A

APPENDIX A

Public Participation Materials

1

Presentation Outline

- Onterra, LLC
- Why Create (update) a Management Plan?
- Elements of a Lake Management Planning Project
  - Data & Information
  - Planning Process

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Onterra, LLC

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

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Why create a lake management plan?

- To create a better understanding of the 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.

A goal without a plan is just a wish!

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Elements of an Effective Lake Management Planning Project

Data and Information Gathering

Environmental & Sociological

Planning Process

Brings it all together

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Data and information gathering

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

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Water Quality Analysis

- General water chemistry (current & historical)
  - No CLMN Data Collected
- Nutrient analysis
  - Lake trophic state (Eutrophication)
  - Limiting plant nutrient
- Supporting data for watershed modeling

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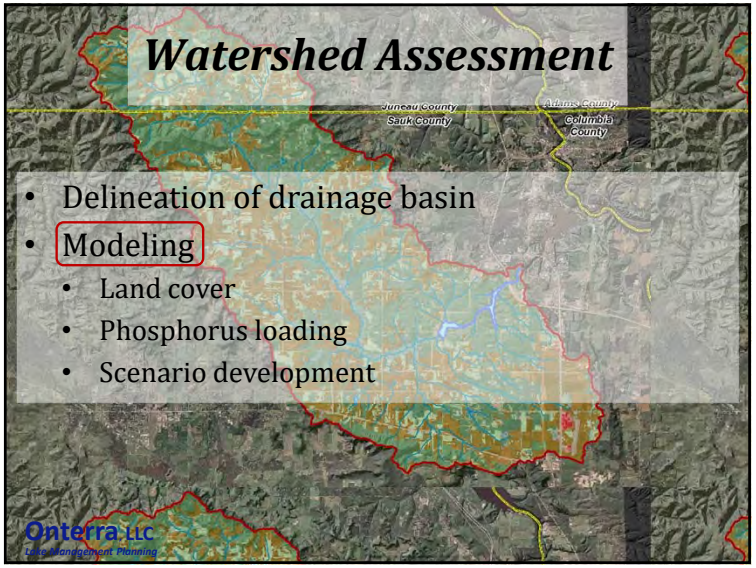
Watershed Assessment



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

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Aquatic Plant Surveys

- Concerned with both native and non-native plants
- Multiple surveys used in assessment
  - Point-intercept survey
  - Aquatic plant community mapping

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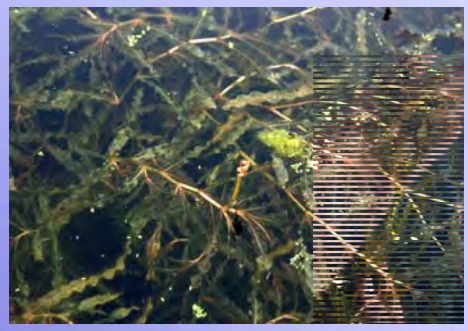
Non-native Aquatic Plants

Curly-leaf Pondweed



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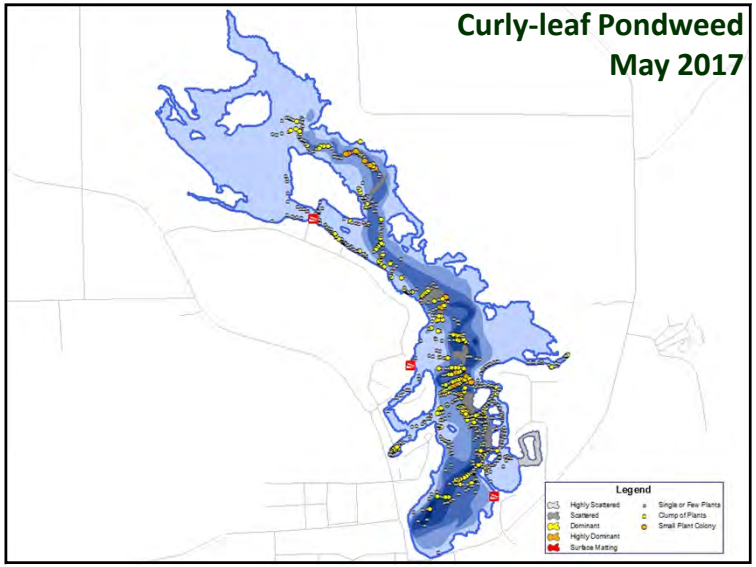
Curly-leaf Pondweed May 2017



11

Non-native Aquatic Plants

Eurasian Water Milfoil

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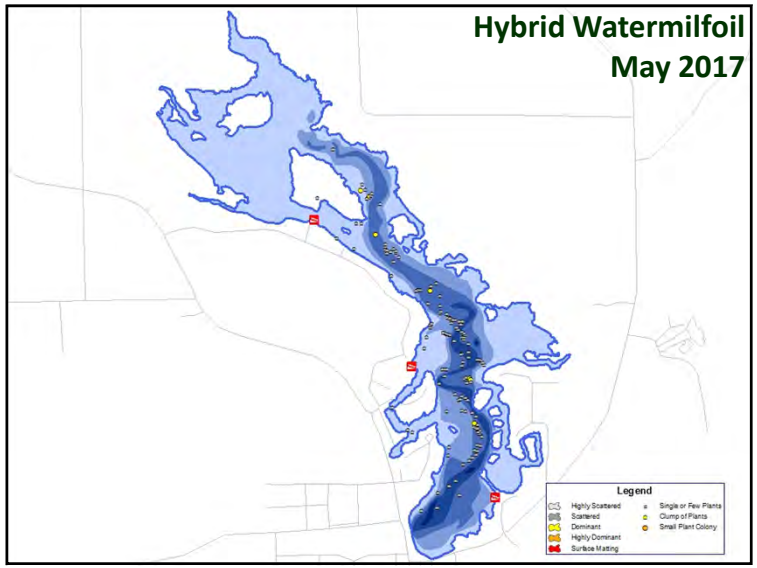

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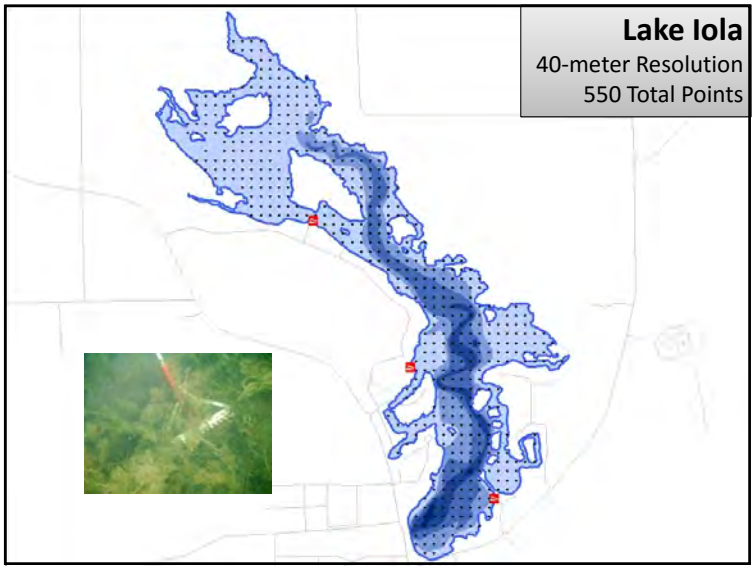

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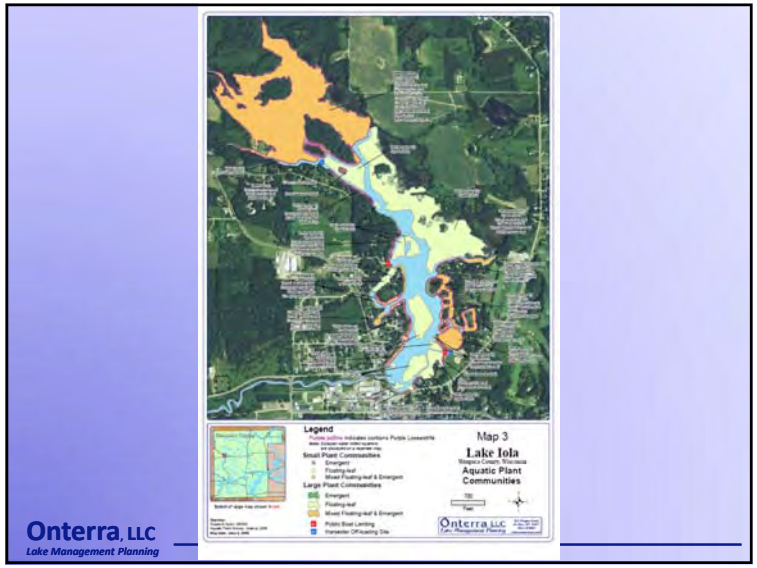

15

Fisheries Data Integration

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

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Shoreland Assessment

- Shoreland area is important for buffering runoff and provides valuable habitat for aquatic and terrestrial wildlife.
- Assessment ranks shoreland area from shoreline back 35 feet
- Assess shoreland development and habitat
  - Coarse woody habitat

Urbanized **Natural**

Range

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Planning Process

Planning Committee Meetings

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

Implementation Plan

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The Planning Process

…it's not as easy as you may think.

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Technical **Sociological**

Study Results
Experience in Ecology & Planning
Lake-Specific Conclusions
Management Actions
Facilitators
Timeframe
Implementation Plan
Realistic Management Goals

Unfounded *Unrealistic*
Founded *Realistic*
Perceptions Beliefs Needs
IDEAL LAKE
Education & Listening

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Lake Iola District

Lake Iola

Management Planning Update Project

Planning Meeting I

December 5, 2017

Tim Hoyman&
Eddie Heath
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Lake Management Planning

Management Planning Update Project Overview

- Initiated to update management plan following 2011-2013 water level drawdown
- Reassess aquatic plant community and develop updated aquatic plant management plan
- Additional Project Components to be discussed during next meeting:
  - Water Quality
  - Watershed
  - Shoreland
  - Stakeholder Survey
  - Fisheries Data Integration

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Meeting Objectives

- Information regarding current state of Lake Iola aquatic plant community
  - Comparisons with surveys completed before (2006) and just after (2014) drawdown shed light on how community has changed
- Discussion about aquatic plant control alternatives
  - Specific to Lake Iola and its plant community
  - Alternatives not utilized in Wisconsin or that are inapplicable to Lake Iola are not discussed
- Aquatic plant management goals
  - AIS/Native
  - Short-term/Long-term
  - What restrictions are there to meeting these goals

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Whole-Lake Point-Intercept Survey 2006, 2014, 2017

Lake Iola
40-meter resolution
550 total points

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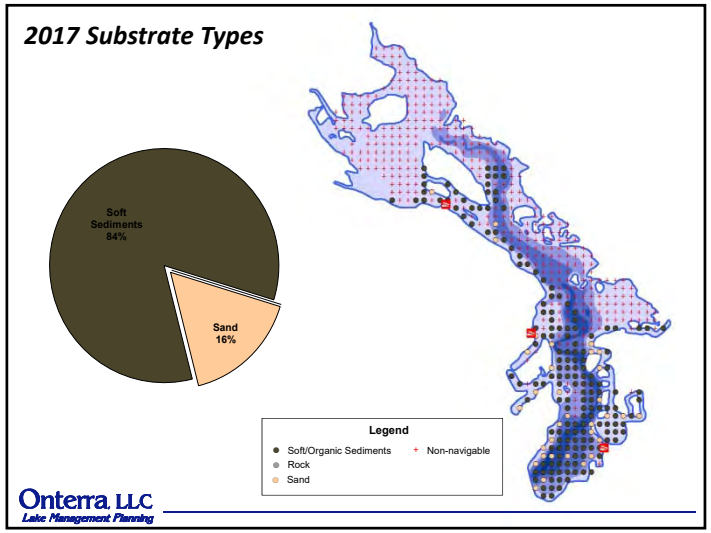
2017 Substrate Types
Soft Sediments 84%
Sand 16%
Legend
Soft/Organic Sediments
Rock
Sand
Non-navigable
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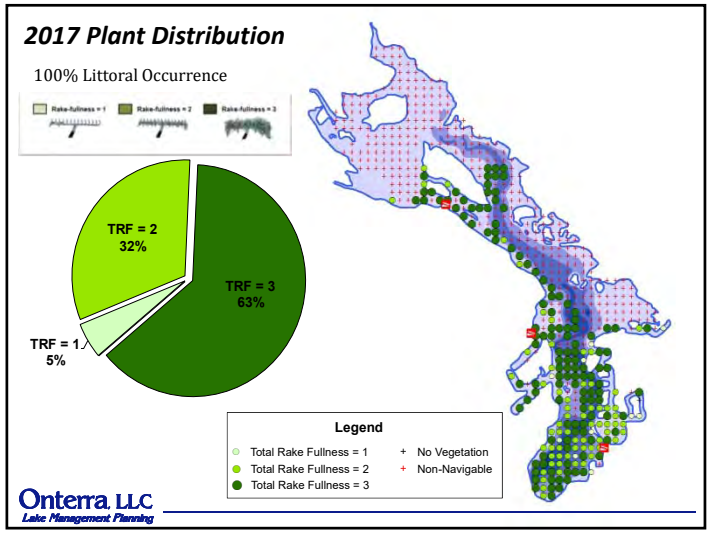
2017 Plant Distribution
100% Littoral Occurrence
Rake-fullness = 1
Rake-fullness = 2
Rake-fullness = 3
TRF = 2 32%
TRF = 3 63%
TRF = 1 5%
Legend
Total Rake Fullness = 1
Total Rake Fullness = 2
Total Rake Fullness = 3
No Vegetation
Non-Navigable
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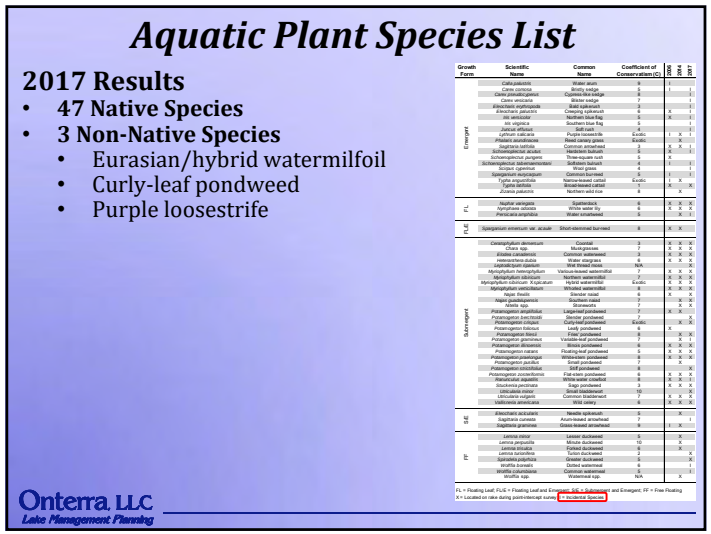
Aquatic Plant Species List
2017 Results
47 Native Species
3 Non-Native Species
Eurasian/hybrid watermilfoil
Curly-leaf pondweed
Purple loosestrife
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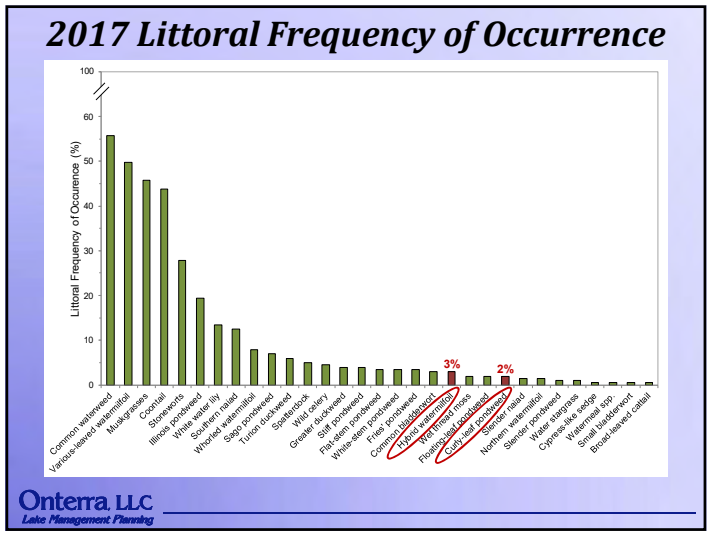
2017 Littoral Frequency of Occurrence
Littoral Frequency of Occurence (%)
100
60
50
40
30
20
10
0
3%
2%
Common waterweed
Variable-leaved watermilfoil
Muskgrasses
Coontail
Stoneworts
Illinois pondweed
White water lily
Southern naiad
Whorled watermilfoil
Sago pondweed
Turion duckweed
Spatterdock
Wild celery
Greater duckweed
Stiff pondweed
Flat-stem pondweed
White-stem pondweed
Fries pondweed
Common Mare's-tail
Hybrid watermilfoil
Purple loosestrife
Floating-leaved pondweed
Curly-leaf pondweed
Slender naiad
Northern watermilfoil
Slender pondweed
Water stargrass
Cypress-like sedge
Watermeal spp.
Small duckweed
Broad-leaved cattail
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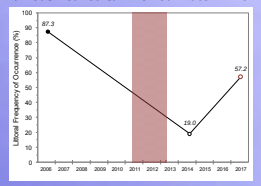
Various-leaved Watermilfoil

- Considered invasive in northeast & western US but native to WI
- Water chemistry, substrate, and clear/shallow water favor for abundant growth of VLWM
- Highly resistant to desiccation
- Herbicide needs to translocate to root crown (hard to kill)

Various-Leaved & Whorled Watermilfoil



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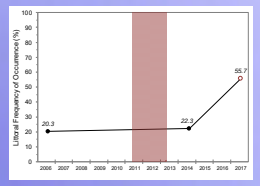
Common Waterweed

- Native to North America
- Found in wide range of lakes with varying water chemistry
- Grows best in moderately productive lakes
- Tolerant of low-light conditions
- Obtains nutrients from the water
- Easily uprooted making it prone to surface matting
- Populations may increase within endothall treatment areas

Common Waterweed



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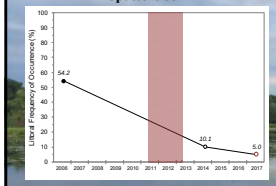
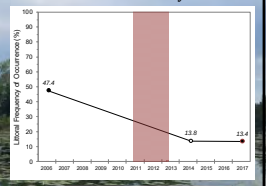
Floating-Leaf Plant Communities

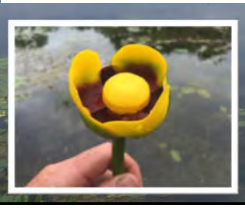
Area these plants occupy has largely stayed the same (or slightly increased), but density of plants has reduced

Spatterdock



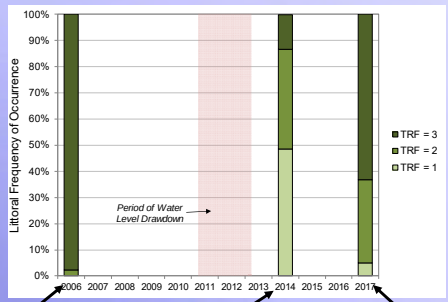
White Water Lily





2006, 2014, & 2017 Data Comparison

Occurrence of Vegetation & Total Rake Fullness Ratings



High Plant Biomass

Reduced Plant Biomass

Increased Plant Biomass

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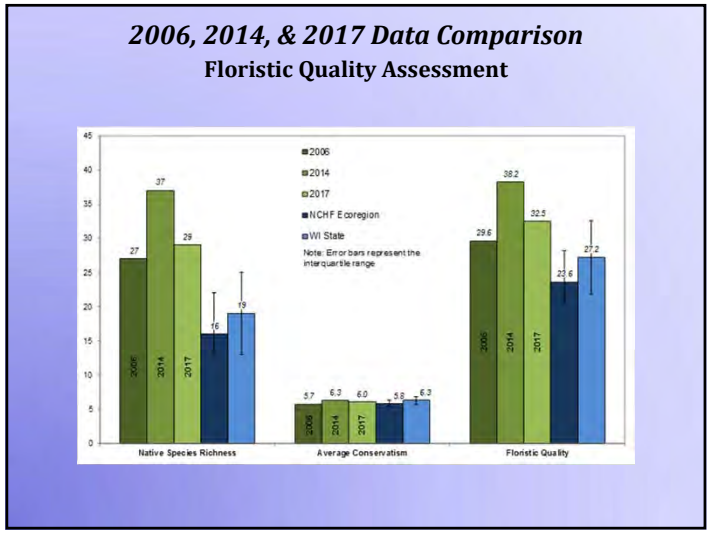
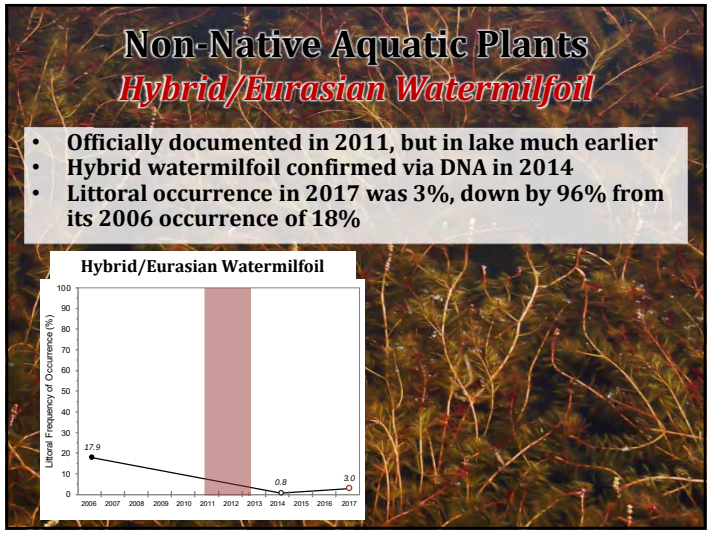
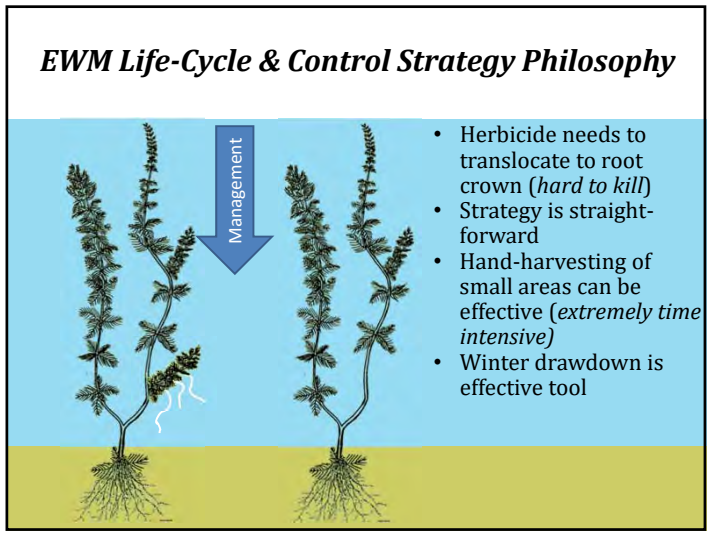
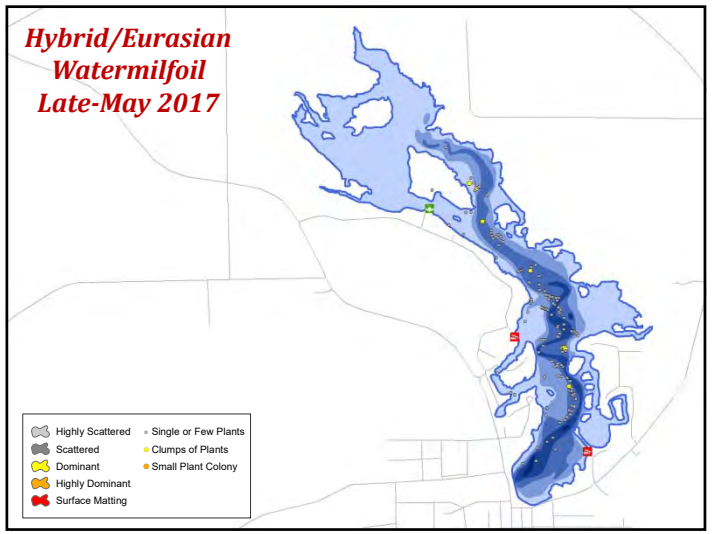
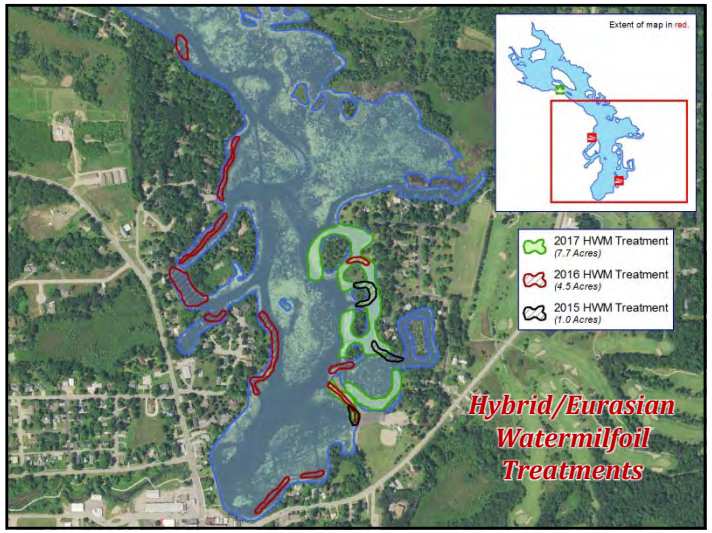
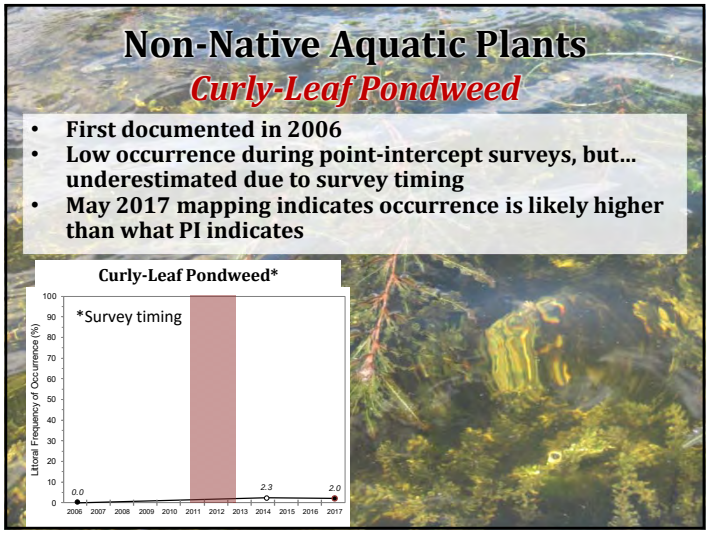

2006, 2014, & 2017 Data Comparison
Floristic Quality Assessment
2006
2014
2017
NCHF Ecoregion
WI State
Note: Error bars represent the interquartile range
Native Species Richness
Average Conservatism
Floristic Quality

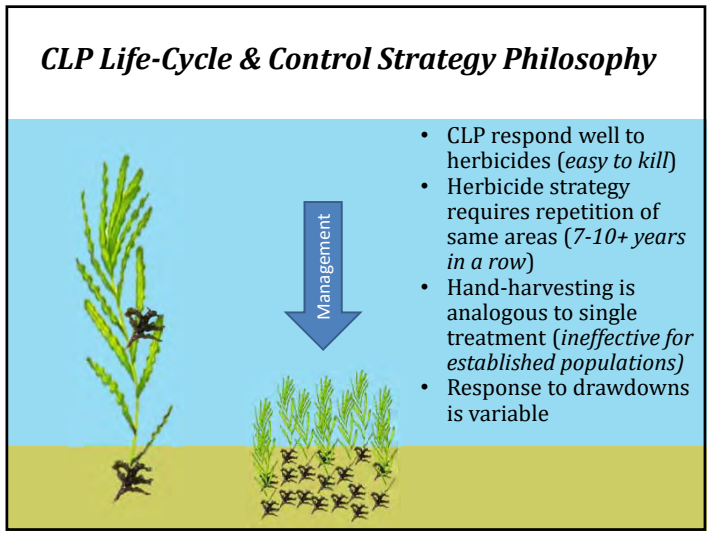

Non-Native Aquatic Plants
Hybrid/Eurasian Watermilfoil
Officially documented in 2011, but in lake much earlier
Hybrid watermilfoil confirmed via DNA in 2014
Littoral occurrence in 2017 was 3%, down by 96% from its 2006 occurrence of 18%
Hybrid/Eurasian Watermilfoil
Littoral Frequency of Occurrence (%)
17.9
0.8
3.0

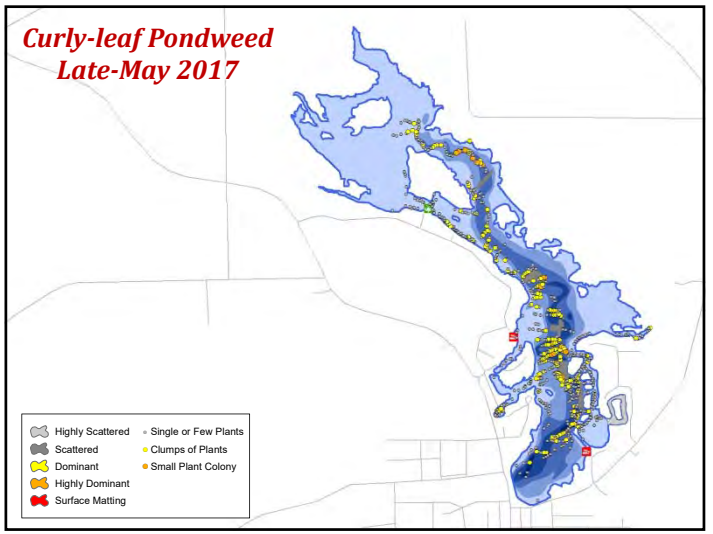

EWM Life-Cycle & Control Strategy Philosophy
Management
Herbicide needs to translocate to root crown (hard to kill)
Strategy is straight-forward
Hand-harvesting of small areas can be effective (extremely time intensive)
Winter drawdown is effective tool


Hybrid/Eurasian Watermilfoil
Late-May 2017
Highly Scattered
Scattered
Dominant
Highly Dominant
Surface Matting
Single or Few Plants
Clumps of Plants
Small Plant Colony


Extent of map in red.
2017 HWM Treatment
(7.7 Acres)
2016 HWM Treatment
(4.5 Acres)
2015 HWM Treatment
(1.0 Acres)
Hybrid/Eurasian
Watermilfoil
Treatments


Non-Native Aquatic Plants
Curly-Leaf Pondweed
First documented in 2006
Low occurrence during point-intercept surveys, but… underestimated due to survey timing
May 2017 mapping indicates occurrence is likely higher than what PI indicates
Curly-Leaf Pondweed*
*Survey timing
Littoral Frequency of Occurrence (%)
0.0
2.3
2.0
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017


CLP Life-Cycle & Control Strategy Philosophy
Management
CLP respond well to herbicides (easy to kill)
Herbicide strategy requires repetition of same areas (7-10+ years in a row)
Hand-harvesting is analogous to single treatment (ineffective for established populations)
Response to drawdowns is variable


Curly-leaf Pondweed
Late-May 2017
Highly Scattered
Scattered
Dominant
Highly Dominant
Surface Matting
Single or Few Plants
Clumps of Plants
Small Plant Colony

Aquatic Plant Community Conclusions

- Significant changes measured following drawdown
- Hybrid/Eurasian watermilfoil occurrence declined by 96%
- Changes in CLP population uncertain, but current population is small & low-density
- Overall occurrence of vegetation remained unchanged, but data indicate biomass is lower
- Quality of native aquatic plant community still high following drawdown
- Nuisance conditions in 2017 primarily due to VLWM & common waterweed
- Drawdown initially effective at controlling VLWM but has since increased
- Conditions in Lake Iola are highly favorable for VLWM

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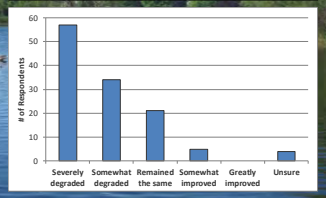
Nuisance Aquatic Plant Growth

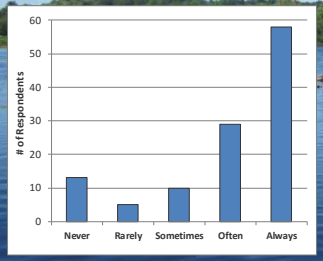
How would you describe the aesthetic appearance of the water of Lake Iola?

How has the aesthetic appearance of Lake Iola's water changed since you first visited the lake?

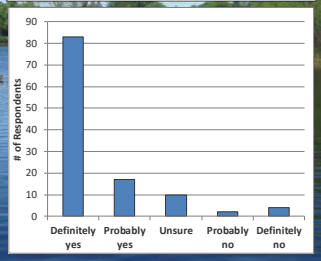


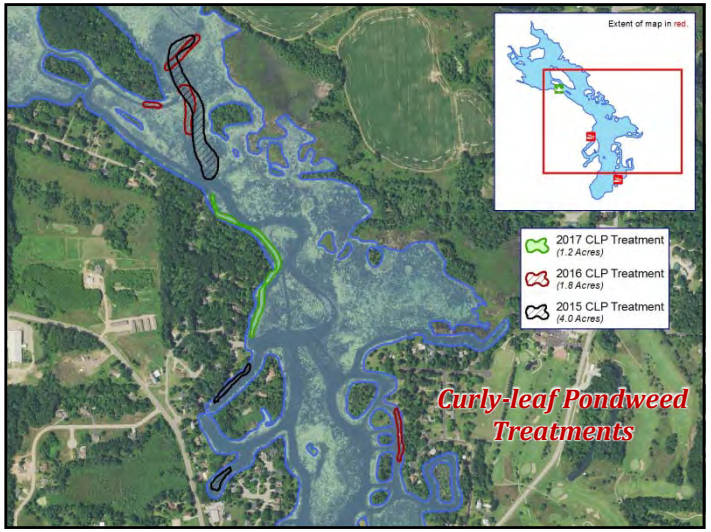
Nuisance Aquatic Plant Growth

During the open-water season, how often does aquatic plant growth, including algae, negatively impact your enjoyment of Lake Iola?



Do you believe aquatic plant control is needed on Lake Iola?

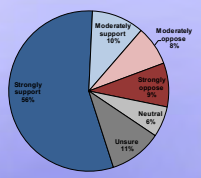




Stakeholder Survey

- What is your level of support for the responsible use of the following techniques on Lake Iola?

Herbicide



- **Can be effective, but includes risk of environmental toxicity**
- **Requires a developed strategy**
  - **Population management of AIS**
  - **Prioritized strategy for nuisance relief**

Support	66%
Not Support	17%
Unsure/Neutral	17%

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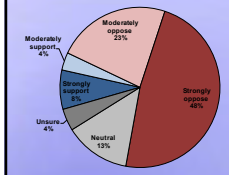
Stakeholder Survey

- What is your level of support for the responsible use of the following techniques on Lake Iola?

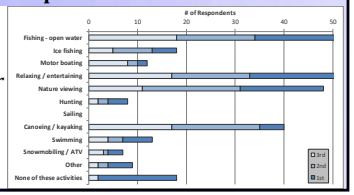
Drawdown



- **Effective control of EWM**
- **CLP response is variable**
- **VLWM response is minimal**
- **Winter drawdown may provide similar plant impacts as previous drawdown**
- **Short-term loss of recreation**
- **Fisheries impacts**

Support	12%
Not Support	71%
Unsure/Neutral	17%

Reasons why you own your property



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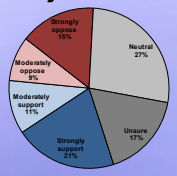
Stakeholder Survey

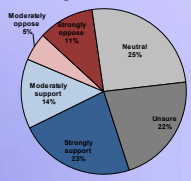
- What is your level of support for the responsible use of the following techniques on Lake Iola?

Hand-Harvesting By Divers



Support	32%
Not Support	24%
Unsure/Neutral	44%

w/ DASH



Support	37%
Not Support	16%
Unsure/Neutral	47%

- **Proven strategy for early AIS infestations, but not applicable for established populations**
- **May alleviate nuisance conditions around docks**

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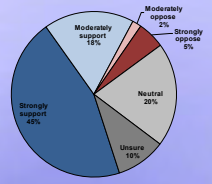
Stakeholder Survey

- What is your level of support for the responsible use of the following techniques on Lake Iola?

Dredging



- **Effective, immediate results**
- **Permitting is very difficult**
- **Favors pioneer plants**
- **EXPENSIVE!**

Support	63%
Not Support	7%
Unsure/Neutral	30%

Dredging Cost Example

Conservative Estimate: $15/cu.yd.

1 acre → 3 feet deeper = 4,840 cu.yd.

X $15/cu.yd.

$72,600

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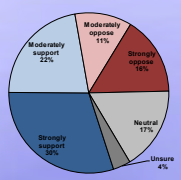
Stakeholder Survey

- What is your level of support for the responsible use of the following techniques on Lake Iola?

Mech Harvest



- **Effective nuisance relief, but requires continuous effort**
- **Can be expensive**
- **May cause increased fragments washing on riparian shorelines**

Support	52%
Not Support	27%
Unsure/Neutral	21%

2017 Harvesting
June 14-25: 80hrs = 63 loads
Aug 15-28: 80hrs = 42 loads

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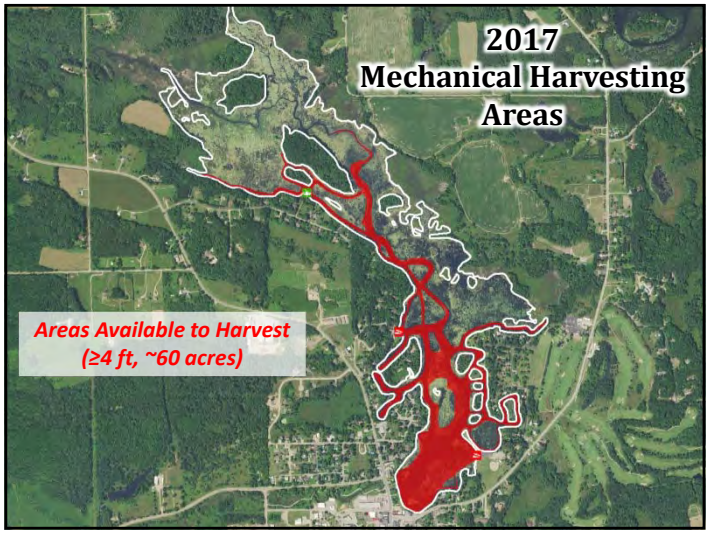

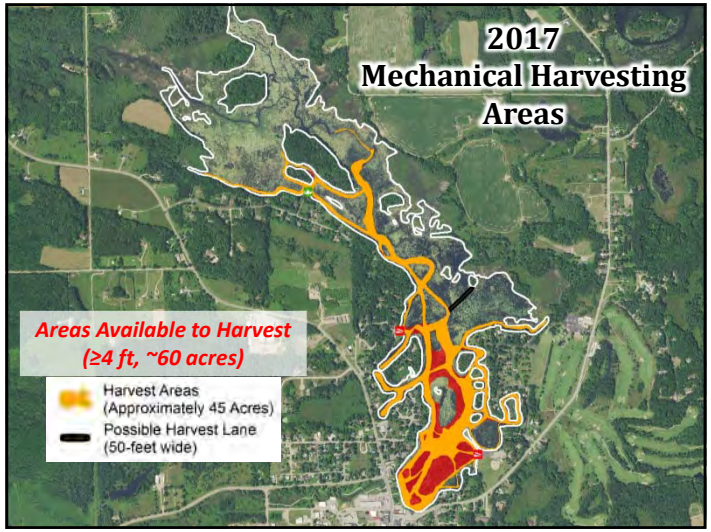

1

Meeting Objectives

- Results and Conclusions:
  - Water quality
  - Watershed
  - Shoreland/Coarse Woody Habitat Assessment
- Review of Aquatic Plant Data
  - Conclusions & Highlights from December 2017 Meeting
- Aquatic Plant Information Update
  - 2017 and 2018 Early-season AIS Surveys
- Schedule and Discuss Planning Meeting III
  - Creating the Implementation Plan Framework

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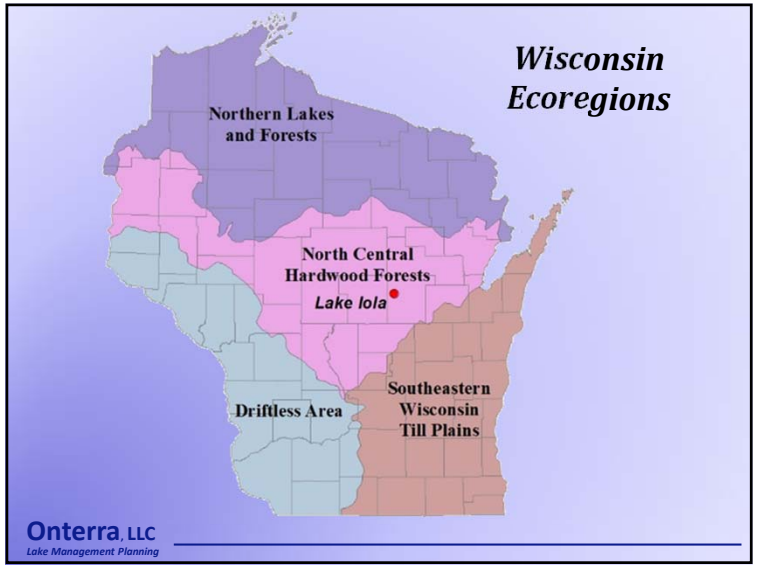
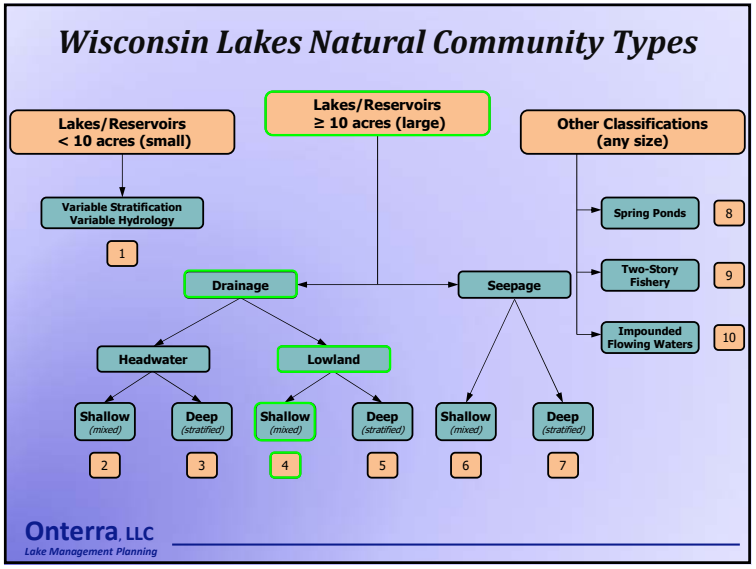


3



4

Introduction to Lake Water Quality

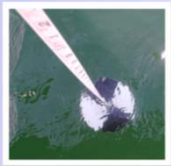
Phosphorus
Naturally occurring & essential for all life
Regulates phytoplankton biomass in **most** WI lakes
Most often 'limiting plant nutrient' (shortest supply)
Human activity often increases P delivery to lakes

14:1 Transitional

Chlorophyll-*a*
Pigment used in photosynthesis
Used as surrogate for phytoplankton biomass

Secchi Disk Transparency
Measure of water clarity
Measured using a Secchi disk

All hit bottom so no data included



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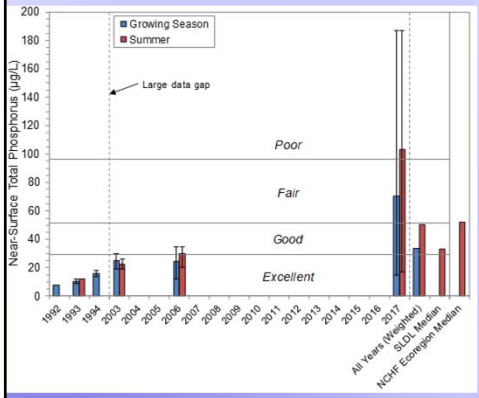
Total Phosphorus Long-Term Trends



2017 Data not Representative
June 106 µg/L, July 187 µg/L
Rainfall prior to sampling
All years average would be excellent if not for 2017 data
Precipitation greatly impacts phosphorus levels in lake

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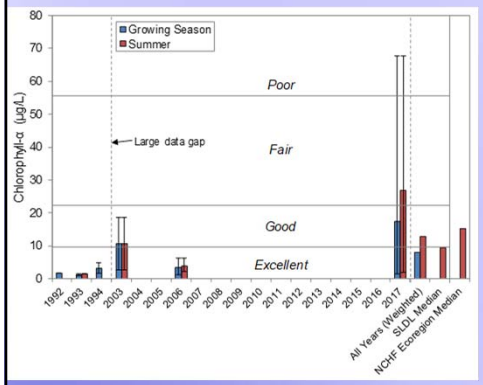
Chlorophyll-a Long-Term Trends



2017 Data not Representative
Impacted by precipitation
Without 2017 data, all years average would be excellent

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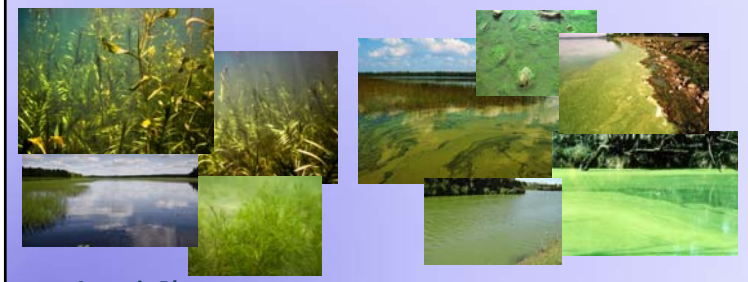
Shallow Lakes are Special

