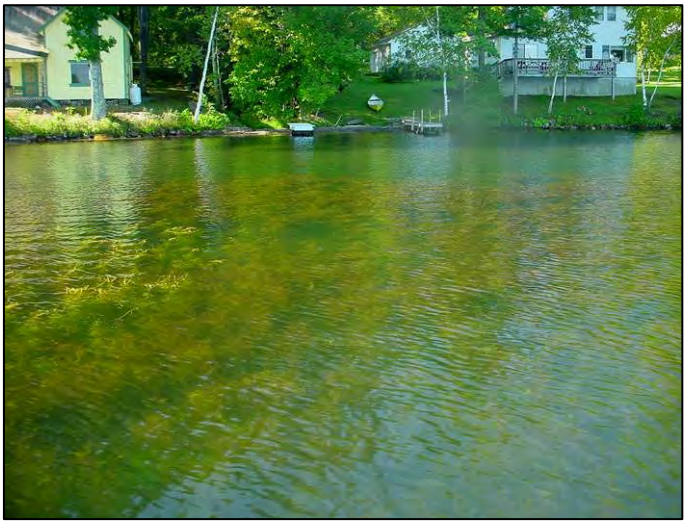
Lake St. Catherine

Aquatic Vegetation Management Program
2007 – Year Four Report

Lake St. Catherine – September 18, 2007



Bed of Eurasian watermilfoil and pondweed

Final Version: December 2007

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INTRODUCTION

The 2007 season marked the fourth year of a five-year Integrated Management Plan that was initiated in 2004 with a whole-lake Sonar (fluridone) treatment to control Eurasian watermilfoil. Management activities performed in 2007 included spot-treatment of two areas totaling 15 acres with Renovate OTF herbicide, diver hand-pulling, diver assisted suction harvesting and aquatic vegetation monitoring.

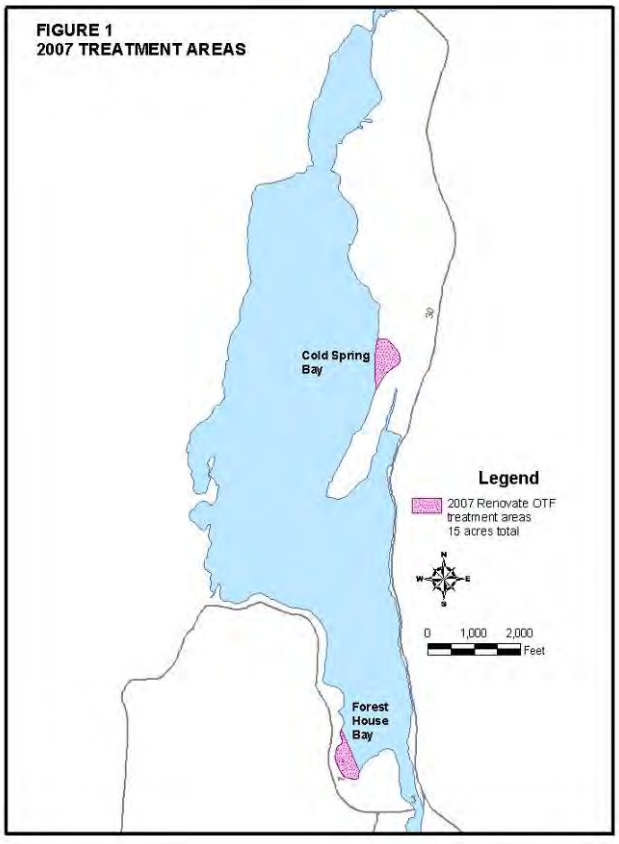
The following report summarizes the results of 2007 Renovate OTF treatment, details findings from the comprehensive aquatic plant survey and provides recommendations for continuation of the program during the 2008 season. Specific information on the 2007 diver hand-pulling and diver assisted suction harvesting efforts will be provided by the Lake St. Catherine Association (LSCA) under separate cover.

HERBICIDE TREATMENT PROGRAM - 2007

Program Chronology

A chronology of the 2007 treatment program is provided below:

- DEC permit issuance (ANC 2007-C01)..... June 18
- Pre-treatment inspection and finalize treatment areas..... June 28
- Treatment – 15 acres with Renovate OTF ..... July 17
- Herbicide residue monitoring..... July 19, July 24
- Post-treatment inspection..... August 22
- Comprehensive aquatic plant survey ..... September 17-18



Pre-Treatment Inspection

The treatment areas were finalized following the pre-treatment inspection performed on 28 June 2007 by Gerry Smith of Aquatic Control and Shaun Hyde of SePRO. The two treatment areas on the main basin of Lake St. Catherine remained unchanged from what was proposed in the permit application and included 8 acres in Cold Spring Bay on the eastern shore and 7 acres in Forest House Bay on the southwest shore (Figure 1).

The remainder of the lake system was visually surveyed at that time and milfoil cover was qualitatively mapped. A copy of the map and report of the survey findings and guidance for non-chemical milfoil management activities was provided to LSCA on July 6 (Appendix A).

Summary of 2007 Treatment

The treatment date of Tuesday, 17 July 2007 was selected to allow enough time to comply with the notification requirements of ANC 2007-C01 and so that the two-day swimming restriction (day of treatment and one

additional day) would not be imposed over a weekend.

Both areas were treated on one day. An Airboat equipped with two GranBlo granular blowers was used for the treatment. The Renovate OTF flakes were distributed through delivery tubes that extended off each side of the boat towards the stern. The boat was equipped with a GPS navigation system to insure that the herbicide was evenly applied to the designated treatment areas. Weather conditions on the day of treatment were mostly sunny, with an air temperature of approximately 75 degrees and light, variable wind. The herbicide was applied in approximately 5.0 hours.

Herbicide Residue Testing

In compliance with conditions of the ANC 2006-C25, water samples were collected from ten (10) locations in Lake St. Catherine following treatment for analysis of triclopyr concentrations (Appendix B). Shaun Hyde of SePRO provided sampling instructions and sample bottles to LSCA representatives. Collected samples were shipped via overnight delivery to SePRO's laboratory in Whittakers, North Carolina. Samples were collected on July 19 and July 24. The highest in-lake concentration detected two days after treatment was 70 ppb (target concentrations applied were 1.75 ppm). On July 24, the concentration was below the detectable limit of <1.0 ppb at all sampled sites and DEC lifted the restriction of using lake water for irrigation.

Post –Treatment Survey

The treatment areas were surveyed on August 22 by Gerry Smith, Shaun Hyde and representatives from LSCA. All of the treatment areas were toured by boat to visually evaluate impacts to the targeted milfoil and to the non-target plants.

Milfoil control was estimated to be 95% in both treatment areas. Milfoil plants that appeared to be damaged from the herbicide treatment were evident at the edges of both treatment areas and seemingly healthy milfoil plants were found within a hundred feet of the treatment areas. The native plant community appeared to be healthy in Cold Spring Bay with several species observed, including: *Potamogeton amplifolius, P. epihydrus, P. robbinsii, P. illinoensis, P. pusillus*, *Najas flexilis* and *Nitellla.* Similar conditions were observed in Forest House Bay and the following species were noted: *P. amplifolius, P. illinoensis, P. robbinsii, Najas flexilis, Vallisneria americana* and *Elodea canadensis.*

It was evident from the results seen in both treatment areas that Renovate OTF did not migrate outside of the treatment areas in high enough concentrations to significantly impact even susceptible aquatic plants like Eurasian watermilfoil. A copy of the e-mail report submitted following the August 22 inspection is provided in Appendix A.

Complete evaluation of the 2007 treatment results follows the findings of the late season comprehensive aquatic vegetation survey.

LATE SEASON COMPREHENSIVE AQUATIC VEGETATION SURVEY

Survey Methods

The late season comprehensive aquatic vegetation survey conducted on 17 September 2007 and 18 September 2007 replicated the methods that were employed in the previous years of this management program.

All three major lake basins were systematically toured by boat. Transect and data point locations established in 2001, were relocated using a Differential GPS system equipped with sub-meter accuracy.

This enabled the practically the same locations to be examined during both surveys (Appendix C – Figure 1). The following information was recorded at each data point: aquatic plants present, dominant species, percent total plant cover, plant biomass and percent milfoil cover. Water depths that were recorded during the pre-treatment survey were checked using a high-resolution depth finder. In most cases, the water depth at the data point was within 1 foot of what was recorded during the pre-treatment inspection. The plant community was assessed through visual inspection, use of a long-handled rake and throw-rake, and with an Aqua-Vu underwater camera system. Plants were identified to genus and species level when possible. Plant cover was given a percentage rank based on the areal coverage of plants within an approximate 400 square foot area assessed at each data point. Generally, in areas with 100% cover, bottom sediments could not be seen through the vegetation. Percentages less than 100% indicated the amount of bottom area covered by plant growth. The percentage of Eurasian watermilfoil was also recorded at each data point. In addition to cover percentage, a plant biomass index was assigned at each data point to document the amount of plant growth vertically through the water column. Plant biomass was estimated on a scale of 0-4, as follows:

0 No biomass; plants generally absent
1 Low biomass; plants growing only as a low layer on the sediment
2 Moderate biomass; plants protruding well into the water column but generally not reaching the water surface
3 High biomass; plants filling enough of the water column and/or covering enough of the water surface to be considered a possible recreational nuisance or habitat impairment
4 Extremely high biomass; water column filled and/or surface completely covered, obvious nuisance conditions and habitat impairment severe

Field data recorded at each transect and data point location is provided in the Field Survey Data Table found in Appendix C.

Survey Findings

The overall distribution and quantitative measures of the aquatic plant community were comparable to prior years.

Table 1: Summary of Survey Data

LILY POND	2001	2004	2005	2006	2007
Total Number of Data Points	24	24	24	22	24
Total Plant Cover	90%	80%	98%	88%	91%
Milfoil Cover	9%	6%	2%	0%	2%
Plant Biomass Index	3.1	2.5	3.3	2.5	2.8
LAKE ST. CATHERINE					
Total Number of Data Points	129	129	129	129	129
Total Plant Cover	66%	46%	51%	57%	58%
Milfoil Cover	43%	16%	0%	4%	11%
Plant Biomass Index	1.9	1.5	1.6	1.8	2.0
LITTLE LAKE					
Total Number of Data Points	43	43	43	43	43
Total Plant Cover	72%	66%	78%	83%	83%
Milfoil Cover	15%	0%	0%	2%	7%
Plant Biomass Index	2.3	2.1	2.4	2.9	2.8

Species encountered and their frequency of occurrence were largely unchanged from 2006 (Table 2). Distribution maps for individual species are provided in Appendix C.

Table 2: Species List and Frequency of Occurrence

Macrophyte Species	**Common Name**	**Abbreviation**					
		(used in field data table)	**2001 pre**	**2004 YOT**	**2005 YAT**	**2006 2YAT**	**2007 3YAT**
Potamogeton robbinsii	Pondweed	Pr	52%	76%	88%	74%	77%
Myriophyllum spicatum	Eurasian watermilfoil	Ms	94%	44%	17%	33%	74%
Potamogeton amplifolius	Large-leaf	Pa	33%	38%	43%	49%	52%
Najas flexilis	Naiad	Nf	22%	0%	8%	39%	34%
Potamogeton illinoensis	Illinois pondweed	Pi	4%	1%	2%	9%	23%
Potamogeton zosteriformis	Flat-stem pondweed	Pz	28%	3%	29%	29%	23%
Zosterella dubia	Water stargrass	Zd	1%	1%	9%	8%	23%
Ceratophyllum demersum	Coontail	Cd	20%	8%	11%	12%	21%
Nitella / Chara	Stonewort	Ni	17%	6%	36%	40%	14%
Nymphaea odorata	White waterlily	Ny	16%	5%	11%	10%	11%
Valisneria americana	Wild celery/Tapegrass	Va	29%	13%	2%	4%	9%
Brasenia schreberi	Watershield	B	4%	8%	7%	7%	7%
Utricularia vulgaris	Common bladderwort	Uv	8%	9%	2%	6%	7%
Elodea canadensis	Waterweed	Ec	32%	1%	1%	1%	5%
Chlorophyta	Filamentous green algae	Fa	2%	37%	26%	7%	4%
Potamogeton crispus	Curly-leaf pondweed	Pc	2%	1%	7%	5%	3%
Potamogeton epihydrus	Ribbon-leaf pondweed	Pe	2%	6%	7%	3%	3%
Nuphar variegatum	Yellow waterlily	Nu	5%	5%	5%	2%	2%
Potamogeton gramineus	Variable pondweed	Pg	23%	1%	6%	6%	2%
Isoetes sp.	Quillwort	I	2%	6%	2%	5%	2%
Utricularia gibba	Creeping bladderwort	Ug	2%	0%	1%	5%	1%
Eleocharis sp.	Spikerush	Eo	1%	1%	1%	0%	0%
Lemna minor	Duckweed	L	7%	1%	0%	1%	0%
Megalodonta beckii	Water marigold	Mb	3%	0%	0%	0%	0%

The most noteworthy difference was the increased distribution of milfoil. The number of occurrences of milfoil at the data point locations more than doubled throughout the entire system, as compared to 2006. Further discussion of changes to the aquatic plant community by lake basin is provided in the following sections.

Lily Pond

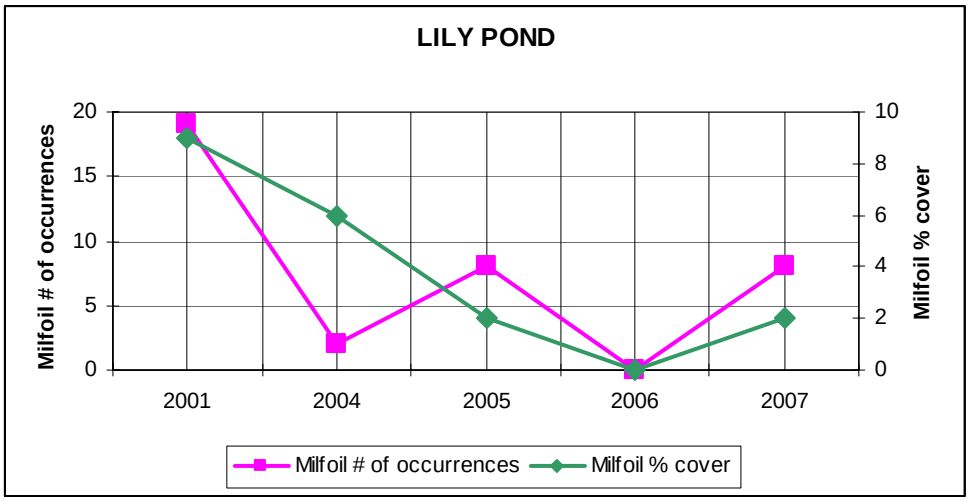
All of Lily Pond was treated with Renovate 3 liquid during the 2006 season. No herbicide treatments were performed in Lily Pond in 2007. There was a significant recovery of the native plant community following the 2006 treatment, with several species returning to distribution levels seen in 2005. There was a significant reduction in observation of the two *Utricularia* species, but these low-lying plants could have been covered by the robust growth of other species.

Table 3: Lily Pond – Species List and Frequency of Occurrence

Macrophyte Species	Lily Pond				
	2001 pre	2004 YOT	2005 YAT	2006 2YAT	2007 3YAT
Potamogeton robbinsii	95.8%	91.7%	95.8%	95.5%	91.7%
Ceratophyllum demersum	70.8%	4.2%	50.0%	45.5%	83.3%
Potamogeton amplifolius	33.3%	100.0%	91.7%	77.3%	79.2%
Potamogeton illinoensis	0.0%	4.2%	8.3%	9.1%	45.8%
Myriophyllum spicatum	79.2%	8.3%	33.3%	0.0%	33.3%
Potamogeton zosteriformis	58.3%	8.3%	62.5%	0.0%	25.0%
Zosterella dubia	4.2%	0.0%	37.5%	0.0%	25.0%
Nymphaea odorata	62.5%	16.7%	29.2%	9.1%	20.8%
Potamogeton crispus	4.2%	4.2%	4.2%	4.5%	12.5%
Chlorophyta	0.0%	29.2%	95.8%	31.8%	8.3%
Elodea canadensis	29.2%	0.0%	8.3%	0.0%	8.3%
Utricularia vulgaris	29.2%	37.5%	0.0%	27.3%	4.2%
Chara sp. / Nitella sp.	0.0%	0.0%	0.0%	4.5%	4.2%
Wolffia sp.	0.0%	0.0%	0.0%	4.5%	4.2%
Potamogeton epihydrus	0.0%	12.5%	4.2%	0.0%	4.2%
Potamogeton gramineus	16.7%	0.0%	8.3%	0.0%	4.2%
Utricularia gibba	0.0%	0.0%	0.0%	40.9%	0.0%
Potamogeton natans	0.0%	0.0%	0.0%	9.1%	0.0%
Lemna minor	45.8%	8.3%	0.0%	4.5%	0.0%
Brasenia schreberi	4.2%	4.2%	0.0%	0.0%	0.0%
Isoetes sp.	0.0%	4.2%	0.0%	0.0%	0.0%
Najas flexilis	4.2%	0.0%	0.0%	0.0%	0.0%
Nuphar variegatum	16.7%	16.7%	16.7%	0.0%	0.0%
Vallisneria americana	33.3%	45.8%	0.0%	0.0%	0.0%

Good carryover control of milfoil was observed throughout the 2007 season. Milfoil was encountered at about one-third of the data points, but it was present in a very low density.

