American Lake Eurasian Milfoil Treatment Program 2024

Prepared for
City of Lakewood and
American Lake LMD

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Introduction

American Lake has experienced significant problems with the invasive aquatic weed Eurasian watermilfoil (EWM) over the past few decades. An Integrated Aquatic Vegetation Management Plan (IAVMP) was developed and adopted by the community and in the summer of 2019, a major herbicide treatment targeted 166 acres of milfoil on the lake. ProcellaCOR is a selective systemic herbicide that is very effective on EWM was used. During the summer of 2020, the lake was largely EWM free. In the years since there has been an expanding population of this plant.

The treatment performed five years ago provided relief. In the years since there has been a limited budget for treatment supported by the Lake Management District or LMD. This budget allows for approximately 20-23 acres to be treated annually and an inexpensive pretreatment visual survey. In the past two years, there have been increasing levels of this aggressive aquatic weed present and some of the Federal agencies contributed to treatments as well.

Spring Survey

Our team performed the EWM survey on June 28th. We equipped our survey team with a Trimble submeter DGPS data logger set up with a data dictionary to mark the locations of EWM plants found within American Lake.

The above map shows results of our Spring Survey showing locations EWM at time of survey and locations of our 2024 treatment areas. EWM is expanding along the shoreline littoral area of the lake which ranges from approximately two feet of depth out to approximately twenty-five feet in depth. Densities vary from sparse to dense.

Treatment

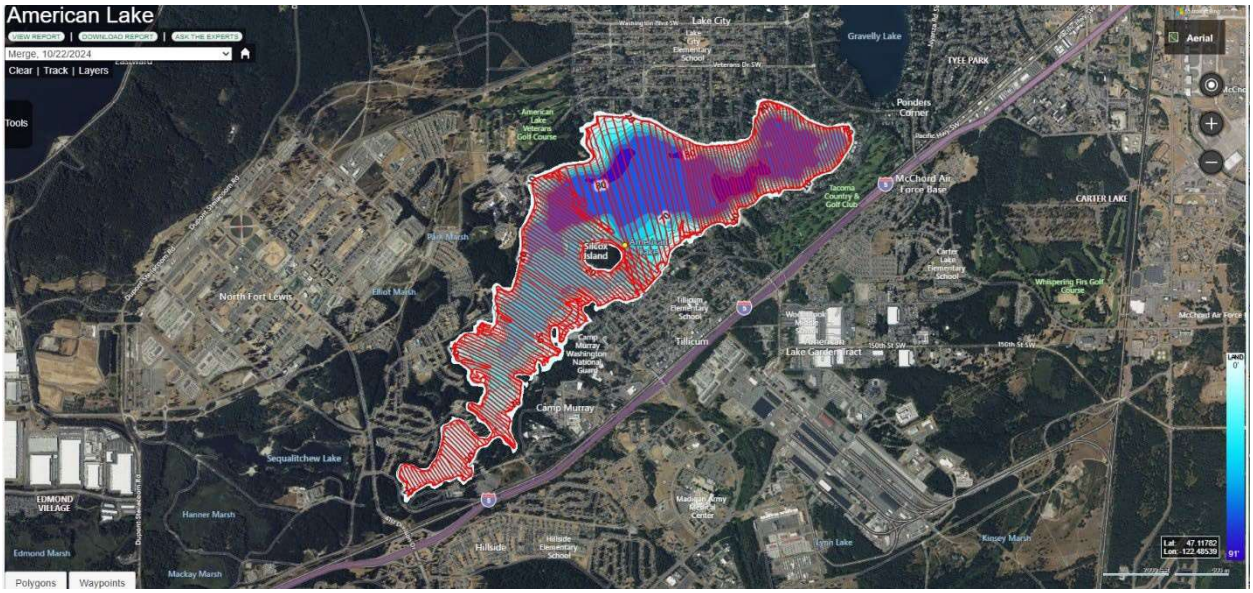
Our team notified the lake residents adjacent to treatment areas and within the Ecology prescribed distance down the shoreline via mail to comply with Ecology permit conditions. This was done in mid-June and there is a 10-day requirement for residents to have received these notices prior to treatment. In addition, prior to treatment our teams posted the affected shoreline areas of the lake where applications were to occur.

