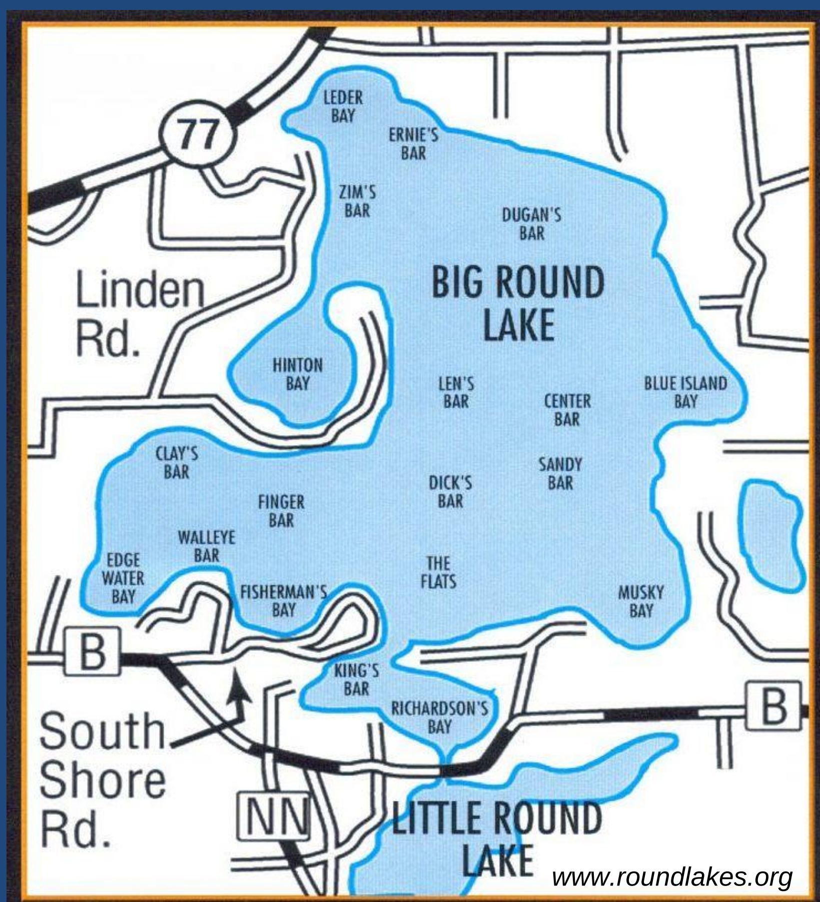
Aquatic Plant Management Plan

for

Round and Little Round Lakes
Sawyer County, Wisconsin

2015-2019



Prepared for:
Round Lake Property Owners Association

Prepared by:
Aquatic Plant and Habitat Services LLC
Sara Hatleli, Sarahatleli97@gmail.com
N4236 Hwy 54, Black River Falls, WI 54615
715-299-4604

Table of Contents

List of Figures

List of Tables

1.0 Executive Summary

Round and Little Round Lakes are located approximately 7 miles east of Hayward in Sawyer County, Wisconsin. The lakes are connected by a narrow channel at the southern end of Round Lake. Round Lake is over 3,324 acres in surface area with very clear water, a maximum depth of 74 feet, and is predominantly sand-bottom with sparse vegetation. Little Round Lake is 179 acres with clear water, a maximum depth of 38 feet, and abundant vegetation

The lakes are a premiere destination for recreation in the Hayward area. Residents and visitors use the lakes for fishing, water-skiing, jet skiing, fishing, swimming, SCUBA diving, snorkeling, kayaking, and paddle boarding. These are just some recreational activities that were observed in 2014.

Eurasian water-milfoil (EWM) was discovered on Round Lake in 1993 and Little Round Lake in 1999. Since then, management efforts related to aquatic plants have largely focused on the control of EWM. The Round Lake Property Owners Association (RLPOA) is engaged in management activities on both Round and Little Round Lakes. With the financial assistance of a WDNR Lakes grant, the RLPOA partnered with Harmony Environmental to develop an Aquatic Plant Management Plan effective from 2009 through 2013. A large component of this plan addressed the management of EWM and protecting native species.

In 2014, the RLPOA partnered with Aquatic Plant and Habitat Services LLC to conduct an aquatic plant survey of the lakes and update the Aquatic Plant Management Plan to be in effect from 2015 through 2019. Many of the same goals from the previous plan have been included in this updated version, although they are presented differently. These goals are intended to follow the Wisconsin Department of Natural Resources Aquatic Plant Management Strategy for the Northern Region and for the RLPOA to maintain eligibility for AIS control grants.

This updated management plan provides background information on the lakes, identifies the issues and need for management, reviews past management activities, and presents management options. All these components were analyzed to develop a strategy that includes the following goals:

Goal 1 – Education
Goal 2 – Prevent the Introduction and Spread of Aquatic Invasive Species
Goal 3 – Aquatic Invasive Species Management
Goal 4 – Protect Native Plant Species
Goal 5 – Maintain High Water Quality

Section 1
What We Know About Round & Little Round Lakes

2.0 Study Site

Round Lake is a seepage lake located in Sawyer County, Wisconsin with a surface area of 3,324 acres. The maximum depth is 74 feet and the mean depth is 33 feet. Connected by a narrow channel to the south is Little Round Lake, also considered a seepage lake with a surface area of 179 acres, maximum depth of 38 feet and mean depth of 12 feet. Although the lakes have their own unique Water Body Identification Code (WBIC, Round 2395600, Little Round 2395500), they are sometimes referred to as the Round Chain and the Round Lake Property Owners Association serves both lakes. The lakes are situated approximately 7 miles east of Hayward, Wisconsin (Figure 1). Water clarity for Little Round Lake is moderately clear. Little Round Lake is considered mesotrophic (WDNR, 2014), but water quality data from 1999-2013 suggest it is borderline oligotrophic with abundant vegetation. Water clarity for Round Lake is very high and the lake is considered oligotrophic with low nutrients and sparse vegetation.

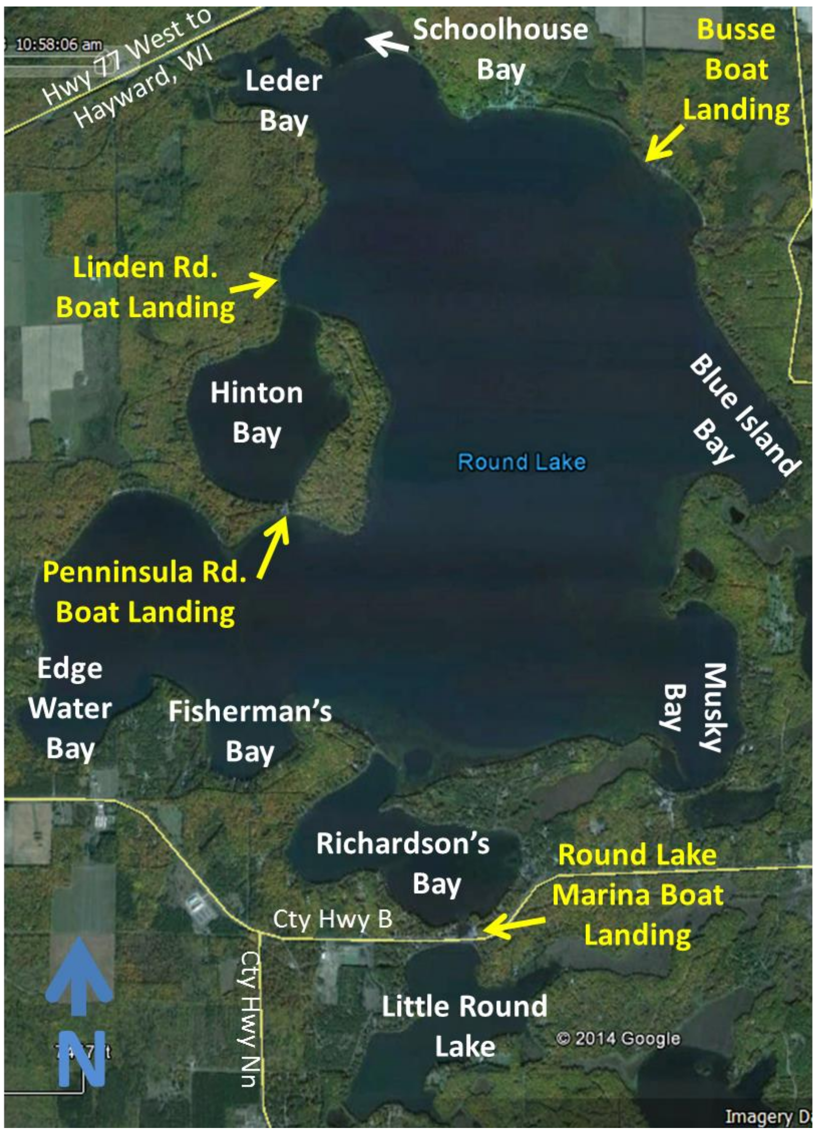


Figure 1 - Round and Little Round Lakes

3.0 Water Quality

The water quality of a lake influences the aquatic plant community and vice versa. Water clarity, total phosphorus, and chlorophyll-*a* are water quality measures that can be used to determine the productivity or trophic status of a lake. Each variable can be used independently to gain insight on the approximate trophic state. However, combining data for clarity, phosphorus, and chlorophyll-*a* yields a more accurate lake classification. The Carlson Trophic State Index (TSI) is frequently used to determine biomass in aquatic systems. The trophic state of a lake is defined as the total weight of living biological material (or biomass) in a lake at a specific location and time. Eutrophication is the movement of a lake's trophic state in the direction of more plant biomass. Eutrophic lakes tend to have abundant aquatic plant growth, high nutrient concentrations, and low water clarity due to algae blooms. Oligotrophic lakes, on the other end of the spectrum, are nutrient poor and have little plant and algae growth. Mesotrophic lakes have intermediate nutrient levels and only occasional algae blooms.

Water quality data are available for Round Lake from 1995-2013 and Little Round Lake from 1999-2013. All data were collected by Lac Courte Orielles Land Conservation Department. The management plan completed by Harmony Environmental in 2009 includes water quality data up to 2005 for both lakes. This management plan presents an update in water quality data collected from 2005-2013.

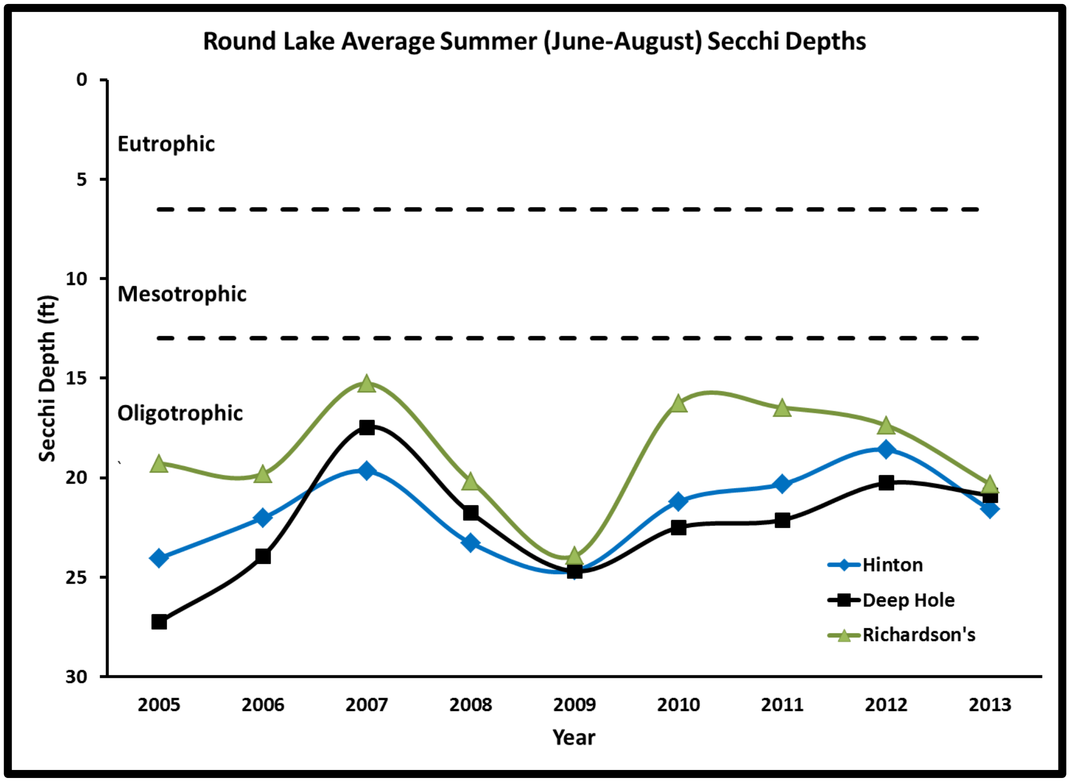
3.1 Water Clarity

The depth to which light can penetrate is a factor that limits aquatic macrophyte growth. Water clarity is measured by lowering a black and white Secchi disk in the water and recording the depth of disappearance. The disk is then lowered further and slowly raised until the reappears. The Secchi depth is the mid-point between the depth of disappearance and the depth of reappearance. Because light penetration is usually associated with nutrient levels and algae growth, a lake is considered eutrophic when Secchi depths are less than 6.5 feet. Secchi depths vary throughout the year, with shallower readings in summer when algae concentrations increase, thus limiting light penetration. Conversely, deeper readings occur in spring and late fall when algae growth is limited.

The 2009-2013 Aquatic Plant Management Plan for Round and Little Round Lakes included average summer Secchi data between 1995 and 2005. Average summer Secchi depths in Round Lake ranged from 17 feet to 32 feet between 1995 and 2005 with a long term trend that suggested water clarity was increasing. Average annual Secchi depths in Little Round Lake ranged from 17 feet to 25 feet between 1999 and 2005.

The Lac Courte Orielles Land Conservation Department provided more recent water clarity data (2005-2013) for Round and Little Round Lakes. Round Lake was monitored at three sites; one in Hinton Bay, one in the main basin, and one in Richardson's Bay. With average summer Secchi depths ranging from 15 feet to 27 feet among the three monitoring sites, data continue to classify Round Lake as an oligotrophic system (Figure 2). The average Secchi depth for all years between 2005 and 2013 was 22 feet for both the Deep Hole and Hinton Bay sites and 19 feet for the Richardson's Bay site.

Little Round Lake was monitored at one site between 2005 and 2013. Average summer Secchi depths ranged from 14 feet to 24 feet (Figure 2). The overall average Secchi depth for those years was 18 feet and these data continue to classify Little Round Lake as an oligotrophic system from a water clarity standpoint.



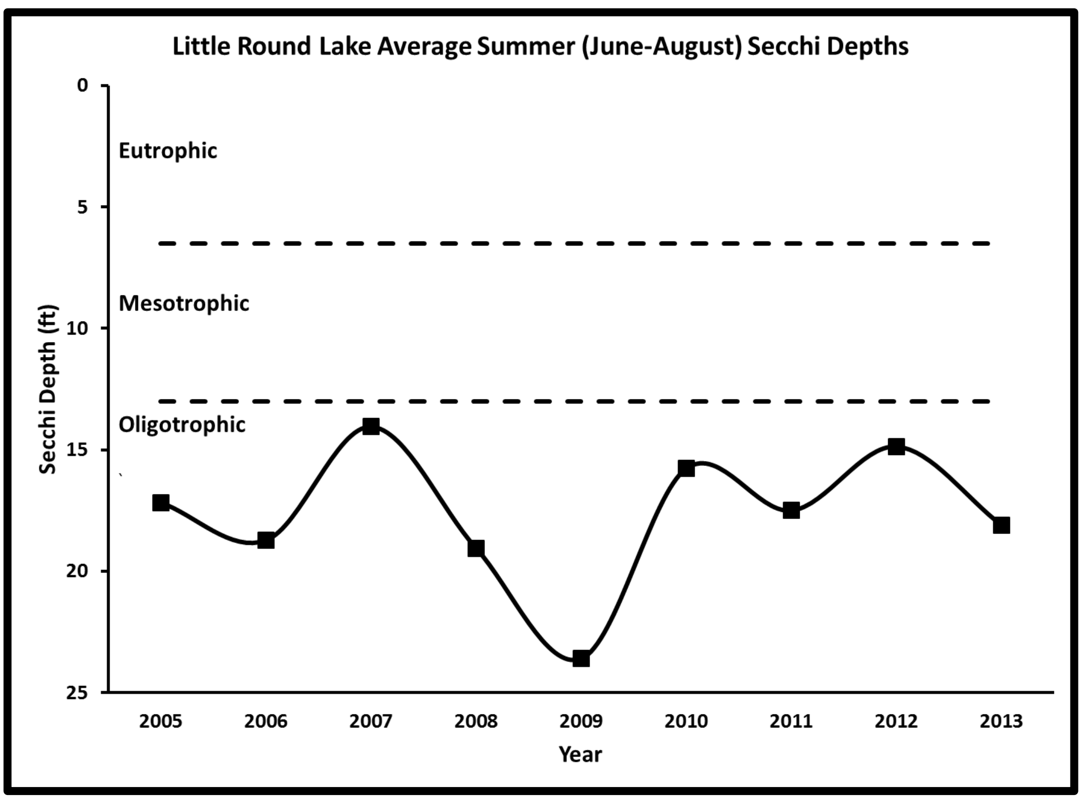


Figure 2 - Secchi Depths for Round and Little Round Lakes (2005-2013)

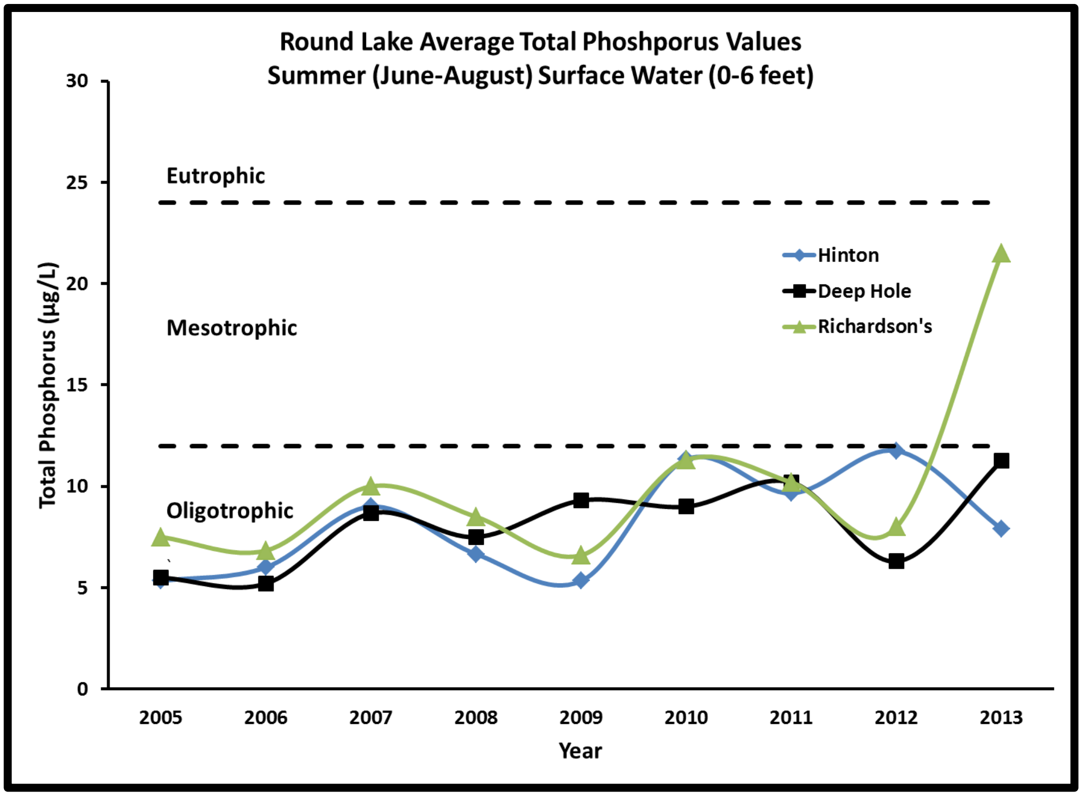
3.2 Phosphorus

Phosphorus is an important nutrient for plant growth and is commonly the nutrient limiting plant production in Wisconsin lakes. As a limiting factor, adding small quantities of phosphorus to a lake can cause dramatic increases in plant and algae growth and should therefore be the focus of management efforts to improve water quality. Phosphorus can be monitored at various depths, especially in deep lakes, because when a lake is thermally stratified, higher levels of phosphorus are found in deeper waters. This is due to decomposition and sinking of zooplankton and algae, thereby causing a "build-up" of nutrients in deeper waters that do not readily mix during thermal stratification. Also due to the lack of mixing in summer, the oxygen levels in deeper waters fall. When oxygen is depleted, chemical changes at the sediment-water interface allow phosphorus that was trapped in the sediment to be re-suspended into the water column.

Total phosphorus was monitored in Round Lake from 1995 through 2005 with Trophic State Index (TSI) values ranging from 24 (approx 4µg/l, oligotrophic) to 50 (approx. 24 µg/l, borderline eutrophic). Water samples were collected from the main basin Deep Hole site in Round Lake. The TSI value of 50 occurred in 1997 while every other year yielded TSI values for phosphorus that were within the range of oligotrophic classification. Total phosphorus was monitored in Little Round Lake from 1999 through 2005 with TSI values ranging from 31 (approx. 6 µg/l) to 39.5 (approx. 11.6 µg/l), which is just barely within the range for oligotrophic classification.

