



Meeting Agenda

1. Update on Watershed-Based Planning for Sherburne County
 - Watershed Monitoring
 - Restoration and Protection Strategy Development
 - Prioritization and Funding

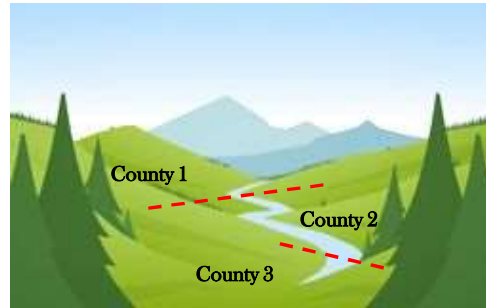
2. Water Stabilization Study Update
 - Briggs Chain Water Quality Trends
 - 2019 Flow and Water Quality Monitoring
 - Potential Feasibility Study & Opportunities





Local Water Management Planning

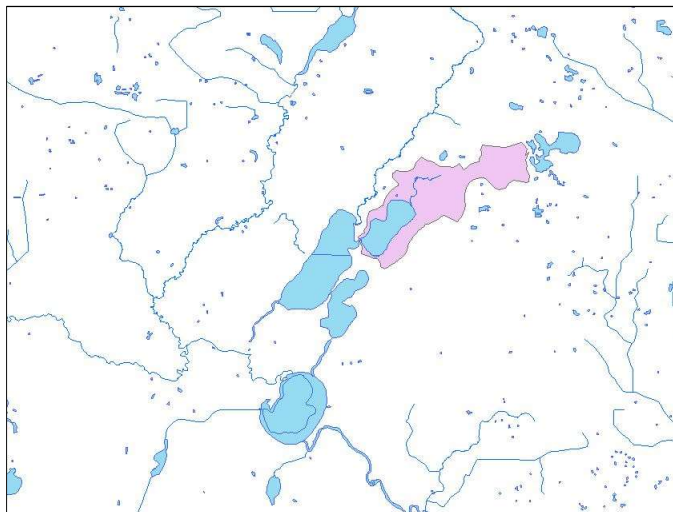
- Local water planning is OPTIONAL
- However, a county is required to have a water plan to be eligible for state funding
 - Water Plans identify the best and most effective projects & areas
- Currently, water planning is completed at a local level
 - County / District
 - Watershed District
 - Watershed Management Organization



The Watershed Concept

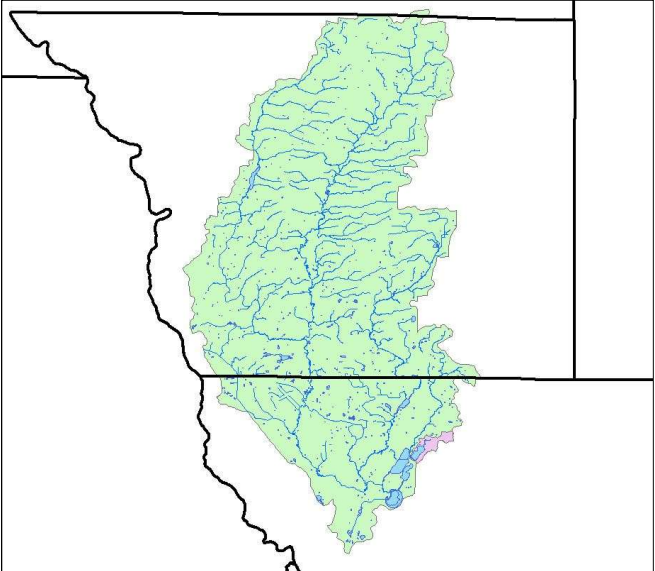


A roof is a very simple “watershed” – gravity allows collected water to be routed towards a specific point




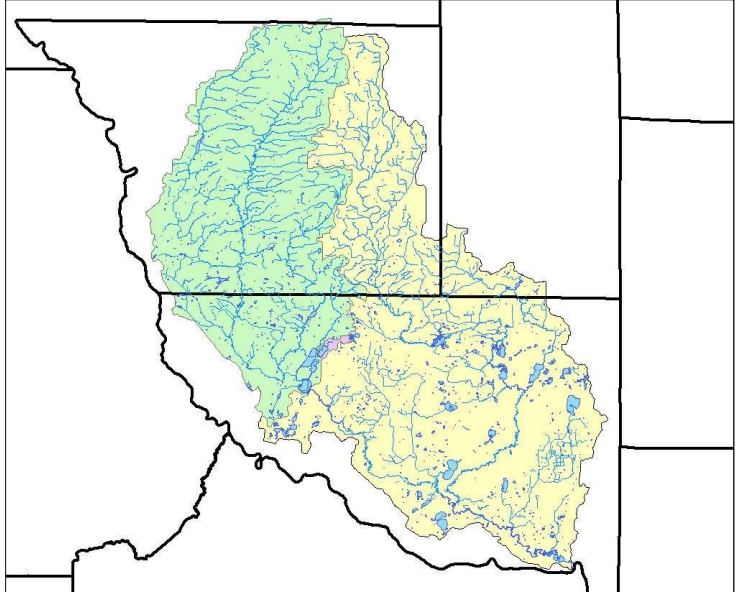
**Julia Lake
Watershed
725 acres
1.13 sq. miles
Sherburne
County**






