

LAKE EDUCATION AND PLANNING SERVICES, LLC  
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# SAND LAKE, BARRON COUNTY

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2016 AQUATIC PLANT MANAGEMENT  
SUMMARY REPORT  
WDNR WBIC: 2661100

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July 28, 2017



SAND LAKE MANAGEMENT  
DISTRICT  
CUMBERLAND, WI 54829



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# 2016 AQUATIC PLANT MANAGEMENT SUMMARY REPORT-SAND LAKE

PREPARED FOR THE SAND LAKE MANAGEMENT DISTRICT

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## INTRODUCTION

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This report discusses aquatic plant management activities completed by the Sand Lake Management District (SLMD) and Lake Education and Planning Services (LEAPS) during the 2016 season and provides details of the 2017 Eurasian watermilfoil (EWM) control plan. The following list of education and management actions were completed in 2016.

- 2016 preliminary EWM treatment proposal
- EWM readiness survey
- 2016 early season EWM treatment
- 2016 Spot Treatments
- Post-treatment summer littoral zone survey
- Clean Boats Clean Waters
- Purple loosestrife monitoring, removal, and biological control
- 2017 EWM management planning
- Citizen Lake Monitoring Network water quality testing
- 2015-16 Tributary Monitoring
- Grant funded project and grant applications
- Lake Fair and Annual Meeting

Each of these actions will be summarized in the following sections of this report.

## 2016 PRELIMINARY EWM TREATMENT PROPOSAL

Based on 2015 EWM treatment results and fall 2015 EWM bed mapping (Berg, 2015), a proposal for treating 17 areas totaling 16.08 acres was made by LEAPS in March 2016. After EWM readiness survey work, the proposed treatment was modified to include 20 beds ranging in size from 0.06 – 2.44 acres covering a total of 10.05 acres. Five areas totaling 5.72 acres were proposed for treatment with liquid 2,4-D (DMA4) at 4.0 ppm, and 4.33 acres were proposed for treatment with granular 2,4-D (Navigate) at 3.0 ppm (Table 1, Figure 1).

**Table 1 – 2016 EWM Treatment Proposal**

<b>2016 Modified Sand Lake EWM Treatment Proposal From Pre-treatment Survey 5/15/2016-Revised (LEAPS)</b>										
<b>New Name</b>	<b>Former Name</b>	<b>Acres</b>	<b>Mean Depth (feet)</b>	<b>Acre-feet</b>	<b>Target 2,4-D (Navigate) (ppm a.e.)</b>	<b>Application rate (lbs/acre-feet)</b>	<b>Navigate Application (pounds)</b>	<b>Target 2,4-D (DMA 4) (ppm a.e.)</b>	<b>Application rate (gal/acre-feet)</b>	<b>DMA 4 (gallons)</b>
Bed1-16		2.44	11.50	28.06				4.00	2.84	79.69
Bed2-16		0.43	11.50	4.95	3.00	42.60	210.66			
Bed3-16	was Bed3-16	0.14	8.25	1.16	3.00	42.60	49.20			
Bed4-16	was Bed3-16	0.09	8.25	0.74	3.00	42.60	31.63			
*Removed	Bed5-16(SW)	*0.12	*5	*0.6						
Bed6-16	was Bed4-16	0.48	8.00	3.84				4.00	2.84	10.91
Bed7-16	new	0.32	8.00	2.56	3.00	42.60	109.06			
Bed8-16	was Bed5-16	0.21	11.00	2.31	3.00	42.60	98.41			
Bed9-16	was Bed6-16	0.23	10.50	2.42	3.00	42.60	102.88			
Bed10-16	was Bed6-16	0.10	10.50	1.05	3.00	42.60	44.73			
Bed11-16	was Bed7-16	0.30	10.50	3.15	3.00	42.60	134.19			
Bed12-16	new	0.09	10.50	0.95	3.00	42.60	40.26			
Bed13-16	was Bed8-16	0.60	10.50	6.30	3.00	42.60	268.38			
Bed14-16 (SW)	was Bed13-16(SW)	0.33	5.50	1.82				4.00	2.84	5.15
*Removed	Bed15-16(SW)	*0.15	*5	*0.75						
*Removed	Orig. Bed15-16(SW)	*0.2	*5.5	*1.10						
Bed16-16 (SW)	new	0.09	4.50	0.41	2.50	35.50	14.38			
Bed17-16	new	0.06	8.00	0.48	3.00	42.60	20.45			
Bed9Org-16	Orig. Bed9-16	0.23	11.00	2.53	3.00	42.60	107.78			
Bed18-16	was Bed10-16	0.31	11.50	3.57	3.00	42.60	151.87			
Bed19-16	was Bed11-16	1.13	11.50	13.00	3.00	42.60	553.59			
Bed20-16 (SW)	was Bed12A-16	0.74	5.75	4.26				4.00	2.84	9.06
Bed21-16 (SW)	was Bed12B-16	1.73	5.75	9.95				4.00	2.84	21.19
<b>Total Primary</b>		<b>10.05</b>	<b>9.13</b>	<b>93.47</b>			<b>1937.45</b>			<b>126.00</b>



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**EWM READINESS SURVEY, TREATMENT, AND POST-TREATMENT SUMMER  
LITTORAL POINT-INTERCEPT AQUATIC PLANT SURVEY**

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**EWM READINESS SURVEY**

With the implementation of a new Aquatic Plant Management Plan (APMP) for Sand Lake, pre and post-treatment surveys were no longer being done. Instead, an EWM readiness survey was completed on May 12, 2016 by LEAPS. An EWM readiness survey involves visually inspecting proposed treatment areas and rake throws to determine if EWM in the proposed treatment areas is ready to treat. At the same time, the rest of the lakes' littoral zone is searched for EWM beds that may have been missed in the previous year. Based on this visual inspection and several rake samples, treatment areas are modified.

**2016 EWM SPRING TREATMENT**

Northern Aquatic Services (NAS) completed the 2016 early season EWM treatment on Sand Lake on two separate days. On May 26 DMA 4 (liquid 2,4-D) was applied. Water temperature was 63°F, air temperature ranged from 53-70°F. There was no wind during the application. On June 2 Navigate (granular 2,4-D) was applied. Water temperature was 66°F and air temperature was 63°F. The wind was out of the NW at 3-5 mph. Jerry Schliemann Secretary of the Sand Lake Management District accompanied NAS during the treatments.

