

November 24, 2010

John Bennett, Pesticide Control Specialist
 Bureau of Pesticide Management
 NYDEC Region 5 Warrensburg Sub-Office
 232 Golf Course Road
 Warrensburg, NY 12885-0220

Re: Annual Report – Saratoga Lake Renovate OTF Herbicide Treatment – DEC # 5-4199-00002

Dear Mr. Bennett:

Please accept the following as the Annual Report for the 2010 Renovate OTF herbicide treatment program in Saratoga Lake.

Project Applicant / Lead Agency:	Saratoga Lake Protection and Improvement District (SLPID)
Applicant Contact:	Joe Finn, SLPID Commissioner [518- 581-0409 or jfynn14@nycap.rr.com]
Applicator:	Aquatic Control Technology, Inc. / Reg . # 07865 Gerald Smith / Applicator ID# C062471 [508-865-1000 or gsmith@aquaticcontroltech.com] Marc Bellaud / Applicator ID# C0806081 [508-865-1000 or mbellaud@aquaticcontroltech.com]
Lake Manager:	Dean Long, Director of Environmental Planning, The LA Group, P.C. [518-587-8100 or dlong@thelagroup.com]

A summary of the 2010 chemical treatment program performed at the Saratoga Lake is provided below.

2010 TREATMENT SUMMARY

All of the established, dense beds of Eurasian watermilfoil (EWM) in Saratoga Lake were targeted by large-block herbicide treatments over the three-year period between 2007 and 2009. The south end of the lake was treated with Sonar (fluridone) pellets in 2007. Renovate OTF (triclopyr) granular herbicide was then applied to the east/northeast shoreline in 2008 and along the entire western shoreline in 2009. While all three of these large-block treatments proved to be effective, the Renovate OTF treatments worked faster, showed greater selectivity for EWM and appeared to be better suited for spot-treatments in Saratoga Lake.

The herbicide treatment proposed at Saratoga Lake in 2010 was intended to target areas that showed higher density EWM regrowth during the 2009 late season aquatic plant survey conducted by the Darrin Fresh Water Institute (DFWI). Preliminary areas and protocol for spot-treatment were proposed in the 2010 permit application. The actual treatment areas were finalized following a pre-treatment inspection by Aquatic Control Technology, SLPID and the LA Group in late May 2010. In total approximately 54 acres were targeted for spot-treatment using 12,000 pounds of Renovate OTF.

A chronology of the management program activities performed in 2010 is provided below:

- Permit issuance (Freshwater Wetlands Permit ID 5-4199-00002/00008;
Aquatic Pesticides Permit ID 5-4199-00002/00010) 4/23
- Pre-treatment inspection..... 5/28
- Renovate OTF (triclopyr) herbicide treatment of 55 acres..... 6/15
- FasTEST analysis of triclopyr residues 7/15 & 8/29
- Post-treatment inspections by Aquatic Control Technology 7/15, 10/14

The treatment was performed as scheduled on June 15th. Approximately 54 acres were treated with Renovate OTF (EPA Reg. No. 67690-42) herbicide. A total of 12,000 pounds of Renovate OTF were applied to four locations shown on Figure 2001_1 (Attachment A). A breakdown of the treatment by section is provided below.

Section #	Acres Targeted	Application Rate	Pounds of OTF applied
1	32 ac	220 lbs/ac	7040 lbs
2	8 ac	240 lbs/ac	1920 lbs
3	2.5 ac	240 lbs/ac	560 lbs
8	11.5 ac	220 lbs/ac	2480 lbs
TOTALS	54 ac	220-240 lbs/ac	12,000 lbs

The application rates were consistent with the 2008 and 2009 treatment programs at Saratoga Lake. Approximately 220 pounds per acre were applied to Sections 1 and 8 because they were large enough or protected enough to overcome the effects of dilution. Sections 2 and 7 were treated at a slightly higher rate of 240 pounds per acre.

The treatment was performed using granular eductor systems that apply the granular herbicide in a stream of lake water that is pumped through fan-pattern spray nozzles. The systems were mounted in two large conventional spray boats powered by outboard motors. Differential/WAAS GPS units were used on-board each spray boat to insure an even application of the herbicide. The State boat launch located on the northeast side of the Route 9P bridge was used as the base of operations during the project. The actual herbicide application started at approximately 10:30 a.m. and was completed by 5:00 p.m. on June 15th.

Weather conditions were favorable on the day of treatment. It was mostly sunny with an estimated air temperature of 75° F. Wind was light out of the north, estimated at less than 5 mph, which resulted in uncharacteristically calm conditions on the lake. Water clarity appeared to be very good on the day of treatment, estimated at greater than 3 meters. The water temperature and dissolved oxygen concentrations were fairly uniform in upper 2 meters of water within the treatment areas ranging from 22.6-22.2° C and 10.2-9.7 mg/l, respectively.