More recent total phosphorus data reveal similar findings. Surface water (0-6 feet) samples of Round and Little Round Lakes were collected by the Lac Courte Orielles Land Conservation Department from 2005-2013. In Round Lake there were three sites, including a site in Hinton Bay, Richardson's Bay, and the main basin (Deep Hole). Average total phosphorus values ranged from 5 to12 µg/l in Hinton Bay, 7 to 22 µg/l in Richardson's Bay, and from 5 to 11 µg/l at the Deep Hole site in the main basin (Figure 3). All mean summer values fall within the oligotrophic range, except for the mean summer value of 22 µg/l in Richardson's Bay in 2013. Overall averages from 2005-2013 were 8 µg/l for Hinton Bay and the Deep Hole site and 10 µg/l for Richardson's Bay.

Little Round Lake was monitored for total phosphorus at one site with average summer values ranging from 8 to 20 µg/l (Figure 3). Approximately 50% of the summer averages between 2005 and 2013 fell within the mesotrophic classification while the other half fell within the oligotrophic classification. This trend is similar to that of total phosphorus data from 1999-2005. Overall mean total phosphorus in Little Round Lake between 2005 and 2013 was 12 µg/l.



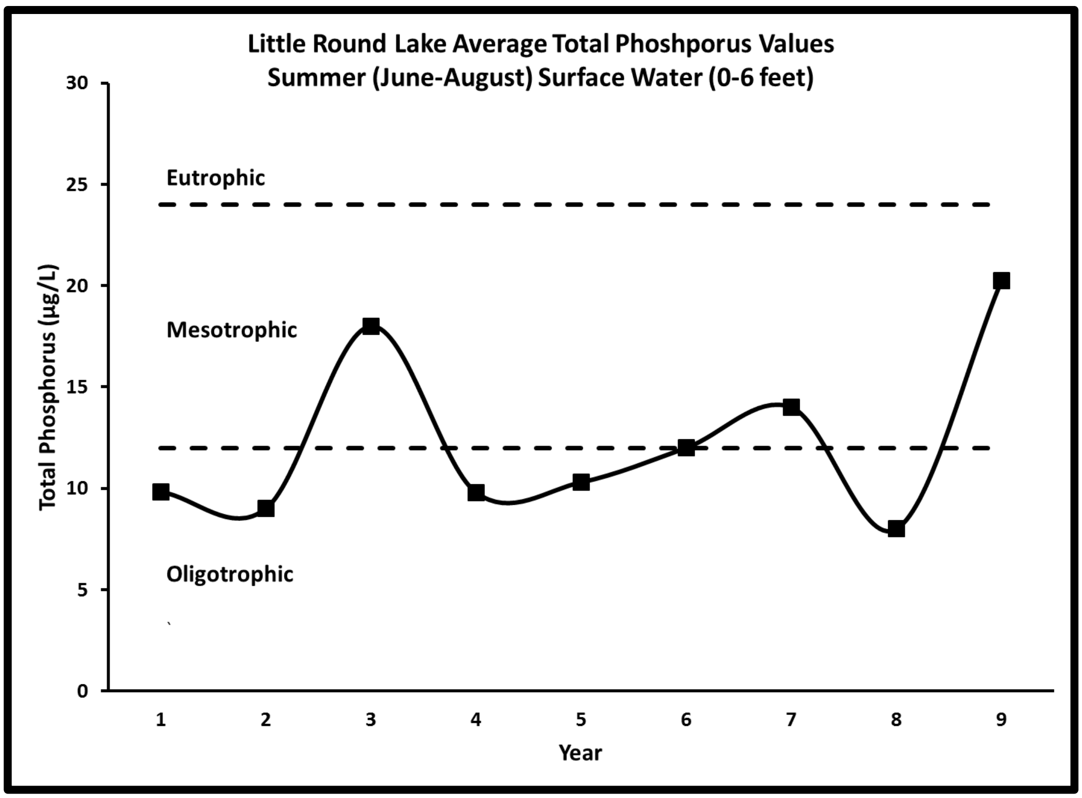


Figure 3 - Total Phosphorus Values for Round and Little Round Lakes (2005-2013)

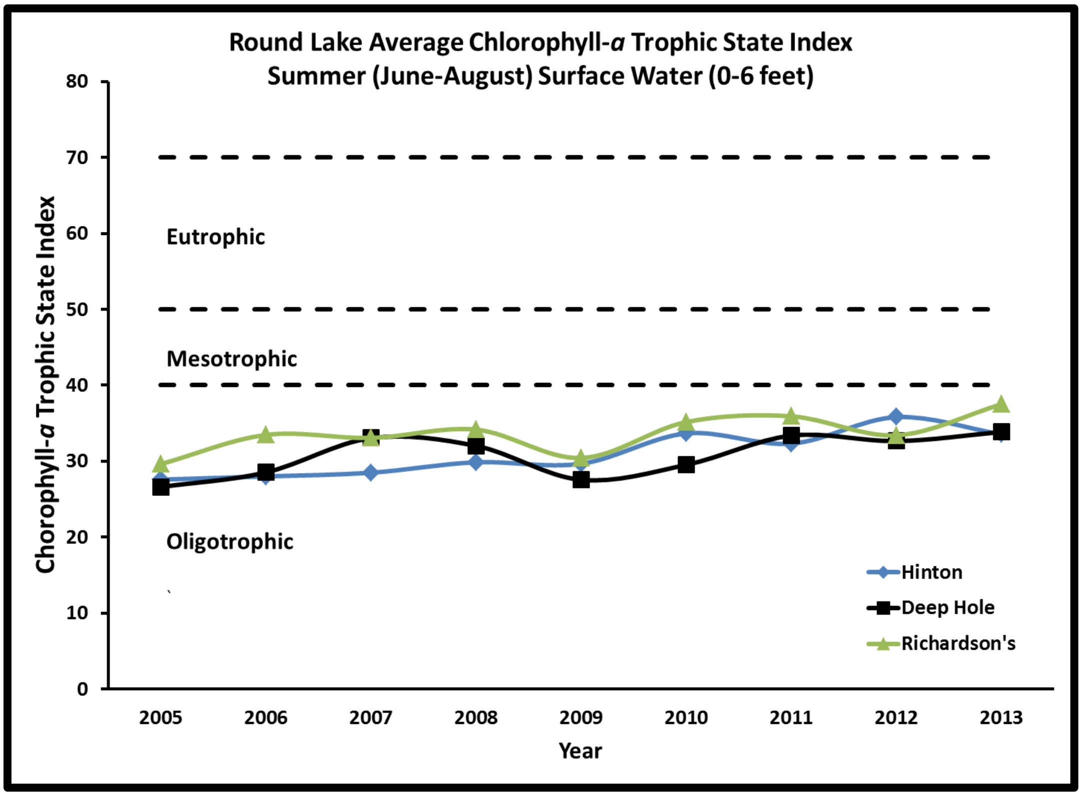
3.3 Chlorophyll-*a*

Chlorophyll-*a* is the green pigment found in plants and algae. The concentration of chlorophyll-*a* is used as a measure of the algal population in a lake. For trophic state classification, preference is given to the chlorophyll-*a* trophic state index (TSI_{CHL}) because it is the most accurate at predicting algal biomass.

Chlorophyll-*a* was monitored in Round Lake from 1995 through 2005 and in Little Round Lake from 1999-2005. Round Lake TSI_{CHL} values ranged from 30 to 39 (oligotrophic). Little Round Lake TSI_{CHL} values ranged from 34.5 to 39.5 (oligotrophic)

The Lac Courte Orielles Land Conservation Department conducted chlorophyll-*a* monitoring of Round and Little Round Lakes between 2005 and 2013. Three sites in Round Lake included one in Hinton Bay, one Richardson's Bay, and one in the main basin at the Deep Hole site. Hinton Bay surface water TSI_{CHL} values ranged from 28-36, Richardson's Bay ranged from 30-38, and the main basin Deep Hole site ranged from 27-34 (Figure 4). All average TSI_{CHL} values fell within the oligotrophic range and were consistent with trends in the previous decade (1995-2005). Overall averages from 2005-2013 were 31 in Hinton Bay and the Deep Hole site and 34 in Richardson's Bay.

Little Round Lake TSI_{CHL} was monitored at one site with values ranging from 30 to 38, which are within the oligotrophic classification (Figure 4). These findings are also consistent with previous TSI_{CHL} trends from 199-2005. The overall mean TSI_{CHL} in Little Round Lake from 2005-2013 was 34.



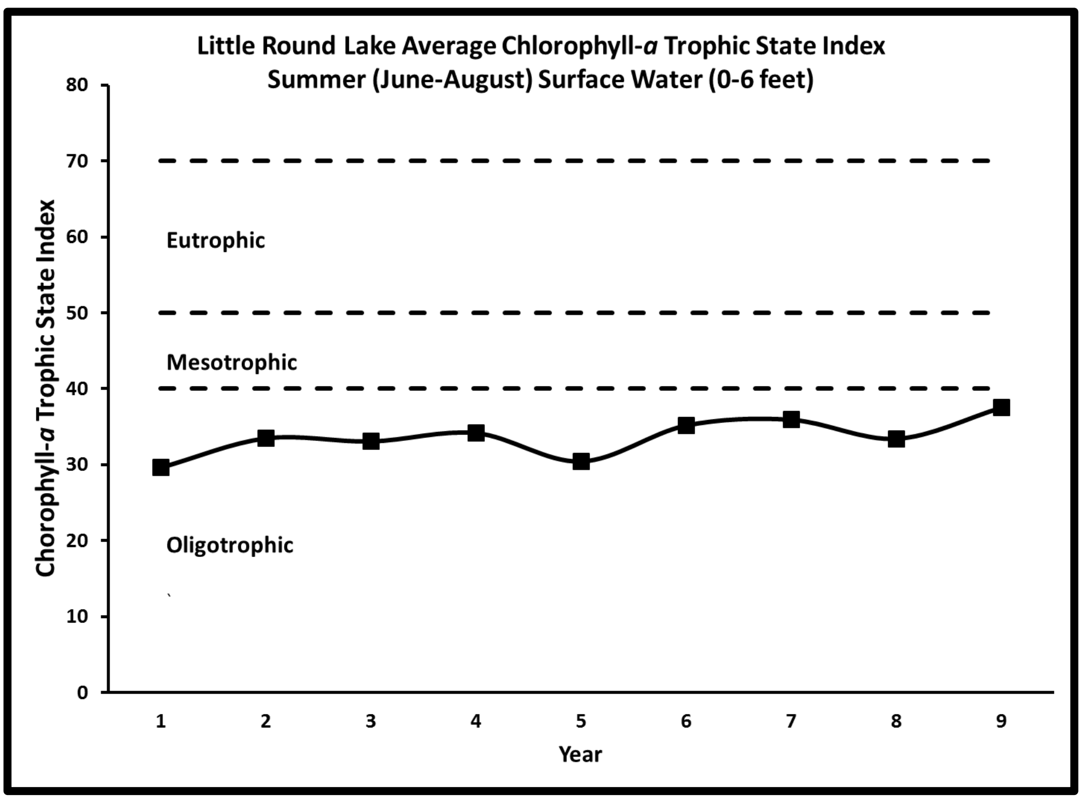


Figure 4 - Chlorophyll-*a* Trophic State Index for Round and Little Round Lakes (2005-2013)

4.0 Shore Land Condition

A shoreline and buffer survey was completed in the summer of 2012 on Little Round Lake, which has 6.4 miles of shoreline. The survey was conducted as a part of the AIS Control Grant from WDNR from 2010 through 2012. Results indicate that 73% of the shoreline (where the water meets the land at ordinary water level) is natural vegetation. Seventy-five percent (75%) of the shore land buffer, or area from the shoreline and extending 35 feet onto shore, was considered natural vegetation (Table 1).

The RLPOA is interested in working with riparian land owners to improve shore land practices, especially as they relate to water quality. The shoreline and buffer survey of Little Round Lake suggests most of the shore land is natural, which is beneficial for water quality. However, there may still be residents of Little Round Lake that could modify shore land practices to better serve water quality. A shoreline and buffer survey of Round Lake has not been completed and such a project would be an appropriate for the RLPOA to conduct and work toward improved shore land practices, thereby protecting water quality.

Table 1 - 2012 Shore Land Condition Data for Little Round Lake

Condition	Condition Description	Condition %
	Shoreline where the water meets land at ordinary water levels	
Natural	Natural vegetation and/or <1-foot strip of sand	72.7%
Sand	Natural or man-made beach	17.3%
Rock	Natural rock shoreline	4.6%
RipRap	Rock installed by humans	2.9%
Structures	Constructed impervious surfaces (launches, houses)	0.2%
Lawn	Planted or natural but routinely mowed	2.9%
	Buffer from the shoreline and extending 35 feet landward	
Natural	Trees, brush, other natural vegetation	74.5%
Hard Surface	Houses, launches, decks, etc. preventing water infiltration into the soil	0.2%
Cleared	Primarily cleared but not mowed, open stairs	8.9%
Lawn	Grass or vegetation that is obviously mowed	9.6%
Sand	Naturally occurring or human transported sand	6.8%

5.0 Aquatic Plants

An aquatic plant survey of Round and Little Round Lakes was completed by Aquatic Plant and Habitat Services LLC on July 25th-27th and August 15th–17th, 2014. The plant survey followed a statewide standard protocol that requires navigation to pre-determined latitude-longitude coordinates. The plants were surveyed from a boat using a double-sided rake head on a telescopic pole or rope, depending on site depth. Even though the lakes are connected by a narrow (~25 feet wide) channel, the aquatic plant survey results are presented here for each lake because the resolution of survey points was different for each lake. In other words, the survey points were 230ft (70m) apart in Round Lake and 105ft (32m) apart in Little Round Lake. Greater detail of aquatic plant survey results and maps can be found in the detailed Aquatic Plant Survey Report for Round and Little Lakes (APHS, 2014), which is intended to complement this management plan.

Table 2 - Aquatic Plant Survey Results for Round and Little Round Lakes

Summary Statistic	Round 2007	Round 2014	Little Round 2005	Little Round 2014
#Sites Visited	942	1,009	352	403
#Sites with Plants	297	425	246	322
Max Rooting Depth	20.6ft	23ft	23.6ft	23ft
#Sites Shallower than Max. Rooting Depth	587	980	345	385
Frequency of Occurrence	50.6%	43.37%	71%	84%
Species Richness (found on rake)	42	37	32	37
Simpson Diversity Index	0.94	0.92	0.90	0.92
Floristic Quality Index	44.05	38.24	NA	38.47
Data from the Aquatic Plant Survey Report for Round and Little Round Lakes (APHS, 2014)				

5.1 Round Lake

There were a possible 2,749 survey points in Round Lake based on the point-intercept survey grid for the 2014 survey. An aquatic plant survey in 2007 revealed a maximum rooting depth of 21.6ft, but survey points that were ≤25ft were sampled. The same method was employed in 2014 to account for changes that may have occurred in the plant community over time, patchiness of aquatic plants, and other sources of variation. Of the 2,749 possible survey points, 1,009 were actually visited because they were ≤25ft. The maximum rooting depth was 23ft and there were 980 survey points that were ≤23ft. Less than half of those sites (425 or 43%) had vegetation present. Of those 425 sites, 76% had a total rake fullness value of 1, 12% had a total rake fullness of 2, and the remaining 12% had a total rake fullness of 3 (Figure 5). Although plant abundance was low, the diversity was high with a species richness of 37 species found on the rake, another 5 species within 6ft of survey points but not on the rake, and another 5 species found greater than 6ft from survey points. The Simpson Diversity Index was also high with a value of 0.92 out of a maximum possible value of 1.00. The Floristic Quality Index was higher than the average value for other lakes in the same ecoregion.

Fern pondweed (*Potamogeton robbinsii*), slender naiad (*Najas flexilis*), and variable pondweed (*Potamogeton gramineus*) were the three most common species found in 2014 with occurrence at 14%, 12%, and 8% of survey points ≤23ft, respectively (Table 3). Together, they accounted for 37.4% of the total relative frequency, which is a relatively low combined relative frequency and further supports that Round Lake has a heterogeneous plant community.

Eurasian water-milfoil (*Myriophyllum spicatum*) was found at 4 survey points and visually observed (i.e., within 6ft of the survey point) at another 2 points (Figure 6). On a whole-lake scale, EWM had a very low occurrence and did not appear to be an immediate nuisance issue. This is likely due to the regular monitoring and treatment of EWM that has been occurring over the past 20 years.

Flowering rush (*Butomus umbellatus*) was found at one survey site in Musky Bay during the aquatic plant survey in 2014 near survey point 2454. It was not documented during the 2007 aquatic plant survey of Round Lake. However, WDNR staff and RLPOA volunteers hand pulled flowering rush from six sites in Leder and Schoolhouse Bays in 2005, but these bays are at the opposite end of the lake from Musky Bay. Flowering rush did not pose a problem to the biotic integrity of the native aquatic plant community in Round Lake nor in Musky Bay at the time of the survey. However, regular monitoring and hand-pulling is important to keep flowering rush from growing to nuisance conditions and/or spreading to other parts of Round Lake.

Table 3 - Round Lake Individual Species Statistics, 2014

Scientific Name	Common Name	Avg. Rake Full.	# Sites	# Visual	Freq. Occur. Veg. Sites	Freq. Occur ≤max depth	Rel. Freq.
Potamogeton robbinsii	Fern pondweed	1.40	139	2	32.71	14.18	15.38
Najas flexilis	Slender naiad	1.03	118	1	27.76	12.04	13.05
Potamogeton gramineus	Variable pondweed	1.01	81	1	19.06	8.27	8.96
Chara sp.	Muskgrasses	1.00	64	0	15.06	6.53	7.08
Potamogeton pusillus	Small pondweed	1.03	62	0	14.59	6.33	6.86
Elodea canadensis	Common waterweed	1.05	59	0	13.88	6.02	6.53
Potamogeton zosteriformis	Flat-stem pondweed	1.35	52	1	12.24	5.31	5.75
Vallisneria americana	Wild celery	1.26	50	0	11.76	5.10	5.53
Myriophyllum sibiricum	Northern water-milfoil	1.07	27	0	6.35	2.76	2.99
Nitella sp.	Nitella	1.07	27	0	6.35	2.76	2.99
Ceratophyllum demersum	Coontail	1.65	26	0	6.12	2.65	2.88
Potamogeton praelongus	White-stem pondweed	1.28	25	0	5.88	2.55	2.77
Not Identified to Species	Filamentous algae	1.04	23	0	5.41	2.35	-
Bidens beckii	Water marigold	1.00	20	0	4.71	2.04	2.21
Potamogeton amplifolius	Large-leaf pondweed	1.15	20	1	4.71	2.04	2.21
Potamogeton friesii	Fries' pondweed	1.21	19	0	4.47	1.94	2.10
Potamogeton richardsonii	Clasping-leaf pondweed	1.05	19	2	4.47	1.94	2.10
Sagittaria sp.	Arrowhead	1.13	16	0	3.76	1.63	1.77
Potamogeton perfoliatus	Perfoliate pondweed	1.13	16	0	3.76	1.63	1.77
Eleocharis acicularis	Needle spikerush	1.00	11	0	2.59	1.12	1.22
Nymphaea odorata	White water lily	1.20	10	8	2.35	1.02	1.11
Schoenoplectus tabernaemontani	Softstem bulrush	1.00	8	10	1.88	0.82	0.88
Potamogeton foliosus	Leafy pondweed	1.00	7	0	1.65	0.71	0.77
Myriophyllum spicatum	Eurasian water milfoil	1.25	4	2	0.94	0.41	0.44
Brasenia schreberi	Watershield	1.67	3	5	0.71	0.31	0.33
Potamogeton strictifolius	Stiff pondweed	1.33	3	0	0.71	0.31	0.33
Utricularia vulgaris	Common bladderwort	1.33	3	1	0.71	0.31	0.33
Heteranthera dubia	Water star-grass	1.00	2	0	0.47	0.20	0.22
Pontederia cordata	Pickerelweed	1.00	2	1	0.47	0.20	0.22
Potamogeton alpinus	Alpine pondweed	1.50	2	0	0.47	0.20	0.22
Eleocharis palustris	Creeping Spikerush	1.00	2	1	0.47	0.20	0.22
Juncus pelocarpus f. submersus	Brown-fruited rush	1.00	1	0	0.24	0.10	0.11
Lemna minor	Small duckweed	1.00	1	0	0.24	0.10	0.11
Myriophyllum alterniflorum	Alternate-flowered milfoil	1.00	1	0	0.24	0.10	0.11
Nuphar variegata	Spatterdock	1.00	1	1	0.24	0.10	0.11
Potamogeton natans	Floating-leaf pondweed	1.00	1	5	0.24	0.10	0.11
Ranunculus flammula	Creeping spearwort	1.00	1	0	0.24	0.10	0.11
Ranunculus aquatilis	White water crowfoot	1.00	1	0	0.24	0.10	0.11
Ceratophyllum echinatum	Spiny hornwort	*	*	1	*	*	*
Polygonum amphibium	Water smartweed	*	*	5	*	*	*
Sparganium angustifolium	Narrow-leaved bur-reed	*	*	1	*	*	*
Sparganium sp.	Bur-reed	*	*	1	*	*	*
Typha latifolia	Broad-leaved cattail	*	*	1	*	*	*
Calla palustris	Wild calla	**	**	**	**	**	**
Butomus umbellatus	Flowering rush	**	**	**	**	**	**
Comarum palustre	Marsh cinquefoil	**	**	**	**	**	**
Iris versicolor	Blue flag	**	**	**	**	**	**
Asclepias incarnate	Swamp milkweed	**	**	**	**	**	**

