



Lake Vegetation Management Plan

Weaver Lake, Hennepin County

Variance Requested by Cooperator

Variance Approved (see Section 8)

Draft LVMP (No Signatures)

Final LVMP with Signatures

Date Signed: 12/12/2013

Expiration Date: 12/31/2017

Summary: This Lake Vegetation Management Plan (LVMP) authorizes a variance to allow treatment of more than 15% of the littoral area of Weaver Lake, Hennepin County to control curly-leaf pondweed and Eurasian watermilfoil. All other APM permits for submerged plants will be subject to 50 x 50 foot minimum standard. Justification for this variance includes the potential for this project to further research on the control of invasive aquatic plants with long term monitoring data available.

SECTION 1: LAKE INFORMATION

Name:	Weaver	Surface Area:	152 acres
County:	Hennepin	Littoral Area:	76 acres
DOW Number:	270117	Max Depth:	57 feet
Fisheries Area:	West Metro	Mean Depth:	21 feet
Classification:	Recreational Development		
Invasive Plants:	Eurasian watermilfoil Curlyleaf pondweed		
Cooperator(s):	(1) Weaver Lake Conservation Association (WLCA) (2) Freshwater Scientific Services, LLC		

SECTION 2: WATER QUALITY, PLANT COMMUNITY, AND PLANT MANAGEMENT HISTORY

A. WATER QUALITY:

	Mean (May-Sept)	Observations	Monitored Years
Total Phosphorus	35 µg/L	78	2003-2012
Chlorophyll-a	15 µg/L	78	2003-2012
Secchi Depth	9.8 ft	97	2003-2012

B. PLANT COMMUNITY:

The WLCA has conducted 2 to 3 point-intercept vegetation surveys annually from 2005 to 2012 (all by James A. Johnson, Freshwater Scientific Services). A detailed summary report of results from these past surveys is available online at http://www.freshwatersci.com/fw_projects.html

Most Recent Survey: **Aug 2013**

Total Points Sampled: **125**

Littoral Points (≤15ft): **107**



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Max Depth of Growth (95th percentile): **15.0 ft**

Table 1 (below): Percent occurrence (points at which species was found/total points sampled in littoral zone x 100) of plants observed in Weaver Lake (1998 to 2013). For years with multiple point-intercept surveys (2006-2013), reported values represent the maximum % occurrence from all surveys. Values greater than 5 are reported to nearest 10%; taxa listed from most frequent to least in each growth form category (based upon most recent survey).

Taxonomic Name	Common Name	1998	1999	2000	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
SUBMERSED PLANTS															
<i>Ceratophyllum demersum</i>	Coontail	90	70	80	60	80	80	50	20	20	50	80	80	100	100
<i>Potamogeton crispus</i>	Curlyleaf pondweed	100	100	100	90	100	50	70	50	30	10	20	50	60	10*
<i>Elodea canadensis</i>	Canadian waterweed	10	10	20	2	-	-	-	-	2	20	70	60	30	-
<i>Vallisneria americana</i>	Wild celery	20	4	-	20	10	20	20	20	20	30	20	10	20	10
<i>Lemna trisulca</i>	Star duckweed	100	80	70	10	20	10	30	10	10	4	10	10	10	30
<i>Stuckenia pectinata</i>	Sago pondweed	10	4	4	10	3	10	20	10	20	20	10	30	10	10
<i>Chara</i> sp.	Muskgrass	10	4	4	-	-	4	5	10	10	30	20	10	10	10
<i>Najas flexilis</i>	Bushy pondweed	-	-	-	1	10	-	-	-	10	20	2	10	10	-
<i>Zosterella dubia</i>	Water stargrass	4	-	-	4	2	10	20	20	20	20	20	10	4	4
<i>Ranunculus aquatilis</i>	Water crowfoot	20	4	-	-	-	4	1	-	-	-	2	3	3	3
<i>Zannichellia palustris</i>	Horned pondweed	-	-	-	-	4	20	10	20	10	10	4	10	1	10
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	-	-	-	-	-	-	-	-	-	-	-	-	1	-
<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	20	4	-	10	10	20	10	10	10	-	-	1	-	P
<i>Potamogeton foliosus</i>	Narrow-leaf pondweed	20	10	10	10	10	10	1	1	-	1	P	P	-	1
<i>Potamogeton praelongus</i>	White-stem pondweed	20	10	10	3	10	10	-	-	-	-	-	1	-	1
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	40	10	-	10	2	-	-	-	-	-	-	-	-	-
<i>Potamogeton richardsonii</i>	Claspingleaf pondweed	10	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Bidens beckii</i>	Water marigold	4	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Fontinalis antipyretica</i> cf.	Common aquatic moss	-	-	-	-	P	-	3	1	-	-	-	-	-	-
FLOATING PLANTS															
<i>Nymphaea odorata</i>	White waterlily	20	10	20	10	10	10	10	10	10	10	10	10	10	10
<i>Lemna minor</i>	Small duckweed	4	10	4	P	10	10	4	10	10	5	10	20	10	20
<i>Spirodella polyrhiza</i>	Giant duckweed	20	4	-	-	-	10	3	3	-	-	10	10	10	20
<i>Wolffia columbiana</i>	Watermeal	-	-	-	-	-	-	-	-	-	-	P	10	5	10
<i>Nuphar variegata</i>	Yellow waterlily	10	4	20	10	4	10	5	10	5	3	5	4	2	3
EMERGENT PLANTS															
<i>Sagittaria</i> spp.	Arrowhead	-	-	-	-	-	-	1	2	1	1	P	P	P	P
<i>Typha</i> sp.	Cattail	P	P	P	P	P	P	P	P	P	P	P	P	P	P