The herbicide treatment was performed by Marc Bellaud (Certification No. C0806081) and Dominic Meringolo (Certification No. C0806083) of Aquatic Control Technology. The treatment was performed in accordance with the product label instructions and permit conditions.

Water samples were collected from all four treatment areas on July 15th for analysis of triclopyr residues. The remaining in-lake concentrations ranged from 5-8 ppb. Based on the 2009 herbicide dissipation seen at Saratoga Lake and results in other area waterbodies, it was expected that low concentrations would linger within the lake for several more weeks. A second round of samples collected on August 29th, revealed remaining in-lake concentrations of 2-3 ppb. Copies of the laboratory reports are provided in Attachment B.

RESULTS

The initial post-treatment survey by Aquatic Control Technology was performed on July 15th, one-month following treatment. EWM appeared to be impacted to varying degrees within all four treatment areas:

- Section 1 (32 ac) > 90% control
- Section 2 (8 ac) ~ 80% control
- Section 7 (2.5 ac) ~ 25% control
- Section 8 (11.5 ac) > 90% control

Better EWM control was achieved in the larger, more protected treatment areas. The only area where ineffective control was seen was Section 7, which is a sunken island located outside of Manning's Cove on the western shoreline that is surrounded by deep water. EWM regrowth was seen in this location following the 2009 treatment, but it was hoped that re-treating this Section in 2010 would provide improved control. However, it appears that dilution prevented adequate herbicide uptake.

Native plants appeared to be healthy and growing robustly in all of the treatment areas except for Section 7 which is nearly a monoculture of EWM. Species observed included broad-leaved and narrow-leaved pondweeds, elodea, coontail, wild celery, water starwort and muskgrass.

The comprehensive late season aquatic plant survey was conducted by DFWI. An interim report is provided in Attachment C. EWM was found in varying densities around the lake. The frequency of occurrence of milfoil at the established data point locations increased from 6.8% in 2009 to 22.1% in 2010. A copy of the final report will be forwarded under separate cover once it is available.

A final late season inspection was performed by Aquatic Control Technology, SLPID and SePRO on October 14th. DFWI provided coordinates of where they recorded EWM growth during their survey. These locations were navigated to using a GPS unit and the surrounding locations were checked using a depth finder and throw rake. Areas around the clusters of "moderate" and "dense" points shown by DFWI (Figure 3 Attachment C) appeared to support fairly robust EWM growth. Other areas where significant EWM growth was observed was immediately north and south of Snake Hill along the southeast shoreline. The EWM plants were within 2 feet of the surface in many of these locations. Plants were heavily coated in filamentous algae, but appeared to be healthy. If left unmanaged, EWM growth will likely reach nuisance densities in many of these locations during 2011 summer season.

SUMMARY

The three-year herbicide treatment program performed between 2007 and 2009 provided nuisance-level control Eurasian watermilfoil throughout Saratoga Lake. As reported by DFWI, the lake-wide frequency of occurrence of Eurasian watermilfoil was reduced from 54% in 2004 to 7% in 2009. Renovate (triclopyr) herbicide proved to be more effective for partial-lake treatments than Sonar (fluridone) herbicide.

The Renovate OTF herbicide spot-treatment proposed for the 2010 season was intended to target areas of higher density Eurasian watermilfoil regrowth reported by DFWI in 2009. Four separate areas totaling 54 acres were treated. Good control (80% or greater) of Eurasian watermilfoil was achieved in all treated areas, except for the sunken island located outside of Mannings Cove along the western shoreline. However, by the end of the 2010 season, Eurasian watermilfoil was beginning to recover in other portions of the lake. The most robust growth was found at the southeast and northeast ends of the lake, areas that were treated in 2007 and 2008, respectively. The lake-wide frequency of occurrence of Eurasian watermilfoil increased from 7% in 2009 to 22% in 2010.

Continued management of Eurasian watermilfoil and other invasive species – namely curlyleaf pondweed (*Potamogeton crispus*) and water chestnut (*Trapa natans*) – will be needed in future years to maintain desired, open-water conditions in Saratoga Lake. SLPID is currently working with Aquatic Control Technology and The LA Group to formulate management plans for the 2011 season and beyond. An integrated approach utilizing mechanical harvesting and herbicide spot-treatments will likely be proposed in order to achieve these objectives.

We trust that this information satisfies the reporting requirement for the 2010 Renovate OTF herbicide treatment at Saratoga Lake. Please feel free to contact us should you have any questions or require additional information.

Sincerely,

AQUATIC CONTROL TECHNOLOGY, INC.