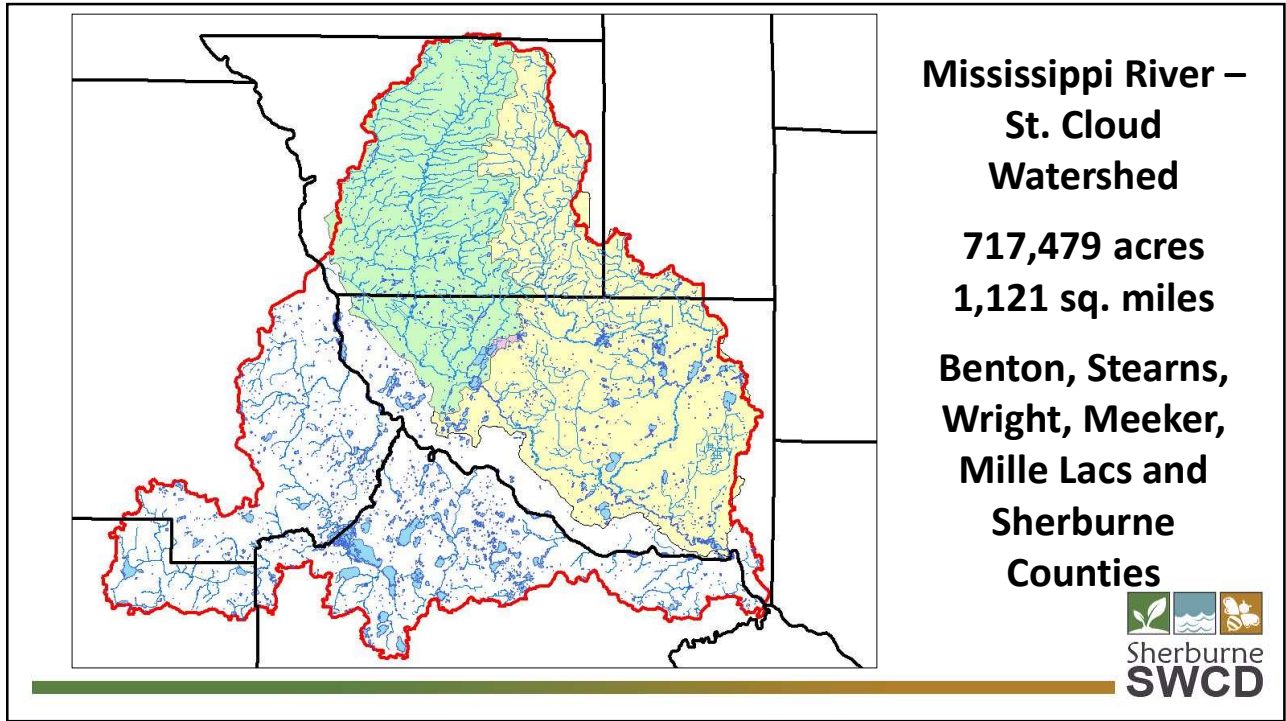
**Elk Lake
Watershed**
152,484 acres
238 sq. miles
**Benton and
Sherburne
Counties**

