

Polk County, Wisconsin

Shoreland Property Owner Handbook

A guide to developing and caring for your waterfront property





Ninety percent of all lake life is born, raised, and fed in the littoral zone, the area where land and water meet. Eighty percent of plants and animals on Wisconsin's Endangered and Threatened Species List live all or part of their lives near the shoreline.

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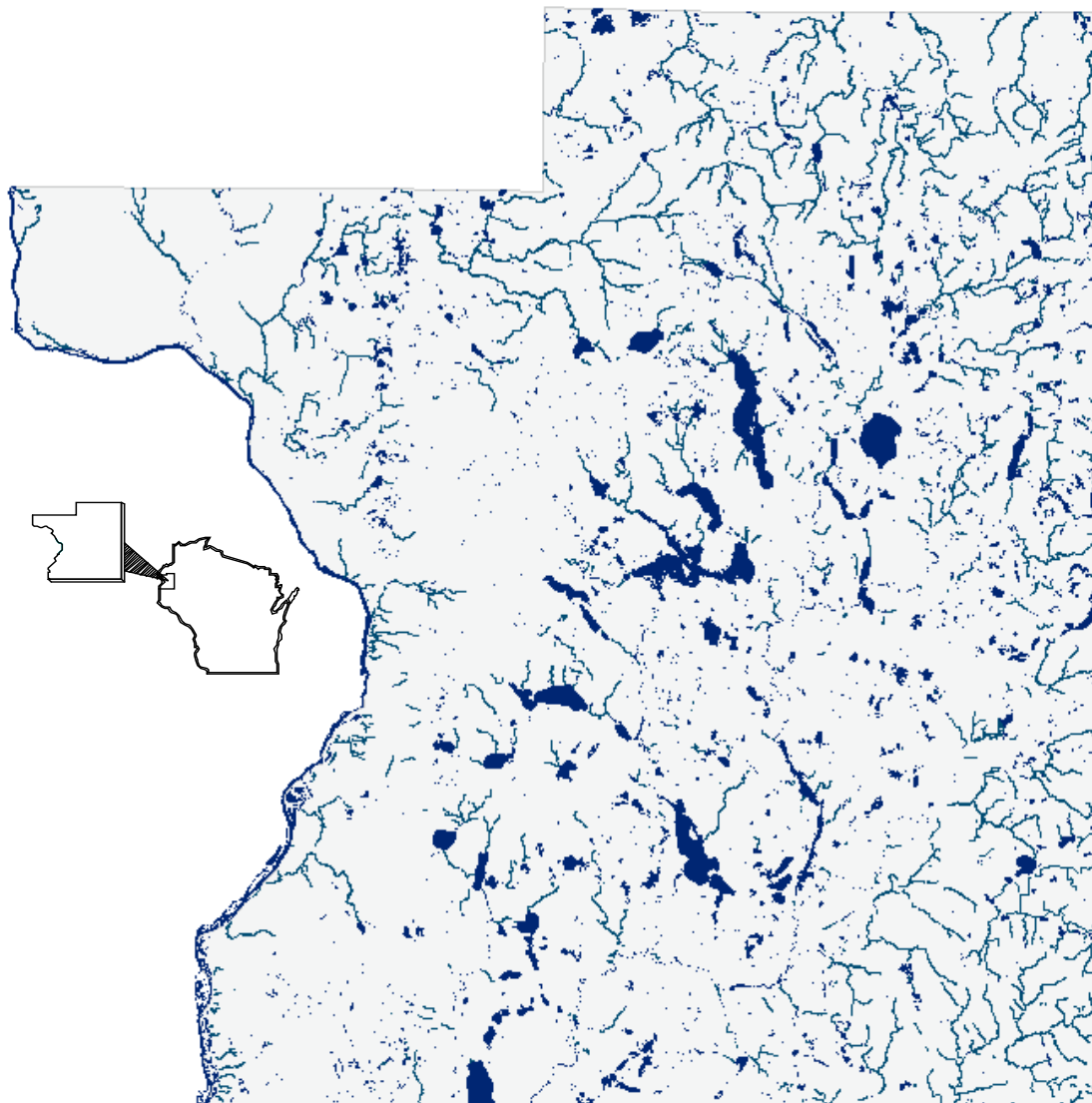
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Polk County is home to 437 lakes and 365 miles of rivers and streams, including 98 miles of trout streams. The St. Croix River—a national scenic riverway—forms the western border of the County. The natural qualities of Polk County’s waterbodies are important in defining the character of this region. Polk County has an exceptional diversity of water resources including trout streams, flood plain forests, inland lakes, and wetlands created by ice-age glaciers. These resources provide fish and wildlife habitat, natural beauty, and a variety of outdoor recreational opportunities.



Introduction

Maintaining the quality of Polk County's waterbodies and the beauty of shorelands is the goal of *Polk County's land use ordinances*. The shoreland zoning ordinance provisions are a requirement of the state of Wisconsin and are intended to regulate development within 1,000 feet of lakes and 300 feet of rivers and streams in compliance with statewide minimum standards. This handbook includes information regarding shoreland zoning in Polk County.

This handbook includes guidelines to be aware of regarding aquatic plant removal and general information for identifying aquatic invasive species and native aquatic plants common in Polk County. Removal of aquatic plants is regulated by the Wisconsin Department of Natural Resources.

Code of Ordinances

Polk County has a comprehensive online ordinance library called Municode that contains all chapters of Polk County ordinances. Municode is available to the public and can be found on the Polk County website.

The Polk County shoreland zoning provisions are located under Chapter 42. Before starting any construction or landscaping project it is important to reference this ordinance and contact the Polk County Zoning Department for any permit requirements. If located in the Towns of Garfield, St. Croix Falls, and Farmington, [contact the town](#) in addition to the Polk County Zoning Department for permitting and zoning related questions.

***Polk County ordinances change.** Refer to Municode before starting a project.

https://library.municode.com/wi/polk_county/codes/code_of_ordinances?nodeId=COOR_CH42ZO

***Before construction takes place,** contact the Polk County Zoning Department (715-485-9111) to ensure all proper permits are obtained.

Lake Types

Lakes are divided into three categories based on their productivity: oligotrophic, mesotrophic, and eutrophic. These categories reflect a lake's nutrient and clarity level and serve as an indicator of water quality.