During the initial treatment, coontail, common waterweed, white waterlily, and white-stem pondweed were present in the treatment areas. During the application of granular herbicide, these species plus northern watermilfoil, large-leaf pondweed, fern-leaf pondweed, and Illinois pondweed were present in the treatment areas.

**2016 EWM SPOT TREATMENTS**

In most previous years of EWM management, spring treatments have been followed up with chemical treatments of individual EWM plants or small clumps of plants later in the season. With the approval of the new APM Plan, 2016 became the last year that individual spot treatments were implemented. In 2016, spot treatments were completed on three different dates. A total of 86 sites (or spots) were treated with the maximum label rate of Navigate (granular 2,4-D) herbicide (Table 2). The goal of individual spot treatments has been to minimize the impacts of EWM growth not in the spring treatment areas by preventing them from expanding.

**Table 2 – 2016 Individual Spot Treatments on Sand Lake**

<b>2016 Individual Spot Treatments on Sand Lake, Barron County</b>	
<b>Date of Application</b>	<b># of Points</b>
23-Jun-16	46
20-Jul-16	16
25-Aug-16	24
<b>Total</b>	<b>86</b>

**POST-TREATMENT SUMMER LITTORAL ZONE POINT-INTERCEPT SURVEY OF  
AQUATIC PLANTS**

Another change that was made in the new APMP was replacing the post-treatment plant survey in just the treated areas with a larger point-intercept survey that covers the entire littoral zone. All EWM and native plants are documented during this survey. Annual results can more accurately compare the results and impacts of each year's treatment.

On July 25, 2016 ERS conducted a summer warm water full point-intercept survey based on 518 points within the 20-ft contour of the lake at a distance apart of 25 meters, more than double the number of points in the littoral zone included in the original WDNR survey grid (Figure 2). Using this new grid, each point was located with a handheld mapping GPS unit, a depth reading (Figure 2) was recorded with a metered pole rake or hand held sonar, and a rake was used to sample an approximately 2.5ft section of the bottom. Substrate (bottom) type was assigned at each site where the bottom was visible or it could be reliably determined using the rake. Organic and sandy muck in the lake’s sheltered bays and flats accounted for 42.9% (222 points) of the substrate within the littoral zone. Pure sand shorelines that ringed the majority of the central basins composed 45.4% (235 points) of the bottom, and scattered gravel and cobble areas, especially on the south shoreline adjacent to the lake’s deepest point, made up the remaining 11.8% (61 points) (Figure 3). All plants on the rake, as well as any that were dislodged by the rake, were identified and assigned a rake fullness value of 1-3 as an estimation of abundance (Figure 3). Visual sightings of all plants within six feet of the sample point but not found in the rake were also recorded. In addition to a rake rating for each species, a total rake fullness rating was also noted.




<u>Rating</u>	<u>Coverage</u>	<u>Description</u>
<b>1</b>		A few plants on rake head
<b>2</b>		Rake head is about ½ full Can easily see top of rake head
<b>3</b>		Overflowing Cannot see top of rake head

Figure 1: Rake Fullness Ratings (Berg, 2016)

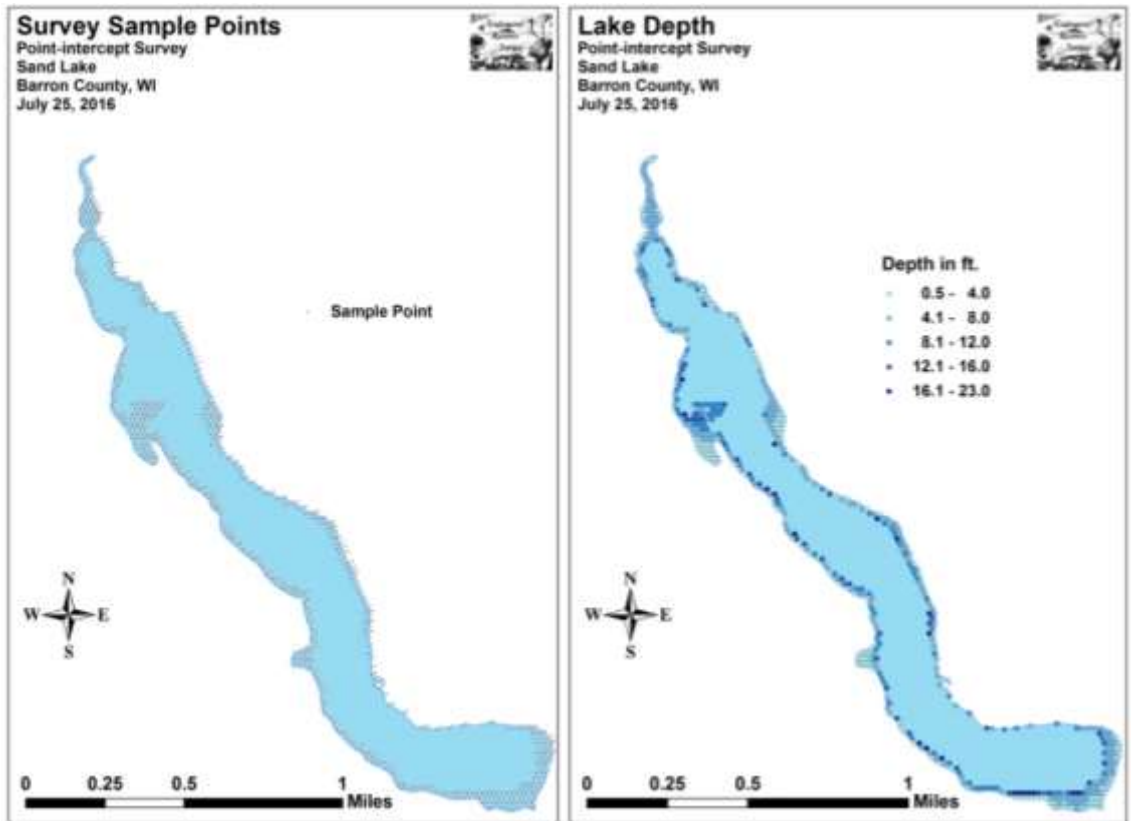


Figure 2 – Summer PI Survey Points and Depth (Berg, 2016)

