A

APPENDIX A

Public Participation Materials

Presentation Outline

- Introduction to Lake Ecology
- Current Lake Project
  - Goals
  - Components
  - Process

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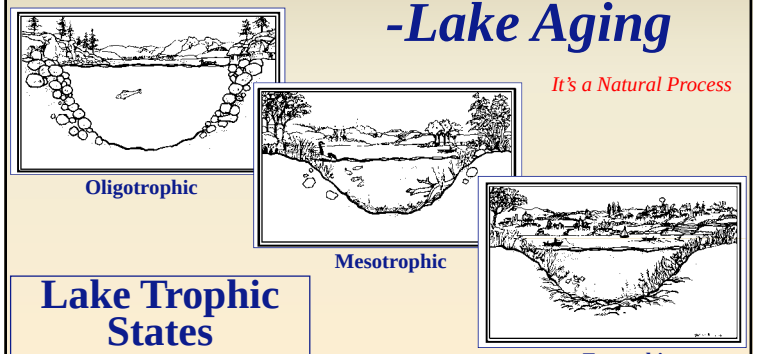
Introduction to Lake Ecology

General Lake Ecology

Eutrophication -Lake Aging

It's a Natural Process



Lake Trophic States

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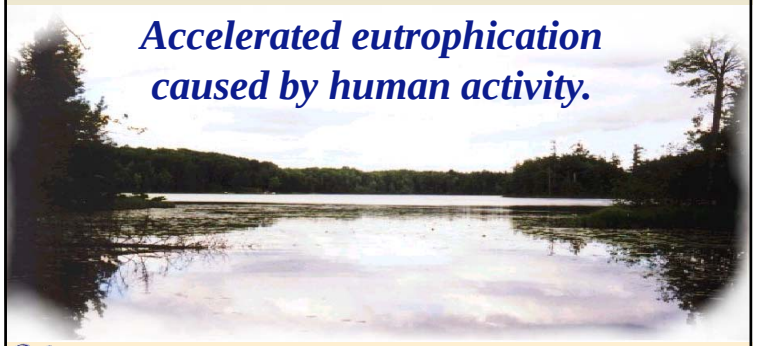
General Lake Ecology

Cultural Eutrophication

Accelerated eutrophication caused by human activity.



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General Lake Ecology

Limiting Nutrient

2 Cups Water
2 Cups Flour
2 Cups Sugar
2 Eggs

2 Cups Water
2 Cups Flour
2 Cups Sugar
2 Eggs

2 Cups Water
2 Cups Flour
2 Cups Sugar
2 Eggs

2 Cups Water
2 Cups Flour
2 Cups Sugar
2 Eggs

General Lake Ecology

Phosphorus

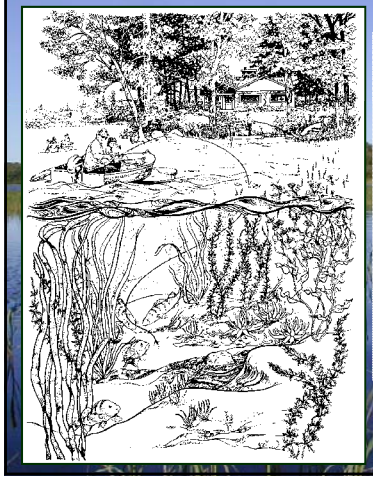
- *Limiting Nutrient*
- *Controls Plant Abundance (Productivity)*
  - *Algae*
  - *Macrophytes*

General Lake Ecology

Aquatic Plants (macrophytes)

- *Native Plants*
- *Exotic Plants (non-native)*

Native Aquatic Plants



- Base of the Food Web
- Cover (not only fish)
- Nursery
- Sediment Stabilization

General Lake Ecology

Non-native Aquatic Plants

Curly-leaf Pondweed

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General Lake Ecology

Non-native Aquatic Plants

Eurasian Water Milfoil

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General Lake Ecology

Consequences of Exotics

- Competition with Natives
  - Monotypic Community
- Decreased Recreational Value
- Decreased Property Value

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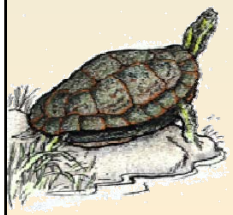
Current Project

Study and Plan Goals

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



A goal without a plan is just a wish.

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Project Components

- Public Participation
- Watershed Modeling
- Water Quality
- Aquatic Vegetation
  - Curly-leaf Survey
  - Comprehensive Survey
- Zebra Mussel Veliger Survey
- Ecologically Valuable Habitat Delineation
- Fisheries Data Integration
- Plan Development

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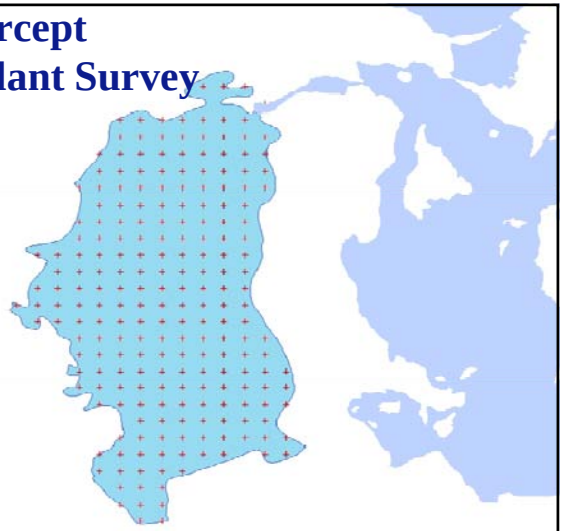
Point-intercept Aquatic Plant Survey



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Current Project

Planning Process

Planning Committee Meetings

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

↓

Implementation Plan

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Thank You

Tim Hoyman **thoyman@onterra-eco.com**
Eddie Heath **eheath@onterra-eco.com**

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

Wisconsin Lakes Partnership

UW Extension

Wisconsin Dept. of Natural Resources

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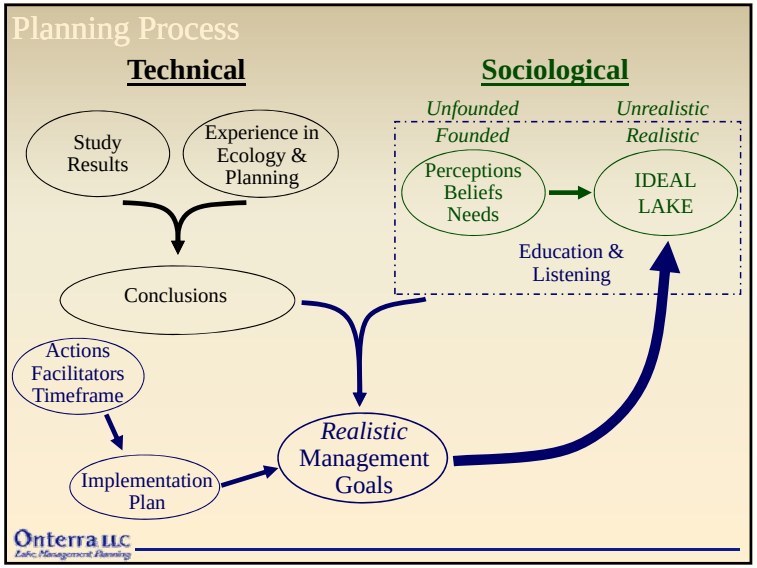
The Planning Process

…it's not as easy as you may think.

Planning Process



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Eurasian Water Milfoil Located in Deer Lake

Submitted by Tim Hoyman, Onterra, LLC

On July 2nd ecologists from Onterra located a bed of Eurasian water milfoil (EWM) near the channel leading to Bridge Lake. On July 10th a single EWM plant was found and removed from the east shoreline during the comprehensive point-intercept survey. While this is an unfortunate event, it is not a complete surprise considering the amount of Eurasian water milfoil that exists in Bridge Lake and the fact that there is boat traffic between the two lakes while the channel is navigable.

The bed of Eurasian water milfoil is of the most concern because it is can act like a source population for the rest of the lake. However, there is no need for panic because based upon its size, the bed has likely been there for one or more growing seasons and as described above, the exotic plant was only located in one other location in the lake. So, for the time being it seems not to be spreading to any great degree.

The Wisconsin Department of Natural Resources (WDNR) was notified immediately regarding the finding and they are prepared to assist the Deer Lake District financially through their Aquatic Invasive Species (AIS) Rapid Response Grant Program. The AIS Rapid Response Program was created to supply financial assistance to lake groups in the event a pioneer infestation of EWM or other AIS is located within their lake. As a part of that program, the WDNR would also have a field crew complete studies of the lake in preparation for a possible treatment. However, these studies are already being completed as a part of the Deer Lake Management Planning Project.

On July 16th, Eddie Heath and I visited the site to determine if site-conditions are suitable for hand-removal of the EWM. At this time, it appears that there is too much EWM and too many large native aquatic plants in the area to effectively remove the EWM by hand. The tall native plants reduce visibility while in the water and make maneuvering in the area very difficult without creating excessive disturbance of plants and sediment. Eddie and I are experienced divers and have performed hand-removal operations on several lakes. Our experience tells us that attempting to hand-harvest the plants at this time would be difficult and likely less effective than using an integrated treatment approach that utilizes a herbicide treatment *and* hand-removal.

Our next step will be to apply for AIS Rapid Response funds from the WDNR on behalf of the Deer Lake District. We will likely receive funding for the completion of a small, quarter-acre treatment of the EWM colony. The treatment will likely occur in early to mid August and include an application of Navigate, an aquatic herbicide. Navigate's active ingredient is 2,4-D, the most used and studied herbicide in the world. The treatment will be completed by a licensed and experienced applicator, Cliff Schmidt of Schmidt's Aquatic Plant Control. Mr. Schmidt completed the application on Bridge Lake this past May. Based upon our July surveys, that application was very successful at controlling EWM on Bridge Lake.

The treatment will be completed below the maximum rate allowed by the USEPA, which has been determined to be well below toxic levels to fish and other aquatic life. Further, 2,4-D is a selective herbicide that only impacts broad-leaved species (dicots). EWM is a broad-leaved

plant, while the vast majority of the native plants in the area are narrow-leaved species (monocots). This means that the herbicide will selectively kill EWM and not impact the majority of the natives in the area that compete against EWM and provide important habitat in the lake.

Phil Schlachtenhaufen has provided the names and contact information of several scuba divers that reside on Deer Lake. We will be contacting the local divers soon to schedule a date to assess the area after the herbicide treatment and determine if hand-removal is an appropriate follow up action. If the conditions are right for hand-removal, we will spend time training the local divers and removing plants. Those divers will then be capable of continued hand-removal in the future. If conditions are not correct, we will formulate another plan that would likely involve further herbicide treatments next spring.

What can you do right now? Most importantly, do not boat through the area as this will fragment the EWM and could facilitate its spread. Secondly, do not panic – the Deer Lake District is in a good position right now because you are well organized, you have an experienced lake management firm working for you, and the WDNR is aware of the problem and very willing to help.

Deer Lake Management Planning Project
Update – April 2009

Submitted by:
Tim Hoyman
Aquatic Ecologist
Onterra, LLC

The Deer Lake Management Planning Project is moving along well. All field studies associated with the project have been completed and analysis of that data is nearly finished. Recently, we assisted the Planning Committee with the development and disbursal of the stakeholder survey. Ms. Kathy Spahn has tallied the information in a spreadsheet we supplied (thanks Kathy!) and Sonya from our staff will soon be analyzing that data so it can be utilized within the development of the management plan.

A great deal of focus has been placed upon the Eurasian water milfoil that was located last summer and the treatment that followed on September 16th by Schmidt's Aquatic Plant Control. We visited the treatment site at the end of October and were unable to find any Eurasian water milfoil. There was a great deal of native vegetation in the area, which was very good to see. We will be checking the area again this spring and summer. If Eurasian water milfoil plants are located, a control plan will be created that may include hand-harvesting by divers, an additional chemical treatment, or possibly a combination of the two.

The original project schedule called for the lake management plan to be completed this spring. We have delayed the completion of the plan in order to learn more about the Eurasian water milfoil over the summer. If more of the exotic plant is found within the lake, whether it is in the original location or other areas, we will need to include its control within the management plan. As mentioned above, we will check the area during May and again during July. Once those surveys are complete, we will determine a new timeline for completion of the management plan.

Presentation Outline

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

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Study and Plan Goals

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

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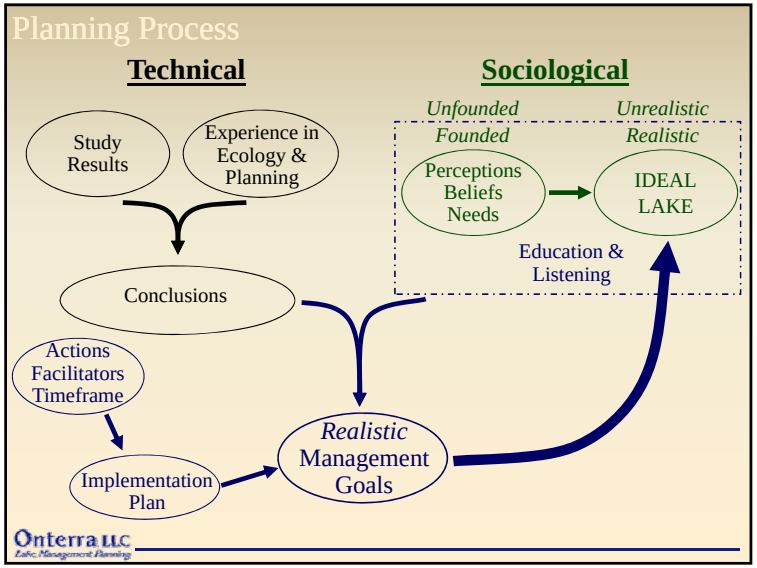


Lillie Mason Regions
Northwest
Northeast
Deer Lake
Southwest
Central
Southeast
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Water Quality
Phosphorus (Limiting Plant Nutrient)
Chlorophyll-a (Algal Abundance)
Water Clarity (Secchi Disk)
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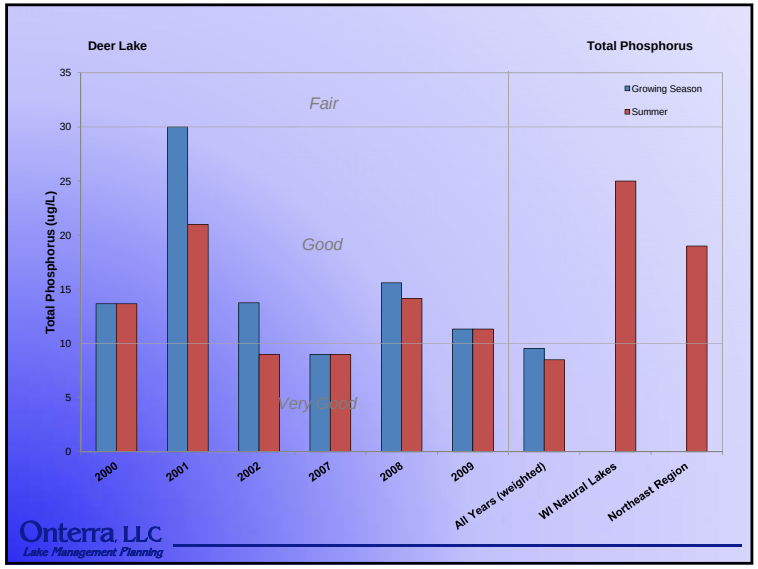
Deer Lake
Total Phosphorus
Growing Season
Summer
Fair
Good
Very Good
Total Phosphorus (ug/L)
0
5
10
15
20
25
30
35
2000
2001
2002
2007
2008
2009
All Years (weighted)
WI Natural Lakes
Northeast Region
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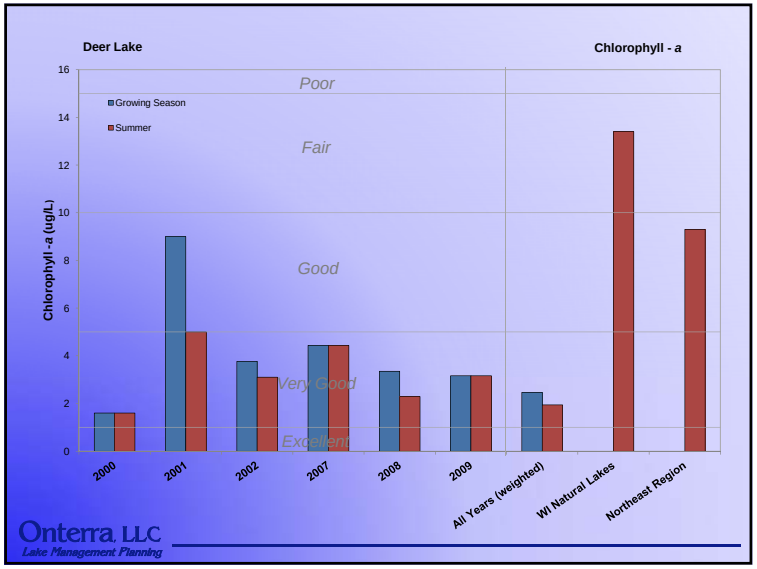
Deer Lake
Chlorophyll - a
Growing Season
Summer
Poor
Fair
Good
Very Good
Excellent
Chlorophyll - a (ug/L)
0
2
4
6
8
10
12
14
16
2000
2001
2002
2007
2008
2009
All Years (weighted)
WI Natural Lakes
Northeast Region
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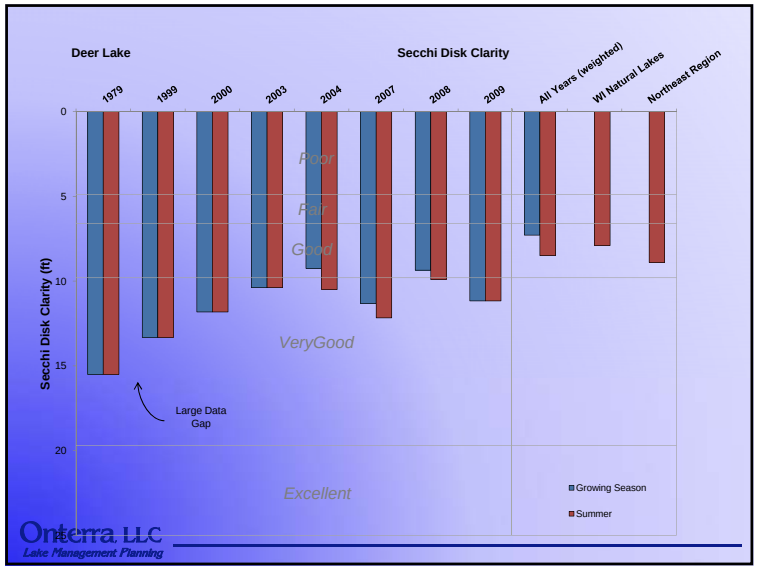