On July 19th biologists from AquaTechnex mobilized to American Lake and treated 56.9 acres of EWM as shown on the treatment map above. Each treatment zone focused mostly on priority areas with moderate to dense EWM and within high use recreation areas.

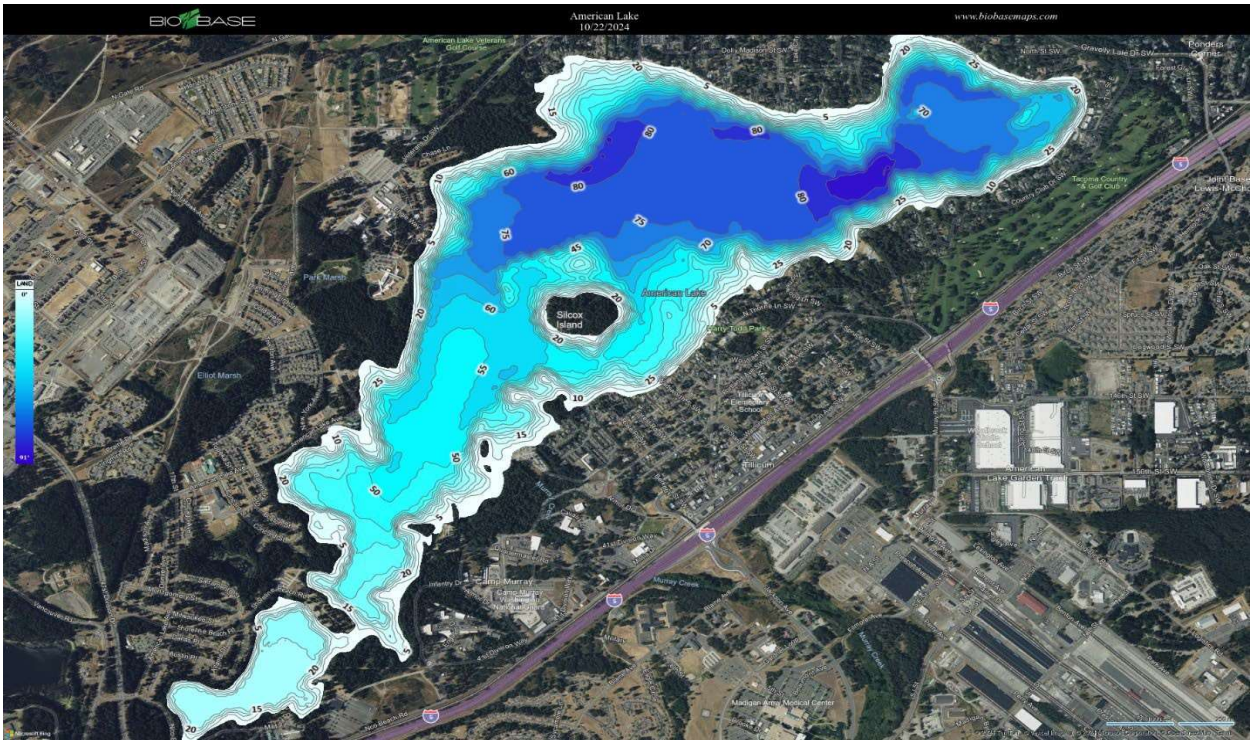
Current Situation

This summer there were unusual (in the time we have worked on the lake) low water levels. A visit to the lake found water levels down about six feet in August. This exposed deeper water EWM beds that had not been visible during the early season survey. It should again be noted that the early season survey is a visual boat survey and the idea there was to protect funding for actual treatment acreages. Based on the observation of that trip, our firm offered to perform a complete hydroacoustic and mapping survey of the lake. This was completed in the fall. Our conclusions are presented here.

The BioBase hydroacoustic mapping system will detect and map the shape of aquatic plant communities as well as provide a color ramp showing the percent of the water column filled with aquatic vegetation at the time of the survey. This type of survey is one way to view plant communities that are too deep to detect with a visual inspection. But this process also took our team seven boat days on the lake to collect the data and process.



The image above shows the survey tracks, the boats traveled these transects and collected hydro acoustic data to create several maps.



