



Green Lake, Green Lake County - Lisa Reas

WISCONSIN'S HEALTHY LAKES IMPLEMENTATION PLAN



2014-2017



*Wisconsin
Lakes
Partnership*

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The statewide Healthy Lakes initiative is a true, collaborative team effort. The Healthy Lakes Implementation Plan describes relatively simple and inexpensive best practices that lakeshore property owners can implement. The Plan also includes funding/accountability, promotion, and evaluation information so we can grow and adapt the Plan and our statewide strategy to implement it into the future. Working together, we can make Healthy Lakes for current and future generations.

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Wisconsin's lakes define our state, local communities, and our own identities. Fond memories of splashing in the water, seeing moonlight reflect off the lake, and catching a lunker last a lifetime. With over 15,000 lakes dotting the landscape, it's no surprise that fishing alone generates a \$2.3 billion economic impact each year, and the majority of property tax base rests along shorelines in some of our counties. Unfortunately, we've learned through science that our love for lakes causes management challenges, including declines in habitat and water quality. In fact, the loss of lakeshore habitat was the number one stressor of lake health at a national scale. Lakes with poor lakeshore habitat tend to have poor water quality. Working together to implement *Wisconsin's Healthy Lakes Implementation Plan* (Plan), we can improve and protect our lakes for future generations to enjoy, as well.

This Plan identifies relatively simple habitat and water quality best practices that may be implemented on the most typical lakeshore properties in Wisconsin. We encourage do-it-yourselfers to use these practices but have also created a Wisconsin Department of Natural Resources (DNR) Lake Classification and Protection Grant *Healthy Lakes* sub-category for funding assistance. Furthermore, local partners like lake groups and counties may choose to integrate the Plan into their lake management, comprehensive planning, and shoreland zoning ordinance efforts.

It's important to consider this plan in the context of the lake and local community's management complexity. The best practices' effectiveness will increase cumulatively with additional property owner participation and depend on the nature and location of the lake. For example, if every property owner implemented appropriate Healthy Lakes best practices on a small seepage lake, also known as a pothole or kettle lake, within a forested watershed, the impact would be greater than on a large impoundment in an agricultural region of Wisconsin. Nevertheless, all lakes will benefit from these best practices, and even with limited impact, they are a piece of the overall lake management puzzle that lakeshore property owners can directly control. More lakeshore property owners choosing to implement Healthy Lakes best practices through time means positive incremental change and eventually success at improving and protecting our lakes for everyone.



GOALS AND OBJECTIVES

Wisconsin's Healthy Lakes Implementation Plan goal is to protect and improve the health of our lakes by increasing lakeshore property owner participation in habitat restoration and runoff and erosion control projects.

- Statewide objective: single-parcel participation in Healthy Lakes will increase 100% in 3 years (i.e. 2015 to 2017).
- Individual lake objective: lake groups or other partners may identify their own habitat, water quality, and/or participation goal(s) through a local planning and public participation process.
 - ◆ Partners may adopt this Plan, as is by resolution, or integrate the Plan into a complimentary planning process such as lake management or comprehensive planning.

Wisconsin's Healthy Lakes Implementation Plan, and the diversion and rock infiltration practices in particular, are not intended for heavily developed parcels, sites with large volumes of runoff, or sites with complex problems that may require engineering design. Technical assistance and funding are still available for these sites; contact your county land and water conservation department or local DNR lakes biologist for more information.

The target audience for this Plan and implementation of the associated practices is lakeshore property owners, including: permanent and seasonal homeowners, municipalities, and businesses.

It will be necessary to do additional planning work to implement Wisconsin's Healthy Lakes Plan and, again, the level of effort will depend on the complexity of the lake and its local community. Planning could be as simple as site-specific property visits and development of design plans, to integrating the Plan into a broader and more comprehensive effort. Your lake group, county land and water conservation department, non-profit conservation association, UW-extension lakes specialist or local educator, and/or DNR lake biologist can provide planning guidance or contacts.

