

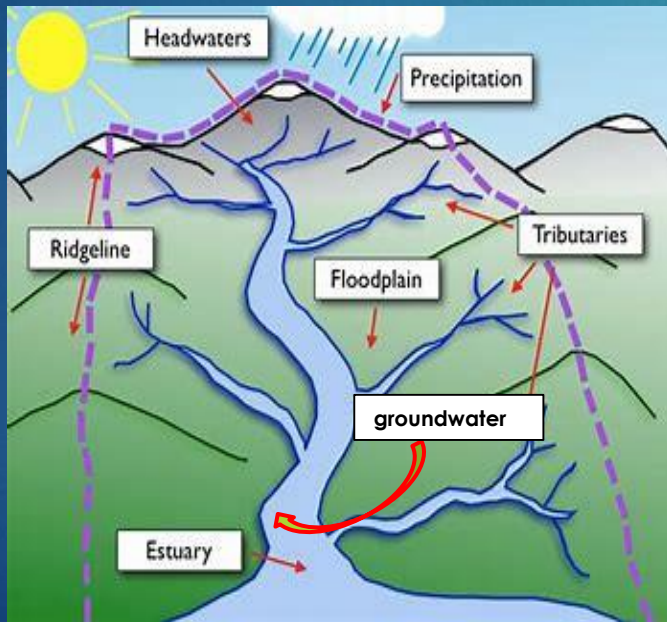
Basics of Managing Watersheds for River and Lake Health

SCOTT PROVOST

WDNR

First: let's define "watershed"

- ▶ A land mass that drains to a waterbody defined by topographical ridge.
- ▶ Could be small or large to the point of being referred to as a basin
- ▶ The water draining through the land, becomes the water to a lake or river.



Rule #1: Water quality starts on land.



Second: Define PS and NPS of pollution

PS: Coming from a single source such as a pipe discharge from a treatment plant or factory
def. Wis. Admin. Code NR 200.02(13) (13)



NPS: Everything else! Pollution sources that are not generated from a single location. Atmospheric deposition, runoff and groundwater contamination are examples.



Rule #2: Think holistically

- ▶ Think and work (when you can) as the ecosystem does – everything is connected
- ▶ Work small, think big – NPS has many “fix it” ops
- ▶ Work together and grow together



Point Source Pollution and Management in Wisconsin

- Authorized under the Clean Water Act of 1972
- EPA authorizes the administration of the CWA to **WDNR**
- Wisconsin Pollution Discharge Elimination Systems (WPDES) ss. 283.13(1)

Individual permits

General permits

Stormwater permits

CAFO's



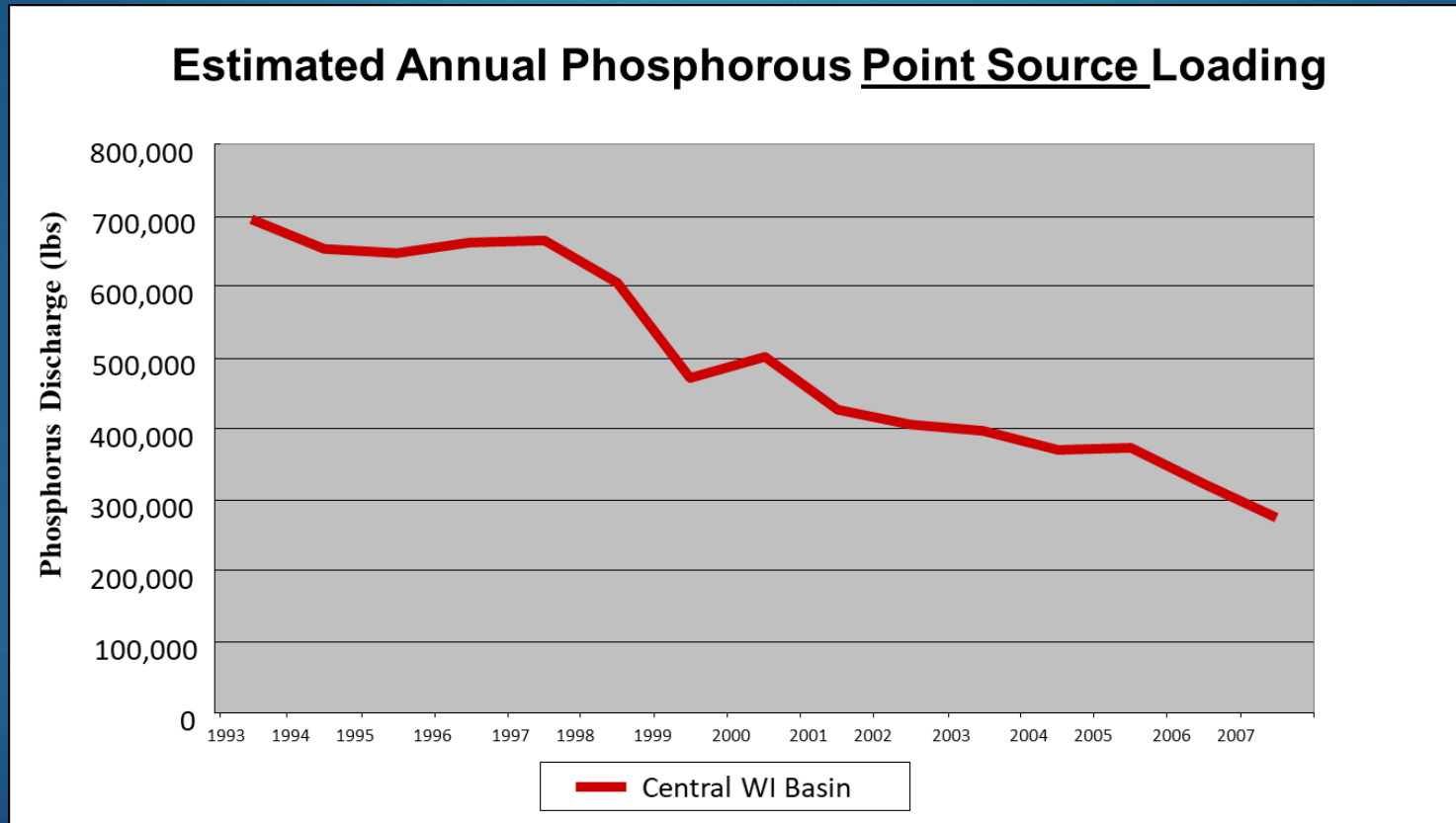
Point Source Pollution Management Tools

- ▶ Facility Upgrades - technology
- ▶ Water Quality Trading – pay someone else to reduce P
- ▶ Multi Discharger Variance - pay \$50/lbs of P. Counties use money for NPS
- ▶ Adaptive Management - Reduce NPS to meet WQ criteria at PS

PS and NPS hybridization

Point Source Management Tools Are Working!

