

LVMP for White Bear Lake
6 January 2012

Section I – Lake Information**Name:** White Bear Lake**DOW number:** 82016700**County:** Ramsey & Washington**Fisheries Area:** East Metro**Surface Acres:** 2427.66**Littoral Acres:** 1314**Classification:** Recreational Development**Cooperators:** White Bear Lake Conservation District (Cities of Birchwood, Dellwood, Mahtomedi and White Bear Lake and White Bear Township); White Bear Lake Homeowners Association; MN Department of Natural Resources**Section II – Water Quality and Plant Community****II a – Water Quality**

Total Phosphorous: 18.5 ppb; standard error 1.8 ppb (Data from 50 observations 2001-2010)

Secchi Disc: 3.5 meters; standard error 0.1 meters (Data from 74 observations 2001-2010)

Chlorophyll II‘a’: 5.0 ppb; standard error 0.5 ppb (Data from 51 observations 2001-2010)

Carlson trophic status for total phosphorous: 46.2

Carlson trophic status for chlorophyll II‘a’: 46.4

Carlson trophic status for secchi disc: 42.1

Overall trophic status: Mesotrophic

Section II b – Plant Community

Note: Systemic herbicide treatment of 46 monoculture acres of Eurasian watermilfoil (EWM) in the Common Area occurred on 15 August 2011.

Total points surveyed on a 175m grid: 317

Total points with plants: 177 (56% of all points)

Total number of different plants: 25

Mean number of native submersed plant species per point: 2.24

Maximum depth of colonization by aquatic plants: 4.6 meters

Maximum depth of 95% of the shallowest points with aquatic plants: 4.6 meters

Table 1. Percent frequencies of aquatic plants observed during a Point-Intercept survey done on White Bear Lake, Washington County (DOW 82.0167) on 23 August-5 September 2011 by Blue Water Science.

Growth form	Dicot or monocot	Native or non-native, invasive	Common name	Scientific name	Percent frequency of occurrence
Submersed	Dicot	Native	coontail	Ceratophyllum demersum	37
			Northern watermilfoil	Myriophyllum sibiricum	1

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		non-native, invasive	Eurasian watermilfoil	M. spicatum	36
		Native	Marsh marigold	Bidens beckii	7
	Monocot		Water celery	Vallisneria americana	20
			Canada waterweed	Elodea canadensis	6
			cabbage	Potamogeton amplifolius	6
			Stringy pondweed	p. _____?[pls complete]	3
			Variable pondweed	p. _____?[pls complete]	1
			Illinois pondweed	P. illinoensis	1
			White-stem pondweed	P. praelongus	19
			Clasping-leaf pondweed	P. richardsonii	9
			Fern pondweed	P. robbinsii	27
			Flat-stem pondweed	P. zosteriformis	14
			Sago pondweed	Stuckenia pectinata	2
			Naiads	Najas [species?]	26
			Water stargrass	Zosterella dubia	2
Floating			Star duckweed	Lemna trisulca	1
Emergent			bulrush	Scirpus	1
			Three square	Scirpus americanus[?]	3
			Spike rush	Eleocharis	1
			cattail	Typha	1

When EWM occurred with other plants (58/63 sites, 92% of EWM sites), other plants were denser in only 17/58 sites (29%). EWM was a monoculture or virtual monoculture (i.e. EWM density ≥ 3 and other plant(s) density ≤ 1) in 15/58 sites (26%).

Section III – Public Input Process

The initial draft of the proposed Plan was created in response to ongoing concerns expressed by many members of the public since 2007. In December 2011 a letter was sent to each of the following (Appendix 1):

- All five WBLCD member communities (Town Board or City Council)
- WBL Homeowners’ Association
- Black Bear Yacht Racing Association
- White Bear Yacht Club

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- Dock operators in Commercial Bay
- Online fora for Fishing and Canoe/Kayak interests
- White Bear Press

The letter explained that (1) the WBLCD is preparing a long-term plan to respond to ongoing concerns with nuisance plants, especially Eurasian watermilfoil and (2) a public stakeholders meeting would be held on 5 January 2012.