Chart 1: *Myriophyllum spicatum* Number of Occurrences and Percent Cover



Lake St. Catherine

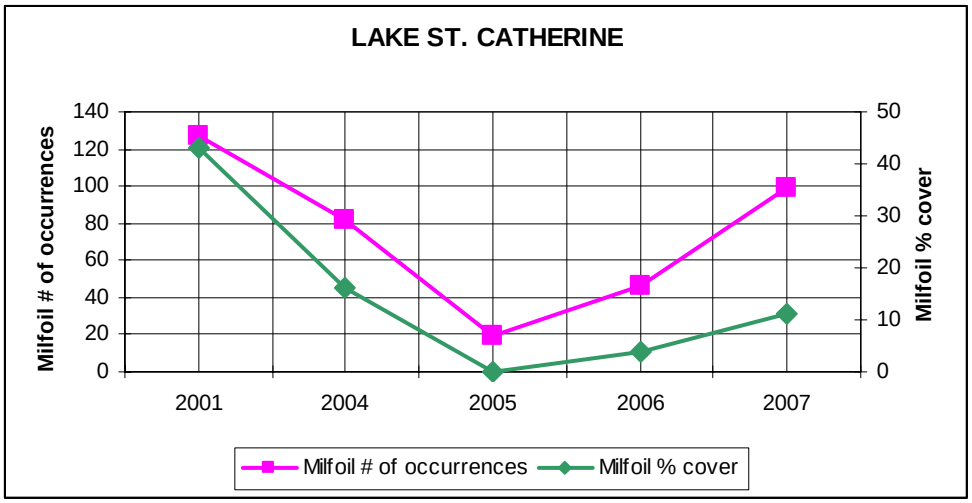
The distribution of native plant species in the main basin of Lake St. Catherine was consistent with the 2006 findings.

Table 4: Lake St. Catherine – Species List and Frequency of Occurrence

Macrophyte Species	Lake St. Catherine				
	2001 pre	2004 YOT	2005 YAT	2006 2YAT	2007 3YAT
Myriophyllum spicatum	98.4%	65.1%	14.7%	35.7%	76.7%
Potamogeton robbinsii	31.0%	65.1%	82.2%	62.0%	66.7%
Najas flexilis	19.4%	0.0%	12.4%	56.6%	50.4%
Potamogeton amplifolius	28.7%	14.7%	25.6%	34.1%	38.8%
Potamogeton zosteriformis	24.0%	2.3%	31.0%	41.9%	27.9%
Zosterella dubia	0.0%	0.8%	4.7%	11.6%	27.9%
Chara sp. / Nitella sp.	1.6%	17.1%	62.0%	57.4%	20.9%
Potamogeton illinoensis	6.2%	0.8%	0.8%	8.5%	15.5%
Potamogeton pusillus	0.0%	0.0%	0.0%	5.4%	12.4%
Ceratophyllum demersum	10.9%	10.9%	6.2%	7.0%	10.9%
Vallisneria americana	14.0%	3.1%	0.8%	3.1%	8.5%
Elodea canadensis	27.9%	0.0%	0.0%	0.8%	4.7%
Nymphaea odorata	3.1%	1.6%	2.3%	3.1%	3.1%
Brasenia schreberi	0.0%	0.8%	0.8%	2.3%	2.3%
Chlorophyta	0.0%	43.4%	14.7%	3.1%	2.3%
Isoetes sp.	2.3%	8.5%	0.8%	6.2%	2.3%
Potamogeton gramineus	17.8%	0.0%	4.7%	1.6%	2.3%
Potamogeton crispus	1.6%	0.0%	9.3%	5.4%	1.6%
Potamogeton epihydrus	2.3%	3.1%	5.4%	2.3%	0.8%
Nuphar variegatum	0.8%	0.0%	0.0%	0.8%	0.8%
Utricularia vulgaris	0.8%	0.8%	0.8%	0.0%	0.0%
Lemna minor	1.6%	0.0%	0.0%	0.0%	0.0%
Megalodonta beckii	1.6%	0.0%	0.0%	0.0%	0.0%

There was a considerable increase in the distribution of milfoil. Similar to Lily Pond, the percentage of milfoil cover remains quite low, despite the increased distribution.

Chart 2: *Myriophyllum spicatum* Number of Occurrences and Percent Cover



Little Lake

The aquatic plant community in Little Lake continued to be dominated by abundant growth of *Potamogeton robbinsii* and *P. amplifolius.* These two broad-leaved pondweeds were filling the majority of the water column with plant growth and were breaking the surface in many locations. Other native species continue to become reestablished in Little Lake following the 2004 Sonar treatment; two noteworthy species are *Ceratophyllum demersum* and *Vallisneria americana*. *Elodea canadensis* and *Najas flexilis* remain present at reduced densities.

Table 5: Little Lake – Species List and Frequency of Occurrence

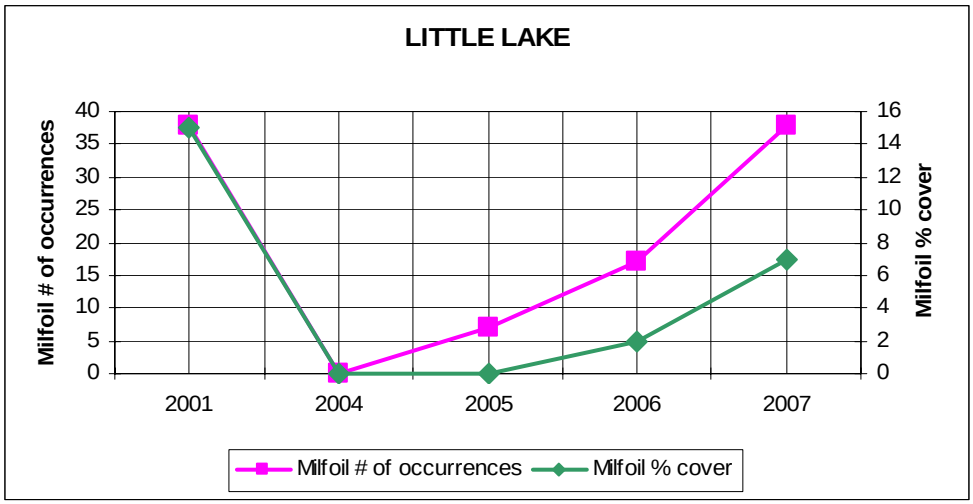
Macrophyte Species	Little Lake				
	2001 pre	2004 YOT	2005 YAT	2006 2YAT	2007 3YAT
Potamogeton robbinsii	88.4%	100.0%	100.0%	100.0%	100.0%
Myriophyllum spicatum	88.4%	0.0%	16.3%	39.5%	88.4%
Potamogeton amplifolius	44.2%	72.1%	69.8%	76.7%	74.4%
Potamogeton illinoensis	0.0%	0.0%	0.0%	9.3%	32.6%
Utricularia vulgaris	16.3%	18.6%	7.0%	11.6%	30.2%
Nymphaea odorata	30.2%	9.3%	25.6%	30.2%	27.9%
Brasenia schreberi	14.0%	30.2%	30.2%	23.3%	25.6%
Ceratophyllum demersum	20.9%	0.0%	2.3%	9.3%	16.3%
Vallisneria americana	72.1%	25.6%	7.0%	9.3%	14.0%
Potamogeton zosteriformis	23.3%	2.3%	4.7%	4.7%	7.0%
Zosterella dubia	2.3%	2.3%	4.7%	0.0%	7.0%
Potamogeton pusillus	0.0%	0.0%	0.0%	2.3%	7.0%
Chlorophyta	7.0%	20.9%	20.9%	4.7%	7.0%
Nuphar variegatum	9.3%	14.0%	11.6%	7.0%	7.0%
Potamogeton epihydrus	0.0%	11.6%	14.0%	7.0%	7.0%
Utricularia gibba	7.0%	0.0%	2.3%	0.0%	4.7%
Najas flexilis	39.5%	0.0%	0.0%	4.7%	2.3%
Elodea canadensis	46.5%	4.7%	0.0%	0.0%	2.3%
Chara sp. / Nitella sp.	7.0%	4.7%	7.0%	11.6%	0.0%
Potamogeton gramineus	41.9%	4.7%	9.3%	23.3%	0.0%
Isoetes sp.	0.0%	0.0%	4.7%	2.3%	0.0%
Potamogeton crispus	0.0%	0.0%	0.0%	2.3%	0.0%
Polygonum sp.	0.0%	0.0%	0.0%	2.3%	0.0%
Eleocharis sp.	4.7%	4.7%	4.7%	0.0%	0.0%
Megalodonta beckii	7.0%	0.0%	0.0%	0.0%	0.0%

Abundant growth of pondweed with scattered milfoil – Little Lake (9/18/07)

Consistent with the other two basins, milfoil was widely distributed throughout Little Lake at low densities. Areas with higher density milfoil growth (>10% cover) were limited to fairly small patches. Where milfoil densities were less than 5%, plants were often difficult to see due to the abundant pondweed growth.

Only widely scattered milfoil plants were found in the northeast corner of Little Lake that was spot-treated with Renovate 3 herbicide in 2006, while milfoil was more frequently encountered just outside of this area. Diverse and robust native plant growth was found in the 2006 treatment area location.

Chart 3: *Myriophyllum spicatum* Number of Occurrences and Percent Cover



Species Richness

Species richness was greater in all three basins during the 2007 survey. This is especially noteworthy in Lily Pond, where species richness had dropped off in 2006 following the Renovate 3 herbicide treatment.

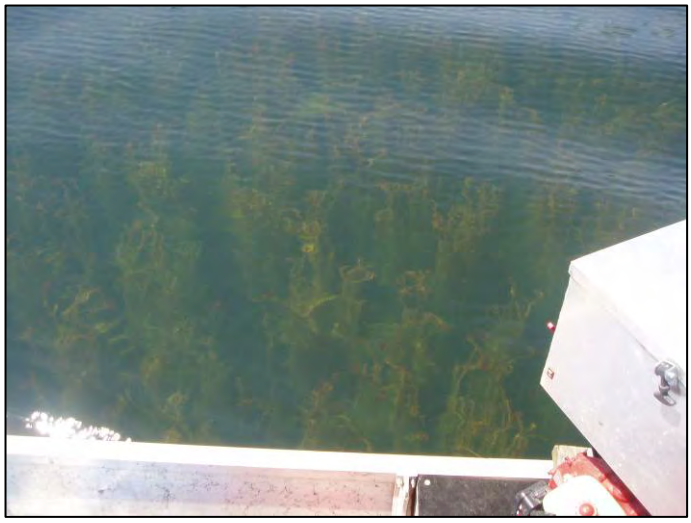
Table 6: Species Richness by Basin

Basin	Pre-Treatment 2001	YOT 2004	YAT 2005	2YAT 2006	3YAT 2007
Lily Pond	5.67	3.58	5.17	3.59	4.54
Lake St. Catherine	2.96	2.39	2.85	3.50	3.75
Little Lake	5.62	3.23	3.30	3.81	4.58

Evaluation of 2007 Treatment Areas

Because of the relatively small size of the two areas that were treated with Renovate OTF in 2007, there were a limited number of data point locations available to make quantitative comparisons of pre and post-treatment conditions. Only 5 data point locations fell within the Cold Spring Bay treatment area and only 4 data point locations fell within the Forest House Bay treatment area. The resulting data was certainly not statistically significant.

During the August 22 inspection the milfoil biomass reduction within each treatment area was estimated at 95%. Similar observations were made during the September 17-18 survey, but there appeared to be recovery of milfoil at the edges of the treatment area. There was no observable impact to milfoil located immediately outside of both treatment areas.



Top Left: Milfoil approaching the surface in Forest House Bay treatment area (7/17/07)

Bottom Left: Pondweed growth breaking the surface in Cold Spring Bay treatment area (9/17/07)

Top Right: Mixed native plants collected in Cold Spring Bay treatment area (9/17/07)

Late Season Milfoil Bed Mapping

Milfoil beds were visually surveyed and mapped during the late season survey. This occurred on 17 September 2007. Visibility was excellent with sunny skies and little or no wind. The entire perimeter of the main basin of Lake St. Catherine was toured by boat. The deep water extent of milfoil bed areas were recorded using a Differential GPS. In areas where milfoil was more widely scattered, locations of individual plants were recorded. The milfoil beds were categorized as either Scattered – generally 1-10% cover, Common – generally 10-25% cover and Abundant – generally 25-75% cover.

Scattered milfoil cover was most commonly encountered. An estimated 70 acres of scattered milfoil beds were mapped in Lake St. Catherine. This includes the portion of the channel north of the bridge, and does not include Lily Pond or Little Lake. Approximately 25 acres of common cover beds and 10 acres of abundant cover beds were mapped (Figure 2).

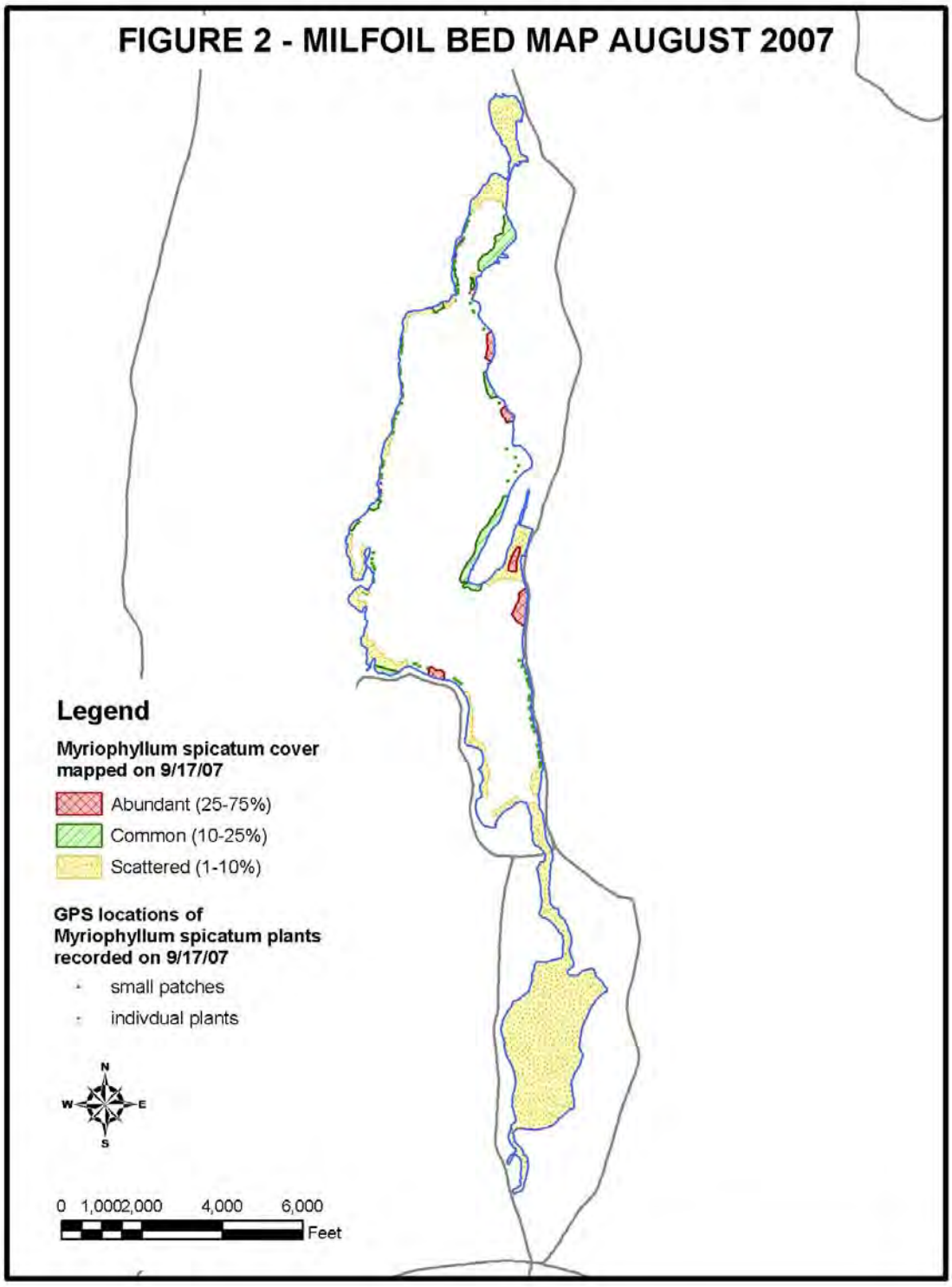


FIGURE 2 - MILFOIL BED MAP AUGUST 2007
Legend
Myriophyllum spicatum cover mapped on 9/17/07
Abundant (25-75%)
Common (10-25%)
Scattered (1-10%)
GPS locations of Myriophyllum spicatum plants recorded on 9/17/07
small patches
indivdual plants
N
W
E
S
0 1,000 2,000 4,000 6,000
Feet

SUMMARY OF 2007 AQUATIC VEGETATION MANAGEMENT PROGRAM

Renovate OTF Herbicide Treatments

The two areas treated with Renovate OTF in 2007 responded favorably to the treatment. Significant reductions of milfoil density and distribution (>90%) were observed in both areas. There were also no obvious impacts to non-target, native species. Somewhat surprisingly, virtually no impact was seen on milfoil located immediately outside of the treatment areas. Similar observations were made at Renovate OTF treatment areas in Lake Morey and Lake Hortonia. It appeared as if only plants that came in direct contact with the Renovate OTF flakes were impacted by the treatment. This suggests that Renovate OTF can be used to provide both area and species selective control of milfoil. However, it will also be necessary to include sufficient areas of treatment around all targeted beds to insure efficacy in future treatment work.

