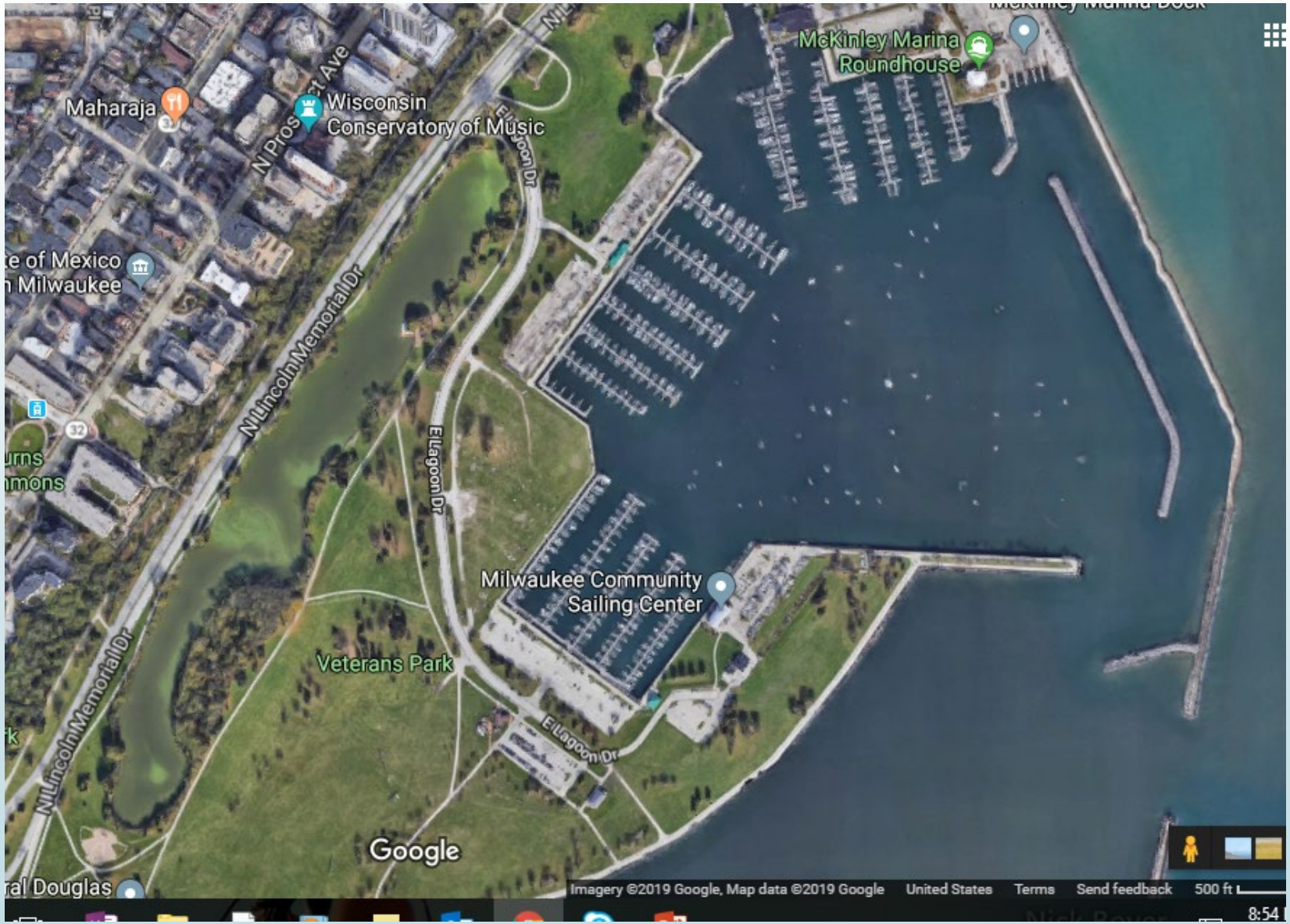
Cyanobacteria & Beaches Wisconsin Case Studies

Donalea Dinsmore, WDNR

Veteran's Park - Milwaukee



Popular Milwaukee Park

July 2017 - Public Health Alerted High Toxins at Veterans Park

- Testing in 2016 by Dr. Todd Miller found microcystin ~3,000 ug/L
- Summer 2017 - microcystin ~73 ug/L a couple of days this year
- Two events scheduled in August – dragon boat race and water ski competition
- Toxin sampling planning 2 days prior, 1 day prior, and morning of the events (per recommendations from WI DPH).
- Milwaukee Public Health to post signs around the lagoon warning people of potential harmful algae.
- Contact beach program and DHS for recommendations on public communication

DHS HAB Toolkit: https://www.dhs.wisconsin.gov/publications/p0/p00853.pdf

EPA Toolkit: https://www.epa.gov/nutrient-policy-data/recreational-water-communication-toolbox-cyanobacterial-blooms

Blue-green algae warning issued for Veterans Park lagoon at Milwaukee lakefront

Jordyn Noennig, Milwaukee Journal Sentinel Published 2:41 p.m. CT Aug. 1, 2017

Veterans Park Lagoon ski event canceled due to high levels of toxic algae

Testing by the UWM School of Fresh Water Sciences found high algal levels

Share Updated: 7:18 PM CDT Aug 17, 2017

SHOW TRANSCRIPT

MILWAUKEE — Toxic Blue Green Algae in the Veterans Park Lagoon has forced the cancellation of the Malibu Open water ski event, according to an official with Milwaukee County.

