A

APPENDIX A

Stakeholder Education Materials

Presentation Outline

- **Project Overview**
- **Study Results**
  - Shoreland Condition Assessment
  - Coarse Woody Habitat Survey
  - Aquatic Plants
- **Mechanical Harvesting Feasibility Study**

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Shoreland Assessment

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

Urbanized **Natural**

Range

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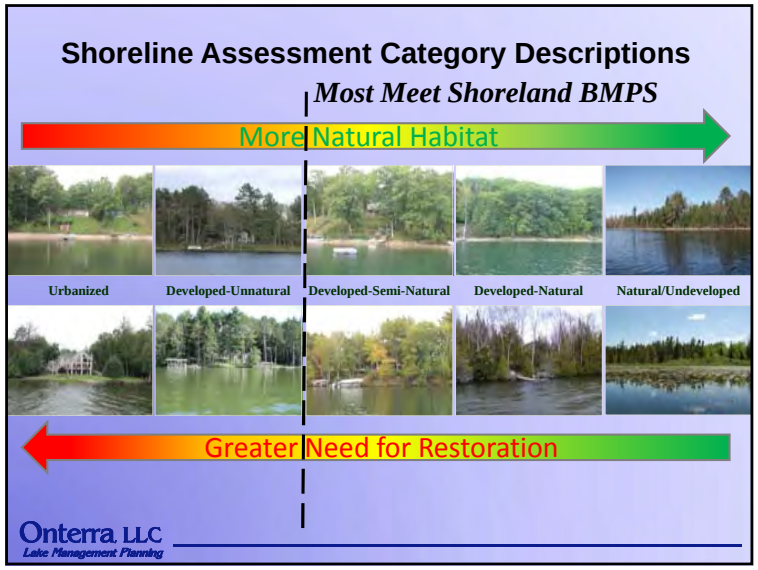
Shoreline Assessment Category Descriptions
Most Meet Shoreland BMPS
More Natural Habitat
Urbanized
Developed-Unnatural
Developed-Semi-Natural
Developed-Natural
Natural/Undeveloped
Greater Need for Restoration
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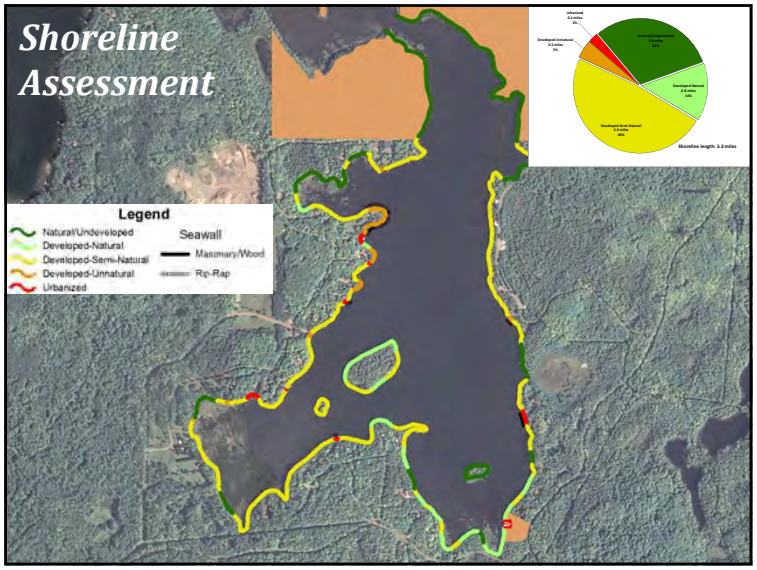
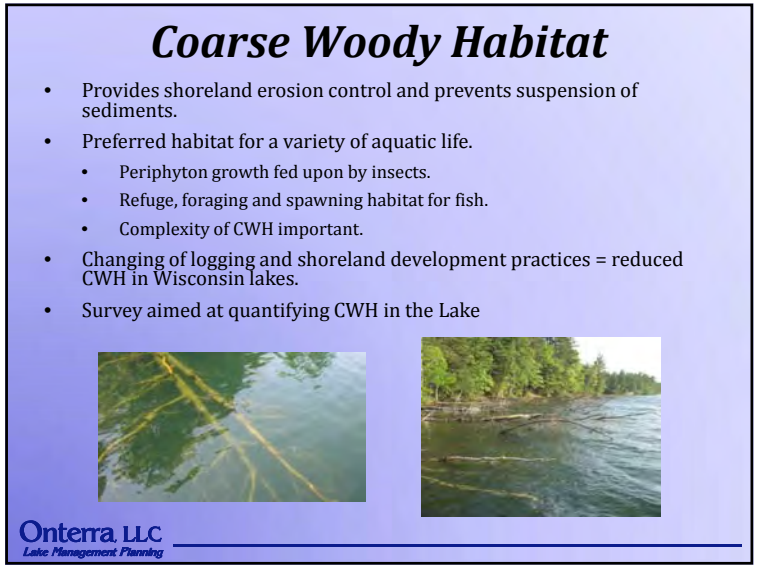

Shoreline Assessment
Legend
Natural/Undeveloped
Developed-Natural
Developed-Semi-Natural
Developed-Unnatural
Urbanized
Seawall
Masonary/Wood
Rip-Rap


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 the Lake
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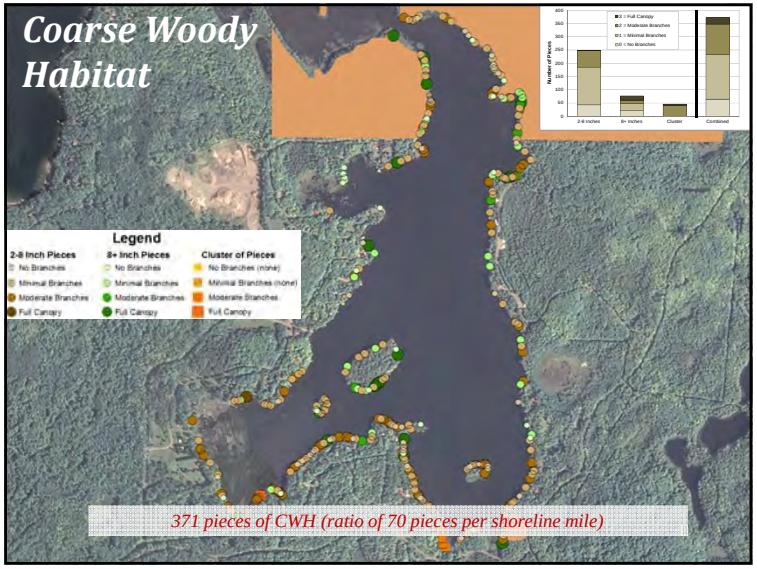
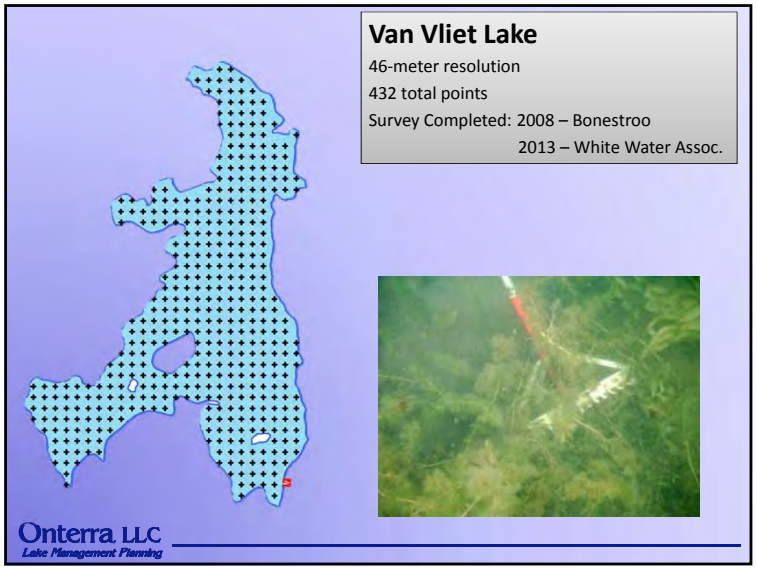
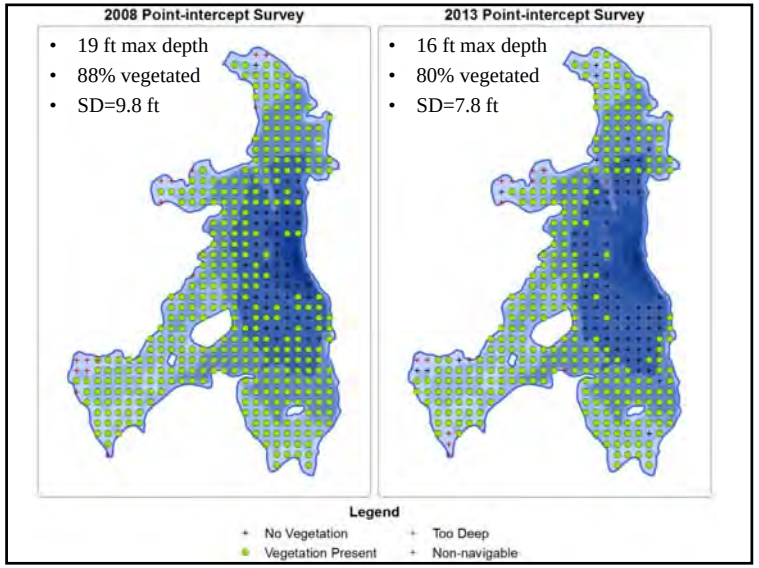

Coarse Woody Habitat
Legend
2-8 Inch Pieces
8+ Inch Pieces
Cluster of Pieces
371 pieces of CWH (ratio of 70 pieces per shoreline mile)





Species List

- **39 Native Species**

Growth Form	Scientific Name	Common Name	Coefficient of Conservatism (C)	2008	2013
Emergent	*Calla palustris*	Water arum	9		I
	Carex comosa	Bristly sedge	5		I
	Carex sp. (sterile)	Sedge sp. (sterile)	N/A		I
	Dulichium arundinaceum	Three-way sedge	10		I
	Eleocharis palustris	Creeping spikerush	6	X	I
	Equisetum fluviatile	Water horsetail	7		I
	Iris versicolor	Northern blue flag	5		I
	Pontederia cordata	Pickerelweed	9		I
	Sagittaria latifolia	Common arrowhead	3		I
	Sagittaria sp. 1	Arrowhead sp. 1	N/A		X
	Sagittaria sp. 2	Arrowhead sp. 2	N/A		X
	Schoenoplectus acutus	Hardstem bulrush	5		I
	Scirpus cyperinus	Wool-grass	4		I
	Typha spp.	Cattail spp.	1		I
FL	*Brasenia schreberi*	Watershield	7	X	X
	Nuphar variegata	Spatterdock	6		I
	Nymphaea odorata	White water lily	6	X	X
	Persicaria amphibia	Water smartweed	5		I
FL/E	*Sparganium americanum*	Eastern bur-reed	8		I
Submergent	*Bidens beckii*	Water marigold	8	X	X
	Ceratophyllum demersum	Coontail	3	X	X
	Chara spp.	Muskgrasses	7	X	X
	Elodea canadensis	Common waterweed	3	X	X
	Elodea nuttallii	Slender waterweed	7	X	X
	Heteranthera dubia	Water stargrass	6	X	X
	Myriophyllum sibiricum	Northern water milfoil	7	X	X
	Najas flexilis	Slender naiad	6	X	X
	Potamogeton amplifolius	Large-leaf pondweed	7	X	X
	Potamogeton foliosus	Leafy pondweed	6		X
	Potamogeton illinoensis	Illinois pondweed	6	X	I
	Potamogeton praelongus	White-stem pondweed	8	X	X
	Potamogeton pusillus	Small pondweed	7	X	X
	Potamogeton richardsonii	Clasping-leaf pondweed	5	X	X
	Potamogeton robbinsii	Fern pondweed	8	X	X
	Potamogeton zosteriformis	Flat-stem pondweed	6	X	X
	Stuckenia pectinata	Sago pondweed	3	X	X
	Utricularia vulgaris	Common bladderwort	7		X
	Vallisneria americana	Wild celery	6	X	X
S/E	*Eleocharis acicularis*	Needle spikerush	5		X
	Schoenoplectus subterminalis	Water bulrush	9	X	

FL = Floating-leaf, FL/E = Floating-leaf and Emergent, S/E = Submergent and Emergent
X = Located on rake during point-intercept survey; I = Incidental species

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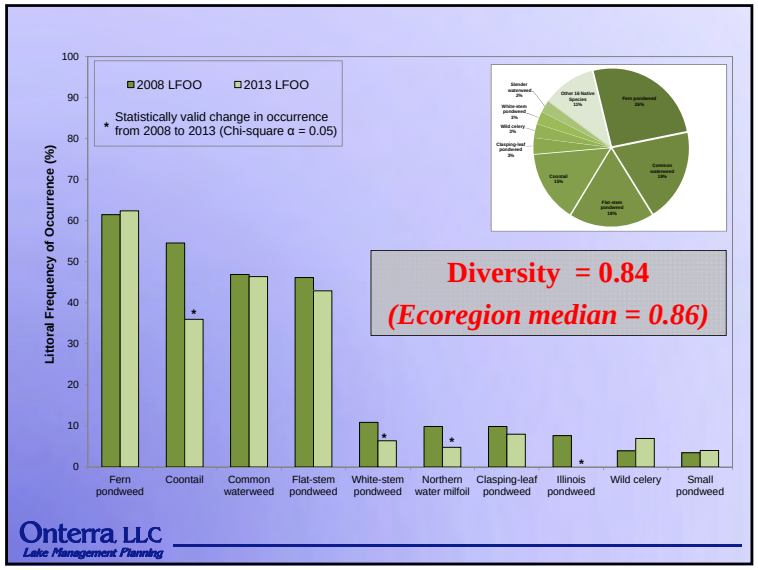
2008 LFOO
2013 LFOO
* Statistically valid change in occurrence from 2008 to 2013 (Chi-square α = 0.05)
Littoral Frequency of Occurrence (%)
Fern pondweed
Coontail
Common waterweed
Flat-stem pondweed
White-stem pondweed
Northern water milfoil
Clasping-leaf pondweed
Illinois pondweed
Wild celery
Small pondweed
Diversity = 0.84
(Ecoregion median = 0.86)
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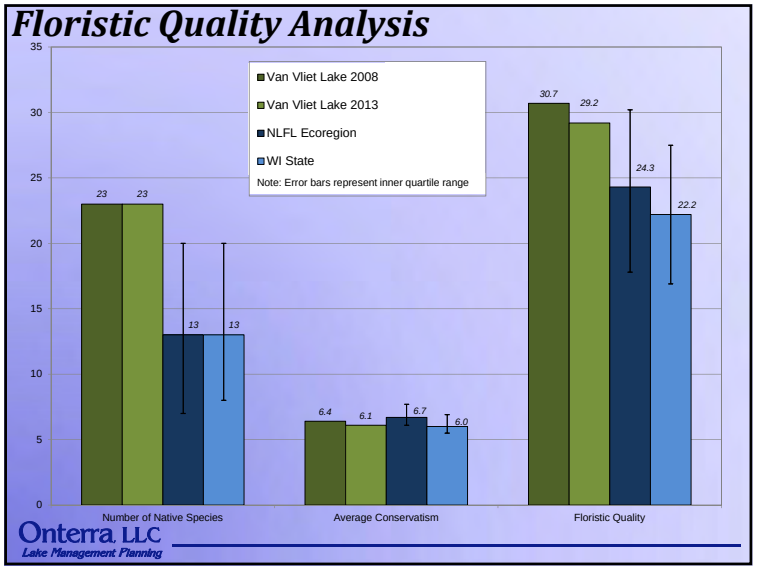
Floristic Quality Analysis
Van Vliet Lake 2008
Van Vliet Lake 2013
NLFL Ecoregion
WI State
Note: Error bars represent inner quartile range
Number of Native Species
Average Conservatism
Floristic Quality
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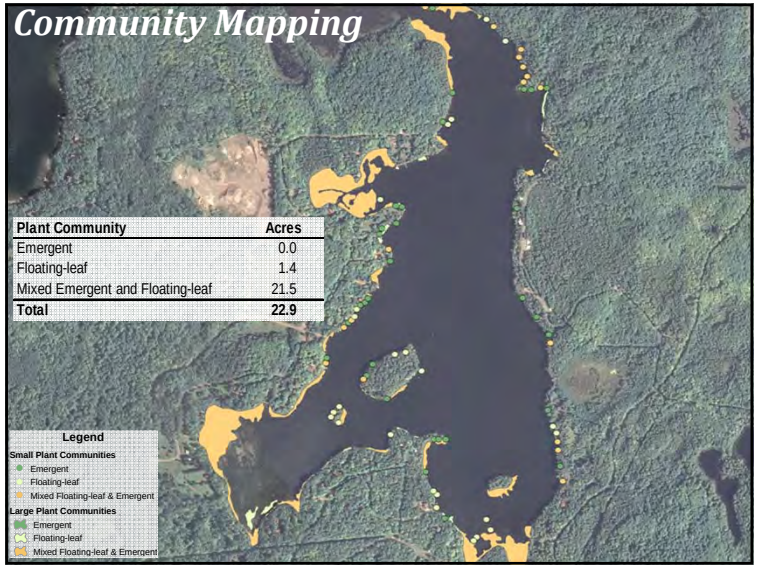
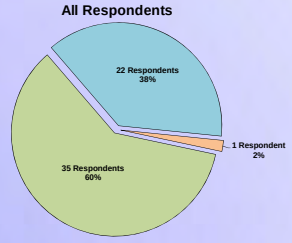

Community Mapping
Plant Community | Acres
Emergent | 0.0
Floating-leaf | 1.4
Mixed Emergent and Floating-leaf | 21.5
Total | 22.9
Legend
Small Plant Communities
Emergent
Floating-leaf
Mixed Floating-leaf & Emergent
Large Plant Communities
Emergent
Floating-leaf
Mixed Floating-leaf & Emergent

Mechanical Harvesting
Feasibility Study

Stakeholder Survey – Aquatic Plants and Algae

Are you in favor of the VVLA work towards development of a plan to mechanically harvest nuisance weeds?



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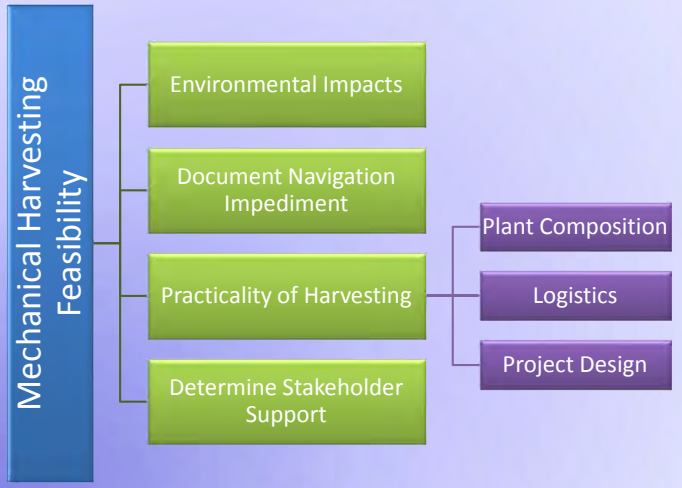

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Environmental Impacts

- *Will harvesting of native aquatic plants lead to the introduction of aquatic invasive species (AIS)?*
- *Will harvesting stir up the muck?*
- *Will harvesting add nutrients to the lake, lower water quality and lead to algae blooms?*
- *Will plant fragments from harvesting end up on the east shoreline, take root, and create new vegetation issues?*
- *Will natural lake cycles correct the vegetation issue?*
- *Is there a way to manage the root cause of the increased aquatic plant levels?*
- *Native vegetation should be protected and preserved.*

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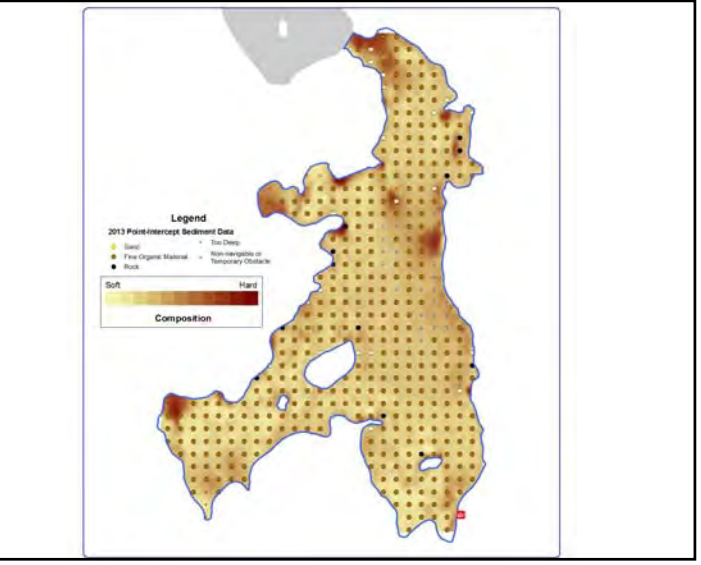

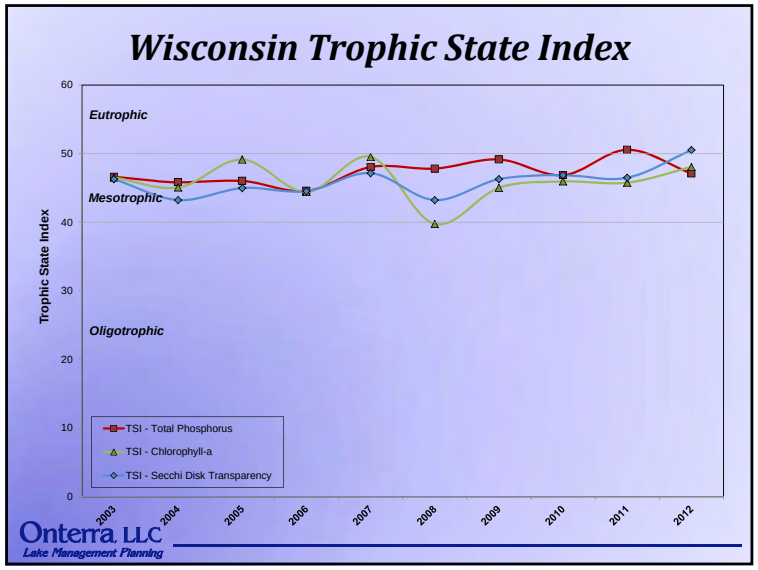
Wisconsin Trophic State Index
Eutrophic
Mesotrophic
Oligotrophic
Trophic State Index
60
50
40
30
20
10
0
TSI - Total Phosphorus
TSI - Chlorophyll-a
TSI - Secchi Disk Transparency
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
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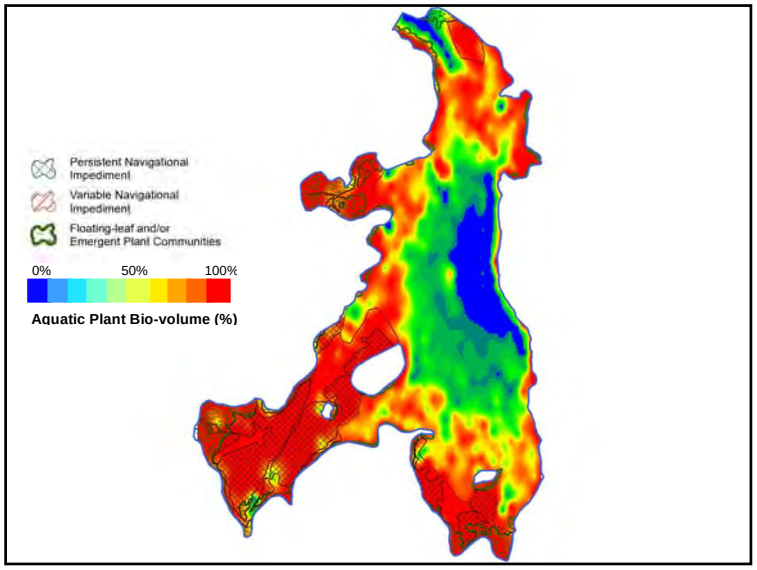
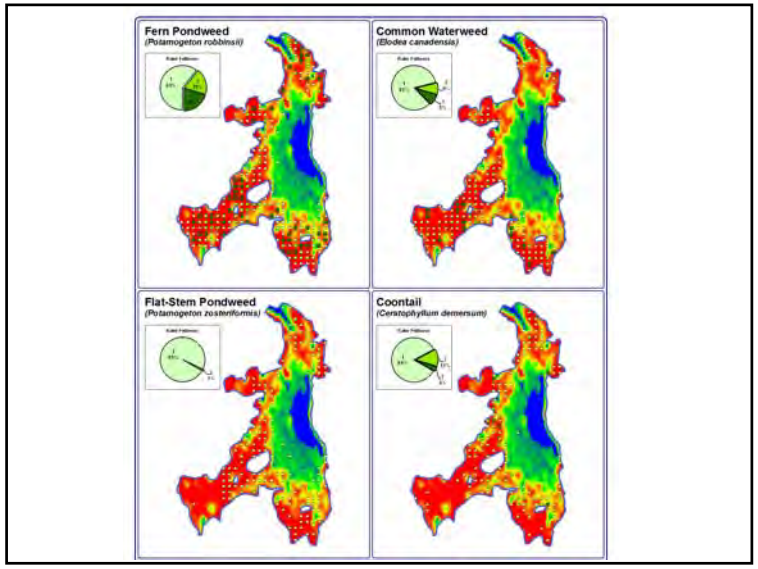
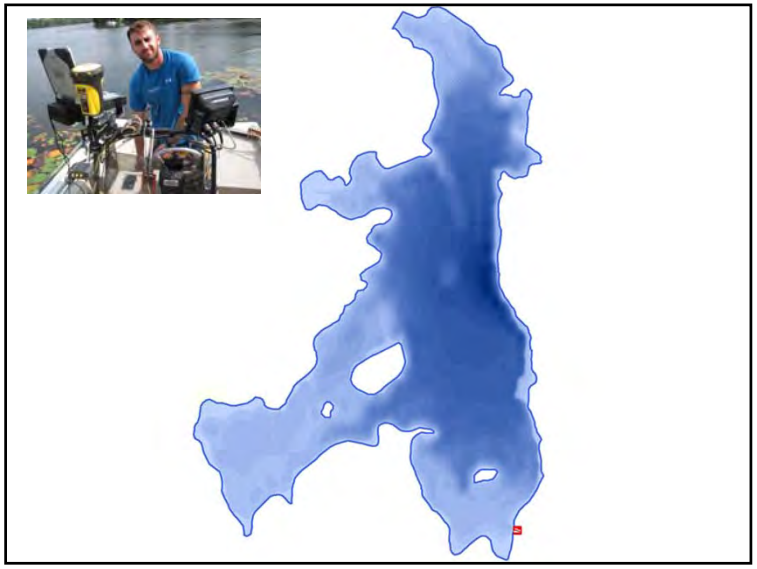
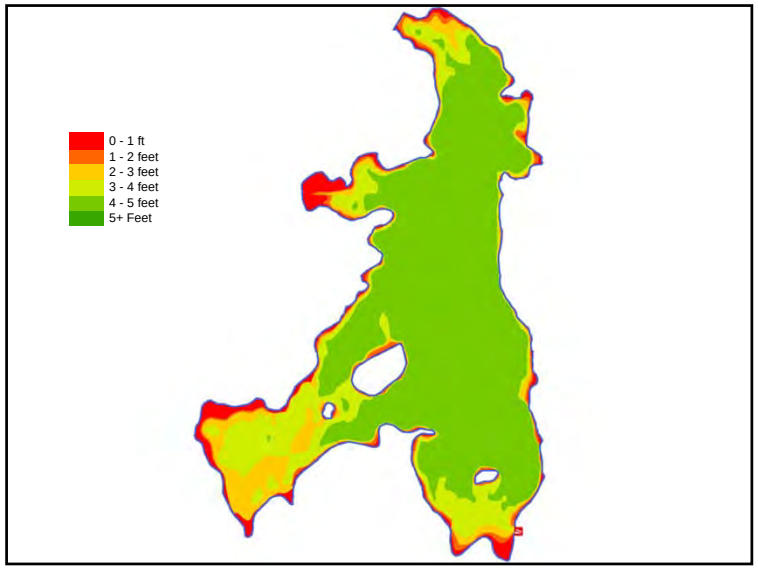
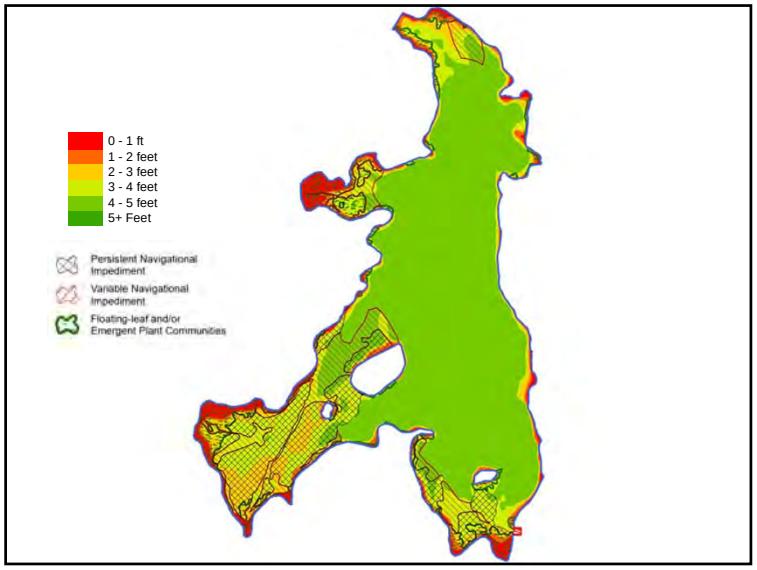
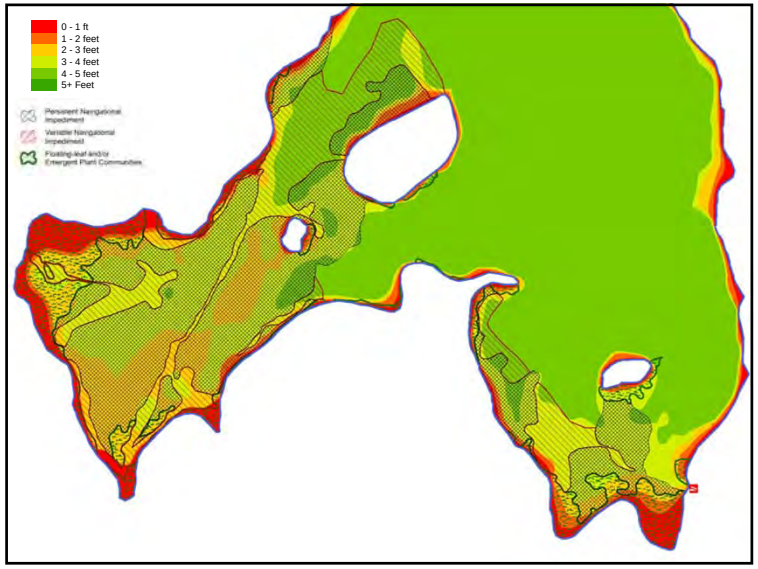

