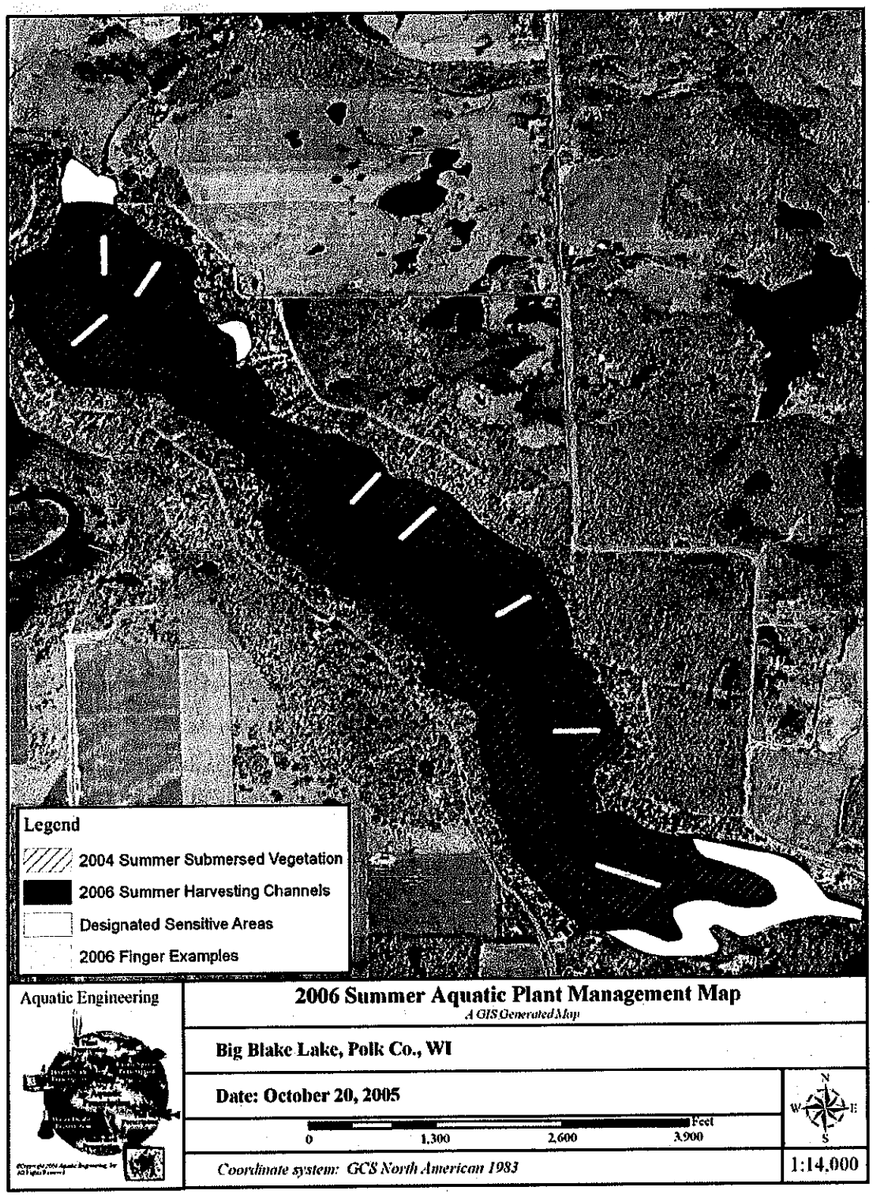

Figure 17. Aquatic plant management map for Big Blake Lake (*Polk County, WI*) beginning summer of 2006. Navigational channels will be harvested 100 feet from shore where nuisance vegetation inhibits recreational use. The yellow areas have been added to depict an example of what "access fingers" may look like. The actual size and location of such fingers will have to be determined annually based on recreational need.

9.4 Individual Dock Programs

Property owners may want to contract an aquatic herbicide application firm to provide relief around their individual docks and swimming areas. These treatments can be used to provide each property owner access to the navigational channels harvested approximately 100 feet from shore. WDNR permits are required for individual dock herbicide applications. See the local APM coordinator for more information.

9.5 Eurasian water-milfoil Prevention Program

In addition to managing CLP and nuisance native plants, monitoring for Eurasian water-milfoil (EWM) is recommended. Though not yet a widespread problem in the region, many lake patrons travel from the Twin Cities and from parts of Wisconsin where EWM is a problem. Detecting pioneer stands of EWM and eliminating them as soon as possible, is essential in preventing widespread infestation. The District committed to implementing a clean boats, clean waters program and will perform volunteer spot checks for exotic species. In addition, the District should appoint a "lake steward" who will be responsible for organizing information collected by volunteers. Monitoring for EWM can be conducted by volunteers on a weekly basis who would then report to the steward. In addition to volunteer monitoring, the District should hire a professional to monitor the lake each year that Level II or III management practices are performed.

Another prevention method would be to implement a Clean Boats, Clean Waters program *(CBCW)*. Information on how to participate in this program is available through the UW-Extension office, WDNR, and TLI. Specific training is required for participation and individuals interested will have to sign up for one of the training courses offered. This is a good program for both preventing exotics from entering Big Blake Lake and preventing the accidental spreading of exotics from Big Blake Lake to a neighboring lake.

In between performing whole lake evaluation surveys, a less intense and more focused monitoring is needed to check for annual changes. The intensity of monitoring will increase with the presence of invasive species.

Use the rake sampling method in areas of:

1) Major inflows - sample a wedged-shaped area *(pointing upstream)* using a minimum of 10 points, 10 meters apart.

2) Known boat launch sites - sample a wedged-shaped area *(pointing at the landing)* using a minimum of 20 points, 10 meters apart.

Detailed records will be maintained of when and where monitors look for plants; GPS coordinates will be used to locate plant communities and plot the results using the GIS software. This will help to keep track of monitoring stations and rake sampling data over time. Without good location data or a GPS record of new sightings, it may be difficult to find a small pioneer population again. Any new sighting will be reported to the District's appointed lake steward.

Monitoring in sites known to contain rare, endangered or sensitive aquatic plants, species of special concern, or areas with the Sensitive Area Designation *(SAD)* needs to be slightly modified. Be sure to sample beyond the margins of the SAD. Visual inspection beyond the standard sampling can enhance detection efforts. Visual observation from a boat or the use of SCUBA is acceptable.

Monitors should patrol the lake in early spring and at least two times during the summer to watch for invasive plants. Since CLP is present, it will typically already be growing at ice-out. If EWM becomes present, it will not be far behind. Selective herbicide treatment of these growths of EWM would be recommended as early as possible for maximum effectiveness and to lessen their impacts on native plant species.

In general a quantitative survey of the lake plant community should be performed at least every five years. Watch for changes in species diversity or changes in abundance of native species, and not just for the presence or absence of exotics. A decrease in diversity or an increase of one particular species may be an early-warning sign of changing water quality. The District should track parameters such as the FQI, these can be extremely useful over time.

Complete a professional survey for the presence of non-native plant species and for updating the native species list every three to five years. This will assist in the evaluation of trends in the lake and ensure more accurate compilations of community composition by volunteers. More intensive monitoring and an update to the plan will be required if there is ongoing restoration or management.

A network of District representatives, with addresses and phone numbers, should be available to volunteers and consultants monitoring the lake in case of a EWM occurrence. The District should have the areas surrounding all boat launches physically monitored during the fishing opener, 4th of July weekend and any local high-use days such as annual fishing tournaments. The District should be prepared to implement a selective strategy to remove EWM in the event it becomes introduced into the lake. The key to eliminating a pioneer stand of EWM is to kill or remove the entire plant(s) without fragmenting it in the process. EWM easily spreads by fragmentation and would be impossible to eliminate by mechanical removal leaving herbicides and physical hand removal as the best option.

9.6 Water Quality Monitoring and Protection

Water quality parameters such as Secchi depth, total phosphorus, and chlorophyll *a* should be monitored on a regular basis. Recent studies suggest that CLP may play an important role in nutrient cycling and water quality as it decays in the summer. Though more research is required to determine exact effects of monotypic CLP beds on water quality, it is widely recognized that the release of phosphorus from CLP in the summer can fuel local algae blooms and disrupt the annual cycling of phosphorus.

The District should monitor the water quality every three years using sampling protocols similar to those used in the 2004 monitoring. The TSI values can be calculated and compared from year to year to determine if the trophic status of the lake is increasing, decreasing or remaining the same. This can be a good long-term indicator for the lake. Yearly variability can be high based on environmental conditions, so it is generally not good to make short-term comparisons.

The District's PEC committee should also promote the implementation of BMP's throughout the Straight River watershed. In addition, ordinances created for Big Blake Lake, such as storm water and septic regulations, should be promoted throughout the Straight River watershed. This means the District will likely need to enlist the help of the Polk County Land and Water Resource Department.

The largest gain in improving water quality within Big Blake Lake lies in improving the quality of water entering the lake. The majority of the water enters the lake from the Straight River which connects Big Round Lake to Little Blake Lake and eventually ends up in Big Blake Lake. We are recommending a holistic approach to managing the water quality throughout the watershed. Property owners of each lake, along with special interest groups, lake patrons, and the general public alike will benefit from increased water quality. We are recommending that the members of each group previously mentioned get organized and begin to improve the water quality not only in their immediate riparian land but throughout the watershed.

9.7 Additional Monitoring

Macroinvertebrate Community

The macroinvertebrate community in lakes is very important in the food web as well as nutrient cycling. Because Big Blake Lake had a low diversity rating, improvements in the lake and surrounding watershed should be seen in a change of the macroinvertebrate community. The macroinvertebrate community should be monitored as management decisions are implemented or minimally just prior to updating the aquatic plant management plan.

Fishery

A healthy fishery will be the result of good plant habitat, water quality, and invertebrate community. Northern pike, bass, and walleye help maintain good water clarity by consuming the fish that eat zooplankton. The past stocking efforts and size/bag limits imposed by the WDNR have helped maintain the fishery and should be continued in

future management efforts. The WDNR is doing a good job of monitoring the fish population of Big Blake Lake and has a good understanding of how the size limits affect abundance and occurrence of quality sized fish.

In addition to managing the fish population through stocking efforts, healthy aquatic plant communities promote the establishment of healthy fisheries. Aquatic plants provide cover and foraging opportunities for fish of all species and sizes. Studies are currently being conducted to assess the effects of monotypic stands of CLP on macroinvertebrate communities. The sampling performed by AEI in 2004 also takes into account the distinct differences between monotypic CLP beds and well-mixed areas of native plant species. The conclusions one can draw are that macroinvertebrate communities are, statistically, not impacted by monotypic CLP beds or that there is not enough difference in the plant community between sample points to notice an effect on the invertebrate community *(i.e., there is no place in the lake were the macroinvertebrate community is not impacted by CLP).*

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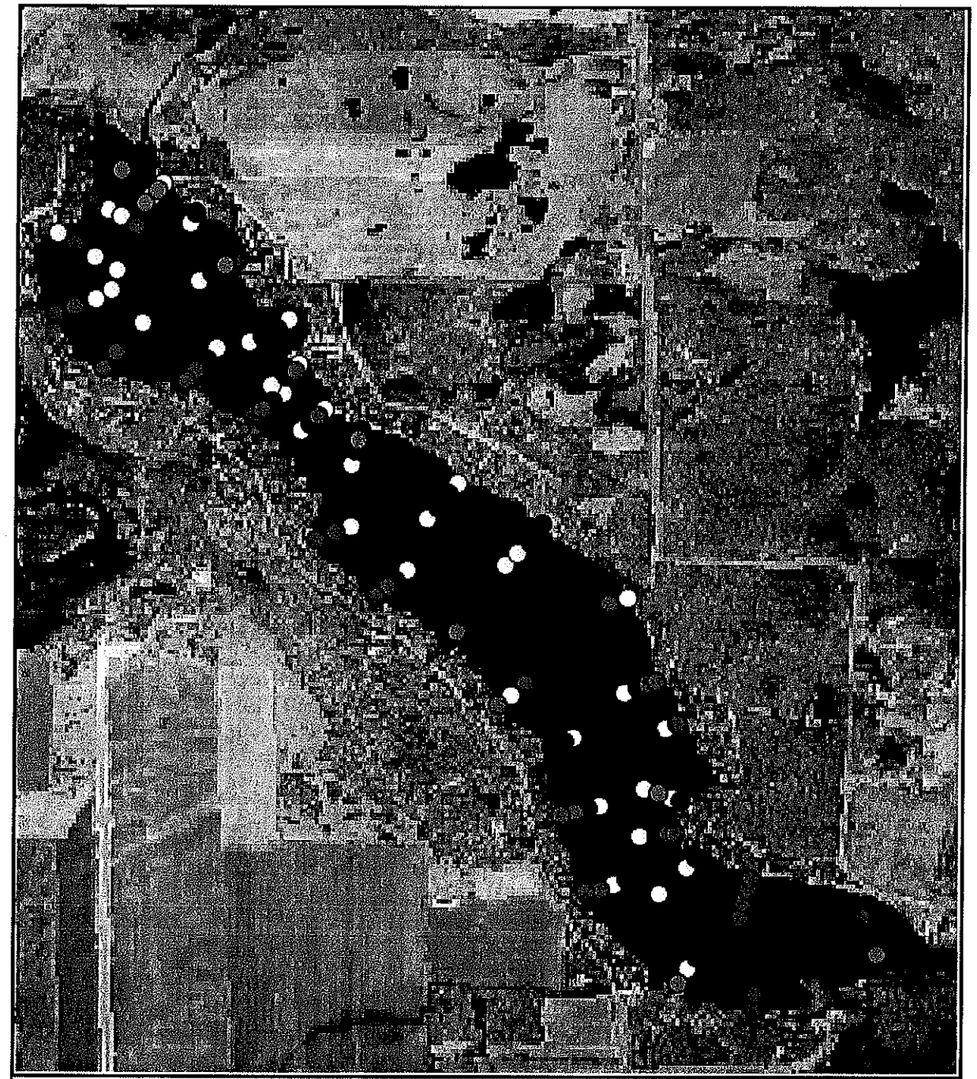
Appendix A:
August Plant Survey Maps



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Total Vegetation (All Species)

A GIS Generated Map

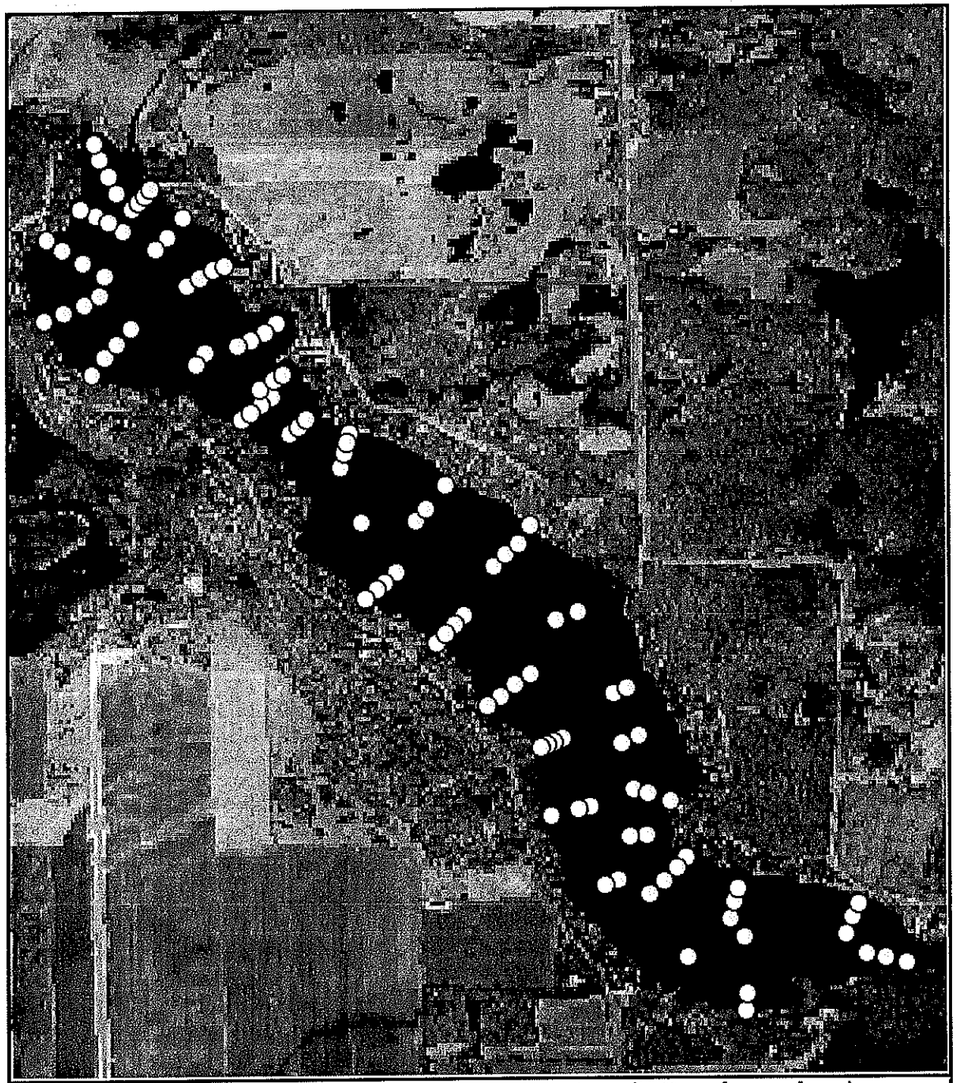
Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Wild celery *(Vallisneria americana)*

A GIS Generated Map

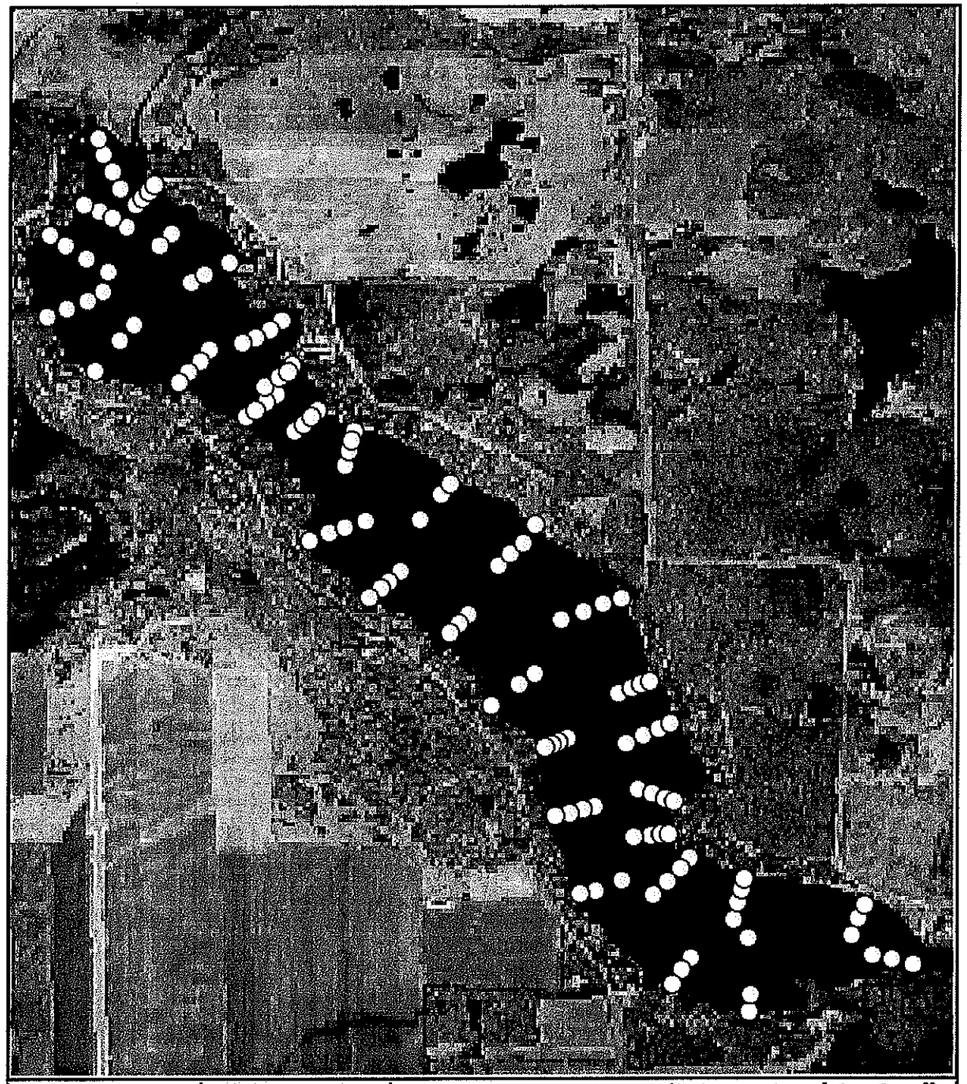
Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Clasping leaf pondweed *(Potamogeton richardsonii)*

A GIS Generated Map

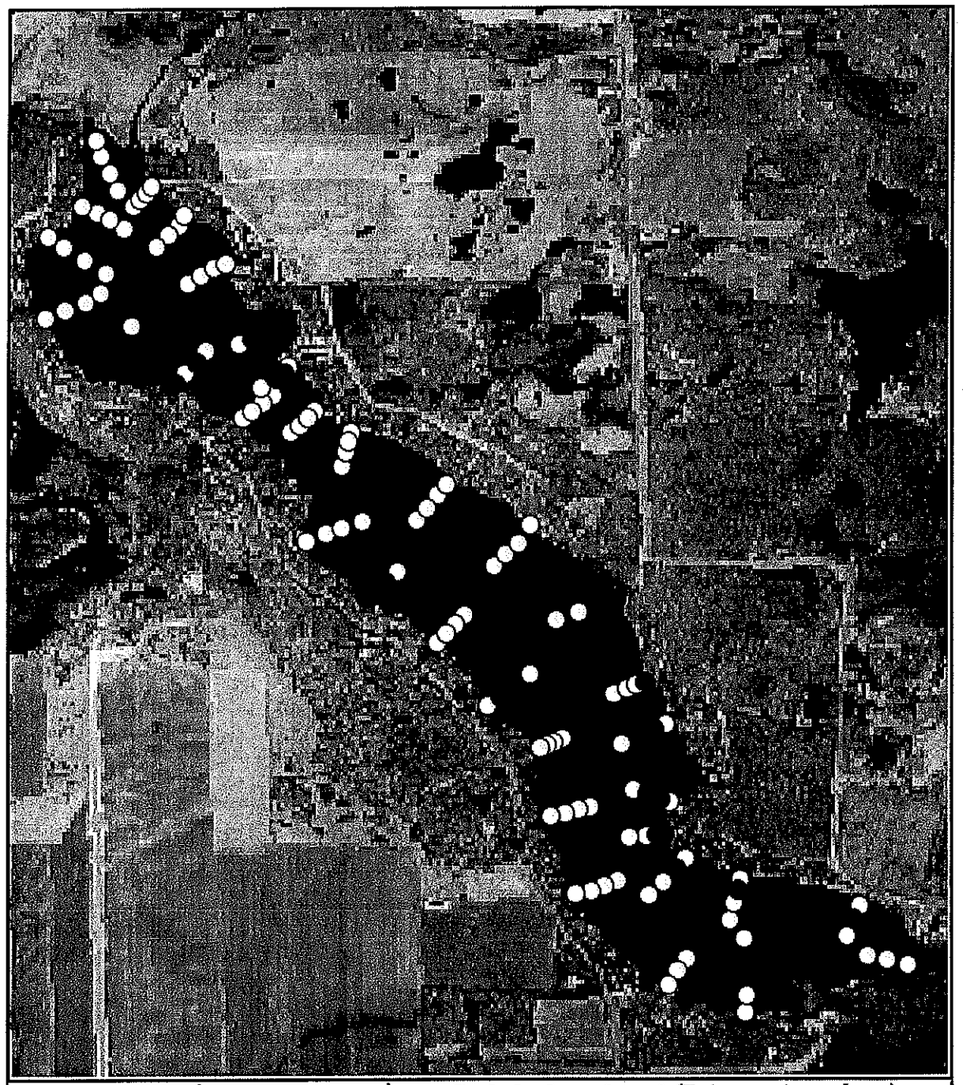
Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Curly-leaf pondweed *(Potamogeton crispus)*