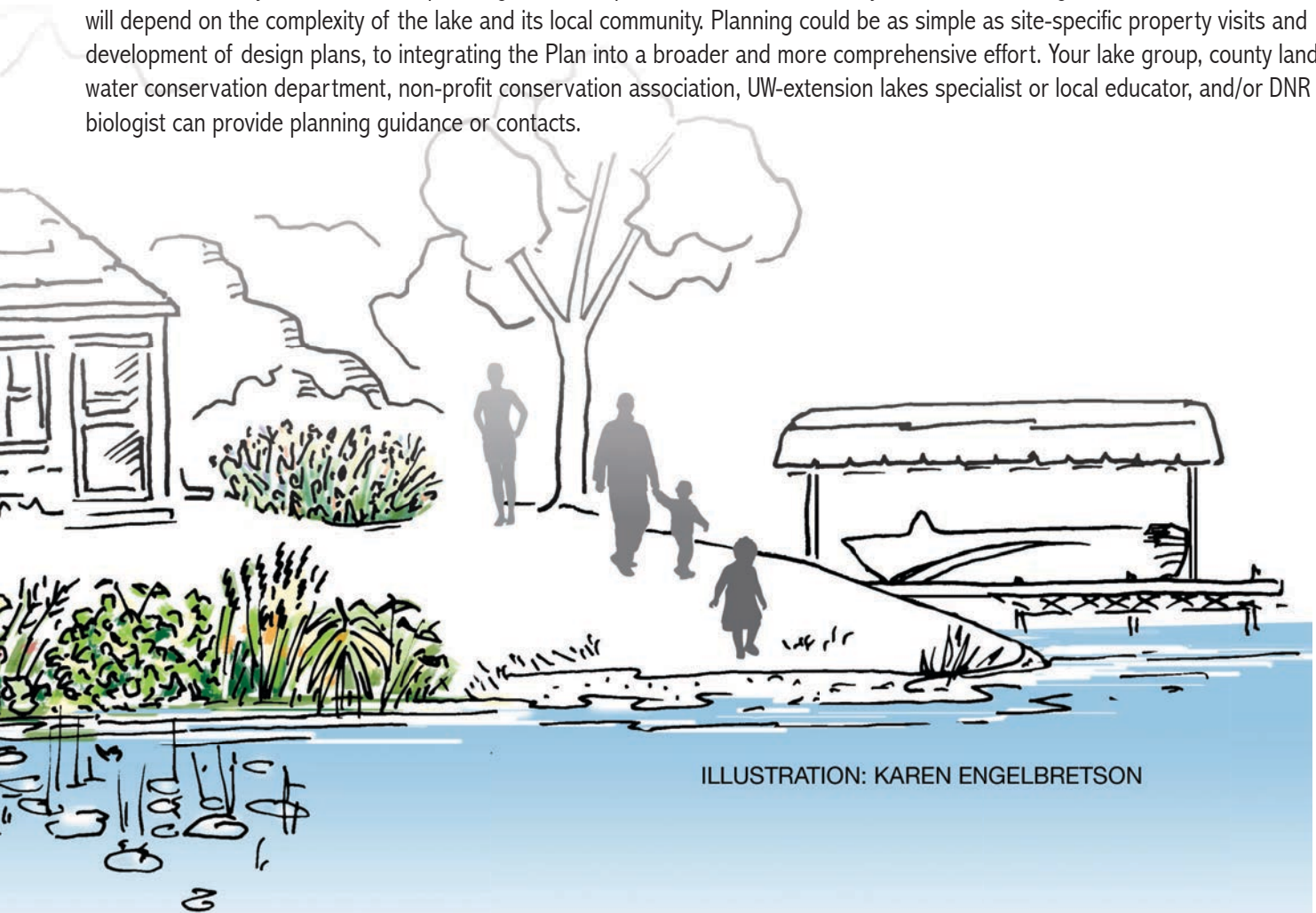


ILLUSTRATION: KAREN ENGELBRETSON

DEFINITIONS

Best

practice: a working method, described in detail, which has consistently shown results.

Divert: redirect runoff water.

Habitat: where a plant or animal lives.

Infiltrate: soak into the ground.