*Visual Only **Boat Survey Only

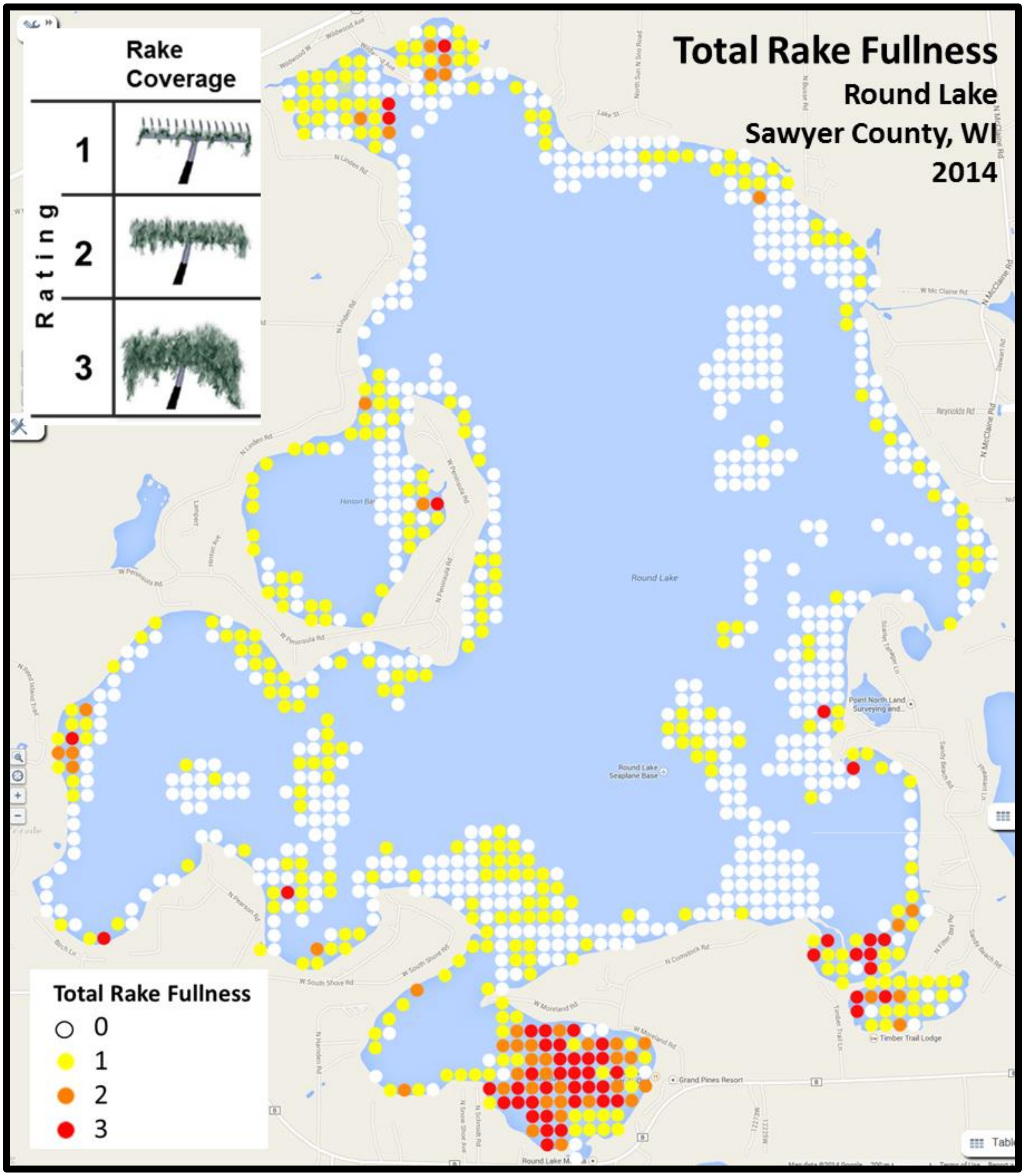


Figure 5 - Round Lake Rake Fullness Map 2014

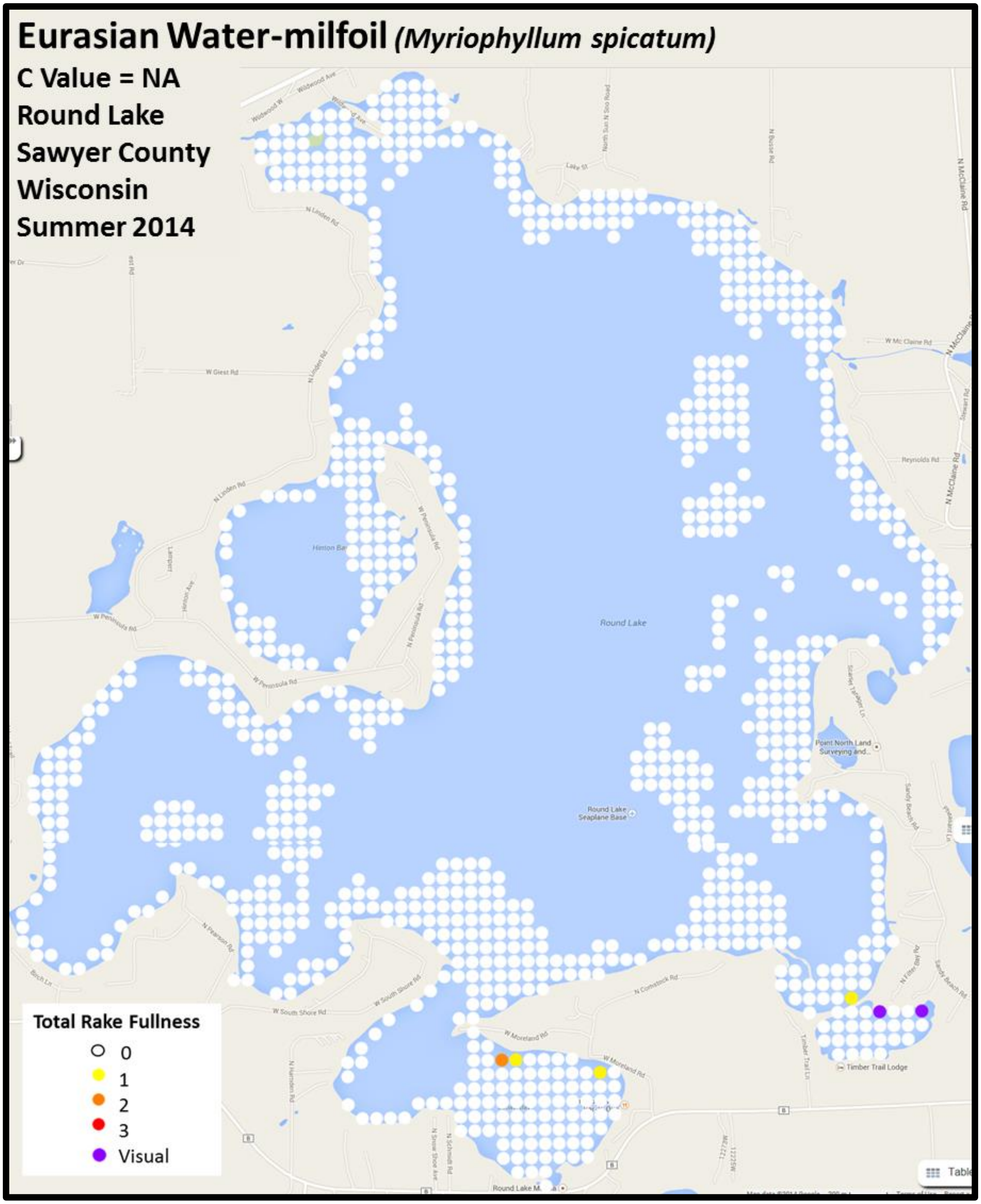


Figure 6 - Round Lake EWM 2014

5.2 Little Round Lake

There were a possible 698 survey points, but only 403 were actually visited because 228 points were ≥25feet deep, 65 points were not navigable due to thick emergent vegetation, one site was blocked by an isthmus and one site was occupied by anglers. The maximum rooting depth of vegetation was 23 feet and there were 385 sites ≤23ft deep. Of those 385 sites, 322 had vegetation present (84%). Most of the sites with vegetation had a total rake fullness of three (132 sites, 41%), 101 sites (32%) had a total rake fullness of 1 and 87 sites (27%) had a total rake fullness of 2 (Figure 7). Species richness was high with 37 species found on the rake at survey points and another three species found within 6 feet of survey points. The Simpson Diversity Index was high at 0.92. The Floristic Quality Index was 38.47, which is higher than the average value for other lakes in the same ecoregion.

Fern pondweed (*Potamogeton robbinsii*) and water celery (*Vallisneria americana*) were the most common species found in 2014 with occurrence at 19% and 10% of survey points ≤23ft, respectively (Table 4). Together, they accounted for 29% of the total relative frequency, which is a relatively low combined relative frequency and further supports that Little Round Lake has a heterogeneous plant community.

Purple loosestrife was found at one point on Little Round Lake near County Highway B, just west of the bridge (Figure 8). The plant was found as part of the boat survey, therefore it was greater than 6 feet from any survey point but it was closest to survey point 303. The occurrence was not very substantial and could be controlled manually by digging the plant and roots before flowering occurs, thereby preventing seed formation. There may already be a bank of seeds in the soil, so continued monitoring of the site after any removal will be required. Keeping this purple loosestrife occurrence from spreading is important because there are areas in Little Round Lake that would be ideal for purple loosestrife to infest and possibly outcompete native species (i.e., the two bays along the southern shore with shallow water, mucky sediment, and dense emergent and floating vegetation).

Eurasian water-milfoil (*Myriophyllum spicatum*) was found at 12 survey points and visually observed (i.e., within 6ft of the survey point) near another 3 points (Figure 8). At four sites, the EWM showed signs of damage from chemical treatment such as fused leaflets, especially toward the top of the plant where new growth occurs. On a whole-lake scale, EWM had a very low occurrence and did not appear to be an issue. This may be due to the regular monitoring and treatment of EWM that has been occurring over the past 15 years.

Table 4 - Little Round Lake Individual Species Statistics, 2014

Scientific Name	Common Name	Avg. Rake Full.	Number of Sites	Number of Visual	Freq. Occur. Veg. Sites	Freq. Occur ≤max depth	Rel. Freq.
Potamogeton robbinsii	Fern pondweed	2.02	190	0	59.01	49.35	19.19
Vallisneria americana	Wild celery	1.69	103	0	31.99	26.75	10.40
Ceratophyllum demersum	Coontail	1.23	70	0	21.74	18.18	7.07
Potamogeton gramineus	Variable pondweed	1.06	67	0	20.81	17.40	6.77
Elodea canadensis	Common waterweed	1.02	66	0	20.50	17.14	6.67
Brasenia schreberi	Watershield	1.20	49	10	15.22	12.73	4.95
Najas flexilis	Slender naiad	1.00	48	0	14.91	12.47	4.85
Potamogeton zosteriformis	Flat-stem pondweed	1.00	35	0	10.87	9.09	3.54
Utricularia intermedia	Flat-leaf bladderwort	1.15	34	1	10.56	8.83	3.43
Bidens beckii	Water marigold	1.00	32	0	9.94	8.31	3.23
Potamogeton amplifolius	Large-leaf pondweed	1.03	32	0	9.94	8.31	3.23
Potamogeton praelongus	White-stem pondweed	1.08	26	0	8.07	6.75	2.63
Nymphaea odorata	White water lily	1.09	23	17	7.14	5.97	2.32
Schoenoplectus subterminalis	Water bulrush	1.04	23	1	7.14	5.97	2.32
Myriophyllum sibiricum	Northern water-milfoil	1.05	20	0	6.21	5.19	2.02
Potamogeton friesii	Fries' pondweed	1.11	18	0	5.59	4.68	1.82
Potamogeton pusillus	Small pondweed	1.06	18	0	5.59	4.68	1.82
Potamogeton perfoliatus	Perfoliate Pondweed	1.00	17	0	5.28	4.42	1.72
Potamogeton strictifolius	Stiff pondweed	1.33	15	0	4.66	3.90	1.52
Utricularia vulgaris	Common bladderwort	1.00	14	0	4.35	3.64	1.41
Myriophyllum spicatum	Eurasian water milfoil	1.00	12	3	3.73	3.12	1.21
Chara sp.	Muskgrasses	1.00	12	0	3.73	3.12	1.21
Nuphar variegata	Spatterdock	1.00	12	14	3.73	3.12	1.21
Not Identified to Species	Filamentous algae	1.08	12	0	3.73	3.12	-
Utricularia minor	Small bladderwort	1.00	9	0	2.80	2.34	0.91
Eleocharis palustris	Creeping spikerush	1.22	9	3	2.80	2.34	0.91
Heteranthera dubia	Water star-grass	1.00	7	0	2.17	1.82	0.71
Potamogeton richardsonii	Clasping-leaf pondweed	1.00	7	0	2.17	1.82	0.71
Not Identified to Species	Aquatic Moss	1.00	7	0	217	1.82	-
Potamogeton foliosus	Leafy pondweed	1.17	6	0	1.86	1.56	0.61
Potamogeton natans	Floating-leaf pondweed	1.00	4	5	1.24	1.04	0.40
Sagittaria sp.	Arrowhead	1.00	4	3	1.24	1.04	0.40
Pontederia cordata	Pickerelweed	1.00	2	5	0.62	0.52	0.20
Dulichium arundinaceum	Three-way sedge	1.00	1	5	0.31	0.26	0.10
Eleocharis acicularis	Needle spikerush	1.00	1	0	0.31	0.26	0.10
Equisetum fluviatile	Water horsetail	1.00	1	0	0.31	0.26	0.10
Myriophyllum tenellum	Dwarf water-milfoil	1.00	1	0	0.31	0.26	0.10
Polygonum amphibium	Water smartweed	1.00	1	3	0.31	0.26	0.10
Schoenoplectus tabernaemontani	Softstem bulrush	1.00	1	2	0.31	0.26	0.10
Sparganium americanum	American bur-reed	*	*	*	*	*	*
Typha latifolia	Broad-leaved cattail	*	*	*	*	*	*
Typha sp.	Cattail	*	*	*	*	*	*
Lytrhum salicaria	Purple loosestrife	**	**	**	**	**	**

*Visual Only **Boat Survey Only

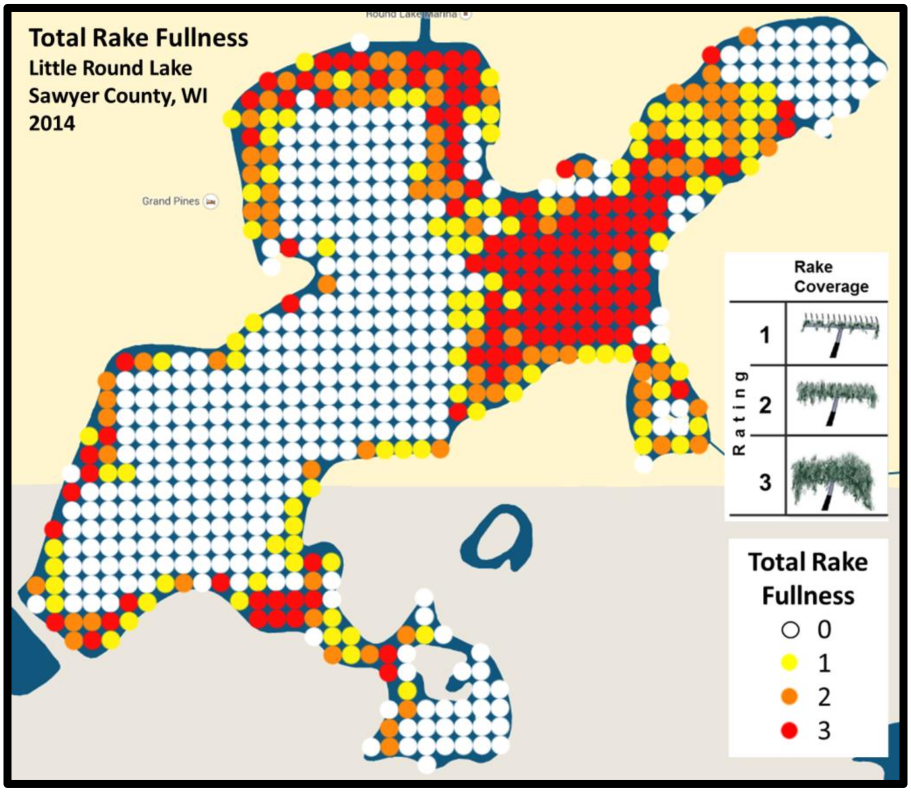


Figure 7 - Little Round Lake Rake Fullness Map 2014

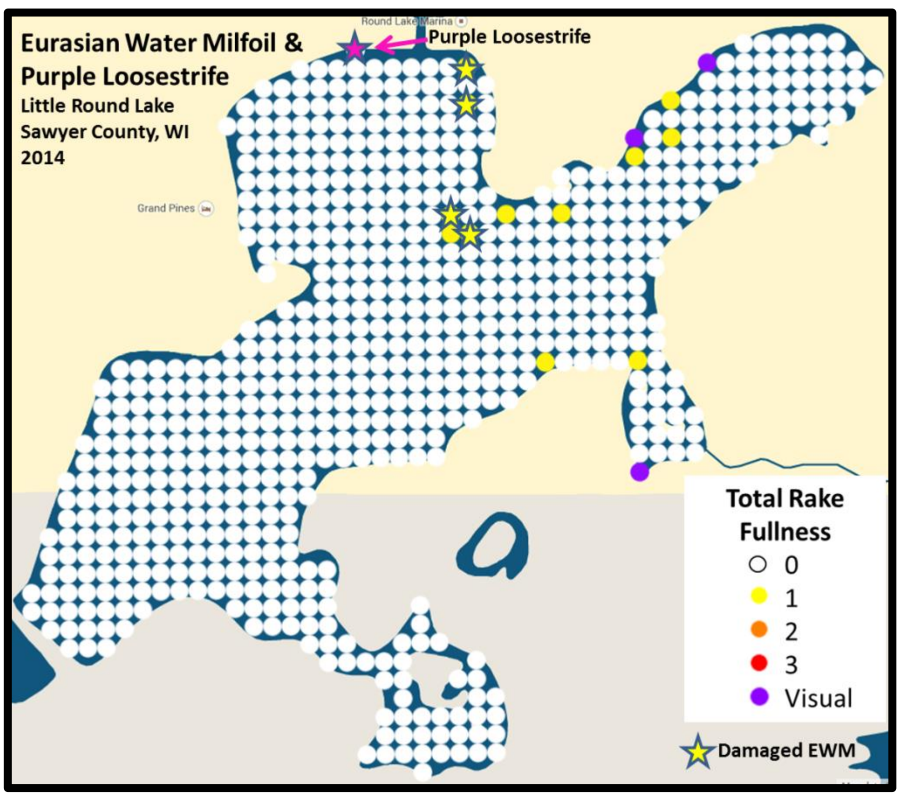


Figure 8 - Little Round Lake EWM & Purple Loosestrife 2014

6.0 Fishery

Game fish species in Round and Little Round Lakes include smallmouth and largemouth bass, walleye, muskellunge, northern pike, and panfish (Table 6). Round Lake is considered a two-story fishery with presence of coldwater ciscoe and although not abundant, they still serve as a food source for walleye and muskellunge[1]. The main body of Round Lake is conducive to spawning and natural recruitment of walleye and smallmouth bass due to its sand and gravel substrate and low abundance of aquatic plants. Conversely, Little Round Lake and Richardson's Bay of Round Lake are deemed excellent largemouth bass habitat. Muskellunge is stocked in order to maintain musky fisheries in the lakes (Neuswanger, 2013). Other fish species stocked in the last decade are listed in Table 5.

A fish survey was conducted by the WDNR in spring 2013 with deliberate surveying of rocky and sandy shorelines to target smallmouth bass (Neuswanger, 2013). As a result, areas with higher aquatic plant abundance were under-represented in the survey. Smallmouth bass ≥ 7 inches were found at a rate of 20 per mile. Largemouth bass ≥ 8 inches were found at a rate of 6.3 per mile, which is higher than the target maximum of 5 per mile and they were also below the regional size average. Furthermore, these largemouth bass were found in habitats not ideal for their species (Neuswanger, 2013).

Other fish species surveyed during spring of 2013 included walleye, northern pike, muskellunge, yellow perch, bluegill and black crappie. Although natural reproduction of walleye is strong[1], they were captured in low numbers during the survey due to late ice cover on the lake, which delayed surveying efforts until after walleye spawning had occurred in areas of open water. Adult walleye capture rates were 1.7 per net night ≥10 inches and junvenille walleye were 10 per mile ≤10 inches. Muskellunge were captured at a rate of 1.4 per net-night, which is considered a moderate to high density, and 100% of those were ≥30 inches (Wolter, 2014)[2].

Round and Little Round Lakes are popular destinations for anglers. The most recent creel data (1998-1999) suggests walleye is the species of greatest interest to anglers in the Round Lake chain with 49% of total angling effort. However, there is a sense of growing interest in targeting of smallmouth bass while largemouth bass were deemed relatively unimportant to local stakeholders. Consequently, there is a special fishing regulation proposal for Round and Little Round Lakes with a goal to promote better smallmouth size and density. Another goal of the special regulation is to minimize the predatory and competitive interactions between largemouth bass and angler-preferred species. The special regulation proposes to remove the minimum length limit for largemouth bass and apply an 18-inch minimum length limit and daily bag limit of 1 to smallmouth bass (Neuswanger, 2013).

[1] Email correspondence with Max Wolter, WDNR Fisheries Biologist, Hayward, WI. October 6, 2014.
[2] Full report available at *http://dnr.wi.gov/topic/Fishing/documents/north/SawyerRound2013SN1SE2.pdf*.

