Plant and Eurasian Watermilfoil Weevil Survey
Sanctuary Pond at Prairie Crossing
8/25/06

Eurasian Watermilfoil Weevil Survey

On August 25, 2006, ILM staff member Sandy Kubillus performed a plant and Eurasian Watermilfoil (EWM) weevil (*Eurychiopsis lecontei*) survey at Sanctuary Pond. EWM has been the dominant plant species in the pond since the late 1990s. A total of three thousand weevils were installed in 2002 and 2003 to help control the EWM. Surveys during those years showed very low survivorship. ILM had theorized that perhaps the weevils were being eaten by the extensive minnow population. This search for the EWM weevil is the first since 2003 and milfoil has continued to be the dominant species present in the pond.

From two 100 ft. transects it was found that EWM was the dominant species in these locations. From the stems collected, only one adult weevil with several larva were observed. It appears that the milfoil weevil is present, but in has an extremely low population. Other aquatic insects were observed on the plants and they may be competing with the weevils.

Monitoring involved collecting data on plant type, milfoil density, and weevil density at two sites in the pond: the 2002 weevil stocking site on the northwest side of the pond and a control site on the southeast side of the pond. Plant type was monitored by establishing a 100-foot transect line through the milfoil beds at both sites, and recording the dominant species present at 5 foot intervals and the depth of water above the milfoil. Weevil density was determined by collecting milfoil stems at even intervals (20 ft) along the transect line at both sites and Jim Bland evaluated the stems for weevil adults, eggs and larvae. The protocol followed was provided by EnviroScience, Inc., the suppliers of the EWM weevils

Transect 1 (NW side of pond)

Nineteen separate milfoil strands were taken from Transect 1. Strands varied in size from short stubs to over 20 inches in length. Average size was about a foot long. Only a single strand demonstrated a blackened appearance characteristic of milfoil damage from milfoil weevils. Each strand was examined with a dissecting scope for the presence of adult weevils, larvae or eggs. The strand for which an adult and larva were found showed very minimal damage. The adult was preserved in alcohol for confirmation. Stem damage is defined as one of two conditions; either blackened and hollow and/or areas where larva can be seen burroughing.

Transect 1 (NW side of pond)

Strand No.	Stem Damage	Adults	Larva	Eggs
1	Yes	0	0	0
2	Yes	0	0	0
3	Yes	0	?	0
4	No	0	0	0
5	No	0	0	0
6	No	0	0	0
7	Yes	0	0	0
8	Yes	0	0	0
9	No	0	0	0
10	No	0	0	0
11	No	0	0	0
12	No	0	0	0
13	Yes	Yes	Yes	0
14	No	0	?	0
15	No	0	0	0
16	No	0	0	0
17	No	0	0	0
18	No	0	0	0
19	No	0	0	0

- Egg masses are present but it is not clear what organism they belong to.
- "?" Larva saved for future identification; Does not look like weevil larva
- Mites present as well as other types of larva and beetles

Transect 2 (SE side of pond)

Strand No.	Stem Damage	Adults	Larva	Eggs
1	Yes	0	0	0
2	Yes	0	0	0
3	No	0	0	0
4	No	0	0	0
5	No	0	0	0
6	No	0	0	0
7	No	0	0	0
8	No	0	0	0
9	Yes	0	0	0
10	No	0	0	0
11	No	0	0	0
12	No	0	0	0
13	No	0	0	0
14	No	0	0	0
15	Yes	0	0	0
16	No	0	0	0
17	No	0	0	0
18	No	0	0	0

- **Aphid like organism on strand No. 3**
- **Unidentified larva on strand 7**
- **Unidentified true bug on strand 8**
- **Unidentified larva burrowing in milfoil**

Aquatic Plant Survey

Eight transects across the pond were done as part of the plant survey. The majority of the plants consisted of only a few species with white water lilies and American pondweeds along the shoreline with some chara mixed in and Eurasian watermilfoil from a depth of 1 foot to about 5 feet, where coontail took over. A small amount of sago pondweed was found in the deepest sections towards the east side of the pond. A small amount of horned pondweed was also observed. A floristic quality assessment showed the following:

Floristic Quality Assessment (FQI)

	8/25/06	7/16/03
Native species	5	7
Total species	6	8
Native Mean C	6.8	6.7
Native FQI	15.2	17.8

The lower FQI in 2006 may be due to the month of the field visit, or that the EWM and coontail have become more dominant. Notice that a plant survey conducted in 2003 had significantly less species than the July visit that same years. Two species that were found in 2003 were not found during the most recent visit. These species were slender naiad and small pondweed. Naiads typically become dominant earlier in the summer, so it may have been present in June, but was not observed during this August visit. Over the years, ILM has noticed less chara and American pondweed and more coontail in the pond. If the EWM weevils become dominant and reduce the milfoil population, there is a good possibility that coontail will replace the EWM.

