

Behavior – very nuanced

- Percentage of critical area getting treatment
- Percentage of target audience implementing practices in critical areas

www.iwr.msu.edu/sidma: The SIDMA toolbox allows you to assign numbers, come up with collective numbers. It provides a checklist for all seven steps, how to use DISMA, choosing a survey method, selecting sample size, administering a survey, interpreting data, etc.

- Look at who your participants trust (crop consultants are a very trust source of information), which information sources they are familiar with
- Targeting – how do you get to the largest contributors if they don't want to listen to you? How do you build an approach that brings in targets and those who are not in the targeted areas but who might be influencers?

Other resources:

- University of Minnesota (Mae Davenport and Seekamp 2013) looking at community capacity model – empowering people and engaging communities in clean water. Broad concept of community engagement.
- Jeremiah Asher, MSU – dashboard, Great Lakes Watershed Management System

Challenges:
Tradeoffs in measurements

- Individual to community
- Unique or consistent/comparable
- Primary data or other existing sources
- Few measures versus many measures
- Activating community/civic resources around watershed issues
- Understanding, documenting and telling the story

Q: How do you tie social indicators to changes in water quality?

A: If you do these surveys in a particular watershed, you might be able to tie to changes in water quality but you may have a legacy nutrients and other sources effects. It probably won't be proof but it can tell a story.
Q: We tend to pick sites to work based on biophysical, environmental variables? Can we base instead on social issues, willingness to change?
A: There are trade-offs with this approach. The EPA 319 program has done a lot but we don't see improvements in water quality and this makes it harder and harder to defend the public resources going into the program. We have to be able to link our actions to a change in water quality.

Small group facilitated discussions – Experiences and challenges using social metrics (Experiences using social metrics in the watershed, values provided by those metrics and methods and challenges faced in using the metrics)

Table participants sent out the Coldwater Angling Survey (fishing) that worked well and motivated more groups to come in. Also sent out the West Fork Kickapoo survey and highlighted environmental issues and a Cannon River watershed survey that helped that project evaluate the community's capacity so, were able to follow up. The biggest challenge is getting data from the various groups. They don't want to share. There are also problems with relationships and trust in terms of who sends out the survey. The high turnover rate in organizations can be a problem and also the fact that no one wants to pay. And it takes time to develop a survey. But if you can complete the surveys, they can help you do a better job of tracking. For example, the Practical Farmers of Iowa have a constituent database that helps them do better tracking.

Table participants used surveys and mailings and advisory groups to provide feedback. These were supplemented by valuable one to one site assessments, observations and testimonial interviews. There was value in both quantified statistical information and qualitative information based on relationships with advisory committee members. Challenges include time and money spent to support advisory boards (meetings, messaging, education, outreach, administrative costs and progress reporting). There was also challenge of participation bias in surveys (some always respond), possible errors due to self-reporting and a programmatic constraint of a feedback loop.

Table participants had experience with event surveys (to meet education needs), watershed planning mailed surveys, and surveys conducted in Year 1 and Year 10 of the project. The surveys helped them understand how watershed residents viewed their organization, helped define what educational materials were needed, supplied information and data for future grant applications and helped secure contract information from landowners and farmers. For the latter, it was important to decide which organization should send out the survey and include an address on the survey so you can get names and addresses. Challenges include going from surveys to getting increased action on the ground, short grant timelines, funding for consultants and mailing companies and how to use the information to increase participation in the program.

Table participants had varying experience using social metrics including HUC-12 mailings, surveys, face to face interactions, familiarity with adoption practices, absentee landowners, willingness to participate (level of engagement), attendance at field days, "reaching intended audiences," reaching out and communicating with landowners, gathering and compiling information from small group meetings, surveying willingness to do certain practices, doing social-net mapping, and asking about motivations. The value of using social metrics included expanding networking opportunities, increasing the influence of early adopters, identifying barriers and how to overcome them, improving awareness of practices and

improving the understanding of economics and resilience as they relate to water quality. Challenges include the need to use the correct language/term/context, the lack of time to develop relationships and determining the value of the social data you collect.

Table participants felt that collecting social metrics helped target education efforts, highlighted the need for education efforts, improved our ability to measure change over time and helped build awareness. Challenges included a possible skewing of results depending on who chose to participate, a high level of distrust in government agencies in general and the need to enlist the participation of trusted sources of information. This points out importance in partnering with consultants, retailers to do surveys but then leads to challenges with whose questions make It on to the survey.

Table participants did a lot of surveys, education and outreach and solicited public participation. The value we saw in this was targeting and showing progress. The challenges included getting producers interested, determining economic impacts and funding these efforts.

Table participants had experience with live polling, both good and bad experiences with surveys (including challenges with writing a good survey), people and relationships, peer-to-peer networks, demonstration farms and balancing surveys with on the ground checks. The value of social metrics included the ability to target, farmer-led councils, willingness to participate and the value to farmers (if you can determine that). The challenges include finding the expertise to build a survey, bias, response rates, lack of partners, trying to determine value to farmers and trying to figure out the insurance/banker barriers to financing.

