2010

Onland Lake Management Plan

Onland Lake Management Planning Committee

3/4/2010

Plan approved by the Onland Lake Management Planning Committee on

Adopted by Town of new Hope on

Adopted by Portage County on

A special thanks to all those who helped to create the Spring Lake Management Plan and provided the necessary data in the Portage County Lake Study.

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Onland Lake Management Planning Committee

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Introduction

Onland Lake is located in the Town of New Hope in Portage County. It is valued by those who use and enjoy the lake for its natural beauty, peace and tranquility, wildlife viewing, fishing, and recreational opportunities.

The purpose of this management plan is to provide guidance to address existing problems and prevent future problems that may be detrimental to the Onland Lake ecosystem. This management plan was written as part of the second phase of the Portage County Lakes Study. The first phase of the Portage County Lakes Study involved data collection from Onland Lake and 28 other lakes throughout the county. The study provided information on water quality, shoreline development, amphibian habitat, fisheries, aquatic plants and other parameters.

The purpose of this plan is to provide guidance to address existing problems and prevent future problems that may be detrimental to the Spring Lake ecosystem.

The development of this plan utilized the information from the lake study and other studies, a committee of interested citizens, local organizations, and professionals. Prior to the lake plan development a citizen survey was conducted to gather information on citizens' values, opinions, and perceived issues with Onland Lake. The survey was sent to 35 residences within the Onland Lake watershed and was available online where any interested member of the public could take the survey. Nineteen citizen surveys were returned for a response rate of 54%. The members of the Onland Lake management planning committee met over five months to learn about topics related the lake and develop this lake management plan.

The overall goal for the Onland Lake Management Plan is to sustainably manage Onland Lake to maintain the water quality and natural and scenic beauty of the lake.

Background Information

Information in this section was taken from the Portage County Lakes Study and the citizen surveys. The complete lake study document and summarized survey results can be found at: http://www.co.portage.wi.us/planningzoning/PCL/Main%20Page/Main%20Page.shtml

The background information provided from the Portage County Lakes Study helps to give us a more complete understanding of Onland Lake. A healthy lake ecosystem is comprised of many components that include water quality and shore lands that support aquatic plants, fish, wildlife, and more. These components are not only found in lakes but also extend to where the water meets the land and beyond into the watershed. Onland Lake is a reflection of the health and activities that occur in the lake, near the shore, and in the watershed.

Onland Lake is a 47 acre groundwater seepage lake located in the town of New Hope. The lake has an estimated volume of 669 acre-feet and a maximum depth of 25 feet (WDNR 2005). The lake bottom consists primarily of sand and gravel, although silt-like sedimentation has been observed. There is a small public access to the lake on the southwest side that is owned by the Town of New Hope.

Watershed

Onland Lake's surface watershed, an area of land where water from precipitation drains from higher elevations towards the lake, is approximately 239 acres.

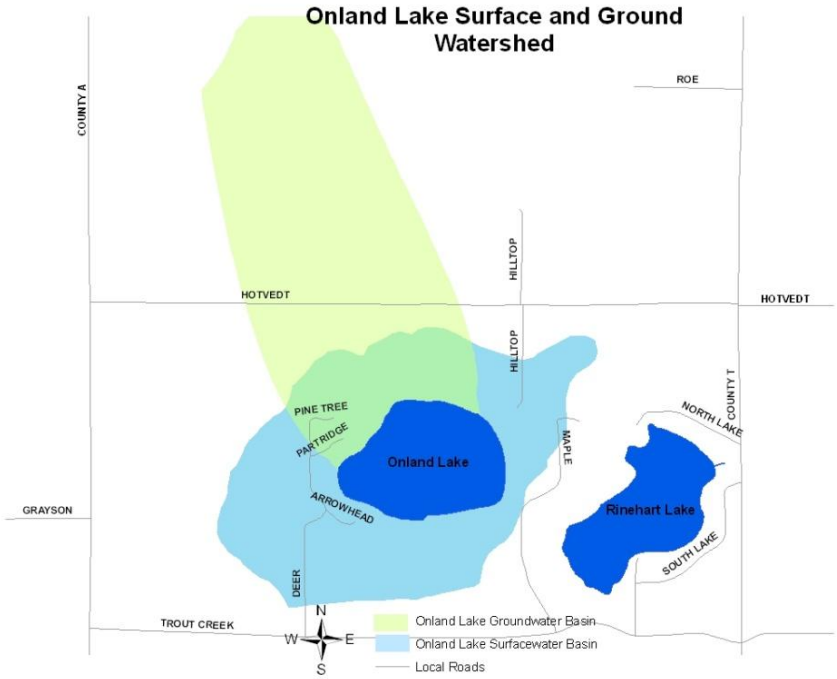

Figure 1. Onland Lake groundwater and surface watersheds.

Land use types and associated management practices can have a significant impact on water quality. **Though land uses may not easily be changed, land management practices can be modified to improve water quality.** Land use within the watershed is predominantly non-irrigated agriculture (34%) and forest land (31%). Residential development, transportation, and forested land uses have increased slightly as non-irrigated agriculture has decreased in the watershed since 1948.

A groundwater watershed is similar to a surface watershed, except that it is an area of land where the groundwater, instead of surface water, drains to Onland Lake. Often surface water watersheds and groundwater watersheds do not match each other, which is the case with Onland Lake. Onland Lake's groundwater watershed is approximately 293 acres and stretches to the northwest of the lake. The groundwater watershed is primarily comprised of forested land (54%) and non-irrigated crop land (26%). The land uses have not changed significantly since 1948.

Survey respondents indicated a willingness to change how they manage their land with respect to Onland Lake. The top motivators included increasing property value, providing better fish and wildlife habitat, increasing the natural beauty of their property, and improving water quality.

Sensitive Areas

The sensitive areas associated with Onland Lake are defined by lands adjacent to the lake that are particularly valuable to the lake's ecosystem or that would be significantly impacted by most disturbances or development. These areas include steep shorelines that virtually surround the lake. The steep shore areas are particularly prone to erosion and could contribute to sedimentation and associated water quality problems in Onland Lake. The sensitive areas also include areas of Native American effigy mounds on the east side of the lake (See Appendix A).

