Aquatic Plant Management Plan Lake Cravath & Tripp Lake, Walworth County, Wisconsin January 2018 -Update for Harvesting Permit Renewal



Prepared by:



W4950 County Road A Elkhorn, WI 53121 (262) 742-2600

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Aquatic Plant Management Plan Lake Cravath and Tripp Lake, Walworth County, Wisconsin January 2018 -Update for Harvesting Permit Renewal

Statement of Intent

The City of Whitewater Parks Department wishes to pursue aquatic plant harvesting permit for the conditional control of prolific vegetaion within channel areas.

Timing

Historically, contracted harvesting services are employed twice each season for channel maintenance. One harvest occurs in June and another in August. These harvesting times typically correspond with the emergence of the target species hindering lake usage. Ultimately, harvest timing will be based on nuisance plant density and lake usage.

Cutting / Treatment Procedures

All operations will be limited to navigation lanes that are described on pages 39 and 40. Disturbance of the bottom sediment can disrupt spawning activity and beneficial benthic organisms. Furthurmore, the suspension of solids reduces visibility of sight-feeding predators, as well as, the posibility of increasing available nutrients throughout the water column. By targeting and removing dense vegetation, it is the operator's intent to create navigational channels in designated areas. Top-cutting is a preferred method to reduce the canopy of the target species, while leaving bottom sediments and potential native plants untouched.



In all cutting areas bottom sediment must remain undisturbed with a minimum buffer of one-foot between blades and top of sediment. Cravath and Tripp Lakes' harvesting program is consistent with these methods and contracted harvesters must continue to do so in the future.

Concerns

Care should be taken to eliminate damage to spawning habitat and the conveyer must be monitored for the removal of young-of-the-year fish. Contracted operators must be proficient in basic aquatic plant identification.

Harvesting Equipment

Equipment currently used for the harvesting of aquatic plants on Cravath and Tripp lakes are listed below:

- One aquatic plant harvester: ILH6-300, manufactured by Inland Lake Harvesters, Inc.
- One land-based conveyer and a dump truck.

Disposal Site

The disposal sight for the aquatic plants removed from both Cravath and Tripp lakes via harvester are transported to and dumped on land owned by the City of Whitewater in Jefferson County, 599 North Jefferson Street, Whitewater, Wisconsin 53190; parcel number: **292-0515-3343-000**, due north of N. Jefferson street.





Figure 1: Haul route map from both Lake Cravath and Tripp Lake to the disposal sight.

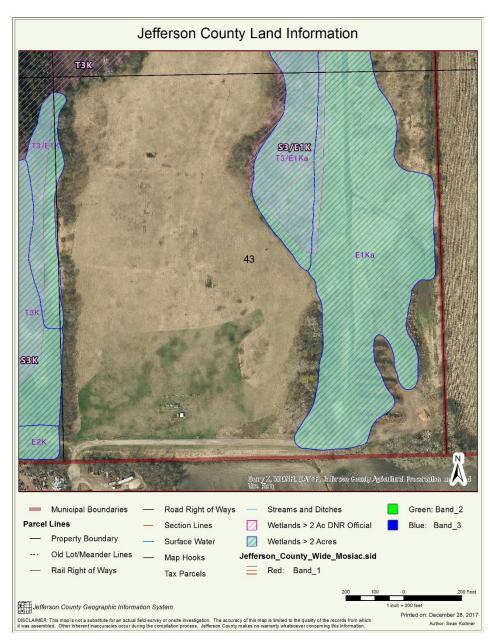


Figure 2: Aerial Image of Disposal Sight. From Jefferson County GIS website.



STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES TRANSPORATION SERVICE LICENSE

Facility Information FID: 128104350

License Number: 4037 SOLID WASTE FACILITY OPERATION LICENSE

WHITEWATER CITY OF SW 1/4 SE 1/4 S33 T5n R15e Whitewater WI 53190 Jefferson County (28) DNR Region: SC

Effective Date: Expiration Date: October 01, 2017 September 30, 2018

Licensee Name: WHITEWATER CITY OF

Facility Contact

Chuck Nass Primary Contact 312 W Whitewater St Whitewater WI 53190-1940 Email: cnass@whitewater-wi.gov

This license authorizes the licensee to operate the solid waste facility described above during the term hereof except as modified by the Department. This license is subject to and conditioned upon compliance with the provisions of chapter 289, Wis. Stats., and chapters NR 500-590, Wis. Adm. Code, any plan approval and modifications thereof, and any special order and modifications thereof issued by the Department. Any exemptions from the requirements of chapters NR 500-590, Wis. Adm. Code, issued for the facility are listed above.

FORM: 4400-8 REV: 08/2017

Figure 3: DNR issued permit for the disposal sight.



Disinfection Protocol

Counties or Lake Associations that receive DNR funding <u>or permits</u> must follow the Disinfection Manual Code and ensure any subcontractors working under DNR funding or permits must disinfect per the Manual Code when moving between waters.

Boat, gear and equipment decontamination and disinfection manual code 9183.1:

http://dnr.wi.gov/topic/invasives/disinfection.html

All methods described in this section require specific permits, and any equipment entering a waterbody is to be cleaned and sanitized as per NR40.02. DNR Preventative Measures Manual Code #9183.1 further details boat, gear and equipment decontamination and disinfection protocol (listed below) to prevent the spread of invasive species.

IV. PROCEDURE

equipm	 lowing decontamination and disinfection steps are to be taken every time a boat, eent, or gear is moved between waterbodies, wetlands, and/or crosses a barrier while if from downstream to upstream on the same waterbody. Decontamination: The following processes must be used to clean equipment prior to moving boats, gear, and equipment from a waterbody. a. Inspect and manually or mechanically (preferably using a stiff bristled brush) remove aquatic plants, animals, and mud from your boat, trailer, equipment, boots, and gear.
	 b. Drain all water from your boat, motor, live well, bilge, and transom wells, as well as from your equipment and gear, including but not limited to tracked vehicles, barges, silt or turbidity curtain, hoses, sheet pile and pumps. c. Dispose of unwanted plants and animals in an appropriate way (e.g. compost, bag
	and landfill, etc.). Disposal methods must ensure that no living plants, animals, or propagules are transported to other waterbodies, or rereleased into the waterbodies they came from.
2.	Disinfection: One of the below disinfection processes (a. – d.) must be used following decontamination. When working in wetlands on foot, disinfection is mandatory after returning to the vehicle and employees must be cognizant of open waters. When working in waterbodies known to contain specific invasive species, it is mandatory to use a disinfection method that is effective for that species. See the BMPs for information on species-specific disinfection. To determine what invasive species are present, follow the guidance on the manual code website: <u>http://dnr.wi.gov/topic/Invasives/disinfection.html</u> . The best disfection methods should be used when a species is suspected, but not yet confirmed. When there are no specific AIS listed on the web site for the waterbody, and there are no other AIS
	 suspected where work or an activity will be conducted, compliance with any of the disinfection methods below (IV.2.aIV.2.d.) is sufficient. a. Store dry for 5 consecutive days after cleaning with soap and water and/or high pressure water; b. Wash with ~212° F water (steam) or ≥140 ° F water; c. Apply a 500 ppm Chlorine (sodium hypochlorite) solution for 10-minute contact time. Household bleach is generally 5.25% sodium hypochlorite so mix 1.22 fl oz or 2.44 tablespoons per gallon water. Consult the chlorine directions in the B MP document for guidance on measuring products with different sodium hypochlorite concentrations:
	https://dnrx.wisconsin.gov/swims/downloadDocument.do?id=126473962 or d. Apply a 2:100 solution (2.7 ounces or 5.4 tablespoons per gallon water) of Virkon Aquatic [®] for 20 minute contact time.

Figure 4: WDNR manual code 9183.1 for decontamination of boats, gear and clothing of state employees and some service providers.

General Procedures

Disinfect by either:

- Dry for 5 days
- Steam / hot water (>140°)
- Chlorine or Virkon (500ppm / 2%)

Boats

- Remove organic material from boats, trailers, and live wells.
- Drain water from live wells, bilges and pumps.
- Scrub all exterior surfaces with a long-handled stiff bristled brush to remove sediments. Scrubbing could damage the anti-fouling paint/coating of some boat hulls so check manufacturers recommendations.
- The outside and inside of the boat, trailer, live wells, bilges, and pumps should be steam cleaned or sprayed with the disinfection solution and left wet for the appropriate contact time.
- The inside of the live wells, bilges and pumps should be in contact with disinfection solution for the appropriate time as well.
- Due to the difficulty of ensuring appropriate contact times, steam cleaning is the preferred method for decontamination when possible.
- Run pumps so they take in the disinfection solution and make sure that the solution comes in contact with all parts of the pump and hose.
- The boat, trailer, bilges, live well, and pumps should be rinsed with clean water after the appropriate contact time.
- Every effort should be made to keep the disinfection solution and rinse water out of surface waters. Pull the boat and trailer off the ramp and onto a level area where infiltration can occur and away from street drains to minimize potential runoff into surface waters.

Heavy equipment

- Scrub equipment with a stiff bristled brush or spray with pressurized water to remove any sediment.
- Steam-cleaning or hot water ($\geq 140^{\circ}$ F) is an effective method for disinfecting heavy equipment.
- Steam-cleaning will not be effective if soil and other organic matter is present so be sure to scrub equipment with a stiff bristled brush.
- Decontamination should take place in areas where equipment is unloaded and loaded.
- Before transporting a piece of heavy equipment from one project site to the next, debris and soil must be cleaned off the tracks, tires and other portions equipment by hand with hand tools or with pressurized water.



Discussion: Lake Cravath

Methods

Study Area – Lake Cravath lies in Southeastern Wisconsin on the western edge of the Kettle Moraine region. The lake is 70 acres with a mean depth of 3.0 feet and a maximum depth of 5.5 feet based on the most recent survey (2017).

