Appendix A – Lake Kegonsa Plant Statistics 2017

Table 1: 2017 Aquatic Plant Community Statistics, Lake Kegonsa, Dane County, WI

Total number of sites visited	425
Total number of sites with vegetation	176
Total number of sites shallower than maximum depth of plants	410
Frequency of occurrence at sites shallower than maximum depth of plants	42.93
Simpson Diversity Index	0.81
Maximum depth of plants (ft)**	12.00
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	412
Average number of all species per site (shallower than max depth)	0.71
Average number of all species per site (veg. sites only)	1.66
Average number of native species per site (shallower than max depth)	0.58
Average number of native species per site (veg. sites only)	1.55
Species Richness	9*
Species Richness (including visuals)	9*
*Filamentous algae is no longer included in species richness by WI DNR	

Table 2: Historical Aquatic Plant Community Statistics, Lake Kegonsa, Dane County, WI

	1991	2006	2011	2017
F.o.o. at sites shallower than maximum depth of plants	---	45.48	58.87	42.93
Most Dominant Species	Eurasian Water-milfoil	Eurasian Water-milfoil	Horned Pondweed	Wild Celery
	Coontail	Coontail	Eurasian Water-milfoil	Coontail
	Sago Pondweed	Sago Pondweed	Coontail	Eurasian Water-milfoil
	Curly-leaf Pondweed	Leafy Pondweed	Flat-stem Pondweed	Filamentous Algae
	Water Stargrass	Filamentous Algae	Wild Celery	Water Star-grass
Maximum Depth of Plants	9.8	9	8	12
Species Richness	5	11	8	10
Community FQI	6.93	14.33	12.66	13.79
Average Coefficient of Conservatism	4.00	4.78	5.17	4.88

Table 3: 2017 Aquatic Plant Taxa-Specific Statistics, Lake Kegonsa, Dane County, WI

Species	Frequency of occurrence within vegetated areas (%)	Frequency of occurrence at sites shallower than maximum depth of plants	Relative Frequency (%)	Number of sites where species found	Average rake fullness
Myriophyllum spicatum, Eurasian water milfoil	31.25	13.41	18.77	55	1.22
Ceratophyllum demersum, Coontail	42.61	18.29	25.6	75	1.17
Chara sp., Muskgrasses	6.82	2.93	4.1	12	1.00
Elodea canadensis, Common waterweed	10.8	4.63	6.48	19	1.00
Heteranthera dubia, Water star-grass	16.48	7.07	9.9	29	1.07
Potamogeton foliosus, Leafy pondweed	6.25	2.68	3.75	11	1.00
Potamogeton richardsonii, Clasping-leaf pondweed	2.84	1.22	1.71	5	1.00
Stuckenia pectinata, Sago pondweed	6.25	2.68	3.75	11	1.00
Vallisneria americana, Wild celery	43.18	18.54	25.94	76	1.75
Filamentous algae	25	10.73	*	44	1.05
*Relative frequency of Filamentous algae is no longer calculated by WI DNR					

Table 4: Historical Floristic Quality Index, Lake Kegonsa, Dane County, WI

			Coefficient of Conservatism				
Genus	**Species**	**Common Name**	**1990**	**1991**	**2006**	**2011**	**2017**
Ceratophyllum	*demersum*	Coontail	3	3	3	3	3
Chara	*Sp.*	Muskgrass	---	---	---	---	7
Elodea	*canadensis*	Common waterweed	---	---	3	3	3
Heteranthera	*dubia*	Water star-grass	---	6	6	6	6
Lemna	*minor*	Small duckweed	---	---	4	---	---
Potamogeton	*foliosus*	Leafy pondweed	---	---	6	---	6
Potamogeton	*richardsonii*	Clasping-leaf pondweed	---	---	5	---	5
Potamogeton	*zosteriformis*	Flat-stem pondweed	---	---	---	6	---
Stuckenia	*pectinata*	Sago pondweed	3	3	3	---	3
Vallisnera	*americana*	Wild celery	---	---	6	6	6
Zannichellia	*palustris*	Horned pondweed	---	---	7	7	--
		Total Species	2	3	9	6	8
		Mean C	3.00	4.00	4.78	5.17	4.88
		Floristic Quality Index (FQI)	**4.24**	**6.93**	**14.33**	**12.66**	**13.79**

Please note: There is no Coefficient of Conservatism for exotic species such as Eurasian Watermilfoil or for species not identified to the species level (*Sagittaria sp.*).

Coefficient of Conservatism
C

0-3 taxa found in wide variety of plant communities and very tolerant of disturbance.
4-6 taxa typically associated with specific plant communities and tolerate moderate disturbance.
7-8 taxa found in narrow range of plant communities and tolerate minor disturbance.
9-10 taxa restricted to a narrow range of synecological conditions, with low tolerance of disturbance.

Table 5: Historical Aquatic Plant Occurrences, Lake Kegonsa, Dane County, Wisconsin.

Genus	Species	Common Name	% Relative Frequency of Occurrence			
			1991	2006	2011	2017
Algae	*sp.*	Filamentous algae	---	8.7	---	***
Ceratophyllum	*demersum*	Coontail	9.5	19.5	14.0	25.6
Chara	*sp.*	Muskgrass	---	---	---	4.1
Elodea	*canadensis*	Common waterweed	---	7.8	5.6	6.5
Heteranthera	*dubia*	Water star-grass	1*	8.1	4.0	9.9
Lemna	*minor*	Small duckweed	---	0**	---	---
Myriophyllum	*spicatum*	Eurasian watermilfoil	82.5	22.2	22.4	18.8
Potamogeton	*crispus*	Curly-leaf pondweed	2*	---	1.2	---
Potamogeton	*foliosus*	Leafy pondweed	---	12.3	---	3.8
Potamogeton	*richardsonii*	Clasping-leaf pondweed	---	0.6	---	1.7
Potamogeton	*zosteriformis*	Flat-stem pondweed	---	---	9.3	---
Stuckenia	*pectinata*	Sago pondweed	6*	14.7	---	3.8
Vallisnera	*americana*	Wild celery	---	1.8	8.4	25.9
Zannichellia	*palustris*	Horned pondweed	---	4.2	35.1	---
** - Data estimated from Figure 6, 2006 Lake Kegonsa Aquatic Plant Management Plan*						
*** - Species was sampled visually only, statistical data was not produced.*						
**** - F.O.O. no longer calculated by WI DNR*						

Appendix B – Lower Mud Lake Plant Statistics

Table 1: 2017 Aquatic Plant Community Statistics, Lower Mud Lake, Dane County, WI

