



# CLMN Data

By Rachel Sabre

2018 Lakes Convention

April 18<sup>th</sup>, 2018

# Why am I doing this?



# What does the DNR do with it?

- All of the data you collect goes directly into the DNR's database (called "SWIMS")
- Every 2 years, DNR runs automated assessments on all of the data in SWIMS, for phosphorus, chlorophyll, and Secchi depth.
- Your lake's values are compared to the statewide thresholds to see what condition your lake is in.
  - Is its water clarity:  

Excellent	Good	Fair	Poor
-----------	------	------	------
  - Is it supporting recreation and the fish community?
  - Should it be put on the *Impaired Waters List* so management actions can be pursued?

[Back to My Projects](#)  
653123 - Green Lake - Deepest Point - 04/04/2017

**Lake Monitoring - Secchi, Temperature and D.O.**

SECCHI DEPTH  
 FEET

SECCHI DEPTH HIT BOTTOM  
 NO  
 YES  
 N/A

WATER LEVEL (STAFF GAUGE)  
 FEET

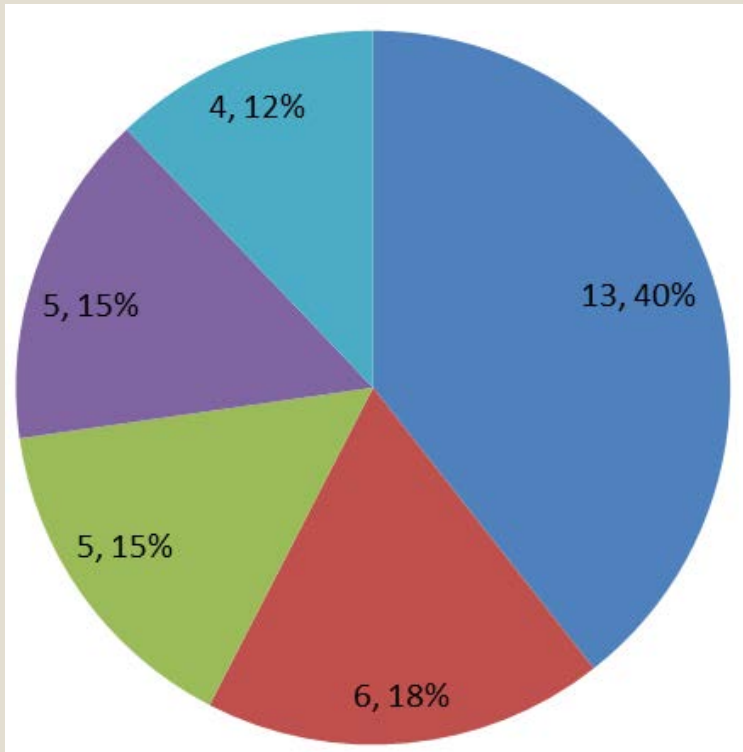
WATER LEVEL (VISUAL)  
 HIGH  
 LOW  
 NORMAL  
 N/A

WATER COLUMN APPEARANCE  
 CLEAR  
 MURKY  
 N/A

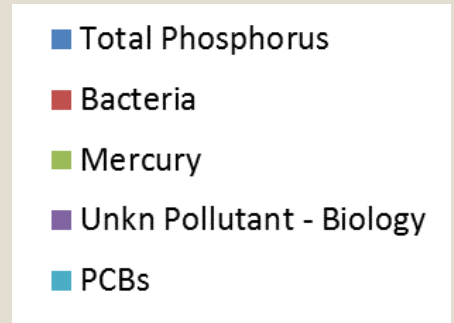
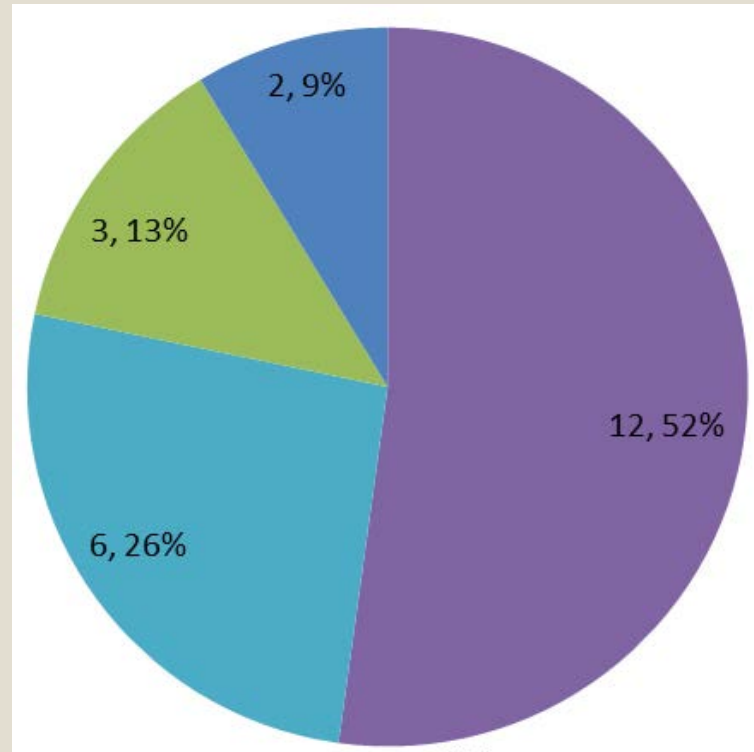