Field Sampling – 233 sample points, spaced 35 meters apart as specified by the WDNR were sampled. Depths were recorded at each point using a PVC measuring pole. At each point plants were identified and recorded based on the WDNR approved plant survey methods. A pole rake was used to sample plants at each point. Plant Density was based on a number scale. A value of (1) showed that the plant was present but with low density, (2) consisted of moderate density or covering about ½ of the pole rake while (3) showed high density or a rake completely covered with plants.

Results

Areas within the lake are not always accessible or some points are on land, this was the case for Lake Cravath as well, with 24 of the 233 points being recorded as either Non-Navigable or Terrestrial, resulting in 209 sampled points.

A species richness (total number of species, including visuals) of 18 was found in Lake Cravath with a Simpson diversity index of 0.82. Simpson diversity index is used to quantify the biodiversity of a habitat. It considers the number of species present, as well as the relative abundance of each species. The index assumes a value between 0 and 1, with 1 having complete evenness.

All points sampled contained vegetation (100%). Plants grew throughout the entirety of the lake, including down to its maximum depth (5.5ft.). On average each point recorded 4.06 species, with 3.46 being native. Data described here is also listed on page 1 in *Table 1*.



Total number of sites with vegetation/ All sites sampled	209/233 (89.6%)
Maximum depth of plants	5.5 (ft.)
Species Richness (including visuals)	18
Average number of species per site (including exotics)	4.06
Average number of native species per site	3.46
Simpson Diversity Index	0.822
Average C-Value	4.88
Floristic Quality	14.66

Table 1: Cravath Lake's key values for 2017 sampling data.

To understand how the plant community in the lake has changed since the original APM plan was written, C-values and the floristic quality indicator (FQI) was assessed. AC-value is the measure of plant conservatism, which in short, means the value assigned to each plant indicates how sensitive that species is to disturbance. The more disturbed an area, the lower the C-value. C-value can range from 0-10. The calculated C-value has remained stable since 2008: 4.75 in 2008, 4.88 in 2013 and again 4.88 in 2017. This is mainly attributed to the lack of change in species sampled. The FQI, which evaluates how close an area is to its undisturbed counterpart [1], was 13.44 in 2008, 13.79 in 2013 and is now calculated to be 14.66 from the 2017 survey. High FQI values indicates less disturbance. The overall picture of the lake is that the plant community appears to maintain a disturbed status with relatively low floristic quality.

¹ Nichols, SA. 1999. Floristic Quality Assessment of Wisconsin Lake Plant Communities with Example Applications. Journal of Lake and Reservoir Management, 15(2):133-141.



<u>Common Name</u>	<u>Scientific Name</u>	Frequency of occurrence within vegetated areas (%)	Average Rake Fullness	Number of sites where species found (does not include visuals)	
American Lotus	Nelumbo lutea	1.4	1.7	3	3
Arrowhead sp.	Sagittaria sp.	0.5	1.0	1	5
Cattail sp.	Typha sp.	-	-	-	33
Common Reed	Phragmites australis	-	-	-	2
Common-Watermeal	Wolffia columbiana	85.2	1.6	178	10
Common Waterweed	Elodea canadensis	35.4	1.3	74	14
Coontail	Ceratophyllum demersum	95.7	2.2	200	1
Curly-Leaf Pondweed	Potamogeton crispus	12.9	1.0	27	39
Eurasian Water-Milfoil (or hybrid)	Myriophyllum spicatum	46.9	1.3	98	21
Filamentous Algae	Filamentous algae	16.3	1.3	34	2
Flat-Stem Pondweed	Potamogeton zosteriformis	2.4	1.0	5	4
Floating-Leaf Pondweed	Potamogeton natans	-	-	-	4
Illinois Pondweed	Potamogeton illinoensis	-	-	-	1
Sago Pondweed	Stuckenia pectinata	6.7	1.0	14	36
Small Duckweed	Lemna minor	92.3	1.7	193	13
Variable Pondweed	Potamogeton gramineus	1.0	1.0	2	7
Yellow Pond-Lily	Nuphar advena	-	-	-	26
White water lily	Nymphaea odorata	25.4	1.4	53	88
Overall totals for vegetation		100	2.363636	209	165

Table 2: Summary of Lake Cravath's 2017 PI Survey Plant Data.

The 2017 survey resulted in 18 species being present. Eurasian water-milfoil (EWM) was found and represented the 4th most frequent species found with an average density of 1.3 when sampled. As an exotic species, EWM is not given a C-value. Therefore, EWM is not included in average C-value or FQI calculations. EWM may provide limited habitat to the aquatic life in a lake, but it is not native and should be considered a negative impact to local lakes. EWM can be considered a burden that indirectly drives down C-values and FQI because it limits the range and distribution of beneficial native species.

Coontail, Small Duckweed and Common Watermeal were among the most sampled species in terms of frequency and density. These species have relatively low C-values associated with them (3,4 and 5, respectively). The maps below illustrate distribution and density of all exotics and the top five native aquatic plants found in the August 2017 survey. Rake fullness indicates density. Although not the most frequent or dense, EWM and CLP are placed first due to their invasive classifications. The remaining maps are arranged in order, with the most frequently found species positioned first.



Cravath Lake Plant Figures

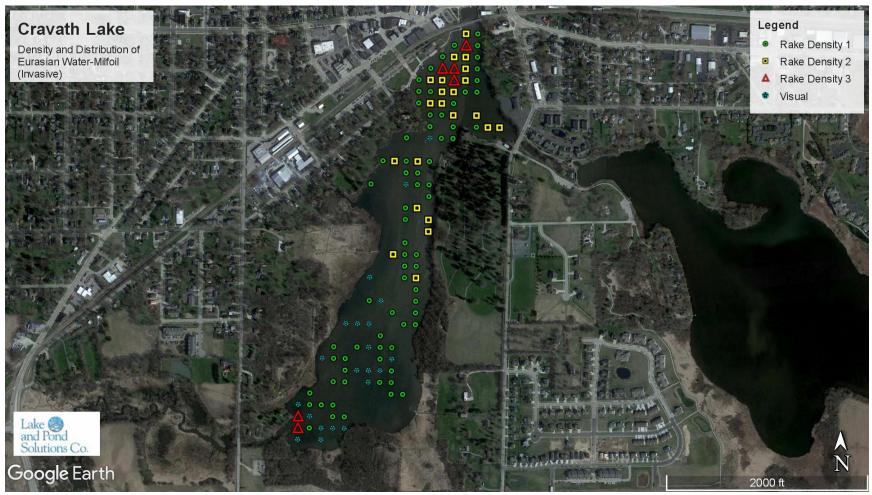


Figure 1: Distribution and density map of Eurasian Water-Milfoil (EWM) [Invasive].

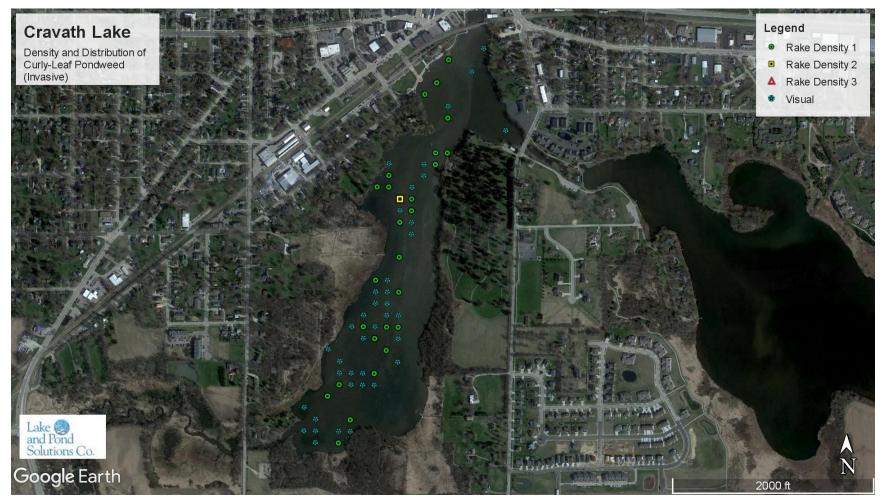


Figure 2: Distribution and density map of Curly-Leaf Pondweed (CLP) [Invasive].



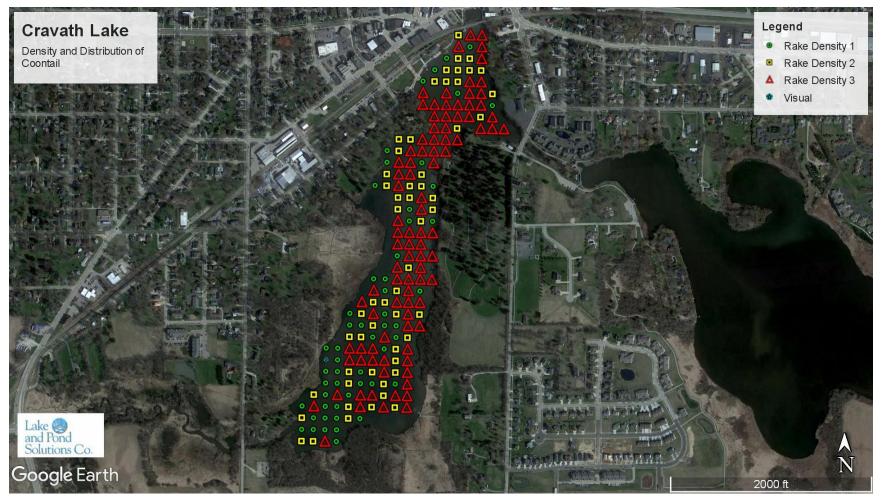


Figure 3: Distribution and density of Coontail (native).



