MINNEHAHA CREEK
WATERSHED DISTRICT

Early Detection & Rapid Response at a Watershed Scale A Role For Local Government

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Upper Midwest Invasive Species Conference

La Crosse, WI

October 16 – 19, 2016

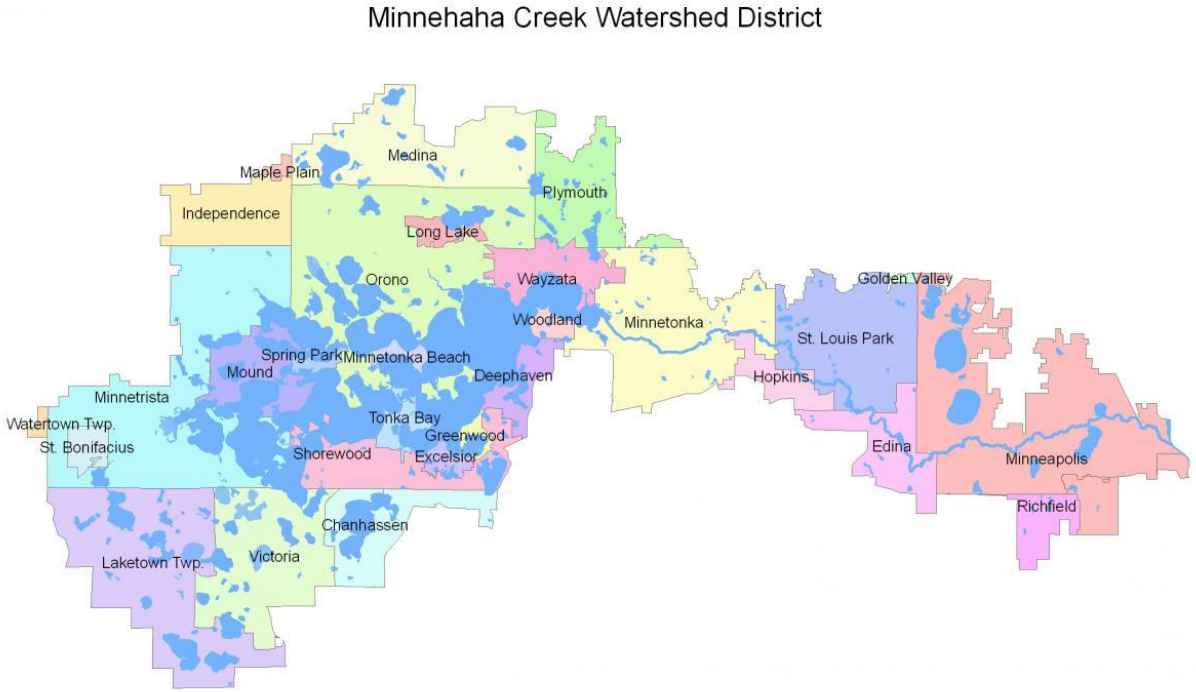
Minnehaha Creek Watershed District

181 square miles

8 major creeks

129 lakes

thousands of wetlands



MINNEHAHA CREEK
WATERSHED DISTRICT

Organization Mission

We collaborate with public and private partners to protect and improve land and water for current and future generations.

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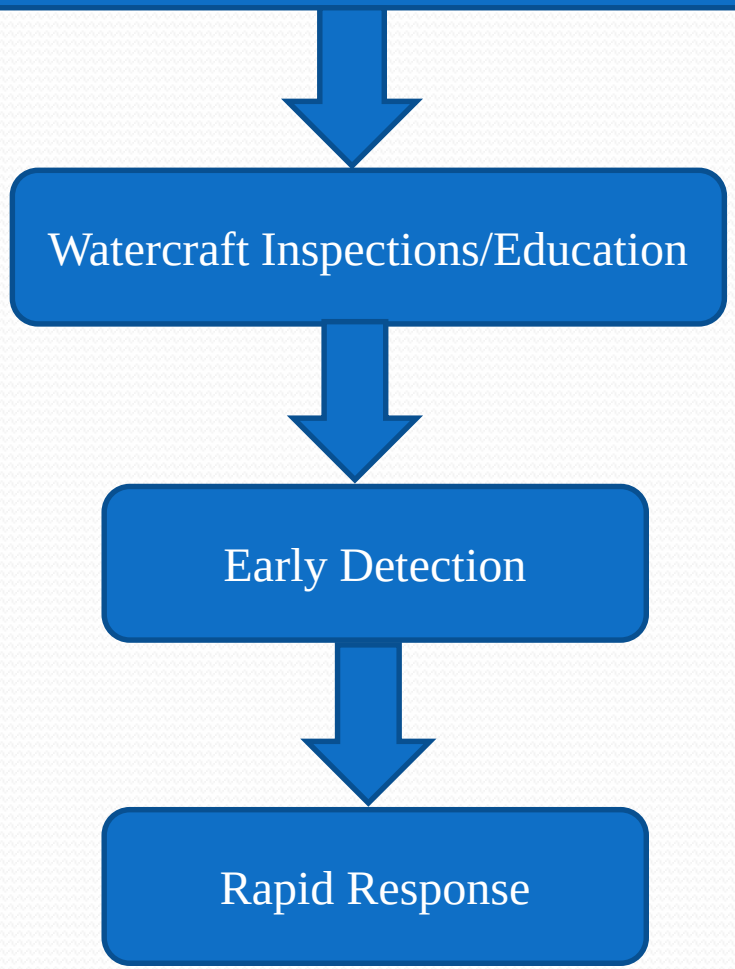
Preventing Establishment of New Aquatic Invasive Species



