LAKE EDUCATION AND PLANNING SERVICES, LLC
221B 2ND STREET
CHETEK, WISCONSIN 54728

RICE LAKE, BARRON COUNTY

2016 LAKE MANAGEMENT SUMMARY REPORT

WDNR WBIC: 2103900

Prepared by: Dave Blumer, Lake Educator March 23, 2017

RICE LAKE-LAKE PROTECTION
AND REHABILITATION DISTRICT

PO BOX 446
RICE LAKE, WI 54868

WWW.RLLAKEDISTRICT.ORG

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PREPARED FOR THE RICE LAKE – LAKE PROTECTION AND REHABILITATION DISTRICT

INTRODUCTION

The Rice Lake – Lake Protection and Rehabilitation District (Lake District) completed its new Aquatic Plant Management Plan (APMP) in 2014 and began implementation of it in 2015 after receiving an Aquatic Invasive Species (AIS) Established Infestation Control Grant (AEIC) in the spring of 2015. The Lake District also completed a Comprehensive Lake Management Plan (Comp Plan) in 2014 and applied for WDNR Lake Protection Grant funding in 2015 and 2016 to begin implementation, but neither grant was awarded. The Lake District completed several lake and aquatic plant management actions in 2016 using its own funds, funding from an AEIC grant and a Clean Boats Clean Waters (CBCW) grant, and funds from the WDOT 53&V settlement money.

Aquatic plant management included curly-leaf pondweed (CLP) harvesting and herbicide application in both the main and south basins of the lake, and harvesting of native plants within predetermined navigation channels. Herbicide concentration testing within the south basin treatment locations and several other locations was completed. CLP turion density sampling was also completed in both 2015 and 2016. Lake District employees and volunteers attempted to map curly-leaf pondweed beds, and continued AIS monitoring throughout the season and collected water quality data through Citizen Lake Monitoring Network (CLMN). Watercraft inspection was completed at three main landings supported by paid staff and volunteers.

Lake education events included Rice Lake Aquafest and the Barron County Fair, and development of a Lake District Brochure.

The goals and objectives identified in the Comprehensive Lake Management Plan were discussed and priorities set, including full support for shoreland improvements, native plantings, and other riparian best management practices, funded almost entirely by money set aside by the Lake District to support its Native Planting Committee and their activities.

Future funding support for actions undertaken by the Lake District in 2017 and beyond was solicited by the application for CBCW and Lake Management Planning grants in December 2016. Both of these grants were awarded in early 2017.

The following provides a brief description of actions completed by the Lake District in 2016.

As mentioned in the introduction, the Lake District continued to manage non-native aquatic plant growth and nuisance native aquatic plant growth in 2016. The APMP recognized control of CLP as important to maintaining and improving water quality and lake use, and laid out guidelines for both chemical control of CLP and large-scale harvesting. A 3-yr AEIC grant was awarded at the beginning of 2015 which helped cover the costs associated with a management plan that had a goal of eliminating CLP from the south basin. Through the previous five years of management no early season harvesting of CLP occurred in the south basin, allowing all three harvesters owned by the Lake District to concentrate CLP harvesting efforts in the main basin. Large-scale application of herbicides was used between 2009 and 2012 to control CLP in the main basin along Lakeshore Drive and sparingly in the south basin. No herbicide application occurred in the south basin in 2013 or 2014. The new APMP continued to support no use of harvesting in the south basin and modified the goal of CLP control in the south basin, now targeting all the CLP with herbicide application for a minimum of three years in an effort to nearly eliminate it from the basin. Herbicide application in 2015 was the first of those three years, with 2016 being the second. 2017 will mark the third year of chemical management of CLP in the south basin in an attempt to severely curtail its growth and turion production.

CHEMICAL MANAGEMENT

A chemical treatment proposal for three CLP beds in the South Basin was prepared in early 2016 that targeted the same three areas of CLP that were targeted in 2015. In the preliminary proposal for 2016, the three beds in the south basin totaled 11.78 acres. Also as a part of the preliminary 2016 CLP chemical treatment proposal, two additional beds in the main basin totaling 10.42 acres were included. After the pretreatment survey, one bed in the main basin was removed, and Bed B in the south basin was modified slightly giving the final treatment plan which included four treatment areas, three in the south basin, and one in the main basin (Figure 1). Aquathol K, a liquid formulation with the active ingredient endothall, was recommended at 2.0 ppm in the larger areas and at 2.25 pm in the smaller areas (Table 1).

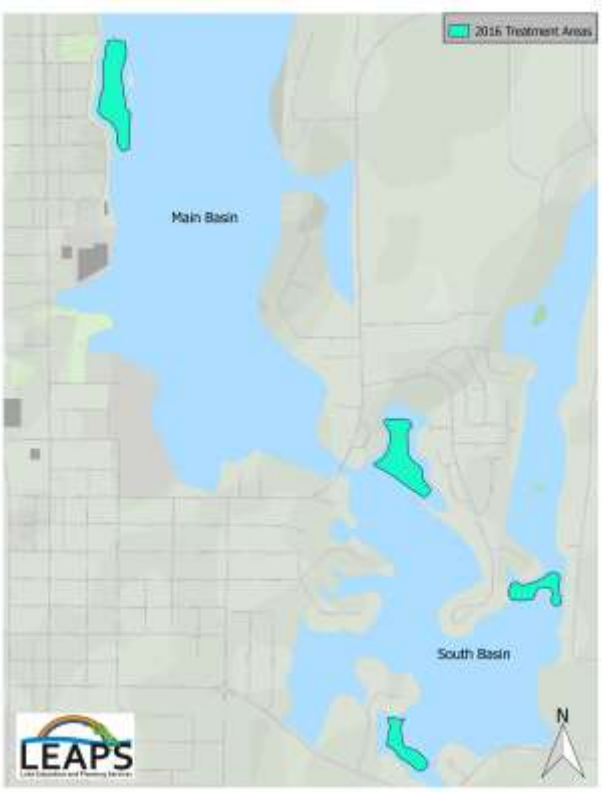


Figure 1 – 2016 Final Treatment Areas in Rice Lake (LEAPS, 2017)

Table 1- CLP Treatment Area Characteristics (LEAPS, 2016)

2016 "After Pre-Treatment" Revision Curly-Leaf Pondweed Treatment Main and South Basin - Endothall (4-17-2016 LEAPS)						
Treatment Area Characteristics				Aquathol® K (liquid)		
Bed	Acreage	Mean Depth (ft)	Acre-Feet	Target A.I. (ppm)	TotalTreatment (gallons)	Density
BedA-2016	6.27	5.4	33.86	2	44.02	Moderate
BedB-2016	2.81	8.4	23.60	2.25	35.17	Moderate
BedC-2016	2.78	7.6	21.13	2.25	31.48	Moderate
BedE_MB_2016	7.24	4.5	32.58	2	42.35	Dense
TOTAL	**19.10**		**111.17**		**153.02**	

PRE AND POST-TREATMENT SURVEY

A pre-treatment survey of just the proposed treatment areas in the south basin was conducted on April 17, 2016. No pretreatment survey was completed in the main basin, however, a CLP readiness survey was completed to visually document the presence of CLP in the proposed treatment areas. After the readiness survey in the main basin, one of the two beds proposed for management was removed. Figure 2 shows the presence/absence of CLP during the pretreatment survey of the three proposed treatment areas in the south basin. Pre and posttreatment survey in the south basin is required in the 3-yr AIS Control grant. As a result of the pre-treatment survey slight modifications from the preliminary CLP treatment proposal were made, specifically, Bed C at the transition from Clearwater Bay to the south basin, was reshaped and expanded slightly from 2.73 acres to 2.81 acres (Figure 2). Treatment was completed on May 11th by Northern Aquatic Services. Water temperature was 56°F, and air temperature was also 56°F. Winds were variable from 0-4 mph, nearly perfect conditions for the treatment. A post-treatment survey was completed on June 8th approximately 4 weeks after treatment. At this time, CLP would normally still be very prevalent in the water column. Figure 3 shows the presence of CLP during the post-treatment survey, there was none in the treatment areas. Table 2 shows the frequency and density data from pre to post treatment survey. All of the CLP in the treatment areas was killed by the 2016 spring treatment.