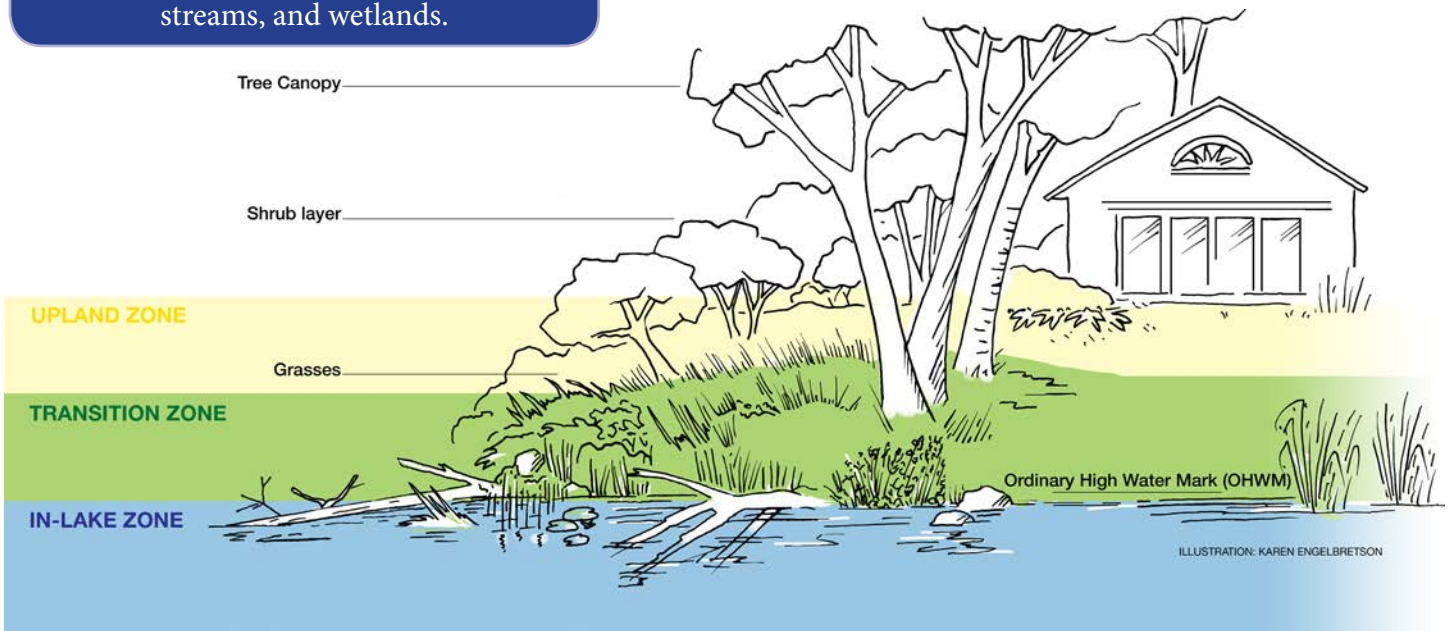
Installed: project cost that includes all materials, labor, and transportation.

Runoff: rain and snowmelt that doesn't soak into the ground and instead moves downhill across land and eventually into lakes, streams, and wetlands.

Wisconsin's Healthy Lakes Implementation Plan divides a typical lakeshore parcel into the following 3 management zones: 1) in-lake, 2) transition, and 3) upland (see illustration below). Best practices are identified for each zone. A team selected these practices based on customer feedback. These practices are:

- relatively simple and inexpensive to implement,
- appropriate for typical lakeshore properties, and
- beneficial to lake habitat and/or water quality.

The Plan also provides cost ranges and averages and technical, regulatory, and funding information for each practice. Fact sheets for each best practice support the Plan and provide more technical detail, and additional guidance is referenced if it currently exists. There is also a funding and administration FAQ fact sheet for those considering pursuing Healthy Lakes grants.



HEALTHY LAKES PLAN

BEST PRACTICES

Best practice descriptions follow. Each description defines the practice, identifies lake health benefits, provides cost ranges and averages based on recent projects, and identifies additional technical and regulatory information. The costs provided are installed costs, which include all materials, labor, and transportation but do not include technical assistance, including design and project management/administration work. Cost ranges are a result of geographic location, property conditions like soils and slopes, and contractor supply and proximity to the project site.

PRACTICE 1 | FISH STICKS

...large woody habitat structures that utilize whole trees grouped together resulting in the placement of more than one tree per 50 feet of shoreline. Fish Sticks structures are anchored to the shore and are partially or fully submerged.



