

Herbicide Control of Cayuga Inlet Hydrilla

Glenn Sullivan, Allied Biological, Inc., Dr. Mark Heilman, SePRO Corp.



2011-2012 Herbicide Timeline

2011

2012

Aquathol K application

Sonar Genesis injection started

Sonar Genesis injection ended



Oct 11-12

Jul 12

Aug 15

Sep 5

Oct 3

Oct 31

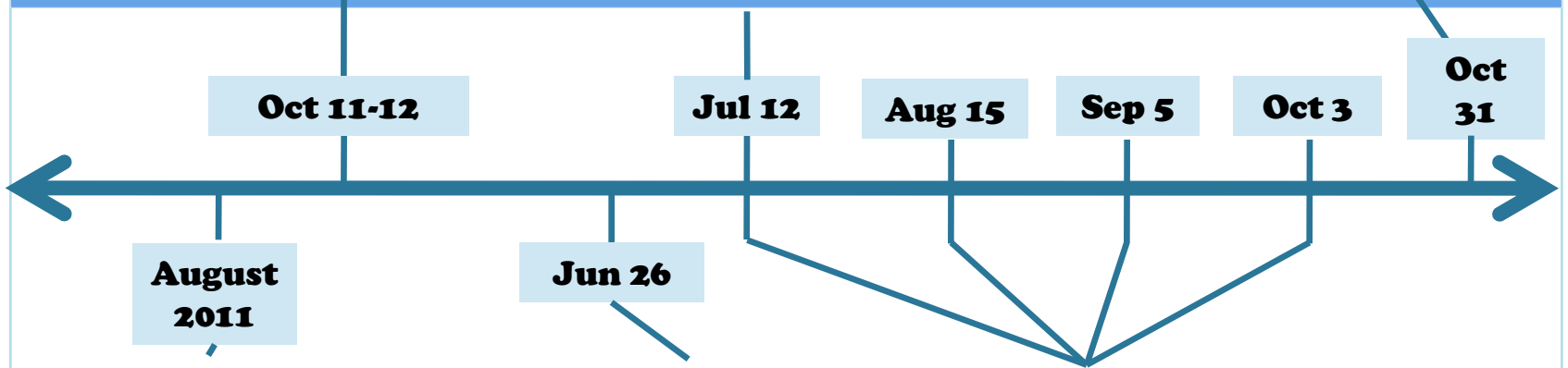
August 2011

Jun 26

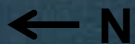
Hydrilla confirmation by Bob Johnson

Aquathol K application

Sonar One applications



Cayuga Lake Inlet and Cascadilla Creek 2011 Area of Concern



2011 Aquathol K label challenges

- **Rate directions stop at 6' depth.**
- **Rates for “Irrigation and Drainage Canals” only.**
- **New “flowing water” rates approved by EPA, but no time to register label in NY before application.**
- **SOLUTION = SUPPLEMENTAL LABEL APPROVED ON OCTOBER 3, 2011**

Permit Requirements

- **“Day after treatment” swimming restriction**
- **Application must be injected below the water surface**
- **Posting**
 - **100’ apart by structures**
 - **50’ apart in public areas**
 - **0.5 miles from treatment**
- **Monitoring**
 - **Up to 0.5 miles from treatment area**
 - **24h, 48h, 72h, 7 days and 14 days**
 - **Additional monitoring for health department**

WARNING

This water body has been treated with **AQUATHOL K**, a pesticide for aquatic weed control.

DO NOT SWIM OR BATHE in treated water for **1 day after treatment**.

DO NOT USE WATER FOR POTABLE PURPOSES until concentration is at or below **50 ppb** as determined by sample results.

DO NOT USE WATER FOR IRRIGATION of annual nursery or greenhouse crops including hydroponics and newly sodded or seeded turf for **7 days after treatment**.

DO NOT USE WATER FROM TREATED AREAS FOR ANIMAL CONSUMPTION for **14 days after treatment**.

Date of Treatment: _____ Time: _____

For more information contact: Allied Biological Inc. 908-850-0303

55,000+ feet of public access shoreline
~ 1,200 posters



Community considerations

- **Ithaca Farmers Market**
- **600+ boats in canal**
- **NYS Canal Corp. permit**
- **Multiple gov't entities**





- **Tompkins County Health Dept. – Work group**
- **Cornell Hydraulics Lab – modeling endothall dissipation**

**Aquathol K Application
October 11, 2011**

GPS recorded application track: 
Acres treated: 67.35



**Aquathol K Application
October 12, 2011**

GPS recorded application track: 
Non-GPS recorded application: 
Acres treated: 67.35



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Lake Cayuga Inlet
Ithaca, New York

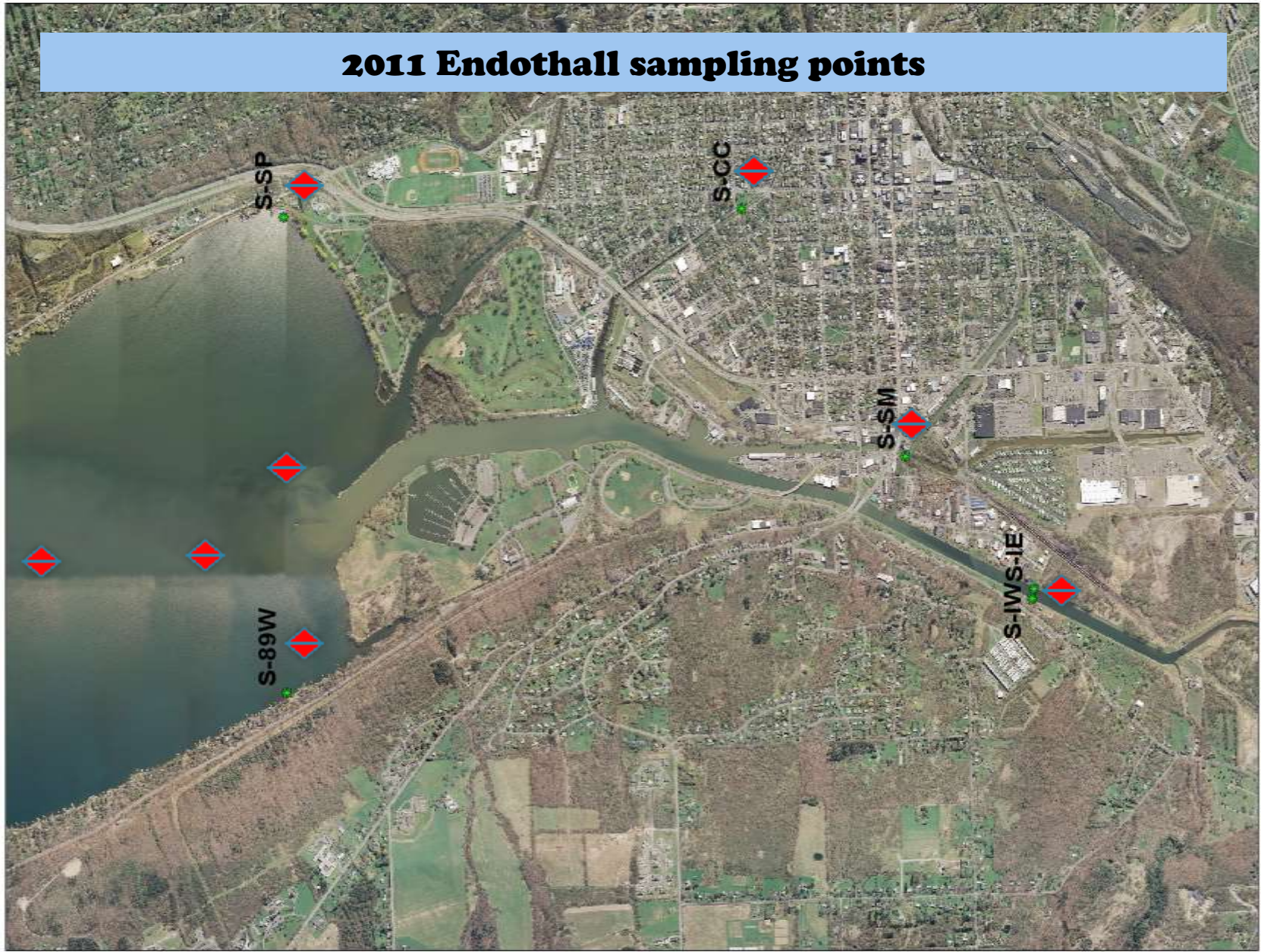
Hydrilla Eradication Project
Aquathol K Application: October 11-12, 2011