Marc Bellaud
Senior Biologist

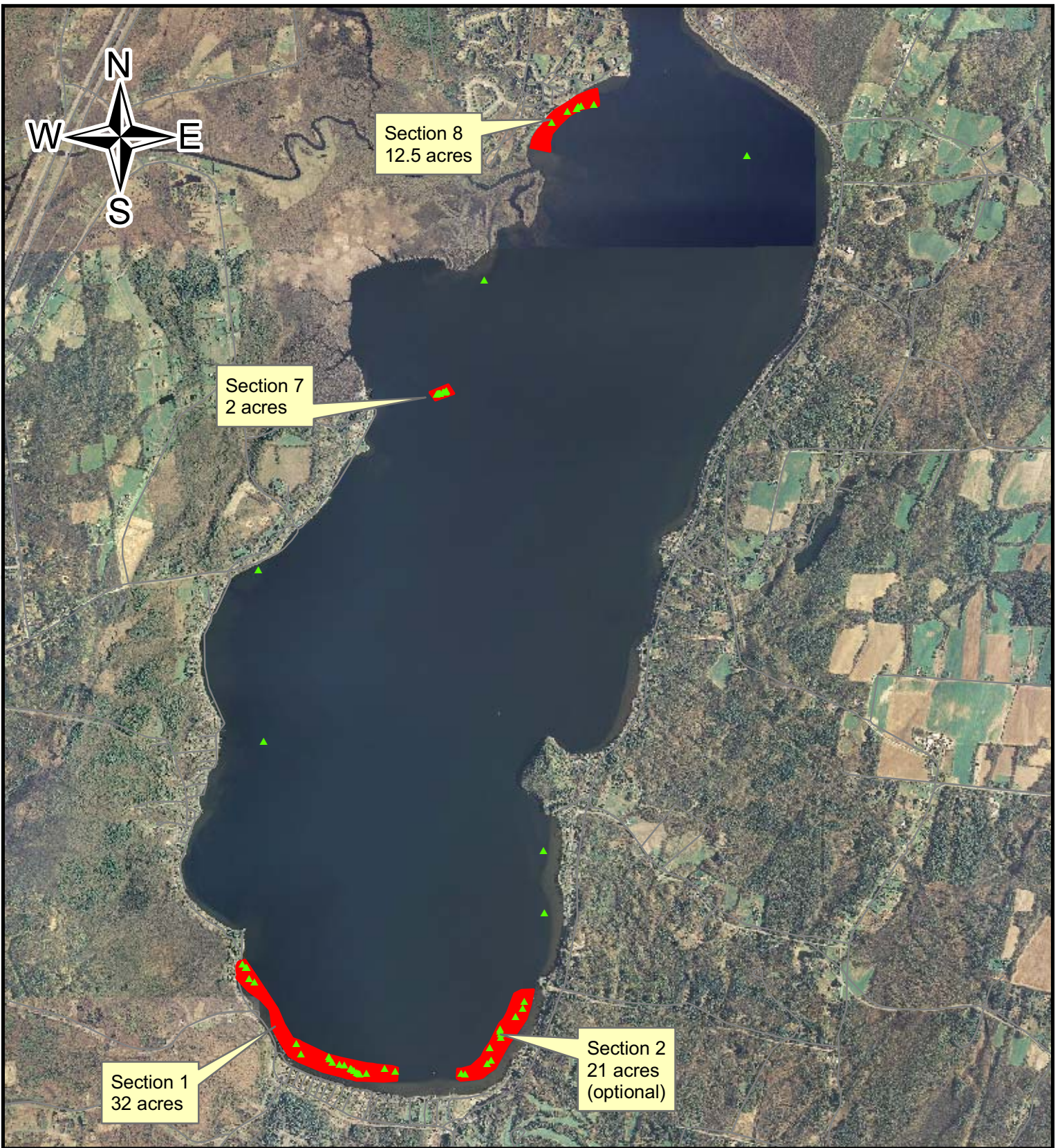
Enclosures

CC: Marc Migliore, Deputy Regional Permit Administrator, NYSDEC DEP Region 5
Joseph Finn, SLPID Commissioner
Dean Long, Director of Environmental Planning, The LA Group, P.C.

ATTACHMENT A

Maps



- Figure 2001_1 – 2010 Treatment Areas



SARATOGA LAKE

Final 2010
Renovate OTF Treatment Areas

Legend

-  GPS locations of Eurasian watermilfoil observed during 5/28/10 survey
-  Recommended Renovate OTF Herbicide Treatment Areas: Priority Section 8, 7 & 1; Optional/Secondary Section 2

3,000 1,500 0 3,000 Feet



 AQUATIC CONTROL TECHNOLOGY, INC.

