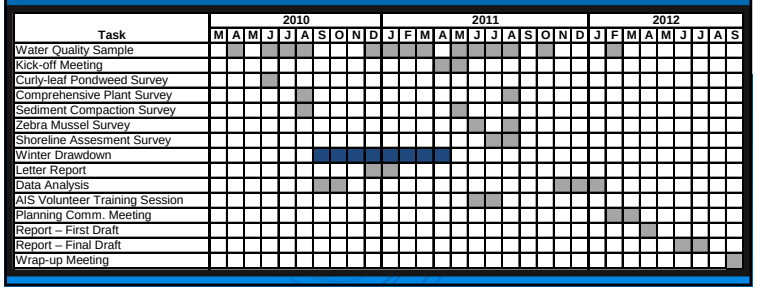
A

APPENDIX A

Public Participation Materials

Pre- and Post Drawdown Monitoring

- Water Quality
- Aquatic Plants
- Sediment Compaction



Water Quality Monitoring

Onterra – Soo Lake United Association – Price County LCD

- **Pre-drawdown**
  - Spring Turnover
  - 3 Summer Months
- **During Drawdown**
  - Dissolved Oxygen
  - Temperature
- **Post Drawdown**
  - Spring Turnover
  - 3 Summer Months
  - Fall Turnover
  - Winter

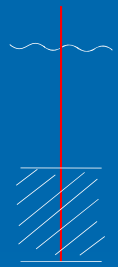
Parameter	2010 Spring S	2010 Spring B	2010 June S	2010 July S	2010 August S	2011 Spring S	2011 Spring B	2011 June S	2011 July S	2011 August S	2011 Fall S	2011 Fall B	2012 Winter S	2012 Winter B
Total Phosphorus	■♦	■	♦	♦	♦	■♦	■	♦	♦	♦	■	■	■	■
Dissolved Phosphorus	■	■				■	■						■	■
Chlorophyll-*a*	■		♦	♦	♦	■		♦	♦	♦	■			
Total Kjeldahl Nitrogen	■	■	●	●	●	■	■	●	●	●	■		■	■
Nitrate-Nitrite Nitrogen	■	■	●	●	●	■	■	●	●	●	■		■	■
Ammonia Nitrogen	■	■	●	●	●	■	■	●	●	●	■		■	■
Laboratory Conductivity	■	■				■	■							
Laboratory pH	■	■				■	■							
Total Alkalinity	■	■				■	■							
Total Suspended Solids	■	■				■	■				■	■	■	■
Calcium	■					■								

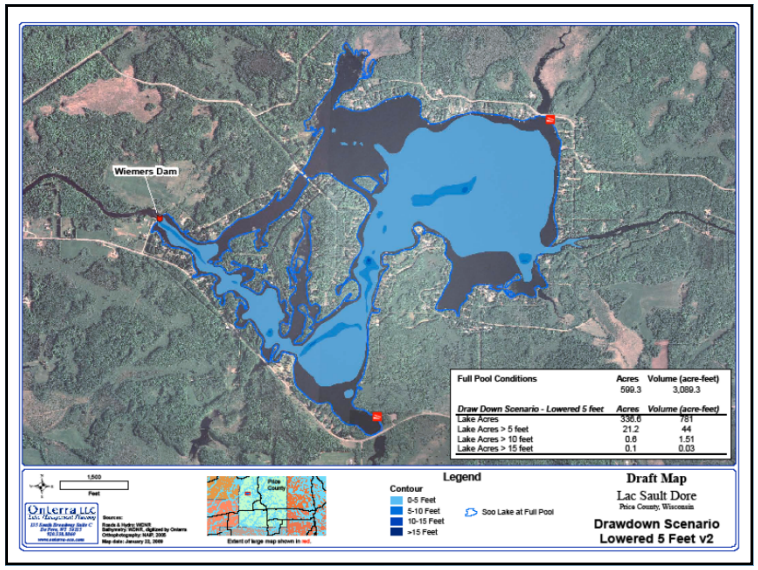
Aquatic Plants

- **Pre-drawdown**
  - Curly-leaf Pondweed
  - Point-intercept
  - Eurasian Water Milfoil Mapping
  - Emergent & Floating-leaf Community Mapping
- **Post Drawdown**
  - Point-intercept
  - Eurasian Water Milfoil Mapping
  - Emergent & Floating-leaf Community Mapping

Sediment Compaction

- Methodology
  - 15 Sites
    - 3 with Sandy Sediments
    - 12 with Organic Sediments
  - Steel Pipes Driven into Hard Layer
  - Pre- and Post Drawdown Measurements
    - Water Level
    - Water Surface to Soft Sediment Surface
    - Soft Sediment Surface to Hard Layer
  - Sediment Samples at 3 Sites
    - Particle Size
    - Percent Organic Material




Wiemers Dam
Full Pool Conditions
Acres
Volume (acre-feet)
599.3
3,089.3
Draw Down Scenario - Lowered 5 feet
Acres
Volume (acre-feet)
Lake Acres
336.6
781
Lake Acres > 5 feet
21.2
44
Lake Acres > 10 feet
0.6
1.51
Lake Acres > 15 feet
0.1
0.03
Legend
Contour
0-5 Feet
5-10 Feet
10-15 Feet
>15 Feet
Soo Lake at Full Pool
Draft Map
Lac Sault Dore
Price County, Wisconsin
Drawdown Scenario
Lowered 5 Feet v2

Lake Management Planning Project Update

Submitted by:
Daniel Cibulka
Aquatic Ecologist
Onterra, LLC

With the help of an Aquatic Invasive Species Grant totaling over $43,000 by the Wisconsin Department of Natural Resources (WDNR), a project is underway to create a lake management plan for Lac Sault Dore. The lake management plan will contain historic and current data from the lake as well as provide guidance for its management by integrating stakeholder needs and goals with what is ecologically beneficial for the system.

The plan will also create and implement a control strategy for Eurasian water milfoil (EWM), an invasive plant which is found throughout the system. An initial strategy was created through the combined efforts of the Price County Dams Committee, WDNR, Soo Lake United Association (SLUA), and Onterra, LLC. Because of scheduled concrete repair work on the Wiemers Dam in fall of 2010, a drawdown of the lake water level was planned. Members of the SLUA asked if the drawdown could serve a double purpose, that is, to also be used as a tool to control EWM. Control would be achieved through the freezing and desiccation (drying out) of the plants root systems. A public meeting was held at the Phillips High School gym on May 13th, 2010, and included members of the fore mentioned groups.

In conjunction with the drawdown, monitoring procedures were drafted to learn of the results of the drawdown on the aquatic plant community (native and non-native), dissolved oxygen content of the water, water quality parameters, and sediment to see if compaction of loose sediments occurred. The lake planning project also includes a component to study the watershed, or area that drains to Lac Sault Dore, as well as the immediate shoreland.

While the dissolved oxygen data collected following the fall 2010 drawdown is not yet available, water quality samples collected by SLUA volunteers through the Citizen's Lake Monitoring Network is available on the WDNR's online water quality database, SWIMS. Secchi disk transparency is a measurement of water clarity. Of all limnological parameters, it is the most used and the easiest for non-professionals to understand. Furthermore, measuring Secchi disk transparency over long periods of time is one of the best methods of monitoring the health of a lake. The measurement is conducted by lowering a weighted, 20-cm diameter disk with alternating black and white quadrates (a Secchi disk) into the water and recording the depth just before it disappears from sight.

While the average Secchi disk records for the past 21 years on Soo Lake have continuously been below the mean values for other lakes in the Northwest Region, these values align with the means of Wisconsin impoundments. The truth is that Soo Lake's water is heavily stained with organic acids and is high in nutrients from its immense watershed which greatly limit light penetration. The good news is that despite some yearly fluctuations, the water clarity has not changed during this time period.

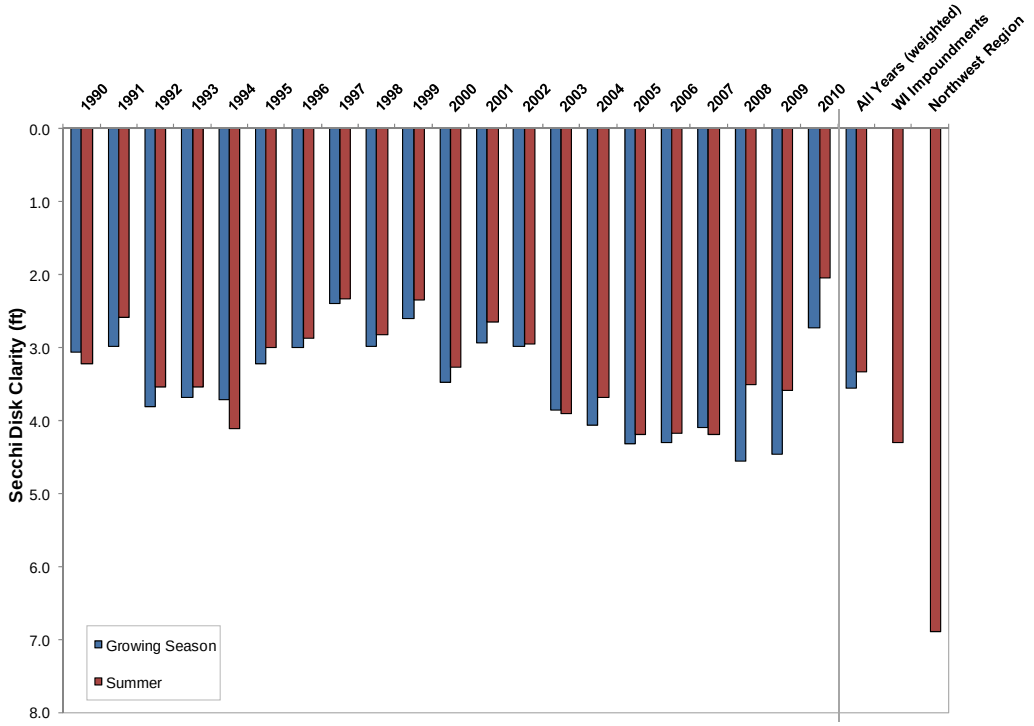


Figure 1. Secchi disk clarity data for Lac Sault Dore, 1990-2010. Data retrieved from the Surface Water Integrated Monitoring System (SWIMS), WDNR.

Many aquatic plant surveys were completed on Lac Sault Dore in 2010. A curly-leaf pondweed survey was conducted in June of 2010. This survey was completed during this time to correspond with the plant's lifecycle. Curly-leaf pondweed begins to grow very early in the spring and reaches its peak growth (biomass) in early summer. It is at this time when it begins to die-back and it will be completely gone by the time our native plant species are just reaching their peak biomass. We did not locate any curly-leaf pondweed during this or any other survey performed on the lake.

A comprehensive survey of the chain's aquatic plants took place in mid-August. We were out on the lake with two crews manned each with two ecologists during this survey. Although the data has not been analyzed completely, many interesting and valuable native plants were found in your lake during our surveys. As a part of this plant study, emergent and floating leaf plant communities were mapped using highly accurate GPS technology. These plant communities provide important habitat and food resources for a variety of wildlife, both aquatic and terrestrial. Maps of this survey can be found attached to this report (Maps 1 and 2).

An additional survey of the submergent plants was performed as well. All in all, 51 species were collected from the lake. This is an incredible number of species - we find ourselves on many (30 to 40) lakes every given summer, and we rarely find this many species in a single lake. In addition, 3 rare species were found – Spiny hornwort (*Ceratophyllum echinatum*), Robbin's spikerush (*Eleocharis robbinsii*), and Vasey's pondweed (*Potamogeton vaseyi*). Records of these plants have been sent to the Wisconsin Natural Heritage Inventory (NHI). Because of the

drawdown that occurred in fall of 2010, these same plant surveys will be conducted in the upcoming summer (2011) to understand if what changes have occurred in the plant community.

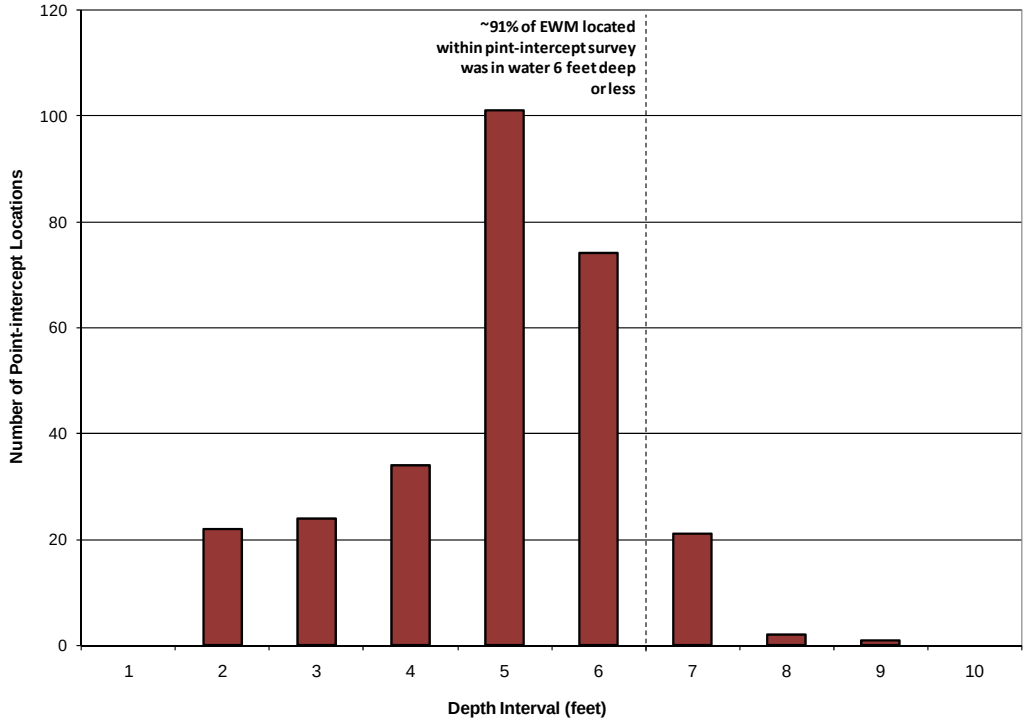


Figure 2. Depth of EWM growth as determined by a 2010 summer point-intercept survey. Data collected by Onterra.

Unfortunately, EWM was the species that was encountered the most during this submergent plant survey. A separate EWM survey was conducted in late June/early July. During this survey, EWM plant colonies were assessed based upon their density, and given a rating between Highly Scattered and Dense Surface Matting (Map 3). As you can see, the variety of colors on the attached map indicates that EWM has basically begun growing in every area it possibly can in the lake, limited only by depth. In the areas marked as Dominant and Highly Dominant, EWM has outcompeted native plants to the point where it is now the most prevalent aquatic plant in that area of the lake. In areas marked Surface Matting and Dense Surface Matting, EWM has grown to the point where navigation by recreational boaters is greatly limited, and few other aquatic plant species can be found.

It is important to understand that the eradication of EWM from a lake, or even a specific area of a lake, is nearly, if not totally, impossible and continued management efforts will be needed on Lac Sault Dore. While we anticipate that the drawdown of fall 2010 will have great impacts on the prevalence of EWM in the system, there will still be significant colonies of EWM that will likely require management. As seen in Figure 2, during the 2010 surveys, 91% of EWM was found in water 6 feet or less. Because the fall 2010 drawdown was to take the water level down 6 feet, there will still be areas where EWM root systems were able to survive.

The next step in the management planning process is to focus our efforts on this upcoming summer's surveys. Following the EWM peak biomass surveys late this summer, we will "go

back to the drawing boards" and develop a strategy for further reducing the density and spread of this invasive plant which may include future draw downs and/or herbicide treatments.

Presentation Outline

- Onterra, LLC
- Why Create a Management Plan?
- Elements of a Lake Management Planning Project
  - Data & Information
  - Planning Process
- Drawdown Monitoring

Onterra LLC
Lake Management Planning

Onterra, LLC

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

Onterra LLC
Lake Management Planning

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.

Onterra LLC
Lake Management Planning

Elements of an Effective Lake Management Planning Project

Data and Information Gathering

Environmental & Sociological

Planning Process

Brings it all together

Onterra LLC
Lake Management Planning

Data and information gathering

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

Onterra LLC
Lake Management Planning

Water Quality Analysis

- General water chemistry (current & historic)
  - Citizens Lake Monitoring Network
- Nutrient analysis
  - Lake trophic state (Eutrophication)
  - Limiting plant nutrient
- Supporting data for watershed modeling

Onterra LLC
Lake Management Planning

Watershed Assessment

- Delineation of drainage basin
- Modeling
  - Land cover
  - Phosphorus loading
  - Scenario development

Onterra LLC
Lake Management Planning

Aquatic Plant Surveys

- Concerned with both native and non-native plants
- Multiple surveys used in assessment
  - Curly-leaf pondweed survey
  - Eurasian water milfoil survey

Onterra LLC
Lake Management Planning

Non-native Aquatic Plants

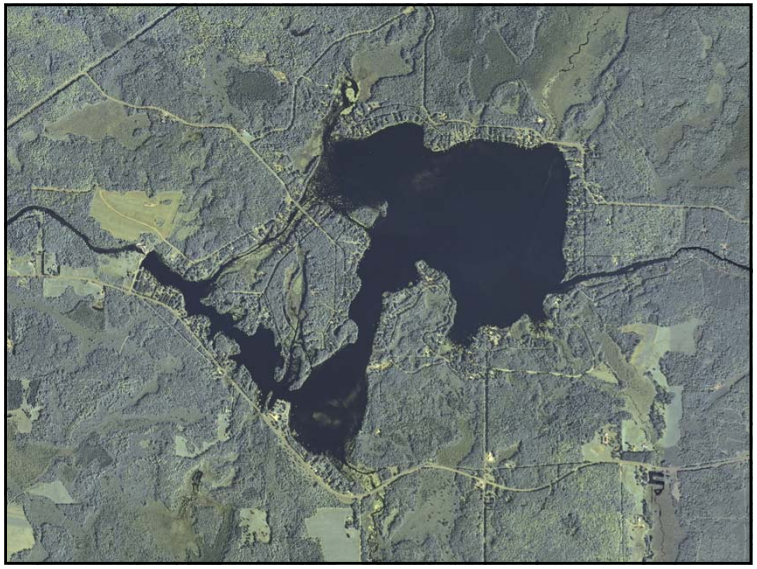
Curly-leaf Pondweed

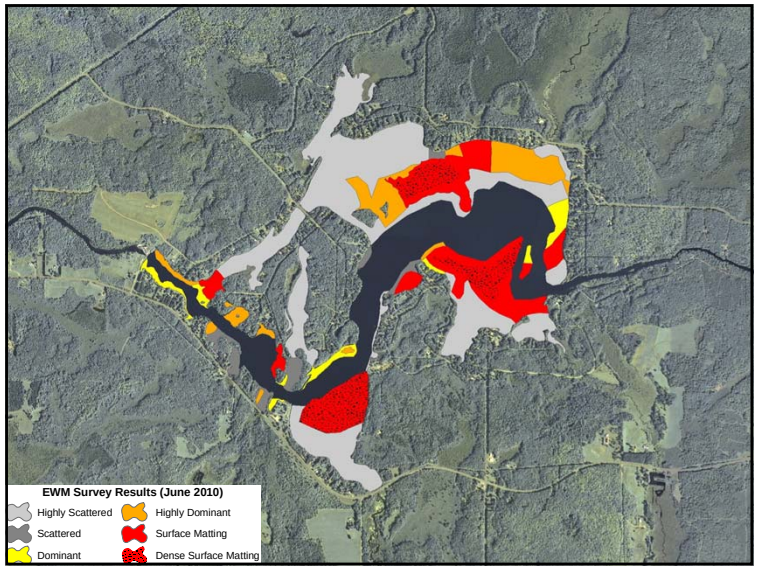
Onterra LLC
Lake Management Planning

Non-native Aquatic Plants

Eurasian Water Milfoil

Onterra LLC
Lake Management Planning

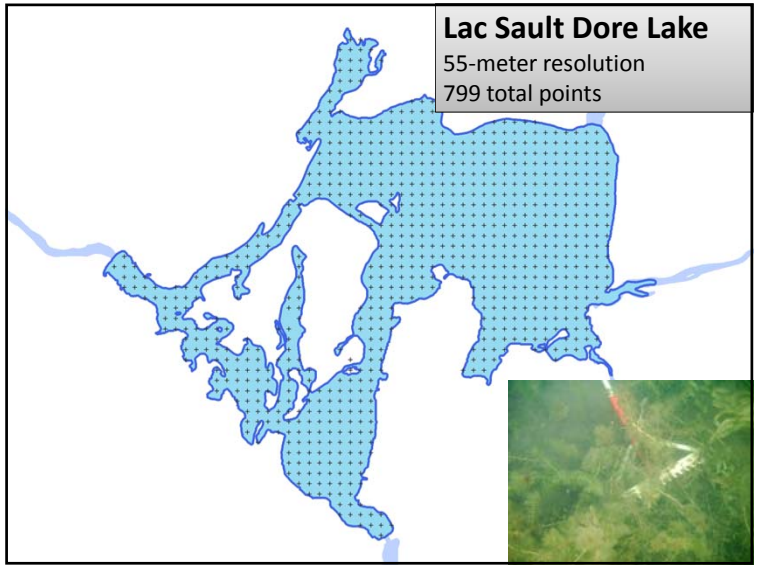




Aquatic Plant Surveys

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

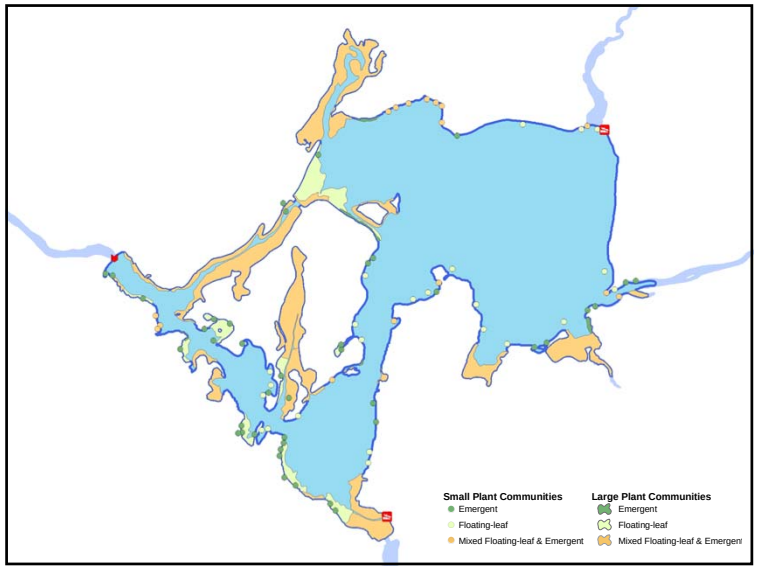
Onterra LLC
Lake Management Planning



Aquatic Plant Surveys

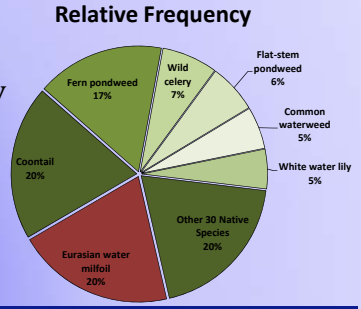
- Concerned with both native and non-native plants
- Multiple surveys used in assessment
  - Curly-leaf pondweed survey
  - Eurasian water milfoil survey
  - Point-intercept survey
  - Plant community mapping

Onterra LLC
Lake Management Planning



Highlights of 2010 Plant Surveys

- 51 total species of aquatic plants
  - 3 rare species
  - No CLP
  - EWM most frequently encountered (56% of vegetated locations)



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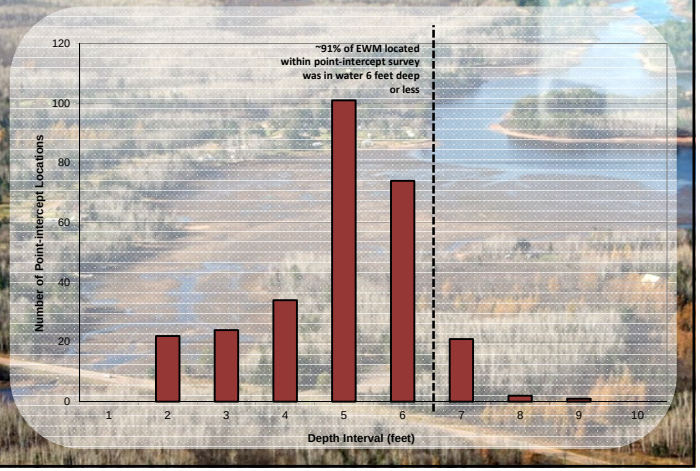
Lake Management Planning

Draw Down Implications - EWM



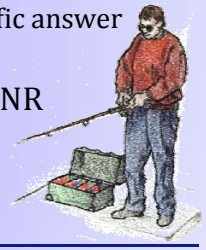
Fisheries Data Integration

- No fish sampling completed
- Assemble data from WDNR, USGS, USFWS, & GLIFWC
- Fish survey results summaries (if available)
- Use information in planning as applicable

Onterra LLC
Lake Management Planning

Stakeholder Survey

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



Onterra LLC
Lake Management Planning

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

Onterra LLC
Lake Management Planning

Pre- and Post Drawdown Monitoring

- Water Quality
- Aquatic Plants
- Sediment Compaction

Task	2010 M	A	M	J	J	A	S	O	N	D	2011 J	F	M	A	M	J	J	A	S	O	N	D	2012 J	F	M	A	M	J	J	A	S
Water Quality Sample																															
Kick-off Meeting																															
Curly-leaf Pondweed Survey																															
Comprehensive Plant Survey																															
Sediment Compaction Survey																															
Zebra Mussel Survey																															
Shoreline Assesment Survey																															
Winter Drawdown																															
Letter Report																															
Data Analysis																															
AIS Volunteer Training Session																															
Planning Comm. Meeting																															
Report – First Draft																															
Report – Final Draft																															
Wrap-up Meeting																															

Water Quality Monitoring

Onterra – Soo Lake United Association – Price County LCD

- **Pre-drawdown**
  - Spring Turnover
  - 3 Summer Months
- **During Drawdown**
  - Dissolved Oxygen
  - Temperature
- **Post Drawdown**
  - Spring Turnover
  - 3 Summer Months
  - Fall Turnover
  - Winter

Parameter	2010 Spring S	Spring B	June S	July S	August S	2011 Spring S	Spring B	June S	July S	August S	Fall S	Fall B	2012 Winter S	Winter B
Total Phosphorus	■♦	■	♦	♦	♦	■♦	■	♦	♦	♦	■	■	■	■
Dissolved Phosphorus	■	■				■	■						■	■
Chlorophyll-*a*	■		♦	♦	♦	■		♦	♦	♦	■			
Total Kjeldahl Nitrogen	■	■	●	●	●	■	■	●	●	●	■		■	■
Nitrate-Nitrite Nitrogen	■	■	●	●	●	■	■	●	●	●	■		■	■
Ammonia Nitrogen	■	■	●	●	●	■	■	●	●	●	■		■	■
Laboratory Conductivity	■	■				■	■							
Laboratory pH	■	■				■	■							
Total Alkalinity	■	■				■	■							
Total Suspended Solids	■	■				■	■				■	■	■	■
Calcium	■					■								

Aquatic Plant Monitoring

- **Pre-drawdown**
  - Curly-leaf Pondweed
  - Point-intercept
  - Eurasian Water Milfoil Mapping
  - Emergent & Floating-leaf Community Mapping
- **Post Drawdown**
  - Point-intercept
  - Eurasian Water Milfoil Mapping
  - Emergent & Floating-leaf Community Mapping

Onterra LLC
Lake Management Planning

Planning Process

Planning Committee Meetings

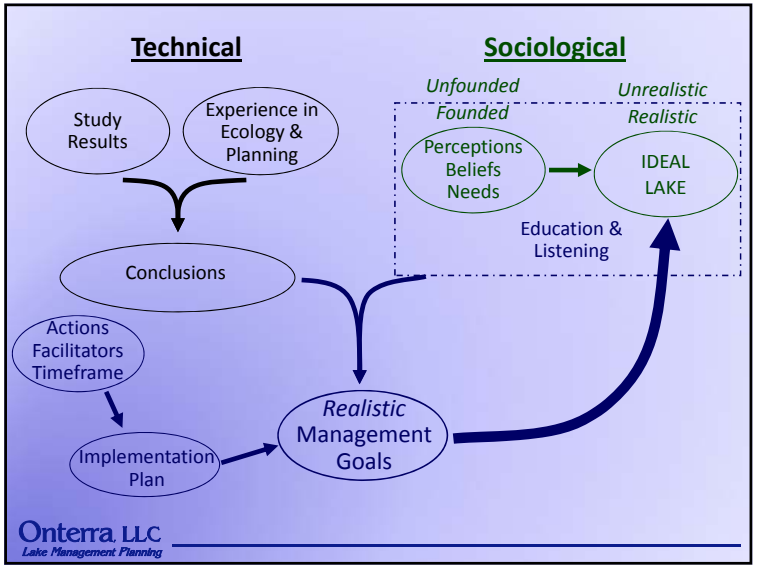
Study Results (including a stakeholder survey)
Conclusions & Initial Recommendations
Management Goals
Management Actions
Timeframe
Facilitator(s)

Implementation Plan

Onterra LLC
Lake Management Planning

The Planning Process

…it's not as easy as you may think.



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Lake Management Planning

Presentation Outline

- **Lake Management Planning Project Overview**
- **Study Results**
  - Water Quality
  - Watershed
  - Aquatic Plants
  - Fishery
- **"Big Picture"**

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Lake Management Planning

Study and Plan Goals

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

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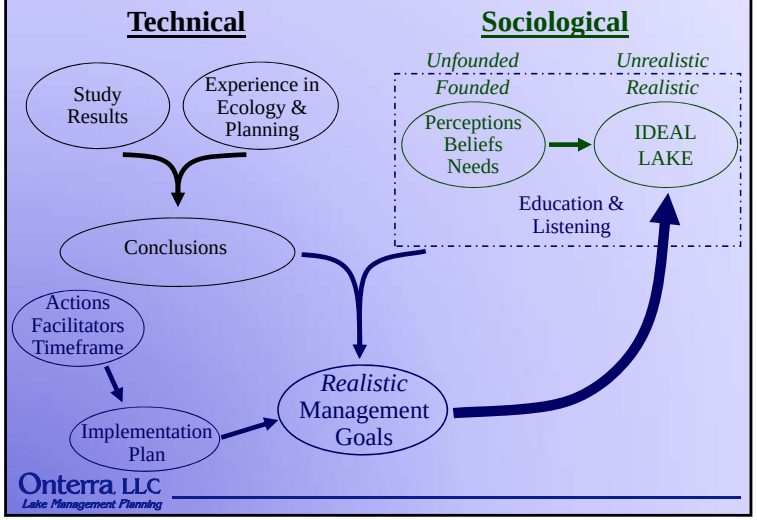
Lake Management Planning

Planning Process



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Water Quality

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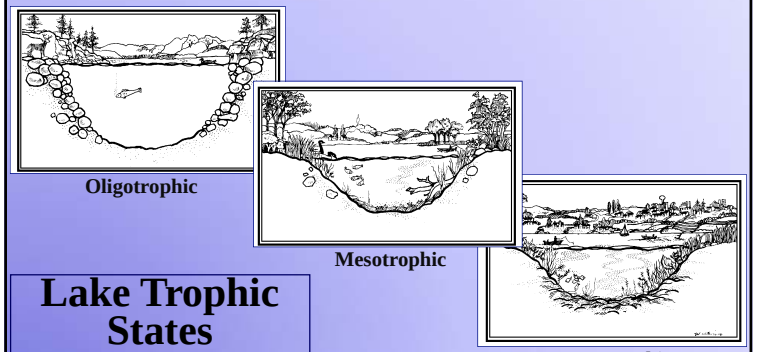
Lake Management Planning

Eutrophication
-Lake Aging



Lake Trophic States

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Lake Management Planning

Water Quality

- **Phosphorus (Limiting Plant Nutrient)**
  Nitrogen:Phosphorus = 17:1
- **Chlorophyll-*a* (Algal Abundance)**
  High Flushing Rate
- **Water Clarity (Secchi Disk)**
  Stained Water

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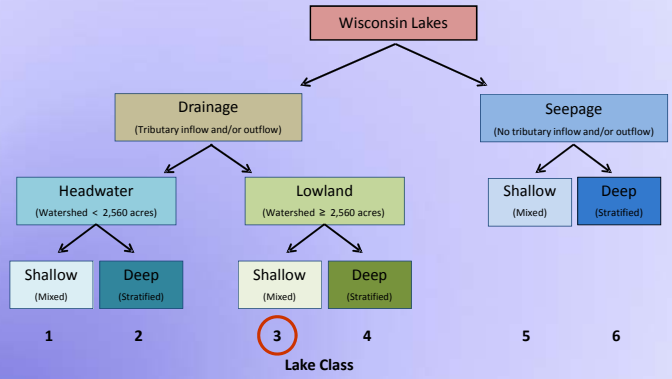
Lake Management Planning

Wisconsin Lakes Classification



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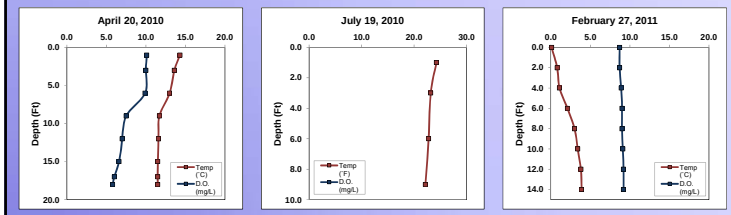
Lake Management Planning

Dissolved Oxygen and Temperature Profiles

- **Dissolved Oxygen and Temperature Profiles**
  - Lake is stratified during winter
    - Oxygen present throughout water column during drawdown
  - Lake does not strongly stratify in the summer



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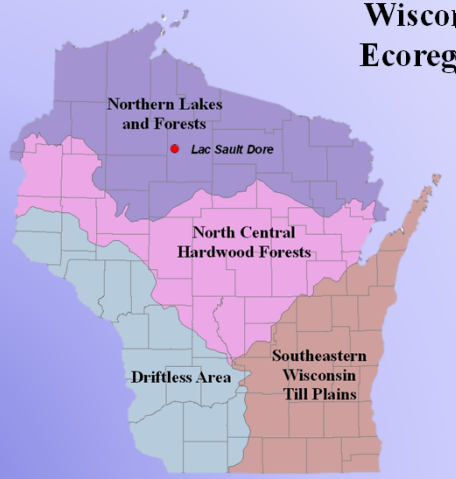
Lake Management Planning

Wisconsin Ecoregions



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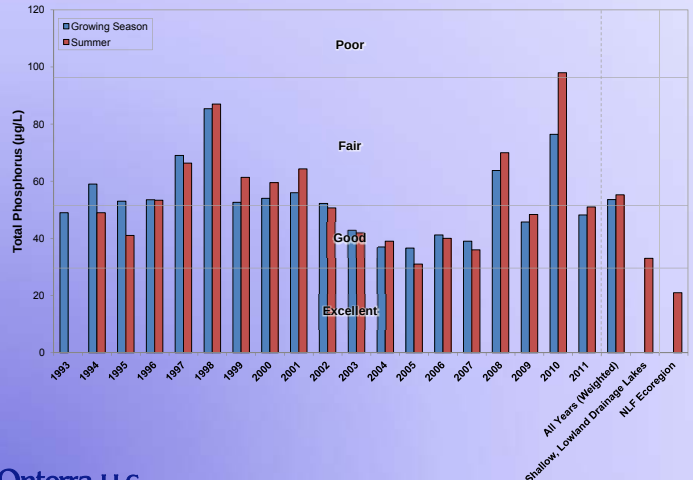
Lake Management Planning

Total Phosphorus



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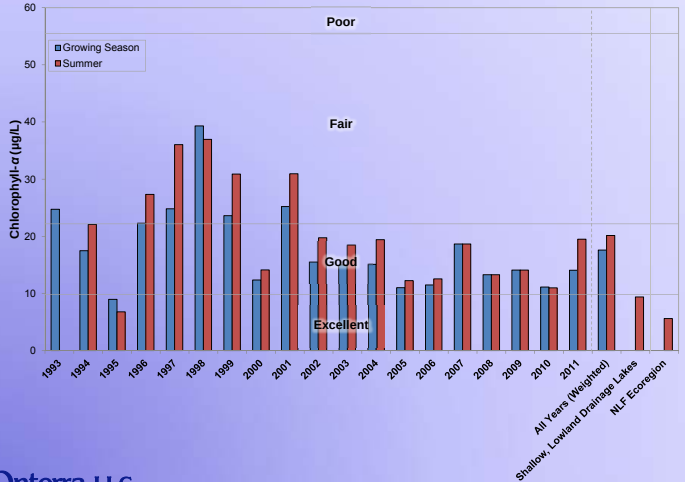
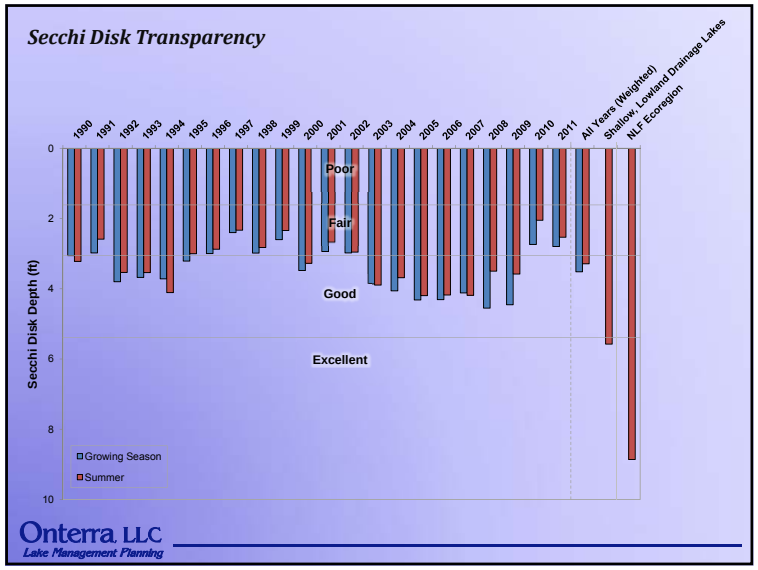
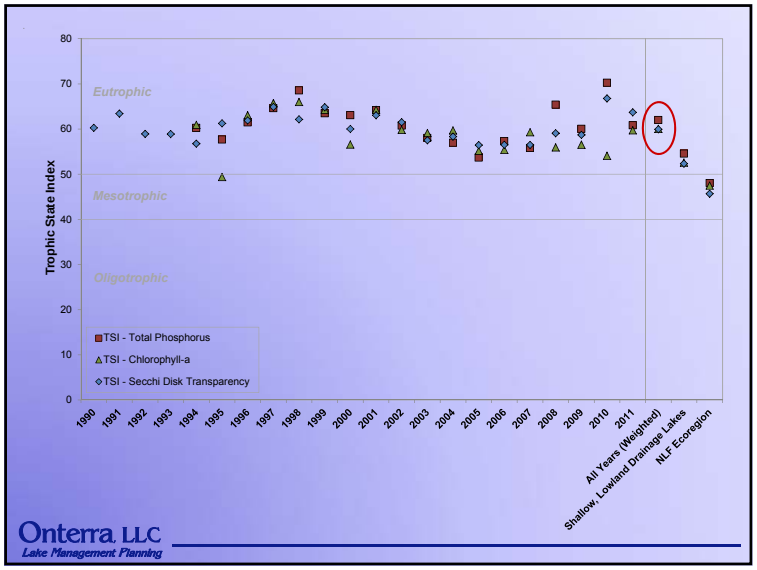
Lake Management Planning

Chlorophyll-α



Onterra LLC
Lake Management Planning

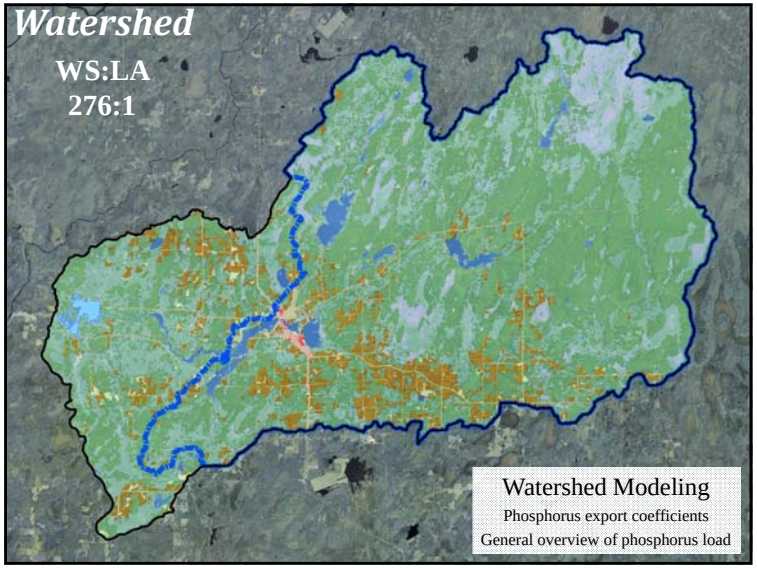




Additional Water Quality Parameters

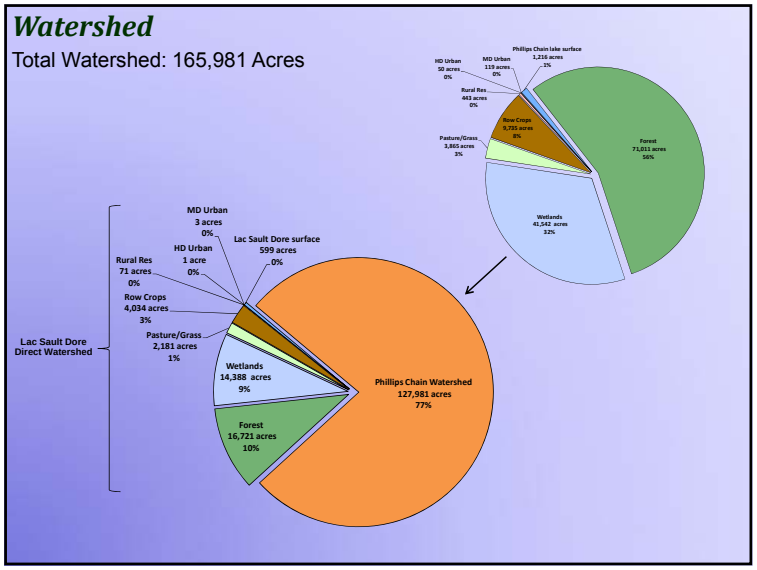
- **Combination of pH and calcium indicates LSD has *very low* susceptibility for zebra mussel establishment**
  - GLIFWC plankton tows in 2008 were negative for zebra mussel veligers

