Cayuga Lake, Aurora, NY Hydrilla Control Demonstration Project

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November 14, 2017

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Agenda

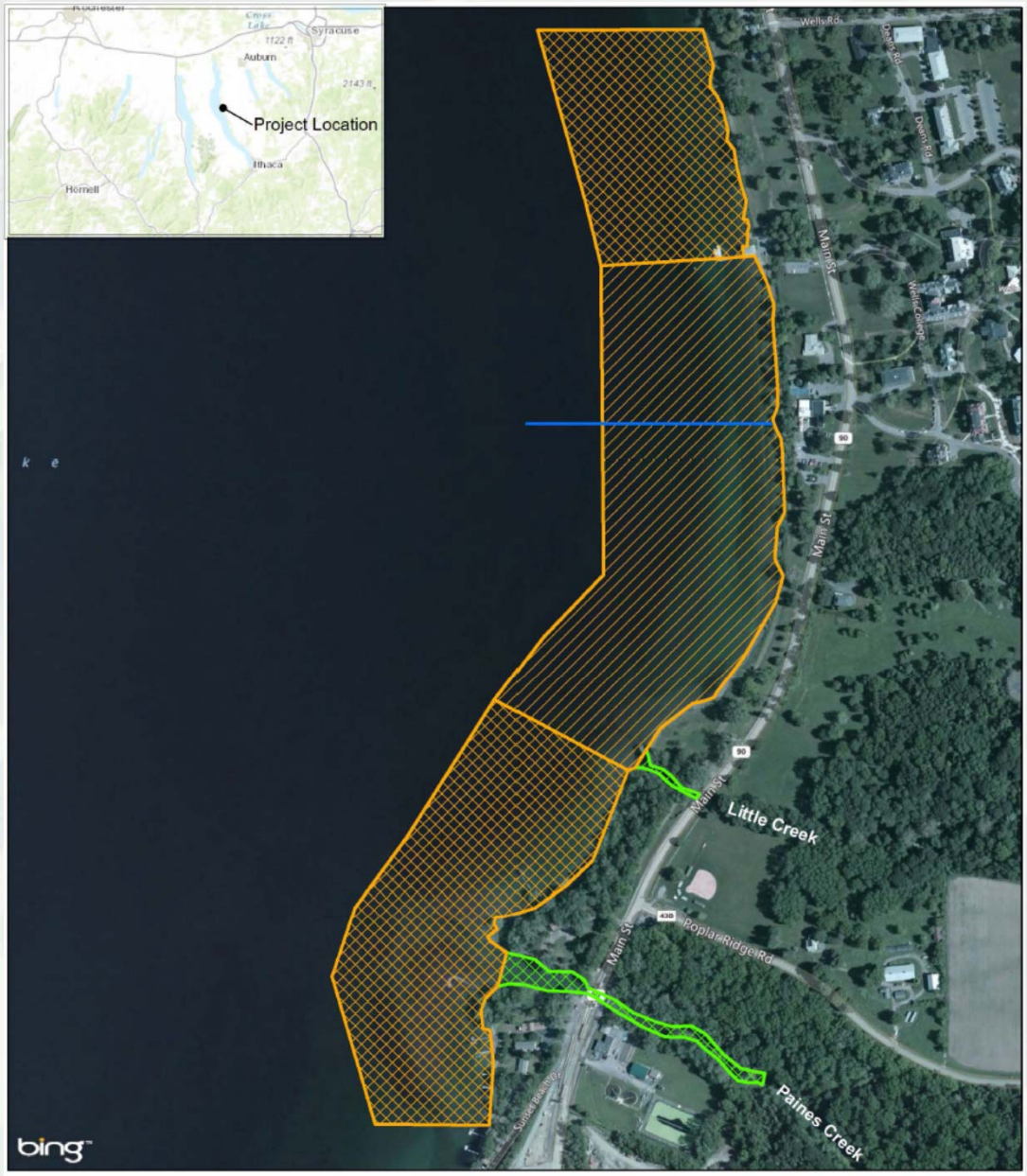
- Project goals
- Overview of project area and treatment plan
- Summary of plant monitoring
- Summary of tuber monitoring
- Summary of water monitoring
- Moving forward
- Questions and comments

What's Important

1. Public safety – responsible use of a well understood herbicides
2. Protect and restore the Great Lakes/Finger Lakes and the associated ecological and economic benefits
3. Significantly reduce the risk of hydrilla spreading from the Aurora site and potentially eradicate it in the project area

Project Area

- Main lake treatment block
- Adjacent areas for potential spot treatment
- Little and Paines Creeks



Potable Water Intake
Lake Treatment Area (26.88 acres)
Lake Spot Treatment Areas (30.95 acres)
Little Creek Treatment Area (0.14 acre)
Paines Creek Treatment Area (1.21 acre)

