

1.0 INTRODUCTION

Forest Lake, Vilas County, is an approximately 468-acre seepage lake with a maximum depth of 60 feet and a mean depth of 29 feet (Figure 1.0-1). Forest lake is a clear, oligo-mesotrophic lake with an average summer Secchi depth reading of 23 feet. Since Forest Lake is a seepage lake, water levels fluctuate every year based on weather patterns. The lake is a popular destination for walleye anglers due to its naturally reproducing walleye population. Forest Lake's primary management unit is the Forest Lake Association, Inc. (FLA) and has partnered with the Forest Lake Preservation Foundation Inc (FLPF) to sponsor a multiple WDNR grants.

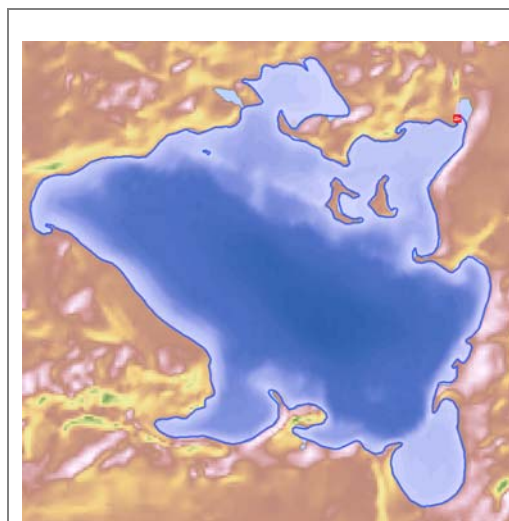


Figure 1.0-1. Forest Lake, Vilas County



Photo 1.0-1. Forest Lake public boat landing. Photo credit: Onterra.

Eurasian watermilfoil (*Myriophyllum spicatum*; EWM) was first documented in Forest Lake during the summer of 2001. Initial management efforts following detection included volunteer-based hand-harvesting activities and a spot 2,4-D treatment in 2001. Continued volunteer-based hand-harvesting occurred in subsequent years, seemingly maintaining the EWM population at low levels. The EWM population in Forest Lake has been monitored since 2013 through the completion of annual Late-Summer EWM Mapping Surveys by Onterra ecologists allowing for a good historical record of the EWM population dynamics.

1.1 Recent EWM Management & Planning

In 2013 and 2014, FLA supplied over 575 volunteer hours monitoring and hand-harvesting the EWM population. During those same years, the group paid for 230 hours of harvesting by professionals. Sufficient EWM was located in the northern portion of the lake to warrant an 8-acre 2,4-D treatment during the spring of 2015, which met control expectations. No active EWM management occurred during 2016-2017, and expanding EWM at the time resulted in professional hand harvesting efforts during 2018-2019.

In 2020, a 2,4-D herbicide treatment strategy was developed to target two areas of the lake that held largest populations of EWM. These bays, located on the northern shoreline of the lake, are described as the boat landing bay and the northwest bay. Ultimately, EWM control in the boat landing bay was high

and met treatment expectations. EWM control in the northwest bay did not meet treatment expectations for the year of treatment.

The 2021 Late-Summer EWM mapping survey indicated the colonized EWM within the northwest bay was of too large of size and scale to effectively target with hand-harvesting efforts. The FLA pursued an integrated pest management strategy for 2022 that included an herbicide treatment for this bay, as well as DASH and hand harvesting efforts targeting other EWM locations within the lake.

The 2022 ProcellaCOR™ treatment looked promising during the *year of treatment* (2022), as very little EWM was detected in the application sites or within the area of potential impact. The *year-after-treatment* (2023) results indicated some EWM population rebound in the June 2023 EWM mapping survey while the population was still below pre-treatment levels with no colonized areas present in the bay. Professional hand harvesting efforts during 2022 led to approximately 228.5 cubic feet of EWM harvested. The late-summer 2022 EWM mapping survey indicated a modest population within the lake because of recent management activities.

No areas of EWM met the FLA's trigger within their management plan for considering herbicide treatment in 2023. The FLA elected to continue an aggressive EWM management strategy during 2023 through a coordinated professional hand harvesting program that would target much of the known population in the lake. Professional harvesting activities included five days utilizing Diver Assisted Suction Harvesting (DASH) and 13 days of traditional hand harvesting during July, August, and early September. A total of 283.5 cubic feet of EWM was harvested from 15 sites around the lake during the professional harvesting activities in 2023.

1.2 2024 EWM Management & Monitoring Strategy

No areas of EWM met the FLA's trigger for considering herbicide management during 2024. The FLA continued to implement their integrated approach to EWM management in 2024 through a coordinated professional hand harvesting/DASH effort. Data from the September 2023 EWM mapping survey was used to create a preliminary harvesting strategy for 2024 (Map 1). The FLA then contracted with Onterra to complete a focused early season AIS survey in June 2024 with the primary purpose of refining the harvesting strategy for the season. A late-summer EWM mapping survey also took place to evaluate the harvesting strategy and to provide the overall census of the population from which the following years' management strategy is derived. This report details the professional monitoring and hand harvesting management efforts that took place during 2024.

2.0 2024 AQUATIC PLANT MONITORING RESULTS

During an AIS Mapping Survey, the entire littoral area of the lake is surveyed through visual observations from the boat (Photograph 2.0-1). Field crews supplemented the visual survey by deploying a submersible camera along with periodically doing rake tows. The AIS population is mapped using sub-meter GPS technology by using either 1) point-based or 2) area-based methodologies. Large colonies >40 feet in diameter are mapped using polygons (areas) and are qualitatively attributed a density rating based upon a five-tiered scale from *highly scattered* to *surface matting*. Point-based techniques were applied to AIS locations that were considered as *small plant colonies* (<40 feet in diameter), *clumps of plants*, or *single or few plants*.



Photo 2.0-1. EWM mapping survey on a Wisconsin lake.
Photo credit Onterra.

2.1 Focused Early Season AIS survey (ESAIS)

Onterra staff conducted a focused early-season AIS survey of Forest Lake on June 24, 2024. The extent of the surveyed areas for this visit was limited to sites where EWM was mapped during 2023 and included all of the preliminary 2024 hand harvesting work areas and therefore some areas of the lake were not surveyed. The survey crew experienced mostly sunny conditions with moderate wind later in the afternoon. Water levels were high with flooding near the boat landing and the crew noted the water clarity was somewhat murkier than usual. Overall, the crew found increased EWM compared to the September 2023 survey in many of the areas around the lake. The results of the June 2024 survey are displayed on Map 2.

The area near the islands harbored some of the largest concentrations of EWM that was encountered during the survey including an approximately 1.2-acre *scattered* to *dominant* density colony. In all, approximately 2.9 colonized acres of EWM was mapped around the lake, with many more occurrences mapped with points (*single plants*, *clumps of plants*, *small plant colonies*) which do not contribute to the acreage total. No colonies were given density ratings of either *highly dominant* or *surface matting*.

From the survey results, the FLA adjusted their prioritization strategy for the 2024 hand harvesting season. A total of 14 sites were included on the FLA's final hand harvesting strategy as reflected on Map 2. The FLA used their experience with this type of management program to lead in the determination of the site-buy-site prioritization plan for the 2024 season. Onterra provided the spatial data from this survey to the FLA's contracted hand harvesting firm to guide the 2024 harvesting activities.

2.2 Professional Hand-Harvesting Activities

The FLA contracted with Aquatic Plant Management, LLC in 2024 to provide professional DASH and hand harvesting services. A combination of DASH and hand harvesting took place over the course of 13 days during July and August 2024. Nine sites were visited during the course of the harvesting efforts and followed the prioritization strategy developed by the FLA and Onterra. Over 90 hours of underwater dive time resulted in a total harvest of 448 cubic feet of EWM (Table 2.2-1). The largest amount of harvest came from sites A-24, B-24, and E-24. Details of the professional hand harvesting activities are included within a EWM Removal Report authored by APM, LLC and is included with this report as Appendix A.

Table 2.2-1. Forest Lake 2024 professional DASH and hand harvesting activities. Table extracted from APM, LLC EWM Removal Report – Appendix A

Service	Dive Location	Avg. Water Depth	# of Dives	Underwater Dive Time	AIS Removed (cubic feet)
DASH	A-24	6.8	9	8.4	73.0
	B-24	6.6	7	14.8	118.0
	E-24	5.5	7	9.5	47.0
	F-24	6.0	4	3.8	15.5
	G1-24	6.5	10	9.8	32.5
	G2-24	6.0	1	0.8	0.5
	H-24	5.1	7	6.5	15.0
	K-24	5.4	4	3.8	24.5
DASH Total		6.1	49	57.5	326.0
HH	A-24	5.3	6	12.1	41.5
	B-24	5.7	3	4.2	14.5
	D-24	6.0	1	0.4	0.5
	E-24	4.7	10	13.6	58.5
	F-24	4.5	1	0.9	0.5
	K-24	4.5	1	1.8	6.5
HH Total		5.0	22	33.0	122.0
Grand Total		5.8	71	90.5	448.0

2.3 Qualitative Monitoring: EWM Mapping Surveys

On September 19, 2024, one of Onterra’s field crews conducted the late-season EWM mapping survey on Forest Lake. The crew had good weather during the survey with modest winds and a mix of sun and clouds along with good water clarity and good visibility. The entire littoral area of the lake was surveyed with all occurrences of EWM mapped around the lake. Results of the survey are displayed on Map 3.