Onterra LLC
Lake Management Planning

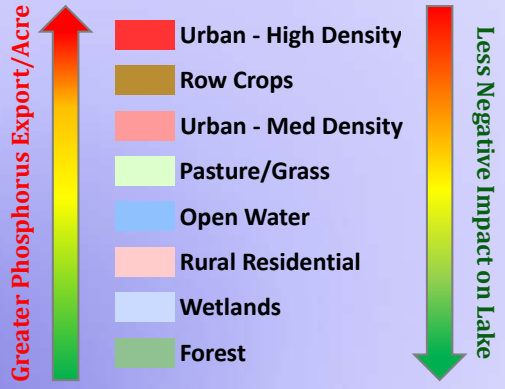


Watershed

Total Watershed: 165,981 Acres



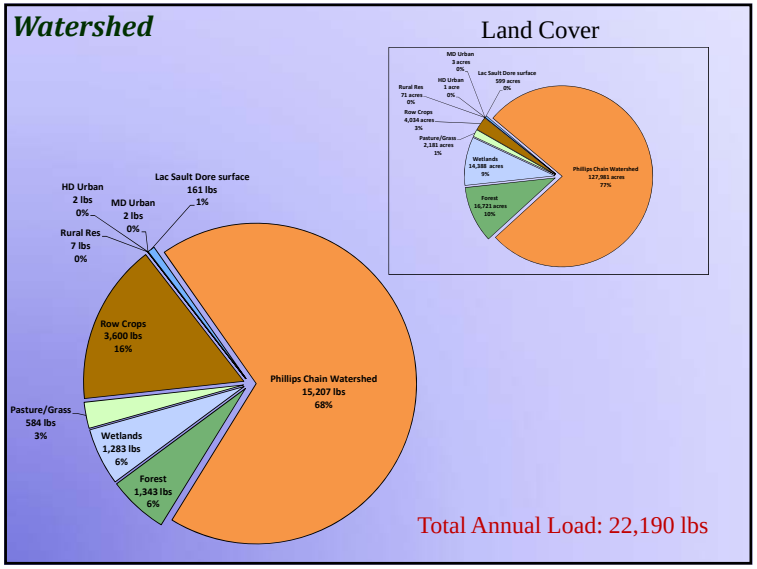
Watershed Land Cover



Onterra LLC
Lake Management Planning

Watershed

Land Cover



Watershed

- WiLMS modeling predicted mean growing season phosphorus of 39 µg/L, while observed was 48 µg/L
  - Indicates possible unaccounted source(s) of phosphorus
    - Limitations of the model with watersheds of this size
    - Residence time of 7 days, highly variable data

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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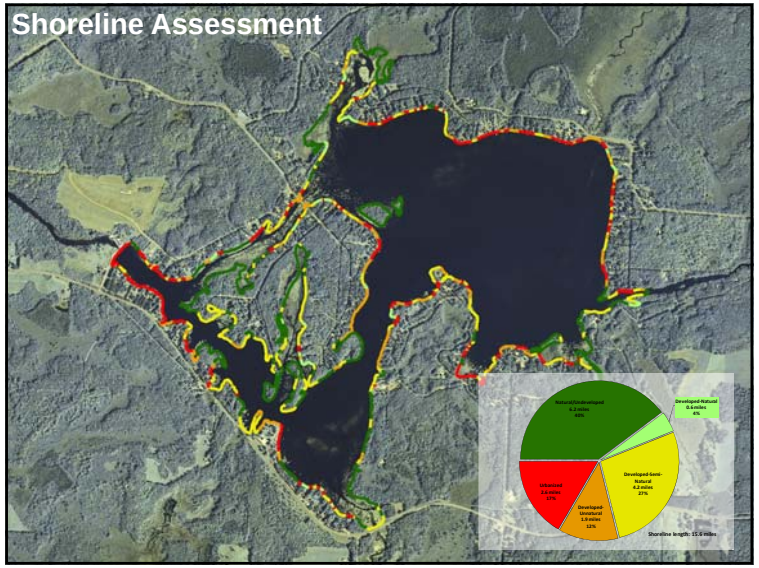

Drawdown

- Water level drawdown of 6 feet over winter of 2010-2011
- Reduce Eurasian water milfoil
- Quantitative Monitoring
  - Sediment compaction
  - Aquatic plant community

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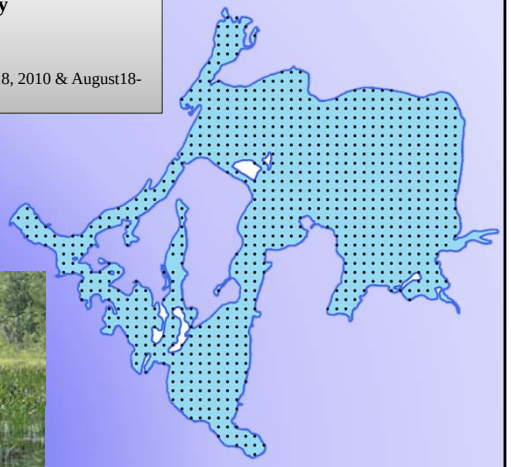
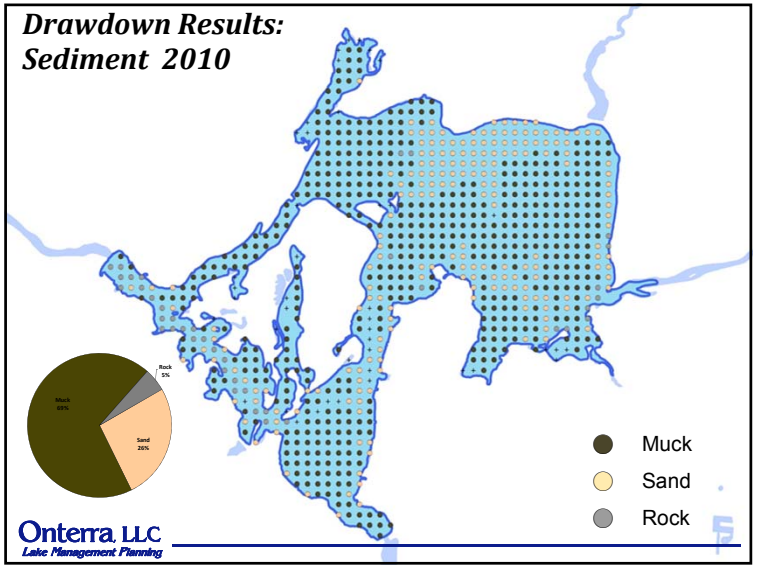
Drawdown: Pre- and post-monitoring

- **Lac Sault Dore PI Survey**
- 55-meter resolution
- 799 total points
- Surveys Completed: August 17-18, 2010 & August18-19, 2011



Drawdown Results: Sediment 2010



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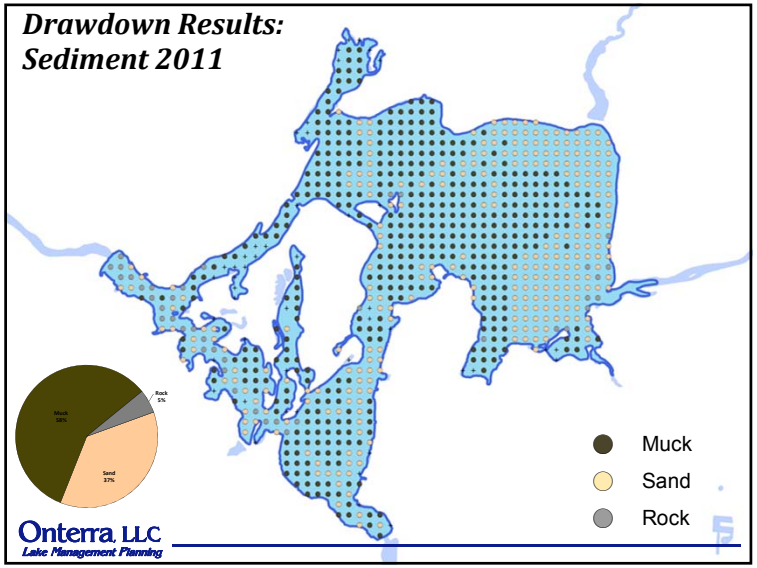
Drawdown Results: Sediment 2011



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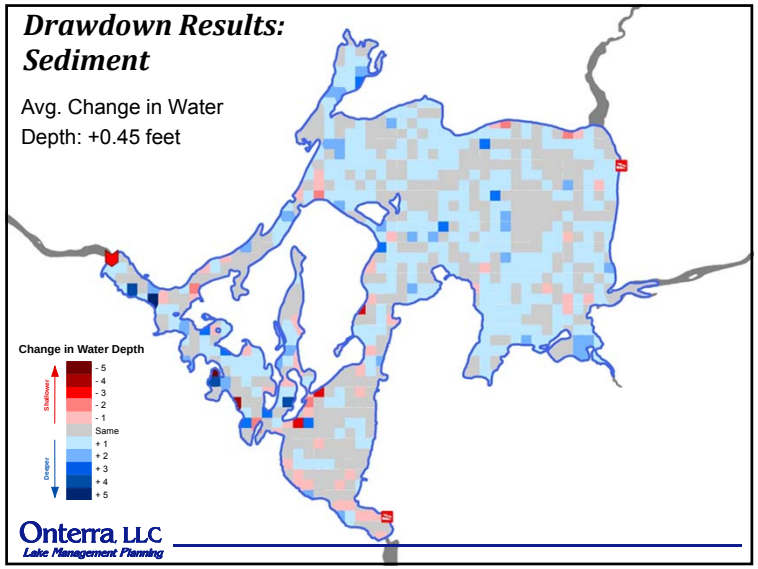
Drawdown Results:
Sediment
Avg. Change in Water
Depth: +0.45 feet
Change in Water Depth
Shallower
Deeper
- 5
- 4
- 3
- 2
- 1
Same
+ 1
+ 2
+ 3
+ 4
+ 5
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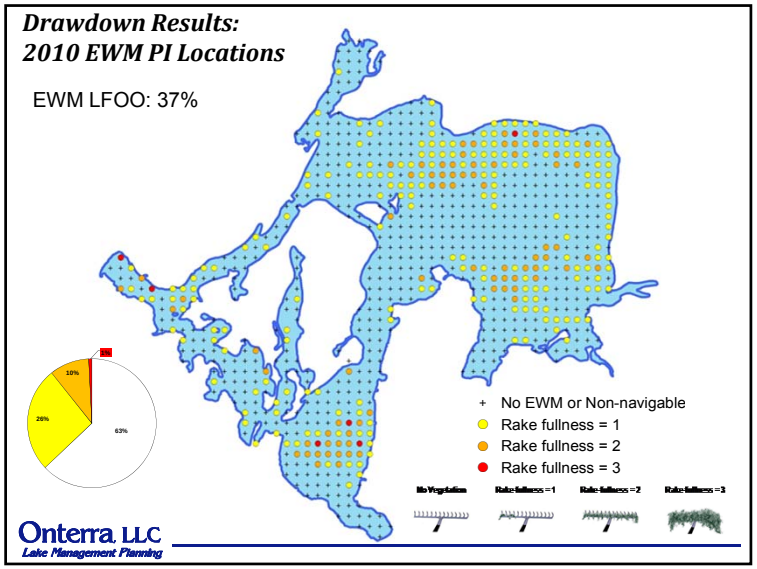
Drawdown Results:
2010 EWM PI Locations
EWM LFOO: 37%
No EWM or Non-navigable
Rake fullness = 1
Rake fullness = 2
Rake fullness = 3
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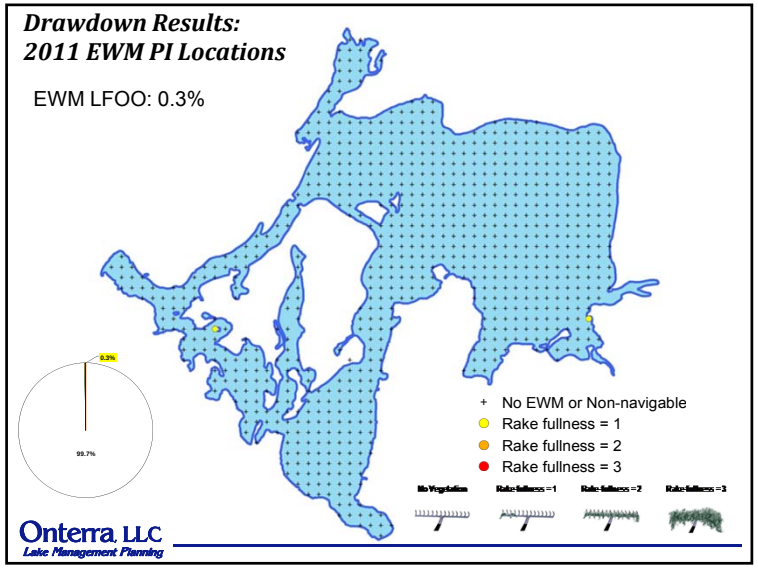
Drawdown Results:
2011 EWM PI Locations
EWM LFOO: 0.3%
0.3%
99.7%
No EWM or Non-navigable
Rake fullness = 1
Rake fullness = 2
Rake fullness = 3
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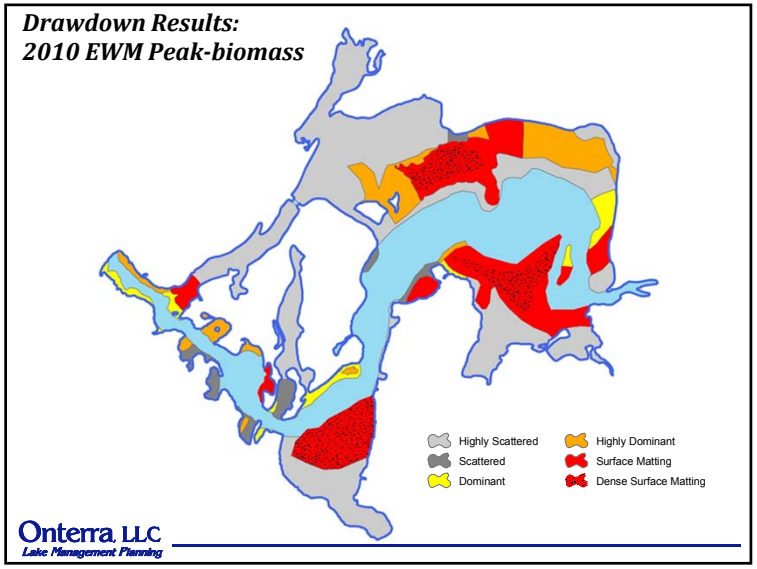
Drawdown Results:
2010 EWM Peak-biomass
Highly Scattered
Scattered
Dominant
Highly Dominant
Surface Matting
Dense Surface Matting
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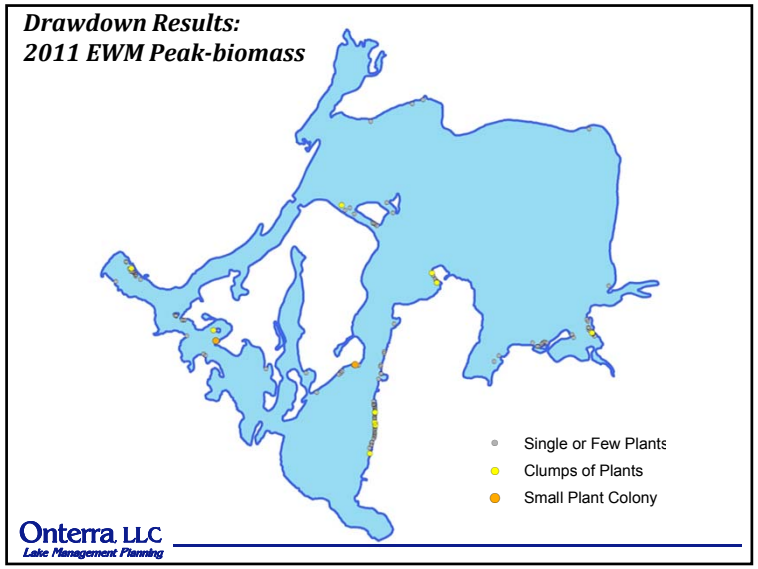
Drawdown Results:
2011 EWM Peak-biomass
Single or Few Plants
Clumps of Plants
Small Plant Colony
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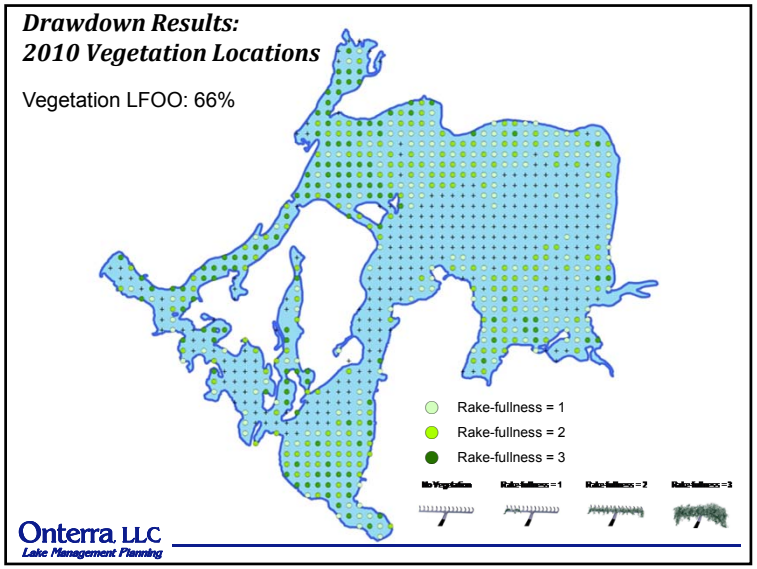
Drawdown Results:
2010 Vegetation Locations
Vegetation LFOO: 66%
Rake-fullness = 1
Rake-fullness = 2
Rake-fullness = 3
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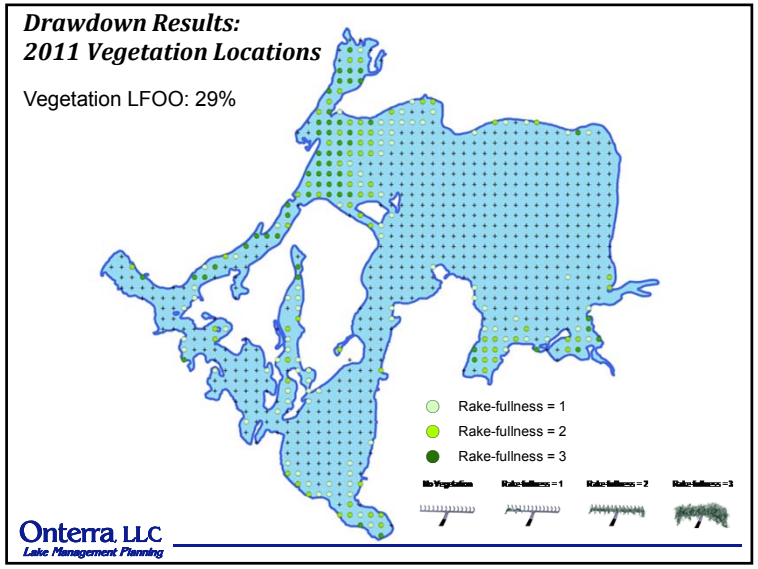
Drawdown Results:
2011 Vegetation Locations
Vegetation LFOO: 29%
Rake-fullness = 1
Rake-fullness = 2
Rake-fullness = 3
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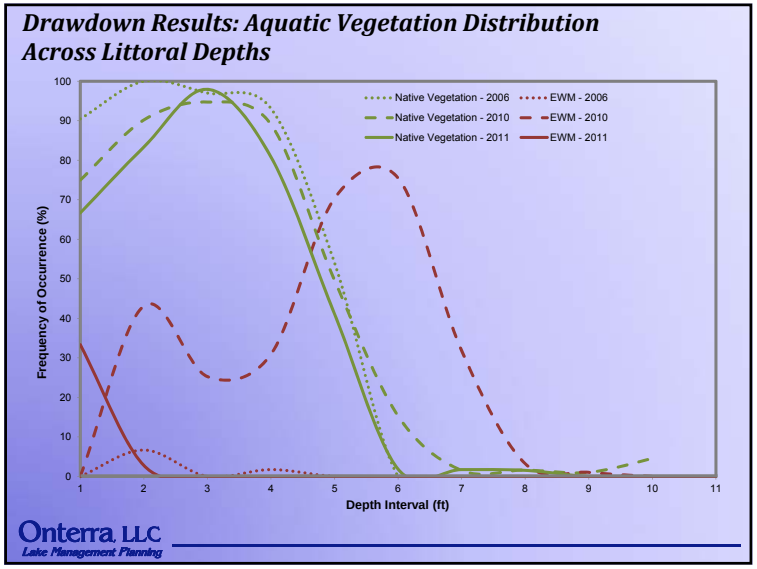
Drawdown Results: Aquatic Vegetation Distribution
Across Littoral Depths
Native Vegetation - 2006
EWM - 2006
Native Vegetation - 2010
EWM - 2010
Native Vegetation - 2011
EWM - 2011
Frequency of Occurrence (%)
Depth Interval (ft)
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Species List

- **Native species richness: 55**
- **1 Non-native Species**
  - Eurasian water milfoil
- **2 Species of special concern**
  - Vasey's pondweed
  - Robbins' spikerush
- **5 species not located post-drawdown**
  - Clasping leaf pondweed
  - Small bladderwort
  - Grass-leaved arrowhead
  - Slender riccia
  - Common watermeal
- **4 species located post- but not pre-drawdown**
  - Northern water milfoil
  - Leafy pondweed
  - Fries' pondweed
  - Needle spikerush

Life Form	Scientific Name	Common Name	Coefficient of Conservatism (c)	2010 (Onterra)	2011 (Onterra)
Emergent	*Acorus americanus*	Sweetflag	7	I	I
	Calla palustris	Water arum	9	I	I
	Carex comosa	Bristly sedge	5	I	I
	Carex utriculata	Northwest Territory sedge	7	I	I
	Dulichium arundinaceum	Three-way sedge	9	I	I
	Eleocharis palustris	Creeping spikerush	6	X	I
	Eleocharis robbinsii	Robbins' spike-rush	10	I	I
	Pontederia cordata	Pickerelweed	9	X	I
	Sagittaria latifolia	Common arrowhead	3	I	I
	Sagittaria rigida	Stiff arrowhead	8	X	I
	Schoenoplectus tabernaemontani	Softstem bulrush	4	I	X
	Zizania palustris	Northern wild rice	8	I	I
FL	*Brasenia schreberi*	Watershield	7	X	X
	Nuphar variegata	Spatterdock	6	X	X
	Nymphaea odorata	White water lily	6	X	X
FLIE	*Sparganium emersum*	Short-stemmed bur-reed	8	I	I
	Sparganium eurycarpum	Common bur-reed	5	X	X
	Sparganium fluctuans	Floating-leaf bur-reed	10	X	X
	Sparganium natans	Little bur-reed	9	I	I
Submergent	*Ceratophyllum demersum*	Coontail	3	X	X
	Ceratophyllum echinatum	Spiny hornwort	10	I	I
	Chara spp.	Muskgrasses	7	X	X
	Elodea canadensis	Common waterweed	3	X	X
	Elodea nuttallii	Slender waterweed	7	X	X
	Megalodonta beckii	Water marigold	8	X	X
	Myriophyllum heterophyllum	Various-leaved water milfoil	7	X	X
	Myriophyllum sibiricum	Northern water milfoil	7		X
	Myriophyllum spicatum	Eurasian water milfoil	Exotic	X	X
	Najas flexilis	Slender naiad	6	X	X
	Nitella sp.	Stoneworts	7	X	X
	Potamogeton amplifolius	Large-leaf pondweed	7	X	X
	Potamogeton epihydrus	Ribbon-leaf pondweed	8	X	X
	Potamogeton foliosus	Leafy pondweed	6		X
	Potamogeton friesii	Fries' pondweed	8		X
	Potamogeton natans	Floating-leaf pondweed	5	X	X
	Potamogeton nodosus	Long-leaf pondweed	7	X	X
	Potamogeton obtusifolius	Blunt-leaf pondweed	9	I	I
	Potamogeton pusillus	Small pondweed	7	X	X
	Potamogeton richardsonii	Clasping-leaf pondweed	5	X	
	Potamogeton robbinsii	Fern pondweed	8	X	X
	Potamogeton spirillus	Spiral-fruited pondweed	8	I	X
	Potamogeton strictifolius	Stiff pondweed	8	X	X
	Potamogeton vaseyi	Vasey's pondweed	10	X	X
	Potamogeton zosteriformis	Flat-stem pondweed	6	X	X
	Utricularia geminiscapa	Twin-stemmed bladderwort	9	X	I
	Utricularia intermedia	Flat-leaf bladderwort	9	X	X
	Utricularia minor	Small bladderwort	10	I	
	Utricularia vulgaris	Common bladderwort	7	X	X
	Vallisneria americana	Wild celery	6	X	X
S/E	*Eleocharis acicularis*	Needle spikerush	5		X
	Sagittaria graminea	Grass-leaved arrowhead	9	X	
FF	*Lemna trisulca*	Forked duckweed	6	X	X
	Lemna turionifera	Turion duckweed	2	X	X
	Riccia fluitans	Slender riccia	7	X	
	Spirodela polyrhiza	Greater duckweed	5	X	X
	Wolffia columbiana	Common watermeal	5	X	

FL = Floating Leaf; FLIE = Floating Leaf and Emergent; S/E = Submergent and Emergent; FF = Free Floating
X = Located on lake during point-intercept survey; I = Incidental Species

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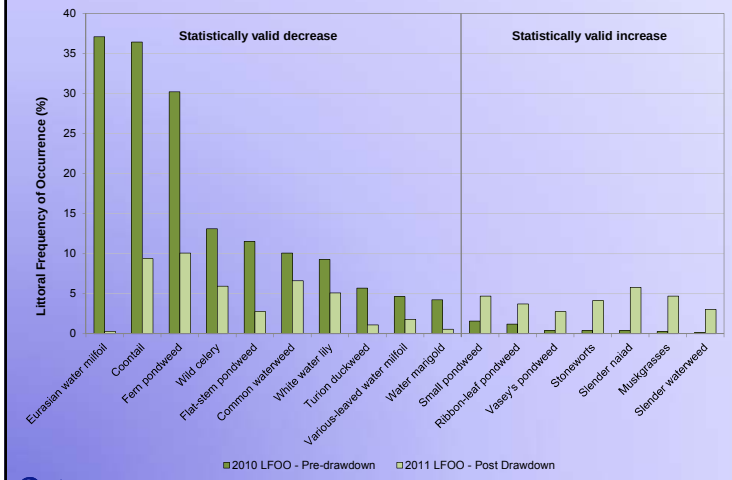
Drawdown Results: Aquatic Plant Community Littoral Occurrence



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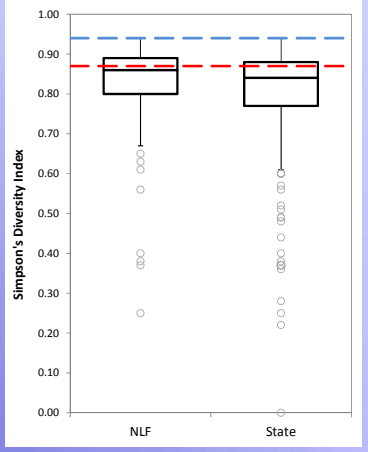
Simpson's Diversity Index



2011: 0.94
2010: 0.87

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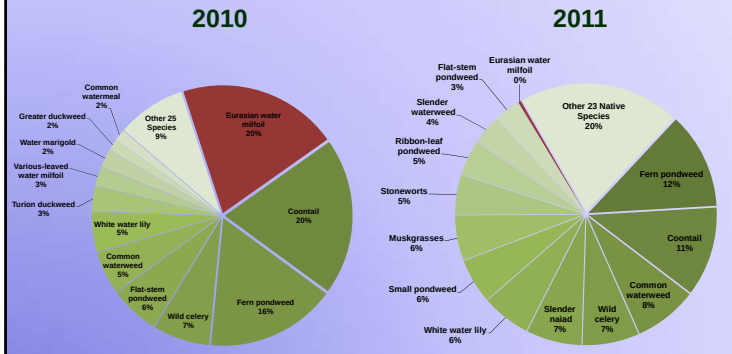
Drawdown Results: Aquatic Plant Community Relative Occurrence



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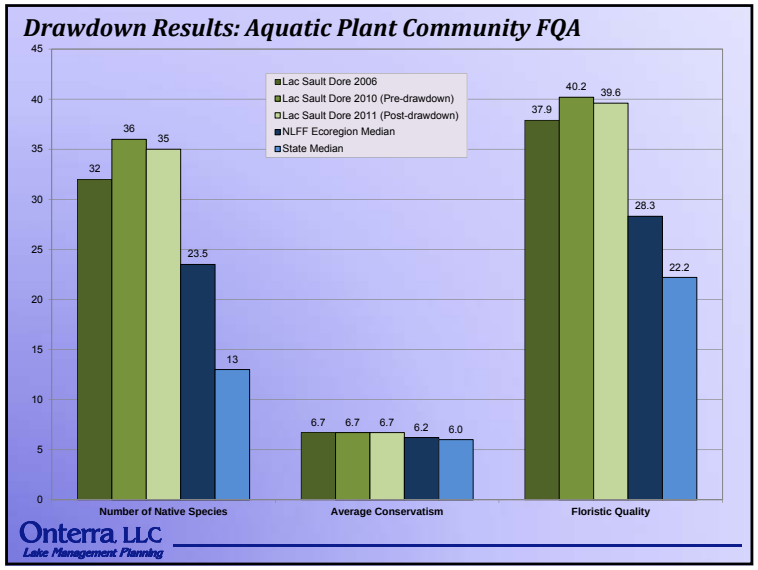
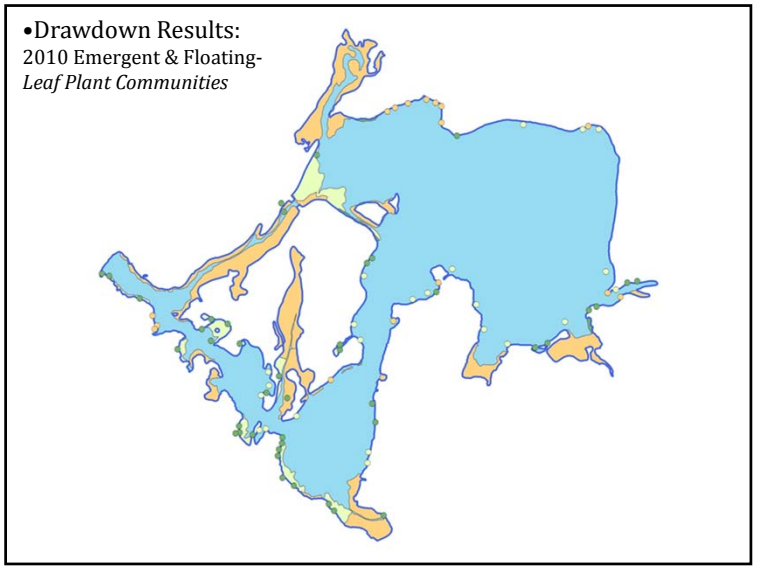
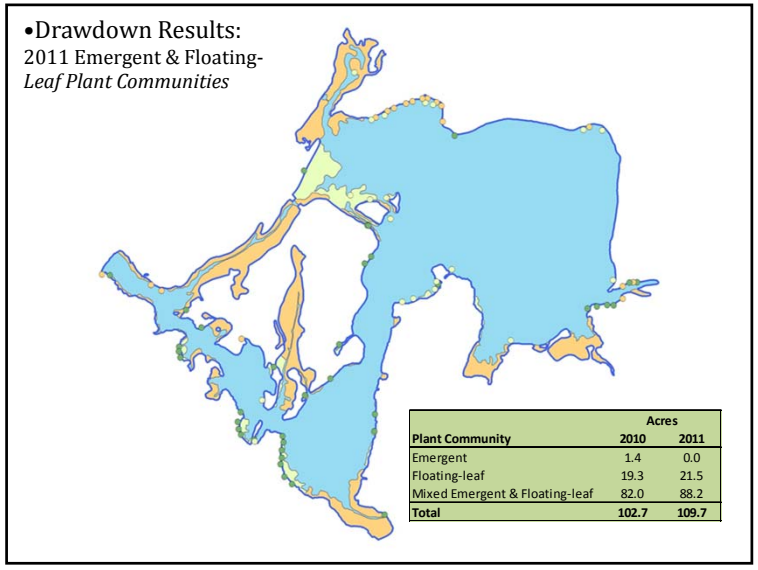
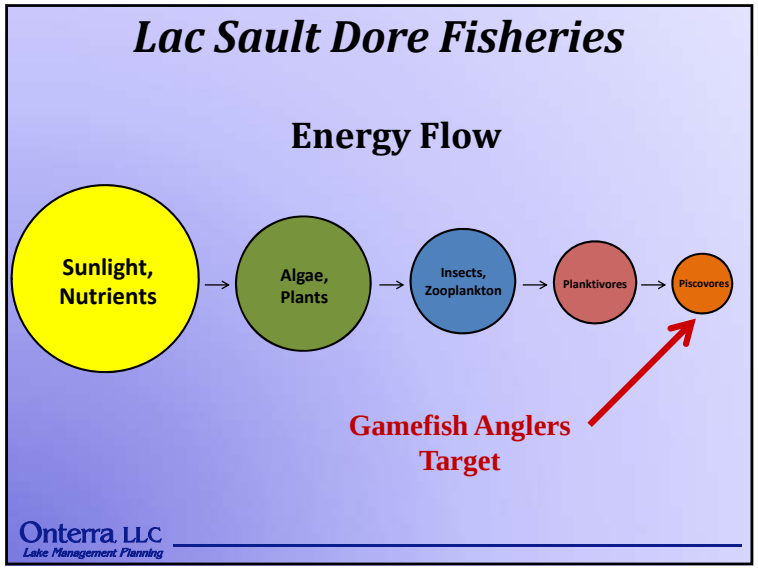






Plant Community	Acres 2010	2011
Emergent	1.4	0.0
Floating-leaf	19.3	21.5
Mixed Emergent & Floating-leaf	82.0	88.2
Total	**102.7**	**109.7**


Lac Sault Dore Fisheries
Energy Flow
Sunlight, Nutrients
Algae, Plants
Insects, Zooplankton
Planktivores
Piscovores
Gamefish Anglers Target
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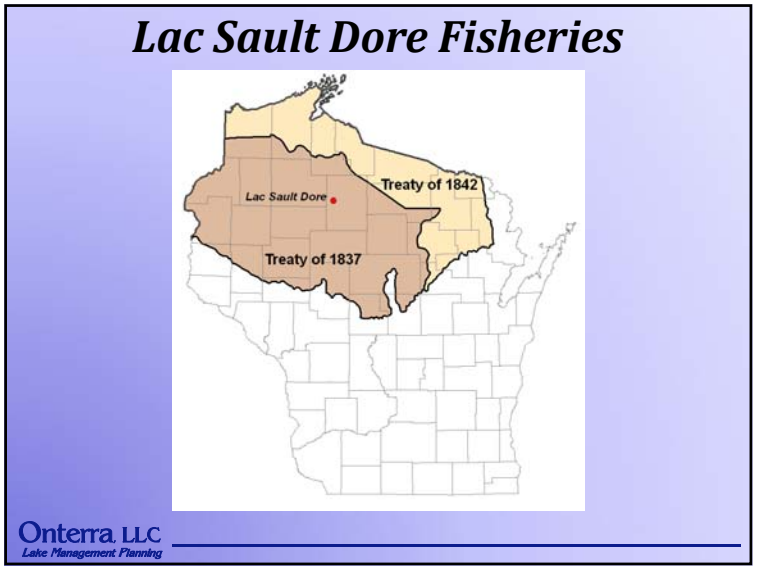
Lac Sault Dore Fisheries
Lac Sault Dore
Treaty of 1842
Treaty of 1837
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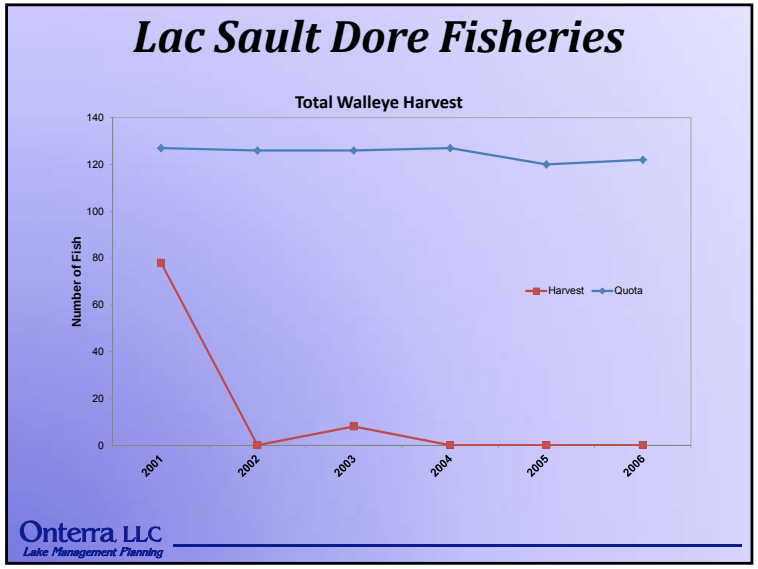
Lac Sault Dore Fisheries
Total Walleye Harvest
Number of Fish
140
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
Harvest
Quota
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The Big Picture

Conclusions

- Water quality is somewhat variable; good to fair.
  - Expected for a lake of this type.
  - No evidence that any trends (positive or negative) are occurring.
  - Elevated phosphorus levels and lower water clarity in 2010 likely due to higher-than-normal precipitation.
- Watershed is in good condition.
  - Vast majority comprised of intact forests and wetlands.
- Drawdown
  - Sediment
    - Increase in sandy subsrate.
    - Average depth increase of 0.45 feet.

Conclusions continued

- Drawdown
  - Aquatic Plant Community
    - EWM occurrence decreased by over 99%.
    - 9 native plants displayed statistically valid reductions; 7 displayed statistically valid increases.
    - Species diversity increased.
    - Standard analysis indicates maintained quality – higher than most lakes in region and the state.
    - Emergent & Floating-leaf plant communities expanded by 7 acres.
  - Fisheries
    - Lake's high productivity likely translates to high fish biomass

Thank You

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

Wisconsin Lakes Partnership

UW Extension

Wisconsin Dept. of Natural Resources

Onterra LLC
Lake Management Planning

B

APPENDIX B

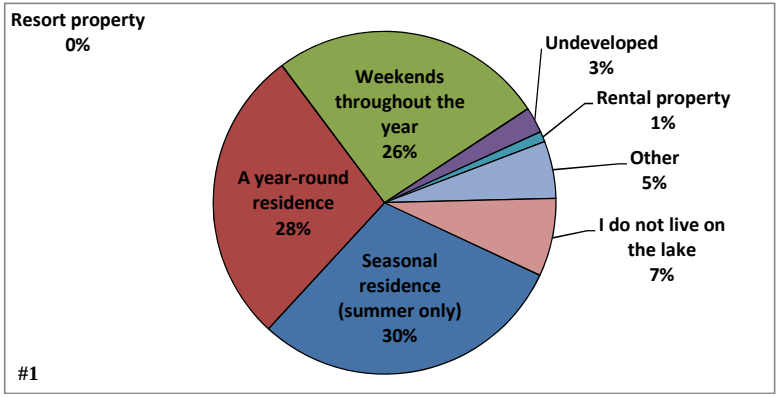
Stakeholder Survey Response Charts and Comments

Returned Surveys	197
Sent Surveys	374
Response Rate (%)	52.7

LAC SAULT DORE PROPERTY

#1 What type of property do you own on Lac Sault Dore?

	Total	%
Seasonal residence (summer only)	61	*29.9*
A year-round residence	57	*27.9*
Weekends throughout the year	53	*26.0*
Undeveloped	5	*2.5*
Rental property	2	*1.0*
Resort property	0	*0.0*
Other	11	*5.4*
I do not live on the lake	15	*7.4*
	204	*100.0*

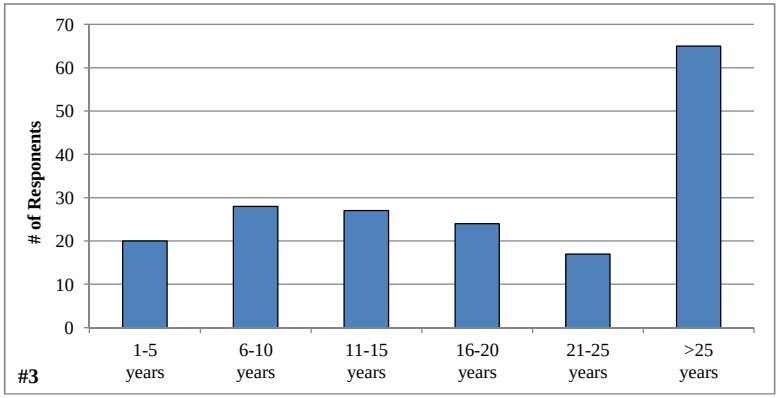


#2 How many days each year is your property used by you or others?