A GIS Generated Map

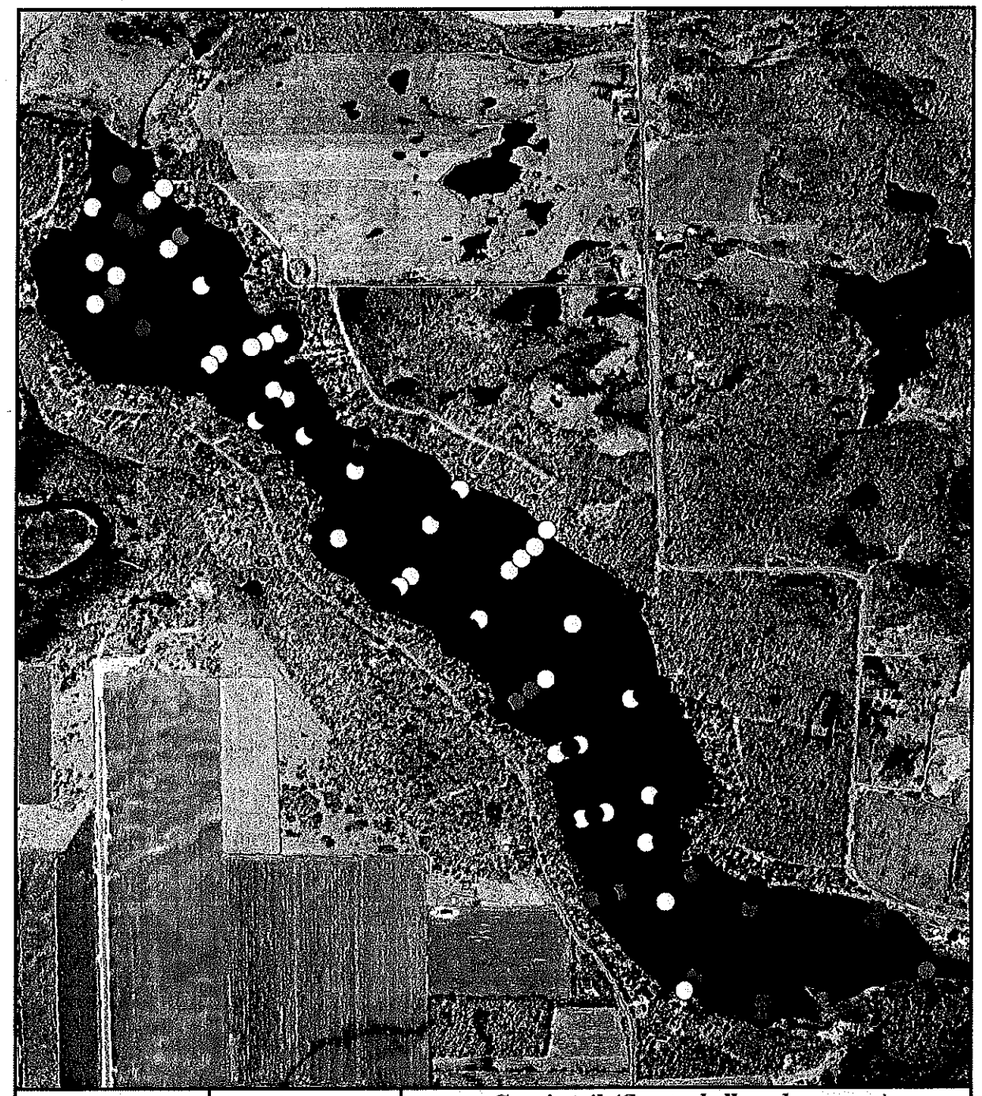
Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Coon's tail *(Ceratophyllum demersum)*

A GIS Generated Map

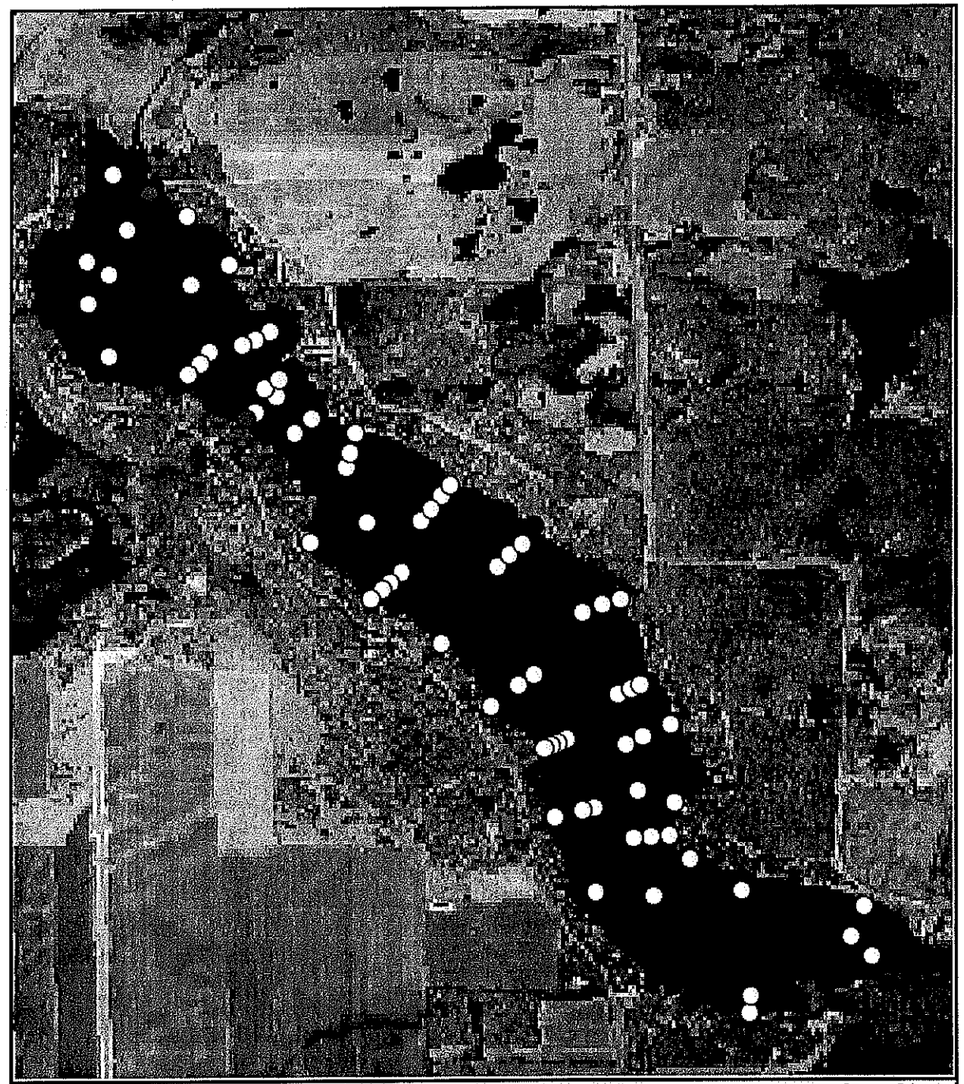
Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Flat stem pondweed *(Potamogeton zosteriformis)*

A GIS Generated Map

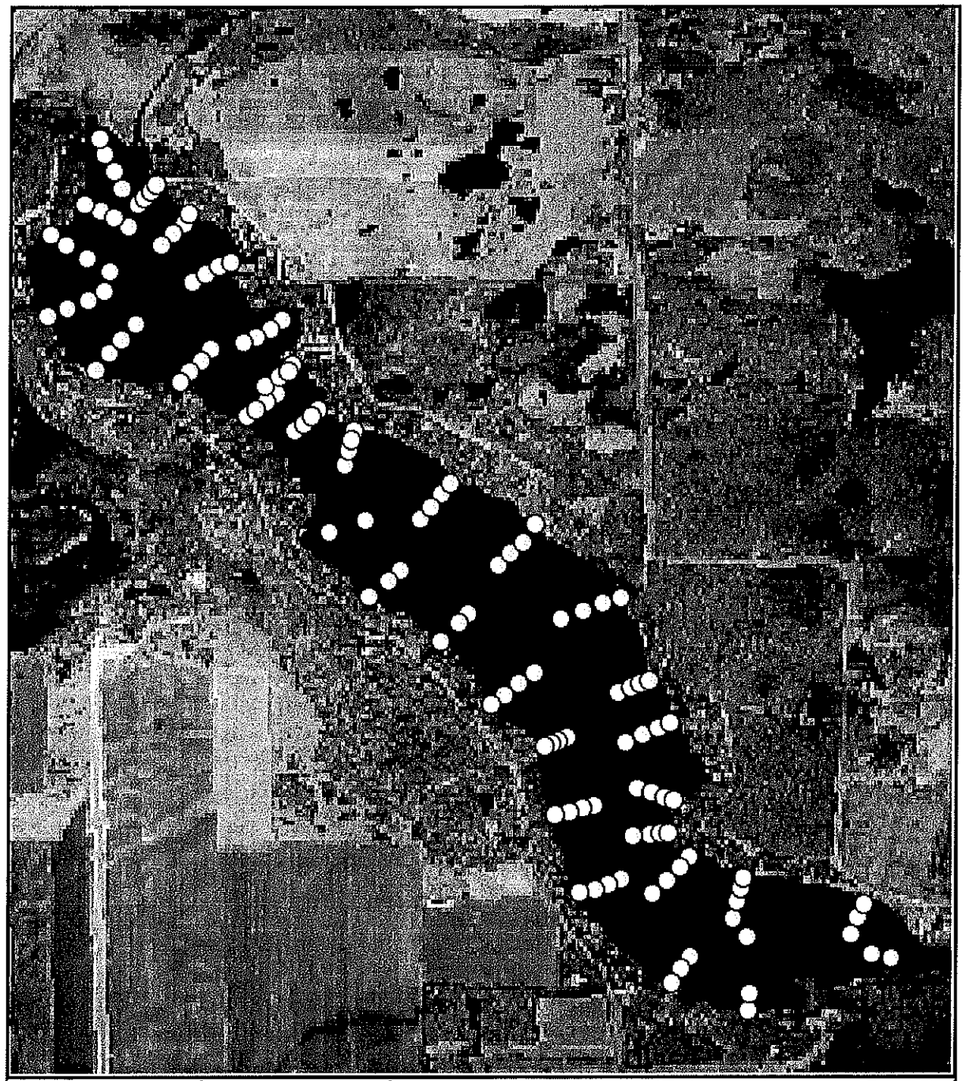
Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Narrow leaf pondweed *(Potamogeton zosteriformis)*

A GIS Generated Map

Big Blake Lake, Polk Co., WI

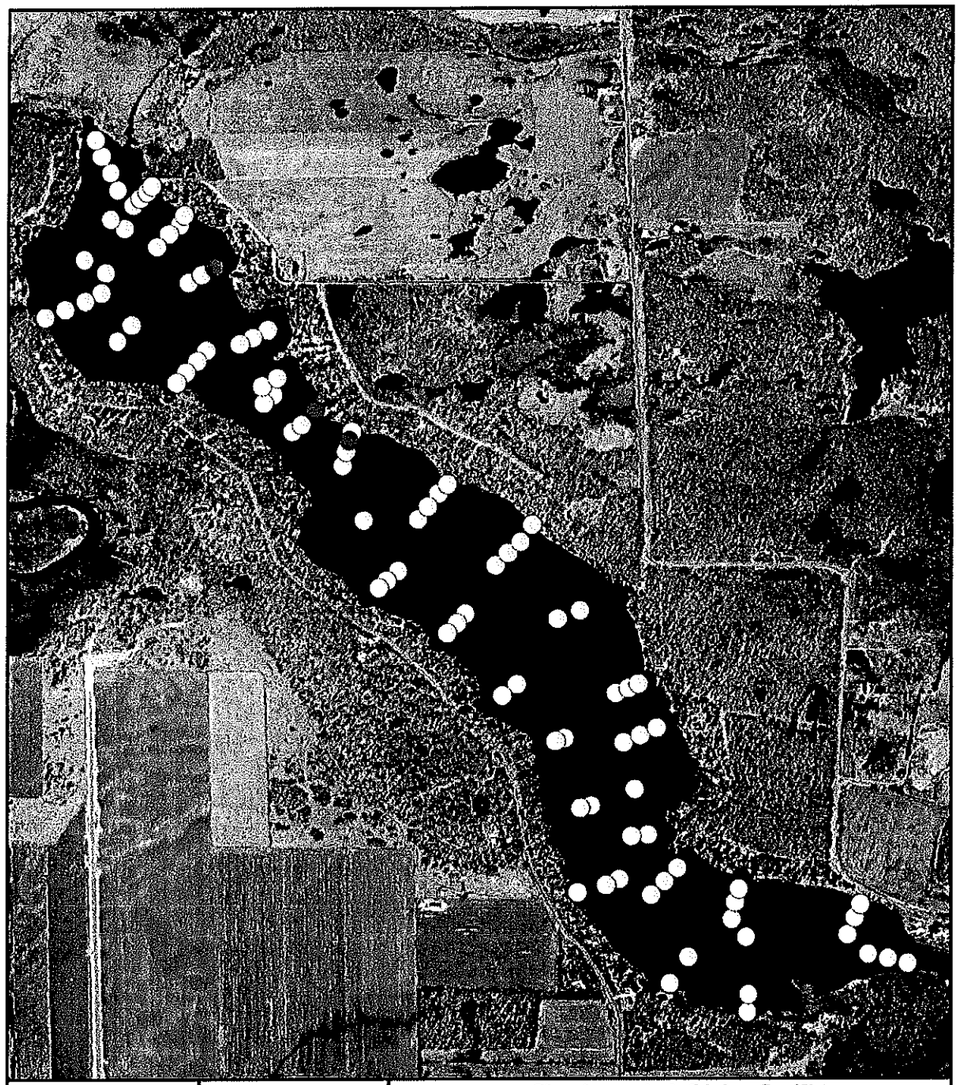
Date: August 2 and 3, 2004

N W E S

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Slender naiad *(Najas flexilis)*

A GIS Generated Map

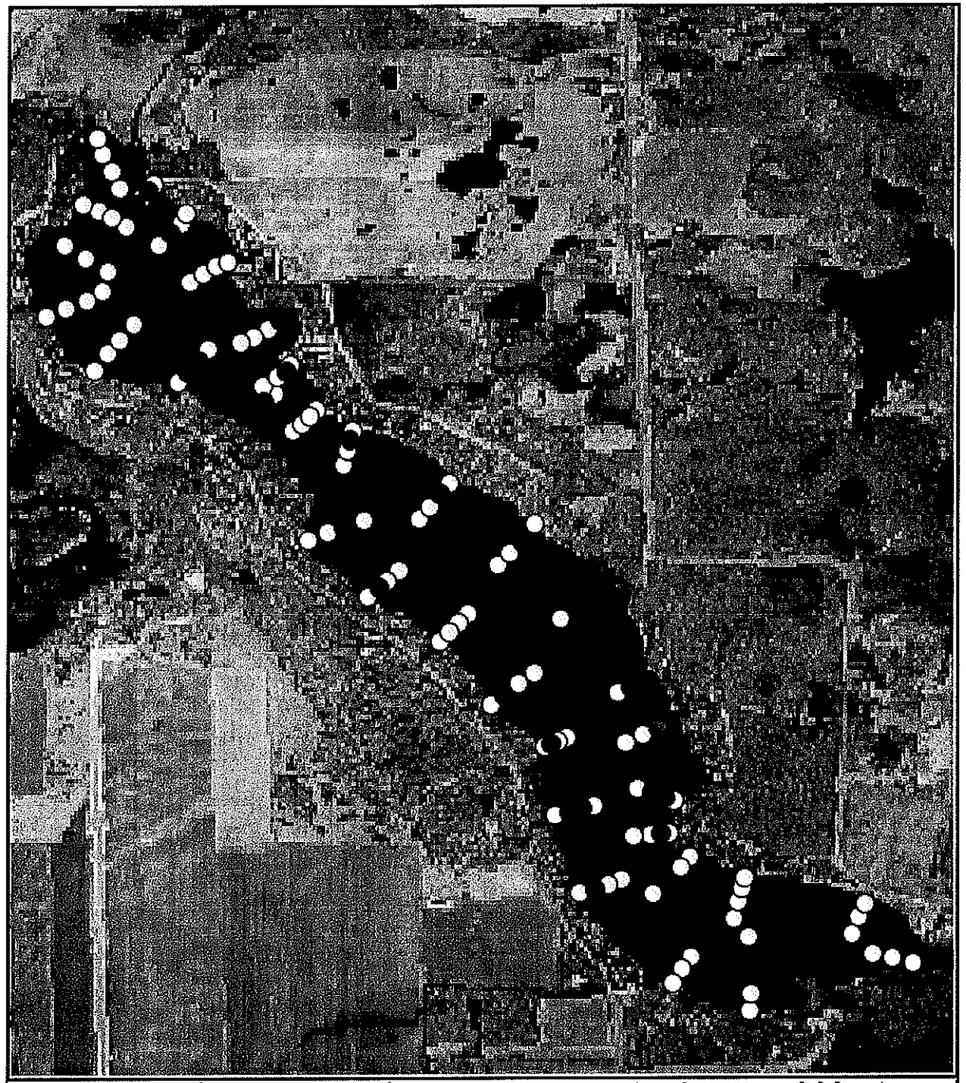
Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Northern milfoil (*Myriophyllum sibiricum*)

A GIS Generated Map

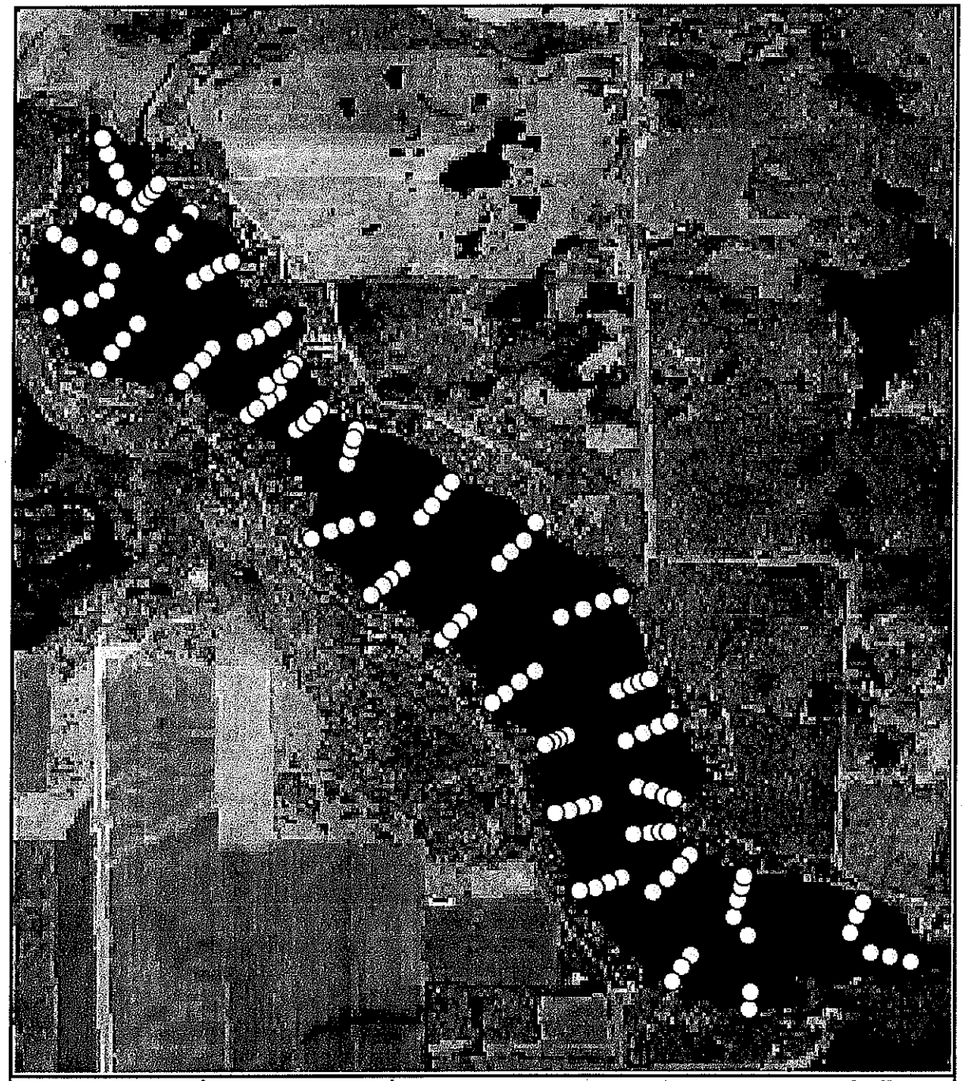
Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Robbin's pondweed *(Potamogeton robbinsii)*

A GIS Generated Map

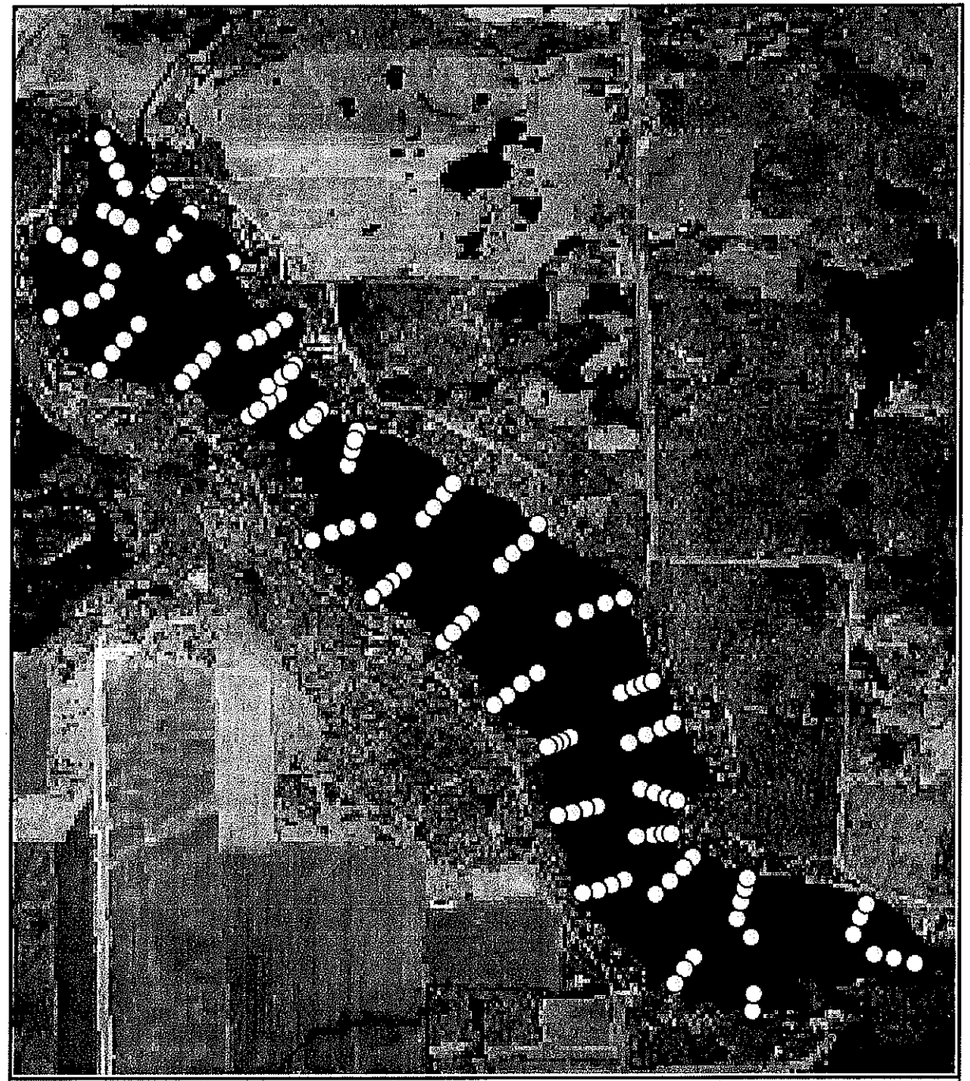
Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Water stargrass (*Zosterella dubia*)

