



**Status Update July 28, 2011**

**Mary Knipper, KMLT Vice President**

**Dr. Jeff Thornton, Principal Planner SEWRPC**

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# **Delavan Lake The Restoration Project**

**Where Have We Been and  
Where Are We Going?**

# Delavan Lake

## History of Restoration Project

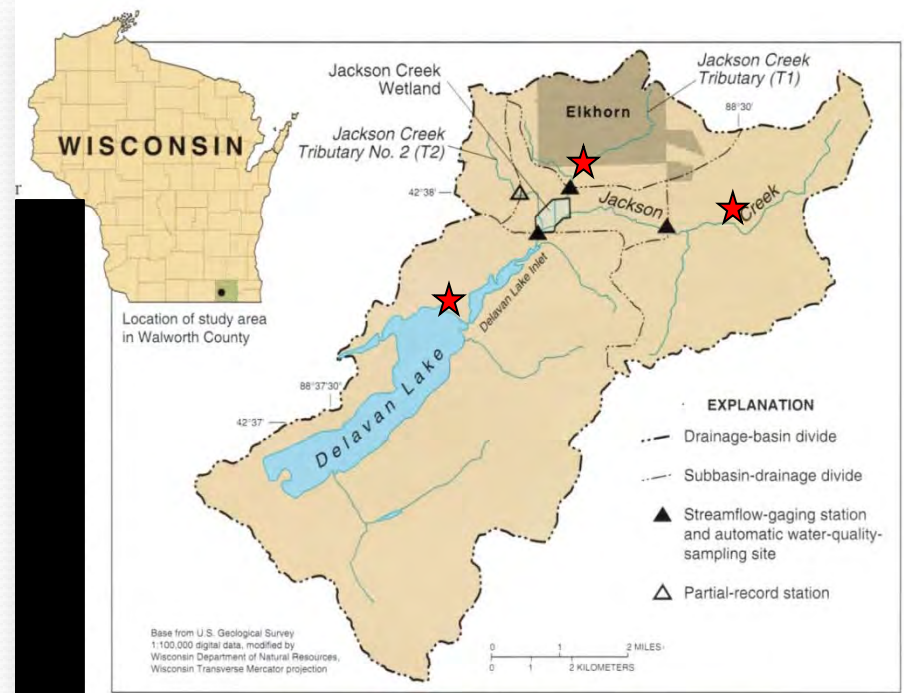
- Algae blooms were first identified in the 1940s



# Delavan Lake

## History of Restoration Project

- In 1969, the Town of Delavan, formed the Delavan Lake Sanitary District.
- 1981 a sewer system and regional treatment plant downstream of the lake was installed at a cost of nearly \$50 million. Replacing hundreds of faulty septic tanks and three upstream wastewater treatment plants



# Delavan Lake History of Restoration Project

- In 1983, two years after the new sewage treatment plant opened, the lake suffered its worst algae bloom.
- Angry residents demanded a solution.



# Delavan Lake History of Restoration Project

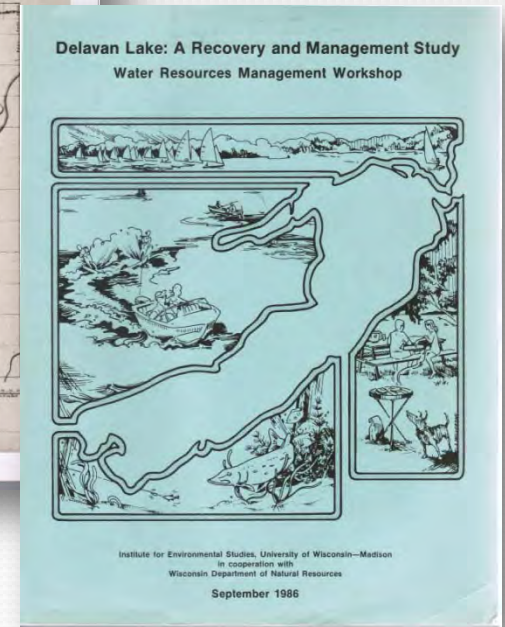
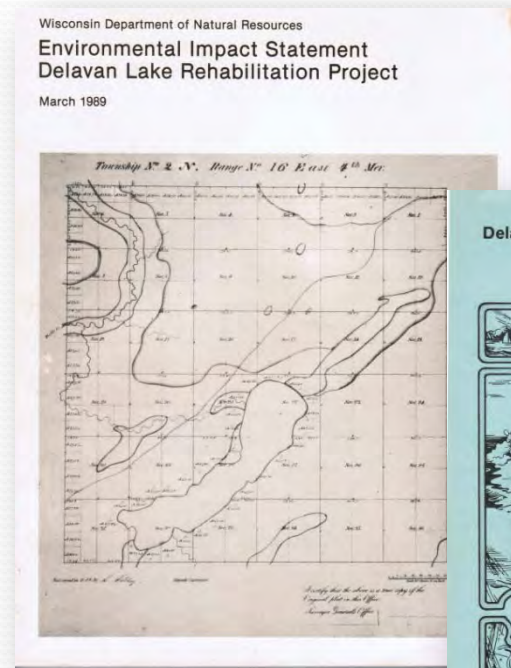
- In 1983, the Town of Delavan and Delavan Lake Sanitary District began working with the U.S. Geological Survey, Wisconsin DNR, and University of Wisconsin-Madison to study the reasons for the lake's continued decline. The goal was to create a comprehensive lake-rehabilitation plan.



