INTRODUCTION

Anvil Lake, Vilas County, is an approximate 400-acre seepage lake with an average depth of 19 feet and a maximum depth of 32 feet (Photo 1). Eurasian water milfoil (*Myriophyllum spicatum*; EWM) was first discovered in Anvil Lake in July of 2012 by the Great Lakes Indian Fish & Wildlife Commission (GLIFWC). The WDNR was alerted of GLIFWC's findings and proceeded to do a point-intercept survey which confirmed more EWM in the northern bay. Onterra, LLC was then contacted by the Anvil Lake Association and a EWM peak-biomass survey was completed in August of 2012 with the assistance of the volunteer EWM locations provided by the Anvil Lake Association.

Photo 1. Anvil Lake, Vilas County

In 2012, the Anvil Lake Association (ALA) successfully applied for a WDNR AIS Early Detection and Response Grant and contracted with Onterra, LLC to conduct comprehensive studies to aid in creating a plan to control the EWM population. This plan included professional and volunteer monitoring and well as volunteer hand-harvesting. In the spring of 2013, Onterra conducted an Early-Season AIS Survey where additional EWM was located in the north bay of the lake. Volunteer hand-harvesting was having a positive outcome in the shallow parts of the North Bay but EWM expansion was occurring in waters greater than 4-feet deep. A decision was then made by the ALA, after many correspondences with Onterra, LLC and the WNDR, to hire a professional hand-harvesting company. Onterra visited the lake again in the late summer of 2013 to assess the EWM lake-wide as well to assess the professional hand-harvesting efforts. The ALA hired Many Waters, LLC to use their Diver Assisted Suction Harvester (DASH) system to remove EWM. The 2013 EWM control on Anvil Lake was met with encouraging results but the efforts were not sufficient to impact the EWM population as a whole on Anvil Lake.

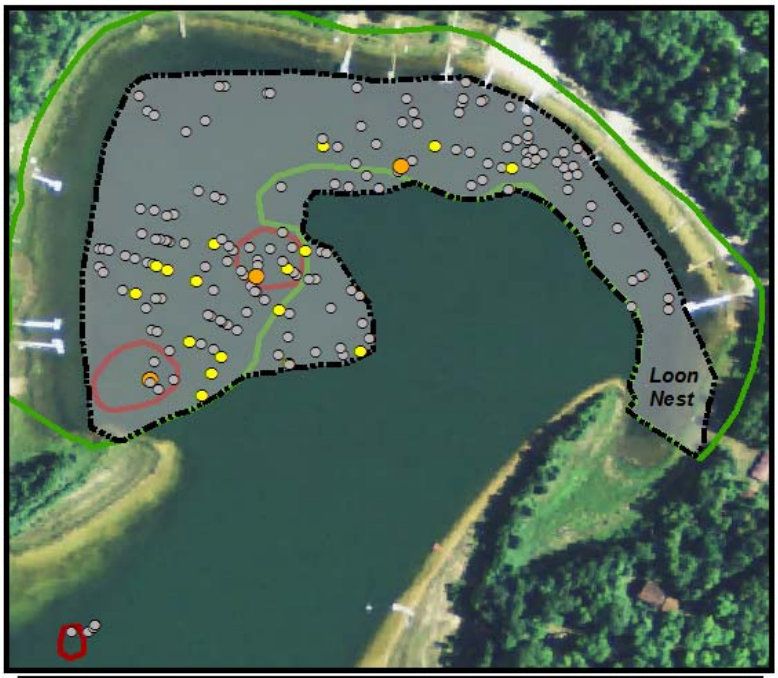
Following surveys conducted in the late summer of 2013, the population of EWM within Anvil Lake was still confined to low density EWM occurrences, with all occurrences being mapped with point-based methods. A hand-harvesting program utilizing professional hand-harvesters was determined to be the most appropriate option for maintaining the low-density population of EWM within Anvil Lake in 2014. This report discusses the 2014 professional hand harvesting EWM control activities.

A set of EWM mapping surveys were used within this project to coordinate and qualitatively monitor the hand-harvesting efforts. The first monitoring event on Anvil Lake in 2014 was the Early Season Aquatic Invasive Species Survey (ESAIS). This late-spring/early-summer survey provides an early look at the lake to help guide the hand-harvesting management to occur on the system. Following the hand-harvesting, Onterra ecologists completed the Late-Summer EWM Peak-Biomass Survey, the results of which serve as a post-treatment assessment of the hand-harvesting. The hand-removal

program would be considered successful if the density of EWM within the hand-removal areas was found to have decreased from the ESAIS Survey to the Late-Summer Peak-Biomass Survey.

EARLY SEASON AIS SURVEY RESULTS (PRE-HAND-HARVESTING)

On June 18, 2014, Onterra ecologists conducted the ESAIS Survey on Anvil Lake (Map 1, Figure 1). During the survey, the EWM population was 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 were qualitatively attributed a density rating based upon a five-tiered scale from *Highly Scattered* to *Surface Matting*. Point-based techniques were applied to EWM locations that were considered as *Small Plant Colonies* (<40 feet in diameter), *Clumps of Plants*, or *Single or Few Plants*.



2014 Final Control Strategy
Professional Hand-Harvest (DASH)

Site	Preliminary Acres	Final Acres	Depth (feet)	Sediment	Obstructions
A-14	16.6	10.6	6 (4-11)	Heavy Organic, Sandier Near Shore	No Physical, Heavy Native Plants Later in Growing Season
Total	16.6	10.6			

Legend

EWM (June 2014)
- Single or Few Plants
- Clump of Plants
- Small Plant Colony

- Final DASH Hand-Harvesting Area
- Conditional DASH Hand-Harvesting Area
- 2013 DASH Hand-Harvesting Location

Figure 1. 2014 ESAIS Survey results and final professional hand-harvesting strategy.

In comparing these data to the late-summer 2013 results, the EWM population was found to be similar but more EWM was located growing deeper during the June 2014 survey. The surveyors found this to be perplexing, as scuba surveys during September 2013 did not yield EWM within these areas. The hand-harvesting area was expanded lakeward to account for these findings (Figure 1). The near-shore parts of the professional hand-harvesting area were also trimmed, as no EWM was found within this area. It was also implied that if EWM was found within this area as the summer progressed, it would be most ideally controlled with volunteer-based methods. While it may appear that the survey did not locate EWM within the eastern part of the North Bay, only a limited survey was conducted in this area to avoid stressing a nesting loon.

A few EWM occurrences were noted in additional areas of the Anvil Lake outside of the North Bay, where volunteer-based hand-harvesting methods were encouraged.