Aquatic Plant Community Statistics	2017
Number of sites sampled	238
Number of sites with vegetation	213
Number of sites shallower than maximum depth of plants	238
Frequency of occurrence at sites shallower than maximum depth of plants	89.50
Simpson Diversity Index	0.50
Maximum Depth of Plants (Feet)	6.0
Number of sites sampled using rake on Rope (R)	0
Number of sites sampled using rake on Pole (P)	239
Average number of all species per site (shallower than max depth)	1.26
Average number of all species per site (veg. sites only)	1.41
Average number of native species per site (shallower than max depth)	1.34
Species Richness	13*
Species Richness (including visuals)	14*
*Filamentous algae is no longer included in species richness by WI DNR	

Table 2: 2017 Aquatic Plant Taxa-Specific Statistics, Lower Mud Lake, Dane County, WI

STATS	Frequency of occurrence within vegetated areas (%)	Frequency of occurrence at sites shallower than maximum depth of plants	Relative Frequency (%)	Number of sites where species found	Average rake fullness
Eurasian water mil-foil	7.04	6.30	5.00	15	1.00
Coontail	98.59	88.24	70.00	210	1.99
Muskgrasses	8.92	7.98	6.33	19	1.16
Elodea Common waterweed	0.47	0.42	0.33	1	1.00
Water star-grass	2.35	2.10	1.67	5	1.4
Small duckweed	3.29	2.94	2.33	7	1.00
Northern water-milfoil	0.47	0.42	0.33	1	1.00
White water lily	1.41	1.26	1.00	3	1.00
Leafy pondweed	0.47	0.42	0.33	1	1.00
Clasping-leaf pondweed	0.94	0.84	0.67	2	1.00
Sago pondweed	6.57	5.88	4.67	14	1.00
Wild celery	7.51	6.72	5.33	16	1.25
Common watermeal	2.82	2.52	2.00	6	1.00
Filamentous algae	37.56	33.61	*	80	1.10
*Relative frequency of Filamentous algae is no longer calculated by WI DNR					

Table 3: Historical Aquatic Plant Community Statistics, Lake Kegonsa, Dane County, Wisconsin.

	2006	2011	2017
F.o.o. at sites shallower than maximum depth of plants	97.15	94.17	89.50
Most Dominant Species	Coontail	Coontail	Coontail
	Filamentous algae	Filamentous algae	Filamentous algae
	Sago Pondweed	Small Duckweed	Chara
	Eurasian Water-milfoil	Common watermeal	Wild Celery
	Small Duckweed	Eurasian Water-Milfoil	Eurasian Water-milfoil
Maximum Depth of Plants	5	3	8
Species Richness	19	10	8
Community FQI	20.25	13.79	12.66
Average Coefficient of Conservatism	5.06	4.88	5.17

Table 4: Historical Floristic Quality Index, Lower Mud Lake, Dane County, WI

Genus	Species	Common Name	2006	2012	2017
Ceratophyllum	*demersum*	Coontail	3	3	3
Chara	*sp.*	Muskgrass	7	7	7
Elodea	*canadensis*	Common waterweed	3	3	3
Heteranthera	*dubia*	Water star-grass	6	6	6
Lemna	*minor*	Small duckweed	4	4	4
Lemna	*trisulca*	Forked duckweed	6	---	---
Myriophyllum	*sibiricum*	Northern water-milfoil	---	---	6
Nymphaea	*odorata*	White water-lily	6	---	6
Potamogeton	*foliosus*	Leafy pondweed	6	---	6
Potamogeton	*pusillus*	Small pondweed	7	---	---
Potamogeton	*richardsonii*	Clasping-leaf pondweed	5	5	5
Ranunculus	*aquatilis*	Stiff water crowfoot	8	---	---
Spirodela	*polyrhiza*	Large duckweed	5	---	---
Stuckenia	*pectinata*	Sago pondweed	3	---	3
Typha	*sp.*	Cattail	1	---	---
Vallisneria	*americana*	Wild celery	6	6	6
Wolffia	*columbiana*	Common watermeal	5	5	5
		Total Species	16	8	12
		Mean C	5.06	4.88	5
		Floristic Quality Index (FQI)	20.25	13.79	17.32

Please note: There is no Coefficient of Conservatism for exotic species such as Eurasian Watermilfoil or for species not identified to the species level (*Sagittaria sp.*).

0-3 taxa found in wide variety of plant communities and very tolerant of disturbance.

4-6 taxa typically associated with specific plant communities and tolerate moderate disturbance.

7-8 taxa found in narrow range of plant communities and tolerate minor disturbance.

9-10 taxa restricted to a narrow range of synecological conditions, with low tolerance of disturbance.

Table 5: Historical Aquatic Plant Occurrences, Lower Mud Lake, Wisconsin.

Genus	Species	Common Name	% Relative Frequency of Occurrence		
			2006	2012	2017
Algae	*sp.*	Filamentous algae	16	18.2	**
Ceratophyllum	*demersum*	Coontail	30.5	27.2	70.0
Chara	*sp.*	Muskgrass	0.4	0.9	7.98
Elodea	*canadensis*	Common waterweed	2.2	1.2	0.3
Heteranthera	*dubia*	Water star-grass	5.0	2.8	1.7
Lemna	*minor*	Small duckweed	5.9	16.7	2.3
Lemna	*trisulca*	Forked duckweed	0*	---	1.0
Myriophyllum	*sibiricum*	Norther Water-milfoil	---	---	0.3
Myriophyllum	*spicatum*	Eurasian Water-milfoil	9.8	10.5	5.0
Nelumbo	*lutea*	American lotus	---	---	0*
Nymphaea	*odorata*	White water-lily	1.2	---	1.0
Potamogeton	*crispus*	Curly-leaf pondweed	0.7	---	---
Potamogeton	*foliosus*	Leafy pondweed	5.6	---	0.3
Potamogeton	*pusillus*	Small pondweed	0*	---	---
Potamogeton	*richardsonii*	Clasping-leaf pondweed	2.4	0.9	0.7
Ranunculus	*aquatilis*	Stiff water crowfoot	0.4	---	---
Spirodela	*polyrhiza*	Large duckweed	0*	---	---
Stuckenia	*pectinata*	Sago pondweed	14.1	---	4.7
Typha	*sp.*	Cattail	0.3	---	---
Vallisneria	*americana*	Wild celery	5.5	8	5.3
Wolffia	*columbiana*	Common watermeal	0*	13.6	2.0

* - Based on number of sample points collected at. Visual observations are included.