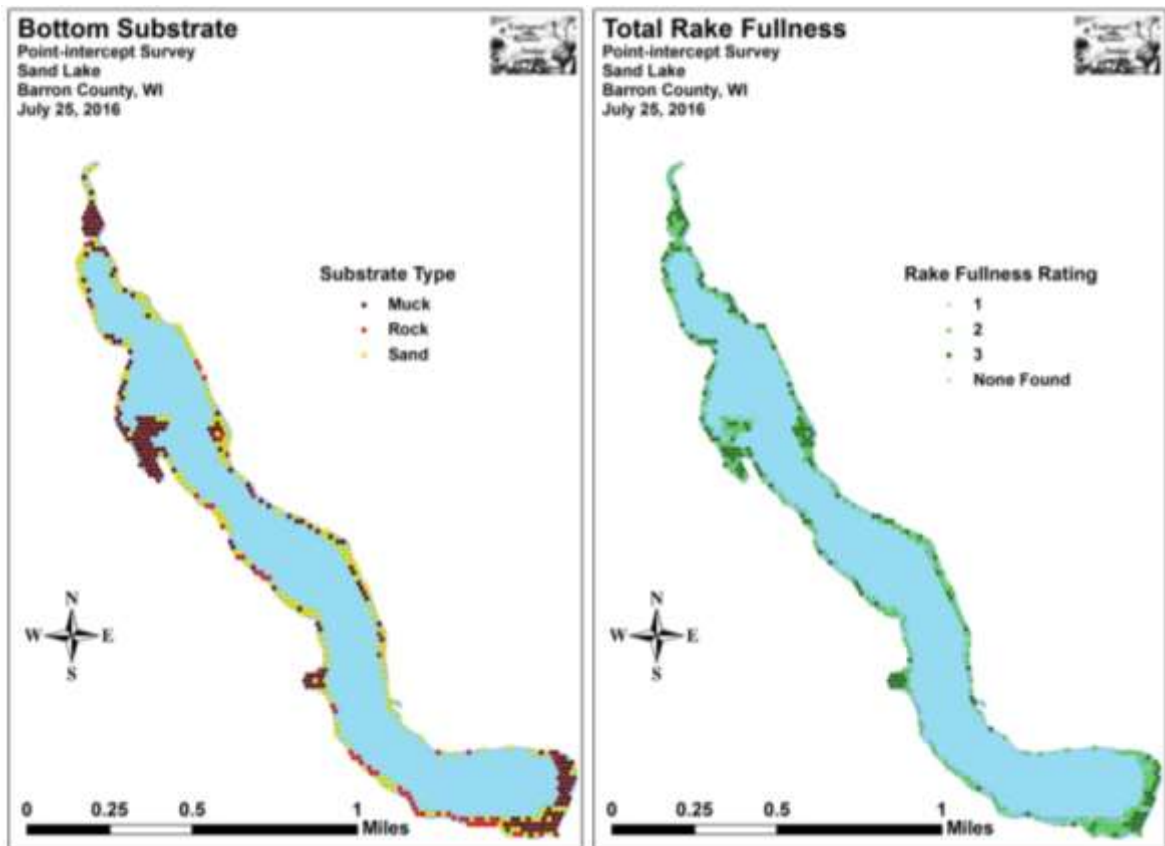


Figure 3 – Bottom Substrate and Total Rake Fullness (Berg, 2016)

The intent of this survey was to establish a new baseline for aquatic plant survey work that would be repeated every year around the same time using the same points. Table 3 reflects the plant survey statistics that were generated during the 2016 survey.

**Table 3 - Aquatic Macrophyte P/I Survey Summary Statistics Sand Lake, Barron County  
July 25, 2016**

Summary Statistics:	2016
Total number of points sampled	518
Total number of sites with vegetation	470
Total number of sites shallower than the maximum depth of plants	517
Frequency of occurrence at sites shallower than maximum depth of plants	90.91
Simpson Diversity Index	0.94
Maximum depth of plants (ft)	18.5
Mean depth of plants (ft)	6.3
Median depth of plants (ft)	6.0
Average number of all species per site (shallower than max depth)	3.32
Average number of all species per site (vegetative sites only)	3.65
Average number of native species per site (shallower than max depth)	3.29
Average number of native species per site (sites with native species only)	3.62
Species richness	43
Species richness (including visuals)	47
Species richness (including visuals and boat survey)	51
Mean total rake fullness (vegetative sites only)	2.16

#### EURASIAN WATERMILFOIL

Eurasian water-milfoil was found at 15 points during the 2016 survey (3.19% of littoral points with plants). Of these, three points had a rake fullness of 3, five were a 2, and the remaining seven were a 1 for a mean rake fullness of 1.73. EWM was recorded as a visual at eight points (Figure 4). When compared to all other plants in the lake, it had a relative frequency of 0.87 and was just the 22<sup>nd</sup> most common macrophyte species.

EWM was present in water from 4-13ft, but the majority of plants we found were in the 9-11ft range over organic and sandy muck on the outer edge of the rooted littoral zone. Most of the beds of EWM occurred in water just a foot or two deeper than the beds of Northern water-milfoil that ring the majority of the central basins.

In addition to the EWM found at the survey points, six additional significant beds were noted either surrounding a point or inter-point. Four occurred on the sunken island north of “Silo Bay”, one was north of the sunken island on the north side of the western point, and the sixth occurred on the outer edge of the visible littoral zone along the eastern shoreline southeast of the sunken island (Figure 4).

#### PURPLE LOOSESTRIFE AND REED CANARY GRASS

Purple loosestrife is present at several locations around the lake. Gallerucella beetles have been release on the lake for many years, but if a self-replicating population exists, it is small. Reed canary grass continues to be widely distributed in undeveloped shoreline areas of the lake, but this ubiquitous plant does provide some habitat for wildlife, and there is no easy or cheap way to eliminate it.