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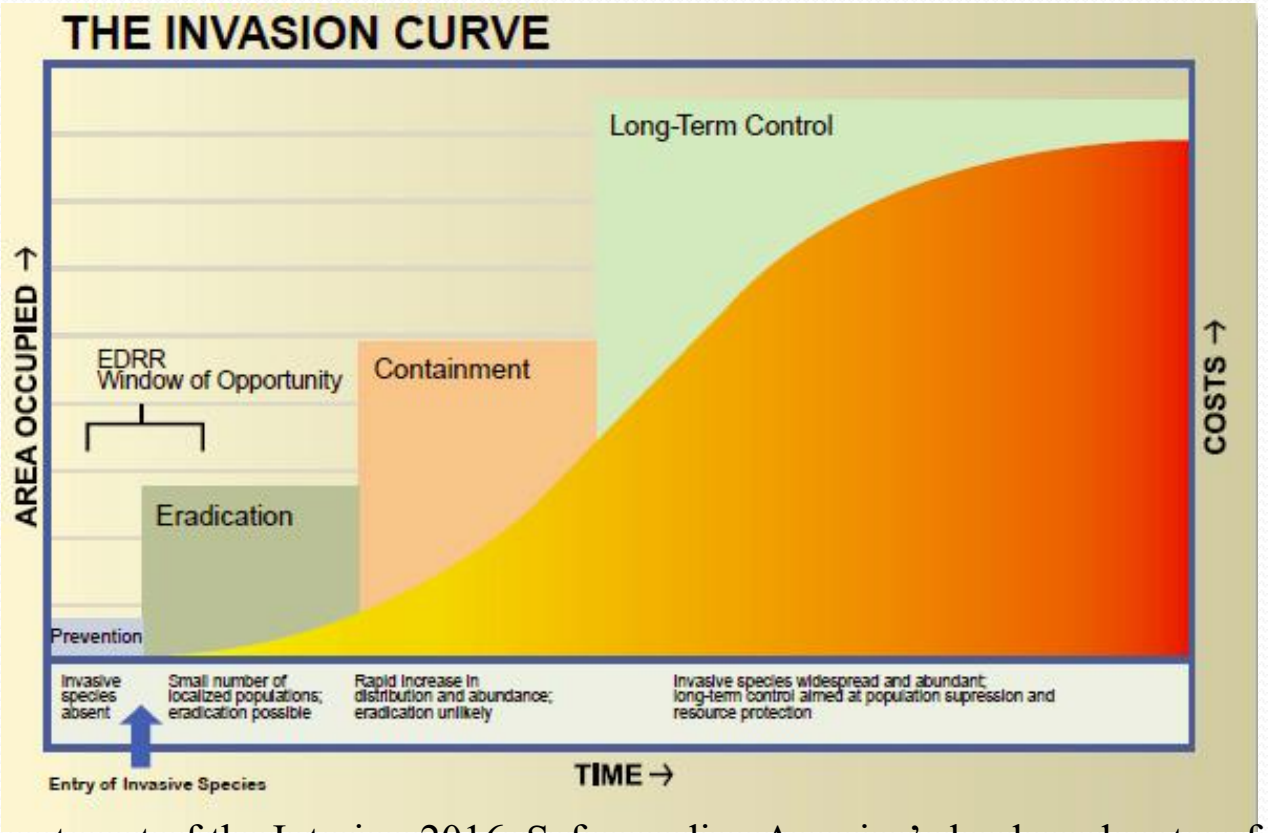
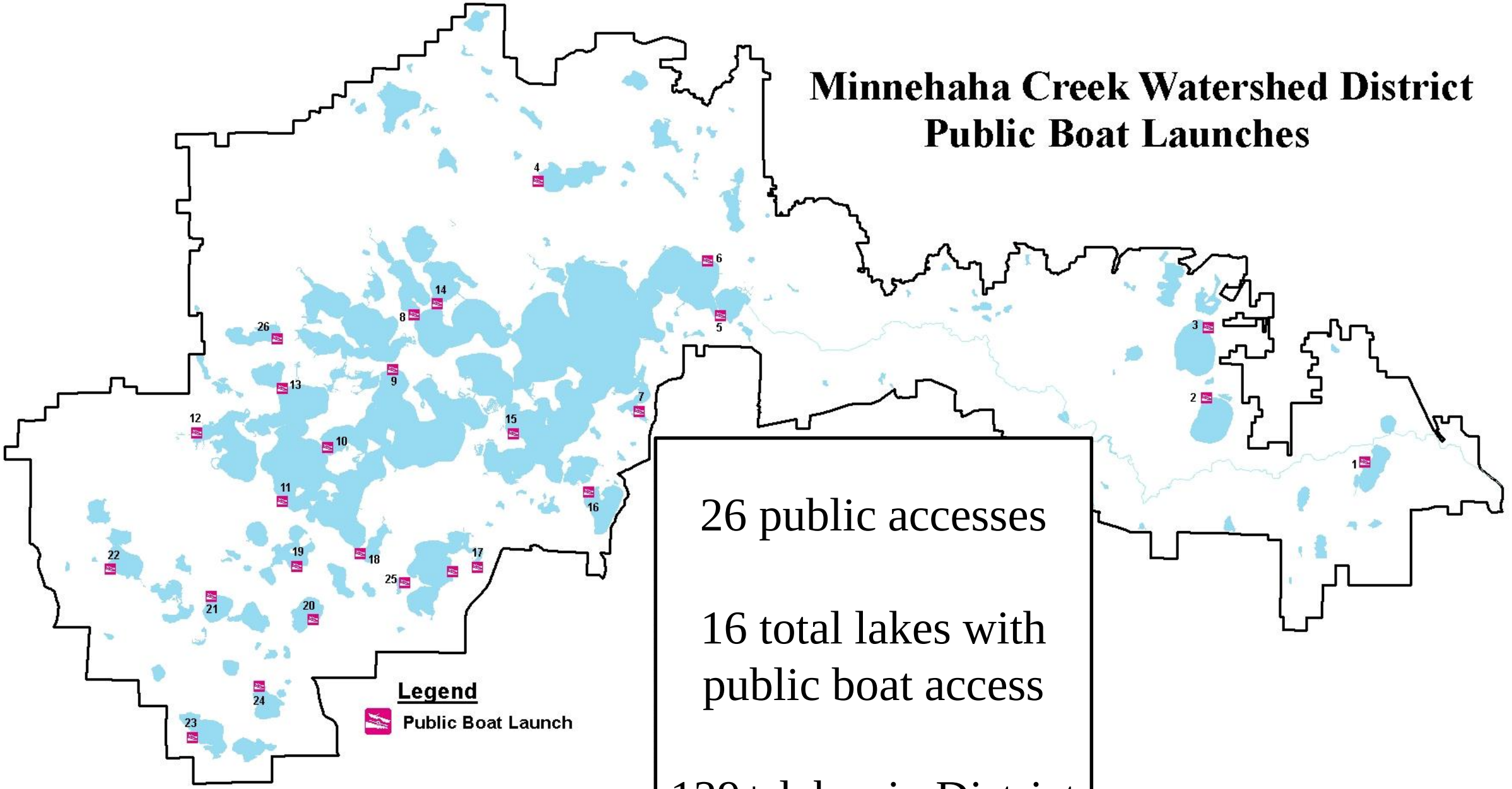
Early Detection & Rapid Response

Goal: Containment or eradication of a newly introduced species before it becomes established lakewide or statewide.



The U.S. Department of the Interior. 2016. Safeguarding America's lands and waters from invasive species: A national framework for early detection and rapid response, Washington D.C., 55p.

