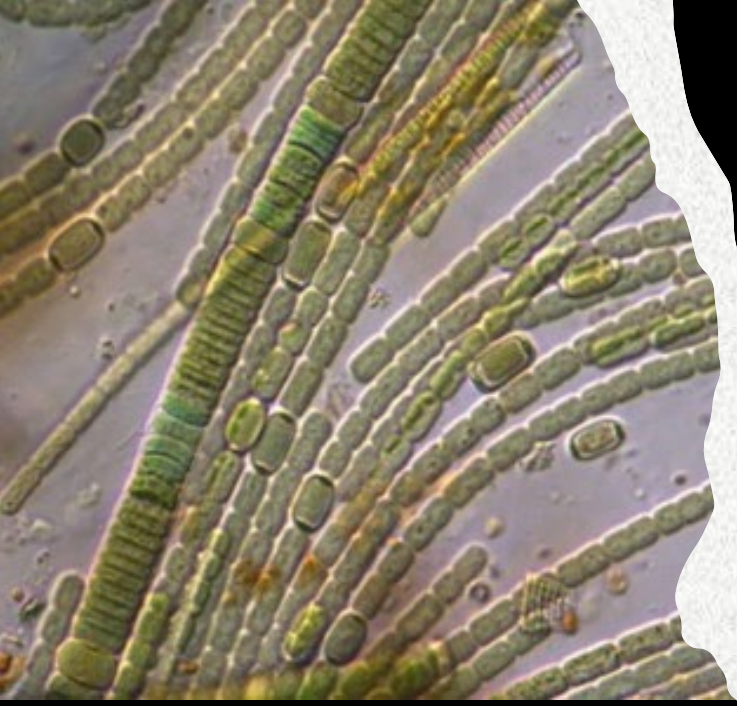


Focused Freshwater Harmful Algal Bloom Monitoring at Lake Elsinore

Date: March 22, 2020

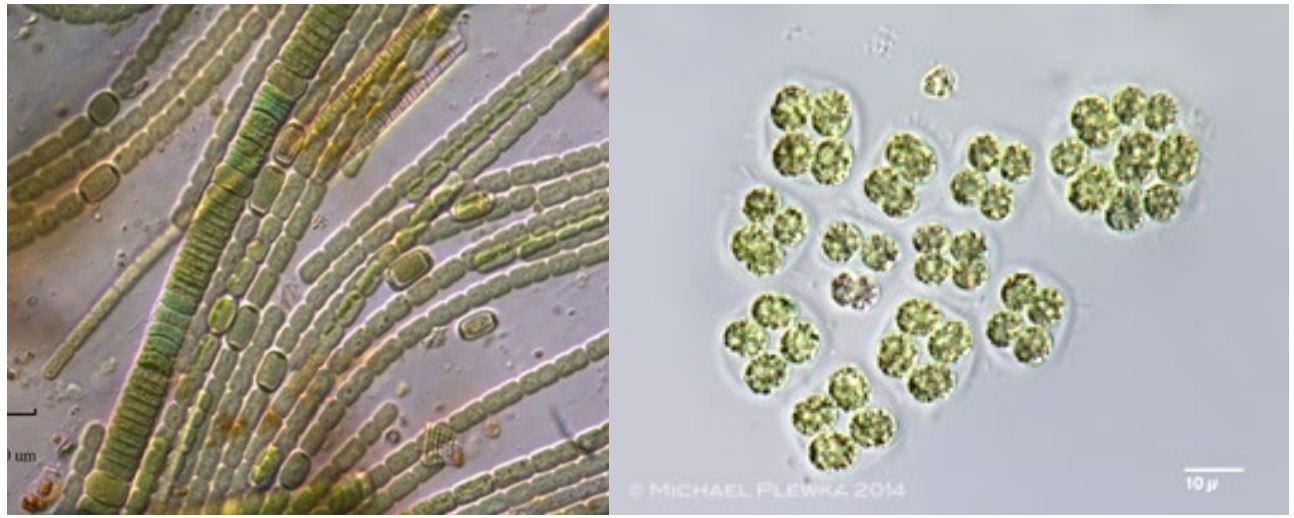
LE/CL Nutrient TMDLs Task Force Meeting

Goal of the Presentation

- Overview of the funded study
  - Background
  - Objective
  - Approach
  - Design
- Opportunities for collaboration and coordination
  - Planning
  - Execution

