

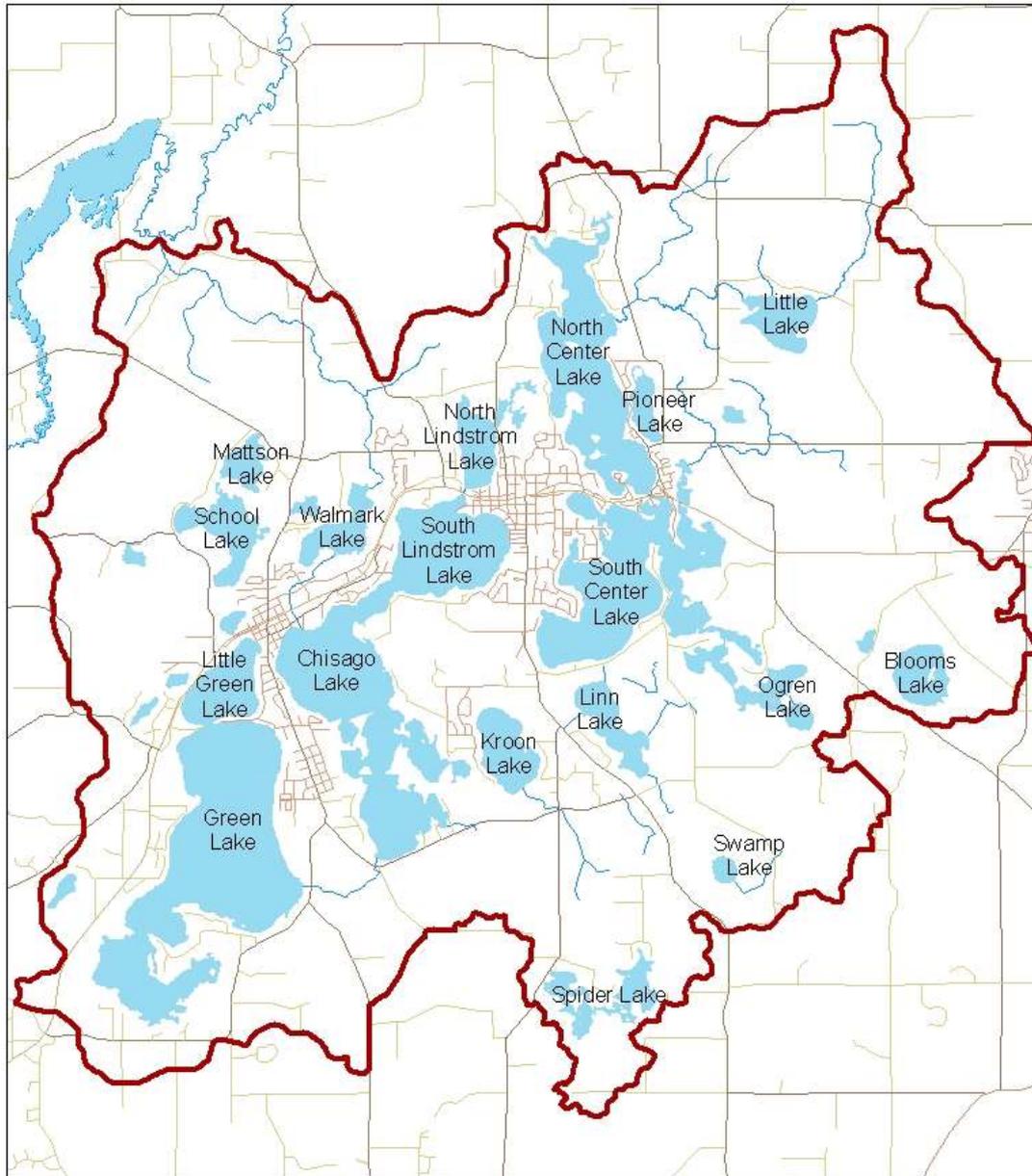


Chisago Lakes  
Lake Improvement District

2012 Annual Report



**Mission:**  
**Protect and restore**  
**the surface water resources of**  
**the Chisago Lakes watershed**

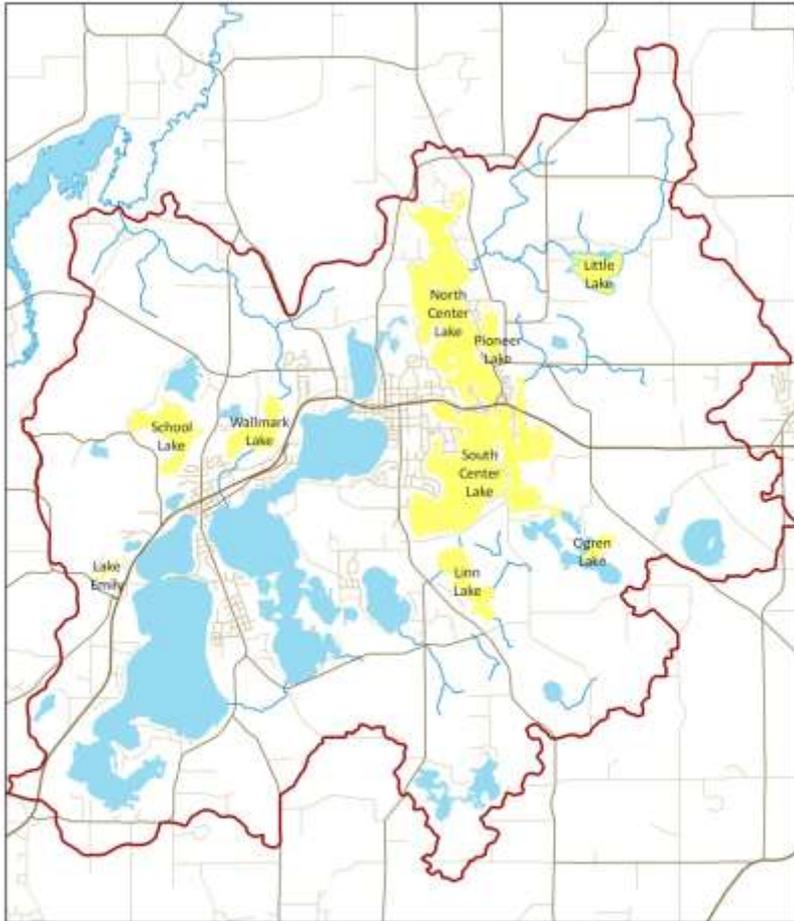


**Chisago Lakes Chain of Lakes Watershed**

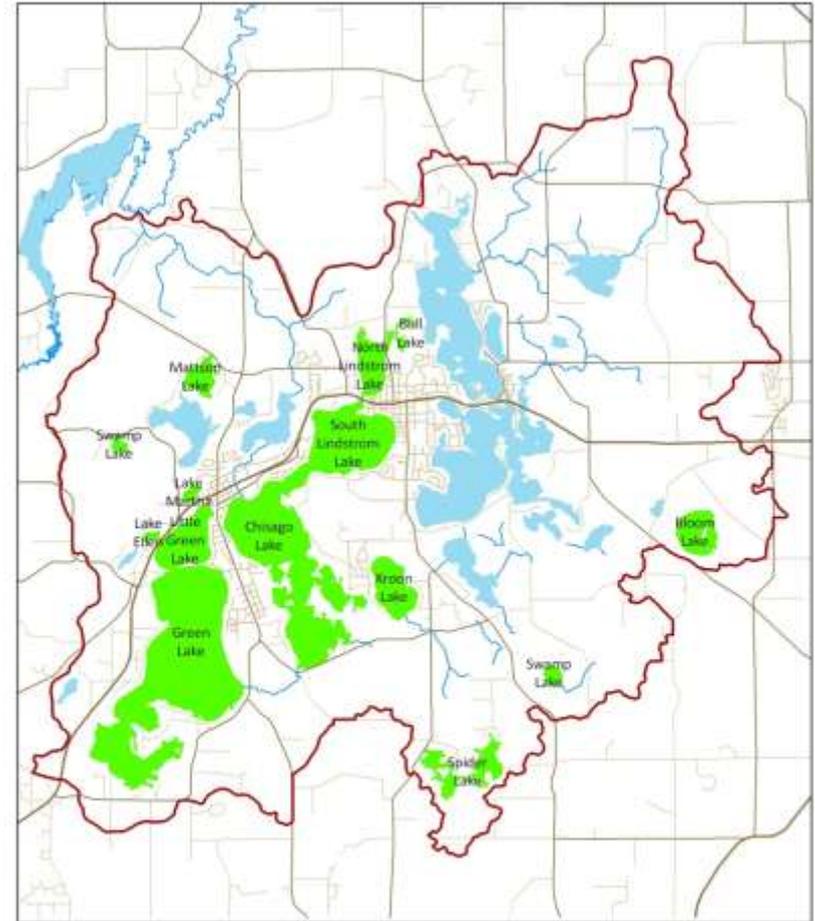


**GOAL:**  
**Preserve, protect and  
enhance water quality  
within the Chisago Lakes  
watershed**

# Protection and Restoration Plan



**Chisago Lakes Chain of Lakes Watershed**  
Impaired Waters



