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LAKES · PONDS · WETLANDS
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Lake Puckaway

2023 Aquatic Invasive Species Survey Summary

On August 15th – 16th, 2023, Cason Land & Water Management, LLC conducted an Aquatic Invasive Species survey on Lake Puckaway. The objective of this survey was to map out the distribution of the invasive Eurasian/Hybrid Watermilfoil (EWM/HWM) that is rapidly becoming a major issue that Lake Puckaway is facing.

In the table below, EWM/HWM acreages throughout the lake are listed by density:

Densities	EWM/HWM Acres
Dense	1,302.7
Moderately Dense	861.1
Scattered	1,453.5
Highly Scattered	1,210.9
Total EWM/HWM Acreage:	**4,828.2**

We observed EWM/HWM at varying densities throughout much of Lake Puckaway during the mapping survey. EWM/HWM has expanded its' distribution dramatically since the 2022 survey was conducted. We identified EWM/HWM of varying density across 4,828.2 acres of the lakes' total area (5,013acres; **Fig. 1**). We found dense beds have now expanded to 1,302.7acres. Dense beds are those EWM/HWM beds which have either reached the surface in a dense mass or are dominating the aquatic plant community while remaining subsurface. An additional 861.1 acres of Moderately Dense EWM/HWM beds were identified. The Scattered (1,453.5acres) and Highly Scattered (1,210.9acres) categories comprise the rest of the EWM/HWM that was mapped across the lake in this survey.

In addition, to the lake-wide meandering survey, we closely assessed the distribution of EWM/HWM within the 2023 trial ProcellaCOR treatment area and surrounding area. The treatment appears to have been very successful within the treatment area itself. On the south and southwest side of the treatment polygon we did not see total control within a couple small areas of the treatment area. However, we observed substantial drift effects of the treatment, wherein EWM/HWM particularly to the north and northeast of the treatment area appeared to have impacted the EWM/HWM as far away as 570ft from the edge of the treatment area. This resulted in the 50-acre trial treatment providing obvious control of EWM/HWM across at least 91.25 acres (**Fig. 2**). In other words, the treatment provided 82.5% more control than intended due to drift effects. Based on how dense the EWM/HWM growth was already by the time of treatment, we can likely expect even better results in subsequent years using ProcellaCOR and targeting a treatment date that is several weeks earlier in the year. Ideally, the LPPRD will be able to decide on treatment options earlier in the year and get their approved DNR treatment permit issued much earlier in the year than was possible this first trial treatment year.

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Based on the results of this survey, we have attached a map with five potential treatment areas identified for potential treatment in 2024 (**Fig. 3.**). These areas were selected based on their proximity to the greatest number of lake residences, most dense beds of EWM, and likelihood of impacting much larger portions of the lake when treated with ProcellaCOR due to the drift potential. Additional treatment area options may be developed in conjunction with LPPRD and DNR consultation. Treatment cost estimators can be provided as well upon request. To take back the lake from this aggressive AIS, and slowly transition it to a native plant dominated lake, will require strategically targeting large portions of the lake for selective aquatic herbicide treatments for several consecutive years. Each year, following mapping surveys, we can propose targeting different areas of the lake, and methods of maximizing the potential for the treatments to be as successful as possible based on the ecological, biological, and physical properties that affect aquatic herbicide treatments.

The following deliverables are attached to this survey summary:

1. EWM/HWM Aquatic Invasive Species Survey Map (Figure 1)
2. 2023 Treatment Area Impact on EWM/HWM (Figure 2)
3. Proposed Treatment Areas for 2024

Thank you for your business and for allowing us to perform this service for your district. If you have any questions, please contact me at 920-290-6810 or at lancepaden@casonland-water.com

Sincerely,

Lance Paden

Figure 1. The current distributions of invasive EWM/HWM throughout Lake Puckaway as observed during the 2023 mapping survey.

