



Lake Stevens Aquatic Plant Management Year End Report 2025



Prepared for
City of Lake Stevens

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LLC**

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Introduction

Lake Stevens has a history with invasive aquatic plant growth. In the late 2000's, the lake was heavily impacted by Eurasian Milfoil (*Myriophyllum spicatum*). Approximately 250 acres of the littoral zone was completely infested by this noxious weed. The City of Lake Stevens took the proactive step to begin addressing this problem. The City issued an RFP for the development and implementation of a treatment program. The lake was treated by our firm in the summer of 2011 targeting all 250 acres with a systemic herbicide Renovate OTF. This provided excellent results. In the years since annual surveys have located and targeted remaining Eurasian Milfoil plants and the population has been significantly reduced.

During the ensuing years, aquatic plant life native to the region has replaced the niche that Eurasian milfoil dominated. Largeleaf pondweed species, such as *Potamogeton amplifolius* and *Potamogeton richardsonii*, are now the dominant species in the lake. While these plants provide good habitat for fish and wildlife, they have begun to impact beneficial uses of the lake. The treatment program has shifted toward targeting dominate growth in impacted areas of the lake.

A second invasive aquatic plant was noted in the lake a few years ago. Curly leaf pondweed (*Potamogeton crispus*) was observed for the first time in low densities at a couple locations in the lake. The turion (reproductive structure) produced by this plant can last in the substrate for up to seven (7) years making this plant a concern. An ongoing program of survey and necessary treatments continued this year. This report will summarize this year's surveys and aquatic plant control.

Survey methods

Aquatechnex biologists mobilized two mapping teams to Lake Stevens on May 28th to perform the 2025 pretreatment survey. The mapping teams were equipped with two systems to map plants. The BioBase hydroacoustic mapping system was installed on each of the survey boats. This system records sonar data along planned transects across the littoral areas of the lake. The sonar logs are processed using algorithms to map the location and shape of aquatic plant beds. The system will also map aquatic plant biovolume which is a measure of the height of plant growth within each plant bed.

The team also used Trimble TDC 600 datalogging DGPS receivers with a data dictionary set up to record locations of the species noted in the survey. This data was collected by observation along the transects covering the littoral areas of the lake. The data was then processed and exported to ArcGIS shapefiles and used to create maps of the aquatic plant communities present.

Survey Findings

The lake's littoral zone has extensive areas where the native largeleaf pondweed (*Potamogeton amplifolius*) has established in the last few years. There are other *Potamogeton* species and *Elodea* mixed in as an understory to this plant. Note the Spring Native Species Survey Map below in Figure 1. In addition, invasive state listed Eurasian milfoil was noted in a few more locations than last year, several plants were observed at pioneering levels along the eastern shoreline and in the bay at the northeast corner of the main lake. Curly leaf pondweed continues to be observed as well. Fragrant water lilies are found in several locations around the lake. All recorded invasive species locations are noted in the Spring Invasive Species Map below in Figure 2.

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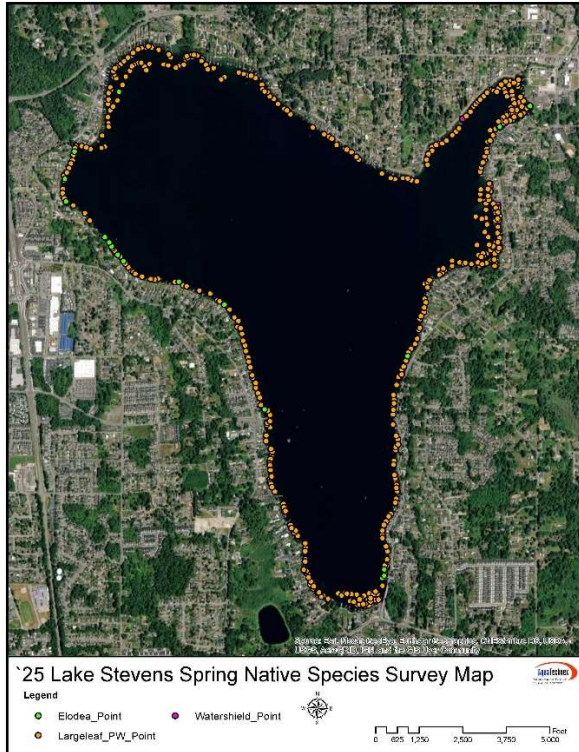