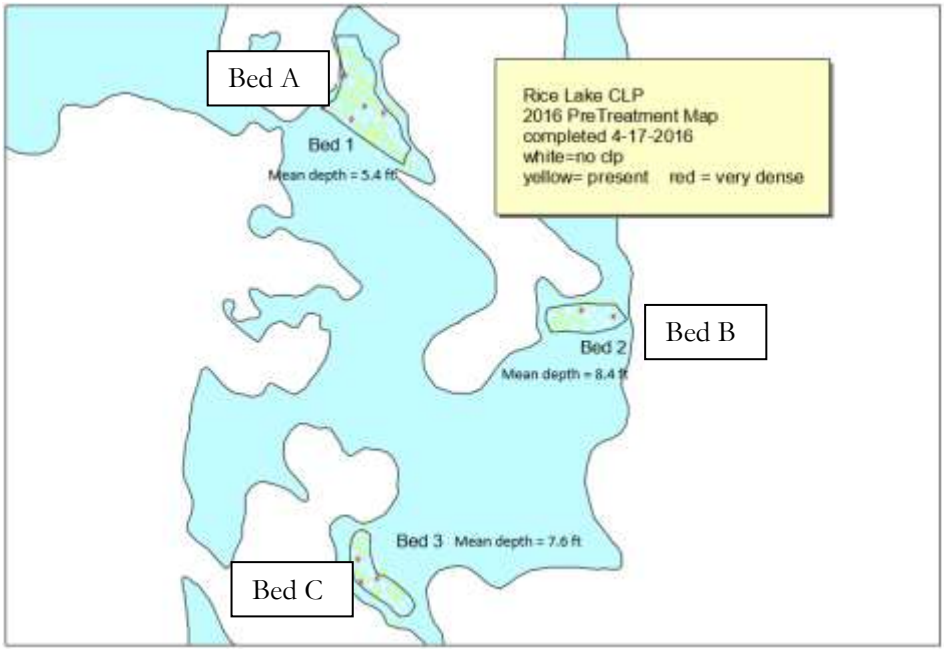


Figure 2 – April 17, 2016 Pre-treatment Survey Results (Schieffer, 2016)

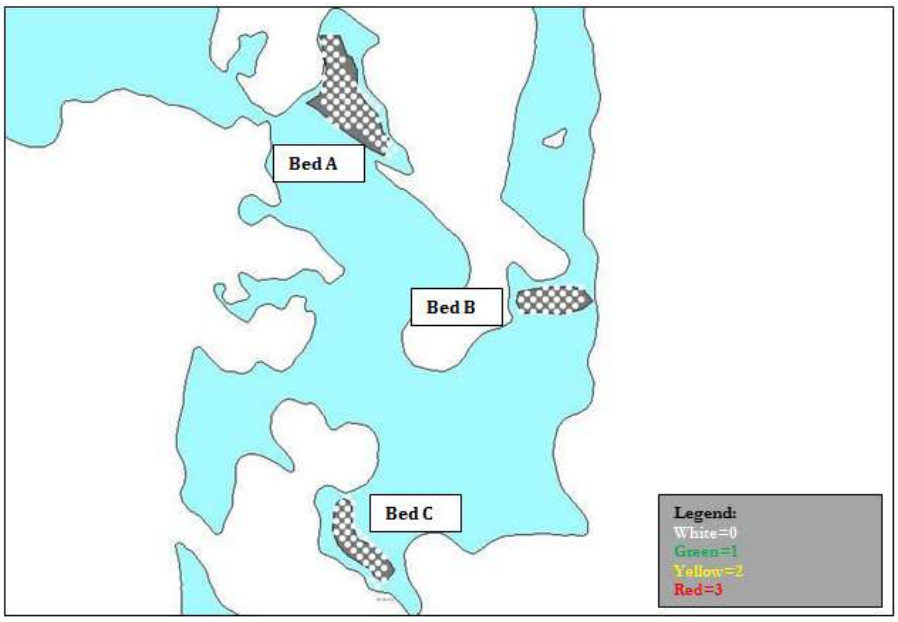


Figure 3- June 8, 2016 Post-treatment Survey Results (Schieffer, 2016)

Table 2 – Summary of Treatment Surveys in Regard to Frequency and Density (Schieffer, 2016)

Bed	Pretreatment 2016 freq.	Post Treatment 2016 freq.	Pretreatment 2015 freq.	Post treatment 2015 freq.	Post 2015 Mean density	Post 2016 mean density
A	67.9%	0.0%	86.4%	0.0%	0.0	0.0
B	56.0%	0.0%	92.0%	0.0%	0.0	0.0
C	51.5%	0.0%	73.7%	0.0%	0.0	0.0
All	60.4%**	0.0%**	82.0%**	0.0%	0.0	0.0

Statistically significant as indicated by a chi-square analysis.
Table 2: Summary of treatment surveys in regard to frequency and density.

TURION DENSITY MONITORING

In order to further reflect potential future growth and the cumulative success of treatments, a CLP turion analysis was conducted in 2015, and again in 2016. This analysis involves going to sample points near the middle of the CLP bed where it is assumed that the highest density will be reflected. At each point a petite PONAR dredge is lowered to the lake sediment and a sample is obtained. CLP turions are then counted and the density of turions is calculated in turions/square meter. Consistently successful treatments should show a trend of reduced turion density each year. If this occurs, then it is known that the treatments are killing plants prior to them being able to produce new turions, resulting in an overall reduction in CLP in those beds over time.

A turion analysis of the treatment areas in the south basin was conducted on Oct. 1, 2016. Table 3 shows the turion density in turions/m^2. The turion density from 2012 & 2015 (the most recent treatment analyses) is included for comparison purposes (Beds A and B had far fewer sample points and the beds were a different size during the 2012 turion analysis and bed C was not treated in 2012). Although the sample locations are different, it allow some valid comparison in turion density within those beds.

Table 3 - Turion Density from 2012, 2015 and 2016 Turion Analysis (Schieffer, 2016)

Bed	2012(last treatment before 2015)	2015 Turion density (T/m²)	2016 Turion density (T/m²)
A	91.4*	48.2	41.2
B	30.7*	47.8	26.9
C	Not a bed in 2012	43.0	27.4
All	*fewer sample points and bed different size.	46.6	34.3

Turion data will be collected from the south basin again in 2017, and additional turion density sites will be sampled in the main basin within several harvested areas.

CONCENTRATION TESTING

Herbicide concentration testing was required in at least one year of three where herbicides were applied for CLP control in the south basin. In 2016, eight sites were monitored for endothall concentrations after initial application. Figure 4 shows the location of the eight sites in relation to the treatment areas and the rest of the lake. Table 4 shows the concentration sampling times. Figure 5 shows the concentration testing results from the eight sites. The first graph includes the three testing sites within the treated areas. The second graph includes the testing sites outside of the treated areas.