The Cedar River Watershed Project (MN) – *Kevin Kruize, Land O'Lakes SUSTAIN; Justin Hanson, Mower County SWCD; and Brad Redlin, Minnesota Department of Agriculture*

There are many partners on the Cedar River Watershed project including Central Farm Services (CFS), Hormel Foods, MN Water Quality certified farm, Land O'Lakes SUSTAIN, Mower SWCD and the Environmental Initiative. The Cedar River watershed is 435 square miles in south central Minnesota. Land use is small communities and agriculture. Hormel is in the watershed and has an interest in water resource concerns. There was a flood a decade ago that prompted the citizens to ask for additional taxes to address watershed concerns. They also have local ag industries that are interested in developing a full-service model. The food companies can help tie the consumers together with the farmers. There is a focus on soil health and reducing erosion. The public-private partnerships bring local values to bear and help:

- Connect with landowners that don't traditionally work with government programs; landowners trust their service providers (retailers)
- Deliver an improved service model
- Programs becoming more complicated and we need a new model for conservation delivery

Land O'Lakes has two precision conservationists who can help certify farmers (not directly but they can develop a plan that can then help the farmer get certified as a Water Quality certified farm).

Conservation work is a constant process of identifying barriers and knocking them down. The partnership helps the project identify more barriers and address them. The wide array of partners makes it easier to have access to all landowners, leveraging trust levels with various partners. Understanding the goals of the various partners was very important. From the retailer's point of view (CFS, Hormel Foods and Land O'Lakes SUSTAIN):

- farmers really want to tell their stories. The VRT data can tell a great story of increased efficiencies, reduced rates, etc. The private partners can help growers build and tell their stories.
- technology driven – utilize technology to understand sustainability
- opportunities for new service offerings
- consumer demand – connect growers to food industry

Minnesota Agricultural Water Quality Certification Program(MAWQCP) – a Public-Private Partnership
- Federal, state, local and private industry
- Risk assessment and treatment process, every acre, entire operation
- Risks mitigated earns MAWQCP certification contract, 10-year term; contract provides regulatory certainty (MN, USDA, EPA)
- MAWQCP directly and exclusively helps growers implement water quality improvements and protections on whole-farm basis, every day, across entire state….and as a premiere watershed strategy
- Now in third year: As of Nov. 2, 2018: 668 certified farms, 428,935 certified acres, 1,289 new BMPs that have yielded 122.5 million lbs of soil saved per year, 48 million lbs of sediment reduced/year, 28,255 lbs of P prevented from entering water and as much as 49 percent estimated reduction in N loss.

Mower SWCD:
- Need to evolve our systems for improving water resources
- Not practical to "cost share away" our issues
- Need to find cultural solutions and use methods that will outlast program payments

Cedar River Watershed metrics
- Currently measuring number of farmers certified and number of acres certified
- Future plans to include impact metrics from CSF Truterra (see below) and aggregate data from the partners' programs

CSF Truterra Insights engine
- Brings together the proven value of stewardship practices
- Leverages agronomic expertise
- Provides farmers with field-customized insights

Farmers enter all of their data, will give him/her an insights score
- Score factors (management stewardship, soil and nutrient loss mitigation and conservation adoption)
- Stewardship indicators (N use efficiency, sheet and rill erosion, wind erosion, soil quality trend, GHG emissions)
- Stewardship report card (basic, moderate, high, advanced)
- Shows farmers how they can change practices and change their scores
- Can also look at current practices versus another suite of practices (e.g. profit focused conservation cover) and what the impacts are
- Trying to link to NRCS programs to show cost-share opportunities

CSF can then produce a sustainability summary (acres assessed, acres by crop, assessment by field, etc.)

Q: For CSF – give me an Ag retailer 101 – why is your service important to farmers?

A: CSF provides everything (seed, fuel, propane, etc.). We're trying to find ways to stay the trusted advisor. We know that nutrient loss is triggering regulations so the Truterra tool helps our customers
Q: Truterra can customize recommendations but you mentioned you could derive a score for a field, a farm, a watershed? Can you derive a score for a watershed?
A: Yes.

GIS precision agriculture decision support for conservation (by video) - *Mark McConnel, Wildlife Outreach Specialist, University of Georgia* (developed from a wildlife conservation standpoint)
Challenges with wildlife habitat include:

- Conversion of conservation land (expiring Conservation Reserve Program (CRP) contracts 2010-2012) when corn and soybean were at their peak
- Conversion of CRP land is coupled with expiration of CRP contracts (will lose about six million more acres by 2020)
- Input costs are high, commodity prices are low (record low farm income)
- Conservation has to be compatible with profitability so they focus on ecological and economic demands
- There are a lot if conservation choices and it's hard to know what they are and where they fit on the landscape (= conservation policy of aggregation – we throw lots of practices out there and hope they will fall into all of the vulnerable, fragile or exploited areas (Pete Nowak))
- Conservation economics – many farmers are only doing the practices because there are conservation payments (e.g. filter strips, riparian buffers, etc.). Payments are a huge motivator.

