2010

Rinehart Lake Management Plan

Rinehart Lake Management Planning Committee

3/4/2010

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Plan approved by the Rinehart Lake Management Planning Committee on September 15, 2010

Adopted by Town of New Hope on September 15, 2010

Adopted by Portage County on

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

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Introduction

Rinehart 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, and many recreational opportunities including fishing, swimming, canoeing/kayaking and walking. The Rinehart Lake Association has actively been involved in maintaining, protecting and enhancing the quality of the lake and its surroundings and community since 1993.

The purpose of this plan is to provide guidance to protect current good conditions, address existing problems and prevent future problems that may be detrimental to the Rinehart Lake ecosystem.

The purpose of this management plan is to provide guidance to protect current good conditions, address existing problems and prevent future problems that may be detrimental to the Rinehart Lake ecosystem. This management plan was written as part of the second phase of the Portage County Lakes Project. The first phase of the Portage County Lakes Study involved data collection from Rinehart 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 development of this plan utilized the information from previous studies including a study that was initiated by Rinehart Lake Association in 1998-1999 (Hudson and Shaw, 2000). This plan was developed by a committee of interested citizens, local organizations, and professionals. Prior to the current lake plan development a citizen survey was conducted to gather information on citizens' values, opinions, and perceived issues with Rinehart Lake. Tin 2009 a survey was sent to 69 residences within the Rinehart Lake watersheds and was available online where any interested person could take the survey. Twenty-seven citizen surveys were returned for a response rate of 39%. The members of the Rinehart Lake management planning committee met with committee members from Sunset and Onland Lakes monthly over five months to learn about topics related the lakes and develop this lake management plan.

The overall goal for the Rinehart Lake Management Plan is to **sustainably manage Rinehart Lake to maintain the healthy ecosystems in and near the lake, while involving all land owners and lake users in the area.**

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 good understanding of Rinehart Lake and its ecosystem. A healthy lake ecosystem is comprised of many components that include in-lake habitat and vegetated shorelands that support aquatic plants, fish, wildlife, good water quality and quantity, absence of aquatic invasive species and more. These components are not only found in Rinehart Lake but also extend to where the water meets the land and beyond into the watershed. Rinehart Lake is a reflection of the health and activities that occur in the lake, near the shore, and in the watershed.

Rinehart Lake is a 42 acre groundwater drainage lake located northeast of Nelsonville in the town of New Hope. The lake has a maximum depth of 27 feet (WDNR 2005). The lake bottom consists primarily of marl

which is formed when calcium rich groundwater flows into Rinehart Lake, but also has sand and gravel present. There is public access to the lake on the south shore with a boat launch and small parking area.

Watershed

A surface watershed is an area of land where water from precipitation drains from higher elevations towards the lake. Rinehart Lake's surface watershed is approximately 326 acres and stretches to the northeast of the lake (Figure 1).

As water moves across the landscape, the quality can either improve or degrade depending upon what it comes in contact with en route to the lake. 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.**

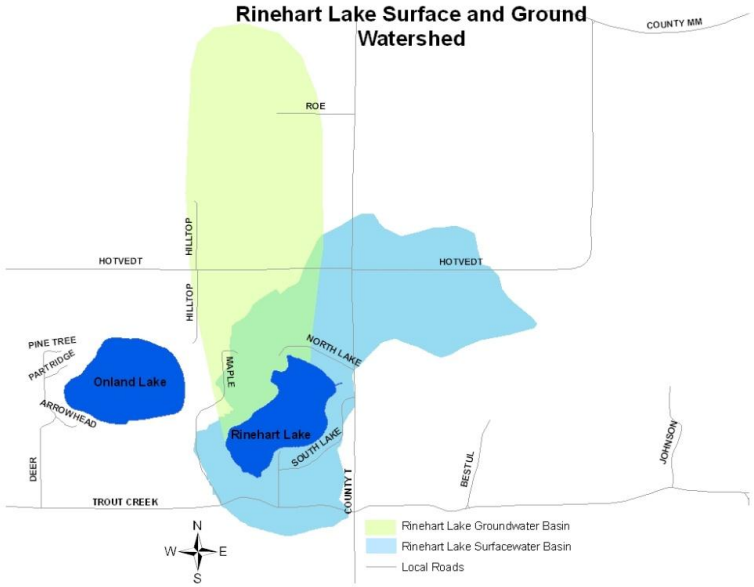


Figure 1. Rinehart Lake groundwater and surface watersheds.

Land uses within the surface watershed are predominantly forested (46%) followed by shrub vegetation (22%) followed by water bodies (12%) and non-irrigated agriculture (6%). Non-irrigated cropland has seen a significant decrease since 1948. The areas near shore have the most direct impact on habitat and water quality. This area is currently comprised of forested residential land uses and wetlands. (See Appendix A).

A groundwater watershed is similar to a surface watershed, except that it is an area of land where the groundwater drains to Rinehart Lake. Within the groundwater watershed, precipitation soaks into the ground and recharges the groundwater. The groundwater slowly moves towards the lake, and enters it via springs and seeps. During dry periods, this provides the majority of water in Rinehart Lake. Often surface watersheds and groundwater watersheds do not match each other, which is the case with Rinehart Lake. Rinehart Lake's groundwater watershed is approximately 327 acres and stretches to the north of the lake (Figure 1). The land cover within the groundwater watershed is primarily comprised of forest (49%) and non-irrigated cropland (31%). These land uses have not changed significantly since 1948 (See Appendix A).

Survey respondents indicated a willingness to change how they manage their land to protect/improve the Rinehart Lake ecosystem. The top motivators included providing better fish and wildlife habitat, increasing natural beauty of the property, increasing property value, improving water quality, and improving water quantity.

Sensitive Areas

The sensitive areas associated with Rinehart 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 on the east and

west shorelines. The steep shore areas are particularly prone to erosion and could contribute to sedimentation and associated water quality problems in Rinehart Lake. Care should be taken if these areas are disturbed. The sensitive areas also include sensitive wetlands on the northeast and southwest sides of the lake, some of which is primary habitat for amphibians and reptiles (See Appendix B).

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 on Rinehart Lake is located on the south and west sides of the lake and in a temporary wetland to the southeast of the lake. Key features of this habitat include protected areas of marsh with submergent, emergent, and floating-leaf vegetation. The good news about the amphibian populations on Rinehart Lake is that several frog species are present and several residential areas have protected portions of shoreline. However, large areas of altered shoreline exist due to residential development and warrant restoration (See Appendix C).

Shoreline

Approximately 45% of the shoreline around Rinehart Lake was considered disturbed. Minimal disturbance of vegetation occurred on 6.1% of the shoreline, 23.5% was considered moderately disturbed, and 15.6% was highly disturbed. Areas of minimal disturbance of vegetation are areas that have unaltered shore except for pier access. Areas of moderate disturbance may contain a mowed lawn with intact overstory vegetation. Areas of high disturbance of vegetation are defined as a beach, rip rap, lawn mowed to the water line, or a boat access. The Rinehart Lake shoreline is comprised of 28.5% alders, 21.4% dense vegetation such as tall grasses and shrubs, and 4.8% narrow wetlands that extend less than five meters onto shore.

Protecting the existing shoreland and restoring the disturbed shoreland would improve near shore habitat along with 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 Rinehart Lake, especially where steep shorelines occur. 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 or changes in the type 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.

According to the citizen survey, 18 of the 27 respondents owned shoreline property. Fourteen of those respondents who owned shoreline property indicated their shorelines were undeveloped or natural. Respondents indicated the depth of their shoreline buffers around Rinehart Lake varied greatly. Only 4 respondents indicated their buffers were more than 35 feet, which is required by the county/state shoreline zoning ordinances. These special rules, the shoreland zoning ordinances, apply to the near shore area of the lake. These rules were developed to help protect water quality and habitat of lakes while allowing for access to a lake.