**Chisago Lakes Chain of Lakes Watershed**  
Protection Lakes



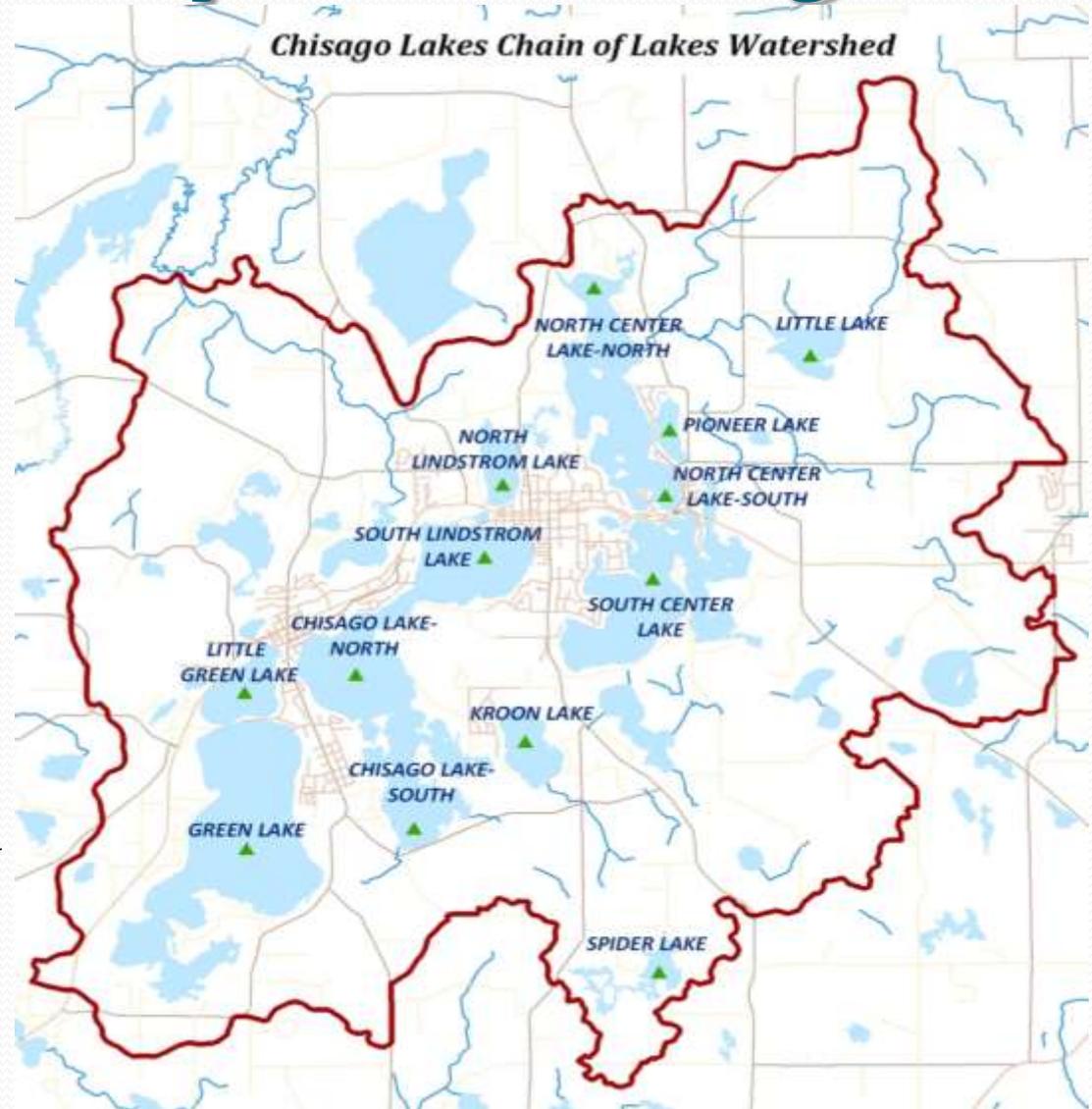
# Protection and Restoration Plan

- All lakes studied for Restoration and Protection Plan
- Long list of BMPs identified for future installation
- Once approved use the TMDL & Restoration and Protection plan to apply for extra project funding



# Water Quality Monitoring

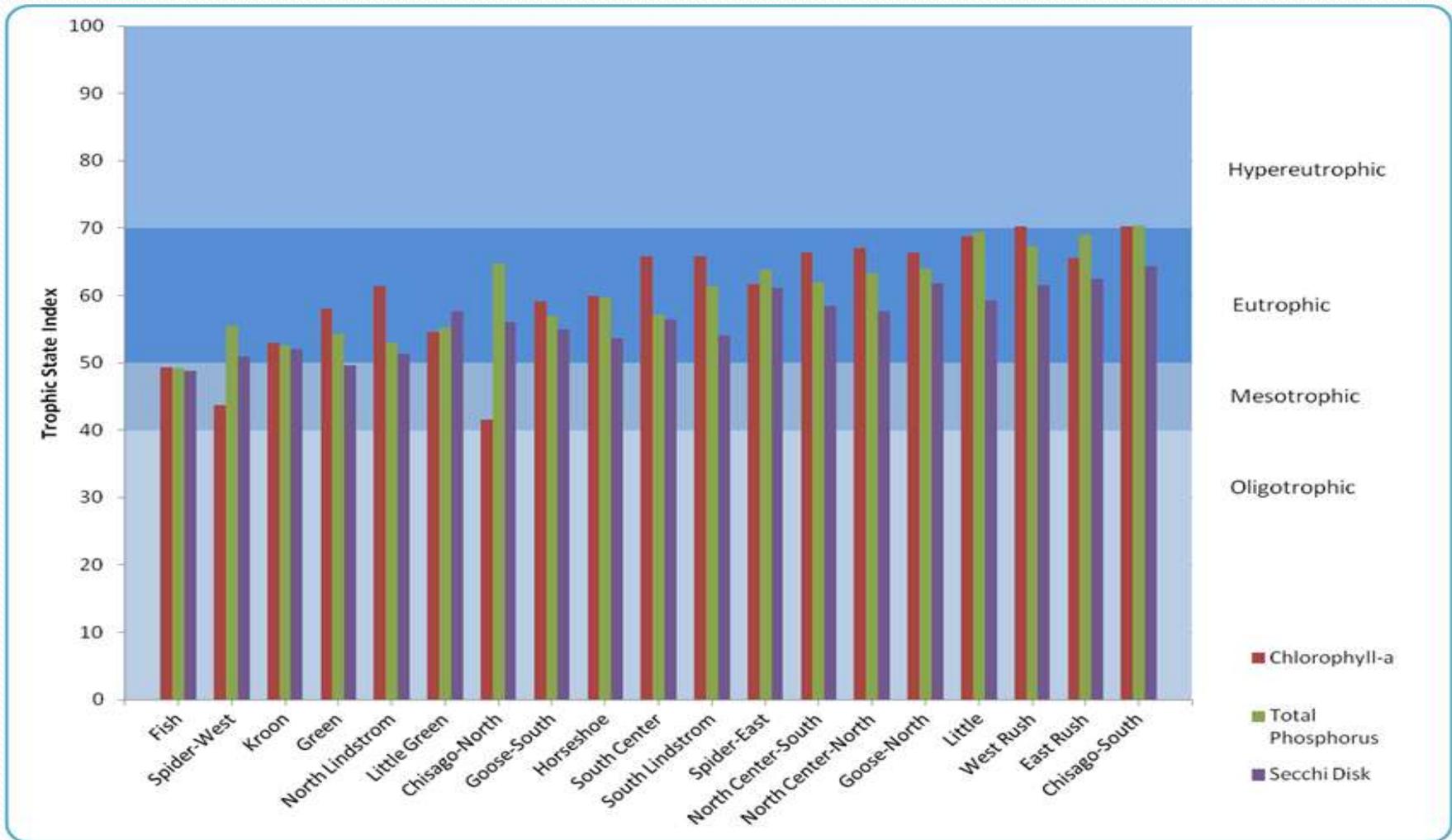
- 12 sites
- Once per month
  - May – September
- Chlorophyll
- Color
- Invasive Plants
- Nitrogen
- Phosphorus
- Physical Condition
- Recreational Suitability
- Temperature
- Transparency