Clear State ***Turbid State***



Aquatic Plants are Incredibly Important

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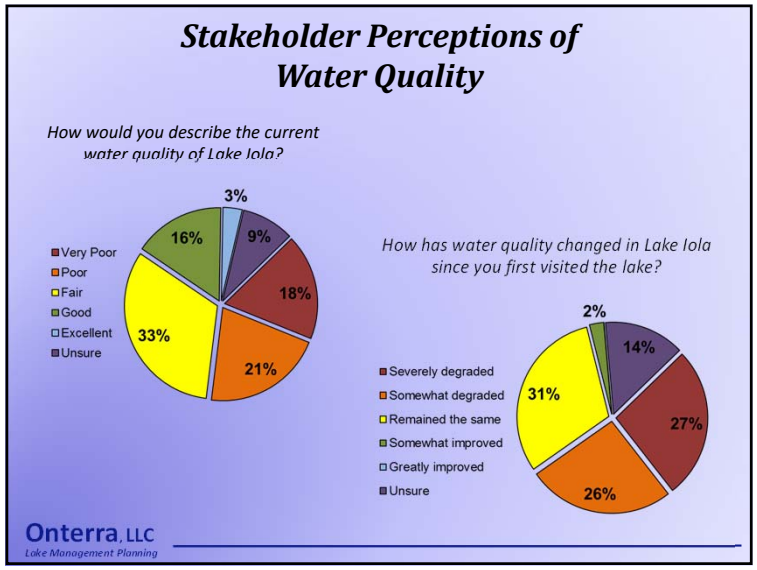
Stakeholder Perceptions of Water Quality
How would you describe the current water quality of Lake Iola?
Very Poor
Poor
Fair
Good
Excellent
Unsure
3%
9%
18%
21%
33%
16%
How has water quality changed in Lake Iola since you first visited the lake?
Severely degraded
Somewhat degraded
Remained the same
Somewhat improved
Greatly improved
Unsure
2%
14%
27%
26%
31%
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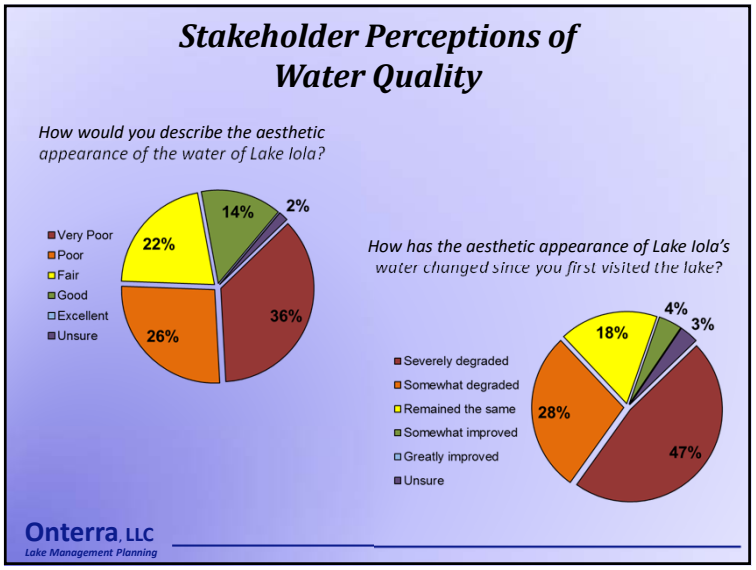
Stakeholder Perceptions of Water Quality
How would you describe the aesthetic appearance of the water of Lake Iola?
Very Poor
Poor
Fair
Good
Excellent
Unsure
2%
14%
22%
36%
26%
How has the aesthetic appearance of Lake Iola's water changed since you first visited the lake?
Severely degraded
Somewhat degraded
Remained the same
Somewhat improved
Greatly improved
Unsure
4%
3%
18%
28%
47%
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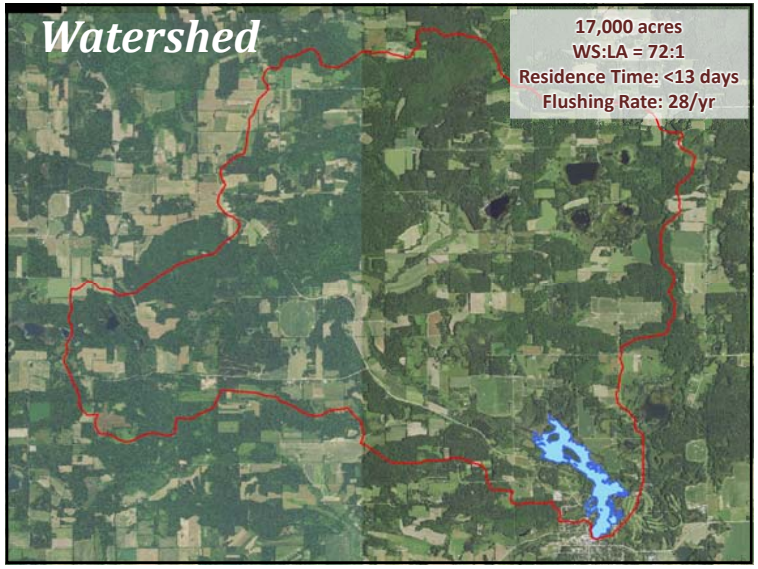
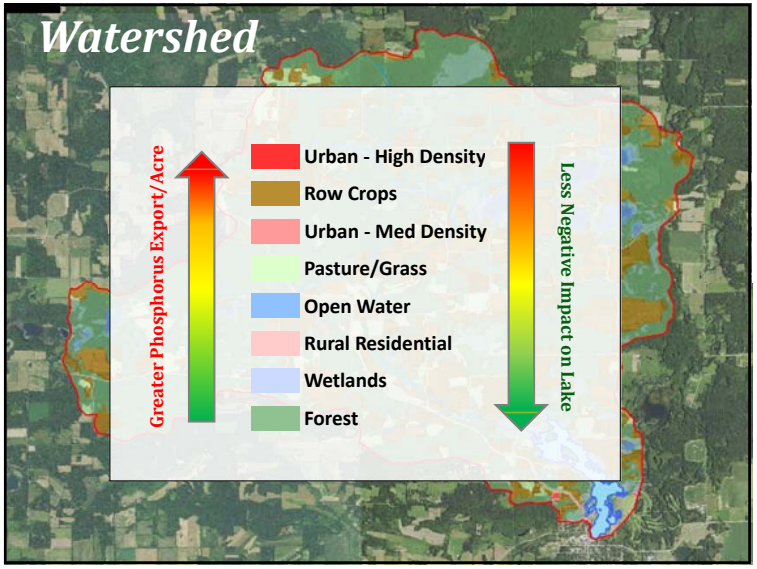
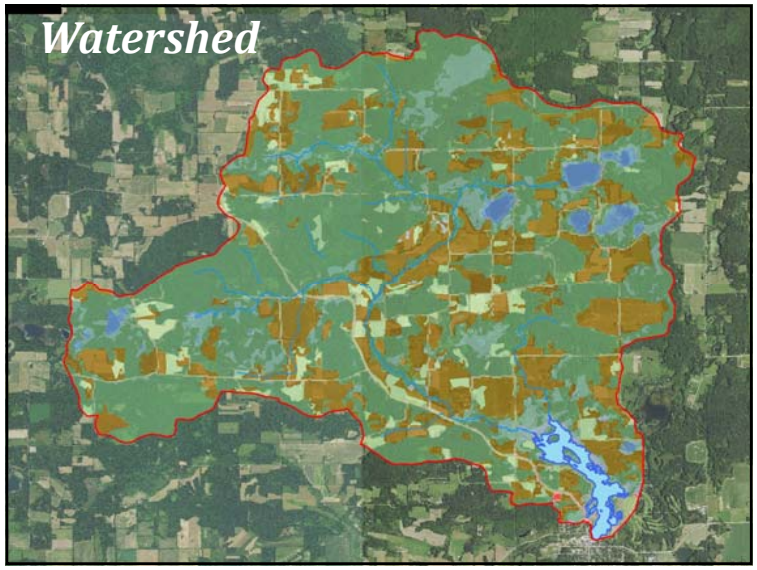

Watershed
17,000 acres
WS:LA = 72:1
Residence Time: <13 days
Flushing Rate: 28/yr

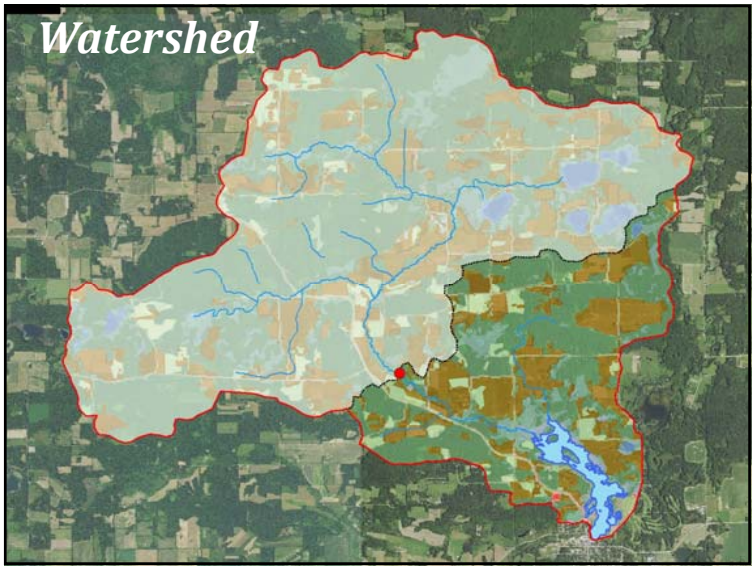
11


Watershed
Greater Phosphorus Export/Acre
Urban - High Density
Row Crops
Urban - Med Density
Pasture/Grass
Open Water
Rural Residential
Wetlands
Forest
Less Negative Impact on Lake

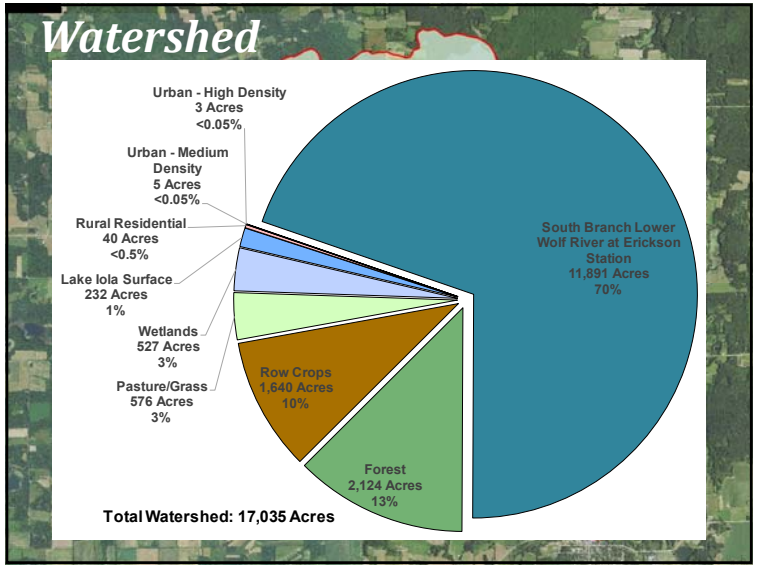
12


Watershed

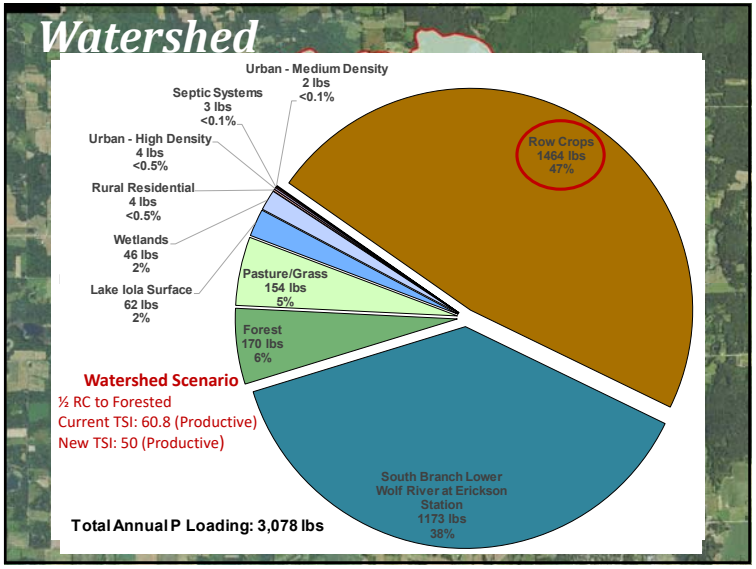
13


Watershed

14


Watershed
Urban - High Density
3 Acres
<0.05%
Urban - Medium Density
5 Acres
<0.05%
Rural Residential
40 Acres
<0.5%
Lake Iola Surface
232 Acres
1%
Wetlands
527 Acres
3%
Pasture/Grass
576 Acres
3%
Row Crops
1,640 Acres
10%
Forest
2,124 Acres
13%
South Branch Lower Wolf River at Erickson Station
11,891 Acres
70%
Total Watershed: 17,035 Acres

15


Watershed
Urban - Medium Density
2 lbs
<0.1%
Septic Systems
3 lbs
<0.1%
Urban - High Density
4 lbs
<0.5%
Rural Residential
4 lbs
<0.5%
Wetlands
46 lbs
2%
Lake Iola Surface
62 lbs
2%
Row Crops
1464 lbs
47%
Pasture/Grass
154 lbs
5%
Forest
170 lbs
6%
Watershed Scenario
½ RC to Forested
Current TSI: 60.8 (Productive)
New TSI: 50 (Productive)
South Branch Lower Wolf River at Erickson Station
1173 lbs
38%
Total Annual P Loading: 3,078 lbs

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Shoreland Assessment

- Shoreland area is important for buffering runoff and provides valuable habitat for aquatic and terrestrial wildlife.
- EPA National Lakes Assessment results indicate shoreland development has greatest negative impact to health of our nation's lakes.
- 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

Greater Need for Restoration

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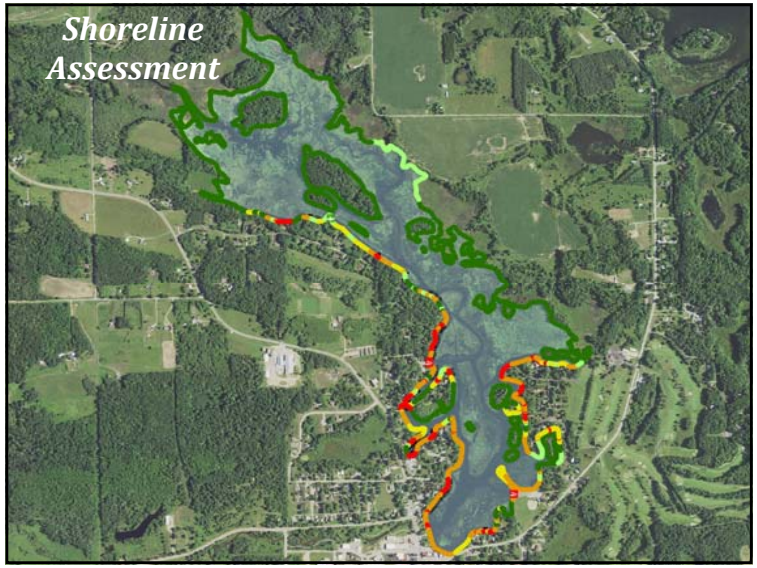
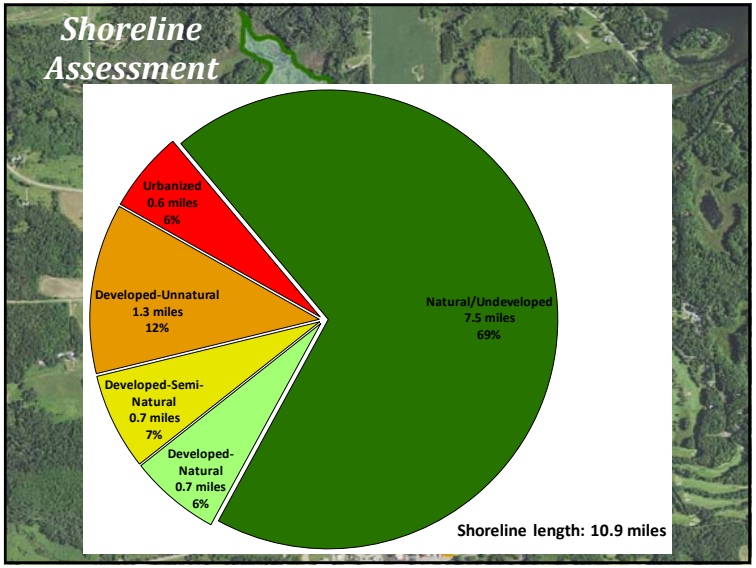
Shoreline Assessment



19

Shoreline Assessment



20

Coarse Woody Habitat

- Provides shoreland erosion control and prevents suspension of sediments.
- Preferred habitat for a variety of aquatic life.
  - Periphyton growth fed upon by insects.
  - Refuge, foraging and spawning habitat for fish.
  - Complexity of CWH important.
- Changing of logging and shoreland development practices = reduced CWH in Wisconsin lakes.
- Survey aimed at quantifying CWH in system.

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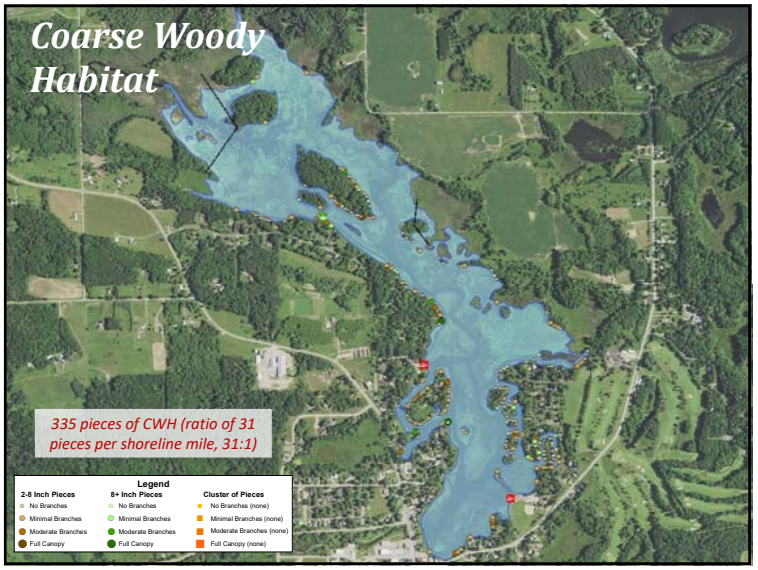

22

Water Quality & Watershed Conclusions

- Water quality in Lake Iola is a direct reflection of water quality in its primary tributary
  - Precipitation amounts affect water quality greatly
  - High flushing rate minimizes symptoms of occasional high phosphorus loads coming from watershed
- Abundant aquatic plant community in Lake Iola protects water quality
  - Lake Iola is in a ***Clear State*** as opposed to a ***Turbid State***
- Parts of the Lake Iola shoreline are highly developed, but the northern portion of the lake is mostly natural, so there is some balance
- While coarse woody habitat exists in the lake, increasing abundance, especially in the southern portion of the lake, may lead to improvements in fishery

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Aquatic Plant Community Conclusions

- Significant changes measured following drawdown
- Hybrid/Eurasian watermilfoil occurrence declined by 96%
- Changes in CLP population uncertain, but current population is small & low-density
- Overall occurrence of vegetation remained unchanged, but data indicate biomass is lower
- Quality of native aquatic plant community still high following drawdown
- Nuisance conditions in 2017 primarily due to VLWM & common waterweed
- Drawdown initially effective at controlling VLWM but has since increased
- Conditions in Lake Iola are highly favorable for VLWM

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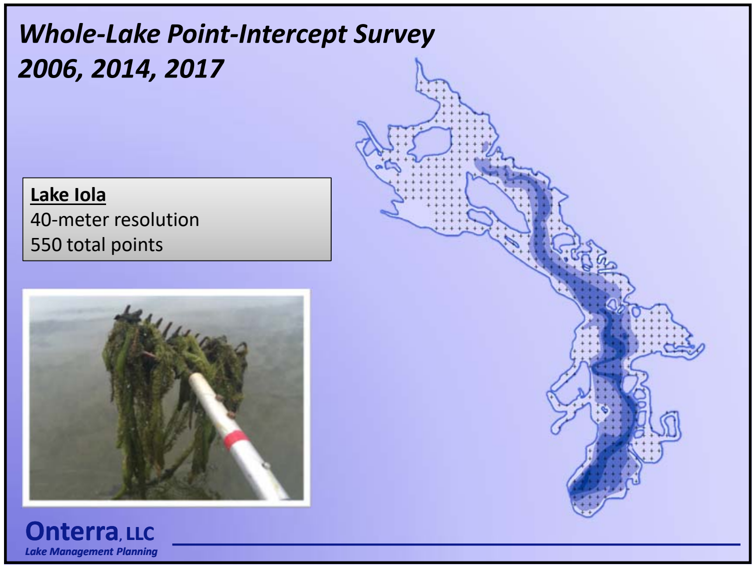
Whole-Lake Point-Intercept Survey
2006, 2014, 2017
Lake Iola
40-meter resolution
550 total points
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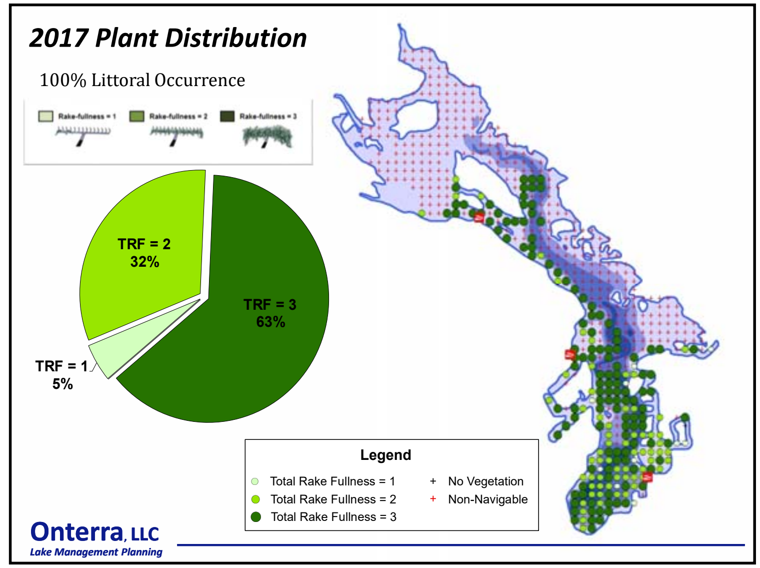
2017 Plant Distribution
100% Littoral Occurrence
TRF = 2
32%
TRF = 3
63%
TRF = 1
5%
Legend
Total Rake Fullness = 1
Total Rake Fullness = 2
Total Rake Fullness = 3
No Vegetation
Non-Navigable
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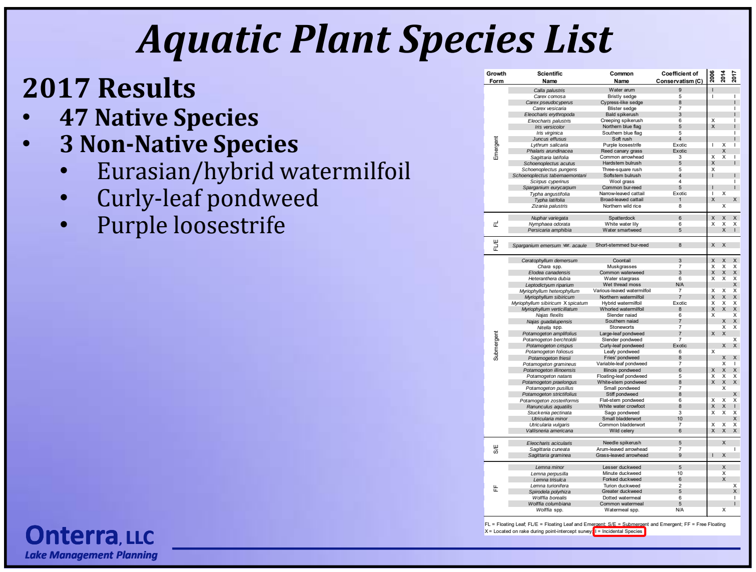
Aquatic Plant Species List
2017 Results
• 47 Native Species
• 3 Non-Native Species
• Eurasian/hybrid watermilfoil
• Curly-leaf pondweed
• Purple loosestrife
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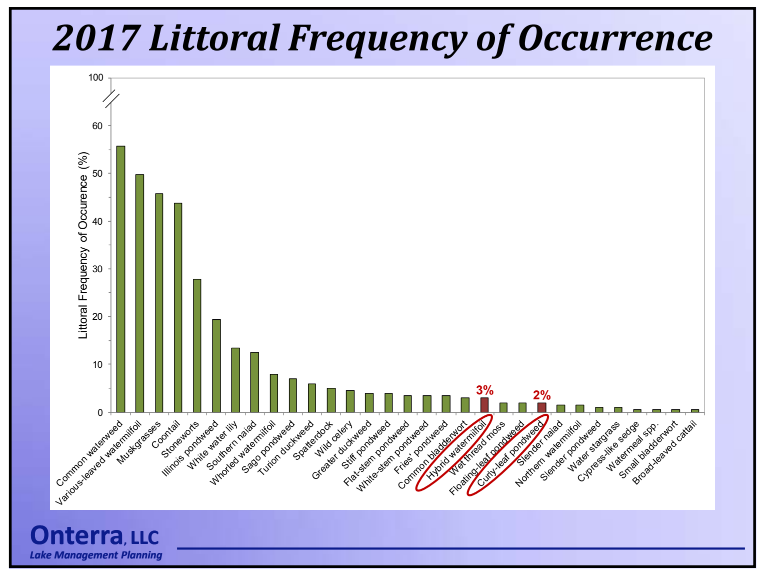
2017 Littoral Frequency of Occurrence
Littoral Frequency of Occurence (%)
100
60
50
40
30
20
10
0
3%
2%
Common waterweed
Various-leaved watermilfoil
Muskgrasses
Coontail
Stoneworts
Illinois pondweed
White water lily
Southern naiad
Whorled watermilfoil
Sago pondweed
Turion duckweed
Spatterdock
Wild celery
Greater duckweed
Stiff pondweed
Flat-stem pondweed
White-stem pondweed
Fries' pondweed
Common bladderwort
Hybrid watermilfoil
Wet thread moss
Floating-leaf pondweed
Curly-leaf pondweed
Slender naiad
Northern watermilfoil
Slender pondweed
Water stargrass
Cypress-like sedge
Watermeal spp.
Small bladderwort
Broad-leaved cattail
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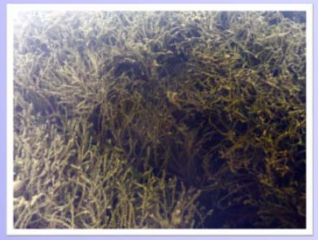
2017 Nuisance Conditions

- Primarily due to two native species:

Various-leaved watermilfoil
(*Myriophyllum heterophyllum*)

Common waterweed
(*Elodea canadensis*)



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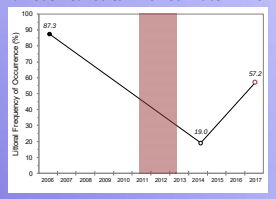
Various-leaved Watermilfoil

- **Considered invasive in northeast & western US but native to WI**
- **Water chemistry, substrate, and clear/shallow water favor for abundant growth of VLWM**
- **Highly resistant to desiccation**
- **Herbicide needs to translocate to root crown (hard to kill)**

Various-Leaved & Whorled Watermilfoil



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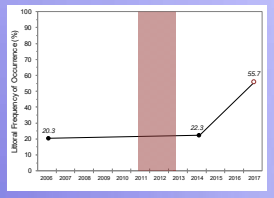
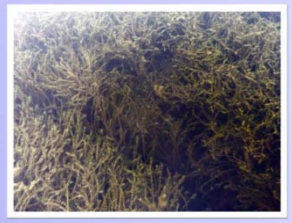
Common Waterweed

- **Native to North America**
- **Found in wide range of lakes with varying water chemistry**
- **Grows best in moderately productive lakes**
- **Tolerant of low-light conditions**
- **Obtains nutrients from the water**
- **Easily uprooted making it prone to surface matting**
- **Populations may increase within endothall treatment areas**

Common Waterweed





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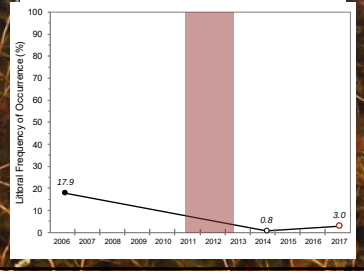
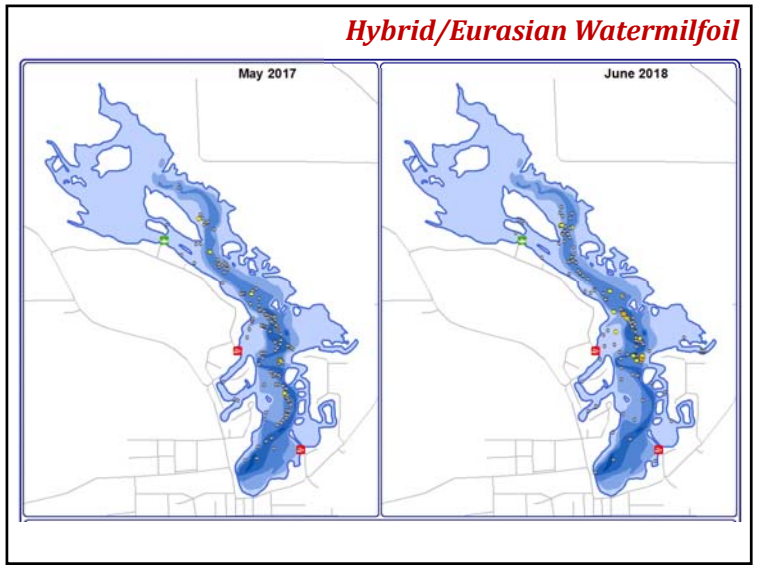
Non-Native Aquatic Plants
Hybrid/Eurasian Watermilfoil

- **Officially documented in 2011, but in lake much earlier**
- **Hybrid watermilfoil confirmed via DNA in 2014**
- **Littoral occurrence in 2017 was 3%, down by 96% from its 2006 occurrence of 18%**

Hybrid/Eurasian Watermilfoil



36


Hybrid/Eurasian Watermilfoil
May 2017
June 2018

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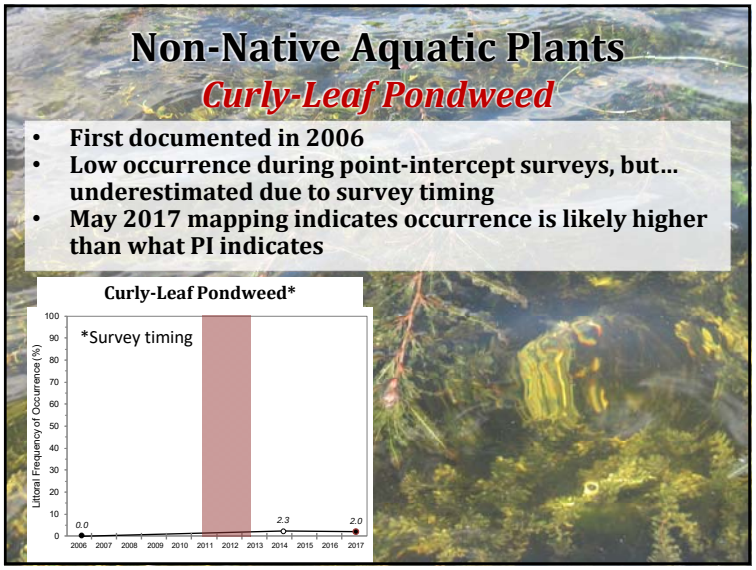
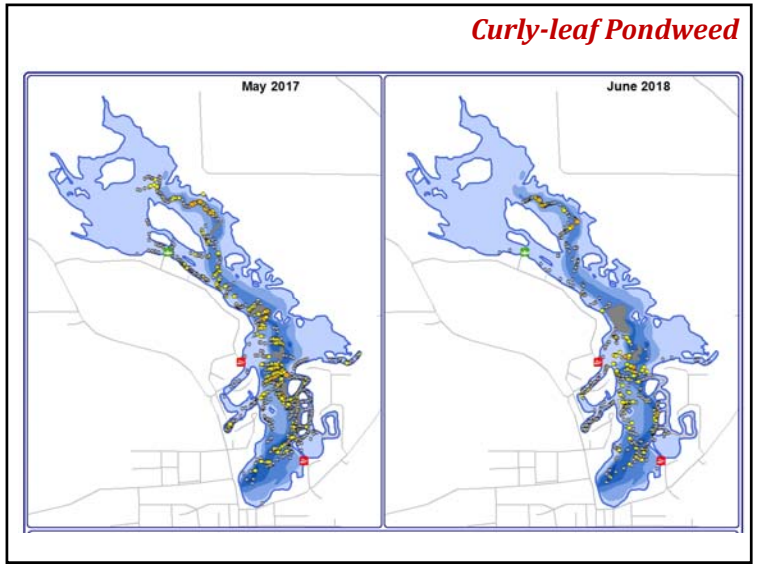

Non-Native Aquatic Plants
Curly-Leaf Pondweed
First documented in 2006
Low occurrence during point-intercept surveys, but… underestimated due to survey timing
May 2017 mapping indicates occurrence is likely higher than what PI indicates
Curly-Leaf Pondweed*
*Survey timing
Littoral Frequency of Occurrence (%)
0.0
2.3
2.0
2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

40


Curly-leaf Pondweed
May 2017
June 2018

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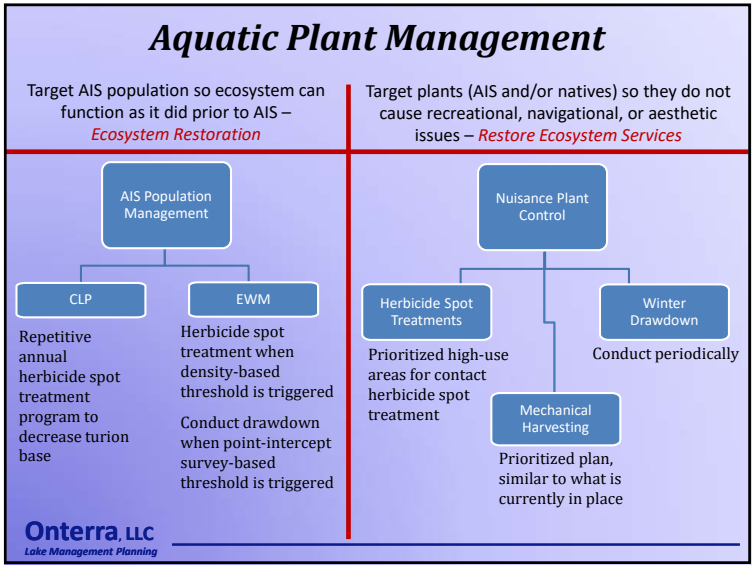
Aquatic Plant Management
Target AIS population so ecosystem can function as it did prior to AIS – Ecosystem Restoration
Target plants (AIS and/or natives) so they do not cause recreational, navigational, or aesthetic issues – Restore Ecosystem Services
AIS Population Management
CLP
EWM
Repetitive annual herbicide spot treatment program to decrease turion base
Herbicide spot treatment when density-based threshold is triggered
Conduct drawdown when point-intercept survey-based threshold is triggered
Nuisance Plant Control
Herbicide Spot Treatments
Winter Drawdown
Prioritized high-use areas for contact herbicide spot treatment
Conduct periodically
Mechanical Harvesting
Prioritized plan, similar to what is currently in place
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Meeting Objective

Planning Committee Meetings

Study Results
Conclusions & Initial Recommendations

Planning Mtg I & II

Management Goals
Management Actions
- Timeframe
- Facilitator(s)

Planning Meeting III

Implementation Plan

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Planning Meeting III

Primary Objective: Create implementation plan framework

Steps to Achieve Objective:

1. Discuss challenges facing lake and lake group
2. Convert challenges to management goals
3. Create management actions to meet management goals
4. Determine timeframes and facilitators to carry out actions

Assignment for Planning Meeting III

1. Create list of challenges facing lake and lake group
2. Review stakeholder survey results (will be sent soon)
3. Send potential report section edits and questions to Tim

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Thank You

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1

Meeting Objectives

- Study Conclusions:
  - Water Quality & Watershed
  - Aquatic Plants
- Proposed Harvesting Plan Changes
- Development of Implementation Plan Framework

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Planning Meeting III

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3

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Aquatic Plant Community Conclusions

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- Overall occurrence of vegetation remained unchanged, but data indicate biomass is lower
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- Drawdown initially effective at controlling VLWM but has since increased
- Conditions in Lake Iola are highly favorable for VLWM

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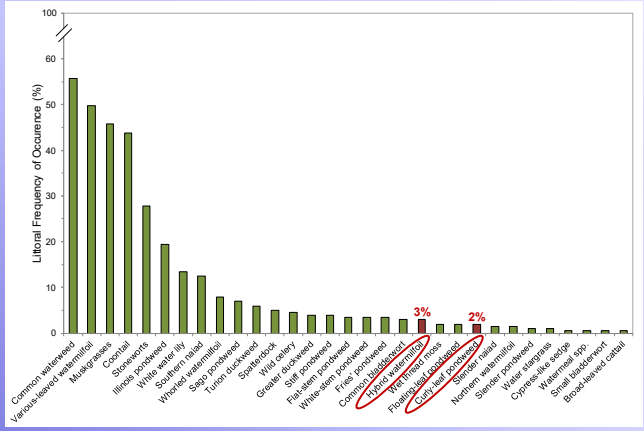
2017 Littoral Frequency of Occurrence



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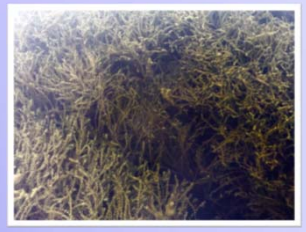
2017-18 Nuisance Conditions

- Primarily due to two native species:

Various-leaved watermilfoil
(*Myriophyllum heterophyllum*)

Common waterweed
(*Elodea canadensis*)



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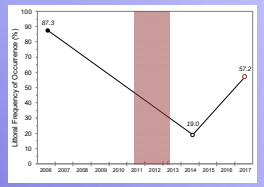
Various-leaved Watermilfoil

- **Considered invasive in northeast & western US but native to WI**
- **Water chemistry, substrate, and clear/shallow water favor for abundant growth of VLWM**
- **Highly resistant to desiccation**
- **Herbicide needs to translocate to root crown (hard to kill)**

Various-Leaved & Whorled Watermilfoil



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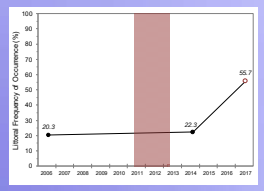
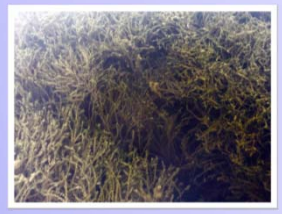
Common Waterweed

- Native to North America
- Found in wide range of lakes with varying water chemistry
- Grows best in moderately productive lakes
- Tolerant of low-light conditions
- Obtains nutrients from the water
- Easily uprooted making it prone to surface matting
- Populations may increase within endothall treatment areas

Common Waterweed





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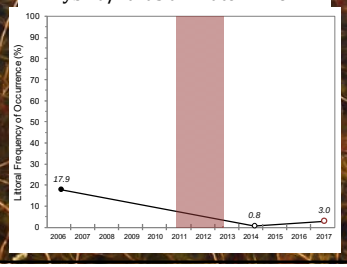
Non-Native Aquatic Plants
Hybrid/Eurasian Watermilfoil

- Officially documented in 2011, but in lake much earlier
- Hybrid watermilfoil confirmed via DNA in 2014
- Littoral occurrence in 2017 was 3%, down by 96% from its 2006 occurrence of 18%

Hybrid/Eurasian Watermilfoil



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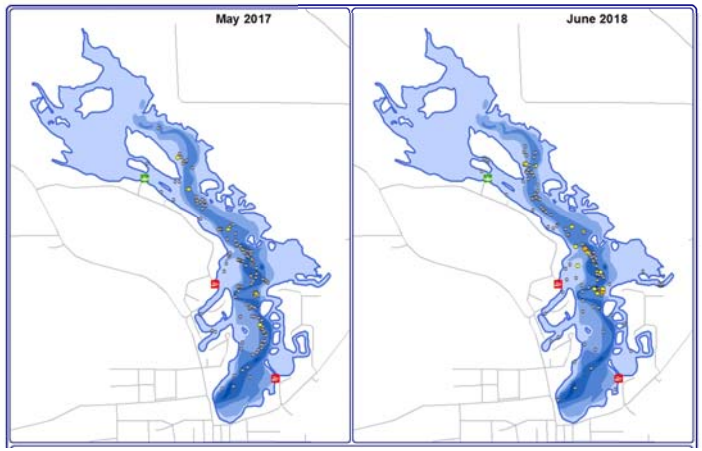
Hybrid/Eurasian Watermilfoil

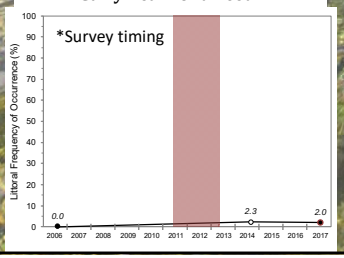


16

Non-Native Aquatic Plants
Curly-Leaf Pondweed

- First documented in 2006
- Low occurrence during point-intercept surveys, but… underestimated due to survey timing
- May 2017 mapping indicates occurrence is likely higher than what PI indicates

Curly-Leaf Pondweed*



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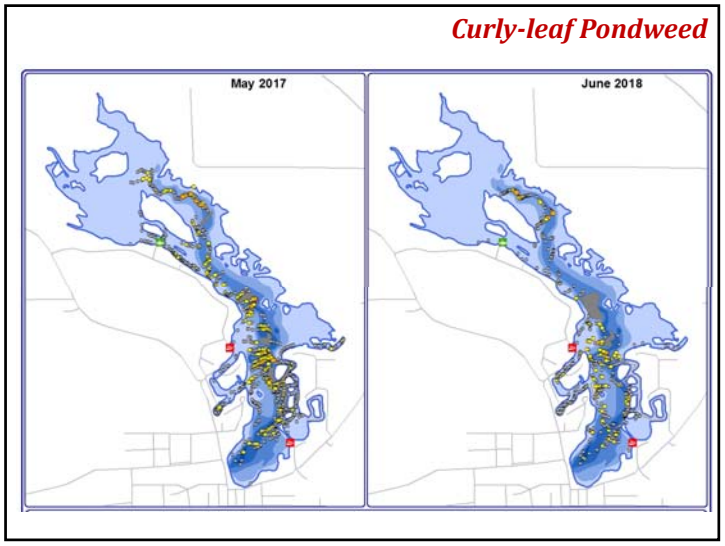
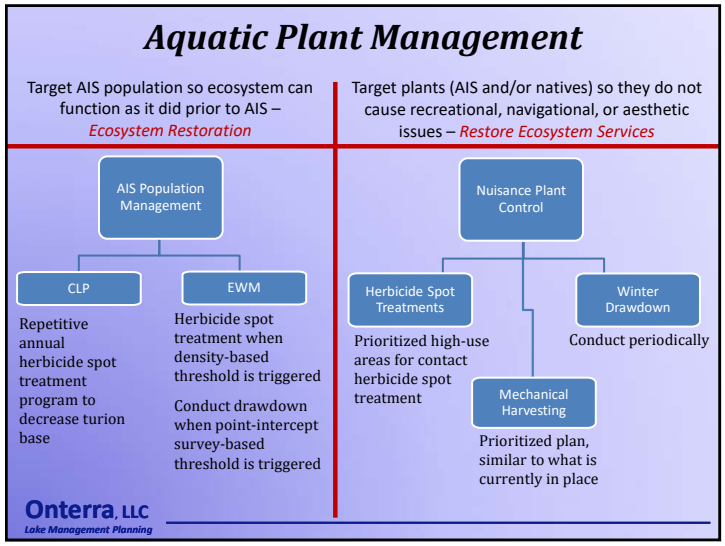