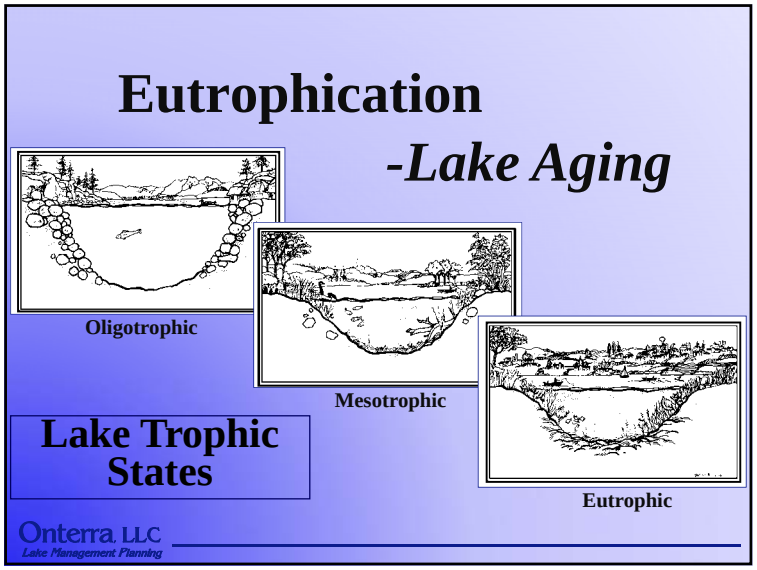

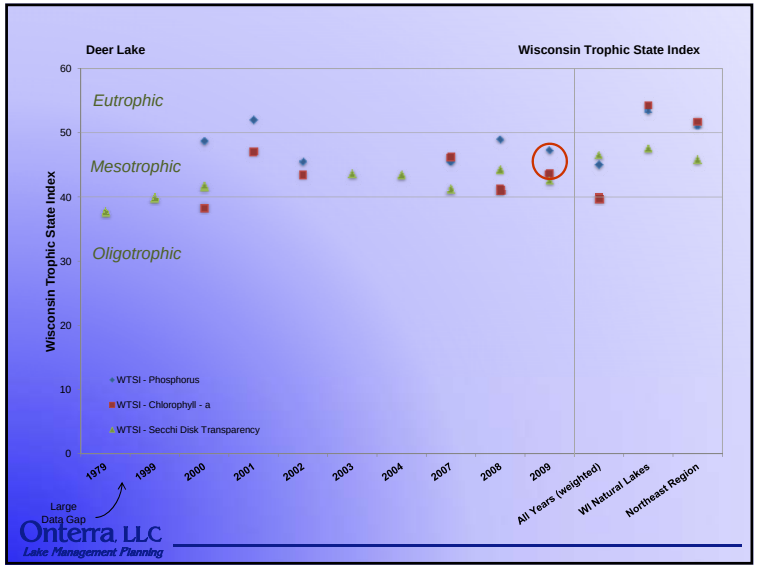

Additional Water Quality Results

- Dissolved Oxygen and Temperature Profiles
  - Lake stratifies during summer & winter
  - Limited anoxia occurs in hypolimnion late in summer
- Limiting Nutrient
  - Nitrogen:Phosphorus = 34:1 (Phosphorus limited)
- Alkalinity (buffer capacity)
  - 24 ppm as $CaCO_3$
  - Low sensitivity to acid rain
- Calcium values (6.3 ppm) indicate low possibility of zebra mussel infestation

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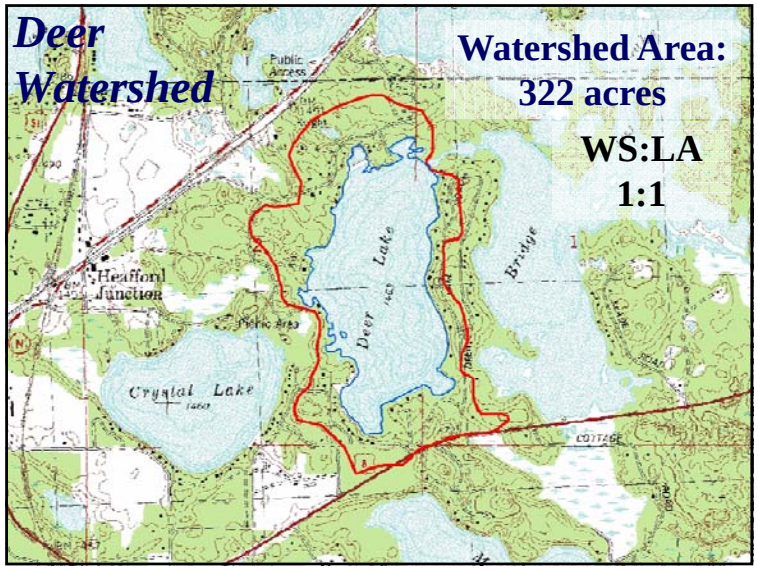
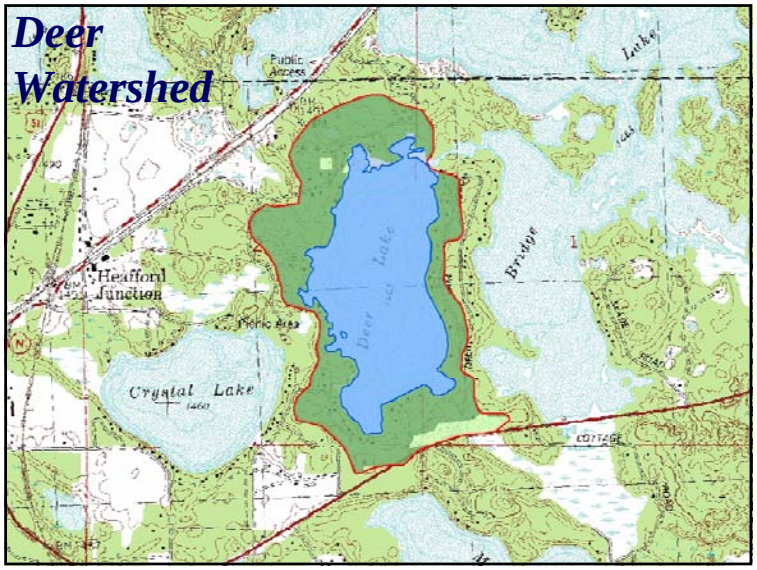
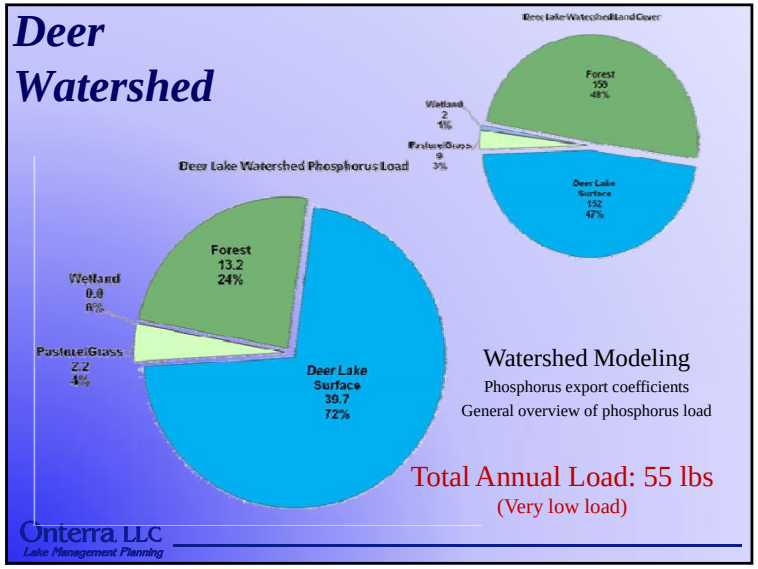

Deer Watershed
Watershed Area:
322 acres
WS:LA
1:1
Heafford Junction
Crystal Lake
Deer Lake
Bridge


Deer Watershed
Heafford Junction
Crystal Lake
Deer Lake
Bridge


Deer Watershed
Deer Lake Watershed Phosphorus Load
Forest
13.2
24%
Wetland
0.0
0%
Pasture/Grass
2.2
4%
Deer Lake Surface
39.7
72%
Watershed Modeling
Phosphorus export coefficients
General overview of phosphorus load
Total Annual Load: 55 lbs
(Very low load)
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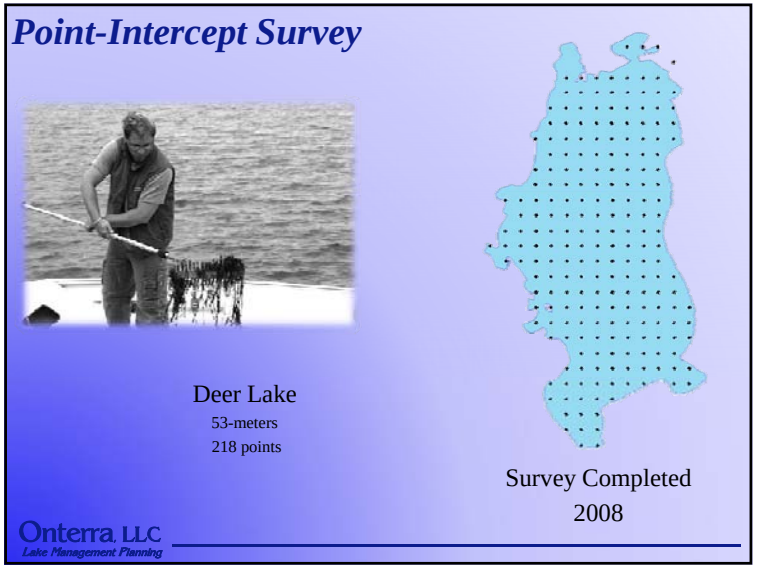
Point-Intercept Survey
Deer Lake
53-meters
218 points
Survey Completed
2008
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Species List

- 38 Total Species
  - 1 non-native
  - 1 special concern

Life Form	Scientific Name	Common Name	Coefficient of Conservatism (c)
Emergent	*Alisma triv ale*	Northern water plantains	4
	Acorus calamus	Sweetflag	Naturalized
	Carex comosa	Bristly sedge	5
	Dulichium arundinaceum	Three-way sedge	9
	Equisetum fluviatile	Water horsetail	7
	Pontederia cordata	Pickerelweed	9
	Schoenoplectus tabernaemontani	Softstem bulrush	4
	Sagittaria latifolia	Common arrowhead	3
	Sagittaria rigida	Stiff arrowhead	8
	Typha latifolia	Broad-leaved cattail	1
FL	*Nuphar variegata*	Spatterdock	6
	Polygonum amphibium	Water smartweed	5
FL/E	*Sparganium angustifolium*	Narrow-leaf bur-reed	9
	Sparganium emersum	Short-stemmed bur-reed	8
	Sparganium fluctuans	Floating-leaf bur-reed	10
Submergent	*Ceratophyllum demersum*	Coontail	3
	Chara sp.	Muskgrasses	7
	Elodea canadensis	Common waterweed	3
	Isoetes lacustris	Lake quillwort	8
	Lobelia dortmanna	Water lobelia	10
	Myriophyllum spicatum	Eurasian water milfoil	Exotic
	Megalodonta beckii	Water marigold	8
	Myriophyllum tenellum	Dwarf water milfoil	10
	Nitella sp.	Stoneworts	7
	Najas flexilis	Slender naiad	6
	Potamogeton natans	Floating-leaf pondweed	5
	Potamogeton epihydrus	Ribbon-leaf pondweed	8
	Potamogeton vaseyi	Vasey's pondweed	10
	Potamogeton sp.	Unknown pondweed	N/A
	Potamogeton foliosus	Leafy pondweed	6
	Potamogeton robbinsii	Fern pondweed	8
	Potamogeton amplifolius	Large-leaf pondweed	7
	Potamogeton richardsonii	Clasping-leaf pondweed	5
	Potamogeton praelongus	White-stem pondweed	8
	Potamogeton zosteriformis	Flat-stem pondweed	6
	Potamogeton gramineus	Variable pondweed	7
S/E	*Eleocharis acicularis*	Needle spikerush	5
	Juncus pelocarpus	Brown-fruited rush	8

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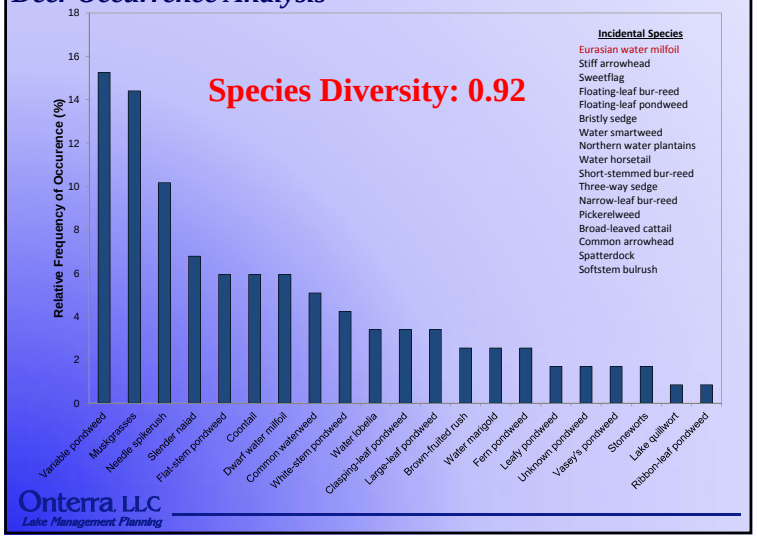
Deer Occurrence Analysis



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Aquatic Plants

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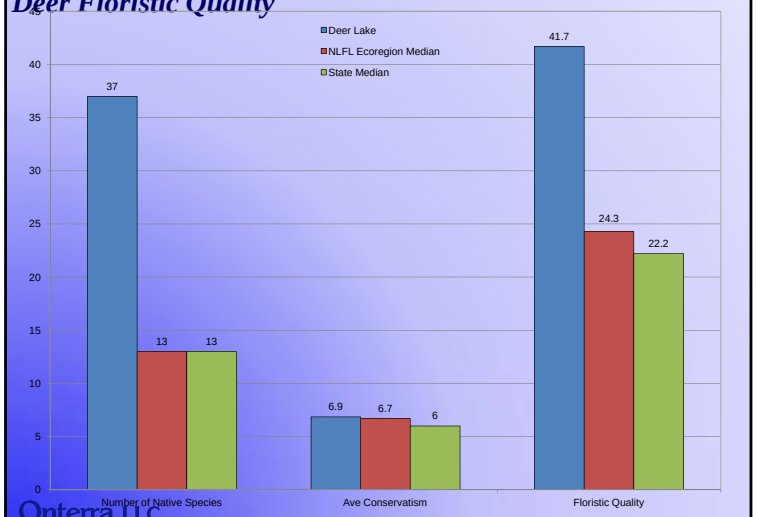
Deer Floristic Quality