They asked how they could maintain CRP acreage in the face of volatile commodity markets. The use of Precision Agriculture is increasing rapidly, particularly yield monitors (15-40% depending on crop). They incorporated data from yield monitors and economic information to persuade farmers to take out just enough land to improve bobwhite quail habitat while maintaining profitability. The result was a decision support tool with python language using ArcGIS/ArcMap. It offers 35 CRP practices. They also added the Soils Survey Geographic Database (SSURGO soils data) and connect the SSURGO shapefile with rental rates.

- Example: Models spatial eligibility of riparian buffer and field buffer practices. Then can go through further interface to figure out optimal economic placement. The tool can show where you are making money and where you are losing money (usually field edges). It can compare profitability of different conservation scenarios (30-foot buffer, 120-foot buffer). The tool basically places buffers precisely on areas of lowest yield. Can model other practices like pollinator habitat. Can also consider farming practices that are not CRP related (EQIP, biofuel establishment, grassland for grazing, seed crops/specialty crop)

We have to start thinking about conservation differently.

- Show the economic opportunities and outcomes of farm bill conservation programs.
- Target the worst land first.
- Sell conservation programs as economic tools first … then for birds, pollinators, etc.
- Will need an increase in precision ag adoption, use in a precision ag context and need free and simple tools to help farmers.

This tool should be available early next year. Staring in Jan. 1, 2019, McConnell will be available at Mississippi State.

Q: When you are looking at the yield data, do you see year to year differences?
A: We've got some data over four years and averaging across years and then running the conservation options. It does vary year by year – some fields are more consistent.
Q: In the Midwest, a lot of our land is cash-rented. How can they make the case to their landowners?
A: Most landowners are very receptive to these economic arguments, taking out land that is hurting their profitability. Some landowners split payments with farmers. Since we're only taking out very poor land, the farmers are okay with it.
Q: What kind of uptake are you having with the tool?
A: We haven't released the tool yet – still working out bugs. We were holding out until the farm bill passes. We think we'll release a beta version in January (we have 30-50 people around the country willing to beta test), will integrate feedback and release later in the Spring though Esri (international supplier of GIS software, web GIS and geodatabase management applications).

Small group facilitated discussion – Experiences and challenges using economic metrics

Table participants talked about various tools for economics. The challenge is getting information from the tools and sharing it and understanding the comprehensive costs (install, maintain long term). The values are more obvious – knowing about the bottom line, delivering conservation cost-effectively (state/local investment) and communicating "benefit" of improved water quality.

Table participants had experience with the following: precision ag to determine how much farmer is losing in marginal areas (developed a poster presentation about this with very general numbers), interested in AgSolver, but hard to get farmer's individual data, not good immediate return on investment (ROI) for cover crops, but no-till very good ROI!, work with the farmer on a basic budget, but use generic $$ for cost of seed, chemicals, fertilizer, etc (good place to start) and side-by-side field trials – esp. good for N practices. One group partnered with other programs to do the economic analyses, one built their own tool and one uses precision ag data. The value of building your own software is not having stuff you don't need but using something that already exists can be cheaper. The precision ag data allows very fine resolution across fields. Challenges include coming up with the same data set with the same pool of information that the grower can trust. Many farmers are resistant to precision ag because of the high cost of equipment and software. Other challenges include: Making year-year decisions (especially considering fluctuation in commodity prices) vs. long-term benefits; farmers are very stuck on YIELD not profitability; no reward for good behavior. Everyone gets the same Environmental Quality Incentive Program (EQIP) payment regardless of his/her practices e.g. in a drought year a farmer using soil health still gets yield, but his/her neighbors still make money because of crop insurance claim. Yield: your base payment is based on yield not profit – policy fix w/Farm Security Agency (FSA)?

Table participants have looked at crop budget analysis vs rotational grazing, practice benefit vs profitability, cost of per pound reduction, nutrient management planning using maximum return to nitrogen (MRTN) rate and dollar value of manure, subfield profitability analysis, maximizing return on investment (ROI) vs. maximize production and engaging landowners to take odd or small fields out of production that the renter didn't want to farm. Using tools makes sense when they include both economics and conservation and achieve overall goals and individual goals. Demonstrating the value may lead to that message being spread onto others.

Table participants felt that the biggest value was shifting discussions from yields to profitability. Challenges included incompatible software between equipment, the lack of IT support from retailers, no

ability to look back on more than one year, income numbers for time and equipment depreciation and the relationship with government and landowners around economics. It can be difficult to incorporate value of time. Local agencies might be uncomfortable talking about economics. Government agencies have to be careful about promoting profit with cost-share dollars.