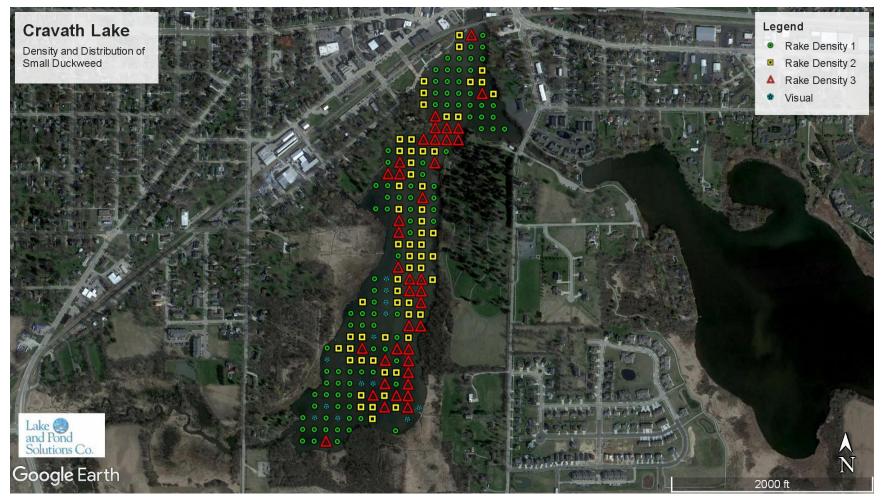


Figure 4: Distribution and density of Small Duckweed (native).



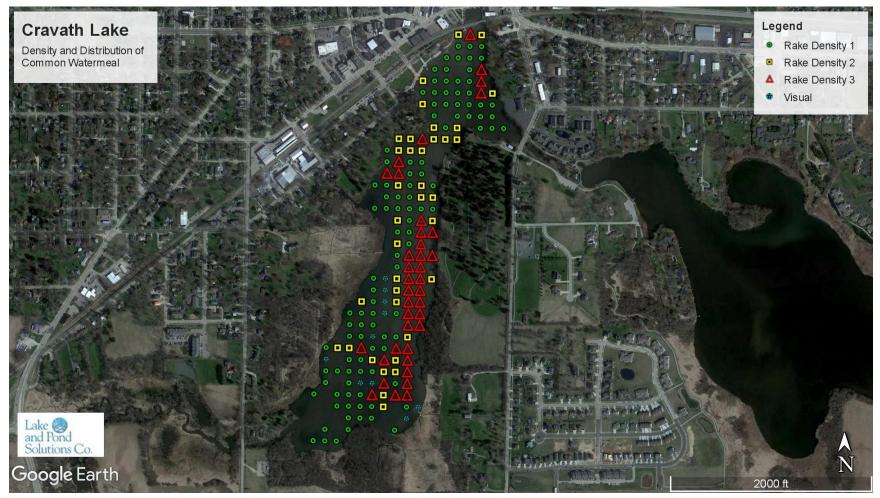


Figure 5: Distribution and density of Common Watermeal (native).



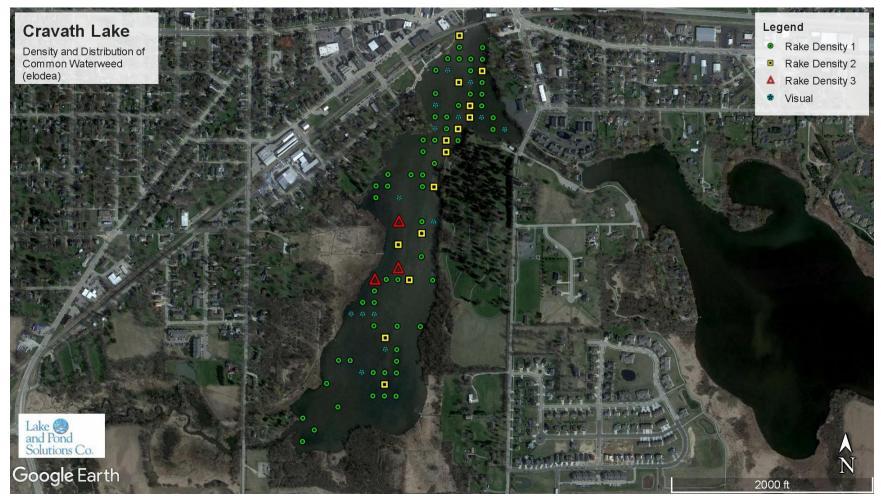


Figure 6: Distribution and density of Common Waterweed (native).





Figure 7: Distribution and density of White Water Lily (native).



Discussion: Tripp Lake

Methods

Study Area – Tripp Lake lies in Southeastern Wisconsin and up-stream of Lake Cravath. The lake is 121 acres with a mean depth of 3.2 feet and a maximum depth of 7.5 feet based on the most recent survey (2017).

Field Sampling – 305 sample points, spaced 40 meters apart as specified by the WDNR were sampled. Depths were recorded at each point using a measuring pole. At each point plants were identified and recorded based on the WDNR approved plant survey methods. A pole rake was used to sample plants at each point. Recording density was based on a number scale. A value of (1) showed that the plant was present but with low density, (2) consisted of moderate density or covering about ½ of the pole rake while (3) showed high density or a rake completely covered with plants.

Results

Areas within the lake are not always accessible or some points are on land, this was the case for Tripp Lake, with 161 of the 305 points being recorded as non-navigable, resulting in 144 sampled points.

A species richness (total number of species, including visuals) of 22 was found in Tripp Lake with a Simpson diversity index of 0.75. Simpson diversity index is used to quantify the biodiversity of a habitat. It considers the number of species present, as well as the relative abundance of each species. The index assumes a value between 0 and 1, with 1 having complete evenness.

Out of the 144 sampled points 116 were found to have plants (80.56%). Plants were found at the maximum depth (7.5 ft.). Points that recorded vegetation had an average of 1.97 species, with 1.71 being native. Data described here is also listed on page 22 in *Table 3*.

Total number of sites with vegetation/ All sites sampled	144/305 (47.2%)
Maximum depth of plants	7.5
Species Richness (including visuals)	22
Average number of species per site (including exotics)	1.97
Average number of native species per site	1.71
Simpson Diversity Index	0.75
Average C-Value	5.28
Floristic Quality	19.77

Table 3: Tripp lake's key values for 2017 sampling data.

To understand how the plant community in the lake has changed since the original APM plan was written, C-values and the floristic quality indicator (FQI) was assessed. As per the most recent survey, the calculated C-value has remained stable since 2008: 5.17 in 2008, 5.15 in 2013 and 5.28 in 2017. This is mainly attributed to the lack of change in species sampled. The FQI was 17.9 in 2008, 19.24 in 2013 and is now calculated to be 19.77 from the 2017 survey. The overall picture of the lake is that the plant community appears to maintain its status as disturbed, with a relatively low floristic value.

The 2017 survey resulted in 22 species being present. Eurasian water-milfoil (EWM) was found and represented the 4th most frequent species found and an average density of 1.15 when found. EWM and CLP are not given a C-value because they are listed as exotic species, which means that it is not included in average C-value or FQI calculations. EWM may provide limited habitat to the aquatic life in a lake, but it is not native and should be considered a negative impact to local lakes. EWM can be considered a burden that indirectly drives down C-values and FQI because it limits the range and distribution of beneficial native species. Shallow water and thick vegetation made 52% of the lake non-navigable (*Figure 19*). American Lotus was prolific throughout these non-navigable areas and were recorded as visuals due to the presence of prominent growth. These *visual* areas were not truly sampled or recorded as defined by point-intercept methods and as a result, other vegetation may have been present but not properly identified. However, to leave this plant unaccounted for would misrepresent a major influence in the plant community of Tripp Lake. Other major species found during this survey include Coontail and Filamentous Algae in terms of their frequency and density. These species have low C-values associated with them (3,0).



Listed below are maps of the two exotic species and top five native species of aquatic plants discovered during the August 2017 survey. They illustrate the distribution and density of each sample point where that species was found. Rake fullness indicates density. Although not the most frequent or dense, EWM and CLP are placed first due to their invasive classifications. The remaining maps are arranged in order, with the most frequently found species positioned first.

<u>Common Name</u>	<u>Scientific Name</u>	Frequency of occurrence within vegetated areas (%)	Average Rake Fullness	Number of sites where species found (does not include visuals)	
American Lotus	Nelumbo lutea	16.38	19	1.84	208
Arrowhead sp.	Sagittaria sp.	-	-	-	3
Cattail sp.	Typha sp.	-	-	-	45
Common-Watermeal	Wolffia columbiana	-	-	-	25
Common Waterweed	Elodea canadensis	16.38	19	1.11	11
Coontail	Ceratophyllum demersum	91.38	106	1.93	37
Curly-Leaf Pondweed	Potamogeton crispus	3.45	4	1.00	21
Eurasian Water-Milfoil (or hybrid)	Myriophyllum spicatum	23.28	27	1.15	39
Filamentous Algae	Filamentous algae	57.76	67	1.46	20
Flat-Stem Pondweed	Potamogeton zosteriformis	0.86	1	1.00	2
Floating-Leaf Pondweed	Potamogeton natans	10.34	12	1.75	14
Illinois Pondweed	Potamogeton illinoensis	3.45	4	1.25	5
Large Duckweed	Spirodela polyrhiza	0.86	1	1.00	2
Leafy Pondweed	Potomogeton foliosus	2.59	3	1.00	8
Long-Leaf Pondweed	Potamogeton nodosus	2.59	3	1.00	7
Purple Loosestrife	Purple Loosestrife	-	-	-	15
Sago Pondweed	Stuckenia pectinata	5.17	6	1.00	48
Small Duckweed	Lemna minor	2.59	3	1.00	60
Variable Pondweed	Potamogeton gramineus	0.86	1	1.00	-
Yellow Pond-Lily	Nuphar advena	-	-	-	4
White water lily	Nymphaea odorata	12.93	15	1.53	80
Wild Celery	Vallisneria americana	4.31	5	1.20	5
Wild Rice	Zizania sp.	-	-	-	5
Overall totals for vegetation		80.56	116	2.22	272

Table 4: Summary of Tripp Lake's 2017 PI Survey Plant Data.



