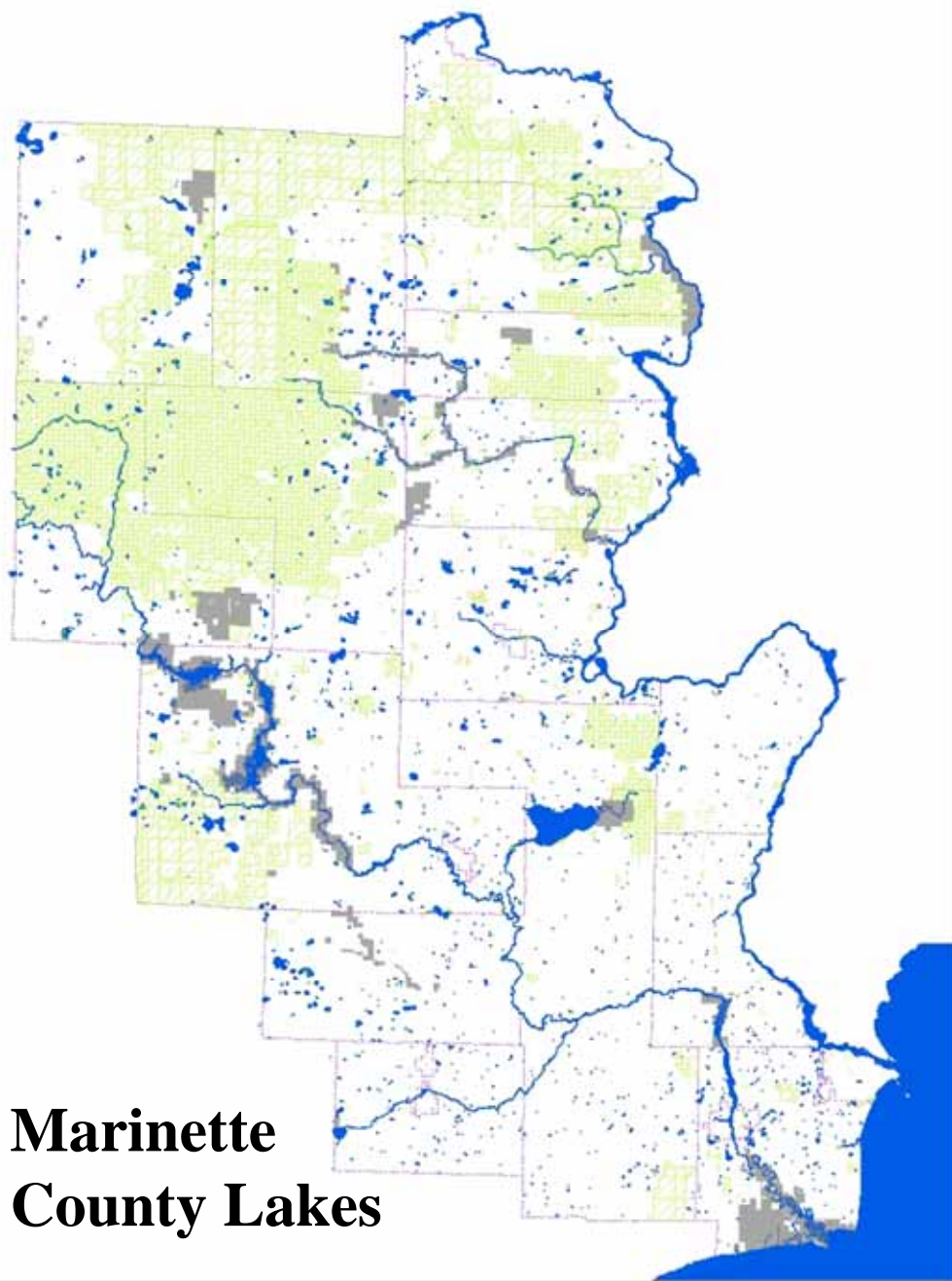


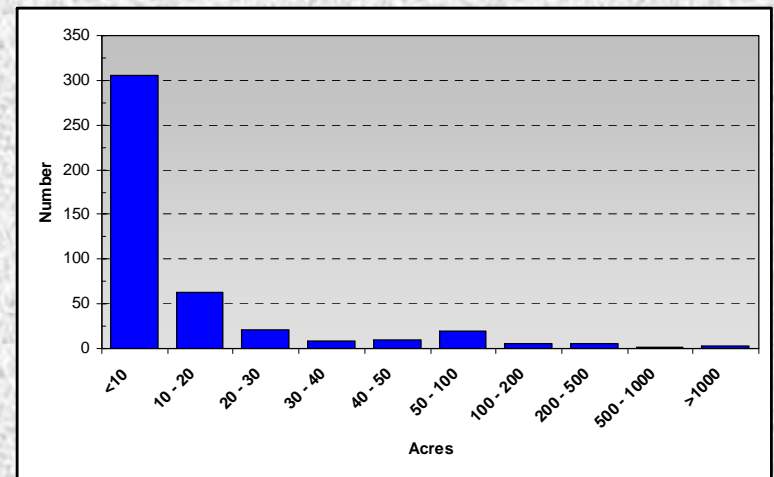
Marinette County LWCD Lakes Program



Chuck Druckrey
Marinette Co. LWCD
1926 Hall Ave.
Marinette, WI 54143
cdruckrey@marinettecounty.com



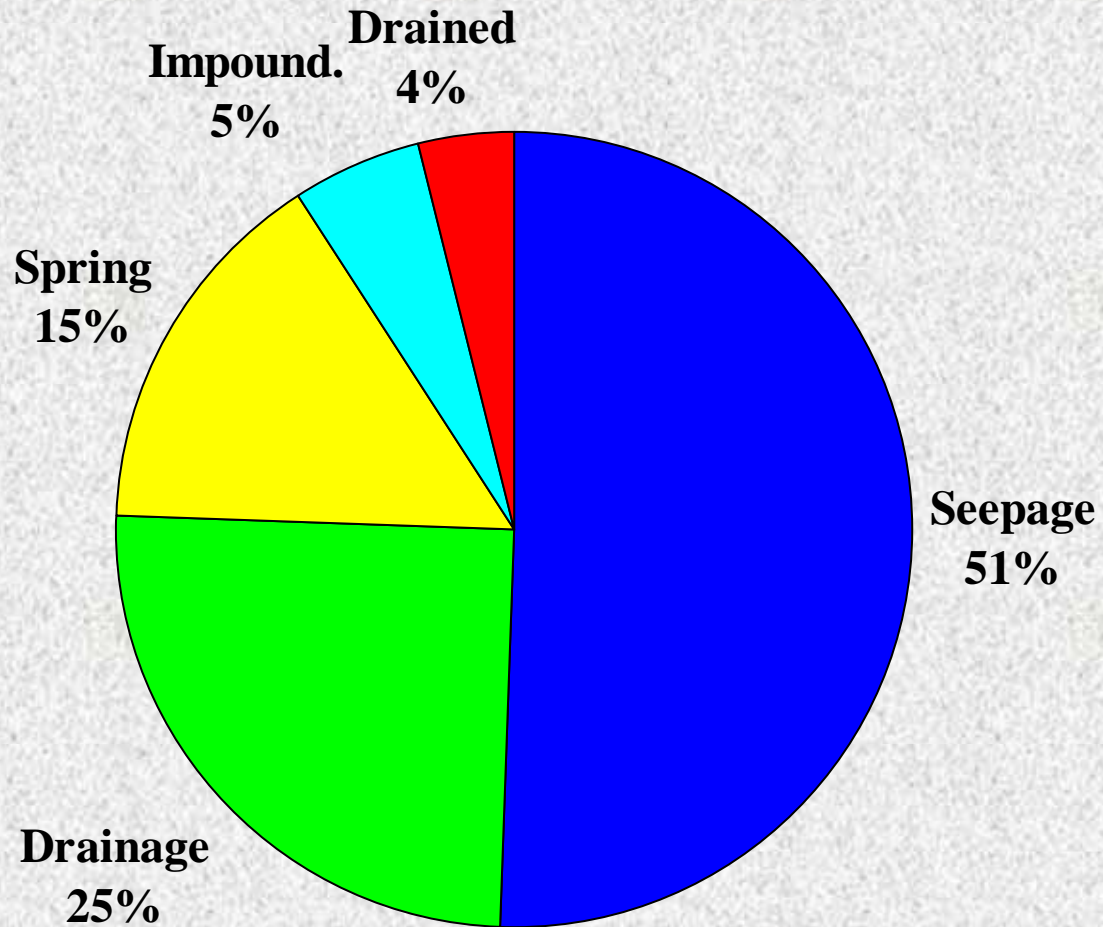
**Marinette
County Lakes**



444 lakes

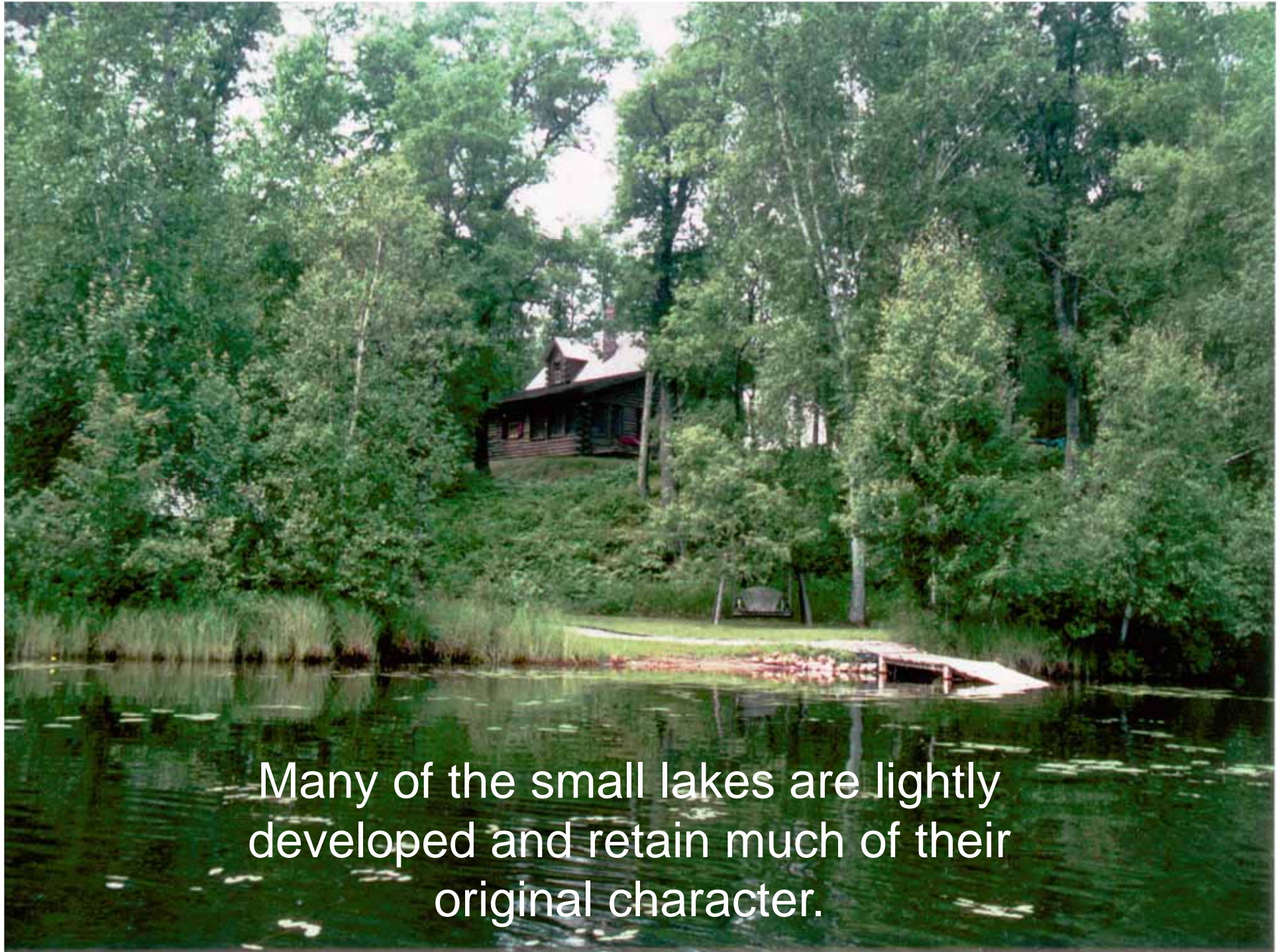
- 69% less than 10 ac.
- The big six represent 54% of the surface area.
 - Cauldron Falls Flowage
 - High Falls Flowage
 - Lake Noquebay
 - Upper Scott Flowage
 - White Rapids Flowage
 - Chalk Hills Flowage

