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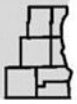

SEWRPC Staff Memorandum

AQUATIC PLANT SURVEY OF SWIFT LAKE AND INVASIVE SPECIES SURVEYS OF PELL LAKE AND COMO LAKE, WALWORTH COUNTY, WISCONSIN

December 2025

As listed in the November 11th, 2024, letter agreement between the Walworth County LURM and SEWRPC, Commission staff have assisted the County fulfill their Lake Monitoring and Protection Network (LMPN) grant agreement by conducting meander and aquatic plant surveys, reporting aquatic invasives species (AIS) and native aquatic plant species on three Walworth County lakes in the summer of 2025. This request was a renewal of similar efforts performed by the Commission for the County in 2021, 2022, 2023, and 2024; these efforts resulted in submission of novel AIS observations and water quality data to the Wisconsin Department of Natural Resources (WDNR) as well as staff memorandum reports of the Commission's findings.

BACKGROUND INFORMATION

The Lake Monitoring and Protection Network ("LMPN") program was established by WDNR to support networks of organizations conducting essential lake monitoring activities, such as baseline water quality measurements, inspecting watercraft for AIS, purple loosestrife biocontrol, and early detection AIS surveys. Walworth County has received LMPN grant awards each year since 2021. The County has utilized a portion of these grant awards to retain the Commission's service in monitoring AIS and baseline water quality on lakes within the County. As in previous years, the County has requested that the Commission focus their efforts on County lakes that have less frequent monitoring activities. In contrast to previous years, the County and Commission agreed to conduct an aquatic plant point-intercept survey in lieu of the meander survey on one of the three lakes surveyed. This survey provides aquatic invasive species information while

also more quantitatively inventorying the native plant species within the lake.[1] County and Commission staff reviewed a list of lakes with little recent AIS, aquatic plant, or water quality monitoring activity in publicly available databases. Using this list, the County decided to conduct an early detection AIS survey on Pell Lake and Como Lake, and an aquatic plant point-intercept survey on Swift Lake, which had never been surveyed for aquatic plants using the point-intercept methodology before. Commission staff also conducted baseline water quality monitoring on Swift Lake.

COMO LAKE

Como Lake is a 955-acre lake located in the Town of Geneva within Walworth County, Wisconsin. WDNR reports Como Lake as a shallow seepage lake. However, unlike most seepage lakes which have no inlet or outlet, Como Lake is impounded by an outlet dam on its northeastern shore that drains to Como Creek, a tributary of the White River in the Fox River watershed. The lake has a maximum depth of 9 feet with a mean depth of four feet.[2] The lake is accessible through two public boat launches located on the lake: one on the northwest side off Lakeshore Drive and another on the southern shore off Schofield Drive.[3] The WDNR Wisconsin in-Lake Modeling Suite (WiLMS) estimates that the Lake has a 5,389 acre watershed, of which 25 percent is composed of low intensity development, 16 percent is agricultural, 15 percent is central hardwoods with the remaining land being undeveloped natural cover or open water (see Figure 1). Presto-Lite modeled total phosphorus loads to the lake are 947 pounds per year with an 80 percent confidence interval of 483-1,855 pounds. As of the time of this report, the Town of Geneva manages the aquatic plant community through mechanical harvesting.[4]

Como Lake AIS Meander Survey Findings

Commission staff worked with Walworth County and WDNR staff to complete the meander survey of Como Lake on August 11th, 2025, following the protocol established by the WDNR (see Figure 2). Staff surveyed eight target site locations including the boat launches (see Figure 3). The weather conditions during the survey were cool with cloudy skies and moderate winds. Recent precipitation events potentially decreased

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[1] *Commission staff have provided a list of native species observed in previous staff memorandum reports for the lakes surveyed as part of this program. However, these lists only provide presence/absence information and are not a quantitative assessment of species frequency of occurrence or abundance within the lake. On small lakes, the point-intercept survey provides much more quantitative information for a small increase in survey effort.*

[2] *https://apps.dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=757900&page=facts*

[3] *The Town of Geneva owns both public launches on Como Lake. Aquatic invasive species signage was present at the Lakeshore Drive launched accessed by Commission staff.*

[4] *https://permits.dnr.wi.gov/water/SitePages/DocSetViewArchive.aspx?DocSet=AP-IP-SE-2024-65-X03-18T07-49-16&Loc=apm1&Lib=Archive*

water clarity from sediment runoff into the Lake. During the survey, several nonnative species were found (Eurasian watermilfoil (EWM, *Myriophyllum spicatum*), hybrid watermilfoil (*Myriophyllum spicatum x Myriophyllum sp.),* curly-leaf pondweed (CLP, *Potamogeton crispus*), spiny naiad (*Najas marina*), hybrid cattail (*Typha sp.*), and purple loosestrife (*Lythrum salicaria*) but all had previously been observed. Hybrid cattails were seen along portions of the shoreline and in many areas had purple loosestrife growing amongst the cattails. Several native species were noted on the rake during the AIS meander survey including muskgrass (*Chara sp.*) and Elodea (*Elodea canadensis*). White water lily (*Nymphaea odorata*) was also seen growing densely along areas of the near shore parts of the lake. Floating leaf plants like water lilies provide excellent habitat for fish in lake are important to protect. Lake sediment samples were collected using a Ponar grab sampler to survey for nonnative mussels; no new mussel species were found during the survey.

PELL LAKE

Pell Lake is an 86-acre seepage lake located in the Town of Bloomfield within Walworth County, Wisconsin. The lake is reported to have a maximum depth of 13 feet with a mean depth of four feet, although as a seepage lake these water levels are likely to fluctuate significantly between years with especially low and high precipitation. The lake is accessible through a public boat launch on the north shore of the lake which is suitable for launching both motorized and non-motorized watercraft. The lake has a watershed area of 1,100 acres (see Figure 4). The Commission completed a lake management plan for Pell Lake in 2006.[5] In that plan, phosphorus loads to the lake were estimated to be 425 pounds per year. Pell Lake has previously been the subject of two aquatic plant surveys: one in 2013 by Stantec and a second in 2018 by WI Lake & Pond Resource, LLC. Through 2022 the Pell Lake - Lake Association Inc. monitored the lake's beach for *E. coli*.