Curly-leaf Pondweed
May 2017
June 2018

18


Aquatic Plant Management
Target AIS population so ecosystem can function as it did prior to AIS – Ecosystem Restoration
Target plants (AIS and/or natives) so they do not cause recreational, navigational, or aesthetic issues – Restore Ecosystem Services
AIS Population Management
CLP
EWM
Repetitive annual herbicide spot treatment program to decrease turion base
Herbicide spot treatment when density-based threshold is triggered
Conduct drawdown when point-intercept survey-based threshold is triggered
Nuisance Plant Control
Herbicide Spot Treatments
Winter Drawdown
Prioritized high-use areas for contact herbicide spot treatment
Conduct periodically
Mechanical Harvesting
Prioritized plan, similar to what is currently in place
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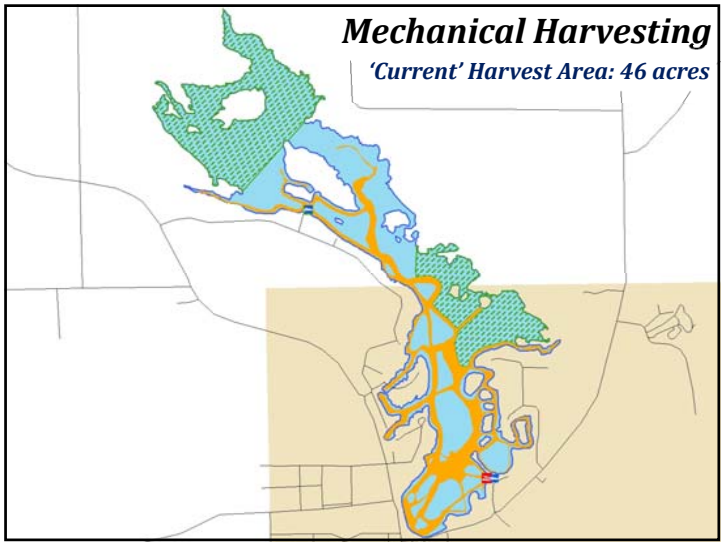
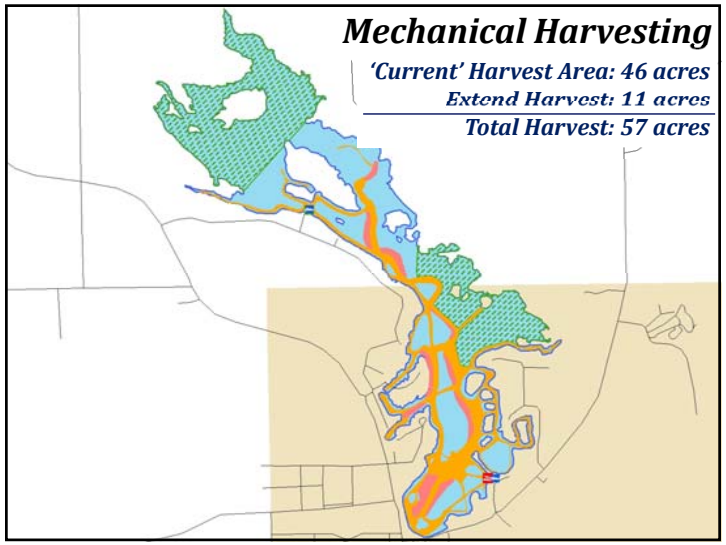
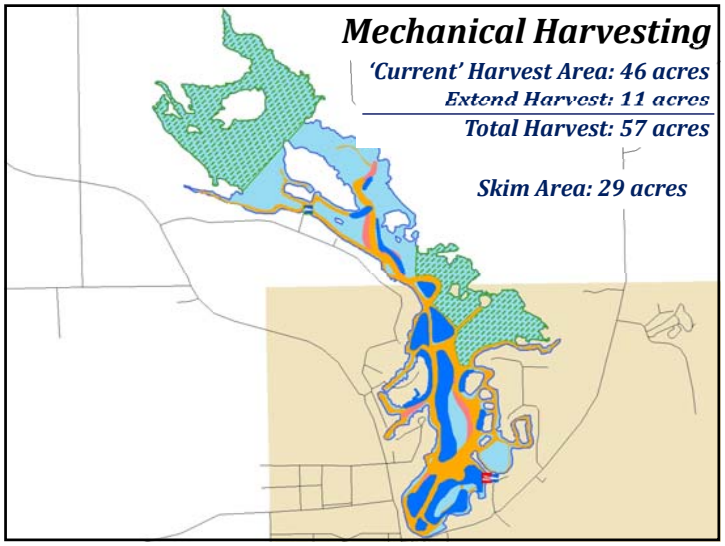

Mechanical Harvesting
'Current' Harvest Area: 46 acres

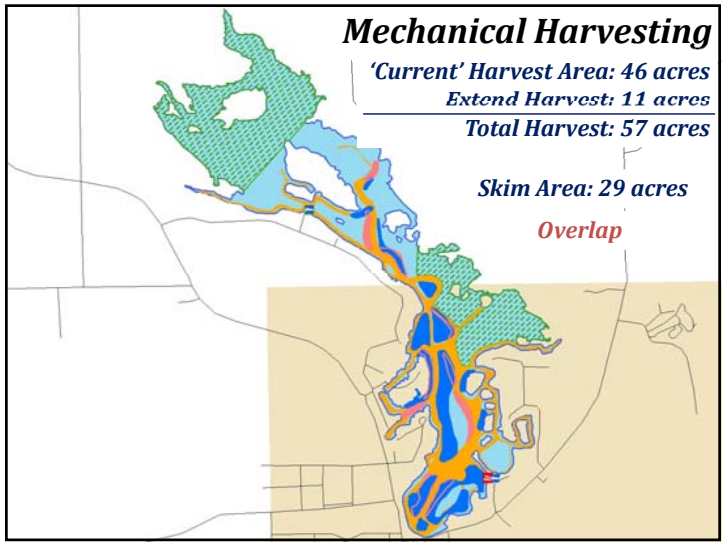
20


Mechanical Harvesting
'Current' Harvest Area: 46 acres
Extend Harvest: 11 acres
Total Harvest: 57 acres

21


Mechanical Harvesting
'Current' Harvest Area: 46 acres
Extend Harvest: 11 acres
Total Harvest: 57 acres
Skim Area: 29 acres

22


Mechanical Harvesting
'Current' Harvest Area: 46 acres
Extend Harvest: 11 acres
Total Harvest: 57 acres
Skim Area: 29 acres
Overlap

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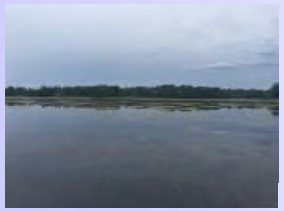
1

Meeting Objective

- Present highlights of study results from Lake Iola
  - Focusing on primarily on water quality and aquatic plants
- Answer questions (throughout)
- Outline management plan goals and actions

Presentation Outline

- Summary of Project Conclusions
- Specific Results Discussion
- Proposed Management Plan (Mixed In)



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Water Quality and Watershed Conclusions

- Water quality in Lake Iola is a direct reflection of water quality in its primary tributary
  - Precipitation amounts affect water quality greatly
  - High flushing rate minimizes symptoms of occasional high phosphorus loads coming from watershed
- Abundant aquatic plant community in Lake Iola protects water quality
- Parts of the Lake Iola shoreline are highly developed, but the northern portion of the lake is mostly natural, so there is some balance
- While coarse woody habitat exists in the lake, increasing abundance, especially in the southern portion of the lake, may lead to improvements in fishery

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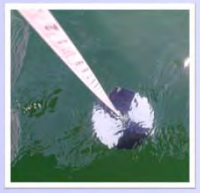
Lake Water Quality – Trophic Parameters

↑ **Phosphorus**
Naturally occurring & essential for all life
Regulates phytoplankton biomass in **most** WI lakes
Most often 'limiting plant nutrient' (shortest supply)
Human activity often increases P delivery to lakes

↑ **Chlorophyll-*a***
Pigment used in photosynthesis
Used as surrogate for phytoplankton biomass

↓ **Secchi Disk Transparency**
Measure of water clarity
Measured using a Secchi disk



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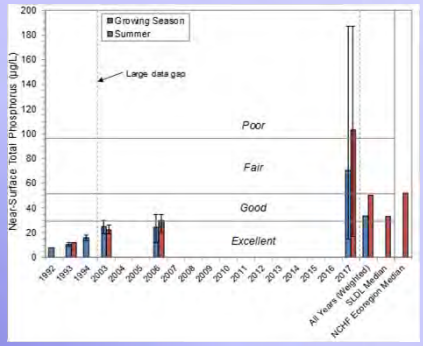
Total Phosphorus Long-Term Trends



2017 Data not Representative
June 106 µg/L, July 187 µg/L
Rainfall prior to sampling
All years average would be excellent if not for 2017 data
Precipitation greatly impacts phosphorus levels in lake

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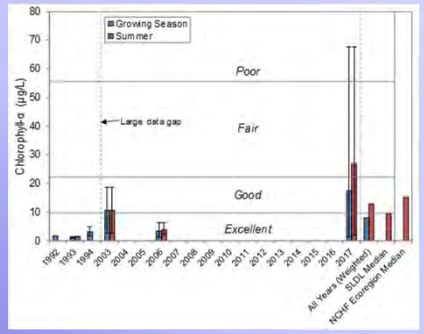
Chlorophyll-a Long-Term Trends



2017 Data not Representative
Impacted by precipitation
Without 2017 data, all years average would be excellent

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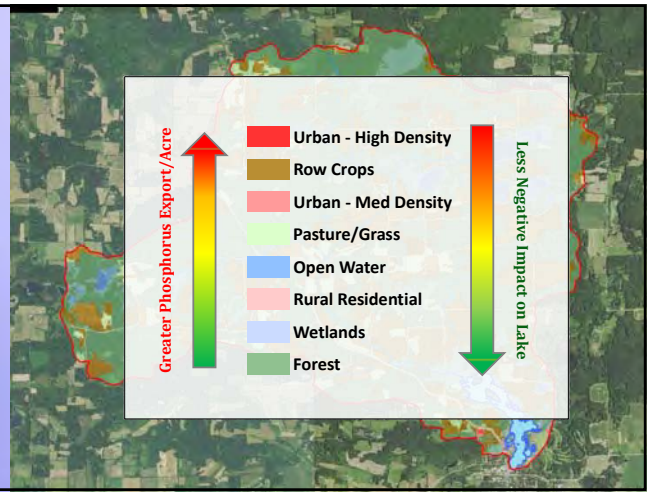
Watershed

17,000 acres
WS:LA = 72:1
Residence Time: <13 days
Flushing Rate: 28/yr
Annual P Load ≈ 1.5 tons

Watershed Modeling Scenario:
½ Row Crops to Forested
Current TSI: 60.8 (Productive)
New TSI: 50 (Productive)



7

Shallow Lakes are Special

Clear State

Turbid State

Aquatic Plants are Incredibly Important

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Management Goal:

Protect and Improve the Ecological Health of Lake Iola

Management Actions

1. **Monitor water quality through WDNR Citizens Lake Monitoring Network.**
2. **Educate stakeholders on the importance of shoreland condition of Lake Iola.**
3. **Enhance Lake Iola fishery through proper stocking and coarse woody habitat additions.**
4. **Conduct AIS population control utilizing herbicide spot treatments and winter drawdowns.**
5. **Conduct periodic vegetation monitoring on Lake Iola.**
6. **Continue Canada goose population control on around Lake Iola.**

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Shoreland Assessment

- Shoreland area is important for buffering runoff and provides valuable habitat for aquatic and terrestrial wildlife.
- EPA National Lakes Assessment results indicate shoreland development has greatest negative impact to health of our nation's lakes.
- 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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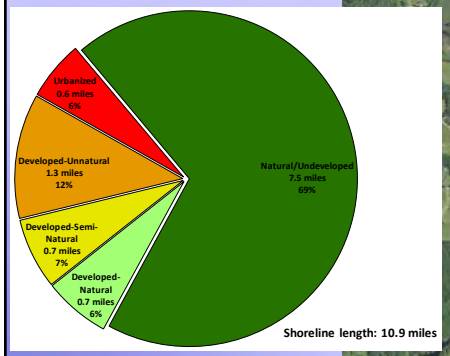
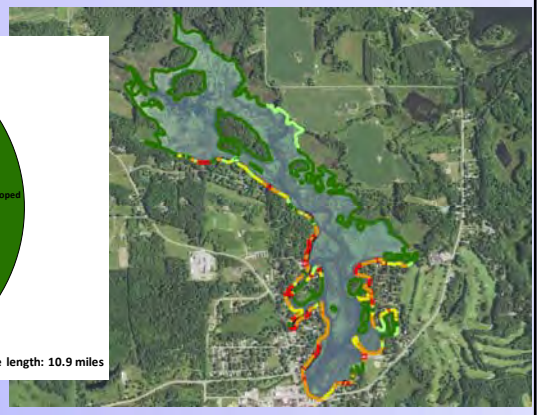
Lake Iola Shoreland Assessment





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Coarse Woody Habitat

- Provides shoreland erosion control and prevents suspension of sediments.
- Preferred habitat for a variety of aquatic life.
  - Periphyton growth fed upon by insects.
  - Refuge, foraging and spawning habitat for fish.
  - Complexity of CWH important.
- Changing of logging and shoreland development practices = reduced CWH in Wisconsin lakes.
- Survey aimed at quantifying CWH in system.

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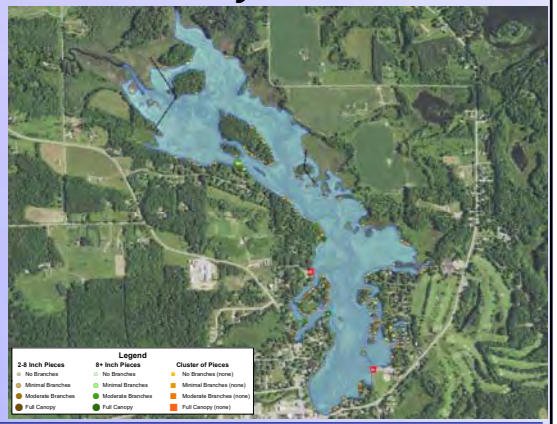
Lake Iola Coarse Woody Habitat

335 pieces of CWH (ratio of 31 pieces per shoreline mile, 31:1)



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Whole-Lake Point-Intercept Surveys 2006, 2014, 2017

Lake Iola
40-meter resolution
550 total points

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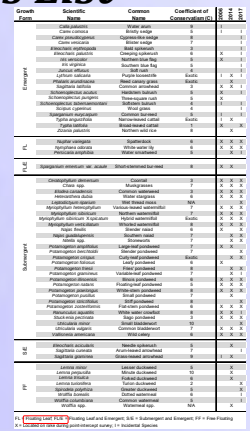
Aquatic Plant Species List

2017 Results
- **47 Native Species**
- **3 Non-Native Species**
  - Eurasian/hybrid watermilfoil
  - Curly-leaf pondweed
  - Purple loosestrife



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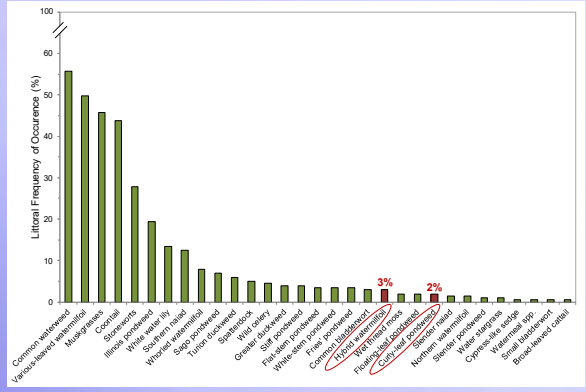
2017 Littoral Frequency of Occurrence



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Nuisance Conditions

Primarily due to two native species:

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Common waterweed
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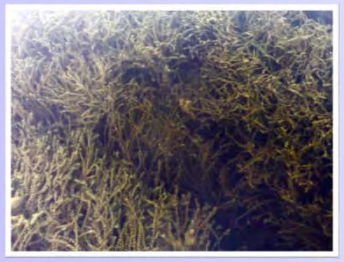

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Various-leaved Watermilfoil

Considered invasive in northeast & western US but native to WI

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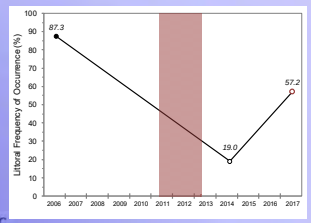

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Common Waterweed

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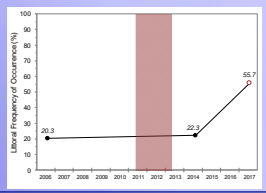
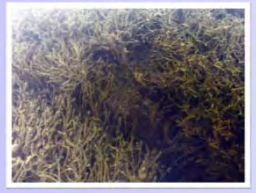
Easily uprooted making it prone to surface matting
Populations may increase within endothall treatment areas

Common Waterweed





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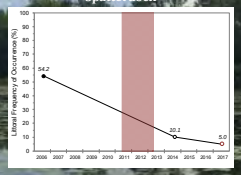
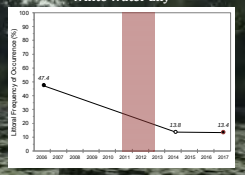
Floating-Leaf Plant Communities

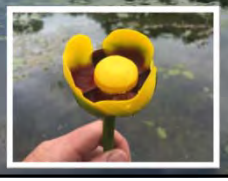
Area these plants occupy has largely stayed the same (or slightly increased), but density of plants has reduced

Spatterdock



White Water Lily

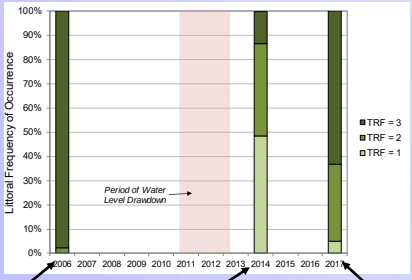




22

2006, 2014, & 2017 Data Comparison

Occurrence of Vegetation & Total Rake Fullness Ratings



High Plant Biomass
Reduced Plant Biomass
Increased Plant Biomass

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Non-Native Aquatic Plants

Hybrid/Eurasian Watermilfoil

Officially documented in 2011, but in lake much earlier
Hybrid watermilfoil confirmed via DNA in 2014
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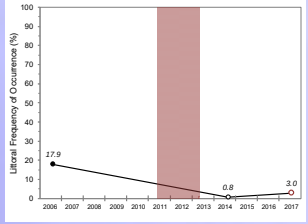
Hybrid/Eurasian Watermilfoil



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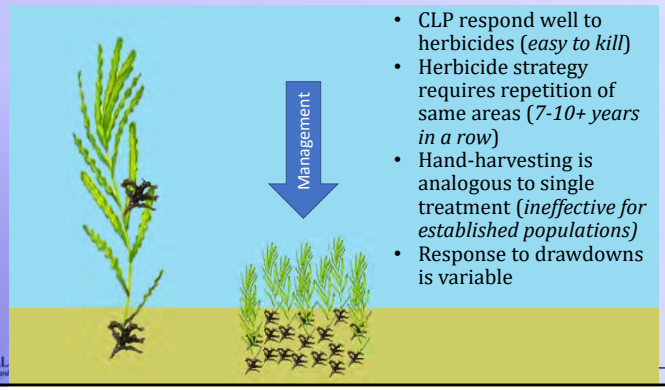
CLP Life-Cycle & Control Strategy Philosophy



- CLP respond well to herbicides (*easy to kill*)
- Herbicide strategy requires repetition of same areas (*7-10+ years in a row*)
- Hand-harvesting is analogous to single treatment (*ineffective for established populations)*
- Response to drawdowns is variable

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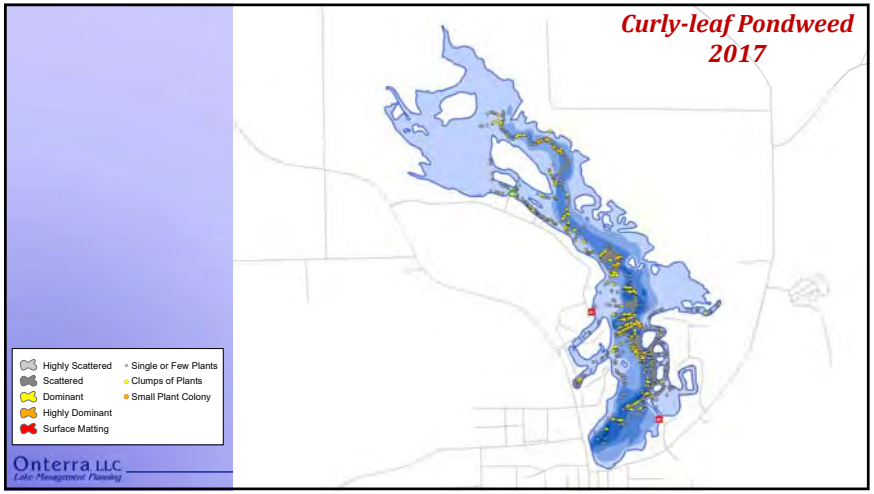
Curly-leaf Pondweed 2017



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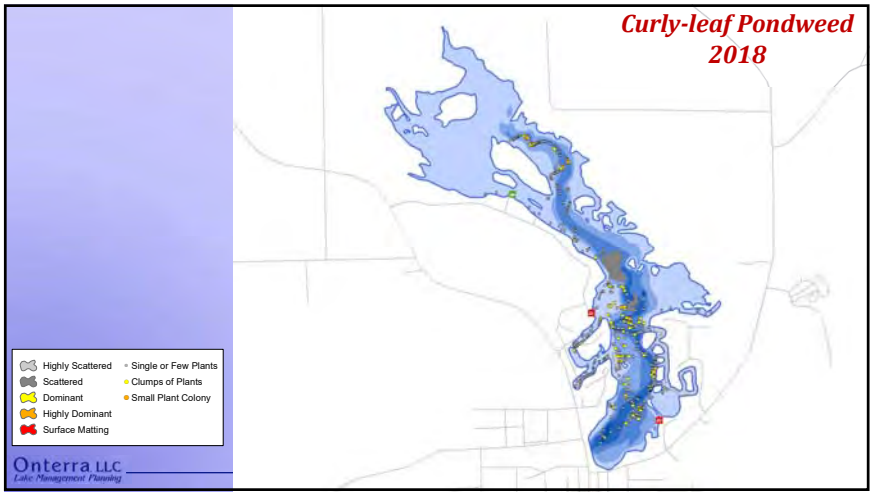
Curly-leaf Pondweed 2018



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Management Goal:

Assure Open Water Recreational Opportunities on Lake Iola

Management Actions

1. **Utilize mechanical harvesting to provide riparian access to open water areas of Lake Iola.**
2. **Conduct nuisance plant treatment using herbicides on an as-needed basis in common use areas of Lake Iola.**

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Management Goal:
Improve District Member Interest and Involvement

Management Actions

1. **Use information to promote lake protection and enjoyment through stakeholder education.**
2. **Promote winter recreation on the lake by organizing an annual Ice Fishing Contest for Youth, held during the Iola Winter Carnival Weekend.**

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Management Goal:
Improve the Capacity of the Lake Iola Lake Management District to Effectively Manage Lake Iola

Management Actions

1. **Participate in Wisconsin Lakes Partnership Convention.**
2. **Continue LILD's involvement with other entities that have responsibilities in managing (management units) Lake Iola.**

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B

APPENDIX B

Stakeholder Survey Response Charts and Comments

Lake Iola - Anonymous Stakeholder Survey

Surveys Distributed: 570
Surveys Returned: 122
Response Rate: 21%

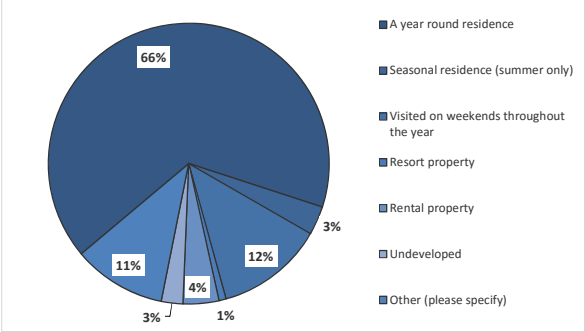
Lake Iola Property

1. Is your property on the lake or off the lake?

Answer Options	Response Percent	Response Count
On the lake	48.3%	58
Off the lake	51.7%	62
answered question		120
skipped question		2

2. How is your property on or near Lake Iola utilized?

Answer Options	Response Percent	Response Count
A year round residence	66.1%	80
Seasonal residence (summer only)	3.3%	4
Visited on weekends throughout the year	12.4%	15
Resort property	0.8%	1
Rental property	4.1%	5
Undeveloped	2.5%	3
Other (please specify)	10.7%	13
answered question		121
skipped question		1

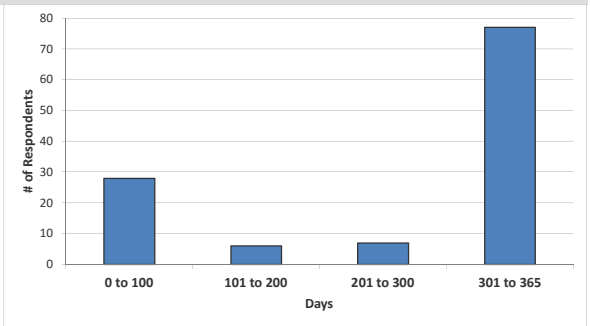


Number	Other (please specify)
1	6-7 months and then weekends throughout the year
2	Visit Year Round
3	full time commercial business
4	in home four days a week year round
5	Vacation Rental/Visited throughout the year
6	Storage
7	only viewed from the road
8	Bar and restaurant not anonymous
9	Business
10	Business Year Round
11	Fishing
12	Outdoor recreation
13	Office

3. How many days each year is your property used by you or others?

Answer Options	Response Count
	118
answered question	118
skipped question	4

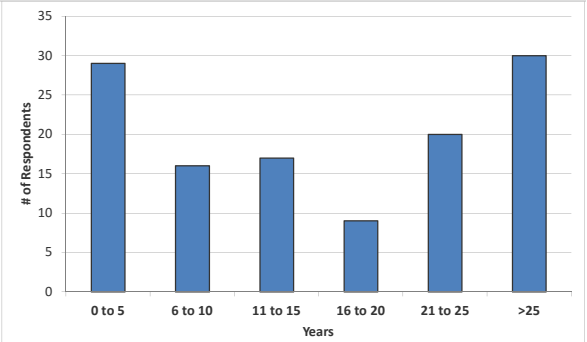
Category (# of days)	Responses	
0 to 100	28	23.7%
101 to 200	6	5.1%
201 to 300	7	5.9%
301 to 365	77	65.3%



4. How long have you owned or rented your property on or near Lake Iola?

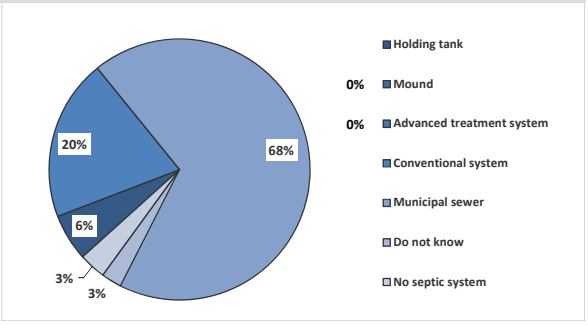
Answer Options	Response Count
	121
answered question	121
skipped question	1

Category (# of years)	Responses	% Response
0 to 5	29	24.0%
6 to 10	16	13.2%
11 to 15	17	14.0%
16 to 20	9	7.4%
21 to 25	20	16.5%
>25	30	24.8%



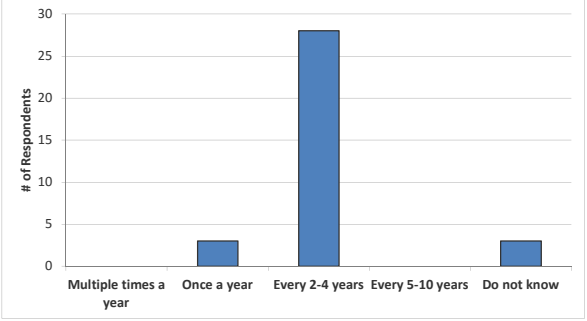
5. What type of septic system does your property utilize?

Answer Options	Response Percent	Response Count
Holding tank	5.8%	7
Mound	0.0%	0
Advanced treatment system	0.0%	0
Conventional system	20.0%	24
Municipal sewer	68.3%	82
Do not know	2.5%	3
No septic system	3.3%	4
answered question		120
skipped question		2



6. How often is the septic system on your property pumped?

Answer Options	Response Percent	Response Count
Multiple times a year	0.0%	0
Once a year	8.8%	3
Every 2-4 years	82.4%	28
Every 5-10 years	0.0%	0
Do not know	8.8%	3
answered question		34
skipped question		88

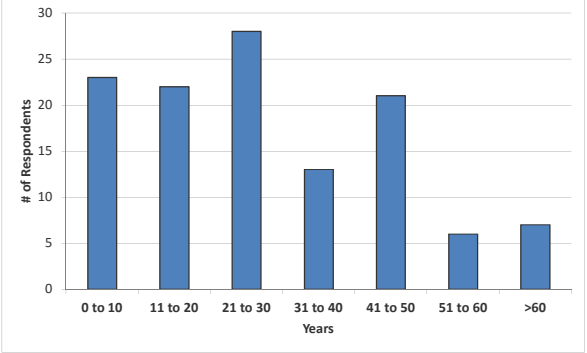


Recreational Activity on Lake Iola

7. How many years ago did you first visit Lake Iola?

Answer Options	Response Count
	120
answered question	120
skipped question	2

Category (# of days)	Responses	% Response
0 to 10	23	19.2%
11 to 20	22	18.3%
21 to 30	28	23.3%
31 to 40	13	10.8%
41 to 50	21	17.5%
51 to 60	6	5.0%
>60	7	5.8%



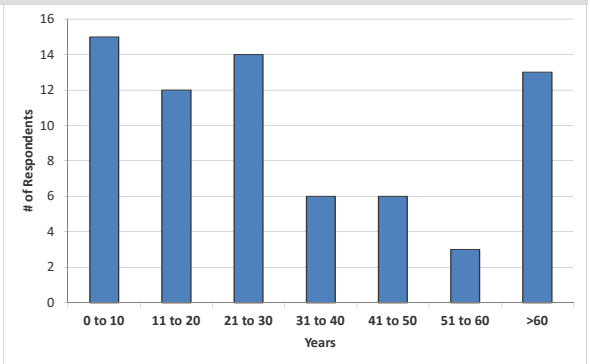
8. Have you personally fished on Lake Iola in the past three years?

Answer Options	Response Percent	Response Count
Yes	48.4%	59
No	51.6%	63
answered question		122
skipped question		0

9. For how many years have you fished Lake Iola?

Answer Options	Response Count
	57
answered question	57
skipped question	65

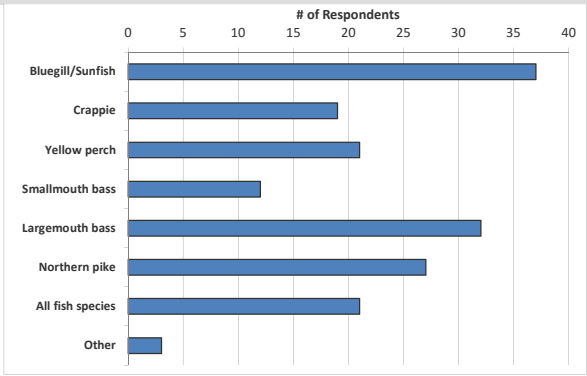
Category (# of years)	Responses	% Response
0 to 10	15	21.7%
11 to 20	12	17.4%
21 to 30	14	20.3%
31 to 40	6	8.7%
41 to 50	6	8.7%
51 to 60	3	4.3%
>60	13	18.8%



10. What species of fish do you like to catch on Lake Iola?

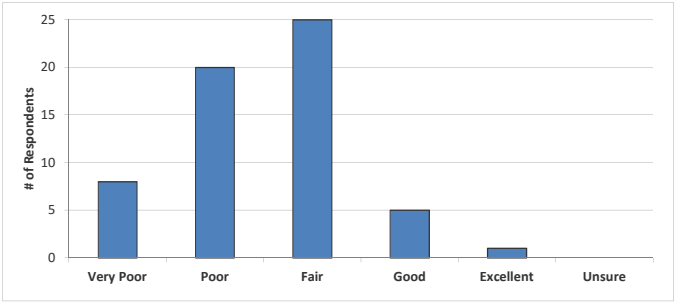
Answer Options	Response Percent	Response Count
Bluegill/Sunfish	63.8%	37
Crappie	32.8%	19
Yellow perch	36.2%	21
Smallmouth bass	20.7%	12
Largemouth bass	55.2%	32
Northern pike	46.6%	27
All fish species	36.2%	21
Other (please specify)	5.2%	3
answered question		58
skipped question		64

Number	Other (please specify)
1	All
2	Yellow perch as #1
3	BROWN TROUT



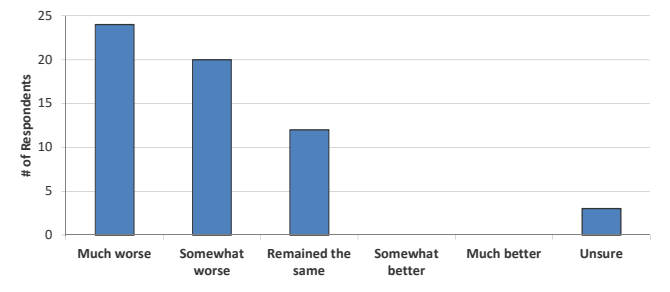
11. How would you describe the current quality of fishing on Lake Iola?

Answer Options	Very Poor	Poor	Fair	Good	Excellent	Unsure	Response Count
	8	20	25	5	1	0	59
answered question							59
skipped question							63



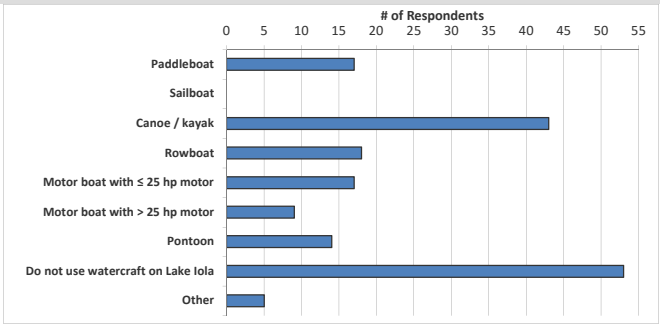
12. How has the quality of fishing changed on Lake Iola since you have started fishing the lake?

Answer Options	Much worse	Somewhat worse	Remained the same	Somewhat better	Much better	Unsure	Response Count
	24	20	12	0	0	3	59
						answered question	59
						skipped question	63



13. What types of watercraft do you currently use on Lake Iola?

Answer Options	Response Percent	Response Count
Paddleboat	14.1%	17
Sailboat	0.0%	0
Canoe / kayak	35.5%	43
Rowboat	14.9%	18
Motor boat with 25 hp or less motor	14.1%	17
Motor boat with greater than 25 hp motor	7.4%	9
Pontoon	11.6%	14
Do not use watercraft on Lake Iola	43.8%	53
Other (please specify)	4.1%	5
answered question		121
skipped question		1



Number	Other (please specify)
1	Jetski?
2	Pontoon as #1
3	not applicable
4	Ice fishing
5	Use electric trolling motor when possible

14. Do you use your watercraft on waters other than Lake Iola?

Answer Options	Response Percent	Response Count
Yes	47.9%	58
No	52.1%	63
answered question		121
skipped question		1

15. What is your typical cleaning routine after using your watercraft on waters other than Lake Iola?

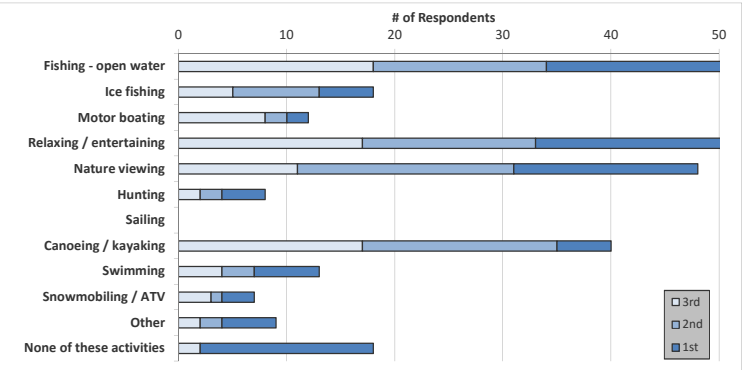
Answer Options	Response Percent	Response Count
Remove aquatic hitch-hikers (ex. - plant material, clams, mussels)	75.5%	40
Drain bilge	37.7%	20
Rinse boat	54.7%	29
Power wash boat	3.8%	2
Apply bleach	3.8%	2
Do not clean boat	7.6%	4
Other (please specify)		5
answered question		53
skipped question		69

Number	Other (please specify)
1	towel off the kayak
2	Do not own a watercraft
3	The boats we use on Lake Iola are used on Lake Iola ONLY. We rent or use other people's boats on other lakes. No trailering.
4	Do not remove from the lake I live on
5	I just use floating devices...tubes, rafts, and rinse them.

16. For the list below, rank your top three activities that are important reasons for owning your property on or near Lake Iola, with 1 being the most important activity.

Answer Options	1st	2nd	3rd	Rating Average	Response Count
Fishing - open water	28	16	18	1.84	62
Ice fishing	5	8	5	2.00	18
Motor boating	2	2	8	2.50	12
Relaxing / entertaining	25	16	17	1.86	58
Nature viewing	17	20	11	1.88	48
Hunting	4	2	2	1.75	8
Sailing	0	0	0	0.00	0
Canoeing / kayaking	5	18	17	2.30	40
Swimming	6	3	4	1.85	13
Snowmobiling / ATV	3	1	3	2.00	7
Other (please specify below)	5	2	2	1.67	9
None of these activities are important to me	16	0	2	1.22	18
			answered question		118
			skipped question		4

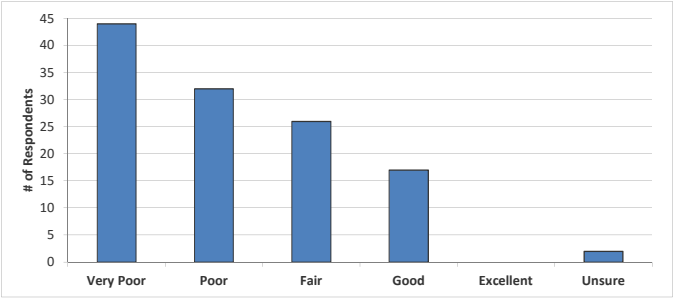
Number	"Other" responses
1	We water our garden with lake water
2	not applicable
3	I live in the village of Iola but do not use the lake for anything! I do NOT own a house on the lake. This survey seems like it's for the rich lake property owners. You are expecting my to pay more taxes so the rich lake property owners can have their lake expenses paid for by people that do not use the lake. Very sad.
4	Storage facility only - do not live on Lake Iola
5	Too weedy to use!
6	Conservation Club
7	Owner of Business in Iola, this is an office building
8	Visiting with friends
9	The mill pond has zero value to me beyond aesthetics
10	floating
11	because its kind of gross
12	Our moving to Iola had nothing to do with the lake
13	live and work here



Lake Iola Current and Historic Condition, Health and Management

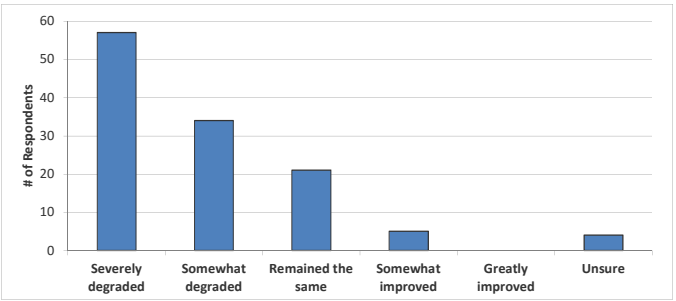
17. How would you describe the aesthetic appearance of the water of Lake Iola?

Answer Options	Very Poor	Poor	Fair	Good	Excellent	Unsure	Response Count
	44	32	26	17	0	2	121
						answered question	**121**
						skipped question	**1**



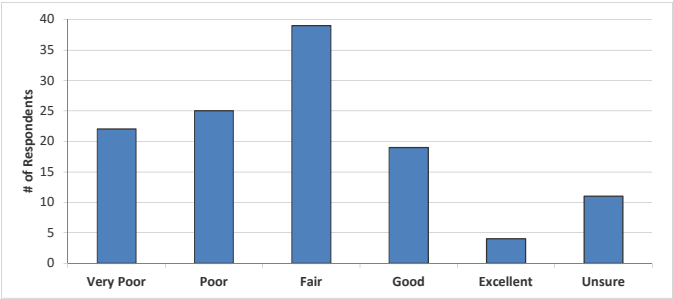
18. How has the aesthetic appearance of Lake Iola's water changed since you first visited the lake?

Answer Options	Severely degraded	Somewhat degraded	Remained the same	Somewhat improved	Greatly improved	Unsure	Response Count
	57	34	21	5	0	4	121
						answered question	**121**
						skipped question	**1**



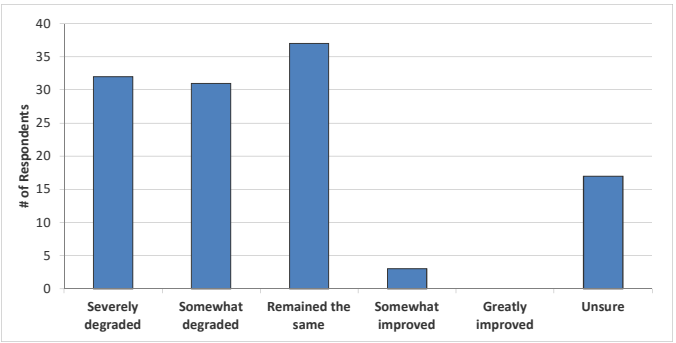
19. How would you describe the overall water quality of Lake Iola?

Answer Options	Very Poor	Poor	Fair	Good	Excellent	Unsure	Response Count
	22	25	39	19	4	11	120
						answered question	**120**
						skipped question	**2**



20. How has the overall water quality changed in Lake Iola since you first visited the lake?

Answer Options	Severely degraded	Somewhat degraded	Remained the same	Somewhat improved	Greatly improved	Unsure	Response Count
	32	31	37	3	0	17	120
						answered question	120
						skipped question	2



21. Before reading the statement above, had you ever heard of aquatic invasive species?

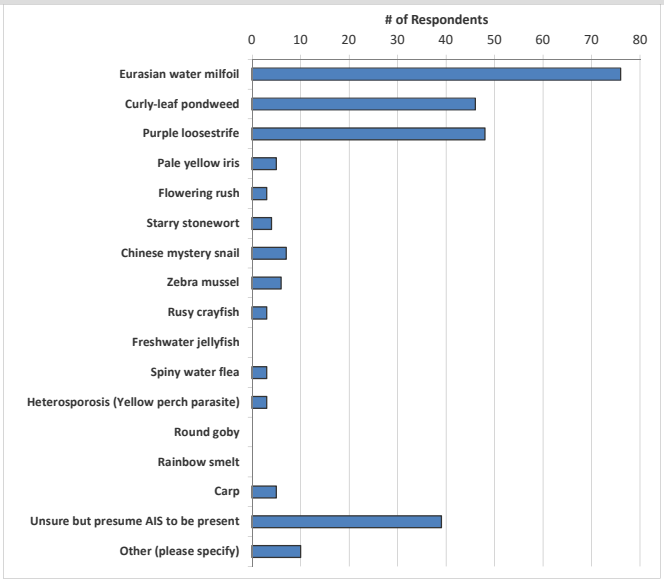
Answer Options	Response Percent	Response Count
Yes	98.4%	119
No	1.7%	2
	answered question	121
	skipped question	1

22. Do you believe aquatic invasive species are present within Lake Iola?

Answer Options	Response Percent	Response Count
Yes	59.5%	69
I think so but am not certain	36.2%	42
No	4.3%	5
	answered question	116
	skipped question	6

23. Which aquatic invasive species do you believe are in Lake Iola?

Answer Options	Response Percent	Response Count
Eurasian water milfoil	67.9%	76
Curly-leaf pondweed	41.1%	46
Purple loosestrife	42.9%	48
Pale yellow iris	4.5%	5
Flowering rush	2.7%	3
Starry stonewort	3.6%	4
Chinese mystery snail	6.3%	7
Zebra mussel	5.4%	6
Rusy crayfish	2.7%	3
Freshwater jellyfish	0.0%	0
Spiny water flea	2.7%	3
Heterosporosis (Yellow perch parasite)	2.7%	3
Round goby	0.0%	0
Rainbow smelt	0.0%	0
Carp	4.5%	5
Unsure but presume AIS to be present	34.8%	39
Other (please specify)	8.9%	10
	answered question	112
	skipped question	10

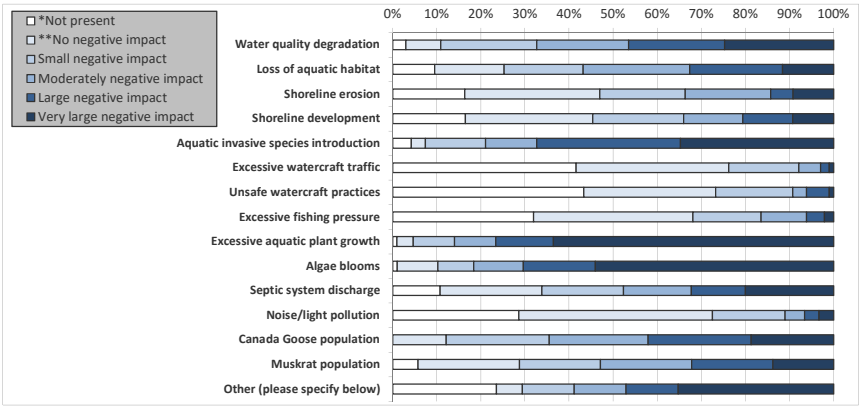


Number	"Other" responses
1	Snails - don't know what kind
2	lots rope weeds!
3	purple loosestrife - "has declined". Starry stonewort - "we think so"
4	I am so sorry we can no longer swim in the lake !
5	not sure of specifics, this is serious issue
6	That is all we have personally seen.
7	Not sure we would recognize
8	large amount of plant growth
9	idk
10	black spot & yellow grub parasites on fish

24. To what level do you believe each of the following factors may currently be negatively impacting Lake Iola?
*** Not present means that you believe the issue does not exist on Lake Iola.**
**** No impact means that the issue may exist on Lake Iola but it is not negatively impacting the lake.**

Answer Options	*Not present	**No negative impact	Small negative impact	Moderately negative impact	Large negative impact	Very large negative impact	Unsure: Need more information	Rating Average	Response Count
Water quality degradation	3	8	22	21	22	25	13	2.02	114
Loss of aquatic habitat	9	15	17	23	20	11	16	1.50	111
Shoreline erosion	16	30	19	19	5	9	15	0.96	113
Shoreline development	16	28	20	13	11	9	17	1.01	114
Aquatic invasive species introduction	4	3	13	11	31	33	18	2.30	113
Excessive watercraft traffic	42	35	16	5	2	1	11	0.32	112
Unsafe watercraft practices	42	29	17	3	5	1	16	0.37	113
Excessive fishing pressure	31	35	15	10	4	2	15	0.49	112
Excessive aquatic plant growth	1	4	10	10	14	68	7	3.02	114
Algae blooms	1	9	8	11	16	53	17	2.52	115
Septic system discharge	7	15	12	10	8	13	47	0.96	112
Noise/light pollution	26	40	15	4	3	3	18	0.40	109
Canada Goose population	0	13	25	24	25	20	7	2.00	114
Muskrat population	5	20	16	18	16	12	23	1.35	110
Other (please specify below)	4	1	2	2	2	6	11	1.29	28
Other (please specify)									13
								answered question	**117**
								skipped question	**5**

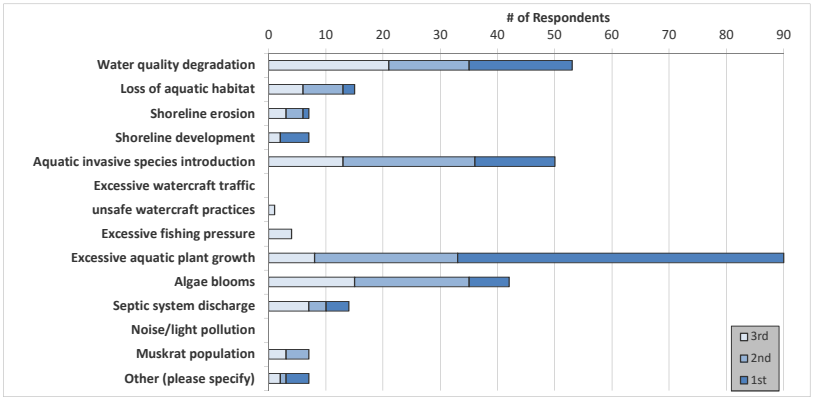
Number	Other (please specify)
1	Fallen trees / limbs DNR responsibility
2	tree stump and branches
3	Can't swim in the lake!
4	Weeds and algae problem.
5	Weed growth is our major concern!
6	Otters
7	Street storm sewer runoff
8	Too much shoreline development causing the Canada goose issues
9	Sedimentation and fertilizer runoff
10	Weed cutting(bandaid), not treatment
11	Otter Population
12	The pond is choked with weeds the partial 2 year drawdown did not help!
13	weeds are so thick I can't get my boat in the water! Had to clean by my dock 3 times this summer and the weeds came back faster than ever! This lake needs to be treated the draw down made things worse.