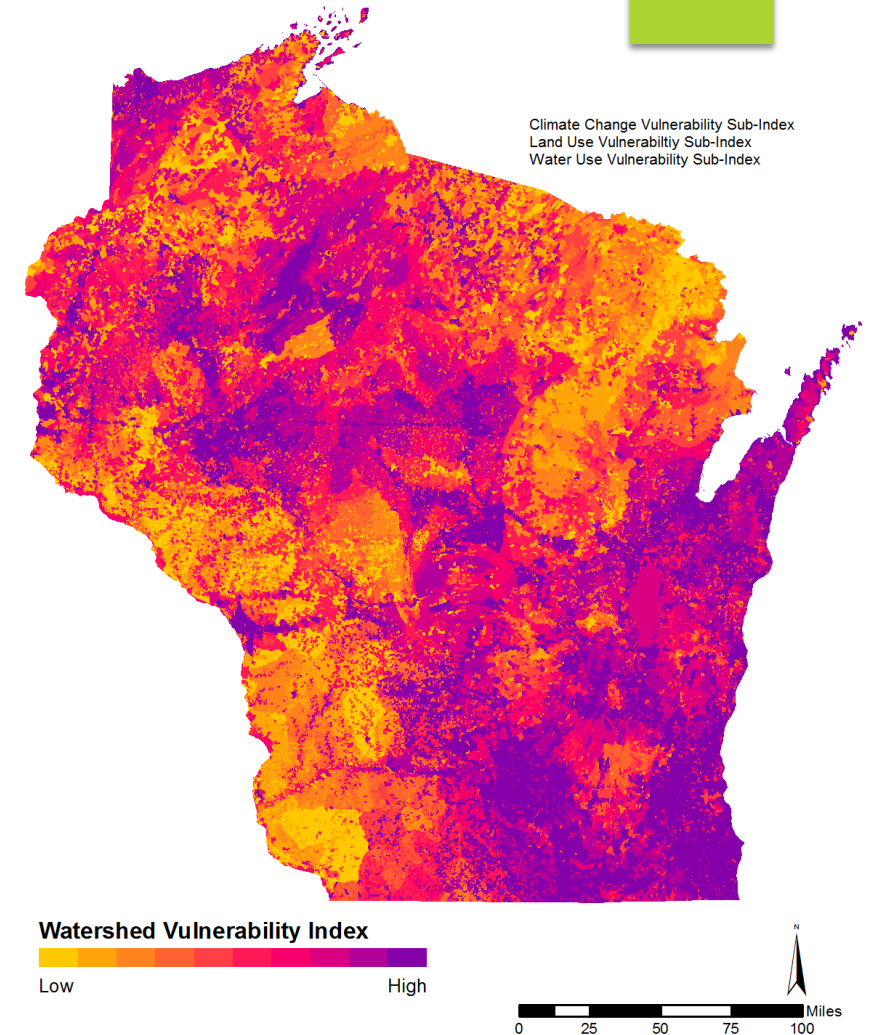
Wisconsin River TMDL



Non Point Source Pollution Management in Wisconsin

- ▶ Authorized under Sec, 319 CWA and State Statutes 91, 92, 93 and 281
- ▶ Administrative Rules NR 151, 216 and 243
- ▶ NRCS technical standards 590
- ▶ Complexed therefore more nuanced than PS.

Watershed vulnerability varies across our state. Land uses, soils, geology, topography, development and socio-economics diversity create complexity.



NPS includes: Atmospheric, runoff and groundwater contamination

- Traditional watershed management focused on in-situ soil
- Preventing overland flow (i.e. runoff) with hard practices
- NMP, MS4, technical standards, modeling and other soft management practices

But less concentration on...

- Commercial fertilizer application (crop need)
- Depth to groundwater not considered
- Wind erosion and atmospheric deposition
- Climate change? Yes!



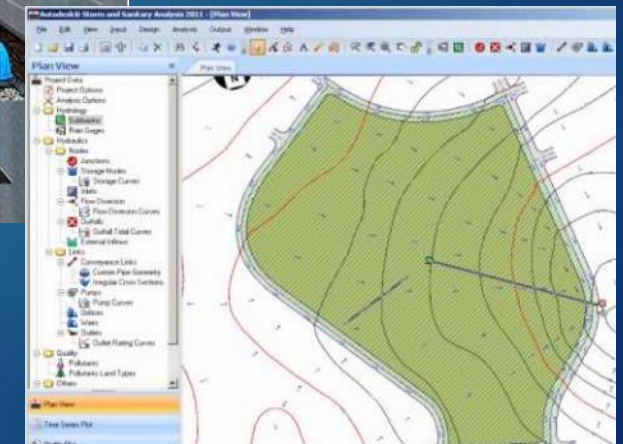
NMP = Nutrient Management Plan
MS4 = Municipal Separate Storm Sewer Systems

Nonpoint Source Pollution Management Tools

- ▶ Technology
- ▶ Soft Practices (NMP's, permitting, etc.)
- ▶ Hard practices (No till, cover crop, bank stabilization, sediment basins)
- ▶ People, People, People...