Aquatic Plants

Aquatic plants play many important roles in aquatic ecosystems including providing habitat for aquatic and semi-aquatic organisms; food for fish, waterfowl, and other animals; use of nutrients that would

otherwise be used by algae; and modifying/cooling water temperatures on hot days.

According to R. Freckmann (UWSP), there are **37** species of aquatic macrophytes or plants that have been identified in Rinehart Lake or on the wet areas of shore. This is below average when compared to other Portage County lakes.

When asked about the abundance of aquatic plants in Rinehart Lake, respondents indicated that the growth was just right or dense. Respondents also indicated July and August were the months with the densest plant growth, which is typical for most Wisconsin lakes.

Water Quality and Land Use

When asked about Rinehart Lake's water quality, the majority of survey respondents felt the water quality was good 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 impact both economically and on their personal enjoyment of the lake.

The assessment of water quality in 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 Rinehart Lake chloride and sodium levels measured in 2002/03 were slightly elevated, and potassium concentrations were low.

Atrazine, an agricultural herbicide, was detected in Rinehart 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 and present in Rinehart Lake.

The temperature in Rinehart Lake was generally mixed throughout much of the year. Dissolved oxygen was always plentiful in the upper 17 feet of the lake. Below that, during some times of the year water lacks 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. Water clarity can be affected by sediment, algae, and color in water. Clarity measurements in Rinehart Lake ranged from eight to 24 feet. May 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 however, changes in water quality are best determined with long-term records. These measurements could be made by trained citizens.

Chlorophyll *a* is a measure of algae in Rinehart Lake. Chlorophyll *a* concentrations in Rinehart Lake ranged from 0.005 to 4.54 mg/L. These readings are all considered to be low.

The 31 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 Rinehart Lake presents a picture of an oligotrophic lake or a lake that has a balance between decaying vegetation and living organisms (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 Rinehart Lake both the phosphorus and nitrogen concentrations fluctuated throughout the year, but generally were not high enough to sustain algal blooms throughout the summer.

Nitrogen concentrations in Rinehart Lake were low, including nitrate, which is easily used for growth by aquatic plants and algae (Figure 2). Concentrations were well below the 0.3 mg/L needed to fuel algae growth (Figure 2).

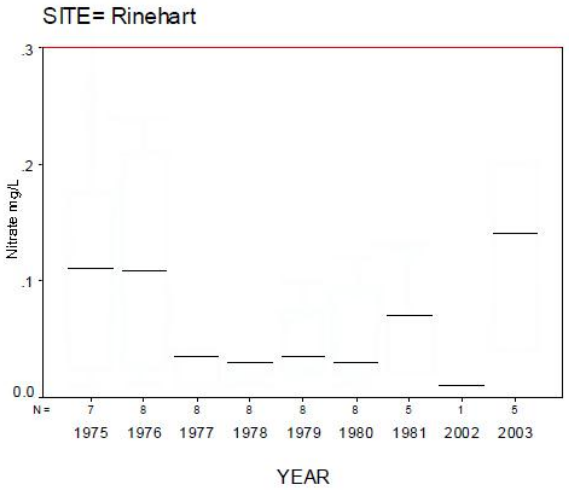


Figure 2. Median Nitrate-N concentrations (mg/L) in Rinehart Lake, 1975-2003. Red line indicates nitrate level needed to fuel algae growth.

Phosphorus is an element that is essential to most living organisms 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 residential runoff, septic systems, and animal waste.

In Rinehart Lake the aquatic plant and algae growth is most responsive to phosphorus due to its relative limited supply with respect to other elements necessary for growth. Increases of small amounts of phosphorus can result in increased abundance of aquatic plants and algae. Phosphorus concentrations in Rinehart Lake are variable throughout the year. Median total phosphorus (TP) concentrations in spring/fall for 2002/2003 were 19 ug/L (Figure 3).

The Wisconsin DNR's phosphorus criteria value for deep groundwater drainage lakes is 30 ug/L. Average summer concentrations at or above this value would result in noticeably degraded water quality. The average summer total phosphorus concentrations in Rinehart Lake was 16.7 ug/L in 2002/03. Total phosphorus should be monitored in Rinehart Lake to be sure that it stays below the recommended value and that increases could be observed and addressed prior to noticeable changes in algal and aquatic plant communities.

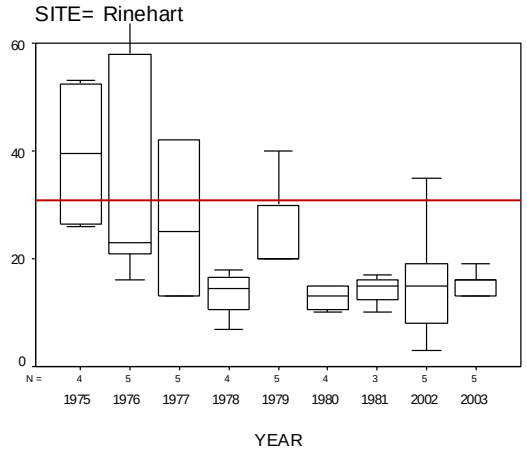


Figure 3. Median total phosphorus concentrations (mg/L) in Rinehart Lake in samples collected in summer, 1975-2003. Red line is WDNR criteria value for phosphorus for deep groundwater drainage lakes.

Marl found in Rinehart Lake can potentially mitigate some of the impacts of phosphorus on water quality. However, earlier water quality

data from the mid to late seventies indicates that the potential for marl to mitigate the impacts of phosphorus can be overcome and phosphorus can still be of concern to the water quality in Rinehart Lake.

Managing phosphorus in the Rinehart Lake watershed is key to protecting the lake itself. Positive land management practices and land uses can result in good water quality in Rinehart 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 , nutrients, and pesticides to the lake. BMPs that should be used near shore and throughout the watershed include the development of water quality-based nutrient management plans for agricultural land, only applying phosphorus and nitrogen from fertilizer or manure based on soil tests for turf or specific crops, 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 manure application only when the ground is not frozen. Some of the near shore land use practices that can decrease the inputs of phosphorus to Rinehart Lake include leaving native vegetation (trees, bushes, and grasses), eliminating the use of fertilizer, minimizing runoff/increasing infiltration, minimizing and securing exposed soil, and increasing the setback of septic drain fields. The Portage County Land Conservation Department is a local organization that can provide assistance to landowners that want to reduce impacts to Rinehart Lake from their property.

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

A "build out" of the current zoning in the watersheds (Town of New Hope) was conducted as a predictive tool to estimate the phosphorus and algal response in Rinehart Lake if complete allowable development occurs. (Current zoning for the Town of New Hope can be found in their Land Use Plan at …) Additional scenarios included connecting more of the landscape to the lake through water diversion such as culverts and roads (Figure 4). 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 additional level of connectedness

The goal for this plan is to maintain the water quality in Rinehart Lake at 2002/2003 concentrations.

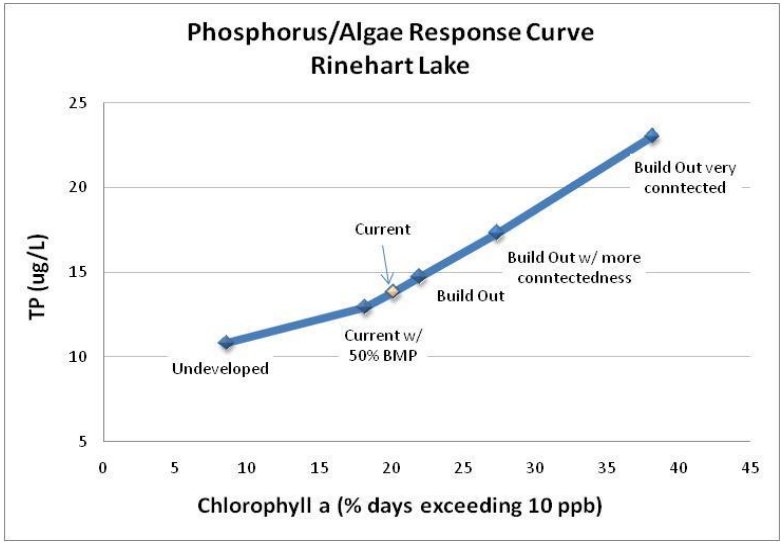


Figure 4. Phosphorus and related algae response to land use scenarios in the watershed.

