William M. Davis (1829-1920): *Catboats Entering Port Jefferson Harbor, Long Island*

Aquatic Plant Point Intercept Survey for White Bear Lake, Washington County, Minnesota, 2011

Full Survey Conducted on: August 23, September 2 and 5, 2011

Prepared for:
White Bear Lake
Conservation District

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Aquatic Plant Point Intercept Survey for White Bear Lake, Washington County, Minnesota, 2011

Summary

White Bear Lake (MnDNR ID: 82-0167) is a 2,428 acre lake located in Washington County, Minnesota. A point-intercept aquatic plant survey was conducted on August 23, September 2 and 5, 2011. Spacing was 175 meters between points and in a grid pattern, 317 points covered the entire lake.

In the Eurasian watermilfoil assessment, conducted by the MnDNR on May 24 and June 14, 2011, milfoil was widely distributed, but at light to moderate growth. There was one area considered to be a nuisance. An open water herbicide treatment was conducted on August 16, 2011.

In the late summer aquatic plant point-intercept survey, 172 sites out of 317 sites had plants. Native plants were abundant with eighteen submerged plant species identified. The dominant plant in White Bear Lake was coontail. Other important plants included Eurasian watermilfoil, fern pondweed, chara, and naiads (Table S-1). Plants grew out to a water depth of 15 feet and estimated native plant coverage was 1,309 acres out of 2,428 acre lake (54% coverage).

The non-native Eurasian watermilfoil was observed at 63 sites (Table S-1) and although it was widespread, heavy growth was observed at 6 sites. No heavy milfoil growth was observed in the area treated with herbicides.

Table S-1. Summary of the occurrence of plant species for aquatic plant survey for 2011. Number in parenthesis represents the percent occurrence of the plant. A total of 317 sites were monitored.

	2011
Three square (*Scirpus americanus*)	**5 (2%)**
Bulrush (*Scirpus sp*)	**1 (1%)**
Cattails (*Typha sp*)	**1 (1%)**
Spike rush ()	**1 (1%)**
Marsh marigold (*Bidens Beckii*)	**13 (4%)**
Coontail (*Ceratophyllum demersum*)	**66 (21%)**
Chara (*Chara sp*)	**47 (15%)**
Elodea (*Elodea canadensis*)	**11 (3%)**
Star duckweed (*Lemna trisulca*)	**2 (1%)**
Northern watermilfoil (*Myriophyllum. sibiricum*)	**2 (1%)**
Eurasian watermilfoil (*M. spicatum*)	**63 (20%)**
Naiads (*Najas sp*)	**46 (15%)**
Cabbage (*Potamogeton amplifolius*)	**10 (3%)**
Variable pondweed (*P. gramineus*)	**2 (1%)**
Illinois pondweed (*P. illinoensis*)	**1 (1%)**
Whitestem pondweed (*P. praelongus*)	**34 (11%)**
Claspingleaf pondweed (*P. Richardsonii*)	**16 (5%)**
Fern pondweed (*P. Robbinsii*)	**48 (15%)**
Flatstem pondweed (*P. zosteriformis*)	**25 (8%)**
Stringy pondweed (*P. sp*)	**6 (2%)**
Sago pondweed (*Stuckenia. pectinata*)	**4 (1%)**
Water celery (*Vallisneria americana*)	**36 (11%)**
Water stargrass (*Zosterella dubia*)	**3 (1%)**
Filamentous algae benthic	**2 (1%)**
Total Number of Species	**23**

White Bear Lake plant conditions in 2011.

Top: Three square by city access area.
Middle: Cattails in the Matoska Marsh.
Bottom: County beach area.

Eurasian Watermilfoil in White Bear Lake in 2011: On May 24 and June 14, 2011 an Eurasian watermilfoil (EWM) assessment was conducted by the MnDNR. Nine areas with potential nuisance milfoil growth and one site with nuisance milfoil growth were delineated (Figure S-1). In the point-intercept survey, in August and September of 2011, EWM was found at 63 out of 317 sites. Late season milfoil distribution was similar to the June distribution delineated by the MnDNR, but abundance increased slightly from June to August. In the August and September, survey conducted after the herbicide application, heavy milfoil growth was observed at six out of 317 sites and no heavy growth was observed in the area treated with herbicides (Figure S-1).

EWM Assessment **Point-Intercept Plant Survey**

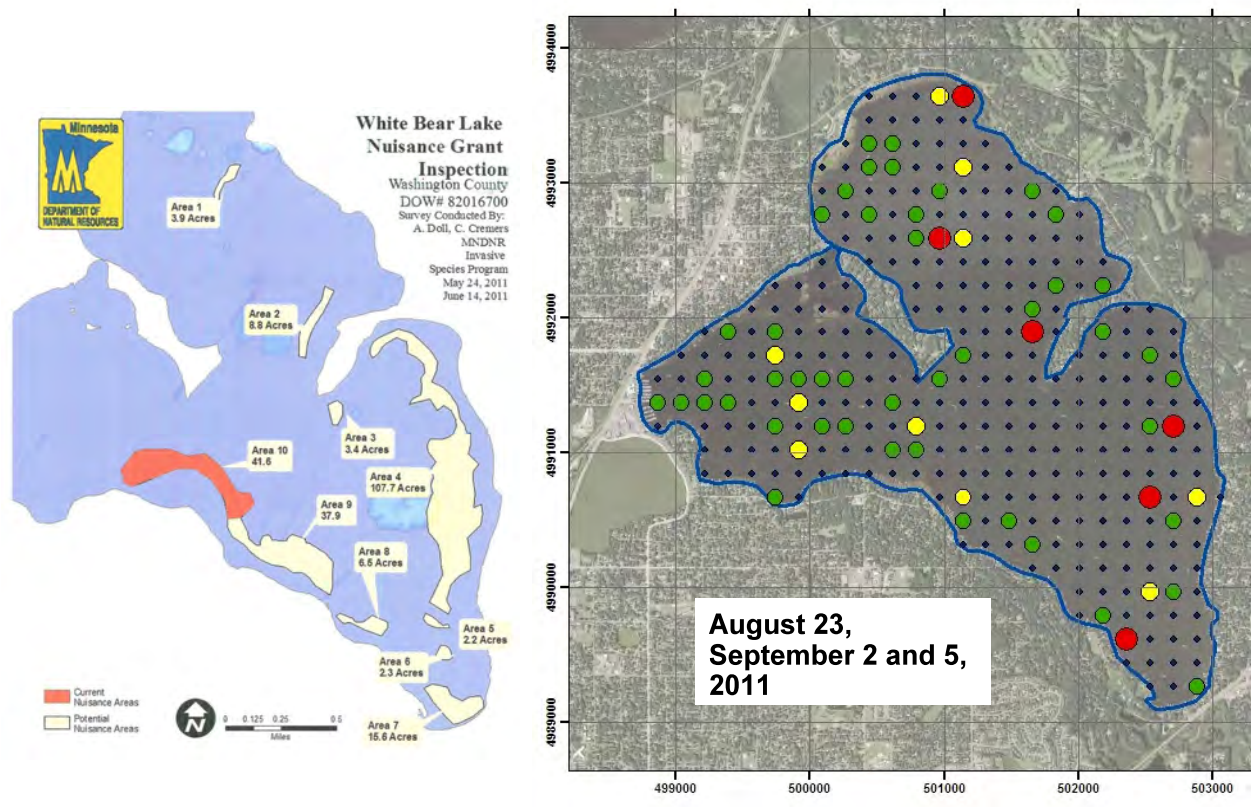

Figure S-1. [left] Locations of Eurasian watermilfoil from the assessment on May 24 and June 14, 2011. Tan areas = potential nuisance growth and red area = nuisance growth.
[right] Coverage of Eurasian watermilfoil from the point-intercept aquatic plant survey on August 23, September 2 and 5, 2011. Green dots = light growth, yellow dots = moderate growth, and red dots = heavy growth.