Answered Question	170
Average	131.3
Standard deviation	123.2

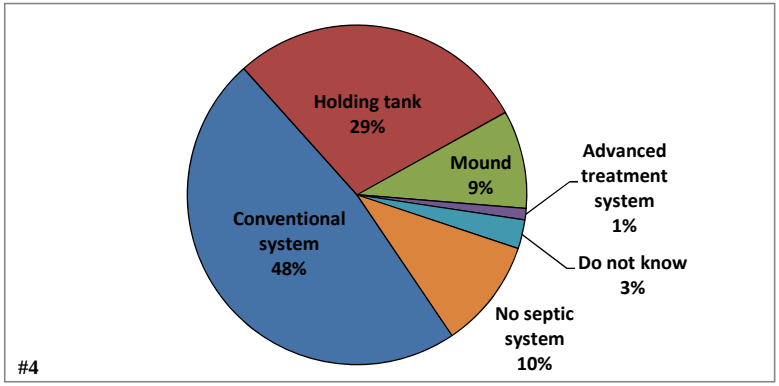
#3 How long have you owned your property on Lac Sault Dore?

	Total	%
1-5 years	20	*11.0*
6-10 years	28	*15.5*
11-15 years	27	*14.9*
16-20 years	24	*13.3*
21-25 years	17	*9.4*
>25 years	65	*35.9*
	181	*100.0*



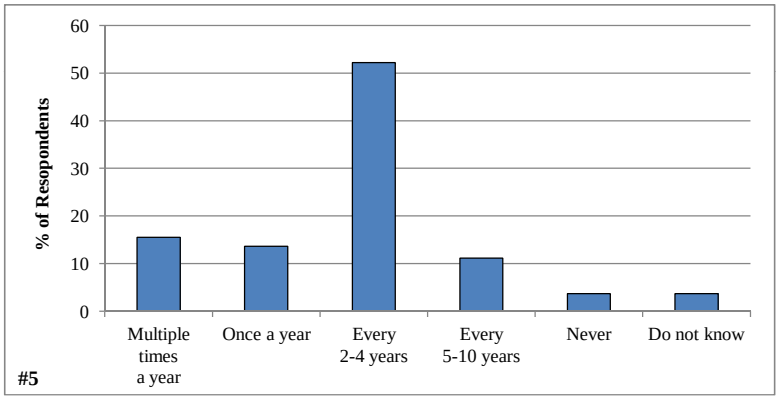
#4 What type of septic system does your property utilize?

	Total	%
Conventional system	87	*47.8*
Holding tank	52	*28.6*
Mound	17	*9.3*
Advanced treatment system	2	*1.1*
Do not know	5	*2.7*
No septic system	19	*10.4*
	182	*100.0*



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

	Total	%
Multiple times a year	25	*15.5*
Once a year	22	*13.7*
Every 2-4 years	84	*52.2*
Every 5-10 years	18	*11.2*
Never	6	*3.7*
Do not know	6	*3.7*
	161	*100.0*



RECREATIONAL USE ON LAC SAULT DORE

#6 How many years ago did you first visit Lac Sault Dore?

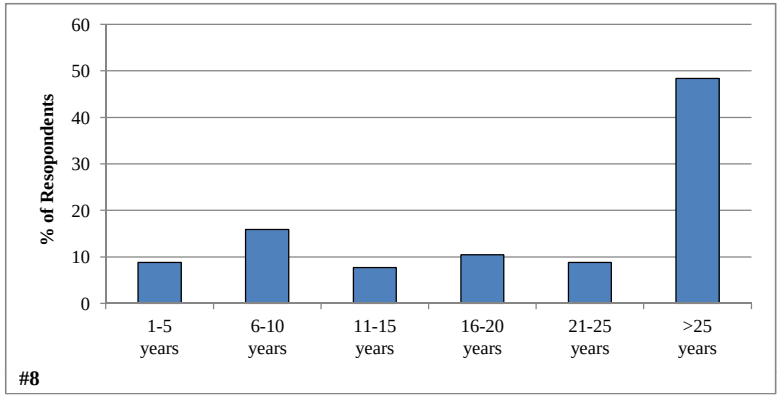
Answered Question	194
Average	29.4
Standard deviation	15.6

#7 Have you personally fished on Lac Sault Dore?

	Total	%
Yes	184	*92.9*
No	14	*7.1*
	198	*100.0*

#8 For how many years have you fished Lac Sault Dore?

	Total	%
1-5 years	16	*8.8*
6-10 years	29	*15.9*
11-15 years	14	*7.7*
16-20 years	19	*10.4*
21-25 years	16	*8.8*
>25 years	88	*48.4*
	182	*100.0*

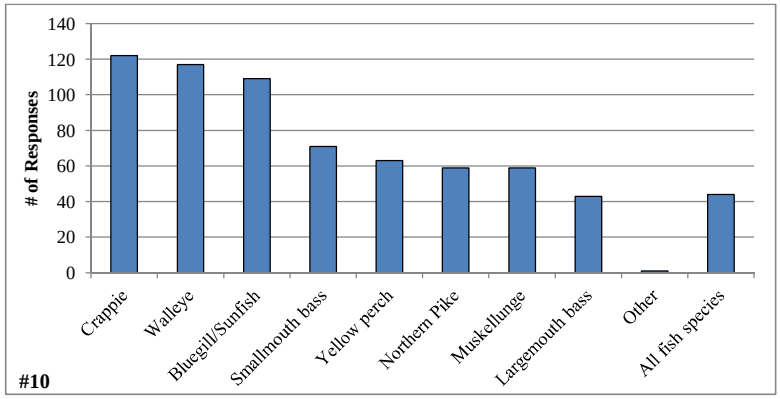


#9 How would you describe the current quality of fishing on Lac Sault Dore?

	Total	%
Very Poor	2	*1.2*
Poor	37	*22.0*
Fair	85	*50.6*
Good	43	*25.6*
Excellent	1	*0.6*
Unsure	13	*7.7*
	168	*100.0*

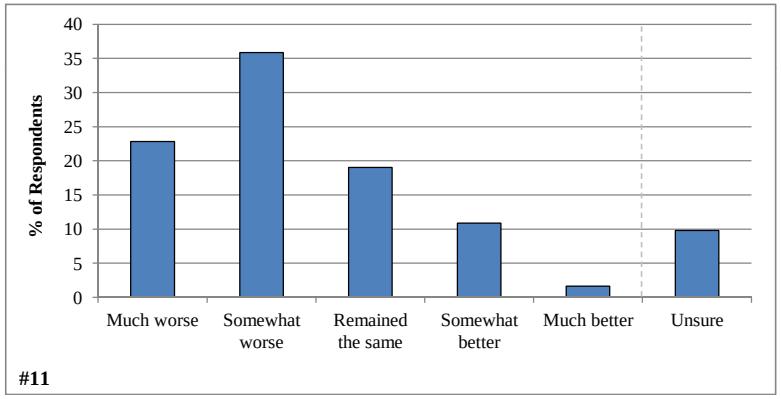
#10 What species of fish do you like to catch on Lac Sault Dore?

	Total
Crappie	122
Walleye	117
Bluegill/Sunfish	109
Smallmouth bass	71
Yellow perch	63
Northern Pike	59
Muskellunge	59
Largemouth bass	43
Other	1
All fish species	44
	644



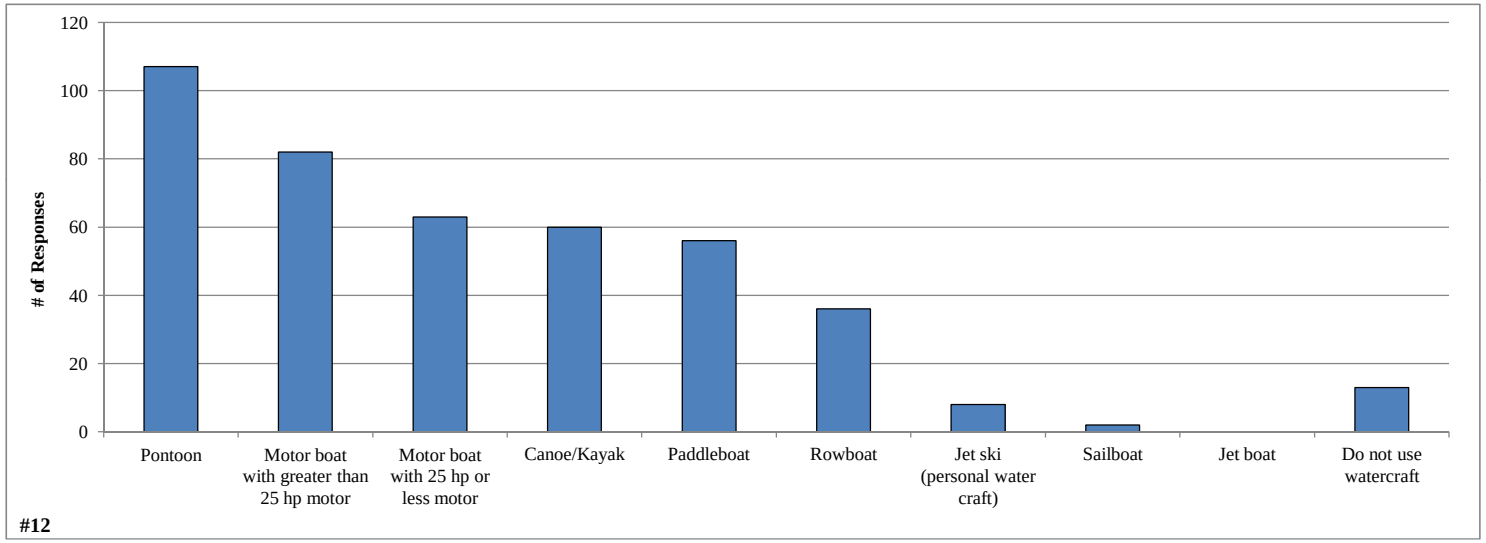
#11 How has the quality of fishing changed since you started fishing on the lake?

	Total	%
Much worse	42	*22.8*
Somewhat worse	66	*35.9*
Remained the Same	35	*19.0*
Somewhat better	20	*10.9*
Much better	3	*1.6*
Unsure	18	*9.8*
	184	*100.0*



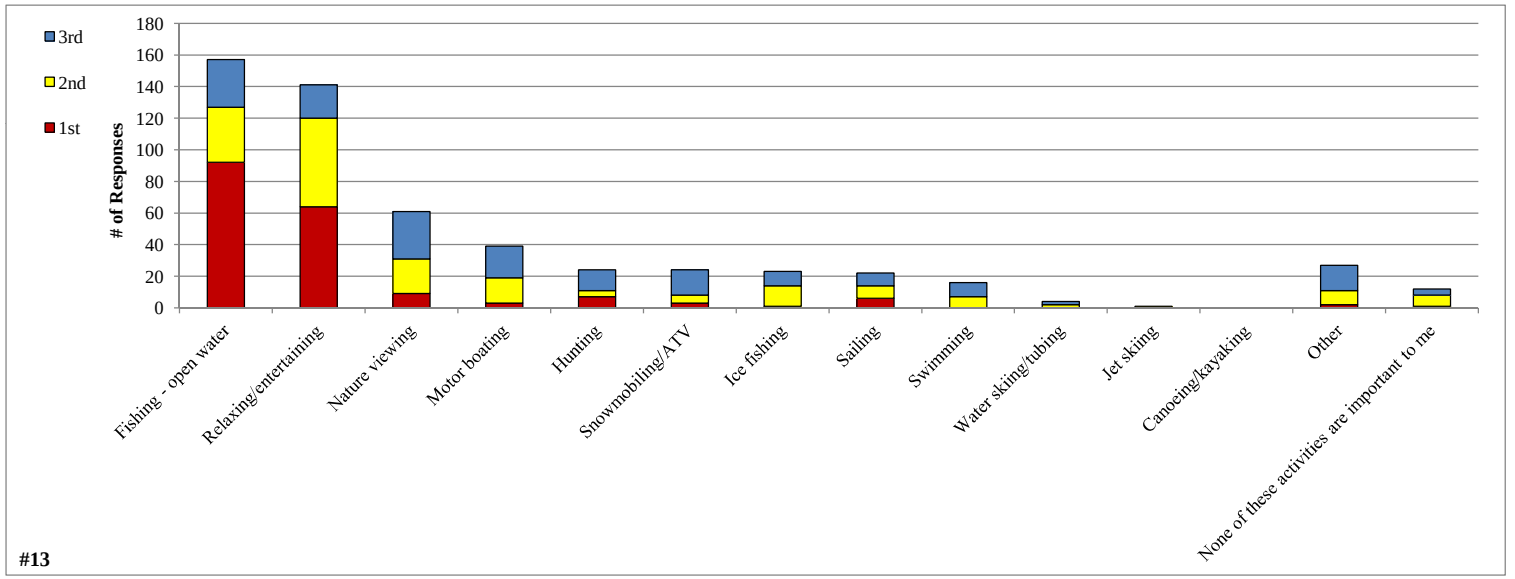
#12 What types of watercraft do you currently use on the lake?

	Total
Pontoon	107
Motor boat with greater than 25 hp motor	82
Motor boat with 25 hp or less motor	63
Canoe/Kayak	60
Paddleboat	56
Rowboat	36
Jet ski (personal water craft)	8
Sailboat	2
Jet boat	0
Do not use watercraft	13



#13 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	92	35	30	*28.5*
Relaxing/entertaining	64	56	21	*25.6*
Nature viewing	9	22	30	*11.1*
Motor boating	3	16	20	*7.1*
Hunting	7	4	13	*4.4*
Snowmobiling/ATV	3	5	16	*4.4*
Ice fishing	1	13	9	*4.2*
Sailing	6	8	8	*4.0*
Swimming	0	7	9	*2.9*
Water skiing/tubing	0	2	2	*0.7*
Jet skiing	0	1	0	*0.2*
Canoeing/kayaking	0	0	0	*0.0*
Other	2	9	16	*4.9*
None of these activities are important to me	1	7	4	*2.2*
	188	185	178	*100.0*

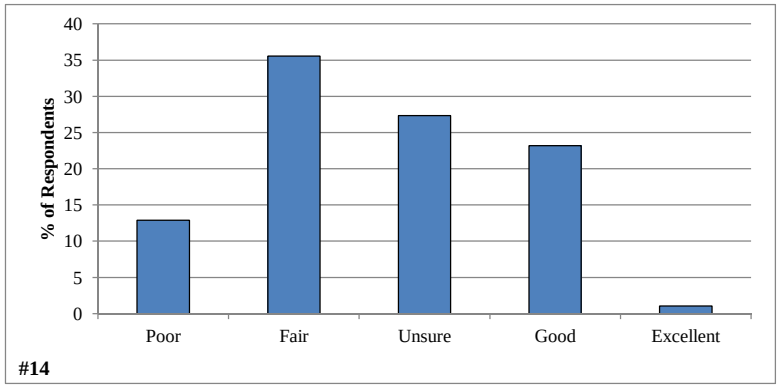


#13

LAC SAULT DORE CURRENT AND HISTORIC CONDITION, HEALTH AND MANAGEMENT

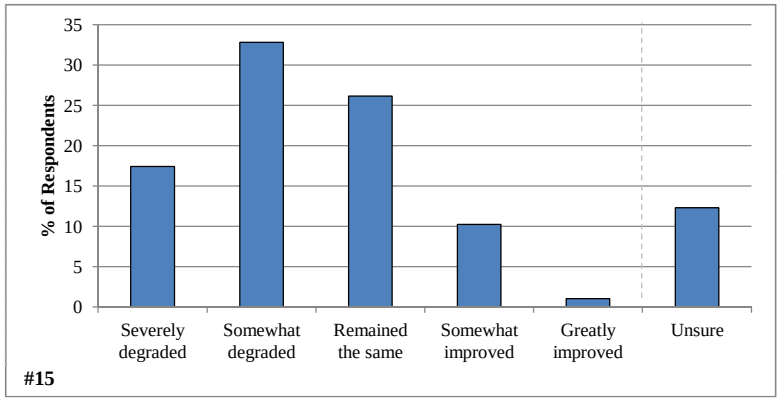
#14 How would you describe the current water quality of Lac Sault Dore?

	Total	%
Poor	25	*12.9*
Fair	69	*35.6*
Unsure	53	*27.3*
Good	45	*23.2*
Excellent	2	*1.0*
	194	*100.0*



#15 How has the water quality changed in Lac Sault Dore since you visited the lake?

	Total	%
Severely degraded	34	*17.4*
Somewhat degraded	64	*32.8*
Remained the same	51	*26.2*
Somewhat improved	20	*10.3*
Greatly improved	2	*1.0*
Unsure	24	*12.3*
	195	*100.0*



#16 Have you ever heard of aquatic invasive species?

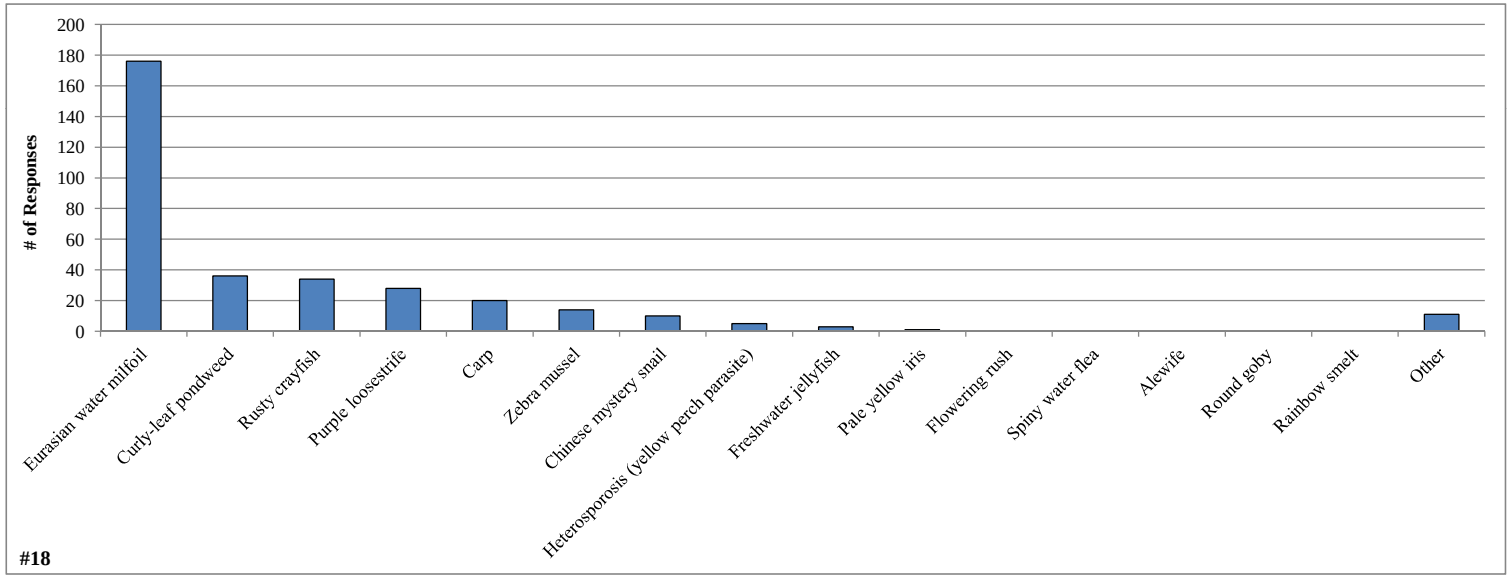
	Total	%
Yes	186	*94.4*
No	11	*5.6*
	197	*100.0*

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

	Total	%
Yes	179	*95.7*
No	8	*4.3*
	187	*100.0*

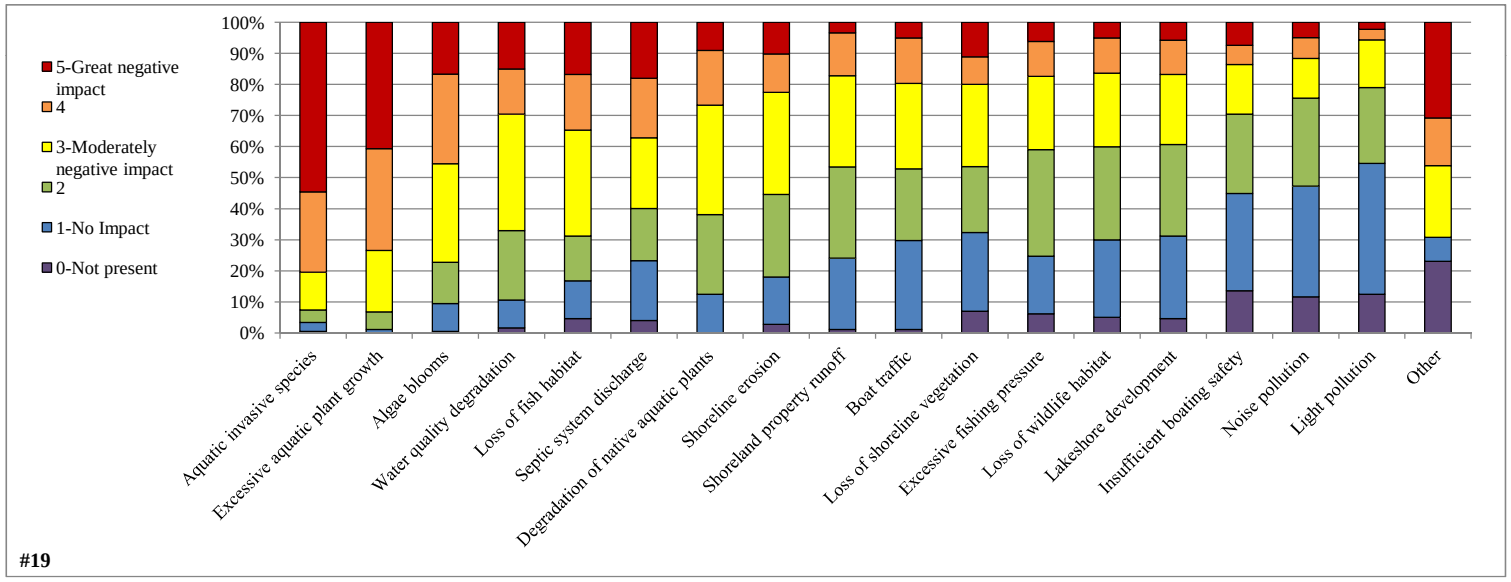
#18 Which aquatic invasive species are you aware of in the lake?

	Total
Eurasian water milfoil	176
Curly-leaf pondweed	36
Rusty crayfish	34
Purple loosestrife	28
Carp	20
Zebra mussel	14
Chinese mystery snail	10
Heterosporosis (yellow perch parasite)	5
Freshwater jellyfish	3
Pale yellow iris	1
Flowering rush	0
Spiny water flea	0
Alewife	0
Round goby	0
Rainbow smelt	0
Other	11



#19 To what level do you believe each of the following factors may be negatively impacting Lac Sault Dore?

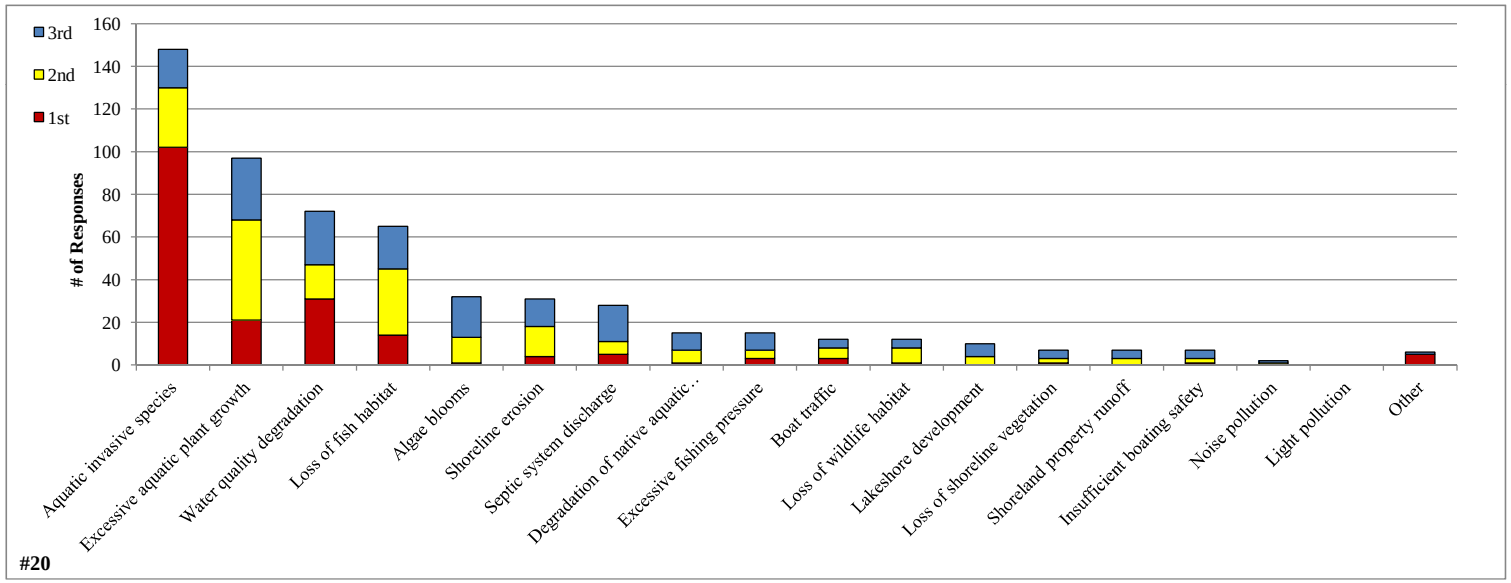
	0-Not present	1-No Impact	2	3-Moderately negative impact	4	5-Great negative impact	*Total*	*Average*
Aquatic invasive species	1	5	7	21	45	95	*173*	*4.2*
Excessive aquatic plant growth	0	2	10	35	58	72	*177*	*4.1*
Algae blooms	1	16	24	57	52	30	*179*	*3.3*
Water quality degradation	3	16	40	67	26	27	*176*	*3.0*
Loss of fish habitat	8	21	25	59	31	29	*165*	*3.0*
Septic system discharge	7	33	29	39	33	31	*165*	*2.9*
Degradation of native aquatic plants	0	22	45	62	31	16	*176*	*2.9*
Shoreline erosion	5	27	47	58	22	18	*172*	*2.8*
Shoreland property runoff	2	40	51	51	24	6	*172*	*2.4*
Boat traffic	2	51	41	49	26	9	*176*	*2.4*
Loss of shoreline vegetation	12	43	36	45	15	19	*158*	*2.4*
Excessive fishing pressure	11	33	61	42	20	11	*167*	*2.3*
Loss of wildlife habitat	9	44	53	42	20	9	*168*	*2.3*
Lakeshore development	8	46	51	39	19	10	*165*	*2.3*
Insufficient boating safety	24	55	45	28	11	13	*152*	*1.9*
Noise pollution	21	64	51	23	12	9	*159*	*1.8*
Light pollution	22	74	43	27	6	4	*154*	*1.6*
Other	3	1	0	3	2	4	*10*	*2.9*



#19

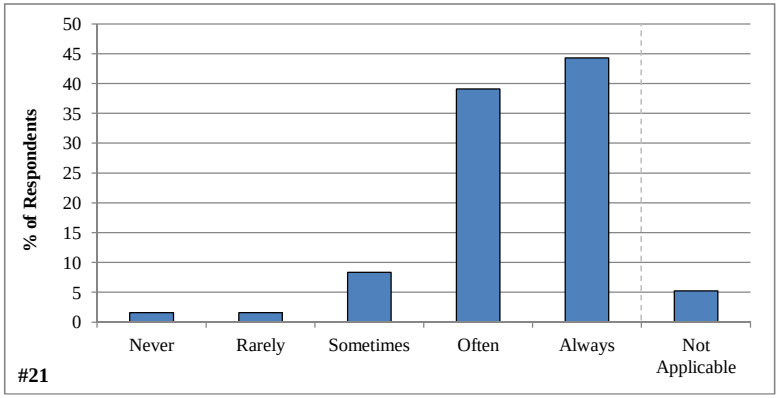
#20 From the list below, please rank your top three concerns regarding the lake.

	1st	2nd	3rd	*% Ranked*
Aquatic invasive species	102	28	18	*26.1*
Excessive aquatic plant growth	21	47	29	*17.1*
Water quality degradation	31	16	25	*12.7*
Loss of fish habitat	14	31	20	*11.5*
Algae blooms	1	12	19	*5.7*
Shoreline erosion	4	14	13	*5.5*
Septic system discharge	5	6	17	*4.9*
Degradation of native aquatic plants	1	6	8	*2.7*
Excessive fishing pressure	3	4	8	*2.7*
Boat traffic	3	5	4	*2.1*
Loss of wildlife habitat	1	7	4	*2.1*
Lakeshore development	0	4	6	*1.8*
Loss of shoreline vegetation	1	2	4	*1.2*
Shoreland property runoff	0	3	4	*1.2*
Insufficient boating safety	1	2	4	*1.2*
Noise pollution	0	1	1	*0.4*
Light pollution	0	0	0	*0.0*
Other	5	0	1	*1.1*
	193	188	185	*100.0*



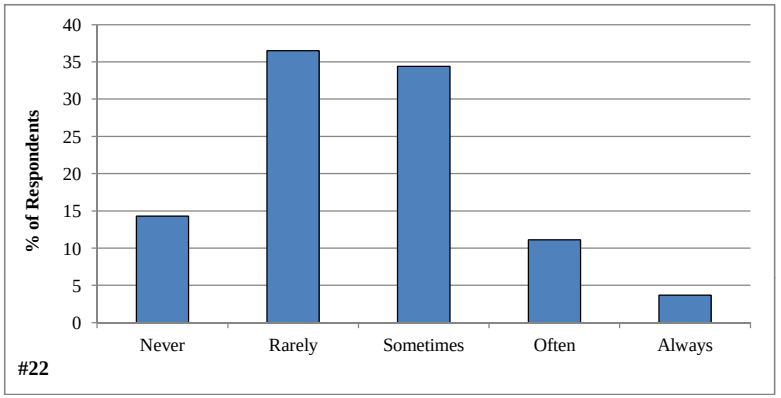
#21 Before the drawdown over the winter of 2010/2011, how often did aquatic plant growth, including algae, negatively impact your enjoyment of Lac Sault Dore during the open water season?

	Total	%
Never	3	*1.6*
Rarely	3	*1.6*
Sometimes	16	*8.3*
Often	75	*39.1*
Always	85	*44.3*
Not Applicable	10	*5.2*
	192	*100.0*



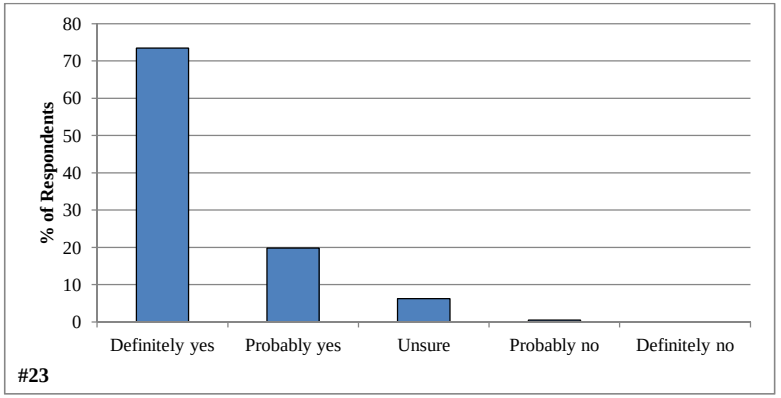
#22 How often does aquatic plant growth, including algae, negatively impact your enjoyment of Lac Sault Dore during the open water season of 2011?

	Total	%
Never	27	*14.3*
Rarely	69	*36.5*
Sometimes	65	*34.4*
Often	21	*11.1*
Always	7	*3.7*
	189	*100.0*



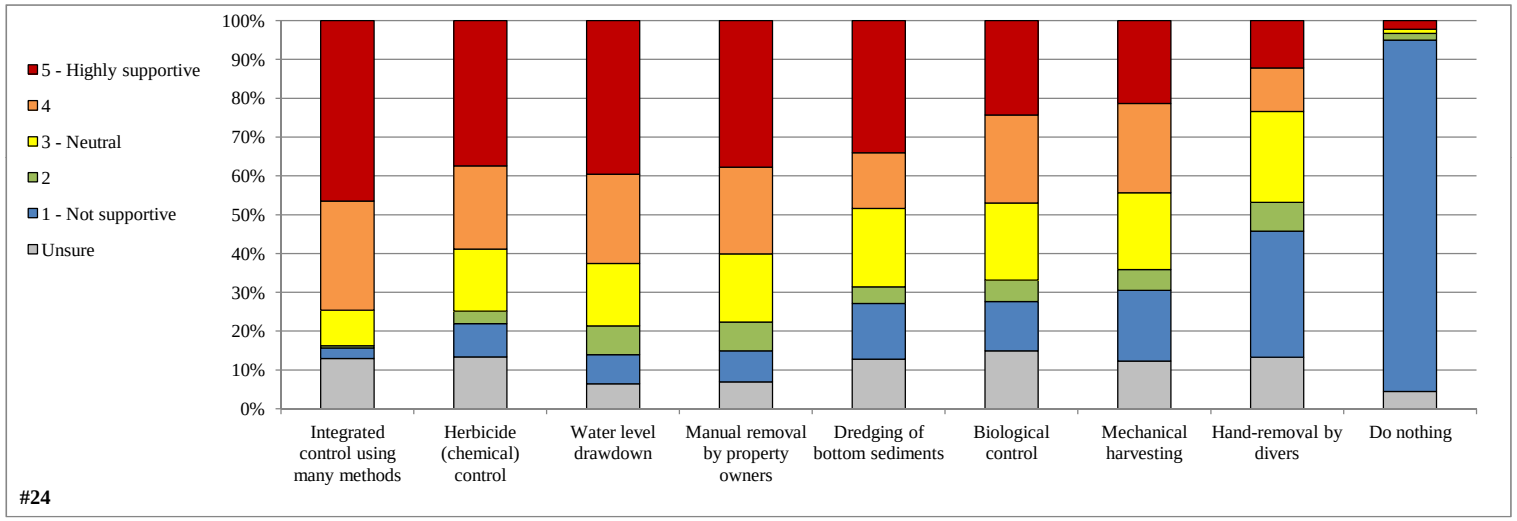
#23 Considering your answer to the question above, do you believe aquatic plant control is needed on the lake?

	Total	%
Definitely yes	141	*73.4*
Probably yes	38	*19.8*
Unsure	12	*6.3*
Probably no	1	*0.5*
Definitely no	0	*0.0*
	192	*100.0*



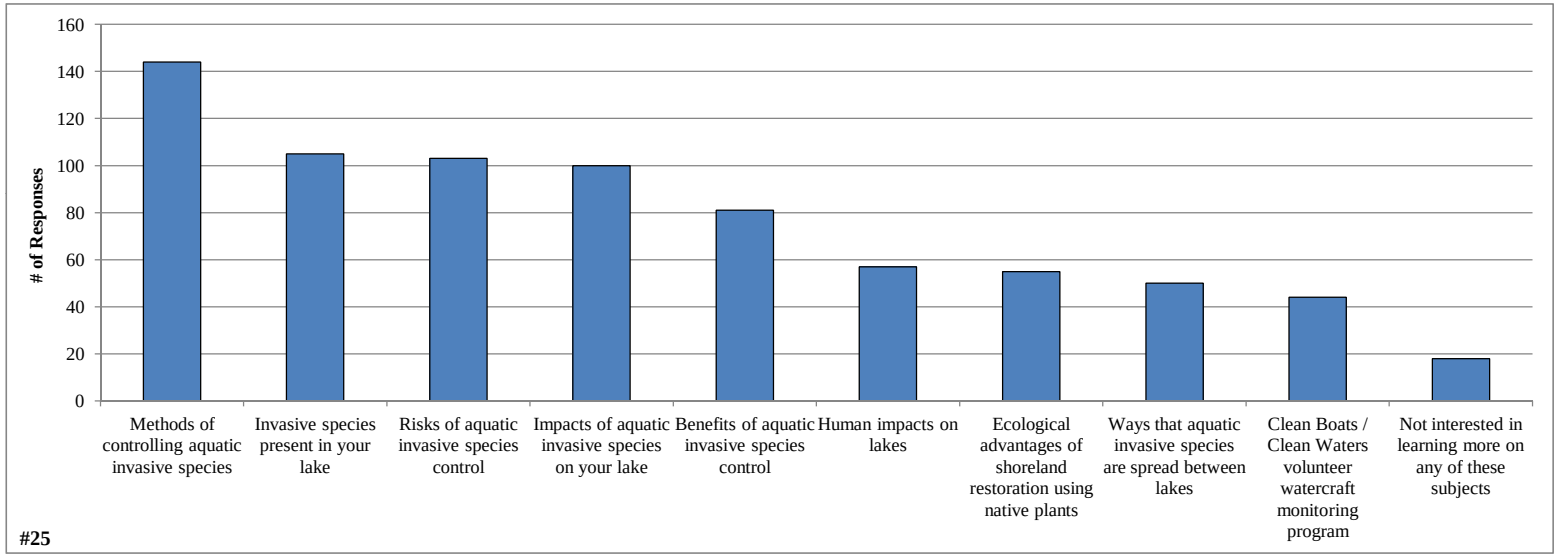
#24 What is your level of support for the responsible use of the following techniques on the lake?

	1 - Not supportive	2	3 - Neutral	4	5 - Highly supportive	Unsure	Total	Average
Integrated control using many methods	5	1	17	52	86	24	*161*	*4.3*
Herbicide (chemical) control	16	6	30	40	70	25	*162*	*3.9*
Water level drawdown	14	14	30	43	74	12	*175*	*3.9*
Manual removal by property owners	15	14	33	42	71	13	*175*	*3.8*
Dredging of bottom sediments	27	8	38	27	64	24	*164*	*3.6*
Biological control	23	10	36	41	44	27	*154*	*3.5*
Mechanical harvesting	34	10	37	43	40	23	*164*	*3.3*
Hand-removal by divers	61	14	44	21	23	25	*163*	*2.6*
Do nothing	163	3	2	0	4	8	*172*	*1.1*



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

	Total
Methods of controlling aquatic invasive species	144
Invasive species present in your lake	105
Risks of aquatic invasive species control	103
Impacts of aquatic invasive species on your lake	100
Benefits of aquatic invasive species control	81
Human impacts on lakes	57
Ecological advantages of shoreland restoration using native plants	55
Ways that aquatic invasive species are spread between lakes	50
Clean Boats / Clean Waters volunteer watercraft monitoring program	44
Not interested in learning more on any of these subjects	18



SOO LAKE UNITED ASSOCIATION, INC.

#26 Before receiving this mailing, have you ever heard of the Soo Lake United Association, Inc.?

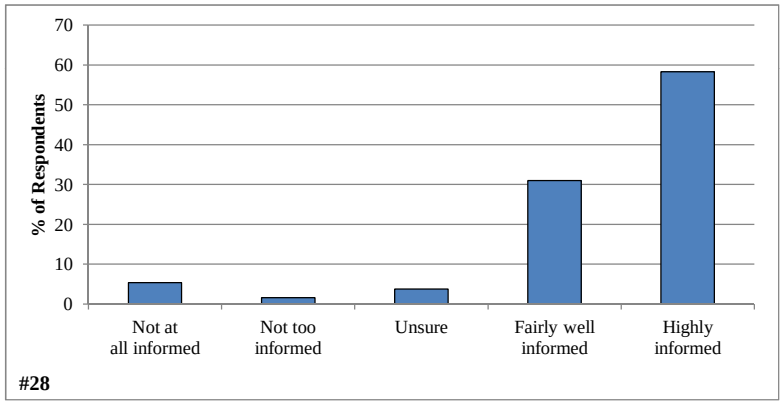
	Total	%
Yes	187	*95.9*
No	8	*4.1*
	195	*100.0*

#27 What is your membership status with the Soo Lake United Association, Inc.?

	Total	%
Current member	161	*85.6*
Former member	10	*5.3*
Never been a member	17	*9.0*
	188	*100.0*

#28 How informed has the Soo Lake United Association, Inc. kept you regarding issues with the lake and its management?

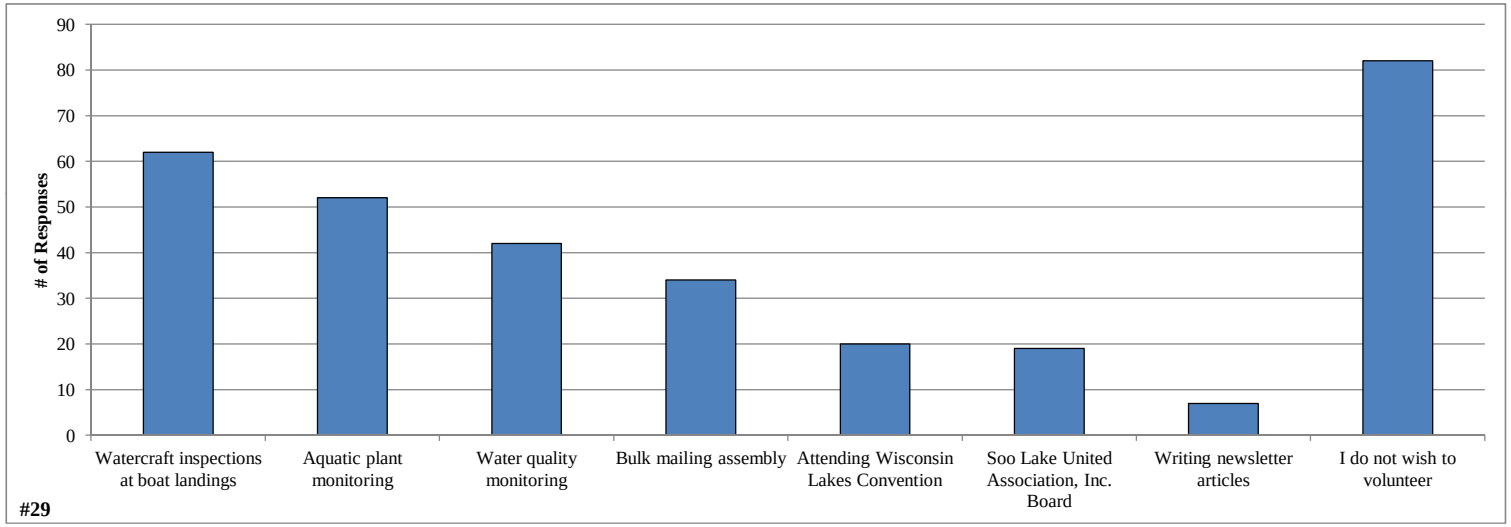
	Total	%
Not at all informed	10	*5.3*
Not too informed	3	*1.6*
Unsure	7	*3.7*
Fairly well informed	58	*31.0*
Highly informed	109	*58.3*
	187	*100.0*



#28

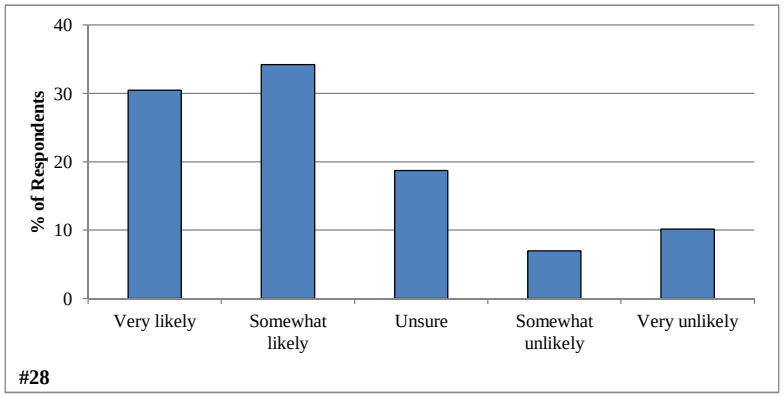
#29 Please circle the activities you would be willing to participate in if the Soo Lake United Association, Inc. requires additional assistance.

