AQUATIC CONTROL TECHNOLOGY, INC.
POND AND LAKE MANAGEMENT SPECIALISTS

October 13, 2011

Mr. Paul Boudreau, Chief Procurement Officer
Town of Lanesborough
83 No. Main St.
Lanesborough, MA 01237

Re: 2011 Year End Report - Aquatic Management Program at Pontoosuc Lake – Lanesborough & Pittsfield, MA

In 2011 a treatment program using Reward (diquat) herbicide was conducted at Pontoosuc Lake to control growth of non-native, invasive Eurasian watermilfoil (*Myriophyllum spicatum*) and curlyleaf pondweed (*Potamogeton crispus*). The Year End Report for the 2011 Aquatic Management Program follows. This report will serve to document the herbicide application process, the post-treatment monitoring of aquatic vegetation in the waterbody and the observed response of the targeted weeds. Attached to this report are several figures and supporting documentation that further help to explain the project and the observed results.

All work performed at Pontoosuc Lake in 2011 was conducted in accordance with the Order of Conditions (OOC) issued by the Lanesborough & Pittsfield Conservation Commissions (DEP #: 194-0161) and the License to Apply Chemicals issued by the MA DEP – Office of Watershed Management (Permit #: 11200).

A chronology of this past year's management and brief description of events follows.

2011 Program Chronology:

- DEP License to Apply Chemicals Issued 5/19/11
- Early Season Vegetation Survey 5/17/11
- Diquat Treatment for Milfoil 6/8/11
- Post-Treatment Inspection 7/13/11
- Late Season Vegetation Survey 9/6/11

Pre-treatment Survey:

A Pre-Treatment Survey was conducted on May 17th to document pre-treatment vegetation composition and confirm the extent of the proposed treatment area. The survey was performed with representatives from Friends of Pontoosuc Lake and ACT, Inc. During the survey the entire littoral area of the lake was toured and the extent of the milfoil infestation was marked with GPS. The presence of other aquatic plant species was also documented and general observations regarding distribution of species type, species density and species location were collected. An AquaVu underwater camera and plant collection with a throw-rake were used to assist in the identification of vegetation and the determination of the milfoil boundary.

- The large littoral area around the lake supported moderate to dense cover (40%-60%) of aquatic plants, primarily Eurasian watermilfoil and curlyleaf pondweed.
- Consistent with previous surveys, plant density was generally greatest at intermediate water depths (4-8 feet)

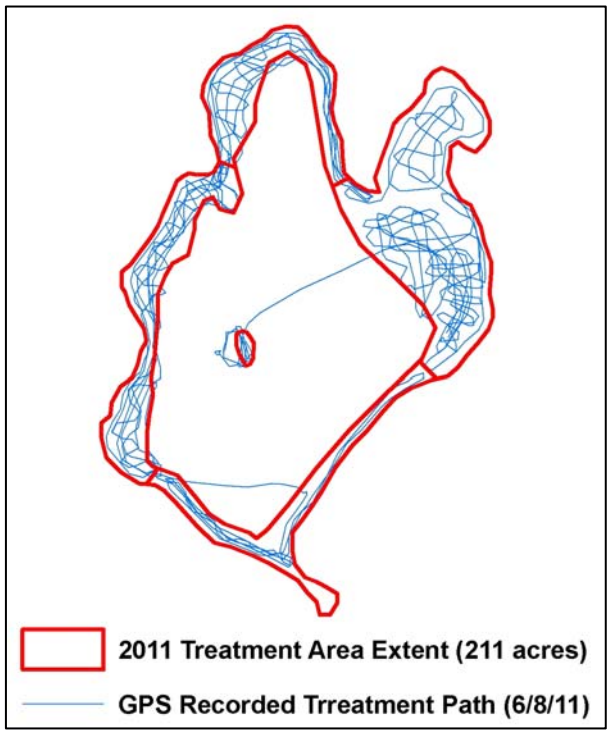
- Milfoil was actively growing at the time of the survey but had not reached peak biomass and was generally and was generally 5-6 feet tall in 8-10 ft water depths.
- Distribution of milfoil was similar to previous years with growth extending along the southern, western and northern shorelines. Growth along the eastern shore was very limited and consisted of scattered low-density milfoil.
- Density of milfoil was markedly reduced from previous years and most of the growth appeared to be older, well developed plants with large root crowns; growth of less mature milfoil was significantly reduced or absent reducing densities significantly.
- The greatest density of milfoil growth was found along the northern shoreline extending eastward from the inlet under Narragansett Street to approximately National Street. A dense (~60% cover) bed of milfoil was also found in 6'-10' feet of water due west from Reilly's Matt Restaurant.
- Growth of curly-leaf pondweed was less advanced then growth of milfoil and was generally 3'-4' feet tall.
- Curlyleaf pondweed cover was also significantly reduced from previous years, typically accounting for less than 5% of the vegetative cover. Curlyleaf pondweed growth was more prominent in the dense beds of milfoil along the northern shoreline where cover was estimated between 15-25% cover.
- Cover of native plants was generally low and was mixed with cover of milfoil and curlyleaf pondweed.
- Native plant species recorded during the survey include: coontail (*Ceratophyllum demersum*), common waterweed (*Elodea canadensis*) sago pondweed (*Stuckenia pectinatus*) and southern naiad (*Najas guadalupensis*).
- Only scattered cover of sago pondweed was recorded in the shallow cove in the northeastern extent of the lake.
- No spiny naiad was observed during the pre-treatment survey.
- Water clarity was good low at the time of the survey with a Secchi disk reading of 7'9".
- Dissolved oxygen concentrations were good averaging 9.9 mg/L at 13.8°C or roughly 100% saturation to a depth of 7 meters.

