A

APPENDIX A

Public Participation Materials

Presentation Outline

- Onterra, LLC
- Why Create a Management Plan?
- Elements of a Lake Management Planning Project
  - Data & Information
  - Planning Process
- Challenges that Lay Ahead

Onterra, LLC

- Founded in 2005
- Staff
  - Four full-time ecologists
  - One part-time ecologist
  - One field technician
- Services
  - Science and planning
- Philosophy
  - Promote realistic planning
  - Assist, not direct

Why create a lake management plan?

- To create a better understanding of lake's positive and negative attributes.
- To discover ways to minimize the negative attributes and maximize the positive attributes.
- To foster realistic expectations and dispel myths.
- To create a snapshot of the lake for future reference and planning.

Elements of an Effective Lake Management Planning Project

Data and Information Gathering

Environmental & Sociological

Planning Process

Brings it all together

Data and information gathering

- Study Components
  - Water Quality Analysis
  - Watershed Assessment
  - Shoreline Assessment
  - Aquatic Plant Surveys
  - Fisheries Data Integration
  - Stakeholder Survey

Shoreland Assessment

- Shoreland area is important for buffering runoff and provides valuable habitat for aquatic and terrestrial wildlife.
- It does not look at lake shoreline on a property-by-property basis.
- Assessment ranks shoreland area from shoreline back 35 feet

Urbanized **Natural**

Range

Aquatic Plant Surveys

- Concerned with both native and non-native plants

Non-native Aquatic Plants

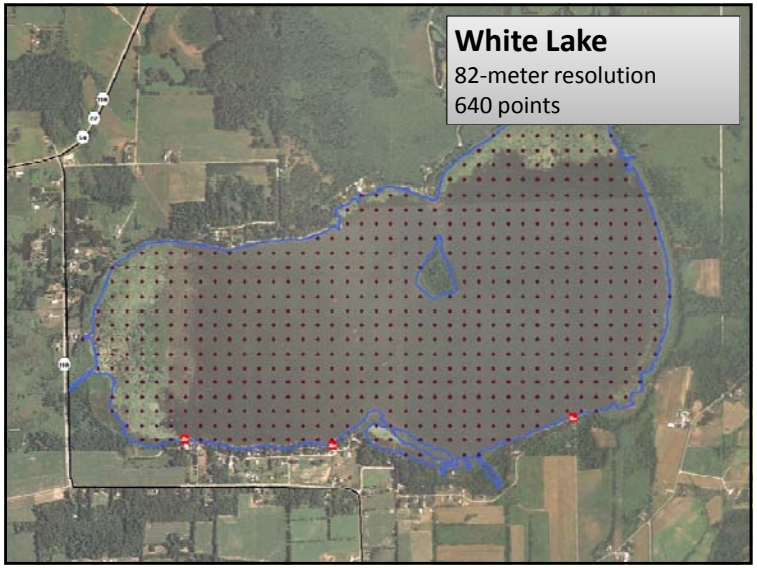
Curly-leaf Pondweed

Non-native Aquatic Plants

Eurasian Water Milfoil

Aquatic Plant Surveys

- Concerned with both native and non-native plants
- Multiple surveys used in assessment
  - Curly-leaf pondweed survey
  - Point-intercept survey

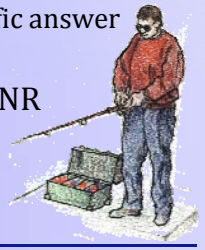


Aquatic Plant Surveys

- Concerned with both native and non-native plants
- Multiple surveys used in assessment
  - Curly-leaf pondweed survey
  - Point-intercept survey
  - Plant community mapping
  - Volunteer survey findings

Stakeholder Survey

- Standard survey used as base
  - Planning committee develops additional questions and options
  - Must not lead respondent to specific answer through a "loaded" question
- Survey must be approved by WDNR



Planning Process

Planning Committee Meetings

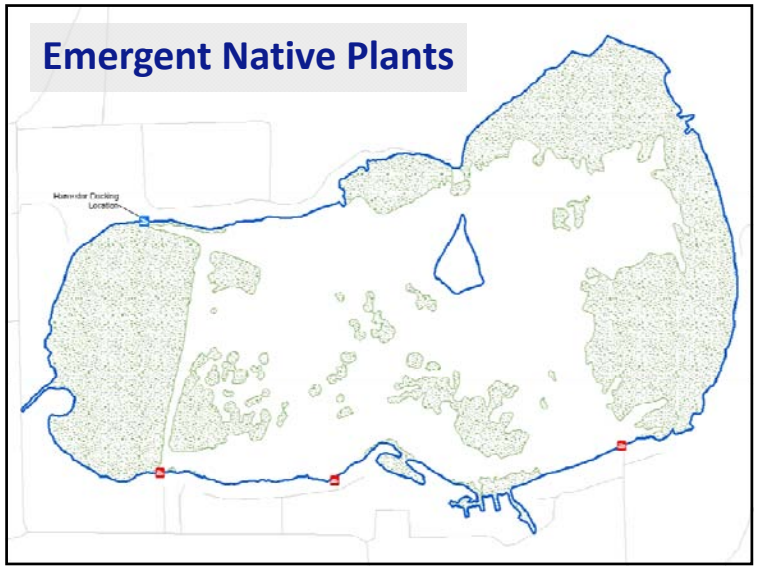
Study Results (including a stakeholder survey)
Conclusions & Initial Recommendations
Management Goals
Management Actions
  Timeframe
  Facilitator(s)

↓

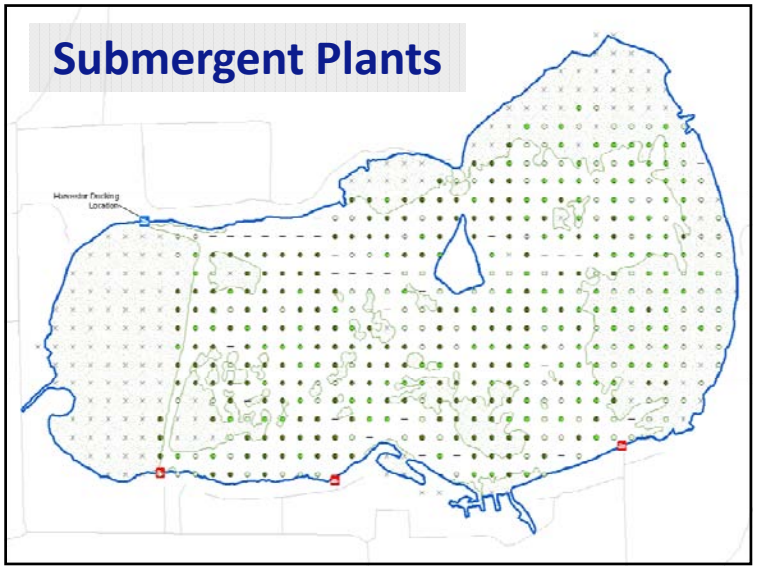
Implementation Plan

Challenges that Lay Ahead…

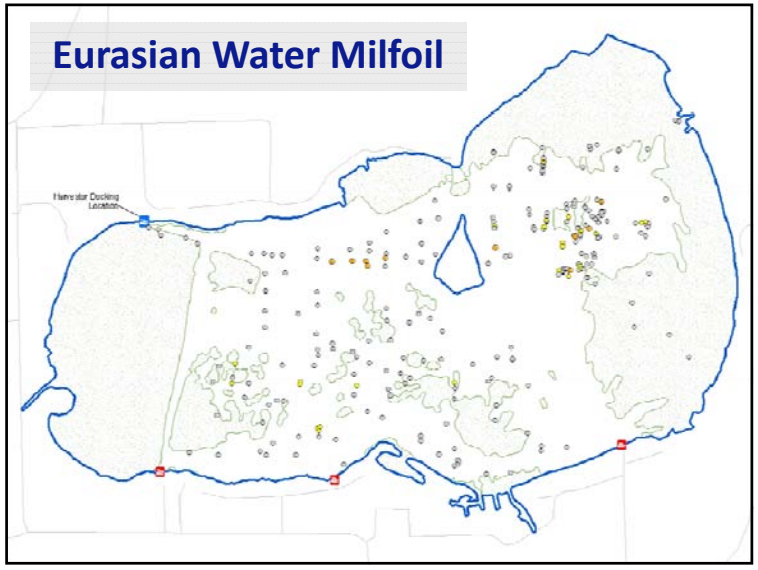
Emergent Native Plants



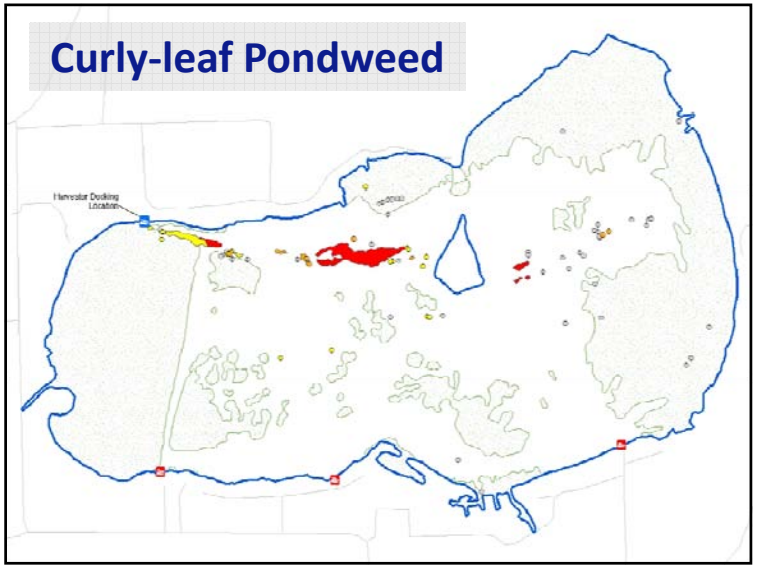
Submergent Plants

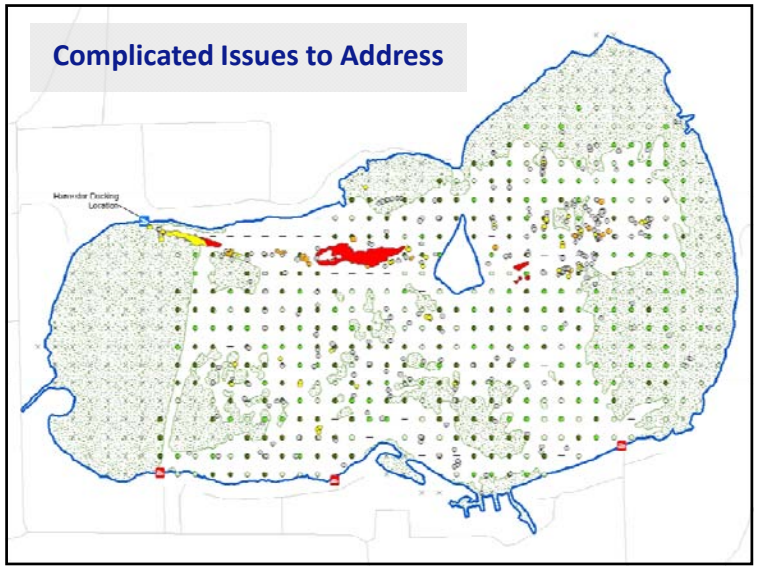


Eurasian Water Milfoil



Curly-leaf Pondweed





Thank You

Many of the graphics used in this presentation were supplied by:

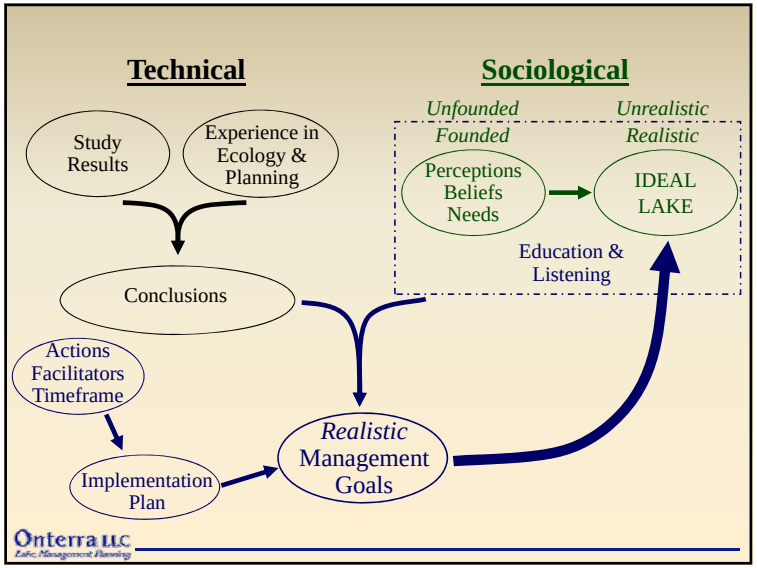
Wisconsin Lakes Partnership

UWEX Extension

Wisconsin Dept. of Natural Resources

The Planning Process

…it's not as easy as you may think.



White Lake Preservation Association, LTD

White Lake
Management Planning Project
Planning Meeting
November 28, 2011

Tim Hoyman &
Dan Cibulka
Onterra LLC
Lake Management Planning

Presentation Outline

- **Lake Management Planning Project Overview**
- **Study Results**
  - Watershed
  - Water Quality
  - Aquatic Plants
  - CLP & EWM Findings
- **"Big Picture"**
- **Goals and Actions Discussion**

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Lake Management Planning

Study and Plan Goals

- Collect & Analyze Data
- Construct Long-Term & Useable Plan

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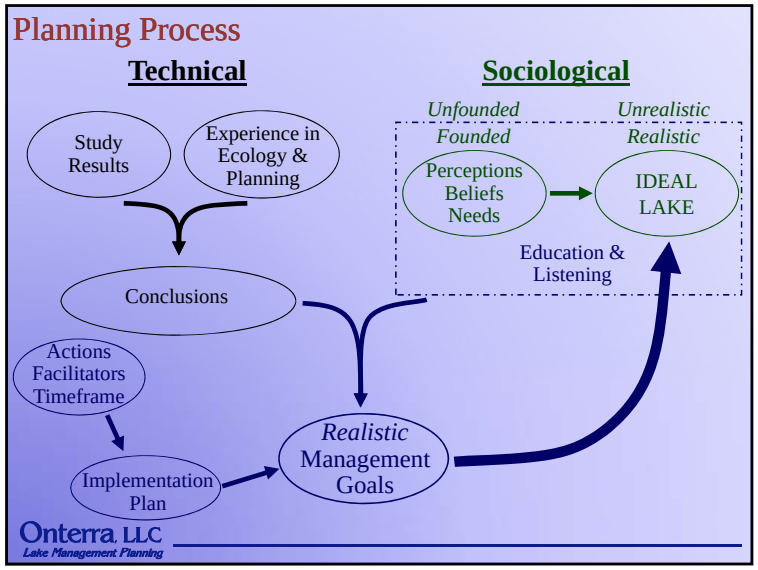
Lake Management Planning

The Planning Process

…it's not as easy as you may think.


Planning Process
Technical
Sociological
Study Results
Experience in Ecology & Planning
Unfounded
Founded
Unrealistic
Realistic
Perceptions Beliefs Needs
IDEAL LAKE
Education & Listening
Conclusions
Actions Facilitators Timeframe
Implementation Plan
Realistic Management Goals
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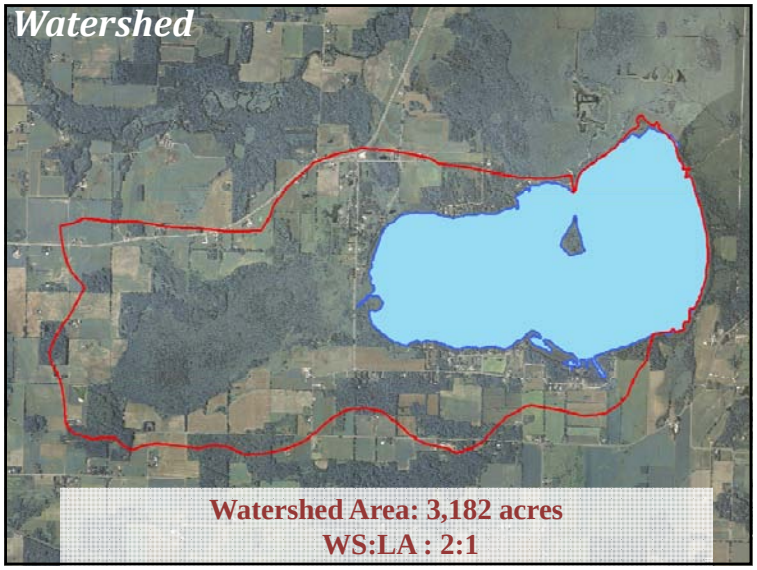
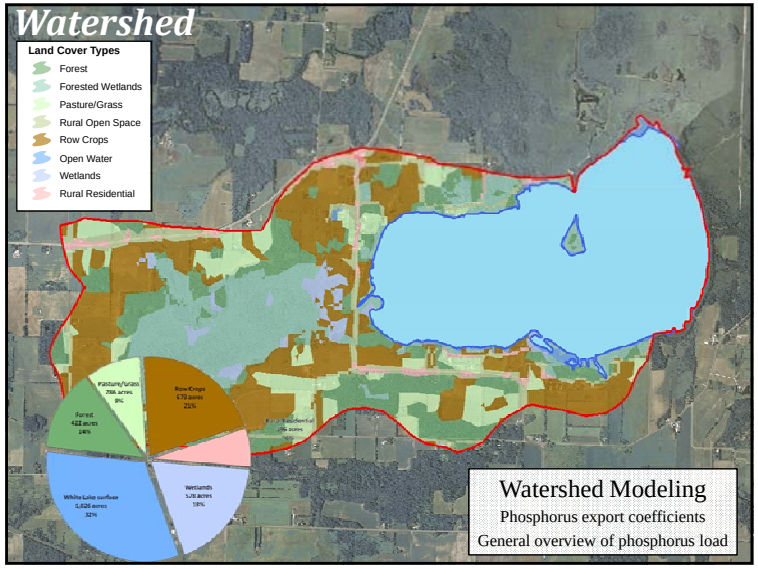
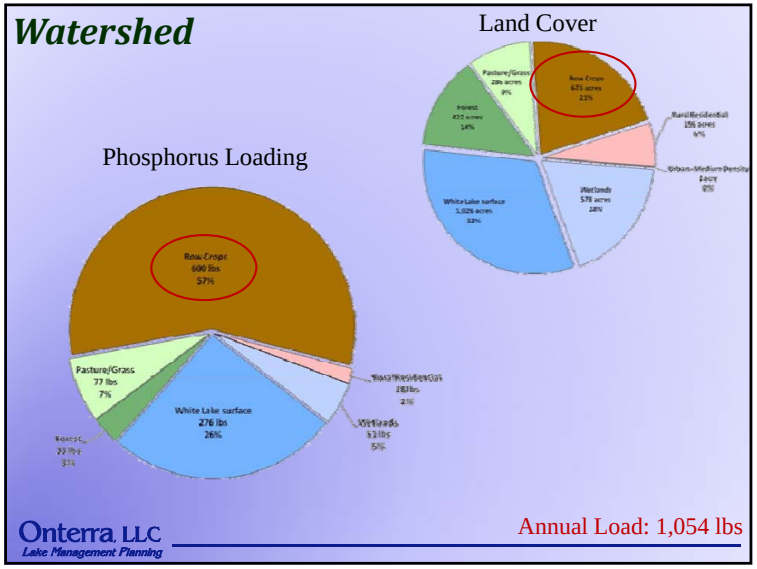
Lake Management Planning


Watershed
Watershed Area: 3,182 acres
WS:LA : 2:1


Watershed
Land Cover Types
Forest
Forested Wetlands
Pasture/Grass
Rural Open Space
Row Crops
Open Water
Wetlands
Rural Residential
Watershed Modeling
Phosphorus export coefficients
General overview of phosphorus load


Watershed
Land Cover
Phosphorus Loading
Row Crops
600 lbs
57%
Pasture/Grass
77 lbs
7%
White Lake surface
276 lbs
26%
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Lake Management Planning
Annual Load: 1,054 lbs

Watershed Scenario Investigation

- **Modeled watershed with row crop reduction**
  - **Convert row crops to pasture/grass**
  - **Modeled 25%, 50% and 75% reduction in RC**
  - **Examined total phosphorus load reduction**
  - **Examined TSI phosphorus value**

Modeling Procedure	Current	Scenario 1	Scenario 2	Scenario 3
Row Crop land cover type	100%	75%	50%	25%
Annual TP load reduction	0%	10%	20%	30%
TSI TP Value	52	51	49	48

Reduction not substantial

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Shoreland Assessment

- Shoreland area is important for buffering runoff and provides valuable habitat for aquatic and terrestrial wildlife.
- It does not look at lake shoreline on a property-by-property basis.
- Assessment ranks shoreland area from shoreline back 35 feet

Urbanized → Range → **Natural**

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Shoreline Assessment Category Descriptions

More Natural Habitat

Urbanized | Developed-Unnatural | Developed-Semi-Natural | Developed-Natural | Natural/Undeveloped