The survey showed EWM to be present in many of the historic locations that have harbored milfoil in the past as well as a few newer locations. Overall, the population was higher than recent years and a bit more widespread around the lake. Dense colonies of northern watermilfoil were also observed around the lake. Some of the largest concentrations of EWM found during the survey was a colonized area between the two islands on the northeast end of the lake. This colony was particularly dense with some surface matting conditions along with scattered, dominant, and highly dominant portions. Another fairly substantial scattered/dominant colony was mapped east of the islands along the shoreline. Other small colonized areas or point-based occurrences were marked around many areas of the lake.

A total of 8.2 acres of colonized EWM was delineated around the lake in the 2024 mapping survey which represents the largest total acreage since annual mapping surveys began in 2013 (Figure 2.3-1). Of the colonized areas mapped in the 2024 survey, approximately 0.1 acres were *surface matting*, 0.5 acres were *highly dominant* and another 2.0 acres were *dominant density*. Colonies mapped as *dominant density* or greater in Onterra’s mapping methodology are indicative of areas where impacts to recreational use of the lake is expected. The remaining 5.5 acres consisted of either highly scattered or scattered density ratings. Note that acreages of EWM only account for colonies mapped with area-based methodologies (polygons) and does not account for point-based EWM occurrences such as *single plants*, *clumps of plants*, or *small plant colonies*. Some of the increased acreage in the 2024 survey can be accounted for by areas previously mapped with point-based methods being better represented as a highly scattered colony.

Since monitoring began, the EWM population has been maintained at modest levels in the lake with most years having less than five colonized acres present (Figure 2.3-1). Changes in the EWM footprint over time are influenced by management occurring on the lake as well as some degree of natural variability. The 2024 growing season saw a banner year for EWM growth on many lakes that Onterra surveyed so the increased population in Forest Lake in 2024 is consistent with regional observations.

2024 DASH & Hand Harvesting Assessment

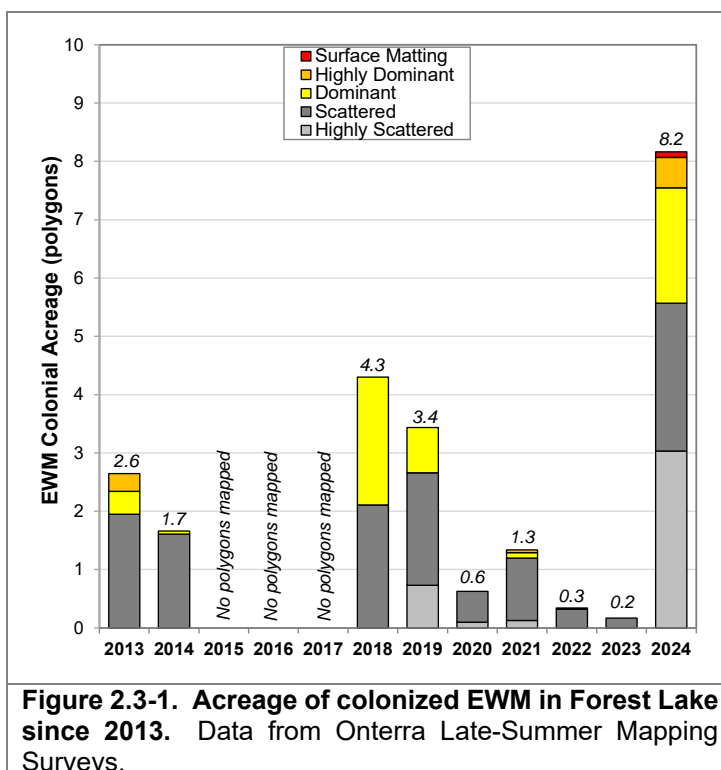
Sites that received the highest amount of hand harvesting effort during 2024 are evaluated below in terms of comparing the pre- and post- harvesting EWM population. Data collected during the June 2024 focused early season survey serves as a pretreatment dataset while the September late-summer mapping survey was completed after harvesting efforts were completed. It is acknowledged that the EWM population likely continued to expand over the course of the growing season and the June survey may underrepresent the actual population in the site at the time harvesting began. Several other sites were targeted during 2024 with varying amounts of effort (Appendix A) and can be evaluated through comparing Maps 2 & 3. All harvesting efforts resulted in suppression of the EWM population during 2024 in the targeted areas.

Site A-24

Site A-24, located near the public boat landing in the northeast portion of the lake, contained a scattered EWM colony along with numerous single plants, clumps of plants or small plant colonies at the time of the June 2024 survey (Figure 2.3-2). Harvesting efforts totaled 20.5 hours and resulted in a harvesting of 114.5 cubic feet of EWM. The late-summer mapping survey indicated that some areas of the site decreased in density, while other portions increased. For example, the former scattered colony was reduced to highly scattered and several areas where point-based mapping data was present in June were now better represented as a highly scattered colony in the September survey.