Public announcements of the upcoming meeting, including an expanded article, also appeared in the White Bear Press issues of 28 December 2011 and 4 January 2012.

An outline of the draft plan (Appendices 2a & 2b) was presented at the public meeting on 5 January 2012. Twelve individuals attended and there were four committee members present. Presenters distributed a handout of the proposed Plan's key elements and expanded on those elements in live presentation. Rapport between presenters and audience was positive. Audience questions followed (Appendix 3). The audience was very supportive of the proposal as presented.

Section IV – Problems to be Addressed

Eurasian watermilfoil has been measurably present in White Bear Lake (WBL) since the late 1980s. Since then, EWM's natural resilience, substrate receptivity and, more recently, lower-than-average water levels have resulted in EWM increasing its presence in WBL from a few noticeable acres in 1998 to over 200 acres in June 2011 (Appendices 4a & 4b).

WBLCD commissioned a lake-wide point-intercept plant survey in 2011. This work was done in late August and early September, between 10 and 21 days after systemic treatment (triclopyr) of 46 EWM monoculture acres. The survey revealed the following:

- no plant appearing in 2 or more sampled sites occurred more often than EWM except coontail (*EWM: 36% of sites sampled; coontail: 37% of sites sampled*);
- no plant occurred at a higher average density than EWM (*The average density of EWM was 2.0 [range 0-4]. The next highest densities were recorded for the native monocot naiads [avg. 1.9; range 0-4] and the native dicot coontail [avg 1.6; range 0-3]*);
- among sites where *any* EWM was recorded along with other plants (*58 sites*), it grew as densely or more densely than the other plants in that sample 83% of the time.
- the plant occurring most commonly when EWM was also present was the native dicot coontail; this was in the area known as Commercial Bay.

IV.1 EWM negatively impacts major recreational activities on WBL, namely, swimming, boating and use of personal watercraft.

IV.2 The density of EWM in typically navigable areas of WBL increases the likelihood that fragments – both auto-fragments and those created by recreational disturbance may be unintentionally transported to other lake bodies as well.

IV.3 The amount of EWM currently present in some areas of WBL increases the likelihood that EWM can eventually impact established, delicate ecosystems within the lake, namely, Hall's Marsh. EWM is already present throughout Matoska Marsh.

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IV.4 The presence of EWM in *relatively higher concentrations (>50% EWM)* in mixed beds increases the likelihood that EWM may displace native plants in those beds over time.

IV.5 Short-term, reactive measures such as seasonal mechanical harvesting have proven to be very expensive and have only a short-term impact of EWM.

IV. 6 Nutrient run-off from different on-shore sources may well contribute to growing conditions that are ripe for EWM.

Section V – Goals for Management of Aquatic Plants

Goal 1. Reduce recreational interference (swimming, use of watercraft and other traditional recreational uses) caused by Eurasian watermilfoil.

Goal 2. Protect and increase the presence of native aquatic plants.

Section VI – Operational Treatment Plan

VI a. Common Areas

We propose to use systemic herbicide to reduce the presence of EWM in White Bear Lake, using the lowest rates likely to give effective control. Currently, Triclopyr is the preferred herbicide because it primarily affects dicots and has little impact on non-target monocots common in White Bear Lake. However, it can affect important lake dicots. Another herbicide or formulation may be chosen, if one becomes available which is more specific to EWM, has equal or lower toxicity to vertebrates, does not persist or bioaccumulate, and otherwise compares favorably with Triclopyr.

An independent professional consultant or DNR representative will annually identify pure and significantly infested EWM stands, typically in May or early June. Areas will be mapped and provided to DNR representatives as per required protocols for approval.

The specific areas to be treated will be determined annually by sampling, available funds, and the amount of pure and significantly infested EWM stands encountered. Treated areas will be mapped and recorded as shapefiles from GPS traces recorded during application using WAAS or another differentially-corrected GPS source providing approximately meter-level accuracy.

For the purposes of this Plan,

- *pure* stands are greater than 95% EWM and may be identified ocularly,
- *significantly infested* stands are greater than 80% EWM, and
- *candidate* stands are those greater than 50% EWM.