Bony Lake, Bayfield County - Pamela Toshner

<p>LAKE HEALTH BENEFITS</p>	<p>Improve fish and wildlife habitat Prevent shoreline erosion</p>	
<p>COSTS</p>	<p>Range - \$100-\$1000 per cluster (3-5 trees), installed Average - Cost per unit (3-5 trees) averages \$500, installed</p>	
<p>TECHNICAL REQUIREMENTS</p>	<p>Healthy Lakes Fact Sheet Series: <i>Fish Sticks</i> http://tinyurl.com/healthylakes DNR Fish Sticks Best Practices Manual http://dnr.wi.gov (search for <i>Fish Sticks best practices</i>)</p>	
<p>REGULATORY INFORMATION</p>	<p>DNR: Habitat Structure - Fish Sticks General Permit (\$303 fee unless DNR grant-funded) Fish Sticks must comply with the local shoreland zoning ordinance. Consult with your county or municipal zoning staff.</p>	
<p>HEALTHY LAKES GRANT FUNDING</p>	<p>Maximum of \$1000/cluster of 3-5 trees Fish Sticks may be a stand-alone grant activity only if the vegetation protection area (i.e. buffer) complies with local shoreland zoning. If not, the property owner must commit to leaving a 350 ft² area un-mowed at the base of the cluster(s) or implement native plantings (Practice 2).</p>	

PRACTICE 2 | 350 FT² NATIVE PLANTINGS

...template planting plans with corresponding lists of native plants suited to the given function of the plan. The 350 ft² area should be planted adjacent to the lake and include a contiguous area, rather than be planted in patches. Functions are based on the goals for the site. For example, one property owner may want to increase bird and butterfly habitat while another would like to fix an area with bare soil. Native planting functions include the following: lakeshore, bird/butterfly habitat, woodland, low-growing, deer resistant, and bare soil area plantings.



Green Lake, Green Lake County - Lisa Reas



<p>LAKE HEALTH BENEFITS</p>	<p>Improve wildlife habitat Slow water runoff Promote natural beauty</p>	
<p>COSTS</p>	<p>Range - \$480-\$2400 for 350 ft² area, installed Average - \$1000 per 350 ft², installed</p>	
<p>TECHNICAL REQUIREMENTS</p>	<p>Healthy Lakes Fact Sheet Series: <i>350 ft² Native Plantings</i> http://tinyurl.com/healthylakes 350 ft² Native Plantings Best Practices Manual</p>	
<p>REGULATORY INFORMATION</p>	<p>DNR: an aquatic plant chemical control permit may be necessary if using herbicides in or adjacent to the lakeshore. Native plantings must comply with the local shoreland zoning ordinance. Consult with your county or municipal zoning staff.</p>	
<p>HEALTHY LAKES GRANT FUNDING</p>	<p>Maximum of \$1000/350 ft² native plantings installed and implemented according to the technical requirements. Only one 350 ft² native planting per property per year is eligible for funding. The native plantings dimension must be 350 ft² of contiguous area at least 10 feet wide and installed along the lakeshore. Final shape and orientation to the shore are flexible.</p>	

PRACTICE 3 | DIVERSION PRACTICE

...includes a water bar, diverter, and broad-based dip. These practices use a berm or shallow trench to intercept runoff from a path or road and divert it into a dispersion area. Depending on the site, multiple diversion practices may be necessary.



http://awwatersheds.org



<p>LAKE HEALTH BENEFITS</p>	<p>Divert runoff water.</p>	
<p>COSTS</p>	<p>Range - \$25-\$3750, installed Average - \$200, installed</p>	
<p>TECHNICAL REQUIREMENTS</p>	<p>Healthy Lakes Fact Sheet Series: <i>Diversion Practice</i> http://tinyurl.com/healthylakes</p>	
<p>REGULATORY INFORMATION</p>	<p>DNR: none.</p> <p>Diversion practices must comply with the local shoreland and floodplain zoning ordinance. Consult with your county or municipal zoning staff.</p>	
<p>HEALTHY LAKES GRANT FUNDING</p>	<p>Maximum of \$1000/diversion practice installed and implemented according to the technical requirements.</p> <p>Healthy Lakes diversion practice grant funding is not intended for large, heavily developed parcels, sites with large volumes of runoff, or sites with complex problems that may require engineering design.</p>	