White Bear Lake, Washington County (ID: 82-0167)

Lake Area: 2,428 acres (MnDNR)
Littoral Area: 1,314 acres (MnDNR)
Maximum depth: 83 ft (MnDNR)

Introduction

White Bear Lake has a variety of native and non-native aquatic plants. The objective of the 2011 plant evaluations were to assess the early season status of Eurasian watermilfoil and to characterize the summer aquatic plant community of White Bear Lake using a point-intercept plant survey. This survey will serve as a reference point to determine if aquatic plants are increasing or decreasing in the future.

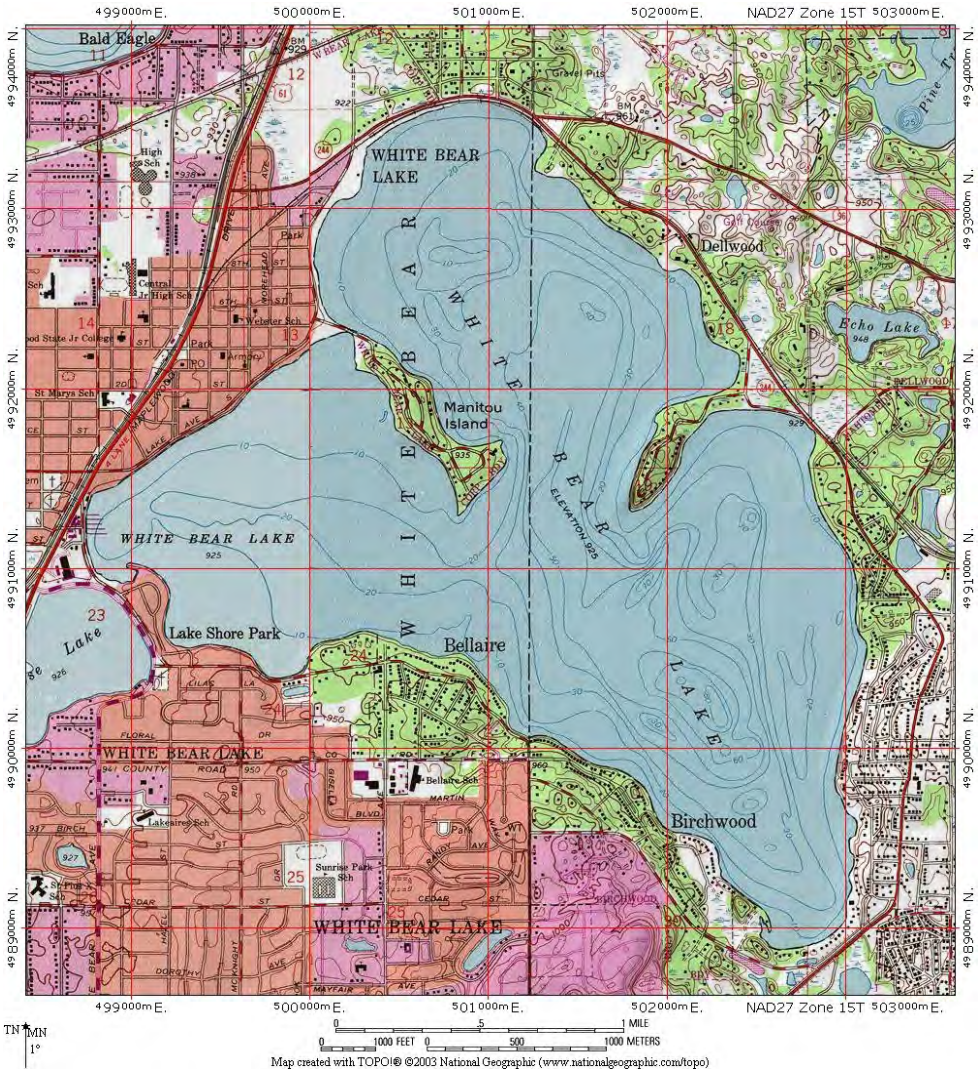

Figure 1. USGS map White Bear Lake, Washington County, Minnesota.

Methods

Eurasian Watermilfoil Assessment: An Eurasian watermilfoil assessment was conducted by the MnDNR on White Bear Lake on May 24 and June 14, 2011. The assessment involved cruising around the entire lake and observing milfoil growth. Areas were selected based on the known previous occurrence of milfoil and the importance for navigation and/or recreation in the area.

Point Intercept Survey: An aquatic plant survey of White Bear Lake were conducted by Blue Water Science in 2011. The late season survey was conducted on August 23, September 2 and 5, 2011. The survey used a point-intercept survey method. A grid map was prepared by Blue Water Science and a consisted of a total of 317 points that were distributed throughout the lake (Figure 2). Points were spaced 175 meters apart and each point represented an average of 7.7 acres of lake surface area (2,428 acres ÷ 317 points = 7.7 ac/pt). GPS coordinates used a UTM WGS84 datum. At each sample point, plants were sampled with a rake sampler. A MnDNR plant density rating was assigned to each plant species on a scale from 1 to 4. A 4.5 or 5 rating indicated matting surface plant growth. A chart of density ratings is shown on the next page.

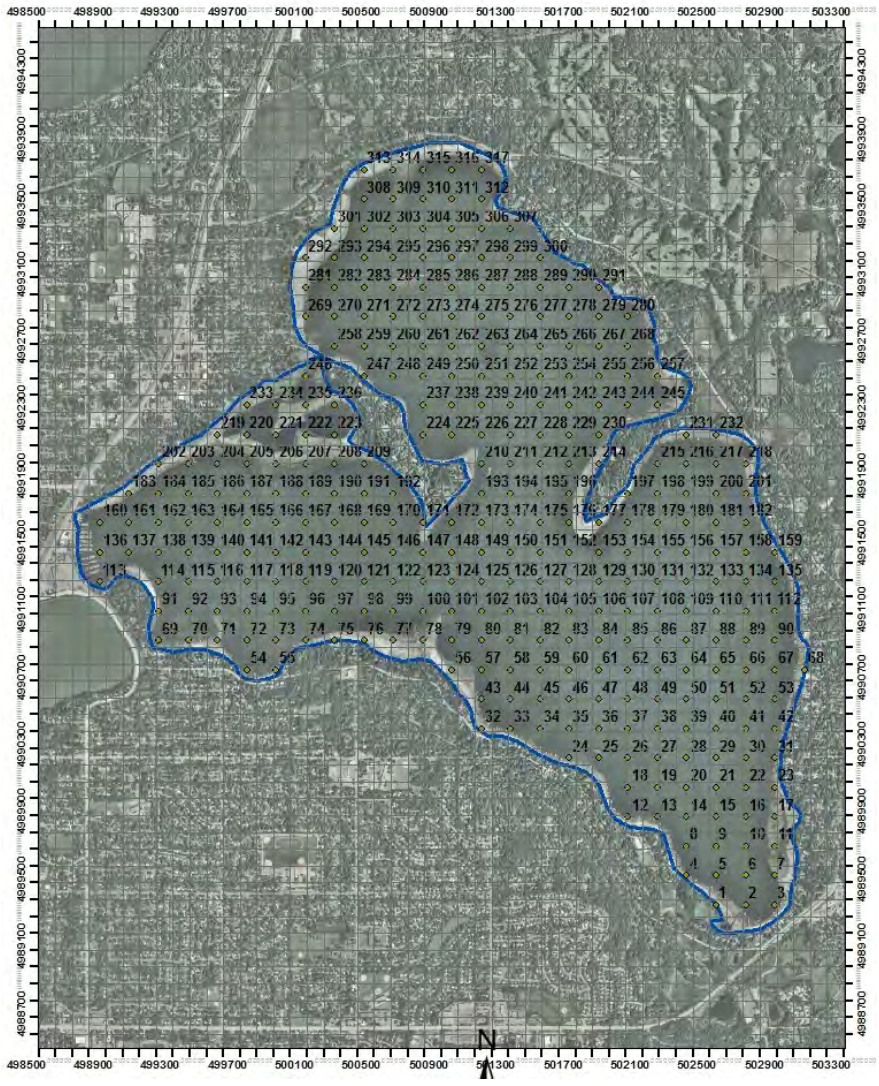

Figure 2. Point locations for the aquatic plant surveys are shown on the lake map with UTM coordinates using the WGS84 datum. The grid consisted of a total of 317 points.