Marinette County Lake Types



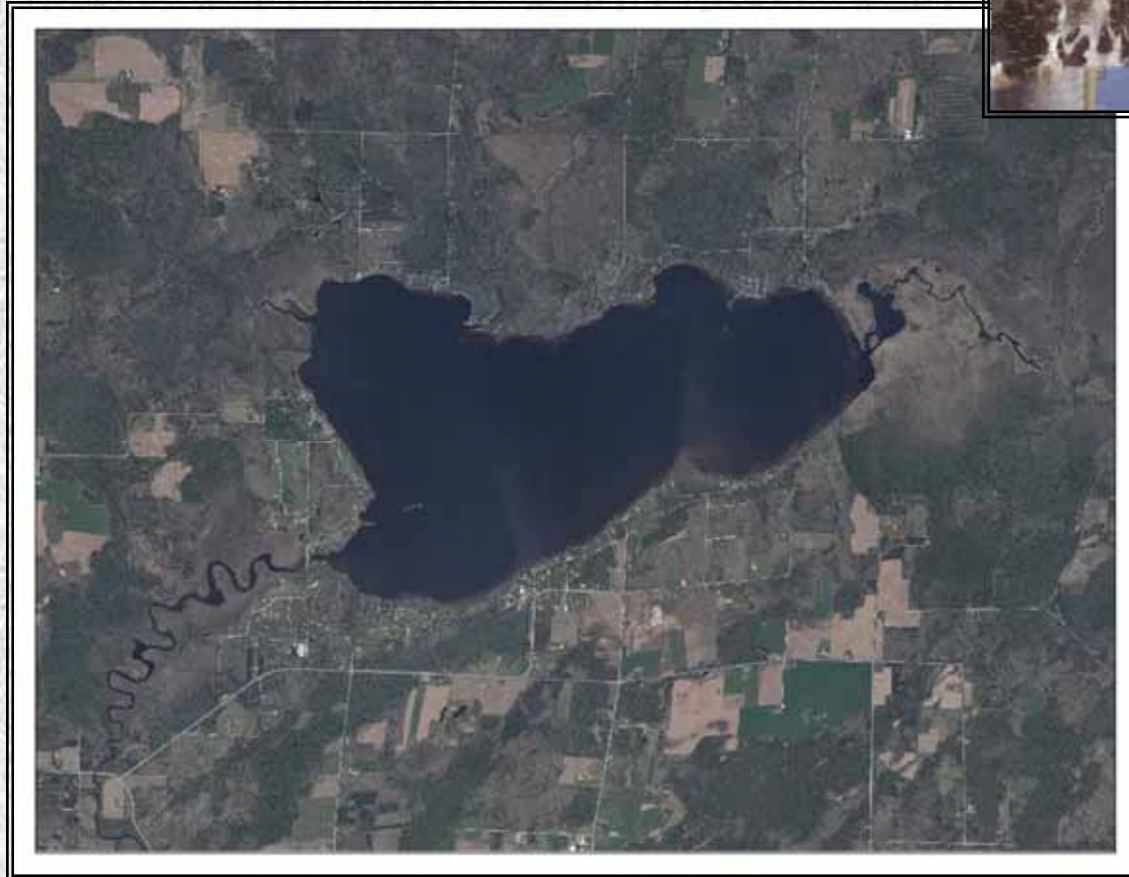


As a rule, the larger lakes are already heavily developed.



Many of the small lakes are lightly developed and retain much of their original character.

Lake Noquebay Priority Watershed Project (1993-2006)



More than 90% of farms in the watershed participated

- \$1.9 million in cost-sharing
- 13 manure storage facilities
- 10 barnyard runoff control facilities
- 4000 acres no longer winter spread



Marinette County Lake Management Program

- Water quality monitoring
- Lake management planning
- Aquatic plant surveys & management planning
- AIS management
- Shoreline habitat restoration design and installation
- Erosion control design and installation
- Grant writing assistance
- Assistance with state and federal permits



Inter-Agency Cooperation is Key!



Take Advantage of State Grant Programs

- Provide much needed services to lake groups in Marinette County.
- Help offset cost of the county lake management program.
- Marinette County is the “consultant”, grant writer, and in some cases the sponsor.

Lake Management Planning Grant Program

Lake Protection and
Classification Grant
Program

Guidelines and Application



Application Deadlines
Planning Grants: Feb. 1, Aug. 1
Protection Grants: May 1

Available on the web: dnr.wi.gov

PUB-CF-007 2012

Aquatic Invasive Species Control Grant Program

Guidelines and Application



Application Deadlines
Education, Prevention and
Planning Projects: Feb. 1, Aug. 1
Established Population
Control Projects: Feb. 1, Aug. 1
Early Detection and Response
Projects: As approved

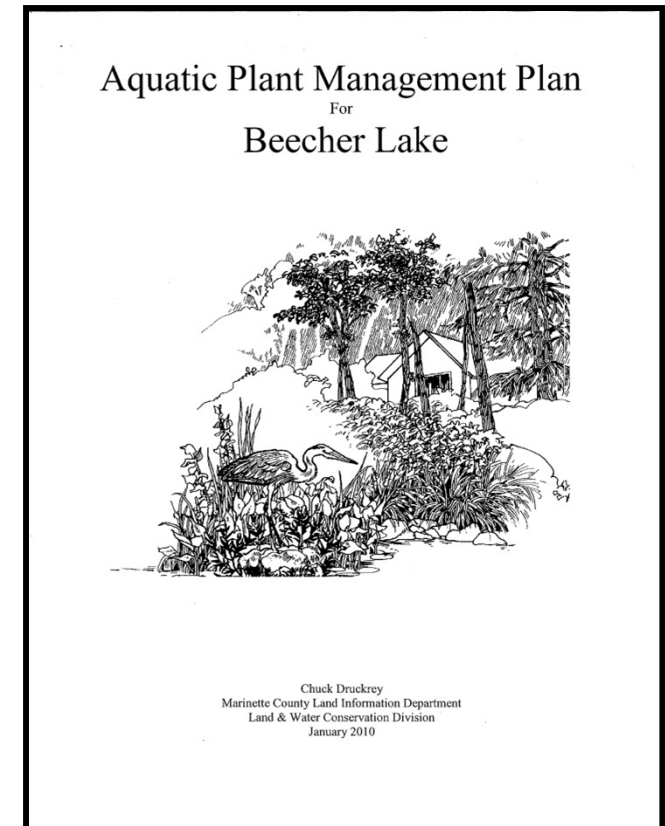
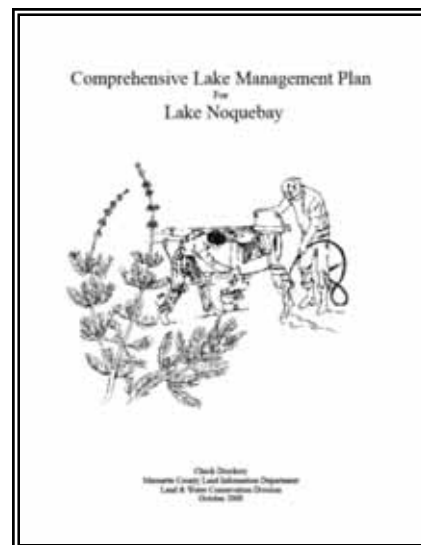
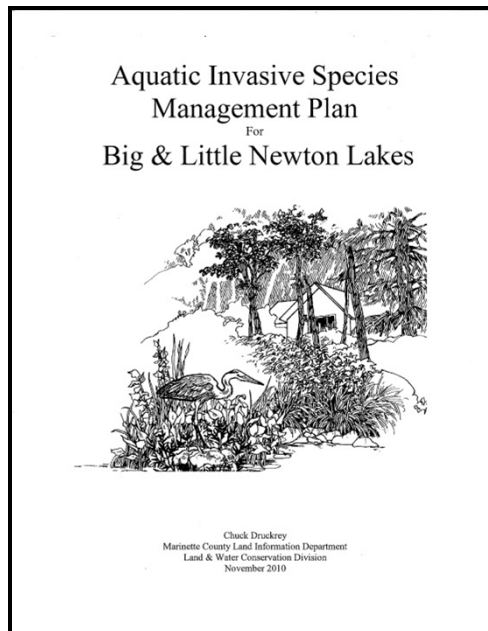
Available on the web: dnr.wi.gov

PUB-CF-020 2012



Since 1994 the LWCD has received/worked on:

- 14 Lake Management Planning Grants
- 6 Lake Protection & Classification Grants
- 3 AIS Education & Planning Grants
- 2 AIS Rapid Response grant
- 3 AIS Control Grant
- 2 AIS Coordinator Grants

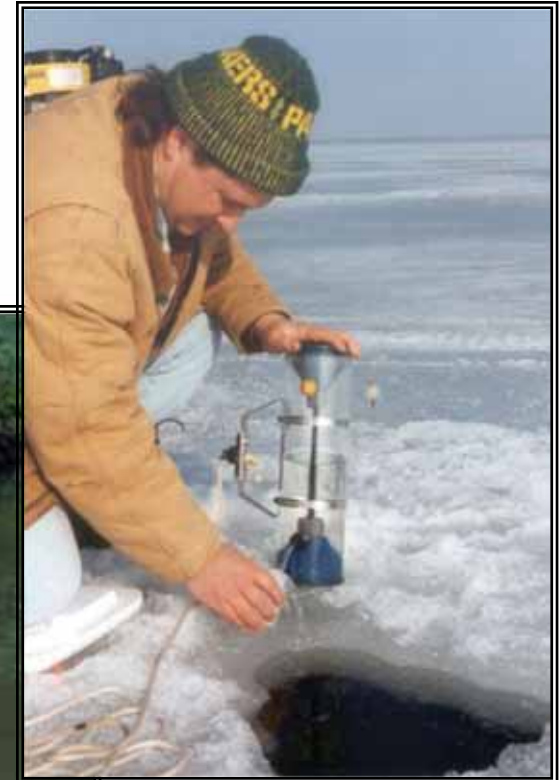
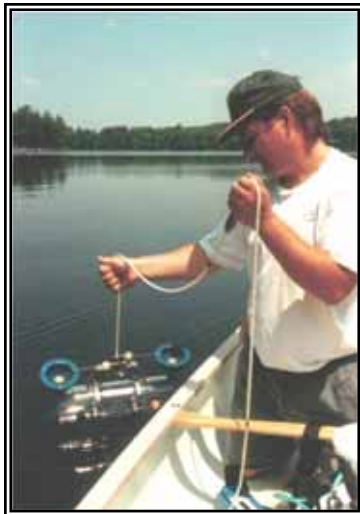


Since 1994 the LWCD has brought more than \$857,000 into the county in support of lakes.

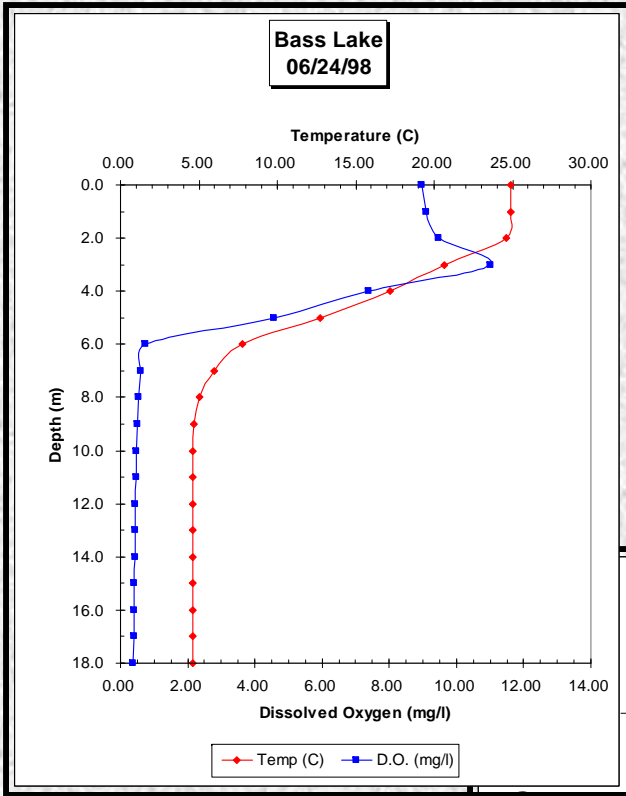
Developing water quality monitoring capability was key to our program!