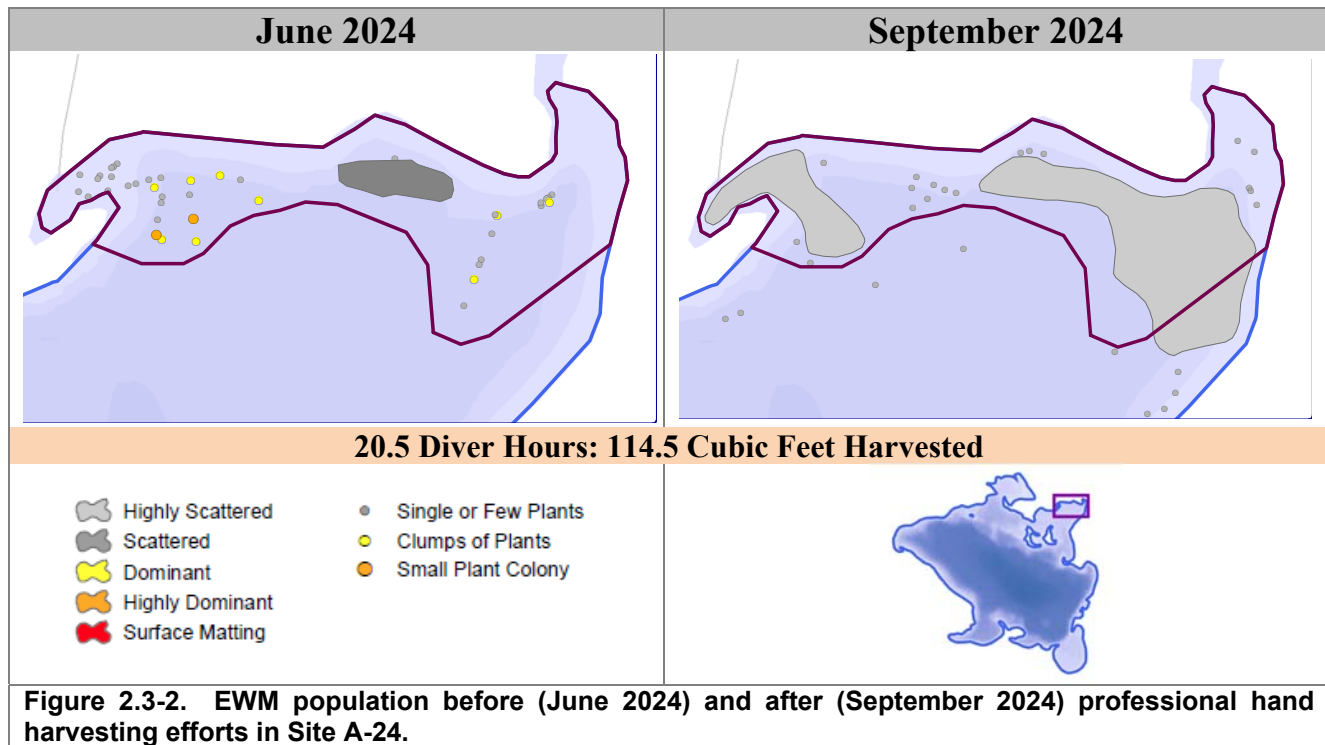
Site B-24

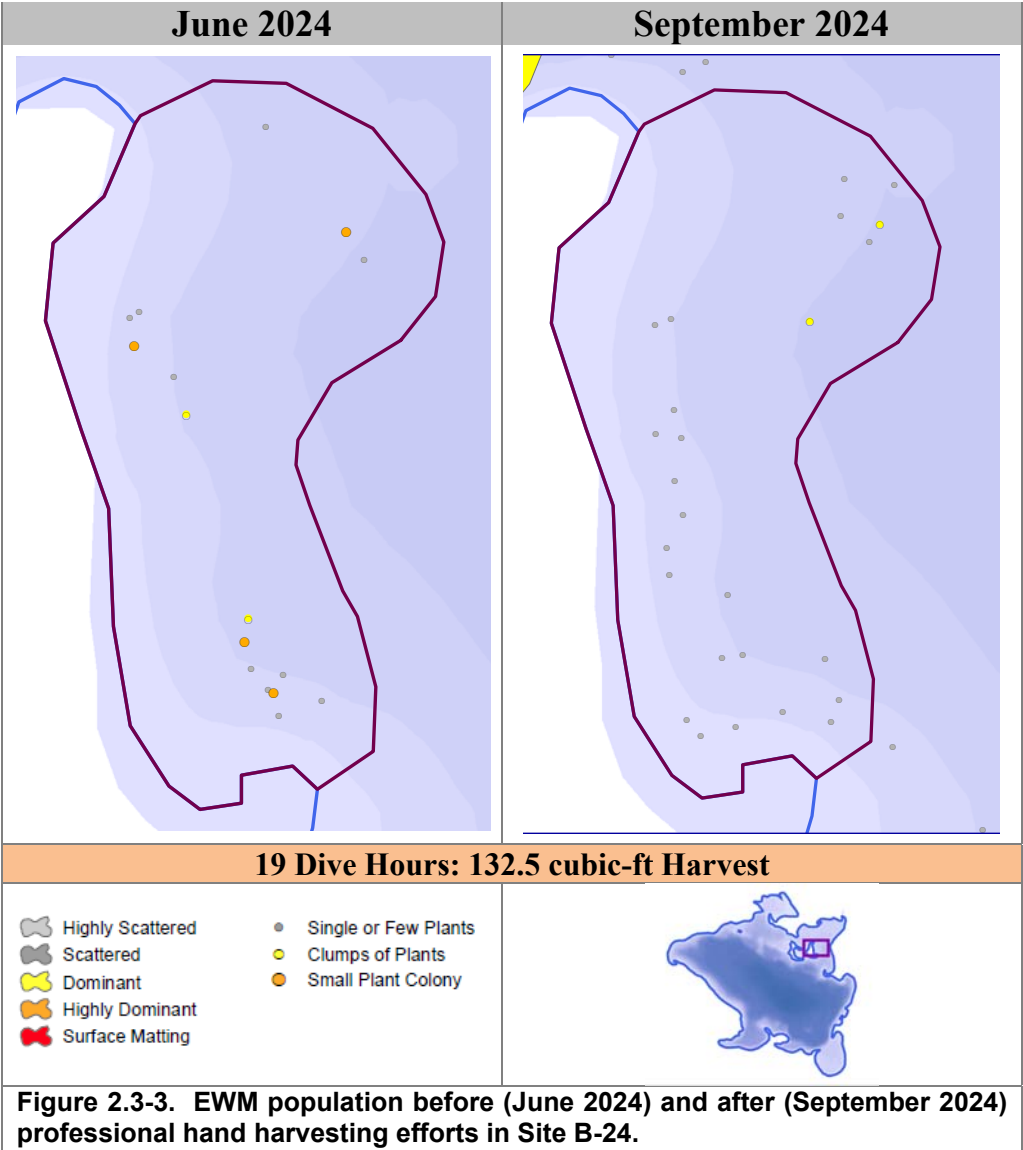
Site B-24 is located along the eastern edge of an island on the northeast part of the lake. The June 2024 EWM population consisted of four small plant colonies as well as several clumps of plants or single or few plants occurrences (Figure 2.3-3). Following the removal efforts which entailed 19 diver hours and a harvest yield of 132.5 cubic feet of EWM, the EWM population had decreased by the time of the September survey. The September survey showed no small plant colonies remained in the work site and only two clumps of plants and several single plants were present.

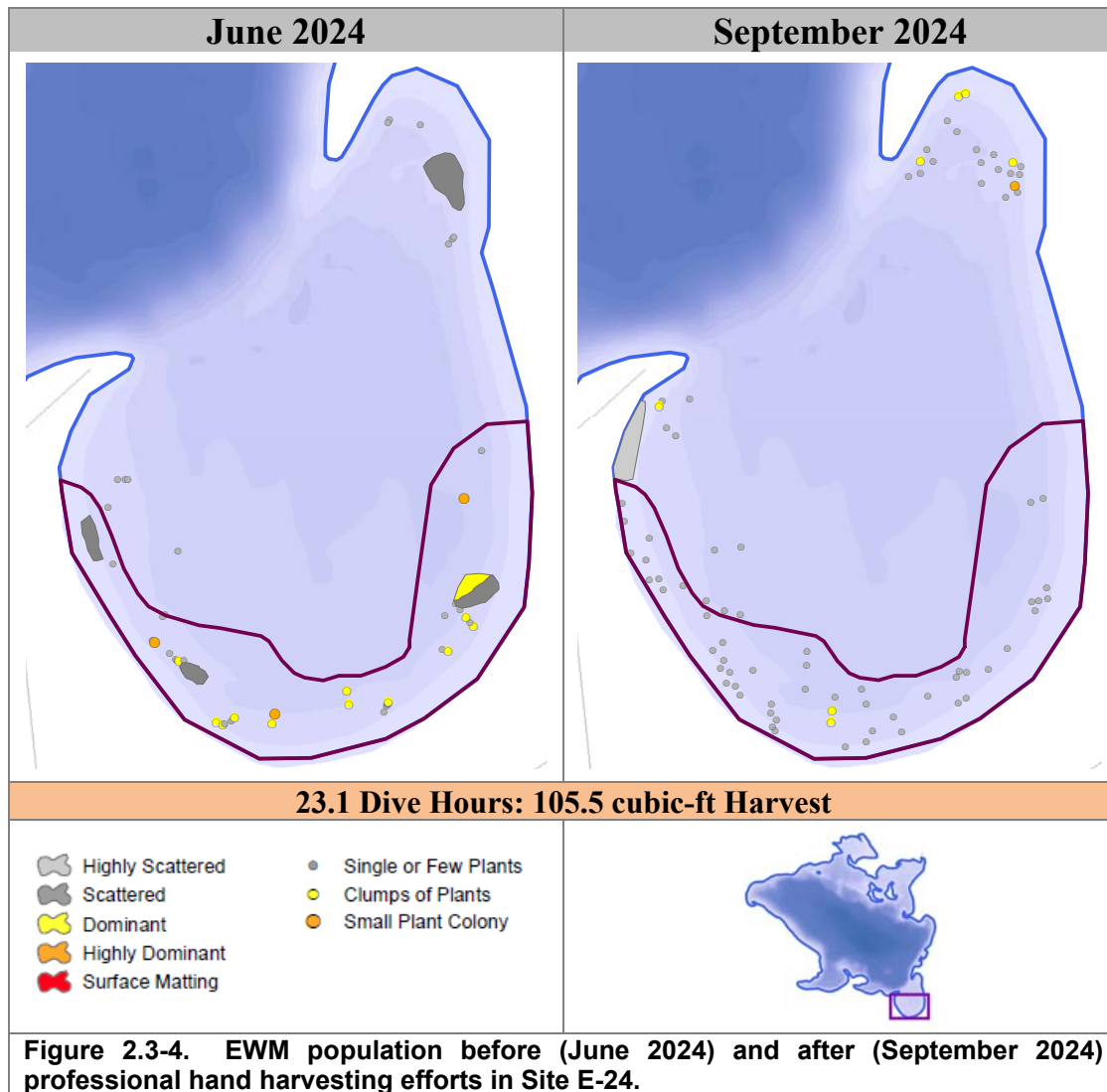


Site E-24

Site E-24 comprised a 6.1-acre area within a bay on the southeast end of Forest Lake (Figure 2.3-4). This site was found to contain three colonized areas of EWM described as scattered or dominant density as well as many single plants, clumps of plants, and small plant colonies during the June 2024 survey. Professional harvesting efforts resulted in a harvest of 105.5 cubic feet of EWM over 23.1 diver hours. After the harvesting was complete, the September survey showed the EWM population decreased throughout the entire site. No colonized areas were present, and most EWM remaining in the site was comprised of single or few plants occurrences, along with two clumps of plants.







3.0 CONCLUSIONS AND DISCUSSION

During 2024 the FLA conducted a coordinated professional EWM hand harvesting program as planned. Substantial efforts were directed at many EWM populations around the lake as a part of a prioritized program seeking to maintain the lake-wide population at lower levels. Professional EWM mapping surveys indicated that the EWM population within the lake increased over the course of the 2024 growing season, with most of the increases being in unmanaged locations. Where professional hand harvesting efforts took place, the EWM population was suppressed and lowered. The 2024 hand harvesting strategy was consistent with expectations for the management technique. The 2024 late-summer EWM mapping survey indicated that the EWM population comprised over 8 acres of colonized area including some colonies that were comprised of dominant, highly dominant, or surface matted densities which were inhibiting recreational uses. Onterra observed EWM population increases within many lakes in the region surrounding Forest Lake, and favorable environmental conditions including an extended growing season may have contributed to EWM population expansion during 2024.

3.1 2025 EWM Management Strategy

The FLA successfully submitted a WDNR AIS-control grant application in the fall 2024 cycle which provides funding assistance to carry out the proposed management and monitoring activities for 2025-2026 that are described below. Consistent with their recently completed Management Plan update, the Forest Lake Preservation Foundation (FLPF), in partnership with the Forest Lake Association (FLA) is planning to implement an Integrated Pest Management strategy for Eurasian watermilfoil in Forest Lake in 2025-2026, along with detailed monitoring.

Since herbicide was last used in Forest Lake in 2022, extensive hand harvesting efforts have aimed to suppress the population and prolong the gains made from the treatments. In 2023-2024, some colonies of EWM have expanded in size such that they are too large to manage with hand harvesting alone and they meet the FLA's trigger within their management plan for considering the use of herbicides.

