County-Level Water Classification in Wisconsin:

An Assessment

Prepared by Wisconsin Association of Lakes

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A nonprofit group of citizens, organizations, and businesses working for clean, safe, healthy lakes for everyone.

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A.   Background

Lake classification is a locally-led process that allows counties to move beyond one-size-fits-all approaches to lake management.

What is lake classification?

Lake classification is a flexible lake management tool that counties may use to organize lakes into similar groups and tailor management approaches to meet the needs of lakes within each class. The lake classification process allows counties to gather data about their lakes' physical features (such as lake type, size, watershed area, sensitivity to pollution and other development impacts, etc.) and characteristics relating to the current pattern and intensity of development around the lakes. Waters with a similar capacity to assimilate pollutants, support development or recreational use, or other characteristics are then placed into distinct management classes.

The criteria used to classify waters depend on the community's objective for doing the project, such as managing shoreland development, recreational use, or watershed land uses. A variety of management strategies are available to communities for these objectives, including:

- Shoreland development regulations,
- Land division ordinances,
- Stormwater and erosion control ordinances, and
- Watercraft regulations.

Classification also helps guide non-regulatory lake management strategies such as:

- Comprehensive land use planning initiatives,
- Information and education programs,
- Shoreland restoration projects,
- Financial incentive programs, and
- Voluntary land preservation programs.

To date almost all of the counties that have completed classification projects have chosen management of shoreland development as their primary objective, and improvement of shoreland regulations as their primary management strategy. Over 20 counties, mostly in the lake-rich areas of Northern Wisconsin (see map, ***County Lake Classification Initiatives,*** following this section), have classified their lakes and rivers and are using their classification systems to better manage those waters. Many counties began by tailoring shoreland development standards to better protect the most pristine and most sensitive lakes, while leaving more liberal standards on those lakes that are least sensitive and heavily developed already.

Seventeen counties have adopted classification systems of two to four groups, with different shoreland zoning rules for each water class, ranging from very protective to the status quo of statewide minimum rules. They are: Ashland, Barron, Bayfield, Burnett, Douglas, Forest, Iron,

Lincoln, Langlade, Marinette, Oneida, Polk, Sawyer, Vilas, Washburn, Washington, and Waupaca. Oconto and Rusk Counties are also currently working on lake classification projects that may potentially include associated shoreland ordinance improvements.

Eight counties undertook a lake classification project to inventory their surface waters and have developed a classification system, with the purpose of better managing shoreland development. However, there has been insufficient political will to adopt shoreland zoning changes based on a classification system so far. These counties are: Chippewa, Dodge, Florence, Manitowoc, Price, Shawano, Waukesha, and Waushara. However, a number of these counties accomplished other goals with the classification data that has been gathered, such as including the information in County Land and Water Resource Management Plans or guiding land use planning efforts.

Adams, Jefferson, and Portage Counties used the lake classification tool to guide countywide lake planning efforts. Door and Kewaunee Counties used classification as a tool to update their surface waters inventories. They now have updated, improved data for making water resource and land use management decisions. For example, state watershed funding is targeted to the most impaired or threatened waters.

Lake classification and associated ordinances have helped to protect the water quality, natural scenic beauty, public and economic benefits of many Wisconsin waters. Over 80% of Wisconsin's lakes are found within the counties mentioned above. There have been numerous spin-off benefits from these projects. Most of the counties have incorporated streams and rivers as well as lakes into their classification and protection efforts. Interest generated by these projects has led to greater community support for water resource protection, stimulated comprehensive land use planning efforts, and spurred interest in restoring natural vegetation in shoreland areas.

Lake classification is a tool whose potential is just beginning to be tapped, a tool that not only helps manage shoreland development but that can also:

- Guide countywide lake planning,
- Protect water quality,
- Manage watershed land uses,
- Reduce recreational use conflicts,
- Coordinate aquatic invasive species prevention and control efforts.

As mounting pressures of all kinds threaten our lakes, the potential benefits of lake classification come into sharper focus. Lake classification is a flexible tool that helps counties tailor water resource protection measures to the needs of the local resources and the community, creating a range of recreational and waterfront living experiences. Continued support for lake classification and other lake grants is essential to uphold the public trust in the stewardship of Wisconsin's lake resources. The lake grants programs are a wise investment because they foster state and local partnerships—people working together to develop sound lake management strategies, tailored to local lake ecosystems and community desires.

County Lake Classification*
Initiatives to Date
April 2007

Douglas, Bayfield, Ashland, Iron, Washburn, Sawyer, Burnett, Price, Vilas, Forest, Florence, Polk, Barron, Rusk, Oneida, Marinette, St. Croix, Dunn, Chippewa, Taylor, Lincoln, Langlade, Oconto, Clark, Marathon, Menominee, Pierce, Eau Claire, Shawano, Pepin, Buffalo, Wood, Portage, Waupaca, Outagamie, Brown, Door, Kewaunee, Jackson, Juneau, Adams, Waushara, Winnebago, Calumet, Manitowoc, Trempealeau, Monroe, Marquette, Green Lake, Fond du Lac, Sheboygan, LaCrosse, Vernon, Sauk, Columbia, Dodge, Ozaukee, Richland, Washington, Crawford, Dane, Jefferson, Waukesha, Milwaukee, Grant, Iowa, Lafayette, Green, Rock, Walworth, Racine, Kenosha

Adopted a classification system & significant shoreland ordinance upgrades by water class

Working on a classification project

Gathered county lake data to guide countywide and/or local lake protection efforts

Only generated a classification system

*The Lake Classification grant program and formal state enabling for counties to use the lake classification tool were initiated by statutory changes (in Ch. 281.69, Wis. Stats.) passed by the Legislature and Governor in 1997 and admininstrative rules (Ch. NR 191, Wis. Admin. Code) adopted by the Department of Natural Resources in 1999.

B.   Recent Trends in County-Level Water Classification

Since 2002, at least thirteen Wisconsin counties received Lake Classification grants from the Department of Natural Resources. Some projects receiving Lake Classification funding assistance awarded prior to 2002 were finalized during this time period (the map on the previous page presents a graphical summary of the status of all county-level water classification efforts pursued in the state to-date). This report will assess both kinds of projects.

Some of the grant funded projects counties undertook were lake or waterbody classification projects aimed at updating the county's shoreland zoning ordinance with standards tailored to each of two to four classes of waters.

A few counties—ones that had previously adopted classification systems and updated shoreland zoning ordinances tailored to the various classes they had created—pursued state funding assistance and worked to further implement their classification-based shoreland management programs.

A handful of other counties received funding through the Lake Classification Grant Program, but chose a slightly different approach. They did not divide the waters of the county into separate classes to be managed in different ways. Instead, they looked at the waters of the county as a whole and either set forth management recommendations for the entire group or used the data collected at the county level to guide individualized lake management planning.

Finally, another handful of counties active on the water body classification front in the last five years pursued classification at the county level (usually aimed at eventual shoreland zoning ordinance updates tailored to a set of water body classes) and were unable to succeed, due to political reasons, in seeing those processes through to fruition.

We will now examine each of these four recent trends in county level water body classification in greater detail.

"Classic" water body classification-based shoreland management efforts

As we alluded to above, some of the Lake Classification grant-funded projects counties undertook since 2002 were lake or water body classification projects aimed at updating the county's shoreland zoning ordinance with standards tailored to each of three (or in some case more) classes of waters.

This approach—of crafting lot size, setback, and other dimensional zoning standards for the shoreland zone to different classes of water bodies—can be considered the "classic" county-level water body classification approach in Wisconsin. As detailed in WAL's 2002 report "*Water Classification in Wisconsin: Annual Report for 2002*," 15 Wisconsin counties took advantage of their new statutory authority in its first few years in existence to use the lake classification tool

(and, in many cases, the attendant state grant program) to pursue this type of classification approach, indeed the very approach the statute seems to have envisioned[1].

Projects along these lines began during our study period in Dane and Rusk counties (and, indeed, are ongoing in each of these two counties as of June 2007), and similar projects wrapped up in several counties, including Ashland, Lincoln, and Washington.

The classic approach to county-level waterbody classification envisioned in the state enabling statutes continues, though fewer new counties endeavor to pursue this kind of approach as the vast majority of the state's most lake-rich counties have now attempted (and, in most cases, succeeded) on this front. That leaves many counties pursuing next-step efforts to continue refining and implementing their classification-based shoreland management programs.

Follow-up implementation of classification-based shoreland management efforts

Six counties received Lake Classification grant funding since 2002 to assist with follow-up activities to amend ordinances and/or further implement classification-based shoreland management programs created earlier (typically with phase 1 Lake Classification grants).

Several of these counties (including Ashland, Bayfield, and Washington) pursued a strategy employed previously by several other counties: they produced colorful, graphic, plain-language guides for shoreland property owners on the nuts and bolts of their classification-based shoreland management programs and on ways property owners can help steward common surface water resources via their land management actions and building techniques.

Some of these counties used Lake Classification grant monies to help fund staff people with titles such as lake protection specialist or lake specialist, who would provide technical assistance to lakefront property owners. Langlade County is one example.

Others further refined their shoreland zoning ordinances to deal with new development trends or other activities not envisioned by the initial shoreland management programs. We detail Bayfield County's efforts to deal with larger-scale, multiple-unit developments in shoreland areas in **Section II.B.**

Yet others sought follow-up Lake Classification grants to help them with ongoing processes to modernize land records and computerized mapping or parcels and natural resource features on the landscape, as a way to improve and streamline shoreland zoning administration and enforcement. Examples here include Ashland, Bayfield, and Marinette Counties.

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[1] Enabling for county-level water body classification and the State's grant program for counties come through Ch. 281, Wisconsin Statutes, specifically in s. 281.69.

Non-classification approaches to county-level lake protection / management

The period of time we examine here saw the first few successful Lake Classification grant applications for projects that varied somewhat from the classic classification-based shoreland zoning approach. Jefferson, Adams, and Portage counties each took a different approach (see detailed coverage of each in **Section II.A.**), but they were similar in that they did not organize their county's lakes into groups to be managed in different ways from group to group. Rather, they took a comprehensive look at the water bodies of the county, typically grounded in the best available data on those waters or with new data collected as part of the classification effort, and crafted lake protection and management plans based on that data.