Nonpoint Source Pollution Management Tools

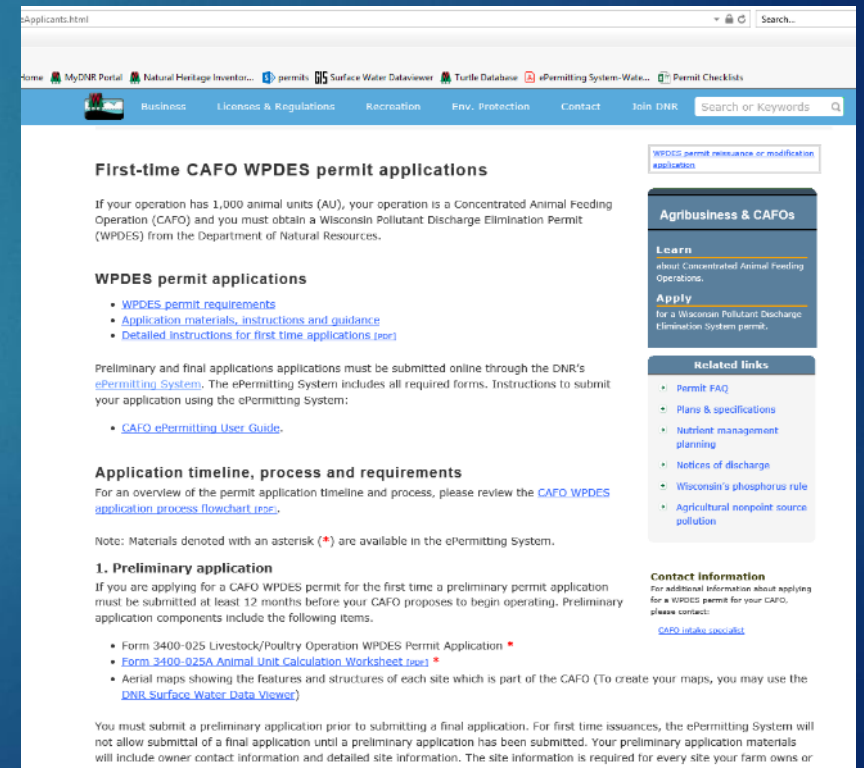
- ▶ Technology
 - ▶ Precision Ag
 - ▶ SW devices
 - ▶ Modeling
 - ▶ STEPL
 - ▶ SNAP; SNAP +
 - ▶ BARNY
 - ▶ SLAM
 - ▶ WiLMS
 - ▶ Many more to fit your need
- ▶ Research



Nonpoint Source Pollution Management Tools

- ▶ Soft Practices
 - ▶ NMP
 - ▶ Permitting

Turfgrass nutrient management planning



The screenshot displays the DNR website's 'ePermitting System' page for CAFO WPDES permits. The page includes a navigation bar with links for Business, Licenses & Regulations, Recreation, Env. Protection, Contact, and Join DNR. The main content area is titled 'First-time CAFO WPDES permit applications' and provides information for operations with 1,000 or more animal units. It lists links for 'WPDES permit requirements', 'Application materials, instructions and guidance', and 'Detailed instructions for first time applications'. A sidebar on the right contains sections for 'Agribusiness & CAFOs', 'Learn', 'Apply', 'Related links', and 'Contact information'. The 'Related links' section includes 'Permit FAQ', 'Plans & specifications', 'Nutrient management planning', 'Notices of discharge', 'Wisconsin's phosphorus rule', and 'Agricultural nonpoint source pollution'. The 'Contact information' section provides a link to the 'CAFO status specialist'.



Steve Turfball

Nonpoint Source Pollution Management Tools

- ▶ Hard practices
 - ▶ Logging roads
 - ▶ Feed lots
 - ▶ Sediment basins)



Nonpoint Source Pollution Management Tools

- ▶ People, People, People...
 - Farmer Led Councils
 - TMDL's
 - 9-Key Element Plans
 - Watershed Mgt. Groups
 - Riparian Owners
 - Municipalities
 - Agencies
 - You
 - Me



Now it gets interesting....

Farmer Led Watershed Councils

- ▶ Planning phase started during St. Croix & Red Cedar TMDL
- ▶ Officially started in Wisconsin in 2013 by UW-Extension
- ▶ DNR, UW-Ex, County, WFU, Tainter-Menomin Lake Improvement Assoc.
- ▶ Goal to reduce P input
- ▶ Selected project area, hired a coordinator, recruited farmers
- ▶ Nurtured farmer to farmer technical communication
- ▶ Council established farmer directed conservation (cost share beyond 30%, etc.)
- ▶ **CHOOSE LEADERS WISELY (CLW)**

4 Watershed Councils

62 farmers

3,383-acre crops

26,551 ft. grassed waterways

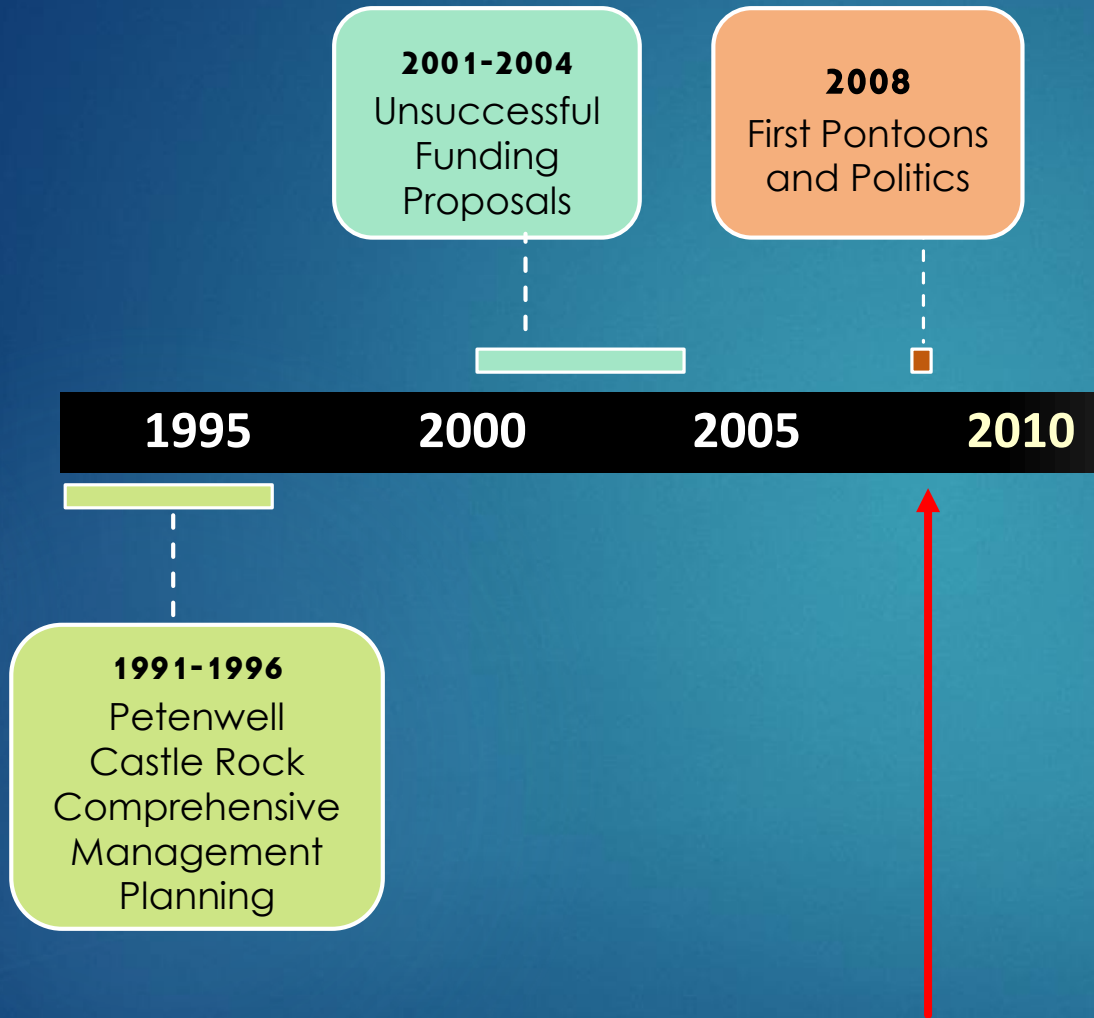
Total Maximum Daily Load (TMDL)