Persistent Navigational Impediment
Variable Navigational Impediment
Floating-leaf and/or Emergent Plant Communities
0%
50%
100%
Aquatic Plant Bio-volume (%)


Fern Pondweed
(Potamogeton robbinsii)
Common Waterweed
(Elodea canadensis)
Flat-Stem Pondweed
(Potamogeton zosteriformis)
Coontail
(Ceratophyllum demersum)

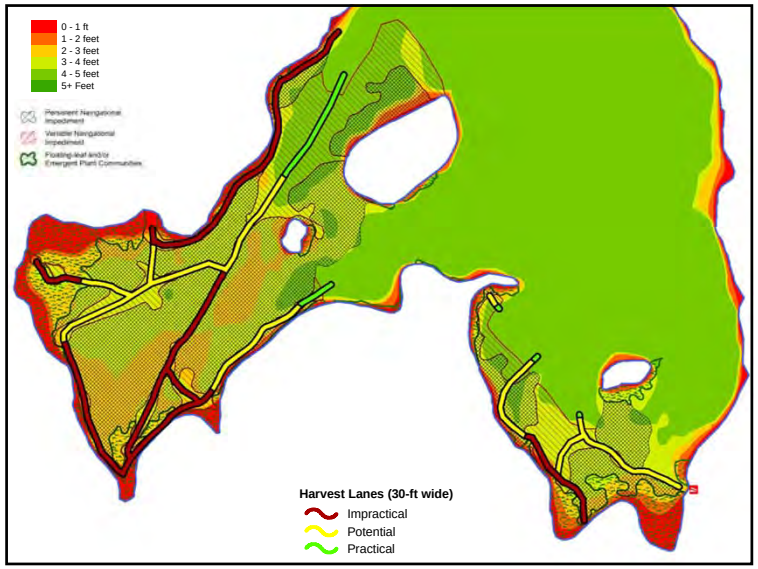



0 - 1 ft
1 - 2 feet
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet

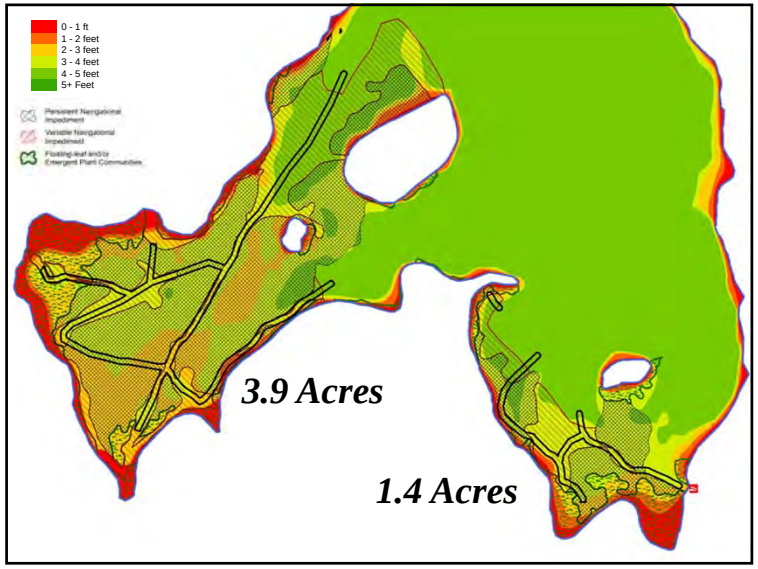

0 - 1 ft
1 - 2 feet
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet
Persistent Navigational Impediment
Variable Navigational Impediment
Floating-leaf and/or Emergent Plant Communities

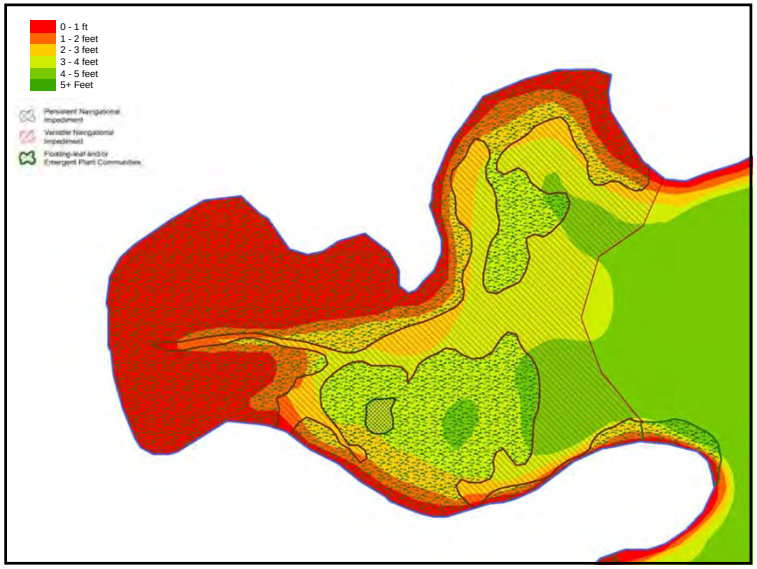

0 - 1 ft
1 - 2 feet
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet

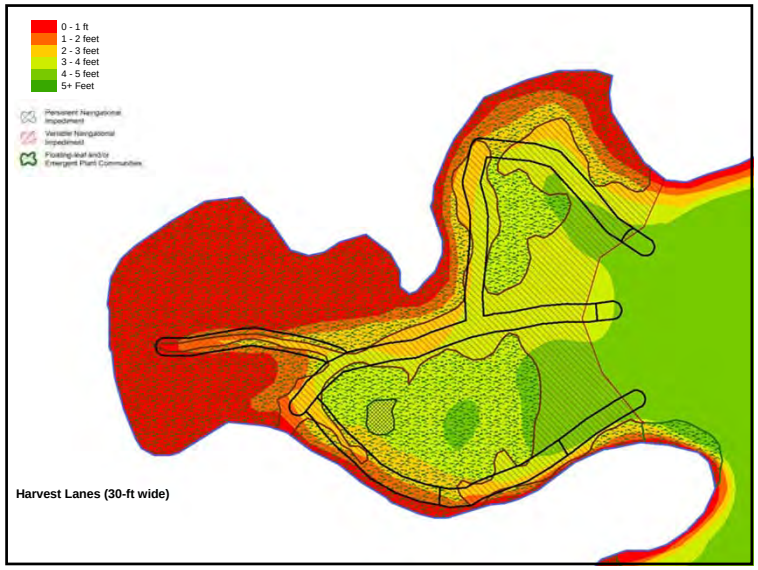
0 - 1 ft
1 - 2 feet
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet
Harvest Lanes (30-ft wide)

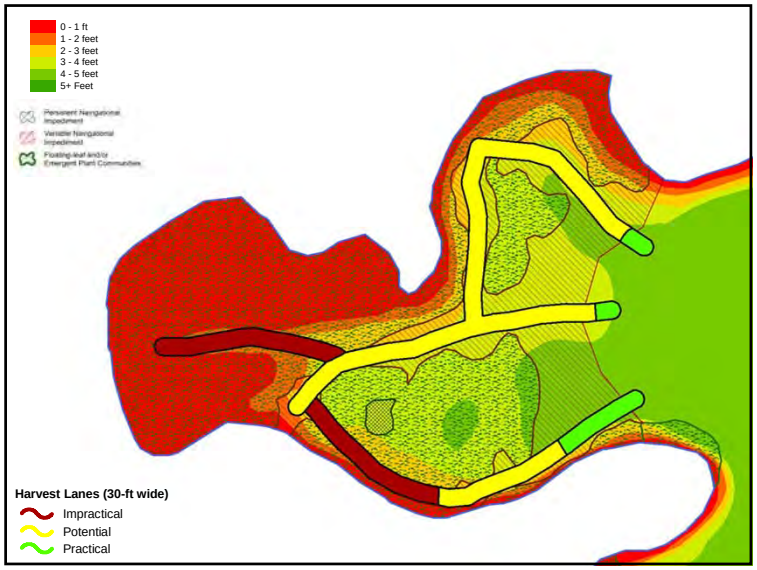

0 - 1 ft
1 - 2 feet
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet
Persistent Navigational Impediment
Variable Navigational Impediment
Floating-leaf and/or Emergent Plant Communities
Harvest Lanes (30-ft wide)
Impractical
Potential
Practical

0 - 1 ft
1 - 2 feet
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet
Persistent Navigational Impediment
Variable Navigational Impediment
Floating-leaf and/or Emergent Plant Communities
Harvest Lanes (30-ft wide)


0 - 1 ft
1 - 2 feet
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet
Persistent Navigational Impediment
Variable Navigational Impediment
Floating-leaf and/or Emergent Plant Communities
3.9 Acres
1.4 Acres


0 - 1 ft
1 - 2 feet
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet
Persistent Navigational Impediment
Variable Navigational Impediment
Floating-leaf and/or Emergent Plant Communities


0 - 1 ft
1 - 2 feet
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet
Persistent Navigational Impediment
Variable Navigational Impediment
Floating-leaf and/or Emergent Plant Communities
Harvest Lanes (30-ft wide)


0 - 1 ft
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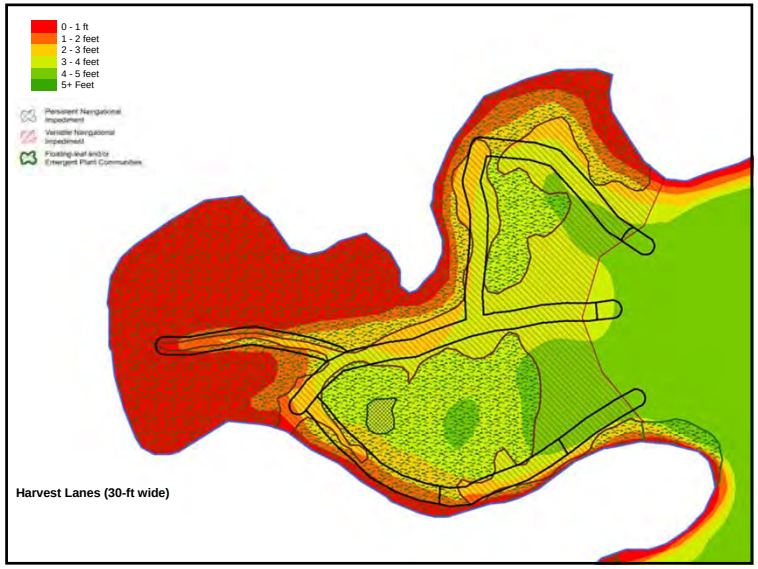
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet
Persistent Navigational Impediment
Variable Navigational Impediment
Floating-leaf and/or Emergent Plant Communities
Harvest Lanes (30-ft wide)
Impractical
Potential
Practical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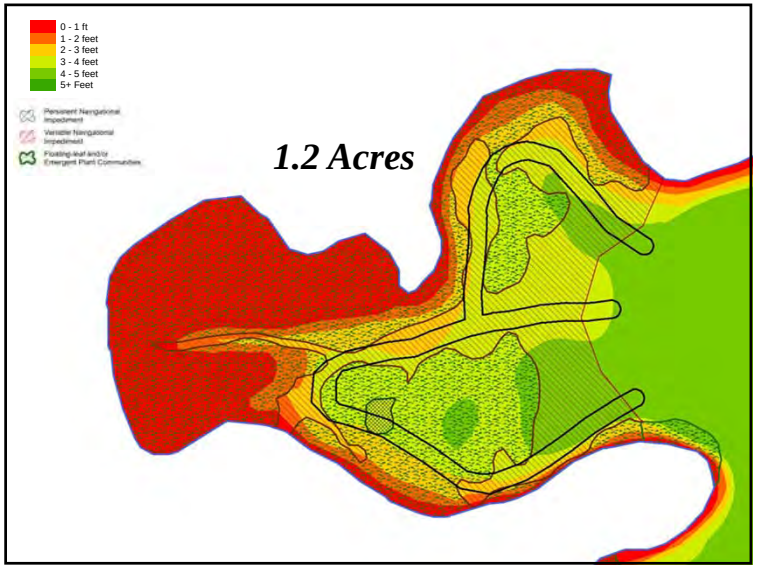
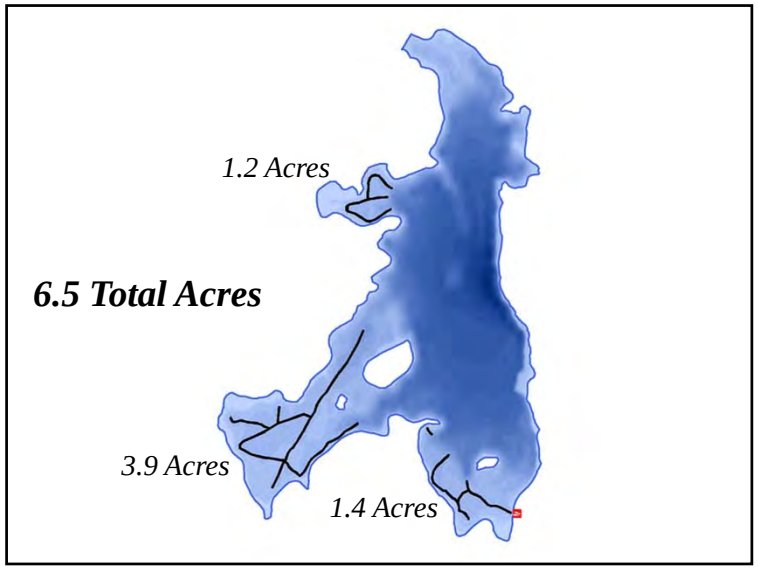
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet
Persistent Navigational Impediment
Variable Navigational Impediment
Floating-leaf and/or Emergent Plant Communities
Harvest Lanes (30-ft wide)


0 - 1 ft
1 - 2 feet
2 - 3 feet
3 - 4 feet
4 - 5 feet
5+ Feet
Persistent Navigational Impediment
Variable Navigational Impediment
Floating-leaf and/or Emergent Plant Communities
1.2 Acres



Conclusions

- Over 90 % of the shoreline is of a condition that wouldn't be prioritized for shoreland restoration
- High count of CWH along shoreline.
- Aquatic plant community
  - Based upon standard analysis, native plant community is of moderately high quality.
    - High species richness
    - Dominated by 4 native species (>78%)
  - Abundance of organic substrate and moderately-nutrient water creates abundant aquatic plant growth.
  - Navigation Impediment documented within the lake

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Thank You

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B

APPENDIX B

Aquatic Plant Management Strategy – WDNR Northern Region

AQUATIC PLANT MANAGEMENT STRATEGY

Northern Region WDNR
Summer, 2007

AQUATIC PLANT MANAGEMENT STRATEGY
Northern Region WDNR

ISSUES

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

BACKGROUND

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

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

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

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

GOALS OF STRATEGY:

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

BASIS OF STRATEGY IN STATE STATUTE AND ADMINISTRATIVE CODE

State Statute 23.24 (2)(c) states:

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

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

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

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

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

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

AQUATIC PLANT MANAGEMENT STRATEGY
Northern Region WDNR

APPROACH

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

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

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

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

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

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

AQUATIC PLANT MANAGEMENT STRATEGY
Northern Region WDNR

DOCUMENTATION OF IMPAIRED NAVIGATION AND/OR NUISANCE CONDITIONS

Navigation channels can be of two types:

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

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

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

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

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

Documentation of the *nuisance* must include:

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

AQUATIC PLANT MANAGEMENT STRATEGY
Northern Region WDNR

DEFINITIONS

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

C

APPENDIX C

Shoreland Habitat Best Management Practices Materials:
1. Wisconsin Biology Technical Note 1: Shoreland Habitat
2. Natural Resources Conservation Service Conservation Practice Standard: Shoreland Habitat

Wisconsin Biology Technical Note 1: Shoreland Habitat

Introduction

Definition of Shoreland Habitat:
An area adjacent to a water body in a non-agricultural setting that is vegetated with a diverse mixture of native species that include grasses, grass-like species, forbs, shrubs, and trees.

Purposes:

- Provide habitat for aquatic and terrestrial fauna
- Enhance adjacent shallow water habitat by providing shade and overhanging vegetation and promoting natural recovery of emergent species
- Promote shoreland corridors
- Increase the presence and diversity of native species
- Reduce the environmental and visual impact of nearby human activities
- Improve water quality
- Enhance bank stability

Interim Standard # 643A, Shoreland Habitat provides specific criteria for Shoreland Habitat establishment and for determining the dimensions of the practice (Section V). It identifies the necessary components of a Shoreland Habitat establishment plan (Section VII), and lists criteria for operation and maintenance of the practice (Section VIII). Local shoreland zoning ordinances and local shoreland restoration design standards may provide additional requirements and guidance. These may include greater buffer depths, more restrictive requirements for viewing/access corridors, and plant selection.

This technical note provides detailed guidance on the following:

Vegetation Establishment Technique ..... p. 2
Plan Components ..... p. 3
Plant Materials Selection and Density ..... p. 4
Additional Planning Considerations ..... p. 7
Steps for Accelerated Recovery ..... p. 9

- Site Preparation
- Planting Techniques

Site Care and Maintenance ..... p. 14
Resources ..... p. 17
Appendices ..... p. 19

Vegetation Establishment Techniques

Determining the appropriate vegetation establishment technique requires an assessment of the existing vegetative cover. In many cases a combination of the two general techniques described below will be appropriate due to varying existing vegetation conditions.

Initial site assessment should include:

- Identification of any native species present and their location, density, and vigor.
- Identification of any invasive species or noxious weeds present and their location, density, and vigor.
- Assessment of the density and vigor of any turf grasses present.

Natural Recovery

Natural recovery or "no-mow" zones are encouraged where feasible. Native vegetation will recover naturally when the site is protected from disturbance and where adequate seed and/or root sources and appropriate site conditions are present. Wet shoreline margins, where turf grasses are not well established, are particularly suited to natural recovery. Results may be slower than for planted buffers, but there is virtually no cost, and the end result may appear more natural.

An area where a dense growth of turf grasses has been maintained for several years is usually not well suited to natural recovery. Turf grasses frequently out-compete native vegetation, and the area may lack native seed sources. Areas with extensive stands of invasive weeds should also not be left to recover naturally.

Accelerated Recovery — Planted Buffers

Accelerated recovery techniques are most appropriate where insufficient native vegetation is present for natural recovery techniques, or where quick results are desired. Accelerated recovery techniques can include planting trees and shrubs, planting native grass and wildflower seedlings, or seeding native grasses and wildflowers. Steps for each of these accelerated recovery-planting techniques are described later in this Tech Note.

On many sites, natural and accelerated recovery techniques can be combined. For example, natural recovery might be used along the shoreline where there are native plants, and accelerated recovery used for the remainder of the restoration, where turf grasses dominate.

Plan Components

A plan shall be developed to guide the restoration process to ensure that restoration requirements and goals for the site are met. An example plan is included in Appendix 1.

The plan shall include:

- Site diagram or map
- Preparation schedule
- Planting dates and schedule
- Care and handling of plant materials
- Watering plan
- Maintenance plan including management of invasive species
- Plant and seed calculation worksheet

Site Diagram

Appendix 2 contains the "*Shoreland Habitat Plan – Site Diagram*" job sheet to assist with plan development.

The site diagram must be to scale and shall include:

- Location of existing primary structures
- Boundary of the practice
- Scale (1inch = 10 feet recommended)
- North arrow
- Location of ordinary high water mark
- Location of viewing/access corridor
- Existing shrubs and trees
- Locations where shrubs and trees are to be planted
- Areas where herbaceous cover will be planted and planting density
- A species list for the site
- Location of erosion control practices to be installed during practice establishment
- Location of practices to address channelized/concentrated flow

Plant Materials

Species Selection

Plants shall be selected from species lists of plant communities that are native to the county or region. Plants should further be chosen based on site soil, moisture, and light conditions. In some cases, such as lack of plant or seed availability, substitutions may be allowed. In addition, references such as those included at the end of this document may be used to make selections. For example, the herbarium website [http://wiscinfo.doit.wisc.edu/herbarium/Countysearch.html] can be queried based on counties, habitat types, or individual plant species.

Planting Densities

The table below describes planting standards for two major shoreland types: woodland, and barrens/dry prairie/wet prairie. The woodland has a nearly complete canopy of trees while the barrens/prairie and wetland are more open. Plant numbers are to be calculated based on the area in square feet to be reestablished and the appropriate density. The area to be reestablished shall be calculated for each layer. See Worksheet 1 for example area calculations.

Table 1. Shoreland Habitat Planting Densities

	Woodland		**Wetland or Barrens / Dry Prairie / Wet Prairie**	
Layer	**Minimum Number of Species[1]**	**Density**	**Minimum Number of Species[1]**	**Density**
Trees[2]	2	0.5 – 5 per 100 sq. ft.	0	0 - 0.2 per 100 sq. ft.
Shrubs	3	1 - 4 per 100 sq. ft. *If clumped, maintain min. 2 foot spacing*	2	0.2 - 0.5 per 100 sq. ft. *If clumped, maintain min. 2 foot spacing*
Herbaceous Cover[3]				
- Plant plugs	3	25 –75 plants per 100 sq. ft. *Soil must be mulched*	5	50 – 100 plants per 100 sq. ft. *Soil must be mulched*
- Seeding	3	Grass/Sedges: 4-8 oz. per 1000 sq. ft. Forbs: 2-4 oz per 1000 sq. ft.	5[4]	Grass/Sedges: 4-8 oz per 1000 sq. ft. Forbs: 2-4 oz. per 1000 sq. ft.

