2010

Springville Pond Management Plan

Springville Pond Management Planning Committee

9/30/2010

Plan approved by the Springville Pond Committee on Sept. 2010

Adopted by the Village of Plover

Adopted by Portage County on

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

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Introduction

Springville Pond is an impoundment of the Little Plover River that is located in the Village of Plover in Portage County. It is valued by those who use and enjoy the pond for its natural beauty, peace and tranquility, wildlife viewing, and quiet recreational opportunities including walking, fishing, biking, and canoeing/kayaking.

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 Springville Pond 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 Springville Pond 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 protect current good conditions, address existing problems and prevent future problems that may be detrimental to the Springville Pond ecosystem.

The development of this lake management plan utilized the information from Springville Pond's current aquatic plant management plan (UWSP, 2006) and a previous management plan, Little Plover River and Springville Pond Watershed Management Plan, conducted by Lampert, Lee and Associates in 1997. This management plan was developed by a committee of interested citizens, the Springville Pond Committee (a sub-committee of the Village of Plover Board), and professionals from UWSP, Portage County, and the Wisconsin Department of Natural Resources. Prior to the current plan development a citizen survey was conducted to gather information on citizens' values, opinions, and perceived issues with Springville Pond. The survey was sent to all residences within the Springville Pond watershed and was available online where any interested person could take the survey. Two hundred and twenty one responses were returned. The members of the Springville management planning committee met over seven months to learn about topics related to the pond and develop this lake management plan.

Background Information

Information in this section was taken from the Portage County Lakes Study and the citizen survey responses. 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 an understanding of Springville Pond and its ecosystem. A healthy pond ecosystem is comprised of many components that include in-pond 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 Springville Pond but also extend to where the water meets the land and beyond into the watershed. Springville Pond is a reflection of the health and activities that occur in the pond, near the shore, and in the watershed.

Springville Pond is as 18 acre impoundment of the Little Plover River with a maximum depth of 12 feet (WDNR 2005). The bottom of the pond consists primarily of sand with some silt. The lower end of the pond has been dredged, while the upper end has not. Because of this the upper end has muck overlaying the sandy substrate. During most years, the Little Plover River is navigable above and below the dam on

Springville Pond. There is a public access to the pond on the south shore with carry-in boat access. This access is owned and managed by the Village of Plover.

Watershed

A surface watershed is an area of land where water from precipitation drains from higher elevations towards the pond. Springville Pond's surface watershed is approximately 6,156 acres and stretches to the large moraine east of the pond just east of the headwaters of the Little Plover River (Figure 1).

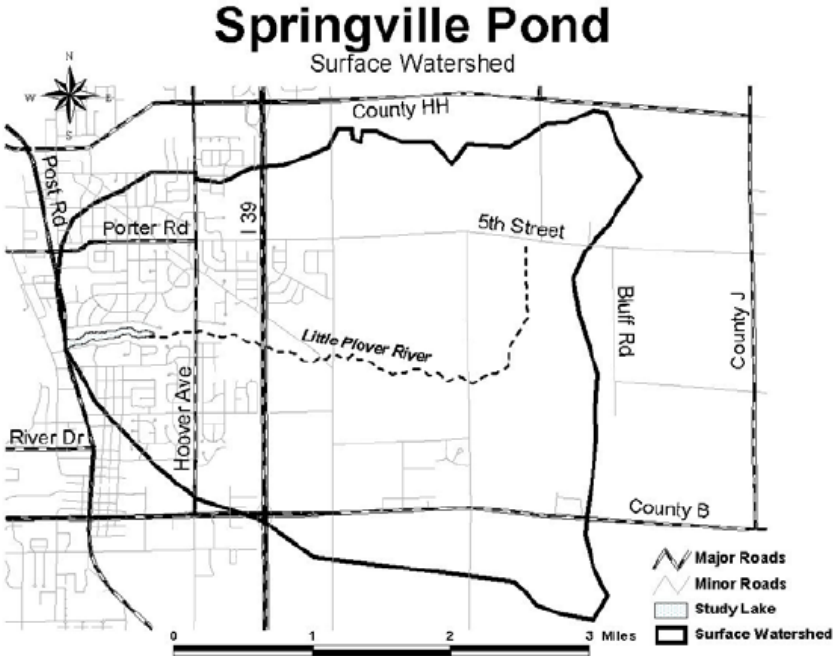


Figure 1. Springville Pond surface watershed.

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 pond. 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.

In 1992 land uses within the surface watershed were predominately irrigated and non-irrigated agriculture (45%,) forested areas (26%), and residential (18%). Residential and road development has increased significantly since 1992. This results in increased runoff and decreased groundwater infiltration. Within the Village of Plover, some of this additional runoff is infiltrated in swales that are put in place to handle stormwater. Increased runoff can carry sediments and pollution and in the summer it can warm the temperature of the river and pond. It can also result in reduced storage of water (as groundwater) which feeds the stream during drier periods. The areas near shore tend to have the most direct impact on habitat and water quality. In Springville Pond this area is comprised of primarily residential areas. The Little Plover River corridor is a mix of forested areas (managed by the WDNR), residences, and agriculture. In recent years, sections of the Little Plover River have dried up during parts of the summer. When this occurs it can affect water temperature and quality in Springville Pond.