* In 2013, plants were only surveyed in August (not a good assessment of curlyleaf pondweed)



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C. HISTORY OF PLANT MANAGEMENT:

Table 2 (below): Timeline showing management actions taken by the WLCA to control aquatic invasive plants in Weaver Lake: 1999 to 2013.

	Target	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Manual Cutting	CLP	█	█													
Mechanical Harvesting	CLP			█	█	█	█	█								
Herbicide Test-Plots	CLP						█									
Whole-Lake Fluridone	CLP							█	█	█						█
Lake-Wide Endothall	CLP									█	█	█	█			
Spot Treatment (endothall)	CLP												█		█	
Hand-Pulling	EWM														█	
Spot Treatment (2,4-D)	EWM														█	

Table 3 (below): Past Herbicide Treatments: In the spring of 2005 and 2006 the entire mixed volume of the lake was treated with fluridone (2-4 µg/L target concentration maintained for ~50 days) in coordination with the MNDNR. This greatly reduced CLP frequency and abundance throughout the lake, but also reduced coontail in the lake. In 2007 the WLCA switched to endothall treatment for controlling delineated CLP beds (target concentration in beds 0.75 to 1.00 mg/L). This allowed coontail to rapidly recover while maintaining control of CLP. In 2013, The lake was once again treated with an experimental low-dose fluridone application in coordination with the MDNR to control both CLP and EWM. Treatment details for each year are shown in the table below.

YEAR	HERBICIDE	TARGET PLANT	CONCENTRATION	AREA TREATED
2005	Fluridone	CLP	2 to 4 ppb	Whole Lake
2006	Fluridone	CLP	2 to 4 ppb	Whole Lake
2007	Endothall	CLP	0.75 to 1.0 ppm	66 acres
2008	Endothall	CLP	0.75 to 1.0 ppm	66 acres
2009	Endothall	CLP	0.75 to 1.0 ppm	69 acres
2010	Endothall	CLP	0.75 to 1.0 ppm	11 acres
2011	-	-	-	No treatment
2012	Endothall	CLP	0.75 to 1.0 ppm	21 acres
2012	2,4-D	EWM	4 ppm	10 acres
2013	Fluridone	CLP/EWM	2 to 4 ppb	Whole Lake



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SECTION 3: PUBLIC PARTICIPATION PROCESS

COMMUNICATION WITH HOMEOWNERS:

Public Meetings: In addition to holding open monthly board meetings, since 2002 the WLCA has held two annual meetings; a lake management “Kickoff” meeting in March, and an annual “State of the Lakes” meeting in October. These meetings have typically been attended by about one-quarter of the homeowners from around the lake (100 lakeshore properties). At each of these meetings, James Johnson (Freshwater Scientific Services, LLC) has presented evaluations of the past year's vegetation management activities, recent aquatic plant survey results, and the planned vegetation management activities for the following spring and summer.

Homeowner Survey: In 2010, the WLCA conducted a watershed-wide homeowner survey to identify current lake uses and perceived lake problems. This survey included specific questions about nuisance aquatic plant growth in the lake and the perceived effectiveness of past curlyleaf pondweed management. Results from this survey available at <http://www.wlca.org>

Newsletters: Each year, the WLCA sends quarterly newsletters to all homes in the Weaver Lake watershed (~750 homes). Since 2002, nearly all of these newsletters have contained articles highlighting the results of aquatic plant management activities, future plans, and notices of upcoming meetings.