Chart of EWM Density Ratings

Eurasian watermilfoil rake density ratings from 1 to 4. Native plants used the same rake fullness rating as well.

Results of the May 24 and June 14, 2011 Eurasian Watermilfoil Assessment Conducted by the MnDNR

On May 24 and June 14, 2011, the nearshore area of White Bear Lake was assessed by the MnDNR to characterize Eurasian watermilfoil (EWM) growth conditions. EWM is present at a number of areas in White Bear Lake ranging from light to moderate growth (based on rake densities)(Table 1 and Figure 3). A full point-intercept plant survey was conducted in August and September to determine the full extent of milfoil coverage and abundance.

Table 1. White Bear Lake aquatic plant assessment on May 24 and June 14, 2011.

Site	Size (ac)	Comments
1	3.9	Potential nuisance area
2	8.8	Potential nuisance area
3	3.4	Potential nuisance area
4	107.7	Potential nuisance area
5	2.2	Potential nuisance area
6	15.6	Potential nuisance area
7	2.3	Potential nuisance area
8	6.5	Potential nuisance area
9	37.9	Potential nuisance area
10	41.6	Nuisance area (treated August 16, 2011)

Sample Site Locations for the EWM Assessment on May 24 and June 14, 2011

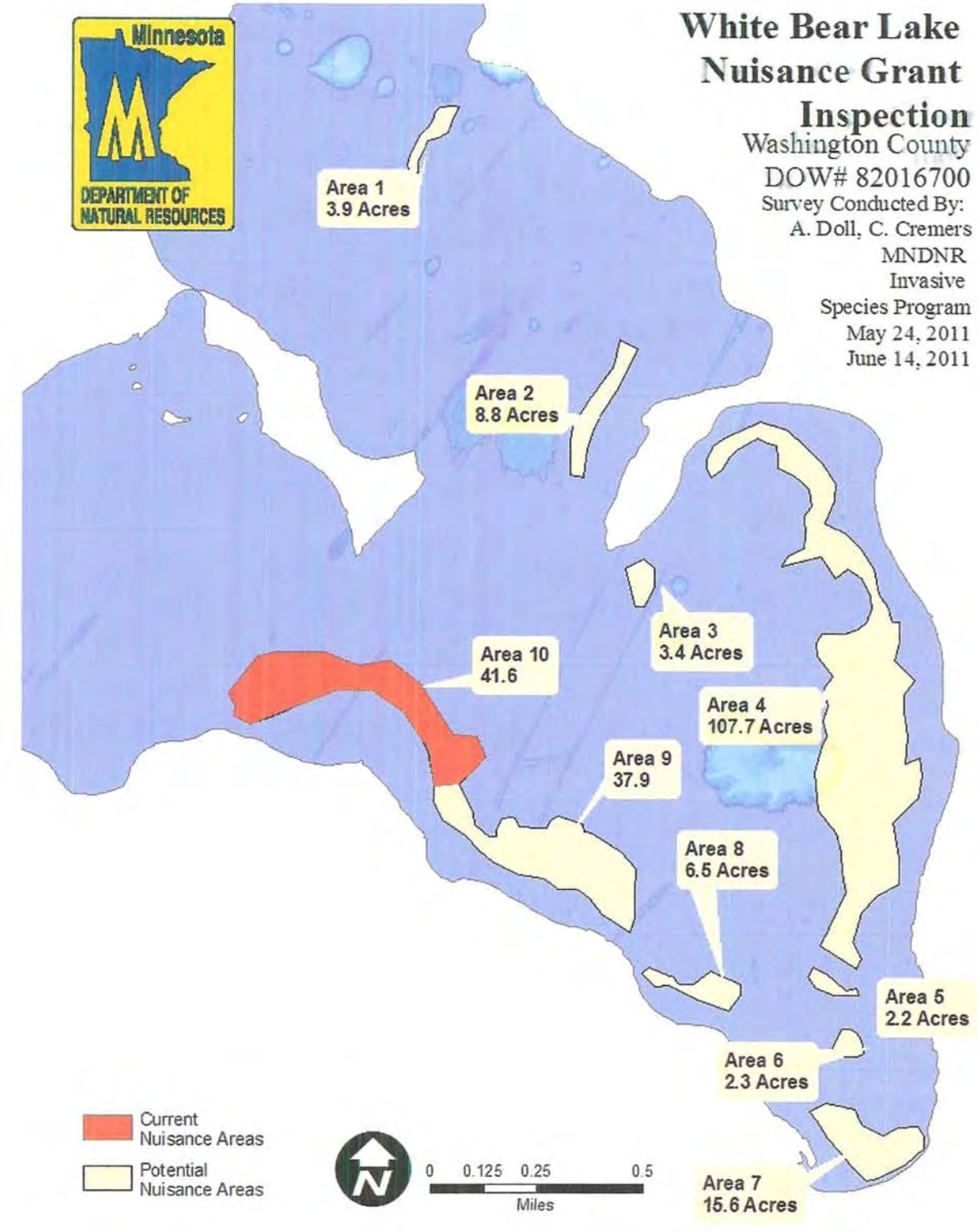

Figure 3. Monitoring areas of the EWM assessment on May 24 and June 14, 2011.

Results of the August 23, September 2 and 5, 2011 Point-Intercept Survey

Results of the point intercept aquatic plant survey conducted on August 23, September 2 and 5, 2011 found 23 aquatic plant species in White Bear Lake (Table 2). A total of 317 sites were sampled out to depth of 30 feet (results for individual sites are shown in the Appendix). The location of native aquatic plants in White Bear Lake is shown in Figure 4. The coverage of native aquatic plants was estimated at 1,309 acres out of 2,428 acre lake (54% coverage).

Table 2. Summary of the occurrence of plant species for aquatic plant survey for 2011. Number in parenthesis represents the percent occurrence of the plant. A total of 317 sites were monitored.

	2011
Three square (*Scirpus americanus*)	**5 (2%)**
Bulrush (*Scirpus sp*)	**1 (1%)**
Cattails (*Typha sp*)	**1 (1%)**
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Water stargrass (*Zosterella dubia*)	**3 (1%)**
Filamentous algae benthic	**2 (1%)**
Number of Species	**23**

Native Aquatic Plants: The distribution and abundance of native plants in White Bear Lake is shown in Figure 4. The dominant native plant was coontail followed Eurasian watermilfoil, fern pondweed, chara, and naiads.