Pell Lake AIS Meander Survey Findings

Commission staff worked with Walworth County staff to complete the meander survey of Pell Lake on June 16th, 2025, following the protocol established by the WDNR (see Figure 5). Staff surveyed eight target site locations including the boat launches (see Figure 6). The weather conditions during the survey were warm with clear skies and minimal winds. During the survey, several nonnative species were found including EWM and CLP. Both EWM and CLP were found intermixed sparingly with native populations of aquatic plants and were not found to be forming any monoculture beds. EWM was first verified and vouchered in the Lake in

[5] *SEWRPC Memorandum Report, No. 158,* A Lake Protection and Recreational Use Plan for Pell Lake, Walworth County, Wisconsin, *2006.*

2014 according to WDNR data.[6] CLP has been in the lake since 2000 but was not found during the 2018 or 2013 aquatic plant surveys. Hybrid cattails were seen along portions of the shoreline. No other new AIS were found in Pell Lake. Elodea, muskgrass, white water lilies (*Nymphaea odorata*) were among some of the native plants seen during the survey. Pell Lake's water was exceptionally clear and many panfish were seen around their nests in the sandy and rocky nearshore areas of the lake. Near site 2 of the meander survey, Commission and County staff observed what appeared to be blue aquarium gravel however no aquarium organisms were found.

SWIFT LAKE

Swift Lake is a 20-acre seepage lake located in East Troy in Walworth County, Wisconsin. The lake is reported to have a maximum depth of 8 feet with a mean depth of four feet, although as a seepage lake these water levels are likely to fluctuate significantly between years with especially low and high precipitation.[7] The lake has no public access and is surrounded by private property.[8] The WDNR WiLMS model estimates that the lake has watershed size of 672 acres, of which 49 percent is wooded, with agriculture (22 percent) and low intensity development (6 percent) making up the remaining major land uses (see Figure 7). The WDNR Presto-Lite modeled total phosphorus loads to the lake are 8 pounds per year with an 80 percent confidence interval of 4-17 pounds. There is currently no active lake organization managing the lake.

Swift Lake Aquatic Plant Survey Findings

Commission staff completed the point-intercept survey of Swift Lake on September 9th, 2025 (see Figure 8). Commission staff surveyed the lake following the protocol established by the WDNR.[9] The survey conducted by Commission staff was the first known point-intercept (PI) survey completed on Swift Lake. The 2025 PI survey utilized a point intercept grid for sample collection, which allows a comprehensive understanding of the aquatic plant species and distribution in the Lake. In this method, sampling sites are based on predetermined global positioning system (GPS) location points that are arranged in a grid pattern across the entire surface of a lake. The grid pattern of Swift Lake was sampled on a set grid pattern of 118 points provided by WDNR staff (Figure 9), which allows the types and abundance of aquatic plants to be directly contrasted to future point-intercept surveys. At each grid point sampling site, a single rake haul is taken

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[6] *https://apps.dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=743600&page=invasive*
[7] *https://apps.dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=741800*
[8] *Commission staff accessed Swift Lake using the property of a riparian owner who granted access to conduct the survey.*
[9] *Wisconsin Department of Natural Resources*, Recommended Baseline Monitoring of Aquatic Plants in Wisconsin*, March 2010. https://www3.uwsp.edu/cnr-ap/UWEXLakes/Documents/ecology/Aquatic%20Plants/PI-Protocol-2010.pdf*

and a qualitative assessment of the rake fullness, on a scale of zero to three, is made for each species identified.

On the date of the aquatic plant survey, the weather conditions were cool and partly cloudy with medium wind speeds. Swift Lake had adequate water clarity, allowing enhanced visibility of AIS and native species during the survey. In general, the aquatic plant species were mature. Commission staff also observed turtles and fish during the survey.

Commission staff recorded the water depth, sediment type, the qualitative abundance of all aquatic plants combined, and the qualitative abundance of each species. A total of 100 sites were sampled during the survey, 77 of which had aquatic vegetation present. The maximum depth of colonization, which is the deepest water depth aquatic plants were observed to grow at, was nine feet. This depth is only one foot lower than the maximum water depth recorded during the survey, which along with the 77.8 percent littoral frequency of occurrence indicates the entirety of the Lake has enough light to support aquatic plant growth. The average rake fullness was 1.04 (see Figure 10) with the vast majority of sites visited having a rake fullness of one, indicative of relatively low aquatic plants abundance, and only four points having a rake fullness of 3, which is indicative of high aquatic plant abundance. A total of thirteen species of aquatic plants were found with the three most common being: yellow bullhead lily also known as spatterdock (*Nuphar variegata*, found at 48 sites), common bladderwort (*Utricularia vulgaris*, found at 32 sites), and floating-leaf pondweed (*Potamogeton natans*, found at 22 sites) (see Table 1). Figure 8 shows some of the extent to which white water lilies were growing on the lake, which provide excellent habitat for fishes in the lake. Two sites had more than five species present (see Figure 11). Two sensitive aquatic plant species were found in the lake, variable pondweed (*Potamogeton gramineus*) which was found at 13 sites and small bladderwort (*Utricularia minor*), found at 24 sites (see Figure 12). The floristic quality index of Swift Lake was 19.9 and the mean coefficient of conservatism value was 6, which indicates an aquatic plant community composed of relatively few but predominantly sensitive species. No invasive aquatic plant species were found in Swift lake during the survey. However, the lake has had a history of EWM being present in the lake since 2004.[10] The aquatic plant data recorded during the survey was submitted to the WDNR and will likely be presented on the WDNR Aquatic Plant Explorer tool following the publication of this report.[11]

[10] *https://apps.dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=741800&page=invasive*

[11] *The entirety of the aquatic plant survey results for Swift Lake should become available on the WDNR Aquatic Plant Explorer tool at the following link: https://dnr-wisconsin.shinyapps.io/AquaticPlantExplorer/.*

