

BLACKHAWK LAKE AQUATIC INVASIVES SPECIES EDUCATION, PREVENTION & PLANNING GRANT (AEPP-410-14) 2016 REPORT

January 2017

Water Quality Monitoring 2016

Blackhawk Lake was monitored by DFS Conservation Consulting for Secchi disk transparency on 8 dates in 2016 (4/19, 5/8, 5/20, 6/3, 6/24, 7/19, 8/2, 8/14, and 9/11/16), for phosphorus on 5/8/16, and for phosphorus and chlorophyll on 6/24, 7/18, and 8/14/16. Data was entered into DNR's Surface Water Integrated Monitoring System (SWIMS). The 2016 water quality data and report, as well as Secchi disk transparency and Trophic State Index (TSI) comparisons from 1997 – 2016 are found in Appendix A.

The water clarity of Blackhawk Lake was 5.5 – 6.5 feet during spring turnover in April and early May, 2016, when it was rainy and windy. From May 20 through June 24, the clarity was excellent, ranging from 20 feet to 29.5 feet. On July 19, the Secchi was 10.5 feet. In August and September, the Secchi ranged from 2.5 – 4 feet, when there was a rainy and windy period. The average summer (July – August) Secchi was 5.83 feet, less than half of what it was in 2015 (12.38 feet). It was still more than the average for the Southwest Georegion in 2016 (4.1 feet). Small green algae were visible in the water as aquatic plants decayed and released nutrients to feed algal growth as summer progressed. There was no evidence of potentially toxic blue-green algae such as *Aphanizomenon*, *Anabaena*, or *Microcystis* that can be recognized in the field.

The average summer chlorophyll (indicating the amount of algae suspended in the water) was 27.1 ug/L as compared to a Southwest Georegion average of 43.7 ug/L. The summer total phosphorus (a nutrient to feed algae growth) was 27.6 ug/L. Impoundments that have more than 30 ug/L total phosphorus may experience noticeable algae blooms.

The average Trophic State Index (based on chlorophyll, indicating the amount of algae suspended in the water) during July and August was 60, indicating the lake was eutrophic. The TSI based on Secchi was slightly eutrophic in April – early May, mesotrophic from mid May – July, and eutrophic in August and September. This pattern was the same for chlorophyll. Based on total phosphorus, the TSI was slightly eutrophic throughout the year.

Until mid-summer, the water at Blackhawk Lake is usually clearer than would be expected based on the phosphorus and chlorophyll. Two major factors may be contributing to this: 1) zooplankton grazing on the algae and 2) abundant aquatic plant growth and filamentous algae out-competing the planktonic algae for the nutrients. When the plants and filamentous algae die off beginning in mid-summer, the nutrients are released to promote planktonic algae growth.

Aquatic Plant Monitoring 2016

Visual and rake boat surveys for *Myriophyllum spicatum* (Eurasian Watermilfoil or EWM) were conducted on 4/19, 5/8, 5/20, 6/3, 6/24, 7/19, 8/2, 8/14, and 9/11/16. Photos were taken and the aquatic plants were noted. No Eurasian watermilfoil was found. The predominant plants in the deeper water and sand ridge were *Potamogeton crispus* (curly-leaf pondweed, mostly decayed by mid-July), *P. puscillus* (slender pondweed), *Ceratophyllum demersum* (coontail), and filamentous algae. *Stuckenia pectinata* (sago pondweed), *Ranunculus aquatilis* (white water crowfoot), *Heteranthera dubia* (water stargrass), *P. foliosus* (leafy pondweed), *Elodea canadensis* (common waterweed), coontail, *Chara* (muskgrass), and *P. zosteriformis* (flat-stem pondweed) were common in the shallower areas.

The visual survey done on 5/20/16 found aquatic plant growth in shallower areas of Pontoon Bay and around the concession dock, fishing pier, and beach more abundant than in previous years at that time. Much of the curly-leaf pondweed had senesced by mid-July and many of the remaining plants (except for water stargrass) had senesced by the end of August.