Web Site: The WLCA regularly posts notices for meetings, downloadable reports, and newsletters at <http://www.wlca.org>

Weaver Lake Conservation Association (WLCA) Board:

Each year, WLCA board members (citizen volunteers from around the lake) meet for a three-hour retreat. At these retreats, they review past projects, prioritize goals for the following year, and form committees. Aquatic plant management planning is directed primarily by the WLCA lake management committee. This committee meets regularly with Freshwater Scientific Services to review outcomes and plan future management activities. Planned projects are then presented to the full WLCA board at monthly meetings for approval. These projects are funded primarily by homeowner contributions, with additional funding provided in some years by the City of Maple Grove and grants from MNDNR.

City of Maple Grove Lake Quality Commission:

Weaver Lake has a representative on the City of Maple Grove – Lake Quality Commission. This commission meets monthly and advises the Maple Grove City Council on lake-related issues. Through their representative, the WLCA has been able to work closely with City staff to keep them informed of management activities, outcomes, and future directions. In addition, this has provided a forum for the WLCA to seek funding assistance from the City and work with other local lake groups.



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SECTION 4: PROBLEM IDENTIFICATION

CURLYLEAF PONDWEED (CLP)

1. CLP interferes with use of the lake
2. CLP displaces native aquatic plants
3. Potential release of nutrients and degradation of water clarity when CLP senesces

EURASIAN WATERMILFOIL (EWM)

4. EWM (new infestation found in 2012) has potential to spread throughout the littoral area of Weaver Lake, resulting in additional recreational impairment and displacement of native plants

RESEARCH NEEDS

5. Need further evaluation of whether continued lake-wide control of CLP can reduce the need for intensive management by maintaining low CLP frequency, abundance, and turion production
6. Need further evaluation of hand-pulling and spot herbicide treatment as rapid-response EWM management strategies for preventing the establishment and spread of new EWM infestations

SECTION 5: GOALS & OBJECTIVES FOR PLANT MANAGEMENT

1. **(CLP)** Control CLP to reduce interference with recreational lake use
 - a. Reduction in annual delineated acres of CLP in spring*
2. Reduction in annual delineated acres of CLP surface matting***(CLP)** Protect and promote healthy native plant community in Weaver Lake
 - a. Native plant frequency and diversity shall be maintained or increased (PI surveys)*
3. **(CLP)** Maintain or Increase water clarity
 - a. Mean Secchi depth (May-Sept) shall be maintained or increased*
4. **(EWM)** Prevent the spread and establishment of EWM in Weaver Lake
 - a. Maintain or reduce delineated areas of EWM infestation*
5. **(Research)** Evaluate effectiveness of long-term, intensive CLP control
 - a. Collect research-quality data on CLP frequency and turion abundance (PI/sediment surveys)
 - b. Communication of results to MNDNR staff
6. **(Research)** Evaluate effectiveness of rapid-response strategies for EWM
 - a. Research-quality data on hand-pulling and herbicide use (number/location of EWM plants)
 - b. Communication of results to MNDNR staff

(* measurable outcomes)



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SECTION 6: ALTERNATIVE METHODS CONSIDERED

This section is needed to meet the requirements of MNG87D000 Vegetative Pests and Algae Control Pesticide General Permit; issued by the Minnesota Pollution Control Agency to meet requirements of the National Pollution Discharge Elimination System.

TARGET PEST: CURLY-LEAF PONDWEED (CLP)

No Action (CLP):

The WLCA has demonstrated that “no action” is currently not a viable management option for Weaver Lake. In 2011, the WLCA chose to suspend CLP management for one year to determine whether continued treatments were necessary. During this “no action” year, CLP frequency increased from 20% occurrence (measured in 2010) to 50% occurrence in 2011. Furthermore, in early 2012 (prior to herbicide treatment) CLP increased to 60% occurrence and formed extensive areas of moderate density growth. It should be noted that annual variation in CLP frequency may be influenced by a number of factors beyond herbicide treatment alone. That being said, these observations suggest that if left unmanaged, CLP may rapidly reestablish in the lake leading to severe recreational impairment, increased competition with native plants, and an increased potential for transport of this invasive plant to other water bodies.

Prevention (CLP):

The MN DNR has an AIS Prevention program to stop the spread of invasive species. This includes designating infested waters, posting signage, enforcing AIS laws, inspecting and educating boaters at water accesses, and decontaminating water equipment as needed.