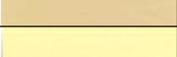
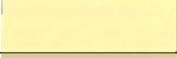
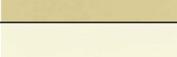
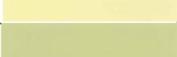
# Water Quality Monitoring Summary

Lake	2012 Grade	2011 Grade
Spider-West	B-C	
Kroon	C	B
Green	B-C	C
North Lindstrom	C	B
Little Green	C-D	C
Chisago-North	C	B
South Center	C	C
South Lindstrom	C	B
Spider-East	C	C
North Center-South	C	C
North Center-North	C	C
Little	D	C-
Chisago-South	D	C

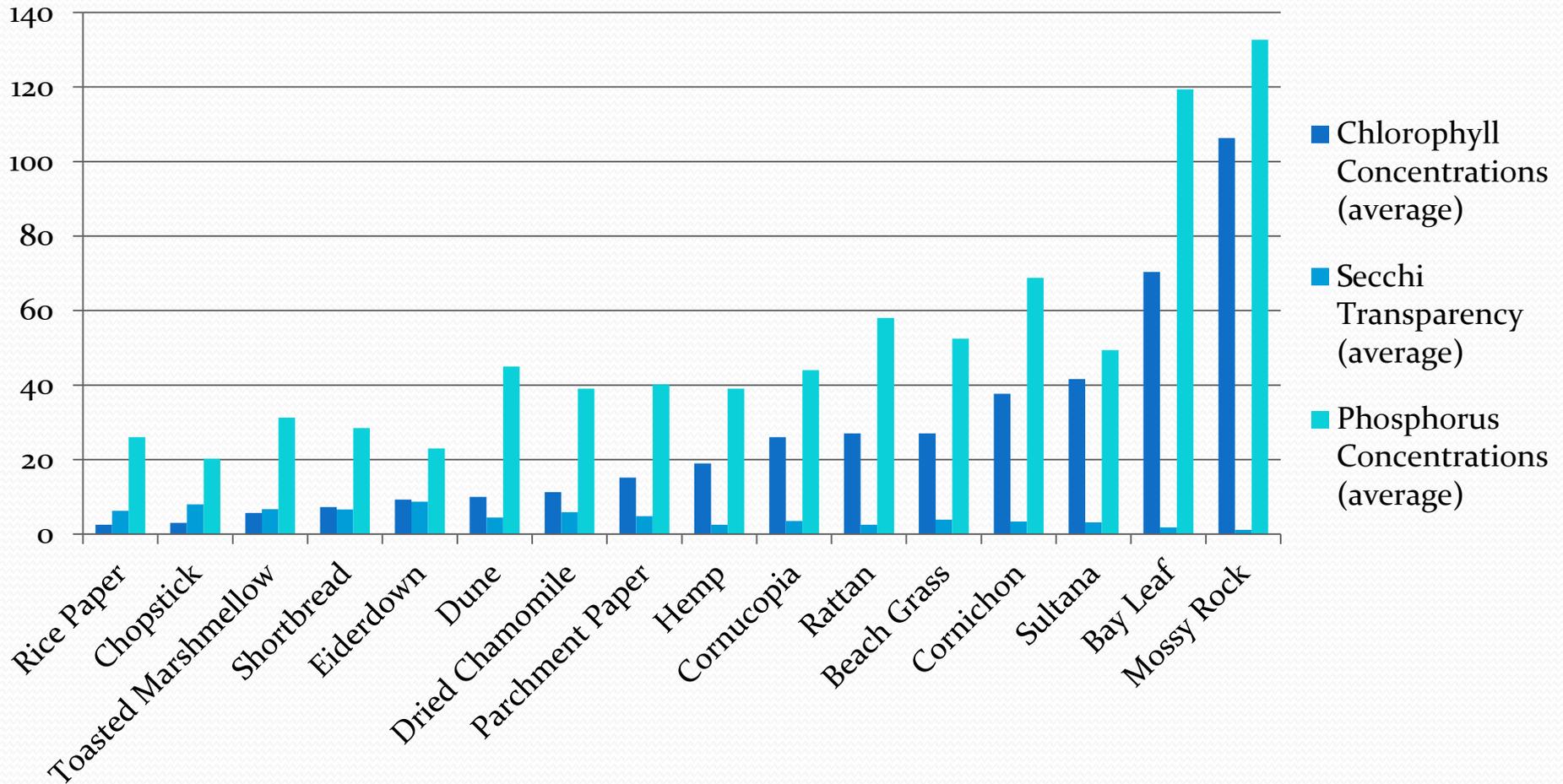
# Water Quality Monitoring Summary



# Lake Water Color

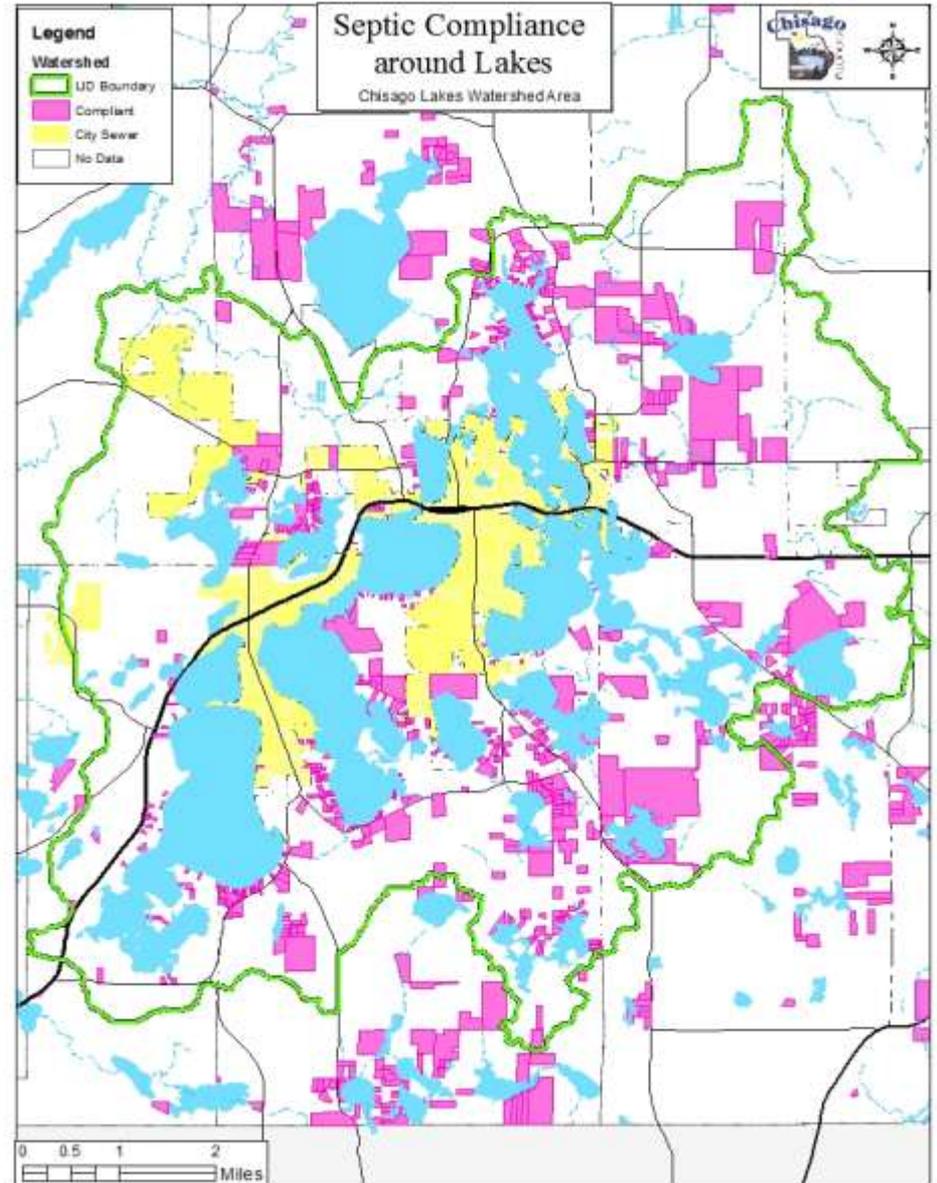
Color Name		Chlorophyll-a Concentrations (average $\mu\text{g/L}$ )	Secchi Transparency (average M)	Phosphorus Concentrations (average $\mu\text{g/L}$ )	Number of Samples
Rice Paper		2.5	6.25	26	2
Chopstick		3	8	20.3	3
Toasted Marshmallow		5.7	6.7	31.3	9
Shortbread		7.3	6.6	28.5	4
Eiderdown		9.3	8.7	23	3
Dune		10	4.5	45	1
Dried Chamomile		11.3	5.9	39	7