Significantly infested and candidate stands will be determined from physical sampling, *e.g.* with rake tosses or other vegetation recovery method.

This Plan will give first treatment priority to pure stands of EWM and then to significantly infested stands of EWM. These areas will be mapped and treated with application rates and timings judged to do the least practicable harm to non-target native plants while providing some measure of control of EWM. An independent professional consultant or DNR representative who

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is knowledgeable in the field of aquatic plant identification and control will physically sample mixed areas both before and after treatments, at least for the first three years in which mixed beds are treated, to assess control effectiveness and identify release or damage to non-target plants. Sampling locations will be recorded with WAAS or other differentially-corrected GPS source with approximately meter-level accuracy. Treated mixed beds will be recorded on shapefiles, and digital records of sampling beds will be collected, analyzed for impacts and archived.

We aim to time applications in a manner that maximizes control and minimizes damage to native plants. We anticipate these applications will be prior to EWM meeting the current nuisance requirement of within 1 foot of the surface.

We will analyze treatment effectiveness to pure and significantly infested stands through after-application ocular assessments. Duration will be monitored through comparisons of treated pure and significantly infested stands across years. Overlays of shapefiles in ArcGIS, QGIS, or similar GIS program will identify areas treated over multiple years. Overlays will reveal the time interval and proportion of area that reaches a level of re-infestation sufficient to warrant repeat treatment.

If time and funds allow, we may treat small areas, less than 20 acres in any one year, which are candidate areas for EWM. Rake samples before and after treatment will be take at a density sufficient to detect a 15% reduction in coverage. These experimental areas are to identify if early treatments or treatments of partially infested beds may reduce EWM and enhance native plant growth, improving control and reducing costs and impacts. Treatments to candidate areas will be discontinued if control is insufficient or if native plant cover is reduced more than 15%.

Mechanical control, while not discounted entirely, is viewed as inferior to other treatment options under all but the rarest set of conditions. It will be selected only for extremely limited areas and when no other method is likely to provide the control required in the time frame needed, *e.g.*, when access is required to a boat ramp or other small area, at season's end, when a short-duration, but immediate reduction in milfoil height is required, and the time period is outside the window for effective chemical control.

Over the duration of this Plan, alternative control methods will be evaluated and adopted to the extent that they improve control, maintain or reduce costs, and cause less harm to native flora and fauna. These may include but are not limited to manual removal, biocontrol, or new pathogen or herbicide formulations.

VI b. Individual Permits

The total number of treated acres (Common Area and Individual Permit areas) may exceed 15% of the littoral zone in any given year. No other changes affecting Individual Permits.

Section VII – Funding

Funding sources include:

- White Bear Lake Conservation District,
- Mn Department of Natural Resources grants

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- Other public grants as available
- Privately donated funds as available

Specific funding sources may change from year to year.

Section VIII – Variance(s) and Justification(s)

Application of pesticides to control submerged vegetation along more than 100 feet of shoreline per site belonging to an individual riparian property owner (M.R. 6280.0350, Subpart 4, A), (list justification below) [Example justification: To maximize the control of curly-leaf pondweed by treating as large a contiguous area as possible to minimize dilution of herbicide.]

- To maximize treatment of EWM over as large a contiguous area as possible with the lowest herbicide concentration possible.

Application of pesticides to control dense growths of aquatic macrophytes that do not interfere with watercraft use, swimming, or other traditional recreational uses (M.R. 6280.0250, Subpart 2, A, (2)) [Includes the prohibition on application of pesticides to improve the appearance of undeveloped shoreline (M.R. 6280.0250, Subp. 4, B)].

- To reduce both the occurrence and the density of EWM as much as possible throughout the entire lake and thus reduce the likelihood of recurrences caused by rooting fragments that originate in these non-recreational areas.

Application of pesticides to control submerged vegetation in more than 15 percent of the littoral area (M.R. 6280.0350, Subp. 4, A). (list justification below)

- To chemically manage as many total acres, as stated in the Operational Treatment Plan, as funds allow in any given year.