In the cases of Adams and Portage counties, the next step was to take on lake management planning on a lake-by-lake basis, guided by county agency staff working directly with local volunteer lake groups. In Jefferson County, the approach turned next to crafting lake protection strategies at the county scale that would serve to enhance *all* of the lakes across the county. These recommendations were generated through a county land and water conservation department-led stakeholder advisory group process.

These non-traditional efforts perhaps represent the leading edge of a wave of lake classification and/or Lake Classification grant-funded efforts by counties (or at least carried out at the county scale) to pursue local lake protection and management objectives via a classification approach or a variant thereof. Indeed, as we explain in detail in **Section III.B.**, we envision many potential uses of the classification tool and the county-level approach which have not yet been pursued by Wisconsin counties.

Politically challenged and ultimately incomplete county-level classification programs

The fourth group of counties we have observed active on the water body classification front these past few years has run into barriers along the way, resulting in incomplete processes. The key factor that seems to explain the aborted efforts in places like Price, Shawano, Dodge, and Waukesha counties is a lack of political will to see the projects through, particularly given that they were typically oriented toward zoning as the ultimate implementation tool of choice and that zoning is an inherently controversial tool.

A related and secondary factor seems to be a lack of adequate and accurate information for stakeholders, especially lakefront property owners, who can sometimes become politically active in opposition to efforts like these which can be perceived to threaten property rights, development plans, or property values. The politics in these cases were such that the barriers were unable to be overcome, and the processes came to an end short of their intended end points.

Different counties in this group ended at different stages of the process. Price County's board did not see fit to adopt the classification system created through their process, much less a modified shoreland zoning ordinance based on that system, as was envisioned at the project's outset. Shawano, Waukesha, and Dodge Counties were able to make it through the classification portion of the process but could not muster the political will necessary either to begin or to

complete a follow-up process to tailor management approaches based on the classification scheme.

It is apparent given these examples that land and water management is a politically-charged realm and that indeed that political dimension can be the undoing of technically and scientifically sound processes. The zoning tool in particular is controversial and often misunderstood, serving in some cases as a lightning rod for conflict that can overwhelm even the uncontroversial intentions of a classification approach to simply craft a plan for the management of the counties shoreland and water bodies via whatever suite of tools is politically palatable in that community context.

The Wisconsin Lakes Partnership works continually to remind local lake management entities that the potential for controversy around zoning and even classification as tools must be kept in mind as local lake management efforts are undertaken, lest outcomes like those faced by these counties arise following political upheaval over the planning effort's implications for vested interests.

Summary

The statutory authority granted to counties by the state in the late 1990s for "lake classification" prescribed an approach for managing lakes at the county scale that was to be based on a science-driven organizing of the subject county's lakes into a small number of classes. Shoreland zoning, since it was mandated by the state in the late 1960s, has been a major effort at the county level aimed at managing land use connected to potential surface water impacts. As such, it has become the predominant management approach chosen by counties who pursued lake classification processes, especially in the first several years of the program's existence.

For the most part, that remains true today, although recently there appears to be a subtle shift toward different approaches to using the classification tool and the state's Lake Classification funding. Several counties reported, in our interviews with them for this assessment, that the 5-years-running (and still ongoing) effort to revise the State's minimum standards for county shoreland zoning—codified in Chapter NR 115, Wisconsin Administrative Code—has hampered progress on the lake classification front, at least those efforts that would target county shoreland management programs. There is a feeling in some quarters that once the statewide minimum standards are revised we may see a resumption of efforts aimed at updating county shoreland zoning codes, including further implementation of existing classification-based programs and possible initiation of new ones in counties that have so far not chosen to go that route.

Meanwhile, several of those counties that have been active on this front during the period of time in which NR 115 has been a moving target have chosen to take alternative paths not aimed squarely at the shoreland zoning tool, but instead at other capacities counties have to coordinate and/or take the lead on surface water conservation via any number of potential approaches.

What the future of county-level water body classification portends in many ways remains to be seen, but it seems a bright future and one that may well be characterized by further expansion of the basic tool in creative new directions, to the benefit of our legacy of lakes.

II.   County Lake Classification Activities

A.   Countywide lake planning using the classification tool

Some counties are using the lake classification tool to guide countywide lake planning and to address watershed management goals. Lake Classification grants can be used to gather physical, chemical, and biological data for the county's water resources in a strategic, coordinated manner. This valuable information can then be used to create lake management plans, tie in with plans that address water quality goals, and link other funding sources to implement watershed best management practices. To illustrate, highlights of projects in Adams, Jefferson, and Portage Counties follow.

Adams County

Adams County is using the lake classification tool to aid comprehensive plan development for the communities surrounding its lakes with a series of projects. This innovative approach uses the lake classification tool to link lake-specific plans and lake and watershed management projects for all of Adams County's lakes. The first of the county's Lake Classification grants helped fund the Land Conservation Department to:

- Delineate surface and ground watershed boundaries and surface flow patterns
- Identify and map land uses
- Inventory and map shoreline erosion and other problem areas related to development
- Identify and map sensitive/critical areas and natural heritage habitats
- Verify wetland delineations
- Delineate lake watersheds and create lake maps.

With another set of Lake Classification grants, the County is collecting lake data to create lake management plans and set water quality goals for all the county's lakes. Chemical and biological data was collected and assessed on all lakes within the county with public access. Individual lake summaries of the data and management recommendations for all the counties lakes are being compiled as well. Plans address lake concerns such as watershed land uses, water quality management, aquatic species, shoreland management, and recreational activities.
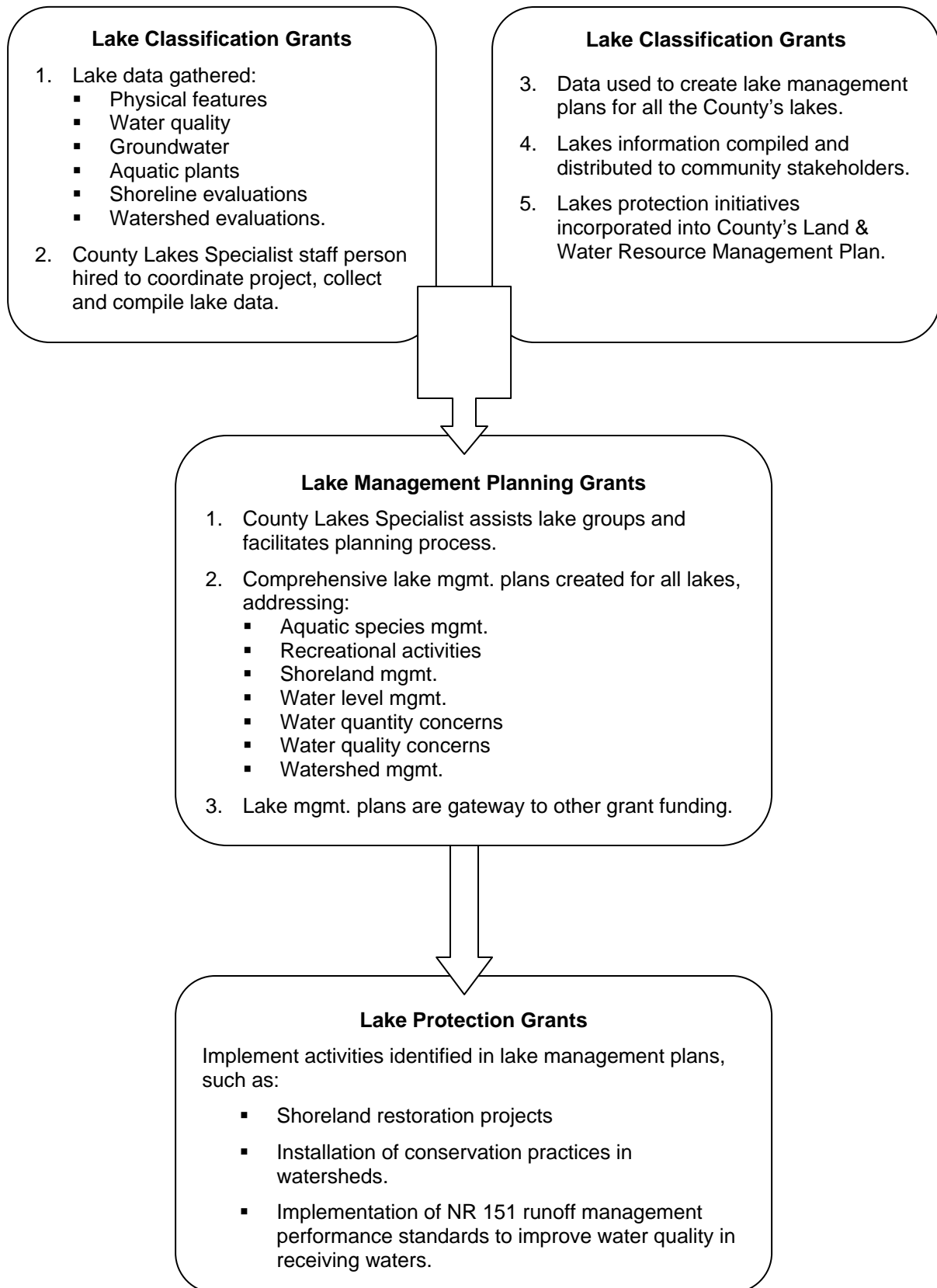
A combination of state lakes grants—Classification, Planning, and Protection—have been used to create lake management plans for all the lakes in the county and to fund implementation activities (see Figure 1 for more detail). Coordinated lake planning becomes the gateway for

other grant funding to help implement activities identified by each lake management plan, such as installation of conservation practices in lake watersheds.

Other outcomes of this project include:

- A county lakes specialist staff person provides assistance to lake organizations.
- Educational programs about Adams County's lakes are conducted for waterfront property owners, lake users, and others.
- Coordination of lake groups to form a countywide lakes association. The Adams County Lakes Advisory Group held its first countywide lakes conference in May 2007.
- A library of the all the county's lakes data and management plans is organized for the public to use.
- Lakes protection efforts are incorporated into the County's Land and Water Resource Management Plan; lake protection grants assist with implementation of NR 151, runoff management and agricultural performance standards, to improve water quality.

Figure 1: Adams County Lakes Program

Lake Classification Grants

1. Lake data gathered:
   - Physical features
   - Water quality
   - Groundwater
   - Aquatic plants
   - Shoreline evaluations
   - Watershed evaluations.

