Appendix B – Trout Brook Nutrient Pilot Meeting Notes

Nutrient Pilots – Cannon River Watershed, Trout Brook
March 19, 2015, 9:30 AM – 2:30 PM
Dakota SWCD Conference Room, Farmington

Presenters: Beth Kallestad (CRWP), Andy Meyer (MSU WRC), Dave Wall (MPCA), Paul Wotzka (CRWP Consultant), Jill Trescott (Dakota County)

Attendees: Brad Becker (Dakota SWCD), Gene Kuntz (Ag Consultant for CRWP), Travis Hirman (Rice SWCD), Lawrence Svien (Zumbro River Watershed Partnership), Adam King (Dodge SWCD), Benjamin Hoyt (Goodhue Co Land Use), Dean Schrandt (Dodge Co Environmental Services), Neith Little (Dakota Extension), Travis Thiel (Dakota Co), Kate Eynak (Goodhue Co Land Use), Ashley Gallagher (Rice SWCD, Glen Roberson (Goodhue SWCD), Dendy Lofton (Limno Tech), Rylee Main (Lake Pepin Legacy Alliance), Breeanna Bateman (Waseca Co) , Ben Runsh (MPCA), Tom Gile (BWSR), Justin Watkins (MPCA), Cindy Hilmoe (MPCA), Wayne Anderson (MPCA)

Welcome – Beth Kallestad

WRAPs for the Cannon and Zumbro Watershed - Paul Wotzka

Review of statutory language and flow chart from MPCA
WRAPS is a mandatory process
10 year outlook to see milestones
Presentation on Nutrient Management as part of WRAPs process

Nutrient Reduction Strategy and NBMP Tool - Dave Wall, MPCA

- Tried some example scenarios
- Questions from audience:
    - Could the most current version of the tool we available on the Nutrient Planning Portal so it is easy to download? – Dave noted he would ask Bill Lazarus
    - How are suitable acres generated? - GIS
    - Is the instruction manual available? – Dave noted Lazarus has a version but it may be somewhat dated. Can a current version be put on the Nutrient Planning Portal?
    - A farm specific version was discussed. There was interest in this.
    - Would this tool be applicable to help fill out the WRAPs strategy table? Justin Watkins from MPCA indicated yes – Miss River/Lake Pepin WRAPS completed by Goodhue is example of use.
    - Do we have maps of "suitable acres"? If not could they be generated? Dave was not sure but would check on this.
    - About half of attendees work with tillage companies and subsurface tiles

- The BMP tool is here to learn from, may help to WRAPS Report and other BMP datasets
- Add to Minnesota Nutrient Planning Portal - new and current revisions BMP tool

Conservation Planning Framework - Andy Meyer MSU WRC

Mark Tomer model that has just come out as a possible tool we could use to help pinpoint areas for BMPs. Used Trout Brook as example.

- Question – where general land use data come from?
- Question – definition of contours did not seem accurate?
- How can we get this application? Can it be downloaded?

NRS, NBMP Tool, Portal, local workshops - Wayne Anderson, MPCA

Wayne Anderson gave summary of overall project – NRS, NBMP Tool, Portal, local workshops

Trout Brook

Brad Becker and Curt Coudron gave update on prioritization work that Dakota SWCD is doing in Trout Brook with focus on erosion control and runoff. Residue management is a big factor. They plan to use several methods/models then come up with list for ground trothing and talk to landowners.

Cannon River Watershed – BMPs in Minnesota Nutrient Reduction Strategy

Small group discussion and report back on what Nutrient BMPs show most promise for being adopted in the Cannon Watershed and which are less likely.

<u>Promising</u>

- Recommended fertilizer rates – based on actual on farm tests
- Cover crops – short and longer season
- Easements – Riparian, wetland restoration, Dakota FNAP
- Placement /Timing of fertilizer (more so than rates)

<u>Less Likely</u>

- Perennial crops for energy – market not there right now
- Terraces, waterways, basins
- Bioreactors – expense, land out of production
- Easements – RIM is cumbersome, not want to retire land , not allow flexibility

Price uncertainty, especially this year, was noted as a factor for hesitancy to make any changes to farming operations.