Spread Prevention and Non-Chemical Control Activities

As required by the DEC Permit, non-chemical milfoil control activities continued at Lake St. Catherine during the 2007 season. Efforts included volunteer monitoring, volunteer and paid hand harvesting and diver assisted suction harvesting. Details of the non-chemical control efforts will be provided by LSCA under separate cover.

RECOMMENDATIONS FOR 2008 MANAGEMENT PROGRAM

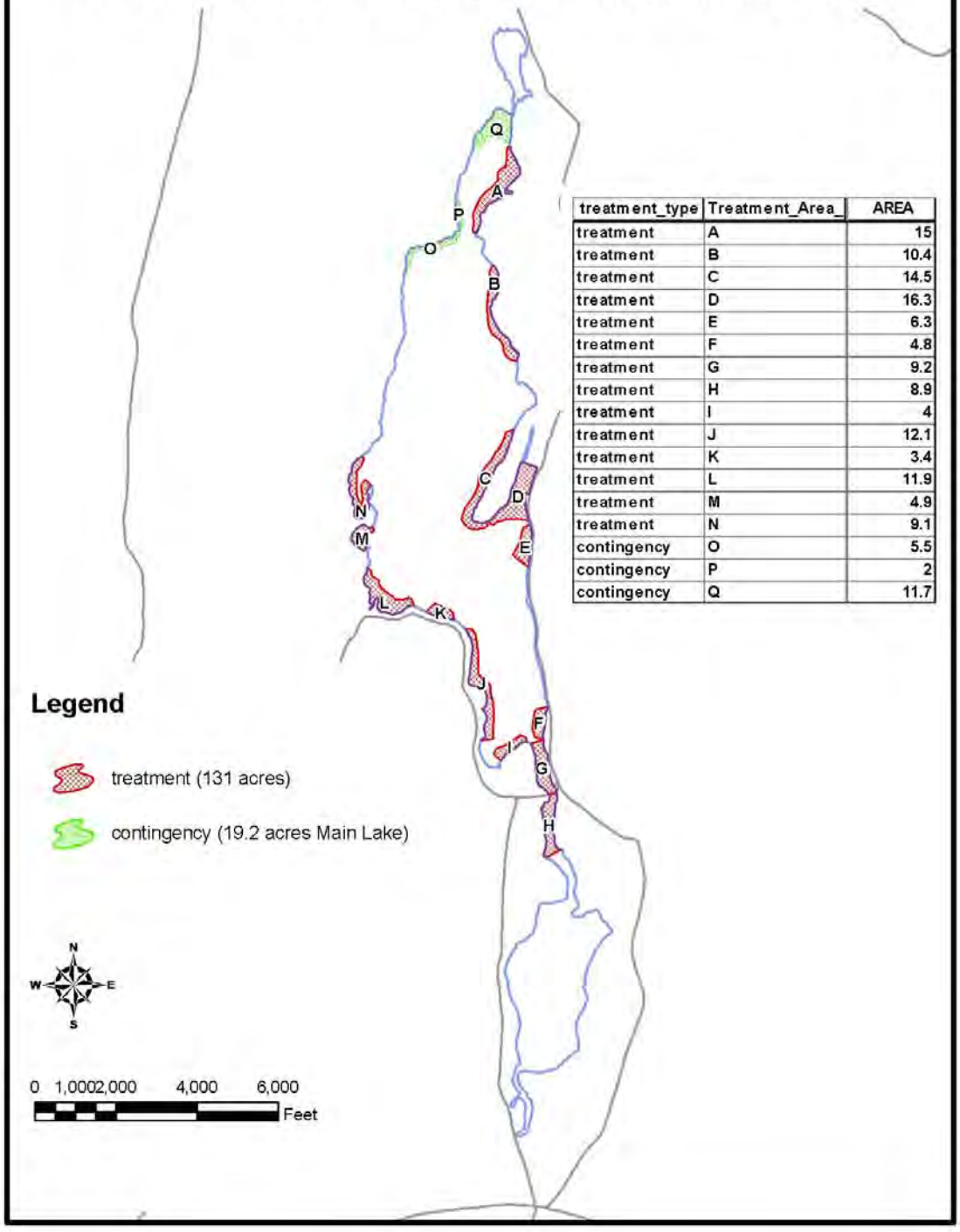
Milfoil cover remains significantly reduced from what was documented in Lake St. Catherine prior to the 2004 Sonar treatment, but the distribution of milfoil has increased steadily over the past two years. Spot-treatments with Renovate 3 and Renovate OTF performed in 2006 and 2007, respectively, demonstrated the potential for effective and highly-selective control of milfoil. Additional treatment of higher density milfoil bed areas in the Main Lake with Renovate OTF is recommended for the 2008 season, while non-chemical control strategies are recommended for areas of lower-density milfoil growth.

Figure 3 depicts Recommended and Contingency treatment areas for the 2008 season. All of the recommended treatment areas are located within the main basin of Lake St. Catherine. Recommended treatment areas total approximately 131 acres. Renovate OTF is recommended for treatment of these areas. The following modifications are recommended to improve treatment efficacy in 2008:

1. Treat earlier in the growing season when all milfoil plants are less than 4 feet tall. This will likely require a late May – early June treatment date.
2. Treat a minimum of 2.5 acres around each milfoil bed to overcome the effects of dilution. The only exceptions to this might be along the southwest shoreline were there are several small milfoil beds isolated very close to shore. Smaller targeted treatments may be considered in these locations.
3. Increase the application rate to 2.0 – 2.5 ppm.

Contingency treatment areas include three beds located along the northwest shoreline of the main basin of Lake St. Catherine that total 19.2 acres. Renovate OTF is recommended for the Contingency treatment areas in Lake St. Catherine, following the same modified treatment approach discussed above.

FIGURE 3 - PROPOSED 2008 TREATMENT MAP



treatment_type	Treatment_Area_	AREA
treatment	A	15
treatment	B	10.4
treatment	C	14.5
treatment	D	16.3
treatment	E	6.3
treatment	F	4.8
treatment	G	9.2
treatment	H	8.9
treatment	I	4
treatment	J	12.1
treatment	K	3.4
treatment	L	11.9
treatment	M	4.9
treatment	N	9.1
contingency	O	5.5
contingency	P	2
contingency	Q	11.7

No treatment is recommended in Little Lake for the 2008 season. Milfoil is scattered throughout much of Little Lake at low densities, but presently, the principal recreational use impairment is due to the robust growth of native plants, specifically Robbins pondweed and largeleaf pondweed. Selectively managing milfoil would not improve access for recreational use of Little Lake or significantly improve habitat in view of its low cover and density. Furthermore, the risk of milfoil expansion from fragments generated in Little Lake is not expected to be significant given the fairly widespread distribution of milfoil already established in other portions of the Lake St. Catherine system.

LSCA is continuing to evaluate whether mechanical harvesting of boating/access channels along the developed shorelines of Little Lake or more area-selective hydro-raking of individual shoreline access points will be more beneficial to Little Lake residents during the 2008 season. LSCA expects to submit a permit application for the agreed upon approach within the next several weeks.

Various management approaches, including the use of aquatic herbicides, will continue to be evaluated for future work at Little Lake, recognizing that both milfoil and native plants will need to be managed to maintain open-water conditions desired near shore to support recreational uses.

APPENDIX A

Preliminary Reports Submitted Following Pre-Treatment Survey and Post-Treatment Survey

- Pre-treatment survey report – 7/9/07
- Post-treatment survey report – 8/23/07

11 John Road
Sutton, MA 01590

Phone: (508) 865-1000
FAX: (508) 865-1220
e-mail: info@aquaticcontroltech.com
Internet: www.aquaticcontroltech.com

Date: July 6, 2007

To: Jim Canders; President, LSCA

From: Gerry Smith; President/Aquatic Biologist

Re: **Report on Milfoil Inspection/Survey of the Lake St. Catherine and Little Lake.**

This report summarizes our observations and recommendations following our recent qualitative milfoil survey/inspection on June 28th. As you'll recall, we inspected both Lake St. Catherine and Little Lake from a Pontoon Boat traveling around the entire perimeter of the lake system. Due to the shallowness of Lily Pond, we d id not get an opportunity to go out on Lily Pond. We will inspect Lily Pond on July 17th when we come to the lake and perform the Renovate OTF treatment of the two coves.

Using a combination of milfoil survey techniques, including; visual observation; use of a "throw rake" and; an Aqua-Vu underwater camera system, when milfoil was observed, it's location was penciled-in on an ortho-photo base map of the lake (refer to attached maps/figures). The percent cover of milfoil in a given area was denoted as follows: – *scattered* (generally <1-5% cover); *frequent* (generally >5-25% cover) or; *common or abundant* (generally >25-100% cover).

It should be noted that the attached map is a "rough approximation" of milfoil distribution observed on June 28th. The "ripple to choppy waters" and overcast skies on that day, did not favor good visibility into the water for seeing milfoil at greater depths. Milfoil was mapped by visual reference to the Ortho-Photo base map and not with GPS. Never-the-less, we believe the attached map is a reasonable representation of milfoil distribution (for at least the visible and more abundant areas) and relative abundance for late June 2007.

Our findings and management recommendations for Lake St. Catherine and Little Lake follow. These recommendations are for "overall guidance only". Time does not allow us to make specific management recommendations for each "patch or area" of milfoil seen nor are the suggestions contained herein a substitute for professional experience when in the field and called upon to make specific decisions relative to whether a specific milfoil area should be hand-pulled, suction harvested or perhaps largely left alone for herbicide treatment at a later date. Furthermore, milfoil distribution is a "moving target". What we saw for distribution in late June will change and likely increase significantly by late summer.

Lake St. Catherine:

While there was a substantial increase in milfoil distribution and abundance from late summer 2006, overall the milfoil infestation in the main lake is still substantially less than when the 2004 Sonar treatment program was initiated. Where we're now in the fourth year of the Five Year Milfoil Management Plan originally prepared for the Lake St. Catherine system, we believe it's fair to say that milfoil has been reasonably well controlled throughout this large lake system and in keeping with our expectations for when the management program was conceived and got underway. Bear in mind that previous lower dose (~6 ppb) Sonar treatment programs performed at Lake Hortonia/Burr Pond in

2000 or 2001 and elsewhere in the northeast, provided good control of milfoil for just two years (year of treatment and the following year) before milfoil re-growth had returned to near pre-Sonar treatment distribution and abundance.

Our June 28th survey/inspection of the main lake identified approximately 74 acres of milfoil described as "common or abundant" and depicted on the attached map. Most of these same areas with higher density/abundance of milfoil were identified late last summer during our comprehensive milfoil survey performed in September. The density or percent cover of milfoil in these areas, however, has greatly expanded between last September and this June, such that hand-pulling or suction harvesting would no longer be cost/effective . In the future, we may want to include and seek to permit such areas for chemical treatment the following year, now that this pattern of significant increase in milfoil from late summer to the following late spring has been established at Lake St. Catherine. That map of milfoil locations from September 2006 is provided here as well for reference.

Non-chemical techniques (Suction harvesting or Diver hand-pulling) over larger areas shown on the June 2007 map like this will generally not provide cost/effective control of milfoil. *LSCA funded Diver harvesting or Suction Harvesting in and around dock/swim areas would provide residents with some interim relief from milfoil , however, we suggest (from a view point of effectiveness only) that LSCA funded work may be better spent in areas of lower density (low percent cover; ie, shown as "scattered or frequent") milfoil, in an effort to prevent such areas from becoming necessary treatment areas in 2008 or beyond.* We understand, however, the need to provide your membership with some immediate measure of milfoil control for this summer. We suggest utilizing the Aquascreen bottom weed barrier in and around dock/swim areas where there are dense patches of milfoil that cannot feasibly be hand-pulled. Be sure to first review your DEC permit for Bottom Barrier use in the Lake St. Catherine system before installing the barrier. The Aquascreen weed barrier is nothing like the "geo-textile fabric material" that Phil Pope described and we discussed during our recent lake inspection. Our experience with such fabric materials is that they "billowed" excessively, due to gases trapped beneath the barrier material and these fabric barriers were extremely heavy and difficult to remove once the fabric was wet. While even the Aquascreen bottom barrier takes a good deal of effort to install and maintain, we've found that Aquascreen to be a largely effective management technique for rooted vegetation in small waterfront swim/dock areas of generally less than 2,500 – 5,000 sq. ft. We strongly recommend LSCA utilize at least the existing stock of Aquascreen this summer, either in the main lake or else in Little Lake. Routine checking, cleaning and maintenance of even the Aquascreen weed barrier will be required, however.