Table 5 - Fish Stocking in Round Lake 2004-2014

Year	Species	Age Class	Number Stocked	Average Length (in)
2014	Muskellunge	Large Fingerling	1,488	11.40
2012	Muskellunge	Large Fingerling	2,500	12.60
2010	Muskellunge	Large Fingerling	1,517	12.15
2008	Muskellunge	Large Fingerling	2,498	10.10
2006	Rainbow Trout	Large Fingerling	7,750	5.50
	Muskellunge	Large Fingerling	1,374	11.20
2005	Brown Trout*	Large Fingerling	22,002	4.60-5.50
	Rainbow Trout	Large Fingerling	8,840	5.70
2004	Brown Trout	Yearling	15,281	7.70
		Large Fingerling	31,000	6.40
	Muskellunge	Large Fingerling	1,523	10..90
	Rainbow Trout	Large Fingerling	12,997	5.80
*Two different strains were stocked (15,687 Seeforellen and 6,315 St. Croix)				

Table 6 - Game Fish Species in Round and Little Round Lakes

	Round	Little Round
Largemouth Bass	Abundant	Common
Smallmouth Bass	Abundant	Present
Walleye	Abundant	Present
Muskellunge	Present	Present
Northern Pike	Present	Common
Panfish	Common	Common
Information retrieved from http://dnr.wi.gov/lakes accessed October 5, 2014		

7.0 Wildlife

The Wisconsin Natural Heritage Inventory (NHI) lists species and natural communities that are known or suspected to be rare in Wisconsin. The species are legally designated as endangered or threatened or they may be listed in an advisory capacity of special concern. The NHI lists species according to township and range, which includes T41N 08W, T10N 07W, and T40N 08W for Round and Little Round Lakes. There are seven NHI species in the Round Lakes area (Table 7).

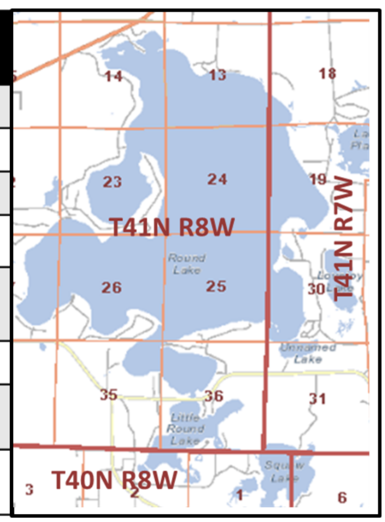
The NHI natural communities in T41N 08W (hard springs and spring runs), T41N R7W (northern wet forest) and T40N R8W (Muskeg) are considered secure in Wisconsin with many occurrences. Spring ponds are another natural community found in T41N R07W and they are considered to be rare or uncommon in Wisconsin with 21-100 occurrences statewide[3].

Bald Eagles on Round and Little Round Lakes have been monitored by the WDNR since 1979. In 2014, there were three occupied territories, or nesting sites, on Round Lake. Two of those sites produced one young eagle per nest. Bald eagles previously had an occupied territory on Little Round Lake but it appears the active nesting moved to Osprey Lake to the southeast[4].
During the aquatic plant survey, four loons were observed at the mouth of Schoolhouse Bay of Round Lake on July 27th, 2014. Lake residents can contribute valuable data on loon populations through the Northland College LoonWatch Program[5].

Table 7 - Natural Heritage Inventory Species Near Round Lakes

Common Name	Scientific Name	State Status	Township & Range
Trumpeter Swan	Cygnus buccinator	Special Concern*	T41N08W
Climbing Fumitory	Adlumia fungosa	Special Concern	T40N08W
Black Tern	Chlidonias niger	Endangered	T41N07W
Spruce Grouse	Falcipennis canadensis	Threatened	T41N07W
Pronghorned Clubtail	Gomphus graslinellus	Special Concern / No Laws Regulating Use	T41N07W
Vasey's Pondweed	Potamogeton vaseyi	Special Concern	T41N07W
Mountain Cranberry	Vaccinium vitis-idaea ssp. Minus	Endangered	T41N07W

Information retrieved from http://dnr.wi.gov/topic/NHI/data October 6, 2014
*Fully protected by state and federal laws under the Migratory Bird Act



[3] http://dnr.wi.gov/topic/NHI accessed October 6, 2014
[4] Phone conversation with WDNR Ecologist, Ryan Magana, October 13, 2014.
[5] http://www.northland.edu/sigurd-olson-environmental-institute-loon-watch.htm

Section 2
Issues and Need for Management

8.0 Aquatic Invasive Species

Aquatic invasive species (AIS) are defined by their tendency to out-compete native species thereby threatening the diversity and balance of plants and animals that are native to a particular system. The aquatic invasive plant of greatest concern in Round and Little Round Lakes at the time of this management plan is Eurasian water-milfoil (*Myriophyllum spicatum*). The only other non-native species found during the 2014 aquatic plant surveys were flowering rush (*Butomus umbellatus*) at one site in Round Lake and purple loosestrife (*Lythrum salicaria*) at one site in Little Round Lake. Neither seem to be a serious threat to the lake ecosystems or recreation at this time. However, their presence warrants monitoring and recommendations are made in Section 19.0.

Eurasian water-milfoil (EWM) was discovered in Round Lake in 1993 and in Little Round Lake in 1999. EWM poses a threat to aquatic plant communities because it thrives in areas of disturbance (natural or human-induced), it can grow to form mats of surface vegetation that block sunlight for other aquatic plants, and those surface mats of vegetation can pose a hindrance to boat navigation (WDNR, 2014a) More specifically, EWM is a threat to Round Lake because the diverse aquatic plant community is relatively sparse (APHS, 2014), thus widespread infestation of EWM could compromise the native species in the few areas where aquatic plants are found. Both lakes have areas of depth beyond the maximum rooting depth of plants, so it is known that EWM will not completely take over either lake. However, the areas that are favorable for aquatic plant growth are also subject to EWM infestation. Also, both lakes have a considerable amount of boat traffic, making it easier for EWM to fragment and spread between and within the two lakes. Since boaters can spread EWM from one lake to another, boats leaving Round and Little Round Lakes can spread EWM to other waterbodies if proper precautions are not followed.

During the aquatic plant surveys of Round and Little Round Lakes in July and August of 2014, purple loosestrife and flowering rush did not impact recreational use of the lakes (e.g., motorized and non-motorized boating, swimming, fishing, snorkeling, SCUBA diving). Also during the plant surveys, there were no observations of recreational activities being impacted by EWM. The EWM that was found in both lakes was low in occurrence with no plants growing to the water's surface. The RLPOA has not received complaints of EWM impacting recreation in the past few years[6]. This could be due to management efforts to keep EWM growth under control. It could also be due to the fact that many lake users seek out areas of open water that are not conducive to plant growth. In any case, efforts to control EWM seem to be due to valid concerns that it will take over areas where plants are found, thereby decreasing biotic integrity in those areas and increasing the possibility of spreading to other lakes.

[6] Email correspondence with Dan Kollodge, RLPOA President. November 17, 2014.

Section 3
Past Aquatic Plant Management Activities

9.0 Adopt-a-Shoreline Monitoring Program

The "Adopt-a-Shoreline" program is a volunteer-based approach to monitoring lakes for AIS. The program is based on the Citizen-based Monitoring Network monitoring protocols for monitoring AIS. Volunteers are trained to identify AIS and conduct surveillance of their designated portions of shoreline. Volunteers are asked to monitor twice monthly from May through August and report any findings of AIS to a designated coordinator. Over the years since 2009, organizers have been Krisy Maki from Sawyer County, Dan Tyrolt from Lac Courte Orielles Land Conservation, the hired consultant, and/or volunteers with assigned jurisdictions. Most recently, the volunteers with assigned shoreline jurisdictions are known as the Milfoil Observation Team and their contact information is easily accessible on the RLPOA website (*www.roundlakes.org*) so any suspected findings of EWM or other AIS can be reported to these volunteers (Figure 9). The program was first established in 2004 with over 30 volunteers (Harmony Environmental, 2009). It was revived in 2010 according the AIS Control Grant Report[7]. The report suggests the program was quite successful with new areas of EWM discovered each summer allowing for appropriate monitoring or control depending on the infestation. Volunteers logged 139.5 hours in 2010, 411 hours in 2011, and 120 hours in 2012 totaling 670.5 hours in three years,[8] which demonstrates the level of dedication provided by the volunteers of this program. At a rate of $12/hour, these volunteers contributed $8,046 worth of time to the effort.

[7] Summary Report, Round and Little Round Lake AIS Control Project #ACEI-083-10, April 2010- December 2012.
[8] Email correspondence with Dan Kollodge, RLPOA. October 6, 2014

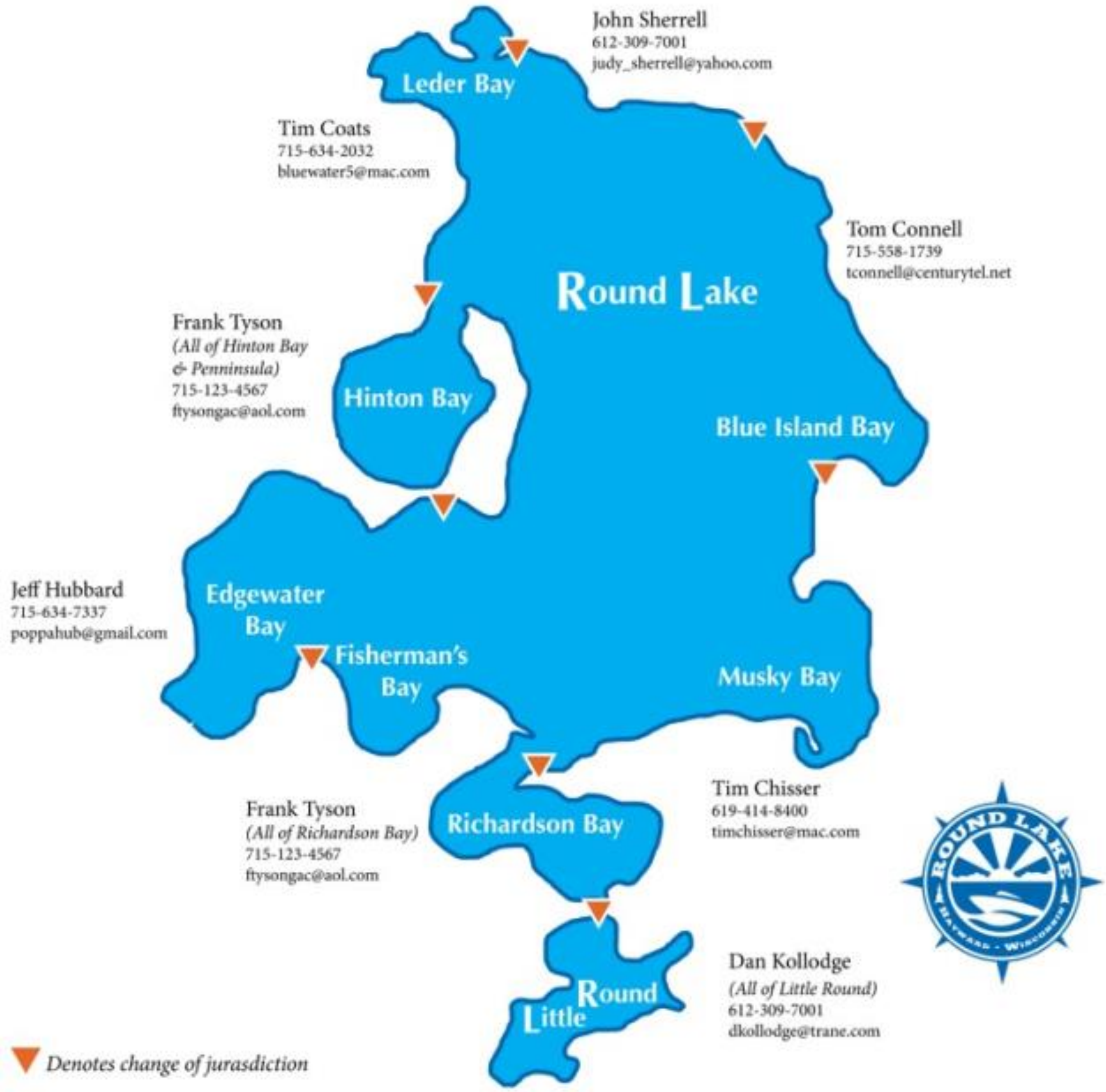


Figure 9 - 2014 Volunteer Milfoil Observation Team
Modified from www.roundlakes.org/reportAIS.html

10.0 Education & Outreach

The Round Lake Property Owners Association (RLPOA) renovated their website with a new URL address *of www.roundlakes.org.* This website provides contact information to report new sightings of EWM and chemical treatment information. There is space allocated for links to Current EWM Maps, WDNR AIS Information, EWM Volunteer Section, and List of Donors but these links are not currently active[9]. There are also links for reporting new EWM observations and donating to the EWM fund.

The RLPOA also publishes newsletters in the fall and spring of each year and organizes an annual membership meeting in the fall. In each newsletter, there is a section on Water Quality / Invasive Species. These articles are well written and cover topics including EWM infestation and treatment updates, water quality issues, and appeals to residents for volunteer and monetary assistance. The newsletters are archived on the RLPOA website and are currently up to date. The annual membership meetings provide an opportunity for EWM infestation and treatment updates, volunteer opportunities, discussion regarding AIS, and dissemination of printed educational materials.

The Sawyer County AIS Coordinator, Kristy Maki, conducted volunteer monitoring trainings for AIS in 2009-2011. The AIS coordinator also assisted with pre- and post- EWM treatment surveys on the lakes from 2009 through 2014 as well as posting signs and/or the most recent AIS information at all public boat landings and at five resort boat landings.

11.0 Watercraft Inspection

The Clean Boats Clean Waters program was a large component of AIS control from 2010-2012 between Memorial Day and Labor Day at the Round Lake Marina and Linden Road boat landings. Two inspectors were hired and they worked during peak boating traffic hours (i.e., weekends and holidays). During these three summers, there were, 2,570 boats inspected, 4,412 people contacted, and 1,429 hours worked by watercraft inspectors[10].

---

[9] *www.roundlakes.org* accessed October 3, 2014
[10] Summary Report, Round and Little Round Lake AIS Control Project #ACEI-083-10, April 2010-December 2012.

12.0 Chemical Treatment

Eurasian water-milfoil was first documented in Round Lake in 1993 and Little Round Lake in 1998 (WDNR, 2014). The first chemical treatment of EWM in Round Lake occurred in 1994 and in Little Round Lake in 2000. Treatment dates (2005-2014), locations, and the size of the treatment area are summarized in Table 8 and Table 9. The remainder of this section focuses on chemical treatment after the development of the Aquatic Plant Management Plan for implementation from 2009-2013.

2009 Chemical Treatment

EWM was treated in Round Lake twice in 2009. Ten colonies totaling 5.8 acres were treated on June 3rd and eight colonies totaling 9.1 acres were treated on October 8th. Three colonies totaling 2.6 acres were treated on Little Round Lake on June 3rd. No fall treatment was done on Little Round Lake.

2010 - 2012 Chemical Treatment

From 2010 through 2012, a WDNR AIS grant provided financial assistance for a comprehensive and aggressive treatment strategy. According to the grant report, post treatment results were not satisfactory in 2010 with the use of Navigate (a granular brand of 2,4-D) because pH in the lakes is 8.5 and the efficacy of Navigate is compromised in waters with pH over 8.0[11]. The size of the treatment area was also a factor because spot treatments are diluted very quickly thereby reducing the dosage and success of treatment. For this reason, mechanical control options were recommended for areas of infestation less than 0.25 acres instead of chemical treatment. Also, based on the reported low success with Navigate brand 2,4-D, different brands were used in 2011 and 2012.

Chemical treatment in 2011 involved the use of two different granular forms of 2,4-D, Renovate MaxG and Sculpin G, to assess which would work best. Renovate MaxG was used as a Field Trial Use Permit[12]. Approximately 10 acres of EWM were treated in each lake and Renovage MaxG provided better control results and was recommended for future treatment.

Renovate MaxG was used again in 2012 on approximately 9 acres in Round Lake and 1.6 acres in Little Round Lake. The acreage of EWM was similar in 2012 to the previous year because volunteers had found new EWM infestations that required treatment

[11] Summary Report, Round and Little Round Lake AIS Control Project #ACEI-083-10, April 2010-December 2012.
[12] Email correspondence between Mark Sundeen, WDNR, and Tom Kintzinger, RLPOA. June 21, 2013.

2013 Chemical Treatment

A total of 19 acres in Round Lake and 0.76 acres in Little Round Lake were chemically treated in 2013. The RLPOA partnered with a local licensed herbicide applicator allowing for greater flexibility to treat during ideal weather conditions. For example, if a treatment was scheduled on a date but weather conditions were too windy, the applicator could return later that day or the following day when weather conditions were more favorable.

The use of Renovate MaxG was discontinued because of its trial use status and the costly monitoring that would have been required with continued use[13]. The use of Navigate brand of 2,4-D was reinstated and had greater success than previous years. Another form of 2,4-D, known as DMA-4 was also used. DMA-4 is a liquid that, like all other brands of 2,4-D, targets broad-leaf species including milfoils coontail, water lilies, and others.

Pre-treatment surveys were completed June 23-29. Treatments occurred in mid-July in Round Lake and early August in Little Round Lake. The late chemical treatments are explained in a report by the licensed herbicide applicator, which indicates 2013 was a late summer with ice-out from May 12-14 and water levels were at their highest in twelve years. Chemical treatments were delayed until after the Fourth of July holiday for safety reason and again delayed until mid-July due to wind and boat traffic[14]. A post-treatment survey occurred in September. No EWM was found in the northern areas and very little EWM was found in the southern areas[15]

2014 Chemical Treatment

EWM was reduced to approximately 9.5 acres total in both of the lakes for 2014 and treatment of those areas was conducted (Figure 10, Figure 11). Navigate was used again and provided better results than previous years. This may be due to the applicator's ability to be flexible and conduct chemical treatment during ideal weather conditions. Sculpin G and DMA-4 were also used at some sites. The applicator reported to spend 11 days on the lake in 2014, most of which was monitoring but some of which was treating. It is worth noting that the level of EWM treatment in both lakes combined in 2014 (9.5 acres) was the lowest acreage reported since 2007 (4 acres).

[13] Email correspondence between Mark Sundeen, WDNR, and Tom Kintzinger, RLPOA. 21 June 2013. Retrieved from *www.roundlakes.org*. October 21, 2014.
[14] Explanation of Treatment on Round Lake, Sawyer County, WI, July 2013 by Tom Connell. Retrieved from *www.roundlakes.org* September 1, 2014.
[15] Email correspondence with Tom Connell October 6, 2014.