11 JOHN ROAD
SUTTON, MASSACHUSETTS 01590
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FIGURE:	SURVEY DATE:	MAP DATE:
2010_1	5/28/10	6/1/10

ATTACHMENT B

FasTEST Information

- Laboratory report forms



Chain of Custody 04F282B8-0

Customer Company

Company Name: Aquatic Control Technology, Inc.
 Address: 11 John Road
 City: Sutton
 State: MA 01590-2509

Customer Contact

Contact Person: Gerald N
 E-mail Address: gnsmith@aquaticcontroltech.com
 Phone:
 Fax:

Payment Information

Payment Type: Invoice
 Card Number/Expiration Num:

Waterbody Information

Waterbody: Saratoga Lake
 Waterbody Size (acres): 4000.00
 Depth Average: 20.00
 Target Plants: Eurasian Watermilfoil,

Sample Information

Sample Site ID	Date Treated	Date Sample Collected	Sample Location	Products	Acres Treated	Rate	Active	Result
1	06/15/2010	07/15/2010	section 8	Renovate OTF	55	2	Triclopyr	0.005 ppm
2	06/15/2010	07/15/2010	section 7	Renovate OTF	55	2	Triclopyr	0.008 ppm
3	06/15/2010	07/15/2010	section 1	Renovate OTF	55	2	Triclopyr	0.006 ppm
4	06/15/2010	07/15/2010	section 2	Renovate OTF	55	2	Triclopyr	0.008 ppm

Laboratory Information

Date Received: 7/21/2010
 Date Results Sent: 7/21/2010
 Date Analysis Performed: 7/21/2010
 Storage Conditions: Analyzed Immediately



Chain of Custody 4422DD9B-9

Customer Company

Company Name: Aquatic Control Technology, Inc.
 Address: 11 John Road
 City: Sutton
 State: MA 01590-2509

Customer Contact

Contact Person: Gerald N
 E-mail Address: gnsmith@aquaticcontroltech.com
 Phone:
 Fax:

Payment Information

Payment Type: Invoice
 Card Number/Expiration Num:

Waterbody Information

Waterbody: Saratoga Lake
 Waterbody Size (acres): 4000.00
 Depth Average: 20.00
 Target Plants: Eurasian Watermilfoil,

Sample Information

Sample Site ID	Date Treated	Date Sample Collected	Sample Location	Products	Acres Treated	Rate	Active	Result
1	06/15/2010	08/29/2010		Renovate OTF	55	1.5	Triclopyr	0.002 ppm
2	06/15/2010	08/29/2010		Renovate OTF	55	1.5	Triclopyr	0.003 ppm

Laboratory Information

Date Received: 9/1/2010
 Date Results Sent: 9/1/2010
 Date Analysis Performed: 9/1/2010
 Storage Conditions: Analyzed Immediately

ATTACHMENT C

- Interim Report of Vegetation Survey of Saratoga Lake (prepared by Darrin Fresh Water Institute)

Interim Report on Vegetation of Saratoga Lake, New York
Lawrence W. Eichler and Charles W. Boylen
Darrin Fresh Water Institute
Bolton Landing, NY 12814
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eichll@rpi.edu boylec@rpi.edu

Background.

Quantitative aquatic plant surveys were undertaken for Saratoga Lake, New York as part of a cooperative effort between Aquatic Control Technologies (ACT) and the Darrin Fresh Water Institute, and supported by the Saratoga Lake Protection and Improvement District (SLPID). The aquatic plant survey was designed to be comparable to pre-treatment and post-treatment data collected by the author in 2004, 2007, 2008 and 2009 (Eichler & Boylen 2004; 2008a; 2008b) to evaluate a treatment program based on application of the herbicide fluridone (SONAR™) in 2007 and the herbicide triclopyr (Renovate) in 2008, 2009 and 2010 (Figure 1) to control Eurasian watermilfoil (*Myriophyllum spicatum*). The Point-Intercept Rake Toss method presently required by NYS DEC for Tier III Lakes was employed.

The project was designed to obtain data to evaluate current aquatic plant management efforts and review potential new strategies. The assessment will generate the information necessary to: 1) review effectiveness of aquatic plant management efforts, 2) meet all permit requirements and 3) provide data for comparison of post-treatment conditions to prior survey information.

Methods

1. Species List and Herbarium Specimens. As the lake was surveyed, the occurrence of each aquatic plant species observed was recorded and adequate herbarium specimens collected. Herbarium specimens were pressed, dried, and mounted (Hellquist 1993) at the Darrin Fresh Water Institute Laboratory in Bolton Landing, NY, where they became part of the permanent collection.

2. Point Intercept. The frequency and richness of aquatic plant species were evaluated using a point intercept (rake toss) method (Madsen 1999). At each grid point intersection, all species located at that point were recorded, as well as water depth. Species were located by a visual inspection of the point and by deploying a rake to the bottom, and examining the plants retrieved. A differential global positioning system (DGPS) was used to navigate to each point for the survey observation. Point intercept plant frequencies were surveyed in August of 2008, at the time of maximum aquatic plant abundance. Based on an 80 m grid and excluding the majority of points outside the littoral zone, we surveyed a total of 244 points on Saratoga Lake (Figure 2). The point intercept method allows a large number of discrete observations in a short period of

time facilitating statistical analysis and comparisons. Point intercept methods also allow for production of distribution maps for all species listed.