The habitats of amphibians and reptiles are of importance because they utilize both aquatic and terrestrial habitats and the shoreline interface between the two. **These areas of habitat are not only important for reptiles and amphibians but also other aquatic and terrestrial species.**

The primary amphibian habitat can be found in several locations around Onland Lake, but the most sensitive areas include portions of the southwest shore. A key feature of this habitat area is undisturbed natural shoreline. Sections of Onland Lake have minimal shoreline alterations from development. However, there are a few areas that

contain large amounts of submergent, emergent, and floating-leaf vegetation, which is ideal habitat for amphibians (See Appendix B).

Shoreline

Around Onland Lake approximately 96% of the shoreline is considered disturbed. Of that, 85.1% is low level of vegetation disturbance and 10.9% is highly disturbed. Areas of low vegetation disturbance are areas that have unaltered shore except for pier access. Areas of high vegetation disturbance are defined as a beach, rip rap, lawn mowed to the water line, or a boat access. Onland Lake also has four percent of the shoreline which is characterized as narrow wetland.

While the majority of shorelines around Onland Lake are currently vegetated, if this changed it would likely impact the water quality in the lake, growth of algae and aquatic plants, and the fish and other species that currently comprise the lake's ecosystem. Surfaces such as roofs, driveways, roads, patios, and compacted soils increase the amount of runoff moving across the landscape towards Onland Lake, especially with steep shorelines. Runoff that enters the lake can carry a variety of pollutants into the water. Some of the negative impacts in the lake due to additional runoff may include: increased nutrients (such as phosphorus), which can cause algae blooms and excessive plant growth, and increased amounts of sediment. This in turn can lead to cloudy or turbid water, sediment burying fish spawning areas and other critical habitat, and sediment transporting additional contaminants such as bacteria, debris, metals, and pesticides. The Portage County Lake Study indicated that sedimentation has already started to become a problem in Onland Lake.

According to the citizen survey, 15 of the 19 respondents owned shoreline property. Thirteen respondents who owned shoreline property indicated their shorelines were undeveloped or natural. Two respondents indicated they had lawn where their property met the water. Two respondents indicated they had a boathouse or other building on their shoreline, and one respondent indicated they utilized rock riprap to stabilize their shoreline.

Respondents indicated the depth of their shoreline buffers around Onland Lake varied greatly. Three respondents indicated they had shoreline buffers 51-100 feet deep, while six respondents indicated their buffers were less than fifty feet deep. Four respondents indicated the depth of their buffer was less than 35 feet which is required by the county/state shoreline zoning ordinances. These special rules, the shoreland zoning ordinance, apply to the near shore area of the lake. These rules were developed to help protect water quality and habitat of lakes.

Aquatic Plants

Aquatic plants play many important roles in aquatic ecosystems including providing habitat for aquatic and semi-aquatic organisms; providing food for fish, waterfowl, and other animals; taking up nutrients that would otherwise be used by algae; and modifying water temperatures on hot days.

According to R. Freckmann (UWSP), there are **41** species of aquatic macrophytes or plants that have been identified in Onland Lake or on the wet areas of shore. This is slightly below average when compared to other Portage County lakes. There is a good quality marsh present in the southwestern part of the lake and adjacent shoreline.

Almost no botanical studies were conducted on Onland Lake prior to 2003, resulting in a relatively small number of species being identified. There are currently no known invasive species in the lake. However, two of the most aggressive shoreline invasive species, purple loosestrife and reed canary grass, are present in small numbers on the shore. Some of the lakes near Onland Lake have invasive species including

Eurasian watermilfoil and curly leaf pondweed. **It is important to prevent any new invasive species from entering Onland Lake.**

When asked about the abundance of aquatic plants in Onland Lake, the majority of respondents (31%) felt the plant growth was just right or dense. Respondents indicated August and July were the months with the densest plant growth which is typical for most Wisconsin lakes.

Water Quality and Land Use

When asked about Onland Lake's water quality, the majority of survey respondents indicated they felt the water quality was good or excellent and felt the water quality hadn't changed during the period that they were familiar with it. Survey respondents also indicated the quality of lake water had major economic impacts and major impacts on their personal enjoyment of the lake.

Water quality assessment of a lake involves a number of measures including temperature, dissolved oxygen, water chemistry, chlorophyll *a*, and algae. Each of these measures plays a part in the lakes overall water quality.

Chloride concentrations, and to a lesser degree sodium and potassium concentrations, are commonly used as indicators of how strongly a lake is being impacted by human activity. In Onland Lake chloride, sodium, and potassium concentrations measured in 2002/03 were low.

Atrazine, an agricultural herbicide, was detected in Onland Lake. Some toxicity studies have indicated that even at low levels reproductive system abnormalities can occur in frogs. The presence of atrazine indicates that other agri-chemicals may also be entering Onland Lake.

The temperature in Onland Lake was generally mixed (remains the same) from top to bottom in the spring and fall. There was very slight stratification present in the winter and summer. Dissolved oxygen was always plentiful in the upper 18 feet of the lake. During much of the year, water in the bottom six feet lacked enough oxygen to support many biota; however, this is considered normal and is due to the decomposition of organic materials.

Water clarity is a measure of how deep light can penetrate the water. It is an aesthetic measure and is related to the depth that rooted aquatic plants can grow. Clarity measurements in Onland Lake ranged from eight to twenty four feet. July had the best water clarity and September had the poorest. Fluctuations in water clarity throughout the summer are normal as algae and aquatic plant populations and sedimentation increase and decrease.

Chlorophyll *a* is a measure of algae in Spring Lake. Chlorophyll *a* concentrations in Spring Lake ranged from 0.005 to 7.22 mg/L. The measure of 7.22 mg/L was an unusually high. The corresponding water clarity reading was approximately 8.0 feet which was poor for this lake.

The 40 algal genera identified during the sample periods were relatively common and none of those that reached numerical dominance in the sample counts were associated with toxins or health issues. The algal community relative to the chlorophyll *a*, phosphorus, and nitrogen values for Spring Lake presents a picture of a very oligotrophic lake (B. Bell).

Nutrients (nitrogen and phosphorus) are important measures of water quality in lakes because they are used for growth by algae and aquatic plants. In Onland Lake both the phosphorus and nitrogen concentrations fluctuated throughout the year, but generally were not high enough to fuel algae blooms in the summer.

Nitrogen concentrations in Onland Lake were low, including nitrate, which is easily used for growth by aquatic plants and algae (Figure 2). However, nitrate concentrations seemed to be on the rise again and should be monitored to determine if they are becoming a problem.