Table participants reported there are now more tools and better tools but farmers are still having difficulty finding the time to implement new technologies and practices. Iowa Soybean Association has a finders' fee for retailers to bring in farmers to enroll. There are state-evolving loan funds at the state level (e.g. IA, OH, OR) that can help bring down costs. Conservation training for ag retailers can also add value. Challenges include competing considerations (the cost of change) and getting commitments from farmers to gather information about new technologies.

Table participants did not use many economic tools but some are collecting farm level data on cover crops, stream data from cover crop fields and control fields to talk to farmers about impact of cover crops on farms. This is an opportunity to tie profitability and water quality improvements. Very important to convey information to ag lending institutions so farmers don't have to do the heavy lifting. Difficulty is a lot of the conservation practices that have long term benefits – need to properly account for these long-term benefits.

Table participants talked about precision ag work and budgeting needs farmer's data. They suggested using generic numbers for that year to work with the farmer (and then he wants to see how his own numbers pan out). Talked about yield versus profit. Base payments are tied to yields, not profits – is there a policy fix there? Five by five trials (N rate trials) – same yields with different rates of N means they'll chose the lowest rate. There is not really a reward for good behavior. Crop insurance challenge (healthy soil, can still farm during drought but farmers who don't do the work to improve their soils just collect the crop insurance). Markets now mean farmers are more receptive to economics, efficiency.

Can economics go broader than the farm? Can we look at impacts on the watershed?
Maybe broader coalitions of up-stream, down-stream?

Watershed project case studies:
The Root River Field to Stream Partnership (MN) – *Kevin Kuehner, Minnesota Department of Agriculture*
The Root River is about 30 miles south of Winoma. They've found that it can be difficult to start a conversation with farmers, landowners and their trusted advisors about water quality issues. Everyone is at a different level of understanding. People need to have a clear understanding of what the issue is, how their actions and collective actions can make a difference. About 10 years ago, they selected a few small watersheds (HUC14s, 3,00-5,000 acres, a total of about 50 farmers) and focused on developing science-based information about agricultural practices and water quality at multiple scales and landscape settings (edge of field, in-stream and farming practices). They have diverse farming systems. It's a big watershed, over one million acres in size. They have 10 stations for in-stream and edge of field monitoring. They monitor flow, sediment, pesticides, weather, soil temperature, soil moisture, biological sampling with continuous year-around sampling. The edge of field monitoring sites represent the range of farm systems within the watersheds. They monitor tile drains, groundwater springs and lysometers to measure ground water.

Farmers wanted to know how frequently run-off actually occurs from their fields.

- On average, the last 8 years, about 20 times a year they measure run-off – only 1-2 of those run-off events account for most of the run-off.
- On average, they get about 2 ½ inches of run-off/acre (range of .05 to 9.2") (68,000 gallons/acre). That is about 7 percent of the precipitation that fell on the field (range of 0.1 -24 percent). Timing of rainfall events is critical. If heavy rainfall is later in the season, there is less run-off. If it occurs in May and June, fields are very vulnerable to runoff.

How often does run-off occur when soils are frozen?

- About 43 percent of the runoff. This is why it is so risky to apply manure on frozen soils. About 20-30% of rainfall comes through the tile system

Over 80 percent of all field loss occurred in just four months (runoff, sediment and nutrients)

- March, April, May and June. Most of it occurs in March (frozen soil).
- For soil sediment loss, over 80 percent occurs in May and June and for P, over 60 percent occurs in May and June.

Message: *Is your farm ready for the next big rain*? They also emphasize concept of critical source areas e.g. ephemeral gullies (result in over 3 times more sediment delivery). The best tool for them has been the erosion power index (odds of active/visible erosion are 6 times higher in high runoff risk areas).

They also have a consultant who does field walk-overs, giving farmers an assessment of their farm. Discovery Farms Wisconsin developed a field walkover guide (intended for farmers who might want to do this on their own) (http://www.uwdiscoveryfarms.org/research-library/conversation-practices/fieldwalkoverguide). This is a Discovery Farms publication. Field walkovers provide field level vision assessment of erosion and erosion potential and an inventory of existing practices and their quality. They have had 98 percent walkover participation, 85 percent signed a letter of intent to address critical areas and within two years, 70 percent have addressed or are addressing their critical areas.

Headwaters of the North Raccoon River Watershed Project (IA) – *Lee Gravel, Iowa Department of Agriculture and Land Stewardship (2018 Watershed Coordinator of the Year)*
The Headwaters have has had a 400 percent increase in cover crops from 2016-2017, nearly 100 percent adoption rate of edge of field (EQF) practices, strong urban-rural partnership and EQF practices are promoted by local governments. The emphasis on edge of field practices started in 2015, primarily bioreactors and saturated buffers. They prioritized outreach to out of state landowners (CA, WA, PA, OR, AK, TX, MN, OK, NY) and they measured the suitability of sites, which sites are most visible in terms of outreach and promotion. The landowners were very receptive and they now have seven saturated buffers installed, four bioreactors; 22 more in the works.