Tripp Lake Plant Figures



Figure 8: Distribution and density map of Eurasian Water-Milfoil (EWM) [Invasive].



Figure 9: Distribution and density map of Curly-Leaf Pondweed (CLP) [Invasive].



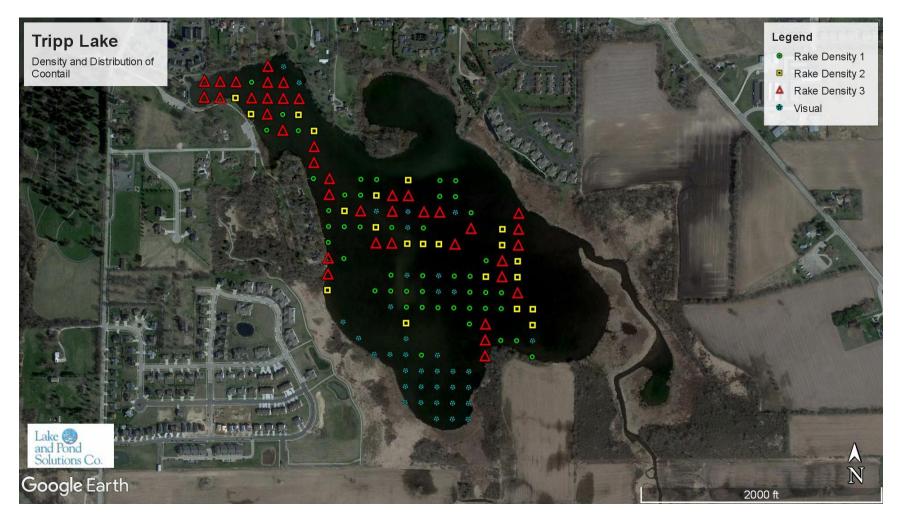


Figure 10: Distribution and density of Coontail (native).



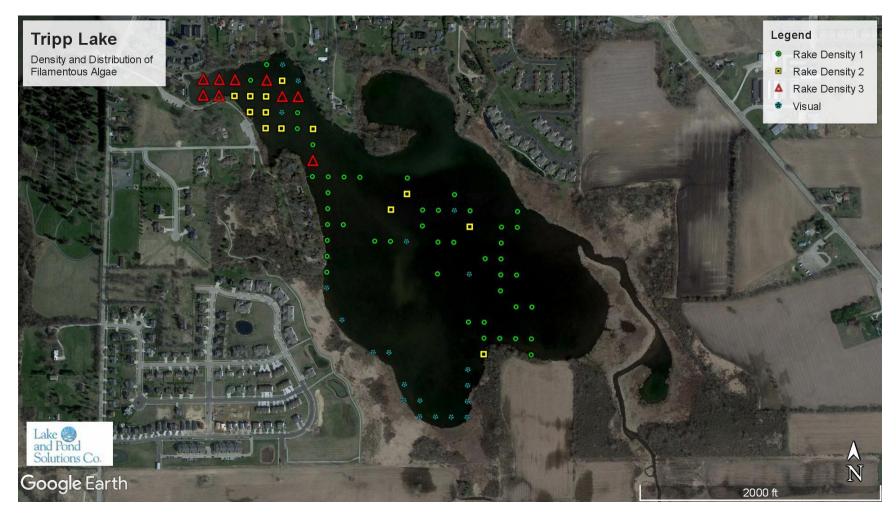


Figure 11: Distribution and density of Filamentous Algae.





Figure 12: Distribution and density of Common Waterweed (native).



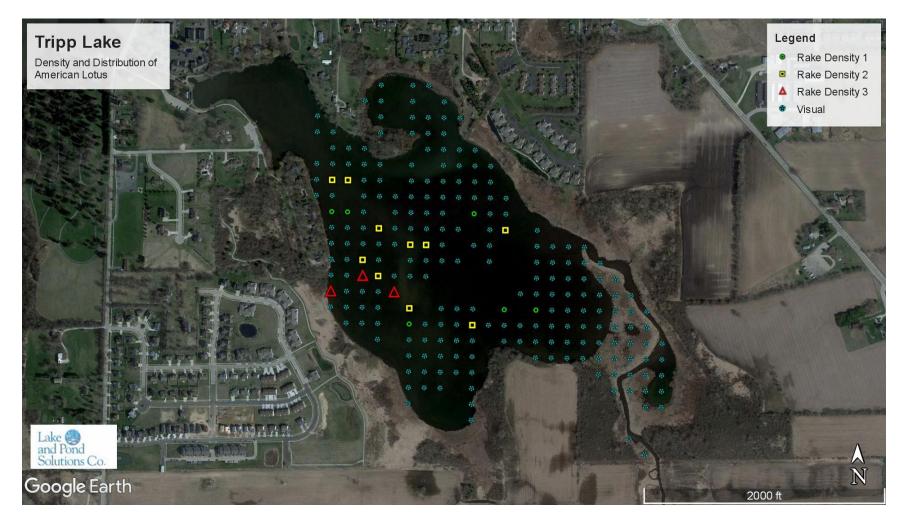


Figure 13: Distribution and density of American Lotus (native).





Figure 14: Distribution and density of White Water Lily (native).





Figure 15: Non-Navigable sample points within Tripp Lake during 2017 survey.



The depth of plants found in the 2017 survey is listed in *Figure 20* for Lake Cravath and in *Figure 21* for Tripp Lake. Both lakes are shallow waterbodies that are 8 feet or less in depth. The plant community is made up of mainly emergent or floating species (watermeal, duckweed, white water lily, American lotus and filamentous algae). Both lakes are capable of plant production 100% throughout the entire waterbody.

Plant Depth Graph for Lake Cravath

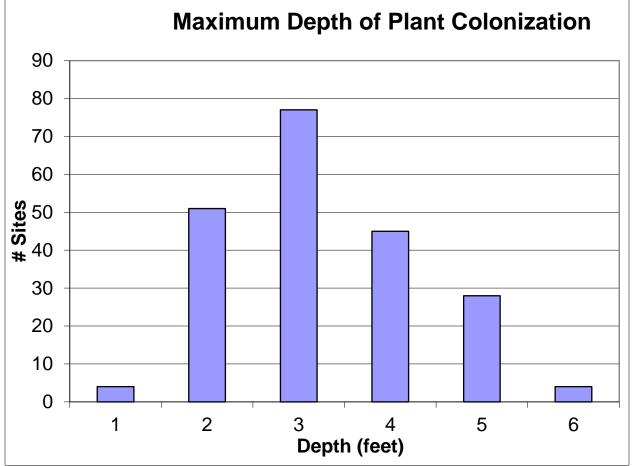
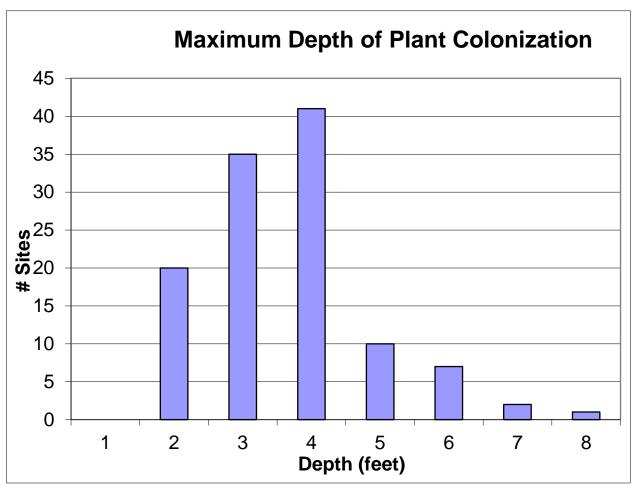


Figure 16: Plant depth graph for Cravath Lake.





Plant Depth Graph for Tripp Lake

Figure 17: Plant depth graph for Tripp Lake.

Management

The figure shown below illustrates the difference between different management approaches. These are rough estimates that depend on many project variables. Each method has advantages and disadvantages, as explained in further detail. Possible methods of control include herbicide application and mechanical harvesting and whole-lake drawdown. Diver Assisted Suction Harvesting (DASH) is described below but is not considered a viable control option for either lake.



	Rough Estimates for Contract Work			
	Dash*	Chemical (2,4-D)	Harvester**	
Cost to treat 1 acre /				
time	\$12,000 / 4-7 days	\$800 / 1.50 hours	\$100-400 / 30 min.	
Cost to treat 5 acres	\$60,000 / 1 Month	\$3,000 / 3 hours	\$600-\$2,400 / 3 hours	
Cost to treat 20 acres	\$240,000 / 1 Season	\$10,000 / 7.5 Hours	\$3,200 - \$12,800 / 2 day	
Cost to treat 100 acres	\$1,200,000 / Several Years	\$44,000 / 3 Days	\$24,000 - \$96,000 / 3+ weeks	

* Based on www.aquaticinvasivecontrol.com and local contractors

** Based on www.ecy.wa.gov and local contractors, All prices do not include shipping, post cleaning, or other fees.

 Table 5: Contract work estimates.