Freshwater Harmful Algal Blooms (FHABs)

- Overgrowth of cyanobacteria which often produce toxins



Impacts

- Ecosystem function
- Aesthetics
- Taste and odor compounds
- **Toxins:** recreation, drinking water, agriculture

Beneficial Uses	
Rec-1	Rare
Rec-2	Cul
Mun	Fish
Agr	Wild
Comm	

(Source: State Board)

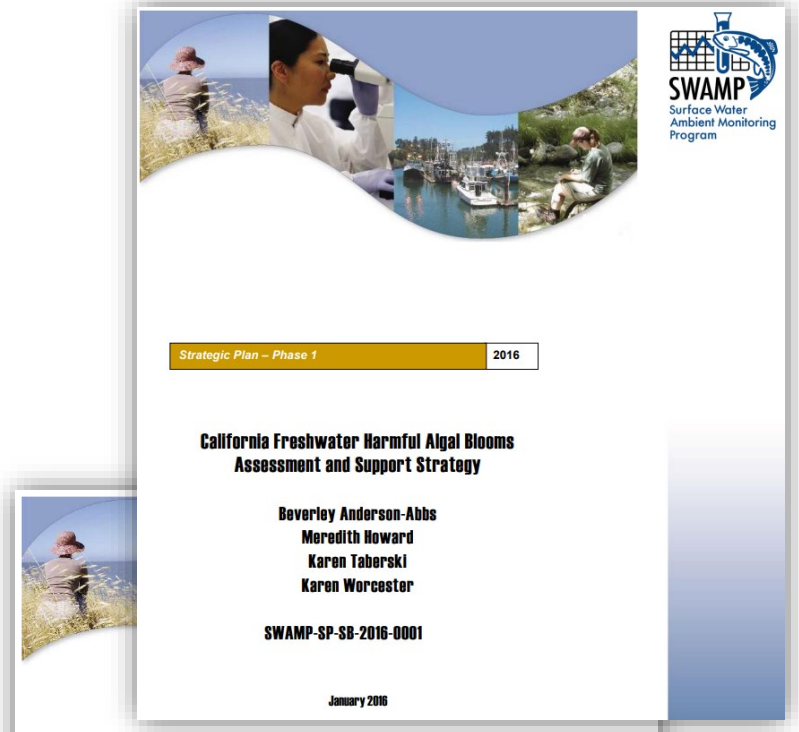
Photo: LE/CL Nutrient TMDL Task Force

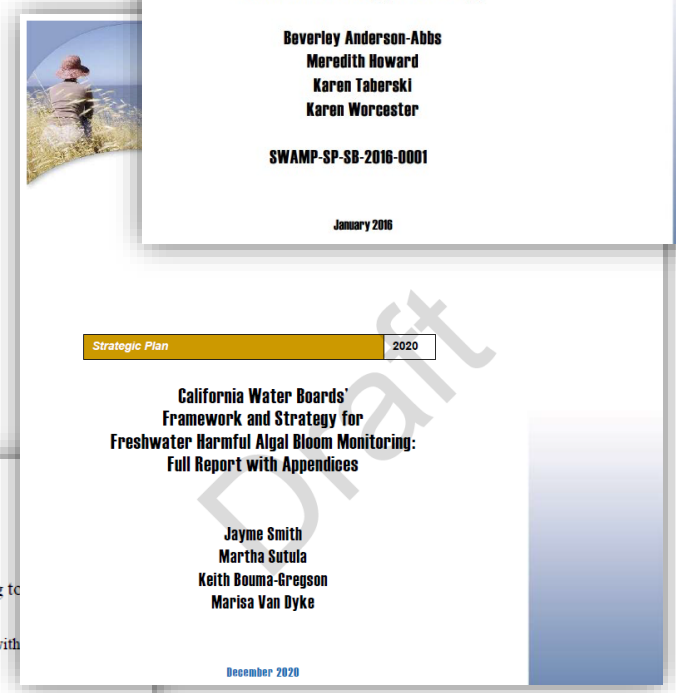
Photo: NOAA

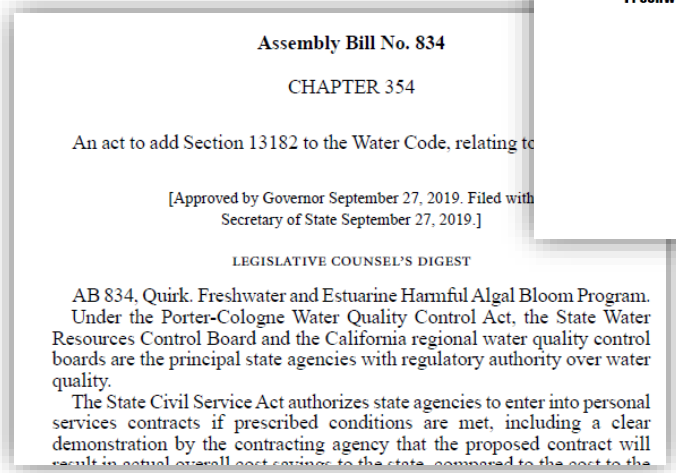
Photo: https://www.ecowatch.com/ (Lake Erie)

Monitoring

- Publications
  - 2016. California FHAB Assessment & Support Strategy
  - 2018. AB 834
  - 2020. Draft California FHAB Monitoring Strategy
- Importance
  - Public notification
  - Temporal and spatial trends
  - Environmental drivers
  - Management solutions






Assembly Bill No. 834

CHAPTER 354

An act to add Section 13182 to the Water Code, relating to

[Approved by Governor September 27, 2019. Filed with Secretary of State September 27, 2019.]

LEGISLATIVE COUNSEL'S DIGEST

AB 834, Quirk. Freshwater and Estuarine Harmful Algal Bloom Program.