Minnehaha Creek Watershed District
Public Boat Launches



26 public accesses

16 total lakes with public boat access

129+ lakes in District

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Initial Approach

- Need for early detection
- Need to establish baseline data on AIS in each waterbody

➢ Adapted approach from Wisconsin DNR Aquatic Invasive Species Early Detection Monitoring Strategy as well as built upon past experiences

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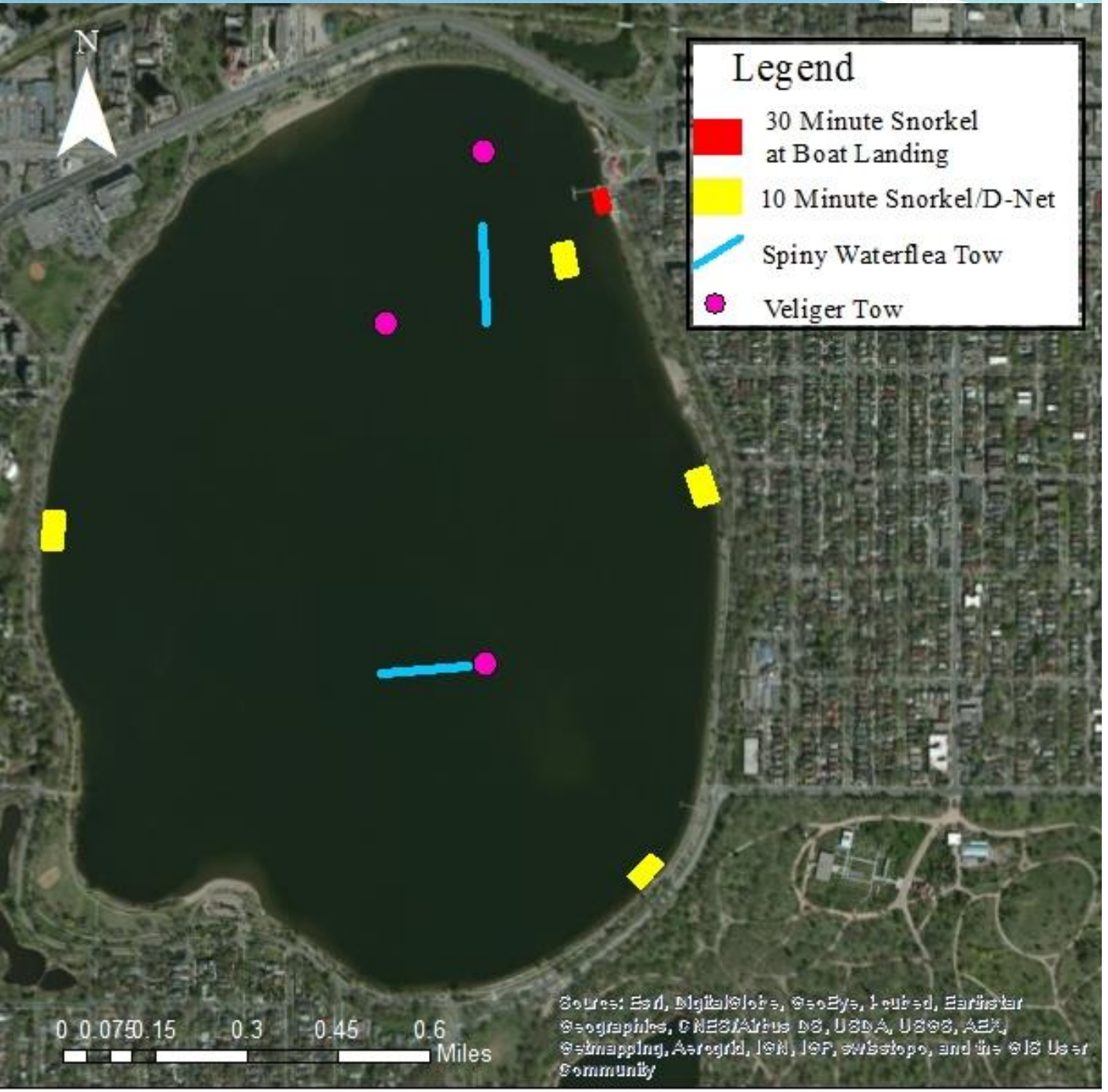
Goal: To assess each waterbody in the District within 5 years, while providing annual monitoring on higher risk lakes.

At each lake:

- Comprehensive Early Detection Survey
  - 30 minute snorkel search at public boat accesses
  - 10 minute snorkel search at 2 to 5 lake sites
  - Rake samples for vegetation & D-Net sweeps for snails at each site
- Zebra Mussel Veliger Tow at 3 sites
- Spiny Water Flea Tow at 2 to 3 sites
- Aquatic Vegetation Meander Survey
- Spring & Summer Aquatic Plant Surveys



Lake Minnewashta: Baseline Monitoring & Early Detection Survey

Fishing pier, sandy, large rocks
AIS found: EWM

Private launch/campsite, mostly sandy.
AIS found: None

Boat launch, small rocks, muck.
AIS found: EWM, CLP

Fishing pier, mostly sandy
AIS found: CLP, EWM

Secondary boat launch, shallow, sandy, few rocks.
AIS found: None

Rocky point with steep drop-off.
AIS found: CLP

Sand/rocks with overhanging vegetation.
AIS found: CLP

Date: 7/21/15
Time: 9:00 AM-12:15 PM
Weather: Sunny, calm
Secchi: 2.6 m

Known AIS present:
Eurasian Watermilfoil (EWM)
Curly Leaf Pondweed (CLP)

Volunteer Zebra Mussel sampler plates

MCWD Zebra Mussel sampler plate & shoreline assessment (checked weekly)

Spiny Waterflea Tow

Zebra Mussel Veliger Tow

Snorkeling/shoreline assessment, D-net, and rake toss

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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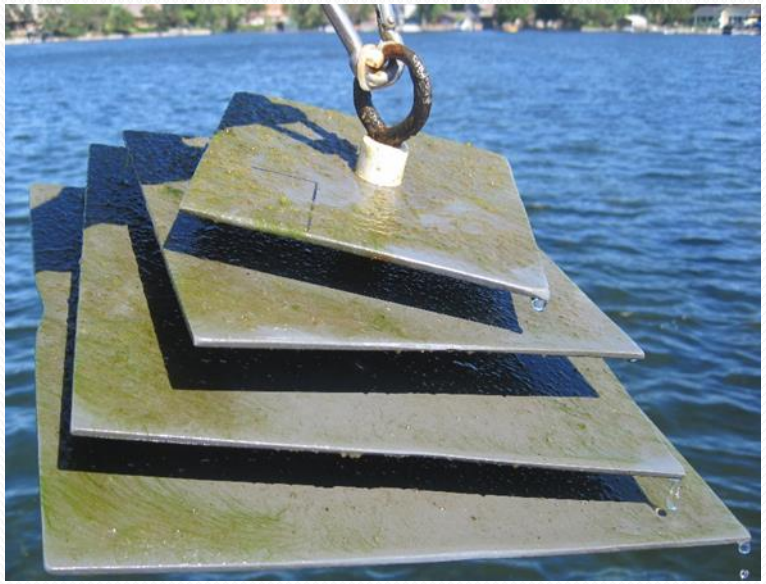
Annual Monitoring at High Risk Lakes:

- Zebra/Quagga Mussel Sampler at Public Access Dock
- 2 to 3 snorkel searches each year



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AIS Early Detector Program

Provides tools and training for the public to monitor for new AIS infestations

2 years (2014 – 2015)

- Completed assessment on most high risk lakes
- One new discovery of Eurasian Watermilfoil
- One discovery of early infestation of zebra mussel
  - Second discovery in 2016