Swift Lake Water Quality

Water quality measurements, including a Secchi disk reading and profiles of temperature and dissolved oxygen measured using a YSI Pro meter, were recorded at the Lake's deep hole site. Water clarity, or transparency, provides an indication of overall water quality—the greater the clarity, the better the water quality. Clarity may decrease because of turbidity caused by:

- high concentrations of small aquatic organisms, such as algae and zooplankton
- suspended sediment and/or inorganic particles
- color caused by high concentrations of dissolved organic substances (e.g., tannins that stain water of bog lakes in northern Wisconsin)

In most Southeastern Wisconsin lakes, water clarity is influenced by the abundance of algae and suspended sediment. Water clarity generally varies throughout the year as algal populations increase and decrease in response to changes in lake temperature, sunlight, and nutrient availability. Large rainfall events can also influence water clarity, with sediment-induced clarity declines caused by heavy runoff. Clarity is measured using a Secchi disk, a black-and-white, eight-inch-diameter disk. This disk is lowered into the water until it is no longer visible, at which point the depth is recorded, and then it is raised until visible again, when depth is recorded again. The average of these depths is called the "secchi depth." Commission staff measured a secchi depth of 6 feet which hit the bottom of the lake. While Commission staff tried to find the deep hole with a depth of 8 feet they were unsuccessful. This is indicative of good water clarity.

Seasonal air temperature fluctuation and varying amounts of sunshine influence lake temperatures, causing waters to mix and stratify seasonally. In spring and fall, most lakes are well mixed and therefore are the same temperature from the water surface to the lake bottom. In summer, surface water warms and becomes more buoyant than underlying cooler water, resulting in thermal stratification of deeper lakes although many shallow lakes remain mixed throughout the summer. Commission staff measured water temperatures down to six feet in the lake (see Figure 13). Water temperatures ranged from 67.7°F at the surface to 67.4°F at six feet deep. This near complete uniformity of water temperature indicates that the lake was mixed and therefore not stratified. All temperatures measured are indicative of healthy conditions for most fish species

found in Southeastern Wisconsin.[12] Fish were observed while conducting the PI survey although no fish species were identified by Commission.

Dissolved oxygen (DO) levels are one of the most critical factors affecting the living organisms of a lake ecosystem. DO is generally higher at the surface of a lake where there is an interchange between the water and atmosphere, stirring by wind action (which aids in atmospheric oxygen diffusion into the surface waters at the air-water interface), and oxygen production by plant and algae photosynthesis. Metabolic processes, such as bacterial decomposition and respiration by aquatic organisms, consume oxygen and decrease DO concentrations. A minimum DO concentration of 5 mg/l is considered necessary for survival of most species of fish. Although Commission staff only measured dissolved oxygen concentrations down to six feet, these concentrations ranged from 7.74 to 7.46 mg/L (see Figure 14). As the lake was mixed at the time of sampling, there was no evident thermal stratification nor a large change in DO concentrations. The Lake's waters have DO concentrations that are supportive of all Southeastern Wisconsin fish species.

Commission staff also measured the pH of Swift Lake from the surface down to 6 feet. pH is a measure of how acidic or basic a substance is. U.S. EPA water quality criteria for pH in freshwater systems suggest a range of 6.5 to 9.[13] When the pH of a water body fluctuates rapidly or is sustained at a very acidic or very basic pH it can cause stress on the biotic communities including, disease, decreased reproduction, decreased growth or death. Commission staff found that the pH of the lake ranged from 7.78 at the surface to 7.82 at six feet in depth (see Figure 15), indicating that the lake is slightly basic as are most lakes in southeastern Wisconsin.[14]

[12] Wisconsin Administrative Code *NR 102.25, 16-8,* *https://docs.legis.wisconsin.gov/code/admin_code/nr/100/102.pdf#page=18*.
[13] *https://www.epa.gov/caddis/ph*
[14] *R.A. Lillie and J.W. Mason, Limnological Characteristics of Wisconsin Lakes, Wisconsin Department of Natural Resources Bulletin No. 138, 1983.*

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WALWORTH COUNTY, WISCONSIN

Tables

Table 1
Ecological Qualities Associated with Aquatic Plant Species in Swift Lake

Aquatic Plant Species Present	Ecological Significance
Ceratophyllum demersum (coontail)	Provides good shelter for young fish; supports insects valuable as food for fish and ducklings.
Chara spp. (muskgrasses)	A favorite waterfowl food and fish habitat, especially for young fish
Heteranthera dubia (water stargrass)	Locally important food source for waterfowl and forage for fish; native
Nuphar variegata (spatterdock)	Provides shade and habitat for young fish and amphibians; protects shorelines from wave action
Nymphaea odorata (white water lily)	Seeds consumed by waterfowl while rhizoids consumed by mammals.
Potamogeton gramineus (variable pondweed)	The fruit is an important food source for many waterfowl; also provides food for muskrat, deer, and beaver; native
Potamogeton illinoensis (Illinois pondweed)	Provides shade and shelter for fish; harbor for insects; seeds are eaten by waterfowl.
Potamogeton natans (Floating-leaf pondweed)	The late-forming fruit provides important food source for ducks; provides good fish habitat due to its shade and foraging opportunities; native
Sagittaria spp. (arrowhead)	Waterfowl consume tubers and seeds, arrowhead beds offer shade and shelter for young fish
Stuckenia pectinata (Sago pondweed)	This plant is the most important pondweed for ducks, in addition to providing food and shelter for young fish; native
Typha spp. (cattail)	Provides cover for waterfowl and small mammals, protects shoreline from wave action
Utricularia minor (small bladderwort)	Stems provide food and cover for fish; native
Utricularia vulgaris (common bladderwort)	Stems provide food and cover for fish; native

Note: Information obtained from A Manual of Aquatic Plants by Norman C. Fassett, University of Wisconsin Press; Guide to Wisconsin Aquatic Plants, Wisconsin Department of Natural Resources; and, Through the Looking Glass: A Field Guide to Aquatic Plants, Wisconsin Lakes Partnership, University of Wisconsin-Extension.