The preliminary 2025 EWM management strategy includes herbicide spot treatment for sites that meet the trigger in the management plan for this technique, as well as coordinated hand harvesting efforts in other known areas around the lake. The expectation of this management approach is to maintain a low population within the lake. Sites treated with herbicides are expected to result in multiple years of little to no EWM present, while hand harvesting efforts aim to suppress the EWM population in targeted areas and postpone the potential need for future use of herbicides.

ProcellaCOR Spot-Treatment

Consistent with the triggers outlined within the FLA's management plan, three sites within Forest Lake are proposed for ProcellaCOR herbicide spot treatments in 2025 (Map 4). Each site is believed to be of sufficient size or be in a favorable location within the lake to expect sufficient CET's to be met that will result in EWM mortality. Treatments at sites A-25 and B-25 are expected to result in EWM impacts beyond the application areas in the vicinity of the northeast end of the lake near the public boat landing as the herbicide dissipates and mixes within waters in this area.

Treatment of site C-25 seeks to achieve multi-year EWM reduction within much of the bay in which the application area is located on the north end of the lake. The dosing strategy of 8.0 PDU's is elevated to account for the relatively small size of the application area as well as the known limits of holding CET's in this particular site based on past management efforts in the same area. It is acknowledged that this is a challenging site within Forest Lake for meeting EWM control expectations with herbicides.

Herbicide treatment timing would likely occur in mid-June, being guided by when walleye are out of the most vulnerable life stages shown to be vulnerable to 2,4-D treatments, acknowledging that this research may also apply to ProcellaCOR. Working with GLIFWC and the regional WDNR biologists, the peak spawning time would be understood to extrapolate when walleye are past these stages.

The FLA has been provided with applicable risk assessment materials during their APM project and past meetings as it pertains to herbicide use. The FLA acknowledges that some native plant species in the lake are likely to be impacted by the pending ProcellaCOR treatment including northern watermilfoil and coontail. Many floating-leaf species, such as watershield or spatterdock, often show signs of sub-lethal impacts such as leaf twisting or inversion from ProcellaCOR treatments, but these species typically recover later in the growing season.

DASH & Hand Harvesting

The FLA has a great deal of past experience with managing EWM with hand harvesting methods and annual strategies that are updated as new information becomes available. The FLA anticipates contracting for professional hand harvesting/DASH efforts beyond the amount that the recent AIS-Control grant provides funds for.

Hand-harvesting will take place between roughly early June and the Late-Season EWM Mapping surveys (roughly mid-September). With the spatial data from the latest EWM mapping survey and delineated harvest areas loaded onto a GPS unit, harvesters will remove EWM following the previously outlined strategy. Map 5 displays the initial 2025 DASH/hand harvesting strategy. The FLA will continue to communicate with their professional DASH contractor and Onterra in developing their prioritization strategy.

3.2 Monitoring Plan

Pretreatment Confirmation & Refinement Survey

Onterra ecologists will conduct a Pretreatment Confirmation & Refinement Survey of the preliminary herbicide treatment areas. Volunteers would collect temperature monitoring prior to treatment to assist with proper timing of the pretreatment survey. During this visit, Onterra staff would provide supplies and training to volunteers for conducting herbicide concentration monitoring. This meander-based survey would investigate for colonial expansion, reduced occurrence, growth stage of the EWM (and native plants), application area specifics (e.g. average depth & extents), and other aspects that would change treatment plan.

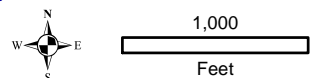
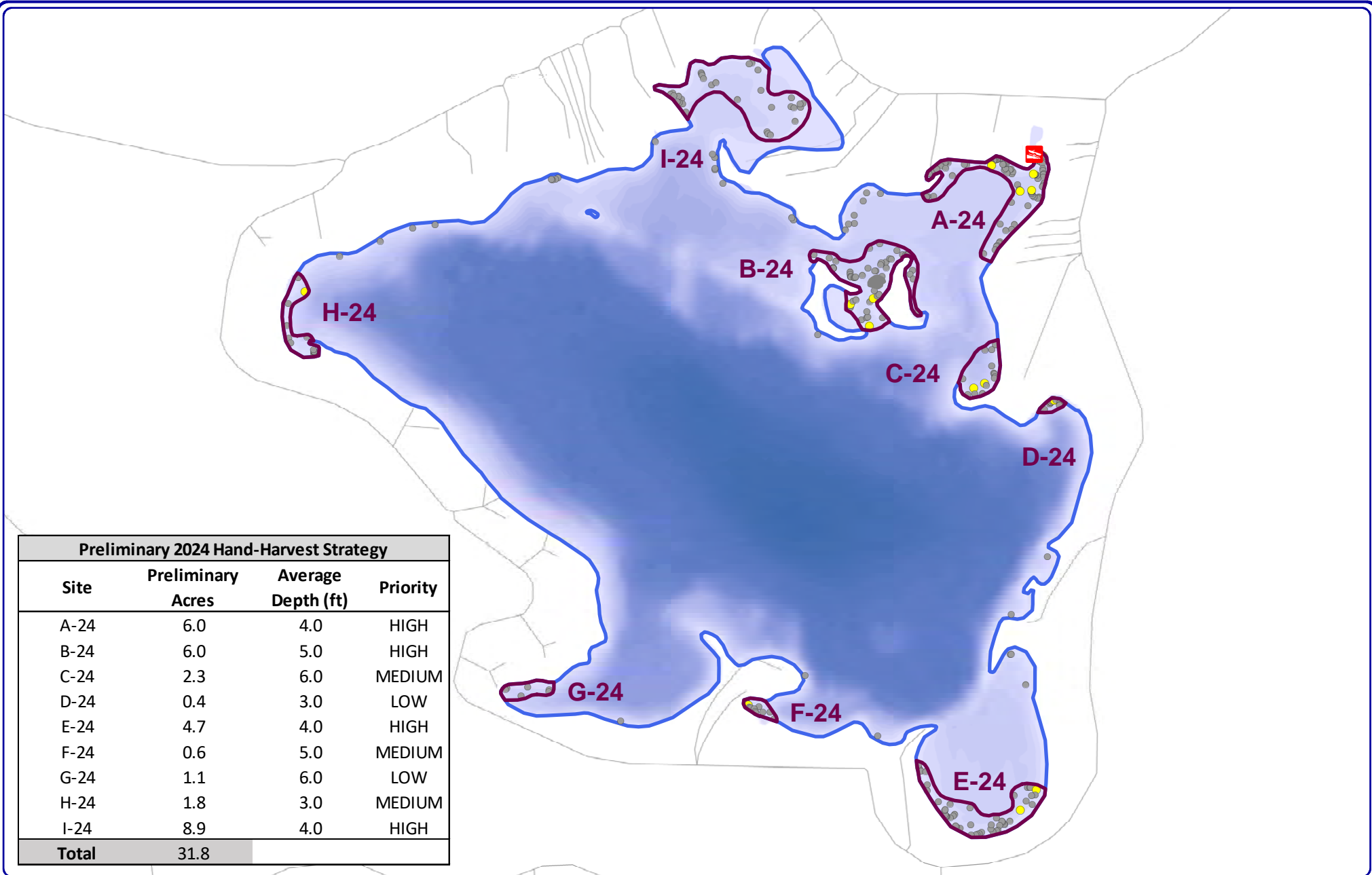
Following the Pretreatment Confirmation & Refinement Survey, an email-style report with map(s) of the survey results and finalized treatment plan would be provided to the FLA, WDNR, and other project partners for review prior to the treatment. Spatial data would be provided to the herbicide applicator in appropriate format. The chosen contractor, in conjunction with the association, will be responsible for completing appropriate permit-related documentation and deliverables to the WDNR.

Herbicide Concentration Monitoring

FLA volunteers would collect herbicide concentration monitoring during the hours/days following treatment. The volunteer-based sampling structure is currently modeled off of the 2024 WDNR's (central office) research project but would adapt to the 2025 model as appropriate. Multiple samples would be collected at specified time intervals, mostly focused on the first few days after treatment. Properly preserved samples would be overnight delivered to the Wisconsin State Lab of Hygiene (WSLH) where the herbicide analysis is conducted. Onterra will develop the specific design of the herbicide concentration monitoring plan and send it to WDNR for feedback and approval. Once the sample plan is finalized, Onterra will provide instruction to the FLA's volunteers.

Late-Summer EWM Mapping Survey

A Late Season AIS (LSAIS) Survey would be conducted towards the end of the growing season to produce the mapping data to document a census of the EWM population within Forest Lake at the perceived peak growth stage. Comparing these data to previous surveys will help lake stakeholders understand management outcomes. The EWM mapping data are also utilized to develop initial management strategies for the following year.