# Proposed 303d Delistings by Pollutant

## Proposed for Delisting



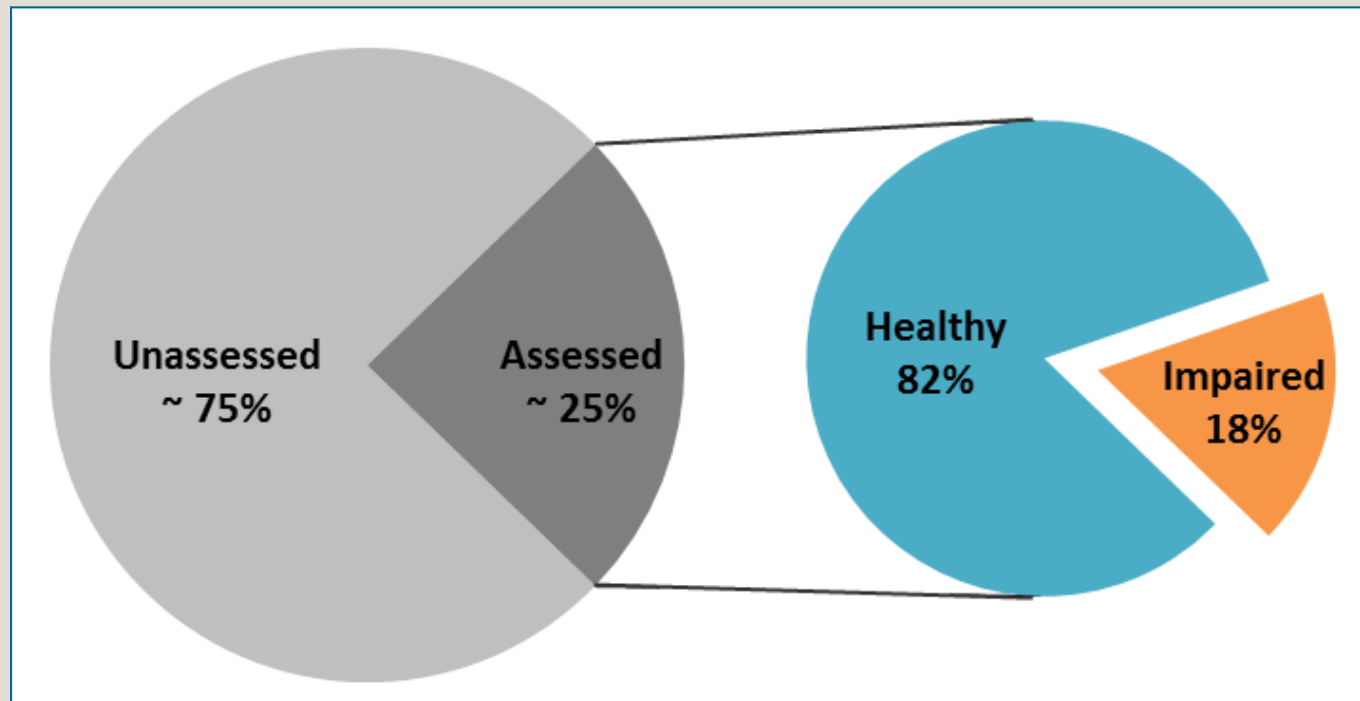
## Deletions\*



\*These waters are still listed for another pollutant.