# Delavan Lake

## History of Restoration Project

- Five years later, on September 1989, after exhaustive research, dozens of public hearings and new, revenue-generating tax on resort rooms, and acquisition of state and federal grants the \$7.1 million began.



# Lessons Learned from Restoration Project

- Social Lessons:
  - It takes partnerships and leadership to accomplish major projects
    - Delavan Lake Sanitary District
    - Town of Delavan
    - Wisconsin DNR
    - University of Wisconsin
    - U. S. Geological Survey
    - U. S. Environmental Protection Agency
    - Walworth County
    - Delavan Lake Improvement Association
    - State and Federal Representatives
    - Private citizens



# What Happened After the Restoration Project and What's Next for Delavan Lake?

# September 1989 to September 2009

- Celebrating 20 Years



# 1992 – 1995

- Life is good, having fun
- Swimming, boating, fishing
- Ecstatic residents
- Visitors coming in droves



# What's Missing In This Picture?

- THE PLAN
- THE PARTNERSHIPS



# Mid 90's

## Who's Minding the Store?

- USGS – water quality monitoring
- Delavan Lake Sanitary District – Self-Help Monitoring, harvesting program
- WDNR – fisheries monitoring, stocking and surveys
- Delavan Lake Improvement Association



# Influencing Policy and Behavior

Collaboration between DLIA and UW-Whitewater Dept.  
of Economic Research

*What Is the Value of a Clean and Healthy Lake to a Local  
Community*

# What Did We Learn?

- Shoreline properties appreciated by 273% between 1987 and 2003
- Delavan Lake residents and visitors contribute significantly to the economic activity annually

# What Did We Learn?

Spending related to Delavan Lake generates approximately \$70 Million annually and 812 jobs

A decline in water quality to pre-restoration levels would reduce total regional expenditures by about 8%, or approx. \$6 million/year

# What Impact did this Study Have on Lake Policy and Public Perception?

- Quantifying the return on investment has helped to leverage further support for lake protection and maintenance efforts
- Elected officials often reference the study and state their support for continued funding and planning
- Results of the study have engaged additional partners and stakeholders

# Lessons Learned

- Partnerships, Partnerships, and more Partnerships!!!!
- Nurture and maintain those critical partnerships
- A watershed –based approach is critical to Delavan Lake’s future





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**SEWRPC**

Serving the counties of  
Kenosha, Milwaukee,  
Ozaukee, Racine, Walworth,  
Washington, and Waukesha

# DELAVAN LAKE, WALWORTH COUNTY, WISCONSIN

SEWRPC COMMUNITY ASSISTANCE PLANNING REPORT  
NO. 253, MAY 2002  
SEWRPC MEMORANDUM REPORT NO. 190, MAY 2011

# 2002 Planning Approach

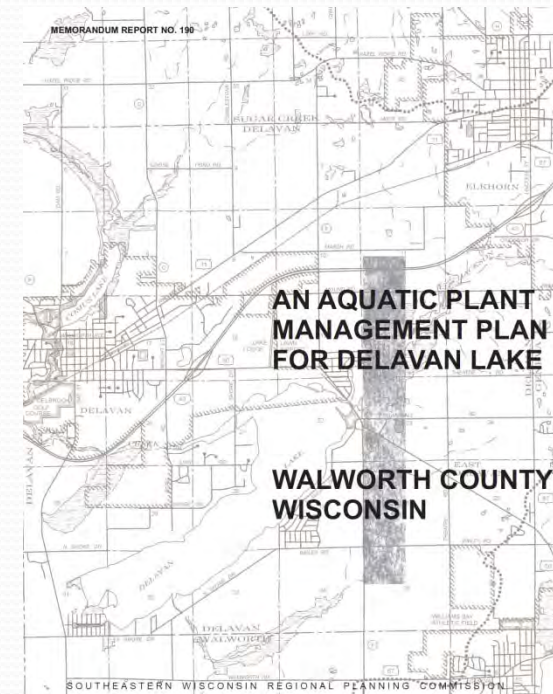
- Consider previous lake management recommendations
  - WDNR Priority Watershed Plan
  - UW-Madison IES Study
- Review data
  - land use
  - water quality
  - lake ecology (aquatic plant communities)
  - human uses
- Identify actions needed
- Define a lake management program



[http://maps.sewrpc.org/publications/capr/capr-253\\_lake\\_management\\_plan\\_delavan\\_lake.pdf](http://maps.sewrpc.org/publications/capr/capr-253_lake_management_plan_delavan_lake.pdf)

# 2011 Planning Approach

- Consider lake management plan recommendations
  - SEWRPC CAPR No. 253
- Review and update data
  - land use
  - water quality
  - lake ecology (aquatic plant communities)
  - human uses
- Identify current status
- Refine the management program



<http://www.sewrpc.org/SEWRPCFiles/Publications/mr/mr-190-an-aquatic-plant-management-plan-for-delavan-lake.pdf?>

# Overview of Land Use

- Multiple jurisdictions exist within the Delavan Lake drainage area
  - Appropriate zoning ordinances are *generally* in place
- Urbanization continues, especially adjacent to existing incorporated areas
  - “Smart Growth” plans foresee 8,800 acres of urban lands by 2035, an increase of 4,600 acres