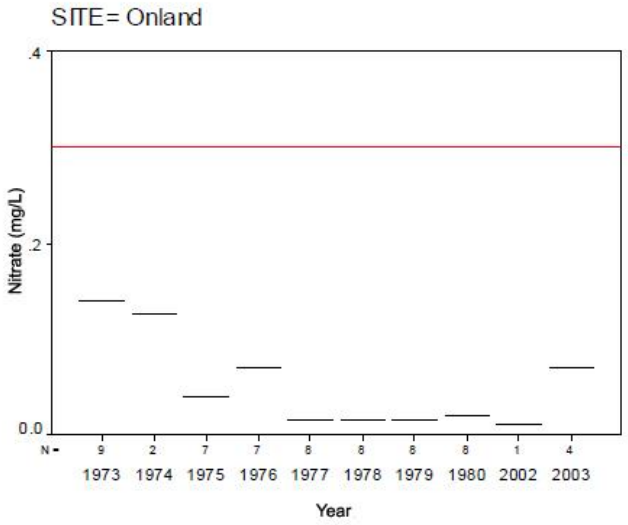

Figure 2. Median Nitrate-N concentrations in Onland Lake, 1973-2003.

Phosphorus is an element that is essential to most living organisms in including plants. Sources of phosphorus can include naturally occurring phosphorus in soils, wetlands, and small amounts in groundwater. Sources from human influence include soil erosion, agricultural and urban runoff, septic systems, and animal waste.

In Onland Lake the aquatic plant growth is most responsive to phosphorus due to its relative limited supply with respect to other substances necessary for growth. Increases of small amounts of phosphorus result in an increase of growth rates and abundance of aquatic plants and algae.

Phosphorus concentrations in Onland Lake are variable throughout the year. Median total phosphorus (TP) concentrations in spring/fall for 2002-2003 were 13 ug/L (Figure 3).

Currently the Wisconsin DNR has proposed phosphorus criteria values for lakes in Wisconsin. The proposed criteria value for deep seepage lakes like Onland Lake is 20 ug/L. Onland Lake had average summer total phosphorus concentrations of 11.9 ug/L in 2002/03. These concentrations fall below the criteria set by the DNR; however, average fall total phosphorus in Onland Lake was 21 ug/L. Total phosphorus should be monitored in Onland Lake to identify any increases in the future.

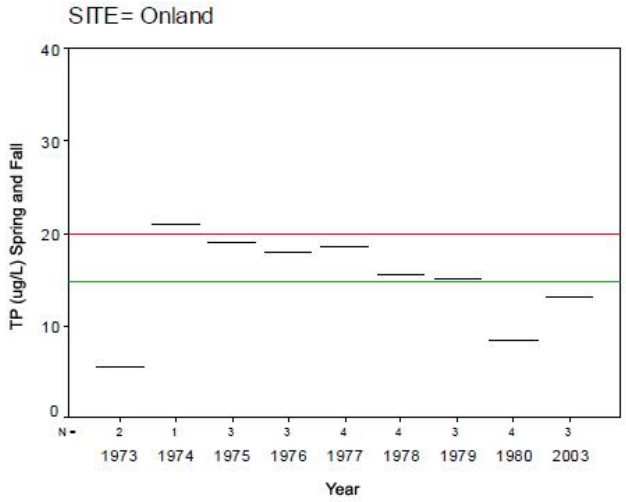

Figure 3. Median total phosphorus concentrations in Onland Lake in samples collected in spring and fall, 1973-2003.

Managing phosphorus in the Onland Lake watershed is key to protecting the lake itself. Positive changes in land management practices and in land uses can result in improved water quality in Onland Lake. Phosphorus inputs to the lake can be controlled through the use of

many different Best Management Practices (BMP's) that minimize the movement of runoff and phosphorus to the lake. Best management practices that should be used near shore and throughout the watershed include the development of water quality-based nutrient management plans for ag land, only applying phosphorus and nitrogen from fertilizer or manure based on soil tests for specific crops or turf, providing cover on the landscape and/or appropriate mitigation when open soils are necessary during construction or cropping, use of cover crops, properly storing manure, and spreading manure only when the ground is not frozen. Some of the near shore land use practices that can decrease the inputs of phosphorus to Onland Lake include leaving native vegetation (trees, bushes, and grasses), eliminating the use of fertilizer, minimizing runoff, protecting exposed soil, and increasing the setback of septic drainfields. The Portage County Land Conservation Department is one of numerous organizations that can provide assistance to landowners that want to reduce impacts to Onland Lake from their property.

Future degradation of water quality in Onland Lake can be minimized with thoughtful land use planning throughout the watershed. This includes locating roads away from the lake, diverting runoff from infrastructures to areas where it can infiltrate rather than runoff to the lake, and controlling runoff and nutrient inputs from new and existing developments.

A "build out" of the current zoning in the watersheds (Town of New Hope) was conducted to estimate nutrient delivery to Onland Lake if the allowable development occurs. Additional build out scenarios included connecting more of the landscape to the lake through water diversion (such as culverts and roads). The development of a lake model allowed us to estimate phosphorus and algal changes within the lake based on various land use scenarios (Figure 4). Points displayed include (in order from left to right) undeveloped, current land use with 25% of the landscape using BMPs, current land use, built out watershed, and built out with two additional levels of connectedness.

In Figure 4, the yellow line on the graph represents the proposed WDNR flag (warning) value for phosphorus in a seepage lake (15 ug/L)and the pink line shows the proposed WDNR criteria value for phosphorus (20 ug/L).

The goal for this plan is to maintain the current water quality in Onland Lake.