Onterra LLC
 Lake Management Planning
 815 Prosper Road
 De Pere, WI 54115
 920.338.8860
www.onterra-eco.com

Sources:
 Roads and Hydro: WDNR
 Bathymetry: Onterra
 Aquatic Plants: Onterra, 2023
Map Date: February 28th, 2024 KLW
 Filename: ForestVilas_2024_HH_Prelim.mxd

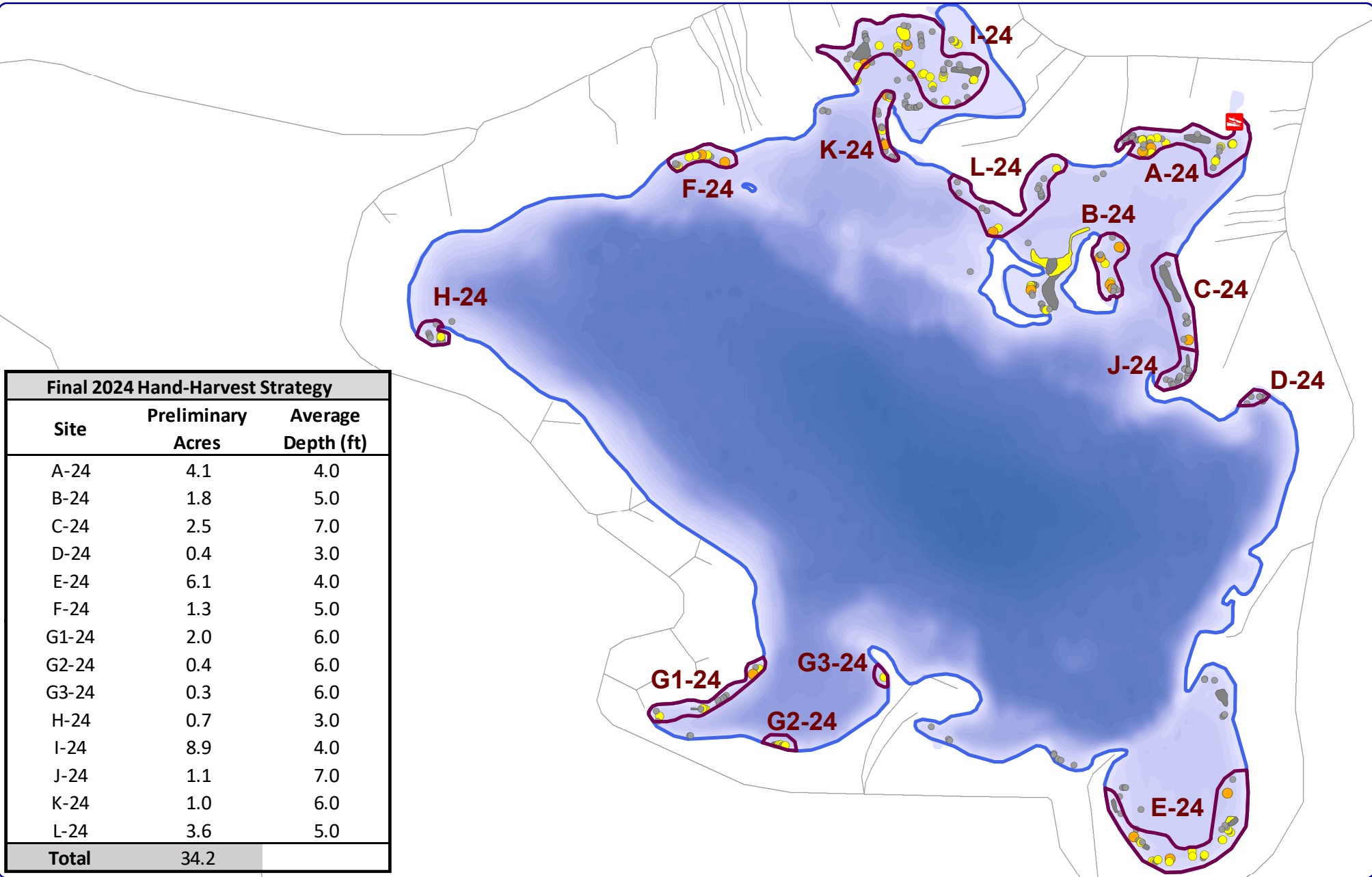


Project Location in Wisconsin

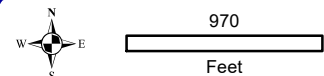
Legend Eurasian watermilfoil (September 14th, 2023)

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- Public Boat Landing
- 2024 Preliminary Hand-Harvesting Site

Forest Lake
 Vilas County, Wisconsin
**Preliminary 2024
 Hand-Harvest Strategy**



Final 2024 Hand-Harvest Strategy		
Site	Preliminary Acres	Average Depth (ft)
A-24	4.1	4.0
B-24	1.8	5.0
C-24	2.5	7.0
D-24	0.4	3.0
E-24	6.1	4.0
F-24	1.3	5.0
G1-24	2.0	6.0
G2-24	0.4	6.0
G3-24	0.3	6.0
H-24	0.7	3.0
I-24	8.9	4.0
J-24	1.1	7.0
K-24	1.0	6.0
L-24	3.6	5.0
Total	34.2	



Onterra LLC
 Lake Management Planning
 815 Prosper Road
 De Pere, WI 54115
 920.338.8860
www.onterra-eco.com

Sources:
 Roads and Hydro: WDNR
 Bathymetry: Onterra
 Aquatic Plants: Onterra, 2024
 Map Date: June 28, 2024 - RMF



Legend

Eurasian Watermilfoil (June 24th, 2024)

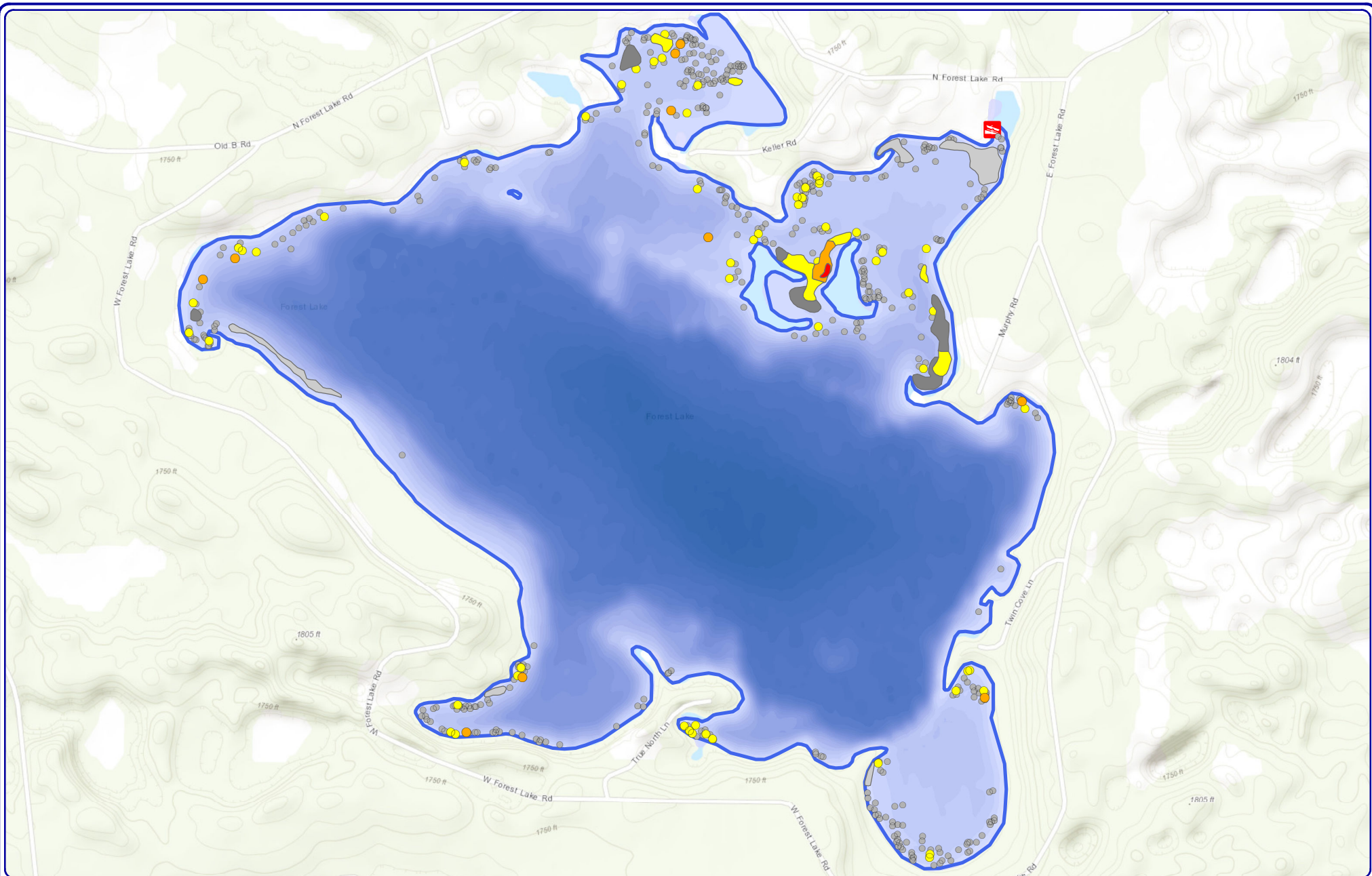
- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting (None)

- Single or Few Plants
- Clumps of Plants
- Small Plant Colony

- Public Boat Landing
- 2024 DASH/ Hand-Harvesting Site

Forest Lake
 Vilas County, Wisconsin

2024
Hand-Harvest/DASH
Strategy



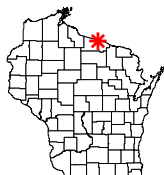
975

Feet

Onterra LLC
Lake Management Planning

815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Basemap: ESRI
Bathymetry: Digitized by Onterra
Aquatic Plants: Onterra, 2024
Map Date: October 7, 2024 - RMF