Little Lake:

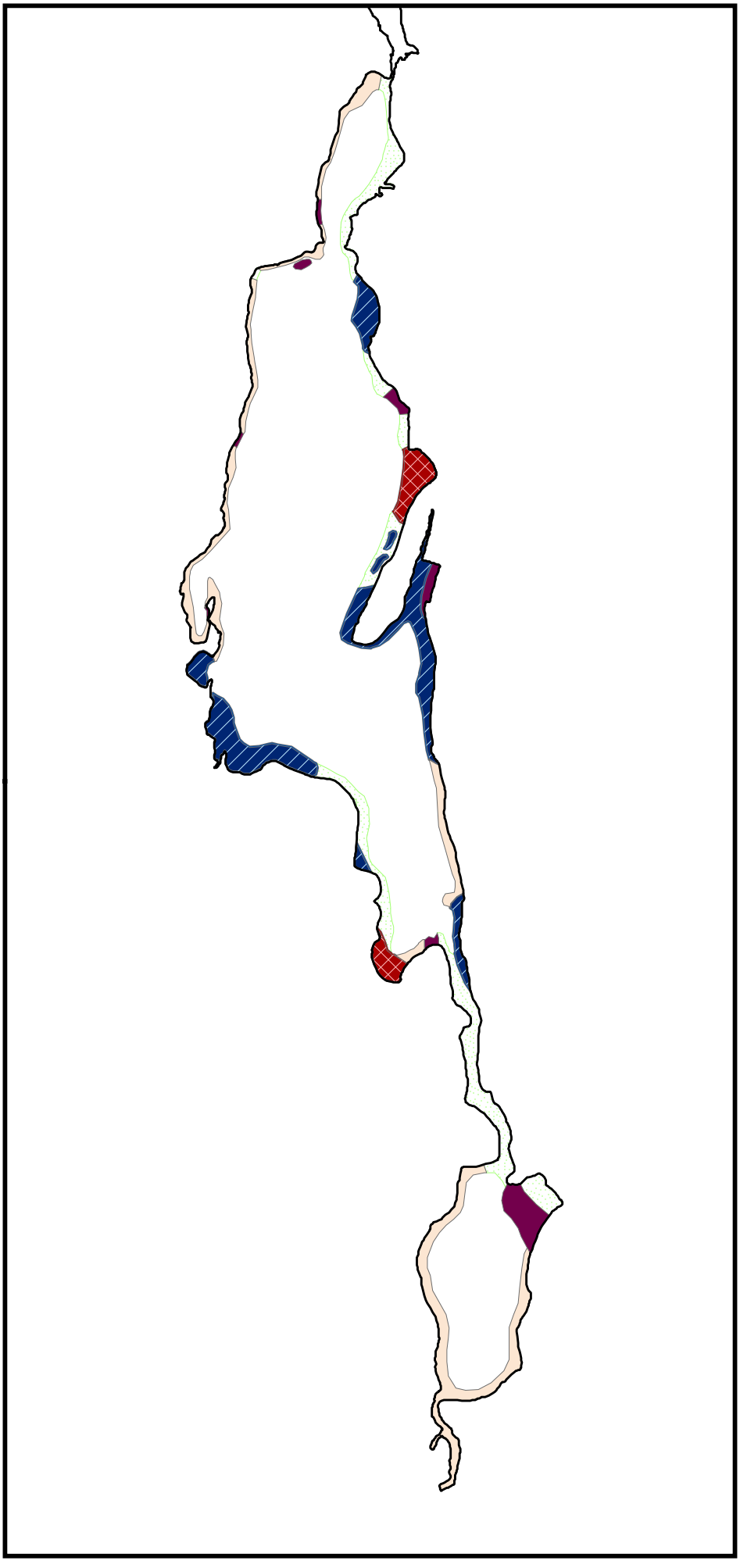
Milfoil was generally sparse and widely scattered (<1%) cover within the northeast cove area that was treated with Renovate last year. Native plants thrived and were abundant throughout most of Little Lake, other than in the south/central portion of the lake where we understand from long-time lake residents that rooted plant growth has always been sparse. This lack of plant growth in that area is most likely due to a difference in bottom texture and/or chemistry, however, just what this specific difference may be is unknown.

Just outside of last year's Renovate treatment area, milfoil was substantially more widespread. This milfoil is interspersed with so much native plant growth, that it's probably unlikely to spread rapidly. We question whether hand-pulling or suction harvesting is a sound management practice in such high density plant areas (just scattered milfoil mixed with common/abundant native plants) for fear that the unintentional disturbance of plants and sediments during the process of hand-pulling or suction harvesting, may actually enable the milfoil to spread and increase more rapidly. Given other milfoil management priorities and the pressing need to manage some scattered milfoil and dense native plant growth along areas of waterfront homes in Little Lake, this northeast cove might be left alone for now and the milfoil continue to be monitored for potential spread. We suggest you may also contact Ann Bove for her recommendation and a "second opinion" for this area, seeing how she accompanied us

during this inspection and Ann has considerable experience with hand-pulling and suction harvesting work performed elsewhere on many other VT lakes and ponds.

Management alternatives for providing waterfront property owners some control of native plants in Little Lake include; hand-pulling, suction harvesting, bottom weed barrier, hydro-raking and mechanical cutting/harvesting. Neither Sonar nor Renovate herbicide will provide good control of the Robbin's pondweed, which was/is the most prevalent native plant that we observed in Little Lake, especially along the lake's western shoreline. Contract hydro-raking or harvesting may be a possibility in future years, assuming little to no milfoil re-grows within those areas (to avoid fragmentation and spread of milfoil) and if DEC would permit those techniques. Suction harvesting, hand-pulling and bottom barriers are probably the only feasible interim management strategies for this year. Concurrent with LSCA's deciding on a proposed course of action, you should check with DEC as to whether your existing permits for suction harvesting and bottom barriers will allow you to work within these areas or whether amendments to those permits will be required.

I hope this information is helpful to you and the Board for setting a course of action for milfoil and nuisance vegetation management within the Lake St. Catherine system for the balance of 2007. Thank you.



Lake St. Catherine
Poultney & Wells, VT

2007 Early Season Qualitative Milfoil Inspection

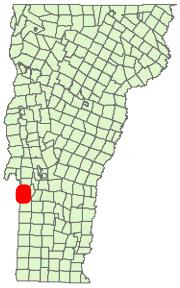
FIGURE:	SURVEY DATE:	MAP DATE:
1	6/28/07	7/5/07

Legend

- Milfoil Treatment Areas 2007
- Common to Abundant Milfoil (Cover 25%-100%)
  *Renovate treatment recommended in 2008.
- Frequent Milfoil (Cover: 5%-25%)
- Scattered Milfoil (Cover: 1%-5%)

N
W E
S

0 500 1,000 2,000 3,000
Feet



AQUATIC CONTROL TECHNOLOGY, INC.
11 JOHN ROAD
SUTTON, MASSACHUSETTS 01590
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FAX: (508) 865-1220
WEB: WWW.AQUATICCONTROLTECH.COM

From: Gerald Smith [GNSmith@aquaticcontroltech.com]
Sent: Thursday, August 23, 2007 3:59 PM
To: jpcltd414@aol.com
Cc: 'Jeffrey P Crandall'; Mgreenb@sover.net; 'Marc Bellaud'; 'Hyde, Shaun'; Susan.Jary@state.vt.us
Subject: Preliminary Report on Inspection of Renovate Treatment Areas - Lake St. Catherine (2007)

Jim:

This e-mail provides a brief summary of our observations made yesterday for the two areas of the lake that were treated with Renovate OTF (Cold Spring Bay and Forest House Bay) on July 17th. We made a number of passes with the boat through each area (recording our visual observations) that we augmented with 5-10 "rake tosses" in each area. Marc Bellaud will take a closer look at these two areas during our upcoming comprehensive Transect Plant Survey that will occurr in September.

Both Shaun and myself were very pleased with what we saw yesterday and I believe that goes for the LSCA Board members who joined us. Excellent control of milfoil (> 95% reduction) was seen in both treatment areas. Native plant cover appeared to be excellent post-treatment, with both low profile plants (bottom cover) well represented as well as those native plants (ie; several of the pondweed /*Potamogeton* species) that grow up through the water column and provide vertical structure and habitat.

In Cold Spring Bay, we noted the occurrence of; *P. amplifolius*, *P. epihydrus*, *P. robbinssii*, *P. illinoensis*, *Najas*, *Nitella*, and a species of thin-leaved pondweed, possibly *P. pusillus*. Along the outer edge of the treatment area (in water depths of ~>8-9 feet) unhealthy milfoil was observed, along with some scattered, apparently healthy milfoil.

In Forest House Bay, we observed similar, extensive cover of native plants and again, excellent control of milfoil within the immediate targeted, treatment area. Native plants noted there yesterday, include; *P. amplifolius*, *P. illinoensis*, *P. robbinssii*, *Najas, Vallisneria* and *Elodea*. Again, just outside of the treatment area, injured milfoil was observed and then healthy milfoil beyond that.

We all commented on and were struck by our observation that beyond the immediate treatment areas, the impact of the Renovate OTF on milfoil and native plants appeared to be minimal. This is a desirable characterisitic of this "flake" herbicide formulation, where its important to protect "state-listed" or non-target native plants that may be located in close proximity to a treatment area.

As you know, we also went into Lily Pond yesterday. We did not perform any kind of plant inventory per say but we did note a variety of submersed and floating-leaved plants throughout the pond. The cover of waterlilies in the northern portion of the pond that had been significantly "thinned" following last year's Renovate 3 treatment of Lily Pond, is rebounding. Pickerelweed was also quite abundant. As noted in a separate e-mail to you, we also hand-pulled 6 or 7 water chestnut (*Trapa*) plants in a shallow, eastern cove of Lily Pond. Tim Hunt from VT DEC had asked me last week to check this area out and hand-pull any chestnut plants that we saw. The hand-pulling was timely, as the plants were quite mature but the nuts (seeds) had yet to drop.

Since our late June inspection of Little Lake and Lake St. Catherine, milfoil has expanded considerably. This was not unexpected. Following Marc's comprehensive plant survey scheduled for September, we'll soon thereafter be putting together a recommended plan of treatment/management, along with a preliminary budget for 2008 and LSCA Board review.

I will be out of state and largely unreachable from Aug. 28th through Sept. 9th. If you need something in the interim, please send along an e-mail and either Marc or I will respond as soon as we can. Thank you.

Gerry

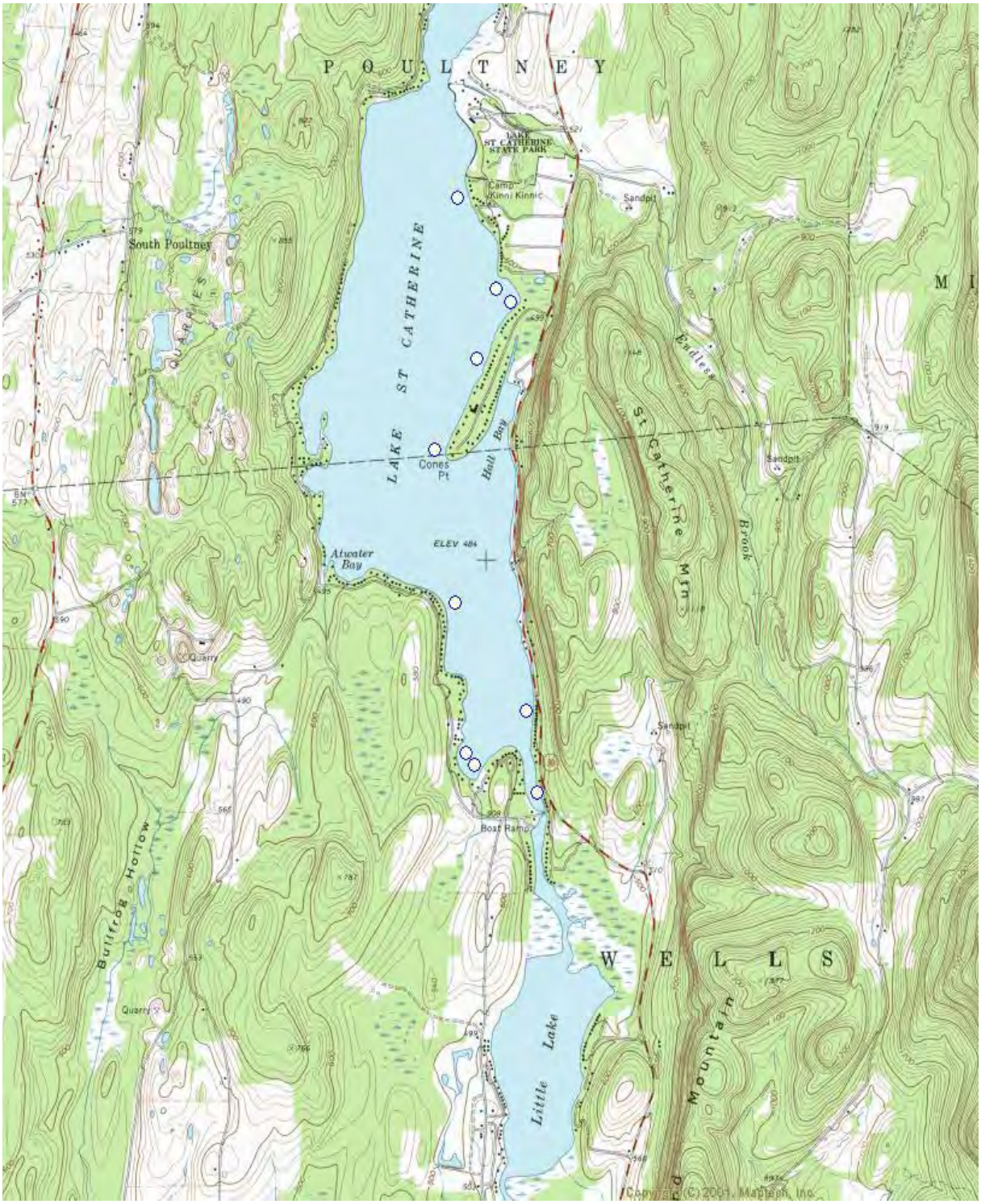
APPENDIX B

Herbicide Residue Testing Results

- Sampling Location Map – Attachment C of ANC 2007-C01 prepared by DEC
- SePRO Laboratory Report – 7/19/07 sampling round
- SePRO Laboratory Report – 7/24/07 sampling round

Attachment C

Areas Approved for Renovate Treatment and Sample Locations



- - - - - treated area

_____ affected area

O sample sites

FasTEST Results Confidential - Not For Distribution

Cooperator:	SePRO Corporation	**Phone:**	**Fax:**
Shaun Hyde	250 McAdoo Dr. Apt. # 421		
Territory: Scott Shuler	Folsom CA 95630-		

Sample	Date(s) Treated	Sonar	Date Collected	Rate Applied	Acres Treated	Sample Location Description	Results PPB
1.	07/20/07	Renovat	7/19/2007			#1	<1.0ppb
2.						#2	<1.0ppb
3.						#3	<1.0ppb
4.						#4	0.01ppm
5.						#5	<1.0ppb
6.						#6	<1.0ppb
7.						#7	<1.0ppb
8.						#8	0.04ppm
9.						#9	0.07ppm
10.						#10	<1.0ppb

Depth Sample Collected: elbow

Storage Conditions: Analyzed upon receipt

Date Shipped to SePRO: 7/19/2007

How would you like results sent to you? **Fax** No **Regular Mail** Yes

Date Sample Received: 7/20/2007

Condition of Sample(s) Box/Water Containers: Excellent excellent

Date Analysis was Performed: 7/20/2007

Date Results Sent to Cooperator: 7/20/2007

Back of Data Sheet

Name of Waterbody: St. Catherine

Average Depth in Feet: 0

Back of Data Sheet

Size of Waterbody in Acres: 904

Target Plant(s) to Control: EWM

FasTEST Results Confidential - Not For Distribution

Cooperator:	Aquatic Control Technology Inc..	Phone:	Fax:
Gerry Smith	11 John Street	(508) 865-1000	(508) 865-1220
Territory: Shaun Hyde	Sutton MA 01590-		

Sample	Date(s) Treated	Sonar	Date Collected	Rate Applied	Acres Treated	Sample Location Description	Results PPB
1.	07/17/07			1.75ppm		SC 1	<1.0ppb
2.						SC 2	<1.0ppb
3.						SC 3	<1.0ppb
4.						SC 4	<1.0ppb
5.						SC 5	<1.0ppb
6.						SC 6	<1.0ppb
7.						SC 7	<1.0ppb
8.						SC 8	<1.0ppb
9.						SC 9	<1.0ppb
10.						SC 10	<1.0ppb