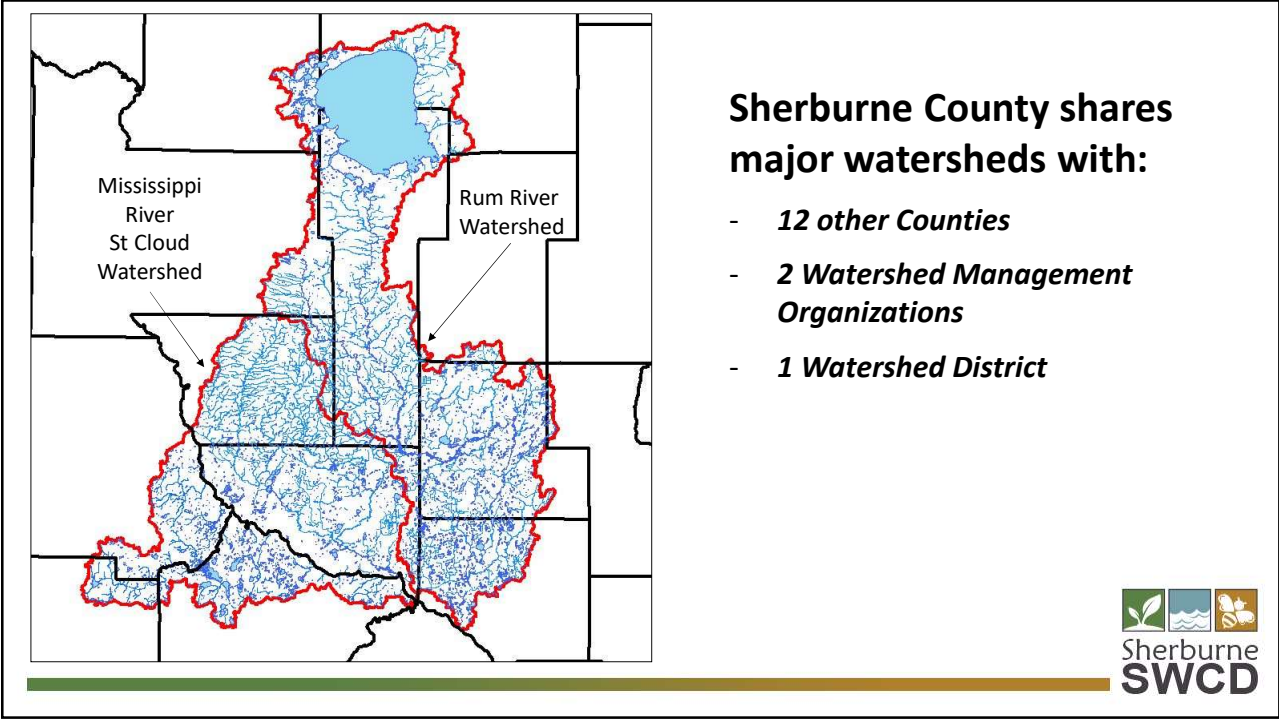
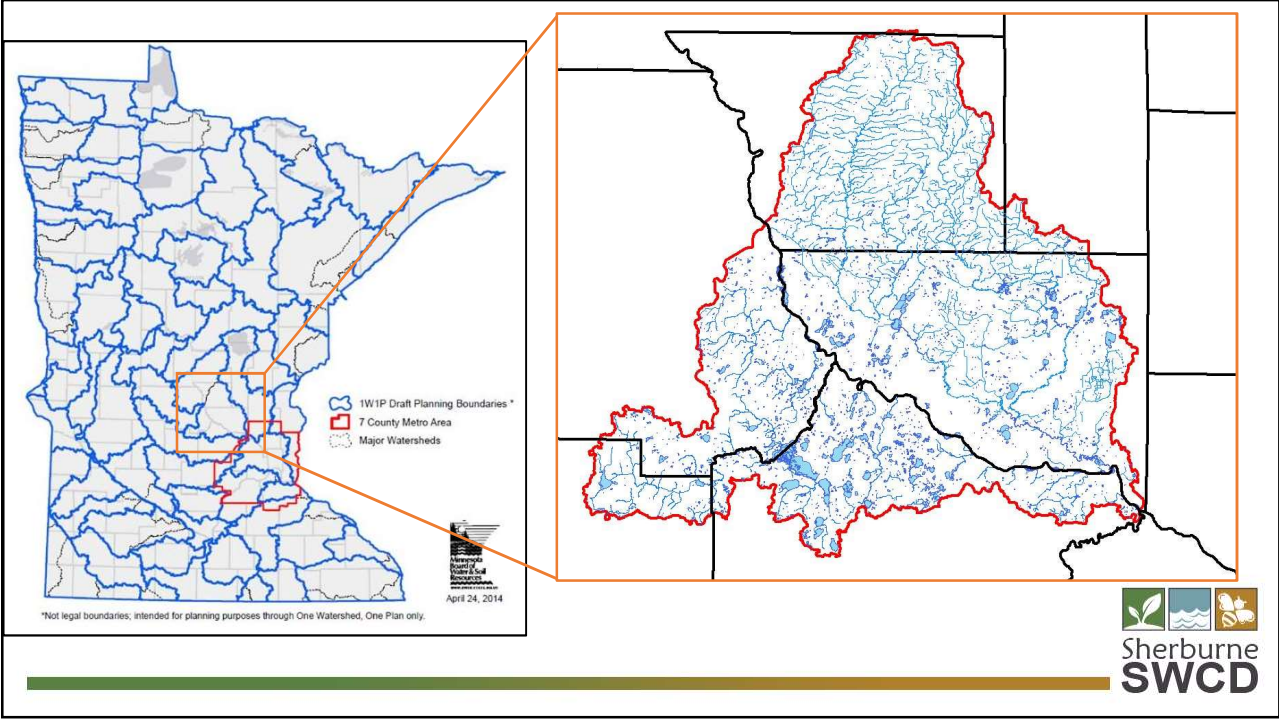




**Elk River
Watershed**
392,320 acres
613 sq. miles
**Benton, Mille
Lacs and
Sherburne
Counties**









Watershed-Based Planning: IWM

Intensive Watershed Monitoring

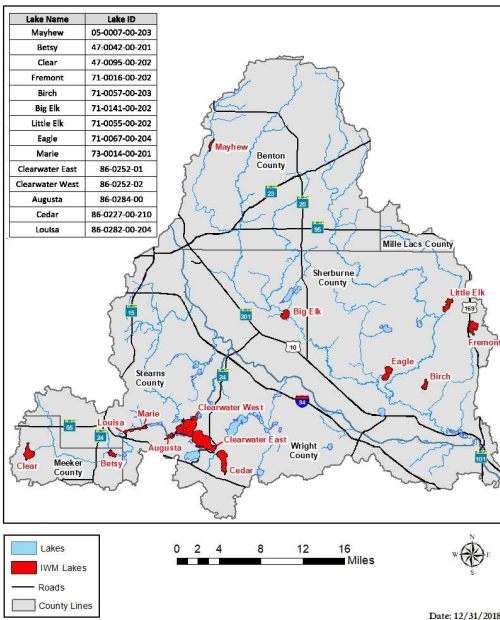
- Assess lake and stream conditions
 - Water Quality
 - Fish, Insects
 - Water condition
- Revisit every watershed ~10 years
- Produces data on quality of waters
- Provides substance for planning efforts