Strategy was too ambitious to complete on all lakes

– had to reprioritize staff time

- Adapt program further to be more efficient for our organization but still achieve our goals for Early Detection and Rapid Response

2016

- Focus staff time at high risk areas & use volunteers elsewhere

Annual Early Detection Monitoring

- Zebra/Quagga Mussel sampler plate at public access docks – checked weekly
- 10 minute shoreline assessment at public access area – weekly
- Snorkel searches at high priority lakes as time allows (1 to 2/season)
- Aquatic Plant Surveys – prioritized by other organizational planning needs
  - More focused in specific areas
- Continuation of volunteer Early Detector Program
- Future addition: rake tosses at public accesses

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Early Detection Has Been Successful

2014

- Early discovery of zebra mussels in Christmas Lake
- Prompted rapid response

2016

- Early discovery of zebra mussels in Lake Minnewashta
- Prompted rapid response

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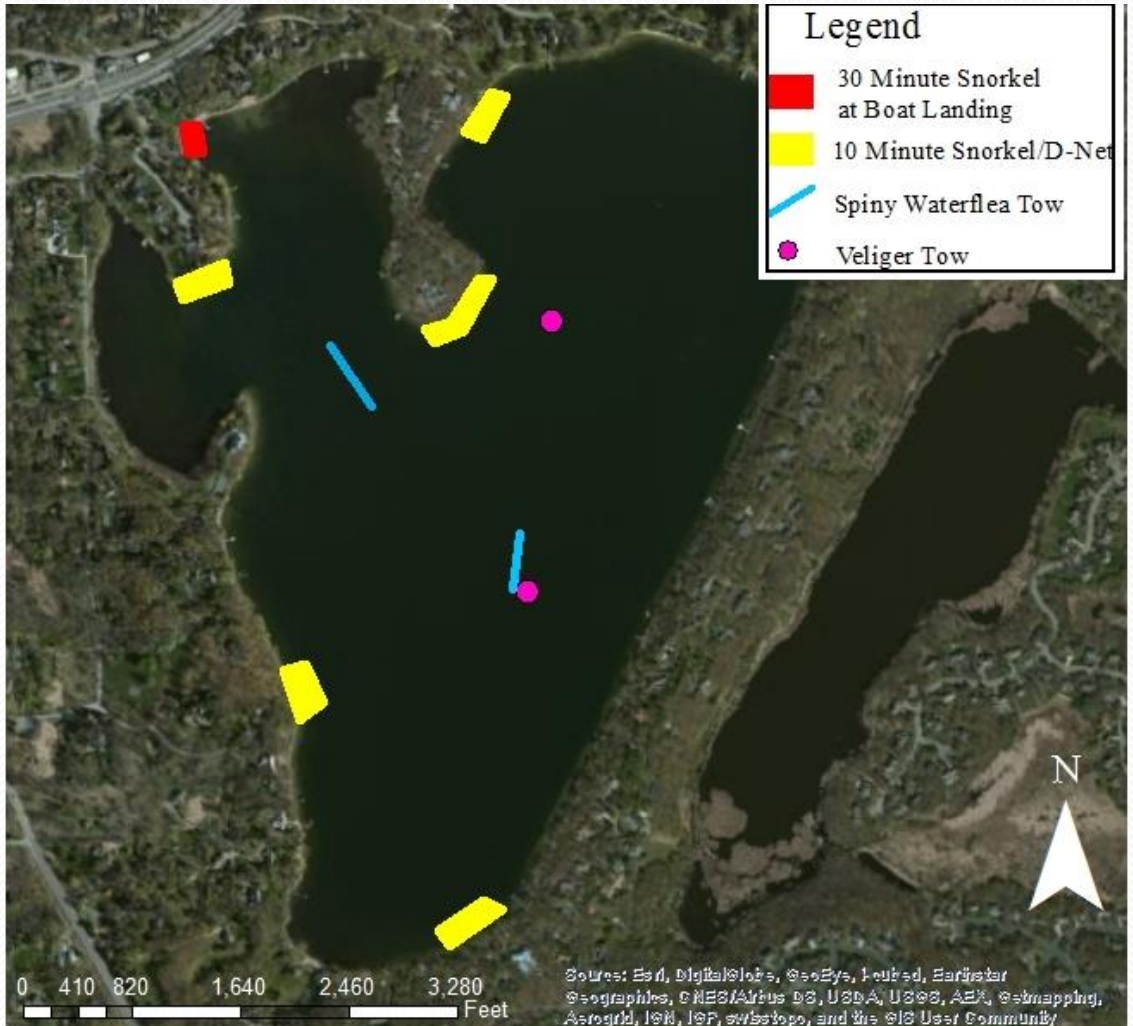
Christmas Lake Zebra Mussel Infestation

- July 28, 2014 – Extensive AIS Search
- August 16, 2014 – Detection of zebra mussels at boat landing



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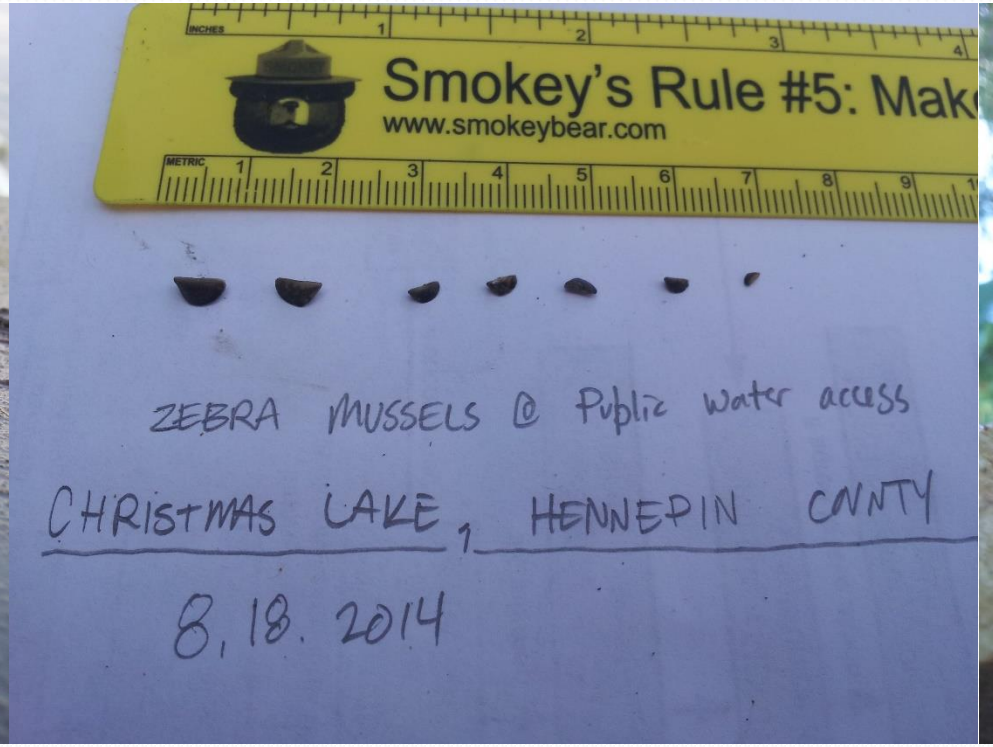
Detection of Invasion

- Sampler check on August 16, 2014 found zebra mussels
  - Several rocks around the access were also checked, and more zebra mussels were found.