ACOUSTIC SURVEY

During the winter of 2013/2014 the ALA conveyed to Onterra their concerns over the possibility of large areas of EWM existing in deeper water parts of Anvil Lake that were escaping detection during the visual mapping surveys. Numerous survey methods aimed at intensively investigating deeper water parts of Anvil Lake were discussed, along with their potential costs. Ultimately, it was determined to conduct a whole-lake acoustic survey to develop focus areas which would subsequently be surveyed with submersible cameras or scuba methods as appropriate.

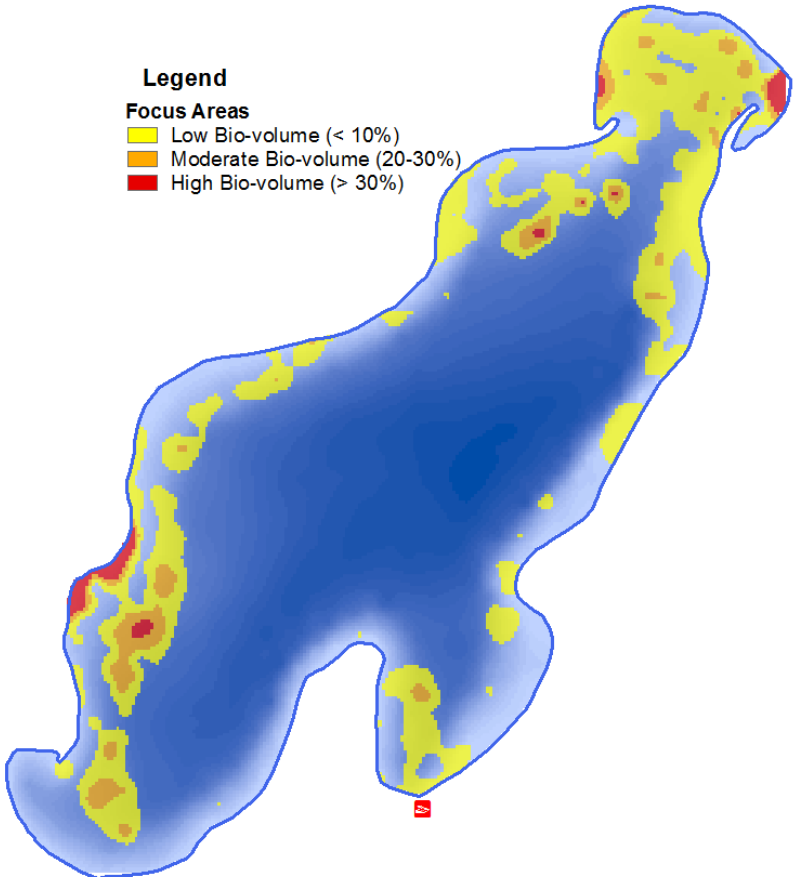


Figure 2. Mid-June 2014 Acoustic Survey Focus Areas

The acoustic survey was conducted at the same time as the ESAIS Survey. Numerous tight transects were made across the lake while collecting continuous advanced sonar-based information. The data collected during this survey are then uploaded to a Minnesota-based company (BioBase, a division of Navico) for processing. Unlike the point-intercept survey, these bio-acoustic data do not differentiate between aquatic plant species. However, areas of high plant bio-volume during mid-June may have a greater chance to be non-native species as many native species have not amassed much growth yet.

The results of the survey yielded a three-tiered set of focus areas which were determined by the quantity of bio-volumes from the mid-June survey (Figure 2).

SUBMERSED CAMERA FOCUS AREA STUDY

Onterra ecologists conducted a submersed camera focus area survey on July 21, 2014. This survey investigated the high biomass areas identified during the mid-June acoustic survey. A submersible camera was used to search the high biomass areas for EWM. With Onterra's onboard GPS-driven computer system, surveyors were able to slowly drive transects across the identified focus areas with a customized mounted submersible camera (Map 2).

Photo 2. Onterra crew conducting a submersible camera survey

As a result of this survey, five single EWM plants were located (Map 2, red squares) but all were in areas where EWM had previously been found and no new areas of EWM were identified. Many notes were made about the native plants observed throughout the meandered areas (Map 2).

HAND-HARVESTING MANAGEMENT ACTIONS

The ALA contracted with Many Waters, LLC to conduct professional hand-harvesting of EWM in 2013 and 2014. Many Waters conducts paid hand-harvesting using a Diver-Assisted Suction Harvest (DASH) system. The DASH system involves scuba divers removing EWM by hand and feeding them into a suction hose attached to a pontoon boat for removal. It is claimed that the DASH system is be able to remove/reduce areas of EWM more efficiently than standard manual removal by scuba divers, particularly dense colonies or those located in deep water. In addition, the DASH system likely reduces the amount of EWM fragments created during hand-removal.

Many Waters conducted hand-harvesting activities on July 23-25, 2014 utilizing spatial data provided to them by Onterra. Many Waters spent a total of 15.25 hours actively hand-harvesting EWM in the lake and removing approximately 401.5 pounds of EWM from site A-14 (Table 1). Full details of the 2014 hand harvesting activities are included as an appendix to this report.

Table 1. Anvil Lake, 2014 professional hand-harvesting activities

Date	Dive Time (Hours)	EWM Removed (lbs)
7/23/2014	4.25	173
7/24/2014	4.5	129
7/25/2014	6.5	99.5
Totals	**15.25**	**401.5**

Volunteer-based hand-harvesting efforts also occurred during 2014, with volunteers recording 152.3 person-hours removing 387 lbs of EWM.

LATE-SUMMER PEAK-BIOMASS SURVEY RESULTS (POST HAND-HARVESTING)

The Late-Summer EWM Peak-Biomass Survey was conducted on September 12, 2014 to qualitatively assess the hand harvesting efforts as well as to understand the peak growth (peak-biomass) of the EWM population throughout the lake. Volunteers from the ALA collected GPS points suspected to be EWM during the summer of 2014 and were used to help aid the focus of the late-summer EWM peak-biomass survey. Within the 2014 hand harvest area, more EWM was observed than when compared to pre-hand-harvesting in June of 2014 (Figure 3). Within the targeted area, EWM increased from point-based occurrences to a large *highly scattered* colony with *scattered* colonies and one *dominant* colony inside the DASH work area. Overall, the 2014 hand harvest efforts were not effective at controlling EWM within the targeted area.