Greater Need for Restoration

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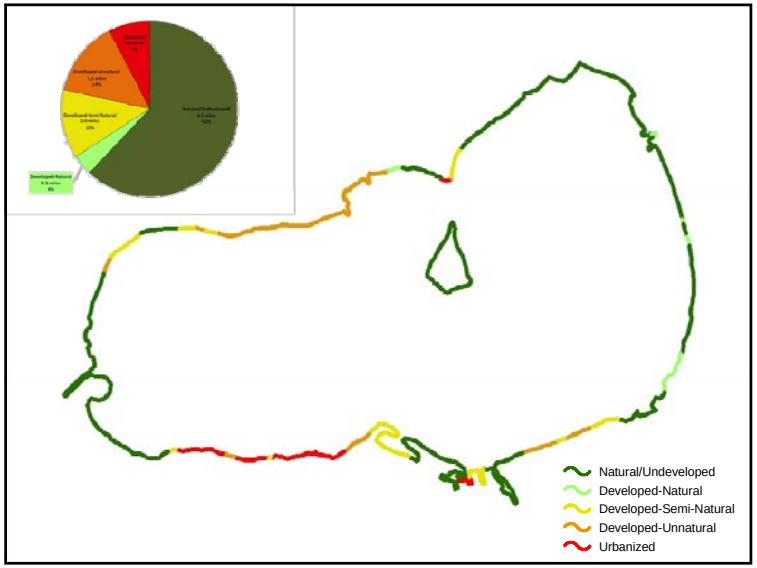

Water Quality

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Wisconsin Ecoregions

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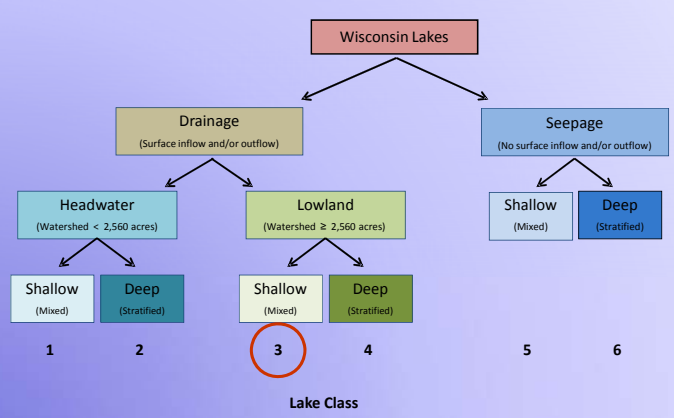
Wisconsin Lakes Classification



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Water Quality

↑ **Phosphorus (Limiting Plant Nutrient)**

Nitrogen:Phosphorus = 74:1

↑ **Chlorophyll-*a* (Algal Abundance)**

Low algal abundance

↓ **Water Clarity (Secchi Disk)**

Clear Water

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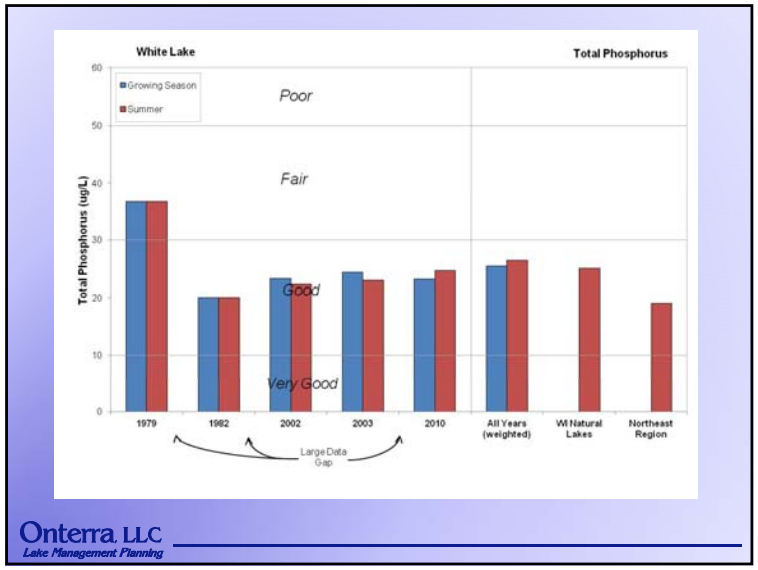
White Lake
Total Phosphorus
Growing Season
Summer
Poor
Fair
Good
Very Good
Total Phosphorus (ug/L)
1979
1982
2002
2003
2010
All Years (weighted)
WI Natural Lakes
Northeast Region
Large Data Gap
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Shallow Lakes are Special
Clear State
Turbid State
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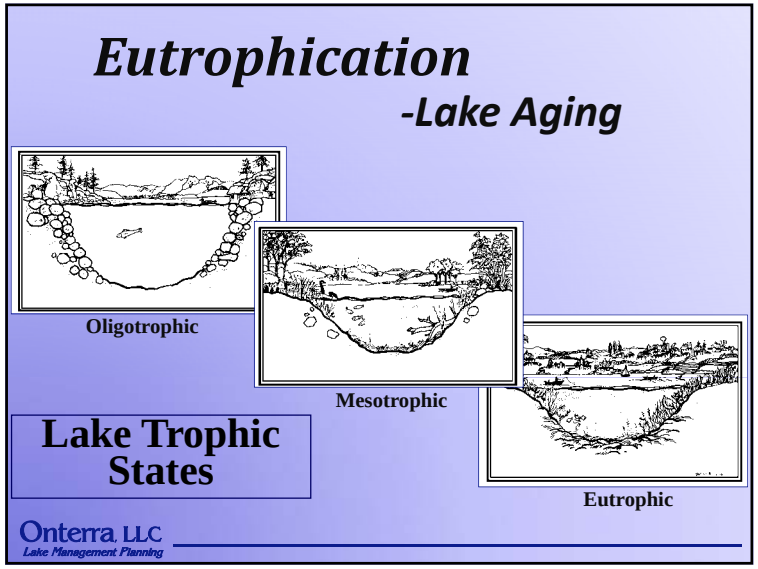
Aquatic Plants are Important


Eutrophication
-Lake Aging
Oligotrophic
Mesotrophic
Eutrophic
Lake Trophic States
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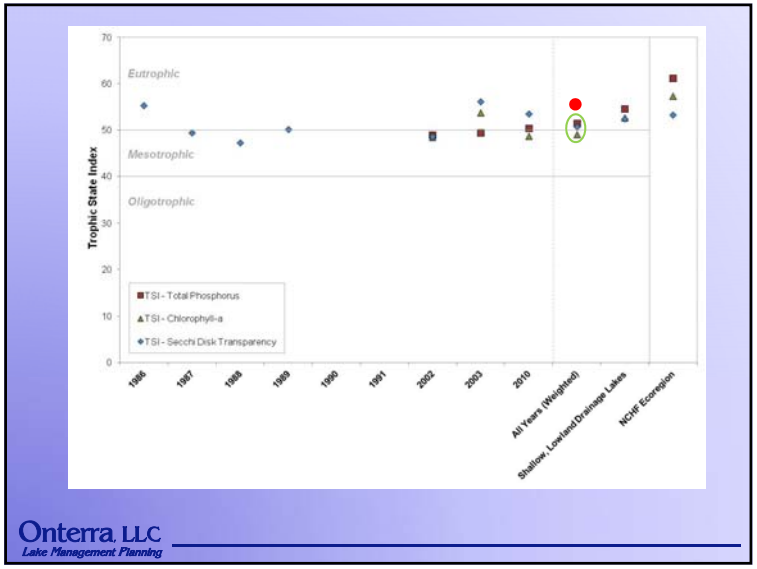
Eutrophic
Mesotrophic
Oligotrophic
Trophic State Index
TSI - Total Phosphorus
TSI - Chlorophyll-a
TSI - Secchi Disk Transparency
1986
1987
1988
1989
1990
1991
2002
2003
2010
All Years (Weighted)
Shallow, Lowland Drainage Lakes
NCHF Ecoregion
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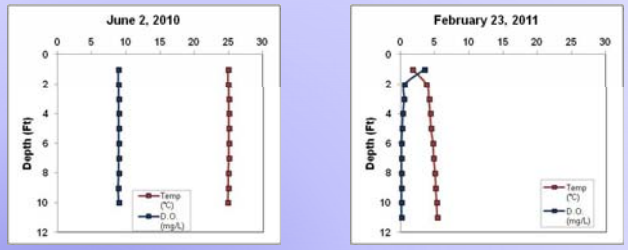
Dissolved Oxygen



- Lake mixes thoroughly during open water season.
- When ice covers the lake, DO drops significantly.
- Aeration unit currently operated on west side of island.
  - Fishery would likely benefit from second aerator.

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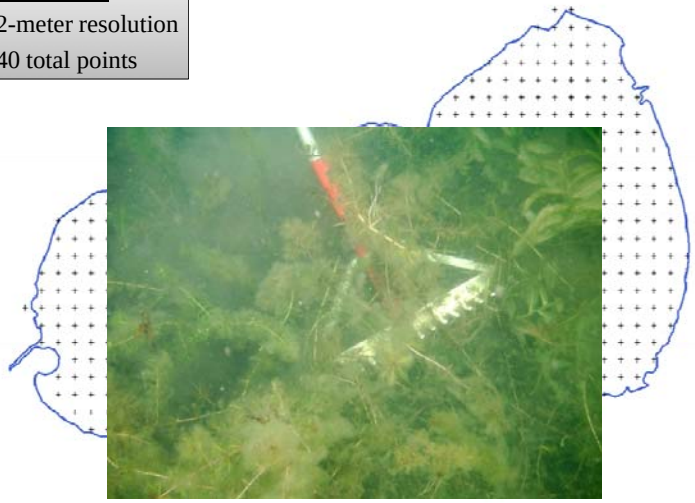
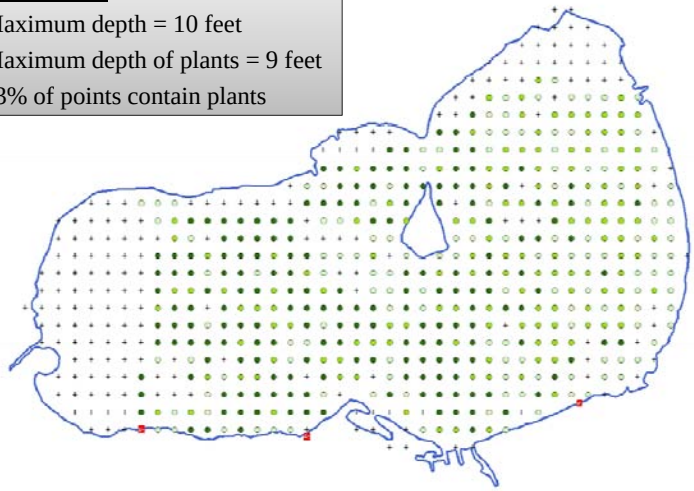
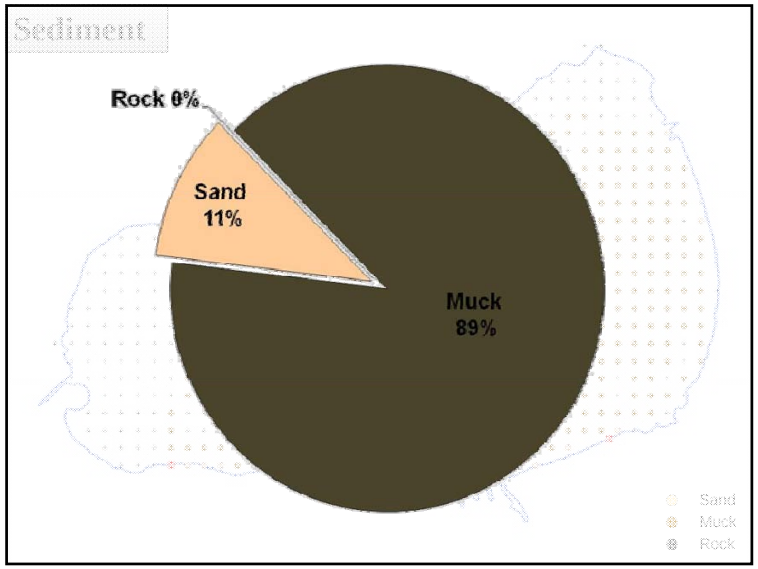
White Lake
82-meter resolution
640 total points



White Lake
Maximum depth = 10 feet
Maximum depth of plants = 9 feet
93% of points contain plants





Species List

- **46 Native Species**
  - 30 from the PI survey
- **3 Non-native Species**
  - Curly-leaf pondweed
  - Eurasian water milfoil
  - Purple loosestrife

Life Form	Scientific Name	Common Name	Coefficient of Conservatism (c)
Emergent	*Decodon verticillatus*	Water-willow	7
	Eleocharis palustris	Creeping spikerush	6
	Lythrum salicaria	Purple loosestrife	Exotic
	Pontederia cordata	Pickerelweed	9
	Sagittaria latifolia	Common arrowhead	3
	Sagittaria rigida	Stiff arrowhead	8
	Schoenoplectus pungens	Three-square rush	5
	Schoenoplectus subterminalis	Water bulrush	9
	Schoenoplectus tabernaemontani	Softstem bulrush	4
	Schoenoplectus acutus	Hardstem bulrush	5
	Typha latifolia	Broad-leaved cattail	1
	Typha angustifolia	Narrow-leaved cattail	1
	Zizania aquatica	Southern wild rice	8
FL	*Brasenia schreberi*	Watershield	7
	Nuphar variegata	Spatterdock	6
	Nymphaea odorata	White water lily	6
Submergent	*Ceratophyllum demersum*	Coontail	3
	Chara sp.	Muskgrasses	7
	Elodea canadensis	Common waterweed	3
	Lobelia dortmanna	Water lobelia	10
	Myriophyllum verticillatum	Whorled water milfoil	8
	Myriophyllum sibiricum	Northern water milfoil	7
	Myriophyllum spicatum	Eurasian water milfoil	Exotic
	Megalodonta beckii	Water marigold	8
	Nitella sp.	Stoneworts	7
	Najas guadalupensis	Southern naiad	7
	Potamogeton friesii	Fries' pondweed	8
	Potamogeton crispus	Curly-leaf pondweed	Exotic
	Potamogeton pusillus	Small pondweed	7
	Potamogeton strictifolius	Stiff pondweed	8
	Potamogeton gramineus	Variable pondweed	7
	Potamogeton natans	Floating-leaf pondweed	5
	Potamogeton illinoensis	Illinois pondweed	6
	Potamogeton zosteriformis	Flat-stem pondweed	6
	Potamogeton amplifolius x illinoensis	Large-leaf x Illinois pondweed	N/A
	Potamogeton praelongus	White-stem pondweed	8
	Potamogeton amplifolius	Large-leaf pondweed	7
	Stuckenia pectinata	Sago pondweed	3
	Utricularia purpurea	Large purple bladderwort	9
	Utricularia minor	Small bladderwort	10
	Utricularia vulgaris	Common bladderwort	7
	Utricularia gibba	Creeping bladderwort	9
	Vallisneria americana	Wild celery	6
S/E	*Eleocharis acicularis*	Needle spikerush	5
	Sagittaria cuneata	Arum-leaved arrowhead	7
	Sagittaria cristata	Crested arrowhead	9

FL = Floating Leaf
S/E = Submergent and/or Emergent

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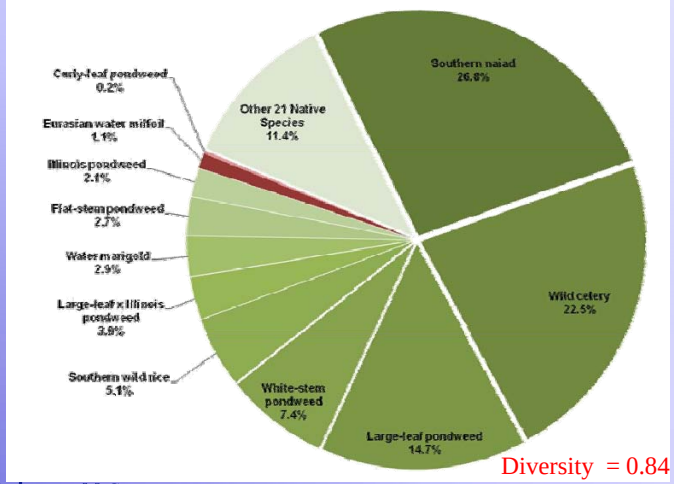
Relative Frequency of Occurrence



Diversity = 0.84

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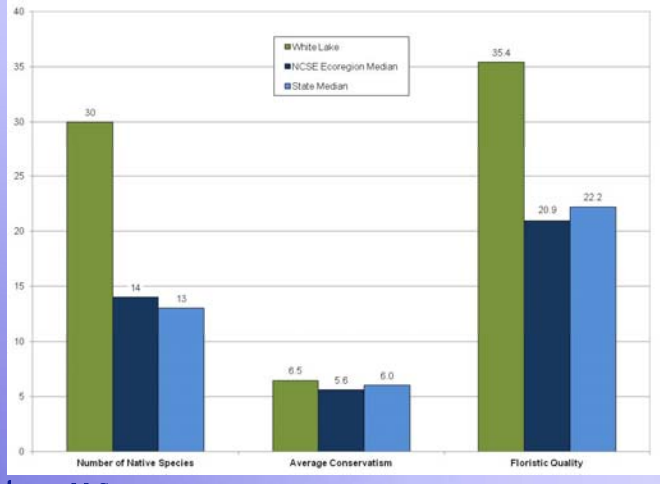
Lake Management Planning

Floristic Quality Analysis



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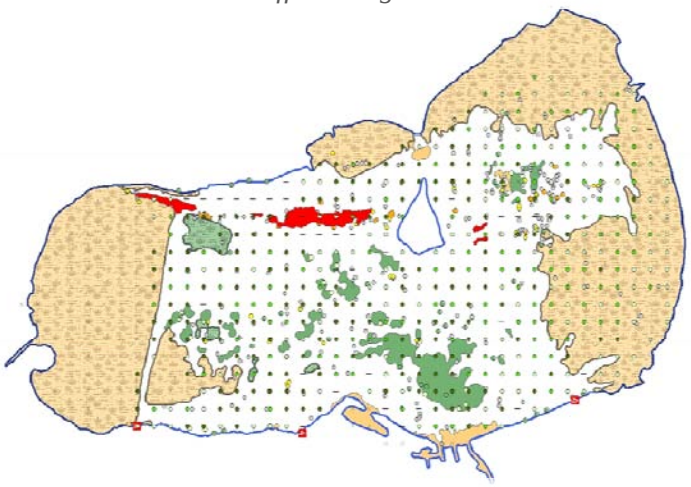
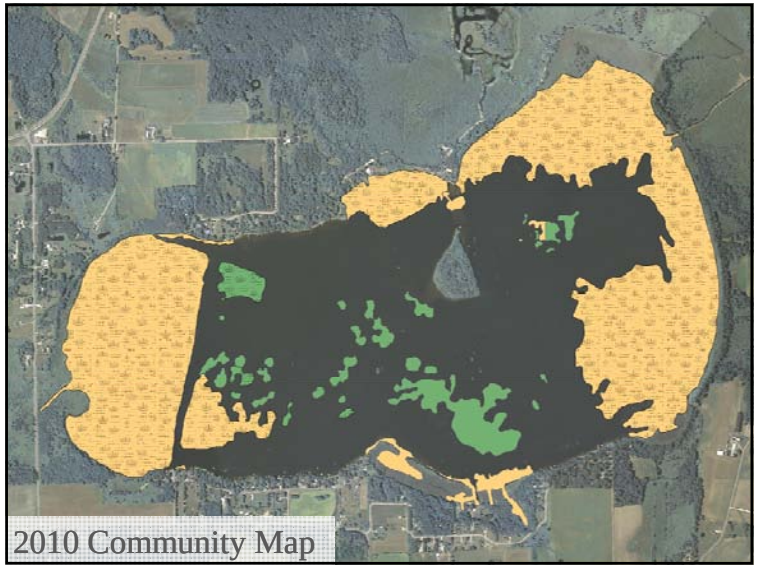
From March 2010 Kick-off Meeting



