Shoreland Management Program Assessment

Dam Safety, Floodplain and Shoreland Section

WISCONSIN
DEPT. OF NATURAL RESOURCES

SHORELAND MANAGEMENT PROGRAM ASSESSMENT

A Study by the Wisconsin Department of Natural Resources
Shoreland Management Program
Dam Safety, Floodplain and Shoreland Section
Bureau of Watershed Management

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NOTE: These appendixes are published in a separate volume (PUB-WT-507-97).

1. EXECUTIVE SUMMARY

Wisconsin's Shoreland Management Program is a partnership between state and local government that requires development near navigable lakes and streams to meet statewide minimum standards. These standards were created to protect water quality, recreation and navigation, fish and wildlife habitat, and natural scenic beauty. County ordinances must have standards that meet or exceed the minimum state standards contained in Chapter NR 115, Wisconsin Administrative Code.

Given the development pressures now confronted by Wisconsin waters and the resultant impacts on water quality and habitat, an important juncture has been reached for the Shoreland Management Program and for our state's natural resources. Shoreland management issues are also linked to other matters of statewide and cross-program concern as identified by the Wisconsin Department of Natural Resources (DNR), such as land use, Northern Wisconsin Initiatives, and Great Waters of Wisconsin.

This report summarizes issues faced by Wisconsin's Shoreland Management Program and arises from a comprehensive evaluation of the program's effectiveness in accomplishing its mission. The report provides a common point of reference for discussion of options for program improvement among DNR staff, local government staff administering the program, property owners and other external organizations affected by the program, and citizens interested in protecting the state's water resources and near-shore habitat. It can also serve as a reference for DNR program staff and managers, the Natural Resources Board, and stakeholders as they develop and consider policy proposals to address shoreland development impacts.

The basic county shoreland zoning standards contained in NR 115 were established in the late 1960s. These standards were developed based on a combination of the best available scientific information, best professional judgment, and the feasibility of implementation at that time. The standards for lot width minimums, restrictions on vegetative cutting, and the building setback distances create a buffer intended to minimize disturbances to aquatic resources and preserve the natural beauty of our lakes, rivers, and streams. With the exception of the wetland protection provisions added in the early 1980s, the standards have essentially remained unchanged. However, the natural, administrative, and political landscapes have changed greatly during the years since program inception.

Current development trends pose major challenges to the shoreland program. Waterfront development is booming in northern Wisconsin, with property values increasing up to 400% in the early 1990s for some counties in the region. In southeastern Wisconsin, most lakes larger than 10 acres have developed shorelines, with much of that shoreline developed before shoreland zoning went into effect. Many homeowners and visitors seek out lakes and rivers as places to enjoy natural beauty in a quiet setting, yet the sheer number of users and owners can create user conflicts and put pressure on limited resources. The scarcity of prime waterfront lands means that areas once passed over for residential development, because they were too steep, too wet, or too rocky, are now being developed. Further, it is more difficult to alter these landscapes without harming nearby resources, especially as landowners do not always understand the impacts of their activities on the water.

Review of the current scientific literature affirms that the present standards provide at least minimal protection of habitat and water quality. Less protective standards are not supported by this review. The literature indicates that, up to a point, larger lot sizes and widths and wider buffer zones would more effectively meet the statutory objectives, but that a broader watershed approach to issues of nonpoint pollution, hydrologic alteration, and habitat degradation will ultimately be required. Applying current NR 115 standards is not likely to prevent the continued degradation of our aquatic resources, without also taking a proactive approach to controlling erosion and addressing stormwater problems in more

developed areas and identifying critical habitat and important wildlife corridors in less developed areas. In a nutshell, current standards are necessary, but not sufficient, to preserve water quality, habitat, and natural beauty.

The strength of the program lies in the state-local government partnerships that have developed to provide a statewide safety net for aquatic resources.

Wisconsin's shoreland program has served as a model for other states developing programs to protect the natural beauty and ecological functions of their shorelands.

The greatest administrative barriers to effective implementation of shoreland zoning are waterfront owners' lack of awareness of zoning requirements and lack of support for the rationale behind these requirements; lack of funding for staff and equipment at the local and state level for education, monitoring, and enforcement; and routine granting of variances. The greatest weaknesses identified in NR 115 itself are clauses that are difficult to interpret and enforce, forming loopholes that frustrate the intent of the law. These include the vegetative cutting standards, nonconforming structure standards, and setback averaging.

Initiatives in three broad areas for improving the program are discussed in this report: 1) program support initiatives, such as information and education, financial and other incentives, technical assistance to local governments, and funding and staffing proposals; 2) potential changes to NR 115, the administrative rule for the Wisconsin Shoreland Management Program, and 3) a potential classification system for water bodies subject to differing regulations.

The shoreland program needs to clearly communicate a vision of healthy shoreland development to the public. It also needs to continue to work with its current partners and reach out to new partners to build an ethic of shoreland stewardship among waterfront property owners, anglers, boaters, civic leaders, developers, realtors, builders, and the young people whose natural inheritance is at stake.

The range of policy choices for the regulatory portion of the program appear to boil down to variations on three general approaches: 1) raise the minimum standards statewide; 2) eliminate statewide minimum standards (leaving shoreland zoning up to each county); or 3) maintain the statewide minimums but encourage counties to strengthen their shoreland zoning standards if they choose.

Raising standards statewide would be potentially divisive. Such an action would draw strong criticism from those opposed to government regulation, while resource protection groups would likely support it as a means of improving the statewide safety net.

Completely eliminating statewide minimum requirements or state oversight authority could be construed as an abdication of the state's affirmative duty to protect the public interest in navigable waters. Legally, such an action might require the legislature to set aside 200 years of case law that provide the underpinning of the Public Trust Doctrine. In addition, many counties have historically been reluctant to adopt shoreland ordinances on their own initiative. Eliminating the mandate could imply that shoreland standards are unnecessary.

However, a case can be made for "informed local control" in that counties are best able to plan for the regulation of resources within their borders. Some of the problem areas with administering and enforcing shoreland ordinances are more easily addressed at the local level where conditions are more uniform, rather than trying to write regulations that fit the wide range of conditions across the state. Support for local initiatives in such areas as lake management planning, cluster development, stormwater management, erosion and sediment control, and forestry and agricultural buffers should be encouraged. At the same time, some issues, such as administering the nonconforming rules, setback averaging,

structure definitions, and a range of minor clarifications may be best addressed at the statewide level to assure consistency on program basics.

Instituting some type of a classification system linked to varying shoreland regulations for different water body classes could address the varying situations across the state. It would be desirable for the DNR to develop a basic framework for categorizing water bodies that any classification system and resulting shoreland standards must meet. Based on the literature review, a classification system that would result in less protective standards than current minimums is not justified.

This report can serve as a catalyst and framework to solicit input from the many groups concerned with shoreland zoning. Through discussions with these groups, the DNR hopes to condense the wide-ranging list of program initiatives and possible rule changes to a concrete set of action proposals. This may well include adding issues and initiatives not previously listed. Program staff will meet with a variety of interest groups and conduct workshops and training sessions to build understanding of and support for the program. If rule changes are pursued, an advisory committee would need to be formed.

Throughout its history, Wisconsin has benefited from the immense wealth of its waters: for economic development, recreation, tourism, hunting, and fishing, and as places to feel the awe and wonder of nature. This is a critical time for Wisconsin's lakes, streams, and wetlands. The challenge is to channel our desire to enjoy these beautiful places into patterns of development that maintain the ecological and aesthetic qualities that draw us to the shore.

2. INTRODUCTION AND BACKGROUND

2.1 Purpose of This Report

Wisconsin's Shoreland Management Program is a partnership between state and local government that requires development near navigable lakes and streams to meet statewide minimum standards. Each Wisconsin county has zoning ordinance provisions that protect water resource values: water quality, recreation and navigation, fish and wildlife habitat, and natural scenic beauty. County ordinances must have standards that meet or exceed the minimum state standards contained in Chapter NR 115, Wisconsin Administrative Code. These shoreland provisions include:

- setbacks for structures from waterways and property lines
- minimum lot sizes and land division review
- controls on cutting shoreline vegetation
- standards for earth-moving activities
- protection for wetlands
- regulation of septic systems and wells
- restrictions on improvements to older structures that don't meet the shoreland standards

The shoreland management program is overdue for a comprehensive review. With the exception of the wetland protection provisions added in the early 1980s, the basic county minimum requirements contained in NR 115, the state administrative rule for Wisconsin's Shoreland Management Program, have essentially remained the same since the program's origin in the late 1960s, while the natural, administrative, and political landscapes have changed greatly.

A U.S. Environmental Protection Agency (EPA) grant has funded a project position to conduct a thorough review, not only of program regulatory aspects, but also of other components, such as technical assistance and training in support of program implementation. The grant has supported:

- review of existing shoreland zoning program standards and their implementation
- review of the scientific literature on shoreland functions
- compilation of examples of innovative standards for protecting water quality, habitat, and scenic beauty
- review of current waterfront development trends and impacts
- suggestions for improving shoreland standards that have proven ambiguous or difficult to administer
- review of other barriers to effective program implementation
- identification of options for new or enhanced zoning standards for improved protection of this upland buffer adjacent to wetlands, lakes, and streams

Over the years, DNR shoreland management program staff have been discussing and implementing program improvements with other DNR program staff, related agency staff, local government administrators, and other partners. This report summarizes the program review. It is intended to be a reference document and a starting point for a broader discussion of the issues facing the shoreland program. The program improvement options presented are simply that. They do not represent final department policy decisions and are not set in stone.

Two summary tables appear in Section 4, Options for Improving the Shoreland Zoning Program. *The Program Support Initiatives* table presents program initiatives that the department could undertake in cooperation with other partners. These include technical assistance, information and education, financial assistance and funding, and staffing proposals. The *NR 115: Issues and Options* table summarizes the

regulatory issues investigated in the study, as well as options that should be considered in revising the state administrative code. As this study is circulated and discussed, additional issues may surface.

2.2 Shoreland Program History

Wisconsin—the name is said to mean *gathering of the waters*—identifies our state with its most bountiful resource. Our state has more than 50,000 miles of rivers and streams, more than 15,000 inland lakes, about 1,751 square miles of Great Lakes estuaries and bays along 1,017 miles of Great Lakes shoreline, and approximately 5.3 million acres of wetland (Wis. DNR 1996). Significant aspects of Wisconsin Native American tribal cultures are based on the harvest and stewardship of aquatic plants and animals. The natural qualities of Wisconsin's lakes and waterways are important, not only for local economies, but also in defining the special character of our state. From trout streams to floodplain forests, from the shores of Lakes Michigan and Superior to the wild rivers, streams, and creeks of the northern forests and the inland lakes and wetlands created by ice-age glaciers, Wisconsin is blessed with an incredible wealth and variety of water resources. These resources provide us with fish and wildlife, natural beauty and serenity, and opportunities for many kinds of outdoor recreation. Maintaining the quality of these waters and the beauty of their shorelands protects these attributes and supports our important homebuilding, tourism, and recreation industries.

2.2.1 Public Trust Doctrine

Wisconsin's history of protecting water resources extends back more than 200 years to the origins of the public trust doctrine. Wisconsin's Public Trust Doctrine is a body of constitutional, common (court-interpreted), and statutory law establishing public rights, and the state's obligation to protect them, in navigable bodies of water (Wis. DNR 1995). Historically, the public trust doctrine was used to protect the right of commercial navigation on waters in the state. Over the years, the public trust doctrine has grown from its historical roots to protect other public rights. These rights include commercial and recreational navigation (boating), fishing and hunting, swimming, enjoyment of natural scenic beauty, ice skating, and other recreational activities on water or ice.

The public trust doctrine is based on ideas found in the Northwest Ordinance of 1787 and incorporated into the Wisconsin Constitution. Language from Article IV of the Northwest Ordinance was used verbatim in Article IX, Section I of the Wisconsin Constitution:

> "...the river Mississippi and the navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between the same, shall be common highways and forever free, as well to the inhabitants of the state as to the citizens of the United States, without any tax, impost or duty therefor."

The public trust is a specific constitutional grant of authority to the state to regulate navigable waters. The primary trustee of navigable waters is the State Legislature; day-to-day trust duties are given to the Department of Natural Resources. The Attorney General enforces trust doctrine requirements and provides legal guidance to state and local governments.

Although the scope of the public trust does not extend above the ordinary high-water mark (OHWM), the courts have ruled that regulating shoreland and wetland areas adjacent to natural navigable waters is justified. Their ruling rests on the theory that such regulation is necessary to protect the public trust in navigable waters.

2.2.2 Waterfront Development Trends and the Need for Shoreland Regulation

As early as the late 1800s, southeastern Wisconsin lakes resorts were attracting tourists from Milwaukee and Chicago. The first significant amount of urban[1] lakeshore development on southeastern Wisconsin lakes began in the 1920s and 1930s. Natural scenery and access to the water were the main drawing points. Scattered buildings, such as cottages and resorts, appeared and began to form ribbons of development. This trend grew with increasing demand for water-based recreation. Large amounts of shorelands were converted to urban use on lakes such as Okauchee Lake, Oconomowoc Lake, Upper Nemahbin Lake, North Lake, and Little Muskego Lake in Waukesha County. Some of the development was occurring at high densities, with lots as small as 25 by 100 feet in Lake Como Beach. Wetland drainage for agriculture began in the late 1800s. Channel dredging to create navigational access to and between lakes further depleted wetlands. At roughly the same time as the first good roads were built in northern Wisconsin, northern lakeshores began to be developed for recreational use.

In the 1950s, the postwar boom generated the largest increases in urban development on many southeastern Wisconsin lake basins. By the mid-1960s the problems associated with uncontrolled waterfront development raised public concern. In a 1968 article, Yanggen and Kusler outlined these concerns:

- Cottages are built on lots barely large enough to accommodate them.
- Many of the septic systems serving cottages are incorrectly constructed or are installed in unsuitable soil.
- With much of the prime residential land already developed, less desirable lands are increasingly subdivided. Low-lying lands with high groundwater or with steep slopes are usually unsuitable for septic systems, but purchasers of such lots often become aware of waste disposal problems only after their homes are constructed.
- Inadequately treated wastewater from municipal treatment plants and industries poses a serious pollution threat.
- Agricultural runoff, road building, grading and filling during development, and other land uses destroy natural cover, cause erosion, and deliver large amounts of sediment and pollutants to lakes and streams.

The authors concluded, "Wisconsin is concerned with shoreland problems not only because they affect the important recreation industry, but also because they prevent enjoyment of the public rights in navigable water which the state has a duty to protect."

[1] "Urban development," as used here, is defined as an area containing a closely spaced network of land access streets and attendant facing urban land uses such as residential, commercial, industrial, governmental, and institutional purposes.

2.2.3 Shoreland Zoning Program Establishment

Wisconsin was a pioneer in enacting zoning-enabling legislation. In 1923, the legislature granted counties the power to zone unincorporated land subject to town board approval. The resultant county zoning structure formed the foundation for later state regulatory initiatives, including shoreland and floodplain zoning. In 1935, the legislature further amended county zoning powers to include regulating land uses along natural water courses subject to town board approval (Fish et al. 1978).

In response to the negative impacts on public waters from adjacent shoreland development, the Wisconsin Legislature on August 1, 1966, passed the Water Resources Act (Ch. 614, Laws of 1965). Among other water pollution control programs, the act created one of the first shoreland zoning programs in the United States.

Wisconsin's Water Resources Act utilized a novel approach toward comprehensive pollution control by supplementing state-level regulation of direct polluters (industries and municipal treatment plants) with county-administered zoning ordinances, sanitary codes, and subdivision regulations to control indirect polluters. The basic premise was to establish practical minimum standards and workable regulations in an area where there had been little experience, despite regulatory authority established decades earlier.

Only ten counties were actively enforcing zoning ordinances prior to the Water Resources Act. None of these ordinances were designed to protect natural resources. County-level land division regulations, although provided for in the statutes, were nonexistent. Since 1959, unsewered subdivisions have been reviewed in the field by the state (currently the Division of Safety and Buildings in the Department of Commerce). For the six years prior to 1959, only percolation test results were reviewed (Lee 1972).

Prior to 1953, no field review of subdivisions took place to ascertain whether the land were suitable for dwelling sites. County sanitary controls governing the installation and location of septic tanks and soil disposal systems existed in two counties prior to 1966. The numbers of field staff and county code administrators were negligible. Many of the zoning ordinances did not require a field inspection, so the system consisted merely of granting a permit (Lee 1972).

The Water Resources Act required the state, through the Department of Resource Development (a predecessor of the Department of Natural Resources), to develop minimum standards to manage water resources and to provide oversight and technical assistance. These standards were promulgated in the predecessor to NR 115, Wis. Adm. Code. The act gave local governments the responsibility to adopt, administer, and enforce minimum shoreland regulations through their local land-use powers and programs, beginning in 1968. A model shoreland ordinance was developed to aid counties in adopting ordinances that complied with these requirements. Many counties chose to simply adopt the model ordinance. At the same time, counties were also given floodplain zoning responsibilities.

The statewide minimum shoreland standards were based on recommendations by a team of representatives from the University of Wisconsin and several state and federal agencies. Experts from many fields, including hydrologists, geologists, foresters, economists, civil and sanitary engineers, soil scientists, and lawyers participated in this team effort (Lee 1972).

2.2.4 Early Program Implementation and Changes Since Establishment

By 1971, all counties in the state had adopted and were administering shoreland zoning ordinances. When the shoreland program was first implemented, the zoning of wetlands in conservancy districts was not required; counties had the discretion as to whether or not to include wetland conservancy districts in their respective ordinances. By 1971, many counties had adopted shoreland zoning ordinances which

referenced U.S. Geological Survey maps to designate wetlands comprising a conservancy district. Prior to 1980, 54 counties had included conservancy district zoning in their shoreland ordinances, 31 of which were based on the recommended language in the model shoreland zoning ordinance. However, the wetland zoning standards were not applied uniformly statewide. The department did not have the authority to require consistent wetland regulations throughout the state. Also, the department did not have veto authority over the rezoning of a conservancy district where the wetland's functional values would be destroyed (Marlett 1983).

In 1972, the Wisconsin Supreme Court upheld the validity of the shoreland zoning state/local partnership against a constitutional challenge in *Just v. Marinette County*, 56 Wis. 2d. 7 [1972]. The court ruled that Marinette County's use of state minimum standards to protect wetlands within a conservancy district did not result in an unreasonable taking, or restriction of private property, given the important interconnections between the wetland resource and wise water resource management. The court stated:

> "Is the ownership of a parcel of land so absolute that man can change its nature to suit any of his purposes?...An owner of land has no absolute and unlimited right to change the essential natural character of his land so as to use it for a purpose for which it was unsuited in its natural state and which injures the rights of others...It is not an unreasonable exercise of the [police power] to prevent harm to public rights by limiting the use of private property to its natural uses."

In 1977, the Wisconsin Wetland Inventory was authorized to produce maps identifying wetland resources (s. 23.32, Stats.). The DNR began mapping wetlands in 1979. In early 1981, the department began to distribute wetland inventory maps to counties for identification of shoreland-wetland areas (Wis. DNR 1988).

The Natural Resources Board in 1978 directed the DNR to maximize wetland protection under its existing authority, and in 1979 the Wisconsin Attorney General concluded that the DNR had extensive existing authority, under 281.31[2] Stats., to regulate wetlands.

In 1980, NR 115 was amended to create minimum standards for zoning *shoreland-wetlands* (wetlands in the shoreland zone, see Section 2.3.2). The legislature in 1981 directed cities and villages to zone shoreland-wetlands in incorporated areas. The intent of the legislature was to require cities and villages to protect wetlands within their respective shoreland areas through zoning. Chapter NR 117, Wis. Adm. Code (Wisconsin's City and Village Shoreland-Wetland Protection Program) was adopted in 1983 to implement this legislative intent (Wis. DNR 1988).

Statutes requiring protection of shoreland-wetlands in cities and villages rely on the definition of wetlands used in s. 23.32, Stats., and on the Wisconsin Wetland Inventory maps to designate regulated wetlands (s. 61.351 and 62.231, Stats., and ch. NR 117, Wis. Adm. Code). In 1985, the regulation of county shoreland-wetlands was reaffirmed by correspondence of Wisconsin's Attorney General.

[2] Wisconsin Statutes were renumbered in 1995. A cross reference of changes relevant to this report is found below.

Current State Reference	Former Reference
59.69(10)	59.97(10)
59.692	59.971
281.31	144.26
281.65	144.25

By 1986, all Wisconsin counties had amended their shoreland ordinances to incorporate the shoreland-wetland provisions required by the 1980 administrative rule amendment. As of 1996, almost all cities and villages had adopted shoreland-wetland ordinances.

2.3 Description of Current Standards and Program Implementation

This section describes current standards and program administration. Other than the addition of wetland standards in 1980 as described above, only minor changes have been made.

2.3.1 Required Local Regulation

In Wisconsin, counties are required to enact regulations for shorelands in unincorporated areas (s. 59.692, Wis. Stats.; NR 115, Wis. Adm. Code). Cities and villages are not required to adopt shoreland zoning general development standards, but in some cases, areas within cities and villages are subject to shoreland zoning. Cities and villages that annex unincorporated land subject to shoreland zoning must continue such zoning or adopt requirements at least as restrictive. Newly incorporated cities and villages must continue the shoreland zoning that was in effect for the land prior to incorporation or adopt an ordinance that is at least as restrictive. Cities and villages may also voluntarily adopt their own shoreland zoning requirements.

Cities and villages are required to adopt shoreland-wetland zoning for wetlands within the shoreland zone that are larger than 5 acres based on the Wisconsin Wetland Inventory maps (NR 117, Wis. Adm. Code). Under certain conditions, towns may also adopt and administer a shoreland zoning ordinance that is at least as restrictive as the county ordinance. In such cases, the town ordinance is concurrent with the county ordinance.

The legislature authorized these regulations to accomplish the purposes in s. 281.31, Wis. Stats.: "..to further the maintenance of safe and healthful conditions; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structure and land uses and reserve shore cover and natural beauty."

2.3.2 Shoreland Zoning Jurisdiction

The following lands are considered shorelands (defined in s. 59.692, Stats. and NR 115.03(8), Wis. Adm. Code), subject to shoreland zoning:

- land within 1,000 feet of the ordinary high-water mark (OHWM) of a navigable lake, pond, or flowage
- land within 300 feet from the OHWM of a navigable river or stream, or to the landward side of the floodplain (i.e., within the floodplain) if that is greater

Generally, a waterway is considered navigable if it has a bed and banks and it is possible to float a canoe or other small craft on it regularly at some time of the year—even if only during the spring thaw. Non-navigable streams may become navigable by natural obstructions such as beaver dams. Navigability is determined on a case-by-case basis. Navigable lakes and streams are public waterways, subject to the public trust doctrine.

The OHWM is the point of a stream bank or lakeshore where the presence or action of water occurs often enough that the lake or stream bed can be distinguished from the upland. This distinction is indicated by erosion, destruction of or change in vegetation, or other easily recognizable characteristics. The OHWM

forms the boundary between public and private ownership on natural lakes. The people of Wisconsin own the beds of natural lakes, which are held in trust for them by the state. On streams, the riparian landowner owns the bed to the center of the stream, but the public has the right to use the water for activities such as fishing and swimming (as long as users are in the water) and for navigation. The OHWM is determined on a case-by-case basis.

2.3.3 Shoreland Zoning Minimum Requirements

The minimum requirements that counties must include in their zoning ordinances for shorelands are contained in NR 115 of the Wisconsin Administrative Code (minimum requirements for cities and villages are contained in NR 117). NR 115 minimum requirements are summarized below.

Wetlands. Wetlands within shorelands must be regulated by counties, cities, and villages. The county requirements are found in NR 115, and city and village requirements are governed by NR 117. Wetlands in the shoreland zone shown on the Wisconsin Wetland Inventory maps (usually wetlands, or portions of wetlands, 5 acres or larger) are regulated. Generally, the shoreland-wetland district is an overlay onto existing zoning classifications and supersedes any other less restrictive zoning requirement. Permitted uses in county-zoned wetlands are limited to:

- hiking, fishing, trapping, hunting, swimming, and boating
- harvesting wild crops
- silviculture
- pasturing of livestock
- cultivation of agricultural crops
- construction and maintenance of duck blinds
- construction and maintenance of certain nonresidential buildings
- construction and maintenance of piers, docks, and walkways, provided that no filling, flooding, dredging, draining, ditching, or excavating is done
- establishment and development of public and private parks, recreation areas, and boat access sites
- construction of electric, gas, or other utility lines
- construction and maintenance of railroad lines
- maintenance and repair of existing town and county highways and bridges

All other uses are prohibited. Similar limitations apply to shoreland-wetlands in cities and villages, although there are a few additional permitted uses, and cities and villages are not required to allow all of the uses in the list above.