DASH

Dash is a process where a certified diver maintains control of a hydraulic pump and pulls selected plants by the root, feeding them into the intake hose. The plant is transferred to a collection station that can range from a mesh onion-sack to large on-shore drainage bags. The advantage of DASH includes the ability to select the target plant for removal. The disadvantage is the slow nature of the process and high cost due to specially trained staff and equipment. Also, as operations begin in a DASH location, underwater visibility rapidly diminishes, further reducing the speed of removal. Low visibility and human error also contribute to missed plants or improper removal (not removing the roots). It is also common to do relative damage to non-target species through the tangled nature of aquatic plants and the hydraulic hose flattening areas as the diver(s) are searching for target plants. Mollusks, crustaceans, insects and other species that live in and around the lake bottom, on or within the plants are also inevitable bycatch. DASH should be used in instances of very small and relatively dense patches of invasive plant species that are ideally located on a dense bottom. Deeper patches of target plants on a sand or gravel substrate with few native species is ideal.



Herbicide

Treatments using state and EPA regulated herbicides and algaecides are typically applied by injection, spraying or spreading of granular product. Herbicide treatments are relatively inexpensive when compared to other management strategies. Herbicide labels are the law and they indicate target species and whether they are selective or non-selective in the type of plants that they affect. The success of an herbicide application is the result of three main components; 1) proper product choice 2) appropriate concentration and 3) timing of application.

The "risk-reward" of herbicide use must be carefully considered. The use of this technology is heavily regulated, requiring knowledgeable, licensed professionals. Many hours, days, even weeks of preparation are necessary. There is always the potential for damage to non-target aquatic plant and the void created by eliminating one species could be filled by another, equally undesirable weed.

Mechanical Harvesting

Mechanical harvesting is a management strategy aimed for the maintenance of plant densities rather than eliminating target species. Mechanical harvesting is costly, with new harvesting boats ranging from \$80,000 to well over \$200,000; with high operating costs associated with them. Approved disposal sites for the removed weeds are required. These sites are chosen to ensure the species removed and the nutrients they contain are not returned to the lake or wetland. Harvesters can provide short-term relief where plant growth prohibits boating or fishing. Harvesting also helps alleviate competition in areas with high density plant populations. Harvesters will not eliminate the cause of a plant imbalance. Furthermore, harvesters can promote species that spread through fragmentation (i.e. *Eurasian Watermilfoil*). "By-catch" must also be considered when using mechanical harvesting as a means of weed removal. *"Harvesting removes large numbers of macro-invertebrates, semi-aquatic vertebrates, forage fishes, young-of-the-year fishes, and even adult gamefishes"*. [²]

² Engel, S., 1990. Ecological impacts of harvesting macrophytes in Halverson Lake, Wisconsin. *Journal of Aquatic Plant Management*, 28(1), pp.41-45.



Drawdown

Lake drawdown may prevent or retard unwanted growth by allowing otherwise littoral areas to dry and freeze, which adversely affects rooting structures. Studies have also shown, in lakes with substantial ground-water influence, upwelling may increase as hydrologic pressure is relieved. In agriculturally-dominated areas, nutrients, especially nitrogen, can become excessive in shallow-water aquifers. The introduction of nutrient-rich water may encourage additional plant growth. Careful study of the hydrology surrounding a water-body is essential to lake drawdown success.

Recommendations

Harvesting

Continue harvesting navigation channels as illustrated in the maps below (*Figures 22* and 23). Harvesting within navigation channels may be non-selective as native invasive species can become problematic in the same manner as exotics. Boating impediments are not species-specific.

Harvesting operations must consider each of the following while functioning within the lake.

- Safely return all captured fish
- Maximum cutting depth is limited to ONE-foot above the sediment
- Contracted harvesters must follow all disinfection protocols

Herbicide Treatment

Herbicide / algaecide applications can provide conditional control of the problematic species present. Treatment plans must take into consideration; target species, area and depth of proposed control. Control within navigation channels are non-selective as native invasive species can become problematic in the same manner as exotics. Finally, proper timing ensures success.

All treatments should take place while growth is near, but preferably not at the lake surface. Application may occur when vegetation has become or threatens to become a boating impediment. "Threaten" as used herein indicate target plants are within 12" of the surface within



the navigation channels and seasonal temperatures, sunlight and overall conditions indicate continued growth is imminent.

Dissolved oxygen must be closely monitored prior to any application. Concentrations below 4.00 PPM are not acceptable for treatment.

Cravath Lake:

EWM, CLP, Coontail and Common waterweed are the species preventing lake usage. Non-selective control is an acceptable treatment method for the navigation channels illustrated below. Such treatment regimens may include; Diquat-based products, Endothall, Flumioxazin and 2,4-D. Tank-mixes may include a combination of herbicides, including WDNR-approved algaecides.

The following herbicide rates should be used:

Endothall (Aquathol K)	3.0 – 4.0 PPM
Diquat	0.691 PPM (maximum label rate)
AquaStrike (Diquat/Endothall)	1.5-1.8 PPM Endothall / 0.3-0.36 PPM Diquat
Flumioxazin (Clipper)	200 - 400 PPB
2, 4-D	3.5 – 4 PPM
Algaecides (alone for algal control)	0.6 - 0.8 PPM
(when mixed with herbicides)	0.3 – 0.6 PPM

Tripp Lake:

Coontail, Lotus and Water Lily are the main species preventing lake usage. Nonselective control is an acceptable treatment method for the navigation channels illustrated below. Such treatment regimens may include; Diquat-based products, Endothall and 2,4-D, however Flumioxazin is the favored product for these target species. Tank-mixes may include a combination of herbicides, including WDNR-approved algaecides.



The following herbicide rates should be used:

Endothall (Aquathol K)	3.0 – 4.0 PPM
Diquat	0.691 PPM (maximum label rate)
AquaStrike (Diquat/Endothall)	1.5-1.8 PPM Endothall / 0.3-0.36 PPM Diquat
Flumioxazin (Clipper)	300 – 400 PPB
2, 4-D	3.5 – 4 PPM
Algaecides (alone for algal control)	0.6 - 0.8 PPM
(when mixed with herbicides)	0.3 – 0.6 PPM

Goals

The goal of this document is to provide current data to better manage both Cravath and Tripp lakes. All methods of management are aimed at the total eradication of any invasive species in or near the lake to promote a healthy, native ecosystem that complements the objectives of all lake-users, with emphasis placed on recreation and the fishery.



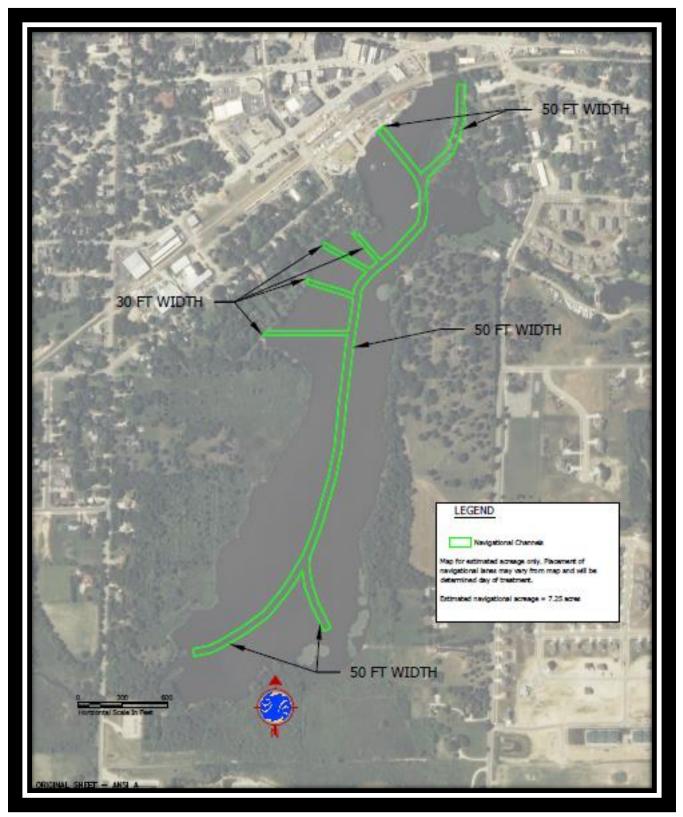


Figure 18: Lake Cravath harvesting map.



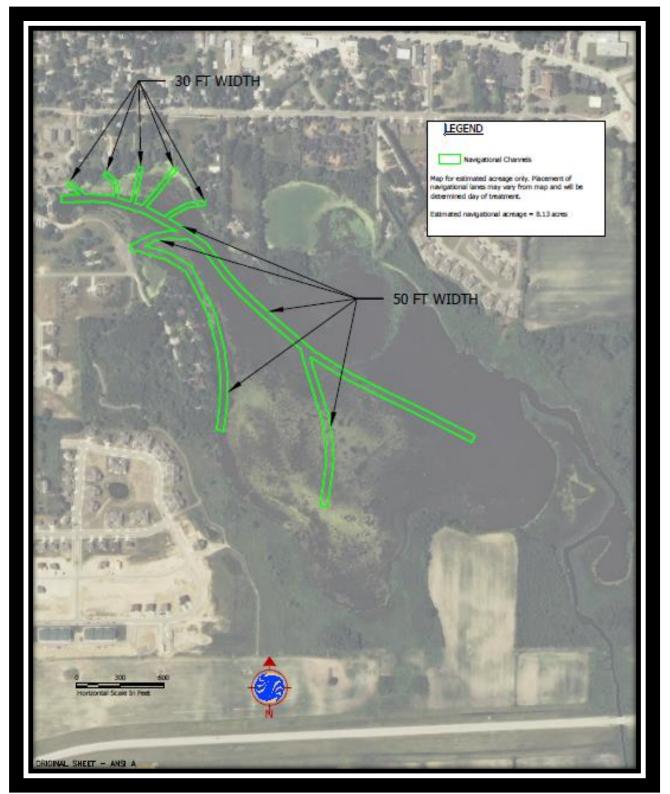


Figure 19: Tripp Lake harvesting map.