Complicated Issues to Address…

Lac Vieux Desert, Vilas County, WI



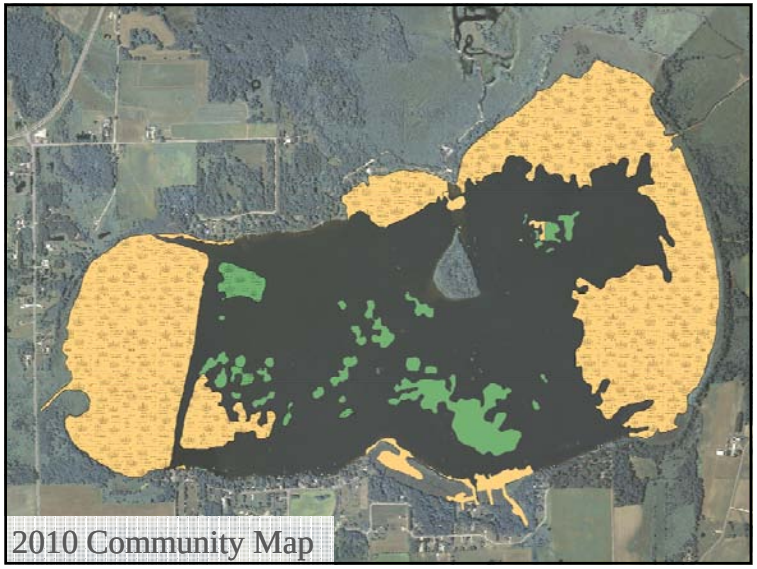
2010 Community Map

2005

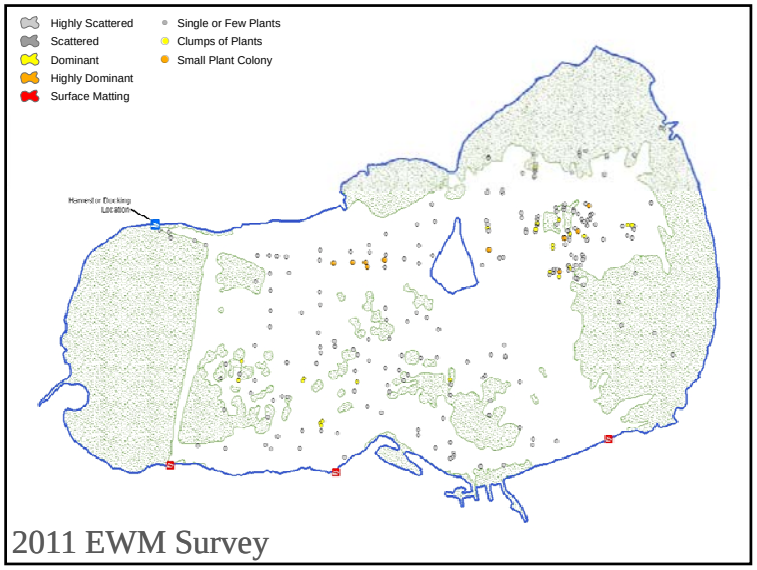

2006

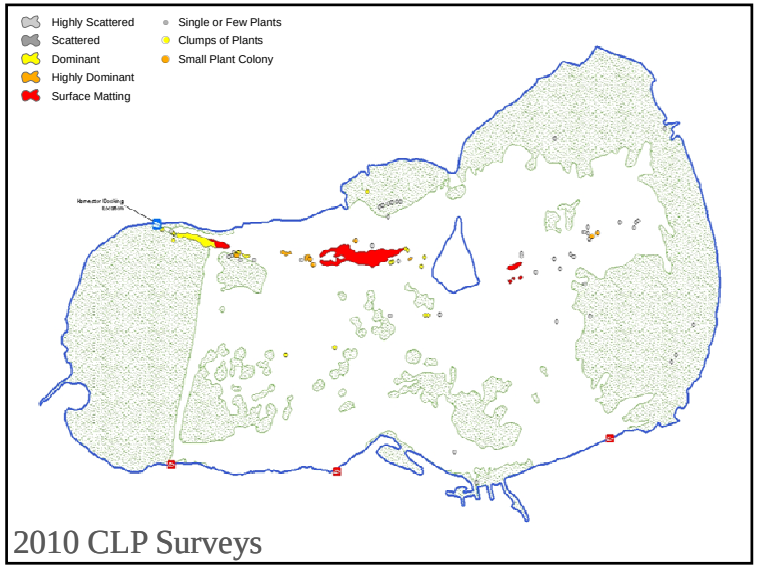

2008

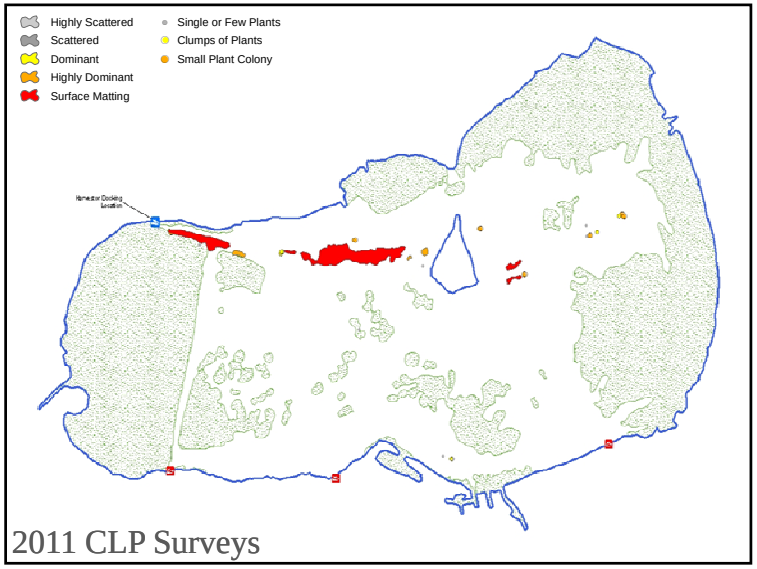

2010


2010 Community Map


Exotic Plants


Highly Scattered
Scattered
Dominant
Highly Dominant
Surface Matting
Single or Few Plants
Clumps of Plants
Small Plant Colony
2011 EWM Survey


Highly Scattered
Scattered
Dominant
Highly Dominant
Surface Matting
Single or Few Plants
Clumps of Plants
Small Plant Colony
2010 CLP Surveys


Highly Scattered
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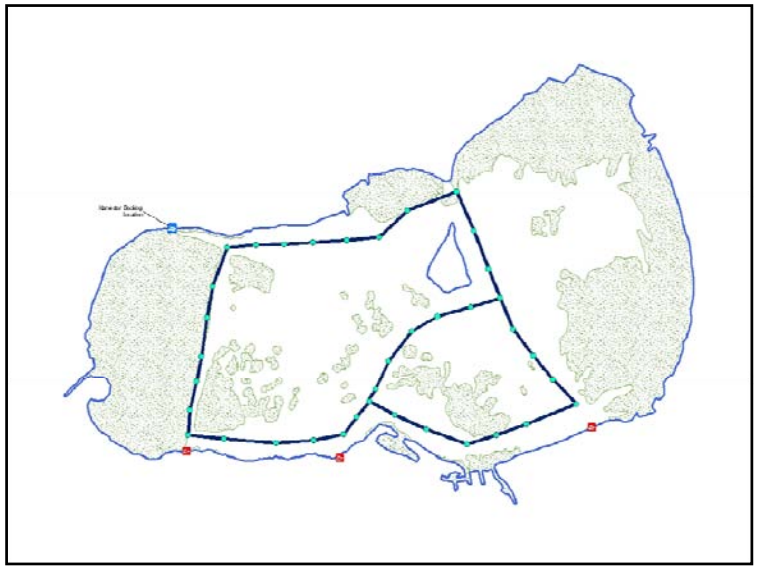
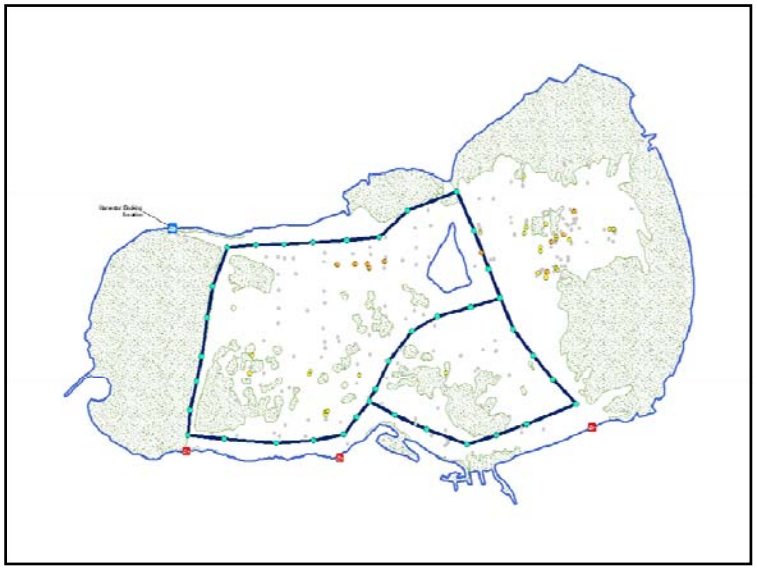
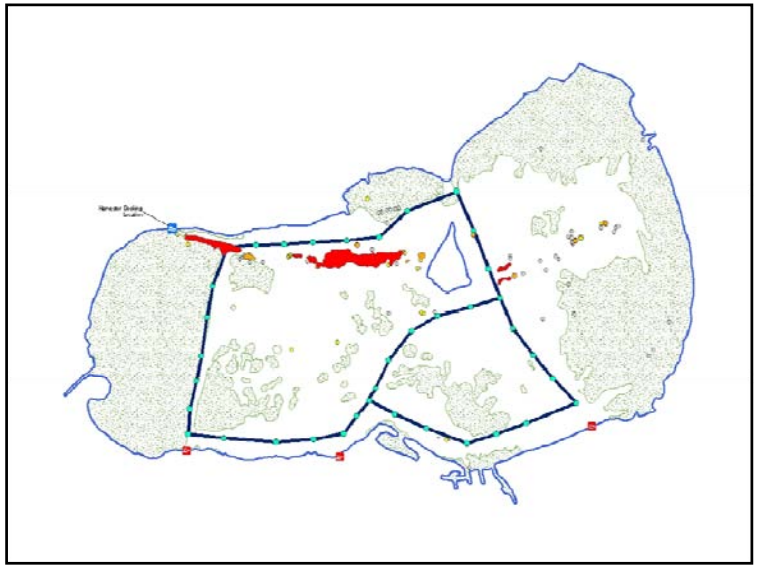
2011 CLP Surveys







Conclusions

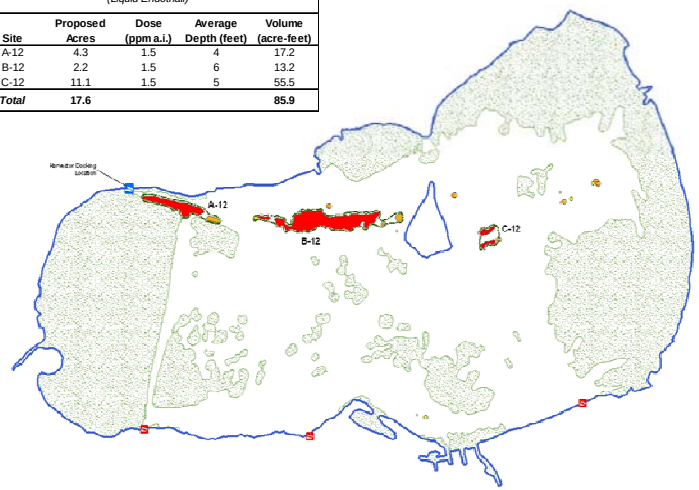
- No concerns over water quality in White Lake.
  - Displays typical “clear lake” characteristics of a shallow system.
- Overall watershed is largely in healthy condition.
  - Watershed is small compared to size of lake.
  - Minimal phosphorus input, considering lake size.
  - Wetlands buffer lake against nutrient inputs from watershed.
- Aquatic plant community
  - Based on standard analysis, native community is of high quality.
  - Suspicion of wild rice community increasing in size, though difficult to say for certain.
    - Rice normally fluctuates on a 3-year cycle.
  - Currently the greatest threat is aquatic invasive species.

Conclusions

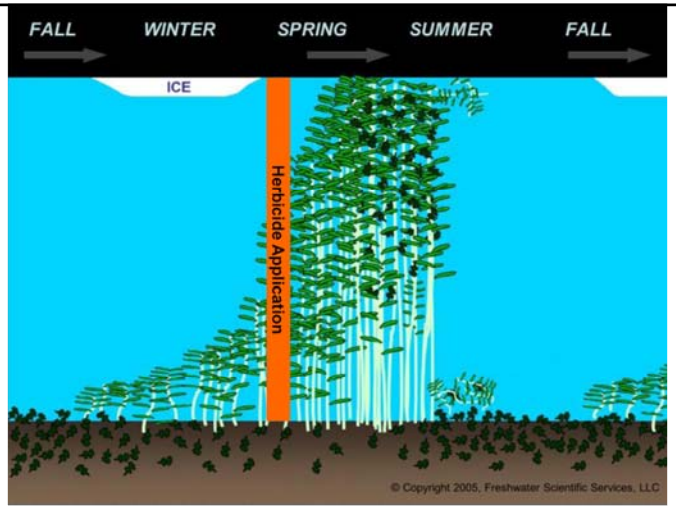
- Purple loosestrife exists in small amounts.
  - Hand removal a viable option at this point.
- No action to be taken on Eurasian water milfoil at this time.
  - Plant has spread throughout the lake at low densities.
  - Monitoring needed to identify colonial expansions, if any, occur.
- Curly-leaf pondweed herbicide treatments are recommended.
  - Currently 17.5 acres of treatable CLP.
  - CLP control often involves several (5+) years of treatment.

2012 Proposed CLP Treatment Areas
(Liquid Endothall)

Site	Proposed Acres	Dose (ppm a.i.)	Average Depth (feet)	Volume (acre-feet)
A-12	4.3	1.5	4	17.2
B-12	2.2	1.5	6	13.2
C-12	11.1	1.5	5	55.5
Total	**17.6**			**85.9**



2012 Conditional Treatment Areas



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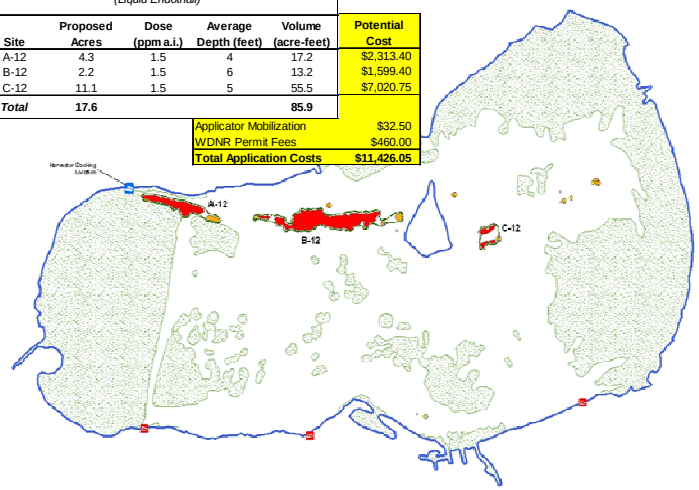
Lake Management Planning

2012 Proposed CLP Treatment Areas
(Liquid Endothall)

Site	Proposed Acres	Dose (ppm a.i.)	Average Depth (feet)	Volume (acre-feet)	Potential Cost
A-12	4.3	1.5	4	17.2	$2,313.40
B-12	2.2	1.5	6	13.2	$1,599.40
C-12	11.1	1.5	5	55.5	$7,020.75
Total	**17.6**			**85.9**	
			Applicator Mobilization		$32.50
			WDNR Permit Fees		$460.00
			Total Application Costs		**$11,426.05**



2012 Conditional Treatment Areas

B

APPENDIX B

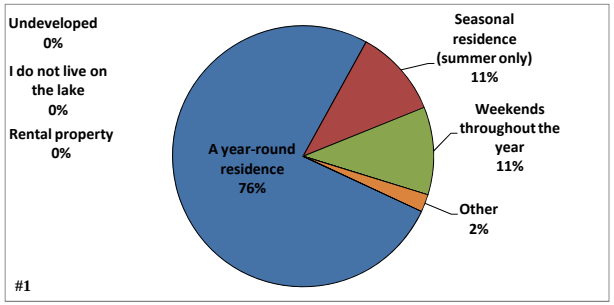
Stakeholder Survey Response Charts and Comments

Returned Surveys	49
Sent Surveys	108
Response Rate (%)	45.4

WHITE LAKE PROPERTY

#1 What type of property do you own on White Lake?

	Total	%
A year-round residence	35	*76.1*
Seasonal residence (summer only)	5	*10.9*
Weekends throughout the year	5	*10.9*
Rental property	0	*0.0*
Undeveloped	0	*0.0*
Other	1	*2.2*
I do not live on the lake	0	*0.0*
	46	*100.0*

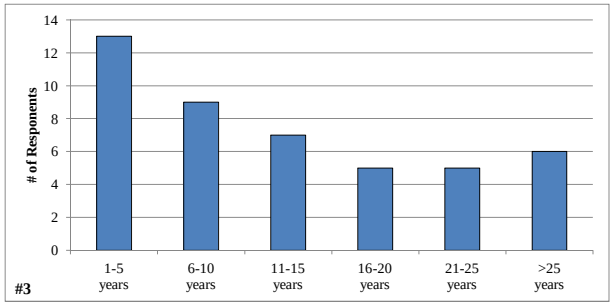


#2 How many days each year is your property used by you or others?

Answered Question	43
Average	250.9
Standard deviation	141.7

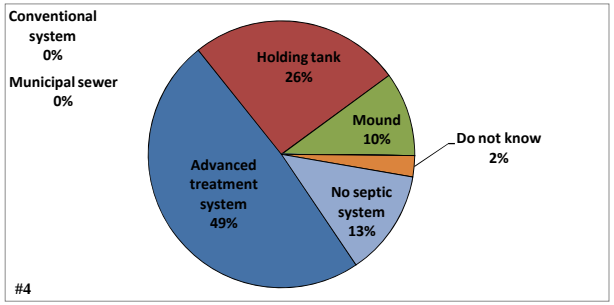
#3 How long have you owned your property on White Lake?

	Total	%
1-5 years	13	*28.9*
6-10 years	9	*20.0*
11-15 years	7	*15.6*
16-20 years	5	*11.1*
21-25 years	5	*11.1*
>25 years	6	*13.3*
	45	*100.0*



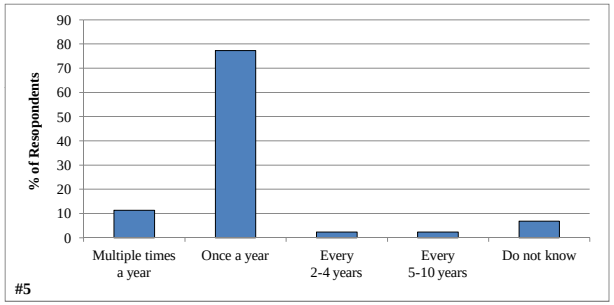
#4 What type of septic system does your property utilize?

	Total	%
Advanced treatment system	19	*48.7*
Holding tank	10	*25.6*
Mound	4	*10.3*
Conventional system	0	*0.0*
Municipal sewer	0	*0.0*
Do not know	1	*2.6*
No septic system	5	*12.8*
	39	*100.0*



#5 How often is the septic tank on your property pumped?

	Total	%
Multiple times a year	5	*11.4*
Once a year	34	*77.3*
Every 2-4 years	1	*2.3*
Every 5-10 years	1	*2.3*
Do not know	3	*6.8*
	44	*100.0*



RECREATIONAL USE ON WHITE LAKE

#6 How many years ago did you first visit White Lake?

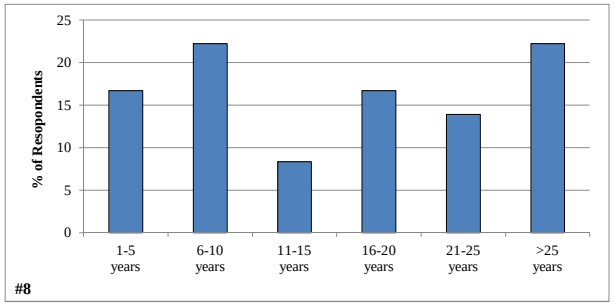
Answered Question	47
Average	23.9
Standard deviation	19.6

#7 Have you personally fished on White Lake in the past 3 years?

	Total	%
Yes	35	*72.9*
No	13	*27.1*
	48	*100.0*

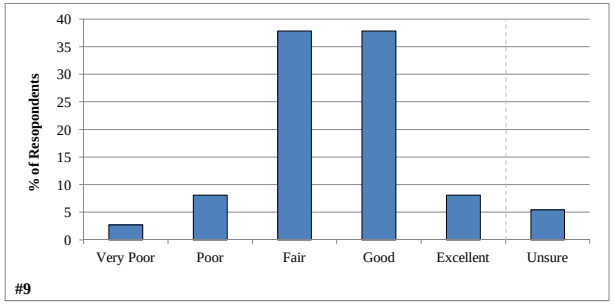
#8 For how many years have you fished White Lake?

	Total	%
1-5 years	6	*16.7*
6-10 years	8	*22.2*
11-15 years	3	*8.3*
16-20 years	6	*16.7*
21-25 years	5	*13.9*
>25 years	8	*22.2*
	36	*100.0*



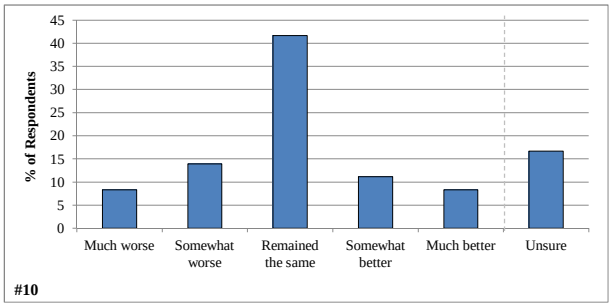
#9 How would you describe the current quality of fishing on White Lake?