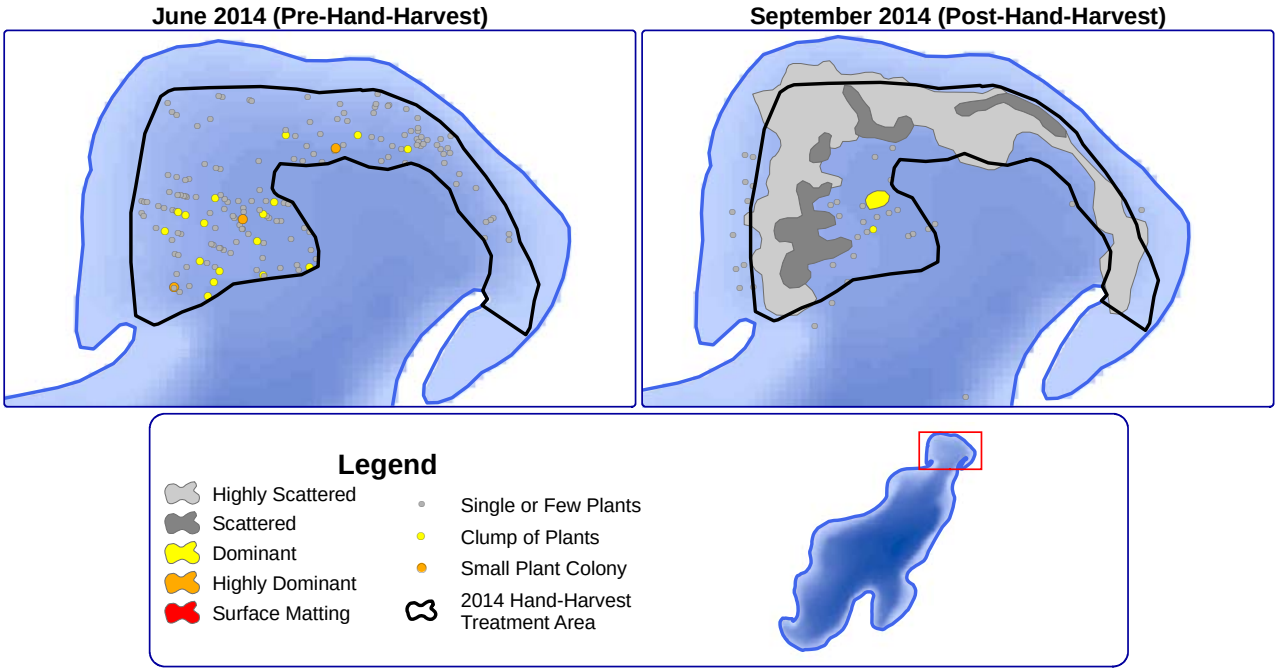


Figure 3. June 2014 pre- and September 2014 post-hand-harvesting EWM survey results in Anvil Lake.

During the meander survey, many of the EWM locations that had been previously mapped in 2013 or in June of 2014 were still present in similar size and density. Overall, the amount of EWM was found to have increased from point data in 2013 to 6.9 acres of colonized plants in 2014 (Figure 3). Of the 6.9 acres of colonized EWM mapped in 2014, approximately 5.4 acres is of a *highly scattered* density, 1.4 acres were *scattered* and another 0.1 acres is of a *dominant* density.

Prior to this survey, an ALA volunteer provided us with spatial data of a few EWM plants – most of which was found to be near existing known EWM populations. While most EWM is concentrated in the North Bay, there was low density plant occurrences located in the southern bays of the lake near the boat landing and in the far southwest area of the lake (Map 3). There were also a few *single or few plants* located just outside of the hand-harvest area as well as one *single or few plants* along the west shore.

CURLY LEAF PONDWEED (CLP)

In addition to mapping EWM during the Early-Season AIS Survey, ecologists are also looking for potential occurrences of other non-native aquatic plants. Curly-leaf pondweed (*Potamogeton crispus*; CLP) is at or near its peak growth in early summer before naturally senescing (dying back) in early July, making early summer the most probable time to locate this species. Curly-leaf pondweed was first encountered in Anvil Lake during a July 2013 survey by Onterra. This lone occurrence consisting of a few plants were identified and removed by ALA members during the summer of 2013. Onterra ecologists located a few single plant occurrences of CLP in the same location as 2013 within the North Bay of Anvil Lake during the June 2014 ESAIS survey (Figure 2). While their efforts were not focused on CLP, Many Waters, LLC also documented more plants during their DASH efforts (Appendix A). An approximate location of the CLP locations observed by Many Waters is displayed on Figure 4).

Curly-leaf pondweed is a European exotic first discovered in Wisconsin in the early 1900's that has an unconventional lifecycle giving it a competitive advantage over our native plants. The plants begin growing almost immediately after, if not immediately before, ice-out and by early-summer they reach their peak growth. As they are growing, each plant produces numerous turions (asexual reproductive structures) which break away from the plant and settle to the bottom following the plant's senescence. The deposited turions lie dormant until autumn when they sprout to produce small winter foliage, and they remain in this state until spring foliage is produced. The advanced growth in spring gives the plant a significant jump on native vegetation. In certain lakes, CLP can become so abundant that it hampers recreational activities within the lake. In instances where large CLP populations are present, its mid-summer die-back can cause significant algal blooms spurred from the release of nutrients during the plants' decomposition. However, in some lakes, mostly in northern Wisconsin, CLP appears to integrate itself within the community without becoming a nuisance. While it is not known how CLP will react in Anvil Lake, it is recommended that these single plant occurrences be targeted for hand-removal in 2015.