0 266 532 1,064 Feet

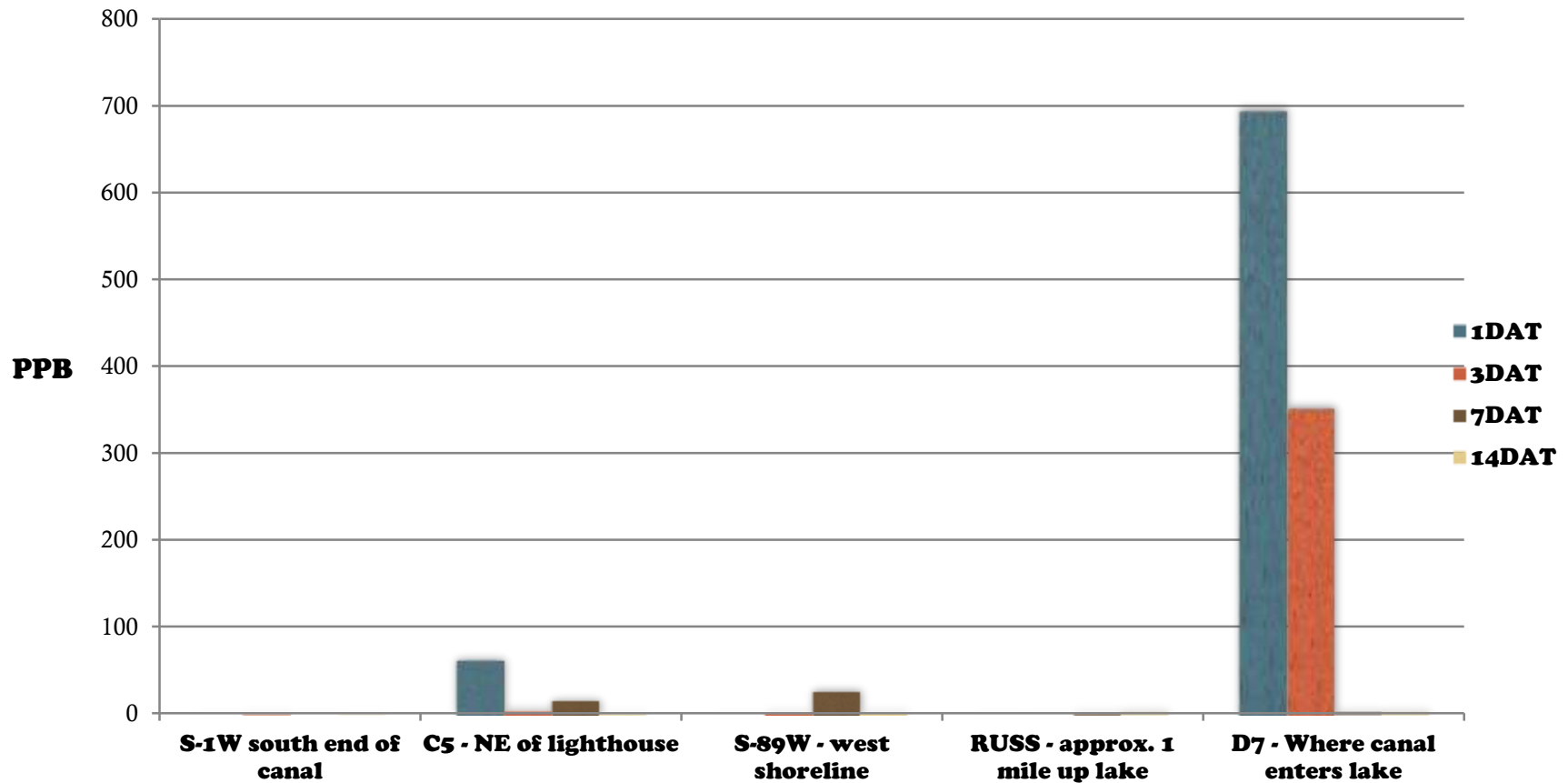
Date: 10/25/11
File: CayugaLakeInlet_AquatholK_101111&101211.mxd