Shoreland-wetland areas can be rezoned to allow otherwise prohibited uses by amendment of the shoreland-wetland map (rezoning). Rezoning is prohibited if it results in significant adverse impact on any of the following wetland functions and values:

- storm and flood storage capacity
- maintenance of dry season stream flow
- discharge of groundwater to wetland
- filtering or storage of sediments, nutrients, or contaminants
- shoreline protection against soil erosion
- fish spawning, breeding, nursery, or feeding grounds
- wildlife habitat
- areas of special recreational, scenic, or scientific interest

Any amendment must go through a zoning ordinance amendment procedure including notice, public hearing, and development of written findings supporting the need for a zoning change. Any such rezoning proposal must be reviewed by DNR for consistency with NR 115 or NR 117.

Minimum lot sizes. Minimum lot sizes are established for the shoreland zone to protect health, safety, and welfare and to guard against pollution of the adjacent body of water. Lots served by a public sanitary sewer must have a minimum average width of 65 feet and a minimum area of 10,000 square feet. Lots not served by a public sanitary sewer must have a minimum average width of 100 feet and a minimum area of 20,000 square feet.

Structure setbacks. Building and structure setbacks are established in order to conform to health, safety, and welfare requirements; preserve natural beauty; reduce flood hazards; and avoid water pollution. All buildings and structures, except piers, boathoists, and boathouses, must be set back 75 feet from the OHWM. If an existing pattern of development is present, counties may allow lesser setbacks calculated by setback averaging. Not all counties allow this.

Vegetative cutting. Vegetative cutting standards are required to protect natural beauty; control erosion and reduce the flow of effluents, sediments, and nutrients; and protect fish and aquatic life. In the strip of land extending 35 feet inland from the OHWM, clear-cutting of trees and shrubbery is limited to less than 30 feet in any 100 feet along the shoreline. Farther inland of the OHWM, vegetative cutting is governed by the potential effect on water quality and by sound forestry and soil conservation practices.

Filling, grading, lagooning, ditching, and excavating. These activities are permitted only in accordance with the appropriate state permits under ch. 30, Stats., county shoreland-wetland zoning requirements, and local approvals to ensure that such activities have a minimal impact on erosion, sedimentation, and fish and wildlife habitat.

Other Shoreland Zoning Provisions
NR 115 specifically allows for the continued lawful use of an existing building, structure, or property that predates the shoreland ordinance or amendment, even if it does not conform to the new ordinance. Such uses are legal nonconforming uses. Nonconforming uses in the shoreland zone are treated similarly to those under general zoning [s. 59.69(10) Wis. Stats.]. The county may prohibit altering, repairing, or adding to such a building or structure, if the cost over its life exceeds 50 percent of its equalized assessed value. Discontinuing a nonconforming use for 12 months results in losing the property's legal nonconforming use status.

In addition to these restrictions on shoreland development, counties are required to adopt two other programs for shorelands. First, each county must review any land divisions in shoreland areas which create three or more parcels or building sites of 5 acres or less each within a five-year period (NR 115.05(4)). County review is pursuant to s. 236.45, Stats., and among other things, subdivisions abutting navigable waters must meet statutory requirements for providing public access to those waters. Second, each county must adopt sanitary regulations to protect health and to preserve and enhance water quality. Where a public sewer is not available, the private sewage disposal must conform to a county private sewage system ordinance. Where public water is not available, private wells must conform to state private well construction standards.

2.3.4 Shoreland Zoning Administration

Shoreland zoning is administered locally, usually by the county (except annexed areas where administration may be by city or village government), with technical assistance and support from the DNR. The department has legislatively mandated oversight duties, including the authority to object to and overturn any zoning ordinance amendment that does not comply with NR 115 (or NR 117) standards.

In addition, the DNR has the authority to review decisions granting special exceptions (conditional use permits), variances, and appeals. The DNR may appeal these local zoning decisions to the county Board of Adjustment or to Circuit Court.

One important way the DNR has assisted local governments is through providing model ordinances that incorporate the minimum standards of NR 115. Initially, the DNR developed the Wisconsin Shoreland Protection Ordinance in 1967, which most counties adopted as their original shoreland ordinance. The latest revision of the model ordinance incorporates shoreland-wetland zoning requirements of NR 115 and deletes sections that are no longer required in counties with comprehensive zoning. Many counties adopted this model ordinance to assure compliance with NR 115. Some counties have developed more restrictive shoreland zoning ordinances. However, this is not the case for shoreland-wetland standards, which counties cannot make either more or less restrictive than NR 115. Under NR 117, cities and villages may adopt more restrictive use standards for shoreland-wetlands.

2.4 Related Water Resource Protection Programs

Many related surface water protection programs are also in place. Some of these focus on issues such as erosion control and septic system regulation that were originally addressed in the first shoreland ordinances.

2.4.1 State Navigable Waters Protection (ch. 30, Wis. Stats.) and Regulation of Dams and Bridges (ch. 31, Wis. Stats.)

Navigable Waters Protection - ch. 30, Wis. Stats.

In addition to state-mandated local zoning, the DNR directly regulates various activities in and near navigable waters under ch. 30, Wis. Stats. These regulations can restrict certain shoreland development activities above and below the OHWM. They may also be augmented by local regulations (Kent 1994).

Above the OHWM. Shoreland development activities subject to ch. 30 permits include: grading or removing topsoil of more than 10,000 square feet from the banks of streams or lakes; beach development; erosion control and placement of shore protection (e.g., rip-rap or sea walls); construction and maintenance of boat shelters; and maintenance of boathouses.

Below the OHWM. Among the structures that could be placed in lakes and streams, and that are subject to ch. 30 permits, are: piers and wharfs; pilings; fish cribs and other habitat improvement structures; water ski jumps and related structures; swimming rafts; fishing rafts; and fords, bridges, and culverts. Removing material from the beds of a stream or lake requires a permit or contract under s. 30.20, Stats. This requirement applies whether or not the lake or stream is navigable. Creating or altering waterways is also governed by ch. 30. Withdrawing surface water is subject to regulation under ch. 30 when the diversion is for irrigation or to maintain water levels, as well as for large-scale diversions.

Regulation of Dams and Bridges - ch. 31, Wis. Stats.

Chapter 31 was developed to ensure that dams are safely built, operated, and maintained. The DNR administers this law. Chapter 31 governs: dam construction; dam safety, operation, and maintenance; altering or repairing dams; and water level and flow control.

The DNR inspects about 1,000 large dams every ten years but may inspect any dam in the state upon complaint or on its own initiative. If a dam is deemed deficient or unsafe, the DNR may order repairs or, in extreme cases, may order the impoundment drawn down. The DNR seeks to prevent dam failures through inspections, voluntary maintenance by dam owners, and repair orders when necessary. Dam

owners are required to keep their dams in good repair and in safe condition and may be liable for any damage caused by dam failure.

2.4.2 County, City, and Village Floodplain Zoning (NR 116)

Under s. 87.30, Wis. Stats. and NR 116, Wis. Adm. Code, lands subject to hazards from the 100-year flood (also called the one-percent chance flood or regional flood) are mapped and regulated under municipal zoning ordinances. Maps are based on detailed engineering flood studies or more general federal flood hazard maps. Floodplain ordinances regulate the land use, site design, and structural design of buildings and other development to prevent harm to public health, safety, and property. The following activities near rivers, streams, and lakes may be subject to floodplain zoning requirements: filling; building new structures or remodeling existing structures; storage or burial of materials; and new construction or rebuilding of dams, dikes, and levees.

2.4.3 Wetland Water Quality Standards (NR 103)

NR 103 establishes water quality standards for all state wetlands. The rule serves as a basis for department decisions in regulatory, permitting, planning, or funding activities that affect wetlands. The most common application of NR 103 is for federal wetland fill permits administered by the U.S. Army Corps of Engineers (USACE) under s. 404 of the Clean Water Act. NR 103 establishes the criteria for making the state water quality certification decisions required for s. 404 permits. The NR 103 standards also apply to many other DNR regulatory decisions affecting wetlands. The DNR's own projects, such as those occurring in state fish and wildlife management areas, must also comply with NR 103 standards.

Review criteria for NR 103 decisions include an assessment of the nature of the project, available alternatives, and the significance of the wetland impacts. These criteria are identical to those listed in s. 404 (b)(1) of the Clean Water Act, which USACE must use in evaluating individual permits. If an activity is not wetland dependent and practicable alternatives are available, then it is not in compliance with NR 103, regardless of the impacts. If the activity would have significant adverse impacts on wetland functional values, water quality, or other environmental values, it is also not in compliance with NR 103.

2.4.4 Lower St. Croix National Scenic Riverway (ss. 30.27(2) and (3), Wis. Stats.)

Counties, cities, and villages are required to adopt ordinances that conform to DNR minimum standards (NR 118) for lands within the Lower St. Croix National Scenic Riverway boundary. These land-use regulations administered by local governments guide development away from sensitive areas such as shorelines, wetlands, steep slopes, and unstable soils. At sites suitable for development, the regulations promote natural scenic beauty and protect water quality and property values. Development standards for lands in the Lower St. Croix Riverway apply at four points in the development process: land division, permitted uses, design, and construction.

2.4.5 Lower Wisconsin State Riverway (ss. 30.40-30.49 Wis. Stats.)

Lands within the Lower Wisconsin Riverway District are to be maintained and protected to promote the physical and aesthetic characteristics of the riverway through permitting and purchase of riverway lands. The Lower Wisconsin Riverway Board administers a system of performance standards to preserve the aesthetic quality of the valley without prohibiting development. The board reviews permit applications for structures, walkways, stairways, utility facilities, and certain roads and bridges, as well as reviewing permit applications for timber harvesting within the 92.3-mile riverway corridor.

2.4.6 Private On-Site Wastewater Treatment Systems (Comm 83)

This administrative code governs the siting and construction of septic systems and their drainfields. The Department of Commerce, Division of Safety and Buildings (previously part of the Department of Industry, Labor and Human Relations) administers it. Currently, Comm 83 contains restrictions on siting drainfields in unsuitable areas, such as impermeable soils and soils with inadequate depth to bedrock or water table. The code requires a 50-foot setback from the OHWM of lakes and streams. The Department of Commerce is proposing revisions to this code to change from current prescriptive standards (telling plumbers how to construct and where systems can and cannot be installed) to performance standards that allow approving new technologies which have been demonstrated to treat effluent sufficiently to meet groundwater standards.

2.4.7 Nonpoint Source Pollution Abatement Program (NR 120, NR 121) and Animal Waste (NR 243)

The Wisconsin legislature established the nonpoint source water pollution abatement program in 1978. Both urban and rural nonpoint sources contribute to the degradation of the state's lakes, streams, and groundwater. Section 281.65, Stats. assigns overall responsibility for this water quality program to the DNR in cooperation with the Department of Agriculture, Trade, and Consumer Protection (DATCP); and local implementation responsibilities to counties, cities, and villages. The DNR has developed the administrative framework in NR 120 and NR 121 under which water quality management areas and plans are identified, priority watershed projects are selected, and counties, cities, and villages receive technical and financial assistance for implementing nonpoint source pollution abatement projects. The DNR identifies high priority lakes, streams, groundwater, or other water resources where runoff threatens or impairs their uses. Priority watersheds are identified by the Land and Water Conservation Board. In cooperation with project sponsors and DATCP, the DNR develops plans which identify and authorize activities to protect or rehabilitate beneficial uses of waters. Implementation is typically managed at the local level.

The DNR's animal waste program, established in NR 243, requires a water pollution discharge permit for large-scale animal operations, such as feed lots. Runoff from smaller animal feeding operations may also contribute to polluted runoff. These smaller operations are only regulated if they have been specifically identified as causing significant water pollution.

2.4.8 Stormwater Management and Construction Site Erosion Control (NR 216) and Uniform Dwelling Code (Comm 21.125)

State Stormwater Discharge Permits (NR 216)

Wisconsin Pollution Discharge Elimination System (WPDES) permits are required for certain industrial facilities, municipalities with populations over 100,000, and municipalities in areas of concern. Applications for coverage under a general WPDES permit are required for construction sites with land-disturbing activity larger than 5 acres. A construction site erosion and stormwater plan must contain provisions for certain management practices and inspection to receive authorization. If the DNR does not respond to the permit application within 14 working days, the applicant is authorized to discharge stormwater under the terms of a Construction Site Stormwater Discharge Permit.

Uniform Dwelling Code - Erosion Control Section (Comm 21.125, Wis. Adm. Code)

This code contains construction site erosion control requirements for one- and two-family dwellings. Inspection and enforcement are the responsibility of building inspectors, who complete a one-day training course. This code preempts local ordinances adopted after January of 1994 **but does not preempt the erosion and sediment control standards of a more restrictive local shoreland ordinance**.

2.4.9 State Platting Regulations (ch. 236, Wis. Stats.)

Part of this chapter contains the state platting regulations dealing with dividing land. It contains the formal requirements regulating surveys and their resulting plats and maps, and also extensive provisions for their review by various state agencies and local governing bodies.

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3. SHORELAND ZONING PROGRAM EVALUATION

3.1 Trends in Waterfront Development and Implications for Effective Shoreland Zoning

It is important to understand the context in which the shoreland program operates. This section reports on current development trends around the state and their impacts on the program's effectiveness.

3.1.1 Development Trends

Current development trends pose major challenges to the shoreland program. Waterfront development is booming in northern Wisconsin. Lakefront property values have risen dramatically in the 1990s, increasing between 100% and 400% from 1990 to 1994 in Vilas County according to the *Vilas County News Review* (Krueger 1995). In 1994, lakefront property values ranged from $500 to $900 per foot of lakefront (based on market value estimates provided by certified assessors on prime lakefront property). Current (1996) prices are even higher.

In Door County, one real estate sales manager reports, "On the waterfront, it's hard to find even a vacant property under $100,000 anymore. Many go for $300,000 to $700,000" (Derus 1996). Northern Wisconsin counties within commuting distance of the Minneapolis metropolitan area are also experiencing significant development, with strong demand for waterfront property putting pressure on currently undeveloped lakes, many of which are small and shallow. A real estate agent working in the Chain of Lakes area in Waupaca County, in central Wisconsin, reports, "We're talking $175,000 range to start, just an average place with lake frontage, heading to $400,000 or $500,000." (Derus 1996).

In southeastern Wisconsin, most lakes larger than 10 acres have extensively developed shorelines, with much of the immediate shoreline developed prior to shoreland zoning ordinances. For example, the non-wetland shoreline of Pewaukee Lake in Waukesha County was almost completely developed between 1900 and 1940 (Southeastern Wisconsin Regional Planning Commission 1984). Since most non-wetland shoreline has already been developed, new developments are typically sited near, but not on, lakes.

Lakefront property values on popular lakes can be extremely high. For example, on some Waukesha County lakes, property values typically range from $300,000 to $700,000 and up. Most sales involve property with existing homes, but older homes are often significantly remodeled and expanded or replaced with larger structures. Many lakefront owners use their lake property as their primary residence, commuting to jobs in the Milwaukee metropolitan area or urbanized portions of the region. With this use, the prevailing concept of a proper yard is a manicured, weed-free lawn, rather than the natural shoreline vegetation. In many cases, vegetation conversion took place decades ago.

Densities on these lakes are often greater than would be allowed under NR 115. Some lots are as narrow as 35 feet and structures are often less than 75 feet from the water's edge. Under these conditions, the extensive rebuilding of homes close to the shore on undersized lots is difficult to control through shoreland zoning. On small lots, several limitations may exist that prevent reconstruction at the 75-foot setback. The use of setback averaging (discussed in Section 3.4.2) further entrenches this development pattern. For instance, an analysis of shoreland variances granted to lake frontage lots by Waukesha County in 1996 showed that the resulting structure setbacks for petitioners seeking a variance averaged about 49 feet. The average lot width for all lake lot petitioners was 87 feet. Of the lake lot variance requests, 79% (49 out of 62) were for either enlarging a home or razing an existing home to build a new larger home (E. Heinecamp, Waukesha County Park and Land Use Department, pers. comm. 1996).

Development in unsuitable areas prior to shoreland regulations has created persistent problems. Along much of the shoreline of Wind Lake in Racine County, cottages were built on the unstable soils of drained wetlands. These homes now suffer a range of structural problems, such as differential settling, sagging roofs, sinking foundations, and flooded basements. Yet interest in building on undersized lots in wetlands and floodplains remains high, and difficult situations due to nonconforming structures arise in administering both shoreland and closely related water regulations. A survey conducted in 1990 found that shoreline protection structures such as bulkheads and revetments covered 27% of the shoreline. Of these, 46% were failing and needed repair. Ironically, 81% of the unprotected shoreline was judged to be stable and well-vegetated (Southeastern Wisconsin Regional Planning Commission 1991).

In some ways, the development picture of northern Wisconsin today resembles that of southeastern Wisconsin a half century ago. The *Northern Lakes and Shorelands* study, completed in 1995, reported on trends in lakeshore development in northern counties (Wis. DNR 1996). The study compared shoreline development data gathered in the 1960s and early 1970s, with current data gathered from statistically designed aerial surveys. Several important trends were documented in this study:

- Since the 1960s, approximately 60% of previously undeveloped lakes 10 acres and larger have been developed with one or more dwellings.

- Based on a conservative estimate, ignoring the rapid increase in development in recent years, all remaining undeveloped lakes 10 acres and larger will likely be developed in the next 20 years.

- The total number of dwellings on 235 study lakes has increased an average of 216% from the 1960s to 1995.

- The overall average density of development has increased by about 60% since 1960, resulting in an average overall density of 10.4 dwellings per mile of shoreline. Expressed another way, this amounts to an overall average of just over 500 feet of shoreline per dwelling.

- Of the privately owned developed lakes, the smallest lakes studied (10-50 acres) have the lowest overall density (averaging approximately 800 feet lake frontage per dwelling) but had the highest **rate** of development (103%) over the last five years. The largest lakes (greater than 1,000 acres) currently have the highest overall density (averaging less than 300 feet lake frontage per dwelling). The second largest lake size category (500-900 acres) has seen the highest increase (almost 800%) in the absolute number of dwellings on the lake during the same time period.

A study of recreational housing in Wisconsin concludes, "It would appear that saturation has occurred throughout most of Wisconsin on developable waterfront (lakes and river frontage) property" (Marcouiller et al. 1996a).

These study findings agree with the assessment of realtors and other professionals acquainted with lakeshore development—most of the desirable land around our lakes has already been developed. The high demand and low supply of lakefront property results in escalating prices and also fuels a trend toward converting recreational homes to permanent four-season homes. Many people can no longer afford the traditional northwoods cabin as a second home, because the price of just the lot is too high. Buyers who can purchase a lakeshore lot are increasingly likely to make their lakeshore home their permanent residence. Buyers affluent enough to buy a lakeshore lot as recreational property are also likely to remodel or tear down the existing house and rebuild completely. A closely related trend is converting existing recreational homes to retirement homes, as homeowners who bought on lakefront homes for recreation in the 1960s and 1970s decide to retire to those homes (Marcouiller et al. 1996b). This often requires extensive remodeling.

As waterfront property becomes prohibitively expensive, buyers interested in recreational property are purchasing woodland lots away from the waterfront. This allows them to purchase bigger lots and gain a larger degree of privacy and solitude than would be possible on a similarly priced lakefront lot. Some wealthier buyers respond to the shortage of undeveloped shoreline by purchasing more than one lot to ensure that they will be able to maintain a more peaceful, natural setting (Derus 1996).

3.1.2 Implications and Impacts

- The trend toward larger homes on existing lots, often accompanied by wooded, brushy, or meadow areas being converted to a suburban-style lawn, affects water quality and habitat. For example, older and smaller three-season recreational cottages are frequently closer to the water than allowed, but have been grandfathered-in as legal nonconforming structures under current zoning. As these are converted to new or remodeled four-season homes, owners do not want to move them farther back. As a result, the house is more obtrusive as viewed from the water, potential erosion and sediment delivery during construction increases, the potential delivery of lawn-care fertilizers and pesticides rises, and the buffering and habitat qualities of shoreline vegetation are lost.

- Conversion of legal nonconforming structures increases the workload pressures on local zoning administration staff and the local Board of Adjustment. In most counties, conversion requires the zoning administrator to determine whether the remodeling will exceed 50% of the equalized assessed value of the home. It also generates a larger number of appeals to the Board of Adjustment.

- As new sections of shoreline are developed, long continuous sections of natural shorelines are broken into small fragmented patches. This likely reduces the availability and quality of habitat needed by shoreline-dependent species, such as loons, eagles, osprey, and many amphibian species, particularly in northern Wisconsin. Development in these areas also fragments blocks of forested habitat needed by area-sensitive bird songbirds, threatened by the predators that benefit from shoreline and road clearing.

- Fish habitat increasingly suffers long-term impacts, especially on northern lakes, as spawning and nursery habitat is lost or degraded due to removal of woody cover and aquatic plants in near-shore waters for pier construction and boating access, construction of shore stabilization structures, creation of swimming areas, and other activities.

- Along highly developed shorelines, preserving even small amounts of near-shore and fringe wetland habitat becomes critical for maintaining natural reproduction of fish populations. This is especially critical for northern pike reproduction, since this fish depends on wetland vegetation for spawning.

- The scarcity of prime lakefront property increases development pressure on small, currently undeveloped or lightly developed lakes. Poorly informed buyers purchase waterfront property on small shallow lakes, unaware that aquatic vegetation and shallow depths in the near-shore zone make these lakes less suitable for swimming and boating. Valuable aquatic habitat in the near-shore waters of smaller lakes is lost as some owners remove aquatic vegetation to make the lake conform to their desires.

- The scarcity of desirable lakefront property increases pressure to develop on smaller lakes, wetlands, and steep slopes. Habitat for animals, such as loons, that prefer undisturbed shorelines is currently provided by undeveloped or lightly developed smaller lakes. Important nesting habitat will be lost as these lakes become more densely developed. In urbanizing areas, where development surrounds wetlands with no buffer, wetland wildlife habitat and water quality functions are reduced. On very steep slopes, effective control of erosion and sediment delivery is extremely difficult.

- As lakefront property becomes unavailable, second and third tier subdivisions are created. These subdivisions increase stormwater delivery with associated pollutants and intensify lake use, increasing user conflicts.

Many homeowners and visitors seek out lakes and rivers as places to enjoy natural beauty in a quiet setting. However, the sheer number of users can create or exacerbate conflicts over uses, and puts pressure on limited resources. Landowners don't always understand how their activities on the land can affect the water. These trends deliver a challenge to develop a more effective regulatory and educational program to encourage development patterns along our shorelands that preserve the aesthetic qualities and ecosystem functions.

3.2 The Costs and Benefits of Shoreland Regulation

3.2.1 Economic and Cultural Importance of Lakes, Streams, and Wetlands

The natural qualities of Wisconsin's lakes and waterways play a highly significant role, not only in local economies, but also in the special character of our state. For many citizens, they are an important reason to live and recreate here.

The economies of Wisconsin lake-rich northern counties depend on attracting tourists, anglers, recreational home owners, and retiring home owners. For instance, Vilas County's hospitality recreation industry accounts for almost two-thirds of the county's total economic activity (Anderson 1992). In Marinette County, tourism generates more than $43 million annually, supporting more than 1,100 tourism-related jobs. Between 70% and 80% of surveyed property owners and visitors indicated that water-based recreation was an important factor in choosing a vacation site in Marinette County (Wis. DNR 1995a). Recreation on the lower Wisconsin River generated an estimated $860,000 (in 1984 dollars) in sales by local businesses (Boyle and Bishop 1984).

Visitors to Vilas County cite fishing, relaxing, and sightseeing as the top three reasons for visiting. A survey of anglers in Minnesota found that enjoyment of nature and the outdoors, relaxation, and being in a quiet and peaceful place were the three most important reasons for fishing there (Cunningham and Anderson 1992). Surveys of lakefront owners also consistently document that enjoyment of peace and quiet and natural beauty are the main reasons people buy waterfront property, followed by such ecosystem-related activities as fishing, observing wildlife, and hunting (Korth et. al. 1994, Shifferd and Palmer 1996). These groups place importance on maintaining the ecological integrity and natural character of our lakes, especially in the northern region.

3.2.2 Cost/Benefit Trade-Offs

Given the public's concern in maintaining the ecology and natural character of the state's lakes, and the state's legal duty to protect the public interest in navigable waters, reasonable regulation of waterfront property is essential. Individual lawsuits are inadequate to preserve both the public and private values inherent in our waterways. In setting reasonable shoreland regulations, the public and private benefits of maintaining water quality, habitat, and natural beauty are balanced against the degree of restriction the regulations impose on individual property owners and developers.

