

December 30, 2019

Saratoga Lake Protection and Improvement District
c/o Cristina Connolly PO Box 2551
Ballston Spa, NY 12020

Re: 2019 Saratoga Lake Management Program Summary Report – Saratoga Lake, NY.

Dear Commissioners:

This report summarizes the management program performed by SOLitude Lake Management on Saratoga Lake during the 2019 season. The objective of the program was focused on managing targeted areas of growth in addition to documenting the early and late-season growth extent of non-native, invasive aquatic plant species Eurasian watermilfoil (*Myriophyllum spicatum*), curly-leaf pondweed (*Potamogeton crispus*), and water chestnut (*Trapa natans*).

MANAGEMENT HISTORY

Starting in the early 1980's, Saratoga Lake has been challenged with non-native aquatic plant growth. Eurasian watermilfoil (EWM) and curly-leaf pondweed (CLP) are the most widespread plants and have been the primary focus of recent management efforts. Water chestnut (*Trapa natans*) has also been present in varying densities for several years, but most of the growth has been found between the Kayaderosseras Creek inlet and along the shorelines of Fish Creek. Significant volunteer hand-pulling efforts coordinated by SLPID and the Saratoga Lake Association have kept water chestnut growth under control.

Lake-wide mechanical harvesting efforts to control EWM and nuisance aquatic plant growth began in the mid 1980's. More comprehensive planning and management efforts began in the late 1990's, which led to an integrated management plan that has incorporated mechanical harvesting, winter drawdown, and large-scale herbicide treatments. Between 1994 and 2004 it was estimated that the dense beds of EWM had increased from 400 acres to over 700 acres. In 2007, 2008, and 2009 a sequential whole-lake herbicide treatment program was completed to control the dense beds of EWM. Between 2010 and 2015, 2017-2018, annual spot-treatments were conducted to prevent EWM from returning to pre-treatment dominance. No herbicide treatments were performed in 2019, but SLPID's harvesting program has continued annually. The water chestnut growth extent noted in 2017/2018 was treated during the 2018 and 2019 seasons in order to reduce the population size to manageable harvesting levels. However, expanded water chestnut growth, south of the Kayaderosseras Creek, was observed by both SOLitude and SLPID this season following the treatment effort.

Management efforts have been monitored and guided by ongoing input to SLPID by The L.A. Group and by Dean Long. Annual aquatic plant surveys are conducted by RPI's Darin Fresh Water Institute (DFWI), performing surveys in 1994, 2004, and annually since 2007. SOLitude Lake Management has



been involved with lake management efforts since 2000 and has performed the majority of in-lake treatment work along with assisting with ongoing monitoring efforts.

VEGETATION & SURVEY SUMMARY

Four surveys were conducted by two SŌLitude Lake Management (SLM) biologists to document aquatic invasive species growth and identify general native, aquatic plant species assemblages.

Pre-management Survey

In early June, SŌLitude biologists surveyed the entire littoral zone of Saratoga Lake to assess the distribution and densities of both EWM and CLP growth, understanding that no herbicide treatments were anticipated for 2019 but in preparation for management in 2020, if necessary. EWM growth was scattered throughout the littoral zone, in minimal densities with no established stands of growth in any one area. CLP growth was also scattered through a majority of the littoral zone, but significant dense, growth was observed along the entire southern shoreline and along the southwestern shoreline, primarily at depths of 10-15 feet.

A SŌLitude biologist conducted pre-management surveys prior to the initial treatment date to confirm areas of water chestnut growth in preparation for 2019 management. Water chestnut treatment areas were based off of the September 2018 survey growth, and confirmed by the premanagement survey.

Herbicide Application Summary

The herbicide treatment to target water chestnut growth was conducted on July 15, 2019. A three-acre treatment area of water chestnut was performed utilizing Clearcast herbicide. The treatment was performed with an airboat equipped with a high-pressure treatment system and associated calibrated broadcast sprayer. During the application, an EZ Guide Navigation system was utilized to document the treatment tracks in order to ensure even application of the respective herbicide in the treatment zone.

On the day of treatment, public access was posted with signs by SOLitude Lake Management, warning of treatment and the various water-use restrictions. These signs remained posted until residue sampling results were received by SŌLitude Lake Management and the restrictions were lifted by NYSDEC.

No fish mortalities or significant non-target impacts to other aquatic biota were observed or reported post-management. Post-management Survey

The post-management surveys were performed by a two-biologist crew from SŌLitude. The littoral zone was systematically surveyed for the Eurasian watermilfoil, curly-leaf pondweed and water chestnut extent. Due to the life cycle of curly-leaf pondweed paired with the timing of the survey, limited growth was observed.

The densest areas of Eurasian watermilfoil growth were primarily documented along the southeastern shoreline and middle-portion shorelines of the lake. Small higher-density patches of Eurasian watermilfoil were also sporadically noted along the northeastern and southwestern shorelines.

Notably, a moderate patch of water marigold (*Bidens beckii*) was observed at the inlet from the Lake Ave and Stony Point Road intersection. Dominant natives throughout the littoral zone include: clasping-leaf pondweed (*Potamogeton perfoliatus*), water stargrass (*Zosterella dubia*), tapegrass (*Vallisneria* sp. likely *V. americana*), and Illinois pondweed (*Potamogeton illinoensis*).