Depth Sample Collected: elbow

Date Sample Received: 7/25/2007

Storage Conditions: Analyzed upon receipt

Condition of Sample(s) Box/Water Containers: Excellent — excellent

Date Shipped to SePRO: 7/24/2007

Date Analysis was Performed: 7/25/2007

How would you like results sent to you? **Fax** No **Regular Mail** Yes

Date Results Sent to Cooperator: 7/26/2007

Back of Data Sheet

Name of Waterbody: Lake St. Catherine

Average Depth in Feet: 0

Back of Data Sheet

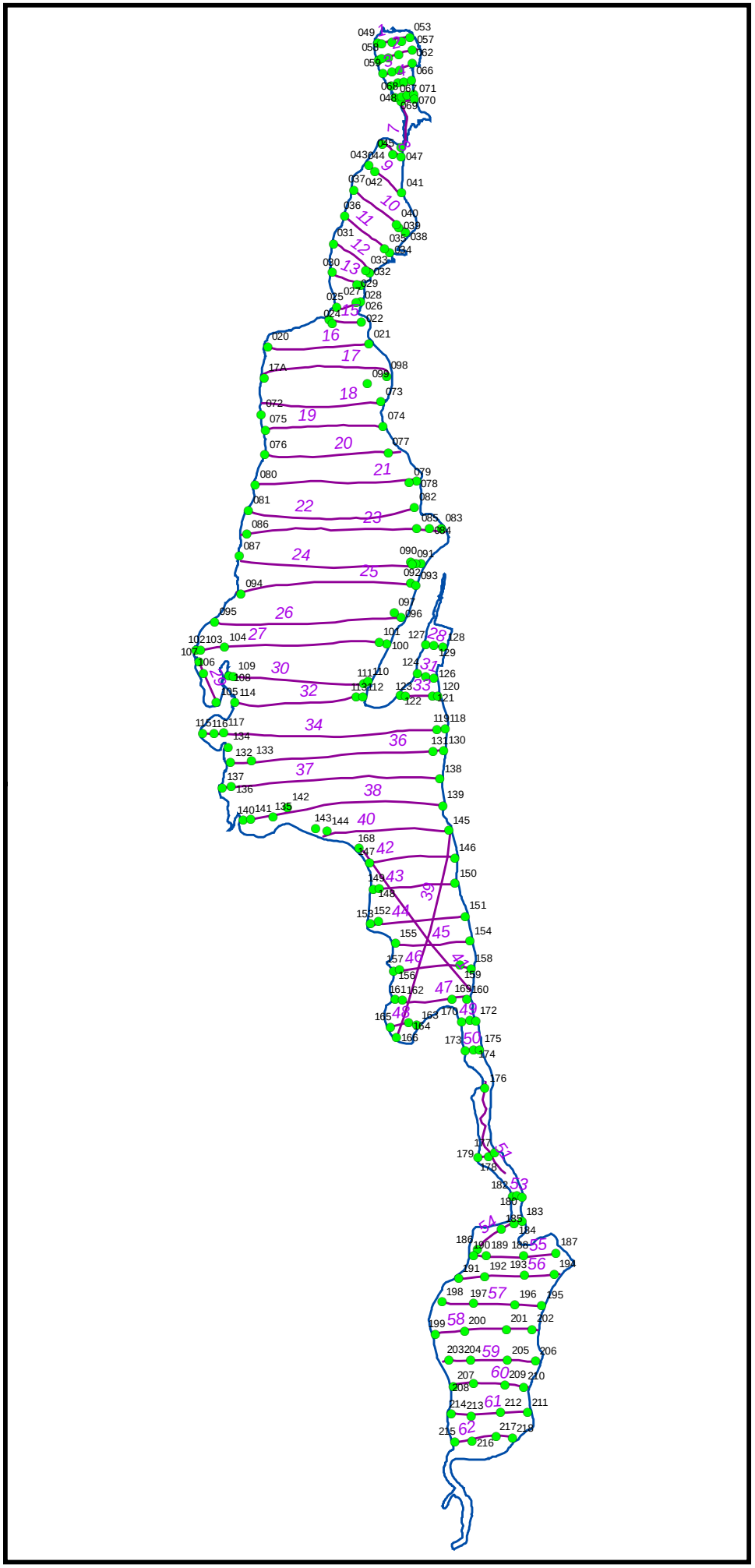
Size of Waterbody in Acres: 904

Target Plant(s) to Control: Eurasian watermilfoil

APPENDIX C

Comprehensive Aquatic Vegetation Survey Information

- Data Point Sampling Location Map
- Field Data Table
- Overall Vegetation Density Map
- Vegetation Species Distribution Maps



Lake St. Catherine

Poultney & Wells, VT

Transects & Data Point Locations for Vegetation Survey

FIGURE:	SURVEY DATE:	MAP DATE:
C-1	9/17 - 9/18/07	11/7/07

Legend

Data point locations recorded with GPs unit during ACT/ ReMetrix 2001 survey. Sampling replicated during ACT 2007 survey. Data points relocated with DGPS unit with sub-meter accuracy.

Transects recorded during ACT/ ReMetrix 2001 survey using DGPS.

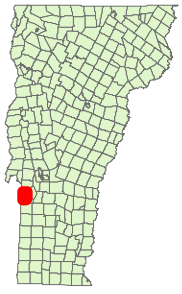
N

W E

S

0 500 1,000 2,000 3,000

Feet



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WEB: WWW.AQUATICCONTROLTECH.COM

Transect	Data Point & GPS ID	Distance from Shore (ft.)	Water Depth (ft.)	% Total Plant Cover	% Milfoil (Ms) Cover	Biomass	Ms	Pr	Pz	Pi	Nf	Pp	Zd	Ca	Cd	Ec	Pa	Pe	Fa	V	I	Nu	Ny	Pg	Pc	B	U	W	Ug
Lily Pond																													
1	49	25	3	100	5	3	X	D		X			X		X		X								X				
1	50	100	3	100	0	3		D		X							X												
1	51	Midpoint	3	100	5	3	X	D					X		X		X												
1	52	150	3	100	0	3		D	X				X		X		X												
1	53	30	3	100	0	4		X	X								D		X				X				X		
2	54	40	3	100	0	3		D	X				X		X		X												
2	55	25	3	100	0	2		D		X					X		X												
2	56	180	5	100	0	2		D							X				X										
2	57	60	3	100	0	3		D	X	X				X	X		X												
2	58	150	6	80	0	2		D		X					X														
3	59	25	3	100	0	3		D					X		X		X							X					
3	60	120	4	100	0	3		D	X	X					X		X												
3	61	Midpoint	4	100	0	3		D		X					X		X												
3	62	15	3	100	5	4	X	D		X					X		X						X						
4	63	20	4	100	10	3	X	D	X						X		X												
4	64	100	5	100	0	3		D		X					X	X	X												
4	65	100	4	100	0	3		X		X					D		X								X				
4	66	30	3	100	5	3	X	X							D		X												
5	68	50	3	100	0	3		D		X			X		X		X												
5	69	60	3	100	5	3	X	X							D		X	X					X		X				
5	70	15	1	0	0	0																							
6	67	20	3	100	5	3	X	D							X								X						
6	71	10	2	100	10	4	X	D							X	X	X						X					X	
7	48	Midpoint	4	0	0	0																							
							8	22	6	11	0	0	6	1	20	2	19	1	2	0	0	0	5	1	3	0	1	1	0
Average				**90.8**	**2.1**	**2.8**	**0.333**	**0.917**	**0.250**	**0.458**	**0.000**	**0.000**	**0.250**	**0.042**	**0.833**	**0.083**	**0.792**	**0.042**	**0.083**	**0.000**	**0.000**	**0.000**	**0.208**	**0.042**	**0.125**	**0.000**	**0.042**	**0.042**	**0.000**

Transect	Data Point & GPS ID	Distance from Shore (ft.)	Water Depth (ft.)	% Total Plant Cover	% Milfoil (Ms) Cover	Biomass	Ms	Pr	Pz	Pi	Nf	Pp	Zd	Ca	Cd	Ec	Pa	Pe	Fa	V	I	Nu	Ny	Pg	Pc	B	U	W	Ug
LAKE ST. CATHERINE																													
7	47	30	3	70	20	3	X								D			X	X	X									
8	44	50	3	100	2	3	X	D									X												
8	45	Midpoint	4	90	0	3		X									D												
8	46	25	3	80	5	2	X	D							X		X												
9	41	15	3	30	5	2	X	X	X	X			D	X															
9	42	150	10	100	50	3	D	X	X	X					X														
9	43	40	1	100	0	2		D		X			X				X												
10	38	40	4	90	5	2	X	D								X	X												
10	39	150	9	100	10	2	X	D									X												
10	40	220	12	100	60	3	D	X	X																				
11	34	20	3	100	10	4	X	X					X				D					X	X			X			
11	35	100	7	0	0	1		X	D								X												
11	36	30	5	80	5	2	X	D									X												
11	37	35	6	70	10	2	X	D									X												
12	31	25	6	60	10	2	X	D			X		X																
12	32	25	4	90	5	3	X	D		X							X			X						X			
12	33	75	8	90	5	2	X	X									D												
13	28	35	4	60	5	3	X	X		D		X	X			X	X												
13	29	120	8	80	5	2	X	D									X												
13	30	25	7	40	10	2	X	X				D																	
14	25	20	4	60	5	2	X	D		X			X				X				X								
14	26	30	3	70	5	3	X			X		D				X	X												
14	27	60	12	90	50	3	D		X	X			X				X												
15	22	75	5	60	10	2	X	D			X						X												
15	23	50	4	10	0	1		D		X																			
15	24	125	10	30	10	1	X							D	X														
16A	20	100	7	80	20	2	X	D			X						X												
16B	21	70	8	10	0	1								D															
17A	17A	25	8	40	0	2		X			D		X																
17	98	80	8	100	0	3		D	X								X												
18	72	15	9	20	5	3	X	D						X															
18	73	30	10	80	5	2	X	D	X								X												
19	74	25	5	70	0	2		D		X	X		X																
19	75	25	13	10	0	1					D																		
20	76	20	7	20	5	2	X	X		D																			
20	77	125	11	70	5	2	X		X		D		X																
21	78	40	6	50	5	2	X	D			X			X						X									
21	79	80	9	60	10	2	X	D									X												
21	80	15	6	80	5	2	X	D	X	X	X		X				X												
22	81	30	6	70	40	2	D	X			X		X		X														
22	82	30	8	40	0	1		X			X			D															
23	83	25	3	60	5	3	X	D			X		X				X			X				X					
23	84	120	5	90	5	3	X	X		D	X		X							X									
23	85	200	6	30	5	2	X		X		D																		
23	86	40	10	40	5	2	X				D	X																	
24	87	40	8	30	10	2	X				D																		
24	88	25	3	0	0	0																							
24	90	100	10	40	5	2	X	X	X						D														
25	92	70	11	50	0	1			X		X			D															
25	93	15	4	50	0	2		X		X	D									X	X			X					
25	94	20	11	70	5	2	X	X	X		X	D																	
26	95	50	5	10	0	1					D		X	X															
26	96	100	4	10	0	1					D																		
26	97	175	12	70	0	2					D			X															
27	102	20	4	100	5	3	X	X					D				X			X			X						
27	103	70	10	80	30	2	X	D	X								X												
27	104	225	10	60	20	2	X		X		D	X													X				
27	100	20	5	40	5	2	X	X			D						X												
27	101	150	8	70	10	2	X	X	X		D			X															
28	127	30	4	70	15	2	X	D					X				X												
28	129	Midpoint	6	80	5	2	X	D								X	X												
28	128	40	4	100	5	4	X	X									X						X			D			
29	107	30	5	40	10	2	X	X	X		D		X																
29	106	30	13	70	5	2	X	D			X			X															
29	105	30	6	90	50	3	D	X			X				X		X												
30	108	25	5	20	0	1					X		D	X						X									
30	109	100	12	40	0	1					D			X															

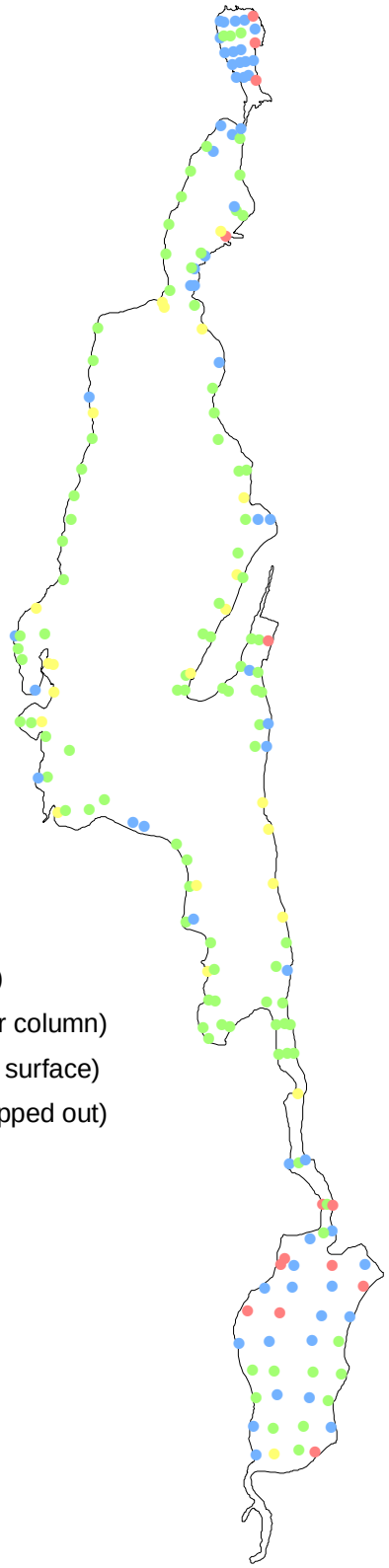
Transect	Data Point & GPS ID	Distance from Shore (ft.)	Water Depth (ft.)	% Total Plant Cover	% Milfoil (Ms) Cover	Biomass	Ms	Pr	Pz	Pi	Nf	Pp	Zd	Ca	Cd	Ec	Pa	Pe	Fa	V	I	Nu	Ny	Pg	Pc	B	U	W	Ug
30	111	150	10	80	20	2	X	X			D						X												
30	110	50	4	20	0	1		X						D															
31	124	25	5	50	10	2	X				X		D											X					
31	125	Midpoint	8	100	70	3	D	X							X														
31	126	30	5	80	0	2		D									X												
32	114	15	6	5	0	1					D																		
32	113	125	8	90	20	2	X	X	X		D														X				
32	112	30	4	30	0	2		D		X	X																		
33	122	30	4	20	5	2	X						D	X															
33	123	120	10	80	10	2	X		X		D				X														
33	121	125	13	50	5	2	X				D			X															
33	120	50	6	30	5	2			X	X	D			X															
34	115	40	5	90	0	2		D									X												
34	116	150	10	70	10	2	X	X			X		D						X										
34	117	250	12	20	5	1	X	X			X			D															
34	119	150	6	30	5	2	X	X		X	D																		
34	118	30	3	90	50	3	D	X							X	X	X												
35	134	50	7	40	5	2	X				D		X																
35	135	125	14	40	5	2	X	X			D	X		X															
36	132	25	8	0	0	0																							
36	133	300	10	40	5	2	X			X	X			D															
36	131	250	12	80	10	2	X		X		X			D															
36	130	50	7	80	50	3	D	X	X		X				X														
37	138	15	10	0	0	0																							
37	136	100	13	60	5	2	X	X			X	X		D															
37	137	25	6	90	20	3	X	D					X										X						
38	140	120	5	10	0	1					X			D															
38	141	300	6	30	5	2	X				D																		
38	142	300	6	30	5	2	X				D																		
38	139	10	7	10	5	1	X	D				X									X								
39	166	50	3	70	5	2	X	D			X		X				X			X									
40	143	100	6	80	40	3	D		X		X						X												
40	144	100	10	90	60	3	D	X	X		X			X															
40	145	20	10	5	5	1	D				X																		
41	168	50	6	80	20	2	X			X	X		D				X												
42	147	35	9	80	20	2	X	D			X		X																
42	146	10	12	0	0	0																							
43	148	35	7	90	5	2	X	X	X				X				D												
43	149	100	13	10	5	1	X							D					X										
43	150	30	7	5	0	1		D																					
44	153	75	5	80	5	2	X					X					D												
44	152	175	10	90	60	3	D		X			X	X																
44	151	20	7	20	5	1	X	X			D																		
45	155	25	8	100	5	2	X	D	X		X	X					X												
45	154	20	6	50	5	2	X				D	X																	
46	156	60	4	10	5	1	X						D				X												
46	157	200	9	80	20	2	X		X		D		X	X															
46	159	175	13	20	5	2	X	X	D					X															
46	158	35	7	80	60	3	D	X	X		X																		
47	161	25	4	70	10	2	X	D					X				X												
47	162	125	10	100	60	2	D	X	X		X		X		X														
47	169	150	7	20	5	2	D				X	X																	
47	160	100	3	20	10	2	D	X	X																				
48	165	40	5	90	5	2	X	X			X	X					D												
48	164	Midpoint	11	70	50	2	D	X	X																				
48	163	45	5	90	20	2	X	X			X	X	D				X												
49	170	25	5	80	10	2	X	X	X	X			D		X	X	X			X									
49	171	Midpoint	8	80	5	2	X	X	X						X		D												
49	172	15	4	80	5	2	X	X	X								D			X									
50	173	20	3	60	25	2	X	X					D																
50	174	Midpoint	7	90	10	2	X	X									D												
50	175	20	6	80	0	2		X									D												
							99	86	36	20	65	16	36	27	14	6	50	1	3	11	3	1	4	3	2	3	0	0	0
Average				**57.9**	**11.4**	**2.0**	**0.767**	**0.667**	**0.279**	**0.155**	**0.504**	**0.124**	**0.279**	**0.209**	**0.109**	**0.047**	**0.388**	**0.008**	**0.023**	**0.085**	**0.023**	**0.008**	**0.031**	**0.023**	**0.016**	**0.023**	**0.000**	**0.000**	**0.000**