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Aquatic Plant Community Mapping

- Mapped Communities
  - Floating-leaf
  - Emergent
- Important Indicators
  - Vulnerable to ecosystem changes
    - Loss of species
    - Expansion or recession

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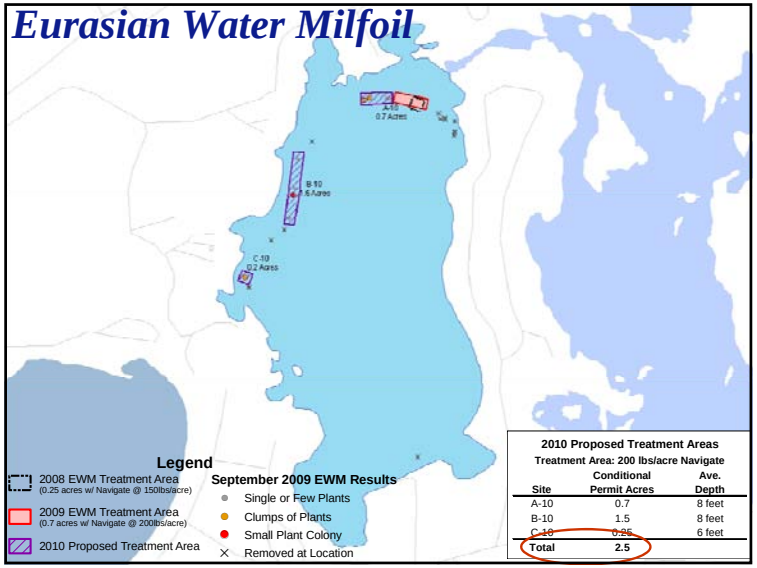
Eurasian Water Milfoil

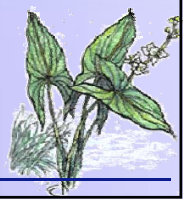


2010 Proposed Treatment Areas
Treatment Area: 200 lbs/acre Navigate

Site	Conditional Permit Acres	Ave. Depth
A-10	0.7	8 feet
B-10	1.5	8 feet
C-10	0.25	6 feet
Total	**2.5**	

Additional Results

- *Dreissena* mussel monitoring
  - No veligers found
- Fisheries Data Summary
  - Compilation complete
  - Data presented for Deer Lake & Rice River Reservoir
  - WDNR feels walleye population is strong and reproducing naturally (surveys completed in 2001 & 2006)
- Stakeholder Survey
  - Tabulation completed (Thanks Kathy!)
  - Charts and comments compiled



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Deer Lake Outlet

- Concerns raised that channel bottom has been scoured.
  - Scouring maybe caused by reversed flow of outlet during Rice Reservoir filling in spring.
  - Sand delta is apparent on Deer Lake side of outlet indicating possible reverse flow and bottom scouring.
  - Shallow cores collected by Onterra staff during Sept. 09 indicate that sand from channel has covered native sediments in delta area.
  - With this limited and unscientific information, it does appear that the concerns are valid.

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Deer Lake Outlet

- Major issues exist:
  - There is no known record of original channel bottom elevation.
    - How much of the low water level issue is caused by the extended drought? – Deer is a spring lake.
    - If a dam were built, at what elevation?
  - Dam construction would be incredibly difficult and likely expensive.
    - Property ownership issues (WVIC, private?).
    - Navigation issues.
    - Fish and wildlife issues.
    - Permitting issues (State and Federal).

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Conclusions

- Water quality is *very good*
  - Lake is moderately productive
- Overall watershed is in great condition.
  - Land cover exports minimal phosphorus.
  - Largest, *controllable* contributor is likely shoreland properties.

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Conclusions

- Aquatic plant community
  - Based upon standard analysis native community is of high quality
  - Many residence are concerned about EWM.
    - Infestation is still small and likely controllable.
- Other Concerns (from survey)
  - Channel and water levels
  - Boat traffic

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B

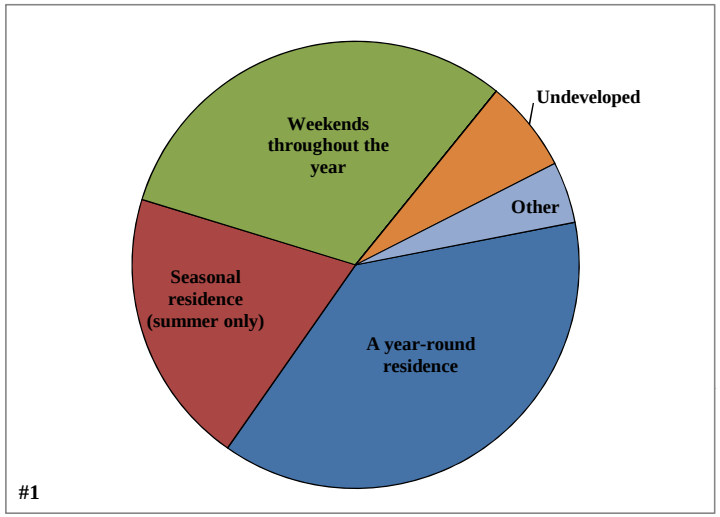
APPENDIX B

Stakeholder Survey Response Charts and Comments

Returned Surveys	46
Sent Surveys	63
Response Rate (%)	73.0

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

	Total	*%*
A year-round residence	17	*37.8*
Seasonal residence (summer only)	9	*20.0*
Weekends throughout the year	14	*31.1*
Resort	0	*0.0*
Rental Property	0	*0.0*
Undeveloped	3	*6.7*
Other	2	*4.4*
	45	*100.0*

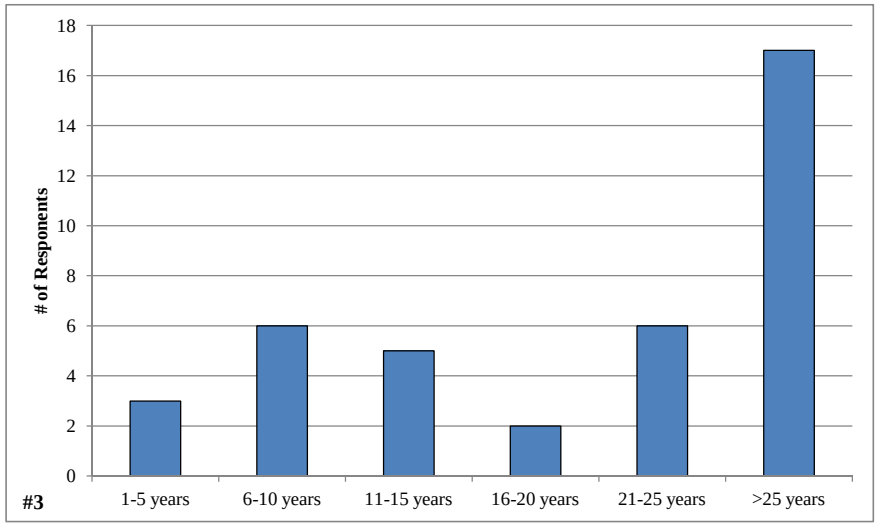


#2 If you are not a year-round resident, how many days each year is your property used by you or others?

Answered Question	31
Average	87.9
Standard deviation	79.0

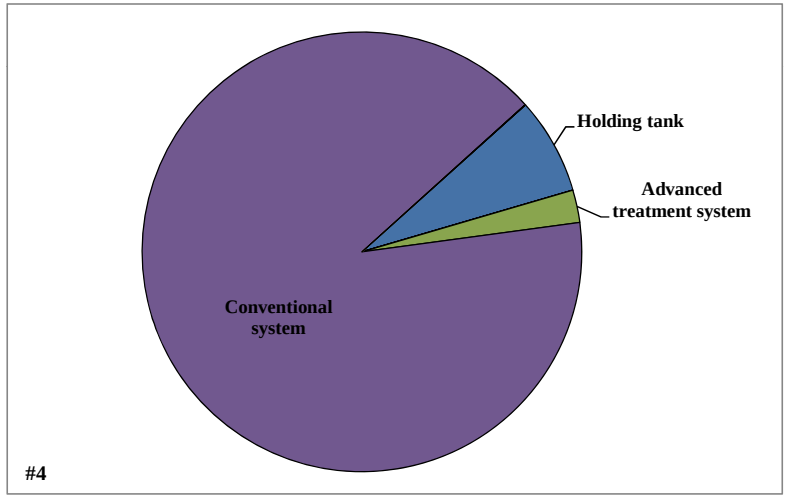
#3 How many years have you owned property on Deer Lake?

	Total	%
1-5 years	3	*7.7*
6-10 years	6	*15.4*
11-15 years	5	*12.8*
16-20 years	2	*5.1*
21-25 years	6	*15.4*
>25 years	17	*43.6*
	39	*100.0*



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

	Total	%
Holding tank	3	*7.1*
Mound	0	*0.0*
Advanced treatment system	1	*2.4*
Conventional system	38	*90.5*
Municipal Sewer	0	*0.0*
Do not know	0	*0.0*
	42	*100.0*

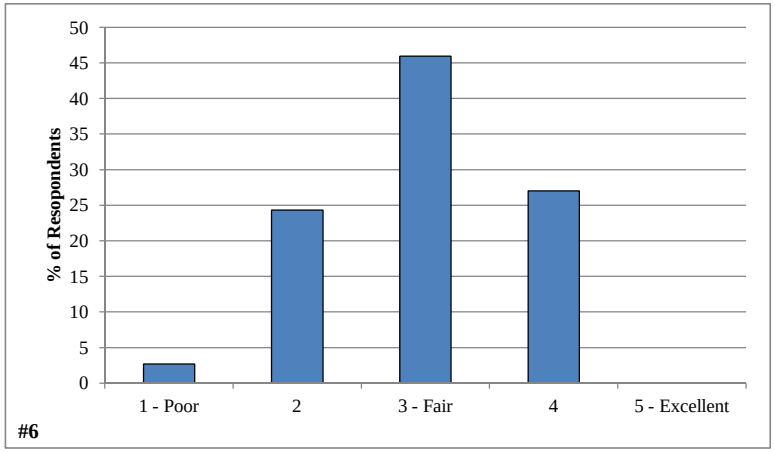


#5 Have you fished on Deer Lake in the past 3 years?

	Total	%
Yes	36	*78.3*
No	10	*21.7*
	46	*100.0*

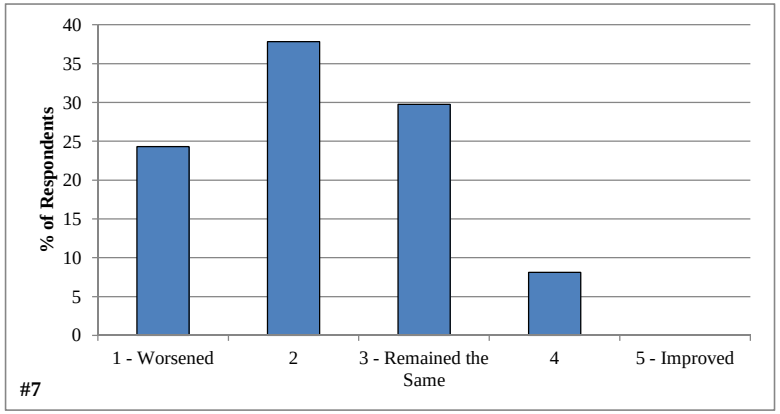
#6 How would you describe the current quality of fishing on Deer Lake?

	Total	%
1 - Poor	1	*2.7*
2	9	*24.3*
3 - Fair	17	*45.9*
4	10	*27.0*
5 - Excellent	0	*0.0*
	37	*100.0*



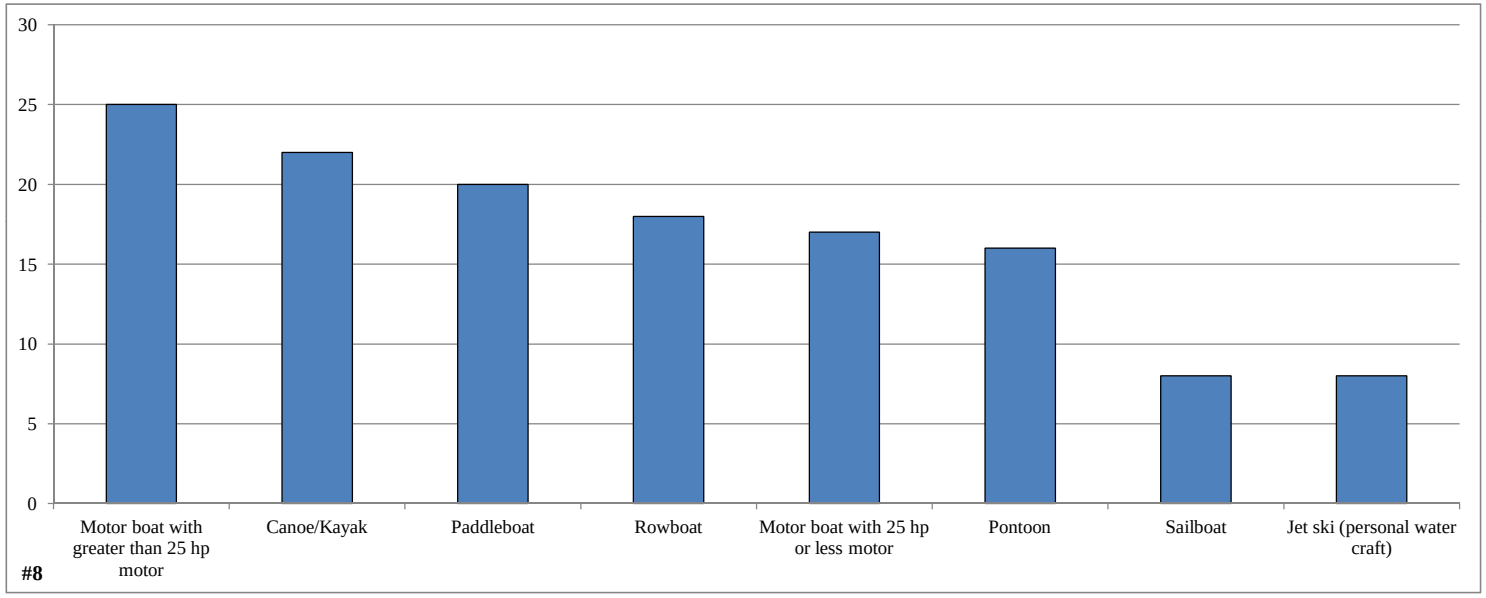
#7 How has the quality of fishing changed on Deer Lake since you obtained your property?

	Total	%
1 - Worsened	9	*24.3*
2	14	*37.8*
3 - Remained the Same	11	*29.7*
4	3	*8.1*
5 - Improved	0	*0.0*
	37	*100.0*



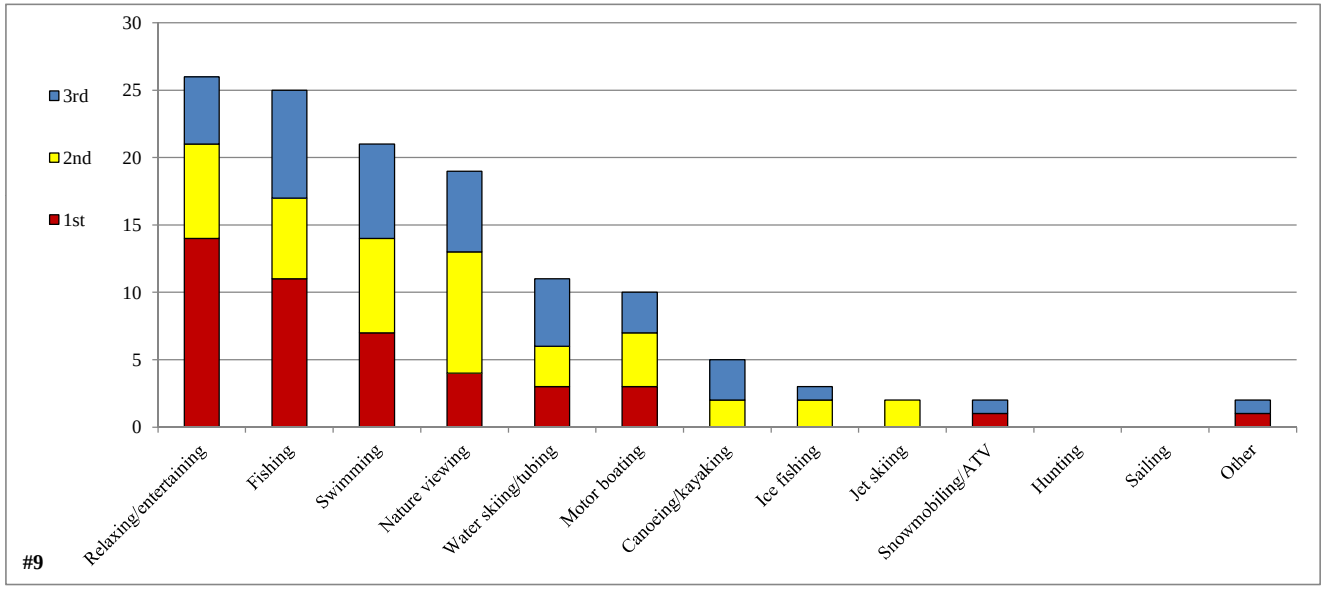
#8 What types of watercraft do you or others that use your property, currently use on the lake?