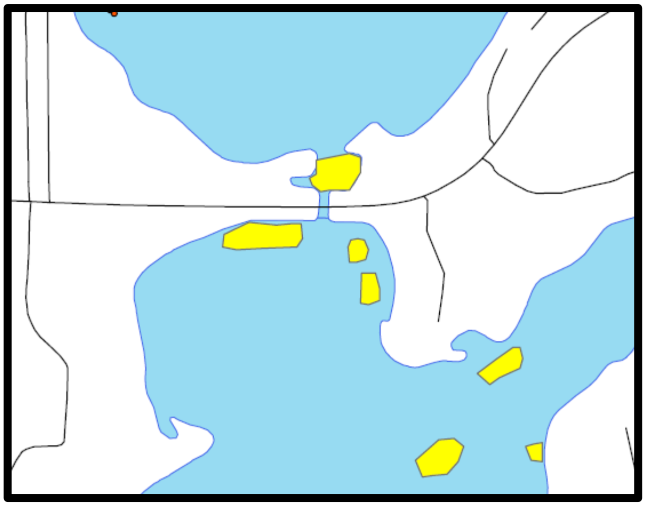


Figure 10 - 2014 EWM Treatment Areas, Little Round Lake
Map provided by Tom Connell

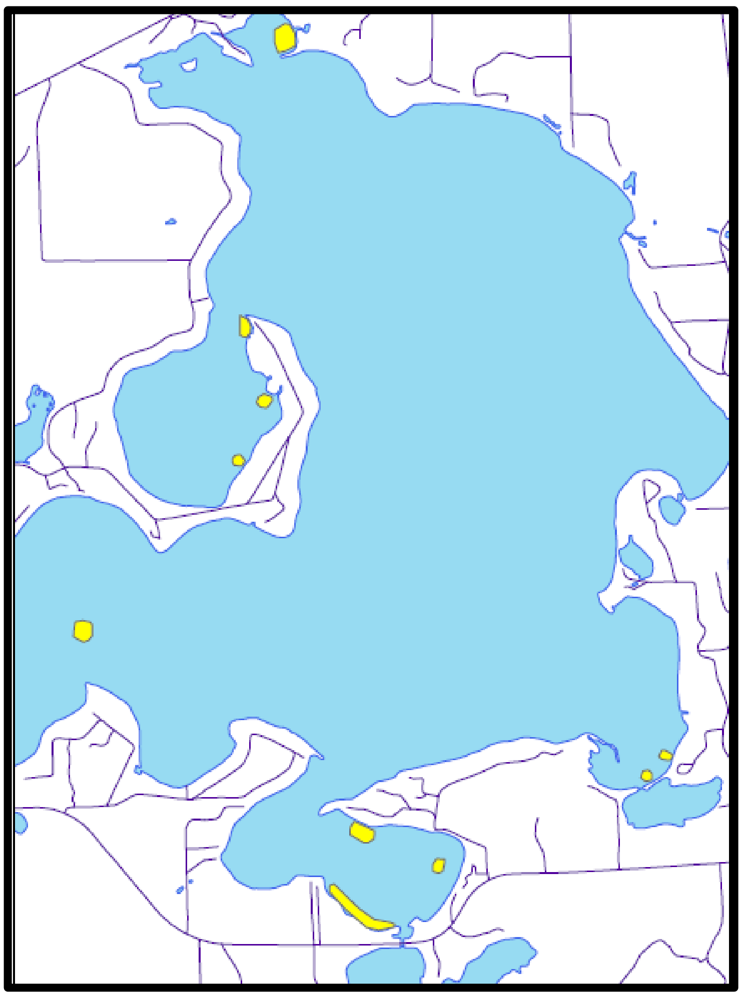


Figure 11 - 2014 EWM Treatment Areas, Round Lake
Map provided by Tom Connell

Table 8 - Round Lake EWM Treatment History 2005-2014

ROUND LAKE EWM TREATMENT HISTORY 2005-2014						
Year of Treatment	Date of Treatment	Applicator	Locations	Area Treated (acres)	Total Area (acres)	Herbicide (ppm) *
2006	June 5	Northern Aquatic Services	Leder and Schoolhouse Bays	-	6.00	-
2007	June 4	Northern Aquatic Services	Leder, Schoolhouse , Hinton, and Musky Bays	-	4.00	-
2008	June 18	Northern Aquatic Services	Hinton and Richardson's Bays	-	7.00	-
2009	June 3 October 8	Northern Aquatic Services	10 spot treatments 8 spot treatments	5.80 9.10	14.90	Navigate
2010	June 24	Northern Aquatic Services	-	-	9.90	Navigate
2011	June 16	Bonestroo, Inc.	See Appendix A – 2011 EWM Treatment Maps	9.88	9.88	Sculpin G Renovate Max G
2012	June 7	Stantec Inc.	Richardson's Bay Various spot treatments Busse	6.50 2.80 0.3 0	9.65	Navigate (4.5)
2013	July 15-20	Northern Environmental Compliance, Inc.	Leder Bay Schoolhouse Bay Richardson's Bay Musky Bay Spot treatments	9 .00 4.50 1.00 1.50 3 .00	19.00	Navigate (3.0-3.5) DMA 4 (3.0-3.5)
2014	July 24	Northern Environmental Compliance, Inc.	Schoolhouse Bay Hinton Bay Patch 2 Patch 3 Patch 4 new	0.50 0.25 0.25 0.25 0.25	7 .00	Navigate (3.0)
			Musky Bay new A	0.50		Navigate (3.0) SculpinG (3.0)
			Patch new B Mud Lake Entrance	<0.25 0.25		Navigate (3.0)
			Richardson's Bay	2.00		Navigate (3.0) SculpinG (3.0) DMA 4 (3.0)
			Famous Dave's South Shore North Shore RL Marina Edgewater Bay, Reed Isle	0.75 0.25 0.50 0.50 0.50		Navigate (3.0)
*Herbicide brand and concentration provided from 2009-2014 when available						

Table 9 - Little Round EWM Treatment History 2005-2014

LITTLE ROUND LAKE EWM TREATMENT HISTORY 2005-2014						
Year of Treatment	**Date of Treatment**	**Applicator**	**Locations**	**Area Treated (acres)**	**Total Area (acres)**	**Herbicide ppm***
2005	September 22	Lac Courte Orielles	-	1.00	1.00	-
2006	May 31	Sawyer County	Keifer's Pine Grove Resort	0.30	0.30	-
2008	June 18	Northern Aquatic Services	-	4.00	4.00	-
2009	June 3	Northern Aquatic Services	3 spot treatments	2.60	2.60	Navigate
2010	June 24	Northern Aquatic Services	-	5.00	5.00	Navigate
2011	June 8	Bonestroo, Inc.	See Appendix A	9.92	9.92	RenovateMaxG Sculpin G
2012	June 6	Stantec, Inc.	-	1.60	1.60	RenovateMaxG (4.5)
2013	August 5	Northern Environmental Compliance, Inc.	NE Corner	0.25	0.76	Navigate (3.0)
			East Side Penninsula	0.25		
			Southwest Point	0.13		
			Kiefers Resort	0.13		
2014	July 23	Northern Environmental Compliance, Inc.	Center Hump	0.50	2.5	DMA 4 (3.0)
			Fam. Dave's Cabins	1.00		Navigate (3.0)
			North Shore	0.50		
			2 spot treatments	0.25 X 2		
*Herbicide brand and concentration provided from 2009-2014 when available						

Section 4
Plant Management Options

Aquatic plants in Wisconsin water bodies can be managed in a variety of ways. The best way to manage aquatic plants will be different for each lake and depends on the overall plant community, the species that require control, whether AIS are present, the level of human use of the system, and various other background information previously presented in this management plan.

Aquatic plant management is regulated under Wisconsin Administrative Codes, Chapters NR107 and NR109 and some management activities require a permit.

There are five broad categories for aquatic plant management:

- **No active management,** which means nothing is done to control plant growth, but a strong monitoring and education component may be included.
- **Mechanical removal of plants**, which includes activities such as hand pulling, raking, and using plant harvesters.
- **Chemical treatment**, which involves the use of herbicide to kill aquatic plants.
- **Physical habitat alteration,** which means plants are reduced by altering variables that affect growth such as sediment, light availability, or depth.
- **Biological control**, which includes the use of living organisms, such as insects, to control plant growth.

The benefits and limitations of each of these broad groups is described below. A table of management options was created by the WDNR in 2008 and is also a valuable resource and can be found at the UW-Extenstion Lakes webpage at *http://www.uwsp.edu/cnr-ap/UWEXLakes/Documents/ecology/Aquatic%20Plants/Appendix-E.pdf.*

13.0 No Active Management

Sometimes the best course of management is to take no immediate action. There are many benefits including the lack of disturbance to desirable native species and the lake system, there is no financial cost, there are no unintended consequences of chemical treatment, and no permit is required. Disadvantages to this approach include the potential for small EWM colonies to become larger and more challenging to control later.

This approach often includes a strong monitoring and educational component. Closely monitoring a colony of EWM is important to determine whether action is required in the near future. Educating lake residents and visitors can help prevent the spread of EWM to other sites in the lake. This approach is appropriate for some colonies of EWM in Round and Little Round Lakes.

14.0 Mechanical Control

Mechanical control includes pulling plants by hand or by using harvesting machines or devices. Permits are required for some activities and there are a variety of options under this type of control. Mechanical control is regulated under Chapter NR 109[16].

Manual Plant Removal

Shore land property owners are allowed to manually remove a 30-foot wide section of native aquatic plants parallel to their shoreline without a permit. This can only occur in a single area and there must be piers, boatlifts, swimrafts, or other recreational or other water use devices within that 30-foot zone. This method can only be employed where other plant control methods are not being used and cannot be used in designated sensitive areas. Property owners considering this method for recreational purposes are encouraged to contact their local WDNR Lakes Coordinator if they have any questions or need clarification on native plant removal at their particular site.

AIS can be selectively removed by manual means anywhere along shore or in open water area without a permit. Regulations require that the native plant community is not harmed during manual removal of AIS. Snorkelers or SCUBA divers can be recruited as volunteers or paid staff to carry out this method of control.

Benefits of these techniques include little damage to the lake and plant community, the removal can be highly selective, and can be very effective in a small colony of AIS. On the other hand, this method can be very labor intensive, which could contribute to high cost if SCUBA divers are hired. Furthermore, plant fragments of EWM can root and grow elsewhere, so all of the plant must be removed. This method is only appropriate of small-scale control (i.e., <10 acres or <10% of littoral area, WDNR, 2014b). It is an appropriate means of controlling EWM in some areas of Round and Little Round Lakes.

Suction Harvest

This form of mechanical removal involves the use of suction tubes connected to pumps mounted on a barge or pontoon. The suction tubes reach to the bottom of the lake and SCUBA divers manually uproot EWM to be sucked through the tubes, up to the barge, and strained. This technique requires good visibility for divers and is best at depths of at least 10 feet so divers can better control their buoyancy. Furthermore, uprooting EWM plants causes suspension of sediments that can quickly limit diver visibility so working at sites that will have limited sediment suspension is helpful. Sites with native plants rooted in the sediment may help keep sediment suspension at a minimum. This method would work well in small infestation sites, including those in Round and Little Round Lakes. The barriers to employing this method at this time are cost and availability. There is no known company in the area that provides this service. If the RLPOA were to develop their own Diver Assisted Suction Harvester (DASH) unit, it would require certified divers to operate and conduct EWM harvesting. Although this is a possibility, initial cost estimates are currently a barrier. For example, insurance costs for two divers to be employed for one summer are estimated at $8,000.

[16] Chapter NR 109 *http://docs.legis.wisconsin.gov/code/admin_code/nr/100/109.pdf*.

Mechanical Harvest
This method includes "mowing" of aquatic plants at depths of 2-5 feet and then collecting the plants and removing them from the lakes. The results are immediate and often with minimal impact to lake ecology. This technique is most appropriate for lake systems with large-scale or whole-lake aquatic plant issues. Unfortunately, plant harvesting is not selective, vegetation fragments can grow to new plants, there is some inadvertent removal of small fish and reptiles, finding a site for plant disposal can be challenging, and the costs can be high. Mechanical harvest is not a viable option for Round Lakes plant management at this time because the plant of main concern, EWM, is not growing at densities and colony sizes that would warrant mechanical harvesting. Furthermore, the fragmenting of EWM cause by a harvester would outweigh the benefit.

15.0 Chemical Control

Chemical control is regulated under Wisconsin Administrative Code Chaper NR 107[17]. A granular or liquid form of herbicide is used to kill plants, usually within 10 days of treatment. Herbicides must be applied in accordance with label guidelines and restrictions.

For EWM control, an herbicide generally known as 2-4,D is often used because it is selective to broadleaf plants. The benefits of using 2-4,D are its effectiveness in controlling EWM, impact to monocots and other native species are supposed to be minimal, altering concentrations and treatment timing allow it to be selective in killing EWM, and it is widely used. On the other hand, 2-4,D can impact native dicots (broadleaf plants such as water lilies and coontail), and there is some toxicity to fish.

Although 2,4-D is intended to target dicots (broadleaf plant species), recent research has shown sustained reductions in monocots after treatment with 2,4-D (Nault et al. 2012, Nault et al. 2014). For example, 2,4-D was used to treat EWM in Tomahawk Lake, Bayfield County, for three years on a whole-lake scale at low-dose concentrations of 500µg/l (0.5 parts per million). Five native monocot species had sustained reductions in frequency after treatment. By comparison, Round and Little Round Lakes have only spot treatments with higher concentrations of herbicide (3.0-4.5 parts per million), but still within label use guidelines.

Herbicide Use in Round Lakes

Herbicides have been used to control EWM in Round Lake intermittently since 1994 and since 2000 in Little Round Lake. There has been mixed success, but there have also been different applicators and different herbicide brands. Most recently, the total EWM coverage was reduced from 20 acres in both lakes in 2013 to approximately 9 acres in both lakes in 2014. New colonies of EWM were discovered in 2014 that were not treated the previous year. Finding new EWM colonies can be attributed to volunteers on the lake and their continued efforts through the Adopt-a-Shore program mentioned in section 9.0 of this plan. These recent findings suggest chemical control of EWM and continued volunteer monitoring are appropriate management options for the lakes.

A pre-treatment survey of EWM is recommended to take place during the fall preceding spring treatment. Treating EWM in spring is beneficial because biomass is lowest at that time of year, which translates to less decaying biomass after treatment and subsequently lower biological oxygen demand during decomposition. Early season treatment is also recommended because native species are not yet growing rapidly so the treatment would have less impact on native species (WDNR, 2014b). Furthermore, EWM is treated before reaching a height that is susceptible to boat propellers causing fragmentation and spreading. Glomski and Netherland (2008) suggest water temperatures are not an important factor in treating another species of milfoil with 2,4-D. However, less microbial activity occurs in cooler water, which leads to slower herbicide decomposition and greater contact time with EWM.

[17] Chapter NR 107 is available at *http://docs.legis.wisconsin.gov/code/admin_code/nr/100/107.pdf*.

Perfoliate pondweed (*Potamogeton perfoliatus*) is a Species of Special Concern that was found at 16 sites in Round Lake and 17 sites in Little Round Lake. Perfoliate pondweed has a State Ranking of S1 which means that it is “critically imperiled in Wisconsin because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state.” If herbicide treatments occur in a given year, it is important that they happen when they are least likely to impact this aquatic plant, which is in early spring or fall.

Herbicide Impacts on Fish

There is ongoing research (WDNR Science Services) on the effects of 2-4-D on fish communities. The local fisheries biologist with the WDNR, Max Wolter, recommends the RLPOA consider non-chemical options until results of these studies are known. Mr. Wolter further explains that the existence of small patches of EWM in Round and Little Round Lakes has had no detrimental impacts on fish community function. Future actions that include chemical treatment should be given special consideration and should take all available (or soon to be available) information into account.

16.0 Physical Habitat Alteration

Various physical habitat alterations exist and most are not appropriate for consideration in Round and Little Round Lakes. Many of these alterations require a Chapter 30 permit.

Bottom Barriers

Bottom barriers prevent light from reaching aquatic plants, but kill all plants, allow for gas accumulation under the barrier and subsequent dislodging, they can impact fish spawning and food sources, and an anaerobic environment below the barrier could cause nutrient release from the sediment. Bottom barriers are not recommended for EWM control in the lakes.

Drawdown

This control technique involves the lowering of water levels and exposing sediments to freezing and drying, which results in plant death. A water level control device, such as a dam, is required for this method. Although a dam exists between Little Round Lake and Osprey Lake to the southeast, it is not intended to allow significant drawdowns for this type of management. Furthermore, the EWM infestations may just “creep” to greater depths since the water clarity is so high. This technique is not appropriate for EWM management in the lakes because there is a lack of a water control structure and the impacts to the lakes would be significant.

Dredging

Dredging includes the removal of plants along with sediment and is most appropriate for systems that are extremely impacted with sediment deposition and nuisance plant growth. Round Lakes do not meet these criteria and therefore dredging is not recommended as a plant control method.

Dyes

The use of dyes is for reducing water clarity thereby reducing light availability to aquatic plants. This is only appropriate for very small water bodies with no outflow and is therefore not recommended for Round and Little Round Lakes.

Non-point Source Nutrient Control

No permit is required for this type of nutrient management, which reduces the runoff of nutrients from the watershed. As a result, fewer nutrients enter the lake and are therefore not available for plant growth. This approach is beneficial because it attempts to correct the source of a nutrient problem and not just treat the symptoms. Although controlling non-point source pollution is always a good idea, it is not an immediate need for Round and Little Round Lakes. The water quality data suggest these lakes do not suffer from nutrient input issues.

17.0 Biological Control

Insects

Insect biocontrol options are available for EWM and purple loosestrife. The purple loosestrife found on Little Round Lake is small enough that manual digging/pulling and close monitoring are appropriate for control measures, so the exploration of biocontrol is not needed at this time.

EWM control using native weevils is also an option. The native weevils (*Euhrychiopsis lecontei*) lay eggs in the tips of milfoil plants. When the larvae hatch, they feed on the tips of the stem and burrow into the stem. Furthermore, adult weevils feed on leaves of milfoil plants. The weevils are native to Wisconsin and normally feed on northern water-milfoil (*Myriophyllum sibiricum*) but will swith their egg-laying and feeding patterns to EWM when present (CLMN, 2014). It is not known whether native populations of weevils exist in Round Lakes and stocking weevils has been done, but whether they effectively control EWM depends on the ability for the weevil to survive in the introduced lake. They require natural shorelines for overwintering and seem to survive best in shallow milfoil beds (Jester, 1999). Controlling EWM using weevils is not recommended at this time, but monitoring for native populations of weevils is an appropriate first step to determine the possibility of this biological control option.

Allelopathy

The chemical compounds released by spikerushes (*Eleocharis sp.*) appear to inhibit EWM growth (WDNR, 2014b). Needle spikerush (*E. acicularis*) and creeping spikerush (*E. palustris*) were found in both lakes. Although this method may seem to offer long-term and maintenance-free control, it has not proven effective in limiting EWM growth. Even so, the protection of spikerushes in both lakes is warranted in the event there is some impact on EWM growth. Furthermore, spikerushes provide valuable wildlife and fish habitat.

Native Plantings

Another form of biological control is to introduce a diverse native plant community that will compete with AIS. Native plants provide valuable food and habitat for fish and wildlife and a diverse community is more repellant to invasive species. Fortunately for Round and Little Round Lakes, a healthy and diverse aquatic plant community already exists. Protection of native plants is a large component of controlling EWM in the lakes.

Section 5 Management Strategy 2015-2019[18]

[18] The goals are numbered for reference but the numbering is not meant to infer priority.

17.0 Goal 1 - Education

A strong educational component is important, especially in preventing the introduction of new aquatic invasive species (AIS) and keeping Eurasian water-milfoil (EWM) at a minimal level.

Objective 1a: Organize two educational events that focus on AIS identification and prevention.

In 2016 and 2018, ideally in early summer, an educational event will be organized by the Round Lake Property Owners Association that specifically focuses on identification of AIS and prevention techniques. This event could occur in conjunction with other scheduled social events or meetings sponsored by the Association.

- Contact the Sawyer County AIS Coordinator (715-634-8288, invasives@sawyercountygov.org), or WDNR (Alex Smith 715-635-4124 alex.smith@wisconsin.gov) to schedule a trainer / instructor for AIS identification and prevention.
- Consider a joint educational event with other lake associations or the Sawyer County Lakes Forum.
- Track attendance at each event and include volunteer time, mileage, and boat use in an annual report for future grant applications.

Objective 1b: Offer educational materials pertaining to AIS and water quality/shore land practices at RLPOA sponsored events.

The RLPOA sponsors several events throughout the year including a 4th of July Boat Parade, Annual Summer Picnic, and Annual Meeting. There are also monthly “Dine Arounds” where members take turns hosting a potluck that is open to all association members. These are existing opportunities to disseminate educational materials.

- Obtain AIS educational materials that can be distributed with relative ease and provide a brief summary of AIS species, such as EWM Wild Cards produced by the WDNR. Publications may be ordered by contacting Michael Putnam at 608-267-9868 or DNRAISinfo@wisconsin.gov.
- Obtain educational materials explaining the connection between shore land practices and water quality. These may be obtained by contacting Patrick Goggin with the UWEX Lakes Program at 715-365-8943 or pgoggin@uwsp.edu.
- Bear in mind the spirit of the event and match outreach efforts accordingly (e.g., disseminating EWM identification cards might be done more aggressively at the Annual Meeting than at a Dine Around).
- Provide approximate number of materials distributed at these events and volunteer time in an annual report for future grant applications.

Objective 1c: Continue to use the Round Lakes Website for education.

The RLPOA recently updated their website at www.roundlakes.org. Information pertaining to invasive species, water level, fish, and other topics already resides on the website. Additional educational links would complement these existing links.

- Under the "Water" tab of the website, add a section titled "Water Quality." The Water Quality page should then describe the link between water quality and aquatic plants (possibly use sections from this management plan).
- Add links to the "Water Quality" page that cover shore land landscaping for water quality. Some possible links are:
  http://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/ecology/shoreland/landscaping.aspx
  http://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/ecology/shoreland/raingardens.aspx
  http://www.uwsp.edu/cnr-ap/UWEXLakes/Documents/resources/bookstore/WaterPlants.pdf
- Document links added and approximate date in an annual report for future grant applications.

18.0 Goal 2 – Prevent Introduction and Spread of Aquatic Invasive Species

Round and Little Round Lakes have low occurrence of purple loosestrife and flowering rush and relatively small and scattered infestations of Eurasian water-milfoil. Managing AIS once it is found can be time-consuming for volunteers and board members and financially expensive. Preventing the introduction of new AIS such as zebra mussels and curly-leaf pondweed and preventing the spread of existing AIS is less costly, in both time and finances.

Objective 2a: Evaluate signage at each of the boat landings and modify if needed.

At the RLPOA Annual Meeting in October 2014, members had a brief discussion regarding the signage at each boat landing and whether more signs would help keep new infestation of AIS from reaching the lakes. Furthermore, the WDNR is undergoing an effort to replace old AIS signs with a new sign updated in 2010. In recent years, WDNR updated signs at most or all Round Lake boat landings[19]. Adding kiosks to boat landing areas would allow posting of additional information.

- Inventory and photograph signs at each public boat landing including Linden Road, Round Lake Marina, Busse Road, and Peninsula Road.
- Analyze the level of signage at each boat landing.
- Visit the UW-Extension Lakes Program webpage for sign and kiosk ideas. *http://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/programs/cbcw/resources/graphics.aspx*
- Contact Christal Campbell at 608-266-0061 or christal.campbell@wisconsin.gov for new WDNR signs, if needed.
- Add AIS signs from WDNR where needed.
- Work with boat landing owners, especially at high traffic landings to consider installation of informational kiosks.
- Include any changes in signage, volunteer time, and mileage in the annual reports for future grant applications.

Objective 2b: Continue watercraft inspections.

Grant funds allowed the RLPOA to hire two staff to work at the Linden Road and Round Lake Marina boat landing during periods of high use, specifically Memorial Day to Labor Day during weekends and holidays. The continuation of this program on an annual basis is an important component of prevention.