2. County Lakes Specialist staff person hired to coordinate project, collect and compile lake data.

Lake Classification Grants

3. Data used to create lake management plans for all the County's lakes.

4. Lakes information compiled and distributed to community stakeholders.

5. Lakes protection initiatives incorporated into County's Land & Water Resource Management Plan.

Lake Management Planning Grants

1. County Lakes Specialist assists lake groups and facilitates planning process.

2. Comprehensive lake mgmt. plans created for all lakes, addressing:
   - Aquatic species mgmt.
   - Recreational activities
   - Shoreland mgmt.
   - Water level mgmt.
   - Water quantity concerns
   - Water quality concerns
   - Watershed mgmt.

3. Lake mgmt. plans are gateway to other grant funding.

Lake Protection Grants

Implement activities identified in lake management plans, such as:

- Shoreland restoration projects

- Installation of conservation practices in watersheds.

- Implementation of NR 151 runoff management performance standards to improve water quality in receiving waters.

Jefferson County

Jefferson County's lake classification grant-funded effort is another example that did not end up with (nor did it set out to create) a classification scheme for all the lakes to use in managing the lakes in specially-tailored ways *by class* across the county. Rather, Jefferson County conducted what they termed a "Lake Enhancement Project." The County Land and Water Conservation Department and a citizens' advisory committee compiled and reviewed lake inventory data. The citizens' advisory committee chose to consider the lakes of the county as a whole and, in the words of the group's final report, "to map out crucial actions necessary to protect and enhance the lakes of Jefferson County."

Thus, the final outcome of this effort was a set of recommended actions to be carried out at the countywide scale, rather than on a lake-by-lake scale. A potential new countywide lake organization, lakefront property owners, local and county governments, landscaping and lawn care businesses, recreational lake users, and others were all identified to implement aspects of the plan generated by the stakeholders committee.

Specific actions recommended in the County's Lake Enhancement Plan included:
- Improve compliance and enforcement of the County's shoreland zoning ordinance.
- Revise the shoreland zoning ordinance to improve shoreland buffer standards and to better protect sensitive near-shore areas in reduced-setback building situations.
- Collect and analyze new and historical lake water quality data to build data sets for lake management planning on all the county's lakes.
- Increase aquatic invasive species monitoring.
- Implement best management practices on riparian, urban, and agricultural lands to reduce non-point source pollution.
- Create a certification program for lake-friendly landscaping and lawn care businesses.
- Form a countywide lake organization to facilitate networking and information sharing among local lake groups and other community leaders.
- Build and support lakes education programming in the county.

Portage County

Portage County is using the lake classification tool in a multi-phase approach to aid their Smart Growth Comprehensive Planning efforts and resource management decisions. Phase 1 of the county's lake classification study entailed initial data collection, including:
- Sampling and water quality analysis
- Studies of aquatic and near-shore plant and animal communities
- Establishing a historical water quality database and conducting lake modeling to assess water quality changes over time.

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- GIS (Geographic Information System) mapping
- Evaluation of land use changes
- Development of informational materials about the county's water resources.

Phase 2 of the county's lake classification study completed data collection, developed a database, and compiled and summarized preliminary results for the county's lakes. A water quality assessment and an algae survey were conducted in phase 3 of the County's lake classification effort. Lastly, the fourth phase of the county's lake classification effort includes:

- Surveys of aquatic plant communities and shorelands (vegetation types around each lake were mapped)
- Studies of fisheries, birds, amphibians and reptiles
- Groundwater flow assessments
- GIS data integration
- Project coordination
- Developing a final report and educational materials.

Results of these efforts are being incorporated into a comprehensive Portage County Lakes Study and distilled into summaries (individual lake summaries of the data collected) to inform town plan commissions, the Portage County Comprehensive Planning Committee, lake groups, community citizens, and others. Information from the lakes study is being used in community land use planning efforts and to guide county land use decisions. The County will also use the lakes study to assess similarities/differences and categorize lakes accordingly in order to make specific recommendations for each category. Lake groups are using the county lakes study to provide direction, focus their goals, and initiate lake plans.

B.   Lake Classification Implementation Activities

A number of counties are using sequential lakes grants over time to fund a number of classification implementation activities, such as:

- Educational programming and training, including zoning workshops for the development community.
- Production of shoreland development guides and other materials for waterfront property owners to summarize shoreland zoning rules and the rationale for them in a user-friendly way.
- Review of the county's classification system, to classify rivers, add a wild lakes class, or address reclassification of certain waters.
- Administration, enforcement, monitoring, and technical support, to digitize parcel maps and create a geographical database in counties' GIS to track riparian parcels, for example.

Highlights of some counties' recent lake classification implementation activities follow (see **Appendices A and B** for a summary of other counties' recent lake classification activities).

Bayfield County

Bayfield County is currently working on a project to improve implementation of their lake classification and protection system (adopted by the county in 1999). Their lake classification implementation activities include: increased public education, technology enhancements, and a revision of their shoreland zoning code to better address the development density concerns associated with multiple unit developments.

Bayfield County adopted multiple unit development and conservation subdivision standards in late March 2007, after three public hearings. Multi-unit developments are controversial in many lake communities. These large scale developments can quickly change the character of a lake—increasing the number of piers and boats, increasing runoff pollution due to greater impervious surfaces, and decreasing natural areas that provide important wildlife habitat and natural scenic beauty.

Bayfield County defined multiple unit developments (or MUDs) as those on a single lot consisting of three or more units. It may be a condominium (in which case the lot consists of the condominium property) or a lot improved with a multiple unit dwelling, a hotel/motel, or a lot with three or more units of other types.

A conservation subdivision is defined as a division of land that is allowed to use more flexible lot standards than would otherwise be applicable, in exchange for providing more open space, preserving desirable natural features, and otherwise enhancing the division and use of the land.

The county's new ordinance provisions require that conservation subdivisions and MUDs be designed and developed to:

- Maximize preservation of existing tree cover and native vegetation;

- Minimize impervious surfaces;

- Reduce, to the extent practicable, their impact on the natural environment, resource uses, and other adjacent land uses; and

- Minimize the disruption of the wooded and rural character of Bayfield County by utilizing clustering, landscaping, screening, vegetation protection areas, and/or other conservation design techniques.

Conservation subdivisions and MUDs with shoreline access to navigable waters in Bayfield County are governed by new minimum standards that correspond to the county's water body classification system (see **Tables 1 and 2** for more detail).

Table 1: Bayfield County Multiple Unit Development Standards by Water Class

	Class 1 Lakes and Lake Superior	Class 2 Lakes	Class 3 Lakes, Rivers and Streams
Row A (Shoreline Frontage)	150 feet per every 4 dwelling units; 600 feet minimum	200 feet for every 3 dwelling units; 800 feet minimum	300 feet for every 2 dwelling units; 1200 feet minimum
Row B (Open Space)	30,000 square feet per dwelling unit	60,000 square feet per dwelling unit	120,000 square feet per dwelling unit
Row C (Open Space in UVOD)	7,500 square feet per dwelling unit	15,000 square feet per dwelling unit	30,000 square feet per dwelling unit
Row D (Open Space-Public Sewer System	10,000 square feet per dwelling unit	20,000 square feet per dwelling unit	40,000 square feet per dwelling unit
Row E (Shoreline Setback)	200 feet	200 feet	225 feet
Row F (Viewing Corridors)	20% of frontage	15% of frontage	10% of frontage

Table is from Bayfield County Zoning Code Title 13, Chapter 1, Article B, Section 13-1-32 (Revised 03-29-07, published 04-05-07).

Other lake classification implementation elements in Bayfield County's current project address ordinance administration, compliance, and educational outreach. The county is developing an electronic permit monitoring system for land use permits and septic maintenance, and a voluntary compliance program. New brochures will be developed to explain shoreland mitigation and restoration procedures, self-reporting requirements, and online permit processing.

Bayfield County had previously produced an eye-catching shoreland development guide, with color photos and illustrated diagrams that clearly explain shoreland zoning standards by water class, who to call for permits and technical assistance, and other helpful waterfront living information. They are now updating this guide as well to explain the County's new multiple unit development and conservation subdivision standards.
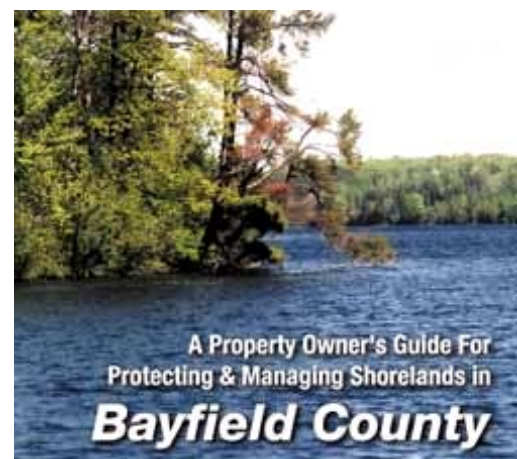

A Property Owner's Guide For Protecting & Managing Shorelands in **Bayfield County**

Table 2: Bayfield County Conservation Subdivision Standards by Water Class

	Class 1 Lakes, Lake Superior	Class 2 Lakes	Class 3 Lakes, Rivers, Streams
Shoreline Frontage	50 feet per developable lot; 600 feet minimum	100 feet per developable lot; 800 feet minimum	150 feet per developable lot; 1,200 feet minimum
Area (except as provided below)	30,000 square feet per developable lot	60,000 square feet per developable lot	120,000 square feet per developable lot
Area in UVOD	7,500 square feet per developable lot	15,000 square feet per developable lot	30,000 square feet per developable lot
Area in non-UVOD Public Sewer System (except Town of Bayfield)	10,000 square feet per developable lot	20,000 square feet per developable lot	40,000 square feet per developable lot
Area in non-UVOD Public Sewer System (Town of Bayfield)	30,000 square feet per developable lot	60,000 square feet per developable lot	120,000 square feet per developable lot
Area in R-3	2 acres per developable lot	2 acres per developable lot	3 acres per developable lot
Area in F-1, A-1, and R-2	4.5 acres per developable lot	4.5 acres per developable lot	4.5 acres per developable lot
Shoreline Setback	200 feet	200 feet	225 feet
Lot Line Setback	10 ft.	20 ft.	30 ft.
Viewing Corridors	20% of frontage	15% of frontage	10% of frontage
Viewing Corridors Width	Up to 20% of total with no individual greater than 30 feet	Up to 15% of total with no individual greater than 30 feet	Up to 10% of total with no individual greater than 30 feet

Table is from Bayfield County Zoning Code Title 13, Chapter 1, Article B, Section 13-1-32 (revised 03-29-07, published 04-05-07).

