Introduction

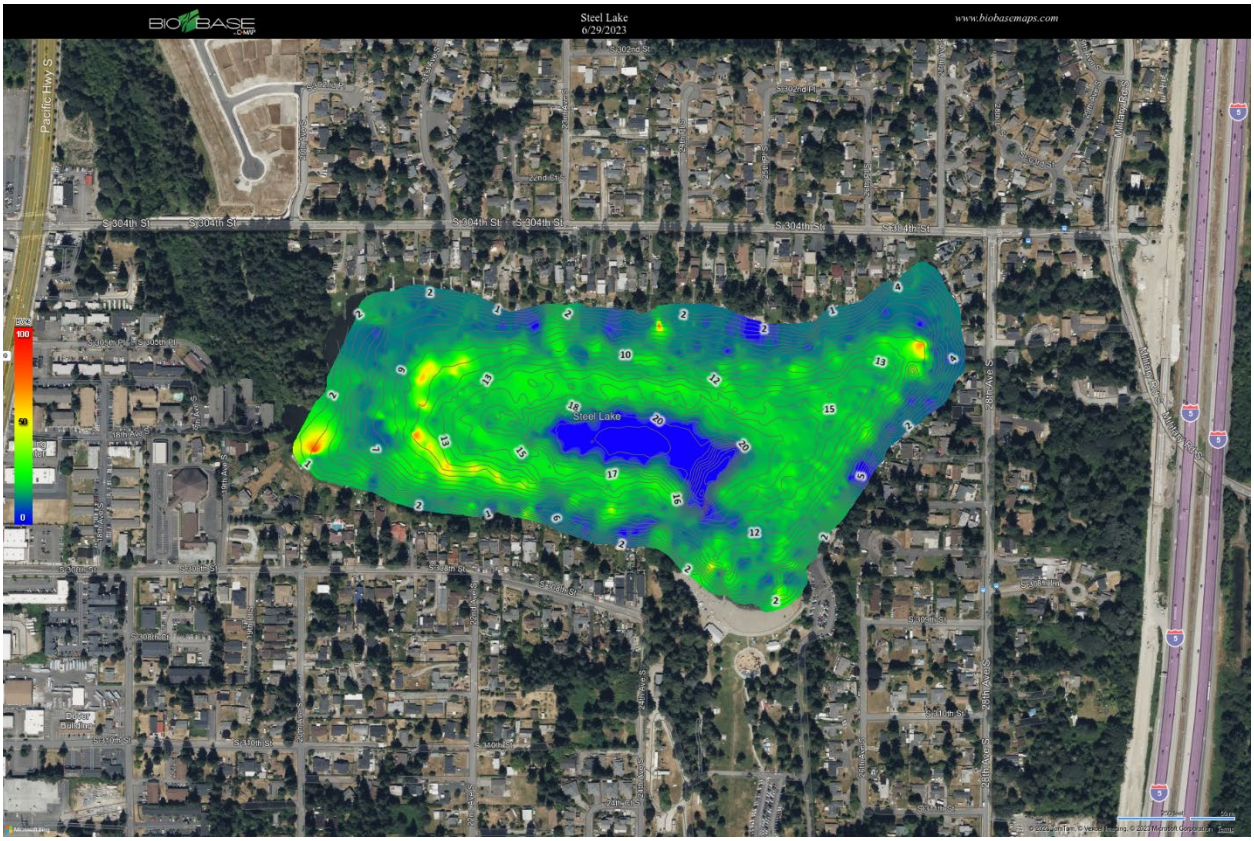
The Steel Lake LMD was formed some years ago to facilitate the management of invasive aquatic weed species. The lake was heavily infested with Eurasian Milfoil and White-Water Lily growth at the start of the program. There were also several scattered patches of Purple Loosestrife and Yellow Flag Iris on the shoreline of the.

The Eurasian Milfoil was eradicated from the lake using Sonar Aquatic Herbicide and one of the objectives of the annual survey is to detect any re-introduction of this noxious weed. The White Water Lily growth has also be reduced to below problem levels.

Survey

Aquatechnex biologists met City of Federal Way staff at the lake on June 29th for this year's survey effort. The lake was circumnavigated to observe the shoreline areas and to map the location of emergent noxious weed growth. The lake was then surveyed using the BioBase Hydro-Acoustic mapping system to locate and quantify aquatic plant beds. The hydro-acoustic system was also used to navigate the survey team to locations where submerged vegetation was present to determine species present.

This survey report was delayed because of a ransomware attack on the Brunswick Corporation who owns BioBase. Brunswick owns several companies focused on marine recreation including Mercury Outboards and Navico. This attack locked us and other subscribers out of the ability to process or access data for about 2 months. We gained access again this past week.



June 2023 Aquatic Plant Biovolume map

The color ramp shows aquatic plant biovolume or the percent of the water column filled with aquatic vegetation. Blue equals no plants present, greens in the 30-60 percent range, yellows and oranges in the 60-80 percent range and red 100 percent.