*** F.O.O. no longer calculated by WI DNR*

Appendix C – Aquatic Invasive Species

Wisconsin Invasive Species Laws

Inspect your boat, trailer and equipment.
Remove any attached aquatic plants or animals (before launching, after loading & before transporting on a public highway)
Never Move live fish away from a waterbody.* Fish out of water are not considered live. Transport on ice is legal and recommended.
Buy minnows from a Wisconsin bait dealer and use leftover minnows only under certain conditions. *
*You may take leftover minnows purchased from a Wisconsin bait dealer away from any state water and use them again on that same water. You may use leftover minnows on other waters only if no lake or river water, or other fish were added to their container. See fishingwisconsin.org for more information.

Minnows
You may take live minnows purchased from a Wisconsin bait dealer (which includes Wisconsin registered fish farms) away from a waterbody if any of the following three conditions are met:

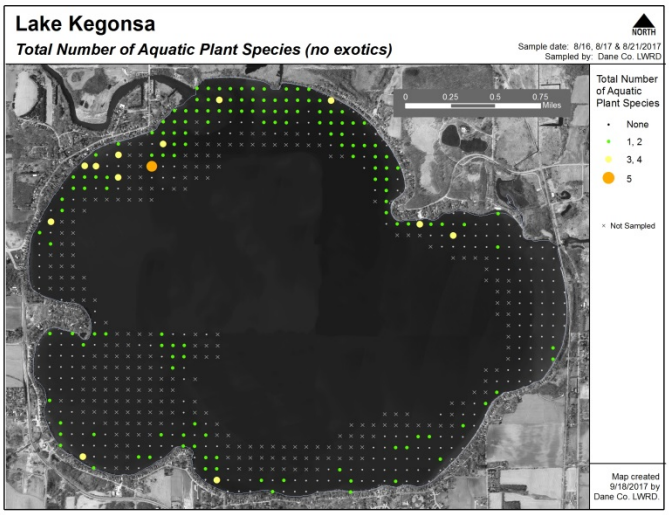
- Anglers can take purchased minnows away from a lake and use them again on that same waterbody.
- Anglers can also take purchased minnows away from a waterbody and use them elsewhere if no lake or river water or other fish were added to the bait container.
- Anglers can also take purchased minnows away from a waterbody for use elsewhere if they intend to preserve them as dead bait using approved methods.

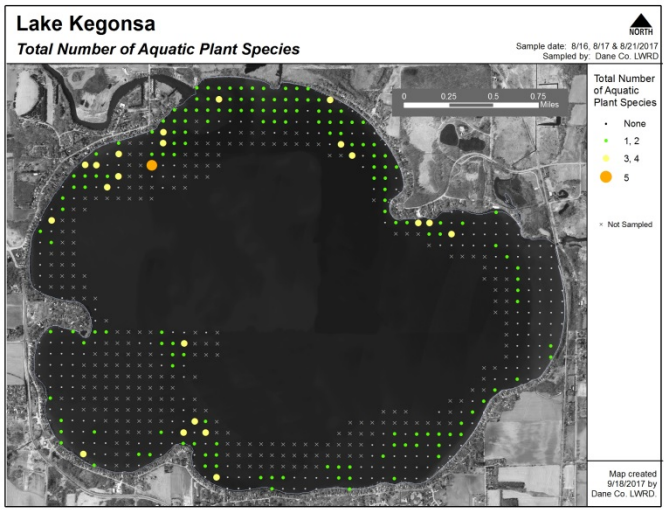
In each of these cases minnows may be transported in the amount of water needed to keep the minnows alive, up to 2 gallons. No other fish may be held in the minnow container.

Additional Dane County Prevention Steps

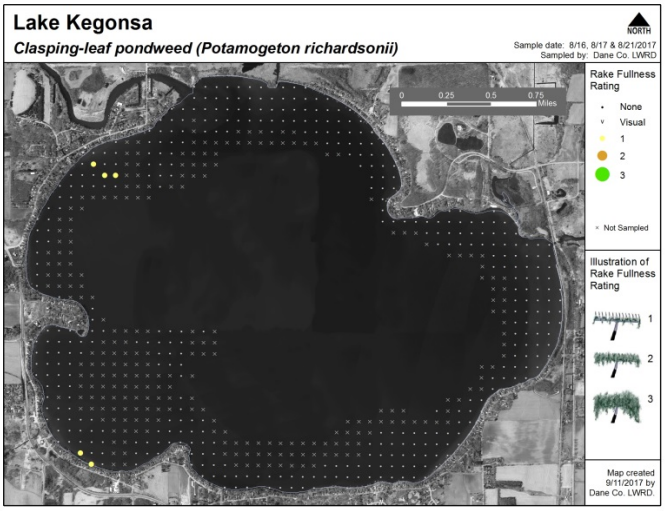
- Dane County staff will remove all vegetation, mud, and other debris that is accessible from the machines before moving them away from any waterbody. (Machines include boats, harvesters, barges, and elevators)
- Dane County staff will remove the machines from a waterbody for a minimum of five dry days before moving them to another waterbody.
- When it is not possible to wait for 5 days Dane County staff will use a 2% Virkon solution mixed no more than seven days prior to application and allowing 10 minutes of contact time before rinsing with hot water to disinfect the machines before moving to another waterbody.
- Dane County staff will try to plan to move only downstream when working in the Yahara river chain as an added layer of protection
- Per Wisconsin DNR protocol found here: http://dnr.wi.gov/topic/Invasives/disinfection.html

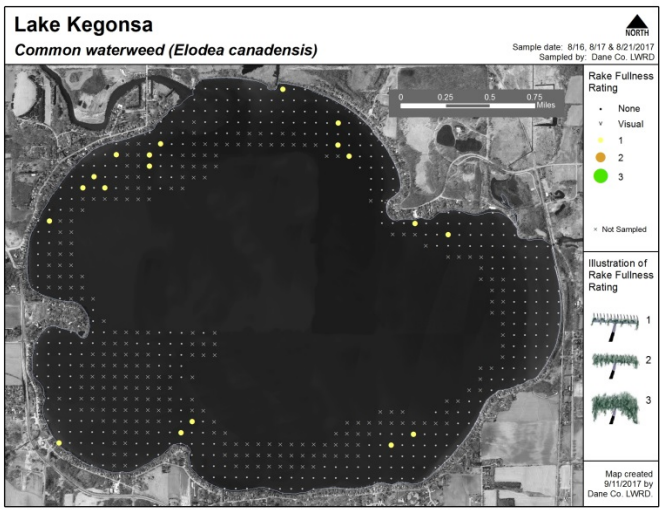
Appendix D – Mapped Plant Distributions for Lake Kegonsa