4/19/16 Water Quality and Aquatic Plants



Coontail



Elodea



Chara



Elodea, curly-leaf, water crowfoot near concession dock



Leafy pondweed, concession dock



Water stargrass near concession dock

5/8/16 Water Quality and Aquatic Plants



Water crowfoot, Pontoon Bay



Elodea, Pontoon Bay



Elodea & leafy pondweed, Pontoon Bay



Leafy pondweed, Pontoon Bay



Water stargrass, Pontoon Bay



Curly-leaf Pondweed, deeper water



Water crowfoot, fishing pier N side



Water crowfoot, fishing pier S side



Curly-leaf pondweed fishing pier deep



Concession dock



Water crowfoot concession



Water crowfoot & CLP concession



Chara



Leafy pondweed



Water stargrass

6/3/16 Water Quality and Aquatic Plants



S. half of beach



Close-up of plants in beach area



Beach area



N. side of beach (toward fish pier)



Plant growth off fishing pier



N side of concession dock



S side of concession dock



Boats moored right side dock



N. side of concession dock



Deeper end of concession dock



Water stargrass near dock

6/24/16 Water Quality and Aquatic Plants



Boat concession area



Concession dock out from shore



Near end of concession dock



S side of concession dock



N side of concession dock



N side of concession dock



Fishing pier N side



Fishing pier S. side



End of fishing pier



Beach looking south



S side of beach where previously a lot of vegetation



Sand ridge filamentous algae



Plants sand ridge & NNE shallows



P. puscillus (slender pw), sand ridge



Slender pondweed sand ridge



Sago & slender pondweed



Plants sand ridge & NNE shallows

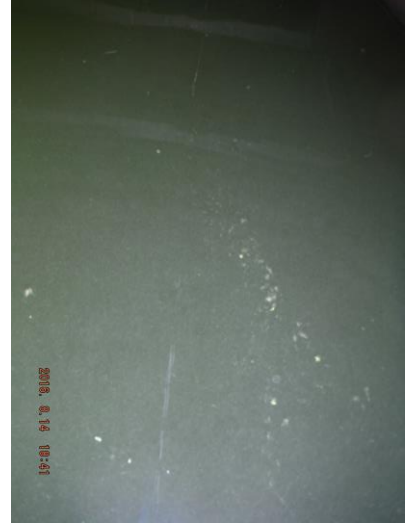
8/14/16 Water Quality and Aquatic Plants



Secchi clarity = 4'



Plants S side concession dock



Clarity end of concession dock



Fishing pier



Duckweed near shore fishing pier



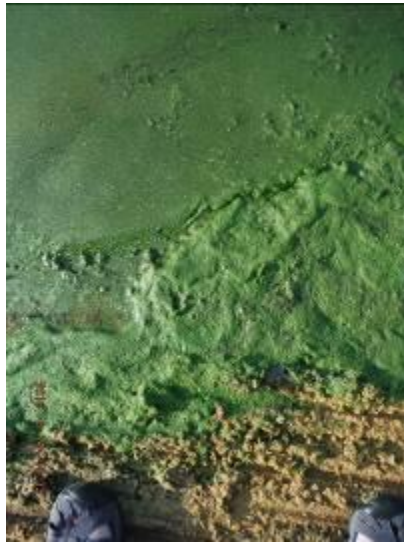
Beach, looking S from fishing pier



Beach, southern 1/3



Coontail & duckweed on beach



Duckweed on beach



Boat launch

8/21/16 Water Quality and Aquatic Plants



Deep hole, right dam



Great Blue Heron, E shore



Left dam



Pontoon Bay



Deep end of fishing pier



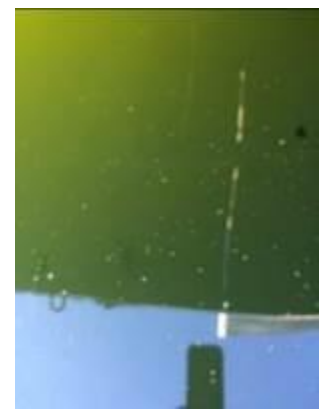
Water stargrass & floating-leaf pondweed fishing pier



Beach looking N



Beach looking north



Concession dock

Aquatic Plant Management in 2016

No Eurasian Water Milfoil was found in 2016. A visual survey done on 5/20/16 found more abundant aquatic plant growth (especially in shallower areas of Pontoon Bay and around the concession dock, fishing pier, and beach) than in previous years. The Blackhawk Lake Recreation Area applied for a permit for chemical treatment. The permit was issued on 5/23/16 (Appendix B). The areas around the concession dock, fishing pier, and beach (mostly deeper water) were chemically treated by Wisconsin Lake and Pond Resource on 5/24/16 from the deeper water towards shore so as not to stir up the sediment in the shallow water. The chemicals approved for the treatment were Aquastrike, Diquat, or Captain.

There was still abundant plant growth in the shallower areas on 6/3/16. The southern 1/3 of the beach (the area reclaimed) was virtually unusable. The treatment stressed the curly-leaf pondweed and slender pondweed toward the ends of the concession dock and fishing pier, but it had little effect on plants in the shallower areas where boats need to navigate and where people fish. The white water crowfoot, coontail, and *Elodea* are relatively low growing, but can be a nuisance in the shallow water where the smaller boats are docked. Water stargrass and *Potamogeton foliosus* (leafy pondweed) were coming up around the docks. They can be a nuisance and wrap around the props later in the season.

Another treatment was recommended, this time making sure the herbicide reached areas closer to shore. The treatment was done by Wisconsin Lake and Pond Resource on 6/9/16.

Plants were substantially reduced around the boat concession dock, end of the fishing pier, and beach by 6/24/16. Plants were no longer a nuisance for getting boats in and out, for fishing, or for swimming. There was still a lot of plant growth and filamentous algae in the shallower areas around the fishing pier and concession dock.

A visual survey on 7/19/16 found few aquatic plants at the concession dock, the deeper area of the fishing pier, the northern 2/3 of the beach. There was abundant water stargrass, leafy pondweed, and sago pondweed on the sides of the fishing pier and in the shallows. Slender pondweed covered with filamentous algae was abundant in the deeper areas of the sand ridge and deeper areas around the shoreline. *Chara*, water stargrass, and leafy pondweed were common in the shallows of the sand ridge near the left dam.

By 8/14/16, the Secchi disk clarity was reduced to 4 feet and there was abundant decaying, smelly duckweed and other aquatic plants near shore. The south 1/3 of the beach had vegetation and green algae, but there was no evidence of potentially toxic blue-green algae (*Aphanizomenon*, *Microcystis*, or *Anabaena*). Many of the

plants in the deeper water had senesced. On 8/21/16, the Secchi disk clarity was 3 feet and the plant growth was similar to that on 8/14/16.