Project Location in Wisconsin

Legend

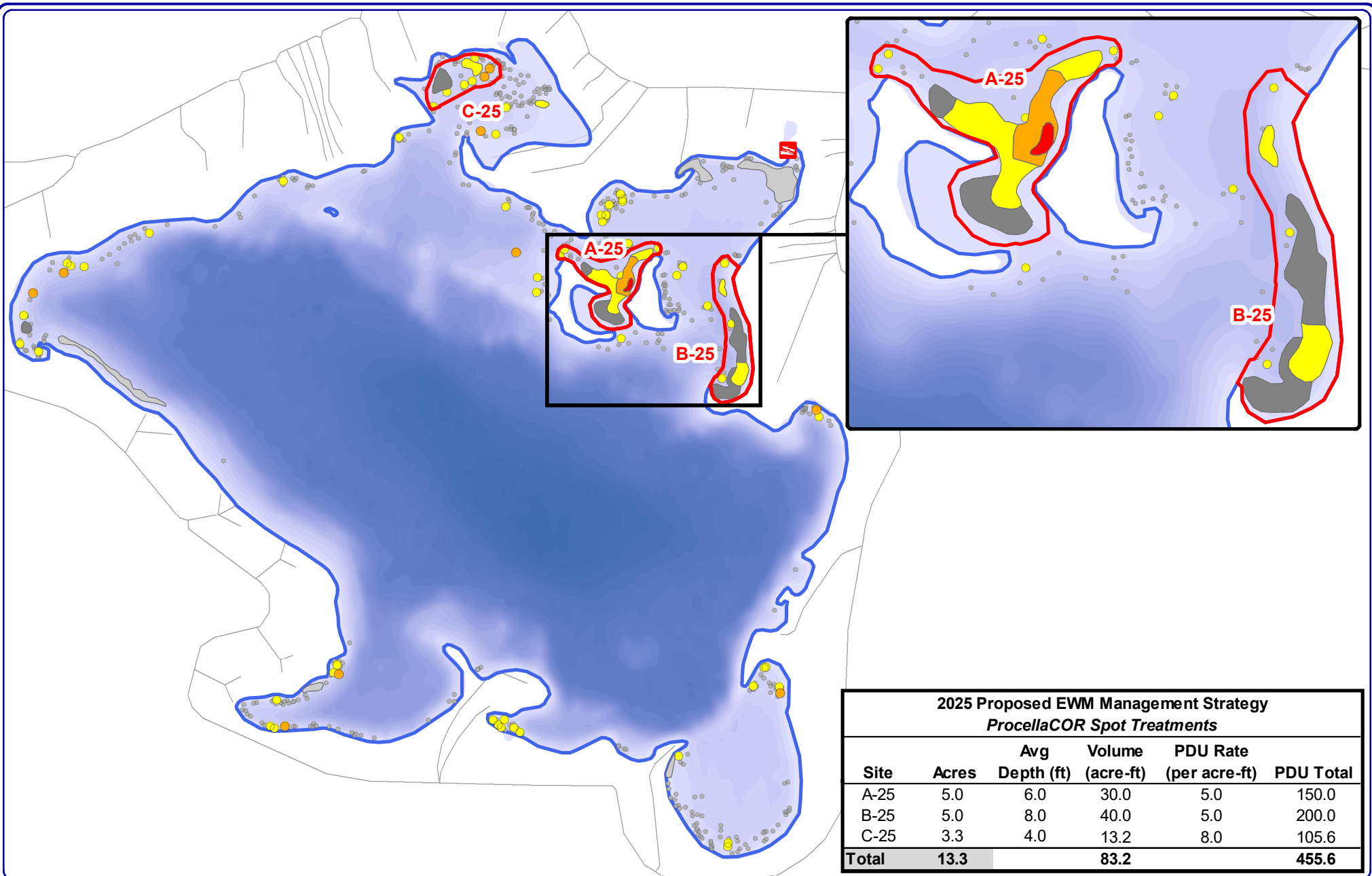
EWM Survey Results (September 19, 2024)

- | | | | |
|--|------------------|--|----------------------|
| | Highly Scattered | | Single or Few Plants |
| | Scattered | | Clumps of Plants |
| | Dominant | | Small Plant Colony |
| | Highly Dominant | | |
| | Surface Matting | | |

Forest Lake

Vilas County, Wisconsin

September 2024
Eurasian watermilfoil
Survey Results



2025 Proposed EWM Management Strategy ProcellaCOR Spot Treatments					
Site	Acres	Avg Depth (ft)	Volume (acre-ft)	PDU Rate (per acre-ft)	PDU Total
A-25	5.0	6.0	30.0	5.0	150.0
B-25	5.0	8.0	40.0	5.0	200.0
C-25	3.3	4.0	13.2	8.0	105.6
Total	13.3		83.2		455.6



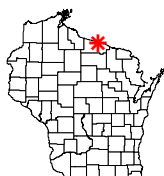
1,000

Feet

Onterra LLC
Lake Management Planning

815 Prosper Road
De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads & Hydro: WDNR
Bathymetry: WDNR, Digitized by Onterra
Aquatic Plants: Onterra, 2024
Map Date: 12-31-2024 TWH



Project Location in Wisconsin

Legend

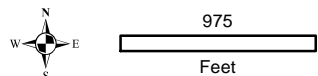
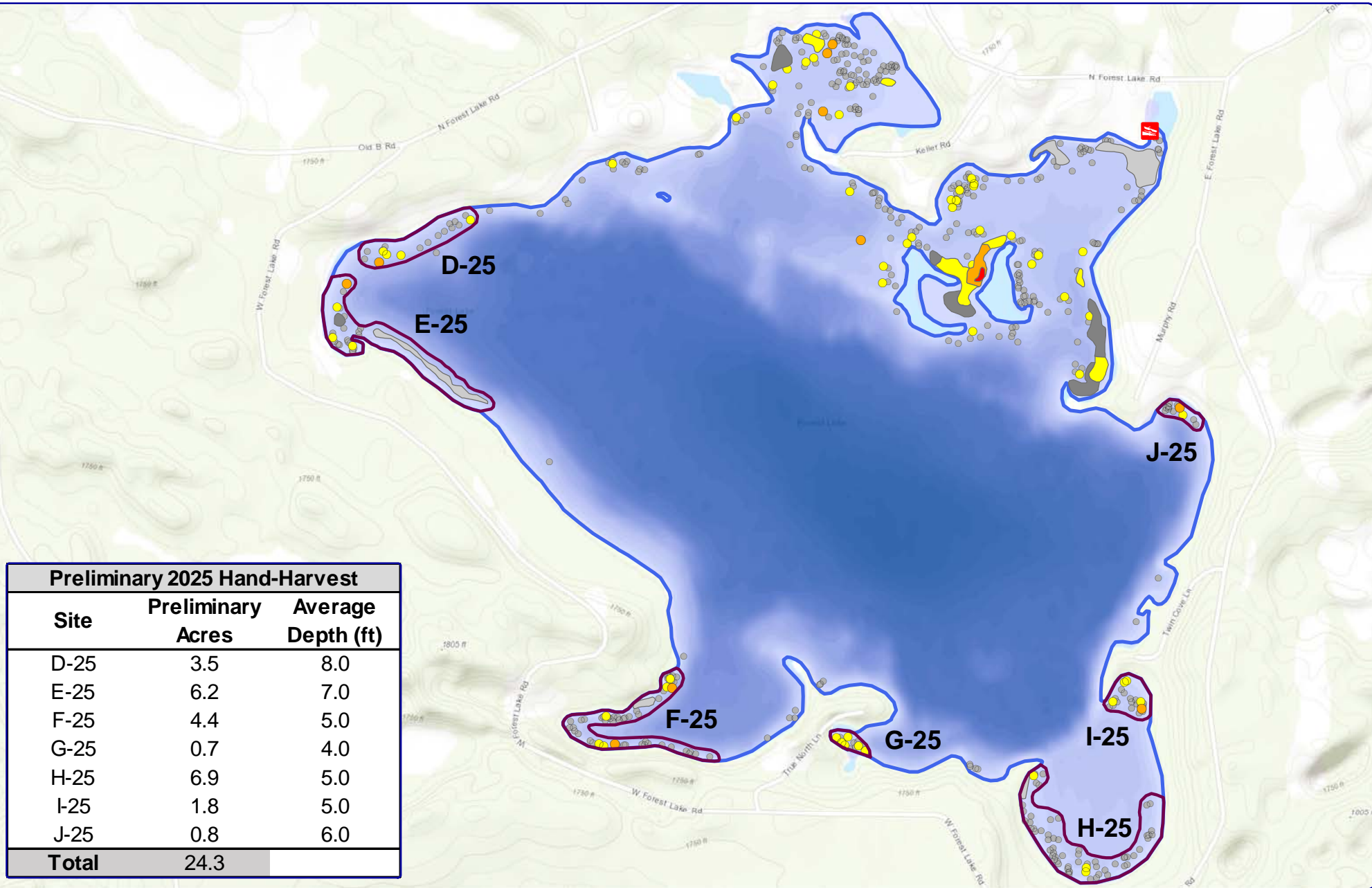
Eurasian watermilfoil Survey: September 19, 2024