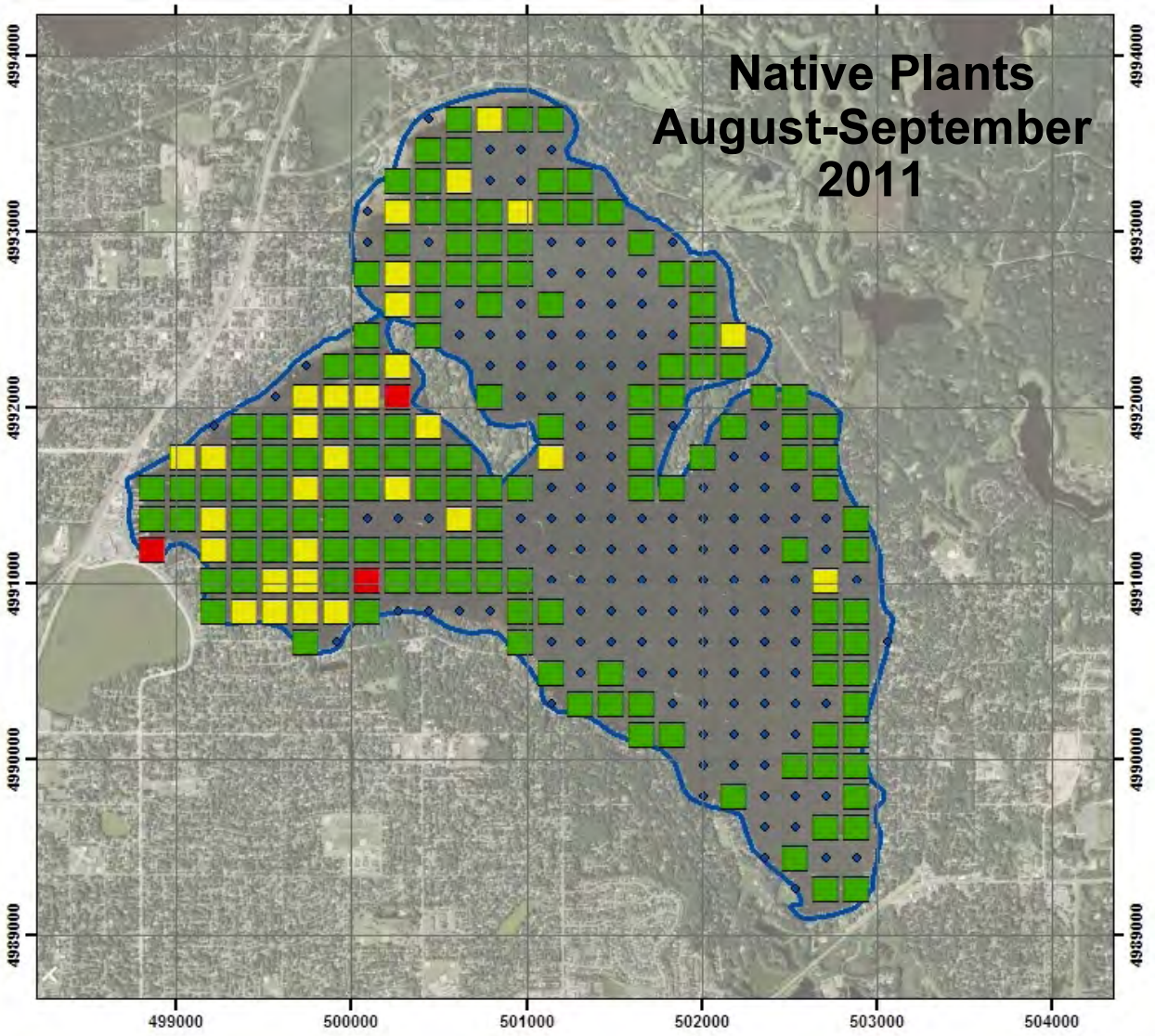

Figure 4. Native aquatic plant coverage for August 23, September 2 and 5, 2011. Green squares = light growth, yellow squares = moderate growth, and red squares = heavy growth.

Coontail: The distribution and abundance of coontail in White Bear Lake is shown in Figure 5. The dominant plant in White Bear Lake was coontail.

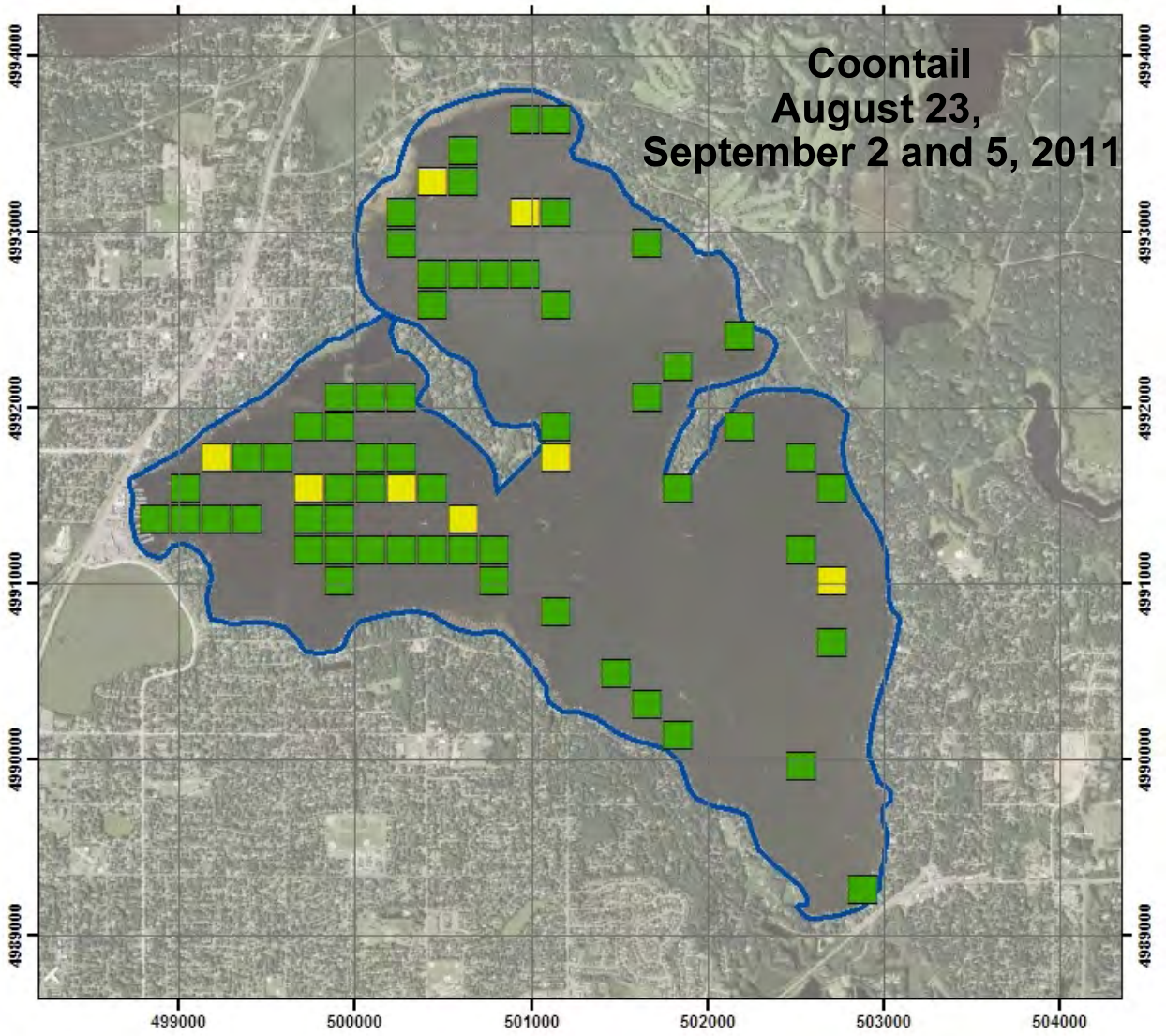

Figure 5. Coontail coverage for August 23, September 2 and 5, 2011. Green squares = light growth and yellow squares = moderate growth.

Eurasian Watermilfoil: The distribution and abundance of Eurasian watermilfoil (EWM) in the August and September 2011 survey is shown in Figure 6. Although EWM was found at 62 sites, heavy growth was observed at only six sites.