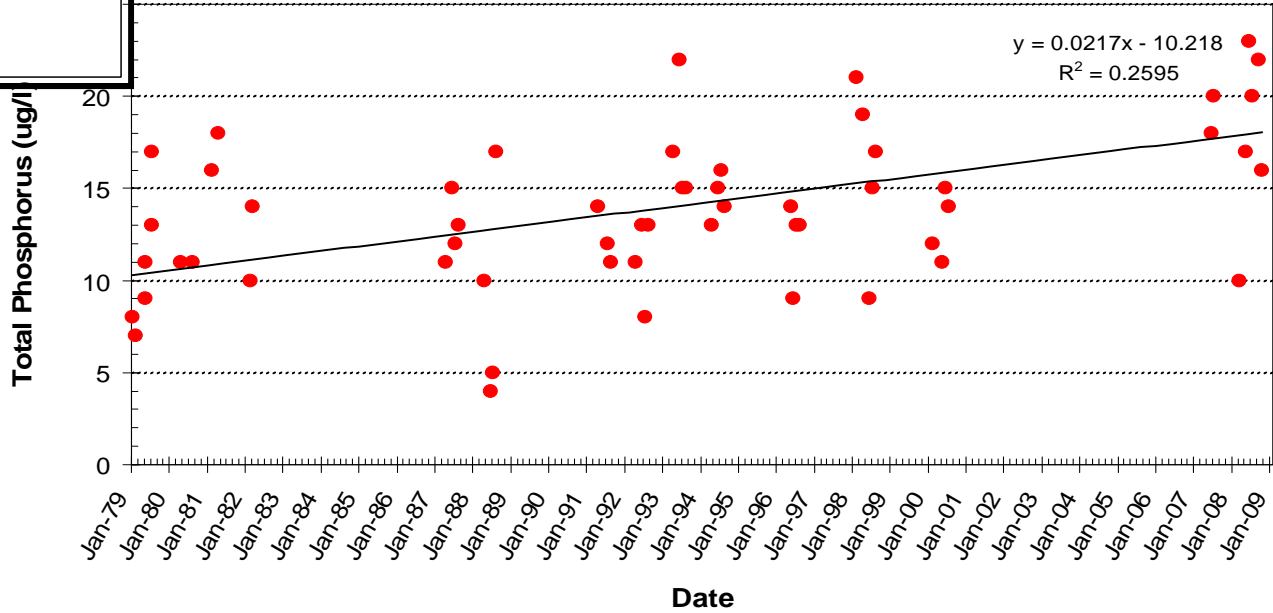
← \$\$\$



**Little or no data
exists for most
inland lakes.**



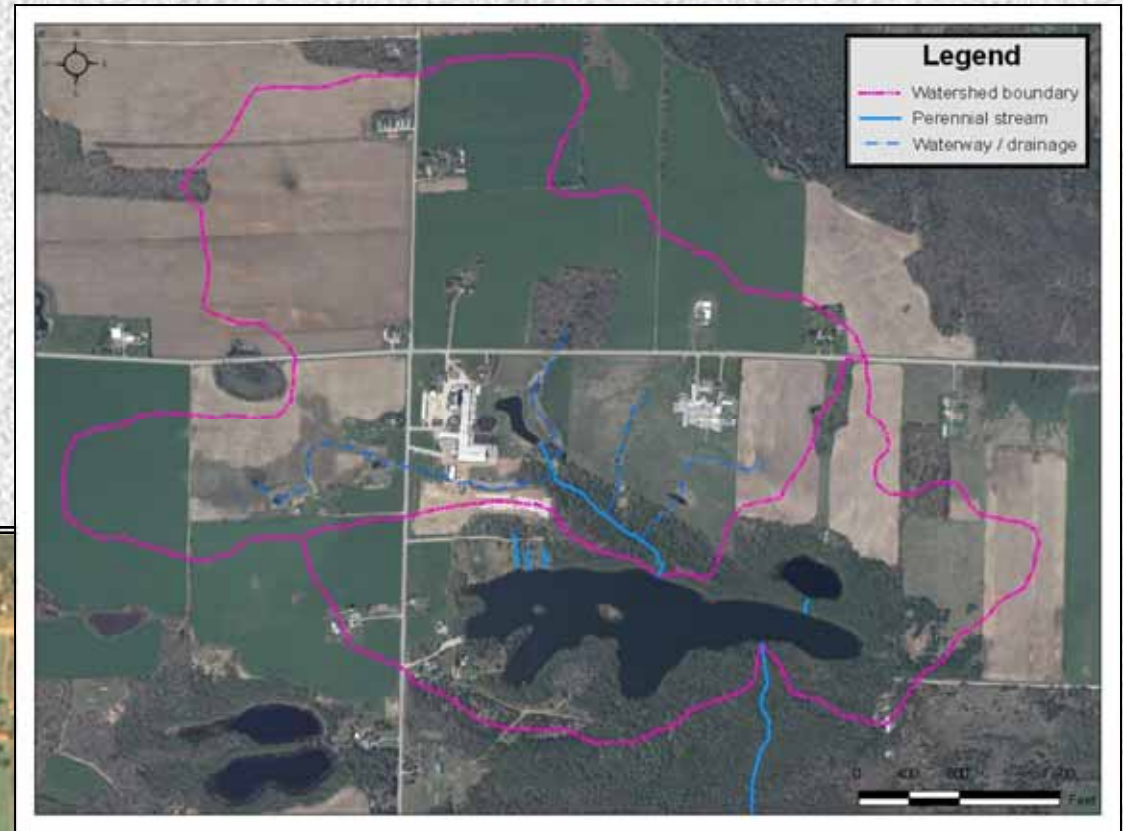
**Total Phosphorus Concentration
Lake Noquebay (1979-2008)**



**Good
planning
requires
good data!**

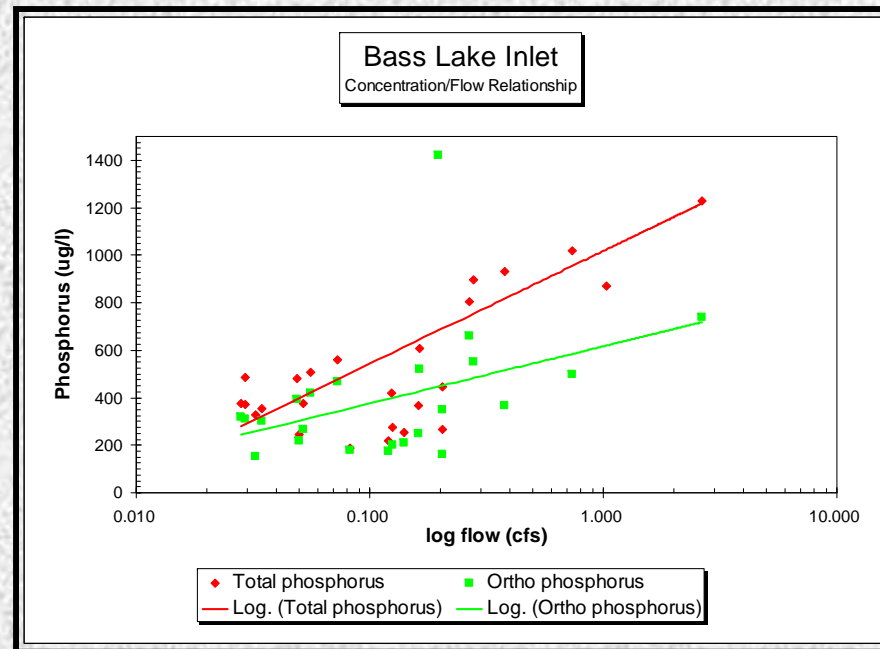
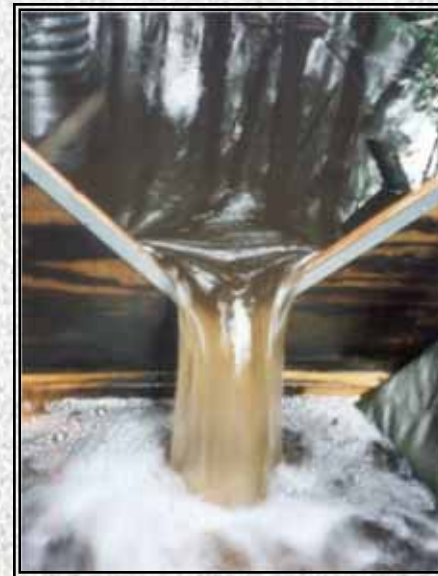
Bass Lake

One of the first NPS priority watershed projects in 1984.



By 1994 all the recommended BMP's were installed and an alum treatment was scheduled...

Phosphorus levels were still elevated!



A freestall here...

A manure storage there..

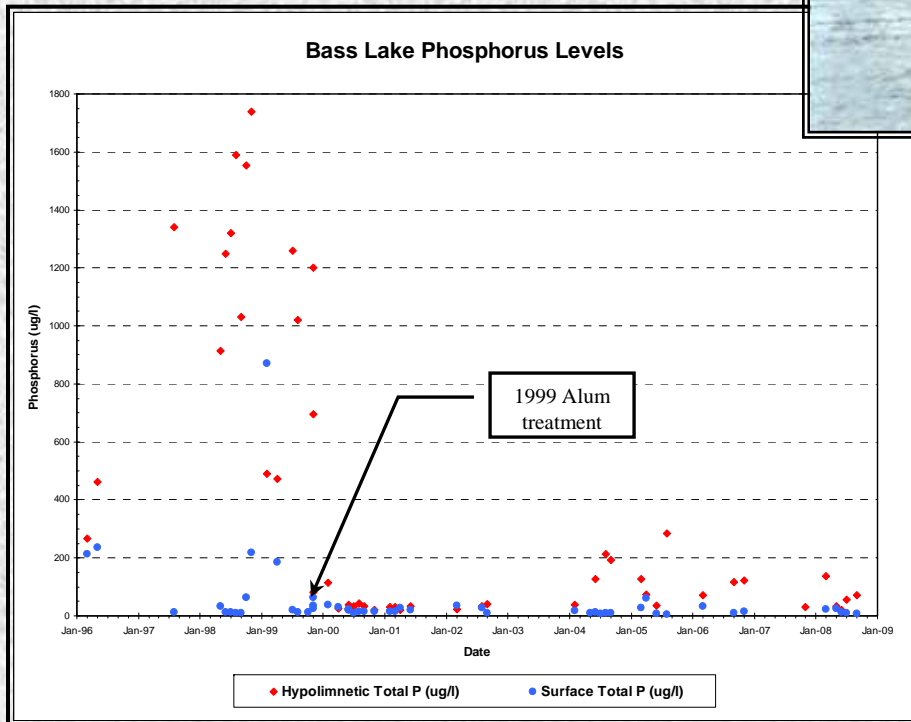
A farm abandonment...

**And a sprinkling of clean
water practices**



**Followed by even
more monitoring...**

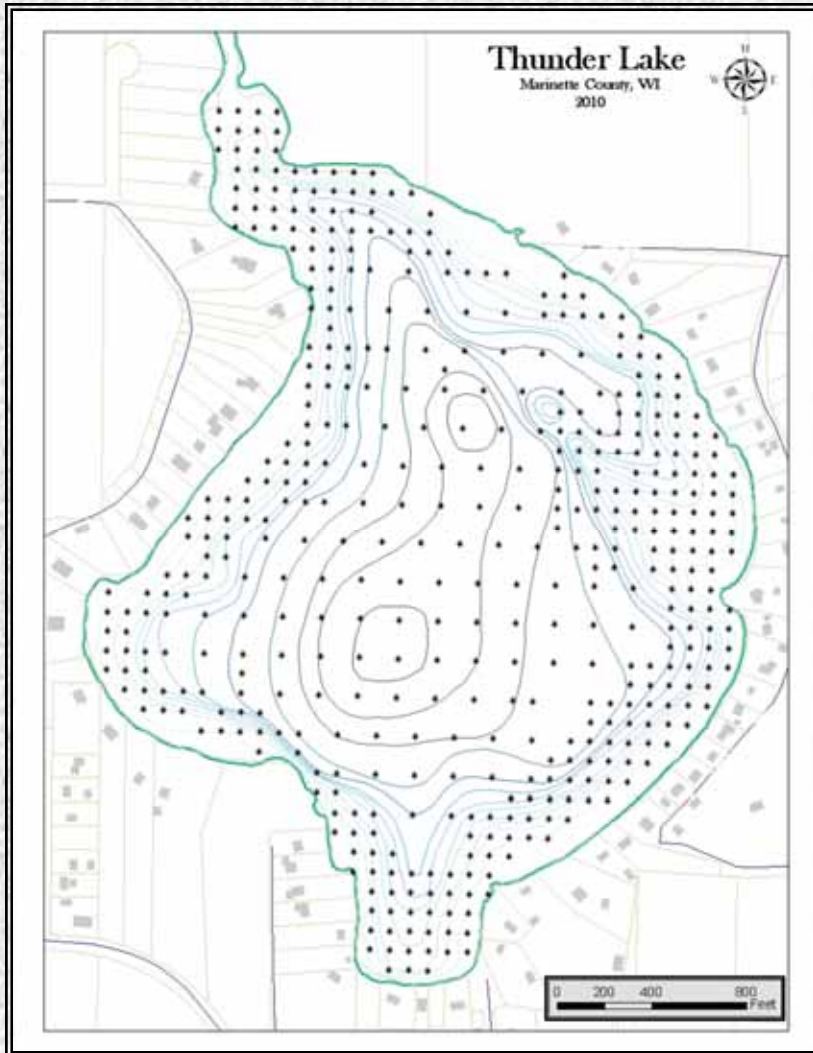
**5 years later.....
the lake was finally ready
for an alum treatment.**



In 2006 The DNR contracted with the LWCD to monitor phosphorus loading and track lake water quality to verify project success.

Bass Lake was removed from the 303d list of impaired waters in 2008.

The LWCD spends a lot of time addressing “aquatic plants problems”



Aquatic plant surveys are conducted according to DNR point/intercept protocols.

(GIS capability is very helpful)

Identify plants and record density.



1(sparse)



2(moderate)



3(dense)



GIS is used to spatially present the aquatic plant data.