Hydrilla Treatment Areas
Summer 2017

0 0.05 0.1 0.2 Miles

N

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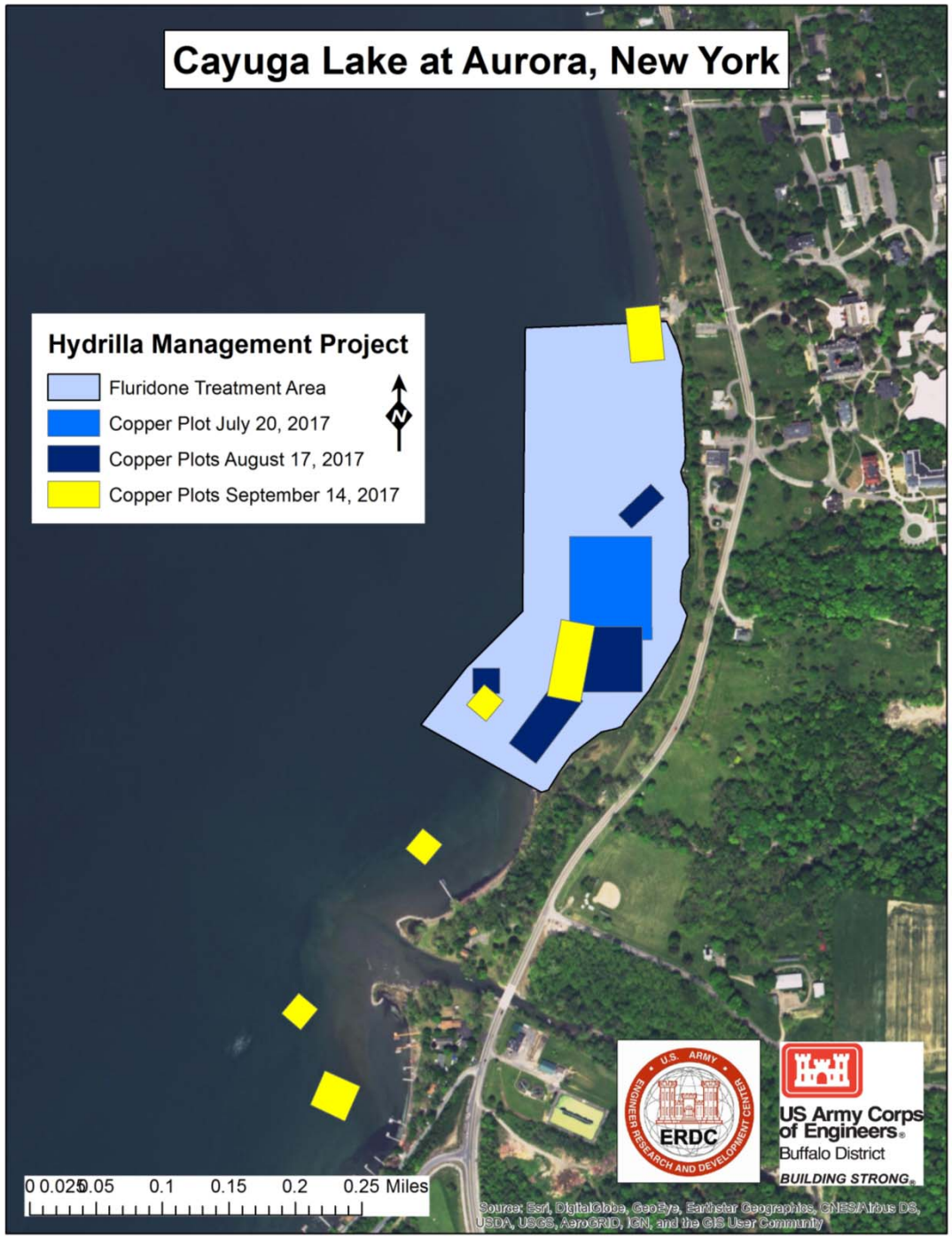
Proposed Plan

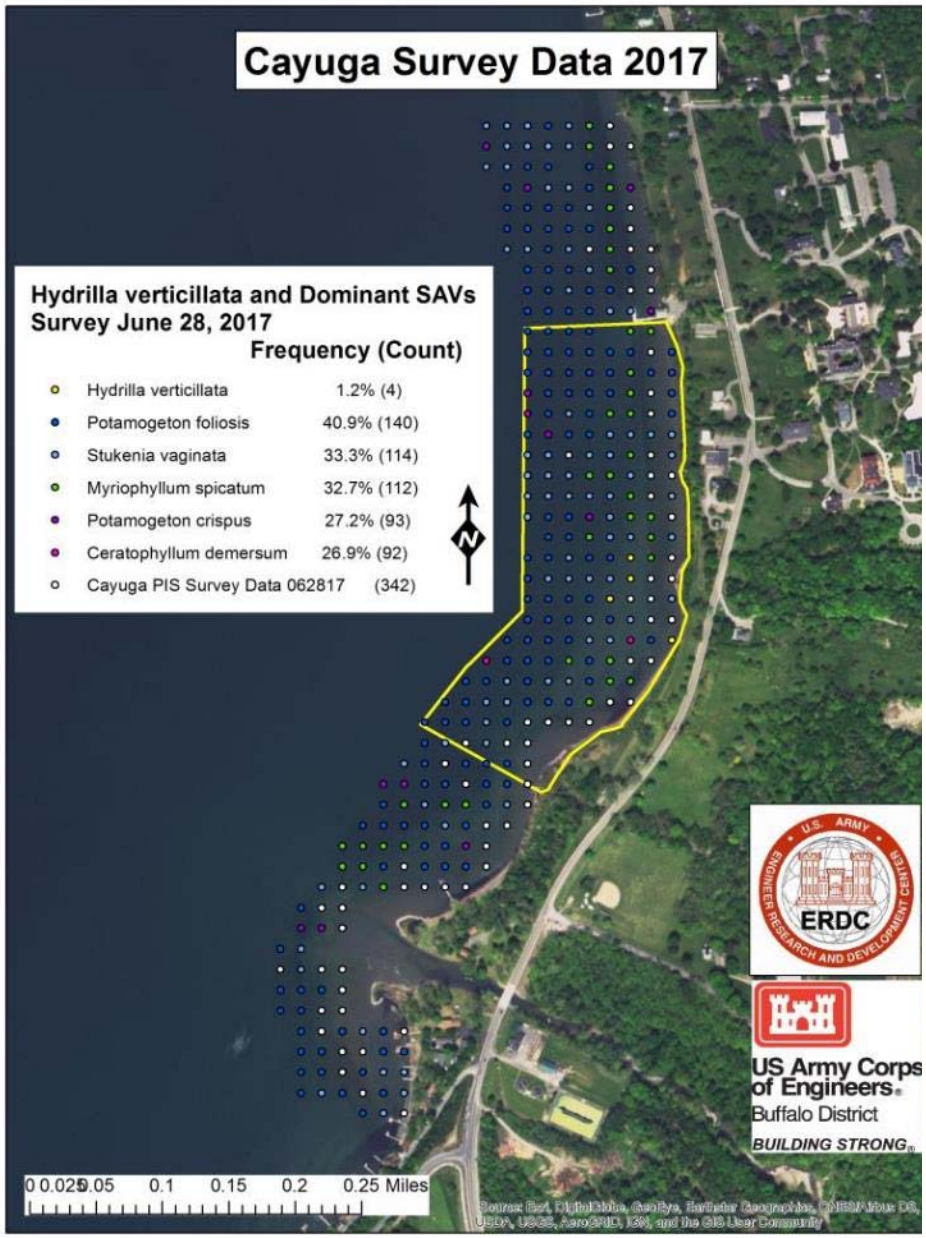
- Main lake treatment: 7 treatments of Sonar® H4C (fluridone) at a rate of 20 ppb each, treatments will be 7-14 days apart
- Potential spot treatments in adjacent areas: ½ - 1 acre blocks of Komeen® Crystal (copper) at 1 ppm as needed
- Little and Paines Creeks: 7 treatments of Sonar® H4C (fluridone) at a rate of 20 ppb each, treatments will be 7-14 days apart; 8 hr. drip application or Nautique® (copper) liquid at 1 ppm