A formal cost-benefit analysis is beyond the scope of this project. Rather, this section outlines the types of monetary and non-monetary costs and benefits that should be considered in a discussion of shoreland regulations and the trade-offs involved in balancing public and private interests. Costs and benefits are used in a broad sense here, and include private and public interests and rights.

Private Costs of Shoreland Regulations

Shoreland zoning regulations, like other zoning regulations, limit the use of private property. The cost of these limitations is difficult to quantify, since it often consists of the owner's loss of anticipated benefits, such as not being able to entertain guests on a large deck built at the water's edge or not being able to build a gazebo within 75 feet of the water's edge. A wide range of possible monetary values could be attributed to these costs, depending greatly on landowner desires, expectations, and beliefs. Given our country's strong tradition of individual freedom, the emotional impact of finding that the options for one's own land are limited can create anger and resentment, regardless of the actual economic cost of compliance. Reactions can be especially strong if the landowner was not aware of shoreland regulations when purchasing or planning for the property or when neighboring properties are not in compliance.

A strong property rights advocate may view many restrictions as unfair and/or unconstitutional in principle. The actual cost of complying with regulations and the indirect cost of not being able to realize an anticipated benefit become secondary to the principle of resisting government intrusion on private property rights. Property owners who believe strongly in private property rights may be willing to incur large legal fees to oppose regulations they see as an unjustifiable infringement on their property rights.

Some property owners have attempted to quantify use restrictions costs while litigating takings claims and demanded government compensation of lost property value under the Fifth Amendment of the U.S. Constitution. Setting aside the legal issues, most of these claims are based on diminished property value arising from restricted use of the property, rather than a direct cost incurred through complying with a regulation. Some claims advanced in takings litigation can be quite large when claimants use speculative real estate values to estimate the lost property value.

A landowner may also incur some direct costs in complying with shoreland zoning regulations when structures that are not in compliance must be removed. The cost can be calculated by the amount spent on the structure, plus the costs of removal. These costs are an unfortunate exception that occurs when landowners are not well informed of shoreland zoning requirements before they build. These costs are not inherent in the regulations themselves. Sometimes removal costs are incurred when a landowner deliberately violates a regulation. However, the monetary loss suffered by the landowner can play a key role in determining how the equity of enforcement is perceived.

Minimum lot sizes and widths limit the number of lots into which a parcel can be subdivided, as well as the number of residences that can be placed along the shoreline. This may reduce the profit that can be gained by the seller of a larger parcel, which can be subdivided into individual lots, and the developer who sells the individual lots.

Public Costs of Shoreland Regulations

The tax revenue generated by waterfront development may be less if minimum lot sizes limit the number of allowable residences along a given length of shoreline. However, this could be offset by the higher value assessed for properties with greater frontage. The per-unit cost of providing services, such as fire protection and road maintenance, to a more densely settled shoreland area is probably smaller than the per-unit cost of providing services to an equivalent area with larger lots.

County government must administer a shoreland zoning ordinance that complies with NR 115 minimum standards. The net cost to the county of administering its shoreland zoning ordinance is a public cost, borne by the taxpayers of the county. Likewise the budget allocation for the DNR to administer the shoreland management program is a public cost, borne by the taxpayers of the state.

Private Benefits of Shoreland Regulations

Most of the benefits of shoreland zoning are simultaneously private and public, but private waterfront landowners ordinarily benefit more directly from the preservation of the valuable amenities associated with the waterfront. This section will examine the benefits of shoreland zoning from the perspective of private waterfront owners.

While shoreland regulations restrict what individuals can do on their own property, they also limit the disturbances to the natural shoreland and near-shore waters by their neighbors. Without shoreland and in-water regulations, the individual waterfront owner could only address some of these issues through the common law of nuisances. Such lawsuits have largely been ineffective in securing more than piecemeal protection of private and public interests in water resources. Zoning controls are a much more effective mechanism for addressing cumulative impacts.

Minimum lot sizes and widths, combined with vegetative cutting restrictions limit the overall intensity of shoreline uses and disturbances to natural shoreline and near-shore vegetation. The individual owner benefits from more privacy and a more peaceful and natural atmosphere on the lake. Limited development is a selling point for waterfront buyers who are seeking a pristine or natural setting, although public uses of the water, such as boating, are also important to individual property owners.

Shoreland zoning helps maintain good water quality. Waterfront property loses value when the water quality (measured by water clarity) is poorer than that of other regional lakes and rivers (Young and Teti 1984, Brashares 1985, Michael et. al 1996). Individual waterfront owners benefit from zoning by avoiding property value losses that occur on water bodies with declining water quality relative to water bodies with better water quality. By analyzing the actual selling prices of a set of properties in a region, researchers can identify the share of the selling price attributable to water clarity as opposed to other (structural and locational) characteristics of waterfront properties. In a five-year study of 900 lakefront properties on 34 lakes in six regional markets in Maine, declining water clarity accounted for a 10-20% decline in selling price (Michael et al. 1996).

Public Benefits[3] of Shoreland Regulation

Local public taxing authorities also benefit when property value remains steady within their jurisdictions. The benefits to the local economy by maintaining the tax base and the consequences of declining water quality were also investigated in the Maine study. Using the model derived from actual selling prices, build-out values were estimated for 58 lakes with below-average clarity for their ecoregion. The researchers estimated that a total property value loss of $150-285 million, relative to lakes with better water clarity, occurs on lakes with below-normal water clarity (Maine Department of Environmental Protection 1996). Extending the model to all the state's lakes, for which substantial water clarity data were available, the loss of property value due to lake water clarity declining below the regional average was estimated at $256-512 million. It is clear from these estimates that the losses to local economies due to poor lake water quality can be very large.

The model was also used to determine potential future tax losses in one Maine township in the study area where 60% of the $211 million property tax valuation is from lakefront property. The model showed that a 1-meter (roughly 3-foot) decline in average minimum water clarity would cause a loss of $10.5 million, roughly 5%, in total property value. One would expect this to result in a 5% increase in taxes paid by

[3] The term "public benefit" is used here to contrast with private and public costs as part of analyzing cost/benefit trade-offs. Public benefits are associated with avoiding the loss of natural beauty, habitat, and water quality, which, in legal sense, may be better expressed as "the prevention of public harm."

non-shoreline owners. However the loss is distributed, taxpayers would be hit by higher taxes, and lakefront owners on the affected lakes would see their investment erode.

By protecting natural beauty, habitat, and water quality, other costs are avoided, such as lost or degraded swimming, fishing, and other water recreation opportunities. The surveys of anglers, lakefront owners, and visitors cited earlier document the importance of these amenities to the public (Cunningham and Anderson 1992, Korth et. al. 1994, Shifferd and Palmer 1996). Choices on where to vacation, go fishing and buy property will continue to be affected. Decisions on where to locate businesses are also affected by a locality's quality of life. According to a 1989 survey of CEOs, "quality of life for employees" was the third most important factor in locating a business (National Park Service 1990). These choices have great significance for local economies, especially in northern Wisconsin.

To many segments of the public, such as anglers, lakeowner's associations, boaters, vacationers, and tourists, the value of preserving the natural qualities of undisturbed shorelines is strongly felt. For local groups, the public benefit of controlling shoreland development is not only felt in the potential loss of tourist dollars but also in avoiding a loss on a deeper emotional and cultural level that can be described as a loss of a way of life or a loss of natural heritage. For instance, the participants in the Northern Initiative study expressed a high degree of concern for maintaining the "character of the Northwoods." Shoreland development surfaced as a major concern, with 90% of the participants indicating that they were "somewhat" or "very" concerned about shoreland development along lakes and streams (Nelson and Nowacek 1995).

Eventually, the amenities provided by natural shorelines and quiet lakes receive monetary valuation through the operation of the free market. For example, as the supply of pristine lakes that can deliver the desired experiences decreases relative to demand, access to these lakes comes at an increased price.

Unfortunately, the market places a monetary value on these qualities only after they have decreased to an extent noticeable to buyers. The physical, chemical, and ecological processes leading to degraded water resources are often triggered well before the public recognizes that a problem exists. This may be too late to avoid large private and public expenditures necessary for remedial measures such as lake dredging, fish stocking, removing nuisance aquatic plants, restoring native aquatic plants, chemical treatments, and other lake, river, and wetland restoration projects.

One way to illustrate potential public benefits of shoreland zoning and other planning tools is to assess the cost to the public when water-related amenities are lost or degraded and to evaluate management projects in terms of the avoided cost. As waterways, shorelands, and wetlands are degraded, the public pays an increasingly higher price in restoration and management measures. Shoreland zoning offers a tool to avoid some of these resource losses, and preserve their public benefits. For instance, the expense associated with attempts to artificially improve fish habitat on highly developed lakes, illustrates just one type of cost associated with degraded or lost near-shore and fringe-wetland habitat.

DNR fish managers install sinking structures (fish cribs) made of wood and branches and build artificial spawning marshes to replace spawning and nursery habitat lost to wetland draining and filling, and near-shore modifications. The average cost of an artificial spawning marsh is estimated at $50,000 and up (M. Vogelsang, DNR Bureau of Fisheries Management and Habitat Protection, pers. comm. 1996). Experience has shown that these habitat improvement projects improve reproduction but not nearly to the level provided by natural habitat.

When natural reproduction fails to maintain populations of sport fish at desired levels, managers must resort to fish stocking and tighter fishing regulations. Setting aside the long-term cost of genetic simplification and questions about anglers' preference for catching “wild” fish, one can focus narrowly on only one cost of habitat loss: the cost of stocking hatchery-raised fish. On the Madison-area chain of

lakes, the DNR stocks a combination of hatchery-reared northern pike, muskellunge, and walleye, totaling about 300,000 fish per year. The average rearing cost per fish is $0.75, for a total cost of $225,000 to stock the Madison lakes alone.

3.2.3 Implications for Administration and Enforcement

Controversies over enactment, interpretation, and enforcement of shoreland regulations almost always involve a conflict over the balance between private and public benefits, interests, and rights. The players who get involved in shoreland zoning issues, such as local County Zoning Administrators, individual waterfront owners, contractors, realtors, Lake Associations, County Zoning Committees, County Boards of Adjustment, DNR Water Management Specialists, and DNR program managers engage in a type of cost/benefit analysis in debating shoreland zoning decisions and actions. This debate sometimes involves deeply held beliefs and philosophies, as well as technical knowledge of ecology, economics, and law.

Private costs of local land regulations are carried by specific individuals who can pinpoint the cost of regulation, while public benefits are dispersed over a large and nebulous group, and the task of identifying the public interest is often left to government agencies. When a clash in values is involved, the actual economic costs of regulation may not be as important as the principles and emotions involved. A discussion of public benefits is often lost in controversial enforcement situations.

For shoreland zoning regulations to be effective, public decision-makers must recognize the important public values at stake. In most cases, it is the cumulative impact of uncontrolled shoreland development in concert with other watershed problems that degrade public waters. It can be difficult to demonstrate the significance of a single violation of shoreland zoning regulations, yet relaxing enforcement will lead to future violations, setting the stage for cumulative degradation. The public benefits of shoreland regulations may not be clearly recognized until valued resources deteriorate due to inadequate protection. In contrast, the private costs of compliance are very well known to the regulated landowner, who may downplay the public benefit of the regulation by arguing that a particular activity, "doesn't hurt the resource that much."

While shoreland regulations can be most effective in protecting public resource values at the beginning of the development process, it is precisely at this point that a local community tends to believe that zoning isn't needed. By the time the need for regulatory controls is widely recognized at the local level, their effectiveness is often already limited by existing impacts.

However, waterfront property owners and buyers are increasingly concerned with environmental and quality-of-life issues in their area. In a survey of Vilas County lakeshore owners, Shifferd and Palmer (1996) found large majorities support "enforcing environmental laws" (87%), "improving water quality" (85%), "enforcing zoning codes" (77%), and "restricting development" (74%). Some local governments in areas of increasing development pressure recognize the importance of land-use planning and identifying areas where public benefits can be preserved, particularly on undeveloped or lightly developed lakes.

3.3 Natural Resource Literature Review Summary: Effectiveness of Standards to Achieve Statutory Goals

This section is a summary of an in-depth scientific literature review of shoreland ecological and aesthetic functions and the effectiveness of current NR 115 standards to maintain those functions (Bernthal 1997).

3.3.1 Summary of Literature Findings

Wisconsin's shoreland zoning standards contained in NR 115 were originally developed in the late 1960s based on a combination of the best available scientific information, best professional judgement, and the feasibility of implementation at that time. The standards for lot width minimums, restrictions on vegetative cutting, and the building setback distance combine to create a buffer to minimize disturbances to aquatic resources and to preserve the natural beauty of Wisconsin's lakes, rivers, and streams. The literature search has focused on this buffer's effectiveness in accomplishing these objectives, assuming that the standards are adequately enforced.

Prevention And Control of Water Pollution

Models of phosphorus loading to lakes show that converting undisturbed vegetated riparian areas to urban or agricultural use leads to greatly increased phosphorus loading from the watershed. This illustrates the importance of preserving our existing vegetated stream corridors as development proceeds and finding more effective incentives for re-vegetating stream corridors through agricultural lands.

The buffer created by existing vegetative cutting standards falls within the lower-to-middle range of what the literature recommends for sediment trapping and nutrient retention. Preventing overland runoff flow from becoming channelized before it reaches the buffer is critical to buffer effectiveness. Many different site circumstances can reduce the effectiveness of the 35-foot shoreline buffer. Limiting factors include: erodible and fine-grained soils, steep slopes, construction disturbance, large impervious surfaces or compacted soils, and heavy use of fertilizers and pesticides. The vegetative cutting standard allows 30 feet in any 100 feet to be cleared. If runoff water is directed to the cleared shoreline area of the lot, the buffer is ineffective. Landowner practices in the zone between the 35-foot restricted cutting area and the 75-foot structure setback are crucial to the buffer function as an effective sediment, nutrient, and toxicant trap. Therefore, landowner education and promotion of shoreland best management practices must remain a top priority.

The literature indicates water pollution from on-site sewage disposal systems is an important concern, not only in areas currently recognized as unsuitable, but also in sandy soils, which have less ability to remove phosphorus from effluent. These systems are currently regulated by the Department of Commerce (formerly by the Department of Industry, Labor and Human Relations) under Comm 83, Wis. Adm. Code (Private On-site Wastewater Treatment Systems). Currently the code requires a 50- foot setback from the water's edge of lakes and streams and prohibits the siting of drainfields in a range of unsuitable conditions. The status of revisions to this code is described in Section 2.4.4.

Protection of Spawning Grounds, Fish, And Aquatic Life

For fish and wildlife, the shoreline buffer created by current standards provides many functions critical to healthy streams and lakes. In addition to trapping sediment from overland runoff, vegetated shorelines stabilize stream banks, preventing erosion and delivery of excessive sediment that could cover spawning gravels and degrade stream fish habitat. Authors making stream restoration recommendations place a major emphasis on establishing adequate and appropriate stream-bank vegetation. Forested stream banks and lakeshores provide shading that helps regulate water temperatures.

Leaf-fall into headwater streams provides organic matter utilized by aquatic invertebrates that in turn are eaten by fish and amphibians. When trees topple into streams they alter flow patterns and create stream habitat variations that provide cover for fish and varied bottom substrates for stream invertebrates. In the near-shore (littoral zone) waters of lakes, fallen trunks and branches also provide long-term woody cover for protection of smaller species and fry and juvenile fish. Because their decay rates are slow, especially for conifer species, fallen trunks can provide habitat structure on a time scale of centuries. Removal of this material from lakes and shorelines can have long-lasting consequences.

Aquatic vegetation plays a crucial role in fish populations by providing a nursery area for fry and juvenile fish. They feed on the invertebrate species found among aquatic plants and use the vegetation to hide from predators. Northern pike require the emergent aquatic vegetation (mostly sedges) found in fringe and upstream wetlands for spawning. Near-shore fish habitat in lakes and larger streams often suffers when riparian owners remove aquatic vegetation for pier construction, boat access, swimming, or aesthetic reasons. Populations of fry and juvenile fish have been significantly reduced along developed shorelines compared to undeveloped shorelines, primarily due to removal of aquatic vegetation.

By preserving shoreline vegetation, the 35-foot cutting restriction zone provides essential habitat for riparian species such as amphibians and reptiles that use both water and land at various stages of their life-cycle. Although the 35-foot buffer provides a fairly narrow habitat zone, it could allow a corridor for the movement of some species if connected to suitable habitat. The habitat value of the buffer will be greatly reduced, however, by the degree of disturbance outside the 35-foot zone and the number and distribution of cleared areas along the shoreline as allowed by the "30 feet in any 100 feet" clear-cutting allowance.

The width of the buffer needed to adequately maintain these important habitat functions varies greatly from species to species. Even relatively narrow buffers can maintain physical conditions, such as stream-bank stabilization, some stream shading, and contribution of organic matter to lakes. However, for some wildlife species the buffer area should be considerably larger and should be connected to larger suitable habitat.

Wildlife literature points out the importance of structural diversity in the ground, shrub, and canopy layers of buffer vegetation to provide habitat for a wider range of species. The greater the variety of both living and dead vegetation (such as rotted logs and tree cavities, as well as rocks and hummocks and pits left by uprooted trees), the more niches are available for different species to utilize, and the more the needs of a given species can be met. The inherent messiness of natural shoreline vegetation contributes to its value to wildlife in ways we don't fully understand yet. To provide good habitat for riparian wildlife, shoreline buffer vegetation should be left unaltered, dead snags and brush should not be cleared out. This is problematic given the language in NR 115 that allows removal of dead and diseased vegetation and limits vegetation removal only to the extent of not allowing clear-cutting in a portion of the shoreline.

Preservation of Shore Cover and Natural Beauty

Two studies were reviewed that evaluated the effectiveness of Wisconsin's shoreland zoning standards in protecting natural beauty as viewed from the water. Both used public evaluation methods, asking people to judge slides depicting different structures in different lakeshore settings. A study by Gobster (1982) found that the structures that people deemed appropriate in natural settings were on sites with greater vegetation screening and were less obtrusive in color contrast than the structures perceived as appropriate in developed settings. Macbeth (1989) found that the degree of vegetative screening and the attractiveness of the buildings were the most important predictors of overall aesthetic quality. He also found there was agreement between different groups of subjects on what is aesthetically pleasing on developed lakeshores. These studies support vegetative buffer standards being necessary for preserving natural beauty along shorelines and that obtrusive buildings along the immediate shoreline should be discouraged. A further policy implication is that painting shoreland structures in low-contrast earth tones would increase the overall attractiveness of the shoreland as viewed from the water.

Shoreland-Wetlands Conservation

In 1980, NR 115 was revised to include zoning standards for conserving wetlands in conjunction with the statutory objectives. This was done in recognition of the hydrologic and sediment and nutrient retention functions of wetlands, as well as their importance in providing fish and wildlife habitat. The revisions were also to protect wetlands of special recreational, scenic, or scientific interest. The literature provides strong evidence for the value of wetlands less than 2 acres in size. Small wetlands hydrologically

connected to streams and lakes can play vital roles in sediment trapping, nutrient retention and transformation, flood storage, provision of spawning areas, and general aquatic wildlife habitat. Cumulatively, small wetlands play an essential role in watershed functioning and wildlife processes, especially if diverse wetland types are distributed across the landscape.

Wisconsin Wetland Inventory (WWI) maps are required for shoreland zoning purposes. Cost constraints during the initial mapping phase forced the DNR to use a 5-acre, rather than a 2-acre minimum map unit. Wetlands smaller than 2 acres are shown on WWI maps as point symbols. The DNR is now using a 2-acre minimum map unit for the WWI Update Program and point symbols for wetlands smaller than 2 acres.

Research indicates that wetlands would also benefit from buffer zones as they are also degraded by excessive sediment, nutrient, and toxicant delivery and by hydrologic alteration. Wetland dependent wildlife suffer negative impacts by loss of surrounding upland habitat for nesting, cover, and other needs. In urbanizing areas, if no buffers are required around wetlands, some wetlands will become increasingly degraded by runoff, resulting in the loss of functioning wildlife habitat as vegetation converts to monocultures of aggressive species. As wetlands become silted in and receive higher runoff volumes of shorter duration, their ability to function as a water quality buffer for streams and lake diminishes, and in some cases they become a source of nutrients and pollutants if they are flushed out during high rainfall events and wet periods of the year when their water levels are higher. Wetland evaluation methodologies recognize that a wetland's ecological importance is amplified by a connection to appropriate surrounding upland habitat, and that habitat value is greatest in landscapes with a mosaic of habitats. The same considerations discussed relative to buffer effectiveness for lakes and streams also generally apply to buffers around wetlands. Recommendations by Castelle et al. (1994) for minimum buffer widths of 15 to 30 meters (roughly 50 to 100 feet) were made relative to protecting wetlands as well as streams.

Possible Areas for Improving Shoreland Zoning Standards Based on the Literature Review Findings

Research over the past 15 years shows a strong correlation between the amount of impervious surface in a watershed and the health of the receiving stream. The clear implication is that water quality and habitat of streams, lakes, and wetlands begin to degrade as watersheds become more densely developed. Because many of the urbanizing areas are currently unincorporated, current standards play an important role in maintaining at least a minimal buffer to protect stream banks and control the density of development. These rural-urban interface areas are perhaps most at risk but also represent a great opportunity for thoughtful planning for aquatic and wildlife protection during development. This indicates the need to ensure that equivalent shoreland protection is provided when unincorporated areas are annexed, and when new incorporations are established, as required by statute. Ultimately, a more comprehensive watershed planning approach, combined with new site development methods, is needed to address stormwater, erosion control, and associated habitat issues.

While current shoreland zoning standards emphasize controlling density through minimum lot dimensions, the planning literature suggests effective subdivision design alternatives based on the concept of conservation (or cluster) development. With this concept, greater housing density is allowed farther away from aquatic resources, in exchange for larger buffer areas around lakes, streams, or wetlands. By basing design on important natural features, total impervious area can be minimized and common open-space areas for human enjoyment and wildlife use can be maximized. Cluster subdivision designs must be evaluated in the particular shoreland context for which they are proposed, especially in regard to providing access to the water for riparian owners. Further, guidelines are needed to insure that aquatic resource protection goals are achieved.

3.3.2 Summary of Policy Implications

The current scientific literature affirms that the present standards provide at least minimal protection of habitat and water quality. The literature indicates that, up to a point, larger lot sizes and widths and wider buffer zones would be more effective in meeting the statutory objectives. However, it also indicates that a broader watershed approach to issues of nonpoint pollution, hydrologic alteration, and habitat degradation will ultimately be required to meet statutory objectives. Applying current NR 115 standards is not likely to protect aquatic resources, if a proactive approach is not also taken toward controlling erosion and addressing stormwater problems in more developed areas, as well as identifying critical habitat and important wildlife corridors in less developed areas.

Buffer Size

In reviewing the literature on stream and wetland buffer size requirements, Castelle et al. (1994) concluded that buffers less than 5 to 10 meters (roughly 15 to 35 feet) wide generally provide little protection of aquatic resources, and recommend minimum buffers of 15 to 30 meters (50 to 100 feet) under most circumstances. Based on this literature review, several conclusions can be reached regarding buffer size:

- Individual site conditions vary so greatly that a correct universally applicable buffer width cannot exist.

- Buffers narrower than 35 feet are likely to be inadequate in meeting the statutory objectives of shoreland zoning, especially for water quality, fish, and habitat protection.

- **If properly maintained**, the relatively narrow, 35- to 75-foot buffer provided by Wisconsin's shoreland zoning standards generates moderate levels of some important ecological and aesthetic functions. A properly maintained buffer can: provide vegetative screening for structures; maintain physical conditions such as bank or shore stabilization; shade streams and lakes; minimize disturbances to the littoral fringes of lakes; retain and transform sediments, nutrients, and toxicants; improve stream and lake habitat structure by allowing for contribution of woody debris and organic matter to lakes and streams; provide habitat for some shoreline-dependent wildlife such as amphibians that utilize narrow corridors; and provide perching spots for fish-eating birds and ambush sites for other shoreline predators.

- All other things being equal, wider buffers provide for a greater diversity of wildlife by protecting more habitat from outright destruction or deterioration, by reducing human-related disturbance, and by reducing the level of competition from edge-adapted species.

- Water quality benefits generally multiply with increasing buffer widths up to about 100 feet, beyond which a point of diminishing returns is reached. Increasing buffer width beyond 100 feet is primarily beneficial for shoreland wildlife in most situations.

- Species that cannot tolerate a great deal of human-related disturbance, such as loons, ospreys, eagles, and wood turtles, benefit from wider buffers. Density controls such as minimum lot widths and sizes are also important for protecting these species and their habitat from disturbance. Buffers 300 feet and wider are necessary to provide habitat for area-sensitive bird species that could decline or disappear from shorelands developed to current standards.

