**State of Wisconsin**
**DEPARTMENT OF NATURAL RESOURCES**
**1300 W. Clairemont Ave.**
**Eau Claire WI 54701**

**Tony Evers, Governor**

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WISCONSIN
DEPT. OF NATURAL RESOURCES

August 1, 2024

Tracy Arnold
Portage County LWCD
1462 Strongs Avenue
3rd Floor
Stevens Point WI 54481

Subject: Approval of lake management plans

Dear Tracy:

After review of the six lake management plans, being duly noticed to the public, approved by the local government, lake associations/districts, and the LWCD as described below, the Department has approved the following plans:

**McDill Pond**

- *Updated plan approved by McDill Inland Lake Protection and Rehabilitation District -February 23, 2023*
- *Village of Whiting acknowledges receipt of 2023 Updated plan -June 13, 2023*
- *Updated plan approved by City of Stevens Point-April 3, 2023*
- *Updated plan approved by Portage County Land Conservation-February 24, 2023*
- *Updated plan submitted to WI DNR- February 24, 2023*

**Sunset Lake**

- *Updated plan approved by Sunset Lake Association-April 12, 2023*
- *Updated plan approved by Town of New Hope-April 19, 2023*
- *Updated plan approved by Portage County Land Conservation-May 30, 2023*
- *Updated plan submitted to WI DNR- May 30, 2023*

**Springville Pond**

- *Updated plan approved by Springville Pond Management Committee-July 12, 2023*
- *Updated plan approved by Village of Plover-July 12, 2023*
- *Updated plan approved by Portage County Land Conservation-July 14, 2023*
- *Updated plan submitted to WI DNR- July 14, 2023*

**Lake Jacqueline**

- *Updated plan approved by Lake Jacqueline Protection and Rehabilitation District-August 20, 2023*
- *Updated plan approved by Town of Sharon-October 10, 2023*
- *Updated plan approved by Portage County Land Conservation-October 11, 2023*
- *Updated plan submitted to WI DNR- October 11, 2023*

**Tree Lake**

- *Updated plan approved by Tree Lake Association-July 30, 2023*
- *Updated plan approved by Town of Alban-August 7, 2023*
- *Updated plan approved by Portage County Land Conservation-August 10, 2023*

- *Updated plan submitted to WI DNR- August 10, 2023*

**Lake Helen**

- *Updated plan approved by Lake Helen Protection and Rehabilitation District-July 26, 2023*
- *Updated plan approved by Town of Alban-August 7, 2023*
- *Updated plan approved by Portage County Land Conservation-August 10, 2023*
- *Updated plan submitted to WI DNR- August 10, 2023*

It is important to understand that although a lake management plan has been approved, permits may be required for any of the recommended management options described. It is also important to remember that proposed management options, that are not specifically mentioned in the aforementioned plans, would need plan approval before submitting a Surface Water Grant - Implementation (SWGI) application(s). Implementation grants can be very helpful to applicants provided the management proposals are well described in an approved plan and show a high likelihood of success.

Your work with this endeavor was superb. I commend you and others' efforts to the commitment of sound watershed ecosystem management planning and look forward to assisting with implementation opportunities.

A sincere thank you,
*Scott Provost*

Scott Provost, P.S.S.
Water Quality Expert
WDNR
Wisconsin Rapids, WI
715.315.0329

cc: Anna Mares – Eau Claire; Jennifer Jefferson – Central Office (via email)

# 2022-2023 Update

# Springville Pond Management Plan

# Portage County, Wisconsin

| | |
|---|---|
| Springville Pond Management Committee Created: | September 30, 2010 |
| Plan prepared by UW-Stevens Point, Center for Watershed Science and Education | |
| Plan approved by Springville Pond Management Committee: | September 2010 |
| Updated by Springville Pond Management Plan Update Participants: | December 9, 2014 |
| Updated by Springville Pond Management Plan Update Participants: | November 2022-July 2023 |
| Updated Plan approved by Springville Pond Management Committee: | July 12, 2023 |
| Updated Plan approved by Village of Plover: | July 12, 2023 |
| Updated Plan approved by Portage County Land Conservation: | July 14, 2023 |
| Updated Plan approved by Wisconsin Department of Natural Resources: | Submitted to WI DNR July 14, 2023<br>Approved by WI DNR August 1, 2024 |

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

## Springville Pond Management Planning Committee Members and Resources

### Planning Committee Members

Steve Anderson Phil Arnold
Michael & Susan Bongard Jean Danielson
Tom Davies Sherri Galle-Teske Jim & Barb Gifford Richard Kajander
Sharron Klein Mike Kochinski John Koutre
Fred LaRosa
Warren Lensmire
Dean Lewis Dan Mahoney
Lynette Mansur Pat Martin
Bob & Eloise Moodie Jason Neska
George & Joanne Nolan Michael & Linda Olson Stephanie Sommers
Bonnie Wiczek
Brad Westrick Dave Worzalla

### Wisconsin Department of Natural Resources

Tom Meronek – Fisheries Biologist
Scott Provost – Water Resources Management Specialist

### Portage County

Randy Slagg – Conservation Technician

### Golden Sands RC&D

Paul Skawinski – Regional Aquatic Invasive Species Coordinator

### University of Wisconsin –Stevens Point

Dr. Robert Freckmann – Professor Emeritus of Botany
Nancy Turyk – Center for Watershed Science and Education
Jen McNelly – Center for Watershed Science and Education
Linda Stoll– Center for Land Use Education

## Portage County Lake Study Researchers/Authors

Becky Cook – Water Quality/Watersheds
Dr. Paul McGinley – Water Quality/Watersheds
Dr. Byron Shaw – Water Quality/Watersheds and Upland Sensitive Areas
Dick Stephens – Water Quality/Watersheds and Upland Sensitive Areas
Nancy Turyk – Water Quality/Watersheds/Final Report Dr.
Glenn Bowles – Near Shore Summary
Dr. Alan Haney – Upland Sensitive Areas Dr.
Vince Heig – Upland Sensitive Areas Dr. Kent Hall – Upland Sensitive Areas
Dr. Bob Bell – Algae
Dr. Robert Freckmann – Aquatic Plants and Upland Sensitive Areas
Dr. Tim Ginnett – Birds
Brad Bulin (Graduate Student) – Birds
Dr. Ron Crunkilton – Fishery and In-lake Habitat
Steve Bradley (Portage County Conservationist) – Land Use Coverages/Watersheds
Lynn Markham – Planning Assistance
Mike Hansen – Portage County Planning Assistance
Dr. Erik Wild – Reptiles and Amphibians/Near Shore Habitat
Rori Paloski (Graduate Student) – Reptiles and Amphibians/Near Shore Habitat

## Springville Pond Management Plan 2014 Update

## Participants Participants 2014

**Springville Pond Management Committee**

Al Haga
Mike Kochinski
John Kontre
Dan Mahoney
Raquel Miskowski
Bill Seybold
Barb and Dave Worzalla

**University of Wisconsin –Stevens Point**

Nancy Turyk – Center for Watershed Science and Education
Sarah Hull – Center for Watershed Science and Education

**Portage County**

Randy Slagg – Conservation Technician

## Springville Pond Management Plan 2022-2023 Update Participants

**Springville Pond Management Committee**

Adam Raabe-Chairperson
Sherri Galle-Teske
Mike Kockinski
Jason Nafe
Michael Hom
Gary Wolf
Kristina Smith
Al Haga

**Golden Sands**

Kendra Kundinger, Executive Director
Chris Hamerla, Regional AIS Coordinator
Jacob Fluur, Terrestrial Invasive Coordinator

**Village of Plover**

Dominique Swangstu-Natural Resources/Recreation Planner
Brenda Bemowski - GIS Manager
Adam DeKleyn-Community Development Manager

**Portage County**

Tracy Arnold-Conservation Technician
Jen McNelly-Water Resource Specialist

**Wisconsin Department of Natural Resources**

Scott Provost-Water Resources Mgmt
Colton Hutchinson-Water Resources Mgmt
Lucas Koenig-Fisheries Biologist

# TABLE OF CONTENTS

Glossary: https://www.co.portage.wi.gov/DocumentCenter/View/3943/Lake-Management-Plans-Glossary

Staff Resource Directory: https://www.co.portage.wi.gov/DocumentCenter/View/3942/Lake-Management-Plans-Directory

# List of Springville Pond Management Plan Goals

**Goal 1.** Better understand the Springville Pond Fishery so sustainable management plans can be created and followed to improve habitat and desirable fish populations long term.

**Goal 2.** Promote the enhancement of Springville Pond's native aquatic plant community and ecosystem while controlling existing invasive aquatic plant species (AIS) and preventing any new AIS from being established.

**Goal 3.** Improve the water quality in Springville Pond. Phosphorus concentrations will be below the 2002/2004 annual average of 32.5 ug/L and summer averages will be well below the Wisconsin State Standard of 40 ug/L.

**Goal 4**. Maintain healthy flow on the Little Plover River and water levels in Springville Pond. Continue the collaboration and conservation efforts of the Little Plover River Watershed Enhancement Project.

**Goal 5.** Inform and educate shoreline property owners and pond users about the importance of sustainable land use and recreational practices that encourage wildlife habitat, improved water quality, and overall aquatic ecosystem health.

**Goal 6.** Protect and restore healthy shoreline habitats near and around Springville Pond. This goal will be achieved when 75% of the shoreline properties (by frontage) from Hoover Ave to Post Road, meet or exceed the County Shoreland Zoning Ordinance 7.7 as it relates to a vegetative buffer.

**Goal 7.** Improve the public's perception of Springville Pond as it relates to its aesthetic beauty and recreational opportunities.

**Goal 8.** Every shoreland or watershed resident and partners identified in this plan can access information regarding Springville Pond and the actions outlined in the management plan.

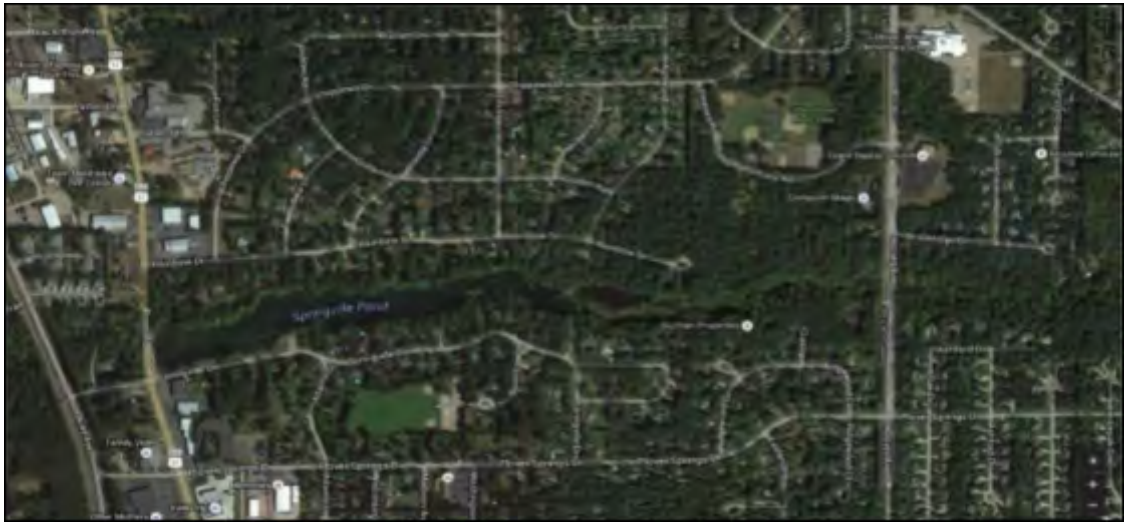
**Goal 9.** Keep the information and resources within the Springville Pond Management Plan current and up to date.

# Introduction

Springville Pond is an 18-acre impoundment of the Little Plover River located in the Village of Plover, Portage County, Wisconsin. It has a maximum depth of 12 feet. The pond bottom consists primarily of sand with some silt. The lower end of the pond has been dredged, between 1983-1985, while the upper end has not; therefore, 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 public access owned and managed by the Village of Plover on the southern shore, which has carry-in boat access. Those who use and enjoy the pond value it for its natural beauty, peace and tranquility, wildlife viewing, and quiet recreational opportunities including walking, fishing, picnicking and canoeing/kayaking.

*The purpose of this management plan is to provide guidance to prevent or solve problems that may harm Springville Pond and its watershed.*

The purpose of lake management plans is to provide guidance to prevent or solve problems that may harm lake ecosystems. The development of the lake management plans for Springville Pond and 28 other Portage County lakes was the second phase of the Portage County Lakes Study. During the first phase, data collection was completed for the 29 lakes. Researchers focused on data related to topics affecting lake health, including water quality, shoreline development, amphibian habitat, fisheries, and aquatic plants. A summary of the 2002/2003 lake study results can be found in the Background Information section and Appendices of this document. The development of this management plan was aided by information from earlier plans created for Springville Pond: the 2006 aquatic plant management plan (University of Wisconsin-Stevens Point) and the 1997 Little Plover River and Springville Pond Watershed Management Plan (Lampert, Lee and Associates). This plan was updated in 2014 and in 2023.



# Springville Pond Management Committee

The Springville Pond Management Committee consists of seven members, including the Chairperson of the Public Works Committee, at least one Trustee of the Village Board and five property owners whose parcels abut Springville Pond appointed by the Village President for staggered five-year terms and confirmed by the Village Board. The Springville Pond Management Committee shall make recommendations to the Public Works Committee for cost-effective pond management in Springville Pond. The Village of Plover works with organizations and entities such as the DNR, Portage County, NRCS, Golden Sands RC&D and others to complete aquatic plant surveys, create management plans, and evaluate existing site conditions and opportunities. The Springville Pond Management Committee began meeting again in 2022 after not meeting for nearly seven years.

One of the main reasons to reconvene the Springville Pond Management Committee was to update the Lake Management Plan for Springville Pond. The update began with a resident survey. The purpose of the 2022 Springville Pond Survey was to identify existing issues, concerns, as well as the public perception of the pond, its health, and the perceived impact of the 2015 Management Plan. The survey results, community input, and professional expertise will all be utilized to update the pond's management plan to establish goals, objectives, and policies to improve water quality, recreational opportunities, as well as the overall health of the waterway. Survey results will be shared with Village partners (DNR, Portage County, NRCS, Golden Sand, etc) to identify potential solutions for the pond issues and concerns. Through these partnerships and input from local residents, businesses, and visitors, the strategies can be explored and implemented to improve the pond's water quality, shoreline vegetation and habitat, as well as recreational opportunities as identified in the adopted management plan. Through reviewing and analyzing the survey results the appropriate planning process can be identified to create the framework for the updated Springville Pone Management Plan.

For previous and current information regarding the Springville Pond Management Committee please visit:
https://www.ploverwi.gov/334/Springville-Pond-Management-Committee

Like data collection, citizen involvement is as important to the success of any management plan. The Springville Pond Management Plan was developed by interested citizens, the Springville Pond Committee (a sub-committee of the Village of Plover Board of Trustees), and professionals who applied the data while actively gathering additional citizen input.

A citizen survey was conducted in 2010 to learn about values, opinions, and any perceived issues with the pond. The survey was sent to all residences within the Springville Pond watershed. The survey was also available online for any members of the public interested in participating. Two hundred twenty-one (221) surveys were returned. Additionally, in 2022 an additional survey was conducted to obtain updated information and input from the residents along the pond as well as those in the general public, from this survey 50 surveys were completed 18 of which where from those who live along the pond. The Springville Pond 2022 Survey Results can be found by visiting the Village of Plover website Initially, in 2010 the members of the Springville management planning committee met over the course of seven

months, learning about the pond and developing this lake management plan. In 2022 Village and County staff worked with the Springville Pond Management Committee and related partners over several months to complete an online survey and review the management plan update process.

## Who can use this plan, and how can it be used?

- **Individuals**: Individuals can use this plan to learn about the lake they love and their connection to it. People living near and those who use Springville Pond have the greatest influence on the pond, by using this plan they can better understand and implement lake-friendly practices to manage their properties and recreational activities.
- **Springville Pond Management Committee:** This plan provides citizens with a well-thought-out plan for the pond and lists options that can easily be prioritized. Annual review of the plan will also help citizens to realize their accomplishments. Resources and funding opportunities for lake management activities are made more available by placement of goals into the lake management plan, and citizens can identify partners to help achieve their goals for Springville Pond.
- **Neighboring lake groups, sporting, and conservation clubs**: Neighboring groups with similar goals for lake stewardship can combine their efforts and provide each other with support, improve competitiveness for funding opportunities, and make efforts more enjoyable.
- **The Village of Plover**: The Village can consider the goals, objectives, and actionable items documented in this lake management plan when considering municipal-level management planning or decisions within the watershed that may affect the pond.
- **Portage County:** County professionals will better know how to identify needs, provide support, base decisions, and allocate resources to assist in lake-related efforts documented in this plan. This plan can also inform county board supervisors regarding decisions related to Portage County lakes, streams, wetlands, and groundwater.
- **Wisconsin Department of Natural Resources**: Professionals working with lakes in Portage County can use this plan as guidance for management activities and decisions related to the management of the resource, including the fishery, and invasive species. Lake management plans help the Wisconsin Department of Natural Resources to identify and prioritize needs within Wisconsin's lake community and decide where to apply resources and funding. A well-thought-out lake management plan increases an application's competitiveness for state funding– if multiple Portage County lakes have similar goals in their lake management plans, they can join together when seeking grant support to increase competitiveness for statewide resources.

# Goals, Objectives and Actions

The following goals, objectives, and associated actions were derived from the values and concerns of citizens and members of the Springville Pond Management Committee. Decisions were made based on the known science about Springville Pond, its ecosystem, and the landscape within its watershed. Implementing and regularly updating the goals and actions in the Springville Pond Management Plan will ensure that the vision is supported, and that changes or new challenges are incorporated into the plan. A management plan is a living document that changes over time to meet the current needs, challenges and desires of the lake and its community. **The goals, objectives and actions listed in this plan should be reviewed annually and updated with any necessary changes.**

Although each pond and lake is different, to ensure a lake management plan considers the many aspects associated with a lake. The Wisconsin Department of Natural Resources (DNR) requires that a comprehensive lake management plan address, at a minimum, a list of topics that affect the character of a lake, whether each topic has been identified as a priority or as simply something to preserve. These topics comprise the chapters in this plan. For the purposes of this plan, the chapters have been grouped as follows:

**In-Lake Habitat and a Healthy Lake**

*Fish Community—fish species, abundance, size, important habitat and other needs*
*Aquatic Plant Community—habitat, food, health, native species, and invasive species*
*Critical Habitat—areas of special importance to the wildlife, fish, water quality, and aesthetics of the lake*

**Landscapes and the Lake**

*Water Quality and Quantity—water chemistry, clarity, contaminants, lake levels*
*Shorelands—habitat, erosion, contaminant filtering, water quality, vegetation, access*
*Watershed Land Use—land use, management practices, conservation programs*

**People and the Lake**

*Recreation—access, sharing the lake, informing lake users, rules*
*Communication and Organization—maintaining connections for partnerships, implementation, community involvement*
*Updates and Revisions—continuing the process*
*Governance—protection of the lake, constitution, state, county, local municipalities, Springville Pond Management Committee*

# In-Lake Habitat and a Healthy Lake

Many lake users have valued Springville Pond for its fishing, wildlife, and reasonably good water quality. These attributes are all interrelated; the health of one part of the lake system affects the health of the rest of the plant and animal community, the experiences of the people seeking pleasure at the lake, and the quality and quantity of water in the lake. Habitat is the structure for a healthy fishery and wildlife community. It can provide shelter for some animals and food for others.

Lake habitat occurs within the lake, along all of its shorelands, and even extends throughout the watershed for some species. Many animals that live in and near the lake are only successful if their needs – food, a healthy environment, and shelter – are met. Native vegetation including wetlands along the shoreline and adjacent to the lake provides habitat for safety, reproduction, and food, and can improve water quality and balance water quantity. Some lake visitors such as birds, frogs, and turtles use limbs from trees that are sticking out of the water for perches or to warm themselves in the sun. Aquatic plants infuse oxygen into the water and provide food and shelter for waterfowl, small mammals, and people. The types and abundance of plants and animals that comprise the lake community also vary based on the water quality, and the health and characteristics of the shoreland and watershed. Healthy habitat in Springville Pond includes the aquatic plants, branches, and tree limbs above and below the water.

## The Fish Community

A balanced fish community has a mix of predator and prey species, each with different food, habitat, nesting substrate, and water quality needs in order to flourish. Activities in and around a lake that can affect a fishery may involve, disturbances to the native aquatic plant community or substrate, excessive additions of nutrients or harmful chemicals, removal of woody habitat, shoreline alterations, unstable water or fluctuation water levels and/or an imbalance in the fishery. Shoreland erosion can cause sediment to settle onto the substrate, causing the deterioration of spawning habitat. Habitat can be improved by promoting shoreland vegetation growth, minimizing the removal of aquatic plants, providing fallen trees or limbs in suitable areas, and protecting wetlands and other areas of critical habitat. People are an important part of a sustainable fish community; their actions on the landscape and the numbers and sizes of fish taken out of the lake can influence the entire lake ecosystem. Putting appropriate fishing regulations in place and adhering to them can help to balance the fishery with healthy prey and predatory species, can be adjusted as the fish community changes, and can provide for excellent fishing.

Managing a lake for a balanced fishery can result in fewer expenses to lake stewards and the public. While some efforts may be needed to provide a more suitable environment to meet the needs of the fish, they usually do not have to be repeated on a frequently recurring basis. Protecting existing habitat such as emergent, aquatic, and shoreland vegetation, and allowing trees that naturally fall into the lake to remain in the lake are free of cost. Alternatively, restoring habitat in and around a lake can have an up-front cost, but the effects will often continue for decades. Costs in time, travel, and other expenses are associated with routine efforts such as fish stocking and aeration. Ideally, a lake contains the habitat, water quality, and food necessary to support the fish communities that are present within the lake and provide fishing opportunities for people without a lot of supplemental effort and associated expenses to maintain these conditions.