This is a bathymetry map created by the BioBase system after processing the field data collected with Sonar logging. Generally, the littoral areas of the lake are fairly narrow as the shorelines in most areas drop off fairly rapidly. Milfoil can grow to depths of 20 or more feet if light conditions are adequate.

The overall map showing vegetation is presented below, and zoomed in images follow.


BIO BASE
American Lake
10/22/2024
www.biobasemaps.com
BV%
100
50
0
Dupont Steilacoom Rd
Lake City
Gravelly Lake
Veterans Dr SW
TYEE PARK
Ponders Corner
McChord Air Force Base
American Lake
Park Marsh
Silcox Island
North Fort Lewis
Elliot Marsh
Camp Murray Washington National Guard
Camp Murray
Tillicum
150th St SW
Madigan Army Medical Center
Hanner Marsh
Hillside
Lynn Lake
Kinsey Marsh
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Microsoft Bing
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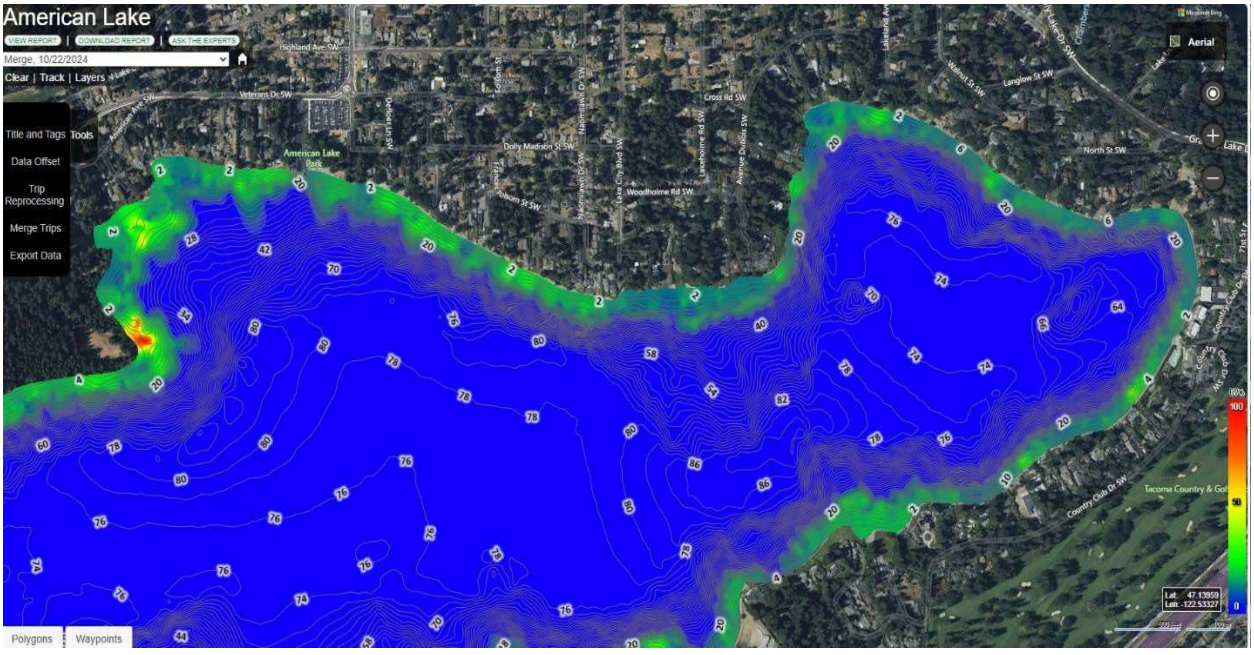
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Trip Reprocessing
Merge Trips
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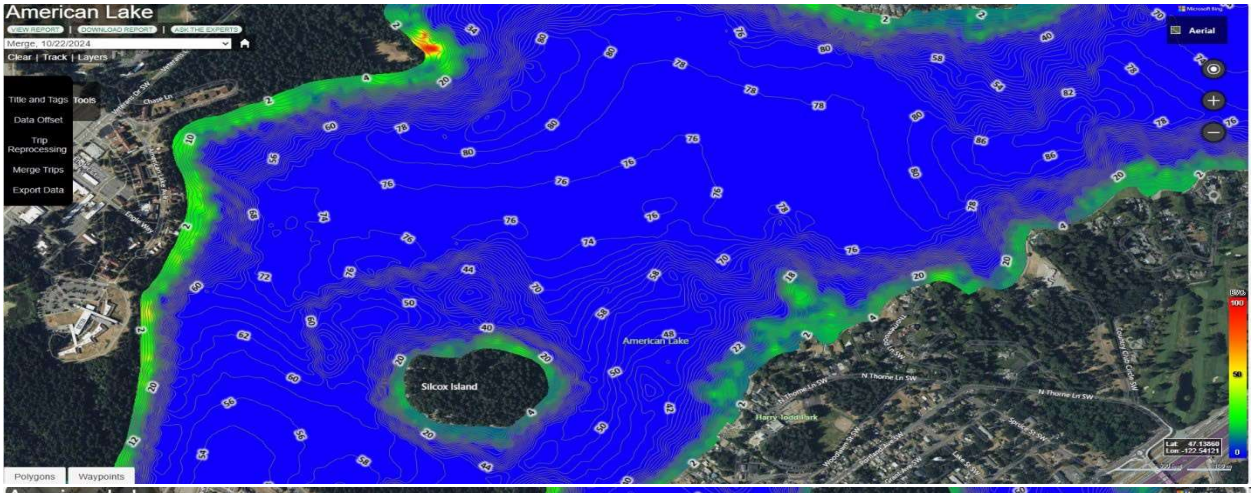
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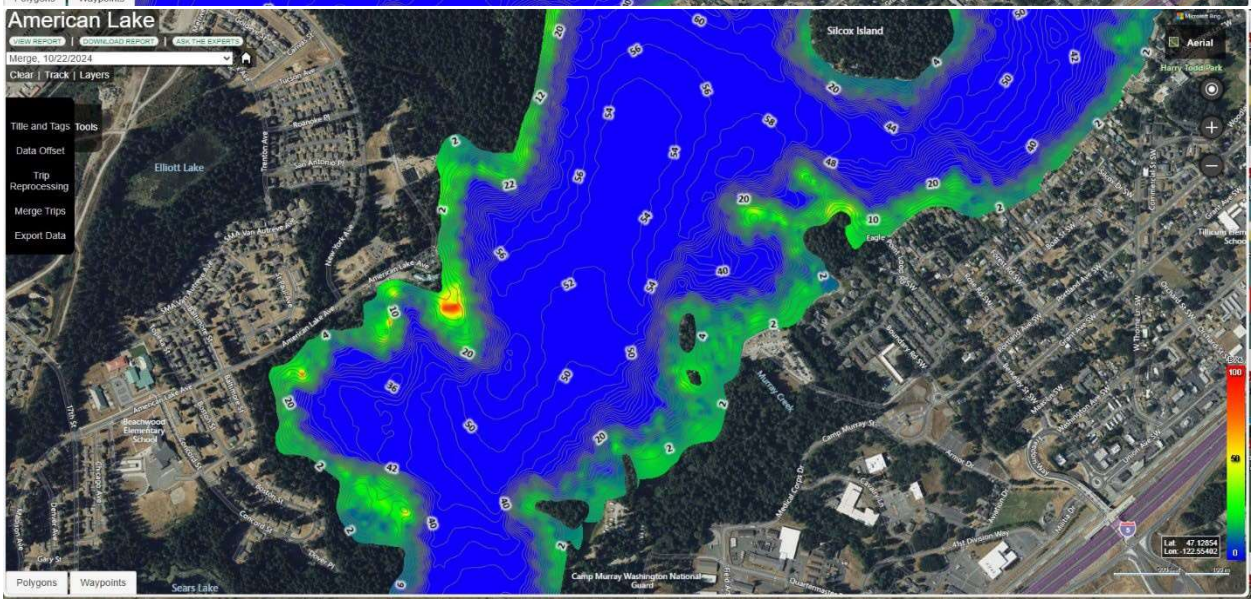