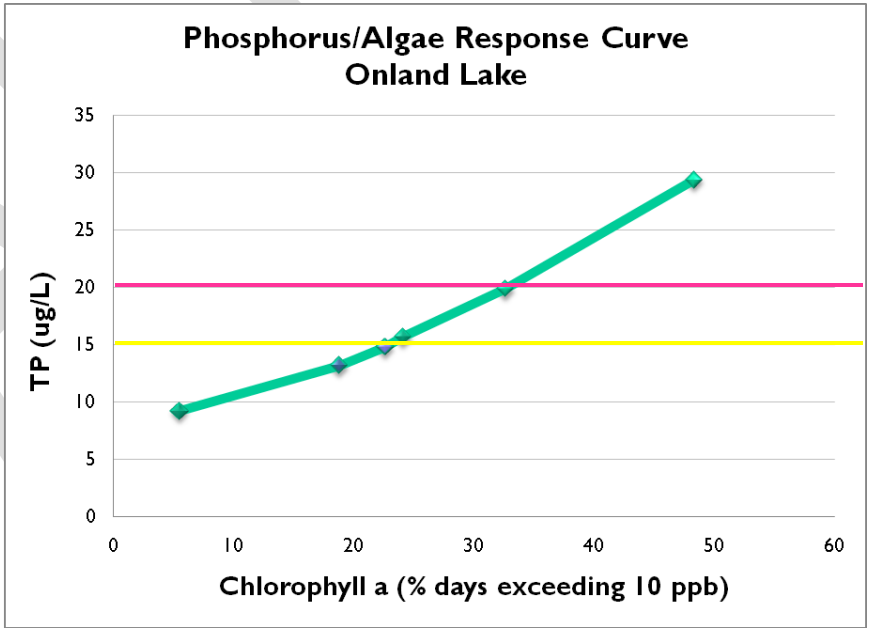

Figure 4. Phosphorus and related algae response to land use scenarios in the watershed.

Recreation

According to respondents of the citizen survey**, the most popular activities at Onland Lake include solitude, swimming/snorkeling, enjoying scenery, enjoying wildlife, and fishing.**

Conflicts between users seemed minimal on Onland Lake as very few survey respondents indicated they were sometimes bothered by other lake users; the majority indicated they saw others but were not bothered by them.

When survey respondents were asked to rate their fishing experiences in Onland Lake, 70% indicated fishing was average and 30% indicated fishing was fair. The majority of survey respondents felt the quality of fishing had stayed the same or declined over time and carp, aquatic plants, and algae were attributed to the decline.

Tom Meronek, West Central Area Fisheries Manager, gave a brief overview of the fisheries in Onland Lake. A hook and line survey was conducted at Onland Lake in the summer of 2009 to obtain information about the largemouth bass population; in general the bass were underweight for their length. A recommendation was made for largemouth bass to be managed with a special slot limit to allow fish to grow to a larger size and have a healthier weight.

Goals, Objectives, and Actions

The overall goal for the Onland Lake Management Plan is to sustainably manage and protect the natural beauty, water quality, and habitats present on Onland Lake while improving the fisheries.

The following goals, objectives, and actions were derived from the values and concerns of the members of the Onland Lake Planning Committee and local citizens and are based on the science used to assess Onland Lake and its ecosystem. Implementing the goals, objectives, and actions of the Onland Lake Management Plan will protect the scenic beauty, peacefulness, recreational opportunities, and water quality for current and future generations. These goals are intended to be met through implementation, education, encouragement, and incentives.

Resources that are listed within the plan include primary organizations or individuals that would be able to provide information, suggestions, and/or services to accomplish the goals and objectives.
A management plan is a living document that changes over time to meet the current needs, challenges, and desires. **The goals, objectives, and actions listed in this plan will be reviewed by the Onland Lake planning committee, interested citizens, and representatives from municipalities and agencies annually in the fall and updated with any necessary changes.**

Communication

Many of the goals outlined in this plan are focused on disseminating information to lake and watershed residents and lake users, ultimately to help them make informed decisions that will result in a healthy ecosystem in Onland Lake that is enjoyed by many people. There is no single best way to distribute information to those that enjoy and/or affect Onland Lake, so the planning committee has identified a variety of options to communicate with one another and in the community.

Vision: Improve communication to create a sense of community around the lake.

Goal 1: Landowners and lake users will routinely communicate with one another about topics related to Onland Lake.

Objectives 1.1: Provide information to landowners and lake users that will allow them to make informed decisions.

Action	Lead person/group	Start/end dates	Resources
Work with Portage County and UWSP to hire a person to work with local citizens and establish stakeholder involvement on Onland Lake.	Portage County and UWSP	Summer 2010	UWSP Portage County
Establish an annual event on Onland Lake so that all shoreland residents have an opportunity to socialize and network.		Summer 2010	
Work with Rinehart Lake Association to develop and distribute informational packets to all riparian landowners on Onland and Rinehart Lakes.	In association with Rinehart Lake Association	Summer 2010	Rinehart Lake Association UW Extension Lakes
Work with other area lake groups on projects with similar goals.		Ongoing	UW Extension Lakes
Continue communications with Sunset and Rinehart Lake Groups by attending the annual meeting for the Town of New Hope Lakes.	Scott Johnson/CWES		Sunset Lake Group Central Wisc Env. Station Rinehart Lake Association
Support the formation of a Portage County lakes Association.			Portage County Land Conservation Dept. UWSP

Water Quality and Landuse

Onland Lake is host to a wide variety of plants, insects, fish, amphibians, and a variety of other animals that all depend on good water quality in the lake. Additions of nutrients (nitrogen and phosphorus) can result in increased algal and aquatic plant growth; pesticides/herbicides can affect the biota and ecosystem and healthy use of the lake. Land uses within the watershed of Onland Lake play a critical role in the development of goals to protect the current water quality in Onland Lake. The Onland Lake committee would like to work with all landowners and lake users found in the watershed to maintain the health of Onland Lake.

Survey respondents indicated that water quality influenced their enjoyment of the lake and impacted their perceived value of Onland Lake and the majority felt the water quality in Onland Lake was good or excellent. Citizens who were familiar with the lake felt that overall the water quality in Onland Lake has remained the same over time. Data shows that water quality in Onland Lake is good, although there is some indication of human influence that may be impacting it.

Vision: The planning committee wishes to maintain the current water quality in Onland Lake.

Goal 2: Maintain the water quality in Onland Lake at 2002/03 concentrations; average summer TP concentrations of 15 ug/L with algae blooms (10 ug/L) occurring 25% of the days. We will know we are achieving this when monitoring indicates that median summer (5 samples/summer) total phosphorus remains 15 ug/L.

Objectives 2.1: Monitor the water quality in Onland Lake to evaluate if we are meeting our goals.

Action	Lead person/group	Start/end dates	Resources
Monitor nitrogen concentrations during spring and fall overturn to keep an eye on concentrations.			UWSP
Establish a citizen water quality monitoring program. Hold joint training session with other local lakes.			UWSP UW Extension Lakes
Update observations of groundwater inflow and outflow on Onland Lake.			UWSP

Objectives 2.2: Reduce nutrient inputs from shoreline properties around Onland Lake.