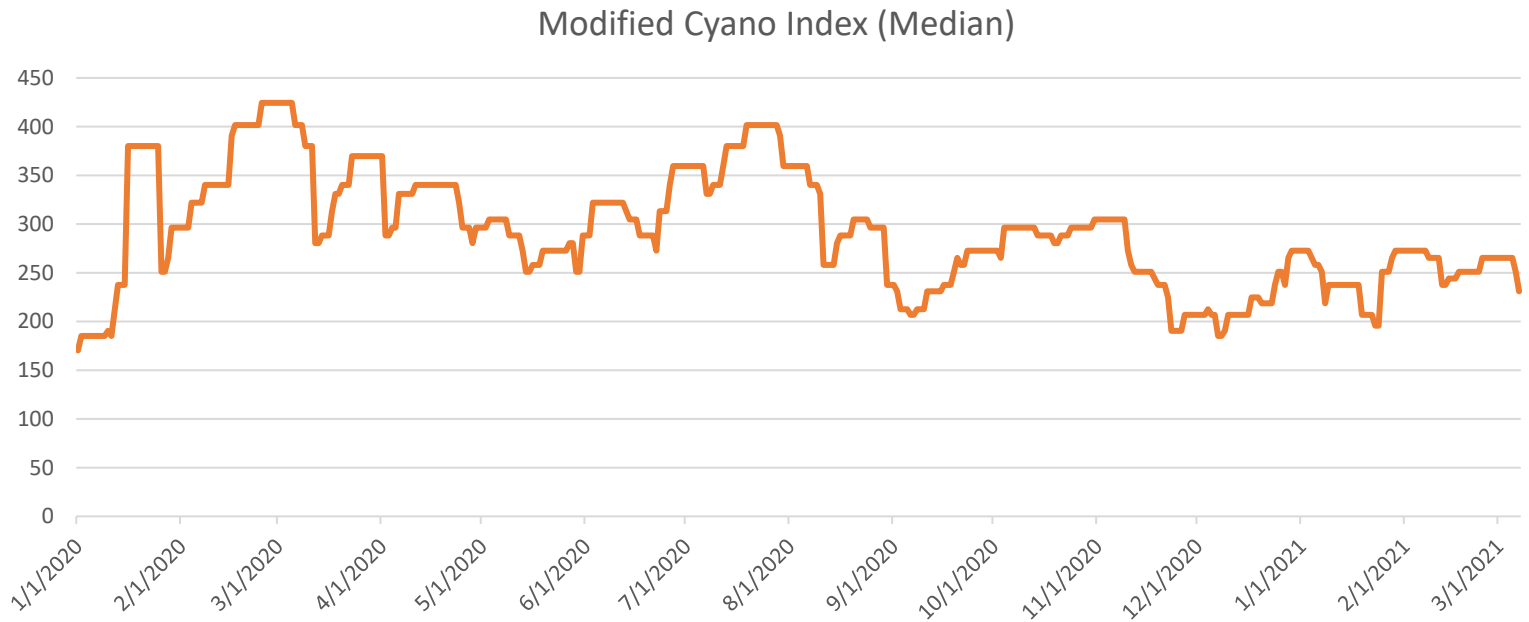
Under the Porter-Cologne Water Quality Control Act, the State Water Resources Control Board and the California regional water quality control boards are the principal state agencies with regulatory authority over water quality.

The State Civil Service Act authorizes state agencies to enter into personal services contracts if prescribed conditions are met, including a clear demonstration by the contracting agency that the proposed contract will