	Total	%
Very Poor	1	*2.7*
Poor	3	*8.1*
Fair	14	*37.8*
Good	14	*37.8*
Excellent	3	*8.1*
Unsure	2	*5.4*
	37	*100.0*



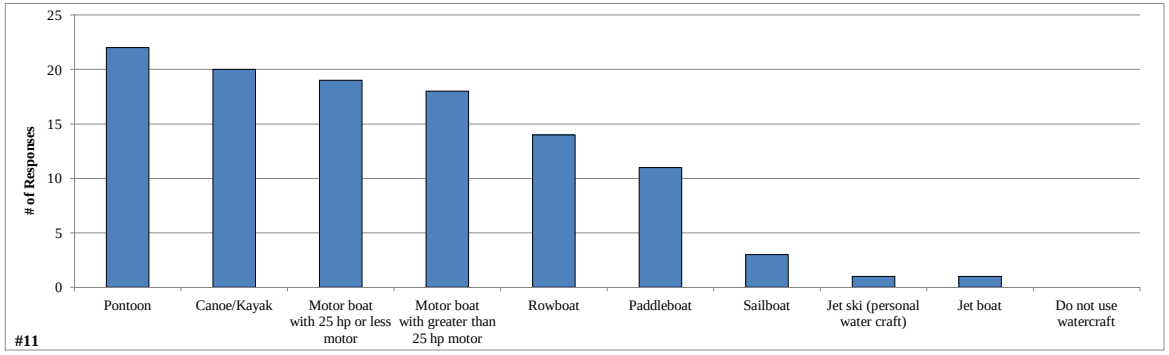
#10 How has the quality of fishing changed since you started fishing on the lake?

	Total	%
Much worse	3	*8.3*
Somewhat worse	5	*13.9*
Remained the Same	15	*41.7*
Somewhat better	4	*11.1*
Much better	3	*8.3*
Unsure	6	*16.7*
	36	*100.0*



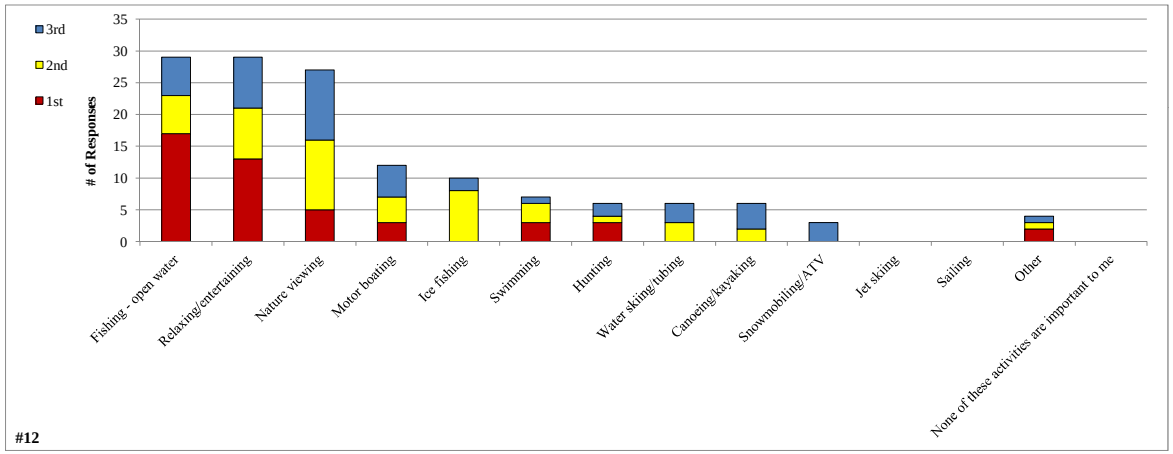
#11 What types of watercraft do you currently use on the lake?

	Total
Pontoon	22
Canoe/Kayak	20
Motor boat with 25 hp or less motor	19
Motor boat with greater than 25 hp motor	18
Rowboat	14
Paddleboat	11
Sailboat	3
Jet ski (personal water craft)	1
Jet boat	1
Do not use watercraft	0



#12 Please rank up to three activities that are important reasons for owning your property on or near the lake.

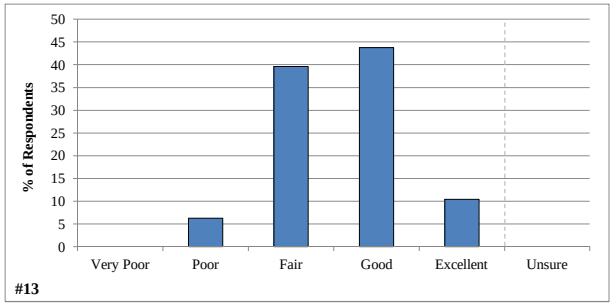
	1st	2nd	3rd	*% ranked*
Fishing - open water	17	6	6	*20.9*
Relaxing/entertaining	13	8	8	*20.9*
Nature viewing	5	11	11	*19.4*
Motor boating	3	4	5	*8.6*
Ice fishing	0	8	2	*7.2*
Swimming	3	3	1	*5.0*
Hunting	3	1	2	*4.3*
Water skiing/tubing	0	3	3	*4.3*
Canoeing/kayaking	0	2	4	*4.3*
Snowmobiling/ATV	0	0	3	*2.2*
Jet skiing	0	0	0	*0.0*
Sailing	0	0	0	*0.0*
Other	2	1	1	*2.9*
None of these activities are important to me	0	0	0	*0.0*
	46	47	46	*100.0*



WHITE LAKE CURRENT AND HISTORIC CONDITION, HEALTH AND MANAGEMENT

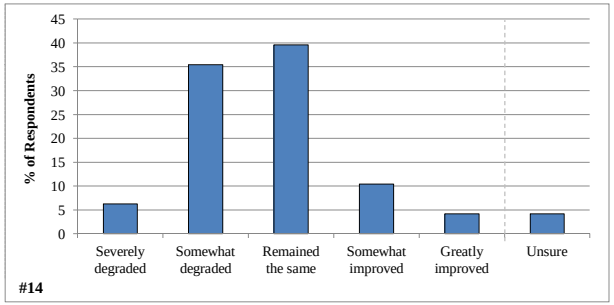
#13 How would you describe the current water quality of White Lake?

	Total	%
Very Poor	0	*0.0*
Poor	3	*6.3*
Fair	19	*39.6*
Good	21	*43.8*
Excellent	5	*10.4*
Unsure	0	*0.0*
	48	*100.0*



#14 How has the water quality changed in White Lake since you first visited the lake?

	Total	%
Severely degraded	3	*6.3*
Somewhat degraded	17	*35.4*
Remained the same	19	*39.6*
Somewhat improved	5	*10.4*
Greatly improved	2	*4.2*
Unsure	2	*4.2*
	48	*100.0*



#15 Have you ever heard of aquatic invasive species?

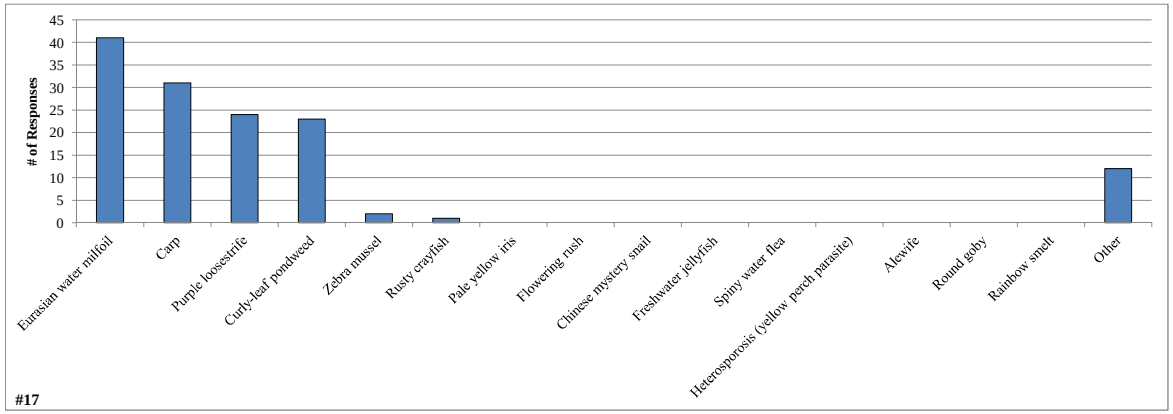
	Total	%
Yes	48	*100.0*
No	0	*0.0*
	48	*100.0*

#16 Are you aware of aquatic invasive species in the lake?

	Total	%
Yes	42	*89.4*
No	5	*10.6*
	47	*100.0*

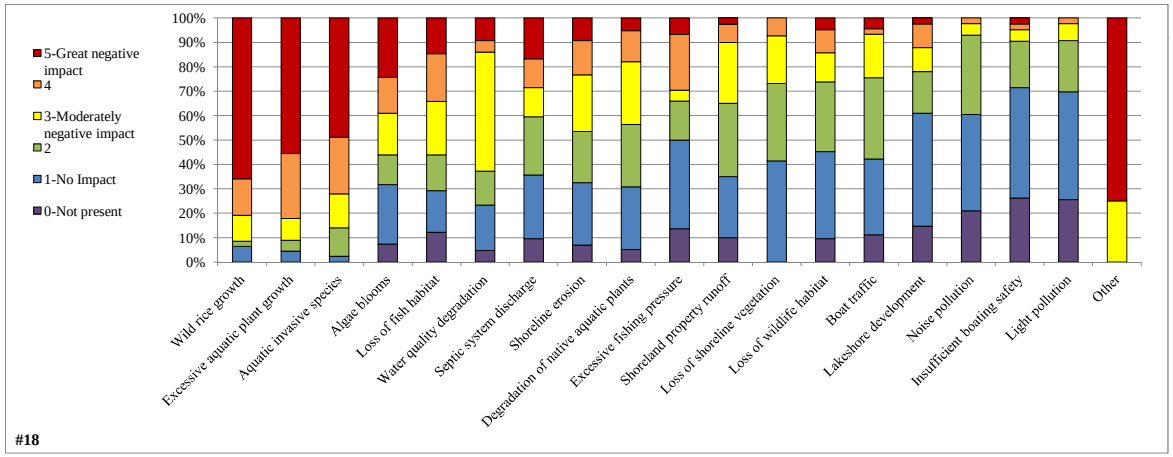
#17 Which aquatic invasive species are you aware of in the lake?

	Total
Eurasian water milfoil	41
Carp	31
Purple loosestrife	24
Curly-leaf pondweed	23
Zebra mussel	2
Rusty crayfish	1
Pale yellow iris	0
Flowering rush	0
Chinese mystery snail	0
Freshwater jellyfish	0
Spiny water flea	0
Heterosporosis (yellow perch parasite)	0
Alewife	0
Round goby	0
Rainbow smelt	0
Other	12



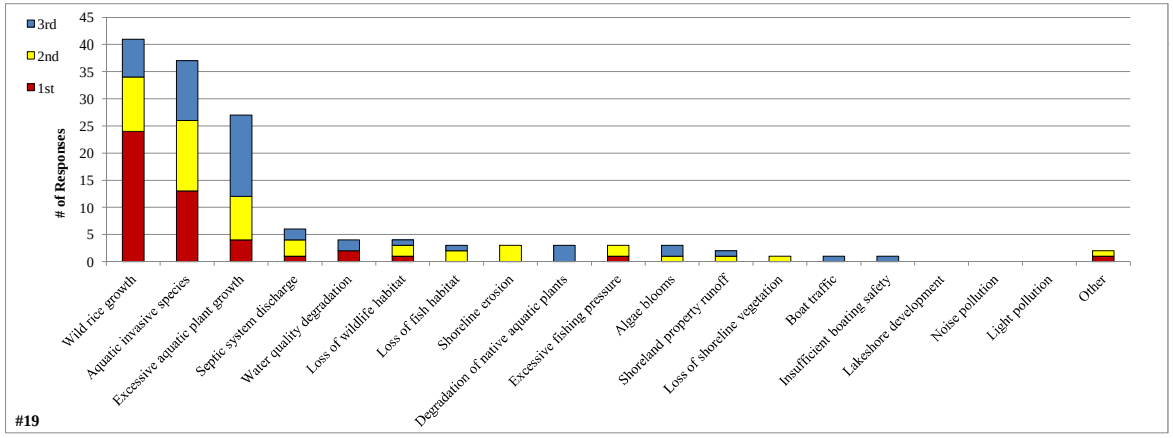
#18 To what level do you believe each of the following factors may be negatively impacting White Lake?

	0-Not present	1-No Impact	2	3-Moderately negative impact	4	5-Great negative impact	*Total*	*Average*
Wild rice growth	0	3	1	5	7	31	*47*	*4.3*
Excessive aquatic plant growth	0	2	2	4	12	25	*45*	*4.2*
Aquatic invasive species	0	1	5	6	10	21	*43*	*4.0*
Algae blooms	3	10	5	7	6	10	*38*	*2.8*
Loss of fish habitat	5	7	6	9	8	6	*36*	*2.6*
Water quality degradation	2	8	6	21	2	4	*41*	*2.6*
Septic system discharge	4	11	10	5	5	7	*38*	*2.4*
Shoreline erosion	3	11	9	10	6	4	*40*	*2.4*
Degradation of native aquatic plants	2	10	10	10	5	2	*37*	*2.3*
Excessive fishing pressure	6	16	7	2	10	3	*38*	*2.1*
Shoreland property runoff	4	10	12	10	3	1	*36*	*2.0*
Loss of shoreline vegetation	0	17	13	8	3	0	*41*	*1.9*
Loss of wildlife habitat	4	15	12	5	4	2	*38*	*1.9*
Boat traffic	5	14	15	8	1	2	*40*	*1.8*
Lakeshore development	6	19	7	4	4	1	*35*	*1.6*
Noise pollution	9	17	14	2	1	0	*34*	*1.3*
Insufficient boating safety	11	19	8	2	1	1	*31*	*1.2*
Light pollution	11	19	9	3	1	0	*32*	*1.2*
Other	0	0	0	2	0	6	*8*	*4.5*



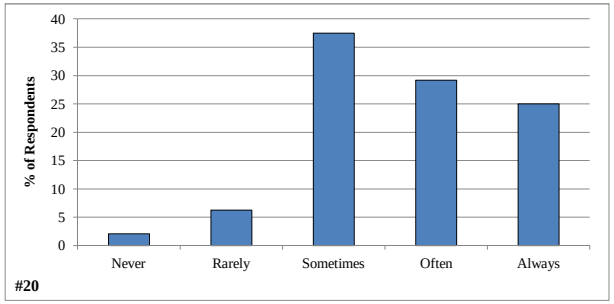
#19 From the list below, please rank your top three concerns regarding the lake.

	1st	2nd	3rd	*% Ranked*
Wild rice growth	24	10	7	*29.1*
Aquatic invasive species	13	13	11	*26.2*
Excessive aquatic plant growth	4	8	15	*19.1*
Septic system discharge	1	3	2	*4.3*
Water quality degradation	2	0	2	*2.8*
Loss of wildlife habitat	1	2	1	*2.8*
Loss of fish habitat	0	2	1	*2.1*
Shoreline erosion	0	3	0	*2.1*
Degradation of native aquatic plants	0	0	3	*2.1*
Excessive fishing pressure	1	2	0	*2.1*
Algae blooms	0	1	2	*2.1*
Shoreland property runoff	0	1	1	*1.4*
Loss of shoreline vegetation	0	1	0	*0.7*
Boat traffic	0	0	1	*0.7*
Insufficient boating safety	0	0	1	*0.7*
Lakeshore development	0	0	0	*0.0*
Noise pollution	0	0	0	*0.0*
Light pollution	0	0	0	*0.0*
Other	1	1	0	*1.4*
	47	47	47	*100.0*



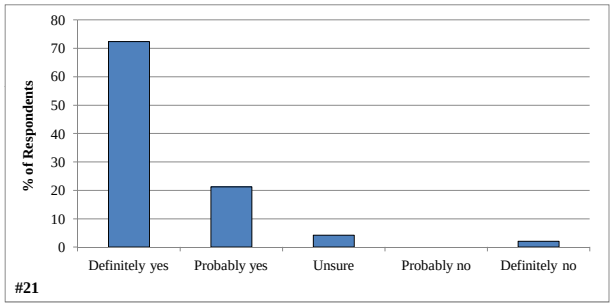
#20 During open water season how often does aquatic plant growth, including algae, negatively impact your enjoyment of the lake?

	Total	%
Never	1	*2.1*
Rarely	3	*6.3*
Sometimes	18	*37.5*
Often	14	*29.2*
Always	12	*25.0*
	48	*100.0*



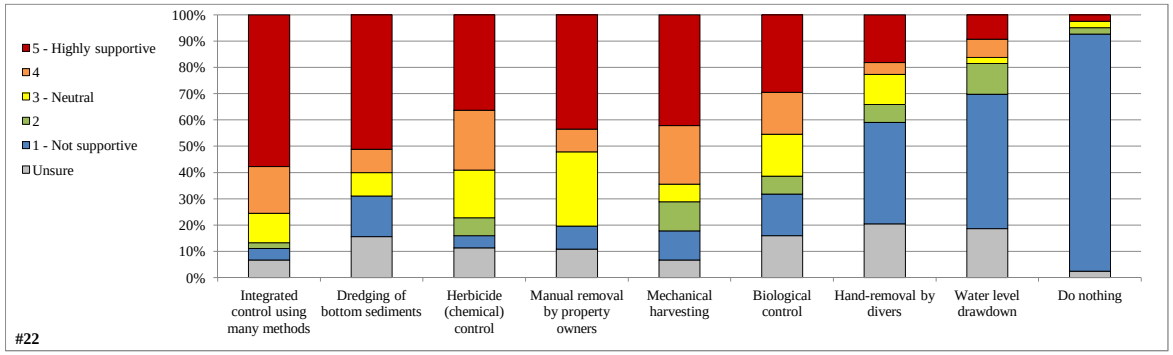
#21 Considering your answer to the question above, do you believe aquatic plant control is needed on the lake?

	Total	%
Definitely yes	34	*72.3*
Probably yes	10	*21.3*
Unsure	2	*4.3*
Probably no	0	*0.0*
Definitely no	1	*2.1*
	47	*100.0*



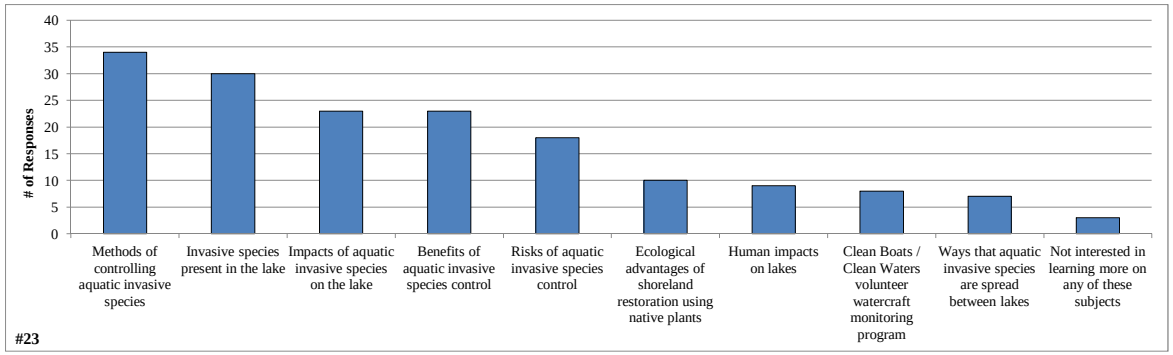
#22 What is your level of support for the responsible use of the following techniques on the lake?

	1 - Not supportive	2	3 - Neutral	4	5 - Highly supportive	Unsure	Total	Average
Integrated control using many methods	2	1	5	8	26	3	*42*	*4.3*
Dredging of bottom sediments	7	0	4	4	23	7	*38*	*3.9*
Herbicide (chemical) control	2	3	8	10	16	5	*39*	*3.9*
Manual removal by property owners	4	0	13	4	20	5	*41*	*3.9*
Mechanical harvesting	5	5	3	10	19	3	*42*	*3.8*
Biological control	7	3	7	7	13	7	*37*	*3.4*
Hand-removal by divers	17	3	5	2	8	9	*35*	*2.5*
Water level drawdown	22	5	1	3	4	8	*35*	*1.9*
Do nothing	37	1	1	0	1	1	*40*	*1.2*



#23 Which of these subjects would you like to learn more about?

	Total
Methods of controlling aquatic invasive species	34
Invasive species present in the lake	30
Impacts of aquatic invasive species on the lake	23
Benefits of aquatic invasive species control	23
Risks of aquatic invasive species control	18
Ecological advantages of shoreland restoration using native plants	10
Human impacts on lakes	9
Clean Boats / Clean Waters volunteer watercraft monitoring program	8
Ways that aquatic invasive species are spread between lakes	7
Not interested in learning more on any of these subjects	3



WHITE LAKE PRESERVATION ASSOCIATION, LTD

#24 Before receiving this mailing, have you ever heard of the White Lake Preservation Association, LTD?

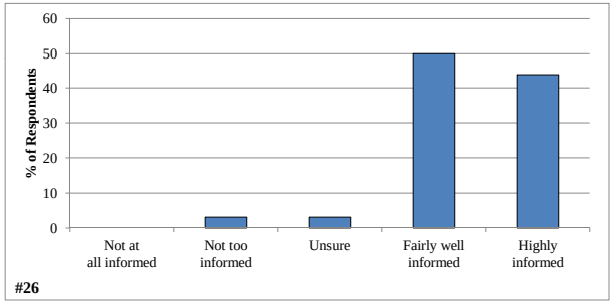
	Total	%
Yes	46	*97.9*
No	1	*2.1*
	47	*100.0*

#25 What is your membership status with the White Lake Preservation Association, LTD?