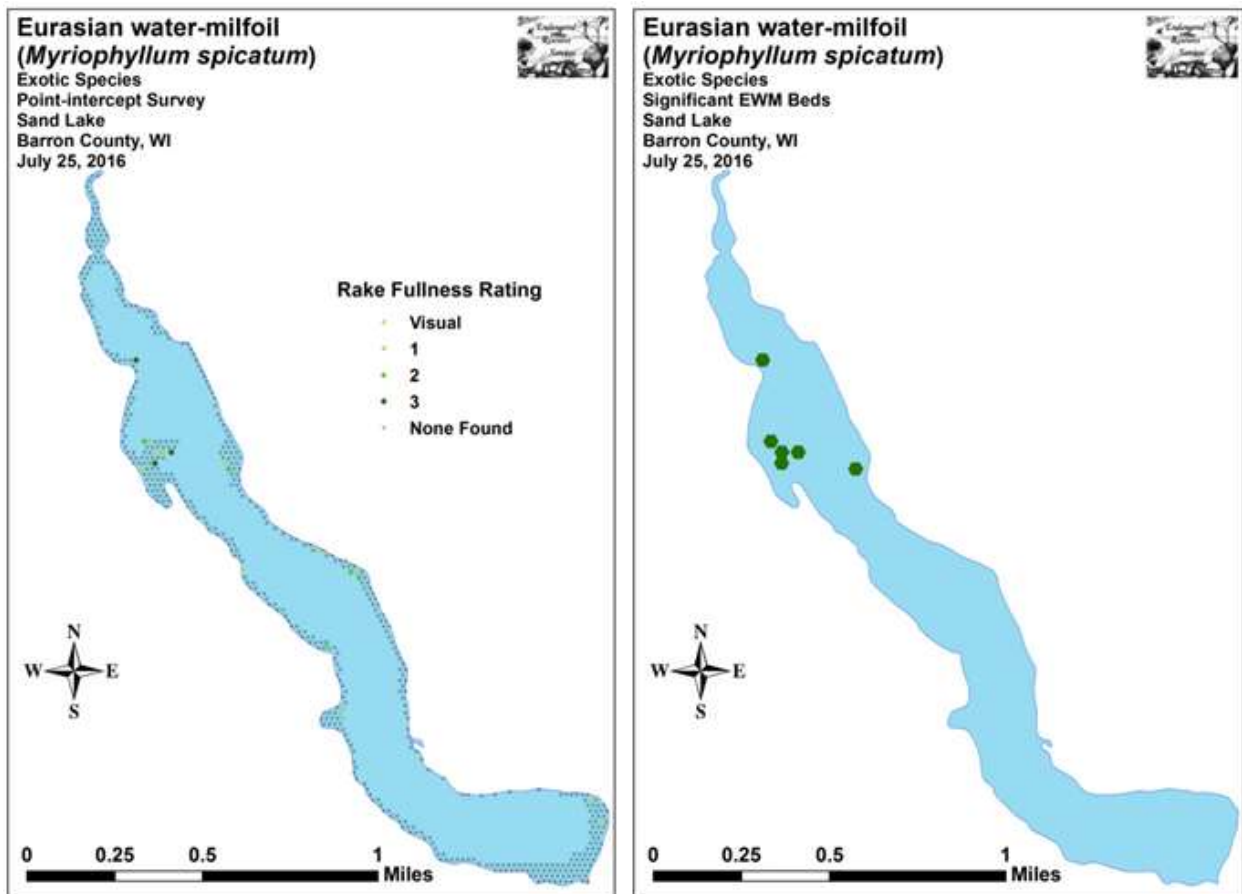


Figure 4 - Eurasian Water-milfoil Density and Distribution and Significant Bed Locations (Berg, 2016)

#### NATIVE AQUATIC PLANTS

At the time of the survey, Secchi disc readings of water clarity were around 10-ft. This good water clarity produced a littoral zone that extended to 18.5ft with the mean and median depths of plants being 6.3ft and 6.0ft respectively. Plant coverage was extensive with 470 out of 517 littoral points (90.9%) having at least some macrophytes present (Figure 5). The majority of areas without plants occurred over rock in water >10ft deep.

Overall diversity in the lake was exceptionally high with a Simpson Index value of 0.94. Species Richness was also quite high with 43 species found in the rake. When including plants recorded as visuals or during the boat survey, this total jumped to 51 species growing in and immediately adjacent to the water.

Localized richness was moderately high as the mean native species richness at sites with native vegetation was 3.62 species. Overall plant density was moderate with a mean rake fullness of 2.16 at sites with vegetation (Figure 5). Coontail, flat-stem pondweed, small pondweed, and northern water-milfoil were the most common species in the 2016 survey accounting for nearly 41% of the total relative frequency of plants. Muskgrass, Illinois pondweed, clasping-leaf pondweed, forked duckweed, common waterweed, and slender naiad were the only other species that had relative frequencies over 4%.

A total of 41 **native index plants** in the rake were identified during the point-intercept survey. They produced a mean Coefficient of Conservatism of 6.0 and a Floristic Quality Index of 38.3. Both of these are above average

for lakes in this part of the state. Three exceptionally high value index plants of note included Wild calla (C = 9), Crested arrowhead (C = 9), and Creeping bladderwort (C = 9).