Source: SEWRPC

SEWRPC Staff Memorandum

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WALWORTH COUNTY, WISCONSIN

Figures

Figure 1
Como Lake in Walworth County Watershed Extent

WATERSHED BOUNDARY

N

0 1,100 2,200 4,400 Feet

Source: SEWRPC and WDNR

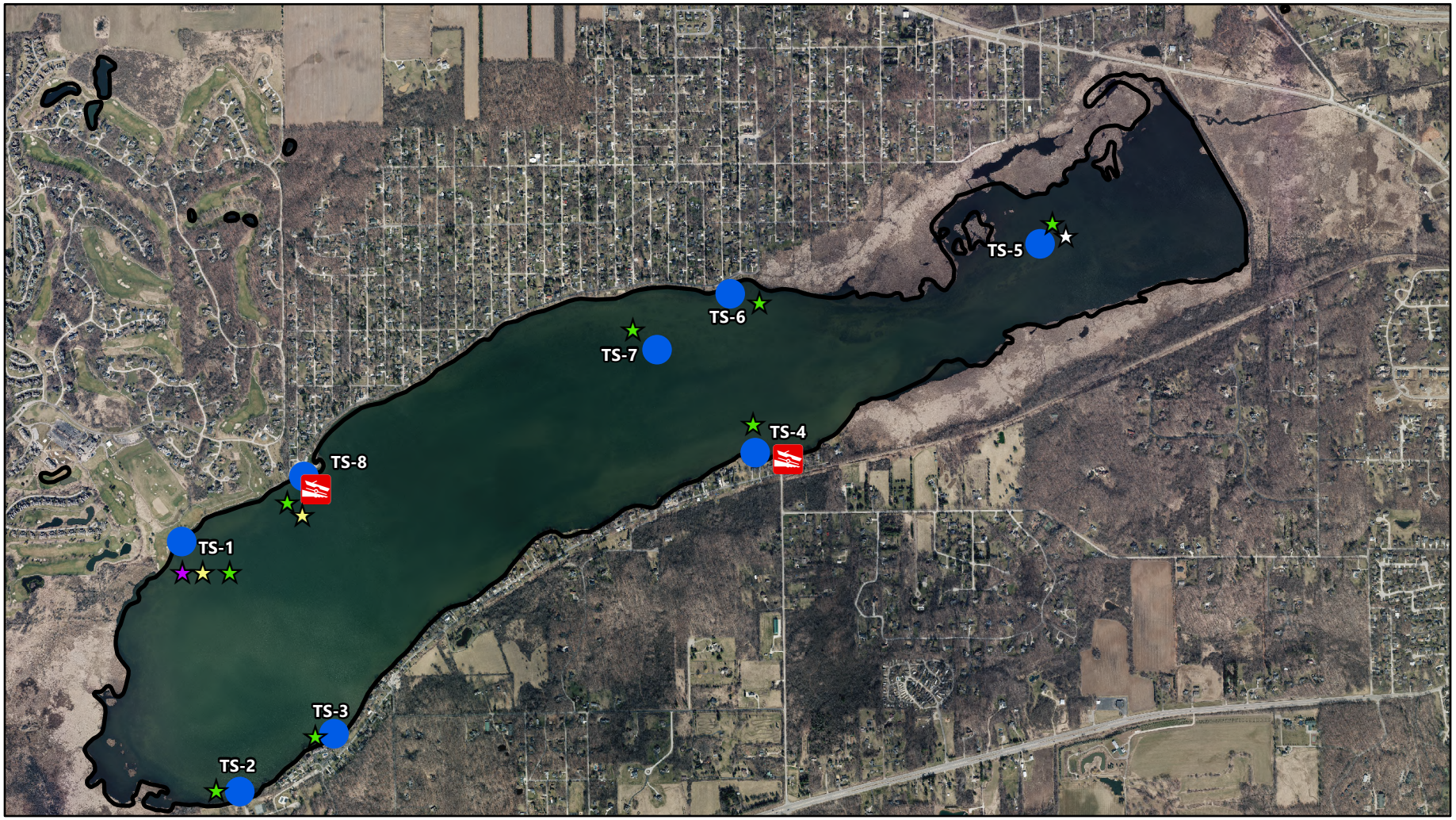
Figure 2
Photos of Como Lake: August 11th, 2025

Como Lake

Signage at Como Lake boat launch

Source: SEWRPC

Figure 3
Como Lake AIS Meander Survey Sites: August 11th, 2025



BOAT LAUNCH

TARGET SITE (TS)

AQUATIC INVASIVE SPECIES

CURLY-LEAF PONDWEED (*POTAMOGETON CRISPUS*)

EURASIAN WATERMILFOIL or HYBRID MILFOIL (*MYRIOPHYLLUM SPICATUM*)

SPINY NAIAD (*NAJAS MARINA*)

CATTAILS (*TYPHA SP.*)