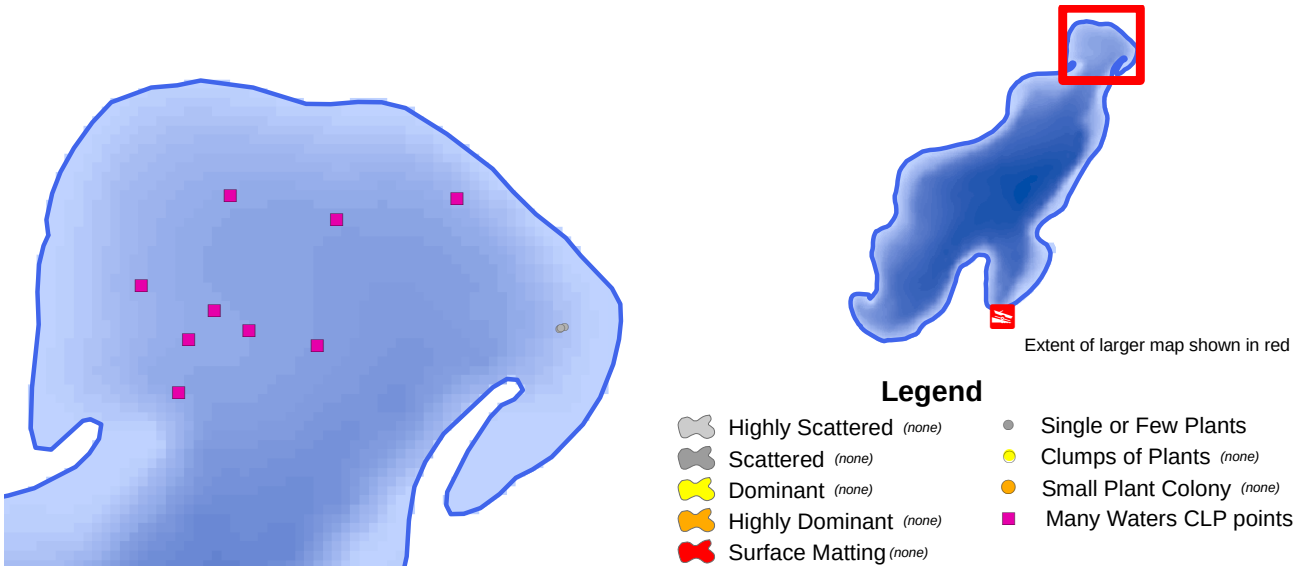


Figure 4. CLP survey results in Anvil Lake from 2014. Data from June 2014 Onterra Survey and July 2014 observations made by Many Waters, LLC

CONCLUSIONS AND DISCUSSION

Overall, the 2014 professional hand-harvesting EWM control program on Anvil Lake was not able to maintain or reduce the EWM population within the North Bay. The EWM populations were found to expand in size and density. Figure 5 shows the EWM peak-biomass from 2012 through 2014.

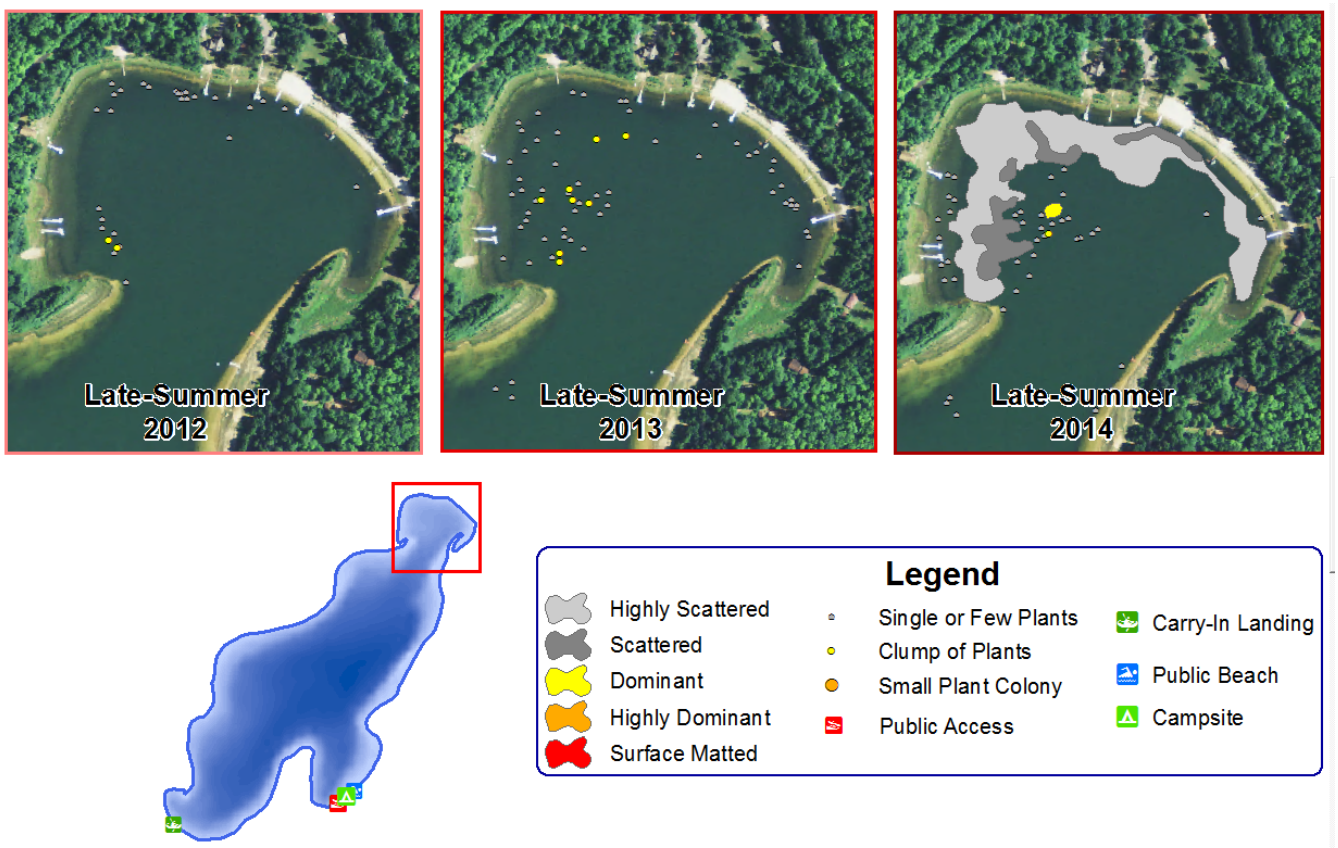


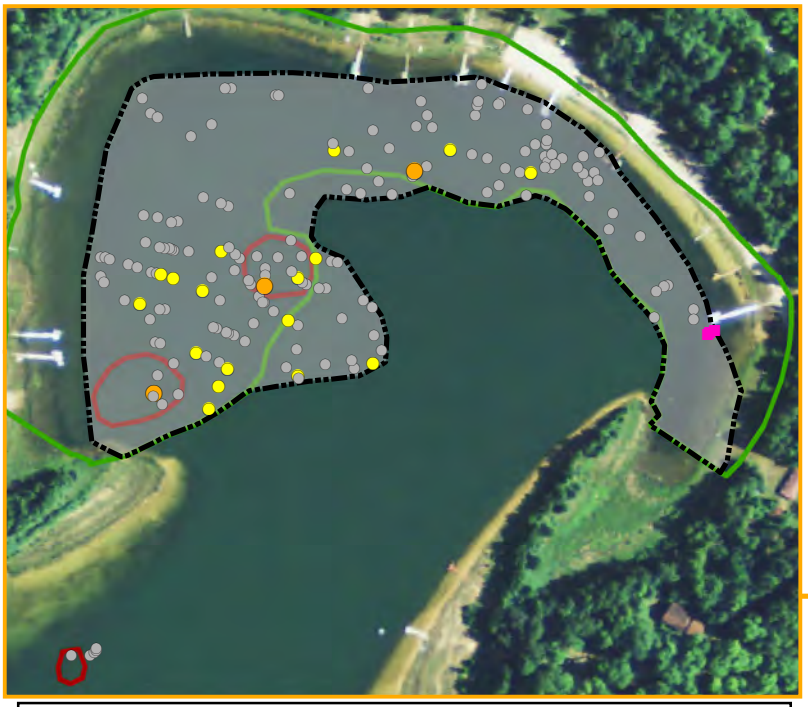
Figure 5. EWM peak-biomass survey results in Anvil Lake from 2012-2014.