	Total
Motor boat with greater than 25 hp motor	25
Canoe/Kayak	22
Paddleboat	20
Rowboat	18
Motor boat with 25 hp or less motor	17
Pontoon	16
Sailboat	8
Jet ski (personal water craft)	8
	134



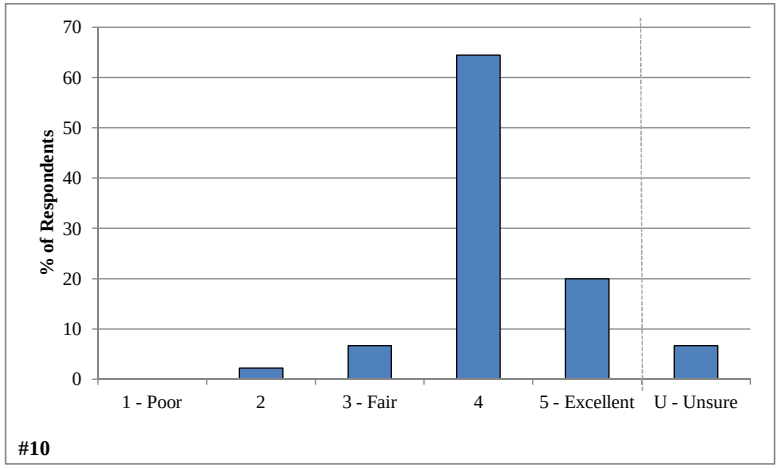
#9 Please rank the activities below that are the most important or enjoyable to you on Deer Lake?

	1st	2nd	3rd	*% ranked*
Relaxing/entertaining	14	7	5	*19.7*
Fishing	11	6	8	*18.9*
Swimming	7	7	7	*15.9*
Nature viewing	4	9	6	*14.4*
Water skiing/tubing	3	3	5	*8.3*
Motor boating	3	4	3	*7.6*
Canoeing/kayaking	0	2	3	*3.8*
Ice fishing	0	2	1	*2.3*
Jet skiing	0	2	0	*1.5*
Snowmobiling/ATV	1	0	1	*1.5*
Hunting	0	0	0	*0.0*
Sailing	0	0	0	*0.0*
Other	1	0	1	*1.5*
	44	42	40	



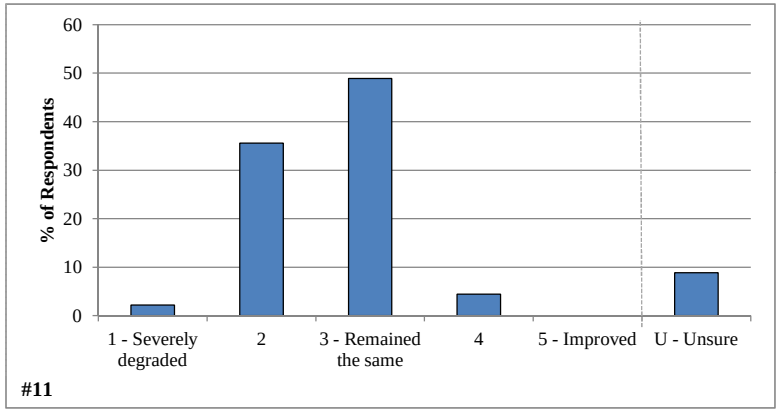
#10 How would you describe the current water quality of Deer Lake?

	Total	%
1 - Poor	0	*0.0*
2	1	*2.2*
3 - Fair	3	*6.7*
4	29	*64.4*
5 - Excellent	9	*20.0*
U - Unsure	3	*6.7*
	45	*100.0*



#11 How has the water quality changed in Deer Lake since you obtained your property?

	Total	%
1 - Severely degraded	1	*2.2*
2	16	*35.6*
3 - Remained the same	22	*48.9*
4	2	*4.4*
5 - Improved	0	*0.0*
U - Unsure	4	*8.9*
	45	*100.0*



#12 Have you ever heard of aquatic invasive species?

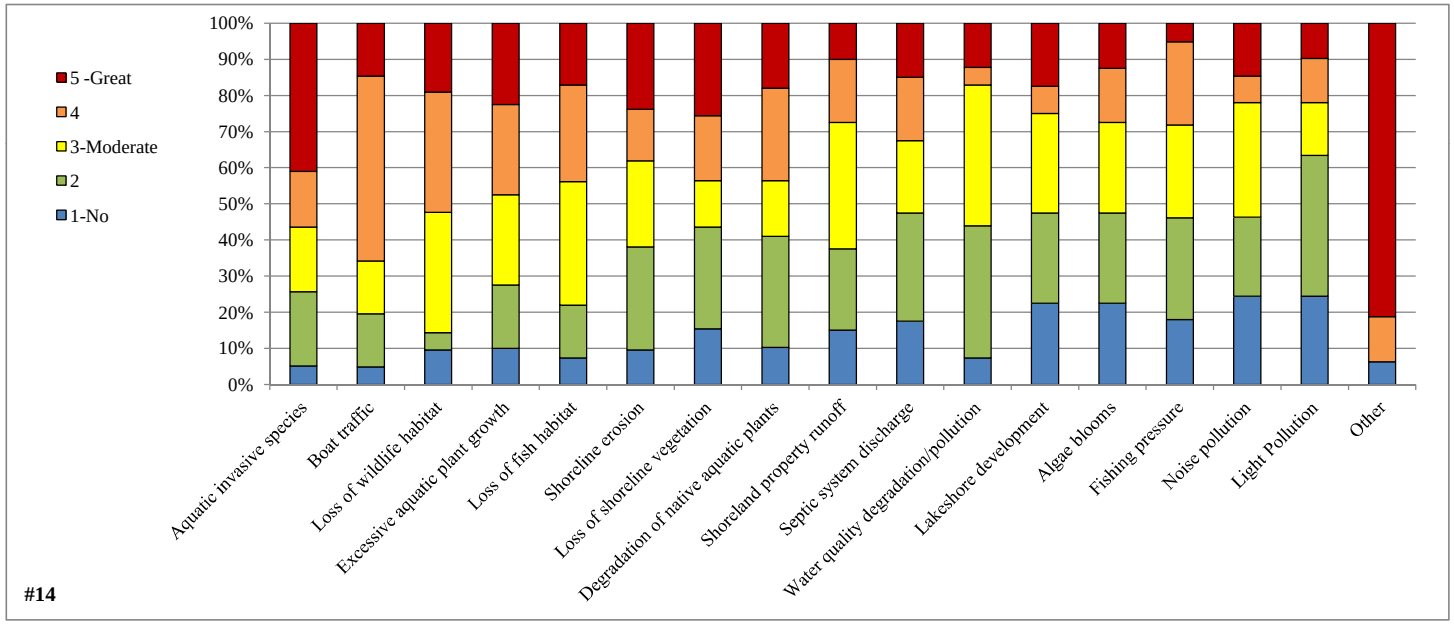
	Total	%
Yes	45	*97.8*
No	1	*2.2*
	46	*100.0*

#13 Are you aware of aquatic invasive species in Deer Lake?

	Total	%
Yes	38	*84.4*
No	7	*15.6*
	45	*100.0*

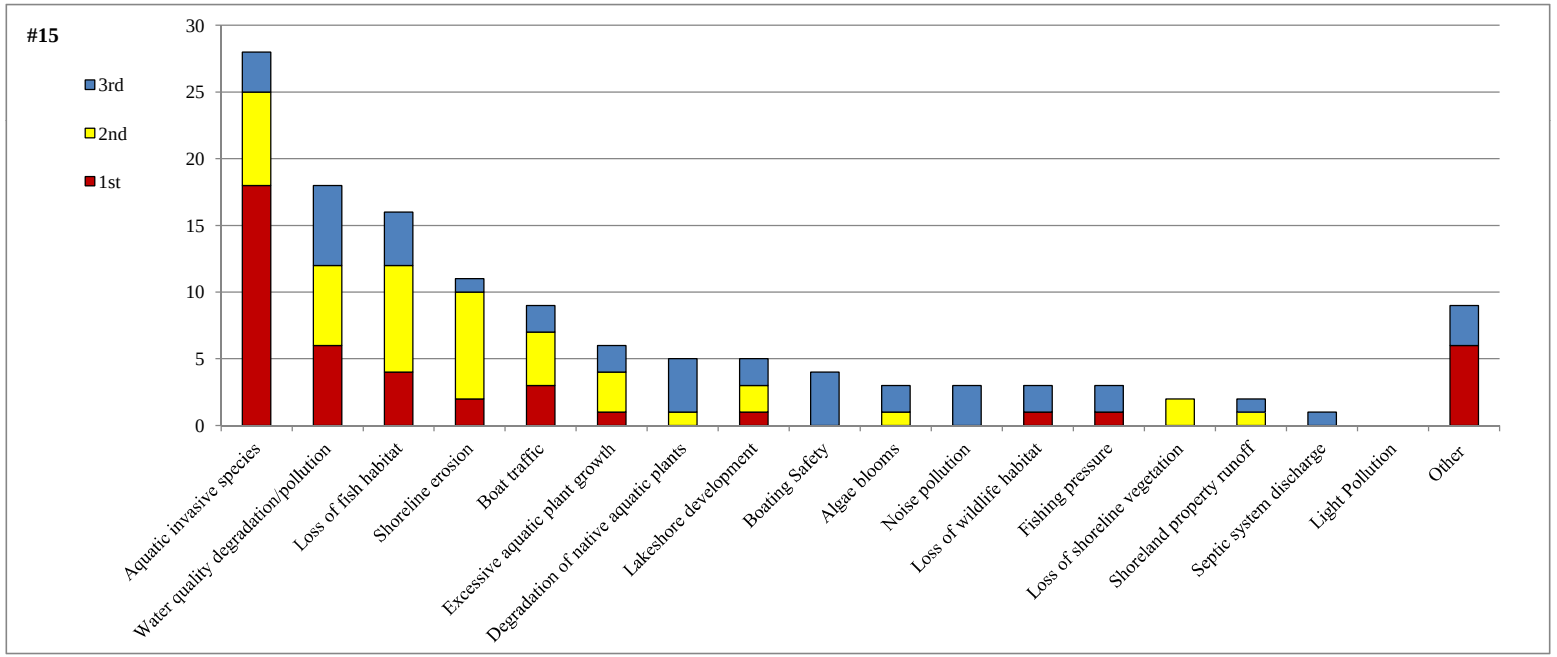
#14 To what level do you believe each the following factors are negatively impacting Deer Lake?

	1-No	2	3-Moderate	4	5 -Great	*Total*	*Average*
Aquatic invasive species	2	8	7	6	16	*39*	*3.7*
Boat traffic	2	6	6	21	6	*41*	*3.6*
Loss of wildlife habitat	2	1	7	7	4	*21*	*3.5*
Excessive aquatic plant growth	4	7	10	10	9	*40*	*3.3*
Loss of fish habitat	3	6	14	11	7	*41*	*3.3*
Shoreline erosion	4	12	10	6	10	*42*	*3.1*
Loss of shoreline vegetation	6	11	5	7	10	*39*	*3.1*
Degradation of native aquatic plants	4	12	6	10	7	*39*	*3.1*
Shoreland property runoff	6	9	14	7	4	*40*	*2.9*
Septic system discharge	7	12	8	7	6	*40*	*2.8*
Water quality degradation/pollution	3	15	16	2	5	*41*	*2.8*
Lakeshore development	9	10	11	3	7	*40*	*2.7*
Algae blooms	9	10	10	6	5	*40*	*2.7*
Fishing pressure	7	11	10	9	2	*39*	*2.7*
Noise pollution	10	9	13	3	6	*41*	*2.7*
Light Pollution	10	16	6	5	4	*41*	*2.4*
Other	1	0	0	2	13	*16*	*4.6*



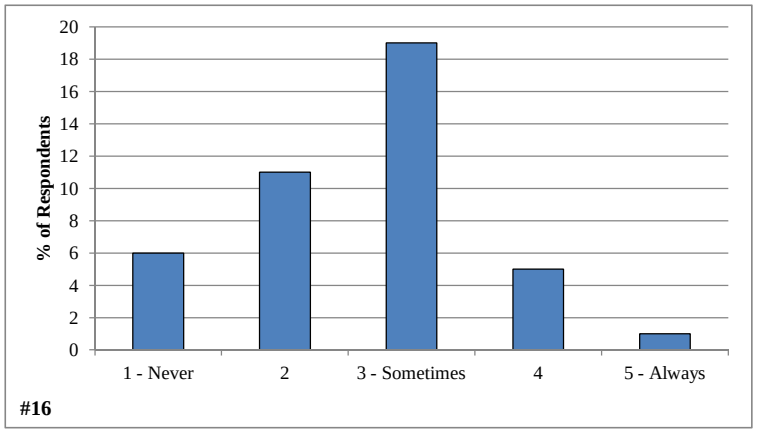
#15 From the list below, please rank your top three concerns regarding Deer Lake?

	1st	2nd	3rd	*% Ranked*
Aquatic invasive species	18	7	3	*65.1*
Water quality degradation/pollution	6	6	6	*41.9*
Loss of fish habitat	4	8	4	*37.2*
Shoreline erosion	2	8	1	*25.6*
Boat traffic	3	4	2	*20.9*
Excessive aquatic plant growth	1	3	2	*14.0*
Degradation of native aquatic plants	0	1	4	*11.6*
Lakeshore development	1	2	2	*11.6*
Boating Safety	0	0	4	*9.3*
Algae blooms	0	1	2	*7.0*
Noise pollution	0	0	3	*7.0*
Loss of wildlife habitat	1	0	2	*7.0*
Fishing pressure	1	0	2	*7.0*
Loss of shoreline vegetation	0	2	0	*4.7*
Shoreland property runoff	0	1	1	*4.7*
Septic system discharge	0	0	1	*2.3*
Light Pollution	0	0	0	*0.0*
Other	6	0	3	*20.9*
	37	43	39	



#16 How often does aquatic plant growth impact your enjoyment of Deer Lake?

	Total	%
1 - Never	6	*14.3*
2	11	*26.2*
3 - Sometimes	19	*45.2*
4	5	*11.9*
5 - Always	1	*2.4*
	42	*100.0*

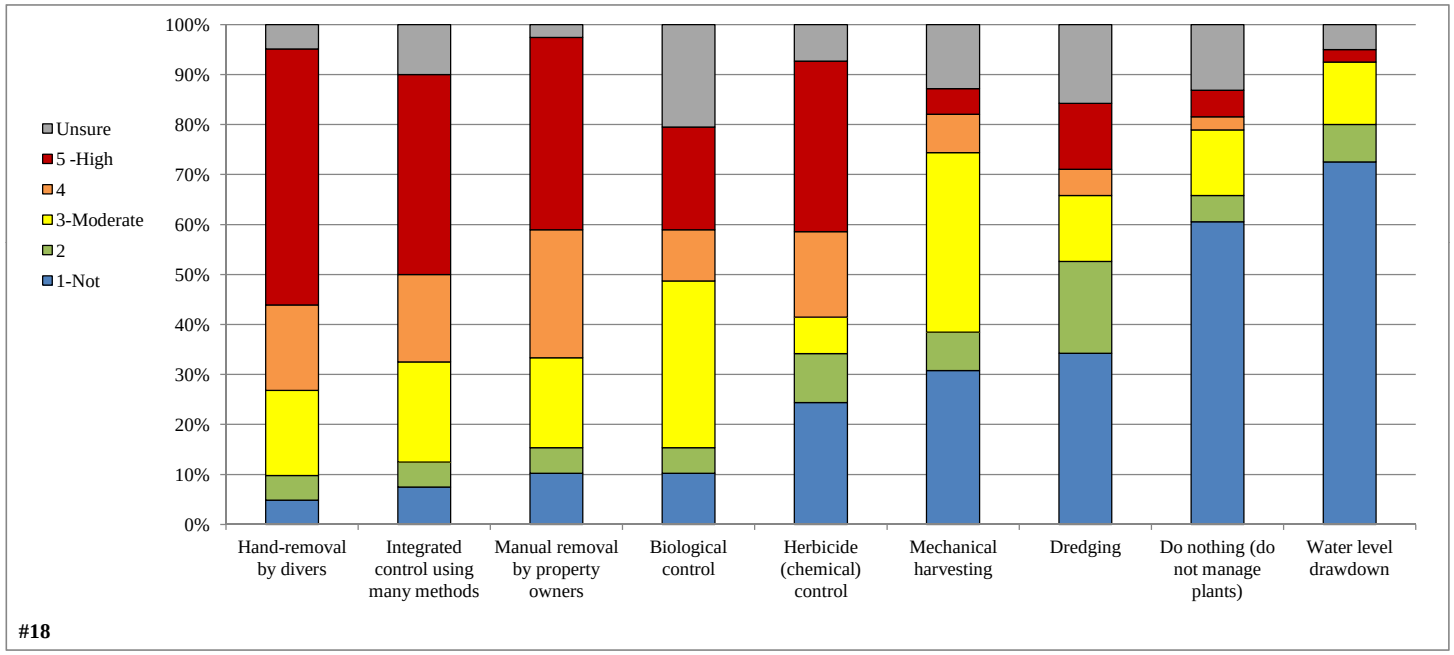


#17 Considering your answer to the question above, do you believe aquatic plant control is needed on Deer Lake?