Parchment Paper		15.2	4.8	40.2	13
Hemp		19	2.5	39	1
Cornucopia		26	3.5	44	1
Rattan		27	2.5	58	1
Beach Grass		27	3.9	52.5	36
Cornichon		37.7	3.4	68.8	34
Sultana		41.6	3.2	49.4	7
Bay Leaf		70.4	1.8	119.4	5
Mossy Rock		106.3	1.17	132.7	3

# Lake Water Color



# Septic Compliance within Chisago Lakes Watershed

- City Sewer
- Systems inspected and compliant
- Unknown

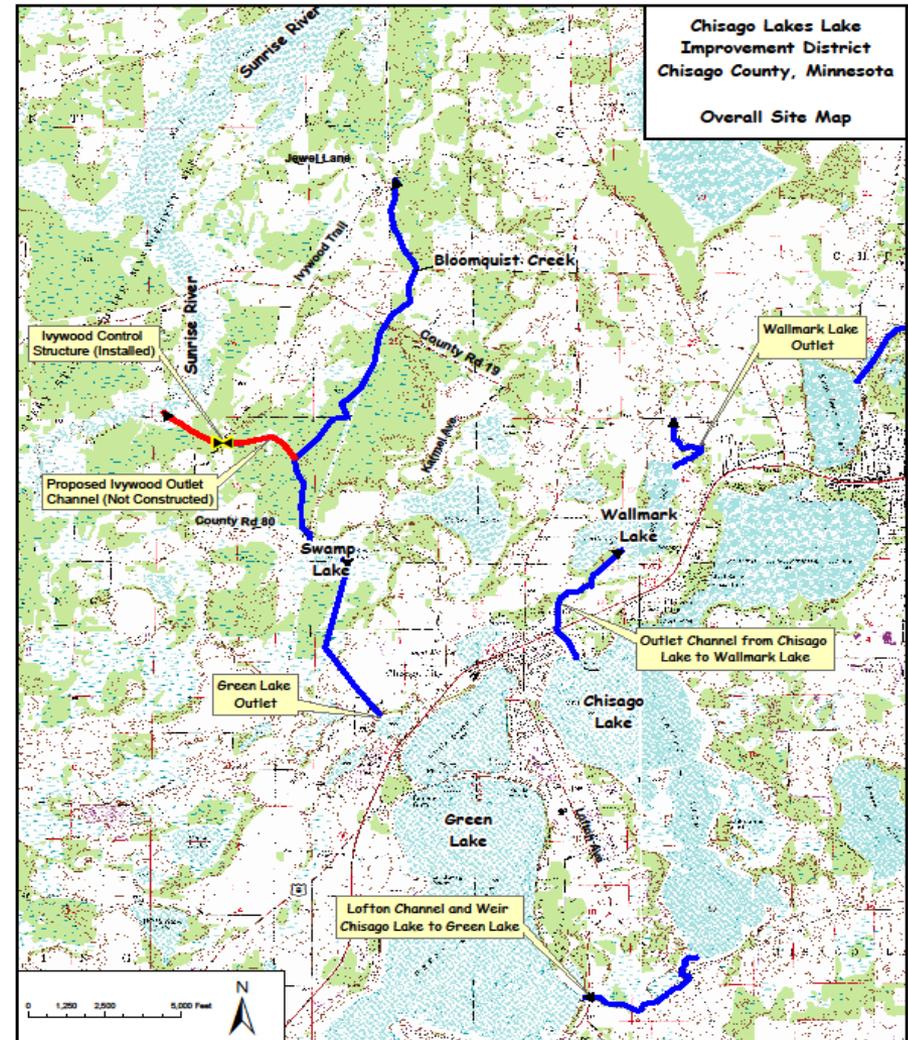




**GOAL:**  
**Maintain the ditch &  
weir system to control  
water levels during high  
water events**

# Ditch & Weir Maintenance

- Quarterly Inspections
- System well maintained and functioning properly



# Ditch & Weir Maintenance



- Lofton Avenue weir: repair sheet piling
- Lake Ellen weir: pump test
- Both weirs: maintenance and repair of gates
- Chisago/Wallmark channel: brush clearing
- Minor clean up and debris removal



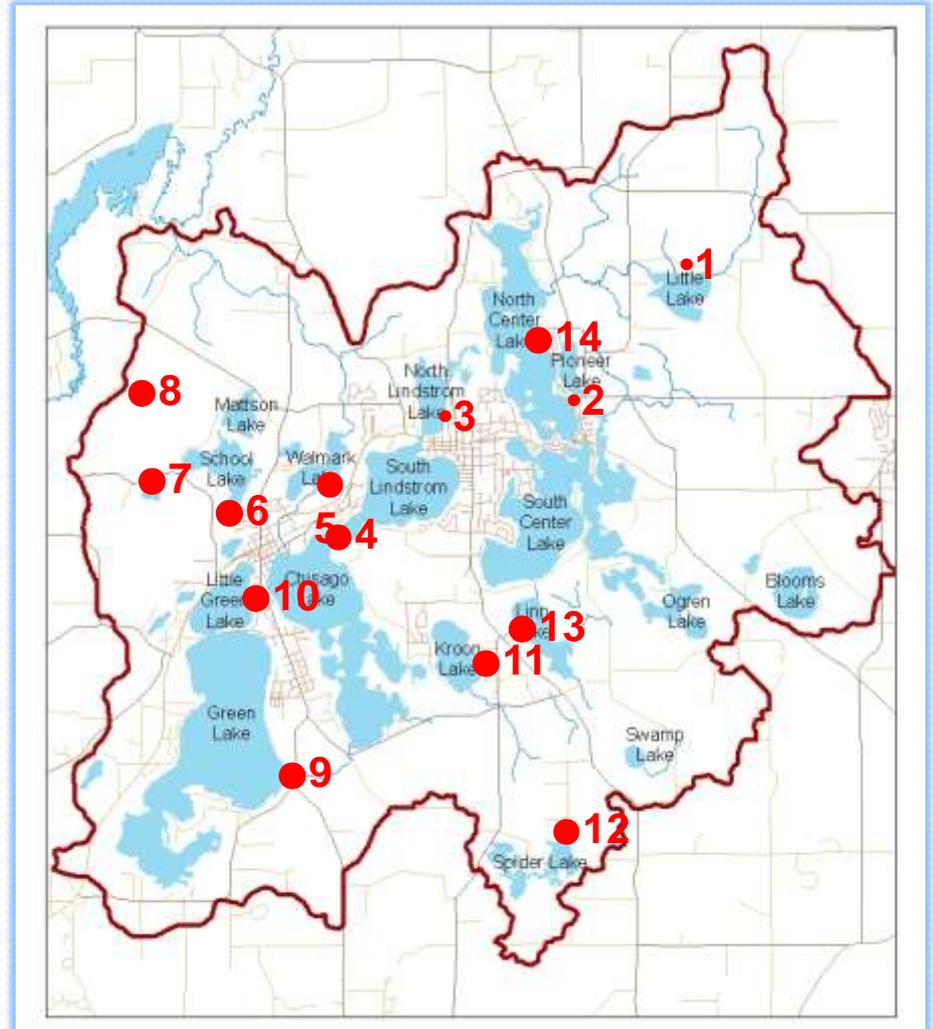
# Ditch & Weir Maintenance Aquatic Plant Management