Action	Lead person/group	Start/end dates	Resources
Share information with landowners about natural vegetated buffers, runoff controls, and rain gardens in the welcome packet.	In association with Rinehart Lake Association	Summer 2010	UWSP UW Extension Lakes Portage County Land Cons.
Share information regarding "green" cleaning products in the welcome packet.	In association with Rinehart Lake Association	Summer 2010	UWSP UW Extension Lakes Portage County Land Cons.
Share information regarding impacts of using fertilizers and pesticides in the welcome packet.	In association with Rinehart Lake Association	Summer 2010	UWSP UW Extension Lakes Portage County Land Cons.

Goal 3: Land use practices in the watershed will have a positive effect on the water quality in Onland Lake.

Objectives 3.1: Understand and keep current with land management rules and decisions that affect water quality in Onland Lake.

Action	Lead person/group	Start/end dates	Resources
Monitor zoning regulations to ensure they stay at 20 acre minimums within the Town of New Hope so they continue to minimize the impacts from development on Onland Lake.		Ongoing	Town of New Hope Portage County Planning and Zoning
Pay attention to the atrazine levels in the prohibition area and if they change alert riparian landowners.	Town of New Hope Groundwater Citizen Advisory Committee member	Ongoing	Town of New Hope Portage County Land Cons. Dept.
Work with the county to encourage water quality based nutrient management plans for all agriculture in the watersheds of Onland Lake.	Portage County Land Cons. Dept.	Ongoing	

Water Levels

Fluctuating water levels in lakes are natural responses to changes in climate and weather patterns. Some lakes experience these fluctuations in water levels periodically. The plant and animal life in these lakes have adapted and sometimes depend on these fluctuations for survival; however, a large withdrawal of groundwater can potentially enhance these natural fluctuations, effecting the extent and duration of low water levels. Survey respondents identified low water levels as a concern for Onland Lake.

Vision: The planning committee wishes to maintain or improve current water levels to sustain a healthy lake eco-system.

Goal 4: Understand water fluctuations in and near Onland Lake.

Objectives 4.1: Evaluate water quantity related to natural and human induced reductions in and near Onland Lake.

Action	Lead person/group	Start/end dates	Resources
Work with Sunset and Rinehart Lakes to monitor the high capacity well situation in the Town of New Hope.	In association with Rinehart Lake Association and Sunset Lake riparian owners	Ongoing	UWSP
Install a monitoring well with the help of UWSP to monitor water levels in Onland Lake.			UWSP

Shorelands

Shorelands are some of the most important habitats near lakes for terrestrial and aquatic wildlife, including birds. They also help to slow runoff moving to the lake and filter runoff before it enters the lake. Restoring and protecting shorelands provides scenery and solitude, as well as natural space for lake residents to enjoy nature. The majority of survey respondents that owned shoreland property indicated they currently have an undeveloped natural shoreline. The shorelands around Onland Lake are also characterized by steep slopes. Making an effort to protect the steep slopes around Onland Lake will reduce soil erosion to the lake.

Vision: The planning committee for Onland Lake envisions a lake with natural shorelines that screen development and provide habitat and water quality benefits.

Goal 5: The shoreland vegetation around Onland Lake will provide habitat, protect water quality, and provide a sense of privacy for shoreland residents and lake users. Shorelands will be maintained or improved to accomplish this goal. This goal will be accomplished when shore land buffers around Onland Lake are consistent or better than the requirements in the state and county shoreland zoning ordinances.

Objectives 5.1: Shoreland owners around Onland Lake will understand their roles in protecting this important land and will make informed land management decisions.

Actions	Lead person/group	Start/end dates	Resources
Become familiar with Portage County shoreland zoning ordinances and their purposes for protecting water quality, habitat, etc.		Ongoing	Portage County Zoning office UWSP Center for Land Use Education
In steep slope areas around Onland Lake, encourage the design of access points to the water that minimize erosion and slow water runoff. Information can also be shared in the informational packets.	In association with Rinehart Lake Association	Summer 2010	Portage County Land Cons. Dept.
Share information about the benefits of natural shorelines with landowners in the welcome packet.	In association with Rinehart Lake Association	Summer 2010	Portage County Land Cons. Dept. UW Extension Lakes
Work with the county to restore or install vegetative buffers on disturbed shorelines.			Portage County Land Cons. Dept.

Actions	Lead person/group	Start/end dates	Resources
Work with willing landowners to consider conservation easements and/or land purchases on undeveloped lands around Onland Lake.			Portage County Land Acquisition Fund North Central Conservancy Trust North East Conservancy Trust
Explore protecting effigy mounds around Onland Lake.			Portage Co. Historical Society Portage County Land Acquisition Fund

Aquatic Plants

Fish and other aquatic and terrestrial life depend on aquatic plants for habitat, food, and spawning areas. Healthy aquatic plant communities, along with a vigilant watch will help to limit new aquatic invasive species from entering and becoming established in Onland Lake. Currently there are no known aquatic invasive species present in Onland Lake. Survey respondents felt the aquatic plant communities on Onland Lake were just right or dense.

Vision: The planning committee for Onland Lake envisions a lake with healthy native aquatic plant communities that provide habitat, food, spawning areas, and helps to maintain the water quality in Onland Lake.

Goal 6: Maintain a balanced native aquatic plant community in Onland Lake.

Objectives 6.1: Foster a healthy native aquatic plant community in Onland Lake.

Actions	Lead person/group	Start/end dates	Resources
Conduct an aquatic plant survey on Onland Lake to assess the density of aquatic plants and if necessary, develop an aquatic plant management strategy.			UWSP
Share information with shoreland property owners on the importance of aquatic plant communities in Onland Lake for water quality, spawning habitat, etc. in the welcome packets.	In association with Rinehart Lake Association	Summer 2010	UW Extension Lakes UWSP
Have citizens watch the lake in case a large blue green algae bloom should appear. Contact UWSP.		Ongoing	UWSP

Goal 7: Prevent any aquatic invasive species from becoming established in Onland Lake. This goal will be achieved when no aquatic invasive species are identified in the lake through our monitoring efforts.

Objectives 7.1: Prevent any aquatic invasive species from becoming established in Onland Lake.