Mechanical/Physical Methods (CLP):

Manual Cutting: From 1996 to 1999, the WLCA used manual cutting to control nuisance CLP growth in small areas (navigational channels). This was very hard work that provided only limited CLP control. Consequently, the WLCA decided it was not feasible for controlling CLP over larger areas. Manual pulling and cutting are still promoted as methods for controlling nuisance plant growth around homeowners' docks. The WLCA owns several manual cutters that are made available to lake residents upon request for this purpose.

Mechanical Harvesting: In 2003 and 2004, the WLCA used mechanical harvesting to control nuisance CLP growth over most of the littoral area of the lake (annual cost ~\$20,000). This harvesting removed large amounts of CLP biomass and attached turions, but monitoring data indicated that it did not substantially decrease CLP frequency or abundance, reduce turion abundance in sediments, or increase native plant frequency or abundance. Furthermore, harvesting was substantially more expensive than using herbicides to control CLP in Weaver Lake. Consequently, no areas of the lake have been harvested since the WLCA began using herbicides to control CLP in 2004. If future research indicates



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that harvesting can effectively maintain low turion abundance, this option may be used instead of herbicides to manage smaller patches of CLP.

Cultural Methods (CLP):

These are manipulations of the habitat to increase pest mortality by making the habitat less suitable to the pest. For example, one might dredge a lake to make it too deep for invasive aquatic plants to obtain enough light to survive. Generally, such approaches are infeasible due to high cost and the potential to reduce the abundance of desirable native plants.

Biological Control Agents (CLP):

At present, there are no proven and acceptable biocontrol agents for curly-leaf pondweed.

TARGET PEST: EURASIAN WATERMILFOIL (EWM)

No Action (EWM): No action would likely result in the expansion of EWM in this water body and could increase the likelihood of recreational impairment, transport of EWM to other water bodies, and displacement of native plants in the lake.

Prevention (EWM):

The MN DNR has an AIS Prevention program to stop the spread of invasive species. This includes designating infested waters, posting signage, enforcing AIS laws, inspecting and educating boaters at water accesses, and decontaminating water equipment as needed.

Mechanical/Physical Methods (EWM):

Hand-Pulling: In 2012, the WLCA hired Freshwater Scientific Services to conduct extensive hand-pulling of EWM plants in Weaver Lake as the primary means of management. In addition, several lake volunteers were trained in identifying and hand-pulling EWM. The WLCA is committed to continuing hand-pulling as a major component of its EWM management strategy as long as it is a feasible option.

Cutting/Mechanical Harvesting: Given the current low abundance of EWM in the lake, the WLCA does not plan to conduct any cutting or mechanical harvesting, as these strategies would likely create fragments and promote the spread of EWM in the lake. If EWM forms widespread areas of dense surface-matted growth in the future, the WLCA may consider cutting or harvesting as a EWM management strategy.

Cultural Methods (EWM):

These are manipulations of the habitat to increase pest mortality by making the habitat less suitable to the pest. For example, one might dredge a lake to make it too deep for invasive aquatic plants to obtain enough light to survive. Generally, such approaches are infeasible due to high cost and the potential to reduce the abundance of desirable native plants.

Biological Control Agents (EWM):