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 Fisheries Biologist feels that Springville Pond provides a viable refuge for fish when water levels are low in the Little Plover River.

**2014 Updates:** Citizens who participated in the plan update process reported issues with the Springville Pond fishery when compared to previous years.

**2022 Updates:** Lucas Koenig, WDNR Fisheries Biologist presented to the Springville Pond Management Committee on October 3, 2022. Lucas had a PowerPoint with specific data to Springville Pond fisheries over numerous decades. The presented data was incorporated and documented throughout Goal 1 and the bullet points after the action items. An electrofishing survey is planned for late spring of 2023 to determine current fishery status if dam maintenance is complete and water levels are planned to remain stable. Recommended overall management should be focused on long-term stable water levels to reestablish populations and protect all fish species (especially warm water species).

## Guiding Vision for the Fish Community

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

## *Goal 1. Better understand the Springville Pond Fishery so sustainable management plans can be created and followed to improve habitat and desirable fish populations long term.*

**Objective 1.1.** Study and understand the needs of the fishery in Springville Pond to create a sustainable fishery.

| 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 (with anchoring) in appropriate areas. | Springville Pond Management Committee | Grant deadline November 15 (Annually) | Extension Lakes<br>WI DNR Fisheries Biologist<br>Portage County Land and Water Conservation Department<br>WI DNR Healthy Lake Grants |
| The WDNR will conduct a fish survey of Springville Pond to evaluate the health of the fish community and determine which fish species are present and persist. | WDNR Fisheries Biologist | Completed in 1987, 1999, 2010<br>Next survey: 2023<br>if dam maintenance is completed and water levels remain stable | WI DNR Fisheries Biologist |
| Request that the WDNR Fisheries Biologist present results of the fish surveys to the Springville Pond Committee. | Springville Pond Management Committee | Completed in 2022<br>Request again in 2023 after survey | WI DNR Fisheries Biologist |
| After the 2023 fish survey, work with the WDNR Fisheries Biologist to develop a plan for fish stocking based on the long-term sustainability of the fishery. | Springville Pond Management Committee | After fish survey | WI DNR Fisheries Biologist |
| Implement the fish management plan developed with the WDNR Fisheries Biologist. | Springville Pond Management Committee | After plan development | Local fishing clubs<br>Portage County Land and Water Conservation Department<br>WI DNR Healthy Lake Grants |

| | | | |
|---|---|---|---|
| Fishery practices implemented should promote and not negatively impact the weevil population in Springville Pond, which in turn controls Eurasian watermilfoil (aquatic invasive species). | Springville Pond Management Committee | Ongoing | WI DNR Fisheries Biologist<br>Golden Sands RC&D |
| Explore dredging and/or alternative options to provide refuge for cold water trout species in times of low-flow on the Little Plover River while addressing the increase in sediment build up over time. | Springville Pond Management Committee | Funding dependent After plan development | WI DNR Lake Biologist<br>WI DNR Fisheries Biologist |
| Encourage and collaborate with UWSP (fisheries staff and students) to organize, implement, and analyze Springville Pond and Little Plover River fish surveys and research. | UWSP | Ongoing | WI DNR Lake Biologist<br>WI DNR Fisheries Biologist<br>Village of Plover |

**Springville Pond fisheries history per WI DNR Fisheries biologist**

- Fish stocking dates back to 1943.
- Pre-1985 fishery was Largemouth Bass, Bluegill, Black Crappie, Northern Pike and Rainbow Trout.
- 1985 Pond was dredged, and fish population was ASSUMED to be eliminated.
- 1987 fyke net survey was conducted with 3 nets for 3 nights to determine severity of dredging on fishery. Results included: Rainbow Trout, Bluegill, Black Crappie, Yellow Perch, Pumpkinseed and Northern Pike. Largemouth bass were absent.
- 1988 Largemouth bass were absent, stocking success is unknown.
- 1993 Springville Pond emptied to repair leaking dam.
- April 1999 transferred 102 adult largemouth bass from McDill, in hopes they would spawn and reproduce.
- September 1999 electrofishing survey captured 8 young-of-year Largemouth bass. Hopefully the adult transfer worked. Results included Largemouth Bass adult, Largemouth bass young-of-year, bluegill, yellow perch and pumpkinseed.
- 2006-2007 3-ft winter drawdown to combat Eurasian Watermilfoil.
- September 2010 electrofishing survey conducted. Fishery contained Largemouth Bass, Bluegill, Pumpkinseed, Black Crappie, Yellow Perch and Rainbow Trout.
- 2020 Springville Pond emptied for dam maintenance
- 2021 Springville Pond water levels restored
- Late Spring 2023 electrofishing survey planned to determine current fishery status. IF dam maintenance is complete and water levels are planned to remain stable.

**Springville Pond fisheries history per WI DNR Fisheries biologist continued**

- Stocked rainbow trout fishery appears to be purely “put-and-take” and absent by fall each year.
- Bluegill, pumpkinseed, black crappie, and yellow perch have persisted through 5 drawdowns over the past 40 years.
  - Still present in 2010 survey in absence of stocking
  - 2020-2021 drawdown impact not known at this time.
- Largemouth bass and northern pike populations have been shown to be more severely impacted by drawdowns over the past 40 years.
- Management should be focused on long-term stable water levels to reestablish populations and protect all fish species (especially warm water species)
- Drawdowns every 10 years do not lead to sustainable fishery

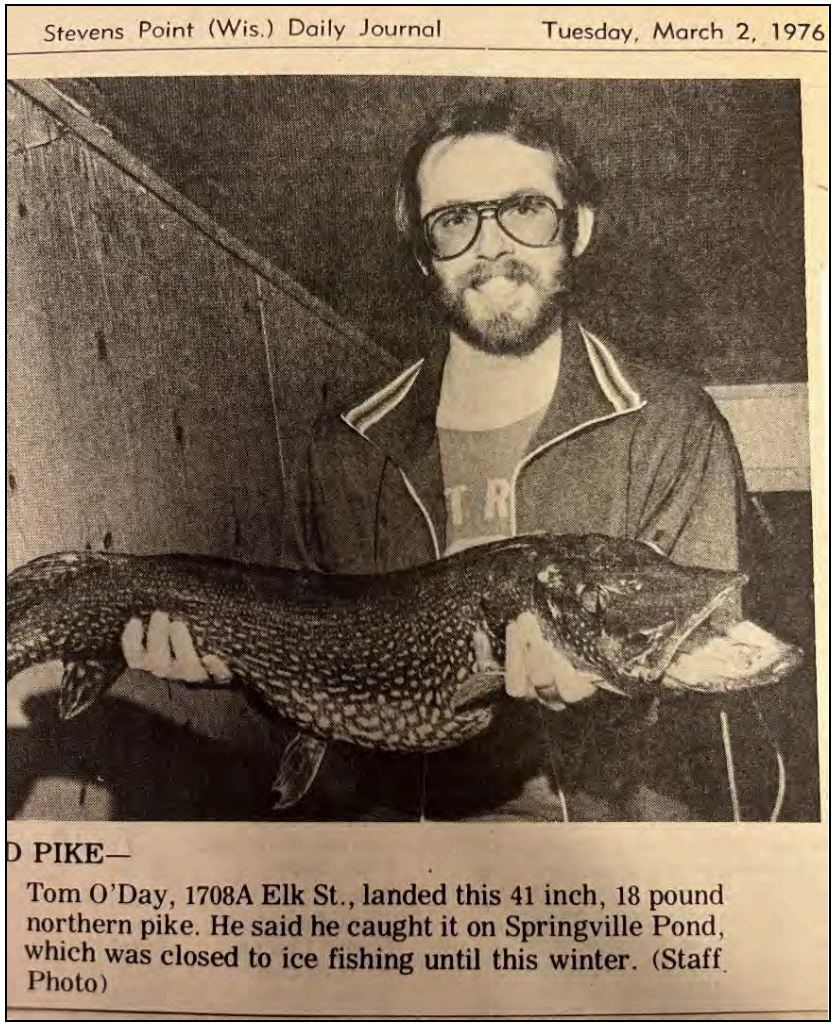
# Historical fishing photos of Springville Pond

AUG 21 1973

Page 12 Stevens Point (Wis.) Daily Journal

WORTH A BIG SMILE

This 17½ inch, two-pound, two-ounce brook trout produced a happy smile on Kevin Shibilski's face as it dangled from his finger. The 12-year-old Ben Franklin seventh grader reeled in his prize catch last Thursday on Springville Pond about 7:45 p.m. The son of Sharon Shibilski, Rt. 1, Plover, used a worm on a fly. (Staff Photo)



Stevens Point (Wis.) Daily Journal Tuesday, March 2, 1976

D PIKE—

Tom O'Day, 1708A Elk St., landed this 41 inch, 18 pound northern pike. He said he caught it on Springville Pond, which was closed to ice fishing until this winter. (Staff Photo)

## Historical fishing photos from Springville Pond

RICHARD FELTZ (center), Route 4, Stevens Point, was first place winner in the game fish department at the Plover Fish and Wildlife League's fisheree Sunday at Springville Pond. Feltz, who caught a seven-pound northern pike, was presented an outboard motor by Conservation Warden Dave Froggatt. Other prize winners here (from left) are Mrs. Ray Kinney, Route 4, Stevens Point, tops in the rough fish class with a two pound-15 ounce sucker; Karl Zdroik, 311 6th Ave., third in the game fish department with a two pound-10 ounce northern, and Gale West (far right), Plover, runnerup in the game fish class with a six pound-nine ounce northern.


A CROWD estimated well over 1,000 was on hand at Springville Pond Sunday for the Plover Fish and Wildlife League's fisheree. Part of the throng is shown here.

# The Aquatic Plant Community

Aquatic plants provide a subsurface "forested" landscape within the pond. The plants provide food and habitat for spawning, breeding, and survival for a wide range of inhabitants and lake visitors including fish, waterfowl, turtles, amphibians, as well as invertebrates and other animals. They improve water quality by releasing oxygen into the water and utilizing nutrients that would otherwise be used by algae. A healthy lake typically has a variety of aquatic plant species which creates diversity that makes the aquatic plant community more resilient and can help to prevent the establishment of non-native aquatic species.

Aquatic plants near shore and in shallows provide food, shelter and nesting material for shoreland mammals, shorebirds and waterfowl. It is not unusual for otters, beavers, muskrats, weasels, and deer to be seen along a shoreline in their search for food, water, or nesting material.

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 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.

Aquatic invasives species are non-native aquatic plants and animals that are most often unintentionally introduced into a lake-by-lake users. This most commonly occurs on trailers, boats, equipment, and from the release of bait. In some lakes, aquatic invasive plant species can exist as a part of the plant community, while in other lakes populations explode, creating dense beds that can damage boat motors, make areas non-navigable, inhibit activities like swimming and fishing, and disrupt the lakes' ecosystems.

**2014 Updates:** Citizens who participated in the plan update process reported algae blooms in years prior to 2014.

**2022 Updates:** Citizens and committee members who participated in the plan update process and/or provided feedback through the online survey, reported an increased abundance of aquatic vegetation within Springville Pond. Such increase in vegetation growth can be attributed to a variety of factors but per the W-DNR and Golden Sands several lakes in the region have experienced increase in such aquatic vegetation and invasive growth over the last few years.

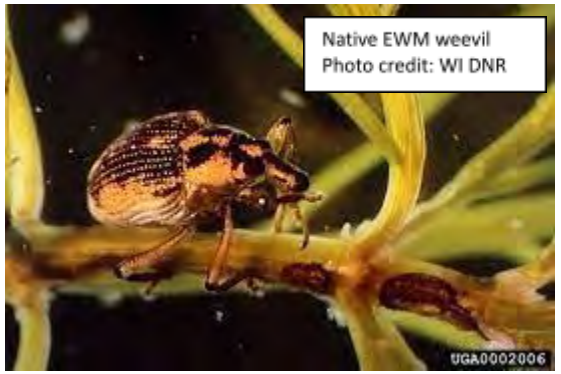
Citizens and members of the Village Board of Plover have decided to let the Springville Pond Aquatic Plant Management Plan (APM) expire, based on proposed causeway improvements scheduled for 2020. They will update the APM as needed. Springville Pond has applied for a year-to-year permit for managing invasive species, and it was decided that Eurasian watermilfoil (EWM) not be managed in Springville Pond in 2015, except for the milfoil

weevils. This is due to the fact that the majority of EWM resides in shallow areas where it cannot be harvested.

Springville Pond has had Eurasian watermilfoil for years. Management methods have included the enhancement of the native weevil population (*Euhrychiopsis lecontei*), hand-pulling, harvesting, and chemical treatment. Recognizing the critical relationship between healthy shoreland vegetation and overwintering habitat for the weevil, many shoreland residents restored disturbed or mowed shorelands. The native milfoil weevil has been present of Springville Pond for years, and studies have confirmed that populations have remained at high levels. Springville pond has been utilized for research projects that involve this weevil; studies have been conducted by UWSP graduate students and staff from Golden Sands RC&D. Weevils may provide a long-term solution to keeping EWM beds at bay in Springville Pond.

2022 Golden Sands RC&D was contacted regarding the continued use of the native weevils to manage EWM. Golden Sands concluded for Springville Pond, biocontrol (weevils) appears to be a very practical option. To implement this management strategy:

1. Fisheries-a balanced fish community appears to be compatible with weevil success. A stunted panfish population may be a limiting factor to success.
2. Weevils-the natural population was sufficient before and hopefully will be again. Golden Sands RC&D can monitor the population to get current status data during every PI (Point Intercept) survey.
3. Eurasion Water Milfoil-monitoring EWM will take place during a PI survey and give an updated population status.
4. Shoreline management-residents have direct control over the quality of habitat on their shoreline. The shoreline within 35' of the water's edge is critical habitat for the weevil's winter hibernation. A natural (unmowed, unraked) shoreline is also beneficial for other wildlife, as well as water quality.




According to Golden Sands RC&D, Inc., Japanese knotweed was found on the north side of the bridge on the shoreline of the dentist's office. A removal work day was hosted by Golden Sands RC&D and the Japanese knotweed was treated and removed. A survey in September 2014 did not reveal the presence of Japanese knotweed. This site should continue to be monitored extensively, as Japanese knotweed is a very aggressive plant.

In 2022, Japanese knotweed was also found on the southwestern corner of the intersection of Post Road and Springville Pond Drive (in front of the Dollar General). Staff have and will continue to work with Golden Sands RC&D monitor and address the situation to ensure the invasives do not spread and cause damage to nearby infrastructure.

Curly-leaf pondweed is present in the lake; in 2012, it was most abundant on the eastern side of the lake. To help eliminate the seed bank of the plants, volunteers manually remove the tops of the plants before they form turions, or modified seed structures, in early June. This effort would need to continue for a number of years before the seed bank is reduced. At that point, hand pulling remaining plants would help to further reduce the population.

**Documents from Golden Sands Resource Conservation and Development Council:**

- Flyer to Springville Pond landowners-November 2005
  - https://www.ploverwi.gov/DocumentCenter/View/991/2005---Milfoil-Flyer---Residents-PDF
- Springville Pond Study Final 2005
  - https://www.ploverwi.gov/DocumentCenter/View/995/2005-Springville-Pond-Study-PDF
- Aquatic Macrophyte Report-UWSP 2007
  - https://www.ploverwi.gov/DocumentCenter/View/994/2007-Aquatic-Macrophyte-Survey-Results-PDF
- Springville Pond Management Strategy 2008
  - https://www.ploverwi.gov/DocumentCenter/View/1110/Springville-Pond-Management-Strategy-2008-PDF
- Aquatic Macrophyte Survey Final Report 2010
  - https://www.ploverwi.gov/DocumentCenter/View/993/2010-Aquatic-Macrophyte-Survey-Results-PDF
- 2015 Springville Pond Management Plan
  - https://www.ploverwi.gov/DocumentCenter/View/871/2015-Springville-Pond-Managment-Plan-PDF
- Springville Pond 2020 PI Summary
  - https://www.ploverwi.gov/DocumentCenter/View/870/2020-Springville-Pond-Aquatic-Plant-Summary-PDF
- Report historical weevil and EWM data Springville 2021
  - https://www.ploverwi.gov/DocumentCenter/View/989/2021-Historical-Summary-of-Milfoil-Weevil-and-Aquatic-Plant-Survey-PI-Data-PDF
- DNR Presentation October 3, 2023
  - https://www.ploverwi.gov/DocumentCenter/View/988/DNR_Presentation_SpringvillePond-October3rd2022-PDF
- Springville Pond 2022 Survey Results
  - https://www.ploverwi.gov/DocumentCenter/View/990/Springville-Pond-2022-Survey-Results-PDF

## Guiding Vision for the Aquatic Plant Community

*Springville Pond will have healthy native aquatic vegetation present in the pond, while reducing current aquatic invasive species populations and preventing new ones from becoming established.*

## *Goal 2. Promote the enhancement of Springville Pond's native aquatic plant community and ecosystem while controlling existing invasive aquatic plant species (AIS) and preventing any new AIS from being established.*

**Objective 2.1.** Manage the amount of Eurasian watermilfoil in Springville Pond to a controllable state.

| Actions | Lead person/group | Start/end dates | Resources |
|---|---|---|---|
| Continue to monitor Eurasian watermilfoil in Springville Pond and develop short-term management strategies. | Springville Pond Management Committee | Ongoing | WI DNR Water Quality Specialist Golden Sands RC&D<br>UWSP Center for Watershed Science and Education |
| Allow the Springville Pond Aquatic Plant Management Plan to expire. (If needed, conduct an aquatic plant point-intercept survey and follow the recommendations outlined in the Springville Pond Aquatic Plant Management Plan and update response annually.) | Springville Pond Management Committee | PI survey planned for 2023<br><br>Update plan 2023 | WI DNR Water Quality Specialist<br>Golden Sands RC&D<br>UWSP Center for Watershed Science and Education<br>Portage County Land and Water Conservation Department |
| Manage the EWM in a way that will help to maintain healthy weevil populations. | Springville Pond Management Committee | Ongoing | WI DNR Water Quality Specialist<br>UWSP Center for Watershed Science and Education<br>Golden Sands RC&D |

**Objective 2.2.** Prevent new aquatic invasive species from entering Springville Pond. If new species do get into the pond, quickly identify their presence and remove them using proper procedures and techniques.

| Actions | Lead Person/Group | Start/End Dates | Resources |
|---|---|---|---|
| Routinely monitor for new aquatic invasive species. | Springville Pond Management Committee | Ongoing | Golden Sands RC&D<br>UWSP Center for Watershed Sci. & Educ.<br>Consultant |
| Request that Golden Sands RC&D hold training sessions and provide educational materials for individuals to identify native and AIS. | Springville Pond Management Committee | Annually<br>Presented in 2022 | Golden Sands RC&D<br>WI DNR Water Quality Specialist |
| Provide information to shoreland landowners on AIS identification and prevention. Information will be provided in welcome packets and/or newsletters. | Springville Pond Management Committee | New neighbors<br>As needed | Golden Sands RC&D Extension Lakes<br>Portage County Land and Water Conservation Department |
| Install an informational; comprehensive sign AIS at a public access point to Springville Pond. Explore where the best location would be to place this signage. | Springville Pond Management Committee | 2023 | Golden Sands RC&D<br>Extension Lakes |
| Utilize aquatic invasive species rapid response plan if new invasive plants are found or suspected (Appendices). | Springville Pond Management Committee<br>Village of Plover | As needed | |
| Routinely update the Springville Pond invasive species rapid response plan. | Springville Pond Management Committee | Annually review<br>Update 2023 | Golden Sands RC&D<br>Portage County Land and Water Conservation Department |

# Aquatic Invasive Species Rapid Response Plan

## Survey/Monitor

Learn to survey/monitor the lake from:

| | |
|---|---|
| Water Resources Management Specialist | Portage County Aquatic Invasive Species (AIS) Coordinator |
| WDNR-Scott Provost or Colton Hutchinson | Golden Sands RC & D- Chris Hamerla |
| 473 Griffith Ave, Wisconsin Rapids, WI 54494 | 1100 Main St, Suite #150, Stevens Point, WI 54481 |
| 715-421-7881 | 715-343-6215 |
| Scott.Provost@wisconsin.gov or colton.hutchinson@wisconsin.gov | info@goldensandrcd.org or Chris.Hamerla@goldensandsrcd.org |

### 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 email.

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 specimens 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).
and note the coordinates (choose UTM or Latitude/Longitude).

**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
Address: 1100 Main St, Suite #150
Stevens Point, WI 54481
Phone: 715-343-6215
E-Mail : info@goldensandsrcd.org

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

**Wisconsin Dept. Natural Resources**
AIS Program Coordinator
WI Dept. of Natural Resources
P.O. Box 7921, Madison, WI 53707-7921
Phone: 920-838-2597, E-Mail: amy.kretlow@wisconsin.gov

**Once the specimen is dropped off or sent for confirmation, make sure to contact:**

**Portage County AIS Coordinator**
Golden Sands RC&D
Address: 1100 Main St, Suite #150
Stevens Point, WI 54481
Phone: 715-343-6215
E-Mail : info@goldensandsrcd.org

**3. If an invasive species is confirmed, the Portage County AIS Coordinator will post notice at the access points to the waterbody and contact the following:**

**Wisconsin Department of Natural Resources**
Water Resources Management Specialist
Contact: Scott Provost and/or Colton Hutchinson
473 Griffith Ave., Wisconsin Rapids, WI 54494
Phone: 715-421-7881
E-Mail: Scott.Provost@wisconsin.gov and/or colton.hutchinson@wisconsin.gov

**Springville Pond Management Committee**
Contact: Adam Raabe (or current Chairperson)
Phone: 715-570-2516

https://www.ploverwi.gov/334/Springville-Pond-Management-Committee

**Village of Plover**
Contact: Dominique Swangstu (or current Natural Resources/Recreation Planner)
Address: 2400 Post Road, Plover, WI 54467
Phone: 715-345-5250

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

# Aquatic Plant Management Strategies

***General recommendations:***

* Reduce nutrients traveling to the lake from the landscape
* Avoid increasing algal blooms by maintaining a healthy amount of aquatic plants
* Don't denude the lakebed
    * Increases potential for aquatic invasive species establishment
    * Sediments can add phosphorus to the water which may lead to increased algal growth
* Choose options that are appropriate for your lake's situation
* Monitor and adjust your strategies if you are not making headway!