# Lake Level Monitoring

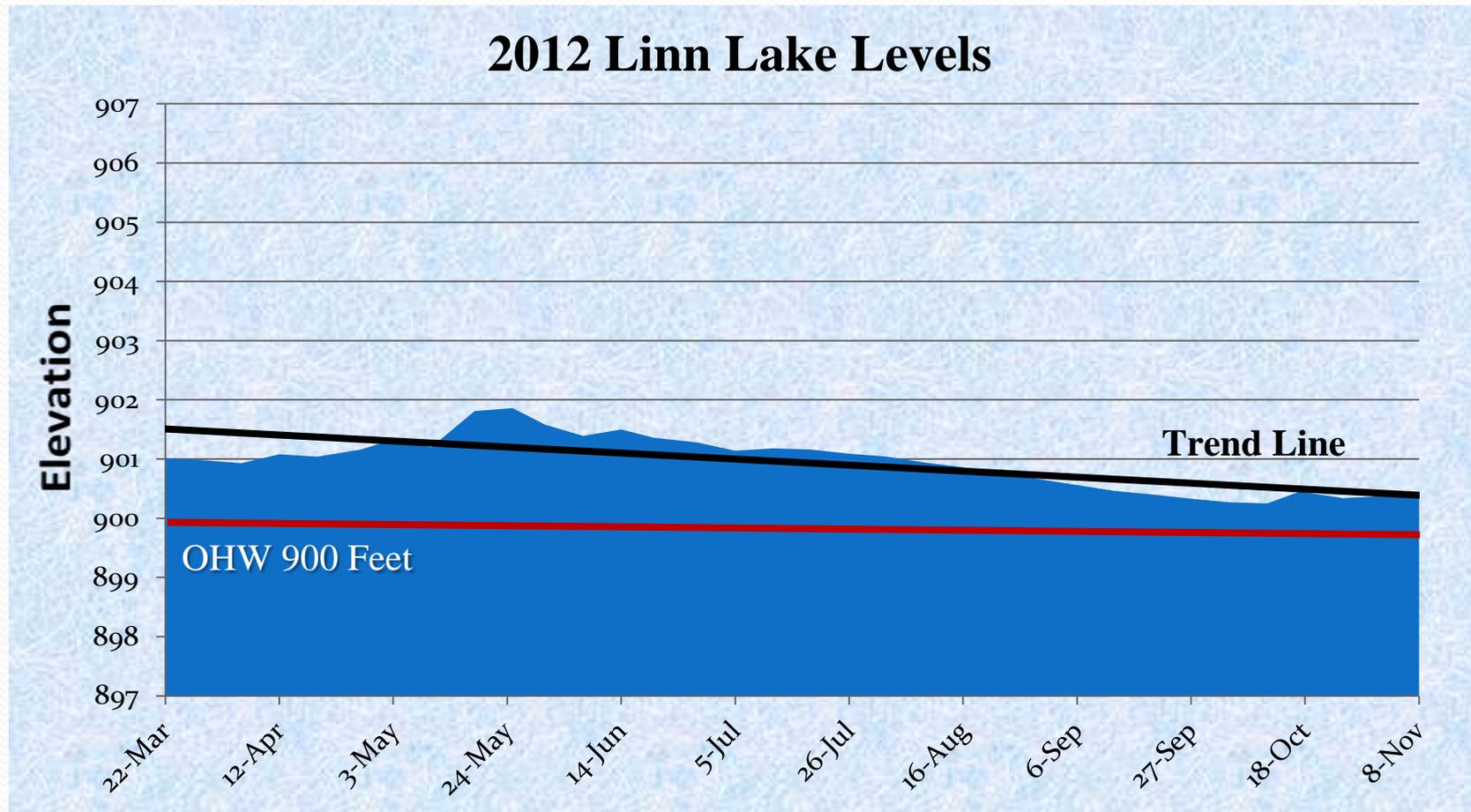


- 14 lake gauges monitored weekly during open water season



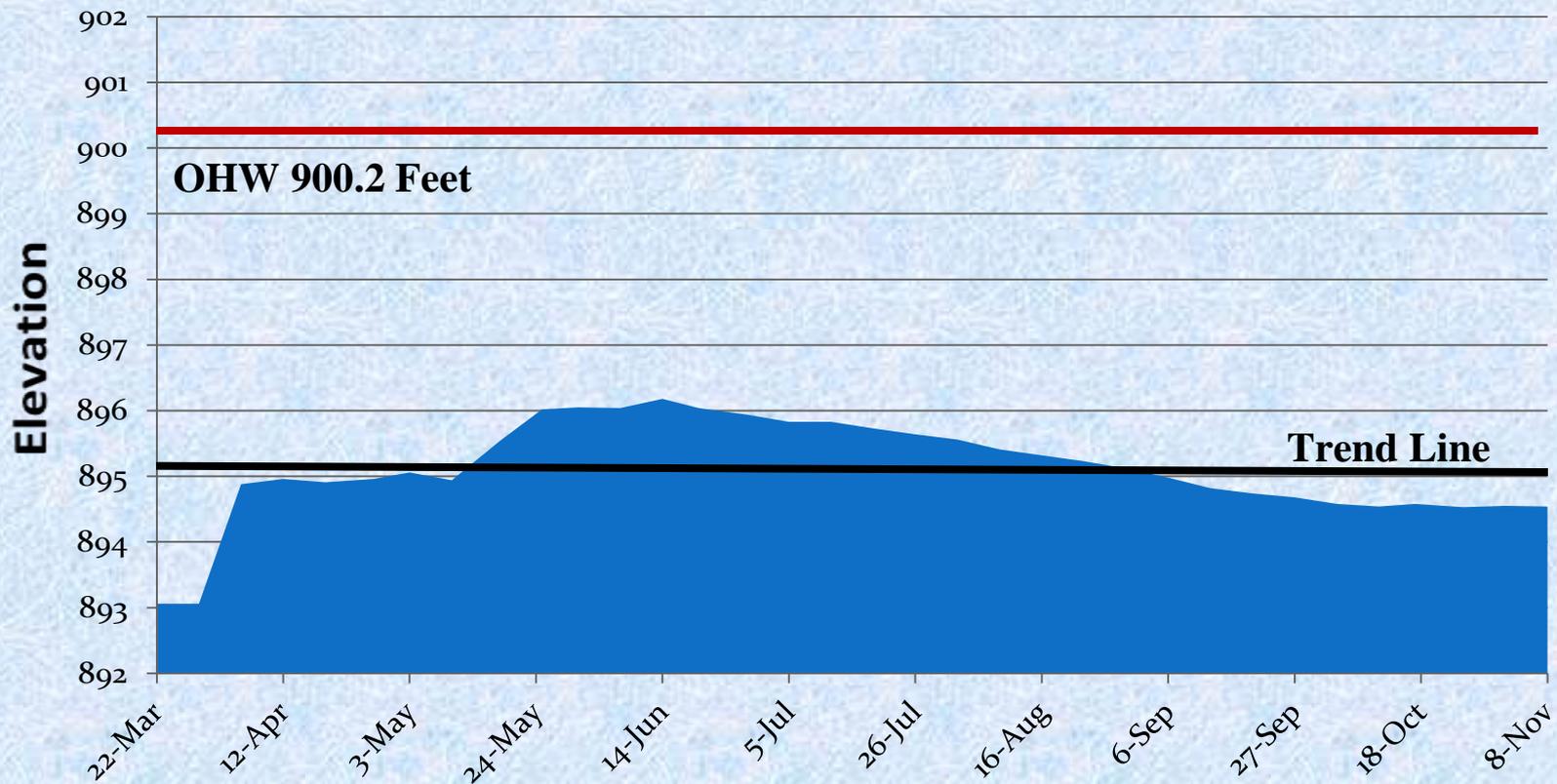
# Lake Level Monitoring

## 2012 Linn Lake Levels



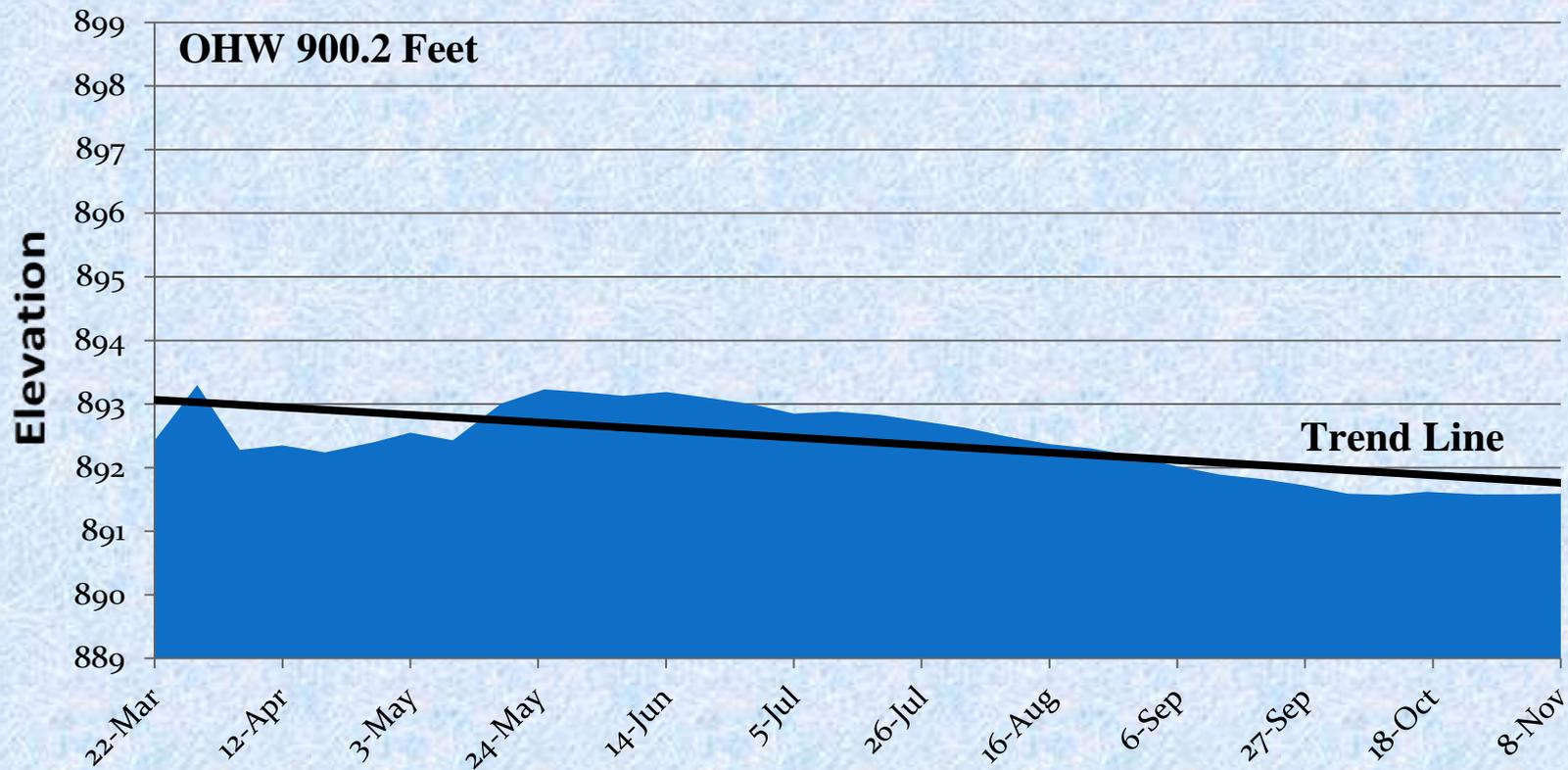
# Lake Level Monitoring

## 2012 North/South Center Lake Levels



# Lake Level Monitoring

## 2012 South Lindstrom / Chisago Lake Levels



## **GOAL:**

**Encourage environmentally sound land use practices for urban and agricultural areas to protect water quality within the Chisago Lakes watershed**

- **Establish a matching fund**

# 2011 Stormwater Best Management Practices



Olinda Green Townhomes



County Road 9, Center City