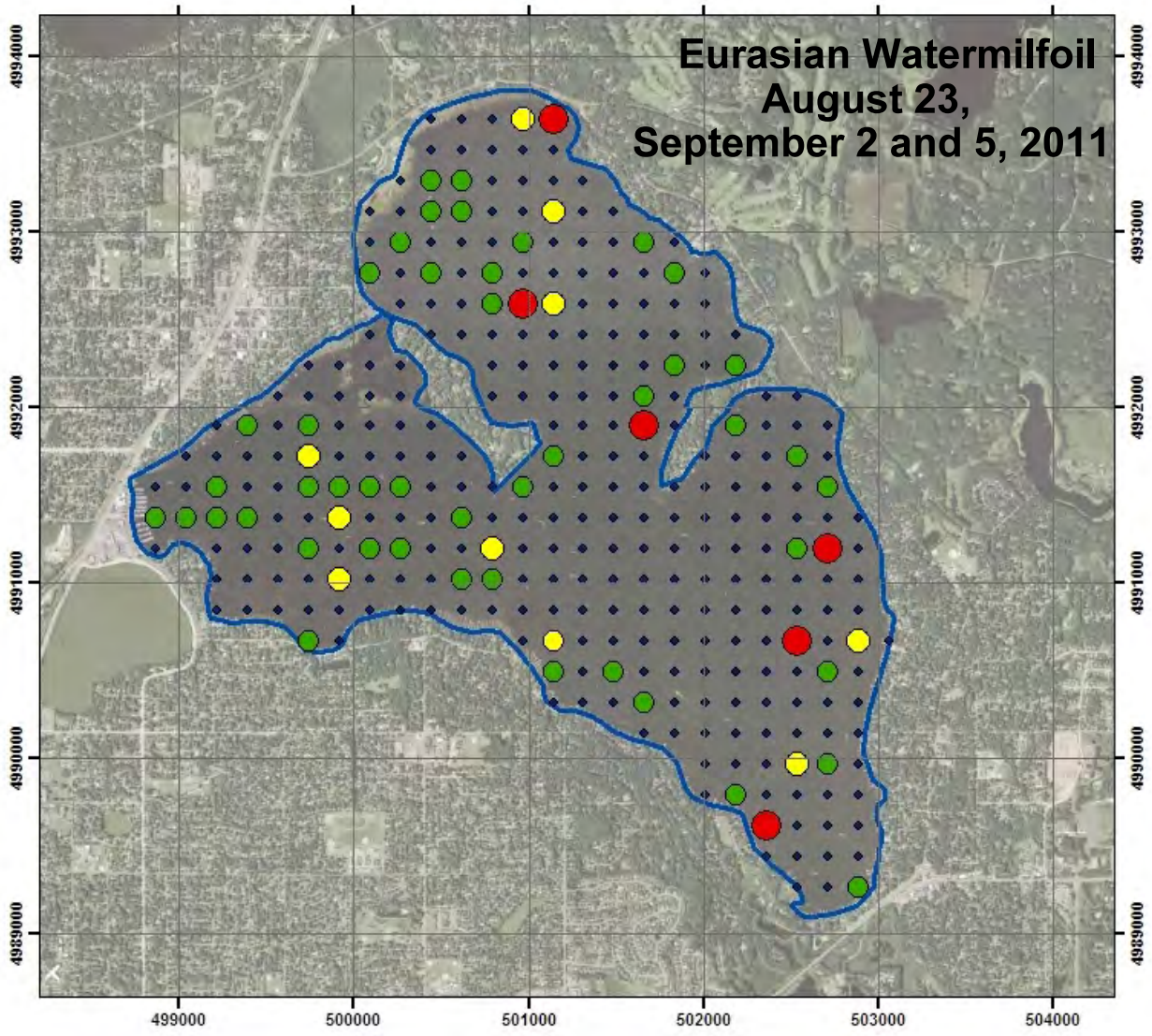

Figure 6. Eurasian watermilfoil coverage for August 23, September 2 and 5, 2011. Green dots = light growth, yellow dots = moderate growth, and red dots = heavy growth.

Eurasian Watermilfoil in White Bear Lake in 2011: On May 24 and June 14, 2011 an Eurasian watermilfoil (EWM) assessment was conducted by the MnDNR. Nine sites with potential nuisance milfoil growth and one site with nuisance milfoil growth were delineated (Figure 7). In August and September of 2011, 317 sites were sampled in water up to 30 feet deep. EWM was found at 63 out of 317 sties. Milfoil distribution was similar to the June distribution, but abundance increased slightly from June to August (Figure 7). In the late summer survey, heavy milfoil growth was observed at six out of 317 sites where it was present.

EWM Assessment **Point-Intercept Plant Survey**

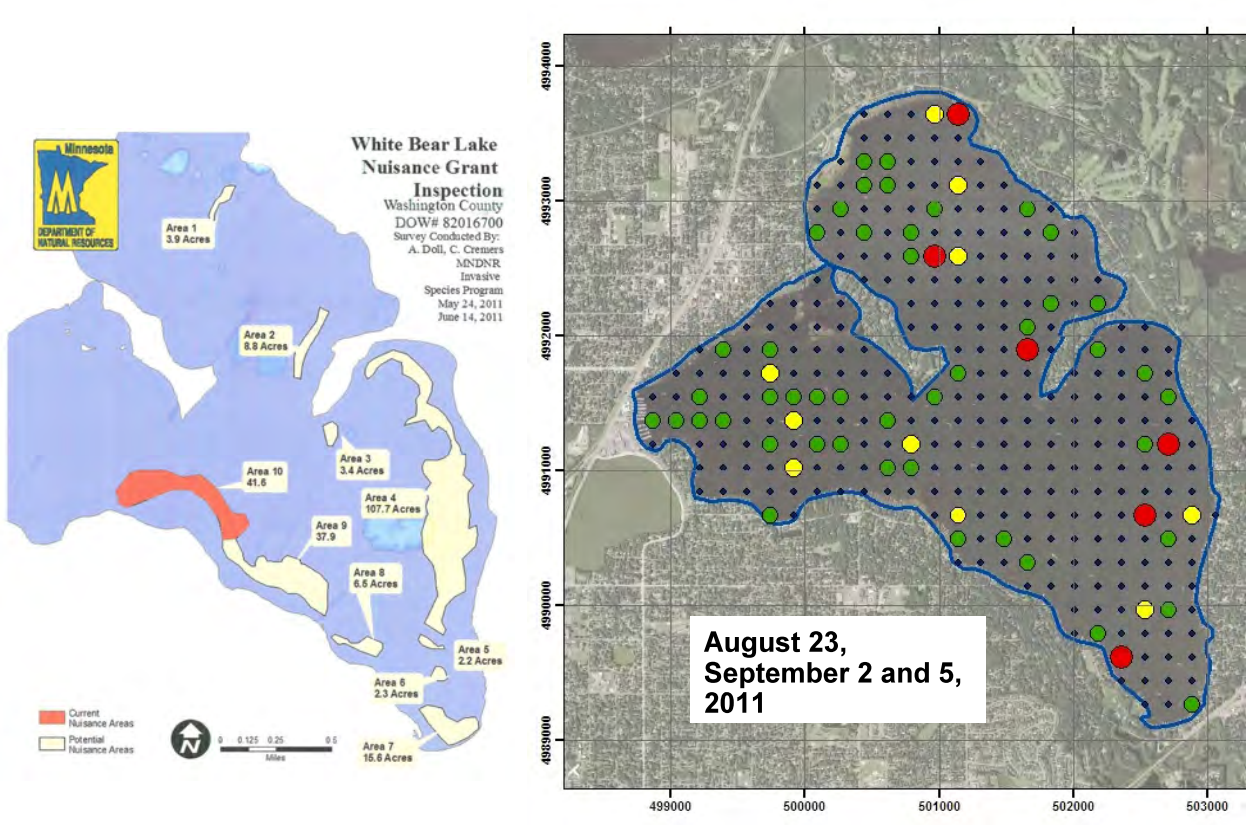

Figure 7. [left] Locations of Eurasian watermilfoil from the assessment on May 24 and June 14, 2011. Tan areas = potential nuisance growth and red area = nuisance growth.
[right] Coverage of Eurasian watermilfoil from the point-intercept aquatic plant survey on August 23, September 2 and 5, 2011. Green dots = light growth, yellow dots = moderate growth, and red dots = heavy growth.