2011 Endothall sampling points



Legend
Monitoring

Endothall concentration



2012 Product label issues

Aquathol K

New Label - all issues addressed

Sonar

Continuous injection

Hydroponics restriction - no end

Pellet applications in <2' of water

1 Day swimming restriction

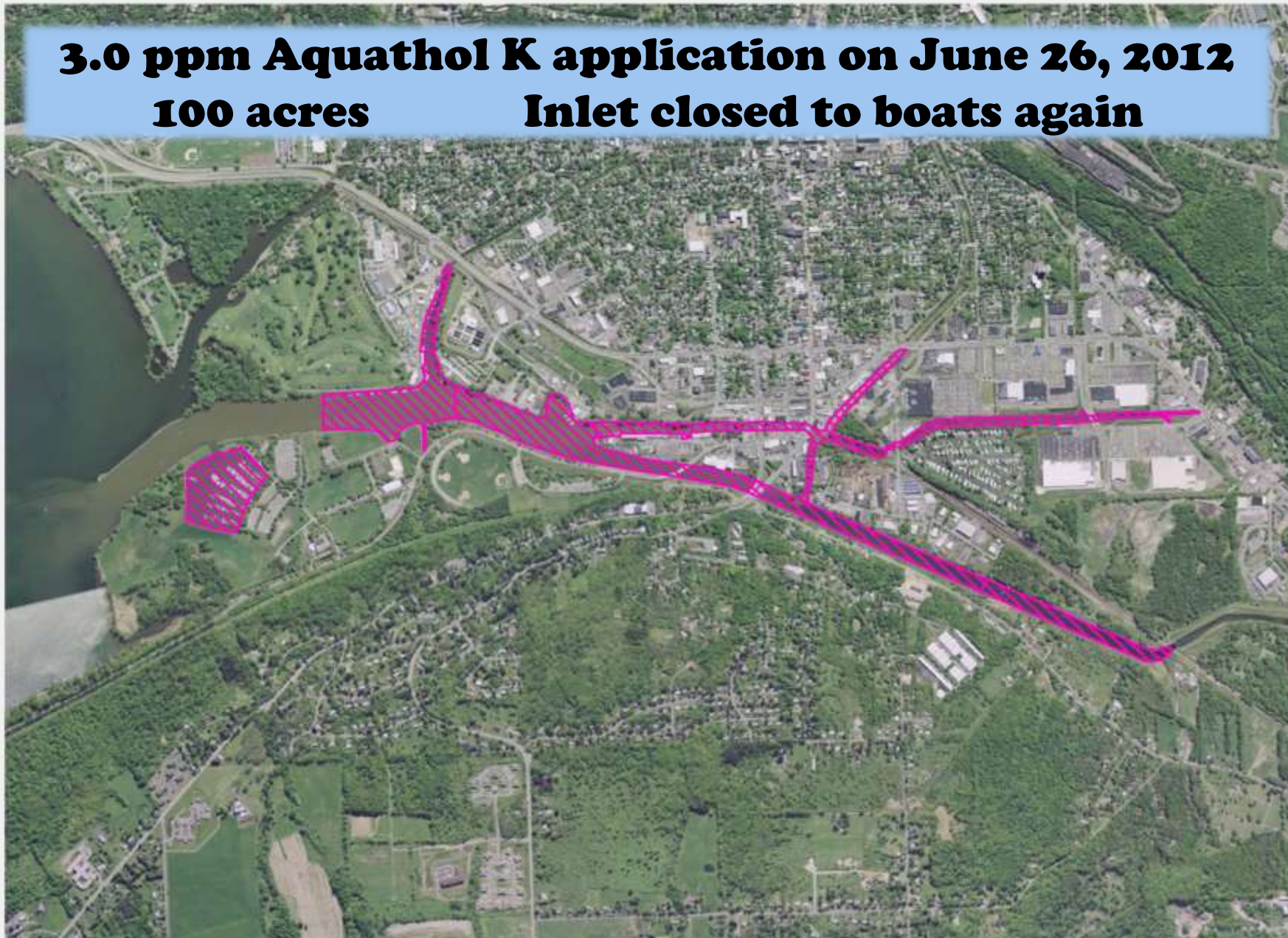


2012 SOLUTIONS

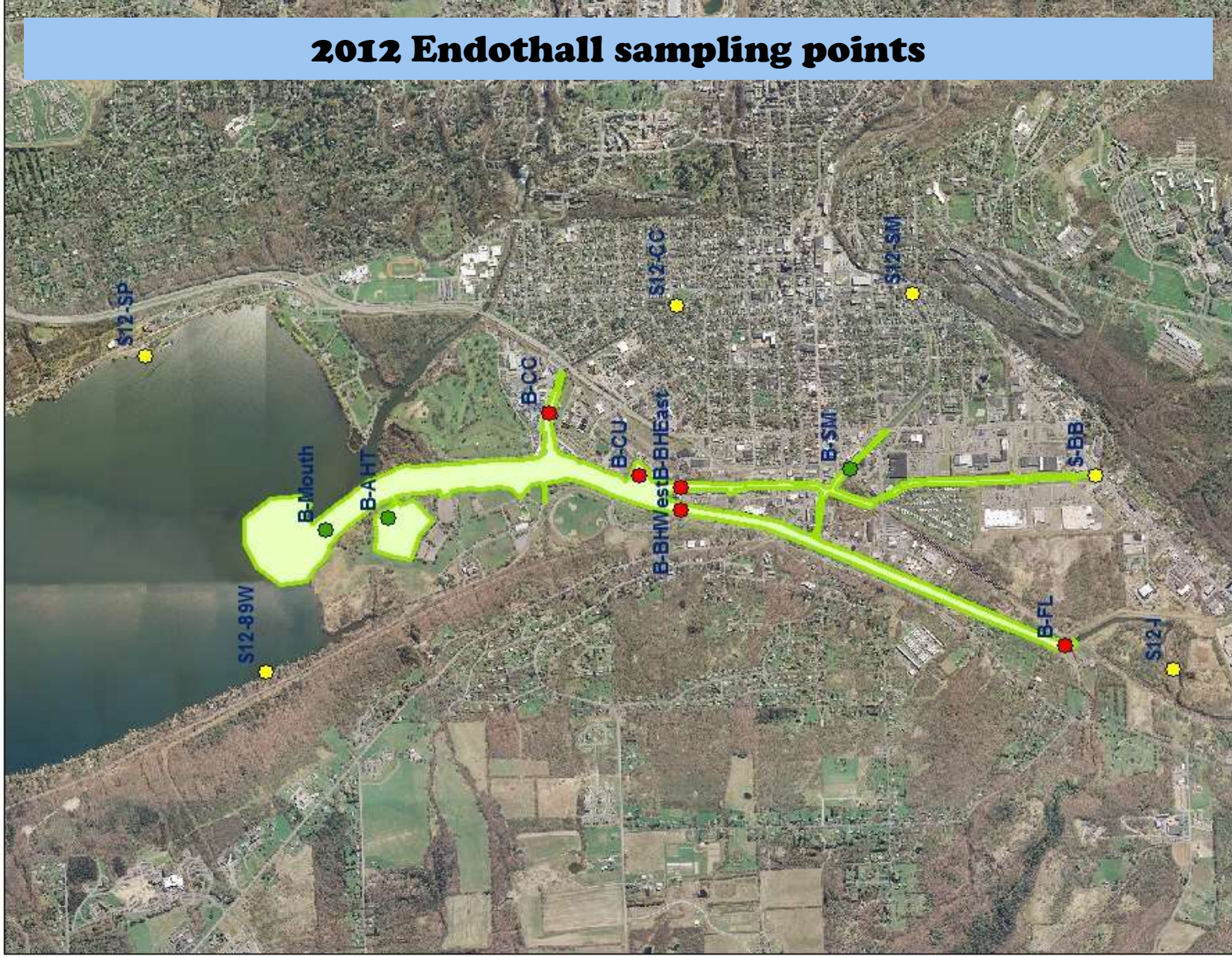
**Special Local Need label - injection, hydroponics
and swimming issues**

**Emergency rulemaking - shallow pellet
applications for 2012**

3.0 ppm Aquathol K application on June 26, 2012
100 acres Inlet closed to boats again