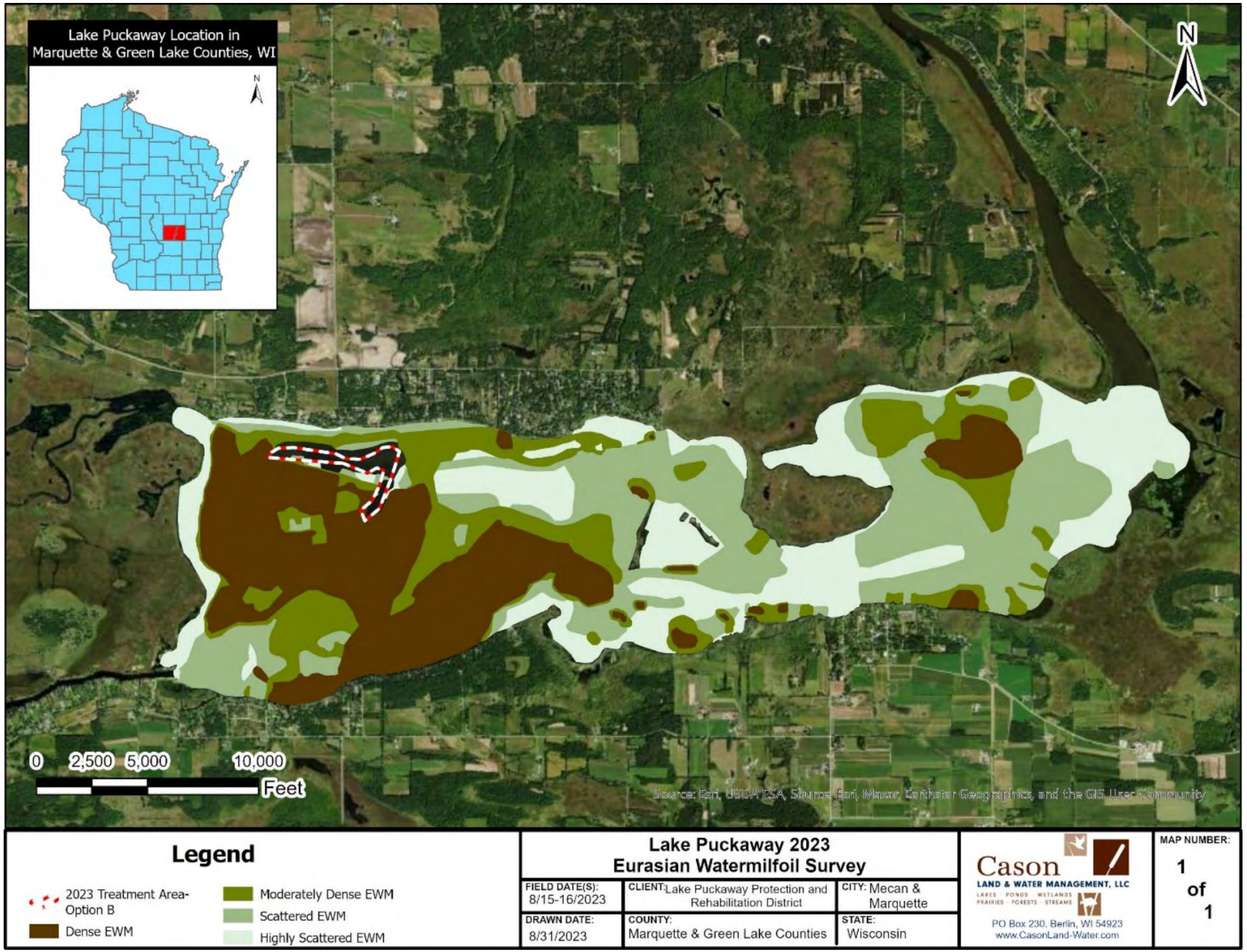

Figure 2. The impact on EWM/HWM at the 2023 ProcellaCOR treatment area and surrounding area. The yellow and black hatched line outlines the area where the EWM/HWM was obviously greatly affected by the treatment. The 300ft buffer zone around the treatment area (in red and white) is denoted in blue.