- Continue to seek grant funds to hire watercraft inspectors for the busiest boat landings.
- Designate a RLPOA member to work with resort owners on the lakes. Encourage resort owners to conduct watercraft inspections when guests arrive and provide educational materials such as Wild Cards or other publications that provide tips for education and prevention.
- Report hours worked and number of people reached at boat landings in the annual reports for future grant applications. Also include the approximate number of educational materials distributed to resort owners.

---

[19] Email correspondence with Kristy Maki, Sawyer County AIS Coordinator. November 18, 2014.

19.0 Goal 3 - Aquatic Invasive Species Management

Purple loosestrife and flowering rush were found in at one site each during the 2014 aquatic plant surveys. Eurasian water-milfoil continues to be a threat, although the acreage of infestation has decreased in recent years (20 acres in 2013 down to 9 acres in 2014). This decrease is likely due to the flexibility of the herbicide applicator in 2013-2014 since he resides on Round Lake and is able to conduct treatment during calm weather and cater herbicide types (granular vs. liquid) based on size, density, and depth of the infestation. Management of these AIS already found in the lakes is an important component of the management plan.

Objective 3a: Remove purple loosestrife and monitor.

The 2014 aquatic plant survey revealed two purple loosestrife plants near Little Round Lake along County Highway B and just west of the bridge. Keeping this small infestation from spreading requires little to moderate effort and volunteer time. The purple loosestrife plants are growing among riprap, so digging/pulling the plant will require some labor.

- RLPOA volunteer pull / dig the purple loosestrife plants, removing as much of the taproot and associated roots as possible without causing too much disturbance to the riprap shoreline. This should occur as soon as possible in 2015, but before flowers bloom in July, at which point viable seeds can be spread while the plant is being pulled.
- Carefully remove plant matter from the site so as not to spread seeds. Burn all purple loosestrife plants as soon as possible.
- Monitor the site annually for any new growth. Follow the same removal techniques if found.
- Include any findings, volunteer time, mileage, boat-use time, and control efforts in the annual report for future grant applications.

Objective 3b: Remove flowering rush and monitor.

The 2014 aquatic plant survey revealed one flowering rush (*Butomus umbellatus*) plant in Round Lake in the southern area of Musky Bay (near point 2454, latitude 45.99883078 longitude -91.29997723). Although flowering rush probably does not pose as much of a threat as purple loosestrife, removal and monitoring are recommended because it can form dense colonies that crowd out native species.

- RLPOA volunteer monitor for flowering rush in southern Musky Bay every-other week in July and August 2015. The plant must be flowering for accurate identification. http://dnr.wi.gov/topic/invasives/fact/floweringrush.html
- Remove any flowering rush (only after accurate identification) by hand pulling the plant while working from the boat. If possible, pull roots up with the plant. If hand-pulling is not possible, flowering rush can be cut below the water surface, but this is not as effective and requires regular monitoring and cutting. Remove any plant parts from the water.
- Monitor the site annually for any new growth. Follow the same removal techniques if found.
- Include and new findings, volunteer time, boat use time, and control efforts in the annual report for future grant applications.

Objective 3c: Control the spread of Eurasian water-milfoil to non-nuisance levels using integrated pest management.
Integrated pest management (IPM) employs information about EWM's life cycle and its negative effects in combination with available control methods to determine the most economical means with minimal hazard to people, property, and environment. The RLPOA realizes that, unfortunately, complete eradication of EWM is not a realistic goal. However, keeping EWM colonies from spreading to nuisance levels is a realistic goal. Chemical treatment has had mixed success since EWM was discovered in Round Lake in 1993 and first treated in 1994. A recent round of chemical treatment was highly successful with a 55% reduction (20 acres in 2013 down to 9 acres in 2014).

Wisconsin Administrative Code (Chapter NR 107) defines large-scale chemical treatment of aquatic plants to be greater than 10.0 acres or 10% of the area of the lake that is 10 feet or less in depth[20]. In the case of Round Lake (3,324 acres) and Little Round Lake (179 acres), treating >10.0 acres in each of the lakes is considered large-scale chemical treatment. Based on the Administrative Code language, a realistic goal for RLPOA is to execute only small-scale treatments in each lake. There may be greater than 10.0 acres of milfoil in each of the lakes, but the RLPOA may target the most appropriate colonies for treatment based on guidelines in Figure 12. Therefore, smaller colonies of EWM would be controlled using mechanical methods or not actively controlled in a particular year with close monitoring.

A measure of success is to aim for EWM eradication from a particular site (or to decrease the EWM colony and density so it may be managed mechanically) so it does not require chemical treatment in consecutive years. If EWM is occurring in the same locations in consecutive years (at colony sizes >0.25 acres and rake fullness ratings ≥2), management techniques should be evaluated and modified. Chemical treatment of EWM in the same locations in consecutive years is considered seasonal nuisance relief, which is not an eligible grant activity under Wisconsin Administrative Code (NR 198.42(3))[21].

Another measure of success is based on expense to the RLPOA in controlling EWM. The RLPOA aims to spend less than $10,000 annually in controlling EWM, with an aim to spend no more than $7,000 on chemical treatment and $3,000 on mechanical treatment[22]

- Apply for an AIS control grant through the WDNR by February 1, 2015.
- The hired applicator or other consultant will conduct an EWM survey in fall to determine its locations, colony size, and density. If WDNR grant funds are being used to pay for herbicide application, a third-party entity is required to conduct the pre-treatment survey in fall. The fall mapping data should then be used to determine control measures for the following growing season (chemical treatment the following spring and/or diver hand pulling in summer).

---

[20] Chapter NR 107 Aquatic Plant Management http://docs.legis.wisconsin.gov/code/admin_code/nr/100/107/04/3
[21] Comments from WDNR Lakes Coordinator, Alex Smith, during comment period Oct-Nov 2014.
[22] Email correspondence with Dan Kollodge, RLPOA President. November 18, 2014.

- Determine the best management strategy for each site using the decision diagram for EWM control (Figure 12).
- Aim to employ herbicide treatment only when necessary, and strive for 10.0 acres or less in each of the lakes (i.e. try to only conduct small-scale treatments based on Chapter NR 107 definitions).
- If chemical treatment is needed, submit a Chemical Aquatic Plant Control Application and Permit to the WDNR in the fall or winter after the pre-treatment survey.
- Work with the hired applicator to schedule treatments during calm wind conditions. The Chemical Aquatic Plant Control Application and Permit requires <10 mph winds, but <5 mph would be better conditions so the herbicide does not dilute and mix as quickly as it would during higher winds. Monitor as described in Figure 12.
- If SCUBA divers are needed, schedule consultants and/or volunteers for EWM removal. Monitor as described in Figure 12.
- If areas of no treatment exist, monitor as described in Figure 12.
- Contact other lake association that manage EWM to explore combining resources to create a Diver Assisted Suction Harvesting (DASH) unit. Possible lake associations to contact are:
    - SAWYER COUNTY – Whitefish, Osprey, Connors, Lost Land, and Clear.
    - BAYFIELD COUNTY – Tomahawk, Sand Bar, George, and Pike Chain.
    - WASHBURN COUNTY – Gilmore, Nancy, and Horseshoe.
    - DOUGLAS COUNTY – St. Croix Flowage.
    - BARRON COUNTY – Lower Vermillion, Horseshoe (also in Polk Co.), Echo, and Sand.

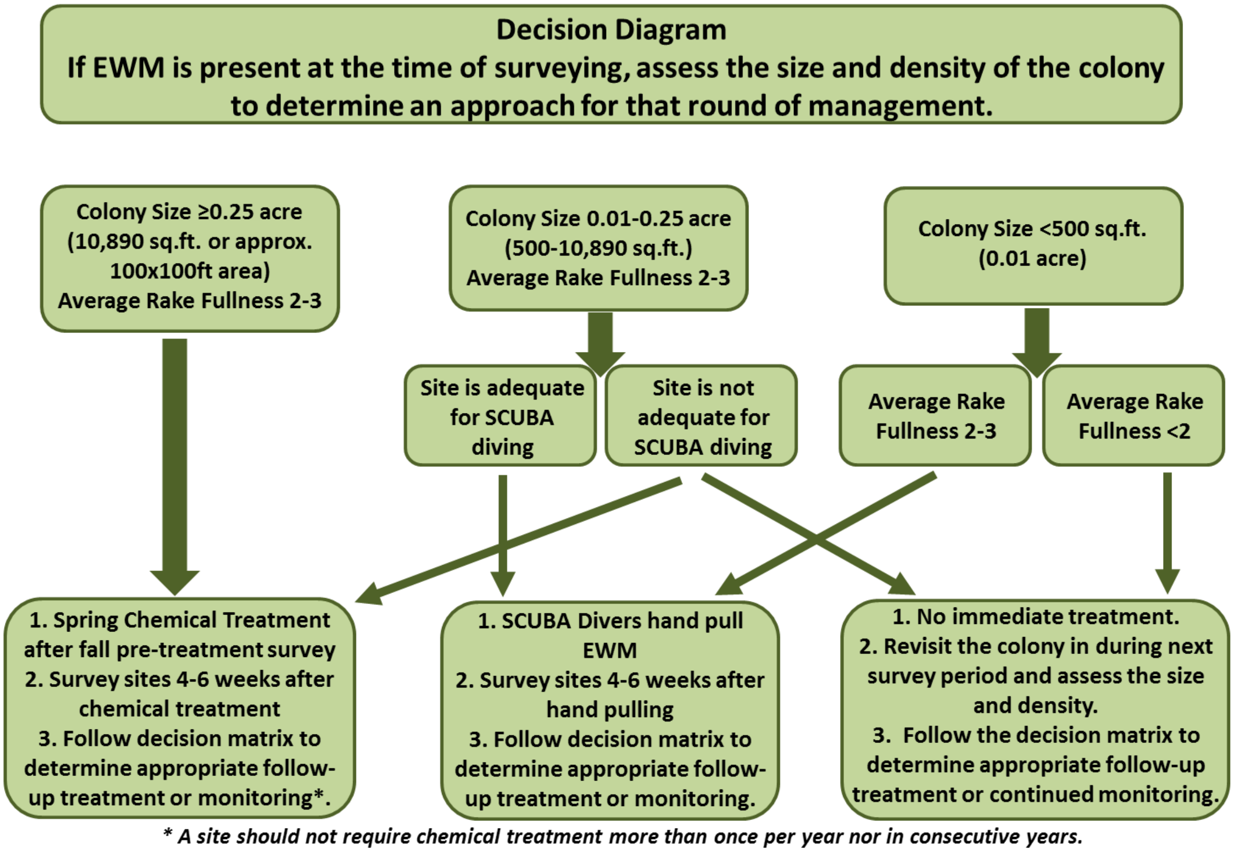


Figure 12 - Decision Diagram for EWM management

20.0 Goal 4 – Protect Native Plant Species

Objective 4a: Avoid impacts to native plants when controlling AIS.

Controlling AIS in lakes can cause unintended damage to the native aquatic plant community. Chemical control of EWM is likely to be the control method of greatest concern regarding impact to native plants. The removal of purple loosestrife and flowering rush will not cause damage to the native plant community because they are small infestations that can be managed with hand pulling and digging. EWM infestations, on the other hand, may be best controlled using chemical treatment or manual removal depending on the colony size, colony shape, density, and location. When chemical treatment is the best option for controlling EWM at a particular site, employ the following action items:

- Use 2,4-D or another herbicide that targets EWM.
- Follow the herbicide label guidelines for concentration. A licensed herbicide applicator is required and will understand these guidelines.
- Treat EWM during the spring, early summer, or fall when growth of native species is less active.
- Do not treat an area more than once per year. If the EWM was treated in spring but not eradicated from a site, it likely means that the spring treatment failed and the method or process for treatment should be evaluated. Repeat treatments in the same site exacerbate the threat to non-target native plants and organisms and therefore should not be considered.[23]

Objective 4b: Minimize the manual removal of native plants for navigation and recreation.

In some instances, native aquatic plants can hinder recreational activities along shore. In Round and Little Round Lakes this most commonly occurs in bays that have thick emergent and/or floating-leaf vegetation. Property owners can remove some native plants but there are restrictions under Wisconsin Administrative Code, Chapter NR109 and more detail on this code is described in the Manual Removal Section of this Plan.

- Per Chapter NR109, native plants removal is allowed but limited to a single area with a maximum width of no more than 30 feet measured along the shoreline. There must be piers, boatlifts, swimrafts, and/or other recreational devices within that 30-foot area. Property owners may remove the plants by manual or mechanical means (not by chemicals). This plant management plan advocates that this should only be done at a minimal level to meet the goal of protecting native plant species.
- Add language to the RLPOA website with information about Chapter NR 109 restrictions and this goal to protect native species in Round and Little Round Lakes.

[23] Adapted from comments received from the WDNR during the public review and comment period Oct-Nov 2014.

21.0 Goal 5 – Maintain High Water Quality

The diverse plant communities found in Round and Little Round Lakes are dependent upon the high water quality found in both systems. Furthermore, these lakes are premiere destinations because their clear water is ideal for recreational activities. The clear water is, in large part, a function of the low nutrient levels found in the lakes. To maintain high water quality, nutrient input must be kept low. Educating property owners about landscaping practices is an important component and is discussed under Goal 1 – Education. Action to maintain water quality involves monitoring and promoting best shore land practices to friends and neighbors on the lakes.

Objective 5a: Monitor water quality in Round and Little Round Lakes.

To date, the Lac Courte Oreilles Land Conservation Department has conducted water quality monitoring at one site on each of the lakes. Data suggest that the water quality of both lakes continues to be very good. Continued monitoring is needed to track water quality. Secchi depth, total phosphorus, and chlorophyll-*a* should be assessed monthly from May –September. If LCO Land Conservation staff are not available to conduct monitoring, a contingency plan is needed so a volunteers can complete the monitoring. Volunteer monitoring for water quality is relatively easy and enjoyable. There are hundreds of volunteers throughout Wisconsin that monitor lakes and enter the data into a statewide database.

- Recruit a volunteer from each lake to be trained in water quality monitoring protocols. Training schedules are available at *http://dnr.wi.gov/lakes/clmn/*. Or contact UW-Extension Lakes program 715-365-8998 for a 2015 volunteer schedule.
- Develop a communication plan between RLPOA and LCO to coordinate monitoring efforts to ensure water quality monitoring is completed and to avoid duplication of efforts.
- Monitor water quality as needed and enter results in the Surface Water Integrated Monitoring System database at *https://prodoasjava.dnr.wi.gov/swims/login.jsp*.

Objective 5b: Conduct a shoreline and buffer survey of Round Lake.

Water quality is directly impacted by surface water runoff that flows along shore land areas before entering the lake. Human develop around lakes impacts water quality because the surface water entering the lake may be polluted with nutrients or particulates and it may be higher in volume due to impervious surfaces. A shoreline and buffer survey of Little Round Lake in 2012 revealed approximately 75% of shore lands to be covered in natural vegetation. No such survey has been completed on Round Lake, however.

- Apply for a WDNR surface water grant (probably a Lake Protection Grant) in 2015 or 2016 to fund a shoreline and buffer survey of Round Lake.
- Conduct a survey once grant funds are received.
- Use results from the survey to determine whether the shore lands are amenable to high water quality or whether target goals are needed for shore land improvements. WDNR, Sawyer County, and UWEX professionals can assist in this process.

Recommended Implementation for the Round and Little Round Lakes Aquatic Plant Management Plan									
Goals, Objectives, and Action Items		Entities Involved	2015	2016	2017	2018	2019	AIS Grant Eligible	Protection Grant Eligible
1. Education									
1a	**Organize two events that focuses on AIS identification and prevention.**								
	Schedule a trainer / teacher for the events.	RLPOA, CO, WDNR		x		x			
	Make contacts for possible joint event(s) with other associations.	RLPOA	x	x	x			x	x
	Keep track of attendance, volunteer time, mileage, and boat use.	RLPOA, RP	x	x	x	x			
1b	**Offer educational materials at RLPOA sponsored events.**								
	Obtain AIS educational materials.	RLPOA, WDNR	x						
	Obtain materials explaining the connection between shore land practices and water quality.	RLPOA, UWEX	x					x	x
	Match outreach efforts appropriately with the event.	RLPOA , Riparian	x	x	x	x	x		
	Track the number of materials distributed and volunteer time.	RLPOA , RP	x	x	x	x	x		
1c	**Continue to use the Round Lakes Website for education.**								
	Add a "Water Quality" page that describes the link between water quality and aquatic plants.	RLPOA	x						
	Add links to the "Water Quality" page that cover shore land landscaping for water quality.	RLPOA	x						x
	Document website changes for future grant applications.	RLPOA, RP	x						
2. Prevent Introduction and Spread of Aquatic Invasive Species									
2a	**Evaluate signage at each of the boat landings and modify if needed.**								
	Inventory and photograph signs at each public boat landing.	RLPOA, Riparian	x						
	Analyze the level of signage at each boat landing.	RLPOA, CO	x						
	Visit the UWEX webpage for sign ideas.	RLPOA, CO	x						
	Contact WDNR for signs if needed.	RLPOA, WDNR	x					x	x
	Add signs where needed.	RLPOA, WDNR		x					
	Work with boat landing owners to explore options for kiosk installation.	RLPOA, RP		x					
	Track sign changes, volunteer time, and mileage for grant applications.	RLPOA, RP		x					
2b	**Continue watercraft inspections.**								
	Seek grant funds to hire watercraft inspectors.	RLPOA, RP	X	X	X	X	X		
	Work with resort owners and encourage watercraft inspections and educational material dissemination.	RLPOA	X	X	X	X	X	x	
	Report efforts in the annual reports for future grant applications.	RLPOA, RP	X	X	X	X	X		

3. Aquatic Invasive Species Management									
3a	**Remove purple loosestrife and monitor.**								
	Pull and dig the purple loosestrife on Little Round Lake.	RLPOA, Riparian	x						
	Carefully remove and burn plant matter so as not to spread seeds.	RLPOA, Riparian	x						
	Monitor the site and remove if found.	RLPLOA, Riparian	x	x	x	x	x		
	Include findings, volunteer time, mileage, boat-use time, and control efforts in the annual report.	RLPOA, RP	x	x	x	x	x		
3b	**Remove flowering rush and monitor.**								
	Monitor for flowering rush in southern Musky Bay.	RLPOA, Riparian	x						
	Remove any flowering rush by hand pulling. The plant must be flowering for accurate identification.	RLPOA, Riparian	x						
	Monitor the site and remove if found.	RLPLOA, Riparian	x	x	x	x	x		
	Include findings, volunteer time, boat use time, and control efforts in the annual report.	RLPOA, RP	x	x	x	x	x		
3c	**Control the spread of Eurasian water-milfoil to non-nuisance levels using integrated pest management.**							x	
	Apply for WDNR AIS Control Grant by February 1, 2015.	RLPOA, RP	x						
	Resource professional conducts an EWM survey the fall prior to EWM control activities the following spring or summer.	RLPOA, RP	x	x	x	x	x		
	Determine the best management strategy for each site using the decision diagram for EWM control (Figure 12).	RLPOA, RP, WDNR, CO, LCO	x	x	x	x	x		
	If chemical treatment is needed, submit a Chemical Aquatic Plant Control Application and Permit to the WDNR.	RLPOA, RP	x	x	x	x	x		
	Work with herbicide applicator so chemical treatments continue to occur during calm wind conditions.	RLPOA, RP	x	x	x	x	x		
	If SCUBA divers are needed, schedule consultants and/or volunteers for EWM removal.	RLPOA, RP	x	x	x	x	x		
	If areas of no treatment exist, monitor as described in Figure 12.	RLPOA, RP	x	x	x	x	x		
	Contact other lake associations to explore construction of a shared Diver Assisted Suction Harvesting (DASH) unit.	RLPOA, RP	x						

4. Protect Native Species									
4a	**Avoid impacts to native plants when controlling AIS.**								
	Use 2,4-D or another herbicide that targets EWM.	RLPOA, RP	x	x	x	x	x		
	Follow the herbicide label guidelines for concentration.	RP	x	x	x	x	x		
	Treat EWM during the spring when growth of native species is less active.	RP	x	x	x	x	x		
4b	**Minimize the manual removal of native plants for navigation and recreation.**								
	Minimize native plant removal.	RLPOA, Riparian	x	x	x	x	x		
	Add information to the Round Lakes website.	RLPOA	x						
5. Maintain High Water Quality									
5a	**Monitor water quality in Round and Little Round Lakes.**								
	Recruit volunteers to be trained in water quality monitoring protocols.	RLPOA, CLMN, Riparian	x						
	Develop a communication plan between RLPOA and LCO.	RLPOA, Riparian, LCO	x						
	Monitor water quality as needed and enter results in the SWIMS database.	RLPOA, Riparian	x	x	x	x	x		
5b	**Conduct a shoreline and buffer survey of Round Lake**								
	Apply for a grant to fund a shoreline and buffer survey of Round Lake.	RLPOA, RP		x					
	Conduct a survey once grant funds are received.	RLPOA, RP			x				x
	Use results from the survey to set goals for shore land improvements	RLPOA, RP, WDNR, CO, UWEX				x			

Entities Involved: RLPOA Round Lakes Property Owners Association; RP, resource professionals/consultant; CO, Sawyer County AIS Coordinator; LCO, Lac Courte Orielles Land Conservation; Riparian, property owner or appointee; UWEX, UW-Extension, WDNR, Wisconsin Department of Natural Resources; CLMN, Citizen Lake Monitoring Network program. Others may be added to the list as needed. Resource professionals are listed in some areas where a hired consultant would be helpful but not necessarily required.

22.0 References

APHS. 2014. Aquatic Plant and Habitat Services LLC Aquatic Plant Survey Report for Round and Little Round Lakes, Sawyer County, Wisconsin.

