

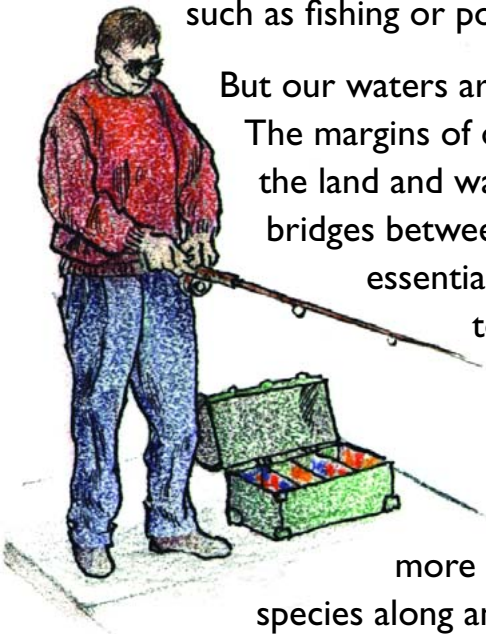
Shoreland Property

a guide to
environmentally
sound ownership

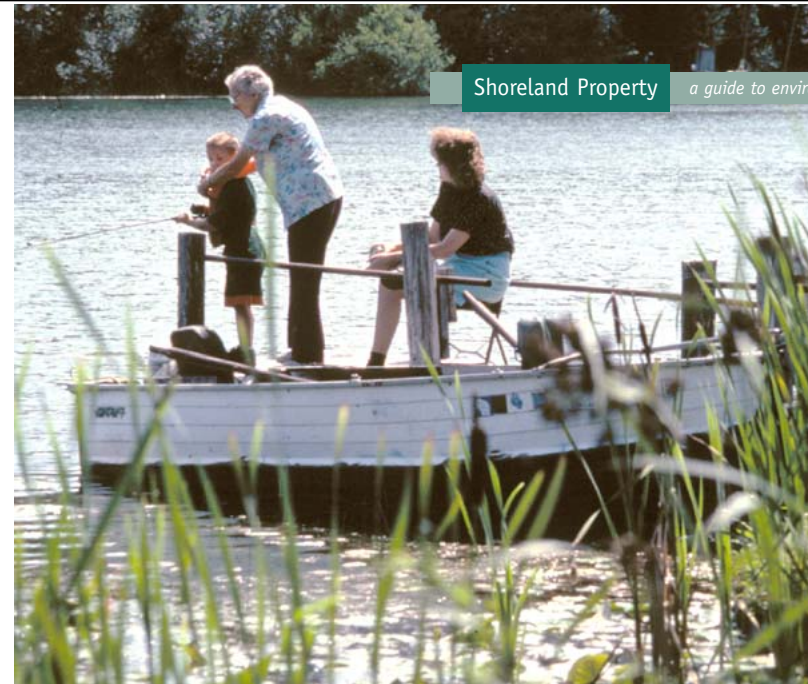
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Many of us are drawn to lands that adjoin lakes and streams. For some reason people find some level of peace by the water. We unwind on the water or along the shores. Some prefer to just sit on a pier and dangle their feet in the water; for others, unwinding involves more active pursuits such as fishing or power boating.

But our waters are important for other reasons. The margins of our waters – the places where the land and water come together – are bridges between two worlds. These are places essential for many plants and creatures to survive. As many as 90% of the living things in our waters are found along the shallow margins and shores. Studies show that there can be 500% more diversity of plants and animal species along an undeveloped shoreline compared to upland areas.



Waterfront property owners have a special responsibility to protect the fragile ecosystems along lakes and rivers.



Shoreland Property a guide to environmentally sound ownership

Unfortunately, we aren't making any more lakes or rivers, but we are making more people. The number of people living near and using our waters is at an all time high, and continues to increase. And as more and more of us buy or build homes on the shores of lakes and rivers, we threaten the very qualities that brought us there.