Rapid Response Plan

Wisconsin's Rapid Response Framework for Aquatic Invasive Species

http://dnr.wi.gov/lakes/invasives/WIAISRapidResponseFramework2012.pdf

- Early Detection and Reporting
- Verification of species
- Notification (relavant resource managers, news media, public)
- Rapid Assessment (threats posed by invasion, resources available)
- Planning
- Rapid Response (the action or series of actions taken to contain and control)
- Monitoring & Evaluation (post-action assessments of actions taken for control)
- Restoration (improve disturbed areas when possible)

Rapid response to a new aquatic invasive is imperative. The first step of which is ensuring an invasive species was not previously found within the waterbody. This APM plan shall serve as this record.

If a suspected invasive species is found:

• Take a digital photo of the plant in the setting where it was found and mark with a GPS (if possible). Then collect 5 - 10 intact specimens. Try to get the root system, all leaves as well as seed heads and flowers when present. Place in a Ziploc bag with no water. Place on ice and transport to refrigerator.

- Fill out form http://dnr.wi.gov/lakes/forms/3200-125-plantincident.pdf.
- Contact the WDNR Aquatic Invasive Species Coordinator (currently Heidi Bunk,

WDNR Lakes Biologist) and deliver the specimens, report, digital photo and coordinates (if available). Do this as soon as possible; but no later than 4 days after the plant is discovered. The



waterbody management entity and current lake consultant should also be notified. Digital photographs may also serve as a faster means of communication. All pictures should be taken within 12" of the plant in question, with care taken to fully illustrate leaf structure, stem and flower (if present).

WIDNR

Attn: Heidi Bunk, AIS Coordinator 141 NW Barstow St., Room 180 Waukesha, WI 53188 262-574-2130 <u>Heidi.Bunk@Wisconsin.gov</u>

If a new invasive species has been verified, a coordinated response plan should be developed in consultation with the WDNR, the governing townships, local lake managing body and lake consultant(s) as needed. Limit or restrict lake access immediately, to include boat landing closures whenever possible. Post signage at all access points with color photographs and species description. Notify all area lake associations and districts immediately.



References

Engel, S., 1990. Ecological impacts of harvesting macrophytes in Halverson Lake, Wisconsin. *Journal of Aquatic Plant Management*, 28(1), pp.41-45.

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



Appendix A

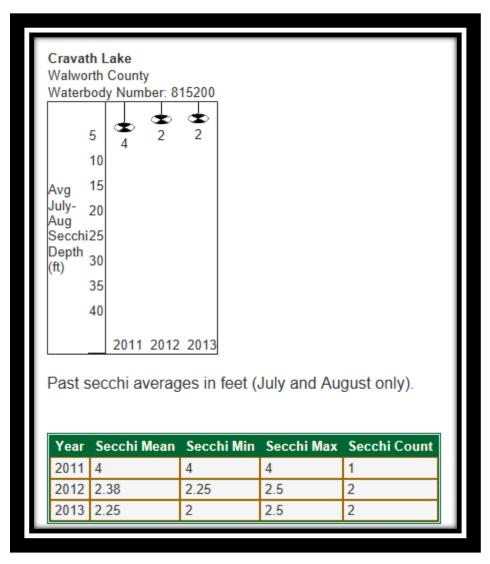


Figure 20: Historical secchi disk data, Lake Cravath. Source www.dnr.wi.gov



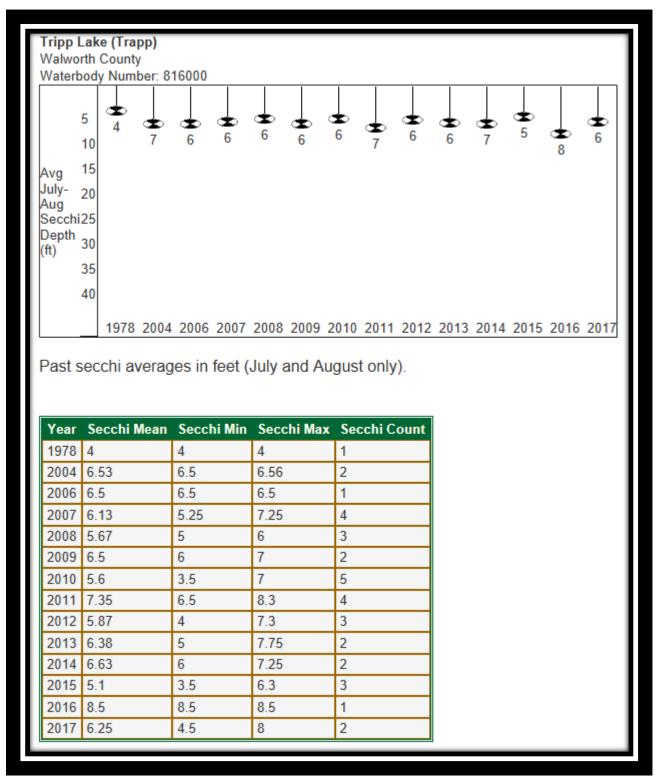


Figure 21: Historical secchi disk data, Tripp Lake. Source www.dnr.wi.gov



Appendix B

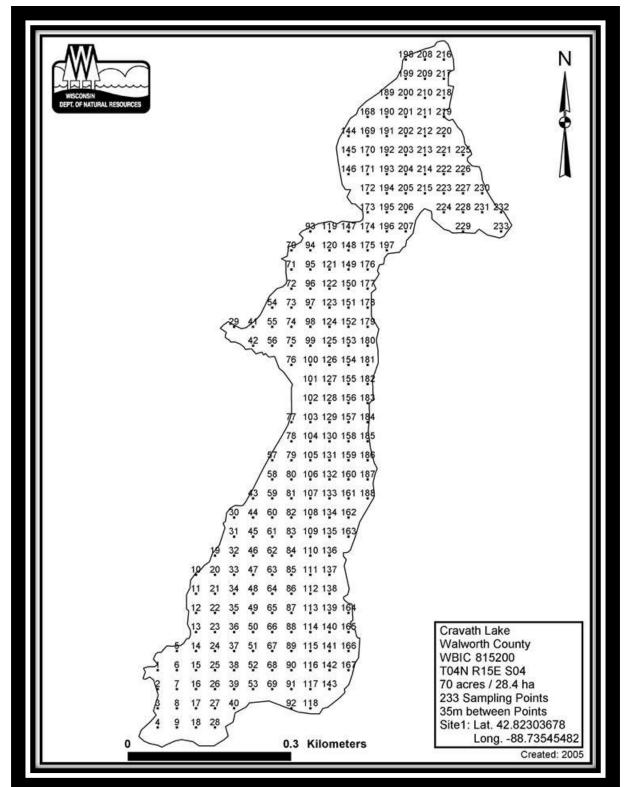


Figure 22: Lake Cravath PI survey map.



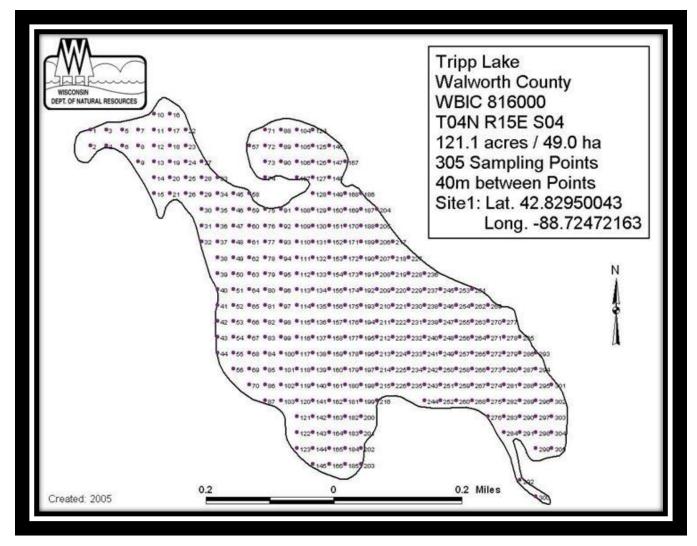


Figure 23: Tripp Lake PI survey map.



Appendix C

Lake Cravath – Past Chemical Treatments

*Please note in the documents within Appendix C that the concentration of product is listed incorrectly, and it is assumed that the correct target concentrations were applied under the supervision of WDNR staff.