*Photo provided by John Nornberg (Plover resident):*

***List of Aquatic Plant Management Options (selection of options varies with situation):***

| **No Action** | |
|---|---|
| ADVANTAGES | LIMITATIONS |
| No associated cost | May not be effective in obtaining aquatic plant management objectives |
| Least disruptive to lake ecosystem | |

| **Manual Removal-training is recommended-Permit is not required** | |
|---|---|
| ADVANTAGES | LIMITATIONS |
| Can target specific plants-with proper training | Removes near-shore wildlife and fish habitat |
| Can be effective in controlling small EWM/HWM infestations | Opens up areas where other AIS can become established |
| No associated cost | If EWM/HWM are not removed properly, could worsen the problem |
| | Training required for proper identification/removal methods |

| **Manual Removal, Diver-Assisted (With or Without Suction)-training is recommended-permit is not required** | |
|---|---|
| ADVANTAGES | LIMITATIONS |
| Can be used in deeper areas | Costs associated with hiring a diver may be comparable to chemical treatment expenses |
| Can target specific plants with proper training | Currently an experimental treatment-not readily available |
| Can be effective in controlling small EWM/HWM infestations | If EWM/HWM are not pulled properly, could worsen the problem |
| May be useful in helping to remove upper root mass | |

| Chemical Treatment with Contact Herbicide (Early Season) – Permit required | |
|---|---|
| ADVANTAGES | LIMITATIONS |
| May reduce EWM/HWM for a time | Usually not fully effective in eradicating target species |
| Treatment not needed as frequently | Contaminants may remain in sediment |
| | Does not remove dead vegetation, which depletes oxygen and releases nutrients, adds to build-up of muck |
| | Extra nutrients may spur additional aquatic plant and algae growth |
| | May negatively affect native vegetation |
| | Effects on lake ecosystem not fully understood |
| | Can open up areas once taken up by natives for AIS to colonize again |
| | Can be costly |

| Water Level Manipulation-Permit required | |
|---|---|
| ADVANTAGES | LIMITATIONS |
| Controls aquatic plants in shallower, near-shore areas | Requires a controlling structure on the lake |
| Can be low cost | May cause undesired stress on ecosystem |
| | Cannot be used frequently |

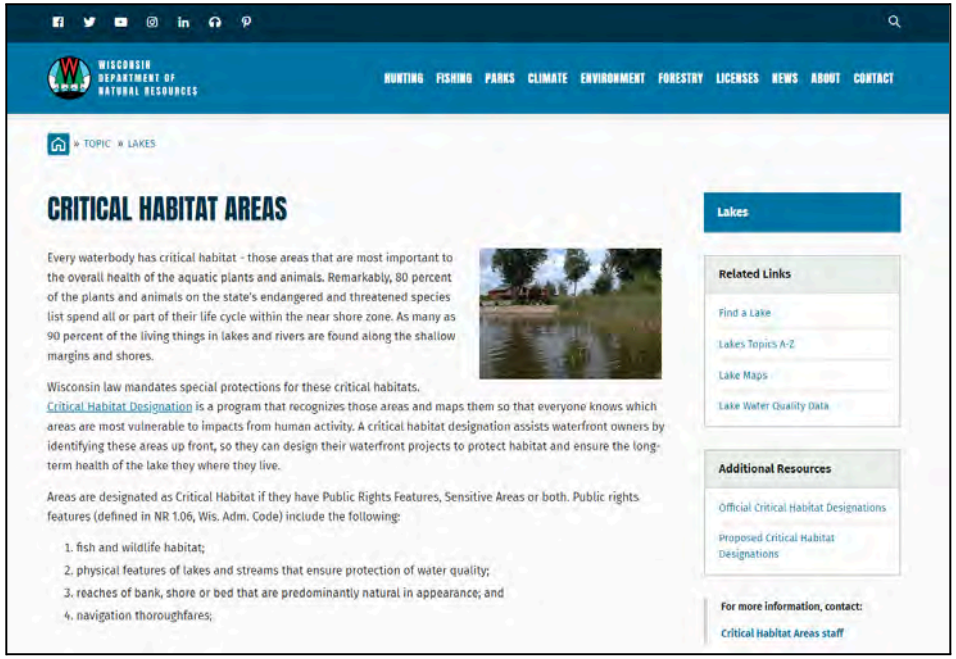
| **Milfoil Weevils - EWM** - *(Note: Not viable if chemical treatment options are being pursued.)* | |
|---|---|
| ADVANTAGES | LIMITATIONS |
| Natural, native maintenance of native and exotic milfoils | Require healthy shoreline habitat for overwintering |
| Prefers the aquatic invasive Eurasian Watermilfoil | Cannot survive in areas of mechanical harvesting or herbicide application |
| Some lakes may already have a native populations. | Effectiveness highly variable between lakes (works well for some lakes) |
| Doesn't harm lake ecosystem | Limited access to weevils for purchase in WI |
| | Still considered experimental |
| | Requires unmowed/natural shorelines for weevil habitat |
| | Too many panfish may prevent weevil population growth |

| **Chemical Treatment with Contact Herbicide (Early Season) – Permit required** | |
|---|---|
| ADVANTAGES | LIMITATIONS |
| May reduce EWM/HWM for a time | Usually not fully effective in eradicating target species |
| Treatment not needed as frequently | Contaminants may remain in sediment |
| | Does not remove dead vegetation, which depletes oxygen and releases nutrients, adds to build-up of muck |
| | Extra nutrients may spur additional aquatic plant and algae growth |
| | May negatively affect native vegetation |
| | Effects on lake ecosystem not fully understood |
| | Can open up areas once taken up by natives for AIS to colonize again can be costly |

# Critical Habitat

Special areas harbor habitat that is essential to the health of a lake and its inhabitants. In Wisconsin, critical habitat areas are identified by biologists and other lake professionals from the Wisconsin Department of Natural Resources in order to protect features that are important to the overall health and integrity of the lake, including aquatic plants and animals. While every lake contains important natural features, not all lakes have official critical habitat designations. Designating areas of the lake as critical habitat enables these areas to be located on maps and information about their importance to be shared. Having a critical habitat designation on a lake can help lake groups and landowners plan waterfront projects that will minimize impact to important habitat, ultimately helping to ensure the long-term health of the lake.

Critical habitat areas support wildlife habitat, provide mechanisms that protect water quality, harbor plant communities, and are especially susceptible to disruptions or development. Protection of these areas near Springville Pond is important because they exemplify the character and qualities of the lakes as well as ensuring the long-term health of a lake. The WDNR has proposed critical habitat designations; however, none have been formally adopted at this time. More details about critical habitat areas are available online at: http://dnr.wi.gov/lakes/criticalhabitat/ During the Portage County Lake Study, special areas around the Pond were identified by researchers.



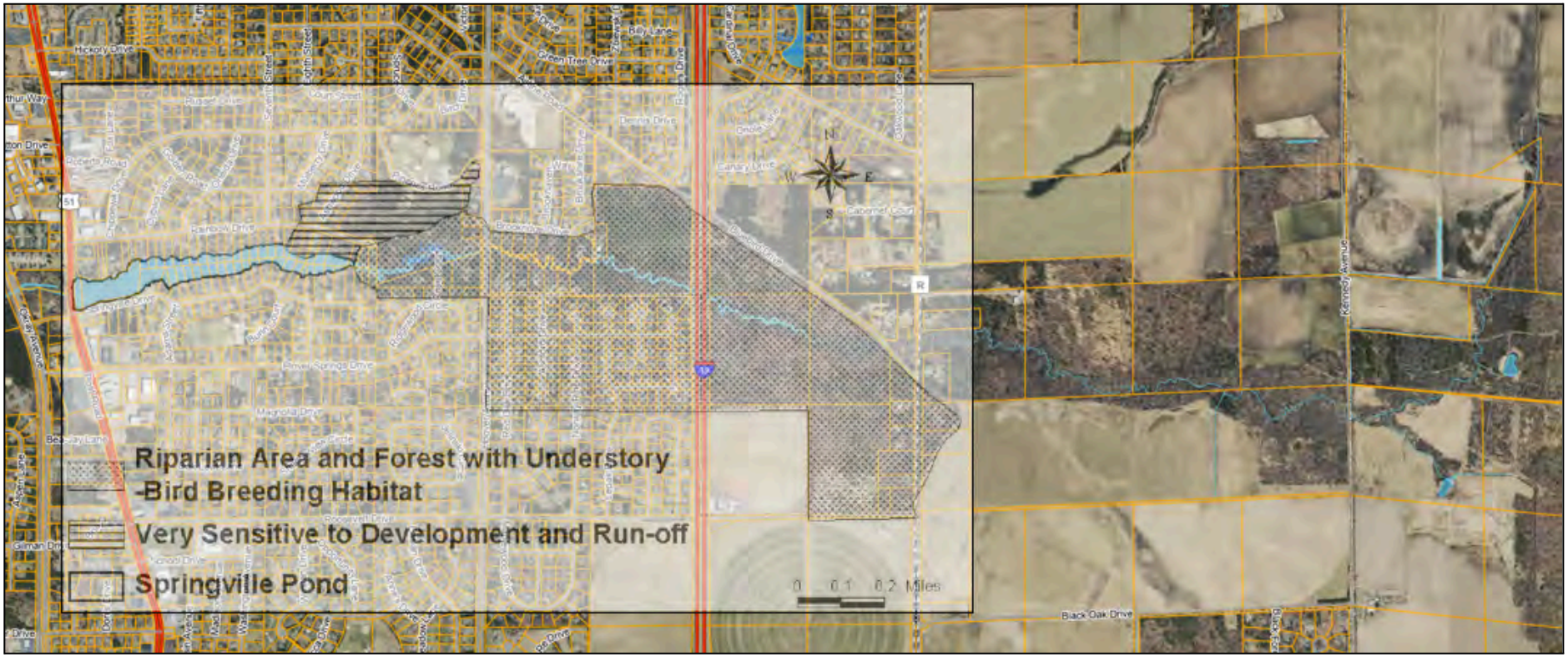
# Primary Amphibian Habitat

(highlighted in red)

From: Paloski and Wild, UWSP Portage County Lakes Study, 2003.

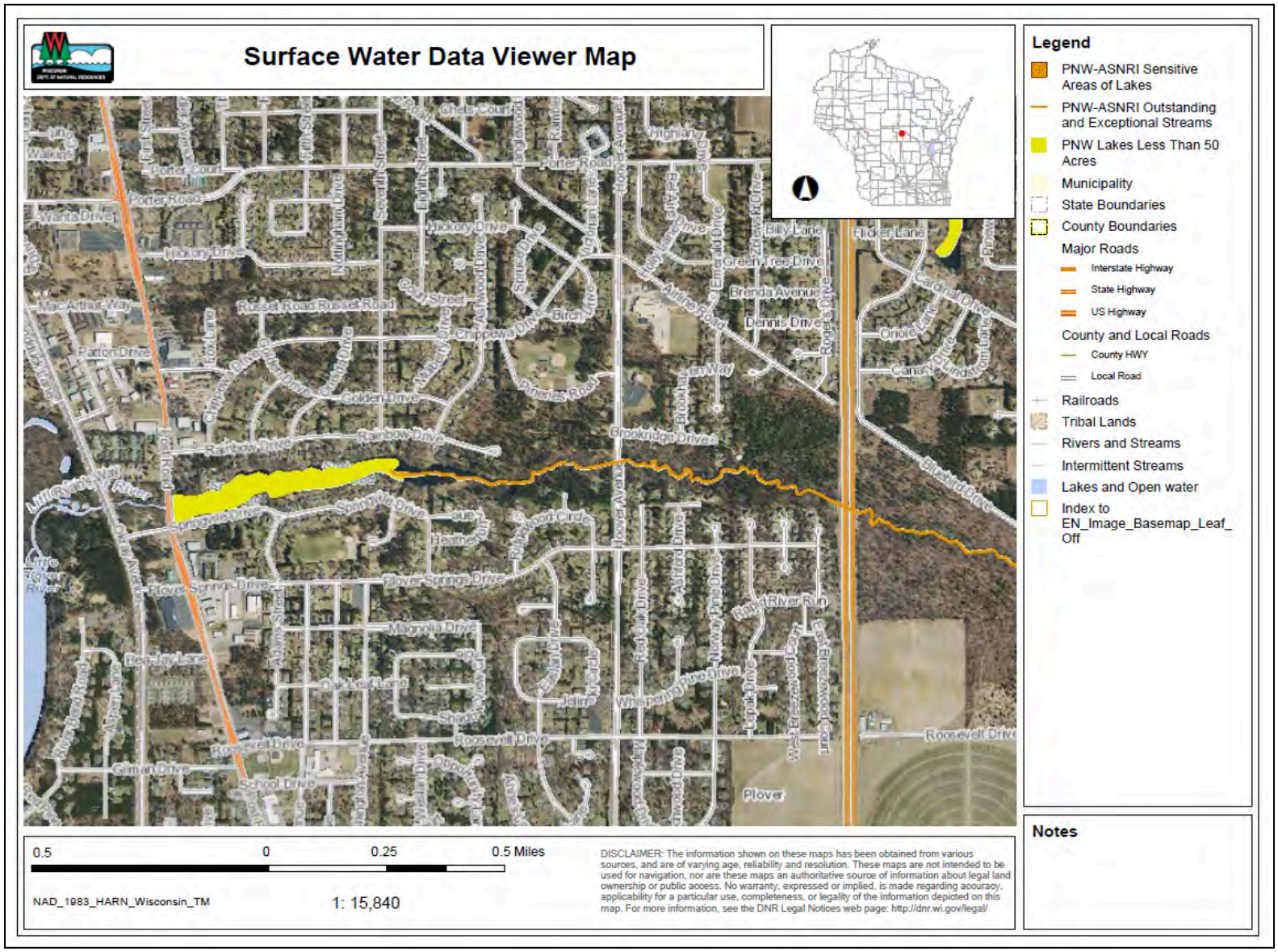
# Sensitive Areas

From: UWSP Portage County Lakes Study, 2003 (w/ 2020 Aerial Overlay)



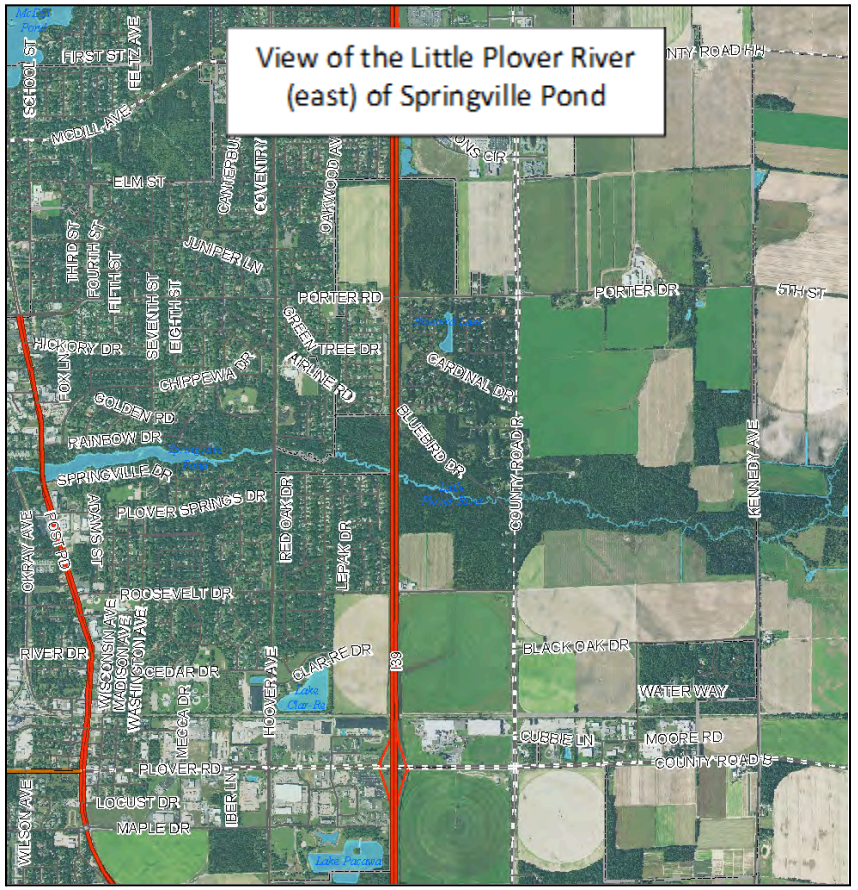
**Springville Pond Sensitive Areas**

PNW Lakes Less than 50 Acres and PNW-ASNRI Outstanding and Exceptional Streams



# Landscapes and the Lake

Land use and land management practices within a lake's watershed can affect both its water quantity and quality. While forests, grasslands, and wetlands allow a fair amount of precipitation to soak into the ground, resulting in more groundwater and good water quality, other types of land uses may result in increased runoff and less groundwater recharge, and may also be sources of pollutants that can impact the lake and its inhabitants. Areas of land with exposed soil can produce soil erosion. Soil entering the lake can make the water cloudy and cover fish spawning beds. Soil also contains nutrients that increase the growth of algae and aquatic plants. Development on the land may result in changes to natural drainage patterns and alterations to vegetation on the landscape, and may be a source of pollutants. Impervious (hard) surfaces such as roads, rooftops, and compacted soil prevent rainfall from soaking into the ground, which may result in more runoff that carries pollutants to the lake. Wastewater, animal waste, and fertilizers used on lawns, gardens and crops can contribute nutrients that enhance the growth of algae and aquatic plants in our lakes. Land management practices can be put into place that better mimic some of the natural processes, and reduction or elimination of nutrients added to the landscape will help prevent the nutrients from reaching the water. In general, the land nearest the lake has the greatest impact on the lake water quality and habitat.



View of the Little Plover River (east) of Springville Pond

Shoreland vegetation is critical to a healthy lake's ecosystem. It helps improve the quality of the runoff that is flowing across the landscape towards the lake. It also provides habitat for many aquatic and terrestrial animals including birds, frogs, turtles, and many small and large mammals. Healthy shoreland vegetation includes a mix of tall grasses/flowers, shrubs, and trees which extend at least 35 feet landward from the water's edge. Shorelands include adjacent wetlands, which also serve the lake by allowing contaminants to settle out, providing shelter for fish and wildlife, and decreasing the hazard of shoreline erosion by providing a shoreland barrier from waves and wind.

The water quality in Springville Pond is the result of many factors, including the underlying geology, the climate, and land management practices. Since we have little control over the climate and cannot change the geology, changes to land management practices are the primary actions that can have positive impacts on the lake's water quality. The water quality in Springville Pond was assessed by measuring different characteristics including

temperature, dissolved oxygen, water clarity, water chemistry, and algae. All of these factors were taken into consideration when management planning decisions were made.

## Water Quality and Land Use

A variety of water chemistry measurements were used to characterize the water quality in Springville Pond. Water quality was assessed during the 2002-2003 lake study and involved a number of measures including temperature, dissolved oxygen, water chemistry, and nutrients (phosphorus and nitrogen). Nutrients are important measures of water quality in lakes because they are used for growth by algae and aquatic plants. Each of these interrelated measures plays a part in the lake's overall water quality. In addition, water quality data collected in past years was also reviewed to determine trends in Springville Pond's water quality.

### Stormwater Management:

In 2022 the Village of Plover began the preliminary processes regarding becoming a MS4 (Municipal Separate Storm Sewer System) Community. This means the Village and any developments within the community will be required to adhere to specific stormwater management standards and requirements to minimize stormwater runoff, potential for contamination in surface and groundwater supplies, as well as promote the appropriate management of runoff and stormwater to minimize the potential negative effects on waterways.

Through this process, the Village of Plover will adopt specific ordinances: Construction Site Erosion and Sediment Control, Post Construction StormWater Management, and Illicit Discharge Detection and Elimination Ordinance(s). Additionally, a Stormwater Management Plan will be created to appropriately and effectively address the different issues, needs, and concerns of the community related to new development and stormwater management. Additional programs, requirements, and regulations will result from becoming a MS4 community, yet these actions are required based on the Villages growth and adoption of Highway 51/Post Road in 2023 based on the Wisconsin Department of Natural Resources standards.

Village staff will continue to work with the W-DNR and its partners to ensure a smooth transition through the process while ensuring all of its natural resources and waterways are protected now and into the future through thoughtful planning and the implementation of Best Management Practices. It is anticipated the VIllage of Plover will become a MS4 community within the next 5 years (timeline based on W-DNR requirements) yet staff will continue to work with developers, builders, and residents in the meantime to address drainage and runoff concerns throughout the Village.

More information about the Wisconsin Department of Natural Resources (W-DNR) MS4 requirements and permitting processes can be found on their website: https://dnr.wisconsin.gov/topic/Stormwater/municipal

# Water Clarity in Springville Pond

Lake water quality is a result of many factors including the underlying geology, the climate, and land management practices. Assessing lake water quality allows us to evaluate current lake health and changes over time. This information can be used to identify what is needed to achieve a more desirable state or preserve an existing state for aesthetics, recreation, wildlife and the fishery.