Langlade and Lincoln Counties: A joint proposal

Both Langlade and Lincoln Counties have adopted lake classification systems and corresponding shoreland ordinance upgrades by lake class (Langlade in 1999 and Lincoln in 2003). Since adopting more protective shoreland zoning rules, both counties have had ongoing demand for:

- Shoreland restoration technical assistance,

- Methods to improve ordinance administration and compliance monitoring, and

- Continuing education to help waterfront property owners understand and accept the shoreland development rules.

Both Langlade and Lincoln Counties require mitigation as a condition of permitting shoreland development and have increasing shoreland management workloads. The two counties submitted a joint lake protection grant application in May 2007 to help fund a staff person to conduct a number of shoreland management and lake classification implementation activities. Key aspects of this project will include:

- Develop GIS parcel maps to track shoreland restoration sites, monitor mitigation compliance, and improve educational outreach methods to waterfront property owners.

- Evaluate their shoreland application process to improve and streamline ordinance administration.

- Provide shoreland restoration technical assistance for waterfront property owners in Lincoln and Langlade Counties.

- Update and coordinate distribution of shoreland protection educational materials to waterfront property owners in both counties; such as:

  o Lists of appropriate native plants to use for shoreland restorations

  o Lists of area businesses providing native plants and restoration services

  o Shoreland zoning guidance booklets and shoreland stewardship packets.

- Expand Langlade County's shoreland restoration web site (www.co.langlade.wi.us) so Lincoln County property owners can also use it to customize their own shoreland restoration plans.

- Hold a landscaping contractor's workshop to review counties' shoreland ordinance mitigation requirements and appropriate shoreland restoration techniques.

- Cooperate with the County Lakes Associations and other groups to develop additional shoreland stewardship marketing strategies.

Marinette County

Marinette County currently has a lake classification implementation project to develop educational outreach materials and activities and technological advancements that will improve ordinance administration and compliance. Key elements of Marinette County's project include:

- Creating a countywide manure spreading layer in the County GIS that would rank farms by need for manure storage and map high hazard areas for winter spreading of manure to improve implementation of NR 151, runoff management and agricultural performance standards.

- Creating a geographical database in the County's GIS that contains riparian parcels, pictorial data, and shoreline assessment data.

- Developing a monitoring process to measure the long term impacts of shoreline development on flora, fish, wildlife, insects, and other biological parameters in at-risk water bodies.

- Expanding the Citizen Lake Monitoring Program in Marinette County to increase volunteerism and build local water quality data sets.

- Updating and improving a county-specific shoreland zoning guide for waterfront property owners.

- Developing a training process to certify contractors that work in shoreland areas.

Oconto County

Oconto County completed a lake classification study to group the county's lakes. Their project resulted in an inventory and matrix of Oconto County lakes categorized by development potential, extent of development, and potential sensitivity to environmental damage. The county currently has a second classification grant open that proposed to continue their work to develop a classification system for lakes and streams and corresponding shoreland ordinance upgrades by water class. However, the County Zoning Committee has placed this project on hold until revisions to NR 115, the state's minimum shoreland zoning standards, are completed. The county's current grant is extended to June 2008.

In the meantime, the Oconto County Land and Water Conservation Department (LWCD) is working with the Land Conservation Committee and the Oconto County Lakes and Rivers Association to build local support to fund a county lakes specialist staff position. The LWCD also implements a cost-share program, comprised of county funding, to provide financial and technical assistance to property owners for shoreland restoration projects. The county also created a program to tour shoreland restoration sites, in partnership with Marinette County. This tour, along with shoreland stewardship educational materials, is promoted to area businesses and waterfront property owners.

C.   Innovative Water Classification Approaches

Although it seems activity on this front has been slow of late due largely to the state's ongoing process aimed at revising NR 115, some counties have sought Lake Classification grant funding to do waterbody classification ultimately intended to guide updates to their shoreland zoning ordinances. That is not all, however, as this set of second-generation classification approaches are also characterized by a broader purpose, or at least a wider set of intended strategies by which to implement water quality goals for the county.

For example, Dane and Rusk Counties—both of which are actively moving through their classification processes at the time of the writing of this report (spring 2007)—recently engaged in processes intended to result in comprehensive shoreland management plans that will likely call on their shoreland zoning ordinances and other implementation tools that can be used to achieve surface water protection and restoration, not all of which are regulatory in nature. Both counties intend to use non-regulatory approaches, including information and education techniques and possible financial incentive-based tools, in addition to zoning and other regulatory tools to help accomplish objectives identified through their classification processes.

Dane County

Dane County has chosen to take new approaches to several aspects of its waterbody classification project, all of which merit highlighting here. They are now working on Phase 2 of their process, which began with a Lake Classification grant in 2004 (the first of two). As described briefly above, the Dane County approach envisions as its outcome a comprehensive strategy for shoreland management and protection along both lakes and rivers that will rely on a variety of tools—regulatory and non-regulatory; shoreland-focused and watershed-focused—for implementation.

Dane County also used an innovative approach for classifying its lakes, which is detailed below. Additionally, the county employed a detailed analysis of impervious surface areas throughout river and stream watersheds and in its lakes' shoreland zones to help guide its classification, which has not been done previously in other county-level classification processes in Wisconsin.

Dane County classified its water bodies in Phase 1 of its process. For lakes, the county chose a novel approach combining the approach followed by many first-generation classification counties with two new considerations.

First, in addition to a set of limnological and watershed criteria along the lines of those used by many other counties (listed along the left-hand side of **Table 3**, from Dane County's Phase 1 report), Dane County also used lake type (seepage/spring or drainage) and lake depth (shallow/deep—with a maximum depth of 18 feet delineating the difference between those two) to help classify lakes. **Figure 2**, also excerpted from the Dane County Phase 1 report, illustrates how consideration of these two aspects of lakes in unison helped guide breaking the county's lakes into classes based on sensitivity. As many other counties have done, Dane County ultimately used a two-dimensional classification matrix overlapping waterbody sensitivity and level of development, as depicted in **Figure 3**. The typical lake and watershed characteristics and their additional sensitivity criteria based on lake type and depth all factored into the sensitivity level eventually assigned to each Dane County lake.

The second innovation Dane County discovered in the classification process for its lakes involved a different technique for establishing each lake's current level of development, to intersect with the sensitivity levels explained above in ultimately delineating various management classes. Most counties historically used dwelling units and/or other structures per mile of shoreline as a measure of the level of current development for each lake. Even with frequent and thus up-to-date aerial photography and the potential for that imagery to be digitized and thus computer-based, there is significant work involved in the classic approach. Dane County being relatively highly developed, particularly along its waterways, they felt this would be an overly burdensome approach.

Dane County's approach instead involved using GIS tools to analyze impervious surface area percentages on riparian lands along lakes throughout the county's shoreland zone to assess each lake's level of shoreland development. This approach involved some degree of computer modeling, GIS proficiency, and solid data, but allowed for a potentially easier and certainly more refined measure of level of development.

The results of combining the county's lake sensitivity analysis with its impervious surface area-based determinations of level of shoreland development for the actual lakes in Dane County are depicted graphically in **Figure 4**.

Dane County also employed an impervious surface area-based approach to classify its rivers and streams. Combining available data from the state and other sources on the sensitivity of flowing waters with watershed impervious surface area provided a neat approach to classifying the county's rivers and streams for cost-effective and strategic management.

Table 3: Dane County Lake Classification Sensitivity Rating Factors

LAKE CLASSIFICATION Sensitivity Rating Factors					
Criterion	Significance	Criterion Classes	Units of Measure	Points	Comments
Lake Surface Area (size)	Smaller lakes are generally more vulnerable to water quality problems	1 - 10 10 - 100 100 - 500 500+	Acres	1 2 3 4	Very small lakes/ponds Small lakes Medium lakes Large lakes
Shoreline Development Factor (shape)	Lakes with irregular shorelines are more vulnerable to a higher density of development	3.0+ 2.0 - 3.0 1.5 - 2.0 1.0 - 1.5	Unitless	1 2 3 4	Very irregular shoreline Close to circular shoreline
Stratification Factor (nutrient sensitivity)	Lakes that strongly stratify are more sensitive to outside sources of phosphorus	30.0+ 13.5 - 30.0 11.5 - 13.5 0 - 11.5	Unitless	1 2 3 4	Strongly stratified Stratified Weakly Not stratified
Soil Erodibility (steep slopes)	Lakes with steep sloped shorelines are more vulnerable to erosion and surface water degradation	75 - 100% 50 - 75% 25 - 50% 0 - 25%	Percent of shoreline within 300'	1 2 3 4	Percent of shoreline with D slope (12% slope or greater)
Septic Suitability (severe soils)	Lakes having shorelines with high groundwater or soils posing severe limitation for septic systems are more vulnerable to ground and surface water contamination	1 - 1.5 1.5 - 2.5 2.5 - 3.5 3.5 - 4.0	Ave. soil factor within 300' of shoreline	1 2 3 4	Very severe limitations Severe Moderate Slight or sewered

Table is from Dane County Water Body Classification Study Phase I. Published March, 2005. Prepared by the staff of the Dane County Regional Planning Commission.