Crow, G.E. and C.B. Hellquist. 2000. Aquatic and Wetland Plants of Northeastern North America, Volumes 1 & 2. University of Wisconsin Press. Madison, Wisconsin.

CLMN. 2014. Citizen Lake Monitoring Network. Native Water-milfoil Weavil Monitoring Protocol. 19 Oct. 2014. http://www.uwsp.edu/cnr-ap/UWEXLakes/Documents/programs/CLMN/publications/Ch12-NativeWeevil.pdf

Czarapata, E.J. 2005. Invasive Plants of the Upper Midwest. An Illustrated Guide to Their Identification and Control. University of Wisconsin Press. Madison, Wisconsin.

Glomski, L.M. and M.D. Netherland. 2008. Effect of Water Temperature on 2,4-D Ester and Carfentrazone-ethyl Applications for Control of Variable-leaf Milfoil. Journal of Aquatic Plant Management. 46: 119-121.

Harmony Environmental. 2009. Aquatic Plant Management Plan, Round Lake and Little Round Lake, Sawyer County, Wisconsin.

Hauxwell, J., S. Knight, K. Wagner, A. Mikulyuk, M. Nault, M. Porzky and S. Chase. 2010. Recommended baseline monitoring of aquatic plants in Wisconsin: sampling design, field and laboratory procedures, data entry and analysis, and applications. Wisconsin Department of Natural Resources Bureau of Science Services, PUB-SS-1068 2010. Madison, Wisconsin. 46pp.

Jester, L.L., M.A. Bozek, and D.R. Helsel. 1999. Wisconsin Milfoil Weevil Project. Wisconsin Cooperative Fishery Research Unit.

Nault, M., A. Mikulyuk, J. Hauxwell, J. Skogerboe, T. Asplund, M. Barton, K. Wagner, T. Hoyman, and E. Heath. 2012. Herbicide Treatments in Wisconsin Lakes. Lakeline, Spring 2012.

Michelle E. Nault , M.D. Netherland , A. Mikulyuk , J.G. Skogerboe , T. Asplund , J. Hauxwell and P. Toshner. 2014. Efficacy, selectivity, and herbicide concentrations following a whole-lake 2,4-D application targeting Eurasian watermilfoil in two adjacent northern Wisconsin lakes. Lake and Reservoir Management. 30:1, 1-10.

Neuswanger D., 2013. Fishing Regulation Proposal Form A-Special Regulations. 5 October 2014. http://www.roundlakes.org.

Nichols, S.A. 1999. Floristic Quality Assessment of Wisconsin Lake Plant Communities with Example Applications. Journal of Lake and Reservoir Management. 15(2):133-141.

Skawinski, P.M. 2010. Aquatic Plants of Wisconsin: A photographic field guide to submerged and floating-leaf aquatic plants.

Surface Water Data Viewer (SWDV). 2013. Wisconsin Department of Natural Resources. Dec. 2013. *http://dnrmaps.wi.gov/imf/imf.jsp?site=SurfaceWaterViewer*.

Wolter, M. 2013. Spring Fisheries Survey Summary, Round Lake and Little Round Lake, Sawyer County, 2013. http://dnr.wi.gov/topic/Fishing/documents/north/SawyerRound2013SN1SE2.pdf.

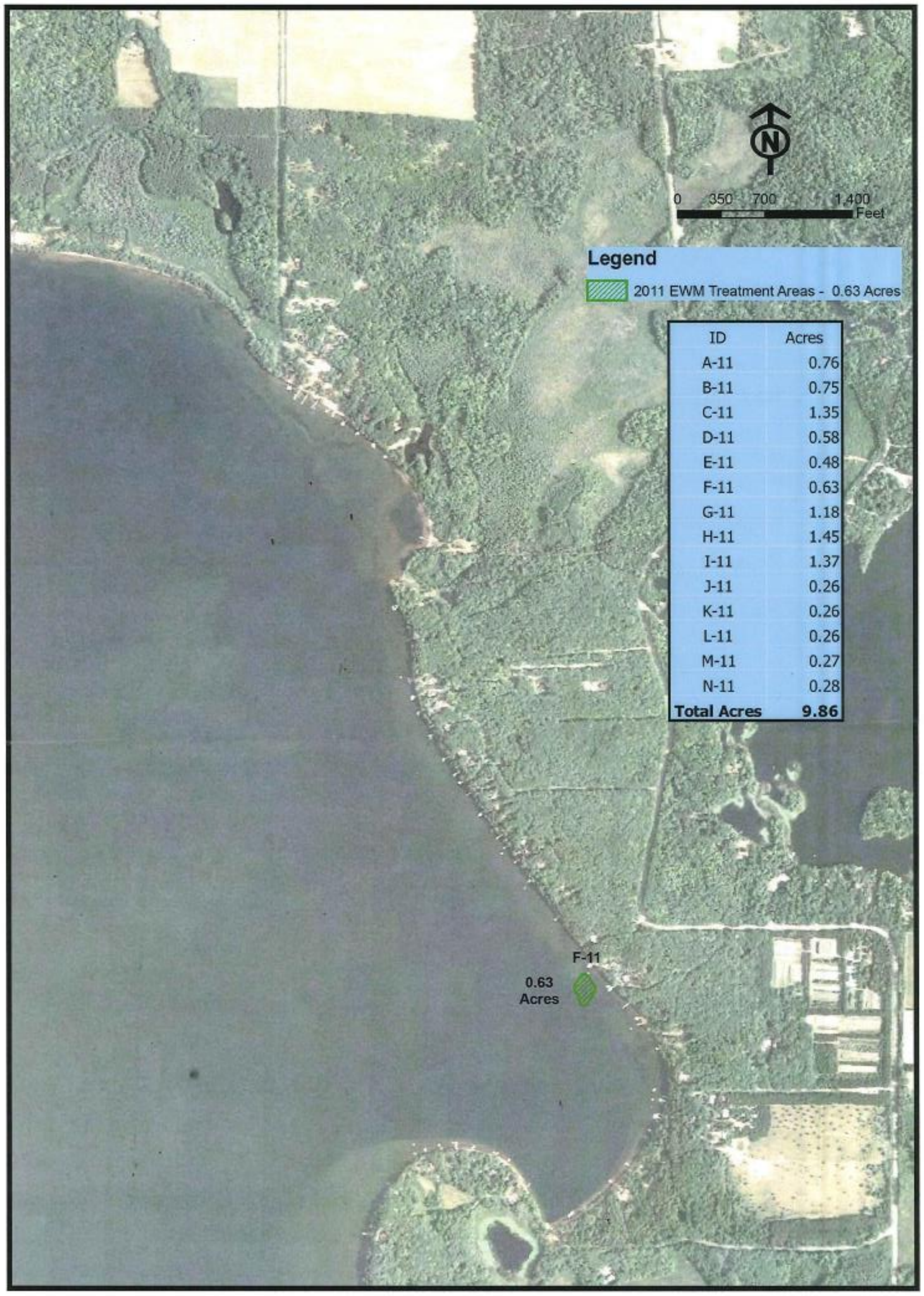
WDNR. 2014. Wisconsin Department of Natural Resources. 3 Sept. 2014 *http://dnr.wi.gov/lakes/lakepages/*.

WDNR. 2014a. Wisconsin Department of Natural Resources Eurasian water-milfoil (*Myriophyllum spicatum*). 1 Oct. 2014. *http://dnr.wi.gov/topic/invasives/fact/eurasianwatermilfoil.html*

WDNR. 2014b. Aquatic Plant Management in Wisconsin. 17 Oct. 2014. *http://www.uwsp.edu/cnr-ap/UWEXLakes/Documents/ecology*

Appendix

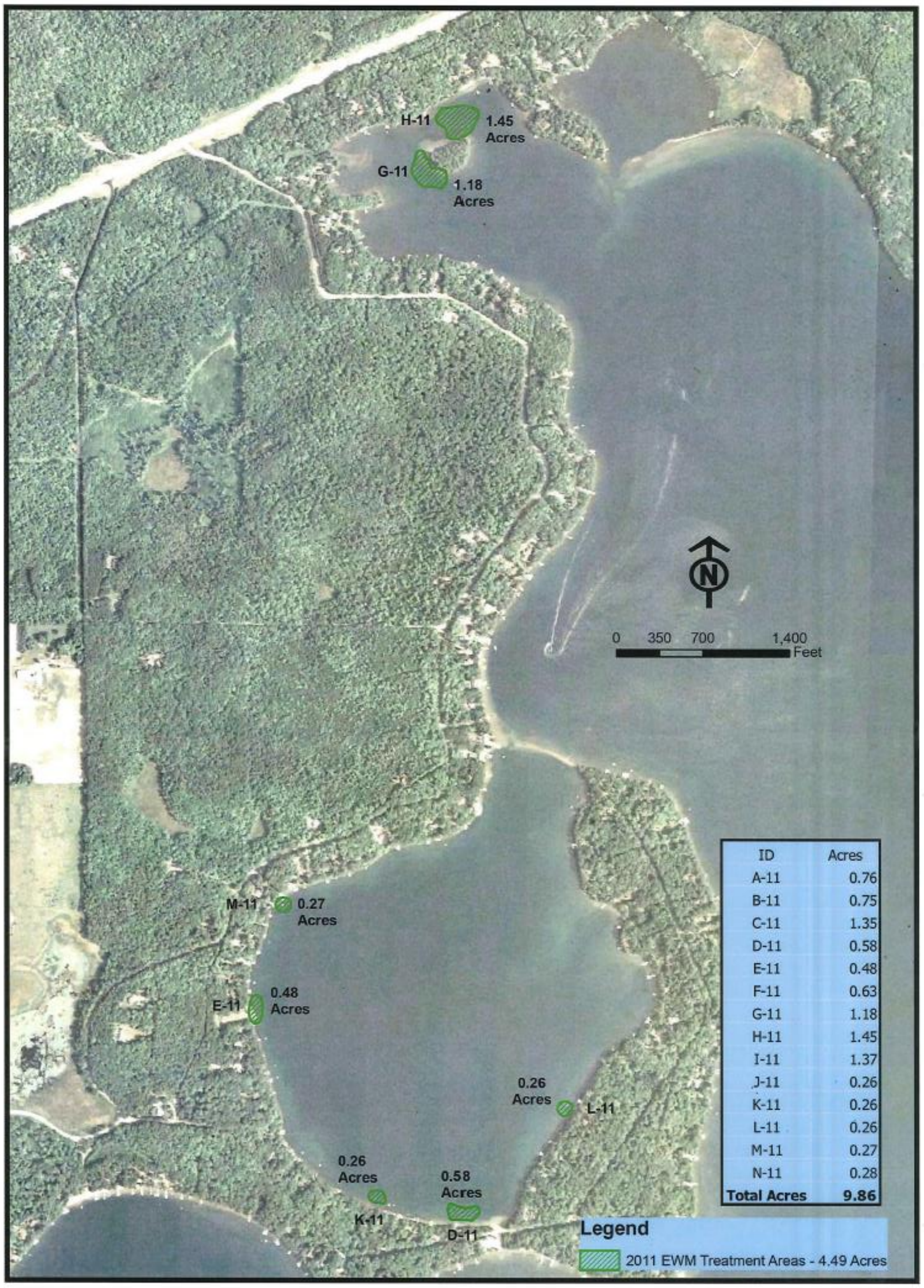
Appendix A – EWM Chemical Treatment Maps 2011 & 2013



ID	Acres
A-11	0.76
B-11	0.75
C-11	1.35
D-11	0.58
E-11	0.48
F-11	0.63
G-11	1.18
H-11	1.45
I-11	1.37
J-11	0.26
K-11	0.26
L-11	0.26
M-11	0.27
N-11	0.28
Total Acres	**9.86**

2011 EWM TREATMENT
ROUND LAKE PROPERTY OWNERS ASSOCIATION
SAWYER COUNTY, WISCONSIN

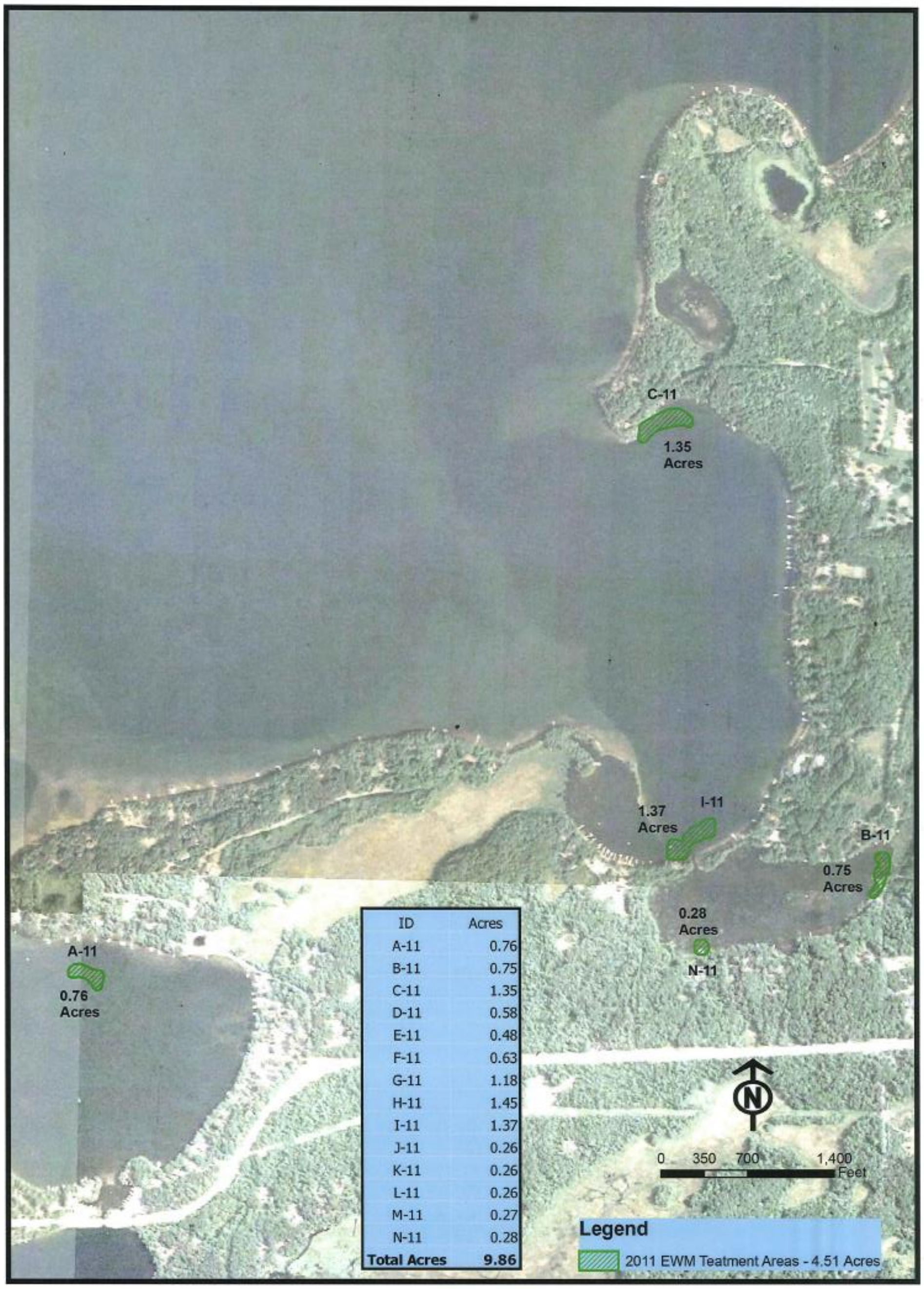
Bonestroo



NW

2011 EWM TREATMENT
ROUND LAKE PROPERTY OWNERS ASSOCIATION
SAWYER COUNTY, WISCONSIN

Bonestroo



ID	Acres
A-11	0.76
B-11	0.75
C-11	1.35
D-11	0.58
E-11	0.48
F-11	0.63
G-11	1.18
H-11	1.45
I-11	1.37
J-11	0.26
K-11	0.26
L-11	0.26
M-11	0.27
N-11	0.28
Total Acres	**9.86**

SE

2011 EWM TREATMENT
ROUND LAKE PROPERTY OWNERS ASSOCIATION
SAWYER COUNTY, WISCONSIN

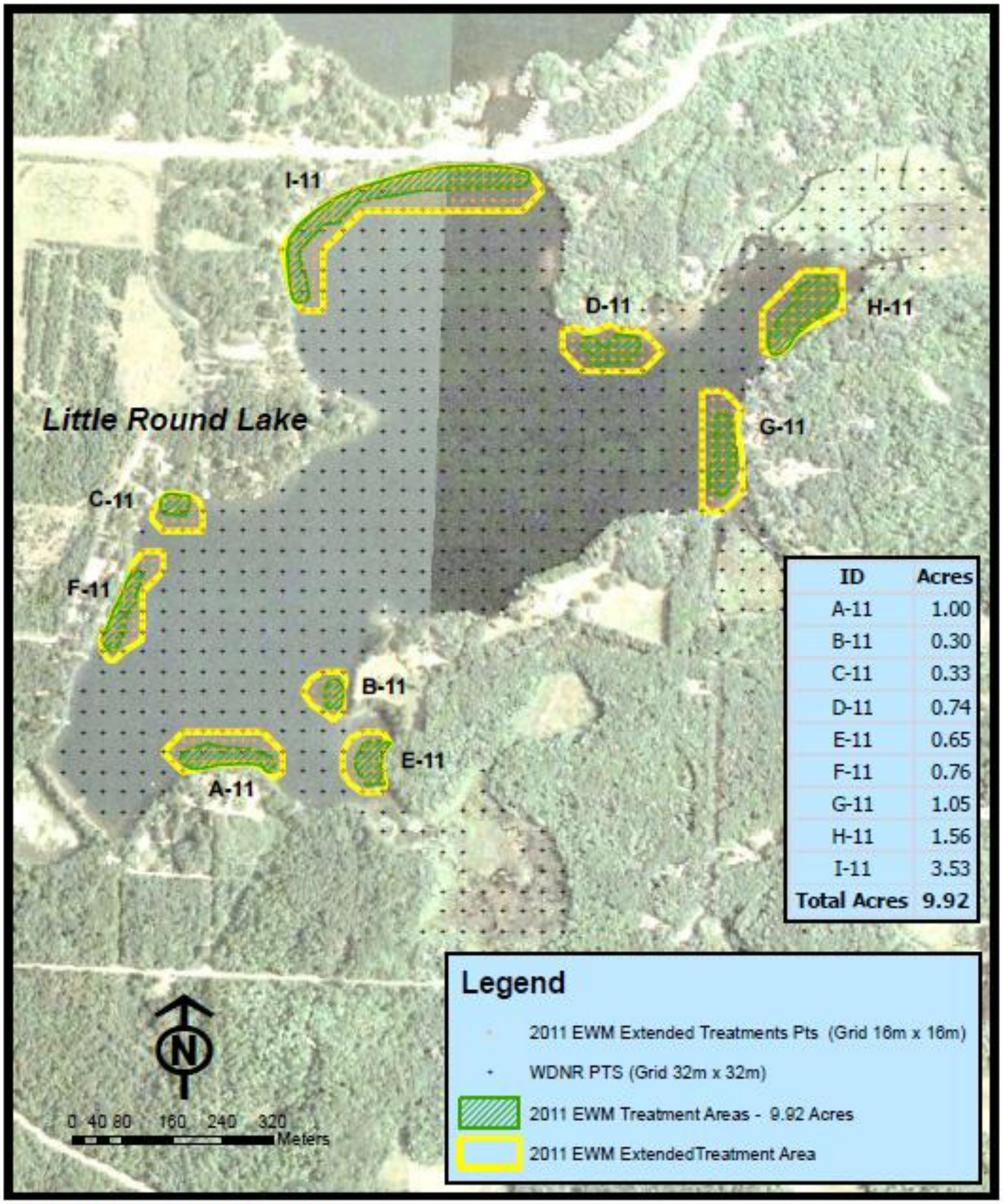
Bonestroo

ID	Acres
A-11	0.76
B-11	0.75
C-11	1.35
D-11	0.58
E-11	0.48
F-11	0.63
G-11	1.18
H-11	1.45
I-11	1.37
J-11	0.26
K-11	0.26
L-11	0.26
M-11	0.27
N-11	0.28
Total Acres	**9.86**