This guide will provide you with information about purchasing, protecting, and enhancing your waterfront property. As a waterfront property owner or potential owner, your responsibilities go beyond individual property boundaries. How you care for your shoreland can impact an entire lake or river system. By following these recommended environmental practices, owners can successfully manage these fragile natural systems.

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Purchasing waterfront property

The most important consideration when considering shoreland property is what you want from the property – are you looking for a secluded retreat or a friendly neighborhood to enjoy lakeside activities? Before buying a particular piece of property, spend some time gathering information about the lake, surrounding resources, and the particular parcel you might purchase. Here are a few points to consider:

Watershed characteristics

The use and care of the land surrounding and draining to a lake or stream largely determines the quality of its water. Before buying waterfront property, consider the land uses in the “watershed,” the area of land that drains or “sheds” its water to the lake or stream. It is important to check not only existing development in the watershed, but also planned development.

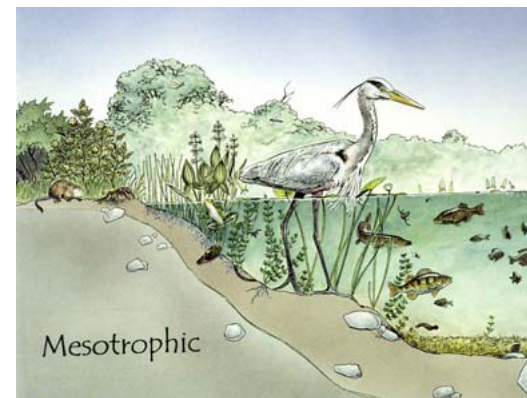
Where development isn’t carefully planned, scattered cottages, homes and resorts can form a continuous ribbon of buildings and structures along the shores of lakes and rivers, resulting in the destruction of natural vegetation and intrinsic scenic quality. A first tier of shoreland structures may be followed by a second and third until the entire watershed is highly developed.

Over-development increases the risks of lake pollution and scenic degradation. Nutrients such as nitrogen and phosphorus and improperly designed sewage treatment systems can contaminate wells and surface waters. Development in or near floodplains can also reduce the natural storage capacity of the watershed, causing increased flooding threats to property.

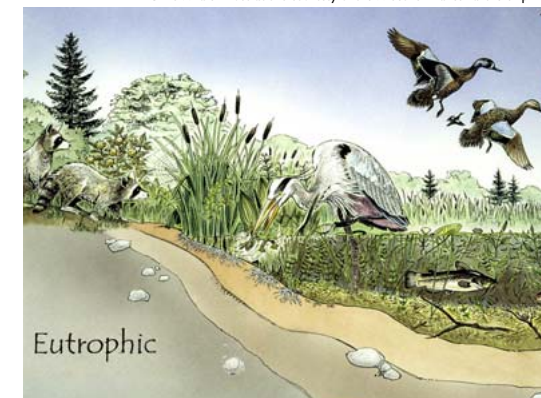
“Waterfront property owners have a special responsibility to protect the fragile ecosystems along lakes and rivers.”



A lake with low levels of nutrients will support relatively low numbers of fish and wildlife.



Moderate levels support a rich variety of plants, fish and wildlife.



High nutrient levels can clog lakes with weeds and algae, and limit recreational opportunities.

Lake and river characteristics

Lake type and use

Wisconsin contains thousands of lakes, each with special characteristics. Before purchasing property determine the main characteristics of the lake, because different types of lakes have different characteristics that may affect water quality, lake levels, water clarity and water temperature. For example, a “seepage” lake is land-locked with no inlet or outlet, and is fed primarily by runoff and groundwater. This type of lake is most common in Wisconsin, and will probably experience fluctuating water levels, as will a flowage above a dam.



Scientists classify lakes according to their trophic status, which represents the nutrient levels in a lake. You can try to match your lifestyle and recreational needs to these lake types. Oligotrophic lakes have low levels of nutrients and clear water, and are less likely to support high numbers of fish, waterfowl and wildlife. Mesotrophic lakes are slightly nutrient-enriched and often support a rich and diverse community of native plants, fish and wildlife, along with a great range of recreational activities. Eutrophic lakes have high levels of nutrients, organic matter and sediments. These lakes can also support excessive levels of weeds and algae, which can limit recreational activities.