Sanctuary Pond Aquatic Plant Surveys
(in order of dominance)

August 25, 2006	**July 16, 2003**	**September 3, 2003**
Eurasian watermilfoil (Myriophyllum spicatum)	Eurasian watermilfoil	Eurasian watermilfoil
Coontail (Ceratophyllum demersum)	American pondweed	Coontail
White water lily (Nymphaea tuberose)	Coontail	American pondweed
American pondweed (Potamogeton nodosus)	Horned pondweed	White water lily
Sago pondweed (Potamogeton pectinatus)	Small pondweed (Potamogeton pusillus)	Sago pondweed
Chara*	White water lily	Chara*
Horned pondweed (Zannichellia palustris)	Sago pondweed	
	Chara*	
	Slender niad (Najas flexilis)	
	Potamogeton c.f. filiformus	

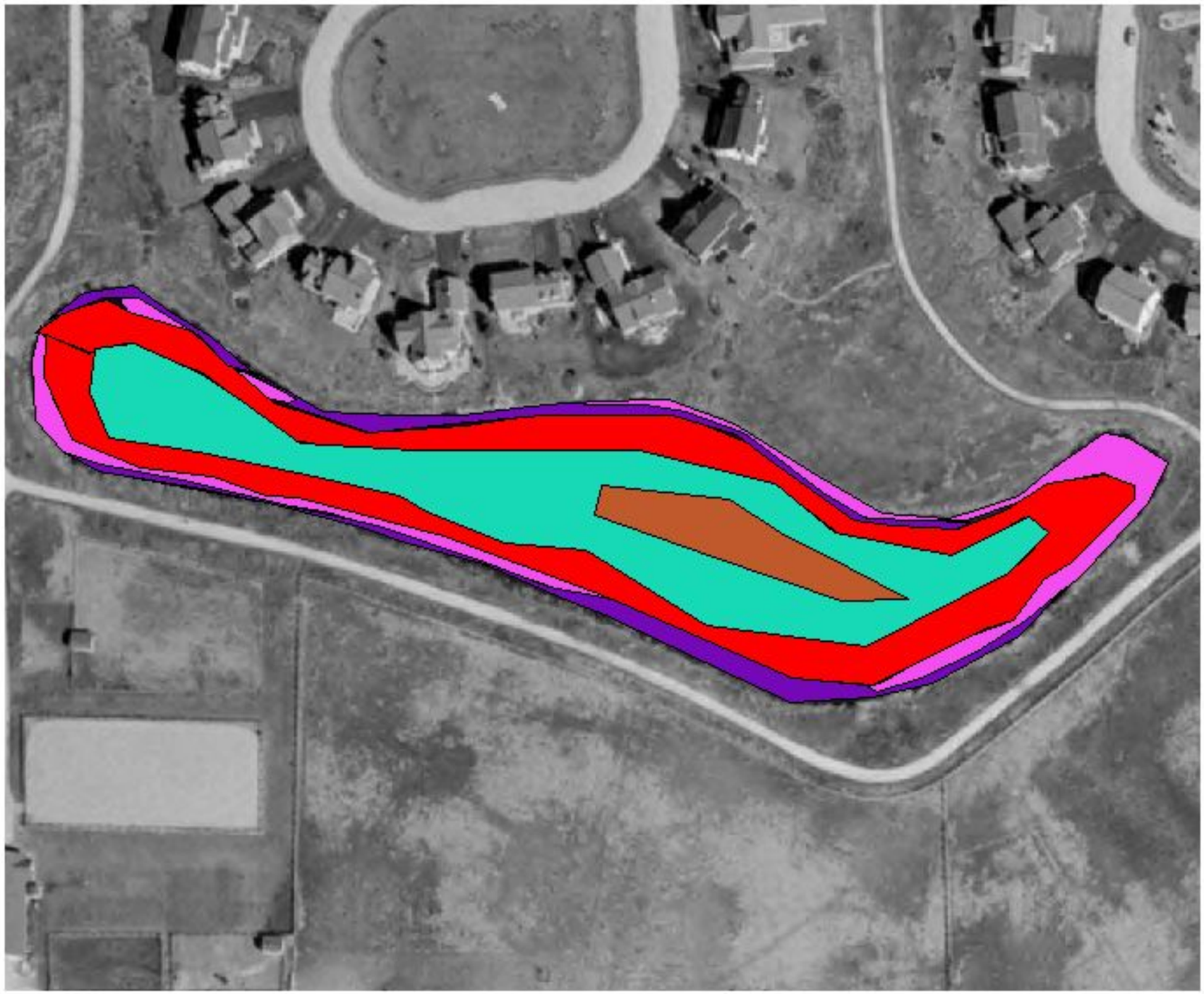
* Chara is a type of algae and not a rooted aquatic plant species that is recognized in the floristic quality assessment.