	Total	%
Yes	23	*53.5*
No	7	*16.3*
Unsure	13	*30.2*
	43	*100.0*

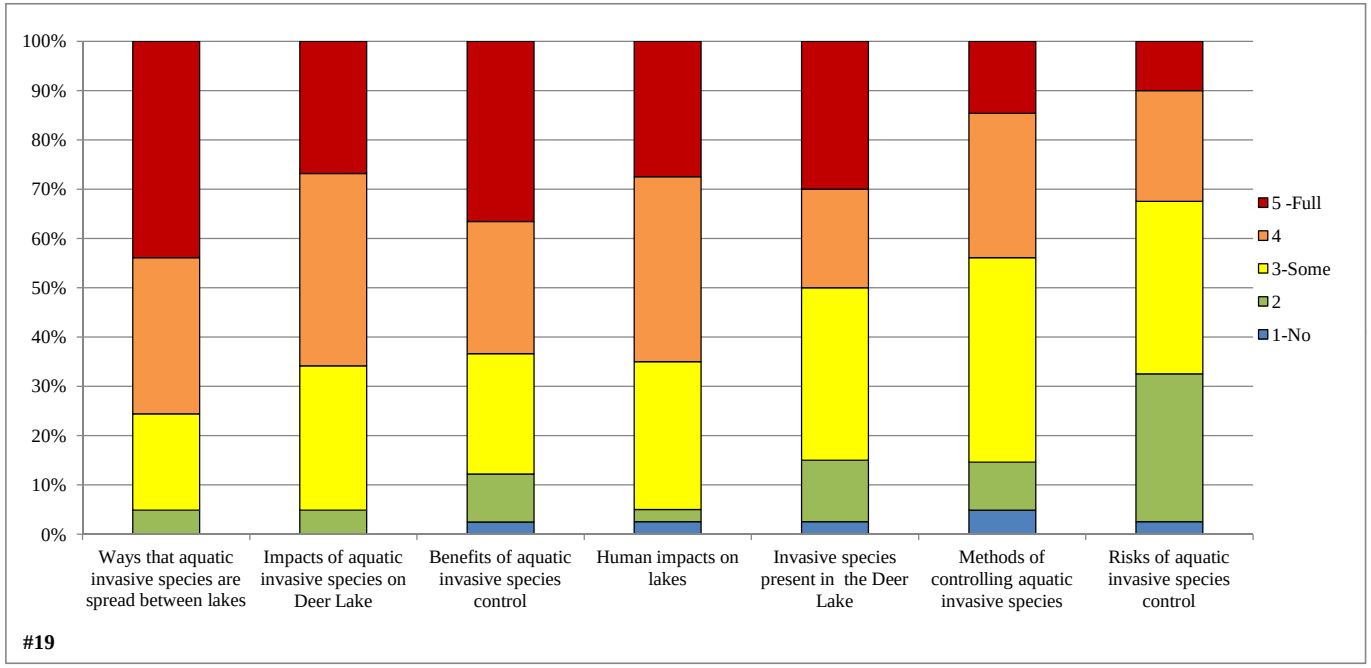
#18 What is your level of support for the responsible use of the following techniques on Deer Lake?

	1-Not	2	3-Moderate	4	5 -High	Unsure	*Total*	*Average*
Hand-removal by divers	2	2	7	7	21	2	*39*	*4.1*
Integrated control using many methods	3	2	8	7	16	4	*36*	*3.9*
Manual removal by property owners	4	2	7	10	15	1	*38*	*3.8*
Biological control	4	2	13	4	8	8	*31*	*3.3*
Herbicide (chemical) control	10	4	3	7	14	3	*38*	*3.3*
Mechanical harvesting	12	3	14	3	2	5	*34*	*2.4*
Dredging	13	7	5	2	5	6	*32*	*2.3*
Do nothing (do not manage plants)	23	2	5	1	2	5	*33*	*1.7*
Water level drawdown	29	3	5	0	1	2	*38*	*1.4*



#19 **Please describe your level of understanding of each of the following lake management issues.**

	1-No	2	3-Some	4	5 -Full	*Total*	*Average*
Ways that aquatic invasive species are spread between lakes	0	2	8	13	18	*41*	*4.1*
Impacts of aquatic invasive species on Deer Lake	0	2	12	16	11	*41*	*3.9*
Benefits of aquatic invasive species control	1	4	10	11	15	*41*	*3.9*
Human impacts on lakes	1	1	12	15	11	*40*	*3.9*
Invasive species present in the Deer Lake	1	5	14	8	12	*40*	*3.6*
Methods of controlling aquatic invasive species	2	4	17	12	6	*41*	*3.4*
Risks of aquatic invasive species control	1	12	14	9	4	*40*	*3.1*

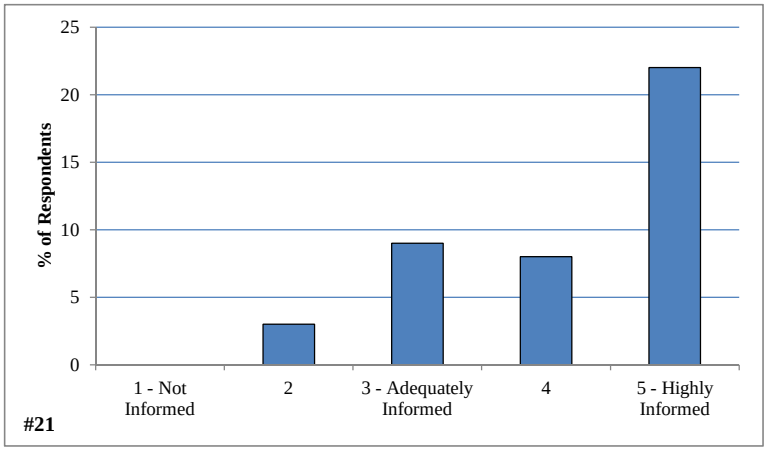


#20 **Before receiving this mailing, have you ever heard of the Deer Lake District?**

	Total	%
Yes	44	*95.7*
No	0	*0.0*
	44	*95.7*

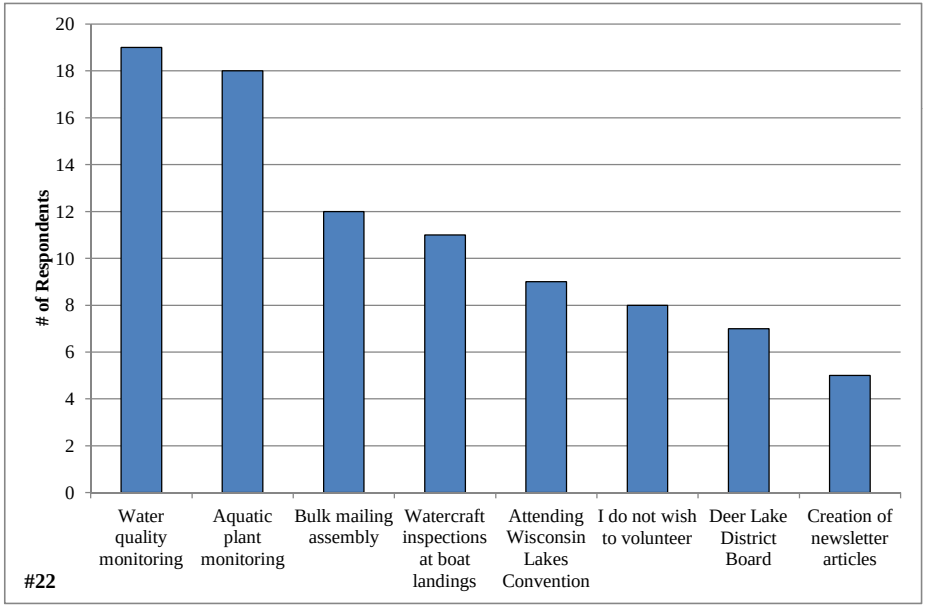
#21 Do you believe the Deer Lake District has kept you adequately informed regarding issues with Deer Lake and its management?

	Total	%
1 - Not Informed	0	*0.0*
2	3	*7.1*
3 - Adequately Informed	9	*21.4*
4	8	*19.0*
5 - Highly Informed	22	*52.4*
	42	*100.0*



#22 Please circle the activities you would be willing to participate in if called upon.

	Total
Water quality monitoring	19
Aquatic plant monitoring	18
Bulk mailing assembly	12
Watercraft inspections at boat landings	11
Attending Wisconsin Lakes Convention	9
I do not wish to volunteer	8
Deer Lake District Board	7
Creation of newsletter articles	5
	89



Survey Number	Question 1g Comment	Question 9m Comment	Question 14q Comment	Question 15r Comment	Question 24 and other comments
1					
2	Full time - April through November				For the first 8 years lived on Deer Lake I could catch walleyes off my dock. The last two years, all I can catch are bullheads, using the same fishing techiques (jig and minnow). I would like to see the water level stabilized to ensure fish reproduction (spawning) areas are stable and productive
3					
4					I believe the DLD could give more advanced publication or notice of board meetings with the agenda. I believe the Lake Management plan is a good program but I also believe per Wis. Stat 33.22(1) that competitive bids should have been gotten before the contract was let since the DLD is responsible for the full cost of the plan until the DNR approves the completed work and reimburses the DLD. I question why the DLD is planning on placing rip-rap along the banks of the channel which is owned by the WVIC and needs WI DNR approval to do so. Also, is the DLD planning to place rip-rap along all Deer Lake property that is subject to natural and high water erosion?
5					Close off channel
6			jet skis		We should construct a loon nest.
7					
8					Question 22 comment: fill in "channel" to natural state. Question 23 comment: In my opinion, I wuld like to treat the mechanical dug channel like most dams in Wisconsin. In the case of dams, remove them and let their natural state come back. In the case of the channel, simply, bring it back to its natural state. This would be a simple solution(s). Too many of the issues in this survey.
9					
10					
11				low water levels	
12					
13					
14			disrupted nesting habitats	disrupted nesting habitat	Comment question 18: Need to know effectiveness to of each approach
15					
16					
17					Question 22 comment: fish habitat development and loon nesting council
18					No water is killing the lake and property value. We need to find out how to keep water in the lake.

Survey Number	Question 1g Comment	Question 9m Comment	Question 14q Comment	Question 15r Comment	Question 24 and other comments
19			No knowledge of Septic discharge, noise pollution some weekends q: jet skis		We are pleased about the formation of the District and supportive of the attention and efforts to protect this wonderful lake in its natural and pristine condition, as much as possible. We have tried to apply those principles to our own property and usage, retaining as much green pace as possible (without nutrients) neither paving nor back topping to decrease runoff, tree planting and maintaining a (tree and vegetation buffer to conceal our buildings and give the shoreline a more natural appearance. When we acquired the property, there was substantial shoreland erosion which has been stopped with the application of natural rip rap rock and encouragement of plant growth on the bank. THe native acquatic plants don't bother us much with swimming so we let them be, in the interest of fish habitat. We regret that we do not feel like we want to spend our already limited time at the Lake volunteering, but are appreciative of the efforts of others. (We are already very active in local politics, church and civic organizations "back home", and regard Deer lake as our recreational getaway!)
20					
21			Lake Level	Lake level	
22			Channel erosion	Channel erosion	The biggest concern is the erosion of the channel between Deer and Bridge. This is unnatural and causes water levels lower than historical. Problems are - loss of wildlife habitat and spawining areas, as well as recreation and property values.
23		Pontoon			We ned to constuct a coffer dam in channel. Loon habitat. Inspectin on septics that could be entering Deer Lake. Not allowing phosphorus fertilizers on lawns that can run off into lake. Set limits on number of ski boats and jet skis on lake at one time.
24					
25		Pontoon	Water level	Water level	During in water the past approximately 50 years the water level has decreased generally and for longer periods of each summer. This can be attributed to erosion of the channel. Many of the other issues are a result of this large drop in water leve! The one positive result is that the channel becomes dry and limits boat traffic and thus limits movement of invasive species into Deer Lake. If Lake Nokomis continues to be drawn down to historic low levels than we need to restore the changes in water levels in Deer Lake.
26					
27					
28			Winter Ice fishing		Fish habitat is most important. In the 60's (1960) there were about 10 cribs in the lake. They have deteriorated. It would be of great benefit to place 20 or more back into Deer Lake

Survey Number	Question 1g Comment	Question 9m Comment	Question 14q Comment	Question 15r Comment	Question 24 and other comments
29			Continued boat traffic thru channel and weekend "part y" activity. Example: Over 75 boats, jet skis on lake at sandbar. Continued water level fluctuation has now increased un-natural weed growth in bays, etc. Also health hazard.	Water level	Over the past 14 years we have seen an incredible increase in boat traffic through the channel. This appears to be partially due to the dramatic increase in popularity of the sandbar, located on the north end of the lake. With this "popularity" has come serious safety hazards (jet ski, ski-boat usage) and negative enviromental issues (invasive species, shoreline erosion, sanitation). These problems, along with disrespectful language, lewd behaviors- urinating on other properties, littering, loud music and alchohol consumption are make the lake difficult to enjoy. As for the continued decrease in water levels, the increase in unnatural weed grown has sky-rocketed. Quite frankly, to the point that certain water fowl-wood ducks- cannot utilize the duck houses. The cattail growth is unbelievable. Natural animal habitat has decreased- loons, frogs, spawning grounds for fish. It is obvious if this continues at this rate, it will only be a matter of time before the lake bays will be overgrown with unnatural weed growth, evasive species will spread and someone will be seriously injured or killed. We need to manage/control the channel to maintain the life of our lake and we need to do it quickly
30			Lawn fertilizers		We have seen the lake develop over the past decades and our parents did before that. We treasure the wildlife and the opportunities for all 3 generations of the family to be together anad enjoy the lake. The biggest threat to the lake is over-development and wrong kind of development. The manicured lawns ging down to the lake ought to be re-thought or at least make sure the lawn care doesn't negatively affect the lake. Not everyone makes the same demands on the lake- let's share the responsibility to keep it as pristine as possible. Thank you for the chance to express this deeply felt concern.
31			Loss of successful nesting sight for the loons; variation of water level	Fluctuation of water level	Re: Weeds. There is definetly increased weed grown as noted while swimming. Crappie and walleye catches are diminished. At times irresponsible jet ski use has been a concern. As stated elsewhere: erosion of the channel is dramatic.
32					We spent no time last summer in Tomahawk only a few weeks a year before due to my husbands illness. My son visits only from time to time. I can't comment on anything at this time. We are concerned about the lake as any home owner would be.
33					
34			Pontoons coming from other lakes and landing on north end sandbar- to much traffic on weekends and disrupts fishing weed beds off shore.		
35			Impact by jet ski and high powered boats and extreme high speeds. Get the channel closed ASAP! Disallow the operation of jet skis and boats with motors over 50HP. We have a small lake.		We must limit the operation of high powered and high speed motor operations and must get control of Deer Lake. It is a natural alke and should be subject rules based on its size not subject to large lake rules - as we have been stuck with Lake Nokomis whis is a manmade lake. We could better control our lake with shoreland frontage owner abiding and agreeing upon rules for speed, type of water craft, etc. This was a beautiful lake prior to the excessive expansion of the channel and the use of jet skis.