In recent years, water quantity has been a topic of concern for Rinehart and other local lakes. Although lake levels have fluctuated over time, current research suggests that the measured fluctuation is greater than what would be anticipated with the current amount of precipitation and is presumed to be a result of excess groundwater extraction.

Recreation

According to respondents of the citizen survey, the **most popular activities at Rinehart Lake include walking, enjoying wildlife, enjoying the scenery, fishing, and enjoying the solitude of the lake.**

Conflicts between users do not appear to be of concern on Rinehart Lake as 50% of respondents indicated that they were sometimes disturbed by the noise and activities of others, while 46% indicated that they were never disturbed the by the noise and activities of others, and 4% indicated that they never saw or heard others.

Fishing is a recreational activity that is enjoyed by many on Rinehart Lake. When survey respondents were asked to rate their fishing experiences on Rinehart Lake, 38% indicated fishing was average and 28% indicated fishing was fair. The majority of survey respondents felt the quality of fishing had declined over time and overfishing and heavy recreational use of the lake were contributing factors.

Rinehart Lakes supports a warm water fishery which is dominated by bluegill, largemouth bass, yellow bullheads, and yellow perch. Rinehart Lake also supports both blackchin and balcknose shiners, which are glacial relics.

Goals, Objectives, and Actions

The overall goal for the Rinehart Lake Management Plan is to **sustainably manage Rinehart Lake to maintain the healthy ecosystems in and near the lake, while involving all land owners and lake users in the area.**

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

Resources that are listed within the plan include primary organizations or individuals that would be able to provide information, suggestions, services and/or support to accomplish an action.

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 and updated with any necessary changes by the Rinehart Lake planning committee, Rinehart Lake Association, interested citizens, and representatives from municipalities and agencies in the fall of 2011 with the assistance of UWSP and Portage County. Updates will be provided to the Town of New Hope, Portage County, the Wisconsin DNR, Rinehart Lake Association, and any other entity adopting the plan.**

Water Quantity

Fluctuating water levels in lakes are natural responses to changes in climate and weather patterns. In Portage County some of the lakes have historically experienced fluctuations in water levels and the plant and animal life in these lakes have adapted and sometimes depend on these fluctuations for survival. The area surrounding Rinehart Lake began experiencing drought like conditions in 2002/2003, that contributed to low lake levels. However, excess withdrawal of groundwater can potentially add to these natural fluctuations, effecting the extent and duration of low water levels. Survey respondents identified low water levels as a concern for Rinehart Lake. The planning committee for Rinehart Lake envisions water level goals that maintain or improve water levels in Rinehart Lake through the maintenance of groundwater levels and limitations on groundwater harvesting in the surrounding areas.

Vision: Maintain or improve water levels in Rinehart Lake by maintaining groundwater levels and limiting groundwater withdrawl in the surrounding areas.

Goal 1: Understand water fluctuations in and near Rinehart Lake.

Objective 1.1: Evaluate water quantity related to natural and human induced reductions in and near Rinehart Lake.

Action	Lead person/group	Target Dates	Resources
Investigate appropriate monitoring that measures lake level and groundwater levels	Rinehart Lake Assn.	January 2011	UWSP
Install a lake level/groundwater monitoring well on Rinehart Lake and collect measurements on a routine basis.	Rinehart Lake Assn.	June 2011	UWSP
Obtain an inventory of high capacity wells currently within the Rinehart Lake watershed.	Rinehart Lake Assn.	June 2010	Portage Co. – Ray Schmidt WDNR
Report annual monitoring to Portage County/UWSP/WDNR	Rinehart Lake Assn.	June 2011	Portage County WDNR UWSP

Objective 1.2: Participate in community advocacy, education, and networking related to high capacity wells.

Action	Lead person/group	Target Dates	Resources
Keep informed about activities/regulation/legislation related to high capacity wells.	Vice President, Rinehart Lake Assn.	Ongoing	Friends of New Hope Lakes Community Spirit Newspaper WI Association of Lakes (WAL) Local Legislators
Participate in community advocacy by disseminating information, letter writing, and networking with other groups.	Secretary, Rinehart Lake Assn. Sunset Lake Friends of Spring Lake/Town of Lanark	Ongoing	Other interested lake groups UWEX Lakes, WAL UWSP
Learn how the lake is affected by water withdrawals in the Rinehart Lake groundwater watershed.	Vice President, Rinehart Lake Assn.	Spring 2011	UWSP – Dr. George Kraft
Learn about regulations regarding the pumping of groundwater.	Vice President, Rinehart Lake Assn.	Spring 2011	Portage County Water Quality Specialist Scott Provost, WDNR
Publicize/explore information about irrigation options.	Vice President, Rinehart Lake Assn.	Summer 2011	Portage County UWEX Agri Agent Portage County Land Cons Dept

Water Quality and Land Use

Rinehart 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, including a freshwater sponge. Survey respondents clearly value good water quality by indicating that water quality strongly influenced their enjoyment of the lake and impacted their perceived economic value of Rinehart Lake. The majority of survey respondents felt that the water quality in Rinehart Lake was good or excellent. Citizens who were familiar with the lake felt that overall the water quality in Rinehart Lake had remained the same over time; those that felt water quality improved cited new/greater setbacks of septic systems as a primary positive influence. The Rinehart Lake Association has been an advocate for years to protect the water quality and land use. The Lake association was key in reduction of potential phosphorus by working with Portage County to establish septic system inspection and enforcement of corrective measures in the late 1990's. Data shows that water quality in Rinehart Lake is good, although there is some indication of human influence.

Vision: The planning committee envisions maintaining the water quality for fishing, wildlife, and recreation in Rinehart Lake.

Goal 2: Maintain the water quality in Rinehart Lake at 2002/03 concentrations; average summer TP concentrations of 16 ug/L with algae blooms (10 ug/L) occurring 22% of the days. We will know that we are achieving this when monitoring indicates that median summer (5 samples/summer) total phosphorus remain 16 ug/L.

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

Action	Lead person/group	Target Dates	Resources
Establish water quality monitoring program using WDNR citizen monitoring protocol and submit data to the WDNR	Rinehart Lake Assn. Fishing & Water Quality Committee	Summer 2011	UWSP UWEX/WDNR Lakes
Report current water quality information in the Lake Association's annual lake letter.	Rinehart Lake Assn. Fishing & Water Quality Committee	Summer 2011	WDNR UWSP

Objective 2.2: Riparian and watershed landowners will minimize their impacts to Rinehart Lake through land management practices.

Action	Lead person/group	Target Dates	Resources
Provide information and recommend to landowners that septic systems should be set back from the lake as far as possible.	Rinehart Lake Assn. Fishing & Water Quality Committee	Summer 2011	UWEX Lakes
Meet with the Portage county on-site septic system staff to learn about septic system rules and how to encourage greater septic system setbacks.	Rinehart Lake Assn. Fishing & Water Quality Committee	Summer 2011	Portage County On-Site Septic System Staff
Provide information from the meeting with the County to landowners.	Rinehart Lake Assn. Fishing & Water Quality Committee	Summer 2011	Portage County On-Site Waste Specialist
Work with Portage County to encourage water quality based best management practices within the watersheds	Rinehart Lake Assn. Fishing & Water Quality Committee	Ongoing	Portage County Land Cons. Dept.