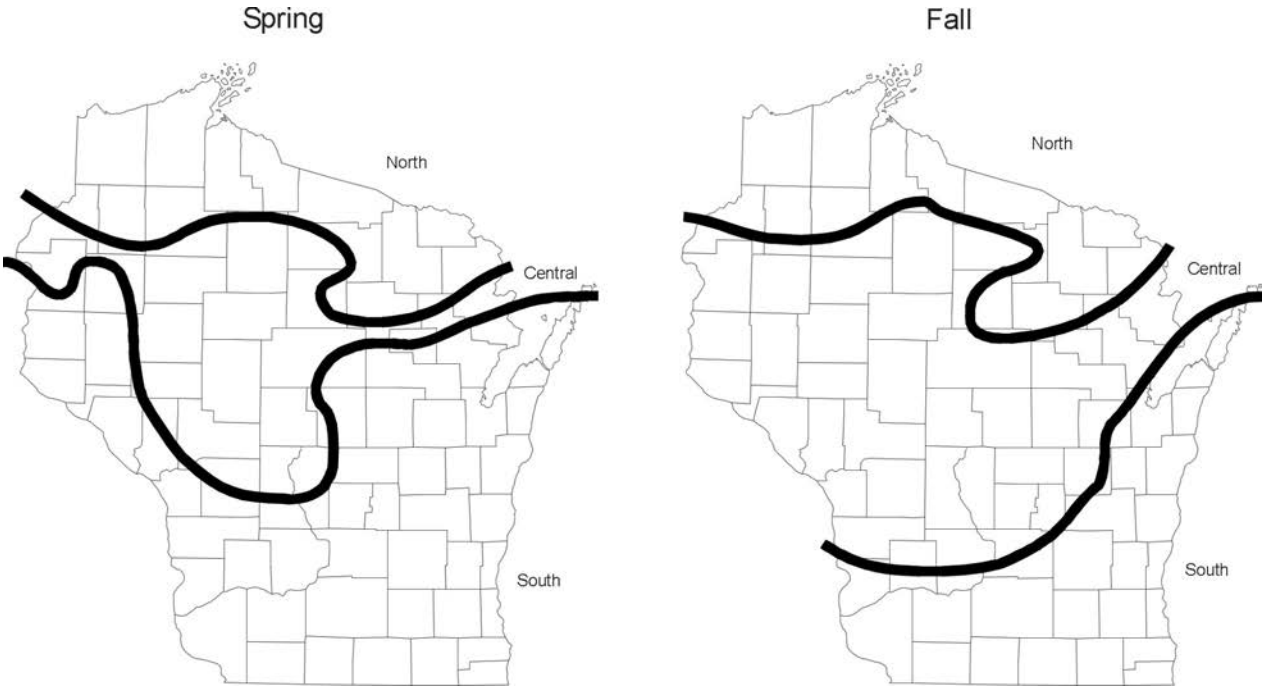
[1] Select species from established plant lists for shoreland habitat. Trees, shrubs, and groundcovers may be transplanted from adjacent woodland or open areas outside the restoration area.
[2] Trees must be at least 2 year old seedlings, 8 inches or taller.
[3] The herbaceous cover layer shall be comprised of a minimum of 30% grasses and/or sedges.
[4] Consider the use of plants rather than seeds in wet areas.

Planting Dates

The table below provides approximate dates for planting. Weather and soil conditions, which vary year-to-year, determine the most appropriate planting time. Please note that adequate moisture levels are assumed due to required watering practices.

Table 2. Recommended Planting Dates

	North	Central	South
Seeded Herbaceous Covers *Seeding early favors cool season plants. Seeding after soil temperature increases above 55 degrees favors warm season plants. Seed after July 1 to reduce weed seed germination.*	May 15 – August 10 *Best dates:* *June 1 – July 15*	May 1 – August 31 *Best dates:* *May 10 – July 20*	May 1- August 31 *Best dates:* *May 5 – July 31*
Plugs (Seedlings) and Potted Herbaceous Covers *Plant after danger of frost is past, and up to first frost. Later plantings may require more frequent watering because of increased temperatures.*	May 20 – September 15	May 1- October 31	May 1 – Nov. 15
Bare-root Trees and Shrubs	Any time soil is not frozen and before leaf-out, or after leaves fall.		
Potted Trees and Shrubs	Any time soil is not frozen.		



Worksheets for Calculating Plant and Seed Needs

Worksheet 1 can be used to calculate the square footage of area to be restored for each vegetative layer. Worksheet 2 can be used to calculate the amount of trees, shrubs, plants and seeds needed.

Worksheet 1: Area Calculations							
	Total Area of Shoreland Habitat (Square Feet)		**Total Area of Viewing/ Access Corridor**		**Total Area of Existing Layer to Preserve and/or Natural Recovery Zones**		**Total Area to be Planted**
Tree Layer		-		-		=	
Shrub Layers		-		-		=	
Herbaceous Layer - Plants		-		-		=	
Herbaceous Layer - Seeds		-		-		=	
SAMPLE[5] Herbaceous Layer-Plants	***6,000***	***-***	***1,500***	***-***	***1,000***	***=***	***3,500***

Worksheet 2: Seed or Plant Densities							
	Total Area to be Planted (Square Feet)		**Density Factor[6]**		**Seed or Plant Densities from Table 1.**		**Total Plants or Seeds to Install**
Tree Layer		÷	100	×		=	
Shrub Layer		÷	100	×		=	
Herbaceous Layer							
Plants		÷	100	×		=	
Grass Seeds		÷	1000	×		=	
Forbs Seeds		÷	1000	×		=	
SAMPLE[7] Herbaceous Layer-Plants	***3,500***	***÷***	***100***	***×***	***70***	=	***2450***

[5] This sample is 60x100 foot restoration (6,000 sq. ft.), with a 25x60 view corridor (1,500 sq. ft), and 1,000 sq. ft. of natural recovery.

[6] See Table 1, column 3, on page 4. Trees, shrubs and plant densities are given in number of plants/100 sq. ft., and seeding densities are given in number of ounces/1000 sq. ft.

[7] Sample site is 3,500 sq. ft., to be planted at 70 plant plugs per 100 sq. ft., for a total of 2450 plants needed.

Additional Planning Considerations

Exposed soil may be encountered because of erosion from runoff, bank instability, heavy use, or construction activities. Eliminate or minimize the cause of the bare soil and then stabilize the area following the guidelines below. Filter fabric fences may be necessary to capture sediment below exposed slopes. Specifications found in the Wisconsin Construction Site Best Management Practices Handbook must be followed.

Companion Seeding for Steep Slopes

When seeding on steep slopes, a companion seeding and/or other erosion control practices shall be used. See companion seeding rates table below.

Slopes >12%: Companion seeding of oats, side oats grama, or Canada wild rye.[8]
Slopes >20%: Companion seeding of oats, side oats grama, or Canada wild rye, and use either mulch and netting or an erosion control blanket.

Table 3. Seeding Rates for Companion Crops	
Oats	0.5 lbs./1000 ft.²
Canada Wild Rye	1 oz./1000 ft.²
Side Oats Grama	1 oz./1000 ft.²

Temporary Cover Crop for Exposed Soil

A temporary cover crop should be planted only if soils have been exposed, and the restoration planting is delayed. In most cases this would only occur in the late fall, generally after September 15th depending upon the location.

Table 4. Seeding Rates for Cover Crop	
Cereal Rye	0.5 – 1.0 lbs./ 1000 ft.²
Winter Wheat	0.5 – 1.0 lbs./ 1000 ft.²

[8] Oats are annuals that will temporarily stabilize an area and then be killed by a hard frost. Canada wild rye and side oats grama are short-lived native perennial grasses.

Runoff Control

Runoff from impervious surfaces and roof gutter downspouts should be directed to maximize infiltration. Runoff should be maintained in sheet flow (not channels) to the greatest extent possible. In soils where adequate infiltration cannot be achieved, outletting through a tile may be an option.

Fire Prevention

Areas with sandy soils are prone to forest fires. Conifer trees are especially susceptible to fire. To reduce fire danger, avoid planting conifers close to structures in those sandy areas of the state. Fire hazard is lower if conifers are planted on the waterward rather than the landward side of the house. Contact your local Department of Natural Resources Forest Ranger for information about fire-prone areas.

Cost of Buffer Preparation

Costs for completing a shoreland habitat project vary greatly. Planting shrubs or trees as bare-root stock greatly saves on the cost. Costs are kept to a minimum when landowners do the work themselves. If contractors are used, costs generally increase, but an experienced contractor may save money in the long run because the project may be more successful. Costs increase as the design shifts from "natural recovery" to "accelerated recovery." Seeding is generally cheaper than planting seedlings. However, seed takes longer to establish and there may be poor germination and seedling survival and excessive weed growth. Larger more established stock increases the price of the restoration. Balance budget constraints with concerns regarding timeliness and appearance.

Plant and Seed Sources

The DNR, counties, lake associations, and conservation groups sponsor shrub and tree sales annually in the spring. Statewide lists of native plant and seed sources are available from both the University of Wisconsin Extension (UWEX)[http://clean-water.uwex.edu/pubs/native/index.html] and the WDNR [http://www.DNR.state.wi.us/org/land/er/invasive/info/nurseries.htm]. Lists of sources of plants and seeds may also be available from your local government office.

Viewing and Access Corridor Design

Viewing corridors that are oriented somewhat obliquely to the shoreline, or are curved, are preferable to those that are perpendicular to the shoreline. This reduces the visual impact of human activities in the shoreland area. Corridor dimensions shall be determined by applicable county standards and ordinances; however, the maximum width of the viewing and access corridor shall be 30 feet.

Steps for Accelerated Recovery

Proper site preparation is one of the most important steps in establishing a native plant landscape. Reducing competition on the site by first removing the existing non-native vegetation is especially important. Turf grasses can quickly out-compete newly planted native plants if left in place.

Sometimes removing existing vegetation is not necessary, and it is possible to plant among existing scattered native plants or to leave zones of vegetation intact. The moist zone near the water's edge often consists mostly of native plants because turf grasses are flooded out. Seeds and underground stems may quickly revegetate the area if allowed to grow. Selected native flowers, grasses, and shrubs can usually be planted among existing native vegetation to fill in bare spots or to add color and variety. Plant flowers and grasses in a manner that will allow them to spread over the entire area. Stands of invasive plants like reed canary grass or purple loosestrife should be removed from wet areas.

Site Preparation

Removing Undesirable Vegetation

Techniques to remove existing vegetation by smothering and/or applying herbicide are described below.

Smothering – Use Black Plastic

Black plastic spread over vegetation eliminates light and creates heat that kills existing plants. This method is suitable for almost any site. In areas with high exposure to wind, extra care must be taken to anchor the plastic in place.

1. You will need
    a. 3.5 mil or thicker black plastic to adequately cover the area, plus extra to overlap sheets at least 6 inches.
    b. 4 inch or longer, 11 gauge or heavier U-shaped metal staples (enough to space 1 foot apart where plastic overlaps and at the edges).
    c. Heavy objects like logs, cement blocks, boards, or tires to hold the plastic in place.
2. Prepare the site by mowing, weed whacking, or trimming vegetation to be removed.
3. If soil is dry, water thoroughly. This will increase the weed killing effectiveness.
4. Lay down the plastic. Overlap the plastic at least 6 inches if using more than one piece. Staple in place at one-foot intervals as it is laid down.

5. Place heavy objects over plastic. All seams and edges must be firmly anchored to exclude light. Edges can also be buried in a shallow trench to help hold them in place.
6. Leave the plastic in place for 4-6 weeks during spring or summer. Make certain there is no sign of living vegetation before removing it.
7. Remove plastic, but leave dead vegetation in place. If using plant mulch over the dead vegetation, plant directly through the mulch.

Applying Herbicide

A glyphosate herbicide like *Roundup*® is recommended. Avoid drift of herbicide to water. If herbicide is to be applied in or over the water, an aquatic glyphosate formulation such as *Rodeo*® must be used, and a Department of Natural Resources permit is required. *Always follow label instructions carefully.*

Timing of herbicide applications is crucial. Do not apply when rain is forecast in the next 24 hours. Do not apply on windy days, since vegetation you wish to preserve may be damaged by herbicide drift. Vegetation must be actively growing for glyphosate herbicides to be effective. To encourage growth, mow grass and allow it to regrow several inches. Air temperature must be between 50 and 75 degrees Fahrenheit for cool season plants like quack grass and brome grass to be actively growing, and therefore effectively killed by the herbicide.

Be certain that vegetation is dead before planting. If turf is still green or yellow-green after 7 – 10 days, a repeated herbicide application is recommended.

Soil Amendments

In most cases soil amendments are **not** required to plant native plants. Adding black dirt or manure can be detrimental to lakeshore plantings. These soil amendments will favor weed growth, and the native plants may grow more quickly and be less sturdy.

Planting Techniques

Seedlings

Fertilizer use is recommended where mulches are used because they demand nitrogen as they decompose. Fertilizer should never be broadcast due to the potential for runoff into the lake. Instead, apply a very small amount of slow release *phosphorous free* fertilizer in each planting hole. Phosphorus levels are adequate in most soils, and phosphorus can increase algae growth in the lake. Phosphorus is the middle number of the three given on the fertilizer bag.

Application amounts will vary depending on nutrient concentration. For a 6-0-6 NPK ratio, use one teaspoon of organic fertilizer per grass or wildflower plant and ¼ cup per shrub or tree. Up to one cup can be added to larger shrub or tree planting holes.

Dead vegetation left in place after smothering or an herbicide application does not need to be removed. Leave the dead material to serve as a mulch to capture moisture, reduce weed growth,

and add organic material to the soil. Plant seedlings directly through the dead material. Roots must be buried in soil and not in the thatch of dead lawn, where the plant would quickly dry out and die.

Plants Installation

1. ***Lay mulch down prior to planting.*** Spread 2 to 3 inches of straw, wood chips, leaves, or pine needles to conserve moisture and reduce weed growth. Avoid using field hay because it generally contains weed seeds. Do not use marsh hay, which is reed canary grass, and is an invasive species.
2. ***Be ready to water.*** Watering plant plugs is critical to their success. Be ready with hoses and sprinklers before planting. Water seedlings immediately after they are planted.
3. ***Dig holes for plants***. A bulb planter or bulb auger drill bit attached to an electric drill will work well to speed up planting. Be sure the holes for the plants penetrate the dead grass.
4. ***Fertilize.*** A small amount of slow release, phosphorus-free fertilizer is recommended. The second number on the fertilizer label represents phosphorus. To fertilize, place a small amount in each plant hole. Excess fertilizer will encourage weed growth.
5. ***Place live plants in the ground soon after they are brought to the site.*** To store plants for a few days before planting, keep them in an area with partial sun such as on the east side of a building or under a deciduous tree. Do not leave them in a dark area for long periods; this will weaken plants. Water to keep packs moist once or twice a day.
6. ***Plant in the cool hours of the day.*** Plants will have a greater survival rate if planted on a cool day or during the morning or evening hours. To plant, separate the mulch, dig a hole, sprinkle organic fertilizer, place the plug in the hole, press the soil gently around the plug, and replace the mulch, being careful to keep mulch 1/2" from stem of plants.
7. ***Water.*** Water immediately after planting. Plan to water at least daily for the first few weeks or until plants are well established. If plants wilt or droop, a repeated watering may be necessary during the day. Once plants are established, water only if prolonged dry periods occur.

Seed Installation

1. ***Rake or till only enough to expose soil for planting seed***, no more than 1–2 inches deep.
2. ***Select seed.*** Refer to Table 1 for seeding densities. Greater amounts of seed will result in denser growth and better chances for success. Include 1 ounce of Canada wild rye per 1,000 square feet if desired. This seed will germinate readily to indicate areas where seeding is successful and help to hold the soil in place. Canada wild rye is a short-lived native perennial grass.
3. ***Mix seeds with slightly moist sand or sawdust.*** Fill an ice cream pail or similar one gallon bucket 2/3 full with moist, but not wet, sand or sawdust. Add up to 4 ounces of seed and mix well. The seeds will adhere to the sand or sawdust, so they can be spread more thinly and evenly.
4. ***Broadcast the seed/sand mixture.*** Use half of the seed/sand mixture to cover the entire area. Sow the remaining half while walking perpendicular to the line of the first pass to assure good

seed distribution. The sand or sawdust will make it easier to see places that have not been seeded.

5. ***Press seed in by tamping down the soil*** with a rake or lightly raking the seeds in. The site may be rolled with a water-filled roller to insure good soil/seed contact. Do not roll when soil is wet, this will compact the soil, decrease levels of oxygen in the soil, and reduce seed germination.
6. ***Mulch lightly*** with 1/2 inch of weed free straw. Soil must be visible between the straw stems, or the mulch is too thick to allow seedlings to grow. If mulch is used on steep slopes, hold it in place with jute or biodegradable net. A biodegradable erosion control blanket up to ½ inch thick may be used as an alternative to mulch.
7. ***Water.*** Water immediately following seeding. Watering seeds and small seedlings after sprouting is critical for sandy soils. Plan to water daily, preferably in the morning, for the first few weeks or until plants are well established. Check to see that soil is moist beneath the mulch. Very sandy sites may require watering more than once daily for the first few weeks. Once plants are established, water only if prolonged dry periods occur.

   Note: Watering *may* not be necessary for spring plantings in areas with loamy or clay soils as long as regular (weekly) rainfall of ½ inch or more occurs.

Shrubs and Trees

1. ***Keep bare-root stock moist and cool before planting.*** Dormant bare-root shrubs can be ordered in fall or winter for delivery in the spring. Plant bare-root stock as soon as it arrives if possible. If necessary, store bare-root stock close to 34 degrees Fahrenheit, to avoid breaking dormancy. Keep tree roots moist by periodically sprinkling with water. Do not soak roots in water because this will deprive them of oxygen.

2. ***Dig the hole deeply enough*** so that the roots won't curl or bunch up. The trees and shrubs should be planted about one-half inch deeper than they were in the nursery. Paler colored bark and a slight swelling on the stem show where the old soil line was. Bare rootstock may need to be root pruned. For more information about bare rootstock refer to WDNR website [http://www.DNR.state.wi.us/org/land/forestry/nursery/generalinfo/plantingprocs.htm#seedling] and contact your local forester.

3. ***Pack soil firmly around the roots.*** Air pockets left around the roots will dry them out. Press soil around the roots with your foot, but do not stomp on them.

4. ***Water regularly*** to keep soil moist but not saturated.

5. ***Mulch*** a two-foot diameter circle around each plant 2 to 3 inches deep with wood chips, straw, or leaves. This will reduce competition with other plants. Keep this area free of other growth by weed whacking or hand-pulling weeds for the first couple of years. Avoid mulching where there are steep slopes. In this case, reduce competition by weed whacking.

Transplanting Trees and Shrubs

It is best to transplant when trees and shrubs are dormant in the early spring or late fall. Identify and label trees and shrubs when leaves are on the plant. Obtain permission from the landowner before removing plant material. Dig up as much of the root as possible. Replace the duff layer of leaves and stems to reduce erosion at the site. Only dig up trees and shrubs if they are part of a large stand or if the seedlings are numerous. If the tree or shrub is uncommon or rare, do not move it. Only remove a small percentage of any one type of plant. Leave behind a large enough population to allow further reproduction of the native population.

Site Care and Maintenance

The most ideal maintenance is to simply leave the site alone. Do not fertilize, do not mow, do not rake, do not "clean up" fallen limbs or trees. Allow native vegetation to regrow.

In accelerated recovery areas, some initial maintenance may be required. Pulling invasive weeds around native shrubs, trees, and groundcovers the first year or two eliminates competition and will help to give them a good start. Maintenance over the long-term must be in accordance with the local shoreland ordinance requirements.

The duff layer, made up of fallen leaves and pine needles, should be left intact. This layer covers the soil, thereby conserving moisture, preventing erosion, and allowing water to infiltrate into the soil.

Year One

Watering

Regular watering in the first two months of a spring or summer planting is one of the most important factors for success. Without supplemental watering, roots may not reach the soil moisture they need. Watering at least 30 minutes each day allows vigorous root growth for plants to become quickly established. Timers to turn water on and off automatically are available from hardware and garden supply stores.

Where drainage is poor, water only in the morning, not at night when evaporation is reduced. Fungal diseases that start with excess moisture can kill young seedlings. Use lake water if feasible, since this water often is warmer and more nutrient-rich than well water. Pumping water from the lake is allowed in Wisconsin as long as no type of structure is left in the lake.

Protection Against Deer Browsing

Whitetail deer and other animals may damage plantings, especially trees and shrubs. Protect against damage by physical or chemical means. Surround newly planted trees and shrubs with 4 – 6 foot high, galvanized mesh fence supported with wooden stakes or fence posts, or cover plants with bird netting. Landscape products available to spray on plants deter browsing through strong tastes or odors. Red pepper spray is an example. Use of these products may need to be varied as deer become accustomed to their taste or smell. Protection against deer browsing is particularly important if deer are fed on the site or nearby. Deer feeding should be discouraged near restoration areas. For more information about deer damage refer to Craven et. al and the following Web site: [http://www1.uwex.edu/ces/pubs/pdf/G3083.PDF].

Weeding Planted Areas
Pull weeds out as early as possible being careful to not disturb the native plants. Be especially diligent in areas where non-native invasive species like purple loosestrife, mullein, lamb's quarter, quack grass, reed canary grass or bluegrass are known to be present.

Weeding Seeded Areas
It can be difficult to tell weeds from the native plants in a seeded area. Sprouting a small sample of the native seeds in a plant tray will assist with their identification. Cut off flowering heads of weeds before they go to seed. Perennial natives will eventually out-compete annual weeds that sprout from seed.

Another alternative is to repeatedly trim weedy vegetation to 6 to 8 inches with a weed-whacker. Remove clippings immediately if they cover the native seedlings. This will discourage weed growth, remove shade, and allow native seedlings to grow.

Fertilizing And Applying Insecticides
Fertilizers and insecticides should be avoided. Applying fertilizers may encourage weed growth. If native plants are selected appropriately, supplemental fertilization should not be required. Also avoid applying insecticides since so many are non-specific and can harm or even kill non-target species.

Vegetative Cover
At the end of the growing season, allow all dead vegetation to remain in place. It becomes a valuable seed source for next year's growth, provides food and cover for wildlife, and will help to cover the soil and slow spring runoff. The grass seed and dried flower heads add another level of appeal to the native landscape in the winter months.

Year Two

Watering
Water only during periods of severe drought.

Weeding
Thoroughly weed early in the summer. After this initial weeding, check for and remove weeds at least once a month.

Year Three and Beyond
No watering or weeding should be necessary except for extreme drought conditions or stubborn invasive weed problems. Leave vegetation in place in the fall and through the winter months. Approval from the zoning or land conservation office is required for extensive weed removal in the shoreland zone.

Prairie and savanna areas may be trimmed or burned only under an approved management plan. Additional permits or approval may be necessary before trimming or burning. Trim groundcover

in prairie areas no more than once every three to five years. Groundcover should be cut no less than 6-8 inches high. Cut vegetation in the late winter when the ground is still frozen, or in late spring, when the ground is dry enough to walk on without damaging new growth. Leave all dead plant clippings on-site. They will add to the shoreland soil structure. A controlled burn may be appropriate only in prairie and savanna areas. A burn should not be attempted until the prairie or savanna is well established – usually after five or more years. To determine if a controlled burn is appropriate evaluate the site for safety considerations; threats to structures, shrubs, and trees; and weed species present. In addition to any required permits, Department of Natural Resources broadcast burning permits are required in intensive fire zones.

Except in prairie areas that are identified in an approved management plan, any native trees, shrubs, and groundcover in the restoration area shall be left undisturbed. Trees and shrubs are intended to move in to create multiple layers of canopy cover. Tree thinning or removal of dead or diseased trees requires approval of the appropriate administering agency.

Vehicles shall be excluded from the buffer except for limited use in the viewing/access corridor. Docks and boatlifts shall be stored outside the buffer or in the viewing/access corridor.

Resources

References for Plant Selection

Please note that counties may have approved or recommended plant lists.

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SHORELAND HABITAT

(Acres)
CODE 643A (Interim)

Natural Resources Conservation Service
Conservation Practice Standard

I. Definition

Area adjacent to a waterbody or watercourse in a non-agricultural setting that is vegetated with a *diverse*[1] mixture of native species that can include grasses, grass-like species, forbs, shrubs, and trees.

II. Purposes

A. Provide habitat (food, shelter, nesting sites, over-winter cover) for aquatic and terrestrial fauna.

B. Enhance *littoral zone* (shallow water) habitat function for a broad range of vertebrate and invertebrate species by providing shade and cover with overhanging vegetation, and promoting natural recovery of emergent species.

C. Provide a source of detritus (decomposing organic matter) and large woody cover for aquatic organisms.

D. Provide shade to lower water temperatures and facilitate higher dissolved oxygen concentrations to improve habitat for aquatic organisms.

E. Promote shoreland corridors for aquatic and terrestrial flora and fauna.

F. Increase the presence and diversity of native plant and animal species in shoreland areas.

G. Reduce the environmental and visual impact of human activities in the near-shore area.

H. Improve water quality by reducing the amount of sediment and other pollutants, such as pesticides and nutrients in surface runoff.

I. Enhance bank stability by limiting intensive use, and reducing wave impact.

III. Conditions Where Practice Applies

This practice applies, but is not limited to, areas of shoreland development where it is desired to enhance or restore native mixed vegetation for the improvement of fish and wildlife habitat, water quality and bank stability.

Where the primary purpose is to control sediment to environmentally sensitive areas, refer to the Natural Resources Conservation Service (NRCS) Field Office Technical Guide Section IV (FOTG), Standard 393, Filter Strip.

Where the primary purpose is to control bank erosion, refer to NRCS FOTG Standard 580, Streambank and Shoreline Protection to be used in conjunction with this standard.

IV. Federal, State, and Local Laws

Installation and maintenance of shoreland habitat shall comply with all federal, state, and local laws, rules, or regulations. The landowner is responsible for securing required permits. This standard does not contain text of any federal, state, or local laws.

V. Criteria

The Wisconsin Biology Technical Note 1: Shoreland Habitat is an important guidance document to this standard. This can be found either in the NRCS Field Office Technical Guide (FOTG) or on the NRCS website: [http://www.wi.nrcs.usda.gov/fotg/index.html]

A. Establishment

1. Shoreland habitat shall be established by planting a diverse mix of native species that are adapted to site conditions and are representative of area plant communities. Where appropriate, natural recovery techniques may be utilized rather than planting. Refer to county species lists and/or the Wisconsin Biology Technical Note 1: Shoreland Habitat, where applicable.

2. In order to restore the functional values of a shoreland habitat, vegetation shall be vigorous, diverse and structurally complex

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

and shall include herbaceous cover, a shrub layer and a tree canopy. The only exception to this requirement shall be where natural conditions in the region lack these habitat components.