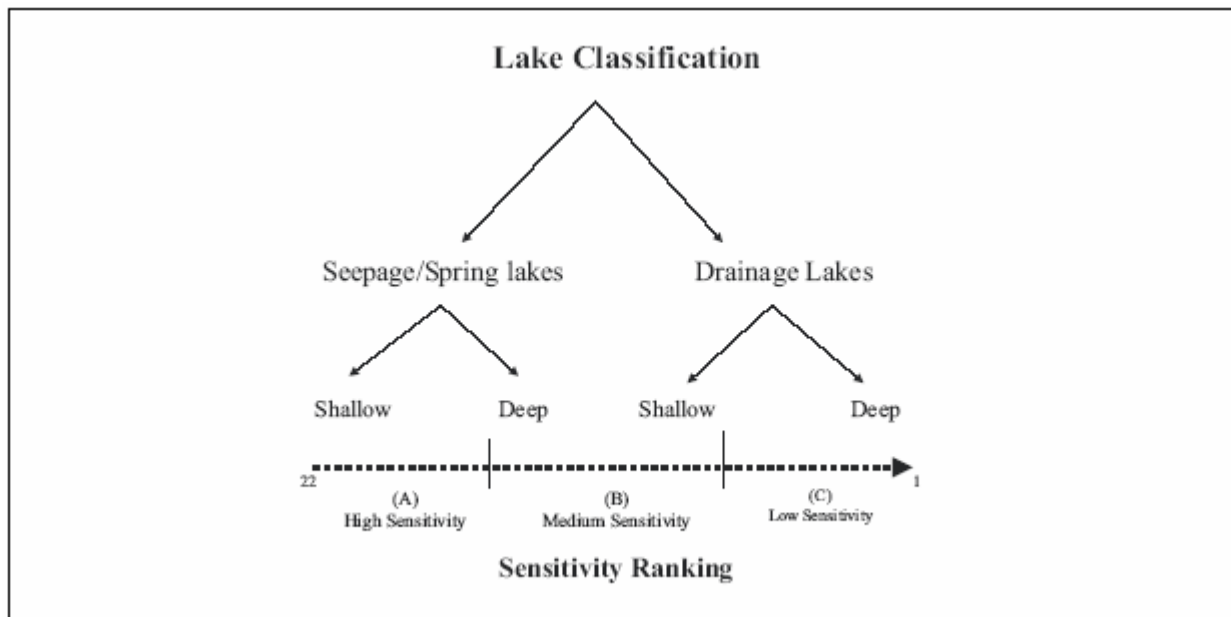**Figure 2: Dane County's Lake Depth- and Lake Type-based Sensitivity Ranking**
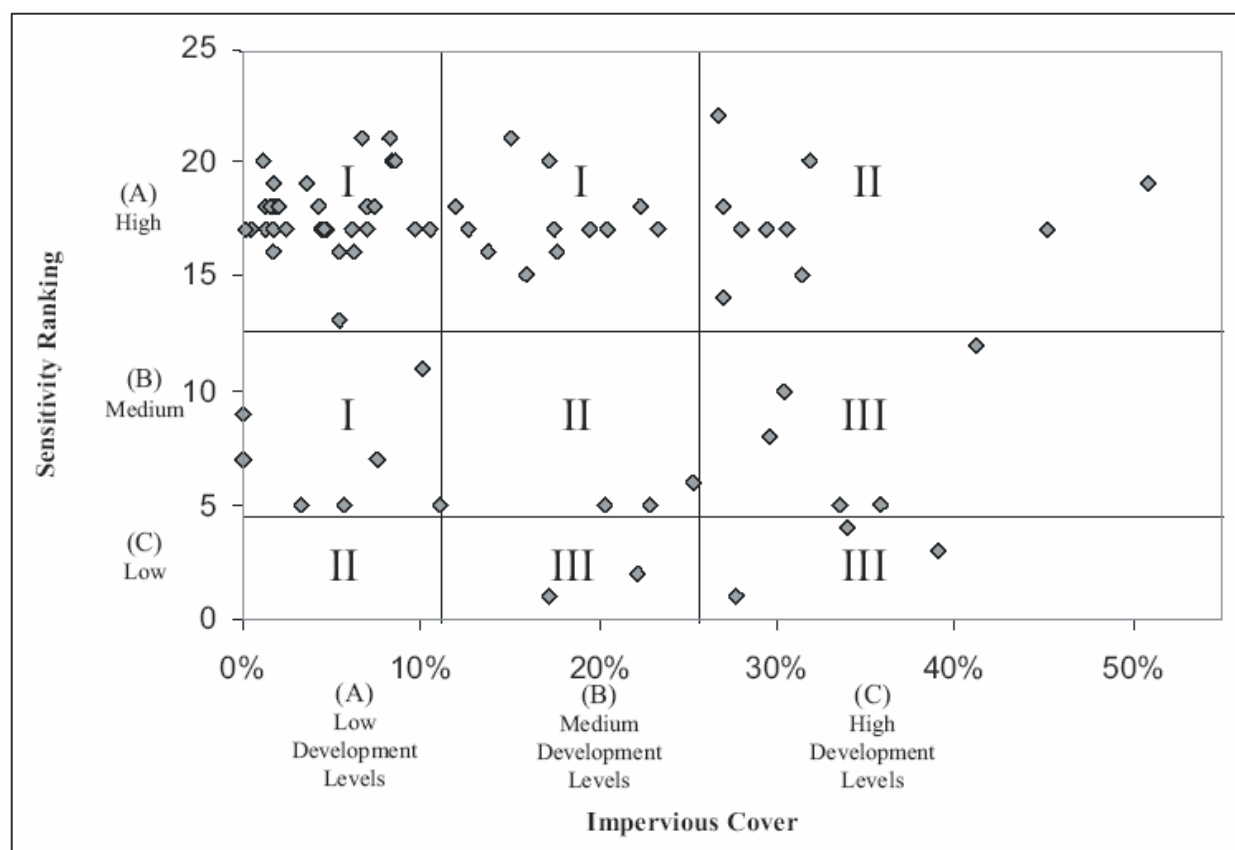

Figure is from Dane County Water Body Classification Study Phase I. Published March, 2005. Prepared by the staff of the Dane County Regional Planning Commission.

Figure 3: Dane County Water Body Classification Matrix

Water Body Classification Matrix (example)			
Sensitivity to Development	**Current Level of Development**		
	Low Level	**Medium level**	**High Level**
High Sensitivity	Protection	Protection	Protection and Restoration
Medium Sensitivity	Protection	Protection and Restoration	Restoration and Enhancement
Low Sensitivity	Protection and Restoration	Restoration and Enhancement	Restoration and Enhancement

Figure is from Dane County Water Body Classification Study Phase I. Published March, 2005. Prepared by the staff of the Dane County Regional Planning Commission.

Figure 4: Dane County's Impervious Surface-based Lake Sensitivity Matrix

[*Each dot above represents an actual Dane County lake. The final sensitivity ranking for each lake is shown on the y-axis, its impervious cover level is shown on the x-axis, and the roman numeral-marked box it lies within corresponds to the water body class it ultimately landed in following the complete classification exercise.* -- WAL]

Table is from *Dane County Water Body Classification Study Phase I*. Published March, 2005. Prepared by the staff of the Dane County Regional Planning Commission.

Rusk County

Rusk County had previously (in 1998) collected and analyzed lake data and created a classification scheme for county waters, but the political will was not sufficient to tie shoreland zoning ordinance standards to the different classes. The county's zoning department applied for and received a Lake Classification grant in 2006 for a new project intended to study the county's lakes in-depth and generate a classification scheme for those lakes that will make sense given what the lake-by-lake analysis suggests the lakes in the county need in the way of management.

Outcomes in the form of specific management approaches are not pre-ordained in this project; rather, through a science-driven analysis component and an intensive public awareness and involvement process, the county zoning department hopes to arrive at a sort of county-wide

shoreland management plan, which will likely detail a suite of available management tools and approaches which can be used to implement the goals the plan will outline.

Again, as with Dane County, this second-generation classification project takes a decidedly broader, more comprehensive, approach to using county-level water body classification to guide lake and river protection and management, not tying the classification tool to shoreland zoning standards alone as the sole implementation mechanism. One benefit of this approach may be that the politically divisive and controversial nature of the zoning tool will hopefully not dominate (or, worse, prematurely end) the public discussion of goals for water management in the county, as has happened elsewhere in the past (refer to **Section I.B.** for details on processes that suffered such fates).

III. Lessons learned

A. Ongoing needs and recommendations

Awareness of lake problems and practical solutions, including classification tools

Counties and other stakeholders in local-level lake protection and management have a wide variety of tools at their disposal to help them achieve their goals. Lake / water body classification and the state's Lake Classification grant program is but one of those tools, albeit a flexible tool that can be used in a variety of ways and tied to a variety of implementation tools to work toward overarching water quality goals.

Ongoing needs for these stakeholders that emerged from this analysis include educational and technical assistance. These could certainly be aimed at the full range of stakeholders. Awareness of the diversity of ways in which classification can be used and guidance on how exactly to pursue those strategies would benefit stakeholders, and ultimately the resource, greatly. Many people in the state continue to consider shoreland zoning and classification to be synonymous, which is a misconception. Because of that, they fail to understand and embrace the numerous other (and, incidentally, less potentially controversial) ways in which classification approaches can be used to meet their needs in the area of water quality protection and management.

There is a continuing need for outreach and awareness-building about the problems facing lakes, the activities connected to lake problems, and the best management techniques available— especially as it relates to newer problems facing lakes, such as aquatic invasive species and water level changes.

Interestingly, it is likely that building awareness and understanding of lake problems, available tools to deal with those problems, and the way classification approaches can fit into an overall framework for management and protection will help in the long run to build political will, both in the populace and in elected decision-making bodies, to seek approaches to deal with identified problems.

Countywide lake groups, an emerging trend at the time of our 2002 water classification assessment, have continued to increase in number, as well as in capacity. (See **Appendix C** for a map and a list on the 25 groups currently known to exist.) These groups—some of them formal entities in and of themselves and others just informal networks of local lake and water groups and other stakeholders coordinating regularly at the county scale—take on a variety of roles and follow varying approaches dependent on the perceived needs in each county. They all seem to play a role, or at least to have the potential to play a role, in building the general awareness and ultimately the political will discussed above. (Please see the sidebar on the next page for more on countywide lake groups.)

Countywide Lakes and Waters Groups

The leadership of countywide lakes and waterways groups can be essential to meeting the challenges of local lake protection. These groups bring together individual lake districts and associations, river and watershed groups, other conservation and sporting organizations, and concerned citizens from across their counties. Complex, countywide lake issues such as classification projects, shoreland zoning changes, and comprehensive land use planning efforts have spurred formation of countywide lakes or waters organizations in many parts of the state.

Countywide lakes groups often form to build better relationships with local governments, to advocate for better local lake protection policies, or simply to create a forum for sharing ideas and resources among the many individual groups in a county. In some cases, countywide lakes groups are important advocates to encourage county governments to undertake lake classification projects and to support county-level lake specialist staff positions. County staff that can focus on lake management projects are essential in lake-rich counties.