As noted above, EWM continues to be present in relatively low amounts throughout many areas in the lake. With the low, but expanding, levels of EWM currently existing in Anvil Lake, the proposed 2015 control strategy is to continue hand-harvesting with a more aggressive approach. The flaw of many hand-harvesting programs is not due to a faulty technique; rather an insufficient amount of effort is conducted to achieve the desired goals. Therefore, building on the hand removal efforts in 2014, it is recommended that a two-tiered hand harvesting approach be implemented in 2015. This would include a combination of professional and volunteer-based hand harvesting of EWM. Professional hand harvesting is recommended for areas mapped in August 2014 comprised of the largest known EWM colonies within the northern bay of the lake (Map 3). These relatively dense colonies of EWM are likely too large for a volunteer based effort.

Currently, there is not much outside information from other projects that can be gleaned to determine how much professional hand-harvesting will be required to target the 6.9 acres outlined on Map 3. Last year, May Waters, LLC spent approximately 15 hours under water over 3 days removing just over 400 lbs of EWM. The EWM levels continued to increase over this time which would suggest that an

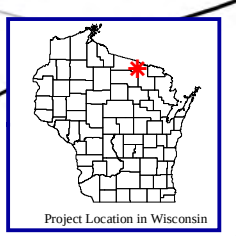
effort multiple times larger may be required in 2015 to reach the desired EWM control goals, potentially more effort than is available by existing effort to conduct this type of work. The 2015 hand-harvesting efforts will be evaluated and if the EWM population continues to expand at a marked pace within the North Bay (and/or other areas of the lake) consideration to other management options will be given. Particularly, these discussions will occur as part of the commencing management planning project. The stakeholders involved in the planning process will clearly define future management goals for the EWM control program along with establishing thresholds (triggers) of when specific active treatment strategies warrant implementation. This discussion will inevitably also include the option of not conducting active management of the EWM population on the system; a management decision being made by some lake groups that are not willing to allocate financial resources and depending on the strategy, assume a certain level of native plant impacts in order to achieve EWM management goals.

Volunteer-based hand-harvesting efforts would also be beneficial to slow the progression of the EWM population within Anvil Lake. Any known areas of EWM outside of where professional removal is occurring should be considered for volunteer-based removal efforts. In order to maximize the volunteer efforts for the greatest benefit, higher priority areas should be targeted first and additional areas should be targeted if time allows. Some of the higher priority locations of EWM to be considered for volunteer removal include areas near the public access location, the carry-in location and areas that are prioritized by ALA members. Onterra would conduct an EWM mapping survey during June 2015 and provide the ALA with a basemap containing the survey findings which will help guide the volunteer-based activities. Volunteer-based hand-harvesting should again be approximately tracked in the same fashion as the professional activities; where volunteers record where, when, and how much effort (time) that are spent conducting these activities. Most of this information was provided by volunteers in 2014, except "where" the activities occurred. For evaluation purposes, it would be helpful to indicate that a certain amount of effort and EWM was removed in a particular area, for instance, "the western shore of the North Bay." The volunteer data would be provided to Onterra prior to the late-summer survey that would be used to evaluate the 2015 professional and volunteer-based hand-harvesting efforts, as well as to propose a control strategy (hand-removal and/or herbicide treatment) for 2016.



2014 Final Control Strategy
Professional Hand-Harvest (DASH)

Site	Preliminary Acres	Final Acres	Depth (feet)	Sediment	Obstructions
A-14	16.6	10.6	6 (4-11)	Heavy Organic, Sandier Near Shore	No Physical, Heavy Native Plants Later in Growing Season
Total	16.6	**10.6**			



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

Sources:
Roads & Hydro: WDNR
Orthophotography: NAIP 2010
Aquatic Plant Survey: Onterra, 2014
Map date: June 23, 2014