N

0 500 1,000 2,000 Feet

Source: SEWRPC

Figure 4
Pell Lake Watershed

WATERSHED BOUNDARY

N

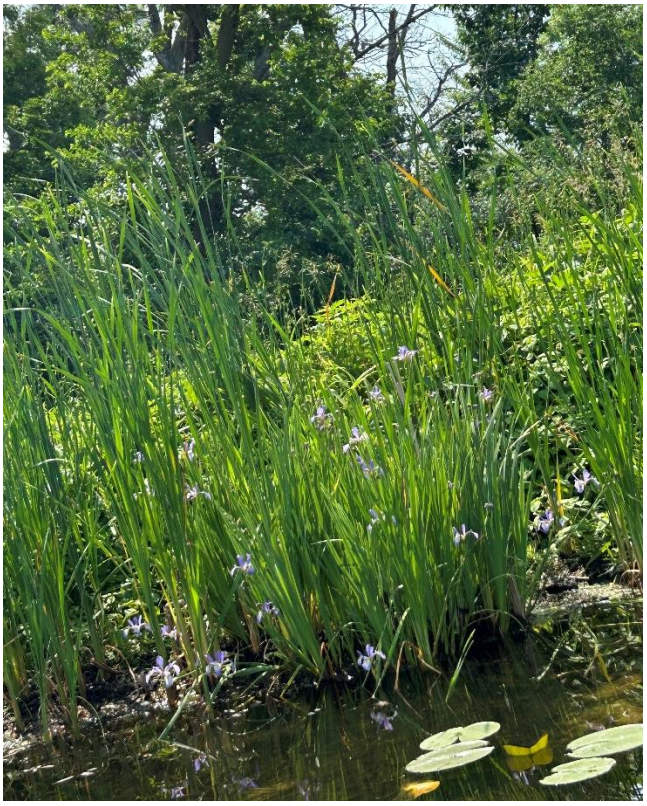
0 425 850 1,700 Feet

Source: SEWRPC

Figure 5
Photos of Pell Lake: June 16th, 2025

Pell Lake

Panfish over nests in Pell Lake



Native Blue Flag Iris on Pell Lake Shoreline

Native Elodea in Pell Lake

Source: SEWRPC

Figure 6
Aquatic Invasive Species Meander Survey on Pell Lake: June 16th, 2025

AQUATIC INVASIVE SPECIES

BOAT LAUNCH

TARGET SITE (TS)

BEACH

CURLY-LEAF PONDWEED (*POTAMOGETON CRISPUS*)

EURASIAN WATERMILFOIL (*MYRIOPHYLLUM SPICATUM*)