Beyond the lake’s characteristics, consider the type of recreational uses permitted on the lake. These might include water skiing, fishing, swimming, canoeing, sailing, etc. How will these various activities affect your enjoyment of the lake itself and your shoreland property?

Keep in mind that Wisconsin lakes of 50 acres or less in size with public access are designated slow/no wake lakes by state statute. Also, a trend in Wisconsin is for towns and counties to develop additional ordinances regulating lake use activities based on a lake classification (see sidebar on the next page). Check to see if your county has a lake classification system, and how it might affect activities on a lake where you might buy property.

Chris Whalen illustrations courtesy of the Wisconsin Lakes Partnership



Increasingly, counties are managing shoreland development and lake-use activities. (See sidebar below.)

Lake Classification

Many counties use an idea called “lake classification,” which is based on the idea that some lakes are better suited for some uses than others. Counties have typically developed a two-tier or three-tier system of classification.

- ✓ A natural environment type of lake needs special care to protect wildlife, vegetation and water quality, and may allow few motor boats and only limited development.
- ✓ A low density type of lake has developed shores and recreational use, but is still intact as a natural system. More homes are allowed if they are clustered away from the lake, and recreation is restricted to low-impact activities such as fishing and wildlife watching.
- ✓ A third lake type, general development, applies to lakes that already have a high density of homes, and may be better suited to recreational uses such as power boating and water-skiing. These lakes are usually larger and deeper than others, and management strategies focus more on restoring the lake than limiting development

River type and use

Wisconsin has more than 43,000 miles of rivers, from small streams winding through rolling farmland and woodlands to large rivers flowing through urban areas. Rivers differ in both their settings and their physical features – features that you should consider before purchasing riverfront property.

“Cool water” streams receive most of their water from ground water, which supplies a steady flow even during dry times, and helps keep the water temperature fairly constant during both summer and winter. “Warm water” streams receive much of their water from surface runoff and tend to be “flashy;” that is, they carry a lot of water during storms and little water during dry spells. These streams are also prone to flooding.

Most streams (about 86% nationwide) are considered “headwater” streams (less than 18 feet wide). Because they are small, headwater streams feel the impacts of human activities more directly than larger streams. They also play a critical role in the production of fish and the basic food needed to supply all other creatures and plants that live downstream. As with lakes, the area adjacent to the water has a major impact on the water itself and should be kept as natural as possible. Healthy shoreline zones along streams may have double the number of species of plants and animals as upland areas.

Consider these points about streamside property:

- Find out what the river is used for upstream, because those activities will affect the stream flowing past your property. For example, streams often receive treated waste water from cities and industries, while most lakes do not.
- Over time and after normal flooding, streams can change their channel, which can affect streamside property. Check with local government and a DNR office for the stream’s flooding history.
- Ice breaking up in spring can damage shores and trees. Look at shores and trees for ice scars, which can sometimes be several feet up a tree trunk.
- Check for dams upstream or downstream. Dams can often cause significant changes in water levels and affect recreational activities.



Know a stream’s flooding history before purchasing property.

Public access

Keep in mind that the lake or stream where you want to live is public property, and the public has access to it. (Refer to DNR publication *Navigable Waters* for more information on public access.) Developed public access areas or other public lands near your property may be good or bad, depending on the amount of privacy you want versus access to recreational opportunities. What kind of other development (for example, campgrounds or resorts) exist around the lake that may offer additional recreational opportunities on the water?

Your shoreland property

Local zoning ordinances

County ordinances establish minimum lot size, building setbacks, and sewage treatment requirements. On a larger scale, local governments also establish “land use” or “zoning districts.” Before purchasing shoreland property, make sure that your intended use is compatible with local and county ordinances as well as state and federal regulations. Contact the county zoning office for information.

Parcel size

The lot should be large enough to accommodate your intended use, as well as comply with the local zoning requirements. Most lots that have been created since the statewide shoreland zoning standards took effect in the 1960s are large enough for most residential uses and comply with local zoning requirements.