25. From the list below, please rank your top three concerns regarding Lake Iola, with 1 being your greatest concern.

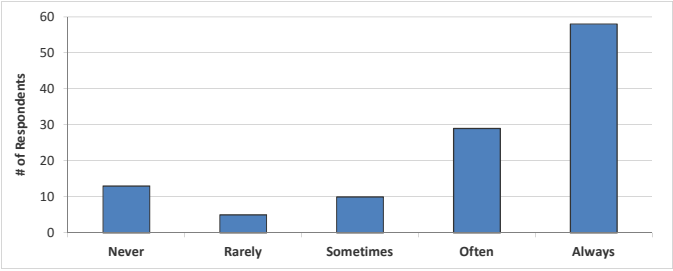
Answer Options	1st	2nd	3rd	Response Count
Water quality degradation	18	14	21	53
Loss of aquatic habitat	2	7	6	15
Shoreline erosion	1	3	3	7
Shoreline development	5	0	2	7
Aquatic invasive species introduction	14	23	13	50
Excessive watercraft traffic	0	0	0	0
unsafe watercraft practices	0	0	1	1
Excessive fishing pressure	0	0	4	4
Excessive aquatic plant growth	57	25	8	90
Algae blooms	7	20	15	42
Septic system discharge	4	3	7	14
Noise/light pollution	0	0	0	0
Canada Goose population	3	9	21	33
Muskrat population	0	4	3	7
Other (please specify)	4	1	2	7
			answered question	**116**
			skipped question	**6**

Number	"Other" responses
1	DON'T drop the lake again. Where are the fish???
2	Respondent also added j. - Algae blooms
3	Respondent added a #4. e. Aquatic invasive species introduction
4	no opinion
5	Can't swim in the lake due to it being unclean
6	Having to pay more taxes so the rich lake property owners have their shoreline taken care of.
7	Spending more tax dollars on the mill pond - enough is enough
8	Sedimentation and runoff
9	So many weeds nearly unfishable
10	weeds,weeds, weeds!



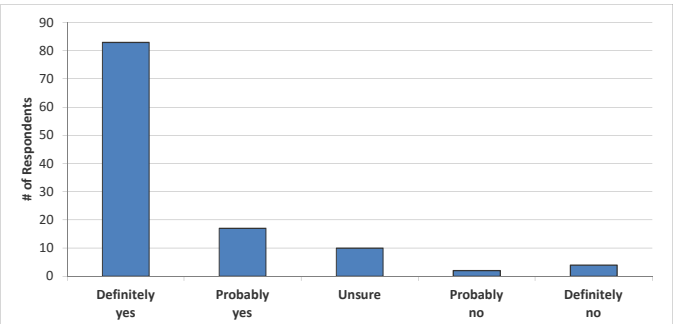
26. During open water season how often does aquatic plant growth, including algae, negatively impact your enjoyment of Lake Iola?

Answer Options	Never	Rarely	Sometimes	Often	Always	Response Count
	13	5	10	29	58	115
				answered question		**115**
				skipped question		**7**



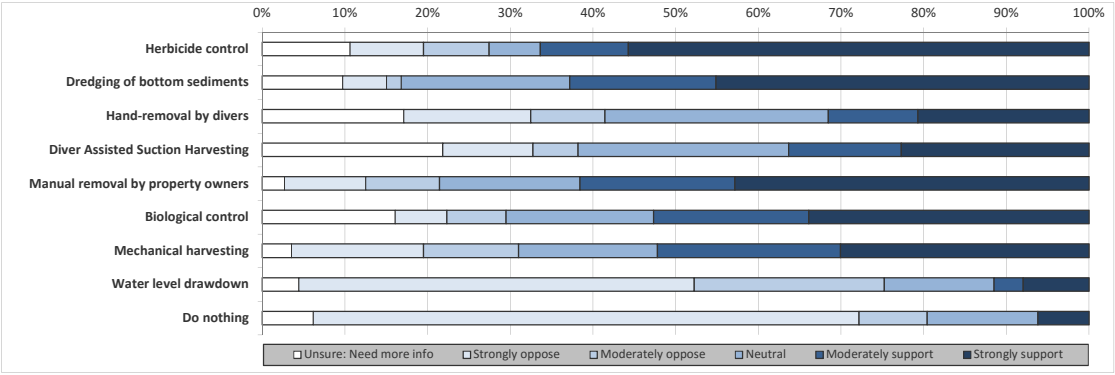
27. Considering your answer to the question above, do you believe aquatic plant control is needed on Lake Iola?

Answer Options	Definitely yes	Probably yes	Unsure	Probably no	Definitely no	Response Count
	83	17	10	2	4	116
					answered question	**116**
					skipped question	**6**



28. Aquatic plants can be managed using many techniques. Please tell us if you oppose or support the *responsible* use of the following techniques on Lake Iola.

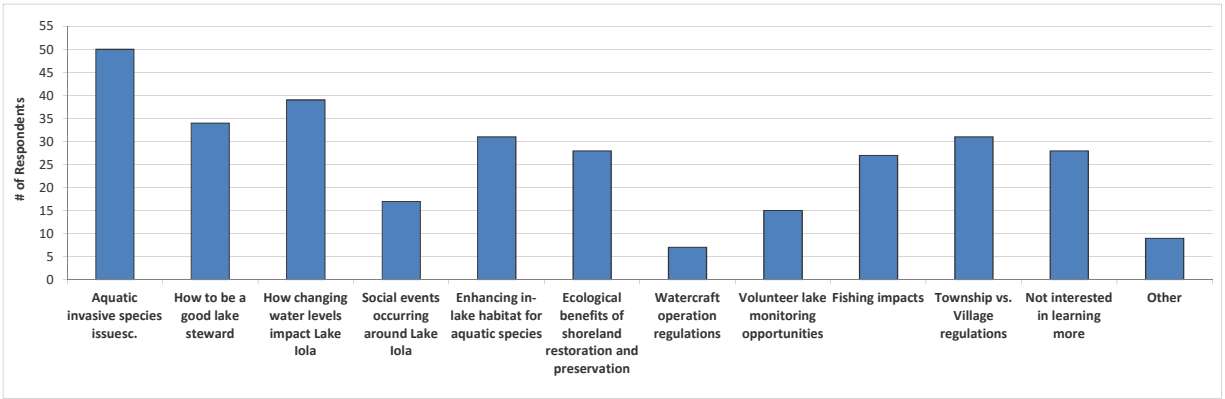
Answer Options	Strongly oppose	Moderately oppose	Neutral	Moderately support	Strongly support	Unsure: Need more info	Rating Average	Response Count
Herbicide (chemical) control	10	9	7	12	63	12	3.65	113
Dredging of bottom sediments	6	2	23	20	51	11	3.66	113
Hand-removal by divers	17	10	30	12	23	19	2.61	111
DASH (Diver Assisted Suction Harvesting)	12	6	28	15	25	24	2.66	110
Manual removal by property owners	11	10	19	21	48	3	3.68	112
Biological control	7	8	20	21	38	18	3.19	112
Mechanical harvesting	18	13	19	25	34	4	3.28	113
Water level drawdown	54	26	15	4	9	5	1.88	113
Do nothing (do not manage plants)	64	8	13	0	6	6	1.54	97
						answered question		**117**
						skipped question		**5**



29. Stakeholder education is an important component of every lake management planning effort. Which of these subjects would you like to learn more about?

Answer Options	Response Percent	Response Count
Aquatic invasive species issues.	45.1%	50
How to be a good lake steward	30.6%	34
How changing water levels impact Lake Iola	35.1%	39
Social events occurring around Lake Iola	15.3%	17
Enhancing in-lake habitat for aquatic species	27.9%	31
Ecological benefits of shoreland restoration and preservation	25.2%	28
Watercraft operation regulations	6.3%	7
Volunteer lake monitoring opportunities	13.5%	15
Fishing impacts	24.3%	27
Township vs. Village regulations	27.9%	31
Not interested in learning more on any of these subjects	25.2%	28
Other (please specify)	8.1%	9
answered question		111
skipped question		11

Number	Other (please specify)
1	Would like the lake to look like it did over 30yrs ago
2	Degree to which DNR has or will fully address animal and chemical upstream runoff.
3	Weed Control Options
4	suction harvesting The rich lake property owners should pay for all of the expenses. Do NOT dump these expenses on the village property owners by raising taxes.
5	Most people in the village of Iola that do NOT live on the lake do not use it. There is no public beach for swimming that non lake property owners can use.
6	Are there property owners not connected to a public sewer system? Is there water being removed from the lake for private use?
7	Any successful results and failures on other bodies of water similar to Lake Iola.
8	Chemical weed control with DNR support
9	Chemical treatment of weeds



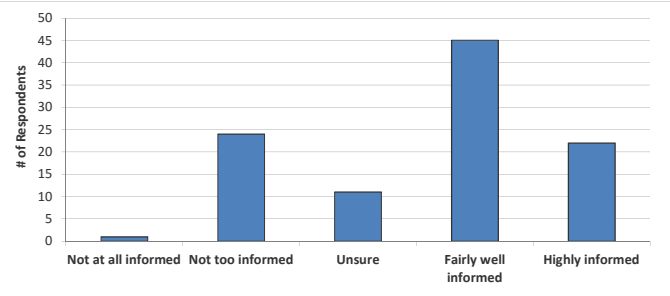
Lake Iola District

30. Before receiving this mailing, had you ever heard of the LID?

Answer Options	Response Percent	Response Count
Yes	89.7%	105
No	10.3%	12
answered question		117
skipped question		5

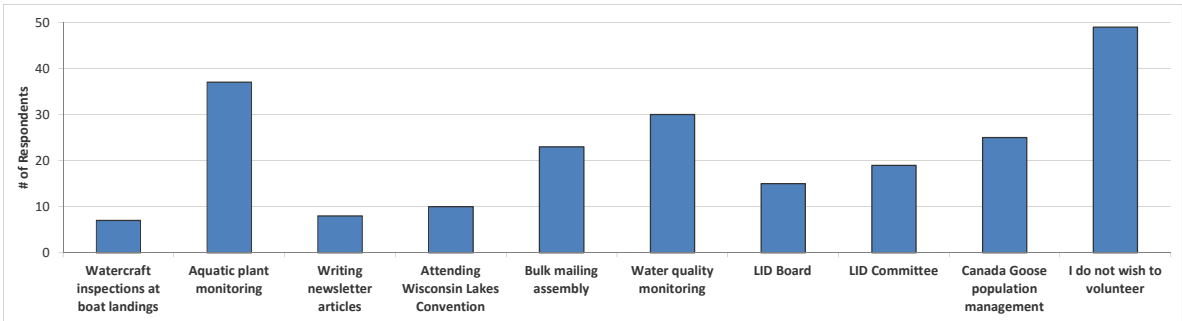
31. How informed has the LID kept you regarding issues with Lake Iola and its management?

Answer Options	Not at all informed	Not too informed	Unsure	Fairly well informed	Highly informed	Response Count
	1	24	11	45	22	103
					answered question	**103**
					skipped question	**19**



32. The effective management of your lake will require the cooperative efforts of numerous volunteers. Please circle the activities you would be willing to participate in if the LID requires additional assistance.

Answer Options	Response Percent	Response Count
Watercraft inspections at boat landings	6.0%	7
Aquatic plant monitoring	31.9%	37
Writing newsletter articles	6.9%	8
Attending Wisconsin Lakes Convention	8.6%	10
Bulk mailing assembly	19.8%	23
Water quality monitoring	25.9%	30
LID Board	12.9%	15
LID Committee	16.4%	19
Canada Goose population management	21.6%	25
I do not wish to volunteer	42.2%	49
	answered question	**116**
	skipped question	**6**



33. Please feel free to provide written comments concerning Lake Iola, its current and/or historic condition and its management.

Answer Options	Response Count
	77
answered question	77
skipped question	45

Number	Response Text
1	When I was young, the beach in Iola was packed people from neighboring communities would come, now you can't even swim in it anymore The DNR draws the water down they should dig it make the water deeper When they cut the weeds they grow back thicker We went fishing this summer - nothing but weeds everywhere - we wished we didn't go - we will go to other lakes in the future
2	We are relatively new to Iola, but enjoy the area immensely. But, as you know, the overgrowth of milfoil is horrendous during certain times of the year. Mechanical removal is expensive and temporary. I think herbicide application, as done in the past, may be the best alternative. I realize there is some reluctance to do this, but should be strongly considered going forward. Thanks again!
3	Not sure how but something MUST be done to "fix" our lake. If this was the quality of the lake 11 years ago we would NOT have purchased our home. Between the very dense weed population and the severe algae bloom navigating the lake was virtually impossible for most of August, all of September and now part of October. The only reason October was better is because of the weed die back. For the first time we experienced our boat motor over heating several times. We cannot continue to do what we've been doing because it's just not fiscally responsible. This is our time to take back our lake!!!!
4	We have lived here many years. The change in Lake Iola in recent years has been massive, in a negative way. The draw down of 2 yrs. has hurt the lake. Since then it has not improved. Our kids learned how to swim and water ski on this lake. Our older grandchildren had a water trampoline, no longer possible. We believe that lake needs chemical treatment, not week cutting. A water suction would also be very helpful to get rid of dead, floating weeds. Comment to Question 28: "strongly support" a partial draw down.
5	Lake Iola used to have less weeds, more fish, had a swimming beach and was nice to look at. This July, August and part of September it was disgusting to look at. We are spending too much money to try and fix it. The geese and snails have guised swimmers itch. Doing the same thing over and over is not working. It is time to either try something different, that won't cost a fortune, or let the lake go back to its original form - as river. Added to question 7: I visited it when it was the mill pond. Question 8: but I would like to answer questions 9 - 12 please. Question 9: Started when it was mill pond. Question 10: a. Bluegill / Sunfish b. Crappie c. Yellow perch d. Smallmouth bass f. Northern Pike g. Other: bullheads Question 11: Poor (2) Question 12: Much worse (1)
6	Since the two year draw down we have a new weed taking over the lake. Let's get rid of it. No more draw down's. I don't know what the name of it is, Get Rid of It.
7	It's a shame that I live on a Lake and I can only fish. I cannot go swimming or take my kids and grandkid tubing, skiing or swimming, it would be nice to walk down to the Lake and jump in on a hot summer day. I would be up for a long turn fix of this.
8	It seems no one from the Village cares about the lake. We can't even swim in our Lake. When I first came to Lake Iola the Lake was beautiful now its terrible an eyesore. My family used to swim in the Lake, we did alot of fishing. Now I don't fish anymore, plus we can't swim. Whats the use of having a Lake, if you can't use it. We used to spray the Lake why can't we go back to spraying. Weed cutting is like getting a hair cut, in 3-4 weeks we need another one. Weeds cut float to our shoreline if you cut the weeks, they must be picked up.
9	We feel the whole lake should be maintained by the Lake District, including all removal and control of weeds to the shoreline. Asking owners to do it seems senseless - one will do it; one won't do it. Weeds do not just stay in one place and soon they just take over - like trying to keep half a tub of water clean! Do the maintenance with weed chemical control on all areas of Lake, including shorelines and not just 30 feet of one's property! Fix a assessment fee or add it to property tax and eliminate machine harvesting! Weeds when harvested float to one area, stay there uncollected and take hold again.

Number	Response Text
10	The homes around the lake should be put on the Village sewer system Have a hunting season for the geese Buy up property around the lake for parks and recreation Strive to get the water clean enough for the swimming area to open again Recognize that this in NOT a lake, but a Mill Pond with its own unique problems like silt etc. Stop building around the Mill Pond until a sewer system is installed
11	We bought and built here because of the Lake 34 yrs ago. It has been very disappointing since the last freeze-out.
12	The weeds are a problem for me. As an avid fisherman I like weeds but not to the extent that is there. Cant even drive my boat in the lake anymore and if I do I pick weeds off my trailer for over a half hour
13	As a "Stakeholder," responding to this excellent survey, it is essential that comments address the volunteer-base that have spent their time, talent, and yet, so often financial investment, in doing their absolute best managing Lake Iola District. Coupled with a multitude of others, so willing to participate, their efforts have been solely responsible for the "Jewel" all of us may continue to enjoy. As an aside, I should like to address a question specific to the survey. Refer to #28 and the term "responsible use." Items b, c and d are all excellent points. Regarding b, we have always been led to believe that it would be financially unrealistic. Regarding "c" (DASH) and "d" (Suction Harvesting) although of lesser impact, both seem costly endeavors. If all are attainable, your survey should allow the participant to choose a request for more information as well as to respond in support or opposition.
14	We care about and love our Lake Iola. All serious efforts to improve the beauty and fishing opportunities of this Lake will be greatly appreciated. I understand the immense challenges this incorporates and with that thought Congratulate John Bertelsen (and the LID) for their Herculean efforts in solving the Lakes dilemmas. Our greatest concern specifically as stated in previous pages, is that the fishing is poor - --to very poor and the "plant life" makes it extremely difficult to catch what fish there are, and the time (struggles) to rid the boat(s) props of these plant species curtails all lake activities. Needless to say :) the aesthetics of the Lake in mid summer are not very pleasing. Enough enough I cry - That covers my core thoughts.....Thank you very much for reading this and your interest in our Lake Iola. (the wife)..... We would be open to additional funds collected by Lake Homeowners if these monies would help to improve our Lake. But this act would mainly apply to family property owners on the lake.
15	A minority of those within a vested economic interest has done an effective job of creating the perception that the expenditure of economic resource will have a remedial affect in a restoration of a mill pond! It seems to me that the illusion that all of the residents in the Village benefit from the Lake Districts efforts, is more than unfair and patently false. Further, that those property owners that adjourn the mill pond should either solely bear the costs of the frivolous spending or at the very least incurr a higher proportion of the costs of the futile efforts which are likely to continue. If you review a history of the Lake Districts formation you will see that original intent was for the landowners adjoining the mill pond to incurr the costs of the effort to improve their lakeshores. Perhaps the Board should revisit this question before it emparks on further waste of financial resources.
16	butWeed and algae are out of control. The condition of the lake affects property values. We are considering selling if we could get a buyer. We have friends who have had their property for sale for three years but the potential buyers saw
17	none
18	Weed growth is much more of a problem than when we purchased home 14 years ago. We rake our shoreline several times during early spring but the weeds seem to grow back faster now.
19	I remember as child swimming across the lake to the public beach. My own children have never been able to get into the lake and my oldest is 18 years old??
20	john bertelson is doing and incredible job of dealing with multiple issues. thanks john
21	Lake Iola was beautiful before the DNR draw down several years ago. We have lived on the lake for 4 years and it's still not back to how we remember it. The weeds/algae are frustrating as well as muskrats. But we have had NO geese on our property this fall. We did have some nesting geese this spring. We think the Lake District is doing a very good job!
22	The lake was so bad this summer it was hard to even kayak around it with the floating weeds and the algae, it looked terrible
23	The lake needs to be freed from many of its aquatic plants so it will be more conducive to recreational activities. Also the problem with swimmers itch needs to be addressed.
24	More aggressive weed management is necessary.
25	We bought on the lake during the winter after the drain down and fill-up and were led to believe that the drain down was going to have a beneficial affect...it hasn't. If anything, the lake is worse now than the first year. We feel strongly that more intense weed management is required.
26	We don't really use the lake much. My husband fishes, but moves around to different area lakes. We do not own a water craft. The only area that I really have much comment about is that the goose poop makes it fairly unappealing to walk by the water - especially by Taylor Field. I heard stories of my mom swimming in Lake Iola when she was a kid and now no one swims there.
27	It is an ugly mess not pretty by any standard
28	Lake Iola was almost unfishable this year. Chemical control must be used .

Number	Response Text
29	Draining the lake bottom to control weeds did not work. The water never completely drained from lake bottom for it to dry out enough & kill weeds...
30	Most times of the year, the lake is beautiful. When the weeds grow, and cover most of the surface area, it is not as appealing. We don't think draining it helped with the weed problem.
31	I strongly oppose killing Canada geese. That will not prevent surviving geese from pooping where people walk. Also no one has ever provided the public with statistics showing how many people have died or been sickened by contact with goose poop in Iola.
32	Weed cutting is far too expensive and a waste of time. Another solution needs to be found.
33	It's a mill pond. They have always been working on controling weeds. I find safe chemical control to be exceptable, but, not weed cutting. Perhaps the possibility of leakage of chemicals from the old dump site (ball diamond) should be looking into.
34	Stop taxing non lake property owners for the upkeep of this lake. Have the rich lake property owners pay for the upkeep themselves. Create a public swimming beach if you expect non lake property owners to also carry the expense of lake upkeep. There really is no place for non lake property owners to enjoy a day on the lake unless they have a boat. Believe me when I tell you that most people do not own boats! Very unfair taxing of non lake property owners!
35	Please do not use herbicide all that does is put down layers of fertilizer.
36	I do not live near Lake Iola.
37	First and foremost Lake Iola should be a LAKE - Fishing, swimming, and boating (small craft obviously). It is disheartening that the lake is openly referred to as 'the pond'. It's extra sad because even as a 'pond' it fails. Lopsided care that takes care of only what can be seen from town's shoreline, and even then it's just visual. Get in a boat and it can't be made across the bay without getting weeds severely tangled in the prop or on oars and paddles. Plus, the need of having to remove weeds from your line after each cast due to the constant gathering masses of weeds on the end of the line; if you even try fishing. The weed cutting paths make it dangerous to navigate the lake. Instead of boats and crafts being able to steer clear of each other and utilize the acreage of the lake, boaters are forced to pass within, in some cases, inches of each other because there are only paths cut through the weeds that are at best eight to ten feet wide. And still, where there are slightly wider cuttings, force us to fish within feet of each other because of the limited size and number of areas where the weeds are cut. On top of that, during summer months, prime lake use time, the cutting makes the lake barely navigable for about two weeks, if we're lucky. And swimming? Forget it! There is no swimming. We haven't been able to safely swim in the lake for decades. And for "lake stakeholders" to care for their section of shoreline hand removal and getting into the water to remove weeds is impossible because of swimmer's itch and other assorted rashes and outbreaks. Any semblance of being a lake was ruined with the drawdown. Shallow spots became even shallower, the biomass increased seemingly tenfold, and logs and stumps drifting around the lake all because of the drawdown which didn't even do what it was supposed to do, limit aquatic plants and remove silt build up. The masses of surface aquatic plants are hideous and draw flies. A picture of a lake would function more as a lake than this water body that has been mismanaged into a swamp barely one level above a cesspool. It's a shame.
38	It's been me to stop screwing around - drawdowns are useless. If the Lake is to be improved it must be dredged and constructed. No
39	The members of LID are doing a great job keeping people in the know. Hopefully we can find a way to restore the lake to its early years.
40	we would lake iola improved
41	Management is trying to do a good job but some land owners are not allowing access to there properties to be effective.
42	Too many stumps and weeds to make fishing enjoyable
43	It's a millpond with great natural habitat. How dose it compare with other millponds?
44	First of all, Lake Iola is NOT an actual lake. It is a pond, and though the owners who live on it call it a Lake it is far from a quality lake of any kind in my thoughts. It had quality water in it when I first moved to Iola and my children used to swim in it and took their swim lessons in it. Now it is always full of weeds and slimy green stuff and it is no longer clean enough to swim in without experiencing swimmers itch. Maybe if the people living on it think it is a lake they should be paying for the upkeep of it as a village resident I could live without it. So much for surveys.
45	Fishing is terrible since draw downs, now its a goose/duck pond, its a waste of tax payers money to cut weeds, does nothing in my eyes,
46	The LID Board has been doing a good job with what it can do to help to improve the conditions of the Lake and just thank them for their service.
47	Used to be such a fun lake to fish, but it seems like most of the fish are gone, and seems to be abandon now except for a few kids by the dam on the weekends. Big Northern pike used to thrive, but I haven't seen one in years.
48	It would be nice if our children had a sandy beach to swim at in Lake Iola
49	- Too much shoreline development causing the goose issue. - Disagree with the goose killing to manage the problem caused by property owners mowing to the lake edge. - The lake draw down a couple of years ago was a waste of time and money. - More effort needs to be made to control/stop fertilizing of lawns, fields and farms adjacent to the lake with causes the excess aquatic plant and algae growth.
50	According to the DNR the draw down was supposed to help the lake. It clearly didn't help and in some ways hurt the lake. I hope that a draw down isn't considered again unless the dam needs repairs.
51	Please stop referring to it as a lake, it is a mill pond and it comes with all the issues that occur when you dam up a river.
52	Lid was formed to help it as a fishery yet no fish have been added to the lake. By lid.
53	Curious about any information regarding the negative effects of the drawdown on trout fishing on the river below Lake Iola.
54	I'm a very part-time resident, but I care about the lake and appreciate what you are doing to maintain and improve the lake. I'm probably not a good candidate to volunteer.
55	I've actually never been on/in this lake because I've heard it had swimmers itch, etc a while back.
56	Lake quality appeared to drastically decline after water level was drawn down for 2 years. Strongly believe that improving the aesthetic value of the lake could have a significant economic benefit for the area to help offset the costs associated with the needed improvements. Many areas of the lake are virtually impassible even by kayak in the summer months due to weeds and algae. Strongly believe it is worth the investment to make improvements.

Number	Response Text
57	Goose poo is gross, but not a big deal. Understand their used to be swimming by the landing, that would be great!!
58	This is not a lake it is a Mil Pond. I do not agree with the LID and oppose paying property tax for something I do not use. If the people on the Mil Pond wish to have it a LID let them have one. But because I live in the village I pay for something that has no value to me. I don't agree at all.
59	I believe the management team is doing a great job. Money has been a limiting factor. Because chemical treatments are limited by the DNR, I believe an aggressive weed cutting plan should be instituted to include buying a cutter and harvesting 2-3 days per week from May thru August. Most of the summer's water activities are limited to non motor propulsion.
60	Quit mowing&Astarte dredging.
61	We have two children who love to be by the water but Lake Iola needs tremendous help with the weed control! It is so bad you can't even fish off of our dock!!
62	I don't use the lake, don't feel it adds economic value to the village and the people who choose to live on the lake should be the ones paying for the lake.
63	It is a shame that it is too weedy to attract boaters. I miss seeing them & swimmers, as in years gone by. The lake needs to be dredged, in my opinion.
64	Money spent cutting weeds could be saved for a few years to dredge part of the lake, can't look worse than when it was drained. That experiment didn't work.
65	I take issue with the fact that I have to pay a "lake tax" when I don't even live on the water. Living on a lake is a privilege, not a right. Those with property on the water should be paying a lake tax, not those of us living blocks away. I can't even see the lake from where I live, and I definitely don't enjoy it. It's not fit for swimming, I don't fish, and it's almost impossible to maneuver a boat through. I can't walk along the shore at either park without stepping in goose excrement. It's a disgrace. I hesitate to even call "Lake" Iola a lake. Personally, I would like to see the dam removed and the river and wetlands restored.
66	I think machine weed harvest does more harm than good. I think the 5 a day limit per species should be considered. The whole lake should be no wake.
67	It's hard to believe this lake actually had a public swimming beach years ago and was one of the top bass fishing lakes in the state. The DNR has done more to ruin this lake than to help it. Most recently with the 2 year draw down (4 yrs ago) of the lake which now the floating surface weeds are worse than ever. Can't even get a boat to shore near my property it's so bad. When the DNR started restricting the type of chemicals used (copper sulfide, etc) it just got worse every year. Having the lake mechanically cut twice a year is just putting a band aid on the problem and a waste of money where EFFECTIVE chemical treatment would be a better use of these dollars. The DNR needs to take the handcuffs off and let the Lake District do what needs to be done to get this lake back to where it was.
68	Lake Iola is a poor excuse for a Lake. It is a gross Mill pond! Draining did nothing nor did the many times of spraying. It only looks nice early in the Spring for just a few weeks. We do not live on the Lake, but we pay a Lake tax....How criminal is that! You could fill it in,we and many more would never miss it!
69	Lake Iola, previously known as the Iola Mill Pond, WAS a place for swimming after baseball games and has since become a eye sore. There is so much goose feces, and it is so run down that I don't consider it much of a lake. Whether you live on the Lake or not you still pay lake fees, which is also disappointing.
70	The cost of many of the items should be researched and published. Obviously that is a big deciding factor that was not stated in the survey questions. That would possibly have changed some of my answers within this survey.
71	WHEN I FIRST BOUGHT MY PLACE THERE WAS VERY LITTLE ALGE OR PLANT PROBLEM,WE WERE ABLE TO ACTUALLY SWIM IN THE LAKE.I WISH THERE WAS SOME WAY WE COULD BRING THE LAKE BACK TO THE WAY IT ONCE WAS. IT SEEMS TO ME THE DNR IS THE BIGGEST HURDLE IN TRYING TO FIX ANYTHING. IF THIS LAKE WAS CLEAN JUST THINK OF THE REVENUE IT COULD BRING IN FOR THE VILLAGE. I HOPE TO SOME DAY RETIRE INTO MY PLACE BECAUSE I LOVE THE AREA AND THE PEOPLE, BUT THE CONDITION OF THE LAKE IS A BIG LET DOWN.
72	Would like to see more people get involved with lake management.
73	We don't live within a mile of the lake; do not benefit from it; and do not like being taxed for the benefit of the lake property owners
74	In the 1960s the lake had excellent fishing 10 pound pike were not common but they were occasionally caught.
75	Since the DNR suggested drawdown, I have quit fishing in the lake. The weeds have ruined enjoyable fishing. I now fish North Lake and White Lake. Too many weeds to fish now
76	When we first moved here in 1998, the water was clear and had few weeds. A plane flew over and treated the water with herbicide and a fellow from the Lake District came and cleaned part of our shore line. Now the lake is a big weed bed and boats have trouble getting around. There are so many weeds around my dock that I can't even get my row boat in the water and I've cleaned the area 3 times this summer, but the weeds grow back, in a week you can't even tell I cleaned them out of there!
77	To me the LID is only a means of protecting the value of property owners investment in their own property. They should all have village sewer or holding tanks. Lake Iola is a stream / creek and will always be one.

C

APPENDIX C

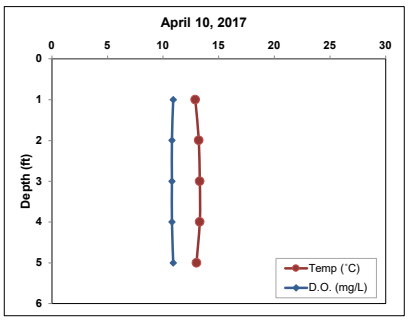
Water Quality Data

Iola Lake

Date: 4/10/2017
Time: 12:30
Weather: 48F, 100% clouds, ~7 mph winds
Entry: EEH

Max Depth: 5.5
IOLS Depth (ft): 2.0
IOLB Depth (ft): 5.0
Secchi Depth (ft): hit bottom

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	12.9	10.9	8.2	
2	13.2	10.8	8.1	
3	13.3	10.8	8.1	
4	13.3	10.8	8.1	
5	13.0	10.9	8.1	



Parameter	IOLS	IOLB
Total P (µg/L)	27.60	32.10
Dissolved P (µg/L)	1.80	ND
Chl-a (µg/L)	5.33	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	1940.00	2130.00
Lab Cond. (µS/cm)	407.00	414.00
Lab pH	8.22	8.14
Alkalinity (mg/L $CaCO_3$)	193.00	192.00
Total Susp. Solids (mg/L)	ND	9.71
Calcium (mg/L)	49.00	NA
Magnesium (mg/L)	25.50	NA
Hardness (mg/L)	227.00	NA
Color (SU)	30.00	NA
Turbidity (NTU)	NA	NA

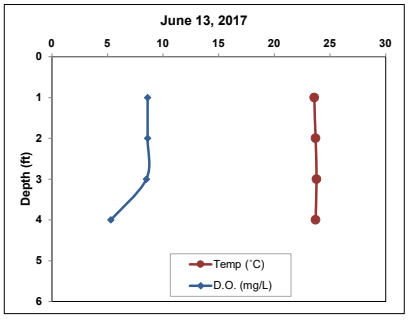
Data collected by JMB and EEH (Onterra).

Iola Lake

Date: 6/13/2017
Time: 13:00
Weather: 95% clouds
Entry: JLW

Max Depth: 5.1
IOLS Depth (ft): 3.0
IOLB Depth (ft):
Secchi Depth (ft): 5.1

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	23.6	8.6		
2	23.7	8.6		
3	23.8	8.5	8.4	
4	23.7	5.3		



Parameter	IOLS	IOLB
Total P (µg/L)	106.00	NA
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	11.20	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA
Magnesium (mg/L)	NA	NA
Hardness (mg/L)	NA	NA
Color (SU)	NA	NA
Turbidity (NTU)	NA	NA

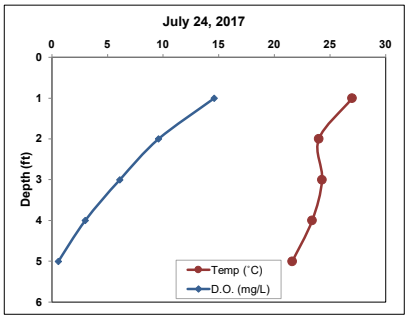
Data collected by TWH & AMS (Onterra). No distinct deep spot, point in open area west of original WQ point. Did not collect a bottom sample

Iola Lake

Date: 7/24/2017
Time: 15:30
Weather: 30% clouds, 82F, light breeze
Entry: EEH

Max Depth: 6.5
IOLS Depth (ft): 3.0
IOLB Depth (ft): -
Secchi Depth (ft): 5.4

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	27.0	14.6		
2	24.0	9.6		
3	24.3	6.1		
4	23.4	3.0		
5	21.6	0.6		



Parameter	IOLS	IOLB
Total P (µg/L)	187.00	NA
Dissolved P (µg/L)	6.90	NA
Chl-a (µg/L)	67.70	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	2590.00	NA
Lab Cond. (µS/cm)	480.00	NA
Lab pH	7.45	NA
Alkalinity (mg/L $CaCO_3$)	237.00	NA
Total Susp. Solids (mg/L)	8.29	NA
Calcium (mg/L)	56.70	NA
Magnesium (mg/L)	25.30	NA
Hardness (mg/L)	246.00	NA
Color (SU)	60.00	NA
Turbidity (NTU)	NA	NA

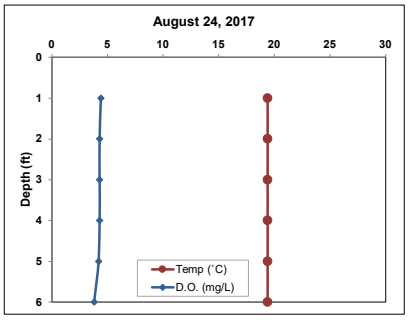
Data collected by JMB & AMS (Onterra). No distinct deep spot, Did not collect a bottom sample

Iola Lake

Date: 8/24/2017
Time: 9:34
Weather: 58F, 100% sun, very little winc
Entry: EEH

Max Depth: 7.2
IOLS Depth (ft): 3.0
IOLB Depth (ft): -
Secchi Depth (ft): hit bottom

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	19.4	4.4		
2	19.4	4.3		
3	19.4	4.3		
4	19.4	4.3		
5	19.4	4.2		
6	19.4	3.8		



Parameter	IOLS	IOLB
Total P (µg/L)	17.20	NA
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	1.90	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA
Magnesium (mg/L)	NA	NA
Hardness (mg/L)	NA	NA
Color (SU)	NA	NA
Turbidity (NTU)	NA	NA

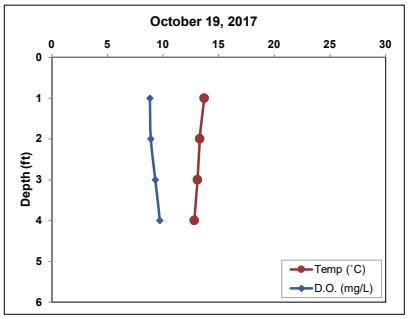
Data collected by AMS and EEH (Onterra).

Iola Lake

Date: 10/19/2017
Time: 11:45
Weather: 10% clouds, 62F
Entry: EEH

Max Depth: 4.5
IOLS Depth (ft): 3.0
IOLB Depth (ft):
Secchi Depth (ft): Hit bottom

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	13.7	8.8		
2	13.3	8.9		
3	13.1	9.3		
4	12.8	9.7		



Parameter	IOLS	IOLB
Total P (µg/L)	14.60	NA
Dissolved P (µg/L)	NA	NA
Chl-a (µg/L)	1.59	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	ND	NA
Calcium (mg/L)	NA	NA
Magnesium (mg/L)	NA	NA
Hardness (mg/L)	NA	NA
Color (SU)	NA	NA
Turbidity (NTU)	NA	NA

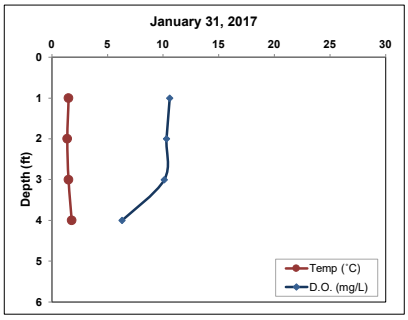
Data collected by JMB (Onterra)

Iola Lake

Date: 1/31/2018
Time: 10:50
Weather: 35F, 100% clouds
Entry: JLW

Max Depth: 4.5
IOLS Depth (ft): 3.0
IOLB Depth (ft):
Secchi Depth (ft): 4.5

Depth (ft)	Temp (˚C)	D.O. (mg/L)	pH	Sp. Cond. (µS/cm)
1	1.5	10.6		
2	1.4	10.3		
3	1.5	10.1		
4	1.8	6.3		



Parameter	IOLS	IOLB
Total P (µg/L)	15.40	NA
Dissolved P (µg/L)	ND	NA
Chl-a (µg/L)	NA	NA
TKN (µg/L)	NA	NA
$NO_3 + NO_2$-N (µg/L)	NA	NA
NH_3-N (µg/L)	NA	NA
Total N (µg/L)	NA	NA
Lab Cond. (µS/cm)	NA	NA
Lab pH	NA	NA
Alkalinity (mg/L $CaCO_3$)	NA	NA
Total Susp. Solids (mg/L)	NA	NA
Calcium (mg/L)	NA	NA
Magnesium (mg/L)	NA	NA
Hardness (mg/L)	NA	NA
Color (SU)	NA	NA
Turbidity (NTU)	NA	NA

Data collected by TWH & JMB (Onterra). Ice depth: 1.5 ft.