A GIS Generated Map

Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

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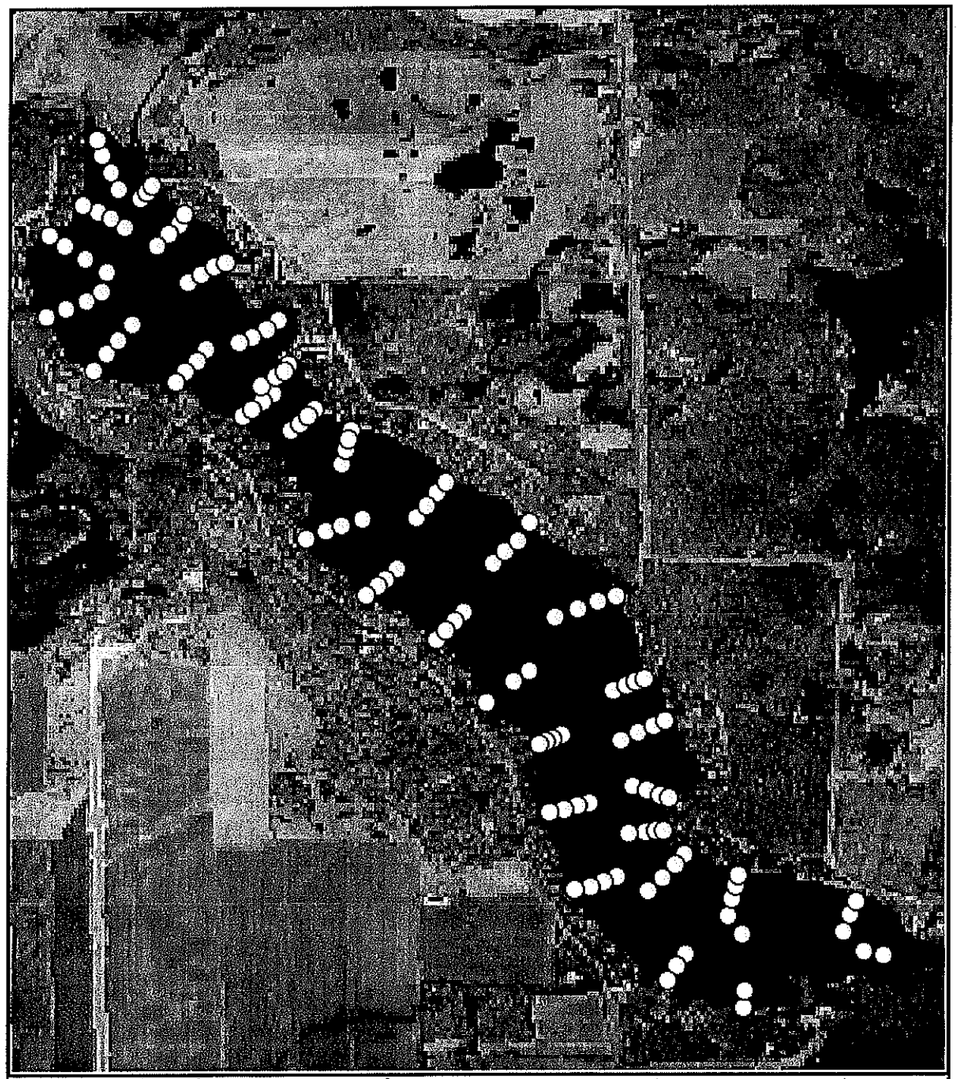


Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

White-water lily *(Nymphaea odorata)*

A GIS Generated Map

Big Blake Lake, Polk Co., WI

Date: August 2 and 3, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000

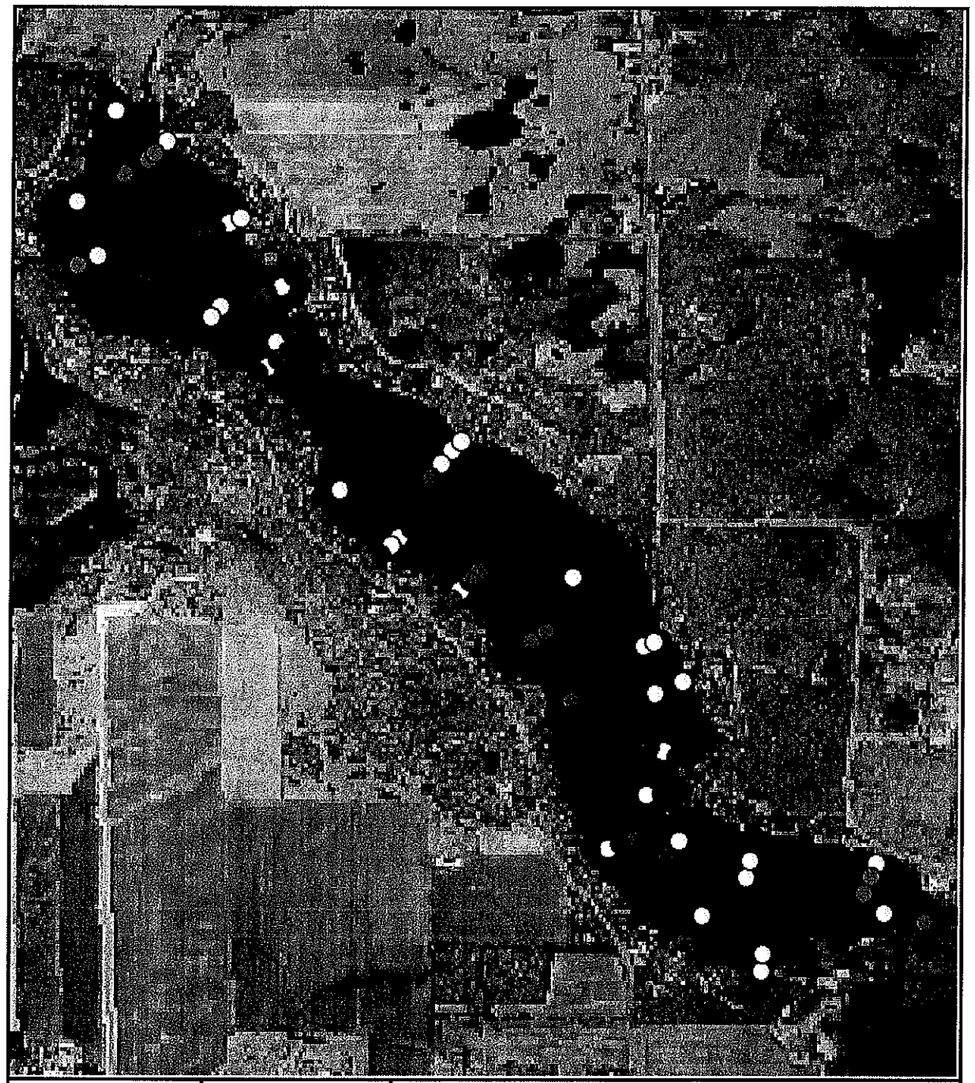
Appendix B:
August Plant Survey Raw Data

Transect	Depth Zone	Depth	DO (mg/L)	DO %	pH	Temp (C)	Cond. (uS/cm)	Total density (0-5)	Coon	Flat stem	n. milfoil	white lily	water star	clasping	val	robbins	elodea	niad	CLP	narrow leaf
0	1	1.4	nr	nr	nr	nr	nr	5	4.5	0.5	0	0	0	0	0	0	0	0	0	0
0	2	4.7	12.75	160	9.32	27.03	0.182	5	5	1	0	0	0	0	0	0	0	0	0	0
0	3	5.7	11.97	150	9.28	26.87	0.187	4	3.75	0	0	0	0	0	0	0	0	0	0	0
0	4	7.9	12.14	151	9.26	26.55	0.187	1	0.25	1	0	0	0	0	0	0	0	0	0	0
1	1	1.2	na	na	na	na	na	4	2	1	0.75	0.25	0.25	0	0	0	0	0	0	0
1	2	4.9	11.32	141	9.17	26.46	0.188	3	2.5	0.75	0	0	0	0	0	0	0	0	0	0
1	3	7.9	11.57	144	9.25	26.62	0.188	4	1.75	1.75	0.25	0	0	0	0	0	0	0	0	0
1	4	10.2	11.69	145	9.23	26.24	0.189	3	2.25	0.75	0	0	0	0	0	0	0	0	0	0
2	1	1	13.61	172	9.35	26.73	0.181	1	0.75	0	0	0	0	0.25	0	0	0	0	0	0
2	2	4.1	11.42	142	9.2	26.66	0.189	3	0.5	0.5	0	0	0.25	0.25	0.5	0.5	0	0	0	0
2	3	9	10.88	135	9.17	26.27	0.189	5	3.5	0.75	0.5	0	0	0	0	0	0	0	0	0
2	4	10.3	10.44	129	9.13	26.23	0.191	1	0	0.25	0	0	0	0	0	0	0	0	0	0
3	1	0.7	10.81	135	9.15	26.76	0.189	2	1	0	0	0	0	0	0	0	0	0.5	0	0
3	2	3.5	10.47	131	9.14	27.03	0.19	4	0.5	1	0	0	0.75	0.25	0	0	0.25	1.5	0	0
3	3	8.6	10.55	131	9.13	26.44	0.19	1	0.5	0.25	0	0	0	0	0	0	0	0	0	0
3	4	10.1	10.66	132	9.12	26.04	0.19	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	1	15.88	201	9.43	27.29	0.187	3	0.75	0.25	0.25	0	0	0	0	0	0	0.75	0.5	0
4	2	4.9	10.36	129	9.12	26.35	0.191	1	0	0	0	0	0	0	0	0	0	0	0.75	0
4	3	8.3	10.3	127	9.11	26.2	0.191	1	0	0	0	0	0	0	0	0	0	0	0.75	0
4	4	10.1	10.33	128	9.1	26.14	0.19	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	1	11.87	149	9.26	27.05	0.186	2	0	0.5	0	0	0.25	0	0	0	0	1	0	0
5	2	3.3	12.3	151	9.29	26	0.184	3	1	1	0	0	0	0	0	0	0	0.5	0	0
5	3	7.2	12.33	153	9.27	26.45	0.186	3	2	0.75	0	0	0	0	0	0	0	0	0	0
5	4	8.5	11.4	141	9.19	26.24	0.19	2	1.5	0	0	0	0	0	0	0	0	0	0	0
6	1	1	13.25	163	9.35	25.52	0.184	3	1	0.75	0.25	0	0	0	0	0	0	1	0	0
6	2	4.6	13.25	163	9.35	25.52	0.184	2	0.25	1	0	0	0	0	0	0	0	0.5	0	0
6	3	8	12.6	155	9.31	25.62	0.185	3	2.5	0	0	0	0	0	0	0	0	0	0	0
6	4	9.2	11.12	136	9.17	25.54	0.19	0	0	0	0	0	0	0	0	0	0	0	0	0
7	1	1	13.26	161	9.3	25.23	0.183	2	0.75	0.75	0	0	0	0	0	0	0	0	0	0
7	2	3.7	16.82	207	9.57	26.12	0.182	2	0.5	1	0	0	0	0	0	0	0	0	0	0
7	3	7	11.99	145	9.24	24.64	0.187	3	2.5	0	0	0	0	0	0	0	0	0	0	0
7	4	8	11.66	141	9.21	24.84	0.188	3	2	0.5	0	0	0	0	0	0	0	0	0	0
8	1	0.7	10.45	126	9.08	24.83	0.197	2	1	0.25	0	0	0	0	0	0	0	0.25	0.5	0
8	2	3.9	11.43	138	9.16	24.82	0.195	2	1	0	0	0	0	0.25	0	0	0	0.25	0.75	0
8	3	6	11.88	143	9.19	24.8	0.195	1	0.5	0.25	0	0	0	0	0	0	0	0	0.5	0
8	4	11.1	11.16	134	9.11	24.76	1.97	3	2	0.5	0	0	0	0	0	0	0	0	0	0
9	1	1	10.09	122	9.06	24.8	0.198	2	1	0.25	0	0	0	0	0.25	0	0	0	0.25	0
9	2	2.9	11.41	138	9.16	24.92	0.196	2	0.5	0	0.5	0	0	0	0.75	0	0	0	0	0
9	3	6.1	11.31	136	9.14	24.75	0.196	1	0	0	0.5	0	0	0	0	0	0	0	0.25	0
9	4	10.1	11.38	137	9.14	24.76	0.196	0	0	0	0	0	0	0	0	0	0	0	0	0
10	1	0.9	10.06	125	9.09	26.48	0.191	3	1	0.25	0	0	0	0	0.75	0	0	0.75	0	0
10	2	4.7	10.06	125	9.09	26.48	0.191	2	0.75	0.5	0.25	0	0	0	0	0	0	0.5	0.25	0
10	3	7.2	9.99	123	9.07	25.79	0.191	1	0.25	0	0	0	0	0	0	0	0	0	0.75	0
10	4	11.5	9.99	123	9.08	25.92	0.191	0	0	0	0	0	0	0	0	0	0	0	0	0
11	1	1.2	11.69	142	9.15	25.02	0.197	2	0.25	0	0.25	0	0	0	0	0	0	1	0	0
11	2	4.8	11.6	140	9.15	24.84	0.196	2	0	1.25	0.25	0	0	0	0	0	0	0.75	0	0
11	3	7.8	11.77	142	9.16	24.87	0.196	1	0.5	0.25	0.25	0	0	0	0	0	0	0	0	0
11	4	12.4	11.4	138	9.12	24.91	0.197	0	0	0	0	0	0	0	0	0	0	0	0	0

Transect	Depth Zone	Depth	DO (mg/L)	DO %	pH	Temp (C)	Cond. (uS/cm)	Total density (0-5)	Coon	Flat stem	n. milfoil	white lily	water star	clasping	val	robbins	elodea	niad	CLP	narrow leaf
12	1	1	10.25	126	9.08	25.96	0.19	2	0.5	0	0	0	0	0	0	0	0	1	0	0
12	2	3.8	10.25	126	9.08	25.96	0.19	3	0.5	0.25	0	0	0	0	0.75	0	0	1.25	0	0
12	3	6.1	9.96	122	9.1	25.31	0.19	1	0.75	0.5	0	0	0	0	0	0	0	0	0	0
12	4	11.2	9.96	122	9.07	25.8	0.191	0	0	0	0	0	0	0	0	0	0	0	0	0
13	1	0.3	11.76	143	9.15	25.17	0.196	2	0.25	0	0	0	0	0	0.25	0	0	0.75	0	0.25
13	2	3.1	11.77	143	9.16	25.24	0.197	2	0	0.75	0	0	0	0	0.75	0	0	0.5	0	0
13	3	5.1	11.71	143	9.16	25.16	0.196	3	1	0.75	0.25	0	0	0	0.5	0	0	0.5	0	0.25
13	4	10.3	11.72	142	9.15	24.93	0.196	1	0.25	0	0	0	0	0	0	0	0	0	0	0
14	1	1.1	11.15	136	9.14	25.19	0.197	2	0.25	0	0	0	0	0	0	0	0	0.75	0.5	0
14	2	4.4	11.96	145	9.18	25.23	0.196	2	0.25	0	0.25	0	0	0	0	0	0	0	0.5	0.5
14	3	7.2	11.46	139	9.12	25.05	0.196	1	0	0	0	0	0	0	0	0	0	0	0.75	0
14	4	12.6	12.18	147	9.19	24.95	0.196	0	0	0	0	0	0	0	0	0	0	0	0	0
15	1	0.5	12.46	153	9.27	26.21	0.193	2	0.75	0	0	0	0	0	0	0	0	0.75	0	0
15	2	3	12.4	152	9.22	25.66	0.195	3	1.25	0.5	0.5	0.25	0	0.25	0	0	0	0	0.25	0
15	3	6.2	12.63	155	9.25	25.76	0.195	2	1.25	0	0	0	0	0	0	0	0	0	0.5	0
15	4	12	12.58	154	9.22	25.6	0.196	1	0	0	0	0	0	0	0	0	0	0.25	0	0
16	1	0.9	11.88	146	9.17	25.75	0.196	1	0	0	0	0	0	0	0	0	0	0.25	0	0
16	2	4.4	12.04	148	9.21	25.75	0.196	1	0	0	0.5	0	0	0	0	0	0	0.75	0	0
16	3	7	12.04	148	9.21	25.75	0.196	1	0.5	0	0	0	0	0	0	0	0	0	0	0
16	4	13.1	12.54	154	9.22	25.81	0.196	0	0	0	0	0	0	0	0	0	0	0	0	0
17	1	1.1	12.8	158	9.25	26.13	0.195	2	1.25	0.5	0	0	0	0	0.25	0	0	0	0	0
17	2	4.3	12.89	160	9.26	26.05	0.195	2	0.75	0	0.25	0	0	0	0.75	0	0	0.5	0	0
17	3	8.2	13.26	164	9.28	26.17	0.195	3	1.75	0.5	0	0	0	0.25	0	0	0	0	0	0
17	4	10.6	12.93	159	9.27	25.75	0.195	1	0.5	0.25	0	0	0	0	0	0	0	0	0	0
18	1	0.5	11.6	144	9.19	26.19	0.196	4	2.5	1	0	0	0	0	0.75	0	0	0	0	0
18	2	2.1	11.6	144	9.19	26.19	0.196	3	1.5	0.25	0	0	0	0	0.75	0	0	0.75	0	0
18	3	6.7	12.78	159	9.27	26.37	0.194	1	0.75	0.25	0	0	0	0	0	0	0	0	0	0
18	4	10.1	12.68	156	9.24	26.07	0.193	4	4	0	0	0	0	0	0	0	0	0	0	0
19	1	1	7.07	88	8.53	26.5	0.205	2	1.75	0	0	0	0	0	0	0	0	0	0	0
19	2	3.3	11.41	141	9.13	26.39	0.195	2	1.5	0.25	0	0	0	0	0	0	0	0	0	0
19	3	9	12.12	149	9.19	25.96	0.193	1	1	0.25	0	0	0	0	0	0	0	0	0	0
19	4	na	na	na	na	na	na	0	0	0	0	0	0	0	0	0	0	0	0	0
20	1	1.4	7.52	89	8.23	24.95	0.205	5	4	0.25	0	0.75	0	0	0	0	0	0	0	0.25
20	2	3.9	9.34	114	8.71	25.29	0.201	5	4.5	0.25	0	0	0	0	0	0	0	0	0	0
20	3	6	10.43	127	8.86	25.21	0.2	4	4.25	0	0	0	0	0	0	0	0	0	0	0
20	4	na	na	na	na	na	na	0	0	0	0	0	0	0	0	0	0	0	0	0
21	1	1.3	6.83	78	8.34	25.62	0.206	1	1.25	0	0	0	0	0	0	0	0	0	0	0
21	2	3.2	8.29	101	8.52	25.51	0.204	2	1.25	0.25	0	0	0	0	0	0	0	0	0.25	0
21	3	8	9.94	122	8.83	25.72	0.198	5	4.75	0	0	0	0	0	0	0	0	0	0	0
21	4	na	na	na	na	na	na	0	0	0	0	0	0	0	0	0	0	0	0	0
22	1	1	11.25	135	9.08	26.2	0.197	2	1	0.25	0	0	0	0	0.25	0	0	0.5	0	0
22	2	4	11.25	135	9.08	26.2	0.197	2	0.5	0	0	0	0	0	0	0	0	0	1	0
22	3	8.5	13.32	164	9.26	26.06	0.193	2	2	0.25	0	0	0	0	0	0	0	0	0	0
22	4	10.4	11.14	136	9.07	25.85	0.197	2	1	0.5	0	0	0	0	0	0	0	0	0	0
23	1	0.8	12	148	9.04	26.07	0.197	1	1	0	0	0	0	0	0	0	0	0.25	0	0
23	2	3.5	12.26	152	9.18	26.19	0.196	3	2	0.25	0	0	0	0	0	0	0	0	0.25	0
23	3	8.4	12.54	154	9.19	26.03	0.196	1	0.75	0.25	0.25	0	0	0	0	0	0	0	0	0
23	4	10.8	14.63	180	9.34	25.86	0.193	0	0	0	0	0	0	0	0	0	0	0	0	0