All lakes experience a natural aging process which causes a change from an oligotrophic to a eutrophic state. Human influences that introduce nutrients like phosphorus and nitrogen into a lake (fertilizers, septic systems, etc.) accelerate the process by which lakes age and become eutrophic.



Wisconsin lakes, rivers, and streams are managed to determine if their conditions are meeting state and federal water quality standards. Water samples are collected through monitoring studies and results are compared to water quality standards. If a waterbody does not meet water quality standards, it is placed on Wisconsin's Impaired Waters List.

Unfortunately, Polk County has waterbodies that are on the Impaired Waters List. Using a variety of different management strategies, lakes can lower their impairment status and be removed from the list. Through good management practices in the shoreland area, nutrient loads to lakes, rivers, and streams can be greatly reduced. The county land use ordinances are designed to help properties reduce their individual impact to lakes, rivers, and streams.

Shoreland Zoning

People value natural, undeveloped shores, and clear water. Natural beauty is one of the main reasons people purchase property on or near lakes and rivers. Polk County recognizes that shoreland development is on the rise and seeks to protect aesthetics, water quality, and wildlife habitat.

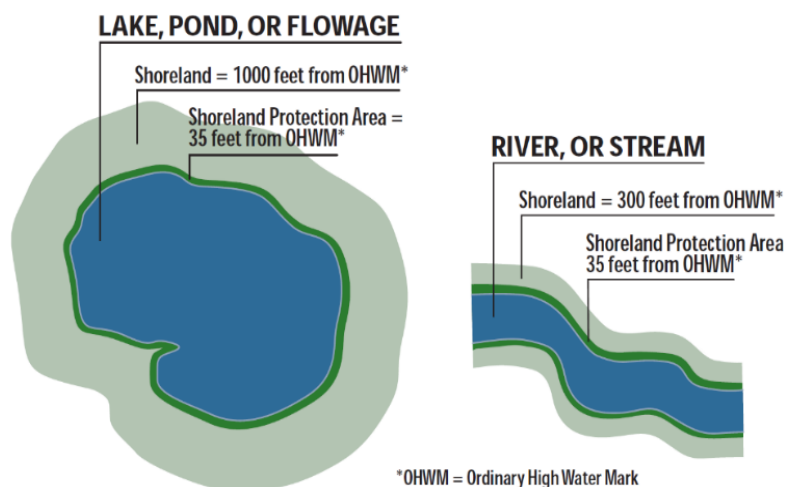
The purpose of shoreland regulations is to ensure the proper management and development of the shoreland area for all navigable lakes, ponds, flowages, rivers, and streams in Polk County. The shoreline of lakes and rivers is unique habitat that is sensitive to development pressure. The shoreland ordinance provisions were designed to:

- Prevent and control water pollution
- Protect spawning grounds for fish and other aquatic life
- Control building sites, placement of structures, and land uses
- Preserve shore cover and natural beauty

The ordinance directs the type and manner of development that may occur within the shoreland area or lands within 1,000 feet of the OHWM of a navigable lake and within 300 feet of the OHWM of a navigable stream or river.

Ordinary High Water Mark (OHWM)

The point on the bank or shore up to which the water, by its presence and action or flow, leaves a distinct mark indicated by erosion, destruction of or change in vegetation or other easily recognizable characteristics.