Objective 2.3: The Rinehart Lake Association Board and Town of New Hope Plan Commission will understand current and future zoning and how that can affect the water quality in Rinehart Lake.

Action	Lead person/group	Target Dates	Resources
Become familiar with shoreland zoning ordinances and conservancy zoning districts	Rinehart Lake Assn. Fishing & Water Quality Committee	Summer 2011	UWSP Center for Land Use UWEX/WDNR Lakes
Explore build-out and scenarios and how they relate to future water quality in Rinehart Lake	Rinehart Lake Assn. Fishing & Water Quality Committee	Summer 2011	UWSP Center for Land Use

Shorelines and Critical Habitat

Shorelines are some of the most important habitat near lakes for aquatic and terrestrial wildlife, including birds. Shoreline vegetation helps to slow runoff moving to the lake and filter runoff before it enters the lake. Restoring and protecting shorelines help to provide scenery and solitude, as well as natural space for lake residents to enjoy nature. The majority of survey respondents that owned property around Rinehart Lake indicated that they currently have an undeveloped natural shoreline, although the majority of shoreline property owners currently have a buffer that is less than 10 feet; significantly less than the 35 feet required by the state and county shoreland zoning ordinances. Survey respondents indicated that a decline in wildlife has occurred near Rinehart Lake and many have identified reduced shoreland vegetation as a factor in this decline. Making an effort to protect the steep slopes around Rinehart Lake will reduce soil erosion to the lake.

Critical habitat areas are places in and near Rinehart Lake that are essential to keeping a healthy sustainable ecosystem. Seven amphibian species were identified during the Portage County Lake study making Rinehart Lake home to some of the greatest diversity of frog species observed near lakes in Portage County. The primary habitat that is necessary to maintain the amphibian populations was designated as two locations adjacent to Rinehart Lake on the south and west sides of the lake and an intermittent wetland near the southeast side of Rinehart Lake (Appendix C). WDNR biologists and lake specialists have identified critical habitat areas within and adjacent to Rinehart Lake; the Wisconsin DNR Critical Habitat Report and recommendations are forthcoming.

Goal 3: The shoreland vegetation around Rinehart 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. We will know we have accomplished this goal when shoreland vegetation around Rinehart Lake is consistent or better than the requirements in the state and county shoreland zoning ordinances.

Objective 3.1: Shore landowners around Rinehart Lake will understand their roles in protecting this important land and will make informed land management decisions.

Actions	Lead person/group	Target Dates	Resources
Begin a landowner education program on the importance of proper shoreline management practices. The program will include dissemination of information through mailings, demonstration sites, awards programs, etc	Vice President, Rinehart Lake Assn.	Summer 2011	UWSP Portage County Land Cons. Dept. UWEX Lakes

Goal 4: Protect existing critical habitat that is critical to a healthy ecosystem in Rinehart Lake.

Objective 4.1: Protect the critical habitat areas near Rinehart Lake that were identified in the Portage County Lake Study and in the forthcoming WDNR Critical Habitat Report.

Actions	Lead person/group	Target Dates	Resources
Inform landowners about amphibian habitat that were identified in the Portage County Lake study and discuss protection strategies.	Rinehart Lake Assn. Land Use Committee	Summer 2011	WDNR UWSP North Central Conservancy Trust North East Conservancy Trust
Learn about WDNR critical habitat designations and consider resolution to support some or all of the recommendations.	Rinehart Lake Assn. Land Use Committee	Summer 2011	WDNR

Aquatic Plants and Aquatic Invasive Species

Fish and other aquatic and water dependent terrestrial life depend on aquatic plants for habitat, food, and spawning areas. The presence of fish, wildlife, and wildlife viewing are valued by the Rinehart Lake survey respondents and committee members. The planning committee felt that currently aquatic plants are not impeding recreation on Rinehart Lake; the survey respondents were split between feeling that the aquatic plant communities on Rinehart Lake were just right or were dense during July and August. Neighboring lakes have aquatic invasive species infestations so attentiveness will be required to prevent the spread into Rinehart Lake. Healthy native aquatic plant communities, along with a vigilant watch will help to limit any new aquatic invasive species from entering and becoming established in Rinehart Lake.

Goal 5: Maintain the diversity/variability of the native aquatic plant community in Rinehart Lake.

Objective 5.1: Foster a healthy native aquatic plant community in Rinehart Lake.

Actions	Lead person/group	Target Dates	Resources
Provide information to residents and neighbors about why aquatic plants are necessary for a healthy aquatic ecosystem through UWEX Lakes Staff	Rinehart Lake Assn. Aquatic Plant & Aquatic Invasive Species Committee	Summer 2011	UWEX Lakes Staff
Provide information to riparian landowners about the legal removal of aquatic vegetation and the benefits of minimizing the disturbance of aquatic plants near their property.	Rinehart Lake Assn. Aquatic Plant & Aquatic Invasive Species Committee	Summer 2011	UWEX Lakes Portage Co. Planning and Zoning
Conduct a survey of aquatic plants every 5 years to identify any changes in the aquatic plant community which might warrant different actions to achieve this goal.	Rinehart Lake Assn. Aquatic Plant & Aquatic Invasive Species Committee	2011	WDNR UWSP Consultants

Goal 6: Prevent aquatic invasive species from getting into and becoming established in Rinehart Lake.

Objective 6.1: Provide information about aquatic invasive species (AIS) to riparian landowners and lake users.

Action	Lead person/group	Target Dates	Resources
Update posters at boat landing that identify local lakes that have AIS.	Rinehart Lake Assn. Aquatic Plant & Aquatic Invasive Species Committee	Spring 2010 & Ongoing Annually	UWSP UWEX Lakes Portage County AIS Specialist
Put information about AIS in local lakes in the Lake Association newsletter.	Rinehart Lake Assn. Aquatic Plant & Aquatic Invasive Species Committee	Spring 2010 & Ongoing Annually	UWEX Lakes Portage County AIS Specialist
Distribute AIS wild cards to riparian landowners.	Rinehart Lake Assn. Aquatic Plant & Aquatic Invasive Species Committee and Land Use Committee	Spring 2010 & Ongoing Annually	Portage County AIS Specialist
Submit articles to the Community Spirit about invasive species in local lakes.	Rinehart Lake Assn. Aquatic Plant & Aquatic Invasive Species Committee	Spring 2010 & Ongoing Annually	Local Newspapers UWSP Portage County AIS Specialist
Establish a Clean Boats Clean Waters effort at the boat landing and annually host or attend Clean Boats Clean Waters training.	Rinehart Lake Assn. Aquatic Plant & Aquatic Invasive Species Committee	Spring 2010 & Ongoing Annually	

Objective 6.2: Monitor Rinehart Lake for aquatic invasive species (AIS).

Action	Lead person/group	Start/end dates	Resources
Conduct a workshop to learn about aquatic plant ID to use in monitoring for AIS.	Rinehart Lake Assn. Aquatic Plant & Aquatic Invasive Species Committee	Spring 2010 & Ongoing Annually	
Establish and implement a monitoring program for aquatic invasive species in Rinehart lake.	Rinehart Lake Assn. Aquatic Plant & Aquatic Invasive Species Committee Riparian landowners	Spring 2010 & Ongoing Annually	Portage County AIS Specialist Clean Boats Clean Waters UWEX Lakes

Fisheries and Recreation

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

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

Goal 7: Habitat in Rinehart Lake will be suitable to sustain a healthy fishery.

Objective 7.1: Enhance the habitat present in Rinehart Lake to support a sustainable fishery.