Transect	Depth Zone	Depth	DO (mg/L)	DO %	pH	Temp (C)	Cond. (uS/cm)	Total density (0-5)	Coon	Flat stem	n. milfoil	white lily	water star	clasping	val	robbins	elodea	niad	CLP	narrow leaf
24	1	1.3	12.76	159	9.22	25.95	0.194	2	0.5	0	0	0	0	0	1	0	0	0.5	0.25	0
24	2	4	12.54	155	9.2	26.04	0.195	2	0.5	0.25	0.5	0	0	0	0.5	0	0	0.25	0.25	0
24	3	9.3	12.94	160	9.22	25.96	0.195	1	1	0	0	0	0	0	0	0	0	0	0	0
24	4	10.5	13.18	164	9.24	25.96	0.195	0	0	0	0	0	0	0	0	0	0	0	0	0
25	1	1	9.85	121	9.05	25.45	0.19	1	0.25	0	0	0	0	0	0	0	0	0.75	0	0
25	2	2.8	9.97	122	9.04	25.36	0.191	3	0.5	0.25	0.25	0	0	0	0.25	0	0	1	0.25	0
25	3	5.7	9.95	121	9.04	25.4	0.191	4	0.5	0.5	1	0	0	0	0	0	0	1	0.75	0
25	4	11.5	9.74	119	8.99	25.13	0.191	0	0	0	0	0	0	0	0	0	0	0	0	0
26	1	1	9.85	121	9.04	25.68	0.191	2	0.25	0	0.25	0	0	0	0.5	0	0	0.5	0	0
26	2	4.5	9.8	120	9.06	25.66	0.191	3	0.75	0.25	1.75	0	0	0	0.25	0	0	0	0.25	0
26	3	7.5	9.75	119	9.04	25.65	0.191	1	0.5	0	0	0	0	0	0	0	0	0	0.25	0
26	4	11.2	9.91	120	9.04	25.09	0.191	1	0.25	0	0	0	0	0	0	0	0	0	0	0
27	1	nr	10.07	124	9.07	25.83	0.191	2	0.25	0.25	0.5	0	0	0	0.5	0	0	0.5	0.25	0
27	2	3	10.07	124	9.07	25.83	0.191	2	0.5	0	0.25	0	0	0	0.75	0	0	0	0	0
27	3	6.2	10.21	125	9.08	25.38	0.191	1	0.25	0	0.25	0	0	0	0	0	0	0	0	0
27	4	14.3	10.02	122	9.06	25.26	0.191	0	0	0	0	0	0	0	0	0	0	0	0	0
28	1	1	10.81	132	9.11	25.54	0.197	1	0.5	0	0	0	0	0.25	0	0	0	0.25	0	0
28	2	4.8	11.01	134	9.1	25.22	0.197	2	1	0.5	0	0	0	0	0	0	0	0	0	0.25
28	3	7.6	11.88	145	9.18	25.38	0.196	1	0.75	0.5	0	0	0	0	0	0	0	0	0	0
28	4	13	12.13	147	9.19	25.18	0.196	1	0	0.25	0	0	0	0	0	0	0	0	0	0
29	1	1	9.97	123	9.07	25.83	0.191	3	0.75	0	0.25	0	0	0	1	0	0	0.75	0.25	0
29	2	3.5	9.97	123	9.07	25.83	0.191	2	0.5	0	0.5	0	0	0	0.25	0	0	0.25	0.25	0
29	3	7.3	10.25	125	9.1	25.82	0.191	1	0.5	0	0.5	0	0	0	0	0	0	0	0	0
29	4	14.2	10	122	9.07	25.41	0.19	1	0	0.25	0	0	0	0	0	0	0	0	0	0
30	1	1	10.51	120	9.1	25.83	0.191	0	0	0	0	0	0	0	0	0	0	0	0	0
30	2	4.5	10.51	120	9.1	25.83	0.191	1	0.5	0	0.25	0	0	0	0.25	0	0	0	0	0
30	3	9.2	10.01	124	9.1	25.87	0.191	1	0.25	0	0	0	0	0.25	0	0	0	0	0	0
30	4	13.5	9.11	111	8.96	25.14	0.192	0	0	0	0	0	0	0	0	0	0	0	0	0
31	1	1.2	10.04	123	9.08	25.96	0.191	1	0	0.5	0	0	0	0	0	0	0	0	0	0
31	2	4.3	9.92	120	9.08	25.7	0.191	1	0	0	0.25	0	0	0	0	0	0	0	0	0
31	3	9.8	9.92	120	9.08	25.7	0.191	0	0	0	0	0	0	0	0	0	0	0	0	0
31	4	14.5	10.14	124	9.08	25.45	0.191	0	0	0	0	0	0	0	0	0	0	0	0	0
32	1	1	10.51	130	9.13	26	0.19	1	0.5	0	0	0	0	0	0	0	0	0	0	0
32	2	5	10.64	131	9.13	25.79	0.19	4	1.5	0.25	0.25	0	0	0	0	0	0	1.5	0	0
32	3	9.7	10.38	128	9.09	25.79	0.191	1	0.25	0	0	0	0	0	0	0	0	0	0	0
32	4	11.6	10.04	122	9.06	25.17	0.191	0	0	0	0	0	0	0	0	0	0	0	0	0
33	1	1	12.3	152	9.22	25.99	0.196	2	0.5	0	0	0	0	0	0	0	0	1	0	0
33	2	4.1	12.3	152	9.22	25.99	0.196	2	0	0.25	0.5	0	0	0	0.75	0	0	0.5	0	0
33	3	7.3	11.22	138	9.14	25.58	0.197	1	0.25	0	0.5	0	0	0	0	0	0	0	0	0
33	4	12.1	13.04	160	9.26	25.8	0.195	0	0	0	0	0	0	0	0	0	0	0	0	0
na = not applicable																				
nr = not recorded																				

Appendix C:
June Plant Survey Maps



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Total Vegetation (All Species)

A GIS Generated Map

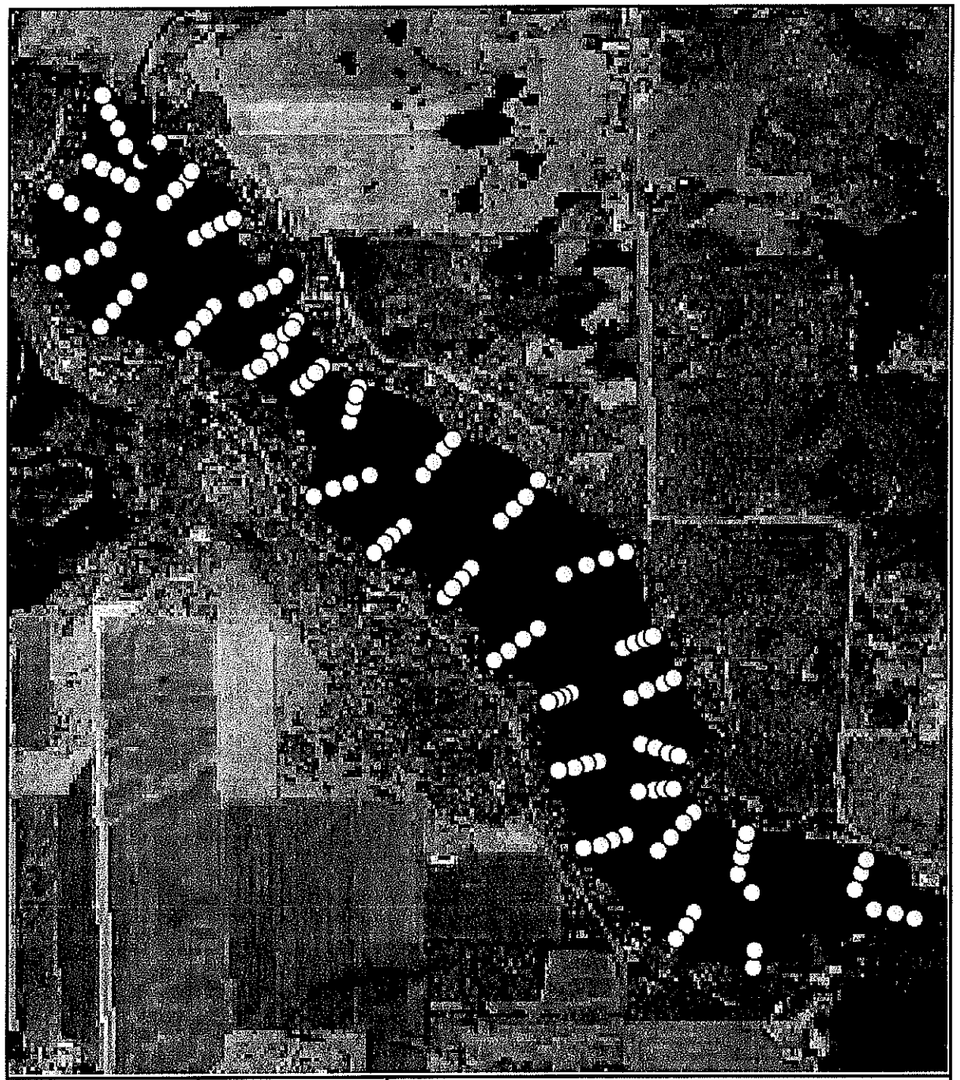
Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Water buttercup *(Ranunculus sp.)*

A GIS Generated Map

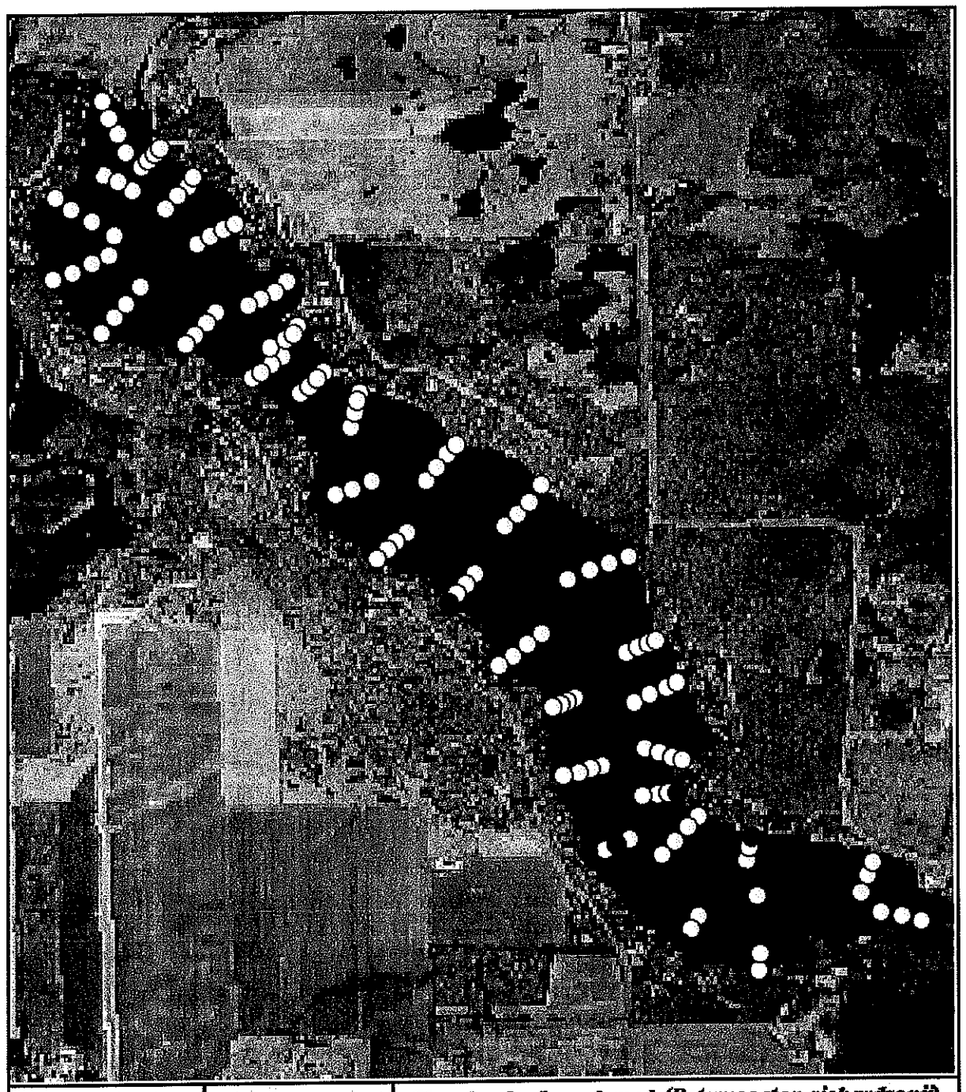
Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Clasping leaf pondweed (*Potamogeton richardsonii*)

A GIS Generated Map

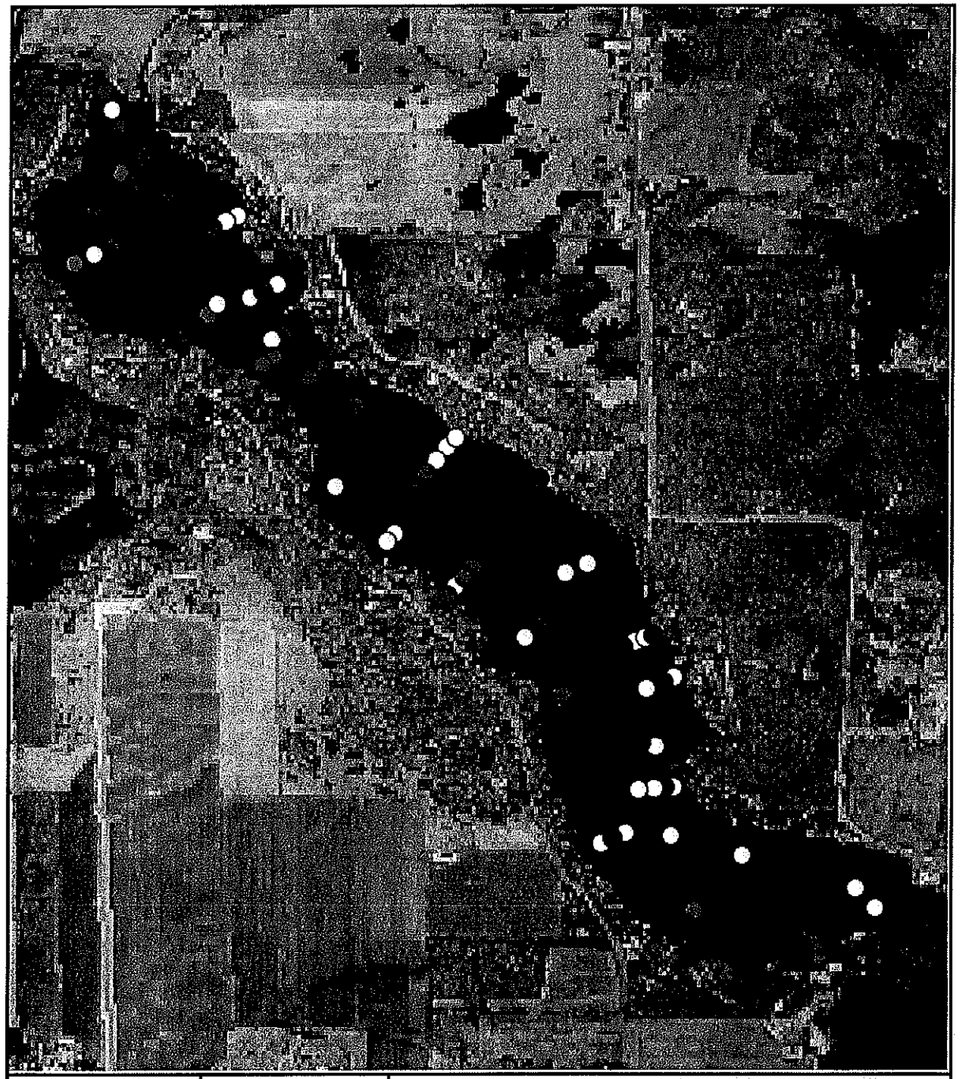
Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Curly-leaf pondweed *(Potamogeton crispus)*

A GIS Generated Map

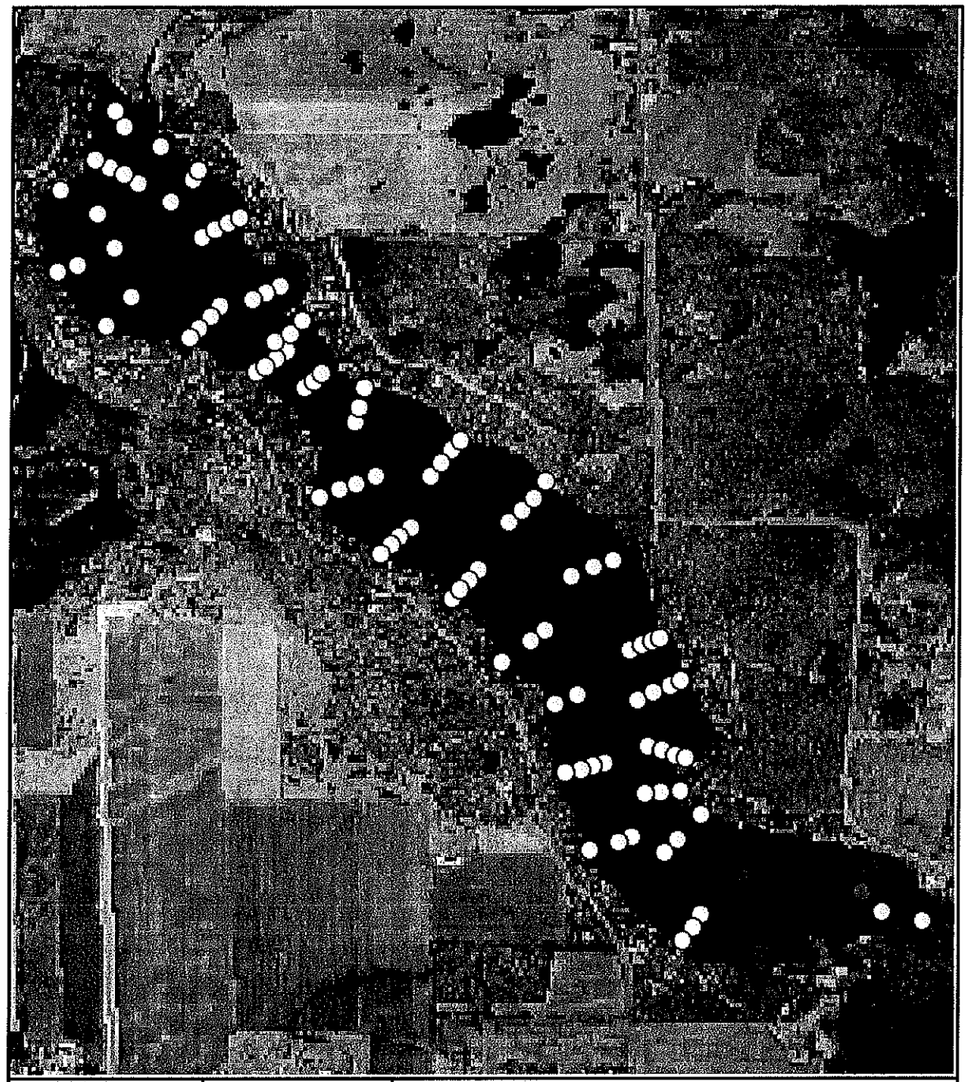
Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Coon's tail *(Ceratophyllum demersum)*

A GIS Generated Map

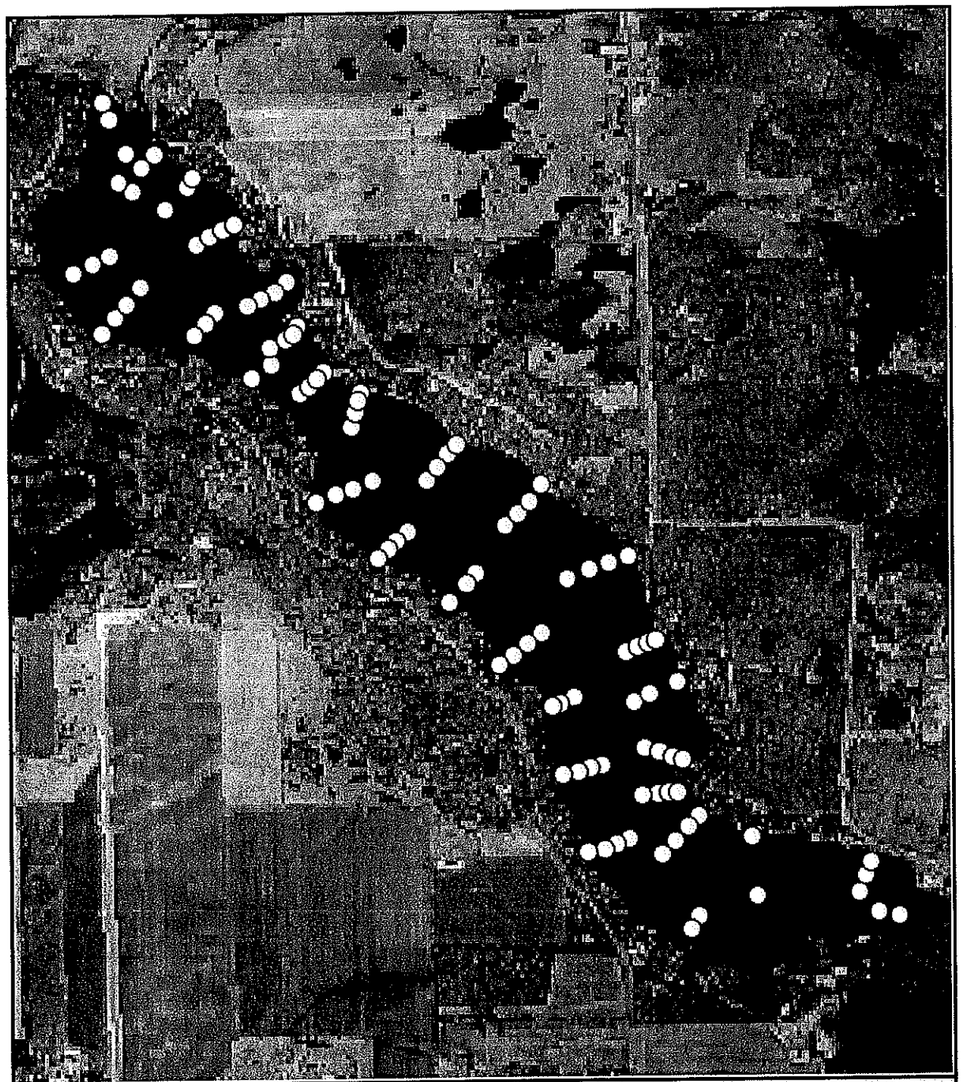
Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Flat stem pondweed *(Potamogeton zosteriformis)*

A GIS Generated Map

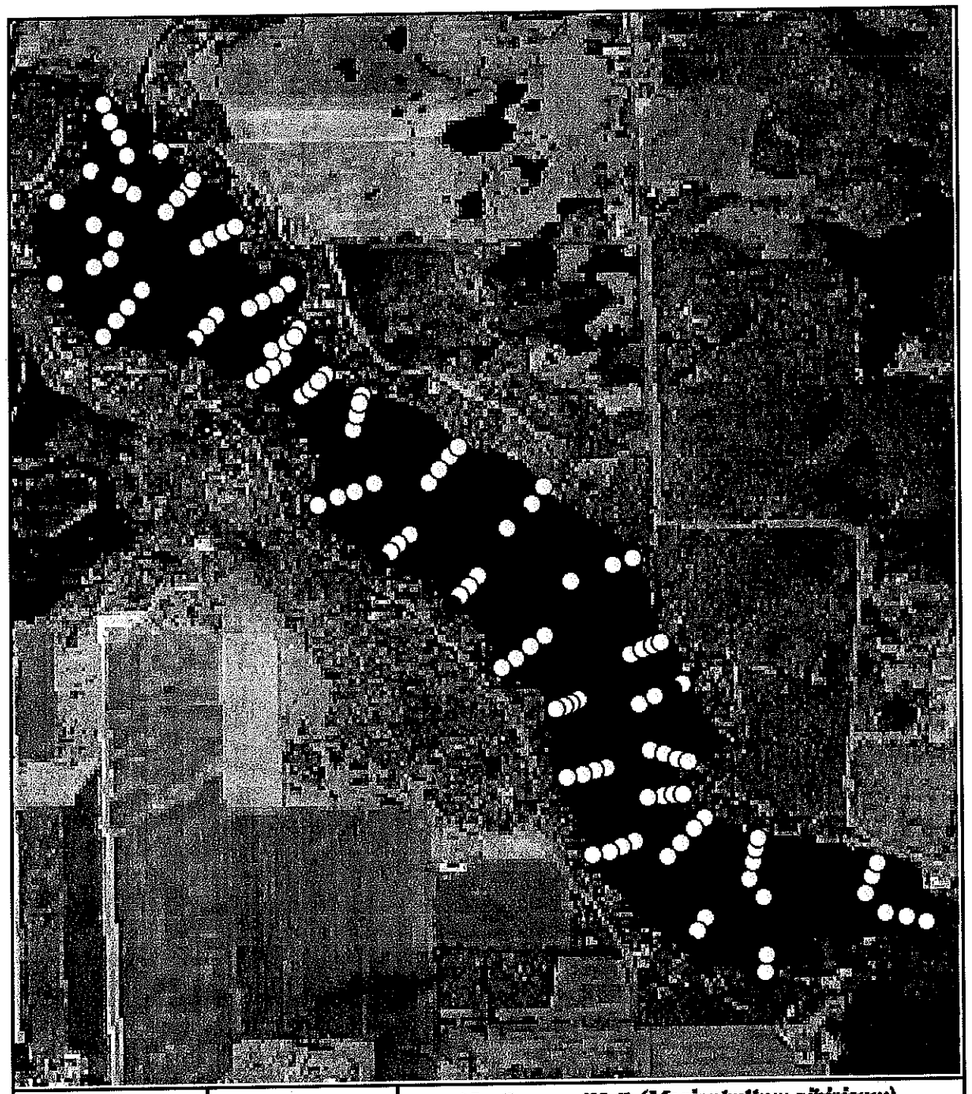
Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Northern milfoil *(Myriophyllum sibiricum)*