Figure 1: Spring Native Species Map



Figure 2: Spring Invasive Species Map

Within the survey area, 66% of this zone supports aquatic plant growth. There are many areas of the littoral zone that are vegetation free. Much of the north shoreline of the lake does not support aquatic plant growth at this point. This can be attributed to the hard lake substrates that are naturally present in this area. Biovolume data is presented and can also be viewed as a “HEAT” map. The HEAT map, figure



Figure 3: Lake Stevens BioBase Biovolume heat map.

3., has a color ramp that shows the percentage of the water column filled with vegetation where aquatic plants are present. The bottom of the HEAT ramp is blue and indicates no vegetation present. The top of the HEAT ramp is red and indicates that aquatic vegetation fills the entire water column at those locations. These plant communities can be viewed on the adjacent map.

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Treatment Planning

The following proposed treatment map was developed based on the findings during the survey work. The state listed noxious aquatic weed Eurasian milfoil encompassed 19.14 acres. ProcellaCOR EC aquatic herbicide was recommended for each of the mapped zones to selectively target and remove the milfoil growth. ProcellaCOR EC herbicide is selective for only Eurasian milfoil and did not place any restriction on water use for potable supply, swimming or fishing. There was a 24-hour irrigation restriction on drawing water from the treatment area.

In addition, 4.74-acres of Curly leaf pondweed were delineated this summer. The main plots was located at the southernmost portion of the basin and in smaller sporadict locations around the lakes littoral area. Curly Leaf Pondweed has a unique growth habit and develops a hard reproductive

structures called turions which form at leaf axils and at the stem tips. Each plant can produce hundreds of these winter buds each year. These fall to the lake bottom in mid to late summer and sprout as new plants in the fall. The new plants overwinter and grow rapidly in the spring when day lengths increase often outcompeting native vegetation. One of the keys to controlling this plant is to complete plant control before turion production in the spring. There were also many areas where the Largeleaf Pondweed was present at nuisance level warranting control. Total area of nuisance aquatic plant control areas mapped totaled 88.04 acres.