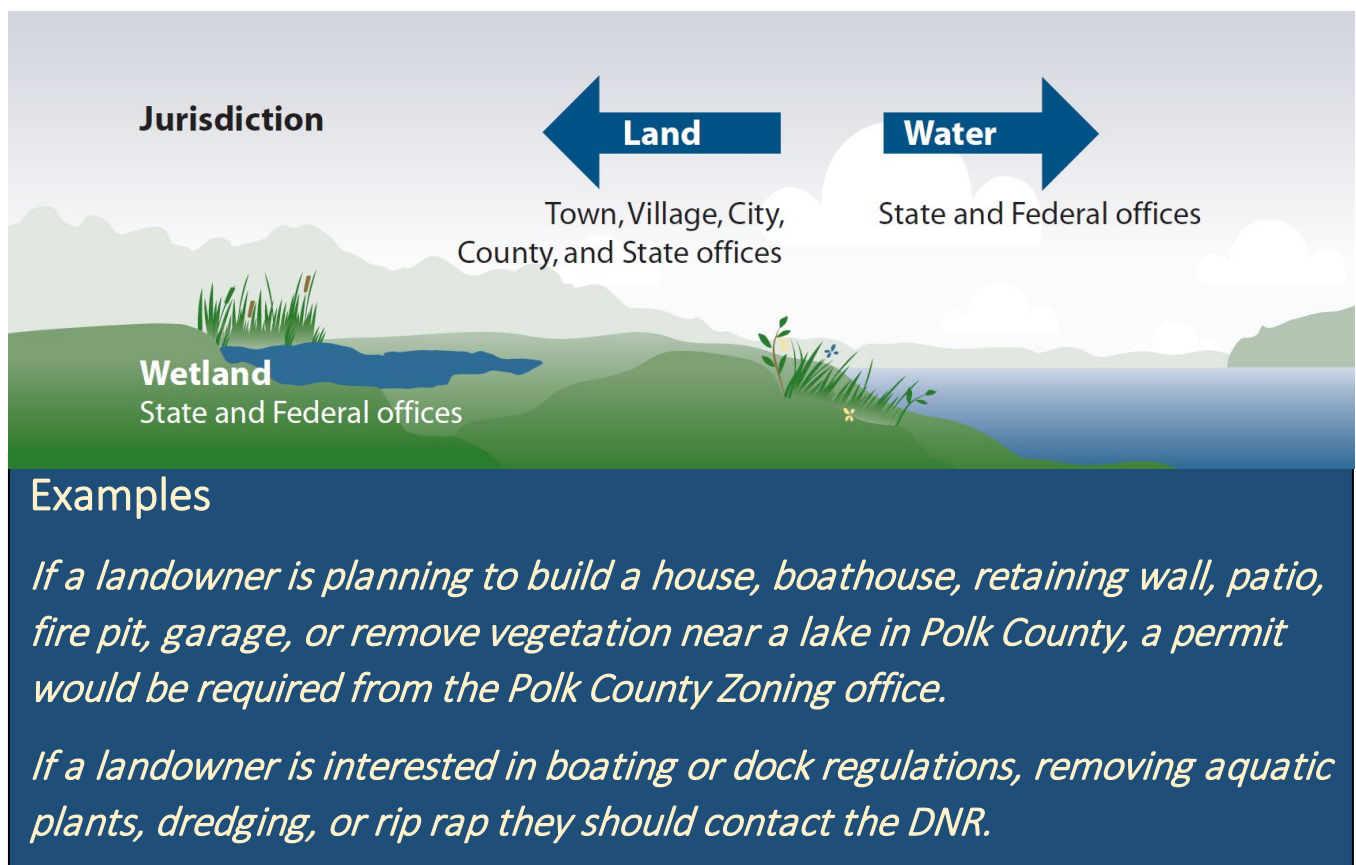


Wetlands

When thinking of a wetland it often brings to mind a swampy, marshy place with mosquitos, ducks, and cattails. However, there are many different types of wetlands, including those that appear to be dry for most of the year and covered in trees and shrubs. Wetlands provide wildlife habitat, flood control, groundwater recharge, and filtering capabilities. It is because of these functions that wetlands are protected.

When looking into building on a vacant property or making modifications, it is best practice to check the [Wisconsin DNR's Surface Water Data Viewer](#) website to see if the parcel contains wetlands, and if so, where are they located. All buildings must be setback at least **25 feet** from a mapped wetland.

When zoning questions arise it can be confusing to know who to contact. Wetlands and anything below the OHWM are regulated by the DNR while anything above is either the town, village, city, or county.



Questions about	Regulatory agency
Alterations to the shoreline *	WI DNR, Spooner Service Center, 715-635-2101
Tree removal on lake property *	Polk County Zoning Department, 715-485-9111
Aquatic plants *	WI DNR, Tyler Mesalk, 715-635-4227
Building and remodeling *	Polk County Zoning Department, 715-485-9111
Docks	WI DNR, Spooner Service Center, 715-635-2101
Sanitary and septic *	Polk County Zoning Department, 715-485-9111
Shoreline restoration *	Polk County Land and Water Resources Department, 715-485-8699
Shoreline setbacks *	Polk County Zoning Department, 715-485-9111
Aquatic and terrestrial invasive species identification	Polk County Land and Water Resources Department, 715-485-8699
Stormwater and erosion control (Disturbance over 0.5 acre) *	Polk County Land and Water Resources Department, 715-485-8699
Stormwater and erosion control (Disturbance over 1 acre) *	WI DNR, Matt Jacobson, 715-928-0485
Wetlands *	WI DNR, Steve La Valley, 715-392-0803
Filling and dredging *	WI DNR, Dan Harrington, 715-733-0019
Fisheries	WI DNR, Kyle Broadway, 715-931-8181
Lake organization contacts	Polk County Land and Water Resources Department, 715-485-8699
Starting a lake organization	UW-Extension Lakes, Eric Olson 715-346-2192

*** Important:** These activities may require a permit or have specific guidelines. Please contact the responsible agency for more information.

Building and Site Construction

New construction, additions, new impervious surfaces, landscaping, filling/grading, and remodeling activities which involve structural changes within the shoreland area **require a Land Use Permit**. Permitted activities must follow certain standards set by state, county, and/or town regulations. Shoreland properties within incorporated villages or cities may be subject to different guidelines than described here. Check with village/city and county staff before beginning any projects on your shoreline property.

*Permits are required for most projects.
Please contact the Polk County Zoning Office, 715-485-9111.*

New Construction Procedure

Initial review	Bring information about the proposed construction (parcel location, parcel size, construction plans, etc.) to the Polk County Zoning Office.
Driveway permit	New driveways connecting to county roads require a permit from the Polk County Highway Department. New driveways connecting to a town road may require a permit from the town. If a driveway is 1,000 feet or greater in length an erosion control permit is required from the Polk County Land and Water Resources Department.
Soil test	Contact a certified soil tester to perform a soil (perc) test to establish what type of sanitary system may be installed and its location.
Sanitary permit	Contact a licensed plumber and provide them with a copy of the soil test. The plumber may act as the property owner's agent and apply for the sanitary permit and any state approvals that are required.
Filling and grading permit	A filling and grading land use permit is required for any filling, grading, or excavation within 300 feet of a navigable waterway. If more than ½ acre is disturbed a Stormwater and Erosion Control Permit from the Land and Water Resources Department is required.
Land use permit	Land use permits are required before you build, move, or alter any structure.
Rural address	A rural address will be issued after the sanitary system has been installed. A rural address can be issued even if you are not installing a sanitary system.

Classification and Setbacks

Certain aspects of Polk County Shoreland Zoning regulations differ depending on lake classification. All Polk County lakes are classified into one of three categories depending on size, development, and other factors.

Class 1 waters are most developed.

Class 2 waters are moderately developed; includes all rivers and streams.

Class 3 waters are least developed; includes lakes that are 20 acres or less in size, and unnamed lakes not appearing in the DNR publication titled "Surface Water Resources of Polk County."

All lakes not listed below are categorized as class three lakes.

Polk County Class One Lakes

Apple River Flowage	Deer	Pipe
Balsam	Half Moon	Poplar
Bear Trap	Horse	Round/Dwight
Big	Horseshoe	Sand
Big Blake	Largon	Twin, North
Big Butternut	Little Butternut	Twin, South
Big Round	Long	Wapogasset
Black Brook Flowage	Loveless	White Ash
Bone	Lower Pine	White Ash, North
Cedar	Magnor	Wind/Round
Church Pine	Paulsen	Ward

Polk County Class Two Lakes

Andrus	Long Trade	Sandhill/Sand
Blom/Bloom	Lost	Somers
Bridget/Mud	Lotus/East	Staples
Clam Falls Flowage	McKenzie	Straight
Clara	Moccasin/Long	Swede
Fountain	Pike	Wild Goose
Freedom	Pipe, North	Wolf
Little Round	Poplar	All rivers & streams
Long/Helbig	Rice	

Setbacks for Newly Developed Shoreland Properties and Buildings

Shoreline setback

The shoreline setback is the distance from the principal dwelling to the OHWM. The setback is 75 feet but may be reduced if adjacent properties have dwellings built within the shoreline setback (Setback Averaging page 12).