Most ordinances restrict the size of a new home (measured in square footage) and base the restrictions on the size of the lot. However, many lots were created prior to the shoreland rules, and may be substantially smaller than the new lot size requirements. These sub-standard lots may still be bought and sold, but may be too small to legally accommodate a structure or a septic system. If you are considering buying such a lot, carefully review your intended use and the limitations of the property.



State and local regulations require a vegetative buffer along the shore (below) and limit structures that detract scenic beauty or harm water quality (right).



Parcel shape

Although the overall size of the lot may meet zoning requirements, the shape could restrict the use and location of structures. Long, narrow lots or pie-shaped lots may make it difficult to meet some of the requirements for setbacks, lot widths and septic systems. Carefully consider the compatibility of a lot shape with your intended use. If you are considering constructing a new cottage or full-time residence, you will need to design the structure so that it complies with all zoning regulations. Avoid having a house plan completed before buying a lot. Most of the time (especially on smaller lots), you will need to design a house to fit the lot and not the other way around.

Parcel orientation

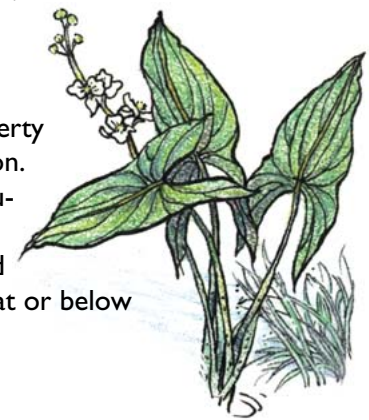
Generally, the most desirable orientation is south or west. Both directions provide daytime sun and off-lake breezes. Deciduous trees allow sun in the winter while pines and other evergreens provide year-around shade.

Topography and soils

Land surface elevations are important for several reasons. First, the lot should be high enough so that the dwelling will not be flooded by fluctuating water levels. The site should be able to accommodate the lowest portion of the building, including the basement, at least three feet above the highest known water level. The soils should be suitable for your intended use. Structures and sewage treatment systems have specific requirements. Wet or clay soils are generally unsuitable for soil absorption sewage treatment systems and can also make building construction difficult. A qualified professional must determine if a site can accommodate a standard septic system, or whether an alternate system is permitted.

Vegetation

The aesthetic and ecological value of shoreland property is linked to the type and quality of existing vegetation. Keep in mind that shoreland zoning ordinances regulate the amount of vegetation that can be removed. So, if you want a sandy swimming beach, you should look for a lot that already has one. Any alterations at or below the water's edge require DNR approval.



Adjacent development

Locate adjacent property waste treatment systems and wells to determine setback restrictions on your property, and consider sideyard setbacks and privacy. State law regulates separation distances between wells and waste water treatment systems.

Potential building sites

After an analysis of your site, select an appropriate location for your building based on the above factors. The best building site is often farther back than the required minimum setback.

Protecting scenic & environmental values of shoreland property

Preserving natural vegetation along the shore presents the most natural view from the water's edge, protects the integrity of shoreland habitat and helps screen adjacent properties and protect privacy. Natural, undeveloped shorelands are usually the most valuable in economic terms. Shoreland property owners have the privilege and responsibility of preserving and developing their land in harmony with the natural environment. The following guidelines will help to achieve these goals:

Structures

Buildings usually make the most dramatic change to the appearance of the shore, so they should be designed and positioned on the site to be as unobtrusive as possible. Spend time on the water in front of your property to help visualize what the structure will look like from the lake and to assess ways to maintain natural screening.



Size

Minimize the overall size of the structure, particularly the profile facing the water. An excessive building height can create a structure out of scale or proportion with the rest of the property.

Exterior materials

Select materials that are natural or have a natural appearance that blend in with the surroundings. This is important for siding, roofing materials, retaining walls, stairs, and decks. Carefully select your structure and roof color to blend in with the surroundings. Use accents such as flowers and vegetation to add complementary natural colors.