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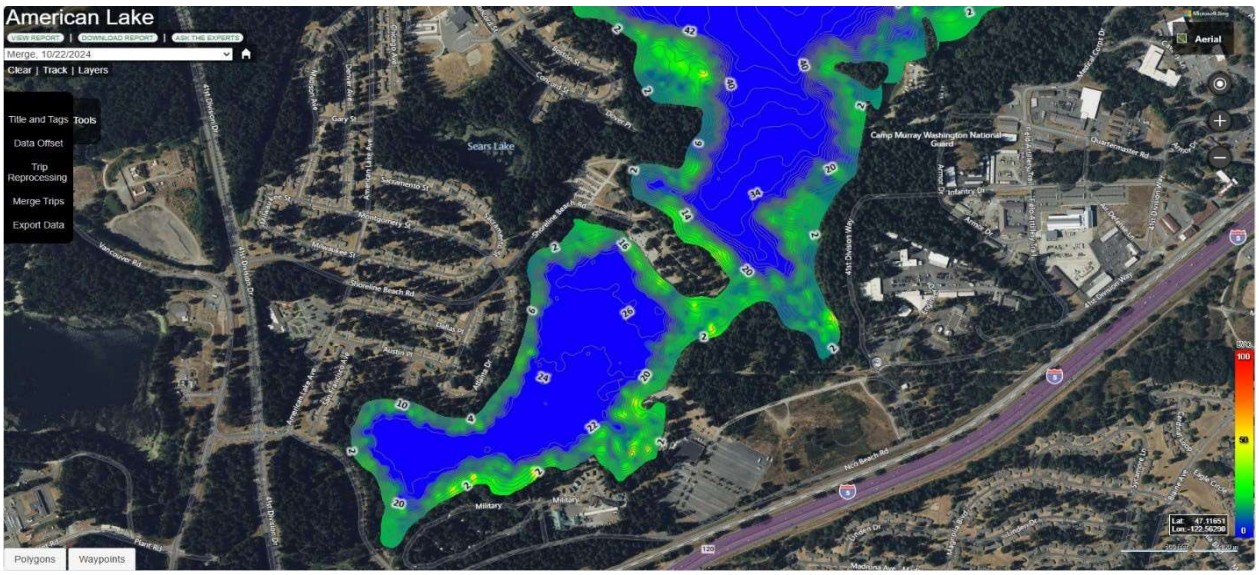
Sears Lake
Camp Murray Washington National Guard
Polygons
Waypoints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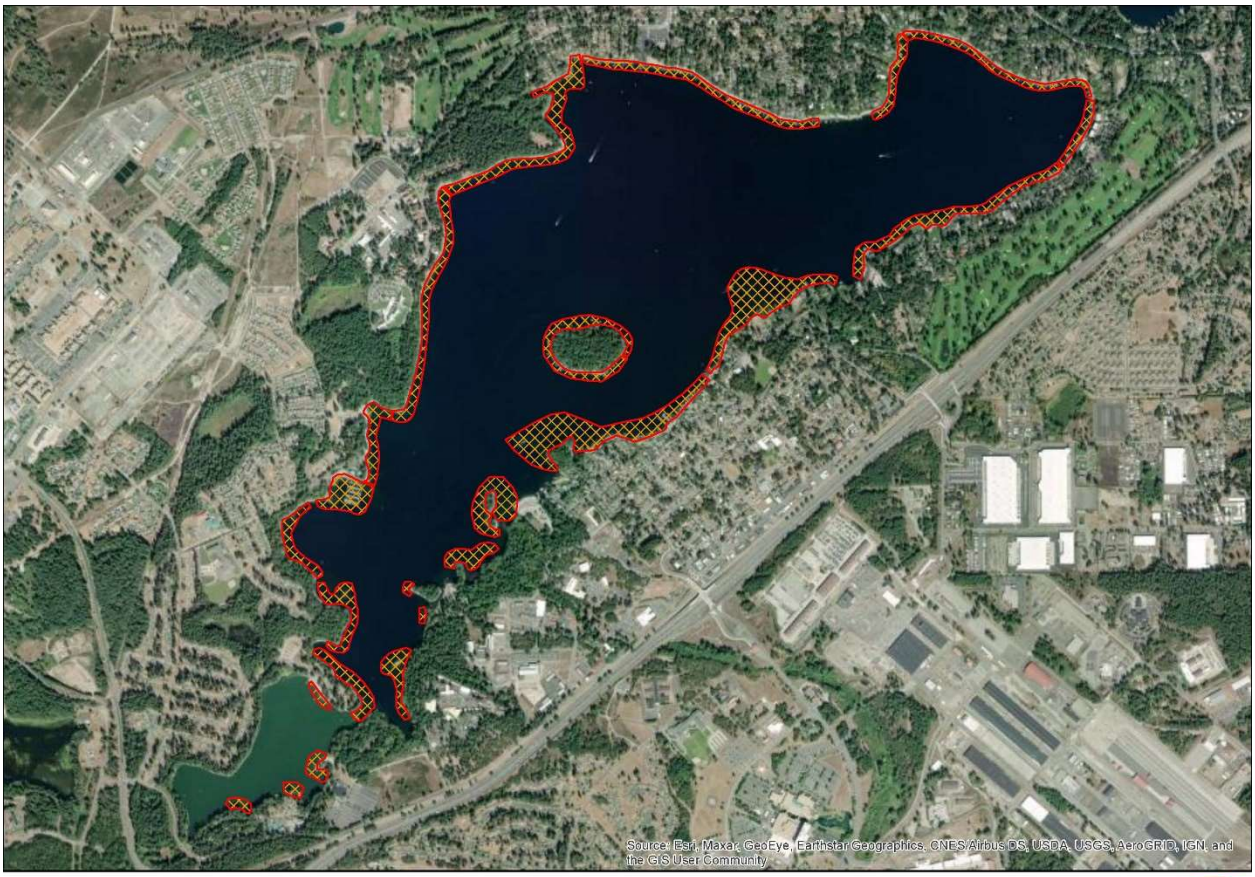
The color ramp on the right lower corner of each image shows the percent of the water column filled with vegetation, blue means no aquatic vegetation detected, green shows shape of the plant communities and as you go up from green to yellow to orange to red shows increasing percent of water column filled with plants. At the time of the survey native plants were starting to drop out for the fall.