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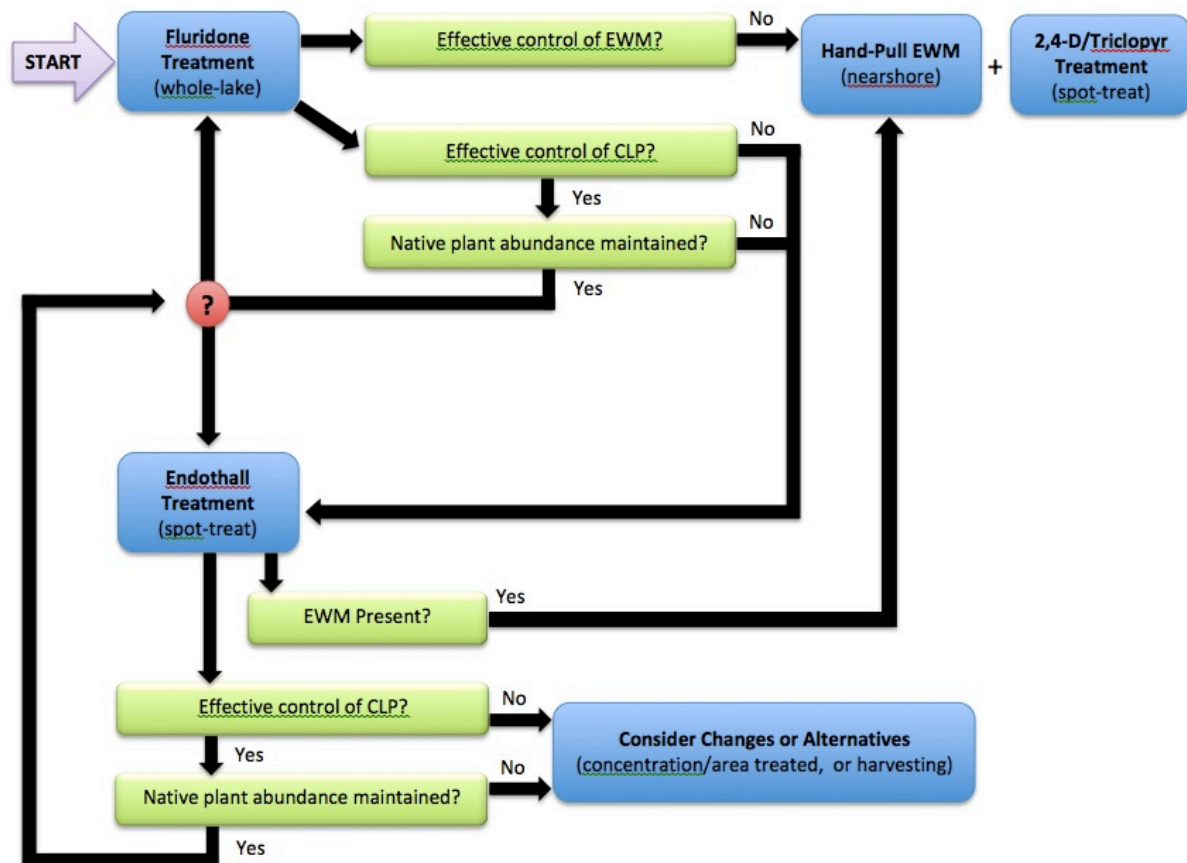
At present, the abundance of EWM in Weaver Lake is too low to support biological control agents (such as milfoil weevils). Furthermore, the lake currently supports abundant bluegills; past studies have shown that predation by bluegills can greatly reduce the effectiveness of biological control agents. Consequently, biological control may not be feasible in Weaver Lake. However, if EWM forms expansive areas of dense-matted growth in the future, the WLCA may consider implementing strategies to introduce or promote EWM biological control agents.

SECTION 7: MANAGEMENT PLAN

The WLCA plans to control invasive plants in Weaver Lake using a combination of herbicide treatments with selective herbicides and selective timing (CLP and EWM), and hand-pulling (EWM only). These management activities will be timed to (1) control CLP before the development of new turions, and (2) control EWM before it produces fragments or substantial roots. Given the presence of both CLP and EWM in the lake, the WLCA and Freshwater Scientific Services have developed an adaptive management decision flowchart (below) to help select the best course of action based upon outcomes.

Note: The treatment protocols detailed below may change as new information becomes available. Any changes will be added to this plan as appendices and incorporated into the APM permits. Upon the next update of this plan, any appended changes will be incorporated into the main document.

Adaptive Management Decision Flowchart





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TREATMENT OPTION 1: WHOLE-LAKE TREATMENT TO CONTROL EWM AND CLP

Herbicide Control: Whole-lake dosing with fluridone (2013 only, as part of an EDRR for EWM)

Proposed Actions: Selective control of CLP and EWM with early-season, low-dose application of fluridone herbicide

Benefits: The WLCA is motivated to prevent the establishment of EWM and minimize recreational and ecological impacts of CLP in Weaver Lake. Fluridone herbicide is an attractive option in that it (1) affects both CLP and EWM, and (2) would provide true whole-lake effects, thus controlling any isolated EWM plants/fragments that may not be found during EWM surveys. In addition, this treatment would provide information about the use of fluridone to control EWM in early infestations with relatively low EWM plant frequency.

Risks:

- (1) The low fluridone concentration used to control CLP (2 to 4 ppb) may not be sufficient to control EWM. If EWM is not controlled by this treatment, hand-pulling of EWM and possible late-season 2,4-D/triclopyr treatment may be required (see the adaptive management decision flowchart).
- (2) The whole-lake fluridone treatments in 2005 and 2006 dramatically reduced the frequency and abundance of coontail. At the time of those treatments, most of the lake was dominated by CLP and the abundance of native plants was low in most areas. Since that time, native plant frequency, abundance, and diversity have increased substantially. This suggests that if future fluridone treatments reduce coontail in the lake, other native taxa that are not as sensitive to fluridone may persist over large areas of the lake. Furthermore, past results clearly showed that coontail rapidly recovered after fluridone treatments were stopped (full recovery after 2 years), suggesting that any reduction of coontail from future fluridone treatments may be temporary.