The Secchi was reduced to 2.5 feet on 9/11/16 and the water was brown with sediment. There had been over 4 inches of rain in the previous few days. There was little plant growth anywhere.

Recommendations for Aquatic Plant Management in 2017

The herbicides and dosages to be used for the treatments should be evaluated based on the effectiveness of the treatments in 2016. Filamentous algae should also be treated to reduce the nuisance they create and to increase the effectiveness of the chemicals on the macrophytes. Two treatments should be planned, one in mid- to later May, and another in early June (if needed). The areas to be treated and methods (e.g., spraying from deeper water as far in toward shore as possible) should be similar to those used in 2016.

Clean Boats, Clean Waters

Abundant plants were found on motors, boats, and trailers from May - July, The Southwest Badger Resource and Development Council put a priority on Clean Lakes, Clean Waters watercraft inspections and education at the Blackhawk Lake boat landing in 2016. DFS Conservation Consulting also did watercraft inspections and educational activities at the lake as the opportunity arose when they were sampling. Eurasian Water Milfoil has not been found in the lake since 2011 and the inspections and educational activities are important to protecting the lake from EWM and other aquatic invasive species.

Brochures on Eurasian water milfoil and aquatic invasive species were available in a prominent place at the front desk in the office.

Education and Outreach

Educational Workshops for Highland Schools

DFS Conservation Consulting conducted educational workshops on water quality and aquatic invasive species for approximately 100 Highland Middle School students on 4/19/16. Students enjoyed the hands-on workshops and learned much as shown in the photos below.



Aquatic Invasive Species workshop & presenter



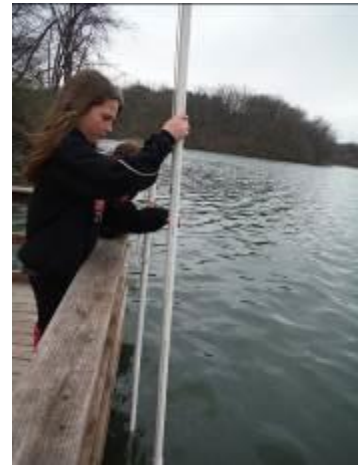
Water Quality workshop poster board



Water Quality workshop poster & Secchi disk



Secchi & integrated sampler



Using integrated sampler



Using integrated sampler



Using Secchi disk to measure water clarity



Preparing to monitor the lake & do aquatic plant surveys

Wisconsin Lakes Convention 2017

DFS Conservation Consulting submitted an abstract for a presentation on the Blackhawk Lake Aquatic Invasive Species Education, Prevention, and Planning project at the Wisconsin Lakes Convention in April 2017 (Appendix C). The abstract was accepted for a 20-minute presentation.

Appendix A
2016 Water Quality Data

	70s- mostly clear- calm to slight breeze; abundant curly-leaf pondweed into deeper water- no EWM; water buttercup- Elodea- Chara- sago pondweed in shallows - more plant growth than usual. Lot of CLP in beach area.
06/03/2016	Lots of plants still around concession dock- beach + fishing pier following treatment. Curly-leaf pondweed dying- Ranunculus stressed- rest of aquatic plants still ok (water stargrass- elodea- P. foliosus- which is abundant in shallows).
06/23/2016	Clear- slight breeze- 85- no EWM- sago in deeper water- some algae. Chemical treatment worked around concession- fishing pier- and beach.
07/19/2016	Partly cloudy- 80- slight breeze- no EWM- small green algae in water. Treatment areas around concession dock- outer edge of fishing pier- beach worked well. Some P. foliosus- water stargrass + sago pondweed in shallower areas at concession dock. P. foliosus abundant in shallower areas of fishing pier. Chara- water stargrass- and P. foliosus abundant in non treated near shore areas. Mostly sago pondweed on sand ridge.
08/14/2016	Lots of decaying duckweed near shore- smelly. South 1/3 of beach has vegetation + duckweed. Lots of small (green) algae in water- no really obvious blue-green colonies (Aphanizomenon- Microcystis- Anabaena).
08/21/2016	70's- partly sunny- breezy. Water green with small green algae visible- but no obvious blue-green colonies (Aphanizomenon- Microcystic- Anabaena). Most of aquatic plants senesced. South 1/3 of beach still some plants + muck. Duckweed near shore.
09/11/2016	70s. slight breeze- 4+ in. rain in last few days. Water brown from sediment- few aquatic plants or algae.

Date	Data Collectors	Project
04/19/2016	Donna Sefton	Citizen Lake Monitoring - Water Quality - Black Hawk Lake; Blackhawk Lake
05/01/2016	Donna Sefton	Citizen Lake Monitoring - Water Quality - Black Hawk Lake; Blackhawk Lake
05/20/2016	Donna Sefton	Citizen Lake Monitoring - Water Quality - Black Hawk Lake; Blackhawk Lake
06/03/2016	Donna Sefton	Citizen Lake Monitoring - Water Quality - Black Hawk Lake; Blackhawk Lake
06/23/2016	Donna Sefton	Citizen Lake Monitoring - Water Quality - Black Hawk Lake; Blackhawk Lake
07/19/2016	Donna Sefton	Citizen Lake Monitoring - Water Quality - Black Hawk Lake; Blackhawk Lake
08/14/2016	Donna Sefton	Citizen Lake Monitoring - Water Quality - Black Hawk Lake; Blackhawk Lake
08/21/2016	Donna Sefton	Citizen Lake Monitoring - Water Quality - Black Hawk Lake; Blackhawk Lake
09/11/2016	Donna Sefton	Citizen Lake Monitoring - Water Quality - Black Hawk Lake; Blackhawk Lake

SD = Secchi depth measured in feet converted to meters; Chl = Chlorophyll a in micrograms per liter(ug/l); TP = Total phosphorus in ug/l, surface sample only; TSI(SD), TSI(CHL), TSI(TP) = Trophic state index based on SD, CHL, TP respectively; Depth measured in feet.