N

0 120 240 480 Feet

Source: SEWRPC

Figure 7
Swift Lake Watershed

WATERSHED BOUNDARY

N

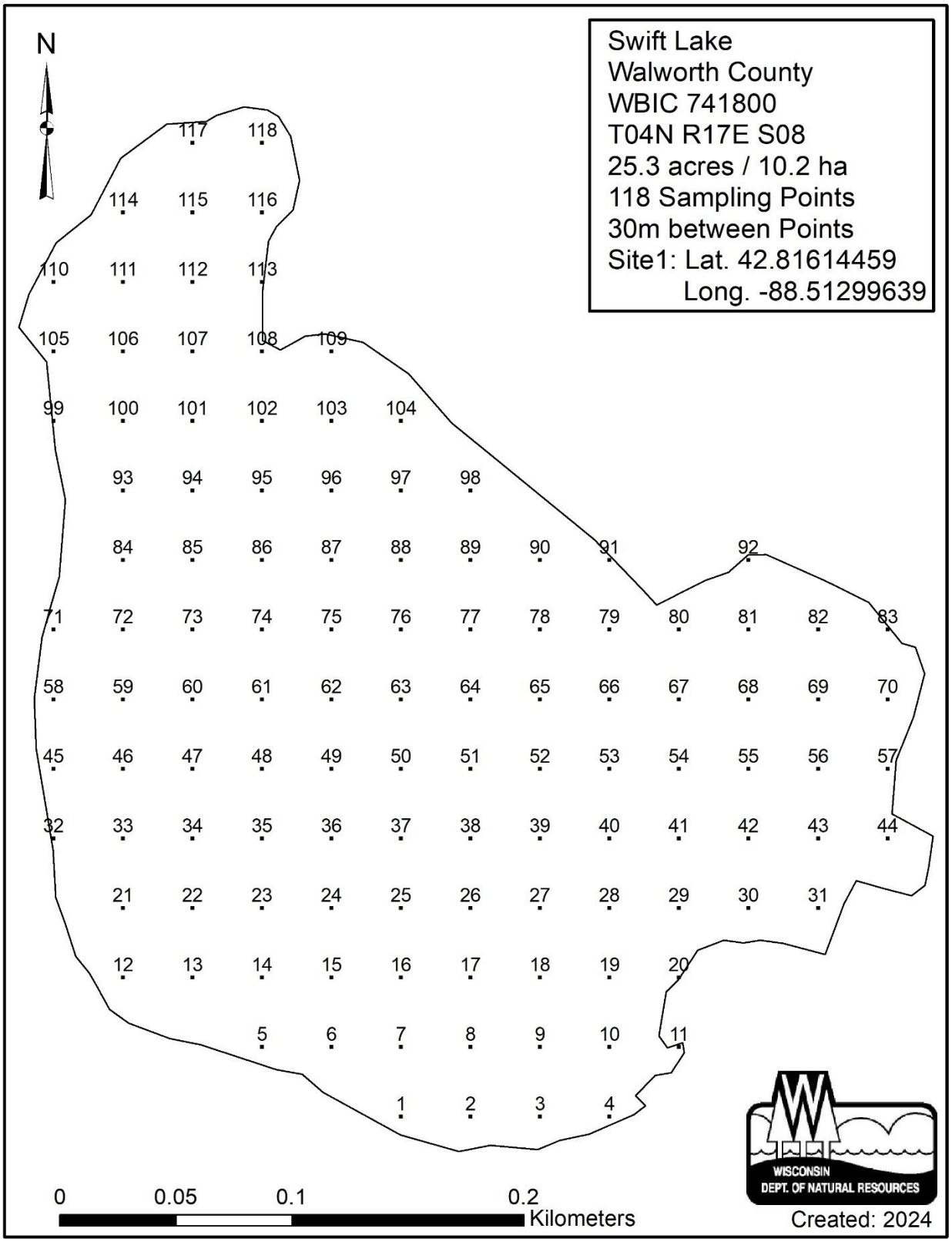
0 375 750 1,500 Feet

Source: SEWRPC

Figure 8
Photos of Swift Lake: September 15th, 2025

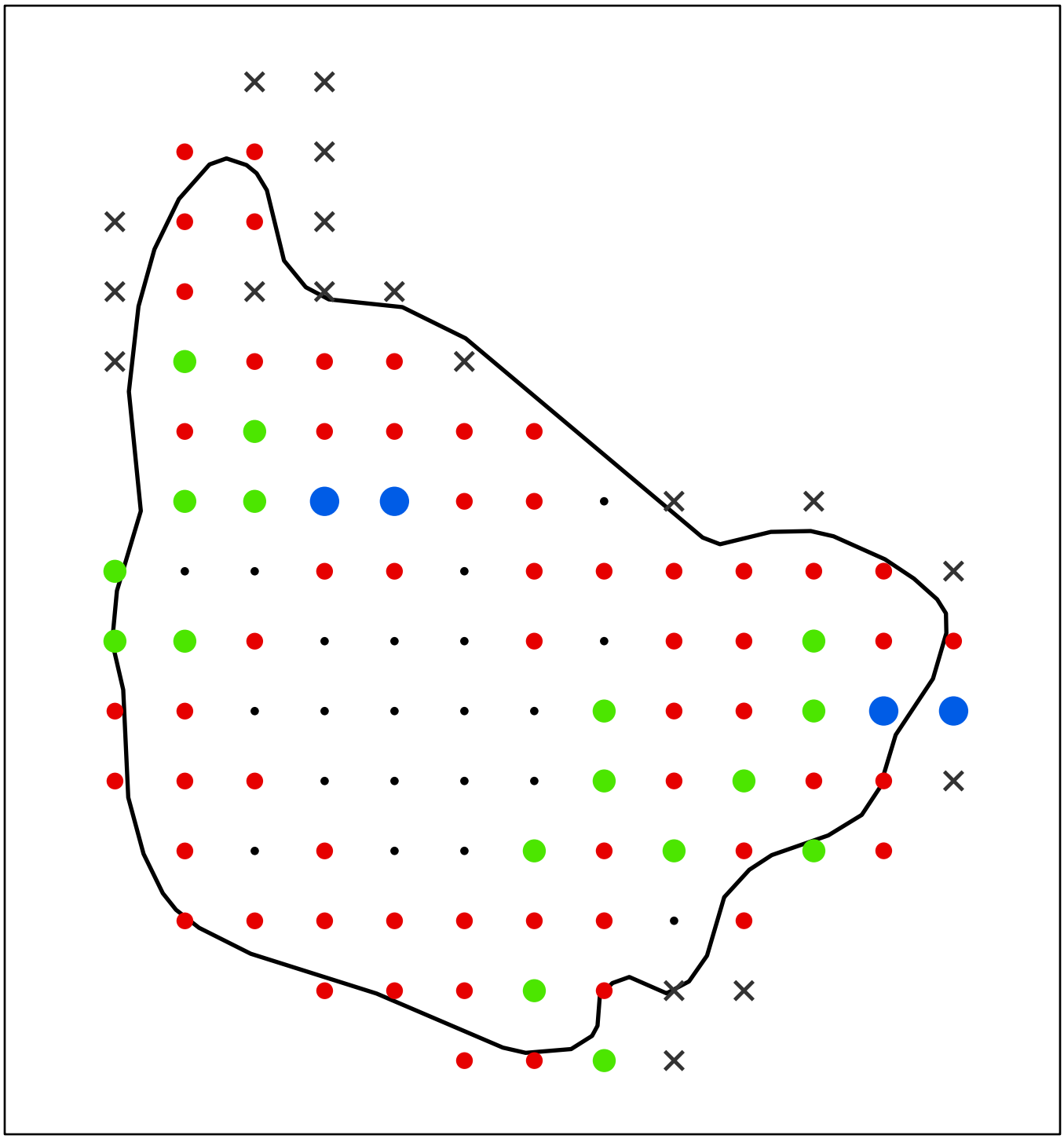
Source: SEWRPC

Figure 9
Point-Intercept Sampling Grid for Swift Lake



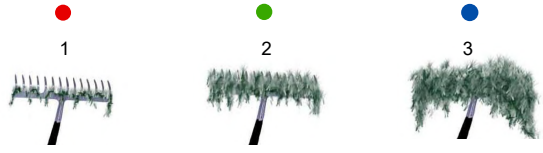
Source: WDNR

Figure 10
Swift Lake Total Rake Fullness: September 2025



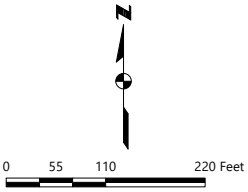
NOTE: Survey was conducted on Swift Lake on September 5th, 2025.