# 2012 Stormwater Best Management Practices

- Chisago Lakes Golf Course
  - Three large vegetative swales & two-cell rain garden
  - Treat road, roof, parking lot, and golf course runoff



# 2012 Stormwater Best Management Practices

- Water's Edge Condominiums
  - Parking lot runoff
  - 2,000 sq ft of pervious asphalt



# 2012 Stormwater Best Management Practices

- Grimm Rain Garden, Center City
  - Mobeck Ave and County Road 9
  - Complimentary to last years' CR 9 rain gardens

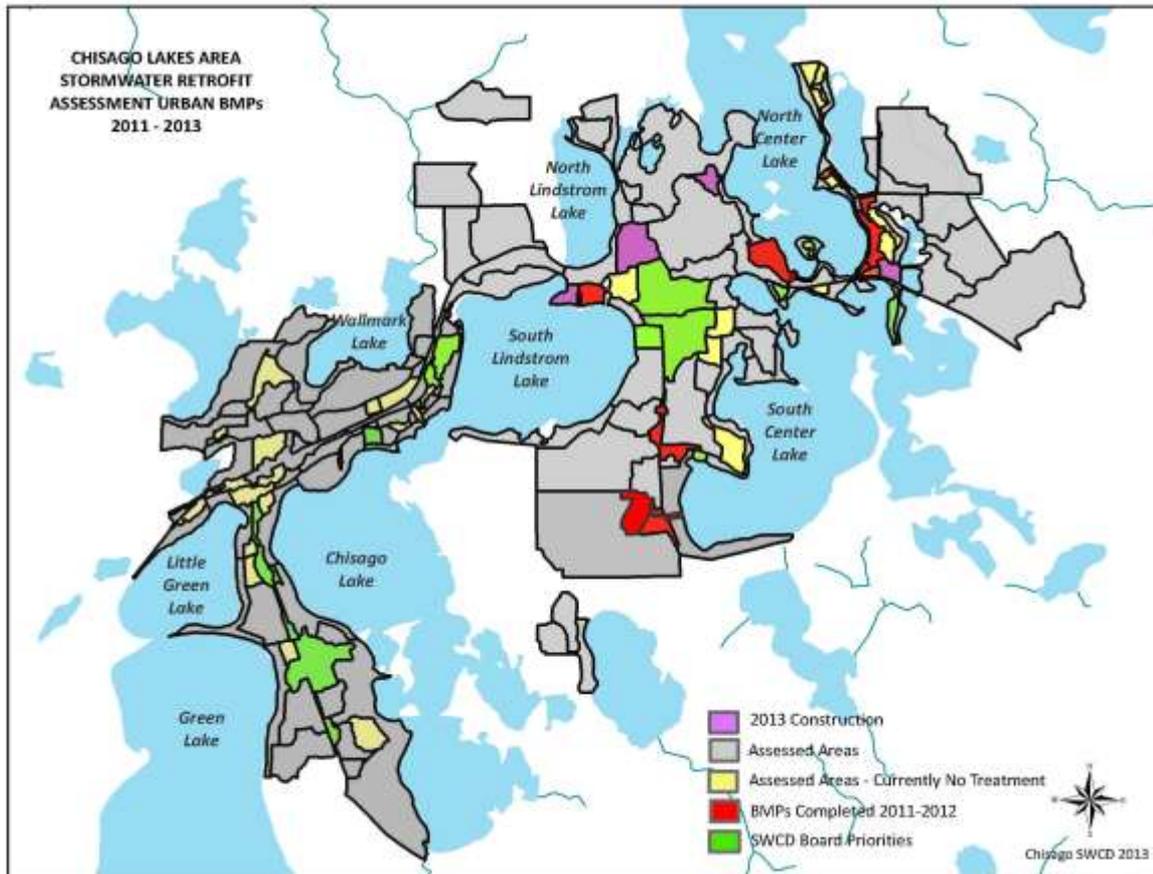


# 2012 Stormwater Best Management Practices

- Chisago County Government Center
  - Remove excess impervious surface
  - Treat roof, sidewalk, and parking lot runoff
  - Two large rain gardens and two tree pits