- Buffers of sufficient size to support area-sensitive species are very unlikely to be acceptable as a matter of mandatory land-use controls but may be achievable as voluntary management measures practiced by large landholders, such as federal, state, and county forests and paper companies. Large wildlife buffers could be an important tool for biodiversity preservation where forest harvesting occurs within areas with large enough intact forest habitat to support area-sensitive species.

Buffer Quality

Perhaps more important than size, is the lack of adequate standards to maintain habitat quality in the lake or stream buffer. This aspect is obscured if debate focuses on buffer size alone. The vegetative cutting standard does not put enough emphasis on preserving shoreline habitat. In fact, it can be interpreted as allowing almost total removal of the natural vegetation, because it only prohibits clear-cutting. Drastic vegetative alteration, such as complete conversion to a manicured lawn underneath a few trees, can reduce the buffer's effectiveness to near zero for wildlife habitat. Fertilizers and pesticides may also be overused in attempting to maintain a perfect lawn. The allowance for the removal of dead or dying trees or shrubbery can have long-term impacts on fish and aquatic habitat and also reduces habitat for many shoreland wildlife species. The "30 feet in any 100 feet" clear-cutting allowance also results in fragmenting shoreline habitat with negative consequences for most species.

The vegetative cutting standards should be revised to focus on maintaining the integrity of a shoreline habitat buffer, as well as an aesthetic and water quality buffer. The emphasis should be on maintaining the structural diversity of existing natural shoreland vegetation, yet the standard should be flexible enough to allow for restoration projects aimed at improving water quality, natural aesthetics, and habitat. One way to address excessive clearing is to define the cleared area as an access and viewing corridor and set an upper limit on the width of this area per lot.

Density Controls

Given the need to provide for the right of riparian access, loss of near-shore aquatic vegetation and fragmentation and simplification of shoreline habitat are inevitable as shoreline property is developed. Lot width and size standards provide a way of limiting the cumulative impacts of shoreline development by reducing the density of settlement along the shoreline and thereby reducing the intensity of use. In combination with a limit on clearing per lot and clear standards for vegetation removal, larger lot widths can preserve longer stretches of buffered shoreline and reduce the amount of direct modification of fish habitat. For shoreline species sensitive to human disturbance, greater lot width minimums are necessary to provide an adequate buffer.

Sewered Subdivision Standards

Given the cumulative impacts to aquatic and riparian life associated with the increased intensity of development allowed in sewered subdivisions, the allowance for smaller lot sizes and widths is not justified. These impacts are greater littoral and riparian habitat fragmentation and simplification, reduced effectiveness in buffering for water quality, greater damage to the shoreline’s natural appearance, and greater potential for user conflicts.

Erosion and Sediment Control

A buffer is not a substitute for adequate erosion and sediment control during construction. Specific erosion and sediment control standards need to be applied to construction in the shoreland area. Technical assistance from the DNR and/or the county Land Conservation Department is needed to implement effective erosion and sediment control.

Wetlands

Wetlands function both as protectors and enhancers of downstream aquatic resources and are themselves valuable aquatic resources. Protector functions, such as downstream water quality protection and flood storage, should not take precedence over intrinsic functions that add to landscape-level ecological

processes, such as plant diversity, wildlife habitat, and natural beauty. In particular, intrinsic functions should not be overlooked when evaluating proposals for stormwater management.

Under current standards, rezoning requests for shoreland-wetlands cannot be approved if the proposal would have a significant impact on protected functional values listed in NR 115. Chapter NR 103, Wisconsin's Water Quality Standards for Wetlands, lists the same general functional values but describes them more completely, especially for fish and aquatic life. Adopting into NR 115 the description of functional values contained in NR 103 would allow a better understanding of the criteria for evaluating rezoning requests.

Wetland water quality, wildlife, and aesthetic functions depend more on factors of landscape position, land-use context, and surrounding habitat than on size. Wetlands smaller than 2 acres can play critical roles, both individually and cumulatively, in protecting water quality and providing wildlife habitat and natural beauty. These should be protected by shoreland-wetland zoning, especially floodplain wetlands and lakes. Small wetlands could be zoned as shoreland-wetlands as they are delineated in the field. Any size limitation should be based on the feasibility of field delineation, rather than a notion that functions are insignificant below a certain size.

Shoreland Zoning and Local Land-Use Planning

Shoreland zoning can be utilized most effectively when standards are linked to a comprehensive plan with clearly defined short-term and long-term goals understood and supported by the entire community. Zoning regulations and other tools can then be rationally linked to the best opportunities to meet the community's resource protection goals. In Wisconsin, all counties have adopted shoreland zoning ordinances, but few have undertaken a comprehensive planning effort. The DNR, as well as other agencies, can support local water resource planning efforts to improve shoreland and other resource protection. Since planning must be comprehensive for a specific region (most likely a county), the plan must be based on readily available information and generally accepted relationships. There is a trade-off between a thorough understanding of each lake and an implementable land-use plan that relies upon generalizations which hold true for a particular region and set of objectives.

Based on the information found in this review, the following set of observations shed light on where more protective shoreland zoning standards would be the most effective:

- As a water quality measure, shoreland zoning can be expected to be most effective for seepage lakes in small watersheds. These lakes are not as influenced by inflowing streams carrying sediment and nutrients as lakes in larger watersheds. However, any reduction in phosphorus loading from runoff is beneficial to any lake, regardless of type, lake size, or watershed size.

- Forested watersheds generally have fewer existing nonpoint pollution problems than agricultural or urbanizing watersheds and have better existing wildlife habitat.

- Streams and wetlands and their shorelands in developing areas offer important aesthetic amenities as green space and wildlife corridors.

- Shallow lakes are more vulnerable to nutrient inputs than deeper lakes and are subject to carp problems. Shallow lakes provide high-quality fish and wildlife habitat, but because of their naturally high level of aquatic plant growth, they are not suitable for many recreational uses, such as motor boating and swimming, and their fish and wildlife values are degraded by modifying them for such uses.

- Other factors being equal, presently undeveloped and lightly developed shorelines generally offer better fish and wildlife habitat, greater natural beauty, and better water quality than developed shorelines.

- In northern counties, lakes under 150 acres and lakes with large stretches of undeveloped shoreline should be considered for more protective shoreland standards and other habitat protection strategies. These types of lakes have good potential to supply loon and/or bald eagle nesting habitat along their shorelines.

- Irregular-shaped lakes, with many bays and peninsulas, have a greater length of shoreline per acre of surface water, so they can be subject to a greater overall development density than regular-shaped (more circular) lakes of the same size. Since shoreland activities have a greater cumulative impact on irregular-shaped lakes, more protective shoreland standards are justified.

Forestry and Agriculture

While shoreland zoning applies to residential development along lakes and streams for the most part, the vegetative standards also apply to forestry and agricultural practices. In these situations, where long stretches of shoreline are in the same ownership, the "30 feet in any 100 feet" clear-cutting allowance should be replaced by standards that relate better to those activities. The shoreland program should continue to work closely with the priority watershed program and other agricultural programs to promote and monitor buffers along streams running through farmland. The voluntary best management practices for water quality recently developed to guide logging operations are being evaluated by the Bureau of Forestry over the next several years. This evaluation should provide insight into the best means of protecting water quality during logging activities. Protecting riparian wildlife habitat for area-sensitive species will likely require larger buffer zones than are recommended for protecting water quality. Best management practices to protect riparian wildlife habitat should also be considered.

Alternative Approaches

It is important to recognize that zoning is only one of many tools available to protect water resources. No matter how strict the regulations, zoning by itself will not adequately protect all water bodies. To be successful, any comprehensive planning effort should include a wide variety of techniques.

Some areas that hold promise for improving aquatic resource protection are employing resource classification planning, promoting cluster development, explicitly incorporating buffer zones into land-use plans, identifying shorelines with high wildlife value, and developing better buffer maintenance standards. In implementing such plans, local governments should consider, in addition to zoning regulation:

- where and how they will invest in public infrastructure such as roads and sewers
- permanent preservation of undeveloped shoreline through easements, joint ownership, or outright purchase
- incentives or disincentives to promote shoreline restoration and protection
- information and education campaigns to persuade landowners to adopt good stewardship practices

Progress in these areas can be made through partnerships between local governments, shoreland property owners, developers, land trusts and other non-profits, and natural resource professionals examining local conditions and finding solutions to local concerns.

3.4 Effectiveness of Program Administration

This section summarizes the real-world factors that hamper effective implementation of shoreland zoning standards. These are discussed below and are also outlined in the Issues/Options Table within Section 4.

3.4.1 Previous Studies of Shoreland Zoning Implementation

Two studies evaluating the effectiveness of shoreland zoning implementation on sets of lakes in Wisconsin counties have been published. Both studies identified apparent compliance problems due to a lack of landowner awareness and acceptance of shoreland zoning regulations.

Ganske (1990) studied shoreland development on six lakes in Oconto County using aerial photography and lot-by-lot field surveys to compare lakeshore development before and after shoreland zoning regulation began in 1972, as well as compliance with shoreland zoning standards. He identified several problems with adequate documentation; of 70 lots developed after 1972, only 42 had building permits. Of 12 structures within 75 feet of the shore, 6 appeared to be allowed through setback averaging, but 6 could not be explained.

No difference was found between pre-1972 and post-1972 lots in the amount of vegetative clearing. The zoning administrator stated that, because of a lack of clarity and lack of a tie to a building permit, the vegetation-cutting restrictions were very difficult to enforce. Ganske concluded that large lot size has been more effective in preserving a shoreland buffer than the vegetative cutting restriction, and that large lot sizes also provide a better opportunity to find a suitable septic drainfield location.

Ganske points out the need for presenting clear information to lakeshore home owners and lakeshore property buyers on when a permit is needed and whom to contact for it. He also recommends a greater commitment of staff time to follow up on permit violations.

Voss (1988) performed field investigations of all residences on three lakes in Chippewa County to evaluate whether shoreland zoning objectives and regulations were being met. In order to assess the effectiveness of the ordinance for real resource protection she defined *technical violations* as an activity that violated the letter of the county shoreland zoning ordinance but still met the objectives of shoreland zoning. For instance, an individual who failed to apply for a permit for an allowed activity would be considered in *technical violation* but not *real violation*. *Real violations* were those that violated both the objectives of shoreland zoning and the letter of the ordinance. Real violations were categorized as moderate, substantial, or severe, depending on the degree of impact to the water quality, habitat, or natural beauty of the lake.

Out of 64 regulated activities on the three lakes, 27% were in compliance with the ordinance and objectives, 31% were technical violations, and 39% were real violations. In terms of the environmental impact of the real violations, 24% were judged to be moderate, while 40% were substantial, and 36% were severe. The combination of substantial and severe violations amounts to 76% of the real violations, or 30% of the regulated activities. Voss concluded that the lack of compliance is resulting in a substantial cumulative impact on these lakes.

Voss also classified the vegetation in the 35-foot shoreline buffer area and the 35- to 75-foot zone for all 128 residences on the three lakes, including those established before shoreland zoning went into effect. She found very little difference between these two zones. Only 3% of the shoreline buffer was maintained as "natural/undisturbed"; 9% was classified as "semi-natural dense"; 54% was classified as "semi-natural sparse"; 50% was classified as "maintained lawn"; and 7% "bare dirt/erosion." This indicates that vegetative cutting standards are not creating the type of buffer intended in NR 115.

Voss concludes there is a widespread lack of awareness on the part of landowners of the shoreland zoning ordinance, evidenced by the lack of a permit for 70% of activities studied. Through interviews with landowners, it was apparent that many landowners either did not realize there was a shoreland zoning ordinance or did not understand which activities were regulated. Further there was a lack of appreciation for the importance of shoreland standards in protecting lake water quality, shoreline habitat, and natural beauty. The lack of buy-in to the objectives of shoreland zoning is indicated by the finding that for 40% of the permits issued, the terms of the permit were violated. Many landowners expressed the feeling that their own project impact upon the lake is minor and did not recognize the significance of the cumulative effects from many projects.

Voss made some recommendations to improve the effectiveness of the shoreland zoning program:

- Increase the general public's awareness of the purposes and requirements of shoreland zoning through educational efforts.
- Develop a mechanism to inform waterfront landowners and buyers of the existence and purposes of shoreland zoning.
- Train lake property owner's association members on shoreland zoning regulations, so they can report suspected violations to a zoning administrator.
- Obtain better enforcement technology, such as the use of aerial photography, to identify shoreland zoning violations.
- Coordinate with DNR conservation wardens to identify shoreland zoning violations.
- Prosecute violations more aggressively.
- Require more complete site information on zoning permit applications.
- Increase the frequency of permit inspections, targeting variance and conditional use (special exception) permits, since these were the permits most frequently violated in the study.

3.4.2 Observations from DNR staff and Zoning Administrators

Local Level

One of the largest barriers to implementing effective shoreland zoning is the lack of sufficient funding at the local government level. Due to limited monetary resources, staffing levels are often insufficient to administer an effective shoreland zoning program. Workload realities often make it impossible to maintain the level of follow-up inspection after permit issuance necessary for strong enforcement. Compounding the problem, the county zoning administrator often has many other major responsibilities beside shoreland zoning (e.g., comprehensive ordinance administration, sanitarian duties, floodplain zoning administration, and land record responsibilities). Scheduling systematic monitoring of waterfront development is also difficult because zoning staff are under time constraints from other state programs. For example, Comm 83, the current state private sewage system code, requires plumbers to notify counties of installations and for counties to inspect each new system installation within 24 working hours of notification. Not only is time an issue, but, because the Zoning Administrator is often required to wear many hats, some individuals hired for shoreland zoning administration may not have the background and experience most suited for effective shoreland ordinance administration.

In areas that were already densely developed prior to shoreland zoning enactment, extensive rebuilding of homes close to the shore on undersized lots generates a large volume of requests for variances. This creates a heavy workload for zoning staff. For example, from 1994 through 1996, 94% (417 out of 444) of the petitions for variances heard by the Waukesha County Zoning Board of Adjustment involved the county's Shoreland Floodland Protection Ordinance. Of these, 188 involved lake frontage lots. During these three years, the Zoning Board of Adjustment denied 17 of 188 variance petitions for lake frontage lots, while granting 171, usually with conditions aimed at gaining compliance with as much of the shoreland ordinance as possible (E. Heinecamp, Waukesha County Park and Land Use Department, pers. comm. 1996).

Zoning permit statistics from the Washburn County Zoning Administration office illustrate the increase in shoreland development activity and the pressure this places on a small county zoning staff (Washburn County Zoning Administration 1985, 1990, 1995). In 1985, 290 zoning permits were issued by Washburn County, increasing to 402 in 1990, continuing to increase to 570 in 1995 and to 665 in 1996. In that same time period, shoreland-related variance requests almost doubled, from 17 in 1985 to 32 in 1995; sanitary permits issued rose from 180 in 1985 to 335 in 1995. The increased workload is being handled by a staff that has actually decreased slightly since 1985 (from 3-2/3 to 3 full-time employees). With this kind of workload, inspection and enforcement activities take lower priority than the need to provide timely service to applicants.

The building boom in the northern lakes region has meant large increases in zoning and sanitary permit activity in the 1990s for other northern county zoning offices as well. In Oneida County, the number of sanitary permits rose from 557 in 1989 and to 859 in 1994, before leveling off at 846 in 1995; while building permits issued rose from 1,112 in 1989 to 1,766 in 1994, leveling off at 1,689 in 1995 (Steven Osterman, Oneida County Zoning Administrator, pers. comm. 1996). Vilas County new home construction statistics show a similar trend with new home starts rising from 227 in 1990 to a high of 374 in 1994 (Krueger 1997).

Insufficient funding also limits access to equipment and technology that would make zoning administration and enforcement more efficient and effective. Many counties do not have adequate computer equipment and most do not have effective Geographic Information Systems (GIS) in place to aid in record keeping and data storage and retrieval. Not only are the initial expenditures for this equipment expensive, but it is costly to keep up with technological advances in software and computer equipment. Access to aerial photography for documenting shoreland development would greatly improve enforcement and monitoring, but its expense limits its use in most counties. Some counties have found videotaping shorelines to be a lower cost method of documentation, but one that still requires staff time as well as access to a boat.

Another common problem is that, although meeting the legal criteria for a variance is quite difficult, it is extremely easy to be granted a variance from the ordinance requirements by decision of the Board of Adjustment in many counties. The Board of Adjustment (BOA) members sometimes do not understand the statutory and case law criteria on which they are legally bound to base their variance decisions. Also, the BOA members often do not fully support the statutory and case law decision criteria on which they are legally bound to base their variance decisions. Some do not fully support the purposes of shoreland zoning, nor do they understand the nature of cumulative impacts.

Often, the belief that property owners should be able to do what they want with their property, as long as it won't cause substantial harm, seems to prevail over following the legal criteria. BOA members have expressed that it is difficult to deny a variance request, even if they know it doesn't meet the criteria, if they cannot ascertain the harm that would arise from granting it. The difficulty can be exacerbated when the applicant is a neighbor, friend, or fellow community member.

The BOA may find it difficult to ascertain the water quality and aesthetic impacts of the proposal and may not even be aware of the impacts on fish and aquatic life habitat. This is understandable, because water quality and habitat degradation resulting from shoreland development can be a gradual, cumulative process. Unfortunately, the potential cumulative impacts of approving other similar applications are often not considered in the decision-making process. Training sessions for BOA members are periodically offered by the DNR and the University of Wisconsin-Extension (UW-Extension), but there is no systematic method to ensure that new BOA members receive training. The training to date has focused more on variance, conditional use, and other decisions; and more on process and statutory requirements than on natural resource implications of their decisions.

In areas where strong support from the county board and other elected officials for shoreland zoning implementation is lacking, funding shortfalls, limited enforcement actions, and improper variance decisions are even more problematic.

Property Owners

Another barrier to effective shoreland zoning implementation is that many people purchase waterfront property without full knowledge of shoreland zoning requirements. Although sellers are required by law to disclose if they are aware that their property is subject to shoreland, wetland, or floodplain zoning at the point of sale, it provides no specific information about shoreland zoning requirements. In some cases, lack of familiarity with the shoreland zoning standards disappoints and frustrates property owners who are surprised to find out that they may not develop their parcel as they desire.

Knowledge of the regulations does not always translate into buy-in by the shoreland property owner to the purposes of shoreland zoning. This is especially true when the regulations prevent the property owner from doing what he or she wants with a parcel of land. Although Wisconsin has a long history of constitutional public trust law to support regulations that protect navigable waters, the principle that property rights are limited by the need to protect the public interest is not always well understood or accepted. Landowners may not understand the negative consequences of the activities that are limited by shoreland zoning, especially when the impacts are usually gradual and cumulative. Philosophically, shoreland zoning standards are based on an ethic of stewardship that calls for minimizing our impact on lakes and streams. This ethic has not yet become universally accepted in our society.

Department Support

Because of its role as trustee of the state's navigable waters, the DNR has been charged by the legislature to assist with the administration and enforcement of local shoreland zoning ordinances. Unfortunately, the current level of DNR staffing is inadequate to address the needs for assistance.

As a result of limited resources, the DNR has emphasized technical assistance and education materials for the counties. Less emphasis has been placed on compliance monitoring and county audits. Additionally, department support to the counties is uneven. In many cases, this is due to the fact that other job responsibilities (e.g., issuing ch. 30 permits, wetland water quality certification determinations) limit time available for water management specialists, the DNR field staff, to assist in local implementation of shoreland zoning. In northern and central Wisconsin, the challenge comes primarily from the large geographic areas that each staff member must cover. In the rapidly growing southeastern counties, the challenge is to keep up with an ever-growing number of applications for other permits in addition to shoreland zoning assistance. Additionally, priorities for providing local zoning assistance vary with personal interests and training of field staff and with management direction.

The Regulations

Weaknesses in the shoreland zoning regulations themselves limit the effectiveness of shoreland zoning ordinances. Interpretations of some of the provisions in NR 115 that address equity issues have reduced shoreland zoning effectiveness; for example, the practice of setback averaging in areas where legal

nonconforming structures are closer than 75 feet from the water's edge. Setback averaging was developed to alleviate perceived inequities between owners of these structures and neighboring new construction. Instead of a gradual disappearance of nonconforming structures, this practice has resulted in an expansion in the number of structures closer to the shore than intended by NR 115.

Another contributing factor to the expansion of nonconforming development is the related language in NR 115. The statute is permissive and allows communities to permit unlimited expansion of nonconforming structures should they so choose. While most counties do have nonconforming provisions which limit structural alterations, additions, and repair to 50% of the equalized assessed value, this standard is difficult to track and to explain to landowners. As a result, even in many counties that have a "50% of value" standard, this provision has resulted in many expansions of nonconformity. The biggest impacts are from the conversion of small seasonal cottages to very large year-round homes, close to the water.

Some of the permitted uses in shoreland-wetland districts (e.g., agricultural, silvicultural activities) are allowed to accommodate a variety of interests. In some cases, wetland systems can be degraded by such activities. In other cases these permitted uses have created loopholes for landowners to avoid regulation. For example, a road constructed across wetland to gain access to a parcel is initially described as providing access for agricultural or silvicultural reasons. Later, the road is used to provide access for new residential construction without going through the rezoning process.

Some of the code requirements are too vague to be easily implemented, allowing for latitude that may not protect the resource fully and leading to inconsistency between counties. An example is the enforcement of current vegetative cutting standards. It is difficult to monitor the type of vegetation existing along the shoreline prior to development, in part because this information is not typically required on a site plan submitted for an application. Since removal of dead, diseased, or dying trees or shrubbery is allowed, in order to take action on violations, the zoning administrator is faced with the difficult task of documenting when the trees and shrubs were removed, as well as their previous extent and health. Also, the rule only prohibits clear-cutting, which could be interpreted to mean that if one or a few trees are left, the owner has not clear-cut the area.

A source of rural landowners' dissatisfaction and resentment is that shoreland zoning only applies within unincorporated (county), annexed, and newly incorporated (city, village) areas and generally not within incorporated areas. The resulting confusion and a sense of inequity promotes criticism of the program. Clearly, the lack of setback and other provisions in the more undeveloped areas of cities and villages cannot be supported from a resource protection standpoint, but it would be difficult to administer shoreland standards in established cities and villages due to the extent of development that predates shoreland zoning.

3.4.3 Surveys of Waterfront Owners and Users Attitudes and Characteristics

Recent survey studies have directly assessed waterfront owner and user attitudes and knowledge on several topics relating to shoreland development in their area.

Since peace, tranquillity, and natural beauty are also highly important to anglers, some consideration should be given to how these groups value the quality of their lake experience. Walleye anglers surveyed in Wisconsin listed user conflicts, along with numbers and sizes of fish caught, and loss of fish habitat as the most important problems affecting the quality of their fishing experience (Wis. DNR Fish Management 1995b). The implication of these studies is that anglers will prefer to spend more of their time and money on lakes with higher quality, less disturbed shorelines than on lakes that are densely settled and/or greatly disturbed shorelines. Travel costs tend to restrict the degree to which this preference can be put into practice.

Vilas County Lakeowner Survey

The demographic characteristics and attitudes of 139 lake property owners were surveyed on nine highly developed lakes in Vilas County (Shifferd and Palmer 1996). This study gathered information on what lake qualities are highly valued by lakefront owners and identified issues of concern as development pressures intensify in their area.

Lakefront Owner Characteristics

- median age is 57
- median education level is grade 16 (vs 13 for general population)
- 37% retired; 52% professionals/managers; 31% clerical/blue collar

Lakefront Owner Attitudes

- No differences were found in attitudes on the basis of age or education.

- Enjoying the view, peace, and tranquility is important to the overwhelming majority of lake owners, followed by fishing and wildlife observation. Other lake uses were cited much less frequently. For most owners, "being at the lake means primarily peace and quiet, and a closer relationship to the natural world."

- Owners on more highly developed lakes view development less favorably than owners on less developed lakes.

- Owners view development in Vilas County in general more negatively than development around their own lake, but support for restricting development around their own lake is fairly strong.

- The negative impacts of perceived overdevelopment are of much greater consequence to waterfront owners than the negative impact of rising taxes. When asked "What would have to happen for you to no longer want to be on (your lake)?" Nineteen out of 117 mentioned rising taxes, while 74 out of 117 mentioned factors relating to "overdevelopment."

- Most owners feel there is an unmet need for educating themselves and other users about protecting their lake. Owners expressed overwhelming support for education about protecting the lake, improving lake habitat or stocking fish, enforcing environmental laws, and improving water quality (84-90% range), while expressing very weak support for encouraging development (14%). Restricting development, enforcing zoning codes, and managing or limiting boating also received very strong support (73-77% range). The four actions seen by the largest percentage of owners as needs that are not being adequately met on their own lake are "educating owners and users about lake protection" (67%); "lake improvement/fish stocking" (57%); "restricting development" (48%); and "managing/limiting boating" (48%). Thirty-three percent see zoning enforcement as inadequate.