# Overview of Human Use

- About 2,000 watercraft are located on the lake
- More than one-half are power boats
- Up to 18,000 launches per summer have been recorded; 2008 was a peak year
- Nonpeak watercraft use about 3% of total watercraft
- The Lake has “adequate” public access

# Overview of Lake Ecology

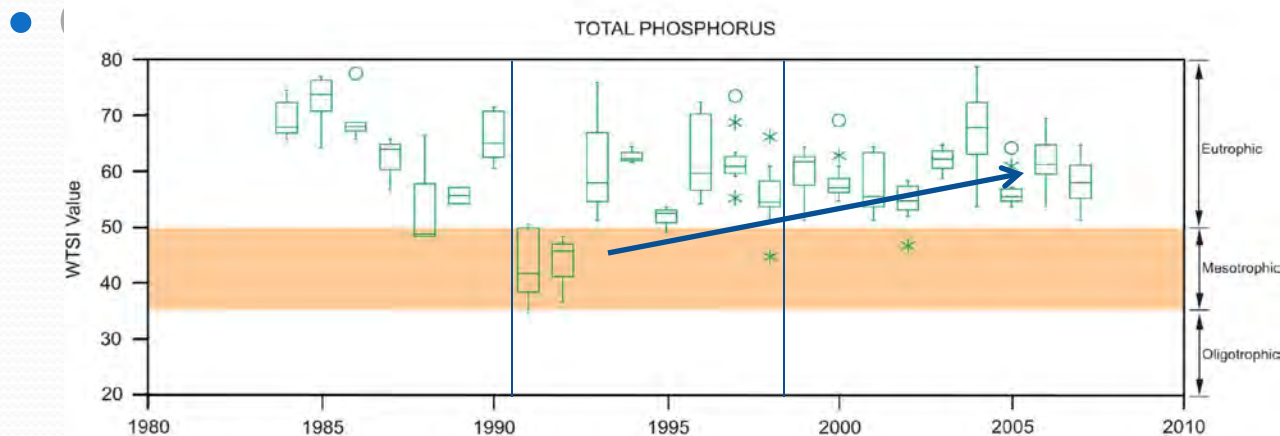
- Prior to 1991, the aquatic plant community was dominated by planktonic algae
- Subsequent to 1991, the aquatic plant community has been dominated by rooted plants
  - Non-native aquatic plants—Eurasian water milfoil and curly leaf pondweed—continue to occur in the Lake
  - Greater native plant diversity has been observed, but densities have decreased since 2006
- Since about 2002, algal blooms have become more frequent

# Overview of Water Quality

- Three distinct periods can be discerned in the water quality data:
  - 1983-1991: declining water quality
  - 1991-1999: improving water quality resulting from the restoration project
  - 1999-2007: declining, but “acceptable,” water quality

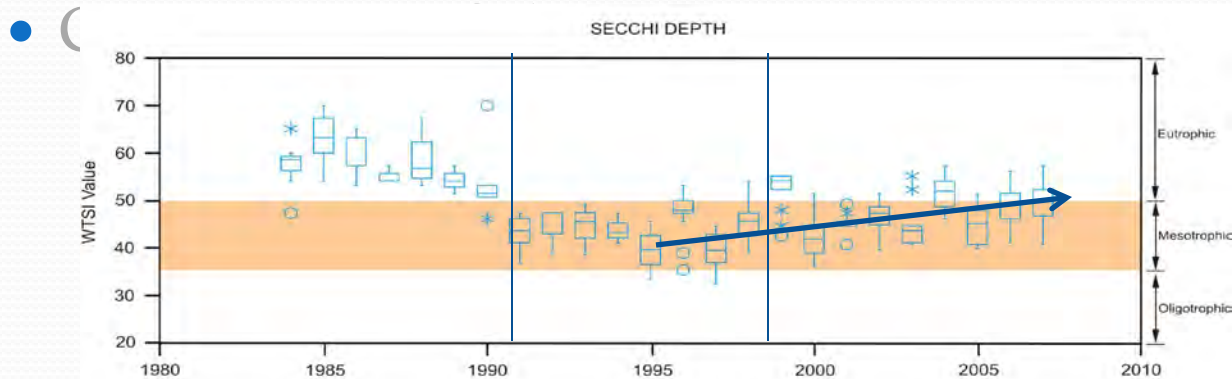
# Current Status

- 1986 lake rehabilitation goals, and results through 2008:
  - ✓ Reduce in-lake [P] to 0.035 mg/l
    - ⇒ [P] reduced to 0.010 mg/l, currently 0.050 mg/l
  - Increase summer transparency to 5 feet
  - Reduce in-lake chlorophyll to 10  $\mu\text{g/l}$