- ▶ If a water is listed as “impaired” according to sec. 303D of the CWA, the regulatory agency (DNR) needs to develop a TMDL or 9Key



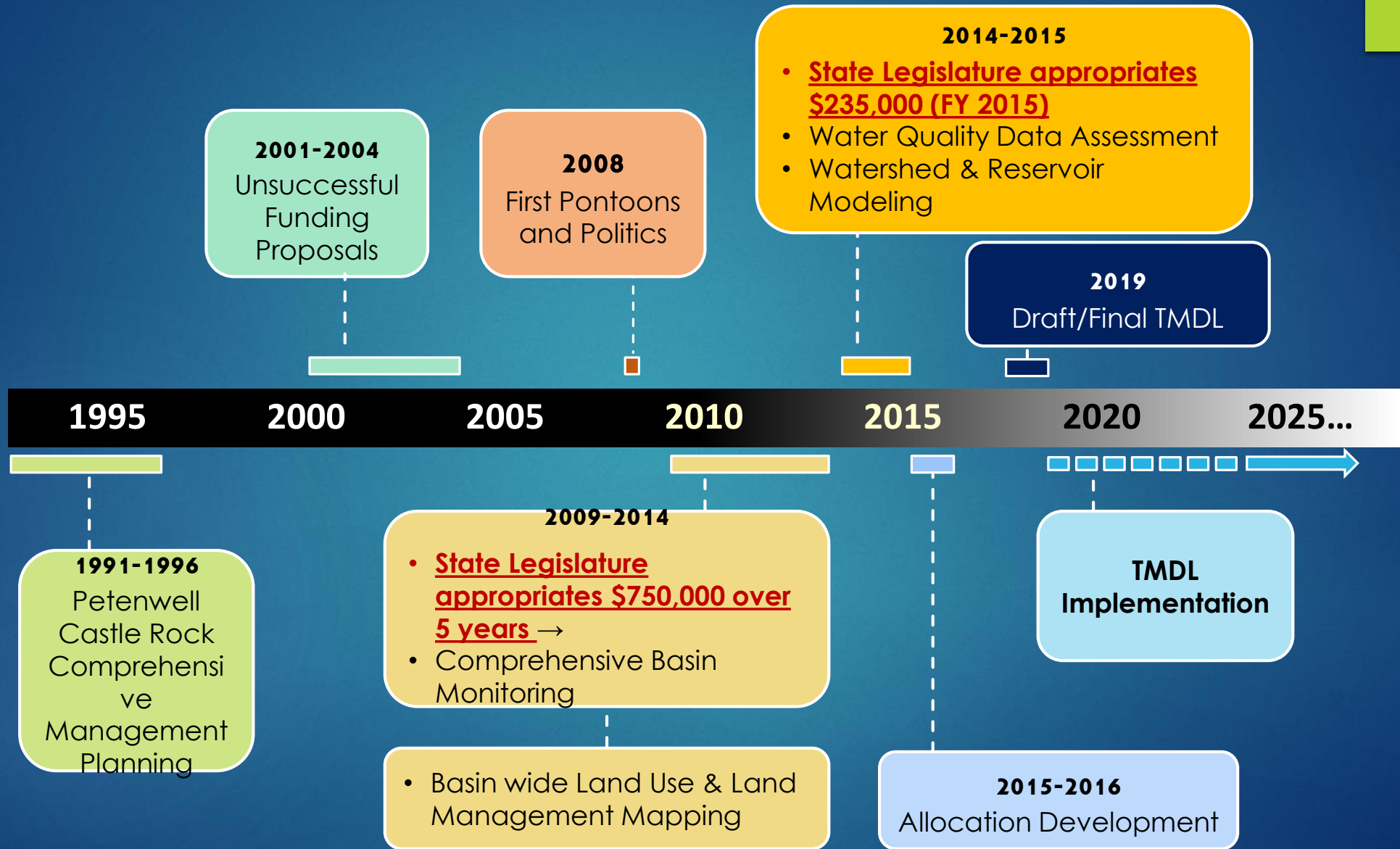
- ▶ Definition: the amount of a pollutant a water can receive and still meet water quality standards.
- ▶ TMDL = Wasteload Allocation + Load Allocation + Margin of Safety
 - ▶ WLA = PS's limits are listed in the WPDES permit to meet pollutant load
 - ▶ LA = NPS's is an adaptive process, **requiring people, regulatory, financial, and technical resources**