Many countywide lakes groups also work with county land conservation or zoning departments to undertake local educational projects. Examples include:

- Lake-friendly waterfront living materials for new property owners,
- Shoreland restoration demonstration sites,
- Workshops and other events.

The coordinated efforts of countywide lakes groups and county governments play an important role in increasing the overall effectiveness of education and communication efforts designed to protect and restore our public waterways.

There are currently 25 active county lakes and rivers groups in Wisconsin (see map and list in **Appendix C**).

Technical assistance for counties working through classification processes

As counties continue to choose classification approaches to help them achieve their surface water management objectives, there will be a need for continuing technical assistance. Counties will be able to benefit from technical assistance from the earliest phases of a project (scoping a proposed strategy to meet identified local needs) to the funding phase (likely involving Lake Classification and other state grants as well as other potential sources of funding) to carrying out the process and implementing the resulting plan. The Department and its contractors—including nonprofit conservation organizations and University Extension centers, as well as private consulting firms and others, can fill this role, as they have throughout the tenure of the lake classification program in Wisconsin.

Recommended approaches to meeting these technical assistance needs include targeted outreach as well as training opportunities for county agency professionals, the elected and appointed officials who direct county agency work, and the citizens and citizen groups that will play vital stakeholder and partner roles in these processes. Other target audiences, including local government officials, can be identified to be added to the above list.

The Wisconsin Lakes Partnership's ten-year strategic plan, *The Water Way*, envisions an overall lake protection, management, and restoration strategy for all of Wisconsin's lakes that meets both state goals and local management objectives. Water classification at the county level can play a significant role in helping local, county, and state partners work in partnership to accomplish these shared goals. Educational programming in the following areas can serve to make the connection between water classification as a tool and on-the-ground lake protection goals shared by lake partners:

- threats facing our lakes and the strategies available to deal with those problems.
- promotion of the lake classification tool and its flexibility, usefulness, and practicality for addressing many lake issues.
- technical hands-on training for those stakeholders that will lead local classification efforts.

B. Next steps: Promoting expanded use of the classification tool

Prevention and management of aquatic invasive species using lake classification

Activity on and around lakes to prevent the spread of aquatic invasive species (AIS) and to manage those species found in certain lakes has increased significantly in recent years, as have general awareness of the issues surrounding AIS and government attention to the issue at all levels. One major sub-trend within this overall trend is that in many areas of the state, the county level has been identified as the optimal level at which to deal with these issues. Several counties have hired AIS staff to help coordinate local and county-level efforts aimed at both AIS prevention and management.

The classification tool could potentially be used at the county level (or, perhaps even at the regional level) to help guide the deployment of resources (human, financial, and otherwise) in the AIS prevention efforts in a strategically focused way. Building off of the theory of so-called "smart prevention" laid out by UW-Madison Center for Limnology professor Jake Vander Zanden (see **Figure 5** for a graphical depiction of a "smart prevention" methodology), an analysis of the ecology of the lakes in the county, existing invasive species populations, and vectors for the movement of those species both within and into the county could result in a classification of the county's lakes sorting them by the priority attention they deserve in terms of AIS prevention resources.

Likewise, classification at the county level could potentially aid counties and local governments and citizens groups in targeting resources aimed at managing established populations of invasive

aquatic species in those lakes where they are found. There is significant potential for coordinating lake-by-lake studies and plans to assess the existence of AIS and generate management strategies for any AIS that are found. Indeed, several counties have done this in the past several years, using Lake Classification funding from the Department (as described in **Section II.A.**). This activity can be coordinated at the county level, and classification (and the state's Lake Classification grant program) can potentially aid in that process, but ultimately the management plans for each lake will have to derive from lake-scale data collection and planning and be implemented one lake at a time.

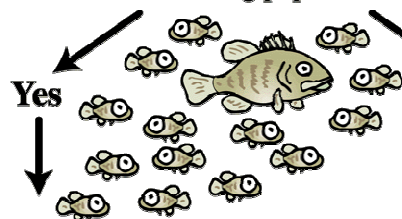## Figure 5: "Smart Prevention" methodology
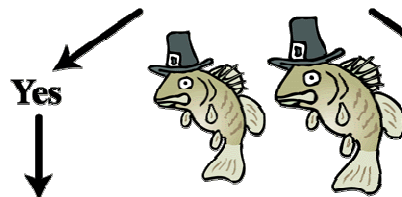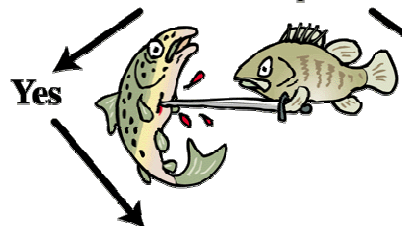
Graphic is from Vander Zanden et al, 2004. *Ecological Applications*, Vol. 14: p. 132-148.

Using lake classification to manage water quality and watersheds

Many counties could benefit from using the lake classification tool in ways similar to the approaches used by Adams and Portage Counties. Lake classification can be used to aid county land and water resource management decisions, guide countywide lakes planning efforts, and address watershed management goals. Lake Classification grants can be used to gather physical, chemical, and biological data for the county's water resources in a strategic, coordinated manner. This valuable information can then be used to set lake water quality goals, create lake management plans, tie in with other plans that address water quality goals, and link funding sources to implement watershed best management practices that will achieve water quality goals.

County land and water conservation departments are the primary local delivery system for Wisconsin's land and water conservation programs to address runoff pollution. County staff provide technical and educational services for local landowners, and administers cost-sharing grants to implement conservation practices on the landscape. Counties are also required to describe how they will implement both rural and urban runoff control performance standards in their Land and Water Resources Management (LWRM) Plans. The LWRM Plans must be developed through a locally led process that identifies local needs and priorities. Examples of other local activities that recent LWRM plans include: invasive species management, groundwater protection, and shoreland protection.

County LWRM Plans are an important tool for quantifying the soil and water conservation practices needed to reduce sediment delivery and runoff pollution to Wisconsin lakes and streams. Counties can use Lake Classification grants to assess similarities/differences and categorize lakes accordingly in order to make specific recommendations for each category. Counties can then incorporate lake protection and management strategies from lake classification data assessments into their LWRM Plans. The plans are used to prioritize where limited cost-share funding for conservation practices will go. Practices that will achieve the highest level of runoff pollution control will be given the highest priority ranking to be implemented when funds are available.

Only counties with LWRM Plans approved by the Department of Agriculture, Trade and Consumer Protection (DATCP) are eligible to receive annual funding through the state's Soil and Water Resource Management Grant Program, which supports locally-led conservation efforts. Each year DATCP and DNR award grant funds to counties as part of an allocation process to help pay for land and water conservation department staff and to provide landowner cost-sharing to implement LWRM Plans.

For example, Washburn County's current LWRM Plan (which guides land and water conservation department activities from 2005 through 2009) identifies as their top two priority goals:

1.   Protect and restore aquatic and near shore fish and wildlife habitats and encourage their appreciation.

2.   Protect and enhance lakes, streams, and wetlands by managing nutrient and sediment inputs.

To accomplish these goals, key activities written in Washburn County's LWRM Plan include:

1. Provide technical assistance and cost sharing to implement shoreline buffer and construction site erosion control requirements in the shoreland zoning ordinance.

2. Use cost share programs to establish best management practices to reduce nutrient and sediment sources.

3. Implement educational strategy activities. One of the activities in the shoreland educational strategy includes the following outreach to all waterfront property owners:

   - Develop shoreland property owners guidebook,

   - Support neighbor-to neighbor contacts,

   - Recognize good stewardship,

   - Compile and distribute information regarding shoreland restoration techniques and assistance available.

Washburn County has a lakes classification system with corresponding shoreland zoning ordinance upgrades for each of three lake classes. Standards for vegetative buffers were also significantly strengthened as part of the classification and shoreland ordinance revisions to limit removal of vegetation and to require restoration of vegetation when land use permits are obtained in shoreland areas. The Land and Water Conservation Department assists landowners with developing vegetation restoration plans.

Washburn County receives approximately $55,000–60,000 from DATCP for cost-sharing conservation practices and about one-half of that money is used for shoreland restoration projects. Their DATCP funding allotment is also expected to increase in 2008.

Managing recreational use with lake classification

The lake classification tool can help counties and local units of government work cooperatively to develop countywide guidance about recreational opportunities and\or management policies addressing recreational use conflicts. Counties can use Lake Classification grants to gather data on all their lakes to help the community better understand current recreational use conditions and potential use conflicts. Lakes can be classified for recreational use management by assessing their ecological characteristics, along with the levels and types of current recreational use. This can include data such as:

- Physical and biological characteristics
  - Surface area
  - Shallowness ratio (% lake area that is less than 10 ft. deep)
  - Water clarity
  - Aquatic plant communities
  - Important fish spawning and wildlife reproduction areas

- Types of recreational uses (water and jet skiing, fishing, paddling, swimming, etc.)

- Levels\intensity of various recreational uses

- Amount of public access
  - Greater than state access code standards (in NR 1.90–1.92)
  - Within standards
  - Less than standards

- Existing level of shoreland development

- Assessment of lake users' recreational expectations and experiences
  - Frustrated, lots of conflicts
  - Mixed experiences, some good\bad
  - Peaceful, no conflicts

This information could be used to create a county recreational use guide for the area's lakes and rivers. For example, the county could create an attractive booklet to showcase the valuable water resource assets in a community—with added benefits of:

- Promoting safety on our public waterways with boating courtesy codes or similar tips for responsible boating,

- Providing a range of recreational experiences by steering fast boaters and paddlers to those waters best suited for each activity,

- Explaining local boating rules,

- Prompting boaters to take steps to prevent the spread of aquatic invasive species, especially on waters already known to contain invasive species, and

- Enhancing levels of enjoyment for all user groups.

County lake classification data can also be used to minimize conflict in high use areas by:

- Designating specific lakes for particular types of recreational uses, (e.g., no-motorized boating regulations on wild lakes)

- Identifying specific times and/or areas of use for a particular lake or for classes of lakes, e.g.:
  - Establishing slow-no-wake times to offer opportunities for anglers and paddlers, as well as water-skiers

  - Establishing slow-no-wake zones in identified sensitive areas

  - Or using any of the wide array of local boating regulation approaches available to eligible local units of government

A classification system may be developed to make a preliminary assessment as to where local boating regulations to protect ecologically sensitive areas or lakes may be appropriate. Lakes which rank high may be considered for whole lake boating restrictions, special use regulations, or slow-no-wake zones. Lakes which rank low may have minimal restrictions, or would not need more protective boating ordinances for environmental purposes.