State of Wisconsin		Aquatic Plant	Management H	lerbicide T	reatment Recor
Department of Natural Resourd dnr.wi.gov	ces	Form 3200-111 (R 11			Page 1 of 2
Notice: Completion of this form 29.22). The Department may n administrative purposes and m	not issue you future permits	unless you complete and	submit this form. Pen	sonal information	collected will be used for
	ediately if any unusual cir con after treatment as port ctober 1 if no treatment o	ssible, no later than 30			
Completion of this form alo			WDNR (NR 107) and	d DATCP (ATCP	29.21 and 29.22).
General Permit Information Permit Number	Waterbody Name (includi	ng ponds, e.g., Smith Po	ond)		
SER-13-65-87r County	Cravath Lake Permit Holder Name (Cus	tomer Name)			
Walworth	City of Whitewater - Park	s and Recreation Depar	tment		
Permit Holder Address		City		Sta	ate ZIP Code
312 W Whitewater Street Treatment Information	And in case of the local division of the loc	Whitewater	1		WI 53190
Treatment Date (mm/dd/yyyy)	Starting Time (24 hr)	Ending Time (24 hr)	Water Temp (°F) Ar	mbient Air Temp (*F)
06/07/2013	13:15	14:45		39	65
Wind Speed (mph)	Wind Direction		of Chemical Residuals		
5-10	NE	NA			
	lí Ye	en s, Supervisor Name Hei	idi Bunk - WDNR		
If adverse conditions noted, in Onsite Supervision Present? Mixing and Loading Site Locat not more than 5 gailons liquid Pre-packaged retail contain Herbicide Treatment and Wate	Yes No If Yes ion (if other than business si or 50 pounds dry) ers	s, Supervisor Name Hei ite or from prepackaged	retail container or app	ied with equipme	nt with a total capacity o
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Treatment Site and Chemica	l Informati	on (attach a	dditional	sheets if neces	sary)	Herbicide Name EPA Reg No.: 6		Herbicide Name EPA Reg No.:	:	Herbicide Name EPA Reg No.:	Page 2 of 2
Site No, Property Name, Address / Fire No	Treated Acreage	Permitted Acreage	Sensitive Area?	Latitude	Longitude	Amount Applied	Concentration (mg/l = ppm)	Amount Applied	Concentration (mg/l = ppm)	Amount Applied	Concentrati (mg/l = ppn
D	0.5	0.5	ΠY			3.0 gal	2.5 ppm				
E	0.5	0.5	□ Y			3.0 gal	2.5 ppm				
F	0.5	0.5	ΠY			3.0 gal	2.5 ppm				
G	0.5	0.5	ΠY			3.0 gal	2.5 ppm				
н	0.97	0.97	ΠY			6.0 gal	2.5 ppm	1			
l*	2.72	4.12	ΠY			16.5 gal	2.5 ppm				
1	0.5	0.5	ΠY			3.0 gal	2.5 ppm				
			□ Y								
TOTALS	6.09	7.59	ΠY			37.5 gal					
			ΠY					1			
*area reduced due to opt out			ΠY	ż.							
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Aquatics at Treatment Site:			es SP	= Species Pr	esent Site(s)			Site(s)		her Aquatics	Site(s)
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Chara				Pondweed		Purpl					
Coontail				af Pondweed		_	irdson Pondweed				
Curly-Leaf Pondweed			Illinois Pon				ins Pondweed				
Duckweed Elodea				Pondweed _							
Eurasian/hybrid Milfoil all	EWM areas		Northern N								
			Phragmites				ersnieru Water Lilv				



Permit Number Waterbody Name (including ponds, e.g., Smith Pond) SER-13-85-874 Cravath Lake County Permit Holder Name (Customer Name) Walworth City of Whitewater – Parks and Recreation Department Permit Holder Address City 312 W Whitewater Streat Vit Toolunoit Information Treatment Date (mindd/typy) State 2/IP Code 312 W Whitewater Streat Vit Toolunoit Information Ending Time (24 hr) Treatment Date (mindd/typy) Stating Time (24 hr) Ending Time (24 hr) Ending Time (24 hr) Wind Speed (mph) Wind Direction Expected Duration of Chemical Residuals 77 Calm inc. to 5-10 W to SW Adverse Conditions Noted (i.e., dead fish, spawning fish, algae bloom, etc.) No If adverse conditions noted, indicate corrective actions taken Onsite Supervision Present? Yes Pre-packaged retail containers Herbicide Treatment and Water Use Restrictions Signs Posted in Accordance With NR 107? Yes Pre-packaged retail containers No Applicator shall provide each customer with a free copy of each pesticide label used (if requested)	State of Wisconsin Department of Natural Resources dnr.wi.gov			Plant Mana 111 (R 11/11)	agement H	erbicide	Treat	Page 1 of 2
(2) as soon after treatment as possible, no later than 30 days (3) by October 11 in to restant occurred Completion of this form along with the permit satisfies the requirements of WDNR (NR 197) and DATCP (ATCP 28.21 and 29.22). Centre 11 Permit Number Valentody Name (including ponds, e.g., Smith Pond) State Craveth Lake Permit Number Valentody Name (including ponds, e.g., Smith Pond) State Craveth Lake Permit Number Valentody Name (including ponds, e.g., Smith Pond) State Craveth Lake Permit Number Walentody Name (including ponds, e.g., Smith Pond) State State 212 Wohldewater Street Withewater Treatment Date (inmiddynym) Stating Time (24 hr) Vind Street in the 11 to the indicate Correction in C4 hr) Water Temp (*F) 24 Whitewater Y 70 Inc. to 80 State 212 Wohldewater Street Y 213 Wohldewater Street Y	29.22). The Department may not issu	e you future permits u	inless you con	nplete and submit	t this form. Perse	onal informatio	on collec	ted will be used for
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Adverse Conditions Noted (i.e., dead fish, spawning fish, algae bloom, etc.) No If adverse conditions noted, indicate corrective actions taken Onsite Supervision Present? Yes No If Yes, Supervisor Name Mixing and Loading Site Location (if other than business sile or from prepackaged retail container or applied with equipment with a total capacity of not more than 5 gallons liquid or 50 pounds dry) Pre-packaged retail containers Herbicide Treatment and Water Use Restrictions Signs Posted In Accordance With NR 107? Yes No Applicator shall provide each customer with a free copy of each pesticide label used (if requested) Applicator Information Telephone Number Street Address (715) 781-9976 209 Commerce Parkway State 2IP Code City State 77603 Cottage Grove First Certification # Nied Joseph (Mike) 69620 Last Name First Certification # Nied Joseph (Mike) 69620 Name of Person Completing Form Signature Made Made	Wind Speed (mph) Win	d Direction	Expected	Duration of Chem	ical Residuals			
Applicator Information Telephone Number Individual or Business Name Telephone Number Stantec, Inc. (715) 781-9976 Street Address 209 Commerce Parkway City State ZIP Code Cottage Grove WI 53527 Idividuals Making Pesticide Application: Last Name First Certification # Scharl James 77803 Last Name First Certification # Nied Joseph (Mike) 89920 Last Name First Certification # Nied Joseph (Mike) 89920 Last Name First Certification # Name of Person Completing Form Signature Date Signed DNR Use Only	if adverse conditions noted, indicate	corrective actions take	m					
Individual or Business Name Stantec, Inc. Telephone Number (715) 781-9976 (715) 781-9976 (715) 781-9	Onsite Supervision Present? Ye Mixing and Loading Site Location (if o not more than 5 gailons liquid or 50 p Pre-packaged retail containers Herbicide Treatment and Water Use F	es No If Yes. other than business site ounds dry) Restrictions Signs Post	e or from prep	ance With NR 10	7? •Yes	O No		n a total capacity of
Street Address 209 Commerce Parkway City State ZIP Code Cottage Grove WI 53527 ndividuals Making Pesticide Application: Last Name First Certification # Scharl James 77803 Last Name First Certification # Nied Joseph (Mike) 89920 Last Name First Certification # Nied Joseph (Mike) 89920 Last Name First Certification # Name of Person Completing Form Signature Date Signed DNR Use Only	Onsite Supervision Present? Ye Mixing and Loading Site Location (if o not more than 5 gailons liquid or 50 p Pre-packaged retail containers Herbicide Treatment and Water Use F Applicator shall	es No If Yes. other than business site ounds dry) Restrictions Signs Post	e or from prep	ance With NR 10	7? •Yes	O No		h a total capacity of
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Date Received	Onsite Supervision Present? Ye Mixing and Loading Site Location (if of not more than 5 gallons liquid or 50 p Pre-packaged retail containers Herbicide Treatment and Water Use F Applicator Information Individual or Business Name Stantec, Inc. Street Address 209 Commerce Parkway City Cottage Grove	es No If Yes. other than business site ounds dry) Restrictions Signs Post I provide each custor I provide each custor Control Control Co	e or from prep	ance With NR 10	7? Yes pesticide label State VI First James First Joseph (Mik	No used (if requ Telephon (71 ZIP Code	ested) e Numb .5) 781-	527 Certification # 77803 Certification # 89920
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Treatment Site and Chemica	al Informati	on (attach a	ditional	sheets if nece	ssary)	Herbicide Nam		Herbicide Name		Herbicide Name	£
Site No, Property Name,	Treated	Permitted	Sensitive			EPA Reg No.: Amount	Concentration	EPA Reg No.: Amount	Concentration	EPA Reg No.: Amount	Concentrati
Address / Fire No	Acreage	Acreage	Area?	Latitude	Longitude	Applied	(mg/l = ppm)	Applied	(mg/l = ppm)	Applied	(mg/l = ppr
Navigation Lanes	7.0	7.59	ΠY			21 gal	3.0 ppm	14 gal	3.0 ppm		
			ΠY								
			ΠY								
1	-		DY								
			DY								
	-		ΩY								
	-		DY								
			DY								
TOTALS	7.0	7.59	ΠΥ			21 gal		14 gal			
	-		ĊΥ								
			DY		×						
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1			<u> </u>	_							
Aquatics at Treatment Site:	TS = Ta	mat Spacie	e SD	= Species Pr	Totals	and the local division of		and the second			
TS SP	Site(s)	TS SP			Site(s)	TS SP		Site(s)		ther Aquatics	Site(s)
Cattail			Filamentou			Plan				e-Stem Pondwee	d
Chara			Flat-Stem I	-			le Loosestrife			Celery	
Coontail				af Pondweed		_	ardson Pondweed				
Curly-Leaf Pondweed		_	Illinois Pon	_			ins Pondweed				
Elodea				Pondweed _		_ C C Sag	o Pondweed				
Eurasian/hybrid Milfoil		_00	Northern M	lifoil		_ O Wat					
						White	e Water Lilv		- L		