Adaptive Management: The WLCA is committed to striking a balance between controlling invasive aquatic plants and maintaining a healthy and diverse native plant community. Accordingly, the WLCA will pursue other treatment options if whole-lake fluridone treatment reduces the overall frequency, abundance, or diversity of native plants in the lake, or fails to effectively control CLP or EWM (see the adaptive management decision flowchart).

TREATMENT OPTION 2: SPOT TREATMENTS WITH ENDOTHALL TO CONTROL CLP

Herbicide Control: Treatment areas determined by early spring delineation and DNR inspection

Proposed Actions: Selective control of CLP with early-season application of endothall herbicide to delineated areas of CLP.



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Benefits: The WLCA is motivated to minimize recreational and ecological impairment due to CLP in the lake. Past endothall spot treatments have proven to be very effective at controlling CLP and preventing the production of new turions. The current native plant community has persisted through multiple years of endothall treatment, suggesting that the current native plant community will likely persist and thrive, despite additional endothall treatments.

Risks: Repeated endothall treatments appear to have selected for widespread and dense *Elodea* growth in Weaver Lake (also observed in SE Anderson Lake in 2010-2011). Many nearshore areas of the lake have supported nuisance growth of *Elodea* that impairs recreation.

Adaptive Management: The WLCA is committed to striking a balance between controlling invasive aquatic plants and maintaining a healthy and diverse native plant community. Accordingly, the WLCA will pursue other treatment options if endothall treatment reduces the overall frequency, abundance, or diversity of native plants in the lake, or fails to effectively control CLP (see the adaptive management decision flowchart). Furthermore, the WLCA is committed to minimizing the area treated as the frequency and abundance of invasives are reduced.

TREATMENT OPTION 3: HAND-PULLING/SPOT HERBICIDE TREATMENT FOR EWM

Herbicide Control: Treatment areas determined by delineation and DNR inspection

Proposed Actions:

- (1) Hand-pulling of EWM plants in nearshore areas (wading/snorkeling)
- (2) Selective control of remaining EWM plants or fragments with application of 2,4-D or triclopyr to delineated areas.

Benefits: The WLCA is motivated to prevent the establishment and spread of EWM in the lake. Although most of the EWM plants will be removed by hand-pulling (if sparse), subsequent treatment of the infested areas with 2,4-D or triclopyr herbicide may help to prevent the spread of EWM in the lake by targeting any remaining EWM plants, regrowth from remaining roots, or any remaining EWM fragments. This is particularly important given that this is a very new EWM infestation.

Risks:

- (1) To be effective, hand-pulling must remove all portions of EWM plants, including roots, stems, and any released fragments. All hand-pulling will be conducted by Freshwater Scientific Services or trained lake volunteers.
- (2) Auxin-mimic herbicides (2,4-D and triclopyr) can also affect lilies, which are common in the EWM-infested areas of the lake. Treatment protocols will include provisions to minimize damage to lilies.

Adaptive Management: The WLCA is committed to striking a balance between controlling invasive aquatic plants and maintaining a healthy and diverse native plant community. Accordingly, the WLCA



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will pursue other treatment options if herbicide treatments reduce the overall frequency, abundance, or diversity of native plants in the lake, or fail to effectively control EWM. Furthermore, the WLCA is committed to minimizing the area treated as the frequency and abundance of invasives are reduced.

SECTION 8: VARIANCE PROVISIONS & APPROVAL *(check all that apply)*

The commissioner may issue APM permits (and IAPM permits) with a variance from one or more of the provisions of parts 6280.0250, subpart 4, and 6280.0350, except that no variance may be issued for part 6280.0250, subpart 4, items B and C. Variances may be issued to control invasive aquatic plants, protect or improve aquatic resources, provide riparian access, or enhance recreational use on public waters (6280.1000, subpart 1). Variance(s) and Justification(s)

- Application of pesticides to control submersed vegetation in more than 15% of the littoral area**
(M.R. 6280.0350, Subp. 4, A)

Justification:

- (1) *CLP in >15% of Littoral:* In 2012, CLP was found growing in 60% of the littoral area of Weaver Lake. A variance may provide substantial recreational and ecological benefits by (1) minimizing recreational impairment, (2) promoting the survival and growth of native submerged aquatic plants, and (3) increasing the likelihood of effective CLP and EWM control by allowing for larger contiguous areas to be treated (*variance to M.R. 6280.0350, Subp. 4, A*).
- (2) *Research Needed:* Low-dose fluridone treatments have not been widely evaluated in Minnesota lakes for efficacy. Because of the long term monitoring dataset on Weaver Lake, information may be gained in terms of native plant response to fluridone using this low-dose method. In addition, using fluridone in early infestations of EWM (such as with an EDRR) may also be evaluated. The WLCA plans to collect research-quality data (contract with Freshwater Scientific Services-LLC) that would be shared with the MNDNR to help guide future management of CLP and EWM in Minnesota lakes.