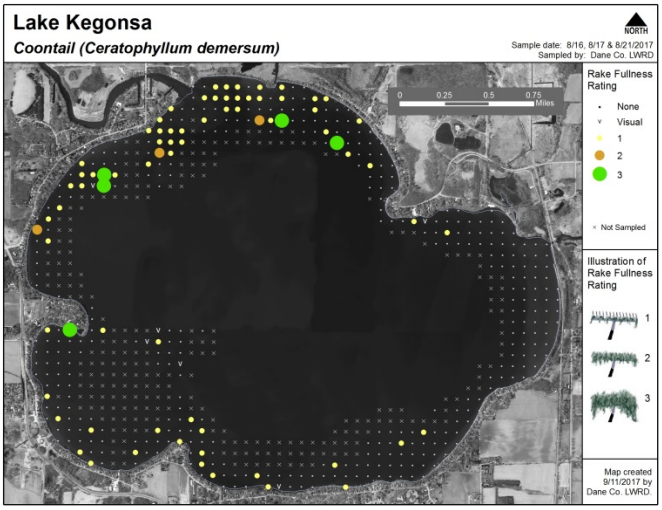


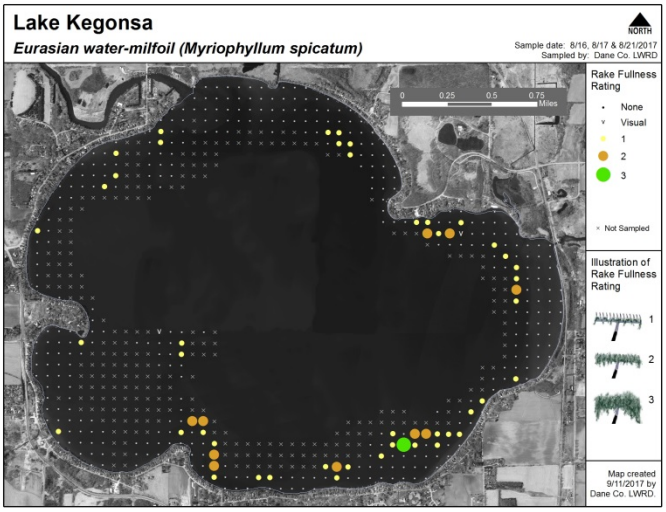


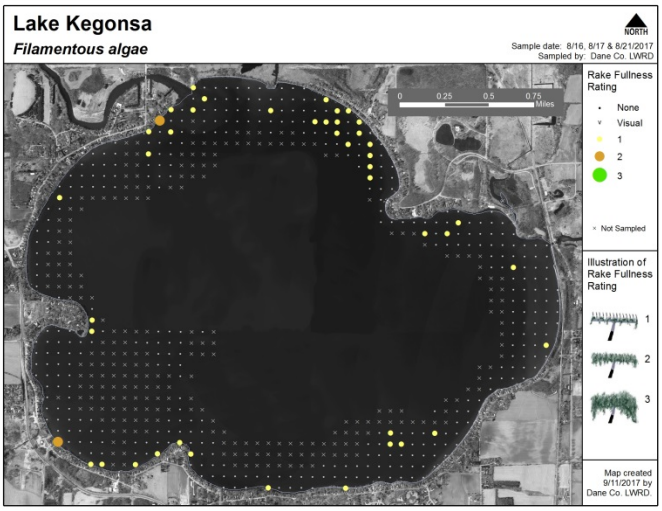
Filamentous algae not included in total species maps