Accessory structures

Excess structures add visual clutter to the shoreland; therefore, incorporating storage and other uses into the main structure can eliminate the need for unattached structures. Try to use the same design and color principles as the primary structure. Locate accessory structures away from the lake view. Keep in mind that even accessory structures must be built according to the local shoreland zoning ordinance.



Shoreline alterations should be designed to affect the natural shoreline as little as possible. Structures dramatically change shoreline appearance, and have the greatest impact on fish and wildlife habitat. Landscaping in the bottom photo is less disruptive than in the top photo.



Docks and boat storage

Keep the size and length of these structures to a minimum and design them to blend in with the shoreline. Some piers require a state permit. Check with the local DNR office and ask for their "pier planner," a set of guidelines for pier length, width, placement and other factors.

Shore alteration

Retaining walls and stairways can clash with the natural surroundings and the DNR discourages the construction of retaining walls because of their unnatural appearance, high failure rate and negative effects on fish and wildlife. Retaining walls are only permitted when they are necessary to correct a pre-existing erosion problem. Maintaining a natural buffer should limit the need to alter the shore. Shoreline alterations should be designed to blend in as naturally as possible, using natural materials and vegetative screening. Any alteration to the shoreline requires review from the county zoning department and DNR.

The shoreland buffer

A shoreland buffer is a zone of native vegetation that extends from the ordinary high water mark inland at least 35 feet. A buffer restoration design seeks to restore functions provided by the original, natural vegetation. Buffers provide habitat, hold soil in place, intercept and purify runoff water, and provide natural beauty.

Preserving and improving the shoreland buffer can benefit the landowner as well as the water resource. These benefits include:

- Less time and cost for lawn maintenance.
- Properties along waterways with undisturbed natural vegetation usually have the highest property values.
- Vegetative cover provides screening and privacy from neighbors and recreational lake-users, as well as nesting places and travel corridors for wildlife. Fallen trees left in the water can provide spawning areas for fish and shading for shallow-water habitat.



A shoreland buffer should consist of a mix of native trees, shrubs, and ground cover. The proper buffer size varies depending on what the property owner is trying to accomplish. Generally, a shoreland buffer is a strip of land extending 35 feet inland from the ordinary high water mark (OHWM), but in many cases may extend beyond the 35-foot area. Local units of government may establish different “zones” that regulate the amount of disturbance that may take place within a particular zone. Typically, a shoreland buffer includes:

No-touch zone

Once the buffer is established, vegetation removal and land disturbing activities are prohibited in this area.

Minimum maintenance zone

Limited pruning and mowing area allowed in this area. In general, the minimum maintenance zone begins 35 feet from the OHWM and extends inland.



Viewing/access corridor

The viewing/access corridor extends from the lake inland, more or less perpendicular to the shore. It may be up to 30 feet wide. While clearcutting, filling, grading, and other land-disturbing activities are not permitted in this area, limited tree removal, pruning, and mowing are allowed. Walkways, pathways, and stairs should be located in the corridor, and piers, wharfs and lifts should be placed in water immediately in front of the corridor.



Remove only a minimal amount of the existing vegetation. The result will be a more aesthetic shoreline, better fish and wildlife habitat, and cleaner water.

Wisconsin's shoreland management program

In the 1960s, the state legislature directed the Department of Natural Resources to adopt an administrative rule (NR 115) that requires counties to adopt shoreland protection ordinances.

- ✓ The regulations apply to buffers, building setbacks and other development issues within 1,000 feet of the ordinary high water mark (OHWM) of navigable lakes, ponds and flowages, and within 300 feet of navigable rivers and streams, or to the landward side of the floodplain of rivers and streams, whichever is greater,
- ✓ A buffer is defined as a strip of land extending 35 feet inland from the OHWM, and where no more than 30 feet in any 100 feet of shoreline can be cleared of trees and shrubs. A great deal of research, however, suggests that a 35 foot buffer is inadequate for shoreland protection. Accordingly, many counties have established greater buffer requirements and building setbacks.