Water Quality Data

2017-2018	Surface		Bottom	
Parameter	Count	Mean	Count	Mean
Secchi Depth (feet)	3	5.0	NA	NA
Total P (µg/L)	6	61.3	1	32.1
Dissolved P (µg/L)	3	4.4	1	ND
Chl a (µg/L)	5	17.5	0	NA
TKN (µg/L	0	NA	0	NA
NO_3+NO_2-N (µg/L)	0	NA	0	NA
NH_3-N (µg/L)	0	NA	0	NA
Total N (µg/L)	2	2265.0	1	2130.0
Lab Cond. (µS/cm)	2	443.5	1	414.0
Alkal (mg/l $CaCO_3$)	2	215.0	1	192.0
Total Susp. Solids (mg/l)	3	8.3	1	9.7
Calcium (mg/L)	2	52.9	0	NA
Magnesium (mg/L)	2	25.4	0	NA
Hardness (mg/L)	2	236.5	0	NA
Color (SU)	2	45.0	0	NA
Turbidity (NTU)	0	NA	0	NA

Trophic State Index (TSI)

Year	TP	Chl-a	Secchi
1992			
1993	40.0	35.0	
1994			
2003	49.0	53.8	
2004			
2005			
2006	53.0	43.8	
2007			
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017	71.0	62.9	
All Years (Weighted)	60.8	55.6	52.8
SLDL Median	54.6	52.6	52.4
NCHF Ecoregion Median	61.1	57.3	53.2

	Secchi (feet)				Chlorophyll-*a* (µg/L)				Total Phosphorus (µg/L)			
	Growing Season		Summer		Growing Season		Summer		Growing Season		Summer	
Year	Count	Mean	Count	Mean	Count	Mean	Count	Mean	Count	Mean	Count	Mean
1992					1	1.7	0		1	8.0	0.0	
1993					2	1.3	1	1.6	2	10.5	1.0	12.0
1994					2	3.2	0		2	16.0	0.0	
2003					2	10.6	2	10.6	3	25.0	2.0	22.5
2004					0		0		0		0.0	
2005					0		0		0		0.0	
2006					5	3.5	3	3.9	5	24.6	3.0	29.7
2007					0		0		0		0.0	
2008					0		0		0		0.0	
2009					0		0		0		0.0	
2010					0		0		0		0.0	
2011					0		0		0		0.0	
2012					0		0		0		0.0	
2013					0		0		0		0.0	
2014					0		0		0		0.0	
2015					0		0		0		0.0	
2016					0		0		0		0.0	
2017	1	5.4	1	5.4	5	17.5	3	26.9	5	70.5	3.0	103.4
All Years (Weighted)		5.4		5.4		8.1		12.8		34.0		50.7
SLDL Median				5.6				9.4				33.0
NCHF Ecoregion Median				5.3				15.2				52.0

D

APPENDIX D

Watershed Analysis WiLMS Results

Date: 11/30/2017 Scenario: Lake Iola Watershed Current

Lake Id: Lake Iola
Watershed Id: 0

Hydrologic and Morphometric Data

Tributary Drainage Area: 4915.0 acre
Total Unit Runoff: 10.50 in.
Annual Runoff Volume: 4300.6 acre-ft
Lake Surface Area <As>: 232.0 acre
Lake Volume <V>: 639.0 acre-ft
Lake Mean Depth <z>: 2.8 ft
Precipitation - Evaporation: 3.8 in.
Hydraulic Loading: 18156.2 acre-ft/year
Areal Water Load <qs>: 78.3 ft/year
Lake Flushing Rate <p>: 28.41 1/year
Water Residence Time: 0.04 year
Observed spring overturn total phosphorus (SPO): 24.4 mg/m^3
Observed growing season mean phosphorus (GSM): 34.0 mg/m^3
% NPS Change: 0%
% PS Change: 0%

NON-POINT SOURCE DATA

Land Use	Acre (ac)	Low	Most Likely	High	Loading %	Low	Most Likely	High
		Loading (kg/ha-year)				Loading (kg/year)		
Row Crop AG	1640.0	0.50	1.00	3.00	47.5	332	664	1991
Mixed AG	0.0	0.30	0.80	1.40	0.0	0	0	0
Pasture/Grass	576.0	0.10	0.30	0.50	5.0	23	70	117
HD Urban (1/8 Ac)	3	1.00	1.50	2.00	0.1	1	2	2
MD Urban (1/4 Ac)	5.0	0.30	0.50	0.80	0.1	1	1	2
Rural Res (>1 Ac)	40.0	0.05	0.10	0.25	0.1	1	2	4
Wetlands	527.0	0.10	0.10	0.10	1.5	21	21	21
Forest	2124.0	0.05	0.09	0.18	5.5	43	77	155
Lake Surface	232.0	0.10	0.30	1.00	2.0	9	28	94

POINT SOURCE DATA

Point Sources	Water Load (m^3/year)	Low (kg/year)	Most Likely (kg/year)	High (kg/year)	Loading %
South Branch Little Wolf River	1.7E+007	0.0	532.0	0.0	38.0

SEPTIC TANK DATA

Description		Low	Most Likely	High	Loading %
Septic Tank Output (kg/capita-year)		0.30	0.50	0.80	
# capita-years	26.0				
% Phosphorus Retained by Soil		98.0	90.0	80.0	
Septic Tank Loading (kg/year)		0.16	1.30	4.16	0.1

TOTALS DATA

Description	Low	Most Likely	High	Loading %
Total Loading (lb)	951.6	3082.6	5268.7	100.0
Total Loading (kg)	431.6	1398.2	2389.9	100.0
Areal Loading (lb/ac-year)	4.10	13.29	22.71	
Areal Loading (mg/m^2-year)	459.75	1489.29	2545.48	
Total PS Loading (lb)	0.0	1172.8	0.0	38.0
Total PS Loading (kg)	0.0	532.0	0.0	38.0
Total NPS Loading (lb)	930.6	1844.8	5052.6	61.9
Total NPS Loading (kg)	422.1	836.8	2291.8	61.9

Phosphorus Prediction and Uncertainty Analysis Module

Date: 11/30/2017 Scenario: 224
Observed spring overturn total phosphorus (SPO): 24.4 mg/m^3
Observed growing season mean phosphorus (GSM): 34.0 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	16	52	89	18	53
Canfield-Bachmann, 1981 Natural Lake	17	53	87	19	56
Canfield-Bachmann, 1981 Artificial Lake	17	47	74	13	38
Rechow, 1979 General	11	37	63	3	9
Rechow, 1977 Anoxic	17	55	94	21	62
Rechow, 1977 water load<50m/year	13	43	73	9	26
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	16	53	90	29	119
Vollenweider, 1982 Combined OECD	15	40	62	11	38
Dillon-Rigler-Kirchner	10	34	58	10	41
Vollenweider, 1982 Shallow Lake/Res.	12	33	53	4	14
Larsen-Mercier, 1976	16	53	90	29	119
Nurnberg, 1984 Oxic	12	40	68	6	18

Lake Phosphorus Model	Confidence Lower Bound	Confidence Upper Bound	Parameter Fit?	Back Calculation (kg/year)	Model Type
Walker, 1987 Reservoir	26	81	z Tw	0	GSM
Canfield-Bachmann, 1981 Natural Lake	16	153	FIT	1	GSM
Canfield-Bachmann, 1981 Artificial Lake	15	135	FIT	1	GSM
Rechow, 1979 General	17	59	FIT	0	GSM
Rechow, 1977 Anoxic	28	85	FIT	0	GSM
Rechow, 1977 water load<50m/year	21	68	FIT	0	GSM
Rechow, 1977 water load>50m/year	N/A	N/A	N/A	N/A	N/A
Walker, 1977 General	22	91	FIT	0	SPO
Vollenweider, 1982 Combined OECD	17	70	FIT	0	ANN
Dillon-Rigler-Kirchner	17	53	P	0	SPO
Vollenweider, 1982 Shallow Lake/Res.	14	58	FIT	0	ANN
Larsen-Mercier, 1976	27	80	P Pin p	0	SPO
Nurnberg, 1984 Oxic	18	67	FIT	0	ANN

Water and Nutrient Outflow Module

Date: 11/30/2017 Scenario: 203
Average Annual Surface Total Phosphorus: 34mg/m^3
Annual Discharge: 1.82E+004 AF => 2.24E+007 m^3
Annual Outflow Loading: 1605.2 LB => 728.1 kg