Q: How did you reach out to landowners?
A: Hand-written letters, reaching out to face book relatives.
Q: Did you ask the farmer to reach out to their landowners?
A: Sometimes – but had decided landowners in other states do care and he could engage them.
Q: Why did they say yes?
A: They weren't aware there were issues with water quality – once they understood that, they responded well (we had a lot of cost-share available for them).

LMW lightening talks – five-minute presentations profiling metrics of watershed projects
Lower Skunk River Watershed, Iowa (Miranda Haes)
Completed their watershed plan between January and July 2018. 128,000 acres (46% in row crops). Held three community meetings in January (half farmers, other half were landowners). Had one-on-one discussions, small groups (five-six people) and large groups. Decided what motivated conservation, what

the watershed meant, significant trends impacting the watershed and words related to water quality. They have a survey in the works (have 800 landowners in the watershed). They plan to use the language they identified, keep up an open dialogue with landowners, have more small group meetings and hold another community meeting. You have to talk to people. Make phone calls, establish relationships with landowners.

James Martin (Southeast Iowa); The watershed has rolling ground, lots of terraces. How saturated is your watershed? Used the Agricultural Conservation Planning Framework (ACPF) tools (runoff risk) using the P index and identified priority acres. Then combined this with the Revised Universal Soil Loss Equation (RUSLE) model, did a tillage survey, looked for ephemeral gullies. They tried to intersect the two models to see consistency and where the priority acres were and were able to reduce identified targets from 3,000 acres down to 350 acres. These are acres closest to the creeks. Then they walked the creek and found 46 tiles. Eight (17 percent) were suitable for a saturated buffer. They are doing water quality monitors, social indicators, spatial documentation of BMP adoption. You need to stay true to the systems approach, treating for sediment and P could eliminate options for treating N. The remaining water quality improvements many need to occur with Middle and Late Adopters. And the Watershed Management Plan (WMP) needs to be reviewed and revised regularly.

Susan Reese: Working Lands Watershed Restoration Program, Minnesota
Detailed plan to incentivize perennial crops to help restore watersheds. Found out that cover crops needed to be included, biofuels not as important as they thought – perennial grasses to food and feed crops (kernza (a perennial grain), alfalfa, cover crops for grazing, winter seed crops). Picked six HUC8 watersheds and surveyed 500 farmers/landowners and six tiny watersheds within these watersheds where they did modeling. They used the Hydrologic Simulation Program Fortran (HSPF) modeling system (incorporates watershed-scale Agricultural Runoff Management (ARM) and NPS models into a basin-scale analysis framework to model flow) and looked at two scenarios. They assumed a long-term scenario where all marginal lands were converted to perennials and 50 percent of remaining lands were in cover crops. Based on survey results they think it might be reasonable to convert 30 percent of marginal lands to perennial crops and 40 percent to cover crops.

Assessing water quality and flood risk with the Iowa Watershed Approach - *Larry Weber, Professor and Executive Associate Dean, University of Iowa College of Engineering*
Iowa Flood Center: provide accurate information to help Iowans better understand flood risks.
Iowa Nutrient Center: Look at fate and transport of nutrients in Iowa streams
Iowa Geologic Survey: general geology, geophysics and hydrogeology
Iowa Watershed approach: Awarded $96,887,177 (9 of 40 applicants awarded national flooding resilience grants from HUD)

- Do plans at the HUC8 scale, do targeting at the HUC12 scale to reduce flood risk. Reduce flood risk, improve water quality, increase resilience, engage stakeholders through collaboration and outreach/education, improve quality of life and health, especially for vulnerable populations, develop a program that is replicable through the Midwest and U.S. Local landowners will provide 25 percent, grant 75 percent. They have project coordinators in each watershed. They will have sensors throughout the watersheds to quantify the benefits of the federal investment and quantify the reduction in stream flow.
- The Iowa Watershed Approach website makes all of the information readily available. They are doing comprehensive hydrologic assessments (hydrology, geology and soils, topography, and use, instrumentation/data records).

- Doing spatially explicit modeling for the watersheds (unit is about 40 acres). Also using the information from the Iowa best management practices (BMP) mapping project (uses lidar data, remote sensing – mapped at HUC12 scale through the entire state). Combine that with the Agricultural Conservation Planning Framework (ACPF) to determine potential of adding more BMPs.
- Intensive data collection and monitoring effort – the data goes into Iowa Flood Information System and Iowa Water Quality Information System. This is going to be expanded into an Upper Mississippi River Water Quality Information System.
- *Iowa stream nitrate and the Gulf of Mexico* (available from the Public Library of Science or PLOS) – plotted 5- and 10- year moving average of load leaving Iowa. The five-year average is up 70 percent in Iowa.