	Total
Watercraft inspections at boat landings	62
Aquatic plant monitoring	52
Water quality monitoring	42
Bulk mailing assembly	34
Attending Wisconsin Lakes Convention	20
Soo Lake United Association, Inc. Board	19
Writing newsletter articles	7
I do not wish to volunteer	82



#30 How likely would you be to offer a monetary donation to the SLUA (other than or in addition to membership dues) if your donation was designated to lake management activities?

	Total	%
Very likely	57	*30.5*
Somewhat likely	64	*34.2*
Unsure	35	*18.7*
Somewhat unlikely	13	*7.0*
Very unlikely	19	*10.2*
	188	*100.5*



If you indicated "Very likely" or "Somewhat likely" on the above question, how much might you donate towards lake management activities?

Surevey respondents were asked to indicate a dollar amount, annually.

Answered Question	112
Average	$122
Standard deviation	$128
Minimum	$0
Maximum	$1,000

Survey Number	1g Comment	10i Comment	13o Comment	18p Comment	19r Comment	20r Comment
1						
2						
3						
4						
5				Lilly Pads		
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16				Water Lilly		
17						
18					Jet Ski	
19						
20	Permanet Camper					
21	Up River					
22						
23						
24	Campground					
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36				Lilly Pads		
37						No Concern
38						None
39						
40						
41	Permanet Camper					
42	Permanet Camper					
43						
44						
45					Lowering the water	
46						
47						
48						
49						
50						
51						
52						
53				Golden Shiners		
54	Permanet Camper					
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65					Floating Debris (Logs, etc.)	
66						
67			Getting away from the city			
68						
69						
70					Jet Ski Speeding	
71						
72						
73						
74						
75				Suckers		
76						
77						
78					No wake violations	
79						
80						
81						
82						

Survey Number	1g Comment	10i Comment	13o Comment	18p Comment	19r Comment	20r Comment
83						
84						
85						
86						
87						
88						
89			Peace & Quite			
90				Jet Skiis	Failure to heed no wake zones	
91						
92						
93						
94						
95						
96						
97						
98						
99						
100						
101						
102						
103			Inherited a lot.			
104						
105						
106						
107					NA	NA
108						
109						
110						
111		Catch & release any caught				
112						
113						
114						
115						
116						
117				Lilly Pad		
118						
119						
120				Humans	Too many people using the lake.	
121						Excessive Lilly Pads in bay areas.
122						
123						
124						
125						
126						
127					Septic System Monitoring	
128						
129						
130						
131						
132						
133						
134						
135						
136						
137						
138						
139						
140						
141						
142						
143	Seasonal (All Year)					
144			Retirement Home			
145			Camping			
146			Pontooning	Snails		
147						
148						
149						
150						
151						
152						
153						
154						
155	Sept,Oct,Deer Hunting, Spring					
156						
157						
158						
159						
160						
161						
162						

Survey Number	1g Comment	10i Comment	13o Comment	18p Comment	19r Comment	20r Comment
163						
164						
165						
166						
167						
168			Sale of Property			
169						
170						
171						
172					Creating wakes in a no wake zone.	
173						
174				I have other weeds infront of my cabin but not sure what they are.		
175						
176						
177			Liesure Rides			
178						
179						
180			Income Tax Break, Capital Gain Tax Break, Inheritance Tax Break			
181						
182						
183						
184						
185	Camper		Camping			
186						
187						
188						
189				Lilly Pads		
190	Late April through end of October					
191						
192						
193						
194						
195						
196						
197						

Lac Sault Dore Survey Question 31

1 There's nothing quite like the "bragging rights" we have when Soo Lake has the most "user friendly", best wildlife viewing & best fishing of all the lakes in the area – especially to visitors (family & friends not living here)! That does involve education & people getting involved whenever possible.

3 The current association is the most we have been united. I strongly believe in unity if we are going to Aget something done.

5 Muskie or bass tournaments brought in problems because of no checking of boats, trailers and vehicles.

6 Prior to the draw down of 2010/2011 the water quality was so disgusting that I didn't even put the boat in the water. This spring was the best fishing that I have experienced in many, many years.

7 I think you have done a wonderful job. Without a clean lake we have nothing.

8 Soo Lake is and has been a nice clean lake to swim, fish and boat. The only exception has been when the EWM growth became excessive in the past 2-3 years. The occasional late summer algae blooms get annoying, but are tolerable. Same for the snails that washed up on the shore lines prior to draw downs.

13 The lake should be drawn down 2-3 feet each year.

18 Our board is doing a great job!

19 I'm glad the draw down had a good impact on the weeds – EWM and most of the fish survived but I don't think future draw downs would be good for the fish survival.

22 Before the draw down, I was afraid to take the pontoon out for fear of ruining the motor. The draw down had a very positive affect on the EWM, however the floating stumps and driftwood was a problem and I had a lot of dead small fish on the shoreline. I would like to see some kind of treatment done to keep the milfoil under control.

23 Really would like more information about herbicide treatment. What are the potential effects to wildlife, humans (via fish consumption). I understand this could be the most effective, but at what cost to the ecosystem.

38 Honest-I am a seasonal weekender on a lake ten miles away. I hate to see the lake go untreated but I don't feel it is necessary for me to get involved at this time.

39 There has been excessive shoreline erosion on the Elk River because of boats and jet skiis going too fast up the river – also scratching and denting boats that are tied to docks. Fishing has always been better after draw down.

45 We feel the draw downs of the last few years has greatly affected the fishing.

46 Very disappointed in DNR restrictions in managing aquatic plant control in personal lake frontages. Was very unhappy with DNR representative's cooperation concerning aquatic plant problems!!

47 I used to fish Soo Lake but with the increased weed growth, excessive boat traffic and noise pollution, I no longer fish there but have kept a vacant lot there that I will eventually sell. Development subdivisions have hurt all our area lakes.

50 I think the draw down was a great move. From the surface it seemed to work. I just hope that some sort of maintenance is done to keep the lake the way it was this past summer.

53 We need to get rid of all the milfoil chemically even if it means loosing some of the native plants and then replant native plants if natural reproduction of these does not occur. Also they have to get rid of the milfoil upstream from our lake to prevent regrowth.

54 Keep up the good work. There was definitely less weeds this year but many less fish, too. Hopefully the fish return faster than the weeds.

58 We need to do something in 20-30 years or the lake will be a swamp. Maybe sooner?

59 Lake was much better before draw downs in the 1980's. I believe draw downs were responsible for destroying the excellent fishing we had before. Also too much pollution is getting into the lake – Soo Lake gets all the pollution from Phillips and all lakes upstream.

64 Something needs to be done:

1) dig the lake deeper – jobs program
2) keep draining the lake each fall
3) chemical treatment

Thank you for your efforts in addressing this issue.

65 The board and the current participants are doing are doing an excellent job! They are passionate about the quality of Soo Lake and it's enjoyment for all. THANK YOU!! PS. Kill the weeds (they are not aquatic plants like the biologists like to tell us. . . . they are weeds that choke off a wonderful lake!!)

70 Most of the bays use to be good for fishing, but can't even get in to them with the EWM & Lilly Pads!! Maybe we need to start cleaning those areas first to keep from spreading into deeper waters.

71 I was surprised that the draw down worked as good as it did as I was worried the fishing would suffer but actually fishing was pretty good and the weeds were down. Hopefully we won't have to draw down the lake for awhile because maybe the ice fishermen won't leave the lake alone next time we draw it down. I think the leaders of the lake association are doing a great job. Keep it up.

82 Our family has had Soo Lake property since 1962 and has seen various problems with weeds. In the 1960's the lake had coontails and I don't know the name of weed (looks like a lily pad but stuck out of the water 2-3 feet). After the first draw down, most of the lily pad looking weeds were eliminated and coontail was reduced or a problem only in shallow water. Now in recent years EWM has been introduced and extends to deeper waters and is a major problem. I'm not sure if the draw down will eliminate the EWM problem if all lakes about us on the Elk River chain are not involved because we are the last lake on the chain – therefore, a dumping ground. I believe all

lakes above us need to be involved and cleaned in order for it to eliminate/or reduce Soo Lake's problem.

85 We live down river of Weimer dam so we are always curious about Soo Lake (we have canoed and fished there). I am a forester in the area and deal a lot with terrestrial (land) invasive species, but I am familiar with aquatic also. I have found there to be quite a bit of Asian bush honeysuckles around the Soo Lake and Elk river corridor, so you may want to mention that in addition to dealing with the lake's aquatic species. Two other aggressive invasives to look out for are buckthorn and garlic mustard. I am sure people would want to get rid of those invasives in addition the aquatic invasives. Keep up the good work. Thanks.

89 President Stan Gruszka is doing an outstanding job as is SLUA.

90 All officers are doing a very good job. Keep it up. How do we get cabbage weeds back? Pleasure boaters come too near to other boats. Boaters are unaware of the meaning of No Wake signs. It doesn't mean slow down a little bit. This subject should be discussed at one of our meetings.

93 As long as we control "weeds" and boating and fishing is good, I'll support with a donation. Everyone should be in agreement. Have a great day. Your friend.

96 We are pleased with the SLUA board especially the president. We think they/we are headed in the right direction.

97 I appreciate receiving this survey. I personally feel the draw down was helpful with the eliminating some the milfoil. An issue I notice a lot in the summer is boaters and jet ski's running way too close to shore causing wakes and scuff boats against docks and causing the shoreline to erode. The fish cribs in the lake are great structure and make for good fishing on occasion but they may be getting a little dated and might need to be replaced in the near future.

101 The fishing is Arizona is really great!

102 My husband inherited a lot near Soo Lake, which is not used. Nor is the lake. We have transferred ownership of this lot to our children – who live far from Phillips and/or out of state. I will send a check for membership, just to help conserve Soo Lake. I live on Long Lake and have similar concerns about it. Thanks.

110 I would like to see the weeds cleaned out of the lake. I don't fish much but my children do. With the weed problem, my grandchildren don't want to swim in the lake. It used to be clean water and great for fishing and swimming. At this time swimming is not fun for them. Boating is in the main channel or the weeds get in the prop so bad we have to stop and pull the weeds off the prop. That is my main concern.

115 Our property is not on the lake but across the street from it and has been in our family for over 50 years. Therefore it is important to our family that we can maintain the connection to Soo Lake. However in the last several years with the lake condition there has been no draw to visit. It's currently used in the fall/winter for hunting and very little in spring/summer because we can't enjoy the lake.

116 The use of large motor boats that contribute to shoreline erosion is a major concern. Our property is left natural at the waterfront with trees and shrubs and still has lost 4-6 feet (lost land shore/inward) of land along shoreline in the last 20 years. Suggestion: tax large motor boats (over 25 HP) and use proceeds to assist affected shoreline owners to protect land from shoreline erosion. Growth on surface of matts of lake weed in open parts of lake is another concern.

120 They only inform those who pay dues to be members – others are left out in the cold – if you want to know what is going on you must pay to belong to get the information. As a property owner why should I pay a membership fee to be involved in the management of what happens to Soo Lake? Also why do I need to pay membership to be informed of what the actions are taken by SLUA? They have a lot of members but less of 50 percent of the owners are members. Information needs to be shared with all lake property owners. After two draw downs in the 1990's and the one in 2010-11 it should be clear that any lake management plan should include draw downs. They can be affective in controlling EWM at an expectable cost and expectable inconvenience to the lake users. Draw downs should be automatic during the winter if milfoil is spotted during the summer. The more milfoil the lower the draw down. Please limit the amount of chemical treatment in any management plan. Also all cost involved need to come from a source other than property taxes or special tax to property owners. Remember the lake is owned by all people of the state and managed by the DNR. Failure to address the milfoil problem by the DNR got us to the situation of summer of 2010 and before. Milfoil must be addressed earlier and quickly. Do not wait for it to come back strongly as it did in 2008-2010. A management plan with "triggers" that are automatic is a good plan. If we need to wait for approval by the DNR it ends up being too slow.

121 Dredging – DNR denied home owners the ability to dredge frontage, makes no sense, it would improve fishing/ swimming at owners expense. Rock shoreline – DNR makes it impossible to get a permit, again makes no sense, it would resolve erosion problems and again is something that we do at our own expense. Removal of lily pads/floating logs – bay areas are bad, it would be nice to remove lily pads, they are spreading each year. Also seems crazy we cannot remove floating logs, boating is dangerous.

122 I have a concern about the effect of all the driftwood that has come up since the draw down. I know these are fish habitats, but you had to use extreme caution while boating. To even attempt Long John's shore, we had to turn away. What will that do for the economics of that particular place or even the people who want to do water sports? Could the drift wood be marked by some method? It not only seems to be a safety issue but how costly it could be to doing damage to the boats or God forbid, a person.

123 You are doing a great job. Just wish it were easier.

127 First and most important the septic system monitoring and regulating. Weed control needs to be regulated – some weeds are necessary for fishing habitat and reproductively but excessive weed growth must be eliminated.

128 Would like to know more about fish stocking in the past, plans for fish survey by DNR and future stockings.

129 After the draw down, it was like visiting a completely lake from 2010. It was very enjoyable and pleasant to have a lake that was not infiltrated with EWM. EWM is still present below the water surface and must be managed. It's only a matter of time before we have an EWM crisis if we do nothing. It will take everyone's involvement, participation, support, and commitment to maintain the long term quality of Soo Lake. SLUA's commitment is required to achieve this goal. Thanks for SLUA is doing a good job and taking a proactive approach.

131 The county trunk S boat landing is a huge disappointment. Our exhaust pipes and bumper should not be submerged when using it. It should have been inspected before payment was made. "UNEXCEPTIBLE"

135 We are very appreciative of all the effort the year round members contribute toward the improvements and maintenance of the lake.

136 I am concerned that the bays on Soo Lake will not get the same quality attention as the main part of the lake. At the present time the bay that I live in is in worse shape than the draw down.

141 Very supportive of association on lake.

155 Thanks for all the hard work.

169 While the draw down was very effective short term, we anticipate the milfoil to return. Over the 15 years of property ownership I've seen the lake go through several stages of weed growth. It is in my opinion that if the lake was dropped two feet each fall instead of the current one foot that in a normal winter the ice would freeze down most shallow bays to better control weeds. The current drop of one foot helps to control shoreline damage in spring, but is not helping control the weeds. Milfoil starts to get it's foothold in 5-6 ft. of water in summer where light can penetrate to the lake floor. By lowering the level by 2 ft. in fall this would freeze to the bottom (30+ inches of ice) of these areas. I believe this simple control measure would be highly effective.

172 I think we need more fish habitat such as fish cribs. I believe fish cribs placed in the river channel to protect small and young fish from over depredation during draw downs would be very helpful in preserving good fishing after such draw downs.

173 The lake is a mess – something needs to be done ASAP. I had more weeds in front of my property this summer (after the draw down) so that did nothing for me. I want the milfoil gone. The lake also needs another tube installed on the island road so we get better circulation on the lake. This would help control the weeds on either side of the culvert. I dredged about 25 years ago and would do it again if given permission.

177 I will be joining the association.

179 I think the association is in the right direction as far as water quality. I would like to see the sheriff get involved with boat patrol. Many boaters on the lake don't follow boating laws. They are too close to shore when tubing and skiing. Our shore erosion has greatly increased over the last five years.

C

APPENDIX C

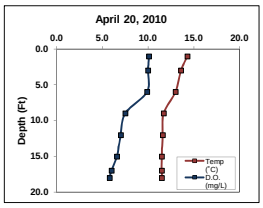
Water Quality Data

Lac Sault Dore

Date: 04-20-10
Time: 10:30
Weather: sunny, 68°F
Entry: TWH

Max Depth (ft): 18.9
LSDS Depth (ft): 3.0
LSDB Depth (ft): 17.0
Secchi Depth (ft): 2.5

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	14.3	10.1	8.1	
3.0	13.6	10.0	8.0	
6.0	13.0	9.9	7.9	
9.0	11.7	7.5	7.4	
12.0	11.6	7.0	7.3	
15.0	11.5	6.6	7.2	
17.0	11.5	6.0	7.1	
18.0	11.5	5.8	7.1	



Parameter	LSDS	LSDB
Total P (µg/L)	40.00	59.00
Dissolved P (µg/L)	2.00	3.00
Chl-a (µg/L)	11.50	
TKN (µg/L)	1010.00	1000.00
$NO_3 + NO_2$-N (µg/L)	ND	ND
NH_3-N (µg/L)	ND	ND
Total N (µg/L)	1010.00	1000.00
Lab Cond. (µS/cm)	109.00	110.00
Lab pH	7.70	7.14
Alkalinity (mg/L $CaCO_3$)	41.10	40.00
Total Susp. Solids (mg/L)	4.00	7.00
Calcium (mg/L)	12.50	

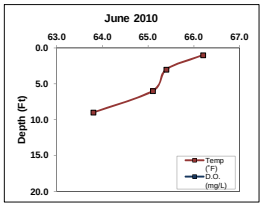
Data collected by TWH and SNR

Lac Sault Dore

Date: 06-16-10
Time:
Weather:
Entry: TWH

Max Depth (ft):
LSDS Depth (ft): 0-6 ft
LSDB Depth (ft):
Secchi Depth (ft): 3.5

Depth (ft)	Temp (°F)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	66.2			
3.0	65.4			
6.0	65.1			
9.0	63.8			



Parameter	LSDS	LSDB
Total P (µg/L)	57.00	
Dissolved P (µg/L)		
Chl-a (µg/L)	26.90	
TKN (µg/L)	1230.00	
$NO_3 + NO_2$-N (µg/L)	ND	
NH_3-N (µg/L)	ND	
Total N (µg/L)	1230.00	
Lab Cond. (µS/cm)		
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)		
Calcium (mg/L)		

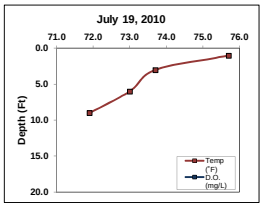
Data collected by CLMN

Lac Sault Dore

Date: 07-19-10
Time:
Weather:
Entry: TWH

Max Depth (ft):
LSDS Depth (ft): 0-6
LSDB Depth (ft):
Secchi Depth (ft): 1.5

Depth (ft)	Temp (°F)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	75.7			
3.0	73.7			
6.0	73.0			
9.0	71.9			



Parameter	LSDS	LSDB
Total P (µg/L)	146.00	
Dissolved P (µg/L)		
Chl-a (µg/L)	3.30	
TKN (µg/L)	1740.00	
$NO_3 + NO_2$-N (µg/L)	151.00	
NH_3-N (µg/L)	131.00	
Total N (µg/L)	1740.00	
Lab Cond. (µS/cm)		
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)		
Calcium (mg/L)		

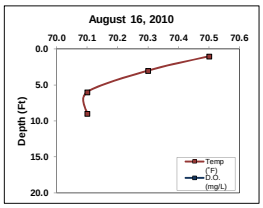
Data collected by CLMN

Lac Sault Dore

Date: 08-16-10
Time:
Weather:
Entry: TWH

Max Depth (ft):
LSDS Depth (ft): 0-6
LSDB Depth (ft):
Secchi Depth (ft): 1.5

Depth (ft)	Temp (°F)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	70.5			
3.0	70.3			
6.0	70.1			
9.0	70.1			



Parameter	LSDS	LSDB
Total P (µg/L)	91.00	
Dissolved P (µg/L)		
Chl-a (µg/L)	2.77	
TKN (µg/L)	1830.00	
$NO_3 + NO_2$-N (µg/L)	123.00	
NH_3-N (µg/L)	102.00	
Total N (µg/L)	1830.00	
Lab Cond. (µS/cm)		
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)		
Calcium (mg/L)		

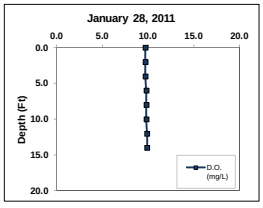
Data collected by CLMN

Lac Sault Dore

Date: 01-28-11
Time: 10:00
Weather: Partly cloudy 17°F
Entry: DAC

Max Depth (ft): -
LSDS Depth (ft): -
LSDB Depth (ft): -
Secchi Depth (ft): -

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
0.0		9.7		
2.0		9.7		
4.0		9.7		
6.0		9.8		
8.0		9.8		
10.0		9.8		
12.0		9.9		
14.0		9.9		



Parameter	LSDS	LSDB
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)		

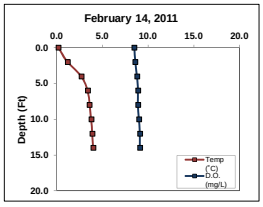
Data collected by SLUA

Lac Sault Dore

Date: 02-14-11
Time: 14:25
Weather: sunny, 37°F
Entry: DAC

Max Depth (ft): -
LSDS Depth (ft): -
LSDB Depth (ft): -
Secchi Depth (ft): -

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
0.0	0.2	8.5		
2.0	1.2	8.6		
4.0	2.7	8.8		
6.0	3.4	8.9		
8.0	3.6	8.9		
10.0	3.8	9.0		
12.0	3.9	9.1		
14.0	4.0	9.1		



Parameter	LSDS	LSDB
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)		

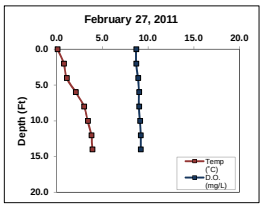
Data collected by SLUA

Lac Sault Dore

Date: 02-27-11
Time: 13:15
Weather: sunny, 35°F
Entry: DAC

Max Depth (ft): -
LSDS Depth (ft): -
LSDB Depth (ft): -
Secchi Depth (ft): -

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
0.0	0.1	8.7		
2.0	0.8	8.7		
4.0	1.1	8.9		
6.0	2.1	9.0		
8.0	3.0	9.0		
10.0	3.4	9.1		
12.0	3.8	9.2		
14.0	3.9	9.2		



Parameter	LSDS	LSDB
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)		

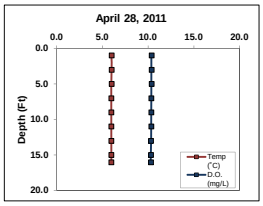
Data collected by SLUA

Lac Sault Dore

Date: 04-28-11
Time: 9:00
Weather: 100% clouds, breezy, light snow, 30°F
Ent: TWH **Verf:**

Max Depth (ft): 17.9
LSDS Depth (ft): 3.0
LSDB Depth (ft): 15.0
Secchi Depth (ft): 2.9

Depth (ft)	Temp (°C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	6.0	10.4	7.2	
3.0	6.0	10.4	7.2	
5.0	6.0	10.4	7.2	
7.0	6.0	10.4	7.2	
9.0	6.0	10.4	7.2	
11.0	6.0	10.3	7.2	
13.0	6.0	10.3	7.2	
15.0	6.0	10.3	7.2	
16.0	6.0	10.3	7.2	



Parameter	LSDS	LSDB
Total P (µg/L)	39.00	37.00
Dissolved P (µg/L)	3.00	2.00
Chl-a (µg/L)	6.05	
TKN (µg/L)	480.00	580.00
$NO_3 + NO_2$-N (µg/L)	151.00	150.00
NH_3-N (µg/L)	16.00	15.00
Total N (µg/L)	480.00	580.00
Lab Cond. (µS/cm)	49.00	49.00
Lab pH	6.95	7.04
Alkalinity (mg/L $CaCO_3$)	16.90	
Total Susp. Solids (mg/L)	3.00	3.00
Calcium (mg/L)	5.70	

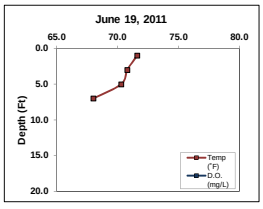
Data collected by TWH (Onterra)

Lac Sault Dore

Date: 06-19-11
Time:
Weather:
Ent: TWH

Max Depth (ft):
LSDS Depth (ft): 0-6
LSDB Depth (ft):
Secchi Depth (ft): 2.5

Depth (ft)	Temp (°F)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	71.6			
3.0	70.8			
6.0	70.3			
9.0	68.0			



Parameter	LSDS	LSDB
Total P (µg/L)	43.00	
Dissolved P (µg/L)		
Chl-a (µg/L)	10.10	
TKN (µg/L)	980.00	
$NO_3 + NO_2$-N (µg/L)	24.00	
NH_3-N (µg/L)	25.00	
Total N (µg/L)	980.00	
Lab Cond. (µS/cm)		
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)		
Calcium (mg/L)		

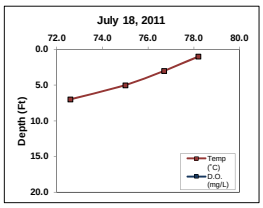
Data collected by CLMN

Lac Sault Dore

Date: 07-18-11
Time:
Weather:
Ent: TWH

Max Depth (ft):
LSDS Depth (ft): 0-6
LSDB Depth (ft):
Secchi Depth (ft): 2.5

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	78.2			
3.0	76.7			
6.0	75.0			
9.0	72.6			



Parameter	LSDS	LSDB
Total P (µg/L)	51.00	
Dissolved P (µg/L)		
Chl-a (µg/L)	25.70	
TKN (µg/L)	860.00	
$NO_3 + NO_2$-N (µg/L)	ND	
NH_3-N (µg/L)	26.00	
Total N (µg/L)	860.00	
Lab Cond. (µS/cm)		
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)		
Calcium (mg/L)		

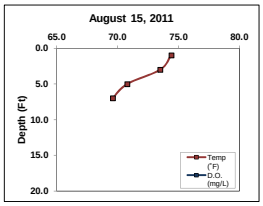
Data collected by CLMN

Lac Sault Dore

Date: 08-15-11
Time:
Weather:
Ent: TWH

Max Depth (ft):
LSDS Depth (ft): 0-6
LSDB Depth (ft):
Secchi Depth (ft): 2.5

Depth (ft)	Temp (˚F)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	74.4			
3.0	73.5			
6.0	70.8			
9.0	69.6			



Parameter	LSDS	LSDB
Total P (µg/L)	59.00	
Dissolved P (µg/L)		
Chl-a (µg/L)	19.80	
TKN (µg/L)	1180.00	
$NO_3 + NO_2$-N (µg/L)	30.00	
NH_3-N (µg/L)	16.00	
Total N (µg/L)	1180.00	
Lab Cond. (µS/cm)		
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)		
Calcium (mg/L)		

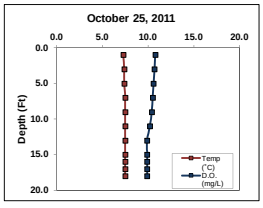
Data collected by CLMN

Lac Sault Dore

Date: 10-25-11
Time: 8:30
Weather: 100% clouds, breezy, 42ºF
Ent: TWH **Verf:**

Max Depth (ft): 18.7
LSDS Depth (ft): 3.0
LSDB Depth (ft): 16.0
Secchi Depth (ft): 3.1

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1.0	7.3	10.8		
3.0	7.4	10.7		
5.0	7.4	10.6		
7.0	7.5	10.5		
9.0	7.5	10.4		
11.0	7.5	10.2		
13.0	7.5	9.9		
15.0	7.5	9.9		
16.0	7.5	9.9		
17.0	7.5	9.9		
18.0	7.5	9.9		



Parameter	LSDS	LSDB
Total P (µg/L)	56.00	60.00
Dissolved P (µg/L)		
Chl-a (µg/L)	5.70	
TKN (µg/L)	600.00	
$NO_3 + NO_2$-N (µg/L)	156.00	
NH_3-N (µg/L)	ND	
Total N (µg/L)	600.00	
Lab Cond. (µS/cm)		
Lab pH		
Alkalinity (mg/L $CaCO_3$)		
Total Susp. Solids (mg/L)	2.00	4.00
Calcium (mg/L)		

Data collected by TWH (Onterra)

D

APPENDIX D

Watershed Analysis WiLMS Results

Date: 4/9/2012 Scenario: Lac Sault Dore Current

Lake Id: Lac Sault Dore
Watershed Id: 0

Hydrologic and Morphometric Data

Tributary Drainage Area: 37399.0 acre
Total Unit Runoff: 12.5 in.
Annual Runoff Volume: 38957.3 acre-ft
Lake Surface Area <As>: 599 acre
Lake Volume <V>: 3089 acre-ft
Lake Mean Depth <z>: 5.2 ft
Precipitation - Evaporation: 4.7 in.
Hydraulic Loading: 172148.8 acre-ft/year
Areal Water Load <qs>: 287.4 ft/year
Lake Flushing Rate <p>: 55.73 1/year
Water Residence Time: 0.02 year
Observed spring overturn total phosphorus (SPO): 39 mg/m^3
Observed growing season mean phosphorus (GSM): 48.2 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	4034	0.50	1.00	3.00	16.2	816	1633	4898
Mixed AG	0.0	0.30	0.80	1.40	0.0	0	0	0
Pasture/Grass	2181	0.10	0.30	0.50	2.6	88	265	441
HD Urban (1/8 Ac)	1	1.00	1.50	2.00	0.0	0	1	1
MD Urban (1/4 Ac)	3	0.30	0.50	0.80	0.0	0	1	1
Rural Res (>1 Ac)	71	0.05	0.10	0.25	0.0	1	3	7
Wetlands	14388	0.10	0.10	0.10	5.8	582	582	582
Forest	16721	0.05	0.09	0.18	6.1	338	609	1218
Lake Surface	599.0	0.10	0.30	1.00	0.7	24	73	242

POINT SOURCE DATA

Point Sources	Water Load	Low	Most Likely	High	Loading %
	(m^3/year)	(kg/year)	(kg/year)	(kg/year)	
Phillips Chain WS	164000000	0.0	6898	0.0	68.5

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)	4082.1	22185.9	16293.6	100.0
Total Loading (kg)	1851.6	10063.5	7390.7	100.0
Areal Loading (lb/ac-year)	6.81	37.04	27.20	0.0
Areal Loading (mg/m^2-year)	763.85	4151.49	3048.89	0.0
Total PS Loading (lb)	0.0	15207.3	0.0	68.5
Total PS Loading (kg)	0.0	6898.0	0.0	68.5
Total NPS Loading (lb)	4028.6	6818.3	15759.2	31.5
Total NPS Loading (kg)	1827.4	3092.8	7148.3	31.5

Phosphorus Prediction and Uncertainty Analysis Module

Date: 4/9/2012 Scenario: 39
Observed spring overturn total phosphorus (SPO): 39.0 mg/m^3
Observed growing season mean phosphorus (GSM): 48.2 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	8	43	31	-5	-10
Canfield-Bachmann, 1981 Natural Lake	8	43	32	-5	-10
Canfield-Bachmann, 1981 Artificial Lake	8	39	30	-9	-19
Rechow, 1979 General	7	36	26	-12	-25
Rechow, 1977 Anoxic	8	42	31	-6	-12
Rechow, 1977 water load<50m/year	N/A	N/A	N/A	N/A	N/A
Rechow, 1977 water load>50m/year	7	39	29	-9	-19
Walker, 1977 General	8	42	31	3	8
Vollenweider, 1982 Combined OECD	8	33	26	-11	-25
Dillon-Rigler-Kirchner	7	36	26	-3	-8
Vollenweider, 1982 Shallow Lake/Res.	6	27	21	-17	-39

Larsen-Mercier, 1976	8	42	31	3	8
Nurnberg, 1984 Oxic	7	41	30	-7	-15

Lake Phosphorus Model	**Confidence** Lower Bound	**Confidence** Upper Bound	**Parameter** Fit?	**Back** Calculation (kg/year)	**Model** Type
Walker, 1987 Reservoir	19	60	Tw	0	GSM
Canfield-Bachmann, 1981 Natural Lake	13	124	FIT	1	GSM
Canfield-Bachmann, 1981 Artificial Lake	12	112	FIT	1	GSM
Rechow, 1979 General	15	52	FIT	0	GSM
Rechow, 1977 Anoxic	19	58	FIT	0	GSM
Rechow, 1977 water load<50m/year	N/A	N/A	N/A	N/A	N/A
Rechow, 1977 water load>50m/year	20	45	FIT	0	GSM
Walker, 1977 General	15	68	FIT	0	SPO
Vollenweider, 1982 Combined OECD	12	56	FIT	0	ANN
Dillon-Rigler-Kirchner	16	50	P L	0	SPO
Vollenweider, 1982 Shallow Lake/Res.	10	45	FIT	0	ANN
Larsen-Mercier, 1976	19	56	P Pin p	0	SPO
Nurnberg, 1984 Oxic	15	63	L	0	ANN

Water and Nutrient Outflow Module

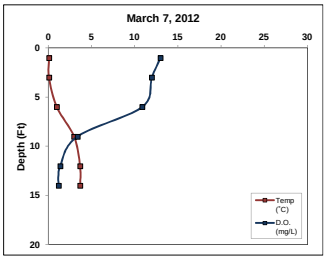
Date: 4/9/2012 Scenario: 28
Average Annual Surface Total Phosphorus: 48.2mg/m^3
Annual Discharge: 1.72E+005 AF => 2.12E+008 m^3
Annual Outflow Loading: 21536.3 LB => 9768.8 kg

Lac Sault Dore

Date: 3/7/2012
Time: 13:40
Weather: 100% clouds, light rain, foggy
Entry: TWH

Max Depth: 14.8
LSDS Depth (ft): 3
LSDB Depth (ft): 11
Secchi Depth (ft): 4.1

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	0.1	13		
3	0.1	12	7.6	150
6	1	10.9	7.6	148
9	3	3.4	7.5	151
12	3.7	1.4	7.4	151
14	3.7	1.2	7.4	152



Parameter	LSDS	LSDB
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 TAH and TWH (Onterra)
Ice depth 1.9ft

Water Quality Data

2010-2012	Surface		Bottom	
Parameter	Count	Mean	Count	Mean
Secchi Depth (feet)	10	2.7	NA	NA
Total P (µg/L)	9.00	64.7	3.00	52.0
Dissolved P (µg/L)	2.00	2.5	2	2.5
Chl a (µg/L)	9.00	12.4	0	NA
TKN (µg/L	9.00	1101.1	2	790.0
NO3+NO2-N (µg/L)	9.00	105.8	2	150.0
NH3-N (µg/L)	9.00	52.7	2	15.0
Total N (µg/L)	9.00	1101.1	2	790.0
Lab Cond. (µS/cm)	2.00	79.0	2	79.5
Lab pH	2.00	7.3	2	7.1
Alkal (mg/l CaCO3)	2.00	29.0	1	40.0
Total Susp Sol (mg/l)	3.00	3.0	3	4.7
Calcium (µg/L)	2	9.1	0	NA

Morphological / Geographical Data

Parameter	Value
Acreage	599
Volume (acre-feet)	3,089
Perimeter (miles)	15.5
Shoreland Complexity	20.4
Maximum Depth (feet)	21
County	Price
WBIC	2236800
Lillie Mason Region (1983)	NLF Ecoregion
Nichols Ecoregion (1999)	NLFL

Watershed Data

WiLMS Class	Acreage	kg/yr	lbs/yr
Phillips Chain Watershed	127,981	6,898	15,207
Forest	16,721	609	1,343
Wetlands	14,388	582	1,283
Pasture/Grass	2,181	265	584
Row Crops	4,034	1,633	3,600
Rural Residential	71	3	7
High-Density Urban	1	1	2
Medium-Density Urban	3	1	2
Lac Sault Dore Surface	599	73	161
Watershed to Lake Area	276:1		

Trophic State Index (WTSI)

Year	TP	Chl-a	Secchi
1990			60.3
1991			63.4
1992			58.9
1993			58.9
1994	60.3	61.0	56.8
1995	57.7	49.4	61.3
1996	61.5	63.1	61.9
1997	64.6	65.8	64.9
1998	68.5	66.0	62.1
1999	63.5	64.3	64.8
2000	63.1	56.6	60.0
2001	64.2	64.3	63.1
2002	60.8	59.9	61.5
2003	58.0	59.2	57.5
2004	57.0	59.7	58.3
2005	53.7	55.2	56.5
2006	57.3	55.4	56.5
2007	55.8	59.3	56.5
2008	65.4	56.0	59.1
2009	60.1	56.6	58.7
2010	70.3	54.1	66.8
2011	60.8	59.7	63.7
All Years (Weighted)	62.0	60.1	60.0
low, Lowland Drainage La	54.6	52.6	52.4
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
1990	17	3.1	9	3.2								
1991	24	3.0	14	2.6								
1992	20	3.8	10	3.5								
1993	20	3.7	12	3.5	2	24.7	0		2	49.0	0.0	
1994	31	3.7	16	4.1	4	17.5	3	22.1	4	59.0	3.0	49.0
1995	19	3.2	13	3.0	3	9.0	1	6.8	3	53.0	2.0	41.0
1996	3	3.0	2	2.9	4	22.3	3	27.3	4	53.5	3.0	53.3
1997	5	2.4	3	2.3	4	24.8	2	36.1	5	69.0	3.0	66.3
1998	22	3.0	15	2.8	4	39.3	3	37.0	5	85.4	3.0	87.0
1999	22	2.6	16	2.3	3	23.6	2	30.9	5	52.6	3.0	61.3
2000	21	3.5	15	3.3	5	12.4	4	14.1	6	54.0	4.0	59.5
2001	25	2.9	17	2.6	4	25.2	3	30.9	5	56.0	3.0	64.3
2002	21	3.0	13	3.0	4	15.5	3	19.7	5	52.2	3.0	50.7
2003	26	3.9	17	3.9	4	15.0	3	18.4	5	42.8	3.0	42.0
2004	27	4.1	16	3.7	4	15.1	3	19.4	5	37.0	3.0	39.0
2005	25	4.3	14	4.2	4	11.0	3	12.2	5	36.6	3.0	31.0
2006	26	4.3	17	4.2	4	11.5	3	12.6	5	41.2	3.0	40.0
2007	23	4.1	12	4.2	2	18.7	2	18.7	4	39.0	3.0	36.0
2008	10	4.6	4	3.5	3	13.3	3	13.3	4	63.8	3.0	70.0
2009	23	4.5	12	3.6	3	14.1	3	14.1	4	45.8	3.0	48.3
2010	19	2.7	10	2.1	4	11.1	3	11.0	5	76.4	3.0	98.0
2011	25	2.8	14	2.5	5	14.1	3	19.5	6	48.2	3.0	51.0
All Years (Weighted)		3.5		3.3		17.6		20.1		53.6		55.2
Shallow, Lowland Drainage Lakes				5.6				9.4				33.0
NLF Ecoregion				8.9				5.6				21.0

