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Date: June 17, 2013

To: Joanna Bilotta; President, Lake Shirley Improvement Corporation

From: Gerry Smith, Aquatic Biologist & Dominic Meringolo, Environmental Engineer

Re: **Aquatic Plant Survey/Inspection of June 15th & Management Recommendations – Lake Shirley - 2013**

This memo summarizes the findings of Aquatic Plant Surveys/ Inspections of Lake Shirley performed on May 27th and again on June 15th. I was joined on both surveys by officers or directors from the lake association. On June 15th, the skies were bright and sunny, which allowed for good visibility into the water. The water clarity in the northern basin, however, had diminished markedly from the excellent clarity seen there just a couple of weeks prior, undoubtedly due to the heavy rains that occurred during the previous week. As we traveled through the lake's middle and southern basins, water clarity improved substantially. Overall, conditions allowed for good visibility into the water to identify and locate milfoil and other aquatic plants.

The survey was performed from a Pontoon Boat, while traveling around the entire shoreline and littoral (shallow water) zone of Lake Shirley. Given the overall shallow depth of the lake, additional transects were made across the coves and open-water portions of the lake in order to characterize the distribution of both invasive and native plants. A combination of survey techniques were utilized, including; visual observation and use of a "throw-rake". Milfoil, curlyleaf pondweed, spiny naiad, tapegrass or wild celery and other aquatic plants were noted and recorded.

We observed very little Eurasian watermilfoil with its growth confined primarily to just a 1-2 acre area along the lake's eastern shoreline in the southern lake basin. Invasive Curlyleaf pondweed that was targeted for treatment along with milfoil in 2012 and some prior years was found in limited distribution primarily in the northern lake basin.

The primary nuisance aquatic plants experienced during late summer of 2012 included invasive Spiny naiad along with native tapegrass or wild celery. These two plants are the primary species that will be targeted for treatment in 2013 along with the small amount of invasive Eurasian watermilfoil and Curlyleaf pondweed.