Action	Lead person/group	Start/end dates	Resources
Ask the Portage County Aquatic Invasive Species (AIS) coordinator assess Onland Lake for invasive species.	Golden Sands RC&D	July 27, 2009	Portage County AIS Specialist
Work with the Town of New Hope to install an informational aquatic invasive species sign at the boat landing on Onland Lake.			Town of New Hope
Distribute information about aquatic invasive species to landowners through the information packets.	In association with Rinehart Lake Association	Summer 2010	Portage County AIS Specialist
Develop a citizen-based aquatic invasive species monitoring program.			Portage County AIS Specialist
Follow the aquatic invasive species rapid response plan if any new aquatic invasive species are found or suspected in Onland Lake.		Ongoing	UWSP
Annually update the aquatic invasive species rapid response plan.		2010 and annually	UWSP

Fisheries and Recreation

Healthy lake ecosystems are valuable natural resources for all lake users. It is desirable to maintain a good fishery so anglers and families are able to enjoy the fishery on Onland Lake, as fishing was one of the top five recreational activities and is valued by lake users. Survey respondents felt the quality of fishing in Onland Lake was fair, but had stayed the same or declined in recent years. Respondents also felt one of the leading causes of the decline in fisheries was the carp population.

Onland Lake users enjoy many different recreational opportunities on the lake. Based on survey results, the most popular recreational activities included solitude, swimming/snorkeling, enjoying scenery and wildlife, and fishing. Recreational needs and uses on the lake will likely continue to increase as populations and development in the area increases.

Vision: The planning committee for Onland Lake envisions a lake with a balanced fishery that promotes healthy communities of sport fish while reducing the populations of rough fish present.

Goal 8: To have balanced healthy fish communities maintained through sustainable management practices.

Objectives 8.1: Maintain/improve fisheries habitat on Onland Lake.

Actions	Lead person/group	Start/end dates	Resources
Provide information in the welcome packet about the benefits of leaving woody vegetation/fallen trees in place.	In association with Rinehart Lake Association	Summer 2010	UWSP WI DNR
Work with UWSP and WDNR to maintain and protect clean, sandy, gravel substrate on western shore for spawning habitat.			UWSP WI DNR

Objectives 8.2: Sustainably manage the fishery to achieve a healthy sport fish population

Actions	Lead person/group	Start/end dates	Resources
Work with the WDNR to revise bass regulations on Onland Lake to allow bass to reach larger sizes and healthier weights.	WDNR		UWSP WI DNR
Request the WDNR and UWSP assess the carp population on Onland Lake and evaluate how it is impacting spawning habitats, native vegetation, and other fish populations.			UWSP WI DNR

Vision: The planning committee for Onland Lake envisions a lake with uses that are quiet, no-wake, and maintain the serene and natural beauty of Onland Lake

Goal 9: Provide recreational opportunities on Onland Lake that do not conflict with the scenic nature and peacefulness of Onland Lake.

Objective 9.1: Provide recreational opportunities to enjoy Onland Lake while minimizing conflicts between users and protecting lake water quality and habitat.

Action	Lead person/group	Start/end dates	Resources
Maintain no-wake status on Onland Lake.		Ongoing	

Onland Lake Aquatic Invasive Species Rapid Response Plan 2010

Survey/Monitor

1. **Learn to survey/monitor the lake** from:

   Water Resources Management Specialist
   Wisconsin Dept. of Natural Resources
   Scott Provost
   473 Griffith Ave.
   Wisconsin Rapids, WI, 54494
   Phone: 715-421-7881
   E-Mail: Scott.provost@wisconsin.gov

   Portage County Aquatic Invasive Species (AIS) Coordinator
   Golden Sands RC&D
   1462 Strongs Ave.
   Stevens Point, WI 54481
   Phone: 715-343-6278
   E-Mail: skawinsp@co.portage.wi.us

2. **Survey the Lake monthly/seasonally/annually**

What to Do When You Find a Suspected Invasive Species

1. **Collect Specimens or Take Pictures**

   - Collect, press, and dry a complete sample. This method is best because a plant expert can then examine the specimen.

   Or --

   - Collect a fresh sample. Enclose in a plastic bag with a moist paper towel and refrigerate.

   Or --

   - Take detailed photos (digital or film) and send them by mail or e-mail.

   Regardless of method used, provide as much information as possible. Try to include flowers, seeds or fruit, buds, full leaves, stems, roots, and other distinctive features. In photos, place a coin, pencil, or ruler for scale. Deliver or send specimen ASAP.

   Note Location
   (Provide one or more of the following)

   - Latitude & Longitude
   - UTM (Universal Transverse Mercator) coordinates
   - County, Township, Range, Section, Part-section
   - Precise written site description, noting nearest city & road names, landmarks, local topography

   If possible, give the exact geographic location using a GPS (global positioning system) unit, topographic map, or the Wisconsin Gazetteer map book. If using a map, include a photocopy with a dot showing the plant's location. You can use TopoZone.com to find the precise location on a digital topographic map. Click the cursor on the exact collection site and note the coordinates (choose UTM or Latitude/Longitude).

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2. **To Positively I.D. the species send or bring specimen and additional information**
    - Collection date & county
    - Your name, address, phone, email
    - Exact location (Latitude/Longitude or UTM preferred, or Township/Range/Section)
    - Plant name (common or scientific)
    - Land ownership (if known)
    - Population description (estimate number of plants, area covered)
    - Habitat type(s) where found (forest, field, prairie, wetland, open water)

Send or bring specimen to:

Portage County AIS Coordinator
Golden Sands RC& D
1462 Strongs Ave.
Stevens Point, WI 54481
Phone: 715-343-6214
E-Mail : skawinsp@co.portage.wi.us

UW-Stevens Point Herbarium
301 Daniel O. Trainer Natural Resources Building
Stevens Point, WI 54481
Phone: 715-346-4248
E-Mail: ejudziew@uwsp.edu

Wisconsin Dept. Natural Resources
Invasive Plant Education, Early Detection, and Mapping Specialist
Brendon Panke
WI Dept. of Natural Resources
P.O. Box 7921
Madison, WI 53707-7921
Phone: (608) 267-7438
E-Mail: invasiveplants@mailplus.wisc.edu

3. **Once the specimen is dropped off or sent for confirmation, make sure to contact:**
Portage County AIS Coordinator
Golden Sands RC& D
Contact: Paul Skawinski
Address: 1462 Strongs Ave. Stevens Point, WI 54481
Phone: 715-343-6214
E-Mail : skawinsp@co.portage.wi.us

4. **If an invasive species is confirmed, Paul Skawinski will contact the following people along with the contact list of citizens.**