Jill Trescott, Dakota County
Example of Nitrogen Management Efforts as part of Drinking Water Protection in Dakota County

Hastings, Vermillion River, South Branch

- 25% of households participated in surveys out of 5000 households
- Sandy soils, large amounts of agricultural lands in the east part with irrigated agricultural land

Wells - Well info is all based on personal surveys

- Findings are that 40% of wells were pre-code
- Older wells were shallow before code index was created
- Private drinking water profile – well records compared to well index records and surveys to get an overall view on drinking Water Resources Center
- Hastings – 5 of 6 wells were showing increasing nitrogen levels
- Joel Groten – Masters Thesis – Trout Brook Nitrogen levels

MDA – Nitrogen Fertilizer Management Plan (Adoption pending)

- Targeted townships, sampling programs
- Potential restruction on fall nitrogen
- Will apply to Dakota County most and southern Minnesota

Protection areas – Vermillion River and other natural areas (2002) Natural easements?

- Septic enforcement in Shoreland Areas
- Agricultural practices are becoming more educated and would like to be enforced
- Ground water protection (1989) wanted to be an end-all plan
- But turned out to be hard and switched to be a more survey and farmer input movement to find problems
- State may give incentives to clean wells and focus on

Cannon River Planning Underway

- WRAPS and Nutrient Management
- HSPF Modeling
- Impairment and stressors
- 36 out of 45 lakes have impairments from Nutrients and Phosphorus
- Byllesby reservoir P – TMDL report

Civic Engagement - Cindy Hilmoe, MPCA

- Local and civic component
- How to get people talking
- Volunteer conservation
- Social Science Model (Civic Engagement)

Jill Trescott	Dakota County
Brad Becker	Dakota SWCD
Gene Kuntz	Ag Consultant for CRWP (paid other funds)
Travis Hirman	Rice SWCD
Lawrence Svien	Zumbro Watershed Partnership
Adam King	Dodge SWCD
Benjamin Hoyt	Goodhue Co Land Use
Dean Schrandt	Dodge Co Env Services
Neith Little	Dakota Extension
Travis Thiel	Dakota County
Kate Eynak	Goodhue Co Land Use
Ashley Gallagher	Rice SWCD
Glen Roberson	Goodhue SWCD
Dendy Lofton	Limno Tech
Rylee Main	Lake Pepin Legacy Alliance
Reeeana Bateman	Waseca County
Tom Gile	BWSR
Beth Kallestad	CRWP
Paul Wotzka	CRWP Consultant (paid through these funds)
Ben Runsh	MPCA
Justin Watkins	MPCA
Wayne Andderson	MPCA
Dave Wall	MPCA
Cindy Hilmoe	MPCA
Andy Meyer	MSU

Nutrient Reduction Strategy BMPs in Cannon River Watershed

Promising

- Recommended Fertilizer rates (based on testing)
- Easement and Riparian, wetland restoration
- Cover Crops (short season)
- Cover crops (longer season)
- Placement and timing of N

NOT promising

- Perennial crops
- Terraces, waterways
- Bioreactors = $ land loss

Easement, riparian, wetland restoration, determined on regional level and depending on funding, legal right of land (ownership)

Cannon River Watershed – Trout Brook

Nutrient Pilot Project Meeting with Dakota County SWCD

Mankato – WRC
March 30, 2015

Present: Curt Coudron & Brad Becker – Dakota SWCD; Rick Moore, Andy Meyer, Kim Musser – MSU WRC

Purpose: To learn more about how to use the ACPF Tool to inform nutrient planning in Trout Brook subwatershed

Dakota SWCD is interested in applying for Clean Water Funds and are developing a list of projects in order to have a better chance of funding. They are working with Houston Engineering and waiting for the PTM Mapper which is another tool they hope will inform project targeting. PTM Mapper is about 1 year out likely. They are developing both a desktop and web based system. Using an extension to ARCMap and a web-based, user-friendly approach

Dakota SWCD wants a laundry list of potential BMPs that are accurate to bring to the landowner.