Q: What's the timeline on the new water information system for the Upper Mississippi?
A: It is a three-year project, we may have something together in six months or so?
Q: What accounts for the big increase in nitrogen runoff?
A: We have a very leaky system – a lot of tile drainage and we've installed a lot more tile in the last few years – plus an expansion of hog production. Farmers don't view manure as very reliable. The nitrate in streams is coming from tiles.
Q: Are the state policy makers acting on your information?
A: We've mapped all of the Iowa flood plains (everything greater than 24 acres). We've proposed that we should be using the 500 year floodplain for planning.

FRIDAY, NOVEMBER 9

Water quality targeting success stories - how to achieve measurably cleaner water through farm conservation watershed projects - *Michelle Perez, Water Initiative Director, American Farmland Trust*
The report was 'born" at the 2015 LMW meeting where Michelle heard about some of the successes that were occurring in watersheds and thought she could document projects that achieved in-stream water quality success as a result of efforts in the watershed. The project leaders identified 16 factors that led to their success. The traditional conservation program approach is to solve water quality problems on individual farms through county-focused SWCD/NRCS. They document dollars spent, contracts signed, and acres or units of practices implemented. NRCS Conservation Effects Assessment Project (CEAP) modeling estimates the reductions in nutrient and sediment runoff that can result. Watershed projects try to target the conservation practices to achieve measurable reductions but it is really difficult to do. The Mississippi River Basin Initiative (MRBI) projects were encouraged to monitor water quality and Resource Conservation Partnership Program (RCPP) prioritized projects that documented outcomes. EPA 319 projects have a high rate of success because they require partners to develop a 9-element based watershed plan and to develop a recommended in-stream monitoring program (paired watershed upstream/downstream, before/after or trend). [Note: 319 projects do have significant NRCS funding – most of the programs interact when you get to the local level].

Michelle set out to document recent watershed projects that had documented instream monitored success. Findings included:
- Difficult to find projects with instream monitoring success
- 41 out of the 100 MRBI projects at that time had said they would do in-stream monitoring.
- Found a traditional conservation approach that worked (Pond Creek watershed, OK) thanks to in-stream monitoring over a 10-year period

- Ultimately found six projects with monitored water quality success (in CA, OK, IA, WI and IN)
- Project leaders varied as did their ultimate goals. They all did geographic targeting except for the Iowa project that wanted to get 50 percent adoption of cover crops and achieved 70 percent adoption.
- They had a variety of monitoring programs.
- Farmer leadership was important to three of the projects. The conservation districts were also important to three of the projects. Project duration was four-13 years.
- Oklahoma's Honey Creek Section 319 project had excellent targeting and monitoring. The Wisconsin Pleasant Valley Branch P Project also had excellent targeting and monitoring. The Iowa Hewitt Creek Project had excellent farmer leadership, goal setting and quantification of social and economic outcomes. Indiana cover crops and 2-stage ditch project took place in a 3,300 acre watershed and achieved a 80 percent load reduction in tile lines.
- Recommendations:
    - In-stream monitoring needs to be well-designed
    - Use modeling support as well
    - NRCS needs to provide more guidance and hopefully set up a reporting system
    - EPA should offer more training and guidance, particularly on monitoring
    - Research community needs to better understand critical mass of land use change needed
    - Increase financial and technical assistance
    - Charitable foundations – sustained support to leverage federal funding

Q: Did you get any feedback from the projects about the lack of MRBI or RCPP funds for technical assistance funds?
A: Many of the projects had to find additional funding to prop up technical assistance funds.
Q: Wisconsin has a lot of listed streams that has prompted stream restoration work.
A: Most of AFT's projects focus on agricultural management in fields but we are finding that in-stream problems are being caused by streambank erosion independent of the farm fields.
C: State agencies can help projects design monitoring systems but you need to know what your goals are and what you are looking for (e.g. % reduction you hope to achieve). It can also be very expensive, yet another challenge for projects.
C: We're starting to see problems with P sinks and legacy P problems. In Wisconsin, they have a marsh that is discharging P.

Small group facilitated discussion – Making linkages among metrics (what are your experiences linking environmental metrics with social and economic metrics; what value has making those links provided and what challenges have you faced linking environmental metrics with social and economic metrics?)

Table participants talked about the concept of how to tie things together to deliver the "for what's in it for me" message. Could be working with nonprofit, working with federal agencies, etc. How do we pull all of the messages together across all of the different platforms? There is value in knowing motivations, why people get involved, identifying target audiences.

Table participants mentioned P testing in-stream to understand where problems are coming from (recent or past practices). Tie to economic impact (tourism, fishing, etc.). Tie to social funding. Building trust in the ag community, telling the story to those who don't have a direct tie to water quality. Challenges included problems identifying direct economic benefits.

Table participants listed challenges: hard to do a randomized trial or control watershed so everything becomes a case study. The cost of monitoring, gathering all of the expertise needed. If the key person leaves, you have to rebuild relationships. Success takes a long time – can take 10-15 years to see in-stream results. Solutions – idea of scaling up and standardizing training for watershed leaders and professionals. Community scale economic benefits – how do you sell these? Water quality training for upstream/downstream participants.