Transect	Data Point & GPS ID	Distance from Shore (ft.)	Water Depth (ft.)	% Total Plant Cover	% Milfoil (Ms) Cover	Biomass	Ms	Pr	Pz	Pi	Nf	Pp	Zd	Ca	Cd	Ec	Pa	Pe	Fa	V	I	Nu	Ny	Pg	Pc	B	U	W	Ug
LITTLE LAKE																													
51	176	Midpoint	6	10	5	1	X	D												X									
52	179	30	3	90	10	3	X	D					X				X		X	X			X			X	X		
52	178	Midpoint	5	50	5	2	X	D	X						X				X	X							X		
52	177	20	4	70	5	3	X	X								X	X			X						D			
53	182	20	3	100	5	4	X	X				X	X				X					X	X			X	X		
53	181	Midpoint	5	60	5	2	X	D																			D		
53	180	20	3	100	5	4	X	X									X						D			X	X		
54	183	25	3	100	5	3	X	D							X		X					X					X		
54	184	40	5	90	5	2	X	D																			X		
54	185	Midpoint	4	100	50	3	D	X		X			X				X		X			X				X			
54	186	100	3	100	5	4	X	D							X		X	X					X				X		
55	190	75	3	100	5	4	X	D		X		X					X						X			X	X		
55	189	250	3	100	5	3	X	D		X							X										X		
55	188	150	3	100	35	4	X	D		X							X										X		
55	187	100	3	100	5	3	X	D		X					X		X						X						
56	194	50	3	100	5	4	X	X									D			X									
56	193	500	3	100	10	3	X	D									X												
56	192	400	3	100	5	3	X	D		X							X												
56	191	30	3	100	10	3	X	D									X												
57	198	120	3	100	5	4	X	X									X						X			D	X		X
57	197	600	3	90	15	4	X	D		X							X												
57	196	500	3	100	5	3	X	D		X							X												
57	195	75	4	90	5	3	X	D							X		X												
58	202	60	6	80	0	2		D							X		X												
58	201	600	3	100	5	3	X	D		X							X												
58	200	700	3	100	5	3	X	D		X							X			X									
58	199	40	3	100	5	3	X	D									X						X				X		
59	203	35	3	80	5	2	X	D									X												
59	204	700	3	100	0	2		D									X												
59	205	500	4	100	5	2	X	D									X												
59	206	125	5	80	5	2	X	D							X		X												
60	210	75	5	70	10	2	X	D									D												
60	209	450	4	100	5	3	X	D									X												
60	208	500	4	100	0	3		D		X							X												
60	207	100	4	50	5	2	X	D									X												
61	214	40	3	70	5	3	X	D	X									X					X			X			
61	213	300	4	50	5	2	X	D		X		X																	
61	212	800	5	30	5	2	X	D		X																			
61	211	75	3	100	5	3	X	D									X												
62	215	50	3	70	10	3	X	D	X		X							X					X			X			
62	216	700	5	10	5	1	X	D															X						
62	217	120	4	30	0	2		D		X																X			
62	218	30	3	100	0	4		D															X			X			X
							38	43	3	14	1	3	3	0	7	1	32	3	3	6	0	3	12	0	0	11	13	0	2
Average				**83.0**	**7.0**	**2.8**	**0.884**	**1.000**	**0.070**	**0.326**	**0.023**	**0.070**	**0.070**	**0.000**	**0.163**	**0.023**	**0.744**	**0.070**	**0.070**	**0.140**	**0.000**	**0.070**	**0.279**	**0.000**	**0.000**	**0.256**	**0.302**	**0.000**	**0.047**

PLANTS ENCOUNTERED DURING SURVEYS (2001-2007)

Macrophyte Species	Common Name	Abbreviation used in Field Data Table
Brasenia schreberi	Watershield	B
Ceratophyllum demersum	Coontail	Cd
Chara sp.	Muskgrass	Ca
Chlorophyta	Filamentous green algae	Fa
Eleocharis sp.	Spikerush	Eo
Elodea canadensis	Waterweed	Ec
Isoetes sp.	Quillwort	I
Lemna minor	Duckweed	L
Megalodonta beckii	Water marigold	Mb
Myriophyllum spicatum - dead	Eurasian watermilfoil	DMs
Myriophyllum spicatum - viable	Eurasian watermilfoil	Ms
Najas flexilis	Naiad	Nf
Najas guadalupensis		Ng
Nitella sp.	Stonewort	Ni
Nuphar variegatum	Yellow waterlily	Nu
Nymphaea odorata	White waterlily	Ny
Polygonum sp.	Smartweed	Po
Potamogeton amplifolius	Large-leaf	Pa
Potamogeton crispus	Curly-leaf pondweed	Pc
Potamogeton epihydrus	Ribbon-leaf pondweed	Pe
Potamogeton gramineus	Variable pondweed	Pg
Potamogeton illinoensis	Illinois pondweed	Pi
Potamogeton natans	Floatingleaf pondweed	Pn
Potamogeton pusillus	Thin-leaf pondweed	Pp
Potamogeton robbinsii	Pondweed	Pr
Potamogeton zosteriformis	Flat-stem pondweed	Pz
Utricularia gibba	Creeping bladderwort	Ug
Utricularia vulgaris	Common bladderwort	Uv
Valisneria americana	Wild celery/Tapegrass	Va
Wolffia sp.	Watermeal	W
Zosterella (Heteranthera) dubia	Water stargrass	Hd / Zd

2007 TOTAL VEGETATION BIOMASS



Legend

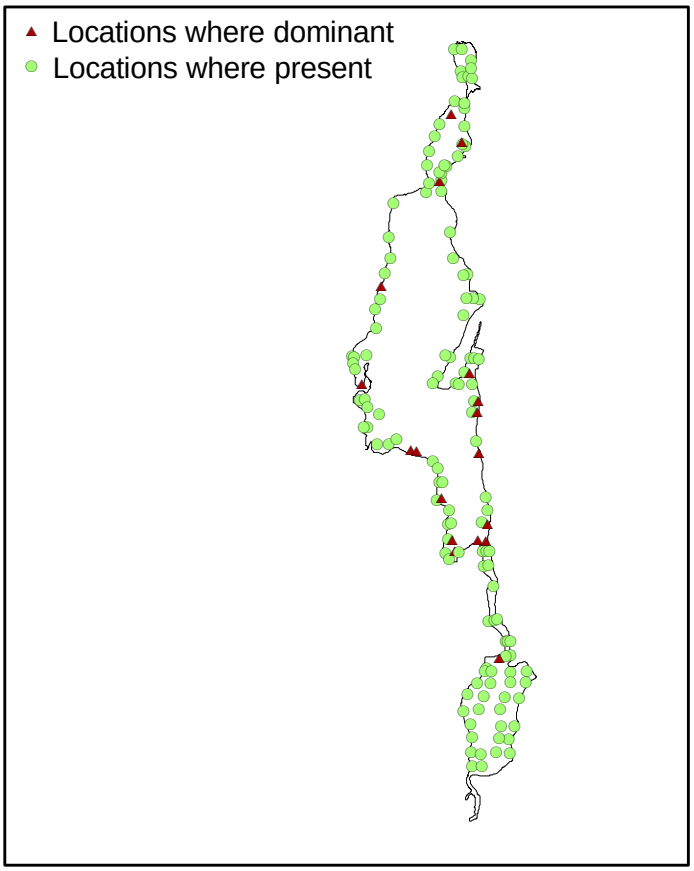
Biomass indices reported
during 9/17/07 and 9/18/07 survey

- 1 - low biomass (along bottom)
- 2 - moderate biomass (in water column)
- 3 - high biomass (approaching surface)
- 4 - extremely high biomass (topped out)

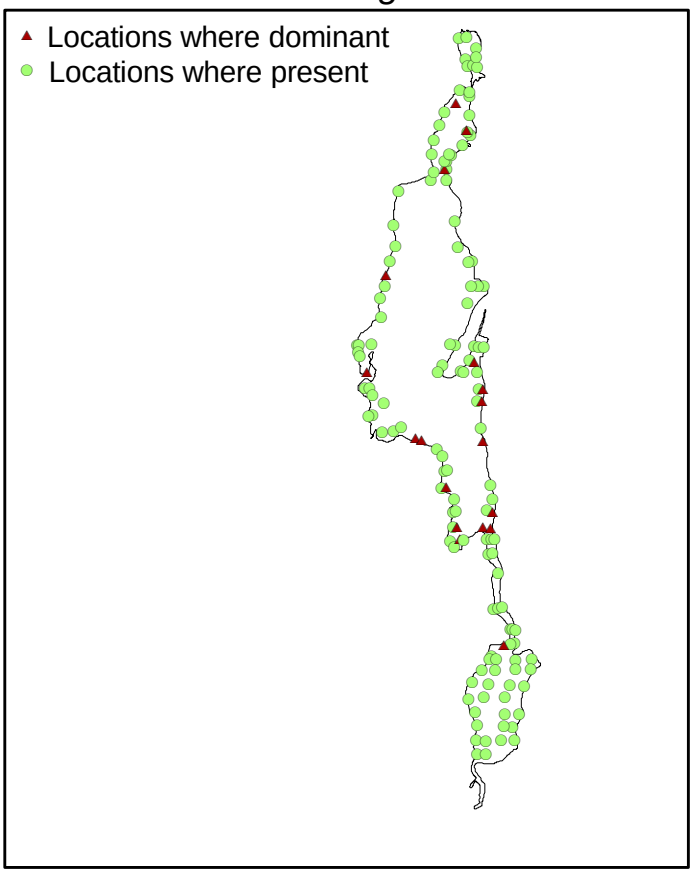
N
W E
S

0 1,000 2,000 4,000 6,000
Feet

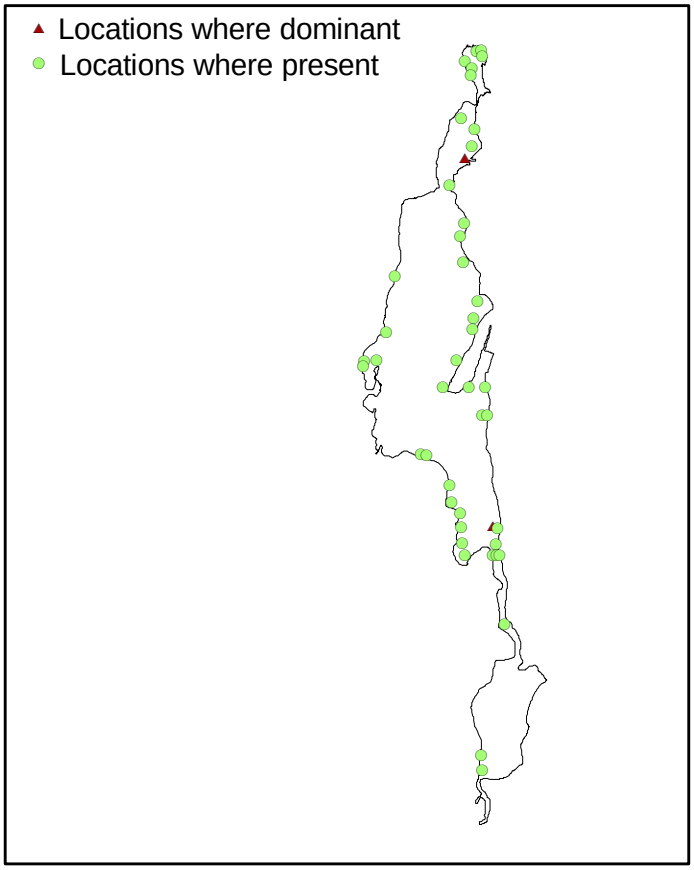
Distribution of *Myriophyllum spicatum*



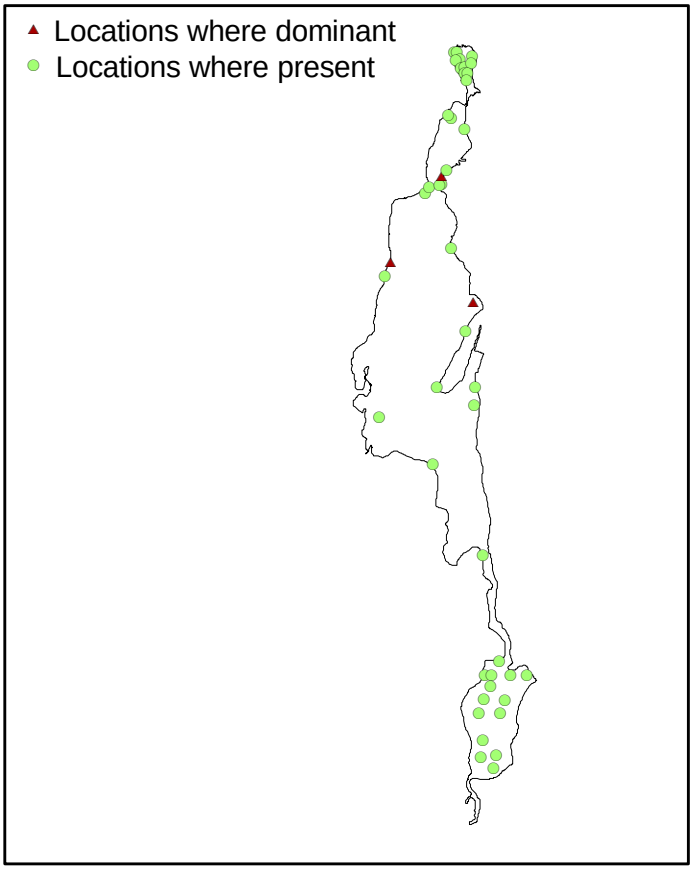
Distribution of *Potamogeton robbinsii*



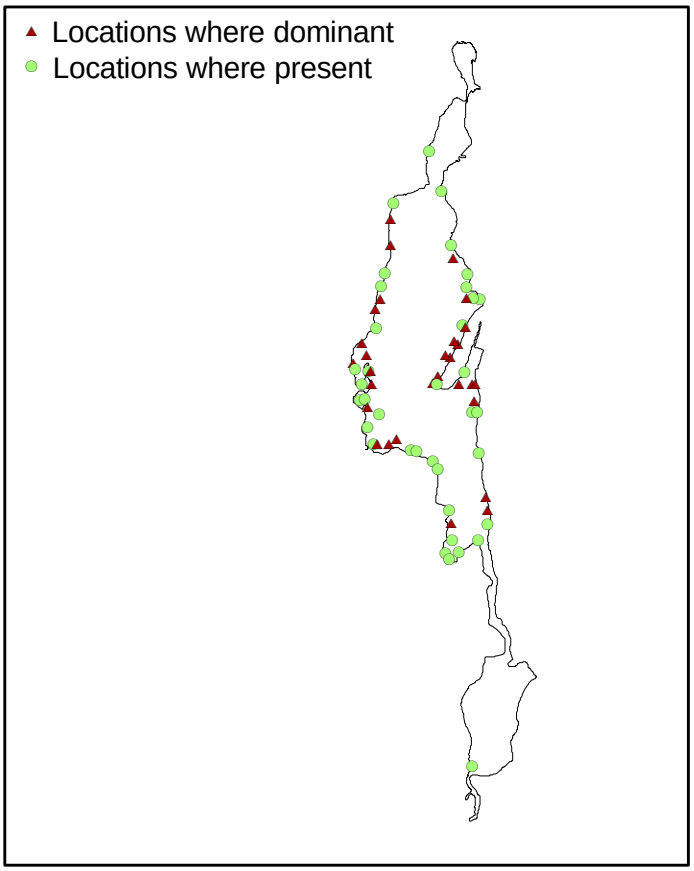
Distribution of *Potamogeton zosterformis*



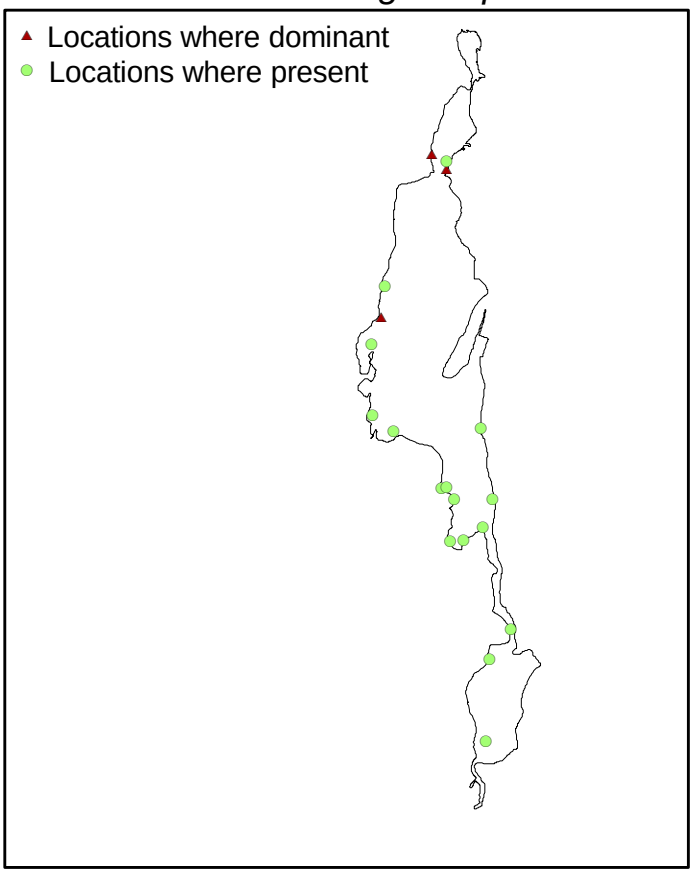
Distribution of *Potamogeton illionensis*