At the point of this survey and well into the summer growing season, there were no areas of the lake where aquatic plant growth was approaching a “weed problem”. The aquatic vegetation analysis report can be viewed at this link: Vegetation Analysis Report (2023 August 16 - 17:02 (UTC)) (s3-nox-prd-processing-snr-rpt-use1.s3.amazonaws.com)

While significant areas of the lake bottom supported aquatic plant growth very little of that growth was approaching the lake surface where it would interfere with beneficial uses.

Aquatic plant diversity in the lake is increasing. In past years, the dominant species present was Naiad, this year five dominant species of submerged aquatic plant species were present. These were Elodea, Illinois Pondweed, White Stem Pondweed and Slender Leaf Pondweed and were located as mapped. There were also a few small patches of American Pondweed Present. As noted in the biovolume maps at this point plant growth is not problematic.

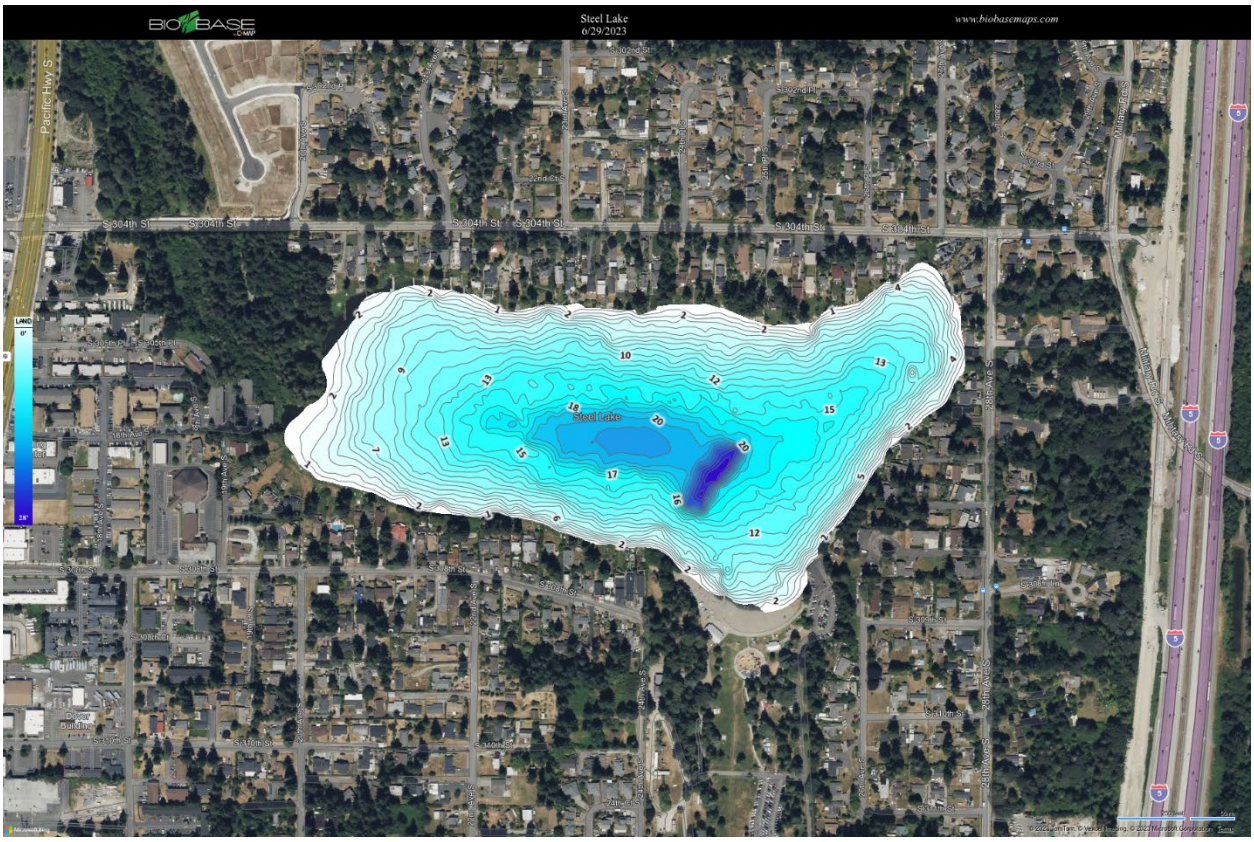
No Eurasian Milfoil was noted either through visual boat survey or underwater survey work that was performed. This is a result of the whole lake Sonar herbicide treatments performed decades ago and the lack of re-introduction to this point.

Steel Lake, June 2023

The map above shows the emergent and floating Noxious Weeds observed on the shoreline. No purple loosestrife was observed by our biologists, a second survey in August or September could be to determine if there are treatment needs for Loosestrife.