Figure 1. Aquatic plant management plan for Saratoga Lake prepared by Aquatic Control Technologies, Inc.

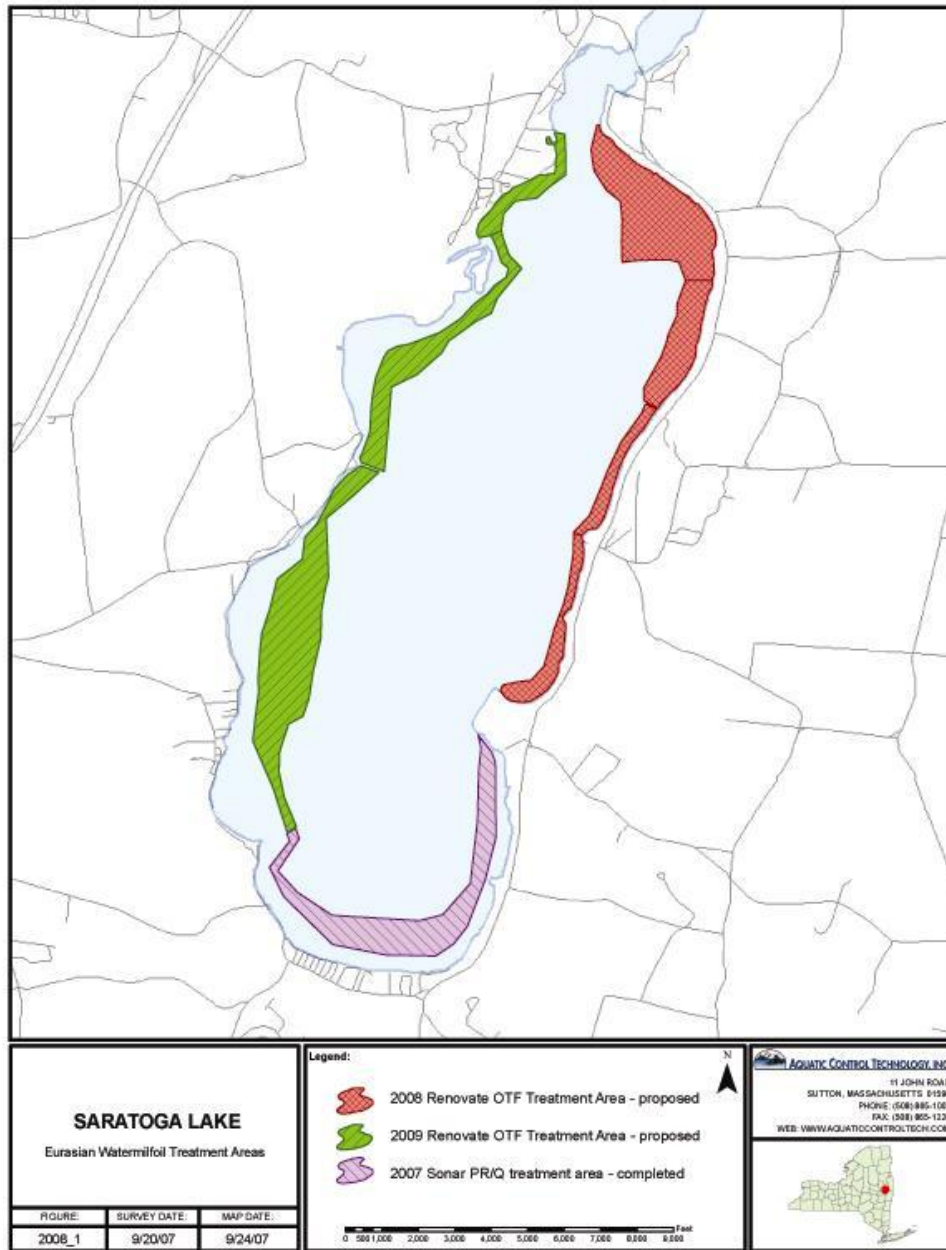
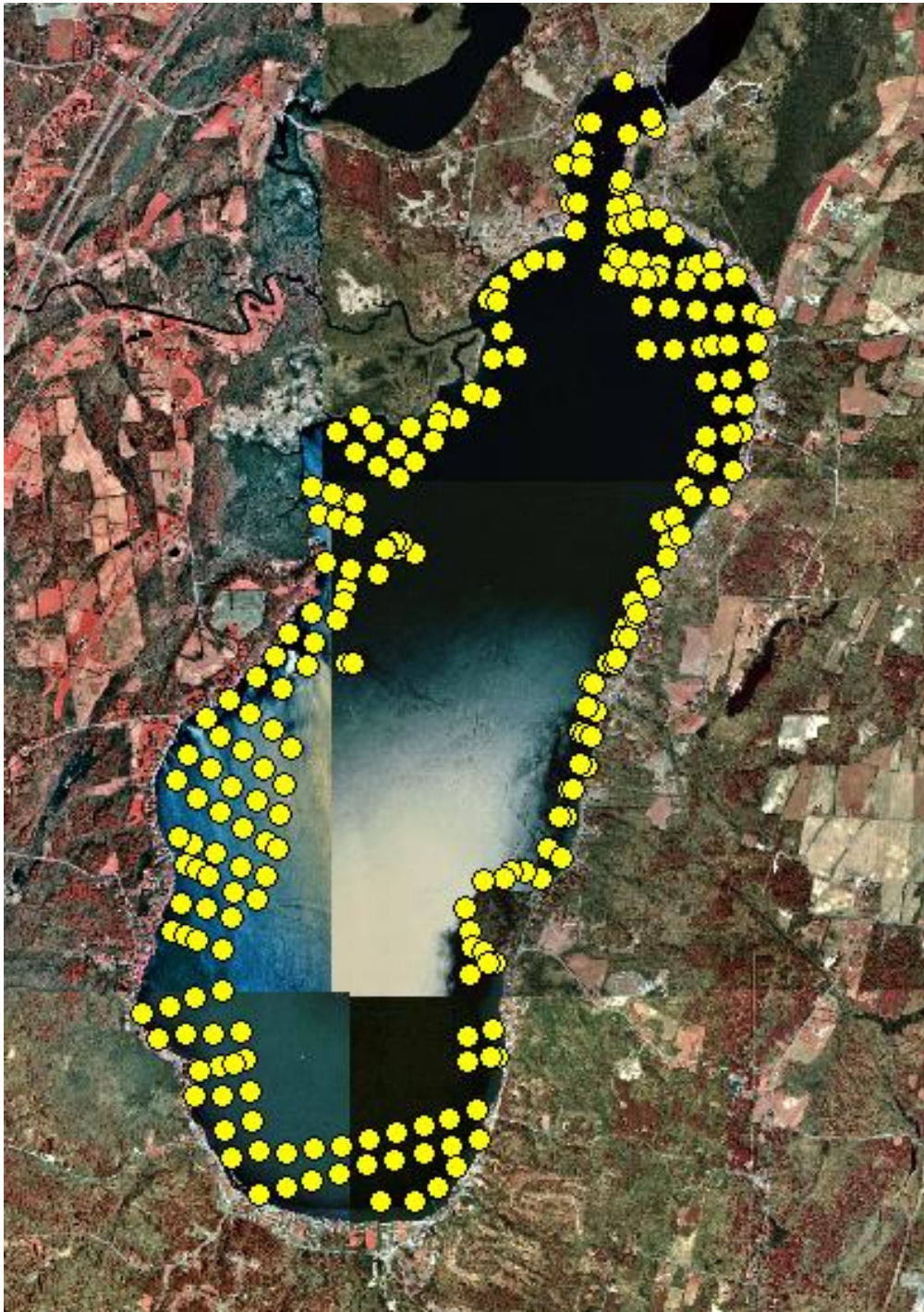