Tripp Lake - Past Chemical Treatments

an					
State of Wisconsin Department of Natural Resources dnr.wi.gov		orm 3200-111 (R 11/11)		bicide Trea	Page 1 of 2
Notice: Completion of this form is a co 29.22). The Department may not issue administrative purposes and may be p	you future permits unle	ss you complete and sub	mit this form. Persona	I information colle	cted will be used for
	r treatment as possib	ble, no later than 30 day			
Completion of this form along with	1 if no treatment occu the permit satisfies t		NR (NR 107) and DA	ATCP (ATCP 29.	21 and 29.22).
General Permit Information				No. of Concession, Name	NAME AND DESCRIPTION OF
Permit Number Water	body Name (including p	oonds, e.g., Smith Pond)			
SER-13-65-873 Trippe County Permit	Lake Holder Name (Custom	er Name)			
		nd Recreation Departmen	ot		
Permit Holder Address	vvninewater - Farks ar	City	m.	State	ZIP Code
312 W Whitewater Street		Whitewater		wi	53190
Treatment Information Treatment Date (mm/dd/yyyy) Start	ing Time (24 hr)	Ending Time (24 hr)	Water Temp (°F)	Ambler	nt Air Temp (°F)
06/07/2013	11:30	12:30	68	Campion	65
		Expected Duration of Ch			00
5-10	NE	NA			
rior to treatment, survey of SEWR	PC areas completed v	with very little / NO EV		EATMENT TOOK	PLACE
Prior to treatment, survey of SEWR Onsite Supervision Present? Yes Mixing and Loading Site Location (if ot not more than 5 gallons liquid or 50 po	PC areas completed v s No If Yes, S her than business site o unds dry)	upervisor Name Heidi B	unk - WDNR		
Prior to treatment, survey of SEWR Onsite Supervision Present? Yes Mixing and Loading Site Location (if ot not more than 5 gallons liquid or 50 po Herbicide Treatment and Water Use Re Applicator shall	PC areas completed v s No If Yes, S her than business site o unds dry)	upervisor Name Heidi B	unk - WDNR I container or applied v 107? Yes	with equipment wi	th a total capacity of
Mixing and Loading Site Location (if of not more than 5 gallons liquid or 50 po -lerbicide Treatment and Water Use Re	PC areas completed v s No If Yes, S her than business site o unds dry)	upervisor Name Heidi Bu r from prepackaged retail	unk - WDNR I container or applied v 107? Yes	with equipment wi	th a total capacity of
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Prior to treatment, survey of SEWR Consite Supervision Present? Yes Mixing and Loading Site Location (if ot not more than 5 gallons liquid or 50 po	PC areas completed v s No If Yes, S her than business site o unds dry) estrictions Signs Posted provide each custome	upervisor Name Heidi Bu r from prepackaged retail	unk - WDNR I container or applied w 107? Yes Ch pesticide label us	With equipment equipm	th a total capacity of
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Prior to treatment, survey of SEWR Onsite Supervision Present? Mixing and Loading Site Location (if of not more than 5 gallons liquid or 50 po	PC areas completed v No If Yes, S No Per than business site o unds dry) Provide each custome Composite the second	upervisor Name Heidi Bu r from prepackaged retai	unk - WDNR I container or applied y 107? Yes ch pesticide label us Ch pesticide label us State VI First James First Joseph (Mike) First	with equipment with equipment with equipment with equipment with equipment with equipment (if requested) Telephone Num (715) 781 ZIP Code 5 Heate Signed	th a total capacity of ther L-9976 3627 Certification # 89920 Certification # 89920 Certification #



reatment Site and Chemica	I Informati	on (attach a	dditional	sheets if nece	ssary)	Herbicide Name	6	Herbicide Name	E	Herbicide Name	E C
						EPA Reg No.:		EPA Reg No .:		EPA Reg No.:	
Site No, Property Name,	Treated	Permitted	Sensitive			Amount	Concentration	Amount	Concentration	Amount	Concentrat
Address / Fire No	Acreage		Area?	Latitude	Longitude	Applied	(mg/l = ppm)	Applied	(mg/l = ppm)	Applied	(mg/l = ppr
NO TREATMENT	0.0	9.0	□ Y								
			ΠY								
			ΠY								
			ΠY								
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			U								
mustice at Transmont Citor	70 - 7-	mat Casale		- Casalan Da	Totals			_	-		-
Aquatics at Treatment Site:	Site(s)	TS SP	5 57	- Species Pr	Site(s)	TS SP	1000	Site(s)	TS SP Ot	her Aquatics	Site(s)
Cattail			Filamentou	s Algae		Plank	tonic Algae		White	-Stem Pondwee	d
Chara			Flat- Stem	Pondweed		Purpl					
Coontail				af Pondweed			rdson Pondweed				
Curly-Leaf Pondweed			Ilinois Pon	dweed			ins Pondweed				
Duckweed Elodea				Pondweed _		Sago	Pontweed				
Eurasian/hybrid Milfoil			Northern M				rshield				
		_	Phragmites	-	4		Water Lilv				



ENN	220 11-19-1				
		B SCANN	200 11-20		
State of Wisconsin Department of Natural Resources dnr.wi.gov	an	Aquatic Plan Form 3200-111 (R	t Management H	lerbicide Tr	Page 1 of 2
Notice: Completion of this form is 29.22). The Department may not is administrative purposes and may b	sue you future perm	its unless you complete a	ind submit this form. Pers	onal information c	ollected will be used for
Submit this form: (1) immedia (2) as soon	tely if any unusual after treatment as	circumstances occurr possible, no later than	ed during treatment		
Completion of this form along v	per 1 if no treatmer with the permit sati		of WDNR (NR 107) and	DATCP (ATCP)	29.21 and 29.22).
General Permit Information	CONTRACTOR OF STREET, ST.				
Permit Number Wa	aterbody Name (incl	uding ponds, e.g., Smith	Pond)		
	ppe Lake rmit Holder Name (0	Customer Name)			
		arks and Recreation Dep	artmont		
Permit Holder Address	y or writewater - P	City	artment	State	a ZIP Code
312 W Whitewater Street		Whitewa	ter	v	VI 53190
Treatment Information Treatment Date (mm/dd/yyyy) S	Starting Time (24 hr)	Ending Time (24 h	nr) Water Temp (°F) Am	bient Air Temp (°F)
06/17/2013	8:00	10:30	7		70
	Vind Direction		of Chemical Residuals		10
calm	W	~3 days			
If adverse conditions noted, indicat					
	Yes No	Yés, Supervisor Name			
Onsite Supervision Present?	-		d retail container or appl		
Mixing and Loading Site Location (s site or from prepackage	d retail container or appl	ed with equipment	with a total capacity of
Mixing and Loading Site Location (not more than 5 gallons liquid or 50		s site or from prepackage	o retail container or appl	ed with equipment	with a total capacity of
Mixing and Loading Site Location (not more than 5 gallons liquid or 50 Pre-packaged retail containers) pounds dry)				with a total capacity of
Mixing and Loading Site Location (not more than 5 gallons liquid or 50 Pre-packaged retail containers Herbicide Treatment and Water Use	e Restrictions Signs		ith NR 107?	○ No	
Mixing and Loading Site Location (not more than 5 gallons liquid or 50 Pre-packaged retail containers Herbicide Treatment and Water Use Applicator sh	e Restrictions Signs	Posted In Accordance W	ith NR 107?	○ No	
Mixing and Loading Site Location (not more than 5 gallons liquid or 50 Pre-packaged retail containers Herbicide Treatment and Water Use Applicator sh Applicator Information	e Restrictions Signs	Posted In Accordance W	ith NR 107?	○ No	ed)
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Mixing and Loading Site Location (not more than 5 gallons liquid or 50 Pre-packaged retail containers Herbicide Treatment and Water Use Applicator sh Applicator Information Individual or Business Name Stantec, Inc. Street Address 209 Commerce Parkway City Cottage Grove	tion: Last Name	Posted In Accordance W	ith NR 107? Yes y of each pesticide labe	No I used (if request Telephone N (715) ZIP Code	ed) Jumber 781-9976 53527 Certification # 77803 Certification #
Mixing and Loading Site Location (not more than 5 gallons liquid or 50 Pre-packaged retail containers Herbicide Treatment and Water Use Applicator sh Applicator Information Individual or Business Name Stantec, Inc. Street Address 209 Commerce Parkway City Cottage Grove	b pounds dry) e Restrictions Signs nall provide each cu stion: Last Name Scharl	Posted In Accordance W	ith NR 107? Yes y of each pesticide labe State VI First James	No I used (if request Telephone N (715) ZIP Code	ed) lumber 781-9976 53527 Certification # 77803
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Treatment Site and Chemica	I Informati	on (attach a	dditional	sheets if nece	ssary)	Herbicide Name		Herbicide Name	E Tribune	Herbicide Nam	e:
Cite Ma Desearch Marra	Treated	Permitted	Sensitive			EPA Reg No.: 6 Amount		EPA Reg No .:		EPA Reg No .:	10
Site No, Property Name, Address / Fire No	Acreage	Acreage	Area?	Latitude	Longitude	Applied	Concentration (mg/l = ppm)	Amount Applied	Concentration (mg/l = ppm)	Amount Applied	Concentratio (mg/l = ppm
Navigation Lanes	7.0	9.0	ΠY			21 gal	3.0 ppm	14 gal	3.0 ppm		
		1.1	ΠY					-			
			ΩY				2				
			ΠY								
			ΩY						1		
	1		ΩY								
			ΠÝ								
			ΠY								
6.1			ΓY								
			ΠY								
			ΠY								
			Π.Υ								
			Û. Y								
			ΠY								-
			Y								
			[] Y								
			[] Y	1.1							
			ΩY								
					Totals		-				
Aquatics at Treatment Site:			s SP	= Species Pr			COMPANY.				
TS SP	Site(s)	TS SP	Filamentou	is Algae	Site(s)	TS SP	tonic Algae	Site(s)		her Aquatics -Stem Pondwee	Site(s)
Chara				Pondweed		D Purpl					
Coontail			Floating-Le	af Pondweed		Richa	rdson Pondweed				
Curly-Leaf Pondweed			Ilinois Pon	dweed			ins Pondweed				
Elodea			Large-Leaf	Pondweed		Sage	Pondweed				
Eurasian/hybrid Milfoil			Northern M	lifoil _		_ U U Wate	rshield				
			Phragmites	5			Water Lilv				