# 2013 Stormwater Best Management Practices



- 14 priority work areas
- 4 construction projects scheduled

# 2013 Stormwater Best Management Practices

- City of Center City – Marine Dock and Lift
  - 2 cell rain garden
- Lindstrom – Maple Street Neighborhood
  - 8 rain gardens
- Lindstrom – Beach Park
  - Shoreland restoration
- Lindstrom – Peninsula Avenue
  - 2 rain gardens

# Minimal Impact Design Standards Pilot Project



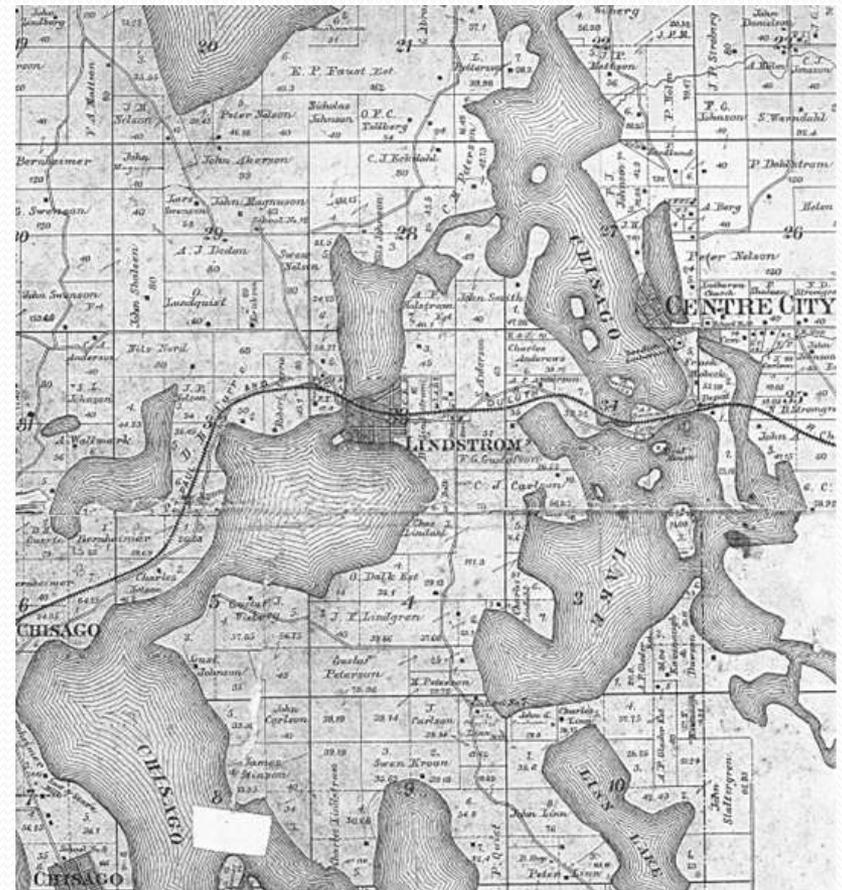
- Statewide Project
- 4 workshops with representatives from Chisago City, Lindstrom & Center City
- Meetings scheduled with Planning Commissions



**GOAL:**  
**Restore, improve, and  
maintain navigation channels  
between the lakes**

# North Center/North Lindstrom Channel Restoration Feasibility

- Preliminary Feasibility Investigations
- Assessments Completed
  - Wetlands
  - Lake Levels
  - Water Quality
  - Soil Borings
  - Concept Designs



# North Center/North Lindstrom Channel Restoration Feasibility

- Next Steps
  - Convene Task Force
  - Recommendations to County Board
- Possible Additional Steps
  - Prepare Channel Design
  - Voluntary Environmental Assessment Worksheet



# North Lindstrom/South Lindstrom Channel Restoration

Prior to 1930s



- LID provided financial assistance for dredging



**GOAL:**  
**Protect, encourage,  
and restore native shoreline  
to improve fish and  
wildlife habitat**

# County Road 20 Restoration

- Gully Stabilization
- Partners
  - Chisago County
  - Lake Improvement District
  - Chisago SWCD
  - City of Lindstrom





**GOAL:**  
**Promote environmental  
education, awareness, and  
stewardship within the  
Chisago Lakes  
watershed**

# Children's Water Festival

**10 Years Strong ~ Thank You for Your Efforts!**



# Fall Tour of Projects



# Hook, Line & Sinker



- Fishing line - 500 years to decompose
- Lead sinkers toxic or fatal to waterfowl
- Recycling stations at 8 boat landings & 2 county buildings
- Fishing line recycled free - Berkley
- Fishing line remade into fish habitat, tackle boxes, & spool for fishing line
- Fish hooks & lead sinkers recycled

# Hook, Line & Sinker



## LETTERS

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### Help get rid of fishing debris the right way

#### To the editor:

Kudos to Chisago County Environmental Services for their bird-friendly "Hook, Line and Sinker" program. Deadly monofilament fishing line can now be disposed of in receptacles at many public

lake accesses within the Chisago Lakes Lake Improvement district. Fishing line, when discarded on the shoreline, endangers not only fish-eating birds, but all wildlife hanging out near the water. As the county newsletter, Environmental Connections, noted, lead sinkers contribute to lead poisoning in loons, and the endangered Trumpeter Swans, birds which have only recently

been brought back from the brink of extinction. "Hook, Line and Sinker" is a terrific program. Thank you, Environmental Services!

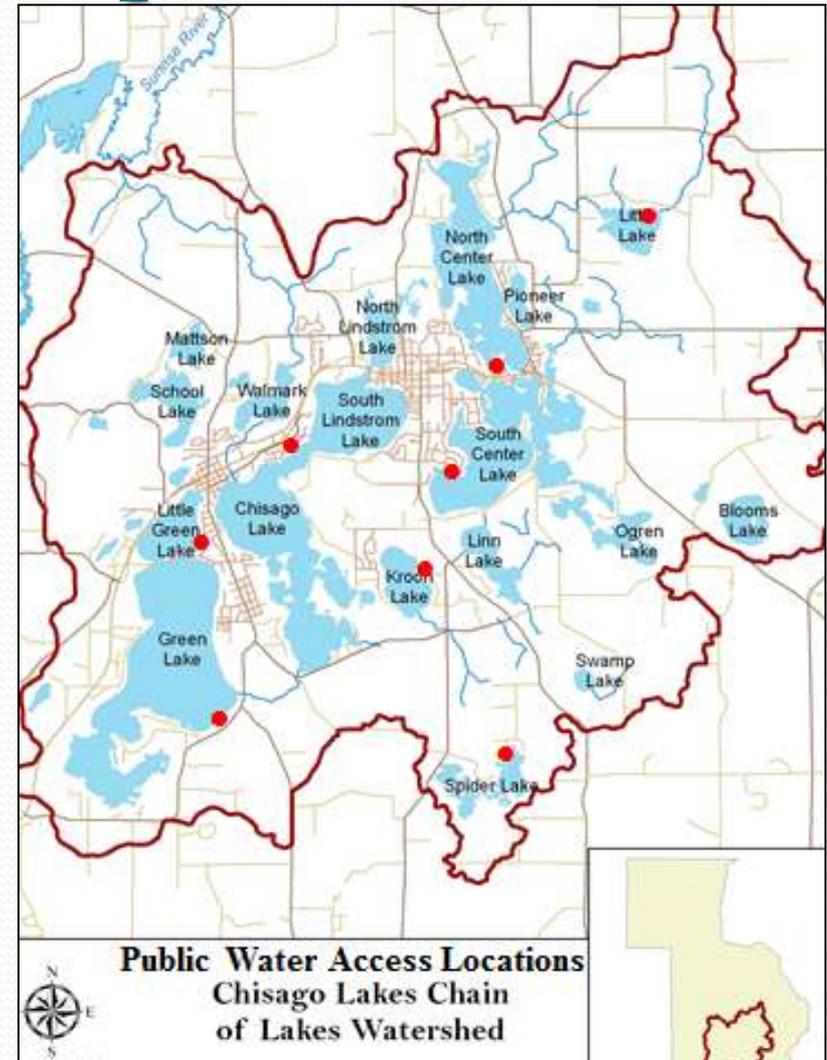
Submitted by,  
Sue Leaf  
Wild River Audubon