Summer 2011 N: 604.0
Summer 2011 P: 52.5

Summer 2011 N:P 12 :1

E

APPENDIX E

Aquatic Plant Survey Data

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Aquatic moss	Brasenia schreberi	Calla palustris	Ceratophyllum demersum	Chara spp.	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater Sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum spicatum	Najas flexilis	Nitella sp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton crispus	Potamogeton epihydrus	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Riccia fluitans	Sagittaria graminea	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia geminiscapa	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana	Wolffia columbiana
1	45.703121	-90.582775	6	R	P	NV																																										
2	45.703620	-90.582074	5	M	P		3				1							1				3																1										
3	45.703125	-90.582069	10	R	P	NV																																										
4	45.702630	-90.582064	10	R	P	NV																																										
5	45.702135	-90.582059	4	R	P		2											1				2				1																					
6	45.703128	-90.581362	2	M	P		2												1			1				1		1																		1	
7	45.702633	-90.581357	10	R	P	NV																																										
8	45.702138	-90.581352	4	S	P		1															1																									
9	45.702637	-90.580651	2	R	P		3				1								1		2	2														1										1	
10	45.702142	-90.580646	9	R	P	NV																																									
11	45.701647	-90.580641	4	M	P		3												1			1				1									3											
12	45.702145	-90.579939	3	S	P		3															3																									
13	45.701650	-90.579934	5	R	P		1															1																									
14	45.701654	-90.579228	9	M	P	NV																																										
15	45.701159	-90.579222	8	R	P	NV																																										
16	45.700664	-90.579217	10	R	P	NV																																										
17	45.700169	-90.579212	6	R	P	NV																																										
18	45.702153	-90.578526	5	S	P		3				3								1			1				1									1											
19	45.701658	-90.578521	6	M	P		1													1		1																									
20	45.701162	-90.578516	5	S	P		2															2													2											
21	45.700667	-90.578511	8	R	P		1																												1												
22	45.700172	-90.578506	5	R	P		1				1											1																									
23	45.702156	-90.577820	4	M	P		3				1								1			1													2											
24	45.701661	-90.577815	6	M	P		2															2																									
25	45.701166	-90.577810	5	M	P		3				2			1					1	2		1				1									1							1			1		
26	45.700176	-90.577799	6	R	P	NV																																									
27	45.699681	-90.577794	3	M	P		3											1				1			1									2											
28	45.699186	-90.577789	5	M	P		2				2								1							1									1		1									
29	45.698691	-90.577784	2	S	P		1				1																								1										2		
30	45.702655	-90.577118	4	M	P		2															1						2							1											
31	45.702160	-90.577113	5	M	P		2				2			1				1	1		1	1													1		1							1		
32	45.701665	-90.577108	4	M	P		3				2			1					1			1				1										1					1			1	1
33	45.700180	-90.577093	6	R	P	NV																																									
34	45.699685	-90.577088	9	R	P	NV																																										
35	45.699190	-90.577083	5	M	P	NV																																										
36	45.703153	-90.576417	3	M	P		3				2								1			1				1									2		1							1	1	
37	45.702658	-90.576412	3	M	P		3				2									1						1									1									1		
38	45.700183	-90.576386	3	M	P		3																			1									3											
39	45.699688	-90.576381	10	R	P	NV																																									
40	45.699193	-90.576376	6	S	P		1																												1												
41	45.703157	-90.575710	3	M	P		3				1			2					1			1				1																			2	1	
42	45.702662	-90.575705	2	M	P		3				2							1	1	2						1		1					1				1					1		1	1	1
43	45.700682	-90.575685				Unreachable																																									
44	45.700187	-90.575680	2	S	P		3				1			1					1			1				1																			2		
45	45.699692	-90.575675	3	S	P		3				1								1			1				1									3			1						1		
46	45.699197	-90.575670	8	R	P	NV																																									
47	45.698702	-90.575665	4	S	P		2				1											1				1									1											
48	45.698207	-90.575660	9	M	P		3				1								1			1				1									3								1			
49	45.697712	-90.575655	2	M	P		2				1											1													2											
50	45.697217	-90.575649	4	M	P		1																												1												
51	45.703655	-90.575009	3	M	P		3				1			1						3															1			1						1	1	1
52	45.703160	-90.575004	3	M	P		3													1	2													3										1	
53	45.700190	-90.574974	3	M	P		3				1								1		2	1				1									1											
54	45.699200	-90.574963	2	S	P		1															1																								
55	45.698705	-90.574958	9	R	P	NV																																									
56	45.698210	-90.574953	9	R	P	NV																																									
57	45.697715	-90.574948	8	M	P	NV																																									
58	45.703659	-90.574303	4	M	P		3				1			1												1				1					2											1
59	45.703164	-90.574297	2	M	P		3				2								1	1						1	1								2									1	1	1
60	45.702669	-90.574292				Unreachable																																									
61	45.702174	-90.574287				Unreachable																																									
62	45.701679	-90.574282				Unreachable																																									
63	45.698709	-90.574252	8	M	P	NV																																									
64	45.698214	-90.574247	8	S	P	NV																																									
65	45.697719	-90.574242	9	R	P	NV																																									
66	45.697224	-90.574237	9	R	P	NV																																									
67	45.696729	-90.574232	9	S	P	NV																																									
68	45.704158	-90.573601	3	M	P		2													1	1	1													2									1		
69	45.703663	-90.573596	3	M	P		3				1									2						1									2										1	
70	45.703167	-90.573591	1	M	P		2				1								1	1							1																1	1		1	1
71	45.699702	-90.573556	2	M	P		2			V	1								1																2											
72	45.699207	-90.573550	7	M	P	NV																																									
73	45.698712	-90.573545	8	M	P	NV																																									
74	45.698217	-90.573540	7	M	P	NV																																									
75	45.697722	-90.573535	6	S	P	NV																																									
76	45.697227	-90.573530	9	R	P	NV																																									
77	45.696732	-90.573525	13			TD																																									
78	45.696237	-90.573520	7	M	P		1															1																									
79	45.695742	-90.573515	2	S	P		1															1																									
80	45.695247	-90.573510	5	M	P		1																												1												
81	45.704656	-90.572900	5	M	P		1															1													1											
82	45.704161	-90.572895	2	M	P		3				2			1					1	2						1																	1			1	
83	45.703666	-90.572890	2	M	P		2				1									1						1									2											1
84	45.699211	-90.572844	5	M	P		2				1											2																									
85	45.698716	-90.572839	8	M	P	NV																																									
86	45.698221	-90.572834	8	M	P	NV																																									
87	45.697726	-90.572829	8	M	P	NV																																									
88	45.697231	-90.572824	7	S	P		1															1																									
89	45.696736	-90.572819	9	S	P	NV																																									
90	45.696241	-90.572814	8	R	P	NV																																									
91	45.695746	-90.572809	6	M	P	NV																																									
92	45.694756	-90.572799	2	S	P		2				2								1			1													1											
93	45.704660	-90.572193	3	M	P		2				1			2						1										1																1	
94	45.704165	-90.572188	3	M	P		3															1			1									3											
95	45.698224	-90.572127	4	M	P		2															2																									
96	45.697729	-90.572122	7	M	P		1															1																									
97	45.697234	-90.572117	3	S	P		3																												3												
98	45.696244	-90.572107	3	R	P	NV																V																									
99	45.695749	-90.572102	9	R	P	NV																																									
100	45.705158	-90.571492	3	M	P		1																												1												
101	45.704663	-90.571487	2	M	P		3				1			1				1	1	1						1									2							1			1	1
102	45.700208	-90.571441				Unreachable																																									
103	45.698723	-90.571426	2	M	P		2				2															1		1							1			1							1	1	
104	45.696743	-90.571406	4	M	P		1															1													1											
105	45.696248	-90.571401	5	S	P		2				1											1													2											
106	45.695753	-90.571396	8	S	P	NV																																									
107	45.695258	-90.571391	2	S	P		2				2			1								1																								1	
108	45.706152	-90.570795	4	M	P		2				1										1						1							1											
109	45.705657	-90.570790	2	M	P		3				1								1			1				1									3								1			
110	45.705162	-90.570785	2	M	P		2				1			1						1						1																			1	
111	45.701697	-90.570750				Unreachable																																									
112	45.701202	-90.570745				Unreachable																																									
113	45.700212	-90.570735	2	M	P		3											1	2	1		1	1			1	1																	1			1
114	45.699717	-90.570730	2	M	P		3											1	1			1			1	1	1								1		1						1	1	1		1
115	45.699221	-90.570725	2	M	P		2				1								1																1											
116	45.698726	-90.570720	3	M	P		1																												1											
117	45.698231	-90.570715	2	M	P		3				1								1									1							3											
118	45.697736	-90.570710	4	M	P		3				1																	1							3											
119	45.697241	-90.570705	4	M	P		3				1										1	1				1				1					3											
120	45.696746	-90.570700	2	M	P		3				2								1	1							1								1							1				1
121	45.696251	-90.570694				Unreachable																																									
122	45.695756	-90.570689	9	R	P	NV																																									
123	45.695261	-90.570684	9	M	P	NV																																									
124	45.694766	-90.570679	6	M	P		1															1																									
125	45.694271	-90.570674	5	M	P		2							1																					2											
126	45.693776	-90.570669	5	M	P		2																												2											
127	45.693281	-90.570664	3	S	P		3				1			1												1									3			1								
128	45.709620	-90.570124																																													
129	45.706650	-90.570094	3	M	P		3				1									1						1									3										1	
130	45.706155	-90.570089																																													
131	45.703680	-90.570064				Unreachable																																									
132	45.703185	-90.570058	3	M	P		2				1									1						1					1													1			
133	45.702690	-90.570053	3	M	P		3				1			1						1															3											
134	45.702195	-90.570048	3	M	P		1				1			1						1	1				1	1	1				1		1										1			
135	45.701700	-90.570043	3	M	P		2				1									1		1				1					1			1									1			

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Aquatic moss	Brasenia schreberi	Calla palustris	Ceratophyllum demersum	Chara spp.	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater Sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum spicatum	Najas flexilis	Nitella sp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton crispus	Potamogeton epihydrus	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Riccia fluitans	Sagittaria graminea	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia geminiscapa	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana	Wolffia columbiana
136	45.701205	-90.570038	3	M	P		1				1										1										1				1													
137	45.700710	-90.570033	3	M	P		2				1								2																1												1	
138	45.698730	-90.570013	3	M	P		1				1			1											1										1												
139	45.698235	-90.570008	3	M	P		3				2								V						V										3												
140	45.696255	-90.569988	4	S	P		3				1																								1												3	
141	45.695760	-90.569983	13			TD																																									
142	45.695265	-90.569978	9	M	P	NV																																										
143	45.694770	-90.569973	7	M	P		1															1																									
144	45.694275	-90.569968	5	M	P		2															2																									
145	45.693780	-90.569963	4	M	P		3				1			1														1						1													
146	45.693285	-90.569958	5	M	P		2				1																								2													
147	45.692790	-90.569953	4	M	P		3							1																					3			1									
148	45.710119	-90.569422																																													
149	45.709624	-90.569417																																													
150	45.707644	-90.569397	2	M	P		3				3			1						1		1									1														1		
151	45.707149	-90.569392	2	M	P		3				1			1								1													3										2	1	
152	45.706654	-90.569387	2	M	P		3															1													3										1		
153	45.698238	-90.569302	3	M	P		3				1								1		1				1										3								1				
154	45.697743	-90.569297	2	M	P		3				1								1						1										2												
155	45.697248	-90.569292	3	S	P		2				1			1								1												1	2										1		
156	45.696753	-90.569287	5	M	P	NV																																									
157	45.696258	-90.569282	9	M	P	NV																																									
158	45.695763	-90.569277	9	M	P	NV																																									
159	45.695268	-90.569272	8	M	P		1															1																									
160	45.694773	-90.569267	6	M	P		2															2																									
161	45.694278	-90.569262	6	M	P		2															2																	1							
162	45.693783	-90.569257	5	M	P		2				1			1																					2				1							
163	45.693288	-90.569252	5	M	P		2																												2											
164	45.692793	-90.569247	5	M	P		3				3			1																					1				1							
165	45.692298	-90.569241	1	S	P		1				1														1	1															1					
166	45.710618	-90.568721	3	M	P		3				1							1	1	2	1				1	1									1											1
167	45.710123	-90.568716	3	M	P		2				1							V		1					1										1											V
168	45.709627	-90.568711	3	M	P		3				2			1				1		1	1				1										1										1	V
169	45.708637	-90.568701	3	M	P		2				1			1																				1	1										1	
170	45.708142	-90.568696	4	M	P		3				1			1																1					1			1							2	
171	45.707647	-90.568691	4	M	P		1				1			1														1							1											
172	45.707152	-90.568686	4	M	P		3				1													1											2				1						1	
173	45.706657	-90.568681	4	M	P		2				1			1																					1				1						1	
174	45.697252	-90.568585	5	S	P		2				1											1													2											
175	45.696757	-90.568580	8	M	P	NV																																									
176	45.696262	-90.568575	13			TD																																									
177	45.695767	-90.568570	8	M	P	NV																																									
178	45.695272	-90.568565	7	M	P		1															1																									
179	45.694777	-90.568560	7	M	P		3															3																									
180	45.694282	-90.568555	6	M	P		2															2																									
181	45.693787	-90.568550	5	M	P		2				1											2																									
182	45.693292	-90.568545	5	M	P		3				2																								2				1							
183	45.692797	-90.568540	5	M	P		3				1																								3											
184	45.692302	-90.568535	4	M	P		2				1						1								1										2											
185	45.711611	-90.568024	3	M	P		3				1	3		1						1	1													1				1						1	V
186	45.711116	-90.568019	5	M	P		3				1			1			1		V		3																									V
187	45.710621	-90.568014	3	M	P		3				1			1							1				1										3											V
188	45.710126	-90.568009	2	M	P		3				1																								2										3		
189	45.709631	-90.568004	3	M	P		2				1																								1				1							1
190	45.709136	-90.567999	3	M	P		3				1																								1				1						1	
191	45.708641	-90.567994	4	M	P		1				1									1						V									1				1						1	
192	45.708146	-90.567989	3	M	P		3				1			1															1						1										2	
193	45.707651	-90.567984	3	M	P		3				2			1								1													1											1
194	45.707156	-90.567979	3	M	P		1				1																								1				1						1	1
195	45.706661	-90.567974	3	M	P		3				2			2								1													1											
196	45.697255	-90.567879	8	M	P	NV																																									
197	45.696760	-90.567874	11			TD																																									
198	45.696265	-90.567869	9	M	P	NV																																									
199	45.695770	-90.567864	8	M	P	NV																																									
200	45.695275	-90.567859	6	M	P		2															2																									
201	45.694780	-90.567854	6	M	P		2				1											2																									
202	45.694285	-90.567849	6	M	P		2										1					2																1							
203	45.693790	-90.567844	5	M	P		3				1											1													2											
204	45.693295	-90.567839	5	M	P		3				1																								3											
205	45.692800	-90.567834	5	M	P		3				1																								3											
206	45.692305	-90.567829	4	M	P		3				1						1									1									3				1							
207	45.713595	-90.567338																																												
208	45.713100	-90.567333																																												
209	45.712605	-90.567328	3	M	P		3													1		1					1								3											V
210	45.712110	-90.567323	3	M	P		3							1					V	3	1		1				V							1	1											V
211	45.711615	-90.567318	3	M	P		3				1			1							3											1			1											V
212	45.710625	-90.567308																																												
213	45.710130	-90.567303	3	M	P		2																												2				1						2	
214	45.709635	-90.567298	4	M	P		2				1			1																									1						1	
215	45.709139	-90.567293	3	M	P		3				1																								1				1						3	
216	45.708644	-90.567288	3	M	P		1				1													1											1											1	
217	45.708149	-90.567283	3	M	P		3				2																								3										3	
218	45.707654	-90.567278	3	M	P		3				1																								3											
219	45.707159	-90.567273	3	M	P		3				2																								2				1							
220	45.706664	-90.567268	3	M	P		3				3						1																		1										1	
221	45.706169	-90.567263	4	M	P		2				1			1																					1											
222	45.699239	-90.567192	4	M	P		1				1			1					1						1										1							1				
223	45.697754	-90.567177	7	M	P	NV																																									
224	45.697259	-90.567172	10	M	P	NV																																									
225	45.696764	-90.567167	11			TD																																									
226	45.696269	-90.567162	7	M	P		1															1																									
227	45.695774	-90.567157	7	M	P		2															2																									
228	45.695279	-90.567152	6	M	P		1															1																									
229	45.694784	-90.567147	6	M	P		2															2																									
230	45.694289	-90.567142	6	M	P		2				1											2																									
231	45.693794	-90.567137	5	M	P		2															2																									
232	45.693299	-90.567132	5	M	P		3							1																					3											
233	45.692804	-90.567127	5	M	P		2				1																								2				1							
234	45.692309	-90.567122	4	M	P		2				1																								1											
235	45.691814	-90.567117	4	M	P		3				1			1																					3											
236	45.691319	-90.567112	1	S	P		1				1																																				
237	45.714093	-90.566636																																												
238	45.713598	-90.566631	3	M	P		3				1			1							3				1						1												1		1	
239	45.713103	-90.566626	4	M	P		1							1	1																															V
240	45.712608	-90.566621	4	M	P		3				1			1					V		3													1									1		1	
241	45.712113	-90.566616	3	M	P		3				1			1							3			1																						1	
242	45.710133	-90.566596	4	M	P		2				1																												1							
243	45.709638	-90.566591	4	M	P		2				1			1																					1										1	
244	45.709143	-90.566586	4	M	P		3				1																								2				1						1	
245	45.708648	-90.566581	4	M	P		2				1																								1				1						2	
246	45.708153	-90.566576	4	M	P		3															1						1							1				1							
247	45.707658	-90.566571	4	M	P		3				1																								3				1							
248	45.707163	-90.566566	3	M	P		3				1											V													3				1							
249	45.706668	-90.566561	3	M	P		3		1		2																																			2		
250	45.706173	-90.566556	3	M	P		1				1															1									1				1						1	
251	45.705678	-90.566551	2	M	P		3				1								V							V									3											V
252	45.698748	-90.566481				Unreachable																																									
253	45.698253	-90.566476	5	S	P		2				1											2																									
254	45.697758	-90.566471	9	M	P	NV																																									
255	45.697263	-90.566466	9	M	P	NV																																									
256	45.696767	-90.566461	9	S	P	NV																																									
257	45.696272	-90.566456	7	M	P	NV																																									
258	45.695777	-90.566451	6	M	P		3															3																									
259	45.695282	-90.566446	6	M	P		2				1											2																									
260	45.694787	-90.566441	6	M	P		2				1											2																									
261	45.694292	-90.566436	5	M	P		2				1											2																1							
262	45.693797	-90.566431	5	M	P		2				1											1													2											
263	45.693302	-90.566426	5	M	P		3																												3											
264	45.692807	-90.566421	4	M	P		3				2						1					1				1									2				1							
265	45.692312	-90.566416	4	S	P		3																												3											
266	45.691817	-90.566411	5	M	P		1										1					1				1									1							1				
267	45.691322	-90.566406	3	M	P		3				1						1									1									3											
268	45.714097	-90.565929																																												
269	45.713602	-90.565924	4	M	P		1		1													1										1													V
270	45.713107	-90.565919	7	M	P		2										1		V			1		2																						V

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Aquatic moss	Brasenia schreberi	Calla palustris	Ceratophylum demersum	Chara spp.	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater Sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum spicatum	Najas flexilis	Nitella sp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton crispus	Potamogeton epihydrus	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Riccia fluitans	Sagittaria graminea	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia geminiscapa	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana	Wolffia columbiana
271	45.712612	-90.565914	3	M	P		3		1		1	1		1										1				1																			V
272	45.712117	-90.565909	2	S	P		3		1		1			1						1	3							1							1											V
273	45.710137	-90.565889	4	M	P		3				1			1								1													3											
274	45.709642	-90.565884	4	M	P		3															V													3			1								
275	45.709146	-90.565879	4	M	P		2															1																1							2	
276	45.708651	-90.565874	4	M	P		2				1																						1												2	
277	45.708156	-90.565869	5	M	P		3				1																								3												
278	45.707661	-90.565864	4	M	P		2				1			1								1													1			1								
279	45.707166	-90.565859	4	M	P		3				1						1																		3											
280	45.706671	-90.565854	4	M	P		1																																						1	
281	45.705681	-90.565844	2	M	P		2												1							V									2										1	
282	45.701226	-90.565800	5	S	P	NV											1																													
283	45.700731	-90.565795	10	M	P	NV																																									
284	45.700236	-90.565790	9	M	P	NV																																									
285	45.698256	-90.565770	6	S	P	NV																																									
286	45.697761	-90.565765	8	S	P	NV																																									
287	45.697266	-90.565760	10	S	P		1							1		1																														
288	45.696771	-90.565755	8	S	P		1															1																								
289	45.696276	-90.565750	6	S	P		1															1																								
290	45.695781	-90.565745	6	M	P		2															2																								
291	45.695286	-90.565740	6	M	P		1															1																								
292	45.694791	-90.565735	5	S	P		3				1											3																1							
293	45.694296	-90.565730	5	M	P		2				1											2													1											
294	45.693801	-90.565725	5	M	P		2				1											1													2											
295	45.693306	-90.565720	3	S	P		2				1			1								1				1									2										1	
296	45.692811	-90.565715	1	S	P		1										1										1																		
297	45.691821	-90.565705	1	S	P		1				1							1								1									1					1					
298	45.691326	-90.565700	4	M	P		1										1														1				1										
299	45.690831	-90.565695	2	M	P		1				1						1		1							1	1								1					1	1				
300	45.713605	-90.565218																																												
301	45.710140	-90.565183	4	M	P		3				1																																		
302	45.709645	-90.565178	4	M	P		2				1			1								1													2			1							1	
303	45.709150	-90.565173	4	M	P		1							1			1																	1	1										
304	45.708655	-90.565168	4	M	P		2																												2											
305	45.708160	-90.565163	5	M	P		3				2						1					1													1		1								
306	45.707665	-90.565158	5	M	P		3				1											1													3											
307	45.707170	-90.565153	4	M	P		3				1						1																		3										1	
308	45.706675	-90.565148	4	M	P		3				1				1																				3			1							
309	45.705190	-90.565133	3	M	P		2				1			1		1			1							1									1											
310	45.703210	-90.565113	5	S	P		1										1																					1							
311	45.702715	-90.565108	8	M	P	NV																																								
312	45.702220	-90.565103	8	S	P	NV																																								
313	45.701725	-90.565098	10	S	P	NV											1																													
314	45.701230	-90.565093	22			TD																																							
315	45.700735	-90.565088	13			TD										1																													
316	45.700240	-90.565083	12			TD																																							
317	45.699745	-90.565078	12			TD											1																													
318	45.699250	-90.565073	12			TD											1																													
319	45.698755	-90.565068	10	S	P	NV											1																													
320	45.698260	-90.565063	11			TD											1																													
321	45.697765	-90.565058	11			TD																																							
322	45.697269	-90.565053	8	S	P	NV											1																													
323	45.696774	-90.565048	6	M	P		3				3																																		
324	45.696279	-90.565043	6	M	P		2				1											2																							
325	45.695784	-90.565038	6	M	P		3				2											1																							
326	45.695289	-90.565033	6	M	P		3				2											1													1											
327	45.694794	-90.565028	4	S	P		2				2											1																							1	
328	45.694299	-90.565023	2	S	P		2				1			1								1				1				1								1							1	
329	45.691329	-90.564993	4	M	P		1				1															1																			
330	45.690834	-90.564988	3	M	P		3				3									1						1																			
331	45.713114	-90.564506																																											
332	45.710144	-90.564476	4	M	P		3				2											1													2											
333	45.709649	-90.564471	4	M	P		3				1																								3											
334	45.709153	-90.564466	4	M	P		2				1											V													2			1							
335	45.708658	-90.564461	5	M	P		1																												1											
336	45.708163	-90.564456	5	M	P		1															V													1											
337	45.707668	-90.564451	4	M	P		2				1			1								1													2											
338	45.707173	-90.564446	4	M	P		3				1											V													3			1							
339	45.706678	-90.564441	4	M	P		3				1			1								1													3			1							
340	45.706183	-90.564436																																											
341	45.705193	-90.564426	2	M	P		3				1			1								1																							3	
342	45.704698	-90.564421	4	S	P		2				1											V													1											1	
343	45.704203	-90.564416	5	S	P		1																																						1	
344	45.703708	-90.564412	9	S	P	NV											1																													
345	45.703213	-90.564407	9	M	P	NV																																								
346	45.702718	-90.564402	10	M	P	NV																																								
347	45.702223	-90.564397	9	M	P	NV																																								
348	45.701728	-90.564392	9	S	P	NV																																								
349	45.701233	-90.564387	10	M	P	NV																																								
350	45.700738	-90.564382	10	M	P	NV																																								
351	45.700243	-90.564377	10	M	P	NV																																								
352	45.699748	-90.564372	9	S	P	NV											1																													
353	45.699253	-90.564367	8	S	P	NV																																								
354	45.698758	-90.564362	3	S	P		3				3																																		1	
355	45.698263	-90.564357	2	S	P		1				1																														1				1	
356	45.691333	-90.564287	3	M	P		3				3															1									1											
357	45.690838	-90.564282	3	M	P		1				1															1									1											
358	45.690343	-90.564277	3	M	P		1				1															1																1				
359	45.710642	-90.563775	3	M	P		3				2											V													2											
360	45.710147	-90.563770	3	M	P		1				1						1					V													1										1	
361	45.709652	-90.563765	4	M	P		1				1																											1								
362	45.709157	-90.563760	4	M	P		1																															1								
363	45.708662	-90.563755	4	M	P		2				2																								1											
364	45.708167	-90.563750	5	M	P		2										1					2																							
365	45.707672	-90.563745	5	S	P		2				2											1													1			1							
366	45.707177	-90.563740	4	M	P		2				1											1													2			1							
367	45.706682	-90.563735	4	M	P		3				1																								3										1	
368	45.706187	-90.563730																																										
369	45.705692	-90.563725	5	S	P		2				1											2																							
370	45.705197	-90.563720	6	M	P																	V																							
371	45.704702	-90.563715	9	M	P	NV																																								
372	45.704207	-90.563710	10	M	P	NV																																								
373	45.703712	-90.563705	9	R	P	NV																																								
374	45.703217	-90.563700	9	M	P	NV																																								
375	45.702722	-90.563695	9	M	P	NV																																								
376	45.702227	-90.563690	9	M	P	NV																																								
377	45.701732	-90.563685	9	M	P	NV																																								
378	45.701237	-90.563680	4	S	P		1															1																1							1	
379	45.700742	-90.563675	4	S	P		2															1													1										2	
380	45.700247	-90.563670	3	S	P	NV																																								
381	45.690841	-90.563576	1	M	P		2				2			1												1	1															1				
382	45.710646	-90.563068	3	M	P		2				2			1																					1		2								
383	45.710151	-90.563063	4	M	P		2																												2											
384	45.709655	-90.563058	4	M	P		1				1																										1										
385	45.709160	-90.563053	4	M	P	NV																																								
386	45.708665	-90.563048	5	R	P	NV																																								
387	45.708170	-90.563043	5	M	P		2														1	1													1			1							
388	45.707675	-90.563038	6	M	P	NV																																								
389	45.707180	-90.563033	5	S	P		1															1																							
390	45.706685	-90.563028	5	S	P		2				1											1													2											
391	45.706190	-90.563023	5	M	P		3				3																									1											
392	45.705695	-90.563018	7	M	P	NV																																								
393	45.705200	-90.563013	8	M	P	NV																																								
394	45.704705	-90.563008	9	M	P	NV																																								
395	45.704210	-90.563003	8	M	P	NV																																								
396	45.703715	-90.562999	9	M	P	NV																																								
397	45.703220	-90.562994	8	M	P	NV																																								
398	45.702725	-90.562989	9	M	P	NV																																								
399	45.702230	-90.562984	9	M	P	NV																																								
400	45.701735	-90.562979	7	M	P	NV																																								
401	45.711144	-90.562366	3	M	P		3				1			1					1			1																				1				1	
402	45.710649	-90.562361	3	M	P		3							1								1													3			1							
403	45.710154	-90.562357	4	S	P		2				2											1													1			1							
404	45.709659	-90.562352	4	S	P		1				1																								1											
405	45.709164	-90.562347	5	M	P		1				1																								1											

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Aquatic moss	Brasenia schreberi	Calla palustris	Ceratophyllum demersum	Chara spp.	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater Sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum spicatum	Najas flexilis	Nitella sp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton crispus	Potamogeton epihydrus	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Riccia fluitans	Sagittaria graminea	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia geminiscapa	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana	Wolffia columbiana
406	45.708669	-90.562342	5	R	P		2				2																								1													
407	45.708174	-90.562337	5	M	P		2				1											1													2													
408	45.707679	-90.562332	5	S	P		2															2														1											
409	45.707184	-90.562327	6	M	P		1															1																									
410	45.706689	-90.562322	6	S	P		1															1																									
411	45.706194	-90.562317	6	M	P		1															1																									
412	45.705699	-90.562312	7	M	P	NV																																									
413	45.705204	-90.562307	9	M	P	NV																																									
414	45.704709	-90.562302	8	M	P	NV																																									
415	45.704214	-90.562297	9	M	P	NV																																									
416	45.703719	-90.562292	9	M	P	NV																																									
417	45.703224	-90.562287	8	M	P	NV																																									
418	45.702729	-90.562282	7	M	P	NV																																									
419	45.702234	-90.562277	6	M	P	NV																																									
420	45.701739	-90.562272	5	M	P		1				1																													1							
421	45.711147	-90.561660	3	M	P		2				1																									2											
422	45.710652	-90.561655	4	M	P		2				2																										1										
423	45.710157	-90.561650	4	M	P		2				2																									1			1							
424	45.709662	-90.561645	5	S	P		1																													1										
425	45.709167	-90.561640	5	S	P		1				1											1																									
426	45.708672	-90.561635	5	S	P		1				1											1																									
427	45.708177	-90.561630	5	S	P		2															2													1				1							
428	45.707682	-90.561625	5	S	P		1				1											1																									
429	45.707187	-90.561620	6	S	P		1															1																1							
430	45.706692	-90.561615	6	S	P		1																													1										
431	45.706197	-90.561610	7	M	P	NV																																								
432	45.705702	-90.561605	8	M	P	NV																																								
433	45.705207	-90.561600	9	M	P	NV																																								
434	45.704712	-90.561595	9	M	P	NV																																								
435	45.704217	-90.561590	9	M	P	NV																																								
436	45.703722	-90.561586	7	M	P	NV																																								
437	45.703227	-90.561581	6	S	P	NV																																								
438	45.702732	-90.561576	6	S	P		2															2																									
439	45.702237	-90.561571	5	R	P		1															1																									
440	45.711151	-90.560953	3	M	P		3				1		1						1			1													3		1					1					
441	45.710656	-90.560948	4	M	P		1																													1										
442	45.710161	-90.560943	4	S	P		1														1	1															1								
443	45.709666	-90.560938	5	S	P		1															1															1								
444	45.709171	-90.560933	5	S	P		1															1																									
445	45.708676	-90.560929	5	S	P		1				1										1	1																									
446	45.708181	-90.560924	5	S	P		1				1											1																									
447	45.707686	-90.560919	5	S	P		2															2																									
448	45.707191	-90.560914	6	S	P		2															2																									
449	45.706696	-90.560909	7	S	P	NV																																								
450	45.706201	-90.560904	8	M	P	NV																																								
451	45.705706	-90.560899	9	M	P	NV																																								
452	45.705211	-90.560894	9	M	P	NV																																								
453	45.704716	-90.560889	9	M	P	NV																																								
454	45.704221	-90.560884	9	M	P	NV																																								
455	45.703726	-90.560879	7	M	P	NV																																								
456	45.703231	-90.560874	1	S	P		1				1																																			
457	45.702736	-90.560869	5	M	P		1				1																																			
458	45.702241	-90.560864	5	M	P		1				1											1																									
459	45.709669	-90.560232	3	S	P		2																																							2		
460	45.709174	-90.560227	5	S	P		1															1														1										
461	45.708679	-90.560222	5	S	P		2															1														1								1		
462	45.708184	-90.560217	5	S	P		2				1											2																						1		
463	45.707689	-90.560212	6	S	P		2															2																									
464	45.707194	-90.560207	6	S	P		2															2																									
465	45.706699	-90.560202	7	M	P	NV																																								
466	45.706204	-90.560197	9	M	P	NV																																								
467	45.705709	-90.560192	9	M	P	NV																																								
468	45.705214	-90.560187	9	M	P	NV																																								
469	45.704719	-90.560182	10	M	P	NV																																								
470	45.704224	-90.560177	8	M	P	NV																																								
471	45.703729	-90.560173	7	M	P	NV																																								
472	45.709178	-90.559520	5	S	P		2				2											1														1										
473	45.708683	-90.559515	5	S	P		1															1														1										
474	45.708188	-90.559510	5	S	P		2															2														1										
475	45.707693	-90.559506	6	S	P		2															2																									
476	45.707198	-90.559501	7	S	P		2				1											2																									
477	45.706703	-90.559496	8	M	P	NV																																								
478	45.706208	-90.559491	9	M	P	NV											1																														
479	45.705713	-90.559486	9	M	P	NV																																								
480	45.705218	-90.559481	10	M	P	NV																																								
481	45.704723	-90.559476	9	M	P	NV																																								
482	45.704228	-90.559471	7	M	P	NV																																								
483	45.703733	-90.559466	6	S	P		1															1																									
484	45.703238	-90.559461	5	M	P		2				2																																			
485	45.709181	-90.558814	5	S	P		2															2																									
486	45.708686	-90.558809	6	S	P		2															2																									
487	45.708191	-90.558804	6	S	P		1															1																									
488	45.707696	-90.558799	6	S	P		2				1											2																									
489	45.707201	-90.558794	7	M	P	NV																																								
490	45.706706	-90.558789	9	M	P	NV																																								
491	45.706211	-90.558784	9	M	P	NV																																								
492	45.705716	-90.558779	9	M	P	NV																																								
493	45.705221	-90.558774	10	M	P	NV																																								
494	45.704726	-90.558769	9	M	P	NV																																								
495	45.704231	-90.558764	7	S	P	NV																																								
496	45.703736	-90.558759	6	S	P		1															1																									
497	45.703241	-90.558755	6	S	P		1															1																									
498	45.702746	-90.558750	2	S	P	NV																																								
499	45.698291	-90.558705				Unreachable																																								
500	45.709680	-90.558112	2	S	P		3				1																																		3		
501	45.709185	-90.558107	6	S	P		2															2																									
502	45.708690	-90.558102	6	S	P		1															1																									
503	45.708195	-90.558097	6	S	P		2															2																									
504	45.707700	-90.558092	6	S	P		2															2																									
505	45.707205	-90.558087	8	M	P	NV																																								
506	45.706710	-90.558083	9	M	P	NV																																								
507	45.706215	-90.558078	9	M	P	NV																																								
508	45.705720	-90.558073	9	M	P	NV																																								
509	45.705225	-90.558068	10	M	P	NV																																								
510	45.704730	-90.558063	9	M	P	NV																																								
511	45.704235	-90.558058	8	M	P	NV																																								
512	45.703739	-90.558053	7	M	P	NV																																								
513	45.703244	-90.558048	6	S	P		2				1											2																									
514	45.702749	-90.558043	6	S	P	NV																																								
515	45.702254	-90.558038	3	S	P		2				1																																		2		
516	45.701759	-90.558033	2	S	P		1															1																									
517	45.699284	-90.558009	3	M	P		1																													1										
518	45.698789	-90.558004	3	M	P		2				1															1										2										
519	45.698294	-90.557999				Unreachable																																								
520	45.709683	-90.557406	5	S	P		1															1																									
521	45.709188	-90.557401	3	S	P		1															1																									
522	45.708693	-90.557396	6	S	P		2				2											1														1										
523	45.708198	-90.557391	6	S	P		1															1																									
524	45.707703	-90.557386	6	S	P		1															1																									
525	45.707208	-90.557381	6	S	P		2															2																									
526	45.706713	-90.557376	7	S	P		1															1																									
527	45.706218	-90.557371	8	M	P	NV																																								
528	45.705723	-90.557366	10	M	P	NV																																								
529	45.705228	-90.557361	11	M	P	NV																																								
530	45.704733	-90.557356	9	M	P	NV																																								
531	45.704238	-90.557351	8	M	P	NV																																								
532	45.703743	-90.557346	7	M	P	NV																																								
533	45.703248	-90.557342	7	S	P		1															1																									
534	45.702753	-90.557337	5	M	P		1															1																									
535	45.702258	-90.557332	5	M	P	NV																																								
536	45.701763	-90.557327	5	M	P		1															1																									
537	45.701268	-90.557322	4	M	P		1																													1										
538	45.700773	-90.557317	4	M	P		2				1																									2										
539	45.700278	-90.557312	4	M	P		1																													1										
540	45.699783	-90.557307	3	M	P		1																													1										

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Aquatic moss	Brasenia schreberi	Calla palustris	Ceratophyllum demersum	Chara spp.	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater Sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum spicatum	Najas flexilis	Nitella sp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton crispus	Potamogeton epihydrus	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Riccia fluitans	Sagittaria graminea	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia geminiscapa	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana	Wolffia columbiana
541	45.699288	-90.557302	3	M	P		2				1																							2													
542	45.698793	-90.557297	2	M	P		3				3			1																				1													
543	45.698298	-90.557292	2	M	P		2																			1							2													
544	45.710182	-90.556704	3	S	P		1				1											1	1												1										1		
545	45.709687	-90.556699	5	S	P		1															1																								
546	45.709192	-90.556694	6	S	P		1				1											1																								
547	45.708697	-90.556689	6	S	P		1															1																								
548	45.708202	-90.556684	6	S	P		2															2																								
549	45.707707	-90.556679	6	S	P		1															1																								
550	45.707212	-90.556674	5	S	P		1				1											1																							1	
551	45.706717	-90.556669	2	S	P		1							1								1																								
552	45.706221	-90.556665	6	S	P		1															1																				1				
553	45.705726	-90.556660	13			TD																																								
554	45.705231	-90.556655	9	M	P	NV																																								
555	45.704736	-90.556650	9	M	P	NV																																								
556	45.704241	-90.556645	8	M	P	NV																																								
557	45.703746	-90.556640	8	M	P	NV																																								
558	45.703251	-90.556635	6	M	P	NV																																								
559	45.702756	-90.556630	6	S	P		2															2																								
560	45.702261	-90.556625	5	S	P		2															2																								
561	45.701766	-90.556620	5	M	P		1																												1												
562	45.701271	-90.556615	4	M	P		1																												1												
563	45.700776	-90.556611	4	M	P		3				1																																		3	
564	45.700281	-90.556606	4	M	P		2				1																								2												
565	45.699786	-90.556601	4	M	P		3				1			1																					3			1							1	
566	45.699291	-90.556596	3	M	P		2				1					1																			2			1								
567	45.698796	-90.556591	3	M	P		1				1																								1											2	
568	45.710185	-90.555997	4	S	P		2				1											1																							2	
569	45.709690	-90.555992	5	S	P		2															2																								
570	45.709195	-90.555987	6	S	P		2															2																								
571	45.708700	-90.555983	6	S	P		1															1																								
572	45.708205	-90.555978	7	M	P		1															1																								
573	45.707710	-90.555973	7	M	P	NV																																								
574	45.707215	-90.555968	8	M	P	NV																																								
575	45.706720	-90.555963	9	M	P	NV																																								
576	45.706225	-90.555958	11	M	P	NV																																								
577	45.705730	-90.555953	10	M	P	NV																																								
578	45.705235	-90.555948	9	M	P	NV																																								
579	45.704740	-90.555943	9	M	P	NV																																								
580	45.704245	-90.555938	9	M	P	NV																																								
581	45.703750	-90.555933	8	M	P	NV																																								
582	45.703255	-90.555929	6	S	P		2															2																								
583	45.702760	-90.555924	5	S	P		2															2																								
584	45.702265	-90.555919	5	S	P		2															2																								
585	45.701770	-90.555914	5	M	P		3																												3												
586	45.701275	-90.555909	4	M	P		2																												2												
587	45.700780	-90.555904	4	M	P		2																												2			1								
588	45.700285	-90.555899	4	M	P		2				1			1																					2												
589	45.699790	-90.555894	4	M	P		2																												2												
590	45.699295	-90.555889	3	M	P		2				1															1									2			1							1	
591	45.710189	-90.555291	5	S	P		2				1											1													1											2	
592	45.709694	-90.555286	6	S	P		3				1											3																								
593	45.709198	-90.555281	6	S	P		2															2																								
594	45.708703	-90.555276	6	S	P		2															2																								
595	45.708208	-90.555271	7	M	P		1															1																								
596	45.707713	-90.555266	8	M	P	NV																																								
597	45.707218	-90.555261	9	M	P	NV																																								
598	45.706723	-90.555256	10	M	P	NV																																								
599	45.706228	-90.555251	9	M	P	NV																																								
600	45.705733	-90.555247	9	M	P	NV																																								
601	45.705238	-90.555242	9	M	P	NV																																								
602	45.704743	-90.555237	9	M	P	NV																																								
603	45.704248	-90.555232	9	M	P	NV																																								
604	45.703753	-90.555227	8	M	P	NV																																								
605	45.703258	-90.555222	6	M	P		1															1																								
606	45.702763	-90.555217	5	S	P		2									1						2																								
607	45.702268	-90.555212	5	S	P		2				1											2																								
608	45.701773	-90.555207	5	M	P		2															2														1											
609	45.701278	-90.555202	4	M	P		2				2											1														1											
610	45.700783	-90.555198	4	M	P	NV																																								
611	45.700288	-90.555193	4	M	P		1																																								
612	45.699793	-90.555188	4	M	P		2				1											1														2											
613	45.710192	-90.554584	3	S	P		1				1											1																							1	
614	45.709697	-90.554579	5	S	P		1															1																								
615	45.709202	-90.554574	6	S	P		1															1																								
616	45.708707	-90.554569	6	S	P		1															1																								
617	45.708212	-90.554565	7	M	P		1															1																								
618	45.707717	-90.554560	8	M	P	NV																																								
619	45.707222	-90.554555	9	M	P	NV																																								
620	45.706727	-90.554550	9	M	P	NV																																								
621	45.706232	-90.554545	9	M	P	NV																																								
622	45.705737	-90.554540	9	M	P	NV																																								
623	45.705242	-90.554535	9	M	P	NV																																								
624	45.704747	-90.554530	9	M	P	NV																																								
625	45.704252	-90.554525	9	M	P	NV																																								
626	45.703757	-90.554520	7	M	P	NV																																								
627	45.703262	-90.554516	5	S	P		2				1											2																								
628	45.702767	-90.554511	5	M	P		1															1																								
629	45.702272	-90.554506	5	S	P		1															1																								
630	45.701777	-90.554501	5	S	P		1				1											1														1											
631	45.701282	-90.554496	5	S	P		1				1											1																								
632	45.700787	-90.554491	5	M	P		3				1			1																					3												
633	45.700292	-90.554486	4	M	P		3																												3												
634	45.699797	-90.554481	3	S	P		1							1								1																								
635	45.710195	-90.553878	2	S	P		1															1																							1	
636	45.709700	-90.553873	5	S	P		2															2																								
637	45.709205	-90.553868	6	S	P		2				1											2																								
638	45.708710	-90.553863	6	M	P	NV																																								
639	45.708215	-90.553858	7	M	P	NV																																								
640	45.707720	-90.553853	8	M	P	NV																																								
641	45.707225	-90.553848	9	M	P	NV																																								
642	45.706730	-90.553843	9	M	P	NV																																								
643	45.706235	-90.553838	9	M	P	NV																																								
644	45.705740	-90.553834	9	M	P	NV																																								
645	45.705245	-90.553829	9	M	P	NV																																								
646	45.704750	-90.553824	9	M	P	NV																																								
647	45.704255	-90.553819	8	M	P	NV																																								
648	45.703760	-90.553814	6	S	P		2				1											2																								
649	45.703265	-90.553809	5	S	P		2															2																								
650	45.702770	-90.553804	4	S	P		2				1											2																								
651	45.702275	-90.553799	5	M	P		1															1																								
652	45.701780	-90.553794	4	S	P		1															1																								
653	45.701285	-90.553790	5	M	P		1				1											1																								
654	45.700790	-90.553785	5	M	P		3																												3												
655	45.700295	-90.553780	4	M	P		3				1																								3												
656	45.699800	-90.553775	4	M	P		3				1																								3												
657	45.699305	-90.553770	1	M	P		1				1								1							1	1								1			1					1	1	1		
658	45.709704	-90.553166	5	S	P		1															1														1											
659	45.709209	-90.553161	5	S	P		1															1																								
660	45.708714	-90.553156	6	S	P		1															1																								
661	45.708219	-90.553151	7	M	P	NV																																								
662	45.707724	-90.553147	8	M	P	NV																																								
663	45.707229	-90.553142	8	M	P	NV																																								
664	45.706734	-90.553137	9	M	P	NV																																								
665	45.706239	-90.553132	9	M	P	NV																																								
666	45.705744	-90.553127	9	M	P	NV																																								
667	45.705249	-90.553122	9	M	P	NV																																								
668	45.704754	-90.553117	8	M	P	NV																																								
669	45.704259	-90.553112	6	M	P		2															2																								
670	45.703764	-90.553107	5	M	P		2															2																								
671	45.703269	-90.553103	5	M	P		1				1											1																								
672	45.702774	-90.553098	6	M	P	NV																																								
673	45.702278	-90.553093	6	M	P		2				2											1																								
674	45.701783	-90.553088	5	S	P	NV																																								
675	45.701288	-90.553083	5	S	P		1				1											1																							1	