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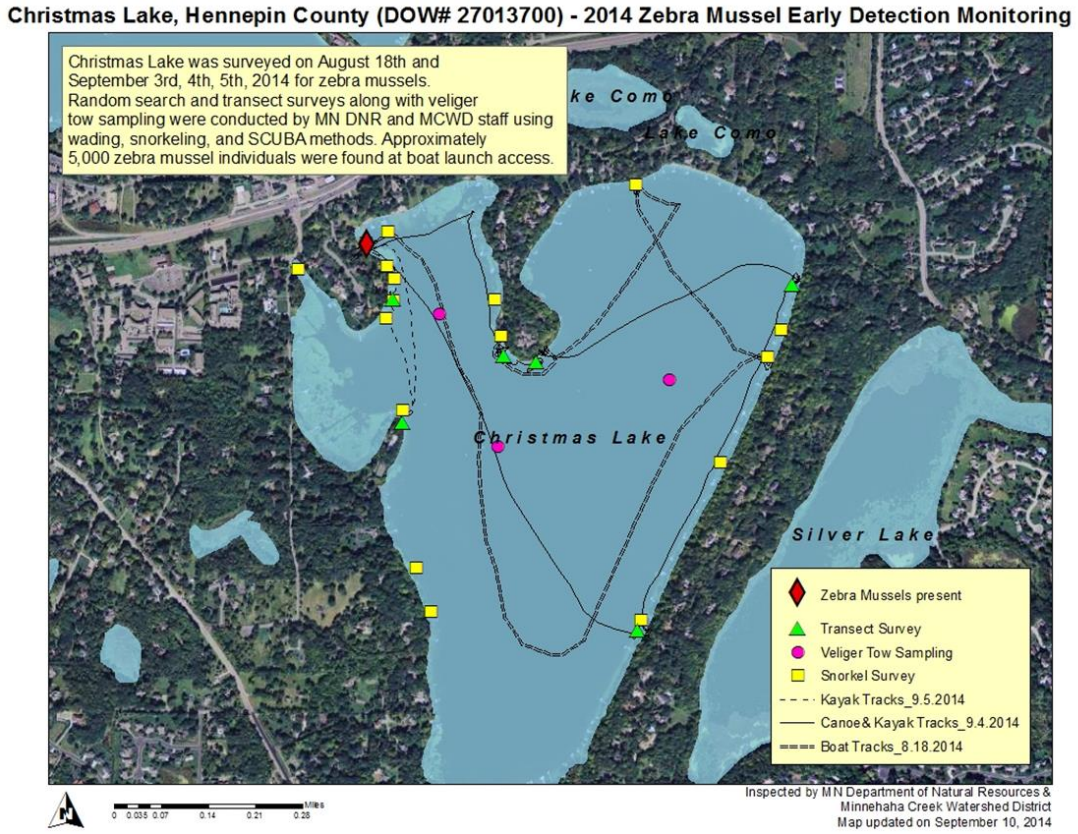
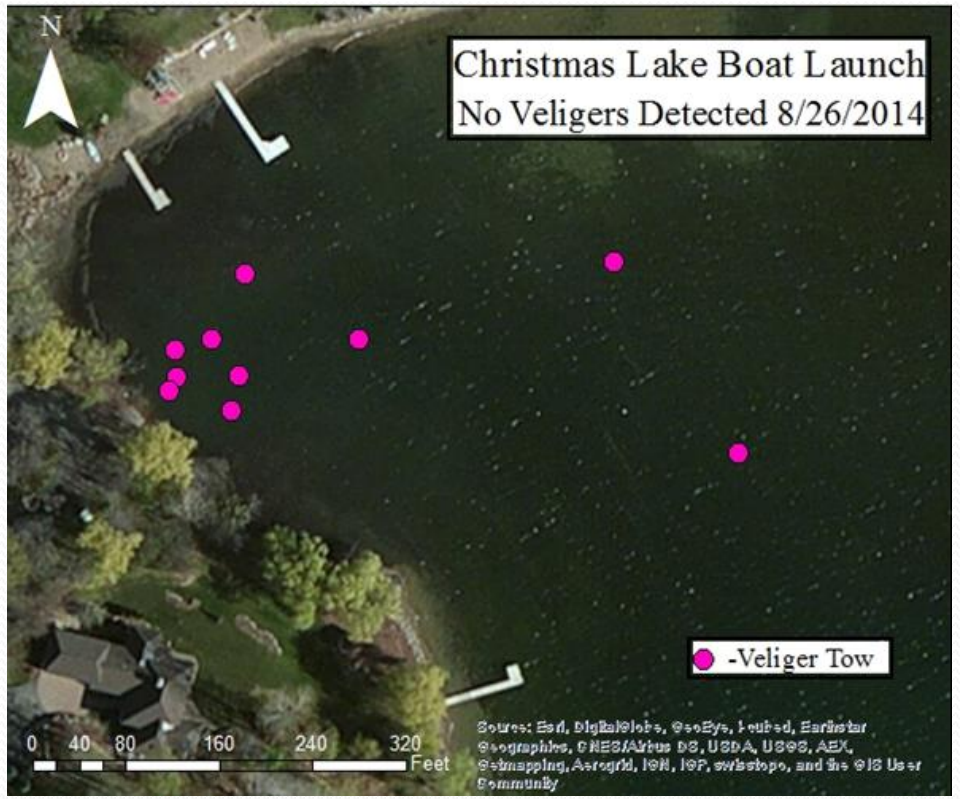
Determine Extent of Infestation

- MCWD & DNR staff performed surveys on the lake and found no additional zebra mussels beyond the public access area.