Wisconsin Department of Natural Resources
Water Resources Management Specialist
Scott Provost
473 Griffith Ave.
Wisconsin Rapids, WI, 54494
Phone: 715-421-7881
E-Mail: Scott.provost@wisconsin.gov
Who will contact them: Portage County AIS Coordinator

The town in which the waterbody is situated
Town of: New Hope
Contact: Chairperson – Daniel Zaborowski
Address: 9596 County Rd. Z Amherst Junction, WI 54407
Phone: 715-677-3878
Who will contact them: Portage County AIS Coordinator

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University of Wisconsin-Stevens Point – Water Resource Scientist
Contact: Nancy Turyk
Address: 216 TNR 800 Reserve St. Stevens point, WI 54481
Telephone: 715-346-4155
E-mail: pclakes@uwsp.edu
Who will contact them: Portage County AIS Coordinator

Local Residents
Contact: Arden Lang
Address: 403 Fieldcrest Ave. Amherst Junction, WI 54407
Telephone: 715-344-3173
E-mail: ajlange@charter.net
Who will contact them: Portage County AIS Coordinator

Contact: Roland Martin
Address: 10142 Trout Ck. Rd Amherst Junction, WI 54407
Telephone: 715-824-2816
E-mail: carole@onlandlake.com
Who will contact them: Portage County AIS Coordinator

Newspapers
Who will contact them: Portage County AIS Coordinator
Amherst Community Spirit
Portage County Gazette
Stevens Point Journal

Post notice at the access points to the waterbody

Literature Cited

Fassbender, R.L., and L.M. Nelson. 1971. Surface Water Resources of Portage County. Wisconsin Department of Natural Resources, Madison, Wisconsin.

Turyk, N; R. Bell; R. Cook; T. Ginnett; R. Crunkilton; L. Markham; P. McGinle; B. Shaw; and E. Wild; 2006. Final report to Portage County and Wisconsin DNR. http://www.co.portage.wi.us/plzo/lakes.html

Glossary

Algae:

One-celled (phytoplankton) or multi-cellular plants either suspended in water (Plankton) or attached to rocks and other substrates (periphyton). Their abundance, as measured by the amount of chlorophyll *a* (green pigment) in an open water sample, is commonly used to classify the trophic status of a lake. Numerous species occur. Algae are an essential part of the lake ecosystem and provide the food base for most lake organisms, including fish. Phytoplankton populations vary widely from day to day, as life cycles are short.

Atrazine:

A widely used herbicide.

Blue-Green Algae:

Algae often associated with problem blooms in lakes. Some produce chemicals toxic to other organisms, including humans. They often form floating scum as they die. Many can fix nitrogen (N_2) from the air to provide their own nutrient.

Calcium (Ca++):

The most abundant cation found in Wisconsin lakes. Its abundance is related to the presence of calcium-bearing minerals in the lake watershed. Reported as milligrams per liter (mg/l) as calcium carbonate ($CaCO_3$), or milligrams per liter as calcium ion (Ca++).

Chloride (Cl-):

Chlorine in the chloride ion (Cl-) form has very different properties from chlorine gas (Cl2), which is used for disinfecting. The chloride ion (Cl-) in lake water is commonly considered an indicator of human activity. Agricultural chemicals, human and animal wastes, and road salt are the major sources of chloride in lake water.

Chlorophyll *a*:

Green pigment present in all plant life and necessary for photosynthesis. The amount present in lake water depends on the amount of algae and is therefore used as a common indicator of algae and water quality.

Clarity:

See "Secchi disc".

Color:

Measured in color units that relate to a standard. A yellow-brown natural color is associated with lakes or rivers receiving wetland drainage. The average color value for Wisconsin lakes is 39 units, with the color of state lakes ranging from zero to 320 units. Color also affects light penetration and therefore the depth at which plants can grow.

Concentration units:

Express the amount of a chemical dissolved in water. The most common ways chemical data is expressed is in milligrams per liter (mg/l) and micrograms per liter (ug/L). One milligram per liter is equal to one part per million (ppm). To convert micrograms per liter (ug/l) to milligrams per liter (mg/l), divide by 1000 (e.g. 30 ug/l = 0.03 mg/l). To convert milligrams per liter (mg/l) to micrograms per liter (ug/l), multiply by 1000 (e.g. 0.5 mg/l = 500 ug/l). Microequivalents per liter (ueq/l) is also sometimes used, especially for alkalinity; it is calculated by dividing the weight of the compound by 1000 and then dividing that number into the milligrams per liter.

Cyanobacteria:

See “Blue-Green Algae”.

Dissolved Oxygen:

The amount of oxygen dissolved or carried in the water.

Drainage Basin:

The total land area that drains towards a lake.

Drainage lakes:

Lakes fed primarily by streams and with outlets into streams or rivers. They are more subject to surface runoff problems but generally have shorter residence times than seepage lakes. Watershed protection is usually needed to manage lake water quality.

Emergent:

A plant rooted in shallow water that has most of its vegetative growth above water.

Eutrophication:

The process by which lakes and streams are enriched by nutrients, and the resulting increase in plants and algae. The extent to which this process has occurred is reflected in a lake's trophic classification: oligotrophic (nutrient poor), mesotrophic (moderately productive), and eutrophic (very productive and fertile).

Groundwater Drainage Lake:

Often referred to as a spring-fed lake, has large amounts of groundwater as its source, and a surface outlet. Areas of high groundwater in-flow may be visible as springs or sand boils. Groundwater drainage lakes often have intermediate retention times with water quality dependent on groundwater quality.

Hardness:

The quantity of multivalent cations (cations with more than one +), primarily calcium (Ca++) and magnesium (Mg++), in the water expressed as milligrams per liter of CaCO3. Amount of hardness relates to the presence of soluble minerals, especially limestone, in the lake watershed.

Intermittent:

Coming and going at intervals, not continuous.

Macrophytes:

See "Rooted aquatic plants."

Marl:

White to gray accumulation on lake bottoms caused by precipitation of calcium carbonate (CaCO3) in hard-water lakes. Marl may contain many snail and clam shells, which are also calcium carbonate. While it gradually fills in lakes, marl also precipitates phosphorus, resulting in low algae populations and good water clarity. In the past, marl was recovered and used to lime agricultural fields.

Mesotrophic:

A lake with an intermediate level of productivity. Commonly clear water lakes and ponds with beds of submerged aquatic plants and medium levels of nutrients. See also “eutrophication”.