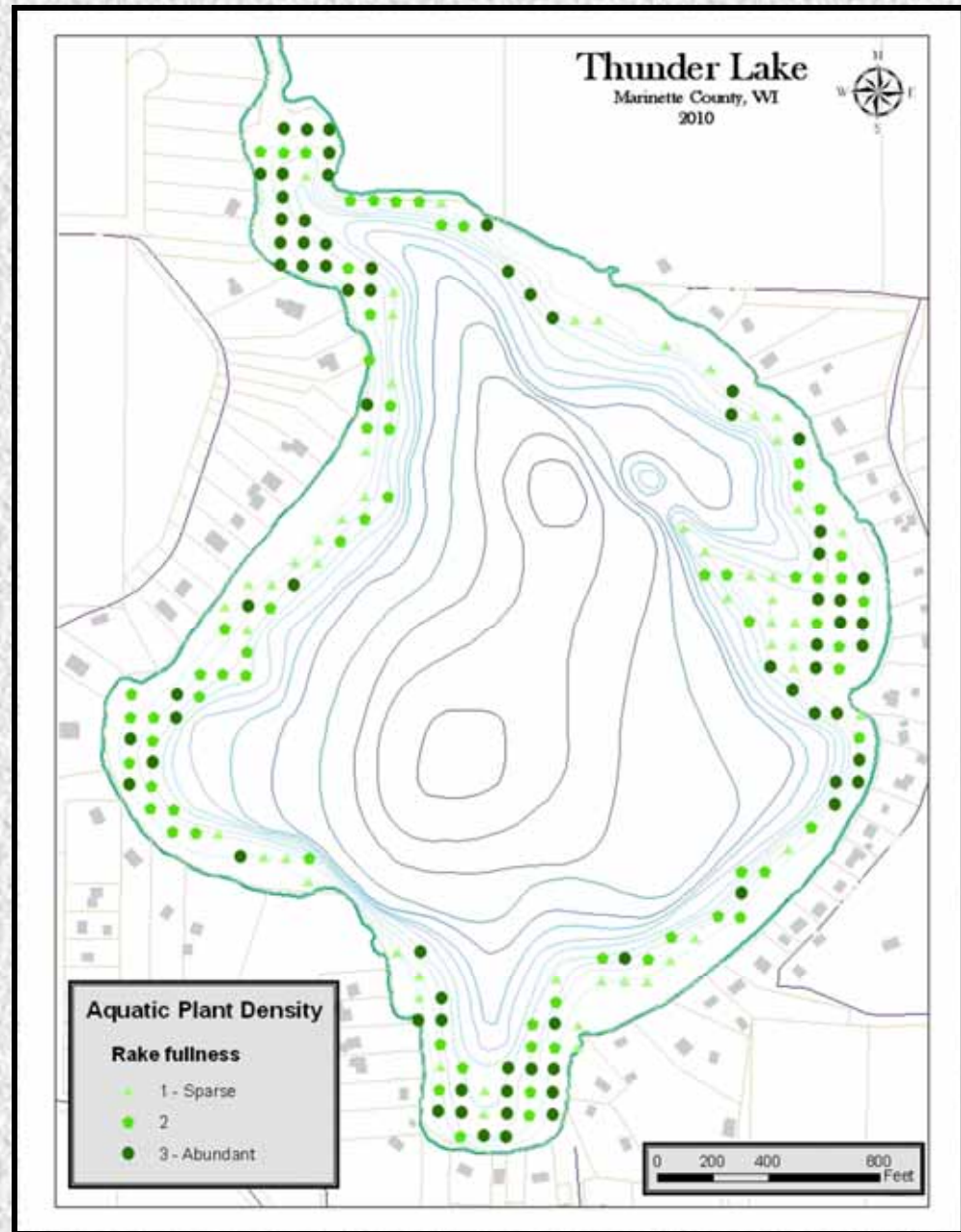
1(sparse)



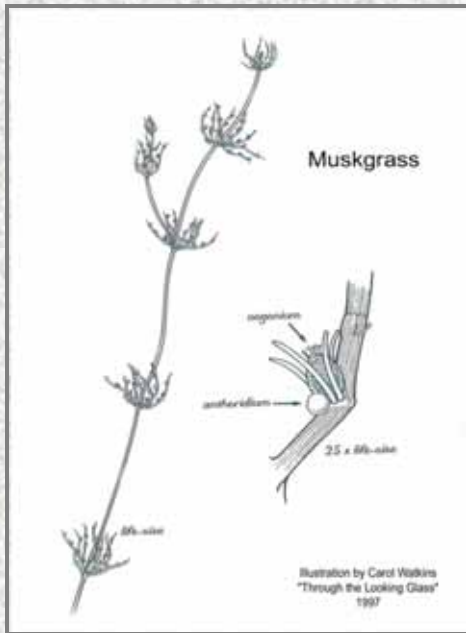
2(moderate)



3(dense)

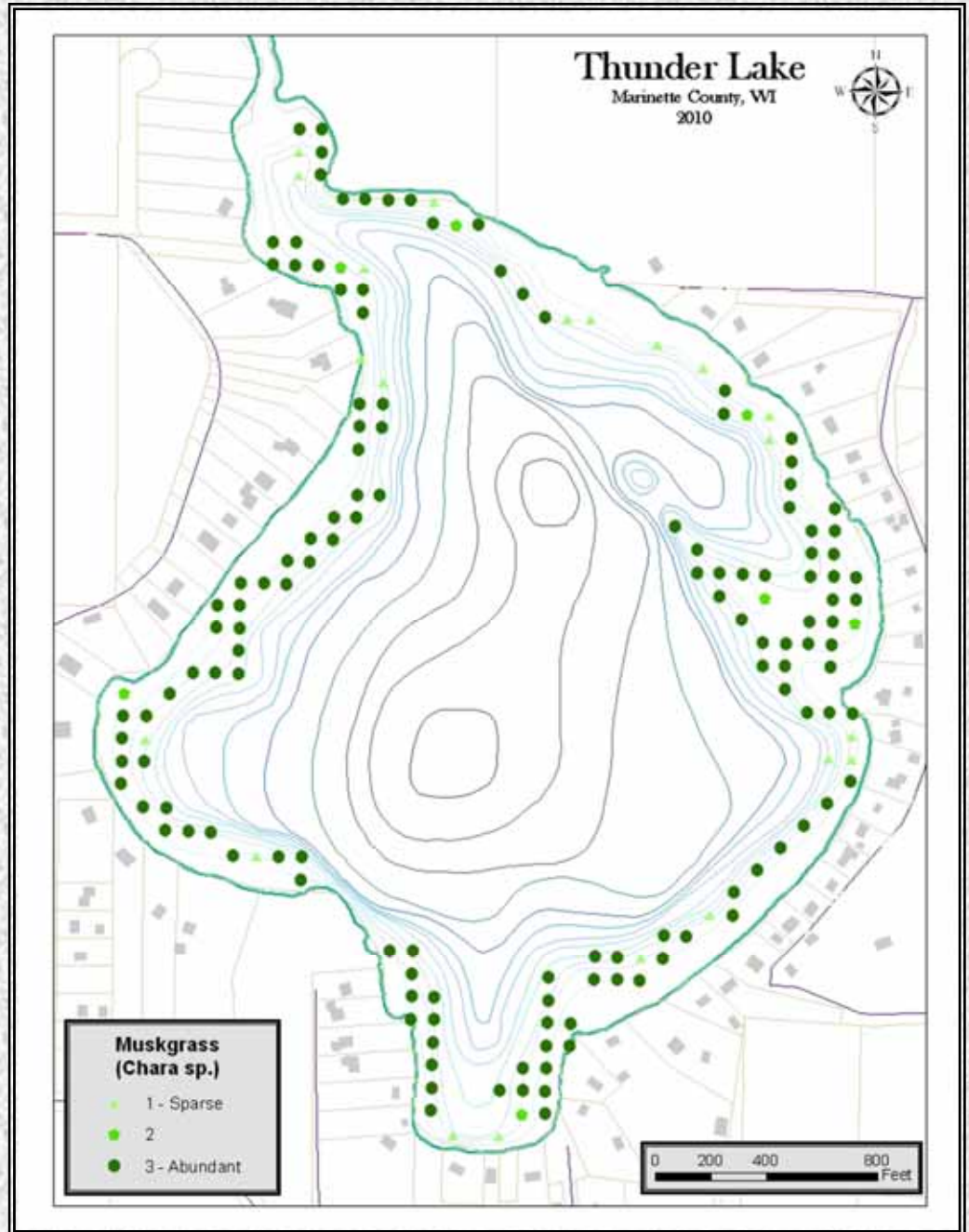


Individual species data can also be mapped.

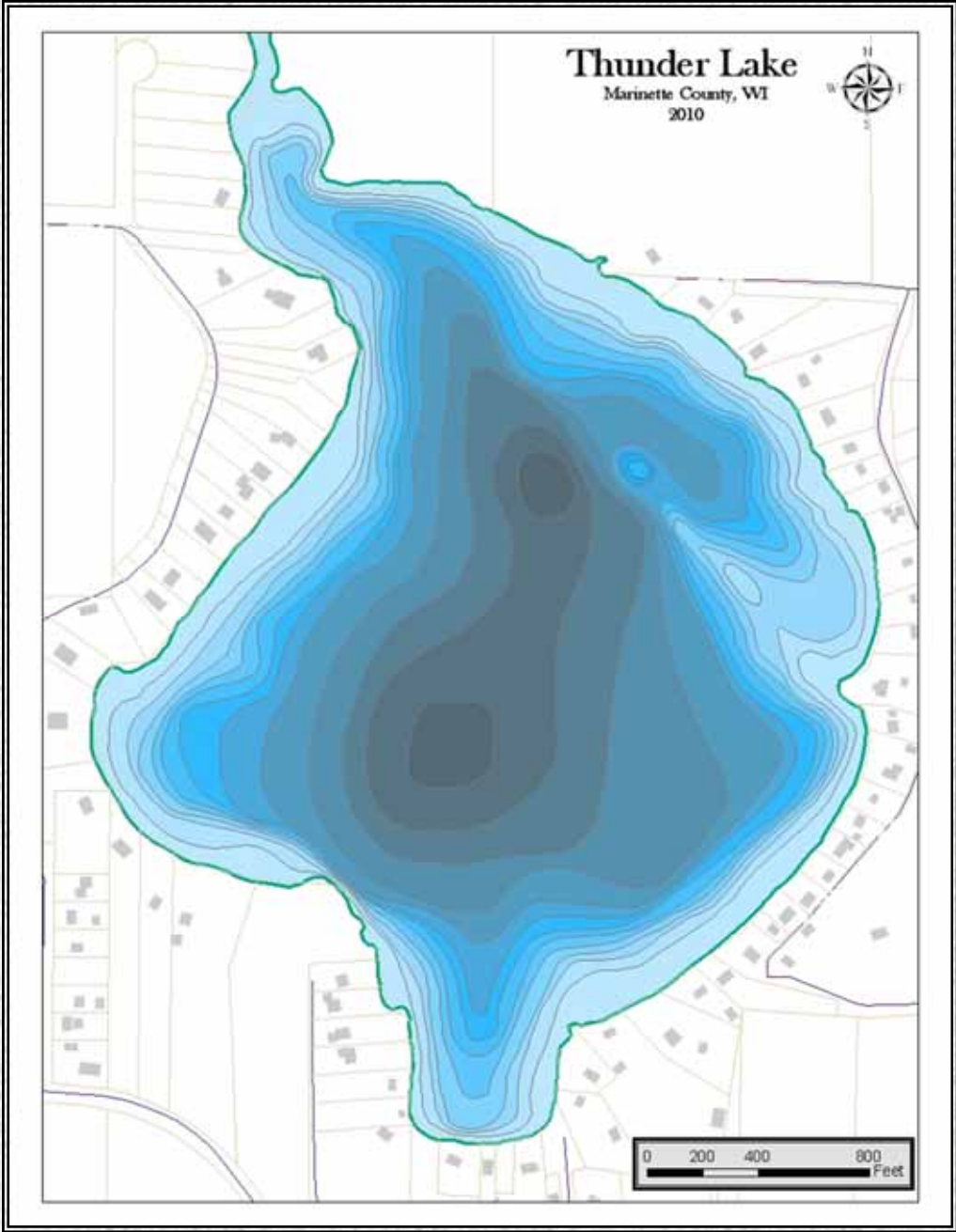
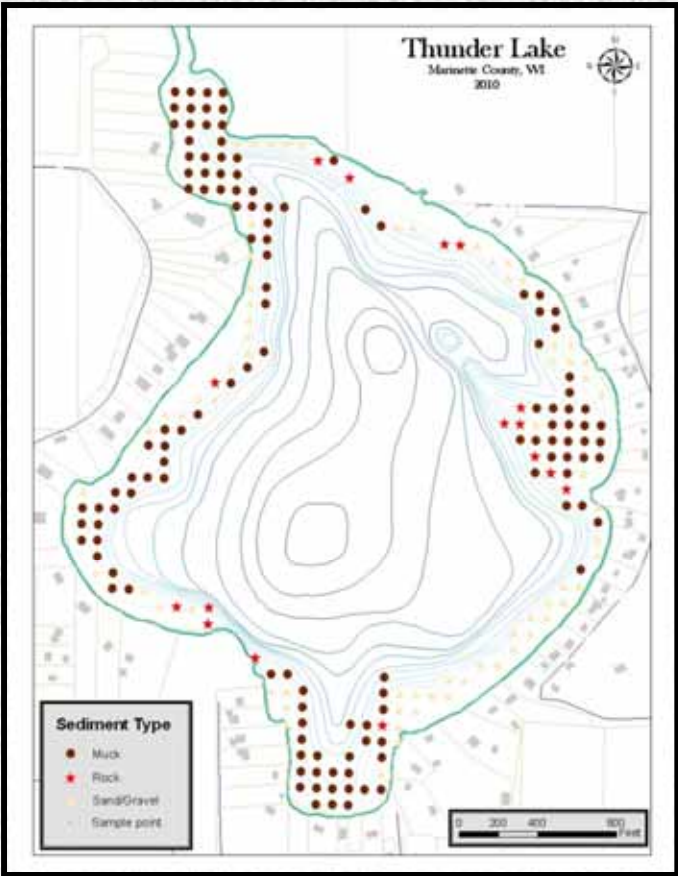


Muskgrass (*Chara* sp.)