TMDL example: The Wisconsin River



Rule #3: People Power

Multi-year effort with an excess of \$2.8 million in State and Federal Spending



TMDL example: Wisconsin River Basin

- * 21 Counties and 85 cities and villages

- * Permitted Wastewater Facilities













108 facilities

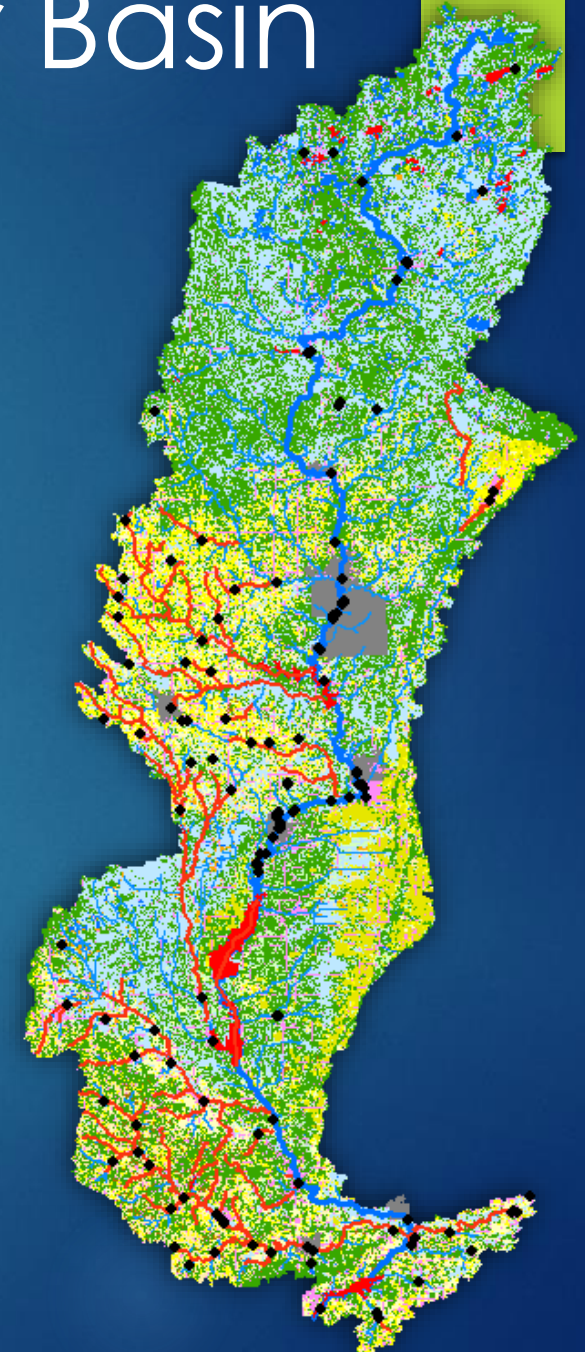
- * Permitted MS4s

 14 municipalities

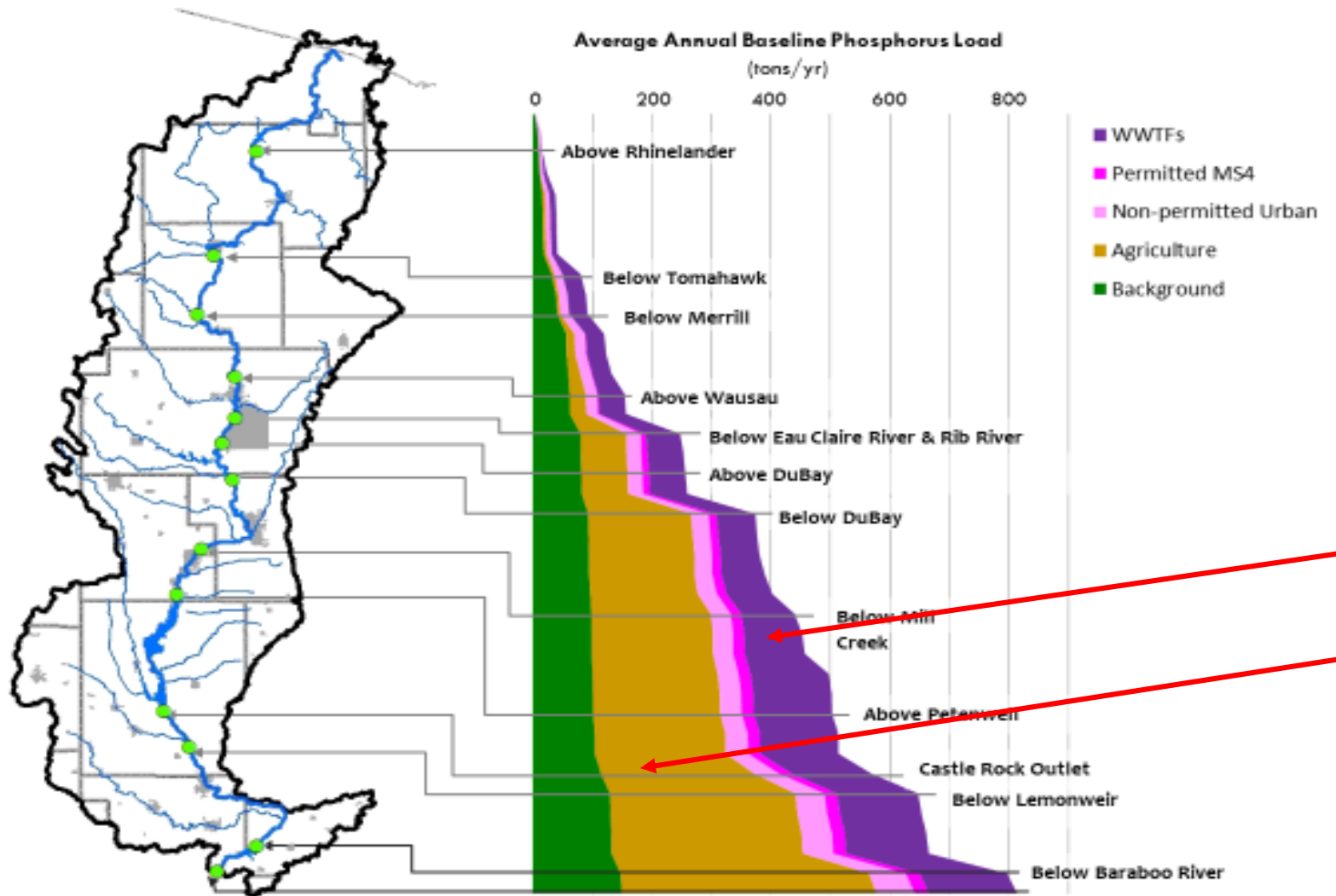
- * 14 Citizen Groups

Land Cover

	Cash Grain
	Cranberries
	CRP
	Dairy
	Deciduous Forest
	Developed/Open Space
	Grassland Herbaceous
	Herbaceous Wetlands
	Open Water
	Pasture/Hay
	Potato/Vegetable
	Woody Wetlands



Define sources of Pollutants



Time to implement!