Actions	Lead person/group	Target Dates	Resources
Educate land owners on what makes good fish habitat.	Rinehart Lake Assn. Fishing & Water Quality Committee	Annual meeting, 2012	UWSP WI DNR
Protect areas of sand and gravel (spawning habitat) from sedimentation by minimizing sediment moving to the lake in runoff	Rinehart Lake Assn. Fishing & Water Quality Committee	2012	UWSP WI DNR
Explore construction of sand and gravel bars for additional spawning habitat.	Rinehart Lake Assn. Fishing & Water Quality Committee	2012	UWSP WI DNR
Identify areas for tree drops and woody habitat and work with willing landowners to add woody habitat to the lake.	Rinehart Lake Assn. Fishing & Water Quality Committee	2012	UWSP WI DNR

Goal 8: Preserve the quiet nature and safety of Rinehart Lake users while allowing for recreational opportunities.

Objective 8.1: Provide recreational opportunities to enjoy Rinehart Lake while minimizing conflicts between users and protecting lake water quality and habitat.

Action	Lead person/group	Target Dates	Resources
Explore means of enforcing no wake lake, look at how to avoid issues with power-loading and inappropriate use of 4-wheelers and snowmobiles with the WDNR	Rinehart Lake Assn. Boating Safety Committee	2011	Town of New Hope WDNR Warden
Provide information to Rinehart residents about how to report incidents/violations	Rinehart Lake Assn. Boating Safety Committee	2011	WDNR Warden Po. Co. Sheriffs Dept.
Explore development of a neighborhood watch with local sheriff's department	Rinehart Lake Emergency Committee	2011	Po. Co. Sheriffs Dept.
Limit future expansion of the boat landing on Rinehart Lake	Rinehart Lake Assn. Boating Safety Committee	Ongoing	Town of New Hope

Communication/Organization

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 Rinehart Lake that is enjoyed by many people. There is no single best way to distribute information to those that enjoy and/or affect Rinehart Lake so the planning committee has identified a variety of options to communicate with one another and in the community. Working together on common values will help to achieve the goals that have been outlined in this plan.

Goal 9: Build a sense of community around Rinehart Lake

Objective 9.1: Work to form a sense of community and include all land owners and lake users in the area.

Action	Lead person/group	Target Dates	Resources
Revive some of the Rinehart Lake Association activities (quarterly speakers, socials, newsletters). Include youth when possible.	Vice President, Rinehart Lake Assn. Hospitality Committee/Secretary	Ongoing	UWEX

Objective 9.2: Provide information to all riparian residents and available lake user on Rinehart Lake and keep them apprised of any new developments .

Action	Lead person/group	Target Dates	Resources
Maintain the Lake Association as the primary route of communication with lake users and land owners. See Appendix	Rinehart Lake Assn.	Ongoing	
Routinely update the officer contact information for inclusion on UWEX webpage	Secretary, Rinehart Lake Assn.	Ongoing	
Create list-serv of individuals on Rinehart Lake	Secretary, Rinehart Lake Assn.	Ongoing	
Prepare and disseminate welcome packets to new and existing residents.	Rinehart Lake Assn .Hospitality Committee/Secretary with assistance of New Hope lakes group	Ongoing	UWEX Portage County LCD

Goal 10: Rinehart Lake stewards will be knowledgeable about local and state lake issues and will make the most of available lake program opportunities.

Objective 10.1 Work with and learn from other lake stewards in Portage County and throughout the state.

Action	Lead person/group	Target Dates	Resources
Attend the New Hope Lakes annual meeting.	Past President, Rinehart Lake Assn.	Spring 2011	
Attend Wisconsin Lakes Annual Conference.	President, Rinehart Lake Assn	Spring 2011	
Partner with other lake stewards in Portage County that are working on common efforts.	President, Rinehart Lake Assn.	Spring 2011	
Attend UWEX Lake Leaders training.	President, Rinehart Lake Assn.	Spring 2011	
Work with Town and County on addressing policy changes that might affect Rinehart Lake habitat, water quality, quality of life.	Past President, Rinehart Lake Assn.	Ongoing	

Objective 10.2 Work with local officials on ordinances and zoning

Action	Lead person/group	Target Dates	Resources
The Rinehart Lake Association will participate in any ordinance or zoning discussions pertinent to Rinehart Lake	Rinehart Lake Assn.	Ongoing	Town of New Hope

Rinehart 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).

Rinehart Lake Aquatic Invasive Species Rapid Response Plan 2010

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

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

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

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

Rinehart Lake Aquatic Invasive Species Rapid Response Plan 2010

Rinehart Lake Association Contact
Contact: President – Barry Winrich
Address: 1180 S Lake Rd Amherst Junction, WI 54407
Telephone: 715-824-2431
* Information will be distributed to all lake association members and lake residents *
Who will contact them: Portage County AIS Coordinator

Newspapers
Who will contact them: Portage County AIS Coordinator
Amherst Our 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.

Hudson, M.H., and B. Shaw. 2000. An Evaluation of Past and Present Water Quality Conditions in Rinehart Lake, Portage County, WI. Final report to Rinehart Lake Association and Wisconsin DNR. 60pp

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.

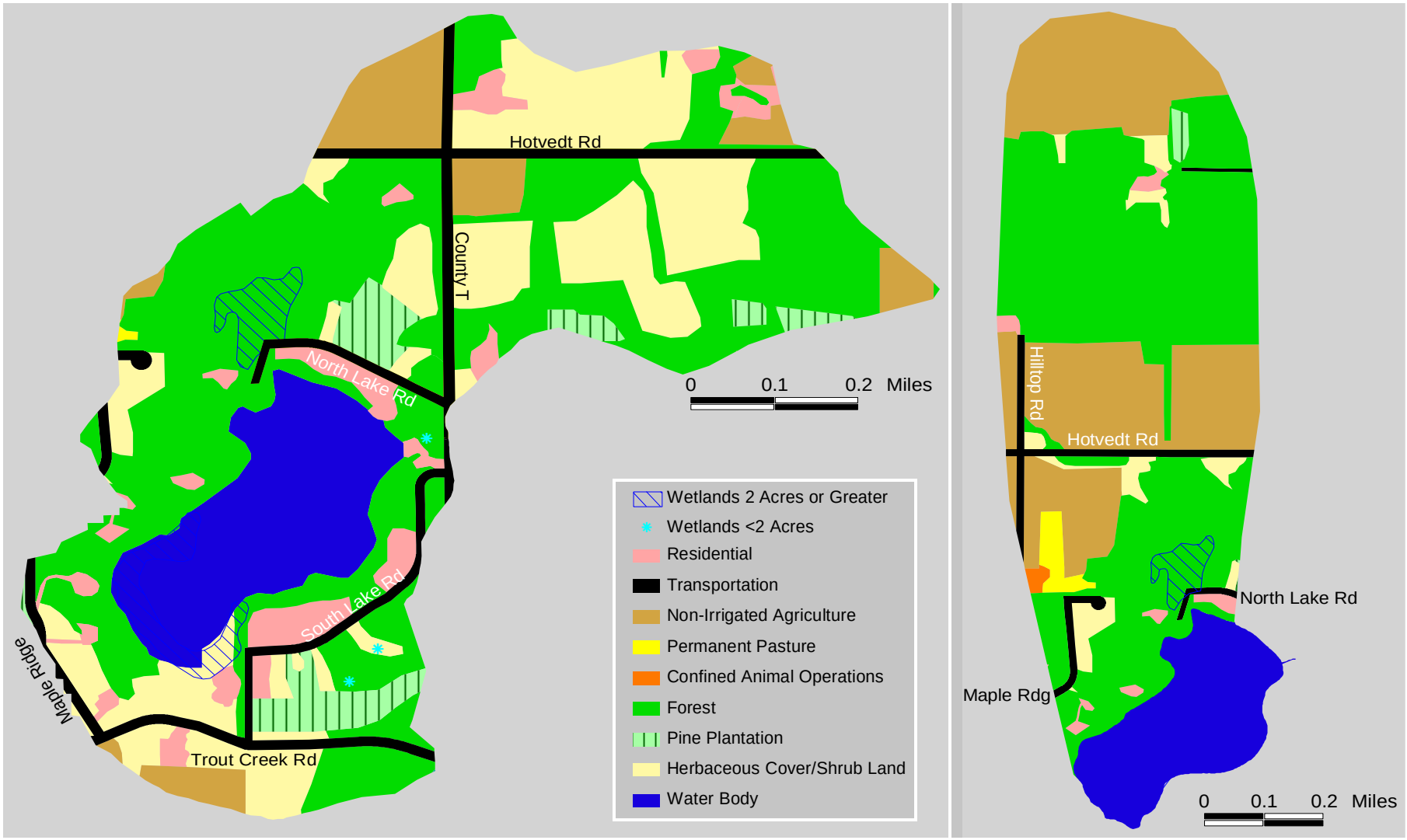
Stratification:

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

Rinehart Lake Watershed Land Uses

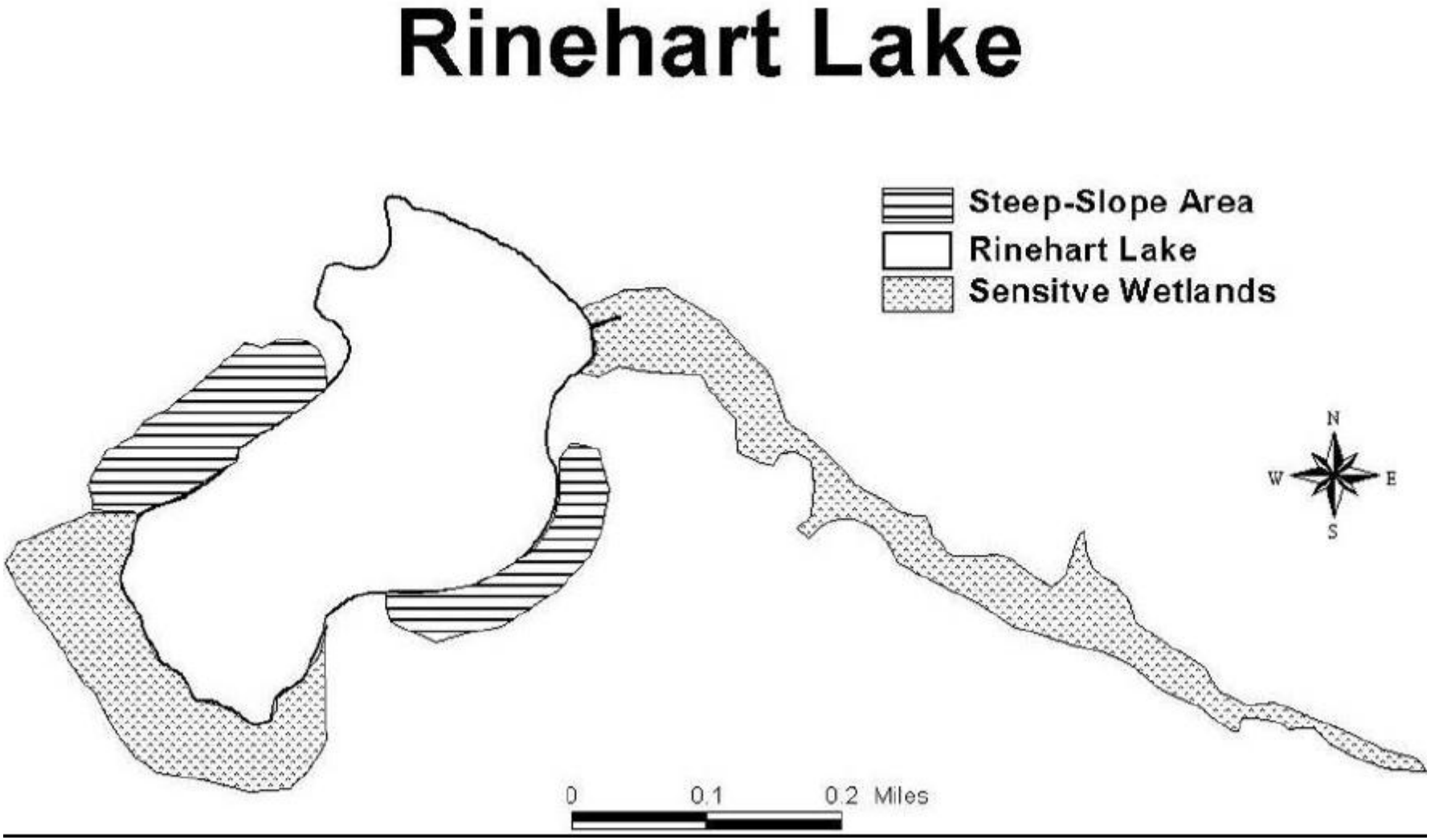


Surface Water Watershed

Groundwater Watershed

Appendix B

Rinehart Lake Sensitive Areas.

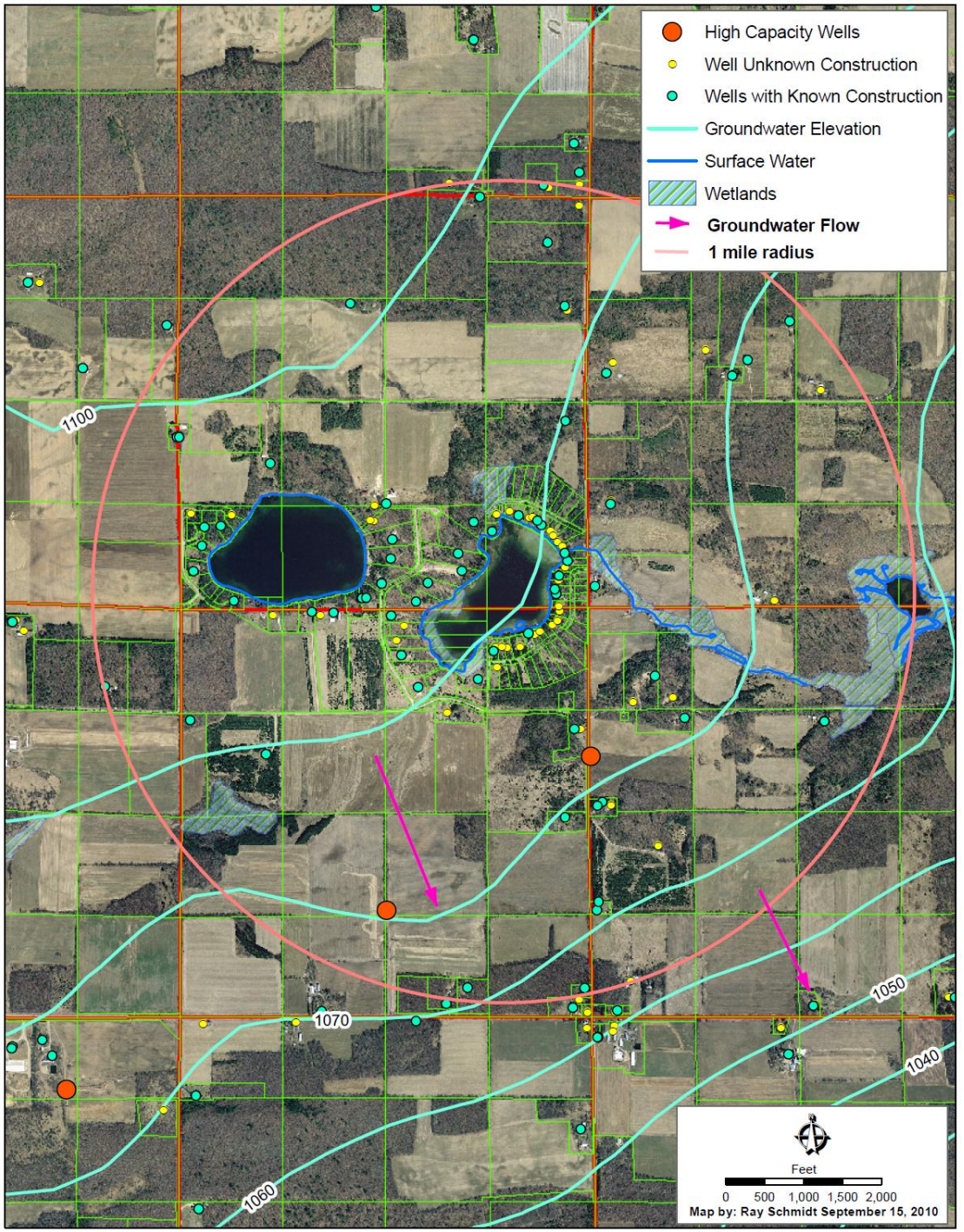


Appendix C

Rinehart Lake Amphibian Habitat (highlighted in red and yellow).