Treatment Dates - with granular fluridone

July 20*
July 27
Aug 3
Aug 10
Aug 17*
Sep 1
Sep 14*

*includes copper spot treatment


Cayuga Survey Data 2017
Hydrilla verticillata and Dominant SAVs
Survey June 28, 2017
Frequency (Count)
Hydrilla verticillata 1.2% (4)
Potamogeton foliosis 40.9% (140)
Stukenia vaginata 33.3% (114)
Myriophyllum spicatum 32.7% (112)
Potamogeton crispus 27.2% (93)
Ceratophyllum demersum 26.9% (92)
Cayuga PIS Survey Data 062817 (342)
N
ERDC
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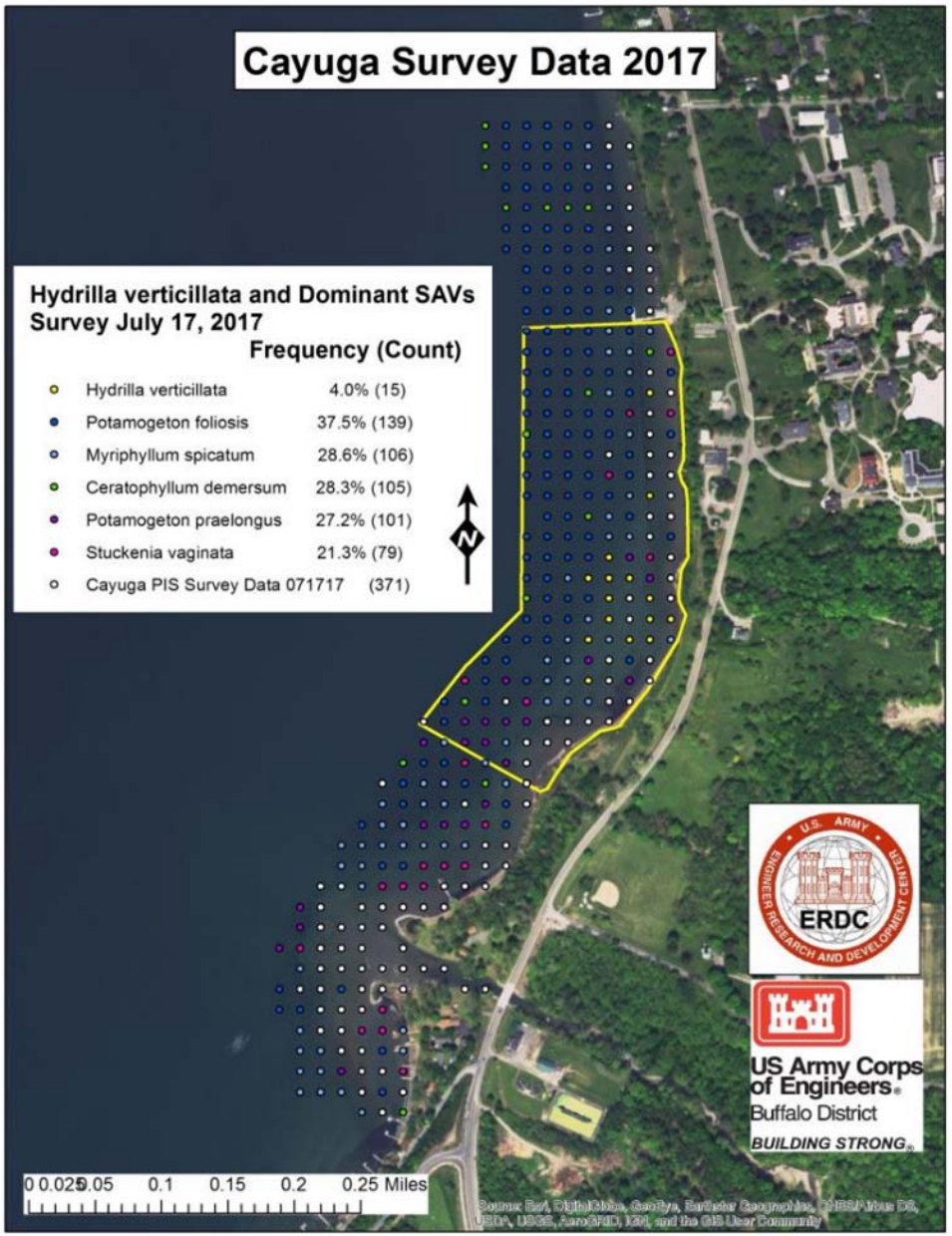
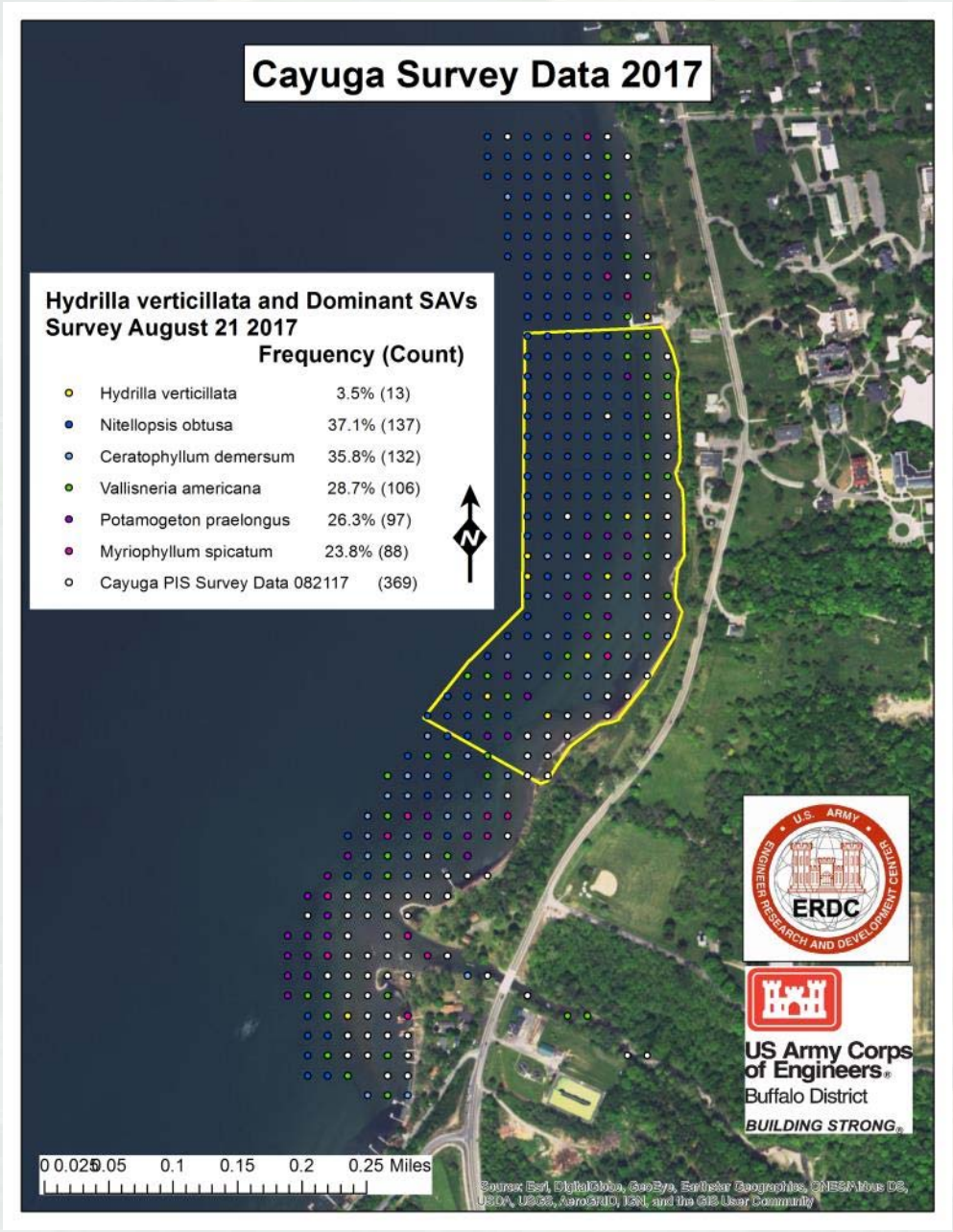
0 0.025 0.05 0.1 0.15 0.2 0.25 Miles