PS

NPS

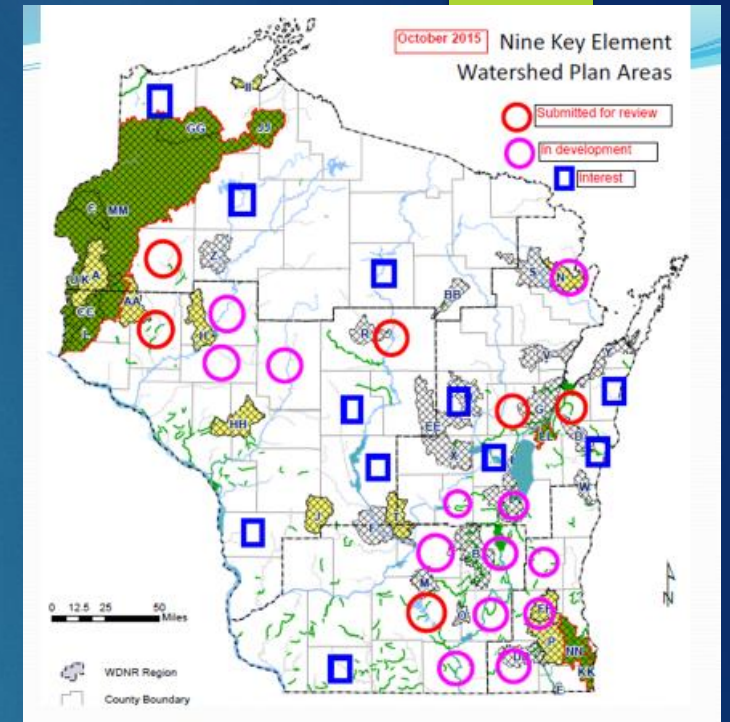
Nonpoint Source Implementation

- **Existing Nonpoint efforts that are helping implement the TMDL:**
 - **County LW plans – 10 year revisions**
 - **Updated Plans** reflecting TMDL findings and focus resources in specific areas
 - **Watershed Based Plans or Efforts**
 - **Fenwood Creek – Marathon County – 9 Key Element Plan and TRM grant**
 - **Mill Creek – Wood and Portage County - 9 Key Element Plan and TRM grant application**
 - **Little Lemonwier -9 Key Element**
 - **14 mile Creek – Adams, Wood Portage and Waushara – development (9K)**
 - **Baraboo River RCPP - Sauk County**
 - focus program within three sub-basins with high TP and Sediment Loads
 - **Farmer Lead Activities – Mill Creek, EPPIC, Lake Redstone, Antigo Flats**
 - **CLW**

9-Key Element Plans

- ▶ Similar to a mini TMDL with....9 Key Elements
 - ▶ Identify causes and sources
 - ▶ Estimate load reductions for proposed management
 - ▶ Description of NPS management needed
 - ▶ Identify sources of funds and authorities
 - ▶ Schedule for **IMPLEMENTATION**
 - ▶ Measurable milestones – are controls being implemented?
 - ▶ Define criteria that determine if water quality goals are being met
 - ▶ Monitor the effectiveness
- ▶ CLW

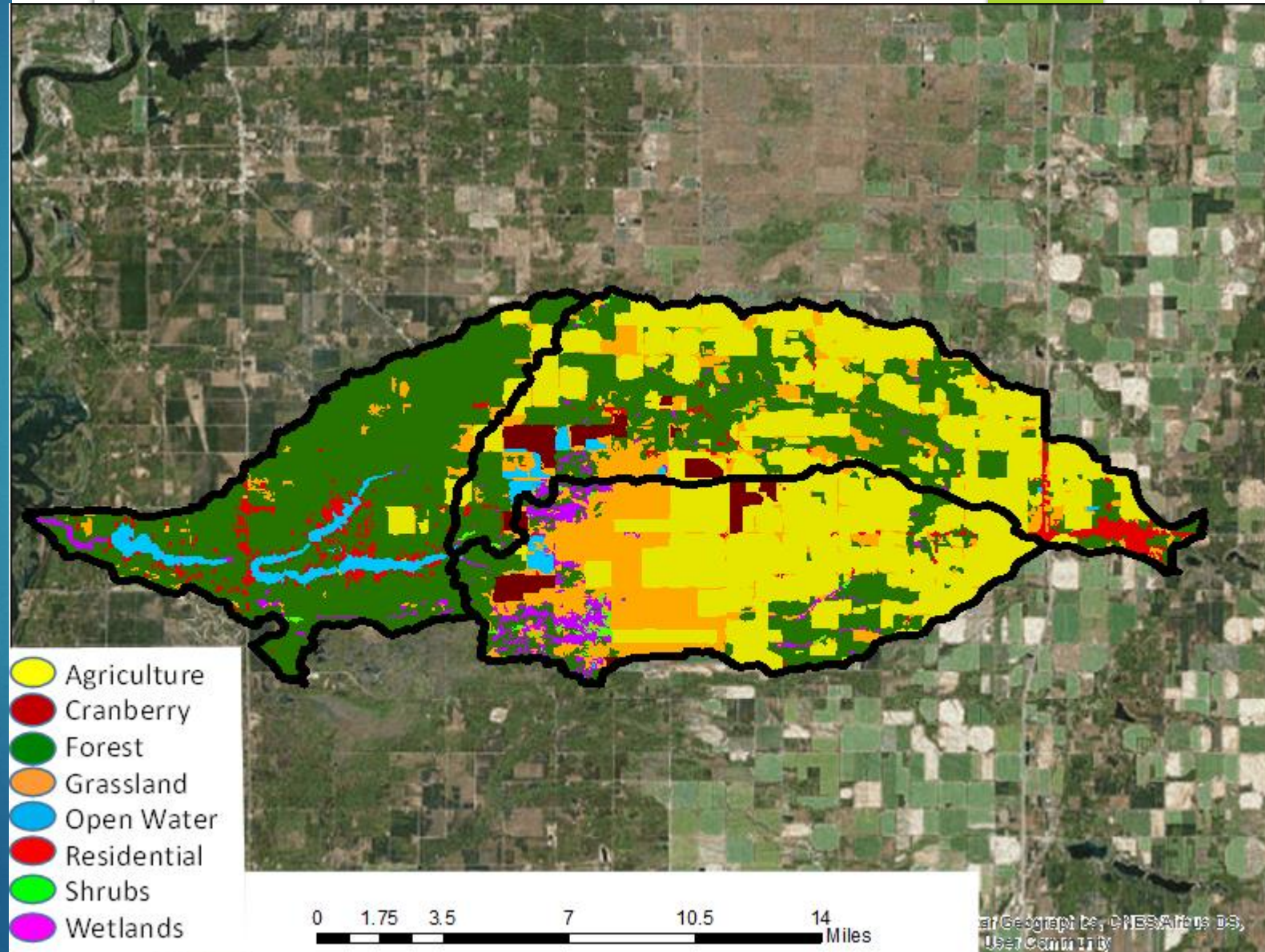
Lake/River Management Plans, Targeted Watershed Assessments, County LWRM Plans, other watershed plans can become 9-Key Element Plans.
Opens CWA Sec. 319 Funds