E

APPENDIX E

Aquatic Plant Survey Data

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum sibiricum X spicatum	Potamogeton crispus	Ceratophyllum demersum	Chara spp.	Elodea canadensis	Heteranthera dubia	Lemna turionifera	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum verticillatum	Najas flexilis	Najas guadalupensis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton bicchoidii	Potamogeton friesii	Potamogeton illinoensis	Potamogeton natans	Potamogeton praelongus	Potamogeton strictifolius	Potamogeton zosteriformis	Sparcedia polyrhiza	Stuckenia pectinata	Typha latifolia	Utricularia minor	Utricularia vulgaris	Vallisneria americana	Wolffia spp.	Leptodictyum riparium	Aquatic moss	Filamentous algae	Canex pseudocyperus
1	44.525980	-89.142452	0	Lake Iola	Waupaca		BTB & JLW	1	0			NONNAVIGABLE (PLANTS)																																					0
2	44.525620	-89.142458	0	Lake Iola	Waupaca		BTB & JLW	2	0			NONNAVIGABLE (PLANTS)																																					0
3	44.525260	-89.142463	0	Lake Iola	Waupaca		BTB & JLW	3	0			NONNAVIGABLE (PLANTS)																																					0
4	44.526696	-89.141938	0	Lake Iola	Waupaca		BTB & JLW	4	0			NONNAVIGABLE (PLANTS)																																					0
5	44.526336	-89.141944	0	Lake Iola	Waupaca		BTB & JLW	5	0			NONNAVIGABLE (PLANTS)																																					0
6	44.525976	-89.141949	0	Lake Iola	Waupaca		BTB & JLW	6	0			NONNAVIGABLE (PLANTS)																																					0
7	44.525616	-89.141954	0	Lake Iola	Waupaca		BTB & JLW	7	0			NONNAVIGABLE (PLANTS)																																					0
8	44.525256	-89.141960	0	Lake Iola	Waupaca		BTB & JLW	8	0			NONNAVIGABLE (PLANTS)																																					0
9	44.524176	-89.141975	0	Lake Iola	Waupaca		BTB & JLW	9	0			NONNAVIGABLE (PLANTS)																																					0
10	44.526692	-89.141435	0	Lake Iola	Waupaca		BTB & JLW	10	0			NONNAVIGABLE (PLANTS)																																					0
11	44.526332	-89.141440	0	Lake Iola	Waupaca		BTB & JLW	11	0			NONNAVIGABLE (PLANTS)																																					0
12	44.525972	-89.141446	0	Lake Iola	Waupaca		BTB & JLW	12	0			NONNAVIGABLE (PLANTS)																																					0
13	44.525612	-89.141451	0	Lake Iola	Waupaca		BTB & JLW	13	0			NONNAVIGABLE (PLANTS)																																					0
14	44.525252	-89.141456	0	Lake Iola	Waupaca		BTB & JLW	14	0			NONNAVIGABLE (PLANTS)																																					0
15	44.524532	-89.141467	0	Lake Iola	Waupaca		BTB & JLW	15	0			NONNAVIGABLE (PLANTS)																																					0
16	44.524172	-89.141472	0	Lake Iola	Waupaca		BTB & JLW	16	0			NONNAVIGABLE (PLANTS)																																					0
17	44.523812	-89.141477	0	Lake Iola	Waupaca		BTB & JLW	17	0			NONNAVIGABLE (PLANTS)																																					0
18	44.526688	-89.140932	0	Lake Iola	Waupaca		BTB & JLW	18	0			NONNAVIGABLE (PLANTS)																																					0
19	44.526328	-89.140937	0	Lake Iola	Waupaca		BTB & JLW	19	0			NONNAVIGABLE (PLANTS)																																					0
20	44.525968	-89.140942	0	Lake Iola	Waupaca		BTB & JLW	20	0			NONNAVIGABLE (PLANTS)																																					0
21	44.525248	-89.140953	0	Lake Iola	Waupaca		BTB & JLW	21	0			NONNAVIGABLE (PLANTS)																																					0
22	44.524168	-89.140969	0	Lake Iola	Waupaca		BTB & JLW	22	0			NONNAVIGABLE (PLANTS)																																					0
23	44.523808	-89.140974	0	Lake Iola	Waupaca		BTB & JLW	23	0			NONNAVIGABLE (PLANTS)																																					0
24	44.523448	-89.140979	0	Lake Iola	Waupaca		BTB & JLW	24	0			NONNAVIGABLE (PLANTS)																																					0
25	44.526685	-89.140429	0	Lake Iola	Waupaca		BTB & JLW	25	0			NONNAVIGABLE (PLANTS)																																					0
26	44.526325	-89.140434	0	Lake Iola	Waupaca		BTB & JLW	26	0			NONNAVIGABLE (PLANTS)																																					0
27	44.525244	-89.140450	0	Lake Iola	Waupaca		BTB & JLW	27	0			NONNAVIGABLE (PLANTS)																																					0
28	44.524884	-89.140455	0	Lake Iola	Waupaca		BTB & JLW	28	0			NONNAVIGABLE (PLANTS)																																					0
29	44.524524	-89.140460	0	Lake Iola	Waupaca		BTB & JLW	29	0			NONNAVIGABLE (PLANTS)																																					0
30	44.524164	-89.140466	0	Lake Iola	Waupaca		BTB & JLW	30	0			NONNAVIGABLE (PLANTS)																																					0
31	44.523804	-89.140471	0	Lake Iola	Waupaca		BTB & JLW	31	0			NONNAVIGABLE (PLANTS)																																					0
32	44.523444	-89.140476	0	Lake Iola	Waupaca		BTB & JLW	32	0			NONNAVIGABLE (PLANTS)																																					0
33	44.528841	-89.139893	0	Lake Iola	Waupaca		BTB & JLW	33	0			NONNAVIGABLE (PLANTS)																																					0
34	44.528481	-89.139899	0	Lake Iola	Waupaca		BTB & JLW	34	0			NONNAVIGABLE (PLANTS)																																					0
35	44.526681	-89.139925	0	Lake Iola	Waupaca		BTB & JLW	35	0			NONNAVIGABLE (PLANTS)																																					0
36	44.524881	-89.139952	0	Lake Iola	Waupaca		BTB & JLW	36	0			NONNAVIGABLE (PLANTS)																																					0
37	44.524520	-89.139957	0	Lake Iola	Waupaca		BTB & JLW	37	0			NONNAVIGABLE (PLANTS)																																					0
38	44.524160	-89.139962	0	Lake Iola	Waupaca		BTB & JLW	38	0			NONNAVIGABLE (PLANTS)																																					0
39	44.523800	-89.139968	0	Lake Iola	Waupaca		BTB & JLW	39	0			NONNAVIGABLE (PLANTS)																																					0
40	44.523440	-89.139973	0	Lake Iola	Waupaca		BTB & JLW	40	0			NONNAVIGABLE (PLANTS)																																					0
41	44.528838	-89.139390	0	Lake Iola	Waupaca		BTB & JLW	41	0			NONNAVIGABLE (PLANTS)																																					0
42	44.528477	-89.139395	0	Lake Iola	Waupaca		BTB & JLW	42	0			NONNAVIGABLE (PLANTS)																																					0
43	44.527037	-89.139417	0	Lake Iola	Waupaca		BTB & JLW	43	0			NONNAVIGABLE (PLANTS)																																					0
44	44.525237	-89.139443	0	Lake Iola	Waupaca		BTB & JLW	44	0			NONNAVIGABLE (PLANTS)																																					0
45	44.524877	-89.139448	0	Lake Iola	Waupaca		BTB & JLW	45	0			NONNAVIGABLE (PLANTS)																																					0
46	44.524517	-89.139454	0	Lake Iola	Waupaca		BTB & JLW	46	0			NONNAVIGABLE (PLANTS)																																					0
47	44.524157	-89.139459	0	Lake Iola	Waupaca		BTB & JLW	47	0			NONNAVIGABLE (PLANTS)																																					0
48	44.523797	-89.139464	0	Lake Iola	Waupaca		BTB & JLW	48	0			NONNAVIGABLE (PLANTS)																																					0
49	44.523437	-89.139470	0	Lake Iola	Waupaca		BTB & JLW	49	0			NONNAVIGABLE (PLANTS)																																					0
50	44.523076	-89.139475	0	Lake Iola	Waupaca		BTB & JLW	50	0			NONNAVIGABLE (PLANTS)																																					0
51	44.528834	-89.138887	0	Lake Iola	Waupaca		BTB & JLW	51	0			NONNAVIGABLE (PLANTS)																																					0
52	44.528474	-89.138892	0	Lake Iola	Waupaca		BTB & JLW	52	0			NONNAVIGABLE (PLANTS)																																					0
53	44.528114	-89.138897	0	Lake Iola	Waupaca		BTB & JLW	53	0			NONNAVIGABLE (PLANTS)																																					0
54	44.527393	-89.138908	0	Lake Iola	Waupaca		BTB & JLW	54	0			NONNAVIGABLE (PLANTS)																																					0
55	44.527033	-89.138913	0	Lake Iola	Waupaca		BTB & JLW	55	0			NONNAVIGABLE (PLANTS)																																					0
56	44.525233	-89.138940	0	Lake Iola	Waupaca		BTB & JLW	56	0			NONNAVIGABLE (PLANTS)																																					0
57	44.524873	-89.138945	0	Lake Iola	Waupaca		BTB & JLW	57	0			NONNAVIGABLE (PLANTS)																																					0
58	44.524513	-89.138950	0	Lake Iola	Waupaca		BTB & JLW	58	0			NONNAVIGABLE (PLANTS)																																					0
59	44.524153	-89.138956	0	Lake Iola	Waupaca		BTB & JLW	59	0			NONNAVIGABLE (PLANTS)																																					0
60	44.523793	-89.138961	0	Lake Iola	Waupaca		BTB & JLW	60	0			NONNAVIGABLE (PLANTS)																																					0
61	44.523433	-89.138966	0	Lake Iola	Waupaca		BTB & JLW	61	0			NONNAVIGABLE (PLANTS)																																					0
62	44.523073	-89.138972	0	Lake Iola	Waupaca		BTB & JLW	62	0			NONNAVIGABLE (PLANTS)																																					0
63	44.522713	-89.138977	0	Lake Iola	Waupaca		BTB & JLW	63	0			NONNAVIGABLE (PLANTS)																																					0
64	44.522353	-89.138982	239	Lake Iola	Waupaca	7/26/2017	BTB & JLW	64	0			NONNAVIGABLE (PLANTS)																																					0
65	44.521992	-89.138987	238	Lake Iola	Waupaca	7/26/2017	BTB & JLW	65	4	Muck	Pole	SAMPLED			2			1								1		2								1											0
66	44.528830	-89.138383	0	Lake Iola	Waupaca		BTB & JLW	66	0			NONNAVIGABLE (PLANTS)																																					0
67	44.528470	-89.138389	0	Lake Iola	Waupaca		BTB & JLW	67	0			NONNAVIGABLE (PLANTS)																																					0
68	44.528110	-89.138394	0	Lake Iola	Waupaca		BTB & JLW	68	0			NONNAVIGABLE (PLANTS)																																					0
69	44.527750	-89.138399	0	Lake Iola	Waupaca		BTB & JLW	69	0			NONNAVIGABLE (PLANTS)																																					0
70	44.527390	-89.138405	0	Lake Iola	Waupaca		BTB & JLW	70	0			NONNAVIGABLE (PLANTS)																																					0
71	44.527030	-89.138410	0	Lake Iola	Waupaca		BTB & JLW	71	0			NONNAVIGABLE (PLANTS)																																					0
72	44.525229	-89.138436	0	Lake Iola	Waupaca		BTB & JLW	72	0			NONNAVIGABLE (PLANTS)																																					0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum sibiricum X spicatum	Potamogeton crispus	Ceratophyllum demersum	Chara spp.	Elodea canadensis	Heteranthera dubia	Lemna turionifera	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum verticillatum	Najas flexilis	Najas guadalupensis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton bicupulatus	Potamogeton friesii	Potamogeton illinoensis	Potamogeton natans	Potamogeton praelongus	Potamogeton strictifolius	Potamogeton zosteriformis	Sparganium polyphyllum	Stuckenia pectinata	Typha latifolia	Utricularia minor	Utricularia vulgaris	Vallisneria americana	Wolffia spp.	Leptodictyum riparium	Aquatic moss	Filamentous algae	Carex pseudocyperus
73	44.524869	-89.138442	0	Lake Iola	Waupaca		BTB & JLW	73	0			NONNAVIGABLE (PLANTS)																																					0
74	44.524509	-89.138447	0	Lake Iola	Waupaca		BTB & JLW	74	0			NONNAVIGABLE (PLANTS)																																					0
75	44.524149	-89.138452	0	Lake Iola	Waupaca		BTB & JLW	75	0			NONNAVIGABLE (PLANTS)																																					0
76	44.523789	-89.138458	0	Lake Iola	Waupaca		BTB & JLW	76	0			NONNAVIGABLE (PLANTS)																																					0
77	44.523429	-89.138463	0	Lake Iola	Waupaca		BTB & JLW	77	0			NONNAVIGABLE (PLANTS)																																					0
78	44.523069	-89.138468	0	Lake Iola	Waupaca		BTB & JLW	78	0			NONNAVIGABLE (PLANTS)																																					0
79	44.522709	-89.138474	0	Lake Iola	Waupaca		BTB & JLW	79	0			NONNAVIGABLE (PLANTS)																																					0
80	44.522349	-89.138479	0	Lake Iola	Waupaca		BTB & JLW	80	0			NONNAVIGABLE (PLANTS)																																					0
81	44.521989	-89.138484	237	Lake Iola	Waupaca	7/26/2017	BTB & JLW	81	0			NONNAVIGABLE (PLANTS)																																					0
82	44.528106	-89.137891	0	Lake Iola	Waupaca		BTB & JLW	82	0			NONNAVIGABLE (PLANTS)																																					0
83	44.527746	-89.137896	0	Lake Iola	Waupaca		BTB & JLW	83	0			NONNAVIGABLE (PLANTS)																																					0
84	44.527386	-89.137901	0	Lake Iola	Waupaca		BTB & JLW	84	0			NONNAVIGABLE (PLANTS)																																					0
85	44.527026	-89.137907	0	Lake Iola	Waupaca		BTB & JLW	85	0			NONNAVIGABLE (PLANTS)																																					0
86	44.526666	-89.137912	0	Lake Iola	Waupaca		BTB & JLW	86	0			NONNAVIGABLE (PLANTS)																																					0
87	44.526306	-89.137917	0	Lake Iola	Waupaca		BTB & JLW	87	0			NONNAVIGABLE (PLANTS)																																					0
88	44.525946	-89.137922	0	Lake Iola	Waupaca		BTB & JLW	88	0			NONNAVIGABLE (PLANTS)																																					0
89	44.525586	-89.137928	0	Lake Iola	Waupaca		BTB & JLW	89	0			NONNAVIGABLE (PLANTS)																																					0
90	44.525225	-89.137933	0	Lake Iola	Waupaca		BTB & JLW	90	0			NONNAVIGABLE (PLANTS)																																					0
91	44.524865	-89.137938	0	Lake Iola	Waupaca		BTB & JLW	91	0			NONNAVIGABLE (PLANTS)																																					0
92	44.524505	-89.137944	0	Lake Iola	Waupaca		BTB & JLW	92	0			NONNAVIGABLE (PLANTS)																																					0
93	44.524145	-89.137949	0	Lake Iola	Waupaca		BTB & JLW	93	0			NONNAVIGABLE (PLANTS)																																					0
94	44.523785	-89.137954	0	Lake Iola	Waupaca		BTB & JLW	94	0			NONNAVIGABLE (PLANTS)																																					0
95	44.523425	-89.137960	0	Lake Iola	Waupaca		BTB & JLW	95	0			NONNAVIGABLE (PLANTS)																																					0
96	44.523065	-89.137965	0	Lake Iola	Waupaca		BTB & JLW	96	0			NONNAVIGABLE (PLANTS)																																					0
97	44.522705	-89.137970	0	Lake Iola	Waupaca		BTB & JLW	97	0			NONNAVIGABLE (PLANTS)																																					0
98	44.522345	-89.137976	0	Lake Iola	Waupaca		BTB & JLW	98	0			NONNAVIGABLE (PLANTS)																																					0
99	44.521985	-89.137981	236	Lake Iola	Waupaca	7/26/2017	BTB & JLW	99	0			NONNAVIGABLE (PLANTS)																																					0
100	44.528102	-89.137387	0	Lake Iola	Waupaca		BTB & JLW	100	0			NONNAVIGABLE (PLANTS)																																					0
101	44.527742	-89.137393	0	Lake Iola	Waupaca		BTB & JLW	101	0			NONNAVIGABLE (PLANTS)																																					0
102	44.527382	-89.137398	0	Lake Iola	Waupaca		BTB & JLW	102	0			NONNAVIGABLE (PLANTS)																																					0
103	44.527022	-89.137403	0	Lake Iola	Waupaca		BTB & JLW	103	0			NONNAVIGABLE (PLANTS)																																					0
104	44.526662	-89.137409	0	Lake Iola	Waupaca		BTB & JLW	104	0			NONNAVIGABLE (PLANTS)																																					0
105	44.526302	-89.137414	0	Lake Iola	Waupaca		BTB & JLW	105	0			NONNAVIGABLE (PLANTS)																																					0
106	44.525942	-89.137419	0	Lake Iola	Waupaca		BTB & JLW	106	0			NONNAVIGABLE (PLANTS)																																					0
107	44.525582	-89.137424	0	Lake Iola	Waupaca		BTB & JLW	107	0			NONNAVIGABLE (PLANTS)																																					0
108	44.525222	-89.137430	0	Lake Iola	Waupaca		BTB & JLW	108	0			NONNAVIGABLE (PLANTS)																																					0
109	44.524862	-89.137435	0	Lake Iola	Waupaca		BTB & JLW	109	0			NONNAVIGABLE (PLANTS)																																					0
110	44.524502	-89.137440	0	Lake Iola	Waupaca		BTB & JLW	110	0			NONNAVIGABLE (PLANTS)																																					0
111	44.523781	-89.137451	243	Lake Iola	Waupaca	7/26/2017	BTB & JLW	111	0			NONNAVIGABLE (PLANTS)																																					0
112	44.523421	-89.137456	244	Lake Iola	Waupaca	7/26/2017	BTB & JLW	112	0			NONNAVIGABLE (PLANTS)																																					0
113	44.523061	-89.137462	247	Lake Iola	Waupaca	7/26/2017	BTB & JLW	113	0			NONNAVIGABLE (PLANTS)																																					0
114	44.522701	-89.137467	248	Lake Iola	Waupaca	7/26/2017	BTB & JLW	114	0			NONNAVIGABLE (PLANTS)																																					0
115	44.522341	-89.137472	249	Lake Iola	Waupaca	7/26/2017	BTB & JLW	115	0			NONNAVIGABLE (PLANTS)																																					0
116	44.521981	-89.137478	235	Lake Iola	Waupaca	7/26/2017	BTB & JLW	116	3	Muck	Pole	SAMPLED			3				3	1															1													0
117	44.527378	-89.136895	0	Lake Iola	Waupaca		BTB & JLW	117	0			NONNAVIGABLE (PLANTS)																																					0
118	44.527018	-89.136900	0	Lake Iola	Waupaca		BTB & JLW	118	0			NONNAVIGABLE (PLANTS)																																					0
119	44.526658	-89.136905	0	Lake Iola	Waupaca		BTB & JLW	119	0			NONNAVIGABLE (PLANTS)																																					0
120	44.526298	-89.136910	0	Lake Iola	Waupaca		BTB & JLW	120	0			NONNAVIGABLE (PLANTS)																																					0
121	44.525938	-89.136916	0	Lake Iola	Waupaca		BTB & JLW	121	0			NONNAVIGABLE (PLANTS)																																					0
122	44.525578	-89.136921	0	Lake Iola	Waupaca		BTB & JLW	122	0			NONNAVIGABLE (PLANTS)																																					0
123	44.525218	-89.136926	0	Lake Iola	Waupaca		BTB & JLW	123	0			NONNAVIGABLE (PLANTS)																																					0
124	44.523418	-89.136953	242	Lake Iola	Waupaca	7/26/2017	BTB & JLW	124	5	Muck	Pole	SAMPLED			2		V	2		1						1											1											0
125	44.523057	-89.136958	245	Lake Iola	Waupaca	7/26/2017	BTB & JLW	125	4	Muck	Pole	SAMPLED			3			1	1									3					1													0
126	44.522697	-89.136964	246	Lake Iola	Waupaca	7/26/2017	BTB & JLW	126	2	Muck	Pole	SAMPLED			2			1		1		1		1			1						1													0
127	44.522337	-89.136969	241	Lake Iola	Waupaca	7/26/2017	BTB & JLW	127	2	Muck	Pole	SAMPLED			3				3															1													0
128	44.521977	-89.136974	234	Lake Iola	Waupaca	7/26/2017	BTB & JLW	128	3	Muck	Pole	SAMPLED			3			1	3														1	1	1											0
129	44.527374	-89.136391	0	Lake Iola	Waupaca		BTB & JLW	129	0			NONNAVIGABLE (PLANTS)																																					0
130	44.527014	-89.136397	0	Lake Iola	Waupaca		BTB & JLW	130	0			NONNAVIGABLE (PLANTS)																																					0
131	44.526654	-89.136402	0	Lake Iola	Waupaca		BTB & JLW	131	0			NONNAVIGABLE (PLANTS)																																					0
132	44.526294	-89.136407	0	Lake Iola	Waupaca		BTB & JLW	132	0			NONNAVIGABLE (PLANTS)																																					0
133	44.525934	-89.136412	0	Lake Iola	Waupaca		BTB & JLW	133	0			NONNAVIGABLE (PLANTS)																																					0
134	44.525574	-89.136418	0	Lake Iola	Waupaca		BTB & JLW	134	0			NONNAVIGABLE (PLANTS)																																					0
135	44.525214	-89.136423	0	Lake Iola	Waupaca		BTB & JLW	135	0			NONNAVIGABLE (PLANTS)																																					0
136	44.524494	-89.136434	0	Lake Iola	Waupaca		BTB & JLW	136	0			NONNAVIGABLE (PLANTS)																																					0
137	44.522334	-89.136466	240	Lake Iola	Waupaca	7/26/2017	BTB & JLW	137	1	Sand	Pole	SAMPLED			3				3		1	1				1							1					1									0
138	44.521973	-89.136471	233	Lake Iola	Waupaca	7/26/2017	BTB & JLW	138	0			NONNAVIGABLE (PLANTS)																																					0
139	44.527371	-89.135888	0	Lake Iola	Waupaca		BTB & JLW	139	0			NONNAVIGABLE (PLANTS)																																					0
140	44.527011	-89.135893	0	Lake Iola	Waupaca		BTB & JLW	140	0			NONNAVIGABLE (PLANTS)																																					0
141	44.526650	-89.135899	0	Lake Iola	Waupaca		BTB & JLW	141	0			NONNAVIGABLE (PLANTS)																																					0
142	44.526290	-89.135904	0	Lake Iola	Waupaca		BTB & JLW	142	0			NONNAVIGABLE (PLANTS)																																					0
143	44.525930	-89.135909	0	Lake Iola	Waupaca		BTB & JLW	143	0			NONNAVIGABLE (PLANTS)																																					0
144	44.525570	-89.135914	0	Lake Iola	Waupaca		BTB & JLW	144	0			NONNAVIGABLE (PLANTS)																																					0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum sibiricum X spicatum	Myriophyllum sibiricum	Potamogeton crispus	Ceratophyllum demersum	Chara spp.	Elodea canadensis	Heteranthera dubia	Lemna turionifera	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum verticillatum	Najas flexilis	Najas guadalupensis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton berchtoldii	Potamogeton friesii	Potamogeton illinoensis	Potamogeton natans	Potamogeton praelongus	Potamogeton strictifolius	Potamogeton zosteriformis	Spirodela polyrhiza	Stuckenia pectinata	Typha latifolia	Utricularia minor	Utricularia vulgaris	Vallisneria americana	Wolffia spp.	Leptodictyum riparium	Aquatic moss	Filamentous algae	Carex pseudocyperus
145	44.525210	-89.135920	0	Lake Iola	Waupaca		BTB & JLW	145	0			NONNAVIGABLE (PLANTS)																																						0
146	44.524490	-89.135930	0	Lake Iola	Waupaca		BTB & JLW	146	0			NONNAVIGABLE (PLANTS)																																						0
147	44.521970	-89.135968	232	Lake Iola	Waupaca	7/26/2017	BTB & JLW	147	4	Muck	Pole	SAMPLED			3					1						1			2										1								0
148	44.526647	-89.135395	0	Lake Iola	Waupaca		BTB & JLW	148	0			NONNAVIGABLE (PLANTS)																																						0
149	44.526287	-89.135401	0	Lake Iola	Waupaca		BTB & JLW	149	0			NONNAVIGABLE (PLANTS)																																						0
150	44.525927	-89.135406	0	Lake Iola	Waupaca		BTB & JLW	150	0			NONNAVIGABLE (PLANTS)																																						0
151	44.525206	-89.135416	0	Lake Iola	Waupaca		BTB & JLW	151	0			NONNAVIGABLE (PLANTS)																																						0
152	44.524846	-89.135422	0	Lake Iola	Waupaca		BTB & JLW	152	0			NONNAVIGABLE (PLANTS)																																						0
153	44.524486	-89.135427	0	Lake Iola	Waupaca		BTB & JLW	153	0			NONNAVIGABLE (PLANTS)																																						0
154	44.522686	-89.135454	250	Lake Iola	Waupaca	7/26/2017	BTB & JLW	154	4	Muck	Pole	SAMPLED			2				2	1						1			1					1													0
155	44.521966	-89.135464	231	Lake Iola	Waupaca	7/26/2017	BTB & JLW	155	5	Muck	Pole	SAMPLED			3				2		1					1			2								1									0
156	44.525563	-89.134908	0	Lake Iola	Waupaca		BTB & JLW	156	0			NONNAVIGABLE (PLANTS)																																						0
157	44.525203	-89.134913	0	Lake Iola	Waupaca		BTB & JLW	157	0			NONNAVIGABLE (PLANTS)																																						0
158	44.524843	-89.134919	0	Lake Iola	Waupaca		BTB & JLW	158	0			NONNAVIGABLE (PLANTS)																																						0
159	44.524482	-89.134924	0	Lake Iola	Waupaca		BTB & JLW	159	0			NONNAVIGABLE (PLANTS)																																						0
160	44.524122	-89.134929	0	Lake Iola	Waupaca		BTB & JLW	160	0			NONNAVIGABLE (PLANTS)																																						0
161	44.522322	-89.134956	252	Lake Iola	Waupaca	7/26/2017	BTB & JLW	161	4	Muck	Pole	SAMPLED			3					3	1																										0
162	44.521962	-89.134961	251	Lake Iola	Waupaca	7/26/2017	BTB & JLW	162	0			NONNAVIGABLE (PLANTS)																																						0
163	44.521602	-89.134966	230	Lake Iola	Waupaca	7/26/2017	BTB & JLW	163	3	Muck	Pole	SAMPLED			3					3																1	1										0
164	44.525559	-89.134405	0	Lake Iola	Waupaca		BTB & JLW	164	0			NONNAVIGABLE (PLANTS)																																						0
165	44.525199	-89.134410	0	Lake Iola	Waupaca		BTB & JLW	165	0			NONNAVIGABLE (PLANTS)																																						0
166	44.524839	-89.134415	0	Lake Iola	Waupaca		BTB & JLW	166	0			NONNAVIGABLE (PLANTS)																																						0
167	44.524479	-89.134421	0	Lake Iola	Waupaca		BTB & JLW	167	0			NONNAVIGABLE (PLANTS)																																						0
168	44.524119	-89.134426	0	Lake Iola	Waupaca		BTB & JLW	168	0			NONNAVIGABLE (PLANTS)																																						0
169	44.523759	-89.134431	0	Lake Iola	Waupaca		BTB & JLW	169	0			NONNAVIGABLE (PLANTS)																																						0
170	44.521958	-89.134458	253	Lake Iola	Waupaca	7/26/2017	BTB & JLW	170	5	Muck	Pole	SAMPLED			3					3						1			1																	0
171	44.521598	-89.134463	229	Lake Iola	Waupaca	7/26/2017	BTB & JLW	171	0			NONNAVIGABLE (PLANTS)																																						0
172	44.521238	-89.134469	228	Lake Iola	Waupaca	7/26/2017	BTB & JLW	172	5	Muck	Pole	SAMPLED			3					1	1						1			3																0
173	44.525195	-89.133907	0	Lake Iola	Waupaca		BTB & JLW	173	0			NONNAVIGABLE (PLANTS)																																						0
174	44.524835	-89.133912	0	Lake Iola	Waupaca		BTB & JLW	174	0			NONNAVIGABLE (PLANTS)																																						0
175	44.524475	-89.133917	0	Lake Iola	Waupaca		BTB & JLW	175	0			NONNAVIGABLE (PLANTS)																																						0
176	44.524115	-89.133923	0	Lake Iola	Waupaca		BTB & JLW	176	0			NONNAVIGABLE (PLANTS)																																						0
177	44.523755	-89.133928	0	Lake Iola	Waupaca		BTB & JLW	177	0			NONNAVIGABLE (PLANTS)																																						0
178	44.523395	-89.133933	0	Lake Iola	Waupaca		BTB & JLW	178	0			NONNAVIGABLE (PLANTS)																																						0
179	44.521594	-89.133960	254	Lake Iola	Waupaca	7/26/2017	BTB & JLW	179	3	Muck	Pole	SAMPLED			3					3																1											0
180	44.521234	-89.133965	227	Lake Iola	Waupaca	7/26/2017	BTB & JLW	180	0			NONNAVIGABLE (PLANTS)																																						0
181	44.520874	-89.133971	226	Lake Iola	Waupaca	7/26/2017	BTB & JLW	181	5	Muck	Pole	SAMPLED			3		1	2		1		1				1			1										1					1			0
182	44.524831	-89.133409	0	Lake Iola	Waupaca		BTB & JLW	182	0			NONNAVIGABLE (PLANTS)																																						0
183	44.524471	-89.133414	0	Lake Iola	Waupaca		BTB & JLW	183	0			NONNAVIGABLE (PLANTS)																																						0
184	44.524111	-89.133419	0	Lake Iola	Waupaca		BTB & JLW	184	0			NONNAVIGABLE (PLANTS)																																						0
185	44.523751	-89.133425	0	Lake Iola	Waupaca		BTB & JLW	185	0			NONNAVIGABLE (PLANTS)																																						0
186	44.523391	-89.133430	276	Lake Iola	Waupaca	7/26/2017	BTB & JLW	186	0			NONNAVIGABLE (PLANTS)																																						0
187	44.523031	-89.133435	277	Lake Iola	Waupaca	7/26/2017	BTB & JLW	187	0			NONNAVIGABLE (PLANTS)																																						0
188	44.521591	-89.133457	255	Lake Iola	Waupaca	7/26/2017	BTB & JLW	188	6	Muck	Pole	SAMPLED			3					3	1	1								1																0
189	44.520870	-89.133467	225	Lake Iola	Waupaca	7/26/2017	BTB & JLW	189	0			NONNAVIGABLE (PLANTS)																																						0
190	44.524467	-89.132911	0	Lake Iola	Waupaca		BTB & JLW	190	0			NONNAVIGABLE (PLANTS)																																						0
191	44.524107	-89.132916	0	Lake Iola	Waupaca		BTB & JLW	191	0			NONNAVIGABLE (PLANTS)																																						0
192	44.523747	-89.132921	275	Lake Iola	Waupaca	7/26/2017	BTB & JLW	192	0			NONNAVIGABLE (PLANTS)																																						0
193	44.523387	-89.132927	274	Lake Iola	Waupaca	7/26/2017	BTB & JLW	193	5	Muck	Pole	SAMPLED			3					3					1																					0
194	44.523027	-89.132932	262	Lake Iola	Waupaca	7/26/2017	BTB & JLW	194	4	Muck	Pole	SAMPLED			3				1	3	1		1											1											0
195	44.522667	-89.132937	261	Lake Iola	Waupaca	7/26/2017	BTB & JLW	195	6	Muck	Pole	SAMPLED			3					3																										0
196	44.522307	-89.132943	260	Lake Iola	Waupaca	7/26/2017	BTB & JLW	196	3	Muck	Pole	SAMPLED			3					3		1		1																1					1		0
197	44.521587	-89.132953	257	Lake Iola	Waupaca	7/26/2017	BTB & JLW	197	5	Muck	Pole	SAMPLED			3	1				1				1				1			2														0
198	44.521227	-89.132959	283	Lake Iola	Waupaca	7/26/2017	BTB & JLW	198	0			NONNAVIGABLE (PLANTS)																																						0
199	44.520867	-89.132964	256	Lake Iola	Waupaca	7/26/2017	BTB & JLW	199	0			NONNAVIGABLE (PLANTS)																																						0
200	44.520506	-89.132969	224	Lake Iola	Waupaca	7/26/2017	BTB & JLW	200	4	Muck	Pole	SAMPLED			3					1		3														1							1			0
201	44.524463	-89.132407	0	Lake Iola	Waupaca		BTB & JLW	201	0			NONNAVIGABLE (PLANTS)																																						0
202	44.524103	-89.132413	0	Lake Iola	Waupaca		BTB & JLW	202	0			NONNAVIGABLE (PLANTS)																																						0
203	44.523743	-89.132418	273	Lake Iola	Waupaca	7/26/2017	BTB & JLW	203	0			NONNAVIGABLE (PLANTS)																																						0
204	44.523383	-89.132423	270	Lake Iola	Waupaca	7/26/2017	BTB & JLW	204	3	Muck	Pole	SAMPLED			3					3																										0
205	44.523023	-89.132429	263	Lake Iola	Waupaca	7/26/2017	BTB & JLW	205	5	Muck	Pole	SAMPLED			3					3																										0
206	44.522663	-89.132434	264	Lake Iola	Waupaca	7/26/2017	BTB & JLW	206	0			NONNAVIGABLE (PLANTS)																																						0
207	44.522303	-89.132439	259	Lake Iola	Waupaca	7/26/2017	BTB & JLW	207	5	Muck	Pole	SAMPLED			3					3	1				1										1											0
208	44.521943	-89.132445	258	Lake Iola	Waupaca	7/26/2017	BTB & JLW	208	7	Muck	Pole	SAMPLED			3				1		3																										0
209	44.521583	-89.132450	281	Lake Iola	Waupaca	7/26/2017	BTB & JLW	209	0			NONNAVIGABLE (PLANTS)																																						0
210	44.521223	-89.132455	284	Lake Iola	Waupaca	7/26/2017	BTB & JLW	210	0			NONNAVIGABLE (PLANTS)																																						0
211	44.520863	-89.132461	282	Lake Iola	Waupaca	7/26/2017	BTB & JLW	211	3	Sand	Pole	SAMPLED			3					3																1											0
212	44.520503	-89.132466	288	Lake Iola	Waupaca	7/26/2017	BTB & JLW	212	4	Muck	Pole	SAMPLED			3					1			1	2					1									1								0
213	44.5201426	-89.1324714	223	Lake Iola	Waupaca	7/26/2017	BTB & JLW	213	4	Sand	Pole	SAMPLED			3				1		3		1					1										1								0
214	44.5240995	-89.13190931	0	Lake Iola	Waupaca		BTB & JLW	214	0			NONNAVIGABLE (PLANTS)																																						0
215	44.52373943	-89.13191465	272	Lake Iola	Waupaca	7/26/2017	BTB & JLW	215	0			NONNAVIGABLE (PLANTS)																																						0
216	44.52337937	-89.13192	268	Lake Iola	Waupaca	7/26/2017	BTB & JLW	216	4	Muck	Pole	SAMPLED			3					1		1			1										1				1							0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum sibiricum X spicatum	Potamogeton crispus	Ceratophyllum demersum	Chara spp.	Elodea canadensis	Heteranthera dubia	Lemna turionifera	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum verticillatum	Najas flexilis	Najas guadalupensis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton bicchoidii	Potamogeton friesii	Potamogeton illinoensis	Potamogeton natans	Potamogeton praelongus	Potamogeton strictifolius	Potamogeton zosteriformis	Spirodela polyrhiza	Stuckenia pectinata	Typha latifolia	Utricularia minor	Utricularia vulgaris	Vallisneria americana	Wolffia spp.	Leptodictyum riparium	Aquatic moss	Filamentous algae	Canx pseudocyperus
217	44.5230193	-89.13192535	265	Lake Iola	Waupaca	7/26/2017	BTB & JLW	217	7	Muck	Pole	SAMPLED			3			1		3																											0
218	44.52265923	-89.13193069	266	Lake Iola	Waupaca	7/26/2017	BTB & JLW	218	0			NONNAVIGABLE (PLANTS)																																					0
219	44.52229917	-89.13193604	278	Lake Iola	Waupaca	7/26/2017	BTB & JLW	219	0			NONNAVIGABLE (PLANTS)																																					0
220	44.5219391	-89.13194139	279	Lake Iola	Waupaca	7/26/2017	BTB & JLW	220	0			NONNAVIGABLE (PLANTS)																																					0
221	44.52157904	-89.13194674	280	Lake Iola	Waupaca	7/26/2017	BTB & JLW	221	5	Muck	Pole	SAMPLED			3			1		1																											0
222	44.52121897	-89.13195208	285	Lake Iola	Waupaca	7/26/2017	BTB & JLW	222	0			NONNAVIGABLE (PLANTS)																																					0
223	44.5208589	-89.13195743	287	Lake Iola	Waupaca	7/26/2017	BTB & JLW	223	0			NONNAVIGABLE (PLANTS)																																					0
224	44.52049884	-89.13196278	289	Lake Iola	Waupaca	7/26/2017	BTB & JLW	224	0			NONNAVIGABLE (PLANTS)																																					0
225	44.52013877	-89.13196812	222	Lake Iola	Waupaca	7/26/2017	BTB & JLW	225	6	Muck	Pole	SAMPLED			2			1	1										2																		0
226	44.52373561	-89.13141135	271	Lake Iola	Waupaca	7/26/2017	BTB & JLW	226	0			NONNAVIGABLE (PLANTS)																																					0
227	44.52337554	-89.1314167	269	Lake Iola	Waupaca	7/26/2017	BTB & JLW	227	0			NONNAVIGABLE (PLANTS)																																					0
228	44.52301547	-89.13142205	267	Lake Iola	Waupaca	7/26/2017	BTB & JLW	228	0			NONNAVIGABLE (PLANTS)																																					0
229	44.52265541	-89.1314274	0	Lake Iola	Waupaca		BTB & JLW	229	0			NONNAVIGABLE (PLANTS)																																					0
230	44.52229534	-89.13143275	0	Lake Iola	Waupaca		BTB & JLW	230	0			NONNAVIGABLE (PLANTS)																																					0
231	44.52193528	-89.1314381	0	Lake Iola	Waupaca		BTB & JLW	231	0			NONNAVIGABLE (PLANTS)																																					0
232	44.52157521	-89.13144345	286	Lake Iola	Waupaca	7/26/2017	BTB & JLW	232	0			NONNAVIGABLE (PLANTS)																																					0
233	44.52121514	-89.1314488	0	Lake Iola	Waupaca		BTB & JLW	233	0			NONNAVIGABLE (PLANTS)																																					0
234	44.52085508	-89.13145415	0	Lake Iola	Waupaca		BTB & JLW	234	0			NONNAVIGABLE (PLANTS)																																					0
235	44.52049501	-89.1314595	0	Lake Iola	Waupaca		BTB & JLW	235	0			NONNAVIGABLE (PLANTS)																																					0
236	44.52013495	-89.13146485	221	Lake Iola	Waupaca	7/26/2017	BTB & JLW	236	0			NONNAVIGABLE (PLANTS)																																					0
237	44.51977488	-89.1314702	212	Lake Iola	Waupaca	7/25/2017	BTB & JLW	237	4	Muck	Pole	SAMPLED			3			1	1	3			1																								0
238	44.51401382	-89.13155578	114	Lake Iola	Waupaca	7/25/2017	BTB & JLW	238	7	Muck	Pole	SAMPLED			2			1	1	1			2					1				1						1							0
239	44.52301164	-89.13091875	0	Lake Iola	Waupaca		BTB & JLW	239	0			NONNAVIGABLE (PLANTS)																																					0
240	44.52229151	-89.13092946	0	Lake Iola	Waupaca		BTB & JLW	240	0			NONNAVIGABLE (PLANTS)																																					0
241	44.52193145	-89.13093481	0	Lake Iola	Waupaca		BTB & JLW	241	0			NONNAVIGABLE (PLANTS)																																					0
242	44.52049118	-89.13095622	0	Lake Iola	Waupaca		BTB & JLW	242	0			NONNAVIGABLE (PLANTS)																																					0
243	44.52013112	-89.13096157	0	Lake Iola	Waupaca		BTB & JLW	243	0			NONNAVIGABLE (PLANTS)																																					0
244	44.51977105	-89.13096693	213	Lake Iola	Waupaca	7/25/2017	BTB & JLW	244	0			NONNAVIGABLE (PLANTS)																																					0
245	44.51941099	-89.13097228	210	Lake Iola	Waupaca	7/25/2017	BTB & JLW	245	5	Muck	Pole	SAMPLED			3				1	1									2																	1	0
246	44.51905092	-89.13097763	208	Lake Iola	Waupaca	7/25/2017	BTB & JLW	246	4	Muck	Pole	SAMPLED			2			1		1									2																		0
247	44.51364993	-89.13105791	113	Lake Iola	Waupaca	7/25/2017	BTB & JLW	247	6	Muck	Pole	SAMPLED			3			1	3	1																											0
248	44.51256973	-89.13107396	111	Lake Iola	Waupaca	7/25/2017	BTB & JLW	248	5	Sand	Pole	SAMPLED			3				2	2																											0
249	44.52192762	-89.13043152	0	Lake Iola	Waupaca		BTB & JLW	249	0			NONNAVIGABLE (PLANTS)																																					0
250	44.52084742	-89.13044759	0	Lake Iola	Waupaca		BTB & JLW	250	0			NONNAVIGABLE (PLANTS)																																					0
251	44.52048735	-89.13045294	0	Lake Iola	Waupaca		BTB & JLW	251	0			NONNAVIGABLE (PLANTS)																																					0
252	44.52012729	-89.1304583	0	Lake Iola	Waupaca		BTB & JLW	252	0			NONNAVIGABLE (PLANTS)																																					0
253	44.51976722	-89.13046366	0	Lake Iola	Waupaca		BTB & JLW	253	0			NONNAVIGABLE (PLANTS)																																					0
254	44.51940716	-89.13046901	211	Lake Iola	Waupaca	7/25/2017	BTB & JLW	254	0			NONNAVIGABLE (PLANTS)																																					0
255	44.51904709	-89.13047437	207	Lake Iola	Waupaca	7/25/2017	BTB & JLW	255	5	Muck	Pole	SAMPLED			3			1		3									1																		0
256	44.51508636	-89.13053327	174	Lake Iola	Waupaca	7/25/2017	BTB & JLW	256	5	Sand	Pole	SAMPLED			2				1	1			2					1																		0
257	44.5147263	-89.13053863	176	Lake Iola	Waupaca	7/25/2017	BTB & JLW	257	0			TERRESTRIAL																																				0
258	44.5136461	-89.13055469	112	Lake Iola	Waupaca	7/25/2017	BTB & JLW	258	0			TERRESTRIAL																																				0
259	44.51292596	-89.1305654	110	Lake Iola	Waupaca	7/25/2017	BTB & JLW	259	3	Muck	Pole	SAMPLED			3	V		1	1	3			1					1			1																0
260	44.52156372	-89.12993359	0	Lake Iola	Waupaca		BTB & JLW	260	0			NONNAVIGABLE (PLANTS)																																					0
261	44.52120365	-89.12993895	0	Lake Iola	Waupaca		BTB & JLW	261	0			NONNAVIGABLE (PLANTS)																																					0
262	44.52084359	-89.12994431	0	Lake Iola	Waupaca		BTB & JLW	262	0			NONNAVIGABLE (PLANTS)																																					0
263	44.52048352	-89.12994967	0	Lake Iola	Waupaca		BTB & JLW	263	0			NONNAVIGABLE (PLANTS)																																					0
264	44.52012345	-89.12995503	0	Lake Iola	Waupaca		BTB & JLW	264	0			NONNAVIGABLE (PLANTS)																																					0
265	44.51976339	-89.12996039	0	Lake Iola	Waupaca		BTB & JLW	265	0			NONNAVIGABLE (PLANTS)																																					0
266	44.51940332	-89.12996574	0	Lake Iola	Waupaca		BTB & JLW	266	0			NONNAVIGABLE (PLANTS)																																					0
267	44.51904326	-89.1299711	209	Lake Iola	Waupaca	7/25/2017	BTB & JLW	267	0			NONNAVIGABLE (PLANTS)																																					0
268	44.51868319	-89.12997646	205	Lake Iola	Waupaca	7/25/2017	BTB & JLW	268	5	Muck	Pole	SAMPLED			3			1		1							1		3									1									0
269	44.51616273	-89.13001397	177	Lake Iola	Waupaca	7/25/2017	BTB & JLW	269	5	Muck	Pole	SAMPLED			3				1	3			1						1																		0
270	44.51580266	-89.13001933	172	Lake Iola	Waupaca	7/25/2017	BTB & JLW	270	3	Sand	Pole	SAMPLED			3			1		1		1	2							1												1					0
271	44.5154426	-89.13002468	173	Lake Iola	Waupaca	7/25/2017	BTB & JLW	271	6	Muck	Pole	SAMPLED			3				1	3			1					1																		0
272	44.51508253	-89.13003004	175	Lake Iola	Waupaca	7/25/2017	BTB & JLW	272	0			TERRESTRIAL																																				0
273	44.51364226	-89.13005147	108	Lake Iola	Waupaca	7/25/2017	BTB & JLW	273	5	Muck	Pole	SAMPLED			3			1	2	1								1						1		1										0
274	44.5132822	-89.13005683	109	Lake Iola	Waupaca	7/25/2017	BTB & JLW	274	2	Sand	Pole	SAMPLED			3				2	2			1					1					1													0
275	44.5100416	-89.13010504	1	Lake Iola	Waupaca	7/25/2017	BTB & JLW	275	4	Sand	Pole	SAMPLED			3								2							1			1											1		0
276	44.50968153	-89.13011039	2	Lake Iola	Waupaca	7/25/2017	BTB & JLW	276	7	Muck	Pole	SAMPLED			3				1	1			3																							0
277	44.50932147	-89.13011575	3	Lake Iola	Waupaca	7/25/2017	BTB & JLW	277	6	Muck	Pole	SAMPLED			3								3					1																1		0
278	44.5089614	-89.1301211	4	Lake Iola	Waupaca	7/25/2017	BTB & JLW	278	6	Sand	Pole	SAMPLED			3								3																					1		0
279	44.52119982	-89.12943567	0	Lake Iola	Waupaca		BTB & JLW	279	0			NONNAVIGABLE (PLANTS)																																					0
280	44.52083975	-89.12944103	0	Lake Iola	Waupaca		BTB & JLW	280	0			NONNAVIGABLE (PLANTS)																																					0
281	44.52047968	-89.12944639	0	Lake Iola	Waupaca		BTB & JLW	281	0			NONNAVIGABLE (PLANTS)																																					0
282	44.52011962	-89.12945175	0	Lake Iola	Waupaca		BTB & JLW	282	0			NONNAVIGABLE (PLANTS)																																					0
283	44.51975955	-89.12945711	0	Lake Iola	Waupaca		BTB & JLW	283	0			NONNAVIGABLE (PLANTS)																																					0
284	44.51939949	-89.12946248	0	Lake Iola	Waupaca		BTB & JLW	284	0			NONNAVIGABLE (PLANTS)																																					0
285	44.51903942	-89.12946784	0	Lake Iola	Waupaca		BTB & JLW	285	0			NONNAVIGABLE (PLANTS)																																					0
286	44.51867936	-89.1294732	206	Lake Iola	Waupaca	7/25/2017	BTB & JLW	286	0			NONNAVIGABLE (PLANTS)																																					0
287	44.51831929	-89.12947856	199	Lake Iola	Waupaca	7/25/2017	BTB & JLW	287	5	Muck	Pole	SAMPLED			3					1									3																		0
288	44.51723909	-89.12949464	180	Lake Iola	Waupaca	7/25/2017	BTB & JLW	288	7	Muck	Pole	SAMPLED			3			1		3		1						1																		0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum sibiricum X spicatum	Potamogeton crispus	Ceratophyllum demersum	Chara spp.	Elodea canadensis	Heteranthera dubia	Lemna turionifera	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum verticillatum	Najas flexilis	Najas guadalupensis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton bicchoidii	Potamogeton friesii	Potamogeton illinoensis	Potamogeton natans	Potamogeton praelongus	Potamogeton strictifolius	Potamogeton zosteriformis	Spirodela polyrhiza	Stuckenia pectinata	Typha latifolia	Utricularia minor	Utricularia vulgaris	Vallisneria americana	Wolffia spp.	Leptodictyum riparium	Aquatic moss	Filamentous algae	Canx pseudocyperus
289	44.51687903	-89.12950001	179	Lake Iola	Waupaca	7/25/2017	BTB & JLW	289	5	Muck	Pole	SAMPLED			2				2	1			1																							0
290	44.51651896	-89.12950537	181	Lake Iola	Waupaca	7/25/2017	BTB & JLW	290	0			NONNAVIGABLE (PLANTS)																																				0
291	44.51615889	-89.12951073	178	Lake Iola	Waupaca	7/25/2017	BTB & JLW	291	0			NONNAVIGABLE (PLANTS)																																				0
292	44.51579883	-89.12951609	171	Lake Iola	Waupaca	7/25/2017	BTB & JLW	292	5	Muck	Pole	SAMPLED			3				1	1	2			2																1							0
293	44.51363843	-89.12954825	107	Lake Iola	Waupaca	7/25/2017	BTB & JLW	293	5	Muck	Pole	SAMPLED			2						1			2						1																0
294	44.5107579	-89.12959113	11	Lake Iola	Waupaca	7/25/2017	BTB & JLW	294	3	Sand	Pole	SAMPLED			2									2						1			1								1					0
295	44.51039783	-89.12959649	10	Lake Iola	Waupaca	7/25/2017	BTB & JLW	295	5	Sand	Pole	SAMPLED			3									2						1			1													0
296	44.51003777	-89.12960185	9	Lake Iola	Waupaca	7/25/2017	BTB & JLW	296	6	Muck	Pole	SAMPLED			3									2											1							1				0
297	44.5096777	-89.12960721	8	Lake Iola	Waupaca	7/25/2017	BTB & JLW	297	7	Muck	Pole	SAMPLED			2									2				1																		0
298	44.50931763	-89.12961257	7	Lake Iola	Waupaca	7/25/2017	BTB & JLW	298	5	Sand	Pole	SAMPLED			2					1				2																				1	1		0
299	44.50895757	-89.12961793	6	Lake Iola	Waupaca	7/25/2017	BTB & JLW	299	5	Muck	Pole	SAMPLED			2									2				1		1																0
300	44.5085975	-89.12962328	5	Lake Iola	Waupaca	7/25/2017	BTB & JLW	300	5	Muck	Pole	SAMPLED			2					1				2				1														1					0
301	44.52119598	-89.12893238	0	Lake Iola	Waupaca		BTB & JLW	301	0			NONNAVIGABLE (PLANTS)																																				0
302	44.52083591	-89.12893775	0	Lake Iola	Waupaca		BTB & JLW	302	0			NONNAVIGABLE (PLANTS)																																				0
303	44.52047585	-89.12894311	0	Lake Iola	Waupaca		BTB & JLW	303	0			NONNAVIGABLE (PLANTS)																																				0
304	44.52011578	-89.12894848	0	Lake Iola	Waupaca		BTB & JLW	304	0			NONNAVIGABLE (PLANTS)																																				0
305	44.51975572	-89.12895384	0	Lake Iola	Waupaca		BTB & JLW	305	0			NONNAVIGABLE (PLANTS)																																				0
306	44.51939565	-89.12895921	0	Lake Iola	Waupaca		BTB & JLW	306	0			NONNAVIGABLE (PLANTS)																																				0
307	44.51903558	-89.12896457	0	Lake Iola	Waupaca		BTB & JLW	307	0			NONNAVIGABLE (PLANTS)																																				0
308	44.51867552	-89.12896994	0	Lake Iola	Waupaca		BTB & JLW	308	0			NONNAVIGABLE (PLANTS)																																				0
309	44.51831545	-89.1289753	200	Lake Iola	Waupaca	7/25/2017	BTB & JLW	309	0			NONNAVIGABLE (PLANTS)	non-nav all the way to the east, no channel to drive through																																				0
310	44.51795539	-89.12898067	185	Lake Iola	Waupaca	7/25/2017	BTB & JLW	310	5	Muck	Pole	SAMPLED			3				1	3				1																							0
311	44.51759532	-89.12898603	183	Lake Iola	Waupaca	7/25/2017	BTB & JLW	311	4	Muck	Pole	SAMPLED			3					3									1																	0
312	44.51723525	-89.1289914	184	Lake Iola	Waupaca	7/25/2017	BTB & JLW	312	0			NONNAVIGABLE (PLANTS)																																				0
313	44.51687519	-89.12899676	182	Lake Iola	Waupaca	7/25/2017	BTB & JLW	313	4	Muck	Pole	SAMPLED			3				1		1			2					1						1											0
314	44.51651512	-89.12900212	192	Lake Iola	Waupaca	7/25/2017	BTB & JLW	314	4	Muck	Pole	SAMPLED			2					2	1			1					1				1													0
315	44.51615506	-89.12900749	198	Lake Iola	Waupaca	7/25/2017	BTB & JLW	315	6	Muck	Pole	SAMPLED			3						1			1					3																	0
316	44.51579499	-89.12901285	169	Lake Iola	Waupaca	7/25/2017	BTB & JLW	316	6	Muck	Pole	SAMPLED			3				1	1	2			1																							0
317	44.51543492	-89.12901822	167	Lake Iola	Waupaca	7/25/2017	BTB & JLW	317	3	Sand	Pole	SAMPLED			2				1					2																							0
318	44.51435473	-89.12903431	125	Lake Iola	Waupaca	7/25/2017	BTB & JLW	318	1	Sand	Pole	SAMPLED			2				1		1			1						1																	0
319	44.51399466	-89.12903967	106	Lake Iola	Waupaca	7/25/2017	BTB & JLW	319	12	Muck	Pole	SAMPLED			1				1										1																	0
320	44.5114742	-89.12907721	27	Lake Iola	Waupaca	7/25/2017	BTB & JLW	320	6	Muck	Pole	SAMPLED			2					1				2					1																	0
321	44.51111413	-89.12908257	26	Lake Iola	Waupaca	7/25/2017	BTB & JLW	321	4	Sand	Pole	SAMPLED			3									2									2													0
322	44.51075406	-89.12908794	12	Lake Iola	Waupaca	7/25/2017	BTB & JLW	322	8	Muck	Pole	SAMPLED			2					1				1											2											0
323	44.510394	-89.1290933	13	Lake Iola	Waupaca	7/25/2017	BTB & JLW	323	6	Sand	Pole	SAMPLED			2									2											1											0
324	44.51003393	-89.12909866	14	Lake Iola	Waupaca	7/25/2017	BTB & JLW	324	6	Muck	Pole	SAMPLED			2									2				1																	0
325	44.50967386	-89.12910402	15	Lake Iola	Waupaca	7/25/2017	BTB & JLW	325	6	Muck	Pole	SAMPLED			3									3																1					0
326	44.5093138	-89.12910939	16	Lake Iola	Waupaca	7/25/2017	BTB & JLW	326	4	Muck	Pole	SAMPLED			3									3																							0
327	44.50895373	-89.12911475	17	Lake Iola	Waupaca	7/25/2017	BTB & JLW	327	4	Muck	Pole	SAMPLED			3					3				1																							0
328	44.50859366	-89.12912011	18	Lake Iola	Waupaca	7/25/2017	BTB & JLW	328	5	Muck	Pole	SAMPLED			3					3								1												1				1			0
329	44.52083207	-89.12843447	0	Lake Iola	Waupaca		BTB & JLW	329	0			NONNAVIGABLE (PLANTS)																																				0
330	44.52047201	-89.12843984	0	Lake Iola	Waupaca		BTB & JLW	330	0			NONNAVIGABLE (PLANTS)																																				0
331	44.52011194	-89.1284452	0	Lake Iola	Waupaca		BTB & JLW	331	0			NONNAVIGABLE (PLANTS)																																				0
332	44.51975188	-89.12845057	0	Lake Iola	Waupaca		BTB & JLW	332	0			NONNAVIGABLE (PLANTS)																																				0
333	44.51939181	-89.12845594	0	Lake Iola	Waupaca		BTB & JLW	333	0			NONNAVIGABLE (PLANTS)																																				0
334	44.51903174	-89.12846131	0	Lake Iola	Waupaca		BTB & JLW	334	0			NONNAVIGABLE (PLANTS)																																				0
335	44.51867168	-89.12846668	0	Lake Iola	Waupaca		BTB & JLW	335	0			NONNAVIGABLE (PLANTS)																																				0
336	44.51831161	-89.12847204	201	Lake Iola	Waupaca	7/25/2017	BTB & JLW	336	0			NONNAVIGABLE (PLANTS)																																				0
337	44.51795155	-89.12847741	220	Lake Iola	Waupaca	7/26/2017	BTB & JLW	337	0			NONNAVIGABLE (PLANTS)																																				0
338	44.51759148	-89.12848278	186	Lake Iola	Waupaca	7/25/2017	BTB & JLW	338	6	Muck	Pole	SAMPLED			3				1		1																										0
339	44.51723142	-89.12848815	187	Lake Iola	Waupaca	7/25/2017	BTB & JLW	339	0			NONNAVIGABLE (PLANTS)																																				0
340	44.51687135	-89.12849351	191	Lake Iola	Waupaca	7/25/2017	BTB & JLW	340	0			NONNAVIGABLE (PLANTS)																																				0
341	44.51651128	-89.12849888	195	Lake Iola	Waupaca	7/25/2017	BTB & JLW	341	0			NONNAVIGABLE (PLANTS)																																				0
342	44.51615122	-89.12850425	197	Lake Iola	Waupaca	7/25/2017	BTB & JLW	342	5	Muck	Pole	SAMPLED			3						3								1																	0
343	44.51579115	-89.12850962	170	Lake Iola	Waupaca	7/25/2017	BTB & JLW	343	0			NONNAVIGABLE (PLANTS)																																				0
344	44.51543109	-89.12851498	168	Lake Iola	Waupaca	7/25/2017	BTB & JLW	344	0			NONNAVIGABLE (PLANTS)																																				0
345	44.51507102	-89.12852035	134	Lake Iola	Waupaca	7/25/2017	BTB & JLW	345	7	Muck	Pole	SAMPLED			3				1		1			2					1																	0
346	44.51471095	-89.12852572	133	Lake Iola	Waupaca	7/25/2017	BTB & JLW	346	7	Muck	Pole	SAMPLED			3				1		3																										0
347	44.51435089	-89.12853108	126	Lake Iola	Waupaca	7/25/2017	BTB & JLW	347	6	Muck	Pole	SAMPLED			3				1	1	2			1																1					0
348	44.51399082	-89.12853645	105	Lake Iola	Waupaca	7/25/2017	BTB & JLW	348	4	Muck	Pole	SAMPLED			3					3																										0
349	44.51363076	-89.12854182	115	Lake Iola	Waupaca	7/25/2017	BTB & JLW	349	4	Muck	Pole	SAMPLED			3					3	1										1			1											0
350	44.51327069	-89.12854718	117	Lake Iola	Waupaca	7/25/2017	BTB & JLW	350	4	Sand	Pole	SAMPLED			2									2									1													0
351	44.51291062	-89.12855255	118	Lake Iola	Waupaca	7/25/2017	BTB & JLW	351	6	Muck	Pole	SAMPLED			3				1		1			1					2						1											0
352	44.51183042	-89.12856865	29	Lake Iola	Waupaca	7/25/2017	BTB & JLW	352	5	Sand	Pole	SAMPLED			2									2																							0
353	44.51147036	-89.12857401	28	Lake Iola	Waupaca	7/25/2017	BTB & JLW	353	5	Muck	Pole	SAMPLED			2									2				1												1						0
354	44.51111029	-89.12857938	25	Lake Iola	Waupaca	7/25/2017	BTB & JLW	354	5	Muck	Pole	SAMPLED			1									1					1																	0
355	44.51075023	-89.12858474	24	Lake Iola	Waupaca	7/25/2017	BTB & JLW	355	6	Muck	Pole	SAMPLED			2					1	1			2				1																	0
356	44.51039016	-89.12859011	23	Lake Iola	Waupaca	7/25/2017	BTB & JLW	356	6	Muck	Pole	SAMPLED			2					1				2																							0
357	44.51003009	-89.12859547	22	Lake Iola	Waupaca	7/25/2017	BTB & JLW	357	5	Muck	Pole	SAMPLED			2					1				2																							0
358	44.50967003	-89.12860084	21	Lake Iola	Waupaca	7/25/2017	BTB & JLW	358	6	Muck	Pole	SAMPLED			2					2				1						1																	0
359	44.50930996	-89.12860621	20	Lake Iola	Waupaca	7/25/2017	BTB & JLW	359	4	Muck	Pole	SAMPLED			3					3																											0
360	44.50894989	-89.12861157	19	Lake Iola	Waupaca	7/25/2017	BTB & JLW	360	4	Muck	Pole	SAMPLED			3					3															1											0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum sibiricum X spicatum	Potamogeton crispus	Ceratophyllum demersum	Chara spp.	Elodea canadensis	Heteranthera dubia	Lemna turionifera	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum verticillatum	Najas flexilis	Najas guadalupensis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton bicchoidii	Potamogeton friesii	Potamogeton illinoensis	Potamogeton natans	Potamogeton praelongus	Potamogeton strictifolius	Potamogeton zosteriformis	Sparganium polyrhiza	Stuckenia pectinata	Typha latifolia	Utricularia minor	Utricularia vulgaris	Vallisneria americana	Wolffia spp.	Leptodictyum riparium	Aquatic moss	Filamentous algae	Canoe pseudocyperus
361	44.52082823	-89.12793119	0	Lake Iola	Waupaca		BTB & JLW	361	0			NONNAVIGABLE (PLANTS)																																				0
362	44.52046817	-89.12793656	0	Lake Iola	Waupaca		BTB & JLW	362	0			NONNAVIGABLE (PLANTS)																																				0
363	44.5201081	-89.12794193	0	Lake Iola	Waupaca		BTB & JLW	363	0			NONNAVIGABLE (PLANTS)																																				0
364	44.51974803	-89.1279473	0	Lake Iola	Waupaca		BTB & JLW	364	0			NONNAVIGABLE (PLANTS)																																				0
365	44.51938797	-89.12795267	0	Lake Iola	Waupaca		BTB & JLW	365	0			NONNAVIGABLE (PLANTS)																																				0
366	44.5190279	-89.12795804	0	Lake Iola	Waupaca		BTB & JLW	366	0			NONNAVIGABLE (PLANTS)																																				0
367	44.51866784	-89.12796342	0	Lake Iola	Waupaca		BTB & JLW	367	0			NONNAVIGABLE (PLANTS)																																				0
368	44.51830777	-89.12796879	202	Lake Iola	Waupaca	7/25/2017	BTB & JLW	368	0			NONNAVIGABLE (PLANTS)																																				0
369	44.51794771	-89.12797416	0	Lake Iola	Waupaca		BTB & JLW	369	0			NONNAVIGABLE (PLANTS)																																				0
370	44.51758764	-89.12797953	219	Lake Iola	Waupaca	7/26/2017	BTB & JLW	370	0			NONNAVIGABLE (PLANTS)																																				0
371	44.51722757	-89.1279849	188	Lake Iola	Waupaca	7/25/2017	BTB & JLW	371	6	Muck	Pole	SAMPLED			3			1		3					1			1																		0
372	44.51686751	-89.12799027	190	Lake Iola	Waupaca	7/25/2017	BTB & JLW	372	0			NONNAVIGABLE (PLANTS)																																				0
373	44.51650744	-89.12799564	194	Lake Iola	Waupaca	7/25/2017	BTB & JLW	373	0			NONNAVIGABLE (PLANTS)																																				0
374	44.51614738	-89.12800101	196	Lake Iola	Waupaca	7/25/2017	BTB & JLW	374	6	Muck	Pole	SAMPLED			3			1		3								1																		0
375	44.51578731	-89.12800638	165	Lake Iola	Waupaca	7/25/2017	BTB & JLW	375	6	Muck	Pole	SAMPLED			3			1		3																									0
376	44.51542724	-89.12801175	166	Lake Iola	Waupaca	7/25/2017	BTB & JLW	376	0			NONNAVIGABLE (PLANTS)																																				0
377	44.51506718	-89.12801712	135	Lake Iola	Waupaca	7/25/2017	BTB & JLW	377	5	Muck	Pole	SAMPLED			3			2	1	1			1							1																0
378	44.51470711	-89.12802249	132	Lake Iola	Waupaca	7/25/2017	BTB & JLW	378	4	Muck	Pole	SAMPLED			3				3	1													1												0
379	44.51434705	-89.12802786	127	Lake Iola	Waupaca	7/25/2017	BTB & JLW	379	5	Muck	Pole	SAMPLED			3				2	1			2																					0
380	44.51398698	-89.12803323	103	Lake Iola	Waupaca	7/25/2017	BTB & JLW	380	4	Muck	Pole	SAMPLED			3				3															1											0
381	44.51362691	-89.1280386	104	Lake Iola	Waupaca	7/25/2017	BTB & JLW	381	0			NONNAVIGABLE (PLANTS)																																				0
382	44.51326685	-89.12804397	116	Lake Iola	Waupaca	7/25/2017	BTB & JLW	382	0			NONNAVIGABLE (PLANTS)																																				0
383	44.51290678	-89.12804934	119	Lake Iola	Waupaca	7/25/2017	BTB & JLW	383	4	Muck	Pole	SAMPLED			2				1				2						1																0
384	44.51254672	-89.12805471	122	Lake Iola	Waupaca	7/25/2017	BTB & JLW	384	5	Muck	Pole	SAMPLED			2			1		1			2						1																0
385	44.51218665	-89.12806008	124	Lake Iola	Waupaca	7/25/2017	BTB & JLW	385	4	Sand	Pole	SAMPLED			2								2						1											1					0
386	44.51182658	-89.12806544	30	Lake Iola	Waupaca	7/25/2017	BTB & JLW	386	5	Muck	Pole	SAMPLED			3					1			3																					0
387	44.51146652	-89.12807081	31	Lake Iola	Waupaca	7/25/2017	BTB & JLW	387	6	Muck	Pole	SAMPLED			2					1			2																					0
388	44.51110645	-89.12807618	32	Lake Iola	Waupaca	7/25/2017	BTB & JLW	388	9	Muck	Pole	SAMPLED			3					3				1				1																0
389	44.51074638	-89.12808155	33	Lake Iola	Waupaca	7/25/2017	BTB & JLW	389	7	Muck	Pole	SAMPLED			3				1		1		2					1							1										0
390	44.51038632	-89.12808692	34	Lake Iola	Waupaca	7/25/2017	BTB & JLW	390	5	Sand	Pole	SAMPLED			2								2																				1	1		0
391	44.51002625	-89.12809229	35	Lake Iola	Waupaca	7/25/2017	BTB & JLW	391	6	Muck	Pole	SAMPLED			3	1				3														1											0
392	44.50966619	-89.12809766	36	Lake Iola	Waupaca	7/25/2017	BTB & JLW	392	4	Muck	Pole	SAMPLED			3					3														1								1			0
393	44.50930612	-89.12810302	37	Lake Iola	Waupaca	7/25/2017	BTB & JLW	393	4	Muck	Pole	SAMPLED			3					3							1							1								1			0
394	44.52010426	-89.12743866	0	Lake Iola	Waupaca		BTB & JLW	394	0			NONNAVIGABLE (PLANTS)																																				0
395	44.51974419	-89.12744403	0	Lake Iola	Waupaca		BTB & JLW	395	0			NONNAVIGABLE (PLANTS)																																				0
396	44.51938413	-89.12744941	0	Lake Iola	Waupaca		BTB & JLW	396	0			NONNAVIGABLE (PLANTS)																																				0
397	44.51902406	-89.12745478	0	Lake Iola	Waupaca		BTB & JLW	397	0			NONNAVIGABLE (PLANTS)																																				0
398	44.51794386	-89.1274709	0	Lake Iola	Waupaca		BTB & JLW	398	0			NONNAVIGABLE (PLANTS)																																				0
399	44.5175838	-89.12747628	0	Lake Iola	Waupaca		BTB & JLW	399	0			NONNAVIGABLE (PLANTS)																																				0
400	44.51722373	-89.12748165	218	Lake Iola	Waupaca	7/26/2017	BTB & JLW	400	0			NONNAVIGABLE (PLANTS)																																				0
401	44.51686366	-89.12748702	189	Lake Iola	Waupaca	7/25/2017	BTB & JLW	401	5	Muck	Pole	SAMPLED			3		1	1		3					1			1																	0
402	44.5165036	-89.1274924	193	Lake Iola	Waupaca	7/25/2017	BTB & JLW	402	5	Muck	Pole	SAMPLED			3			1		3																									0
403	44.51614353	-89.12749777	214	Lake Iola	Waupaca	7/26/2017	BTB & JLW	403	6	Muck	Pole	SAMPLED			3			1		3																									0
404	44.51578347	-89.12750314	164	Lake Iola	Waupaca	7/25/2017	BTB & JLW	404	0			NONNAVIGABLE (PLANTS)																																				0
405	44.5154234	-89.12750852	163	Lake Iola	Waupaca	7/25/2017	BTB & JLW	405	6	Muck	Pole	SAMPLED			3	1		1		3																									0
406	44.51506334	-89.12751389	136	Lake Iola	Waupaca	7/25/2017	BTB & JLW	406	6	Muck	Pole	SAMPLED			3					3								1																	0
407	44.51470327	-89.12751926	131	Lake Iola	Waupaca	7/25/2017	BTB & JLW	407	6	Muck	Pole	SAMPLED			3	1	1	1		3								1																	0
408	44.5143432	-89.12752464	128	Lake Iola	Waupaca	7/25/2017	BTB & JLW	408	6	Muck	Pole	SAMPLED			3	1		1		3								1								1										0
409	44.51398314	-89.12753001	100	Lake Iola	Waupaca	7/25/2017	BTB & JLW	409	4	Muck	Pole	SAMPLED			3				1	1			3										1												0
410	44.51362307	-89.12753538	101	Lake Iola	Waupaca	7/25/2017	BTB & JLW	410	4	Muck	Pole	SAMPLED			3				1				3										1												0
411	44.51326301	-89.12754075	102	Lake Iola	Waupaca	7/25/2017	BTB & JLW	411	0			NONNAVIGABLE (PLANTS)																																				0
412	44.51290294	-89.12754613	121	Lake Iola	Waupaca	7/25/2017	BTB & JLW	412	0			NONNAVIGABLE (PLANTS)																																				0
413	44.51254287	-89.1275515	120	Lake Iola	Waupaca	7/25/2017	BTB & JLW	413	0			NONNAVIGABLE (PLANTS)																																				0
414	44.51218281	-89.12755687	123	Lake Iola	Waupaca	7/25/2017	BTB & JLW	414	0			NONNAVIGABLE (PLANTS)																																				0
415	44.51182274	-89.12756224	59	Lake Iola	Waupaca	7/25/2017	BTB & JLW	415	5	Muck	Pole	SAMPLED			3				1				3																						0
416	44.51146267	-89.12756761	58	Lake Iola	Waupaca	7/25/2017	BTB & JLW	416	8	Muck	Pole	SAMPLED			3					3																						1				0
417	44.51110261	-89.12757299	52	Lake Iola	Waupaca	7/25/2017	BTB & JLW	417	6	Muck	Pole	SAMPLED			2								2																						0
418	44.51074254	-89.12757836	51	Lake Iola	Waupaca	7/25/2017	BTB & JLW	418	6	Muck	Pole	SAMPLED			2								2																						0
419	44.51038248	-89.12758373	43	Lake Iola	Waupaca	7/25/2017	BTB & JLW	419	6	Muck	Pole	SAMPLED			1								1																						0
420	44.51002241	-89.1275891	42	Lake Iola	Waupaca	7/25/2017	BTB & JLW	420	5	Muck	Pole	SAMPLED			2				2				1						1																0
421	44.50966234	-89.12759447	38	Lake Iola	Waupaca	7/25/2017	BTB & JLW	421	4	Muck	Pole	SAMPLED			3				3				1						1				1												0
422	44.51974034	-89.12694076	0	Lake Iola	Waupaca		BTB & JLW	422	0			NONNAVIGABLE (PLANTS)																																				0
423	44.51938028	-89.12694614	0	Lake Iola	Waupaca		BTB & JLW	423	0			NONNAVIGABLE (PLANTS)																																				0
424	44.51902021	-89.12695152	0	Lake Iola	Waupaca		BTB & JLW	424	0			NONNAVIGABLE (PLANTS)																																				0
425	44.51866015	-89.12695689	0	Lake Iola	Waupaca		BTB & JLW	425	0			NONNAVIGABLE (PLANTS)																																				0
426	44.51830008	-89.12696227	203	Lake Iola	Waupaca	7/25/2017	BTB & JLW	426	0			NONNAVIGABLE (PLANTS)																																				0
427	44.51794002	-89.12696765	0	Lake Iola	Waupaca		BTB & JLW	427	0			NONNAVIGABLE (PLANTS)																																				0
428	44.51757995	-89.12697302	0	Lake Iola	Waupaca		BTB & JLW	428	0			NONNAVIGABLE (PLANTS)																																				0
429	44.51721988	-89.1269784	0	Lake Iola	Waupaca		BTB & JLW	429	0			NONNAVIGABLE (PLANTS)																																				0
430	44.51685982	-89.12698378	217	Lake Iola	Waupaca	7/26/2017	BTB & JLW	430	0			NONNAVIGABLE (PLANTS)																																				0
431	44.51649975	-89.12698915	216	Lake Iola	Waupaca	7/26/2017	BTB & JLW	431	0			NONNAVIGABLE (PLANTS)																																				0
432	44.51613969	-89.12699453	215	Lake Iola	Waupaca	7/26/2017	BTB & JLW	432	0			NONNAVIGABLE (PLANTS)																																				0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum sibiricum X spicatum	Potamogeton crispus	Ceratophyllum demersum	Chara spp.	Elodea canadensis	Heteranthera dubia	Lemna turionifera	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum verticillatum	Najas flexilis	Najas guadalupensis	Nitella spp.	Nuphar variegata	Nymphaea odorata	Potamogeton bicchoidii	Potamogeton friesii	Potamogeton illinoensis	Potamogeton natans	Potamogeton praelongus	Potamogeton strictifolius	Potamogeton zosteriformis	Spirodela polyrhiza	Stuckenia pectinata	Typha latifolia	Utricularia minor	Utricularia vulgaris	Vallisneria americana	Wolffia spp.	Leptodictyum riparium	Aquatic moss	Filamentous algae	Carex pseudocyperus
433	44.51577962	-89.12699991	144	Lake Iola	Waupaca	7/25/2017	BTB & JLW	433	0			NONNAVIGABLE (PLANTS)																																				0
434	44.51541956	-89.12700528	142	Lake Iola	Waupaca	7/25/2017	BTB & JLW	434	0			NONNAVIGABLE (PLANTS)																																				0
435	44.51505949	-89.12701066	137	Lake Iola	Waupaca	7/25/2017	BTB & JLW	435	8	Muck	Pole	SAMPLED			2			2		1								1																			0
436	44.51469942	-89.12701604	130	Lake Iola	Waupaca	7/25/2017	BTB & JLW	436	1	Muck	Pole	SAMPLED	Typha latifolia		1			1		1										1											1						0
437	44.51433936	-89.12702141	129	Lake Iola	Waupaca	7/25/2017	BTB & JLW	437	1	Muck	Pole	SAMPLED			3			2		1		1								1														1	1		0
438	44.51397929	-89.12702679	99	Lake Iola	Waupaca	7/25/2017	BTB & JLW	438	7	Muck	Pole	SAMPLED			3			1		3				1																						0
439	44.51361923	-89.12703216	93	Lake Iola	Waupaca	7/25/2017	BTB & JLW	439	5	Muck	Pole	SAMPLED			2			1	1					2						1	1															0
440	44.51325916	-89.12703754	92	Lake Iola	Waupaca	7/25/2017	BTB & JLW	440	4	Muck	Pole	SAMPLED			3				3					1															1						0
441	44.51289909	-89.12704291	86	Lake Iola	Waupaca	7/25/2017	BTB & JLW	441	4	Muck	Pole	SAMPLED			3				3																											0
442	44.51253903	-89.12704829	85	Lake Iola	Waupaca	7/25/2017	BTB & JLW	442	4	Muck	Pole	SAMPLED			3									3					1																	0
443	44.51217896	-89.12705366	83	Lake Iola	Waupaca	7/25/2017	BTB & JLW	443	5	Muck	Pole	SAMPLED			2									2						1																0
444	44.5118189	-89.12705904	60	Lake Iola	Waupaca	7/25/2017	BTB & JLW	444	8	Muck	Pole	SAMPLED			3									1					3																	0
445	44.51145883	-89.12706441	57	Lake Iola	Waupaca	7/25/2017	BTB & JLW	445	7	Muck	Pole	SAMPLED			3			1	2	2				1					1																	0
446	44.51109876	-89.12706979	53	Lake Iola	Waupaca	7/25/2017	BTB & JLW	446	6	Muck	Pole	SAMPLED			2					1				2					1																	0
447	44.5107387	-89.12707516	50	Lake Iola	Waupaca	7/25/2017	BTB & JLW	447	5	Muck	Pole	SAMPLED			2					1				2																					0
448	44.51037863	-89.12708054	44	Lake Iola	Waupaca	7/25/2017	BTB & JLW	448	5	Muck	Pole	SAMPLED			3				2					1										1							1					0
449	44.51001856	-89.12708591	41	Lake Iola	Waupaca	7/25/2017	BTB & JLW	449	3	Sand	Pole	SAMPLED			2				1	1				2				1																	0
450	44.5096585	-89.12709129	39	Lake Iola	Waupaca	7/25/2017	BTB & JLW	450	3	Muck	Pole	SAMPLED			3				3																											0
451	44.51937643	-89.12644287	0	Lake Iola	Waupaca		BTB & JLW	451	0			NONNAVIGABLE (PLANTS)																																				0
452	44.51901637	-89.12644825	0	Lake Iola	Waupaca		BTB & JLW	452	0			NONNAVIGABLE (PLANTS)																																				0
453	44.5186563	-89.12645363	0	Lake Iola	Waupaca		BTB & JLW	453	0			NONNAVIGABLE (PLANTS)																																				0
454	44.51829623	-89.12645901	204	Lake Iola	Waupaca	7/25/2017	BTB & JLW	454	0			NONNAVIGABLE (PLANTS)																																				0
455	44.51793617	-89.12646439	0	Lake Iola	Waupaca		BTB & JLW	455	0			NONNAVIGABLE (PLANTS)																																				0
456	44.5175761	-89.12646977	0	Lake Iola	Waupaca		BTB & JLW	456	0			NONNAVIGABLE (PLANTS)																																				0
457	44.51721604	-89.12647515	0	Lake Iola	Waupaca		BTB & JLW	457	0			NONNAVIGABLE (PLANTS)																																				0
458	44.51685597	-89.12648053	0	Lake Iola	Waupaca		BTB & JLW	458	0			NONNAVIGABLE (PLANTS)																																				0
459	44.51649591	-89.12648591	146	Lake Iola	Waupaca	7/25/2017	BTB & JLW	459	0			NONNAVIGABLE (PLANTS)																																				0
460	44.51613584	-89.12649129	145	Lake Iola	Waupaca	7/25/2017	BTB & JLW	460	0			NONNAVIGABLE (PLANTS)																																				0
461	44.51577577	-89.12649667	143	Lake Iola	Waupaca	7/25/2017	BTB & JLW	461	7	Muck	Pole	SAMPLED			3				3							1			1													1					0
462	44.51541571	-89.12650205	141	Lake Iola	Waupaca	7/25/2017	BTB & JLW	462	3	Sand	Pole	SAMPLED			1			1		1	1		1				1	1																	0
463	44.51505564	-89.12650743	138	Lake Iola	Waupaca	7/25/2017	BTB & JLW	463	1	Sand	Pole	SAMPLED			2			2		1				1						1																0
464	44.51397544	-89.12652357	98	Lake Iola	Waupaca	7/25/2017	BTB & JLW	464	7	Muck	Pole	SAMPLED			3			2	1	2								1	1							1	1									0
465	44.51361538	-89.12652895	94	Lake Iola	Waupaca	7/25/2017	BTB & JLW	465	6	Muck	Pole	SAMPLED			2			1		2																										0
466	44.51325531	-89.12653432	91	Lake Iola	Waupaca	7/25/2017	BTB & JLW	466	6	Muck	Pole	SAMPLED			3	1			1	3													1													0
467	44.51289525	-89.1265397	87	Lake Iola	Waupaca	7/25/2017	BTB & JLW	467	5	Muck	Pole	SAMPLED			3					1				3																						0
468	44.51253518	-89.12654508	84	Lake Iola	Waupaca	7/25/2017	BTB & JLW	468	5	Muck	Pole	SAMPLED			2									2					1		1															0
469	44.51217511	-89.12655046	82	Lake Iola	Waupaca	7/25/2017	BTB & JLW	469	7	Muck	Pole	SAMPLED			3				1	3																										0
470	44.51181505	-89.12655584	61	Lake Iola	Waupaca	7/25/2017	BTB & JLW	470	2	Sand	Pole	SAMPLED			2				1		1			2																				1	1		0
471	44.51145498	-89.12656122	56	Lake Iola	Waupaca	7/25/2017	BTB & JLW	471	3	Sand	Pole	SAMPLED			1				1	1				1				1																	0
472	44.51109492	-89.12656659	54	Lake Iola	Waupaca	7/25/2017	BTB & JLW	472	5	Muck	Pole	SAMPLED			3				3					1						1																0
473	44.51073485	-89.12657197	49	Lake Iola	Waupaca	7/25/2017	BTB & JLW	473	5	Muck	Pole	SAMPLED			2					1				2																						0
474	44.51037478	-89.12657735	46	Lake Iola	Waupaca	7/25/2017	BTB & JLW	474	5	Sand	Pole	SAMPLED			2									2																						0
475	44.50965465	-89.12658811	40	Lake Iola	Waupaca	7/25/2017	BTB & JLW	475	2	Muck	Pole	SAMPLED			1				1					1																						0
476	44.51829238	-89.12595576	0	Lake Iola	Waupaca		BTB & JLW	476	0			NONNAVIGABLE (PLANTS)																																				0
477	44.51757225	-89.12596652	0	Lake Iola	Waupaca		BTB & JLW	477	0			NONNAVIGABLE (PLANTS)																																				0
478	44.51721219	-89.1259719	0	Lake Iola	Waupaca		BTB & JLW	478	0			NONNAVIGABLE (PLANTS)																																				0
479	44.51685212	-89.12597729	0	Lake Iola	Waupaca		BTB & JLW	479	0			NONNAVIGABLE (PLANTS)																																				0
480	44.51649206	-89.12598267	147	Lake Iola	Waupaca	7/25/2017	BTB & JLW	480	0			NONNAVIGABLE (PLANTS)																																				0
481	44.51613199	-89.12598805	162	Lake Iola	Waupaca	7/25/2017	BTB & JLW	481	0			TEMPORARY OBSTACLE	fisherman																																				0
482	44.51505179	-89.1260042	139	Lake Iola	Waupaca	7/25/2017	BTB & JLW	482	2	Sand	Pole	SAMPLED			3				1		3									1				1												0
483	44.51433166	-89.12601496	96	Lake Iola	Waupaca	7/25/2017	BTB & JLW	483	2	Sand	Pole	SAMPLED			3				1		2												1												0
484	44.51361153	-89.12602573	95	Lake Iola	Waupaca	7/25/2017	BTB & JLW	484	6	Muck	Pole	SAMPLED			3				1		1								3		1		1				1							1			0
485	44.51325146	-89.12603111	89	Lake Iola	Waupaca	7/25/2017	BTB & JLW	485	5	Muck	Pole	SAMPLED			3				1		3																										0
486	44.5128914	-89.12603649	88	Lake Iola	Waupaca	7/25/2017	BTB & JLW	486	2	Sand	Pole	SAMPLED			3				1		3				1																						0
487	44.51253133	-89.12604187	81	Lake Iola	Waupaca	7/25/2017	BTB & JLW	487	5	Muck	Pole	SAMPLED			2						1				2					1		1														0
488	44.5118112	-89.12605264	62	Lake Iola	Waupaca	7/25/2017	BTB & JLW	488	4	Muck	Pole	SAMPLED			2				1	2	1				1					1																	0
489	44.51109107	-89.1260634	55	Lake Iola	Waupaca	7/25/2017	BTB & JLW	489	4	Sand	Pole	SAMPLED			2				1	1				1				1	1																	0
490	44.510731	-89.12606878	48	Lake Iola	Waupaca	7/25/2017	BTB & JLW	490	6	Muck	Pole	SAMPLED			2				1		2				1						1															0
491	44.51037093	-89.12607416	47	Lake Iola	Waupaca	7/25/2017	BTB & JLW	491	3	Muck	Pole	SAMPLED			3				3	1				1					1		1						1										0
492	44.51001087	-89.12607954	45	Lake Iola	Waupaca	7/25/2017	BTB & JLW	492	0			NONNAVIGABLE (PLANTS)																																				0
493	44.51828853	-89.1254525	0	Lake Iola	Waupaca		BTB & JLW	493	0			NONNAVIGABLE (PLANTS)																																				0
494	44.5175684	-89.12546327	0	Lake Iola	Waupaca		BTB & JLW	494	0			NONNAVIGABLE (PLANTS)																																				0
495	44.51720833	-89.12546866	0	Lake Iola	Waupaca		BTB & JLW	495	0			NONNAVIGABLE (PLANTS)																																				0
496	44.51684827	-89.12547404	0	Lake Iola	Waupaca		BTB & JLW	496	0			NONNAVIGABLE (PLANTS)																																				0
497	44.5164882	-89.12547943	149	Lake Iola	Waupaca	7/25/2017	BTB & JLW	497	0			NONNAVIGABLE (PLANTS)																																				0
498	44.51612814	-89.12548481	148	Lake Iola	Waupaca	7/25/2017	BTB & JLW	498	8	Muck	Pole	SAMPLED			3				3																											0
499	44.51504794	-89.12550097	140	Lake Iola	Waupaca	7/25/2017	BTB & JLW	499	6	Muck	Pole	SAMPLED			3					1				1		1			3																	0
500	44.51432781	-89.12551174	97	Lake Iola	Waupaca	7/25/2017	BTB & JLW	500	5	Muck	Pole	SAMPLED			3				3		1								1									1									0
501	44.51252748	-89.12553866	80	Lake Iola	Waupaca	7/25/2017	BTB & JLW	501	4	Muck	Pole	SAMPLED			2				1		2								1																	0
502	44.51216741	-89.12554405	78	Lake Iola	Waupaca	7/25/2017	BTB & JLW	502	4	Sand	Pole	SAMPLED			3						1				3								1													0
503	44.51180735	-89.12554943	68	Lake Iola	Waupaca	7/25/2017	BTB & JLW	503	3	Muck	Pole	SAMPLED			2					2				1																						0
504	44.51144728	-89.12555482	67	Lake Iola	Waupaca	7/25/2017	BTB & JLW	504	3	Muck	Pole	SAMPLED			2					2														1													0