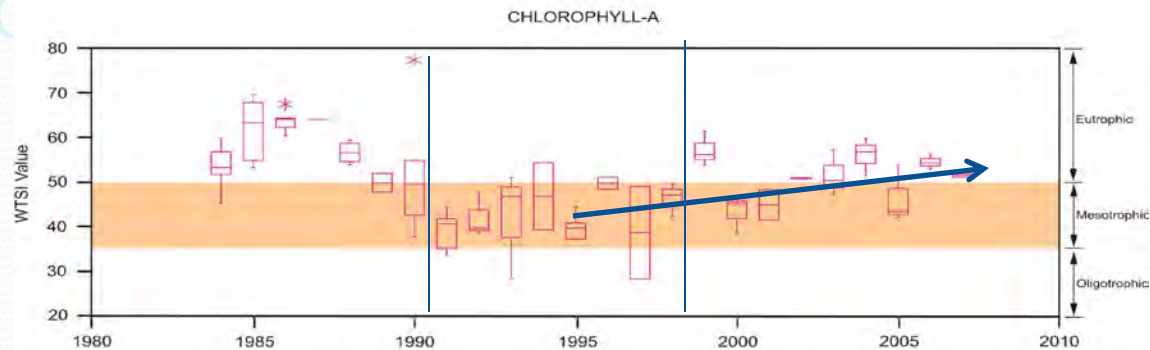
# Current Status

- 1986 lake rehabilitation goals, and results through 2008:
  - Reduce in-lake [P] to 0.035 mg/l
  - ✓ Increase summer transparency to 5 feet
    - ⇒ SDT increased to about 14 feet
    - ⇒ SDT has been slowly decreasing to about 10 feet
  - Reduce in-lake chlorophyll to 10  $\mu\text{g/l}$



# Current Status

- 1986 lake rehabilitation goals, and results through 2008:
  - Reduce in-lake [P] to 0.035 mg/l
  - Increase summer transparency to 5 feet
  - ✓ Reduce in-lake chlorophyll to 10  $\mu\text{g/l}$ 
    - ⇒ Chlorophyll reduced to about 4  $\mu\text{g/l}$
    - ⇒ Chlorophyll has increased to about 12  $\mu\text{g/l}$



# Remaining Gaps to be Bridged

- Continue to reduce external (watershed) nutrient loads
  - Enforce stormwater management and consider creation of metropolitan stormwater district
  - Maintain public sewerage system
- Maintain navigational access
  - Manage aquatic plant populations
  - Consider dredging of navigational access lanes
- Continue informational programming

# Recommended Plan Elements

- Water Quality and Quantity Management
  - Continue in-lake water quality monitoring
  - Continue water quality monitoring of Jackson Creek
  - Continue dam operations in accord with WDNR permit requirements
- Aquatic Plant Management
  - Continue aquatic plant management program
  - Install shoreland buffers

# Recommended Plan Elements

- Land Use Management
  - Implement adopted county and local land use plans
    - Protect environmentally valuable lands
    - Develop and enforce stormwater management ordinances
  - Consider formation of a regional stormwater utility
- Watershed Management
  - Install and maintain riparian buffers
  - Enhance and maintain the Mound Road wetland
  - Provide sewerage services according to adopted plan; inspect and maintain onsite sewage disposal systems
  - Implement urban and rural “good housekeeping” practices

# Recommended Plan Elements

- Recreational Use Management
  - Maintain adequate public recreational boating access pursuant to NR 1 requirements
  - Maintain navigational access
- Informational and Educational Programming
  - Continue to utilize existing media and informational outlets to encourage “good housekeeping”
  - Consider implementing school-based programs in partnership with local school districts
  - Encourage continuing education of Board members, Commissioners, and citizens



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**Maggie Zoellner, Delavan Lake WWIN Project Manager**

# Partnering with a Non-profit

- Delavan Lake Sanitary District approached the Kettle Moraine Land Trust seeking a partner
- Land trusts are non-profits who can work without regard to municipal or political boundaries
- Delavan Lake Improvement Association (DLIA) and Southeastern Wisconsin Regional Planning Commission (SEWRPC) also wanted to be watershed partners

# KMLT Tasks Defined 2010

- Begin the multi-year process that leads to the realization of a collaborative network implementing actions to protect water quality of Delavan Lake
  - Network Focus: Improved land management practices which have the potential to significantly abate current runoff pollution.
- Engage the farming community through formation of a partnership with USDA – Natural Resources Conservation Service

# 2010 Work Plan

- Begin the multi-year process that leads to the realization of a collaborative network implementing actions to protect water quality of Delavan Lake
  - Project manager hired, vision, goals, framework and guidance documents created or identified; member organizations determined; level of interest identified and recruitment materials developed; organizations & municipalities recruited; watershed recommendations reviewed & prioritized; priority actions selected where Delavan Lake WIN could be most effective.

# 2010 Work Plan


- Engage the farming community through formation of a partnership with USDA – Natural Resources Conservation Service
- Successful recipient of Mississippi River Healthy Basin funding. A 3 year collaborative effort between Delavan Lake WIN partners, Walworth County and NRCS

# Early success and committed partners

- As directed by DLSD, funds for the Delavan Lake and Jackson Creek Watersheds were sought through USDA – Natural Resources Conservation Service’s Mississippi River Basins Healthy Initiative (MRBI)
- This request supported by Walworth County who is contributing up to \$42,000 in in-kind assistance
- \$200,616 awarded over a three year period
- Only 2 projects approved in Wisconsin

# Early success – MRBI Funding

- 2010 - \$119,260
- 2011 - \$70,803
- 2012 - NRCS estimates \$73,000 will be available
- Total: \$263,063

- 
- The MRBI funds are available to all farmers in the Delavan Lake and Jackson Creek watersheds.
  - Interested farmers must submit an application to NRCS
  - All applicants are awarded points based on past commitment to conservation practices, potential for water quality improvements, improved soil health and increased wildlife habitat

- NRCS has designated 46 practices for approval such as: cover crops, grassed waterways, wetland restoration, residue management, stream crossings & field borders.
- Only practices which qualify under the Mississippi River Basin Healthy Initiative will be funded.
- Stream bank stabilization is not a covered practice for MRBI funding.