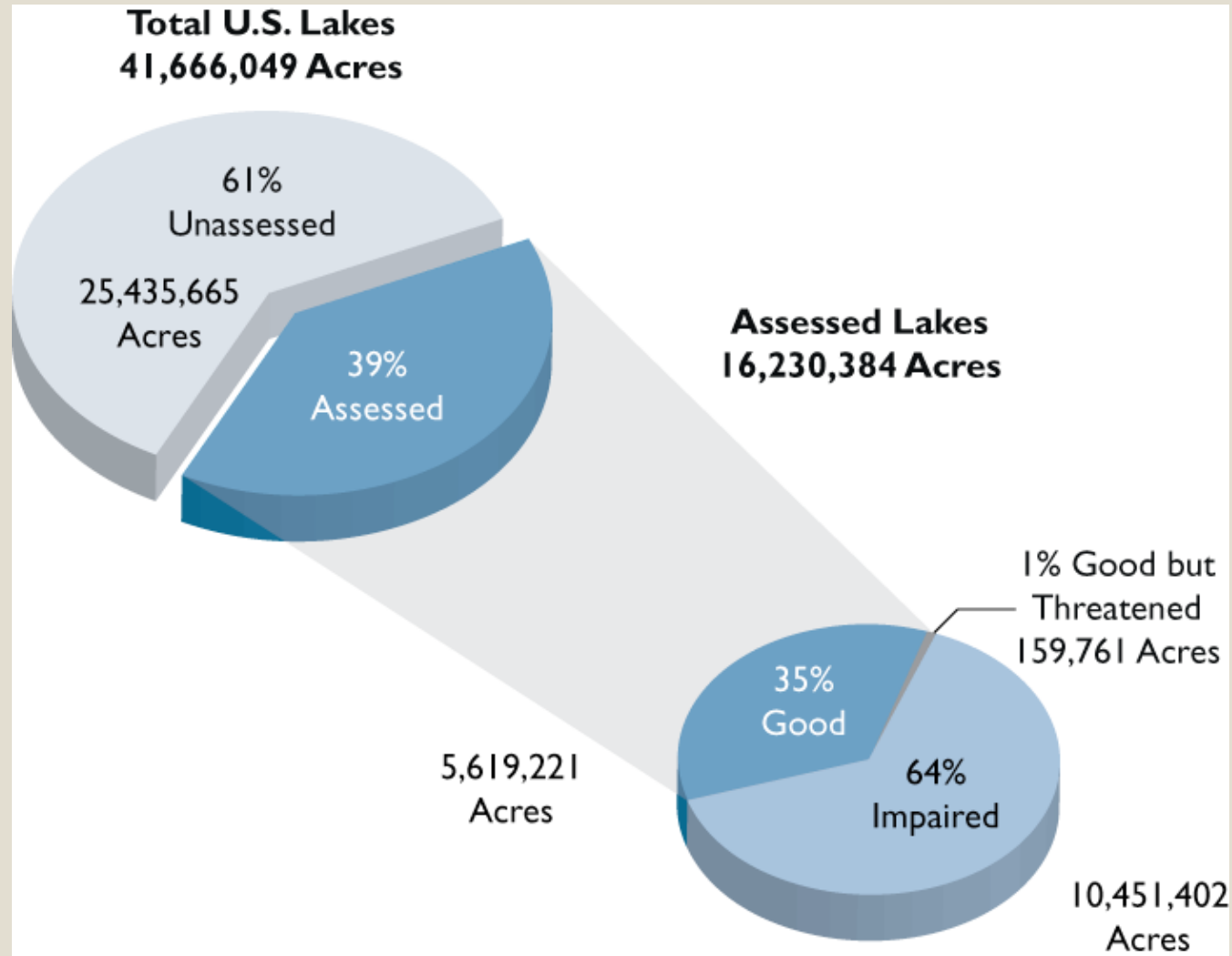
# Healthy Waters

- 731 previously unassessed waterbodies were newly found to be attaining uses.  
New total of 6,978 waters attaining uses.



# How is the data used nation-wide?

- EPA compiles summary information too, which is available online.





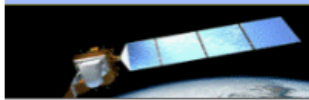
## Citizen Lake Monitoring Network

[Enter Data](#)

Log in to enter your data.

The Citizen Lake Monitoring Network, the core of the Wisconsin Lakes Partnership, creates a bond between over 1000 citizen volunteers statewide and the Wisconsin DNR. Our goals are to collect high quality data, to educate and empower volunteers, and to share this data and knowledge.

### Remote sensing highlights



- [Remote sensing of water quality](#)
- [Remote sensing research](#)
- [Frequently asked questions](#)

Volunteers measure water clarity, using the Secchi Disk method, as an indicator of water quality. Volunteers may also collect chemistry, temperature, and dissolved oxygen data, as well as identify and map plants or watch for the first appearance of Eurasian Water Milfoil near boat landings.

In addition, satellite images are used to retrieve water clarity data for lakes across the state. This effort began in 1999 when the University of Wisconsin-Madison Environmental Remote Sensing Center (ERSC) developed a model for the retrieval of water clarity data from satellite images and Citizen Lake Monitoring Network volunteers provided on-the-ground Secchi data to calibrate this model

for each satellite image. Water clarity data was retrieved for over 8,000 lakes statewide between 1999 and 2001. The DNR continues to analyze data in this way today in its remote sensing program.

Interested? Contact your local [Citizen Lake Monitoring coordinator](#) about getting started.

### Graphs & Data

- [Adams County](#)
- [Ashland County](#)
- [Barron County](#)
- [Bayfield County](#)
- [Brown County](#)
- [Buffalo County](#)
- [Burnett County](#)
- [Calumet County](#)
- [Chippewa County](#)
- [Clark County](#)
- [Columbia County](#)
- [Crawford County](#)
- [Dane County](#)
- [Dodge County](#)
- [Door County](#)
- [Douglas County](#)
- [Dunn County](#)
- [Eau Claire County](#)
- [Florence County](#)
- [Fond du Lac County](#)
- [Forest County](#)
- [Grant County](#)
- [Green County](#)
- [Green Lake County](#)
- [Iowa County](#)
- [Iron County](#)
- [Manitowoc County](#)
- [Marathon County](#)
- [Marquette County](#)
- [Menominee County](#)
- [Milwaukee County](#)
- [Monroe County](#)
- [Oconto County](#)
- [Oneida County](#)
- [Outagamie County](#)
- [Ozaukee County](#)
- [Pepin County](#)
- [Pierce County](#)
- [Polk County](#)
- [Portage County](#)
- [Price County](#)
- [Racine County](#)
- [Richland County](#)
- [Rock County](#)
- [Rusk County](#)
- [Saint Croix County](#)
- [Sauk County](#)
- [Sawyer County](#)
- [Shawano County](#)
- [Sheboygan County](#)
- [Taylor County](#)

Lake Name:

[Lakes](#)[Find](#)

a lake.