Within these plant communities, there are very few areas that do not have some EWM present. Some are mixed native and EWM plants, other areas are monocultures or heavily dominated by EWM.

The map below shows acreages and locations that could be treated if funding is available. There are approximately 207.18 acres of littoral area that have some level of EWM present.



Suggested Options

There have been some occurrences of hybrid milfoils present in Washington State, primarily east of the Cascades. One suggestion would be to collect representative samples from around the lake and have a DNA analysis performed. Hybrids have

exhibited a need for higher herbicide application rates. We would be willing to do that.

Additionally, much of this EWM is in deeper water where a liquid like ProcallaCOR requires higher doses and greater expense to deliver the required dose to the plants. Granular herbicides could reduce the cost for targeting those plants. There are two granular systemic products that are available. The first is Renovate OTF which is a controlled release granular. It is not subject to a fish timing window and could be used earlier in the season to target growth in the deeper areas. The current contract has a price per acre for that. A second would be Sculpin G, a granular 2,4-D herbicide. This is less expensive but is subject to the fish timing window. The cost for that would be $550.00 per treated acre. ProcellaCOR cost remains the same and could be used in shallower water zones.

There are also options to combine lower cost contact herbicides in some areas while using systemics in others if budget is limited. Diquat treatments for example cost $325.00 per acre, are subject to fish timing window and generally provide summer long control, as contact herbicides do not kill root crowns and there will be regrowth at some level. But perhaps a combination of this and systemic herbicides could be considered.

The first task should be to determine if hybrid milfoil strains are present. The second task should be to obtain as much funding as possible, pursuing the Department of Ecology Grant program for example. Then resources should be delegated based on obtaining the best available outcome.

Conclusion

EWM is a very persistent plant reproducing by fragments. During the fall EWM plants auto-fragment and each mature plant can produce hundreds of fragments. These fragments float around the lake until they deposit on the lake bottom to start a new plant. This mode of reproduction gives EWM the ability to expand very quickly. The only way to defeat this plant is to control the full extent of where the plant is growing within the lake. If funding is not available to target all EWM within the lake using systemic herbicides, contact herbicides can be used to temporarily control the EWM, mitigate fragmentation, and prevent it's spread to areas controlled with systemic herbicides or that are EWM free.