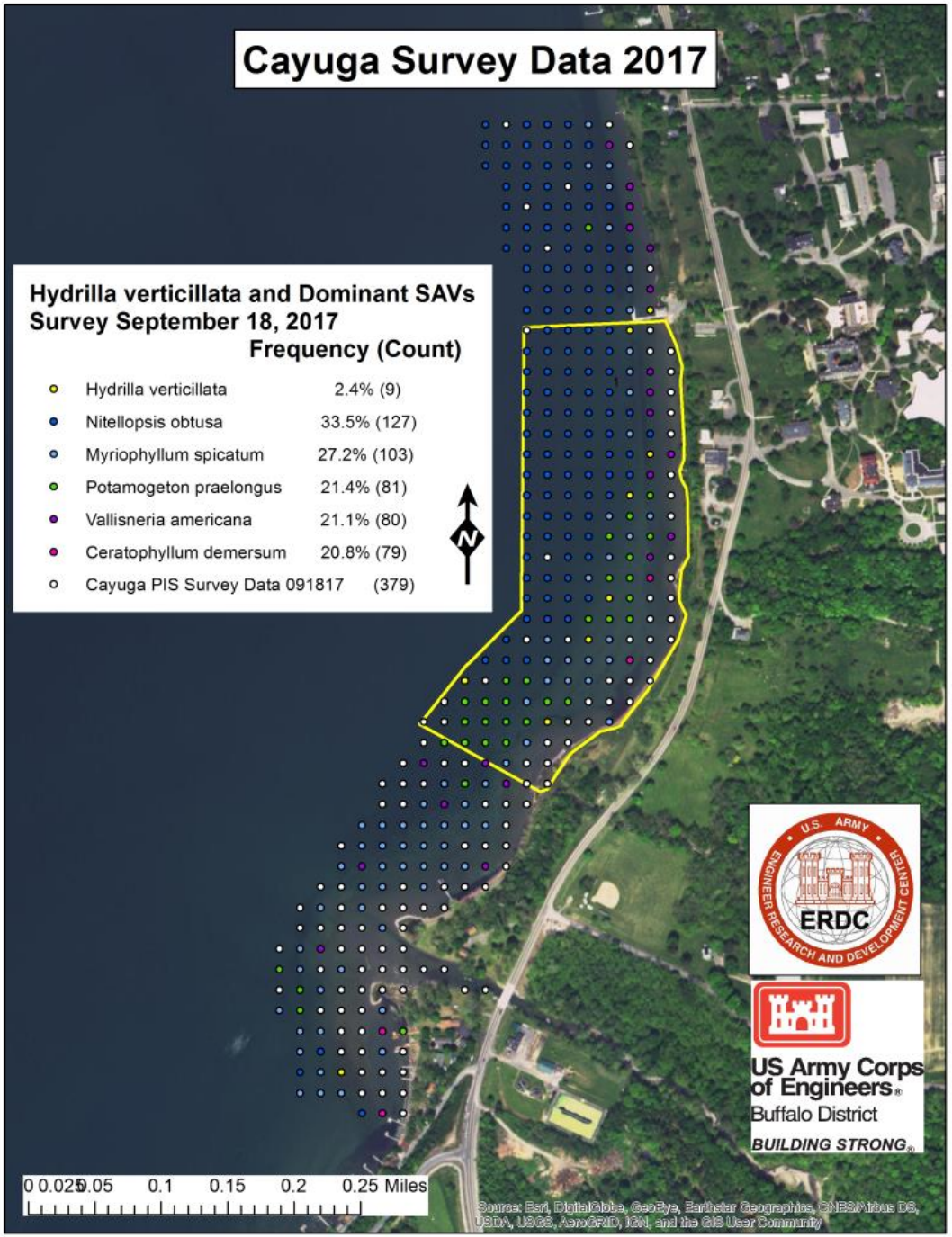

Cayuga Survey Data 2017
Hydrilla verticillata and Dominant SAVs
Survey July 17, 2017
Frequency (Count)
Hydrilla verticillata 4.0% (15)
Potamogeton foliosis 37.5% (139)
Myriphyllum spicatum 28.6% (106)
Ceratophyllum demersum 28.3% (105)
Potamogeton praelongus 27.2% (101)
Stuckenia vaginata 21.3% (79)
Cayuga PIS Survey Data 071717 (371)
N
ERDC
US Army Corps of Engineers
Buffalo District
BUILDING STRONG
0 0.025 0.05 0.1 0.15 0.2 0.25 Miles



Proliferation of Starry Stonewort in August

57% Starry Stonewort frequency in Sept 2017 vs 35% in Sept 2016

Is this due to annual variability or fluridone treatment ?

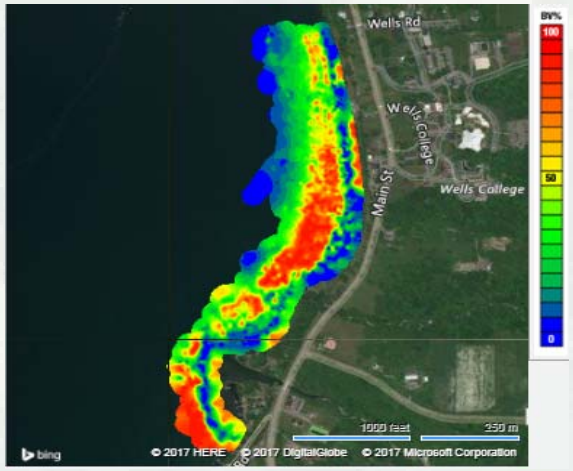


57% Hydrilla frequency was Measured in Sept 2016

2.4% Hydrilla frequency was Measured in Sept 2017

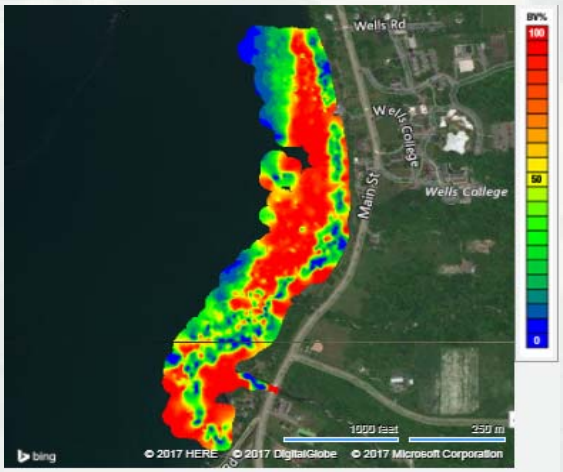

Starry Stonewort became dominant in the deep water (>12 feet)

June 28, 2017



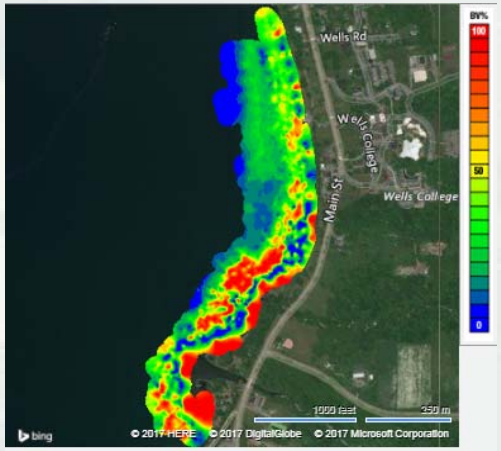
91% PAC 49% BVI

July 17



91% PAC 65% BVI

Aug 8



89% PAC 44% BVI

Sept 18

83% PAC 46% BVI

Maintaining good vegetative cover in the plot following use of Sonar

Cayuga Tuber Sampling – Buffalo District/ERDC

- Sampled on May 24 – 5 sites with 40 cores/site
  - 8.5% sprouting – water temp = 12 C
- Sampled again on June 8
  - 15% sprouting – water temp = 13 C
- Sampled again on June 28
  - 82% sprouting – water temp = 21 C
- Sampled again on Aug 8 and Sept 18
  - 88% reduction in tubers in Aug
  - 93% reduction in tuber in Sept. (no new tubers !!)
  - 179 total tubers on 6/28 to 14 total tubers on 9/18