Figure 2. Sampling points for 2010 Saratoga Lake aquatic plant survey.



Results

1. Species List. A preliminary list of species observed for Saratoga Lake is provided in Table 1.

A total of 22 species were collected in the point intercept portion of the survey and 28 species were observed in Saratoga Lake in 2010. These results are comparable to previous surveys in 2009 (29 species, Eichler and Boylen 2009), 2007 - 2008 (25 species, Eichler and Boylen 2008), 2004 (21 species, Eichler and Boylen 2004), 1994 (22 species, Eichler and Boylen 1995), 1982 (21 species, Hardt et al. 1983) and 1969 (20 species, Dean 1969).

2. Species Frequency. Species richness in Saratoga Lake was quite high, with a large number of species occurring in more than 5% of survey points (Table 2). Eurasian watermilfoil was the seventh most widely distributed plant (22% of survey points, Figure 3), an increase from ninth in 2009 (Figure 3). Common native species included *Ceratophyllum demersum* (62%), *Najas guadalupensis* (48%), *Elodea canadensis* (46%), *Vallisneria americana* (43%), *Zosterella dubia* (30%), *Potamogeton zosteriformis* (23%), *Potamogeton perfoliatus* (16%) and *Najas flexilis* (8%). Average number of species per sample point was greater in 2010 (3.47 ± 0.12) than in 2009 (2.74 ± 0.12) or 2008 (2.47 ± 0.12). Exclusion of all survey points outside the littoral zone in 2010 may account for this change.

Figure 3. Distribution of Eurasian watermilfoil (*Myriophyllum spicatum*) in surveyed areas of Saratoga Lake in 2010.