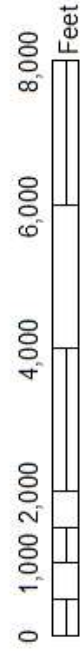


2012 Endothall sampling points

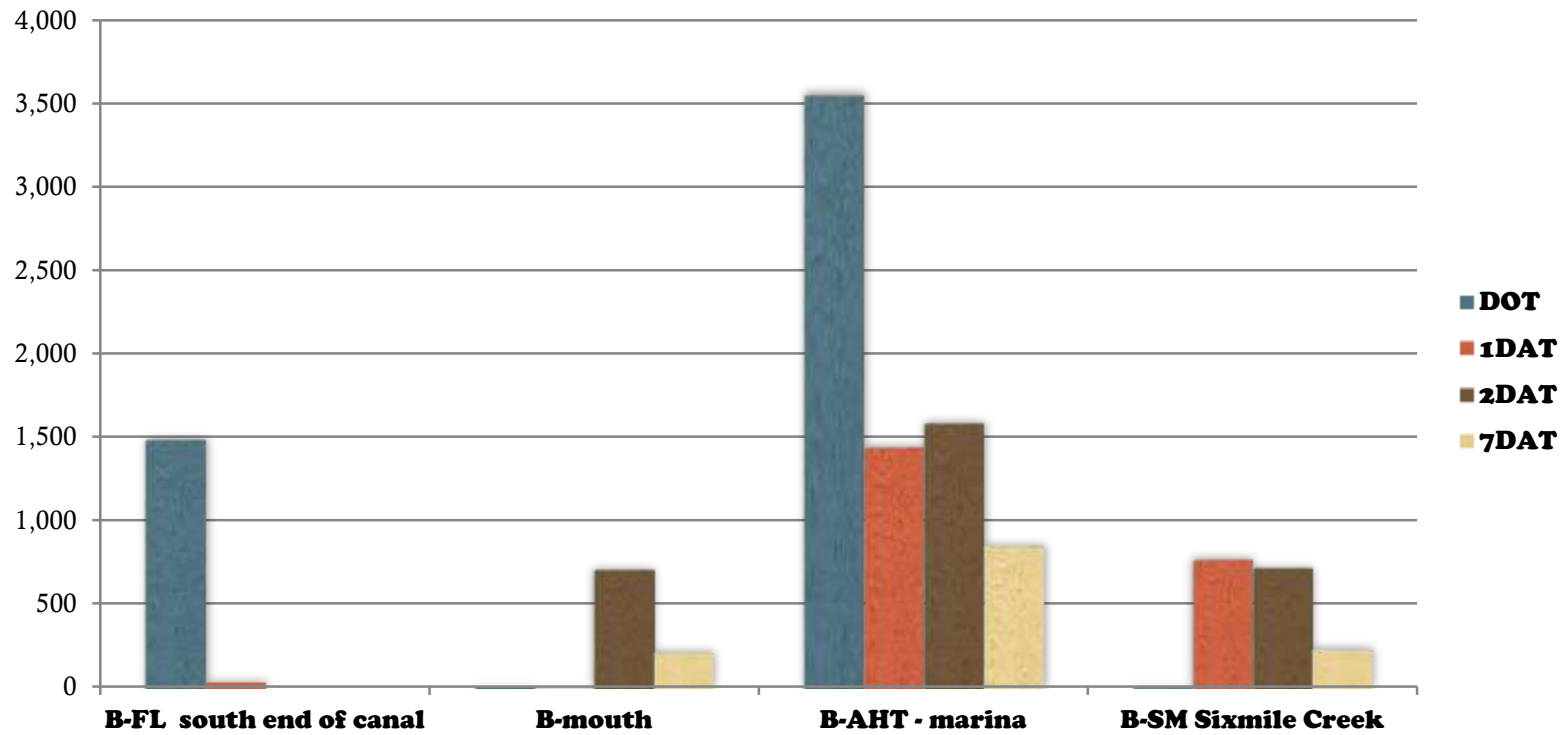


Legend

- DEC Sites
- Concentration
- Concentration and Health

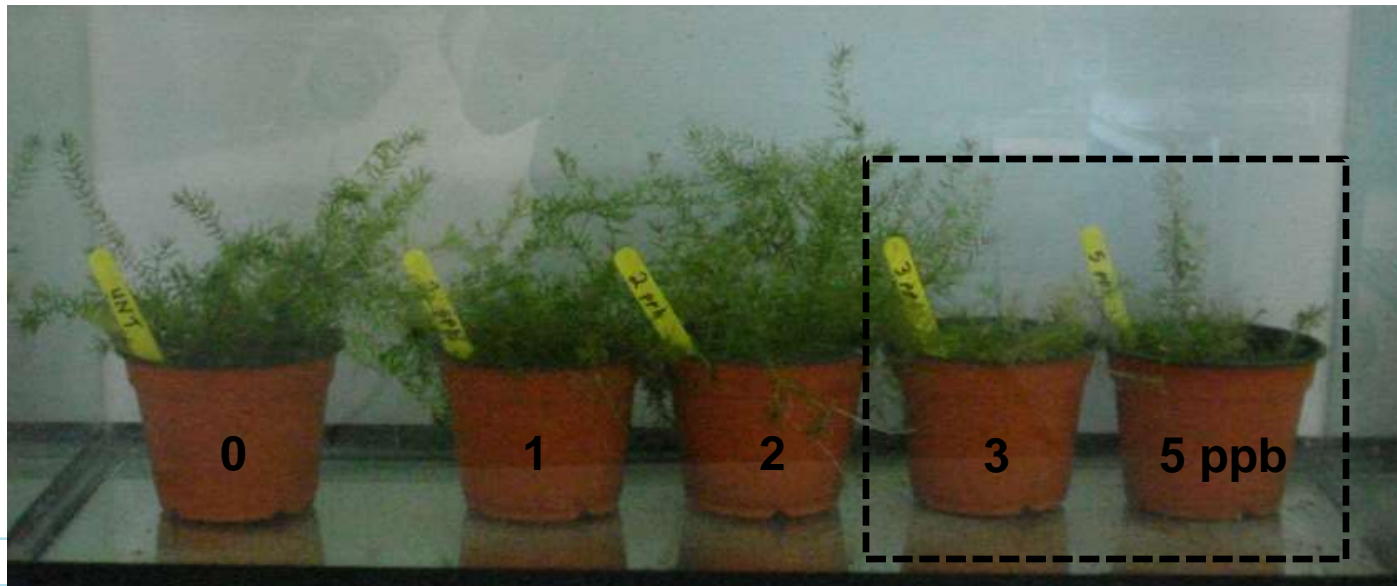


2012 Endothall Concentrations



Cayuga Inlet: Sonar[®] Herbicide (Fluridone)

- **Objective: Maintain 3 – 5 ppb**
 - **Control any remaining biomass following Aquathol[®] treatment**
 - **Control indiscriminate tuber germination**
 - **Tuber depletion → multi-year eradication**