A GIS Generated Map

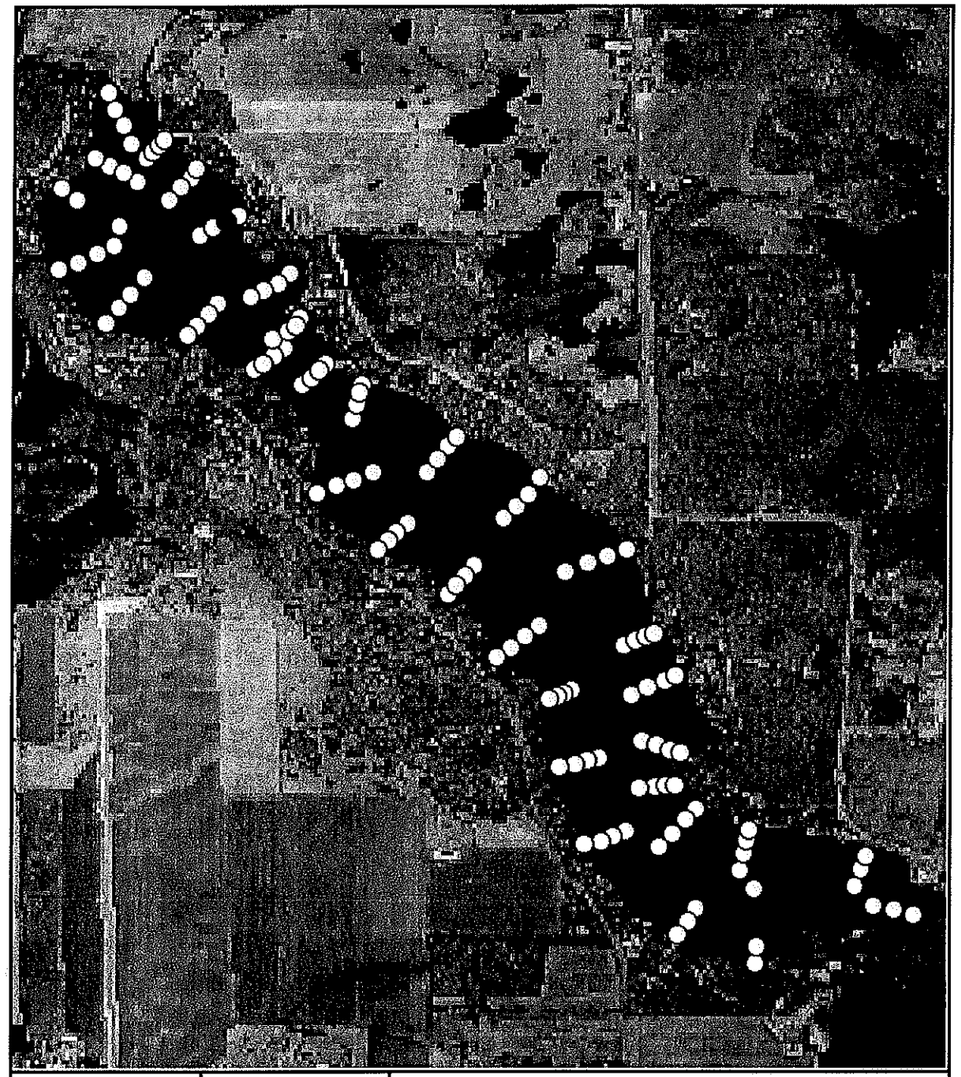
Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Narrow leaf pondweed *(Potamogeton strictifolius)*

A GIS Generated Map

Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000

Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Water Stargrass *(Zosterella dubia)*

A GIS Generated Map

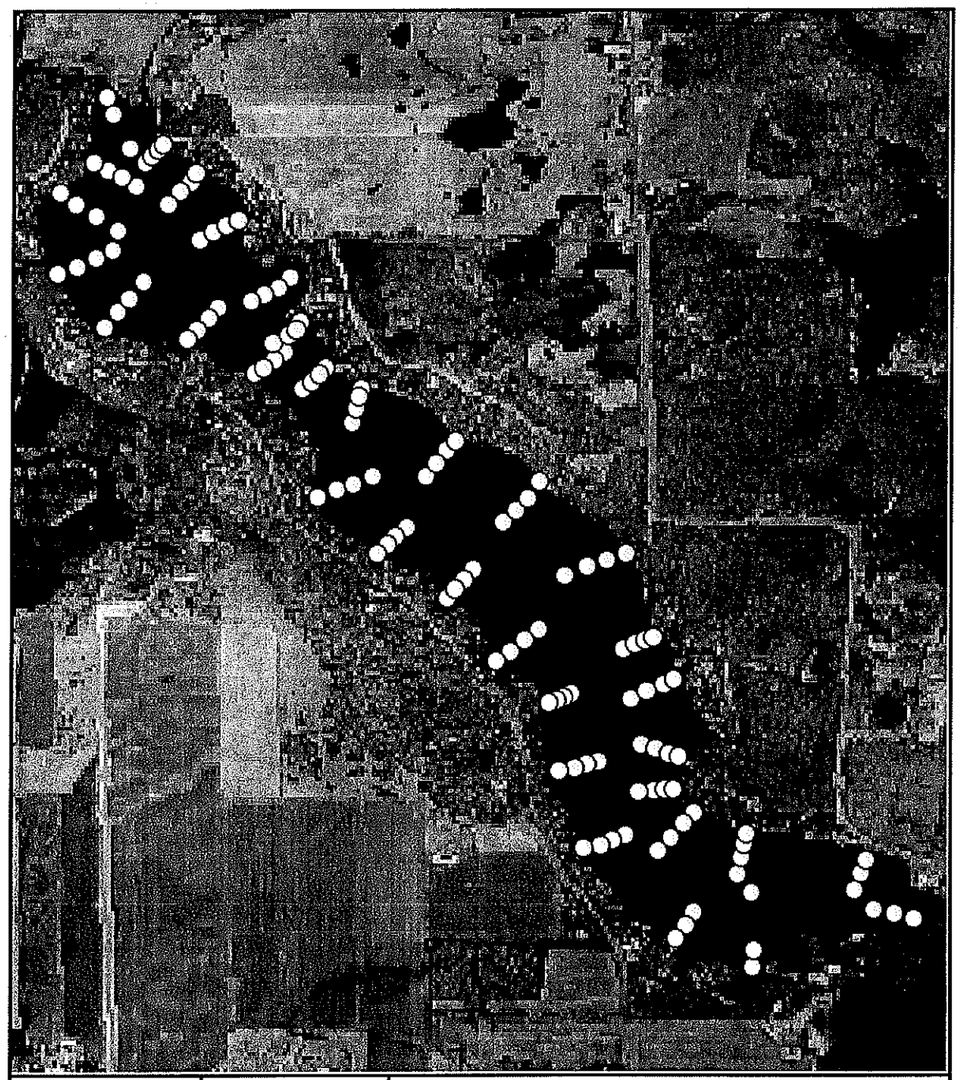
Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

White-stem pondweed *(Potamogeton praelongus)*

A GIS Generated Map

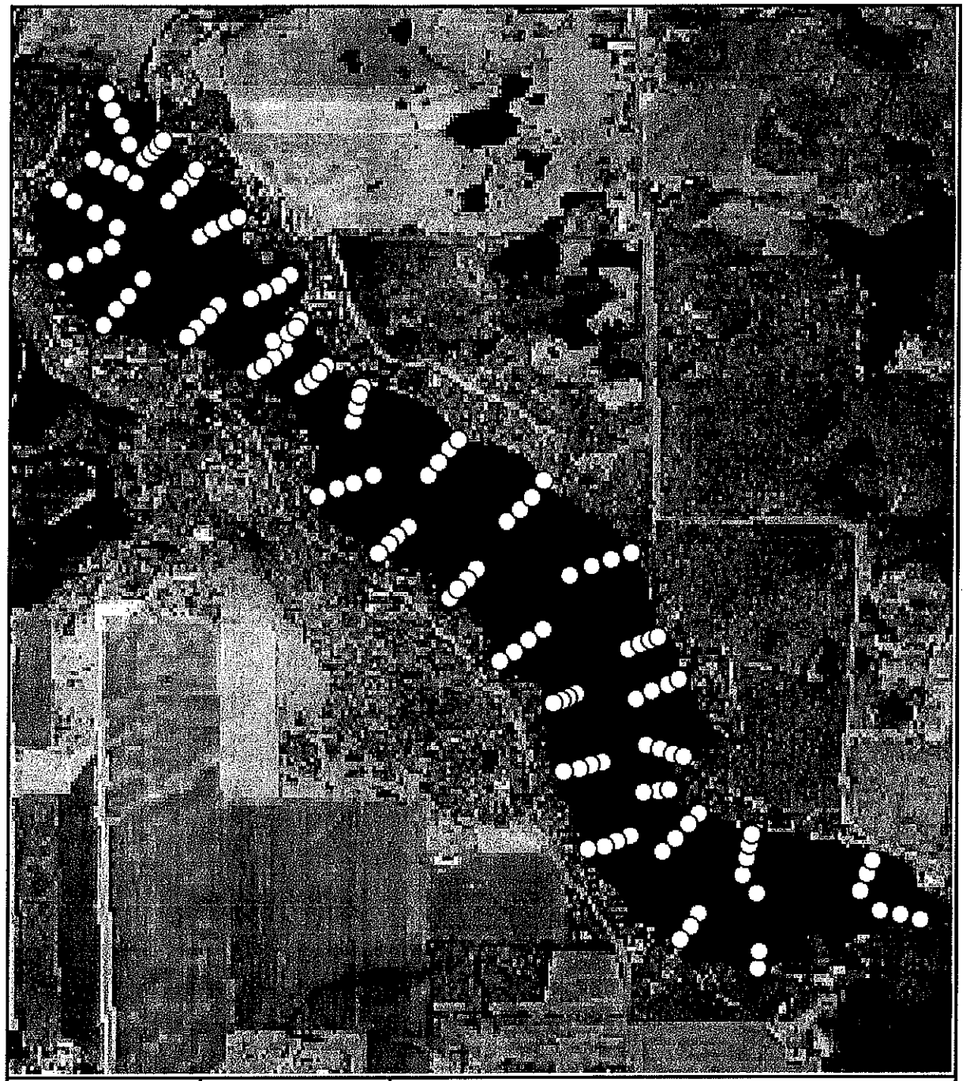
Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000



Aquatic Engineering

Legend

- Dense (>80%)
- Common (61 – 80%)
- Present (41 – 60%)
- Sparse (21 – 40%)
- Rare (1 – 20%)
- None

Wild Celery (*Vallisneria americana*)

A GIS Generated Map

Big Blake Lake, Polk Co., WI

Date: June 16 and 17, 2004

0 1,000 2,000 3,000 Feet

Coordinate system: GCS North American 1983

1:14,000

Appendix D:
June Plant Survey Raw Data

Transect	Depth Zone	Depth	DO (mg/L)	DO %	pH	Temp (C)	Cond. (uS/cm)	Sediment (see key)	Shoreline (see key)	Total density (0-5)	Coon	Flat stem	n. milfoil	white lily	water star	clasping	val	CLP	narrow leaf	white stem pondweed	buttercup	med leaf pondweed	cattails	yellow lily	duckweed	fil. Algae
0	3	5.3	11.33	131	8.98	22.8	0.169	4		2	0	0.5	0	0	0	0	0	1.25	0	0.25	0	0	0	0	0	0
0	4	7.8	11.12	129	8.95	22.7	0.174	4		1	0.25	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
0	2	2.3	11.32	132	9.5	22.9	0.189	4		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1.4	na	na	na	na	na	4	2	5	0.5	3	0	0	0	0	0	1.75	0	0	0	0	0	0	0	0
1	1	1	na	na	na	na	na	na	3	4	2	0	0.5	0	0	0	0	1.75	0	0	0	0	0	0	0	0
1	2	2.5	11.94	139	9.13	23.1	0.185	2		4	0.75	0.5	1	0	0	0	0	1.75	0	0	0.5	0	0	0	0	0
1	3	6.2	11.01	128	8.84	23.1	0.196	4		5	0	0	0	0	0	0	0	4.75	0	0	0	0	0	0	0	0
1	4	7.7	10.94	127	8.88	22.9	0.192	4		3	0.5	0.5	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2	2	2	12.05	142	8.93	23.5	0.196	3		1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2	1	0.7	12.02	145	8.89	23.7	0.195	2	3	2	0	0	0	0	0.25	0	0	0.25	0	0	0	1	0	0	0	0
2	3	8.7	11.08	130	8.83	23.1	0.198	4		2	0.25	0.5	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2	4	12	11	128	8.84	23.1	0.197	4		2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
3	4	11	10.46	122	8.72	23.1	0.204	4		2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
3	3	8.8	10.04	117	8.66	23.1	0.207	4		2	0	0	0	0	0	0	0	1.75	0	0	0	0	0	0	0	0
3	2	4.8	10.35	121	8.71	23.7	0.206	2		3	0	0	0	0	0	0	0	2.25	0.25	0	0	0	0	0	0	0
3	1	1	na	na	na	na	na	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	p	0	0	0
4	1	1	16.44	195	9.32	24	0.195	3	3	1	0.75	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
4	2	4.8	9.92	116	8.67	23.2	0.207	4		3	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0
4	3	7.9	9.8	114	8.66	23.1	0.206	4		2	0	0	0	0	0	0	0	1.75	0	0	0	0	0	0	0	0
4	4	12	10.2	118	8.68	22.9	0.207	4		2	0	0	0	0	0	0	0	2.25	0	0	0	0	0	0	0	0
5	4	8.4	10.55	123	8.89	22.8	0.179	4		2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
5	2	2.5	11.31	132	9.04	22.8	0.182	2		2	0	0.5	0.5	0	0	0	0	1	0	0	0	0	0	0	0	0
5	3	5.5	11.22	130	9.01	22.7	0.184	4		4	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
5	1	1	11.38	132	9.03	22.8	0.181	1	3	1	0	0.25	0	0	0	0.75	0	0.25	0	0	0	0	0	0	0	0
6	1	0.5	10.48	123	8.86	23	0.191	3	3	1	0	0.25	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0
6	2	2.5	10.61	123	8.83	22.6	0.191	2		3	0.25	0.75	0.75	0	0.25	0	0	1	0	0	0	0	0	0	0	0
6	3	3.5	10.62	123	8.83	22.6	0.191	3		2	0	0.25	0	0	0	0	0	1.5	0.25	0	0	0	0	0	0	0
6	4	8	10.43	121	8.92	22.6	0.186	4		2	1.25	0.75	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7	4	8.5	10.37	121	8.71	22.2	0.201	4		2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
7	3	4.5	10.78	124	8.81	22.3	0.971	4		3	0.25	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
7	2	2.2	11.26	130	8.89	22.5	0.195	3		4	0	0	0.25	0	0	0	0	3.75	0	0	0	0	0	0	0	0
7	1	1	11.35	132	8.92	22.5	0.195	3	3	2	0	0.5	0	0	0	0	0	1.75	0	0	0	0	0	0	0	0
8	4	11	10.59	122	8.72	22.8	0.205	4		2	0.5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8	2	3.5	12.04	142	9.1	23.7	0.187	3		5	0.25	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
8	1	1.2	13.18	157	9.2	24.1	0.184	2	3	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8	3	6.7	14.4	171	9.17	23.9	0.183	4		5	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
9	4	10	9.98	113	8.63	21.3	0.213	4		3	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0
9	3	6.2	8.89	100	8.54	21.2	0.215	4		3	0	0	0	0	0	0	0	3.25	0	0	0	0	0	0	0	0
9	2	4.3	8.63	97	8.49	21.3	0.215	4		5	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
9	1	1	8.51	96	8.49	21.2	0.215	3	3	2	0	0.25	0.25	0	0	0	0	1.25	0	0	0	0	0	0	0	0
10	4	14	9.29	105	8.59	21.2	0.216	4		3	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0
10	3	7.8	8.42	95	8.45	21.2	0.219	4		2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
10	1	1	na	na	na	na	na	2	3	1	0	0	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0
10	2	3.6	7.51	85	8.26	21.2	0.222	3		5	0.25	0	0	0	0	0	0	4.75	0	0	0	0	0	0	0	0
11	4	13	9.08	103	8.56	21.1	0.217	4		1	0	0.25	0	0	0	0	0	1	0	0	0	0	0	0	0	0
11	3	8.5	9.21	104	8.58	21.2	0.216	4		2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
11	1	0.7	9.01	101	8.58	21.1	0.215	2	3	1	0	0	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0
11	2	4	9.14	103	8.58	21.2	0.216	3		3	0	0.5	0	0	0	0	0	2	0	0	0	0	0	0	0	0

Transect	Depth Zone	Depth	DO (mg/L)	DO %	pH	Temp (C)	Cond. (uS/cm)	Sediment (see key)	Shoreline (see key)	Total density (0-5)	Coon	Flat stem	n. milfoil	white lily	water star	clasping	val	CLP	narrow leaf	white stem pondweed	buttercup	med leaf pondweed	cattails	yellow lily	duckweed	fil. Algae
12	4	16	8.78	99	8.53	21.5	0.219	4		1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
12	3	6.2	8.7	99	8.51	21.5	0.219	4		1	0	0	0	0	0	0	0	1.25	0	0	0	0	0	0	0	0
12	2	4.2	8.81	100	8.53	21.5	0.218	4		2	0.25	0	0	0	0	0	0	1.25	0	0	0	0	0	0	0	0
12	1	0.5	8.9	101	8.54	21.5	0.216	1	3	1	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
13	4	11	9.58	110	8.61	22.3	0.215	4		1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
13	2	2	12.1	141	8.72	23	0.218	2		3	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0
13	1	1	11.52	137	8.87	23.9	0.212	1	3	1	0	0	0	0	0	0.75	0	0.25	0	0	0	0	0	0	0	0
13	3	7.7	9.87	114	8.64	23	0.218	4		1	0	0	0	0	0	0	0	1.25	0	0	0	0	0	0	0	0
14	4	11	9.9	114	8.65	22.6	0.217	4		1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
14	3	7.1	9.6	111	8.65	22.9	0.217	4		3	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0
14	2	3.2	12.1	142	8.92	23.6	0.212	3		3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
14	1	1.2	14.38	170	9.15	24.5	0.206	1	3	1	0	0	0.25	0	0	0	0	1	0	0	0	0	0	0	0	0
15	4	11	9.55	110	8.67	22.6	0.215	4		2	0	0	0	0	0	0	0	1.5	0	0	0	0	0	0	0	0
15	3	6.4	9.66	112	8.69	23.1	0.215	4		2	0	0	0	0	0	0	0	2.25	0	0	0	0	0	0	0	0
15	2	4	10.32	123	8.81	24.4	0.212	4		5	0.25	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
15	1	0.8	11.29	133	8.89	23.5	0.211	2	3	1	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0
16	4	13	9.91	114	8.74	22.5	0.214	1		1	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
16	3	8.7	10.11	118	8.8	23.1	0.214	4		2	0.25	0.25	0	0	0	0	0	1.25	0	0	0	0	0	0	0	0
16	2	3	10.94	127	8.87	22.9	0.213	1		1	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	1	1	10.94	127	8.87	22.9	0.213	1	3	1	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0
17	4	11	9.93	115	8.59	22.8	0.223	4		2	0	0	0	0	0	0	0	2.25	0	0	0	0	0	0	0	0
17	3	9.8	10.32	120	8.67	23.2	0.22	4		2	0	0	0	0	0	0.25	0	2	0	0	0	0	0	0	0	0
17	2	4.4	10.55	124	8.82	23.7	0.214	4		3	0.25	0	0	0	0	0	0	2.25	0	0	0	0	0	0	0	0
17	1	1	10.98	128	8.89	23.1	0.211	2	3	1	0	0	0	0	0	0.25	0	0.75	0	0	0	0	0	0	0	0
18	3	7.5	12.02	141	9.05	23.2	0.207	4		3	0	0	0	0	0	0	0	3.25	0	0	0	0	0	0	0	0
18	2	4.7	12.66	149	9.21	23.6	0.192	4		5	0	0	0	0	0	0	0	4.75	0	0	0	0	0	0	0	0
18	1	1	13.13	155	9.26	23.6	0.191	2	3	2	0	0.25	0.25	0	0	1	0	0.5	0	0	0	0	0	0	0	0
18	4	na	na	na	na	na	na	na		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	3	7.7	12.39	145	8.88	23.2	0.214	4		5	0.25	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
19	1	1	na	na	na	na	na	4	1	3	2	0.5	0	0	0	0	0	0.75	0	0	0	0	0	p	0	0
19	2	4.1	13.21	155	9.27	23.8	0.195	4		3	1.25	0.25	0	0	0	0	0	1.5	0	0	0	0	0	p	0	0
19	4	na	na	na	na	na	na	na		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	3	6.5	8.12	95	8.28	22.9	0.229	4		3	2.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	2	3.3	13.38	156	9.04	23.1	0.22	4		5	0.75	0	0	p	0	0	0	5	0	0	0	0	0	0	0	0
20	1	1.4	na	na	na	na	na	4	2	4	2.75	0.25	0	p	0	0	0	1	0	0	0	0	0	0	0	0
20	4	na	na	na	na	na	na	na		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	3	6.4	8.66	100	8.36	22.8	0.228	4		4	3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	2	3.3	7.78	92	8.29	23.2	0.229	4		4	1.5	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
21	1	1	na	na	na	na	na	1	3	3	1.75	0	0	0	0	0	0	0.75	0	0	0	0	0	0	p	p
21	4	na	na	na	na	na	na	na		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	4	12	9.98	117	8.62	23.9	0.224	4		3	1.5	0.5	0	0	0	0.25	0	1	0	0	0	0	0	0	0	0
22	3	9.6	8.65	100	8.4	22.9	0.227	4		3	0.25	0.25	0	0	0	0	0	2.75	0	0	0	0	0	0	0	0
22	2	3.5	9.74	115	8.59	23.9	0.221	3		5	0.5	0.25	0	0	0	0	0	5	0	0	0	0	0	0	0	0
22	1	1	na	na	na	na	na	3	3	2	0.5	0	0	0	0	0.25	0	0.75	0	0	0	0	0	0	0	0
23	4	13	9.1	105	8.46	22.6	0.226	4		2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
23	3	8.8	9.19	107	8.47	22.7	0.226	4		3	0	0	0	0	0	0	0	2.75	0	0	0	0	0	0	0	0
23	1	1	10.6	123	8.78	22.8	0.217	3	3	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
23	2	3.3	10.13	117	8.57	22.9	0.223	4		5	0.75	0	0	0	0	0	0	4.5	0	0	0	0	0	0	0	0