WUWM 89.7 MILWAUKEE'S npr

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Toxic Algae Problem Plagues Wisconsin Lakes & Streams

By SUSAN BENCE • AUG 9, 2017

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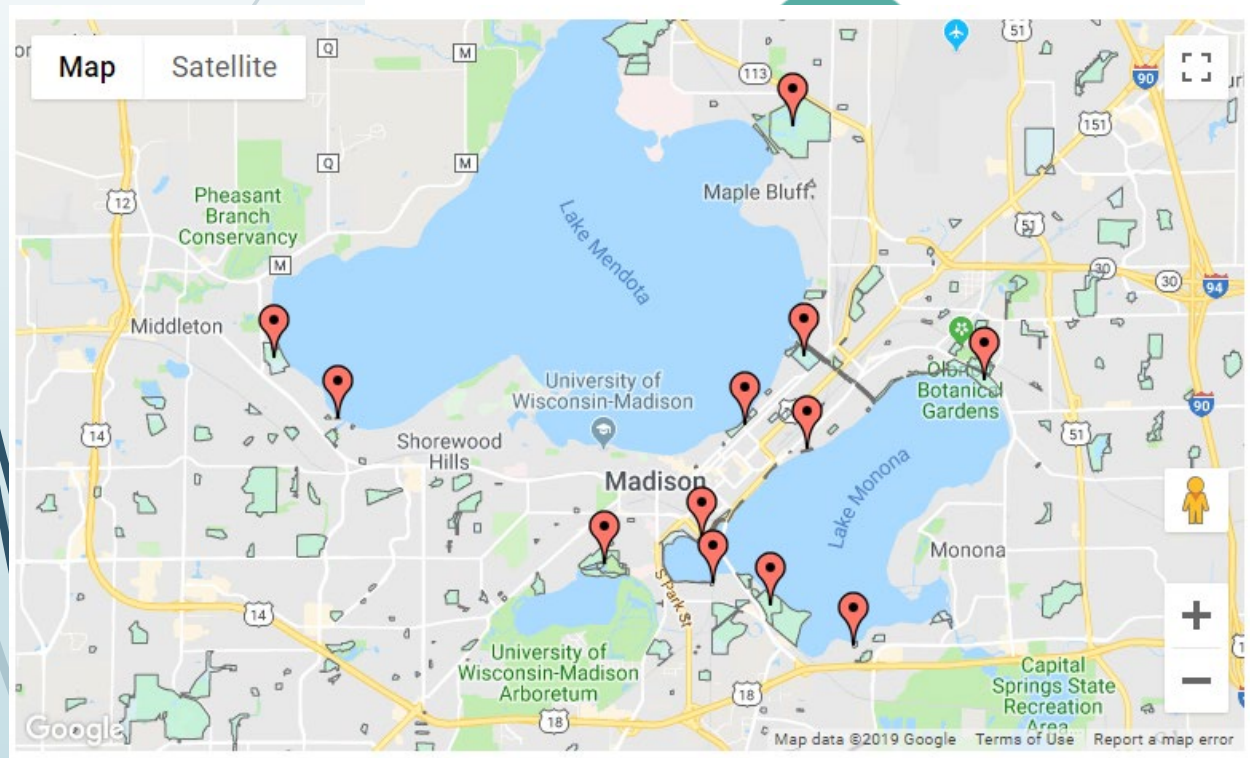
Scientist Todd Miller gathering water samples from Veterans Park lagoon this Tuesday.
SUSAN BENCE / MILWAUKEE PUBLIC RADIO

Listen
5:19

Warning Signs
Fact Sheets at Vendor

City of Madison Beach Program



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Public Health / Environmental Health / Beaches, Lakes & Pools / Beach Conditions

Beach Conditions

Beach Alert: Our beach monitoring will begin again on Memorial Day 2019. Always take an overall look at water conditions before you or your pet enter the water and avoid contact with algal blooms. Swim at your own risk.

Memorial Day to Labor Day, we test water at the beaches listed below for E.coli bacteria and cyanobacteria (blue-green algae) and their toxins to protect swimmers and other recreational water users. If a water test shows concerning results, the beach will close until levels of E. coli bacteria or blue-green algae decline.