3. *Invasive plants* shall not be included in any installation.

4. Invasive plants and state listed *noxious weeds* shall be *controlled* during establishment, if present.

5. Exposure of bare soils during establishment shall be kept to a minimum. Measures shall be taken to prevent erosion.

6. Phosphorus application is only permitted where soil tests indicate a deficiency. Where fertilizer application is necessary, no drift or misapplication into the water shall occur.

7. Heavy equipment shall be excluded from the shoreland habitat area, to avoid compaction of soil.

8. Weeds shall be controlled until the shoreland habitat species are established.

9. A watering schedule shall be followed until species are established.

B. The starting point for measuring minimum shoreland habitat depths for the following landscape features shall be as follows.

1. Lakes. Practice depth shall be measured from the *ordinary high water mark* (OHWM) landward perpendicular to the shoreline.

2. Perennial and intermittent streams, and springs. Practice depth shall be measured from the OHWM. Each side of the stream shall be evaluated independently.

3. Wetlands. Practice depth shall be measured from the upland-wetland interface.

4. Existing tree and shrub corridors. Existing tree and shrub corridors shall be included as part of the measured practice depth.

C. Shoreland habitat dimensions

1. Practice depth: The minimum practice depth is 35 feet. Greater practice depths provide increased benefit and are encouraged.

   a. Where the principal structure is within 50 feet of the OHWM, land within 15 feet of the structure may be excluded from the practice.

2. Practice length: The practice shall extend the entire length of the lot, except that a viewing and access corridor is allowed.

3. A viewing and access corridor may extend from the lake inland. Corridor dimensions shall be determined by applicable county standards and ordinances. The maximum viewing corridor width is 30 feet.

D. Runoff from impervious surfaces, such as rooftops and driveways, in the contributing drainage area shall be evaluated and treated to promote infiltration and sheet flow.

E. When soil disturbance is necessary due to bank or gully repair, the appropriate action shall be taken to limit the disturbance and protect and replant all disturbed areas in accordance with this standard.

F. Areas of concentrated flow shall be evaluated and treated.

G. Areas below the OHWM shall not be disturbed. This does not preclude practices intended for bank stabilization.

VI. Considerations

A. Consider using this practice to enhance the conservation of declining species.

B. Consider marking practice boundaries in an identifiable manner until established.

VII. Plans and Specifications

Plans and specifications for the shoreland habitat describe the requirements for applying the practice to achieve its intended purpose. Plans and specifications shall be prepared for each specific site where the practice will be installed. A plan includes information about the location, site preparation, vegetation establishment, and operation and maintenance requirements.

Plan specifications will include the following (see Wisconsin Biology Technical Note 1: Shoreland Habitat).

A. Dimensions of the practice to accomplish the planned purpose.

B. Site map or diagram.

C. Species selection, planting rates, location and spacing to accomplish the planned purpose.

D. Planting dates, care, and handling of the seeds or plants to ensure an acceptable rate of survival.

E. Site preparation sufficient to establish and grow selected species.

F. Identification and treatment of concentrated flow areas.

G. Operation and Maintenance Plan.

VIII. Operation and Maintenance

A. Dead or windblown trees provide cover and refuge for fish and wildlife, and should be left in place. Tree thinning or removal of dead or diseased trees requires approval by the appropriate administering agency.

B. Mowing or other removal of ground cover is prohibited in the practice area except as part of an approved maintenance plan.

C. The duff layer, made up of fallen leaves and/or pine needles, must be left intact. This layer covers the soil, thereby conserving moisture and preventing erosion.

D. State listed noxious weeds shall be controlled. Control of invasive plants is encouraged.

E. Herbicides are prohibited except as required for control of invasive plants and as approved by the appropriate administering agency. Avoid damage to shoreland habitat vegetation from herbicide application to nearby areas.

F. Fertilizers are prohibited after the establishment year, except as approved by appropriate administering agency.

G. Except for an access corridor, areas waterward of the practice shall be undisturbed.

H. Boats, docks and other equipment shall be excluded from the practice area to prevent soil compaction and damage to practice vegetation.

I. Vehicles shall be excluded except as necessary for establishment and maintenance activities.

J. Activities are prohibited in the practice area which damage or destroy the vegetation, such as piles of leaves, boards, etc.

IX. References

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Iowa State University, University Extension. 1996. *Stewards of Our Streams, Buffer Strip Design, Establishment, and Maintenance*. Pm-1626b.

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National Council for Air and Stream Improvement. 2000. *Riparian Vegetation Effectiveness*. Technical Bulletin No. 799.

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United States Department of Agriculture – Natural Resources Conservation Service, *Wisconsin Field Office Technical Guide, Section IV* (Technical Standards).

Wisconsin Department of Natural Resources. 1995. *Wisconsin's Forestry Best Management Practices for Water Quality*. Bureau of Forestry, Pub-FR-093 95.

UW Madison herbarium website (good source of county species lists):_[http://wiscinfo.doit.wisc.edu/herbarium/Countysearch.html].

Wisconsin Manual of Control Recommendations for Ecologically Invasive Plants: [http://www.dnr.state.wi.us/org/land/er/invasive/manual_toc.htm].

X. Definitions

Control (V.A.4.) – To destroy the above-ground portion of a weed in a manner and at the proper time to prevent the development and distribution of viable seeds or other propagules and their spread from one area to another. For species that reproduce vegetatively, control includes the use of methods which help contain or reduce the vegetative spread of the weed.

Diverse (V.A.1.) – For the purposes of this standard, a mix of plants is considered diverse when it meets the minimum number of species as specified in Wisconsin Biology Technical Note 1: Shoreland Habitat, Table 1.

Invasive plants (V. A. 3.) – Having the ability to significantly displace desirable vegetation in landscapes or to reduce yield of growing crops. The Department of Natural Resources Bureau of Endangered Resources maintains a list of invasive plants. For more guidance refer to the following Web site: [http://www.dnr.state.wi.us/org/land/er/invasive/index.htm].

Littoral zone (II.B.) – The near shore area of a lake or wetland where water is shallow enough to support the growth of rooted aquatic vegetation.

Noxious weed (V. A. 4.) – "Noxious weed" means Canada thistle, leafy spurge and field bindweed (creeping jenny) and any other weed the governing body of any municipality or the county board of any county by ordinance or resolution declares to be noxious within its respective boundaries (ref. WI Statute, Chapter 66, part 66.0404). For more information refer to the following Web site: [http://www.legis.state.wi.us./rsb/stats.html].

Ordinary high water mark (V. B. 1.) – The ordinary high water mark (OHWM) is the point on the bank or shore where the water is present often enough so that the lake or streambed begins to look different from the upland. Specifically, the OHWM is the point on the bank or shore up to which the water, by its presence, wave action, or flow, leaves a distinct mark on the shore or bank. The mark may be indicated by erosion, destruction of or change in vegetation, or other easily recognizable characteristics.

The OHWM can be located through on-site studies of physical and biological conditions at the shoreline. The principal indicator is the change from water plants to land plants. In the area where the plants change, the investigator may also use indicators such as change in soil type, ridges, or other erosion marks or water stains on rocks, soils, trees, or structures. If none of these indicators are available in the immediate location, the elevation of the OHWM may be found at another spot and transferred to that site in question.

D

APPENDIX D

Working Comments on Draft Documents

1. **Normal Typos / Corrections / Grammar**

Person	Page #	Paragraph / Location	Comment / Change
RJ	7	4	Should change to "The owners of the 76 parcels on VVL"
RJ	10	2	Rewrite for clarity - The lesser of 30% or what ? - - - NR115.05(1)(c)2.b. - - The county may allow removal of trees and shrubs in the vegetative buffer zone to create access and viewing corridors, provided that the combined width of all access and viewing corridors on a riparian lot or parcel may not exceed the lesser of 30 percent of the shoreline frontage or 200 feet.
RJ	11	1	Waterskiing / a or a ?
MCz	11	1	Should we add section on PI Chapter 500 to citations or ref in Appendix
MCz	12	Photo 3.1-1	Citation Needed ?
MCz	13	Photo 3.1-2	Citation Needed ?
TO	13	3rd para	“pressured” should be “pressures”
MCz	20	2nd Para - Boestroo (sp)	Change to Bonestroo
MCz	23	Box plot	Standalone box or text inclusion - no graphic example - ref Pg 30 ?
MCz	27	Fig 3.4-6 2nd & 3rd Para	Change to Fig 3.2-6
MCz	27	Fig 3.4-7	Change to Fig 3.2-7
RJ	32	2	After as illustrated, remove "in"
RJ	35	5	An not and
RJ	35	6	Add effects on the

2. Large Scale Areas for Questions / Discussion

Person	Page #	Paragraph / Location	Comment / Change
TO	5	Line 4	line 4 says max depth of 20' – I know it is at least 23' along the east shoreline by the big rock. (Eddie - how do we avoid anecdotal commentary)
TO	5	Para 2	To better flesh out history - - the Lake Association is the current one; there was a prior one formed in the 1960's which purchased a weed harvester and used it; they also received a permit to do chemical treatment which was done on at least one occasion (two applications – which, according to legend, "killed every weed in the lake")
TO	5	Para 4	ADD - - in addition to hindering navigation, the excessive weeds limit fishing and swimming opportunities
MCz	7	Stakeholder Survey Section	Should Survey data spreadsheet (no names) and form letter be included in Appendices as spreadsheet (Parcel #) and letter ?
MCz	7	Stakeholder Survey Section	Should we cite education efforts by Board on Website - survey results and other information packets sent ? **Outline VVLA website contents ? VVLA Web 2.a.i.1-3 and VVLA Web 2.e.**
MCz	7	Stakeholder Survey Section	Should we cite web based 2008 opinion survey results and 2012 **- Outline VVLA Website contents ? VVLA Web 2.a.x.**
TO	10	Vegetation Removal	discusses viewing corridors – it says "… viewing corridors may not exceed the lesser of 30% of the shoreline frontage." – The lesser of 30% or what - - - **NR115.05(1)(c)2.b. as above (clarify**)
MCz	11	Wisconsin ACT 31	Should we cite the local PI ordinances - 200ft no wake etc - - **As above PI Chapter 500 to citations or ref in Appendix**
TO	11	Act 31	– correct statement with the exception that PI has a 200' no wake requirement (query – **should our navigation lanes be designed so that they are more than 200' from shore in light of this ?**
MCz	13	Last Paragraph	Citation to back statement - "in recent years --- increased property values....." **Realtor Assoc data citation ?**
MCz	17	Shore land Category Assessment	Figure 3.1-1 - - Is this a published standard - state / national? Reference ?
MCz	18	Shore land Category Assessment	**Should there be a short discussion to "bridge" the differences of the 2008 Bonestroo assessment vs Onterra to avoid confusion with folks who read prior reports ?**
RJ	18	2nd Para	**Can there be a stronger (+) conclusion about the % of VV shoreline in the yellow and green categories ?**
RJ	19	2nd Para	**Is there a conclusion about the 70:1 ratio and VV conditions ?**

Person	Page #	Paragraph / Location	Comment / Change
RJ	25	Fig 3.2-4	**Lake was deeper in 2013 than 2008 - - a factor worth mentioning in addition to diminishing clarity?**
TO	25		has our secchi reading actually shown less water clarity – I am a bit surprised by this; the discussion on declining water clarity seems to be something we should think about
TO	27		the report indicates that coontail has declined; my on the water observation of the deeper portions of the lake from Olson's Point to a point north of Novak's Island would imply a substantial increase in coontail in that area - **Adding anecdotal comments** ?
TO	30		There is a statement that says – "This analysis indicates that Van Vliet Lake's aquatic plant community is of higher quality than the majority of the lakes in the in the NLFL Ecoregion and in Wisconsin." - **what is the implication of this – and is it a positive statement about our area – or is the region so big that it is meaningless**
RJ	31	Map 4	Why are all plant communities along shoreline ? ie lane between Novak Island and west shore has no communities but it is full of plants ? **Is this map specific for only 2 types of plants, floating leaf and emergent, and does it include all the "stuff" we see floating around and off Novak Island ? Map 6 gives a good snapshot of real world.**
MCz	32	""	Should we cite web based 2008 opinion survey results and 2012 - see pg 7 **Outline VVLA Website contents ?**
MCz	32	35% Bench mark	Should Fig 3.2-5 have 35% benchmark dotted line ?
TO	32		it appears that they have concluded that by DNR's (??) own nuisance level benchmark's, that Van Vliet Lake exceeds the benchmark for nuisance level plants- **Who are Alison, Mikulyuk** ?
MCz	33	3rd Para	Add **Increasing**
MCz	34		**The review group feels we need to remove these $ estimates and redo this section.** We feel they are understated based on our communications with Schmidt and would set a dangerously low $ figure in the readers mind. At best, we might give a range, set the concept of minimum $ charge for small jobs and include Schmidts initial concept estimate and letter in Appendix ?

Person	Page #	Paragraph / Location	Comment / Change
Mcz	34	3rd Para	I'd like to see a discussion about the use of alternative smaller scale units, like - - - Silver Mist to access these low water areas
TO	34		I would like to see several alternative harvest plans that could be approved by DNR; if the cost of doing a plan is such that the hours of time harvesting is small but the cost is fixed, I would like to see options to create greater mechanical harvesting (See follow on Maps)
TO	34		it appears that we may not be able to find someone who is willing to harvest for us given the small amount to be harvested – what then?
TO	34		Would DNR staff (e.g.; Gauthier) agree with the statement that –"… if properly done, mechanical harvesting would not result in the removal of native aquatic plants, simply cutting the top few feet of biomass off existing plants." If so, this seems to negate an argument that harvesting necessarily will make it easier for AIS to come in.
MCz	35	Addition	Add any commentary on fishery impact based on known studies.
TO	35		Would DNR staff also agree that the amount of plant material removed would have a negligible impact on water quality?
TO	35		It is interesting that the plant fragments don't seem to be an issue in creating new colonies of plants. The colonies are already developed where they are going to be as I read the report.
MCz	XXX-Appendix	Appendix-New List	Onterra - provide list / contact info of Harvestors ? / with insight ??
MCz	XXX Appendix	Map 7	3 Blow-up Views Possible ? - Once plan / lanes established. Add spokes • Birch Bay • Novak Island - Lemburg Bay • Montgomery Bay
TO	XXX		My thoughts – it is encouraging that mechanical harvesting doesn't seem to be a concern for harming the lake going forward. I think the big question will become whether or not there is enough benefit to be gained by doing it. Once again, this will probably boil down to the property owners with the greatest impact being willing to fund the matter. That is why we need various harvesting plans with alternative costs to plan going forward – at least in my mind.
TO			Tom to discuss value of Steve Peterson with Eddie Heath

3. ADDITIONAL INFORMATION

a) Town of Presque Isle Ordinances - Chapter 500. Watercraft, Snowmobiles, and Other Recreational Vehicles. Subchapter 501. Motorboats. - Include as separate PDF

b) Copy of SURVEY Sheet Data - No Names , just Parcel #'s and Table - Include as separate PDF

c) Blowups of Individual Bays with Suggested Cutting Plans for Discussion - Include as separate PDF

i) The planning committee does recognize and understand the work done by Onterra.

ii) The planning committee also recognizes the "small size" of the harvesting job may be problematic in finding a harvesting contractor.

iii) The planning committee decided to develop a DRAFT plan, for discussion with Onterra, that works towards several goals:

(1) Develop the largest plan possible, recognizing the DNR will negotiate downward.
(2) Maximize the cutting lanes
(3) Uses a spoke/hub concept to access most piers and allow for higher buy-in from lake residents
(4) The plan will require BOTH:
    (a) a large contactor unit that can manage the main cutting lanes
    (b) ii) a small unit (like Silver Mist) that can develop access lanes in shallower areas.

iv) The planning committee expects to work with Onterra, to "whittle the plan down " with facts and comments either in a phone call or by documents.

v) The planning committee also recognizes the need to interface with DNR forestry mgmt to assess their willingness to allow cutting in the north end of VVL.

d) Outline VVLA Web Page (APPENDIX A ?? with refs from document or screenshots to Appendix)

1. General

2. Project
    - **a. Aquatic Plant Mgmt Plan**
        - **i. 2012 Aquatic Plants Committee**
            1. **Request for Information - July, 2012**
            2. **Review of Intial Survey Results - August, 2012**
            3. **Updated survey results - October, 2012**
            4. **Information update - October, 2012**
            5. **Onterra proposal - December, 2012**
            6. **Onterra grant application - February,2013**
        - ii. 2012 Approved APMP
        - iii. APMP Progress
        - iv. 2011 DNR Visit Notes
        - v. Aquatic Plants Factsheet
        - vi. Aquatic Plant Management Program
        - vii. 2009 Declining Lakes Conference
        - viii. 2009 APMP Update
        - ix. 2008 DNR Visit Report
        - x. 2008 Opinion Poll Results
        - xi. Lake Level Concerns
        - xii. 2007 Lake Level Letter
    - b. Clean Boats Clean Waters
    - c. Lake Management Plan
        - i. Introduction
        - ii. Complete 2005 Plan
        - iii. June, 2005 Plan Report Opening
        - iv. June, 2005 Report Summary
        - v. June, 2005 Report Body
        - vi. June, 2005 Plan Conclusion
        - vii. 2004 Message
        - viii. June 5, 2004 meeting
        - ix. 2004 Proposal
        - x. 2004 Monitoring Report
    - d. Septic Maintenance
    - e. Van Vliet Hemlocks - 10 years ago when the lake association got interested in Van Vliet Hemlocks, one of the purposes was to protect the shoreline of Van Vliet and Averill from any potential degradation resulting from commercial activities there which might be required by the BCPL's charge to make money. So, sale of land for development, sales of timber rights, etc. that would negatively impact the watershed were both parts of the reason for involvement.
    - f. Zoning

3. Reports
    - a. Newsletters
    - b. Annual Meeting Reports
    - c. Board Meeting Reports

4. Website
    - a. Recent Updates
    - b. Contact Us

Tom Olson (VVLA member) – Comments Received June 2014

Comments by Eddie Heath

comment:
The report is very comprehensive. It creates a minimal plan for plant harvesting that will do no harm to the lake(assuming that the harvesting is done correctly). I think that we need to try it and see what good it does. We need an accurate budget and plan for the timing of the cut - probably in mid to late July.
The finalized Aquatic Plant Management Plan Update – Mechanical Harvesting Feasibility Study and Planning Project will include the information the VVLA will need to determine if they would like to move forward with the mechanical harvesting plan that is outlined. This plan can be taken to perspective firms to bid on the completion of the activities.
Determination of proper timing will vary on the annual conditions, the timing of the permit process, and the schedule of the contracted mechanical harvesting firm.

Paul Specht (VVLA member) Feedback on Draft Van Vliet Lake, "Aquatic Plant Management Plan Update" dated April, 2014 – Comments Received May 5, 2014

Comments by Eddie Heath

Comments on document and its content in no particular order of importance—

COVER PAGE

Page 1—The "Aquatic Plant Management In Wisconsin" guide, prepared by the UW Extension and distributed by the State of Wisconsin DNR to assist lake groups in the development of aquatic plant management plans, clearly states on page 15 that the makeup of this committee should include individuals from all sides of the issue. One of my concerns all along is that the committee put together to address this issue was not balanced. All of the planning committee members are riparian owners that voted in favor of harvesting plants in the initial survey. The UW Extension guide also suggests that "stakeholders" to be involved in the planning process include a much broader audience than just riparian owners in favor of harvesting plants. Relevant excerpt from that document follows:

"The Planning Committee *The size of your lake will help determine how you go about forming an advisory planning committee which should contain a cross-section of your lake neighborhood with folks from all sides of the issue: property owners, passive and active lake users, businesses, clubs, agencies and local government."*

I believe the report should state that the makeup of the Van Vliet Planning Committee lacked balance as it relates to the issue of plant harvesting on Van Vliet Lake. It should further state that the breath of stakeholders included in the process was limited to only riparian owners in conflict with the definition of, and recommendations for, stakeholders to be included in the process as set forth in the Aquatic Plant Management in Wisconsin Guide.
As an elected body of the Van Vliet Lake Association (VVLA), the sponsor of this project, the VVLA Board of Directors put together the Planning Committee. A small paragraph denoting this fact is included

towards the beginning of Section 2.0, along with the fact that some folks contained criticism to the composition of the committee.

1.0 INTRODUCTION—

☐**Page 5**—The report introduces the fact that Van Vliet Lake is the headwaters of the Presque Isle River and feeds into Averill and Presque Isle Lakes but does not address any potential impact, or lack thereof, of harvesting downstream or the need to include property owners and other chain users as stakeholders. This section also talks about the Van Vliet Lake Association (VVLA) as an organization representing the lake and its concerns. It should be noted in the report that the VVLA membership today and historically has represented considerably less that 50% 0f the riparian owners on the lake. In addition, I do not believe that the Planning Committee has any members outside the membership ranks of the VVLA.

Statements of opinion listed within this comment; no action necessary.

☐**Page 6**—The report makes the statement that VVL stakeholders have increasingly become concerned with excessive aquatic plant growth in the lake. First of all, only a contingent of VVL stakeholders share this opinion. Secondly, later in the report it is stated that aquatic plant levels have actually come down since 2008. And finally, many of this contingent of VVL stakeholders purchased their lake front in recent years, relatively speaking, and were well aware, or should have been aware, of the plant levels in Van Vliet Lake yet they opted to purchase anyway. Later on page 6 the report indicates that, "stakeholder participation was also a key element in the development of this plan". Again, this was unbalanced stakeholder participation. I would ask that any report redraft include some of this additional information.

Statements of opinion listed within this comment. Portions of these sections have been modified for clarity.

2.0 STAKEHOLDER PARTICIPATION

☐**Page 7—Opening paragraph**—Again, in my opinion, stakeholder participation at the planning level has been limited and as a result educational efforts to-date have been bias toward harvesting plants versus an objective view of the situation.

A small paragraph denoting this fact is included towards the beginning of Section 2.0, along with the fact that some folks contained criticism to the composition of the committee.

☐**Page 7—second paragraph**—This paragraph makes it sound as if there was a big open meeting to discuss this issue. In reality, it was the planning committee meeting with Onterra and a few other non-riparian—non-stakeholder participants. Also, the paragraph implies that the original survey can be found in the Appendices, however, I could not locate it. In my opinion, this paragraph should be adjusted.

This paragraph has been edited for clarity. The stakeholder survey completed as a part of this project is included as Appendix E.

☐**Page 7—Third paragraph—**Were there any alternative aquatic plant management strategies discussed at this meeting?—The analysis of such alternatives was a listed goal of this project.

Various discussions of alternative analysis and causation are discussed towards the end of Section 3.2.

☐**Page 7--Stakeholder Referendum Question**—I believe the first paragraph contains a factual error. The report states that 76% of the surveys were returned. I was still involved at that time and only 70% of the surveys were returned. The number 76 represents the total number of parcels surveyed.

Also, I would ask that you take another look at the original survey packet. I believe that packet was quite bias toward harvesting with limited, if any, discussion of potential risks, the ongoing nature of plant harvesting and its long term costs. In my opinion, this paragraph needs to be expanded to accurately portray the limited validity of the original survey results.
Thanks for your clarification on response rate. During February 2014, Onterra forwarded the referendum question packet to the WDNR's social survey expert for comment and advice on how to properly portray the results. The expert indicated:

> *If you deconstruct the question, its focus is on the DEVELOPMENT OF A PLAN. Developing a plan is not the same as implementing a plan. Citizens may voice little objection to an organized group developing a plan, but their support or opposition to IMPLEMENTING the plan depends on what the plan is! It's a subtle difference but you cannot say with certainty that respondent interpretation of the question was exactly the same as the authors' intent.*

For this reason, the VVLA and WDNR deemed it appropriate to develop a plan and then have property owners conduct a survey that evaluated their support of the plan. These concepts have been elaborated upon for clarity in the Draft 2 document.

☐**Page 8**--I believe one more pie chart needs to be added on this page—one that depicts the results from a total riparian owner perspective. Of the 76 riparian owners surveyed, only 34(44.7%) indicated a desire to see plants harvested. All reference to either the referendum question or the 2014 stakeholder survey should use an approximation of the term stakeholder respondents, as these were the folks that voted on the measure. And 60% of the respondents indicated they were in favor of the VVL working towards the development of a mechanical harvest plan. The math above assumes that folks that were given a stakeholder survey but did not respond were opposed to harvesting – that is imprudent analysis of stakeholder survey data. It is not valid practice to include a "non-response" or a "non-sent in" count as a percentage of the total. It is not possible to infer their thoughts, in favor/against/neutral, when no response is given.

And I believe, had the original survey included a proper balance of information, this number would have been even smaller. This change is important and will change the report several times going forward when it refers to, "the majority of riparian owners" in error. I will do my best to point each of these occurrences out as I go forward with my review.
Integration of the 2014 stakeholder survey data will also help shed light on the favor/opposition to the mechanical harvesting plan that has been developed.

3.0 RESULTS AND DISCUSSION

☐**Page 11--**A couple of questions. Don't some of the plants earmarked for harvesting in this report currently help protect shorelines from wave action? The shoreland condition section discusses the immediate shoreline zone, which is "approximately from the water's edge to at least 35 feet shoreland." Some of the proposed harvesting lanes appear to be very close to shore. Also, page 11 talks about the importance of shoreline preservation for green frogs. Aren't plant structures within the water equally as important and an argument for leaving them alone?
Much emphasis within the Implementation Plan Section (5.0) underscores the importance of having quality shoreline habitat and the limitations of obtaining a mechanical harvesting permit if shoreline conditions aren't in the process of being upgraded to meet best management practices.

☐**Page 14—**The section labeled "Cost" on this page does not address the importance of water vegetation as an additional buffer to reduce erosion. Again, in my opinion, we are considering allowing

the harvesting of some of these buffer zone plants given the proximity to the shoreline of some of the proposed channels. Page 15 actually lists an "aquatic zone" as a component of shoreline restoration. Mechanical harvesting would not occur in near shore areas that are less than 3 feet in water depth. These areas are outlined as the riparian use corridors (spokes) that will be maintained by manual removal by property owners (does not require a permit).