PRACTICE 3 | DIVERSION PRACTICE

...includes a water bar, diverter, and broad-based dip. These practices use a berm or shallow trench to intercept runoff from a path or road and divert it into a dispersion area. Depending on the site, multiple diversion practices may be necessary.



http://awwater.sheds.org

LAKE HEALTH BENEFITS	Divert runoff water.	
COSTS	<u>Range</u> - \$25-\$3750, installed <u>Average</u> - \$200, installed	
TECHNICAL REQUIREMENTS	Healthy Lakes Fact Sheet Series: <i>Diversion Practice</i> http://tinyurl.com/healthylakes	
REGULATORY INFORMATION	DNR: none. Diversion practices must comply with the local shoreland and floodplain zoning ordinance. Consult with your county or municipal zoning staff.	
HEALTHY LAKES GRANT FUNDING	Maximum of \$1000/diversion practice installed and implemented according to the technical requirements. Healthy Lakes diversion practice grant funding is not intended for large, heavily developed parcels, sites with large volumes of runoff, or sites with complex problems that may require engineering design.	

PRACTICE 4 | ROCK INFILTRATION PRACTICE

...ian excavated pit or trench filled with rock that reduces runoff by storing it underground to infiltrate. A catch basin and/or perforated pipe surrounded by gravel and lined with sturdy landscape fabric may be integrated into the design to capture, pre-treat, and redirect water to the pit or trench. Pit and trench size and holding capacity are a function of the area draining to it and the permeability of the underlying soil.



Deer Lake, Polk County - Cheryl Clemens



<p>LAKE HEALTH BENEFITS</p>	<p>Divert runoff water. Clean runoff water. Infiltrate runoff water.</p>	
<p>COSTS</p>	<p>Range - \$510-\$9688 per rock infiltration practice, installed Average - \$3800 per rock infiltration practice, installed</p>	
<p>TECHNICAL REQUIREMENTS</p>	<p>Healthy Lakes Fact Sheet Series: <i>Rock Infiltration Practice</i> http://tinyurl.com/healthylakes</p>	
<p>REGULATORY INFORMATION</p>	<p>DNR: none. Rock infiltration practices must comply with the local shoreland zoning ordinance. Consult with your county or municipal zoning staff.</p>	
<p>HEALTHY LAKES GRANT FUNDING</p>	<p>Maximum of \$1000/rock infiltration practice installed and implemented according to the technical requirements. Healthy Lakes rock infiltration practice grant funding is not intended for heavily developed parcels, sites with large volumes of runoff, or sites with complex problems that may require engineering design.</p>	

PRACTICE 5 | RAIN GARDEN

...a landscaped shallow depression with loose soil designed to collect roof and driveway runoff.



Shell Lake, Washburn County - Brent Edlin

<p>LAKE HEALTH BENEFITS</p>	<p>Improve wildlife habitat. Divert runoff water. Clean runoff water. Infiltrate runoff water. Promote natural beauty.</p> 
<p>COSTS</p>	<p>Range - \$500-\$9000 per rain garden, installed Average - \$2500 per rain garden, installed</p>
<p>TECHNICAL REQUIREMENTS</p>	<p>Healthy Lakes Fact Sheet Series: <i>Rain Garden</i> http://tinyurl.com/healthylakes</p> <p><i>Rain Gardens: A How-to Manual for Homeowners</i> http://dnr.wi.gov/topic/Stormwater/documents/RgManual.pdf</p> 
<p>REGULATORY INFORMATION</p>	<p>DNR: none.</p> <p>Rain gardens must comply with the local shoreland zoning ordinance. Consult with your county or municipal zoning staff.</p>
<p>HEALTHY LAKES GRANT FUNDING</p>	<p>Maximum of \$1000/rain garden installed and implemented according to the technical requirements.</p> <p>Healthy Lakes rain garden grant funding is not intended for heavily developed parcels, sites with large volumes of runoff, or sites with complex problems that may require engineering design.</p>

FUNDING AND ACCOUNTABILITY

Administrative details and the application process are described in detail in the DNR's Water Grant Application and Guidelines (<http://dnr.wi.gov/> search for surface water grants) and the Healthy Lakes website (<http://tinyurl.com/healthylakes>) and *Administration and Funding FAQ* fact sheet.