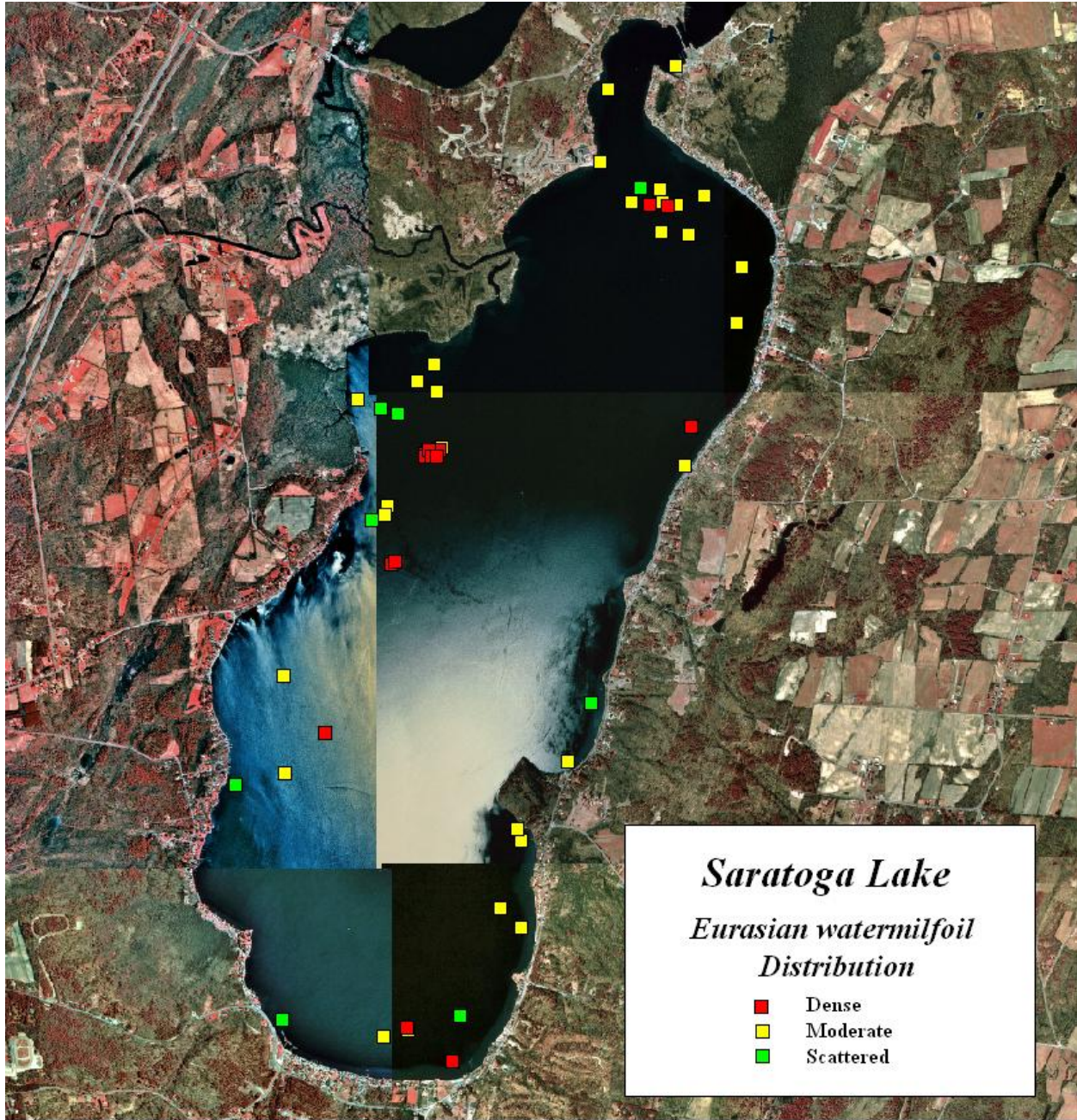


Table 1. Aquatic plant species present in Saratoga Lake in recent surveys.