Viewing Corridor

Within the shoreland protection area property owners may remove trees and shrubs to facilitate an unobstructed view between a dwelling and a waterbody only in the viewing corridor. The corridor can be split into separate corridors if the maximum width is not exceeded. The corridor size is limited to 35% of the lot width, with a maximum width of up to 200 feet. Lot widths less than 30 feet are allowed a 10-foot viewing corridor.

Shoreland Protection Area

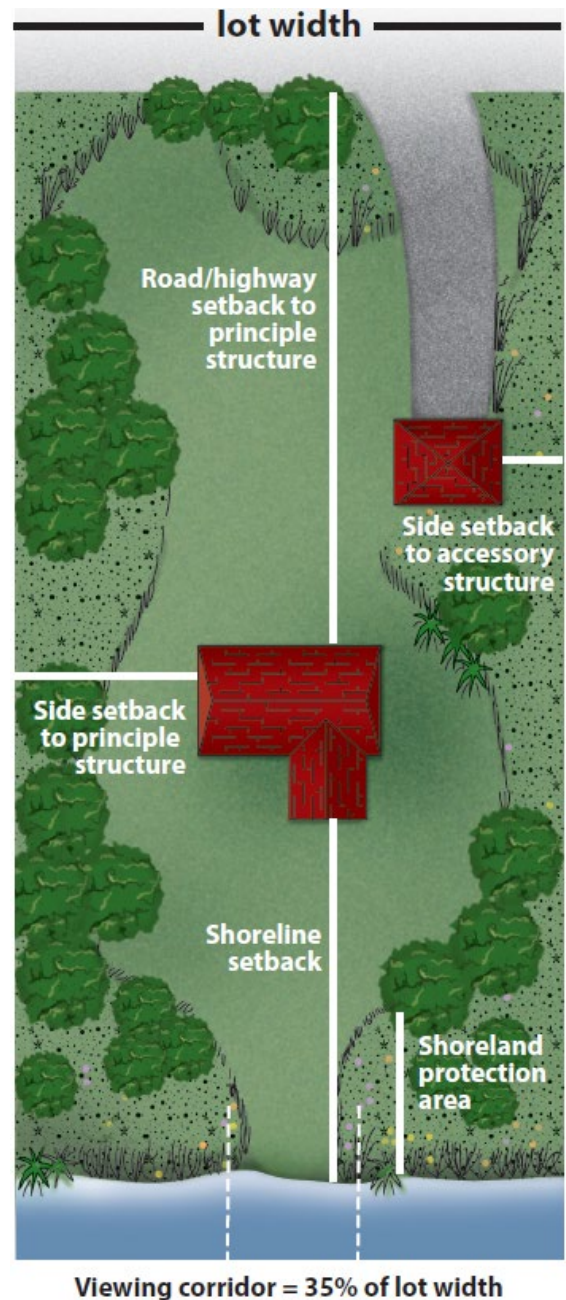
The first 35 feet landward from the OHWM is defined as the shoreland protection area, where additional regulations apply. This area is the most crucial for reducing the impact of development on water quality.

Side Yard Setback

Required distance from structures to the adjoining property lot line.

Road/Highway Setback

Required distance from principal structure to center-line of road or road right-of-way.



Site Dimensions for Newly Developed Properties and Construction

	Class 1 Lakes	Class 2 Lakes	Class 3 Lakes	Rivers/ Streams
Minimum lot size	20,000 ft ² with public sewer, 1 acre without	60,000 ft ²	100,000 ft ²	60,000 ft ²
Minimum lot width (minimum average)	90 ft with public sewer, 100 ft without	150 ft	250 ft	150 ft
Maximum building height	35 ft			
Number of accessory structures* allowed within 300 ft of OHWM	2 (including a boathouse), class 2 and 3 lakes may qualify for additional accessory buildings			
Shoreline setback (landward from OHWM)	75 ft			
Shoreland protection area (landward from OHWM)	35 ft			
Side yard setback to a principal structure	10 ft	15 ft	25 ft	15 ft
Side yard setback to an accessory structure	5 ft	10 ft	25 ft	10 ft
Rear setback for a dwelling	25 ft			
Rear setback for accessory structures*	10 ft			
State or federal highway setback to any structure	110 ft from centerline or 50 ft from right-of-way, whichever is greater			
County road setback to any structure	75 ft from centerline or 42 ft from right-of-way, whichever is greater			
Town road setback to any structure	63 ft from centerline or 30 ft from right-of-way, whichever is greater			
Private road setback to any structure	35 ft from centerline			

* A structure is considered an accessory structure if it is more than 64 square feet in size.
 Note: setbacks are based on the lake classification system. A property may have
 more restrictive setbacks based on the underlying zoning district classification.