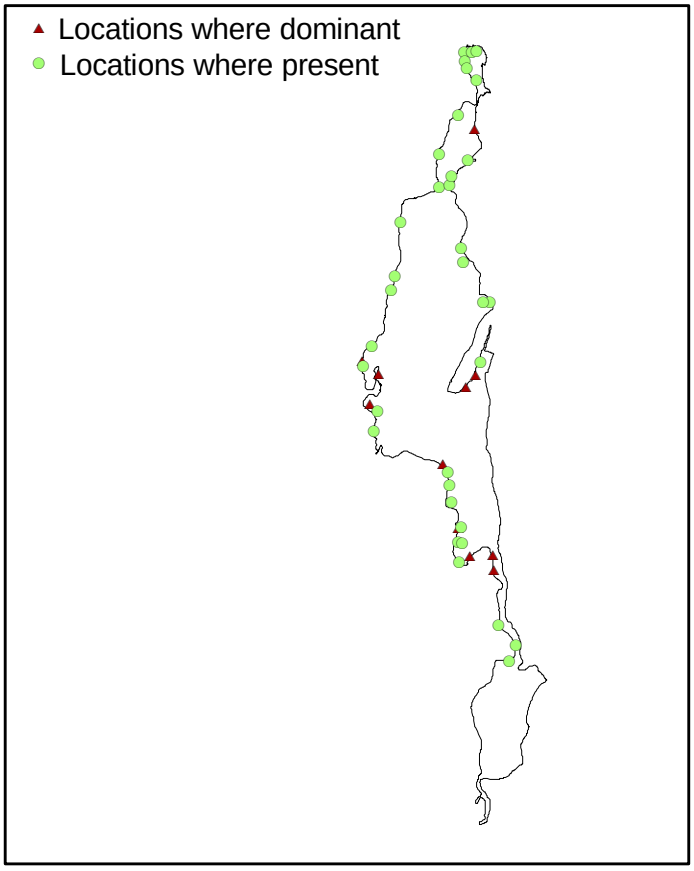
Distribution of *Najas flexilis*



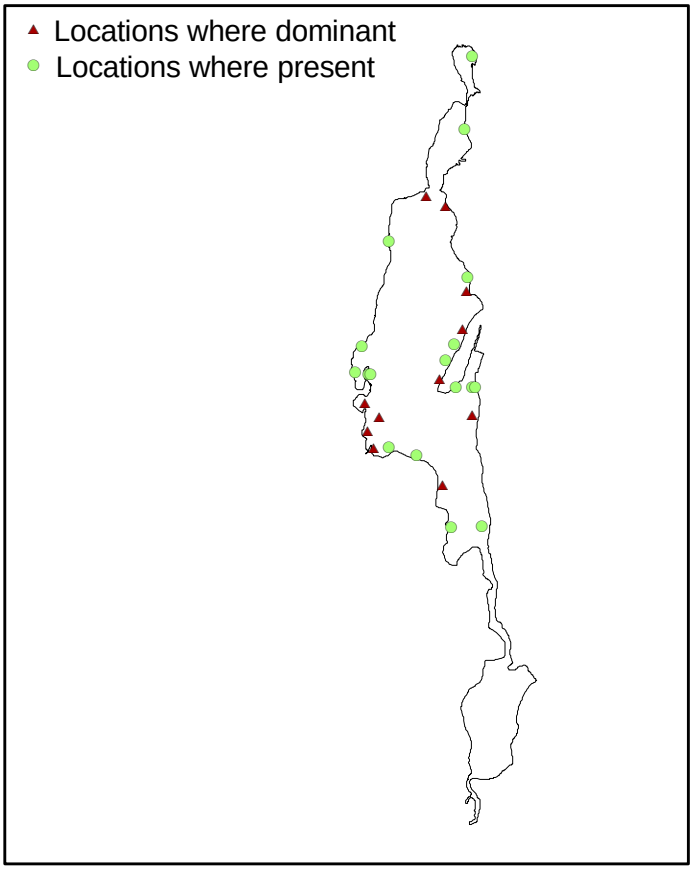
Distribution of *Potamogeton pusillus*



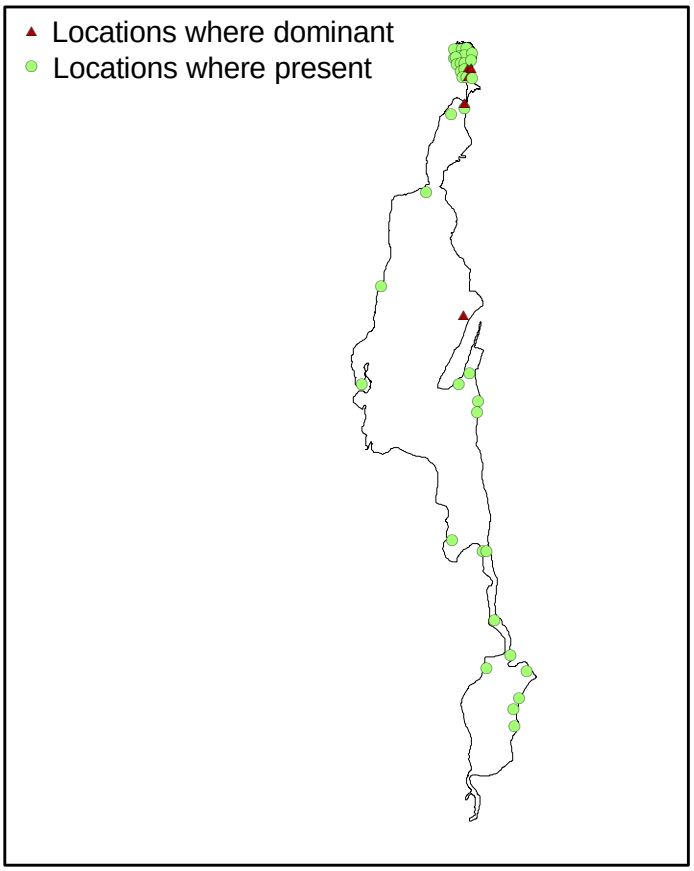
Distribution of *Zosterella dubia*



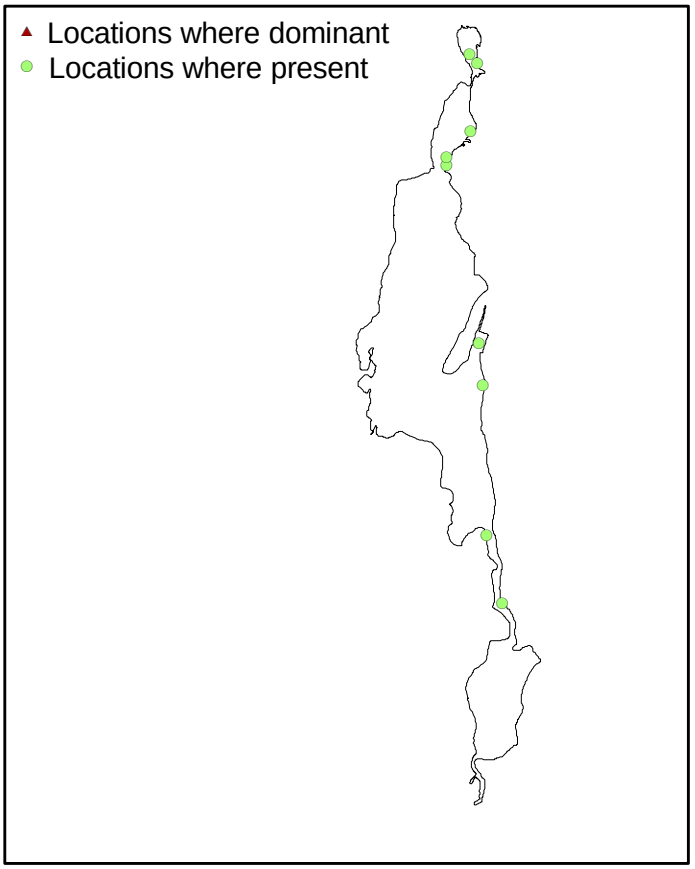
Distribution of *Chara spp.*



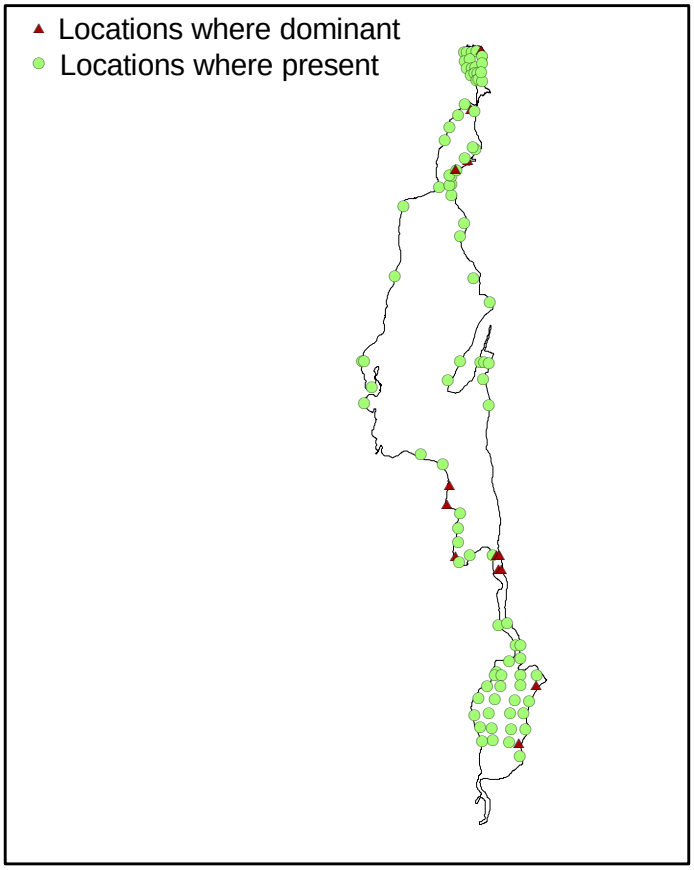
Distribution of *Ceratophyllum demersum*



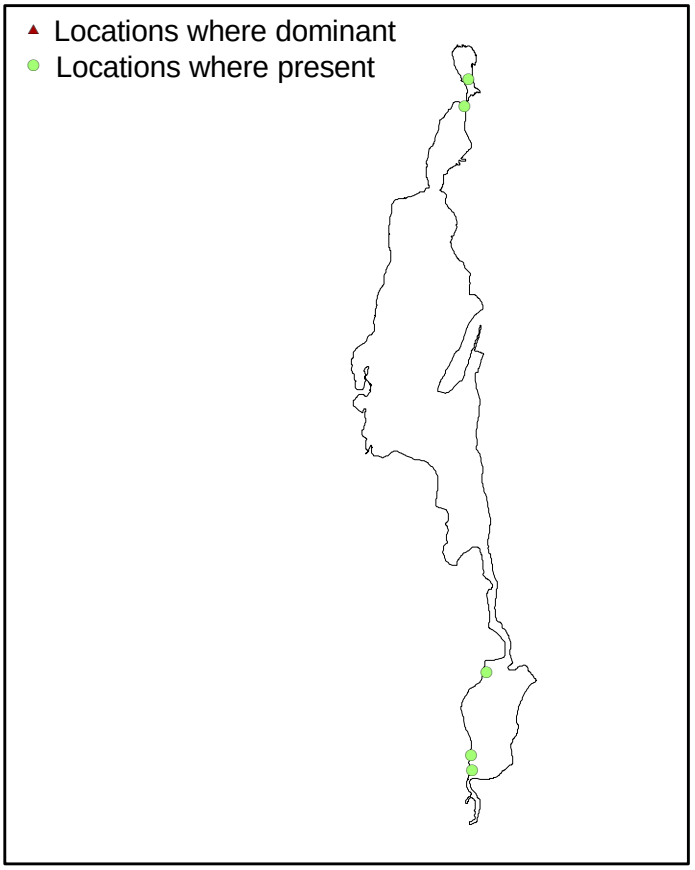
Distribution of *Elodea canadensis*



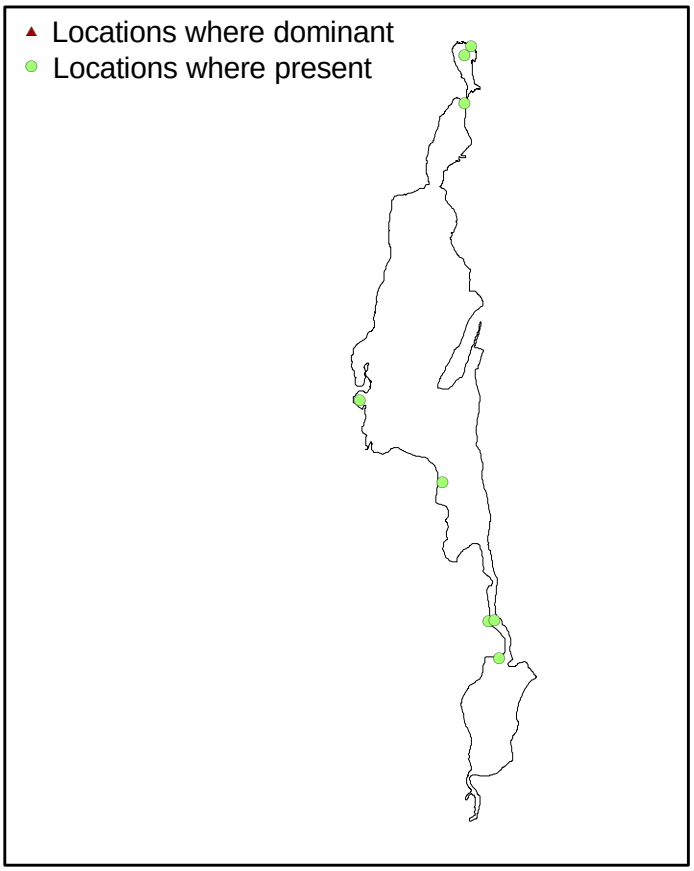
Distribution of *Potamogeton amplifolius*