**GOAL:**  
**Promote the reduction  
of non-native aquatic  
invasive species**

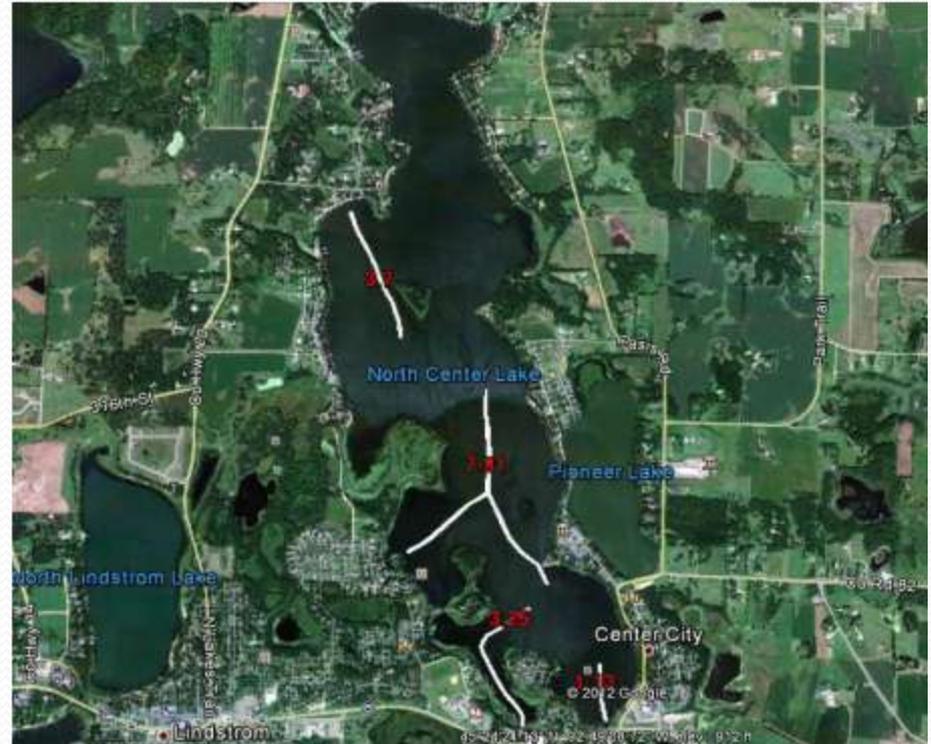
# Watercraft Inspections

- Partnership with DNR
- 8 Public accesses
- 610 Watercraft Inspections & Education
- 32 Plugs not removed
- 37 Aquatic vegetation found
- 11 Eurasian Water Milfoil found
- 104 Previous lake outside LID
- 35 Next lake outside LID

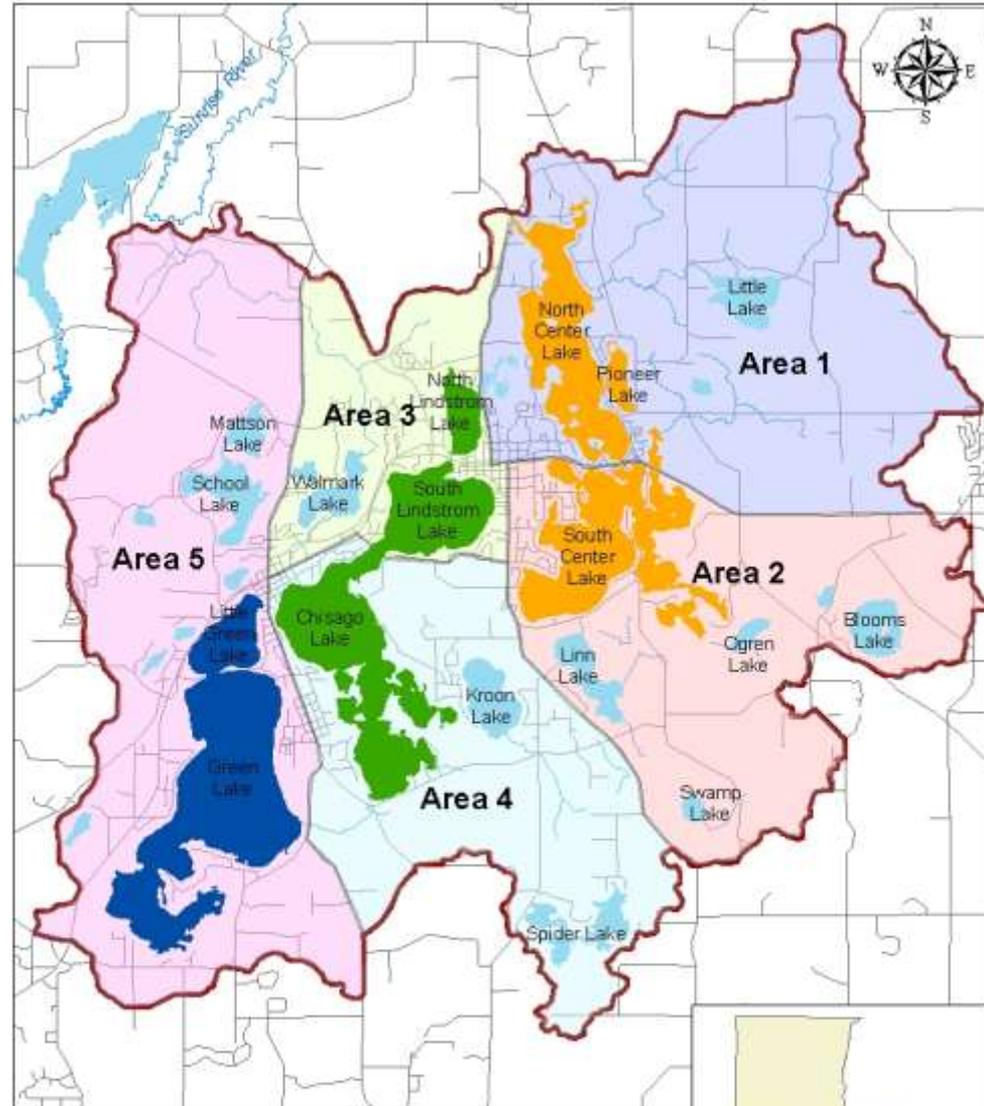


# LID, Lake Associations & DNR Partnership

- Eurasian Water Milfoil treatment
- Improve navigation



# Board Member Areas & Lake Associations



**Chisago Lakes Chain  
of Lakes Watershed  
Board Member Areas**

Chisago SWCD 2013

- Chisago Lindstrom Lake Association
- Green Lake Association
- Center Lakes Association



~ **Thank you**  
for supporting the  
**Chisago Lakes Lake  
Improvement District**

**We look forward to  
working with you  
in 2013!**