Water Monitoring

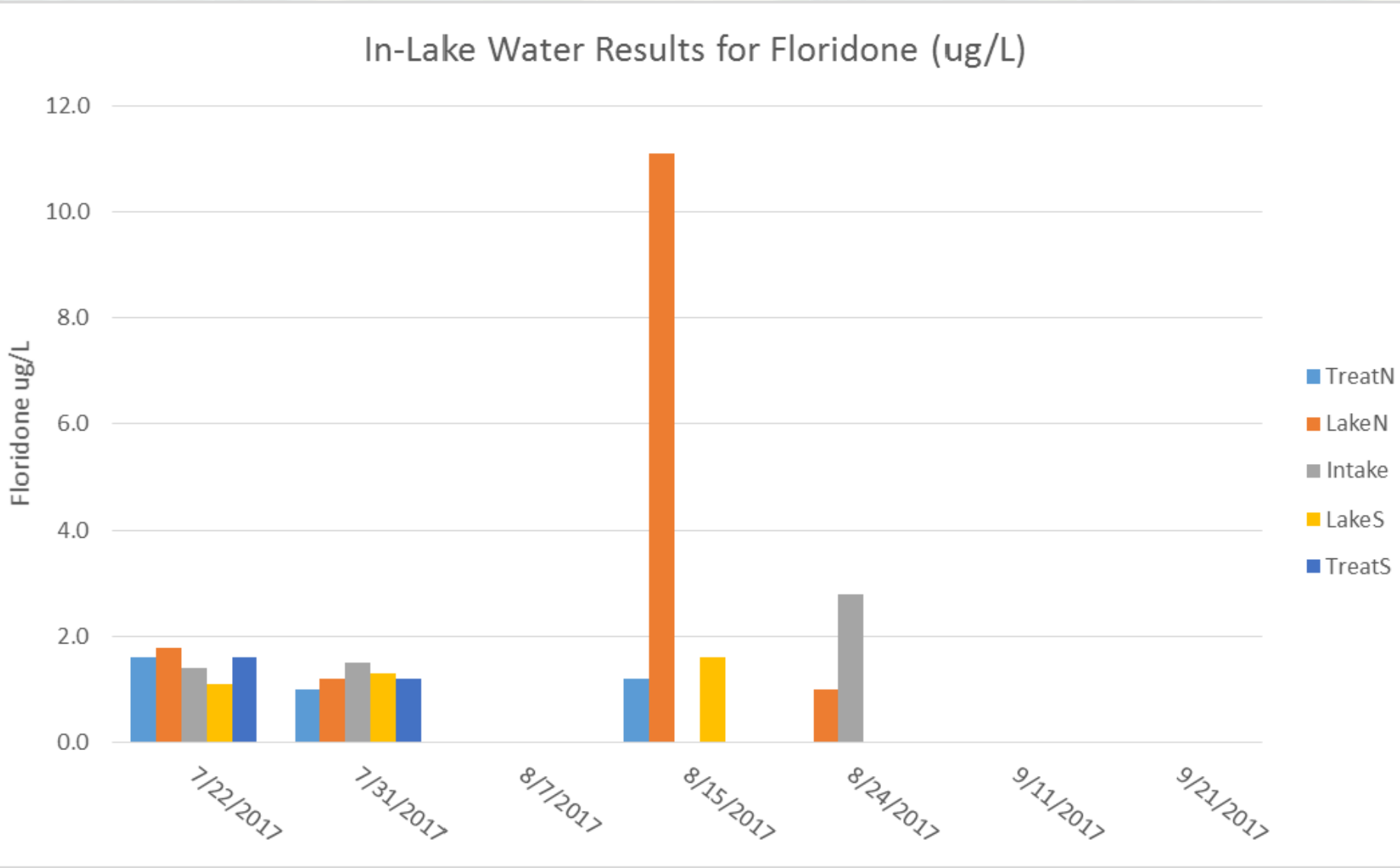
Drinking Water

- Fluridone limit in drinking water 50 ppb
- Daily then 2 per week
- Total of 42 samples collected at the water treatment plant and dock bathroom
- 3 measurable detects:1.2 ppb, 1.4 ppb, and 2.7 ppb