☐**Page 25 and 26—**First and second paragraphs make it pretty clear that based on test data total aquatic vegetation is less in 2013 versus 2008. First of all, I disagree with the report's assessment that vegetation as "slightly" lower in that it was down by 10%--that is a big number. Secondly, the section goes on to report that 2013 water levels were higher than recent historical levels and much higher than levels in 2012 when the effort to gain permission to harvest plants began in earnest. I would go as far as to suggest that, given the multi-year drought ending in 2013, it could be argued that the plant levels in 2012, that may have been at extremely high from an historic perspective, came down naturally due to the increase in water level(sunlight had further to go). Doesn't this suggest that our plant situation could be cyclical following the cyclical water levels and given the current decrease in plant levels more time may be needed to determine if navigational issues in "practical" and "potential" areas for harvesting continue to exist going forward with higher water levels?
Within the Implementation Plan Section (5.0), it is stated that a mechanical harvesting permit would not be issued by the WDNR if navigational impediment does not exist. Prior to any permit issuance, the WDNR reserves the ability to conduct a site visit to verify conditions of the permit.

☐**Page 26—**The "practical" and "potential" areas identified in the report for harvesting were determined based on water levels that were relativity high given recent history. What process will be in place to adjust these areas of harvest if the water levels decline? Lower water levels would suggest much of these areas could become "impractical" for harvesting given how you set each category in this report.
If water levels are too low or navigation impediment does not exist, the WDNR would not issue a permit. Prior to any permit issuance, the WDNR reserves the ability to conduct a site visit to verify conditions of the permit.

☐**Page 26—**The last paragraph on the page discusses Fern Pondweed and its role in preventing the resuspension of bottom sediments. Later in the report it is discussed that Fern Pondweed is easily uprooted, and when uprooted, releases sediments into the water column. This suspension, per the report, would put extra nutrients in the water, effect water clarity and support the potential for algae blooms. This is not a factual interpretation of the contents of the document, which is improper inference by the commenter. Why should we think a harvester could go in to areas with high levels of soft sediment and cut these plants without tearing them from the sediment? Also, if the water level decreases, so would the level above the bottom these plants would be cut. Won't this just increase the potential for them being torn up by their roots releasing more sediment into the water short term and exposing this damaged lake bottom to even more sediment release over time because the plants that held it in place are now gone? Also, the report states that if a portion of the bottom is exposed due to the removal of plants it becomes more susceptible to invasion by non-native AIS. I believe these risks should be included in any communications to stakeholders before, or as a part of, the next survey. Our lake has a great deal of transient boat traffic making AIS introduction a true possibility.
The discussions discussed above are included within Group 1 of the frequently asked questions and concerns at the end of the Aquatic Plant Section (3.0). 88% of stakeholder respondents indicated that they read the draft Van Vliet Document (#14).

☐**Page 28—**the fourth paragraph down discusses the 100% decline of the Illinois pondweed and the reductions in two other species that require higher water clarity to survive. How would harvesting at any level not make this decline worse especially if plants are torn from the bottom due to the nature of their structure? The report clearly states that plant diversity is important to a lake's health. This should be included as a risk in any communications to stakeholders before, or as part of, the next survey.
The discussions discussed above are included within Group 1 of the frequently asked questions and concerns at the end of the Aquatic Plant Section (3.0).

☐**Page 28—**The last paragraph on this page sounds like a darn good argument for not harvesting at any level as it will release additional nutrients into the water affecting water clarity.
The discussions discussed above are included within Group 1 of the frequently asked questions and concerns at the end of the Aquatic Plant Section (3.0).

☐**Page 31—**The text on this page talks again about the benefits of diverse aquatic plant communities as they relate to AIS. It also states that Van Vliet littoral zone is over 90% soft sediment—a factor that will result in extra nutrients being released due to harvesting--yet another factor that increases the risk of harvesting.
The document does not indicate what the comment above suggests, which is improper inference by the commenter.

☐**Page 32—**The table on this page states that 23 acres of the lake contains plant communities that "provide valuable fish and wildlife habitat important to the ecosystem of the lake". Yet the report appears to be suggesting that we harvest 6 acres, or stated differently, 25%, of this habitat. This seems like a pretty high price to pay to clear out navigation lanes for the benefit of a relative a handful of riparian owners.
The document does not indicate what the comment above suggests. None of the 22.9 acres of emergent and floating-leaf aquatic plant communities are within the draft mechanical harvesting areas. Care should be taken to avoid areas of emergent/floating-leaf vegetation, if at all possible, when mechanically harvesting.

☐**Page 33—**The first paragraph starts with the statement, "For many years, Van Vliet Stakeholders have had concerns…" This statement should be changed in that only some of the stakeholders have this concern—many of us do not have this concern, actually feel the risks associated with harvesting are too high and believe there are other methods including shoreline restoration and septic review and repair, among others, that could provide the same results in a more eco-friendly manner.
It is a factual statement that VV Lake Stakeholders have had concerns regarding excessive levels of plant growth, as evident within discussion of all past management plans. This statement does not indicate that all or even a majority have these concerns, simply that they exist.

☐**Page 33—**The report mentions that the WDNR Science Services standard for the determination of nuisance levels of plants has gone out of favor yet it is used in the report as the only benchmark for determining nuisance levels in Van Vliet Lake. In my opinion the use of this benchmark in this report is inappropriate.
Statements of opinion listed within this comment; no action on integration made.

☐**Page 34—**The third paragraph seems in conflict with another statement in the report. Aquatic plants are down 10% (a significant amount) when compared to 2013. In addition, based on the analysis presented in the report, higher water levels and continued loss of clarity could reduce the level of

aquatic plants even further. The document does not indicate what the comment above suggests, that is improper inference by the commenter. Also, and once again, not all VVL stakeholders agree that excessive plant growth is an annual occurrence and always poses some level of navigational impediment. In this paragraph the report seems to be limiting the definition of stakeholder in error to only members of the planning committee and the minority subset of riparian owners in favor of harvesting.
This paragraph has been revised to reflect the commenter's thoughts.

☐**Page 34—**The fourth paragraph states that "soft sediments do not allow plants to become strongly anchored, and they are easily uprooted via wind and water action…". Even if these plants are not uprooted as the result of harvesting I find it hard to believe they would have any luck staying rooted given the shallow nature of the water and the increased water action caused by increased boating activity in the harvested lanes. In my opinion, this risk is key as it opens VVL to the introduction of AIS by the many visitor fisherman and boaters to the lake.
Statements of opinion listed within this comment; no action on integration made. An alternative opinion could be stated that by keeping riparian use lanes open and focusing the traffic within designated lanes, a smaller footprint of disturbance would be made in these areas and would offer a more focused area for surveying potential AIS.

☐**Page 35—**First full paragraph—Sounds as if the navigation lanes considered for harvesting already exist begging the question why additional clearing is necessary. Also, the locations of most lanes identified for potential harvesting would suggest, given the limited potential usage, that a 30 foot wide cut could be excessive. A 30-foot lane was devised to extend the amount of time between cuttings as native plants grow up and encroach into the harvesting lane. Some other systems that mechanically harvest similar lanes choose to use a 20-foot lane, but harvest on a more frequent basis. The VVLA planning committee thought that limiting the amount of times a harvester company would have to visit the lake would help keep costs down as well as potential exposure to AIS The paragraph also discusses water levels necessary for harvesting. As I mentioned earlier, what happens to the areas permitted for harvesting in low water level years?
If water levels are too low or navigation impediment does not exist, the WDNR would not issue a permit. Prior to any permit issuance, the WDNR reserves the ability to conduct a site visit to verify conditions of the permit.

☐**Page 35—**Second full paragraph talks about the "spokes" approach to the harvesting plan yet Map 8 seems to be in conflict with the spoke approach by allowing harvesting directly to, and or from, specific pier locations.
These spokes would be maintained by the property owner utilizing non-mechanical methods. A property owner does not need a permit to conduct these actions.

☐**Page 35—**Last paragraph discusses the cost of one harvesting event. It is my understanding that harvesting is like cutting a lawn making it necessary more than once a year and for years to come to keep the lanes open. I believe this section needs to provide a more realistic cost estimate of harvesting per year and over the next 3 to 5 years with a clear statement that harvesting is not a one-time event. This information also needs to be included as part of any future survey of stakeholders.
While included within the Implementation Plan Section (5.0), a statement regarding the potential need to harvest more than once per year is included here as well for clarity.

☐**Page 35—**Last paragraph. The report makes the statement that the areas proposed to be harvested are roughly the same as the plan shared in the original plan. Looking at the two plans side-by-side I find this hard to believe and would like to hear the logic behind the statement as presented. Also, I am not sure the statement has any relevance.
If anything, the original plan is more acres than the draft plan and therefore the original price quote is higher than actual.

☐**Page 36—**First paragraph opening sentence is factually wrong. Once again, only 44% of the property owners supported the development of a mechanical harvesting plan. And to make matters worse is the fact the information provided with the initial survey was, in my opinion, bias toward harvesting and missing key risk factors that should have been included in the survey materials. Yes, 64% of the property owners returning the survey said yes, but that is not what the report is saying here. This section of the report needs to be corrected.
Respectfully disagree with comments above. This section has been updated to reflect the results of the 2014 stakeholder survey.

☐**Page 36—**Second paragraph. The caveat "if done properly" is included in the discussion about harvesting not causing AIS directly. Again, the fact that all the plants to be cut are in shallow water with soft sediment will increase the possibility of the plants being pulled out versus cut off. This would expose the bottom to AIS carried in by transient boaters. Also, if plants are ripped out versus cut, given the sediment levels in the areas to be harvested, I have to believe that the DNR, Onterra and at least some of the planning committee members would agree the re-suspension of sediment in the water could be significant and have a lasting impact on water clarity. This information needs to be shared with stakeholders before, and in, the next survey.
The discussions discussed above are included within Group 1 of the frequently asked questions and concerns at the end of the Aquatic Plant Section (3.0).

☐**Page 37—**First full paragraph—the statement that "Steve Gilbert, informally suggested…" seems at tad vague and a bit weak. I am curious if the stakeholders downstream that have not been included in this process would agree considering their lack of weeds (in Presque Isle Lake) and the fact that many species of fish in the chain most likely use Van Vliet and its habitat for reproduction activity.
Statements of opinion listed within this comment; no action on integration made. All stakeholders are given a chance to review multiple drafts of the plan. Also, the WDNR fisheries manager will review a mechanical harvesting permit when submitted to the WDNR.

☐**Page 37—**fourth full paragraph—How and when the WDNR conducts its reviews of shoreline conditions is critical to this process. Properties considered to be candidates for shoreline restoration need to be identified and restoration work done (or at least a plan in place and work begun) before harvesting should be allowed. I also believe once the restoration in completed we need to give the lake some time to heal before we make a final determination if harvesting should be allowed.
Statements of opinion listed within this comment; no action on integration made.

4.0 SUMMARY AND CONCLUSIONS

☐**Page 39—**First paragraph—For the first time the report suggests that navigational impediments appear on VVL during the late summer. My question is, how major are the navigational issues if we are only looking at late summer and fall? Most boating of a non-fishing nature, other that back water kayaking, is over by then. Do we really need to be harvesting to facilitate just a few weeks of use at the end of the season? Most folks remove their big boats shortly after Labor day and I would suggest based

on personal experience there are very few navigational issues when in a small fishing boat in late fall. In fact, plants begin to die back shortly after Labor Day. This statement in the report should at least suggest that harvesting no plants is a valid option to be considered.
Statements of opinion listed within this comment; no action on integration made. The plan outlines a feasible mechanical harvesting plan, but does not comment on whether it is worth the financial resources to carry out the plan.

☐**Page 39—**Second paragraph—Report talks about common use lanes yet several places in the harvesting plan these lanes appear to be property specific lanes. You also note shallow water as a challenge for implementing a harvesting plan. I feel you need to mention that history suggests the waters under consideration for harvesting could and will get shallower (and deeper) on a regular basis.
If water levels are too low or navigation impediment does not exist, the WDNR would not issue a permit. Prior to any permit issuance, the WDNR reserves the ability to conduct a site visit to verify conditions of the permit.

☐**Page 39—**Third paragraph—The report talks about educating the stakeholders on risks—to-date this has not been adequately done. Educating stakeholders needs to be done and the materials provided need to include the ongoing costs of harvesting over the long term and the cost and potential loss of property values if AIS takes hold as an indirect result of harvesting before any future survey should be considered valid.
This will be an implementation challenge to the VVLA moving forward.

☐**Page 39—**Last paragraph suggests that more work needs to be done to determine root causes before we begin harvesting. One fear should be that once the harvesting begins no one will look back to see if there truly were, or continue to be, other causes. I believe harvesting now is putting the cart before the horse.
Statements of opinion listed within this comment; no action on integration made.

5.0 IMPLEMENMTATION PLAN
☐**Page 40—**Second Paragraph—Talks about a living document that will be under constant review. Does that review include the review of the WDNR?
Comment not understood.

☐**Page 40—**Description section—the phase “riparian user conflicts” should be changed to “conflicts of some riparian users”. There is also a fact error in this section. A majority of the property owners did not support the development of a plan. Only 44% did at the point of the first survey—a survey bias toward harvesting and missing key information for consideration about the risks and their related costs and the true costs of harvesting. In my opinion, had this information been included the number of owners in favor of developing a plan would have been lower.
The statement is correctly written, as it indicates, “the response data of a stakeholder referendum.” The second part of the comment is a statement of opinion; no action on integration made.

☐**Page 41—**First full paragraph—again, some lanes appear to be very owner specific versus common lanes
No riparian use lanes are intended to be owner-specific.

☐**Page 41—**Fourth full paragraph—When will this work begin? The plan said earlier that harvesting in front of properties requiring shoreline restoration would not be allowed unless efforts to restore are

underway. Will the harvester have to hip hop over these areas? How will that affect costs? When will this shoreline assessment be completed by the WDNR?
A shoreline assessment was conducted in 2013. The WDNR will conduct secondary site visits prior to issuance of a permit.

☐**Page 41—**Last paragraph—How will water levels be factored into this annual decision?
If water levels are too low or navigation impediment does not exist, the WDNR would not issue a permit. Prior to any permit issuance, the WDNR reserves the ability to conduct a site visit to verify conditions of the permit.

☐**Page 42—**Management Action Description—Text once again refers to "60% of Van Vliet lake stakeholders support VVLA in……" This wording needs to be changed. The use of "respondents" will be added to this paragraph. Integration of the 2014 stakeholder survey data will also help shed light on the favor/opposition to the mechanical harvesting plan that has been developed. The second paragraph of the description indicates that, "The VVLA will start making this document available for review by all interested parties". How will the pool of interested parties be determined? It needs to be broader than the limited definition of stakeholders used thus far during this process. A later paragraph on this page goes on to say that, "The VVLA **may** decide to disseminate….". If education is an important part of this process how can it be left up to VVLA to decide whether or not they are going to facilitate this education? What happens if they decide not to disseminate the information? Later in that same paragraph it is stated that, "Public education of the development process of the mechanical harvesting plan will be important to allow stakeholders to have an educated opinion about the benefits and risks of moving forward with this strategy" Again, who are the stakeholders in this statement? Who will develop the list of benefits and risks to be communicated? If it is the Planning Committee, right now the Committee makeup could suggest a more bias than neutral view toward harvesting will be communicated. Who will be making sure the risks are appropriately presented?
The VVLA will need stakeholder support in the form of monetary donations in order to conduct mechanical harvesting on their system. If they do not conduct the comments listed above, they will likely not be able to raise the funds necessary to conduct the actions. Or the VVLA membership will vote out the board members that failed to deliver on their responsibilities.

☐**Page 42—**Action steps—How will stakeholders beyond riparian owners be identified then notified of how and where to obtain a copy of the report and the process for providing comments?
The report has been available online.

☐**Page 43—**Management action section—How will the universe of stakeholders to participate in this survey be determined? Again, why is the definition of stakeholders limited to just riparian owners and VVLA members? Also, it is stated that the survey will be "developed by Onterra with input from the VVLA Board of Directors…" Will the VVLA have final say on content? How will Onterra ensure that the survey presents all sides of the issue of harvesting including all risks or potential risks and their costs? Right now the VVLA Board of Directors is primarily the same people who make up the Planning Committee, all of which lined up in favor of harvesting in the first survey. Will a funding plan be included in the survey? I suggest that this would be an imperative. How will stakeholder input for the survey content be handled? Will stakeholders be given the opportunity to vote on whether or not harvesting should actually happen as part of this survey?
The answers to these comments are included within the Stakeholder Participation Section (2.0) and are evident by the stakeholder survey data that has come out of the survey.

☐The Application Materials created, and dated February 1, 2013, for submission to the WDNR at the beginning of this process included as one of the stated Project Goals an, “Analysis of aquatic plant management alternatives”. I am not finding this analysis in the draft, or at least not in a codified presentation within the draft. I believe this analysis would be extremely important and would provide critically needed information to stakeholders before they make a decision on whether or not to implement a harvesting plan. I further believe that one alternative needs to be to not harvest plants in the short term until the impact of the extended ice cover this winter along with potential higher water levels for a second year in a row on plant levels and related navigation issues can be assessed.
Statements of opinion listed within this comment; no action on integration made.

☐The report appears to be clearly focused on the development of a harvesting plan. The application submitted to the WDNR stated, "Ultimately, this project has been designed to assess the aquatic plant communities in Van Vliet Lake and create a mechanical harvesting plan, **if appropriate**, which would aim to improve navigability and recreational opportunity on the lake." However, the report does not seem to address why harvesting is the "appropriate" approach as compared to other alternatives especially considering the limited amount of harvesting recommended.
Statements of opinion listed within this comment; no action on integration made. Numerous conversations with this commenter were conducted in response of this comment. The document is an Aquatic Plant Management Plan Update – Mechanical Harvesting Feasibility Study and Planning Project.

Gene Somers (Riparian) – Comments made April 11, 2014
Comments by Eddie Heath

There is enough book information in this report to flood the presque isle library. It’s the biggest overkill I ever saw regarding a report.

I went immediately to the back or the front of the report for a summary which would have saved me from endless reading of history and biological facts. Of course I didn’t find a summary. But as an interested reader this is what a summary page should have told me:

Date of Study?
Cost of Study?
Who did the study?
How many acres of weed cutting will be necessary?
How many man hours and machine hours should this cost?
What will be the cost of the weed machine either to purchase or to rent?
How often will this be done?
How are the cut weeds disposed of? And where?
Does majority vote rule? Or is the plan to just do those people who want it?
When will it start.?

All of the above are located somewhere in this huge pile of stuff called a report, now just get it on one page and simplify for all who arent going to spend 3 weeks reading all this stuff. Anyone who cant put a summary on a lengthy report like this obviously hasn’t had much experience in

presenting reports. Preliminary or not. Summary is of utmost importance on a report of this type. If you want comments, send it right back and tell them to summarize their findings before preliminary review is undertaken.

Statements of opinion regarding the design of the report are listed within these comments; no action on integration made.

I believe if the reader moved directly from the Introduction Section (1.0) to the Summary & Conclusion Section (4.0), they would receive the information in the manner they would like. An extra paragraph was placed at the end of the Introduction Section (1.0) that details the Table of Contents.

Executive Summaries are not often used in ecological-based documents, as non-linear issues cannot be represented or "solved" in bulleted points. Therefore it is not recommend the reader skip sections 2.0 and 3.0.

VVLA BOARD CORRECTIONS - - Van Vliet Lake Aquatic Plant Mgmt Plan Update - October 2014 DRAFT 2

Response Comments by Eddie Heath in red

1) Appendix D no longer contains spreadsheet of board - BOTH comments and corrections. Should the comments still be included to be consistent? Yes, added back in

2) Appendix D – Paul's first set of comments, 2nd page re: Page 7 Stakeholder Referendum Question - Paul indicated only 70% of the surveys were returned not 76%. Change made.

a) The initial survey results released in August 2012 were 70%. Yes
b) The updated results in October were a 76% return rate (58 / 76 = 76.3%) Yes
c) These results have been on the VVLA Website - Projects / Aquatic Plant Mgmt Plan - 2012 Aquatic Plants Committe. Added text
d) All the numbers quoted in the 2nd paragraph of this pg 7 section of the report derive from the Oct results. Yes

3) Can the comments from the stakeholder survey be included in Appendix D as well as leaving the table in Appendix E? (Unique comments on the draft document without repetition of same comment from owner of multiple parcels.) They seem a little bit buried in the back of Appendix E and it would make Appendix D more accurate as to the total comments received. Understood, but no change made. The stakeholder comments need to stay connected to the stakeholder survey.

4) Pg 6 - Bullet Pt #3 - 60% vs 70%.Change Made

5) P. 7. 1st Para - Stakeholder participation -The "planners" and "stakeholder" differentiation is a little hard to comprehend. Perhaps define in ( ) the various participants of each group – ie "planners " (Onterra, VVLA, the Aquatic Plant Committee, WDNR, & VVLA Planning Committee) "stakeholders" (property owners around Van Vliet Lake, members of the VVLA, members of Vilas County Land and Water Conservation, and WDNR)? Added text

6) Pg 7 - Para 3 - 76% vs. 70% changed to 76.

7) P. 7. 4th para. 3rd line - verb tense shifts in paragraph. This paragraph should probably be written in all past tense, since both the first and third paragraphs are done so. Change Made

8) Pg 8 - Planning Committee - ADD SENTENCE - The VVLA Planning Committee was put together by the VVLA Board of Directors, an elected body of the VVLA. “The committee members included property owners from both the east and west sides of the lake.” Added text

9) Pg 9 - Para 1 - was integrated vs were. Change Made

10) Pg 9 - Para 3 - Date = October 15, 2014 ? No action taken

11) P. 9. Under Wrap-up Mtg. " as well as presented the draft" or perhaps - - - During this meeting, Eddie Heath presented to the 19 members of the VVLA general membership, both the highlights of the scientific studies and the draft Implementation Plan. Change Made

12) P. 10. 1st sentence. - and "at what time of year it occurred". Change Made

13) Pg 10 - Last sentence, 1st par. ...summer progresses, "but also exist throughout the open water season (spring and summer, etc.). (This is what the previous summation has essentially said.) Change Made

14) Pg 10 - Para 2 below Fig 2.0-2 - ...believe aquatic plant control is needed (vs need) Change Made

15) Pg 11 - Para 1 ...believe aquatic plant control is needed (vs need) Change Made

16) Pg 11 - Figure 2.0-4 - Need a “question box “ added to graph for consistency? Added

17) Pg 11 - Para 3 - As shown in Figure 2.0-5 vs 2.0-4... Change Made

18) Pg 11 - Para 3 - were supportive vs where - - - Would it be possible to add a statement here indicating how much this quantitatively changed the overall support/nonsupport?) (Or another graph?) Understood, but no change made.

19) Pg 12 - Para 1- next by Cost (Figure 2.0-6 vs 2.0-5) Change Made

20) P. 13. Last sentence - How would that 75 percent expressing neutrality based on insufficient cutting affect the percentage who would be supportive if more were to be cut? That may be an interesting statistic. Inference may not have scientific validity and cause this (?) to be discarded. It would raise the support (completely or moderately) to 60% within region 1. As pointed out, this is not scientifically valid analysis and therefore not included within the document.