Native Plant and Eurasian Watermilfoil Distribution and Abundance

In August and September of 2011, aquatic plant growth was found to cover 54% of the lake area. Although the non-native Eurasian watermilfoil is found in White Bear Lake. Native plant growth is more widespread and nearly as abundant as Eurasian watermilfoil (Figure 8 and 9).

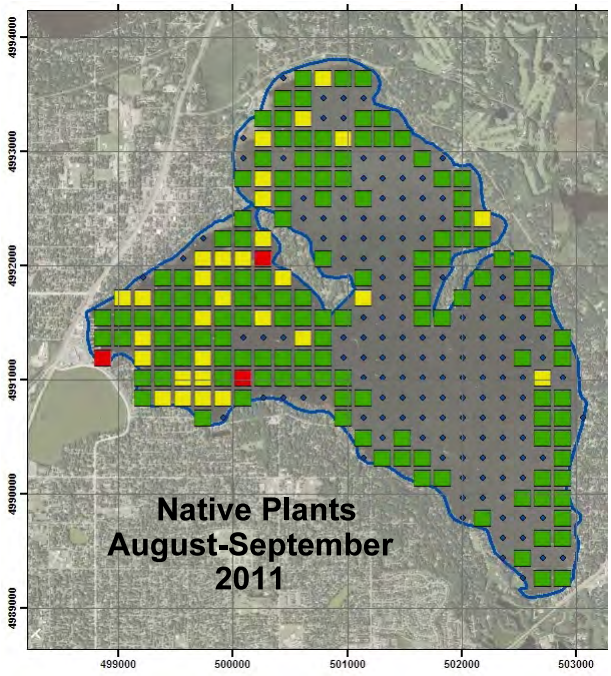

Figure 8. Native plants coverage. Green squares = light growth, yellow squares = moderate growth, and red squares = heavy growth.

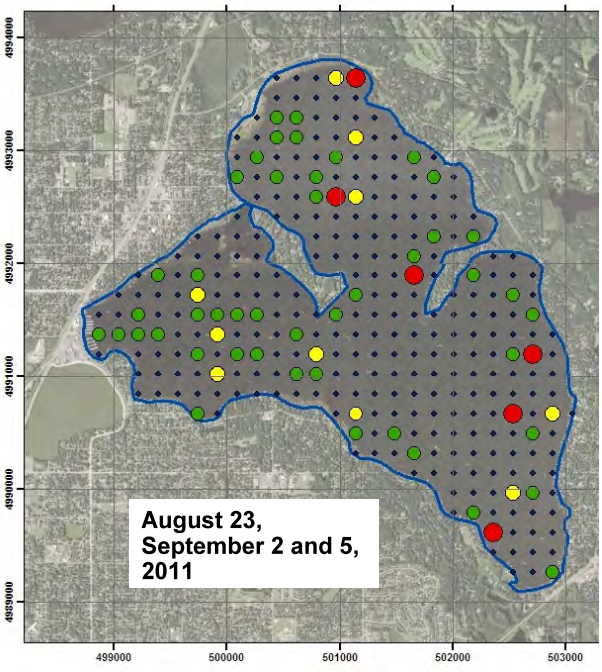

Figure 9. Eurasian watermilfoil coverage. Green circles = light growth, yellow circles = moderate growth, and red circles = heavy growth.

Potential Future Growth of Eurasian Watermilfoil in White Bear Lake Based on Lake Sediment Characteristics

Eurasian Watermilfoil Growth Potential in White Bear Lake: Eurasian watermilfoil has been in White Bear Lake since 1988. Lake sediment sampling results from 1998, 2009, and 2010 have been used to predict lake bottom areas that have the potential to support light, moderate, or heavy EWM growth in the future. Based on the key sediment parameters of NH_4 and organic matter (McComas, unpublished), a table and map were prepared that predict what type of milfoil growth could be expected (Table 3 and Figure 10).

The sediment nitrogen conditions in White Bear Lake range from mostly low to moderate concentrations. Sediments over 10 ppm of nitrogen are candidates for heavy milfoil growth and only two sites have nitrogen over 10 ppm. It has also been found that Eurasian watermilfoil does not grow well in sediments with over 20% organic matter. Site 6, sampled in 2009, and Sites 13 and 14, sampled in 2010 have high organic matter and are not predicted to support heavy milfoil growth even though nitrogen is high. Eurasian watermilfoil may grow widely through the littoral area in White Bear Lake but it is predicted that it not will produce extensive perennial nuisance matting conditions (which are defined as heavy growth conditions) on a long-term basis.

Table 3. White Bear Lake sediment data and ratings for potential heavy EWM growth.

			NH_4 Conc (ppm)	Organic Matter (%)	Potential for Heavy EWM Growth
Site	Depth		<10	<0.6 or >20	Light (green) to Moderate (yellow)
	1998	2009/ 2010	>10	>0.6 or <20	Heavy (red)
1998 Data					
1	4	0	0.8	0.6	Light
2	5	1	0.9	0.7	Moderate
3	6	2	0.7	0.4	Light
4	6	2	0.6	0.5	Low
5	5	1	0.9	0.6	Light
6	5	1	0.6	0.7	Moderate
7	7	3	0.6	0.8	Moderate
8	7	3	0.9	0.8	Moderate
9	7	3	0.8	0.5	Low
10	7	3	0.5	0.5	Low
11	7	3	0.6	0.5	Low
12	6	2	4.2	2.7	Moderate
13	6	2	1.2	0.6	Light
14	4	0	1.1	1.5	Moderate
15	2	0	0.8	0.6	Light
16	4	0	1.3	0.7	Light
17	4	0	1.2	1.3	Moderate
18	5	1	4.4	11.6	Moderate
19	5	1	0.7	1.9	Moderate
20	5	1	5.2	10.8	Moderate
21	6	2	0.2	0.5	Low
22	6	2	48.1	8.7	Heavy
23	5	1	2.7	2.1	Moderate
24	7	3	2.3	2.7	Moderate
25	4	0	1.0	0.6	Light

			NH_4 Conc (ppm)	Organic Matter (%)	Potential for Heavy EWM Growth
Site	Depth		<10	<0.6 or >20	Light (green) to Moderate (yellow)
	1998	2009/ 2010	>10	>0.6 or <20	Heavy (red)
2009 Data					
1	14	10	3.6	0.8	Moderate
2	14	10	3.2	0.9	Moderate
3	14	10	3.1	1.5	Moderate
4	14	10	2.8	1.9	Moderate
5	14	10	5.7	0.7	Moderate
6	13	9	10.1	30.5	Moderate
7	14	10	3.0	0.9	Moderate
2010 Data					
8	14	8.5	3.1	0.9	Moderate
9	14	9.5	3.5	2.0	Moderate
10	14	10	4.3	0.7	Moderate
11	14	11	5.4	0.8	Moderate
12	14	11	8.5	7.1	Moderate
13	13	12	7.2	24.6	Light
14	14	12	10.0	31.9	Light