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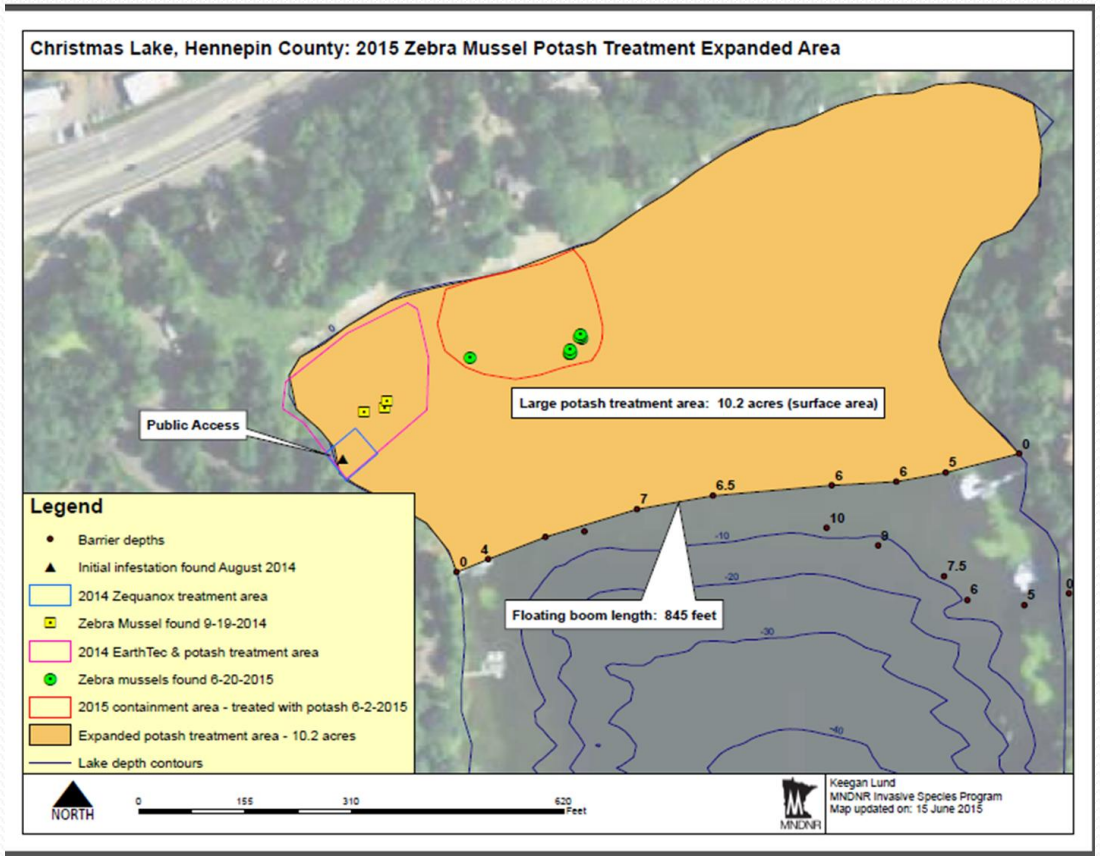
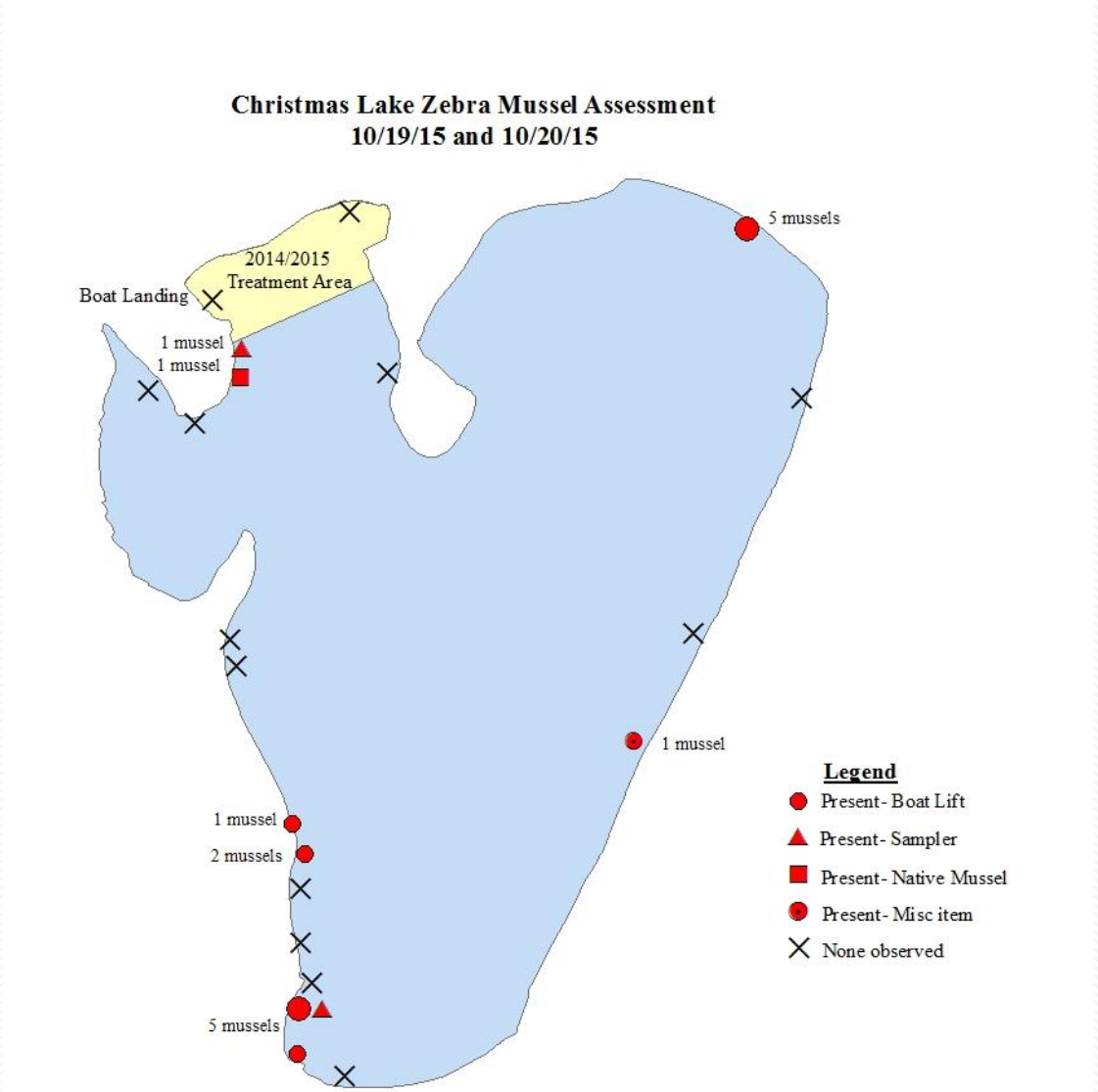
Contained area where zebra mussels were found

- 3 products used - Zequanox, EarthTec QZ & Potassium Chloride
- Initially treated small areas where zebra mussels were found (< 1 acre)
- Found additional zebra mussels outside the small treatment areas
- 2015 – treated large 10 acre area in bay near public access



Should have treated 10 acres initially



Lake Minnewashta Zebra Mussel Infestation

- Weekly checks of zebra mussel sampler plate at public access
- 5 to 10 minute weekly check of rocks/hard substrate at public access
- Volunteers have zebra mussel sampler plates throughout lake
- Snorkel survey at public access (August 18, 2016)

August 18, 2016 – 4 juvenile zebra mussels found on rocks under dock at public access