Wisconsin Department of Natural Resources

Wisconsin Lakes Partnership

Report Generated: 12/13/2016

Wisconsin Department of Natural Resources

Blackhawk Lake

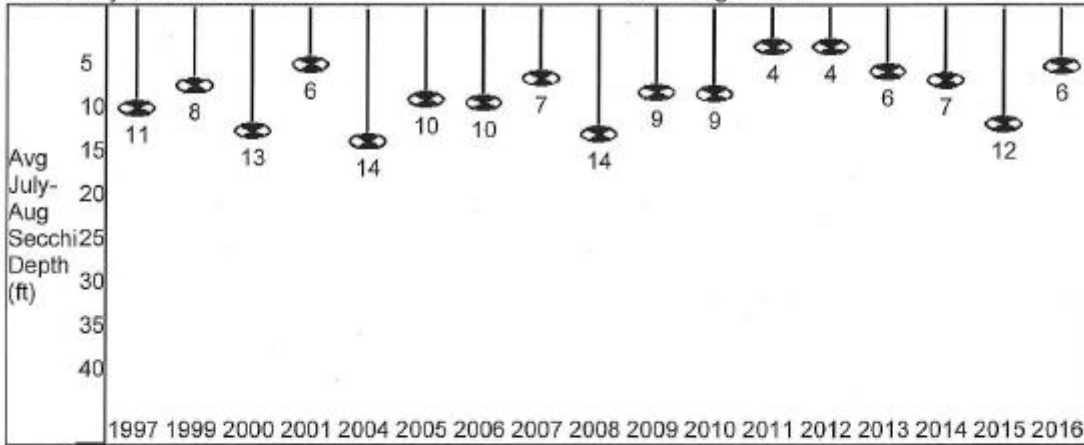
Iowa County

Waterbody Number: 1239400

Lake Type: DRAINAGE

DNR Region: SC

GEO Region: SW

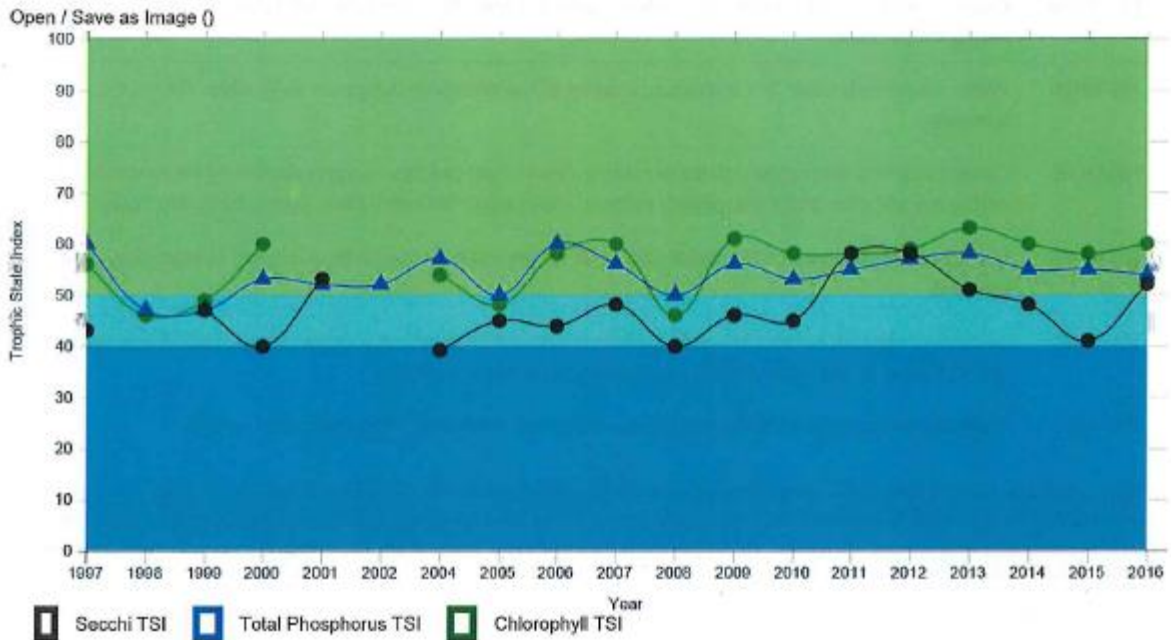


Past secchi averages in feet (July and August only).