Towns, cities, villages, and public inland lake and rehabilitation districts have authority to adopt local boating rules, in accord with state law (Chapter 30, Wisconsin Statutes). Counties only have jurisdiction over rivers and streams. Counties and local municipalities would need to work

cooperatively to implement recreational use management projects that include efforts to adopt local boating rules for certain lakes or groups of lakes.

A small complicating factor is that only counties are eligible to receive Lake Classification grants. However, the county's role in a coordinated project with local government units could be to gather, compile, and analyze the lake inventory and assessment data. Additionally, the county could play a valuable project coordination and facilitation role in guiding the recreational use planning process. Other units of government may receive lake planning or protection grants to implement certain aspects of the larger project that are within their jurisdictions.

A county could also build on previous lake classification work completed for shoreland management by cooperating with a local unit of government to implement specific local boating rules for a specific water body or classes of water. For example, if a county established a wild lakes class where a high level of protection is desired, a town could work with others in the community to adopt slow-no-wake or electric-motor-only boating rules on the wild lakes within their town. The county could then create a recreational use guide that promotes a range of recreational experiences in their community: fast boaters are welcome on the county's recreational development class lakes, and paddlers are encouraged to visit those waters in the county's wild lakes class. This approach represents a comprehensive strategy for protecting the ecological character of a particular region's sensitive water resources and balancing the many competing uses of our public waters.

Appendix A: Summary of other recent lake classification activities

Ashland County

Ashland County received Lake Classification grant funding in 2000, which helped fund a successful classic lake classification process and classification-based shoreland zoning updates. Later, with a combination of other state grants, the county improved administration of its classification-based ordinance by automating its land records with GIS. The County also created a website connecting property owners to ordinance information.

The county received another Lake Classification grant in 2003, which helped fund the creation of a shoreland property owner's guide. The guide was completed and the grant closed in 2005. The county's zoning administrator reports having shared the guide book with numerous waterfront property owners and others.

Dodge County

The Dodge County Planning and Development Department used a Lake Classification grant to inventory the county's lakes and streams in effort to better regulate and manage the county's water resources. Dodge County retained the professional consulting services of RSV Engineering, Inc. to classify their waters, which was completed in September 2003. The goal of the waterway classification system was to provide the County with a method of categorizing or grouping each lake, river, and stream by their unique characteristics. The county's lakes, rivers and streams were ranked by sensitivity to development and current levels of development. Lakes, rivers, and streams were then placed into 3 classes: class 1, most sensitive and least amount of existing development; class 2, intermediate; and class 3, least sensitive and highest levels of existing development.

RSV's waterway classification report included a recommendation to revise the Dodge County shoreland zoning regulations with standards that corresponded to the waterway classification system. Their recommendation was to provide the most protective zoning standards for class 1 waters, an intermediate level of protection for class 2 waters, and allow the highest development potential for class 3 waters. This approach was not adopted by the county.

However, recent revisions (February 2007) to Dodge County's Land Use Code do include upgraded shoreland buffer standards that apply to all shoreland areas in the county. Shoreland buffers are now required to be at least 50 feet wide (structure setbacks are still 75 ft.) Additional provisions clarify that shoreland vegetation must be sufficient to screen structures as seen from the water, and function to control erosion.

Price County

Price County received Lake Classification grant funding to pursue the creation of a classification system and to organize the shoreland zoning code around that system. The process was nearly completed when it fell prey to politicization and controversy. Ultimately, the classification system was never adopted by the county board, nor were any class-based changes to the shoreland zoning code.

In some ways, lake data gathered in connection with the failed classification process were incorporated into the county's comprehensive land-use planning process. Of note is the fact that Price County has incrementally modified its shoreland zoning ordinance several times over the years making some of its standards more restrictive than the statewide minimums in NR 115.

Shawano County

Shawano County received Lake Classification grant funding in 2001 for a lake-classification project aimed at tailoring shoreland zoning standards to the various classes. Ultimately, the proposed shoreland ordinance was not adopted by the county board, in the face of sharp political opposition. The zoning administrator reports that the direction from the county board has been to leave the shoreland zoning ordinance as is until after the state adopts a revised NR 115.

According to the County's final report to the DNR, some of the recommended strategies in the mothballed shoreland zoning ordinance proposal were incorporated into the county's Land and Water Resource Management Plan and the science-based assessments of water body sensitivity that guided the proposal were to be considered in the process to create a natural resources element of the county's comprehensive plan.

Waukesha County

Waukesha County received a Lake Classification grant prior to 2002. With that funding assistance, the county worked with the Southeastern Wisconsin Regional Planning Commission to analyze available lake and stream data and generate a recommended classification system for all the surface waters in the county. That portion of the process was completed. It is not clear whether the intent at the outset was to eventually incorporate the classification system into the county's shoreland zoning code. The zoning administrator reports now that such an outcome is unlikely.

Appendix B: Counties' Upgraded Shoreland Ordinance Standards with Classification

Table 1: Lot size and water frontage width standards for new development

County	Wild Lakes Class	Most Protective Class	Moderate Protection Class	General Development Class	Rivers & Streams Class [1]
Ashland	NA	62,500 ft^2 250 ft.	40,000 ft^2 200 ft.	30,000 ft^2 150 ft.	62,500 ft^2 250 ft.
Barron	160,000 ft^2 400 ft.	80,000 ft^2 250 ft.	62,500 ft^2 200 ft.	Unsewered: 43,560 ft^2 150 ft. Sewered: 20,000 ft^2 100ft.	80,000 ft^2 250 ft.
Bayfield [2]	NA	120,000 ft^2 300 ft.	60,000 ft^2 200 ft.	30,000 ft^2 150 ft.	120,000 ft^2 300 ft.
Burnett	NA	1.72 ac 300 ft.	40,000 ft^2 200 ft.	30,000 ft^2 150 ft.	1.72 ac 300 ft.
Douglas [3]	10 ac. 300 ft	1.84 ac 200 ft.	40,000 ft^2 175 ft.	30,000 ft^2 150 ft.	1.84 ac 200 ft.
Forest	NA	NA	40,000 ft^2 200 ft.	20,000 ft^2 100 ft.	40,000 ft^2 200 ft.
Iron	NA	NA	2.07 ac 300 ft.	40,000 ft^2 200 ft.	2.07 ac 300 ft.
Langlade	NA	120,000 ft^2 300 ft.	80,000 ft^2 200 ft.	20,000 ft^2 100 ft.	Sensitive rivers: 120,000 ft^2 300 ft. Less sensitive rivers: 80,000 ft^2 200 ft.
Lincoln	NA	50,000 ft^2 200 ft.	40,000 ft^2 175 ft.	30,000 ft^2 150 ft.	30,000 ft^2 150 ft
Marinette	NA	Unsewered: 90,000 ft^2 300 ft. Sewered: 45,000 ft^2 300 ft.	Unsewered: 60,000 ft^2 200 ft. Sewered: 30,000 ft^2 200 ft.	Unsewered: 30,000 ft^2 100 ft. Sewered: 15,000 ft^2 100 ft.	Rivers grouped 1-3 with same standards as lakes classes 1-3
Oneida	NA	NA	50,000 ft^2 200 ft.	30,000 ft^2 150 ft	30,000 ft^2 150 ft.
Polk	NA	100,000 ft.^{2} 250 ft.	60,000 ft.^{2} 150 ft.	Unsewered: 43,560 ft.^{2} 100 ft. Sewered: 20,000 ft.^{2} 90 ft.	60,000 ft.^{2} 150 ft.

County	Wild Lakes Class	Most Protective Class	Moderate Protection Class	General Development Class	Rivers & Streams Class [1]
Sawyer	NA	40,000 ft^2 200 ft.	30,000 ft^2 150 ft	20,000 ft^2 100 ft.	30,000 ft^2 150 ft.
Vilas	NA	60,000 ft^2 300 ft.	40,000 ft^2 200 ft.	30,000 ft^2 150 ft.	Class I Rivers: 60,000 ft^2 300 ft. Class II Rivers = 40,000 ft^2 200 ft.
Washburn	NA	3.0 ac. 300 ft	80,000 ft^2 200 ft	30,000 ft^2 150 ft	3.0 ac 300 ft.
Washington	NA	Unsewered: 40,000 ft^2 150 ft. Sewered: 30,000 ft^2 100 ft.	Unsewered: 30,000 ft^2 125 ft. Sewered: 20,000 ft^2 85 ft.	Unsewered: 20,000 ft^2 100 ft. Sewered: 10,000 ft^2 65 ft.	Rivers grouped 1-3 with same standards as lakes classes 1-3
Waupaca	NA	5.0 ac. 400 ft	2.0 ac. 200 ft.	20,000 ft^2 100 ft.	40,000 ft^2 200 ft.

1 ac. = 43,560 sq ft.

1. Most of the counties that have included river management objectives and standards in their classification projects have grouped all navigable rivers into one to two classes. Some classification systems have identified stream segments (usually no more than two per stream) that placed headwaters in a more protected category than the downstream segments. Sixteen counties have adopted classification systems with two to four groups of varying development standards (very protective – status quo of statewide minimums). Of these counties:

   o Nine have also put all navigable rivers and streams into one of their lake classes with the same corresponding development standards. Polk County may do further review of a more specific rivers classification system in the future.

   o Another three counties have created a unique Rivers Class with a single set of development standards.

   o Another five have sorted rivers into two or more different management classes, varying the development standards by water class.

   Langlade sorted rivers into class 1 (with lakes) if they are designated as ORW\ERW, and all other rivers are in class 2 (with lakes).

   Vilas sorted rivers into class 1 if they are designated as trout streams or ORW\ERW, and all other rivers are in class 2.

   Waupaca has 3 lake classes, plus a rivers \ streams class and a trout streams class.

   Washington and **Marinette** have grouped rivers into 3 management classes along with lakes using average width, average depth and fishery type to determine each stream class. Headwater streams were placed in class 1 (providing the highest degree of protection); and the large, historically heavily utilized rivers were in class 3 (providing a level of protection equivalent to the state minimum shoreland zoning requirements).