Water clarity is a measure of the depth that light can penetrate into the water. It is an aesthetic measure and is also related to the depth that rooted aquatic plants can grow. Water clarity is affected by water color, turbidity (marl or sediment), and algae, so it is normal for water clarity to change throughout the year and from year to year. Most of the water clarity data collected after 2003 was done by local citizen monitors participating in the Citizen Lake Monitoring Network (CLMN) sponsored by the Wisconsin Department of Natural Resources (http://dnr.wi.gov/lakes/clmn/).

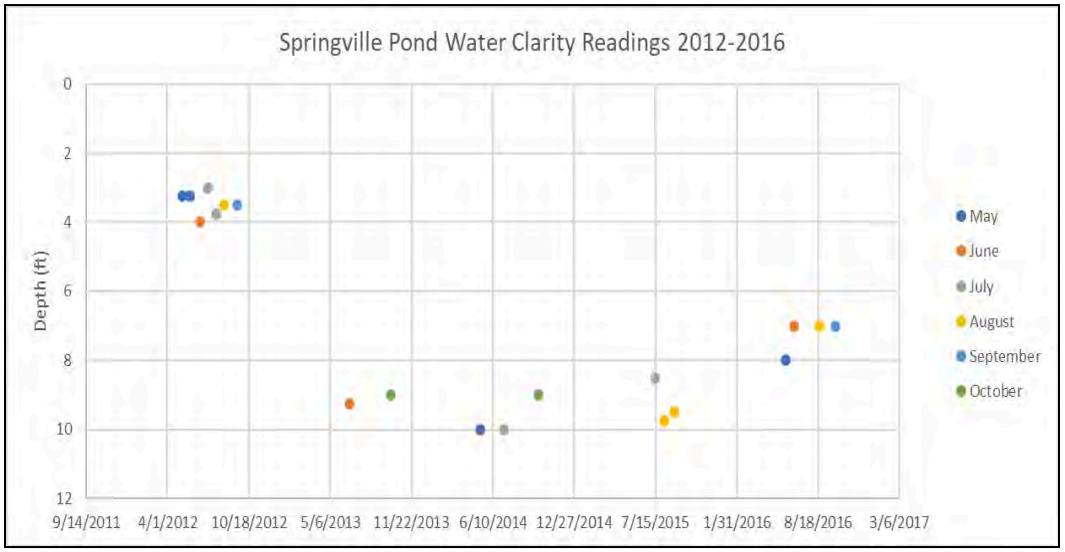
In order to measure water clarity, **a** volunteer lowers an 8" diameter, black & white disc ("Secchi disc") into the deepest part of the lake to determine how far down they can see the disc as it is lowered. The water clarity reading is taken at the point at which the volunteer can longer see the disc and is recorded as the depth (in feet) below the water surface. The deeper the secchi disc reading, the better the water clarity.

Water clarity measurements were gathered sporadically between 2002 and 2013. In recent years, samples have been collected by the Worzallas. The most recent depth measurements recorded in Springville Pond suggested poorer water clarity for the months of April and July; however, it is difficult to determine if these few data points represent a trend. Continued monitoring would lead to a more robust set of data which would help with the interpretation of changes occurring in Springville Pond.

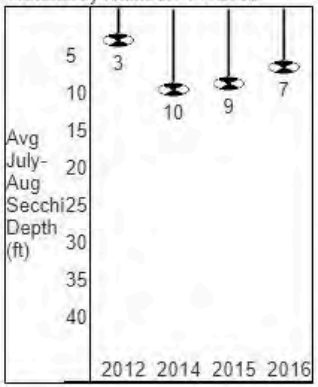
During the 2002-2003 lake study, both the phosphorus and nitrogen concentrations fluctuate throughout the year. Phosphorus levels were just below the phosphorus criteria of 30 ug/L set by the Wisconsin Department of Natural Resources, which continued in 2012-2016. However, nitrogen levels, including nitrate which is easily used for growth by aquatic plants and algae, were quite elevated. Concentrations were well above the 0.3 mg/L needed to fuel algae growth throughout the summer. Nitrogen and/or nitrate concentrations in Springville have not been collected recently and should be considered in future monitoring efforts. The algal community relative to the chlorophyll a, phosphorus, and nitrogen values for Springville Pond presented a picture of a eutrophic pond. The dominance of blue-green algae and mat- forming diatoms (filamentous algae) could be the result of increasing cultural eutrophication 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, photosynthetically-produce oxygen in the interwoven mat materials, and

then loft off the bottom and float to the surface. At the surface, the mats 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.

Currently Dissolved oxygen is not monitored in Springville Pond. Establishing a program to monitor dissolved oxygen in Springville Pond maybe of interest to lake residents to ensure there are adequate oxygen levels in the pond throughout the year and to monitor any variations in the levels. Continued monitoring of all water quality parameters in Springville Pond will be necessary to determine future trends in water quality and determine if there are changes. Monitoring can be accomplished through the State's Citizen Lake Monitoring Program.




**Springville Pond**
Portage County
Waterbody Number: 1402300

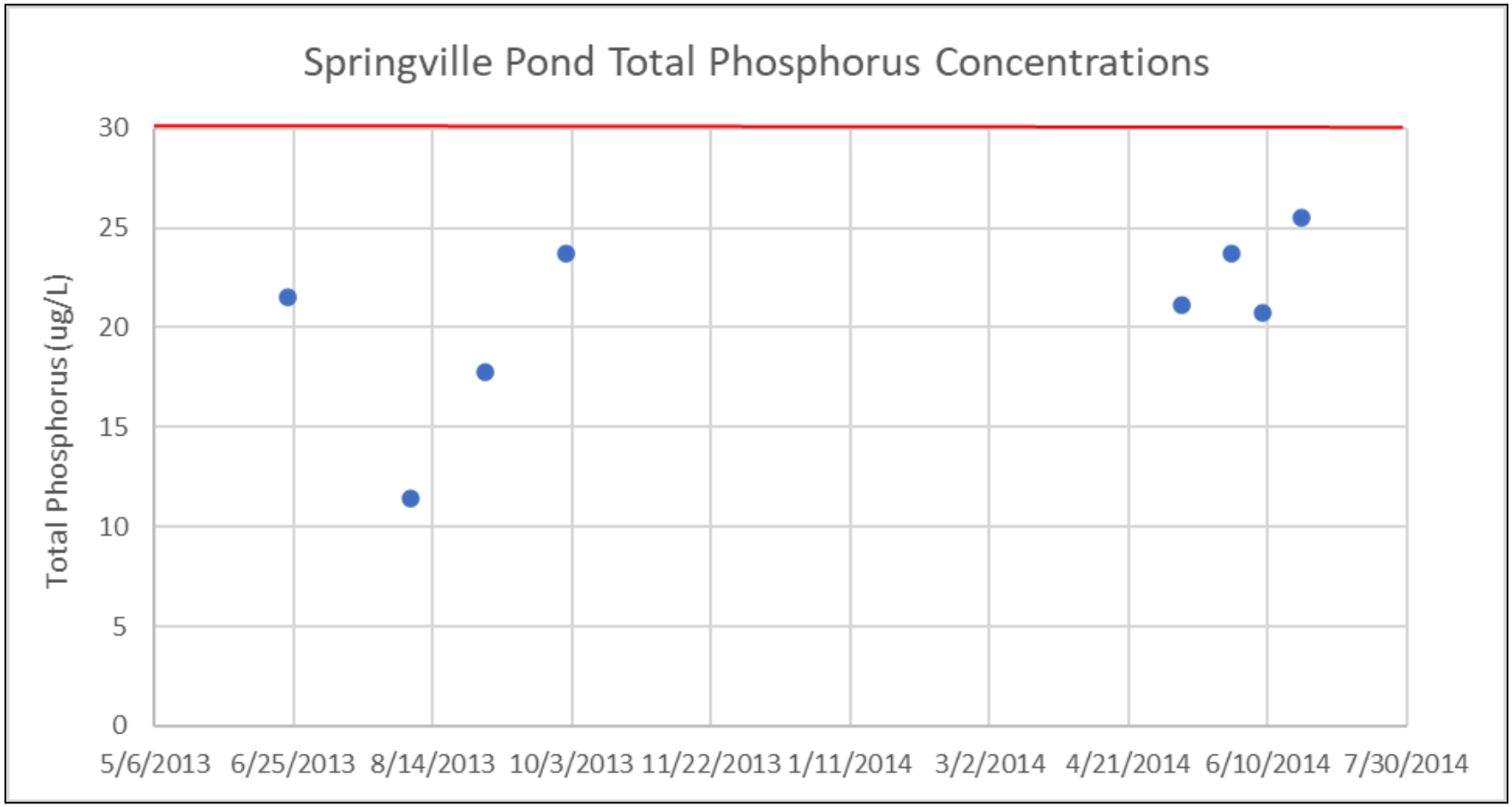



Past secchi averages in feet (July and August only).

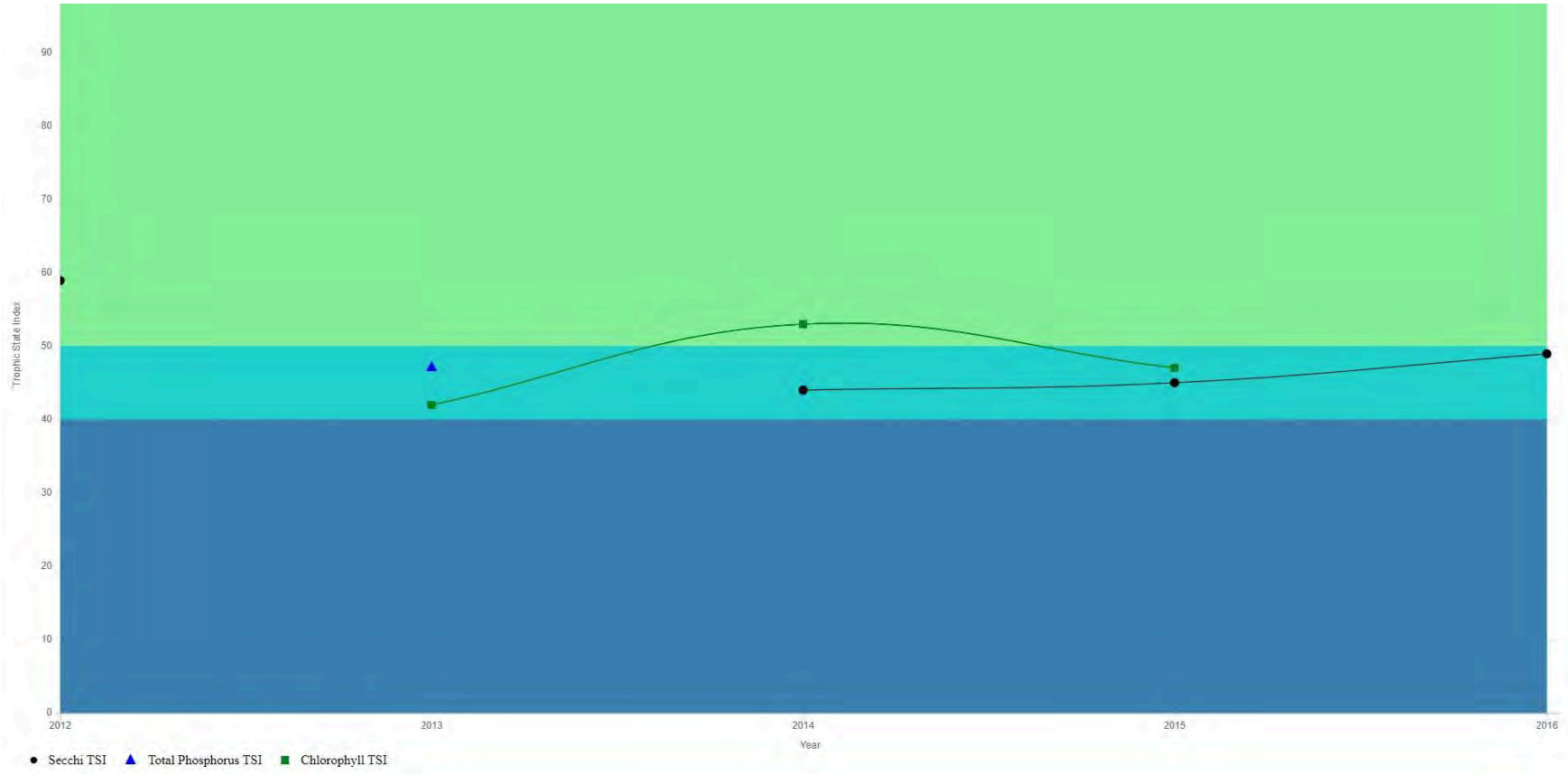
| Year | Secchi Mean | Secchi Min | Secchi Max | Secchi Count |
|---|---|---|---|---|
| 2012 | 3.42 | 3 | 3.75 | 3 |
| 2014 | 10 | 10 | 10 | 1 |
| 2015 | 9.25 | 8.5 | 9.75 | 3 |
| 2016 | 7 | 7 | 7 | 1 |

Report Generated: 01/09/2023

The graph below shows Total phosphorus concentrations (ug/L) in Springville Pond. Red line at 30 ug/L is the phosphorus criteria for stratified reservoirs established by the Wisconsin Department of Natural Resources.



## Trophic State Index (TSI) Graph-Deep Hole through 2016



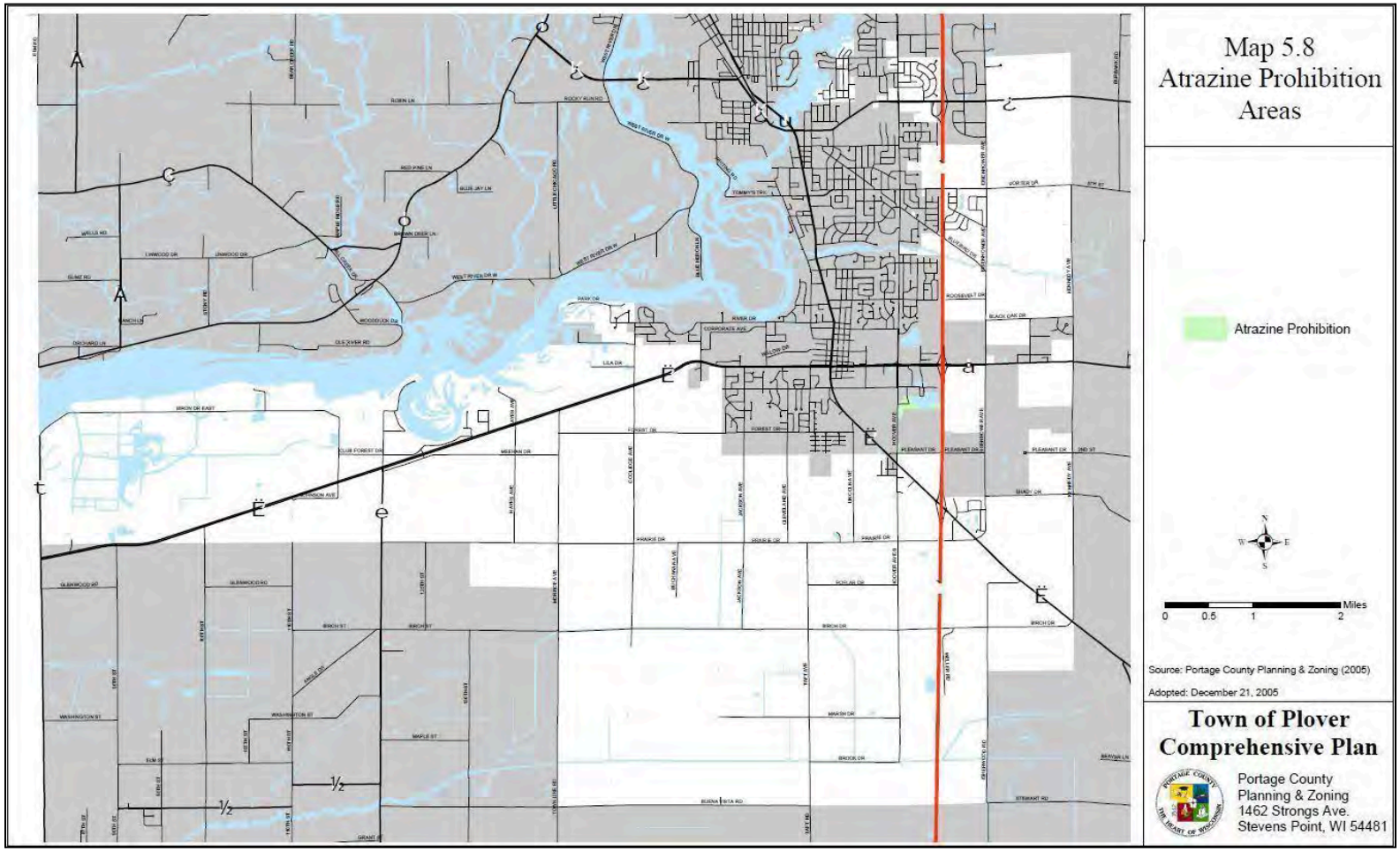

| TSI | TSI Description |
|---|---|
| **TSI < 30** | Classical oligotrophy: clear water, many algal species, oxygen throughout the year in bottom water, cold water, oxygen-sensitive fish species in deep lakes. Excellent water quality. |
| **TSI 30-40** | Deeper lakes still oligotrophic, but bottom water of some shallower lakes will become oxygen-depleted during the summer. |
| **TSI 40-50** | Water moderately clear, but increasing chance of low dissolved oxygen in deep water during the summer. |
| **TSI 50-60** | Lakes becoming eutrophic: decreased clarity, fewer algal species, oxygen-depleted bottom waters during the summer, plant overgrowth evident, warm-water fisheries (pike, perch, bass, etc.) only. |
| **TSI 60-70** | Blue-green algae become dominant and algal scums are possible, extensive plant overgrowth problems possible. |
| **TSI 70-80** | Becoming very eutrophic. Heavy algal blooms possible throughout summer, dense plant beds, but extent limited by light penetration (blue-green algae block sunlight). |
| **TSI > 80** | Algal scums, summer fishkills, few plants, rough fish dominant. Very poor water quality. |

Trophic state index (TSI) is determined using a mathematical formula (Wisconsin has its own version). The TSI is a score from 0 to 110, with lakes that are less fertile having a low TSI. We base the overall TSI on the Chlorophyll TSI when we have Chlorophyll data. If we don't have chemistry data, we use TSI Secchi. We do this rather than averaging, because the TSI is used to predict biomass. This makes chlorophyll the best indicator.

Atrazine, an agricultural herbicide, was detected in Springville Pond in samples collected in 2002-2003. No recent data on atrazine has been collected since 2002-2003. Some toxicity studies have indicated reproductive system abnormalities can occur in frogs at low levels. The presence of atrazine indicated other agri-chemicals may also be entering Springville Pond.

# Atrazine Prohibition Areas for Town of Plover

http://www.co.portage.wi.us/Comprehensive%20Plan/Planning%20Program/Plover/Map58_006.pdf



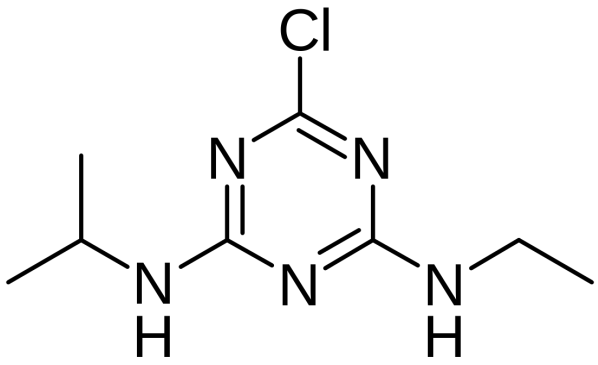
# Atrazine Prohibition Areas for Portage County

https://datcpgis.wi.gov/maps/?viewer=pa

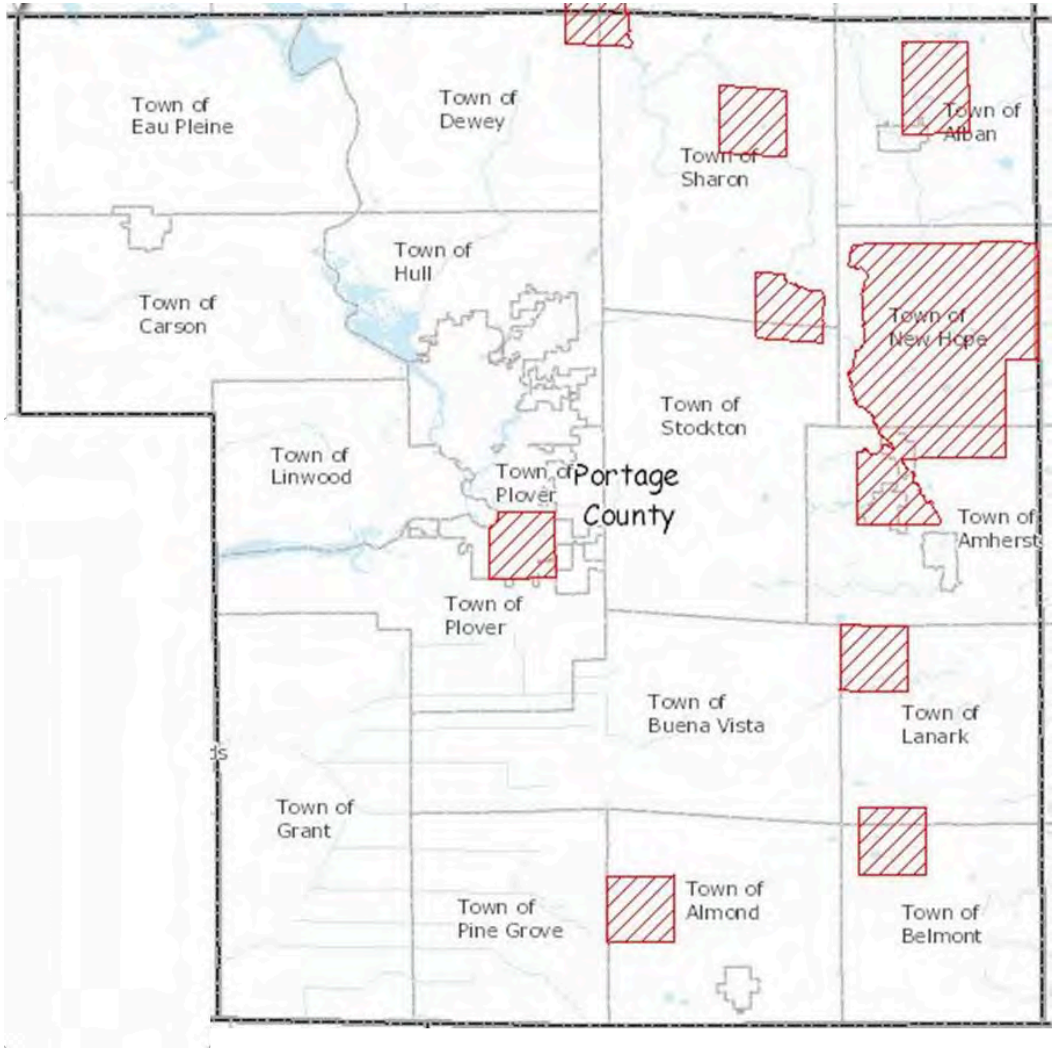
45,527 acres of land within Portage County are in atrazine prohibition areas.