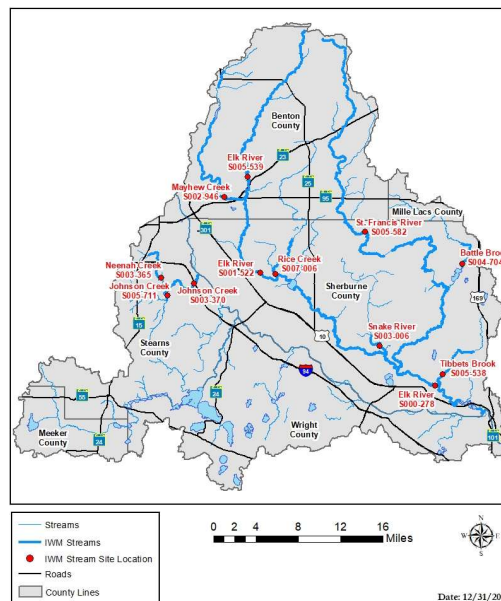
Photo: Sherburne SWCD



Mississippi River St. Cloud IWM Lake Sites



Mississippi River St. Cloud IWM Stream Sites

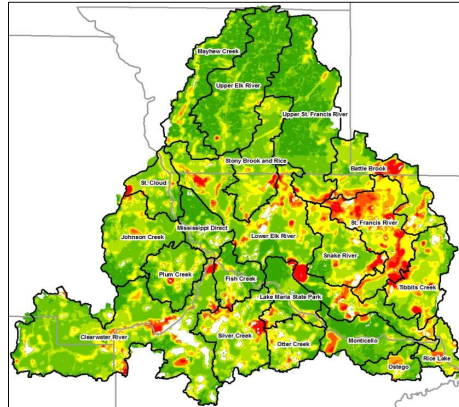




Watershed-Based Planning: WRAPS

Watershed Restoration & Protection Strategies

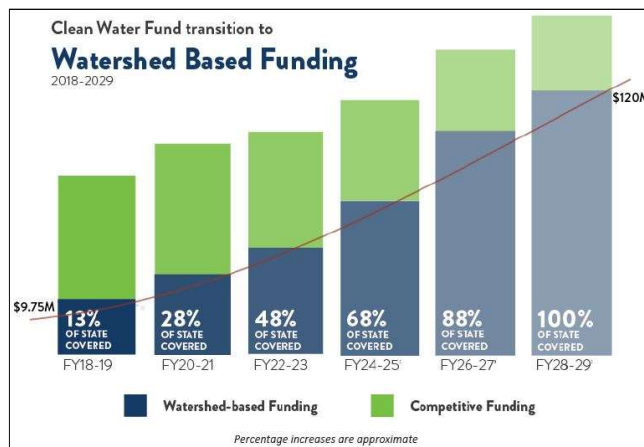
- Integrate data from IWM
- Establish priorities and goals for restoration
- Identify protection areas
- Develop action strategies to protect/restore
- Facilitates TMDL completion
- Revisit every watershed ~10 years

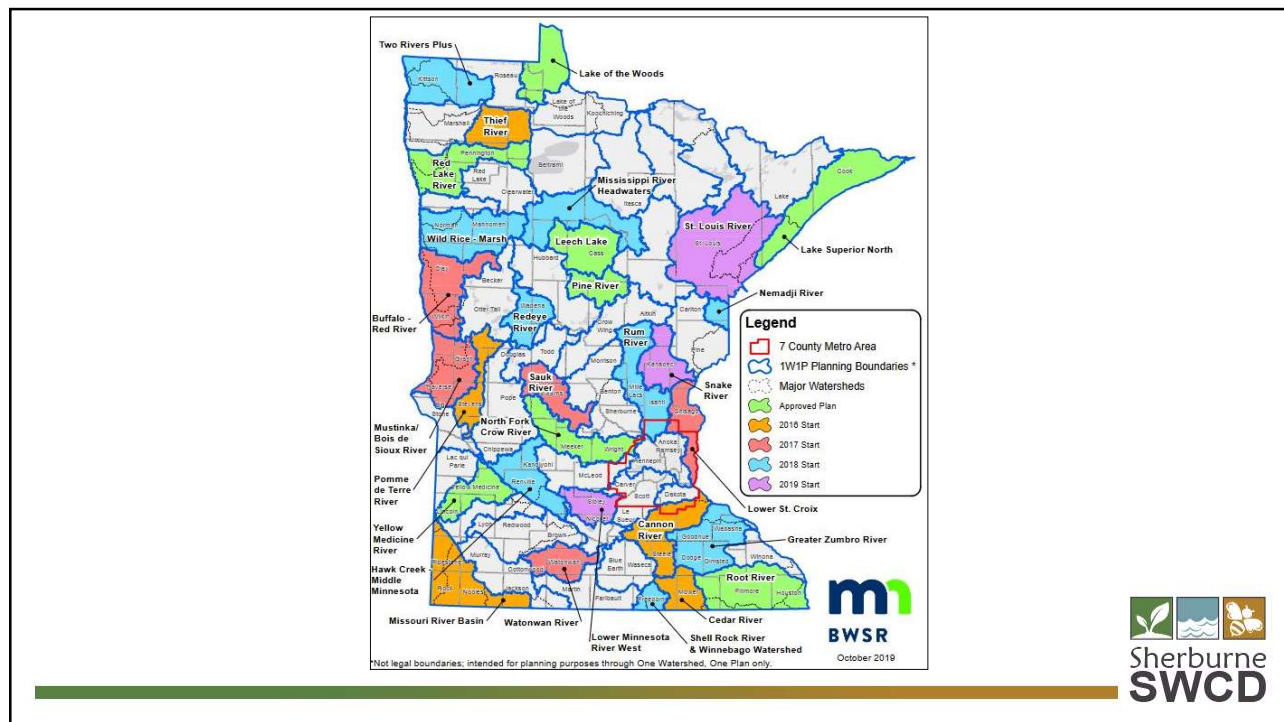


Watershed-Based Planning: 1W1P

One Watershed, One Plan

- Water plans at watershed level
 - Prioritized and targeted projects
 - Multiple benefits and downstream impacts
- Plan identifies specific areas, projects, pollution reductions and estimated costs
- Sustained and predictable funding





1W1P - Who is Involved?