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant
- Surface Matting

- Single or Few Plants
- Clumps of Plants
- Small Plant Colony
- 2025 Preliminary Herbicide Treatment Site

Forest Lake
Vilas County, Wisconsin

**Preliminary 2025
EWM Herbicide
Treatment Strategy**



Onterra LLC
 Lake Management Planning
 815 Prosper Road
 De Pere, WI 54115
 920.338.8860
 www.onterra-eco.com

Sources:
 Basemap: ESRI
 Bathymetry: Onterra
 Aquatic Plants: Onterra, 2024
 Map Date: January 27, 2025 - RMF



- Legend**
Eurasian watermilfoil (September 19, 2024)
- Highly Scattered
 - Scattered
 - Dominant
 - Highly Dominant
 - Surface Matting
 - Single or Few Plants
 - Clumps of Plants
 - Small Plant Colony

- Public Boat Landing
- 2025 Preliminary Hand-Harvesting Site

Map 4
 Forest Lake
 Vilas County, Wisconsin
**Preliminary 2025
 Hand-Harvest Strategy**

A

APPENDIX A

**Forest Lake EWM Removal Report 2024 – Aquatic Plant
Management LLC**



Forest Lake EWM Removal Report 2024

PO Box 1134 Minocqua, WI 54548



Forest Lake EWM Removal Summary

Dive Background: In July and August, Aquatic Plant Management LLC (APM) conducted nine (9) days of Diver Assisted Suction Harvesting and five (5) days of Hand Harvesting for Eurasian Watermilfoil (EWM) on Forest Lake in Vilas County, WI. The team focused their efforts at 9 sites as prioritized by the Forest Lake Preservation Association. In total APM was able to remove **448.0 cubic feet of EWM** from Forest Lake.

Dive Results by Day

Date	Weather Conditions	Water Temp (F)	Underwater Dive Time (hrs)	AIS Removed (cubic ft)
7/8/2024	Periods of rain	74	6.7	64.0
7/9/2024	Sunny	71	7.0	63.0
7/10/2024	Sunny	71	6.5	43.0
7/11/2024	Sunny	73	6.4	43.5
7/29/2024	Partly Cloudy	70	6.9	21.0
7/30/2024	Partly Cloudy	70	6.8	30.0
7/31/2024	Sunny	70	12.6	27.5
8/2/2024	Sunny	70	6.3	23.0
8/12/2024	Sunny	69	7.8	55.0
8/13/2024	Sunny	70	6.4	30.0
8/20/2024	Sunny	70	5.8	20.5
8/21/2024	Sunny	70	5.7	16.5
8/22/2024	Sunny	67	5.7	11.0
Grand Total			90.5	448.0

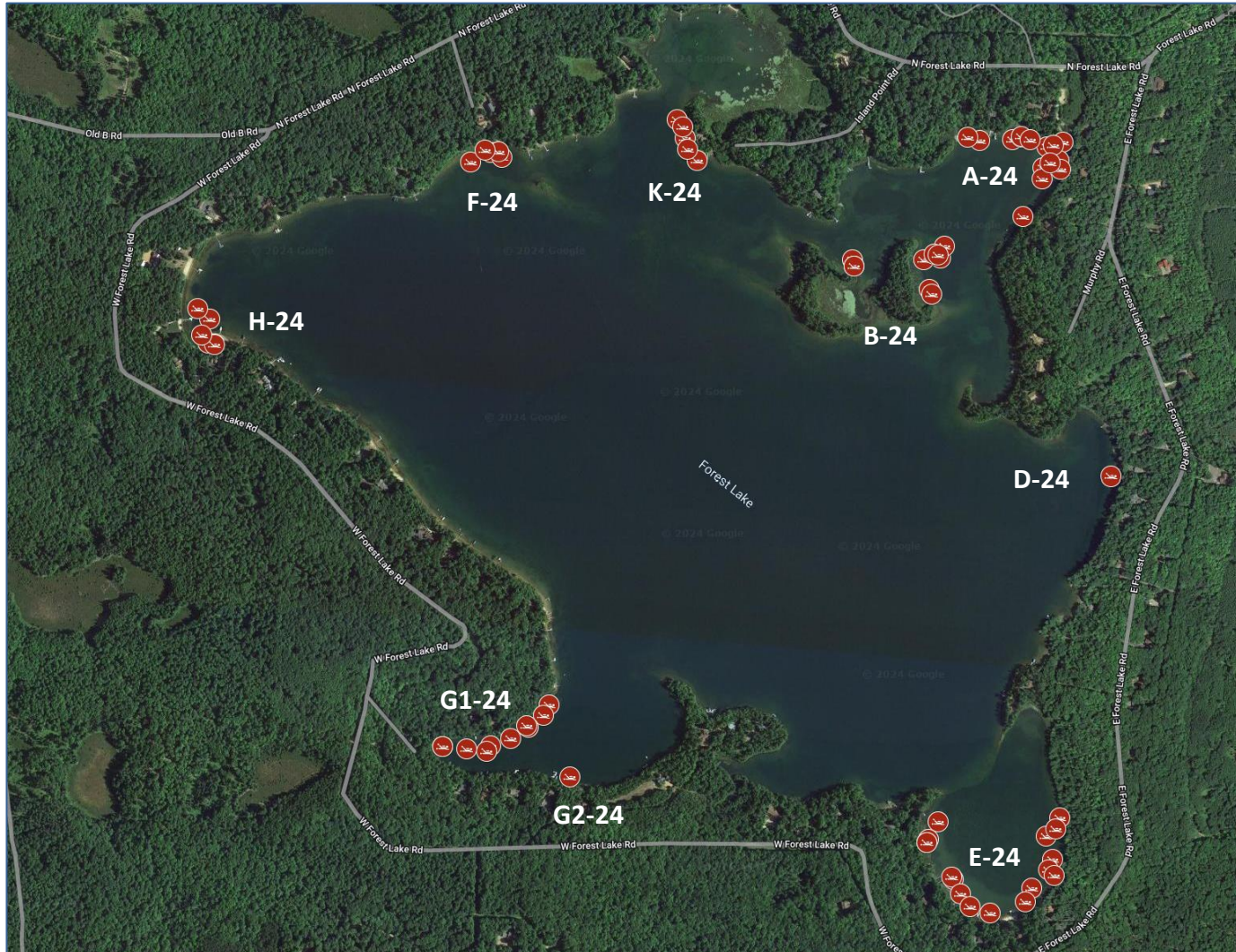


Dive Results by Site

Service	Dive Location	Avg. Water Depth	# of Dives	Underwater Dive Time	AIS Removed (cubic feet)
DASH	A-24	6.8	9	8.4	73.0
	B-24	6.6	7	14.8	118.0
	E-24	5.5	7	9.5	47.0
	F-24	6.0	4	3.8	15.5
	G1-24	6.5	10	9.8	32.5
	G2-24	6.0	1	0.8	0.5
	H-24	5.1	7	6.5	15.0
HH	K-24	5.4	4	3.8	24.5
	DASH Total	6.1	49	57.5	326.0
	A-24	5.3	6	12.1	41.5
	B-24	5.7	3	4.2	14.5
	D-24	6.0	1	0.4	0.5
	E-24	4.7	10	13.6	58.5
	F-24	4.5	1	0.9	0.5
HH Total	K-24	4.5	1	1.8	6.5
	HH Total	5.0	22	33.0	122.0
Grand Total		5.8	71	90.5	448.0

Dive Highlights and Recommendations: The dive teams spent the about half of their time between sites A-24 and E-24 where they removed about half of the total biomass. Site B-24 also had significant biomass removed. The DASH team was able to target additional sites down the priority list in G1-24, G2-24, and H-24 after targeting the other sites first. Overall, Forest Lake should continue to take an Integrated Pest Management (IPM) approach and evaluate different strategies to manage the EWM population on the lake. Continued monitoring and management efforts are important to prevent the spread of EWM throughout Forest Lake.