21) P. 23. – 3rd Para- "Littoral zone" is mentioned here, but not explained/defined until p. 25. It probably would be good to either explain it at least parenthetically here, reference the definition on p. 25, or say that his will be explained in depth later (no pun intended - well, maybe) or bring definition box forward. Change Made

22) P. 38. 1st Para - - Re: nuisance indicator percentage -I think it's wise to use that indicator as a reference point whether or not the standard is or isn't "currently out of favor." Text has been changed

23) P. 44. 1st par. - "document" - (no ing) Change Made

24) P44 1st Para - "clearly 'defined their existence and cited where the' navigational..." Change Made

25) P44 2nd Para (last sentence) - "...due to shallow... Change Made

26) P 44 3rd par - (3rd sentence) "...risks (no 'of') in order... Change Made

27) P 44 3rd par -(last sentence) - "...reduce 'possible' or "potential" negative consequences..." As stated now, the sentence implies that there WILL BE negative consequences, and that is not necessarily accurate. No Change Made

28) P 44 4th par. -- (1st sentence) ..."allows" solicitation Change Made

29) P 44 – 4th par. - (last sentence) - ...VVLA "has".... Change Made

30) P 44 – 5th par. - (1st sentence) - Following the "completion" of... (not completing)

31) P44 - 6th par. - (2nd sentence) - "...causes of (the 'nuisance level / excessive level,'etc.) of the native..." I assume this is what is meant, as it is referred to as such in the summary on the previous page - and more or less in the next sentence - and further in the report. Added some text

32) P. 46 2nd par. - (last sentence) - - - "the" level of volunteer... Change Made

33) Pg 46 - Time frame December ?? Added some text

34) P 46 3rd par. - (under the Mgt. Goals DESCRIPTION) - - - ...distribute "it" to the public... Change Made

35) Pg 47 – Management Action, Description, 1st para, last sentence -- remove of Change Made

36) P. 47 (Next to last par.) - - - Should the changes effected "when not having to pay" be reflected with a statement showing those percentages of additional support/nonsupport - or with a graph? It may increase understanding. STET

37) Pg 49 - Para 2- The VVLA understands No Change Made

Kevin Gauthier (WDNR Lakes Coordinator) – Comments made February 22, 2015

Response Comments by Eddie Heath in red
Response Comments by Emily Henrigillis in blue

I have reviewed the Van Vliet Lake Management Plan Update and offer these comments:

1. Overall, the plan was done well and we appreciate the high quality work. Appreciate the comments

2. Page 5. 1st Par. 1st Sent. Grammatical. Missing parentheses and period. Fixed
3. Page 5. 2nd Par. Our files are open for public review and we encourage these to be looked at to bring historical perspective to a management plan – attached are 1 harvesting and 3 herbicide permits issued on Van Vliet Lake. A sentence regarding these data are provided within the "Nuisance-Native Aquatic Plant Growth in Van Vliet Lake Subsection"
4. Page 6. Last Par. 3rd Sent. Spelling. outlies…outlines…Fixed
5. Page 7. Stakeholder Participation. 4th Par. 1st Sent. Wording. …development of mechanical…Fixed
6. Page 8. Planning Committee. This criticism seems valid if this is true. Was this addressed in any way during this project? Why were folks that may be opposed to harvesting not on the planning committee? Most planning committees are comprised of participants from all perspectives. Two additional sentences were added to this sub-section for additional clarity and documentation.
7. Page 10. 2nd Par. 2nd Sent. Wording. …is need on…Fixed
8. Page 11. 1st Par. 2nd Sent. Wording. …is need on…Fixed
9. Page 11. Last Par. Last Sent. Spelling. where…were…Fixed
10. Page 11. Last Par. Last Sent. Looks like the Figure referenced is Figure 2.0-5 not 2.0-4? Fixed
11. Page 12. 2nd Sent. Looks like the Figure referenced is Figure 2.0-6 not 2.0-5? Fixed
12. Page 22. 2nd Par. 3rd Sent. Remove …if at all possible. Removed
13. Page 30. 2nd Par. 3rd Sent. Wrong citation of Figure. Fixed
14. Page 31. 1st Par. Last Sent. Wrong citation of Figure – looks like all Figures in the text might be off in the remainder of the document? Went through and fixed all of section 3.2
15. Page 31. Figure 3.2-4. Is this info related back to an Ordinary High Watermark (OHW)? Interesting info, but doesn't give an ecological/historical perspective. No Action Taken. It is correct that this figure does not give historical perspective, but the justification for this data being collected is to allow that to occur in the future. This figure demonstrates that water levels fluctuate on the system and one can put the 2013 surveys into context of future conditions (ie. the lake is 5 cm shallower than when Onterra conducted the bathymetric survey).
16. Page 33. Last 2 Par. Important paragraphs with elevated level of importance because of aquatic plant management as a recommendation. No Action Taken.
17. Page 38. 1st Par. The text starting at – At one point… should be removed. This is being used out of context – see comments from Michelle Nault. These paragraphs have been re-worded to indicate this benchmark is used by Onterra. Additonal qualifying text has also been added.
18. Page 38. Last Par. Wrong photo listed. Fixed
19. Page 38. Can you provide a map of matted at surface plants? – While this was originally shown on Map 7, we added Figures 3.2-12, 3.2-13 and 3.2-14. These show the process by deconstructing the information shown on Map 7.
20. Page 39. 4th Par. 1st Sent. Overabundant and excessive are subjective terms – can these be defined, put into context or perhaps re-worded? Both terms could imply the plant abundance and level of nutrients are above a level expected for Van Vliet Lake and this is not likely the case for Van Vliet. Reworded
21. Page 41. Group 1. Q1. 1st Par. Answer seems a little simplistic – harvesting can and does pull up plants, especially in shallower water with soft sediments and is similar, but not as perfect as mowing a lawn. Disturbance activities, like harvesting, will increase the chance of AIS establishment and expansion. Current "open" areas in plant-rich areas are likely open for a reason related to some environmental factor that doesn't favor plant growth – this is different than a disturbed area. Reworded

22. Page 41. Group 1. Q1. 2nd Par. Note who would be heavily scrutinizing. Added : by VVLA volunteers
23. Page 42. Group 2. Q2. Use of the word excessive again implies that the amount of plants in Van Vliet is above what would be expected and that is not likely the case. Changed excessive to high volume.
24. Page 42. Group 2. Q3. The mechanical harvesting proposed in this draft plan is specifically for management of native plants because of human navigation concerns not an ecological concern. Harvesting is a disturbance activity and in this case is not being proposed as ecological restoration effort – What is the context of referring to harvesting as an ecologically sound method? Seems like this is not appropriate and should be removed or reworded. It is being considered to minimize the impacts of potentially addressing a human use concern as to perhaps maybe even more disturbance management activities? Reworded
25. Page 43. 2nd Par. 3rd Sent. Wording. …components requiring address… Changed to three main components which required addressing
26. Page 44. 1st Par. 1st Sent. Wording. …define and documenting…Fixed
27. Page 44. 2nd Par. Last Sent. Wording. …due shallow water…Fixed
28. Page 44. 3rd Par. 3rd Sent. Wording. …risks of in order…Fixed
29. Page 47. Mgmt Action – Support… Desc. Last Sent. Is the 60% referenced 60% of property owners or 60% of the respondents? - Respondents
30. Page 48. 2nd Par. Wording. The NOR APM strategy uses the wording "impairment of navigation" and/or "nuisance conditions" not recreational nuisance and the wording in this draft plan should also use this language. Reworded
31. Page 48. 3rd Par. Last Sent. Strong language in this sentence indicating that the harvest will not have adverse impacts – might suggest softening this? Reworded
32. Page 47-49. Mgmt Action. Support… General comments/thoughts.
    a. Looks like the shoreland areas mapped in the greens would likely be in compliance with shoreland standards, areas mapped in the red/orange would likely need to take actions to come into compliance, and areas mapped in yellow would need some ground-truthing to make determinations.
    b. Site visits will be required to evaluate aquatic plant nuisance level and shoreland conditions/compliance before a permit will be considered. We can discuss the specifics of this.
33. Maps 7 and 8. Lots going on in these maps. Would be useful to have a map with proposed harvesting, shoreland conditions and bathmetry. A site visit would/should help make sure we are all on the same page with the info provided on the maps. Additional clarity was provided; please refer to the response comments in 19.
34. Map 8. Harvesting coming out from boat landing is of concern because this is the primary entry point of AIS – the more this is disturbed, the more vulnerable Van Vliet becomes to AIS establishment and secondarily expansion. I would rather folks encounter a few plants that may be inconvenient at times than chance opening this area up for AIS. All of the proposed areas of harvesting will need to have a site visit when it is believed that nuisance conditions exist – we can discuss these specifics. Removed the boat landing access lane from the proposed strategy.
35. General comment. Recommend building in a recommendation to perform a property by property stormwater assessment. Would be glad to assist in the formation of this. Above scope of this project and not a component Onterra would get involved with (ie. accessing individual riparian compliance)
36. Please also give attention to reviews received from Jordan Petchenik, Tim Plude, Susan Knight, and Michelle Nault. Their reviews are individually addressed below.

Tim Plude (WDNR Lakes) – Comments made December 12, 2014

Response Comments by Eddie Heath in red

-would like to see landowner property displayed on maps Onterra makes it a point not to access individual riparian compliance
-Why is the boat landing proposed to be harvested? See response comments to Kevin Gauthier's comment number 34.
-Map 7 shows a few lanes as a clear color, there is no indication to the practicality of those lanes (these lanes are questionable). See response comments to Kevin Gauthier's comment number 19.
-There seems to be a need/want for protection; CBCW and AIS monitoring should be major activities required/suggested. This is a continuation of a current effort and has been added to the Implementation Plan Section.
-Why is there impractical lanes, it is already stated in the plan that the DNR will likely not approve these lanes. See response comments to Kevin Gauthier's comment number 19.

Jordan Petchenik (WDNR Resource Sociologist) – Comments made December 5, 2014

At your request I reviewed the results from the property owner survey along with the survey methodology and the report chapter 2 "Stakeholder participation." To the point, Onterra did a fine job of conducting the survey and for the most part, accurately interpreting and presenting the survey results. Appreciate the comments

Specific observations follow.

The survey methods and data interpretation are acceptable. Agreed

The 50% response is not unusual. But reports of surveys with response rates below 60% (and which do not include a non-response bias check) should include a qualifying statement that clearly tells the reader the results should not be interpreted as being a statistical representation of the population but *may* foreshadow contentious issues or public opinion if a scientific survey had been or is planned for the future. The report should have a statement acknowledging that limitation. The Dept does not and should not require that public surveys conducted by outsiders achieve a specific response threshold (e.g., 60%). Therefore, we should not discount the data that have been generated … as long as the interpretation of what the data do and do not represent is fairly stated. Agreed

Those who oppose the position being taken by the Planning Committee cannot assume that the non-respondents are similar to them; that they are opposed to mechanical harvesting. Neither side (those opposing and those supporting mechanical harvesting) should assume anything about the non-respondents. Reasons for not responding are numerous and without the conduct of a non-response bias check, no one should conclude anything about the non-respondents. Agreed

Report – Chapter 2: Stakeholder Participation:

Page 8

Bias may have occurred (I cannot say with any certainty) from participation of Planning Committee (PC) members. **IF** the PC comprised 8-10 members, and **IF** those members (most likely) returned their surveys and **IF** those members held similar views re: mechanical harvesting, than their responses accounted for one-fifth or more of the total responses – and that amount could bias the overall picture of Van Vliet property owners. This brings into question the composition of the PC: if the statement on page 8 is correct (Chapter 2, Planning Committee), why was there not a better balance of property owners on the PC? If the statement is true, it is a likely root cause for the survey conflict you now face. Agreed

Page 9
Allowing PC members to enter survey responses may have been done for cost saving. However, it introduces the possibility of poor inter-coder reliability (inconsistent data entry) and possible data tampering. Agreed. The VVLA PC acknowledges that and has saved all hard copies in the event an audit is required.

Page 9
"The majority of stakeholders who returned surveys (41%)…" I don't see how this can be a correct statement since 41% is not a majority. Perhaps the author meant a "plurality" – the greatest response. Reworded

Page 12
Just want to acknowledge the fair interpretation – favoring harvesting does not mean favoring the plan. Agreed

Survey Results

Q5 – the % rankings are miscalculated. Rankings 1 -2 -3 are treated as equals. If a ranking was the goal, the first choice should be counted 3 times, the second choice counted twice and the third choice counted once (see "nominal scoring technique"). It's a matter of semantics – given how the results are presented, the question should have been worded as "Please select up to three…", not "rank." We have updated the Appendix accordingly. We also look forward to reaching out to you to learn better ways to analyze these data.

Michelle Nault (WDNR Research Scientist) – Comments made April 23, 2014

Response Comments by Eddie Heath in red

Do we know if plants were vouchered during the 2008 and 2013 surveys? I see that Bonestroo & White Water Assoc. conducted the surveys, respectively. Do we know what time during the summer (beginning, middle, end) these surveys occurred also? 2008 survey conducted on july 16; 2013 survey conducted over 3 days during first week of July. I assume the WDNR required vouchers but was not able to track them down.

Regarding coontail I'm not too concerned, as the change in this species is likely due to the unrooted nature of the plant, and possibly due to sampling effort differences (was every single boarder line 'deep' point sampled? A lot of small coontail frags can be lurking down there and can be 'missed' if not sampled according to protocol). Agreed

P-values were not reported, but I suspect that the changes in white-stem pondweed (0.027)and northern watermilfoil were boarder line statistically significant (0.007)(closer to =0.5 that <0.001), and may be within the realm of natural annual variation. I think another year of survey data collected in the near future would help illustrate if this is actually a decreasing trend over time, or just natural fluctuation between survey years. I do not disagree, but the low p-values may indicate difference between the surveys. Perhaps the "difference" was actually the survey methodology.

The complete decline in Illinois pondweed is most concerning, and I think warrants a search of 2008 herbarium specimens to make sure that it wasn't mis-IDed (although I'm not sure as what). However, the 2013 survey did have it listed as an 'incidental', so it may be a correct ID. Again, additional data in the future will help illustrate if it was just a 'bad' year for Illinois, or if it's a continuing trend. Agreed.

And again with the Elodea nuttallii, this may just be an ID distinction which was made in 2013, but possibly not in 2008. Lumping the two elodea spp. together may make for a more accurate analysis. Agreed

Also, I'm sure someone has caught that their Figure labels in the aquatic plant section are slightly off (by 1) in the text…may be a good idea to get these all straightened out for clarity. Fixed

One more thing, this sentence on pg.33, "At one point in time, WDNR SS researchers hypothesized…..exceed 35%" is taken out of context. We qualitatively decided many years back that >35% littoral frequency of occurrence of EWM would translate to 'nuisance' conditions, but this should not be extrapolated for native plants (many which don't top out at the surface and form mats typical of EWM). I think this should be omitted/clarified throughout this entire section. This has been changed to state it is an "Onterra standard" as we feel few have enough experience for this.

Paul Specht (VVLA member) – Comments made October 28, 2014

Response Comments by Eddie Heath in red

. Page 41--In the paragraph labeled " Will harvesting stir up the muck?", you state that sediment "should" settle back out in two to three days. "Should settle" and "will settle" are two very different things. What steps will be taken to monitor the time it takes for sediment to settle out to better understand the impact of harvesting in the lake's heavily sedimented areas as it relates to water clarity? What steps will be taken to monitor any increases in algae blooms, if any? This information would be useful in determining future harvesting decisions. Agreed. Additional words added to this section.

Page 41--Section labeled "Will harvesting of native aquatic plant lead to the introduction of AIS?" What monitoring of harvesting activities will be done to ensure plants are in fact being cut versus uprooted? - What monitoring will be done to ensure the proper removal of harvested plants is being done thus keep floating plant debris and fragments to a minimum? Your comment are understood, but no action was taken. This will be an assessment the VVLA will need to make with their chosen contractor.

Your response to my comments on the first draft--1.0 Introduction--Page 5 . Your response stated that my comments were statements of opinion. The last sentence of my comments could have been considered an opinion but the first several sentences certainly are not. I would appreciate a response and, if appropriate, an adjustment to the report.

Page 5—The report introduces the fact that Van Vliet Lake is the headwaters of the Presque Isle River and feeds into Averill and Presque Isle Lakes but does not address any potential impact, or lack thereof, of harvesting downstream or the need to include property owners and other chain users as stakeholders. The report briefly discusses the impact to the downstream lakes within the FQA: "Will harvesting of native aquatic plants be detrimental to the lake's fishery?" Additional discussion was added within the FQA: "Will plant fragments from harvesting end up on the east shoreline, take root, and create new vegetation issues?"

This section also talks about the Van Vliet Lake Association (VVLA) as an organization representing the lake and its concerns. It should be noted in the report that the VVLA membership today and historically has represented considerably less that 50% 0f the riparian owners on the lake. In addition, I do not believe that the Planning Committee has any members outside the membership ranks of the VVLA. Statements of opinion listed within this comment; no action necessary.

Paul Specht (VVLA member) – Comments made on March 30, 2015

Response Comments by Eddie Heath in red

Page 7 Paragraph #2 refers to Map #7 as the harvesting plan. I would suggest that Map # 7 is not a representation of the harvesting plan when you compare it to the maps on page 41, or for that matter, when compared to what now everyone involved believes my be the actual potential harvesting footprint. I would think the harvesting plan map should display the lanes that are practical to cut (those in black on the map on the right on page 41). In my view, Map # 7 needs to be adjusted. Based upon this and subsequent comments made, a deconstructed set of map-figures and text were inserted into the report for clarity.

Your #35 comment in your January 21, 2015 letter recommends the performance of a property by property stormwater assessment. I did not see this addressed in the new version of the report, however, I may have just missed it. No action taken

And finally, in reviewing my file of historical documents on this matter I came across the voting results of the original survey distributed by the Plant Committee. That survey simply asked the question: "Are you in favor of the VVLA work towards development of a plan to mechanically harvest nuisance weeds? Yes or No. Note it was not asking if the respondent was in favor of a study to determine the need for and the feasibility of harvesting nuisance plans. The results of that survey confirm that all members of the original plant study group, the resulting committee and the current VVLA Board all answered yes indicating their preference for harvesting. Page 8 in the latest draft of the report suggests that the makeup of the committee was those either neutral or in favor of harvesting. In reality, the committee was made up of folks all in favor of harvesting. Again, to the best of my knowledge, and as confirmed by folks who originally responded no to harvesting, there does not appear to have been any concerted effort to solicit those voting no for participation on the committee. Statements of opinion listed within this comment; no action necessary.

Your colleague Jordan Petchenik expressed his concern that a committee with this one-sided makeup "could bias the overall picture of the Van Vliet property owners". I believe this situation along with the lack of risk discussion early on in this process most likely bias the outcome. I am not particularly

interested in having this narrative included in the report as it will only inflame already difficult coexistence issues on the lake. I would, however, much like I suggested in my e-mail the other day, like to see the discussion of the Plan Committee on Page 8, its makeup and its continued lack of balance adjusted to eliminate references to neutrality and the invalid reason for not seeking participation by riparian owners with a different view on this matter. There was way too many no votes to suggest no one would have fit into the process. Statements of opinion listed within this comment; no action necessary.

Kevin Gauthier (WDNR Lakes Coordinator) – Comments made May 13, 2015

Response Comments by Eddie Heath in red

- Question the addition of the word "fierce" in the planning committee section. No action taken
- My comment 21 and response in Appendix D – Not sure we are on the same page regarding "open niches" and AIS – these "open niches" do occur naturally in lakes and plants do not grow in these for some biological reason and these same areas would not likely be suitable for AIS plants as well. This is different than an "open/disturbed area" that may be caused by harvesting – potential AIS establishment and expansion will be higher in a disturbed opening vs a naturally occurring opening. I understand your perspective, which is why this sentence is included within the report, "*However, reducing disturbance and the open niches caused by disturbance makes it more difficult for AIS to become established if exposed to a given system*. "

- My comment 35 and response – The expectation/hope for this comment was to at a minimum have stormwater management on the radar for future work – if this is not the first most important issue for Van Vliet Lake, it is the second, only to habitat along the shoreline. It should not matter who would get involved with implementation of a recommendation for it to be placed in a plan. I will expect that stormwater management will either be put in this plan as a placeholder or within the next scope of work taken by Van Vliet Lake. A placeholder was included that conveys you would like to have the VVLA look at storm water management.

- I did not notice any option for seeking a volunteer or perhaps hiring a person to navigate a boat through the proposed navigational lanes as we had discussed during our March 2015 face-to face meeting. This could be an option that if started early enough in the season, and done a few times a week, might provide the navigational relief that the group desires and there may not be a need for other measures. I would be glad to explore this further if interested. Passive boat traffic is one thing, but actively having folks motor through an area to chop up plants and cause disturbance seems like mechanically harvesting with an inefficient and unregulated tool. This has not been included within the plan.

- As you have been doing, please provide all comments received in Appendix D as a clearinghouse of openness for all - also include any comments received from Michelle Nault and Susan Knight.

- I also have on my calendar a shoreline visit on June 8, with a rain date of June 9. Would a 9 am start time work? Also let me know where you would like to meet for our tour.

E

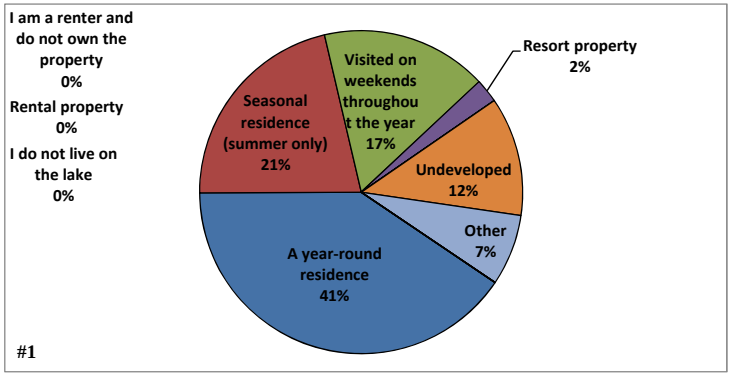
APPENDIX E

Stakeholder Survey Response Charts, Maps, and Comments

Returned Surveys	38
Sent Surveys	75
Response Rate (%)	50.7

#1 How is your property on Van Vliet Lake utilized?

	Total	%
A year-round residence	17	*40.5*
Seasonal residence (summer only)	9	*21.4*
Visited on weekends throughout the year	7	*16.7*
Resort property	1	*2.4*
Rental property	0	*0.0*
Undeveloped	5	*11.9*
Other	3	*7.1*
I am a renter and do not own the property	0	*0.0*
I do not live on the lake	0	*0.0*
	42	100.0



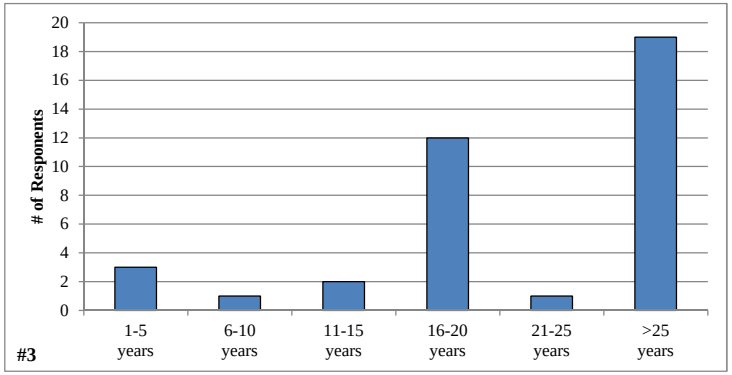
#2 The lakefront of Van Vliet Lake has been divided into six regions. Please indicate which region your property is located within. (See Map 1)

	Total	%
Region 1	14	*36.8*
Region 2	8	*21.1*
Region 3	0	*0.0*
Region 4	0	*0.0*
Region 5	7	*18.4*
Region 6	9	*23.7*
Unsure	0	*0.0*
	38	100.0

These data are also displayed on Map 1 of this Appendix

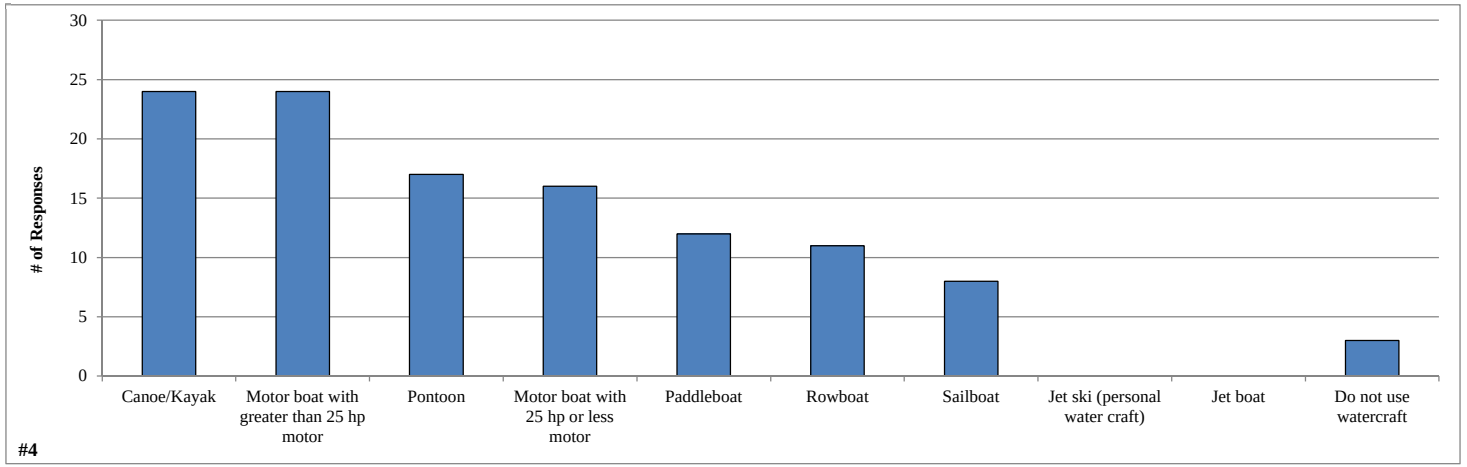
#3 How many years ago did you first visit Van Vliet Lake?

	Total	%
1-5 years	3	*7.9*
6-10 years	1	*2.6*
11-15 years	2	*5.3*
16-20 years	12	*31.6*
21-25 years	1	*2.6*
>25 years	19	*50.0*
	38	*100.0*



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

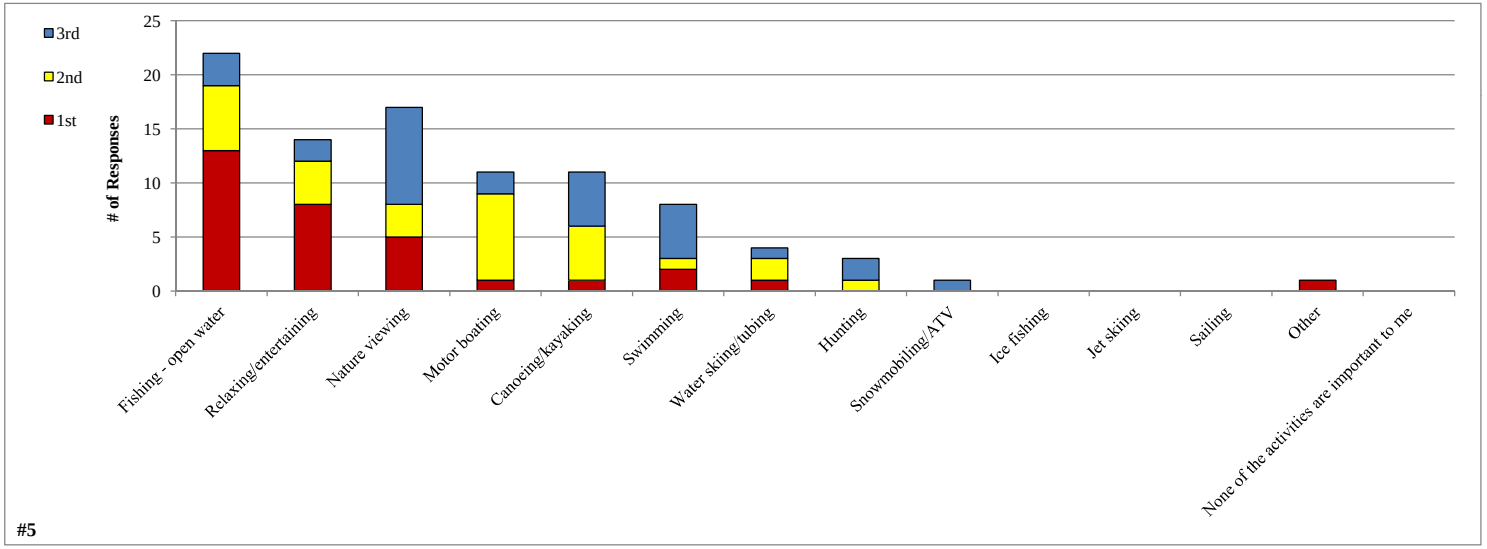
	Total
Canoe/Kayak	24
Motor boat with greater than 25 hp motor	24
Pontoon	17
Motor boat with 25 hp or less motor	16
Paddleboat	12
Rowboat	11
Sailboat	8
Jet ski (personal water craft)	0
Jet boat	0
Do not use watercraft	3



#5 Please rank up to three activities that are important reasons for owning your property on or near Van Vliet Lake.

	Responses				
	1st	**2nd**	**3rd**	*% response*	*% ranked**
Fishing - open water	13	6	3	*23.9*	*29.0*
Relaxing/entertaining	8	4	2	*15.2*	*18.3*
Nature viewing	5	3	9	*18.5*	*16.1*
Motor boating	1	8	2	*12.0*	*11.3*
Canoeing/kayaking	1	5	5	*12.0*	*9.7*
Swimming	2	1	5	*8.7*	*7.0*
Water skiing/tubing	1	2	1	*4.3*	*4.3*
Hunting	0	1	2	*3.3*	*2.2*
Snowmobiling/ATV	0	0	1	*1.1*	*0.5*
Ice fishing	0	0	0	*0.0*	*0.0*
Jet skiing	0	0	0	*0.0*	*0.0*
Sailing	0	0	0	*0.0*	*0.0*
Other	1	0	0	*1.1*	*1.6*
None of the activities are important to me	0	0	0	*0.0*	*0.0*
	32	30	30	*100.0*	*100.0*

**Responses assigned scores of:*
1st response = "3"
2nd response = "2"
3rd response = "1"
and ranked according to response totals



#6 Have you ever heard of aquatic invasive species?