Recommendations

- EWM weevils may eventually build up a high enough population to have an effect on the milfoil, but after 4 years, it is not very likely. If control of EWM is desired it will have to done with herbicide treatments or reintroduction of weevils, - but we do not recommend this based on past experience. Herbicide treatments in this pond may require Incidental Take permits from the IDNR due to the presence of the Threatened and Endangered fish species.

- Formal plant surveys should be conducted annually to notice changes in the aquatic plant community.

Sanctuary Pond Plant Survey, 8/25/06



American pondweed.shp
Scattered sago pondweed shp.shp
Coontail.shp
Ewm.shp
Whitewater lilies.shp

N

Integrated Lakes Management, Inc.
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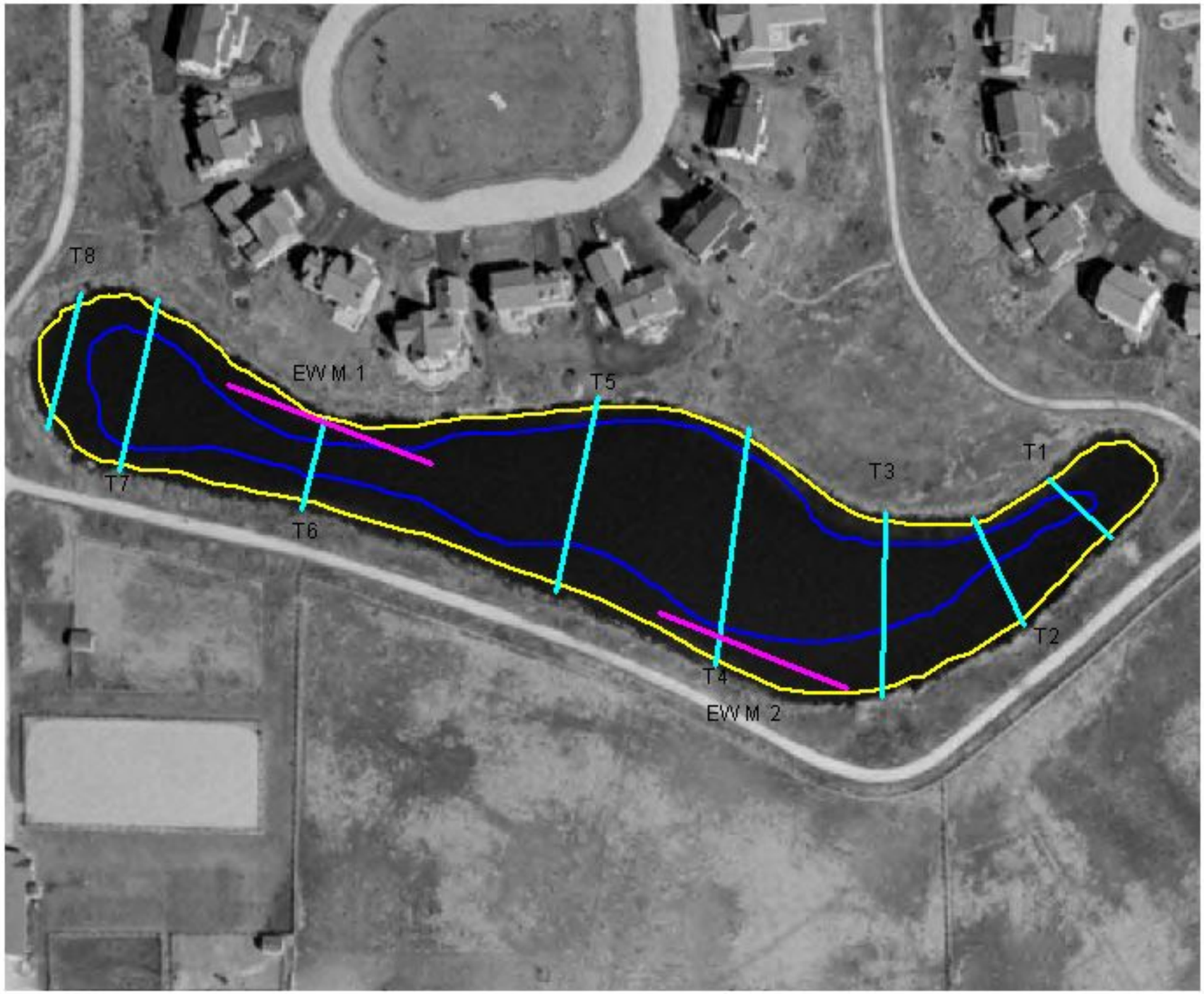
Location of plant species are approximate. Chara was underneath shoreline plants. Horned pondweed was minimal.