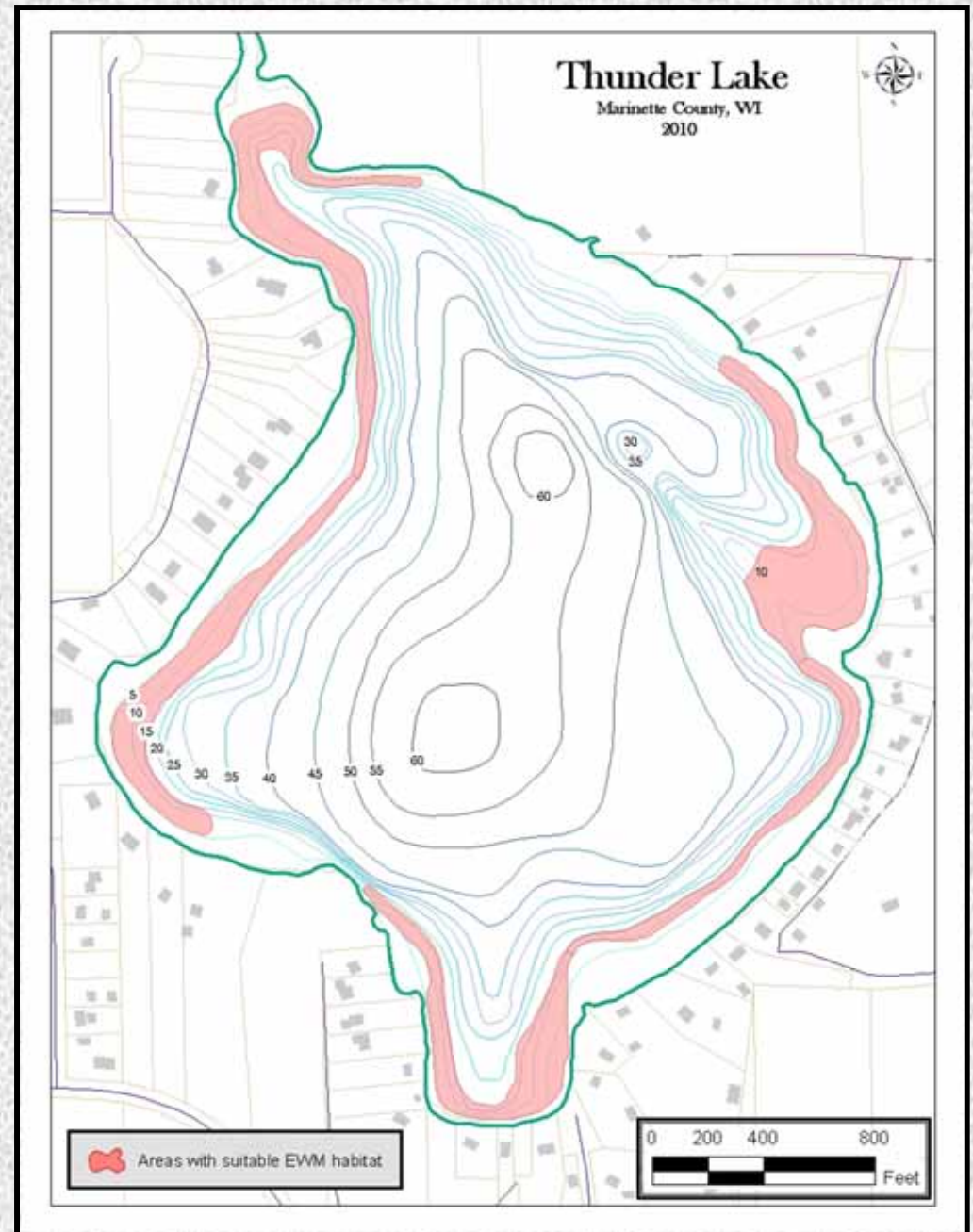
Muskgrass is a type of macro-algae adapted to shallow sandy substrate. It is the most abundant plant in the lake



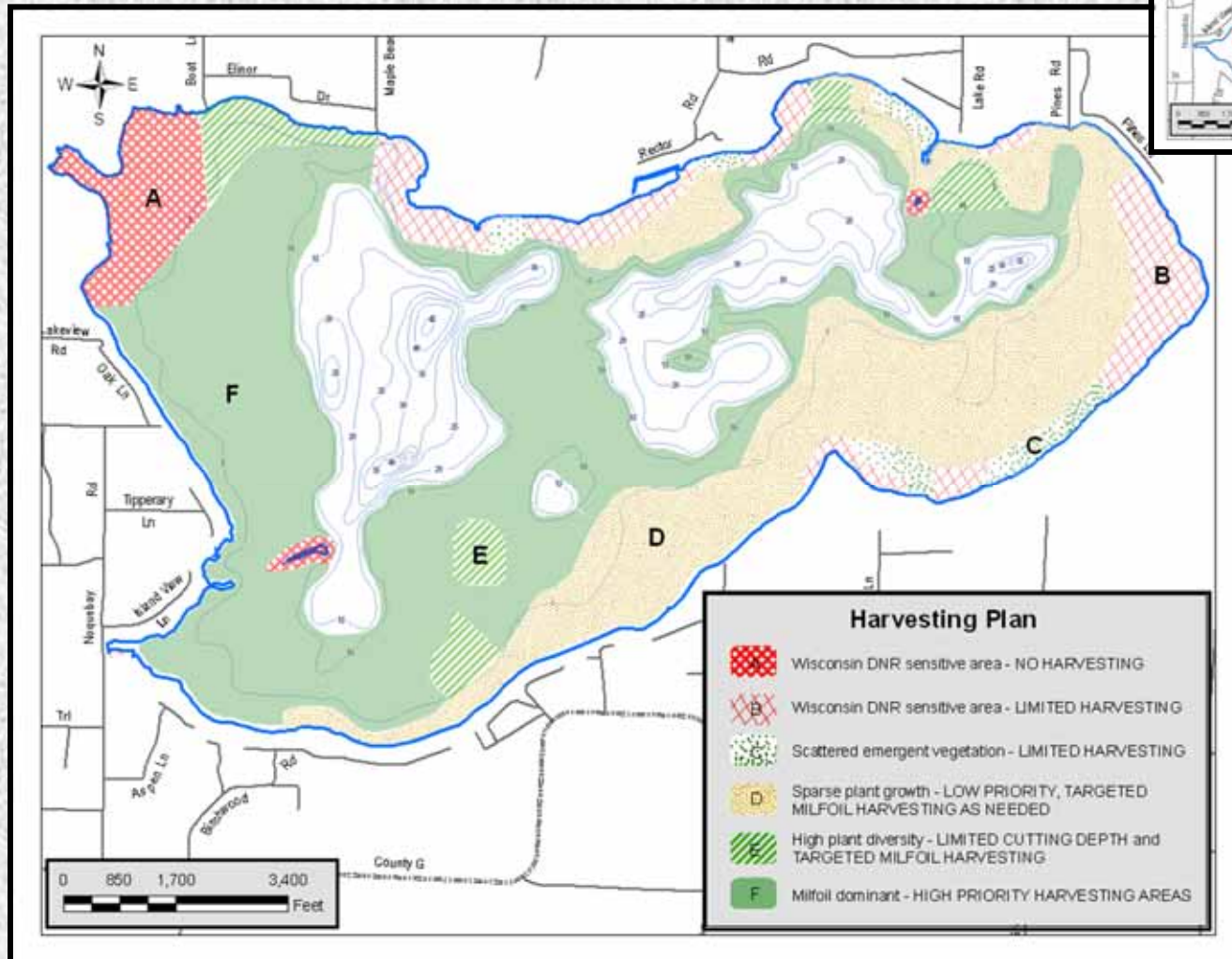
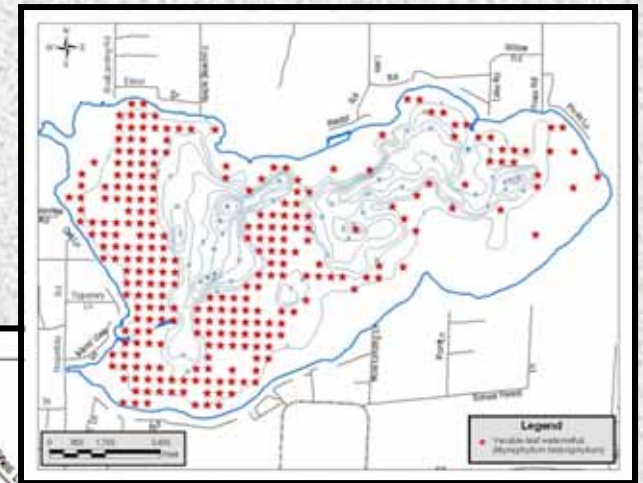
Sediment data and depth are mapped



Potential EWM habitat is determined by analyzing plant preferences.



The goal is a realistic aquatic plant management plan

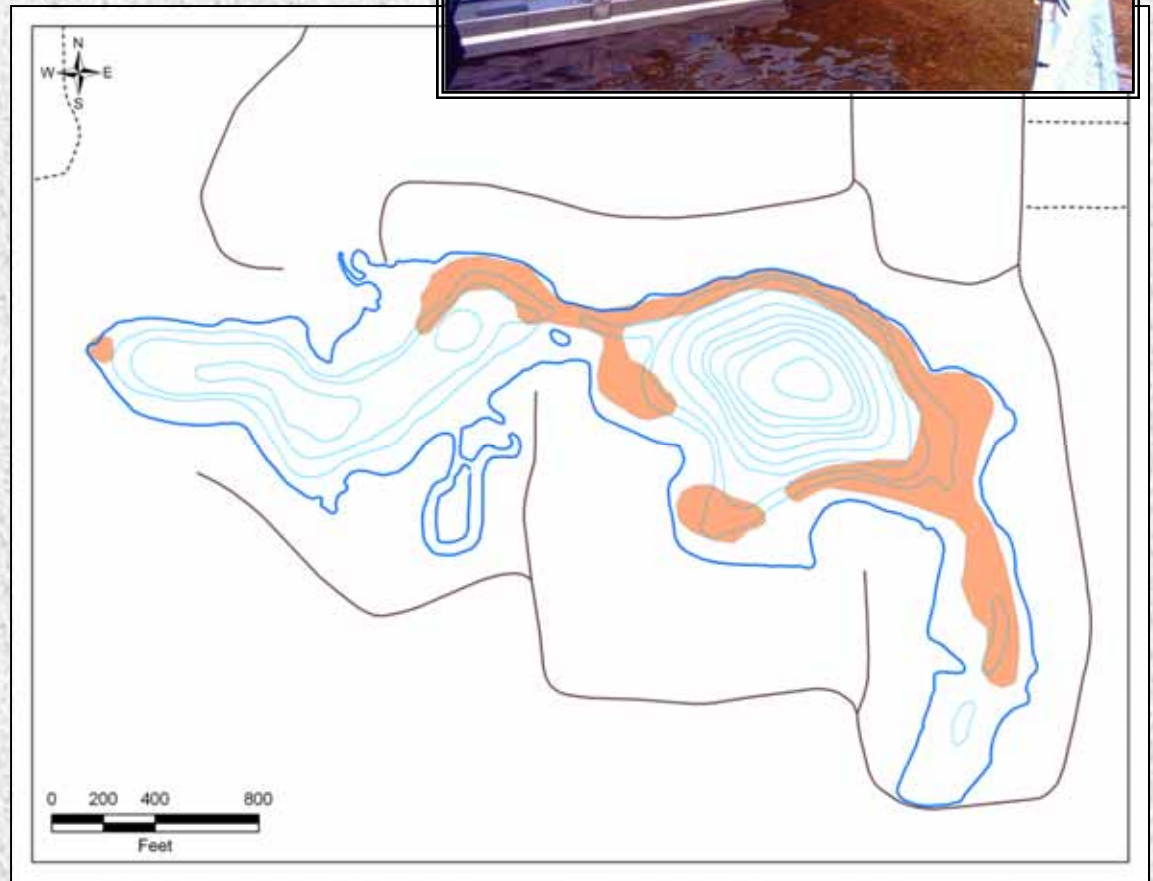


- Nuisance species
- High use areas
- High plant diversity
- Sensitive areas

APM plan implementation and evaluation.



GIS mapping is used to guide harvesting and herbicide application.



Wisconsin Recreational Boating Facilities Program

- 50% cost-sharing for aquatic plant harvesting equipment
- 5 harvesters acquired with LWCD assistance since 1993



Exotic Invasive Species Management

- Grant funded county AIS coordinator since 2009
- Monitoring
- Management



Clean Boats Clean Waters Watercraft Inspection Program



- The LWCD provides volunteer training and coordination.
- Received grant funding to hire three LTE's to conduct watercraft inspections.



Training
In order for a volunteer monitoring program to be successful, it is important to adequately train, support and guide volunteers along the way. No matter where boaters go across the state, the volunteer message will remain the same: "Clean Boats, Clean Waters."

Training sessions are scheduled at convenient locations across the state. During the training sessions, volunteers will get a general overview of what current aquatic invasive species threaten Wisconsin waters. They are given instructions on how to set up a boat launch monitoring program, approach boaters, perform boat/trailer checks, record pertinent data, and report suspect specimens. In addition, they receive a volunteer handbook and receive a kit to assist them in their monitoring efforts. Contact the Clean Boats, Clean Waters Coordinator for the next scheduled workshop in your area: 715/265-2659.

How Can You Help?

- **Report and remove** aquatic plants, animals, and mud from boat, trailer, and equipment before leaving the water access.
- **Drain** water from boat, motor, bilge, live wells, and bait containers before leaving the water access.
- **Dispose** of unwanted bait in the trash.
- **Spray** (wash) boats and recreational equipment with high pressure and/or hot tap water (> 104° F), especially if moved for more than a day. Dry boats and equipment thoroughly for at least 5 days.

Wisconsin laws prohibit launching a boat or placing a trailer or boating equipment in navigable waters if it has aquatic plants or rebar mussels attached.

For more information about the "Clean Boats, Clean Waters" program go to our website: www.dnr.wisconsin.gov/lawcd/cbw

The Wisconsin Department of Natural Resources provides technical assistance to its volunteer program, watercraft launch sites at all locations and the staff of the Wisconsin Department of Transportation, Department of Marine Regulation, LLC, and other public entities is available to advise on boat launch site, facility, and equipment. Please call 715/265-2659 for more information.