Survey respondents indicated a willingness to change how they manage their land to protect/improve the Springville Pond ecosystem. The top motivators included increasing property value, increasing the natural beauty of their property, improving water quality and quantity, and savings on landscaping/maintenance costs.

Sensitive Areas

The sensitive areas associated with Springville Pond are defined by lands adjacent to the pond that are particularly valuable to the pond's ecosystem or that would be significantly impacted by most disturbances or development. These areas include a region to the northeast of the pond that would be adversely affected by any kind of development or increased runoff. The other area, to the east of the pond, is a

particularly important riparian area with adjacent forest and understory that provides birds with excellent bird breeding habitat (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. Springville Pond committee members indicated that fewer turtles and frogs are present on/near the pond than they have observed in the past.

The primary amphibian habitat for Springville Pond is located on the east end of the pond where the Little Plover River flows into Springville Pond. Key features of this habitat include undisturbed natural shoreline with large amounts of submergent, emergent, and floating-leaf vegetation. The good news about the amphibian populations on Springville Pond is that several areas on the eastern end of the pond support some amphibian species. The bad news is that few amphibian species have been found at Springville Pond; the high levels of altered shoreline may be preventing the establishment of amphibian populations, or agricultural chemicals maybe affecting the reproduction and/or survival (See Appendix B). Over the last five years shoreland owners have worked towards restoring disturbed habitat.

Shoreline

In 2002/2003 approximately 95% of the shoreline around Springville Pond was considered disturbed. Minimal disturbance of vegetation occurred on 5.8% of the shoreline, 26.2% was considered moderately disturbed, and 62.9% 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 remaining shoreline around Springville Pond was comprised 5.1% dense vegetation such as tall grasses and shrubs. Over the last five years shoreland residents and the Village have taken steps to reduce the disturbance along much of the shoreline which has resulted in better near shore habitat along with the water quality in the pond and reduced growth of algae and aquatic plants.

Surfaces such as roofs, driveways, roads, patios, and compacted soils increase the amount of runoff moving across the landscape towards Springville Pond. Runoff that enters the pond can carry a variety of pollutants into the water. Some of the negative impacts in the pond 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, 29 of the 221 respondents owned shoreline property. Twenty-two of those respondents who owned shoreline property indicated their shorelines were undeveloped or natural. Respondents indicated the depth of their shoreline buffers around Springville Pond varied greatly. Only 4 respondents indicated their buffers were more than 35 feet. Shoreland surveys have been conducted annually during the summer since 2007. The most recent (2010) shoreland survey results can be found in Appendix B. Healthy shoreland vegetation makes good winter habitat for the milfoil weevil which helps to control the invasive aquatic plant, Eurasian watermilfoil .

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) in 2003 there were **22** species of aquatic macrophytes or plants that had been identified in Springville Pond or on the wet areas of shore. This was below average when compared to other Portage County lakes. Since 2003, aquatic plant surveys have been conducted annually and a total of 43 aquatic plants and two macrophytic algae have been identified in/adjacent to the pond.

In 2006-2008 Springville Pond was strongly impacted by the aggressive invasive aquatic plant Eurasian water-milfoil. As a response to the abundant growth observed in 2006, an aquatic plant management plan was developed for Springville Pond in 2007. Each year results from the previous year's management and the aquatic plant response have been reviewed and a new plan for the upcoming year has been established. To date, efforts have focused on control of Eurasian watermilfoil but another aquatic invasive plant, curlyleaf pondweed is present in the pond. Its abundance should be measured annually so that increases in this plant abundance could result in management activities before it creates nuisance conditions.

During the 2010 survey, when asked about the abundance of aquatic plants in Springville Pond, respondents indicated that the growth was heavy or they were unsure. Respondents also indicated July and August were the months with the densest plant growth, which is typical for most Wisconsin lakes. The east end of the pond was identified as an area where the amount of aquatic plant growth impacted enjoyment of the pond. Filamentous algae is the primary problematic plant in the east end of the pond. Control of aquatic plants in this area is limited; shallow water depths won't permit harvester use, groundwater inflow (springs) doesn't provide the necessary time needed for chemicals to work. Other options would include the reestablishment of pond lilies to reduce favorable conditions for the filamentous algae including open and easily disturbed nutrient-rich sediment.

Water Quality and Land Use

When asked about Springville Pond's water quality, the majority of survey respondents felt the water quality was fair and were ambiguous about any change that may have occurred during the period that they were familiar with it. Survey respondents also indicated the quality of water in the pond had an impact both economically and on their personal enjoyment of the pond.