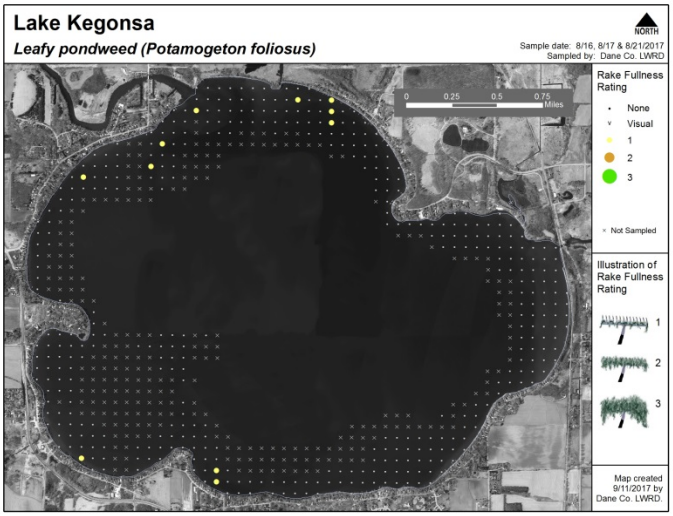


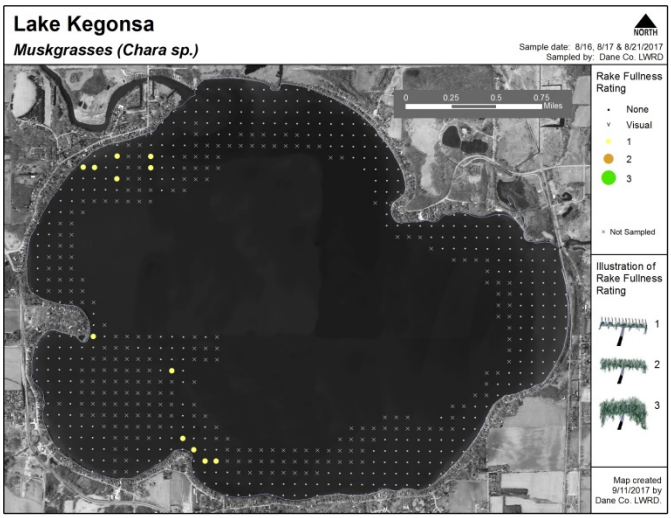


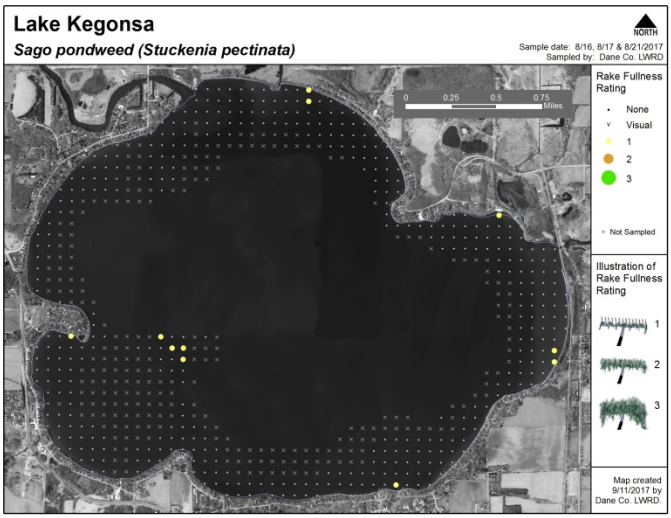


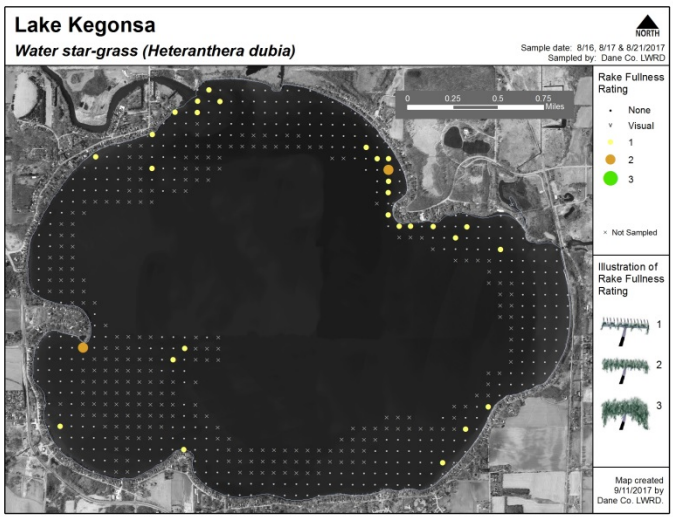


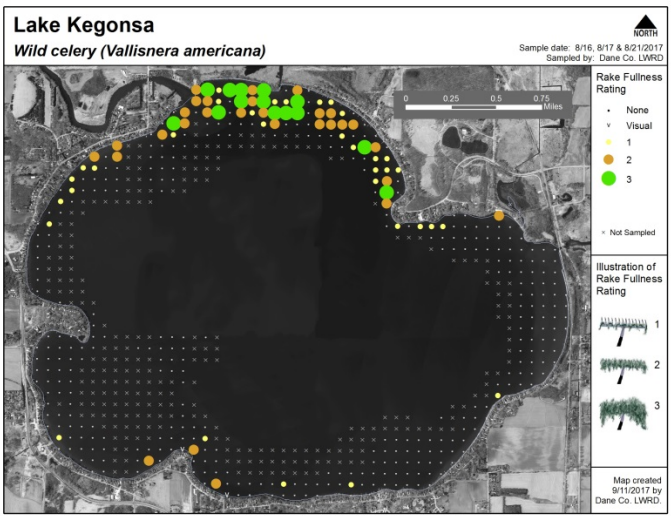

Lake Kegonsa
Filamentous algae
Sample date: 8/16, 8/17 & 8/21/2017
Sampled by: Dane Co. LWRD
NORTH
0 0.25 0.5 0.75 Miles
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
Map created 9/11/2017 by Dane Co. LWRD.


Lake Kegonsa
Leafy pondweed (Potamogeton foliosus)
Sample date: 8/16, 8/17 & 8/21/2017
Sampled by: Dane Co. LWRD
NORTH
0 0.25 0.5 0.75 Miles
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
Map created 9/11/2017 by Dane Co. LWRD.

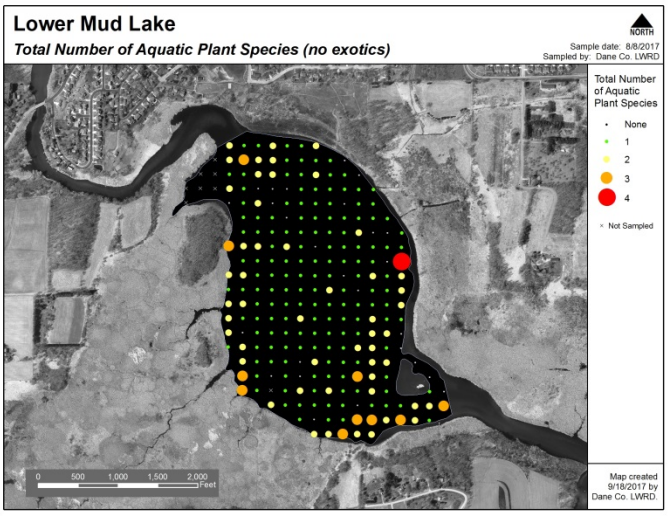

Lake Kegonsa
Muskgrasses (Chara sp.)
Sample date: 8/16, 8/17 & 8/21/2017
Sampled by: Dane Co. LWRD
NORTH
0 0.25 0.5 0.75 Miles
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
Map created 9/11/2017 by Dane Co. LWRD.

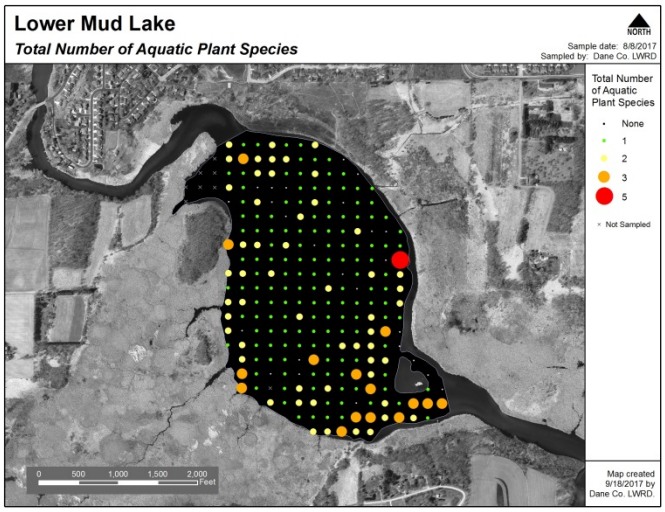

Lake Kegonsa
Sago pondweed (Stuckenia pectinata)
Sample date: 8/16, 8/17 & 8/21/2017
Sampled by: Dane Co. LWRD
NORTH
0 0.25 0.5 0.75 Miles
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
Map created 9/11/2017 by Dane Co. LWRD.


Lake Kegonsa
Water star-grass (Heteranthera dubia)
Sample date: 8/16, 8/17 & 8/21/2017
Sampled by: Dane Co. LWRD
NORTH
0 0.25 0.5 0.75 Miles
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
Map created 9/11/2017 by Dane Co. LWRD.