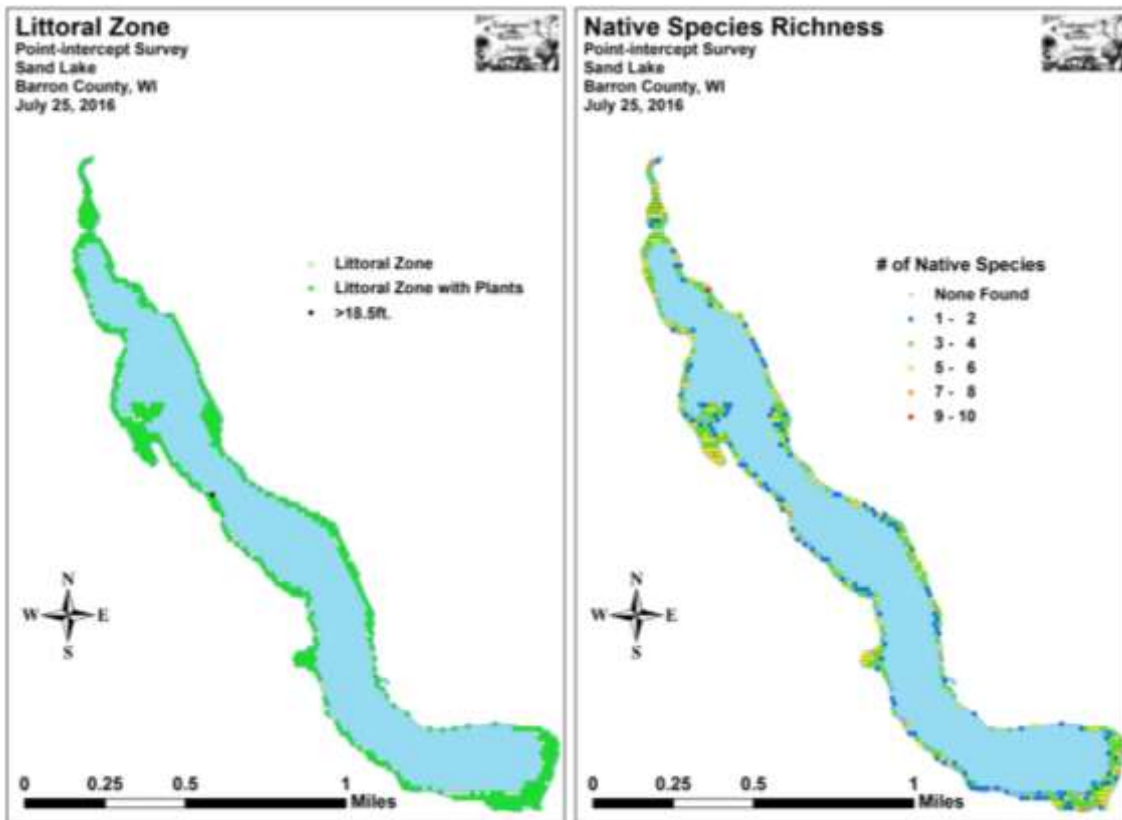


Figure 5 – 2016 Sand Lake Littoral (plant growing) Zone (left) and Species Richness per point (Berg, 2016)

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### CLEAN BOATS, CLEAN WATERS

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There were 138 hours of watercraft inspection time recorded at the Sand Lake public boat landing in 2016. Most of the time was put in by students from the Island City Academy (Cumberland Charter School). The remaining time was put in by SLMD volunteers and a paid watercraft inspector in August, September, and October. The Sand Lake Management District gives a donation to the Island City Academy for the time they put in at the landing.

At least 132 people in 68 boats were contacted during this time. Data recorded during watercraft inspection showed boats coming from 11 different lakes in the area – 4 of these lakes have EWM in them.

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### AIS MONITORING

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Through a combination of volunteer time and paid resource professionals, AIS monitoring was completed on Sand Lake on at least 13 different dates between May and August. Monitoring was completed by two main Sand Lake volunteers and by Northern Aquatic Services and LEAPS. Total time spent monitoring for AIS was 23 hours, with this time being sent to the WDNR /UWEX via the End of Season AIS Monitoring Report form 3200-133.

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## **PURPLE LOOSESTRIFE MONITORING, REMOVAL, AND BIOLOGICAL CONTROL**

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Purple loosestrife was monitored for in August by NAS when the last spot treatment was completed, and it was documented during AIS monitoring surveys. A few plants were physically removed, however not all of them. No beetles were released on the lake in 2016.

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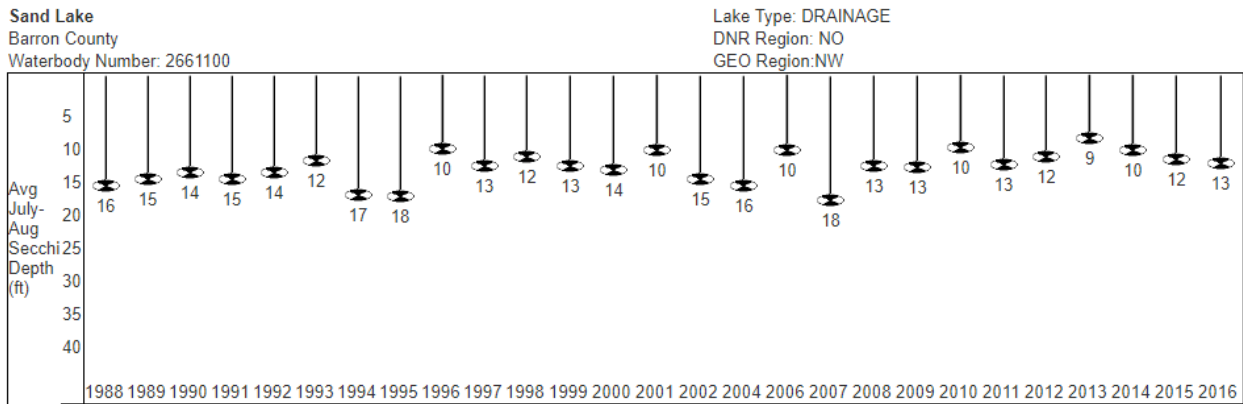
### **2017 EWM PRELIMINARY MANAGEMENT PLANNING**

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Based on results from the 2016 summer point-intercept survey of the littoral zone, a preliminary treatment proposal was created in early March 2017 that included 10 treatment areas ranging in size from 0.42 acres to 3.08 acres totaling 13.7 acres. After the EWM readiness survey the initial proposal was modified to cover 7 treatment areas ranging in size from 0.40 acres to 6.64 acres totaling 13.6 acres. The summer spot treatment program will not be continued in 2017.