Planning Team

- Several local agency staff who are the “heavy lifters” who keep the project on task

Steering Committee

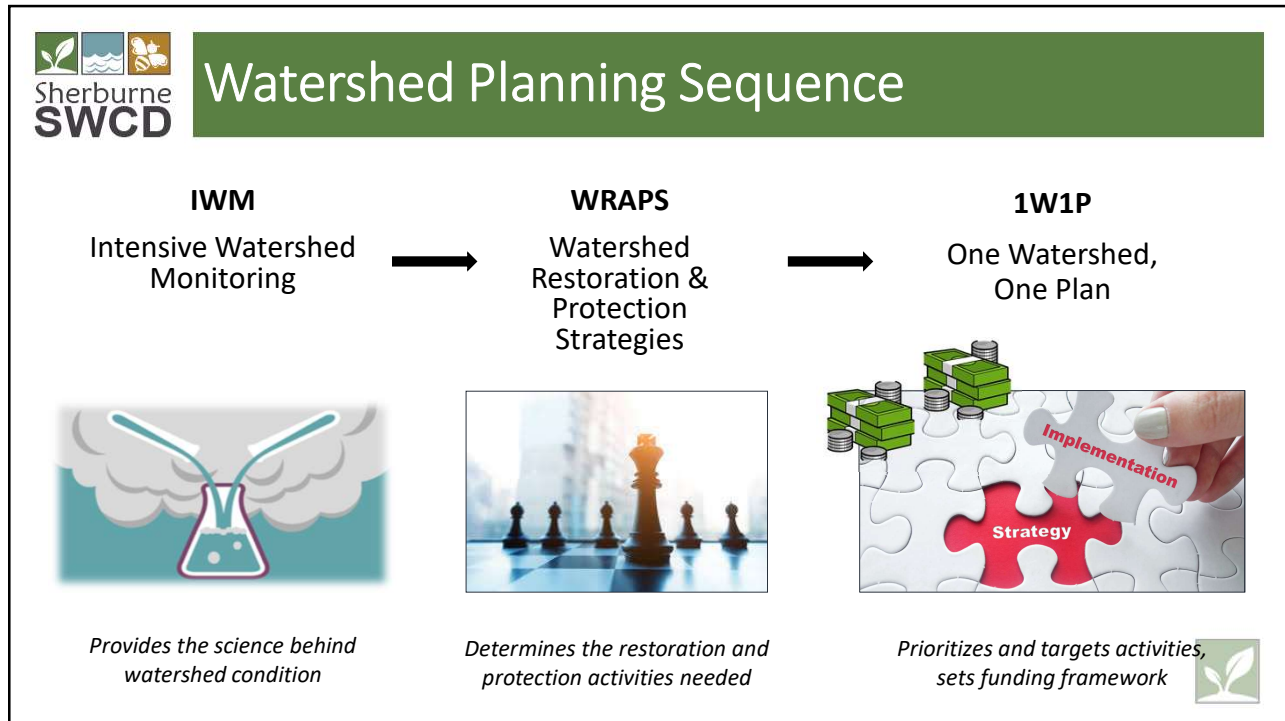
- Local agency staff representing counties and SWCDs in watershed
- Guide process, ensure stakeholder input, develop plan materials as directed

Advisory Committee

- Approved by Policy Committee. Includes local staff, state agencies, local stakeholder groups (environmental groups, lake associations, agricultural community, cities, townships, etc.)

Policy Committee

- Decision making authority. Includes elected official from Counties and Soil & Water Conservation Districts



Sherburne SWCD **ERWA Transition**

A watershed-based entity has existed for 25 years

- Elk River Watershed Association
 - Representatives from Benton and Sherburne Counties, Soil & Water Conservation Districts
 - No taxing authority, reliant upon competitive grant applications
 - Coordinated work between counties, within watershed
 - Will be dissolving at end of 2019, Sherburne County and SWCD favors transitioning to 1w1p

Legend
 County Boundaries
 Elk River Watershed
 Miss River - St Cloud Watershed

Mississippi River - St Cloud Watershed



Watershed-Based Planning Timeline

Rum River Watershed	2017	2018	2019	2020	2021	2022
IWM (complete in 2015)	← → complete					
WRAPS	← →					
1W1P	← →					

MRSC Watershed	2019	2020	2021	2022	2023	2024
IWM	← →					
WRAPS	← →					
1W1P	← → Start Date TBD					



Stakeholder Engagement Opportunities

IWM

- Citizen monitoring data supports program greatly!
- Several long-term monitoring partners contributing data
- Advanced studies help to pinpoint sources of pollution

WRAPS

- Open House opportunities with Phase I, again with Phase II?
- Local presentations on water quality data, trends, opportunities