Appendix D

Map of 2010 High Capacity Wells Around Rinehart Lake



APPENDIX E –By-Laws for Rinehart Lake Association, INC.

BY-LAWS
RINEHART LAKE ASSOCIATION, INC.

ARTICLE I – PURPOSE

The purpose of the Association is to maintain, protect, and enhance the quality of the lake, its surroundings and community, for the collective interests of the members and general public. To carry out the program of the Association and to make representations on behalf of its members, the Association shall be organized as a non-profit, non-stock corporation under Chapter 181 of the Wisconsin Statutes. (Sections of the statutes are cited throughout these By-Laws.) No asset of the Association shall benefit any officer or member. The Association shall not participate in partisan political activity.

ARTICLE II – MEMBERSHIP

Section 1 – ELGIBILITY: Membership in the Association shall be open to any individual, family, business, or organization, that (a) subscribes to the purposes of the Association and (b) owns or leases property on or within one mile of the lake.

Section 2 – DUES: Dues shall be $10.00 per calendar year, payable prior to, or at the annual meeting of the Association.

ARTICLE III – VOTING

Section 1 – MULTIPLE VOTING: Any individual member may cast only one vote on any question called to a vote. Up to two (2) individuals may represent a family, a business, or organization; and each of those two individuals may cast one vote on any question called to a vote.

Section 2 – CASTING BALLOTS: A member must be present at the meeting at the time a vote is called in order to vote. No member may vote by proxy or absentee ballots. All votes shall be counted by a show of hands unless otherwise specified in these by-laws, or at the time the vote is called.

Section 3 – REFERENDA: The Board of Directors may at any time solicit reactions from members through a mail survey. The Board resolution authorizing the referendum shall indicate whether the results shall be considered advisory or binding on the Board. The annual meeting may initiate an advisory or binding referendum and shall specify the exact wording of the question and the required follow up action of the Board. Members shall have thirty (30) days to return response forms. Results of the referendum shall be announced at a membership meeting or in printed form within ninety (90) days of the response deadline.

ARTICLE IV – MEMBERSHIP MEETINGS

Section 1 – ANNUAL MEETING: The annual meeting of the Association shall be held in the vicinity of Rinehart Lake between Memorial Day and Labor Day each year. Actual time and place will be specified by the Board of Directors unless specified at the previous annual meeting. The agenda of the annual meeting shall include

Elections, Discussion of Projects, Adoption of a Budget, Member concerns, and an Educational Program. (Sect. 181.14 (1) (2) SS)

Section 2 – SPECIAL MEETINGS: A special meeting of the Association may be called at any time by the President, by majority vote of the Board of Directors, or by written request of one twentieth of the members, or six members, whichever is greater. The agenda of a special meeting may include any items properly brought before an annual meeting. (Sec. 181.14 (3) SS)

Section 3 – INFORMATIONAL MEETING OR SOCIAL EVENT: The Association may sponsor a variety of meetings and events designed to provide educational, recreational, or social opportunities for its members and their guests. It may also sponsor fund raising activities. If business is to be considered at such events, the notice requirement for special meetings must be met.

Section 4 – NOTIFICATION: Every annual or special meeting must be preceded by notice to paid members and members from the preceding year who have not yet renewed their membership. Notification may be by hand delivery or by mail at least thirty (30) days, but not more than fifty (50) days prior to annual meetings, and at least fifteen (15) days, but not more than fifty (50) days prior to special meetings. The notice shall highlight any proposals to dissolve the Association, and may include a detailed agenda. (Sec. 181.15 SS)

Section 5 – QUORUM: No formal business may be conducted at membership meetings unless at **least one twentieth of the members, or six members, whichever is greater**, are present. (Sec. 181.17 SS)

Section 6 – PROCEDURE: Roberts Rules of order, in the current revised edition, shall be in force at the meetings of the Association, of the Board of Directors, and of any Association Committees unless required otherwise by Wisconsin Statutes or these By-Laws. Non-members of the Association may be recognized to speak at Association functions at the discretion of presiding officer who shall also serve as parliamentarian.

ARTICLE V – BOARD OF DIRECTORS

Section 1 – COMPOSITION: The Board of Directors shall include the president, vice president, past president [subject to Article VI Section 1], the secretary and treasurer and four at-large representatives. The Board of Directors will nominate one or more members for each vacant position on the Board. Additional nominations of members, present at the annual meeting and willing to serve, will be taken from the floor. Board member elections are conducted by show of hands unless a secret ballot is requested; the majority rules. The **president votes only to break ties**.

Section 2– AUTHORITY: Subject to directives of annual and special meetings and these By-Laws, the Board of Directors shall have authority over the activities and assets of the Association.

Section 3 – TERMS OF OFFICE: Directors are elected to two-year terms. Their terms shall expire after the annual meeting or upon the election of new directors, whichever occurs later. The terms of office of President, Vice-President, and two at-large directors expire in even numbered years. The terms of office of Secretary, Treasurer, and two at-large directors expire in odd numbered years. (Sec. 181.20 (3) SS)

Section 4 – BOARD MEETINGS: The new Board shall meet within 60 days of the annual meeting and at least one other time prior to the next annual meeting. Regular meetings shall be held at places, times, and dates established by the Board. Special meetings may be held on call of the President, or any three Directors after at least 72 hours notice by telephone, mail, or personal contact. **A quorum is constituted by a majority of currently elected Board members.** The meetings shall be open to the members. Decisions shall be made by majority vote of Directors present, with the President voting only to break ties. Between meetings, the President may solicit decisions from the Board through written communications. (Sec. 181.22; Sec. 181.24 SS)

Section 5 – VACANCIES: Any Director who misses two consecutive meetings without cause may, at the discretion of the Board, be removed from office. Any vacancy may be filled for the remainder of the term by the affirmative vote of a majority of the Directors then in, although less than a quorum. (Sec. 181.20 (4); Sec. 181.21 SS)

Section 6 – COMPENSATION: Directors shall not be compensated for their time and effort. The Board may authorize officers, directors, and committee members to be paid actual and necessary expenses incurred while on Association business.

ARTICLE VI – OFFICERS

Section 1 – PRESIDENT: The President shall preside over all membership meetings and Board meetings. The President shall be the chief executive officer of the Association, responsible for day-to-day administration of the affairs of the Association. The President will attend or designate the Vice President or Past President to attend the New Hope Lakes Annual meeting and partner with other lake stewards in Portage County working on common efforts. This will also include but is not limited to the Wisconsin Lakes Annual Conference, UWEX Lake Leaders Training. The president will supervise any employees or contractors providing services to the Association. The President shall appoint all committee members who shall serve until the end of the President's term. The President is ex-officio member of all committees.

Section 2 – PAST PRESIDENT: The Past President shall continue to serve on the Board a minimum of 1 term. The Past President shall represent the President as requested and work with town and county on addressing policy changes that might affect Rinehart Lake habitat, water quantity and quality that may affect the quality of life. The Past President will work with and assist with carrying out the duties of the Land Use Committee to represent the Association at appropriate meetings.