300 0 300 600 Feet

Sanctuary Pond Plant Transect Map, 8/25/06



Ewm transects.shp
Plant transects.shp
2ft.shp
6ft.shp

N

Integrated Lakes Management, Inc.
Lake and Pond Management
Restoration ▪ Consulting

Transect locations are approximate.
See report for GPS information.

300 0 300 600 Feet

Site: **Sanctuary Pond Plant Inventory (8/25/06)**
Locale:
By: Sandy Kubillus
File: 82506sp.xls

FLORISTIC QUALITY DATA		Native			Adventive		
5	NATIVE SPECIES	Tree	0	0.00%	Tree	0	0.00%
6	Total Species	Shrub	0	0.00%	Shrub	0	0.00%
6.8	NATIVE MEAN C	W-Vine	0	0.00%	W-Vine	0	0.00%
5.7	W/Adventives	H-Vine	0	0.00%	H-Vine	0	0.00%
15.2	NATIVE FQI	P-Forb	5	83.30%	P-Forb	1	16.70%
13.9	W/Adventives	B-Forb	0	0.00%	B-Forb	0	0.00%
-5	NATIVE MEAN W	A-Forb	0	0.00%	A-Forb	0	0.00%
-5	W/Adventives	P-Grass	0	0.00%	P-Grass	0	0.00%
AVG:	Obl. Wetland	A-Grass	0	0.00%	A-Grass	0	0.00%
		P-Sedge	0	0.00%	P-Sedge	0	0.00%
		A-Sedge	0	0.00%	A-Sedge	0	0.00%
		Cryptogam	0	0.00%			

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGN	COMMON NAME
CERDEM	5	Ceratophyllum demersum	-5	OBL	Nt P-Forb	HORNWORT
MYRSPI	0	MYRIOPHYLLUM SPICATUM	-5	OBL	Ad P-Forb	EUROPEAN WATER MILFOIL
NYMTUB	7	Nymphaea tuberosa	-5	OBL	Nt P-Forb	WHITE WATER LILY
POTNOD	7	Potamogeton nodosus	-5	OBL	Nt P-Forb	LONG-LEAVED PONDWEED
POTPEC	5	Potamogeton pectinatus	-5	OBL	Nt P-Forb	SAGO PONDWEED
ZANPAL	10	Zannichellia palustris	-5	OBL	Nt P-Forb	HORNED PONDWEED

Eurasian Watermilfoil Plant Survey

Site: Sanctuary Pond Date: 8/25/06

Weather Conditons: Partly Cloudy, becoming stormy

Transect EWM 1

GPS location Start: N42°20.024
GPS location Finish: W088°00.789
Direction of transect: 110

Feet	Plants		Inches Below Surface		
0	EWM		surface		
5	EWM		surface		
10	EWM		surface		
15	EWM		surface		
20	EWM		surface		
25	EWM		surface		
30	EWM		surface		
35	EWM		surface		
40	EWM		surface		
45	EWM		surface		
50	EWM		surface		
55	EWM		surface		
60	EWM		surface		
65	EWM		surface		
70	EWM		surface		
75	EWM		surface		
80	EWM		surface		
85	EWM		surface		
90	EWM		surface		
95	EWM		surface		
100	EWM		surface		