**CITIZEN LAKE MONITORING NETWORK (CLMN) WATER QUALITY TESTING**

There are three water quality monitoring sites in Sand Lake that are a part of the CLMN monitoring program. However, only the main site “Near Deepest Pt” in the southern-most basin had data collected from it in 2016. In 2016, water clarity readings were collected at the deep hole on seven different dates. Chlorophyll data was collected on three dates, and TP data was collected on four dates. Figure 6 shows the average summer (July-August) Secchi disk readings since CLMN began. The 2016 average summer (July-Aug) Secchi disk reading for Sand Lake - Near Deepest Pt (Barron County, WBIC: 2661100) was 12.67 feet, slightly better than in was in 2015. The average for the Northwest Georegion was 8.4 feet. Summer (July-Aug) water was reported as CLEAR and GREEN suggesting that the Secchi depth may be mostly impacted by algae. Algal blooms are generally considered to decrease the aesthetic appeal of a lake because people prefer clearer water to swim in and look at. Algae are always present in a balanced lake ecosystem. They are the photosynthetic basis of the food web. Algae are eaten by zooplankton, which are in turn eaten by fish.



Past secchi averages in feet (July and August only).

**Figure 6: Average summer (July-August) Secchi disk readings at the Near Deepest Pt**

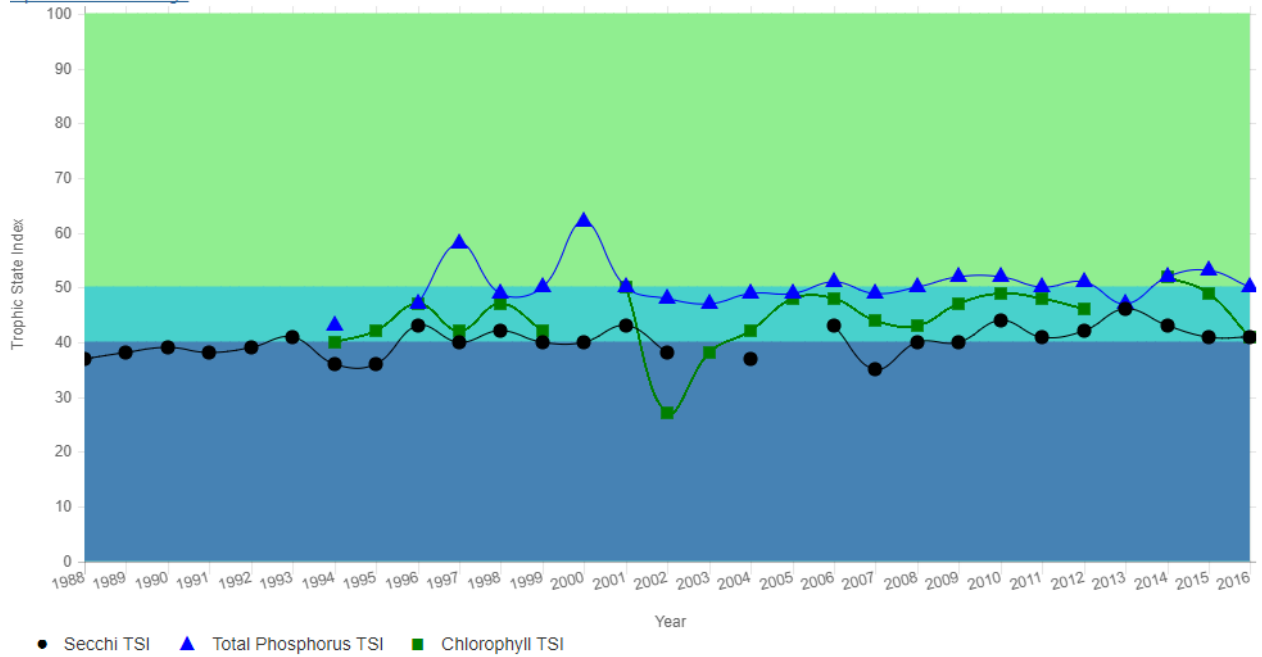
Chemistry data was collected on Sand Lake - Near Deepest Pt. The average summer Chlorophyll was 2.3µg/l, less than half what this reading was in 2015. The Northwest Georegion summer average was 17.7µg/l. The summer total phosphorus average was 16.7µg/l. Both of these values are better than what was recorded in 2015, continuing at least a three year trend toward better water quality. Lakes that have more than 20 µg/l and impoundments that have more than 30 µg/l of total phosphorus may experience noticeable algae blooms.

Figure 7 shows the average summer Trophic State Index (TSI) value for total phosphorus, chlorophyll, and Secchi disk readings. The overall Trophic State Index (based on chlorophyll) for Sand Lake - Near Deepest Pt was 41. This TSI suggests that Sand Lake - Near Deepest Pt was mesotrophic, and 8 points better than it was in 2015 (49). Mesotrophic lakes are characterized by moderately clear water, but have an increasing chance of low dissolved oxygen in deep water during the summer. These conditions accurately describe Sand Lake in 2016.



# Trophic State Index Graph: Sand Lake - Near Deepest Pt, Barron County

[Open / Save as Image](#)



**Figure 7: 2016 Summer (July and August) TSI values for total phosphorus and chlorophyll-a at the Near Deepest Pt on Sand Lake**

**2015 & 2016 TRIBUTARY MONITORING**

2016 marked the second consecutive year of collecting tributary data from four continuous or intermittent flow streams entering Sand Lake and at the outlet. The tributary sampling was part of the lake protection grant awarded to the SLMD to repair the NW Wash. Repair of the wash was started in late 2015 and completed in 2016. Tributary sampling was originally set up to collect monthly total phosphorus (TP) and suspended solids (TSS) April through October in both 2015 and 2016. Due to weather conditions, the only two sites that actually had water in them through all of the months included in this project were the main inlet from Little Sand Lake and the Outlet of the lake. The other three sites: the NW Tributary, NE Tributary, and the Silo Bay Tributary did not have flow all the time. In addition, in 2015, volunteers collected TP and TSS from the wrong site near Silo Bay. The data they collected for TP and TSS is valid, however, there is no volume data to enable the calculation of the total load brought in by the site that was monitored.

Tributary sampling results were similar to previous work done in that the inlet to the lake from Little Sand Lake brought in the most TP. The average concentration of TP in the water samples collected from the inlet was less than any of the other sites, but given that the inlet flows year round the total load was the highest at 786.53 kg (Tables 4&5).