Atrazine is a popular corn herbicide that is used to control weeds in corn fields and has been used in Wisconsin for over 25 years. Atrazine may have entered Wisconsin's groundwater as a result of its use on farm fields. In some cases it may be the result of a spill or improper disposal of unwanted or unused product. As of 2006, there are 102 atrazine prohibition areas in Wisconsin, covering about 1.2 million acres. An atrazine prohibition area is an area of land where all uses of atrazine are prohibited.

http://wi.water.usgs.gov/gwcomp/find/portage/atrazine.html




Atrazine



## Guiding Vision for Water Quality

*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 3. Improve the water quality in Springville Pond.*

***We will know that this goal has been achieved when monitoring indicates that median (5 samples/summer) total phosphorus concentrations remain at or below these levels. Phosphorus concentrations will be below the 2002/2004 annual average of 32.5 ug/L and summer averages will be well below the Wisconsin State Standard of 40 ug/L.***

**Objective 3.1.** Monitor the water quality in Springville Pond to evaluate current conditions and if goals are being met.

| Action | Lead person/group | Start/end dates | Resources |
|---|---|---|---|
| Monitor nitrogen and phosphorus concentrations during spring and fall overturn. Submit results to the WDNR SWIMS database for long-term storage. | Springville Pond Management Committee | Annually Spring/Fall | UWSP Water & Environmental Analysis Lab<br>WI DNR Citizen Lake Monitoring Network |
| Develop strategies for an annual nutrient-related water quality monitoring program for the Pond that includes water clarity (at least every 3 weeks May-Sept.), chlorophyll-*a* (monthly at least 3 times/summer), phosphorus (overturn and summer), nitrogen (overturn), temperature (late summer), and other water quality measures. | Village of Plover &<br>Springville Pond Management Committee; | Annually - Open-water (April-October) Started in 2023 | WI DNR Citizen Lake Monitoring Network (CLMN)<br>UWSP Water & Environ. Analysis Lab State certified labs<br>Plover Wastewater Treatment Plant Manager<br>Portage County Land and Water Conservation Department |
| Residents will monitor Springville Pond through the Citizen Lake Monitoring Network (CLMN). | Village of Plover &<br>Springville Pond Management Committee | Monthly | Portage County Land and Water Conservation Department |
| Water quality monitoring data will be presented to the Springville Pond Management Committee on an annual basis. | Village of Plover,<br>Portage County Land and Water Conservation Department | Annually | WI DNR<br>Portage County Land and Water Conservation Department |

Springville Pond is host to a variety of plants, insects, fish, amphibians, and a variety of other animals that respond to the quality and quantity of water 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 remained 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.

# Watershed Land Use

It is important to understand where Springville Pond's water originates in order to understand the lake's health. During snowmelt or rainstorms, water moves across the surface of the landscape (runoff) towards lower elevations such as lakes, streams, and wetlands. The land area that contributes runoff to a lake is called the surface watershed. Groundwater also feeds Springville Pond; its land area may be slightly different than the surface watershed.

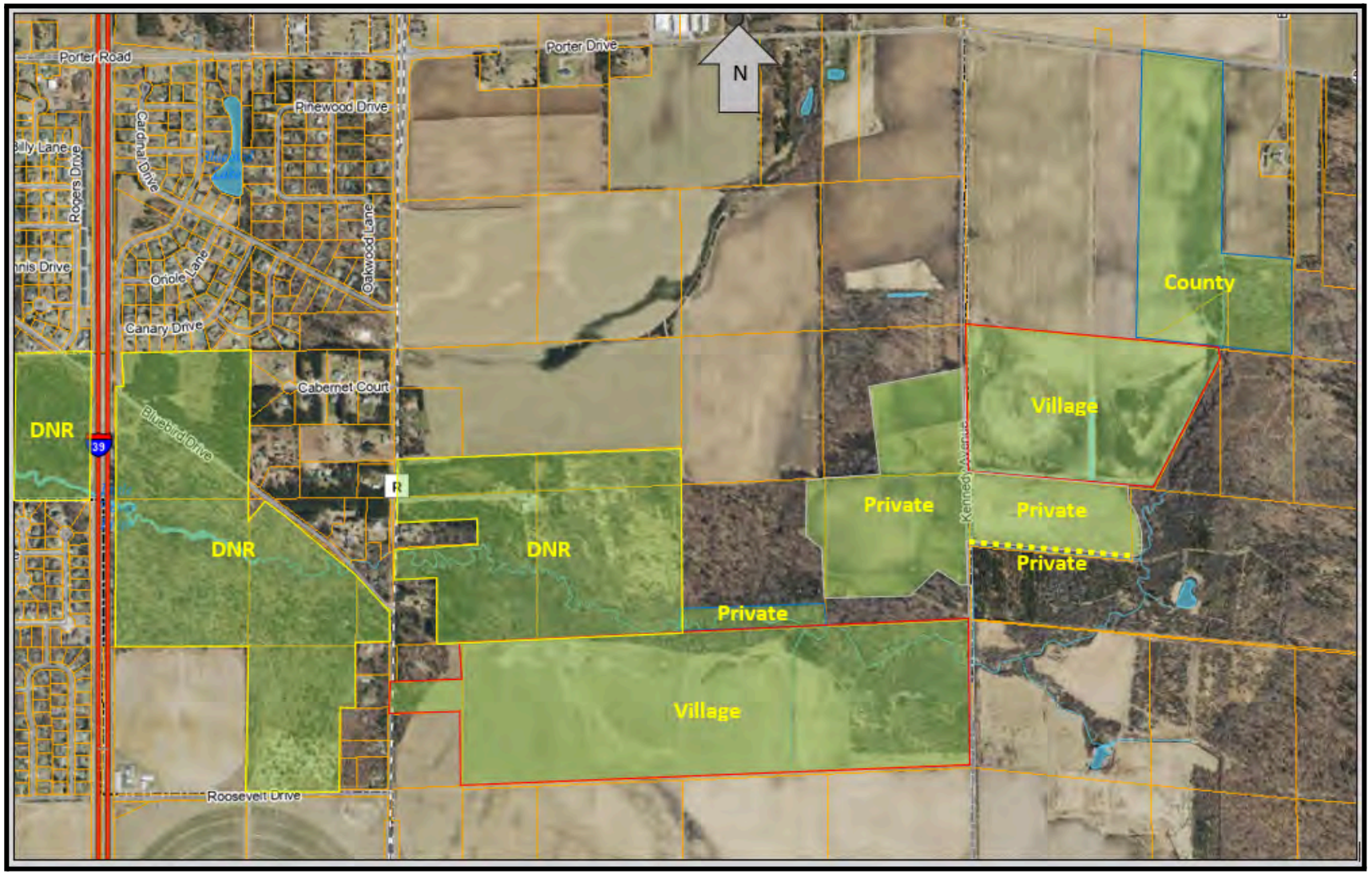
The capacity of the landscape to shed or hold water and contribute or filter particles determines the amount of erosion that may occur, the amount of groundwater feeding a lake, and ultimately, the lake's water quality and quantity. Essentially, landscapes with greater capacities to hold water during rain events and snowmelt slow the delivery of the water to the lake. Less runoff is desirable because it allows more water to recharge the groundwater, which feeds the lake year-round - even during dry periods or when the lake is covered with ice. A variety of land management practices can be put in place to help reduce impacts to our lakes. Some practices are designed to reduce runoff. These include protecting/restoring wetlands, installing rain gardens, swales, rain barrels, and routing drainage from pavement and roofs away from the lake. Some practices are used to help reduce nutrients from moving across the landscape towards the lake. Examples include manure management practices, eliminating/reducing the use of fertilizers, increasing the distance between the lake and a septic drainfield, protecting/restoring wetlands and native vegetation in the shoreland, and using erosion control practices.

**2014 Updates**: The Village of Plover has worked to amend their practices regarding fertilizing municipal properties. As of December 2014, the Village does not fertilize the lift station parcel that is adjacent to Springville Pond. The Village continues to fertilize baseball facilities and Municipal grounds, but only if fertilization is necessary.

**2023 Updates**: Efforts continue with the collaboration and conservation efforts of the Little Plover River Watershed Enhancement Project (LPRWEP). The LPRWEP is a multi party collaboration convened by the Village of Plover to improve the health of the Little Plover River and the quality of life of the surrounding community. The LPRWEP aims to use the best available data and voluntary conservation actions to achieve the following goals:1. Increase the flow and improve the aquatic health of the Little Plover River, 2. Improve surface and groundwater connections and water retention across the Little Plover River Watershed, 3. Alleviate storm water-driven flooding, 4. Improve and expand fish and wildlife habitat and public recreation opportunities and

access. More information about the Little Plover River Watershed Enhancement Project, including project overview, multiple project updates, 2019 analysis report and multiple videos can be found at: https://www.ploverwi.gov/328/Little-Plover-River-Watershed-Enhancemen.

**Map of active and/or proposed conservation activities within the Little Plover River Watershed (as of Spring 2023)**



**Objective 3.2.** Reduce nutrient and sediment inputs to Springville Pond from land management practices.

| Action | Lead person/group | Start/end dates | Resources |
|---|---|---|---|
| Encourage residents to test their soil to determine recommendations. Provide information to landowners on how and where to sample. | Springville Pond Management Committee | Ongoing<br>Fall or spring | Portage County UW-Extension<br>JayMar - Plover |
| 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 avoiding fertilizer if or no soil tests are conducted. | Springville Pond Management Committee | Ongoing | Portage County UW-Extension<br>Extension Lakes |
| The Village will review and possibly amend their practices regarding fertilizing municipal properties (i.e. lift station parcel, baseball facilities, municipal grounds, etc.) | Village of Plover | 2015<br>Ongoing | Springville Pond Management Committee |
| The County and the NRCS will support and follow-up with water quality-based Best Management Practices (BMPs) within the Little Plover River/Springville Pond watershed. | Portage Co. Land Conservation<br>NRCS | In progress<br>Ongoing | Springville Pond Management Committee<br>DATCP funding<br>WI DNR Lake Protection Grants |
| Work with the Little Plover River Watershed Enhancement Project (LPRWEP) Team and related producer-led groups to implement conservation practices such as ditch filling, wetland restoration, and stream restoration within the Little Plover Watershed to promote improved water quality and quantity. | Village of Plover<br>LPRWEP Team | Ongoing | Springville Pond Management Committee<br>WI DNR<br>Wisconsin Wetland Association<br>UWSP<br>Portage County |

**Objective 3.3.** Shoreland and watershed landowners will minimize impacts to Springville Pond through improved land management practices.

| Action | Lead person/group | Start/end dates | Resources |
|---|---|---|---|
| Support efforts to convert irrigated agricultural land to open space, park land, and restored wetlands through land purchases. Consider purchasing land adjacent to the Pond or the Little Plover River. | Springville Pond Management Committee<br><br>LPRWEP Team | Ongoing | Village of Plover<br>Del Monte<br>WI Potato & Vegetable Growers Assn<br>WI DNR Lake Protection Grants |
| Protecting land within a mile of the Little Plover River is the Village's highest priority for improved water volume, habitat, and water quality.<br>Current efforts focus on the Daniel R Mahoney Conservancy area as well as the conversion of irrigated ag land, ditch filling, wetland restoration, and stream realignments within the Little Plover River Watershed. | Village of Plover | Ongoing | Little Plover River Work Group<br>Del Monte<br>WI Potato & Vegetable Growers Assn<br>Springville Pond Management Committee |
| Promote increased vegetated buffer areas (at least 35 feet in width) between agricultural/residential areas and Little Plover River/Springville Pond by providing property owners with resources and assistance related to grants, projects, funding, and conservation practices. | Portage County Land and Water Conservation Dept<br><br>Village of Plover | Ongoing | WI DNR<br>Property Owners |
| 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. Provide this information through newsletters, newspapers, and other community resources. | Springville Pond Management Committee | Ongoing | Village of Plover<br>Portage County Land and Water Conservation Department<br>Extension Lakes<br>Healthy Lakes and Rivers Grant |
| Require more deliberate and specific runoff reduction practices to be implemented during new construction projects in the Village of Plover by adopting an Erosion Control and Stormwater Management Ordinance that would be implemented Village wide. (Areas outside an adopted ordinances jurisdiction should still be encouraged to implements BMPs to minimize erosion and runoff) | Village of Plover | Ongoing | WI DNR<br>Extension Lakes<br>Portage County Land and Water Conservation Department<br>Consultants |

**Objective 3.4.** Remove nutrient-rich sediment that has deposited and/or built up in Springville Pond.

| Action | Lead person/group | Start/end dates | Resources |
|---|---|---|---|
| Consider dredging the Pond and/or alternative options that would reduce and address increased sediment deposition. (Previous dredging operations were halted before reaching the east end of the Pond due to the lack of funding. | Springville Pond Management Committee<br>Wisconsin DNR | No earlier than 2025<br><br>Funding Dependent | Village of Plover |

# Water Levels

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 in some cases the plant and animal life in these water bodies have adapted and may depend on these fluctuations for survival. Recently, the Little Plover River has dried up, even during years of normal precipitation. The low flow in the Little Plover River increases the amount of time that water resides in Springville Pond. The results of this can include increased water temperatures and increased algal growth. The increased temperatures can negatively affect the fishery and their food. In a warm summer, the temperatures of the surface of the pond water may also be lethal to the weevils that help to keep EWM in check. Excess withdrawal of groundwater is the primary source of the reduction of low flow in the Little Plover River. 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.

**2014 Updates**: Water levels are being monitored in the Little Plover River; however, the monitoring provides data but does not address the problem. The Little Plover River workgroup continues to meet. In 2020, water levels in Springville Pond will be lowered for the Department of Transportation to rebuild the Business 51 causeway.

**2023 Updates:** In late 2022 the majority of the Springville Pond Dam construction project was completed in coordination with the reconstruction and expansion of Post Road (Hwy 51). Ultimately, after numerous discussions with the W-DNR and Village engineers, the new box culvert dam was designed to be oversized, intended to safely and effectively regulate the water levels within the pond while ensuring any excessive water flows resulting from large rain events and/or spring runoff can be conveyed and property deposited west of Post Road before flowing into the Wisconsin River. Overall, it has been observed that water flows appear to have increased into the pond and the variability of the water levels has become more stabilized within the Little Plover River (Flowing into Springville Pond) which appears to be a result of the ongoing conservation efforts within the Little Plover River watershed. Although water levels within Springville Pond has not been a concern in recent years (besides scheduled drawdowns resulting from the dam reconstruction), ensuring there is adequate flow and water levels in the LIttle Plover River will better support trout and other fish species as well as will improve the overall ecological health of the watershed.

## Guiding Vision for Water Levels

*Maintain and promote healthy flows on the Little Plover River, which flows into Springville Pond.*

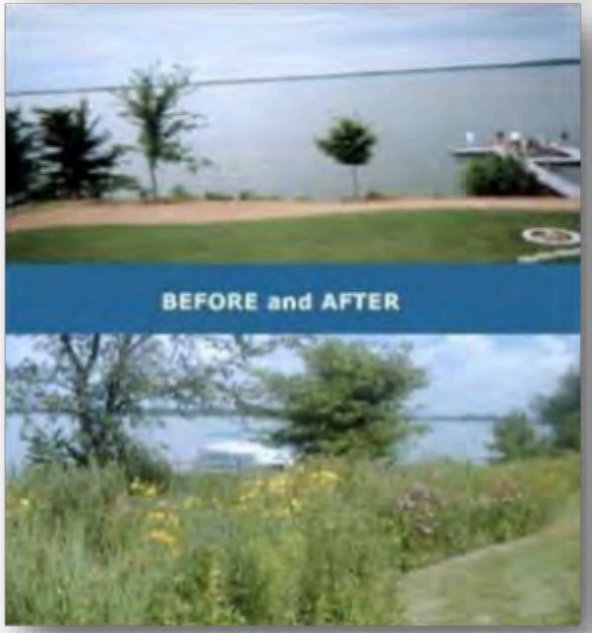
### *Goal 4. Maintain healthy flow on the Little Plover River and water levels in Springville Pond. Continue the collaboration and conservation efforts of the Little Plover River Watershed Enhancement Project.*

**Objective 4.1.** 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 residents can decrease personal water use through website, newsletter, other mailings, Lake Tides subscriptions. | Village of Plover<br>Springville Pond Management Committee | | Extension Lakes<br>UWSP Groundwater Center<br>Portage County Water Quality Specialist |
| Promote ways citizens can infiltrate runoff on their properties through website, newsletter, and other mailings. | Village of Plover<br>Springville Pond Management Committee | Grant deadline Feb 1 | Portage County Land and Water Conservation Department<br>WI DNR Healthy Lakes Grant |
| Stay informed on upcoming groundwater legislation. Share information through website, newsletter and other mailings. | Village of Plover<br>Springville Pond Management Committee | | Portage County Water Quality Specialist<br>Little Plover River Work Group<br>Extension Lakes<br>Friends of the Central Sands producer-led Group |
| Maintain and/or update the flow gauge for the Little Plover River flow monitoring gauge. | Springville Pond Management Committee | Ongoing | WI DNR<br>Village of Plover<br>Portage County Water Quality Specialist |
| Continue to work with UWSP and/or other organizations to maintain stream flow monitoring of the Little Plover River and continue to analyze and report the data collected. | Springville Pond Management Committee | Ongoing | 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.




**2014 Updates:** The 2012 shoreland survey indicated that shoreland management around Springville Pond has improved significantly since 2002, although there is still room for additional improvement. Several properties on the northern side are still mowed to the water's edge, which affects water quality and habitat. Continued efforts should be made to improve shoreland vegetative buffers on Springville Pond.

The 2012 survey also inventoried near-shore human disturbances around the pond. Most of the disturbances were of minor consequence; however, cumulative disturbances may cause problems. Structures such as seawalls, rip-rap (rocked shoreline), and artificial beach result in habitat loss.

Erosion contributes sediment to the lake, which can alter spawning habitat and carry nutrients into the lake. Unmanaged runoff from rooftops of structures contributes more runoff to the lake, often resulting in delivery of more sediment to the lake. Docks result in altered in-lake habitat. Denuded lakebeds adjacent to docks provide opportunities for invasive species to become established and reduce habitat that is important to fish and other lake inhabitants. Maps and additional information about the survey can be found in the Springville Pond Shoreland Inventory – 2012 appendix of this document.

**2023 Updates**: The Village of Plover has applied for and has received grant funding for native plantings within Springville Pond Park through the Portage County Healthy Lakes and Rivers grant application (Grant awarded Spring 2023). Village and County staff have identified specific species and areas of the park that would be suitable for native plantings as well as will work with the Springville Pond Management and Parks Development Committees to design and install educational signage and information to inform residents and visitors about the importance of shoreline vegetation and native species. These plantings will serve as a demonstration project for residents that are interested in stabilizing their shoreline property, slowing stormwater runoff, improving wildlife habitat, and promoting natural beauty. Additionally, the Village of Plover will explore options and opportunities to further beautify and vegetate Springville Pond Park with native species to promote wildlife habitat, water infiltration, pollinators, and improve overall water quality

A shoreline survey was last conducted in 2012. An action item added to Goal 5 is to complete a shoreland survey in 2023 and compare it to the last survey to view progress and highlight properties to focus on.