Nitrate (NO3-):

An inorganic form of nitrogen important for plant growth. Nitrate often contaminates groundwater when water originates from manure, fertilized fields, lawns, or septic systems. High levels of nitrate-nitrogen (over 10 mg/L) are dangerous to infants and expectant mothers. A concentration of nitrate-nitrogen (NO3-N) plus ammonium-nitrogen (NH4-N) of 0.3 mg/L in spring will support summer algae blooms if enough phosphorus is present.

Oligotrophic:

Lakes with low productivity, the result of low nutrients. Often these lakes have very clear waters with lots of oxygen and little vegetative growth. See also “eutrophication”.

Overturn:

Fall cooling and spring warming of surface water increases density, and gradually makes temperature and density uniform from top to bottom. This allows wind and wave action to mix the entire lake. Mixing allows bottom waters to contact the atmosphere, raising the water's oxygen content. However, warming may occur too rapidly in the spring for mixing to be effective, especially in small, sheltered kettle lakes.

Phosphorus:

Key nutrient influencing plant growth in more than 80% of Wisconsin lakes. Soluble reactive phosphorus is the amount of phosphorus in solution that is available to plants. Total phosphorus includes the amount of phosphorus in solution (reactive) and in particulate form.

Rooted Aquatic Plants: (macrophytes)

Refers to multi-celled plants growing in or near water. Macrophytes are beneficial to lakes because they produce oxygen and provide substrate for fish habitat and aquatic insects. Overabundance of such plants, especially problem species, is related to shallow water depth and high nutrient levels.

Secchi Disc (Secchi Disk):

An 8-inch diameter plate with alternating quadrants painted black and white that is used to measure water clarity (light penetration). The disc is lowered into water until it disappears from view. It is then raised until just visible. An average of the two depths, taken from the shaded side of the boat, is recorded as the Secchi disc reading. For best results, the readings should be taken on sunny, calm days.

Sedimentation:

Materials that are deposited after settling out of the water.

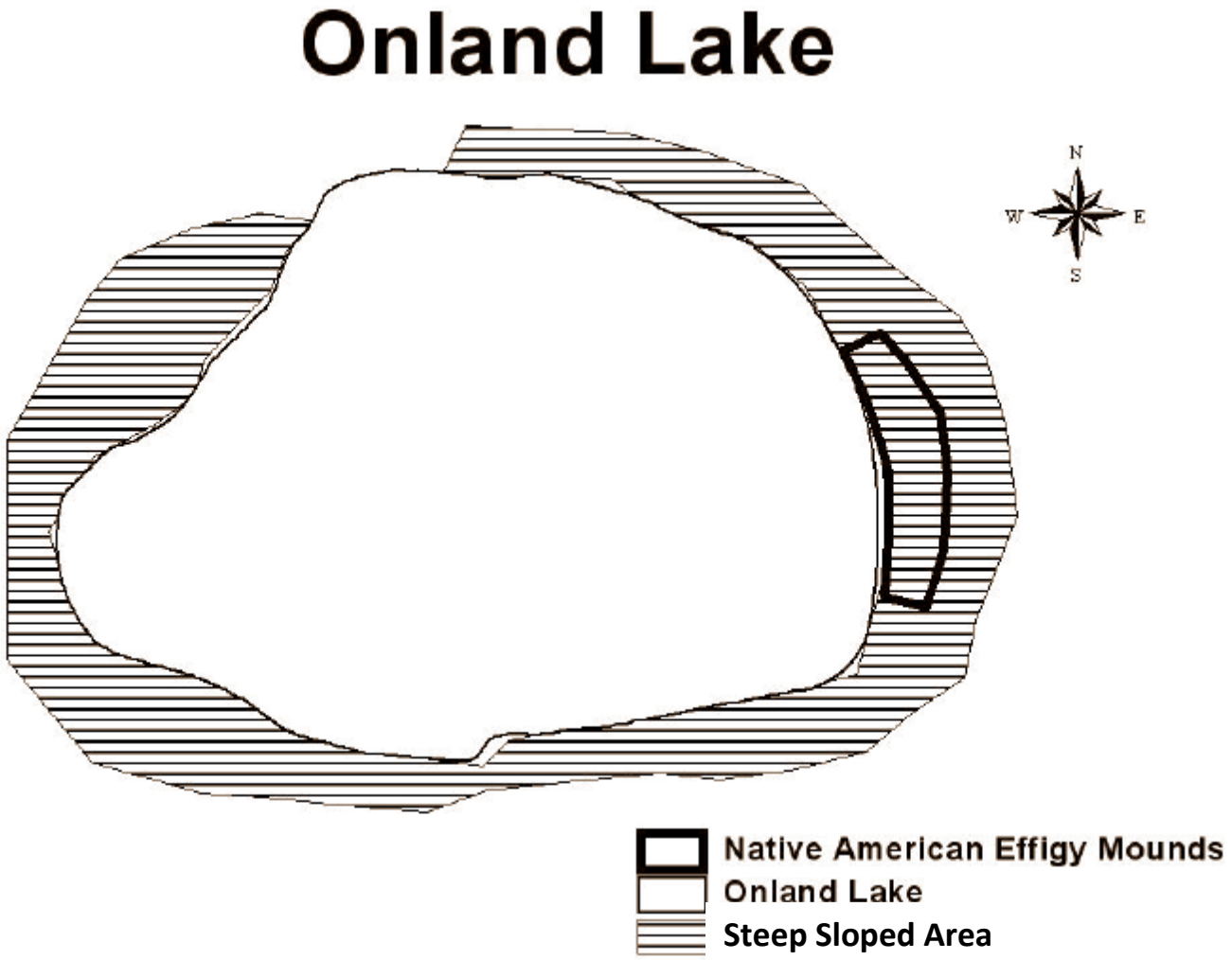
Stratification:

The layering of water due to differences in density. Water's greatest density occurs at 39 Deg.F (4 Deg.C). As water warms during the summer, it remains near the surface while colder water remains near the bottom. Wind mixing determines the thickness of the warm surface water layer (epilimnion), which usually extends to a depth of about 20 ft. The narrow transition zone between the epilimnion and cold bottom water (hypolimnion) is called the metalimnion or thermocline.

Watershed: See “drainage basin”.

Appendix A

Onland Lake Sensitive Areas.



Appendix B

Onland Lake Reptile and Amphibian Habitat (highlighted in red).