Watershed Groups

- Start as a Lake or River Association
- Address lake or river concerns holistically (watershed approach)
- Identify all sources
- Communicate to all watershed residents
- Work TOGETHER
- CLW

14-Mile Creek Watershed Tri-Lakes District



Lake residents concerned about HBA



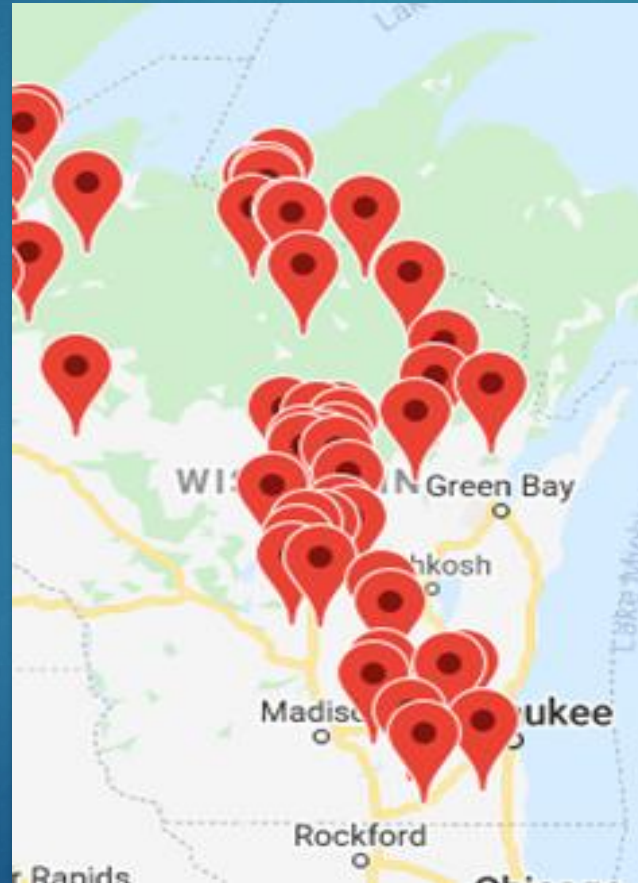
- ▶ Tr-Lakes reacted to HBA complaints
- ▶ Worked with DNR, County and Business Association
- ▶ Created 14-Mile Creek Watershed Group
- ▶ Focused on riparian owners (lawns, runoff control, etc.)
- ▶ Lake District expanded to include rural citizens and vegetable growers
- ▶ Utilized existing data from lake studies (funded by DNR LPG's) and current CBM
- ▶ Instrumental in development of 9-Key Element Plan
- ▶ First 9-Key to include a groundwater component
- ▶ N and P focused, emphasizing on N
- ▶ Waiting for EPA Approval
- ▶ Concurrently working on multiple fronts

Riparian Owners



- ▶ Start at your shore
- ▶ Reach out to small groups
- ▶ Find funding
- ▶ Implement
- ▶ Have fun!
- ▶ CLW

Riparian Owner Example: Healthy Lakes



- ▶ The peoples' segue to implementation
- ▶ Grant funds to cost share BMP's
- ▶ Empowers local citizens

www.healthylakeswi.com.



28 Counties

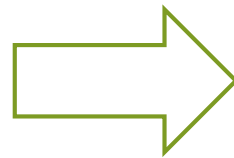
81 Lakes

474 Properties

794 practices

Municipalities

- ▶ Plan to control stormwater - MS4 or not?
- ▶ Inform and educate citizens about SW – label inlets
- ▶ Encourage rain gardens and other infiltration BMP's
- ▶ Make water your center



Municipalities

Becoming a MS4...or not...

- ▶ Public Outreach and Education
- ▶ Public Involvement and Participation
- ▶ Illicit Discharge Detection and Elimination
- ▶ Construction Site Pollution Control
- ▶ Post Construction Storm Water Management
- ▶ Pollution Prevention
- ▶ Storm Water Quality Management
- ▶ Storm Sewer Mapping and Annual Reporting

Agencies



- ▶ Here to help!
- ▶ Dispel myths
- ▶ Technical expertise
- ▶ Facilitating
- ▶ Education
- ▶ Made up of people who care
- ▶ We don't stand in front of you