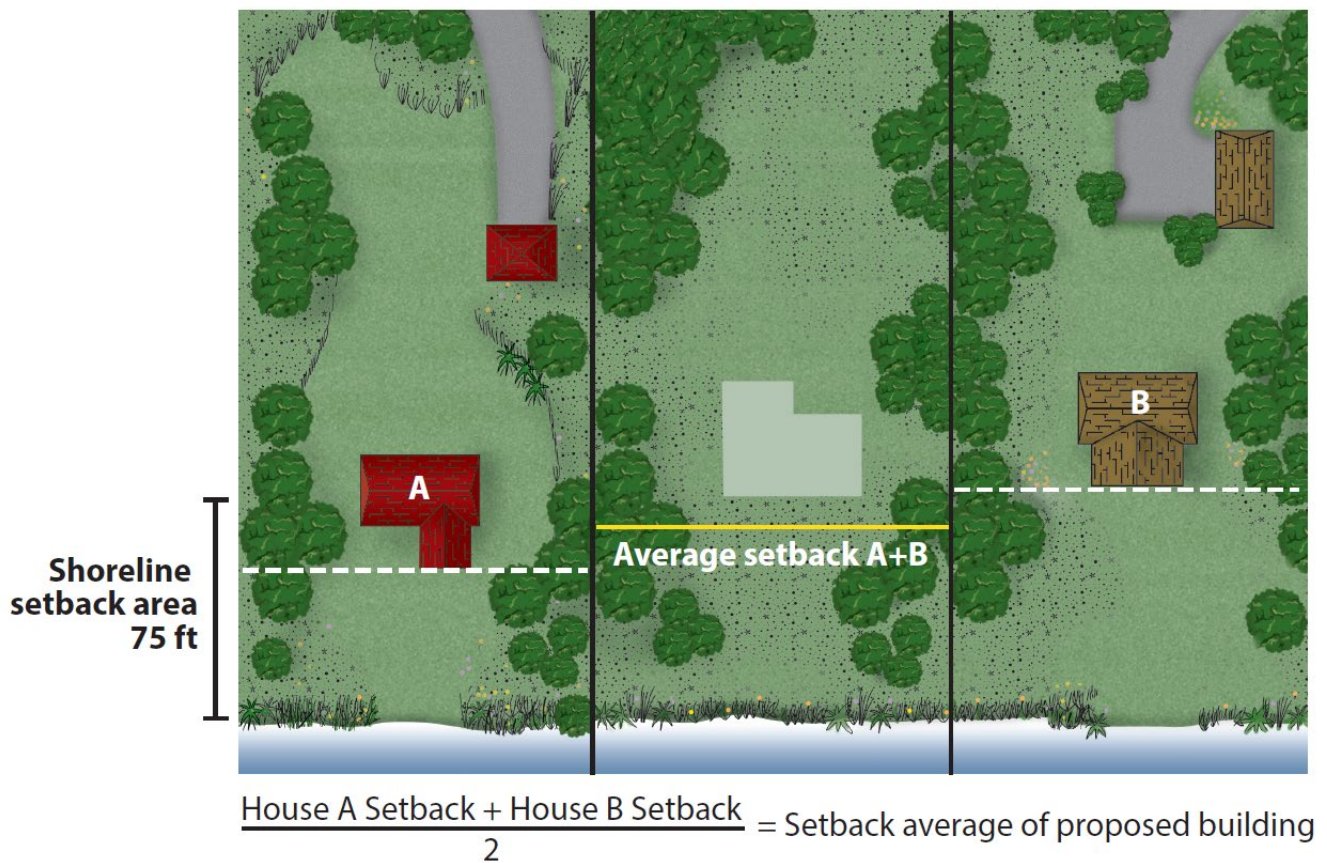
Setback Averaging

There are circumstances in which a principal structure can be located closer than 75 feet from the OHWM. Setback averaging can be used if several criteria are met.

- ✓ Both adjacent properties have a principal structure.
- ✓ The existing principal structures on adjacent properties are both within 250 feet of the proposed building site.

The setback for a principal structure using setback averaging is determined by measuring the distance that each adjacent principal structure is set back from the OHWM, adding them together, and dividing by 2. This value is the final setback for the proposed principal structure.

Regardless of setback averaging, the proposed principal structure must still be at least 35 feet from the OHWM.



Site Dimensions for Previously Developed Properties

An existing structure lawfully constructed that does not meet the current requirements for new construction is called a nonconforming structure, commonly referred to as a structure that is grandfathered in. An existing structure may be maintained, repaired, replaced, restored, rebuilt, or remodeled if:

- ✓ the footprint is not expanded
- ✓ vertical expansion is less than 35 feet above grade
- ✓ use has not been discontinued for 1 year

Lateral expansion is allowed if the principal structure is at least 35 feet from the OHWM. Expansion is limited to a maximum of 200 square feet over the life of the structure and no portion of the expansion can be closer to the OHWM than the closest point of the existing principal structure.

Relocation of a principal structure is allowed if it is not relocated closer to the OHWM and if relocation is approved by the zoning office.

Limiting the removal of vegetation protects natural scenic beauty, fish and wildlife habitat, and water quality.

Polk County's wetlands and shorelines are home to many wildlife and plants, such as the large-flowered trillium (right) which flowers throughout Polk County in spring.

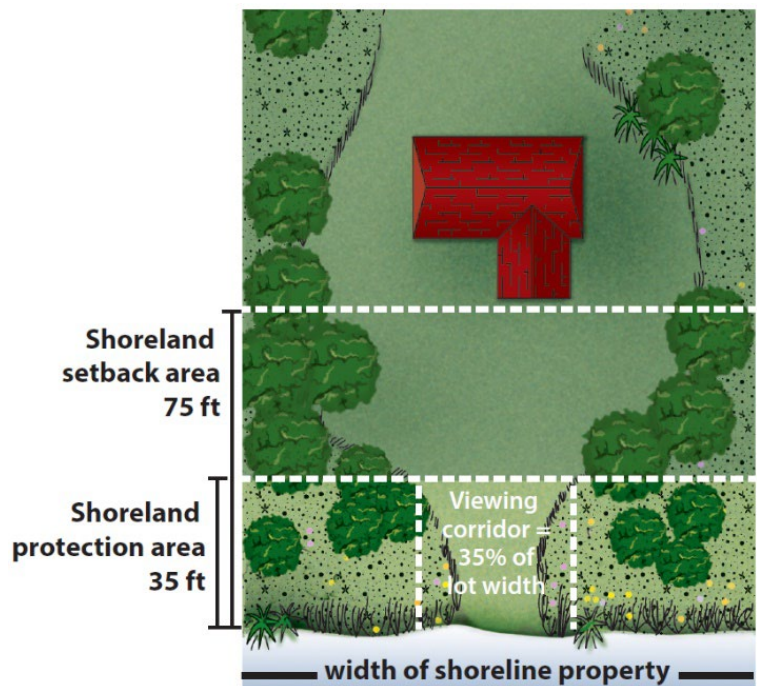


Property Alterations in the Shoreland Protection Area

Regulations are more restrictive when building in the shoreland protection area. The most inquired-about regulations are summarized below; however, this is **not a full list**. Refer to Chapter 42 of the County Code of Ordinances of Polk County, Wisconsin for full text.

Shoreland Protection Area and Viewing Corridors

- ✓ Removal of vegetation is regulated in the shoreland protection area.
- ✓ Each property is allowed a viewing corridor (area cleared of vegetation) of no more than 35% of the lot width within the shoreland protection area.
- ✓ The viewing corridor may be split on a property but the total width of all the corridors cannot exceed the maximum width allowed.
- ✓ Creating or maintaining a viewing corridor requires a Land Use Permit from the Polk County Zoning Office.
- ✓ Viewing corridors cannot be expanded or moved once established.
- ✓ A lot with an existing viewing corridor that does not comply with current standards can be maintained if no additional trees and shrubs are removed within the shoreland protection area.
- ✓ Tree trimming is allowed in the shoreland protection area without a permit if the trimming does not result in the vegetation dying.
- ✓ Piers, wharfs, temporary boat shelters, and boatlifts must be located within or immediately adjacent to the viewing corridor.