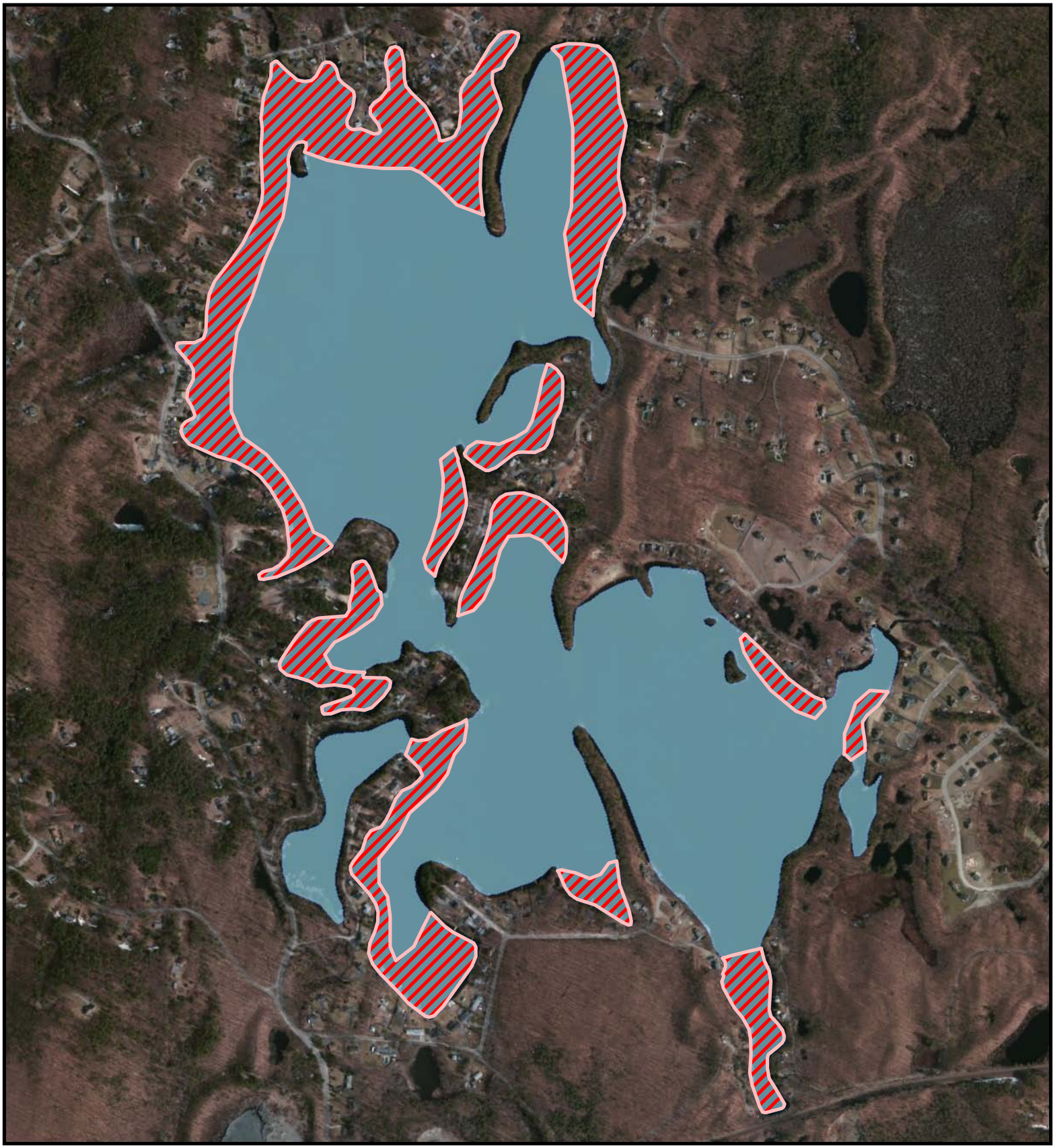
Some of native aquatic plants also observed during the survey, included, coontail, bushy pondweed, ribbon-leaf pondweed, bladderwort, sago pondweed, waterlilies and a macro-alga called muskgrass. The growth of these native species was just beginning and typically lags behind the early season and aggressive growth of milfoil weed.

A map of proposed Treatment Areas is attached. Based upon our survey findings, we recommend chemical treatment of approximately 100-acres. The attached map represents invasive and nuisance plant cover in most treatment areas, of generally between > 10% and 100% and was judged by myself and other participants during the survey to represent an impairment to the recreational uses of Lake

Shirley and management with “hand-pulling” or other non-chemical techniques are not practical or feasible.

We are targeting chemical treatment of Lake Shirley for June 27th. The lake will be closed to all water uses, including swimming, fishing and boating on the day of treatment only. There will be an additional restriction on water use for irrigation, watering livestock and drinking purposes for 5 days. We will be sending you a written “notice of treatment” for you to publish in the local paper(s) and will also mail you printed signs for you to post around the lake shoreline (over the weekend) prior We will be chemically treating with Reward (diquat) at rate of 1-1.5 gal/acre which is substantially less than the maximum label rate of 2.0 gals/acre. Maximum USEPA label rate for Reward is 2.0 gals/acre. The Reward (diquat) will be tank-mixed with a low does of copper based algaecide to enhance uptake and efficacy for control of the tapegrass/wild celery which can be difficult to control.

I hope this information is helpful to LSIC. Feel free to forward this memo to the Conservation Commissions and other appropriate parties. Thank you.



Lake Shirley

Lunenburg/Shirley, MA

2013

Treatment Area

FIGURE:	SURVEY DATE:	MAP DATE:
1	5/27 & 6/15/13	6/17/13

Proposed 2013 Treatment Areas

N

Total Treatment Area: ~100 acres

0 380 760 1,520 2,280 3,040 Feet

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