	Total	%
Current member	32	*69.6*
Former member	9	*19.6*
Never been a member	5	*10.9*
	46	*100.0*

#26 How informed has the White Lake Preservation Association, LTD kept you regarding issues with the lake and its management?

	Total	%
Not at all informed	0	*0.0*
Not too informed	1	*3.1*
Unsure	1	*3.1*
Fairly well informed	16	*50.0*
Highly informed	14	*43.8*
	32	*100.0*



WHITE LAKE AERATION ASSOCIATION

#27 Before receiving this mailing, have you ever heard of the White Lake Aeration Association?

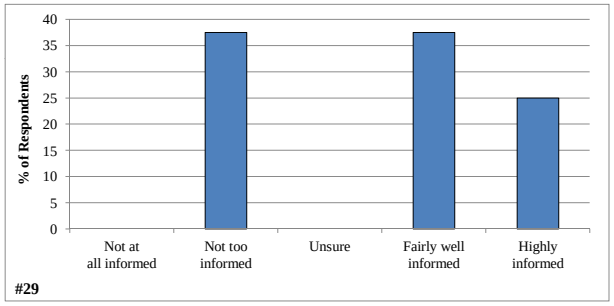
	Total	%
Yes	43	*91.5*
No	4	*8.5*
	47	*100.0*

#28 What is your membership status with the White Lake Aeration Association?

	Total	%
Current member	8	*18.6*
Former member	5	*11.6*
Never been a member	30	*69.8*
	43	*100.0*

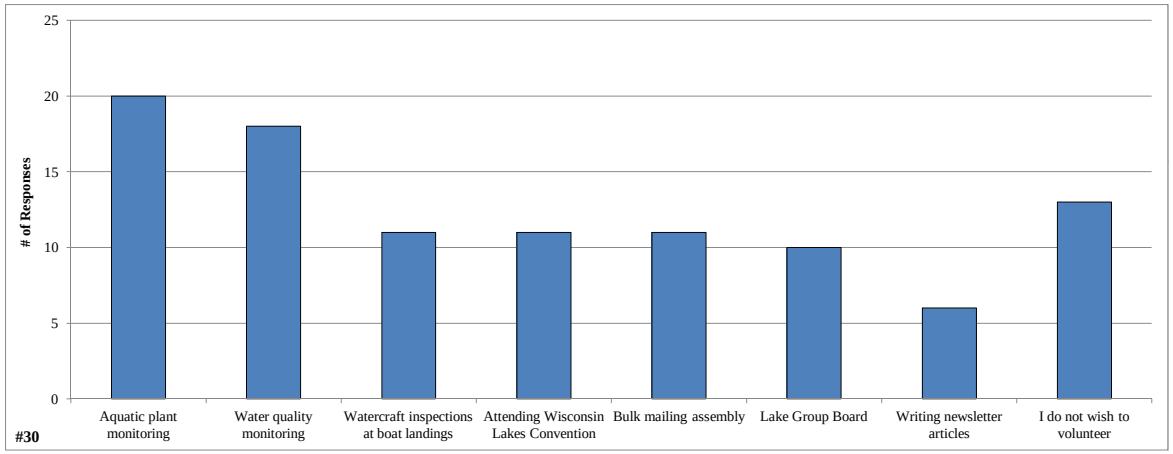
#29 How informed has the White Lake Aeration Association kept you regarding issues with the lake and its management?

	Total	%
Not at all informed	0	*0.0*
Not too informed	3	*37.5*
Unsure	0	*0.0*
Fairly well informed	3	*37.5*
Highly informed	2	*25.0*
	8	*100.0*



#30 Please circle the activities you would be willing to participate in if the White Lake Preservation Association, LTD or White Lake Aeration Association requires additional assistance.

	Total
Aquatic plant monitoring	20
Water quality monitoring	18
Watercraft inspections at boat landings	11
Attending Wisconsin Lakes Convention	11
Bulk mailing assembly	11
Lake Group Board	10
Writing newsletter articles	6
I do not wish to volunteer	13



Survey Number	1f Comment	12m Comment	17p Comment	18s Comment	19s Comment	Other Comments (and Question 31)
1	Rent Yr round		wild rice			Wild Rice is spreading too much
2				Do not know about others, not here long enough		re 23: Know it already, but can't hurt
3						I have just moved here and I love the lake and the wildlife. I am concerned about the weed and the fish habitat and seeing what they are doing to the lake in Weyauwega is a concern. I would like to have more information about both lake associations and what I can do to help. please mail me any information you can. NAME + address
4						
5						Right now we are able to spend very little time at the lake each year, making volunteering difficult.
6			wild rice			Over the years I have seen a growing deteriation of the conditions of the lake. Fewer and fewer foul in the fall. Enormous growth of invasive plant species in the lake. Encroachment of wild rice and reed to the point that the waterfront is collapsing and disappearing. Impossible to get a boat out. Major impact on property values. something must be done, please...
7						I quit being a member because I don't like the weedcutter
8						I recently retired and now live here all year. I really enjoy the peace and quiet of the lake, the wildlife, & fishing. I knew the lake was pretty shallow & very weedy when I bought our home but I thought that was something we could solve if everyone worked together...and the DNR allowed us the freedom to improve our lake.
9						I feel that harvesting is the lesser of all the evils in dealing with the weed problem. Biological controls such as White Amur-Sterile grass carp, could be used also, but they do affect the native species. All solutions will have pros/cons.
10		Gardening	rice	Filling with sediment and turning into a swamp		#8: Family and Friends fish. #20: I use weeds for the garden mulch. #31; I worry most about the lake filling up with sediment from dying plants etc. It once showed a lot of sandy bottom and the weeds were only found in patches.
11		Home Place				Need for a publicly available management plan with clearly goals and objectives and time line. Would like to see more people involved and educational sessions or articles.
12						To keep our lakes free of invasive plants we need financial help from the state of Wisconsin. Without money, small lake associations like the WLPA will at some point go broke. Then what will happen to the quality of White Lake?
13				Cutting wild rice when seed is mature. Farm land, spreading of septic on farmland		Education is Key! What are the effects of mechanical harvesting? What happens if we do nothing?
14						
15				Cat Tails	Cat Tails	I would like to see some kind of permanent aquatic plant control, not like the harvestor. The harvestor is just a bandaid. You cut the weed, they grow back, it's a vicious circle that never ends and very costly to maintain and run.
16						
17						
18			Wild rice is over taking lake			#29: Seems like a closed click #30 (h) Because of work responsibilities
19						
20						
21						The amount and lack of control of evasive weeds (I.E.E.A.M.)and wild rice in the past 13 yrs has becoma major concern to me. If we do not react more pro-active concerning the above in the next 10 to 20 yrs we have lost a beautiful lake and gained another wild swamp!
22				Weed cutter paddles spread weeds (poor recovery)	Remove week cutter from lake	#20: shore line weeds from weed cutter. #21 Only chemicals, not cutting. #22 Re mechanical harvesting: Remove…it's a piece of junk, outdated, obsolete, spills oil and fuel. Paddles spread weeds. After #26: The White Lake Pres. Assoc seems to be very secret. I don't trust them or these people. I believe they have agenda to make White Lake a No weed lake. #31: Your assoc. has a very bad reputation and leadership is very one sided.
23						
24			Planted Rice			I feel the infighting of the two white lake clubs has hurt the quality of White Lake. The DNR have not been helpful. They have been unhelpful.
25						

Survey Number	1f Comment	12m Comment	17p Comment	18s Comment	19s Comment	Other Comments (and Question 31)
26						
27						
28			Wild rice			We would like the water raised to control wild rice.
29		But like all of these at some time of the year	Too much wild rice on the lake			# 21: Rice and curly leaf #26: Hear most stuff from neighbors
30				Boaters littering in lake		We commend those who have contributed their time and knowledge to prepare and distribute this survey. Hopefully this survey will result in effective controls that will first prevent the spread of the wild rice, Eurasian Water milfoil and curly leaf pondweed and later confine the wild rice to specially designated areaa of White Lake. Thank you Very much
31		Location: close to extended family		Too many Weeds		Cutting the weeds just seems to make them grow more. I can see leaving sections of the lake for vegetation bu tot let it take over the la ke the way it has and with the lake being so shallow we may just end up with a big SWAMP
32				I am stating again: Rice Grass ruining the lake	*NO RANKING given to A,L, R*	Both associations seem to have opposing views for lake management. I believe the associations should be combined for the good of the lake. I also feel people actually living on the lake should have a greator say in management than people off the lake
33						Need more involvement from younger members
34						Leave the lake along. It's spring feed-a natural lake. What a waste of money to get this lake to be a recreation lake when this lake all these years has been a fishing and hunting lake. This lake doesn't need jet skiing and water skiing. The person or persons that started this "Wild Rice" growth are the destroyers of this lake and the DNR are proud of it because it can't be cut or pulled out.
35		*No Rankings applied to A, b, e*	P: Wild Rice			
36					*No Rank applied to A, L, R,*	
37						
38		Seaplane Flying		spreading of cat tails		
39			wild rice			
40						
41						I feel white Lake is a better lake now than it was 53 yrs a go. Everybody I talk to says it's a lake where you always catch fish. That says a lot. Hunting is better then it use to be. It is not a boating and swimming lake. History points to what its always been. Nothing should be trying to change that!!!!
42				Wild Rice (again)		I Think wild rice has a huge negative impact on Lake. What about clubs combining into one?
43			Rice			Great concern that area of lake is decreasing, especially on west side. Needs massive weed removal measures.
44						The excessive plant growth and the wild rice are ruining our lake and lowering our property values
45				Purple Loostrife		Active Member WLPA
46			Planted Rice			The lake has changed so much from when we first bought it, that our children do not care to even come anymore. The weeds, planted rice and lake bottom has totally turned them off. It is sad as it was so beautiful when we first bought it. I am certainly in hopes that the problems can be resolved and restore it back to its natural beauty.
47						
48						
49			Wild Rice			White Lake is a multi recreational water body but with all of the vegetational growth then die off which then will fill it in, it will become a swamp. It either needs to be drained and the muck be removed or be dredged. Deeper water and the correct vegetation will provide us with a better and more usable lake.
50						

C

APPENDIX C

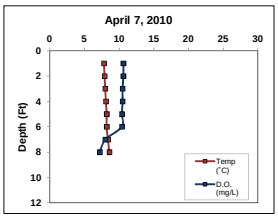
Water Quality Data

White Lake

Date: 4/7/2010
Time: 10:30
Weather: snow flurries, windy, 34°F
Entry: TWH

Max Depth: 9.1
WLS Depth (ft): 3.0
WLB Depth (ft): 8.0
Secchi Depth (ft): 4.7

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	7.8	10.6		
2.0	7.9	10.6		
3.0	8.0	10.5		
4.0	8.1	10.5		
5.0	8.2	10.4		
6.0	8.2	10.4		
7.0	8.4	8.0		
8.0	8.6	7.2		



Parameter	WLS	WLB
Total P (µg/L)	18.000	23.000
Dissolved P (µg/L)	ND	ND
Chl-a (µg/L)	8.76	
TKN (µg/L)	1010.00	1170.00
$NO_3 + NO_2$-N (µg/L)	58.000	58.000
NH_3-N (µg/L)	67.000	73.000
Total N (µg/L)	1010.00	1170.00
Lab Cond. (µS/cm)	256	257
Lab pH	8.11	8.09
Alkalinity (mg/L $CaCO_3$)	105	105
Total Susp. Solids (mg/L)	4	5
Calcium (mg/L)	26.1	

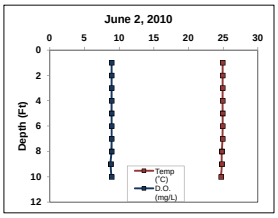
Data collected by BTB (Onterra)
GPS 3014 took new WQ point
605304 432874

White Lake

Date: 6/2/2010
Time: 9:45
Weather: cloudy and sprinkles, 65°F
Entry: TWH

Max Depth: 11.7
WLS Depth (ft): 3.0
WLB Depth (ft):
Secchi Depth (ft): 2.9

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	24.9	8.9	8.8	
2.0	24.9	8.9	8.8	
3.0	24.9	8.9	8.8	
4.0	24.9	8.9	8.8	
5.0	24.9	8.9	8.9	
6.0	24.9	8.9	8.8	
7.0	24.9	8.9	8.8	
8.0	24.8	8.9	8.8	
9.0	24.8	8.8	8.8	
10.0	24.7	8.9	8.8	



Parameter	WLS	WLB
Total P (µg/L)	32.000	38.000
Dissolved P (µg/L)		
Chl-a (µg/L)	9.19	
TKN (µg/L)		
~~$NO_3 + NO_2$-N (µg/L)~~		
NH_3-N (µg/L)		
Total N (µg/L)		
Lab Cond. (µS/cm)		
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)	8	17
Calcium (mg/L)		

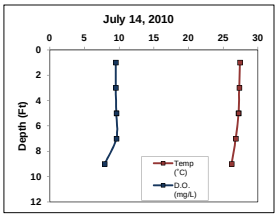
Data collected by DAC and SNR (Onterra)
Just north of site about 30 meters. Could not take point with GPS. Edit mode not working.

White Lake

Date: 7/14/2010
Time: 14:00
Weather: 100% clouds, 80's°F
Entry: TWH

Max Depth: 11.0
WLS Depth (ft): 3.0
WLB Depth (ft): 8.0
Secchi Depth (ft): 3.5

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	27.4	9.5		
3.0	27.3	9.5		
5.0	27.2	9.6		
7.0	26.8	9.6		
9.0	26.2	7.9		



Parameter	WLS	WLB
Total P (µg/L)	24.000	24.000
Dissolved P (µg/L)	ND	ND
Chl-a (µg/L)	6.54	
TKN (µg/L)	1270.00	1270.00
$NO_3 + NO_2$-N (µg/L)	25.000	28.000
NH_3-N (µg/L)	22.000	24.000
Total N (µg/L)	1270.00	1270.00
Lab Cond. (µS/cm)	226	228
Lab pH	9.26	9.20
Alkalinity (mg/L $CaCO_3$)	90	90
Total Susp. Solids (mg/L)	6	6
Calcium (mg/L)		

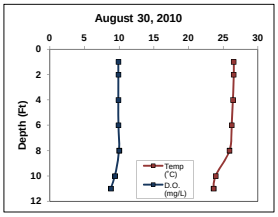
Data collected by TWH (Onterra)

White Lake

Date: 8/30/2010
Time: 15:15
Weather: clear, light breeze, 85°F
Entry: TWH

Max Depth: 11.7
WLS Depth (ft): 3
WLB Depth (ft): 9
Secchi Depth (ft): 7.1

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	26.5	9.9	9.5	198
2.0	26.5	9.9	9.5	198
4.0	26.4	9.9	9.5	198
6.0	26.2	9.9	9.5	197
8.0	25.9	10.0	9.5	197
10.0	23.9	9.4	9.5	196
11.0	23.6	8.8	9.4	195



Parameter	WLS	WLB
Total P (µg/L)	18.000	18.000
Dissolved P (µg/L)		
Chl-a (µg/L)	3.23	
TKN (µg/L)		
$NO_3 + NO_2$-N (µg/L)		
NH_3-N (µg/L)		
Total N (µg/L)		
Lab Cond. (µS/cm)	198	197
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)	2	2
Calcium (mg/L)		

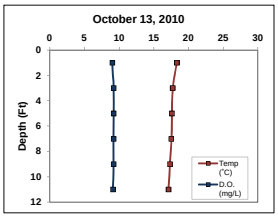
Data collected by TAH (Onterra)

White Lake

Date: 10/13/2010
Time: 11:15
Weather: 90% sun, 58°F
Entry: TWH

Max Depth: 11.5
WLS Depth (ft): 3
WLB Depth (ft): 8
Secchi Depth (ft): 7.5

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	18.3	9.0		
3.0	17.7	9.2		
5.0	17.6	9.2		
7.0	17.5	9.2		
9.0	17.3	9.2		
11.0	17.1	9.1		



Parameter	WLS	WLB
Total P (µg/L)	24.000	21.000
Dissolved P (µg/L)		
Chl-a (µg/L)	2.61	
TKN (µg/L)		
$NO_3 + NO_2$-N (µg/L)		
NH_3-N (µg/L)		
Total N (µg/L)		
Lab Cond. (µS/cm)		
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)	2	3
Calcium (mg/L)		

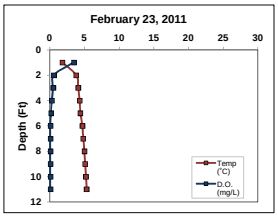
Data collected by TWH (Onterra)

White Lake

Date: 2/23/2011
Time: 9:38
Weather: slight breeze, 2.2°c
Entry: TWH

Max Depth: 11.6
WLS Depth (ft): 3
WLB Depth (ft): 8
Secchi Depth (ft): 5

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	1.8	3.5		
2.0	3.8	0.6		
3.0	4.1	0.5		
4.0	4.3	0.3		
5.0	4.4	0.2		
6.0	4.7	0.1		
7.0	4.8	0.1		
8.0	5.0	0.1		
9.0	5.1	0.1		
10.0	5.2	0.1		
11.0	5.3	0.1		



Parameter	WLS	WLB
Total P (µg/L)	20.000	20.000
Dissolved P (µg/L)	ND	ND
Chl-a (µg/L)		
TKN (µg/L)	2720.00	3250.00
$NO_3 + NO_2$-N (µg/L)	58.000	ND
NH_3-N (µg/L)	1300.000	1620.000
Total N (µg/L)	2720.00	3250.00
Lab Cond. (µS/cm)		
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)	2	4
Calcium (mg/L)		

Data collected by DAC,TWH (Onterra) Note: Ice depth 1.1'

Water Quality Data

2010	Surface		Bottom	
Parameter	Count	Mean	Count	Mean
Secchi Depth (feet)	6	5.1	NA	NA
Total P (µg/L)	6	22.7	6	24.0
Dissolved P (µg/L)	3	ND	3	ND
Chl a (µg/L)	5	6.1	0	NA
TKN (µg/L	3	1666.7	3	1896.7
NO3+NO2-N (µg/L)	3	47.0	3	43.0
NH3-N (µg/L)	3	463.0	3	572.3
Total N (µg/L)	3	1666.7	3	1896.7
Lab Cond. (µS/cm)	3	226.7	3	227.3
Lab pH	2	8.7	2	8.6
Alkal (mg/l CaCO3)	2	97.6	2	97.7
Total Susp Sol (mg/l)	6	4.0	6	6.2
Calcium (µg/L)	1	26.1	0	NA

Trophic State Index (WTSI)

Year	TP	Chl-a	Secchi
1979	56.1	45.9	47.6
1982	47.3	48.2	
1986			55.3
1987			49.3
1988			47.2
1989			50.1
1990			
1991			
2002	48.9	48.4	48.5
2003	49.4	53.7	56.1
2010	50.4	48.7	53.4
All Years (Weighted)	51.4	49.1	50.7
llow, Lowland Drainage La	54.6	52.6	52.4
NCHF Ecoregion	61.1	57.3	53.2

	Secchi (feet)				Chlorophyll-a (µg/L)				Total Phosphorus (µg/L)			
	Growing Season		Summer		Growing Season		Summer		Growing Season		Summer	
Year	Count	Mean	Count	Mean	Count	Mean	Count	Mean	Count	Mean	Count	Mean
1979	3	7.8	3	7.8	1	4.8	1	4.8	3	36.7	3.0	36.7
1982					1	6.0	1	6.0	2	20.0	1.0	20.0
1986	7	4.8	5	4.6								
1987	8	7.1	6	6.9								
1988	5	7.9	2	8.0								
1989	3	7.0	2	6.5								
1990	4	5.9	0									
1991	1	9.0	0									
2002	4	7.0	3	7.3	2	6.1	2	6.1	4	23.3	3.0	22.3
2003	1	4.3	1	4.3	1	10.5	1	10.5	3	24.3	2.0	23.0
2010	6	5.5	4	5.2	5	6.1	3	6.3	5	23.2	3.0	24.7
All Years (Weighted)		6.5		6.3		6.4		6.6		25.4		26.4
Shallow, Lowland Drainage Lakes				5.6				9.4				33.0
NCHF Ecoregion				5.3				15.2				52.0

Summer 2010 N: 1666.7
Summer 2010 P: 22.7

Summer 2011 N:P 74 :1

D

APPENDIX D

Watershed Analysis WiLMS Results

Date: 10/13/2011 Scenario: White Lake Current

Lake Id: White Lake
Watershed Id: 0

Hydrologic and Morphometric Data

Tributary Drainage Area: 2156.3 acre
Total Unit Runoff: 10.5 in.
Annual Runoff Volume: 1886.8 acre-ft
Lake Surface Area <As>: 1026 acre
Lake Volume <V>: 4104 acre-ft
Lake Mean Depth <z>: 4.0 ft
Precipitation - Evaporation: 3.8 in.
Hydraulic Loading: 2211.7 acre-ft/year
Areal Water Load <qs>: 2.2 ft/year
Lake Flushing Rate <p>: 0.54 1/year
Water Residence Time: 1.86 year
Observed spring overturn total phosphorus (SPO): 18.0 mg/m^3
Observed growing season mean phosphorus (GSM): 26.1 mg/m^3
% NPS Change: 0%
% PS Change: 0%