SW

2011 EWM TREATMENT
ROUND LAKE PROPERTY OWNERS ASSOCIATION
SAWYER COUNTY, WISCONSIN

Bonestroo

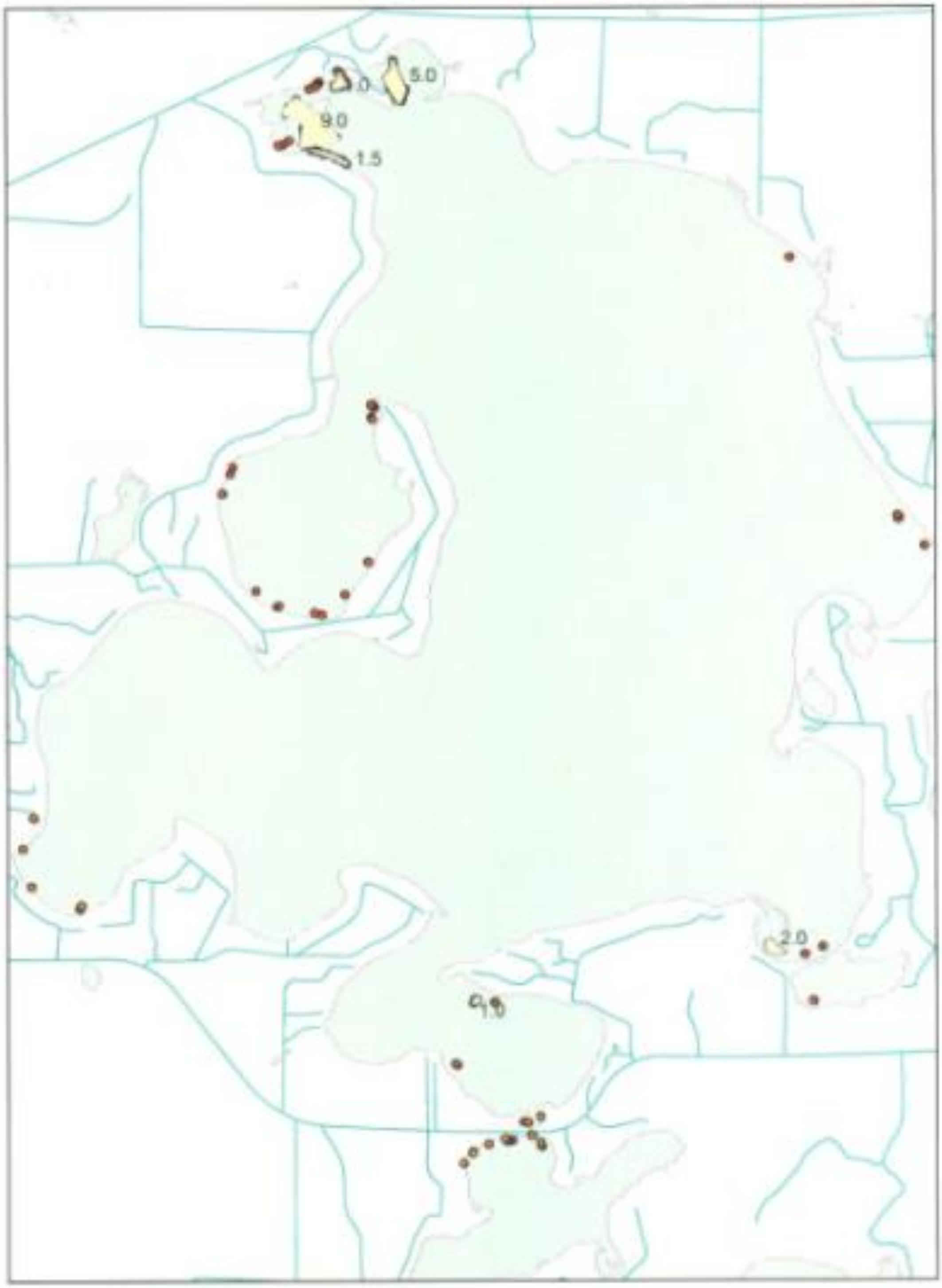


2011 EWM TREATMENT
ROUND LAKE PROPERTY OWNERS ASSOCIATION
SAWYER COUNTY, WISCONSIN

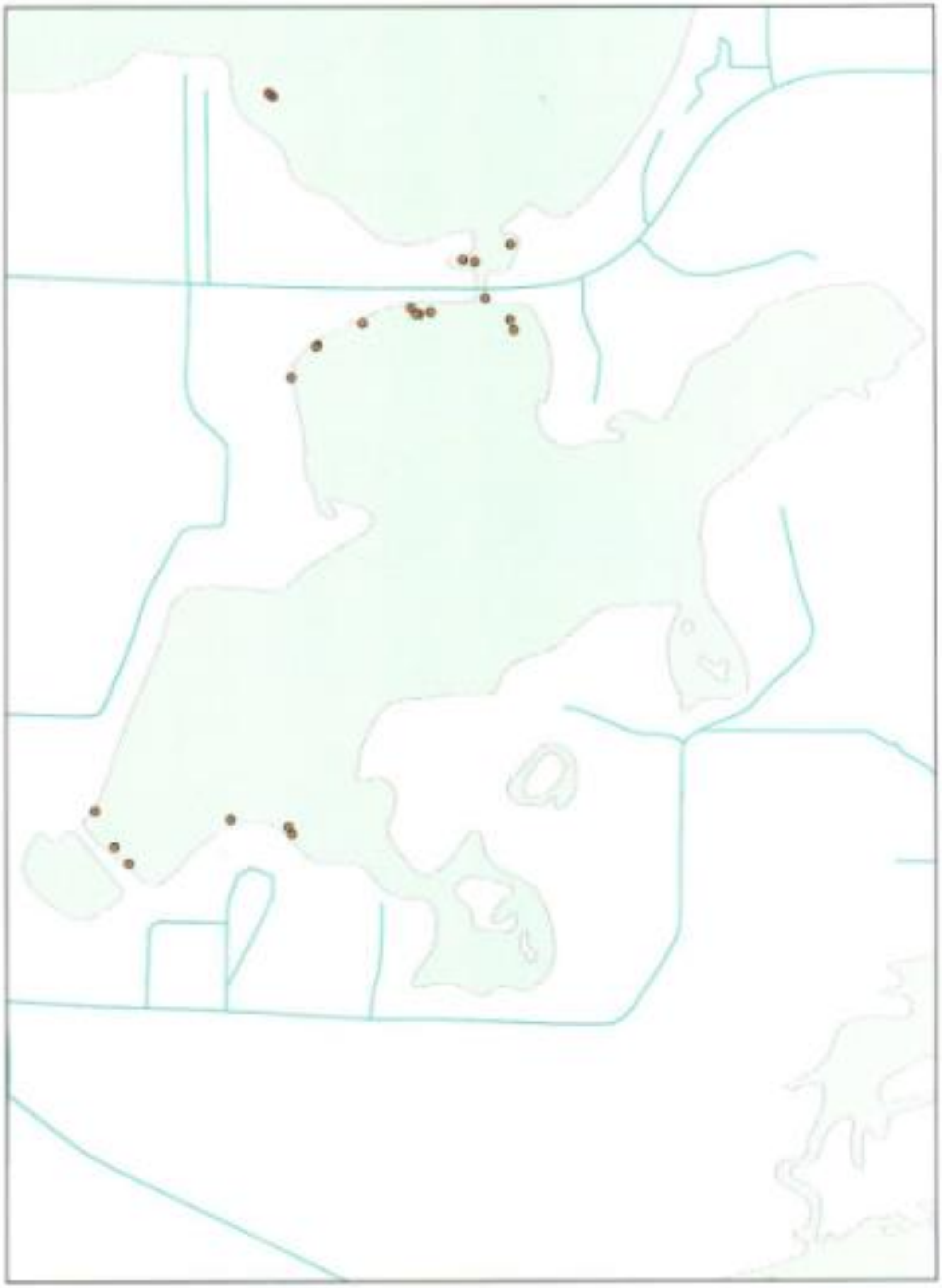
Bonestroo

Proposed Treatment Areas on Round Lake 2013

Proposed Treatment Areas on Round Lake 2013



Proposed Treatment Areas on Round Lake 2013



Appendix B – Public Review and Comment Period

The public review and comment period was open from October 24 through November 7, 2014. A public notice was published in the Sawyer County Record (local newspaper) on October 22, 2014. The management plan was made available as a hard copy at the Sherman & Ruth Weiss Community Library in Hayward, WI and online at **www.roundlakes.org**. One member of the general public provided comments and Lakes Coordinator, Alex Smith with the Wisconsin Department of Natural Resources, conducted a courtesy review and provided comments.

General Public Comments

Black Text – General Public Comments
Brown/Orange Text = Aquatic Plant and Habitat Services Responses

Goal 1 - The goal should specify the specific years the educational event will be held. Done, 2016 & 2018. Perhaps add a comment encouraging a joint meeting with other lake associations or Sawyer County Lakes Forum This comment was added as an action item under Objective 1a. Tracking comment—how would boat use be associated with this activity—collect and display observation reports at the event? Boat use may occur if there is a "pontoon classroom" activity associated with the event. Lake residents may donate the use of their pontoons. Tracking of materials distribution needs to be assigned to someone. This would be assigned and organized by the RLPOA. "Water Quality" new page—can the content be simply this plan? I would recommend something much more succinct that pertains specifically to the link between water quality and aquatic plans. UWEX has many resources. Contact Patrick Goggin with the UWEX Lakes Program at 715-365-8943 or pgoggin@uwsp.edu.

Goal 3 - The description should cite why the Eurasian water-milfoil acreage of infestation has decreased—active management practices in previous years Brief explanation included under Goal 3. Is the procedure(s) in Figure 8 consistent with past practices—or are these new? The 2009-2013 Aquatic Plant Management Plan recommended integrated management but the extent of this practice and its success on Round and Little Round is unknown.

Goal 4 - Is the stated herbicide the one we have found most effective—seek advice from our applicator for specific recommendation here The stated herbicide is the type the applicator used in 2013-2014. Seems we have treated in July for maximum effectiveness in prior years; should we be stating the time for application here; conflicts with past practice? Treating in July is not recommended In order to prevent impacts on native plants, herbicide treatments should occur in the spring based on the fall bed mapping data (EWM growing in fall will be easier to locate than in early spring). Other benefits to spring treatments include: less plant biomass requires less oxygen for decomposition, plants are treated before reaching a height where they are more susceptible to shredding by propellers, fewer lake users in the spring so fewer people will be exposed to herbicide, native plants aren't typically growing so they are less susceptible to the herbicide, microbial activity is less in cooler water so herbicide decomposition is slower. Perfoliate pondweed (Potamogeton perfoliatus) is a Species of Special Concern that was found at 16 sites in Round and 17 sites in Little Round. Perfoliate pondweed has a State Ranking of S1 which means that it is "critically imperiled in Wisconsin because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state." If herbicide treatments occur in a given year, it is important that they happen when they are least likely to impact this aquatic plant.

4b—how do we accomplish this; education, website, etc.? Action item added under 4b to add language to the website.

Goal 6 - A goal to implement the plan that contains the goal seems redundant/circular; should this be retitled since the major emphasis item here is the grant applications; perhaps annual grant application should be its own goal. Goal 6 was deleted and an Implementation Table was added.

Does the numbering of the goals represent and/or infer an priority—if so I would reorder them in priority to: The goals are not listed in order of priority. A footnote was added at the beginning of Section 5 to clarify this. Goal 1 – Maintain High Water Quality Goal 2—Annual AIS Grant Applications Goal 3 – Aquatic Invasive Species Management Goal 4 – Prevent the Introduction and Spread of Aquatic Invasive Species Goal 5 – Education Goal 6 – Protect Native Plant Species

WDNR Comments - Project Review Checklist Format

Black Text = WDNR Checklist items
Blue Text = WDNR Comments
Brown/Orange Text = Aquatic Plant and Habitat Services Comments

Specifies which recommendations are intended to be implemented with grant funding. This part needs to be more specific. Please include a time table matrix that outlines when, who, expenses, and with what money, each activity will be implemented. An implementation table was developed and included WHO would be involved in each action item, YEAR(s) actions would take place, and identified which activities would use grant funding.

Documentation of the process used to gather public comments on plan and summarizes those findings Currently out for public comment. Please incorporate comments and note any changes made as a result of the comment period. This document reveals all comments and the changes made.

Documentation of the action taken by the sponsor to adopt the plan. Need this yet. To be adopted by the RLPOA before February 1, 2015.

If the water body is a lake, it must meet the minimum public boating access standards of NR 1.91. Yes No changes needed

An identification of the *problems or threat* to the aquatic ecosystem presented by the aquatic invasive species including recreational uses and other beneficial functions up to the time of application, and how these uses and functions may have changed because of the presence of aquatic invasive species. Page 23 outlines general AIS threats (navigation and matting issues) and specifically mentions that because Round has a diverse, but sparse, plant community, that a widespread infestation of EWM could compromise native plant community and diversity. No changes needed. Fisheries Biologist doesn't feel that AIS are negatively impacting fisheries. No changes needed. Are recreational uses being impacted by AIS? A paragraph was added in Section 8.0 to answer this question.

A description of the *historical control actions* taken or that are in progress. Yes, page 28-32. No changes needed. The maps in Appendix A of the Plan suggest that the EWM tends to be in similar locations from year to year (at least for the years provided) which suggests that those are potentially the preferred habitats for EWM and/or the herbicide treatments may not be completely killing the EWM but rather just knocking it back for the summer. If the same beds are in fact getting treated each year, why is that occurring and how does the POA control that? Furthermore, if the same beds are being treated each year because the herbicide is not completely killing the EWM, the treatments could be deemed as only providing seasonal nuisance relief, which is not an eligible grant activity. NR 198.42(3). If there are new beds that pop up each year, why is that occurring and how does the POA prevent new beds? On a side note, if the same locations tend to have EWM each year, it might be interesting to look other characteristics that may support or discourage EWM establishment: physical or chemical sediment characteristics, wave energy, lack of native plants, or correlation with specific native plant species (spike rushes), weevils, etc. Discussion with Alex Smith regarding these comments lead to agreement to incorporate something in the plan stating a measure of success is not having to treat the same EWM in consecutive years. Such was added under Objective 3c.

A thorough *characterization of the water body's* aquatic ecosystem's historical and current condition, including at least one year of current base line data quantifying the extent of the infestation. Tables 3 & 4 display how many PI sample points where EWM was found. Figure 5 on page 18 shows locations of EWM in Little Round Lake. Please provide a corresponding map that shows the 2014 locations of EWM in Round Lake. Map of Round Lake EWM added after the Round Lake Total Rake Fullness Map.

An *assessment* of the fishery, wildlife and aquatic plant community. Fishery: pages 19-20. See Fishery comments at end of document. Wildlife: page 21. Aquatic plant community: Pages 12-18. No changes needed.

An identification of the need for the *protection and enhancement* of fish and wildlife habitat, endangered resources, and other local natural resource concerns. An identification of the potential to affect wild rice and documentation that the draft plan has been shared with any affected tribe and GLIFWC for impacts to wild rice. No rice present. Plan was sent to LCO Tribe for review.

Identification of the *management objectives* needed to maintain or <u>restore</u> the beneficial uses of the aquatic ecosystem. The Draft management plan outlines management approaches for different size EWM beds and densities. Draft plan also discusses objectives for controlling Purple Loosestrife and Flowering Rush.No changes needed.

Identification of *target levels of control* needed to meet the objectives. What is the target level goal for EWM by the end of the plan; < X acres, < X density, X number of beds, and/or no new locations?? Is the target level <500 square feet and any bed that is larger has some sort of control? A paragraph was added under Objective 3c, which explains Wisconsin Administrative Code (Chapter NR107) definition of large-scale treatment. An action idem was added under Objective 3c: Aim to employ herbicide treatment only when necessary, and strive for 10.0 acres or less in each of the lakes (i.e. try to only conduct small-scale treatments based on Chapter NR 107 definitions). How does the POA measure success? Eventually, it may come down to economics. If grants aren't available, how much EWM can the POA live with, how do they prioritize where and how much to treat with the donation dollars? Ultimately a good goal to shoot for is to have EWM at a level that can be managed by the POA without grant funds.

Identification and discussion of the *alternative management actions* considered and proposed for aquatic invasive species control including expected results. Pages 33-39 No changes needed.

An analysis of the need for and a list of the *proposed control actions* that will be implemented to achieve the target level of control. Plan goals outline 3 management alternatives that correspond to the size of the EWM beds. It might be worthwhile to explore other options like suction harvesting (work to support private sector, partner with Whitefish Lake), using tents to hold herbicide in place (may require permits), and volunteer hand pulling parties through the life of the plan. As provided below, Max Wolter has some fisheries concerns as it relates to 2,4-D and would prefer the POA to avoid using herbicides, at least until further research is completed. Contact was made with Many Waters LLC, the nearest known private sector business to offer suction harvesting services. With their main office located in Michigan, a co-owner advised the Hayward region is outside their travel area. An action item was added under objective 3c to explore options for partnering with local lake associations to develop a shared DASH unit. Volunteer hand pulling parties is not recommended in the current management plan because most sites infested with EWM are too deep for wading and hand pulling. Integrated pest management is promoted in the plan so herbicide treatment is employed at sites >0.25 acres and the target for the POA is to treat less than 10 acres in each lake.

A discussion of the potential *adverse impacts* the project may have on non targeted species, drinking water or other beneficial waterbody uses.
The plan touches on the adverse impacts but should also include the restrictions of each proposed herbicide. The last 2 years, herbicide treatments have occurred during July which is the peak of summer and exposes lake users to the chemicals. One chemical treatment per year should be enough to kill EWM. If repeat treatments are deemed necessary, then that likely means that the first one failed and that method/process should be re-evaluated. Repeat treatments only exacerbate the threat to non-target plants and organisms, and shouldn't be considered. Timing of herbicide application is discussed in Section 15. An action item was added under Objective 4a stating no repeat treatments should occur in fall. In order to prevent impacts on native plants, herbicide treatments should occur in the spring based on the fall bed mapping data. Other benefits to spring treatments include: less plant biomass requires less oxygen for decomposition, plants are treated before reaching a height where they are more susceptible to shredding by propellers, fewer lake users in the spring so fewer people will be exposed to herbicide, native plants aren't typically growing so they are less susceptible to the herbicide, microbial activity is less in cooler water so herbicide decomposition is slower. Action item under Objective 3c changed survey of EWM to occur the previous fall rather than early spring. EWM growing in fall will be easier to locate than in early spring. Other benefits of early season treatment not already listed in the APMP were added to Section 15 Chemical Control. Perfoliate pondweed (*Potamogeton perfoliatus*) is a Species of Special Concern that was found at 16 sites within Round Lake. Perfoliate pondweed has a State Ranking of S1 which means that it is "critically imperiled in Wisconsin because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state." If herbicide treatments occur in a given year, it is important that they happen when they are least likely to impact this aquatic plant. Added to Sec. 15 Chemical Control.

A *prevention strategy* to reasonably assure that new introductions of aquatic invasive species will not infest the waterbody. Continue with CBCW and volunteer monitoring along shorelines to prevent introduction and establishment of new AIS. No changes needed.

A *contingency strategy* for effectively monitoring and preventing the re-introduction of the aquatic invasive species following initial control. Volunteer AIS monitoring. Each monitor has a specified shoreline portion to monitor for and document EWM and *hopefully* other AIS as well (zebra mussels, flowering rush, loosestrife, etc). No changes needed.

Sufficient information for determining the *feasibility* of alternative control measures, including: costs; the relative permanence of the control; the potential for long-term control of the causes of infestation as well as the baseline data required to measure subsequent change
This portion could be expanded to include more information on costs and long term control. Are the spot treatments working? Data between 2013 and 2014 suggest spot treatments resulted in 55% EWM reduction. The POA currently has an applicator that lives on Round Lake and therefore has the ability to apply treatment when weather conditions are calm. How much do they cost? Herbicide treatment in 2014 $8145/9acres=$905/acre. SCUBA figures range from $97-$5000/acre. How long does the control last (weeks, months, years)? Would alternatives be more or less expensive? How long would the alternatives control last? This gets back to the nuisance relief issue as discussed in (b). Research suggests hand pulling by SCUBA divers is effective in controlling small, isolated colonies of EWM. Recent herbicide monitoring research

indicates that herbicides rapidly drift off site, especially during small spot treatments. Attention should be given to that issue and the plan should detail ideal weather and lake morphology conditions that are conducive for successful herbicide treatments. Added an action item under Objective 3c to work with the applicator and aim for <5mph winds in treatment areas.

Additional comments, conclusions and recommendations

Pages 8-10. Please provide graphs for the secchi, TP, and chlorophyll a data once it is received from LCO. Graphs and text have been added for 2005-2013 water quality.

On a related note, the chlorophyll a narrative is a little confusing because it gives ranges for concentrations (10 & 20 ug/L) but not for TSI. A little context would help the reader better understand. Changes have been made.

Page 11. What are the data from the shoreline mapping being used for? Enforcement? Tracking shoreline development and/or restorations? Prioritizing and targeting new shoreline restoration efforts? A paragraph was added in Section 4 to address this. Objective 5b was added for RLPOA to initiate a shoreline and buffer survey of Round Lake.

Pages 13-18. Do you have an estimate and/or map of how many acres of EWM there are currently in Round and Little Round? The herbicide applicator provided 2014 maps that reveal treatment areas, but there are no maps that reveal post-treatment EWM in 2014. Please provide an EWM PI map for Round Lake similar to the Little Round Lake map. Done.

AIS grants may require 3rd party pre-post plant survey rather than applicator to minimize conflict of interest. This information is added to an action item in Objective 3c.

Please also include more information on the specific type of pre and post treatment plant monitoring. Pre/post plant monitoring needs to follow DNR guidance if funded by grants.

Page 46. Mechanical removal of native plant requires a permit. The only native plant removal that is exempt from a permit is hand removal outside of a Sensitive Area. More clarification that removal of only *Butomus umbellus* (the invasive flowering rush) is to be removed.

Comments from Max Wolter, DNR Fisheries Biologist: Unlike places like Lake Elwood, we have not observed fishery issues, recruitment or otherwise, that would seem to be attributed to past herbicide treatments on Round or Little Round Lake. That said, there is ongoing research (WDNR Science Services) on the effects of 2-4-D on fish communities. Assuming they share a similar concern for overall fishery health, my recommendation would be that the RLPOA consider non-chemical options until results of these studies are known. From my perspective, the existence of small patches of EWM in Round and Little Round Lakes has had no detrimental impacts on fish community function (i.e. walleye, panfish, bass, and pike all reproduce successfully). Future actions that include chemical treatment should be given special consideration and should take all available (or soon to be available) information into account. Furthermore, efforts to curb AIS plant abundance should be counterbalanced with efforts to restore native plant communities to avoid an absence of a habitat type (broadleaf plants) that is important to many species of fish across several life stages. Information and recommendations incorporated into Section 15 Chemical Control.