<i>Species</i>	Common Name	2007	2008	2009	2010
<i>Ceratophyllum demersum</i> L.	coontail	s	s	s	s
<i>Chara/Nitella</i> sp.	muskgrass, chara	s	s	s	s
<i>Elodea canadensis</i> Michx.	elodea	s	s	s	s
<i>Lemna minor</i> L.	duckweed	f	f	f	f
<i>Lemna trisulca</i>	duckweed	f	f	f	f
<i>Megalodonta beckii</i> Torr.	water marigold	s	s	s	s
<i>Myriophyllum spicatum</i> L.	Eurasian watermilfoil	s	s	s	s
<i>Najas flexilis</i> (Willd.) Rostk. & Schmidt.	bushy pondweed	s	s	s	s
<i>Najas guadalupensis</i> (Spreng.) Magnus	Southern naiad	s	s	s	s
<i>Nuphar luteum</i> (Ait.) Ait. f.	yellow pondlily	fl	fl	fl	fl
<i>Nymphaea odorata</i>	white pondlily	fl	fl	fl	fl
<i>Pontederia cordata</i>	pickerelweed	e	e	e	e
<i>Potamogeton amplifolius</i> Tuckerm.	largeleaf pondweed	s	s	s	s
<i>Potamogeton crispus</i> L.	curlyleaf pondweed	s	s	s	s
<i>Potamogeton gramineus</i> L.	variable-leaf pondweed	s	s	s	s
<i>Potamogeton illinoensis</i> L.	Illinois pondweed	s	s	s	s
<i>Potamogeton perfoliatus</i> L.	Clasping-leaved Pondweed	s	s	s	s
<i>Potamogeton praelongus</i> Wulfen	white-stem pondweed	s	s	s	s
<i>Potamogeton pusillus</i> L.	small pondweed	s	s	s	s
<i>Potamogeton robbinsii</i> Oakes	Robbins' pondweed		s	s	s
<i>Potamogeton zosteriformis</i> Fern.	flat-stem pondweed	s	s	s	s
<i>Ranunculus longirostris</i> Godron	white watercrowfoot				s
<i>Stuckenia pectinata</i> L.	sago pondweed	s	s	s	s
<i>Trapa natans</i> L.	waterchestnut	fl			fl
<i>Typha</i>	cattail	e	e	e	e
<i>Utricularia vulgaris</i> L.	great bladderwort			s	s
<i>Vallisneria americana</i> L.	wild celery	s	s	s	s
<i>Zosterella dubia</i> Jacq.	water stargrass	s	s	s	s

S=submersed fl=floating leaved f=floating e=emergent

Table 2. Percent frequency of occurrence of aquatic plant species in Saratoga Lake. Invasive species are in bold.

Species	2008	2009	2010
<i>Ceratophyllum demersum</i>	59.0%	61.4%	62.3%
<i>Chara/Nitella</i>	6.8%	10.5%	11.9%
<i>Elodea canadensis</i>	25.3%	40.7%	46.3%
<i>Lemna trisulca</i>	2.2%	2.5%	2.5%
<i>Megalodonta beckii</i>	0.9%	0.9%	2.0%
<i>Myriophyllum spicatum</i>	13.0%	6.8%	22.1%
<i>Najas flexilis</i>	8.6%	13.6%	7.8%
<i>Najas guadalupensis</i>	30.9%	38.3%	48.0%
<i>Nuphar variegata</i>	0.6%	0.3%	0.4%
<i>Nymphaea odorata</i>	0.6%	0.3%	0.8%
<i>Potamogeton amplifolius</i>	1.2%	1.2%	2.5%
<i>Potamogeton crispus</i>	5.6%	3.1%	9.4%
<i>Potamogeton gramineus</i>	0.3%	1.9%	0.0%
<i>Potamogeton illinoensis</i>	4.0%	4.6%	6.6%
<i>Potamogeton perfoliatus</i>	5.9%	8.0%	15.6%
<i>Potamogeton praelongus</i>	2.8%	3.1%	4.1%
<i>Potamogeton pusillus</i>	8.6%	6.5%	5.7%
<i>Potamogeton robbinsii</i>	0.3%	0.9%	0.4%
<i>Potamogeton zosteriformes</i>	14.5%	17.3%	22.5%
<i>Ranunculus longirostris</i>	0.0%	0.3%	1.6%
<i>Stuckenia pectinata</i>	2.5%	0.3%	0.4%
<i>Utricularia vulgaris</i>	0.0%	0.3%	0.0%
<i>Vallisneria americana</i>	30.6%	31.2%	43.4%
<i>Zosterella dubia</i>	23.1%	20.4%	30.3%

3. References

- Eichler, L.W. and C.W. Boylen. 2004. Saratoga Lake aquatic plant survey – 2004. Prepared for Saratoga Lake Protection and Improvement District, Saratoga Springs, NY. DFWI Technical Report 2004-6. Darrin Fresh Water Institute, Bolton Landing, NY.
- Eichler, L.W. and C.W. Boylen. 2008a. Saratoga Lake aquatic plant survey – 2007. Prepared for Saratoga Lake Protection and Improvement District, Saratoga Springs, NY. DFWI Technical Report 2008-4. Darrin Fresh Water Institute, Bolton Landing, NY.
- Eichler, L.W. and C.W. Boylen. 2008b. Saratoga Lake aquatic plant survey – 2008. Prepared

for Saratoga Lake Protection and Improvement District, Saratoga Springs, NY. DFWI Technical Report 2008-8. Darrin Fresh Water Institute, Bolton Landing, NY.

Hellquist, C.B. 1993. Taxonomic considerations in aquatic vegetation assessments. *Lake and Reserv. Manage.* 7:175-183.

Madsen, J.D. 1993. Biomass techniques for monitoring and assessing control of aquatic vegetation. *Lake and Reserv. Manage.* 7:141-154.

Madsen, J.D. 1999. Point intercept and line intercept methods for aquatic plant management. US Army Engineer Waterways Experiment Station Aquatic Plant Control Research Program Technical Note CC-02, Vicksburg, MS.