Residue Management

- Six individual contracts have been awarded so far with the MRBI funding

*MRBI farmer in no-till corn field with Delavan Lake WIN project manager*



# Building Networks

- Efficient, active coalitions accomplish more than a single person or organization
- Coalitions are also seen by funders as a better investment
- Networks take time to develop
- Networks need to be managed

# Networks evolve differently

- Networks face different challenges therefore they look and act accordingly
- They work well because they are addressing specific needs of a specific area
- A significant investment by a founding member or foundation normally provides initial support

# How Delavan Lake WIN was formed

- Sharing information and resources among members avoids redundant efforts & maximizes limited resources
- Followed successful models for watershed action networks
- Structure, goals , work process and sustainable plan developed with coalition consultant guiding the process

# How Delavan Lake WIN was formed

- One steering committee with one representative from each organization
- Two working groups: land management, education & outreach
- Utilize Delavan Lake management documents to avoid re-doing the work of others

Steering  
Committee

Staff (Maggie)



Land  
Management  
Work Group

Education &  
Outreach Work  
Group

Future Work  
Groups



City of Delavan\*

City of Elkhorn\*

Delavan Lake Improvement Association

Delavan Lake Sanitary District

USDA - Farm Service Agency

Kettle Moraine Land Trust

Natural Resources Conservation Service USDA

Southeastern WI Regional Planning Commission

Wisconsin Department of Natural Resources

Wisconsin Lakes

UW Extension

WalCoMet\*

Walworth County\*

Walworth County Lakes Association

\*Observing Members

# We Are On Track:

- One Information Partner meeting & four Delavan Lake WIN working meetings
- Many municipal presentations and four community presentations given
- Delavan Lake WIN members believe in the network
- In-kind contributions by several members demonstrate the importance of their investment

# We Are On Track, continued:

- National, State, Regional & Local partner commitments
- 10 Committed Partners, 4 observing, Geneva township
- Guided review of 50+ recommendations and developed a 2-Year Work Plan
- Member organizations are taking responsibility for completing portions of the work plan