Subwatershed Approach

Dakota County has 10 subwatersheds and they are planning to rotate through them on a 10 year cycle. They plan to pick a subwatershed, list where BMPs are needed, get them designed and sold to landowners. The list they are creating is a means to an end.

Trout Brook

- This is a flashy system with bank erosion
- Has the highest Nitrogen identified in Southern Minnesota
- It is highly farmed with coarse soils
- Little tiling in this area (compared to other parks of Dakota Co)
- There are some canning crops and this varies significantly from corn/soybean. 2 more months of exposed soil, different tillage
- This is Dakota County's only Karst subwatershed, they have a few sinkholes and springs, really on the fringe of sinkhole country

Nutrient Reduction Goals

- Reduce commercial and manure nitrogen. The primary source of Nitrogen in this subwatershed is fertilizer.
- Elevated sediment is also a concern, less Phosphorus

Tomer Tool Reflections

Tillage

- Corn-Bean rotation and tillage are important factors
- Ideally, they would like to have access to the FSA database.
- Nearly all of the fields are in some farm program and farmers are not required to report on tillage practices
- They don't know about plowing but they need that specific subwatershed data to accurately do this analysis. Tillage transect gives a good representative idea of the county, but not appropriate for field by field data

- Potentially could fly in April and August – is there a way to convert GIS data to ID crop somehow
- Residue is a major factor and could have a significant impact on storage and downstream flow (could vary from 10-70%)
- They don't have time to do an intensive analysis

Waterways

- DNR stream reach data may not be accurate, needs to be updated. Data likely overstates perennial flow
- Flow includes side wall seeps, aerial photography can't illustrate some of the flow

Runoff Risk

- May not be a good representation of runoff risk

Contour Filter Strips

- This term is not used in MN. Maybe another term could be "Potential for Contour Strip Farming"
- This has been a difficult sell. It is not easy for large equipment. Their design standards are too large for farmers
- They have a shape file with existing strips delineated

Berms

- Berm length and average cost an important consideration
- There are soil limitations in this watershed. Doesn't have much clay
- The tool identified length of berms that SWCD would never build (Example of ¼ mile berm illustrated)

Wetlands

- Few natural wetlands here, little opportunity for restoration
- Hydric or near hydric soils layer could help identify

- Nutrient Removal Wetlands

Farm Ponds & WASCOBs

- This term is not typically used around here. What is the difference between WASCOBs and Farm Ponds?
- Size of impoundment

Bioreactors & Conservation Drainage

- Both were shown to have high cost and maintenance
- Low benefit in terms of N reduction
- Political Issue - They really don't consider conservation drainage because they don't want to be installing tile.. NBMP tool illustrated that it is one of the lowest to reduce N.

Potentially Drained

- Seems on target
- Criteria makes sense
- Might make sense to use soil polygons rather than fields for this parameter in this watershed

Runoff Risk & Siting Practices

Is there more value next to stream versus 7 miles upstream?

Does it have identical value? This brings up In channel versus out of channel issues.

They used an example of a willing landowner who has a ravine washing out. It would cost $300 K to fix the problem. With that amount of money, they could build 60 WASCOBs upstream. How do they identify upstream basins, waterways

Siting – Where to locate in watershed

They generally consider channel practices after they address issues in upper watershed

Weighing Cost-Benefit of Particular Projects

Basins - Identifying basins are not easy in this watershed,

Waterways are more complex, could have multiple landowners

Set cost with any contract, set amount of staff time

Converting Units

Translating meters to feet could be helpful for planning

Current Tool Limitations

Don't have access to parcel data

GIS Exercise versus Experienced Staff Ground Truthing

Discussed the potential time-savings that GIS tools could offer. SWCD could send experienced technician to focus on part of the subwatershed with aerial maps and pour over landscape for 3 weeks to ground truth and identify basins and waterways. Experienced person with local knowledge hard to replicate but tools can focus effort.

Having access to GIS information has already been helpful and provides a great framework. Can shorten the desktop analysis time.