1W1P

- Rum River Watershed – Isanti COLA is representing lake association interests, will reach out to ICOLA to attend a SCCOLA meeting with updates
- Mississippi River St Cloud – Participation by SCCOLA and/or Briggs Lake representatives on Advisory Committee would be appropriate



Water Stabilization Studies Update



Work in the Briggs Chain Watershed

Briggs Chain Watershed (including Elk Lake) has been a priority watershed for conservation

- Approximately 980 BMPs initiated in upstream areas from 2004-2018*
 - Coordinated efforts of Benton SWCD, Sherburne SWCD, NRCS and landowners
- Agricultural BMPs
 - Nutrient Management
 - Water & Sediment Control Basins
 - Grassed Waterways
 - Cover Crops
 - Buffer & Filter Strips
- Urban / Residential BMPs
 - Critical Area Planting
 - Stormwater mitigation
 - Stream / Shore protection



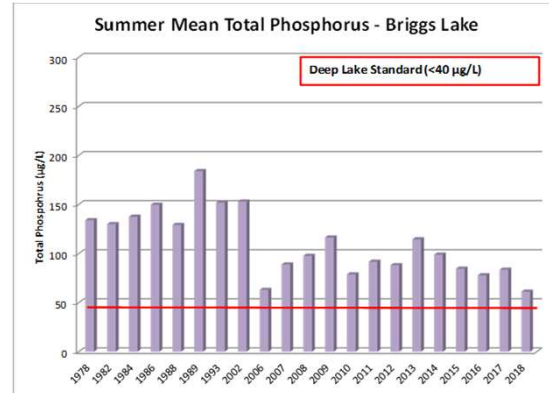
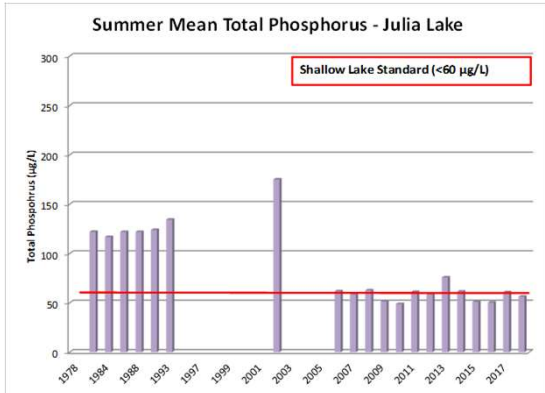
Photo: Sherburne SWCD



* <https://www.pca.state.mn.us/water/best-management-practices-implemented-watershed>



Lake Trends



- All lakes listed as “impaired” for excessive nutrients.
- Phosphorus data indicates improving conditions in all four lakes.
- Julia Lake is hovering near/below the impairment threshold.



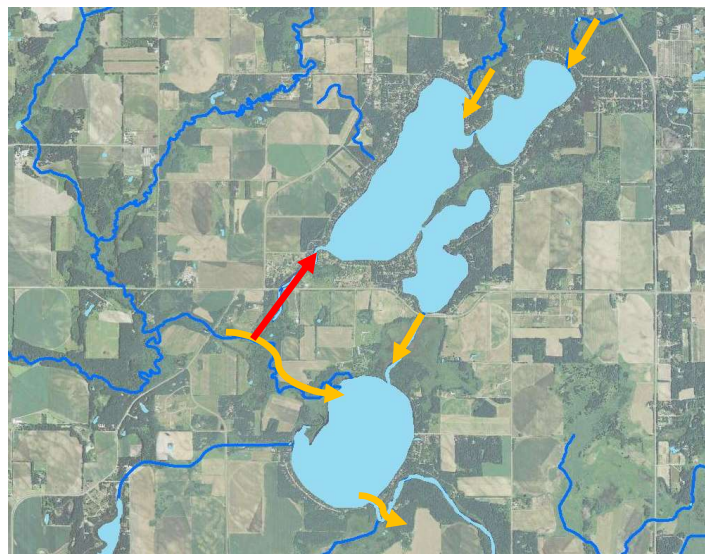
Briggs Chain Hydrology

Change in hydrology over time

- Clearing of vegetative cover
- Draining of wetlands
- Establishment of impervious and relatively impervious cover
- Results in faster runoff, quick accumulation of water in streams / lakes

How to address this?

- Increase vegetative cover
- Increase water storage & infiltration
 - Stormwater basins, wetlands, native plants

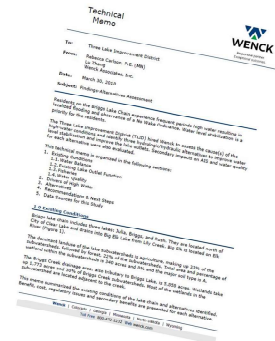




Water Stabilization Study Recap

Purpose: Assess causes of high water conditions and identify hydrologic alternatives

- Examined water level data, sub-watershed characteristics
- Identified several potential mitigation options
 - Upstream storage
 - Rush Lake outlet modification
 - Bayou inlet modification
- Identified data gaps
 - Survey data for several inlets / outlets
 - Lake level and river level stage data
 - Rating curves for several inlets / outlets



Bayou Monitoring, 2019

- Periodic flow velocity measurements
- Tape-down measurements (stream height)
- Water quality sampling
 - Precipitation events
 - Baseline conditions
- Funding provided by MPCA small-grant
 - MPCA staff (Paul Schrieber) collected flow data
- Much of data collected by several volunteers
 - Special thanks to Walt Munsterman, Gary Anderson and Mike Flanery!!!