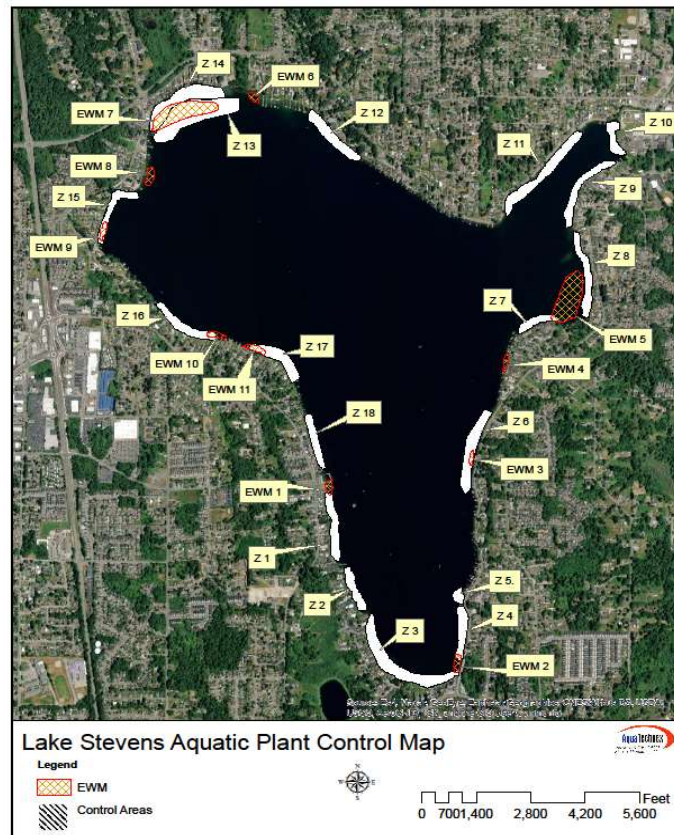


Figure 4: Control Map

Treatment Operations

Our first step prior to treatment is meeting permit compliance and to deliver a 10-day notice to the lake residents adjacent to a treatment area and for a quarter mile in each direction from the treatment zone. The day prior to treatment our teams posted the lake shoreline with the permit required signage. The team then mobilized four treatment and support boats to get the treatment completed early in the day prior to maximum boat traffic and to limit the impact of treatment work on the lake users. Milfoil zones were treated with ProcallaCOR EC herbicide. Curly leaf and native aquatic plant zones were treated with a combination of Diquat and Aquathol herbicides. This work was performed on July 22nd after the treatment window opened on the lake.

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Fall Survey

Our team performed a post-treatment aquatic plant survey on October 13th. The littoral area of the lake was examined by aquatic biologists utilizing a Trimble to mark specific species locations. Vegetative density was measured using a hydroacoustic sonde that which also recorded bottom depth, sediment composition, and vegetative biomass. During this survey, biologists identified locations of invasive aquatic plant in different sections of Lake Stevens, such as Eurasian watermilfoil (*Myriophyllum spicatum*), Curly-Leaf Pondweed (*Potamogeton crispus*), and Fragrant Water Lily (*Nymphaea odorata*).

One Eurasian watermilfoil location was recorded at the northwest end of the lake. Three zones of Curlyleaf pondweed were recorded at the northwest, eastern side and south end of the lake. This new growth was from germinated turion from the seed bank. Fragrant water lilies were recorded sporadically around the lake near shore areas.