- Compared to other county services, zoning enforcement received the most "poor" ratings, but zoning enforcement received as many "fair" and "good" ratings as "poor" ratings. However, the most common response was "don't know." It appears there is a general concern with development issues but a lack of specific knowledge of zoning standards and enforcement mechanisms.

Oneida County Survey of Lakefront Owners, Realtors, and Contractors

The Center for Economic Development at the University of Wisconsin Extension-Superior (1996a,b) in cooperation with the Oneida County Planning and Zoning Department surveyed realtors and contractors throughout the county and also surveyed homeowners on four lakes to assess lake property characteristics, demographic trends, knowledge of shoreland regulations and contacts, and other issues

affecting the effectiveness of the county shoreland zoning ordinance. Taken together these surveys provide a snapshot of issues and trends in a northern lake-rich county, facing extreme development pressure on its lakes. They revealed several important trends in lakefront home ownership and a disturbing lack of knowledge of shoreland zoning.

Lakefront Property Trends and Uses

- New homes on recently purchased property make up a significant portion of privately owned lakefront shoreline. Thirty-eight percent of lakefront property owners purchased their property within the last ten years. Twenty-three percent of the homes on all four lakes were less than ten years old. On one lake (Seven Mile Lake), 22% of the homes are less than five years old.

- Newer lakefront lots tend to be deeper and narrower than older lots. The authors believe this trend reflects a desire for large lots without paying a premium for expansive lake frontage. Of the 47 lots over 500 feet deep, 55% were found on the lake with the newest homes (Seven Mile Lake).

- By far the most important uses of lakefront property are the enjoyment of peace and quiet, as well as of natural beauty and wildlife. These uses ranked well above all other uses.

Knowledge of Shoreland Zoning Regulations

The design and interpretation of results of this part of the survey probably paint a somewhat bleaker picture than may be justified. Questions were multiple choice. For many questions more than one choice was correct, but the answer was not considered correct unless all correct choices were selected. Tallying the results of partially correct responses may show a much higher degree of public understanding of shoreland regulations.

- Most lakefront property owners do not completely understand the objectives for shoreland zoning (20% answered a multiple-choice question correctly) or the types of property to which shoreland zoning applies (9% answered correctly). Most realtors and contractors also do not completely understand shoreland zoning objectives (13% answered correctly) or the types of property to which shoreland zoning applies (24% answered correctly).

- Shoreland standards for vegetation removal and filling and grading are very poorly understood by lakefront property owners (23% correct for vegetation removal, 3% correct for filling and grading) and only slightly better understood by realtors and contractors (46% correct for vegetation removal, 24% correct for filling and grading).

- Wetland regulations are very poorly understood by both lakefront owners and realtors and contractors. Only 7% of realtors and contractors and 1.3% of lakefront owners gave all four correct responses on county wetland regulations.

- Lakefront property owners have a fair understanding of structure setback regulations (43% correct), while contractors and realtors have a good understanding (80% correct).

- The rules governing nonconforming structures are very poorly understood by lakefront property owners (7% correct) and somewhat better, but still poorly understood by realtors and contractors (32% correct).

- The functions of the shoreline buffer area, provided through structure setback and vegetation removal regulations, are not completely understood by lakefront property owners (14% gave all four correct responses) or realtors and contractors (32% gave all four correct responses).

Knowledge of Contacts for Shoreland Regulations

It may not matter whether property owners completely understand the regulations as long as they are aware that regulations exist that apply to their lakefront property and know whom to contact for more information before proceeding with a project. Several questions were related to whom property owners would contact for information or assistance.

- The DNR is the preferred source of information about shoreland regulations (63%), followed by Oneida County Planning and Zoning (18%).

- The DNR is identified as the source for information about boating regulations (92%) and the first contact for help with water quality problems (80%).

- The Town and Oneida County Planning and Zoning are identified by most lakefront owners (combined 85% of responses) as the sources for building permit information. However, 33% of those surveyed did not answer this question, implying a lack of knowledge on whom to contact.

- Lakefront owners named the Town, Oneida County Planning and Zoning, and simply "the county" with about equal frequency as the preferred sources for information on private sewage system regulations (28%, Town; 28%, Oneida County Planning and Zoning; and 20%, the county, no department specified). Plumbing and septic contractors were named slightly less frequently (13%). Again, a large number of non-responses (47%), indicates a lack of knowledge of where to get information.

3.4.4 Department Actions to Improve Program Implementation

Local Level

- The DNR has held at least annual training sessions for Boards of Adjustment (often in conjunction with Planning and Zoning Committee and Zoning Administrators) for many years. The main topics have been variance criteria; DNR and municipality roles in shoreland, shoreland-wetland, and floodplain programs; appeal of Board of Adjustment decisions to circuit court and how it works; and outcome of recent court cases. These sessions have also involved program updates and guidance.

- In recent years, UW-Extension, through its Local Government Center and the Extension component of the Wisconsin Lakes Partnership, has offered local elected and appointed official training, also focusing on decision and meeting process. The DNR, the UW-Extension, and the Wisconsin County Code Administrators have begun to work together on scheduling and developing content for these sessions.

- A follow-up to the Northern Initiatives study, *Northern Wisconsin's Lakes and Shorelands*, recommended forming task teams to pursue the report's recommendations; the Natural Resources Board approved this plan. During 1996, four task teams developed four tools for preserving the character of northern Wisconsin lakes and shorelands: acquisition, voluntary conservation, technical assistance to local decision-makers, and education. The teams were coordinated by the DNR staff but included local government, zoning and conservation officials, regional planning staff, Minnesota DNR staff, federal conservation staff, Wisconsin Conservation Congress, realtors, and nonprofit environmental conservation and education groups (Wis. DNR 1995c, 1996). The action items identified by these groups will be used to set priorities for developing work plans for DNR staff, as well as other partners in this effort.

The teams recognize the importance of shoreland zoning as the core regulatory tool for protecting shorelands. Several initiatives have been proposed to improve shoreland zoning implementation and develop more protective ordinances. These are detailed in the Program Support Initiatives Table in Section 4.1.1. The work has dovetailed with the work of the technical assistance, voluntary conservation and education task teams. As a result, there is a high degree of commitment and resolve to improve shoreland zoning in northern Wisconsin.

Property Owners Information and Education

- DNR staff participate in forums and activities to educate property owners about regulations and the rationale for them.

- DNR staff have written newspaper columns explaining navigable waters law, the public trust, and the rationale for shoreland standards.

- DNR staff develop and staff displays at lake fairs, Farm Progress Days, the State Fair, and various outdoor sports shows.

- The DNR plays a major role in planning and participating in the annual Wisconsin Association of Lakes Convention.

- DNR regional and local staff have held training sessions with realtors and contractors.

- The DNR has produced two informational videos: *Champions of the Public Trust*, tracing the development of Wisconsin water rights law, and *Why Protect Shoreland Areas?* explaining the rationale behind shoreland zoning regulations, and the activities that require a zoning permit.

Department Support

- Water management specialists provide information to the county zoning administrator and Board of Adjustment through letters and make themselves available to testify on the facts of a case and on potential DNR action at Board of Adjustment hearings.

- Through funding from the NOAA/DOA Coastal Zone Management Program, the department has been able to secure three to four federally funded permanent positions since 1991. These positions have increased DNR assistance with zoning implementation, as well as navigable waters permitting and wetland water quality certification decisions in the coastal zone. Grant funding is limited, however, and there is not a great opportunity for future expansions.

- Department staff and UW-Extension personnel have acted as liaisons to County Zoning Committees in efforts to revise County Shoreland Ordinances. Funding support for many counties' ordinance revisions has been provided by DNR Lake Planning and Protection grants.

- Department staff have provided assistance to zoning administrators in videotaping shorelines in order to provide evidence of baseline zoning compliance.

- In 1993, the Southeast District Water Regulation and Zoning Program undertook a total quality management effort to improve their performance in responding to permit applications and to reduce the backlog of pending applications. The overall gain in efficiency has carried over into zoning, where all staff have regular contacts with county zoning staff.

- The DNR has cooperated with federal agencies, academics, and regional planning commissions to complete several projects involving advance delineation and functional analyses of wetlands in areas with high development interest and important wetland ecosystems. Projects include:
    - Special Wetland Inventory Study (SWIS) around Green Bay
    - Advanced Identification and Delineation (ADID) for Chiwaukee Prairie, a high-quality wetland complex in Kenosha County, part of which is now owned by Wisconsin Nature Conservancy
    - Special Area Management Plan (SAMP) for the City of Superior
    - Town of Norway Wetland Mapping and Functional Evaluation

- DNR staff have assisted counties on several navigable waters mapping projects for county shoreland zoning maps.

- DNR staff have increased their enforcement efforts over the last few years, as well as assistance to local governments in gaining compliance with shoreland ordinances.

  Since 1993, almost 50 local zoning decisions, most of them BOA variance decisions that violate local ordinance conditions and state law, have been referred to circuit court with good success. Of the cases that have been resolved, 48% have resulted in circuit court or court of appeals reversal of the incorrectly granted variance. Another 27% of the cases have resulted in shoreland ordinance objectives being met in other ways, such as property owners deciding to comply with shoreland requirements. Approximately 16% have resulted in unfavorable circuit court or court of appeals decisions that the DNR has chosen not to appeal further. Another 8% have been resolved in favor of the property owner in contravention of shoreland requirements.

- The DNR has also provided assistance to counties in defending good local decisions against challenge.

  Pursuing compliance in the courts is a last resort. DNR policy is not to appeal local BOA decisions unless there is a pattern of incorrect decisions or unless an individual decision is likely to adversely affect zoning objectives such as prevention of water pollution and protection of fish and wildlife habitat. In addition, water management specialists objections in writing in advance of BOA hearings on variances and other actions often result in decisions in compliance with shoreland ordinance objectives.

The Regulations

The DNR has taken a number of steps to minimize the barriers to effective shoreland administration created by the regulations themselves, that is the lack of clarity of some language, and provisions in rule that in practice have worked against the water quality and habitat protection goals of state law.

For example, the DNR has over the years routinely issued program guidance responding to specific questions of regulation application that have been raised by DNR field staff or zoning administrators. For some areas where the rule language is more permissive than the literature supports, or in loopholes that have been identified, the DNR and partners such as the UW-Extension advised counties that they are free to be more restrictive than the NR 115 requirements (unless specifically prohibited from doing so by rule or statute), and have provided options for counties to consider in addressing the resource problems that can arise from the loophole. For example, some counties have prohibited setback averaging and written more restrictive ordinance language to limit expansion of nonconforming structures. The DNR and other partners have shared examples of how the process, political will, and ordinance language has enabled other counties to address these and similar issues.

The DNR's Lake Management Program has been especially helpful in providing a boost for counties that voluntarily want to review and upgrade their ordinances. For the past few years, lake planning and protection grants have been available to local governments for convening ordinance upgrade task forces and hiring consultants, culminating in a shared vision and tighter ordinance.

Some regulatory barriers can only satisfactorily be addressed through a change to the rules themselves. This report is the culmination of staff recognition that only so much can be done through isolated voluntary efforts. Through preparation of the companion literature review (Bernthal 1997), meetings, solicitation of input from those affected by the shoreland program, and other ways, this report summarizes promising options for strengthening resource protection through NR 115, and more concerted efforts at cooperating with a variety of partners to encourage county action beyond minimums.

3.4.5 A Summary of Current Challenges and Opportunities

Wisconsin's shoreland zoning program is at a crossroads. Development pressure is increasing on lakes across the state, but particularly in the northern region and western counties within commuting distance of the Minneapolis/St. Paul area. The nature of lakefront property in the northwoods is shifting from seasonal to year-round residences, and newly constructed lakefront homes of both types are considerably larger than the traditional northwoods cabin. This shift is accentuated as property values and taxes rise beyond the means of long-time residents. Metropolitan expansion in Waukesha and other highly developed areas is placing pressure to develop outer tier residential subdivisions near lakes and in wetlands, while the waterfront has been densely developed for decades. Door County is continuing its building boom, with condominium development a popular option, partly because the review process is faster and less rigorous than subdivision review.

Administrative difficulties increase during times of heavy workload. Monitoring and enforcement activities give way to the need to process new permit applications in a timely manner. Some of the administrative and enforcement barriers identified here are long-standing concerns, but with intense development pressure, weaknesses become more glaring and have a greater cumulative impact.

In the past, sewage disposal site restrictions have limited the overall density of development in some shoreland areas. As shorelines are settled up to the maximum allowed density, new development is pushed toward marginal lands and wetlands. Technological advances in on-site sewage disposal, such as mound systems, have opened up some of these marginal lands for development. Proposed changes to Comm 83 are intended to further encourage the development and installation of alternative on-site wastewater treatment facilities. This is likely to further increase residential development on formerly unsuitable lands.

The potential cumulative impact of opening these lands to development significantly changes the planning picture for counties across the state. Much of the shoreland area identified as unsuitable due to on-site sewage limitations also has other characteristics, such as wildlife value or open-space value, that warrant limits on development. If counties wish to direct development away from environmentally sensitive lands, they must explicitly inventory the natural characteristics that warrant such protection. Planning agencies should assume that the shoreland around a particular lake or stream will in fact be developed to the maximum density allowed in the zoning code and set lot widths and sizes and structure setbacks accordingly.

There is growing concern in northern Wisconsin over the adequacy of statewide minimum standards to preserve the natural beauty and ecological health of northern lakes, especially small, currently undeveloped or very lightly developed lakes. Several northern counties are looking for ways to strengthen their zoning standards and to plan more effectively for orderly and sustainable shoreland development.

Degradation and loss of shoreline habitat for wildlife and impacts to near-shore fish and aquatic habitat are pressing concerns in a region nationally known for its ecological and aesthetic qualities. These attributes form the basis for its thriving tourist economy. Yet more protective zoning standards that could reduce the cumulative impacts of shoreland development on lightly settled northern Wisconsin lakes are likely to be difficult to effectively administer on densely settled lakes across the state, because of the large amount of existing development that would become nonconforming.

The survey results on lakefront owner attitudes indicate the time is right for further information and education initiatives to increase understanding and support for shoreland zoning. The most consistent result in these and other surveys is that lakefront owners are primarily motivated by a desire to maintain the peace and tranquillity and the natural beauty of their lake, so there is widespread support for one of the basic objectives of shoreland zoning. The greatly increased rate of development appears to concern a significant number of lakefront property owners. Although lack of awareness and understanding of shoreland zoning objectives and standards has been identified as a barrier, lakefront owners have a higher-than-average level of education, a strong interest in protecting the character and ecological health of their lakes, and a very strong interest in educating themselves on issues affecting their lakes.

At the same time, challenges to some shoreland standards have been raised in the legislature by those who see such standards as an undue infringement on private property rights. The lack of jurisdiction over incorporated areas draws criticism from rural residents who find this situation inequitable. While waterfront owners in cities and villages are free from restrictions on building decks, gazebos, sheds, and other structures along the shoreline, residents in unincorporated areas must maintain a 75-foot setback. Strictly enforced vegetative cutting standards could also be another source of resentment for both long-term rural residents and newly arrived residents, expecting to escape from the restrictions of city life.

The greatest administrative barriers to effective implementation of shoreland zoning are lack of awareness of waterfront owners of zoning requirements; lack of funding for staff and equipment at the local and state level to devote to education, monitoring, and enforcement; and routine granting of variances. The greatest weaknesses identified in NR 115 are clauses that are difficult to interpret and enforce, and loopholes that frustrate the intent of the law. These include the vegetative cutting standards, nonconforming structure standards, and setback averaging. An underlying difficulty affecting shoreland zoning implementation is the variability in public awareness and buy-in to the rationale for shoreland zoning, including an understanding of cumulative impacts. Options for addressing these issues are discussed in the next section.

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4. OPTIONS FOR IMPROVING THE SHORELAND ZONING PROGRAM

Given the challenges and opportunities summarized in the previous section, how should the shoreland management program respond? This section will suggest and discuss initiatives in three broad areas:

- program support initiatives, such as information and education, technical assistance, financial and other incentives, and funding and staffing proposals
- potential changes to NR 115
- some considerations for a potential classification of water bodies linked to differing regulations

4.1 Program Support Initiatives

A broad range of opportunities exists for supporting and promoting shoreland development that balances enjoyment of the waterfront with preservation of natural shoreland functions. Shoreland ordinance regulations are important in achieving these goals but not the only way. Other essential methods include individual landowner and community efforts at restoring shore vegetation and promotion of best management practices that minimize impacts on habitat and water quality.

Information and Education

The shoreland program needs to clearly communicate a vision of healthy shoreland development to the public, recognizing that effective implementation of shoreland ordinances depends on the understanding and acceptance of the standards' purpose. The shoreland program needs to continue to work with its current partners and to reach out to new partners to build an ethic of shoreland stewardship among waterfront property owners, anglers, boaters, civic leaders, developers, realtors, builders, and the young people whose natural inheritance is at stake.

Information and education efforts can be aimed at many different levels and audiences. Some excellent educational material has already been developed in different forms by the UW-Extension, from comprehensive manuals such as *Life on the Edge - Owning Waterfront Property* to individual fact sheets on a wide range of topics. The following table lists ideas and strategies for information and education initiatives, some of which are already underway, along with currently available materials and an indication of potential partners.

Technical Assistance to Local Government

In addition to ongoing assistance programs carried out by the DNR and the UW-Extension, a need exists for addressing the wide variety of waterfront and watershed issues that are not included in the existing Model Ordinance. The table lists specific issues that could be addressed through new model ordinance sections.

Financial Incentives

Some options are needed to address the financial incentives that push development into unsuitable areas. Options to provide some financial assistance to counties to administer their shoreland ordinances are also needed.

Other Initiatives

Throughout Wisconsin, local governments, nonprofit groups, and developers are moving forward with projects to conserve aquatic habitat and shorelands. They are engaging in efforts to identify environmentally sensitive lands and establish environmental corridors, designing erosion control and stormwater ordinances, utilizing conservation easements, purchasing development rights, establishing

land trusts, designing conservation developments, and pursuing other efforts that benefit water quality and habitat. Some of the techniques used to protect shorelands are listed in Appendix A. Appendix A also contains descriptions of some planning and zoning models and resources from around the country and state that show promise in addressing wetland, shoreland, and watershed protection.

4.1.1 Program Support Initiatives Table

The Program Support Initiatives Table is an attempt to summarize Shoreland Management Program improvements that could be made immediately, with or without administrative rule changes. Some of these initiatives, since initially proposed in earlier drafts of this report, are underway in DNR Integrated Ecosystem Management projects, through other Northern Initiatives activities, and with other cooperative efforts between the DNR and partner organizations.

Abbreviations used in the Program Support Initiatives Table and NR 115 Issues and Options Table (Section 4.2.1) are listed below.

ADA	Americans with Disabilities Act (federal)
Appendix A	The Appendix to this report titled "Alternative Planning and Zoning Strategies"
BMP	Best management practice
COE	U.S. Army Corps of Engineers
DNR	Department of Natural Resources
FFHA	Federal Fair Housing Act
GMU	Geographic Management Unit
I&E	Information and education
Lakes Partnership	Collaborative lake protection efforts of WAL, DNR, and UWEX
LCD	Land Conservation Department
MN	Minnesota
NALMS	North American Lake Management Society
NWP	Nationwide permit
NWRPC	Northwest Regional Planning Commission
OHWM	Ordinary high-water mark
SEWRPC	Southeastern Wisconsin Regional Planning Commission
USEPA	United States Environmental Protection Agency
UWEX	University of Wisconsin Extension
WAL	Wisconsin Association of Lakes
WBA	Wisconsin Builders Association
WCCA	Wisconsin County Code Administrators
WFHA	Wisconsin Fair Housing Act
WI	Wisconsin
WLWCA	Wisconsin Land and Water Conservation Association
WWI	Wisconsin Wetland Inventory
ZA	Zoning administrator

TECHNICAL ASSISTANCE OR I&E PRODUCT IDEA	CURRENT RESOURCES & MODELS	POTENTIAL PARTNERS	NOTES (status, program commitment, etc.)
1. Summary of Shoreland Zoning Study Report Summarize findings and program improvement options in a more user-friendly document. Focus on findings of the literature review, including documentation of citizen support for zoning and its enforcement and documentation of the economic benefits of shoreland zoning. Audience: local government officials and citizens. Purpose: provide background necessary to enable informed discussion of the shoreland zoning program and initiatives discussed in the study report. Spinoff products could include: a) slide-show series on development impacts on lakes and streams and near-shore habitat b) visual demonstration of zoning success; e.g., simulate before/after waterfronts or compare compliant with noncompliant c) visual simulation showing how structures, waterfronts could be altered to comply/meet objectives, etc. d) workshops for zoning administrators and local officials on the cumulative impacts of shoreland development and mitigative measures to reduce impacts	Condense from Study Report and Literature Review Utilize DNR Bureau of Communication and Education Model after Fisheries Management presentations for code revisions Utilize DNR expertise in modeling and visual simulation; use existing slide shows and file photos	DNR Shoreland Program, Lakes Partnership - DNR, UWEX, and WAL	This idea ranked #1 at WCCA 1996 Fall Conference DNR shoreland program plans to complete by end of 1997 as part of current project Spinoff idea (d), workshops for ZAs and local officials, was ranked #4 at WCCA 1996 Fall conference

TECHNICAL ASSISTANCE OR I&E PRODUCT IDEA		CURRENT RESOURCES& MODELS	POTENTIAL PARTNERS	NOTES (status, program commitment, etc.)
2. Shoreland Best Management Practices Manual and Video Compile/adapt existing educational materials and practical references on nonpoint pollution prevention and control, construction site erosion control, fish and wildlife habitat preservation, low-impact shoreline erosion protection alternatives, environmentally sensitive pesticide and fertilizer application, and building and landscaping to maximize shoreland aesthetics. Format: Field guide size similar to *Wisconsin's Forestry Best Management Practices for Water Quality*.		UWEX/DNR *Yard Care and the Environment* series UWEX/Priority watershed publications Lakes Partnership *Life on the Edge* Video project underway in Balsam Branch and St. Croix Lakes in St. Croix Priority Watershed Use MN Lake County Soil & Water Conservation District product video and fact sheet	Propose as a joint DNR/UWEX project, with input from WAL, WBA, and Wisconsin River Alliance	Ranked #2 at WCCA 1996 Fall Conference Product from Balsam Lake project may be usable or adapted for use around the state
3. Model Ordinances Compile and/or develop ordinance language that could be adopted by municipalities that want to go beyond the minimum state shoreland zoning standards. This would include both compiling sections of ordinances actually proposed or adopted by counties, and developing model ordinances incorporating report recommendations. Specific topics for model ordinance language could include:		Terrene Institute, Inc. April 1995. *Local Ordinances: A User's Guide* 1997 Wisconsin Lakes Convention Technical Session presentation. *Local Shoreland Zoning Ordinance Innovations*	DNR - Shoreland, Runoff Management, Lakes & Wetlands, Rivers and Regulations UWEX Local Government Center Various municipalities WAL	DNR Product of USEPA Grant Ranked #3 at WCCA 1996 Fall Conference
A	Designation of *no motor* lakes (below a certain size) and *slow, no wake* lakes	DNR PUB-LE-317-94. *Guidelines For Ordinance Writing and Buoy Placement in Wisconsin Waters*		

TECHNICAL ASSISTANCE OR I&E PRODUCT IDEA		CURRENT RESOURCES & MODELS	POTENTIAL PARTNERS	NOTES (status, program commitment, etc.)
B	Regulation below the OHWM, including pier and dockominium regulation examples and advice. ("Dockominium" refers to a type of condominium ownership in which blocks of lakefront air are sold to provide pier or boat mooring rights.)	Oneida County - 1/21/97 ordinance amendment WI Lakes Partnership. 1996. *A Model Local Ordinance to Regulate Piers, Wharves and Berths in Wisconsin*	WAL	
C	Development incorporating cluster and conservation design concepts (e.g., greater allowable densities if undisturbed shoreland buffer preserved)	SEWRPC Planning Guide #7: Rural Cluster Development Guide Randall Arendt and MN cluster standards (see Appendix A)		
D	Backlot development control	Some county examples; MN cluster standards		
E	Enhanced wetland protection; e.g., wetland buffer requirements, small shoreland-wetland protection, and interior (beyond shoreland zone) wetland protection	City of Boulder Wetland Ordinance (see Appendix A) DNR compilation of county ordinance innovations		
F	Nonconforming structures expansion limitation	Ideas in NR 115 Issues/Options table		
G	Boating/user conflict regulations	DNR PUB-LE-317-94 *Guidelines for Ordinance Writing & Buoy Placement in Wisconsin Waters* WAL - may produce a model ordinance	WAL	
H	Small lake protection; sensitive resource protection	Douglas County	WAL DNR-Fisheries Management & Habitat Protection, Integrated Science Services	