For more information on how we test, see our Monitoring Beach Health factsheet.

Swimming

Before swimming, always take an overall look at water conditions. Conditions can change quickly, and testing results may not always reflect real-time water quality. A few things to be aware of:

- Swimming is not advisable after a heavy rainfall because bacteria levels in the water may be high.
- Avoid contact with blue-green algae blooms which appear blue-green, green, reddish-purple, or brown, and cause the water to be murky.

For more tips on staying healthy while swimming and ways to keep our water safe, visit our Healthy and Safe Swimming page.

Beaches

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Public Information Webpage

When we collect samples

E. coli Bacteria

- We collect water for *E. coli* testing at least once a week at each beach.
- If bacteria levels are elevated, the beach is closed. Weekday follow-up occurs until the sample meets an acceptable bacteria level, at which point the beach will be reopened.

Cyanobacteria (blue-green algae)

- We conduct visual inspections for blue-green algae blooms at least once a week at each beach.
- In addition, if a lifeguard or beach user reports an algae bloom, Public Health staff will follow-up at that beach as soon as possible.
- If a blue-green algae bloom is present, water is collected daily (M-F) to test for cyanobacteria.
- The beach will remain closed until levels of cyanobacteria are acceptable.

Beach Closures for Swimming

- Beach water quality closures occur when levels of *E. coli* or cyanobacteria and their toxins exceed established safety limits. For *E. coli* this limit is 1,000 MPN/100 mL.
- For cyanobacteria, the presence of potential toxin producing algae and/or measured microcystin toxin 20 ppb or higher will prompt a closure.
- A beach water quality closure means that the water has been deemed unsafe for swimming.
- Beach goers may still enjoy the sandy area of the beach and the park's other facilities while avoiding contact with the water.

Blue-Green Algae Precautions

Our lakes can provide hours of fun, but they can also cause illness. We monitor beach water quality, but you can also take steps to stay healthy.

Check Out Beach Water Quality

If you are planning to swim at an area beach, check out our beach water quality page for the beach you are visiting. We monitor 20 area beaches for E-coli bacteria and blue-green algae.

Always Look at Water Conditions

Before swimming, always take an overall look at water conditions. Conditions can change quickly, and posted testing results may not always reflect real-time water quality.

Do not swim or let your dog swim if:

- **We have just had a heavy rainfall**
  Swimming is not advisable after a heavy rainfall because bacteria levels in the water may be high. Bacteria, viruses and protozoa in the water can cause some ear and eye infections, stomach aches, diarrhea, and flu-like symptoms.
- **You see a blue-green algae bloom**
  Blue-green algae can appear blue-green, reddish-purple, or brown, and cause the water to be murky.

If You Have Been in the Water with Blue-Green Algae

- Rinse off well when you get out.
- If you have symptoms you think are due to contact with the blooms, call your health care provider or Poison Control Center at 1-800-222-1222.

Tips for Dog Owners

Science of the Total Environment 625 (2018) 809–818

Contents lists available at ScienceDirect

Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv

Water Exclosure Treatment System (WETS): An innovative device for minimizing beach closures