Prepared by S. J. Arnold, Blue Sky Economics & Design, LLC

2008 W1702 0001

Phragmites Management

DNR/LWCD
partnership to
restore native
vegetation on the
shores of Green
Bay.



Phragmites Control Project

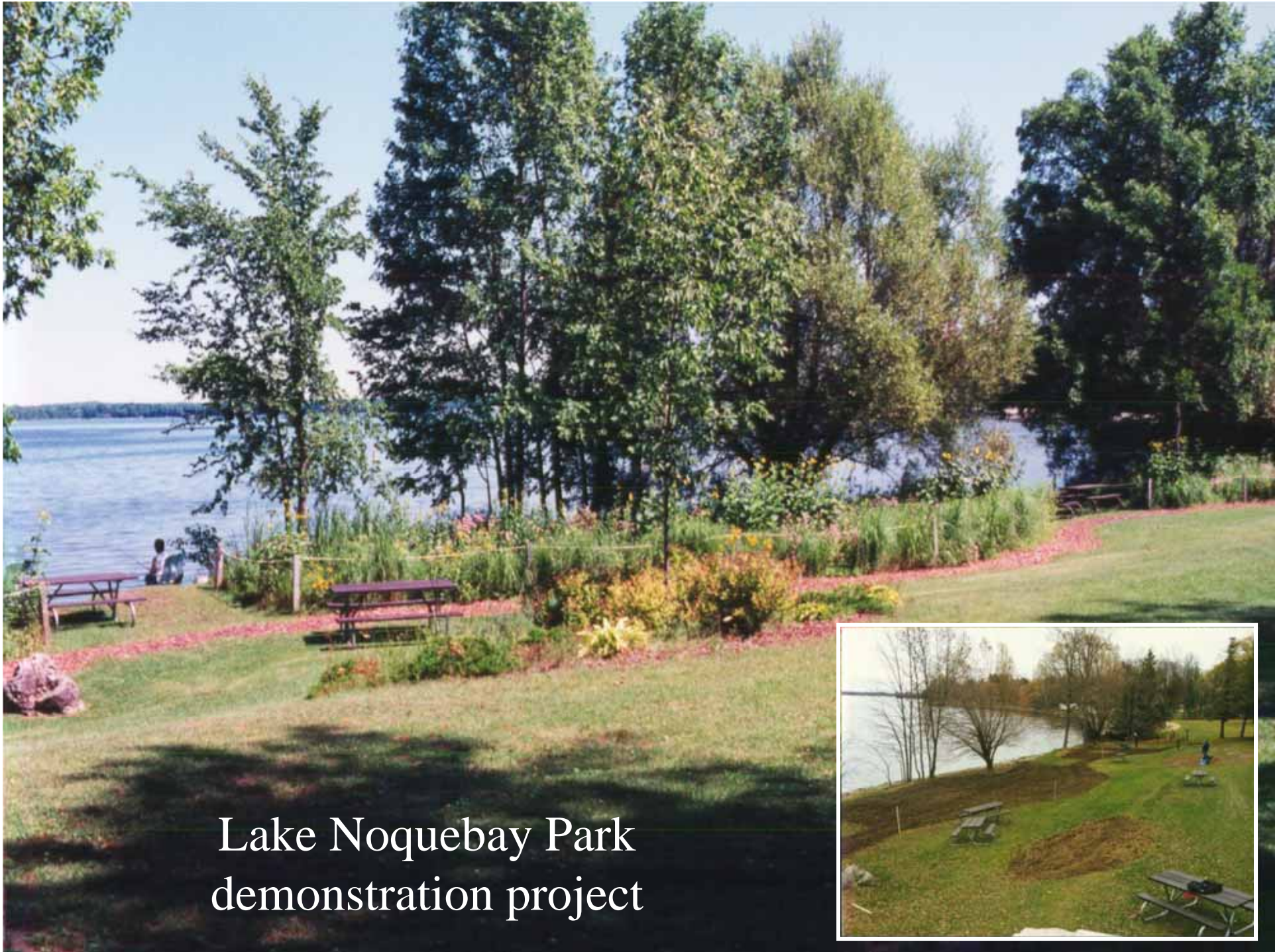
- Three year, \$805,000 GLRI grant
- Six participating counties
- 3000 acres of public and private lands



Shoreline Habitat Restoration & Mitigation



- County cost share program
- Demonstration projects
- Mitigation activities
- Zoning violations



Lake Noquebay Park
demonstration project

Erosion Control

- Cost shared
- Non-cost shared
- Zoning violations



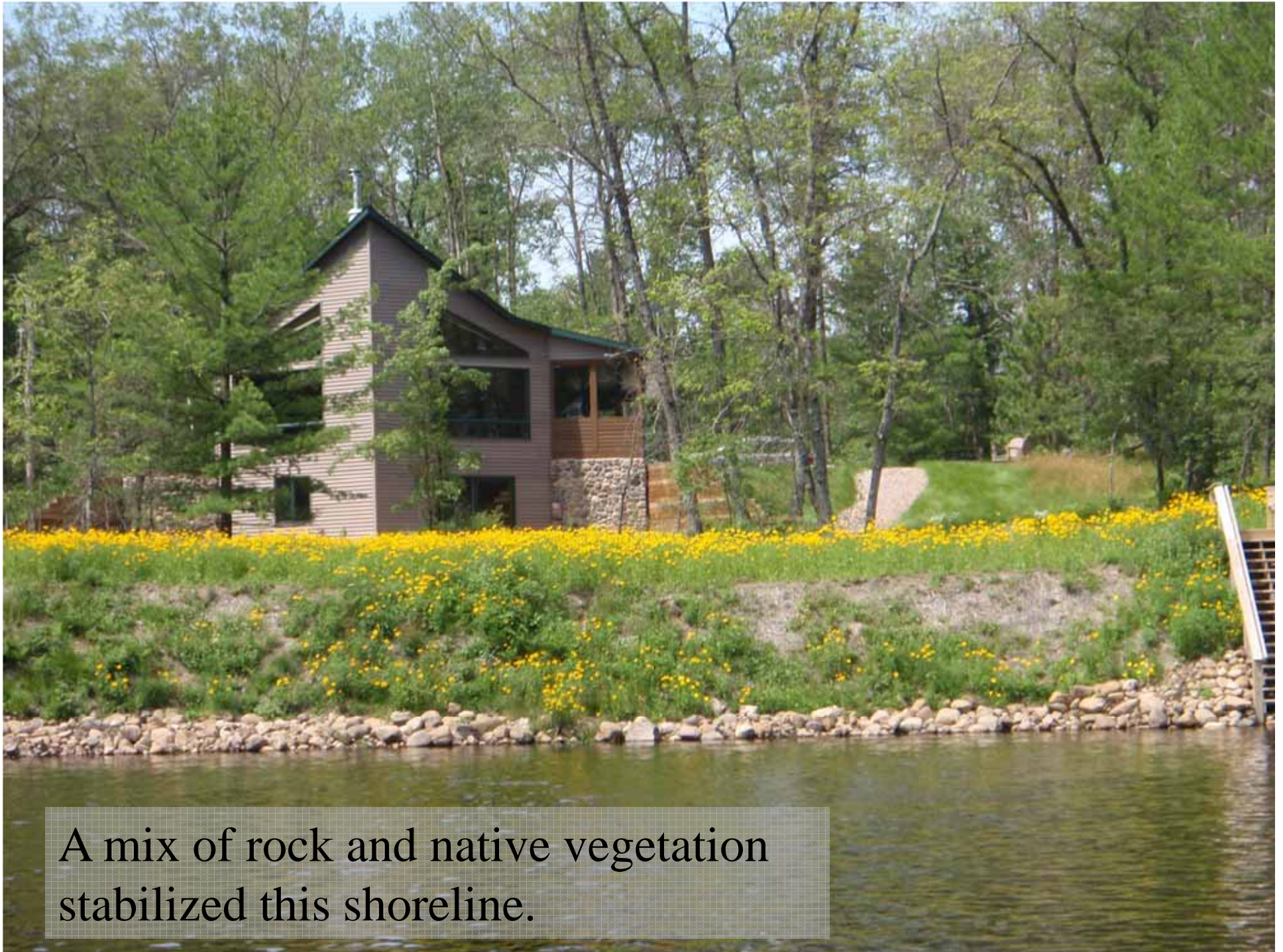


**Bioengineering is our
first choice...
but sometimes you have
to bring in the heavy
equipment**



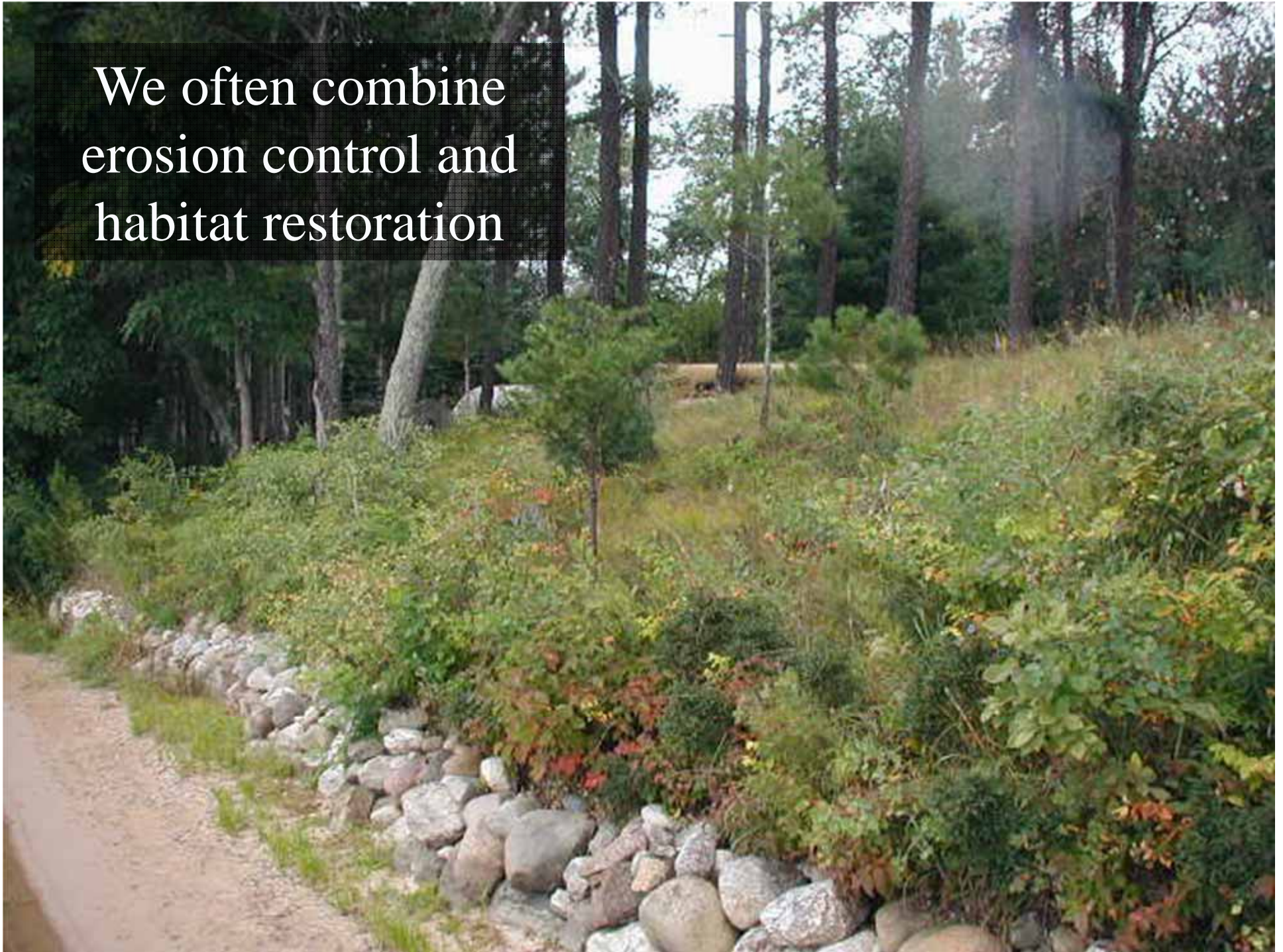


Bioengineering can even work on severe slopes with unstable soil.



A mix of rock and native vegetation stabilized this shoreline.

We often combine
erosion control and
habitat restoration





This Project was designed by “ a man with a backhoe” ... After one spring it all washed into the Bay.



LWCD obtained cost-share funds to do it right!