*Photo provided by John Nornberg (Plover resident):*

## Guiding Vision for Shorelands

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

## *Goal 5. Inform and educate shoreline property owners and pond users about the importance of sustainable land use and recreational practices that encourage wildlife habitat, improved water quality and overall aquatic ecosystem health*

**Objective 5.1.** Provide a variety of informational/education opportunities for waterfront property owners to learn about the importance of shorelands to the Pond's health.

| 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 and Water Conservation Department<br>Extension Lakes<br>WI DNR Lake Grants |
| Share contact information brochure that includes Portage County Land Conservation personnel, landscaping companies, nurseries, and other helpful links with local landowners through the welcome packets. | Springville Pond Management Committee | Ongoing-New residents | Village of Plover<br>Portage County Land and Water Conservation Department<br>Shoreland property owners<br>Friends of the Little Plover River |
| The Village of Plover and the Springville Pond Management Committee may participate in the summer 2015 door-to-door shoreland project. | Village of Plover<br>Springville Pond Management Committee | Summer 2015 | UWSP Center for Watershed Science & Education |
| Distribute the results of recently conducted shoreland survey(s) to members of the Springville Pond Management Committee. | Village of Plover | 2015 | UWSP Center for Watershed Science & Education |
| Install and monitor shoreland restoration project as a demonstration project on Village Land. Consider adding barriers to prevent damage to the site. | Village of Plover<br>Springville Pond Management Committee | Ongoing | Portage County Land and Water Conservation Department<br>Landscape consultants |

| | | | |
|---|---|---|---|
| Host workshops on shoreland restoration and collaborate with local organizations. | Springville Pond Management Committee | Check WI DNR website for current Grant deadline | Village of Plover<br>Portage County Land and Water Conservation Department<br>Shoreland restoration consultants<br>WI DNR Healthy Shoreland Grants |
| Install native shoreland planting through the Healthy Lakes and Rivers grant in Springville Pond Park that will serve as a demo site for Springville Pond residents. | Portage County Land and Water Conservation Dept<br>Village of Plover | 2023 | Village of Plover<br>Portage County Land and Water Conservation Department<br>WI DNR Healthy Shoreland Grants |
| Conduct a shoreland survey to collect current data on Springville Pond's shoreland and to identify where conservation efforts need to be focused. | Portage County Land and Water Conservation Dept<br>Village of Plover | 2023, and every 3 years following | Portage County Land and Water Conservation Department<br>Extension Lakes<br>WI DNR |

*2023 Healthy Lakes and River Grant recipients completing their shoreline planting along Springville Pond.*

*Source: Portage County Lakes and Rivers Facebook*

## *Goal 6. Protect and restore healthy shoreline habitats near and around Springville Pond. This goal will be achieved when 75% of the shoreline properties (by frontage) between Hoover Ave to Post Rd, meet or exceed the County Shoreland Zoning Ordinance 7.7 as it relates to a vegetative buffer.*

**Objective 6.1.** Waterfront homeowners around Springville Pond will understand their roles in protecting this important land and will make informed land management decisions.

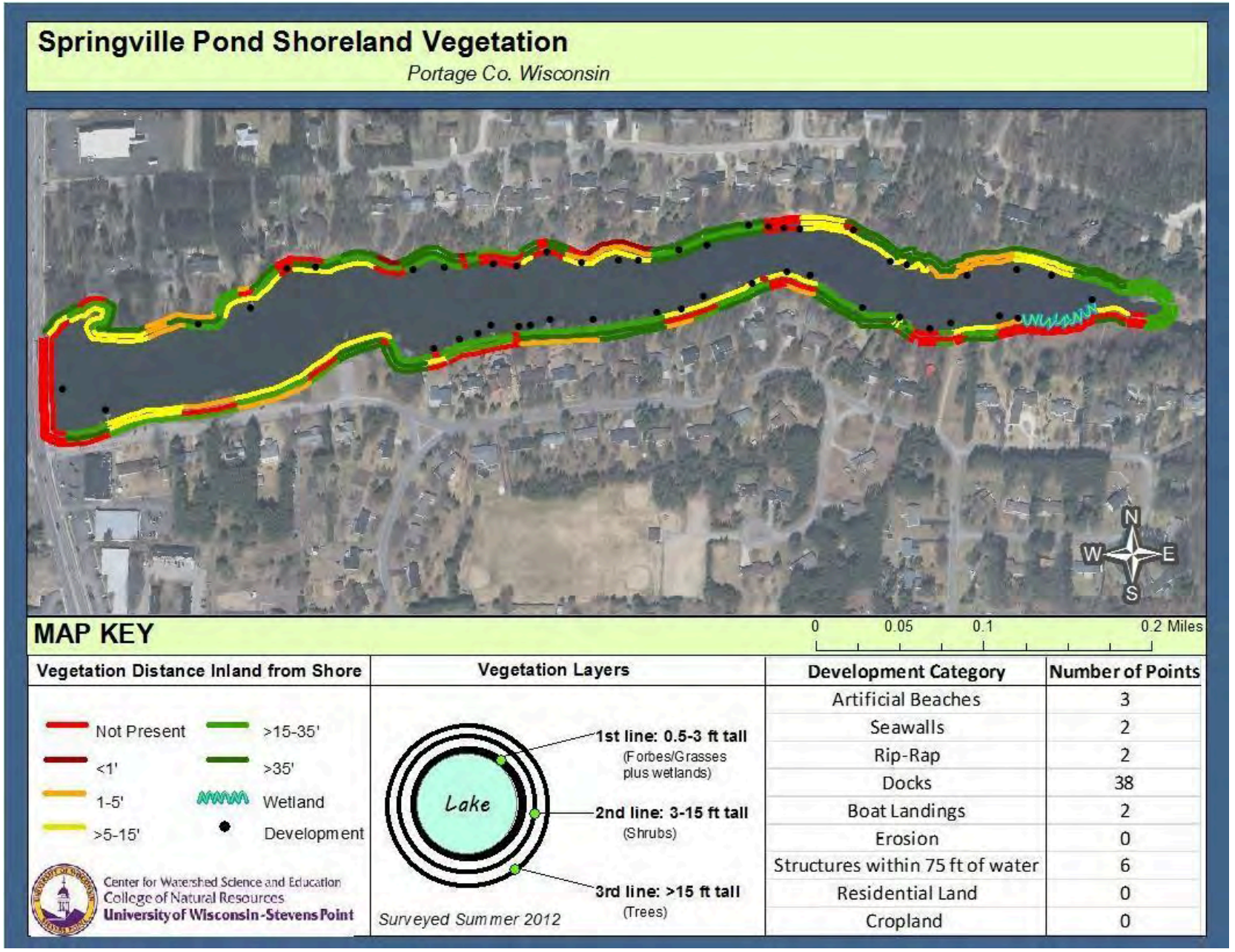
| Actions | Lead person/group | Start/end dates | Resources |
|---|---|---|---|
| Shoreland property owners will work on shoreland improvements. | Shoreland property owners | Ongoing | Portage County Land and Water Conservation Department<br>WI DNR Healthy Lakes Grants<br>Landscape consultants |
| In steeper sloped areas around Springville Pond, encourage the design of access points to the water that minimizes erosion and slow water runoff through informational workshops and the welcome packets. | Springville Pond Management Committee<br>Village of Plover | Ongoing | Portage County Land and Water Conservation Department<br>Extension Lakes |
| Pursue shoreline improvement and funds for improvements to prevent and/or repair shoreland erosion along Springville Pond. | Springville Pond Management Committee | Check WI DNR website for current Grant deadline | Portage County Land and Water Conservation Department<br>WI DNR Healthy Lakes Grants |
| Participate in the shoreland planting program in Portage County with the DNR and County Staff. The Village will consider purchasing plants for the re-installation of the demo site at the wastewater lift station. Shoreland residents will be invited to participate in the planting process. | Springville Pond Management Committee | Ongoing | Portage County Land and Water Conservation Department<br>WI DNR |
| Continue monitoring shoreland vegetation around Springville Pond and share results through mailing or possibly welcome packets. This will be done every two years. | Springville Pond Management Committee | Every 2 years<br>Survey completed in 2012 | UWSP Center for Watershed Science and Education |
| 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 | If the state legislature will allow it again. | UWSP Center for Land Use Educ.<br>WI DNR Lake Protection Grant |

# Springville Pond Shoreland Inventory

Shoreland vegetation is critical to a healthy ecosystem in and around Springville Pond. It provides habitat for many aquatic and terrestrial animals including birds, frogs, turtles, and many small and large mammals. It also helps to improve the quality of the runoff that is flowing across the landscape towards the lake. Healthy shoreland vegetation includes a mix of tall grasses/flowers, shrubs and trees.

The results of the 2012 survey of Springville Pond's shoreland are shown in the figure below. The ring nearest the lake depicts the shoreland vegetation depth inland from the water's edge for the 0.5 to 3 foot tall vegetation (forbs and grasses), the middle ring depicts the depth of the vegetation that is 3 to 5 feet tall (shrubs), and the outer ring depicts the depth of the vegetation that is greater than 15 feet in height (trees). Shoreland management for Springville Pond has improved significantly since 2002, although there is still room for additional improvement. Several properties on the northern side are still mowed to the water's edge, which affects water quality and habitat. Continued efforts should be made to improve shoreland vegetative buffers on Springville Pond.

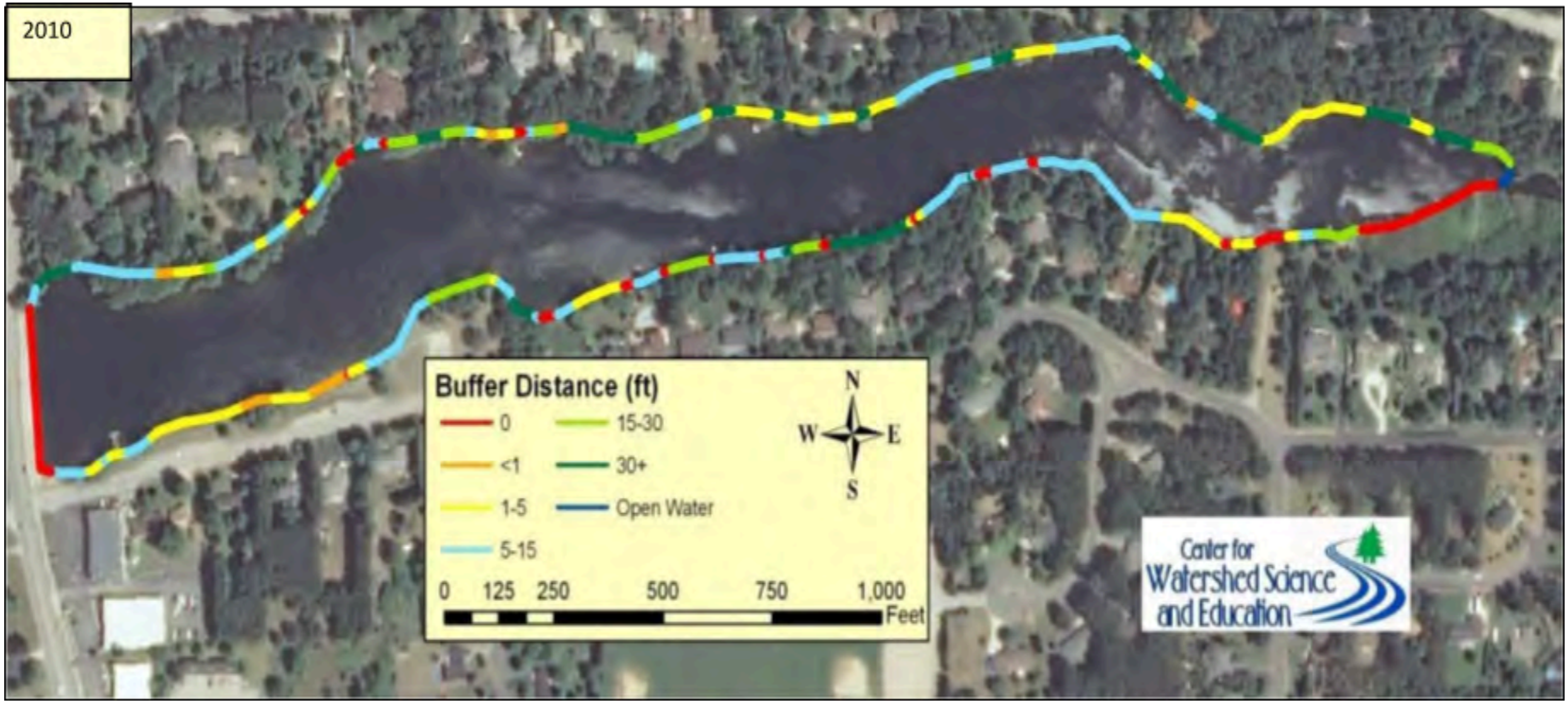
# Shoreland vegetation survey around Springville Pond, summer 2012.



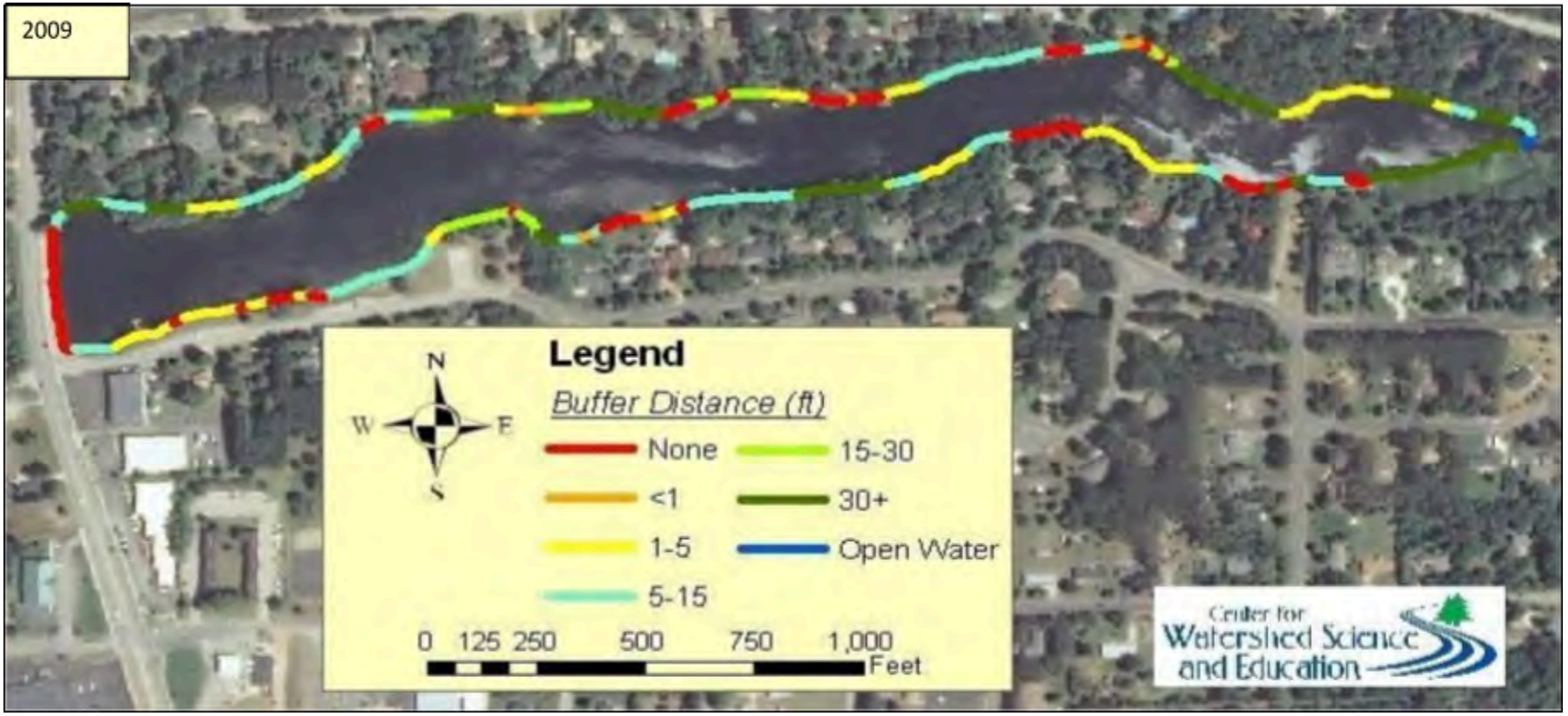

| Development Category | Number of Points |
|---|---|
| Artificial Beaches | 3 |
| Seawalls | 2 |
| Rip-Rap | 2 |
| Docks | 38 |
| Boat Landings | 2 |
| Erosion | 0 |
| Structures within 75 ft of water | 6 |
| Residential Land | 0 |
| Cropland | 0 |

Shoreland surveys were conducted annually from 2007-2010 to measure the extent of changes as residents and the Village of Plover worked to improve the shores. The survey categories were changed over the years to provide a better measure of incremental improvements. The figures below show the changes over this time period.

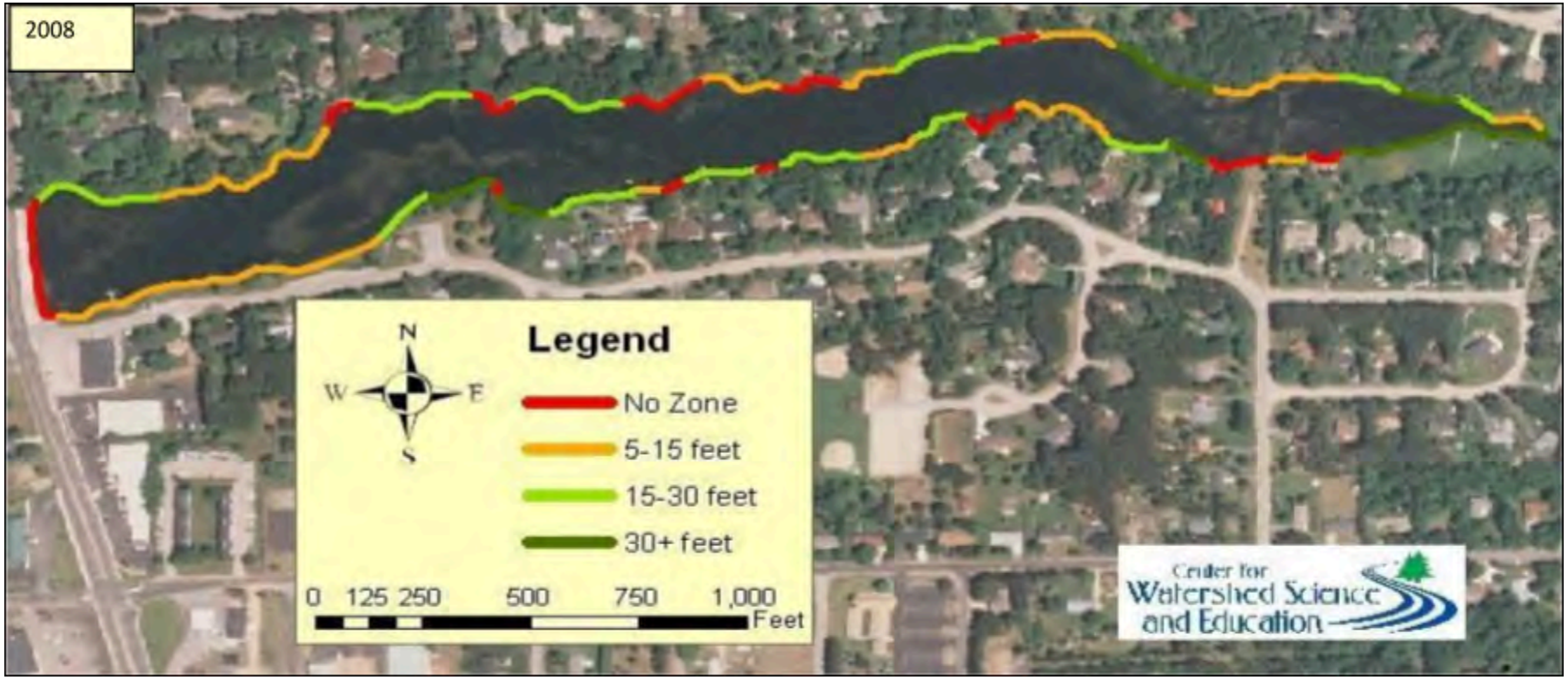
## Shoreland vegetation survey around Springville Pond, 2010.



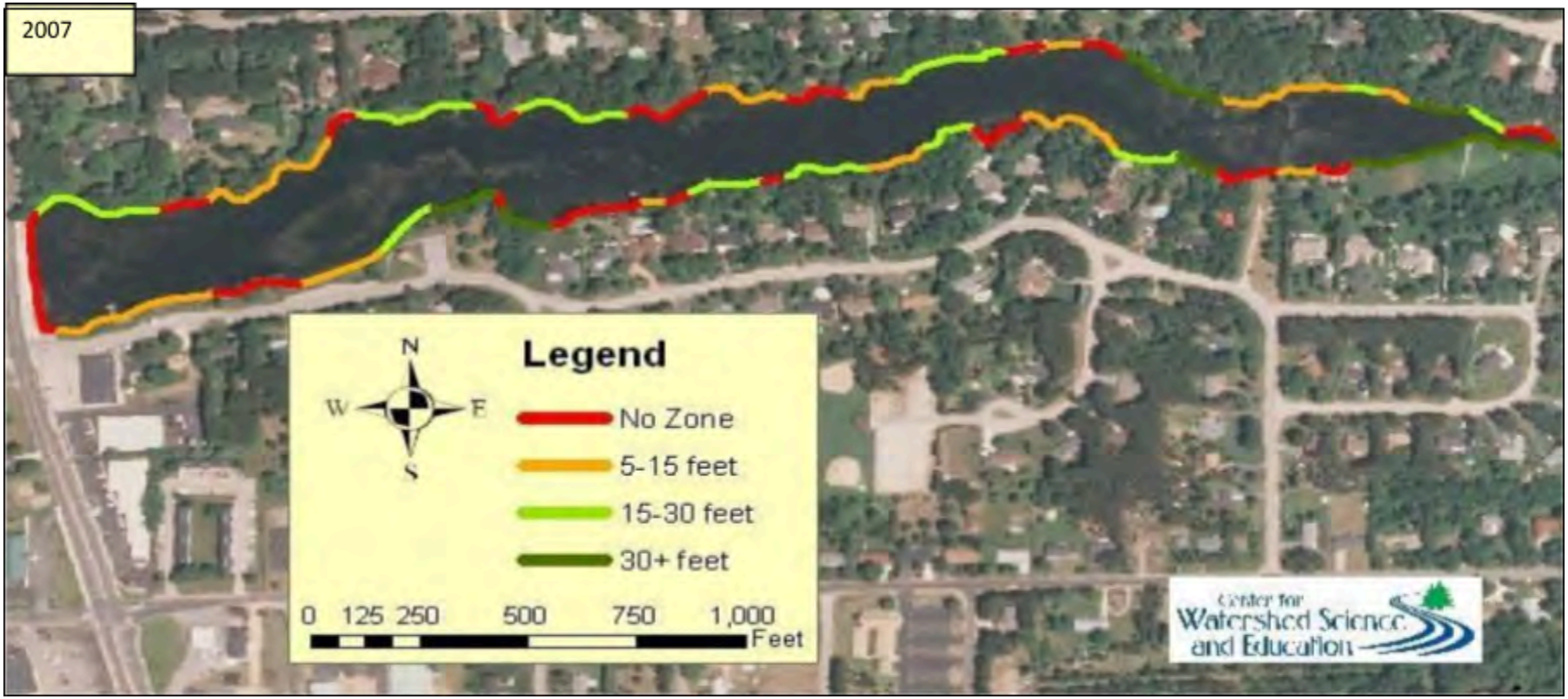
## Shoreland vegetation survey around Springville Pond, 2009.