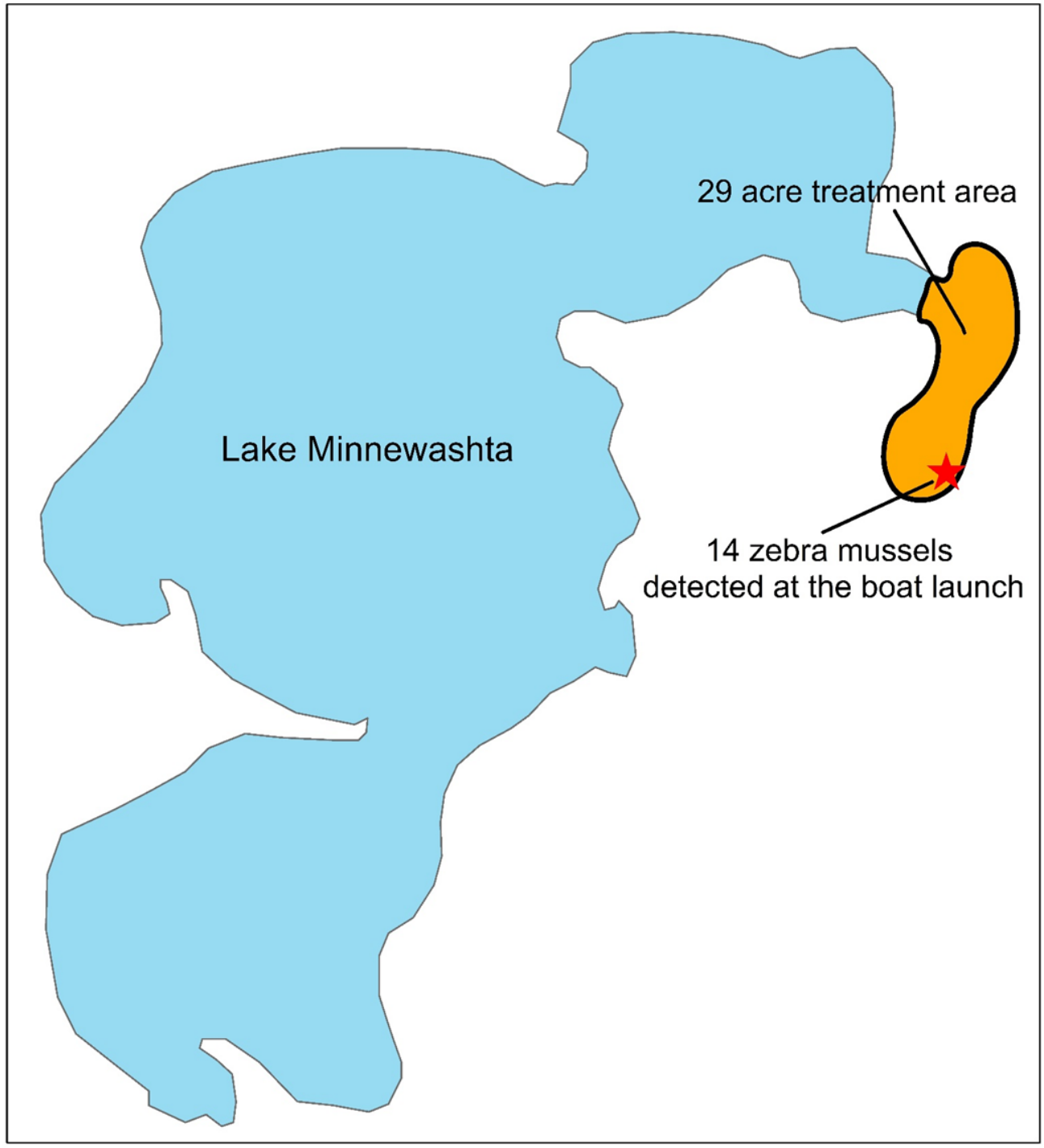
August 19, 2016 – Lake survey to determine extent of infestation

- 10 additional zebra mussels found under same dock at public access
- 2 full days of searching (4 to 5 divers each day)
- No additional zebra mussels found
- No veligers detected
- Size range of 14 zebra mussels (2 mm to 10 mm)
- Appeared to be a recent introduction

Applied lessons learned from Christmas Lake

- Treat as large an area that is reasonable
- Knowledge on product efficacy

Contained area where zebra mussels were found



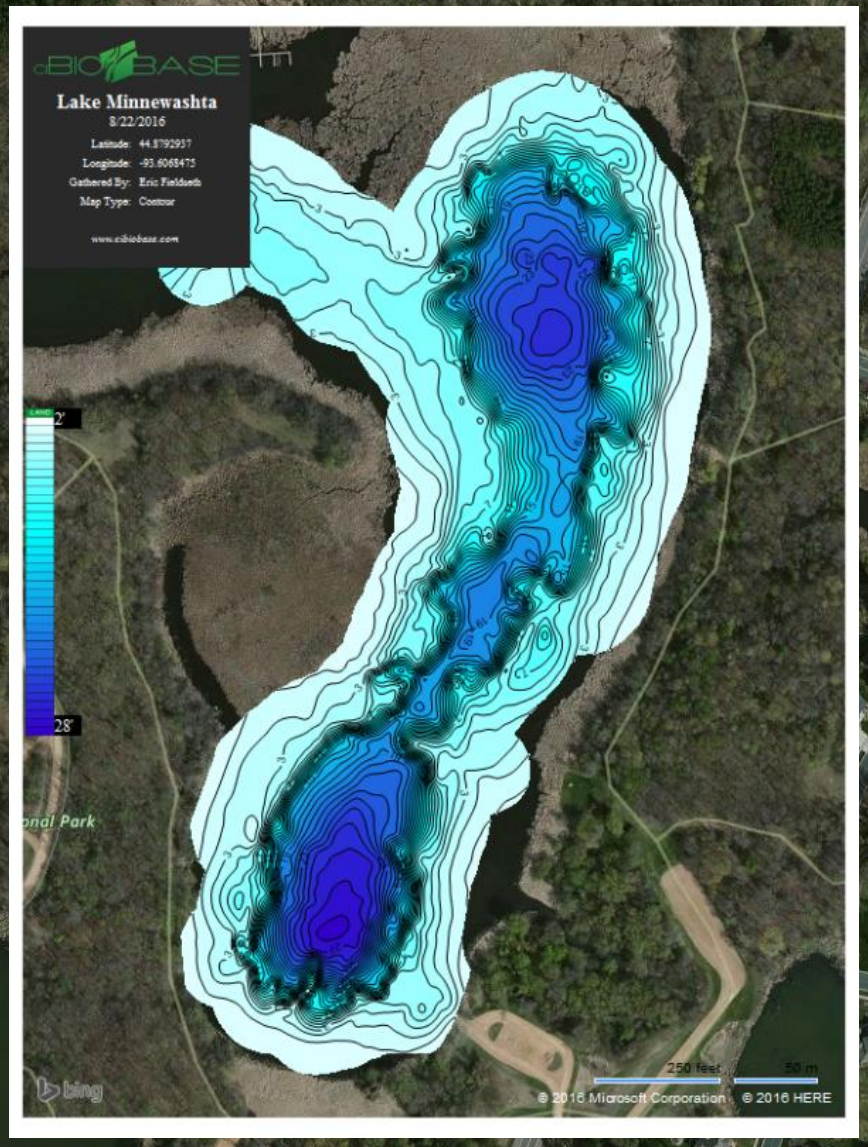
Lake Minnewashta
Proposed Zebra Mussel Treatment Areas

Product Selected:
EarthTec QZ
Target Concentration
(0.3 – 0.5 mg/L Cu)
8 to 14 day duration

Channel Area
29 acres
272 acre ft

Access Site
0.61 acres
2.24 acre ft.