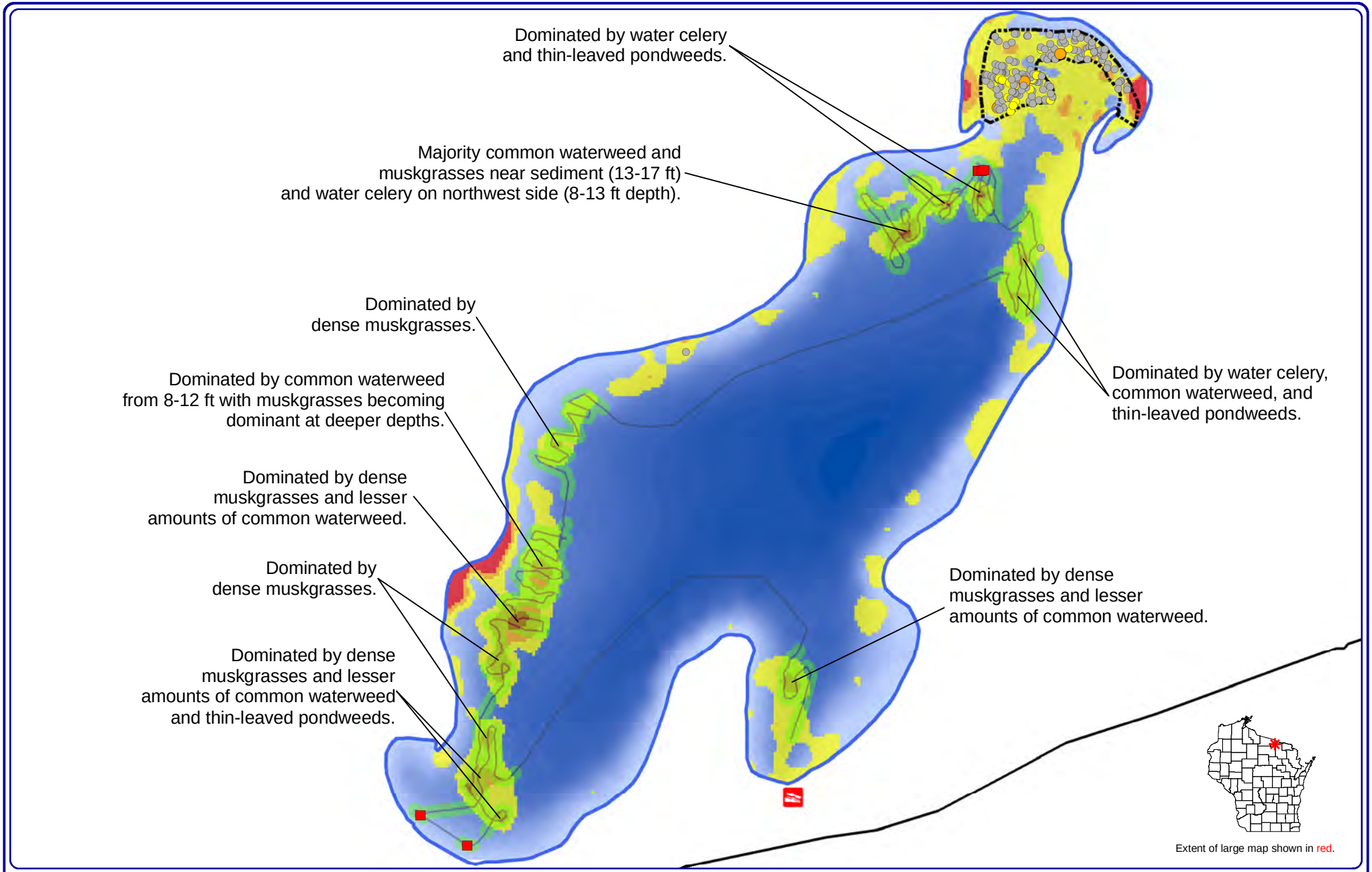
Legend

- CLP Occurence (June 2014)

EWM (June 2014)
- Single or Few Plants
- Clump of Plants
- Small Plant Colony

- Final DASH Hand-Harvesting Area
- Conditional DASH Hand-Harvesting Area
- 2013 DASH Hand-Harvesting Location

Map 1
Anvil Lake
Vilas County, Wisconsin
2014 Final EWM Manual Removal Strategy



Extent of large map shown in red.

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Onterra LLC
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De Pere, WI 54115
920.338.8860
www.onterra-eco.com

Sources:
Roads & Hydro: WDNR
Aquatic Plants: Onterra, 2014
Bathymetry: Onterra, 2014; processed by Navico
Bio-volume: Onterra, 2014; processed by Navico
Map date: July 28, 2014

Legend

2014 DASH Hand-Harvesting Area

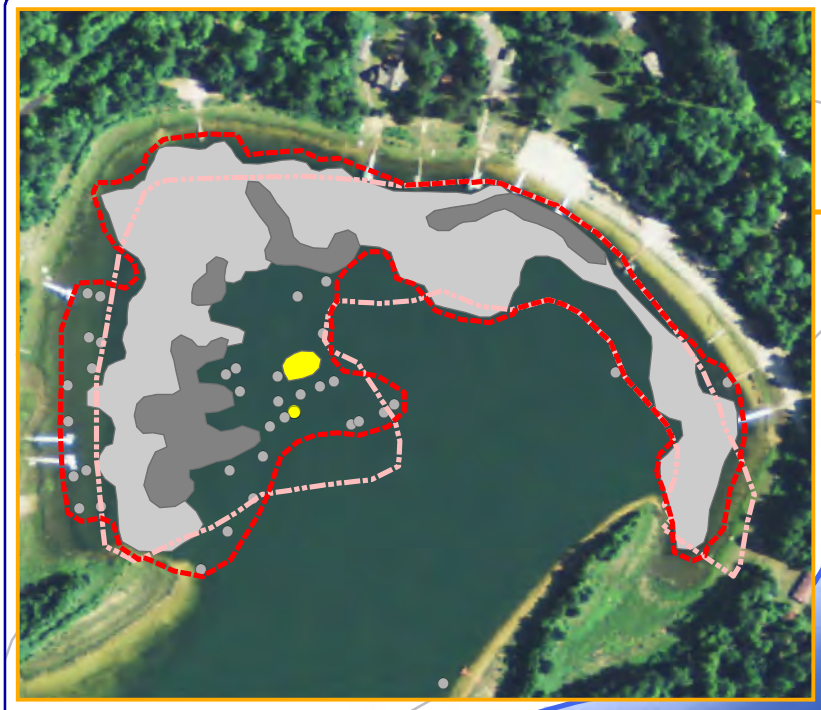
EWM (June 2014)
- Single or Few Plants
- Clump of Plants
- Small Plant Colony

Focus Areas
- Low Bio-volume (< 10%)
- Moderate Bio-volume (20-30%)
- High Bio-volume (> 30%)

EWM (July 2014)
- Single or Few Plants

Tracklog of Early-July Survey
- Submersed Camera Insepection

Map 2
Anvil Lake
Vilas County, Wisconsin
July 2014
EWM Focus Area Survey Results



Project Location in Wisconsin

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Feet

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

Sources:
Roads & Hydro: WDNR
Aquatic Plants: Onterra, 2014
Orthophotograpy: NAIP 2013
Bathymetry: Onterra, 2014; processed by Navico

Map date: September 25, 2014

Legend

- Highly Scattered
- Scattered
- Dominant
- Highly Dominant *(none)*
- Surface Matting *(none)*
- Single or Few Plants
- Clumps of Plants
- Small Plant Colony *(none)*
- 2014 DASH Area
- 2015 Preliminary DASH Area

Map 3

Anvil Lake

Vilas County, Wisconsin

September 2014 EWM Survey Results

A

APPENDIX A

Management of Eurasian Watermilfoil (*Myriophyllum spicatum*) using Diver Assisted Suction Harvesting – Many Waters, LLC

2527 Lake Ottawa Road

Iron River, MI 49935

906.284.2198

Management of Eurasian Watermilfoil (*Myriophyllum spicatum*) using Diver Assisted Suction Harvesting

Anvil Lake, Vilas County, WI - 2014

Final Reporting

Date: 10.10.2014

Submitted To:

Anvil Lake Association

Wisconsin Department of Natural Resources

Submitted By:

Many Waters, LLC

2527 Lake Ottawa Road

Iron River, MI 49935

Contact:

Bill Artwich: billartwich@gmail.com, 906.367.3206

Barb Gajewski: barb@manywatersconsulting.com, 715.617.4688

Introduction

The Anvil Lake Association solicited the services of Many Waters, LLC to utilize their Diver Assisted Suction Harvesting (DASH) program to manage for Eurasian watermilfoil (EWM) from Anvil Lake, located east of Eagle River, in Vilas County, WI. DASH is a mechanical process and requires a mechanical harvesting permit (Form 3200-113 (R 3/04)) from the Wisconsin Department of Natural Resources (WDNR). The Association submitted and received a Mechanical Harvesting Permit from the WDNR to utilize DASH. (Permit ID # MNDR-64-14-05, WBIC: 968800). Onterra, LLC provided mapping information.