## Shoreland vegetation survey around Springville Pond, 2008.

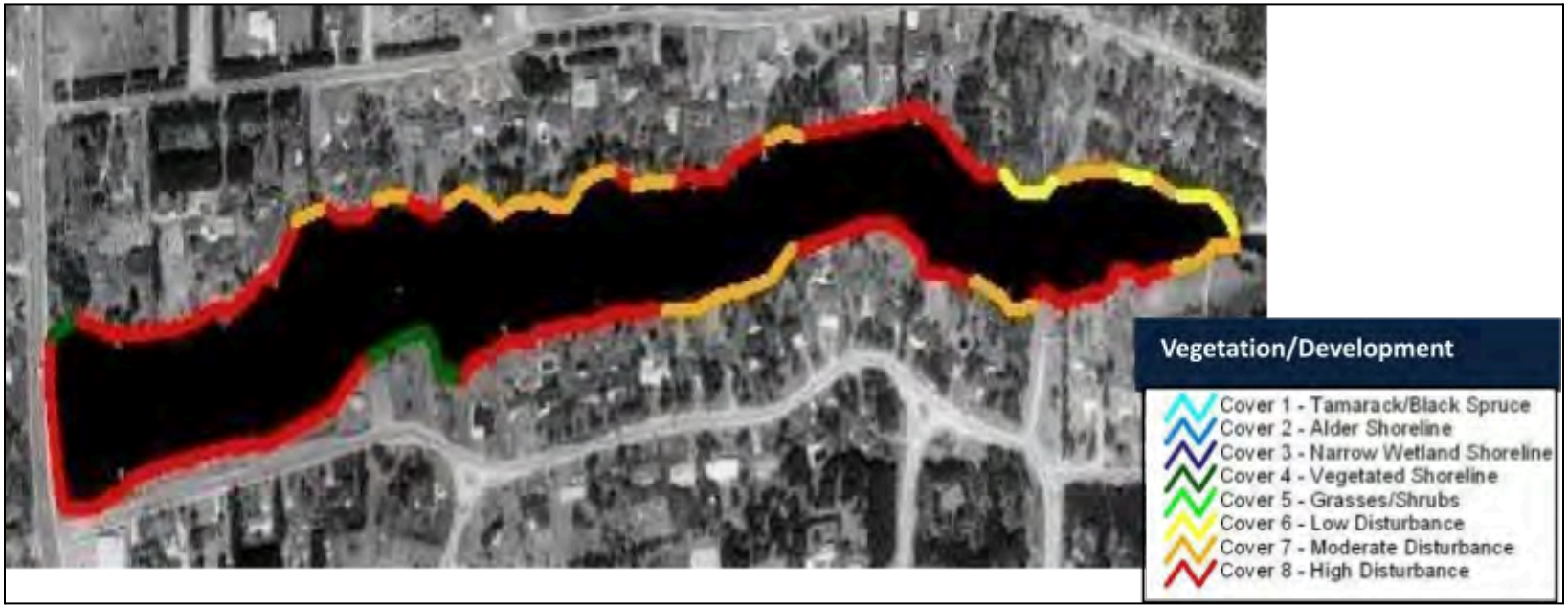


## Shoreland vegetation survey around Springville Pond, 2007.




A shoreland survey was conducted in 2002-2003 during the Portage County Lakes Study. The survey categories differed from those in later surveys, but some comparisons can be made. Classifications for the 2002-2003 survey are described in the table below. Springville Pond's length of undisturbed shoreline greatly increased during the ten years between 2002 and 2012.

# Shoreland vegetation survey around Springville Pond, 2002-2003.

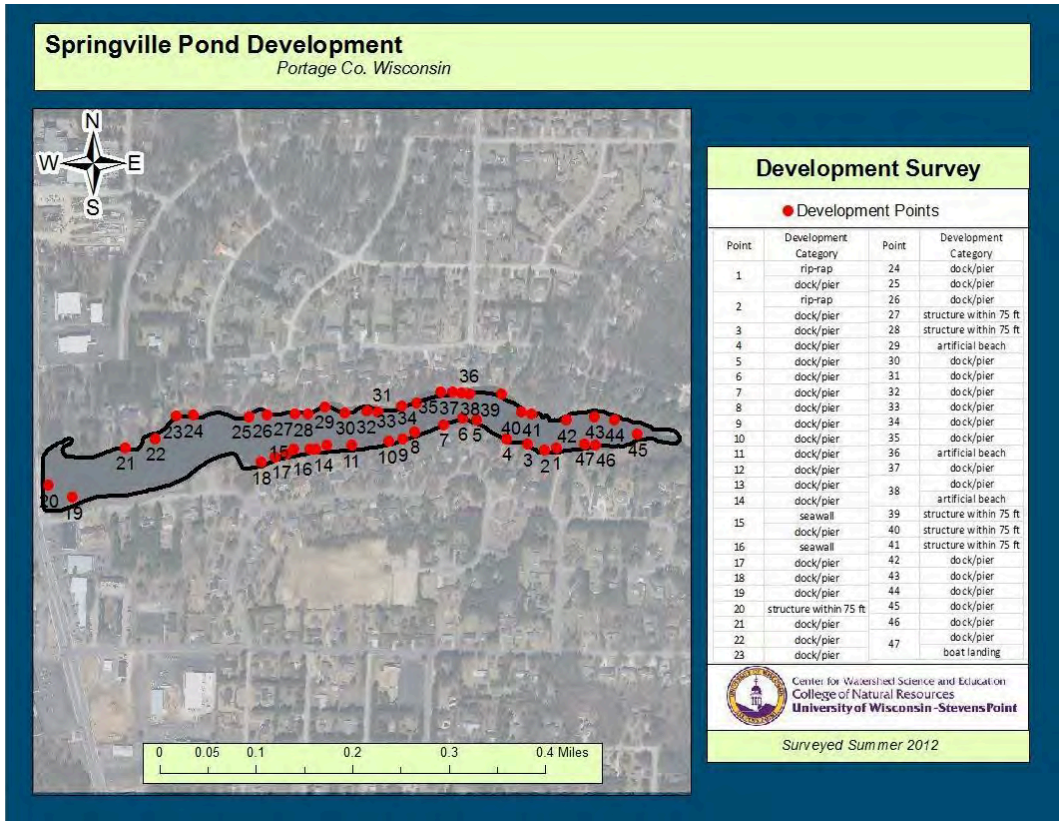



**Categories applied during the 2002-2003 shoreland survey of Portage County lakes. Observations were predominant category 15 feet inland from the water's edge.**

| Code and Cover-type Description | |
|---|---|
| **Wetlands** | |
| Cover 1 | All wetland shore zone with a sweet gale or leather leaf shrub layer associated with tamarack or black spruce. |
| Cover 2 | All wetland shore zone with an alder shrub layer. |
| Cover 3 | Narrow wetland shore zone (< 5 m) with an adjacent upland component that was not developed. |
| **Upland with No Development** | |
| Cover 4 | Upland shore zone with a densely vegetated shoreline component (i.e., tall grasses or dense shrub component adjacent to the water). Also has a non-rocky substrate within the water zone area. |
| Cover 5 | Upland shore zone that lacked dense shoreline grasses or shrubs, or a water zone area with a rocky substrate. |
| **Development Categories Category** | |
| Cover 6 | Low level of vegetation disturbance: Unaltered shore zone except for pier access. |
| Cover 7 | Moderate level of vegetation disturbance: Shore zone area containing mowed lawn but having intact overstory. |
| Cover 8 | High level of vegetation disturbance: Highly disturbed cover including shorelands that were mowed to the water line (e.g., beach, rip-rap, or seawall). |

During the 2012 survey, an assessment of human influence features was also conducted around Springville Pond (figure below). These inventoried features included artificial beaches, docks, rip-rap, seawalls, erosion, and structures built near the water's edge. Structures such as seawalls, rip-rap (rocked shoreline), and artificial beach result in reduction of habitat which directly impacts the fishery and wildlife. Docks and artificial beaches can result in altered in-lake habitat, and denuded lake beds provide opportunities for invasive species to become established and reduce habitat that is important to fish and other lake inhabitants. Erosion can contribute sediment to the lake, which can alter spawning habitat and carry nutrients into the lake. Unmanaged runoff from the rooftops of structures located near shore can also contribute more sediment to the lake. Each human-made feature by itself may not result in a large impact to the lake, but when these features occur more frequently around the lake, the cumulative impact can be a problem for habitat and water quality. In 2012, 47 sites around Springville Pond were noted. Thirty-eight were docks/piers. There were artificial beaches, which significantly affected habitat, the fishery, and water quality. If artificial beaches are desired by the public, these areas should be restricted to the 30-foot width maximum allowed for access corridors. Runoff into the lake from near shore structures can be reduced by the installation of rain gardens, swales and rain barrels.

## Features of human influence around Springville Pond, summer 2012.



## People and the Lake

The people that interact with the lake are a key component of the lake and its management. In essence, a lake management plan is a venue by which people decide how they would like people to positively impact the lake. The plan summarizes the decisions of the people to take proactive steps to improve their lake and their community. Individual decisions by lake residents and visitors can have a positive impact on the lake and on those who enjoy this common resource. Collaborative efforts may have a bigger positive impact; therefore, communication and cooperation between a lake group, community, and suite of lake users are essential to maximize the effects of plan implementation.

Boating regulations and fishing limits are examples of principles that are put into place to minimize conflict between lake users and balance human activities with environmental considerations for the lake.

## Recreation

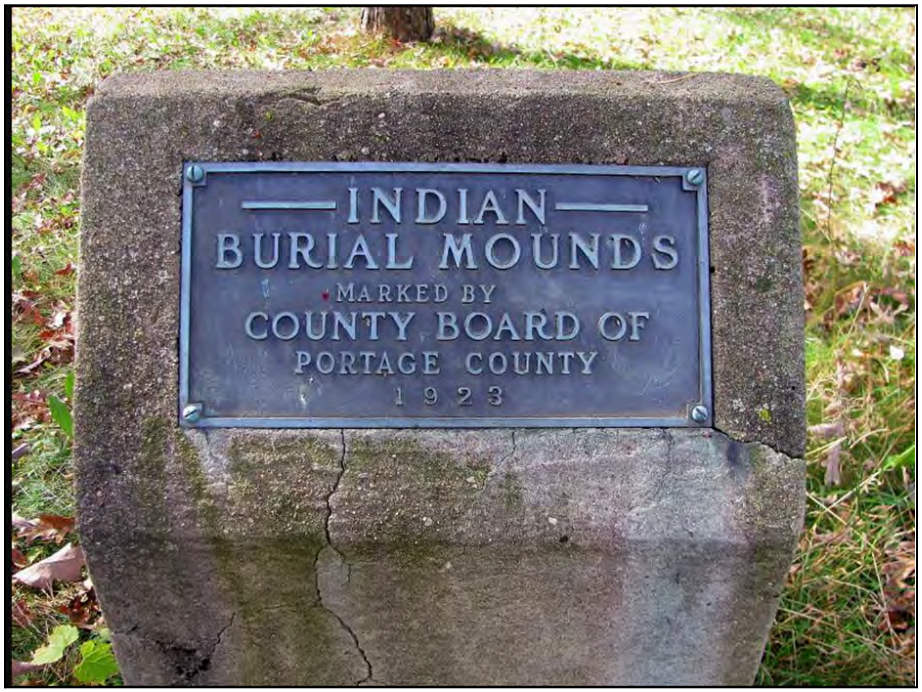
Springville Pond residents and users enjoy many different recreational opportunities on Springville Pond. Some of the popular recreational activities on Springville Pond include enjoying wildlife and scenery, walking, fishing, and enjoying the solitude. Village of Plover lands provide carry-in access to the Pond, picnic areas, and a handicap accessible fishing pier. The Pond is a no-wake lake. Recreational needs and uses on the pond will likely continue to increase as populations and development in the area increases.

## Cultural Resource Management

Native peoples have lived in Portage County and Central Wisconsin for thousands of years. They fished in post-glacial lakes and rivers, hunted mammoth, mastodon and other megafauna along the edges of continental glaciers. They burned and cleared areas of the land and they raised crops. They built camps and villages. And they buried their dead, typically on ridges above lakes, streams and rivers … Today we are stewards of those lakes and resources, along with those sites of previous occupation and burial. Lands still held sacred by Wisconsin Tribes. Such properties should be appropriately cared for, and merit respect and recognition.

Native burial mounds are by far the most obvious and numerous burial features occurring adjacent to surface waters in Portage County. More mounds were built by ancestral Native American communities in Wisconsin than in any other region of North America. Prior to Euromerican settlement, there may have been 20,000-25,000 mounds across the state. Estimates are that perhaps 4,000 of these remain today.

The earliest mounds, dating as far back as 500 BC were round or "conical" in shape. By about AD 800, communities began to build mounds in other forms, including linear-shaped, and "effigy" mounds made in the shape of birds, turtles, bears, panthers and other animals (more effigy mounds occur in Wisconsin than anywhere else in the world). Mounds may exist singly, or as "mound groups" of several to over 100 individual mounds, sometimes clustered as "sub-groups" within a larger group.



All of these sites are protected from disturbance under the State's burial sites law (Wisconsin Statutes s.157.70). An important feature of WS 157.70 stipulates that there may be no disturbance of the burial or within (a minimum of) five feet from the perimeter or base of a mound or other defined burial area. A buffer greater than 15 feet or greater is preferred, and is the DNR standard (exceptions considered in consultation with the Wisconsin Historical Society).

The link below provides standards that should apply to human burial sites of all forms – including non-mound burials; conical, linear, effigy and platform mounds; and other types of burial sites. This policy and standards do not apply to areas where cremated human remains have been recently deposited or dispersed. The following policies and plan components apply to all DNR properties, but are consistent and applicable to private, county, town, and village properties. Note: Submerged burials require additional considerations; please consult with the Departmental Archaeologist for further guidance.

For management purposes, it may be useful to think of burial areas as "preserves" which occur within a larger setting, and which have different management needs than other areas within a lake management plan area.

Cultural Resources Best Management Practices: **https://www.co.portage.wi.us/home/showpublisheddocument/38943**

## Guiding Vision for Recreation

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

## *Goal 7. Improve the public's perception of Springville Pond as it relates to its aesthetic beauty and recreational opportunities.*

**Objective 7.1.** Promote the scenic nature of the pond by continuing to manage and create additional silent sports/ low impact recreational opportunities on and near Springville Pond.

| Action | Lead person/group | Start/end dates | Resources |
|---|---|---|---|
| Incorporate recreation related actions that may be pursued through park improvement projects within Springville Pond Park. (Ex: gardens, landscape beds, gazebo, etc) | Village of Plover | As needed | Springville Pond Management Committee |
| Explore rebuilding the gazebo or similar infrastructure in Springville Pond Park. | Springville Pond Management Committee | Funding Dependent | Village of Plover |
| Maintain the walking trail system along the river in the Little Plover River Park. | Springville Pond Management Committee | As needed | Village of Plover |
| Explore placing benches and informational pieces along the shore/walking trail. | Springville Pond Management Committee | Funding Dependent | Village of Plover<br>Extension Lakes<br>UWSP Environ. Educ. Students |
| Explore re-Installing an additional fishing pier on Springville Pond on the point. Grant funding may be available for handicap accessible piers. | Springville Pond Management Committee | Funding Dependent | Village of Plover<br>WI DNR Fisheries Biologist<br>American Fisheries Grant<br>Prime W.A.T.E.R. Anglers |
| Post "No Fishing" signs on the dam. | Springville Pond Management Committee | 2023 | Village of Plover<br>WI DOT or<br>sign vendors |

# Communication and Organization

Working together on common values will help to achieve the goals that are outlined in this plan. This will involve communication between individuals, Springville Pond Management Committee, Village of Plover, Portage County, resource managers, elected officials, and other lake and river groups. In addition, staying informed about lake related topics will be essential to achieving the goals laid out in this plan.

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.

## Guiding Vision for Communication

*Communication will be nurtured among shoreland residents, lake users, watershed property owners, professional staff, and elected officials that make decisions that affect Springville Pond.*

## *Goal 8. Every shoreland or watershed resident and partners identified in this plan can access information regarding Springville Pond and the actions outlined in the management plan.*

**Objective 8.1.** Reach out to shoreland property owners and the community using a variety of communication methods.

| Action | Lead person/group | Start/end dates | Resources |
|---|---|---|---|
| Explore ways to disseminate information to current property owners and new Springville Pond residents.<br>Welcome packets could be assembled by the committee with assistance from the other partners. | Village of Plover<br>Springville Pond Management Committee<br>Friends of Little Plover River | Ongoing – As new residents move in | Village of Plover<br>Extension Lakes<br>Portage County Realtors |
| Post information to the Village website, specifically the Springville Pond Management Committee site.<br>https://www.ploverwi.gov/334/Springville-Pond-Management-Committee | Village of Plover | Ongoing | Springville Pond Management Committee |
| Share information through Village Newsletter. | Springville Pond Management Committee | As needed | Village of Plover |
| Continue the Springville Pond Management Committee. | Springville Pond Management Committee | Ongoing | Village of Plover |
| Use the Village Administrators intern to assist with community issues. | Springville Pond Management Committee | As needed | Village of Plover |

**Objective 8.2.** Stay informed about lake-related topics with other lake stewards and professionals.

| Action | Lead person/group | Start/end dates | Resources |
|---|---|---|---|
| Encourages them to subscribe to a Lake Tides subscription (hard copy or email). | Village of Plover | 2015 and ongoing | Extension Lakes |
| "Like" the Portage County Lakes and Rivers Facebook page. Add names to the Portage County Lakes and Rivers listserv, please send email to arnoldt@co.portage.wi.gov. | Individuals | | Portage County Land and Water Conservation Department |
| Encourage shoreland property owners and stewards to attend the Wisconsin Lakes Convention in Stevens Point. | Springville Pond Management Committee | Annually in spring | Extension Lakes<br>Portage County Land and Water Conservation Department |
| Encourage shoreland property owners to participate in Lake Leaders Institute. | Springville Pond Management Committee | Even calendar years - fall | Extension Lakes<br>Portage County Land and Water Conservation Department |

# Updates and Revisions

A lake management plan is a living document that changes over time to meet the current needs, challenges and desires of the lake and its community. The goals, objectives and actions listed in this plan should be reviewed annually. It is recommended that this lake management plan be updated every five years with any necessary changes.

## *Goal 9. Keep the information and resources within the Springville Pond Management Plan current and up to date.*

**Objective 9.1.** Keep the plan current and up to date so Springville Pond is eligible for grant opportunities and residents' concerns are able to be addressed to the best as possible.

| Action | Lead person/group | Start/end dates | Resources |
|---|---|---|---|
| Annually review the Springville Pond Management Plan to identify successes and plan for the upcoming year. Share this information with residents. | Springville Pond Management Committee | Annually review | Portage County Land and Water Conservation Department |
| Connect with partners listed in the plan for updates to their efforts. Share everyone's updates with all partners. | Springville Pond Management Committee | Annually at December meeting | Partners listed in the plan |
| If situations warrant, revisions to this plan may be made at any time. Barring this need, this plan should be updated every 5 years. | Springville Pond Management Committee | Next update 2028 | Partners listed in the plan<br>WI DNR Planning Grant |

# Background Information (from the 2002/2003 study)

A lake is the reflection of the health and activities that occur in the lake, near its shore, and in the surrounding watershed. A healthy lake ecosystem is comprised of components that support aquatic plants, fish, wildlife and more – not only in the lake, but also in the surrounding landscape.

Data collected during the first phase of the Portage County Lakes Study are summarized in this section. For more detail, see the complete study reports. These reports, as well as citizen survey results collected during plan development, can be found at:
http://www.co.portage.wi.us/planningzoning/PCL/Main%20Page/Main%20Page.shtm

Updated information is located in each section of this plan and when available, is appended to this plan. More information about Springville Pond can be found at http://dnr.wi.gov/lakes/lakepages/Results.aspx?location=50.

## Description

Springville Pond is an 18 acre impoundment of the Little Plover River located in the Village of Plover, Portage County, Wisconsin. It has a maximum depth of 12 feet (Wisconsin Department of Natural Resources, 2005). The pond bottom consists primarily of sand with some silt. The lower end of the pond has been dredged, while the upper end has not. 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 public access owned and managed by the Village of Plover on the southern shore, which has carry-in boat access.

# Surface Watershed

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


**Figure 1. Little Plover River watersheds (Surface and Groundwater).**

## Sensitive Areas

Sensitive areas associated with Springville Pond are defined by lands adjacent to the water that are particularly valuable to the pond's ecosystem or would be significantly impacted by 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, and an important riparian area to the east of the pond with adjacent forest and understory that provide birds with excellent breeding habitat (Appendices).

Amphibians and reptiles depend on both aquatic and terrestrial habitats and the shoreline interface between the two. **These areas are also important to other aquatic and terrestrial species.** Members of the management planning committee indicated fewer turtles and frogs are present on/near the pond now than in the past.

The primary amphibian habitat for Springville Pond is located on the eastern 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. Several areas on the eastern end of the pond support amphibian species; however, few amphibian species have been found at Springville Pond. Large areas of altered shoreline may be preventing the establishment of amphibian populations, or agricultural chemicals may be affecting their reproduction and/or survival (Appendices). Over the last five years, shoreland owners have worked to restore habitat.