RAKE FULLNESS RATING



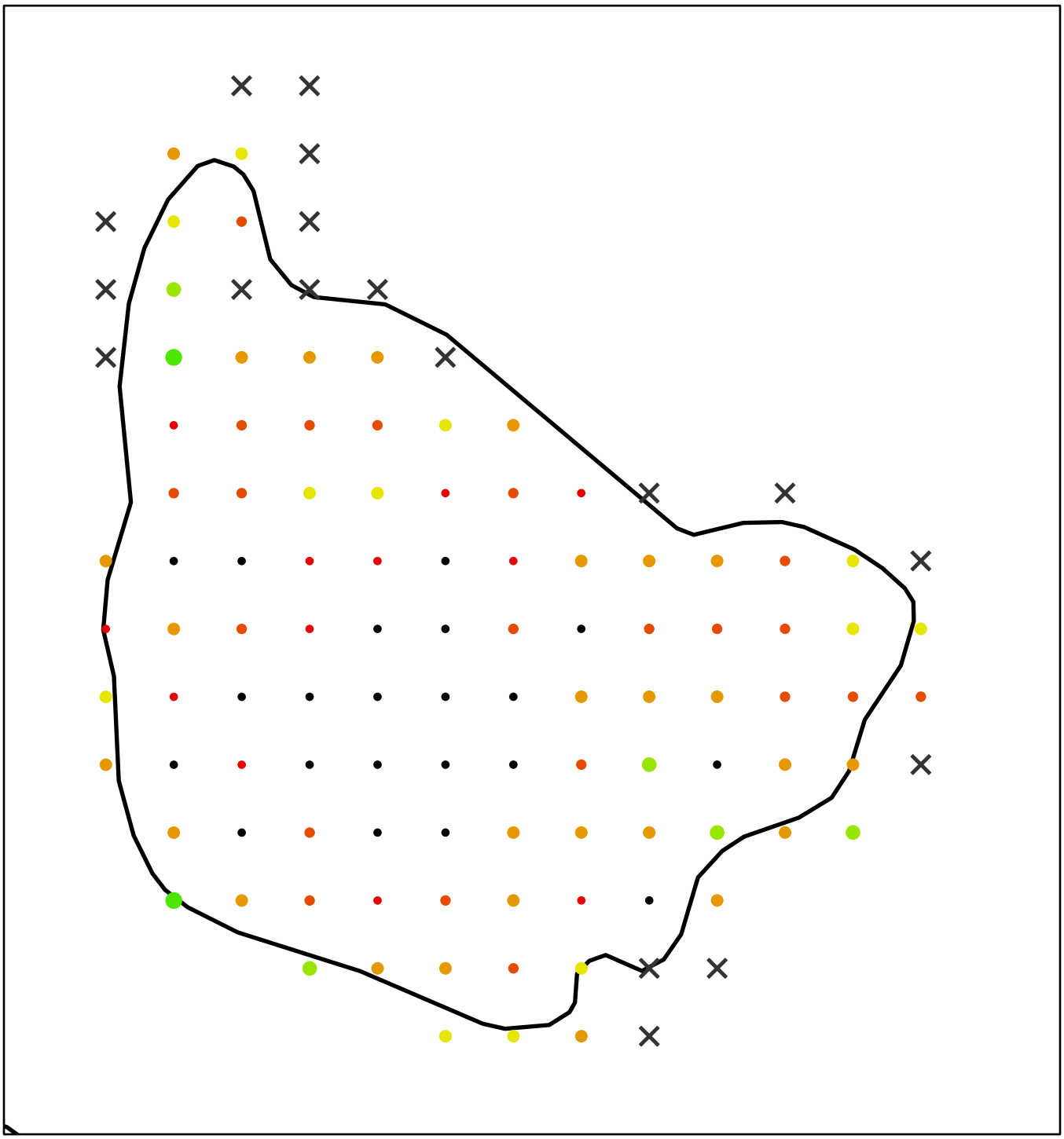
VISIBLE NEARBY

• NO AQUATIC PLANTS FOUND × NOT SAMPLED



Source: SEWRPC

Figure 11
Species Richness in Swift Lake: September 2025



NOTE: Survey was on September 5th,2025. Species Richness values include nearby visual sightings of aquatic plants and nonnative aquatic plant species.

SPECIES RICHNESS

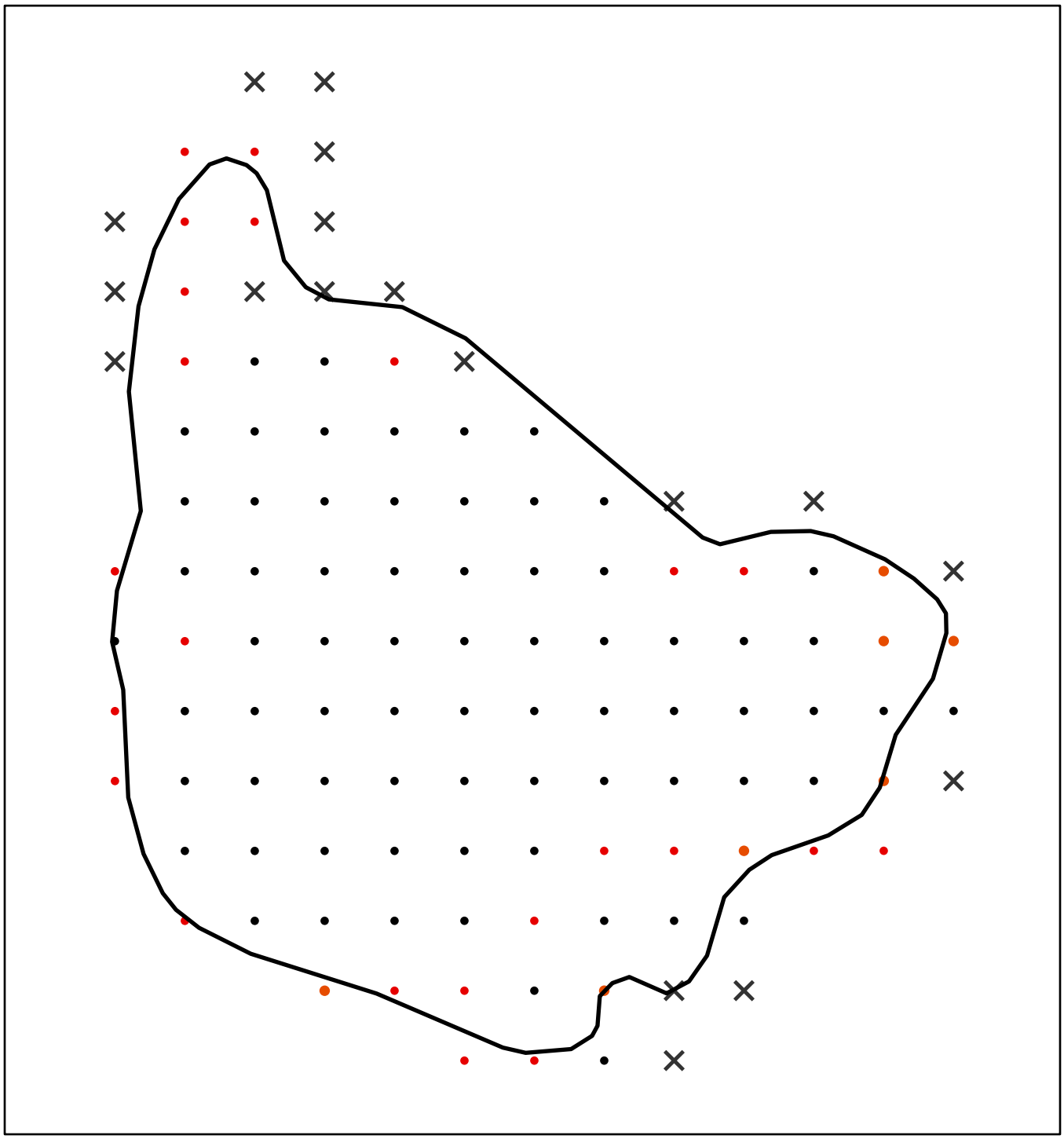
- 1
- 2
- 3
- 4
- 5
- 6
- × NOT SAMPLED
- • NO AQUATIC PLANTS FOUND

N

0 55 110 220 Feet

Source: SEWRPC

Figure 12
Sensitive Species - Species Richness in Swift Lake: September 2025



NOTE: Survey was conducted on September 5th,2025. Species Richness values include nearby visual sightings of aquatic plants and nonnative aquatic plant species.