White Bear Lake Eurasian Watermilfoil Growth Potential Based on Lake Sediments

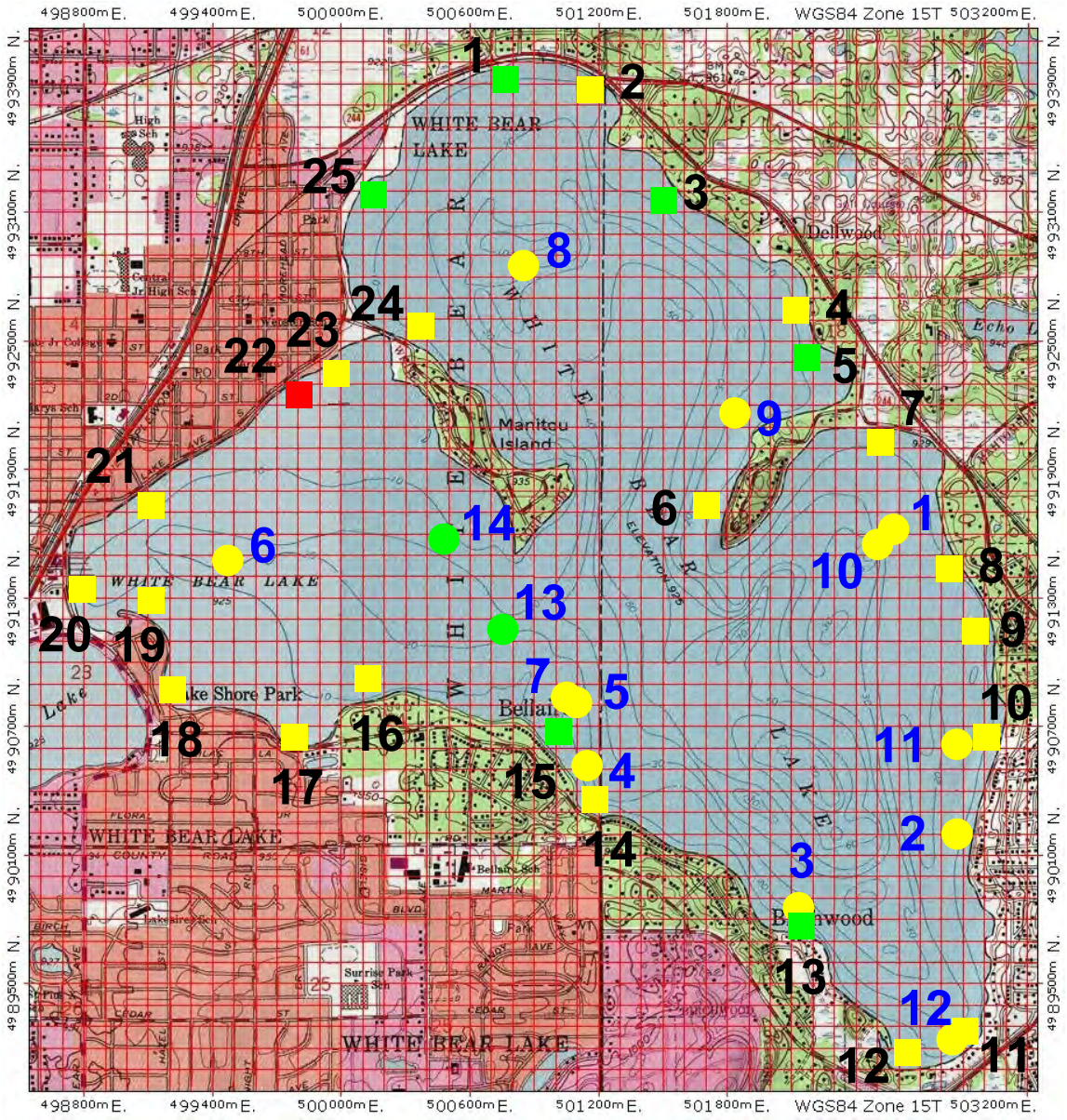

Figure 10. Sediment sample locations are shown with squares (1998 data) and circles (2009 and 2010 data). The color indicates the potential for heavy Eurasian watermilfoil to occur at that site. Key: green = low; yellow = medium; red = high potential.

Predicted Eurasian watermilfoil growth (Figure 11a) based on lake sediment characteristics indicates that light to moderate growth is expected in the areas tested in the littoral zone with heavy growth only predicted in the Matoska Marsh area on a long-term basis.

In 2008, 2009, and 2010 low lake levels have apparently stimulated growth in lake areas that were formerly too deep (too light-limited) to produce significant milfoil growth. However, in these areas, lake sediments have moderate nitrogen levels and this would indicate that if lake levels remain low, heavy milfoil growth may occur for another year or two, but is not expected to sustain long-term heavy growth.

Predicted Eurasian Watermilfoil Growth

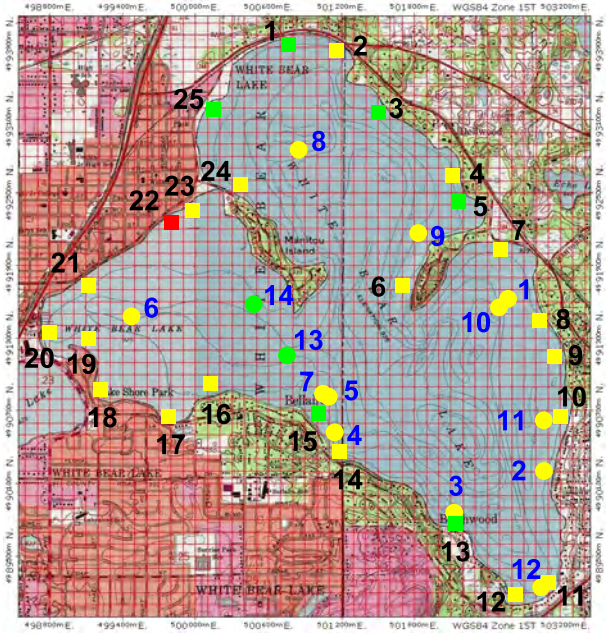

Figure 11a. Sediment sample locations are shown with squares and circles. The color indicates the type of Eurasian watermilfoil growth predicted to occur at that site. Key: green = light; yellow = moderate; red = heavy.

Actual Eurasian Watermilfoil Growth - 2011

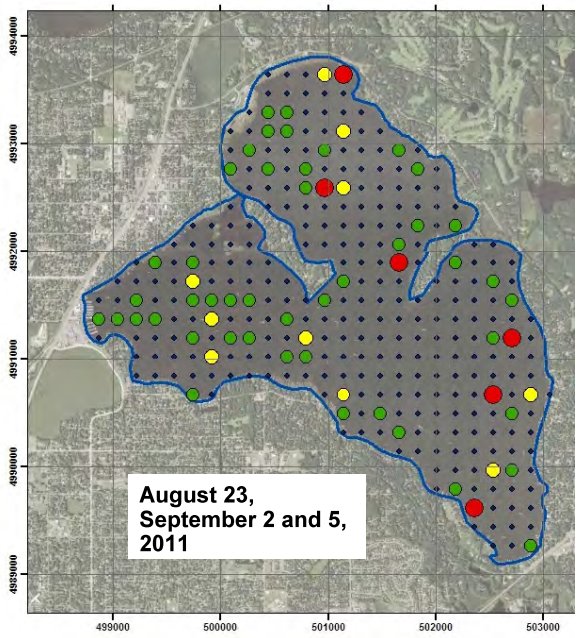

Figure 11b. Eurasian watermilfoil coverage for 2011 conditions. Key: green = light growth; yellow = moderate growth; red = heavy growth.

APPENDIX

Point-Intercept Aquatic Plant Survey

White Bear Lake point-intercept survey results for August 23, September 2 and 5, 2011.