Table participants found that people related to trout fish counts in streams in the driftless areas. Bacteria measurements were also more relatable for people. Challenges were largely around putting economic value to resource benefits. Problems of comparing apples to oranges (social, economic, etc.) Values – focus on visible, public recognizable benefits. Shared investments, how do we communicate that the benefits are going across different sources, different agencies? Emphasize multiple benefits, seeing the larger picture.

Table participants felt that social benefits were particularly important. High rental rates were causing problems to getting clear economic benefits and costs. Important to quantify all of the benefits.

Table participants felt that value on the micro-scale to the farmer is important. Need to decide where to put the dollars – monitoring? Modeling? Econometrics? University extension – are we paying for their services – and if not, why not if it is so important to us? What about investing in the private sector to bring more technology/solutions to bear. Need to keep the messaging simple, basic. Hand-written letters, face book asks, asking the landowners to participate. If you can link water quality to measurable benefits, you can reach all sorts of groups. It can help you achieve win-win scenarios.

Minnesota's "One Watershed, One Plan" – *LeAnn Buck, Executive Director, Minnesota Association of Soil and Water Conservation Districts*
Local government roundtable Comprehensive Water Planning and Management Policy paper:

- Scale (major watersheds)
- Streamline (statute and programs)
- Funding (predictable, equitable)

2006: Clean Water Legacy Act
2008: Clean Water Land & Legacy
2010: Local Government Water Roundtable (3 year process, called themselves "the G16")
2012: Local water management coordination
2013: Clean Water Accountability Act
2015: Comprehensive Watershed Management Plan
2017: Watershed Based Funding

Local communities can play a huge role in helping address NPS pollution. Minnesota has comprehensive watershed management plans (defined in statute, replace water plans for watershed areas, voluntary) and has turned the One Watershed One Plan into policy – used 8-digit HUCs

- Robust stakeholder process connected to the local work planning
- Counties, SWCDs, watershed districts: shared vision and goals
- Local water planning provides a framework for the prioritization work required by the locally led process – tied to surface water quality, flooding, groundwater quality, wildlife habitat, etc.

- One Watershed, One Plan is a significant opportunity for leveraging, connecting local, state and federal government

Now phasing in grants – the watershed plans/implementation are now getting some base funding and no longer have to write grants (as long as the state has signed off on their plan). They are also using these funds for leverage with RCPP program.

NRCS updates and discussion

Minnesota and the upper Midwest – *Troy Daniell, Minnesota State Conservationist, NRCS*
Troy has been in Minnesota for three months now and is very excited to be here. The partnerships are impressive. His takeaway from yesterday is this is really about people. The NRCS 9 step planning process involves 2 components (8 and 9) that involve follow-up and determining outcomes which we need to pay more attention to. It is about people, messaging, telling our story.

- EQIP is on "Go" – payments need to go out of the door
- Encouraged about RCPP, both versions of the farm bill put more emphasis on RCPP

National conservation initiatives – *Martin Lowenfish, Conservation Initiatives Team Leader, and Dee Carlson, Conservation Initiatives Coordinator (MRBI and NWQI), NRCS*

The National Water Quality Initiative (NWQI) and Mississippi River Basin Initiative (MRBI) in FY19-23

- Focus on watershed planning and assessment
    - Readiness plan – additional assistance with watershed assessments to inform practice implementation
    - Watershed assessment to id and target critical source acres for treatment
    - Outreach strategies to engage producers
- In FY2020, all NWQI and NRBI watersheds will have assessments/plan that meet guidance Implementation plans with multi-year budgets to demonstrate commitment of accelerated funding
- NWQI: Scope expansion to include source water protection (SWP) including surface and groundwater – this year have 16 SWP pilots.

NRCS Initiatives in the Midwest: have brought in over 100 million dollars (NWQI, MRBI and GLRL)
On national scale, measure progress using the CEAP framework which estimates the amount of sediment, N and P reduced in MRI small watersheds at the edge of field

- HUC12 scale, across all programs
- Great Lakes Restoration Initiative (GLRI)– doing additional spatial analysis to estimate P reductions by land unit based on practice combination for current contracts
- Framework applies to cropland only and does not include some edge of field and instream practices that have a high conservation benefit
- Have numbers up to 2017, will make slides available

NRCS has scorecards now for each of the initiatives which give overall summary and list 2018 milestones to measure progress against goals. They've added a new metric to track implementation on identified critical source areas. The metric uses the NRCS CEAP Conservation Benefits Identifier (CCBI) which qualifies relationships between levels of inherent vulnerability (SVI) and known levels of conservation treatment to rank fields by their potential for soil and water quality gains from additional conservation. Looks at soil data – high, medium, low risk, incorporates all of the treatment support that USDA has supplied. This is an internal tool developed by the NRCS Resource Assessment Division (RAD) GIS Lab for

NWQI. The output is field-by-field but it can be aggregated up into broader priority areas for public release. Also have ACPF, P index. They are doing metrics across a number of projects e.g. percentage of high priority acres treats, acres of practices installed, etc.