## Shoreline

In 2002-2003, approximately 95% of Springville Pond's shoreline was considered disturbed. Of that, 5.8% exhibited minimal vegetation disturbance, 26.2% was moderately disturbed, and 62.9% was highly disturbed. Areas of minimal disturbance are areas with unaltered shore except for pier access. Areas of moderate disturbance may contain a mowed lawn with intact overstory vegetation. Areas of high disturbance are defined as beaches, rip-rap, lawns mowed to the water line, and/or boat accesses. The remaining 5% of shoreline was comprised of dense vegetation, such as tall grasses and shrubs. During the last five years, shoreland residents and the Village of Plover have taken steps to reduce the disturbance along much of the shoreline. These efforts have resulted in better near-shore habitat, improved water quality, and reduced algae and aquatic plant growth.

Vegetated shorelines act as buffers for runoff from surfaces such as roofs, driveways, roads, patios and compacted soils. Runoff that enters the lake can carry a variety of pollutants. Negative impacts to lakes due to increased runoff include the introduction of more nutrients (such as phosphorus), which can cause algae blooms and excessive plant growth, and an increased amount of sediment, which can create cloudy or turbid water and bury fish spawning areas and other critical habitat. Sediment can also transport additional contaminants to the lake, such as bacteria, debris, metals and pesticides.

Twenty-nine of the 221 respondents owned shoreline property. Twenty- two of those respondents indicated their shorelines were undeveloped or natural. County and state shoreland zoning rules were developed to help protect lake water and habitat by regulating vegetation buffer areas along lake shorelines. Current zoning requires a buffer depth of 35 feet from the water's edge. Shoreline buffer depths around Springville Pond varied greatly. Only 4

respondents indicated their buffers were more than 35 feet deep. Shoreland surveys have been conducted every summer since 2007. The 2010 shoreland survey results can be found in the appendices.

## Aquatic Plants

Aquatic plants play many important roles in aquatic ecosystems. They provide habitat for aquatic and semi-aquatic organisms, and food for fish, waterfowl, and other animals. Aquatic plants take up nutrients that would otherwise be used by algae, and moderate water temperatures on hot days. Healthy shoreland vegetation provides the added benefit of good winter habitat for the milfoil weevil, an insect that helps to control the aquatic invasive plant, Eurasian water-milfoil.

In 2003, **22** species of aquatic macrophytes, or aquatic plants, 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, annual aquatic plant surveys have identified a total of 43 aquatic plants and two macrophytic algae in and adjacent to the pond.

In 2006-2008, Springville Pond was strongly impacted by the aggressive aquatic invasive plant Eurasian water-milfoil. In response to the abundant growth observed in 2006, an aquatic plant management plan was developed for Springville Pond in 2007. Each year, the previous year's management efforts and the aquatic plant response have been reviewed and a new plan established for the upcoming year. Efforts have focused on controlling Eurasian water-milfoil, but another aquatic invasive plant, curly-leaf pondweed, is present in the pond. Its abundance should be measured annually so any needed management activities can be implemented before nuisance conditions are reached.

When asked about the abundance of aquatic plants during the 2010 citizen survey, respondents indicated 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 eastern end of the pond was identified as an area where aquatic plant growth, particularly filamentous algae, impacted enjoyment of the pond. The ability to control aquatic plants in this area is limited, as the shallow depths prohibit harvester use and groundwater inflow (springs) inhibits chemical use. An option to consider is the reestablishment of pond lilies to reduce favorable growing conditions for filamentous algae.

## Water Quality and Land Use

Land use types and associated management practices can have significant impacts on water quality. In 1992, land uses within Springville Pond's surface watershed were predominantly irrigated and non- irrigated agriculture (45%), forested areas (26%), and residential development (18%). Areas near shore tend to have the most direct impact on habitat and water quality. For Springville Pond, this area is comprised primarily of residential development. For the Little Plover River corridor, this area is a mix of forested areas, residential development, and agriculture.

Residential and road development have increased significantly since 1992, resulting in increased runoff and decreased groundwater infiltration. Within the Village of Plover, some of the additional runoff is infiltrated in swales built to handle stormwater. Runoff carries sediments and pollutants, and in the summer it can warm the river and pond. Less infiltration results in reduced water storage (as groundwater) that feeds the stream during drier periods. In

recent years, sections of the Little Plover River have dried up during parts of the summer. When this occurs, it can also affect the pond's water temperature and quality.

**Although land uses may not easily be changed, land management practices can be modified to improve water quality.** Survey respondents indicated a willingness to change how they manage their land to protect/improve the Springville Pond ecosystem. The top motivators included increasing their property values, increasing the natural beauty of their properties, improving water quality and quantity, and saving on landscaping/maintenance costs.

When asked about Springville Pond's water quality, a majority of survey respondents felt the water quality was fair, and were ambiguous about any change that may have occurred since they first became familiar with the pond. They also indicated the pond's water quality had impacts both economically and on their personal enjoyment of the pond.

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

Chloride concentrations, and to lesser degrees sodium and potassium concentrations, are commonly used as indicators of how strongly a lake is being impacted by human activity. In Springville Pond, chloride and sodium levels measured in 2002-2003 were elevated, while potassium concentrations were low.

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

Springville Pond's water temperature was generally uniform top to bottom throughout the year. This is expected due to 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 late summer, reduced water volume entering Springville Pond will result in warmer water near the surface as the water will remain in the pond long enough to be warmed by the sun. This longer retention time will also provide more contact time for the algae with phosphorus and nitrogen. In addition, warmer water temperatures could become lethal to the weevil that helps to control Eurasian water-milfoil.

In 2002-2003, dissolved oxygen was always plentiful in the upper 8 feet of the pond. At deeper depths, the water lacked the oxygen levels needed to support some biota at some times of the year. Cooler water contains higher concentrations of dissolved oxygen, so continuing low water volumes entering 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 7 feet to 9 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 record-keeping, which can be done by trained citizens.

Chlorophyll *a* is a measure of algae. Chlorophyll *a* concentrations in Springville Pond ranged from 0.005 mg/L to 19.75 mg/L. Readings over 5 mg/L are considered high.

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 *Anabaena*. The algal community relative to the chlorophyll *a*, phosphorus, and nitrogen values for Springville Pond presented a picture of a eutrophic pond. The dominance of blue-green algae and mat-forming diatoms (filamentous algae) could be the result of increasing cultural eutrophication 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, photosynthetically- produce oxygen in the interwoven mat materials, and then loft off the bottom and float to the surface. At the surface, the mats 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.

## Nutrients

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 were just below the phosphorus criteria set by the Wisconsin Department of Natural Resources; however, nitrogen levels, including nitrate which is easily used for growth by aquatic plants and algae, were quite elevated. 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 groundwater. Sources from human influence include soil erosion, agricultural and residential runoff, septic systems, and animal waste. Phosphorus makes its way to the pond via near shore runoff and the Little Plover River.

**In Springville Pond, the aquatic plant and algae growth is highly responsive to phosphorus** due to its limited supply relative to other elements necessary for growth. Small increases in phosphorus result in increased growth rates and abundance of aquatic plants and algae.

Phosphorus concentrations in Springville Pond are variable throughout the year. Median total phosphorus concentrations in spring/fall for 2002-2003 were 32.5 ug/L (Figure 2).

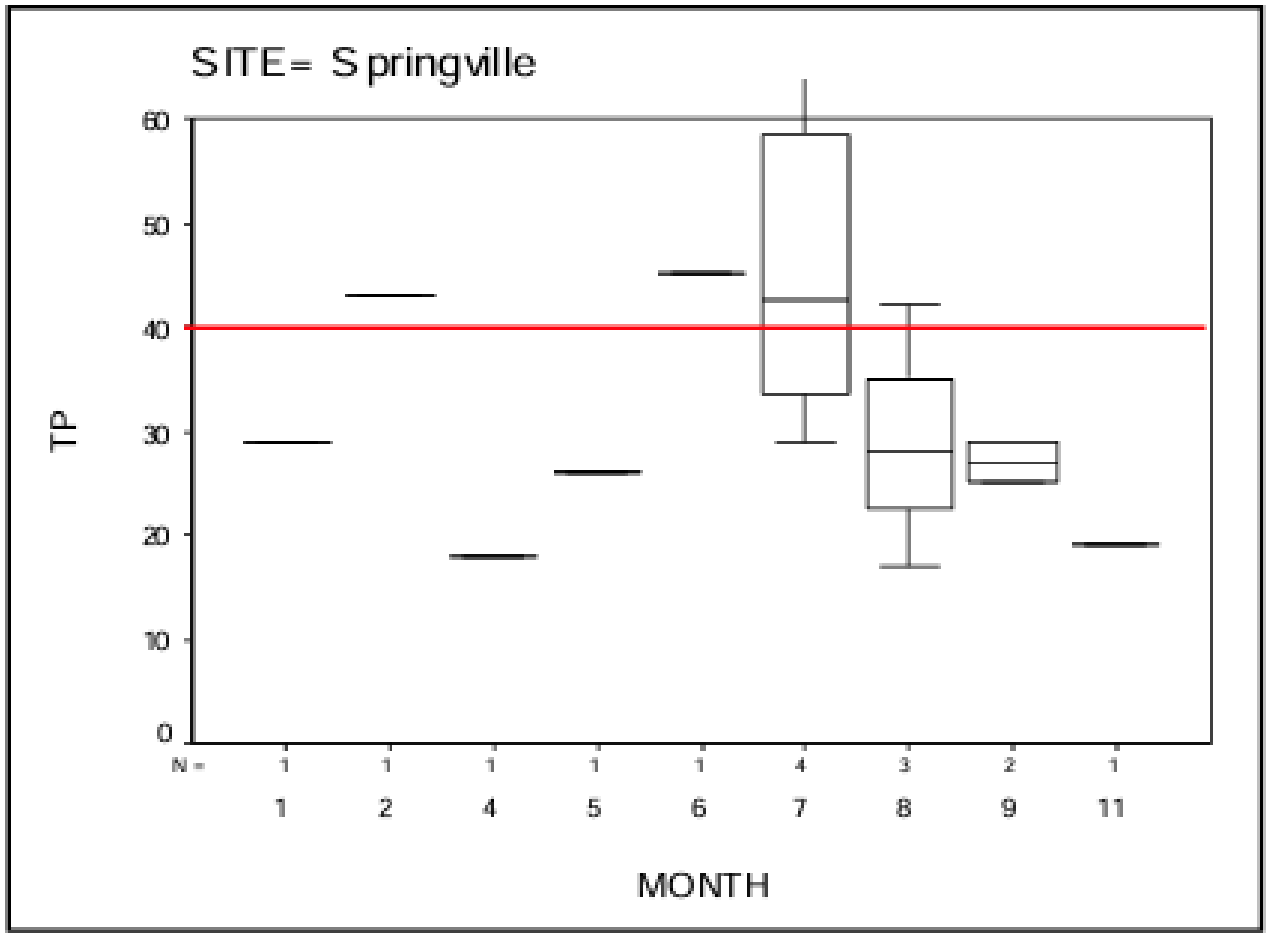



**Figure 2. Median total phosphorus concentrations (mg/L) by month in Springville Pond in samples collected in summer, 2002-2004.**

Currently, the Wisconsin Department of Natural Resources has proposed phosphorus criteria values for lakes in Wisconsin. The 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 concentration in Springville Pond was 37.0 ug/L in 2002-2003; however, median readings in July were above the standard (Figure 2). Total phosphorus should be monitored multiple times each year to be sure it stays below the recommended value and so increases can 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 lake itself. Positive changes in land use and management practices can result in improved water quality. Phosphorus inputs can be controlled through the use of best management practices (BMPs) that minimize the movement of runoff to the pond. BMPs that should be used near shore and throughout the watershed include developing 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 and/or appropriate mitigation when open soils are necessary during construction or cropping, using cover crops, properly storing manure, and spreading manure only when the ground is not frozen. Some of the near shore land use practices that can decrease phosphorus loading to Springville Pond include native vegetation buffers (trees, bushes, and grasses), eliminating the use of fertilizers, minimizing runoff, protecting exposed soil, and increasing setbacks for septic drain fields. The Portage County Land Conservation Department is one of many organizations that can provide assistance to landowners who want to reduce impacts to Springville Pond from their lands.

Estimates of phosphorus from the landscape can help to understand the phosphorus sources to Springville Pond. Land use in the surface watershed was evaluated and used to populate the Wisconsin Lakes Modeling Suite (WILMS) model. In general, each type of land use contributes different amounts of phosphorus in runoff and through groundwater. The types of land management practices that are used and their distances from the lake also affect the contributions to the lake from a parcel of land. Based on modeling results, irrigated and non- irrigated agriculture had the greatest percentages of phosphorus contributions from the watershed to Springville Pond (Figure 3).

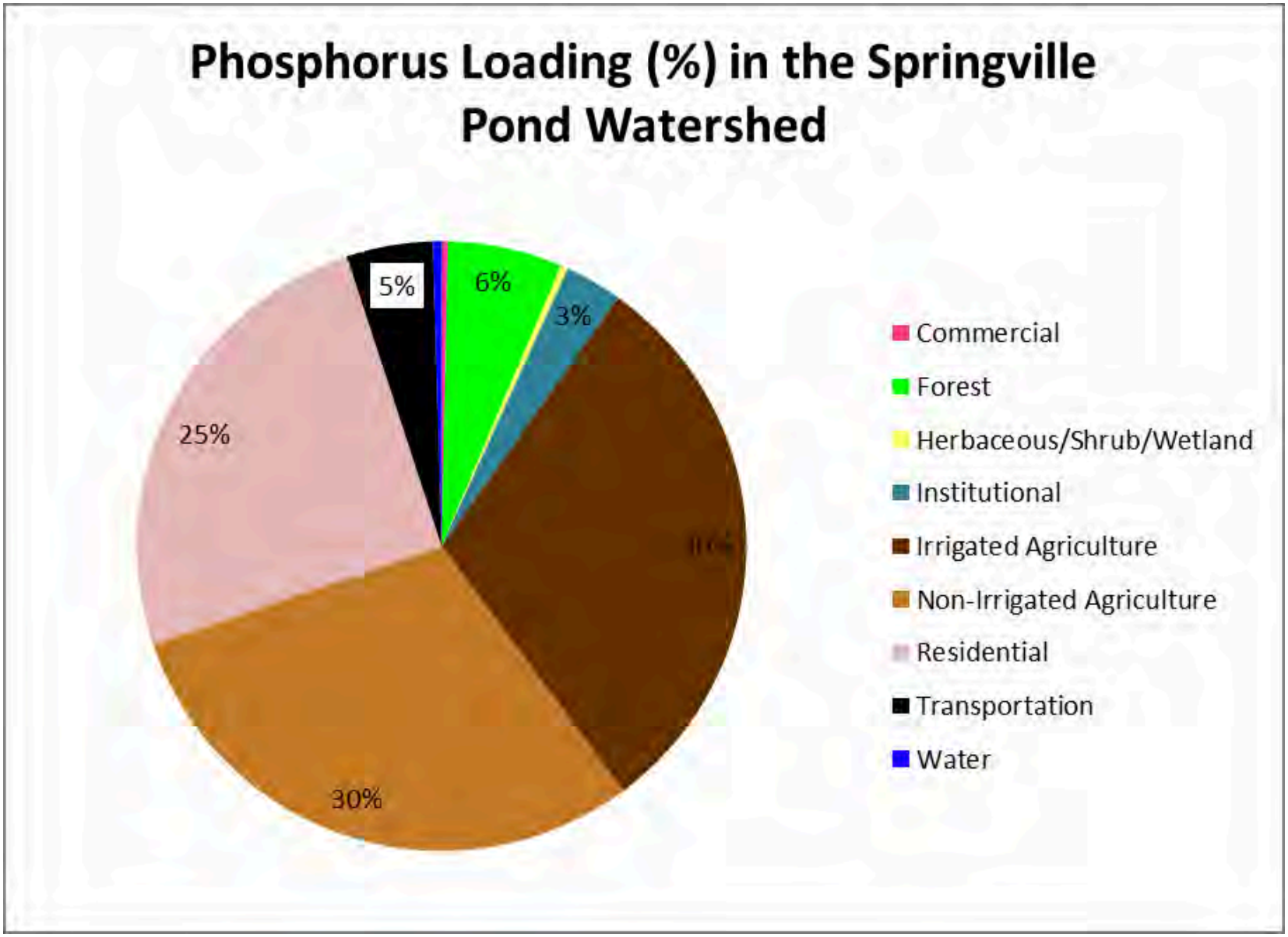



**Figure 3. WILMS modeling results for Springville Pond (McGinley, 2008).**

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 the soil rather than run towards 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 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 watershed was conducted as a predictive tool to estimate the phosphorus response in Springville Pond if complete allowable development occurs (Figure 3). Additional scenarios included connecting more of the landscape to the pond through water diversion (such as culverts and roads). The development of a water body model allows us to estimate phosphorus and algal changes within the pond based on various land use scenarios.

Points displayed in Figure 4 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.**

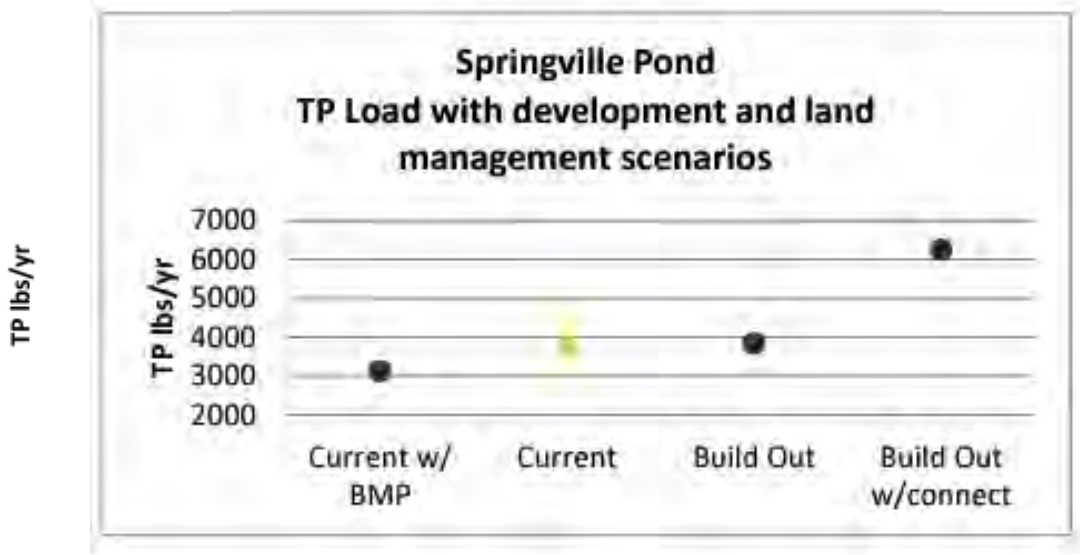



**Figure 4. Changes in phosphorus from the landscape related to land use (development) scenarios.**

# Recreation

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

The committee noted an increase in the number of people fishing the pond during the summer of 2010, but conflicts between users do not appear to be of concern. Respondents indicated they were not disturbed by others on the pond.

Survey responses indicated the gazebo on Village property had been enjoyed by a number of residents, and citizens would like to see it replaced (the gazebo was destroyed by an arsonist).

# Governance

There are management plans, regulations and ordinances that provide guidance for the development, use and protection of natural resources in and around Springville Pond. These pieces of governance serve as tools to help achieve the goals, objectives and actions outlined in the Springville Pond Management Plan.

Land management plans that influence the land uses around Springville Pond and in its watershed include:

- Wolf River DNR Basin Plan that covers a regional area: http://dnr.wi.gov/water/basin/wolf/wolf_final_801.pdf
- Portage County Comprehensive Plan: https://www.co.portage.wi.us/department/planning-zoning/planning-section/comprehensive-planning/portage-county
- Portage County Land and Water Conservation Plan: https://www.co.portage.wi.us/home/showpublisheddocument/27502/637164123499230000
- Village of Whiting Comprehensive Plan: http://www.co.portage.wi.us/Comprehensive%20Plan/Planning %20Program/Whiting/Whiting.html
- City of Stevens Point Comprehensive Plan: https://stevenspoint.com/602/Comprehensive-Plan

Portage County has eight ordinances that may impact the water quality of McDill Pond: the Zoning Ordinance, Shoreland Zoning Ordinance, Wellhead Protection Zone Ordinance, Subdivision Ordinance, Open Space Design Ordinance, Floodplain Zoning Ordinance, Private Sewage Septic System Ordinance, and Animal Manure Storage and Nutrient Management Plan Ordinance. These ordinances can be found at: https://www.co.portage.wi.us/government/code-of-ordinances

In addition to these county ordinances, there are several state regulations that have a direct impact on water quality in Springville Pond. These regulations include:

- Agricultural Runoff Regulation: http://dnr.wi.gov/topic/nonpoint/AgPerformanceStandards. html
- Storm Water Runoff Regulation – including NR 151, 152, 153, 155, 216, 243, and ATCP 50: http://dnr.wi.gov/topic/stormwater/learn_more/regulations. html
- Shoreland-Wetland Zoning Regulations: https://dnr.wisconsin.gov/topic/ShorelandZoning
- Critical Habitat Areas Regulations: http://dnr.wi.gov/lakes/criticalhabitat/
- Pesticide prohibitions and use restrictions including ATCP 30 which regulates atrazine applications: https://docs.legis.wisconsin.gov/code/admin_code/atcp/020/30.pdf

In addition to pieces of governance that will assist with the goals, objectives and actions outlined in this plan, there are a number of community groups and organizations that can provide support and assistance. These include citizen and professional organizations, UW- Extension, and others. Please see the appendices for a list of resources and contact information.

## References

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. McGinley; B. Shaw; and E. Wild; 2006. Final report to Portage County and Wisconsin DNR. http://www.co.portage.wi.us/plzo/lakes.html