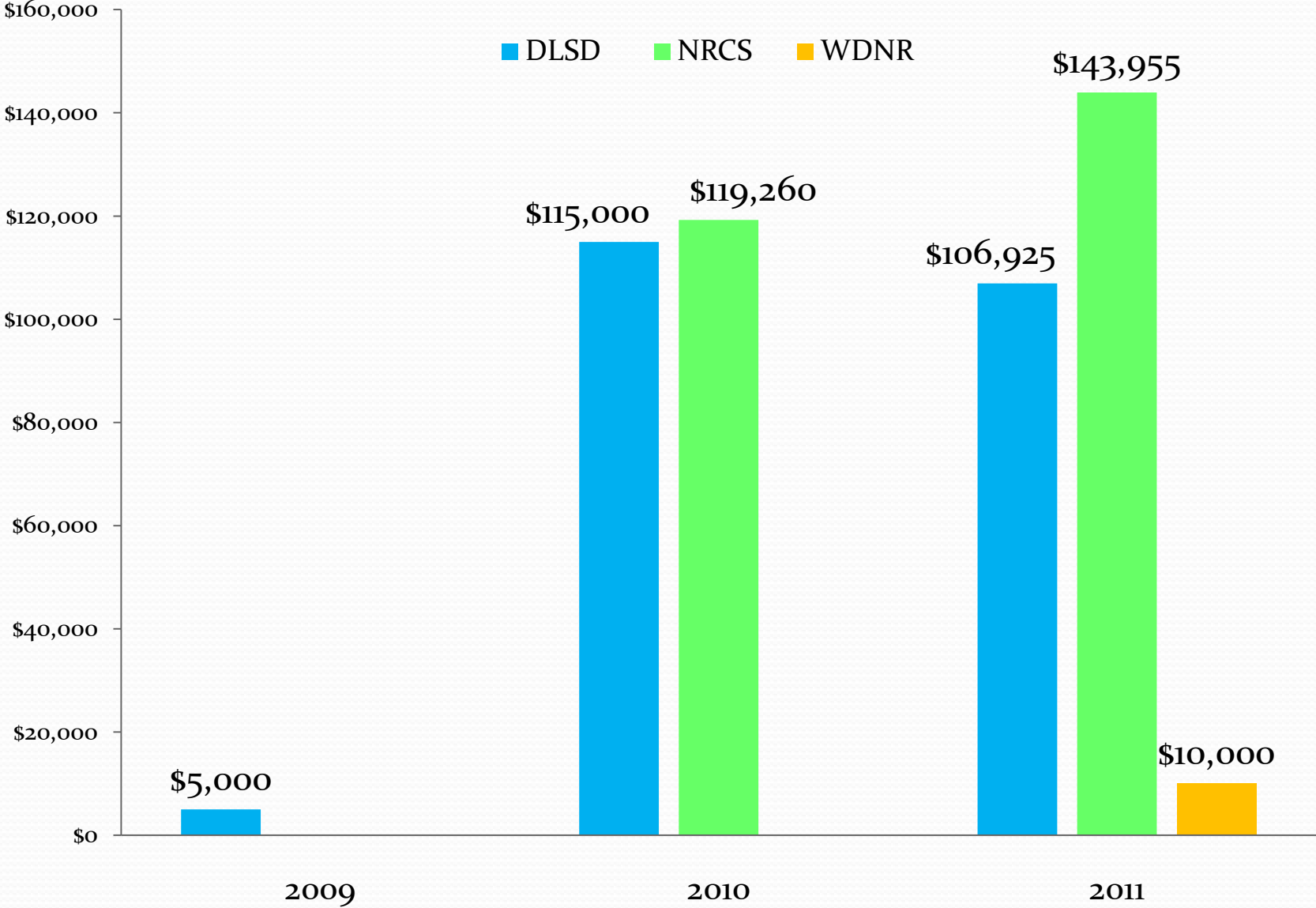
# Delavan Lake WIN Priority Actions

## 2 Year Work Plan

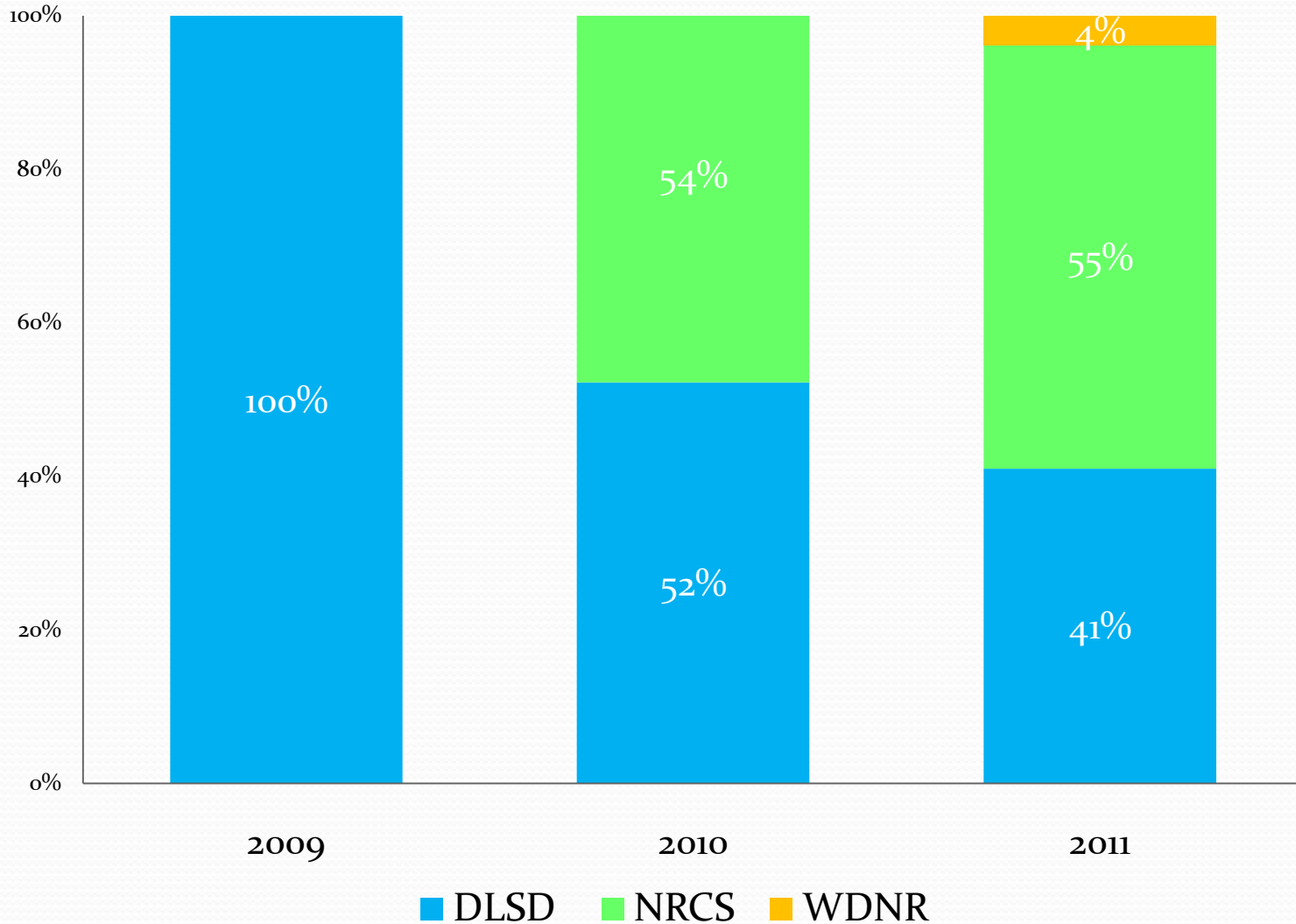
1. Urban Non-Point Source Pollution Abatement
2. Establishment of Buffers & Protection/Restoration of Wetlands
3. Lake Monitoring
4. Seek Funding