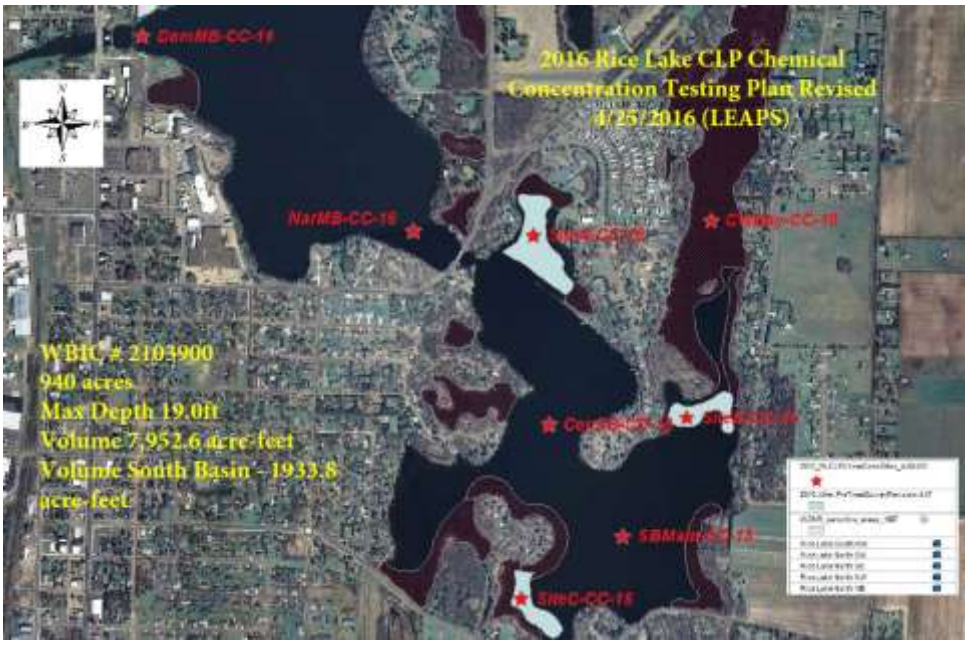


Figure 4 – Endothall Concentration Testing Sites in Rice Lake

Table 4 - Endothall Herbicide Concentration Testing Times – Hours After Treatment (HAT) and Days After Treatment (DAT) on Rice Lake

2016 Rice Lake Chemical Concentration Monitoring Planning 4-20-2016 (LEAPS)

Location	SITE_NAME	Lat	Long	1 HAT	3 HAT	6 HAT	1 DAT	3 DAT	5 DAT	7 DAT	14 DAT	21 DAT	28 DAT
South Basin	BedA-CC-16	45.494	-91.717	x	x	x	x	x	x	x	x	x	x
South Basin	BedB-CC-16	45.49	-91.711	x	x	x	x	x	x	x	x	x	x
South Basin	BedC-CC-16	45.485	-91.717	x	x	x	x	x	x	x	x	x	x
South Basin	CenSB-CC-16	45.489	-91.716	x	x	x	x	x	x	x	x	x	x
South Basin	SBMain-CC-16	45.486	-91.713	x	x	x	x	x	x	x	x	x	x
ClearWater Bay	CWBay-CC-16	45.495	-91.71	x	x	x	x	x	x	x	x	x	x
Main Basin	NarMB-CC-16	45.494	-91.722	x	x	x	x	x	x	x	x	x	x
Main Basin	DamMB-CC-16	45.499	-91.732	x	x	x	x	x	x	x	x	x	x
				8	8	8	8	8	8	8	8	8	8

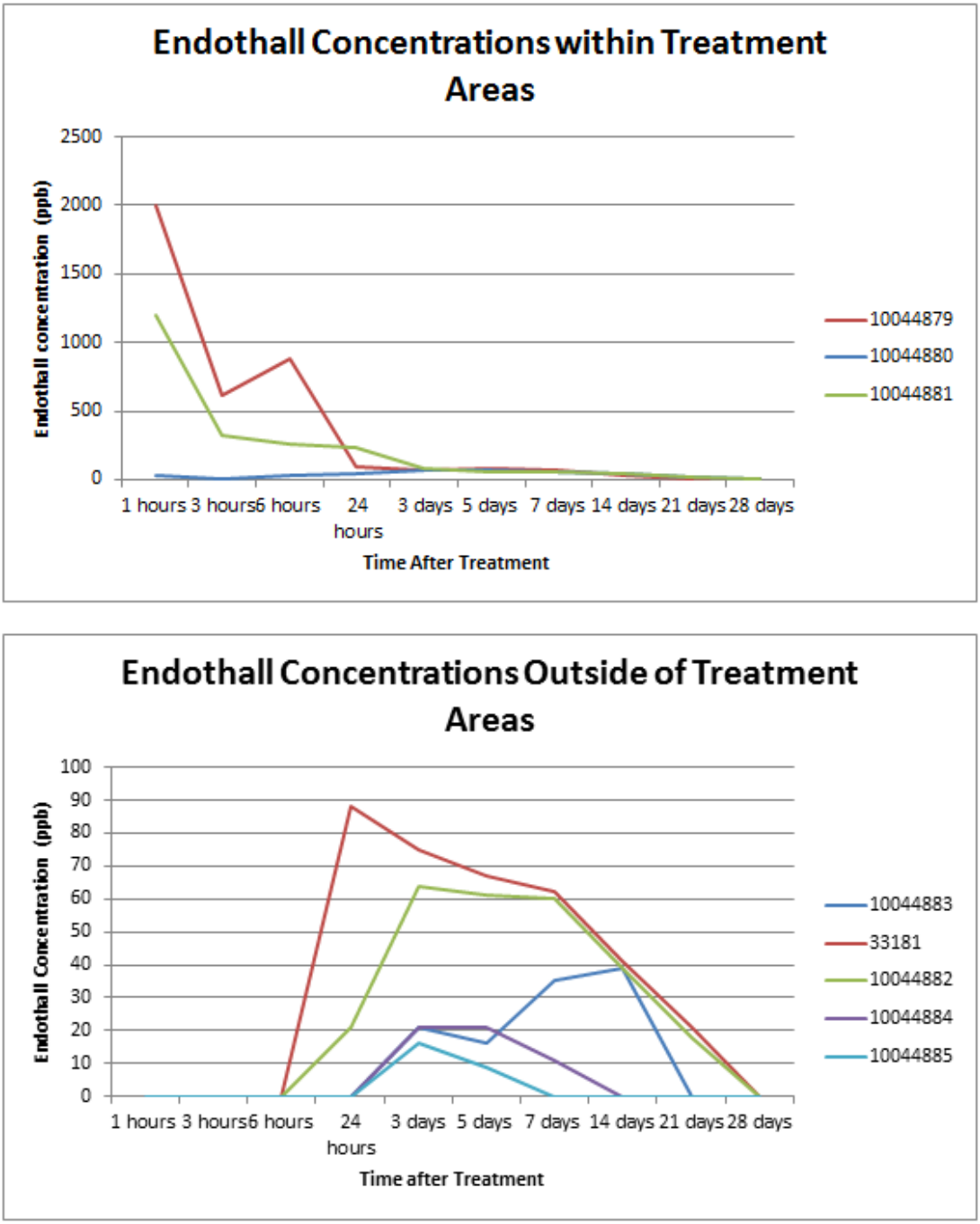


Figure 5 – Endothall Concentration Testing Results in Rice Lake

Herbicide concentrations in two of the treatment areas (SiteA-CC-16 (10044879) & SiteC-CC-16 (10044881) reached high levels of herbicide concentration within an hour of application, with SiteA-CC-16 actually reaching the concentration that the herbicide was applied at (2.0 ppm). The third treatment site (SiteB-CC-16) did not reach as high levels of herbicide concentration. Two native plant species (Elodea nutallii & Potamogeton robbinsii) suffered significant declines post-treatment in 2016. It is possible that the declines in these two species were most prevalent in Treatment Area A (BedA-2016).

Herbicide concentration testing also revealed some interesting data about the movement of the herbicide in the lake once applied. Site CWBay-CC-16 (10044883) is located a substantial distance into Clearwater Bay. It has been the assumption in the past that water is mostly moving out of Clearwater Bay into the south basin, but concentration data shows that the herbicide applied in the south basin moved into Clearwater Bay about three days after

application, reaching its peak at two weeks after application, albeit still at very low concentrations (0.039 ppm). The exact mechanism for carrying the herbicide into Clearwater Bay is not known, but could include wind speed and direction, currents, and movement of boats into the Bay.