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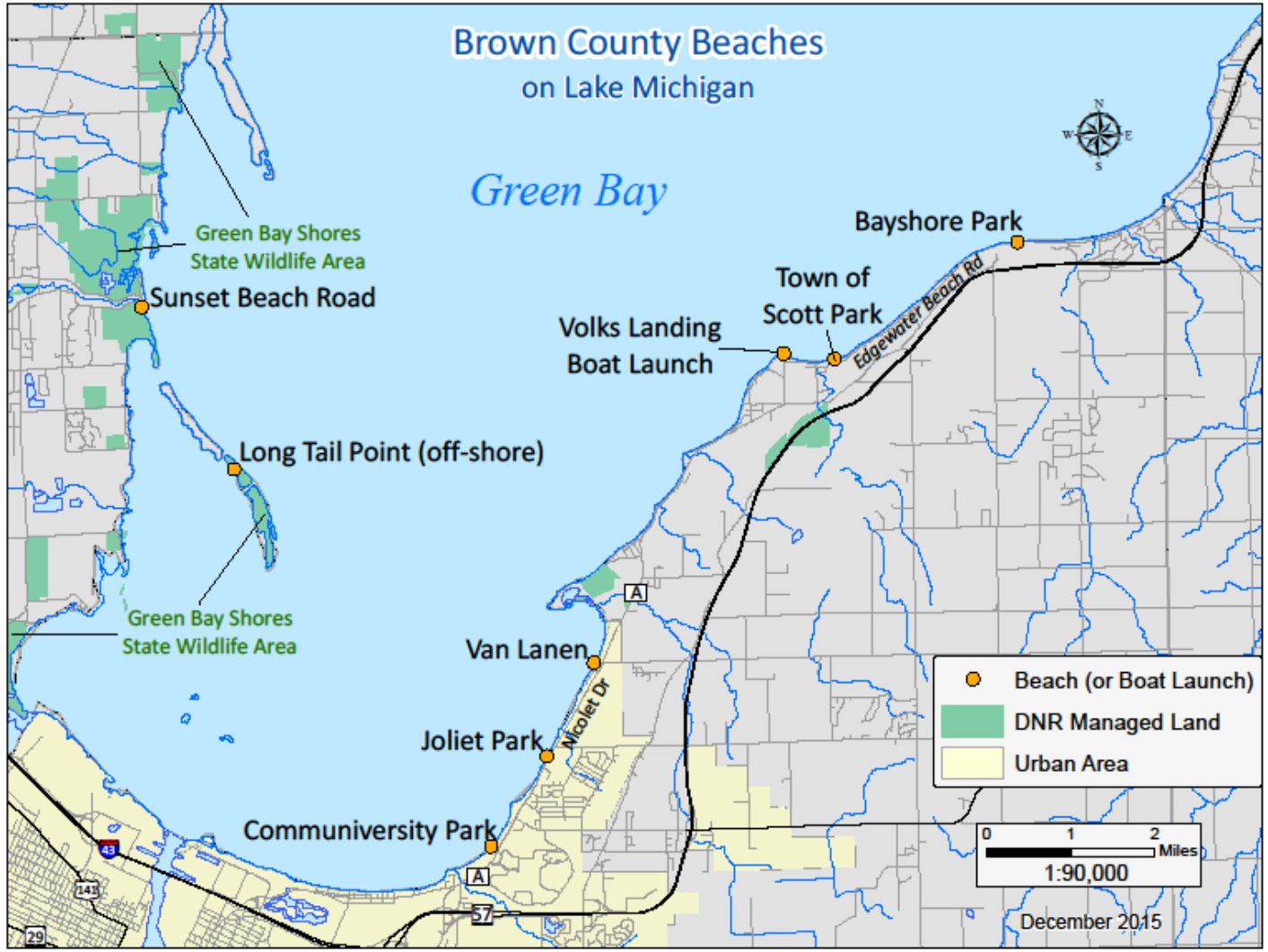