NON-POINT SOURCE DATA

Land Use	Acre	Low	Most Likely	High	Loading %	Low	Most Likely	High
	(ac)	Loading (kg/ha-year)				Loading (kg/year)		
Row Crop AG	672.7	0.50	1.00	3.00	56.9	136	272	817
Mixed AG	0.0	0.30	0.80	1.40	0.0	0	0	0
Pasture/Grass	285.8	0.10	0.30	0.50	7.3	12	35	58
HD Urban (1/8 Ac)	0.0	1.00	1.50	2.00	0.0	0	0	0
MD Urban (1/4 Ac)	1.1	0.30	0.50	0.80	0.0	0	0	0
Rural Res (>1 Ac)	196.5	0.05	0.10	0.25	1.7	4	8	20
Wetlands	577.9	0.10	0.10	0.10	4.9	23	23	23
Forest	422.3	0.05	0.09	0.18	3.2	9	15	31
Lake Surface	1026.0	0.10	0.30	1.00	26.0	42	125	415

POINT SOURCE DATA

Point Sources	Water Load	Low	Most Likely	High	Loading %
	(m^3/year)	(kg/year)	(kg/year)	(kg/year)	

SEPTIC TANK DATA

Description		Low	Most Likely	High	Loading %
Septic Tank Output (kg/capita-year)		0.3	0.5	0.8	
# capita-years	0.0				
% Phosphorus Retained by Soil		98	90	80	
Septic Tank Loading (kg/year)		0.00	0.00	0.00	0.0

TOTALS DATA

Description	Low	Most Likely	High	Loading %
Total Loading (lb)	496.6	1054.8	3007.4	100.0
Total Loading (kg)	225.3	478.5	1364.2	100.0
Areal Loading (lb/ac-year)	0.48	1.03	2.93	0.0
Areal Loading (mg/m^2-year)	54.25	115.23	328.55	0.0
Total PS Loading (lb)	0.0	0.0	0.0	0.0
Total PS Loading (kg)	0.0	0.0	0.0	0.0
Total NPS Loading (lb)	405.1	780.2	2092.0	100.0
Total NPS Loading (kg)	183.7	353.9	948.9	100.0

Phosphorus Prediction and Uncertainty Analysis Module

Date: 10/13/2011 Scenario: 9
Observed spring overturn total phosphorus (SPO): 18.0 mg/m^3
Observed growing season mean phosphorus (GSM): 26.1 mg/m^3
Back calculation for SPO total phosphorus: 0.0 mg/m^3
Back calculation GSM phosphorus: 0.0 mg/m^3
% Confidence Range: 70%
Nurenberg Model Input - Est. Gross Int. Loading: 0 kg

Lake Phosphorus Model	Low Total P (mg/m^3)	Most Likely Total P (mg/m^3)	High Total P (mg/m^3)	Predicted -Observed (mg/m^3)	% Dif.
Walker, 1987 Reservoir	38	80	228	54	207
Canfield-Bachmann, 1981 Natural Lake	30	51	102	25	96
Canfield-Bachmann, 1981 Artificial Lake	28	43	74	17	65
Rechow, 1979 General	4	9	27	-17	-65
Rechow, 1977 Anoxic	57	121	346	95	364
Rechow, 1977 water load<50m/year	20	43	124	17	65
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	39	84	239	66	367
Vollenweider, 1982 Combined OECD	29	53	125	31	141
Dillon-Rigler-Kirchner	19	41	117	23	128
Vollenweider, 1982 Shallow Lake/Res.	23	45	114	23	104
Larsen-Mercier, 1976	35	74	212	56	311
Nurnberg, 1984 Oxic	16	34	98	8	31

Lake Phosphorus Model	Confidence Lower Bound	Confidence Upper Bound	Parameter Fit?	Back Calculation (kg/year)	Model Type
Walker, 1987 Reservoir	46	175	z	0	GSM
Canfield-Bachmann, 1981 Natural Lake	16	147	FIT	1	GSM
Canfield-Bachmann, 1981 Artificial Lake	13	124	FIT	1	GSM
Rechow, 1979 General	5	21	qs	0	GSM
Rechow, 1977 Anoxic	71	264	FIT	0	GSM
Rechow, 1977 water load<50m/year	24	95	FIT	0	GSM
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	41	190	FIT	0	SPO
Vollenweider, 1982 Combined OECD	26	110	FIT	0	ANN
Dillon-Rigler-Kirchner	24	89	P qs	0	SPO
Vollenweider, 1982 Shallow Lake/Res.	22	96	FIT	0	ANN
Larsen-Mercier, 1976	45	161	P Pin	0	SPO
Nurnberg, 1984 Oxic	17	77	FIT	0	ANN

Water and Nutrient Outflow Module

Date: 10/13/2011 Scenario: 9
Average Annual Surface Total Phosphorus: 26.1mg/m^3
Annual Discharge: 2.21E+003 AF => 2.73E+006 m^3
Annual Outflow Loading: 150.1 LB => 68.1 kg

E

APPENDIX E

Aquatic Plant Survey Data

sampling point	Latitude (need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	Total Rake Fullness	Myriophyllum spicatum	Potamogeton crispus	Najas flexilis	Vallisneria americana	Potamogeton amplifolius	Potamogeton praelongus	Zizania aquatica	Potamogeton hybrid sp	Megalodonta beckii	Potamogeton zosteriformis	Potamogeton natans	Potamogeton illinoensis	Brasenia schreberi	Nymphaea odorata	Stuckenia pectinata	Schoenoplectus acutus	Sagittaria cristata	Myriophyllum sibiricum	Chara spp.	Potamogeton gramineus	Typha latifolia	Utricularia gibba	Potamogeton pusillus	Potamogeton strictifolius	Typha angustifolia	Nitella sp.	Pontederia cordata	Utricularia vulgaris	Utricularia minor	Eleocharis acicularis	Lobelia dortmanna	Myriophyllum verticillatum	Potamogeton friesii	Lythrum salicaria
1	44.358565	-88.933177				Unreachable																																			
2	44.358555	-88.932149				Unreachable																																			
3	44.358526	-88.929062				Unreachable																																			
4	44.358517	-88.928033				Unreachable																																			
5	44.359474	-88.951683				Unreachable																																			
6	44.359465	-88.950654				Unreachable																																			
7	44.359455	-88.949625				Unreachable																																			
8	44.359446	-88.948597	3	S	P		1			1	1																														
9	44.359436	-88.947568	1	S	P		1				1																1														
10	44.359427	-88.946539	1	S	P		1			1	1																1								V						
11	44.359418	-88.94551	5	S	P		3			1	3					1	1	1									1														
12	44.359408	-88.944481	5	M	P		3			1	3						1				V																				
13	44.359399	-88.943452	4	S	P		1			2	1	1					1										1														
14	44.359389	-88.942424	5	M	P		3			2	2						1																								
15	44.359379	-88.941395	5	M	P		1			1		1					1					1																		
16	44.35937	-88.940366	4	S	P		1			1							1				1	1																		
17	44.35936	-88.939337	3	S	P		1			1																															
18	44.359351	-88.938308	3	S	P	No Vegetation																																			
19	44.359322	-88.935222				Unreachable																																			
20	44.359312	-88.934193				Unreachable																																			
21	44.359293	-88.932135	2	S	P	No Vegetation																																			
22	44.359284	-88.931106	4	S	P		1										1										1														
23	44.359274	-88.930078	5	M	P		2			2	2								1					1																
24	44.359264	-88.929049	5	M	P		2			1	2																														
25	44.359255	-88.92802	5	M	P		3	V		3	2	1		1						V	V																		
26	44.359245	-88.926991	3	M	P		2			1	1		1	1				2			1																		
27	44.359235	-88.925962	3	S	P		1			1	2																	1												
28	44.360222	-88.952699				Unreachable																																			
29	44.360212	-88.95167				Unreachable																																			
30	44.360203	-88.950641				Unreachable																																			
31	44.360194	-88.949612				Unreachable																																			
32	44.360184	-88.948583	4	M	P		3			3	1		1																											
33	44.360175	-88.947554	6	M	P		2			2			1																											
34	44.360165	-88.946526	6	M	P		1			1																														
35	44.360156	-88.945497	5	M	P		2	V			1	1																												
36	44.360146	-88.944468	5	M	P		1			1																														
37	44.360137	-88.943439	5	M	P		3			1		2	1																											
38	44.360127	-88.94241	5	M	P		3	V		2	3	2	1																											
39	44.360118	-88.941381	5	M	P		3				1	3																												
40	44.360108	-88.940353	5	M	P		2			1	2						1																							
41	44.360098	-88.939324	5	M	P		3			1	3	1																												
42	44.360089	-88.938295	5	M	P		3																																	
43	44.360079	-88.937266	4	M	P		3			3	3																													
44	44.36006	-88.935208				Unreachable																																			
45	44.360051	-88.93418				Unreachable																																			
46	44.360041	-88.933151	2.5	S	P	No Vegetation																																			
47	44.360031	-88.932122	5	M	P		2				2					1								1																
48	44.360022	-88.931093	5	M	P	No Vegetation																																			
49	44.360012	-88.930064	5	M	P		3			1	1	2					1																							
50	44.360002	-88.929035	5	M	P		3			3	1											2																		
51	44.359993	-88.928006	5	M	P		3			2	3	1				1	1																							
52	44.359983	-88.926978	6	M	P		1			1																														
53	44.359973	-88.925949	5	M	P		3			1									3																						
54	44.359964	-88.92492	6	M	P	No Vegetation																																			
55	44.359954	-88.923891	2	S	P		1			1																															
56	44.360969	-88.953714				Unreachable																																			
57	44.36096	-88.952686				Unreachable																																			
58	44.360951	-88.951657				Unreachable																																			
59	44.360941	-88.950628				Unreachable																																			
60	44.360932	-88.949599				Unreachable																																			
61	44.360922	-88.94857	5	M	P		3			1	1	2																												
62	44.360913	-88.947541				Unreachable																																			
63	44.360903	-88.946512				Unreachable																																			
64	44.360894	-88.945484				Unreachable																																			
65	44.360884	-88.944455	5	M	P		1					1																												
66	44.360875	-88.943426	5	M	P		3			3	2			1																										
67	44.360865	-88.942397	5	M	P		3			3	1	1																												
68	44.360856	-88.941368	5	M	P		3			1	2	2																												
69	44.360846	-88.940339	5	M	P		3	1		3	2	3																												
70	44.360837	-88.93931	5	M	P		3	V		2		1																												
71	44.360827	-88.938282	5	M	P		3			1		3																												
72	44.360817	-88.937253	5	M	P		1			1		1																												
73	44.360808	-88.936224	5	M	P	No Vegetation																																			
74	44.360789	-88.934166	4	S	P		1			1																														
75	44.360779	-88.933137	5	M	P		3			1	3											1																		

sampling point	Latitude (need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	Total Rake Fullness	Myriophyllum spicatum	Potamogeton crispus	Najas flexilis	Vallisneria americana	Potamogeton amplifolius	Potamogeton praelongus	Zizania aquatica	Potamogeton hybrid sp	Megalodonta beckii	Potamogeton zosteriformis	Potamogeton natans	Potamogeton illinoensis	Brasenia schreberi	Nymphaea odorata	Stuckenia pectinata	Schoenoplectus acutus	Sagittaria cristata	Myriophyllum sibiricum	Chara spp.	Potamogeton gramineus	Typha latifolia	Utricularia gibba	Potamogeton pusillus	Potamogeton strictifolius	Typha angustifolia	Nitella sp.	Pontederia cordata	Utricularia vulgaris	Utricularia minor	Eleocharis acicularis	Lobelia dortmanna	Myriophyllum verticillatum	Potamogeton friesii	Lythrum salicaria
76	44.360769	-88.932108	5	M	P		1			1	1													1																	
77	44.36076	-88.93108	4	M	P		3			2	3	2																													
78	44.36075	-88.930051	6	M	P		3			1	2		1	1		2	1																								
79	44.360741	-88.929022	4	M	P		3			2	3	2		1		1																								
80	44.360731	-88.927993	5	M	P		3			1	3	2		1		2																								
81	44.360721	-88.926964	5	M	P		3	V		1	3																													
82	44.360712	-88.925935	6	M	P		1						1																												
83	44.360702	-88.924906	6	M	P		1			1			1																												
84	44.360692	-88.923878	5	M	P		3			2	2			1																											
85	44.360683	-88.922849	6	M	P		2			2												1																			
86	44.360673	-88.92182	4	M	P		1			1	1													1			2													
87	44.360663	-88.920791	3	S	P		1																			1														
88	44.360653	-88.919762				Unreachable																																		
89	44.361708	-88.953701				Unreachable																																		
90	44.361698	-88.952672				Unreachable																																		
91	44.361689	-88.951644				Unreachable																																		
92	44.361679	-88.950615				Unreachable																																		
93	44.36167	-88.949586				Unreachable																																		
94	44.36166	-88.948557	5	M	P		3				1	2	1				1																							
95	44.361651	-88.947528				Unreachable																																		
96	44.361641	-88.946499				Unreachable																																		
97	44.361632	-88.94547	5	M	P		3				2	1	1	V			1																							
98	44.361622	-88.944441	5	M	P		2			1	2		1																											
99	44.361613	-88.943413	5	M	P		1					1												V																
100	44.361603	-88.942384	5	M	P		2			2	1	1	1			1								1																
101	44.361594	-88.941355	5	M	P		2			1	2	1					1																							
102	44.361584	-88.940326	5	M	P		3			3	2	1																												
103	44.361575	-88.939297	5	M	P		3			1	1	2																												
104	44.361565	-88.938268	5	M	P					1	3																													
105	44.361556	-88.937239	5	M	P		3			1	3		1																											
106	44.361546	-88.93621	5	M	P		2			1		2																												
107	44.361536	-88.935182	5	M	P		2			1	2	1																												
108	44.361527	-88.934153	6	S	P	No Vegetation																																		
109	44.361517	-88.933124	5	S	P		1			1																														
110	44.361508	-88.932095	5	M	P		3			3	2	2	1				1																							
111	44.361498	-88.931066	5	M	P		3			1	3	3																												
112	44.361488	-88.930037	5	M	P		3			2	3	3	1																											
113	44.361479	-88.929008	5	M	P		3	1		2	1	1																												
114	44.361469	-88.92798	5	M	P		2				2	1	1			1								1	1															
115	44.361459	-88.926951	4	M	P		2			1	2	1																												
116	44.36145	-88.925922	6	M	P		1			1		1																												
117	44.36144	-88.924893	5	M	P		2			2		1																												
118	44.36143	-88.923864	6	M	P		1			1	1		1																											
119	44.361421	-88.922835	5	M	P		3			3	1				1								1																	
120	44.361411	-88.921806	5	M	P		1			1					1																									
121	44.361401	-88.920778	4	M	P	No Vegetation																																		
122	44.361391	-88.919749	3	M	P		1											1			1																			
123	44.361382	-88.91872	2	M	P		1											1		1	1																			
124	44.361372	-88.917691				Unreachable																																		
125	44.362436	-88.952659				Unreachable																																		
126	44.362427	-88.95163				Unreachable																																		
127	44.362417	-88.950601				Unreachable																																		
128	44.362408	-88.949573				Unreachable																																		
129	44.362398	-88.948544				Unreachable																																		
130	44.362389	-88.947515	5	M	P		1				2	1		1																							1			
131	44.362379	-88.946486				Unreachable																																		
132	44.36237	-88.945457	5	M	P		1					1																												
133	44.36236	-88.944428	5	M	P		3					2																												
134	44.362351	-88.943399	5	M	P	No Vegetation																																		
135	44.362341	-88.94237	5	M	P		3				1	3		V							V																			
136	44.362332	-88.941342	5	M	P		3	V		1	2	3																												
137	44.362322	-88.940313	5	M	P		2			2		1	1																							1				
138	44.362313	-88.939284	5	M	P		1			1		1												1																
139	44.362303	-88.938255	5	M	P		3			3	1	1																												
140	44.362294	-88.937226	5	M	P		2			2		1					1																							
141	44.362284	-88.936197	5	M	P		2			1	2																													
142	44.362275	-88.935168	5	M	P		3			1	3	2																V											
143	44.362265	-88.934139	5	M	P		3			2	2	1																												
144	44.362255	-88.93311	5	M	P		1			1																										1				
145	44.362246	-88.932082	5	M	P		3			3	1	1																												
146	44.362236	-88.931053	5	M	P		3	1		2	3																												
147	44.362226	-88.930024	5	M	P		3			1	2	2												V																
148	44.362217	-88.928995	5	M	P		3			3	2											1																		
149	44.362207	-88.927966	5	M	P		3			3	3															1														
150	44.362197	-88.926937	5	M	P		2			2	1				1																									

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151	44.362188	-88.925908	6	M	P		1			1					1																										
152	44.362178	-88.924879	7	M	P		1								1																										
153	44.362168	-88.923851	5	M	P		2			1	1	1																												
154	44.362159	-88.922822	6	M	P		2			2		1	1																											
155	44.362149	-88.921793	5	M	P		3			1	1	2		1	1																									
156	44.362139	-88.920764				Unreachable																																		
157	44.36213	-88.919735	5	M	P		1											1		1	1																			
158	44.36212	-88.918706	4	M	P		1											1																						
159	44.36211	-88.917677	2	M	P		1				1			1					1	1	1													1						
160	44.3621	-88.916649				Unreachable																																		
161	44.363193	-88.954704				Unreachable																																		
162	44.363184	-88.953675				Unreachable																																		
163	44.363174	-88.952646				Unreachable																																		
164	44.363165	-88.951617				Unreachable																																		
165	44.363155	-88.950588				Unreachable																																		
166	44.363146	-88.949559				Unreachable																																		
167	44.363137	-88.94853				Unreachable																																		
168	44.363127	-88.947502	5	M	P		3			1	1	3																												
169	44.363118	-88.946473	5	M	P		3			2	3		1				1																V					1		
170	44.363108	-88.945444	5	M	P		3	1		1		1	2	V		2							V																
171	44.363099	-88.944415	5	M	P		3			1	1	2											1																
172	44.363089	-88.943386	5	M	P		3	V			1	3																												
173	44.36308	-88.942357	5	M	P		2			1		1	1																											
174	44.36307	-88.941328	5	M	P		3			1		3																												
175	44.36306	-88.940299	5	M	P		3	V		3		1														1														
176	44.363051	-88.93927	5	M	P		1			1		1																												
177	44.363041	-88.938242	5	M	P		1			1		1																												
178	44.363032	-88.937213	5	M	P		3			3	1		1																											
179	44.363022	-88.936184	5	M	P		3			2	2	3																							1					
180	44.363013	-88.935155	5	M	P		2			1	3	1	1																											
181	44.363003	-88.934126	5	M	P		2	V		2	1	2																			1								
182	44.362993	-88.933097	5	M	P		2			1	1					2																								
183	44.362984	-88.932068	5	M	P		3			2	3	1	1			1																								
184	44.362974	-88.931039	5	M	P		3			3	1		1																											
185	44.362965	-88.93001	5	M	P		3			1	3	1	2																											
186	44.362955	-88.928982	5	M	P		2			2	1	1		1																										
187	44.362945	-88.927953	5	M	P		3			2	1	1																												
188	44.362936	-88.926924	5	M	P		1			1	1																													
189	44.362926	-88.925895	6	M	P		1				1	1																												
190	44.362916	-88.924866	6	M	P		3			1	3				1																									
191	44.362907	-88.923837	5	M	P		2			1	1				1		1																							
192	44.362897	-88.922808	6	M	P		2			2	1		1		1																									
193	44.362887	-88.921779	5	M	P		2			2																								1						
194	44.362877	-88.92075				Unreachable																																		
195	44.362868	-88.919722	4	M	P		3			1	2	1		1										1																
196	44.362858	-88.918693	5	M	P		3			1	1	2							1																					
197	44.362848	-88.917664				Unreachable																																		
198	44.362838	-88.916635	2	M	P		1											1		1	1								1						1					
199	44.363931	-88.954691				Unreachable																																		
200	44.363922	-88.953662				Unreachable																																		
201	44.363912	-88.952633				Unreachable																																		
202	44.363903	-88.951604				Unreachable																																		
203	44.363894	-88.950575				Unreachable																																		
204	44.363884	-88.949546				Unreachable																																		
205	44.363875	-88.948517				Unreachable																																		
206	44.363865	-88.947488	5	M	P		3			1		2	1	V				V										V							1				
207	44.363856	-88.946459	5	M	P		3			2	1			V																									
208	44.363846	-88.945431	5	M	P		3						1											V															
209	44.363837	-88.944402	5	M	P		1				1													1															
210	44.363827	-88.943373	5	M	P		3			3			1																											
211	44.363818	-88.942344	5	M	P		3			2																														
212	44.363808	-88.941315	5	M	P		3	V		2	3					1																							
213	44.363799	-88.940286	5	M	P		2			2			1																											
214	44.363789	-88.939257	5	M	P		2				1	2																												
215	44.363779	-88.938228	5	M	P		3			2		1				1																							
216	44.36377	-88.937199	5	M	P		1			1														V															
217	44.36376	-88.93617	5	M	P		3	V				3																											
218	44.363751	-88.935141	5	M	P		3			1		1	1																											
219	44.363741	-88.934113	6	M	P		3				3	1																												
220	44.363732	-88.933084	5	M	P		2				2																													
221	44.363722	-88.932055	5	M	P		2			1	1	1																												
222	44.363712	-88.931026	5	M	P		3			3	1	3																												
223	44.363703	-88.929997	5	M	P		3	V		1	2	1																												
224	44.363693	-88.928968	5	M	P		3			3	2								1																					
225	44.363683	-88.927939	5	M	P		3			3	2	1																												