TECHNICAL ASSISTANCE OR I&E PRODUCT IDEA		CURRENT RESOURCES & MODELS	POTENTIAL PARTNERS	NOTES (status, program commitment, etc.)
I	Erosion control ordinances and cooperative agreement models	DNR Model Ordinance UWEX and Commerce Department currently provide training LCD/ZA cooperative agreements: Dane, Walworth, Chippewa, and other counties	WLWCA WBA	
J	Stormwater Ordinances	DNR Draft Model ordinance Waukesha County Walworth County	DNR-Runoff Management	
K	Guidelines on avoiding takings challenges through ordinance construction	Compile reference articles	UWEX Local Government Center UW-Madison Urban and Regional Planning	
L	Natural scenic beauty	Lower Wisconsin Riverway visual standards (including building height limits, bluff setbacks, timber cutting standards) and how they contribute to statutory goals of natural scenic beauty protection Town of Arbor Vitae Commercial Building Design Standards	Lower Wisconsin Riverway Board, UWEX	
M	Impervious surface limits - lot and watershed	Dick Sigel Lake County, MN Land Use Planner *Site Planning for Urban Stream Protection*, available from Center for Watershed Protection	DNR-Runoff Management	

TECHNICAL ASSISTANCE OR I&E PRODUCT IDEA		CURRENT RESOURCES & MODELS	POTENTIAL PARTNERS	NOTES (status, program commitment, etc.)
N	Guidance on Lakes Classification, and for protection of sensitive/high-value lake or riverfront segments	NWRPC - currently working with a number of counties Sample language from Waupaca County and other municipalities using this approach Recommendations in *Rural Environmental Planning for Sustainable Communities*	WAL	Lake classification legislation and funding support to counties passed as part of 1997-99 budget
O	Bluff protection provisions (minimum setbacks, steep slope restrictions)	St. Croix Model Ordinance NR 118.08(3) and (4)		
P	Subdivision Model Ordinance	UW-Madison Urban and Regional Planning staff, working with UWEX county agents		
4. Shoreland Zoning Administration Resource Book Examples of useful approaches from around the state, such as cooperative agreements between Zoning and Land Conservation departments, permit fee structures adequate to support zoning administration, information requirements for adequate permit applications, development moratoria.		Collect examples from counties with successful products.	DNR WCCA WLWCA UWEX Local Government Center	Ranked #5 at WCCA 1996 Fall conference
5. A Guide to Nonregulatory Tools for Shoreland Stewardship Ideas, references, and examples of nonregulatory tools for shoreland resource protection, such as restrictive covenants, conservation easements, purchase of development rights, deed restrictions, and land acquisition. Collect examples of successful use of these tools.		Trust for Public Land guidebooks (referenced in Appendix A - Voluntary Conservation) *Common Groundwork: A Guide to Protecting Rural and Urban Land* from Institute for Environmental Education Compile successful Wisconsin examples	Gathering Waters Lakes Partnership Various Land Trusts, including The Nature Conservancy Wisconsin Realtors Association	Idea Stage

TECHNICAL ASSISTANCE OR I&E PRODUCT IDEA	CURRENT RESOURCES & MODELS	POTENTIAL PARTNERS	NOTES (status, program commitment, etc.)
6. Nonregulatory Performance Criteria for Shoreland Buffers Develop a set of performance criteria for buffer integrity (minimal disturbance to shoreland and near-shore vegetation, allowance for riparian access, width of buffer on steep slopes, etc.) to be used as model standards **for nonregulatory** approaches to shoreland protection in #5 and #7 of this table. For example, these buffer standards could be written into the terms of a conservation easement or used as goals in voluntary conservation efforts. Because they would be used with incentive programs these could be higher standards than are feasible in regulatory ordinances, representing more closely the ideal state for low- impact shoreland development. Use a menu format, so users can pick and choose standards that will work best for their situation. By including a rationale section for each standard, such a document could also be used as an educational tool.	Baltimore County Buffer Ordinance City of Boulder Wetland Ordinance *Site Planning for Urban Stream Protection*, from Center for Watershed Protection (All three described in Appendix A) *Shoreline Habitat Restoration on Developed Lakes Interim BMP* - DNR Priority Watershed Program Conditions from some existing easements and deed restrictions	DNR - many programs UWEX Lakes Partnership WAL Wisconsin River Alliance The Nature Conservancy Gathering Waters Wisconsin Realtors Association	Idea Stage This could be developed by a team of professionals from other agencies, voluntary conservation organizations, and other partners.
7. Tax Incentives for Shoreland Stewardship Provide property tax relief for owners who are willing to dedicate conservation easements. This could be a way to prevent long-time landowners from being "taxed off" their land. In return, the easement would require preservation or restoration of the natural shoreland buffer (standards could be based on the model standards described in #6).		WAL Gathering Waters	Idea Stage

TECHNICAL ASSISTANCE OR I&E PRODUCT IDEA	CURRENT RESOURCES & MODELS	POTENTIAL PARTNERS	NOTES (status, program commitment, etc.)
8. Tax Assessor Education Land that is zoned shoreland-wetland, floodway, or has other development limitations under current zoning should not be assessed based on development value but on current use. However, the assessment would change if the land is proposed for development, and conditions need to be in place to assure this doesn't encourage speculation.	Use Value Assessment legislation is in place for farmlands	Department of Revenue Wisconsin Taxpayers Alliance Wisconsin Farm Bureau Wisconsin Manufacturers and Commerce The Nature Conservancy Gathering Waters	Idea Stage Write into instructions to assessors. Need to explore current legal framework and interest of potential partners in such a project.
9. Improve visibility of shoreland regulations to new buyers Prepare brief explanation of shoreland and other water regulations for inclusion on real estate disclosure forms. Create internet web page with links easily accessible to realtors to provide clients with information, not only on water regulations, but also on lake and stream characteristics or other special natural resources. Provide examples of how counties have included shoreland and other local regulation notice in tax bills.	Wisconsin Realtors Association		Cooperative project with Realtors Association has been started.
10. Develop a Certification Program and associated curriculum for realtor specializing in waterfront property The goals are to: • foster the development of realtor expertise in *qualifying the buyer*—matching new buyers with waters that meet their desires, thus avoiding situations where owners' desires conflict with the resource's suitability • increase ability to inform clients of shoreland and other water regulations and access DNR lake and stream information	Wisconsin Realtors Association—continuing education for licensing currently includes shoreland/floodplain/water law sections. Minnesota requires realtor certification in shoreland program requirements.	Wisconsin Realtors Association NALMS WAL UWEX	NALMS/UWEX/Realtors are currently exploring certification from NALMS as a *waterfront property specialist* (or similar term) DNR is cooperating in developing the curriculum for this project.

TECHNICAL ASSISTANCE OR I&E PRODUCT IDEA	CURRENT RESOURCES & MODELS	POTENTIAL PARTNERS	NOTES (status, program commitment, etc.)
11. Voluntary Shoreland Restoration Landscaping Program Establish an incentive program in which good examples of landowner natural landscaping and re-vegetation are given awards and statewide publicity. Encourage property owners to maintain existing natural vegetation, and encourage re-landscaping methods to restore native species for natural beauty and wildlife value. Produce demonstration projects for vegetative screening and shoreline habitat reestablishment, as well as bioengineering for bank stability.	*Shoreline Habitat Restoration on Developed Lakes Interim BMP* - DNR Priority Watershed Program UWEX and DNR July 1997 workshop binder *Restoring Shoreland Habitats* UWEX *Shorelandscaping* publication and fact sheets available (need to evaluate existing publications). MN is developing a similar publication *Lakescaping for Wildlife* (available spring 1998)	UWEX - County Agents Lakes Partnership DNR-Wildlife, Endangered Resources, Runoff Management Wild Ones (A native plant landscaping group) Native Plant Nurseries WAL - Could be well suited to implementation by individual Lake Associations as part of a Shoreland Stewardship project.	Two Priority Watershed Project examples: -Lake Noquebay demonstration project; -Interim BMP to be introduced in 1997 in two northern lake watersheds (will be evaluated after 18 months) As experience is gained, this BMP should be made available throughout the state.
12. [The Governor's] Shoreland Stewardship Campaign Awards for individual citizens who restore native vegetation, keep structures screened, attract wildlife to waterfront property. Could also give awards to developers who have preserved natural shoreline buffers, and builders who have done an exceptional job of erosion and sediment control. Advertise the project through local media outlets, *Outdoors Wisconsin*, fishing and other publications. Get sponsorship for the project from a visible and respected individual and use the sponsor in advertising.	Use DNR Bureau of Communication and Education expertise for public relations work	WAL and individual lake associations seem most appropriate to implement. WBA Lakes Partnership	

TECHNICAL ASSISTANCE OR I&E PRODUCT IDEA	CURRENT RESOURCES & MODELS	POTENTIAL PARTNERS	NOTES (status, program commitment, etc.)
Funding and Staffing Ideas			
1. State-employed, locally based Zoning Administrators Explore this concept as a way of providing state financial support to reduce the burden on counties. This would address long-standing complaints that shoreland zoning is an unfunded mandate.	District Attorney Model - DAs salaries are funded by the state, but work in specific counties.		Idea Stage
2. Joint county-state support of local zoning administration This would be another way of providing financial relief for county zoning offices.	UW-Extension Community Resource Development Agents Model		Idea Stage
3. Revise permit fee structure Support county efforts to revise permit fee structure to ensure self-sufficiency from fees.	Some counties support a high percentage of office expenses through fees.		Idea Stage
4. Provide block grants Establish a simple block grant program to provide monetary assistance for funding the salaries of county zoning staff and daily administration of shoreland and floodplain zoning ordinances. Consider minimum program adequacy before providing financial support.	Minnesota's Shoreland Program provides block grants for county shoreland zoning administration. Washington state land-use program		Idea Stage This could be a new program or could be incorporated into the redesign of the nonpoint program.
5. Improve DNR staff support to counties Explore opportunities as DNR reorganization reaches the GMU level to direct resources for accomplishing shoreland zoning objectives. This could be done through funding local zoning staff with nonpoint funds (similar to funding of local Land Conservation staff) and through prioritizing basin staff efforts toward shoreland issues.			Idea Stage Incorporate through non-point program redesign or through GMU work planning

4.2 Possible Regulatory Changes in NR 115

The range of policy choices for the program's regulatory portion boil down to variations on three general approaches: raise the minimum standards statewide; eliminate statewide minimum standards (leaving shoreland zoning up to each county); or maintain the statewide minimums but encourage counties to strengthen their shoreland zoning standards. While it is likely that any rule change package would contain some combination of all three approaches, a brief discussion of the pros and cons of each general approach yields some perspective on the individual options outlined in the NR 115 Issues and Options Table.

Raise Standards Statewide?

While the scientific literature and professional experience provide a strong basis for minimizing the amount of modifications to the near-shore and shoreline environment, closing the loopholes and tightening restrictions on shoreline modifications would mean further limitations on waterfront owners' activities. Such an approach would draw strong criticism from those opposed to government regulation, while resource protection groups would likely support strengthening the minimum standards as a way of improving the statewide safety net.

Increasing structure setbacks would also be likely to create a great deal of anxiety to current waterfront owners whose homes would become legal nonconforming structures subject to restriction on rebuilding and remodeling. Structure setbacks and vegetative cutting restrictions are attempts to reduce impacts from individual properties and place limitations on waterfront owner actions. Density controls are less focused on individual activities. If stricter enforcement and more restrictive standards are seen as unacceptable, policy makers may need to consider greater density controls and look at increasing minimum lot sizes and widths as a way of reducing the cumulative impact on a water body.

Although it is a well-established principle that the community is justified in setting the rules of the game in order to protect the common good, the use of density controls has raised concerns about reducing the value of existing large parcels by reducing the number of new lots that can be created. Increasing minimum lot sizes and widths can be expected to reduce the amount of profit from subdividing waterfront property. However, this may not always hold true, as buyers are increasingly willing to pay a premium for a natural and peaceful setting.

Another concern raised with increasing lot sizes and widths is that such a change puts the cost of waterfront property beyond the reach of all but the most affluent buyers. Unfortunately, given current trends, waterfront ownership is already beyond the means of a great many people.

Eliminate Statewide Minimum Standards in Favor of Local Control?

One response to the challenges described in this report could be to replace the current model of state oversight authority and statewide minimum regulatory requirements with a program that eliminates the mandated standards. The answer would be to get the state out of the zoning business and focus state-level efforts only on providing information, education, and technical assistance to support informed local control.

Completely eliminating statewide minimum requirements or state oversight authority could be considered to be an abdication of the state's affirmative duty to protect the public interest in navigable waters. Legally, such an action would likely require the legislature to set aside 200 years of case law that provides the underpinning of the Public Trust Doctrine.

The case for informed local control is that counties are best able to plan for the regulation of resources within their borders. However, many counties are not likely to have the natural resource and legal staff to

establish and defend their own standards in the absence of statewide requirements. Many counties have historically been reluctant to adopt shoreland ordinances on their own initiative. Eliminating the mandate would be likely to send a message that shoreland standards are unnecessary, even if the intent is to allow greater local control.

The current standards act as a statewide safety net for ensuring a minimum level of protection for aquatic resources. When administering and litigating their shoreland ordinances, counties can rely on the fact that the state standards are mandatory and the state has oversight authority. Without mandatory minimum standards the pressure on many counties to lower or eliminate their shoreland standards would be great. Pressure to grant unwarranted variances might also increase. Without state oversight authority, the legal resources in the Attorney General's Office would no longer be available to counties.

While some counties might be able to maintain or improve their ordinances, there would be continual pressure on individual counties to compete with neighboring counties by reducing standards to the level of the least restrictive county. The likely result would be greater deterioration of shoreline habitat, natural beauty, and water quality functions in some areas.

Maintain Statewide Program but Encourage and Assist Local Innovation?

One of the greatest successes of the program has been the development of local zoning infrastructure and expertise in response to the state mandate. A strategy is needed to maximize opportunities for local control and account for unique local conditions without undercutting the statewide minimums. This strategy should aim to increase collaboration and partnership between department and other agency professionals and local governments. This would allow continued department support for shoreland protection.

As the department begins to implement service delivery through Geographic Management Units (GMUs), opportunities will arise for water division staff to provide their expertise to local governments. Support for local initiatives in such arenas as cluster development, stormwater management, erosion and sediment control, and forestry and agricultural buffers should be encouraged. Best management practices for controlling nonpoint pollution may best be incorporated into subdivision review ordinances that apply throughout a jurisdiction, not just in the shoreland zone. Comprehensive land-use planning is perhaps the best tool for establishing flexible shoreland and other zoning standards best suited to various localities.

Some of the problem areas with administering and enforcing shoreland ordinances are more easily addressed at the local level, rather than trying to write regulations that fit the wide range of conditions across the state. For instance, zoning administrators in different parts of the state view boathouse regulations and vegetative cutting restrictions in dramatically different ways. At the same time some issues, such as administering the nonconforming rules, setback averaging, and structure definitions have been raised throughout the state. These issues and a range of minor clarifications may be best addressed at the statewide level to assure consistency on the program's basics. Hopefully, this report will be the first step in sorting through which issues are best addressed at the statewide level through revisions to NR 115, and which are best addressed through local ordinances. The final section of this report summarizes the response of external and internal DNR reviewers to the report, especially the program support initiatives table and the NR 115 table presented below.

4.2.1 NR 115 Issues and Options Table

The Issues/Options Table that follows is an attempt to capture important issues surrounding specific aspects of NR 115 raised throughout this report. Department staff have brainstormed some initial ideas for addressing each issue. These are listed as possible options in the table. This discussion is beginning to take place as comments have been solicited on a draft version of the Issues/Options Table.

A list of minor corrections and clarifications that could be made as part of a NR 115 code revision is also included as Appendix D.

1. STRUCTURE SETBACKS AND SETBACK AVERAGING

Current Standard—Building and structure setbacks are established in order to conform to health, safety, and welfare requirements, preserve natural beauty, reduce flood hazards, and avoid water pollution. All buildings and structures, except piers, boathoists, and boathouses must be setback 75 feet from the OHWM. The rule states that if "an existing pattern of development" exists, counties may allow lesser setbacks calculated by setback averaging.

Issue	Possible Option	Expected Benefit			
		Regulatory Relief for Permittees	Administrative Relief for ZA	Clarity	Better Resource Protection
1.1 A *structure* subject to setback requirements is not defined in NR 115 or s. 59.692, Stats. The current code's lack of a definition for structure has caused confusion about which structures are subject to setback from the OHWM of navigable waters.	Define *structure* consistent with NR 116 (floodplain rule). Definition would be "Any human-made object with form, shape and utility, either permanently or temporarily attached to or placed upon the ground, river bed, stream bed, or lake bed." All structures must still be setback from OHWM unless they are named exceptions (current rule exempts piers, boathoists, and boathouses). Some counties already allow some additional minor structures, so it would be necessary to work on consistency issues.		x	x	
1.2 Certain minor structures within 75 feet have minimal impact on shoreland zoning objectives and should be considered for lesser setback or exemption. One specific example is at-grade patios. Patios are not exempt from the structure setback. However, staff in the shoreland zoning program in the 1980s, without any written policy change, allowed some counties to adopt language allowing patios within the 75-foot setback that met standards. Some counties have adopted this language which is contrary to the rule. It would be politically unwise to now require all counties to require that patios be set back 75 feet.	Allow some minor structures in setback (but no closer than 50 feet from OHWM), if they meet standards and have no impact on shoreland zoning purposes. Example: as a matter of equity, it is best to allow patios across the state, as long as they met standards. Patios could be allowed as long as no closer than 50 feet to OHWM and meet all conditions below: <6 inches above pre-existing grade, constructed of porous materials, allowed only where minimal cutting and filling needed, total patio area within setback does not exceed 100 square feet; no permanent benches or tables; no canopies or enclosures; total lot impervious coverage (see recommendation associated with issue 1.7) limitations not exceeded; patio area vegetatively screened to be visually unobtrusive from the water. Mitigative methods should be required for some minor structures to maintain natural beauty and shoreline habitat.	x	x	x	

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Issues	Possible Option	Expected Benefit			
		Regulatory Relief for permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
1.3 Certain marina or utility structures (e.g., fuel tanks and dispensing structures, above-ground sanitary sewer lift stations, and utility lines) often cannot, as a practical matter, be located more than 75 feet from OHWM and must currently go through the variance process in order to be located closer to the OHWM. Because the properties on which they are located are able to support uses without these structures being located closer to the water, variances should not be granted for them.	Utility structures/marina structures (e.g. fuel tanks and dispensers, sanitary sewer lift stations)—allowed within setback if it can be demonstrated that there is no practical alternative, a minimum setback of 50 feet is met wherever possible, and impacts are minimal as determined by the ZA in the permitting process. The specific setbacks and other details would need to be coordinated with Department of Commerce programs and be consistent with NR 116 floodplain requirements.	x	x		
1.4 Shore stabilization structures such as retaining walls are currently not allowed within the 75-foot setback without a variance, although some counties conditionally permit them. These structures can have water quality benefits in some cases but also can negatively impact habitat and natural beauty. In many cases shore erosion protection can be accomplished by nonstructural means.	Allow certain shoreline stabilization structures to be permitted (in consultation with experts such as LCD, DNR staff, or professional engineers) within 75 feet of the OHWM by the zoning administrator, if the applicant can demonstrate, through an engineering analysis or equivalent means, an erosion or slumping problem that cannot be solved by regrading, vegetative cover establishment, bioengineering, or other nonstructural method. Standards are needed to reduce impacts to habitat and natural beauty and to ensure that the structure will not create an encroachment in the floodway (NR 116). Any NR 115 change should be consistent with current work on developing administrative rules interpreting ch. 30.12 for shore protection structures.	x			x- if strictly limited

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Issue	Possible Option	Expected Benefit			
		Regulatory Relief for permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
1.5 Stairways, walkways, lifts, and open fences are not exempted from setback by current rule, but the DNR has allowed stairways, etc., via program guidance and local ordinance amendments since 1992. Similarly, open fences have been allowed if counties amend ordinances to specifically allow them, according to the 1985 model ordinance. A rule change is needed that would clearly allow those exemptions.	Clarify by adding to rule a setback exemption for one stairway or walkway, only where necessary to access shoreline because of steep slopes and unstable soils, if the structure meets standards. Current standards that are in the form of guidance could be incorporated into administrative code (not exceeding 4 feet high, not excavated, minimize vegetation removal and shoreline disturbance, landings shall not exceed 40 square feet). Open fences would be allowed but must meet standards designed to minimize the barrier to wildlife movement, maintain natural beauty, and prohibit encroachment into the floodway (NR 116).	x		x	

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Issue	Possible Option	Expected Benefit			
		Regulatory Relief for permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
1.6 Boathouses. There are no boathouse dimensional standards in the rule, and so counties may currently permit as large a structure as they wish. Boathouses can be located very close to the water and, especially if they are not earth-toned, can be very visually conspicuous. The long-standing exemption from the setback requirement for boathouses does not make sense ecologically, as it allows for further fragmentation and disturbance of habitat. Large roofed areas on these structures increases runoff and reduces infiltration into the soil. DNR and ZA staff experience is that many boathouses are not used for storing boats (in violation of the ordinance), but have become a way of legally building a structure on the immediate shoreline. The original justification for allowing boathouses, to protect wooden boats from the weather, is not as persuasive for aluminum and fiberglass boats. Some counties do not allow boathouses.	1. Boathouses must meet dimensional standards (no higher than 12 feet at peak) and other dimensions consistent with NR 326 (12 feet wide and 24 feet outside dimensions for waters <1000 acres; and 14 feet wide by 24 feet long for waters >1000 acres). For streams, must meet smaller lake standards. Boathouses should meet the same minimum setback as all other structures/expansions—ideally no closer than 50 feet and minimally 35 feet to remain outside the vegetated buffer area. If one cannot meet minimum setback due to steep slopes, etc., applicant has option of using permanent or seasonal boat shelter. Boathouses prohibited on slopes greater than 20%. OR 2. Make boathouses subject to 75-foot setback, unless applicant can demonstrate there is no feasible alternative			x x	x x

1. STRUCTURE SETBACKS AND SETBACK AVERAGING

Current Standard – Building and structure setbacks are established in order to conform to health, safety, and welfare requirements, preserve natural beauty, reduce flood hazards, and avoid water pollution. All buildings and structures, except piers, boathoists, and boathouses must be setback 75 feet from the OHWM. The rule states that if "an existing pattern of development" exists, counties may allow lesser setbacks calculated by setback averaging.