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Aquatic moss	Brasenia schreberi	Calla palustris	Ceratophyllum demersum	Chara spp.	Eleocharis palustris	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater Sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum spicatum	Najas flexilis	Nitella sp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton crispus	Potamogeton epihydrus	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton robbinsii	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Riccia fluitans	Sagittaria graminea	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia geminiscapa	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana	Wolffia columbiana
676	45.700793	-90.553078	5	S	P		1				1											1													1												
677	45.700298	-90.553073	5	S	P		1																													1											
678	45.699803	-90.553068	3	S	P		2							1																				1										2	
679	45.699308	-90.553064				Unreachable																																								
680	45.709707	-90.552459	5	S	P		1				1											1																							
681	45.709212	-90.552455	5	S	P		1															1																							
682	45.708717	-90.552450	6	M	P		2															2																							
683	45.708222	-90.552445	7	M	P		2															2																							
684	45.707727	-90.552440	8	M	P	NV																																							
685	45.707232	-90.552435	9	M	P	NV																																							
686	45.706737	-90.552430	8	M	P		1				1																																		
687	45.706242	-90.552425	9	M	P	NV																																							
688	45.705747	-90.552420	9	M	P																	1																							
689	45.705252	-90.552416	8	M	P	NV																																							
690	45.704757	-90.552411	7	M	P	NV																																							
691	45.704262	-90.552406	5	M	P		2				1											2																							
692	45.703767	-90.552401	7	M	P	NV																																							
693	45.703272	-90.552396	7	M	P	NV																																							
694	45.702777	-90.552391	6	M	P	NV																																							
695	45.702282	-90.552386	6	M	P	NV																																							
696	45.701787	-90.552381	7	M	P	NV																																							
697	45.701292	-90.552377	5	M	P	NV																																							
698	45.700797	-90.552372	5	M	P		1				1											1																							
699	45.700302	-90.552367	3	R	P		1															1													1		1								
700	45.699312	-90.552357				Unreachable																																							
701	45.698817	-90.552352				Unreachable																																							
702	45.709711	-90.551753	5	S	P		1															1																							
703	45.709216	-90.551748	5	S	P		1				1											1																							
704	45.708721	-90.551743	6	S	P		1				1											1																							
705	45.708226	-90.551738	6	S	P	NV																																							
706	45.707731	-90.551733	7	M	P	NV																																							
707	45.707236	-90.551729	7	M	P	NV																																							
708	45.706741	-90.551724	8	M	P	NV																																							
709	45.706245	-90.551719	8	M	P	NV																																							
710	45.705750	-90.551714	8	M	P	NV																																							
711	45.705255	-90.551709	8	M	P	NV																																							
712	45.704760	-90.551704	7	M	P		1															1																							
713	45.704265	-90.551699	7	M	P	NV																																							
714	45.703770	-90.551694	7	M	P		1															1																							
715	45.703275	-90.551690	5	M	P		2				1											2																							
716	45.702780	-90.551685	6	M	P	NV																																							
717	45.702285	-90.551680	6	M	P	NV																																							
718	45.701790	-90.551675	9	S	P	NV																																							
719	45.701295	-90.551670	8	S	P	NV																																							
720	45.700800	-90.551665	5	M	P		1				1											1																							
721	45.700305	-90.551660	2	R	P		1				1																																		
722	45.699810	-90.551656	2	M	P		1				1								1		1	1				1	1								1							1		1				1	
723	45.699315	-90.551651				Unreachable																																								
724	45.709714	-90.551046	4	S	P		2																																						2	
725	45.709219	-90.551041	5	M	P		1															1																							
726	45.708724	-90.551037	5	M	P		1															1																							
727	45.708229	-90.551032	6	M	P		2															2																							
728	45.707734	-90.551027	7	M	P	NV																																							
729	45.707239	-90.551022	8	M	P	NV																																							
730	45.706744	-90.551017	9	M	P	NV																																							
731	45.706249	-90.551012	9	M	P	NV																																							
732	45.705754	-90.551007	8	M	P	NV																																							
733	45.705259	-90.551003	7	M	P	NV																																							
734	45.704764	-90.550998	7	M	P	NV																																							
735	45.704269	-90.550993	7	M	P	NV																																							
736	45.703774	-90.550988	7	M	P	NV																																							
737	45.703279	-90.550983	7	M	P		1															1																							
738	45.702784	-90.550978	7	M	P		1															1																							
739	45.702289	-90.550973	7	M	P	NV																																							
740	45.701794	-90.550969	11	M	P	NV																																							
741	45.701299	-90.550964	5	M	P	NV																																							
742	45.700804	-90.550959	5	M	P		2															1														2									
743	45.700309	-90.550954	4	M	P		1																													1									
744	45.699814	-90.550949	3	M	P		1																			1										1									
745	45.699319	-90.550944	2	M	P		2												1							1				1						2						1			
746	45.709717	-90.550340	4	S	P	NV																																							
747	45.709222	-90.550335	5	M	P		2										1					2																							
748	45.708727	-90.550330	5	M	P		1															1																							
749	45.708232	-90.550325	6	M	P	NV																																							
750	45.707737	-90.550320	6	M	P		1										1					1																							1	
751	45.707242	-90.550315	6	M	P		1															1																							
752	45.706747	-90.550311	8	M	P		1				1																																		
753	45.706252	-90.550306	8	M	P	NV																																							
754	45.705757	-90.550301	8	M	P	NV																																							
755	45.705262	-90.550296	7	M	P	NV																																							
756	45.704767	-90.550291	7	M	P	NV																																							
757	45.704272	-90.550286	7	M	P	NV																																							
758	45.703777	-90.550281	5	M	P		2				1						1					2																							
759	45.703282	-90.550277	6	M	P		1															1																							
760	45.702787	-90.550272	7	M	P	NV																																							
761	45.702292	-90.550267	7	M	P		1															1																							
762	45.701797	-90.550262	9	S	P	NV																																							
763	45.701302	-90.550257	2	R	P		1							1																															
764	45.700807	-90.550252	2	R	P		1				1			1							1	1						1																
765	45.700312	-90.550247	2	S	P		1				1										1													1										1	
766	45.699817	-90.550243	3	M	P		3												1							1									3							1			
767	45.709721	-90.549633	4	S	P		1				1																																	
768	45.709226	-90.549628	5	M	P		3				3											1							1															
769	45.708731	-90.549623	5	M	P		1				1											1																							
770	45.708236	-90.549619	5	M	P		1				1											1														1									1	
771	45.707741	-90.549614	5	M	P		1															1																							
772	45.707246	-90.549609	7	M	P		1															1																							
773	45.706751	-90.549604	7	M	P	NV																V																							
774	45.706256	-90.549599	7	M	P	NV																																							
775	45.705761	-90.549594	8	M	P	NV																																							
776	45.705266	-90.549590	7	M	P	NV																																							
777	45.704771	-90.549585	7	M	P	NV																																							
778	45.704276	-90.549580	6	S	P		2				2											1																							
779	45.703781	-90.549575	5	S	P		2				2											1																							
780	45.703286	-90.549570	4	S	P		2				1											2																							
781	45.702791	-90.549565	4	M	P		3															1																							3	
782	45.702296	-90.549560	4	R	P		2															1																							2	
783	45.701801	-90.549556	5	R	P	NV																																							
784	45.699820	-90.549536	2	M	P		3				1								1							1									3							1			
785	45.709229	-90.548922	4	M	P		2				1											1																							2	
786	45.708734	-90.548917	4	M	P		1															1																							
787	45.708239	-90.548912	4	S	P		1															1																							
788	45.707744	-90.548907	5	S	P		2				2											1																							
789	45.707249	-90.548902	5	S	P		1				1											1																							
790	45.706754	-90.548898	5	S	P		1															1																							
791	45.706259	-90.548893	6	S	P		1				1											1																	1						
792	45.705764	-90.548888	6	S	P		1				1											1																	1						
793	45.705269	-90.548883	5	S	P		1															1																							
794	45.704774	-90.548878	3	R	P		1															1																							
795	45.704279	-90.548873	3	R	P		1																																						1	
796	45.703784	-90.548868	2	S	P		1															1																						1	
797	45.703289	-90.548864	3	S	P		2				1			1								1													1										2	
798	45.702794	-90.548859	3	S	P		3				1																																		3	
799	45.702299	-90.548854	2	S	P		1															1																							1	

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
1	45.703121	-90.582775	7	Rock	Pole		0																																						
2	45.703620	-90.582074	5	Rock	Pole		0																																						
3	45.703125	-90.582069	11	Rock	Pole		0																																						
4	45.702630	-90.582064	10	Rock	Pole		0																																						
5	45.702135	-90.582059	5	Sand	Pole		0																																						
6	45.703128	-90.581362	2	Sand	Pole		2			1		1										1						1																	1
7	45.702633	-90.581357	10	Rock	Pole		0																																						
8	45.702138	-90.581352	8	Sand	Pole		0																																						
9	45.702637	-90.580651	2	Sand	Pole		3		1			2										1				1			1																
10	45.702142	-90.580646	9	Rock	Pole		0																																						
11	45.701647	-90.580641	5	Muck	Pole		0																																						
12	45.702145	-90.579939	5	Rock	Pole		0																																						
13	45.701650	-90.579934	10	Rock	Pole		0																																						
14	45.701654	-90.579228	8	Muck	Pole		0																																						
15	45.701159	-90.579222	9	Rock	Pole		0																																						
16	45.700664	-90.579217	10	Rock	Pole		0																																						
17	45.700169	-90.579212	6	Sand	Pole		0																																						
18	45.702153	-90.578526	5	Sand	Pole		0																																						
19	45.701658	-90.578521	6	Rock	Pole		0																																						
20	45.701162	-90.578516	6	Sand	Pole		0																																						
21	45.700667	-90.578511	9	Rock	Pole		0																																						
22	45.700172	-90.578506	6	Sand	Pole		0																																						
23	45.702156	-90.577820	5	Rock	Pole		0																																						
24	45.701661	-90.577815	6	Sand	Pole		0																																						
25	45.701166	-90.577810	5	Muck	Pole		1																		1														1						
26	45.700176	-90.577799	8	Rock	Pole		0																																						
27	45.699681	-90.577794	4	Muck	Pole		1																1		1																				
28	45.699186	-90.577789	5	Muck	Pole		1																		1																				
29	45.698691	-90.577784	4	Sand	Pole		3		1																																				2
30	45.702655	-90.577118	4	Muck	Pole		3						1									3						1						1											
31	45.702160	-90.577113	3	Muck	Pole		1																		1																				
32	45.701665	-90.577108	3	Muck	Pole		1						1																						1										
33	45.700180	-90.577093	6	Rock	Pole		0																																						
34	45.699685	-90.577088	9	Sand	Pole		0																																						
35	45.699190	-90.577083	5	Sand	Pole		0																																						
36	45.703153	-90.576417	2	Rock	Pole		1																			1																				
37	45.702658	-90.576412	3	Muck	Pole		3		1																1										3										
38	45.700183	-90.576386	6	Sand	Pole		0																																						
39	45.699688	-90.576381	11	Rock	Pole		0																																						
40	45.699193	-90.576376	7	Rock	Pole		0																																						
41	45.703157	-90.575710	4	Muck	Pole		3		1			3													1										1										
42	45.702662	-90.575705	0			NONNAVIGABLE (PLANTS)																																								
43	45.700682	-90.575685	0			NONNAVIGABLE (PLANTS)																																								
44	45.700187	-90.575680	1	Sand	Pole		2			1		1									1	1													1										
45	45.699692	-90.575675	3	Sand	Pole		2						1															2																	
46	45.699197	-90.575670	9	Rock	Pole		0																																						
47	45.698702	-90.575665	0			TEMPORARY OBSTACLE																																								
48	45.698207	-90.575660	4	Muck	Pole		1																		1																				
49	45.697712	-90.575655	6	Muck	Pole		0																																						
50	45.697217	-90.575649	0			TERRESTRIAL																																							
51	45.703655	-90.575009	2	Muck	Pole		2																		1																1				
52	45.703160	-90.575004	0			NONNAVIGABLE (PLANTS)																																								
53	45.700190	-90.574973	4	Muck	Pole		1																		1										1	1								
54	45.699200	-90.574963	5	Sand	Pole		0																																						
55	45.698705	-90.574958	10	Rock	Pole		0																																						
56	45.698210	-90.574953	9	Rock	Pole		0																																						
57	45.697715	-90.574948	10	Sand	Pole		0																																						
58	45.703659	-90.574303	4	Muck	Pole		1															1			1																				
59	45.703164	-90.574297	0			NONNAVIGABLE (PLANTS)																																								
60	45.702669	-90.574292	0			NONNAVIGABLE (PLANTS)																																								
61	45.702174	-90.574287	0			NONNAVIGABLE (PLANTS)																																								
62	45.701679	-90.574282	0			NONNAVIGABLE (PLANTS)																																								
63	45.698709	-90.574252	9	Muck	Pole		0																																						
64	45.698214	-90.574247	9	Sand	Pole		0																																						
65	45.697719	-90.574242	9	Sand	Pole		0																																						
66	45.697224	-90.574237	9	Rock	Pole		0																																						
67	45.696729	-90.574232	5	Muck	Pole		0																																						
68	45.704158	-90.573601	5	Muck	Pole		3		2										1								1							1										

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
69	45.703663	-90.573596	0			NONNAVIGABLE (PLANTS)																																							
70	45.703167	-90.573591	0			NONNAVIGABLE (PLANTS)																																								
71	45.699702	-90.573556	0			NONNAVIGABLE (PLANTS)																																								
72	45.699207	-90.573550	6	Muck	Pole		0																																						
73	45.698712	-90.573545	9	Muck	Pole		0																																						
74	45.698217	-90.573540	8	Muck	Pole		0																																						
75	45.697722	-90.573535	7	Muck	Pole		0																																						
76	45.697227	-90.573530	9	Sand	Pole		0																																						
77	45.696732	-90.573525	0			DEEP																																							
78	45.696237	-90.573520	8	Sand	Pole		0																																						
79	45.695742	-90.573515	5	Sand	Pole		1																		V										1										
80	45.695247	-90.573510	5	Sand	Pole		0																																						
81	45.704656	-90.572900	5	Muck	Pole		3					1															1						1	2											
82	45.704161	-90.572895	0			NONNAVIGABLE (PLANTS)																																								
83	45.703666	-90.572890	0			NONNAVIGABLE (PLANTS)																																								
84	45.699211	-90.572844	6	Muck	Pole		0																																						
85	45.698716	-90.572839	9	Muck	Pole		0																																						
86	45.698221	-90.572834	9	Muck	Pole		0																																						
87	45.697726	-90.572829	8	Muck	Pole		0																																						
88	45.697231	-90.572824	8	Muck	Pole		0																																						
89	45.696736	-90.572819	9	Sand	Pole		0																																						
90	45.696241	-90.572814	8	Rock	Pole		0																																						
91	45.695746	-90.572809	4	Sand	Pole		0																																						
92	45.694756	-90.572799	0			TERRESTRIAL																																							
93	45.704660	-90.572193	3	Muck	Pole		3		1				1																						1										
94	45.704165	-90.572188	0			NONNAVIGABLE (PLANTS)																																								
95	45.698224	-90.572127	5	Sand	Pole		1					1																								1									
96	45.697729	-90.572122	7	Muck	Pole		0																																						
97	45.697234	-90.572117	2	Sand	Pole		0																																						
98	45.696244	-90.572107	6	Sand	Pole		0																																						
99	45.695749	-90.572102	9	Rock	Pole		0																																						
100	45.705158	-90.571492	4	Muck	Pole		1		1													1						1						1										
101	45.704663	-90.571487	3	Muck	Pole		3		1			3						1							1												1							
102	45.700208	-90.571441	2	Muck	Pole		0																	V																				
103	45.698723	-90.571426	4	Muck	Pole		1		1					1											1										1									1	
104	45.696743	-90.571406	5	Muck	Pole		0																																						
105	45.696248	-90.571401	5	Muck	Pole		1																											1										
106	45.695753	-90.571396	9	Rock	Pole		0																																						
107	45.695258	-90.571391	1	Sand	Pole		0																																						
108	45.706152	-90.570795	5	Muck	Pole		3																				1							3										
109	45.705657	-90.570790	4	Muck	Pole		3		1			1										1			1			1						2	1		1							
110	45.705162	-90.570785	3	Muck	Pole		2		1									1							1									1										
111	45.701697	-90.570750	3	Muck	Pole		1	V																V	1	V																	1	
112	45.701202	-90.570745	0			NONNAVIGABLE (PLANTS)																																								
113	45.700212	-90.570735	3	Sand	Pole		2				1											2			V	V							1									1	
114	45.699717	-90.570730	3	Muck	Pole		1		1															1	1																		1	
115	45.699221	-90.570725	4	Muck	Pole		1																		1									1										
116	45.698726	-90.570720	4	Muck	Pole		2		1																									1									1	
117	45.698231	-90.570715	0			TERRESTRIAL																																							
118	45.697736	-90.570710	3	Sand	Pole		2		1																			2						1										
119	45.697241	-90.570705	5	Muck	Pole		1		1																V											1								
120	45.696746	-90.570700	6	Muck	Pole		1																		V									1										
121	45.696251	-90.570694	0			TERRESTRIAL																																							
122	45.695756	-90.570689	8	Sand	Pole		0																																						
123	45.695261	-90.570684	9	Rock	Pole		0																																						
124	45.694766	-90.570679	6	Muck	Pole		0																																						
125	45.694271	-90.570674	5	Muck	Pole		0																																						
126	45.693776	-90.570669	4	Muck	Pole		1																		V									1										
127	45.693281	-90.570664	3	Muck	Pole		2																		V									2										
128	45.709620	-90.570124	0			NONNAVIGABLE (PLANTS)																																								
129	45.706650	-90.570094	2	Muck	Pole		2			1		1	1						1															1										
130	45.706155	-90.570089	0			NONNAVIGABLE (PLANTS)																																								
131	45.703680	-90.570064	0			NONNAVIGABLE (PLANTS)																																								
132	45.703185	-90.570058	3	Muck	Pole		3		1											1					1				1					1		1							1	
133	45.702690	-90.570053	4	Muck	Pole		3		2																V								1	1								1	1	
134	45.702195	-90.570048	3	Muck	Pole		1						1									1		V	V					1		1										1	
135	45.701700	-90.570043	3	Muck	Pole		1		1																1																			
136	45.701205	-90.570038	3	Muck	Pole		1		1		1														V																			

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
137	45.700710	-90.570033	2	Muck	Pole		2	V			1														V	V							1						1						
138	45.698730	-90.570013	2	Muck	Pole		1		1																1								1							V						
139	45.698235	-90.570008	2	Muck	Pole		1																																							1
140	45.696255	-90.569988	0			TERRESTRIAL																																								
141	45.695760	-90.569983	10	Rock	Pole		0																																							
142	45.695265	-90.569978	9	Muck	Pole		0																																							
143	45.694770	-90.569973	7	Muck	Pole		0																																							
144	45.694275	-90.569968	6	Muck	Pole		0																																							
145	45.693780	-90.569963	5	Muck	Pole		0																																							
146	45.693285	-90.569958	4	Muck	Pole		1							1																					1											
147	45.692790	-90.569953	3	Muck	Pole		2		1						1																								1							1
148	45.710119	-90.569422	0			NONNAVIGABLE (PLANTS)																																									
149	45.709624	-90.569417	0			NONNAVIGABLE (PLANTS)																																									
150	45.707644	-90.569397	3	Muck	Pole		3					3	1									1							1					1	1			1							
151	45.707149	-90.569392	2	Muck	Pole		2			1												1			1																				
152	45.706654	-90.569387	3	Muck	Pole		3			1												1						1					1				2							
153	45.698238	-90.569302	3	Muck	Pole		1	1																	V									1										
154	45.697743	-90.569297	3	Muck	Pole		1		1																1									1											
155	45.697248	-90.569292	2	Sand	Pole		1					1																																	1
156	45.696753	-90.569287	3	Sand	Pole		1															1	1																					
157	45.696258	-90.569282	8	Muck	Pole		0																																							
158	45.695763	-90.569277	12	Muck	Pole		0																																							
159	45.695268	-90.569272	8	Muck	Pole		0																																							
160	45.694773	-90.569267	6	Muck	Pole		0																																							
161	45.694278	-90.569262	6	Sand	Pole		0																																							
162	45.693783	-90.569257	6	Muck	Pole		0																																							
163	45.693288	-90.569252	5	Muck	Pole		0																																							
164	45.692793	-90.569247	4	Muck	Pole		1																													1				1						
165	45.692298	-90.569241	3	Muck	Pole		2		1						1						V				V														1							2
166	45.710618	-90.568721	3	Muck	Pole		2												1						1															1							1
167	45.710122	-90.568716	3	Muck	Pole		3					2										1			1	1																				
168	45.709627	-90.568711	3	Muck	Pole		3					2	1						1						1	1									1				1							
169	45.708637	-90.568701	4	Muck	Pole		3			1		3										1																	1							
170	45.708142	-90.568696	4	Muck	Pole		3					3	1									1																								
171	45.707647	-90.568691	3	Muck	Pole		3		1	1		2										1													1											
172	45.707152	-90.568686	3	Muck	Pole		3																												3											
173	45.706657	-90.568681	2	Muck	Pole		2					1	1												V										1											
174	45.697252	-90.568585	2	Sand	Pole		1															1	1		V					1															
175	45.696757	-90.568580	8	Muck	Pole		0																																							
176	45.696262	-90.568575	13	Muck	Pole		0																																							
177	45.695767	-90.568570	8	Muck	Pole		0																																							
178	45.695272	-90.568565	7	Muck	Pole		0																																							
179	45.694777	-90.568560	6	Muck	Pole		0																																							
180	45.694282	-90.568555	6	Muck	Pole		0																																							
181	45.693787	-90.568550	6	Sand	Pole																																								
182	45.693292	-90.568545	5	Sand	Pole		0																																							
183	45.692797	-90.568540	5	Muck	Pole		0																																							
184	45.692302	-90.568535	4	Muck	Pole		1								1																				1											
185	45.711611	-90.568024	5	Muck	Pole		3		1			2										1			V														1							1
186	45.711116	-90.568019	6	Muck	Pole		2		1										2																											
187	45.710621	-90.568014	4	Muck	Pole		3					1							1			1			1																					
188	45.710126	-90.568009	3	Muck	Pole		3					3										1						1							1				1							
189	45.709631	-90.568004	4	Muck	Pole		3					2	1															2																		
190	45.709136	-90.567999	5	Muck	Pole		2		1					1								1																								
191	45.708641	-90.567994	4	Muck	Pole		3			1		3										1																								
192	45.708146	-90.567989	4	Muck	Pole		3			1		1																							1					1						1
193	45.707651	-90.567984	4	Muck	Pole		3		1																										3											
194	45.707156	-90.567979	3	Muck	Pole		3			1		1																							1				1							2
195	45.706661	-90.567974	4	Muck	Pole		3			3		1										1													1											
196	45.697255	-90.567879	8	Muck	Pole		0																																							
197	45.69676	-90.567874	12	Muck	Pole		0																																							
198	45.696265	-90.567869	9	Sand	Pole		0																																							
199	45.69577	-90.567864	8	Muck	Pole		0																																							
200	45.695275	-90.567859	6	Muck	Pole		0																																							
201	45.69478	-90.567854	6	Muck	Pole		0																																							
202	45.694285	-90.567849	6	Muck	Pole		0																																							
203	45.69379	-90.567844	6	Muck	Pole		0																																							
204	45.693295	-90.567839	5	Sand	Pole		0																																							

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
205	45.6928	-90.567834	5	Muck	Pole		1		1						1										1	1								1											
206	45.692305	-90.567829	4	Muck	Pole		1		1																								1				1							
207	45.713595	-90.567338	0			NONNAVIGABLE (PLANTS)																																							
208	45.7131	-90.567333	0			NONNAVIGABLE (PLANTS)																																							
209	45.712605	-90.567328	4	Muck	Pole		3					1						1				1			1	1							1	1										
210	45.71211	-90.567323	4	Muck	Pole		3		1				1						1			1											1											1	
211	45.711615	-90.567318	5	Muck	Pole		2		1				1						1									1																1	
212	45.710625	-90.567308	2	Sand	Pole		1		1																1																			
213	45.71013	-90.567303	3	Muck	Pole		3		1			2	1															1										1							1
214	45.709635	-90.567298	4	Muck	Pole		2			2																		1										2							
215	45.709139	-90.567293	5	Muck	Pole		3		1																																				3
216	45.708644	-90.567288	5	Muck	Pole		3			1																																			3
217	45.708149	-90.567283	4	Muck	Pole		2			2												1																							
218	45.707654	-90.567278	4	Muck	Pole		3			1			1																																2
219	45.707159	-90.567273	4	Muck	Pole		3			1		1																1																	2
220	45.706664	-90.567268	4	Muck	Pole		3			1		1	1									1			V			1						1		1								
221	45.706169	-90.567263	6	Muck	Pole		1		1																																				
222	45.699239	-90.567192	4	Sand	Pole		2		2								1								V												1							
223	45.697754	-90.567177	7	Muck	Pole		0																																						
224	45.697259	-90.567172	11	Muck	Pole		0																																						
225	45.696764	-90.567167	12	Muck	Pole		0																																						
226	45.696269	-90.567162	7	Sand	Pole		0																																						
227	45.695774	-90.567157	7	Muck	Pole		0																																						
228	45.695279	-90.567152	7	Muck	Pole		0																																						
229	45.694784	-90.567147	6	Muck	Pole		0																																						
230	45.694289	-90.567142	6	Muck	Pole		0																																						
231	45.693794	-90.567137	5	Muck	Pole		0																																						
232	45.693299	-90.567132	5	Sand	Pole		0																																						
233	45.692804	-90.567127	4	Sand	Pole		0																																						
234	45.692309	-90.567122	4	Muck	Pole		0																																						
235	45.691814	-90.567117	3	Sand	Pole										1																		1											
236	45.691319	-90.567112	3	Muck	Pole		2															1	1					1					1	1										
237	45.714093	-90.566636	0			NONNAVIGABLE (PLANTS)																																								
238	45.713598	-90.566631	4	Muck	Pole		3												1			1				1		1	1		1													
239	45.713103	-90.566626	5	Muck	Pole		2																																					2	
240	45.712608	-90.566621	5	Muck	Pole		3		3																						1			1									1	
241	45.712113	-90.566616	4	Muck	Pole		3			1		1	1						2			2	1						1														1
242	45.710133	-90.566596	4	Muck	Pole		2			1																										1								2
243	45.709638	-90.566591	5	Muck	Pole		3			2																												1						1
244	45.709143	-90.566586	5	Muck	Pole		3			3																																		1
245	45.708648	-90.566581	5	Muck	Pole		2						1																				1	1										1
246	45.708153	-90.566576	5	Muck	Pole		1																1										1											
247	45.707658	-90.566571	4	Sand	Pole		2																											1				1						1
248	45.707163	-90.566566	4	Sand	Pole		2						1										1																					1
249	45.706668	-90.566561	4	Muck	Pole		3	V	1	1					1										V							1											2
250	45.706173	-90.566556	4	Muck	Pole		2			1		1										1																							
251	45.705678	-90.566551	0			NONNAVIGABLE (PLANTS)																																							
252	45.698748	-90.566481	0			TERRESTRIAL																																							
253	45.698253	-90.566476	5	Sand	Pole		0																																						
254	45.697758	-90.566471	9	Muck	Pole		0																																						
255	45.697263	-90.566466	9	Sand	Pole		0																																						
256	45.696767	-90.566461	9	Sand	Pole		0																																						
257	45.696272	-90.566456	7	Muck	Pole		0																																						
258	45.695777	-90.566451	7	Muck	Pole		0																																						
259	45.695282	-90.566446	6	Muck	Pole		0																																						
260	45.694787	-90.566441	6	Muck	Pole		0																																						
261	45.694292	-90.566436	5	Sand	Pole		0																																						
262	45.693797	-90.566431	5	Sand	Pole		1																																					1	
263	45.693302	-90.566426	4	Sand	Pole		1																1																					
264	45.692807	-90.566421	4	Muck	Pole		1					1										1											1											
265	45.692312	-90.566416	4	Sand	Pole		1		1																																				
266	45.691817	-90.566411	4	Muck	Pole		2		1			1											1				1										1	1	1					
267	45.691322	-90.566406	4	Muck	Pole		2		1			1													1								1										1	
268	45.714097	-90.565929	0			NONNAVIGABLE (PLANTS)																																							
269	45.713602	-90.565924	4	Muck	Pole		1		1																																				
270	45.713107	-90.565919	8	Muck	Pole		2												1																									
271	45.712612	-90.565914	5	Muck	Pole		3		2																																			1	
272	45.712117	-90.565909	5	Muck	Pole		3		3										1																									

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
273	45.710137	-90.565889	5	Sand	Pole		2		1																								1												
274	45.709642	-90.565884	5	Sand	Pole		2																1																						2
275	45.709146	-90.565879	5	Muck	Pole		2							1									1												2										
276	45.708651	-90.565874	5	Muck	Pole		2																1																						1
277	45.708156	-90.565869	6	Muck	Pole		0																																						
278	45.707661	-90.565864	5	Sand	Pole		1																																						1
279	45.707166	-90.565859	4	Sand	Pole		1					1																																	
280	45.706671	-90.565854	5	Muck	Pole		2																																	2						1
281	45.705681	-90.565844	2	Muck	Pole		2					1													1			1																	
282	45.701226	-90.5658	2	Rock	Pole		0																																						
283	45.700731	-90.565795	10	Muck	Pole		0																																						
284	45.700236	-90.56579	10	Muck	Pole		0																																						
285	45.698256	-90.56577	5	Sand	Pole		0																																						
286	45.697761	-90.565765	8	Sand	Pole		0																																						
287	45.697266	-90.56576	9	Sand	Pole		0																																						
288	45.696771	-90.565755	8	Sand	Pole		0																																						
289	45.696276	-90.56575	6	Sand	Pole		0																																						
290	45.695781	-90.565745	7	Sand	Pole		0																																						
291	45.695286	-90.56574	7	Sand	Pole		0																																						
292	45.694791	-90.565735	6	Muck	Pole		0																																						
293	45.694296	-90.56573	5	Sand	Pole		0																																						
294	45.693801	-90.565725	5	Sand	Pole		0																																						
295	45.693306	-90.56572	0			TEMPORARY OBSTACLE																																									
296	45.692811	-90.565715	2	Muck	Pole		2																1					1										1						1
297	45.691821	-90.565705	0			NONNAVIGABLE (PLANTS)																																								
298	45.691326	-90.5657	3	Sand	Pole		1		1														1																					
299	45.690831	-90.565695	2	Sand	Pole		3		1			1				1	1					1			V			1						3					1		V		1		
300	45.713605	-90.565218	0			NONNAVIGABLE (PLANTS)																																								
301	45.71014	-90.565183	4	Sand	Pole		3															1	1											2					1					1
302	45.709645	-90.565178	4	Sand	Pole		2																																						2
303	45.70915	-90.565173	4	Sand	Pole		2			1																													1						
304	45.708655	-90.565168	5	Sand	Pole		2																1																					1
305	45.70816	-90.565163	6	Sand	Pole		0																																						
306	45.707665	-90.565158	5	Sand	Pole		0																																						
307	45.70717	-90.565153	5	Sand	Pole		2															1																1						
308	45.706675	-90.565148	5	Sand	Pole		2																													11										
309	45.70519	-90.565133	4	Muck	Pole		2			1		1																																	2
310	45.70321	-90.565113	4	Sand	Pole		0																																						
311	45.702715	-90.565108	8	Muck	Pole		0																																						
312	45.70222	-90.565103	9	Sand	Pole		0																																						
313	45.701725	-90.565098	9	Sand	Pole		0																																						
314	45.70123	-90.565093	0			DEEP																																							
315	45.700735	-90.565088	0			DEEP																																							
316	45.70024	-90.565083	13	Muck	Pole		0																																						
317	45.699745	-90.565078	13	Muck	Pole		0																																						
318	45.69925	-90.565073	11	Sand	Pole		0																																						
319	45.698755	-90.565068	11	Sand	Pole		0																																						
320	45.69826	-90.565063	12	Sand	Pole		0																																						
321	45.697765	-90.565058	11	Sand	Pole		0																																						
322	45.697269	-90.565053	8	Sand	Pole		0																																						
323	45.696774	-90.565048	6	Muck	Pole		0																																						
324	45.696279	-90.565043	6	Muck	Pole		0																																						
325	45.695784	-90.565038	6	Muck	Pole		0																																						
326	45.695289	-90.565033	6	Muck	Pole		0																																						
327	45.694794	-90.565028	5	Sand	Pole		1					1			1																														
328	45.694299	-90.565023	0			TERRESTRIAL																																								
329	45.691329	-90.564993	3	Muck	Pole		2		2								1																		1					1					
330	45.690834	-90.564988	3	Muck	Pole		1		1							1	1								V																			
331	45.713114	-90.564506	0			NONNAVIGABLE (PLANTS)																																									
332	45.710144	-90.564476	4	Muck	Pole		1																													1										
333	45.709649	-90.564471	4	Muck	Pole		1																1																						
334	45.709153	-90.564466	4	Muck	Pole		1																1														1								
335	45.708658	-90.564461	5	Muck	Pole		1																																						1
336	45.708163	-90.564456	6	Muck	Pole		0																																						
337	45.707668	-90.564451	5	Muck	Pole		0																																						
338	45.707173	-90.564446	4	Muck	Pole		0																																						
339	45.706678	-90.564441	4	Muck	Pole		1							1									1																						
340	45.706183	-90.564436	0			NONNAVIGABLE (PLANTS)																																									

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
341	45.705193	-90.564426	4	Sand	Pole		1																1												1									
342	45.704698	-90.564421	5	Sand	Pole		1		1														1																					
343	45.704203	-90.564416	8	Sand	Pole		0																																						
344	45.703708	-90.564412	9	Muck	Pole		0																																						
345	45.703213	-90.564407	10	Muck	Pole		0																																						
346	45.702718	-90.564402	10	Muck	Pole		0																																						
347	45.702223	-90.564397	10	Muck	Pole		0																																						
348	45.701728	-90.564392	9	Sand	Pole		0																																						
349	45.701233	-90.564387	11	Sand	Pole		0																																						
350	45.700738	-90.564382	11	Muck	Pole		0																																						
351	45.700243	-90.564377	11	Muck	Pole		0																																						
352	45.699748	-90.564372	9	Muck	Pole		0																																						
353	45.699253	-90.564367	8	Sand	Pole		0																																						
354	45.698758	-90.564362	5	Sand	Pole		0																																						
355	45.698263	-90.564357	2	Sand	Pole		2						1										2																	V					
356	45.691333	-90.564287	2	Muck	Pole		2		2							1	1								V									1	1					1					1	
357	45.690838	-90.564282	3	Sand	Pole		2		1							1	1		1									1																	
358	45.690343	-90.564277	2	Muck	Pole		3									1	1								V	V								3											
359	45.710642	-90.563775	4	Muck	Pole		2		1																									2											
360	45.710147	-90.56377	5	Muck	Pole		1		1																																				
361	45.709652	-90.563765	4	Muck	Pole		1																																						1
362	45.709157	-90.56376	4	Muck	Pole		1																																						1
363	45.708662	-90.563755	5	Muck	Pole		0																																						
364	45.708167	-90.56375	5	Muck	Pole		0																																						
365	45.707672	-90.563745	5	Muck	Pole		0																																						
366	45.707177	-90.56374	5	Muck	Pole		0																																						
367	45.706682	-90.563735	4	Rock	Pole		0																																						
368	45.706187	-90.56373	3	Sand	Pole		0																																						
369	45.705692	-90.563725	5	Muck	Pole		1																																						1
370	45.705197	-90.56372	7	Muck	Pole		0																																						
371	45.704702	-90.563715	8	Muck	Pole		0																																						
372	45.704207	-90.56371	11	Muck	Pole		0																																						
373	45.703712	-90.563705	10	Muck	Pole		0																																						
374	45.703217	-90.5637	10	Muck	Pole		0																																						
375	45.702722	-90.563695	10	Muck	Pole		0																																						
376	45.702227	-90.56369	10	Muck	Pole		0																																						
377	45.701732	-90.563685	9	Muck	Pole		0																																						
378	45.701237	-90.56368	4	Sand	Pole		1																1																					
379	45.700742	-90.563675	3	Sand	Pole		1																1																					
380	45.700247	-90.56367	0			TERRESTRIAL																																							
381	45.690841	-90.563576	0			NONNAVIGABLE (PLANTS)																																						1			
382	45.710646	-90.563068	4	Muck	Pole		1																																						1
383	45.71015	-90.563063	5	Muck	Pole		1																																						1
384	45.709655	-90.563058	4	Muck	Pole		0																																						
385	45.70916	-90.563053	5	Muck	Pole		0																																						
386	45.708665	-90.563048	6	Muck	Pole		0																																						
387	45.70817	-90.563043	5	Muck	Pole		0																																						
388	45.707675	-90.563038	6	Muck	Pole		0																																						
389	45.70718	-90.563033	6	Sand	Pole		0																																						
390	45.706685	-90.563028	5	Rock	Pole		0																																						
391	45.70619	-90.563023	6	Sand	Pole		0																																						
392	45.705695	-90.563018	7	Muck	Pole		0																																						
393	45.7052	-90.563013	9	Muck	Pole		0																																						
394	45.704705	-90.563008	9	Muck	Pole		0																																						
395	45.70421	-90.563003	8	Muck	Pole		0																																						
396	45.703715	-90.562999	10	Muck	Pole		0																																						
397	45.70322	-90.562994	8	Muck	Pole		0																																						
398	45.702725	-90.562989	9	Muck	Pole		0																																						
399	45.70223	-90.562984	9	Muck	Pole		0																																						
400	45.701735	-90.562979	7	Muck	Pole		0																																						
401	45.711144	-90.562366	3	Muck	Pole		1		1						1																														
402	45.710649	-90.562361	4	Muck	Pole		0																																						
403	45.710154	-90.562357	4	Muck	Pole		1																																						
404	45.709659	-90.562352	5	Muck	Pole		0																																						
405	45.709164	-90.562347	5	Muck	Pole		0																																						
406	45.708669	-90.562342	5	Muck	Pole		0																																						
407	45.708174	-90.562337	6	Muck	Pole		0																																						
408	45.707679	-90.562332	6	Muck	Pole		0																																						