Transect EWM 2

GPS location Start: N42°20.003
GPS location Finish: W088°00.728
Direction of transect:

Feet	Plants		Inches Below Surface		
0	EWM		surface		
5	EWM		surface		
10	EWM		surface		
15	EWM		surface		
20	EWM		surface		
25	EWM		surface		
30	EWM		surface		
35	EWM		surface		
40	EWM		surface		
45	EWM		surface		
50	EWM		surface		
55	EWM		surface		
60	EWM		surface		
65	EWM		surface		
70	EWM		surface		
75	EWM		surface		
80	EWM		surface		
85	EWM		surface		
90	EWM		surface		
95	EWM		surface		
100	EWM		surface		

Cross Transects: for Plant Survey (8/25/06)
Sanctuary Pond

T1	Direction Feet from shore	Plants present and percentages
N42°20.013	W shoreline	WWL (70%) (White water lily = WWL)
W088°00.647	10 ft from W shore	EWM (100%) (Eurasian watermilfoil = EWM)
140°	center	EWM (100%)
	E shoreline	WWL (70%)
T2	SE shoreline	AP (100%) (American Pondweed = AP)
N42°20.001	10 ft from SE shore	WWL (20%) / EWM (80%)
W088°00.653	20 ft from SE shore	EWM (100%)
325°	20 - 50 ft from SE shore	Coontail (100%)
	15 ft from NW. shore	WWL (75%) / EWM (25%)
	NW shoreline	WWL (100%)
T3	N shoreline	WWL (75%) / AP (15%) / EWM (10%)
N42°20.008	20 ft from N shore	EWM (100%)
W088°00.676	40 ft from N shore	coontail (50%) / EWM (50%)
210°	center	coontail (20%)
	40 ft from S shore	sago (25%) / coontail (50%)
	20 ft from S shore	coontail (75%) / EWM (25%)
	10 ft from S shore	EWM (100%)
	S shoreline	WWL (50%) / AP (25%) / chara (25%)
T4	S shore	AP (70%) / EWM (20%) / bare sediment (10%)
N42°19.994	30 ft from S shore	EWM (100%)
W088°00.715	50 ft from S shore	coontail (50%) / EWM (50%)
192°	center	sago (25%) / coontail (50%)
	20 ft from N shore	coontail (50%) / EWM (50%)
	10 ft from N shore	EWM (100%)
	N shoreline	WWL (60%) / AP (25%) / chara (15%)
T5	N shoreline	AP (20%) / WWL (30%) / EWM (50%)
N42°20.021	10 ft from N shore	EWM (100%)
W088°00.741	25 ft from N shore	coontail (75%) / EWM (25%)
203°	center	coontail (50%)
	20 ft from S shore	EWM (100%)
	S shoreline	EWM (70%) / WWL (10%) / AP (20%)
T6	S shoreline	AP (50%) / EWM (30%) / chara (20%)
N42°20.012	10 ft from S shore	EWM (80%) / WWL (20%)
W088°00.776	50 ft from S shore	EWM (50%) / coontail (50%)
200°	10 ft from N shore	EWM (90%) / AP (10%)
	N shoreline	AP (70%) / chara (30%)
T7	S shoreline	AP (50%) / chara (50%)
N42°20.01	10 ft from S shore	WWL (70%) / AP (10%) / EWM (20%)
W088°00.80	15 ft from S shore	chara (50%) / EWM (10%) / WWL (40%)
220°	20 ft from S shore	EWM (100%)
	30 ft from S shore	sago (20%) / coontail (80%)
	20 ft from N shore	EWM (80%) / WWL (20%)
	N shoreline	WWL (75%) / AP (10%) / chara (15%)
T8	N shoreline	AP (10%) / EWM (90%)
N42°20.39	10 ft from N shore	EWM (100%)
W088°00.81	30 ft from N shore	Sago (10%) / coontail (40%) / EWM (50%)
225°	50 ft from N shore	coontail (100%)
	20 ft from S shore	coontail (70%) / EWM (20%) / sago (10%)
	S shoreline	WWL (90%) / EWM (10%)