[Enter Your Data](#)[Log in to Enter Data](#)[Spring materials](#)

- [Secchi Data Sheet](#)
- [Secchi, Temperature, D.O. Data Sheet](#)
- [Satellite Schedule 2018 \[PDF\]](#)
- [Your Satellite Path](#)

[How To](#)

- [Interpretive Guide to CLMN Water Quality Reports \[PDF\]](#)
- [Training Resources & Manuals \[exit DNR\]](#)
- [How to Get A User ID \[PDF\]](#)
- [How to Enter Data Online \[PDF\]](#)

# Citizen Lake Monitoring Network Homepage

<https://dnr.wi.gov/lakes/clmn>

- Enter data
- Data sheets
- Satellite info
- Guides and Manuals
- Graphs & Data Summaries by County



## Silver Lake - Deep Hole

### Annual Reports

The annual report displays Secchi, Chemistry and Temperature/D.O. profiles (where applicable) for a year.  
[2016](#) | [2015](#) | [2013](#) | [2012](#) | [2011](#) | [2010](#) | [2009](#) | [2008](#) | [2007](#) | [2006](#) | [2004](#) | [1991](#) | [1990](#) | [1989](#) | [1988](#) | [1986](#) | [1985](#) | [1981](#) | [1980](#)

### Narrative Report

Summarizes Secchi and Chemistry results for the most recent monitoring season. [2016](#) | [2015](#) | [2013](#) | [2012](#) | [2011](#) | [2010](#) | [2009](#) | [2008](#) | [2007](#) | [2006](#) | [2004](#) | [1991](#) | [1990](#) | [1989](#) | [1988](#) | [1986](#) | [1985](#) | [1981](#) | [1980](#)

### Secchi Graph

Shows average summer (July-August) Secchi readings by year.  
[Secchi Graph](#)

### Trophic State Index Graph

Displays average summer (July-August) Trophic State Index (TSI) values for Secchi, Chlorophyll a and Total Phosphorus by year.  
[Trophic State Index \(TSI\) Graph](#)

### Data Download

Download Secchi, Total Phosphorus, Chlorophyll, Temperature and D.O. data all years (where available).  
[Data Download](#)

Lake Name:

#### Lakes

#### Find

a lake.

#### Silver Lake - Deep Hole

- [Citizen Lake Monitoring](#)
- [Interpretive Guide to CLMN Water Quality Reports \[PDF\]](#)
- [Log in to enter your data](#)

#### Contact information

For information on Lakes in Wisconsin, contact:

[Wisconsin DNR Lakes](#)

Division of Water  
Bureau of Water Quality

[Citizen Lake Monitoring Contacts](#)

# Lake Reports & Data Page

- Annual Reports
- Narrative Reports
- Secchi Graph
- Trophic State Index Graph
- Data Download



# Annual Reports

## Lake Water Quality 2017 Annual Report

Fox Lake  
Dodge County  
Waterbody Number: 835800

Lake Type: DRAINAGE  
DNR Region: SC  
GEO Region: SE

Site Name	Storet #
Fox Lake - Deep Hole	143123

Date	SD (ft)	SD (m)	Hit Bottom	CHL	TP	TSI (SD)	TSI (CHL)	TSI (TP)	Lake Level	Clarity	Color	Perception
05/11/2017					67.5			61				
05/11/2017	6.5	2	NO			50			NORMAL	CLEAR	BLUE	2-Very minor aesthetic problems
07/18/2017	2	0.6	NO	40.2		67	63		NORMAL	MURKY	GREEN	3-Enjoyment somewhat impaired (algae)
07/27/2017				63.8	114		66	65				
07/27/2017	2	0.6	NO			67			NORMAL	MURKY	GREEN	5-Enjoyment substantially impaired (algae)
08/01/2017	1.4	0.4	NO	39.4	93.6	72	63	63	NORMAL	MURKY	YELLOW	2-Very minor aesthetic problems
08/28/2017				37.7	92		62	63				
08/28/2017	1.75	0.5	NO			69			NORMAL	MURKY	GREEN	4-Would not swim but boating OK (algae)

05/11/2017		
Depth METERS	Temp. DEGREES C	D.O. MG/L
0	15.3	11.84
1	14.5	12.21
2	14	12.26
3	13.8	12.21
4	12.8	9.02
5	12.4	5.58

07/18/2017		
Depth METERS	Temp. DEGREES C	D.O. MG/L
0	23.8	7.31
1	23.8	7.32
2	23.8	7.23
3	23.7	6.75
4	23.6	4.98
5	23.4	1.14
6	23.3	.13

07/27/2017		
Depth FEET	Temp. DEGREES F	D.O. MG/L
3	76.6	7.28
6	76.2	6.9
9	76.1	6.87
12	76	6.77
15	75.9	6.43

08/01/2017		
Depth METERS	Temp. DEGREES C	D.O.
0	25.5	
1	25.5	
2	25.2	
3	24.8	
4	24.1	
5	23.9	

08/28/2017		
Depth FEET	Temp. DEGREES F	D.O. MG/L
3	69.9	8.13
6	69.7	7.81
9	69.6	7.41
12	69.5	7.35
15	69.5	7.17

Date	Collector Comments
07/18/2017	Collectors: Amanda Smith- Taylor Steager
07/27/2017	sunny- windy- air temp 75F boats out with ski boarders
08/01/2017	DO meter was not reading correctly. Additional helper: Kevin Olson- Taylor Steager
08/28/2017	Partly sunny- calm- air temp = 63 degrees F.