Soil disturbance (Filling and Grading)

- ✓ A filling and grading land use permit is required for any filling, grading, or excavation (soil disturbance) within 300 feet of a navigable waterway.
- ✓ Filling and grading is limited to 2,000 square feet on slopes 12% or less and 1,000 square feet on slopes from 12-20%.
- ✓ An erosion control plan is required for any filling or grading on slopes over 20% or when the limits listed above are exceeded.
- ✓ Using erosion control fabric on disturbed areas is the best way to reduce soil erosion, especially for slopes over 20%.
- ✓ Exposed piles of soil should have silt fence or straw wattles around the base or should be tarped during construction to reduce the sites erosion potential and impact on water quality.

Impervious Surface Limitations

- ✓ The total amount of impervious surface (roofs, driveways, patios, etc.) on a parcel is limited to 15% of the total parcel.
- ✓ If the total amount of impervious surface is between 15% and 30%, runoff mitigation is required.
- ✓ Roads and sidewalks do not count towards the impervious surface calculation.

Fertilizer Use

- ✓ Fertilizers containing phosphorus are prohibited in shoreland areas.

The phosphorus in fertilizers that make lawns and gardens green also make lakes and rivers green.

One pound of phosphorus can produce 500 pounds of algae.



Lake Access (Stair, Trail, Path)

- ✓ One developed pedestrian access to the shoreline is allowed within the viewing corridor unless the location in the viewing corridor is not feasible due to steep slopes, wet soils, or similar limiting conditions.
- ✓ Access will be no more than five feet wide with landings of 50 square feet or less with minimum construction to provide safe access (essential railings).
- ✓ Access is constructed with materials that blend with natural ground cover.



Boathouses

- ✓ The maximum dimension for boathouses is 14 feet in width (runs parallel to water) by 26 feet in depth (runs perpendicular to water).
- ✓ Boathouses shall be set back 10 feet from the OHWM.
- ✓ Boathouses shall be a single story with a 14-foot maximum sidewall height.
- ✓ The boathouse roof must pitch away from the lake.
- ✓ Boathouses cannot contain plumbing.
- ✓ Boathouses must be located within the access and viewing corridor.
- ✓ A boathouse shall be used for the storage of watercraft and associated materials.
- ✓ The roof of the boathouse can be used as a deck if the boathouse has a flat roof with no side walls or screens. A railing that meets building code is allowed and is not considered in the 14-foot sidewall height.
- ✓ Boathouse regulations for towns with their own zoning may vary.

Open Structures (Decks, Patios, Gazebos) Within the Shoreland Protection Area

- ✓ Open structures must be located at least 35 feet from the OHWM.
- ✓ The open structure must have no sides or have open/screened sides. Railings are allowed in conformance with building code requirements.
- ✓ Open structures can't be connected to a closed structure.
- ✓ The total floor area of all open structures (deck, patio, portion of any pier above the OHWM, etc.) in the shoreline setback area cannot exceed 200 square feet. Boathouses and other exempt structures are excluded.
- ✓ To have an open structure, the first 37.5 feet of shoreline, as measured from the OHWM, must be fully vegetated for at least 70% of the total property (shoreline) width.

Fire Pits

- ✓ There are no setbacks from the OHWM for firepits if the following criteria are met: firepit is surrounded by pervious material (washed rock, pea gravel, wood chips) and any border around the pervious material is 1 level high.
- ✓ If the firepit is surrounded by an impervious surface, it must be set back 75 feet from the OHWM unless it meets the criteria of an open structure.
- ✓ A firepit can be located adjacent to the lake access to provide additional hard seating areas.



Invasive Species Removal

- ✓ Invasive species are defined as nonnative species whose introduction causes or is likely to cause economic or environmental harm or harm to human health.
- ✓ For a list of invasive species refer to the Invasive Species Rule, Wisconsin Administrative Code Chapter NR 40.
- ✓ Unlimited removal of terrestrial invasive species is allowed with a Land Use Permit from the Zoning Department.
- ✓ Manual removal and herbicide are options for removal.
- ✓ Herbicides must be applied according to the label.
- ✓ For help identifying terrestrial invasive species, contact the Land and Water Resources Department at 715-485-8699.

Buckthorn (Invasive)

- ✓ Shrub or tree, growing up to 20-25 feet tall
- ✓ Abundant clusters of black pea-sized fruit that ripen in late summer
- ✓ Easy to identify in the fall/winter as it is one of the few trees to have green leaves long after a fall frost



Best Practices for Septic Systems

Private septic systems are regulated under Chapter 40 of the Code of Ordinances of Polk County, Wisconsin. All septic tanks must be visually inspected by a plumber, a private onsite wastewater treatment system (POWTS) inspector, or person licensed under Wisconsin Statutes 281.48 and pumped within 3 years of the date of installation and at least once every 3 years thereafter. The Polk County Zoning Department mails maintenance reminder notifications every 3 years, but it is the owner's responsibility to follow their pumping schedule. Pumping intervals will vary depending on the system type.

Keep your septic system working properly and help extend its life by following these maintenance tips.

- ✓ **INSPECT** Have your system inspected and pumped at least every 3 years.
- ✓ **CONSERVE** Use water wisely to avoid overloading your septic system. Fix leaky faucets, check that the float in your toilet is adjusted correctly, and consider installing low flow shower heads and dual flush toilets.
- ✓ **DISPOSE** Grease, paints, solvents, and other materials should be disposed of properly rather than poured down a drain. Items such as diapers, coffee grounds, and feminine hygiene products should never be flushed down the toilet.
- ✓ **PROTECT** Care for your drainfield. Driving or parking on your drainfield increases compaction and shortens the life of your septic system. Keep trees and other deep-rooted vegetation from establishing above your drainfield. Point down spouts away from your septic system since excess runoff can overload your system.