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

Chloride concentrations, and to a lesser degree sodium and potassium concentrations, are commonly used as indicators of how strongly a water body is being impacted by human activity. In Springville Pond chloride and sodium levels measured in 2002/03 were elevated, and potassium concentrations were low.

Atrazine, an agricultural herbicide, was detected in Springville Pond. 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 Springville Pond.

The temperature in Springville Pond was generally uniform throughout the water column through the year. This would be expected because of the constant influx of water from the Little Plover River and the relatively shallow depth of the impoundment, however if the Little

Plover River continues to have historic low flows in the late summer, the reduced water volumes entering Springville Pond would result in the water remaining in the Pond for longer time. This longer retention time would allow the upper layer of water to warm with the summer sun and would allow more contact time for the algae with phosphorus and nitrogen. In addition, increased temperatures at the water's surface could become lethal to the weevil that helps to control Eurasian watermilfoil.

In 2002/03, dissolved oxygen was always plentiful in the upper 8 feet of the pond. Below that, during some times of the year water lacks enough oxygen to support some biota. Cooler water contains higher concentrations of dissolved oxygen so continued low volumes of water coming in from the Little Plover River in late summer would aggravate this situation.

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 Springville Pond ranged from seven to nine feet. July had the best water clarity and August had the poorest. Fluctuations in water clarity throughout the summer are normal as algae and aquatic plant populations and sedimentation increase and decrease. 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 Springville Pond. Chlorophyll *a* concentrations in Springville Pond ranged from 0.005 to 19.75 mg/L. Readings over 5 mg/L are considered to be elevated.

The 36 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, with the exception of the *Anabaena*. The algal community relative to the chlorophyll *a*, phosphorus, and nitrogen values for Springville Pond presents a picture of an eutrophic pond. The dominance of blue-green algae and mat-forming diatoms (filamentous algae) could be the result of increasing cultural eutrohication in the watershed and should be considered a warning sign. Mats of blue-greens and diatoms can carpet the shallow reaches on the eastern end of the pond, [and as they photosynthetically-produce oxygen in the interwoven mat materials] they will loft off the bottom and float to the surface. At the surface they get too much sunlight, bleach to yellow/white, and then decay. The decay can be aesthetically displeasing, and in some cases the bacterial decomposition of this material leads to oxygen depletion and perhaps to fish kills. (B. Bell).

Nutrients (nitrogen and phosphorus) are important measures of water quality in water bodies because they are used for growth by algae and aquatic plants. In Springville Pond both the phosphorus and nitrogen concentrations fluctuated throughout the year. Phosphorus levels generally, did not exceed the phosphorus criteria set by the Wisconsin DNR. However, the nitrogen levels in Springville Pond were quite elevated. Nitrogen concentrations in Springville Pond were high, including nitrate, which is easily used for growth by aquatic plants and algae. Concentrations were well above the 0.3 mg/L 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. They make their way to the pond by near shore runoff and the Little Plover River.

In Springville Pond 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 Springville Pond are variable throughout the year. Median total phosphorus (TP) concentrations in spring/fall for 2002/2003 were 32.5 ug/L (Figure 3).

The Wisconsin DNR's phosphorus criteria value for impoundments is 40 ug/L. Average summer concentrations at or above this value would result in noticeably degraded water quality. The average summer total phosphorus concentrations in Springville Pond was 37.0 ug/L in 2002/03 however median readings in July were above the standard (Figure 2). Total phosphorus should be monitored multiple times per year in Springville Pond 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.

Managing phosphorus in the Springville Pond watershed is key to protecting the pond. Positive land management practices and land uses can result in good water quality in Springville Pond. Phosphorus inputs to the pond 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 pond. 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 help to reduce the inputs of

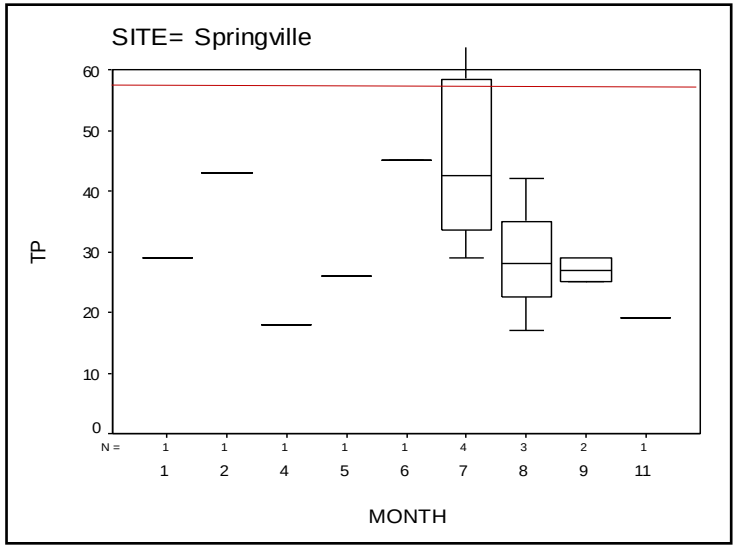


Figure 2. Median total phosphorus concentrations (mg/L) by month in Springville Pond in samples collected in summer, 2002-2004. Red line is WDNR criteria value for phosphorus for impoundments.

phosphorus to Springville Pond include leaving native vegetation (trees, bushes, and grasses), eliminating the use of fertilizer, minimizing runoff/increasing infiltration, and minimizing and securing exposed soil. The Portage County Land Conservation Department is a local organization that can provide assistance to landowners that want to reduce impacts to Springville Pond from their property.