Date	Data Collectors	Project
05/11/2017	JEANNE SCHERER	SCR Long-Term Trend Lakes
05/11/2017	KEVIN OLSON	SCR Long-Term Trend Lakes
07/18/2017	AMANDA SMITH	SCR Long-Term Trend Lakes
07/27/2017	Cherie Witkowski	Citizen Lake Monitoring - Water Quality - Fox Lake; Deep Hole
07/27/2017	Cherie Witkowski- Elizabeth Orsay	Citizen Lake Monitoring - Water Quality - Fox Lake; Deep Hole
08/01/2017	AMANDA SMITH	SCR Long-Term Trend Lakes
08/28/2017	Cherie Witkowski	Citizen Lake Monitoring - Water Quality - Fox Lake; Deep Hole
08/28/2017	Cherie Witkowski- Elizabeth Orsay	Citizen Lake Monitoring - Water Quality - Fox Lake; Deep Hole

# Narrative Reports

## Lake Emily - Deep Hole 2017 Results



Lake Emily - Deep Hole was sampled **13** different days during the 2017 season. Parameters sampled included:

- water clarity
- temperature
- dissolved oxygen
- total phosphorus
- chlorophyll

The average summer (July-Aug) secchi disk reading for Lake Emily - Deep Hole (Dodge County, WBIC: 161600) was 1.79 feet. The average for the Southeast Georegion was 7 feet. Typically the summer (July-Aug) water was reported as **MURKY** and **GREEN**. This suggests that the secchi depth may be mostly impacted by algae. Algal blooms are generally considered to decrease the aesthetic appeal of a lake because people prefer clearer water to swim in and look at. Algae are always present in a balanced lake ecosystem. They are the photosynthetic basis of the food web. Algae are eaten by zooplankton, which are in turn eaten by fish. You will know algae are causing reduced Secchi depth if the water generally appears green when you assess the color against the white background of the secchi disc.

Chemistry data was collected on Lake Emily - Deep Hole. The average summer Chlorophyll was 83.2 µg/l (compared to a Southeast Georegion summer average of 24 µg/l). The summer Total Phosphorus average was 79.1 µg/l. Lakes that have more than 20 µg/l and impoundments that have more than 30 µg/l of total phosphorus may experience noticeable algae blooms.

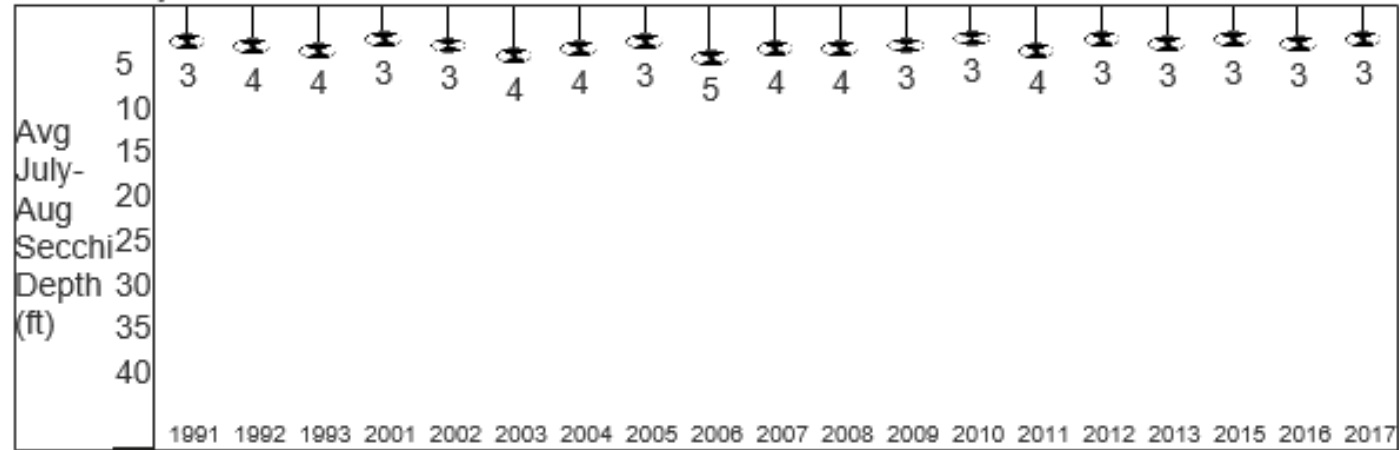
The overall Trophic State Index (based on chlorophyll) for Lake Emily - Deep Hole was 68. The TSI suggests that Lake Emily - Deep Hole was **eutrophic**. This TSI usually suggests blue-green algae become dominant and algal scums are possible, extensive plant overgrowth problems possible.