Lake Elsinore

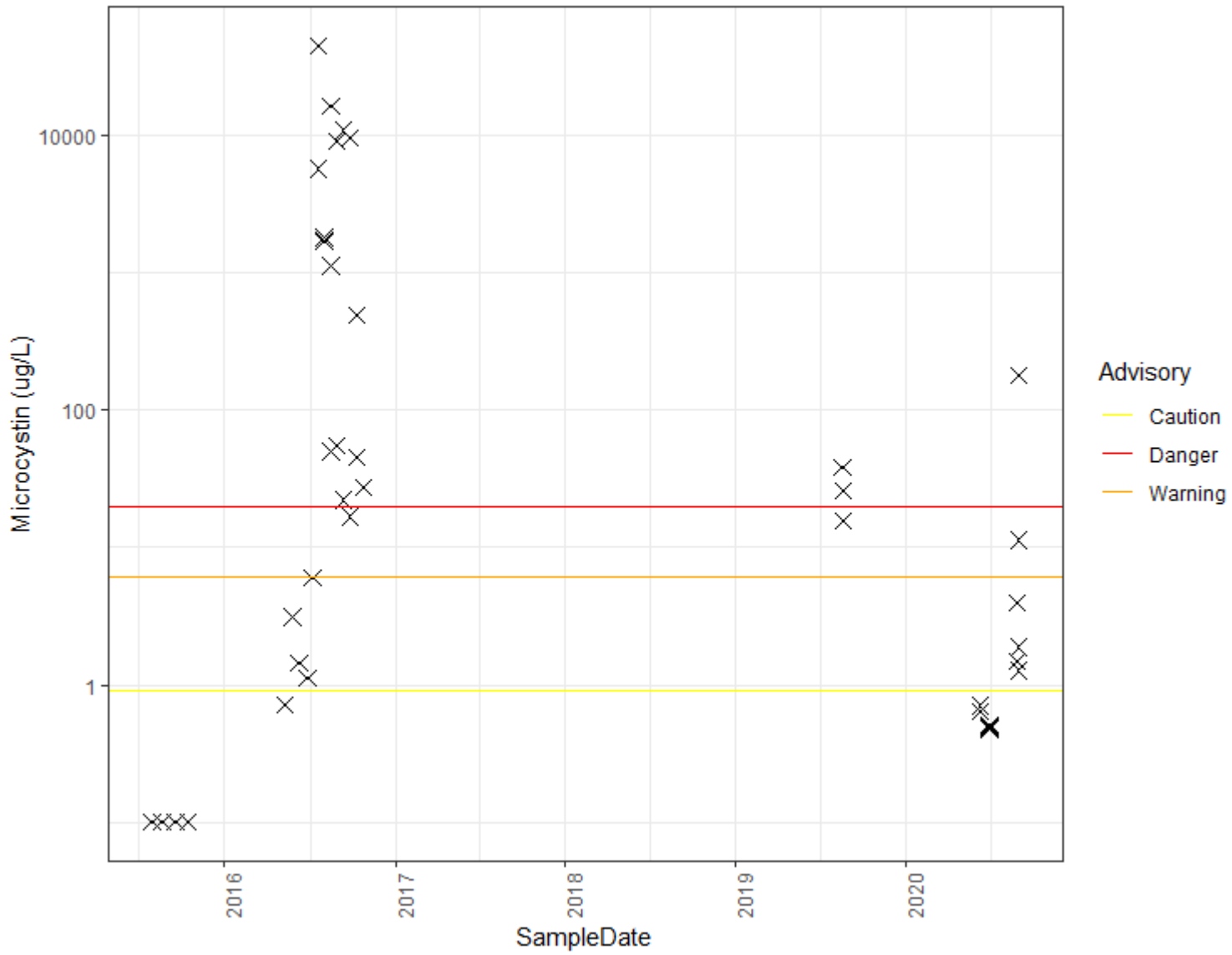
- Largest natural lake in southern California, a valuable recreational and habitat resource, and important to the local economy