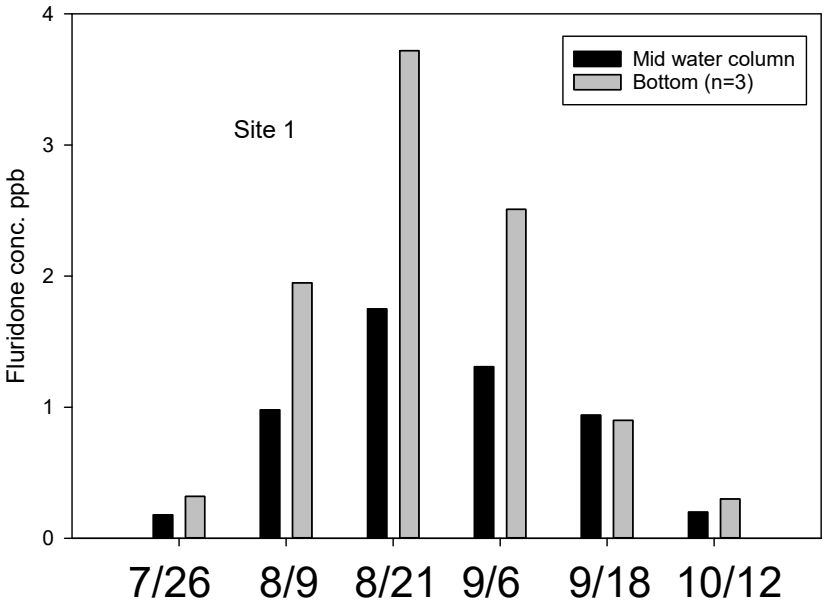
Water Monitoring

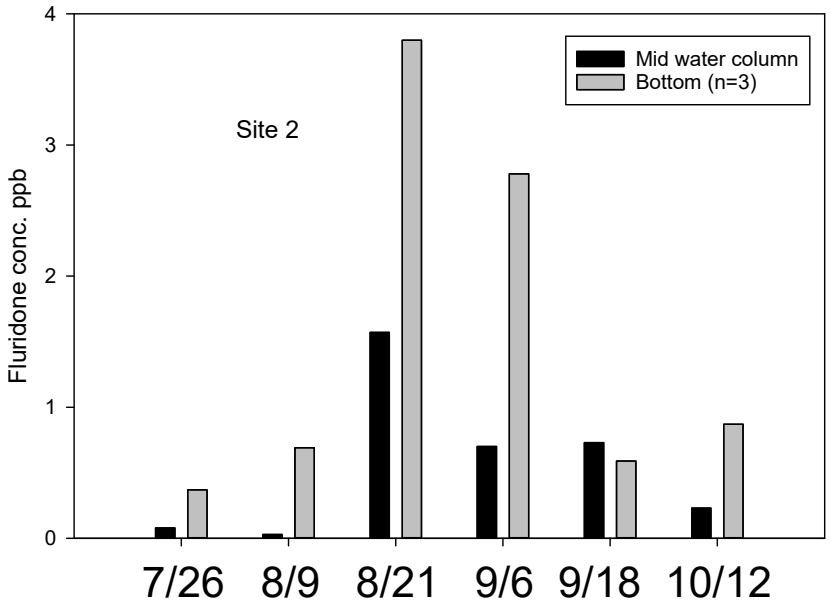
Lake Water

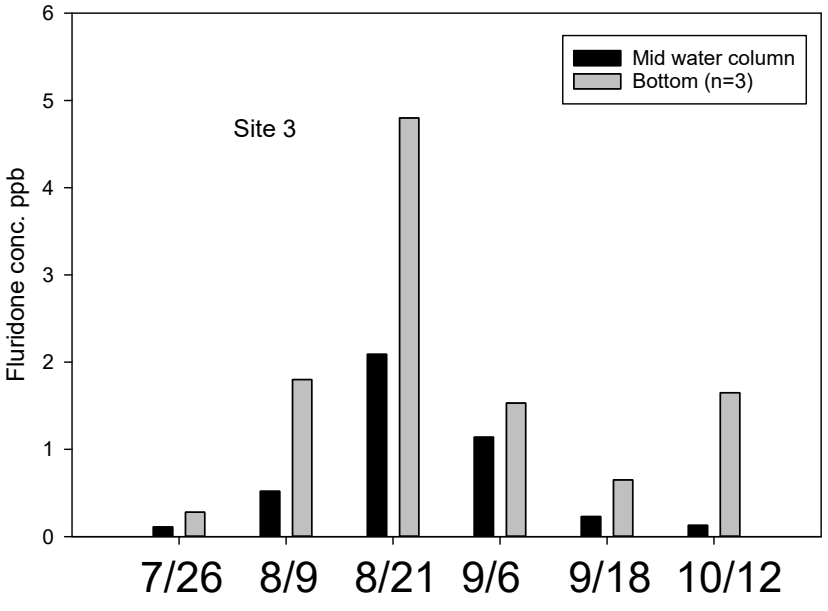
- Monitored at 5 sites: 2 in the main treatment block; 2 within the ½ mile buffer; 1 adjacent to the water intake
- Tested weekly for four weeks and then bi-weekly for duration of treatment