Shoreland Restoration

The health of lakes and rivers depends on decisions that landowners make on their properties. When waterfront properties are developed, a shift from native plants and trees to hard surfaces and lawn occurs. This change increases the amount of rainwater containing nutrients like phosphorus that runs off a property and into a waterbody.

Increases in hard surfaces and lawns cause a loss of habitat for birds and wildlife. Overdeveloped shorelines remove critical habitat that species such as loons, frogs, songbirds, waterfowl, and otters depend on. Fish species depend on the area where land and water meet for spawning. Trees and branches that fall into a lake provide habitat for fish and aquatic organisms. Canada geese, which can be a nuisance, favor lawns over taller native grasses and flowers.

Shoreland restoration restores a healthy transition between land and water. The goal of shoreland restoration is to establish native vegetation that is acclimated to existing soil, moisture, and sunlight conditions. Once established, native vegetation is superior to non-native plants and lawn as wildlife habitat, as a pollutant filter, and for protection against shoreline erosion.



Shoreline restoration can add many desirable features to your shoreline. At a minimum, a restoration will provide a seasonal array of colors, textures, and aromas as well as consistent wildlife activity from songbirds and pollinators.

To get started on your own shoreland restoration contact the Polk County Land and Water Resources Department for technical assistance and possible funding sources at 715-485-8699.

Aquatic Plants

Aquatic plants play an important role in creating a thriving habitat for fish and wildlife. Plants are essential to the spawning success of many fish species, provide shade and refuge for near shore animals, create oxygen for animals, and their fruits and tubers provide food for mammals, waterfowl, insects, and fish. Plant roots create woven networks that stabilize sediments at the water's edge where waves might otherwise erode the shoreline. Submersed plants use phosphorus and nitrogen, making these nutrients less available for nuisance algae.



Aquatic Plant Removal

Aquatic plant removal is regulated by the Wisconsin Department of Natural Resources. The DNR allows for the removal of native vegetation to provide each property an individual riparian access lane to access open water. This area is limited to a **maximum width of 30 feet per property** measured along the shoreline and includes the area where a dock, boat lift, swim raft, and other recreational equipment is located. Boundaries of the riparian access lane **cannot be moved from year to year.**

Plant removal in the individual riparian access lane can only be done **by hand** with a tool such as a rake. There can be no assistance from machinery, boats, rollers, etc. unless a permit is obtained. When plants are cut/uprooted they must be taken out of the lake.

Wild rice can never be removed even if it is present in a riparian access lane.

For questions regarding aquatic plant removal, contact Tyler Mesalk (WDNR), 715-635-4227.

Aquatic Invasive Species

Aquatic invasive species (AIS) are non-native species that are likely to cause harm to the economy, environment, or human health. Some aquatic invasive species present in Polk County include zebra mussels, curly-leaf pondweed, Eurasian watermilfoil, purple loosestrife, and yellow iris.

The Polk County Illegal Transport of Aquatic Plants and Animals Ordinance makes it illegal to operate or transport equipment with aquatic plants or invasive animals attached. The ordinance also states that if a decontamination station is present at a boat landing the boater must decontaminate before entering and leaving the lake.



Wisconsin also has transport laws for boaters and anglers to prevent the introduction and control the spread of AIS. To comply with these laws and to prevent the spread of AIS, perform these actions every boating trip.

- ✓ **Inspect** boats, trailers, and equipment
- ✓ **Remove** all attached aquatic plants and animals
- ✓ **Drain** all water from boats, live wells, motors, trailers, and equipment
- ✓ **Never move** live fish away from a waterbody
- ✓ **Dispose** of unwanted bait in the trash
- ✓ **Buy** minnows from a Wisconsin bait dealer



Aquatic Species to Look For

The final section of this handbook includes photos and descriptions of some of the invasive species found in Polk County lakes and rivers as well as the most common native aquatic plants found throughout the county. In many cases, a **native look-a-like** is included for each invasive species.

If you see an invasive species take a photo, note the location, and contact the Polk County Land and Water Resources Department at 715-485-8699.

The Polk County Land and Water Resources Department also offers numerous training opportunities to identify both invasive and native species common to Polk County waterbodies. Events will be posted on the [Polk County WI Environmental Services Division Facebook page](#).

Zebra mussel (Invasive)

- ✓ **D-shaped shell** with alternating black and tan stripes
- ✓ **Able to attach to hard surfaces** (plants, rocks, other mussels, etc.)
- ✓ Up to **1.25 inches in length**
- ✓ Microscopic when immature



Curly leaf pondweed
(Invasive)

- ✓ Leaves are **wavy** like lasagna noodles
- ✓ Leaf edges have fine **teeth**
- ✓ Leaves **do not** wrap around the stem



Clasping leaf pondweed
(Native)

- ✓ Leaves are wavy
- ✓ Leaf edges do not have teeth
- ✓ Leaves wrap around the stem



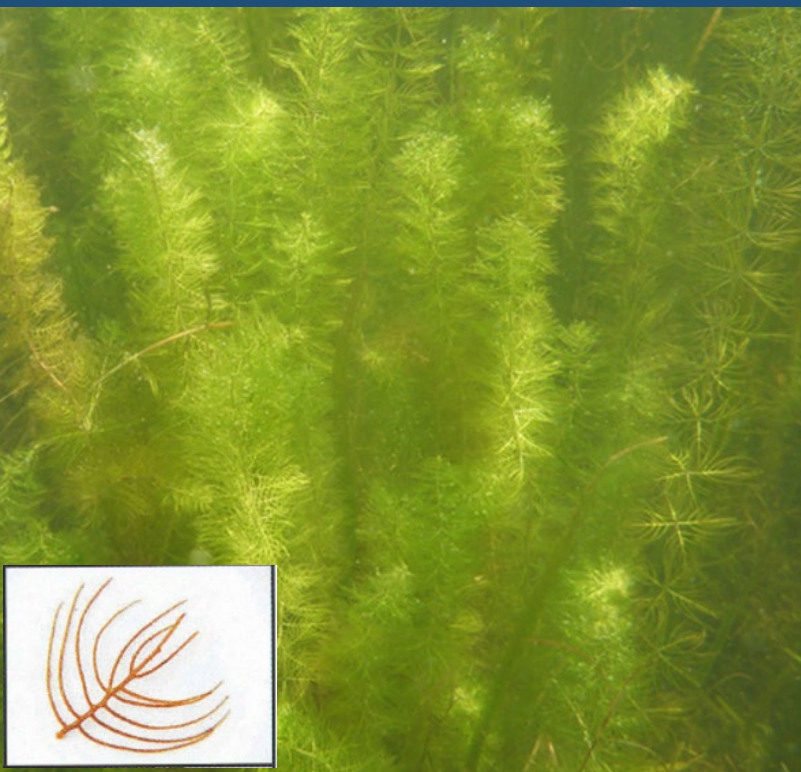
Eurasian watermilfoil (Invasive)