Section 3 – VICE PRESIDENT: The Vice President shall assume the duties of the President should that office become vacant and shall preside at meetings when the President is unable to attend. The Vice President shall arrange for the educational segment of the Annual meeting and other educational meetings as deemed important to the Lake Association. The Vice President will carry out other assignments at the request of the President.

Section 4 – SECRETARY: The Secretary shall maintain the official records of the Association as well as archives. The Secretary shall record and distribute the minutes of member meetings and Board meetings. The Secretary shall maintain a current record of the names and addresses of members entitled to vote, and shall send out notices of membership and board meetings. The Secretary shall prepare publicity for the Association and shall

prepare the Association newsletter or solicit an editor to carry out the task. The Secretary shall act as a liaison to the Membership, Emergency Planning and Hospitality committees (Sec. 181.27 SS).

Section 5 – TREASURER: The Treasurer shall maintain the financial records of the Association and shall sign all checks. The treasurer shall prepare an annual financial statement for the annual meeting and shall be responsible for presentation of the proposed budget to the annual meeting. The treasurer shall serve on the Finance Committee.

Section 6 – MULTIPLE OFFICE HOLDING: The same person may hold the offices of Vice-President and Treasurer or the offices of Secretary and Treasurer. (Sec. 181.25 (1) SS)

Section 7 – Board of Directors: The Board of Directors are responsible in carrying out the Associations affairs and representing the membership. At least one Board member shall act as a liaison to each committee. When a committee is not established, the Board members will be assigned by the president to carry out the functions of that committee.

Section 8– OTHER OFFICERS: Other officers may be appointed by the President, with concurrence of the Board. A legal counsel, an executive secretary, or such assistant officers as are deemed necessary need not be members of the Association.

ARTICLE VII – COMMITTEES

Section 1 – MEMBERSHIP COMMITTEE: The Membership Committee shall develop and initiate a plan to recruit new members and retain current members and seek offer suggestions to the Board for approval.

Section 2 – HOSPITALITY COMMITTEE: The Hospitality Committee shall provide refreshments at the Annual Meeting and, after receiving Board approval, shall organize and publicize other social events sponsored by the Association.

Section 3 – FINANCE COMMITTEE: The Finance Committee shall recommend fund raising to the Board and, after receiving Board approval, shall organize such activities. The Finance Committee shall also annually audit the financial records of the Association.

Section 4 – LAND USE COMMITTEE: The Land Use Committee shall represent the Association at local public hearings and information meetings relating to zoning, sanitation codes, subdivision ordinances, pollution ordinances, and changes in land use which might affect water quality (e.g. watershed runoff) and water quantity (e.g. water harvesting). This committee shall be responsible to learn about WDNR critical habitat designations and consider resolution to support some or all of the recommendations, inform landowners about amphibian habit that was identified in the Portage County Lake study, implement protection strategies and explore means of publicizing Portage County Zoning regulations and reporting potential violations to appropriate authorities The committee shall offer proposals to the Board regarding land use issues affecting water quality or quantity.

Section 5 – BOATING COMMITTEE: The Boating Committee shall represent the Association at local public hearings and informational meetings relating to water safety patrols, lake use ordinances, and obstacles to navigation. The committee shall offer proposals to the Board regarding water use issues. The Boating

Committee shall assist develop relationships with local sports clubs and conservation clubs. This committee shall assist with the Clean Boats Clean Waters program on an annual basis and explore means of publicizing DNR regulations and reporting potential violations to appropriate authorities

Section 6 – FISHING AND WATER QUALITY COMMITTEE: The Fishing and Water Quality Committee shall represent the Association at Department of Natural Resources hearings and at local meetings relating to in-lake water quality and quantity (water levels) and fish and wildlife habitat. The Fish and Water Quality Committee shall work with the Aquatic Plants and Aquatic Invasive Species Committee to provide lake monitoring as requested by the Rinehart Lake Management Planning Committee. The committee shall offer proposals to the Board regarding water quality monitoring and ecological management of the fishery and may be delegated responsibility to implement such a plan.

Section 7 – AQUATIC PLANTS AND AQUATIC INVASIVE SPECIES COMMITTEE: The Aquatic Plants and Aquatic Invasive Species (AIS) Committee shall represent the Association at Department of Natural Resources hearings and at local meetings relating to the control of AIS plants and to the protection of desirable vegetation. The Aquatic Plants and Aquatic Invasive Species Committee shall work with the Fishing and Water Quality Committee to provide lake monitoring as requested by the Rinehart Lake Management Planning Committee. The committee shall offer proposals to the Board for a AIS management plan and may be delegated responsibility to implement such a plan.

Section 8 – Emergency Planning Committee: The Emergency Planning Committee shall develop and maintain on an annual basis a map of current land owners adjacent to the lake and prepare a mail list of names and addresses to be used for newsletters and e-mail and phone numbers to be for emergencies. The committee shall prepare a list of neighbors and distribute the list to permanent residents. The Emergency Planning committee will investigate the need for and implement as recommend an emergency plan and neighborhood watch for residents within 1 mile of the lake. Emergency plans will include what and how to report to local officials suspected safety issues.

Section 9 - OTHER COMMITTEES : The President may appoint such other committees as are deemed necessary to support the efforts of the Board.

ARTICLE VIII – MISCELLANEOUS PROVISIONS

Section 1 – INDEMNIFICATION OF OFFICERS AND DIRECTORS: As provided by Wisconsin law, the Association shall indemnify any officer, director, employee, or agent who was, is, or may be involved in legal proceedings by virtue of his or her good faith actions on behalf of the Association. (Sec. 181.0145 SS)

Section 2 – FISCAL YEAR: The records and accounts of the Association shall be maintained on a calendar year basis.

Section 3 – ACCOUNTS AND INVESTMENTS: Funds of the Association shall be promptly deposited at a financial institution designated by resolution of the Board of Directors. Funds not needed for current operations shall be deposited in investment accounts or certificates as authorized by the Board of Directors. Expenditures exceeding $50 require approval by the president.

ARTICLE IX – ADOPTION AND AMENDMENTS

These By-Laws and any amendments thereto, may be adopted at any annual or special meeting of the Association by two-thirds vote of members present and entitled to vote. Amendments to the By-Laws must be summarized in the notice for the annual meeting at which the amendments are to be voted on.

ARTICLE X – DISSOLUTION

The Board of Directors, by a two-thirds vote of all directors, may recommend that the Association be dissolved and that the question of such dissolution be submitted to a vote at a subsequent meeting of members. Notice of the meeting shall highlight the question of dissolution. At the meeting, a two-thirds affirmative vote of members present and entitled to vote shall be required to approve a resolution for dissolution. Such a resolution shall direct the Board of Directors to prepare a dissolution plan for subsequent approval of the members as provided under Wisconsin law. Dissolution of the Association shall not be final until the members, by majority vote, shall have approved the dissolution plan, either at a meeting or by a binding mail referendum. (Sec. 181.50; Sec. 181.52 SS)

CERTIFICATION

These By-Laws were established at the annual meeting on August 8, 1998 and revised and approved July 30, 2005. (Specifically Article IV – Membership)

Ruth Wanta, Secretary 7/30/05

These By-Laws were established at the annual meeting on August 8, 1998 and revised and approved August 16, 2008. (Specifically Article II – Membership Dues)

These By Laws were established at the annual meeting on August 8, 1998 and revised and approved at the annual meeting August 28, 2010 (Specifically Article VI and VII) in order to bring consistency to the By-laws and the 2010 Rinehart Lake Management Plan facilitated by Center for Watershed Science and Education – UWSP/Center for Land Use Education. Board approved editorial changes on 9/15/2010.