Herbicide did not reach the outlet of Rice Lake at the dam until 2-3 days after application. The herbicide that did arrive there was not entirely from the south basin treatment areas, as there was a fourth herbicide application area along the west shore of the lake north and upstream of the dam. But again, the concentration of herbicide was very low, well below any thresholds of potential negative impact. All herbicide concentrations at the 8 sites were essentially gone by 3-4 weeks after application. After 24 hours herbicide concentrations at all sites except one were below 100 ppb or 0.001 ppm.

HARVESTING

CURLY-LEAF PONDWEED

Similar to the spring of 2015, 2016 saw a more typical ice out on the lake and an early growth pattern for CLP as well as vigorous growth for native plants throughout the growing season. This was essentially the reason for including the fourth treatment area along Lakeshore Drive. Although a readiness survey was completed by the Lake District's consultant prior to treatment, no additional pre or posttreatment monitoring was completed in this area in 2016. The AIS Control grant only provided funding for aquatic plant survey support in the south basin. Approximately 186 hours was devoted to harvesting primarily CLP. Thirty-two harvester loads equating to about 68 tons of primarily CLP was harvested from May 16th to June 15th. Incidental harvest included common waterweed, coontail, and northern watermilfoil. Harvesting of CLP in the Main Basin of Rice Lake covered a total area of approximately 110 acres.

In addition to evaluating the impacts of management on CLP during pre and post-treatment surveys, impacts on native species are evaluated. This is to determine if any adverse effects occurred on the native plants from the herbicide. Table 5 contains the frequency data of native plants and compares their changes from 2015 to 2016. 2013 data is included for informal comparison purposes, but significantly fewer points were sampled in 2013 so it is not an exact comparison.

Table 5 - Frequency comparison and statistical analysis on native species 2013, and 2015 to 2016 (Schieffer, 2016)

Native Species – Scientific Name	***Native Species - Common Name***	***Frequency 2013 post treatment***	***Frequency 2015 post treatment***	***Frequency 2016 post treatment***	***Significant reduction (p<0.05) 2015 to 2016***
Chara sp.	*Muskgrass*	*6.25%*	*0.0%*	*0.9%*	***increase***
Ceratophyllum demersum	*Coontail*	*75.0%*	*90.5%*	*85.6%*	***no***
Elodea canadensis	*Common waterweed*	*43.8%*	*50.9%*	*44.1%*	***no***
Elodea nuttalli	*Slender waterweed*	*37.5%*	*25.9%*	*13.5%*	***Yes (p=0.01)***
Lemna triscula	*Forked duckweed*	*6.25%*	*4.3%*	*4.5%*	***increase***
Nymphaea odorata	*White waterlily*	*6.25%*	*6.0%*	*9.9%*	***increase***
Potamogeton richardsonii	*Clasping-leaf pondweed*	*6.25%*	*1.7%*	*1.8%*	***increase***
Potamogeton zosteriformis	*Flat-stem pondweed*	*6.25%*	*0.9%*	*0.0%*	***no***
Vallisneria americana	*Water celery*	*18.8%*	*7.8%*	*6.3%*	***no***
Bidens beckii	*Water marigold*	*0.0%*	*3.4%*	*2.7%*	***no***
Potamogeton robbinsii	*Fern-leaf pondweed*	*0.0%*	*5.2%*	*0.0%*	***Yes (p=0.004)***
Nitella sp.	*Stonewort*	*0.0%*	*2.6%*	*0.0%*	***no***
Nuphar variagata	*Spatterdock*	*0.0%*	*3.4%*	*2.7%*	***no***
Ranunculus aquatilis	*Water Crowfoot*	*0.0%*	*3.4%*	*0.0%*	***no***
Heteranthera dubia	*Water stargrass*	*0.0%*	*0.9%*	*2.7%*	***increase***
Sagittaria rigida	*Stiff arrowhead*	*0.0%*	*0.9%*	*0.0%*	***no***
Aquatic moss		*0.0%*	*1.7%*	*0.9%*	***no***

Table 5 shows that there was a significant reduction in two native species from 2015 to 2016; Elodea nuttallii and Potamogeton robbinsii. The cause for the reduction in these two species is not known, but could be the result of herbicide management. Based on a treatment area comparison, Elodea nuttallii seems to have been reduced the most in treatment area Bed A (Table 6), which also maintained the highest herbicide concentration after the 2016 treatment (Figure 5 (10044879). Potamogeton robbinsii had significant reductions in all three sites, which is not unexpected as this pondweed may not always be dormant when curly-leaf pondweed (Potamogeton crispus) is growing, and as a pondweed, would be affected similarly to the CLP. In addition to herbicide effects, it could also be season variation (plants late to come out of dormancy) and/or sampling variation (it is difficult to sample in the precise location each time, thus leading to differences in species composition on the sample rake). Continued monitoring of natives species must continue to determine any trends.

Table 6 - Frequency of Occurrence of Two Species that Suffered Significant Declines from Pre to Post in 2016, and from Post to Post 2015 & 2016

	Frequency of occurrence					
Species	**Bed A '15**	**Bed A '16**	**Bed B '15**	**Bed B '16**	**Bed C '15**	**Bed C '16**
Elodea nuttalli	0.25	0.07	0.08	0.04	0.32	0.35
Potamogeton robbinsii	0.05	0	0	0	0.11	0

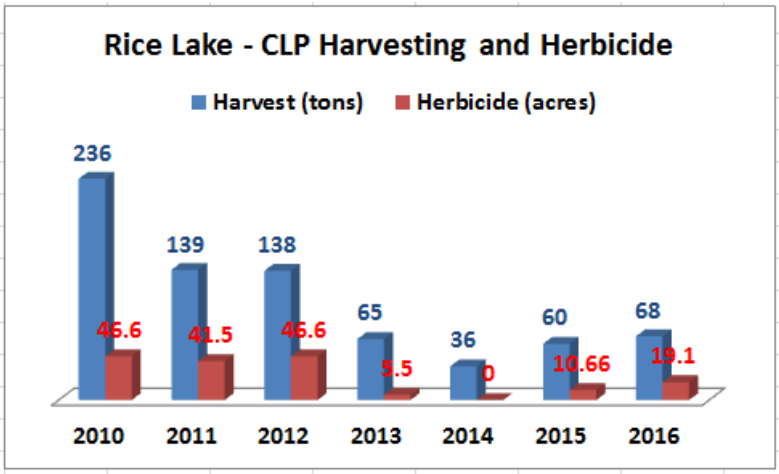
Three other parameters that allow for evaluation of the health of the native aquatic plant community are species richness, Simpson's diversity index and Floristic Quality Index. These parameters were calculated for the 2015 and 2016 post treatment survey to allow for future comparison after future treatments. Table 6 shows those data. A slight decrease in diversity and FQI occurred and is likely due to reduced species sampled. It is unknown if this is herbicide related, but native species should be monitored in the future.

Table 7 - Species Richness, SDI, and FQI Comparisons 2015 to 2016 Post-treatment

Rice Lake Post Treatment Beds A, B and C	2015	2016
Native species richness	16	12
Simpson's diversity index	0.94	0.86
Floristic Quality Index	25.71	20.5

NATIVE AQUATIC PLANT HARVESTING

Improving water clarity seems to be having an effect on aquatic plant growth in Rice Lake. The amount of CLP harvested each year is going down, but the amount of native vegetation harvested is going up (Figure 6). According to visual estimates by harvester operators, the amount of water celery picked up by the harvesting operators in 2016 was much higher than normal, even when compared to what was harvested in 2015. In 2016, the average summer total phosphorus and chlorophyll a were just slightly worse than the average from 2010-2015. However, Secchi disk readings of water clarity were slightly better than the 2010-2015 average. Slightly worse than average phosphorus and chlorophyll readings and slightly better water clarity readings coupled with greater native aquatic plant harvest suggests more of the available phosphorus is being used by aquatic plants, and less is being used by algae.