Year	Secchi Mean	Secchi Min	Secchi Max	Secchi Count
1997	10.63	6.75	14.5	2
1999	8	8	8	1
2000	13.2	2	19	5
2001	5.5	5.5	5.5	3
2004	14.3	14.3	14.3	2
2005	9.5	8.5	10.5	2
2006	10	8	13	5
2007	7.29	3	18	12
2008	13.56	12.25	15	4
2009	8.75	4	15.75	6
2010	9	4.5	17	5
2011	3.67	3	5	3
2012	3.67	3	4	3
2013	6.33	3	10	3
2014	7.33	3	14	3
2015	12.38	7	17	4
2016	5.83	3	10.5	3

Report Generated: 12/13/2016

Trophic State Index Graph: Black Hawk Lake - Deep Hole, Iowa County



Past Summer (July-August) Trophic State Index (TSI) averages.

TSI(Chl) = TSI(TP) = TSI (Sec) It is likely that algae dominate light attenuation.

TSI(Chl) > TSI(Sec) Large particulates, such as Aphanizomenon flakes dominate

TSI(TP) = TSI(Sec) > TSI (Chl) Non-algal particulate or color dominate light attenuation

TSI(Sec) = TSI(Chl) >= TSI (TP) The algae biomass in your lake is limited by phosphorus

TSI(TP) > TSI(Chl) = TSI (Sec) Zooplankton grazing, nitrogen, or some factor other than phosphorus is limiting algae biomass

TSI **TSI Description**

TSI < 30 Classical oligotrophy: clear water, many algal species, oxygen throughout the year in bottom water, cold water, oxygen-sensitive fish species in deep lakes. Excellent water quality.

Wisconsin Department of Natural Resources

Black Hawk Lake - Deep Hole 2016 Results



Black Hawk Lake - Deep Hole was sampled 10 different days during the 2016 season. Parameters sampled included:

- water clarity
- total phosphorus
- chlorophyll

The average summer (July-Aug) secchi disk reading for Black Hawk Lake - Deep Hole (Iowa County, WBIC: 1239400) was 5.83 feet. The average for the Southwest Georegion was 4.1 feet. Typically the summer (July-Aug) water was reported as **MURKY** and **GREEN**. This suggests 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. You will know algae are causing reduced Secchi depth if the water generally appears green when you assess the color against the white background of the secchi disc.

Chemistry data was collected on Black Hawk Lake - Deep Hole. The average summer Chlorophyll was 27.1 $\mu\text{g/l}$ (compared to a Southwest Georegion summer average of 43.7 $\mu\text{g/l}$). The summer Total Phosphorus average was 27.6 $\mu\text{g/l}$. Lakes that have more than 20 $\mu\text{g/l}$ and impoundments that have more than 30 $\mu\text{g/l}$ of total phosphorus may experience noticeable algae blooms.

The overall Trophic State Index (based on chlorophyll) for Black Hawk Lake - Deep Hole was 60. The TSI suggests that Black Hawk Lake - Deep Hole was **eutrophic**. This TSI usually suggests decreased clarity, fewer algal species, oxygen-depleted bottom waters during the summer, plant overgrowth evident, warm-water fisheries (pike, perch, bass, etc.) only.

Appendix B
2016 Aquatic Plant Management Permit

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
3911 Fish Hatchery Road
Fitchburg WI 53711-5397

Scott Walker, Governor
Cathy Stepp, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711



May 23, 2016

Cobb-Highland Recreation Commission
2025 County Rd BH
Highland, WI 53543
(permit sent via email to bhlake@mhto.net)

PERMIT# SC-2016-25-419

Subject: Aquatic Plant Management Permit for Blackhawk Lake, Iowa County

Dear Applicant:

Enclosed is your permit for chemical control of dense aquatic plants in 1 acre of Blackhawk Lake, Iowa County, Wisconsin. Your permit application has been reviewed and meets the minimum requirements by law and a permit is being issued. Issuance of the permit is not an endorsement or approval for the action authorized.

Permit Conditions:

1. Treatments are limited in area to protect native plants and shoreline habitat for animals that have been documented in the area. Treatment areas are intended to allow shorefishing for anglers, and reduce difficulties with navigation from the pier. Cattail control is allowed to help reclaim the beach area.
2. The following herbicides are not permitted for use in this pond: Clipper, fluridone products, Hydrothol 191 and copper products. There is no evidence that an application of clipper and diquat (or clipper alone) is more effective or longer lasting than only diquat. Captain isn't needed because there is no problem with filamentous algae here.

Diquat is approved for use at the label rate for the treatment area where the average depth is 2 feet. (1 gallon per surface acre). A permit amendment must be issued by the department if any herbicide or applicator not already listed on the application form will be added.

Diquat is inactivated when it comes in contact with sediment, so a boat propeller stirring up the sediment in an area to be treated is counter-productive, and could be the reason the treatment didn't work very well last year. This year, the applicator should operate the boat in at least 3' of water, and spray toward shore. This will put the diquat where it's needed without stirring up the bottom.

3. The herbicide applicator must follow the disinfection protocol following the signature to reduce the possible spread of fish diseases or other invasive species.
4. Pesticide treatment area signs must identify the areas that are treated with chemicals, and remain posted for the duration of any use restrictions according to the chemicals used.
5. Supervision of this treatment is required. Please notify me via email at susan.graham@wisconsin.gov to coordinate a date and time.
6. The permit holder must submit form 3200-111 (available online), "Aquatic Plant Management Herbicide Treatment Record", for each treatment as follows:

1. **Immediately, if any unusual circumstances occur during the treatment.**

2. Within 30 days, if treatment occurred.
3. By October 1 of this year, if no treatment occurred.

Thank-you for complying with Chapter NR 107, Wisconsin Administrative Code concerning aquatic plant management.