Survey Number	Question 1g Comment	Question 9m Comment	Question 14q Comment	Question 15r Comment	Question 24 and other comments
36	Fall and some winters		Jet Ski's		We own- still in the family, the first cottage built on Deer Lake in 1923. We welcome the LNCC input and the Deer Lake District etc. We need all the help we can get- grants, efforts, volunteers, etc to effectively manage our lakes and land.
37					
38					In regard to your letter, I cannot answer all of the questions. ***** owned the property some 40+ years ago. I do not fish or have a boat, since ***** passed away. Sometimes my grandson and great grandson come up to water ski if they can get in. My great grandson has a small canoe and fishes out in front. I do know ***** would talk about how clean and clear it use to be and that it was good fishing
39					
40					While I have only owned property for 7 years, my family has been on this lake for 50 years. The water quality has declined, more weeds, very few crayfish, less fish, etc. Part of the problem is th enumber of boats/people that use the lake via the channel. For the size of the lake becomes of channel access the use is very heavy.
41	second home		grass fertilizer		
42					Don't use the property at the Deer Lake
43				water level due to white water rafting and kayaking races	We wish that more time, energy and money would be spent on working with the LNCC and WVIC on a compromise on the whitewater kayak draw down of water
44			warming temperatures		I think a lot of what is happening on Deer Lake has to do with an increase in water temperatures. As the water levels drop and at the same time the outdoor temp seems to be warmer, it increasees the likelyhood of weeds. I am not sure our lake is any difficult than other lakes in the area, except water level may have more to do with accelerating the weeds. Although the lake is used by a lot of people, really development on the lake has not changed much in thelast ten years. Especially when you compare our lake to other.
45			too many long and large docks.		
46				lake level redirection	Lake levels have dropped dratmatically over the last 30 years.

C

APPENDIX C

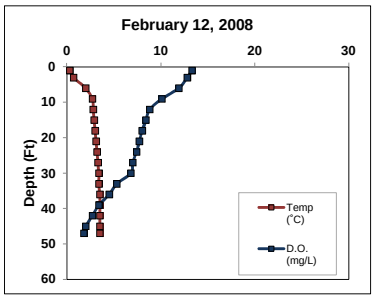
Water Quality Data

Deer Lake

Date: 02-12-08
Time:
Weather: Hazy Sun 5°F
Entry: BTB

Max Depth: 48.0
DLS Depth (ft): 3.0
DLB Depth (ft): 45.0
Secchi Depth (ft): 10.0

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	0.3	13.3	7.6	78
3.0	0.7	12.8	7.6	76
6.0	2.0	11.9	7.4	68
9.0	2.7	10.1	7.3	68
12.0	2.8	8.8	7.1	69
15.0	2.9	8.4	7.0	68
18.0	3.0	8.0	6.9	69
21.0	3.1	7.7	6.8	69
24.0	3.2	7.4	6.7	69
27.0	3.3	7.0	6.6	70
30.0	3.4	6.8	6.4	71
33.0	3.4	5.3	6.2	71
36.0	3.5	4.5	6.1	71
39.0	3.5	3.4	6.0	71
42.0	3.5	2.7	5.9	72
45.0	3.5	2.0	5.8	72
47.0	3.5	1.8	5.7	73



Parameter	DLS	DLB
Total P (µg/L)	11.000	6.000
Dissolved P (µg/L)	4.000	6.000
Chl-*a* (µg/L)	NA	NA
TKN (µg/L)	420.00	590.00
$NO_3 + NO_2$-N (µg/L)	36.000	141.000
NH_3-N (µg/L)	ND	170.000
Total N (µg/L)	456.00	731.00
Lab Cond. (µS/cm)	76	73
Lab pH	7.60	5.80
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	ND	ND
Calcium (mg/L)	NA	NA

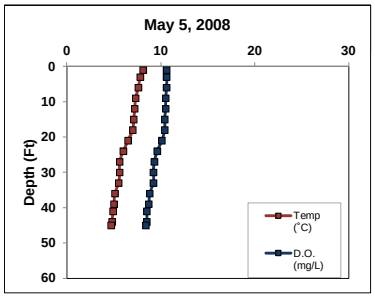
Data collected by TAH and EJH (Onterra)

Deer Lake

Date: 5/5/2008
Time: 10:52
Weather: Sunny, light breeze, 48°F
Entry: BTB

Max Depth: 47.0
DLS Depth (ft): 3.0
DLB Depth (ft): 45.0
Secchi Depth (ft): 7.0

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	8.1	10.6	7.3	63
3.0	7.8	10.6	7.1	63
6.0	7.6	10.6	7.1	62
9.0	7.3	10.5	7	63
12.0	7.2	10.5	7	63
15.0	7.1	10.4	6.9	63
18.0	7.0	10.4	6.8	63
21.0	6.5	10.1	6.8	63
24.0	6.0	9.6	6.6	63
27.0	5.6	9.3	6.6	63
30.0	5.6	9.2	6.5	63
33.0	5.5	9.2	6.5	63
36.0	5.1	8.8	6.4	63
39.0	5.0	8.7	6.4	63
41.0	4.9	8.5	6.4	63
44.0	4.8	8.5	6.4	64
45.0	4.7	8.4	6.4	63



Parameter	DLS	DLB
Total P (µg/L)	21.000	17.000
Dissolved P (µg/L)	4.000	4.000
Chl-*a* (µg/L)	6.43	NA
TKN (µg/L)	500.00	450.00
$NO_3 + NO_2$-N (µg/L)	82.000	98.000
NH_3-N (µg/L)	ND	29.000
Total N (µg/L)	582.00	548.00
Lab Cond. (µS/cm)	68	NA
Lab pH	7.35	NA
Alkalinity (mg/L $CaCO_3$)	23	NA
Total Susp. Solids (mg/L)	3	NA
Calcium (mg/L)	6.3	NA

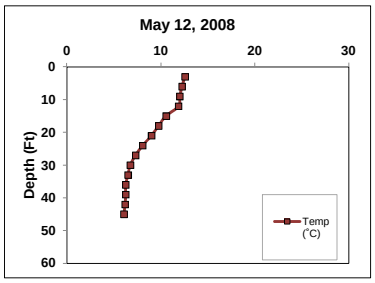
Data collected by BTB and SNK (Onterra)

Deer Lake

Date: 5/12/2008
Time:
Weather:
Entry: BTB

Max Depth: 45.0
DLS Depth (ft): 3.0
DLB Depth (ft): 45.0
Secchi Depth (ft): 6.8

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3.0	12.6			
6.0	12.3			
9.0	12.0			
12.0	11.9			
15.0	10.6			
18.0	9.8			
21.0	9.0			
24.0	8.1			
27.0	7.3			
30.0	6.8			
33.0	6.5			
36.0	6.3			
39.0	6.3			
42.0	6.2			
45.0	6.1			



Parameter	DLS	DLB
Total P (µg/L)	18.000	NA
Dissolved P (µg/L)	NA	NA
Chl-*a* (µg/L)	NA	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA

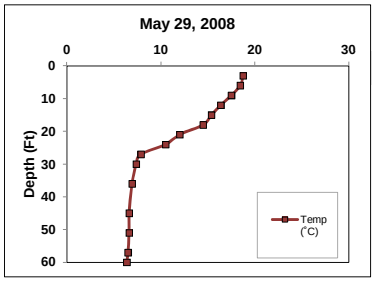
Data collected by Pamela Mack (Deer Lake CLMN)

Deer Lake

Date: 5/29/2008
Time:
Weather:
Entry: BTB

Max Depth: 60.0
DLS Depth (ft): 3.0
DLB Depth (ft): 60.0
Secchi Depth (ft): 8.0

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3.0	18.8			
6.0	18.4			
9.0	17.5			
12.0	16.4			
15.0	15.4			
18.0	14.5			
21.0	12.0			
24.0	10.5			
27.0	7.9			
30.0	7.4			
36.0	6.9			
45.0	6.6			
51.0	6.6			
57.0	6.5			
60.0	6.4			



Parameter	DLS	DLB
Total P (µg/L)		
Dissolved P (µg/L)		
Chl-*a* (µg/L)		
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)		
Calcium (mg/L)		

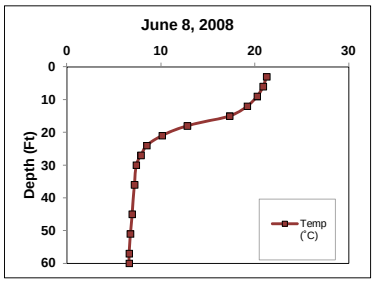
Data collected by Pamela Mack (Deer Lake CLMN)

Deer Lake

Date: 6/8/2008
Time:
Weather:
Entry: BTB

Max Depth: 60.0
DLS Depth (ft): 3.0
DLB Depth (ft): 60.0
Secchi Depth (ft): 8.0

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3.0	21.3			
6.0	20.9			
9.0	20.3			
12.0	19.2			
15.0	17.3			
18.0	12.8			
21.0	10.1			
24.0	8.5			
27.0	7.9			
30.0	7.4			
36.0	7.2			
45.0	6.9			
51.0	6.8			
57.0	6.6			
60.0	6.6			



Parameter	DLS	DLB
Total P (µg/L)		
Dissolved P (µg/L)		
Chl-*a* (µg/L)		
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)		
Calcium (mg/L)		

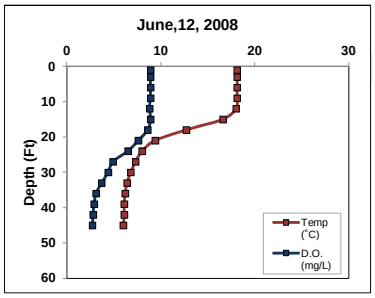
Data collected by Pamela Mack (Deer Lake CLMN)

Deer Lake

Date: 6/12/2008
Time: 9:25
Weather: 100% Clouds, Rain in Vicinity, 62˚F
Entry: BTB

Max Depth: 46.6
DLS Depth (ft): 3.0
DLB Depth (ft): 45.0
Secchi Depth (ft): 9.2

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	18.1	8.9	7.8	65
3.0	18.1	8.9	7.8	65
6.0	18.1	8.9	7.8	65
9.0	18.1	8.9	7.8	65
12.0	18.0	8.8	7.8	65
15.0	16.6	8.9	7.5	65
18.0	12.7	8.6	7.2	63
21.0	9.4	7.6	6.9	63
24.0	8.0	6.5	6.7	64
27.0	7.3	4.9	6.5	64
30.0	6.8	4.4	6.5	64
33.0	6.4	3.7	6.5	64
36.0	6.2	3.1	6.4	64
39.0	6.1	2.9	6.4	64
42.0	6.1	2.8	6.4	64
45.0	6.0	2.7	6.4	64



Parameter	DLS	DLB
Total P (µg/L)	19.000	23.000
Dissolved P (µg/L)	NA	NA
Chl-*a* (µg/L)	1.42	NA
TKN (µg/L)	420.00	NA
$NO_3 + NO_2$-N (µg/L)	ND	NA
NH_3-N (µg/L)	19.000	NA
Total N (µg/L)	420.00	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	7.80	6.40
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	4	NA
Calcium (mg/L)	NA	NA

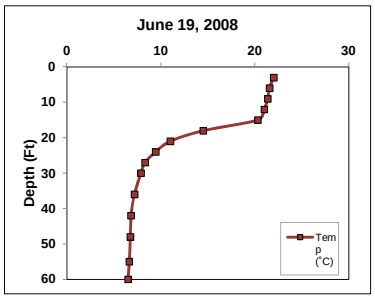
Data collected by BTB and SNK (Onterra)

Deer Lake

Date: 6/19/2008
Time:
Weather:
Entry: BTB

Max Depth: 60.0
DLS Depth (ft): 3.0
DLB Depth (ft): 60.0
Secchi Depth (ft): 9.8

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3.0	22.0			
6.0	21.6			
9.0	21.4			
12.0	21.0			
15.0	20.3			
18.0	14.5			
21.0	11.0			
24.0	9.4			
27.0	8.3			
30.0	7.9			
36.0	7.2			
42.0	6.8			
48.0	6.8			
55.0	6.6			
60.0	6.5			



Parameter	DLS	DLB
Total P (µg/L)	16.000	NA
Dissolved P (µg/L)	NA	NA
Chl-*a* (µg/L)	NA	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA

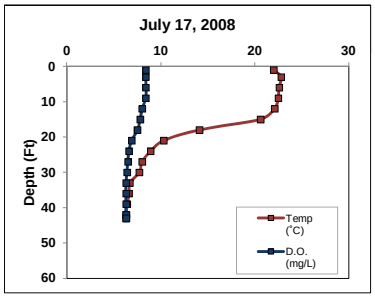
Data collected by Pamela Mack (Deer Lake CLMN)

Deer Lake

Date: 7/17/2008
Time: 9:50
Weather: Sunny, 80 F
Entry: BTB

Max Depth: 45.0
DLS Depth (ft): 3.0
DLB Depth (ft): 43.0
Secchi Depth (ft): 11.4

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	22.0	8.4	8.0	69.0
3.0	22.8	8.4	8.0	69.0
6.0	22.6	8.4	8.0	69.0
9.0	22.5	8.4	8.0	69.0
12.0	22.1	8.0	7.9	69.0
15.0	20.6	7.8	7.7	69.0
18.0	14.1	7.5	7.4	65.0
21.0	10.3	6.9	6.7	65.0
24.0	8.9	6.6	6.2	65.0
27.0	8.0	6.5	6.0	67.0
30.0	7.7	6.4	6.0	75.0
33.0	6.7	6.3	6.1	78.0
36.0	6.6	6.3	6.2	78.0
39.0	6.4	6.3	6.2	80.0
42.0	6.3	6.3	6.3	81.0
43.0	6.3	6.3		



Parameter	DLS	DLB
Total P (µg/L)	14.00	39.00
Dissolved P (µg/L)	2.000	14.000
Chl-*a* (µg/L)	1.04	NA
TKN (µg/L)	580.00	840.00
$NO_3 + NO_2$-N (µg/L)	ND	ND
NH_3-N (µg/L)	ND	304.000
Total N (µg/L)	580.00	840.00
Lab Cond. (µS/cm)	70	71
Lab pH	7.77	6.99
Alkalinity (mg/L $CaCO_3$)	25	26
Total Susp. Solids (mg/L)	ND	3
Calcium (mg/L)	NA	NA

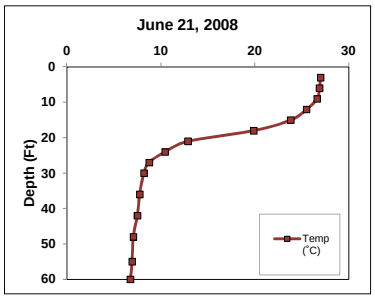
Data collected by BTB and SNK (Onterra)

Deer Lake

Date: 7/21/2008
Time:
Weather:
Entry: BTB

Max Depth: 60.0
DLS Depth (ft): 3.0
DLB Depth (ft): 60.0
Secchi Depth (ft): 11.6

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3.0	27.0			
6.0	26.9			
9.0	26.6			
12.0	25.5			
15.0	23.8			
18.0	19.9			
21.0	12.9			
24.0	10.4			
27.0	8.8			
30.0	8.2			
36.0	7.8			
42.0	7.5			
48.0	7.1			
55.0	6.9			
60.0	6.8			



Parameter	DLS	DLB
Total P (µg/L)	11.000	NA
Dissolved P (µg/L)	NA	NA
Chl-*a* (µg/L)	NA	NA
TKN (µg/L)	NA	NA
NO_3 + NO_2-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA

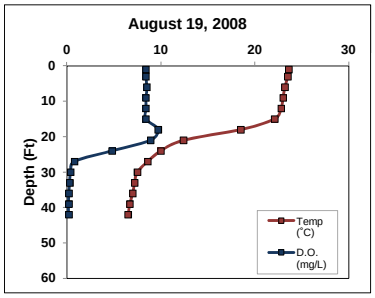
Data collected by Pamela Mack (Deer Lake CLMN)

Deer Lake

Date: 8/19/2008
Time: 12:00
Weather: full sun, windy, 70F
Entry: BTB

Max Depth: 43.5
DLS Depth (ft): 3.0
DLB Depth (ft): 42.0
Secchi Depth (ft): 9.8

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	23.6	8.4	8.0	69.0
3.0	23.5	8.4	8.0	69.0
6.0	23.2	8.5	8.0	69.0
9.0	23.0	8.4	8.0	69.0
12.0	22.8	8.4	7.9	69.0
15.0	22.1	8.4	7.7	69.0
18.0	18.5	9.7	7.4	65.0
21.0	12.4	8.9	6.7	65.0
24.0	10.0	4.8	6.2	65.0
27.0	8.6	0.8	6.0	67.0
30.0	7.5	0.4	6.0	75.0
33.0	7.2	0.3	6.1	78.0
36.0	7.0	0.2	6.2	78.0
39.0	6.7	0.2	6.2	80.0
42.0	6.5	0.2	6.3	81.0