DISCUSSION AND RECOMMENDATIONS

Based on the success of the herbicide treatments conducted in 2018 and the decrease in frequency of occurrence of EWM reported by DFWI, it is anticipated that a minimal treatment footprint will be required for management of EWM in 2020. The current EWM growth is most noticeable along the southeastern shoreline, of which most of this area has not been treated for the last few seasons. Native plant growth was present throughout this area and was dominated by or tapegrass, (*Vallisneria americana*) with some localized, dense areas of water stargrass (*Zosterella dubia*) and various pondweed species in deeper water.

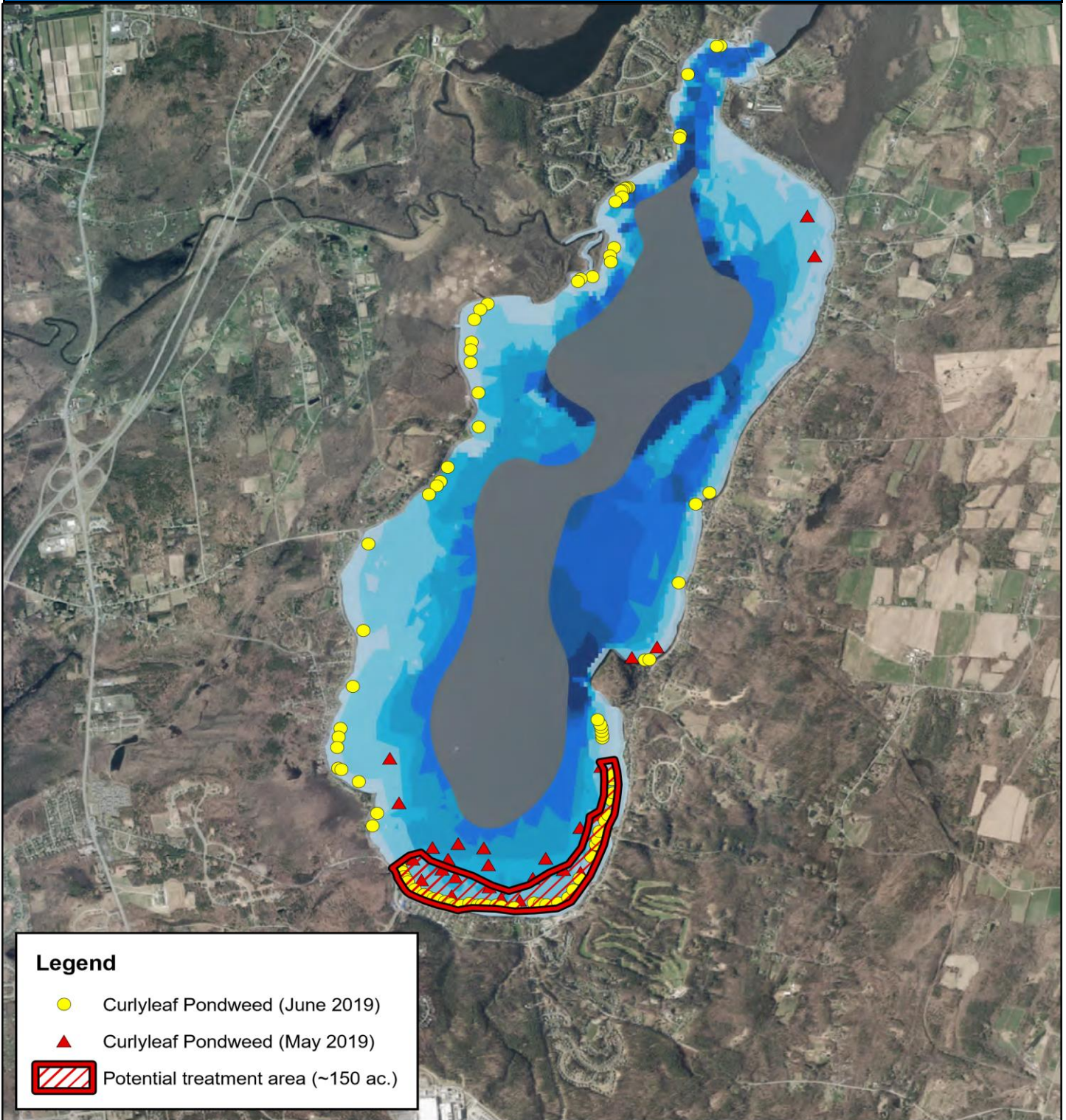
Due to the distribution of EWM and CLP and historically treated areas, we believe that spot-treatment approach of approximately 100-250 acres utilizing ProcettaCOR EC and Aquathol K will provide the most benefit during the 2020 season, as finalized by the pre-treatment survey in the spring. Treatment will likely be scheduled for the late-May to early-June period.

In addition to the herbicide treatment, we recommend the following monitoring efforts to assess the treatment effectiveness:

- Early-season visual inspection to evaluate EWM, CLP and WC distribution, and finalize the 2020 treatment scope.
- Post-treatment survey and water quality sampling required by permit conditions
- Hydro-raking/harvesting assistance to remove water chestnut plants from shallow areas near the mouth of Kayaderosseras Creek.
- Late season survey to validate findings of DFWI survey and to plan future management efforts.

Please feel free to contact us if you have any questions or require any additional information.

Potential 2020 Treatment Area



Legend

- Curlyleaf Pondweed (June 2019)
- ▲ Curlyleaf Pondweed (May 2019)
- ▨ Potential treatment area (~150 ac.)

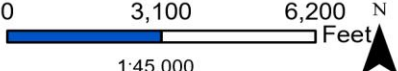
Saratoga Lake
Saratoga Springs, NY
Saratoga County
43.02115°, -73.74193°



Saratoga Lake

0 3,100 6,200 N
Feet

1:45,000



Map Date: 07/02/19
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