Sincerely,



Susan Graham
Lake Management Coordinator
608-275-3329

e-copy. Gene Van Dyck, DNR Fisheries Manager
Donna Sefton, DFS Conservation Consulting
Mark Kordus, Stantec Consulting Services, Inc.

DISINFECTION PROTOCOL:

All equipment used for the project including but not limited to tracked vehicles, barges, boats, silt or turbidity curtain, hoses, sheet pile and pumps shall be de-contaminated for invasive species and viruses prior to use and after use. **Specific disinfection measures are required on all waters infected with Viral Hemorrhagic Septicemia (VHS) and must be taken prior to moving to another waterbody. The most current disinfection protocols along with a VHS-affected waters list can be found at the following website http://dnr.wi.gov/topic/fishing/vhs/vhs_prevent.html**

The following steps should be taken *every time* you move your equipment to avoid transporting invasive viruses and species. To the extent practicable, equipment and gear used on infested waters should not be used on other non-infested waters.

1. Inspect and remove aquatic plants, animals, and mud from your equipment.
2. Drain all water from your equipment, including but not limited to tracked vehicles, barges, boats, silt or turbidity curtain, hoses, sheet pile and pumps
3. Dispose of aquatic plants, animals in the trash. Never release or transfer aquatic plants, animals or water from one waterbody to another.
4. Wash your equipment with hot (>104° F) and/or high pressure water OR allow your equipment to dry thoroughly for 5 days OR follow a current disinfection protocol at the following website http://dnr.wi.gov/topic/fishing/documents/vhs/disinfection_protocols.pdf

State of Wisconsin DNR
 DNR Department of Natural Resources
 Water Permit Central Intake -- attn. APM
 PO Box 7185
 Madison, WI 53707-7185

**Chemical Aquatic Plant Control Application and Permit
 Wisconsin Pollutant Discharge Elimination System (WPDES)
 Pesticide Pollutant Permit Application**
 Form 3200-004 (R 03/13)

Notice: Use of this form is required by the Department for any application filed pursuant to s. 281.17(2), Wis. Stats., and Chapters NR 107, 200 and 205, Wis. Adm. Code. This permit application is required to request coverage for pollutant discharge into waters of the state. Personally identifiable information on this form may be provided to requesters to the extent required by Wisconsin's Open Records Law [ss. 19.31-19.39, Wis. Stats.].

DNR Use Only	
ID Number SC-2016-25-419	Permit Expiration Date 10/1/16
Waterbody #	Fee Received 45-

Section I - Applicant Information - Name of Permit Applicant. Also indicate names and addresses of all individuals, associations, communities or town sanitary districts sponsoring treatment. Attach additional sheets if necessary.

Home Address				Lake Address			
Name Cobb-Highland Recreation Commission				Name Blackhawk Lake Recreation Area			
Street Address 2025 County Rd BH				Street Address 2025 County Rd BH			
City Highland	State WI	ZIP Code 53543		City Highland	State WI	ZIP Code 53543	
Phone Number (include area code) Primary: 608-623-2707 Secondary: 608-574-5573				Email Address bhlake@mhtc.net			

Section II - Aquatic Plant Control Location

Waterbody to be Treated (waterbody where treatment area is located) Blackhawk Lake				Lake Surface Area 220 acres	Estimated Surface Area that is 10 Feet or Less in Depth _____ acres
County Iowa	Section 6	Township 7 N	Range 2	Name of Applicator or Firm Wisconsin Lake and Pond Resource	
Latitude: 43.025654		Longitude: -90.288626		Street or Route	
Is the waterbody a private pond? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				City Eldorado	State WI
Does the waterbody have public access? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				County	Phone Number (include area code)
Adjacent Riparian Property Owner Names (attach sheets if necessary)				Email Address Mark@WisconsinLPR.com	
1. _____				Applicator Certification Number for Category 5 Aquatic Pesticide Application JS 77803 + MK 82178 OK	
2. _____				Business Location License Number (if applicable) 93-015182-012226 OK	
3. _____				Restricted Use Pesticides License Number (if applicable)	
4. _____					
5. _____					
6. _____					
7. _____					
Name of Lake Property Owners' Association Representative or Lake District Representative (if none, please indicate)					

Area(s) Proposed for Control: (Note details in permit cover letter for final permitted sizes of treatment areas.)

Treatment Length	Treatment Width	Estimated Acreage	Average Depth	Total Estimated Acres
A. <u>400</u> ft. X <u>20</u> ft. + 43,560 ft. ² =	<u>.18</u>	<u>3</u> ft.		
B. _____ ft. X _____ ft. + 43,560 ft. ² =				Total from lines A - E _____
C. _____ ft. X _____ ft. + 43,560 ft. ² =				Total from Attached Sheets _____
D. _____ ft. X _____ ft. + 43,560 ft. ² =				
E. _____ ft. X _____ ft. + 43,560 ft. ² =				Grand Total _____

If the estimated acreage is greater than 10 acres, or is greater than 10 percent of the estimated area 10 feet or less in depth in Section II, complete and attach Form 3200-004A, Large-Scale Treatment Worksheet. Private pond treatments are exempted from this requirement.