Aquatic habitat protection

Here again, the idea is to keep it natural, because the areas along the shore are critical to the ecological health of a lake or stream. The shallow near-shore or littoral zone in a lake is critical in the support of fish and aquatic life by providing a source of food, cover and diverse habitat. Most Wisconsin fish spend part of their life cycle in the near shore zones for spawning and carrying out other important life activities.

Shoreland plants (in the form of roots, grasses and other types of vegetation) help maintain shore stability, prevent bank and soil erosion, and create shoreland vegetation traps that prevent silt from choking spawning beds. Woody and grassy vegetation along the shore provides an important source of food for the aquatic system.

Fallen twigs and leaves are broken down and digested by insects and microorganisms, which in turn are consumed by fish and other predators higher up the food chain. Fallen trees in lakes and streams enhance the quality of the fishery by providing habitat.

“Fallen trees in lakes and streams enhance the quality of the fishery by providing habitat.”



Removing fallen trees and other vegetation destroys fish habitat and exposes the shoreline to erosion.



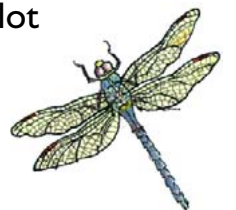
Stormwater runoff and water quality



Development often means removal of shoreline vegetation and an increase in the amount of polluted stormwater washing into a lake.

Drainage is changed when an area is developed or the landscape is altered. Covering land surfaces with roads, driveways, and other impervious surfaces (rooftops, decks, walkways, and parking lots), creates more runoff because less water seeps into the soil, where some impurities can be filtered. This increased runoff, and the sediment carried with it, is usually channeled into ditches, drainage ways, and eventually into nearby lakes and streams. Limiting the number of impervious surfaces on a shoreland lot reduces the amount and volume of stormwater runoff.

The DNR has calculated runoff volume from an undeveloped shoreland lot compared to a large lake home (approximately 4,000 square feet of impervious surfaces) on a lot entirely converted to lawn. They found up to a 500% increase in runoff volume, a 700% increase in phosphorus washing into the lake and a 900% increase in sediment flowing to the lake on the large home lot.



Methods to reduce runoff

Follow these long-term practices during and after construction to minimize runoff and prevent sediments from washing into the lake:

- Limit clearing and grading, especially on slopes that drain to the shoreline, and minimize cutting and filling for roads, driveways, sidewalks, stairways, and footpaths to reduce erosion. Stabilize areas by planting new vegetation and diverting drainage away from the lake whenever possible.
- Limit hard surfaces and covered areas that prevent water from seeping into the ground. Hard surfaces include areas such as rooftops, sidewalks, driveways and access roads.
- Use driveways of gravel or grass instead of asphalt or concrete. Where paved areas are necessary, locate them as close to the main road as possible to minimize the length of paved driveway and keep the paved areas as far from the shoreline as possible. Use porous bricks or interlocking bricks that allow for some water to soak in.
- Because steeper slopes have greater erosion potential, locate driveways, sidewalks, stairways, and footpaths away from slopes. Follow the contour of the slope if your walkway goes across a hillside. Use steps when a walkway must go directly up and down a slope, particularly near the shore. Use paving stones or wood instead of solid concrete for walkways. This allows some stormwater to seep through instead of running off.
- Sweep driveways or sidewalks instead of washing them down with a hose to prevent sediment, salt, and petroleum products from washing into the lake.
- Direct roof drainage to grassy or vegetated areas.

Sediment fences serve as a last resort for preventing construction site erosion, but the best policy is to leave the natural shoreline intact.



Recreation and water quality

Recreational opportunities are a primary reason people choose to live by or visit lakes and rivers. However, recreational activities can adversely affect water quality, the shoreline, and a lake's peace and quiet. You can limit these impacts by practicing a stewardship attitude as you enjoy your shoreland property and participate in water related activities.