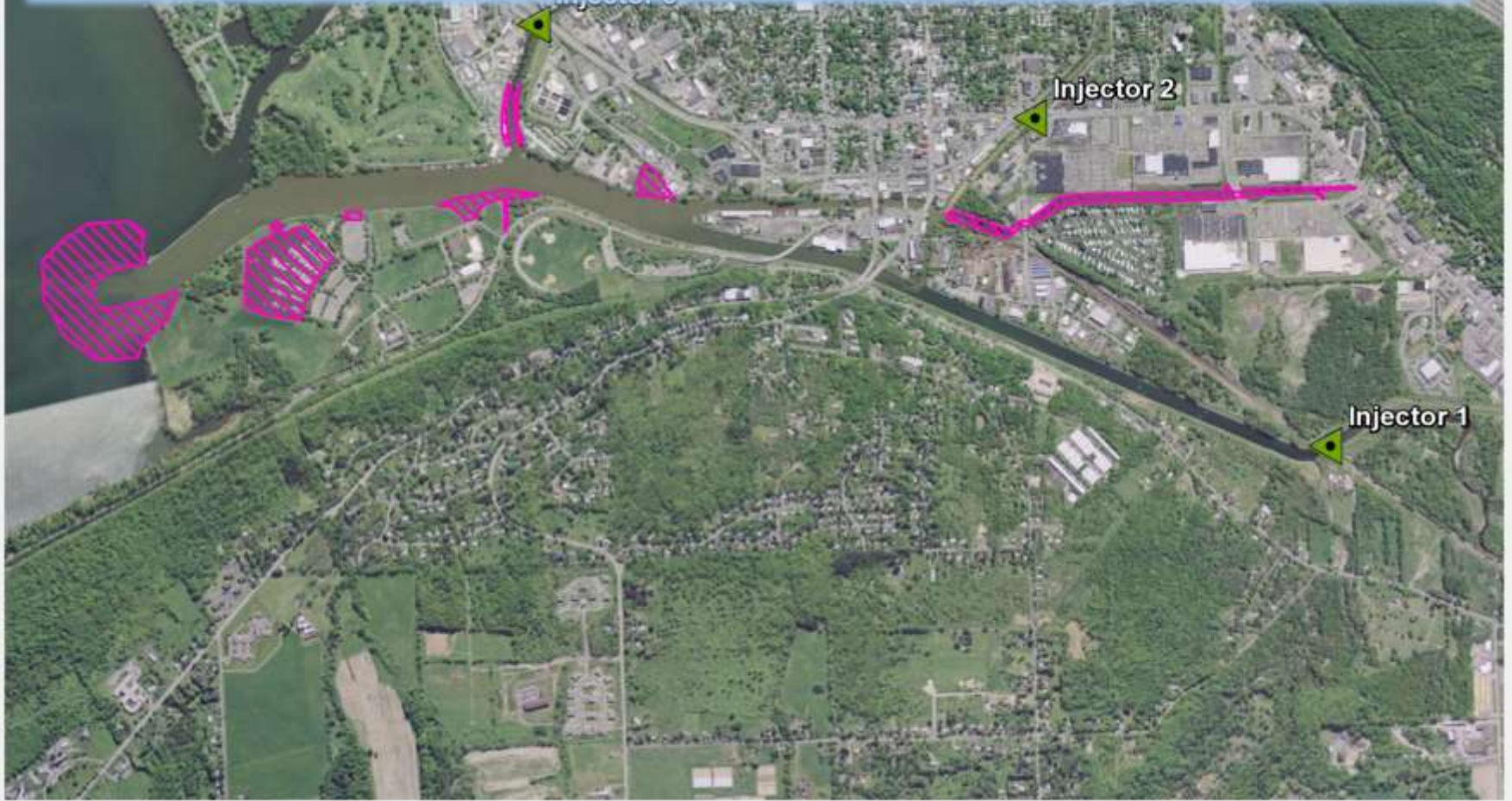


Cayuga Inlet: Sonar Herbicide

- **Multiple formulations**
 - **Liquid (Sonar Genesis[®])**
 - **2 – 8 ppb**
 - **Inlet tributaries (3)**
 - **Pellets (SonarOne[®])**
 - **4 split apps (10 - 30 ppb/app)**
 - **‘backwater’ areas with reduced exchange with tributaries**
 - **High exchange transition zone**
- **Highly adaptive**



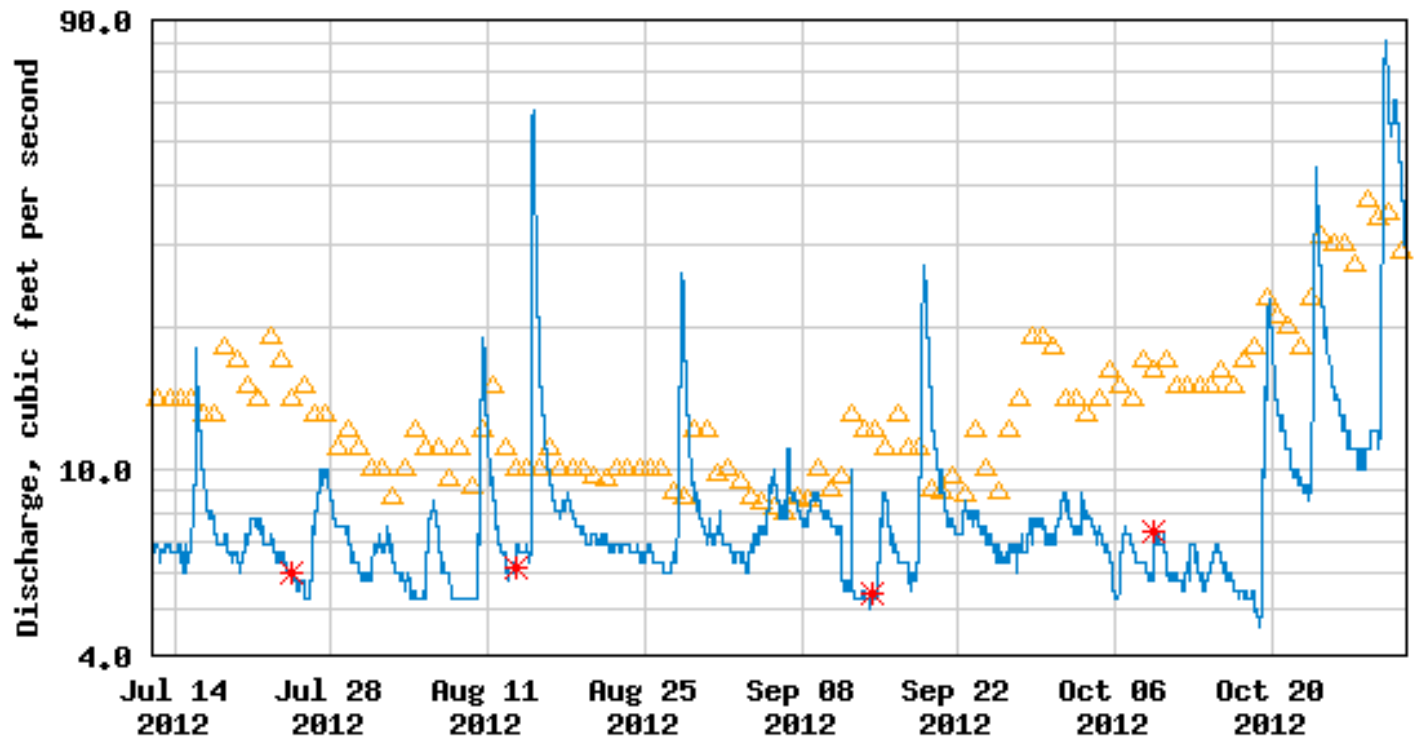
July 12, 2012 – 1st Sonar One application
24 ppb in 60 acres
Three injectors stocked with Sonar Genesis
and turned on, dosing at targeted 5 ppb



Discharges at two locations checked daily online on USGS website



USGS 04233300 SIXMILE CREEK AT BETHEL GROVE, NY



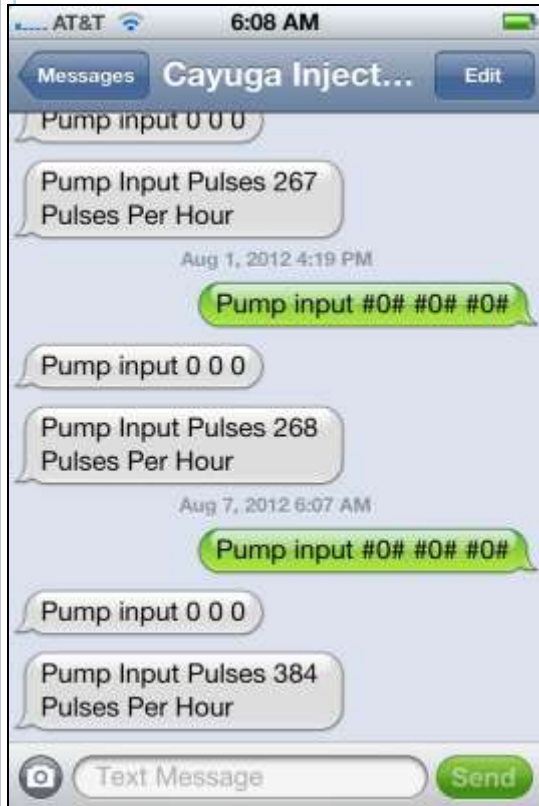
---- Provisional Data Subject to Revision ----