Is this area within or adjacent to a sensitive area designated by the Department of Natural Resources? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	DNR Use: NHI Review? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Describe: No issues
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**Chemical Aquatic Plant Control Application and Permit
WPDES Pesticide Pollutant Permit Application**

Form 3200-004 (R 03/13)

Page 2 of 4

Section III - Fees

1. s. NR 107.11(1), Wis. Adm. Code, lists the conditions under which the permit fee is limited to the \$20 minimum charge.
2. s. NR 107.11(4), Wis. Adm. Code, lists the uses that are exempt from permit requirements.
3. s. NR 107.04(2), Wis. Adm. Code, provides for a refund of acreage fees if the permit is denied or if no treatment occurs.

4. Fee calculations: Basic Permit Fee (non-refundable) \$ 20.00

If proposed treatment is over 0.25 acre, calculate acreage fee:
(round up to nearest whole acre, to maximum of 50 acres.)

1 acres X \$25 per acre = \$ _____

If proposed treatment is ≤ 0.25 acre, acreage fee is \$0.

Enter Acreage Fee (from above) 25

Total Fee Enclosed \$ 20.00 45 65

Site Map: Attach a sketch or a printed map of lake indicating area and dimensions of each individual area where plant control is desired and flow of surface water outside treatment area. Also show location of property owners riparian to and adjacent to the treatment area. Attach a separate list of owners and corresponding treatment dimensions coded to the lake map, if necessary.

Section IV - Reasons for Aquatic Plant Control

Is this permit being requested in accordance with an approved Aquatic Plant Management Plan? Yes No

Treatment Type:

- Lake Pond Wetland Marina Other

Goal of Aquatic Plant Control:

- Reduce nuisance algae accumulation
- Maintain navigational channel for common use
- Maintain private access for boating
- Maintain private access for fishing
- Improve swimming
- Control of purple loosestrife
- Control of invasive exotics
- Other: improve public use - recreation (canoe/kayak entry, swimming, beach use)

Nuisance Caused By:

- Algae
- Emergent water plants (majority of leaves and stems growing above water surface, e.g. cattails, bulrushes)
- Floating water plants (majority of leaves floating on water surface, e.g., waterlilies, duckweed)
- Submerged water plants (leaves and stems below water surface, flowering parts may be exposed, e.g., milfoil, coontail)
- Other: _____

List Target Plants

*Small amount of cattails
+ mixed submersed native plants*

Note: Different plants require different chemicals for effective treatment. Do not purchase chemical before identifying plants.

Section V - Chemical Control

Alternatives to Chemical Control:

1. Mechanical harvesting
2. Hand pulling
3. Hand raking
4. Hand cutting
5. Sediment screens/covers
6. Dredging
7. Lake drawdown
8. Nutrient controls in watershed
9. Other: _____

Feasible?

- | | |
|---|--|
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |

If No, Why Not?

Insufficient labor force

Note: If proposed treatment involves multiple properties, consider feasibility of EACH alternative for EACH property owner. If you checked yes to any of the alternatives listed above, please explain your decision to use chemical controls:

Chemical Aquatic Plant Control Application and Permit
WPDES Pesticide Pollutant Permit Application

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Section V – Chemical Control (continued)

Trade Name of Proposed Chemical(s)

Diquat 1 gal/acre + Habitat for cattails

Method of Application: _____

Will surface water outflow and/or overflow be controlled to prevent chemical loss? Yes No

Have the proposed chemicals been permitted in a prior year on the proposed site? All Some None

What were the results of the treatment?

Good control of emergent weeds and overgrowth

Note: Chemical fact sheets for aquatic pesticides used in Wisconsin are available from the Department of Natural Resources upon request.

Section VI – Applicant Responsibilities and Certification

1. The applicant has prepared a detailed map which shows the length, width and average depth of each area proposed for the control of rooted vegetation and the surface area in acres or square feet for each proposed algae treatment.
2. The applicant understands that the Department of Natural Resources may require supervision of any aquatic plant management project involving chemicals. Under s. NR 107.07, Wis. Adm. Code, supervision may include inspection of the proposed treatment area, chemicals and application equipment before, during or after treatment. The applicant is required to notify the regional office 4 working days in advance of each anticipated treatment with the date, time, location and size of treatment unless the Department waives this requirement. Do you request the Department to waive the advance notification requirement? Yes No
3. The applicant agrees to comply with all terms or conditions of this permit, if issued, as well as all provisions of Chapter NR 107, Wis. Adm. Code. The required application fee is attached.
4. The applicant has provided a copy of the current application to any affected property owners' association, inland lake district and, in the case of chemical applications for rooted aquatic plants, to all owners of property riparian or adjacent to the treatment area. The applicant has also provided a copy of the current chemical fact sheet for the chemicals proposed for use to any affected property owner's association or inland lake district.

Check if you are signing as Agent for Applicant.

I hereby certify that the above information is true and correct and that copies of this application have been provided to the appropriate parties named in Section II and that the conditions of the permit and pesticide use will be adhered to.

Paul Welch
Signature of Applicant

3/15/2016
Date Signed

All portions of this permit, map and accompanying cover letter must be in possession of the chemical applicator at time of treatment. During treatment all provisions of Chapter NR 107, specifically ss. NR 107.07 and NR 107.08, Wis. Adm. Code, must be complied with, as well as the specific conditions contained in the permit cover letter.