Eurasian Watermilfoil Management

Based on the stage of milfoil growth observed during the pre-treatment survey, the diquat application at Pontoosuc Lake was scheduled for June 2nd, however treatment was postponed until June 8th due to high winds.

Treatment scope did not change from 2009/10 and ultimately, 211 acres around the perimeter of the lake were targeted for treatment. Notification of treatment including all temporary water use restrictions to be imposed following treatment was printed in The Berkshire Eagle. Printed signs displaying the water use restrictions were also posted around the lake. The public boat ramp was closed during the day of treatment.

An 18 foot airboat equipped with a low pressure pump and calibrated spraying system was used for the treatment. The treatment area was split into five sections; each section was treated individually with the calculated dosage of Reward herbicide (see Figure 1 – attached). Application rates ranged from 1.0-1.5 gal/acre; rates were primarily determined by vegetation density and dilution potential in each area. The liquid Reward herbicide was mixed with lake water in an on-board tank and injected subsurface through weighted hoses to prevent aerial drift of the herbicide. GPS was used during the application to monitor



boat speed and ensure a uniform distribution of the herbicide in each treatment area. The GPS track recorded during the treatment is pictured left.

Air temperature during the treatment was approximately 80°F. Water temperature at the surface was ~77 °F. Conditions were sunny with a light breeze from the west/southwest.

The treatment was completed by Aquatic Control's state certified applicators, Gerry Smith and Brandon Peoples, and was conducted in accordance with the product label directions and the permits issued by MA DEP and the Lanesborough & Pittsfield Conservation Commissions. At no time during the course of this management program did we either observe or receive any reports of negative affect of treatment on fish, other aquatic life or wildlife.

Post-treatment Inspection:

A cursory post-treatment inspection of Pontoosuc Lake was performed by Michael Lennon (ACT, Inc.) on July 13th to assess the results of the diquat application. During the survey the western shore and northern cove were checked for cover of milfoil.

- At the time of the inspection milfoil growth in the lake was relatively sparse and what remained was mostly dead and decaying on the lake bottom.
- Plant cover where large milfoil beds had existed was scant and was dominated by coontail and southern naiad.
- Low to moderate cover of coontail was present towards the deeper portions of the beds (8-10ft.)
- Stonewort/muskgrass (*Nitella sp./Chara sp.*), tapegrass (*Vallisneria americana*), thin-leaf pondweed (*Potamogeton pusillus*), spiny naiad (*Najas minor*) and waterweed were also recorded.
- Water clarity was fairly low at the time of the inspection with a Secchi disk reading of 4'10". Clarity appeared to be impacted by high algae densities which gave the water a greenish-brown appearance.
- Dissolved oxygen concentrations were good averaging 8.8 mg/L at 25.7°C or roughly 105% saturation in the epilimnion (above 4 meters). Temperature and dissolved oxygen dropped quickly below the thermocline bringing the overall averages for the water column to approximately 1.7 mg/L at 22.2°C or roughly 30% saturation.