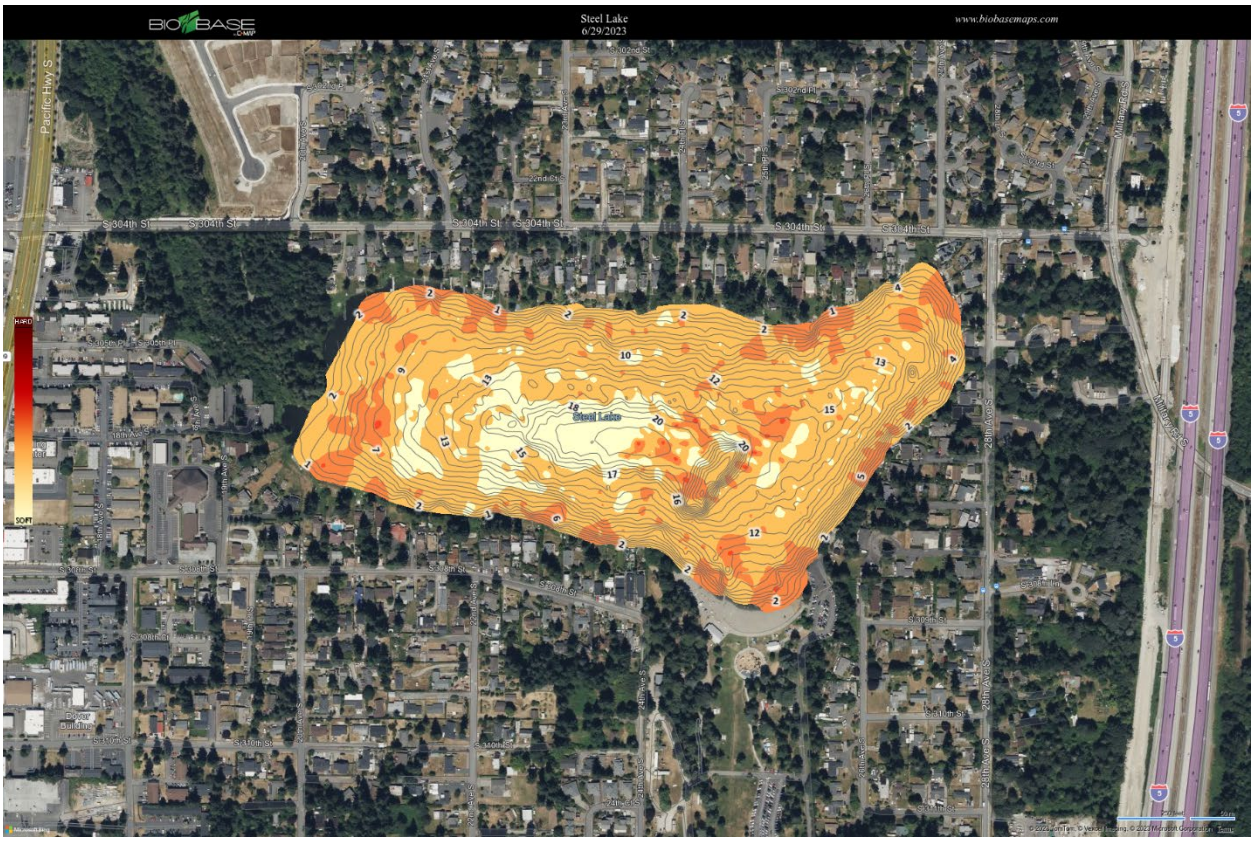
There continues to be scattered populations of Yellow Flag Iris around the margins of the lake as shown on the map above. One issue however is that the remaining Yellow Flag Iris is present in lake residents landscape. The plants are generally single plant communities in the residents' lawns. Treating these would require permission and careful application as treatment crews would be working on private property.

In previous years some of the Lake Management District residents did not want to have applications made on their property and the City had provided us with maps each year where permission was available to treat. We used this information to target this growth. There used to be a map of those properties. Much of the growth present is well into the property and landscape and applicators will have to enter these properties in most cases to reach these plants. This should be an objective of the LMD for future work targeting this weed.



Steel Lake Bathymetry, June 2023

The BioBase system creates two additional maps, one of lake bathymetry and one of lake sediment composition. The bathymetry map is useful to calculate lake volume and to generally show the shape of the lake bottom. The lake sediment map is useful to look at accumulations of organic matter, the softer the sediment layers the more organic matter present as a general rule.



Steel Lake Sediment Composition June 2023

The lake sediment composition map can be viewed and analyzed using the color ramp on the left of the image. The top darker colors represent hard bottom and generally rock, the light color on the bottom indicates very soft organic sediments are present.

In the past few years the lake has experienced some cyanobacteria or blue green algae blooms. We have observed this in our work on the lake. This can be potentially problematic in that if the blooms expand, and cell counts increase there can be production of toxins that result in lake closure.

These cyanobacteria blooms can result in harmful impacts on pets and wildlife. We have been doing extensive work mitigating these blooms using Phosphorus sequestering technologies in other lakes. We would like the LMD to be aware of this capability should toxic blooms occur again in the future. Video's of two projects can be viewed here.

Lake & Pond Heroes – Kitsap Lake on Vimeo

EutroSORB G Highlight (vimeo.com)