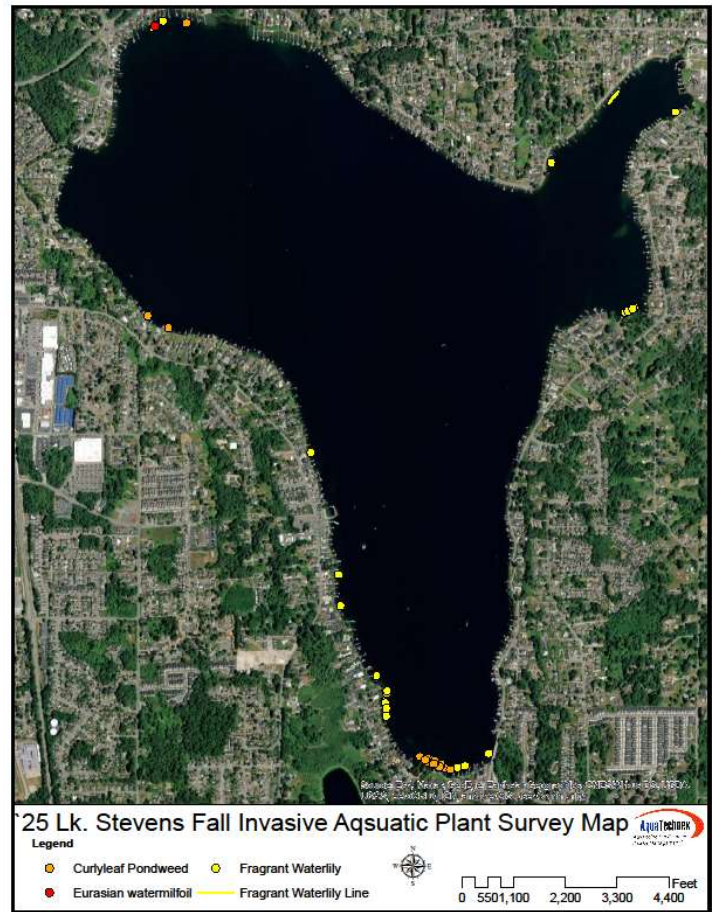


Figure 5: Invasive Plant Map

The more dominating Large-leaf pondweed remains in reduced densities around the lake. This plant was treated with contact aquatic herbicides to provide seasonal control. These products control the biomass in the water column, does not kill the roots, and plants have the ability to return late season and the following year. The map, Figure 6. below, provides native plant locations around the lake which notes Watershield, Tapegrass, and Largeleaf pondweed. The Fall Biobase map, Figure 7., following the Native Aquatic Plant Survey map shows overall biomass reductions of nuisance plants within the 2025 control areas compared to the Spring Biobase Map.

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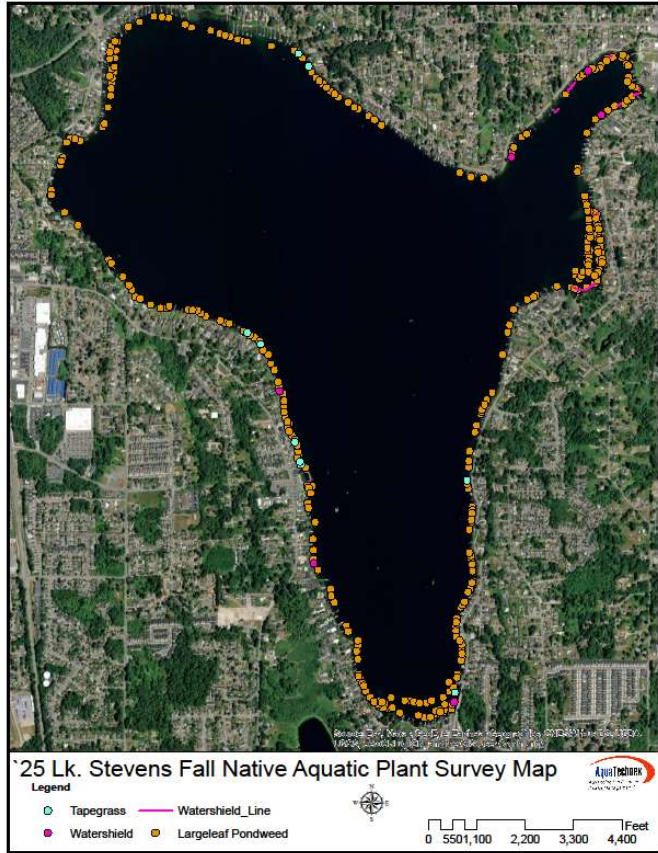


Figure 6: Native Plant Survey Map



Figure 7: Fall Biobase Heat Map

Recommendations for Next 2026

Eurasian Milfoil was found in more locations and was more widespread around the lake's littoral areas this Spring. While greatly reduced and only one location found during the fall survey, this plant has the probability to be found in multiple locations in the Spring. Curly leaf pondweed appears to be reduced, but the number of winter buds that germinated won't be known until Spring. Two surveys are recommended to focus on all aquatic plant species. A spring survey in late April or early May should be performed to catch the Curly leaf plants prior to turion production. Treatments for Eurasian milfoil and curly leaf can be performed with herbicides that are not subject to the fish timing windows. Treatments should then be followed with post-treatment surveys to monitor and determine next management steps. Fragrant water lily is a state listed noxious weed and should be managed to prevent expansion with a goal of eradication over time. Continued nuisance aquatic plant control should continue where warranted around the lake next season.

As stated in the past, the Fish timing window has been problematic in the past. In accordance with the permit, we can request a modification of the fish timing window from the department of Fish and Wildlife. It may not be granted, but if it is, we could start treating the nuisance pondweed growth a bit earlier in the season. In addition, the new Aquatic Plant and Algae Management Permit will be in place this coming March. It is unknown if there will be any significant changes made that may impact or possibly improve the ability to manage nuisance and invasive aquatic plant species. AquaTechnex continues to work with WADOE to help in renewal process and will adhere to any change in the new permit come 2026.