Late Season Survey:

A Late Season Vegetation Survey was performed on September 6th. The survey was performed by Michael Lennon (ACT, Inc.) and representatives from Friends of Pontoosuc Lake.

The littoral area of the lake was toured and vegetation was identified. An AquaVu underwater camera and plant collection with a throw-rake were used to assist in the identification of vegetation. A map of the late season vegetation composition is attached (Figure 2 – Late Season Vegetation Assemblage).

To satisfy additional monitoring requirements pre-established data points were also visited and vegetation was classified based on parameters defined by the Friends of Pontoosuc Lake. The data from that monitoring will be provided under a separate cover.

- Plant distribution was consistent with what was recorded during the spring and was generally confined to depths of less than 10 feet.
- Plant cover was fairly low density throughout the littoral zone with overall cover ranging for just 5%-15% cover. Vegetation was dominated by a combination of southern naiad, tapegrass and coontail. Muskgrass and spiny naiad (*Najas minor*) were also common, however cover of spiny naiad was significantly reduced from what was observed in 2010.
- Limited low density(<5% cover) re-growth of milfoil was observed throughout the littoral area, but it was generally very low growing and was only 6"-1' foot in height.
- The greatest concentration of milfoil re-growth was found along the northern shore yet cover remained below 10%.
- Water clarity at the time of the survey was good with a Secchi disk reading of roughly 6'6".
- Dissolved oxygen concentrations were good averaging 6.4 mg/L at 20.7°C or roughly 75% saturation in the epilimnion (above 5 meters). Temperature and dissolved oxygen dropped quickly below the thermocline bringing the overall averages for the water column to approximately 4.6 mg/L at 19.0°C or roughly 45% saturation.

Recommendations for Ongoing Management

The Reward (diquat) treatment performed in 2011 provided excellent season-long control of milfoil throughout Pontoosuc Lake. Late season re-growth of milfoil was reduced significantly by comparison to 2009 and 2010 and, where found, was generally scattered and low-growing. While we cannot be sure what exactly lead to the increased success of this year's treatment, we believe that it was likely the result of a few of factors including: ideal conditions on the day of treatment (sunny, low wind); good treatment timing with regards to plant maturity; and reduced overall milfoil abundance resulting from previous years of management.

Although we cannot guarantee that results of subsequent treatments will yield the same lasting results we observed in 2011 we are hopeful that the cumulative effect of annual treatments will continue to reduce milfoil abundance leading to higher treatment efficacy. We will continue to evaluate treatment timing and dosage to achieve the best possible milfoil control at Pontoosuc Lake. We strongly encourage Lanesborough, Pittsfield and the Friends of Pontoosuc Lake to continue with the scheduled milfoil management efforts in 2012.

Specifically for the 2012 season, we recommend the following invasive aquatic plant management efforts:

1. Early Season Vegetation Survey to access milfoil growth and finalize treatment scope - early May.
2. Spot-treatment of dense milfoil growth with Reward (diquat) (up to 211 acres) for the control of Eurasian watermilfoil. Treatment timing should be performed between late May and early June before annual native plants have germinated. (Specific treatment requirements will be determined following our pre-treatment survey in May 2012.)

3. Continued monitoring of vegetation in the lake with both a post-treatment inspection and a late season vegetation survey.

We look forward to continuing our involvement with your lake management efforts over the next year. If you have any questions, please do not hesitate to contact us.