Boat Access and Recreational Development



Work with towns and villages:

- Design
- Permitting
- Recreational Boating Facilities Grants

Pond management

- Aquatic plant ID
- D.O. monitoring
- Water quality issues



**Wetland
Restoration &
Mitigation**

**The DNR caught this landowner
doing a bad thing!**

**The LWCD developed the
restoration plan**



**This is the same site one year
after restoration.**

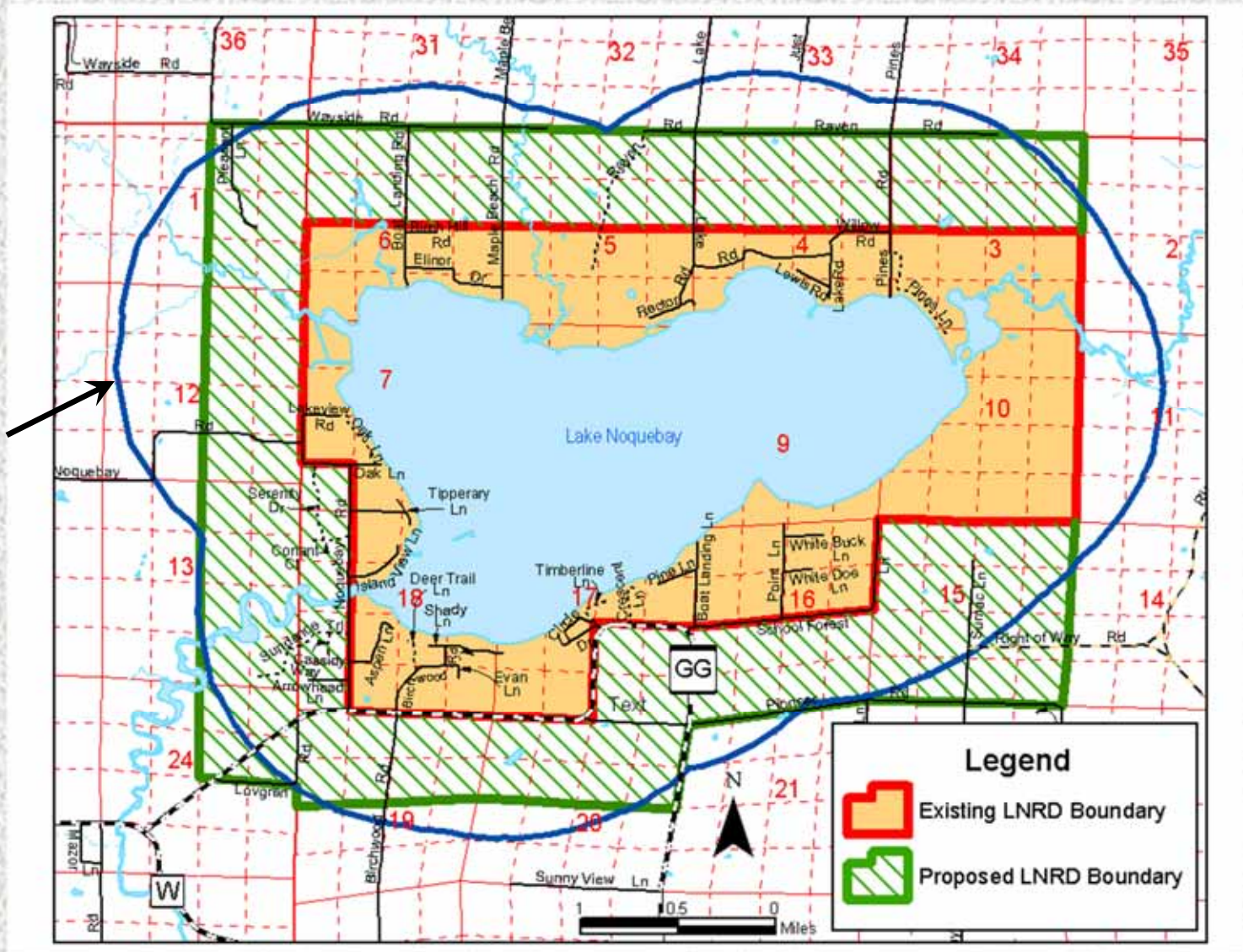


**The LWCD partners
with USFW for
wetland and stream
improvement projects.**



Lake Community Organizing

1-mile
offset



State and Federal Permit Assistance

BANK EROSION POTENTIAL INDEX (BEPI) WORKSHEET

Applicants and Department staff shall use this worksheet to calculate erosion intensity pursuant to ss. NR 328.38(2)

| | | | | | |
|-----------------|-------|----------|-----------------------------|---------------------------|--|
| Name | | | Contact Person | | |
| Mailing Address | | | Email Address | | |
| City | State | Zip Code | Phone Number () () () | Fax Number () () () | |

| STREAMBANK VARIABLES | DESCRIPTIVE CATEGORIES | | | | | SCORE |
|--|---|-----------------------------------|-----------------------------------|--------------------------------------|----------------------------|--|
| | Erosion Intensity Value is Located in Parenthesis at Bottom of Each Category Box. | | | | | |
| Bank Materials – predominance of bank materials at toe (between heel and O/HWM on bank face) | Bedrock Outcrop Step assessment BEPI-1 | Cobble >3 inches (-10 points) | Silt/Clay (0 points) | Gravel <3 inches (5 points) | Sandy Gravel (7 points) | Non-plastic sands and silts (10 points) |
| Hydraulic Influence of Upstream Structures – distance (number of channel widths) to bridges, culverts, or dams. Calculations: Number of Channel Widths = Stream Distance to Structure Divided by the Average Channel Width | | 10+ channel widths (1 point) | 3-10 channel widths (2 points) | 2-3 channel widths (3 points) | | |
| Max Bank Height (feet) Divided by the O/HWM Height (feet) Calculations: Max Bank Height / O/HWM Height | 1 – 1.19 Very Low or Low (2 points) | 1.2 – 1.3 Medium (3 points) | 1.4 – 2.0 High (7 points) | 2.1 – 2.8 Very High (9 points) | | |
| Bank Slope (degrees) – measure stream and translate into angle degree Calculations: Bank Slope Inverse Tangent (Rise/Run) | 0 – 20 Very Low (1 point) | 21 – 40 Low (3 points) | 41 – 60 Medium (5 points) | 61 – 90 Vertical (7 points) | | |
| Scour/Strath Bank Layering – | | | | | | |

State of Wisconsin
Department of Natural Resources
(Return to appropriate DNR Regional/Service Center Office)

State / Federal Application for Water Regulatory Permits and Approvals
Form 3500-053 (R 4/01) Page 1 of 2

PLEASE COMPLETE BOTH PAGES 1 & 2 OF THIS APPLICATION. PRINT OR TYPE. The Department requires use of this form for any application filed pursuant to Chapter 30, Wis. Stats. The Department will not consider your application unless you complete and submit this application form. Personally identifiable information on this form will not be used for any other purpose, but it must be made available to requesters under Wisconsin's open records law (s. 19.31-19.39, Wis. Stats.).

1. Applicant (Individual or corporate name) _____
Address _____
City, State, Zip Code _____ Fire Number _____
Telephone No. (include area code) _____ Tax Parcel Number _____

2. Agent/Contractor (firm name) _____
Address _____

3. If Applicant is not owner of the property where the proposed activity will take place, please provide the name of the owner and the address of the property.

Electronic reproduction of 2009-10 Wis. Stats. Database, 1/1/2009 through 2011 Wis. Act 113 and December 31, 2011.

Updated 09-18 Wis. Stats. Database NAVIGABLE WATERS, HARBORS AND NAVIGATION

CHAPTER 30 NAVIGABLE WATERS, HARBORS AND NAVIGATION

| SUBCHAPTER I GENERAL PROVISIONS | DEVELOPMENT AND OPERATION OF HARBORS |
|---|---|
| 30.01 Definitions | 30.04 Municipal authority to order harbor improvements |
| 30.02 Permit procedure for utility facilities | 30.05 Permitted and other improvements to be followed in making harbor improvements |
| 30.03 Lower Wisconsin State Riverway | 30.06 Canals, navigation building structures |
| 30.04 Enforcement of harbors, alteration of streams, enlargement of public rights | 30.07 Harbor railway law fees |
| 30.05 Authority of chapter to modify certain self-governing districts | 30.08 Floating harbor improvements and operations generally |
| 30.06 Erection from certain permit requirements | 30.09 Beach of navigable waterways |
| 30.07 Removal of obstructions from navigable waters | 30.10 Process and Status of Harbors Construction |
| 30.08 Excavation of public lands and interests, protection of public utility systems | SUBCHAPTER II LOWER WISCONSIN STATE RIVERWAY |
| 30.09 Declaration of navigability | 30.10 Definitions |
| 30.10 Identification of ordinary high water mark by local utility districts | 30.11 Creation |
| 30.11 Delineating boundary of district | 30.12 Department duties, powers, prohibitions |
| 30.12 NAVIGABLE WATERS AND NAVIGATION IN GENERAL | 30.13 Board duties |
| 30.13 Establishment of navigable waters | 30.14 Harbors and rivers, board governance |
| 30.14 Damages and penalties in navigable waters | 30.15 Easement, protection and control |
| 30.15 Regulation of harbors and boats | 30.16 Plans |
| 30.16 Unimproved structures | 30.17 Prohibited and restricted activities in the morning |
| 30.17 Bridges and structures | 30.18 Prohibited activities in the stream |
| 30.18 Unimproved bridge construction | 30.19 Prohibition of navigation activities |
| 30.19 Navigation and management | 30.20 Agricultural use |
| 30.20 Request on control of specific navigation spaces | 30.21 Reclamation or restoration use |
| 30.21 Regulation of fishing rights | 30.22 Reclamation |
| 30.22 Withdrawal and preservation and maintenance by person other than riparian owner | SUBCHAPTER III REGULATION OF BOATING |
| 30.23 Prohibition against construction of riparian rights | 30.24 Definitions |
| 30.24 Harbors and navigation | 30.25 Floating boat laws |
| 30.25 Regulation of water on public lands and waters | 30.26 Certificate of number system to conform to federal system |
| 30.26 Regulation of water on public lands and waters | 30.27 Certificate of number and registration, application, certificate and registration permit fees, issuance |
| 30.27 Liability for unlawful obstruction of navigable waters | 30.28 Certificate or registration shall be on board display of boats and registration permit |
| 30.28 Removal of obstructions to navigation | 30.29 Certificate or registration shall be on board display of boats and registration permit |
| 30.29 Withdrawal of water from lakes and streams | 30.30 Temporary use permits for recreational boats |
| 30.30 Enforcement and protection of streams | 30.31 Certificate of origin, requirements, contents |
| 30.31 Erection of water control structures | 30.32 Certificate of title, requirements, exemptions |
| 30.32 Erection of water control structures | 30.33 Application for certificate of title, fee and engine identification numbers |
| 30.33 Erection of water control structures | 30.34 Department to issue records |
| 30.34 Erection of water control structures | 30.35 Certificate of title, issuance, records, fees |
| 30.35 Erection of water control structures | 30.36 Contents of certificate of title |
| 30.36 Erection of water control structures | 30.37 Sale, index or certified certificates |
| 30.37 Erection of water control structures | 30.38 Transfer of boat title |
| 30.38 Erection of water control structures | 30.39 Transfer of title to boat |
| 30.39 Erection of water control structures | 30.40 Acquisition of boat purchase tax credit |
| 30.40 Erection of water control structures | 30.41 Enforcement and jurisdiction prohibited |
| 30.41 Erection of water control structures | 30.42 Transfer of ownership of boat with a certificate of title, certificate of ownership or registration |
| 30.42 Erection of water control structures | 30.43 Prohibition of obstruction or diversion of boat or change of address |
| 30.43 Erection of water control structures | 30.44 Floating boat laws |
| 30.44 Erection of water control structures | 30.45 Prohibition of security interests |
| 30.45 Erection of water control structures | 30.46 Notification of person who has perfected security interest |
| 30.46 Erection of water control structures | 30.47 Dates on creation of security interest |
| 30.47 Erection of water control structures | 30.48 Assignment of security interest |
| 30.48 Erection of water control structures | 30.49 Secured party's and owner's duties |
| 30.49 Erection of water control structures | 30.50 Method of perfecting exclusive |
| 30.50 Erection of water control structures | 30.51 Suspension or revocation of certificate of title |
| 30.51 Erection of water control structures | 30.52 Grounds for refusing issuance of certificate of title |
| 30.52 Erection of water control structures | 30.53 Classification of motorboats |
| 30.53 Erection of water control structures | 30.54 Lighting equipment |
| 30.54 Erection of water control structures | 30.55 Other equipment |
| 30.55 Erection of water control structures | 30.56 Rental of motorboats |
| 30.56 Erection of water control structures | 30.57 Sale and use of certain outboard motors restricted |
| 30.57 Erection of water control structures | 30.58 Motorboat prohibition |
| 30.58 Erection of water control structures | 30.59 Title boat |
| 30.59 Erection of water control structures | 30.60 Traffic rules |
| 30.60 Erection of water control structures | 30.61 Speed restrictions |
| 30.61 Erection of water control structures | 30.62 Accidents and accident reports |
| 30.62 Erection of water control structures | 30.63 Disasters signal flag |
| 30.63 Erection of water control structures | 30.64 Boating safety certificate; requirements; exemptions; operation by minors |
| 30.64 Erection of water control structures | 30.65 Intoxicating boating |
| 30.65 Erection of water control structures | 30.66 Preliminary breath screening test |

State of Wisconsin
Department of Natural Resources
www.dnr.wis.gov

Fee for Applications to Alter Lakes, Streams or Wetlands
Form 3500-033A page 2 of 2

Please review the permit application materials closely to see if your project is eligible for a General Permit (GP) or an Individual Permit (IP). This will make a difference in your fee, and in the permit processing time. For projects that require multiple permits or approvals, use the right hand columns to calculate your total fee. The following projects do not require fees: stormwater facilities to which or part by any federal or state agency; flow or wetland projects conducted by the individual State agency.