- ✓ Leaves are whorled around the stem
- ✓ Leaves have **12 or more pairs** of leaflets
- ✓ Plant is **weak and limp** when out of water



Northern watermilfoil (Native)

- ✓ Leaves are whorled around the stem
- ✓ Leaves have less than 12 pairs of leaflets
- ✓ Plant tends to hold its shape out of water



**Purple loosestrife
(Invasive)**

- ✓ Found on shorelines, in wetlands, and roadside ditches
- ✓ **Square** or 6-sided woody **stem**
- ✓ **Purple flowers** bloom in July and August
- ✓ Can grow 3 to 5 feet tall



**Pickerelweed
(Native)**

- ✓ Grows in dense clusters in shallow water
- ✓ Leaves are large and heart shaped
- ✓ Important shoreline stabilizer against wave action

**Yellow flag iris
(Invasive)**

- ✓ **Yellow flowers** bloom in early spring (May to early June)
- ✓ Leaf has a **raised midvein**
- ✓ Leaves are **dark green** to **blue-green**
- ✓ Can grow 3-5 feet tall



**Blue flag iris
(Native)**

- ✓ **Blue/purple flowers** bloom in early spring
- ✓ Leaves are **light green** in color
- ✓ Can grow 2-4 feet tall

Common bladderwort (Native)

- ✓ Leaves contain bladders that trap invertebrates, carnivorous plant
- ✓ Small yellow flowers
- ✓ Provides food and cover for fish



Common waterweed (Native)

- ✓ Leaves are in whorls of three around the stem
- ✓ Can form nuisance mats
- ✓ Provides cover for fish and food for muskrats and waterfowl

Fern leaf pondweed
(Native)

- ✓ Leaves two ranked, creating a fern or feather like appearance
- ✓ Grows in deeper water
- ✓ Provides food and cover for fish
- ✓ Provides habitat for invertebrates



Large leaf pondweed
(Native)

- ✓ Leaves often brown to red in color
- ✓ Large leaves with a distinct half-moon shape
- ✓ Produces large nutlets favored as a valuable food source for waterfowl

Coontail (Native)

- ✓ Free-floating, can form dense mats that are difficult to navigate through
- ✓ Whorls of leaves can resemble a racoon's tail
- ✓ Foliage and fruit are consumed by waterfowl



Water celery (Native)

- ✓ Thin, ribbon like leaves
- ✓ Provides important habitat for fish
- ✓ All parts of the plant are consumed by waterfowl

White water lily
(Native)

- ✓ Round leaves up to 11 inches in diameter
- ✓ White flowers with a yellow center
- ✓ Seeds are eaten by waterfowl and rhizomes are eaten by wildlife



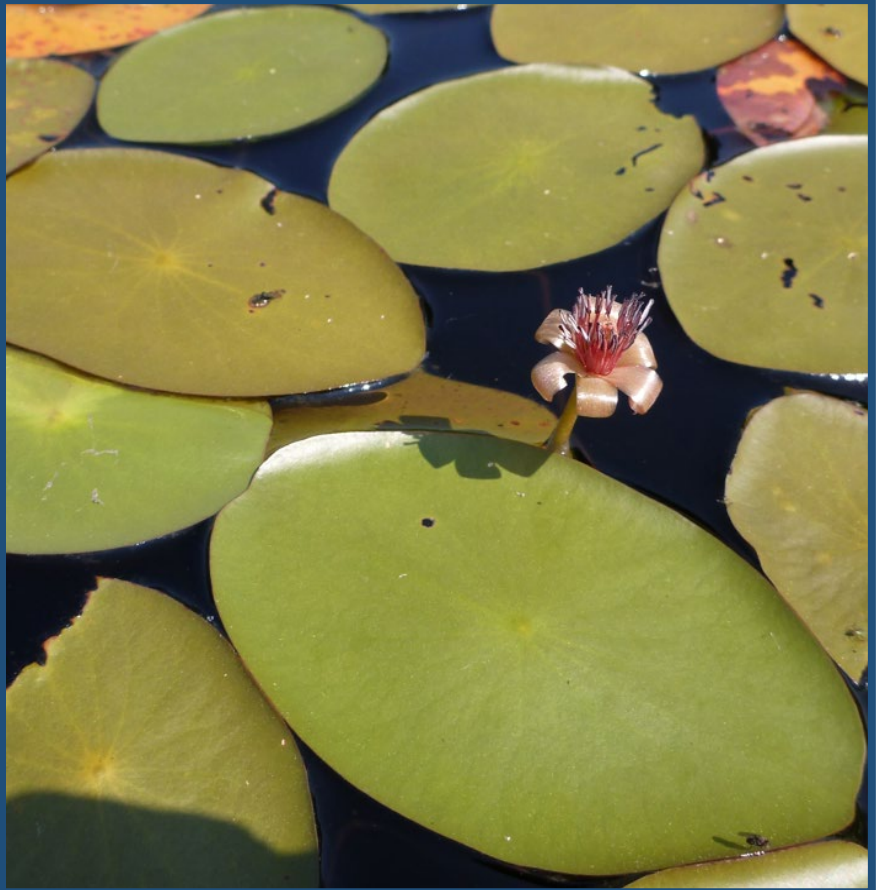
Yellow water lily
(Native)

- ✓ Heart shaped leaves up to 16 inches in length
- ✓ Small yellow flowers
- ✓ Seeds are eaten by waterfowl and rhizomes are eaten by wildlife



Watershield (Native)

- ✓ Oval leaves up to 6 inches in diameter
- ✓ Stem is attached to the center of the underside of the leaf
- ✓ Stems and underside of leaf are covered in a clear slime
- ✓ Small red-purple flower



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