The second worst site was the NE Tributary, also known as the NE Wash. Even though the number of days this tributary had flow in it was only 42% of the total days included in this study, it had the second highest TP load at 535.55 kg. Based on kg of TP brought in during each day with flow, this site was the worst with 3.57 kg per day with flow. The inlet only contributed 2.18 kg per day with flow (Tables 4&5).

The NW Tributary, also known as the NW Wash and was the wash that was repaired during this project, had the lowest overall contribution of TP at only 50.33 kg, however it had the single highest average TP concentration in the samples collected as compared to all the other sampling sites. Contrary to this, it had the lowest TP load per day of flow at only 0.34 kg. Between repairing the wash, and installing agricultural buffers at the top of the wash, it appears this site is no longer a major contributor to the TP load in the lake (Tables 4&5).

The Silo Bay Tributary appears to be rather benign, only adding 135.42 kg of TP over the time period covered by this project. It also had the lowest total time when it was actually flowing at only 120 days. TP load per day with flow was third out of four sites at 1.13 kg (Tables 4&5).

Based on this data set, the Outlet of Sand Lake removes more phosphorus than is brought in from the sites that were monitored. This suggests that more phosphorus is being brought in from other sources, the most likely ones being the nearshore area and internal loading.

**Table 4 – 2015 and 2016 TP Tributary Loading Calculations**

<b>2015 &amp; 2016 Seasonal (April-October) Volume (l) and TP Loading (kg)</b>									
	Volume (cfs) 3/1/2015	Volume (cfs) 3/1/2016	Volume (cfs) 4/1/2016	Volume (cfs) 6/1/2016	Volume (cfs) 7/1/2016	Ave Volume (cfs)	Ave Volume (cfd)	# of months (12 max)	# of Days
NW Tributary	0.24		0.39			0.315	27216	5	150
NE Tributary		5.14	7.78			6.46	558144	5	150
Silo Bay			1.57			1.57	135648	4	120
Inlet		7.5	23.42	3.485	0.556	8.74	755136	12	360
Outlet		154.9	38.637	11.53		68.36	5906304	12	360

**Table 5 – 2015 and 2016 TP Tributary Loading Calculations *Continued***

<b>2015 &amp; 2016 Seasonal (April-October) Volume (l) and TP Loading (kg)</b>						
	Total Volume cf per total time with flow	cf to liters	Ave TP conc mg/L	mg of TP (2-yr total)	kg of TP (2-yr total)	kg of TP per day with flow
NW Tributary	4082400	115600504.3	0.4354	50332459.58	50.33	0.34
NE Tributary	83721600	2370727803	0.2259	535547410.7	535.55	3.57
Silo Bay	16277760	460934074.4	0.2938	135422431	135.42	1.13
Inlet	271848960	7697892631	0.1022	786532179.5	786.53	2.18
Outlet	2126269440	60209146479	0.0267	1605577239	1605.58	4.46

Total Suspended Solids were also measured in the tributary samples collected during the 2015 and 2016 study. This data reveals that the NE Tributary is the leading contributor of suspended solids to the lake at 80,652 kg over the twelve months included in this study, even though it only had flow in it that reached the lake an estimated 150 days during the same 12 month period (Tables 6&7).

The NW Tributary had the highest average TSS concentration over the twelve months, but it also had a very low flow associated with it over the 150 days water was moving through it. It only contributed an estimated 6,712 kg of sediment over the 12 months included in the study. The contribution of sediment from the Silo Bay Tributary was very low at 28.4 kg. The inlet only contributed 81.7 kg even though it had flow in it during the entire 12 months this study was conducted (Tables 6&7).

The outlet of the lake only carried only about 27% of the sediment out of the lake that was carried in by the tributaries measured. So most of the sediment brought in is staying in the lake (Tables 6&7).

**Table 6 - 2015 and 2016 TSS Tributary Loading Calculations**

<b>2015 &amp; 2016 Seasonal (April-October) Volume (l) and TSS Loading (kg)</b>									
	Volume (cfs) 3/1/2015	Volume (cfs) 3/1/2016	Volume (cfs) 4/1/2016	Volume (cfs) 6/1/2016	Volume (cfs) 7/1/2016	Ave Volume (cfs)	Ave Volume (cfd)	# of months (12 max)	# of Days
NW Tributary	0.24		0.39			0.315	27216	5	150
NE Tributary		5.14	7.78			6.46	558144	5	150
Silo Bay			1.57			1.57	135648	4	120
Inlet		7.5	23.42	3.485	0.556	8.74	755136	12	360
Outlet		154.9	38.637	11.53		68.36	5906304	12	360

Table 7 - 2015 and 2016 TSS Tributary Loading Calculations *Continued*

2015 & 2016 Seasonal (April-October) Volume (l) and TSS Loading (kg)						
	Total Volume cf per total time with flow	cf to liters	Ave TSS conc mg/L	mg of TSS (2-yr total)	kg of TSS (2-yr total)	kg of TSS per day with flow
NW Tributary	4082400	115600504.3	58.06	6711765281	6711.77	44.75
NE Tributary	83721600	2370727803	34.02	80652159854	80652.16	537.68
Silo Bay	16277760	460934074.4	7.4	3410912150	3410.91	28.42
Inlet	271848960	7697892631	3.8200	29405949849	29405.95	81.68
Outlet	2126269440	60209146479	1.1200	67434244056	67434.24	187.32

Figures 8 & 9 reflect the total loading of TP and TSS from the tributaries during the 12 months included in this study. TP and TSS removed by the outlet are also included in these figures.