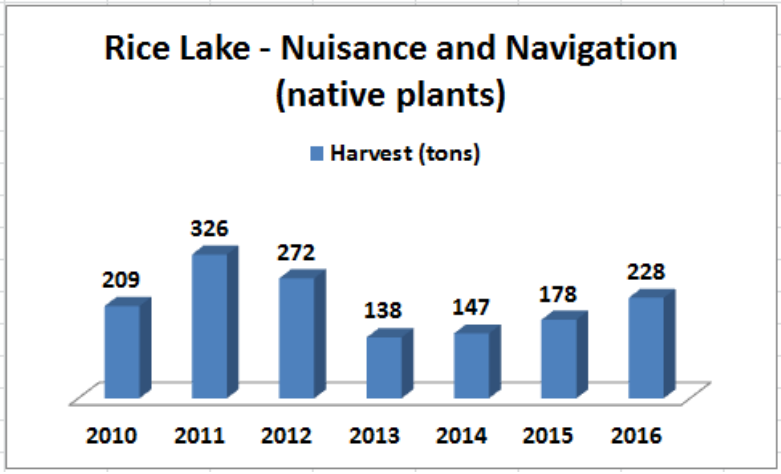


Figure 6 – Changes in CLP and Native Aquatic Plant Harvesting Results from 2010-2016

WATER QUALITY

Water quality data through the CLMN program was collected by Lake District Employees in 2016 from three locations on the lake: North Basin, Central Basin, and South Basin. Total phosphorus, chlorophyll, water clarity, and dissolved oxygen/temperature profiles were collected from the South Basin and the Central Basin. Only water clarity and dissolved oxygen/temperature profiles were collected from the North Basin. The results of CLMN monitoring for 2016 in the South Basin and Central Basin are shown in Figures 7 & 8.

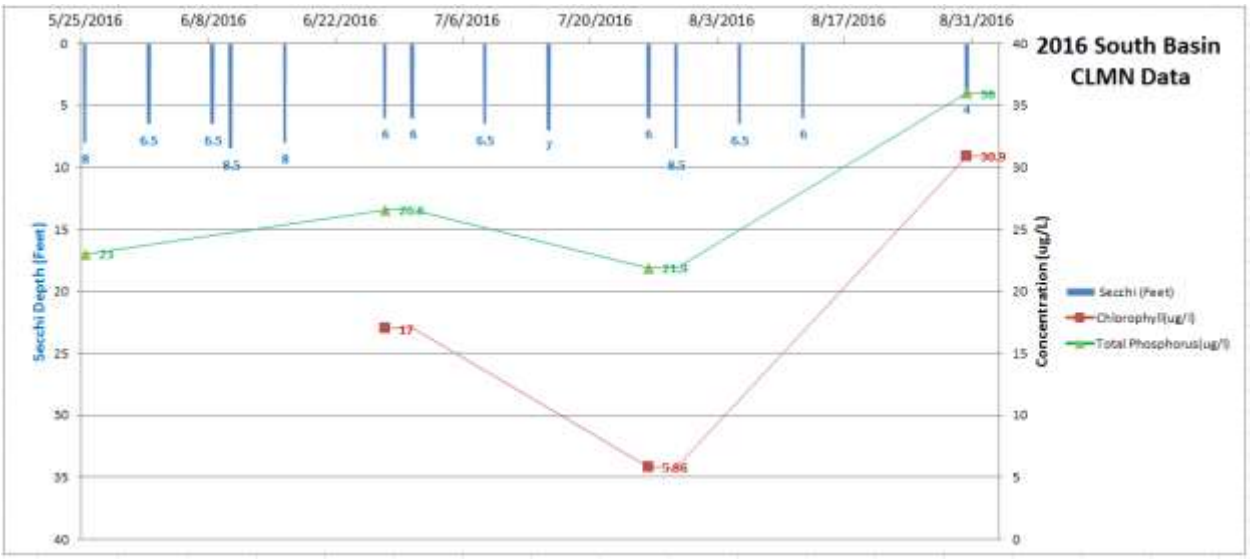


Figure 7 – 2016 Citizen Lake Monitoring Network Data for the South Basin of Rice Lake – Secchi, TP, and ChlA

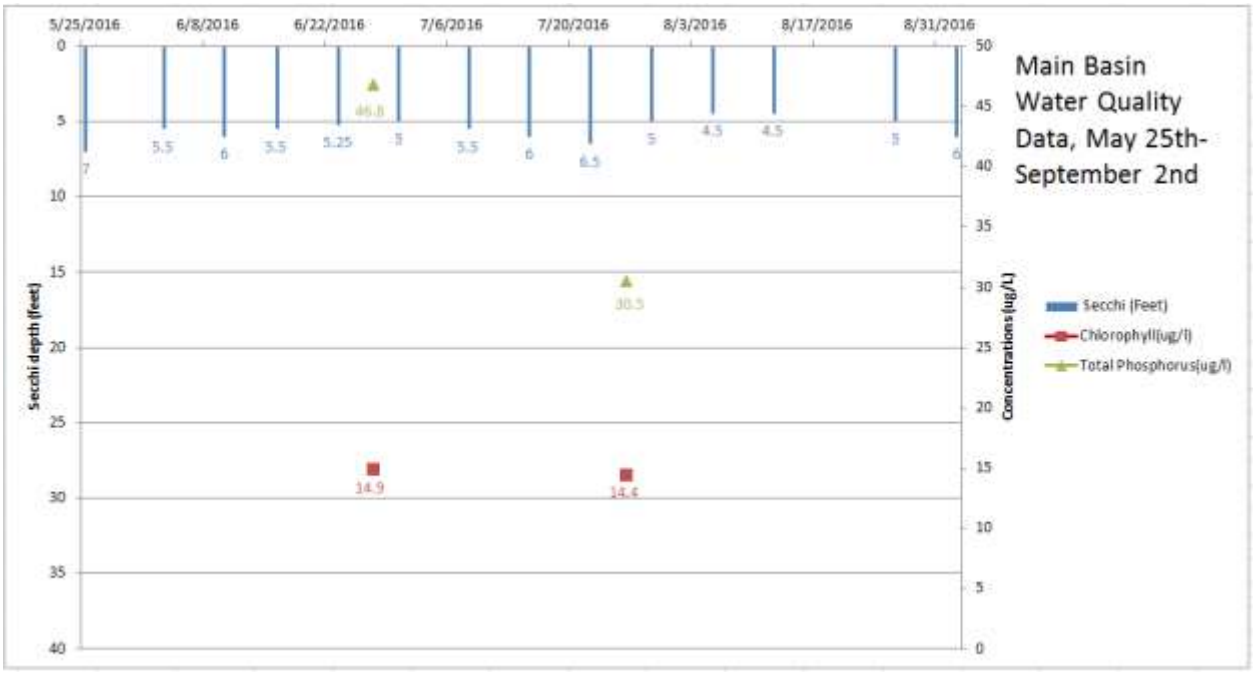


Figure 8– 2016 Citizen Lake Monitoring Network Data for the Central Basin of Rice Lake – Secchi, TP, and ChlA

Total phosphorus and chlorophyll values in the south basin typically spike in late August - early September, while Secchi readings of water clarity tank, due to an influx of phosphorus from the bottom waters. The south basin of the lake normally stratifies in the early summer creating a layer of warm oxygen-rich water at the surface separated from cooler water in the bottom by the thermocline. With a thermocline in place, oxygen in the surface waters cannot mix with the cooler water, setting up the opportunity for the bottom waters to become anaerobic or devoid of oxygen in the mid to late summer. When this happens, phosphorus formally locked up in the sediments is released back into the water column and becomes available for algae growth, turning the south basin green. Because the main basin of the lake is continually mixed by the influx of water from Bear Creek and the Red Cedar River, it does not stratify. However, both of these tributaries carry in a lot of phosphorus attached to suspended solids in the river water and may cause spikes in phosphorus like what is seen in the late June sample from the central basin. Chlorophyll values

(which measure the amount of algae in the lake) don't spike, because the water from the tributaries carries on through the lake and over the dam relatively quickly, before algae can use it to turn the water green.