**Chemical Aquatic Plant Control Application and Permit
WPDES Pesticide Pollutant Permit Application**

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Section VII - WPDES Permit Request

Is WPDES coverage being requested? Refer to <http://dnr.wi.gov/topic/wastewater/aquaticpesticides.html> for more information.

- No: Already have WPDES coverage until Sept. 2016 Yes - complete section VII with signature
 WPDES coverage not needed

- Select which permit you are requesting: WI-0064556-1 Aquatic Plants, Algae & Bacteria
 WI-0064564-1 Aquatic Animals
 WI-0064581-1 Mosquitoes & other Flying Insects

Indicate WPDES permittee responsible for the pollutant discharge: Applicator Sponsor

Do you expect the pest control activity will result in a detectable pollutant discharge to waters of the state beyond the treatment area boundary or a pollutant residual in waters of the state after the treatment project is completed? Yes No

If yes, identify the pollutant(s): _____

Are you planning to incorporate integrated pest management principles, as specified in the WPDES permit, into your pest control activity to minimize any pollutant residual or pollutant discharge beyond the treatment area? Yes No

Type of WPDES coverage being requested: One Treatment Site Statewide Coverage

For informational purposes, select areas of WI for most of your aquatic treatments: NW NE SW SE

Is WPDES coverage being requested for more than 1 year?

Yes No If yes, the permittee will remain in "active" WPDES status until a Notice of Termination is submitted.

I hereby certify that I am the authorized representative (as specified in Ch. NR 205.07(1)(g), Wis. Adm. Code) of the pest treatment activity which is the subject of this permit application. I certify that the information contained in this form and attachments is, to the best of my knowledge, true, accurate and complete.

Don Welsh
Signature of Authorized Representative

Don Welsh
Printed Name

3/15/2016
Date Signed

Section VIII - Permit to Carry Out Chemical Treatment (Leave Blank - DNR Use Only)

The foregoing application is approved. Permission is hereby granted to the applicant to chemically treat the waters described in the application during the season of 20____.

Application fee received?

Yes No

State of Wisconsin
Department of Natural Resources
For the Secretary

Advance notification of treatment required?

Yes No

By _____
Regional Director or Designee

Date Signed _____ Date Mailed _____

Please Note:

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

This notice is provided pursuant to s. 227.48(2), Wis. Stats.

To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.



Surface Water Data Viewer Map



Legend

2010 Air Photos (WROC)

Treatment area is inside the white lines
 .58 acres at beach
 .08 acres at boat pier
 .66 acres total

Notes



1:2,765

ft

DISCLAIMER: The information shown on these maps has been obtained from various sources, and are of varying age, reliability and resolution. These maps are not intended to be used for navigation, nor are these maps an authoritative source of information about legal and ownership or public access. No warranty, expressed or implied, is made regarding accuracy, applicability for a particular use, completeness, or legality of the information displayed on this map. For more information, see the OWR Legal Notices web page: <http://dir.v.w.gov/legal/>

0.1

0.1 Miles

0.04

0

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Appendix C
Abstract for 2017 Wisconsin Lakes Convention

Eradication of Eurasian Watermilfoil in Blackhawk Lake, Iowa County, Wisconsin

By Donna Sefton and Laura Spears, DFS Conservation Consulting, Blue Mounds, WI

Three colonies of Eurasian watermilfoil (*Myriophyllum spicatum* or EWM) were found in Blackhawk Lake, a 220-acre recreational impoundment, in 2006. By 2007, EWM had spread around the lake. An Aquatic Plant Management Plan was prepared and implemented using a DNR Early Detection/Rapid Response grant. In May 2007, 2,4-D granular was applied on small colonies and manual harvesting was done. EWM was reduced in high density areas, but still found in scattered locations post-treatment. No EWM was found in 2008 when the water was turbid with sediment. In 2009, EWM was found near the original infestations. Colonies were manually harvested. In June 2010, EWM was found in 5 acres. 2,4-D granular effectively controlled it. One colony was found in 2011 and none since. Diversity and abundance of native vegetation has increased since 2006. DNR Aquatic Invasive Species and Clean Boats, Clean Waters grants have supported biweekly aquatic plant surveys and watercraft inspection and education activities since 2012.

Donna Sefton bio

Donna Sefton has monitored water quality and conducted AIS and aquatic plant surveys on Blackhawk L. since 2004. She earned a B.S.E. in Biology and Chemistry from UW-Whitewater and M.S. in Aquatic Biology from UW-La Crosse. She was a founder of the Illinois Lake Management Society and the North American Lake Management Society. While at the Illinois EPA, she developed one of the first volunteer lake monitoring programs in the nation, which was a model for Wisconsin's CLMN. She also served as Clean Lakes and Watershed Coordinators for the U.S. EPA in Kansas City. Donna was a Citizen Lake Monitoring Network Coordinator and AIS Specialist and is currently a Drinking Water Specialist with the DNR.

Laura Spears bio

Laura Spears has been a citizen lake monitor for Blackhawk L. since 2004. She graduated from UW-Platteville in 2013 with a biology major, ecology emphasis. As an AIS Specialist with the Southwest Badger RC&D, she sampled waterbodies for AIS and conducted watercraft inspection and educational activities, including workshops for student groups. Laura was a Water Resources Management Specialist and is currently a Stormwater Specialist with DNR's Runoff Management Section.