# Secchi Graph

## Butternut Lake

Price County

Waterbody Number: 2283300

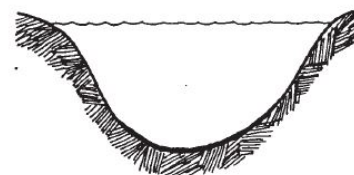
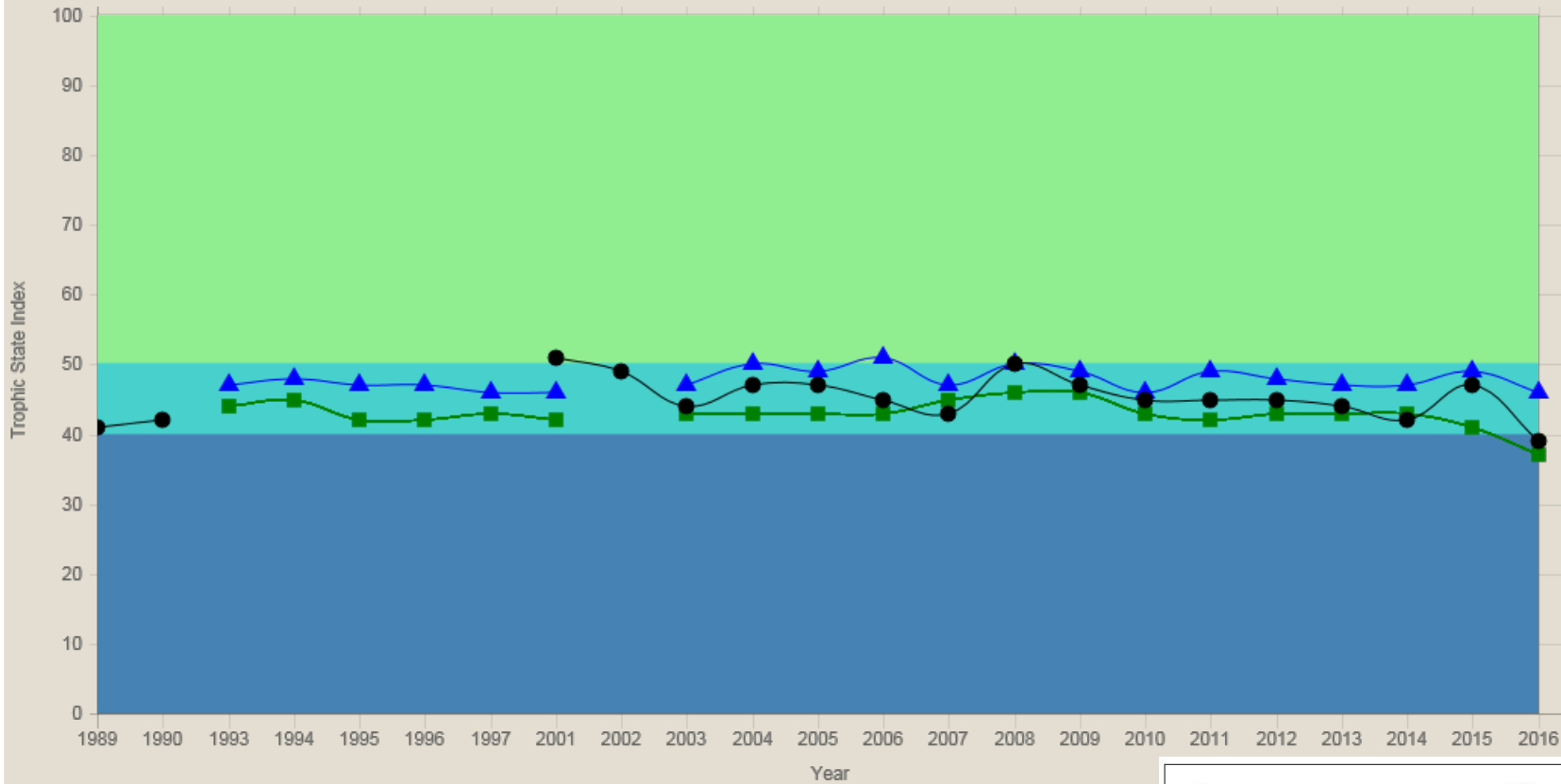


Past secchi averages in feet (July and August only).

Year	Secchi Mean	Secchi Min	Secchi Max	Secchi Count
1991	2.93	2.5	3.5	7
1992	3.63	3	5	6
1993	3.96	3.5	4.5	6
2001	2.75	1.75	3.5	3
2002	3.44	3	3.75	4
2003	4.5	4.25	4.75	3
2004	3.75	3.5	4	2
2005	3	2.5	3.5	2
2006	4.75	4.5	5	2
2007	3.88	3	4.75	2
2008	3.75	3.5	4	2
2009	3.38	3	3.75	2
2010	2.63	2.25	3	2
2011	4	3.25	4.75	2
2012	2.75	2.75	2.75	1
2013	3.13	3	3.25	2
2015	2.75	2.5	3	2
2016	3.13	2.75	3.5	2
2017	2.75	2.75	2.75	1

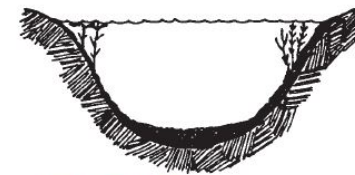
Report Generated: 04/17/2018

# Trophic State Index Graph



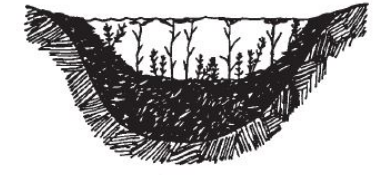
## OLIGOTROPHIC

- Clear water, low productivity
- Very desirable fishery of large game fish



## MESOTROPHIC

- Increased production
- Accumulated organic matter
- Occasional algal bloom
- Good fishery



## EUTROPHIC

- Very productive
- May experience oxygen depletion
- Rough fish common

# How is the data applied locally?

- Lake Associations can use the data to decide on the best protection or restoration strategies for their lakes.  
They can use the data:
  - To apply for Lake Management Grants
  - For Aquatic Plant Management
  - For education of homeowners around the lake
- Data is used for Watershed Plans, to recommend management options.
- Data used to develop pollutant reduction plans (known as Total Maximum Daily Load analyses, or TMDLs) created by third party or DNR.
- Information about each lake is published on DNR's website.