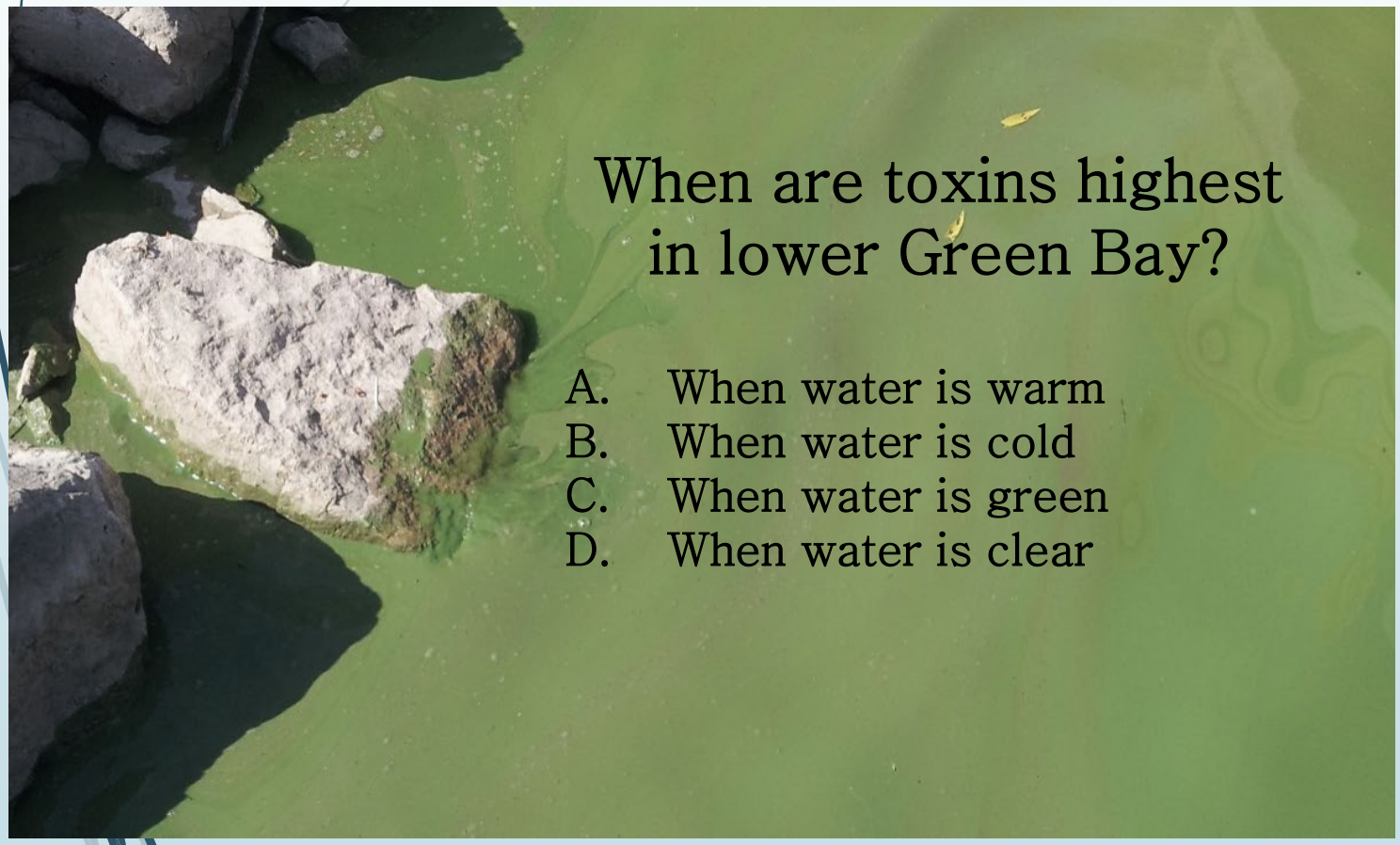
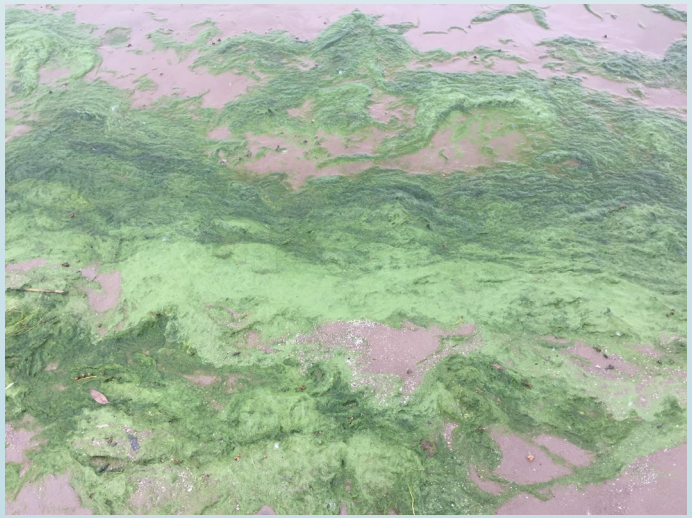
Green Bay & Bay Beach Restoration