Healthy Lakes grant funding highlights:

- 75% state share grant with a maximum award of \$25,000, including up to 10% of the state share available for technical assistance and project management. Technical assistance and project management do not include labor and are based on the entire state share of the grant, not the best practice caps.
- 25% match from sponsors, participating property owners or other partners. The grant sponsor may determine individual property owner cost share rates, provided the state's share of the practice caps (\$1000) and total grant award (75%) are not exceeded. The grant sponsor's match may include technical assistance and project management costs beyond the state's 10% share.
- Sponsor may apply on behalf of multiple property owners, and the property owners do not have to be on the same lake.
- Standard 2-year grant timeline to encourage shovel-ready projects.
- Landowners may sign a participation pledge to document strong interest in following through with the project.
- Standard deliverables, including a signed Conservation Commitment with operation and maintenance information and 10-year requirement to leave projects in place. Also:
 - ◆ Native plantings must remain in place according to local zoning specs if within the vegetation protection area (i.e. buffer).
 - ◆ Fish Sticks projects require a 350 ft² native planting at shoreline base or commitment not to mow, if the property does not comply with the shoreland vegetation protection area (i.e. buffer) specifications described in the local shoreland zoning ordinance.
- Standardized application and reporting forms and process.
- 10% of projects randomly chosen each year for self-reporting and/or professional site visits.

PROMOTION

Wisconsin's Healthy Lakes Implementation Plan will be supported and promoted as a statewide program. Lake groups, counties, towns, villages, cities, and other partners may choose to adopt and implement the Plan as is or to integrate into their own planning processes. Statewide promotion, shared and supported by all partners, includes the following:

- A Healthy Lakes logo/brand.
- A website with plan, practice, and funding detail to be housed on the Wisconsin Department of Natural Resources' and University of Wisconsin-Extension Lakes' websites. It may also include the following:
 - ◆ Link to science and supporting plans.
 - ◆ Shoreline restoration video.
 - ◆ How-to YouTube clips.
 - ◆ Tips on how to communicate and market healthy lakeshores.
 - ◆ Maps with project locations without personally identifiable information.



Wisconsin's Healthy Lakes Implementation Plan and results will be evaluated annually and updated in 2017, if warranted. Best practices may be modified, removed, or added depending on the results evaluation.

The following information will be collected to support an objective evaluation:

- County and lake geographic distribution and participation in Healthy Lakes projects.
- Lakeshore property owner participation in Healthy Lakes projects, including numbers and locations of best practices implemented.
- Standardized Healthy Lakes grant project deliverable report including:
 - ◆ Numbers of Fish Sticks trees and clusters.
 - ◆ Dimensional areas restored.
 - ◆ Structure/floral diversity (i.e. species richness).
 - ◆ Impervious surface area and estimated water volumes captured for infiltration.



Line Lake, Portage County - Robert Korth

The results may be used to model nutrient loading reductions at parcel, lake, and broader scales and to customize future self-reporting options, like plant mortality and fish and wildlife observations, for lakeshore property owners.

ACKNOWLEDGEMENTS



L to R: Patrick Goggin, Jane Malischke, Pamela Toshner, Carroll Schaal, Tom Onofrey, Dave Ferris

Wisconsin's Healthy Lakes Implementation Plan and corresponding technical information and grant funding are the results of a collaborative and participatory team effort. We would like to thank the staff, agency, business, and citizen partners, including *Advanced Lake Leaders*, who provided feedback for our team, including the many partners who completed a customer survey and provided valuable comments during the public

review of proposed DNR guidance. We would like to express our gratitude to the following contributors and information sources, respectively: Cheryl Clemens, John Haack, Dave Kafura, Amy Kowalski, Jesha LaMarche, Flory Olson, Tim Parks, Bret Shaw, Shelly Thomsen, Scott Toshner, Bone Lake Management District, Maine Lake Smart Program, and Vermont Lake Wise Program.

We appreciate your continued feedback as our Healthy Lakes initiative evolves into the future. Please contact DNR Lake Biologist Pamela Toshner (715) 635-4073 or pamela.toshner@wisconsin.gov if you have comments or questions.

Amy Kowalski