Next Steps

Current gap is Cost benefit analysis. How do they rank particular BMPs? What tools can help to clarify which BMPs to prioritize and where. Pollution reduction ranking is part of the equation.

Look at potential projects, identify pollutant removal, costs per project. They will likely use sediment for framework

Take the projects and rank top 100
Desktop Analysis

Field Reconnaissance

Use GIS analysis and could field truth

Merge the process together

Civic Engagement Approach

Used to work in first come, first serve approach

They have a gully washing out and come to them

Now they do an analysis and ID gullies and reach out to landowners

They need to change they way that they sell things

Geographic scale – subwatershed is even too big

Not individual, not subwatershed - what scale is appropriate?

Need to find the sweet spot

BMP install, transform knowledge into action at smaller than subwatershed scale

They are considering going by section and identifying most high priority projects. Say, 15 projects in area. They can offer 100 cost share but they would say all landowners would have to do projects (Could use Catholic guilt for peer pressure they laughed)

Potential Approach for Trout Brook Nutrient Reduction

Nitrogen

Cover Crops (Tomer doesn't help)

N Reduction through Fertilizer Management (Tomer doesn't help)

Sediment

Gully Management

Residue Management

WASCOBS

Grass Waterways

Need to identify where basins are appropriate, this is linked to residue which tool doesn't not do well

Concentrated flow and grass waterways can be helpful. They can start there are flow upward. SPI potential for gully erosion

Landowner Perspectives in Trout Brook

- They have a long history of working with residents in this area. They are aware of the elevated N and sediment
- They have heard "what is the big deal with nitrates?" If we didn't have a trout stream… wouldn't be such an issue…
- Landowners have said that the UM recs are not appropriate on coarse textured soils
- They say that they need ore N then telling what we need
- They trust crop advisors more than UM
- Temptation to put 20 pounds per acre more than they need
- In December 2014, they learned in 5 years that MDA will be phasing out fall N applications
- Landowners know that is coming on the horizon
- They know more regulation is coming in these high N areas

Tomer Tool and Training Approach

SWCD staff reflected that Dakota SWCD is fortunate relative to other SWCDs across the state to have funding and larger staff and GIS specialists so they can develop detailed subwatershed analysis. Others do not have same staffing and training available to them. A streamlined approach might be to have a centrally located training hubs that do subwatershed analysis. Rather than train all SWCD staff in GIS tool. Then SWCD technicians could do ground truthing.

Minnesota Nutrient Reduction Strategy

Nutrient Pilot – Cannon River

Survey Results – March 19, 2015

P=Phosphorus

N=Nitrogen

The goal of this survey is to better understand landowner willingness to implement BMPs identified in Minnesota's Nutrient Reduction Strategy in the Cannon River Watershed. These results are a snapshot of perceived landowner interest based on 13 completed surveys at a meeting on March 19, 2015 in Farmington, MN. Participants were local conservation staff working in the Cannon River Watershed.

	Landowner Interest				
	1 (Low)	2	3	4	5 (High)
Fertilizer Use Efficiencies					
Recommended Fertilizer Rates (B)	1	1	5	4	1
Placement and Timing of application (B)	1	2	5	3	2
Reducing soil P (P)		5	3	1	
Livestock feed management (P)	2	1	4	2	
Nitrification inhibitors (N)	1	4	4	1	
Increase and Target Living Cover					
Cover Crops (B)		1	2 v	6	2
Perennial Buffers (B)		3	4	2	
Forage and biomass planting (B)	3	3	2	1	
Perennial energy crops (B)	7	2		1	
Conservation easements and land retirements (B)	2	4		4	
Drainage Water Retention and Treatment					
Constructed Wetlands (N)	2	3	3		1
Controlled drainage (N)	1	5	2	1	1

Bioreactors (N)	4	6	1		
Two stage ditches (N)	7	1		1	
Field Erosion Control					
Conservation Tillage and residue management (P)			4	2	3
Terraces/grasses waterways (P)		2	2	3	2
Sediment control basins (P)		1	1	1	5
Urban Stormwater and Other sources					
		1	2	2	1
Wastewater Treatment					
	1	1	2	2	