# Delavan Lake WIN Contributions



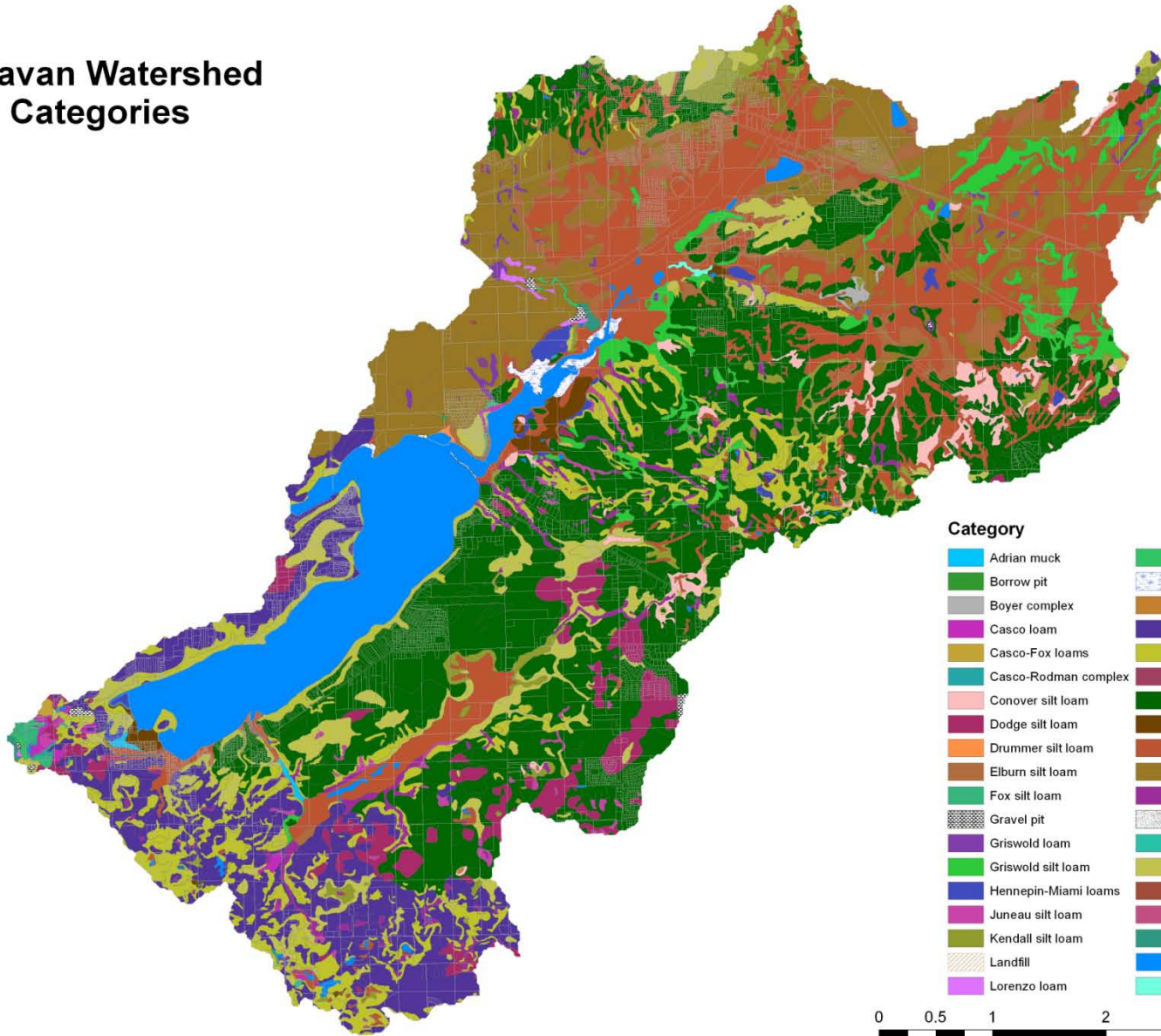
# Delavan Lake WIN Member Contributions



# We Are On Track, continued:

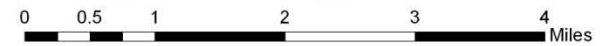
- Received MRBI grant for agricultural improvements
- Received WDNR grant to identify priority projects along Jackson Creek
- Developed database of the watershed to track land use
- Began establishing stream monitoring points to evaluate effectiveness of conservation practices

# Lake Delavan Watershed Soil Categories



## Category

- |                      |                        |
|----------------------|------------------------|
| Adrian muck          | Lorenzo-Rodman complex |
| Borrow pit           | Marsh                  |
| Boyer complex        | Martinton silt loam    |
| Casco loam           | McHenry silt loam      |
| Casco-Fox loams      | Miami loam             |
| Casco-Rodman complex | Miami sandy loam       |
| Conover silt loam    | Miami silt loam        |
| Dodge silt loam      | Palms muck             |
| Drummer silt loam    | Pella silt loam        |
| Elburn silt loam     | Plano silt loam        |
| Fox silt loam        | Radford silt loam      |
| Gravel pit           | Sandy lake beaches     |
| Griswold loam        | Saylesville silt loam  |
| Griswold silt loam   | St. Charles silt loam  |
| Hennepin-Miami loams | Troxel silt loam       |
| Juneau silt loam     | Walkkill silt loam     |
| Kendall silt loam    | Warsaw silt loam       |
| Landfill             | Water                  |
| Lorenzo loam         | Wet alluvial land      |



# We Are On Track & On The Ground

- Residue Management / No-till 287 acres
- Cover Crop 195.5 acres
- Grassed Waterway 3.2 miles
- Nutrient Management 590 acres
- Filter Strips 1.6 acres