POINT_NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
409	45.707184	-90.562327	6	Muck	Pole		0																																						
410	45.706689	-90.562322	6	Muck	Pole		0																																						
411	45.706194	-90.562317	6	Muck	Pole		0																																						
412	45.705699	-90.562312	8	Muck	Pole		0																																						
413	45.705204	-90.562307	10	Muck	Pole		0																																						
414	45.704709	-90.562302	10	Muck	Pole		0																																						
415	45.704214	-90.562297	9	Muck	Pole		0																																						
416	45.703719	-90.562292	10	Muck	Pole		0																																						
417	45.703224	-90.562287	9	Muck	Pole		0																																						
418	45.702729	-90.562282	8	Muck	Pole		0																																						
419	45.702234	-90.562277	8	Muck	Pole		0																																						
420	45.701739	-90.562272	6	Sand	Pole		0																																						
421	45.711147	-90.56166	4	Muck	Pole		2																			V									1										1
422	45.710652	-90.561655	4	Muck	Pole		0								1																														
423	45.710157	-90.56165	5	Muck	Pole		1																											1											
424	45.709662	-90.561645	5	Muck	Pole		0																																						
425	45.709167	-90.56164	6	Muck	Pole		0																																						
426	45.708672	-90.561635	6	Muck	Pole		0																																						
427	45.708177	-90.56163	6	Muck	Pole		0																																						
428	45.707682	-90.561625	6	Muck	Pole		0																																						
429	45.707187	-90.56162	6	Sand	Pole		0																																						
430	45.706692	-90.561615	6	Muck	Pole		0																																						
431	45.706197	-90.56161	7	Muck	Pole		0																																						
432	45.705702	-90.561605	9	Muck	Pole		0																																						
433	45.705207	-90.5616	10	Muck	Pole		0																																						
434	45.704712	-90.561595	10	Muck	Pole		0																																						
435	45.704217	-90.56159	9	Muck	Pole		0																																						
436	45.703722	-90.561586	8	Muck	Pole		0																																						
437	45.703227	-90.561581	6	Sand	Pole		0																																						
438	45.702732	-90.561576	6	Sand	Pole		0																																						
439	45.702237	-90.561571	6	Muck	Pole		0																																						
440	45.711151	-90.560953	4	Muck	Pole		2		1																			1							1										1
441	45.710656	-90.560948	4	Muck	Pole		1		1																																				
442	45.710161	-90.560943	5	Muck	Pole		0																																						
443	45.709666	-90.560938	6	Muck	Pole		0																																						
444	45.709171	-90.560933	6	Muck	Pole		0																																						
445	45.708676	-90.560929	5	Muck	Pole		0																																						
446	45.708181	-90.560924	6	Muck	Pole		0																																						
447	45.707686	-90.560919	6	Sand	Pole		0																																						
448	45.707191	-90.560914	6	Muck	Pole		0																																						
449	45.706696	-90.560909	7	Muck	Pole		0																																						
450	45.706201	-90.560904	8	Muck	Pole		0																																						
451	45.705706	-90.560899	9	Muck	Pole		0																																						
452	45.705211	-90.560894	10	Muck	Pole		0																																						
453	45.704716	-90.560889	11	Muck	Pole		0																																						
454	45.704221	-90.560884	10	Muck	Pole		0																																						
455	45.703726	-90.560879	7	Muck	Pole		0																																						
456	45.703231	-90.560874	1	Sand	Pole		1																1																						
457	45.702736	-90.560869	5	Sand	Pole		0																																						
458	45.702241	-90.560864	6	Muck	Pole		0																																						
459	45.709669	-90.560232	4	Muck	Pole		0																																						
460	45.709174	-90.560227	6	Muck	Pole		0																																						
461	45.708679	-90.560222	6	Muck	Pole		0																																						
462	45.708184	-90.560217	6	Sand	Pole		0																																						
463	45.707689	-90.560212	6	Sand	Pole		0																																						
464	45.707194	-90.560207	6	Sand	Pole		0																																						
465	45.706699	-90.560202	8	Muck	Pole		0																																						
466	45.706204	-90.560197	10	Muck	Pole		0																																						
467	45.705709	-90.560192	10	Muck	Pole		0																																						
468	45.705214	-90.560187	12	Muck	Pole		0																																						
469	45.704719	-90.560182	10	Muck	Pole		0																																						
470	45.704224	-90.560177	9	Muck	Pole		0																																						
471	45.703729	-90.560172	8	Muck	Pole		0																																						
472	45.709178	-90.55952	6	Muck	Pole		0																																						
473	45.708683	-90.559515	6	Muck	Pole		0																																						
474	45.708188	-90.55951	6	Muck	Pole		0																																						
475	45.707693	-90.559506	6	Muck	Pole		0																																						
476	45.707198	-90.559501	7	Muck	Pole		0																																						

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
477	45.706703	-90.559496	9	Muck	Pole		0																																						
478	45.706208	-90.559491	9	Muck	Pole		0																																						
479	45.705713	-90.559486	10	Muck	Pole		0																																						
480	45.705218	-90.559481	10	Muck	Pole		0																																						
481	45.704723	-90.559476	10	Muck	Pole		0																																						
482	45.704228	-90.559471	7	Muck	Pole		0																																						
483	45.703733	-90.559466	6	Muck	Pole		0																																						
484	45.703238	-90.559461	6	Sand	Pole		0																																						
485	45.709181	-90.558814	6	Muck	Pole		0																																						
486	45.708686	-90.558809	6	Muck	Pole		0																																						
487	45.708191	-90.558804	6	Sand	Pole		0																																						
488	45.707696	-90.558799	6	Sand	Pole		0																																						
489	45.707201	-90.558794	8	Muck	Pole		0																																						
490	45.706706	-90.558789	10	Muck	Pole		0																																						
491	45.706211	-90.558784	10	Muck	Pole		0																																						
492	45.705716	-90.558779	10	Muck	Pole		0																																						
493	45.705221	-90.558774	11	Muck	Pole		0																																						
494	45.704726	-90.558769	10	Muck	Pole		0																																						
495	45.704231	-90.558764	8	Muck	Pole		0																																						
496	45.703736	-90.558759	6	Sand	Pole		0																																						
497	45.703241	-90.558755	6	Muck	Pole		0																																						
498	45.702746	-90.55875	2	Sand	Pole		0																																						
499	45.698291	-90.558705	0			NONNAVIGABLE (PLANTS)																																									
500	45.70968	-90.558112	3	Sand	Pole		1																1													1								
501	45.709185	-90.558107	6	Muck	Pole		0																																						
502	45.70869	-90.558102	6	Sand	Pole		0																																						
503	45.708195	-90.558097	6	Sand	Pole		0																																						
504	45.7077	-90.558092	7	Muck	Pole		0																																						
505	45.707205	-90.558087	8	Muck	Pole		0																																						
506	45.70671	-90.558083	9	Muck	Pole		0																																						
507	45.706215	-90.558078	9	Muck	Pole		0																																						
508	45.70572	-90.558073	10	Muck	Pole		0																																						
509	45.705225	-90.558068	11	Muck	Pole		0																																						
510	45.70473	-90.558063	9	Muck	Pole		0																																						
511	45.704235	-90.558058	9	Muck	Pole		0																																						
512	45.703739	-90.558053	8	Muck	Pole		0																																						
513	45.703244	-90.558048	6	Muck	Pole		0																																						
514	45.702749	-90.558043	6	Muck	Pole		0																																						
515	45.702254	-90.558038	2	Sand	Pole		1																	1														1							
516	45.701759	-90.558033	2	Sand	Pole		1																																						1
517	45.699284	-90.558009	4	Muck	Pole		3																			V									3										
518	45.698789	-90.558004	3	Muck	Pole		3						1																						2										
519	45.698294	-90.557999	0			NONNAVIGABLE (PLANTS)																																								
520	45.709683	-90.557406	6	Muck	Pole		0																																						
521	45.709188	-90.557401	6	Sand	Pole		0																																						
522	45.708693	-90.557396	6	Sand	Pole		0																																						
523	45.708198	-90.557391	6	Muck	Pole		0																																						
524	45.707703	-90.557386	6	Sand	Pole		0																																						
525	45.707208	-90.557381	7	Muck	Pole		0																																						
526	45.706713	-90.557376	8	Muck	Pole		0																																						
527	45.706218	-90.557371	8	Sand	Pole		0																																						
528	45.705723	-90.557366	10	Muck	Pole		0																																						
529	45.705228	-90.557361	11	Muck	Pole		0																																						
530	45.704733	-90.557356	10	Muck	Pole		0																																						
531	45.704238	-90.557351	9	Muck	Pole		0																																						
532	45.703743	-90.557346	8	Muck	Pole		0																																						
533	45.703248	-90.557342	6	Muck	Pole		0																																						
534	45.702753	-90.557337	6	Muck	Pole		0																																						
535	45.702258	-90.557332	6	Muck	Pole		0																																						
536	45.701763	-90.557327	6	Muck	Pole		0																																						
537	45.701268	-90.557322	5	Muck	Pole		1																													1										
538	45.700773	-90.557317	5	Muck	Pole		0																																						
539	45.700278	-90.557312	5	Muck	Pole		1																			V									1										
540	45.699783	-90.557307	4	Rock	Pole		2						1																						1										
541	45.699288	-90.557302	4	Muck	Pole		2									1																			1	1									
542	45.698793	-90.557297	3	Muck	Pole		2		1					1																					1	1									
543	45.698298	-90.557292	3	Muck	Pole		2		1				1													V									1				1						
544	45.710182	-90.556704	2	Sand	Pole		2																2																						

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
545	45.709687	-90.556699	6	Sand	Pole		0																																						
546	45.709192	-90.556694	6	Sand	Pole		0																																						
547	45.708697	-90.556689	7	Muck	Pole		0																																						
548	45.708202	-90.556684	6	Sand	Pole		0																																						
549	45.707707	-90.556679	7	Muck	Pole		0																																						
550	45.707212	-90.556674	6	Sand	Pole		0																																						
551	45.706717	-90.556669	5	Sand	Pole		0																																						
552	45.706221	-90.556665	7	Sand	Pole		0																																						
553	45.705726	-90.55666	14	Muck	Pole		0																																						
554	45.705231	-90.556655	10	Muck	Pole		0																																						
555	45.704736	-90.55665	10	Muck	Pole		0																																						
556	45.704241	-90.556645	9	Muck	Pole		0																																						
557	45.703746	-90.55664	8	Muck	Pole		0																																						
558	45.703251	-90.556635	6	Muck	Pole		0																																						
559	45.702756	-90.55663	6	Muck	Pole		0																																						
560	45.702261	-90.556625	6	Muck	Pole		0																																						
561	45.701766	-90.55662	6	Muck	Pole		0																																						
562	45.701271	-90.556615	5	Muck	Pole		0																																						
563	45.700776	-90.556611	5	Muck	Pole		0								1																														
564	45.700281	-90.556606	5	Muck	Pole		1		1						1								1												1										
565	45.699786	-90.556601	4	Muck	Pole		2					1	1																						2										
566	45.699291	-90.556596	4	Muck	Pole		2																		V								1	2										
567	45.698796	-90.556591	3	Muck	Pole		2		1																								1	1					1						
568	45.710185	-90.555997	2	Sand	Pole		1																1																						
569	45.70969	-90.555992	6	Sand	Pole		0																																						
570	45.709195	-90.555987	6	Muck	Pole		0																																						
571	45.7087	-90.555983	7	Sand	Pole		0																																						
572	45.708205	-90.555978	7	Muck	Pole		0																																						
573	45.70771	-90.555973	8	Muck	Pole		0																																						
574	45.707215	-90.555968	9	Muck	Pole		0																																						
575	45.70672	-90.555963	9	Muck	Pole		0																																						
576	45.706225	-90.555958	12	Muck	Pole		0																																						
577	45.70573	-90.555953	12	Muck	Pole		0																																						
578	45.705235	-90.555948	11	Muck	Pole		0																																						
579	45.70474	-90.555943	10	Muck	Pole		0																																						
580	45.704245	-90.555938	10	Muck	Pole		0																																						
581	45.70375	-90.555933	10	Muck	Pole		0																																						
582	45.703255	-90.555929	7	Muck	Pole		0																																						
583	45.70276	-90.555924	6	Muck	Pole		0																																						
584	45.702265	-90.555919	6	Muck	Pole		0																																						
585	45.70177	-90.555914	6	Muck	Pole		0																																						
586	45.701275	-90.555909	5	Muck	Pole		0																																						
587	45.70078	-90.555904	5	Muck	Pole		0								1																														
588	45.700285	-90.555899	5	Muck	Pole		0																																						
589	45.69979	-90.555894	4	Muck	Pole		1																												1					1						
590	45.699295	-90.555889	4	Muck	Pole		1								1										V									1										
591	45.710189	-90.555291	5	Sand	Pole		0																																						
592	45.709694	-90.555286	6	Sand	Pole		0																																						
593	45.709198	-90.555281	6	Sand	Pole		0																																						
594	45.708703	-90.555276	6	Sand	Pole		0																																						
595	45.708208	-90.555271	7	Sand	Pole		0																																						
596	45.707713	-90.555266	8	Muck	Pole		0																																						
597	45.707218	-90.555261	9	Muck	Pole		0																																						
598	45.706723	-90.555256	10	Muck	Pole		0																																						
599	45.706228	-90.555251	9	Muck	Pole		0																																						
600	45.705733	-90.555247	9	Muck	Pole		0																																						
601	45.705238	-90.555242	9	Muck	Pole		0																																						
602	45.704743	-90.555237	9	Muck	Pole		0																																						
603	45.704248	-90.555232	9	Muck	Pole		0																																						
604	45.703753	-90.555227	9	Muck	Pole		0																																						
605	45.703258	-90.555222	7	Sand	Pole		0																																						
606	45.702763	-90.555217	6	Sand	Pole		0																																						
607	45.702268	-90.555212	5	Sand	Pole		0																																						
608	45.701773	-90.555207	5	Sand	Pole		0																																						
609	45.701278	-90.555202	5	Sand	Pole		0																																						
610	45.700783	-90.555198	5	Sand	Pole		1																												1										
611	45.700288	-90.555193	5	Sand	Pole		0								1																														
612	45.699793	-90.555188	5	Sand	Pole		2								1																				1										

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
613	45.710192	-90.554584	4	Sand	Pole		1			1																																		
614	45.709697	-90.554579	6	Sand	Pole		0																																						
615	45.709202	-90.554574	6	Sand	Pole		0																																						
616	45.708707	-90.554569	7	Sand	Pole		0																																						
617	45.708212	-90.554565	8	Sand	Pole		0																																						
618	45.707717	-90.55456	9	Muck	Pole		0																																						
619	45.707222	-90.554555	9	Muck	Pole		0																																						
620	45.706727	-90.55455	9	Muck	Pole		0																																						
621	45.706232	-90.554545	9	Muck	Pole		0																																						
622	45.705737	-90.55454	9	Muck	Pole		0																																						
623	45.705242	-90.554535	9	Muck	Pole		0																																						
624	45.704747	-90.55453	9	Muck	Pole		0																																						
625	45.704252	-90.554525	9	Muck	Pole		0																																						
626	45.703757	-90.55452	8	Sand	Pole		0																																						
627	45.703262	-90.554516	6	Sand	Pole		0																																						
628	45.702767	-90.554511	6	Sand	Pole		0																																						
629	45.702272	-90.554506	6	Sand	Pole		0																																						
630	45.701777	-90.554501	6	Sand	Pole		0																																						
631	45.701282	-90.554496	6	Sand	Pole		0																																						
632	45.700787	-90.554491	5	Sand	Pole		0																																						
633	45.700292	-90.554486	5	Sand	Pole		2																														2								
634	45.699797	-90.554481	5	Sand	Pole		1																																				1			
635	45.710195	-90.553878	2	Sand	Pole		2			2																											1								
636	45.7097	-90.553873	5	Sand	Pole		0																																						
637	45.709205	-90.553868	6	Sand	Pole		0																																						
638	45.70871	-90.553863	6	Sand	Pole		0																																						
639	45.708215	-90.553858	7	Sand	Pole		0																																						
640	45.70772	-90.553853	9	Muck	Pole		0																																						
641	45.707225	-90.553848	9	Muck	Pole		0																																						
642	45.70673	-90.553843	9	Muck	Pole		0																																						
643	45.706235	-90.553838	9	Muck	Pole		0																																						
644	45.70574	-90.553834	9	Muck	Pole		0																																						
645	45.705245	-90.553829	9	Muck	Pole		0																																						
646	45.70475	-90.553824	9	Muck	Pole		0																																						
647	45.704255	-90.553819	8	Muck	Pole		0																																						
648	45.70376	-90.553814	7	Sand	Pole		0																																						
649	45.703265	-90.553809	6	Sand	Pole		0																																						
650	45.70277	-90.553804	5	Sand	Pole		0																																						
651	45.702275	-90.553799	5	Sand	Pole		0																																						
652	45.70178	-90.553794	5	Sand	Pole		0																																						
653	45.701285	-90.55379	5	Sand	Pole		0																																						
654	45.70079	-90.553785	5	Sand	Pole		0																																						
655	45.700295	-90.55378	5	Sand	Pole		0																																						
656	45.6998	-90.553775	5	Sand	Pole		0																																						
657	45.699305	-90.55377	2	Sand	Pole		3											1							V										3				1					1	
658	45.709704	-90.553166	6	Sand	Pole		0																																						
659	45.709209	-90.553161	6	Sand	Pole		0																																						
660	45.708714	-90.553156	6	Sand	Pole		0																																						
661	45.708219	-90.553151	7	Sand	Pole		0																																						
662	45.707724	-90.553147	8	Muck	Pole		0																																						
663	45.707229	-90.553142	9	Muck	Pole		0																																						
664	45.706734	-90.553137	9	Muck	Pole		0																																						
665	45.706239	-90.553132	9	Muck	Pole		0																																						
666	45.705744	-90.553127	9	Muck	Pole		0																																						
667	45.705249	-90.553122	9	Muck	Pole		0																																						
668	45.704754	-90.553117	9	Muck	Pole		0																																						
669	45.704259	-90.553112	7	Sand	Pole		0																																						
670	45.703764	-90.553107	6	Sand	Pole		0																																						
671	45.703269	-90.553103	6	Sand	Pole		0																																						
672	45.702773	-90.553098	6	Sand	Pole		0																																						
673	45.702278	-90.553093	5	Sand	Pole		0																																						
674	45.701783	-90.553088	6	Sand	Pole		0																																						
675	45.701288	-90.553083	5	Sand	Pole		0																																						
676	45.700793	-90.553078	5	Sand	Pole		0																																						
677	45.700298	-90.553073	5	Sand	Pole		0																																						
678	45.699803	-90.553068	4	Sand	Pole		1			1																																			
679	45.699308	-90.553064	0			TERRESTRIAL																																							
680	45.709707	-90.552459	5	Sand	Pole		0																																						

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
681	45.709212	-90.552455	6	Sand	Pole		0																																						
682	45.708717	-90.55245	6	Sand	Pole		0																																						
683	45.708222	-90.552445	7	Sand	Pole		0																																						
684	45.707727	-90.55244	8	Muck	Pole		0																																						
685	45.707232	-90.552435	9	Muck	Pole		0																																						
686	45.706737	-90.55243	9	Muck	Pole		0																																						
687	45.706242	-90.552425	9	Muck	Pole		0																																						
688	45.705747	-90.55242	9	Muck	Pole		0																																						
689	45.705252	-90.552416	9	Muck	Pole		0																																						
690	45.704757	-90.552411	8	Sand	Pole		0																																						
691	45.704262	-90.552406	6	Sand	Pole		0																																						
692	45.703767	-90.552401	7	Sand	Pole		0																																						
693	45.703272	-90.552396	7	Sand	Pole		0																																						
694	45.702777	-90.552391	7	Sand	Pole		0																																						
695	45.702282	-90.552386	6	Sand	Pole		0																																						
696	45.701787	-90.552381	7	Sand	Pole		0																																						
697	45.701292	-90.552377	6	Sand	Pole		0																			V																				
698	45.700797	-90.552372	6	Sand	Pole		0																																						
699	45.700302	-90.552367	4	Rock	Pole		0																																						
700	45.699312	-90.552357	0			NONNAVIGABLE (PLANTS)																																									
701	45.698817	-90.552352	0			NONNAVIGABLE (PLANTS)																																									
702	45.709711	-90.551753	3	Sand	Pole		1			1																												1								
703	45.709216	-90.551748	6	Sand	Pole		0																																						
704	45.708721	-90.551743	6	Sand	Pole		0																																						
705	45.708226	-90.551738	6	Sand	Pole		0																																						
706	45.707731	-90.551733	7	Sand	Pole		0																																						
707	45.707236	-90.551729	9	Muck	Pole		0																																						
708	45.706741	-90.551724	9	Muck	Pole		0																																						
709	45.706245	-90.551719	8	Sand	Pole		0																																						
710	45.70575	-90.551714	9	Muck	Pole		0																																						
711	45.705255	-90.551709	8	Muck	Pole		0																																						
712	45.70476	-90.551704	6	Sand	Pole		0																																						
713	45.704265	-90.551699	7	Muck	Pole		0																																						
714	45.70377	-90.551694	7	Sand	Pole		0																																						
715	45.703275	-90.55169	6	Sand	Pole		0																																						
716	45.70278	-90.551685	7	Sand	Pole		1																											1												
717	45.702285	-90.55168	7	Sand	Pole		0																																						
718	45.70179	-90.551675	8	Sand	Pole		0																																						
719	45.701295	-90.55167	7	Sand	Pole		0																																						
720	45.7008	-90.551665	6	Sand	Pole		0																																						
721	45.700305	-90.55166	2	Rock	Pole		0																																						
722	45.69981	-90.551656	2	Muck	Pole		2		1							1	1									1	V								1					1		1		1	
723	45.699315	-90.551651	2	Muck	Pole		2		2																	1																1			
724	45.709714	-90.551046	3	Sand	Pole		3			1												1															2	1							
725	45.709219	-90.551041	6	Sand	Pole		0																																						
726	45.708724	-90.551037	6	Sand	Pole		0																																						
727	45.708229	-90.551032	6	Sand	Pole		0																																						
728	45.707734	-90.551027	7	Sand	Pole		0																																						
729	45.707239	-90.551022	8	Sand	Pole		0																																						
730	45.706744	-90.551017	9	Muck	Pole		0																																						
731	45.706249	-90.551012	9	Muck	Pole		0																																						
732	45.705754	-90.551007	8	Sand	Pole		0																																						
733	45.705259	-90.551003	8	Sand	Pole		0																																						
734	45.704764	-90.550998	7	Sand	Pole		0																																						
735	45.704269	-90.550993	8	Sand	Pole		0																																						
736	45.703774	-90.550988	8	Sand	Pole		0																																						
737	45.703279	-90.550983	7	Sand	Pole		0																																						
738	45.702784	-90.550978	7	Sand	Pole		0																																						
739	45.702289	-90.550973	7	Sand	Pole		0																																						
740	45.701794	-90.550968	12	Sand	Pole																																								
741	45.701299	-90.550964	6	Sand	Pole		0																																						
742	45.700804	-90.550959	5	Sand	Pole		0																																						
743	45.700309	-90.550954	5	Muck	Pole		1																														1								
744	45.699814	-90.550949	5	Muck	Pole		2		1																	1									1	1									
745	45.699319	-90.550944	4	Muck	Pole		3		1			1										1				1			1									1							
746	45.709717	-90.55034	5	Sand	Pole		1		1					1								1																							
747	45.709222	-90.550335	6	Sand	Pole		0																																						
748	45.708727	-90.55033	6	Sand	Pole		0																																						

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis acicularis	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Lemna turionifera	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum spicatum	Najas flexilis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton foliosus	Potamogeton friesii	Potamogeton natans	Potamogeton nodosus	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium eurycarpum	Sparganium fluctuans	Spirodela polyrhiza	Utricularia intermedia	Utricularia vulgaris	Vallisneria americana
749	45.708232	-90.550325	6	Sand	Pole		0																																						
750	45.707737	-90.55032	7	Sand	Pole		0																																						
751	45.707242	-90.550315	7	Sand	Pole		0																																						
752	45.706747	-90.550311	9	Muck	Pole		0																																						
753	45.706252	-90.550306	9	Muck	Pole		0																																						
754	45.705757	-90.550301	8	Muck	Pole		0																																						
755	45.705262	-90.550296	8	Muck	Pole		0																																						
756	45.704767	-90.550291	8	Sand	Pole		0																																						
757	45.704272	-90.550286	8	Sand	Pole		0																																						
758	45.703777	-90.550281	6	Sand	Pole		0																																						
759	45.703282	-90.550277	6	Rock	Pole		0																																						
760	45.702787	-90.550272	8	Sand	Pole		0																																						
761	45.702292	-90.550267	7	Sand	Pole		0																																						
762	45.701797	-90.550262	8	Rock	Pole		0																																						
763	45.701302	-90.550257	2	Rock	Pole		1																					1								1									
764	45.700807	-90.550252	2	Sand	Pole		3					3									1	1						1								1									
765	45.700312	-90.550247	3	Sand	Pole		3			1		2										2						1										1							
766	45.699817	-90.550243	5	Sand	Pole		1			1												1					1															1			
767	45.709721	-90.549633	4	Sand	Pole		0																																						
768	45.709226	-90.549628	5	Sand	Pole		0																																						
769	45.708731	-90.549623	6	Sand	Pole		0																																						
770	45.708236	-90.549619	6	Sand	Pole		0																																						
771	45.707741	-90.549614	6	Sand	Pole		0																																						
772	45.707246	-90.549609	6	Sand	Pole		0																																						
773	45.706751	-90.549604	7	Sand	Pole		0																																						
774	45.706256	-90.549599	8	Muck	Pole		0																																						
775	45.705761	-90.549594	8	Muck	Pole		0																																						
776	45.705266	-90.549589	8	Sand	Pole		0																																						
777	45.704771	-90.549585	7	Sand	Pole		0																																						
778	45.704276	-90.54958	6	Sand	Pole		0																																						
779	45.703781	-90.549575	6	Sand	Pole		0																																						
780	45.703286	-90.54957	5	Sand	Pole		0																																						
781	45.702791	-90.549565	4	Rock	Pole		0																																						
782	45.702296	-90.54956	5	Sand	Pole		0																																						
783	45.7018	-90.549556	6	Rock	Pole		0																																						
784	45.69982	-90.549536	3	Muck	Pole		3		2													1				1								1				1							
785	45.709229	-90.548922	4	Sand	Pole		0																																						
786	45.708734	-90.548917	4	Sand	Pole		0																																						
787	45.708239	-90.548912	5	Sand	Pole		0																																						
788	45.707744	-90.548907	6	Sand	Pole		0																																						
789	45.707249	-90.548902	6	Sand	Pole		0																																						
790	45.706754	-90.548898	6	Sand	Pole		0																																						
791	45.706259	-90.548893	6	Sand	Pole		0																																						
792	45.705764	-90.548888	6	Sand	Pole		0																																						
793	45.705269	-90.548883	6	Sand	Pole		0																																						
794	45.704774	-90.548878	4	Rock	Pole		0																																						
795	45.704279	-90.548873	4	Sand	Pole		0																																						
796	45.703784	-90.548868	2	Sand	Pole		0																																						
797	45.703289	-90.548864	5	Rock	Pole		0																																						
798	45.702794	-90.548859	4	Sand	Pole		2			1																										2		1						1
799	45.702299	-90.548854	2	Sand	Pole		2			1		1																								1								2

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Aquatic moss	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis robbinsii	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum spicatum	Myriophyllum verticillatum	Najas flexilis	Nitella sp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton alpinus	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton friesii	Potamogeton hybrid	Potamogeton natans	Potamogeton nodosus	Potamogeton obtusifolius	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spiritus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium angustifolium	Sparganium eurycarpum	Sparganium sp.	Spirodela polyrhiza	Utricularia intermedia	Utricularia minor	Utricularia vulgaris	Vallisneria americana
1	45.703121	-90.582775	6	Rock	Pole		0																																							
2	45.703620	-90.582074	3	Rock	Pole		1																							1																	
3	45.703125	-90.582069	9	Rock	Pole		0																																							
4	45.702630	-90.582064	9	Sand	Pole		0																																							
5	45.702135	-90.582059	5	Sand	Pole		0																																							
6	45.703128	-90.581362	1	Rock	Pole		2						1							1																										2
7	45.702633	-90.581357	10	Rock	Pole		0																																							
8	45.702138	-90.581352	7	Sand	Pole		0																																							
9	45.702637	-90.580651	1	Rock	Pole		1						1												1				1																	
10	45.702142	-90.580646	10	Rock	Pole		0																																							
11	45.701647	-90.580641	2	Sand	Pole		2						1			1				V									1																	
12	45.702145	-90.579939	3	Sand	Pole		1						1																																	
13	45.701650	-90.579934	10	Rock	Pole		0																																							
14	45.701654	-90.579228	9	Sand	Pole		0																																							
15	45.701159	-90.579222	9	Rock	Pole		0																																							
16	45.700664	-90.579217	10	Rock	Pole		0																																							
17	45.700169	-90.579212	5	Rock	Pole		0																																							
18	45.702153	-90.578526	2	Sand	Pole		3			1			1												1												2								1
19	45.701658	-90.578521	5	Rock	Pole		0																																							
20	45.701162	-90.578516	6	Muck	Pole		0																																							
21	45.700667	-90.578511	9	Rock	Pole		0																																							
22	45.700172	-90.578506	2	Rock	Pole		1																																							
23	45.702156	-90.577820	4	Rock	Pole		0																																							
24	45.701661	-90.577815	5	Muck	Pole		0																																							
25	45.701166	-90.577810	3	Sand	Pole		1						1													1																			1
26	45.700176	-90.577799	7	Rock	Pole		0																																							
27	45.699681	-90.577794	2	Muck	Pole		1						1													1																			
28	45.699186	-90.577789	5	Muck	Pole		0																																							
29	45.698691	-90.577784	1	Sand	Pole		2			1			1																																	1
30	45.702655	-90.577118	3	Muck	Pole		1						1													1				1																
31	45.702160	-90.577113	4	Sand	Pole								1												1					1																
32	45.701665	-90.577108	1	Sand	Pole		3						1			1																													1
33	45.700180	-90.577093	7	Rock	Pole		0																																							
34	45.699685	-90.577088	10	Rock	Pole		0																																							
35	45.699190	-90.577083	4	Sand	Pole		0								1																														
36	45.703153	-90.576417	2	Muck	Pole		1			1			1													1											1								
37	45.702658	-90.576412	3	Muck	Pole		1			1			1					1								1			1									1							
38	45.700183	-90.576386	4	Sand	Pole		0																																							
39	45.699688	-90.576381	10	Sand	Pole		0																																							
40	45.699193	-90.576376	8	Rock	Pole		0																																							
41	45.703157	-90.575710	3	Muck	Pole		1						1													1											1								
42	45.702662	-90.575705	0			NONNAVIGABLE (PLANTS)																																									
43	45.700682	-90.575685	0			NONNAVIGABLE (PLANTS)																																									
44	45.700187	-90.575680	1	Rock	Pole		1						1							1																1								1
45	45.699692	-90.575675	3	Sand	Pole		1													V									1								1							
46	45.699197	-90.575670	9	Rock	Pole		0																																							
47	45.698702	-90.575665	2	Muck	Pole		1						1											1												1								
48	45.698207	-90.575660	3	Sand	Pole		1						1											1	1											1								
49	45.697712	-90.575655	5	Muck	Pole		0																																							
50	45.697217	-90.575649	0			TERRESTRIAL																																								
51	45.703655	-90.575009	2	Sand	Pole		2						1													1														1		1			
52	45.703160	-90.575004	0			NONNAVIGABLE (PLANTS)																																									
53	45.700190	-90.574973	3	Muck	Pole		1						1													1				1															
54	45.699200	-90.574963	3	Sand	Pole		0																																							
55	45.698705	-90.574958	9	Sand	Pole		0																																							
56	45.698210	-90.574953	9	Rock	Pole		0																																							
57	45.697715	-90.574948	9	Muck	Pole		0																																							
58	45.703659	-90.574303	3	Muck	Pole		2			1			1													1											1								
59	45.703164	-90.574297	0			NONNAVIGABLE (PLANTS)																																									
60	45.702669	-90.574292	0			NONNAVIGABLE (PLANTS)																																									
61	45.702174	-90.574287	0			NONNAVIGABLE (PLANTS)																																									
62	45.701679	-90.574282	0			NONNAVIGABLE (PLANTS)																																									
63	45.698709	-90.574252	8	Sand	Pole		0																																							
64	45.698214	-90.574247	7	Sand	Pole		0																																							
65	45.697719	-90.574242	9	Rock	Pole		0																																							
66	45.697224	-90.574237	9	Sand	Pole		0																																							
67	45.696729	-90.574232	6	Sand	Pole		0																																							
68	45.704158	-90.573601	4	Muck	Pole		3			2			1						1							1				1								1								
69	45.703663	-90.573596	2	Muck	Pole		2						1													2											1								
70	45.703167	-90.573591	0			NONNAVIGABLE (PLANTS)																																									
71	45.699702	-90.573556	2	Sand	Pole		2			1			1																	1															
72	45.699207	-90.573550	7	Muck	Pole		0																																							
73	45.698712	-90.573545	8	Muck	Pole		0																																							
74	45.698217	-90.573540	8	Muck	Pole		0																																							
75	45.697722	-90.573535	6	Muck	Pole		0																																							
76	45.697227	-90.573530	8	Sand	Pole		0																																							
77	45.696732	-90.573525	13	Rock	Pole		0																																							
78	45.696237	-90.573520	7	Sand	Pole		0																																							
79	45.695742	-90.573515	2	Sand	Pole		1						1																																	
80	45.695247	-90.573510	4	Muck	Pole		0																																							
81	45.704656	-90.572900	5	Muck	Pole		1			1																																				
82	45.704161	-90.572895	3	Muck	Pole		2			1			1													1											1								
83	45.703666	-90.572890	2	Muck	Pole		1			1			1						1							1											1								
84	45.699211	-90.572844	6	Muck	Pole		0																																							
85	45.698716	-90.572839	8	Muck	Pole		0																																							
86	45.698221	-90.572834	8	Muck	Pole		0																																							
87	45.697726	-90.572829	8	Muck	Pole		0																																							
88	45.697231	-90.572824	7	Muck	Pole		0																																							
89	45.696736	-90.572819	8	Sand	Pole		0																																							
90	45.696241	-90.572814	7	Rock	Pole		0																																							
91	45.695746	-90.572809	3	Sand	Pole		0																																							
92	45.694756	-90.572799	0			DOCK																																								
93	45.704660	-90.572193	3	Muck	Pole		2			1			1						1	1	V					1											1							1	
94	45.704165	-90.572188	3	Muck	Pole		2			1									1							1											2								
95	45.698224	-90.572127	4	Sand	Pole		2						1																							1								
96	45.697729	-90.572122	7	Muck	Pole		0																																							
97	45.697234	-90.572117	2	Sand	Pole		1						1																															1		1
98	45.696244	-90.572107	4	Rock	Pole		0																							1																
99	45.695749	-90.572102	8	Sand	Pole		0																																							
100	45.705158	-90.571492	3	Muck	Pole		1			1			1			1						1															1								
101	45.704663	-90.571487	2	Muck	Pole		2			1				1												1											1								
102	45.700208	-90.571441	0	Muck	Pole		1			1																																				
103	45.698723	-90.571426	2	Muck	Pole		2			1			1						1																	1	1			1					
104	45.696743	-90.571406	4	Muck	Pole		1									1																					1								
105	45.696248	-90.571401	4	Sand	Pole		1																															1								
106	45.695753	-90.571396	8	Rock	Pole		0																																							
107	45.695258	-90.571391	1	Sand	Pole		0																																							
108	45.706152	-90.570795	4	Muck	Pole		2			1																1											2								
109	45.705657	-90.570790	3	Muck	Pole		2						1													1				1							1								1
110	45.705162	-90.570785	2	Sand	Pole		1			1												1				1												1							1
111	45.701697	-90.570750	0			NONNAVIGABLE (PLANTS)																																									
112	45.701202	-90.570745	0			NONNAVIGABLE (PLANTS)																																									
113	45.700212	-90.570735	2	Muck	Pole		2			1			1						1							1											1			1					1
114	45.699717	-90.570730	0			NONNAVIGABLE (PLANTS)																																									
115	45.699221	-90.570725	3	Muck	Pole		1			1			1												1																				
116	45.698726	-90.570720	3	Muck	Pole		2						1													1																				
117	45.698231	-90.570715	0	Muck	Pole		2			1			1																																	
118	45.697736	-90.570710	3	Sand	Pole		1			1				1																	1							1								1
119	45.697241	-90.570705	4	Muck	Pole		2			1			1			1										1											2								
120	45.696746	-90.570700	4	Muck	Pole		0																																							
121	45.696251	-90.570694	0			TERRESTRIAL																																								
122	45.695756	-90.570689	8	Sand	Pole		0																																							
123	45.695261	-90.570684	8	Rock	Pole		0																																							
124	45.694766	-90.570679	6	Muck	Pole		0																																							
125	45.694271	-90.570674	5	Muck	Pole		1																		1																				
126	45.693776	-90.570669	5	Muck	Pole		0																																							
127	45.693281	-90.570664	3	Muck	Pole		1									1										1											1								
128	45.709620	-90.570124	0			NONNAVIGABLE (PLANTS)																																									
129	45.706650	-90.570094	3	Muck	Pole		3						1						2	1						1											1								2
130	45.706155	-90.570089	0			TERRESTRIAL																																								
131	45.703680	-90.570064	0			NONNAVIGABLE (PLANTS)																																									
132	45.703185	-90.570058	2	Muck	Pole		3			1			1													1					1							1					1		
133	45.702690	-90.570053	3	Muck	Pole		3			3			1						1							1										1	1							1	
134	45.702195	-90.570048	4	Muck	Pole		3						1											1		1					1					1								
135	45.701700	-90.570043	2	Muck	Pole		3		1	1			1												1											1	1							1	
136	45.701205	-90.570038	2	Muck	Pole		3			1		2	1													1											1			1					
137	45.700710	-90.570033	1	Muck	Pole		3	1				1																		1						1							1	
138	45.698730	-90.570013	2	Muck	Pole		1																			1					1						1								
139	45.698235	-90.570008	2	Muck	Pole		1			1																																				
140	45.696255	-90.569988	2	Sand	Pole		1																																							1
141	45.695760	-90.569983	12	Muck	Pole		0																																							
142	45.695265	-90.569978	9	Muck	Pole		0																																							
143	45.694770	-90.569973	7	Muck	Pole		0																																							
144	45.694275	-90.569968	6	Muck	Pole		0																																							
145	45.693780	-90.569963	5	Muck	Pole		0																																							
146	45.693285	-90.569958	4	Muck	Pole		1																			1																			
147	45.692790	-90.569953	3	Sand	Pole		1																																							
148	45.710119	-90.569422	0			NONNAVIGABLE (PLANTS)																																									
149	45.709624	-90.569417	0			NONNAVIGABLE (PLANTS)																																									
150	45.707644	-90.569397	3	Muck	Pole		2						1						1																	1								1
151	45.707149	-90.569392	2	Muck	Pole		3						1													1																			1
152	45.706654	-90.569387	3	Muck	Pole		3			1			1													1											1	1							
153	45.698238	-90.569302	2	Muck	Pole		2		1				1													1											1								
154	45.697743	-90.569297	3	Muck	Pole		1																			1											1								
155	45.697248	-90.569292	0	Sand	Pole		0																																							
156	45.696753	-90.569287	5	Sand	Pole		0																																							
157	45.696258	-90.569282	8	Muck	Pole		0																																							
158	45.695763	-90.569277	9	Muck	Pole		1						1																																	
159	45.695268	-90.569272	7	Muck	Pole		0																																							
160	45.694773	-90.569267	6	Muck	Pole		0																																							
161	45.694278	-90.569262	6	Muck	Pole		0																																							