Map of Forest Lake Dive Sites





Detailed Diving Activities | July

Date	Dive Location	Latitude	Longitude	Underwater Dive Time (hrs)	AIS Removed (cubic ft)	AIS Density	Avg Water Depth (ft)	Native Species	Native By-Catch	Substrate Type
7/8/2024	A-24	46.15439	-89.36712	1.67	7.0	Clumps	5.0	Northern Milfoil	0.5	Organic
7/8/2024	A-24	46.15404	-89.36724	0.92	9.5	Clumps	6.0	Northern Milfoil	0.0	Organic
7/8/2024	A-24	46.15391	-89.36766	1.08	16.0	Clumps	7.0	Northern Milfoil	0.5	Organic
7/8/2024	A-24	46.15370	-89.36768	0.50	7.0	Single or Few	8.0	Northern Milfoil	0.5	Organic
7/8/2024	A-24	46.15443	-89.36848	1.00	10.5	Clumps	7.0	Northern Milfoil	0.0	Organic/Sand
7/8/2024	A-24	46.15448	-89.36824	1.00	7.0	Clumps	7.0	Northern Milfoil	0.0	Organic/Sand
7/8/2024	A-24	46.15442	-89.36936	0.50	7.0	Single or Few	8.0	Northern Milfoil	0.0	Organic/Sand
7/9/2024	B-24	46.15224	-89.37042	2.42	21.0	Small Plant Colony	7.0	Northern Milfoil	0.5	Organic/Sand
7/9/2024	B-24	46.15221	-89.37086	1.17	21.0	Small Plant Colony	6.0	Northern Milfoil	0.5	Organic/Sand
7/9/2024	B-24	46.15245	-89.37031	2.17	7.0	Small Plant Colony	7.0	Northern Milfoil	0.0	Organic/Sand
7/9/2024	B-24	46.15166	-89.37071	1.25	14.0	Small Plant Colony	6.0	Northern Milfoil	0.5	Organic/Sand
7/10/2024	A-24	46.15449	-89.36824	1.17	5.5	Clumps	7.0	Northern Milfoil	0.0	Organic/Sand
7/10/2024	A-24	46.15430	-89.36755	0.58	3.5	Clumps	6.5	Northern Milfoil	0.5	Organic/Sand
7/10/2024	K-24	46.15480	-89.37748	0.67	2.5	Clumps	3.0	Northern Milfoil	0.0	Organic/Sand
7/10/2024	K-24	46.15446	-89.37726	0.83	3.5	Small Plant Colony	6.0	Northern Milfoil	0.0	Organic/Sand
7/10/2024	K-24	46.15405	-89.37694	1.58	18.0	Small Plant Colony	6.0	Northern Milfoil	0.5	Organic/Sand
7/10/2024	F-24	46.15420	-89.38248	1.00	6.5	Clumps	6.0	Northern Milfoil	0.5	Organic/Sand
7/10/2024	F-24	46.15401	-89.38300	0.67	3.5	Single or Few	6.0	Northern Milfoil	0.0	Organic/Sand
7/11/2024	F-24	46.15410	-89.38216	1.25	5.0	Single or Few	6.0	Northern Milfoil	0.0	Organic/Sand
7/11/2024	E-24	46.14152	-89.36758	1.92	21.0	Small Plant Colony	7.5	Northern Milfoil	0.5	Organic/Sand
7/11/2024	E-24	46.14108	-89.36741	2.42	14.0	Small Plant Colony	7.5	Northern Milfoil	0.5	Organic/Sand
7/11/2024	E-24	46.14089	-89.36751	0.83	3.5	Small Plant Colony	7.5	Northern Milfoil	0.0	Organic/Sand
7/29/2024	A-24	46.15301	-89.36821	3.25	9.0	Scattered	5.0	Grasses	1.5	Organic/Sand
7/29/2024	A-24	46.15388	-89.36720	1.92	4.5	Scattered	5.0	Grasses	1.0	Organic/Sand
7/29/2024	A-24	46.15433	-89.36738	1.75	7.5	Scattered	4.0	Grasses	1.5	Organic/Sand
7/30/2024	D-24	46.14819	-89.36583	0.42	0.5	Highly Scattered	6.0	None	0.0	Organic/Sand
7/30/2024	A-24	46.15400	-89.36747	1.25	1.5	Scattered	6.5	Grasses	0.5	Organic
7/30/2024	A-24	46.15443	-89.36800	1.83	5.5	Scattered	5.5	Grasses	1.5	Organic/Sand
7/30/2024	A-24	46.15448	-89.36968	2.08	13.5	Scattered	5.5	Grasses	2.0	Organic/Sand
7/30/2024	B-24	46.15231	-89.37058	1.17	9.0	Scattered	6.0	Grasses	1.5	Organic/Sand
7/31/2024	F-24	46.15421	-89.38225	0.83	0.5	Single or Few	6.0	None	0.0	Organic/Sand
7/31/2024	K-24	46.15425	-89.37720	0.75	0.5	Single or Few	6.5	None	0.0	Organic/Sand
7/31/2024	E-24	46.14055	-89.36797	0.92	0.5	Single or Few	5.0	None	0.0	Organic
7/31/2024	E-24	46.14179	-89.37048	0.83	2.0	Highly Scattered	2.0	None	0.0	Organic/Sand
7/31/2024	E-24	46.14145	-89.37074	1.75	4.5	Scattered	3.0	None	0.0	Organic/Sand
7/31/2024	E-24	46.14071	-89.37006	0.83	1.5	Highly Scattered	6.0	None	0.0	Organic/Sand
7/31/2024	B-24	46.15156	-89.37064	2.00	3.0	Scattered	5.0	Grasses	0.5	Organic/Sand
7/31/2024	B-24	46.15230	-89.37047	1.00	2.5	Scattered	6.0	Grasses	0.5	Organic/Sand
7/31/2024	K-24	46.15467	-89.37732	1.83	6.5	Scattered	4.5	Grasses	1.0	Organic/Gravel
7/31/2024	F-24	46.15424	-89.38262	0.92	0.5	Highly Scattered	4.5	Grasses	0.0	Organic/Sand
7/31/2024	E-24	46.14185	-89.36721	0.92	5.5	Clumps	6.0	Northern Milfoil	0.5	Organic/Sand
Total	41			52.85	292.0					



Detailed Diving Activities | August

Date	Dive Location	Latitude	Longitude	Underwater Dive Time (hrs)	AIS Removed (cubic ft)	AIS Density	Avg Water Depth (ft)	Native Species	Native By-Catch	Substrate Type
8/2/2024	E-24	46.14139	-89.37077	1.67	6.0	Scattered	3.5	Elodea	0.5	Organic/Sand
8/2/2024	E-24	46.14139	-89.37077	1.25	3.0	Scattered	3.5	Elodea	0.5	Organic/Sand
8/2/2024	E-24	46.14075	-89.37012	1.75	8.0	Small Plant Colony	5.0	Grasses	0.5	Organic/Sand
8/2/2024	E-24	46.14044	-89.36988	1.00	4.0	Scattered	5.0	Grasses	0.5	Organic/Sand
8/2/2024	E-24	46.14009	-89.36909	0.58	2.0	Scattered	5.0	Grasses	0.5	Organic/Sand
8/12/2024	B-24	46.15220	-89.37277	1.33	9.0	Clumps	6.5	Grasses	4.0	Organic/Sand
8/12/2024	B-24	46.15208	-89.37273	2.50	10.0	Clumps	6.5	Grasses	4.0	Organic/Sand
8/12/2024	B-24	46.15208	-89.37273	4.00	36.0	Small Plant Colony	7.5	Grasses	14.0	Organic/Sand
8/13/2024	E-24	46.14021	-89.36961	1.42	4.5	Scattered	4.5	Grasses	0.5	Organic/Sand
8/13/2024	E-24	46.14029	-89.36814	1.50	7.0	Scattered	4.5	Pondweeds	0.5	Organic/Sand
8/13/2024	E-24	46.14079	-89.36736	2.83	15.5	Scattered	5.0	Pondweeds	2.0	Organic/Sand
8/13/2024	E-24	46.14165	-89.36733	0.67	3.0	Scattered	5.0	Pondweeds	0.5	Organic
8/20/2024	G1-24	46.14395	-89.38091	1.25	9.0	Small Plant Colony	7.0	Grasses	1.0	Sand
8/20/2024	G1-24	46.14376	-89.38105	0.83	1.0	Clumps	7.0	Grasses	0.5	Sand
8/20/2024	G1-24	46.14354	-89.38146	0.67	2.0	Scattered	7.0	Northern Milfoil	0.5	Gravel
8/20/2024	G1-24	46.14357	-89.38150	1.50	6.0	Clumps	6.5	None	0.0	Organic/Sand
8/20/2024	G1-24	46.14333	-89.38194	0.75	1.5	Scattered	7.0	None	0.0	Organic/Sand
8/20/2024	G1-24	46.14320	-89.38247	0.83	1.0	Scattered	6.5	Grasses	0.5	Organic
8/21/2024	G1-24	46.14309	-89.38258	1.92	9.5	Clumps	6.5	Grasses	1.0	Sand
8/21/2024	G1-24	46.14314	-89.38311	0.83	1.0	Highly Scattered	6.5	None	0.0	Organic/Sand
8/21/2024	G1-24	46.14318	-89.38376	0.33	1.0	Scattered	5.5	Grasses	0.5	Organic
8/21/2024	G1-24	46.14318	-89.38376	0.92	0.5	Highly Scattered	5.5	Grasses	0.5	Organic
8/21/2024	G2-24	46.14262	-89.38035	0.83	0.5	Highly Scattered	6.0	Elodea	0.5	Organic/Sand
8/21/2024	H-24	46.15065	-89.38989	0.83	4.0	Clumps	3.5	Grasses	0.5	Organic
8/22/2024	H-24	46.15065	-89.38989	1.08	4.5	Clumps	3.5	Elodea	1.5	Organic
8/22/2024	H-24	46.15066	-89.39004	1.42	1.5	Scattered	4.0	Grasses	1.0	Organic
8/22/2024	H-24	46.15111	-89.39001	0.58	2.5	Clumps	10.5	Grasses	0.5	Sand
8/22/2024	H-24	46.15063	-89.38988	1.17	1.0	Highly Scattered	2.0	Elodea	0.5	Organic/Sand
8/22/2024	H-24	46.15080	-89.39022	0.58	0.5	Single or Few	5.0	None	0.0	Organic
8/22/2024	H-24	46.15129	-89.39033	0.83	1.0	Scattered	7.0	Northern Milfoil	0.5	Organic/Sand
Total	30			37.65	156.0					