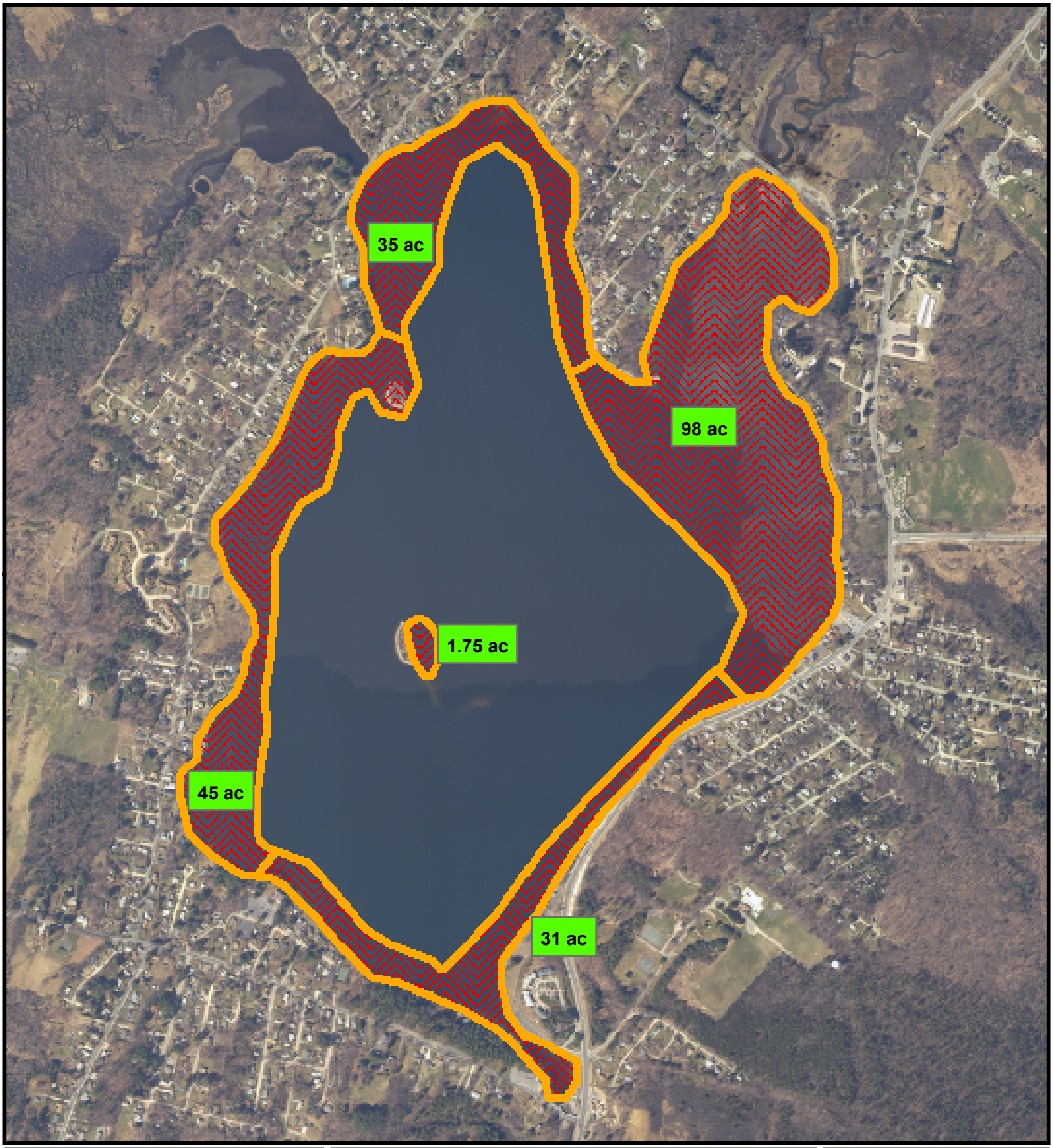
This report has been sent electronically to representatives with the Friends of Pontoosuc Lake. Please be sure to forward a copy of this report to the Conservation Commission in each town.

Sincerely,

Aquatic Control Technology, Inc.

Gerald N. Smith
President/Aquatic Biologist

Michael Lennon
Biologist



Pontoosuc Lake
Lanesborough, MA

2011 Treatment Map

FIGURE:	TREATMENT DATE:	MAP DATE:
1	6/8/11	9/29/11

Legend:

2011 Treatment Area Extent (~211 acres)

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0 250 500 1,000 1,500 2,000 2,500 Feet