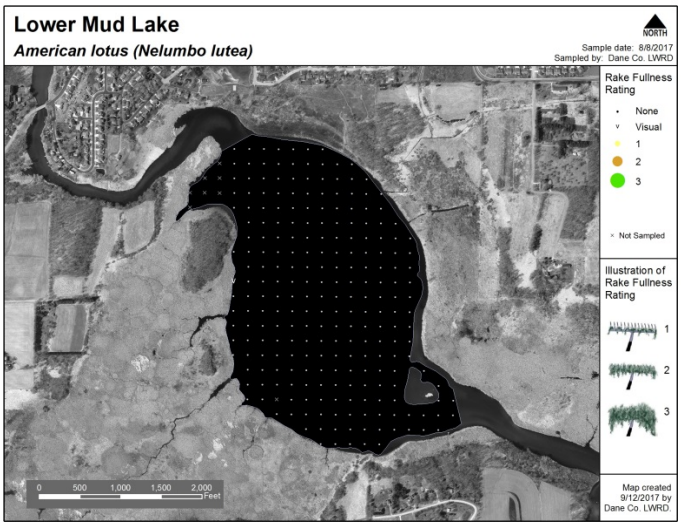

Lake Kegonsa
Wild celery (Vallisnera americana)
Sample date: 8/16, 8/17 & 8/21/2017
Sampled by: Dane Co. LWRD
NORTH
0 0.25 0.5 0.75 Miles
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
Map created 9/11/2017 by Dane Co. LWRD.

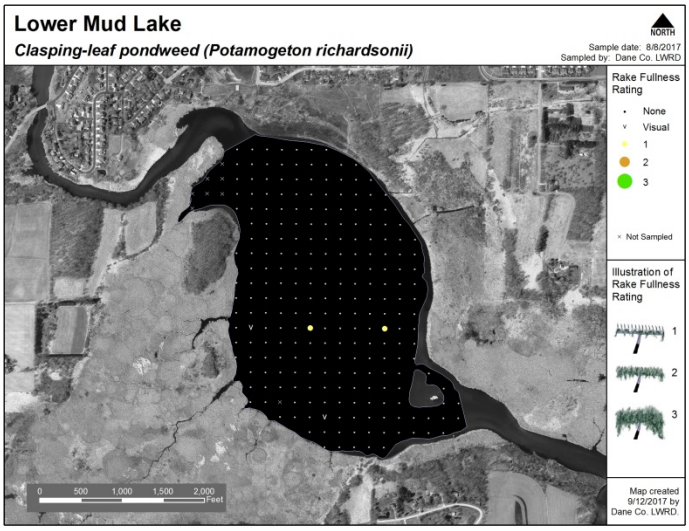
Appendix E – Mapped Plant Distributions for Lower Mud Lake

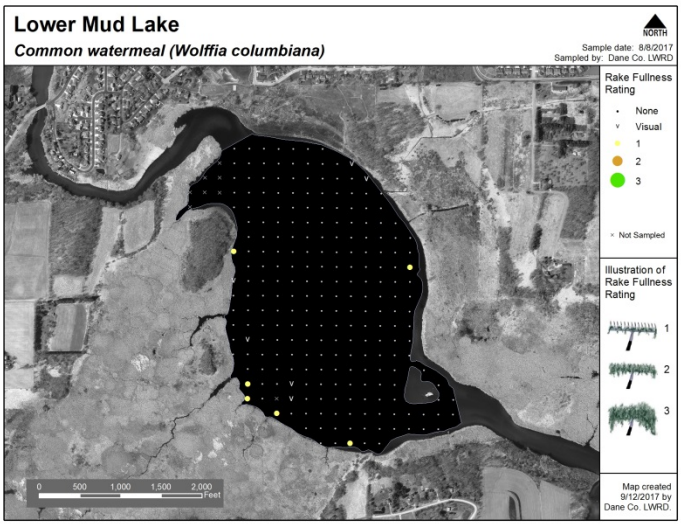


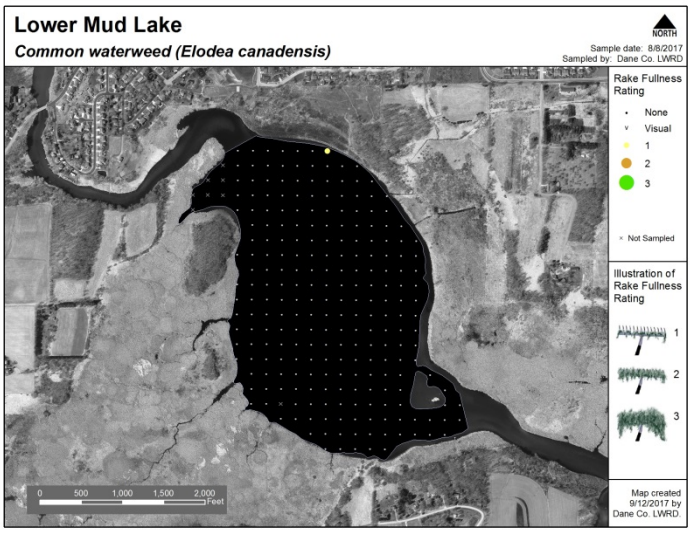


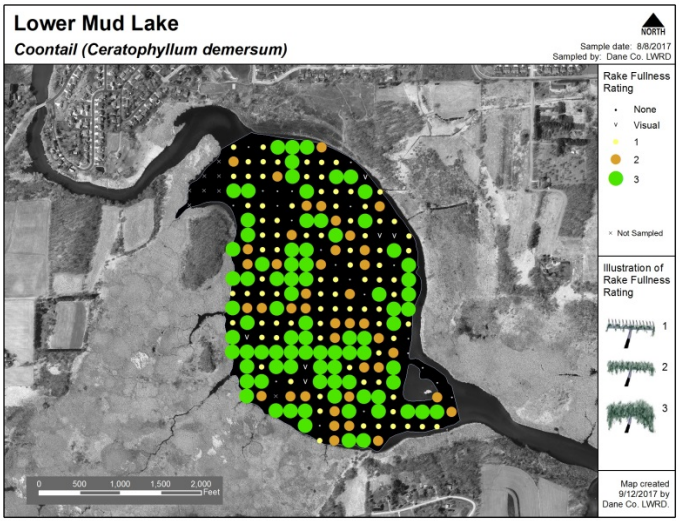
Filamentous algae not included in filamentous algae maps