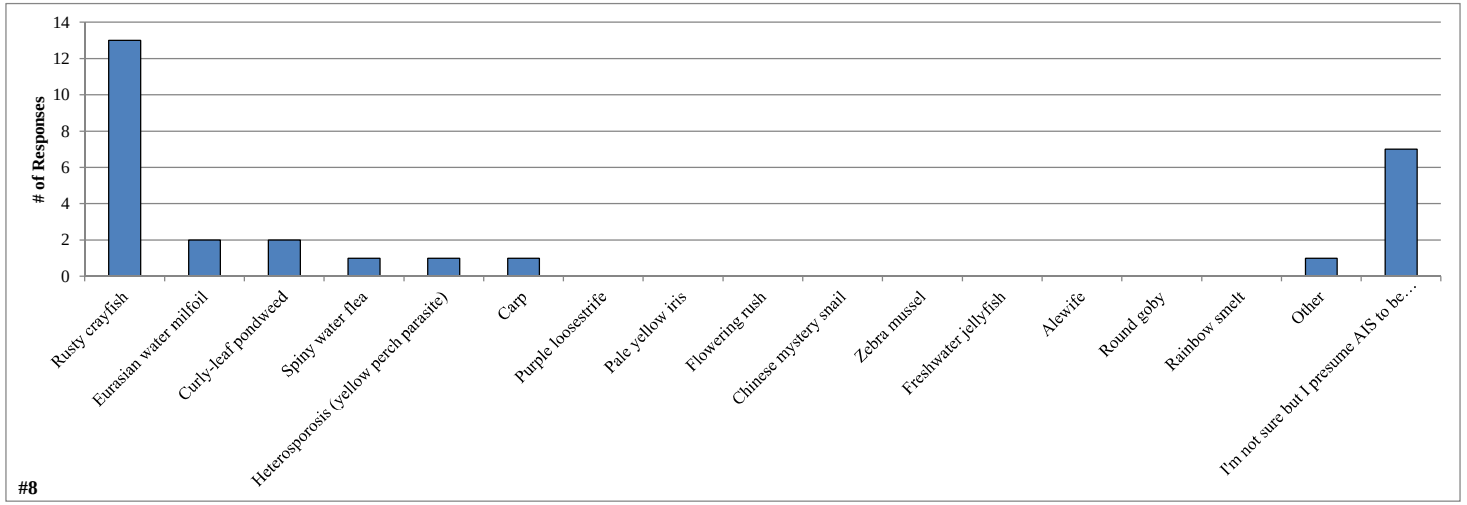
	Total	%
Yes	35	*97.2*
No	1	*2.8*
	36	*100.0*

#7 Do you believe aquatic invasive species are present within Van Vliet Lake?

	Total	%
Yes	19	*57.6*
No	14	*42.4*
	33	*100.0*

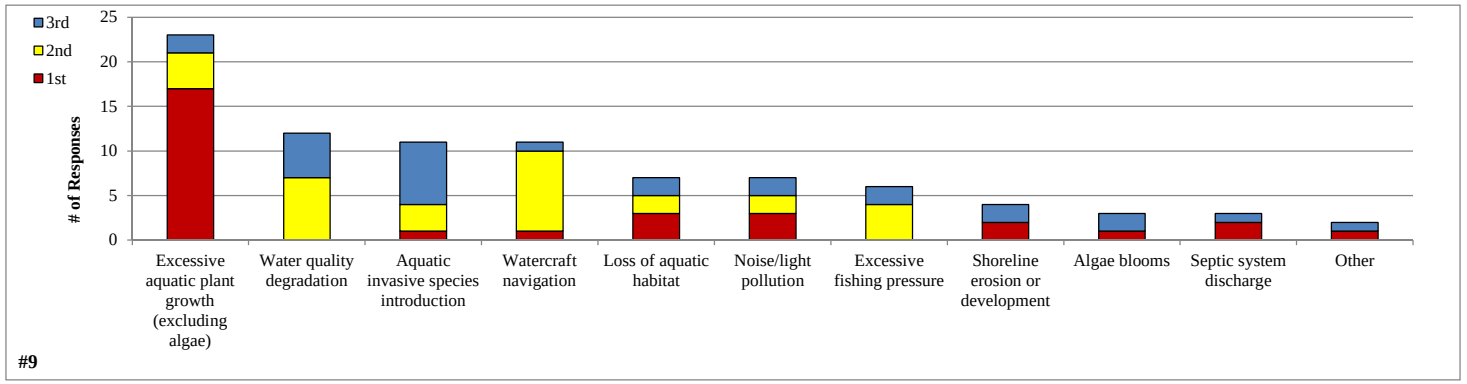
#8 Which aquatic invasive species do you believe are in the lake?

	Total
Rusty crayfish	13
Eurasian water milfoil	2
Curly-leaf pondweed	2
Spiny water flea	1
Heterosporosis (yellow perch parasite)	1
Carp	1
Purple loosestrife	0
Pale yellow iris	0
Flowering rush	0
Chinese mystery snail	0
Zebra mussel	0
Freshwater jellyfish	0
Alewife	0
Round goby	0
Rainbow smelt	0
Other	1
I'm not sure but I presume AIS to be present	7



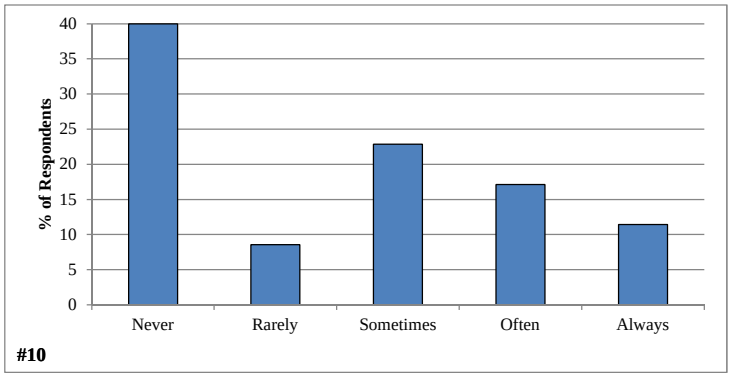
#9 From the list below, please rank your top three concerns regarding Van Vliet Lake.

	1st	2nd	3rd	*% Ranked*
Excessive aquatic plant growth (excluding algae)	17	4	2	*25.8*
Water quality degradation	0	7	5	*13.5*
Aquatic invasive species introduction	1	3	7	*12.4*
Watercraft navigation	1	9	1	*12.4*
Loss of aquatic habitat	3	2	2	*7.9*
Noise/light pollution	3	2	2	*7.9*
Excessive fishing pressure	0	4	2	*6.7*
Shoreline erosion or development	2	0	2	*4.5*
Algae blooms	1	0	2	*3.4*
Septic system discharge	2	0	1	*3.4*
Other	1	0	1	*2.2*
	31	31	27	*100.0*



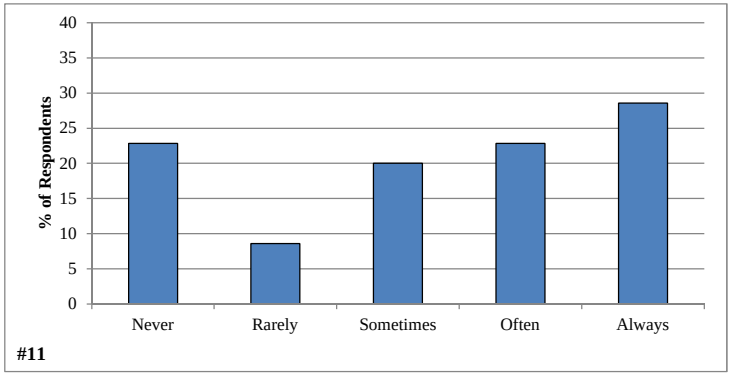
#10 During the <u>early</u> open water season (approximately May 1 to July 4) how often does aquatic plant growth, including algae, negatively impact your enjoyment of Van Vliet Lake?

	Total	*%*
Never	14	*40.0*
Rarely	3	*8.6*
Sometimes	8	*22.9*
Often	6	*17.1*
Always	4	*11.4*
	35	*100.0*



#11 During the late open water season (approximately after July 4 to September 30) how often does aquatic plant growth, including algae, negatively impact your enjoyment of Van Vliet Lake?

	Total	%
Never	8	*22.9*
Rarely	3	*8.6*
Sometimes	7	*20.0*
Often	8	*22.9*
Always	10	*28.6*
	36	*102.9*

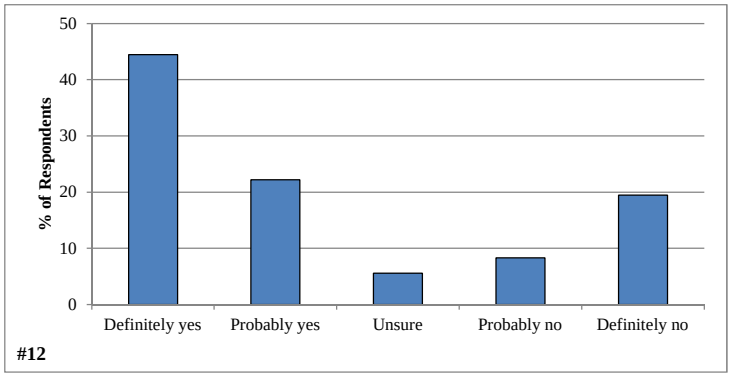


#11

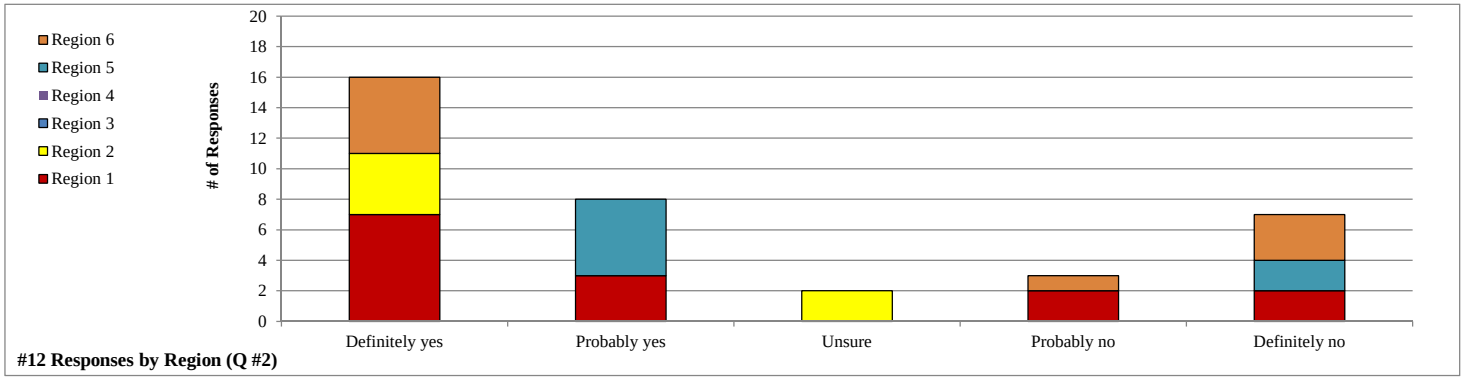
#12 Considering your answer to the Questions #10 and #11 above, do you believe aquatic plant control is needed on Van Vliet Lake?

	Total	%
Definitely yes	16	*44.4*
Probably yes	8	*22.2*
Unsure	2	*5.6*
Probably no	3	*8.3*
Definitely no	7	*19.4*
	36	*100.0*

These data are also displayed on Map 2 of this Appendix



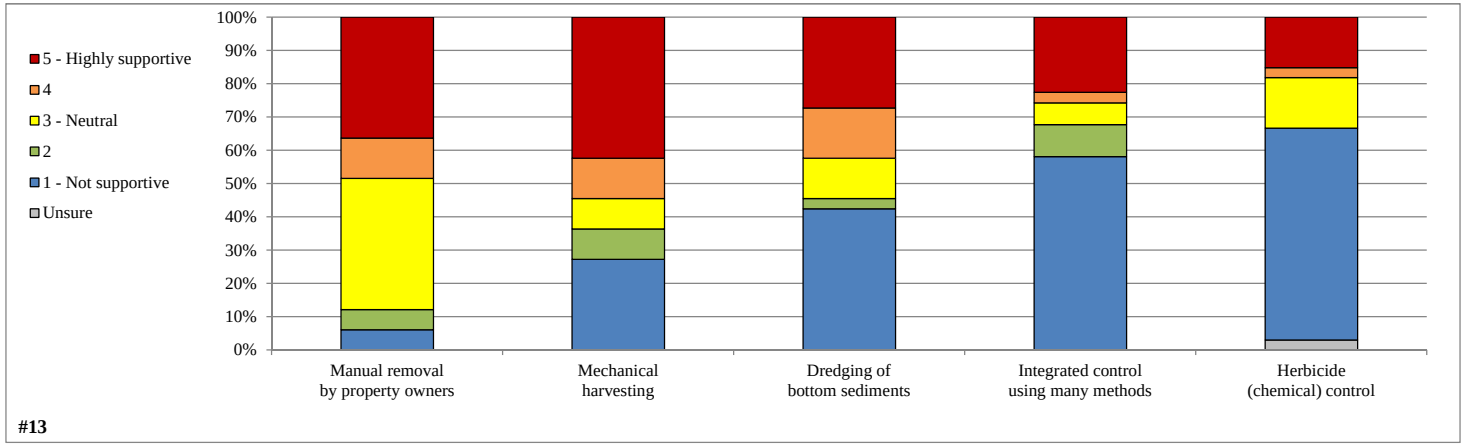
#12



#12 Responses by Region (Q #2)

#13 Native aquatic plants can be managed using many techniques. In general, what is your level of support for the responsible use of the following techniques on Van Vliet Lake?

	1 - Not supportive	2	3 - Neutral	4	5 - Highly supportive	Unsure	Total	Average
Manual removal by property owners	2	2	13	4	12	0	*33*	*3.7*
Mechanical harvesting	9	3	3	4	14	0	*33*	*3.3*
Dredging of bottom sediments	14	1	4	5	9	0	*33*	*2.8*
Integrated control using many methods	18	3	2	1	7	0	*31*	*2.2*
Herbicide (chemical) control	21	0	5	1	5	1	*32*	*2.0*



#13

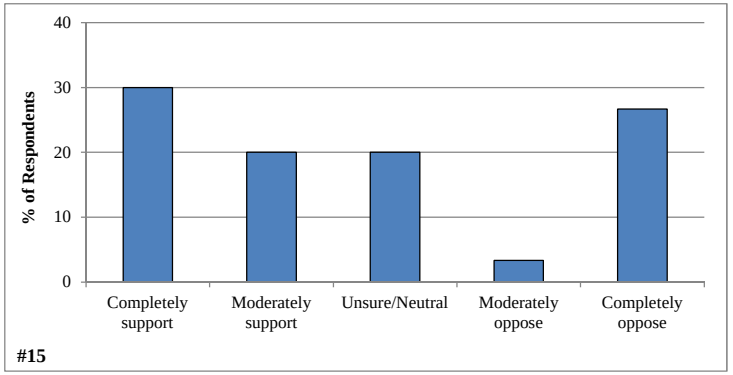
#14 Have you read the April 2014 draft Van Vliet Lake Aquatic Plant Management Plan Update?

	Total	%
Yes	30	*88.2*
No	4	*11.8*
	34	*100.0*

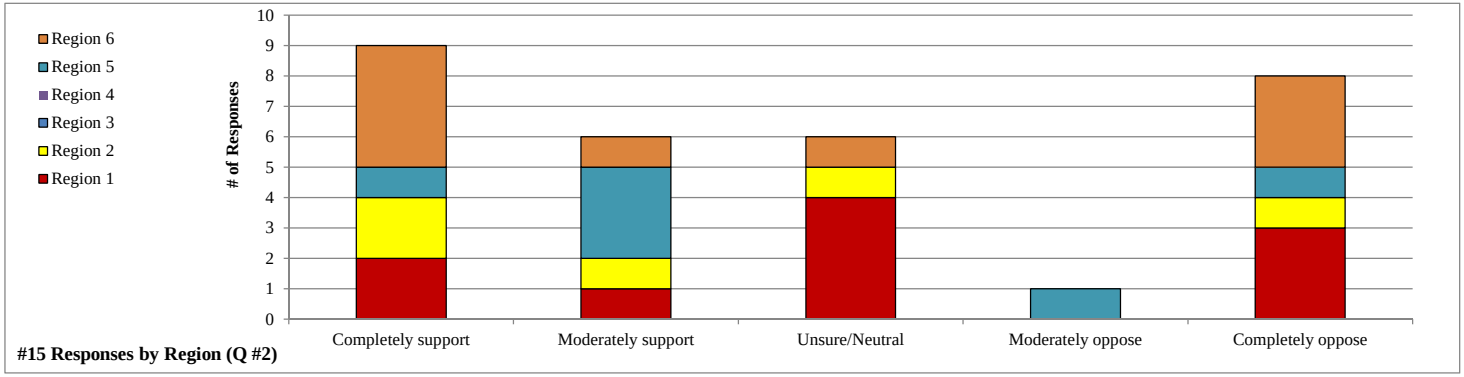
#15 What level of support do you have for the draft mechanical harvesting plan that is included within the Van Vliet Lake Aquatic Plant Management Plan Update?

	Total	%
Completely support	9	*30.0*
Moderately support	6	*20.0*
Unsure/Neutral	6	*20.0*
Moderately oppose	1	*3.3*
Completely oppose	8	*26.7*
	30	*100.0*

These data are also displayed on Map 3 of this Appendix



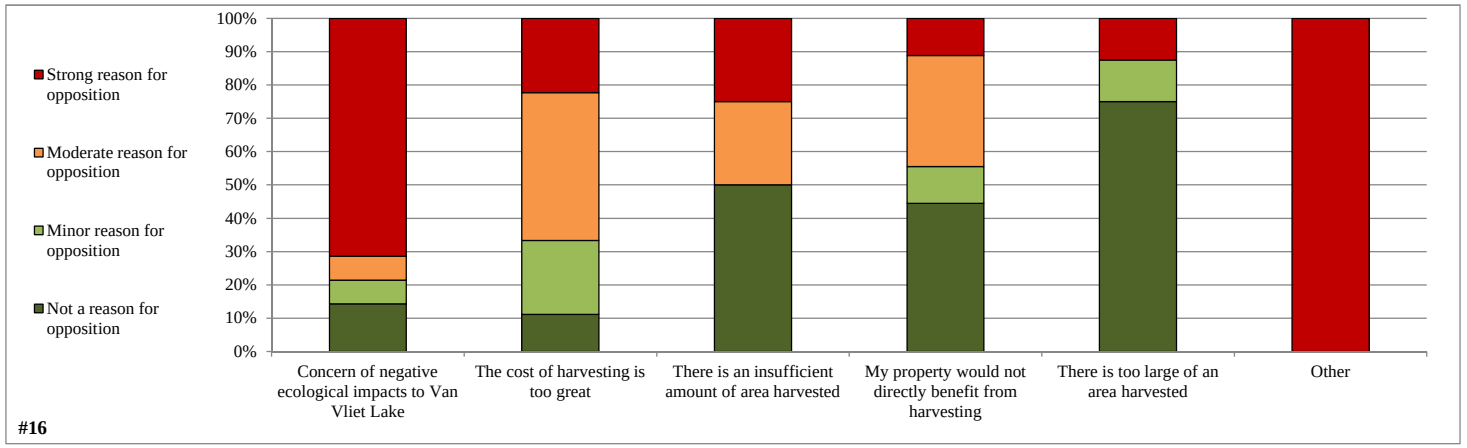
#15



#15 Responses by Region (Q #2)

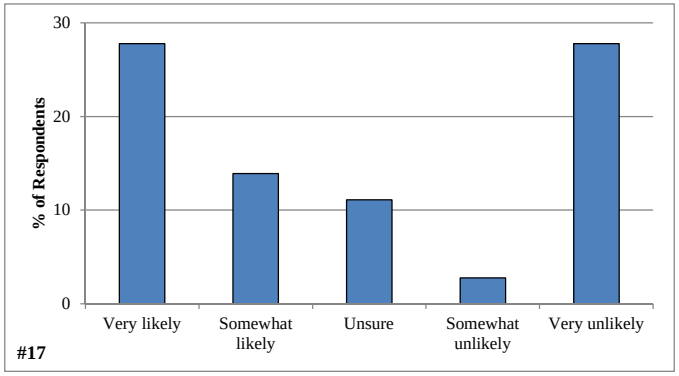
#16 If you selected "Unsure/Neutral", "Moderately oppose" or "Completely oppose" on Question #15, please help us understand your objection(s) to the draft plan by answering each of the following statements.

	Not a reason for opposition	Minor reason for opposition	Moderate reason for opposition	Strong reason for opposition	Total	Average
Concern of negative ecological impacts to Van Vliet Lake	2	1	1	10	*14*	*3.4*
The cost of harvesting is too great	1	2	4	2	*9*	*2.8*
There is an insufficient amount of area harvested	4	0	2	2	*8*	*2.3*
My property would not directly benefit from harvesting	4	1	3	1	*9*	*2.1*
There is too large of an area harvested	6	1	0	1	*8*	*1.5*
Other	0	0	0	7	*7*	*4.0*



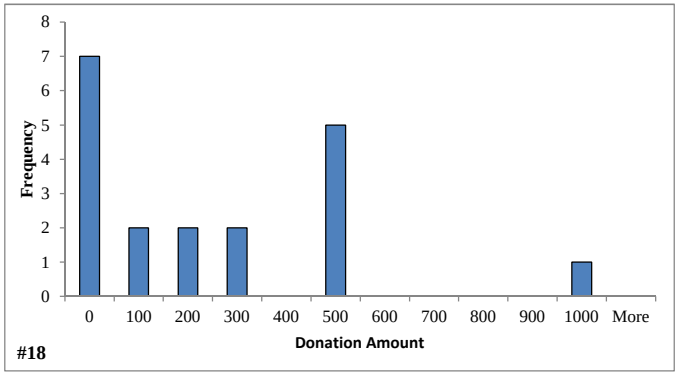
#17 Mechanical harvesting will have associated costs that are not eligible for cost-sharing opportunities through the state or county. How likely would you be to offer a monetary donation to the Van Vliet Lake Association (other than or in addition to membership dues) for the purposes of mechanically harvesting as specified in the draft Van Vliet Lake Aquatic Plant Management Plan Update?

	Total	%
Very likely	10	*27.8*
Somewhat likely	5	*13.9*
Unsure	4	*11.1*
Somewhat unlikely	1	*2.8*
Very unlikely	10	*27.8*
	30	*83.3*



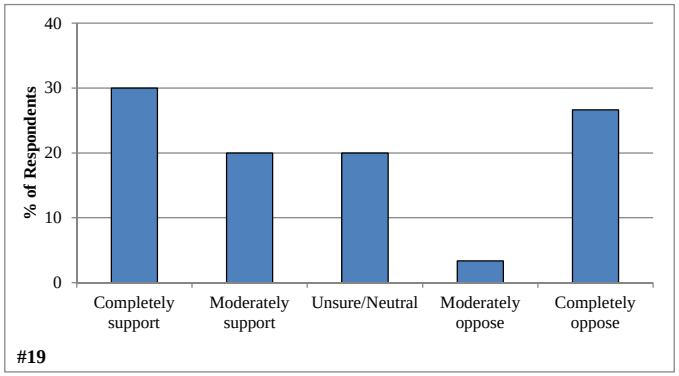
#18 How much might you donate towards mechanical harvesting?

Average	$	242.11
Minimum donation	$	-
Maximum donation	$	1,000.00
Total of all donations	$	4,600.00

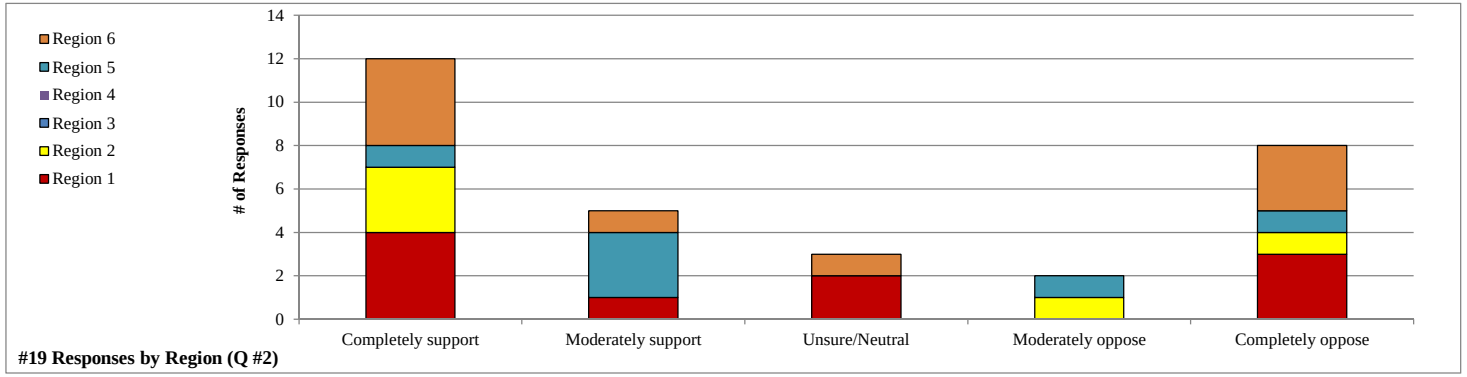


#19 Lastly, *if you were not expected to help pay for the mechanical harvesting* , what level of support would you have for the draft mechanical harvesting plan that is included within the Van Vliet Lake Aquatic Plant Management Plan Update?