Future degradation of water quality in Springville Pond can be minimized with thoughtful land use planning throughout the watershed. This includes diverting runoff to areas where it can infiltrate rather than runoff to the pond, limiting withdrawal of groundwater, and controlling runoff, nutrient, and chemical inputs from new and existing developments and agriculture. Currently the Village of Plover is managing their stormwater using storage and infiltration techniques

instead of a storm drain system that would ultimately drain to surface water.

A "build out" of the current zoning in the watersheds was conducted as a predictive tool to estimate the phosphorus response in Springville Pond if complete allowable development occurs. Additional scenarios included connecting more of the landscape to the pond through water diversion such as culverts and roads (Figure 4). The development of a water body model allowed us to estimate changes in phosphorus inputs from the landscape based on various land use scenarios (Figure 4). Points displayed include (in order from left to right) 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 improve water quality in Springville Pond.**

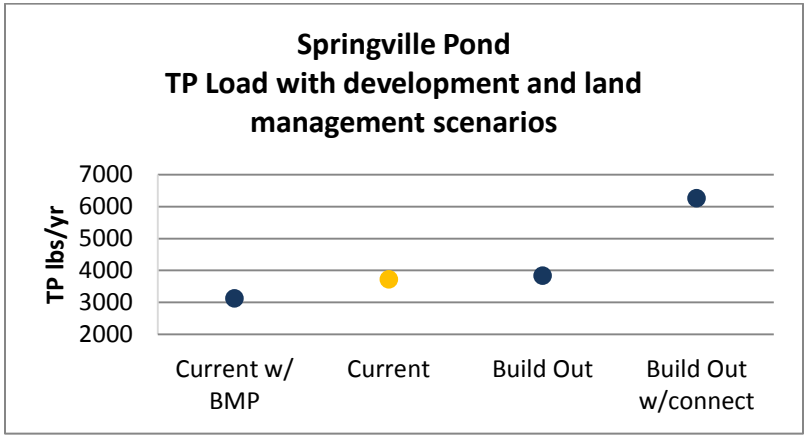


Figure 3. Changes in mass of phosphorus from the landscape related to land use (development) scenarios in the Springville Pond watershed.

Recreation

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

The committee indicated an increase in people fishing the Pond during the summer of 2010 but conflicts between users do not appear to be of concern on Springville Pond as respondents indicated that they were not disturbed by others on the pond. Surveys indicated that the gazebo on Village property was enjoyed by a number of residents and they would like to see it replaced (the gazebo was destroyed by an arsonist).

Goals, Objectives, and Actions

The following goals, objectives, and actions were derived from the values and concerns of the members of the Springville Pond Planning Committee including members of the Springville Pond Committee and local citizens and are based on the science used to assess Springville Pond and its ecosystem. Implementing the goals, objectives, and actions of the Springville Pond Management Plan should protect many of the values that have been identified including 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 annually and updated with any necessary changes by the Springville Pond committee, interested citizens, and representatives from municipalities and agencies. Updates will be provided to the Village of Plover, Portage County, the Wisconsin DNR, Springville Pond Committee, and any other entity adopting the plan.**

Water Quality and Land Use

Springville Pond is host to a variety of plants, insects, fish, amphibians, and a variety of other animals that all depend on good water quality in the pond. Survey respondents indicated that water quality influenced their enjoyment of the pond and impacted their perceived aesthetic and economic value of Springville Pond. Respondents felt that the water quality in the pond was fair and those that were familiar with Springville Pond felt that water quality had stayed the same over time. Data shows that water quality in Springville Pond could use improvement. Currently, Springville Pond has high concentrations of both phosphorus and nitrogen that can fuel excess plant and algae growth in the pond and atrazine and other agricultural chemicals are entering the pond. The majority of the water entering Springville Pond originates in its watershed; therefore, water quality in the pond is directly related to the land use practices in the watershed and especially near shore.

Vision: *The water quality in Springville Pond will improve and landowners and the Village will support land uses within the watershed that can contribute to improved water quality.*

Goal 1: Improve water quality in Springville Pond so that phosphorus concentrations are below the 2002/2004 annual average of 32.5 ug/L and summer averages are below the Wisconsin State Standard of 40 ug/L. We will know that we have achieved this goal when monitoring indicates that median summer (5 samples/summer) total phosphorus remain at or below these levels.

Objective 1.1: Monitor the water quality in Springville Pond to evaluate if goals are being met.