Site	Depth (ft)	Bul-rush	Cat-tails	Spike rush	Three square	Marsh mari-gold	Coon-tail	Chara	Elodea	Star duck-weed	NWM	EWM	Naiads	Cab-bage	Stringy pond-weed	Vari-able pond-weed	Illinois pond-weed	White-stem pond-weed	Fern pond-weed	Clasp-ingleaf pond-weed	Flat-stem pond-weed	Sago pond-weed	Water celery	Water star-grass	FA benthic
1	land																								
2	6					1		1					2	1											
3	9						2					2									1				
4	land																								
5	10																		2		1				
6	TD																								
7	1																								
8	14											4													
9	TD																								
10	9					1													1				1		
11	2							0.5																	
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13	7							1				1	1								1				
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21	14						1					3													
22	8					1						1													
23	2							1																	
24	4							1																	
25	14						1											1			1				
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31	5					1								1										2	
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42	7							1					2												
43	7											2								2			1		
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70	1.5							3																	
71	1							3																	
72	3				2								3										1		
73	6												3							2					
74	4												2								1		1		
75	land																								
76	land																								
77	land																								
78	land																								
79	7								1									1	1		1				
80	13						1					3													
81	18																								
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87																									
88	TD																								
89	10																		2						
90	8																1								
91	1.5				1			2																	
92	3												2									1	1		
93	4				1								3												
94	7								1									1	3		1				
95	8						1					3							2						

White Bear Lake point-intercept survey results for August 23, September 2 and 5, 2011.

Site	Depth (ft)	Bul-rush	Cat-tails	Spike rush	Three square	Marsh mari-gold	Coon-tail	Chara	Elodea	Star duck-weed	NWM	EWM	Naiads	Cab-bage	Stringy pond-weed	Vari-able pond-weed	Illinois pond-weed	White-stem pond-weed	Fern pond-weed	Clasp-ingleaf pond-weed	Flat-stem pond-weed	Sago pond-weed	Water celery	Water star-grass	FA benthic
96	9																		4						
97	9					1												1	2						
98	8												1					1							
99	9											0.5							1	2	1				
100	10						1					1									1				
101	5							1																	
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114	2							3															1		
115	4				1								2					2					1		
116	5												3						2						
117	7						2					1	2	1						1					
118	9						2		1				2						2		1				
119	11						2					2							1						
120	13						2					2							1						
121	13						2		1										2						
122	15						1																		
123	14						1					3													
124	18																								
125																									
126																									
127																									
128																									
129																									
130																									
131																									
132																									
133	14						2					1											1		
134	11											4													
135	8																						1		
136	4						1					2			1										
137	5						1					2			1										
138	5						1					2							3						
139	7						1					1						1		2					
140	7													1				1							
141	9						2		1									2							
142	12						1					3													
143	16																								
144	19																								
145	17																								
146	12						3					2													
147	11														1				2						
148	24																								
149																									
150																									
151																									
152																									
153																									
154																									
155																									
156																									
157																									
158	20																								
159	3							0.5																	
160	13												0.5												
161	14						1		1																
162	6								1			1	1					2	1				2		
163	14								1																1
164	10																		1	1			1		
165	14						3					2													
166	14						2					2													
167	15						2					1													
168	14						3					1													
169	14						2												1						
170	6							1						1									1		
171	2							0.5																	
172	10											1							1	1					
173	24																								
174	19																								
175																									
176	5							1										1							
177	6						1												1	1					
178																									
179																									
180																									
181																									
182	10						2					2									1				
183	6					2													3				2		
184	14						3																		
185	15						2		1																
186	12						2		1										1		1				
187	9											3		1				1	1						
188	6							3																	
189	9						1												1	1	1				
190	9						2											2	2						

White Bear Lake point-intercept survey results for August 23, September 2 and 5, 2011.

Site	Depth (ft)	Bul-rush	Cat-tails	Spike rush	Three square	Marsh mari-gold	Coon-tail	Chara	Elodea	Star duck-weed	NWM	EWM	Naiads	Cab-bage	Stringy pond-weed	Vari-able pond-weed	Illinois pond-weed	White-stem pond-weed	Fern pond-weed	Clasp-ingleaf pond-weed	Flat-stem pond-weed	Sago pond-weed	Water celery	Water star-grass	FA benthic
191	9																	1	2						
192	8																		2						
193	11						3					2								1			1		
194																									
195	24																								
196	5							1								1									
197	4							1					1			1									
198																									
199																									
200	13						2					2													
201	5							1					1					1							
202	land																								
203	4											1	2						1						
204	4					1							1	1				1	1				2		
205	4.5						1					1	3	1				1					2		
206	2						1	2																	
207	2							2																	
208	3							2					1					1					1		
209	3												3					1	1				1		
210	10						2	1											1				1		
211																									
212	27																								
213	11											4									1				
214	land																								
215	14						2					2													
216																									
217	8					1												1	2				1		
218	1							1																	
219	land																								
220	2												3									1			
221	5						1						3						1				1		
222	5						1						3						1				1		
223	4						1						4					1							
224	8																				2		1		
225																									
226																									
227																									
228																									
229	15						1					0.5													
230	6							2					1					2					2		
231	2												1							2					
232	2							1					1												
233	land																								
234	1.5												2												
235	1												2									1			
236	1												3												
237	17																								
238																									
239																									
240																									
241																									
242																									
243	10						1					1													
244	7					1		1					2					1							
245	1							1				1													
246	1												2									1			
247	2							1					1												
248	16																								
249	30																								
250																									
251																									
252																									
253																									
254																									
255	22																								
256	9					1		2											2				1		
257	3						1						3					1					1	1	
258	4												3							1	1		1		
259	13						1																		
260	20																								
261	10					1						2									1		2		
262	13											4													
263	9						1					3													
264	28																								
265																									
266																									
267	22																								
268	9							1											1						
269	3										1	1	1												
270	6												3						1				1		
271	13						1					2							2						
272	15						1																		
273	12						2					2							2						
274	13						1																		
275	18																								
276																									
277																									
278	22																								
279	8							1				1							1				1		
280	7										1		1	1				1	1					1	
281	land																								
282	9						2					2									1				
283	20																								
284	5							0.5										1							
285	6							1					1					1					1		

White Bear Lake point-intercept survey results for August 23, September 2 and 5, 2011.

Site	Depth (ft)	Bul-rush	Cat-tails	Spike rush	Three square	Marsh mari-gold	Coon-tail	Chara	Elodea	Star duck-weed	NWM	EWM	Naiads	Cab-bage	Stringy pond-weed	Vari-able pond-weed	Illinois pond-weed	White-stem pond-weed	Fern pond-weed	Clasp-ingleaf pond-weed	Flat-stem pond-weed	Sago pond-weed	Water celery	Water star-grass	FA benthic
286	8					1		1				2	1												
287	25																								
288																									
289	TD																								
290	15						1					1							1						
291																									
292																									
293	8						1												1	1	3				
294	10											2						1	2						
295	15											1									1				
296	26																								
297	5						3	3																	
298	10						1					3							1						
299	25																								
300	8							1							1						1				
301	land																								
302	10						3			1		1						2							
303	9						1					1		1				3		1	2				
304																									
305																									
306	1							1					1												
307	6							1					1												
308	8								1	1															2
309	2						1	1										0.5							
310	19																								
311	TD																								
312	22																								
313	land																								
314	1							2																	
315	6							3					3					1					1		
316	12						1					3									1				
317	8						1					4								1	1				
Average		**3.0**	**5.0**	**1.0**	**1.2**	**1.1**	**1.6**	**1.4**	**1.0**	**1.0**	**1.0**	**2.0**	**1.9**	**1.0**	**1.0**	**1.0**	**1.0**	**1.2**	**1.5**	**1.3**	**1.2**	**1.0**	**1.2**	**1.3**	**1.5**
occurrence (317 sites)		**1**	**1**	**1**	**5**	**13**	**66**	**47**	**11**	**2**	**2**	**63**	**46**	**10**	**6**	**2**	**1**	**34**	**48**	**16**	**25**	**4**	**36**	**3**	**2**
% occurrence		**0**	**0**	**0**	**2**	**4**	**21**	**15**	**3**	**1**	**1**	**20**	**15**	**3**	**2**	**1**	**0**	**11**	**15**	**5**	**8**	**1**	**11**	**1**	**1**