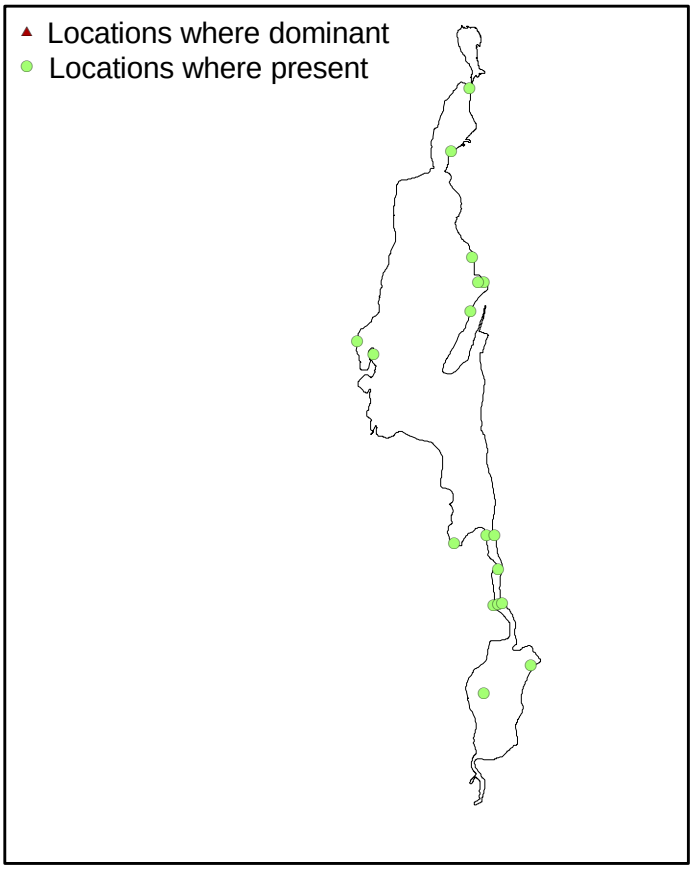
Distribution of *Potamogeton epihydrus*



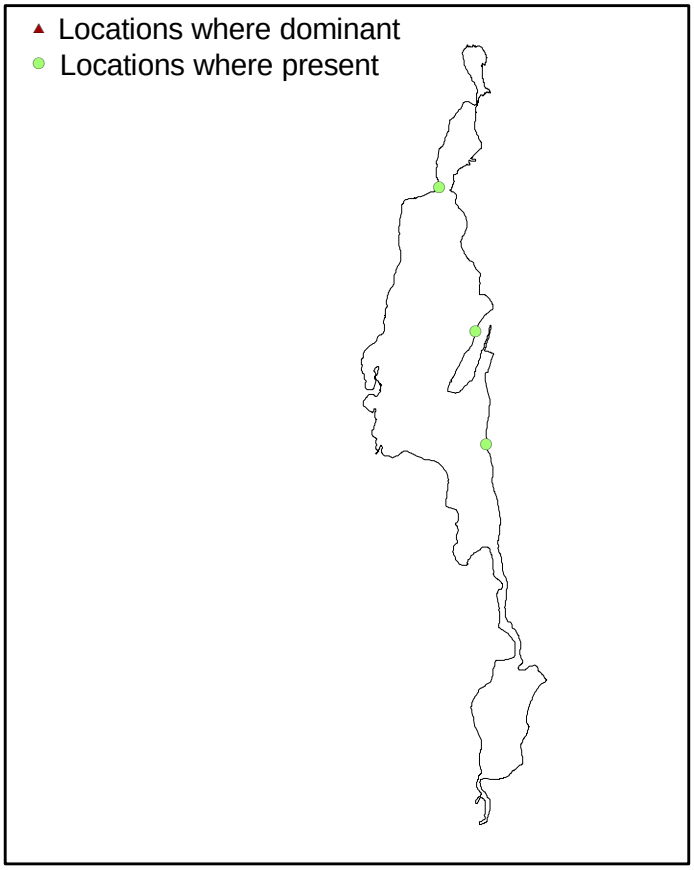
Distribution of Filamentous algae



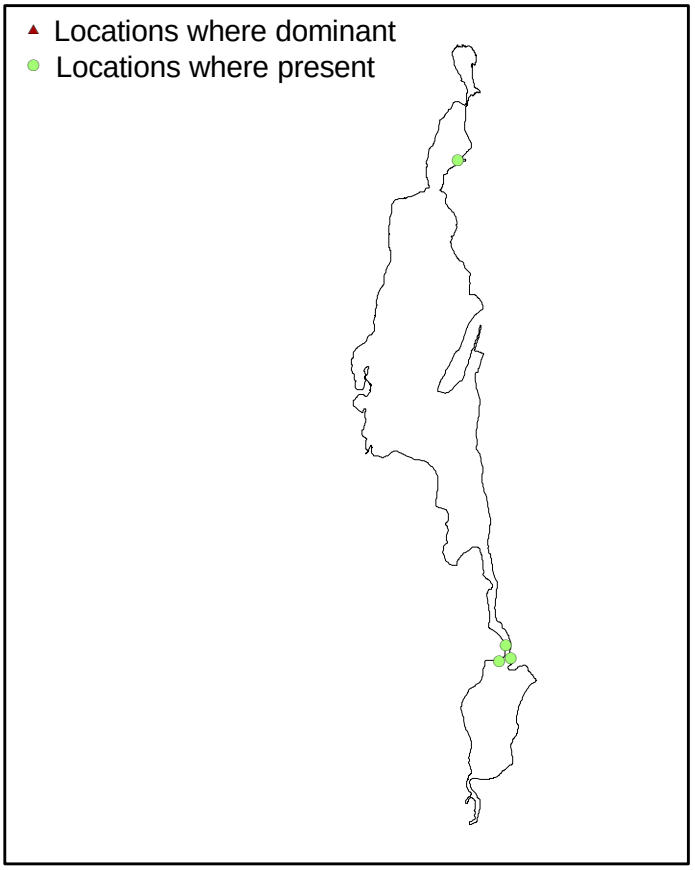
Distribution of *Vallisneria americana*



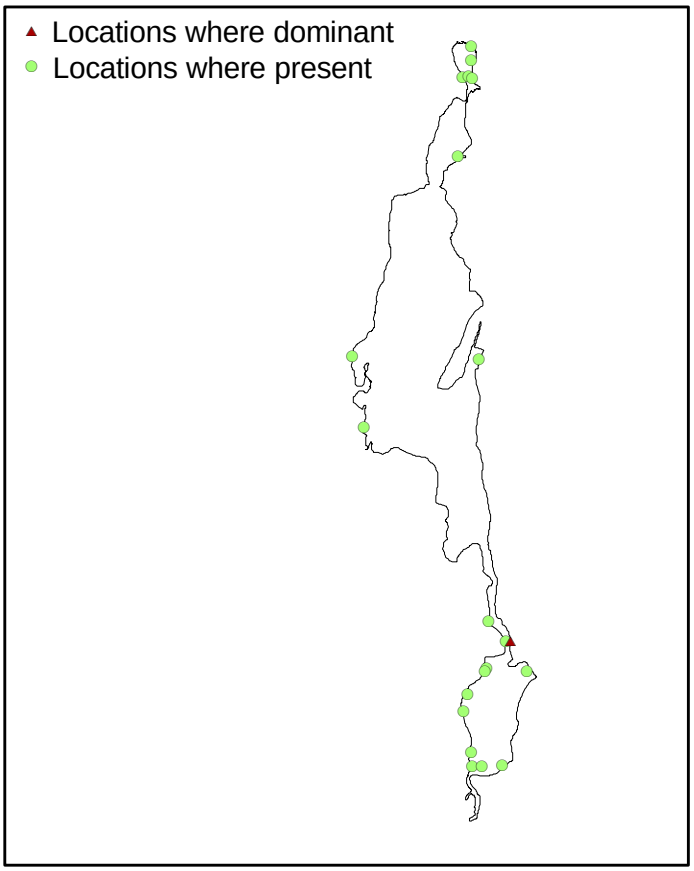
Distribution of *Isoetes spp.*



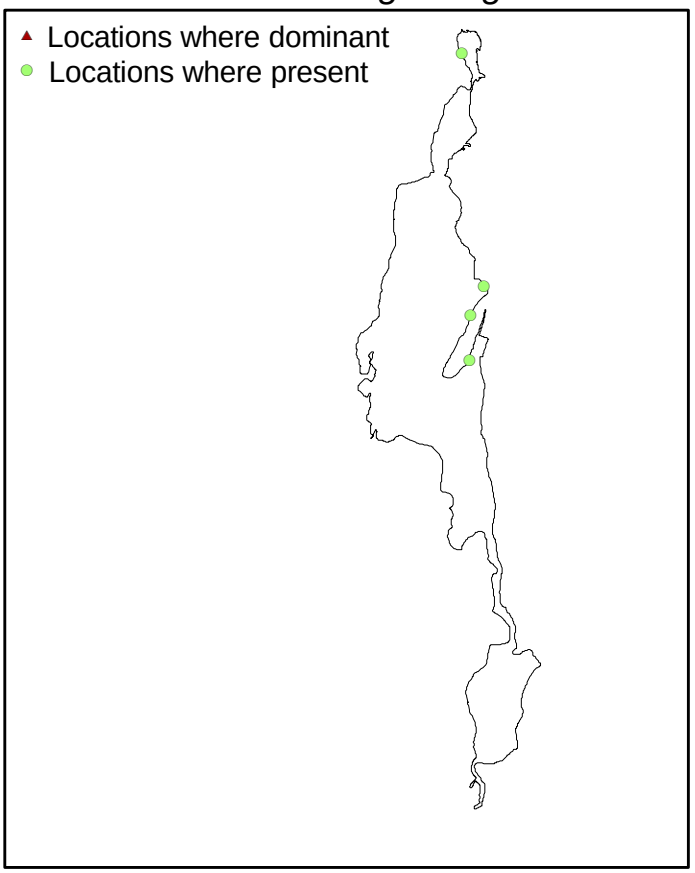
Distribution of *Nuphar variegatum*



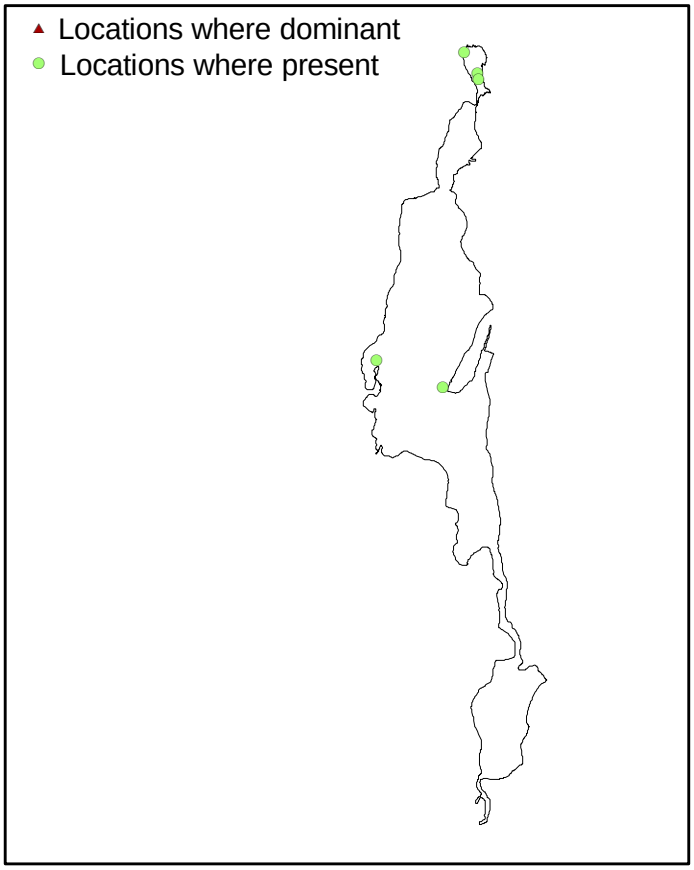
Distribution of *Nymphaea odorata*



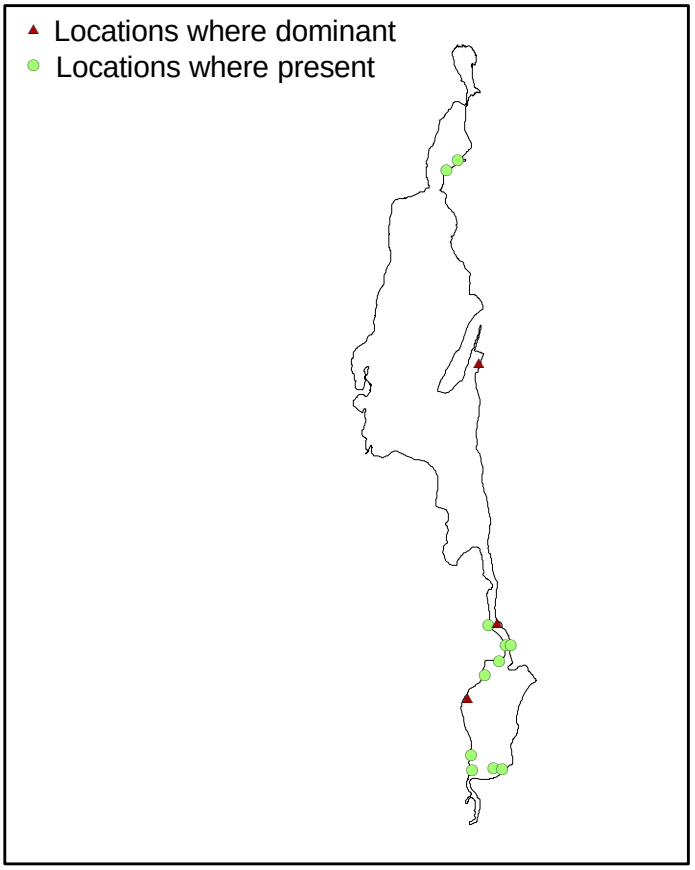
Distribution of *Potamogeton gramineus*



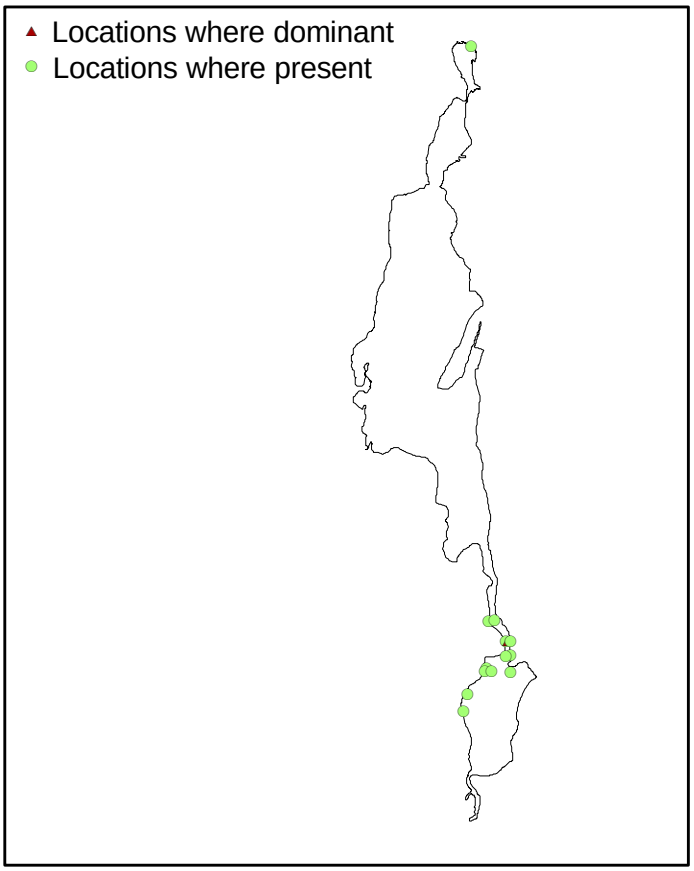
Distribution of *Potamogeton crispus*



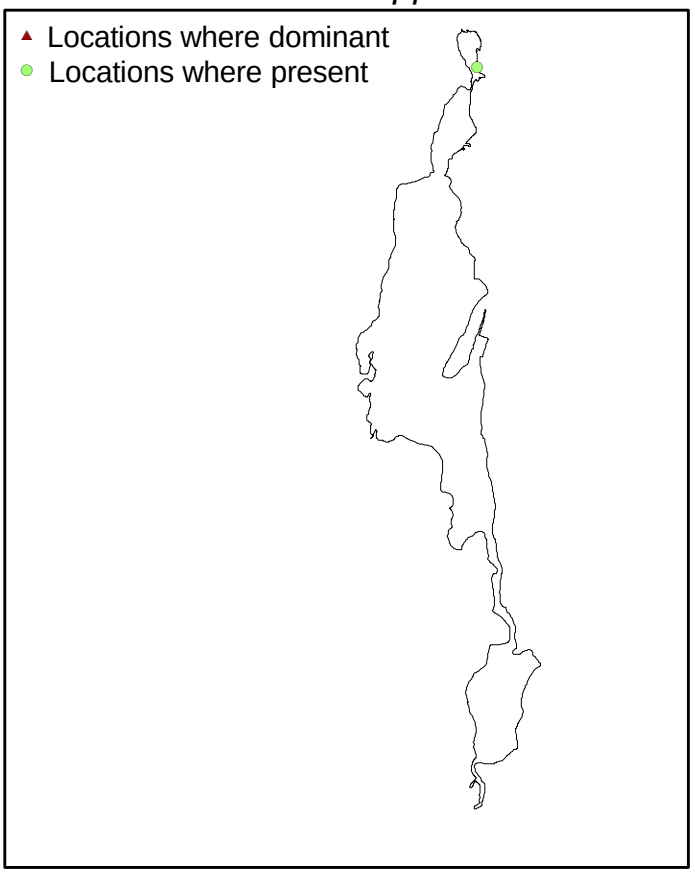
Distribution of *Brasenia schreberi*



Distribution of *Utricularia vulgaris*



Distribution of *Wolffia spp.*



Distribution of *Utricularia gibba*