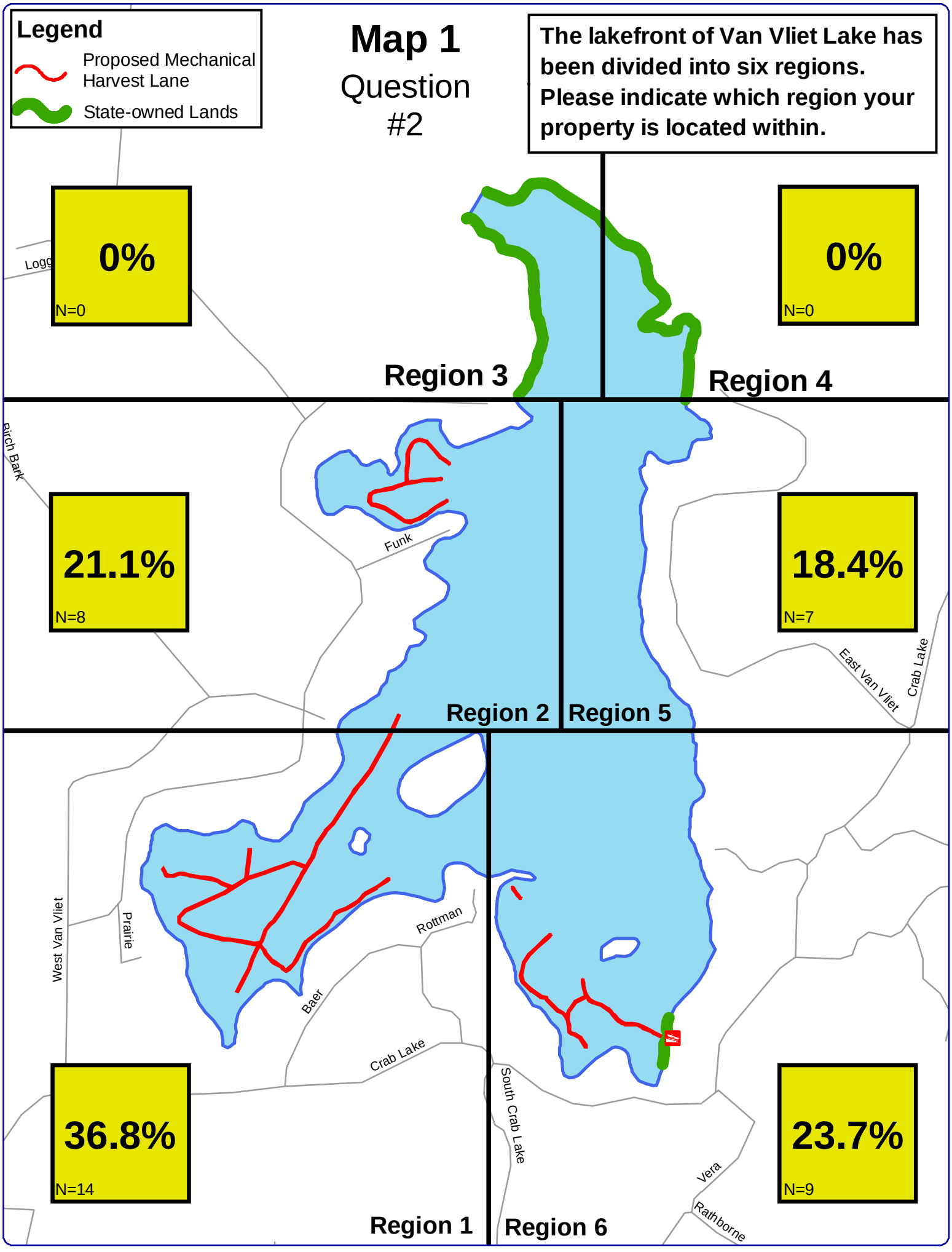
	Total	%
Completely support	12	*40.0*
Moderately support	5	*16.7*
Unsure/Neutral	3	*10.0*
Moderately oppose	2	*6.7*
Completely oppose	8	*26.7*
	30	*100.0*

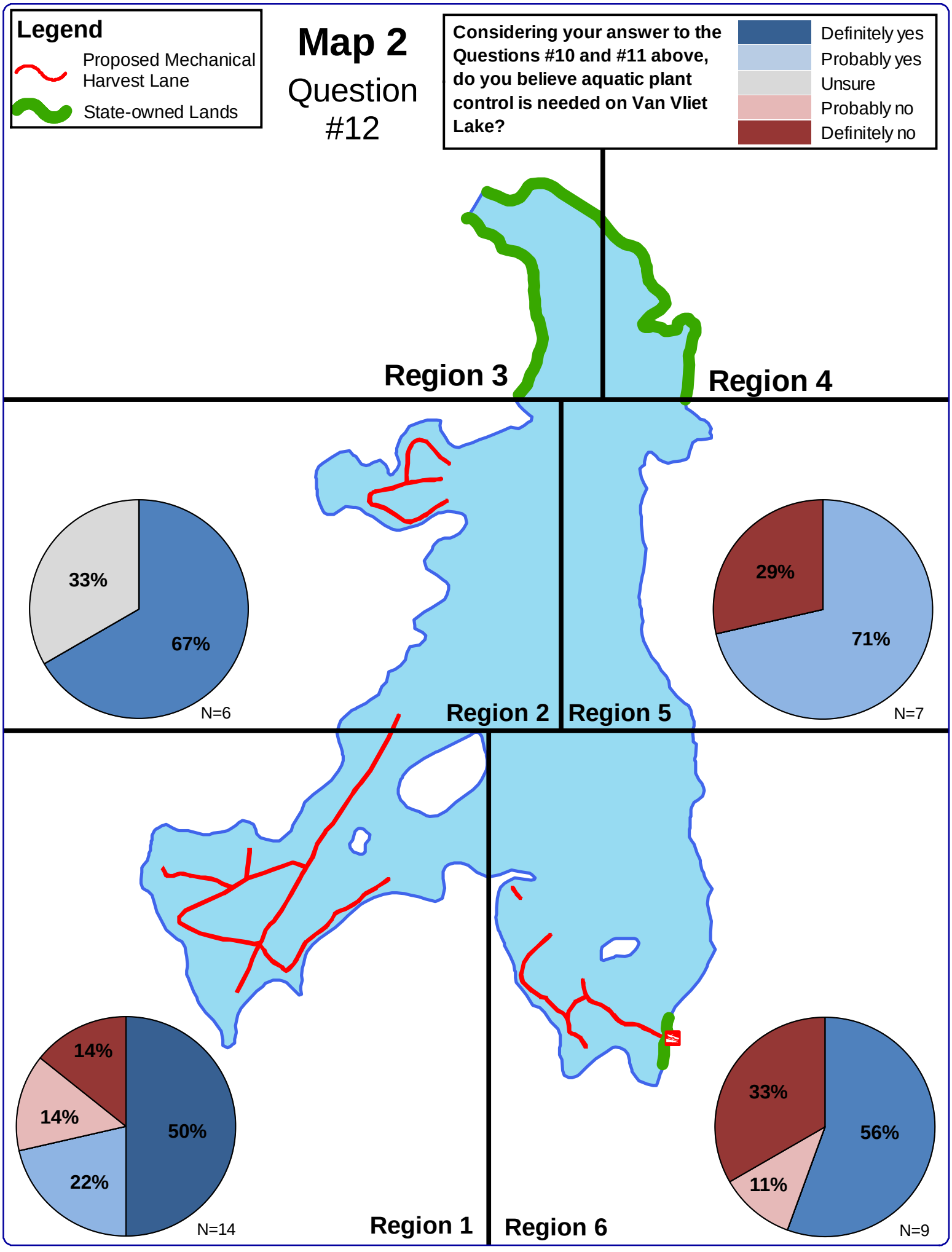


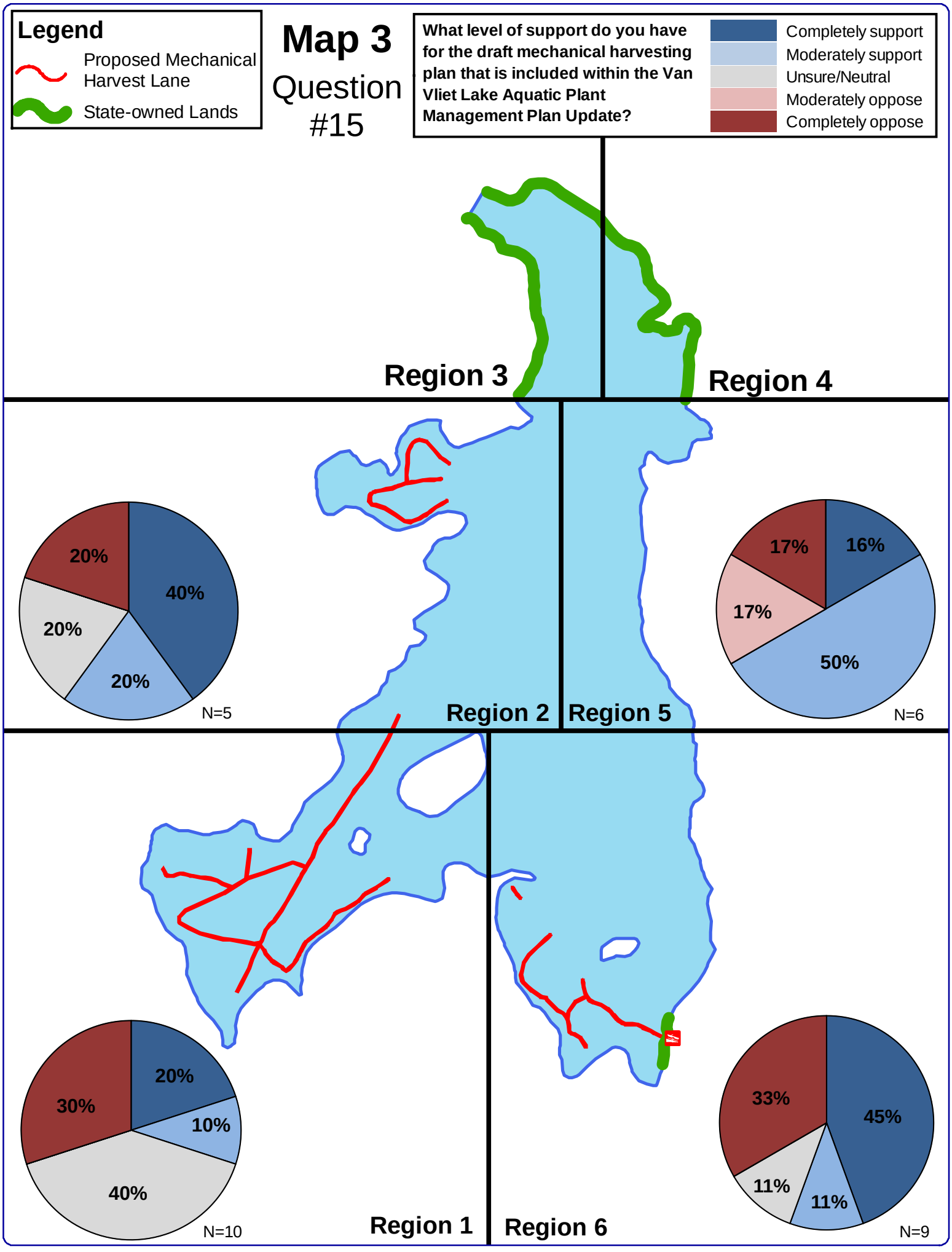
#19



#19 Responses by Region (Q #2)


Legend
Proposed Mechanical Harvest Lane
State-owned Lands
Map 1
Question #2
The lakefront of Van Vliet Lake has been divided into six regions. Please indicate which region your property is located within.
0%
N=0
Region 3
0%
N=0
Region 4
21.1%
N=8
Region 2
18.4%
N=7
Region 5
36.8%
N=14
Region 1
23.7%
N=9
Region 6
Birch Bark
Funk
East Van Vliet
Crab Lake
West Van Vliet
Prairie
Rottman
Baer
Crab Lake
South Crab Lake
Vera
Rathborne


Legend
Proposed Mechanical Harvest Lane
State-owned Lands
Map 2
Question #12
Considering your answer to the Questions #10 and #11 above, do you believe aquatic plant control is needed on Van Vliet Lake?
Definitely yes
Probably yes
Unsure
Probably no
Definitely no
Region 3
Region 4
Region 2
Region 5
Region 1
Region 6
33%
67%
N=6
29%
71%
N=7
14%
14%
50%
22%
N=14
33%
56%
11%
N=9


Legend
Proposed Mechanical Harvest Lane
State-owned Lands
Map 3
Question #15
What level of support do you have for the draft mechanical harvesting plan that is included within the Van Vliet Lake Aquatic Plant Management Plan Update?
Completely support
Moderately support
Unsure/Neutral
Moderately oppose
Completely oppose
Region 3
Region 4
Region 2
Region 5
Region 1
Region 6
20%
40%
20%
20%
N=5
17%
16%
17%
50%
N=6
20%
30%
10%
40%
N=10
33%
45%
11%
11%
N=9

Survey Number	1g Comment	5m Comment	5 (general) Comment	8p Comment	9k Comment	16f Comment	20 (general) Comments	Contact Information (optional)
1							Van Vliet is not a pristine wilderness lake untouched by human activity. Homes have been built around the lake with septic systems installed and docks added to the shoreline. Roads have been developed that are in the lake's watershed. There is a public boat landing and an historical basis that the lake is used for public recreation. Wisconsin Administrative Code NR109 states that the department shall consider "the long-term sustainability of beneficial water use activities" as part of an aquatic plant management permit. The native aquatic plants in Van Vliet Lake have increased in location and density in the ten years we have owned our property on the northwest bay. Human activities probably play a role in causing the increase. Lily pads used to be around the edges of the bay and more common in the terminal marshy area of the bay. Now there are floating leaf plants across much of Birch Bay. The other bays and even parts of the east shoreline have also seen an increase in plant life. Areas of increased plant density that began in low water years have persisted in the last two years of higher water. The aquatic plants in the lake are already being disturbed by lake users. Individual homeowners use weed rakes to clear their shoreline. Boat traffic cuts and uproots plants which results in fragments being dispersed around the lake by wind and wave action. There has not been an automatic introduction of aquatic invasive species because areas of the lake bottom have been exposed by these events. Aquatic plant management is not a new concept for Van Vliet Lake. The WDNR issued at least two herbicide application permits for the lake (1967 and 1986). Mechanical harvesting took place for over 20 years starting in the 1970's in a neighbor run spot nuisance harvesting-collection effort. Floating mats of decaying plants in the lake impair navigation, decrease the aesthetic qualities and property values of the lake, and impact recreation use including fishing, swimming, and boating. Cutting of common use navigation channels and removal of cut plants will provide improvement of conditions without significantly changing the native plant population in the lake. It appears to be the only legal option available for nuisance conditions caused by native plants. Concern about excessive aquatic plants and what can be done has been an issue raised at lake association meetings for many years. Onterra, LLC is a reputable scientific company which has presented a detailed analysis of the lake and a plan to manage the nuisance plants. We believe that the lake community should move forward with their recommendations.	Ronie Jacobsen and Mike Czarny 7236 W Van Vliet Rd 715-686-7998
2								
3						Does not address root problems.	I have been present on the Van Vliet Lake for 57 years. The geographic location and especially the density of the aquatic plants have increased significantly during that time. This invasion has been most rapid and significant in years of lower water levels. In the last 45 years we have had some efforts at control. Cutting has resulted in very short term solutions as it only temporarily provided relief. We did hire a company to chemically kill selected areas of significant aquatic plant growth. This did provide good relief for about 5 years. The plant growth than did slowly come back. Fishing was not adversely affected. The bottom organic debris (muck) results with significant die off of aquatic plants and with increased plant populations is quickly building the depth of such muck each year. Sunlight is increasingly able to reach the bottom and encourage accelerated plant growth. At our property, we never had this muck in the last 55 years. We are now experiencing the muck covering the sand and gravel bottom of this lake in our bay (began in 2012). There is now also substantial plant growth in our bay. We need to deal with the root problem - not provide ineffective temporary bandages.	George Kupfer 12047 Funk Dr Presque Isle WI 715 686-2680
4								
5								
6							Cutting a 6 acre navigation lane on a 250+/- acre lake just doesn't make sense to me.	Bill Rauwald 12081 Streator Rd 686-7218
7							It seems to me that those that are most against harvesting have made no attempt to be part of the decision making or have shown an interest to be part of the assoc.	Ed Brodsky PO Box 175 (12091 Streator) 715 686-7596
8								
9							#18 Donation depends on final decision of amount of harvesting done	Don Trimble 7243 E Van Vliet Rd 715-686-2095
10							#18 Donation depends on final decision of amount of harvesting done	Don Trimble 7243 E Van Vliet Rd 715-686-2095
11							#18 Donation depends on final decision of amount of harvesting done	Don Trimble 7243 E Van Vliet Rd 715-686-2095

Survey Number	1g Comment	5m Comment	5 (general) Comment	8p Comment	9k Comment	16f Comment	20 (general) Comments	Contact Information (optional)
12						These property owners bought in weedy areas. They should consider selling, not cutting weeds.	The historical records indicate that these areas have always been weedy. They were weedy when the current owners purchased them. They paid less for these properties because they were in weedy areas. They should sell and find properties that meet their needs instead of trying to change the property/lake where they bought that does not meet their needs.	Kim and Tim Bowler Alpine Resort 715-686-2800
13						These property owners bought in weedy areas. They should consider selling, not cutting weeds.	The historical records indicate that these areas have always been weedy. They were weedy when the current owners purchased them. They paid less for these properties because they were in weedy areas. They should sell and find properties that meet their needs instead of trying to change the property/lake where they bought that does not meet their needs.	Kim and Tim Bowler Alpine Resort 715-686-2800
14						These property owners bought in weedy areas. They should consider selling, not cutting weeds.	The historical records indicate that these areas have always been weedy. They were weedy when the current owners purchased them. They paid less for these properties because they were in weedy areas. They should sell and find properties that meet their needs instead of trying to change the property/lake where they bought that does not meet their needs.	Kim and Tim Bowler Alpine Resort 715-686-2800
15						It's a one year fix. They will be back.	When Crab Lake Road was put in over 100 years ago, the flow of the lake was changed. Eutrophication began to occur much faster than it would naturally. The bays began to fill with sediment - a perfect growing "soil" for aquatic vegetation. This lake is aging at an unnatural rate. This was caused by humans. The only way to stop it is for humans to remove the sediment. These discussions have been going on for at least the 50 years I've known the lake. It never gets beyond the discussion/survey stage. I hope this time it does!	Ken Artner 0N013 Evans Ave Wheaton IL 60187 630-927-2446
16				Bullheads			As a property owner on Van Vliet for more than 50 years, we have seen a steady expansion of aquatic plants over the entire lake area. Some areas cannot be navigated thru during low water level periods. The lake bottom is also covered with deeper layers of sediment. Below the sediment is a nice sand & gravel surface! Fishing is not as good as it once was. The lake was stocked years ago with both walleyes & muskies. Natural re-production is also not as good as it once was due to the shrinking areas of sand & gravel on the bottom surface of the lake. Too much muck!	Paul (son) and Phyllis (mother) Widstrand N82W7339 Pine St Cedarburg WI 53012 262 377-7617 Phyllis 262 375-4263 Paul
17					loss of shoreline due to silt buildup		#4 would like to use paddleboat but too many weeds and aquatic plants #6 have heard of (ais) but do not know much about #17 depends on costs per household per year #18 minimal amount, family opinions differ	
18								
19								John Fagan 12087 Streator Rd 262 251-0617 715 686-2960
20								
21								
22								
23								
24	For Sale		Estate Issue				No Comments at this time. Hope to have new owners for both properties soon. Please contact Patrick Schultz if you know of a possible buyer. 262-547-5517	Robert Stewart W7250 Brick Church Rd Walworth WI 53184 262-275-3538
25								
26						These property owners bought in weedy areas. They should consider selling, not cutting weeds.	The historical records indicate that these areas have always been weedy. They were weedy when the current owners purchased them. They paid less for these properties because they were in weedy areas. They should sell and find properties that meet their needs instead of trying to change the property/lake where they bought that does not meet their needs.	Kim and Tim Bowler Alpine Resort 715-686-2800
27							If the weed problem is not addressed on our lake, it will continue to choke out our lakefront real estate values.	Mark and Wendy Osberg 7085 Crab Lake Rd 715-686-2294
28								
29					jet ski traffic	create floating weeds that could be excessive		Brett Bussler 312 Gray Ave Webster Groves MO 63119 314-614-3188
30								
31								

Survey Number	1g Comment	5m Comment	5 (general) Comment	8p Comment	9k Comment	16f Comment	20 (general) Comments	Contact Information (optional)
32	used in conjunction with adjacent pond		Everything but d and l are important.				#18 $500 this is a total for my two properties - see survey 40 (entered 0 on data sheet for this survey and 500 for survey 40) #20 In my 37 years on the lake, nuisance weed growth has expanded greatly. Swimming between our property and the two larger islands without encountering weeds. Fishing could be done with only modest impediment throughout the summer - neither is now true. Althought there are ups and downs in the impediment to use, the ups are more frequent and higher and downs less frequent. Without action, property owners on much of the western shore may be prevented from use of their property as a lake property within 2 decades.	Tom Olson 12018 Rottman Dr Pl WI 54557 715-686-2053 837 Sauk Ridge Ter Madison WI 53717 608-831-0837 cell 608-239-7786
33								
34								
35								
36								Ken Alix 10922 80th St Pl Pr 53158 12074 Baer Rd 262-694-3527 715-686-7252
37							We feel the Van Vliet Lake Association is doing a fine job at managing the health and well being of Van Vliet Lake. The information presented at the annual meeting by Eddie Heath from Onterra regarding mechanical harvesting of aquatic plants was fairly presented and very informative.	Bill and Diane Schroeder 7193 E Van Vliet Rd Presque Isle WI 54557 715 686-7243
38						risk of negative ecological impacts to solve perceived late year navagational concerns for a relatively small number of property owners	Have been on Van Vliet for 20 years. Aquatic plant levels appear to be cyclical and follow water levels. Fig 3.2.4 on page 26 appears to confirm a cyclical pattern. For the report plant levels were lower in 2013 than in 2008. 2008-2012 were low water years caused by regional drought. The current concerns for increasing plant levels began in 2011 and 2012. Water levels increased dramatically in 2013 and plant levels went down. Late ice out in 2014 and continuing high water levels appears to have reduced plant levels even more. In our view this is not the time to consider harvesting as mother nature is taking care of the problem. The VVLA represents only a minor percentage of lake owners. Further its Aquatic Plant Management Committee, the driving force behind this study, was made up of only individuals who voted in favor of harvesting in the initial survey. The committee was not balanced and did not include individuals from the other side of issue.	Paul Specht 7129 Crab Lake Rd Presque Isle WI 54557 715-686-2129
39								
40			The above (k,c,a) are most important. Only d and l are unimportant.				#18 $500 assuming broad support #20 In my 37 years on the lake, nuisance weed growth has expanded greatly. Swimming between our property and the two larger islands without encountering weeds. Fishing could be done with only modest impediment throughout the summer - neither is now true. Although there are ups and downs in the impediment to use, the ups are more frequent and higher and downs less frequent. Without action, property owners on much of the western shore may be prevented from use of their property as a lake property within 2 decades.	Tom Olson 12018 Rottman Dr Pl WI 54557 715-686-2053 837 Sauk Ridge Ter Madison WI 53717 608-831-0837 cell 608-239-7786
41			We choose this lake because of the connections to the nature conservancy properties and desire to keep lakeshore pristine.			I do not believe it is in ecologic best interest of the lake. We have fish because of the lakes aquatic structure - to disturb it would (down arrow) habitat for young fish.	We choose our property based on the fact that it is an ecologically sound aquatic system - the weeds allow proper sustained support for fish development. To change this for benefit of few who want to use the lake for water sports would be detrimental to fisherman and nature lovers.	Amy Sheldon and Tom Etheridge 7080 Prairie Drive 920 904-6076
42								

Survey Number	1g Comment	5m Comment	5 (general) Comment	8p Comment	9k Comment	16f Comment	20 (general) Comments	Contact Information (optional)
43			We would list swimming as one of the very top activities if we were able to do so off our property or nearby.				We have owned property on Van Vliet Lake for nearly 24 years, and we had been coming to the Presque Isle chain and area for nearly 2 decades prior to that. Our concern has always been for the care of the lake, its usage, and its surroundings. During those years, our concern has also grown for the increasing lake weed population. While the species variety may not have increased significantly, in our estimation the density certainly has done so during that time period - to the point that some areas of the lake which used to be navigable are either impassable, or nearly so, for much of the summer season. For that reason, we are in favor of weed harvesting. We know that much of the opposition to harvesting has to do with the fear of introduction of aquatic invasive species. While every lake property owner should be concerned about aquatic invasives, we are convinced that such an introduction, based on the Onterra report, surveys of other lakes having done harvesting, and other research, has little if any correlation to professional weed harvesting, If invasives are introduced into the lake, in all probability, it will be done via boats entering the boat landing. Probability also would suggest that if there is such an introduction, it will be close to the landing. Our suggestion to prevent that is that everyone professing fear of invasives help supervise the boat landing and inspect boats entering and leaving the lake. We strongly feel that weed harvesting, done by a qualified professional harvester, and supervised, is a viable option to help curtail the increasing weed population and should be attempted. Those who are in favor of doing so, and who are willing to help finance it, should be allowed to do it.	Jim and Kathy Sprester 12034 Baer Rd Presque Isle WI 54557 715-686-2613 262-490-2569 Jim cell 262-490-2700 Kathy cell
44							#18 250 to 500 donation ($250 entered on data sheet)	Todd Hagedorn 6407 Red Oak Ct Weston WI 54476 715-218-8672
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47								Frank Bradley 715 686-2881
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50							Thank you for everything!	Kathy Nasenbeny 7284 W Van Vliet 715 904-1020
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61			The guests we have love fishing. My husband and I are not big fishing people - my husband also loves hunting.				I have been coming to the lake my whole life (50 yrs) and every year the weeds get worse to me it is not fun fishing anymore when all you are doing is pulling weeds off your line. I didn't have this problem as a little girl. What is really bad now is on really windy days all of the weeds end up on my shore and in the bay and the smell isn't too nice. These are not problems we had back in 1957 when my grandfather bought our property. I would really love to see something done.	Linda and Squiggy Resch 1619 S Conrad Pl New Berlin WI 53151 262 649-3976
62								
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66	For Sale		Estate Issue				No Comments at this time. Hope to have new owners for both properties soon. Please contact Patrick Schultz if you know of a possible buyer. 262-547-5517	Robert Stewart W7250 Brick Church Rd Walworth WI 53184 262-275-3538
67		conserving nature					Preservation/conservation first priority	

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68			relatively unspoiled and generally quiet					Jeff and Jorja Burke 12099 Streator Rd Pl 715 686-2557
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73							Due to health reasons, I have not been able to keep up with the Van Vliet Lake Association's work on everything.	Richard Novak 1004 Lincoln Ave Fox River Grove IL 60021 847 639-3038
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