- Additional samples collected to inform efficacy of treatment

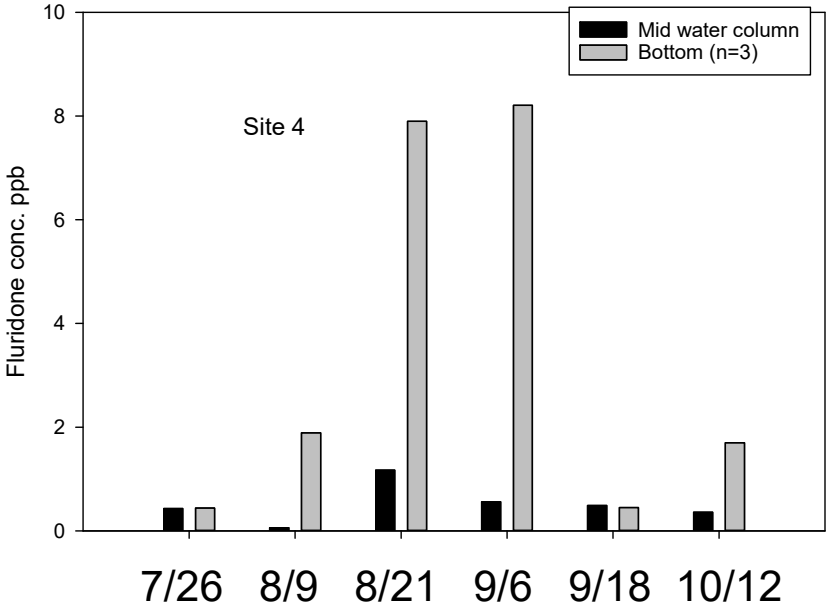

In-Lake Water Results for Floridone (ug/L)
Floridone ug/L
12.0
10.0
8.0
6.0
4.0
2.0
0.0
7/22/2017
7/31/2017
8/7/2017
8/15/2017
8/24/2017
9/11/2017
9/21/2017
TreatN
LakeN
Intake
LakeS
TreatS

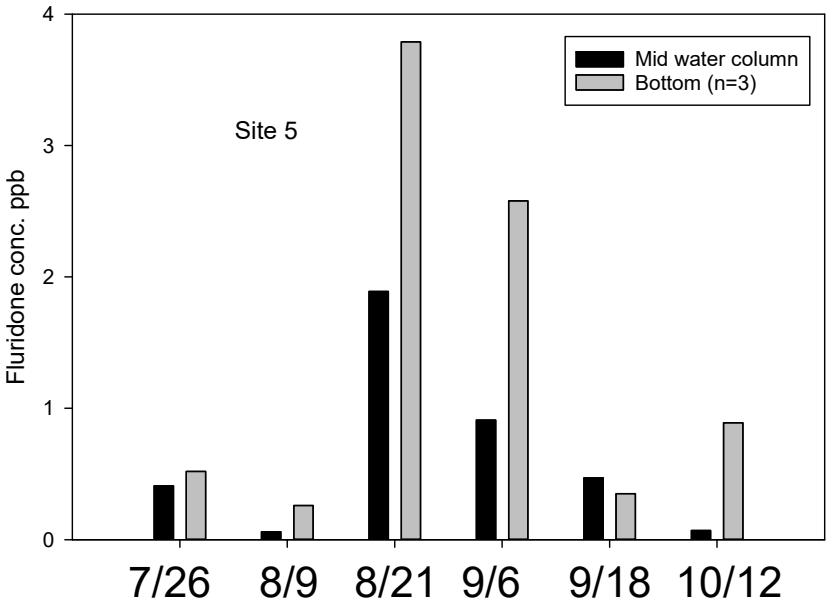
Aurora, NY – Additional Fluridone Sample Sites