# 2011 – 2012 Work Plan

- Continue building support for Delavan Lake WIN, establish partner roles, facilitate successful project outcomes by identifying needs and securing resources
- Work with agricultural community to reduce polluted run-off and administer MRBI grant
- Propose additional funding opportunities and administer current grants
- Oversee creation and distribution of education & outreach materials
- Continue to develop a monitoring component of the project

# Delavan Lake WIN Priority Actions

## 2 Year Work Plan

1. Urban Non-Point Source Pollution Abatement
2. Establishment of Buffers & Protection/Restoration of Wetlands
3. Lake Monitoring
4. Seek Funding





City of Delavan  
City of Elkhorn  
Delavan Lake Improvement Association  
Delavan Lake Sanitary District  
USDA - Farm Service Agency  
Kettle Moraine Land Trust  
Natural Resources Conservation Service USDA  
Southeastern WI Regional Planning Commission  
Wisconsin Department of Natural Resources  
Wisconsin Lakes  
UW Extension  
WalCoMet  
Walworth County  
Walworth County Lakes Association

Potential Members

Town of Delavan  
Town of Geneva  
Town of Walworth  
Local School Districts  
Pheasants Forever  
Ducks Unlimited  
Chamber of Commerce  
??????????



# Questions?

Following are questions and answers from the July 28, 2011 presentation at the Delavan Lake Sanitary District office.

## **What does the 2012 Delavan Lake WIN budget look like?**

- The operating funds needed to manage Delavan Lake WIN will be proposed to the DLSD in September. The funding need to facilitate the network is expected to decrease in 2012, while the budget to implement Delavan Lake WIN programs and projects is expected to increase.

## **What is the status of the work Lake & Pond Co. was contracted to complete on Jackson Creek?**

- Lake & Pond Solutions Co. provided DLSD with a photo-inventory of potential trouble areas along Jackson Creek and some of its tributaries. The photographs are accompanied by global positioning satellite (gps) locations. Photographs and location information provide useful visual indication of the stream condition at one point in time. Further information about the degree of bank erosion, the width of the stream, deposition of the stream bed, and status of the aquatic habitat will help pinpoint important restoration and protection areas along Jackson Creek. This additional data will be collected as part of the Wisconsin DNR River Protection and Planning Grant that will get underway in 2012.



**Where are the projects located that have been funded by the Mississippi River Healthy Basins Initiative program?**

•3 projects are located north of Hwy 50 in the Jackson Creek sub-basin and 3 are south of Hwy 50 in the Delavan Lake sub-basin.

**Who monitors the projects completed with the Mississippi River Healthy Basins Initiative funding?**

•Staff of the Walworth County Land Use and Resource Management department.

**What are the plans for obtaining donations from businesses and private citizens?**

•This is an excellent recommendation and will be undertaken by the end of 2011 stressing the need for funds to implement the priority actions.

# Which organizations are on the Delavan Lake WIN steering committee and work groups?

## Steering Committee

Delavan Lake Sanitary District	Charlie Handel
Southeastern Wisconsin Regional Planning Commission	Jeff Thornton
Wisconsin Department of Natural Resources	Jim D'Antuono
Wisconsin Lakes	Karen Von Huene
Walworth County Metropolitan Sewerage District	Karla Eggink*
Kettle Moraine Land Trust	Mary Knipper
University of Wisconsin Extension	Peg Reedy
Delavan Lake Improvement Association	Sue Heffron

\*Pending WalCoMet board approval

## Education & Outreach Work Group

Delavan Lake Sanitary District	Education & Outreach
Southeastern Wisconsin Regional Planning Commission	Education & Outreach
Delavan Lake Improvement Association	Education & Outreach
Walworth County Lakes Association	Education & Outreach
University of Wisconsin Extension	Education & Outreach
Wisconsin Department of Natural Resources	Education & Outreach
Wisconsin Lakes	Education & Outreach
Farm Service Agency	Education & Outreach
University of Wisconsin Extension	Education & Outreach*

\*Work group liaison

## Land Management Work Group

Kettle Moraine Land Trust	Land Management
USDA - Natural Resources Conservation Service	Land Management
Wisconsin Department of Natural Resources	Land Management
City of Elkhorn	Land Management
Southeastern Wisconsin Regional Planning Commission	Land Management
Walworth County Metropolitan Sewerage District	Land Management *

\*Work group liaison

**Are there details available about the work group action items such as who is responsible for the tasks and when the tasks will be started?**

•The work groups are finalizing implementation details and areas of responsibility for each of the actions. As soon as the action plans are finalized they will be posted on the DLSD website. We anticipate this occurring by October 2011.

**When will the Delavan Lake WIN website and brochure be completed?**

•These tasks are targeted for the second half of 2011 and will be complete by the end of this year.

**Can more timely information about the status of Delavan Lake WIN be provided? Residents would appreciate knowing how the member organizations are contributing and when actions will be implemented.**


•The Delavan Lake WIN project manager will post monthly reports on the DLSD website. This presentation will serve as the current report through the end of July 2011.

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## **How long will the Delavan Lake WIN project go on?**

- The best chance of maintaining sustainable water quality in Delavan Lake will occur if municipalities and organizations continue to work together and actively collaborate with each other. The intent of Delavan Lake WIN is that the partnership will last forever.



Further information can be obtained by contacting Maggie Zoellner, Delavan Lake WIN project manager at: [maggie@kmlandtrust.org](mailto:maggie@kmlandtrust.org), or 262-949-7211.