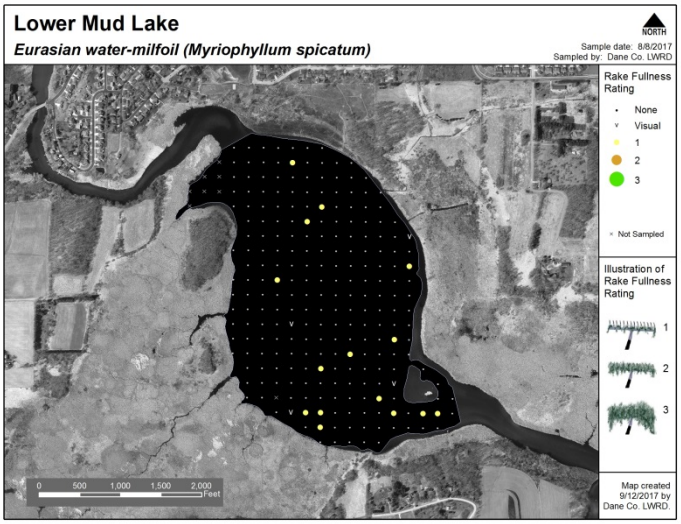


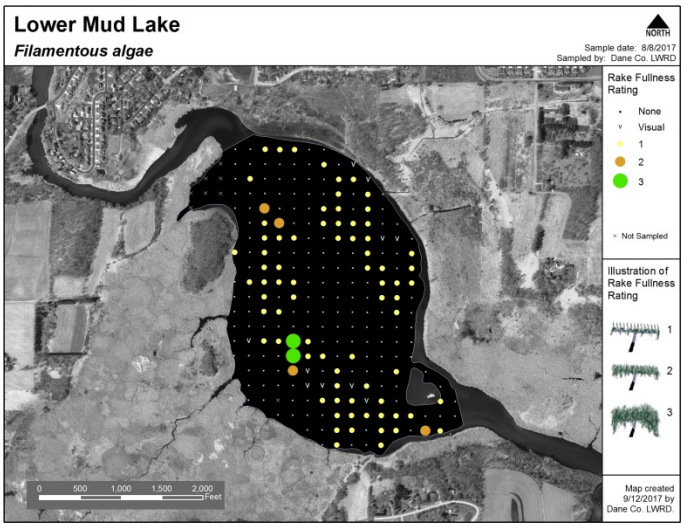


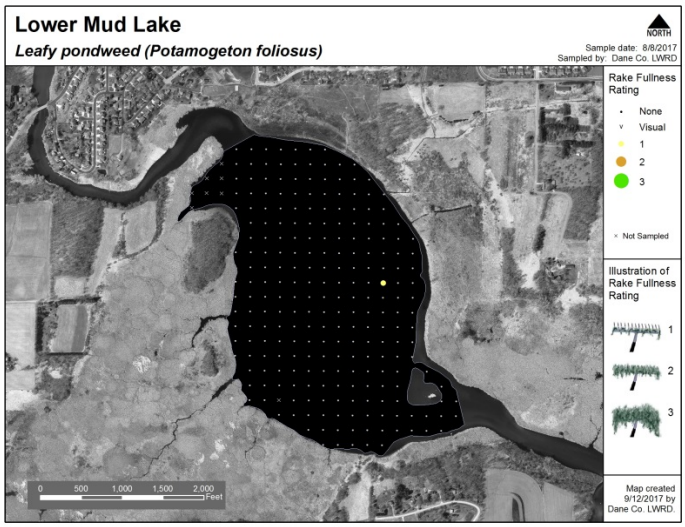


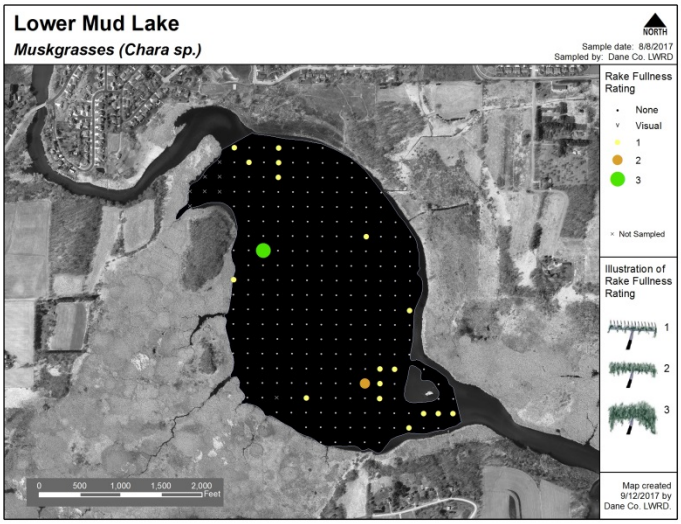


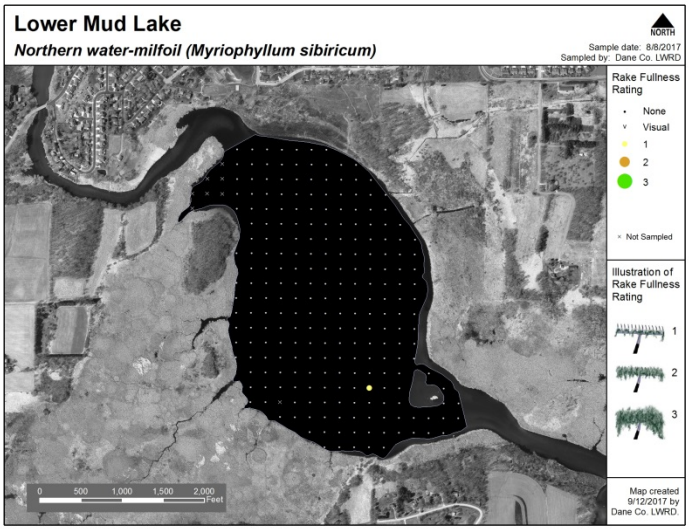

Lower Mud Lake
Coontail (Ceratophyllum demersum)
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
NORTH
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.

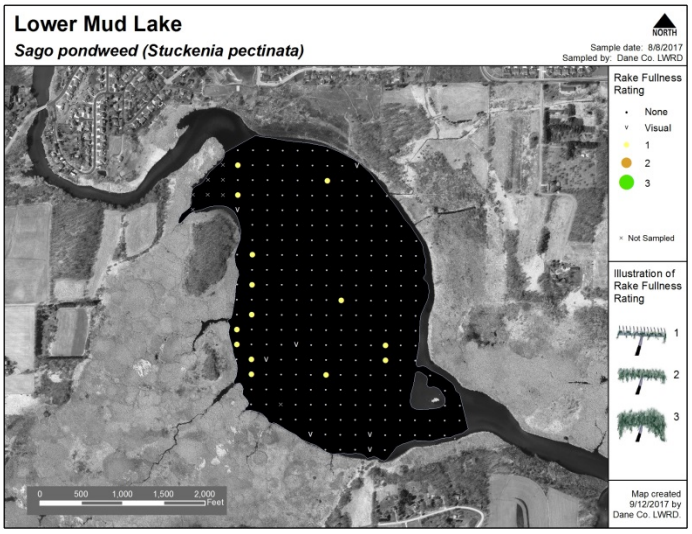

Lower Mud Lake
Eurasian water-milfoil (Myriophyllum spicatum)
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
NORTH
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.