Dive Methods

Diver Feeding EWM Plant into Suction Hose

While using DASH, a diver typically will begin by locating a EWM plant from the surface, and then descend next to the plant while simultaneously lowering the nozzle. Divers works along the bottom by using fin pivots, kneeling on the bottom or hovering above the bottom at a distance where the root mass of the plant is within hands reach. The diver will either feed the top of the plant into the hose first and then uproot the plant or uproot the plant and feed it root wad first into the hose. It is very important that the diver shake as much sediment from the root wad before getting the root wad near the nozzle. Shaking the root wad away from the nozzle helps maintain visibility for the diver and minimizes debris and sediment in the holding bins. As plants are fed into the nozzle, the diver carefully observes for possible fragments. Fragments are caught by hand and fed into the nozzle.

Work sites that have dense monotypic beds of EWM, the initial DASH efforts are quite simple. The diver will descend adjacent to the bed and begin hand pulling or harvesting systematically across the bed to dismantle the bed. Once the majority of the bed is removed, a more systematic approach follows to target remaining clustered, scattered or outlier plants in the work site. As part of our method for covering a work area while using DASH (or divers alone), a grid pattern is used. A diver will start at either the port or starboard side of the boat and work to and from the boat perpendicular to the direction the boat is facing. For example, with the boat facing north and the diver starting on the port side, the diver begins by heading west. The diver will continue to work perpendicular to the boat until reaching the end of the suction hose. The diver then works back to the boat on a new transect line. Distance between each transect is dictated by visibility, density of EWM, and obstructions. This process is repeated on the opposite side and in front of the boat. Depending on the site, once the diver has adequately covered the area, which the suction hose can reach, they will signal the deckhand to let out more anchor line or determine that the boat needs re-positioning

Once plants reach the surface, a hose dispenses the plant material into a series of screened bins located on the deck of the boat. These bins capture plants and allow water to drain out back into the lake. Plants on deck are sorted into two categories: the targeted invasive plant and native vegetation. A wet weight of both the invasive plant and all native species combined is taken. Plants are placed in sealable containers or bags for transport to the dumping site. The dumping site is a pre-determined site upland, away from any water body.

Figure 1: 2014 DASH Work Areas (Onterra, 2014)

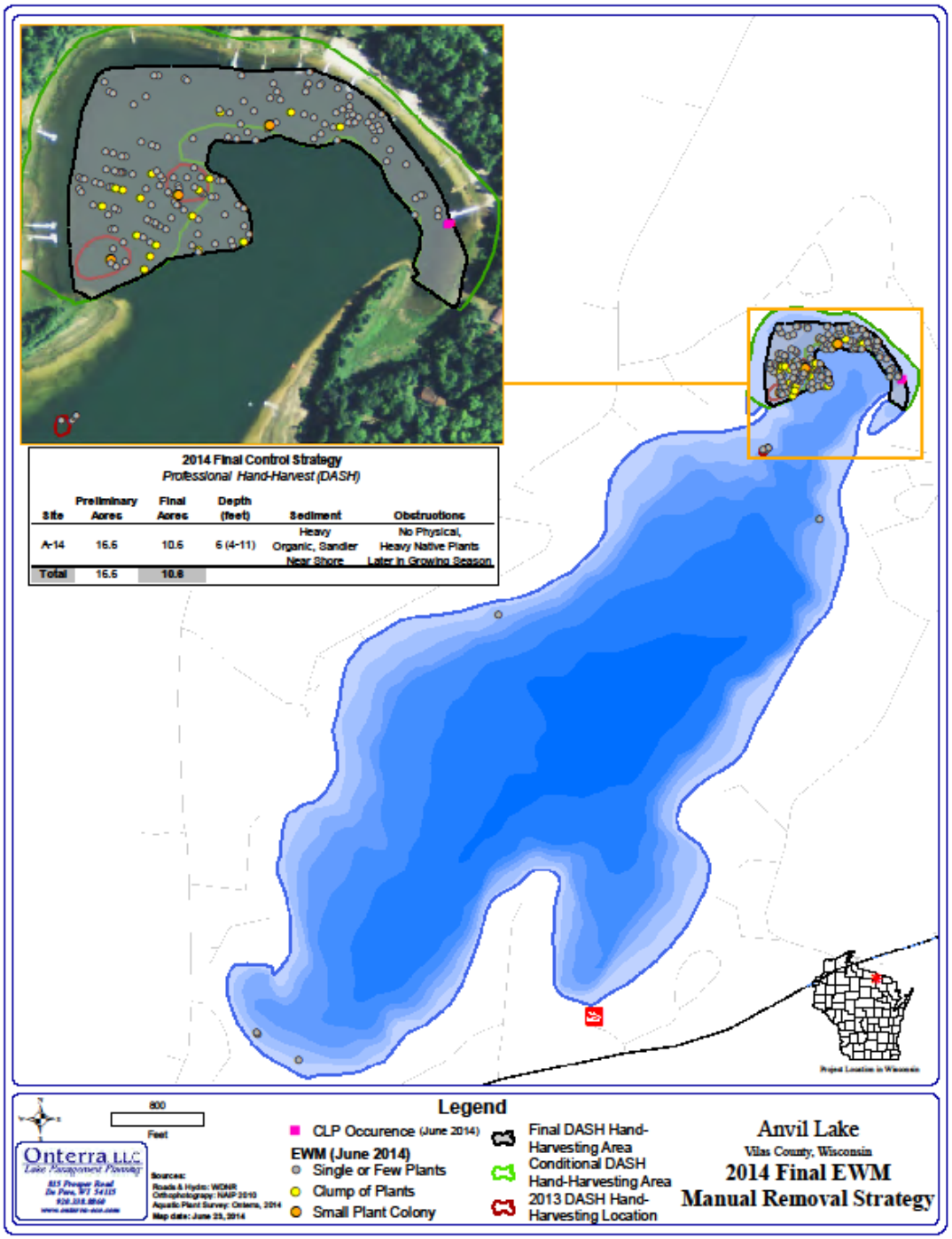
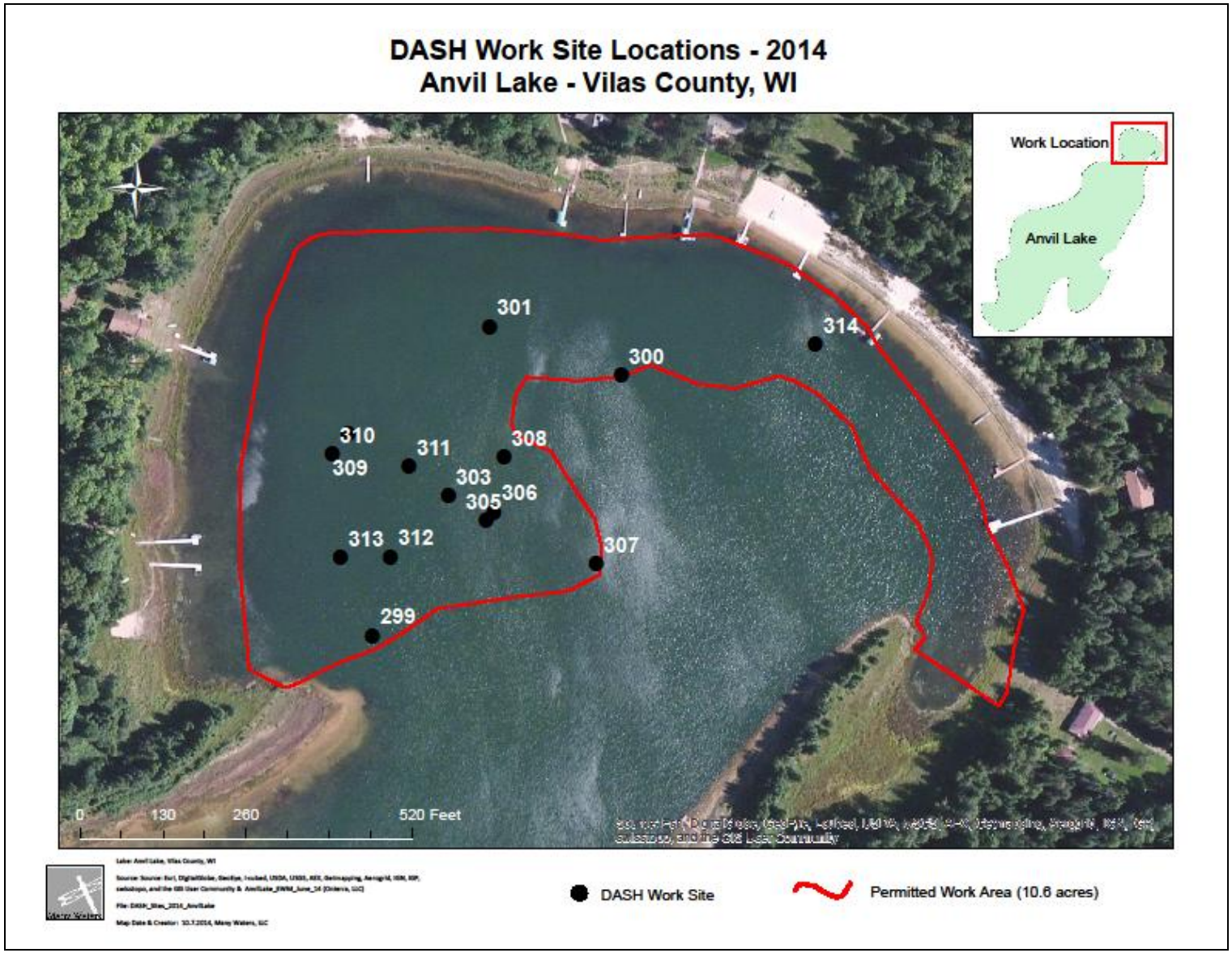