- △ Median daily statistic (16 years)
- * Measured discharge
- Discharge

Cayuga Inlet Sonar Genesis



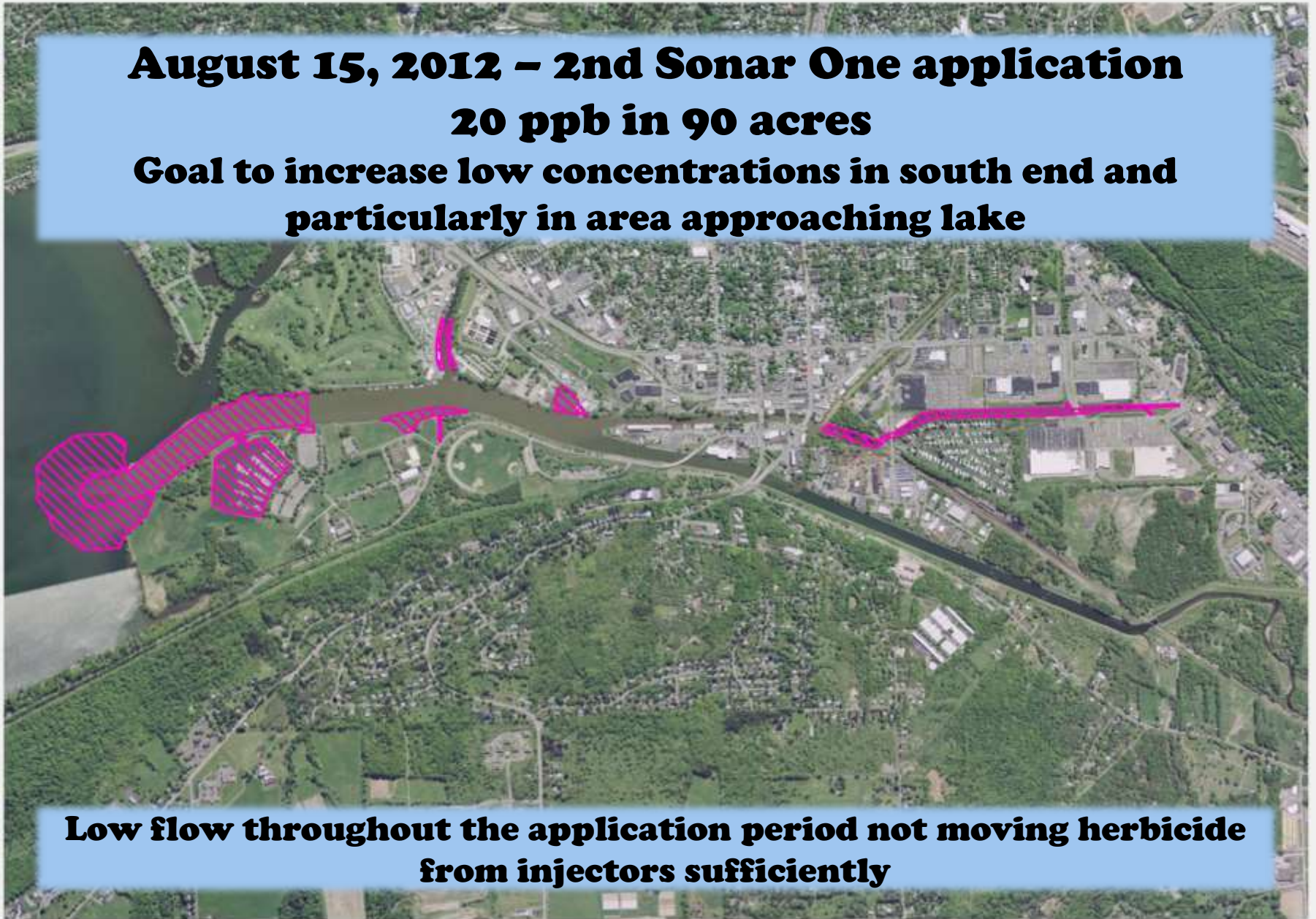
Cayuga Inlet Sonar Genesis



August 15, 2012 – 2nd Sonar One application

20 ppb in 90 acres

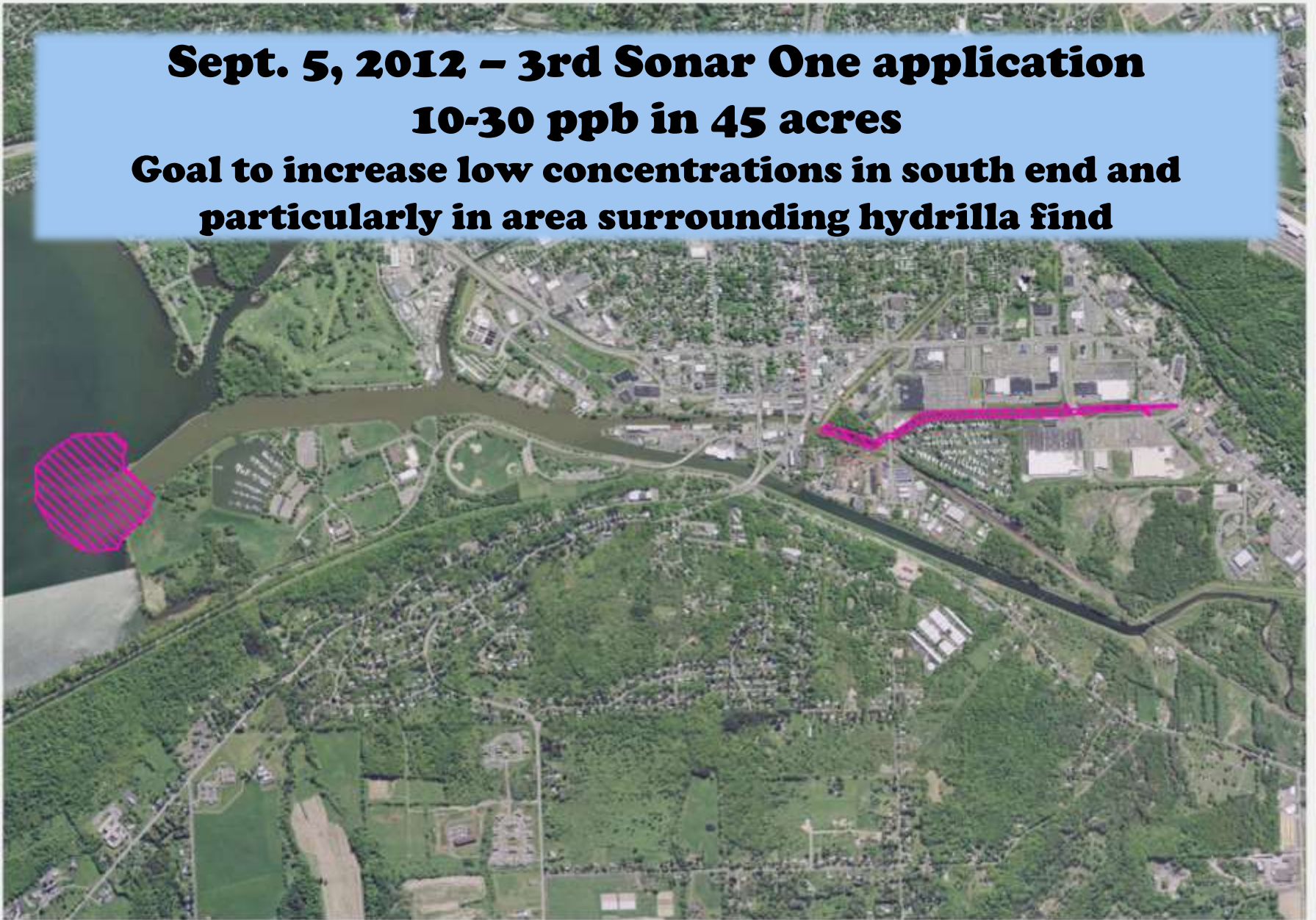
Goal to increase low concentrations in south end and particularly in area approaching lake



