

Siver Springs Lake Preservation Committee - 2024 Annual Report

(D. Lester, T. Klaves, November 2024)

The Silver Springs Lake Association's 'Clean Water Committee' (CWC) was renamed the 'Lake Preservation Committee' (LPC) following work performed in 2023 by the CWC and the Aeration Committee. The current LPC Members include Terry Klaves, Tony Mainiero, and David Lester.

For several years now, Tony Mainiero and Terry Klaves have been instrumental in identifying regional service providers and scientific experts in Lake Ecology and Aquatic Weed Management, who have provided science-based answers to our questions, and guidance. Through his past aquatic weed management business experience, David Lester brought additional industry knowledge and guidance to the team, at this key point in our lake's aging and maturation process.

The Lake Management Program is our plan to preserve Silver Springs Lake's recreational value and to maximize the overall desirability of this community as a place to live and to raise our families! The Lake Management Program is initially focused on using Weed Harvesting services to remove large quantities of nutrient rich biomass. Additional Lake Management Plan elements are presented separately. The ultimate goal is to slow, stop, or even reverse the maturation rate for Silver Springs Lake.

As reported last year, Silver Springs Lake is man made. It is comparatively shallow. It has clear water. And the shorelines are gently sloped. This makes Silver Springs Lake 'predisposed' to aging - - more quickly than steep-sided and deeper lakes and ponds with turbid water. In either case, Mother Nature and Man are continuously adding nutrients, which continuously collect in the water and promote plant and microbial algae growth. Weeds grow, multiply, and die. Decaying plant matter builds up as muck on the lake-bottom. Over many generations, lakes and ponds become swampy grasslands.

In science-speak, lake-aging is called "Lake Eutrophication". With time, the desirability to live on late-Eutrophication-phase bodies of water decreases. A lake's recreational value decreases, and home values follow. Human intervention (and investment) is necessary to slow, stop, and/or reverse the lake aging process.

Aquatic weed growth in Silver Springs Lake has been increasing, along with the rate of muck and silt collection on the lake-bottom. Chara algae growth has also become wide-spread. Chemical weed control has not and will not change this direction.

In early 2024, the projected cost of the chemical herbicide weed treatment program for Silver Springs Lake nearly doubled. This has made it economically feasible to consider a Weed Harvesting Program, which removes nutrients from the lake ecosystem while sustaining its recreational value.

As a prerequisite for weed harvesting, it was necessary to construct a deep-water launch ramp and a more substantial and permanent pier. The Association's lightweight pier and shallow launch ramp could not be used to launch, moor and retrieval of large (10-20 Metric Ton) weed harvesters (and future dredge) equipment.

After suitable plans were developed and competitive bids were obtained, the Association Board of Directors unanimously approved this investment. Contracts were awarded and the new launch and pier were installed in May 2024. Unfortunately, the rationale for this investment decision was not thoroughly communicated to the Lake Association's general members. Some individuals are unhappy and have been expressing their unhappiness on social media. The LPC and current Board Members hope that our current action plan for Silver Springs Lake will re-align these sentiments.

Following the deep-water launch ramp and pier installation, a two-part Lake Management Program was initiated. To start, invasive weed species were professionally mapped, chemically treated, and permanently removed using Diver-Assisted Suction Weed Harvesting (DASH). Six mapped beds of Eurasian Water Milfoil (EWM) and Curly Leaf Pondweed (CLP) were removed.

Non-invasive 'native' weeds are expected to replace them over the next few years. New EWM and CLP beds are expected to reappear, and another DASH program is budgeted for 2026. We suggest the repetition of DASH programs every third year, or 'as needed' to combat invasive aquatic weed species, based on available funding and annual weed mapping assessments.

As described above, Silver Springs Lake is in its early Eutrophic-stage (heavy weed growth and muck accumulation) phase. And to slow, stop, or reverse the lake-aging process, you must remove nutrients.

The second and more substantial test-program initiated 2024 was weed harvesting. Weed harvesting can be compared to mowing the lawn with a bagger. Nutrient rich biomass is physically removed from the lake. The goal of weed harvesting is not to eradicate weeds. We want the weeds to grow like crazy, so we can cut and remove them along with the nutrients they have absorbed. Plant growth itself has multiple positive lake effects. Aquatic weeds remove nutrients from the water and from the lake bottom. Rigorous plant growth supports clear water, by absorbing nutrients that might otherwise be used by suspended plant algae.

To evaluate the near-term effects of weed harvesting on lake recreation, and its effectiveness in terms of total biomass removal, the LPC recommended and the Lake Association Board approved three cuttings of weeds in the Navigation Lanes and targeted weed beds in 2024.

Each of the three contracted service periods were 40 hours in duration. Weed harvesting was to take place in May, July, and October. The October cutting was scheduled to happen after boats, piers, and lawn-irrigation suction hoses/pipes were removed - - allow the harvester to cut weeds somewhat closer to shore.

The primary goal for the weed cutting service is to remove the maximum amount of biomass from Silver Springs Lake, and to keep the Navigation Lane free from excessive weed growth. The 'Navigation Lane' is defined as an area located just off from the ends of residents' piers, toward the lake center for a distance of 20 feet (three passes of the selected ILH-250 Weed Harvester).

The area covered by the four (4) mile (20 Ft wide) Navigation Lane around the perimeter of Silver Springs Lake is less than 10% the total lake surface area. After clearing the Navigation Lane, the remaining time in each one-week service period was used to clear the heaviest of the previously mapped and targeted weed beds.