Parameter	DLS	DLB
Total P (µg/L)	14.00	36.00
Dissolved P (µg/L)	NA	NA
Chl-*a* (µg/L)	3.12	NA
TKN (µg/L)	410.00	NA
NO_3 + NO_2-N (µg/L)	ND	NA
NH_3-N (µg/L)	ND	NA
Total N (µg/L)	410.00	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	8.00	6.30
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	ND	NA
Calcium (mg/L)	NA	NA

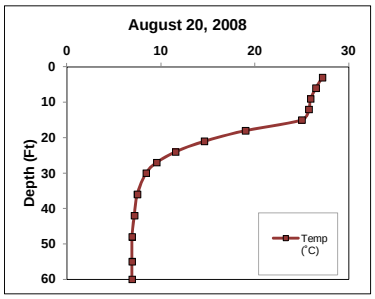
Data collected by BTB (Onterra)

Deer Lake

Date: 8/20/2008
Time:
Weather:
Entry: BTB

Max Depth: 60.0
DLS Depth (ft): 3.0
DLB Depth (ft): 60.0
Secchi Depth (ft): 9.6

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3.0	27.2			
6.0	26.5			
9.0	25.9			
12.0	25.8			
15.0	25.0			
18.0	19.0			
21.0	14.6			
24.0	11.6			
27.0	9.6			
30.0	8.4			
36.0	7.5			
42.0	7.2			
48.0	6.9			
55.0	6.9			
60.0	6.9			



Parameter	DLS	DLB
Total P (µg/L)	11.000	NA
Dissolved P (µg/L)	NA	NA
Chl-*a* (µg/L)	NA	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA

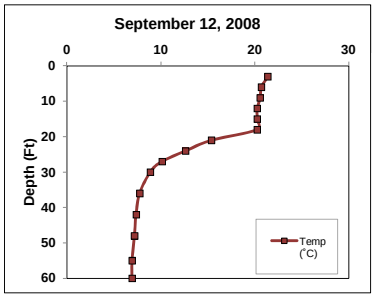
Data collected by Pamela Mack (Deer Lake CLMN)

Deer Lake

Date: 9/12/2008
Time:
Weather:
Entry:

Max Depth: 60.0
DLS Depth (ft): 3.0
DLB Depth (ft): 60.0
Secchi Depth (ft): 11.5

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3.0	21.4			
6.0	20.7			
9.0	20.6			
12.0	20.3			
15.0	20.3			
18.0	20.3			
21.0	15.4			
24.0	12.6			
27.0	10.1			
30.0	8.9			
36.0	7.8			
42.0	7.4			
48.0	7.2			
55.0	6.9			
60.0	6.9			



Parameter	DLS	DLB
Total P (µg/L)		
Dissolved P (µg/L)		
Chl-*a* (µg/L)		
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)		
Calcium (mg/L)		

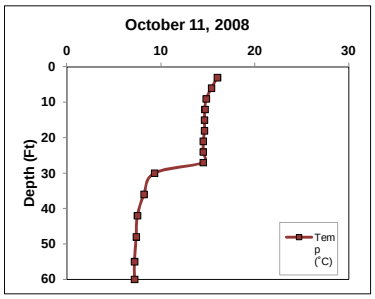
Data collected by Pamela Mack (Deer Lake CLMN)

Deer Lake

Date: 10/11/2008
Time:
Weather:
Entry:

Max Depth: 60.0
DLS Depth (ft): 3.0
DLB Depth (ft): 60.0
Secchi Depth (ft): 11.0

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
3.0	16.0			
6.0	15.4			
9.0	14.8			
12.0	14.7			
15.0	14.6			
18.0	14.6			
21.0	14.5			
24.0	14.5			
27.0	14.5			
30.0	9.3			
36.0	8.2			
42.0	7.5			
48.0	7.4			
55.0	7.2			
60.0	7.2			



Parameter	DLS	DLB
Total P (µg/L)		
Dissolved P (µg/L)		
Chl-*a* (µg/L)		
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)		
Calcium (mg/L)		

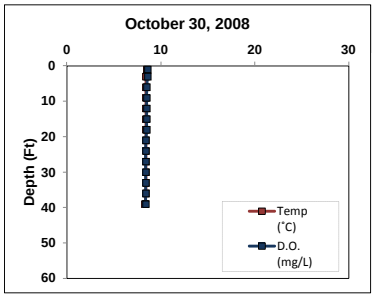
Data collected by Pamela Mack (Deer Lake CLMN)

Deer Lake

Date: 10/30/2008
Time: 11:30
Weather: 50 F, breezy, full sun
Entry: BTB

Max Depth: 44.1
DLS Depth (ft): 3.0
DLB Depth (ft): 41.0
Secchi Depth (ft): 7.9

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	8.5	8.6	7.5	66.0
3.0	8.4	8.6	7.2	66.0
6.0	8.4	8.5	7.0	66.0
9.0	8.4	8.5	6.9	67.0
12.0	8.4	8.5	6.8	67.0
15.0	8.4	8.5	6.7	67.0
18.0	8.4	8.5	6.6	66.0
21.0	8.4	8.4	6.6	67.0
24.0	8.4	8.4	6.6	67.0
27.0	8.4	8.4	6.6	67.0
30.0	8.4	8.4	6.6	66.0
33.0	8.4	8.4	6.6	67.0
36.0	8.4	8.4	6.6	67.0
39.0	8.3	8.4	6.6	67.0



Parameter	DLS	DLB
Total P (µg/L)	16.000	16.000
Dissolved P (µg/L)	NA	NA
Chl-*a* (µg/L)	6.62	NA
TKN (µg/L)	430.00	NA
$NO_3 + NO_2$-N (µg/L)	ND	NA
NH_3-N (µg/L)	44.000	NA
Total N (µg/L)	430.00	NA
Lab Cond. (µS/cm)	66	67
Lab pH	7.20	6.60
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	4	4
Calcium (mg/L)	NA	NA

Data collected by TAH (Onterra)

Water Quality Data

2008	Surface		Bottom	
Parameter	Count	Mean	Count	Mean
Secchi Depth (feet)	15	8.8	NA	NA
Total P (µg/L)	10	15.0	6	22.8
Dissolved P (µg/L)	3	3.3	3	8.0
Chl a (µg/L)	5	3.7	0	NA
TKN (µg/L	6	460.0	3	626.7
NO3+NO2-N (µg/L)	2	59.0	2	119.5
NH3-N (µg/L)	2	31.5	3	167.7
Total N (µg/L)	6	479.7	3	706.3
Lab Cond. (µS/cm)	4	70.0	3	70.3
Lab pH	6	7.6	5	6.4
Alkal (mg/l CaCO3)	2	23.7	1	25.6
Total Susp Sol (mg/l)	3	3.5	2	3.3
Calcium (µg/L)	1	6.3	0	NA

Year	TP	Chl-a	Secchi
1979			37.6
1999			39.8
2000	41.9	35.2	41.5
2001	48.1	46.4	
2002	35.8	41.7	
2003			43.4
2004			43.2
2007	35.8	45.2	41.1
2008	42.4	38.7	44.1
2009	39.2	41.9	42.4
2010	38.5	43.6	39.8
2011	40.6	41.8	40.1
All Years (Weighted)	40.7	41.6	41.7
ep, Headwater Drainage L	45.0	46.4	42.8
NLF Ecoregion	48.1	47.5	45.7

	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	1	15.5	1	15.5								
1999	1	13.3	1	13.3								
2000	4	11.8	4	11.8	3	1.6	3	1.6	3	13.7	3.0	13.7
2001					2	9.0	1	5.0	3	30.0	2.0	21.0
2002					4	3.8	3	3.1	4	13.8	3.0	9.0
2003	6	10.4	6	10.4								
2004	4	9.3	2	10.5								
2007	6	11.3	3	12.2	1	4.4	1	4.4	1	9.0	1.0	9.0
2008	13	9.3	7	9.9	8	3.4	6	2.3	10	15.6	6.0	14.2
2009	3	11.2	3	11.2	3	3.2	3	3.2	3	11.3	3.0	11.3
2010	9	12.6	7	13.3	7	3.8	7	3.8	7	11.1	6.0	10.8
2011	3	13.1	3	13.1	4	3.1	4	3.1	4	12.5	4.0	12.5
All Years (Weighted)		11.0		11.6		3.7		3.1		14.7		12.6
Deep, Headwater Drainage Lake				10.8				5.0				17.0
NLF Ecoregion				8.9				5.6				21.0

Summer 2008 N: 479.7
Summer 2008 P: 15.0

Summer 2008 N:P 32 :1

D

APPENDIX D

Watershed Analysis WiLMS Results

Date: 3/29/2010 Scenario: Deer Current

Lake Id: Deer Lake
Watershed Id: 0

Hydrologic and Morphometric Data

Tributary Drainage Area: 170.9 acre
Total Unit Runoff: 11.7 in.
Annual Runoff Volume: 166.6 acre-ft
Lake Surface Area <As>: 152 acre
Lake Volume <V>: 3593 acre-ft
Lake Mean Depth <z>: 23.6 ft
Precipitation - Evaporation: 5.2 in.
Hydraulic Loading: 232.5 acre-ft/year
Areal Water Load <qs>: 1.5 ft/year
Lake Flushing Rate <p>: 0.06 1/year
Water Residence Time: 15.45 year
Observed spring overturn total phosphorus (SPO): 21.0 mg/m^3
Observed growing season mean phosphorus (GSM): 15.6 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	0.0	0.50	1.00	3.00	0.0	0	0	0
Mixed AG	0.0	0.30	0.80	1.40	0.0	0	0	0
Pasture/Grass	9.2	0.10	0.30	0.50	4.4	0	1	2
HD Urban (1/8 Ac)	0.0	1.00	1.50	2.00	0.0	0	0	0
MD Urban (1/4 Ac)	0.0	0.30	0.50	0.80	0.0	0	0	0
Rural Res (>1 Ac)	0.0	0.05	0.10	0.25	0.0	0	0	0
Wetlands	2.4	0.10	0.10	0.10	0.4	0	0	0
Forest	159.3	0.05	0.09	0.18	22.8	3	6	12
Lake Surface	152.0	0.10	0.30	1.00	72.5	6	18	62

POINT SOURCE DATA

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

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)	21.7	56.2	165.5	100.0
Total Loading (kg)	9.8	25.5	75.1	100.0
Areal Loading (lb/ac-year)	0.14	0.37	1.09	0.0
Areal Loading (mg/m^2-year)	16.00	41.41	122.05	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)	8.1	15.5	29.9	100.0
Total NPS Loading (kg)	3.7	7.0	13.6	100.0

Phosphorus Prediction and Uncertainty Analysis Module

Date: 3/29/2010 Scenario: Deer Current
Observed spring overturn total phosphorus (SPO): 21.0 mg/m^3
Observed growing season mean phosphorus (GSM): 15.6 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	10	26	78	10	64
Canfield-Bachmann, 1981 Natural Lake	7	14	26	-2	-13
Canfield-Bachmann, 1981 Artificial Lake	9	15	25	-1	-6
Rechow, 1979 General	1	3	10	-13	-83
Rechow, 1977 Anoxic	9	24	70	8	51
Rechow, 1977 water load<50m/year	2	5	15	-11	-71
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	9	23	68	2	10
Vollenweider, 1982 Combined OECD	8	17	40	-1	-5
Dillon-Rigler-Kirchner	8	21	61	0	0
Vollenweider, 1982 Shallow Lake/Res.	6	13	34	-5	-27
Larsen-Mercier, 1976	7	18	53	-3	-14
Nurnberg, 1984 Oxic	6	17	49	1	6

Lake Phosphorus Model	Confidence Lower Bound	Confidence Upper Bound	Parameter Fit?	Back Calculation (kg/year)	Model Type
Walker, 1987 Reservoir	14	59	Tw	0	GSM
Canfield-Bachmann, 1981 Natural Lake	4	40	FIT	1	GSM
Canfield-Bachmann, 1981 Artificial Lake	5	43	FIT	1	GSM
Rechow, 1979 General	1	7	P L qs	0	GSM
Rechow, 1977 Anoxic	13	53	FIT	0	GSM
Rechow, 1977 water load<50m/year	3	11	FIT	0	GSM
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	11	54	FIT	0	SPO
Vollenweider, 1982 Combined OECD	8	35	FIT	0	ANN
Dillon-Rigler-Kirchner	11	46	P L qs p	0	SPO
Vollenweider, 1982 Shallow Lake/Res.	6	28	FIT	0	ANN
Larsen-Mercier, 1976	10	40	P Pin	0	SPO
Nurnberg, 1984 Oxic	8	38	FIT	0	ANN

Water and Nutrient Outflow Module

Date: 3/29/2010 Scenario: Deer Current
Average Annual Surface Total Phosphorus: 15.6mg/m^3
Annual Discharge: 2.32E+002 AF => 2.87E+005 m^3
Annual Outflow Loading: 9.5 LB => 4.3 kg

Date: 4/5/2010 Scenario: Deer Lake, with 50% shoreline in Medium Density Urban land

Lake Id: Deer Lake
Watershed Id: 0

Hydrologic and Morphometric Data

Tributary Drainage Area: 170.9 acre
Total Unit Runoff: 11.70 in.
Annual Runoff Volume: 166.6 acre-ft
Lake Surface Area <As>: 152.0 acre
Lake Volume <V>: 3593.0 acre-ft
Lake Mean Depth <z>: 23.6 ft
Precipitation - Evaporation: 5.2 in.
Hydraulic Loading: 232.5 acre-ft/year
Areal Water Load <qs>: 1.5 ft/year
Lake Flushing Rate <p>: 0.06 1/year
Water Residence Time: 15.45 year
Observed spring overturn total phosphorus (SPO): 21.0 mg/m^3
Observed growing season mean phosphorus (GSM): 15.6 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	0.0	0.50	1.00	3.00	0.0	0	0	0
Mixed AG	0.0	0.30	0.80	1.40	0.0	0	0	0
Pasture/Grass	8.8	0.10	0.30	0.50	3.4	0	1	2
HD Urban (1/8 Ac)	0.0	1.00	1.50	2.00	0.0	0	0	0
MD Urban (1/4 Ac)	34.9	0.30	0.50	0.80	22.6	4	7	11
Rural Res (>1 Ac)	0.0	0.05	0.10	0.25	0.0	0	0	0
Wetlands	0.0	0.10	0.10	0.10	0.0	0	0	0
Forest	127.2	0.05	0.09	0.18	14.8	3	5	9
Lake Surface	152.0	0.10	0.30	1.00	59.1	6	18	62

POINT SOURCE DATA

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

SEPTIC TANK DATA

Description		Low	Most Likely	High	Loading %
Septic Tank Output (kg/capita-year)		0.30	0.50	0.80	
# capita-years	0.0				
% Phosphorus Retained by Soil		98.0	90.0	80.0	
Septic Tank Loading (kg/year)		0.00	0.00	0.00	0.0

TOTALS DATA

Description	Low	Most Likely	High	Loading %
Total Loading (lb)	29.4	68.8	184.9	100.0
Total Loading (kg)	13.3	31.2	83.9	100.0
Areal Loading (lb/ac-year)	0.19	0.45	1.22	
Areal Loading (mg/m^2-year)	21.65	50.75	136.33	
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)	15.8	28.1	49.3	100.0
Total NPS Loading (kg)	7.2	12.8	22.3	100.0

Phosphorus Prediction and Uncertainty Analysis Module

Date: 4/6/2010 Scenario: 12
Observed spring overturn total phosphorus (SPO): 21.0 mg/m^3
Observed growing season mean phosphorus (GSM): 15.6 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	13	30	80	14	90
Canfield-Bachmann, 1981 Natural Lake	9	15	28	-1	-6
Canfield-Bachmann, 1981 Artificial Lake	11	17	27	1	6
Rechow, 1979 General	2	4	11	-12	-77
Rechow, 1977 Anoxic	12	29	78	13	83
Rechow, 1977 water load<50m/year	3	6	17	-10	-64
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	12	28	76	7	33
Vollenweider, 1982 Combined OECD	10	20	44	2	11
Dillon-Rigler-Kirchner	11	25	68	4	19
Vollenweider, 1982 Shallow Lake/Res.	7	16	37	-2	-11
Larsen-Mercier, 1976	9	22	59	1	5
Nurnberg, 1984 Oxic	9	20	55	4	26