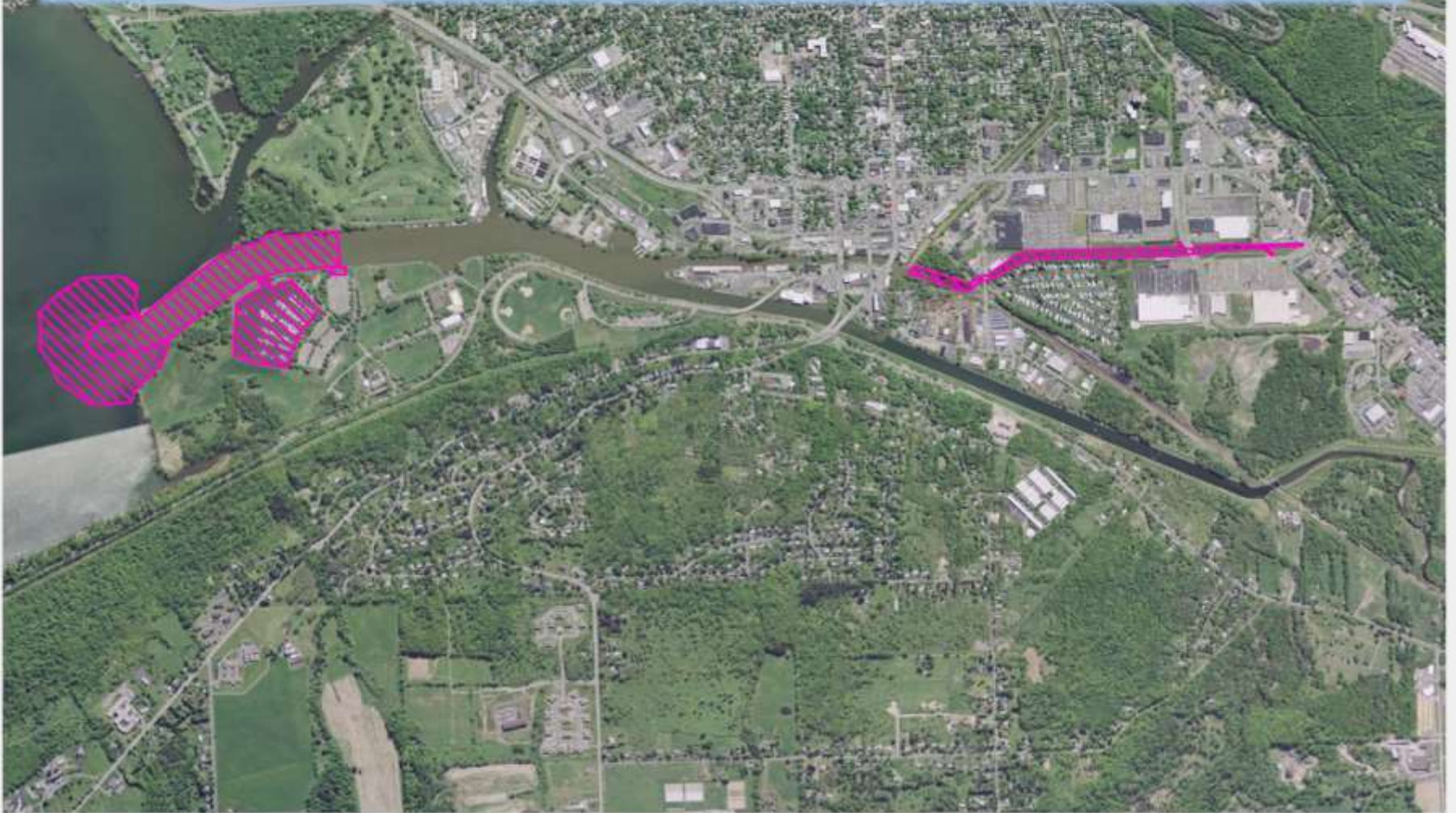
Low flow throughout the application period not moving herbicide from injectors sufficiently

Sept. 5, 2012 – 3rd Sonar One application
10-30 ppb in 45 acres

Goal to increase low concentrations in south end and particularly in area surrounding hydrilla find



October 3, 2012 – 4th Sonar One application
10-30 ppb in 84 acres
Final planned pellet application



Cayuga Genesis Injection As-Applied Analysis

- **111 total days (July 12 – Oct 31)**
 - **5 ppb for 46 days**
 - **8 ppb for 65 days**
- **Injector #1**
 - **Target based on final 15-min USGS #04233255 Cayuga Inlet**
 - **103 gallons**
 - **Actual As-Applied**
 - **104 gallons = < +1% theoretical**