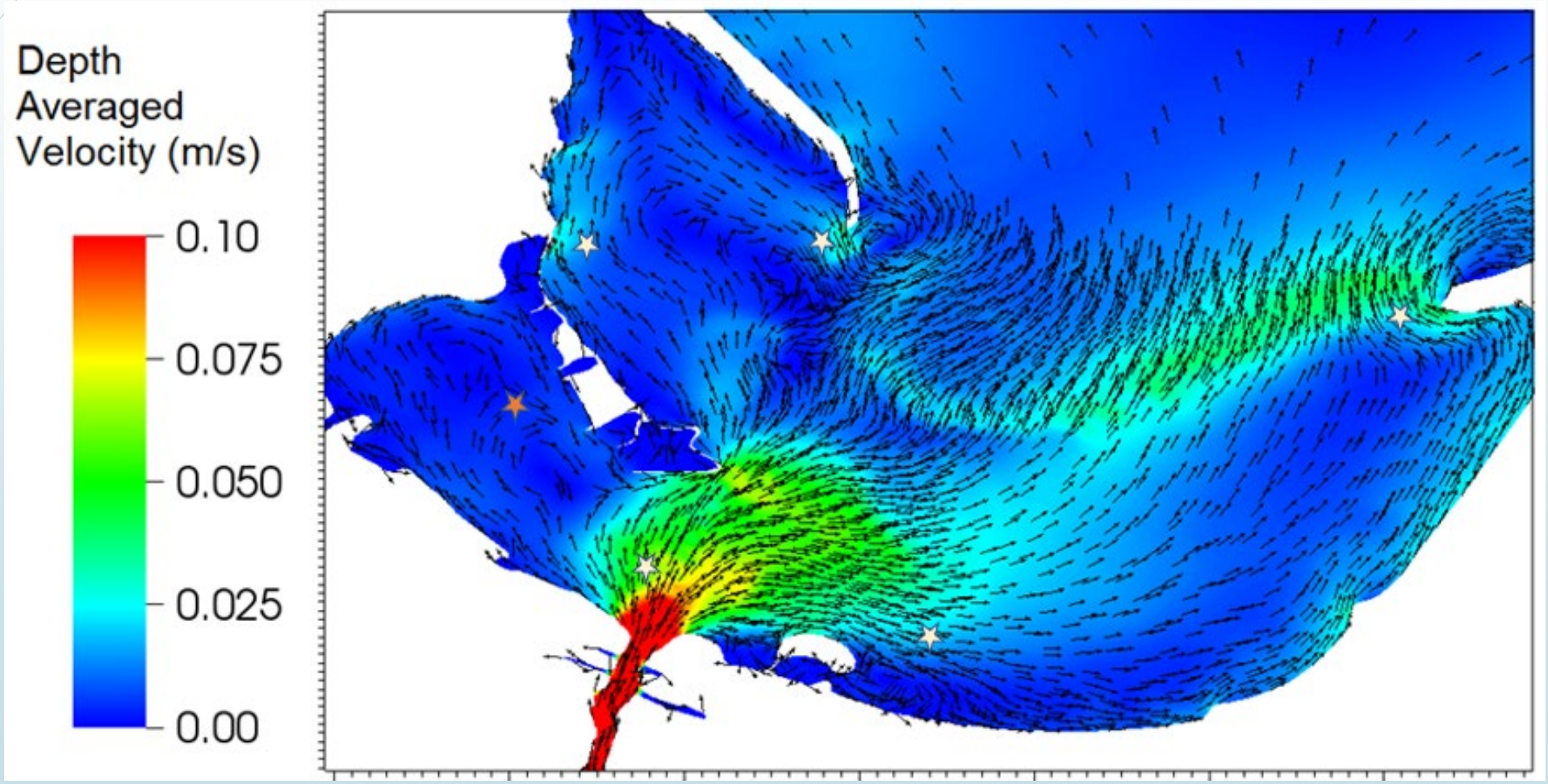


What People See

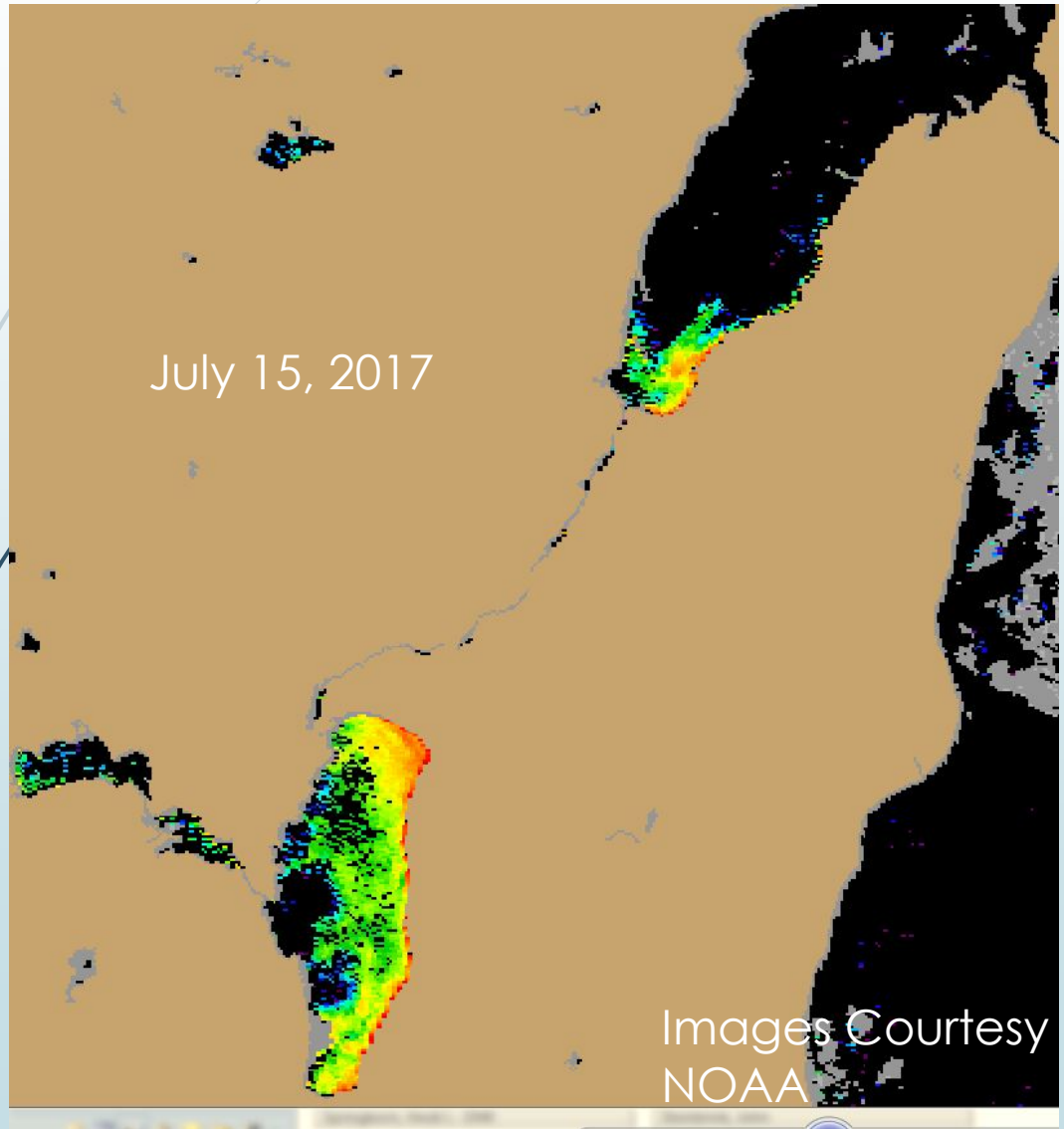


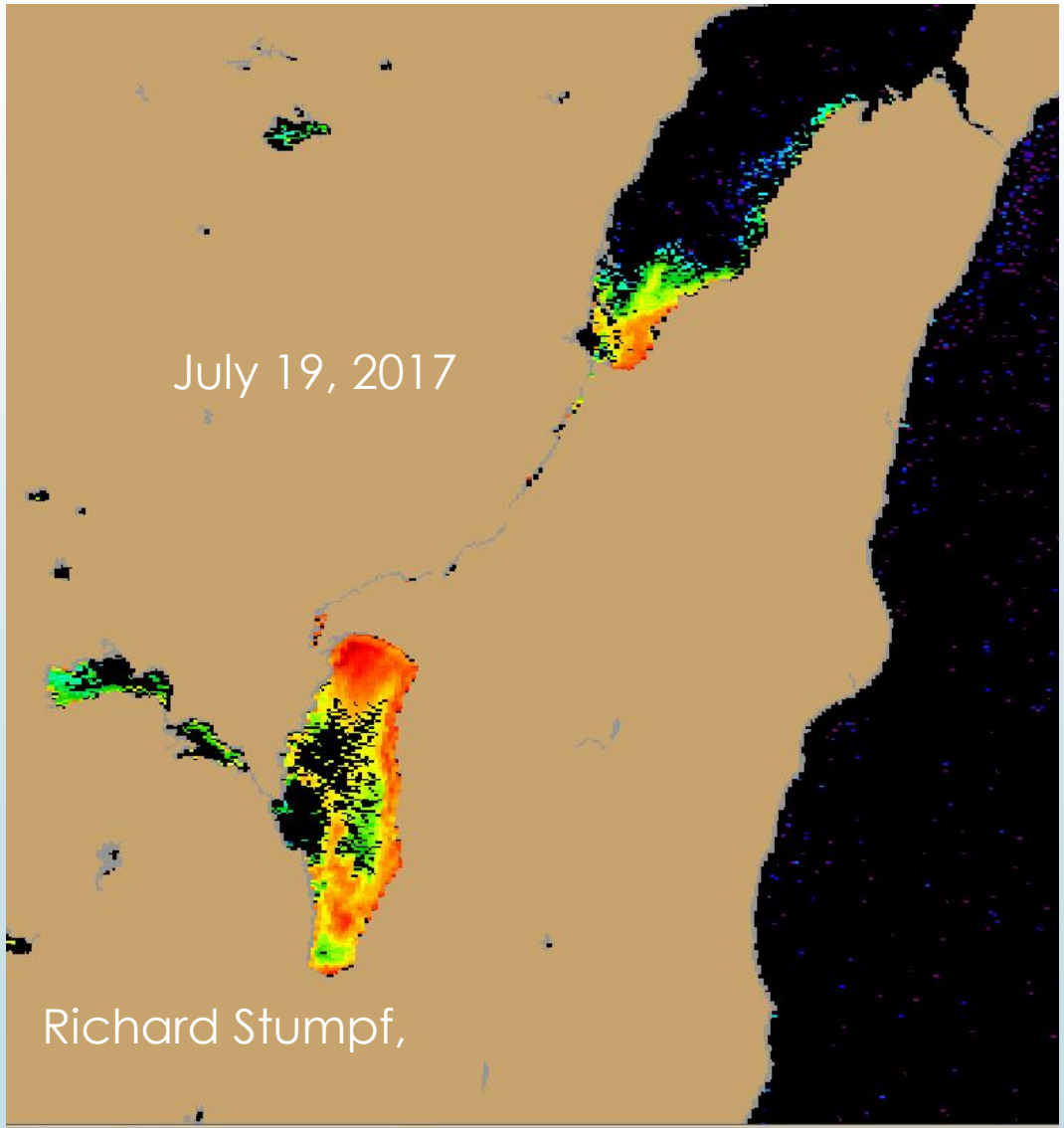


Complex Currents in Lower Green Bay



Bloom Formation Satellite Imagery - NOAA



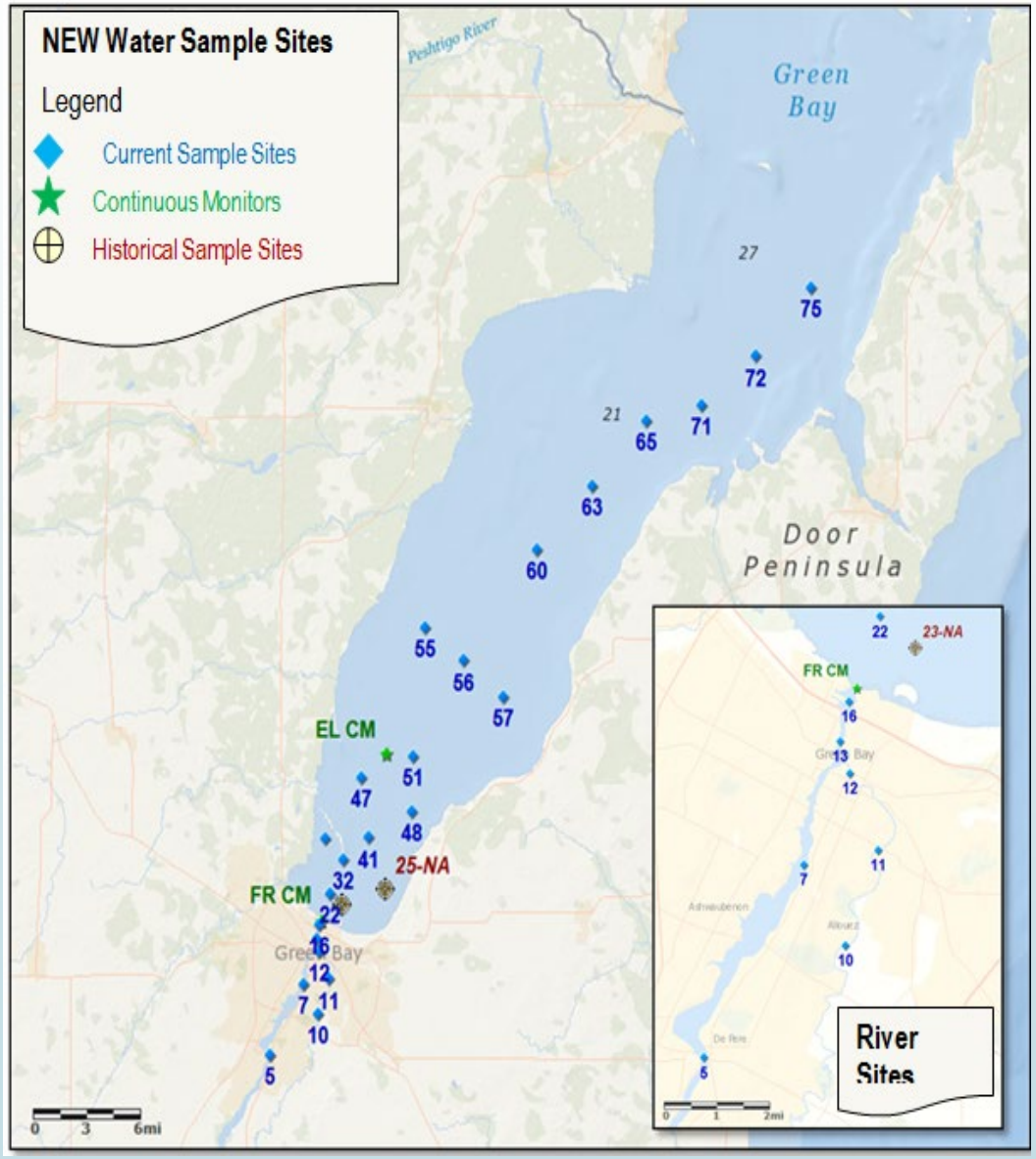


Project Objectives

- Extent, severity, toxicity, trends – intensify during peak periods (usually July – September)
- Develop data set to support modeling tools
  - Implemented locally – Virtual Beach (recreation risk)
  - Time scale appropriate for beach use
- Inform status of BUIs – baseline or removal
- Provide rich data set to support compatible research – share data to avoid duplication
- Comparison with Lake Erie
- Transferable methods (Lake Winnebago)

Basic Sampling Plan

- Weekly Sampling at 4 New Water sites May - September
- 2 Nearshore sites 2-3 times/week
  - Soft algae, toxins, phycocyanin, chlorophyll a , nutrients
  - Genetic markers
- Buoys – mouth of river, Long Tail Point, nearshore@ Bay Beach
  - YSI EXO 2 sonde - DO, pH, conductance, temperature, and turbidity sensors;
  - Turner Cylcops 7 fluorimeters for chlorophyll and phycocyanin
  - Wind monitor
  - Photosynthetically Active Radiation (PAR) – one buoy



PreliminaryMicrocystin Results 2016 - 2018