Water Quality Protection Plans/Actions: Weaver Lake is included in two regional water quality management plans: (1) the City of Maple Grove water resources management plan, and (2) the Elm Creek Watershed TMDL (currently under development). These plans include provisions for bi-weekly monitoring, watershed modeling and management, street sweeping, and maintenance of various stormwater structural BMP's designed to protect the lake's water quality.

INDIVIDUAL NEAR-SHORE PERMIT STANDARDS

- Chemical Treatment of Submersed Plants:** *(new permits after lake-wide treatment)*
Limited to an area no greater than 50 feet wide along shore (or half of lake frontage, whichever is less) x 50 feet lakeward.



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Any permit applications received from riparian landowners for chemical treatment of native submersed plant after the lake-wide treatment will be considered on an individual basis. Removal of native submersed vegetation will be limited to only that area necessary to allow reasonable use. No removal of sparse native vegetation through the use of chemicals will be permitted. Permit requests are subject to inspection and the aforementioned limits are maximums allowed for native species control.

- Waiver of dated signature requirement for invasive aquatic plant management permits because collecting signatures would create an undue burden** (*M.S. 103G.615, Subp. 3a(b)*)
- Variance approved with monitoring conditions** (*refer to Section 9 below*)

SECTION 9: REQUIRED MONITORING (*check all that apply & refer to Table 4 below*)

Pre- treatment data collection

Pre-treatment delineation of CLP will be provided annually with IAPM permit application to the Regional Invasive Species Specialist.

Post treatment data collection

Treatment report will be provided annually by 31 December of each year to the MNDNR Regional Invasive Species Specialist and will include treated acreage with map and GIS data, herbicide used, target concentration and amount applied. (Earlier delivery may be required for grant eligibility.)

Monitoring

Annual littoral plant survey (point-intercept method) conducted during peak growth of native vegetation (late June through August) will be provided annually to the MNDNR Regional Invasive Species Specialist. Reliable water quality data must also be collected throughout the season. The plant survey reports and water quality data must be provided to the DNR, the lake association, and other interested parties by 31 December each year.

Evaluation

The DNR, in conjunction with other interested parties, will review the plant survey(s) and water quality results annually. If plant surveys or water quality data reveal that the treatments appear to be producing results that do not meet the goals of this plan, then the approach to control may be revised at the discretion of the DNR.



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Table 4. Weaver Lake (27-0117) aquatic plant management monitoring/reporting requirements

	Item	When?	Completed by whom?
A	Pre-treatment Survey (bed delineations, PI-survey)	Early spring	WLCA or approved contractor other than the commercial applicator for this project
B	Point-Intercept Survey	Mid-summer (July-Sept)	WLCA or approved contractor other than the commercial applicator for this project
C	Water Quality Monitoring (Secchi, TP, Chl-a)	Twice per month (May- Sept)	WLCA or approved contractor other than the commercial applicator for this project
D	Treatment Report	By 31 December	WLCA or approved contractor/commercial



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SECTION 10: SIGNATURES

This Lake Vegetation Management Plan is in effect for 4 years from date of Regional Fisheries approval. If the plan is not renewed, then permits will be issued according to the standards listed in MR6280.

DNR Approval:

Submitted By: _____

Title: _____

Date: _____

Regional Fisheries Manager

Date

Regional Ecological & Water Resources Manager

Date

I affirm that I am an authorized representative of **Weaver Lake, Hennepin County** and acknowledge participation in the development and implementation of this lake vegetation management plan.

Cooperator's Signature and Title

Date

Cooperator's Signature and Title

Date

Either party may terminate participation in this plan at any time, with or without cause, upon 30 days' written notice to the other party. If participation is terminated, permits will be issued according to standards listed MR6280.