As previously stated, average summer water clarity in 2016 was slightly lower than what was recorded in 2015, but slightly higher than the average summer readings from 2010-2015. Total phosphorus and chlorophyll a values for 2016 are lower than those recorded in 2015, but slightly higher than the average from 2010-2015. Figures 9-11 shows the summer averages for water clarity (Secchi disk), total phosphorus, and chlorophyll a.

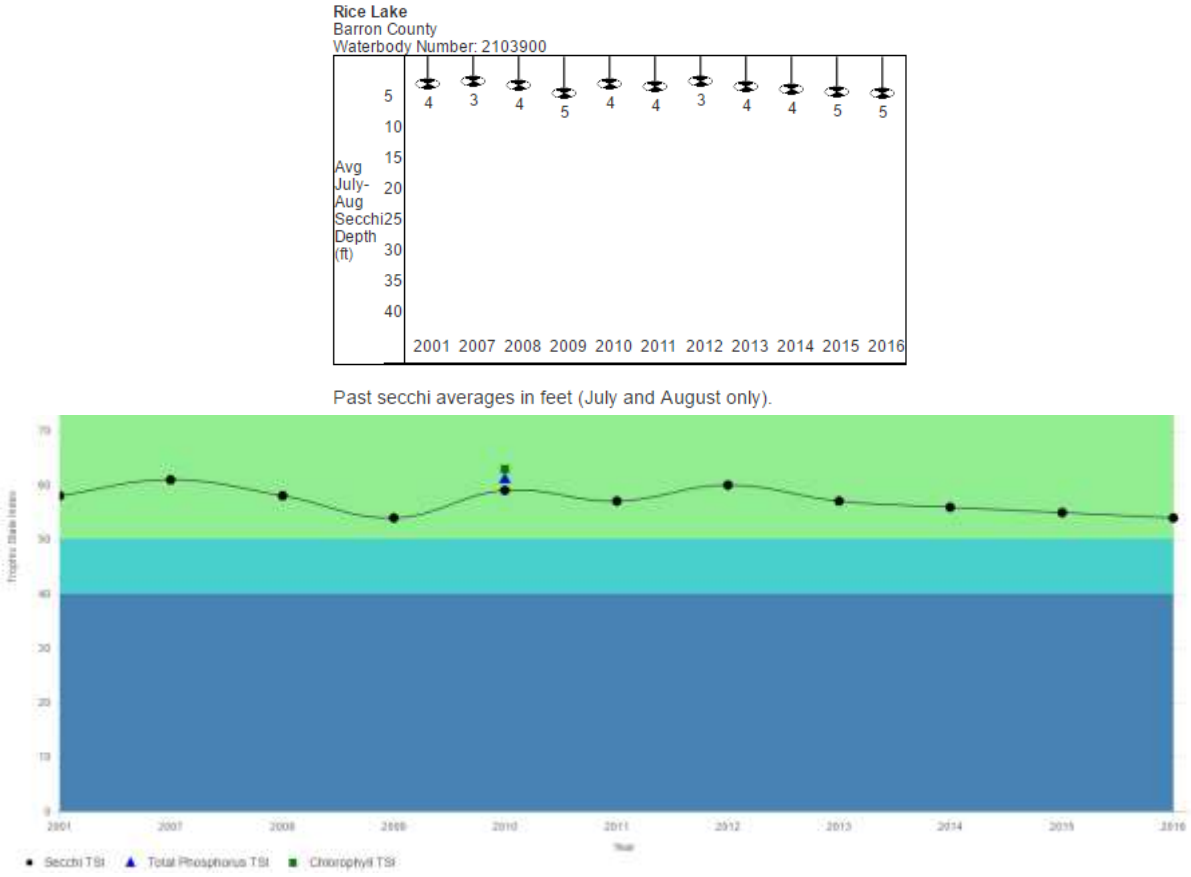


Figure 9 – North Basin Average Summer Water Clarity and Trophic Status (CLMN, 2016)

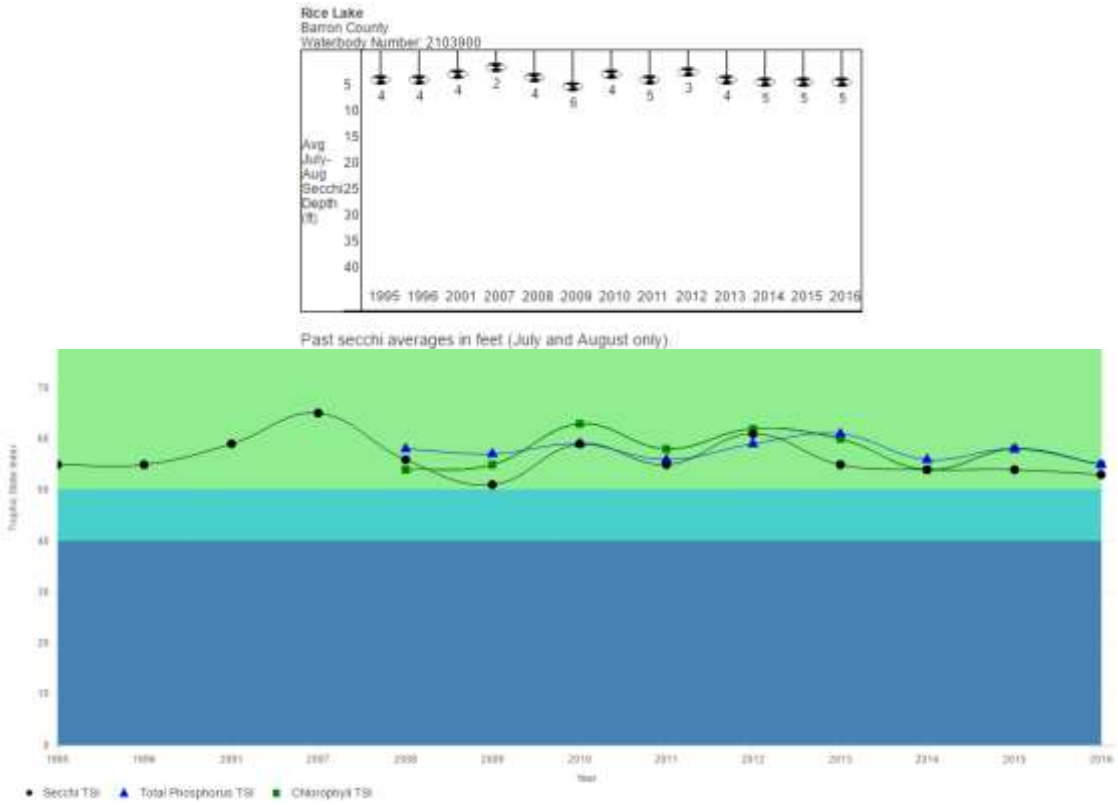


Figure 10 – Central Basin Average Summer Water Clarity, Total Phosphorus, and Chlorophyll; and Trophic Status (CLMN, 2016)