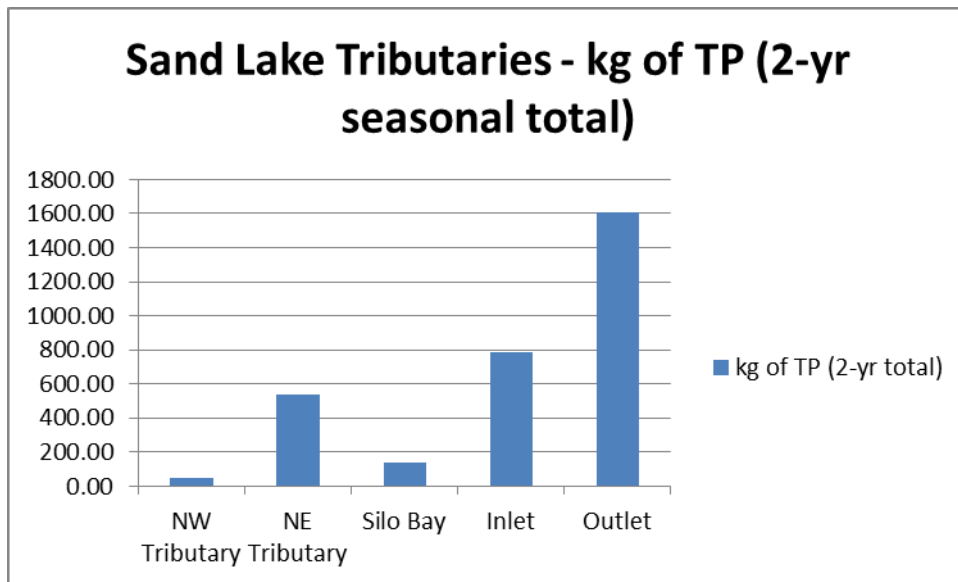


Figure 8 – 2015 and 2016 Loading of TP from Tributaries to Sand Lake

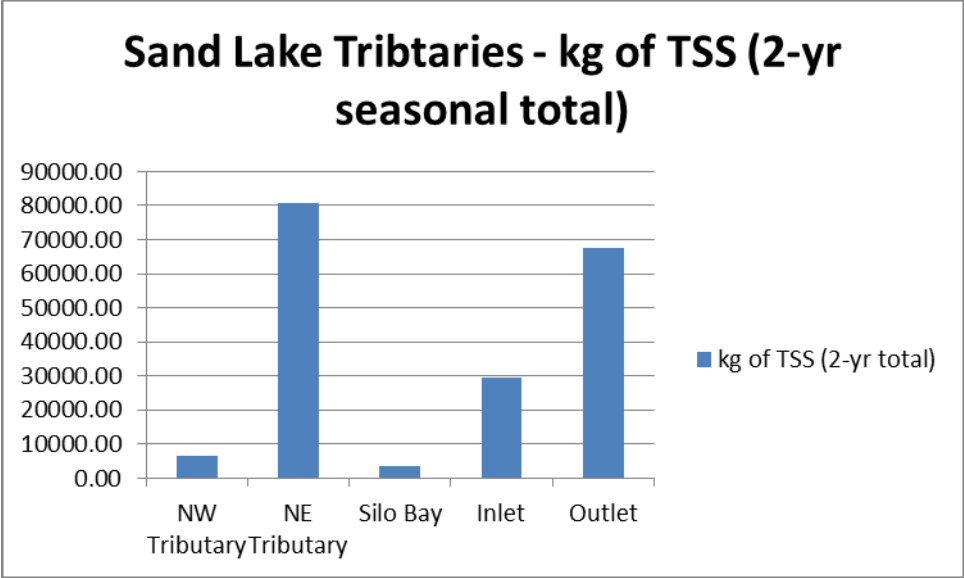


Figure 9 – 2015 and 2016 Loading of TSS from Tributaries to Sand Lake

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## GRANT FUNDED PROJECTS AND GRANT APPLICATIONS

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The new APM Plan was finally approved in late 2016, early 2017. An AIS Education, Prevention and Planning grant was applied for on December 10, 2016 to cover three years of EWM management support starting in 2017. The grant was awarded.

The Lake Protection Grant to cover the repair of the NW Wash was extended through the 2017 year as there were additional funds left in it. These funds are being allowed for use to help fund a possible NE Wash project in 2017. Barron County has been working with the SLMD and property owners along the wash to define a project that can be done that would use up the remaining \$15,000-\$20,000 left in the grant. As a part of the agreement established during the Lake Protection project, two farmer payments were made in 2016. The first went to Tim Heinecke for \$105.00 and the second to Jim Bryce for \$598.00. A no till incentive payment to Mark Renstrom was held back in 2016 because the field that was initially included in the agreement was tilled at the beginning of 2016.

The Healthy Lakes Grant to support several lakeshore improvement and Fishsticks projects is in its second year in 2017. Five of six Fishsticks installations were completed in the winter of 2016-17. One shoreland improvement project was completed. The other original shoreland improvement project has been put on hold because a plan has not been established that the property owner will support. Several other property owners came forward in 2016 interested in participating in the Healthy Lakes projects. Only one of these new projects moved forward in 2017, but it too has since been put on hold due to landowner complications. Three new properties have stepped forward with an interest in participating in a Healthy Lake project in 2017, but these have not been thoroughly explored yet.

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## LAKE FAIR AND ANNUAL MEETING

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Every year the SLMD holds a picnic/lake fair event to focus on AIS and other actions being completed by the Lake District. In 2016 this event was held on July 30. More than 50 people attended the Lake Fair/Picnic. Information was provided by LEAPS about the 2016 EWM management actions.

The SLMD held its annual Membership Meeting on August 20, 2016 at 9:00am in the Maple Plain Town Hall. Approximately 25 people were in attendance at the meeting.

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### 2017

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It is expected that EWM will be treated in the spring of 2017, however not spot treatments will be completed in 2017. It is expected that a project to reduce runoff from the NE Tributary will be planned and potentially completed in 2017 as a part of the lake protection grant that was extended through the end of 2017. The 3-year (2014-2016) AIS Education grant to rewrite the APM Plan will have a final reimbursement claim filed with the WDNR in 2017. The 2016-17 one year AIS Education grant will also be filed for reimbursement in 2017. Projects for the Healthy Lakes grant will continue to be pursued and implemented.

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## REFERENCES

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Berg, Matthew S., 2015. Eurasian water-milfoil Pre/Post Herbicide and Fall Bed Mapping Surveys – Sand Lake WBIC: 2661100 Barron County, WI

Berg, Matthew S., 2016. Warm-water Point-intercept Macrophyte Survey – Sand Lake WBIC: 2661100 Barron County, WI