Issue	Possible Option	Expected Benefit			
		Regulatory Relief for permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
1.7 Current practice allows parking lots, driveways, and other paved areas that technically should be subject to 75-foot setback. These can have impacts on natural beauty (cars visible from water) and water quality (increased runoff), especially if for commercial use.	Allow at-grade impervious surfaces within the 75-foot setback if there is no feasible alternative and per lot coverage (including structure roofs) doesn't exceed 15-25% of lot area, and if the surfaces are not closer than 50 feet to the OHWM. Establish clear procedures and standards for addressing the expansion of the nonconforming impervious surfaces which would be created by this change.	x			x
1.8 The shoreland zoning literature review has noted that greater structure setbacks, in combination with revised vegetative cutting standards, would create a more effective shoreline habitat buffer. Greater setbacks would also reduce the likelihood of sediment delivery during construction.	1. Increase the minimum structure setback to 100 feet (based on the literature review findings). As in issue 1.7, this would create many non-conforming structures. OR Actively support individual counties in increasing setbacks.				**x** **x**

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Issue	Possible Option	Expected Benefit			
		Regulatory Relief for permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
1.9 Setback averaging compromises the ability to maintain an effective aesthetic, habitat, and water quality buffer. Structures placed by setback averaging are legal conforming structures, with no limitations on their future expansion within the 75-foot setback. No minimum setback is currently required by rule, although some counties require a minimum setback of 40 feet. In practice, setback averaging has been used to allow increased waterward development of not only new structures, but also expansion of nonconforming structures, which was not the intent of the rule. Setback averaging is used in some counties to allow placement of new accessory structures.	1. Don't allow setback averaging, due to its lack of scientific support and its tendency to undermine the statutory objectives of shoreland zoning. OR 2. Allow setback averaging to continue, but place standards in rule. Require that no structures be placed for any reason (averaging, nonconforming, etc.) closer than 50 feet to OHWM. (The minimum setback distance should be consistent with other buffer proposals.) Prohibit setback averaging using accessory structures—clarify that setback averaging is for principal structures only. 3. Specify a formula for setback averaging, if county ordinance allows setback averaging. Such as: Allowable setback = (75 feet + Average Setback of principal structures within 200 feet)/2 .			x x	x x
1.10 Setback averaging. Averaging procedures are not specified in the current rule. NR 115 does not define "existing pattern of development" necessary for allowing setback averaging or require a procedure for averaging, but 1985 Model Ordinance does. Not all counties allow averaging.	1. Define *existing pattern of development* that would allow averaging to be used by incorporating Model Ordinance language into code (at least one principal residence that is closer than the required setback must be within 200 feet from either side of the applicant's proposed building site). OR 2. Put a more protective definition and procedure than Model Ordinance into the code: A. change to "200 feet from <u>each</u> side" (must have two closer principal structures to do averaging) OR B. use setback averaging when the setbacks of "a majority of principal structures within 200 feet" are closer than required.			x x	x x

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Issue	Possible Option	Expected Benefit			
		Regulatory Relief for permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
1.11 Compliance with Americans With Disabilities Act (ADA), Federal Fair Housing Act (FFHA), and Wisconsin Fair Housing Act (WFHA). In limited situations, encroachment into the 75-foot setback is required to meet Federal and State requirements for compliance with ADA, FFHA, and WFHA. Many counties have been granting variances for such development. Statutory and case law requirements for determining hardship necessary for granting a variance present a legal difficulty for persons with disabilities who require structural modifications (when a hardship is personal to the applicant rather than the physical features of the property, it does not meet the unnecessary hardship test in statute and case law).	State that zoning administrators or a designated board or committee have authority to issue permits for structures or modifications within 75-foot setback to access the principal structure if required by ADA, FFHA, or WFHA. The permit is only valid if standards are met. Some proof of disability would be required. No variance needed, but permit would expire when the disabled person leaves the property, and structure modifications would have to be removed if feasible. Permit expiration should be recorded on deed so purchasers are aware that structure modifications would have to be removed.	x	x	x	

2. NONCONFORMING USES, STRUCTURES, AND LOTS

Current Standard – NR 115 specifically allows for the continuation of a lawful existing use of a building, structure, or property which predated the shoreland ordinance or amendment, even if the structure does not conform to the requirements of the new ordinance. Such structures are considered to be a legal nonconforming use. Nonconforming uses in the shoreland zone are treated similarly to those under general zoning (s. 59.69(10) Wis. Stats.). The county may prohibit the alteration, addition, or repair of such a structure if the cost over the life of the structure or building exceeds 50% of the equalized assessed value of the building or structure. The discontinuation of a nonconforming use for 12 months results in the loss of the property's legal nonconforming use status.

Issue	**Possible Option**	**Expected Benefit**			
		Regulatory Relief for permittees	**Administrative Relief for ZAs**	**Clarity**	**Better Resource Protection**
2.1 The rule does not contain a policy statement on nonconforming uses, structures, and lots. The intent of statute (and zoning practice in general in the U.S.) is to allow repairs and maintenance to nonconforming structures, but to eventually bring them into compliance with setbacks and other ordinance requirements, is not being met by use of the 50% rule.	Add policy statement that nonconforming limitations are for the purpose of preventing the impacts to water quality, natural beauty, and habitat caused by the unlimited expansion of these structures.	x	x	x	x
2.2 The "50% of value" standard has proven to be difficult to track, and therefore is inconsistently administered. At the same time, there is a growing need to control the expansion of nonconforming structures in the shoreland zone, due to the impacts from the trend toward expanding small seasonal cottages close to the water into year-round homes. Even when the 50% cap has been exceeded on these expansions, applicants are often able to obtain a variance from the Board of Adjustment for such expansion, although they are often not justified according to statutory standards for granting a variance.	Replace "50% rule" with an easier-to- administer expansion limitation for principal structures: Within 50 feet of OHWM, no expansion of footprint of principal nonconforming structure. 50- to 75-foot of OHWM: principal nonconforming structures may expand up to lifetime cap of 25% of footprint, also with a volume limit, height limit for vertical expansions, and 1500 sq ft absolute cap; additions must be landward of existing building line; owner implements and maintains plan approved by LCD to restore natural aesthetic, habitat, and water quality protection values of vegetative buffer. Require a record keeping and permitting system adequate to regulate. Do not allow expansion of nonconforming accessory structures.	x	x	x	x

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Issue	**Possible Option**	**Expected Benefits**			
		Regulatory Relief for Permittees	**Administrative Relief for Z.A.s**	**Clarity**	**Better Resource Protection**
2.3 Current statutory language for counties regarding nonconformities is permissive; that is, it says that counties may limit the expansion of nonconformities. In the last fey years, some counties have begun amending their ordinances to remove some or all limitation of nonconformities, realizing that the statute is permissive. However, NR 116 (floodplain management) contains mandatory restrictions on nonconforming expansions The literature review concludes that in terms of increasing environmental and aesthetic impacts, expansions of nonconforming structures are of greatest concern, since they create a greater risk for sediment delivery during construction, destruction or buffer vegetation, and greater visual intrusiveness. Interior remodeling is of lesser concern (a situation different than that faced by floodplain planners where the emphasis is on removing nonconforming structures because of the risks they pose to life, health, and property).	Change "may" to "shall" and require a nonconforming structure expansion limit, as described in option for 2.1. (Change would be consistent with NR 116 requirement).			x	x

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Issue	**Possible Option**	**Expected Benefit**			
		Regulatory Relief for Permittees	**Administrative Relief for ZAs**	**Clarity**	**Better Resource Protection**
2.4 The DNR provides staff and cost sharing assistance to county land conservation departments and individual landowners for projects with water quality goals where implementation sometimes can be in conflict with the letter of the NR 115 wording. Example: structural improvements to failing barnyard runoff control structures to protect waterways can easily exceed the limitation on nonconforming structure expansion.	Barnyard runoff control structures - allow ZA to permit structural alteration in excess of nonconforming structure expansion limits if for water quality improvement and if moving the structure back to 75 feet is not feasible.	x	x	x	x

3. VEGETATIVE CUTTING STANDARDS

Current Standard—Vegetative cutting standards are required in order to protect natural beauty; control erosion; and reduce the flow of effluents, sediments, and nutrients from the shoreland area. In the strip of land extending inland from the OHWM 35 feet, clear-cutting of trees and shrubbery must not occur more than 30 feet in any 100 feet of width. The removal of dead, diseased, and dying trees is allowed. In shoreland areas beyond 35 feet inland of the OHWM, cutting of trees and shrubs is governed by consideration of the effect on water quality and consideration of sound forestry and soil conservation practices.

Issue	Possible Option(s)	Expected Benefit			
		Regulatory Relief for permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
From the standpoint of establishing an effective shoreline buffer for water quality, natural beauty, and habitat this is the key standard, yet it is the most poorly implemented.					
3.1 "Trees and shrubbery" as a heading doesn't convey the idea of the shoreline buffer or the ecological value of the riparian zone. It is important to clearly state the purpose of these standards as preserving/establishing a natural buffer for water quality, natural beauty, and habitat along public interest waters.	Describe this section as "Vegetated Shoreline Buffer" or "Preservation of Natural Shoreline Transition Zone" and use that terminology throughout (requirements would extend to non-woody vegetation).			x	
3.2 The allowance to clear "30 feet in any 100 feet" is difficult to understand and can cross lot lines. A standard that applies to each lot would be easier to enforce/administer. On shorelines with lots wider than 100 feet this would preserve more overall natural shoreline but would preserve less natural shoreline on lakes with narrower lots.	Replace allowance to clear "30 feet in any 100 feet" with allowing 30 feet of shoreline to be cleared per lot for an "access and viewing corridor." Allow 20-foot corridor for lots less than 100 feet wide. Require minimizing soil disturbance during clearing of the corridor.		x	x	x

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Issue	**Possible Options**	**Expected Benefit**			
		Regulatory Relief for Permittees	**Administrative Relief for ZAs**	**Clarity**	**Better Resource Protection**
3.3-3.5 Standards for 35-foot Buffer Zone (not corridor) in Residential areas. 3.3 Clear-cutting is not defined, and "do not clear-cut" could be interpreted to allow almost total removal of existing vegetation, with loss of the buffer's function.	<u>Options to address issues 3.3-3.5</u> 1. From OHWM—35 feet inland, do not allow any vegetative cutting (including mowing in shoreline buffer area); unless its a necessary step in a plan (approved by ZA in consultation with DNR water management, private land, wildlife manager, or natural areas specialists) to restore or improve the water quality, habitat, or natural beauty functions of the shoreline buffer area. Allow the removal of dead/diseased trees only for safety reasons.		Hard to enforce		x
3.4 Allowing the removal of "dead, diseased, and dying trees and shrubs" creates a large loophole by providing an after-the-fact justification for vegetative cutting that is impossible for a ZA to verify. Dead and dying trees provide many important ecological functions along the shoreline and their removal has a negative impact on fish and wildlife habitat (documented in literature review).	2. Apply the above standards with the same exceptions for restoration plans to a 15-foot "no disturbance zone"—no cutting, mowing, brushing, except in access corridor. From 15 to 50 feet allow limited cutting (could use Forestry's BMP standard of maintaining 60 square feet basal area/acre in trees 5 inches DBH and larger), and allow brushing and mowing. 3. Allow clear-cutting in a 25-foot zone around conforming residence for safety reasons.		More complex		x x
3.5 Conversely, some vegetation alteration that would be beneficial to habitat (clear-cutting undesirable non-native species to restore natural stream bank vegetation, or establishment of prairie for example) is problematic under the current rule.	Note: Extensive public education is required on the benefits of natural shorelines for either option to work.	x		x	x
3.6 Lakes that are already heavily developed have lost virtually all their natural shoreline.	Require vegetative mitigation (screening and habitat) for nonconforming structure expansions.				x

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Issue	**Possible Options**	**Expected Benefit**			
		Regulatory Relief for Permittees	**Administrative Relief for ZAs**	**Clarity**	**Better Resource Protection**
3.7 Shoreland cutting standards are not being applied in agricultural settings, which usually are already cleared. Therefore, the "don't clear-cut" language does not apply. Also cleared areas for viewing and access every "30 feet in 100 feet" are not needed. However, there is a very clear need for an effective buffer for water quality in agricultural lands.	1. Develop special standards for agriculture (define using statutory definition consistent with ch. 30) in NR 115 . These could be similar to those being developed as a Riparian Buffer Interim BMP by Priority Watershed program.			x	x

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Current Standard – Vegetative cutting standards are required in order to protect natural beauty; control erosion; and reduce the flow of effluents, sediments, and nutrients from the shoreland area. In the strip of land extending from the OWHM 35 feet, clear-cutting of trees and shrubbery must not occur more than 30 feet in any 100 feet of width. The removal of dead, diseased, and dying trees is allowed. In shoreland areas beyond 35 feet inland of the OWHM, cutting of trees and shrubs is governed by consideration of the effect on water quality and consideration of sound forestry and soil conservation practices.

Issue	Possible Options	Expected Benefit			
		Regulatory Relief for Permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
3.8 The existing "30 feet in any 100 feet" clear-cut standard focuses on residential development. The rule references "sound forestry practices" but otherwise does not address silviculture. The Bureau of Forestry addresses water quality issues along streams and lakes with its BMP for water quality manual and they are monitoring the implementation of these voluntary BMPs. Around navigable perennial streams they suggest a 50-foot "no equipment" zone and a 100-foot "selective harvest" zone. There is evidence from the literature that riparian zone buffers should be wider to create effective habitat buffers for area-sensitive species.	Write special standard for timber harvest: eliminate "30 feet in any 100 feet" clear-cut allowance AND 1. Develop comprehensive standards now, such as: - 35-foot buffer width, in which - timber harvest must leave at least 60 square feet of basal area per acre in trees 5 inches in diameter or larger, evenly distributed (easy to learn how to measure this) - any harvesting plan leaving less basal area must be approved by ZA in consultation with DNR forester, private lands specialist, wildlife manager, fisheries manager, or natural areas specialist.		requires some training	x	x
	OR 2. Based on monitoring results, consider adopting Forestry BMP guidelines (more protective than option 1) as standards for timber harvesting at some future date.		greater workload	x	x
	AND 3. Work with Forestry, Endangered Resources, and Research to address biodiversity concerns identified in literature review by providing habitat buffers in certain riparian zones identified as important habitat.				x

4. LOT SIZES AND WIDTHS

Current Standards — Minimum lot sizes are established for the shoreland zone to afford protection of health, safety and welfare, and protect against pollution of the adjacent body of water. Lots served by a public sanitary sewer must have a minimum average width of 65 feet and a minimum area of 10,000 square feet. Lots not served by a public sanitary sewer must have a minimum average width of 100 feet and a minimum area of 20,000 square feet.

Issue	Possible Option(s)	Expected Benefit			
		Regulatory Relief for Permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
4.1 The literature review has called into question the wisdom of allowing smaller lot sizes and widths as an incentive for providing sanitary sewer service. Lot sizes are an important means of controlling the cumulative impacts of shoreline development. Smaller lot sizes and widths in a sewered subdivision result in increased cumulative impacts to shoreland and near-shore habitat. The increased impact of denser development makes trading smaller lots for sewer service an unwise trade. Denser development allowances should be done in the context of cluster development standards—see next issue 4.2.	Eliminate the provision for smaller lots on sewered subdivisions. Allow denser development through Cluster Standards.		x	x	x
4.2 Increased density of development can be accomplished if done with appropriate *Cluster Development* standards. The benefits of cluster development design are the ability to provide for a greater amount of natural shoreline buffer and design in harmony with landscape features as opposed to traditional lake and river subdivision design. However, NR 115 does not currently allow relaxation of minimum lot width and size requirements to accommodate clusters of smaller lots in the shoreland.	Develop *Minimum Cluster Development Standards* modeled after standards used by Minnesota's Shoreland Management Program, which feature a trade-off of greater open space along the shoreline for increased overall density that is clustered farther back from the shore. Apply Cluster Standards to Condominiums and Resort conversions.	x	Greater workload Greater workload	 x	x x

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Issues	Possible Options	Expected Benefit			
		Regulatory Relief for Permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
4.3 Backlot/Keyhole Development As available waterfront property is developed on many lakes, interest shifts to developing second and third tiers of lots that do not front on the water but do have the right of access to the water through a keyhole lot. The number of lots which have access through the keyhole and the width of the keyhole lot have important implications for the amount of use the lake is asked to sustain and the disturbance to adjoining riparian lots. NR 115 is currently silent on these issues.	1. Municipalities are currently able to adopt ordinance provisions to address these issues, and the DNR could provide guidelines to assist them. 2. Add minimum standards for keyhole lots to NR 115.			x x	x x

5. WETLANDS

Current Standard - Wetlands within shorelands must be regulated by counties, cities, and villages. The county requirements are found in NR 115, and city and village requirements are governed by NR 117. Wetlands in the shoreland zone that are shown on the Wisconsin Wetland Inventory maps (usually limited to wetlands or portions of wetlands either 2 or 5 acres in size or more) are regulated. The shoreland-wetland district is usually an overlay onto existing zoning classifications and supersedes any other less restrictive zoning requirement. Permitted uses in county-zoned wetlands are limited to open-space uses enumerated in NR 115. These uses include: hiking, fishing, trapping, hunting, and recreational uses; harvesting wild crops, silviculture, and agriculture; construction and maintenance of piers, docks, walkways provided that no filling, flooding, dredging, draining, ditching, or excavating is done; and certain utility and transportation uses. All other uses are prohibited unless the applicant is successful in having the property rezoned to a zoning district other than shoreland-wetland. Rezoning is prohibited if it results in significant adverse impact on wetland functions and values. Similar limitations apply to shoreland-wetlands in cities and villages, although there are a few additional permitted uses, and cities and villages are not required to allow all of the uses in the list above.

Issue	**Possible Option**	**Expected Benefit**			
		Regulatory Relief for Permittees	**Administrative Relief for ZAs**	**Clarity**	**Better Resource Protection**
5.1 Staff and others over the years have suggested open-space type and other activities compatible with wetlands and existing permitted uses, that arguably should also be explicitly permitted by the shoreland and shoreland-wetland programs.	Allow all utility crossings (could use COE definition from NWP 12) if there is no alternative and impacts are minimal; allow snowmobiling if no filling, excavating, draining, or ditching is done.	x	x		
5.2 The literature review concludes that a buffer of 50-100 feet around wetlands is the minimum necessary to protect most wetland functions.	1. Require wetland buffer establishment (perhaps only structure setbacks). OR 2. Work with counties to incorporate standards more protective of wetlands into their ordinances.		Greater workload Greater workload		x x

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Issues	**Possible Option**	**Expected Benefit**			
		Regulatory Relief for Permittees	**Administrative Relief for ZAs**	**Clarity**	**Better Resource Protection**
5.3 Current NR 115 requirement is that ALL wetlands on final Wisconsin Wetland Inventory maps are regulated, but this has been officially ignored by most, but not all, counties. Model ordinance language says wetlands 5 acres or more are regulated, as does NR 117. The literature review and field experience supports that smaller wetlands than those regulated in shoreland zoning also need protection.	1. Clarify in rule that all wetlands in the shoreland, regardless of size, that are shown on the Wisconsin Wetland Inventory may be zoned. OR 2. State in both NR 117 and NR 115 that shoreland-wetlands of the size used as the minimum map unit by the Wisconsin Wetland Inventory update process (currently 2 acres, not 5) are required to be zoned. About half the counties are now mapped at 2 acres. OR 3. Amend to be consistent with city and village shoreland-wetland rules (NR 117), the shoreland zoning model ordinance, and the practice in many counties, by stating that wetlands greater than 5 acres in size are zoned.	 x	 x - but would undercut some counties	 x x	 x less protective

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Issues	Possible Options	Expected Benefits			
		Regulatory Relief for Permittees	Administrative Relief for ZAs	Clarity	Better Resource Protection
5.4 Clarify Wisconsin Wetland Inventory amendment process/decisions on regulation. Model ordinance recognizes the situation where WWI map shows a wetland that does not exist and grants ZA authority to immediately take action; but is silent where a wetland exists but is not mapped.	When a wetland is present in the field, yet not identified on the Wisconsin Wetland Inventory map, ZAs should be able to take action immediately based on field conditions, while initiating the map amendment process. This could be done by adding the phrase "...or incorrectly mapped as non-wetland" to Model Ordinance section 8.11 and incorporating into NR 115.		x		x
5.5 Some updated Wisconsin Wetland Inventory maps are not adopted by counties for long periods and should be amended into shoreland zoning ordinances more quickly for applicant equity and resource protection. Counties currently can amend their map after a public hearing is held - NR 115.05(2)(b)2 and s.59.69(5)(e)2., Stats., but no time limit is given.	1. Require in rule that county must amend ordinance to include updated Wisconsin Wetland Inventory maps within 6 months after receiving the updated map from the DNR (consistent with NR 116). (The feasibility of this approach depends on what process is required; if the updated WWI map is treated as a preliminary WWI map, the process would create a heavy workload for field staff, if treated as a ordinance map amendment the workload may be manageable.) Incorporating WWI updates could be scheduled so as to minimize the number of map amendments. 2. State that if a fill is proposed in a wetland shown on the WWI but county ordinance has not yet been amended, ZA can make a decision based on field conditions while initiating the map amendment process.		 x	x	x x

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Issues	**Possible Option**	**Expected Benefits**			
		Regulatory Relief for Permittees	**Administrative Relief for ZAs**	**Clarity**	**Better Resource Protection**
5.6 The permitted uses for shoreland-wetlands in counties (NR 115.05(2)(c)) are different from uses permitted in shoreland-wetlands located in cities and villages. Currently, cities and villages **may** permit, prohibit, or conditionally permit the list of wetland uses; while counties are **required** to permit all listed uses (meaning that counties are not permitted to be more restrictive than NR 115).	Allow counties the same flexibility as cities/villages in setting wetland permitted uses; so that counties can also prohibit or conditionally permit certain wetland uses.			x	x

6. FILLING AND GRADING

Current Standard - Filling, grading, lagooning, ditching, and excavating are permitted only in accordance with the appropriate state permits under ch. 30, Stats., county shoreland-wetland zoning requirements, and county approvals to ensure that such activities are done in a manner designed to minimize erosion, sedimentation, and impairment of fish and wildlife habitat.

Issue	**Possible Option(s)**	**Expected Benefit**			
		Regulatory Relief for Permittees	**Administrative Relief for Z.A.s**	**Clarity**	**Better Resource Protection**
6.1 NR 115 language on filling and grading is very general. Some counties do not have sufficient shoreland ordinance provisions to assure that filling and grading is "done in a manner designed to minimize erosion, sedimentation, and impairment of fish and wildlife habitat." Also, in many counties, applicants proposing grading in excess of a certain area and slope (e.g., 2000 square feet, 20% slopes) must seek a conditional use permit from the Board of Adjustment or Planning and Zoning Committee. Most of these local officials do not have the training necessary to critically evaluate these applications.	1. Require Conditional Use Permit for projects exceeding the size and slope triggers in the 1985 Model Ordinance. CU permit should require erosion control plans prepared in accordance with *Construction Site BMP Handbook*. OR 2. On land that is within 100 feet of and draining toward navigable water: A. Excavation, filling, and grading may only take place if needed to construct a permitted principal or accessory structure or address a demonstrated erosion problem. B. Any excavation, filling, or grading shall require submittal and adherence to an erosion control plan in accordance with the *Construction Site BMP Handbook*, unless the provisions of Comm 20 and 21 apply or an equally effective (compared to BMP Handbook) erosion and sediment delivery ordinance applies.		x	x	x
6.2 Often it is the removal of vegetation that causes the need to grade and fill on steep slopes. Grading and filling on very steep slopes is unlikely to be accomplished without excessive sediment delivery.	Prohibit any excavation or other soil disturbing activity on slopes greater than 30%.		x	x	x

7. OTHER
A variety of current standards and concerns.

Issue	Possible Option	Expected Benefit			
		Regulatory Relief for permittees	Administrative Relief for Z.A.s	Clarity	Better Resource Protection
7.1 Lack of state shoreland zoning staff, and state funding and staffing support to ZAs. This program has been referred to by ZAs as the original unfunded mandate, in contrast to neighboring Minnesota's program, which directly subsidizes counties for shoreland zoning implementation.	1. Explore legislative mechanisms to provide funding and staff support to counties. For instance, make ZAs state-funded employees similar to District Attorneys, or state/county-funded similar to County Extension Agents. 2. Encourage counties to amend permit fee structure to more fully support staff. 3. Explore ways of providing more direct legal/program support to counties and state zoning program staff.		x x x		x x x
7.2 Current rule gives the DNR limited authority to directly pursue shoreland zoning violations, and this is inconsistent with the floodplain program's ability to intervene to address violations.	Add direct enforcement authority similar to floodplain program authority in s. 87.30, Stats., so that DNR can pursue local violations when local officials are unwilling or unable. Requires statutory change		x		x
7.3 A concern raised by legislators and citizens: difference between shoreland requirements for counties and villages/cities. Many city and village areas are also relatively undeveloped, and any shoreland alteration could have significant impacts on shoreland zoning objectives.	Require incorporated villages and cities to adopt shoreland zoning standards for areas currently developed at low densities (defined by minimum buildings per acre). Requires statutory change			x	x

7. OTHER
A variety of current standards and concerns

Issues	Possible Options	Expected Benefit			
		Regulatory Relief for permittees	Administrative Relief for Z.A.s	Clarity	Better Resource Protection
7.4 The DNR is not always notified when a county shoreland zoning decision is appealed (e.g., when the DNR was not a party to initial action). An adverse precedent could be set without the department being able to provide legal expertise.	Require County to notify the DNR of any stipulation or other agreement to settle a shoreland enforcement case. Also, require notice of appeal to Circuit Court of a Board of Adjustment decision				x
7.4B Permit application process/DNR notice. Zoning applications often do not contain adequate information. Site diagrams do not include decks, patios, impervious surfaces, plans for vegetative cutting. It is unclear which projects require notice to DNR staff, and what information related to these projects must be submitted to the DNR. Notice alone is often not enough for staff to determine whether or not to be concerned.			x	x x	x x

7. Other
A variety of current standards and concerns.

Issues	Possible Option	Expected Benefits			
		Regulatory Relief for permittees	Administrative Relief for Z.A.s	Clarity	Better Resource Protection
7.5 Many new waterfront property owners are not aware that their property is subject to a minimum structure setback and a zone in which removal of vegetation is subject to restrictions. Many problems with compliance and enforcement are related to this lack of awareness.	Advocate for an addition to the platting statute that requires the applicable structure setback line and the vegetative cutting restriction zone be shown on all subdivisions of land (certified surveys and plats).		x	x	x
7.6 The 1,000-foot shoreland zone can be problematic for some small ponds (legally, a pond is treated as a lake) that meet the navigational waters criteria but have small watersheds such that the watershed divide is less than 1,000 feet from the OHWM. It is hard to justify a jurisdictional area that exceeds the watershed of the body of water that standards are designed to protect.	1. Change NR 115 definition of shoreland for lakes, ponds, and flowages to "1,000 feet from a lake, pond or flowage, or to the watershed divide of the lake, pond or flowage, whichever is smaller, but not less than 300 feet from the OHWM;..." OR 2. Add provision that the shoreland zone for lakes, ponds and flowages less than a certain size (2 acres?) and shall extend a certain distance (300 feet?) Note: Both changes regarding shoreland zoning jurisdiction require a statutory change and must be coordinated with potential legislation affecting the definition of navigability.	x x	greater workload x	less clear x	

7. Other

A variety of current standards and concerns.