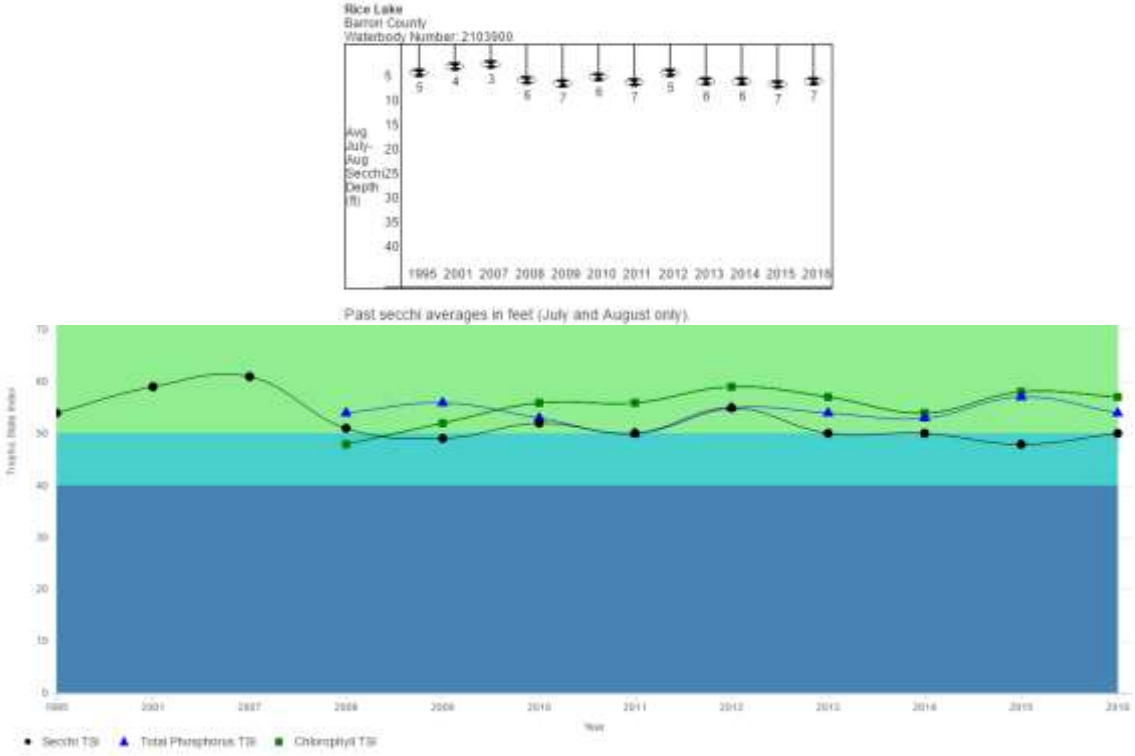


Figure 11 – South Basin Average Summer Water Clarity, Total Phosphorus, and Chlorophyll; and Trophic Status (CLMN, 2016)

DISSOLVED OXYGEN AND TEMPERATURE PROFILES

Lake District employees collected dissolved oxygen (DO) and temperature (Temp) profiles almost weekly from May 25th through August 5th at three sites. In the South Basin, the water column became fully stratified by June 16th with the thermocline established in the 12-15 foot range. Oxygen levels were below 2.0 ppm at 18-ft from late May to September except in late August. Oxygen levels were below 2.0 ppm below 15-ft of water from mid-June through the last sampling date on August 5th.

In the Central and North Basins, the water column remained mixed for most of the season, with oxygen levels only dipping below 2.0 ppm briefly around July 8. Mixing in the Central and North Basins occurs because of the amount of water coming into the Main Basin from Bear Creek and the Red Cedar River providing nearly continuous flushing. There is no such tributary entering into the South Basin, so flushing does not occur as continuously, leading to low oxygen levels and phosphorus release from the bottom sediments at times when no oxygen is present in the deep water. As has been mentioned in past reports, the South Basin and the Main Basin are basically two different types of lakes connected by a narrow channel. Water moves from the South Basin into the Main Basin. Water does not flow into the South Basin from the Main Basin.

The Native Plant Committee of the Lake District was formed a couple of years ago with this goal in mind: To minimize nutrient and toxin exposure for Rice Lake and its surrounding watershed. Some methods for achieving this goal are designing and building rain gardens to slow runoff and allow water percolation and filtering before draining into the lake; and installing lake shore buffers with native plants to slow runoff from streets, lawns, and other surfaces. To that end, the Lake District established a new line item in its annual budget to fund runoff reduction and diversion projects within the boundaries of the Lake District. As a part of this budget, the Committee has made a commitment to fund up to $200 for consultant costs to come up with a design, and then if the project goes forward, the cost of the project would be split 50/50 with the Property Owner up to $500 from the Lake District per project. Larger projects undertaken by larger public entities like the City of Rice Lake or a local town would similarly be split with up to $2,000.00 from the Lake District. Other projects can be undertaken but would be handled case by case. Payments would be made after a project is completed and invoices for expenses submitted to the Lake District by the property owner.

The Lake District continued maintenance and care of several previous sites including the Lumbering Hall of Fame Park and Shutlick Park. Native plants were grown in cooperation with the Rice Lake High School and Barron County Campus and used at several improvement sites in 2016. Overall, this cooperative project provided some plants for use, but was not considered cost-saving or profitable so will not be continued in 2017. The old beach house at the old beach site was removed by the City of Rice Lake, and an informal agreement made with the Lake District to restore the site to something more desirable that both reduces runoff from the site and improves the aesthetics of the site. Throughout 2016 and into early 2017, members of the Lake District Shoreland Improvement Committee have been working on a plan. It is expected that that plan will be implemented in 2017. In 2016, the following projects were either: planned, planned and implemented, started, or completed (Figure 10):

- Preparation and planting of the Narrows Park Native Plant Restoration
- Grinders Bike Shop Rain Garden
- Arnolds Landing Rain Garden
- Invasive Plant Control/Native Planting – Storm
- Establish a no-mow area/remove invasive species/native planting at Lake Shore Park Band Shelter
- Signage and weeding at City Hall

Figure 12 – Left: Narrows Park Native Plant Restoration (Blumer, 2016); Right: Storm Shoreland Improvement (Green Frog Co, 2016)

LAKE EDUCATION EFFORTS

AIS MONITORING

Lake District employees Jeff and Denny monitored Rice Lake for AIS nearly every week from late May to early September 2016. One or both of them would go out on the Lake District Boat late in the week and survey the nearshore area, shallow water, and shoreline for AIS like EWM, purple loosestrife, and CLP. No EWM was found in 2016. Rice Lake is already known to have Chinese mystery snails, rusty crayfish, Japanese knotweed, and CLP. These AIS were again found in 2016, and where necessary, control work or removal was completed.

CLEAN BOATS, CLEAN WATERS

For the 2016 season, 540 paid hours of inspection time along with an additional 124 volunteer hours was logged at Rice Lake landings, with 842 boats inspected and 1,539 people contacted. All inspection data has been entered into the WDNR SWIMS on-line database.

LAKE EDUCATION EVENTS

RICE LAKE BROCHURE

In early 2016, the Lake District Public Communications Committee worked on a brochure to highlight the activities of the Rice Lake – Lake Protection and Rehabilitation District. The brochure was professionally designed and printed and contained an 11x17 map of the lake and information about the Lake District, water quality, aquatic plant management, aquatic invasive species, and the governing Board of Directors. The brochure was handed out at Lake District events including the Aquafest Parade, Barron County Fair, and during Clean Boats, Clean Waters inspection time at the landings.

RICE LAKE AQUAFEST PARADE

The Lake District was again represented in the Rice Lake Aquafest Parade in early June. A float was entered under the theme "Splish Splash" featuring a water-skier and muskie fisherman being pulled by a "boat" (Figure 11). Lake District volunteers handed out a new brochure that was constructed in 2016. The Curly-leaf Pondweed Monster did not make an appearance as he has been forced out of the lake. The float took second place in the competition ending three years of first place finishes. Still it was a popular addition to the parade.

Figure 13 – Rice Lake Aquafest Parade Float (Blumer, 2016)

BARRON COUNTY FAIR

The Lake District once again had a display booth in the WDNR/Barron County Building during the Barron County Fair in mid-July. Literature was provided to the public at the booth and a LEAPS employee was present much of the time to answer questions. Another feature of the Fair was the Storm Water Runoff Prevention Plinko Game to teach people young and old about what they can do to reduce runoff pollution into lakes, rivers, and streams.