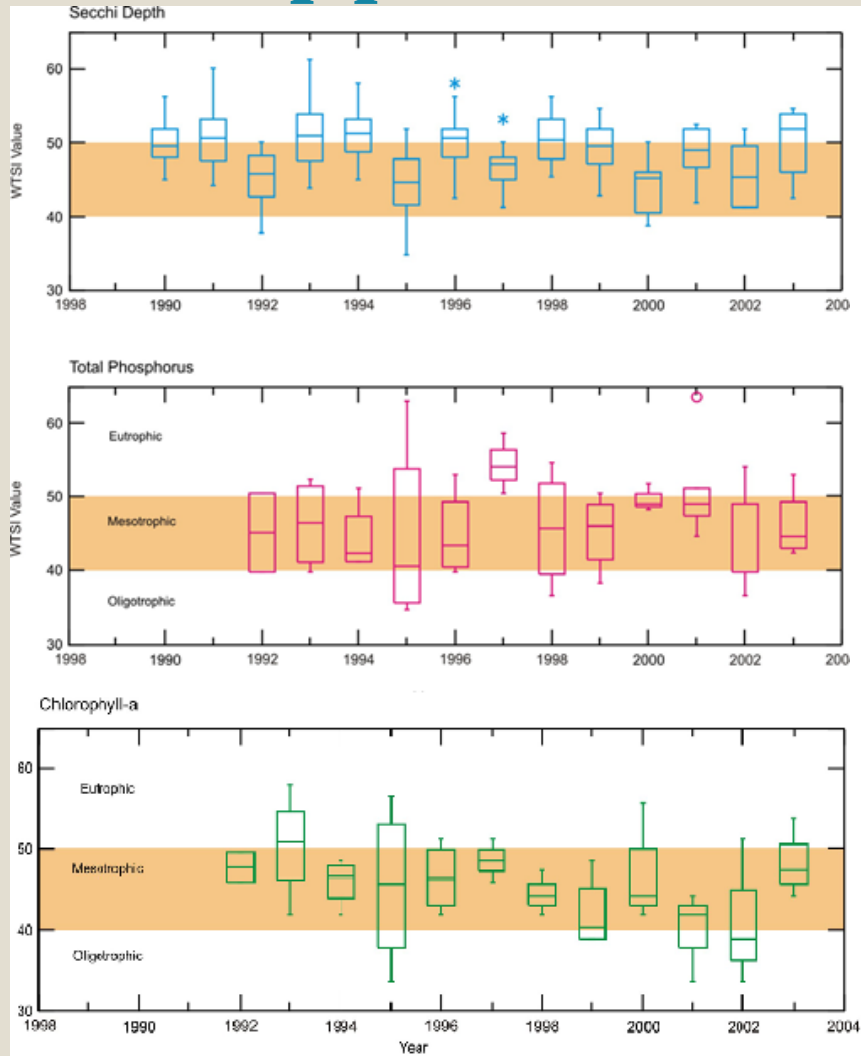
COMMUNITY ASSISTANCE  
PLANNING REPORT NO. 48  
(2nd Edition)

A topographic map of the Ashippun Lake region in Waukesha County, Wisconsin. The map shows contour lines, roads, and various lakes. A vertical green highlight is drawn across the center of the map, passing through Ashippun Lake. The text 'A LAKE MANAGEMENT PLAN FOR ASHIPGUN LAKE' is overlaid on the right side of the map, and 'WAUKESHA COUNTY WISCONSIN' is overlaid at the bottom right.

**A LAKE  
MANAGEMENT PLAN  
FOR ASHIPGUN LAKE**

**WAUKESHA COUNTY  
WISCONSIN**

# Ashippun Lake Management Plan



- Values more than 3 box-lengths from 75th percentile (extremes)
  - \* Values more than 1.5 box-lengths from 75th percentile (outliers)
  - Largest observed value that is not an outlier
  - 75th Percentile
  - Median
  - 25th Percentile
  - Smallest observed value that is not an outlier
  - \* Values more than 1.5 box-lengths from 25th percentile (outliers)
  - Values more than 3 box-lengths from 25th percentile (extremes)
- 50% of cases have values within the box