Issue	Possible Option	Expected Benefit			
		Regulatory Relief for permittees	Administrative Relief for Z.A.s	Clarity	Better Resource Protection
7.7 Some small, human-made ponds/lakes sometimes meet the navigable waters definitional criteria, creating a 1,000-foot shoreland zone that often exceeds the boundaries of the pond's watershed. Neighboring properties become subject to shoreland zoning by virtue of the pond's creation. If created between 1963 and 1988 and within 500 feet of another navigable water body, the pond is considered navigable, with a 1,000-foot shoreland jurisdictional zone, without a determination of whether or not there is a public interest in the pond. For human-created ponds where there is no public interest, it is hard to justify any jurisdictional zone.	1. Change NR 115 definition of shoreland for lakes, ponds and flowages to "1,000 feet from a lake, pond, or flowage, or to the watershed divide of the lake, pond or flowage, whichever is smaller, but not less than 300 feet from the OHWM;..."	x	greater workload	less clear	
	OR				
	2. Add provision that the shoreland zone for lakes, ponds and flowages less than a certain size (2 acres?) shall extend a certain distance (300 feet?). Setting appropriate size trigger and jurisdictional distance will require data analysis to determine impacts of the change.	x	still have zone around waters with no public interest	x	
	OR				
	3. Propose a statutory change to eliminate jurisdiction over human-made ponds when there is no public interest in the pond.	x	x	x	
	Note: All three options regarding shoreland zoning jurisdiction require a statutory change and must be coordinated with potential legislation affecting the definition of navigability.				

4.3 Classification of Water Bodies for Shoreland Zoning Purposes

An idea which holds some promise for addressing the varying resource character across the state is to institute a classification system linking varying shoreland regulations to different classes. There are many different reasons to classify, ranging from purely scientific, descriptive purposes (e.g., eutrophic) to purely regulatory or jurisdictional (e.g., navigable). Classification systems for land-use planning purposes typically combine a measure of existing development patterns with measures of an area's suitability for different types of development and identify land that is more sensitive to degradation from foreseeable development impacts.

Various stakeholders have expressed strong interest in developing a classification system. Most of this discussion has been in the context of classifying lakes, but stream classification could be done, and a nationwide classification system for wetlands was proposed in the last session of Congress. There is a need for clarification and dialog on what different groups want a classification system to achieve. The discussion below presents some initial considerations with regards to developing a classification system linked to shoreland regulations.

4.3.1 Statewide Classification

A statewide lake classification system, for example, would allow zoning regulations to be more sensitive to regional differences in existing development patterns. A classification system that is influenced by existing development density is one way of realistically recognizing the limitations of zoning controls in developed areas. For instance, such a system may provide for more protective density controls in northern Wisconsin, while recognizing the difficulties of enforcing regulations on densely developed lakes in southern Wisconsin.

A statewide classification process presents several difficulties. Wisconsin has over 15,000 inventoried inland lakes alone, for which there exists a reasonable amount of data. There are also many small lakes that are not inventoried. Some potentially useful data, such as shoreline length and surface water area, may be easily obtainable from the DNR Surface Water Inventory. For other criteria, such as existing development density and soil type, land information availability and quality varies widely from county to county. For instance, in some counties individual structures can be reliably located and inventoried, and detailed soils data are available. In other counties soil surveys and parcel ownership data are incomplete. Gathering the necessary data for the whole state would require a major expenditure of time and money.

Developing criteria that are uniform across the state would also be a major hurdle. The resulting system would have to be based on simplistic distinctions, using readily available data on lake and watershed characteristics. A public review of the resulting classifications is essential. Recognizing the inherent limitations of such a system, provisions for reclassification based on new data or unique conditions must be made. The same considerations hold true for classifying Wisconsin's roughly 50,000 miles of streams and rivers, but the data problems would be even greater, forcing the use of a very simplistic set of criteria.

Wisconsin has mapped more than 5 million acres of wetland, ranging across a wide spectrum of vegetative and hydrologic types. The Wisconsin Wetland Inventory (WWI) classifies wetlands according to vegetative type, hydrology, human influence, and other wetland characteristics. Revision of the WWI is an ongoing process. However, the WWI classification system is a scientific, descriptive system that does not include information on functional values. It could not serve as a link to differential regulation based on functional value.

Most wetland regulatory decisions are about whether to permit wetland destruction. A decision on the continued existence of a specific wetland requires a full accounting of its value to society. A wide range of functional values must be considered (e.g., flood storage, wildlife habitat, water quality, recreation, etc.). Site specific factors cause extreme variation in functional value, even among wetlands of the same type and in the same region. For these reasons, evaluation of functions and values is best done on an individual, case-by-case basis. Assigning uniform functional values to wetlands of a certain type across a large geographic area is not feasible or appropriate.

Some delineation and inventory projects have evaluated wetland functions. These have concentrated on limited geographic areas and have involved intensive field work requiring a broad range of scientific expertise. The department's experience with wetland evaluation methods indicates that an attempt to develop a statewide wetland classification system offering a scientifically defensible evaluation of function would be prohibitively expensive and time consuming.

4.3.2 Regional Classification

A somewhat less cumbersome and more flexible alternative to a statewide project would be lake classification at the regional, county, or township level. This could be undertaken as part of a comprehensive land-use plan or as a revision of a county's or town's shoreland zoning ordinance and could be done by a regional planning commission, county planning department, or by a county or town planning or zoning committee. Lake and watershed characteristics and processes vary widely across the state. The DNR's role could be to provide technical assistance to help counties understand the basic physical and biological factors at work in their ecoregion. The DNR could also help in identifying unique lake characteristics for a particular region that merit consideration. These special characteristics will not be the same across the state.

While measures of environmental quality would be very difficult to incorporate into a statewide classification system, with a more manageable project size there may be better opportunities for fine-tuning the system. DNR staff may be able to assist in identifying priority areas of existing high-quality riparian and littoral zone habitat that justify more protective shoreland zoning standards. Community involvement would also be easier to facilitate.

Any classification that results in new setback and density standards would still create winners and losers among current property owners, in terms of the profitability of subdividing property and nonconforming structure issues. The classification system must have a strong scientific basis and a clear link to the public interest to justify the accompanying standards.

Classification systems would likely focus on different issues in different regions, counties, and townships. The design of any system should be based on the goals the community is trying to accomplish and on the tools available to the community to accomplish those goals. For example, a classification system linked to shoreland standards would be designed differently than one linked to fish-stocking policy or wastewater treatment. DNR technical assistance can aid communities in designing a system that meets their goals.

It would be desirable for the DNR to develop a basic framework or set of standards for classifying water bodies that any classification system and resulting shoreland standards must meet. This would allow the shoreland program to verify that local standards are adequate to meet statutory objectives.

Literature review findings indicate that current NR 115 mandated standards are at least minimally effective for most situations. There appear to be few situations in which standards less restrictive than current minimums would not lead to greater impacts on water quality, habitat, and natural beauty, especially for any new development. The case for using a classification system to identify water bodies for less restrictive standards seems to be that a long-established pattern of nonconforming development already exists, such that buffer functions no longer exist. However there is a growing interest by community groups in restoring urban streams and lakes. Standards would have to be designed to avoid foreclosing on the possibility of successful shoreline and near-shore restoration in the future.

For any water body receiving less protective standards as a result of its classification, public involvement and support would be especially crucial. A vote of the riparian owners on that water body would be one way to ensure their property interests are safeguarded by the new standards.

4.4 Research Recommendations

There have been great advances in the understanding of aquatic and riparian ecology, soils and hydrology, and the sediment-trapping ability of vegetated buffers, as well as in the public perception of natural beauty, since the shoreland program was conceived and initiated in the late 1960s. Nevertheless, the professional judgement on which the shoreland standards were based has held up surprisingly well.

There are still gaps, primarily in quantifying the impacts of shoreland development, the mechanisms by which they occur, and their physical and ecological ramifications. The Shoreland Management Program should continue to cooperate with fish ecology, wildlife ecology, limnology, hydrology, and runoff management researchers within the department and in academia to address the gaps in assessing impacts to aquatic and riparian resources. Several needs have been identified:

- Quantify the relationship between littoral zone habitat quality and quantity and shoreland development variables. The association of fish with littoral habitat structure is well established. However, the effect of different shoreline activities on littoral habitat structure and the mechanisms by which habitat modification affects invertebrate, herptile, and fish communities should continue to be investigated. The eventual goal of this line of research should be a better understanding of the relationship of shoreline modification to changes in aquatic communities.

- Document the relationship between shoreline development and bald eagle, loon, mink, breeding songbird, and amphibian abundance across a range of lake and river types and littoral and riparian vegetative communities. These studies can provide a starting point for a research effort that might ultimately identify critical habitat needs of many species sensitive to degraded water quality, alteration of riparian vegetation, and disturbance from human activities and human-associated competitors, parasites, and predators (e.g. dogs, cats, raccoons, squirrels, cowbirds, grackles, crows, etc.). The habitat needs of these sensitive species can be used to identify critical shoreline habitat and help develop regional guidelines for a buffer adequate to protect these species.
- Develop a shoreline assessment methodology for the habitat quality of lake riparian areas and littoral zones, similar to that which exists for streams. Such a methodology could be utilized in prioritizing, and perhaps monitoring, riparian and near-shore conservation and restoration efforts. It could also be used as an educational tool.

- Continue to develop modeling capabilities to better evaluate the effectiveness of vegetative buffers to trap sediment and remove nutrients from runoff.

- Quantify the economic benefits of minimizing shoreland development impacts.

5. SUMMARY OF EXTERNAL COMMENTS ON DRAFT REPORT

As sections of the report were completed they were circulated for internal review by the wide range of DNR program experts that work on similar water quality and wildlife issues. Review comments have also been solicited on these sections from individual external reviewers chosen to be representative of the main groups that interact with the shoreland program. The purpose was to improve the report by gathering constructive criticism from segments of the public most affected by the shoreland program. The external reviewers were not intended to be an Advisory Committee, and did not meet as a group. Relevant comments from outside the designated external reviewers are also summarized here.

EXTERNAL REVIEWERS

Groups affected by shoreland zoning, and representative organization	Reviewer who will help represent that viewpoint in shoreland zoning study
Zoning administrators, building inspectors: Wisconsin County Code Administrators	Becky Frisch, Director, Langlade County Land Records and Regulation
Waterfront property owners who must comply with shoreland regulations: Wisconsin Association of Lakes	Judy Jooss, Wisconsin Association of Lakes
Development professionals: Wisconsin Builders Association Wisconsin Realtors Association	Jerry Deschane, Executive Director, Wisconsin Builders Association (agreed to work with William Malkasian, Executive Vice President of Wisconsin Realtors Association, to provide a cross section of practical, on-the-ground perspectives from builders and realtors around the state)
Environmental groups concerned about planning and development issues: Northwoods Conservation Association	Susan Knight, President, Northwoods Conservation Association
Professionals who assist local governments and citizens: University of Wisconsin-Extension	Mike Dresen, College of Natural Resources, UW-Stevens Point
Local elected officials	Evelyn Maloney, Chippewa County Board and Planning and Zoning Committee Member Myron Ehrhardt, Chair, Dodge County Board of Adjustment and past Town Board member

This process was chosen so that the project would receive feedback throughout its preparation and reviewers could concentrate on discrete manageable sections rather than being asked to review the entire report. Some of the responses have already been incorporated into this final draft. For instance, much of the Program Support Initiatives Table has been based on reactions to an earlier list of potential technical assistance resource materials and ideas generated by individuals commenting on earlier drafts of the report. Because these ideas are already incorporated they are not covered in detail here.

In many cases, commenters had conflicting views on the issues. For this reason, the final draft has not been greatly changed, but this section serves to acknowledge the wide range of perspectives on the issues raised in the report.

The majority of the comments received related to the two option tables for program improvement. These will be summarized separately and indexed to the numbering system used in the table.

5.1 Comments on NR 115 Issues and Options Table

To aid in evaluating the many issues presented in the table (Section 4.1.1), the reviewers were given a rating sheet on which they could indicate the priority of the issue, the desirability of the proposed option, and the feasibility of implementing the proposed option. Some reviewers found this helpful, others found it cumbersome, so the summary below varies in the degree the rating system is reported.

Development Professionals - Wisconsin Builders Association (WBA)

Gerard Deschane, Executive Director of the Wisconsin Builders Association (WBA), circulated copies of the table to builders and developers in Wisconsin. WBA reviewers had strong negative reactions to many of the options in the table and indicated that much more time is needed to more fully discuss their impact. They felt that sweeping changes were being proposed which would have a very broad potential impact on property throughout much of Wisconsin and wanted more background information on the proposals. Options which would strengthen regulatory controls or allow greater DNR involvement were given strongly negative ratings.

At the same time, there were some comments acknowledging the need for the state to stay involved in maintaining minimum standards and guidelines for town and county boards. One commenter supported replacing the 50% of value standard with a more workable one, such as allowing only a 50% expansion of the footprint of nonconforming structures. One commenter suggested current minimum standards are adequate and owners of expensive lakefront property should be allowed to use and enjoy the lake, including being able to see it. Another commented that it should not be the landowner's responsibility to provide wildlife habitat along the shoreline and stated that proper development can improve the shoreline's appearance.

There was some support for putting more emphasis on controlling farm runoff than on controlling development. Also the need to provide sizeable buffers during logging operations was stated.

Forestry Groups/Paper Industry

Although no specific external reviewer was established for forestry-related concerns, the forestry-related sections of the table were discussed internally with the Bureau of Forestry. The table was sent to six forestry associations and councils and two responses from the paper industry were received.

Issue 3.8 deals with the current lack of specific standards for forestry practice and lists three possible options. Both commenters preferred option 2 — adopt standards consistent with existing Forestry Best Management Practices for Water Quality. They felt this option would provide greater regulatory consistency than option 3 — developing standards to address biodiversity needs in important riparian habitat areas. One commenter stated that addressing biodiversity concerns is outside the intent of NR 115 and would be an unwarranted expansion of the current rule. Both also opposed requiring a buffer that includes restrictions on silviculture around wetlands. Both responders suggested working with the Wisconsin Paper Council and other forest industry representatives on any proposals affecting forestry practices.

Wisconsin County Code Administrators

As the day-to-day administrators of NR 115, members of the Wisconsin County Code Administrators (WCCA) are acutely aware of the shortcomings and strengths of the current rule. WCCA formed an Ad-Hoc NR 115 Committee to develop a formal position based on the Issues and Options Table. After meeting with district members, the committee drafted a list of twelve top-priority issues. The list was approved by the Executive Board and the general membership at the WCCA 1997 spring conference.

Three issues were unanimously identified as high priority issues to address statewide:

1.1 Definition of "structure;"
1.9 Setback averaging;
2.1 Replacing/clarifying the "50-percent-of-value" rule for nonconforming structures.

Other identified priorities included:

1.5 Allowances for stairways and walkways in setback areas;
2.3 Permissive language in rule regarding regulation of nonconforming structures;
1.2 Allowance for some minor structures in setback areas;
1.6 Restrictions on boathouse location and dimensions;
3.2 Clarification of "30 feet in any 100 feet" language for vegetation removal;
3.3 Clarification of "clear-cutting" language for vegetation removal;
3.7 Applicability of vegetation removal restrictions in agricultural areas;
7.2 Enforcement authority for DNR field staff;
5.3 Clarification of the minimum size of shoreland-wetlands to be regulated.

The NR 115 Committee intends to work with districts and the WCCA Executive Board to develop a specific set of recommendations as to how to address these priority issues by the spring of 1998. In informal discussions, WCCA members acknowledged differences in opinion between Zoning Administrators serving largely undeveloped northern counties and those serving more urbanized counties, especially in the southeast. Many WCCA members have expressed interest in lake classification as a means to resolve such regional differences. WCCA members and the Executive Board also expressed concern that attempts to amend or revise the administrative rule may be incorrectly interpreted as condemnation of the current shoreland zoning program.

Local Elected Officials and Planners

There was no response from the designated reviewers, but the Issues and Options Table was presented to a meeting of the Wisconsin County Planning Directors.

In general there was concern that the length and large number of issues that are covered in the table give the false impression that the rule is not working at all. The report would then provide an argument for those interested in eliminating or weakening the whole program. There was concern that in opening up NR 115 for revision, the program might be weakened rather than

strengthened. The group felt strongly that any revision of NR 115 should not prevent counties from being more restrictive than NR 115. Suggestions were made to highlight the successes of the program as well as the difficulties. The need for communicating the reasons behind the standards was emphasized.

Several specific features of the code were discussed. Some believed that the vegetative cutting provisions were overemphasized. Others suggested better documentation of existing vegetation through the use of aerial photography and videotaping. Some suggested that basal area could be used as a standard for trees. The need for a good structure definition was raised.

Waterfront Owners - Wisconsin Association of Lakes (WAL)

In addition to comments received from the assigned reviewer, several issues of the organization's newsletter, *Lake Tides*, informed members of the shoreland program evaluation. Shoreland zoning issues have also been widely discussed at the last two annual conferences. There has been a great deal of interest among the membership in improving shoreland zoning and other lake management programs, as well as a sense of urgency to improve the program's ability to guide development in a positive direction. There is a fear among lakefront owners in northern Wisconsin that their lakes will end up like some southeastern lakes that they see as overdeveloped. There is also a concern that new lake owners, especially those moving in from other metropolitan areas do not share the same ethic in regard to preserving natural shorelines and taking care of the lake.

Two out of the three legislative initiatives listed by WAL for the 1997 legislative session involve shoreland zoning. One initiative is simply to maintain the shoreland zoning program in the face of attempts to dismantle it, as happened in the last legislative session. WAL is also interested in establishing a lake classification system for the state that would link varying shoreland regulations and lake management programs to different lake classes.

The top five issues listed by the WAL reviewer were:

Issue 7.3 - Lack of minimum standards for cities and villages
Issue 2.2 - Revise "50% of value rule"
Issue 2.3 - Mandatory nonconforming expansion limit
Issue 1.2 - Define and provide lesser setback for "minor structures"
Issue 1.6 - Provide for minimum boathouse standards and setbacks

Some other ideas mentioned were:

- place all the standards in one section of the code, using a table or chart format
- expanding the minimum structure setback to 100 feet is not feasible
- set an absolute minimum setback in conjunction with a mandatory formula for setback averaging
- set the allowable amount of impervious area as a percentage of total lot size
- set an absolute cap on expansions of nonconforming structures, and require this to be recorded as a deed restriction
- prohibit lakeward expansions of nonconforming structures.

Environmental and Conservation Groups

The environmental group reviewer gave very strong support for improving NR 115 across the broad range of issues listed in the table. Out of the 40 issues identified in the table, 31 were rated at the top two highest priority levels. Some of the options for high priority issues were given low

desirability or low feasibility ratings, however. The top options to act on (those rated as high priority, desirability, and feasibility) are listed below.

Issue 1.6, option 2 - require 75-foot boathouse setback
Issue 1.9, option 1 - prohibit setback averaging
Issue 2.2 - replace 50% of value, with limitation on expansion of nonconforming structures
Issue 2.3 - **require** a statewide nonconforming expansion limit
Issue 3.2 - replace "30 feet in any 100 feet" clear-cutting allowance with "30 feet per lot access and viewing corridor"
Issue 3.5 - allow removal of invasive shoreland vegetation for restoration projects
Issue 3.8, option 2 - adopt Forestry BMPs for Water Quality as NR 115 standards
Issue 4.3, option 2 - adopt minimum standards for keyhole lots
Issue 5.4 - allow Zoning Administrator to zone wetlands missed by Wisconsin Wetland Inventory
Issue 6.1, option 2 - limit excavation, grading, and filling on land within 100 feet of OHWM
Issue 6.2 - prohibit soil-disturbing activity on slopes steeper than 30%
Issue 7.2 - give DNR direct enforcement authority for shoreland zoning violations
Issue 7.5 - require shoreland setbacks to be shown on land subdivision maps

Regarding Issue 1.8 - Greater Setbacks, it was suggested that it would be better to work on eliminating clearing in front of the house than to stress distance from the lake.

In addition to the designated reviewer, comments have been received from other individuals with an environmental perspective. Some of these concerns have already been incorporated into the report. A few specific concerns can be mentioned here.

One comment noted that the minimum lot size for unsewered lots is sometimes not large enough when a significant portion of the lot is unsuitable for septic drainfields. Inadequately sized lots create the need for clearing a greater percentage of existing vegetation on the lot. It was suggested that lot size should be a function of soil type and soil testing for drainfield suitability be required prior to subdivision so that adequate space for ordinary and economical waste disposal can be maintained as the lot is developed.

A comment relative to streams in urbanizing areas stressed the importance of maintaining shoreland buffer standards as these areas are developed. These stream corridors could later become incorporated into urban greenways through easements or purchase. The standards can also serve as an incentive for developers to use conservation designs that feature stream corridors as natural amenities for common access.

5.2 Comments on Program Support Initiatives Table and Summary Sections

There were not a large number of responses to the mailing which included these sections. The responses received are summarized below.

Development Professionals

Wisconsin Builders Association (WBA) members were frustrated with the practice of giving individuals large documents to review in isolation from other reviewers. WBA requested that, at the conclusion of the initial drafting process a Technical Advisory Committee be appointed to thoroughly review and revise any proposal and volunteered to nominate an individual from the

housing/development industry to serve on such a committee. They felt the report exhibits bias and makes unfounded assertions about aesthetics.

There were no specific responses to the table of nonregulatory program initiatives. One commenter made the point that education of realtors and contractors is a key to better compliance and suggested a mandatory certification and testing program be initiated. The point was made that increased public access has created much of the pressure on lakes by people who are not subject to the high taxes that lakefront owners pay. It was suggested that an access fee be paid at public boat landings for the right to use the lake and that some landings be converted to footpaths. One commenter suggested that there is an adequate supply of state-owned lakes where the public can go to enjoy natural beauty so there is no need to create any more.

Wisconsin County Code Administrators

There was concern that the report, in its focus on identifying and addressing the gaps in the program, did not highlight enough of the successes of shoreland zoning.

Local Elected Officials

The reviewer for this group stressed the difficulties in effective administration at the local level, particularly in regard to Board of Adjustment (BOA) decisions. It was pointed out that not all BOA members receive training, so more frequent and accessible training sessions should be provided. Another suggestion was to require training for BOA members. It was observed that too many counties do not plan and do not consistently enforce their ordinances.

Water Quality and Local Governmental Assistance Professionals

Department of Agriculture, Trade and Consumer Protection (DATCP) - Soil and Water Resource Management Section.

The DATCP reviewer supported the strategy of maintaining the statewide program while encouraging and assisting local innovations. The lack of county enforcement of the requirement for filing "Timber Sale Cutting Notices" with county clerks was noted as a program administration weakness that could have been mentioned in the report. It was suggested that NR 115 clarify that counties have the authority to require that forestry BMPs are followed when harvesting timber near surface water.

University of Wisconsin Extension - Lakes Partnership

Comments from the Lakes Partnership staff were taken into consideration in developing the options and initiatives listed in the tables. A major concern was expressed over the feasibility of pursuing statewide regulatory changes to NR 115 versus aiding local innovations through ordinance revisions. The importance of coordinating educational and technical assistance and supporting lake association efforts at preserving shoreland buffer functions was stressed. Extension Lakes partnership staff support lake classification as a method to attain greater resource protection, especially in undeveloped reaches. They also emphasized the importance of a greater support mechanism for local governments implementing the shoreland and shoreland-wetland program, in the form of enforcement training, staffing, etc., and other assistance to increase compliance.

University of Wisconsin-Extension - Urban and Regional Planning

A faculty advisor to local governments on planning and zoning issues and law recommended that shoreland zoning program changes be linked to comprehensive planing, such as the Maine shoreland program. This reviewer also questioned that shoreland standards do not apply in incorporated areas, as they do in other states (Minnesota).

Waterfront Property Owners - Wisconsin Association of Lakes (WAL)

The WAL reviewer noted that there are already a lot of good resource materials on wise shoreland development, but it can be difficult to get people to read them. Videos might have a greater impact and reach more people at the local level than holding workshops. Another suggestion for reaching people was to use an electronic format with text files that are easily searched for keywords. The reviewer expressed support for creating incentives for landowners to maintain or improve shoreland buffer functions, possibly in the form of a stewardship credit against their property taxes.