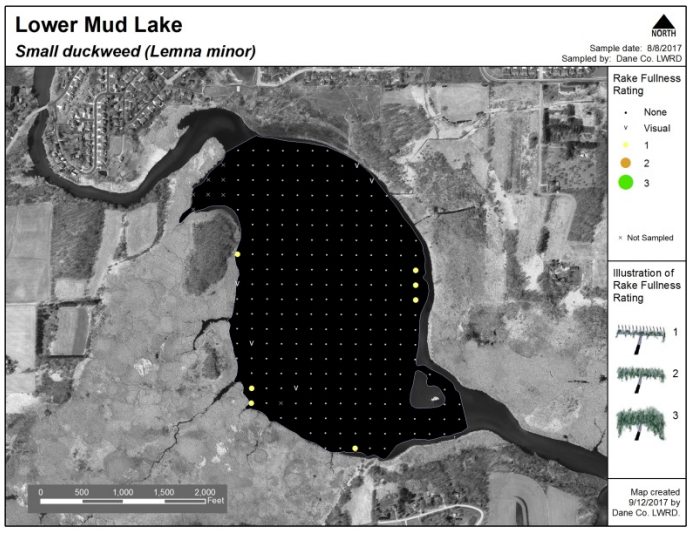

Lower Mud Lake
Filamentous algae
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
NORTH
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.

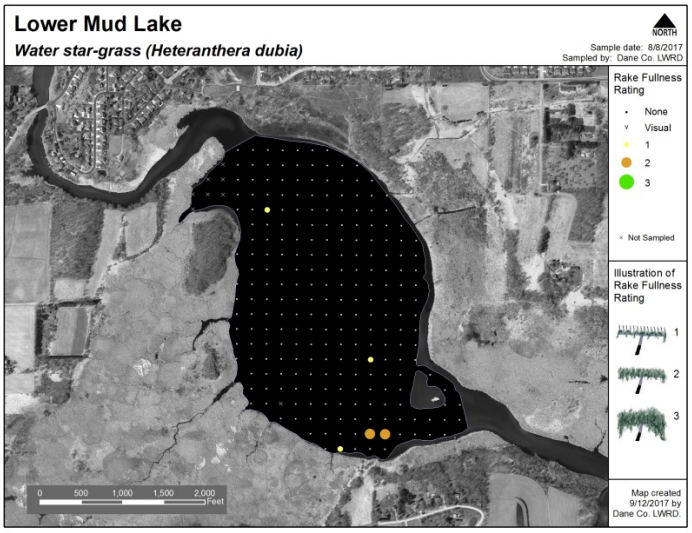

Lower Mud Lake
Leafy pondweed (Potamogeton foliosus)
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
NORTH
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.

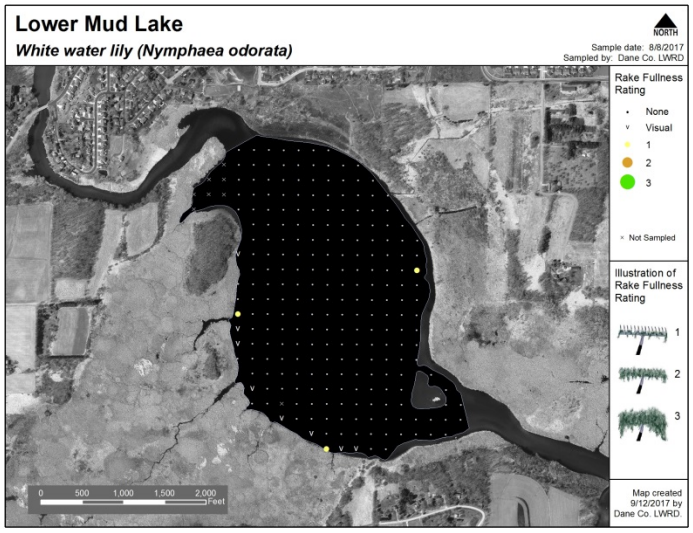

Lower Mud Lake
Muskgrasses (Chara sp.)
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
NORTH
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.

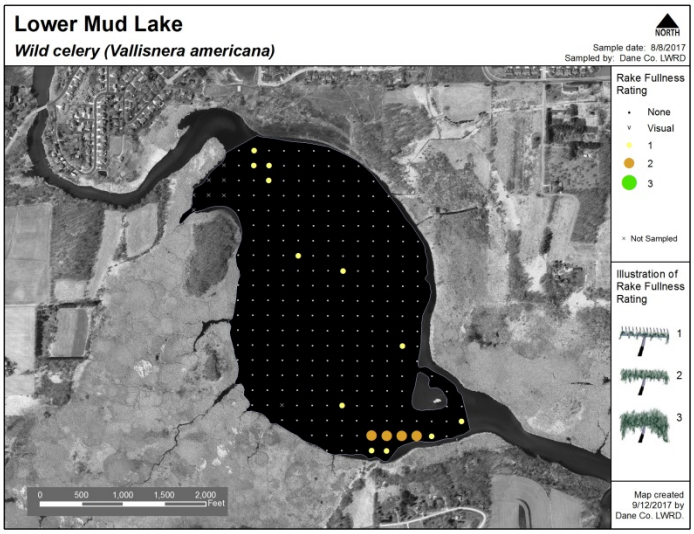

Lower Mud Lake
Northern water-milfoil (Myriophyllum sibiricum)
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
NORTH
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.


Lower Mud Lake
Sago pondweed (Stuckenia pectinata)
NORTH
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.


Lower Mud Lake
Small duckweed (Lemna minor)
NORTH
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.


Lower Mud Lake
Water star-grass (Heteranthera dubia)
NORTH
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.


Lower Mud Lake
White water lily (Nymphaea odorata)
NORTH
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.


Lower Mud Lake
Wild celery (Vallisnera americana)
NORTH
Sample date: 8/8/2017
Sampled by: Dane Co. LWRD
Rake Fullness Rating
None
Visual
1
2
3
Not Sampled
Illustration of Rake Fullness Rating
1
2
3
0 500 1,000 1,500 2,000 Feet
Map created 9/12/2017 by Dane Co. LWRD.