# Ashippun Lake Management Plan

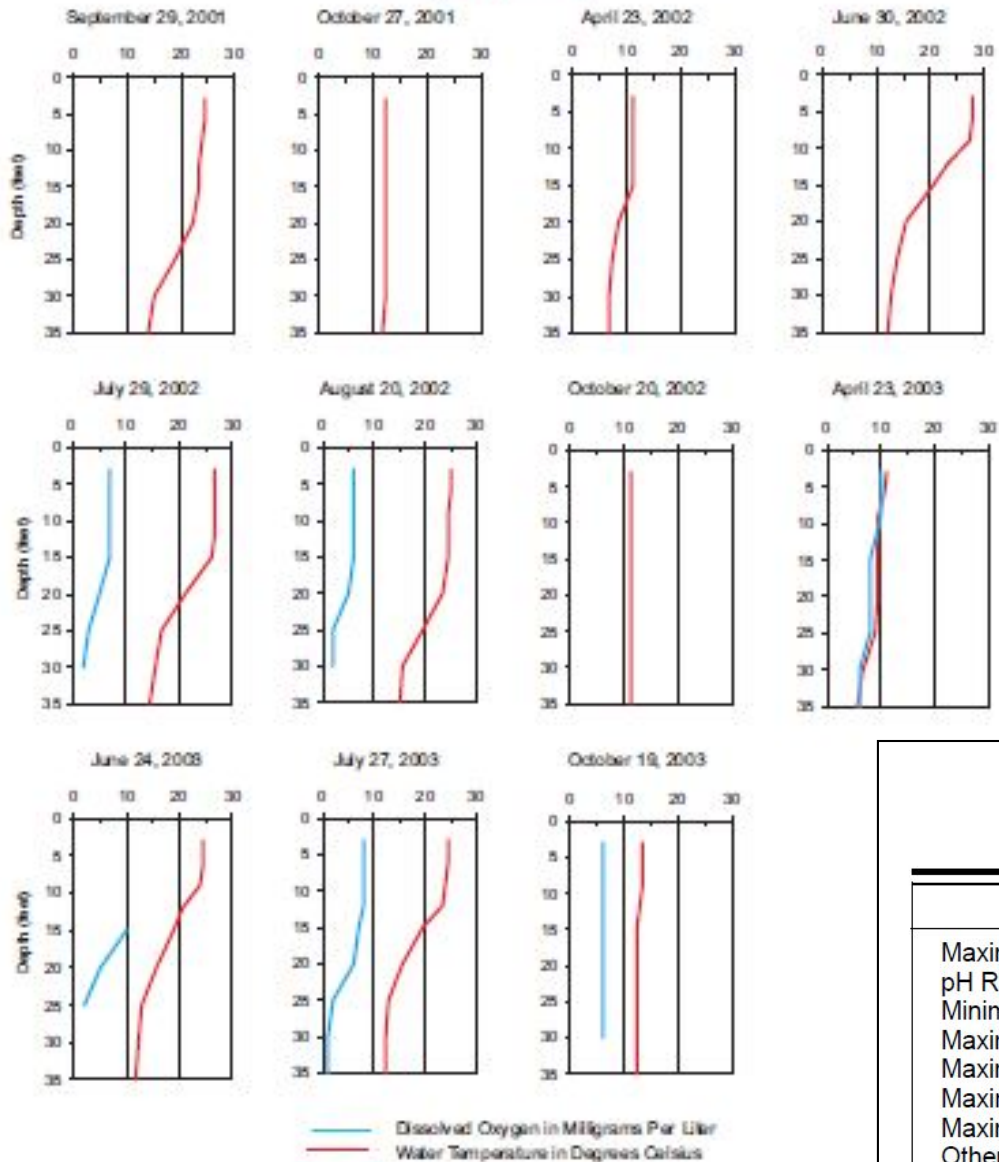
SEASONAL WATER QUALITY IN ASHIPPUN LAKE: 1990-2003

Parameter	Spring	Summer	Fall
Secchi Disc Depth (feet)			
Number of Samples .....	39	108	65
Range.....	4.3 – 14.3	3 – 19	3 – 9.8
Average.....	8.1	7.8	6.8
Standard Deviation.....	2.5	3.1	1.4
Chlorophyll-a ( $\mu\text{g/l}$ )			
Number of Samples .....	3	27	12
Range.....	3 – 10	1 – 10	1 – 24
Average.....	7	4.0	11
Standard Deviation.....	3.6	2.2	6.7
Total Phosphorus ( $\mu\text{g/l}$ )			
Number of Samples .....	7	28	12
Range.....	2 – 52	7 – 27	13 – 50
Average.....	21.7	13.4	25.5
Standard Deviation.....	15.3	4.9	9.9

Source: Wisconsin Department of Natural Resources.



Figure 2 (continued)



- Dissolved Oxygen and Temperature Profiles were based on monitoring completed through the CLMN program.

## Recommendations from Planning

- Recommends full recreational use and warmwater fish and aquatic life objectives for Ashippun Lake!

TABLE 01  
RECOMMENDED WATER QUALITY STANDARDS TO SUPPORT RECREATIONAL AND WARMWATER FISH AND AQUATIC LIFE USE

Water Quality Parameter	Water Quality Standard
Maximum Temperature .....	89°F <sup>a,b</sup>
pH Range .....	6.0-9.0 standard units
Minimum Dissolved Oxygen .....	5.0 mg/l <sup>b</sup>
Maximum Fecal Coliform .....	200/400 MFFCC/100 ml <sup>c</sup>
Maximum Total Residual Chlorine .....	0.01 mg/l
Maximum Un-ionized Ammonia Nitrogen .....	0.02 mg/l
Maximum Total Phosphorus .....	0.02 mg/l <sup>d</sup>
Other .....	- ,e,f

# Questions?