Action	Lead person/group	Start/end dates	Resources
Develop strategies for an annual nutrient related water quality monitoring program on Springville Pond that includes year round monitoring for phosphorus, nitrogen, surface temperature, and other water quality measures.	Springville Pond Management Committee		UWSP WI DNR

Objective 1.2: Reduce nutrient and sediment inputs to Springville Pond.

Action	Lead person/group	Start/end dates	Resources
Encourage soil tests on lawns – provide information to landowners on how & where to sample.	Springville Pond Management Committee		Portage County UW-Extension
Host a soil testing workshop for Springville Pond watershed residents/work with Portage County UW Extension agent to interpret/map results.	Springville Pond Management Committee		Portage County UW-Extension
Provide information on when to fertilize or not based on soil test results.	Springville Pond Management Committee		Portage County UW-Extension UWEX Lakes
Village will review and possibly amend their practices regarding fertilizing municipal properties.	Springville Pond Management Committee		Village of Plover
Work with the county to encourage development of water quality based nutrient management plans within the Springville Pond Watershed.	Springville Pond Management Committee		Portage County Land Cons. Dept.

Objective 1.3: Riparian and watershed landowners will minimize their impacts to Springville Pond through improved land management practices.

Action	Lead person/group	Start/end dates	Resources
Support efforts to convert irrigated ag land to open space, park land, and restored wetlands through land purchases.	Springville Pond Management Committee	Completed?	Village of Plover Little Plover River Work Group
Protecting land within a mile of the Little Plover River is highest priority for improved water volume, habitat, and water quality.	Springville Pond Management Committee	Completed?	Village of Plover Little Plover River Work Group
Promote increased vegetated buffer areas between ag areas and Little Plover River.	Springville Pond Management Committee		Portage County Land Cons. Dept.
Encourage the use of natural vegetation, rain gardens, or landscaping throughout the residential areas adjacent to Springville Pond to reduce runoff that reaches the pond by providing information through newsletters, newspapers, and other community resources.	Springville Pond Management Committee		Portage County Land Cons. Dept. UWEX Lakes

Objectives 1.3 (cont):

Action	Lead person/group	Start/end dates	Resources
Consider implementing runoff reduction practices during new construction and replacement of infrastructure in the Village of Plover and throughout the Springville Pond Watershed	Springville Pond Management Committee		UWEX Lakes Portage County Land Cons. Dept.
Continue use & dredging of sediment catch basin on Springville Pond	Springville Pond Management Committee		Village of Plover
Explore dredging the east end of Springville Pond when it is lowered for dam repairs.	Springville Pond Management Committee		Village of Plover

Water Quantity

Fluctuating water levels in water bodies are natural responses to variation in climate and weather patterns. In Portage County some water bodies have historically experienced fluctuations in water levels and the plant and animal life in these water bodies have adapted and sometimes depend on these fluctuations for survival. Recently, the area surrounding Springville Pond began experiencing drought like conditions in 2002/2003 and in 2006 and 2007 this contributed to lower pond levels. Excess withdrawal of groundwater can potentially add to these natural fluctuations, affecting the extent and duration of low water levels. The planning committee for Springville Pond envisions water level goals that maintain and promote healthy water flows in the Little Plover River and Springville Pond.

Vision: Help maintain and promote healthy flows on the Little Plover River, which flows into Springville Pond.

Goal 2: Promote actions that can help maintain healthy flow on the Little Plover River and water levels in Springville Pond.

Objective 2.1: Provide information to landowners around Springville Pond about actions that they can take to help maintain healthy flows on the Little Plover River and water levels in Springville Pond.

Action	Lead person/group	Start/end dates	Resources
Promote ways citizens can decrease personal water use through website, newsletter, other mailings.	Springville Pond Management Committee		UWSP Groundwater Center Portage County Water Quality Specialist
Promote ways citizens can infiltrate runoff on their properties through website, newsletter, other mailings.	Springville Pond Management Committee		Portage County Land Cons. Dept.
Stay informed on upcoming groundwater legislation. Share information through website, newsletter, other mailings.	Springville Pond Management Committee		Portage County Water Quality Specialist Little Plover River Work Group
Maintain stream flow monitoring of the Little Plover River and continue to collect and report the data collected.	Springville Pond Management Committee		Village of Plover

Shorelands

Shorelands are some of the most important habitat near water bodies for aquatic and terrestrial wildlife, including birds. Shoreline vegetation helps to slow runoff moving to the pond and filter runoff before it enters the pond. In winter, the weevils that help to control Eurasian milfoil hibernate in old shoreland vegetation. Leaving shorelands intact helps to support high populations of this insect. Restoring and protecting shorelines not only improves water quality and protects habitat but will also help to provide scenery and solitude, as well as natural space for residents to enjoy nature, which were some of the most popular recreational activities identified in the citizen survey. A healthy shoreland buffer should be comprised of native flowers/forbs, shrubs, and trees. Annual evaluations of shorelands around Springville Pond indicate that there have been substantial improvements in the amount of vegetated buffer present since the 2003 survey. However, there is still room for additional improvement.