Lake Phosphorus Model	Confidence Lower Bound	Confidence Upper Bound	Parameter Fit?	Back Calculation (kg/year)	Model Type
Walker, 1987 Reservoir	17	62	Tw	0	GSM
Canfield-Bachmann, 1981 Natural Lake	5	43	FIT	1	GSM
Canfield-Bachmann, 1981 Artificial Lake	5	49	FIT	1	GSM
Rechow, 1979 General	2	9	L qs	0	GSM
Rechow, 1977 Anoxic	16	60	FIT	0	GSM
Rechow, 1977 water load<50m/year	3	13	FIT	0	GSM
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	13	62	FIT	0	SPO
Vollenweider, 1982 Combined OECD	9	40	FIT	0	ANN
Dillon-Rigler-Kirchner	14	53	P L qs p	0	SPO
Vollenweider, 1982 Shallow Lake/Res.	7	32	FIT	0	ANN
Larsen-Mercier, 1976	13	45	P Pin	0	SPO
Nurnberg, 1984 Oxic	10	44	FIT	0	ANN

Water and Nutrient Outflow Module

Date: 4/6/2010 Scenario: 14
Average Annual Surface Total Phosphorus: 15.6mg/m^3
Annual Discharge: 2.32E+002 AF => 2.87E+005 m^3
Annual Outflow Loading: 9.5 LB => 4.3 kg

E

APPENDIX E

Aquatic Plant Survey Data

Point Number	Latitude (Degrees)	Longitude (Degrees)	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Notes	Myriophyllum spicatum	Potamogeton crispus	Potamogeton gramineus	Chara sp.	Eleocharis acicularis	Myriophyllum tenellum	Ceratophyllum demersum	Najas flexilis	Elodea canadensis	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton amplifolius	Potamogeton richardsonii	Potamogeton robbinsii	Lobelia dortmanna	Nitella sp.	Megalodonta beckii	Juncus pelocarpus	Potamogeton vaseyi	Potamogeton sp.	Potamogeton foliosus	Potamogeton epihydrus	Isoetes lacustris
0	45.546516	-89.700125				Wetland																							
1	45.546037	-89.699448				Wetland																							
2	45.546514	-89.699446	4	S	P																								
3	45.546991	-89.699443	7	S	P								1		1														
4	45.547945	-89.699438				Wetland																							
5	45.546035	-89.698769	5	S	P						2				1									1					
6	45.546512	-89.698767	7	R	P																								
7	45.546989	-89.698764	9	S	P								1																
8	45.547466	-89.698762	7	S	P					2																			
9	45.547943	-89.698759	6	S	P						1	2																	
10	45.544125	-89.698101				Wetland																							
11	45.544602	-89.698098				Wetland																							
12	45.545079	-89.698096	2	S	P						1								1										
13	45.545556	-89.698093	6	S	P				2			1									1						1		
14	45.546033	-89.698090	10	S	P				2																				
15	45.546510	-89.698088	20	-	R																								
16	45.546987	-89.698085	19	-	R																								
17	45.547464	-89.698083	9	S	P																						1		
18	45.547941	-89.698080	6	S	P					1			1		1			1											
19	45.548418	-89.698078	6	S	P																								
20	45.548895	-89.698075	5	S	P						1										1								
21	45.549850	-89.698070				Terrestrial																							
22	45.541738	-89.697435	11	S	P	No vegetation																							
23	45.542215	-89.697432	4	M	P											1													
24	45.543646	-89.697424				Wetland																							
25	45.544123	-89.697422				Wetland																							
26	45.544600	-89.697419	4	S	P							1									1								
27	45.545077	-89.697417	7	S	P									1															
28	45.545554	-89.697414	19	-	R	No vegetation																							
29	45.546031	-89.697411				Too deep																							
30	45.546508	-89.697409				Too deep																							
31	45.546985	-89.697406				Too deep																							
32	45.547463	-89.697404				Too deep																							
33	45.547940	-89.697401				Too deep																							
34	45.548417	-89.697399	11	S	P	No vegetation																							
35	45.548894	-89.697396	14	-	R	No vegetation																							
36	45.549371	-89.697394	17	-	R					1																			
37	45.549848	-89.697391	8	S	P				1	1			1										1						

Point Number	Latitude (Degrees)	Longitude (Degrees)	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Notes	Myriophyllum spicatum	Potamogeton crispus	Potamogeton gramineus	Chara sp.	Eleocharis acicularis	Myriophyllum tenellum	Ceratophyllum demersum	Najas flexilis	Elodea canadensis	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton amplifolius	Potamogeton richardsonii	Potamogeton robbinsii	Lobelia dortmanna	Nitella sp.	Megalodonta beckii	Juncus pelocarpus	Potamogeton vaseyi	Potamogeton sp.	Potamogeton foliosus	Potamogeton epihydrus	Isoetes lacustris
38	45.550325	-89.697388	6	S	P					1	1																		
39	45.550802	-89.697386	5	S	P						1										1			1					
40	45.540782	-89.696761	4	M	P	No vegetation								1		1													
41	45.541259	-89.696758	18	-	R	No vegetation																							
42	45.541736	-89.696756	28	-	R	Too deep																							
43	45.542213	-89.696753	16	-	R	No vegetation																							
44	45.542690	-89.696751	3	S	P															2									
45	45.543644	-89.696745	3	S	P				1		1																		
46	45.544121	-89.696743	7	S	P						1																		
47	45.544598	-89.696740	11	S	P	No vegetation																							
48	45.545075	-89.696738	20	-	R	No vegetation																							
49	45.545553	-89.696735				Too deep																							
50	45.546030	-89.696733				Too deep																							
51	45.546507	-89.696730				Too deep																							
52	45.546984	-89.696727				Too deep																							
53	45.547461	-89.696725				Too deep																							
54	45.547938	-89.696722				Too deep																							
55	45.548415	-89.696720				Too deep																							
56	45.548892	-89.696717				Too deep																							
57	45.549369	-89.696715				Too deep																							
58	45.549846	-89.696712	17	-	R	No vegetation																							
59	45.550323	-89.696709	17	-	R																					1			
60	45.550800	-89.696707	7	S	P				2																				
61	45.551277	-89.696704	5	S	P						2							2											
62	45.551754	-89.696702				Non navigable																							
63	45.540303	-89.696084	5	S	P																								
64	45.540780	-89.696082	15	-	R									1		1													
65	45.541257	-89.696079	5	S	P																								
66	45.541734	-89.696077	20	-	R	No vegetation																							
67	45.542211	-89.696074				Too deep																							
68	45.542688	-89.696072				Too deep																							
69	45.543165	-89.696069	19	-	R	No vegetation																							
70	45.543643	-89.696066	15	-	R	No vegetation																							
71	45.544120	-89.696064	19	-	R	No vegetation																							
72	45.544597	-89.696061				Too deep																							
73	45.545074	-89.696059				Too deep																							
74	45.545551	-89.696056				Too deep																							
75	45.546028	-89.696054				Too deep																							

Point Number	Latitude (Degrees)	Longitude (Degrees)	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Notes	Myriophyllum spicatum	Potamogeton crispus	Potamogeton gramineus	Chara sp.	Eleocharis acicularis	Myriophyllum tenellum	Ceratophyllum demersum	Najas flexilis	Elodea canadensis	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton amplifolius	Potamogeton richardsonii	Potamogeton robbinsii	Lobelia dortmanna	Nitella sp.	Megalodonta beckii	Juncus pelocarpus	Potamogeton vaseyi	Potamogeton sp.	Potamogeton foliosus	Potamogeton epihydrus	Isoetes lacustris
76	45.546505	-89.696051				Too deep																							
77	45.546982	-89.696048				Too deep																							
78	45.547459	-89.696046				Too deep																							
79	45.547936	-89.696043				Too deep																							
80	45.548413	-89.696041				Too deep																							
81	45.548890	-89.696038				Too deep																							
82	45.549367	-89.696036				Too deep																							
83	45.549844	-89.696033				Too deep																							
84	45.550321	-89.696030	20	-	R	No vegetation																							
85	45.550798	-89.696028	12	S	P								2																
86	45.551275	-89.696025	6	S	P				1							1		1		1									
87	45.551752	-89.696023				Non navigable																							
88	45.540301	-89.695406	3	S	P									1		1													
89	45.540778	-89.695403	5	M	P					1																			
90	45.541255	-89.695400	3	M	P									1															
91	45.541733	-89.695398	4	S	P					1	1	1																	
92	45.542210	-89.695395	20	-	R	No vegetation																							
93	45.542687	-89.695393				Too deep																							
94	45.543164	-89.695390				Too deep																							
95	45.543641	-89.695388				Too deep																							
96	45.544118	-89.695385				Too deep																							
97	45.544595	-89.695382				Too deep																							
98	45.545072	-89.695380				Too deep																							
99	45.545549	-89.695377				Too deep																							
100	45.546026	-89.695375				Too deep																							
101	45.546503	-89.695372				Too deep																							
102	45.546980	-89.695370				Too deep																							
103	45.547457	-89.695367				Too deep																							
104	45.547934	-89.695364				Too deep																							
105	45.548411	-89.695362				Too deep																							
106	45.548888	-89.695359				Too deep																							
107	45.549365	-89.695357				Too deep																							
108	45.549842	-89.695354				Too deep																							
109	45.550319	-89.695352	19	-	R	No vegetation																							
110	45.550796	-89.695349	14	-	R					2					1														
111	45.551274	-89.695346	8	S	P				2				1			1							1						
112	45.551751	-89.695344				Non navigable																							
113	45.541731	-89.694719	5	S	P				2	1																			

Point Number	Latitude (Degrees)	Longitude (Degrees)	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Notes	Myriophyllum spicatum	Potamogeton crispus	Potamogeton gramineus	Chara sp.	Eleocharis acicularis	Myriophyllum tenellum	Ceratophyllum demersum	Najas flexilis	Elodea canadensis	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton amplifolius	Potamogeton richardsonii	Potamogeton robbinsii	Lobelia dortmanna	Nitella sp.	Megalodonta beckii	Juncus pelocarpus	Potamogeton vaseyi	Potamogeton sp.	Potamogeton foliosus	Potamogeton epihydrus	Isoetes lacustris
114	45.542208	-89.694716	15	-	R																	2							
115	45.542685	-89.694714				Too deep																							
116	45.543162	-89.694711				Too deep																							
117	45.543639	-89.694709				Too deep																							
118	45.544116	-89.694706				Too deep																							
119	45.544593	-89.694704				Too deep																							
120	45.545070	-89.694701				Too deep																							
121	45.545547	-89.694698				Too deep																							
122	45.546024	-89.694696				Too deep																							
123	45.546501	-89.694693				Too deep																							
124	45.546978	-89.694691				Too deep																							
125	45.547455	-89.694688				Too deep																							
126	45.547932	-89.694685				Too deep																							
127	45.548409	-89.694683				Too deep																							
128	45.548886	-89.694680				Too deep																							
129	45.549363	-89.694678				Too deep																							
130	45.549841	-89.694675				Too deep																							
131	45.550318	-89.694673				Too deep																							
132	45.550795	-89.694670	19	-	R	No vegetation																							
133	45.551272	-89.694667	13	S	P											1										2			
134	45.551749	-89.694665				Non navigable																							
135	45.542206	-89.694038	8	S	P				1	1																			
136	45.542683	-89.694035	14	-	R	No vegetation																							
137	45.543160	-89.694032				Too deep																							
138	45.543637	-89.694030				Too deep																							
139	45.544114	-89.694027				Too deep																							
140	45.544591	-89.694025				Too deep																							
141	45.545068	-89.694022				Too deep																							
142	45.545545	-89.694019				Too deep																							
143	45.546022	-89.694017				Too deep																							
144	45.546499	-89.694014				Too deep																							
145	45.546976	-89.694012				Too deep																							
146	45.547453	-89.694009				Too deep																							
147	45.547931	-89.694006				Too deep																							
148	45.548408	-89.694004				Too deep																							
149	45.548885	-89.694001				Too deep																							
150	45.549362	-89.693999				Too deep																							
151	45.549839	-89.693996				Too deep																							

Point Number	Latitude (Degrees)	Longitude (Degrees)	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Notes	Myriophyllum spicatum	Potamogeton crispus	Potamogeton gramineus	Chara sp.	Eleocharis acicularis	Myriophyllum tenellum	Ceratophyllum demersum	Najas flexilis	Elodea canadensis	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton amplifolius	Potamogeton richardsonii	Potamogeton robbinsii	Lobelia dortmanna	Nitella sp.	Megalodonta beckii	Juncus pelocarpus	Potamogeton vaseyi	Potamogeton sp.	Potamogeton foliosus	Potamogeton epihydrus	Isoetes lacustris
152	45.550316	-89.693994				Too deep																							
153	45.550793	-89.693991				Too deep																							
154	45.551270	-89.693988	6	S	P				2										1										
155	45.551747	-89.693986				Non navigable																							
156	45.552701	-89.693981				Non navigable																							
157	45.542204	-89.693359	3	S	P	No vegetation																							
158	45.542681	-89.693356	10	S	P				2																				
159	45.543158	-89.693353				Too deep																							
160	45.543635	-89.693351				Too deep																							
161	45.544112	-89.693348				Too deep																							
162	45.544589	-89.693346				Too deep																							
163	45.545066	-89.693343				Too deep																							
164	45.545543	-89.693341				Too deep																							
165	45.546021	-89.693338				Too deep																							
166	45.546498	-89.693335				Too deep																							
167	45.546975	-89.693333	16	-	R	No vegetation																							
168	45.547452	-89.693330				Too deep																							
169	45.547929	-89.693328				Too deep																							
170	45.548406	-89.693325	15	-	R	No vegetation																							
171	45.548883	-89.693322	15	-	R	No vegetation																							
172	45.549360	-89.693320				Too deep																							
173	45.549837	-89.693317				Too deep																							
174	45.550314	-89.693315				Too deep																							
175	45.550791	-89.693312	18	-	R	No vegetation																							
176	45.551268	-89.693309	7	S	P				1		1																		
177	45.551745	-89.693307				Non navigable																							
178	45.552699	-89.693302				Non navigable																							
179	45.542679	-89.692677	9	S	P	No vegetation																							
180	45.543156	-89.692675	13	S	P	No vegetation																							
181	45.543633	-89.692672				Too deep																							
182	45.544110	-89.692669				Too deep																							
183	45.544588	-89.692667				Too deep																							
184	45.545065	-89.692664				Too deep																							
185	45.545542	-89.692662				Too deep																							
186	45.546019	-89.692659				Too deep																							
187	45.546496	-89.692656	8	S	P					1																			
188	45.546973	-89.692654	7	S	P					1				1					1										1
189	45.547450	-89.692651	6	S	P					1				1															

Point Number	Latitude (Degrees)	Longitude (Degrees)	Depth (ft)	Sediment type (M=muck, S=Sand, R=Rock)	Rope (R); Pole (P); Visual (V)	Notes	Myriophyllum spicatum	Potamogeton crispus	Potamogeton gramineus	Chara sp.	Eleocharis acicularis	Myriophyllum tenellum	Ceratophyllum demersum	Najas flexilis	Elodea canadensis	Potamogeton zosteriformis	Potamogeton praelongus	Potamogeton amplifolius	Potamogeton richardsonii	Potamogeton robbinsii	Lobelia dortmanna	Nitella sp.	Megalodonta beckii	Juncus pelocarpus	Potamogeton vaseyi	Potamogeton sp.	Potamogeton foliosus	Potamogeton epihydrus	Isoetes lacustris
190	45.547927	-89.692649	11	S	P				1								2												
191	45.548404	-89.692646	6	S	P				1				1															1	
192	45.548881	-89.692643	6	S	P												1	1											
193	45.549358	-89.692641	5	S	P				1	1	1	1																	
194	45.549835	-89.692638	2	S	P							1																	
195	45.550312	-89.692636	15	-	R	No vegetation																							
196	45.550789	-89.692633	10	S	P				1						2		1												
197	45.551266	-89.692630	2	S	P	No vegetation																							
198	45.551743	-89.692628				Non navigable																							
199	45.552697	-89.692623				Non navigable																							
200	45.542200	-89.692001				Wetland																							
201	45.542678	-89.691998				Wetland																							
202	45.543155	-89.691996	5	S	P							2																	
203	45.543632	-89.691993	8	S	P				1	1															1				
204	45.544109	-89.691990				Too deep																							
205	45.544586	-89.691988				Too deep																							
206	45.545063	-89.691985	18	-	R	No vegetation																							
207	45.545540	-89.691983	10	S	P	No vegetation																							
208	45.549833	-89.691959	2	M	P					1							1							1					
209	45.550310	-89.691957	5	M	P										1		1			1		1	1						
210	45.550787	-89.691954	3	S	P														1										
211	45.551264	-89.691951				Non navigable																							
212	45.552219	-89.691946				Non navigable																							
213	45.542199	-89.691322				Wetland																							
214	45.542676	-89.691319				Wetland																							
215	45.543630	-89.691314				Terrestrial																							
216	45.544107	-89.691312	5	S	P				2	1				1											1				
217	45.544584	-89.691309	5	S	P	No vegetation																							