Transect	Depth Zone	Depth	DO (mg/L)	DO %	pH	Temp (C)	Cond. (uS/cm)	Sediment (see key)	Shoreline (see key)	Total density (0-5)	Coon	Flat stem	n. milfoil	white lily	water star	clasping	val	CLP	narrow leaf	white stem pondweed	buttercup	med leaf pondweed	cattails	yellow lily	duckweed	fil. Algae
24	3	8.8	9.64	110	8.64	21.9	0.219	4		2	0	0	0	0	0	0	0	2.25	0	0	0	0	0	0	0	0
24	2	4.5	9.28	107	8.58	22.3	0.221	3		5	0.5	0	0	0	0	0	0	4.75	0	0	0	0	0	0	0	0
24	1	1	9.13	105	8.49	22.1	0.224	1	3	1	0	0	0	0	0	0.25	0.25	0	0	0	0	0	0	0	0	0
24	4	12	10.18	116	8.76	21.9	0.215	4		3	0	0	0	0	0	0	0	2.75	0	0	0	0	0	0	0	0
25	4	11	9.99	113	8.76	21.8	0.214	4		2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
25	3	6.6	9.76	112	8.72	21.9	0.216	4		3	0	0	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0
25	2	2.6	9.72	111	8.73	21.9	0.216	1		1	0	0	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0
25	1	1	9.72	111	8.73	21.9	0.216	1	3	1	0	0	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0
26	4	11	9.54	109	8.65	21.7	0.217	1		1	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
26	3	7.5	9.27	106	8.6	21.9	0.218	4		3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
26	2	4.5	9.33	106	8.62	21.8	0.216	3		1	0	0.25	0.25	0	0	0	0	0.75	0	0	0	0	0	0	0	0
26	1	1	9.33	106	8.62	21.8	0.216	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	4	12	9.63	109	8.72	21.6	0.214	1		1	0	0	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0
27	3	7.1	9.3	105	8.62	21.7	0.217	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	2	4.1	9.3	105	8.62	21.7	0.217	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	1	0.5	9.3	105	8.62	21.7	0.217	1	nr	1	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0
28	4	12	8.88	103	8.66	22.5	0.217	4		2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
28	3	7.3	10.12	117	8.7	23.2	0.213	4		2	0	0	0	0	0	0	0	1.5	0	0	0	0	0	0	0	0
28	1	0.7	10.89	128	8.79	23.2	0.213	2	3	2	0	0	0.25	0	0	0.75	0	1.25	0	0	0	0	0	0	0	0
28	2	4.1	10.71	125	8.8	23.2	0.213	2		3	0	0.25	0	0	0	0	0	2.5	0	0	0	0	0	0	0	0
29	4	14	9.68	110	8.71	21.7	0.215	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	3	6.5	9.59	108	8.7	21.6	0.216	1		1	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0
29	1	0.5	9.59	108	8.7	21.6	0.216	1	1	1	0.25	0	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0
29	2	3.5	9.59	108	8.7	21.6	0.216	1		1	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
30	4	12	9.31	106	8.64	21.6	0.216	1		2	0	0	0	0	0	0	0	1.5	0	0	0	0	0	0	0	0
30	2	4.5	9.1	103	8.61	21.6	0.217	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	1	1	9.1	103	8.61	21.6	0.217	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	3	7.5	9.1	103	8.61	21.6	0.217	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	4	13	9.52	108	8.69	21.7	0.216	1		1	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
31	3	7	9.34	106	8.67	21.6	0.216	1		1	0	0	0.25	0	0	0	0	1	0	0	0	0	0	0	0	0
31	2	4.2	9.53	107	8.66	21.6	0.216	1		1	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0
31	1	1	9.53	107	8.66	21.6	0.216	1	1	1	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0
32	4	12	9.38	106	8.64	21.5	0.217	4		1	0	0	0	0	0	0	0	1.25	0	0	0	0	0	0	0	0
32	3	9.1	9.14	104	8.6	21.5	0.217	4		1	0	0	0	0	0	0	0	1.25	0	0	0	0	0	0	0	0
32	1	0.5	8.83	100	8.52	21.5	0.219	1	1&3	1	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
32	2	4.5	8.83	100	8.54	21.6	0.218	4		1	0.25	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
33	4	12	10.15	117	8.8	22.5	0.213	4		1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
33	3	8.7	10.19	118	8.8	22.9	0.214	3		1	0	0	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0
33	2	2.5	10.37	121	8.82	22.8	0.214	1		1	0	0	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0
33	1	0.7	10.37	121	8.82	22.8	0.214	1	1&3	1	0	0	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0

na = not applicable

nr = not recorded

shoreline

forest = 1

wetland = 2

cult lawn = 3

sediment	sites with
rock=1	32
gravel=2	14
sand=3	18
muck=4	67
detritus=5	0

Appendix E:
Macroinvertebrate Raw Data

INVERTS - TOTAL by Genus (species)	n	Mean	SD	SE	95% CI of Mean
Hyalella azteca	18	0.778	2.8400	0.6694	-0.634to 2.190
Baetis	18	0.056	0.2357	0.0556	-0.062to 0.173
Bezzia	18	0.611	2.3549	0.5551	-0.560to 1.782
Argia	18	0.722	1.9943	0.4701	-0.270to 1.714
Natarsia	18	0.111	0.4714	0.1111	-0.123to 0.346
Stenochironomus	18	1.167	2.9556	0.6966	-0.303to 2.636
Clinotanypus	18	1.444	3.6173	0.8526	-0.354to 3.243
Potthastia	18	0.333	0.8402	0.1980	-0.084to 0.751
Pagastia	18	0.111	0.3234	0.0762	-0.050to 0.272
Diamesa	18	0.167	0.7071	0.1667	-0.185to 0.518
Stylogomphus	18	0.056	0.2357	0.0556	-0.062to 0.173
Stylurus	18	0.056	0.2357	0.0556	-0.062to 0.173
Stenonema	18	0.056	0.2357	0.0556	-0.062to 0.173
Haliplus	18	1.278	2.8244	0.6657	-0.127to 2.682
Helobdella	18	4.944	8.7949	2.0730	0.571to 9.318
Hydracarina	18	0.167	0.5145	0.1213	-0.089to 0.423
Imature gastropod	18	55.667	69.0490	16.2750	21.329to 90.004
Asellus	18	13.722	45.9729	10.8359	-9.140to 36.584
Mystacides	18	0.167	0.7071	0.1667	-0.185to 0.518
Ylodes	18	6.167	11.7936	2.7798	0.302to 12.031
Triaenodes	18	3.278	6.1339	1.4458	0.227to 6.328
Setodes	18	0.778	2.3653	0.5575	-0.398to 1.954
Nectopsyche	18	0.389	1.6499	0.3889	-0.432to 1.209
Pachydiplax	18	0.111	0.3234	0.0762	-0.050to 0.272
Perithemus	18	0.222	0.5483	0.1292	-0.050to 0.495
Symptrum	18	0.500	0.9852	0.2322	0.010to 0.990
Hydatophylax	18	0.056	0.2357	0.0556	-0.062to 0.173
Oligochaete	18	2.222	3.7971	0.8950	0.334to 4.110
Physella	18	0.556	0.9835	0.2318	0.066to 1.045
Acentria	18	0.167	0.3835	0.0904	-0.024to 0.357
Sphaeriidae	18	1.056	2.2089	0.5206	-0.043to 2.154
Tabanus	18	0.167	0.5145	0.1213	-0.089to 0.423
Valvata	18	1.000	2.0580	0.4851	-0.023to 2.023

Comparative statistics of Blake Lake Invertebrate Species. SD = standard deviation, SE = standard error, and CI = confidence interval.

n	594

INVERTS - TOTAL by Genus (species)	n	Mean	SD	SE
Hyalella azteca	18	0.778	2.840	0.6694
Baetis	18	0.056	0.236	0.0556
Bezzia	18	0.611	2.355	0.5551
Argia	18	0.722	1.994	0.4701
Natarsia	18	0.111	0.471	0.1111
Stenochironomus	18	1.167	2.956	0.6966
Clinotanypus	18	1.444	3.617	0.8526
Potthastia	18	0.333	0.840	0.1980
Pagastia	18	0.111	0.323	0.0762
Diamesa	18	0.167	0.707	0.1667
Stylogomphus	18	0.056	0.236	0.0556
Stylurus	18	0.056	0.236	0.0556
Stenonema	18	0.056	0.236	0.0556
Haliplus	18	1.278	2.824	0.6657
Helobdella	18	4.944	8.795	2.0730
Hydracarina	18	0.167	0.514	0.1213
Imature gastropod	18	55.667	69.049	16.2750
Asellus	18	13.722	45.973	10.8359
Mystacides	18	0.167	0.707	0.1667
Ylodes	18	6.167	11.794	2.7798
Triaenodes	18	3.278	6.134	1.4458
Setodes	18	0.778	2.365	0.5575
Nectopsyche	18	0.389	1.650	0.3889
Pachydiplax	18	0.111	0.323	0.0762
Perithemus	18	0.222	0.548	0.1292
Symptrum	18	0.500	0.985	0.2322
Hydatophylax	18	0.056	0.236	0.0556
Oligochaete	18	2.222	3.797	0.8950
Physella	18	0.556	0.984	0.2318
Acentria	18	0.167	0.383	0.0904
Sphaeriidae	18	1.056	2.209	0.5206
Tabanus	18	0.167	0.514	0.1213
Valvata	18	1.000	2.058	0.4851

Source of variation	SSq	DF	MSq	F	p
Genus (species)	55492.438	32	1734.139	7.93	<0.0001
Within cells	122738.278	561	218.785		
Total	178230.715	593			

ANOVA of species density

Appendix F:
Resident Lake Survey Results

The Limnological Institute

A conservation organization providing research and solutions for the preservation of our inland waters.

Big Blake Lake District
RESIDENT LAKE SURVEY
May 20, 2005

ATTENTION: *The Limnological Institute would like your feedback to the following questions. Your comments and opinions are very important to us, and will form the basis of developing a management plan for your lake. The plan will be used to guide the implementation of lake-protection and improvement strategies over at least the next several years. Please answer all the questions to the best of your ability. Completed surveys should be returned to*

The Limnological Institute no later than ***June 1st, 2005.***

To send, simply re-fold and return to:
TLI Post Office Box 304, La Crosse, WI 54602-0304
Please staple or tape shut (please do not staple), and mail before the deadline.
Thank you in advance for your input and cooperation!

1. What type of property owner are you? (Check all that apply.)
___Residential Homeowner ___Farmer ___Commercial Business ___Vacant Landowner ___Renter ___Other

2. Approximately what distance from the lake is your property located?
___On the water ___¼ mile ___½mile ___¾mile ___1+ mile

3. Which of the following best describes your residency status?
___Year-round/Permanent ___Seasonal/Part-time

4. When do you ***most often*** spend time recreating on your lake?
_____ Never _____ Spring (Mar— May) _____ Summer (Jun — Aug) _____ Fall (Sept— Nov)
_____ Winter (Dec— Feb) _____ All Year

5. How many years have you owned property in your lake District?
___0-5 years ___6-10 years ___1 1-15 years ___16-20 years ___21-25 years ___26-30 years ___ 30+ years

6. List the top three reasons why you chose to own property on or near your lake? (List the letters of your top three choices.)

A. Family inheritance/tradition
B. Cost of property
C. Proximity to primary residence
D. Recreational opportunities
E. Peace/tranquility
F. Type & quality of lake
G Area amenities (small town atmosphere, etc.)
H. Location of friends or family
I Real estate investment
J. Business purposes
K. Entertaining
L. Other (Specify) _____

1st___ 2nd___ 3rd___

7. If you own lakefront property, which of the following describes your lake frontage within 25 feet of the water's edge? (Check all that apply.)
___Mowed lawn ___Thick vegetation ___Sparse vegetation ___Stabilizing rocks ___Sand beach
___Unaltered/undeveloped ___Retaining wall ___Pier/dock ___Private boat ramp ___Boat hoist
___Buffer Zone

8. What types of watercraft do you routinely use on your lake? (Check all that apply.)
___Rowboat/Paddle boat ___Canoe/Kayak ___Sailboat___Personal watercraft___Motor boat under 25 HP
___Speed boat ___Pontoon boat ___Other (Specify)_____

9. If you are an angler, please answer the following questions.
   A) Rank the following fish species that you prefer to catch on your lake? (Rank 1-6: 1 = most important and 6 = least important)
   ____Largemouth Bass ____Crappie ____Northern Pike ____Perch ____Bluegill/Sunfish
   ____Other (Specify)_____

   B) What is the average size of each type of fish that can be caught on your lake?

Largemouth Bass:	____inches	Perch:	____inches
Crappie:	____inches	Bluegill/Sunfish:	____inches
Northern Pike:	____inches	Other (_____):	____inches

   C) How would you rate the quality of fishing on your lake in terms of fish SIZE?
   ____Poor ____Fair ____Good ____Excellent

   D) How would you rate the quality of fishing on your lake in terms of fish NUMBERS?
   ____Poor ____Fair ____Good ____Excellent

   E) Do you voluntarily practice "catch-and-release" when fishing for species other than panfish?
   ____ Always ____ Sometimes ____Rarely

10. Do you feel your lake has more than adequate public access? If not, what type of access is most needed?
    ____ Yes ____No (type most needed:_____)

11. What is your opinion regarding the use of fertilizers and/or weed killer to maintain lawns around your lake? (Check all that apply.)
    ____Two or more applications needed per year
    ____One application needed per year
    ____Needed only on a sporadic basis depending on soil and plant growth conditions
    ____Not needed or not justified due to perceived health/environmental effects

12. Overall, how would you describe the water clarity in your lake during the summer months?
    ____Crystal clear ____Clear____Cloudy ____Murky ____Pea soup

13. When is water clarity at its worse? (Check all that apply.)
    ____Consistently bad ____After heavy rains
    ____Spring ____After heavy motor boat & jet ski traffic
    ____Summer ____During abnormally high/low lake levels
    ____Fall ____Other (Specify) _____

14. Overall, how would you describe your lake's aquatic plant growth?
    ____Too few plants ____Healthy amount of plant growth ____ Too many plants

15. Are there areas on the lake where aquatic plant growth becomes especially problematic? If yes, please specify the location and nature of problem.
    ____Yes (Location:_____ Nature of Problem:_____)
    ____No

16. Do you feel the current weed management program is effectively controlling nuisance plant growth? If not, please explain.
    ____Yes ____No

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

17. What activities do you and the members of your household most enjoy while recreating on your lake? (List the letters of your top three choices.)

A.	Fishing	H.	Swimming/Snorkeling
B.	Motor boating	I.	Enjoying the view
C.	Canoeing/Paddle boating	J.	Observing wildlife
0.	Sailing/Wind surfing	K.	Entertaining
E.	Jet skiing	L.	Cross-country skiing
F.	Water skiing	M.	Snowmobiling
G.	Enjoying peace & tranquility	N.	Other (Specify)_____

1st____ 2nd____ 3rd____

18. Rank the following according to their level of importance to you. (Rank 1-14: 1 = most important, 14 = least important)

____Clear water
____amount of aquatic plant growth
____Little or no aquatic plant growth
____ Large fish
____Abundant fish
____Presence of wildlife/habitat
____Rule compliance
____Sandy bottom
____Natural, well-vegetated shorelines
____Reduced noise
____Reduced traffic & congestion
____ Overall ecosystem health
____ Greater separation of conflicting lake uses
____Other (Specify)_____

19. How have the following changed since you've lived on or near your lake?

	BETTER	SAME	WORSE
Water clarity:	____	____	____
Fish size:	____	____	____
Fish abundance:	____	____	____
Nuisance "weed" growth:	____	____	____
Algae growth:	____	____	____
Motor boat traffic:	____	____	____
Personal watercraft traffic:	____	____	____
Noise:	____	____	____
Fishing pressure	____	____	____
Fish habitat:	____	____	____
Wildlife diversity:	____	____	____
Muckiness of lake bottom	____	____	____
Lake-level fluctuations:	____	____	____
Rule compliance/enforcement:	____	____	____

20. Do you feel that there is an adequate law enforcement presence on your lake?
____Yes ____No

21. Are there any types of behavior, recreational activities or lake uses that you believe are seriously jeopardizing the health and safety of the lake? If yes, please explain.
____Yes ____No
_____
_____

22. Would you be in favor of expanding "slow-no-wake" times and/or locations to promote safety and protect sensitive habitat areas on your lake? Please explain.
____Yes ____No
_____
_____

23. What is your opinion regarding lake-use regulations on your lake in general'?
____Over regulated ____Under regulated ____Sufficiently regulated

24. Rank the following according to the degree each condition negatively impacts your use or enjoyment of your lake? (Rank 1-16: 1=biggest problem, 16-smallest problem)

____Nuisance algae growth	____Poor water clarity
____Excessive weed growth	____Passive vs. active recreational conflicts
____Small fish size	____Loss of wildlife habitat (e.g. shoreland & aquatic vegetation)
____Small fish quantity	____Shoreline development
____Lake-level too high	____Boat traffic/congestion
____Lake-level too low	____Noise
____Too many fishermen	____Lack of rule compliance/enforcement
____Too many boating restrictions	____Other (Specify)_____

25. What do you feel are the top three factors that contribute to problems on your lake? (List the letters of your top three choices)

A.	Fertilizer/pesticide use	G.	Lake-level fluctuations
B.	Construction site erosion & runoff	H.	Shoreline development pressures
C.	Farm field erosion & runoff	I.	Leaking septic fields
D.	Shoreline and stream bank erosion	J.	Inappropriate lake management efforts
E.	Motor boat & jet ski traffic	K.	Wetland & wildlife habitat destruction
F.	Inadequate law enforcement	L.	Other (Specify)_____

1st_____ 2nd_____ 3rd_____

26. Do you feel that you have a voice in decision-making matters regarding the management of your lake? If not, please explain why you think this is the case.

____Yes ____No

_____

_____

_____

_____

_____

_____

_____

_____

_____

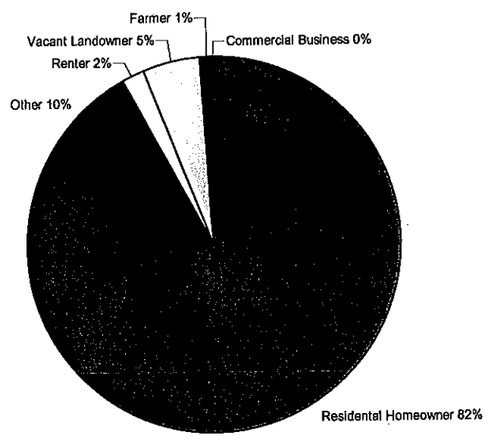
_____

_____

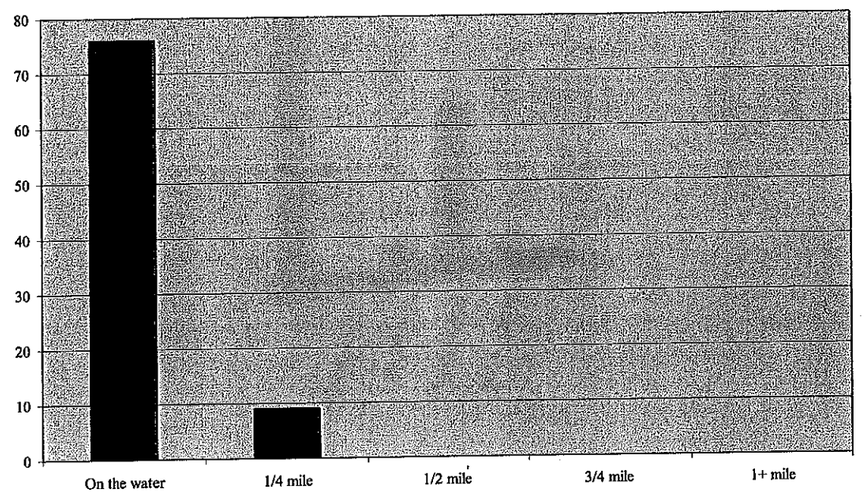
Place Stamp Here

The Limnological Institute
Post Office Box 304
La Crosse, WI 54602

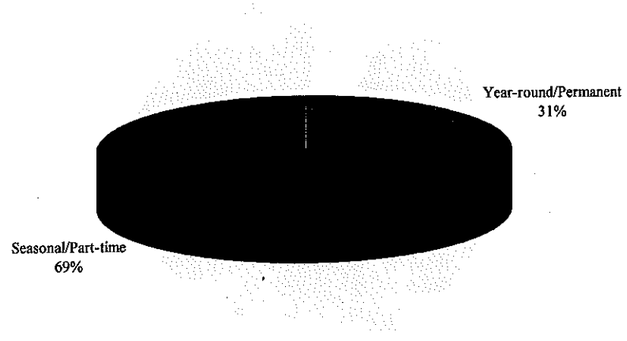
1. What type property owner are you? (86 of 87 answered)



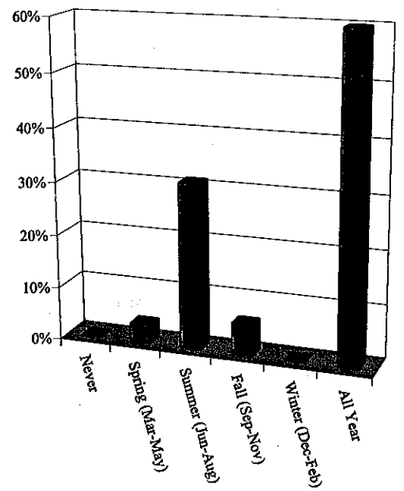
2. Approximately what distance from the lake is your property located? (85 of 87 responded)



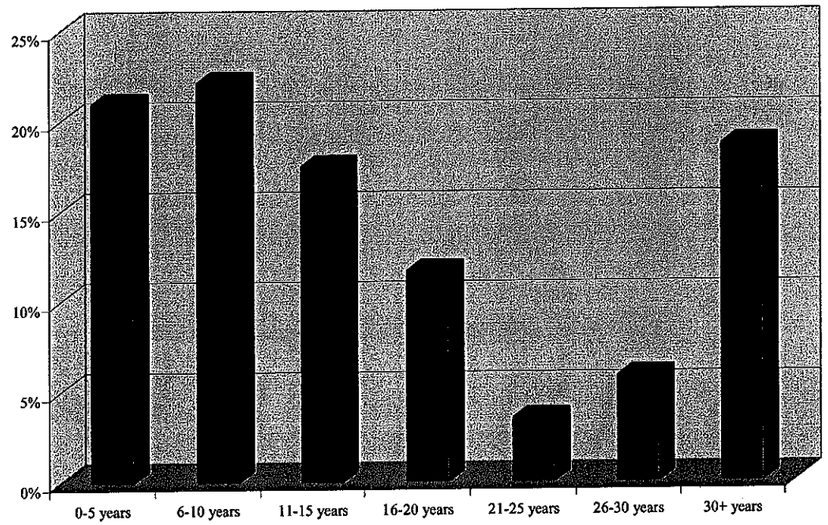
3. Which of the following best describes your residency status? (87 of 87 responded)



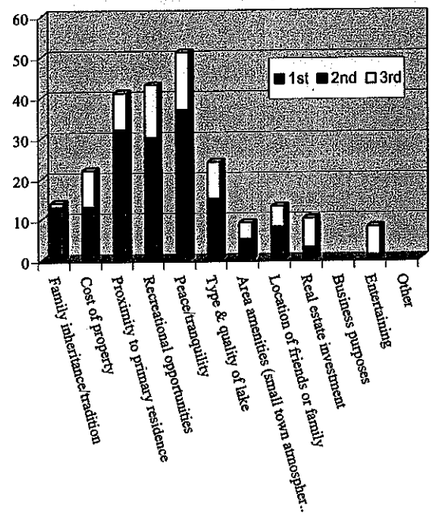
4. When do you most often spend time recreating on your lake? (87 of 87 responded)