Vision: Springville Pond will have healthy shorelands that support a variety of wildlife and fisheries and maintain a healthy ecosystem.

Goal 3: Educate waterfront homeowners on the importance of shorelands for a sustainable aquatic ecosystem and how their actions affect the aquatic ecosystem.

Objective 3.1: Provide a variety of informational/education opportunities for waterfront homeowners to learn about the importance of shorelands for a sustainable aquatic ecosystem.

Actions	Lead person/group	Start/end dates	Resources
Provide information about the benefits of natural vegetation and natural shorelands through the Village website, newsletters, and welcome packets.	Springville Pond Management Committee	Ongoing – New residents	Portage County Land Cons Dept UWSP UWEX s WDNR Grants
Install a shoreland restoration project as a demonstration project on Village Land at the wastewater lift station. Combine demo site with a hands-on shoreline restoration workshop.	Springville Pond Management Committee	Completed?	Village of Plover Portage County Land Cons Dept
Host workshops on shoreland restoration. Look into combining efforts with McDill Pond District.	Springville Pond Management Committee	2012?	Village of Plover Portage County Land Cons Dept
Share Portage County Land Conservation personnel information with local landowners through the welcome packets.	Springville Pond Management Committee	Ongoing-New residents	Village of Plover

Goal 4: Create, restore, and protect healthy, stable shoreline habitats near and around Springville Pond. This goal will be achieved when all of the shorelands around Springville Pond meet or exceed the county and state shoreland zoning ordinances.

Objective 4.1: Waterfront homeowners around Springville Pond will understand their roles in protecting this important land and will make informed land management decisions.

Actions	Lead person/group	Start/end dates	Resources
Continue monitoring shoreland vegetation around Springville Pond and share results though mailing or possibly welcome packets.	Springville Pond Management Committee	UWSP 2012	UWSP Center for Watershed Science and Education
In steeper sloped areas around Springville Pond, encourage the design of access points to the water that minimize erosion and slow water runoff through informational workshops and the welcome packets.	Springville Pond Management Committee	ongoing	Portage County Land Cons. Dept.
Pursue shoreline improvement and funds for improvements to prevent and/or repair shoreland erosion along Springville Pond.	Springville Pond Management Committee	Grant-May1 deadline	Portage County Land Cons. Dept WDNR Lake Protection Grants DATCP Funds
Review the Village of Plover shoreland zoning ordinance to ensure that it is meeting the current needs. Update the shoreland zoning ordinance if needed.	Springville Pond Management Committee		UWSP Center for Land Use Edu WDNR Lake Protection Grant UWSP Center for Land Use Education
Participate in the shoreland planting program in Portage County with the DNR and County Staff. The Village will consider purchasing plants in 2010 for a demo site at the wastewater lift station. Riparian residents will be offered to participate in the planting process in 2011	Springville Pond Management Committee	Completed? Ongoing?	Portage County Land Cons. Dept 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 Springville Pond survey respondents and committee members. Twenty four percent of Springville Pond survey respondents felt that the plant growth in Springville Pond in 2009 did not impact their enjoyment of the pond, while 19% felt it did have an impact. Most of those that were impacted indicated that they live on the east end of the pond. The survey respondents were split between feeling that the aquatic plant communities on Springville Pond were heavy or were unsure about plant growth. The Springville Pond Committee has been working to manage aquatic invasive species plants in Springville Pond using the pond's approved aquatic plant management plan. To date, the invasive species Eurasian watermilfoil, curly leaf pondweed, flowering, rush, and water lettuce have been observed in Springville Pond. Healthy aquatic plant communities, along with a vigilant watch will help to limit any new aquatic invasive species from becoming established in the Springville Pond.

Vision: Springville Pond will have healthy native vegetation present in the pond, while reducing current and preventing new aquatic invasive species.

Goal 5: Control existing invasive aquatic plant species and prevent any new invasive aquatic species from becoming established in Springville Pond.

Objective 5.1: Manage the amount of Eurasian watermilfoil in Springville Pond to a controllable state.

Actions	Lead person/group	Start/end dates	Resources
Follow the recommendations outlined in the Springville Pond Aquatic Plant Management Plan and update response annually.	Springville Pond Management Committee	ongoing	WDNR UWSP Center for Watershed Science and Education
Manage the plant community in a way that will help to maintain healthy weevil populations.	Springville Pond Management Committee	ongoing	WDNR UWSP Center for Watershed Science and Education

Objective 5.2: Prevent new aquatic invasive species from entering Springville Pond. If new species do get into the pond quickly identify their presence and remove using proper procedures and techniques.