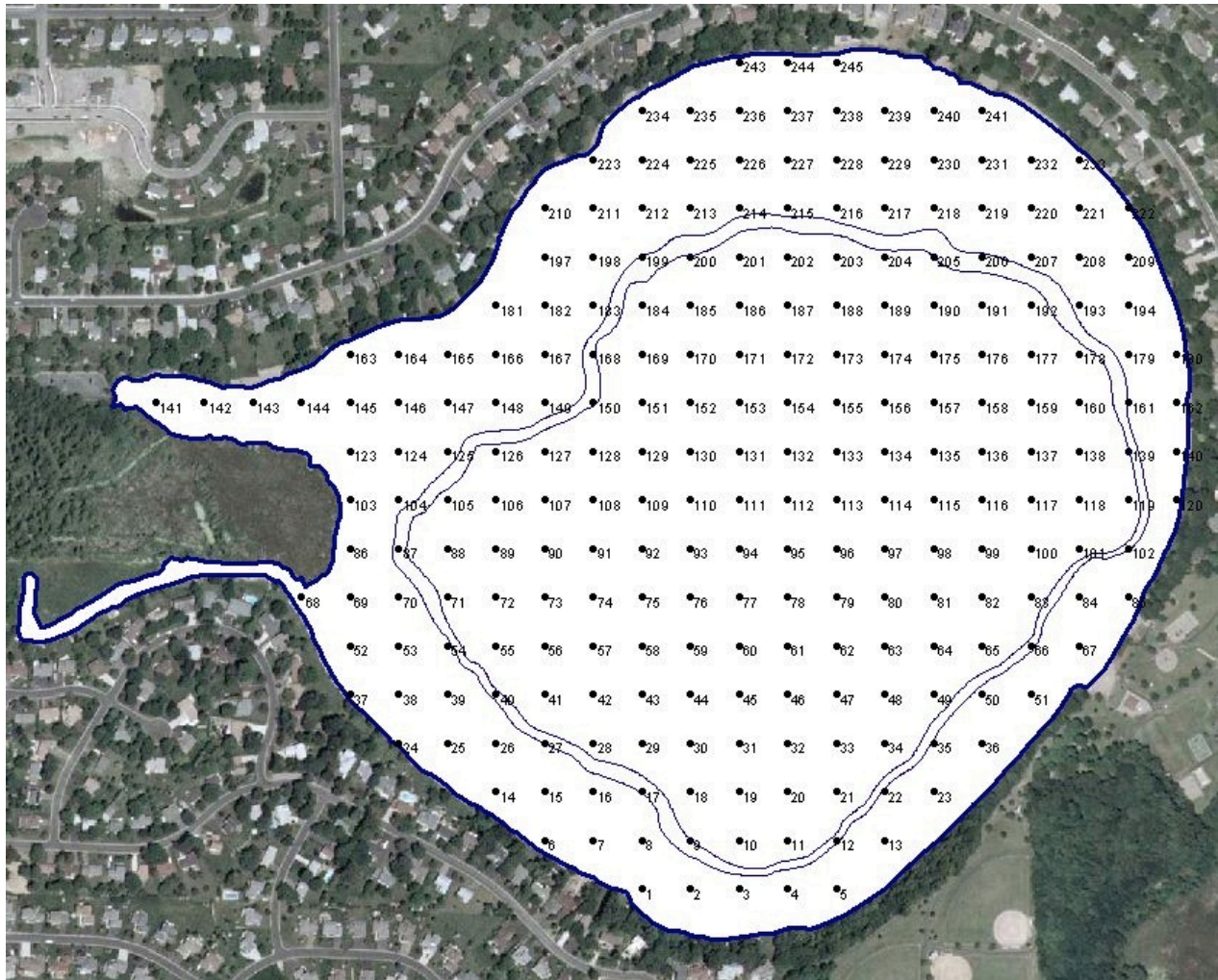


Lake Vegetation Management Plan

Weaver Lake, Hennepin County

SECTION 11: APPENDIX

Point-intercept locations sampled in surveys conducted from 2005 to 2013; 15-ft and 20-ft contours shown.





Lake Vegetation Management Plan

Weaver Lake, Hennepin County

SECTION 10: SIGNATURES

This Lake Vegetation Management Plan is in effect for 4 years from date of Regional Fisheries approval. If the plan is not renewed, then permits will be issued according to the standards listed in MR6280.

DNR Approval:

Submitted By: Keegan Lund

Title: Aquatic Invasive Species Specialist

Date: 12/11/2013



Regional Fisheries Manager

12.13.13
Date


Regional Ecological & Water Resources Manager

12-12-2013
Date

I affirm that I am an authorized representative of **Weaver Lake, Hennepin County** and acknowledge participation in the development and implementation of this lake vegetation management plan.

 PRESIDENT
Cooperator's Signature and Title

12/3/13
Date

 Aquatic Ecologist (Consultant)
Cooperator's Signature and Title

12/11/13
Date

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