| Activity | Quantity | Amount | Subtotal |
|---|----------------|---------|----------|
| GP for dredging of stream, stream, channel, structure | | | |
| GP for total loading (single unit) | | | |
| GP for other riprap bridge | | | |
| GP for dredging, removal or less than 25 cubic yards from a lake or stream | | | |
| GP for dredging, pile and animal carcass removal in "floating water" | | | |
| GP for dredging, previously permitted drainage district maintenance | | | |
| GP for dry fire hydrant | | | |
| GP for fish crib, half log, spawning reef, tree drop, wing deflector | | | |
| GP for pier | | | |
| GP for piling | | | |
| GP for pond-landscape (not located in a wetland) | | | |
| GP for pond-wildlife / wetland conservation (meeting criteria in NR 353.04 and NR 353.05) | | | |
| GP for new riprap on moderate and high energy lakes and flowages | | | |
| GP for riprap repair or replacement on inland lakes and flowages | | | |
| GP for seawall replacement or seawall replacement with riprap or vegetated armoring | | | |
| GP for temporary in-stream crossing | | | |
| GP for weed rake | | | |
| GP for wildlife habitat structure (nesting structure) | | | |
| Roadhouse / Road Houseboat repair certification | Total Quantity | x \$50 | = \$ |
| Activities requiring a \$400 fee: | | | |
| GP for a new culvert | | | |
| GP for dredging each open trench utility crossing or dredging a previously dredged area | | | |
| GP for grading greater than 10,000 square feet on the bank | | | |
| GP for intake-outfall structure | | | |
| GP for pond-stormwater | Total Quantity | x \$300 | = \$ |
| Activities requiring a \$300 fee: | | | |



State of Wisconsin
Department of Natural Resources
www.dnr.wis.gov

Repair of Streambank Erosion Control Structure
General Permit Packet 03-07

page 3 of 8

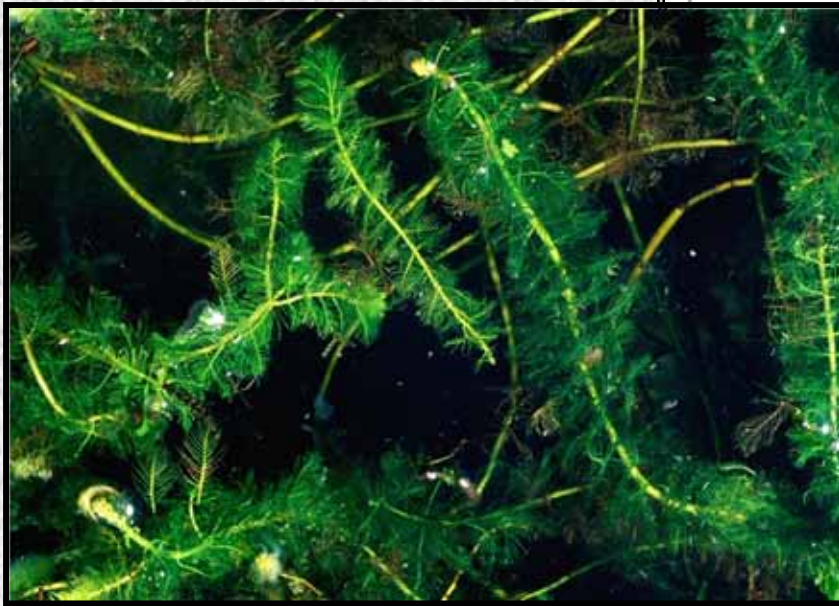
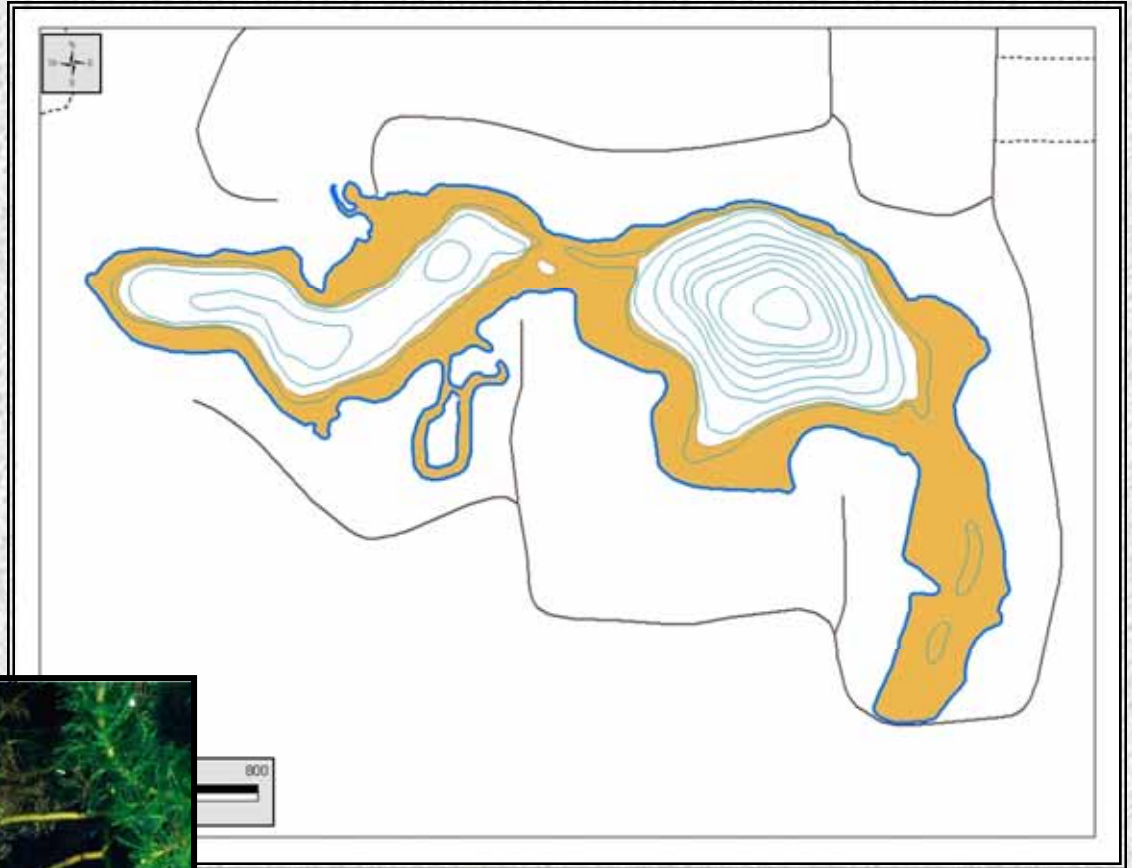
Standards Summary

This sheet generally describes the standards & conditions that you must follow when you have received eligibility for a general permit. All of our general permits have specific standards for construction and location contained in law. By acting on this permit you certify that your plans comply and that you will follow the standards and laws pertaining to the general permit program.

- The project site is located in an urban watershed as identified in NR 328.38, or is within village or city limits.
- The total repair may not exceed the lesser of the length of the existing structure or 300 linear feet of streambank
- Toe protection materials may not be placed above the ordinary high water mark (O/HWM) elevation plus one foot in the Southeastern Till and Cornbelt Plains Ecoregions and may not be placed above the O/HWM plus 2 feet in the Driftless and Prairie Pothole Ecoregions, or a predominantly urban watershed.
- Redistribution or placement of stone is limited to the horizontal footprint of the existing structure and may not exceed the elevations described above.
- Structural stabilization practices shall be sloped to 1.5 horizontal to 1 foot vertical or flatter. Banks treated only with vegetation shall be sloped to 2 feet horizontal to 1 foot vertical or flatter.
- The streambank must be re-vegetated above the ordinary high water mark with Wisconsin native plant species and shall follow NRCS Field Office Technical Guide (FOTG), Section IV, Practice Standard 643A, Shoreland Habitat, found at <http://efotg.nrcs.usda.gov/references/public/WI/643a.pdf>.
- Vegetation, such as seeding and dormant plantings, shall be plant species native to the area of Wisconsin where the project is located. Non-invasive cool season species such as Virginia wild rye, Timothy, alfalfa, alsike clover, orchard grass, Smooth brome grass and red top, may be incorporated into native seed mixes for the purpose of rapid stabilization of critical sites adjacent to agricultural fields.

errant through 2011 Wis. Act 113 and December 31, 2011. Statutory changes effective after 2-1-12 are designated by NOTES.

Beecher Lake AIS Management Plan



- Herbicide treatment
- Winter drawdown



Beecher Lake Dam

- 6 foot head
- Simple fixed spillway

Problem: No water level control structure.

Pumping would be prohibitively expensive!
(83,734,063 gallons)

Solution: Siphons



August 27, 2011

The Big Suck

- Installed 4 siphons in Beecher Lake
- Constructed from 6" pvc pipe and fittings
- Intakes are 50 feet from shore

September 5

Reduced the water level by 9"



September 10



Reduced the number of siphons to 3. Extended the intakes to 110'

October 2

Water level is 2.5 feet
below full pool



October 21

**NO BOAT
LAUNCHING**
By Order of Town Board

Water level is 4.9 feet
below full pool

Only 1 siphon still operating
because water can't get to the dam.



Upper Lake

Beecher Lake

Current location of
Beecher Lake Dam



Some manual “channel improvements” helped!



But the siphons still exceeded the capacity of the channel. Dredging will be required to achieve maximum drawdown.

December 27

Siphons
removed



The warmest winter on record didn't help.... we only had about 4 inches of frost in the exposed lake bed.



It Came from Athelstane

(~~Godzilla~~ Hydrilla Invades Marinette County)



August 2007 - Hydrilla was positively identified in this private landscape pond.



Probable source of the hydrilla was an aquatic nursery in Maryland that supplied exotic water garden plants to the landowner.

Summer 2005



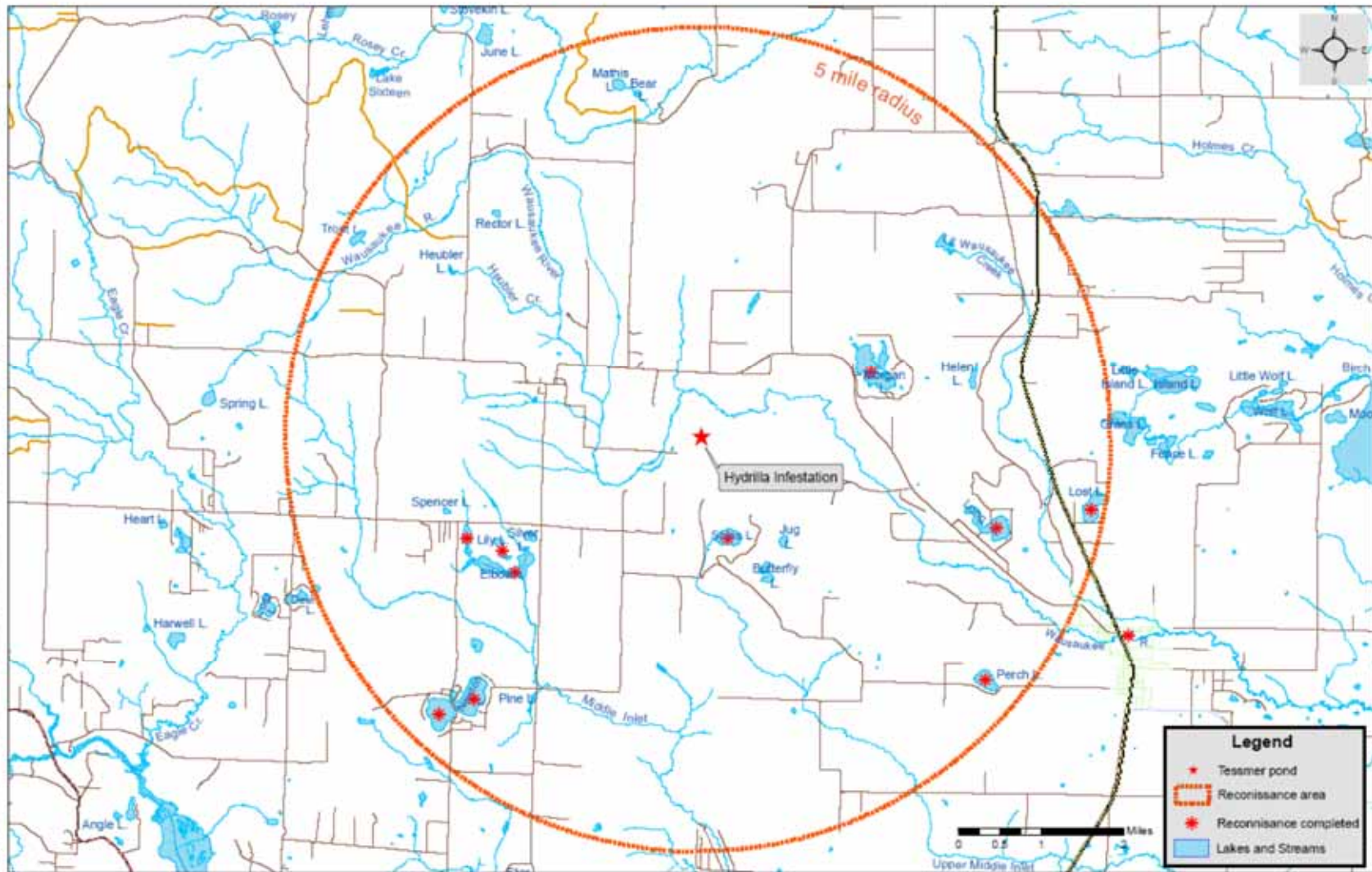
Hydrilla mistakenly
identified as elodea

An aerial photograph of a lake. The water is a deep, dark green color. In the upper left corner, there is a cluster of yellowish-green lily pads. The rest of the lake is covered in a dense, textured green vegetation, likely submerged plants. There are several irregular, yellowish-brown patches scattered across the green area, possibly indicating dead or decaying plant matter. The overall scene is a natural, somewhat desolate landscape.

Summer 2007

Not bad for a plant that won't survive in lakes with prolonged ice cover!

LWCD conducted hydrilla reconnaissance on all waters within 5 miles of the site





LWCD worked closely with the DNR to develop and implement a rapid response plan.





Thank you!

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