Public Access



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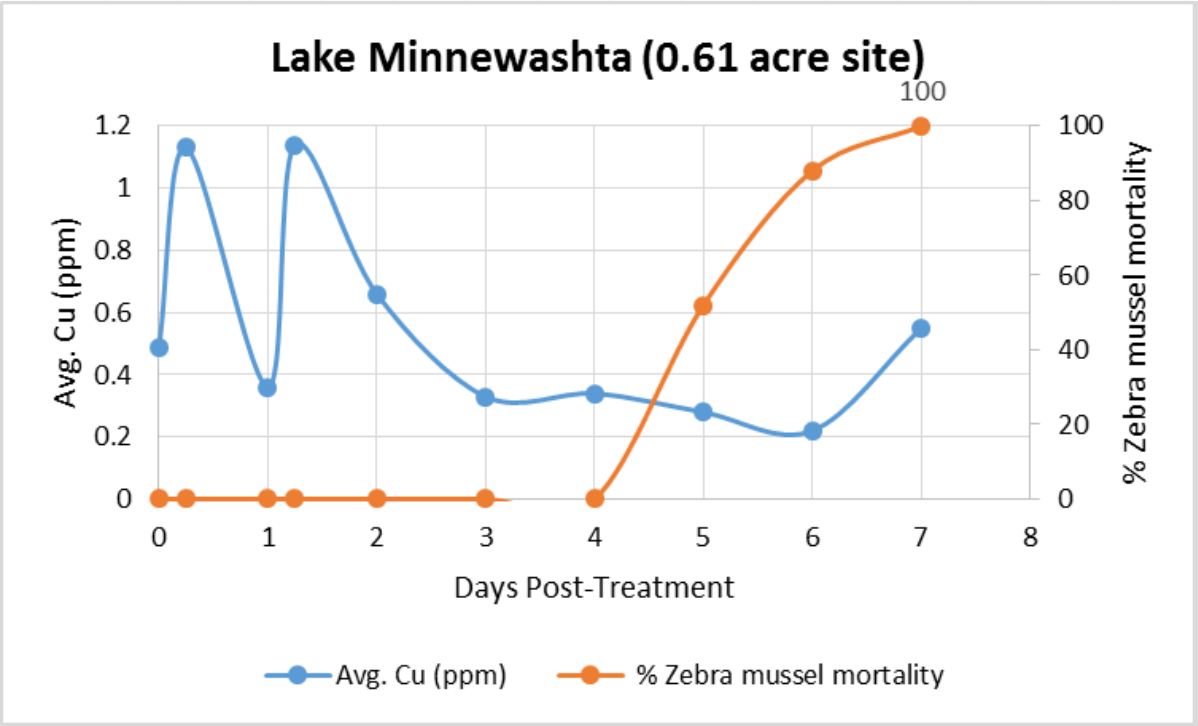
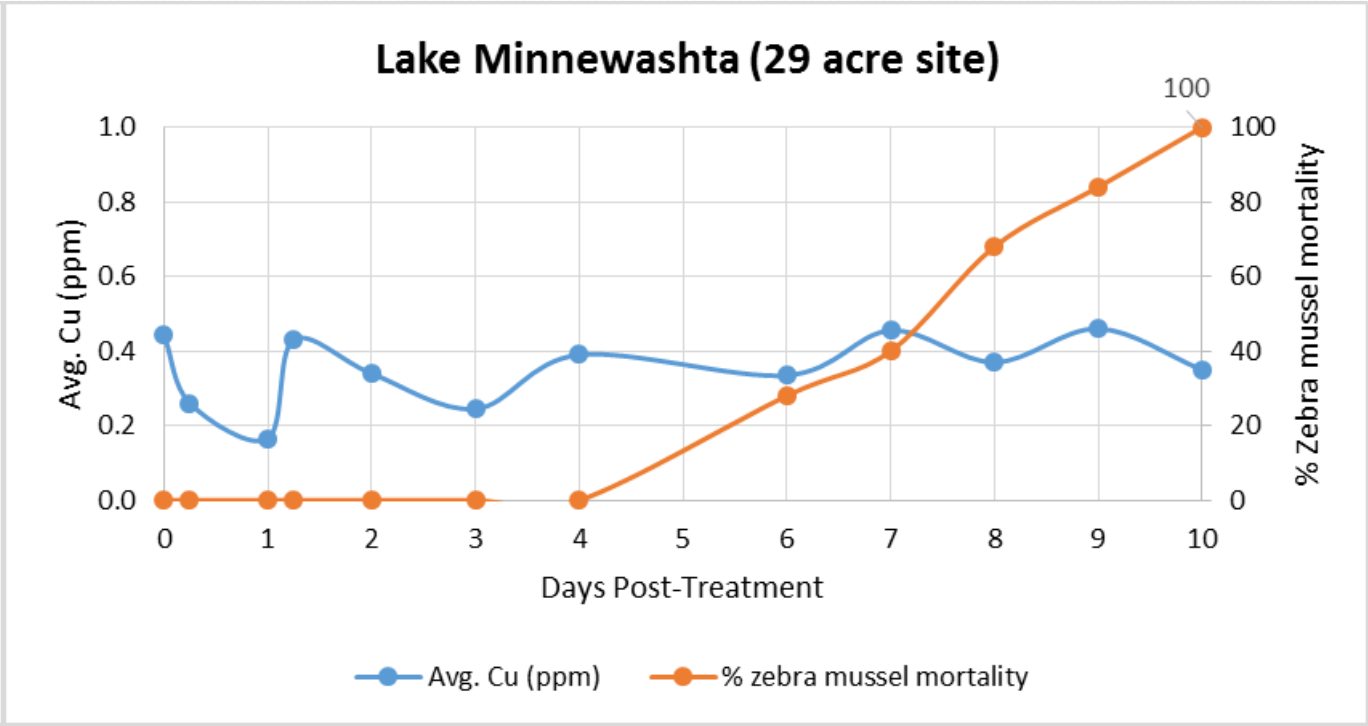
Daily Monitoring

- Zebra Mussel Mortality
- Copper Concentration
- Dissolved Oxygen
- Observed non-target impacts

100% zebra mussel mortality in 7 days



100% zebra mussel mortality in 10 days



Non-target impacts

- Damage to Coontail
- Dissolved Oxygen Crashed
- Minor fish kill consisting of mostly small bullheads

Key Takeaways

- Early Detection is key!
- Adapt to fit within your organization time and priorities
- Incorporate into current monitoring efforts

Rapid Response

- Immediate containment
- Treat as large an area as reasonable
- Learn from past – treatment design – maintaining concentration exposure time

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Any Questions

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