Boating and fishing

Many recreational activities involve the use of motorized watercraft, including personal watercraft, inboard/outboard motor boats for fishing or water-skiing, and pontoon boats. The following practices will help minimize potential damage to lakes and rivers:



- Avoid spilling gas. Never pour gas over the water during fueling or boat maintenance and do not "top-off" fuel tanks. Fuel the boat on the trailer whenever possible.
- Properly store and dispose of all wastewater, both greywater (from sinks) and human waste.
- Adjust your speed to reduce the wake and wave action that can erode the shoreline. Observe surface water use guidelines, including "no-wake" and low speed zones.
- Inspect boats and trailers to avoid transporting non-native plants and animals from one water body to another.

Wharves and piers

Piers and boat access ramps are necessary to reach and enjoy the water. If not properly constructed and maintained, however, they may cause water quality problems.

- Follow your site plan when installing a docking facility. Piers must follow DNR and county regulations.
- Use naturally water-resistant wood (cedar, tamarack, redwood), metal, or plastic instead of treated wood, because the chemicals used to treat the wood may cause water quality problems. Never apply wood preservatives or paint to docks while they are in or over the water.
- Construct the smallest possible dock to meet your needs.
- Consider using the public access instead of developing your own boat access (which requires a permit) to minimize shoreland disturbance.

A quick checklist for purchasing shoreland property

- ✓ Initial contact with DNR and your Local Zoning Office to discuss plans, site location, and other shoreland regulations.
- ✓ Gather and access information on the lake and property you are interested in (Does the lake have the characteristics you desire, i.e. Water skiing, swimming, wildlife, solitude, etc.)
- ✓ Develop your site plan and building location based on an analysis of your property.
- ✓ Obtain soil tests from certified soils tester.
- ✓ Obtain necessary permits from DNR, your local zoning office and township, if required.
- ✓ Because the greatest impact to water quality occurs during home construction, discuss methods to reduce erosion and runoff with your contractor prior to the construction phase



Looking for more information about shoreland preservation and restoration?

The following materials are available from University of Wisconsin–Extension. Contact your county Extension office or Extension Publications, 1-877-947-7827. The materials are free to Wisconsin residents unless otherwise noted.

A Fresh Look at Shoreland Restoration (GWQ027)

What is a Shoreland Buffer? (GWQ028)

Two short fact sheets providing tips on reviving shorelands through the use of natural buffers.

Shoreland Plants and Landscaping (GWQ014)

An overview of shoreland protection for homeowners, and a lengthy list of trees, shrubs and groundcovers suitable for Wisconsin's shorelands.

Rethinking Yard Care (GWQ009)

Describes simple yard care practices that are effective and environmentally sound.

Shoreland Restoration – a growing solution (GWQ032)

A 15-minute videotape on the benefits of shoreland restoration. \$4.00

Sensible Shoreland Lighting (GWQ031)

Practical tips on balancing the need to see at night with the desire to preserve the beauty of the night.

Wisconsin Water Law – a guide to water rights and regulations (G3622)

A 200-page overview of water law, including sections on shoreland management, public and private rights in surface waters, and regulation of structures such as piers and wharves. Informative for lay persons and attorneys. \$15.00

The following materials are available from Wisconsin Department of Natural Resources offices.

Wisconsin Pier Planner

Describes a landowner's rights to place a pier, dock or wharf on a lake or stream bed.

Ordinary High Water Mark

Describes how the DNR determines the point on the shore where private land meets the public lake bed.

Navigable Waters

Describes how the DNR determines which waters are navigable and have specific public rights.

The following materials are available from the Wisconsin Lakes Partnership, University of Wisconsin-Extension/Stevens Point, 715/346-2116.

www.uwsp.edu/cnr/uwexlakes/publications.asp

Life on the Edge – owning waterfront property

A 100-page book with practical advice on buying and living with waterfront property. \$4.50 – Call or order from their web site.

Lake Classification Fact Sheet Series

A series of 22 fact sheets covering shoreland buffers, managing land disturbance during construction, guiding lakeshore development, managing recreational use and many other topics. Can be viewed and printed free from their web site, or call to order.

Through the Looking Glass – a field guide to aquatic plants

A 250-page, beautifully illustrated book describing North American aquatic plants. Includes detailed descriptions, natural history, human uses and folklore surrounding many aquatic plants. \$25.00 – Order from their web site.



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