NWQI next 5 years

- Measure progress towards watershed goals
- Track implementation on critical source areas
- Establish and monitor a set of water quality metrics that meet local partners needs
- In-stream monitoring results where available
- Edge of field monitoring results where available
- NRCS will continue to work with partners to evaluate and monitor

Q: Is NRCS doing in-stream monitoring?
A: No, we rely on partners to do that.
Q: If you've developed a 9-point plan, then you don't need to write a new plan for USDA?
A: We don't want you to write a new plan, we can provide guidance (on their website) (https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=nrcs144p2_015695.) What is important is scale. You can have 9 element plan for an 8 digit HUC that won't help you that much on a 12 digit HUC.
Q: In MN, we use 319 funds to do the implementation at the HUC12 level which is a piece of the large HUC8 plan.
A: The way we solicit projects is to reach out to the State Conservationists to bring in projects that meet needs, have buy-in across the agencies. We'd like to expand to work with more water utilities. The project proposal comes through the State Conservationist.
C: In MN they have a good system that includes a ranking system that determines which proposals go forward.
Q: How do you balance the need to keep data private with the public need to know?
A: We don't have a lot of latitude in determining this balance. We must keep all of the conservation practice adoption on farms confidential. District employees have access to this data – also partners who have an agreement to deliver services to producers. These partners help USDA deliver their programs.
Q: In WI we're trying to work with agronomists associated with private retailers who are helping farmers implement practices but these are not recorded. We're trying to accumulate this information. There is a lot more out on the land than we recognize.
A: Yes – it is a huge issue. Areas are starting to capture this information in formats that maybe could be shared (although much is proprietary). This is a huge opportunity
Q: For the source water protection, are you going to rely on utilities for monitoring? It is difficult for private landowners with well water.
A: We don't have a monitoring requirement as part as NWQI although we welcome the data.
C: We should make sure our projects acknowledge multiple funders – maybe call our projects by their watershed name, not the MRBI or RCPP or 319 but just harness all of the funding/leveraging that allows us to do the work.
Q: Can you talk about how MRBI projects are integrating into the state hypoxia task force plans?
A: We're careful to separate the impact of MRBI from an impact on the Gulf because the Gulf Hypoxia is on a significantly larger scale. But the MRBI projects support the priorities established by the state nutrient reduction strategies.
Q: There are a plethora of tools to use at the local level. Who do you zero in on as the end user of the NRCS tools?

A: The users of the tools are the planners. The product is like a map that shows critical source areas attached to a narrative. The tools can very technical, not for general use but the outcome should be understandable, actionable.
Q: RCPP is under a different team than your team, right?
A: Yes
Q: Any insight on the future of RCPP?
A: Through the normal process and flexibility of the State Conservationists, they can enter into agreements to do things like watershed planning or request additional funding for technical assistance that can be used for the readiness phases of projects in the various states.
C: In the Senate Version, RCPP is a separate program (no longer feeding off of EQIP, CSP, etc.) – would have its own regulations, policies). That would be huge. They are telling the State Conservationists that there will be a farm bill before Christmas.
Q: Do you think the watershed projects here could establish agreements with their NRCS partners to obtain the new NRCS targeting data? Also, could you set up some kind of sharing series of webinars though the LMW network?
A: Sounds like a good idea. We are doing this with the actual projects that are in the readiness phase (monthly calls).

Group exercise – What will you take home to your watershed project? (what "a-ha" moments will you take home or simply want to think about more? Is there anything LMW could do to help?)

Take home "a-ha" moments

- Take full advantage of the state level certification programs
- Need to really invest in watershed readiness (social baselines, metrics)
- Huge diversity of resources, ideas, partners across state boundaries
- Interest in quantifying social, economic outcomes but not a lot of expertise
- Tie metrics to what your communities need
- Peer to peer and one on one interactions were really helpful
- Liked talking about the social aspect and how to incorporate it
- Value in having more time for project to do effective outreach
- Many of us are here on public dollars but we talk a lot about the private sector but we should be doing a better job of utilizing the private sector (e.g. environmental markets)
- Important to look at density and intensity
- Important to expand partnerships to achieve goals and pick watersheds that have the best social capacity to complete a project

What LMW can do to help

- Pull together tools and best practices that you can use (have Michelle lead a small committee to expand on her matrix – what the tool does, what kind of expertise, etc.)
- Hub or matrix for tools
- Need cohesion in training for watershed workers and for evaluations
- Share contact information, think about a training webinar series
- Want to work on how we show our successes better
- Finding ways to keep the network going, gathering data in one place
- More network facilitation
- Focus on projects, what tools they used, brief summaries – something easy to sift through
- Invite private sector leaders (business leaders, farmers, etc.) to participate

- Could use website clearinghouse support from LMW

Rebecca: we have had private sector representatives at this meeting. We now have some better examples in our region of successful partnerships.