Point Number	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	ID	Lake Name	County	Date	Field Crew	Point Number	Depth (ft)	Sediment	Pole; Rope	Comments	Notes	Nuisance	Total Rake Fullness	Myriophyllum sibiricum X spicatum	Potamogeton crispus	Ceratophyllum demersum	Chara spp.	Elodea canadensis	Heteranthera dubia	Lemna turionifera	Myriophyllum heterophyllum	Myriophyllum sibiricum	Myriophyllum verticillatum	Najas flexilis	Najas guadalupensis	Nitella spp.	Nuphar variegata	Nymphea odorata	Potamogeton bicupulatus	Potamogeton friesii	Potamogeton illinoensis	Potamogeton natans	Potamogeton praelongus	Potamogeton strictifolius	Potamogeton zosteriformis	Sparganium polyedra	Stuckenia pectinata	Typha latifolia	Utricularia minor	Utricularia vulgaris	Vallisneria americana	Wolffia spp.	Leptodictyum riparium	Aquatic moss	Filamentous algae	Canex pseudocyperus
505	44.51108721	-89.1255602	63	Lake Iola	Waupaca	7/25/2017	BTB & JLW	505	3	Muck	Pole	SAMPLED			3				3								1					1														0
506	44.51828468	-89.1249492	0	Lake Iola	Waupaca		BTB & JLW	506	0			NONNAVIGABLE (PLANTS)																																					0
507	44.51792461	-89.12495463	0	Lake Iola	Waupaca		BTB & JLW	507	0			NONNAVIGABLE (PLANTS)																																					0
508	44.51756454	-89.12496002	0	Lake Iola	Waupaca		BTB & JLW	508	0			NONNAVIGABLE (PLANTS)																																					0
509	44.51720448	-89.12496541	0	Lake Iola	Waupaca		BTB & JLW	509	0			NONNAVIGABLE (PLANTS)																																					0
510	44.51684441	-89.1249708	0	Lake Iola	Waupaca		BTB & JLW	510	0			NONNAVIGABLE (PLANTS)																																					0
511	44.51648435	-89.12497619	151	Lake Iola	Waupaca	7/25/2017	BTB & JLW	511	0			NONNAVIGABLE (PLANTS)																																					0
512	44.51612428	-89.12498157	150	Lake Iola	Waupaca	7/25/2017	BTB & JLW	512	5	Muck	Pole	SAMPLED			3			2	1				1				1																			0
513	44.51324376	-89.12502468	90	Lake Iola	Waupaca	7/25/2017	BTB & JLW	513	1	Muck	Pole	SAMPLED			2			1		1		1															1								0
514	44.51252362	-89.12503546	79	Lake Iola	Waupaca	7/25/2017	BTB & JLW	514	1	Muck	Pole	SAMPLED			2			2		1		1	1							1								1							0
515	44.51216356	-89.12504084	77	Lake Iola	Waupaca	7/25/2017	BTB & JLW	515	4	Muck	Pole	SAMPLED			2			2	1	1							1			1			1					1							0
516	44.51180349	-89.12504623	69	Lake Iola	Waupaca	7/25/2017	BTB & JLW	516	3	Muck	Pole	SAMPLED			2				2											1			1							1					0
517	44.51144343	-89.12505162	66	Lake Iola	Waupaca	7/25/2017	BTB & JLW	517	3	Muck	Pole	SAMPLED	stumps all up in here!		3				3																										0
518	44.51108336	-89.12505701	64	Lake Iola	Waupaca	7/25/2017	BTB & JLW	518	4	Muck	Pole	SAMPLED			2				2	1								1		1															0
519	44.51828082	-89.12444598	0	Lake Iola	Waupaca		BTB & JLW	519	0			NONNAVIGABLE (PLANTS)																																					0
520	44.51792075	-89.12445138	0	Lake Iola	Waupaca		BTB & JLW	520	0			NONNAVIGABLE (PLANTS)																																					0
521	44.51756069	-89.12445677	0	Lake Iola	Waupaca		BTB & JLW	521	0			NONNAVIGABLE (PLANTS)																																					0
522	44.51720062	-89.12446216	0	Lake Iola	Waupaca		BTB & JLW	522	0			NONNAVIGABLE (PLANTS)																																					0
523	44.51684056	-89.12446755	0	Lake Iola	Waupaca		BTB & JLW	523	0			NONNAVIGABLE (PLANTS)																																					0
524	44.51648049	-89.12447294	152	Lake Iola	Waupaca	7/25/2017	BTB & JLW	524	0			NONNAVIGABLE (PLANTS)																																					0
525	44.5121597	-89.12453764	71	Lake Iola	Waupaca	7/25/2017	BTB & JLW	525	3	Sand	Pole	SAMPLED			3				3								1					1													0
526	44.51179964	-89.12454303	70	Lake Iola	Waupaca	7/25/2017	BTB & JLW	526	3	Muck	Pole	SAMPLED			2				2	1													1												0
527	44.51143957	-89.12454842	65	Lake Iola	Waupaca	7/25/2017	BTB & JLW	527	3	Muck	Pole	SAMPLED			2				2										1				1												0
528	44.51791689	-89.12394812	0	Lake Iola	Waupaca		BTB & JLW	528	0			NONNAVIGABLE (PLANTS)																																					0
529	44.51755683	-89.12395352	0	Lake Iola	Waupaca		BTB & JLW	529	0			NONNAVIGABLE (PLANTS)																																					0
530	44.51719676	-89.12395891	0	Lake Iola	Waupaca		BTB & JLW	530	0			NONNAVIGABLE (PLANTS)																																					0
531	44.5168367	-89.12396431	0	Lake Iola	Waupaca		BTB & JLW	531	0			NONNAVIGABLE (PLANTS)																																					0
532	44.51647663	-89.1239697	153	Lake Iola	Waupaca	7/25/2017	BTB & JLW	532	0			NONNAVIGABLE (PLANTS)																																					0
533	44.51611657	-89.1239751	157	Lake Iola	Waupaca	7/25/2017	BTB & JLW	533	0			NONNAVIGABLE (PLANTS)	10 m away and it's a wall of cattail																																					0
534	44.51323604	-89.12401825	76	Lake Iola	Waupaca	7/25/2017	BTB & JLW	534	0			TERRESTRIAL																																					0
535	44.51215584	-89.12403444	72	Lake Iola	Waupaca	7/25/2017	BTB & JLW	535	5	Muck	Pole	SAMPLED			1				1		1								1																	0
536	44.5171929	-89.12345566	0	Lake Iola	Waupaca		BTB & JLW	536	0			NONNAVIGABLE (PLANTS)																																					0
537	44.51683284	-89.12346106	0	Lake Iola	Waupaca		BTB & JLW	537	0			NONNAVIGABLE (PLANTS)																																					0
538	44.51647277	-89.12346646	154	Lake Iola	Waupaca	7/25/2017	BTB & JLW	538	0			NONNAVIGABLE (PLANTS)																																					0
539	44.51611271	-89.12347186	158	Lake Iola	Waupaca	7/25/2017	BTB & JLW	539	2	Muck	Pole	SAMPLED			2				2		1																1						1	1			0
540	44.51323218	-89.12351504	75	Lake Iola	Waupaca	7/25/2017	BTB & JLW	540	5	Muck	Pole	SAMPLED			3		1	3		1																									0
541	44.51287212	-89.12352044	74	Lake Iola	Waupaca	7/25/2017	BTB & JLW	541	1	Muck	Pole	SAMPLED			0																															0
542	44.51215198	-89.12353123	73	Lake Iola	Waupaca	7/25/2017	BTB & JLW	542	0	Sand	Pole	SAMPLED			1				1		1											1													1
543	44.51718904	-89.12295242	0	Lake Iola	Waupaca		BTB & JLW	543	0			NONNAVIGABLE (PLANTS)																																					0
544	44.51682897	-89.12295782	0	Lake Iola	Waupaca		BTB & JLW	544	0			NONNAVIGABLE (PLANTS)																																					0
545	44.51646891	-89.12296322	155	Lake Iola	Waupaca	7/25/2017	BTB & JLW	545	0			NONNAVIGABLE (PLANTS)																																					0
546	44.51610884	-89.12296862	161	Lake Iola	Waupaca	7/25/2017	BTB & JLW	546	2	Muck	Pole	SAMPLED			3				3		1						1					1													0
547	44.51682511	-89.12245457	0	Lake Iola	Waupaca		BTB & JLW	547	0			NONNAVIGABLE (PLANTS)																																					0
548	44.51646504	-89.12245998	156	Lake Iola	Waupaca	7/25/2017	BTB & JLW	548	0			NONNAVIGABLE (PLANTS)																																					0
549	44.51610498	-89.12246538	159	Lake Iola	Waupaca	7/25/2017	BTB & JLW	549	0			NONNAVIGABLE (PLANTS)																																					0
550	44.51610111	-89.12196214	160	Lake Iola	Waupaca	7/25/2017	BTB & JLW	550	7	Muck	Pole	SAMPLED			1													1									1									0

F

APPENDIX F

WDNR Fisheries Studies

2016 Spring Electrofishing (SEII) Summary Report

Iola Millpond (WBIC 278800)

Waupaca County

Introduction and Survey Objectives

In 2016, the Department of Natural Resources conducted a one night boomshocking survey of Iola Millpond in order to provide insight and direction for the future fisheries management of this water body. Primary sampling objectives of this survey are to characterize species composition, relative abundance, and size structure. The following report is a brief summary of all activities conducted, general status of fish populations and future management options.

Acres: 220
Lake Type: Impoundment
Regulations: Statewide Default Regulations
Shoreline Miles: 4.74
Public Access: 1 public boat Launch
Maximum Depth (feet): 9

WISCONSIN DNR CONTACT INFO.

Elliot Hoffman - Fisheries Technician

Wisconsin Dept. of Natural Resources
647 Lakeland Rd.
Shawano, WI 54166

Elliot Hoffman Phone: 715-526-4231
E-mail: elliot.hoffman@wisconsin.gov

Survey Information							
Site location	Survey Date	Water Temp. (F)	Target Species	Total Miles Shocked	No. of Stations	Gear	Dippers
Iola Millpond	5/18/2016	64	All	1.5	3	Boomshocker	2

Fish Metric Descriptions
PSD, CPUE, LFD and Growth

Proportional Stock Density (PSD) is an index used to describe size structure of fish. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values in the 30 to 50 percent range generally describe a balanced fish population.

Catch per unit effort (CPUE) is an index used to measure fish population relative abundance which simply refers to the number of fish captured per unit of distance or time. For lake surveys we typically quantify CPUE by the number and size of fish per mile of shoreline. CPUE indexes are compared to statewide data by percentiles. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

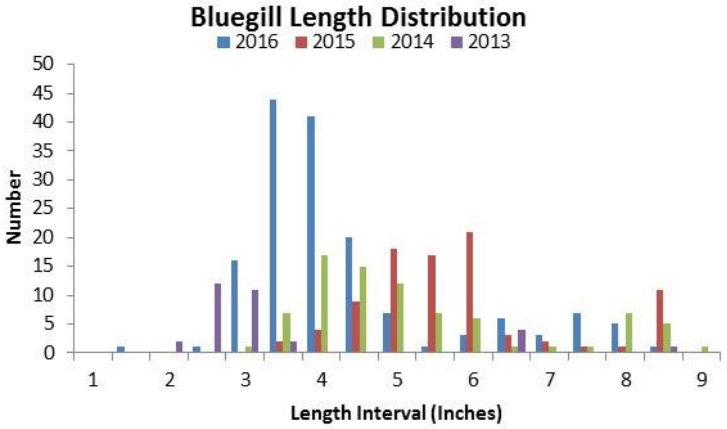
Length frequency distribution (LFD) is a graphical representation of the percentage of fish captured by one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or gear sampling limitations.

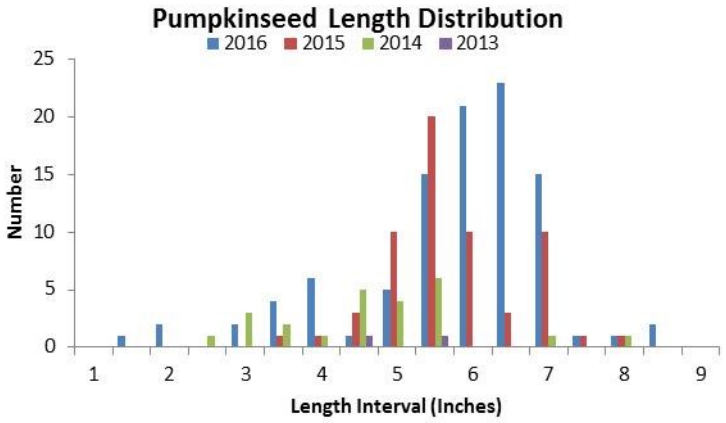
Survey Method

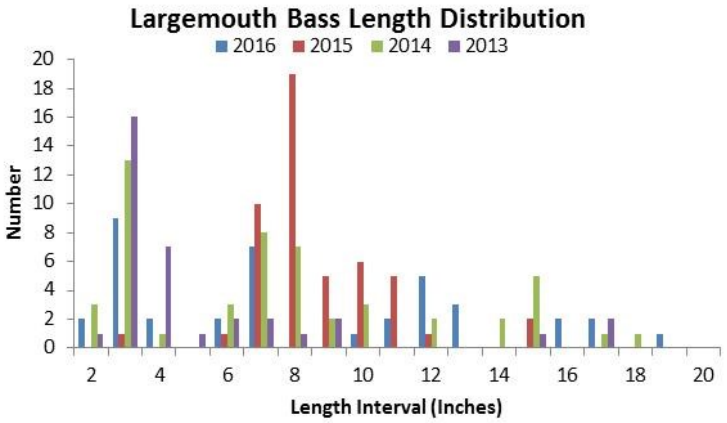
- Iola Millpond was sampled according to spring electrofishing (SEII) protocols as outlined in the statewide lake assessment plan. The primary objective for this sampling period is to count and measure adult bass and panfish. Other gamefish may be sampled but are considered by-catch as part of this survey.
- One and a half miles of shoreline was sampled. All fish captured were identified to species and measured for length.
- Fish metrics used to describe fish populations include proportional stock density, catch per effort, and length frequency distribution,.

Size Structure Metrics									
Species	Total	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock No	Quality No	PSD	Percentile Rank	Size Rating
BLUEGILL	156	4.5	1.9 - 8.5	3.0 and 6.0	154	25	16%	23rd	Low
LARGEMOUTH BASS	38	8.7	2.9 - 19.4	8.0 and 12.0	16	13	81%	83rd	Moderate - High
NORTHERN PIKE	7	16.4	14.5 - 18.5	14.0 and 21.0	7	0	0%	-	Low
PUMPKINSEED	99	6.0	1.6 - 8.8	3.0 and 6.0	96	63	66%	79th	Moderate - High

Abundance Metrics							
Species	CPUE Total (no per mile)	Percentile Rank	Overall Abundance Rating	Length Index	Length Index CPUE	Percentile Rank	Abundance Rating
BLUEGILL	104.0	55th	Moderate	≥ 7.0	10.7	63rd	Moderate
LARGEMOUTH BASS	25.3	67th	Moderate	≥ 14.0	3.3	58th	Moderate
NORTHERN PIKE	4.7	83rd	Moderate - High	≥ 21.0	0	-	Low
PUMPKINSEED	66.0	95th	High	≥ 7.0	12.7	97th	High







Stocking History				
Species	**Year**	**Age**	**Mean Length**	**Number Stocked**
BLUEGILL	2016	LARGE FINGERLING	0.5	18925
LARGEMOUTH BASS	2015	LARGE FINGERLING	1.9	11012
LARGEMOUTH BASS	2014	LARGE FINGERLING	3.2	5125
NORTHERN PIKE	2014	SMALL FINGERLING	2.7	15442
LARGEMOUTH BASS	2013	LARGE FINGERLING	2.1	5148
NORTHERN PIKE	2013	SMALL FINGERLING	4.5	15451

Summary

- A total of 340 fish in 12 species were collected during our survey. The most frequently encountered and common species were bluegill (156), pumpkinseed (99), largemouth bass (38), and lake chubsucker (24).
- One state listed special concern species, lake chubsucker, was found at moderate levels of abundance.
- Other species sampled in low abundance included black crappie (1), golden shiner (6), green sunfish hybrid (2), northern pike (7), rock bass (1), white sucker (3), yellow bullhead (2), and yellow perch (1).
- Largemouth bass was the dominant gamefish captured in our survey. Size structure was at moderate to high levels, while the abundance metrics were at moderate levels. The largest bass sampled was 19.4 inches and 32% of the bass caught were greater than 14.0 inches.
- 7 northern pike were sampled. Fyke netting would be the more appropriate sampling technique to assess this population. Iola millpond should be sampled with in the next few years with fyke nets.
- Panfish populations were mainly comprised of bluegill and pumpkinseed. Bluegill were found at moderate density and low size structure with only 16% of our catch greater than 6.0 inches and 10% greater than 7.0 inches. Pumpkinseed were found at high abundance levels and size structure was high with 66% of the catch greater than 6.0 inches and 20% of our catch greater than 7.0 inches.
- Panfish abundance metrics were lower than expected, suggesting these populations are recovering slower than expected following the refill of the mill pond. However, panfish are showing signs of fast growth.

Management Options

This survey was primarily intended to assess largemouth bass and sunfish populations. Other species were captured but different survey techniques are typically used to assess their populations. Therefore, management recommendations are focused on bass and panfish.

Largemouth Bass

- Management Objective: Increase largemouth CPUE of > 14.0 inches bass to 5-10 per mile and hopefully with increased recruitment of younger largemouth bass PSD will lower to 40-50%.
- Management Action: The DNR has no immediate plans to stock any more predators. This should help in the survival of younger large-mouth bass.

Panfish

- Bluegill size structure was found at low levels.
- Management Objective: Increase bluegill size structure and maintain bluegill relative abudance
- Management Action: Stocking of predator species like largemouth bass and northern pike has been the key management technique in keeping numbers of panfish under control. With stocking not taking place in the near future we anticipate numbers of panfish to increase.

Other Management Objectives:

- Ongoing aquatic plant management continues to be an issue and will be monitored.

G

APPENDIX G

Lake Iola Lake District Planning Committee Minutes and Original Harvest Plan Maps (2008 and 2018)

Lake Iola Study
Planning Committee
Sunday, July 23, 2017

2:00 Meeting was called to order by Chair John Bertelson

Members present: John Bertelson, Brian Lepak, Vicki Bellows, Michelle Frola, Lyle Nauman, Oscar Knoeck, Jerry Harvancik, Roger Olson, Gary Richards

Excused: Jack Kuhr

Chair Bertelson thanked members present for volunteering their time to help with this study. The study will help set the management direction for the next 5-10 years on Lake Iola.

The Study

A short review of the last study was given by Chair Bertelson. John encourages all Committee members to review this plan at their convenience. John believes there are three main considerations for the study:

1. What do we want to see done with the lake?
2. What will the DNR allow us to do with the lake?
3. What will we be able to afford to do?

As we work through the process for the study, we need to keep the three questions in mind.

The Survey: the first part of the process

The committee decided that ANY address that receives a notice for the annual meeting would also receive a chance to be a part of the study. Each address will receive a post card with directions for how to complete the survey on line. If a resident wishes to complete a hard copy of the survey, they will be able to pick up and return a copy of the survey at the Community Center (Iola Village Hall). Chair Bertelson will double check to make sure that this will be ok with Dan Johnson, Village Clerk. Vicki Bellows volunteered to enter any hard copy results that are turned in. All results will be private as each survey is coded; names will not be used. This process will help keep costs down, as we will not be using postage.

Survey Questions

The committee spent the remainder of the meeting time reviewing each section of questions. Most of the questions remained as printed on the sample or with minor changes to fit our lake. The same process was agreed on for the opening Statement for the survey.

Next Steps

Chair Bertelson will sent our changes to Onterra so the survey can be updated based on our input. Once the draft is ready, it will be sent back to the Committee for another look via email. Once the Committee gives the ok, then the survey will be sent for approval from the DNR. After they sign off we will be able to send the survey out.

This group does not plan to meet again until spring, when the work begins with Onterra. In the meantime, Committee members are encouraged to read the last Lake Study Report (available on the Village website or from the Iola Public library-hard copy).

Meeting adjourned at 4:15pm.
Submitted by Michelle Frola

December 5, 2017
Lake Iola Management Planning Project

6:02 Call to Order by John Bertelson

Attendance,
Onterra: Tim Hoyman, Eddie Heath
Plan Committee: John Bertelson, Lyle Nauman, Michelle Frola, Vicki Bellows, Oscar Knoeck, Roger Olson, Tom Fucik, Brian Lepak, Jack Kuhr, Gary Richards, Jerry Harvancik.
Audience: Cliff Schmidt, Hamilton Harvey, Lyn Schwister, Larry Schwister

Tim opening comments - wants us to understand the composition of the lake in order to make a plan that will best serve our lake. Eddie Heath is the person at Onterra who specializes in plants. The 2011-2013 drawdown really changed the make-up of the lake. Recommendations and plan customized for our lake.

Went through the presentation from Onterra.

- Our main invasive plants, Eurasian Water Milfoil (EWM) and Curly Leaf Pondweed, are at low levels. Drawdown was very effective reducing EWM.
- Hybrid Water Milfoil (HWM) confirmed to exist in the lake in 2014 and is a mix of EWM and native milfoils. It is more difficult to treat chemically than EWM, but it also seems to be controlled well with drawdowns.
- Various-leaved Water Milfoil (VLWM) and Common Waterweed are the two native plants that currently exist at nuisance levels and severely limit the recreational opportunities on the lake. VLWM exists primarily in the lower part of the lake, while Waterweed is in the upper part. Drawdown did reduce VLWM, but it has rebounded due to very favorable growing conditions in the lake.
- Drawdown did significantly knock down the total plant biomass, but it is rebounding back to levels seen in 2006 lake study.
- Quality of native plant community is high, and that diversity helps to keep invasive plants in check.
- 570 surveys sent out, with 122 returned. More effective plant control is main issue. Herbicide, dredging, and harvesting control activities supported by majority of respondents. Tim pointed out that a conservative cost estimate for dredging is $15 per cubic yard removed, IF we can get permit. One acre dug three feet deeper would cost $72,600.

7:30-7:40 break

7:40 Aquatic Plant Management Plan

Herbicides will give some relief to some plants, drawdowns can help (may limit to winter drawdowns – Labor Day until Memorial Day), and mechanical harvesting. Invasive weeds are not our problem. Our problem is nuisance weeds.

Ecosystem restoration
To target kill invasive weeds

Restore ecosystem services
Target plants so they do not cause recreational, navigational or aesthetic issues

We need to have a plan that has a combination of actions to help with both management options. The restoration part needs to have triggers included to address the invasive plants. For spring, we need to have a plan that emphasizes herbicide treatments and mechanical harvesting.

Tim and Eddie are going to put together, from our discussions and the results, a combination of herbicide and harvesting options for us to consider in February.

Meeting adjourned at 8:50 pm.
Minutes recorded by Michelle Frola

Lake Iola Planning Meeting
Sunday January 7, 2018
Iola Community Center

Call to order at 6:05pm by John Bertelson

Committee members present: John Bertelson, Jerry Harvancik, Jack Kuhr, Michelle Frola, Tom Fucik, Vicki Bellows, Brian Lepak, Oscar Knoeck. Also in attendance: Lyn Schwister.

Discussion centered on weed harvesting, which according to Onterra, will need to be included in our new plan for the lake. Options discussed:

1. Purchase equipment so the Lake District could harvest weeds on their own. Oscar shared some preliminary prices of equipment so the Committee members could have some idea of what costs could look like. After much discussion, Tom and John volunteered to put together a budget of what this could cost. Possible grant money may be available to help with the costs of purchasing machinery. This will be looked into as well.
2. Another option discussed was to use the budget information that Tom and John are going to put together and pitch the idea of working with the Village on this venture. There would be many benefits to the Lake District in working with the Village. A good example may be found by learning how the McDill Pond Lake District works with the city of Stevens Point.
3. A third option is continuing weed harvesting using a contractor, as we do now, but looking into the possibility of increasing the number of times weeds are cut. Also, knowing that Cliff may want to retire someday, looking into other harvesting businesses that are out there.

Further information needs to be gathered before any decisions can be made. The Planning Committee will need to meet again, probably when Onterra is ready to go over what they are suggesting that we include in our plan.

Meeting adjourned 7:10 pm.

Minutes recorded by Michelle Frola.

March 27, 2018

Call to order by Chair, John Bertelson, 5:30 pm

Present: John Bertelson, Jerry Harvancik, Jack Kuhr, Michelle Frola, Tom Fucik, Vicki Bellows, Brian Lepak, Roger Olson, Lyle Nauman. Also in attendance, Clifford Schmidt, Hamilton Harvey, Dave Harper, Tracey Ambacher, Terry Murphy.

Absent: Oscar Knoeck

Review of Onterra plan. DNR will not allow us to spray as aggressively as we would like for fear of killing off too many native plants (which these are) and then leaving those areas open for the invasive plants. The areas that would be allowed are all areas where houses are located.

Map shows areas where the DNR will allow us to spray. If we spray in these areas, there would not be any weed harvesting in the areas. The chemical that would be used is pretty potent stuff and will kill pretty much all plants.

No invasive spraying will be done this year unless the invasive plants are in the channels.

Moved by Tom Fucik
Second by Michelle Frola

Motion approved unanimously.

Meeting adjourned, 6:00 pm

Minutes recorded by Michelle Frola

August 28, 2018 - Iola Lake Planning Committee Meeting

Call to order by Chair, John Bertelson, 5:30 pm

Present: John Bertelson, Oscar Knoeck, Jack Kuhr, Tom Fucik, Vicki Bellows, Brian Lepak, Roger Olson, Lyle Nauman. Also in attendance, Clifford Schmidt, Dave Harper, Terry Murphy, Lyn Schwister, Joel Edler, Mike Devine, Bill Erklin, Connie Erklin.

Absent: Michelle Frola, Jerry Harvancik

After opening comments, John asked for volunteers to form a harvester management team that would develop the program and manage its operation. Some of the responsibilities would include,

- staffing (volunteers and/or paid operators)
- training
- safety
- determine where cutting or skimming is needed and when, then communicate to operator
- monitor to make sure activities stay within DNR permit requirements
- maintaining equipment or arranging for maintenance
- set up and monitor plant disposal site
- work with equipment vendor
- work with Village, Town, DNR, etc. as needed; report to Lake District Board Chairman

Oscar volunteered to lead the effort, while Brian and Roger offered to help. Lyle volunteered to help with staffing, specifically in regards to a possible labor pool from a program at UW-Stevens Point. John will assist Oscar and Lyle as needed, and will work with Lyn on financing considerations.

Prior to the meeting, Oscar delivered files to the committee members containing equipment bids from four possible suppliers: Aquarius Systems (North Prairie, WI), Inland Lake Harvester (Burlington, WI), Henning Aquatic Harvester (New Hope, MN) and Aquatic Weed Harvester Company (Spooner, WI). Cliff outlined what he thought would be best for our lake. A larger cargo capacity with a certain length gives the greatest stability during operation, so the Henning bid was dismissed as too small of equipment. Cliff mentioned some other considerations that need more follow-up, so he agreed to take a closer look at the remaining three proposals. Cliff's harvesting equipment was custom built to his requirements by Aquarius, which does have a good reputation as a company.

Discussion of handling harvested plant material brought out some challenges. We need a way to haul it to a dumpsite, and a self-unloading trailer may be considered. No CDL is required for driving a truck weighing less than 26,000 lbs. gross weight, so perhaps a small dump truck would work. Cliff pointed out that the planned expansion of the care facility in Iola will cut into the area he presently dumps harvested plants, so we may need to find a new site.

Other lake harvesting programs may be considered. John will look into contacts for similar lakes, like found in Stevens Point (McDill Pond), Clintonville (Pigeon Lake), Montello and Marion.

Lyn did speak with someone at Bank First regarding a possible loan. The Lake District is eligible to borrow for the purchase of harvesting equipment, and terms are flexible. Initial considerations are a seven or eight year loan, with a 15% to 20% down payment. The down payment requirement may be waived if purchase is made at the end of the cutting season, if that would help lower costs. Once or twice per year payments instead of monthly. Could rewrite loan if we get a grant. Two signatures are required for loan, but those who sign will hold no personal liability. Signatures by the Lake District Chairman and Treasurer should be fine, along with copies of the past two years of budgets and any approvals by the board and membership.

The next planning committee meeting to discuss the harvester program will be September 18, prior to the next planning meeting with Onterra

Meeting adjourned, 6:35 pm, Minutes recorded by John Bertelson

September 18, 2018 - Iola Lake Planning Committee Meeting

Call to order by Chair, John Bertelson, 5:10 pm

Present: John Bertelson, Oscar Knoeck, Vicki Bellows, Brian Lepak, Roger Olson, Lyle Nauman, Michelle Frola. Also in attendance, Clifford Schmidt, Tracey Ambacher Jr., Lyn Schwister, Holly Neumann, Tony Neumann.

Absent: Jack Kuhr, Jerry Harvancik, Tom Fucik

Oscar brought updated equipment bids from the three remaining potential suppliers. Copies made and distributed. Committee will review for discussion at the next meeting.

The following preliminary project timeline reviewed,

Apply for grant (if available)
- deadlines Nov. 1, 2018, Feb. 1, 2019 (if money left), June 1, 2019
Sometime 2019 - receive grant money
Summer 2019 - apply for and receive loan (after approval at our annual meeting in June)
Fall 2019 - start manufacture of harvesting equipment
Nov. 2019 - set special purpose tax levy on waterfront property owners
Spring 2020 - receive special purpose levy money to pay off loan (also annually for life of loan - 8 years???)
Summer 2020 - we start our own harvesting program

If we decide to pursue new equipment, we will plan to apply for the June 1, 2019 grant period. Vicki asked to assist John in reviewing requirements for the grant application.

We have extended our harvesting contract with Cliff for one more year. Cliff has offered to sell us his harvester and shore elevator after he completes next season, which may allow us to at least start our program and save up for new equipment later. Copies of Cliff's proposal given to the committee for review and later discussion. We still will need to purchase a trailer and equipment to haul harvested plants to a dumpsite.

Lynn provided loan information she got from Premier Community Bank. They are willing to write a loan for up to 12 years at a rate of 5% interest. The loan could be rewritten if we get a grant.

Discussed possible university student labor with Lyle. It was decided not to pursue, since we should look for someone with experience operating heavy equipment to run the harvester. It was also decided that it should be a paid position, and not to consider volunteers.

Brief discussion on equipment storage. There may be a shed available near where the village stores grass clippings. Tracey mentioned Recon Boats has storage that may be available for rent.

Dump site considerations. The village mixes some of our harvested aquatic plants in with collected leaves, and is available for people to use as mulch. Will check with the village to see if there is another place to dump harvested plants so they can still use them.

Next meeting is planned for October 30, one hour before the board meeting.

Meeting adjourned, 5:50 pm, Minutes recorded by John Bertelson

Following the planning meeting, Onterra presented an update on the lake study information collected over the past two years.

October 30, 2018 - Iola Lake Planning Committee Meeting

Call to order by Chair, John Bertelson, 5:32 pm

Present: John Bertelson, Oscar Knoeck, Roger Olson, Jack Kuhr, Lyle Nauman, Jerry Harvancik
Also in attendance, Clifford Schmidt, Lyn Schwister, Dave Harper, Mike Devine
Absent: Brian Lepak, Michelle Frola, Tom Fucik, Vicki Bellows

Discussed the updated equipment bids distributed at the September meeting. The committee decided to pursue the offer from Cliff Schmidt for his equipment after the next aquatic plant harvesting season. As long as it is in decent shape, it would be the best way to begin our program without investing a lot of capital. Will pursue new equipment if our program is judged successful.

Cliff's offer is for the harvester and conveyor, so we will still need a trailer and equipment to haul and dump plants. Looking at trailer costs on the new equipment bid summary sheet, the lowest bid is from Inland Lake Harvester with new trailer costs ranging from $9,600 to $16,000 depending on harvester size. Cliff Schmidt asked if that included a winch and waterproof bearings. Oscar will check into it, while Roger will look into other types of trailers that may suit our needs at lower cost.

Cliff was asked about the condition of his harvester. It is about 20 years old and has been well maintained. We may want to consider adding some sheet steel to it for about $5,000. Next spring, Oscar will ask Aquarius Systems to evaluate the condition of the harvester to see if anything else is needed.

Cliff was asked about insurance coverage, and he carries $1 million for liability. John will check with the village about whom they use for insurance.

Roger mentioned that he knew a retiree from the foundry in Waupaca who may be interested in applying for the harvester operator job when we create it. The committee agreed that someone with a good mechanical background is a plus.

Roger and Oscar will work on sourcing a dump truck or a dump trailer to haul aquatic plants. Oscar pointed out that a CDL license is not need to operate a vehicle less than 26,000 lbs. gross weight. A landscaping truck for hauling would cost $15,000 to $20,000. Cliff pointed out that his conveyor runs off a hydraulic line from his dump truck, so conveyor operation would have to be considered for whatever we get.

Oscar is checking into possible dumpsites in the township and the village. Plans are to still harvest from the two points on the lake we currently use - Frogner St. for the north end and the village boat landing for the south end.

Roger will check with the village on possibly using a vacant bay in one of their buildings to store our equipment. He will also check with Glenn Tetzlaff regarding the possibility of the village helping with maintenance.

Discussion returned to the condition of the harvester, specifically the engine. Cliff said it is a common diesel engine with an overhaul schedule of 10,000 hours. There are 4,000 hours remaining until that level is reached. Cliff will only be harvesting on Lake Iola next season, and that will be 160 hours. There will be plenty of hours left before considering overhaul or a new engine. An overhaul costs about $5,000, while a decent used engine can be found for around $1,200 with additional costs for installation.

Cliff mentioned that the hydraulic oil needs to be changed every two years. It is a vegetable-based oil and the system holds 40 gallons. Cliff buys a 55-gal. drum for $1,100.

As for fuel, Cliff uses off-road diesel from Norm's. The harvester fuel tank holds 18 gallons, and usage is about 1 gallon per hour during harvesting. Cliff uses fuel cans to refuel. While there are no road taxes on the fuel, it is rather expensive due to the need to remove sulfur.

Meeting adjourned, 6:20 pm, Minutes recorded by John Bertelson. Next meeting planned for November 25.

November 25, 2018 - Iola Lake Planning Committee Meeting

Call to order by Chair, John Bertelson, 6:00 pm

Present: John Bertelson, Roger Olson, Jack Kuhr, Lyle Nauman, Vicki Bellows
Also in attendance, Clifford Schmidt, Holly Neumann
Absent: Oscar Knoeck, Brian Lepak, Michelle Frola, Tom Fucik, Jerry Harvancik

John expects to get about $5,000 back for the final DNR reimbursement from the lake management plan next year. Together with other savings should be enough to get us started with sourcing equipment next year if our harvesting plan approved by the membership in June. John will work with Lyn regarding budget considerations.

Reviewed the 2018 budget for McDill Pond harvesting program. The city of Stevens Point does help with storage and maintenance and they have two harvesters and operators, so our program will be different, but it looks like they can harvest all summer for about $22,000 to $27,000. That does fit into our budget. The operating expense items listed on the McDill budget gives us the framework for what we need to consider for our own program.

Wages for a harvester operator discussed. We will be looking for someone with mechanical experience, so that needs consideration. Hours of operation and other duties need better definition before setting an appropriate starting wage, but $20/hr. is not out of the question. Hoses should be replaced in the winter along with a thorough inspection and repairs as needed. Engine oil changes can be done while equipment is in the water, but we should have a spill containment kit available. We do not plan to pay overtime, so workweeks will not exceed 40 hours nor daily hours over eight. With only one operator, there should be planned breaks during the summer too. This needs more consideration at our next meeting.

Roger is still looking into other types of trailers that may suit our needs at lower cost. The trailer needs to fit the 35-foot length of Cliff's harvester.

Roger is also considering dump vehicles. He plans to visit Elderon Truck & Equipment / Truck World, in Wittenberg, WI. Looking for a 1-1/2 ton used dump truck. Someone mentioned checking out military surplus too.

Roger checked with Glenn regarding storage in a building owned by the village as well as maintenance considerations. The available storage space is 70 feet long, so it is big enough for our needs. Storage would be from October to May. The village maintenance shop is large enough to hold the harvester too. Cliff mentioned that the harvester has outrigger legs so it does not need to stay on a trailer for storage or maintenance. We now need to put a proposal together for village board review and approval.

Roger is willing to trim trees and mow grass to keep Frogner St. clear for our northern lake access. Lashua or Bestul consideration if any fill needed for the road. Since the road belongs to the Township, Roger will discuss it with them. Any work expected to be low maintenance and cost.

Cliff offered to provide half-day training sessions next year for anyone interested in learning the operation of the harvester. More consideration at our next meeting.

Cliff's harvester does have an extra heavy-duty sickle bar, which not often seen with farm equipment today. If we get to the point of considering new equipment, we may want to ask if it can be transferred.

Cliff does not use 5-gallon fuel containers. He recommends using six to eight 2-1/2 gallon containers. He goes through about six per day of harvesting.

The plan is to keep the harvester in the water all summer, so trailering needed only twice a year (unless maintenance issues arise). It is safer for the cutting heads to rest on unpaved ground, so longer-term storage will be at the Frogner St. access. Cliff suggests getting an on-board pressure washer, since storing in the water will require more cleaning.

Someone asked if purchasing used equipment now would hurt our chances of getting a grant for new equipment later. John does not think so, but will check with the DNR. Cliff would consider leasing his equipment to us if purchasing will cause us a problem in this regard.

Jack asked about the harvesting map. It is something that is set in our lake management plan when the DNR approves it. If we want to change the map, now is the time to consider. Plan to bring it up at out February meeting with Onterra.

Meeting adjourned, 6:55 pm. Minutes recorded by John Bertelson. Next meeting planned for December 30.

December 30, 2018 - Iola Lake Planning Committee Meeting

Call to order by Chair, John Bertelson, 6:00 pm

Present: John Bertelson, Brian Lepak, Roger Olson, Vicki Bellows, Jack Kuhr
Also in attendance, Clifford Schmidt
Absent: Michelle Frola, Tom Fucik, Oscar Knoeck, Lyle Nauman, Jerry Harvancik

Motion to approve meeting minutes from November, Jack. Second by Roger. Motion approved.

John will check with Onterra if the developing lake management plan will be complete enough to apply for a five-year harvesting permit in 2019. John reminded the group that Tim would like to have any questions or comments on the draft report reviewed in September sent to him prior to the meeting with Onterra in February. We also need to bring our list of challenges for the lake to that meeting for discussion and development of lake management goals and actions.

Reviewed the mechanical harvesting permit map with Cliff. Cliff thought that the map was created during the previous work with Onterra on the 2008 lake management plan. The map is based on the area Cliff was cutting at that time. The group agreed that the second cutting last year turned out great. Plants normally come back quicker, but last year the cutting held longer than expected. Cliff did not have any explanation other than natural variation. The plants in the lake differ depending on location. From the golf course north, the main nuisance plant is elodea (common waterweed), while to the south is mostly milfoils. Cliff will review the map and make suggested changes to the cutting area as well as recommend areas to skim. The revised maps will be sent to Onterra for review.

A trailer and dump truck are needed for the 2020 harvesting season, so they probably will be purchased when the tax levy is available that spring. Of the two, the dump truck is a higher priority. Roger was able to find a 2003 International diesel truck with less than 100,000 miles for $12,000 at Truck World. It is similar to the 1-1/2 or 2-ton truck that the village has. There is a choice between a 12v hydraulic pump and a power take-off hydraulic pump, and Cliff indicated that the power take-off is preferred. There is an International equipment dealer in Stevens Point, and the feeling is that we should be able to get what we need in 2020 for about that price.

The group would like to pursue the harvester operator being a seasonal Village employee with the Lake District paying all associated costs. We are thinking of offering $15/hr. minimum, with higher wages depending on experience. We figure about 400 hours of work per year, based on three four-week periods consisting of three 40-hr weeks of harvesting and/or skimming followed by one week off. Up to 40 hours of maintenance planned for after the season. John will write a letter outlining our current plans to the Village Board for consideration at their January meeting.

Roger still plans to contact the Township about Frogner St. maintenance.

Training for the harvester operator was discussed. Cliff is willing to provide ½ day training when he harvests in 2019. Only one person trained at a time. May want to advertise in 2019 to find those willing to apply for the job in 2020. Those willing to serve on the committee overseeing our harvesting program should go through the training too. So far, Oscar, Roger and Brian are considered to be on the harvester program committee. Brian will put together a flow chart checklist based on the training.

It was agreed to write the pursuit of new equipment after three or four years of experience into our lake management plan.

Meeting adjourned, 7:30 pm, Minutes recorded by John Bertelson.

Next meeting planned for January 27, 2019.

January 27, 2019 - Iola Lake Planning Committee Meeting

Call to order by Chair, John Bertelson, 6:05 pm

Present: John Bertelson, Brian Lepak, Roger Olson, Vicki Bellows, Jack Kuhr, Jerry Harvancik
Also in attendance, Clifford Schmidt, Sharlyn Schwister
Absent: Michelle Frola, Tom Fucik, Oscar Knoeck, Lyle Nauman

One correction in the meeting minutes from December, last line. The next meeting planned was January 27, 2019, not February 26. Motion to approve meeting minutes as corrected, Brian. Second by Jack. Motion approved.

The letter outlining our plans to the Iola Village Board was not presented at their January meeting. John will modify the letter for presentation at the Village Board meeting in February.

John reminded the group of the three action items requested by Onterra in preparation for their meeting in February,

- Review the draft report from September, and then send comments and questions to Onterra a few weeks before the meeting.
    - Vicki submitted her review notes.
- Review stakeholder survey results and comments. John will send a copy to the planning group.
- Bring a list of challenges for the lake and district to the meeting. Management goals and related actions to be developed.

Sharlyn reported that $17.33 was due for two meeting notices in the newspaper, and that would leave $22,471.82 in the Lake District money market account. Some of this amount will go to pay off the remaining Onterra bills, but we also expect money to come back from the final DNR reimbursement. This will be figured into this year's budget and tax levy. If our harvesting plan is approved, some provision will be made to save any unspent annual budget money in an interest-bearing account to put towards any future equipment purchases or major maintenance. Sharlyn will check on a state program available to Lake Districts and other governmental bodies. From a financial standpoint, the goal with this plan is not to raise the tax levy any higher than it is now. Jack pointed out that the lake taxes did drop for most people when they got their statements this year, but John explained the reason was a change with the properties in the Lake District and not a change in our total levy amount approved last year. More information to follow at our board meeting in March, as well as at the annual meeting.

Our plan this year is to have Aquarius Systems evaluate the condition of Cliff's harvester. We still need to find out how much the evaluation will cost and if they can do it on-site. Cliff has recommended spending up to $5,000 next winter for sheet steel reinforcement, but that will depend on the evaluation. Cliff did say that $5,000 was a good budgetary number to use for annual maintenance.

Roger still is considering a lower cost option for the trailer. Cliff will put the harvester in the lake next spring, and there may be options for borrowing a suitable trailer as long as the harvester is not moved out of the lake too often. Sourcing a dedicated trailer for the harvester is considered a low priority at this time. The dump truck is the higher priority and should be purchased as soon as possible, which will probably be when the tax levy is available early in 2020.

Roger will check with the Township sometime this spring or summer regarding the maintenance of Frogner St.

John will contact Glenn regarding disposal of the harvested plants this year. There is some question if the village can still handle the material with the new addition to the assisted living complex in that area. There is an odor for a few days after the material is dumped that may be an issue. We still should try to find a disposal area north of the village for use when harvesting the upper part of the lake.

John informed the group that Tim, from Onterra, did say that we should be able to get a 5-year harvesting permit this year if we want. The group would rather have a one-year permit for this final year with Cliff, then get a 5-year permit if we start our own program next year.

John passed around a job description he found in the newspaper for an Agricultural Mechanic. The group thought it had some good requirements we should consider for our harvester operator when it comes time for us to advertise for the position.

The group considered how a typical workday for the operator would go. It is not expected that the entire eight-hour day will be spent cutting or skimming, as there are other requirements of the job such as hauling away the plants, cleaning equipment, refueling and other cleanup. The operator will pick up the dump truck at the start of the day and use it in the course of their duties until the end of the day. That way there is no need to compensate the operator for use of their personal vehicle.

Annual fuel costs were considered, and the price can vary between $3 and $5 per gallon. Off-road diesel is 50-cents a gallon less expensive. Cliff agreed that a budget of $1,000 per year should be sufficient.

Cliff is still willing to do annual plant surveys for us. What will be needed will depend on the final lake management plan being developed.

Sharlyn will check with Premier regarding insurance for the harvester, conveyor, truck and trailer. Premier is the company that insures Cliff's equipment now.

Jerry emphasized that this project seems to be the only alternative to not harvesting on the lake. We as a group do not believe 'no harvesting' is a good option.

Meeting adjourned, 7:05 pm, Minutes recorded by John Bertelson.

Next harvester meeting planned for 5pm February 26, 2019, followed by the final planning meeting with Onterra at 6pm.

February 26, 2019 - Iola Lake Planning Committee Meeting

Call to order by Chair, John Bertelson, 5:05 pm

Present: John Bertelson, Roger Olson, Vicki Bellows, Jack Kuhr, Jerry Harvancik
Also in attendance, Clifford Schmidt, Sharlyn Schwister, Ray Przekurat
Absent: Michelle Frola, Tom Fucik, Oscar Knoeck, Lyle Nauman, Brian Lepak

Motion to approve meeting minutes from January, Vicki. Second by Jack. Motion approved.

The meeting focused on program costs, with the overriding goal of not increasing the Lake District tax levy from current level.