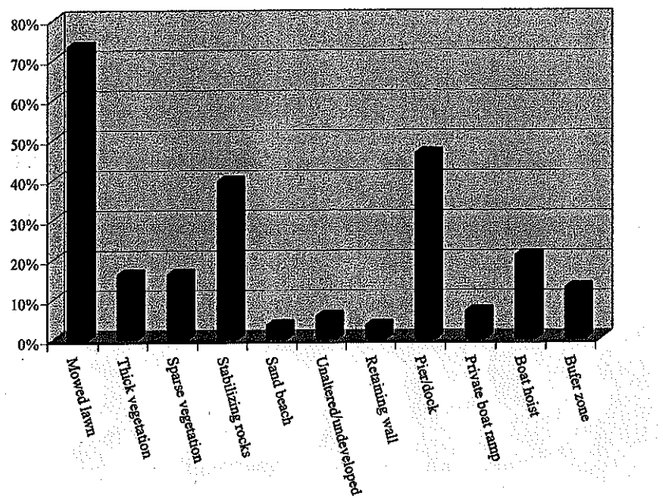
5. How many years have you owned property in your lake District? (86 of 87 responded)



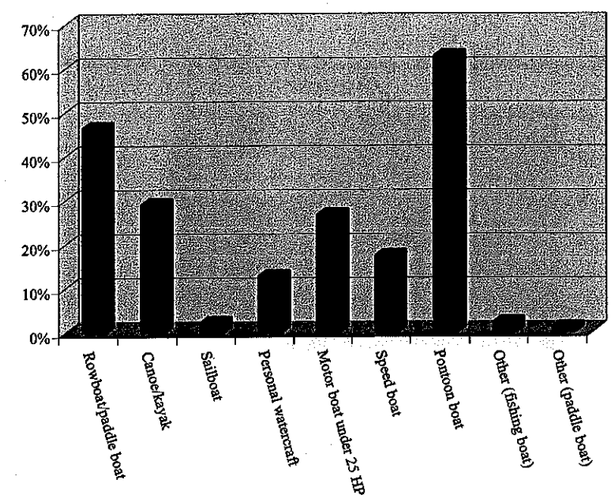
6. List the top three reasons why you chose to own property on or near your lake? (78 of 87 responded)



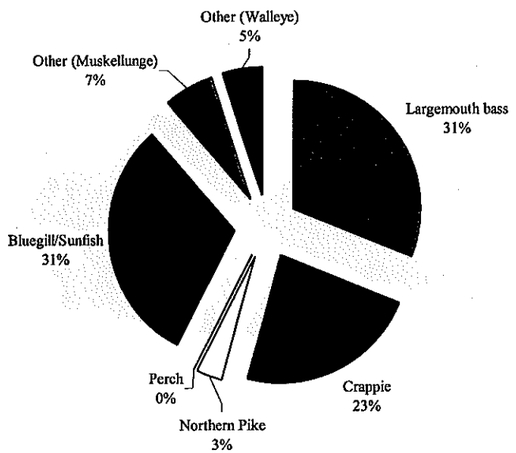
7. If you own lakefront property, which of the following describes your lake frontage within 25 feet of the water's edge? (Check all that apply.) (79 of 87 responded)



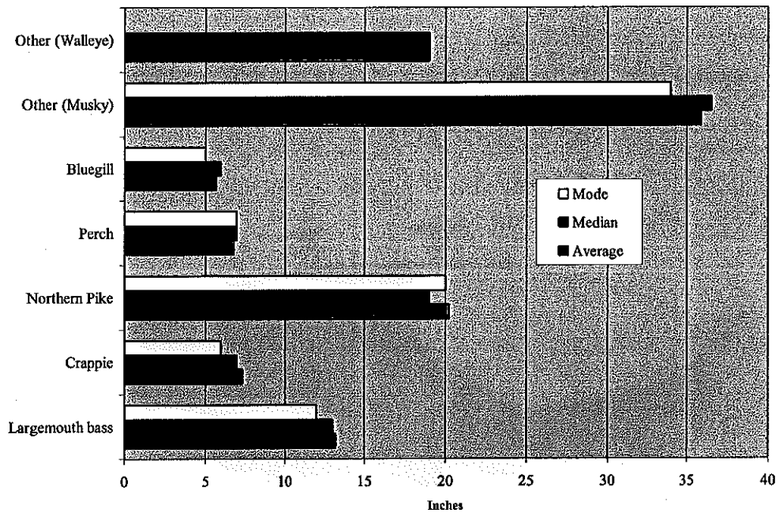
8. What types of watercraft do you routinely use on your lake? (Check all that apply.) (86 of 87 responded)



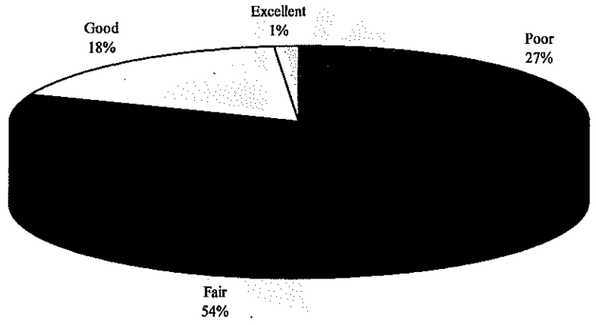
9A. Rank the following fish species that you prefer to catch on your lake?
(shows % of people that ranked each species #1) (61 of 87 responded)



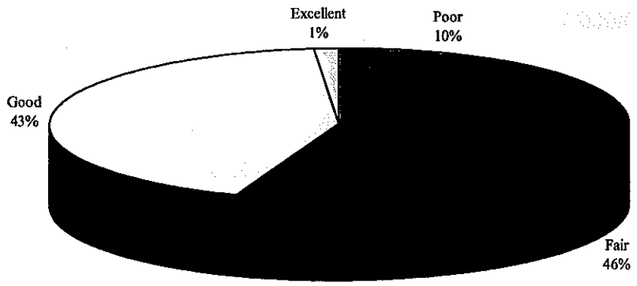
9B. What is the average size of each type of fish that can be caught on your lake? (49 of 87 responded)



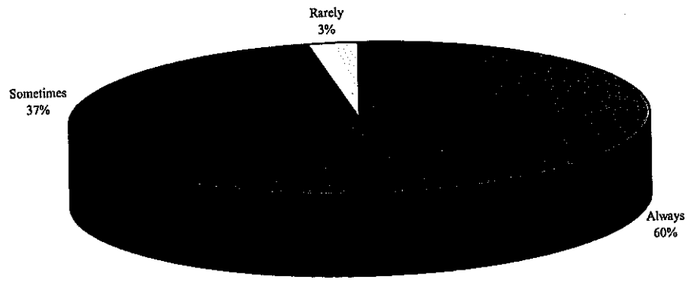
9C. How would you rate the quality of fishing on your lake in terns of fish SIZE? (79 of 87 responded)



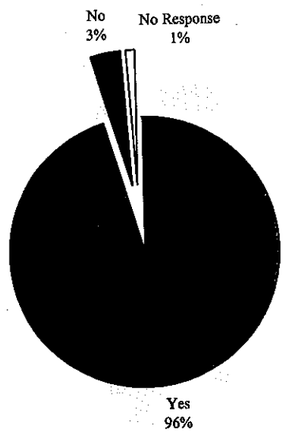
9D. How would you rate the quality of fishing on your lake in terns of fish NUMBERS?
(77 of 87 responded)



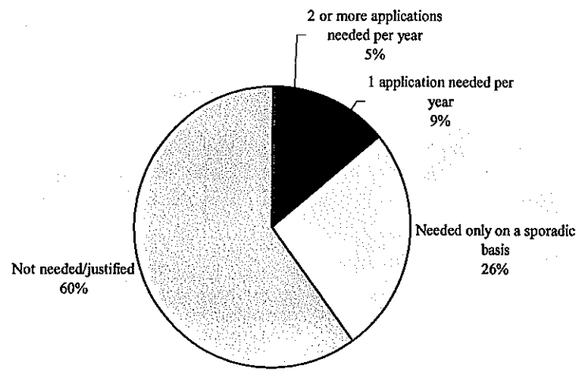
9E. Do you voluntarily practice "catch and relaese" when fishing for species other than panfish? (71 of 87 responded)



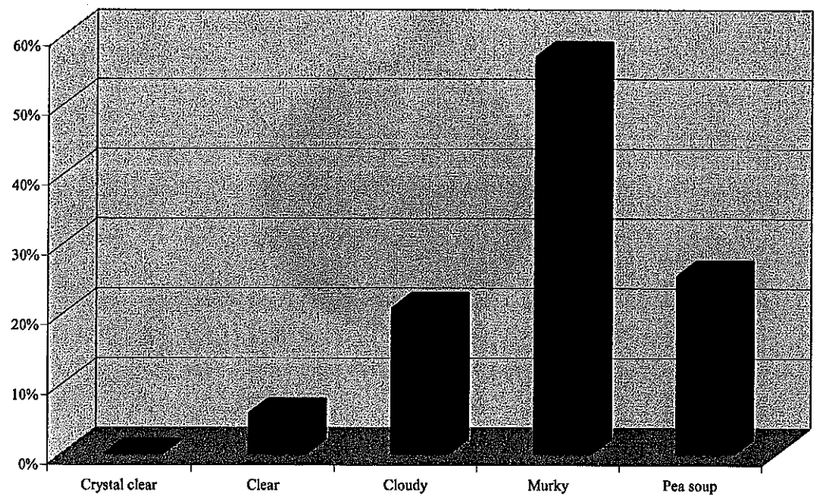
10. Do you feel your lake has more than adequate public access? (86 of 87 responded)



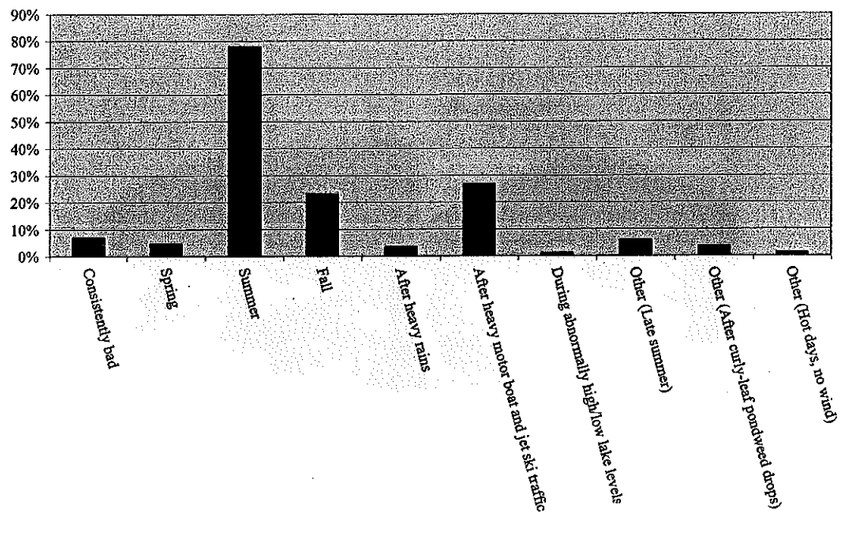
11. What is your opinion regarding the use of fertilizers and/or weed killer to maintain lawns around your lake (check all that apply) (80 of 87 responded)



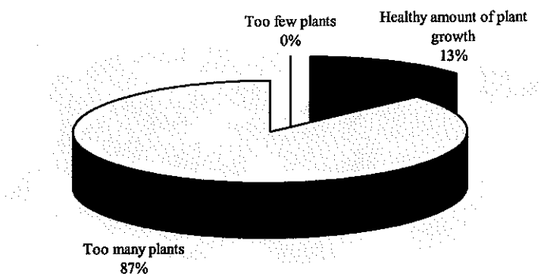
12. Overall, how would you descibe the water clarity in your lake during the winter months? (87 of 87 responded)



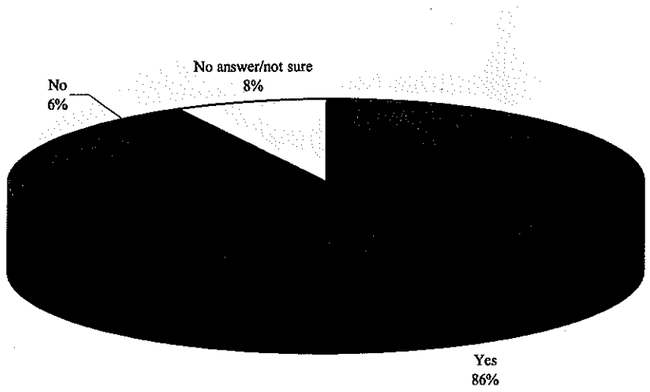
13. When is water clarity at its worst? (check all that apply) (84 of 87 responded)



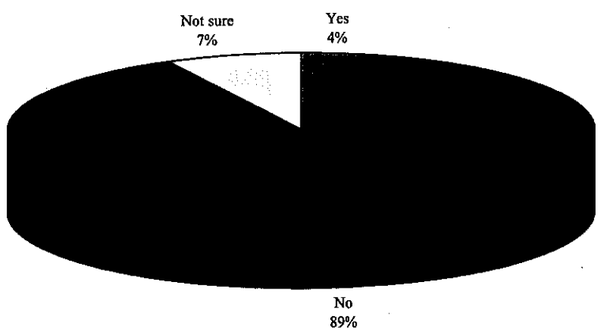
14. Overall, how would you describe your lake's aquatic plant growth? (82 of 87 responded)



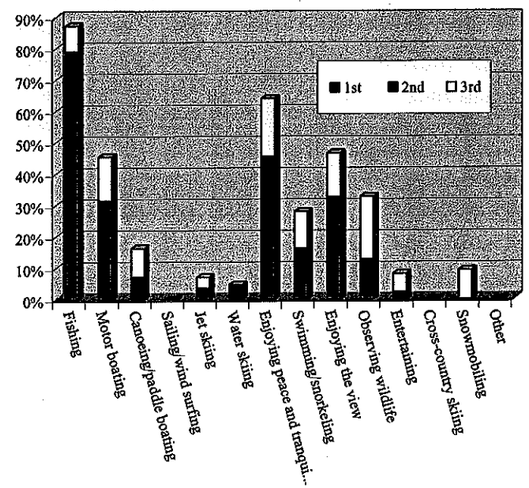
15. Are there areas on the lake where aquatic plant growth becomes especially problematic? (71 of 86 responded)



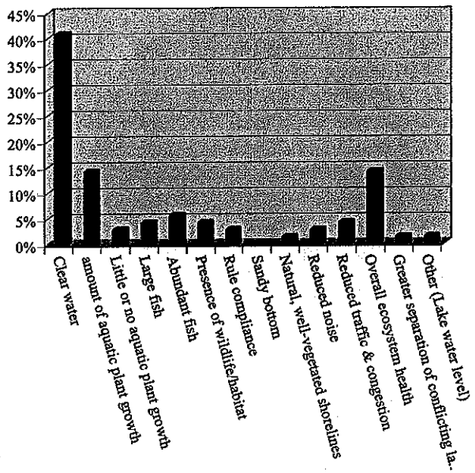
16. Do you feel the current weed management program is effectively controlling nuisance plant growth? (81 of 87 responded)



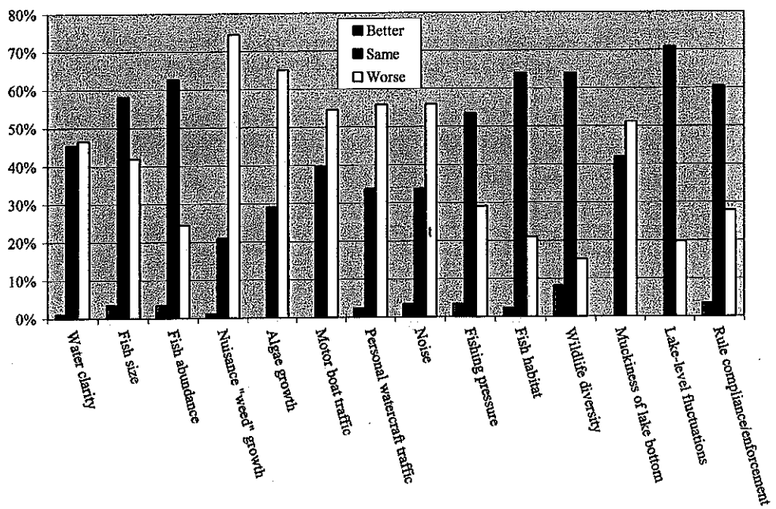
17. What activities do you and the members of your household most enjoy while recreating on your lake? (List the letters of your top three choices) (83 of 87 responded)



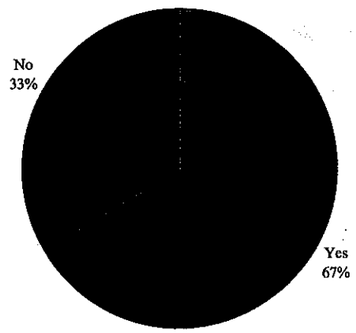
18. Rank the following according to their level of importance to you. (% ranked #1) (71 of 87 responded)



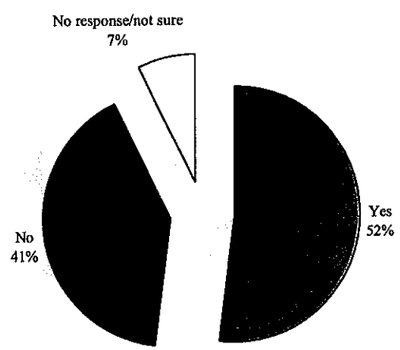
19. How have the following changed since you've lived on or near your lake? (83 of 87 responded)



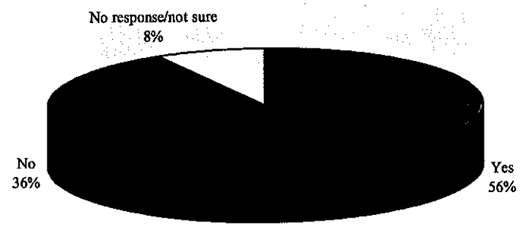
20. Do you feel that there is an adequate law enforcement presence on your lake? (81 of 87 responded)



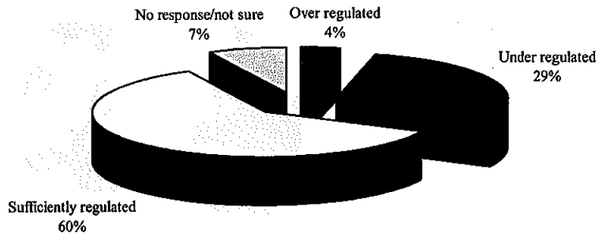
21. Are there any types of behavior, recreational activities or lake uses that you believe are seriously jeopardizing the health and safety of the lake? (77 of 87 responded)



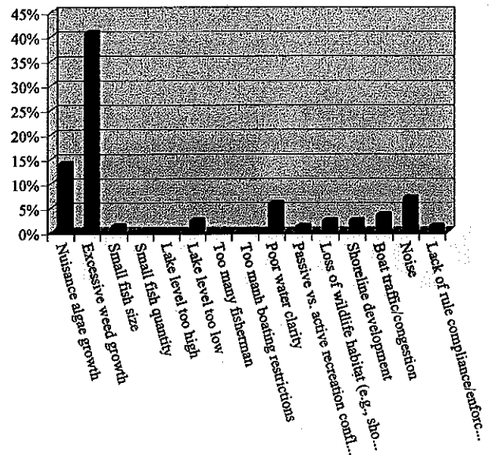
22. Would you be in favor of expanding "slow-no-wake" times and/or locations to promote safety and protect sensitive habitat areas on your lake? (79 of 87 responded)



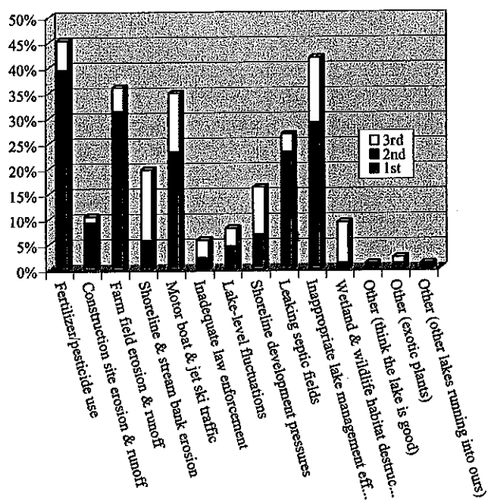
23.What is your opinion regarding lake-use regulations on your lake in general? (78 of 87 responded)



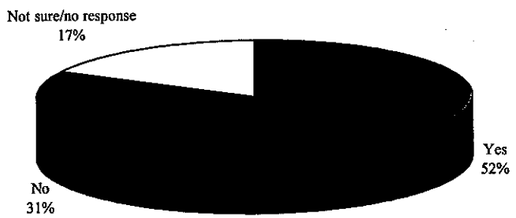
24. Rank the following according to the degree each condition negatively impacts your use or enjoyment of your lake? (Shows % of people who ranked each category #1) (70 of 87 responded)



25. What do you feel are the top three factors that contribute to problems an your lake? (list the letters of your top three choices) (79 of 87 responded)



26. Do you feel that you have a voice in decision-making matters regarding the management of your lake? (72 of 87 responded)



Appendix G:

Big Blake Lake P&RD Meeting Minutes

Appendix H:

WDNR Permit Application to Harvest Aquatic Vegetation

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Mechanical / Manual Aquatic Plant Control Application

Form 3200-113 (R 3/04)

FOR DNR USE ONLY	
Date Received	ID Number
Fee Received	County Code
Exp. Date	WBIC

Notice: Information requested on this form is required to permit mechanical and/or manual aquatic plant control application, per s. 23.24, Wis. Stats. The Department will not issue a permit unless you complete and submit this application. Personally identifiable information collected will be used for program administration and will be available to requesters under Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

Section I: Applicant Data

Permit Applicant Name

Applicant Mailing Address

City | State | ZIP Code

Applicant is

☐ Private individual ☐ Contractor

☐ Lake Organization (Specify) _____

Lake Property Address, City, State, ZIP (if different)

Telephone Number | E-Mail Address

Telephone Number | E-Mail Address

Individuals and organizations (e.g., Lake District, Lake Association, Property Owners Association, County Department of Recreation), sponsoring removal. Attach additional sheets if necessary.

	Name	Address	Phone	E-mail Address
A.				
B.				
C.				
D.				

Has a Lake Management plan been provided to the DNR? ☐ Yes ☐ No

If Yes, date approved of most current copy

Location of Applicant file copy

Does the proposed plant removal agree with the approved plan? ☐ Yes ☐ No
If NO, explain. Attach additional sheets if necessary.

Is this area within or adjacent to a Sensitive Area designated by the Wisconsin Department of Natural Resources?

☐ Yes ☐ No ☐ Don't Know If yes, list sites _____

Section II: Location of Aquatic Plant Removal and Disposal

Waterbody of proposed plant removal | Lake Surface Area (acres) | County | Town _____ Range _____ Section _____

Name of Firm (if sub-contracted) | Telephone Number

Street Address | City, State and ZIP

	¼ / ¼	¼	Section	Township N	Range E / W	County
Name of 1st Plant Disposal Site (if applicable)						
Name of 2nd Plant Disposal Site (if applicable)						

Area(s) Proposed for Plant Removal (Note details in permit cover letter for final permitted sizes). Please see attached sample drawing for guidance

1. Length from shore _____ ft. x Shoreline or area width _____ ft. / 43,560 ft. = _____ Estimated Acreage Avg. Depth _____ft.
2. Length from shore _____ ft. x Shoreline or area width _____ ft. / 43,560 ft. = _____ Estimated Acreage Avg. Depth _____ft.
3. Length from shore _____ ft. x Shoreline or area width _____ ft. / 43,560 ft. = _____ Estimated Acreage Avg. Depth _____ft.
4. Offshore Control Site Length _____ ft. x Shoreline or area width _____ ft. / 43,560 ft. = _____ Estimated Acreage Avg. Depth _____ft.
5. Offshore Control Site Length _____ ft. x Shoreline or area width _____ ft. / 43,560 ft. = _____ Estimated Acreage Avg. Depth _____ft.