Actions	Lead person/group	Start/end dates	Resources
Routinely monitor for new aquatic invasive species.	Springville Pond Management Committee /UWSP	ongoing	Portage Co AIS Coordinator UWSP
Hold training sessions and provide educational materials for individuals to identify native and invasive aquatic species.	Springville Pond Management Committee	ongoing	Portage Co AIS Coordinator WDNR
Provide information to riparian landowners on invasive aquatic species and how to prevent introduction. Information will be provided in welcome packets and/or newsletters.	Springville Pond Management Committee	New neighbors	Portage Co AIS Coordinator UWEX Lakes
Install an informational sign about invasive species where there is public access to Springville Pond.	Springville Pond Management Committee		Portage Co AIS Coordinator UWEX Lakes
Utilize aquatic invasive species rapid response plan if new invasive plants are found (see appendix).	Springville Pond Management Committee Village of Plover	As needed	UWSP Center for Watershed Science and Education
Annually update the Springville Pond invasive species rapid response plan.	Springville Pond Management Committee	annually	UWSP Center for Watershed Science and Education

Goal 6: Enhance Springville Pond's native aquatic plant community and ecosystem

Objective 6.1: Enhance Springville Pond's native aquatic plant community and ecosystem

Actions	Lead person/group	Start/end dates	Resources
Share information about the importance and maintenance of native aquatic plants in Springville Pond. Information will be provided in welcome packets and/or newsletters.	Springville Pond Management Committee	ongoing	UWEX Lakes WDNR Aquatic Plant Specialist UWSP Center for Watershed Science and Education
Pursue funding and guidance to reintroduce native aquatic plants to Springville Pond.	Springville Pond Management Committee		WDNR

Fisheries and Recreation

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

Healthy pond ecosystems are valuable natural resources for all pond users. It is important to maintain a good fishery so that anglers and families are able enjoy the fishery on Springville Pond, as fishing is one of the top five recreational activities on the pond and is valued by pond users. Survey respondents felt that the quality of fishing in Springville Pond was fair, but that fishing had declined in recent years. The WDNR fishery biologist feels that Springville Pond provides a viable refuge for fish when water levels are low in the Little Plover River.

Vision: *Springville Pond will have a sustainably managed fishery that allows anglers to catch fish on Springville Pond.*

Goal 7: Study and understand the fishery of Springville Pond so that a sustainable management plan can be created and followed.

Objective 7.1: Understand the needs of the fishery in Springville Pond to create a sustainable management plan.

Actions	Lead person/group	Start/end dates	Resources
Inform individuals about the importance of woody habitat in shallow water near shore areas of the pond and encourage its' placement in appropriate areas.	Springville Pond Management Committee		WDNR/UWSP Portage County Land Cons Dept
WDNR will conduct a fish survey of Springville Pond to determine what fish species are present.	WDNR	Summer 2010	WDNR Fishery Biologist
Request that the DNR present results of the 2010 fish survey to the Springville Pond Committee	Springville Pond Management Committee	Winter 2010 Completed?	WDNR Fishery Biologist
Fishery of Springville Pond should be managed in accordance with the needs of the weevils for Eurasian water milfoil control in Springville Pond.	Springville Pond Management Committee		WDNR Fishery Biologist UWSP
Explore dredging the east end of Springville Pond when it is lowered for dam repairs, so that it is able to provide refuge for cold water trout species in times of low-flow on the Little Plover River	Springville Pond Management Committee		WDNR Fishery Biologist

Vision: Springville Pond will provide a multitude of silent sport/low impact recreational opportunities.

Goal 8: Improve the aesthetic beauty and recreation on Springville Pond.

Objective 8.1: Continue and create additional silent sports/ low impact recreational opportunities on Springville Pond that promote the scenic nature of the pond.

Action	**Lead person/group**	**Start/end dates**	**Resources**
Explore rebuilding the gazebo on Springville Pond.	Springville Pond Management Committee		Village of Plover
Improve carry-in boat access at parking point.	Springville Pond Management Committee		Village of Plover
Look at creating a walking system/boardwalk along the pond.	Springville Pond Management Committee		Village of Plover
Explore placing benches and informational pieces along the shore/walking trail.	Springville Pond Management Committee		Village of Plover
Install one more fishing pier on Springville Pond.	Springville Pond Management Committee		Village of Plover WDNR
Post no fishing signs on the dam.	Springville Pond Management Committee		Village of Plover

Communication/Organization

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

Goal 9: Every riparian or watershed resident is able to access/obtain information regarding Springville Pond and the actions outlined in the management plan

Objective 9.1: Reach out to Springville Pond landowners and the community using a variety of communication methods.

Action	Lead person/group	Start/end dates	Resources
Distribute welcome packets with information to current property owners and new Springville Pond residents. Packets will be assembled by the committee with assistance.	Springville Pond Management Committee	As new residents move in	Village of Plover UWSP
Post information to Village website.	Springville Pond Management Committee	ongoing	Village of Plover
Share information through Village/Pond Newsletter.	Springville Pond Management Committee	As needed	Village of Plover
Continue the Springville Pond Committee.	Springville Pond Management Committee		Village of Plover
Use the Village Administrators intern to assist with community issues.	Springville Pond Management Committee		Village of Plover

Springville Pond Aquatic Invasive Species Rapid Response Plan 2010

Survey/Monitor

1. **Learn to survey/monitor the pond** 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 pond 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).