One-time costs include $32,000 for the harvester (over two years), $12,000 estimated for a dump truck and $500 for misc. supplies, like tools, gas cans, pressure washer, grease gun, etc. Still unsure what trailer cost will be. Lyn pointed out that we can get a loan for used equipment at 5% interest. Jerry suggested considering state auctions for dump trucks. The dump truck should be sourced for this upcoming budget year, if the program approved at our annual meeting.

Annual costs include $6,000 to $8,000 for operating labor, $3,000 estimated for equipment and liability insurance (McDill), $1,000 for hydraulic oil (every other year), $1,000 fuel and $2,000 routine maintenance.

For DNR reporting, Cliff said a daily log should be kept for the dates lake was harvested, quantity removed and types of plants. Algae tends to be denser than the plants, so less volume collected per harvester load when more algae is present.

John will contact Aquarius regarding inspection of Cliff's harvesting equipment by April.

Lyn outlined the state savings account that is available to us as a Lake District. There is no check writing available, but funds can be electronically transferred to our checking account. Interest paid is now around 2%, and since we are considered a special unit of state government, we are not required to pay taxes on it.

Meeting adjourned, 5:50 pm, Minutes recorded by John Bertelson.

The final working session with Onterra followed the meeting. It began at 6:00 pm and ended at 8:30 pm. Some highlights,

- New plan will have less chemical control for invasive plants and more monitoring. May consider partial winter drawdowns. Plant point-intercept study every five years and plant community mapping every ten years in order to keep our DNR permits possible.
- More chemical control is possible for high densities of native plants in navigation lanes of the bays. Bays are more difficult to harvest because of having to turn around, which also tends to scatter more plant fragments.
- Cliff can harvest plants in water as low as 2-1/2 feet depth. Ted Johnson is ok with allowing chemical treatment for plants around piers.
- Must participate in the CLMN (Citizen Lake Monitoring Network). Lake water samples are taken four times a year and sent to the state lab in Madison for analysis. Results are entered into SWIMS (surface water integrated monitoring system), which is a DNR data management program. Water testing results from UW-Stevens Point, or any other test lab, do not go into SWIMS.
    - Two people from the Lake District need to be trained. Samples taken from the same location that Onterra collected. Sample point is in a deeper well-mixed part of the lake.
- Suggest including a Chairman's Report with the annual letter to the Lake District to improve communications. Facebook can be useful too, as links to more information can be added.
- Cliff is willing to continue providing plant surveys in the spring.
- John will provide a summary of the harvester program planning meetings for the final report.
- Lake management goals and actions developed through a brainstorming session led by Tim.
- The official first draft of the final report is planned for the end of March.

Next harvester meeting planned for 5:30pm March 26, 2019, followed by the Lake District board meeting at 6:30pm.

March 26, 2019 - Iola Lake Planning Committee Meeting

Call to order by Chair, John Bertelson, 5:30 pm

Present: John Bertelson, Roger Olson, Vicki Bellows, Jack Kuhr, Jerry Harvancik, Oscar Knoeck, Brian Lepak, Lyle Nauman
Also in attendance, Clifford Schmidt, Sharlyn Schwister, Dave Harper, Greg Reinhardt, Holly Neumann, Tracey Ambacher Jr., Ed Staal, Bill & Lori Schumacher
Absent: Michelle Frola, Tom Fucik

Motion to approve meeting minutes from February, Roger. Second by Brian. Motion approved.

Reviewed the Lake Iola Aquatic Plant Harvesting Program draft document. The only change was quarterly billing of village costs for the program to the Lake District instead of monthly. Final approval will be at the April meetings. Dave Harper agreed that the Lake District would recruit and select the harvester operators, with the information passed on to the village personnel committee.

Reviewed the Iola Lake District 10-year Budget outline. Greg Reinhardt suggested an adjustment for yearly inflation in the out years, and the group agreed to figure in 2% for the costs expected to change. Cliff suggested adding a line for a new GPS. The DNR reimbursement for the lake study to be added as income. Final approval for this year's budget and tax levy will be at the annual meeting in June.

Aquarius will inspect Cliff's harvesting equipment on either April 4 or 5, when they are in our area. Roger, Oscar and Brian will try to meet April 4 with Cliff and the two Aquarius reps, Travis and Chad. There is no charge for this. The group agreed that Aquarius should be our preferred harvesting equipment supplier.

Meeting adjourned, 6:28 pm, Minutes recorded by John Bertelson.

Final harvester meeting planned for 5:30pm April 30, 2019, followed by the Lake District board meeting at 6:30pm.

April 30, 2019 - Iola Lake Planning Committee Meeting

Call to order by Chair, John Bertelson, 5:35 pm

Present: John Bertelson, Roger Olson, Vicki Bellows, Jack Kuhr, Jerry Harvancik, Oscar Knoeck, Brian Lepak, Lyle Nauman
Also in attendance, Sharlyn Schwister, Dave Harper, Greg Reinhardt, Mike Devine, Tracey Ambacher Jr.
Absent: Michelle Frola, Tom Fucik

Motion to approve meeting minutes from March, Lyle. Second by Brian. Motion approved.

Final review of the Lake Iola Aquatic Plant Harvesting Program document. Motion to approve, Jack. Second by Roger. Motion approved. Now goes to the board for consideration. If board approves, copies will be made for review at the annual Lake District meeting.

Final review of the Iola Lake District 10-year Budget outline that supports our new Lake Management Plan, which includes the harvesting program. Suggest specifying that the dump truck will be used and the trailer will be new. John asked if getting a grant for the new trailer would keep us from getting a grant for other equipment for 10 years. Roger said that the person from Aquarius said the 10-year limit before getting another grant is only for the equipment that the grant was received. Motion to approve, Oscar. Second by Lyle. Motion approved. Now goes to the board for consideration. If board approves, copies will be made for review at the annual Lake District meeting. The Lake District can only approve the budget one year at a time, but this budget outline will greatly help with future planning. If plan is approved at the annual meeting, John will work with Aquarius to pursue a DNR grant for the new trailer.

Reviewed the Aquarius inspection report for Cliff's harvesting equipment. There was one minor issue with the conveyor, while the harvester is in excellent condition. The cutting system parts could be replaced, but that is typical maintenance for this equipment. With the great condition of the equipment and Cliff's willingness to provide training, they consider this a "very wise purchase" for the Lake District.

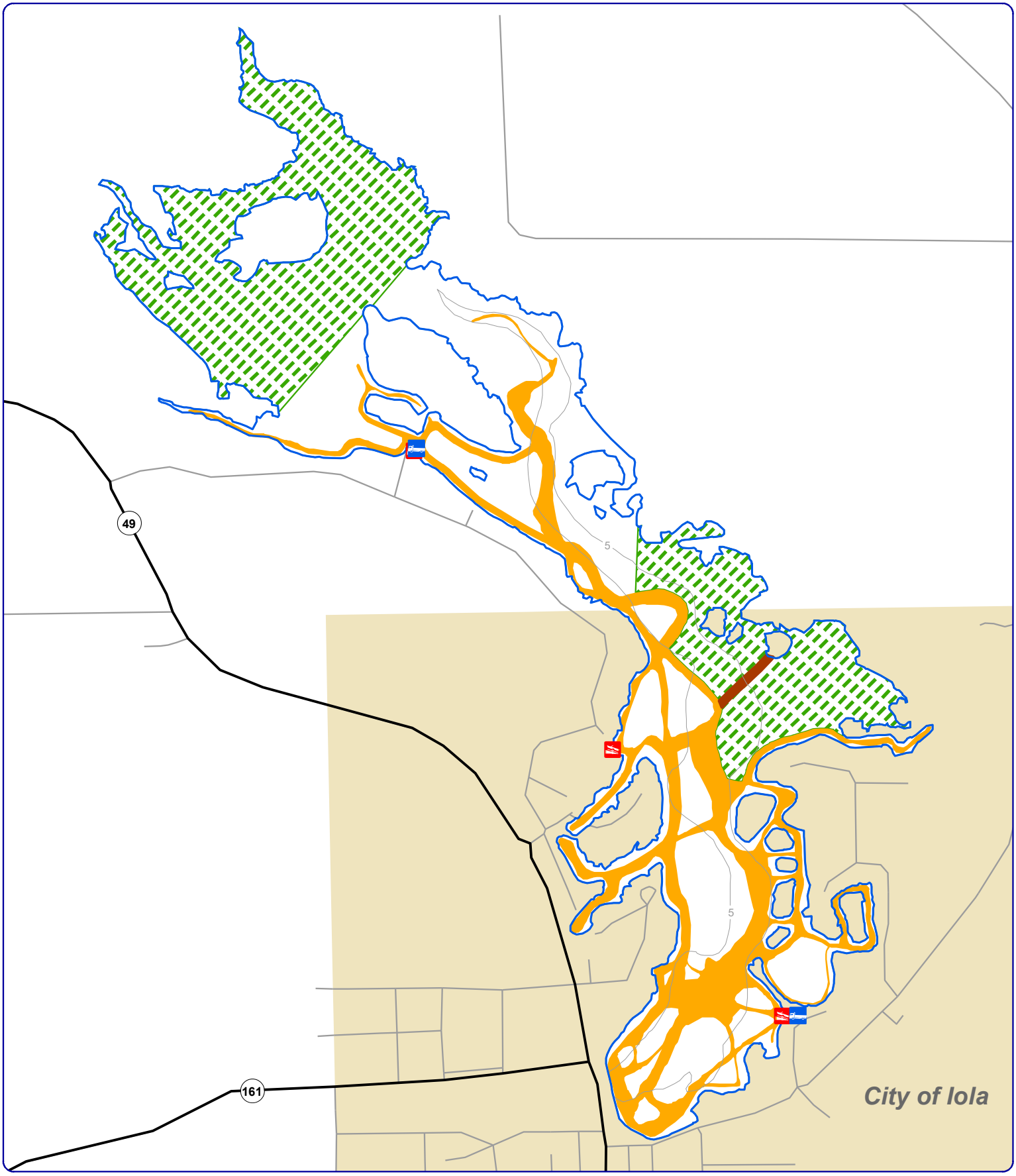
The remainder of the meeting was spent reviewing the draft Implementation Plan from Onterra. The draft is based on our final working session with Onterra in February. There are four management goals, with several management actions supporting each one. Volunteer leaders were solicited for each action,

- Monitor lake water quality through WDNR CLMN - Lyle & Brian
- AIS control – Brian interested in plant ID, Oscar interested in Lake Leader program
- Periodic monitoring of vegetation in lake – John will work with contractor
- Shoreline condition education – John
- Fish stocking and coarse woody habitat additions – Tracey
- Goose population control – John
- Mechanical harvesting program – Roger, Oscar & Brian
- Herbicide treatments on nuisance plants – John will work with contractor
- Stakeholder education – John
- Participate in annual Lakes Convention – John
- Work with other organizations for lake management – John

Tim, from Onterra, will make the final presentation of our new Lake Management Plan at the annual Lake District meeting, and then we will decide how we will use herbicides on the lake this year for plant control.

This is the final meeting for our planning group for this project. Thank you to all those who have helped.

Meeting adjourned, 6:35 pm, Minutes recorded by John Bertelson.



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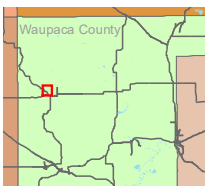
Feet

Onterra LLC
Lake Management Planning
135 South Broadway Suite C
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads & Hydro: WDNR
Harvest Areas: SAPC, 2006
Map date: April 19, 2007



Extent of large map shown in red.

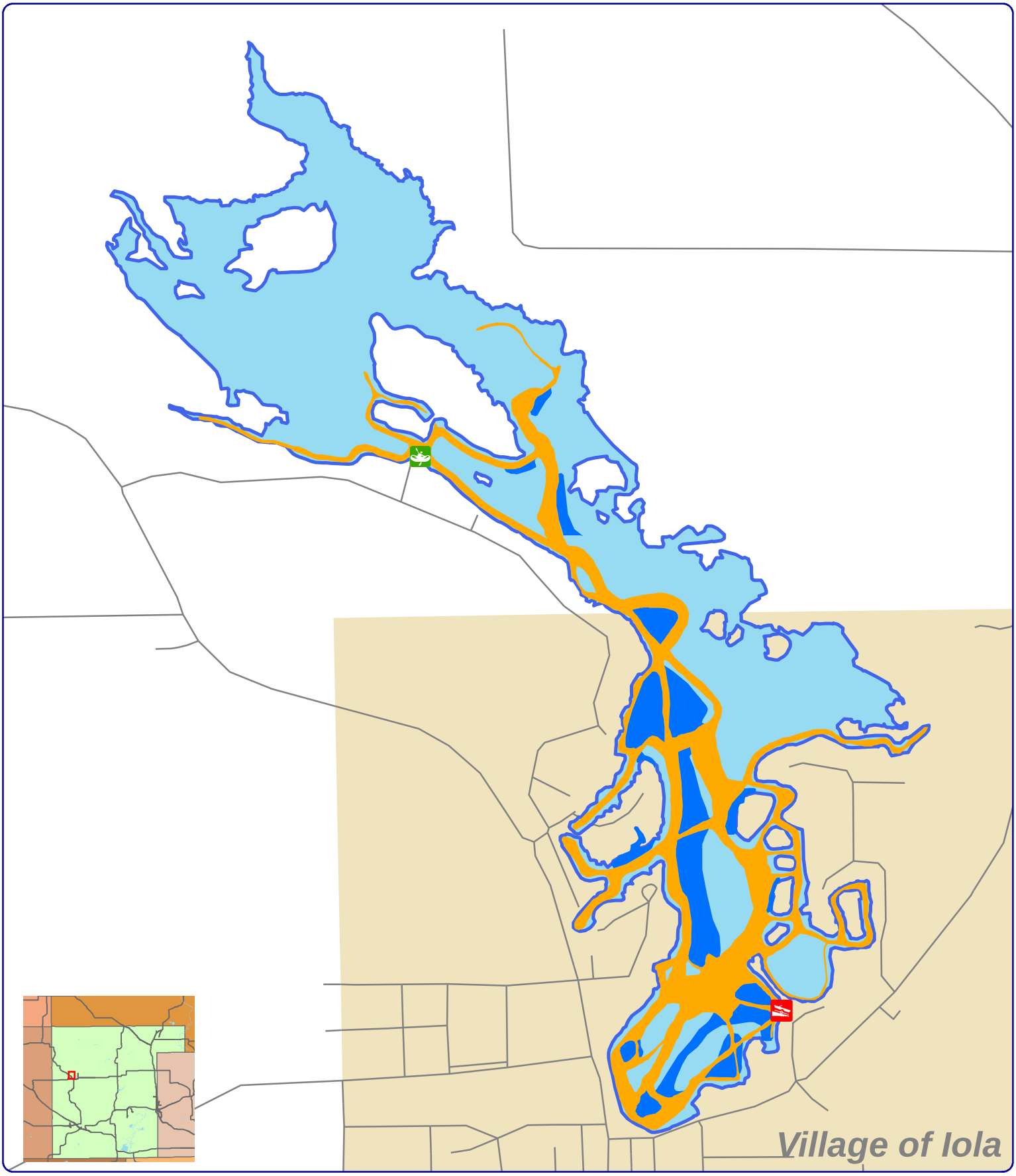
Legend

- Harvest Areas (Approximately 45 Acres)
- Possible Harvest Lane (50-feet wide)
- Conservation Area (Approximately 88 Acres)
- Boat Landing
- Harvester Off-Loading Point

Lake Iola

Waupaca County, Wisconsin

Proposed Harvest Areas



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Legend

- Harvest Area (46 acres)
- Skim Area (29 acres)
- Public Access
- Village of Iola

Map 11

Lake Iola
Waupaca County, Wisconsin

Mechanical Harvesting Plan

Onterra LLC
Lake Management Planning
815 Prosper Rd
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources
Roads and Hydro: WDNR
Map Date: April 25, 2019
Filename: *Iola_2019Harvest_Prelim2.mxd*

H

APPENDIX H

Village of Iola Harvester Purchase Agreement and Village/Iola Lake District Lease Agreement

EQUIPMENT SALE AGREEMENT

This is an Agreement by and between Schmidt's Landscaping & Nursery, Inc., having its principal place of business at 320 Golf Drive, Iola, Wisconsin 54945, hereinafter called SELLER and the Village of Iola, having its principal place of business at 180 South Main Street, Iola, Wisconsin 54945, hereinafter called BUYER.

WITNESSETH, that in consideration of the mutual undertakings herein contained, the parties hereto agree as follows:

1. **SALE**. SELLER agrees to sell to BUYER and BUYER agrees to purchase from SELLER the machines listed below (referred to as the "Equipment") in accordance with the terms and conditions specified herein:

   1998 HM320 aquatic plant harvester (with GPS guidance system) and shore elevator

2. **SALE PRICE.** The Sale Price of the Equipment is $32,000.00. BUYER agrees to pay SELLER $100.00 upon delivery of equipment; $15,900.00 no later than July 1, 2020 and $16,000.00 no later than July 1, 2021.

3. **DELIVERY**. SELLER shall deliver and BUYER shall accept delivery of the Equipment at Iola, Wisconsin after season-end maintenance completed by SELLER.

4. **CLOSING DATE**. The closing date shall take place upon delivery of the Equipment.

5. **WARRANTY. SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE DESIGN, OPERATION, OR AS TO THE QUALITY OF THE MATERIAL OR WORKANSHIP IN, THE EQUIPMENT AND ALL WARRANTIES INCLUDING WARRANTIES OF, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF THE EQUIPMENT ARE HEREBY EXCLUDED, BUYER AGREES THAT SELLER WILL IN NO EVENT BE LIABLE FOR DAMAGES ARISING IN STRICT LIABILITY OR FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, HOWEVER ARISING. SELLER'S LIABILITY SHALL UNDER NO CIRCUMSTANCES EXCEED THE PURCHASE PRICE OF SUCH ITEM OF EQUIPMENT SET FORTH IN THIS AGREEMENT.**

6. **TITLE.** Title to the Equipment free and clear of all liens, claims and encumbrances of any kind shall vest in BUYER upon payment by BUYER to SELLER of the full Sale Price required to be paid pursuant to Paragraph 2 hereof. SELLER shall retain and BUYER hereby grants to SELLER a

purchase money security interest in the Equipment as security for payment in full to SELLER of such Sale Price. BUYER hereby authorizes SELLER to file Uniform Commercial Code financing statements to perfect SELLER'S security interest in the Equipment.

7. **TAXES.** BUYER will be responsible for and shall pay all applicable taxes, fees, levies, imposts, duties, withholdings or other charges (including any interest and penalties thereon), if any, imposed by any taxing authorities by reason of the sale and delivery herein provided for. In the event BUYER is purchasing for resale, a duly executed resale certificate shall be delivered to SELLER on the Closing Date for the State where delivery taxes place.

8. **NOTICES**. Any notice hereunder shall be in writing and shall be deemed to be given when delivered, including but not limited to overnight courier or electronic transmission or, if mailed, on the third day after mailing by registered or certified mail, postage prepaid and addressed to BUYER or SELLER at its respective address shown on the preamble to this Agreement, or to either party at such other address it has designated as its address for purposes of notice hereunder.

9. **MISCELLANEOUS**.

A. This Agreement constitutes the entire agreement between SELLER and BUYER with respect to the sale and purchase of the Equipment and supersedes all prior and concurrent offers, promises, representations, negotiations, discussions and agreements that may have been made in connection with the sale of the Equipment. No representation or statement not contained herein shall be binding upon SELLER or BUYER as a warranty or otherwise unless in writing and executed by the party to be bound thereby. If BUYER does not sign this Agreement and return the signed copy of this Agreement to SELLER within thirty (30) days of the Agreement Date, this Agreement may be voided at SELLER'S election.

B. BUYER shall not assign its rights under this Agreement unless it has obtained the prior written consent of SELLER. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns.

C. This Agreement shall be governed by construed in accordance with the internal laws of the State of Wisconsin including all matters of construction, validity, performance and enforcement.

D. This Agreement may be executed in multiple counterparts, each of which shall be deemed to be an original and of equal force and effect.

E. No revision or modification of this Agreement shall be effective unless it is in writing and signed by duly authorized officers of BUYER and SELLER.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed and do each hereby warrant and represent that its signatory whose signature appears below has been and is on the date of this Agreement duly authorized by all necessary and appropriate corporate action to execute this Agreement.

This Agreement is executed by both parties on September 23, 2019.

SELLER:

SCHMIDT'S LANDSCAPING & NURSERY, INC.

BY: _____
Clifford Schmidt, President

BUYER:

VILLAGE OF IOLA

BY: _____
Joel T. Edler, President

EQUIPMENT LEASE AND OPERATING AGREEMENT

This Equipment Lease and Operating Agreement (the "Agreement") is made and entered on September 23, 2019 by and between the Village of Iola ("Lessor") and the Lake Iola Lake Protection and Rehabilitation District ("Lessee") (collectively referred to as the "Parties").

The Parties agree as follows:

1. **EQUIPMENT:** Lessor hereby leases to Lessee the following equipment:

   1998 HM320 aquatic plant harvester (with GPS guidance system), shore elevator, dump truck and trailer

   (the "Equipment").

2. **LEASE TERM:** The lease will start on August 27, 2019 (begin date) and will end on September 30, 2026 (end date) (Lease Term). However, in the event the Equipment is no longer needed or operable due to its age, the Lease shall automatically terminate at that time.

3. **LEASE PAYMENTS:**. Lessee agrees to pay to Lessor as rent for the Equipment: (a) full reimbursement for the costs incurred to purchase the Equipment and (b) the amount of $7.00 ("Rent") at P.O. Box 336, Iola, Wisconsin 54945. Payment shall be due at signing.

4. **POSSESSION AND SURRENDER OF EQUIPMENT:** Lessee shall be entitled to possession of the Equipment on the first day of the Lease Term. At the expiration of the Lease Term, Lessee shall surrender the Equipment to Lessor by delivering the Equipment to Lessor or Lessor's agent in good condition and working order, ordinary wear and tear excepted, as it was at the commencement of the Agreement.

5. **USE OF EQUIPMENT:** Lessee shall only use the Equipment in a careful and proper manner and will comply with all laws, rules, ordinances, statutes and orders regarding the use, maintenance of storage of the Equipment. The Equipment may only be used to harvest aquatic plants on Lake Iola. The Lessors shall employ operators to use the equipment and the Lessee shall reimburse Lessor for all expenses incurred to include payroll, insurance, etc so there will be no net cost to Lessor.

6. **CONDITION OF EQUIPMENT AND REPAIR:** Lessee or Lessee's agent has inspected the Equipment and acknowledges that the Equipment is in good and acceptable condition.

7. **MAINTENANCE, DAMAGE AND LOSS:** Lessee will, at Lessee's sole expense, keep and maintain the Equipment clean and in good working

order and repair during the Lease Term. If Lessor makes any repairs, Lessee shall fully reimburse it for all expenditures.

8. **INSURANCE:** Lessor shall be responsible to maintain insurance on the Equipment with losses payable to Lessor against fire, theft, collision and other such risks as are appropriate and specified by Lessor. Lessee shall reimburse Lessor for all expenses of insurance.

9. **ENCUMBRANCES, TAXES AND OTHER LAWS:** Lessee shall keep the Equipment free and clear of any liens or other encumbrances and shall not permit any act where Lessor's title or rights may be negatively affected. Lessee shall be responsible for complying with and conforming to all laws and regulations relating to the possession, use or maintenance of the Equipment. Furthermore, Lessee shall promptly pay all taxes, fees, licenses and governmental charges, together with any penalties or interest thereon, relating to the possession, use or maintenance of the Equipment.

10. **LESSORS REPRESENTATIONS:** Lessor represents and warrants that it has the right to lease the Equipment as provided in this Agreement and that Lessee shall be entitled to quietly hold and possess the Equipment and Lessor will not interfere with that right.

11. **OWNERSHIP:** The Equipment is and shall remain the exclusive property of Lessor.

12. **SEVERABILITY:** If any part or parts of this Agreement shall be held unenforceable for any reason, the remainder of this Agreement shall continue in full force and effect. If any provision of this Agreement is deemed invalid or unenforceable by any court of competent jurisdiction and if limiting such provision would make the provision valid, then such provision shall be deemed to be construed as so limited.

13. **ASSIGNMENT:** Neither this Agreement nor Lessee's rights hereunder are assignable except with Lessor's prior, written consent.

14. **BINDING EFFECT:** The covenants and conditions contained in the Agreement shall apply to and bind the Parties and the heirs, legal representatives, successors and permitted assigns of the Parties.

15. **GOVERNING LAW:** This Agreement shall be governed by and construed in accordance with the laws of the State of Wisconsin.

16. **NOTICE:** Any notice required or otherwise given pursuant to this Agreement shall be in writing and mailed certified return receipt requested, postage prepaid, or delivered by overnight delivery service to:

LESSOR:	LESSEE:
Village of Iola	Iola Lake District
P.O. Box 336	c/o John Bertelson, Jr.
Iola, WI 54945	3300 Arbor Vitae Lane
	Plover, WI 54467

Either party may change such addresses from time to time by providing notice as set forth above.

17. **ENTIRE AGREEMENT:** This Agreement constitutes the entire agreement between the Parties and supersedes any prior understanding or representation of any kind preceding the date of this Agreement. There are no other promises, conditions, understandings or other agreements, whether oral or written, relating to the subject matter of this Agreement. This Agreement may be modified in writing and must be signed by both Lessor and Lessee.

18. **CUMULATIVE RIGHTS:** Lessor's and Lessee's rights under this Agreement are cumulative and shall not be construed as exclusive of each other unless otherwise required by law.

19. **WAIVER:** The failure of either party to enforce any provisions of this Agreement shall not be deemed a waiver or limitation of that party's right to subsequently enforce and compel strict compliance with every provision of this Agreement. The acceptance of rent by Lessor does not waive Lessor's right to enforce any provisions of this Agreement.

20. **INDEMNIFICATION:** Except for damages, claims or losses due to Lessor's acts or negligence, Lessee, to the extent permitted by law, will indemnify and hold Lessor and Lessor's property, free and harmless from any liability for losses, claims, injury to or death of any person, including Lessee, or for damage to property arising from Lessee using and possessing the Equipment or from the acts or omissions of any person or persons, including Lessee, using or possessing the Equipment with Lessee's express or implied consent.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed the day and year first above written.

LESSOR:	LESSEE:
VILLAGE OF IOLA	LAKE IOLA LAKE PROTECTION AND REHABILITATION DISTRICT
BY: _____	BY: _____
Joel T. Edler, President	John Bertelson, Jr., Chairman

APPENDIX I

Permitted Harvest Map Development

Permitted Harvest Map Development

Submitted by:
John Bertelson, Jr., Chair
Lake Iola District

At our first LMP committee meeting, I outlined three main considerations in the development of our plan

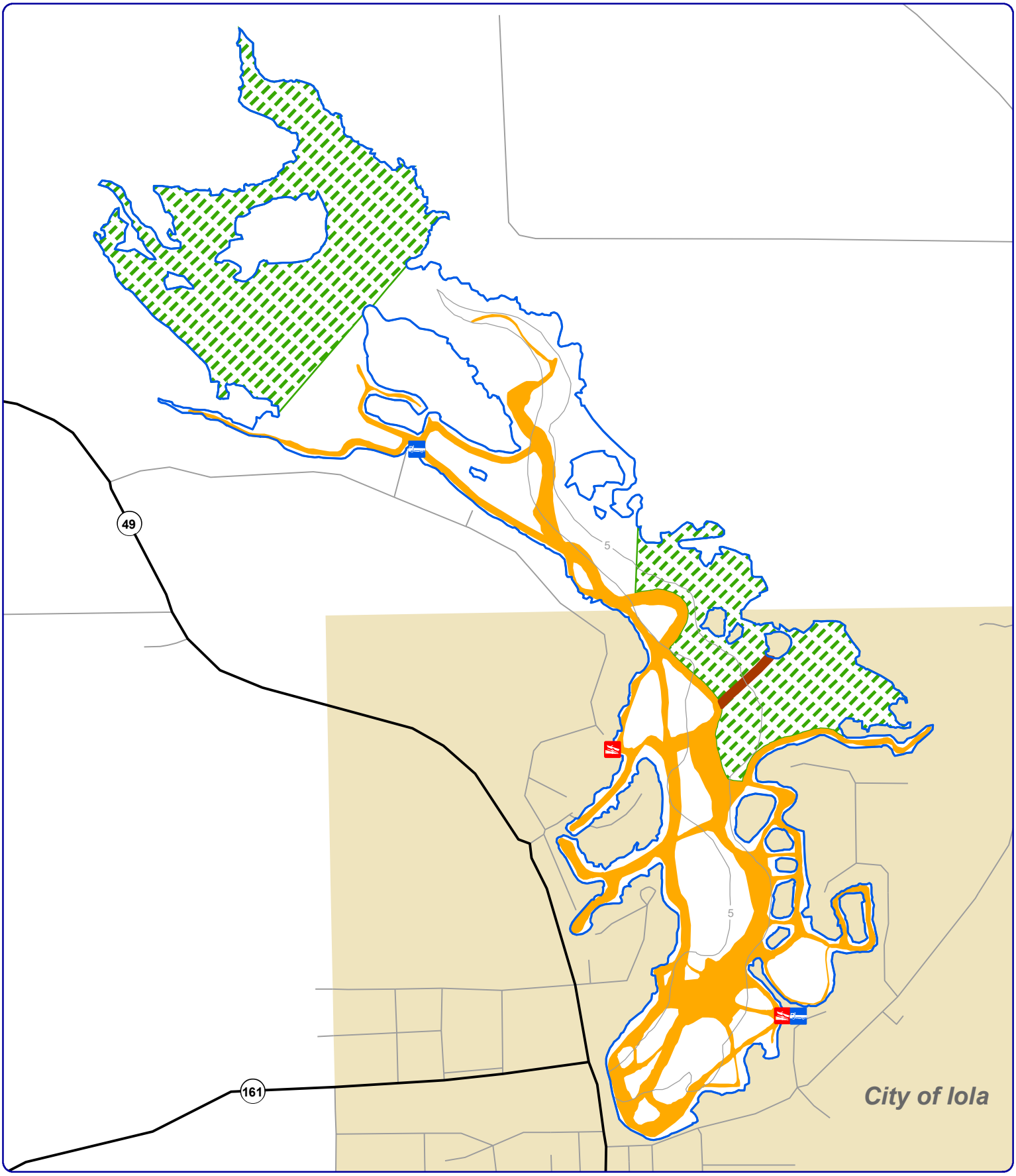
1. What do we want to see done with the lake?
2. What will the DNR allow us to do with the lake?
3. What will we be able to afford to do?

Onterra was to use their experience to help us develop our plan, but it was still our plan to commit to. During our planning process we answered #1 and #3, but #2 would have to wait until our draft plan was complete and reviewed by our DNR Water Resources Mgmt. Specialist.

Aquatic plant harvesting has been a staple of our LMP as a Lake District for over 20 years, and we have been using the map developed in 2008 as our DNR permitted harvest area. ***(see 2008 Harvest Map - 45 acres)*** After the drawdown of 2011 to 2013 to reduce EWM and gain some depth, the DNR allowed picking up debris outside the permitted area by skimming because the lake came up with nuisance levels of aquatic plants and algae that made summertime use nearly impossible ... all in spite of spending a lot of money to harvest 160 hours per year. It is recognized that if the lake is not navigable during the most desirable summertime season, then there is really no point in trying to manage the lake for anything else.

For years our DNR representative agreed that we should consider our own harvesting program to allow us to harvest when and where most needed, so it was a shock that after we developed our new plan and map when the concept of harvest lanes was dropped on us. During the committee meetings we developed a harvest and skimming map as far as what we wanted to do based on the experience of the contractor who has been harvesting our lake for over 20 years. Onterra saw no issue with our request, and created the ***4/25/19 draft map - 46 acres harvest, 29 acres skim.***. The response from the DNR to that map was that skimming would not be allowed and that the harvest area was too large and that more defined harvest lanes needed to be developed. Buffalo Lake was suggested as an example. Based on a survey of the lake with the DNR rep, our harvesting contractor and a Lake District member in June, a new harvest map was drawn that reduced our 2008 allowable area by 32%. ***(see August 2019 Harvest Map - 30.6 acres)*** Such a reduction in allowable harvest area was unacceptable to us, so after several calls and e-mails the final map was agreed to. ***(see 8/26/19 Harvest Map - 35.7acres)***

The DNR rep is agreeable to incremental changes to the allowable harvest area based on our new harvest program experience, so at this time the reduced area from the 2008 map is no longer a concern for the LD Chairman.

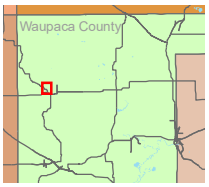


N
W E
S

900
Feet

Onterra LLC
Lake Management Planning
815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads & Hydro: WDNR
Harvest Areas: SAPC, 2006
Map date: June 13, 2008



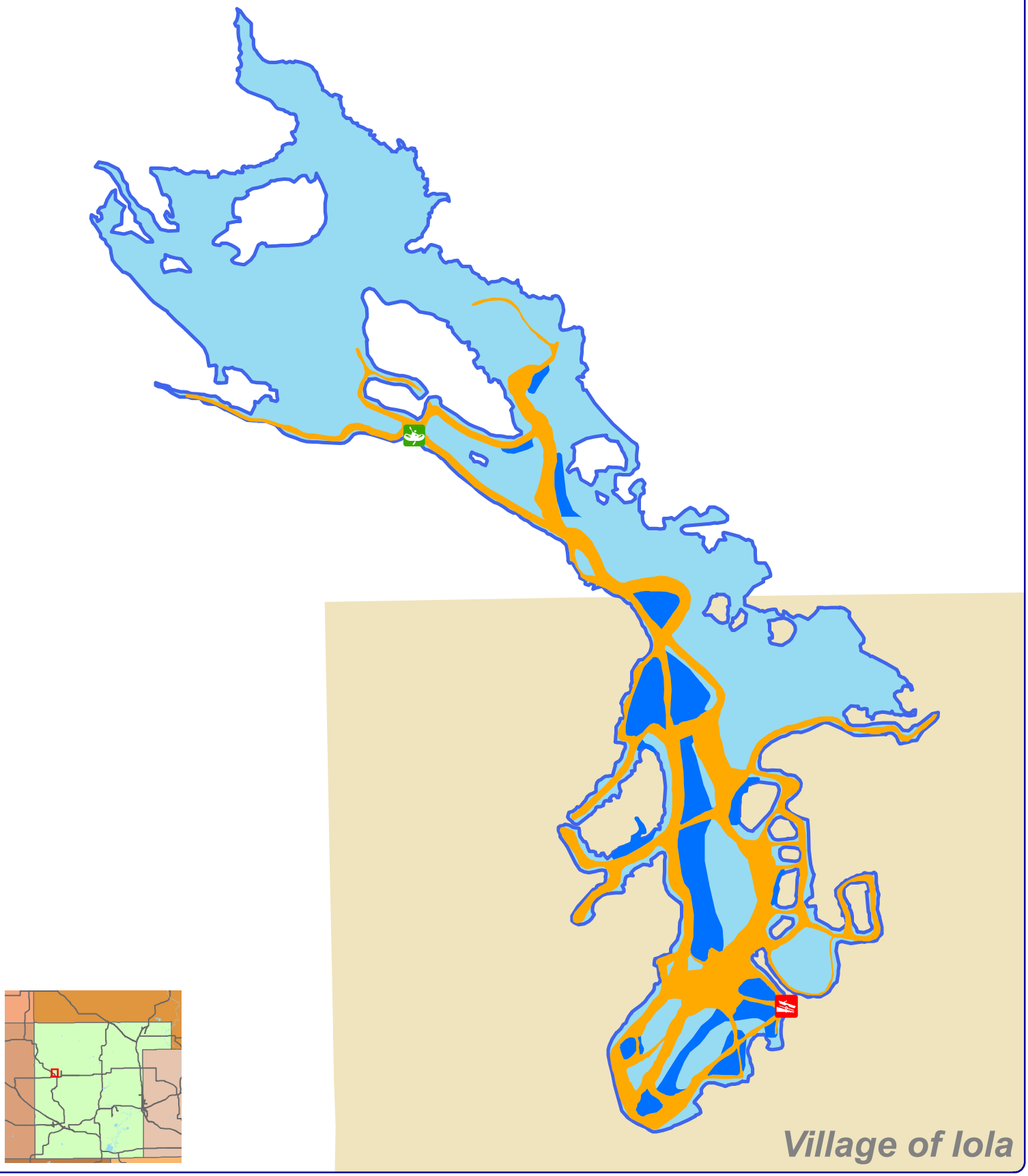
Extent of large map shown in red.

Legend

- Harvest Areas (Approximately 45 Acres)
- Possible Harvest Lane (50-feet wide)
- Conservation Area (Approximately 88 Acres)
- Boat Landing
- Harvester Off-Loading Point

Map 7
Lake Iola
Waupaca County, Wisconsin

Mechanical Harvesting Plan



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Legend

- Harvest Area (46 acres)
- Skim Area (29 acres)
- Public Access
- Village of Iola

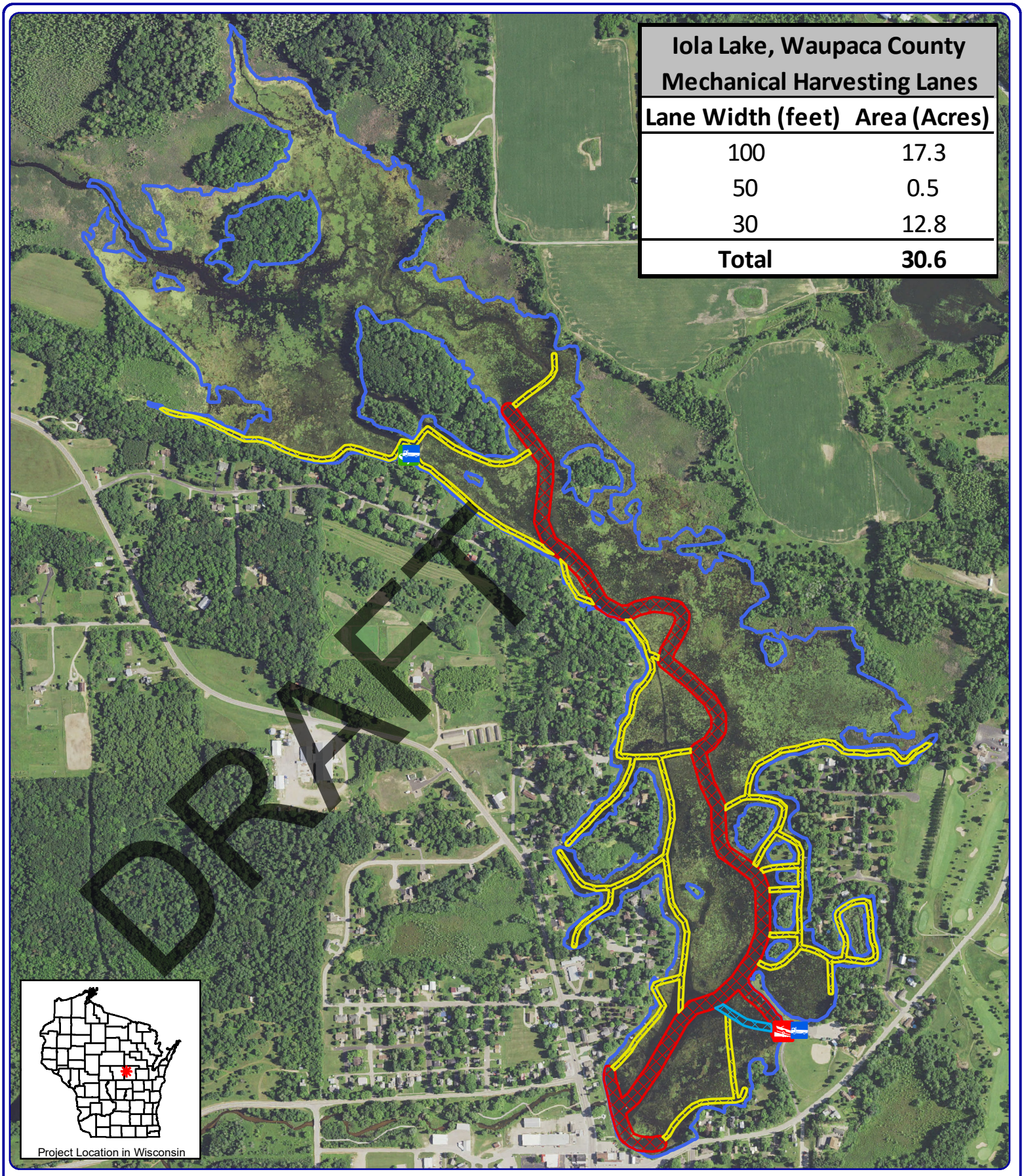
Map 11

Lake Iola
Waupaca County, Wisconsin

Mechanical Harvesting Plan

Onterra LLC
Lake Management Planning
815 Prosper Rd
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources
Roads and Hydro: WDNR
Map Date: April 25, 2019
Filename: *Iola_2019Harvest_Prelim2.mxd*



870
Feet

Legend

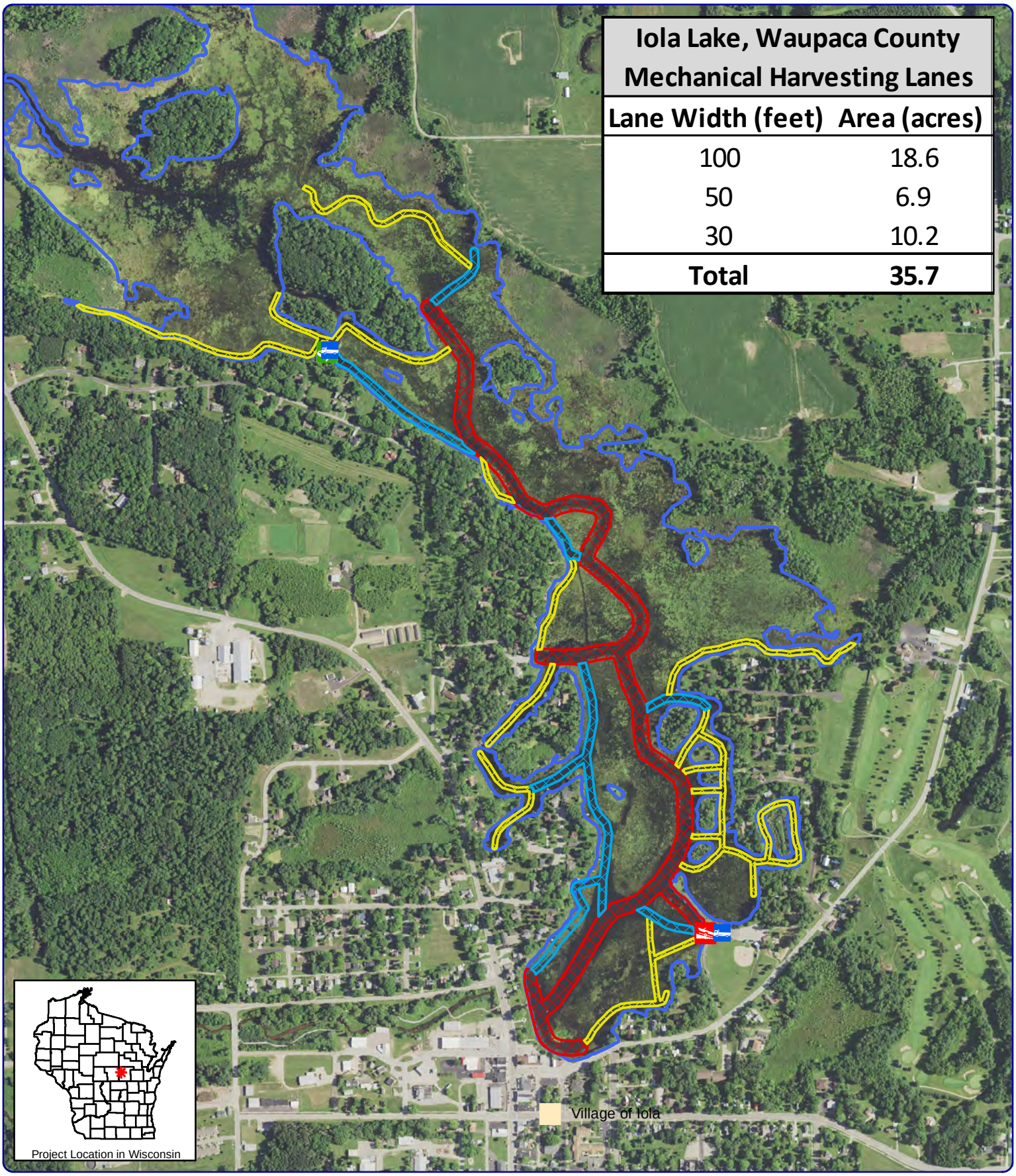
- 100' Harvesting Lane
- 50' Harvesting Lane
- 30' Harvesting Lane
- Harvester Off-Loading Point

Onterra LLC
Lake Management Planning
815 Prosper Rd
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources
Roads and Hydro: WDNR
Orthophoto: NAIP 2017
Map Date: August 7, 2019 TWH
Filename: *Iola_HarvestPlanUpdate_Aug19.mxd*

Lake Iola
Waupaca County, Wiscosin

Iola Lake Mechanical Harvesting Plan August 2019



870
Feet

Onterra LLC
Lake Management Planning
815 Prosper Rd
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources
Roads and Hydro: WDNR
Orthophoto: NAIP 2017
Map Date: August 26, 2019 AMS
Filename: *Iola_HarvestPlanUpdate_Aug19.mxd*

Legend

- 100' Harvesting Lane
- 50' Harvesting Lane
- 30' Harvesting Lane
- Harvester Off-Loading Point

Map 11

Lake Iola
Waupaca County, Wiscosin

Lake Iola Mechanical Harvesting Plan