TOTAL ESTIMATED ACREAGE _____

Section II: Location of Aquatic Plant Removal (cont.)

What type of aquatic plants below the Ordinary High Water Mark are proposed to be removed? (check all that apply)

☐ Emergent (above water level) ☐ Submergent (below water level) ☐ Floating Leaf (at the surface i.e. lilly pads)

Section III: Map & Property Ownership

Attach a copy of a lake map that includes the property(s) to be harvested. If no printed map is available, provide a sketch of the site at the bottom of this page. On the map, identify the following required information.

- Area and dimensions of each proposed plant removal area.
- Location of all riparian neighbors (property owners riparian to and adjacent to the proposed removal area) including project participants and non-participants. Consecutively number each riparian neighbor (both project participants and non-participants). In the space below:
- Name all riparian owners, including project participants & non-participants. The number should correspond with the numbered properties on the map. Attach additional sheets if necessary.
- Check Yes box to indicate project participants and No box for non-participants.

No.	Name of Riparian Neighbor	Project Participant	Control dimensions (calculated acreage)
1.	_____	☐ Yes ☐ No	_____
2.	_____	☐ Yes ☐ No	_____
3.	_____	☐ Yes ☐ No	_____
4.	_____	☐ Yes ☐ No	_____
5.	_____	☐ Yes ☐ No	_____
6.	_____	☐ Yes ☐ No	_____

☐ Check here if separate sheets are attached identifying additional neighbor riparian owners. Indicate project participants and/or non-participants.

☐ Check here if printed map attached. If no printed map, use this space to sketch the site and provide required information.

Map

Mechanical / Manual Aquatic Plant Control Application

Form 3200-113 (R 3/04)

Section IV: Methods

What mechanical or manual methods to remove plants are proposed? (check all that apply)

☐ Mechanical harvesting ☐ Raking Other _____

☐ Hand Pulling ☐ Cutting _____

Please explain why you selected the proposed method(s).

Note: Other control methods (i.e. bottom barriers, weed rollers, herbicides) also need DNR permits. Contact this office for more details.

Section V: Fees

Fees are not refundable and are calculated as follows:

Check box for type of project:

1. ☐ single riparian area, one property owner, less than one acre **$30.00**
2. ☐ multiple riparian areas, offshore control areas, multiple riparian properties, one acre or greater $30.00/acre (round up to the nearest whole acre) If proposed removal is greater than 10 acres fee caps at $300.00

_____ acres x $30.00 per acre = $ _____

Total non-refundable fee enclosed (max $300.00) . . . . . $_____

Section VI: Reasons for Aquatic Plant Removal

Purpose of Aquatic Plant Removal

☐ Maintain navigational channel for common use

☐ Maintain private access for boating

☐ Maintain private access for fishing

☐ Improve swimming

☐ Other _____

Nuisance Caused By

☐ Emergent water plants

☐ Submergent water plants

☐ Floating water plants

☐ Other _____

Name of plants, if known

Section VII: Alternatives Considered

	A. Previously Done?		B. Presently Proposed?	
1. Chemical	☐ Yes	☐ No	☐ Yes	☐ No
2. Sediment screens	☐ Yes	☐ No	☐ Yes	☐ No
3. Dredging	☐ Yes	☐ No	☐ Yes	☐ No
4. Drawdown	☐ Yes	☐ No	☐ Yes	☐ No
5. Nutrient controls in watershed	☐ Yes	☐ No	☐ Yes	☐ No
6. Nutrient controls on property	☐ Yes	☐ No	☐ Yes	☐ No
7. Other	☐ Yes	☐ No	☐ Yes	☐ No

NOTE: Consider feasibility of alternatives for **each** control site. This information not only helps the department make a decision on this application but also helps you evaluate your investment in aquatic plant management.

Describe the level of success for alternative methods previously used:

1. Chemical _____
2. Sediment screens _____
3. Dredging _____
4. Drawdown _____
5. Nutrient controls in watershed _____
6. Nutrient controls on property _____
7. Other _____

Mechanical / Manual Aquatic Plant Control Application

Section VIII: Applicants Responsibilities

1. The applicant has prepared a detailed map, which shows the length, width and average depth of each area proposed for the control of rooted vegetation.

2. The applicant understands that the Department of Natural Resources may require supervision of any aquatic plant management project involving removal. Supervision may include inspection of the proposed treatment area and/or equipment, before, during, or after removal. The applicant is required to notify the regional office 4 working days in advance of each anticipated date of plant removal with the date, time, location and size of plant removal unless the Department waives this requirement. The advance notification may be specified in your permit.

3. The applicant agrees to inform all operators of harvesting equipment of the conditions and terms of this permit and to insure that all operators understand and abide by those terms and conditions.

4. The applicant agrees to comply with all terms and conditions of this permit, if used, as well as applicable Wisconsin Administrative Rules. The required fee is attached.

I hereby certify that the above information is true and correct and that copies of the application have been provided to the appropriate parties name in Section II and that the conditions of the permit will be adhered to. All portions of this permit, map and accompanying cover letter must be in possession of the applicant or their agent at time of plant removal. During plant removal activities, all provisions of applicable Wisconsin Administrative Rules must be complied with, as well as the specific conditions contained in the permit cover letter.

Applicant's Signature _____ Date Signed _____

DNR Use Only

Review Notes:

☐ Natural Heritage Inventory Review

Section IX: Permit to Carry Out Mechanical or Manual Removal of Aquatic Plants

The foregoing application is approved. Permission is hereby granted to the applicant to mechanically or manually remove aquatic plants described in the application during the season. The approval of an aquatic plant management permit may not represent an endorsement of the permitted activity, but represents that the applicant has complied with Wisconsin Administrative Rules.

Season Year: 0

Application fee if received? ☐ Yes ☐ No

State of Wisconsin
Department of Natural Resources For the Secretary

By _____
Regional Director or Designee

Date Signed _____ Date Mailed _____

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For Judicial review of a decision pursuant to ss. 227.52 and 227.53, Wis. Stats., you have 30 days after the decision is mailed or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for review shall name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to s. 227.42, Wis. Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filling of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.

This notice is provided pursuant to s. 227.48(2), Wis. Stats.

Appendix I:

Waterways Commission Harvesting Equipment Grant Application

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921

Waterways Commission
Financial Assistance Application

Form 8700-121 (R 4/01)

Notice: This form is authorized under s. 30.92, Wis. Stats. You must complete this form in order to apply for or receive financial assistance from the Department of Natural Resources. Failure to complete this form will result in denial of financial assistance. Personally identifiable information on this form is not intended to be used for any other purpose.

1. Complete the suggested resolution on the reverse side, or submit a resolution conforming to the appropriate section of ch. NR 7, Wis. Adm. Code.
2. Submit 2 copies of all forms and attachments. See reverse side for necessary attachments.
3. Mail application to the appropriate DNR regional office (address on reverse side).

Date Prepared

LEAVE BLANK - DNR USE ONLY	
Received	Project Number
Acknowledged	

1. Type of Project

☐ Feasibility Study ☐ Development Project ☐ Channel Dredging ☐ Aids to Navigation and Regulatory Markers
☐ Weed Harvesting Equipment ☐ EWM Treatment ☐ Trash Skimmer

2. Applicant's Name

Street or Route

City, State, Zip Code

3. Name of Individual Authorized to Act on Behalf of Applicant

Title

Business Telephone Number | Home Telephone Number

4. Project Title

5. Name to Appear on Check(s)

6. List proposed work items for a feasibility study, development or channel dredging project, with schedule for completion. For development or channel dredging projects, provide proof of project's feasibility. Summarize the number and type of navigational or regulatory markers. For weed harvesting equipment, list the pieces of equipment, how they are to be utilized and maintained. Plans submitted for the development of launching ramps should indicate percentage slope of the ramp and the width of the existing or proposed boarding dock. (Attach additional sheets if necessary.) List all sources of sponsor match and note other sources of any donation or in-kind costs.

7.	Estimated Costs	LEAVE BLANK - DNR USE ONLY Eligible Costs	
State Share		State Share	
Applicant's Share		Applicant's Share	
Total		Total	

8. ☐ Check here if the applicant conducts a boating safety enforcement and education program approved by the Department.

9. ☐ Check here if applicant is requesting cost sharing under NR 7.088, projects of regional or statewide significance.

10. List any other state or federal aid, grant or loan program that have been, are, or may be involved in this project.
If none, check here ☐

11. I,_____, the applicant's authorized official, certify that to the best of my knowledge, the information in this application is true and correct.

12. Typed Name of Authorized Official | Signature of Authorized Official

Waterways Application Attachments

Feasibility Study:

A. Governmental unit or qualified lake association resolution authorizing participation (sample below)

B. List of tasks to be accomplished and the cost of each. Tasks should be arranged under the following headings:

1. Economic Analysis; 2. Environmental Analysis; 3. Engineering Analysis.

Development:

A. Governmental unit or qualified lake association resolution requesting financial assistance and authorizing participation (sample below)

B. Statement of feasibility of the project covering economic, environmental and engineering aspects.

C. Cost estimate worksheet (Form 8700-14).

D. Preliminary site plans.

E. Construction plans of structures to be built.

F. Copy of permit.

Channel Dredging:

A. Governmental unit or qualified lake association resolution requesting financial assistance and authorizing participation (sample below)

B. Statement of feasibility of the project covering economic, environmental and engineering aspects.

C. Cost estimate worksheet (Form 8700-14).

D. Preliminary engineering plans.

E. Copy of permit (if applicable).

Navigational or Regulatory Markers:

Copy of waterway placement permit indicating buoys or markers requested.

Weed Harvesting Equipment:

A. Copy of approved weed harvesting management plan

B. Cost estimate worksheet (form 8700-14).

C. Governmental unit or qualified lake association resolution requesting financial assistance and authorizing participation (sample below).

Chemical Treatment of Eurasian

Copy of chemical treatment permit.

Trash Skimmer: Cost Estimate Worksheet (form 8700-014)

Sample Resolution

WHEREAS, _____ hereby requests assistance for purpose of ☐ performing a feasibility study for ☐ developing recreational boating facilities ☐ acquiring weed harvesting equipment ☐ dredging a channel for recreation boating ☐ acquiring aids to navigation or regulatory markers as described in the application ☐ acquiring trash skimming equipment ☐ chemical treatment for EWM

THEREFORE, BE IT RESOLVED, that _____ has budgeted a sum sufficient to complete the study, project, or acquisition and

HEREBY AUTHORIZES _____, _____, to act on behalf of _____ to:

Submit an application to the Wisconsin Waterways Commission for financial assistance;
Sign documents; and
Take necessary action to undertake, direct and complete the approved project.

BE IT FURTHER RESOLVED that _____ will comply with state and federal rules for the programs; may perform force account work will maintain the completed project in an attractive, inviting and safe manner; will keep the facilities open to the general public during reasonable hours consistent with the type of facility; and will obtain approval in writing from the Wisconsin Waterways Commission before any change is made in the use of the project site (if applicable).

Adopted this _____ day of _____, 20____.

I hereby certify that the foregoing resolution was duly adopted by _____ at a legal meeting on the ____ day of _____, 20____.

Authorized Signature _____
Title _____

Department of Natural Resources Regional Offices

Northern Region

810 Maple Street
Spooner, WI 54801
(715) 635-4159

OR

107 Sutliff
Rhinelander, WI 54501
(715) 365-8928

Northeast Region

1125 N. Military Avenue
Green Bay, WI 54307
(920) 492-5821

Southeast Region

2300 N. Dr. Martin Luther King Jr. Drive
Box 12436
Milwaukee, WI 53212
(414) 263-8610

South Central Region

3911 Fish Hatchery Road
Fitchburg, WI 53711
(608) 275-3265

West Central Region

1300 W. Clairemont Avenue
Eau Claire, WI 54702
(608) 839-3713

State of Wisconsin
Department of Natural Resources
Box 7921
Madison, Wisconsin 53707

RECREATION GRANT PROJECT COST ESTIMATE WORKSHEET
Form 8700-014 Rev. 01/2004

For use with Grant Application Form 8700-191

Sheet of	Project Applicant:	Prepared By:	LEAVE BLANK - DNR USE ONLY
County	Project Name:		Project Number

DEVELOPMENT PROJECT ITEMS *List by individual item or break down by Use Areas* (See Item List On Back Of This Form)	Indicate Contract (C) Force Acct. (F) Donated(D)	Quantity and Unit of Measure	Component Costs	Estimated Total Item Cost	INFORMATION PROGRESS Insp. Date - Bill No. / Percent Completed
			TOTAL		TOTAL

NOTE: For acquisition projects, complete the information on the reverse side of this form.

DEVELOPMENT PROJECT ITEMS LISTING: *NOTE: This list is intended as a guideline and is not a complete list.*

SERVICES
- Pre-approval Engineering
- Post-approval Engineering
- Supervision
- Feasibility Studies
- Planning
- Administration

BOATING AREA
- Ramp Apron
- Launch Ramp
- Bulkhead/Seawall
- Riprap
- Security Lighting

CAMPSITES
- Tables
- Grills/Fire Rings
- Camp Pads (Gravel, Asphalt)
- Refuse Containers

EQUIPMENT
- Benches
- Trash Receptacles
- Other (identify)

FISHING AREA
- Fishing Pier
- Bank Stabilization
- Riprap
- Bank Fishing Site

LANDSCAPING
- Tree/Shrub Planting
- Sodding/Grass Seed
- Mulch/Fertilizer
- Retaining Walls

OTHER/MISCELLANEOUS
- Specify

PARKING
- Gravel/Paving
- Curbs/Bumper blocks
- Striping

PICNIC AREA
- Tables/Grills
- Trash Receptacles
- Shelters
- General Construction
- Electrical/Water Service

PLAY AREA
- Play Equipment
- Equipment Installation
- Surfacing Material

ROADS
- Gravel Base/Paving
- Curb and Gutter

SIGNING
- Signs
- Posts/Hardware
- Installation
- Walkways/Trails
- Interpretive/Informational
- Parking

SITE PREPARATION
- Cleaning/Grubbing
- Rough Grading/fine Grading
- Fill/Top Soil
- Building Demolition
- Drainage Structures
- Storm Sewers

SPORT COURTS
- Tennis
  - Sand Lift
  - Gravel/Paving
  - Fencing
  - Color Coating
  - Lighting
- Volleyball
- Basketball
- Hockey Rinks
  - Sand/Gravel Base
  - Dasher Boards
  - Lighting
  - Water Hydrant
- Multipurpose Courts

SPORTS FIELDS-*should include specific items as shown under Softball.*
- Softball
  - Infield Mix
  - Backstop/Fencing
  - Grass Seeding/Sodding
  - Player Enclosures
  - Bleachers with Pads
  - Lighting
  - Sprinkling Sys/Drainage Tile
- Soccer/Football
- Baseball
- Skating Rinks
- Multipurpose Game Fields
- Sledding/Toboggan Hills

SWIMMING AREA
- Beach
  - Dredging
  - Sand Blanket
  - Raft/Pier
  - Guard Towers
  - Buoys & Ropers
  - Bathhouse
- Swimming/Wading Pool
  - Pool Tank
  - Filtration Equipment
  - Fencing
  - Pool Equipment

TOILETS
- Flush Toilets
  - General Construction
  - Plumbing
  - Electrical
  - Sewer/Water Laterals
- Vault Toilets

TRAILS
- Clearing
- Surfacing
- Overview Structures
- Boardwalks
- Culverts
- Bridges
- Grading

UNDERGROUND ELECTRIC
- Trenching
- Junction Boxes
- Conduit
- Transformers

WALKWAYS
- Fill
- Gravel
- Paving
- Culverts
- Bridges
- Curb Cuts

WATER SYSTEMS
- Well
- Pump
- Distribution
- Fountains
- Spigots/Hose Bibs

ACQUISITION PROJECT COST ESTIMATE: NOTE: If project includes more than two parcels, attach additional information.

	Parcel 1	Parcel 2	Total
1. Parcel Owner			
2. Number of Acres being Purchased			
3. Grant Eligible Acres			
4. Option Expiration Date			
5. Option Amount	$	$	
6. Appraised Value: Land or Easement	$	$	$
Improvements	$	$	$
7. Subtotal	$	$	$
8. Estimated Other Eligible Acquisition Costs Total	$	$	$
List costs included in above:	$	$	
	$	$	
	$	$	
9. **Grand Total Project Costs:** (Add Lines 7 & 8)	$	$	$

Appendix J:

2006 Management Maps (GPS Reference Points)

Aquatic Engineering

2006 Management Map (GPS Reference Points)

A GIS Generated Map

Big Blake Lake, Polk Co., WI

Date: October 20, 2005

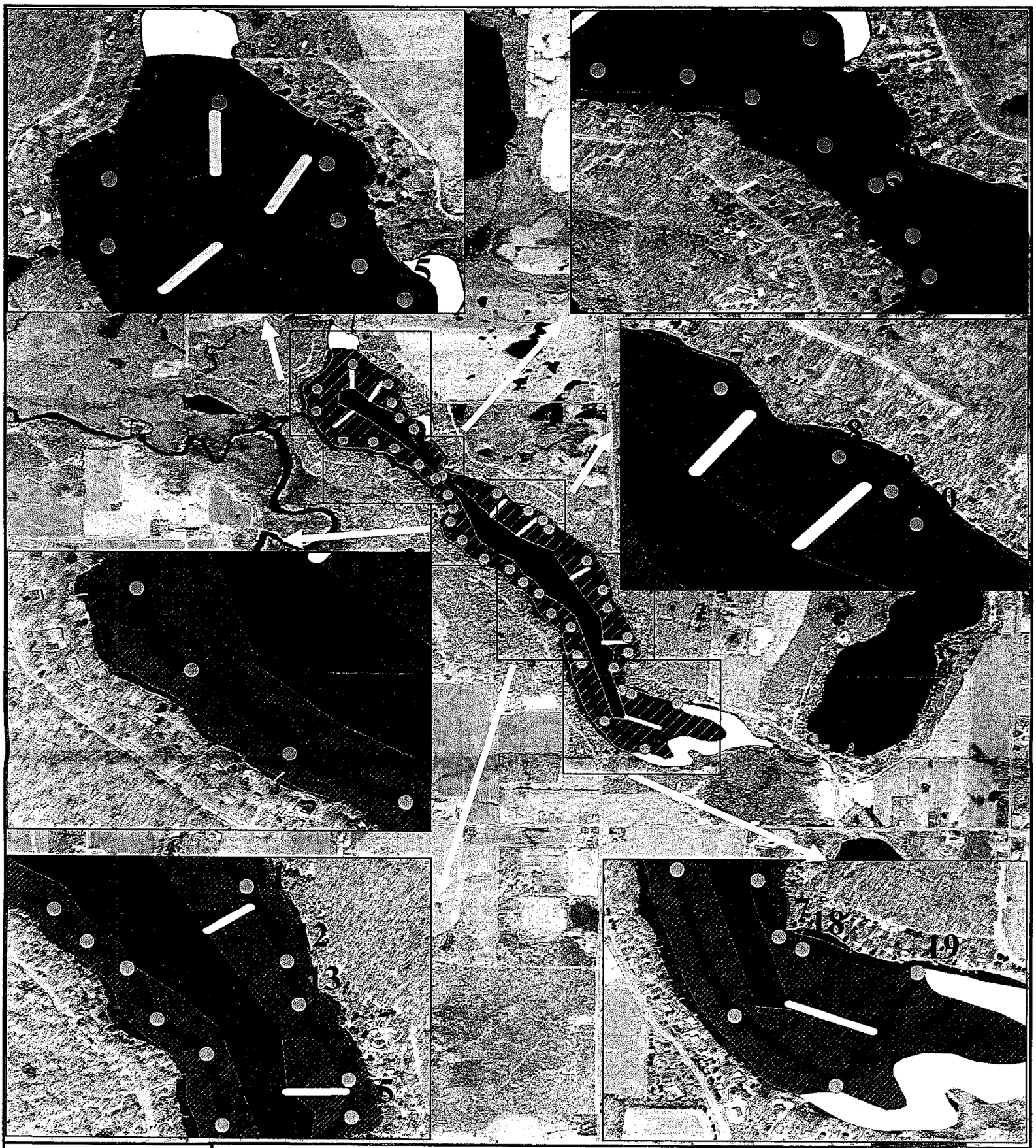
0 1,300 2,600 3,900 Feet

N W E S

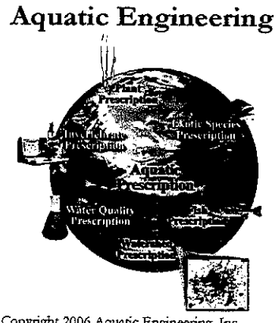
Coordinate system: GCS North American 1983

1:14,000

AUTO_ID	WGS84_LON	WGS84_LAT
1	-92.3395268	45.5075232
2	-92.3389118	45.5075616
3	-92.3381466	45.5074848
4	-92.3352492	45.5040864
5	-92.3347298	45.5036736
6	-92.3346752	45.5030496
7	-92.3217414	45.4892832
8	-92.3195000	45.4878528
9	-92.3221788	45.4877472
10	-92.3222470	45.4867296
11	-92.3238324	45.4870464



Aquatic Engineering



2006 Management Map (GPS Reference Points)

A GIS Generated Map

Big Blake Lake, Polk Co., WI

Date: October 20, 2005

Feet

0 2,800 5,600 8,400

N W E S

Coordinate system: GCS North American 1983

1:30,000

AUTO_ID	WGS84_LON	WGS84_LAT
1	-92.3383036	45.5067488
2	-92.3365084	45.5057288
3	-92.3363316	45.5047850
4	-92.3359644	45.5040128
5	-92.3352164	45.5034504
6	-92.3338292	45.5010956
7	-92.3310412	45.5002086
8	-92.3294500	45.4992838
9	-92.3287428	45.4988166
10	-92.3284028	45.4983686
11	-92.3265124	45.4967860
12	-92.3256964	45.4952798
13	-92.3254560	45.4943990
14	-92.3244410	45.4928736
15	-92.3243870	45.4921110
16	-92.3251448	45.4913198
17	-92.3247118	45.4901948
18	-92.3242380	45.4899470
19	-92.3219238	45.4894798
20	-92.3235558	45.4871762
21	-92.3255994	45.4885776
22	-92.3267632	45.4915330
23	-92.3269798	45.4919334
24	-92.3273064	45.4933778
25	-92.3282992	45.4940834
26	-92.3289112	45.4951224
27	-92.3297136	45.4956564
28	-92.3303800	45.4963142
29	-92.3316856	45.4968670
30	-92.3327736	45.4978092
31	-92.3333856	45.4987340
32	-92.3332496	45.4994490
33	-92.3335216	45.5001354
34	-92.3341336	45.5009742
35	-92.3349904	45.5016512
36	-92.3362008	45.5024520
37	-92.3372752	45.5028062
38	-92.3387712	45.5029016
39	-92.3401584	45.5043412
40	-92.3401312	45.5054660