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226	44.363674	-88.92691	5	M	P		2			2	1	1	1		1																										
227	44.363664	-88.925881	7	M	P	No Vegetation																																			
228	44.363654	-88.924852	6	M	P		2			1	1	1	1																												
229	44.363645	-88.923824	6	M	P		2			1	1	2																													
230	44.363635	-88.922795	5	M	P		2			2	1		1			1																									
231	44.363625	-88.921766	5	M	P		1			1	1	1		1					1																						
232	44.363616	-88.920737	5	M	P		2			2	1				1																										
233	44.363606	-88.919708	5	M	P		2				2	1		1										1																	
234	44.363596	-88.918679	4	M	P		2				1	1		1					1																						
235	44.363586	-88.91765	5	M	P		1				1	1		1		1		1																						
236	44.363577	-88.916621				Unreachable																																			
237	44.363567	-88.915592	2	M	P		1													1									1						1						
238	44.364679	-88.955707				Unreachable																																			
239	44.364669	-88.954678				Unreachable																																			
240	44.36466	-88.953649				Unreachable																																			
241	44.364651	-88.95262				Unreachable																																			
242	44.364641	-88.951591				Unreachable																																			
243	44.364632	-88.950562				Unreachable																																			
244	44.364622	-88.949533				Unreachable																																			
245	44.364613	-88.948504				Unreachable																																			
246	44.364603	-88.947475	5	M	P		2																																		
247	44.364594	-88.946446	5	M	P		3			3	1																														
248	44.364584	-88.945417	5	M	P		3			3																															
249	44.364575	-88.944388	5	M	P	No Vegetation																																			
250	44.364565	-88.943359	5	M	P		3	V		3	2					1																								
251	44.364556	-88.942331	5	M	P		2			1			1																											
252	44.364546	-88.941302	5	M	P		2			2			1																											
253	44.364537	-88.940273	5	M	P		2			1						1																								
254	44.364527	-88.939244	5	M	P		3			1	3	2																												
255	44.364518	-88.938215	5	M	P		3	1			1	3																												
256	44.364508	-88.937186	4	M	P		3			1	3	1														1														
257	44.364498	-88.936157	5	M	P		3			1		3																												
258	44.364489	-88.935128	5	M	P		3			1		2	1																											
259	44.364479	-88.934099	5	M	P		3			1		3																												
260	44.36447	-88.93307	5	M	P		1			1		1	1																											
261	44.36446	-88.932041	5	M	P		3			2	1	1				1																								
262	44.36445	-88.931012	5	M	P		1			1	1																													
263	44.364441	-88.929984	5	M	P		2			1		2																												
264	44.364431	-88.928955	5	M	P		2			2		1							1																					
265	44.364421	-88.927926	5	M	P		3			3	2																													
266	44.364412	-88.926897	5	M	P		2			1		1																												
267	44.364402	-88.925868	6	M	P		3			3					1																									
268	44.364392	-88.924839	5	M	P		1							1																										
269	44.364383	-88.92381	6	M	P		2			1	2																													
270	44.364373	-88.922781	6	M	P		2				2			1																										
271	44.364363	-88.921752	5	M	P		1			1	1			1					1				1									1								
272	44.364354	-88.920723	5	M	P		2			1	2	1		1					1																				
273	44.364344	-88.919694	5	M	P		1			1		1		1					1																				
274	44.364334	-88.918666	5	M	P		2			1	1			1					2																				
275	44.364324	-88.917637	6	M	P		1				1													1															
276	44.364315	-88.916608				Unreachable																																			
277	44.364305	-88.915579	3	M	P		1												1	1	1		1																
278	44.365408	-88.954665				Unreachable																																			
279	44.365398	-88.953636				Unreachable																																			
280	44.365389	-88.952607				Unreachable																																			
281	44.365379	-88.951578				Unreachable																																			
282	44.36537	-88.950549				Unreachable																																			
283	44.36536	-88.94952				Unreachable																																			
284	44.365351	-88.948491				Unreachable																																			
285	44.365341	-88.947462	5	M	P		3					1	1	1																										
286	44.365332	-88.946433	6	M	P		2			1	2																													
287	44.365322	-88.945404	5	M	P		2				1		1																											
288	44.365313	-88.944375	5	M	P		3			3	2																1													
289	44.365303	-88.943346	5	M	P		2			1	1		1			1																								
290	44.365294	-88.942317	5	M	P		3	V		3	1															1													
291	44.365284	-88.941288	5	M	P		3			3	1																													
292	44.365275	-88.940259	5	M	P		2			1																													
293	44.365265	-88.93923	5	M	P		3			2		2					2																							
294	44.365256	-88.938202	5	M	P		3				1	2																												
295	44.365246	-88.937173	5	M	P		2			2																													
296	44.365237	-88.936144	5	M	P		3				2	3																												
297	44.365227	-88.935115				Unreachable																																			
298	44.365217	-88.934086	5	M	P		1					1																												
299	44.365208	-88.933057	5	M	P		1			1		1	1																											
300	44.365198	-88.932028	5	M	P		3	1		2	3	3																												

sampling point	Latitude (need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	Total Rake Fullness	Myriophyllum spicatum	Potamogeton crispus	Najas flexilis	Vallisneria americana	Potamogeton amplifolius	Potamogeton praelongus	Zizania aquatica	Potamogeton hybrid sp	Megalodonta beckii	Potamogeton zosteriformis	Potamogeton natans	Potamogeton illinoensis	Brasenia schreberi	Nymphaea odorata	Stuckenia pectinata	Schoenoplectus acutus	Sagittaria cristata	Myriophyllum sibiricum	Chara spp.	Potamogeton gramineus	Typha latifolia	Utricularia gibba	Potamogeton pusillus	Potamogeton strictifolius	Typha angustifolia	Nitella sp.	Pontederia cordata	Utricularia vulgaris	Utricularia minor	Eleocharis acicularis	Lobelia dortmanna	Myriophyllum verticillatum	Potamogeton friesii	Lythrum salicaria
301	44.365189	-88.930999	5	M	P		1					1																													
302	44.365179	-88.92997	6	M	P		3			2	2	1	1				1								1																
303	44.365169	-88.928941	5	M	P		3			3	1	1																													
304	44.36516	-88.927912	5	M	P		3			1			2																												
305	44.36515	-88.926883	5	M	P		3			1	3	1																													
306	44.36514	-88.925854	7	M	P		1			1	1	1																													
307	44.365131	-88.924825	6	M	P		2			1	2		1																												
308	44.365121	-88.923797	6	M	P		3			1	2	2																													
309	44.365111	-88.922768	6	M	P		1			1		1	1		1																										
310	44.365101	-88.921739	6	M	P		2			2		1		1																											
311	44.365092	-88.92071	5	M	P		1			1		1		1	1																										
312	44.365082	-88.919681	5	M	P		2						2	1																											
313	44.365072	-88.918652	5	M	P		2			1	1			1			1					1																			
314	44.365063	-88.917623	5	M	P		1				1			1																											
315	44.365053	-88.916594	4	M	P		2			1	1				2																										
316	44.365043	-88.915565	2	M	P		1							1				1	1	1	1																			
317	44.366146	-88.954651				Unreachable																																		
318	44.366136	-88.953622				Unreachable																																			
319	44.366127	-88.952593				Unreachable																																			
320	44.366117	-88.951565				Unreachable																																			
321	44.366108	-88.950536				Unreachable																																			
322	44.366098	-88.949507				Unreachable																																			
323	44.366089	-88.948478				Unreachable																																			
324	44.36608	-88.947449	5	M	P		3				2	1	1	1		1																								
325	44.36607	-88.94642	5	M	P		3				3						1																								
326	44.366061	-88.945391	3	M	P		3			2	1		1																V											
327	44.366051	-88.944362	5	M	P		1			1																														
328	44.366042	-88.943333	5	M	P		3			1	1																													
329	44.366032	-88.942304	5	M	P		3	V		2	2																													
330	44.366022	-88.941275	5	M	P		1						1																												
331	44.366013	-88.940246	5	M	P		3			2	1		1																												
332	44.366003	-88.939217	5	M	P		3	1		1	1		1			1																							V	
333	44.365994	-88.938188	5	M	P		2				1	1																												
334	44.365984	-88.937159	5	M	P		1					1																												
335	44.365975	-88.93613	5	M	P	No Vegetation																																		
336	44.365965	-88.935101	5	M	P	No Vegetation																																		
337	44.365955	-88.934072	5	M	P		1			1																														
338	44.365946	-88.933043	4.5	S	P		1			1																			1											
339	44.365936	-88.932015	6	M	P		3			2	2		1																											
340	44.365927	-88.930986	5.5	M	P		3			3	1																													
341	44.365917	-88.929957	6	M	P		2				2																													
342	44.365907	-88.928928	5	M	P		3																				3												
343	44.365898	-88.927899	6	M	P		2				3																													
344	44.365888	-88.92687	5	M	P		3			1	3	1			1																									
345	44.365878	-88.925841	6	M	P		2				1	2				1																								
346	44.365869	-88.924812	6	M	P		3					3	1																											
347	44.365859	-88.923783	5	M	P		2			1	2				1																									
348	44.365849	-88.922754	6	M	P		2					1	1		1																									
349	44.36584	-88.921725	5	M	P		2			1	2			1																										
350	44.36583	-88.920696	6	M	P		2			1	1			1			2																								
351	44.36582	-88.919667	4	M	P		3			1	2	1		1					1																					
352	44.36581	-88.918638	5	M	P		2				2		1	1													1												
353	44.365801	-88.917609	5	M	P		1			1	1			1										2																
354	44.365791	-88.91658	5	M	P		1							1					1		1			1											1				
355	44.365781	-88.915552	2	M	P		1											1		1	1																		
356	44.366874	-88.953609				Unreachable																																			
357	44.366865	-88.95258				Unreachable																																			
358	44.366856	-88.951551				Unreachable																																			
359	44.366846	-88.950522				Unreachable																																			
360	44.366837	-88.949493				Unreachable																																			
361	44.366827	-88.948464				Unreachable																																			
362	44.366818	-88.947436	5	M	P		3			1		3		1																										
363	44.366808	-88.946407	5	M	P		3			1																														
364	44.366799	-88.945378	5	M	P		3			1	2																													
365	44.366789	-88.944349	5	M	P		2				1		1																											
366	44.36678	-88.94332	5	M	P		3			1	1			1		3																								
367	44.36677	-88.942291	5	M	P		3	V		1						1																								
368	44.366761	-88.941262	5	M	P		3			2	2																													
369	44.366751	-88.940233	5	M	P		2			1			1																		2									
370	44.366741	-88.939204	5	M	P		3	V		3	3		1																		1								
371	44.366732	-88.938175	5	M	P		3			1	3															1													
372	44.366722	-88.937146	6	S	P		1			1																													
373	44.366713	-88.936117	5	S	P		1			1																		V											
374	44.366703	-88.935088	5	S	P		1			1																													
375	44.366694	-88.934059	5	M	P		2			2	1	1	1																										

sampling point	Latitude (need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	Total Rake Fullness	Myriophyllum spicatum	Potamogeton crispus	Najas flexilis	Vallisneria americana	Potamogeton amplifolius	Potamogeton praelongus	Zizania aquatica	Potamogeton hybrid sp	Megalodonta beckii	Potamogeton zosteriformis	Potamogeton natans	Potamogeton illinoensis	Brasenia schreberi	Nymphaea odorata	Stuckenia pectinata	Schoenoplectus acutus	Sagittaria cristata	Myriophyllum sibiricum	Chara spp.	Potamogeton gramineus	Typha latifolia	Utricularia gibba	Potamogeton pusillus	Potamogeton strictifolius	Typha angustifolia	Nitella sp.	Pontederia cordata	Utricularia vulgaris	Utricularia minor	Eleocharis acicularis	Lobelia dortmanna	Myriophyllum verticillatum	Potamogeton friesii	Lythrum salicaria
376	44.366684	-88.93303	3	S	P	No Vegetation																																			
377	44.366674	-88.932001	5	S	P		1			1																1															
378	44.366655	-88.929943	4	S	P		1															1																		
379	44.366645	-88.928914	4	S	P		1			1																														
380	44.366636	-88.927885	6	M	P		2			1		1	2																											
381	44.366626	-88.926856	6	M	P		3			1	3		1																											
382	44.366616	-88.925827	7	M	P		2			1	2		1																											
383	44.366607	-88.924798	6	M	P		2			2	1		1			1																								
384	44.366597	-88.92377	6	M	P		1			1																														
385	44.366587	-88.922741	6	M	P		2			1	2		1																											
386	44.366578	-88.921712	6	M	P		1				1			1	1																									
387	44.366568	-88.920683	5	M	P		1			1	1			1																										
388	44.366558	-88.919654	5	M	P		1			1	1			1																										
389	44.366549	-88.918625	5	M	P		2				2	1		1					1																				
390	44.366539	-88.917596	5	M	P		2			1	1		1		1																									
391	44.366529	-88.916567	5	M	P		1			1	1	1																												
392	44.366519	-88.915538	4	M	P		1							1		1		1																						
393	44.366509	-88.914509				Unreachable																																		
394	44.367613	-88.953596				Unreachable																																		
395	44.367603	-88.952567				Unreachable																																		
396	44.367594	-88.951538				Unreachable																																		
397	44.367584	-88.950509				Unreachable																																		
398	44.367575	-88.94948				Unreachable																																		
399	44.367565	-88.948451				Unreachable																																		
400	44.367556	-88.947422				Unreachable																																		
401	44.367546	-88.946393	5	M	P		2			2																														
402	44.367537	-88.945364	4	M	P		1			1		1		1																										
403	44.367527	-88.944335				Unreachable																																		
404	44.367518	-88.943306	5	M	P		3			1	3	1		1																										
405	44.367508	-88.942277	5	M	P		3				1	3				1																								
406	44.367499	-88.941248	5	M	P		3	1		2	1	2																											
407	44.367489	-88.940219	6	M	P		3			3	3		1													1														
408	44.36748	-88.939191	6	M	P		3			1	3	1																												
409	44.36747	-88.938162	5	S	P	No Vegetation																																		
410	44.36746	-88.937133	5	S	P	No Vegetation																																		
411	44.367451	-88.936104	5	S	P	No Vegetation																																		
412	44.367441	-88.935075	4	S	P	No Vegetation																																		
413	44.367432	-88.934046	4	S	P		1			1	1																													
414	44.367422	-88.933017	4	S	P		1																					1												
415	44.367384	-88.928901	6	M	P		1			1	1																													
416	44.367374	-88.927872	8	M	P		1			1	1																													
417	44.367364	-88.926843	9	M	P		2			2	1						1																							
418	44.367355	-88.925814	7	M	P		1				1																													
419	44.367345	-88.924785	7	M	P		3			2	2																													
420	44.367335	-88.923756	5	M	P		3			1	3	1																												
421	44.367326	-88.922727	6	M	P		1			1	1																													
422	44.367316	-88.921698	5	M	P		3			1	1	2							1																				
423	44.367306	-88.920669	5	M	P		1			1	1	1							1																				
424	44.367296	-88.91964	5	M	P		2			1	2			1																										
425	44.367287	-88.918611	5	M	P		2			1	2	1		1	1																									
426	44.367277	-88.917582	5	M	P		1			1	1	1		1																										
427	44.367267	-88.916553	5	M	P		2				1	2																												
428	44.367257	-88.915524	4	M	P		1			1	1					1	1	1		1																				
429	44.368351	-88.953583				Unreachable																																		
430	44.368341	-88.952554				Unreachable																																		
431	44.368332	-88.951525				Unreachable																																		
432	44.368322	-88.950496				Unreachable																																		
433	44.368313	-88.949467				Unreachable																																		
434	44.368303	-88.948438				Unreachable																																		
435	44.368294	-88.947409	4	M	P		1			1				V																										
436	44.368284	-88.94638	5	M	P		2	V		1				1								1																		
437	44.368275	-88.945351	5	M	P		3			1	1	3		1			1																							
438	44.368265	-88.944322	6	M	P		3			3			1			1	1																							
439	44.368256	-88.943293	6	M	P		3			2	1		1																											
440	44.368246	-88.942264	6	M	P		3	1		3			1				1																							
441	44.368237	-88.941235	6	M	P		3	V		1	1						3																							
442	44.368227	-88.940206	7	M	P		3			1			3																											
443	44.368218	-88.939177	6	M	P		3				2																													
444	44.368208	-88.938148	9	M	P	No Vegetation																																		
445	44.368199	-88.937119	10	M	P		1	1	1																														
446	44.368189	-88.93609	10	M	P		1	1	1																														
447	44.368179	-88.935061	8	M	P		2		1				1																											
448	44.36817	-88.934032	6	M	P		3	V		1	3																													
449	44.36816	-88.933003	6	M	P		3			3	3																													
450	44.368151	-88.931974	3	S	P		2	1		1							1																							V

sampling point	Latitude (need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	Total Rake Fullness	Myriophyllum spicatum	Potamogeton crispus	Najas flexilis	Vallisneria americana	Potamogeton amplifolius	Potamogeton praelongus	Zizania aquatica	Potamogeton hybrid sp	Megalodonta beckii	Potamogeton zosteriformis	Potamogeton natans	Potamogeton illinoensis	Brasenia schreberi	Nymphaea odorata	Stuckenia pectinata	Schoenoplectus acutus	Sagittaria cristata	Myriophyllum sibiricum	Chara spp.	Potamogeton gramineus	Typha latifolia	Utricularia gibba	Potamogeton pusillus	Potamogeton strictifolius	Typha angustifolia	Nitella sp.	Pontederia cordata	Utricularia vulgaris	Utricularia minor	Eleocharis acicularis	Lobelia dortmanna	Myriophyllum verticillatum	Potamogeton friesii	Lythrum salicaria
451	44.368122	-88.928887	5	M	P		2			2																															
452	44.368112	-88.927858				Unreachable																																			
453	44.368102	-88.926829	7	M	P		3			1	3						1																								
454	44.368093	-88.9258	11	M	P	No Vegetation																																			
455	44.368083	-88.924771	12	M	P	No Vegetation																																			
456	44.368073	-88.923742	8	M	P	No Vegetation																																			
457	44.368064	-88.922714	6	M	P		3			3	1																														
458	44.368054	-88.921685	6	M	P		2				1	2			1																										
459	44.368044	-88.920656	5	M	P		2			1		2	1																												
460	44.368034	-88.919627	6	M	P		2			1	1	2	1	1																										
461	44.368025	-88.918598	6	M	P		2			1		2																													
462	44.368015	-88.917569	5	M	P		2			1	1				1	1																							1		
463	44.368005	-88.91654	4	M	P		1			1	1	1		1										1																
464	44.367995	-88.915511	4	M	P		1											1																						
465	44.36907	-88.951512				Unreachable																																			
466	44.36906	-88.950483				Unreachable																																			
467	44.369051	-88.949454				Unreachable																																			
468	44.369041	-88.948425				Unreachable																																			
469	44.369032	-88.947396	6	M	P		1			1				1			1																								
470	44.369023	-88.946367	6	S	P		1					1																													
471	44.369013	-88.945338	4	S	P	No Vegetation																																			
472	44.369004	-88.944309	4	S	P	No Vegetation																																			
473	44.368994	-88.94328	5	S	P	No Vegetation																																			
474	44.368984	-88.942251	5.5	S	P	No Vegetation																																			
475	44.368975	-88.941222	5.5	S	P	No Vegetation																																			
476	44.368965	-88.940193	5.5	S	P	No Vegetation																																			
477	44.368956	-88.939164	5	S	P	No Vegetation																																			
478	44.368946	-88.938135	6	M	P		3					3																													
479	44.368937	-88.937106	5	M	P		3			3	3	1																													
480	44.368927	-88.936077	5	M	P		3			2	3	1	1				1																							
481	44.368918	-88.935048	5	M	P		3			3	2																													
482	44.368908	-88.934019	5	M	P		1			1		1																													
483	44.368898	-88.93299	5	M	P		2			1	1	2																													
484	44.368889	-88.931961	5	M	P		3			1	3	1																													
485	44.368869	-88.929903	6	S	P		3			3	3																														
486	44.36886	-88.928874	5	M	P	No Vegetation																																			
487	44.36885	-88.927845	5	M	P		3			2	2								1																						
488	44.36884	-88.926816	6	M	P		1			1	1				1																										
489	44.368831	-88.925787	7	M	P		2			2	1	1																													
490	44.368821	-88.924758	6	M	P		2			1	2																														
491	44.368811	-88.923729	7	M	P		3			1	3																														
492	44.368802	-88.9227	8	M	P		2			2			1				1																								
493	44.368792	-88.921671	7	M	P		3				3																														
494	44.368782	-88.920642	6	M	P		1			1	1		1		1																										
495	44.368773	-88.919613	6	M	P		2				1		1		1																										
496	44.368763	-88.918584	6	M	P		2			1	1	1				1																									
497	44.368753	-88.917555	5	M	P		3			1	1	2				1																									
498	44.368743	-88.916526	5	M	P		1			1				1		1	1																								
499	44.368734	-88.915497	3	M	P		1											1				1																			
500	44.369694	-88.939151	4	S	P	No Vegetation																																			
501	44.369684	-88.938122	4	S	P		1			1																															
502	44.369675	-88.937093	5	S	P		1			1																															
503	44.369665	-88.936064	5	M	P		3			1	2	1																													
504	44.369656	-88.935034	5	M	P		3			1	3	2																													
505	44.369646	-88.934005	5	M	P		3			2	1	2																													
506	44.369636	-88.932976	4.5	M	P		1				1	1		v																											
507	44.369627	-88.931947	5	M	P		3			3	3	1																													
508	44.369617	-88.930918	5	S	P		3			3	1												1								1										
509	44.369608	-88.929889	5.5	S	P		3			3	2																														
510	44.369598	-88.92886	5	M	P		3	1		3																															
511	44.369588	-88.927831	5	M	P		3			1	2	1																													
512	44.369579	-88.926802	6	M	P		2			2	1		1																												
513	44.369569	-88.925773	6	M	P		3			1	3												1																		
514	44.369559	-88.924744				Unreachable																																			
515	44.36955	-88.923715	4	M	P		2			1	2																								1						
516	44.36954	-88.922686	7	M	P		1			3	1		1		1																										
517	44.36953	-88.921657	6	M	P		3			2	2																														
518	44.36952	-88.920628	7	M	P		2			2																															
519	44.369511	-88.919599	7	M	P		2			1	2		1																												
520	44.369501	-88.91857	6	M	P		1			1	1				1										1																
521	44.369491	-88.917541	5	M	P		2				1	2																													
522	44.369481	-88.916512				Unreachable																																			
523	44.369472	-88.915483	2	S	P		1											1	1	1	1		1																		
524	44.370413	-88.937079	5	S	P		3			1				V			1	2																							
525	44.370403	-88.93605	5	M	P		3			1	3			V																											