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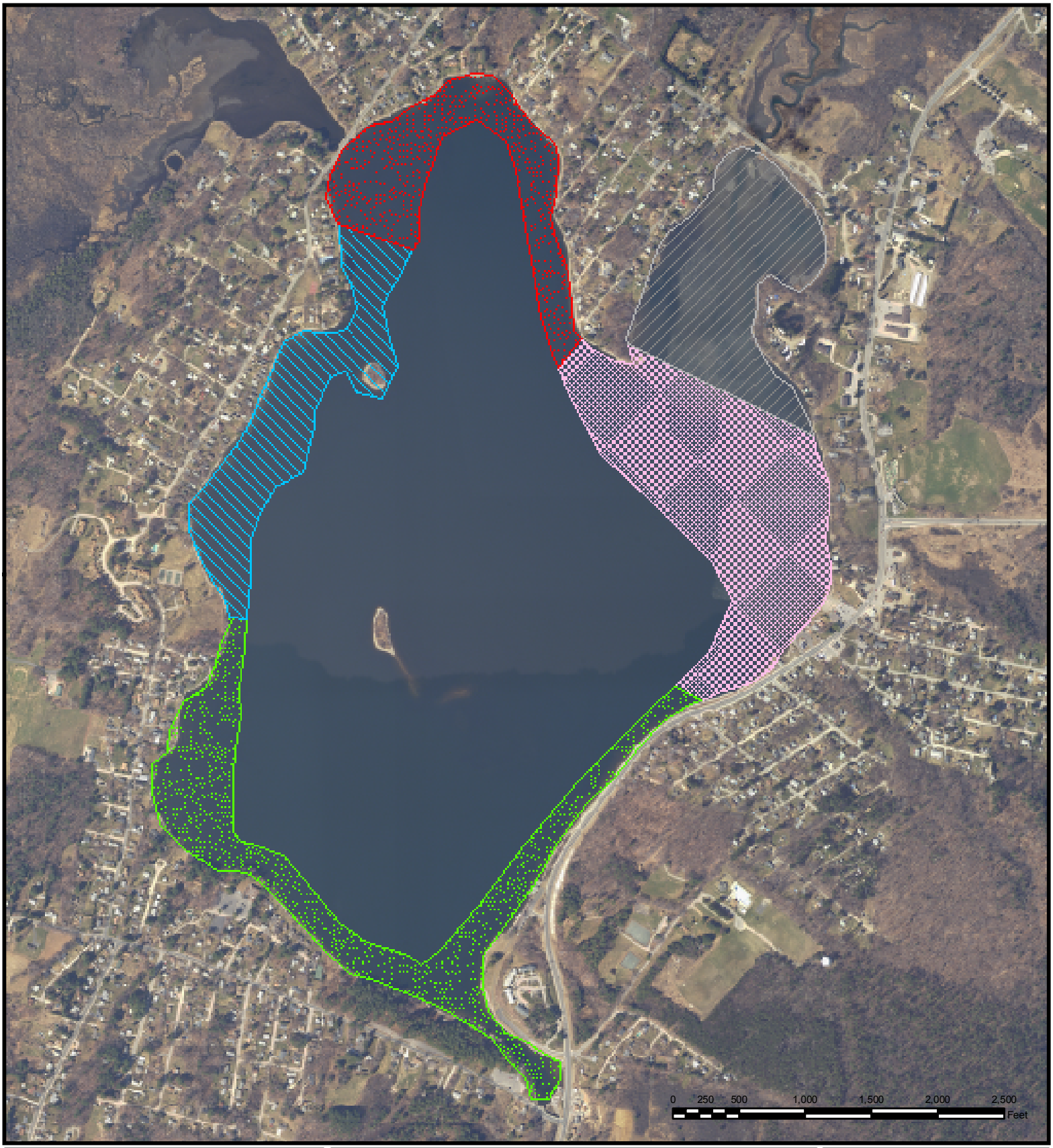

Pontoosuc Lake

Lanesborough, MA

Late Season Aquatic Plant Distribution

FIGURE:	SURVEY DATE:	MAP DATE:
2	9/6/11	9/29/11

- Low density cover dominated by Eurasian watermilfoil with coontail, tapegrass and thinleaf pondweed Cover 10-20%)
- Low desnsity cover of southern naiad and tapegrass with scattered Eurasin watermilfoil (Cover<5%)
- Low density cover of spiny naiad,muskgrass and filamentous algae (Cover <5%)
- Low-moderate density cover of spiny naiad, tapegrass, milfoil, muskgrass and filamentous algae (Cover 5-30%)
- Low density cover of tapegrss, Eurasian watermilfoil and coontial with lesser amounts of muskgrass, thinleaf pondweed and filamentous algae (Cover 10%)

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