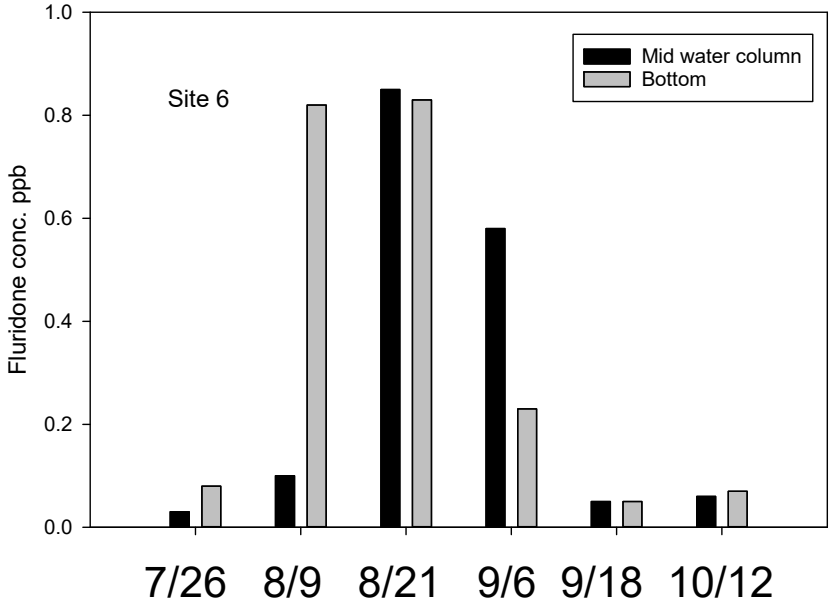

Site 1
Mid water column
Bottom (n=3)
Fluridone conc. ppb
0
1
2
3
4
7/26
8/9
8/21
9/6
9/18
10/12


Site 2
Mid water column
Bottom (n=3)
Fluridone conc. ppb
0
1
2
3
4
7/26
8/9
8/21
9/6
9/18
10/12

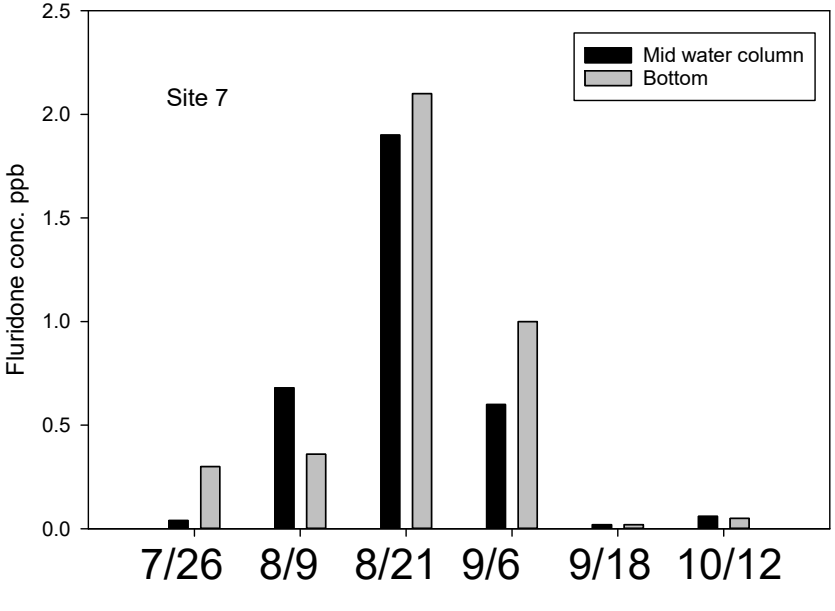

Site 3
Mid water column
Bottom (n=3)
Fluridone conc. ppb
0
1
2
3
4
5
6
7/26
8/9
8/21
9/6
9/18
10/12


Site 4
Mid water column
Bottom (n=3)
Fluridone conc. ppb
0
2
4
6
8
10
7/26
8/9
8/21
9/6
9/18
10/12

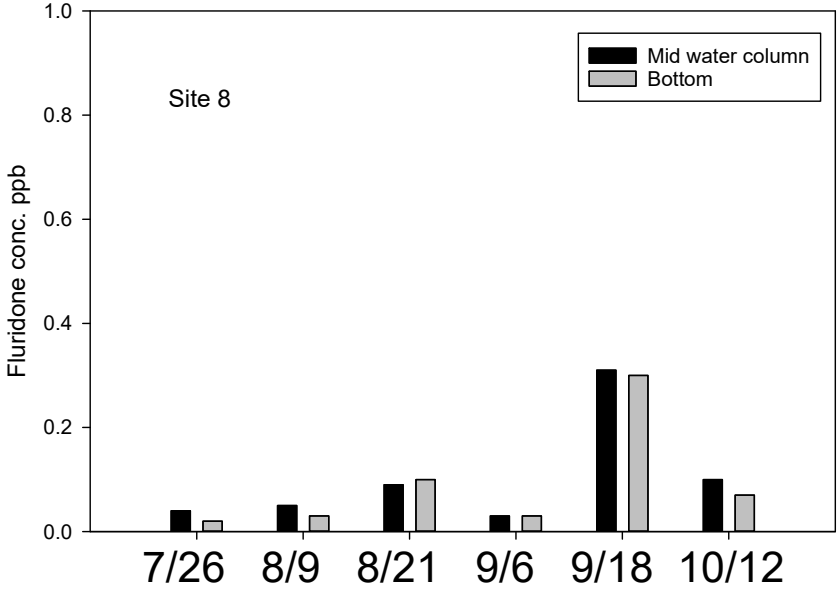

Site 5
Mid water column
Bottom (n=3)
Fluridone conc. ppb
0
1
2
3
4
7/26
8/9
8/21
9/6
9/18
10/12


Site 6
Mid water column
Bottom
Fluridone conc. ppb
0.0
0.2
0.4
0.6
0.8
1.0
7/26
8/9
8/21
9/6
9/18
10/12

s


Site 7
Mid water column
Bottom
Fluridone conc. ppb
0.0
0.5
1.0
1.5
2.0
2.5
7/26
8/9
8/21
9/6
9/18
10/12

s


Site 8
Mid water column
Bottom
Fluridone conc. ppb
0.0
0.2
0.4
0.6
0.8
1.0
7/26
8/9
8/21
9/6
9/18
10/12

Thinking Ahead

- Start treatments closer to onset of tuber sprouting
- Address small patches that were found outside of the main treatment block
- Monitor Little and Paines Creeks

Additional Resources

- New York Invasive Species Information: http://www.nyis.info/, select hydrilla from the aquatic plants tab
- Cornell Cooperative Extension/Tompkins County: www.stophydrilla.org, includes FAQs regarding fluridone
- Finger Lakes PRISM: http://fingerlakesinvasives.org/
- Cayuga Lake Watershed Network: http://www.cayugalake.org/
- Center for Aquatic and Invasive Plants: http://plants.ifas.ufl.edu/node/183
- SOLitude Lake Management: http://www.solitudelakemanagement.com/product-labels-new-york-2017