Figure 2: DASH Site Locations



Results and Summary

Table 1: DASH Efforts

Date	Location	Lat (NAD 83)	Long (NAD 83)	Working Direction	Dive Time	EWM (lbs*)	Native (lbs*)	Percent Bi-Catch	Total LBS*	Notes
7/23/2014	299	45.95092	89.05640	North	1.25	45.0	3.0	6%	48.0	CLP** 2 x 2 clump
	300	45.95202	89.05485	North	1.5	81.0	4.0	5%	85.0	CLP, ~25 ft N of waypoint 300
	301	45.95224	89.05565	West	0.75	15.0	3.0	20%	18.0	CLP, ~30 ft NW of waypoint 301
	303	45.95152	89.05592	North, West, East	0.75	32.0	3.0	9%	35.0	CLP, ~15 ft NW of 303
7/24/2014	305	45.95141	89.05569	North	0.5	8.0	<1.0	~12%	8.0	
	306	45.95144	89.05564	North	0.5	4.0	1.5	~37%	5.5	CLP at 306
	307	45.95122	89.05501	South	1.25	64.0	2.0	3%	66.0	CLP at 307
	308	45.95168	89.05557	North	2.25	53.0	2.5	~5%	55.5	CLP at 308
7/25/2014	309	45.95178	89.05653	South						CLP at 309
	310	45.95170	89.05663	North	1	19.0	3.0	16%	22.0	
	311	45.95164	89.05616	South	2.5	52.0	4.0	8%	56.0	
	312	45.95126	89.05628	South	0.75	11.0	<1.0	~9%	11.0	CLP at 312
	313	45.95126	89.05659	South, Southeast	1.5	9.5	<1.0	~10%	9.5	
	314	45.95215	89.05365	Southwest to West	0.75	8.0	<1.0	~12%	8.0	CLP at 314
					15.25	**401.5**	**26.0**	**~6%**	**427.5**	

* wet weight

** Curly leaf pondweed (*Potamogeton crispus*)

Given the extent of total workable DASH area, the strategy as discussed with Anvil Lake Association representatives, was to focus on deeper water locations where EWM plants were near or at the surface and also focus on larger clusters. Many sites were marked by volunteers with floating buoys for reference.

July 23rd 2014 Weather- partly cloudy turning sunny, 70˚F, winds north 5-10 mph

DASH focused on four locations at GPS sites 299, 300, 301 and 303 (Figure 2). Four and a quarter dive hours removed 45 pounds of EWM with an average bi-catch of 10%. Non-target native bi-catch included *E. canadensis* and *V. americana*, however primarily comprised of *V. americana*. Curly leaf pondweed was noted within proximity of each dive location in various densities ranging from a small clump or cluster of plants at GPS site 299 to individual plants observed at GPS sites 300, 301 and 303.

July 24th 2014 Weather-sunny, 75˚F, winds south 5-10 mph

DASH efforts continued at GPS sites 305, 306, 307 and 308. Primary focus was along deeper water areas within the southeast area of the western portion of the larger northern work area. Four and a half dive hours removed 129 pounds of EWM with an average bi-catch of 5%. Non-target native bi-catch again included *E. canadensis* and *V. americana*, however primarily comprised of *V. americana*. Curly leaf pondweed was noted within the vicinity of 3 out of the 4 work site locations at low densities consisting of a few individuals observed.

July 25th 2014 Weather- overcast, 63˚F, winds south 5-10 mph

Dash efforts continued at 309, 310, 311, 312, 313 and 314. Six and a half dive hours removed 99.5 pounds of EWM with an average bi-catch of ~10%. Non-target native bi-catch included *E. canadensis* and *V. americana*, however primarily comprised of *V. americana*. Curly leaf pondweed was noted within the vicinity of 3 out of the 6 work site locations at low densities consisting of a few individuals observed.