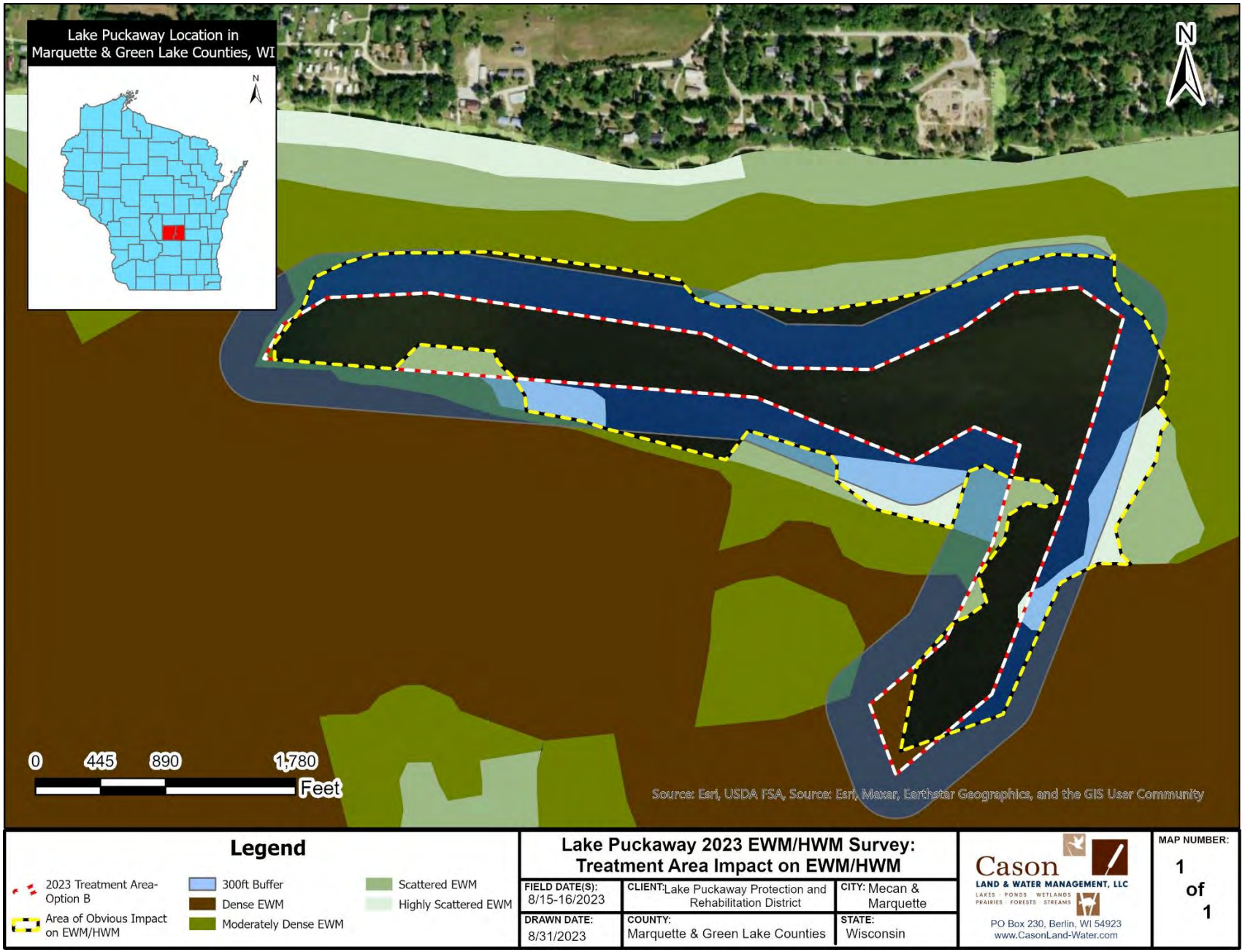

Figure 3. Proposed 2024 ProcellaCOR Treatment Areas based on the 2023 EWM/HWM mapping survey results.