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Aquatic moss	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis robbinsii	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum spicatum	Myriophyllum verticillatum	Najas flexilis	Nitella sp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton alpinus	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton friesii	Potamogeton hybrid	Potamogeton natans	Potamogeton nodosus	Potamogeton obtusifolius	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium angustifolium	Sparganium eurycarpum	Sparganium sp.	Spirodela polyrhiza	Utricularia intermedia	Utricularia minor	Utricularia vulgaris	Vallisneria americana
162	45.693783	-90.569257	5	Muck	Pole		0																																								
163	45.693288	-90.569252	5	Muck	Pole		0																																								
164	45.692793	-90.569247	4	Muck	Pole		1						1																																	
165	45.692298	-90.569241	2	Muck	Pole		2			1			1																1						1	2										
166	45.710618	-90.568721	2	Muck	Pole		3			3			1												1											1					1					
167	45.710122	-90.568716	3	Muck	Pole		3			2			1													1																				
168	45.709627	-90.568711	3	Muck	Pole		3			1			1												1																					
169	45.708637	-90.568701	4	Muck	Pole		3			1			1					2																			1									
170	45.708142	-90.568696	3	Muck	Pole		3						1							V																1									
171	45.707647	-90.568691	3	Muck	Pole		3						1					1							1																				1
172	45.707152	-90.568686	2	Sand	Pole		3						1																						1		1		1							1
173	45.706657	-90.568681	2	Muck	Pole		3						1												1											1				1					
174	45.697252	-90.568585	4	Sand	Pole		1								1									1																					
175	45.696757	-90.568580	8	Muck	Pole		0																																							
176	45.696262	-90.568575	13	Muck	Pole		0																																							
177	45.695767	-90.568570	8	Muck	Pole		0																																							
178	45.695272	-90.568565	7	Muck	Pole		0																																							
179	45.694777	-90.568560	7	Muck	Pole		0																																							
180	45.694282	-90.568555	6	Muck	Pole		0																																							
181	45.693787	-90.568550	5	Muck	Pole		0																																							
182	45.693292	-90.568545	5	Muck	Pole		0																																							
183	45.692797	-90.568540	4	Muck	Pole		0																																							
184	45.692302	-90.568535	4	Sand	Pole		0																																							
185	45.711611	-90.568024	2	Muck	Pole		3			1			1												1	1			1						1										
186	45.711116	-90.568019	5	Muck	Pole		3			1			1						3																	1									
187	45.710621	-90.568014	3	Muck	Pole		3			1			1																							1			1						
188	45.710126	-90.568009	2	Muck	Pole		3			1			1						1																	1									1
189	45.709631	-90.568004	3	Muck	Pole		3			1			1																																	1
190	45.709136	-90.567999	5	Muck	Pole		1						1							V																	1		1						
191	45.708641	-90.567994	4	Muck	Pole		3						1																						1			1							1
192	45.708146	-90.567989	3	Muck	Pole		2						1																							1									
193	45.707651	-90.567984	3	Muck	Pole		3						1																																	1
194	45.707156	-90.567979	3	Muck	Pole		3						1																							3									
195	45.706661	-90.567974	3	Muck	Pole		3						1												1					1					1									
196	45.697255	-90.567879	8	Muck	Pole		0																																							
197	45.696760	-90.567874	11	Muck	Pole		0																																							
198	45.696265	-90.567869	9	Muck	Pole		0																																							
199	45.695770	-90.567864	8	Muck	Pole		0																																							
200	45.695275	-90.567859	6	Muck	Pole		0																																							
201	45.694780	-90.567854	6	Muck	Pole		0																																							
202	45.694285	-90.567849	6	Muck	Pole		0																																							
203	45.693790	-90.567844	5	Muck	Pole		0																																							
204	45.693295	-90.567839	5	Sand	Pole		0																																							
205	45.692800	-90.567834	4	Muck	Pole		0								1																														
206	45.692305	-90.567829	3	Sand	Pole		0								1																														
207	45.713595	-90.567338	2	Muck	Pole		1			1											1					1	1	1								1	1								
208	45.713100	-90.567333	2	Muck	Pole		3		1																1	1				1					1	1					1			1	1	
209	45.712605	-90.567328	3	Muck	Pole		3		1				1					3	1							1										1					1				
210	45.712110	-90.567323	3	Muck	Pole		3			1	1		1					1		1																1									2
211	45.711615	-90.567318	3	Muck	Pole		2						1						1							1					1													
212	45.710625	-90.567308	3	Muck	Pole		3						1													1	1								1									
213	45.710130	-90.567303	3	Muck	Pole		3			1			1																						1									1
214	45.709635	-90.567298	3	Muck	Pole		2						1																																1
215	45.709139	-90.567293	3	Muck	Pole		3						1																																1
216	45.708644	-90.567288	4	Muck	Pole		3						1							V									1															3
217	45.708149	-90.567283	3	Muck	Pole		3						1																																
218	45.707654	-90.567278	3	Muck	Pole		3						1																							1									2
219	45.707159	-90.567273	3	Muck	Pole		3						1																																1
220	45.706664	-90.567268	3	Muck	Pole		3		1				1																																1
221	45.706169	-90.567263	5	Muck	Pole		2			2			1							V																					1				1
222	45.699239	-90.567192	4	Muck	Pole		2																													2									
223	45.697754	-90.567177	8	Muck	Pole		0																																							
224	45.697259	-90.567172	10	Muck	Pole		0																																							
225	45.696764	-90.567167	10	Muck	Pole		0																																							
226	45.696269	-90.567162	7	Muck	Pole		0																																							
227	45.695774	-90.567157	6	Sand	Pole		0																																							
228	45.695279	-90.567152	6	Muck	Pole		0																																							
229	45.694784	-90.567147	6	Muck	Pole		0																																							
230	45.694289	-90.567142	6	Muck	Pole		0																																							
231	45.693794	-90.567137	5	Muck	Pole		0									1																													
232	45.693299	-90.567132	4	Sand	Pole		0																																							
233	45.692804	-90.567127	4	Muck	Pole		1																							1															
234	45.692309	-90.567122	3	Sand	Pole		1			1					1																					1									
235	45.691814	-90.567117	3	Sand	Pole		1	1		1			1																							1									
236	45.691319	-90.567112	2	Sand	Pole		3						1																							1									1
237	45.714093	-90.566636	0			NONNAVIGABLE (PLANTS)																																									
238	45.713598	-90.566631	3	Muck	Pole		3			1								3							1						1		1											
239	45.713103	-90.566626	3	Muck	Pole		3			1			1					3	V					1						1				1	1									
240	45.712608	-90.566621	7	Muck	Pole		3						1	1				3																											
241	45.712113	-90.566616	5	Muck	Pole		3			1			1					3																		1									
242	45.710133	-90.566596	3	Muck	Pole		3			1			1																																1
243	45.709638	-90.566591	3	Muck	Pole		3						1																																3
244	45.709143	-90.566586	4	Muck	Pole		2																																						2
245	45.708648	-90.566581	4	Muck	Pole		2						1																																2
246	45.708153	-90.566576	4	Muck	Pole		2						1																																1
247	45.707658	-90.566571	3	Muck	Pole		3						1							V																									2
248	45.707163	-90.566566	3	Muck	Pole		3						1																																2
249	45.706668	-90.566561	3	Muck	Pole		3		1				1																																1
250	45.706173	-90.566556	3	Muck	Pole		3						1													1																				1
251	45.705678	-90.566551	1	Sand	Pole		2						1													1																	1		1		1
252	45.698748	-90.566481	0			TERRESTRIAL																																								
253	45.698253	-90.566476	5	Sand	Pole		0																																							
254	45.697758	-90.566471	8	Sand	Pole		0																																							
255	45.697263	-90.566466	9	Sand	Pole		0																																							
256	45.696767	-90.566461	8	Muck	Pole		0																																							
257	45.696272	-90.566456	6	Muck	Pole		0																																							
258	45.695777	-90.566451	6	Muck	Pole		0																																							
259	45.695282	-90.566446	6	Muck	Pole		0																																							
260	45.694787	-90.566441	6	Muck	Pole		0																																							
261	45.694292	-90.566436	5	Muck	Pole		0																																							
262	45.693797	-90.566431	5	Muck	Pole		0																																							
263	45.693302	-90.566426	4	Sand	Pole		1			1			1		1																															
264	45.692807	-90.566421	4	Muck	Pole		1																																					1			
265	45.692312	-90.566416	4	Sand	Pole		3						1																	1															
266	45.691817	-90.566411	4	Sand	Pole		1																													1									
267	45.691322	-90.566406	3	Sand	Pole		1			1			1																1							1									
268	45.714097	-90.565929	0			NONNAVIGABLE (PLANTS)																																									
269	45.713602	-90.565924	4	Muck	Pole		3			3								1																	1									1
270	45.713107	-90.565919	5	Muck	Pole		3											3																	1									
271	45.712612	-90.565914	3	Muck	Pole		3		1		1		1					3				1																						1	
272	45.712117	-90.565909	3	Muck	Pole		3		1	1								1								1									1	1								
273	45.710137	-90.565889	4	Muck	Pole		1						1																																
274	45.709642	-90.565884	4	Muck	Pole		3																																							3
275	45.709146	-90.565879	4	Muck	Pole		1						1																							1									
276	45.708651	-90.565874	4	Muck	Pole		2																																							2
277	45.708156	-90.565869	5	Muck	Pole		0																																							
278	45.707661	-90.565864	4	Muck	Pole		1																																							1
279	45.707166	-90.565859	4	Muck	Pole		2						1													1																				
280	45.706671	-90.565854	3	Muck	Pole		3						1												1					1															
281	45.705681	-90.565844	3	Muck	Pole		2						1													1											1									
282	45.701226	-90.565800	5	Sand	Pole		0																																							
283	45.700731	-90.565795	9	Muck	Pole		0																																							
284	45.700236	-90.565790	9	Muck	Pole		0																																							
285	45.698256	-90.565770	6	Sand	Pole		0																																							
286	45.697761	-90.565765	8	Sand	Pole		0																																							
287	45.697266	-90.565760	9	Sand	Pole		0																																							
288	45.696771	-90.565755	7	Sand	Pole		0																																							
289	45.696276	-90.565750	6	Sand	Pole		0																																							
290	45.695781	-90.565745	7	Sand	Pole		0																																							
291	45.695286	-90.565740	6	Muck	Pole		0																																							
292	45.694791	-90.565735	6	Muck	Pole		0																																							
293	45.694296	-90.565730	5	Muck	Pole		1																			1																				1
294	45.693801	-90.565725	5	Muck	Pole		1						1																																	
295	45.693306	-90.565720	3	Sand	Pole		1																			1																				
296	45.692811	-90.565715	1	Sand	Pole		2						1										1			1	1																				1
297	45.691821	-90.565705	0			TERRESTRIAL																																								
298	45.691326	-90.565700	3	Muck	Pole		3						1																																	
299	45.690831	-90.565695	2	Sand	Pole		2			1			1		1											1											1									
300	45.713605	-90.565218	0			NONNAVIGABLE (PLANTS)																																									
301	45.710140	-90.565183	3	Muck	Pole		3																													1									3
302	45.709645	-90.565178	4	Muck	Pole		3																																							3
303	45.709150	-90.565173	4	Muck	Pole		3																																							3
304	45.708655	-90.565168	4	Muck	Pole		2																													1					1					1
305	45.708160	-90.565163	5	Muck	Pole		0																																							
306	45.707665	-90.565158	4	Muck	Pole		0																																							
307	45.707170	-90.565153	4	Muck	Pole		2						1																																	2
308	45.706675	-90.565148	4	Muck	Pole		2						1	1																							1									
309	45.706180	-90.565133	3	Muck	Pole		1						1													1																				1
310	45.703210	-90.565113	5	Muck	Pole		1																																							1
311	45.702715	-90.565108	8	Muck	Pole		0																																							
312	45.702220	-90.565103	8	Sand	Pole		0																																							
313	45.701725	-90.565098	9	Sand	Pole		0																																							
314	45.701230	-90.565093	0			DEEP																																								
315	45.700735	-90.565088	0			DEEP																																								
316	45.700240	-90.565083	12	Muck	Pole		0																																							
317	45.699745	-90.565078	0			DEEP																																								
318	45.699250	-90.565073	10	Sand	Pole		0																																							
319	45.698755	-90.565068	11	Sand	Pole		0																																							
320	45.698260	-90.565063	10	Sand	Pole		0																																							
321	45.697765	-90.565058	10	Sand	Pole		0																																							
322	45.697269	-90.565053	8	Muck	Pole		0																																							

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Aquatic moss	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis robbinsii	Elodea canadensis	Eldea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum spicatum	Myriophyllum verticillatum	Najas flexilis	Nitella sp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton alpinus	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton friesii	Potamogeton hybrid	Potamogeton natans	Potamogeton nodosus	Potamogeton obtusifolius	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spiritus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium angustifolium	Sparganium eurycarpum	Sparganium sp.	Spirodela polyrhiza	Utricularia intermedia	Utricularia minor	Utricularia vulgaris	Vallisneria americana
323	45.696774	-90.565048	6	Sand	Pole		0																																							
324	45.696279	-90.565043	6	Muck	Pole		0																																							
325	45.695784	-90.565038	6	Sand	Pole		0																																							
326	45.695289	-90.565033	5	Sand	Pole		0																																							
327	45.694794	-90.565028	4	Muck	Pole		3						1												1																				3
328	45.694299	-90.565023	2	Sand	Pole		2						1		1					V																									2
329	45.691329	-90.564993	2	Muck	Pole		2			1			1												1																				
330	45.690834	-90.564988	4	Sand	Pole		3			2					1										1																			1	
331	45.713114	-90.564506	0			NONNAVIGABLE (PLANTS)																																								
332	45.710144	-90.564476	4	Muck	Pole		2			1			1																2						1	1								
333	45.709649	-90.564471	4	Muck	Pole		1						1																1															1
334	45.709153	-90.564466	4	Muck	Pole		1																																					1
335	45.708658	-90.564461	4	Muck	Pole		1																																					1
336	45.708163	-90.564456	5	Muck	Pole		0																																						
337	45.707668	-90.564451	4	Muck	Pole		0																																						
338	45.707173	-90.564446	4	Muck	Pole		0																																						
339	45.706678	-90.564441	3	Muck	Pole		1													V																									
340	45.706183	-90.564436	0			NONNAVIGABLE (PLANTS)																																								
341	45.705193	-90.564426	4	Sand	Pole		1						1																																1
342	45.704698	-90.564421	5	Sand	Pole		1																																						1
343	45.704203	-90.564416	6	Sand	Pole		0																																						
344	45.703708	-90.564412	9	Muck	Pole		0																																						
345	45.703213	-90.564407	9	Muck	Pole		0																																						
346	45.702718	-90.564402	9	Muck	Pole		0																																						
347	45.702223	-90.564397	9	Muck	Pole		0																																						
348	45.701728	-90.564392	9	Muck	Pole		0																																						
349	45.701233	-90.564387	10	Muck	Pole		0																																						
350	45.700738	-90.564382	9	Muck	Pole		0																																						
351	45.700243	-90.564377	9	Muck	Pole		0																																						
352	45.699748	-90.564372	8	Muck	Pole		0																																						
353	45.699253	-90.564367	8	Sand	Pole		0																																						
354	45.698758	-90.564362	3	Sand	Pole		0																																						
355	45.698263	-90.564357	1	Sand	Pole		1			1			1																																1
356	45.691333	-90.564287	2	Muck	Pole		3			2															1											1							1		
357	45.690838	-90.564282	3	Sand	Pole		3			2			1									1			1											1								
358	45.690343	-90.564277	1	Sand	Pole		2			1			1												1																		1		
359	45.710642	-90.563775	3	Muck	Pole		2						1																							2								
360	45.710147	-90.563770	4	Muck	Pole		2						1																												2				
361	45.709652	-90.563765	4	Muck	Pole		2																													1								2
362	45.709157	-90.563760	4	Muck	Pole		0																																						
363	45.708662	-90.563755	5	Muck	Pole		0																																						
364	45.708167	-90.563750	5	Muck	Pole		0																																						
365	45.707672	-90.563745	5	Muck	Pole		0																																						
366	45.707177	-90.563740	5	Muck	Pole		0																																						
367	45.706682	-90.563735	4	Muck	Pole		1						1																																1
368	45.706187	-90.563730	2	Muck	Pole		3						1												1	1																1		1		
369	45.705692	-90.563725	5	Muck	Pole		0																																						
370	45.705197	-90.563720	7	Muck	Pole		0																																						
371	45.704702	-90.563715	8	Muck	Pole		0																																						
372	45.704207	-90.563710	8	Muck	Pole		0																																						
373	45.703712	-90.563705	9	Muck	Pole		0																																						
374	45.703217	-90.563700	9	Muck	Pole		0																																						
375	45.702722	-90.563695	9	Muck	Pole		0																																						
376	45.702227	-90.563690	9	Muck	Pole		0																																						
377	45.701732	-90.563685	8	Muck	Pole		0																																						
378	45.701237	-90.563680	1	Sand	Pole		1																									1												
379	45.700742	-90.563675	2	Sand	Pole		1																									1												
380	45.700247	-90.563670	2	Sand	Pole		2																																						2
381	45.690841	-90.563576	0			TERRESTRIAL																																							
382	45.710646	-90.563068	3	Muck	Pole		3			1			1																1		1														1
383	45.710150	-90.563063	4	Muck	Pole		1																																						1
384	45.709655	-90.563058	4	Muck	Pole		1																																						1
385	45.709160	-90.563053	4	Muck	Pole		0																																						
386	45.708665	-90.563048	5	Muck	Pole		0																																						
387	45.708170	-90.563043	5	Muck	Pole		0																																						
388	45.707675	-90.563038	6	Muck	Pole		0																																						
389	45.707180	-90.563033	5	Muck	Pole		0																																						
390	45.706685	-90.563028	5	Muck	Pole		0																																						
391	45.706190	-90.563023	5	Muck	Pole		0																																						
392	45.705695	-90.563018	7	Muck	Pole		0																																						
393	45.705200	-90.563013	9	Muck	Pole		0																																						
394	45.704705	-90.563008	9	Muck	Pole		0																																						
395	45.704210	-90.563003	8	Muck	Pole		0																																						
396	45.703715	-90.562999	9	Muck	Pole		0																																						
397	45.703220	-90.562994	8	Muck	Pole		0																																						
398	45.702725	-90.562989	9	Muck	Pole		0																																						
399	45.702230	-90.562984	8	Muck	Pole		0																																						
400	45.701735	-90.562979	7	Muck	Pole		0																																						
401	45.711144	-90.562366	3	Muck	Pole		3			1			1							V																									1
402	45.710649	-90.562361	3	Muck	Pole		1																																						1
403	45.710154	-90.562357	4	Muck	Pole		0																																						
404	45.709659	-90.562352	4	Muck	Pole		0																																						
405	45.709164	-90.562347	5	Muck	Pole		0									1																													
406	45.708669	-90.562342	5	Muck	Pole		0																																						
407	45.708174	-90.562337	6	Muck	Pole		0																																						
408	45.707679	-90.562332	6	Muck	Pole		0																																						
409	45.707184	-90.562327	6	Muck	Pole		0																																						
410	45.706689	-90.562322	6	Muck	Pole		0																																						
411	45.706194	-90.562317	7	Muck	Pole		0																																						
412	45.705699	-90.562312	8	Muck	Pole		0																																						
413	45.705204	-90.562307	9	Muck	Pole		0																																						
414	45.704709	-90.562302	9	Muck	Pole		0																																						
415	45.704214	-90.562297	8	Muck	Pole		0																																						
416	45.703719	-90.562292	9	Muck	Pole		0																																						
417	45.703224	-90.562287	8	Muck	Pole		0																																						
418	45.702729	-90.562282	8	Muck	Pole		0																																						
419	45.702234	-90.562277	7	Muck	Pole		0																																						
420	45.701739	-90.562272	5	Muck	Pole		0																																						
421	45.711147	-90.561660	3	Muck	Pole		3						1																																2
422	45.710652	-90.561655	4	Muck	Pole		1																																						1
423	45.710157	-90.561650	4	Muck	Pole		1																																						1
424	45.709662	-90.561645	4	Muck	Pole		0																																						
425	45.709167	-90.561640	5	Muck	Pole		0																																						
426	45.708672	-90.561635	5	Muck	Pole		0																																						
427	45.708177	-90.561630	6	Muck	Pole		0																																						
428	45.707682	-90.561625	6	Muck	Pole		0																																						
429	45.707187	-90.561620	6	Muck	Pole		0																																						
430	45.706692	-90.561615	6	Muck	Rope		0																																						
431	45.706197	-90.561610	7	Muck	Pole		0																																						
432	45.705702	-90.561605	8	Muck	Pole		0																																						
433	45.705207	-90.561600	9	Muck	Pole		0																																						
434	45.704712	-90.561595	9	Muck	Pole		0																																						
435	45.704217	-90.561590	9	Muck	Pole		0																																						
436	45.703722	-90.561586	8	Muck	Pole		0																																						
437	45.703227	-90.561581	6	Sand	Pole		0																																						
438	45.702732	-90.561576	6	Sand	Pole		0																																						
439	45.702237	-90.561571	6	Muck	Pole		0																																						
440	45.711151	-90.560953	4	Muck	Pole		3			1																1			1							2								
441	45.710656	-90.560948	4	Muck	Pole		3																																						3
442	45.710161	-90.560943	4	Muck	Pole		1																																						1
443	45.709666	-90.560938	5	Muck	Pole		0																																						
444	45.709171	-90.560933	5	Muck	Pole		0																																						
445	45.708676	-90.560929	5	Muck	Pole		0																																						
446	45.708181	-90.560924	5	Muck	Pole		0																																						
447	45.707686	-90.560919	5	Muck	Pole		0																																						
448	45.707191	-90.560914	6	Muck	Pole		0																																						
449	45.706696	-90.560909	7	Muck	Pole		0																																						
450	45.706201	-90.560904	8	Muck	Pole		0																																						
451	45.705706	-90.560899	9	Muck	Pole		0																																						
452	45.705211	-90.560894	9	Muck	Pole		0																																						
453	45.704716	-90.560889	9	Muck	Pole		0																																						
454	45.704221	-90.560884	9	Muck	Pole		0																																						
455	45.703726	-90.560879	7	Muck	Pole		0																																						
456	45.703231	-90.560874	2	Sand	Pole		0																																						
457	45.702736	-90.560869	4	Sand	Pole		0																																						
458	45.702241	-90.560864	5	Muck	Pole		1																			1																			
459	45.709669	-90.560232	5	Muck	Pole		0																																						
460	45.709174	-90.560227	5	Muck	Pole		0																																						
461	45.708679	-90.560222	6	Muck	Pole		0									1																													
462	45.708184	-90.560217	6	Muck	Pole		0																																						
463	45.707689	-90.560212	6	Sand	Pole		0																																						
464	45.707194	-90.560207	6	Sand	Pole		0																																						
465	45.706699	-90.560202	8	Muck	Pole		0																																						
466	45.706204	-90.560197	10	Muck	Pole		0																																						
467	45.705709	-90.560192	9	Muck	Pole		0																																						
468	45.705214	-90.560187	10	Muck	Pole		0																																						
469	45.704719	-90.560182	10	Muck	Pole		0																																						
470	45.704224	-90.560177	8	Muck	Pole		0																																						
471	45.703729	-90.560172	7	Sand	Pole		0																																						
472	45.709178	-90.559520	5	Muck	Pole		0																																						
473	45.708683	-90.559515	5	Muck	Pole		0																																						
474	45.708188	-90.559510	6	Muck	Pole		0																																						
475	45.707693	-90.559506	6	Muck	Pole		0																																						
476	45.707198	-90.559501	7	Muck	Pole		0																																						
477	45.706703	-90.559496	8	Muck	Pole		0																																						
478	45.706208	-90.559491	9	Muck	Pole		0																																						
479	45.705713	-90.559486	9	Muck	Pole		0																																						
480	45.705218	-90.559481	10	Muck	Pole		0																																						
481	45.704723	-90.559476	10	Muck	Pole		0																																						
482	45.704228	-90.559471	8	Muck	Pole		0																																						
483	45.703733	-90.559466	6	Sand	Pole		0																																						

POINT NUMBER	LATITUDE	LONGITUDE	DEPTH (FT)	SEDIMENT	POLE_ROPE	COMMENTS	TOTAL RAKE-FULLNESS	Aquatic moss	Brasenia schreberi	Ceratophyllum demersum	Chara spp.	Eleocharis robbinsii	Elodea canadensis	Elodea nuttallii	Filamentous algae	Freshwater sponge	Lemna trisulca	Megalodonta beckii	Myriophyllum heterophyllum	Myriophyllum spicatum	Myriophyllum verticillatum	Najas flexilis	Nitella sp.	Nuphar variegata	Nymphaea odorata	Pontederia cordata	Potamogeton alpinus	Potamogeton amplifolius	Potamogeton epihydrus	Potamogeton friesii	Potamogeton hybrid	Potamogeton natans	Potamogeton nodosus	Potamogeton obtusifolius	Potamogeton pusillus	Potamogeton robbinsii	Potamogeton spirillus	Potamogeton strictifolius	Potamogeton vaseyi	Potamogeton zosteriformis	Sagittaria rigida	Sparganium angustifolium	Sparganium eurycarpum	Sparganium sp.	Spirodela polyrhiza	Utricularia intermedia	Utricularia minor	Utricularia vulgaris	Vallisneria americana
484	45.703238	-90.559461	5	Sand	Pole		1																		1																				
485	45.709181	-90.558814	6	Sand	Pole		0																																							
486	45.708686	-90.558809	6	Sand	Pole		0																																							
487	45.708191	-90.558804	6	Sand	Pole		0																																							
488	45.707696	-90.558799	7	Sand	Pole		0																																							
489	45.707201	-90.558794	8	Muck	Pole		0																																							
490	45.706706	-90.558789	9	Muck	Pole		0																																							
491	45.706211	-90.558784	9	Muck	Pole		0																																							
492	45.705716	-90.558779	9	Muck	Pole		0																																							
493	45.705221	-90.558774	10	Muck	Pole		0																																							
494	45.704726	-90.558769	9	Muck	Pole		0																																							
495	45.704231	-90.558764	7	Sand	Pole																																									
496	45.703736	-90.558759	6	Sand	Pole		0																																							
497	45.703241	-90.558755	6	Sand	Pole		0																																							
498	45.702746	-90.558750	2	Sand	Pole		2															2							1															1
499	45.698291	-90.558705	0			NONNAVIGABLE (PLANTS)																																								
500	45.709680	-90.558112	2	Sand	Pole		`													V		1	1																				1
501	45.709185	-90.558107	6	Sand	Pole		0																																							
502	45.708690	-90.558102	6	Sand	Pole		0																																							
503	45.708195	-90.558097	6	Sand	Pole		0																																							
504	45.707700	-90.558092	6	Sand	Pole		0																																							
505	45.707205	-90.558087	8	Muck	Pole		0																																							
506	45.706710	-90.558083	9	Muck	Pole		0																																							
507	45.706215	-90.558078	9	Muck	Pole		0																																							
508	45.705720	-90.558073	9	Muck	Pole		0																																							
509	45.705225	-90.558068	10	Muck	Pole		0																																							
510	45.704730	-90.558063	9	Muck	Pole		0																																							
511	45.704235	-90.558058	8	Muck	Pole		0																																							
512	45.703739	-90.558053	8	Muck	Pole		0																																							
513	45.703244	-90.558048	6	Muck	Pole		0																																							
514	45.702749	-90.558043	6	Muck	Pole		0																																							
515	45.702254	-90.558038	3	Sand	Pole		2						1																													1					
516	45.701759	-90.558033	3	Rock	Pole		1																																							1
517	45.699284	-90.558009	3	Muck	Pole		3						1												1												3								
518	45.698789	-90.558004	3	Muck	Pole		3						1												1												2								
519	45.698294	-90.557999	3	Muck	Pole		2			2															1												1								
520	45.709683	-90.557406	5	Sand	Pole		0																																							
521	45.709188	-90.557401	6	Sand	Pole		0																																							
522	45.708693	-90.557396	6	Sand	Pole		0																																							
523	45.708198	-90.557391	6	Sand	Pole		0																																							
524	45.707703	-90.557386	6	Muck	Pole		0																																							
525	45.707208	-90.557381	7	Muck	Pole		0																																							
526	45.706713	-90.557376	7	Sand	Pole		0																																							
527	45.706218	-90.557371	8	Muck	Pole		0																																							
528	45.705723	-90.557366	10	Muck	Pole		0																																							
529	45.705228	-90.557361	10	Muck	Pole		0																																							
530	45.704733	-90.557356	9	Muck	Pole		0																																							
531	45.704238	-90.557351	8	Muck	Pole		0																																							
532	45.703743	-90.557346	8	Muck	Pole		0																																							
533	45.703248	-90.557342	6	Muck	Pole		0																																							
534	45.702753	-90.557337	6	Muck	Pole		0																																							
535	45.702258	-90.557332	6	Muck	Pole		0																																							
536	45.701763	-90.557327	5	Muck	Pole		0																																							
537	45.701268	-90.557322	5	Muck	Pole		0																																							
538	45.700773	-90.557317	5	Muck	Pole		0																																							
539	45.700278	-90.557312	5	Muck	Pole		0																																							
540	45.699783	-90.557307	5	Muck	Pole		1						1																																	
541	45.699288	-90.557302	4	Muck	Pole		3						1																								2								
542	45.698793	-90.557297	3	Muck	Pole		3			1			1			1																					1								
543	45.698298	-90.557292	3	Muck	Pole		3			1			1												1																				1
544	45.710182	-90.556704	1	Rock	Pole		o																																							
545	45.709687	-90.556699	6	Sand	Pole		0																																							
546	45.709192	-90.556694	6	Sand	Pole		0																																							
547	45.708697	-90.556689	6	Sand	Pole		0																																							
548	45.708202	-90.556684	6	Sand	Pole		0																																							
549	45.707707	-90.556679	7	Muck	Pole		0																																							
550	45.707212	-90.556674	7	Muck	Pole		0																																							
551	45.706717	-90.556669	4	Sand	Pole		0																																							
552	45.706221	-90.556665	6	Sand	Pole		0																																							
553	45.705726	-90.556660	11	Muck	Pole		0																																							
554	45.705231	-90.556655	10	Muck	Pole		0																																							
555	45.704736	-90.556650	9	Muck	Pole		0																																							
556	45.704241	-90.556645	9	Muck	Pole		0																																							
557	45.703746	-90.556640	8	Muck	Pole		0																																							
558	45.703251	-90.556635	6	Muck	Pole		0																																							
559	45.702756	-90.556630	6	Muck	Pole		0																																							
560	45.702261	-90.556625	6	Muck	Pole		0																																							
561	45.701766	-90.556620	5	Muck	Pole		0																																							
562	45.701271	-90.556615	5	Muck	Pole		0																																							
563	45.700776	-90.556611	5	Muck	Pole		0																																							
564	45.700281	-90.556606	5	Muck	Pole		0									1																													
565	45.699786	-90.556601	4	Muck	Pole		2			1			1																1																
566	45.699291	-90.556596	4	Muck	Pole		2																						1								2								
567	45.698796	-90.556591	3	Muck	Pole		2						1																1								1								
568	45.710185	-90.555997	3	Sand	Pole		0																																							
569	45.709690	-90.555992	6	Sand	Pole		0																																							
570	45.709195	-90.555987	6	Sand	Pole		0																																							
571	45.708700	-90.555983	6	Muck	Pole		0																																							
572	45.708205	-90.555978	7	Muck	Pole		0																																							
573	45.707710	-90.555973	8	Muck	Pole		0																																							
574	45.707215	-90.555968	9	Muck	Pole																																									
575	45.706720	-90.555963	9	Muck	Pole		0																																							
576	45.706225	-90.555958	10	Muck	Pole		0																																							
577	45.705730	-90.555953	10	Muck	Pole		0																																							
578	45.705235	-90.555948	9	Muck	Pole		0																																							
579	45.704740	-90.555943	9	Muck	Pole		0																																							
580	45.704245	-90.555938	9	Muck	Pole		0																																							
581	45.703750	-90.555933	8	Muck	Pole		0																																							
582	45.703255	-90.555929	6	Muck	Pole		0																																							
583	45.702760	-90.555924	6	Muck	Pole		0																																							
584	45.702265	-90.555919	6	Muck	Pole		0																																							
585	45.701770	-90.555914	5	Muck	Pole		0																																							
586	45.701275	-90.555909	5	Muck	Pole		1						1																																	
587	45.700780	-90.555904	5	Muck	Pole		0																																							
588	45.700285	-90.555899	5	Muck	Pole		1																1																						
589	45.699790	-90.555894	5	Muck	Pole		1						1																								1								
590	45.699295	-90.555889	4	Muck	Pole		1																						1								1								
591	45.710189	-90.555291	4	Sand	Pole		0													v																										
592	45.709694	-90.555286	6	Sand	Pole		0																																							
593	45.709198	-90.555281	6	Sand	Pole		0																																							
594	45.708703	-90.555276	6	Sand	Pole		0																																							
595	45.708208	-90.555271	7	Muck	Pole		0																																							
596	45.707713	-90.555266	8	Muck	Pole		0																																							
597	45.707218	-90.555261	9	Muck	Pole		0																																							
598	45.706723	-90.555256	10	Muck	Pole		0																																							
599	45.706228	-90.555251	10	Muck	Pole		0																																							
600	45.705733	-90.555247	9	Muck	Pole		0																																							
601	45.705238	-90.555242	9	Muck	Pole		0																																							
602	45.704743	-90.555237	9	Muck	Pole		0																																							
603	45.704248	-90.555232	9	Muck	Pole		0																																							
604	45.703753	-90.555227	9	Muck	Pole		0																																							
605	45.703258	-90.555222	7	Muck	Pole		0																																							
606	45.702763	-90.555217	6	Muck	Pole		0																																							
607	45.702268	-90.555212	6	Muck	Pole		0																																							
608	45.701773	-90.555207	5	Sand	Pole		0																																							
609	45.701278	-90.555202	5	Muck	Pole		0																																							
610	45.700783	-90.555198	5	Muck	Pole		0																																							
611	45.700288	-90.555193	5	Muck	Pole		0																																							
612	45.699793	-90.555188	4	Sand	Pole		2																						2																
613	45.710192	-90.554584	2	Sand	Pole		2													1		1	1																	1						2
614	45.709697	-90.554579	6	Muck	Pole		0																																							
615	45.709202	-90.554574	6	Muck	Pole		0																																							
616	45.708707	-90.554569	7	Muck	Pole		0																																							
617	45.708212	-90.554565	8	Muck	Pole		0																																							
618	45.707717	-90.554560	9	Muck	Pole		0																																							
619	45.707222	-90.554555	9	Muck	Pole		0																																							
620	45.706727	-90.554550	9	Muck	Pole		0																																							
621	45.706232	-90.554545	9	Muck	Pole		0																																							
622	45.705737	-90.554540	9	Muck	Pole		0																																							
623	45.705242	-90.554535	9	Muck	Pole		0																																							
624	45.704747	-90.554530	9	Muck	Pole		0																																							
625	45.704252	-90.554525	9	Muck	Pole		0																																							
626	45.703757	-90.554520	8	Muck	Pole		0																																							
627	45.703262	-90.554516	6	Sand	Pole		0																																							
628	45.702767	-90.554511	6	Sand	Pole		0																																							
629	45.702272	-90.554506	5	Sand	Pole		0																																							
630	45.701777	-90.554501	5	Sand	Pole		0																																							
631	45.701282	-90.554496	5	Sand	Pole		0																																							
632	45.700787	-90.554491	5	Sand	Pole		0																																							
633	45.700292	-90.554486	4	Rock	Pole		0																																							
634	45.699797	-90.554481	4	Sand	Pole		0																																							
635	45.710195	-90.553878	1	Sand	Pole		1															1																							1
636	45.709700	-90.553873	5	Sand	Pole		0																																							
637	45.709205	-90.553868	6	Muck	Pole		0																																							
638	45.708710	-90.553863	7	Muck	Pole		0																																							
639	45.708215	-90.553858	8	Muck	Pole		0																																							
640	45.707720	-90.553853	9	Muck	Pole		0																																							
641	45.707225	-90.553848	9	Muck	Pole		0																																							
642	45.706730	-90.553843	9	Muck	Pole		0																																							
643	45.706235	-90.553838	9	Muck	Pole		0																																							
644	45.705740	-90.553834	9	Muck	Pole		0																																							

F

APPENDIX F

Aquatic Plant Management Strategy – WDNR Northern Region

AQUATIC PLANT MANAGEMENT STRATEGY

Northern Region WDNR
Summer, 2007

AQUATIC PLANT MANAGEMENT STRATEGY
Northern Region WDNR

ISSUES

- Protect desirable native aquatic plants.
- Reduce the risk that invasive species replace desirable native aquatic plants.
- Promote "whole lake" management plans
- Limit the number of permits to control native aquatic plants.

BACKGROUND

As a general rule, the Northern Region has historically taken a protective approach to allow removal of native aquatic plants by harvesting or by chemical herbicide treatment. This approach has prevented lakes in the Northern Wisconsin from large-scale loss of native aquatic plants that represent naturally occurring high quality vegetation. Naturally occurring native plants provide a *diversity of habitat* that *helps maintain water quality*, helps *sustain the fishing* quality known for Northern Wisconsin, supports common lakeshore wildlife from loons to frogs, and helps to provide the *aesthetics* that collectively create the "up-north" appeal of the northwoods lake resources.

In Northern Wisconsin lakes, an inventory of aquatic plants may often find 30 different species or more, whereas a similar survey of a Southern Wisconsin lake may often discover less than half that many species. Historically, similar species diversity was present in Southern Wisconsin, but has been lost gradually over time from stresses brought on by cultural land use changes (such as increased development, and intensive agriculture). Another point to note is that while there may be a greater variety of aquatic vegetation in Northern Wisconsin lakes, the vegetation itself is often *less dense*. This is because northern lakes have not suffered as greatly from nutrients and runoff as have many waters in Southern Wisconsin.

The newest threat to native plants in Northern Wisconsin is from invasive species of aquatic plants. The most common include Eurasian Water Milfoil (EWM) and CurlyLeaf Pondweed (CLP). These species are described as *opportunistic invaders*. This means that these "invaders" benefit where an opening occurs from removal of plants, and without competition from other plants may successfully become established in a lake. Removal of native vegetation not only diminishes the natural qualities of a lake, it *may increase the risk that an invasive species can successfully invade onto the site where native plants have been removed*. There it may more easily establish itself without the native plants to compete against. This concept is easily observed on land where bared soil is quickly taken over by replacement species (often weeds) that crowd in and establish themselves as new occupants of the site. While not a providing a certain guarantee against invasive plants, protecting and allowing the native plants to remain may reduce the success of an invasive species becoming established on a lake. Once established, the invasive species cause far more inconvenience for all lake users, riparian and others included; can change many of the natural features of a lake; and often lead to *expensive annual control plans*. Native vegetation may cause localized concerns to some users, but as a natural feature of lakes, they generally do not cause harm.

To the extent we can maintain the normal growth of native vegetation, Northern Wisconsin lakes can continue to offer the water resource appeal and benefits they've historically provided. A regional position on removal of aquatic plants that carefully recognizes how native aquatic plants benefit lakes in Northern Region can help prevent a gradual decline in the overall quality and recreational benefits that make these lakes attractive to people and still provide abundant fish, wildlife, and northwoods appeal.

GOALS OF STRATEGY:

1. Preserve native species diversity which, in turn, fosters natural habitat for fish and other aquatic species, from frogs to birds.
2. Prevent openings for invasive species to become established in the absence of the native species.
3. Concentrate on a" whole-lake approach" for control of aquatic plants, thereby fostering systematic documentation of conditions and specific targeting of invasive species as they exist.
4. Prohibit removal of wild rice. WDNR – Northern Region will not issue permits to remove wild rice unless a request is subjected to the full consultation process via the Voigt Tribal Task Force. We intend to discourage applications for removal of this ecologically and culturally important native plant.
5. To be consistent with our WDNR Water Division Goals (work reduction/disinvestment), established in 2005, to "not issue permits for chemical or large scale mechanical control of native aquatic plants – develop general permits as appropriate or inform applicants of exempted activities." This process is similar to work done in other WDNR Regions, although not formalized as such.

BASIS OF STRATEGY IN STATE STATUTE AND ADMINISTRATIVE CODE

State Statute 23.24 (2)(c) states:

"The requirements promulgated under par. (a) 4. may specify any of the following:

1. The **quantity** of aquatic plants that may be managed under an aquatic plant management permit.
2. The **species** of aquatic plants that may be managed under an aquatic plant management permit.
3. The **areas** in which aquatic plants may be managed under an aquatic plant management permit.
4. The **methods** that may be used to manage aquatic plants under an aquatic plant management permit.
5. The **times** during which aquatic plants may be managed under an aquatic plant management permit.
6. The **allowable methods** for disposing or using aquatic

plants that are removed or controlled under an aquatic plant management permit.

7. The requirements for plans that the department may require under sub. (3) (b). “

State Statute 23.24(3)(b) states:
“The department may require that an application for an aquatic plant management permit contain a plan for the department’s approval as to how the aquatic plants will be introduced, removed, or controlled.“

Wisconsin Administrative Code NR 109.04(3)(a) states:
“The department may require that an application for an aquatic plant management permit contain an aquatic plant management plan that describes how the aquatic plants will be introduced, controlled, removed or disposed. Requirements for an aquatic plant management plan shall be made in writing stating the reason for the plan requirement. In deciding whether to require a plan, the department shall consider the potential for effects on protection and development of diverse and stable communities of native aquatic plants, for conflict with goals of other written ecological or lake management plans, for cumulative impacts and effect on the ecological values in the body of water, and the long-term sustainability of beneficial water use activities.”

AQUATIC PLANT MANAGEMENT STRATEGY
Northern Region WDNR

APPROACH

1. After January 1, 2009* no individual permits for control of native aquatic plants will be issued. Treatment of native species may be allowed under the auspices of an approved lake management plan, and only if the plan clearly documents "impairment of navigation" and/or "nuisance conditions". Until January 1, 2009, individual permits will be issued to previous permit holders, only with adequate documentation of "impairment of navigation" and/or "nuisance conditions". No new individual permits will be issued during the interim.

2. Control of aquatic plants (if allowed) in documented sensitive areas will follow the conditions specified in the report.

3. Invasive species must be controlled under an approved lake management plan, with two exceptions (these exceptions are designed to allow sufficient time for lake associations to form and subsequently submit an approved lake management plan):
   a. Newly-discovered infestations. If found on a lake with an approved lake management plan, the invasive species can be controlled via an amendment to the approved plan. If found on a lake without an approved management plan, the invasive species can be controlled under the WDNR's Rapid Response protocol (see definition), and the lake owners will be encouraged to form a lake association and subsequently submit a lake management plan for WNDR review and approval.
   b. Individuals holding past permits for control of *invasive* aquatic plants and/or "mixed stands" of native and invasive species will be allowed to treat via individual permit until January 1, 2009 if "impairment of navigation" and/or "nuisance conditions" is adequately documented, unless there is an approved lake management plan for the lake in question.

4. Control of invasive species or "mixed stands" of invasive and native plants will follow current best management practices approved by the Department and contain an explanation of the strategy to be used. Established stands of invasive plants will generally use a control strategy based on Spring treatment. (typically, a water temperature of less than 60 degrees Fahrenheit, or approximately May 31st, annually).

5. Manual removal (see attached definition) is allowed (Admin. Code NR 109.06).

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* *Exceptions to the Jan. 1, 2009 deadline will be considered only on a very limited basis and will be intended to address unique situations that do not fall within the intent of this approach.*

AQUATIC PLANT MANAGEMENT STRATEGY
Northern Region WDNR

DOCUMENTATION OF IMPAIRED NAVIGATION AND/OR NUISANCE CONDITIONS

Navigation channels can be of two types:

- Common use navigation channel. This is a common navigation route for the general lake user. It often is off shore and connects areas that boaters commonly would navigate to or across, and should be of public benefit.

- Individual riparian access lane. This is an access lane to shore that normally is used by an individual riparian shore owner.

Severe impairment or nuisance will generally mean vegetation grows thickly and forms mats on the water surface. Before issuance of a permit to use a regulated control method, a riparian will be asked to document the problem and show what efforts or adaptations have been made to use the site. (This is currently required in NR 107 and on the application form, but the following helps provide a specific description of what impairments exist from native plants).

Documentation of *impairment of navigation* by native plants must include:

a. Specific locations of navigation routes (preferably with GPS coordinates)
b. Specific dimensions in length, width, and depth
c. Specific times when plants cause the problem and how long the problem persists
d. Adaptations or alternatives that have been considered by the lake shore user to avoid or lessen the problem
e. The species of plant or plants creating the nuisance (documented with samples or a from a Site inspection)

Documentation of the *nuisance* must include:

a. Specific periods of time when plants cause the problem, e.g. when does the problem start and when does it go away.
b. Photos of the nuisance are encouraged to help show what uses are limited and to show the severity of the problem.
c. Examples of specific activities that would normally be done where native plants occur naturally on a site but can not occur because native plants have become a nuisance.

AQUATIC PLANT MANAGEMENT STRATEGY
Northern Region WDNR

DEFINITIONS

Manual removal:	Removal by hand or hand-held devices without the use or aid of external or auxiliary power. Manual removal cannot exceed 30 ft. in width and can only be done where the shore is being used for a dock or swim raft. The 30 ft. wide removal zone cannot be moved, relocated, or expanded with the intent to gradually increase the area of plants removed. Wild rice may not be removed under this waiver.
Native aquatic plants:	Aquatic plants that are indigenous to the waters of this state.
Invasive aquatic plants:	Non-indigenous species whose introduction causes or is likely to cause economic or environmental harm or harm to human health.
Sensitive area:	Defined under s. NR 107.05(3)(i) (sensitive areas are areas of aquatic vegetation identified by the department as offering critical or unique fish and wildlife habitat, including seasonal or lifestage requirements, or offering water quality or erosion control benefits to the body of water).
Rapid Response protocol:	This is an internal WDNR document designed to provide guidance for grants awarded under NR 198.30 (Early Detection and Rapid Response Projects). These projects are intended to control pioneer infestations of aquatic invasive species before they become established.