sampling point	Latitude (need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	Total Rake Fullness	Myriophyllum spicatum	Potamogeton crispus	Najas flexilis	Vallisneria americana	Potamogeton amplifolius	Potamogeton praelongus	Zizania aquatica	Potamogeton hybrid sp	Megalodonta beckii	Potamogeton zosteriformis	Potamogeton natans	Potamogeton illinoensis	Brasenia schreberi	Nymphaea odorata	Stuckenia pectinata	Schoenoplectus acutus	Sagittaria cristata	Myriophyllum sibiricum	Chara spp.	Potamogeton gramineus	Typha latifolia	Utricularia gibba	Potamogeton pusillus	Potamogeton strictifolius	Typha angustifolia	Nitella sp.	Pontederia cordata	Utricularia vulgaris	Utricularia minor	Eleocharis acicularis	Lobelia dortmanna	Myriophyllum verticillatum	Potamogeton friesii	Lythrum salicaria
526	44.370394	-88.935021	5	M	P		2			2	1		1	v																											
527	44.370384	-88.933992	5	M	P		3			3	1	1		1																											
528	44.370375	-88.932963	5	M	P		3			1	3	1																													
529	44.370365	-88.931934	5	M	P		3			1	2	1																													
530	44.370355	-88.930905	4	M	P		3			1	3		1	1								1																		
531	44.370346	-88.929876	5	S	P		2			1	1					1																					1			
532	44.370336	-88.928847	6	M	P		3			3																														
533	44.370326	-88.927818	6	M	P		3			2	3																													
534	44.370317	-88.926789	5	M	P		2			1	2	1			1																									
535	44.370307	-88.92576	6	M	P		2			1	2																													
536	44.370297	-88.924731	5	M	P		3			1	3																													
537	44.370288	-88.923702	6	M	P		2			1	2																													
538	44.370278	-88.922673	5	M	P		1	1		1			1																											
539	44.370268	-88.921644	6	M	P		2			1	2		1																											
540	44.370259	-88.920615	6	M	P		1						1																											
541	44.370249	-88.919586	6	M	P		1						1																											
542	44.370239	-88.918557	5	M	P		2	V		1	1		2																											
543	44.370229	-88.917528	5	M	P		2			1	1	1		1		1																								
544	44.37022	-88.916499	4	M	P		1							1				1		1																				
545	44.37021	-88.91547				Unreachable																																		
546	44.371151	-88.937066				Unreachable																																		
547	44.371141	-88.936037				Unreachable																																		
548	44.371132	-88.935008				Unreachable																																		
549	44.371122	-88.933979				Unreachable																																		
550	44.371113	-88.93295				Unreachable																																		
551	44.371103	-88.931921	5	M	P		3			3	2	1																												
552	44.371093	-88.930892	4	S	P		1			1		1									1																			
553	44.371084	-88.929863	5	M	P		1			1	1	1																												
554	44.371074	-88.928834	5	M	P		3			1	3	1	1																											
555	44.371064	-88.927805	5	M	P		3			2	2											3																		
556	44.371055	-88.926775	5	M	P		1			1	1	1										1																		
557	44.371045	-88.925746	6	M	P		2			2																														
558	44.371035	-88.924717	6	M	P		2			1	2																													
559	44.371026	-88.923688	6	M	P		2			1	2		1																											
560	44.371016	-88.922659	5	M	P		1			1		1																												
561	44.371006	-88.92163	6	M	P		2			2	1				1																									
562	44.370997	-88.920601	6	M	P		2				2				1																									
563	44.370987	-88.919572	5	M	P		1			1	1		1		1				1																				
564	44.370977	-88.918543	5	M	P		2			2	1	1	1																											
565	44.370967	-88.917514	4	M	P		2			1	2	1		1	1	1																								
566	44.370958	-88.916485	3	M	P		1											1		1																				
567	44.37188	-88.936023				Unreachable																																		
568	44.37187	-88.934994				Unreachable																																		
569	44.37186	-88.933965				Unreachable																																		
570	44.371851	-88.932936				Unreachable																																		
571	44.371822	-88.929849	5	M	P		3			1	1	1						1		1																				
572	44.371812	-88.92882	5	M	P		3			3	2																													
573	44.371803	-88.927791	5	M	P		2			3	1								1																				
574	44.371793	-88.926762	4	M	P		1			1	1	1																							1					
575	44.371783	-88.925733	6	M	P		1			1	1	1																												
576	44.371774	-88.924704	7	M	P		1			1	1		1																											
577	44.371764	-88.923675	6	M	P		2				1								2																					
578	44.371754	-88.922646	4	M	P		1			1																														
579	44.371744	-88.921617	4	M	P		1					1																												
580	44.371735	-88.920588	6	M	P		2			2	1			1																										
581	44.371725	-88.919559	5	M	P		2			1	1				1																									
582	44.371715	-88.91853	5	M	P		2			1	1	1							2																				
583	44.371706	-88.917501	5	M	P		1				1			1																										
584	44.371696	-88.916472	3	M	P	No Vegetation																																		
585	44.37256	-88.929836				Unreachable																																		
586	44.37255	-88.928807				Unreachable																																		
587	44.372541	-88.927778	4	M	P		3			2	3	3				1																								
588	44.372531	-88.926749	5	M	P		1			1	1	1																												
589	44.372521	-88.925719	5	M	P		1			1	2	1			1																									
590	44.372512	-88.92469	6	M	P		2			2	1	1	1	1																										
591	44.372502	-88.923661				Unreachable																																		
592	44.372492	-88.922632	5	M	P		2	V		2	1																													
593	44.372483	-88.921603	4	M	P		2			2			1	1	1					1															1					
594	44.372473	-88.920574	5	M	P		2			1	1	1		1					1						1														
595	44.372463	-88.919545	5	M	P		2			2	1	1																												
596	44.372453	-88.918516	5	M	P		2			1	2	1		1	1	1																								
597	44.372444	-88.917487	5	M	P		2			1				1				2																						
598	44.373288	-88.928793				Unreachable																																		
599	44.373279	-88.927764				Unreachable																																		
600	44.373269	-88.926735	5	M	P		2								1			2																						

sampling point	Latitude (need electronic copy of site locations)	Longitude (need electronic copy of site locations)	Depth (ft)	Dominant sediment type (M=muck, S=Sand, R=Rock)	Sampled holding rake pole (P) or rake rope (R)?	comments	Total Rake Fullness	Myriophyllum spicatum	Potamogeton crispus	Najas flexilis	Vallisneria americana	Potamogeton amplifolius	Potamogeton praelongus	Zizania aquatica	Potamogeton hybrid sp	Megalodonta beckii	Potamogeton zosteriformis	Potamogeton natans	Potamogeton illinoensis	Brasenia schreberi	Nymphaea odorata	Stuckenia pectinata	Schoenoplectus acutus	Sagittaria cristata	Myriophyllum sibiricum	Chara spp.	Potamogeton gramineus	Typha latifolia	Utricularia gibba	Potamogeton pusillus	Potamogeton strictifolius	Typha angustifolia	Nitella sp.	Pontederia cordata	Utricularia vulgaris	Utricularia minor	Eleocharis acicularis	Lobelia dortmanna	Myriophyllum verticillatum	Potamogeton friesii	Lythrum salicaria
601	44.373259	-88.925706	6	M	P		1					1																													
602	44.37325	-88.924677	5	M	P		2			1				1				2			1																				
603	44.37324	-88.923648	5	M	P		1													1								1								1					
604	44.37323	-88.922619				Unreachable																																			
605	44.373221	-88.92159	4	M	P		1											1		1												1								
606	44.373211	-88.920561	4	M	P		1				1							2		1	1																			
607	44.373201	-88.919532	4	M	P		1											1																						
608	44.373191	-88.918503	5	M	P		2			1	1	1						2							1															
609	44.373182	-88.917473	3	S	P		1								1								1																	
610	44.374017	-88.927751				Unreachable																																			
611	44.374007	-88.926722				Unreachable																																			
612	44.373998	-88.925692				Unreachable																																			
613	44.373988	-88.924663				Unreachable																																			
614	44.373978	-88.923634	5	M	P		2											2		1								1												
615	44.373968	-88.922605	3	M	P		1													1	1							1												
616	44.373959	-88.921576				Unreachable																																			
617	44.373949	-88.920547				Unreachable																																			
618	44.373939	-88.919518				Unreachable																																			
619	44.37393	-88.918489				Unreachable																																			
620	44.374745	-88.926708				Unreachable																																			
621	44.374736	-88.925679				Unreachable																																			
622	44.374726	-88.92465				Unreachable																																			
623	44.374716	-88.923621				Unreachable																																			
624	44.374707	-88.922592				Unreachable																																			
625	44.374697	-88.921563				Unreachable																																			
626	44.374687	-88.920534				Unreachable																																			
627	44.374677	-88.919504				Unreachable																																			
628	44.374668	-88.918475				Unreachable																																			
629	44.375464	-88.924636				Unreachable																																			
630	44.375454	-88.923607				Unreachable																																			
631	44.375445	-88.922578				Unreachable																																			
632	44.375435	-88.921549				Unreachable																																			
633	44.375425	-88.92052				Unreachable																																			
634	44.375416	-88.919491				Unreachable																																			
635	44.376193	-88.923594				Unreachable																																			
636	44.376183	-88.922565				Unreachable																																			
637	44.376173	-88.921536				Unreachable																																			
638	44.376163	-88.920506				Unreachable																																			
639	44.376921	-88.922551				Unreachable																																			
640	44.376911	-88.921522				Unreachable																																			

F

APPENDIX F

WDNR 2008 Comprehensive Survey Summary

White Lake Fish Survey
Summary Report – 2008

In 2008, the Department of Natural Resources conducted a comprehensive fish survey of White Lake in order to provide direction for the future fisheries management of this lake. The following report is a brief summary of all activities conducted, general fisheries information and future management options for White Lake. A more comprehensive report is available upon request. If you have any questions, please contact: Al Niebur, DNR Fisheries Biologist , 647 Lakeland Road, Shawano, Wisconsin, 54166. Phone: 715-526-4227

Comprehensive Fish Survey – What is it?

A comprehensive fish survey is an assessment of the entire fish community in a lake. Different survey methods are used to sample all the different fish species that inhabit a lake. Fyke-netting and boomshocking are the primary fish capture methods. Once fish are captured, information can be collected as it relates to species composition, abundance, size structure, age classes, growth, survival, and reproductive success.

The following surveys were conducted on White Lake:

Fyke Netting after ice-out: This survey is conducted to target spawning northern pike, walleye and yellow perch.

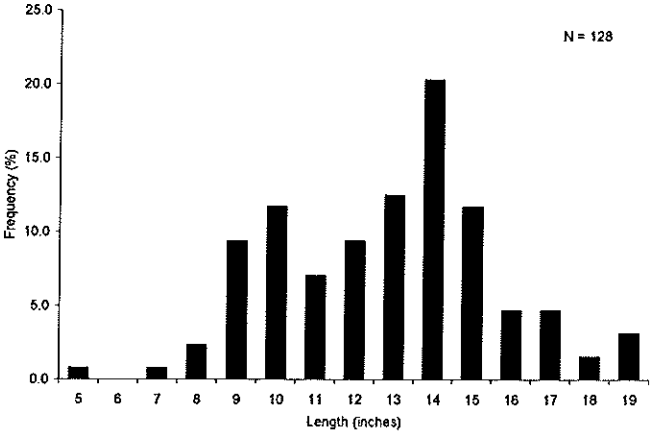
Boomshocking: This survey is conducted at night and is used to target largemouth bass and recapture fish that were marked during fyke netting. Other species are also collected. We also use this gear in the fall to check for newly hatched young of year (YOY) gamefish.

Late Spring Fyke Netting: This survey is conducted to target pre-spawn centrarchids (e.g. bluegills, pumpkinseed) and other panfish.

DNR fisheries crew removing fish from fyke-net.

Gamefish Summary

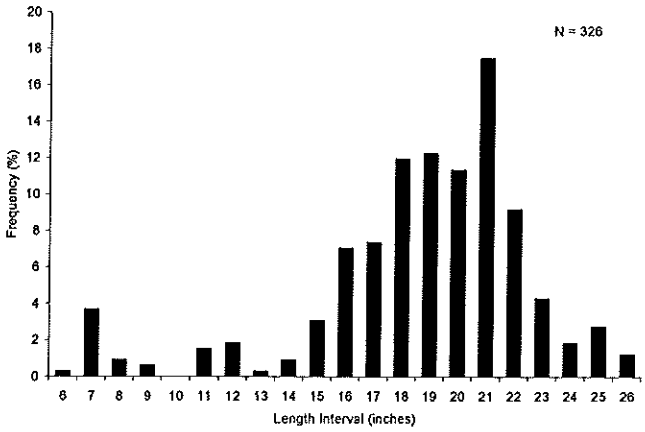
Largemouth bass were found in moderate to low abundance. A total of 271 were captured during our surveys. Size structure was average with length ranges of 5.9 – 19.8 inches and a mean length of 12.1 inches. Approximately 34% of stock size bass sampled were greater than the legal size of 14.0 inches. Trophy sized (> 18.0 inches) comprised 6% of the catch. Bass size structure has remained relatively stable when compared to past surveys. Growth was average with bass attaining legal size by the end of their 6th summer.



Largemouth bass length frequency distribution taken from spring electrofishing catch.

Northern pike were found in high abundance and comprised a large portion of the predator (gamefish) population. A total of 2799 pike were captured during our fyke-netting survey with female length ranges of 11.2 to 31.8 inches and a mean length of 15.0 inches. Male pike length ranged from 9.8 to 28.3 inches and a mean length of 17.7 inches. A population estimate of 4383 (4.3 pike/acre) was calculated from mark/recapture surveys. Abundance was low when compared to the last survey (8.5/acre in 2002) but high when compared to other lakes in the area. Size structure was poor with only 11.3% of the catch over 21.0 inches in length but has increased significantly from the last survey (2% in 2002).

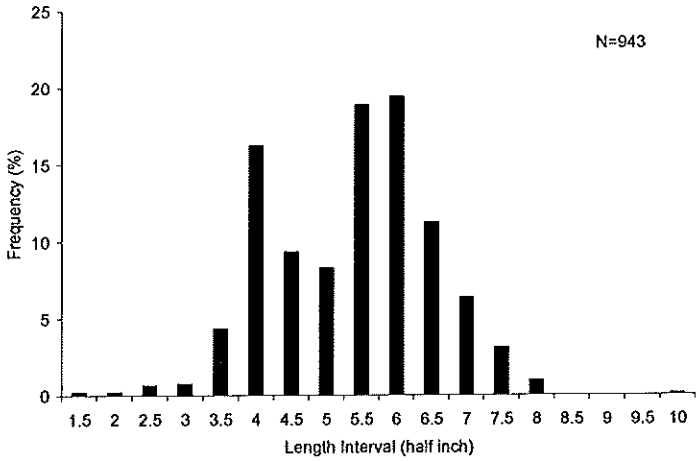
Walleye were found in low abundance. A total of 294 were captured during our surveys. Female length ranged 17.6 – 28.8 inches with a mean length of 22.3 inches. Male walleye length ranged from 7.3 – 22.0 inches with a mean length of 18.6 inches. A population estimate of 530 (0.5 walleye/acre) was calculated from mark/recapture surveys. Abundance has increased 16% since the last survey conducted in 2002. Size structure has remained stable.



Walleye length frequency distribution taken from spring fyke net catch.

Panfish Summary

Bluegill was the dominant panfish sampled in White Lake. A total of 5262 were captured during spring surveys. Relative abundance appeared to be high when compared to past survey years. Electrofishing relative abundance (expressed as the number of bluegill captured per hour of electofishing) was 330 bluegill per hour during our survey compared to 39 per hour in 2002. Size structure was average with 42% greater than preferred size (6.0 inches) and with less than 11% over 7.0 inches in length. Size structure indexes appear to have declined when compared to past surveys (in 2002 over 87% of catch was greater than 6.0 inches) but are still within acceptable limits. Bluegill numbers were at extremely low levels in 2002 and have now rebounded to more acceptable levels. Growth rates have declined due to higher abundance but are still at acceptable levels. The strong year classes of age 4 and 5 year old fish should provide a good fishery in coming years.



Bluegill length frequency distribution from pooled electro-fishing and fyke net catch.

Pumpkinseed was found in high abundance and comprised over 20% of the panfish catch. Abundance appeared to be high when compared to past survey years. A total of 1450 were captured during spring surveys. Average length was 5.8 inches (range 3.3 – 7.2 inches). Size structure indexes were low with only 28% of the catch greater than 6.0 inches.

Black crappie was found in low abundance and comprised a small portion (approx. 2%) of the prey (panfish) catch. A total of 214 were captured during spring surveys. Size structure was average with length ranges of 4.5 to 11.4 inches and a mean length of 8.9 inches. Most of crappies captured were comprised of 3-5 year old fish.

Other species sampled included yellow perch, black bullhead, brown bullhead, white sucker, and common carp. Carp abundance has increased significantly from the last survey. A total of 127 carp were sampled out of one net near the outlet. During electrofishing a high number of carp were observed on the northeast shoreline. All captured carp were removed from the lake.

Management Recommendations

Overall, the fishery in White Lake could be considered average when compared to other lakes in the area. It supports a diverse fishery that can produce both quantity and quality gamefish. The largemouth bass population could be considered one of the highest quality fisheries in the area and in most years it has also supported a quality panfishery. Perhaps the only concerns would be the recent population increase of common carp.

Management Options:

1) **Walleye** relative abundance (0.5 per acre) has increased slightly when compared to the last survey (0.4 per acre in 2002) but is still at a low level. Walleye abundance in most stocked clear water lakes in Central Wisconsin rarely achieve densities higher than 1.0 per acre due to spawning habitat limitations and predation. If any private stocking is proposed, I recommend large fingerling walleye to maximize survival. In addition, construction of artificial walleye spawning reefs should be avoided since the vast majority of artificial reef constructions statewide have shown no improvements to walleye natural reproduction.

2) **Bluegill** size structure indexes have declined since the last survey but are still at acceptable levels. Some angling public have expressed concerns with the poor size of bluegill in recent years and would like to see DNR manage for more quality sized fish. The poor size of bluegill is due to abundant year classes of age 4 and 5 year old fish and lack of 6-9 year old fish. In recent years the fishery was dominated by a strong year class of large older age bluegill. Most of these older age classes have likely succumbed to old age or have been fished down. Given time the bluegill fishery will likely rebound as the age 4-5 year old fish recruit into the catchable size range.

3) **Carp** abundance has increased significantly from the 2002 survey. Most likely this increase is the result of the carp exclusion weir (on the outlet structure) being down in 2004 while carp were making upstream spawning movements and had free passage into White Lake. It is important that this weir be maintained – especially during spring warm-up to prevent future carp emigration into White Lake. Overabundant carp populations can be devastating to aquatic habitat. DNR will continue to monitor abundance. In meantime, lake residents are encouraged to remove any carp via angling or bowfishing. In addition, maintaining an abundant base of predator fish will help control carp numbers through predation.

4) Historically, **northern pike** abundance has been very high while size structure and growth has remained poor. Some angling public would like to see the department manage for a more quality fishery, however, this may be a difficult goal to achieve. The shallow nature of White Lake presents poor growth conditions (especially in summer when the lake becomes to warm) and the abundant vegetation creates hyper spawning habitat which has led to consistently high recruitment.

5) Protect and/or restore natural aquatic habitat. Preserving existing habitat will be far more beneficial in maintaining the fishery than relying on stocking and artificial habitat enhancements (e.g. rock spawning reef).

6) Continue monitoring of fish populations on a four year rotation.