SPECIES RICHNESS

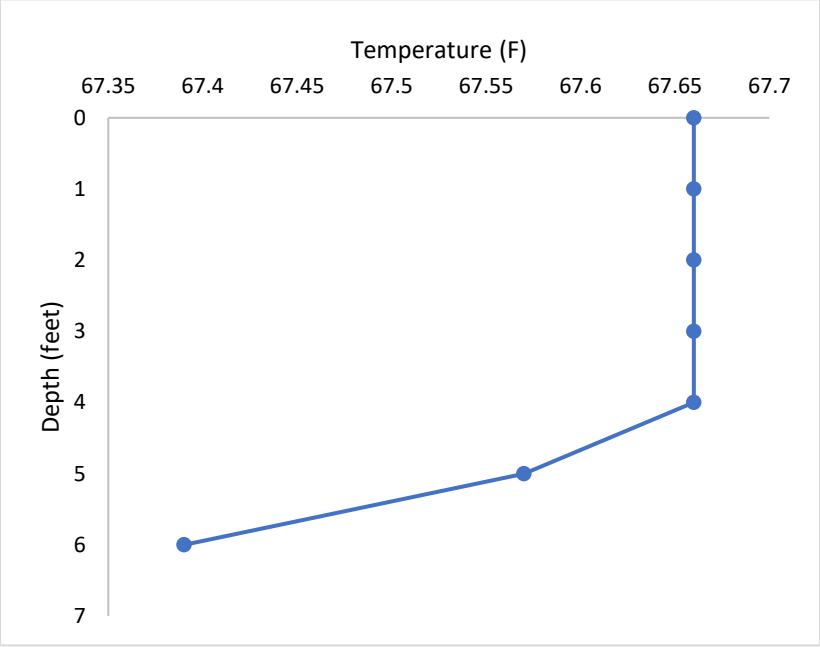
- 1
- 2
- × NOT SAMPLED
- • NO AQUATIC PLANTS FOUND

N

0 55 110 220 Feet

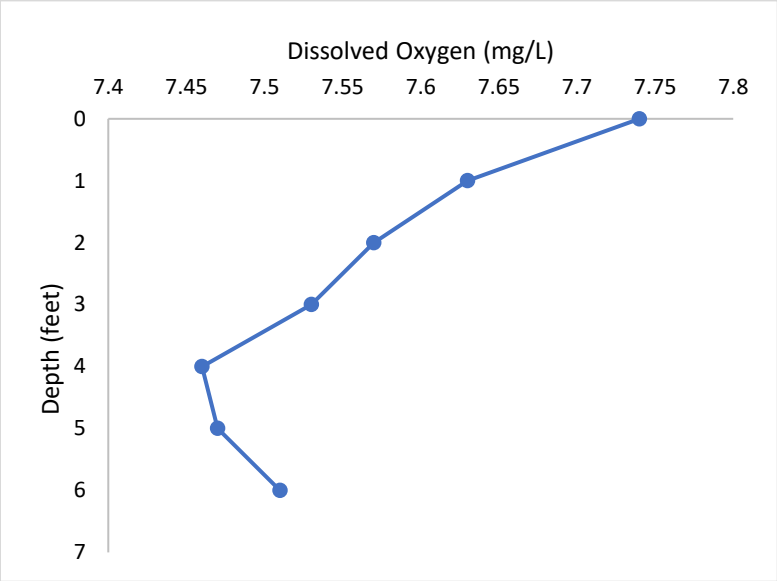
Source: SEWRPC

Figure 13
Temperature Profile for Swift Lake: September 5th, 2025



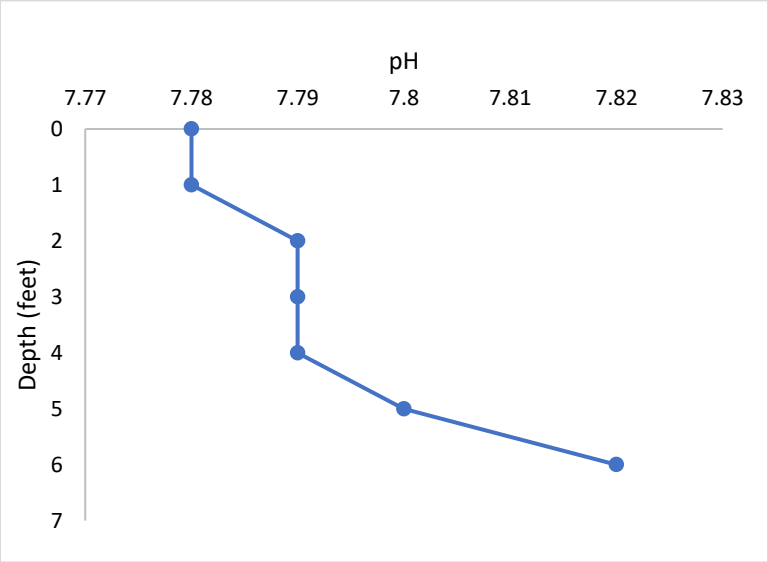
Source: SEWRPC

Figure 14
Dissolved Oxygen Profile for Swift Lake: September 5th, 2025



Source: SEWRPC

Figure 15
pH Profile for Swift Lake: September 5th, 2025



Source: SEWRPC