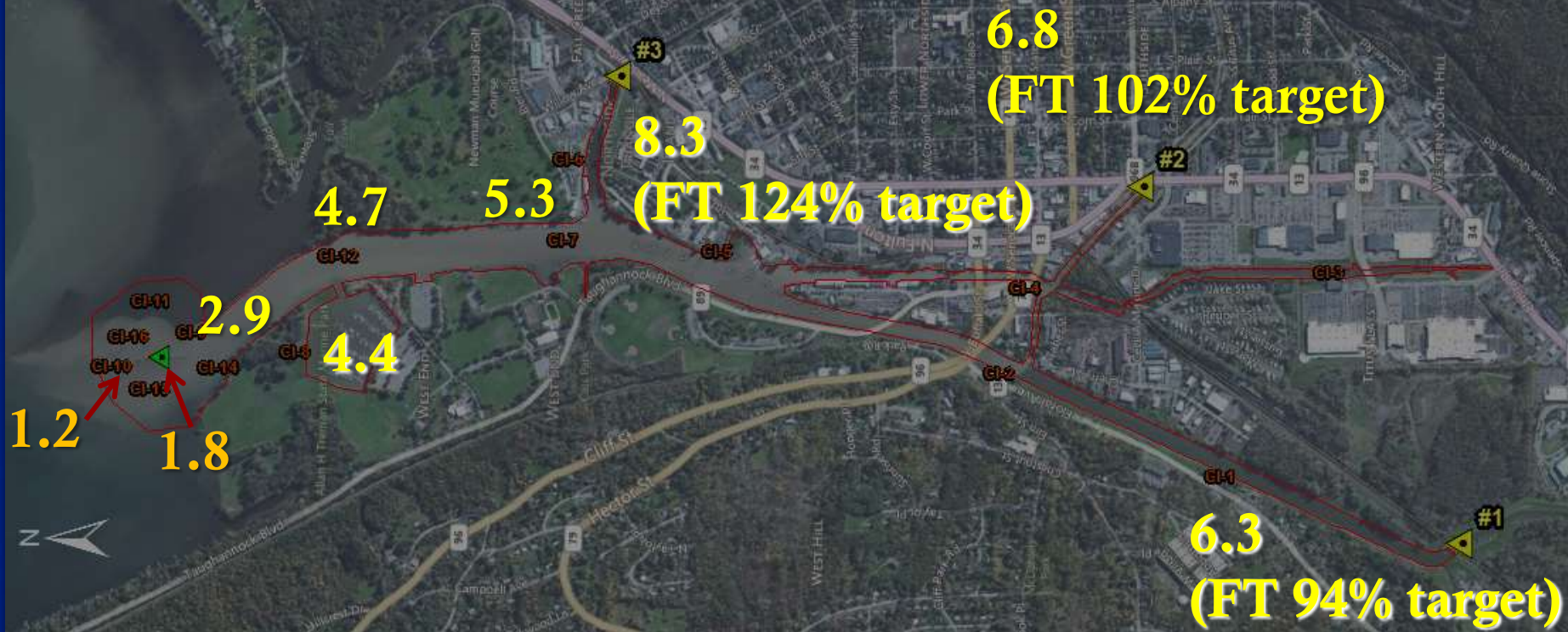


Cayuga Genesis Injection As-Applied Analysis

- **Injectors #2 & #3**
 - **Targets based on final 15-min USGS #04233300 Six Mile**
 - **69 gal (#2) + 17 gal (#3) = 86 gal**
 - **Actual As-Applied**
 - **67 gal (#2) + 16 gal (#3) = 83 gal**
 - **-2.4% difference**
- **Total Program**
 - **187 gal As-Applied v. 189 gal**
 - **98.9% of Theoretical**



2012 Cayuga Inlet Sonar FasTEST Weekly Monitoring Seasonal Averages (ppb): July 17 – October 29



**Genesis Dosing
5 – 8 ppb (Avg = 6.7 ppb)**

**Cayuga Inlet
FasTEST Results Map**

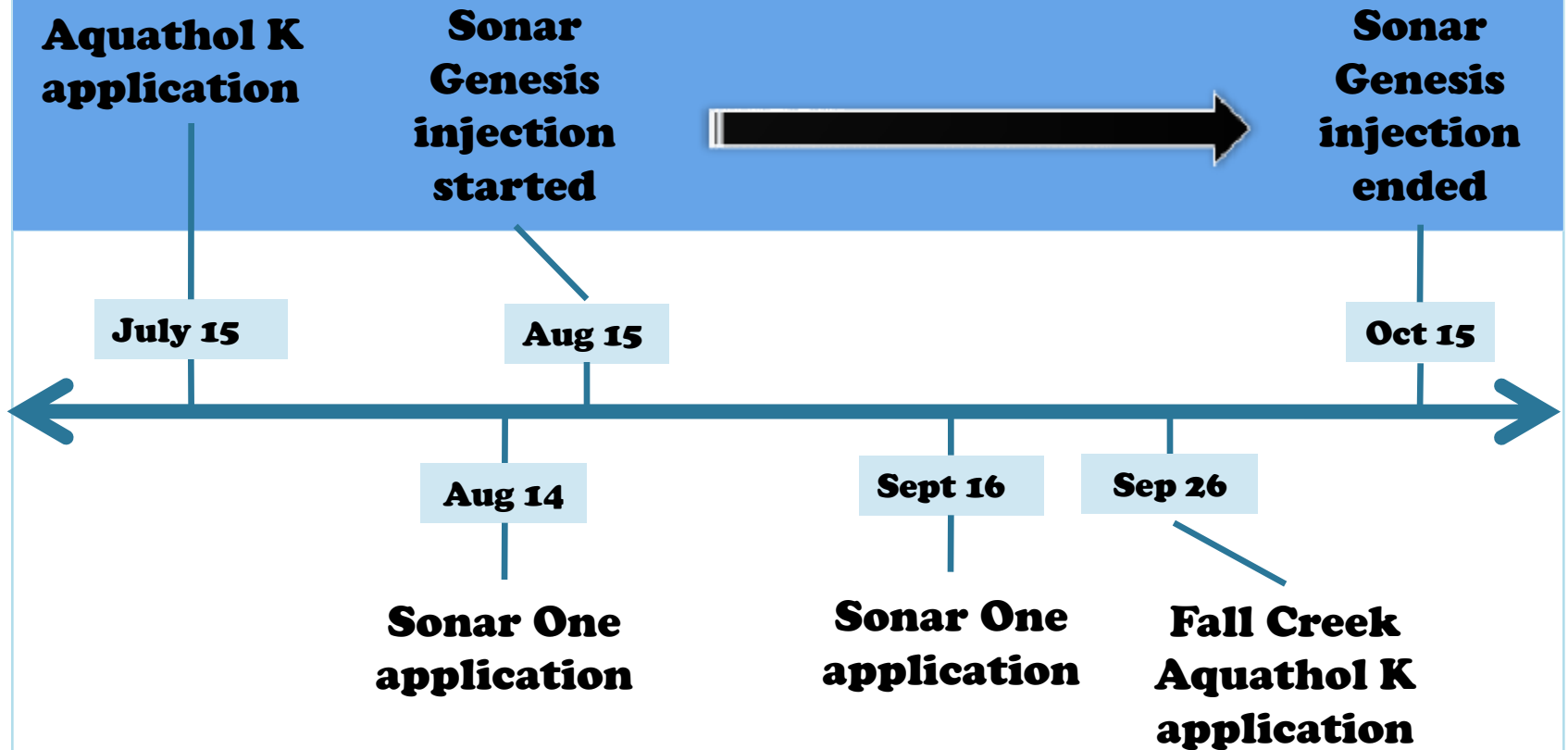
- ▲ Hydrilla_Find_08172012
- ▲ Sonar Injection Sites
- ▭ Inlet Treatment Zone



2012 Herbicide Summary

- **Both Aquathol K applications very successful**
- **Sonar Genesis injectors worked extremely well for extended precision dosing.**
- **Water flow below expected, so Sonar One pellets important to sustain effective levels.**
- **Only one viable hydrilla stem found after Aquathol K application and during Sonar application period**

2013 Herbicide Timeline



September 26, 2013
Fall Creek Treatment area
22 acres – 3.0 ppm Aquathol K



New Developments in 2013



Hydrobiologists have also focused the monitoring of Cayuga Lake sampling activities and August 2013 in Fall Creek and 30. Phosphorus removal of Grayed dikes working within netted barriers. Benthic barriers were placed only that to help to task from water table to suppress possible hydrocarbon gas wells this season. Fall Creek and Cayuga Lake treatment areas will be on hold to be done in the next few months in Fall Creek and Plan for Sept 16 or 17.

Many Thanks to the Team!

Racine-Johnson Aquatic Ecologists - **Bob Johnson**

NYSDEC - **Scott Kishbaugh, Dave Adams & Don Nelson**

UPI – **Jacob Meganck, Gerald Adrian**

SePRO Corp.– **Sarah Miller, Mark Heilman**

City of Ithaca– **James Balyszak, Roxy Johnson, Ray Benjamin**

Tompkins County Soil & Water. - **Angel Hinickle, Craig Schutt**

Ichthyological Associates - **Jeremy Dietrich**

The Peer Review Committee

John Madsen, Kurt Getsinger, Mike Netherland,

Lars Anderson, Rob Richardson and Bill Haller

Allied Biological - **Steve Wilson, Bob Schindler & Krista Michniewicz**