Bayou Monitoring Results – Flow & Stage

- Stage fluctuated nearly 4.5 feet over the summer
- Discharge varied from 0 cfs to 620 cfs*
- Slow-no-wake reached numerous times in 2019



Photo: Sherburne SWCD

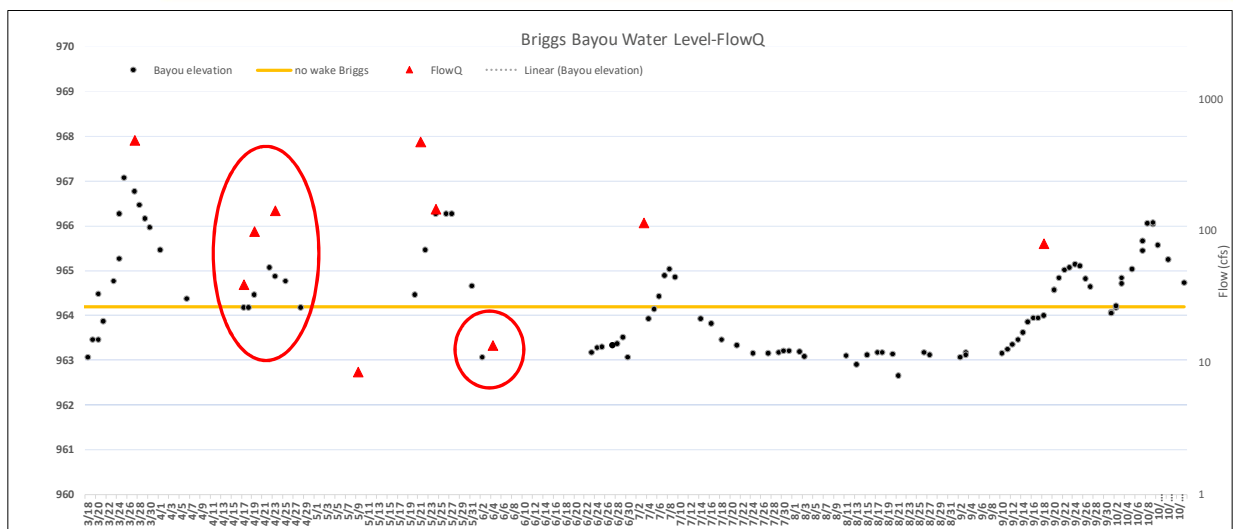


Photo: Mike Flanery

*1 cubic feet per second = 450 gallons per minute

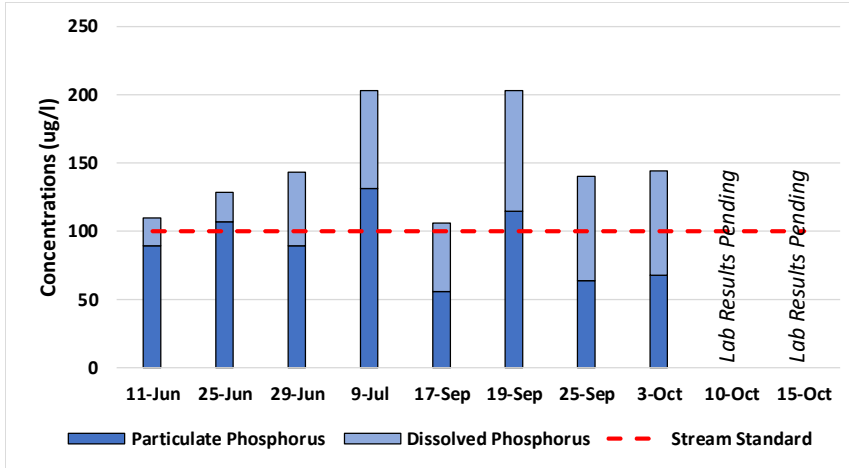


Bayou Monitoring Results – Flow & Stage





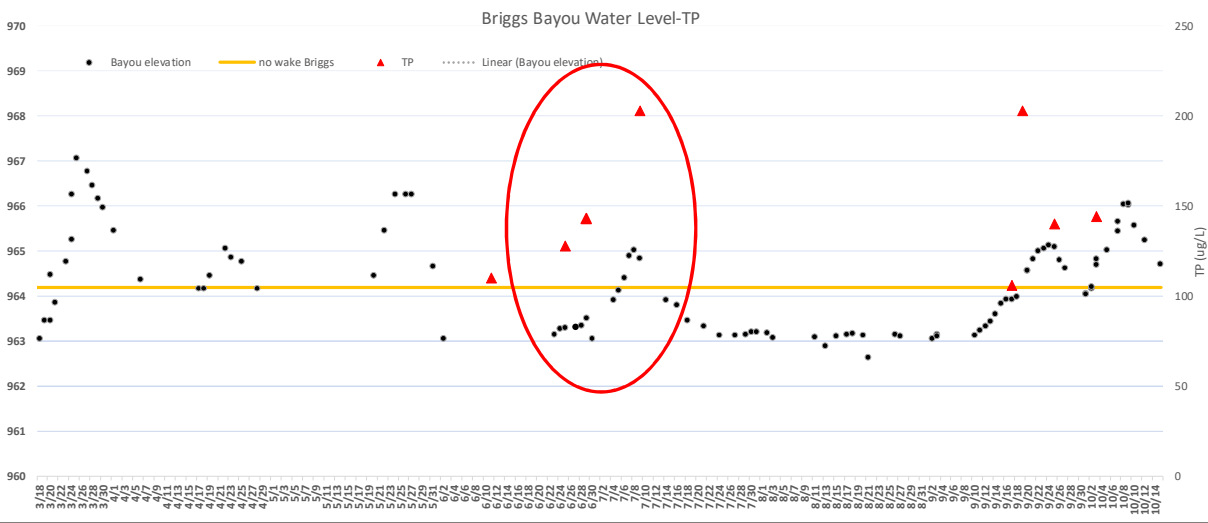
Bayou Monitoring Results – Water Quality