The ILH-250 weed harvester used by Aquatic Plant Management (APM), was previously determined to be the most efficient and effective commercial harvester available. The seven (7) foot wide cutting head and high capacity weed collection hopper served to minimize the number of return trips to the launch ramp for unloading. The Henke family, our closest farm to the North, gladly accepted the removed cut-weed biomass, which is spread in their fields for fertilizer.

Weed growth also increases the amount of oxygen dissolved in the water. High oxygen content and moderate weed growth supports larger fish populations. Balanced aquatic weed growth, limited aeration, natural artesian wells, wind, and wave action all contribute to our lake's excellent overall water oxygenation levels. Silver Springs Lake has stayed close to its 'saturation point' for dissolved oxygen throughout the 2024 season. Our water-clarity has also been excellent. This was surprising, given the 'stillness' of our weather through the late summer months.

The Silver Springs Lake Weed Harvesting Program is not intended to remove weeds, algae, and muck from resident homeowner's shorelines (inside of the Navigation Lane). A custom 'private pay' program was considered for clearing residents' shorelines. APM stopped this program following the first lot-evaluation. In moving the ILH-250 harvester straight in the shoreline, the weight of cut weeds, Chara algae, and muck,

made its cutting blades repeatedly dig into the rising shoreline lake bottom. Cutter heads and bearings were quickly worn and damaged by digging into the lake bottom.

APM is offering to have an independent team of their employees contract with individual homeowners for shoreline and swimming area clearing services, at a rate of \$2,000.00 per day. There is a one day / 8-Hour minimum, so neighbors might consider teaming up to get their money's-worth.

The goal of the Association's Weed Harvesting Program is to pay a service provider to remove the maximum amount of plant biomass during the contracted time-period. Large weed harvesters operate best between three (3) and seven (7) feet of water. Weeds are cut one (1) foot or so above the lake-bottom. Their most efficient operation is realized by running parallel to the shoreline. To remove the maximum amount of plant nutrient biomass during the service period, Harvester stops and turns are kept to a minimum. The goal is to fill and empty the hopper as many times as possible.

The Silver Springs Lake 2024 Weed Harvesting Program was a 'test'. At the outset, the measurable yield of nutrient rich cut-weed and algae 'biomass' for each service period was not known. We did not know whether weed harvesting in May and July would keep the Navigation Lane free of major weed growth for the full boating season. We did not know what the near-term / immediate effects would be on water clarity, oxygenation, fishing, or fish populations. We did not know how effective the late-season harvesting program would be / how much of an effect it would have on the near-shore areas for all residents.

The results are now in. In broad terms, the selected aquatic weed harvesting service provider, Aquatic Plant Management (APM), removed over 800 Cubic Yards of biomass. Two hundred cubic yards were removed in May, a bit more in July, and more than twice that amount in October. To visualize this, if the total 800 Cubic Yards of material was pallet-loaded, APM removed the equivalent of 30 trailer-truckloads of biomass from Silver Springs Lake.

The LPC firmly believes that the 2024 Weed Harvesting Program was successful.

- The Navigation Lanes did not have excessive weed growth for the entire season
- 800 Cubic Meters of plant biomass was removed
- The cost of the Weed Harvesting Program employed is comparable to the projected cost of a Chemical Weed Control Program... without using large amounts of potentially hazardous chemicals.
- The program cost is sustainable... within the Association's proposed budget
- Fish-trolling (in the navigation lane, without constant weed fouling) was possible for the first time in a decade.
- Dissolved Oxygen levels throughout the lake were excellent

Conducting a perennial Weed Harvesting Program promises to provide ongoing boat Navigation Lane maintenance and positive long-term de-nutrication effects for our lake. Many hundreds of tons of nutrient rich biomass will be removed. Muck and silt build-up will be slowed, stopped, or even reversed. The rate of lake maturation will be slowed, stopped, or even reversed.

This program should negate the eventual need to dredge significant portions of the lake... which will surely be required if no action is taken at this time. (Dredging is dramatically more expensive and disruptive.)

Man, and Mother Nature, are continuously adding nutrients to our lake, which results in increased aquatic weed and algae growth. The goal of our Weed Harvesting Program is simply to remove more biomass (nutrients) than Man and Mother Nature put into our lake. The LPC believes that the three-cut per year Weed Harvesting program initiated in 2024 does that job. We are recommending to the Board of Directors and to all residents that we continue this economical program indefinitely.

A few more seasons are needed to know for sure, but utilizing the now-demonstrated three-time-per-year weed harvesting program may provide excellent water clarity, balanced weed growth, and a very healthy fish population. If weed growth patterns do not change, or become worse by 2027, a more aggressive and comprehensive program should be considered. The elements to consider for that enhanced Lake Management Plan might include:

- 1) Continuing chemical treatment and DASH removal of invasive weed species and native weed species, where weed harvesting alone is inadequate
- 2) Continuous lake-wide Weed Harvesting, to physically remove biomass (>3x/Yr)
- 3) Sequestering nutrients (Nitrogen & Phosphates) from farm runoff at the inlet stream
- 4) A one-time dredging program to physically remove sediments (muck and silt) from the inlet area and other 'target-sites'
- 5) Engineering and installing a sediment basin at the Inlet Stream

A more detailed description of the above Lake Management Program Elements, and more, are posted on the Association Website: www.SilverSpringsNeshkoro.com

The Executive Summary Report from APM is available for review on request.

Contact David Lester or Terry Klaves for questions and clarifications regarding any Lake Preservation Committee and/or Lake Management Program activities.