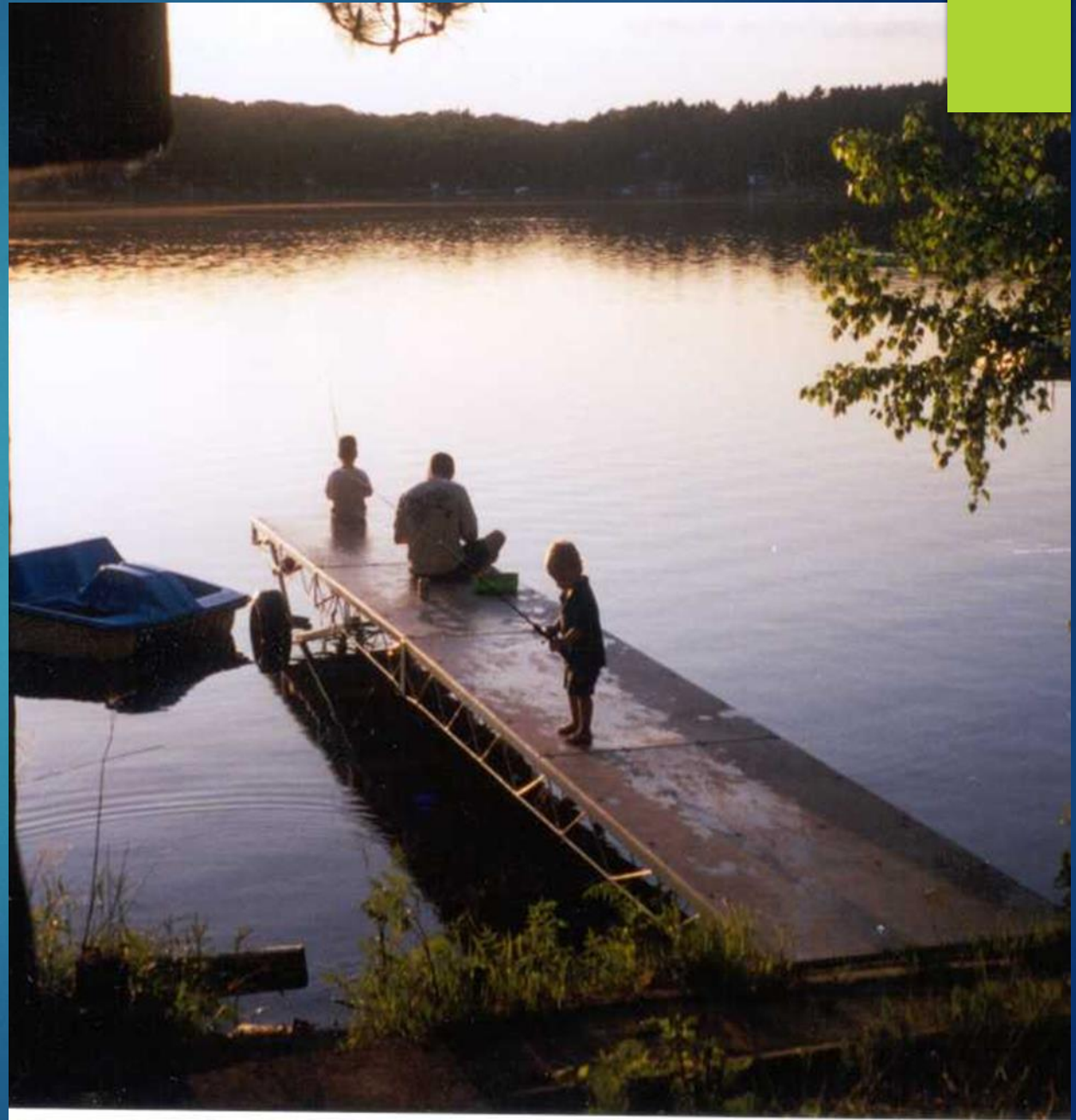
You

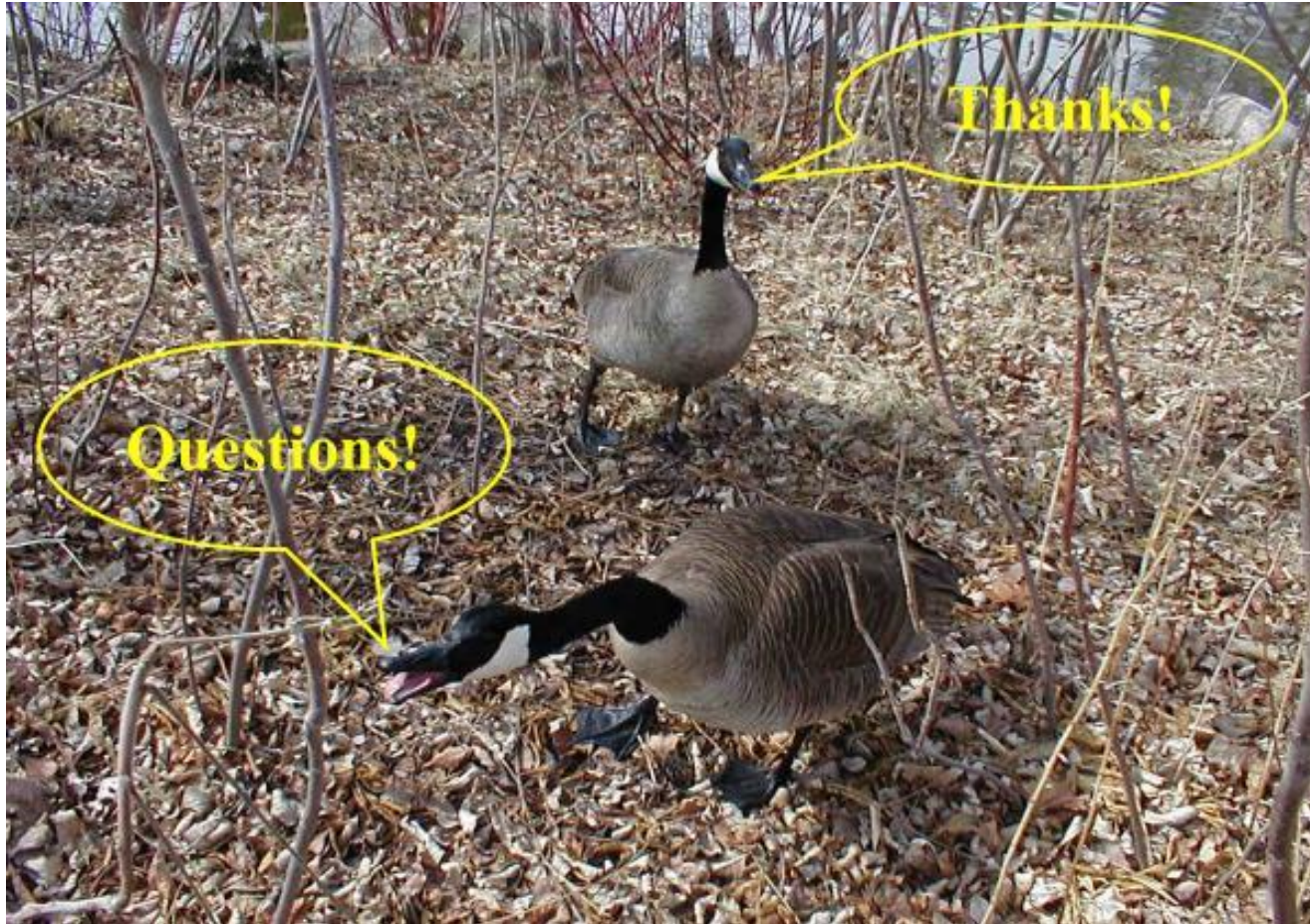
- ▶ You don't have to be a riparian – think watershed
- ▶ Do what you can (don't underestimate the little things)
- ▶ Join a group, or start one
- ▶ Listen to understand not to respond
- ▶ Reach out to experts
- ▶ Plan
- ▶ Implement



Me

- ▶ Learn
- ▶ Listen
- ▶ Educate
- ▶ Participate
- ▶ Practice
- ▶ Thank you





It's
People