- Particulate Phosphorus + Dissolved Phosphorus = “Total Phosphorus”
- Total Phosphorus exceeded stream standard (100 µg/L) with every sampling event and at all flow conditions
- Mainstem Elk River generally averages 80-100 µg/L
- Bayou flows may transport nutrient rich water from terrestrial soils



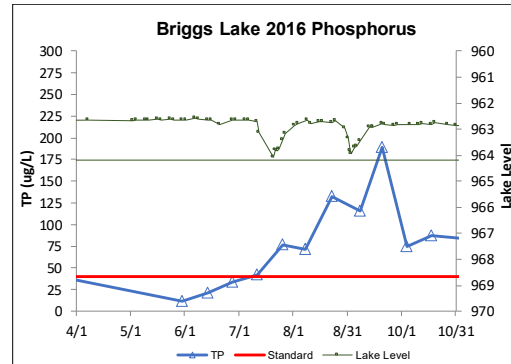
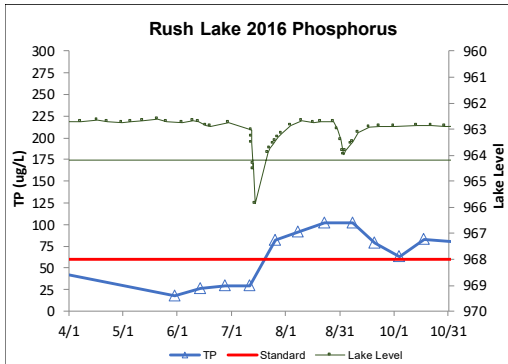
Water Quality & Water Level





Water Quality & Water Level

- Some correlation between lake level and high phosphorus
- Timing of sample collection, water flushing rate, and internal nutrient loading complicate this correlation a bit.



Graphs created by Wenck Associates, modified by Sherburne SWCD



Opportunities for Water Storage?

COUNTY LOOKING AT LAND FOR ANOTHER PARK.
9-21-19

Fri, 09/20/2019 - 3:34pm admin

Potential County Park offers unique opportunity

- Difficult to find land to place large BMPs
- Could provide water storage for flood events
- Could allow for settling of sediment & nutrients
- Could compliment park features and provide wildlife habitat
- No guarantee of project, not a “silver bullet”
 - County purchase is still preliminary, and any plans for a BMP on this site would need county approval

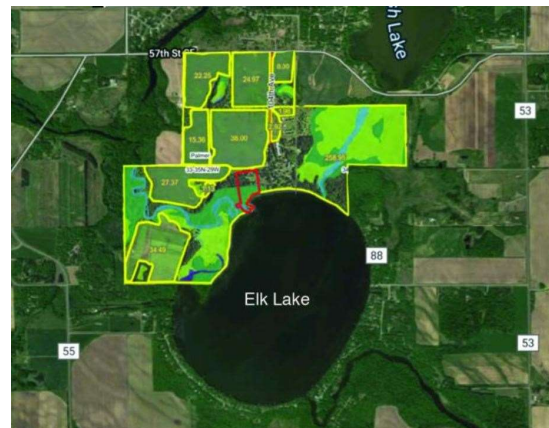


Image and Article from West Sherburne Tribune 9-20-19



Continued Work on Water Levels

Wenck Associates Proposed Work:

- Review and compile newly collected data
- Calibration and development of advanced Water Level Model
- Update model with new channel information, build fish barrier into model
- Run model scenarios
 - Existing
 - Fish barrier removal
 - 3 alternative design options for water storage
- Cost: roughly \$12,000
- Sherburne SWCD would like to contribute \$5,000 towards project, along with staff time for survey data collection and project participation.



Funding Opportunities

1. Continued water quality modeling provided through WRAPS process
 - Funds available through State of Minnesota (Pollution Control Agency)
2. BMP implementation could be potentially large-scale, quite expensive
 - Clean Water Funds grant (Clean Water Land & Legacy Amendment)
 - 75% Cost Share, three year term
 - Could fund majority of project
 - 1W1P Priority Funding
 - Following completion of 1w1p project
 - Project could rank high due to multiple benefits and multiple waters impacted
 - Conservation Partnership Legacy
 - 90% Cost Share
 - Must restore or enhance wildlife habitat – applicability depends upon project type





Conclusions

- Watershed-based planning will benefit Briggs Chain and downstream waters
- Briggs Chain lakes water quality is trending in right direction
- New data sheds light on Bayou flow patterns during a “wet” year
- Bayou water quality data provides better understanding of impacts to lake water quality
- Additional diagnostic / feasibility analysis is required
 - To what degree would flooding be mitigated in Briggs Chain lakes?
 - How would downstream water levels be impacted?
 - How would water quality be impacted?
- Implementation could be expensive, but if studies show impacts substantial a good chance for grant funding exists



Questions?

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