Springville Pond 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, Portage County AIS Coordinator 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 Village of Plover
Contact: Village Administrator – Dan Mahoney
Address: 2400 Post Road P.O. Box 37 Plover, WI 54467
Phone: 715-345-5252
E-Mail: dmahoney@ploverwi.gov
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

Springville Pond Aquatic Invasive Species Rapid Response Plan 2010

Springville Pond Management Committee
Contact: President -
Address:
Telephone:
Who will contact them: Village of Plover

Newspapers
Who will contact them: Village of Plover
Portage County Gazette
Stevens Point Journal

Public notice will be posted at: The Village of Plover Village Hall

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.

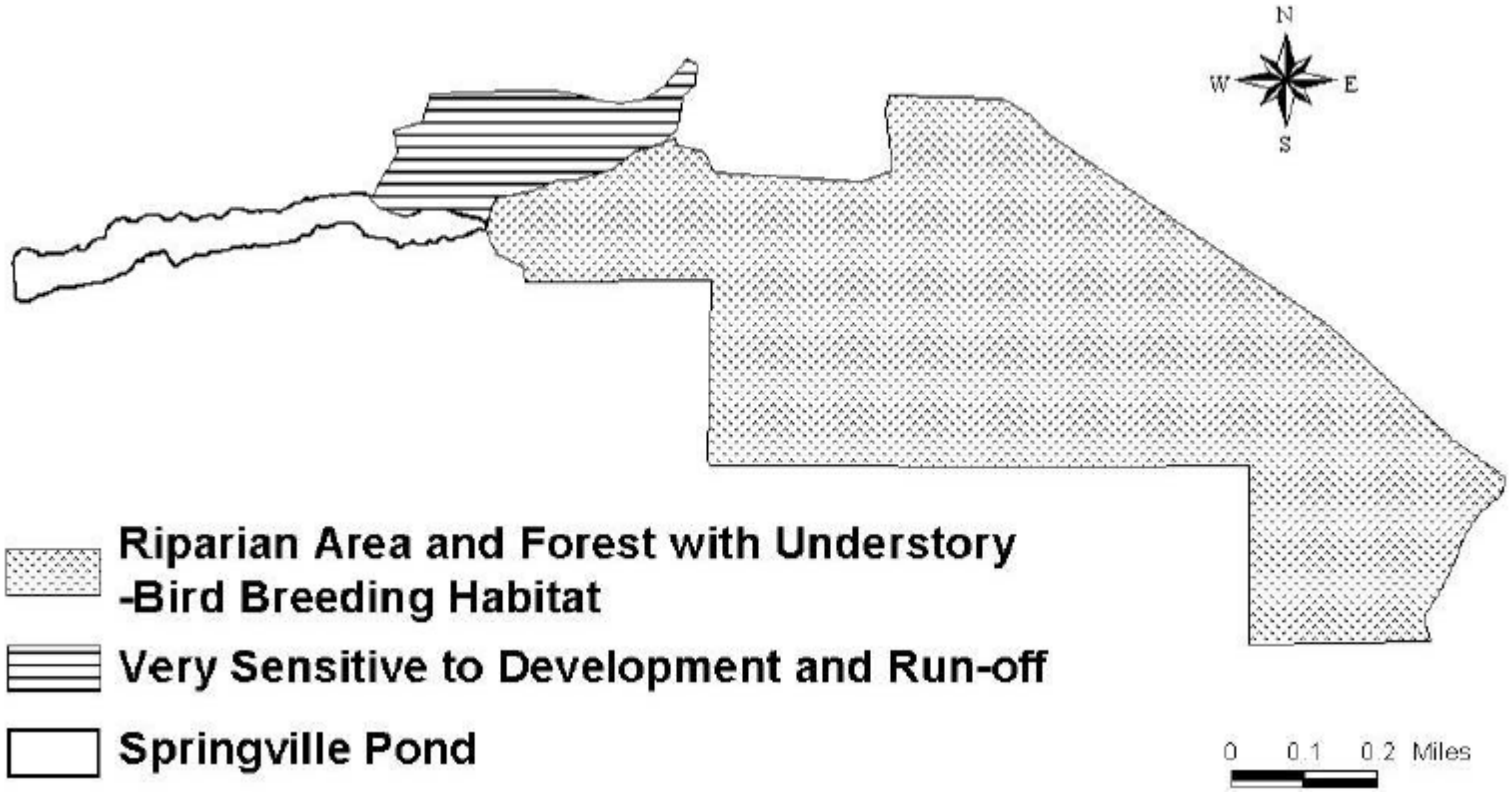
Stratification:

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

Springville Pond Sensitive Areas.



Appendix B

Springville Pond primary amphibian habitat (highlighted in red).

Springville Pond Shoreland Survey (2010).