RECOGNITION PLAQUES

Two recognition plaques were given out in 2016. The first went to American Excelsior Co. for their past, present, and continued support of lake improvement projects through the supply of erosion mat and related materials. Just about every improvement project that has been done in and around Rice Lake has used materials provided at little or no cost by American Excelsior. Kurt Kelsey accepted the wooden plaque which featured a laser line carving of the lake and its bathymetry, on behalf of American Excelsior at the 2016 Annual Meeting in October.

The second recognition plaque went to Jerry McRoberts for better than 10-years' service on the Rice Lake – lake Protection and Rehabilitation District Board as a Barron County Representative.

NEW RICE LAKE SWIMMING ACCESS AT NARROWS PARK

While not directly tied to the actions of the Lake District, the City of Rice Lake began construction of a new swimming access point on Rice Lake at the Narrows Park. Construction includes a new shelter, bathrooms, and changing rooms, a tiered sidewalk/ramp to the waters' edge, placement of sand, and space to put two access piers. The concept of this project was first pitched by the Lake District several years ago, but the final design and construction was taken over by the City (Figure 12).

Figure 14 – New City of Rice Lake Swimming Access (Blumer, 2016)

2017 education efforts include updating the Rice Lake District webpage, development of a realtors' packet, and an AIS education event probably set up at the annual meeting in October.

Back in 2013 and 2014, the Lake District and the Bear Lake Association were awarded a sum of money as reparation for damage caused in 2012 when major sediment runoff from the Highways 53 and V Interchange Construction site fouled Bear Lake, Bear Creek, Stump Lake, and Rice Lake. The intent of the money was to use it for on-the-ground, shovel ready projects that would reduce future surface water runoff and sediment from entering waterways within the Rice Lake and Bear Lake watersheds. Several projects were proposed at the initial award. Some of those projects have been completed, others have been modified, and new projects have been proposed. The following projects were either: started, started and completed, or introduced in 2016.

HUMBIRD STREET GRIT CHAMBER

The City of Rice Lake redid a stretch of Humbird Street between Main Street and Lakeshore Drive in 2016. This project included the installation of a grit chamber at the lake side of the storm water sewer system. The actual grit chamber was paid for by the Lake District to the sum of $15,000.00. Design work and installation was completed by the City of Rice Lake. The installation of a grit chamber was approved and added to the project. This project was completed over the summer (Figure 12).

Figure 15 – Humbird Street Grit Chamber Installation

BARRON COUNTY FAIRGROUNDS

A Lake Protection Grant was submitted in February 2016 that would have used up the remaining funds in the 53 & V Projects Fund. Unfortunately, that grant request was not awarded. As such, additional projects were discussed that would use up the funds before the end of 2017. One project that was proposed in 2016 and is going forward in 2017 is a Storm Water Management Plan for the Barron County Fairgrounds in Rice Lake. This project includes the installation of at least one best management practice to reduce runoff from the Fairgrounds into Rice Lake. Specifically, an infiltration trench will be installed along-side one of the larger Fairgrounds Structures (Figure 16). The infiltration trench will be designed to hold rooftop runoff, allowing it to infiltrate into the sandy ground just a foot or two down from the grass. The trench will also be designed to allow for vehicular traffic across it, without compromising its integrity.

A Lake Management Planning grant was submitted in December 2016 to support this project and a much broader stormwater management plan for the entire fairgrounds. This project was awarded and will move forward in 2017. Assuming additional best management practices are identified in the overall plan, some of these may be implemented with 53 & V Project Funds.

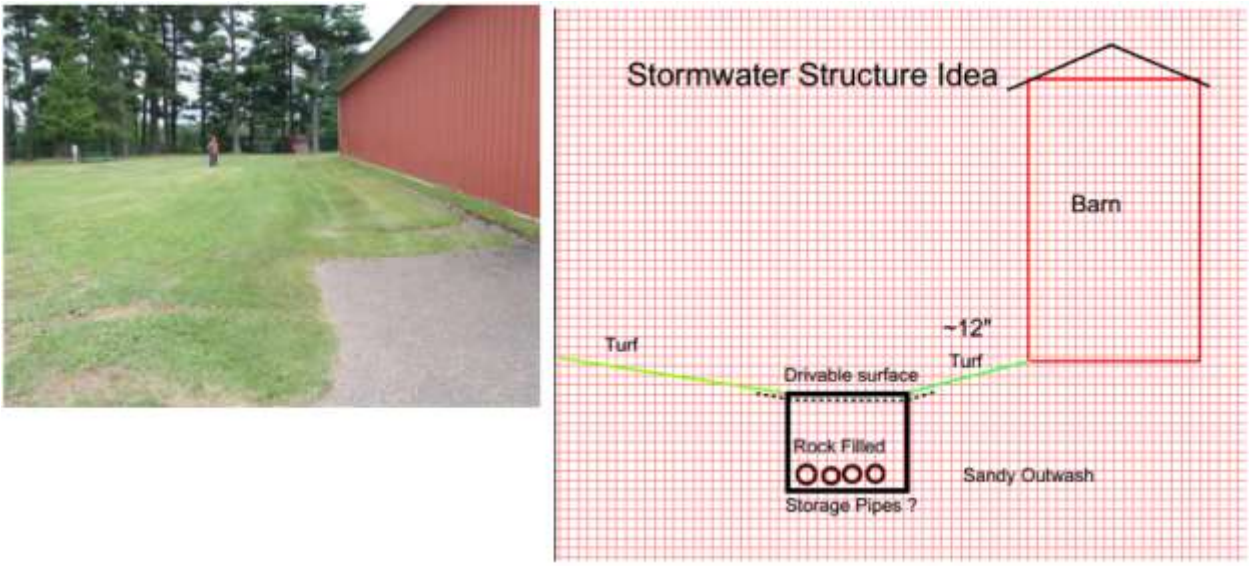


Figure 16 – Proposed Infiltration Trench at the Barron County Fairgrounds (Gruetzmacher, 2016)

53 & V AGRICULTURAL FIELD ON TOP OF THE WASTE PILE

Discussion continues to take place between the property owner, renter, Lake District, Barron County, and the WDNR about what to do with the agricultural field on top of the waste pile at the V & 53 intersection. Currently the renter has been planting corn on top of the hill. The corn crop was not very good in 2016, and the renter is willing to consider other options on the hill top. Severe erosion continues to occur in the gully between the top of the hill and the Bear Creek flat below. Options are limited, and the renter is not entirely willing to give up the ground for enterprises that may not provide income. But as was stated, the conversation continues.

Figure 17 – Washout between the top of the 53 & V field and Bear Creek in June 2016 (Blumer, 2016)

CLEAN BOATS, CLEAN WATERS GRANT APPLICATION AND IMPLEMENTATION

A CBCW grant was applied for and received by the Lake District and Sharon Pacholski was hired to manage CBCW efforts on Rice Lake in again in 2016. Another CBCW grant was submitted in December 2016 to solicit funding to support the 2017 CBCW program. This grant was awarded so it is expected that the CBCW program in 2017 will be similar to that in 2016.

LAKE MANAGEMENT PLANNING GRANT APPLICATION

A Lake Protection Grant was submitted to the WDNR in February 2016, but it was not funded. As a result, a lake management planning grant was submitted in December 2016 on behalf of the Lake District to support implementation of several projects in the Comprehensive Lake Management Plan. This grant was awarded in early 2017. It covers tributary monitoring of 10 sites in the watershed, lake monitoring in Stump Lake, updating the current Comprehensive Lake Management Plan to meet 9-Key Element Planning requirements, and provides funding to complete a storm water management plan for the Barron County Fairgrounds.

FINAL WORD

Again, it was a busy year, a testament to the concerned, interested, and capable people that make up the Lake District Board. As in 2015, it seems the community is mostly satisfied with what is happening in and around Rice Lake, as regardless of the amount of publicity, only a few people ever show up at the Lake District Annual Meeting in October.

Respectfully Submitted by Dave Blumer, LEAPS