2. **Bayfield County Lake Superior Lots:** Lots having frontage on Lake Superior have the same standards as lots on Class 1 (general development) lakes, except that if a lot has a bank or a bluff fronting the lake, the top of which is discernible due to evidence of erosion, the required shoreline setback is 75 feet back from the top edge of the bank or bluff. If a lot is located in an area of active or potential erosion designated on Bayfield County's Erosion Hazard Areas map, a greater setback may be required, based on projected shoreland recession rates.

3. **Douglas County** has a Wild Lakes Overlay District that includes all lakes in unincorporated areas which do not have a habitable residence within 300 ft of the OHWM as of the date of ordinance adoption (1998).

Table 2: Shoreland setback and buffer width standards for new development

County	Wild Lakes	Most Protective Class	Moderate Protection Class	General Development Class	Rivers & Streams Class [1]
Ashland	NA	75 ft setback 50 ft. buffer	75 ft 50 ft.	75 ft 50 ft	75 ft 50 ft
Barron	125 ft. setback 100 ft. buffer	100 ft 75 ft	100 ft. 75 ft.	75 ft 50 ft	100 ft 75 ft
Bayfield [2]	NA	100 ft setback 75 ft. buffer	75 ft. 50 ft.	75 ft 50 ft.	100 ft. setback 75 ft. buffer
Burnett	NA	100 ft setback 75 ft. buffer	75 ft 50 ft.	75 ft 50 ft.	100 ft 75 ft.
Douglas [3]	175 ft. setback 50 ft. buffer	125 ft 50 ft.	100 ft 35 ft.	75 ft 35 ft.	125 ft 50 ft. Brule, St. Croix, & Eau Claire: 200 ft setback 50 ft. buffer
Forest	NA	NA	75 ft. setback 35 ft. buffer	75 ft 35 ft.	75 ft 35 ft.
Iron	NA	NA	75 ft. setback 35 ft. buffer	75 ft 35 ft.	75 ft 35 ft.
Langlade	NA	125 ft. setback 100 ft. buffer + 30 ft. sideyards	100 ft setback 75 ft. buffer + 20 ft. sideyards	75 ft setback 50 ft. buffer	Sensitive Rivers: 125 ft setbacks 100 ft. buffer + 30 ft. sideyards Less sensitive: 100 ft. setback 75 ft. buffer + 20 ft. sideyards
Lincoln	NA	100 ft. setback 60 ft. buffer + 35 ft. sideyards	90 ft. 50 ft. + 30 ft. sideyards	75 ft. 35 ft. + 25 ft. sideyards	75 ft. 35 ft. + 25 ft. sideyards
Marinette	NA	75 ft. setback 50 ft. buffer width	75 ft. setback 50 ft. buffer width	75 ft. setback 50 ft. buffer width	Rivers grouped 1- 3 with same standards as lakes classes 1-3
Oneida	NA	NA	75 ft setback 35 ft. buffer	75 ft 35 ft.	75 ft 35 ft.
Polk	NA	100 ft. setback 35 ft. buffer	100 ft. 35 ft.	75 ft. 35 ft.	100 ft. 35 ft.

County	Wild Lakes	Most Protective Class	Moderate Protection Class	General Development Class	Rivers & Streams Class
Sawyer	NA	75 ft. setback 35 ft. buffer	75 ft 35 ft.	75 ft 35 ft.	75 ft 35 ft.
Vilas	NA	75 ft setback buffer: no cut w\in 75 ft, allowed 1 SRA 30 x 35 ft.	75 ft buffer: no cut w\in 75 ft, allowed 1 SRA 30 x 35 ft.	75 ft buffer: no cut w\in 75 ft, allowed 1 SRA 30 x 35 ft.	75 ft. buffer: no cut w\in 75 ft, allowed 1 SRA 30 x 35 ft.
Washburn	NA	100 ft. setback 75 ft. buffer	100 ft 75 ft.	75 ft 50 ft.	125 ft. 75 ft.
Washington	NA	125 ft setback ave to 75 ft w\ mitigation. 75 ft. buffer	100 ft setback ave to 50 ft w\ mitigation. 50 ft. buffer	75 ft. setback ave to 50 ft w\ mitigation. 35 ft. buffer	Rivers grouped 1-3 with same standards as lakes classes 1-3
Waupaca	NA	300 ft. setback 275 ft. buffer	100 ft 75 ft.	75 ft 50 ft.	R \ S = 100 ft. setback 75 ft. buffer T =125 ft. setback 100 ft. buffer

SRA = Shoreland Recreation Area   Wisconsin Association of Lakes. 2007

Notes 1-3: See notes that follow Table 1.

References

1. County Zoning Departments. Zoning contacts for each county are found here:
    http://www.dnr.state.wi.us/org/water/wm/dsfm/shore/county.htm

2. *Creating an Effective Shoreland Zoning Ordinance: A Summary of Wisconsin's Shoreland Zoning Ordinances.* DNR Publication Number WT-542-00, 2000. Available on-line here:
    http://www.dnr.state.wi.us/org/water/wm/dsfm/shore/creating.htm

3. Shoreland Zoning Resources for Local Governments are available here:
    http://www.dnr.state.wi.us/org/water/wm/dsfm/shore/local.htm

Appendix C: List of County Lakes and Waterways Associations

- Adams County Lakes Advisory Group
- Bayfield County Lakes Forum
- Burnett County Lakes and Rivers Association
- Douglas County Association of Lakes and Streams
- Iron County Lakes Alliance
- Florence County Lakes and Rivers Association
- Forest County Association of Lakes
- Langlade County Waterways Association
- Lincoln County Lakes Association
- Manitowoc County Lakes Association
- Marinette County Association of Lakes and Streams
- Marquette County Lakes Association

- Oconto County Lakes & Rivers Association
- Oneida County Lakes and Rivers Association
- Racine County Lakes Alliance
- Polk County Association of Lakes and Rivers
- Friends of Portage County Lakes
- Price County Lakes Association
- Rusk County Waters Alliance
- Sawyer County Lakes Forum
- Sheboygan County Lakes Association
- Vilas County Lakes Association
- Walworth County Lakes Association
- Washburn County Lakes and Rivers Association
- Waushara County Lakes and Watershed Council

Appendix C.

Status of County Lakes and Waterways Groups*
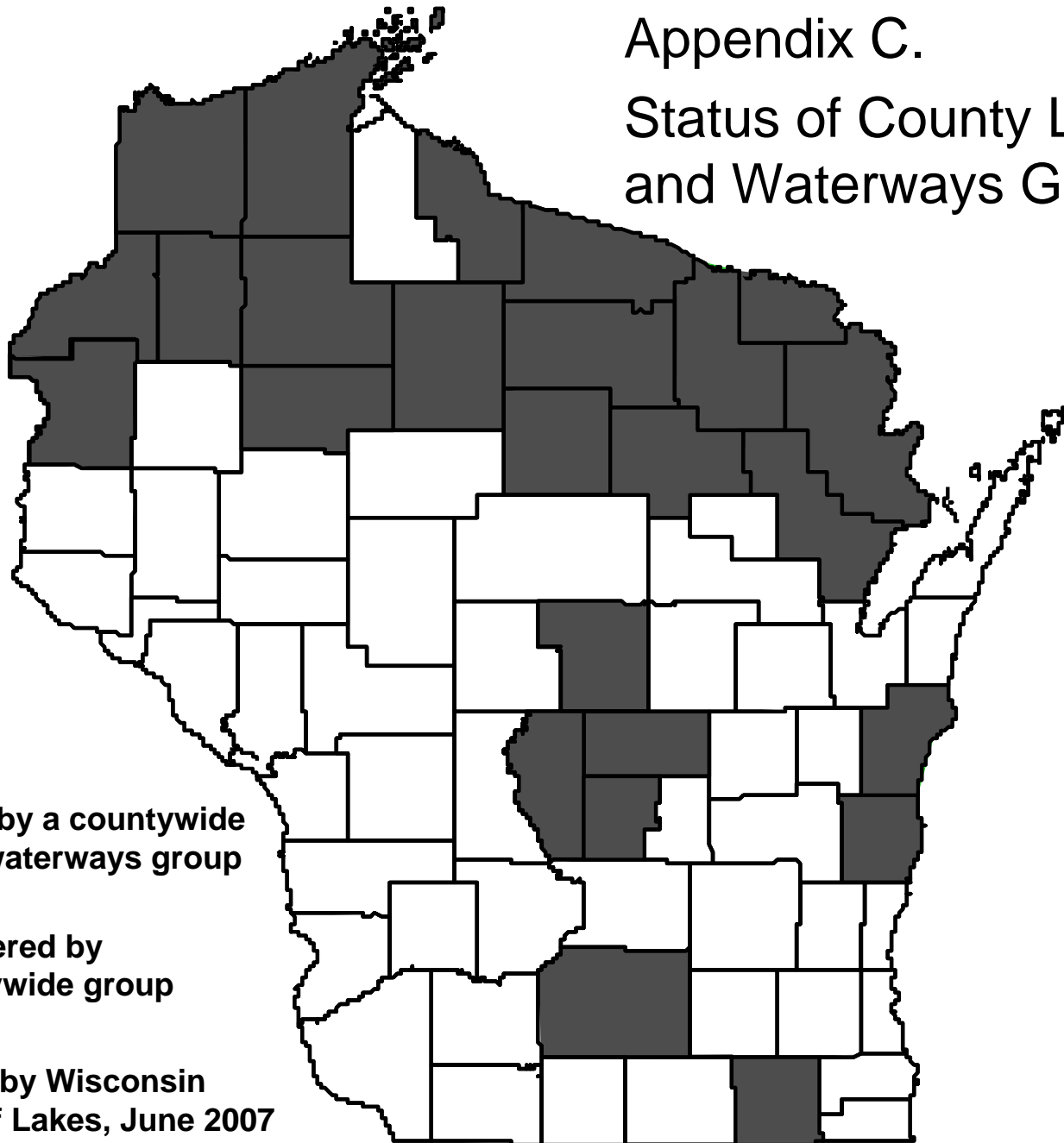
Covered by a countywide lakes & waterways group

Not covered by a countywide group

* Map created by Wisconsin Association of Lakes, June 2007