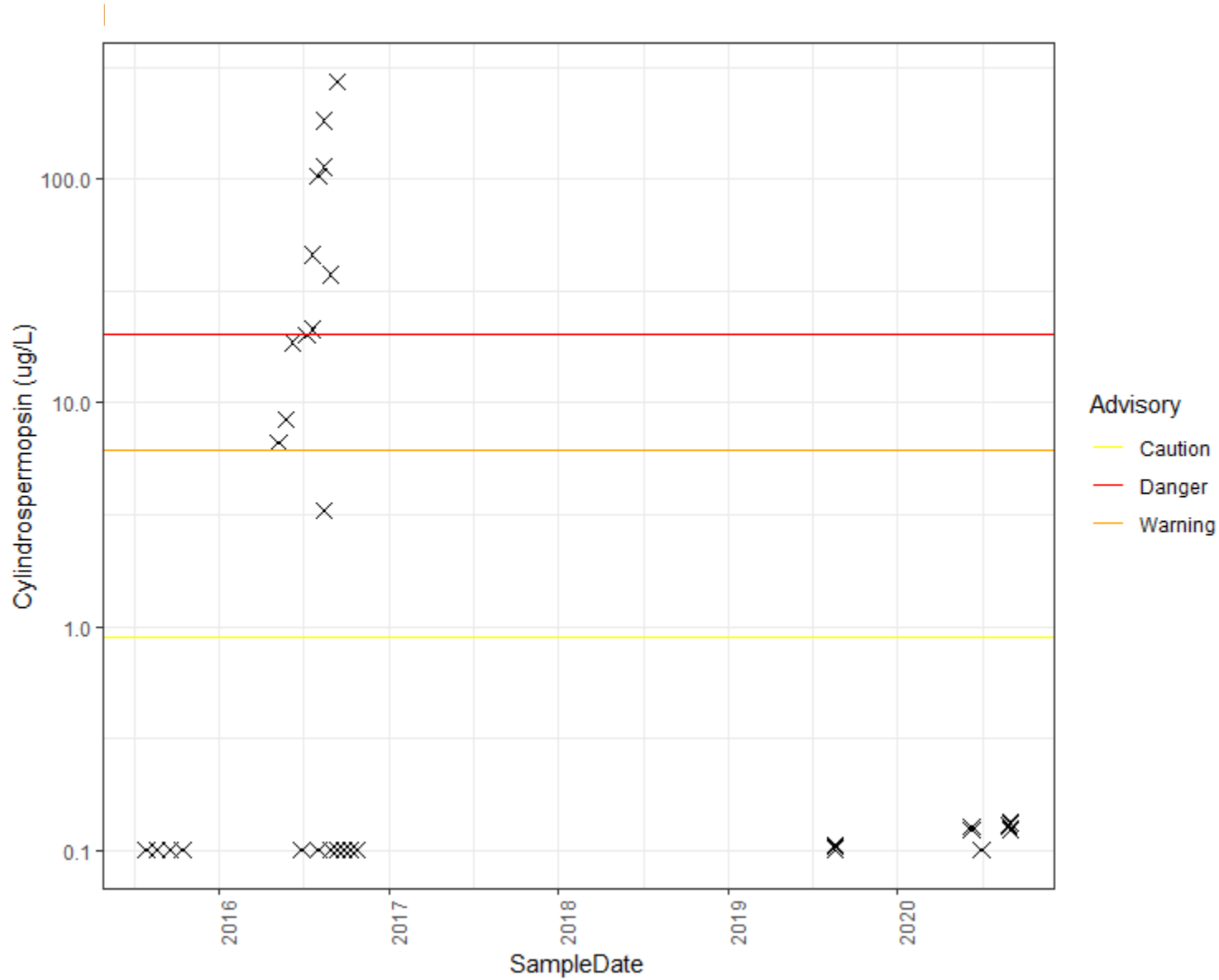
- Have year-round blooms (based on Satellite), nutrient TMDLs



Past Monitoring

- Mostly reactive
- Scarce winter data
- Infrequent temporal coverage




Cylindrospermopsin (ug/L)
100.0
10.0
1.0
0.1
2016
2017
2018
2019
2020
SampleDate
Advisory
Caution
Danger
Warning

Project Objectives

- Primary Objective: Fill FHAB monitoring data gap

- Secondary objectives:
  - Develop tools: remote sensing, data pipeline
  - Inform investigation on environmental drivers

Approach

- Focus on temporal coverage for LE FHAB monitoring

- Thought process
  - Maximize data and project outcomes with potential resource limitations
  - Consider hydrodynamic mixing conditions and historical satellite data

Preliminary Sampling Design

- Consider project objectives and budget

Sampling Period	Number of Stations	No. of Sampling Events	Total Number of Samples
May 2021 – Sept 2021	1 open water	10	10
Oct 2021 – Sept 2022	1 open water 1 shoreline	26	52


#1
#2
#3
Lake Elsinore
Lake Elsinore
Lakeshore Dr
W Graham Ave
W Heald Ave
W Sumner St
W Flint St
W Minthorn St
N Main St
E Franklin St
Mill St
E Lakeshore Dr
Camino del Norte
Riverside Dr CA-74
Grand Ave
Ortega Hwy
Gullrite Canyon
Adelia St
Brightman Ave
Lakeview Ave
Smithland Ave
Jay St
Machado St
Laguna Ave
Canyon Estates Dr
Corona Fwy
Auto Center Dr
Lake Elsinore City Center
Grape St
Links at Summerly
Village Pkwy
Meadow Trl
Windsong Rd
Sedco Hills
Lake Elsinore MX Park
562 m
601 m
471 m
440 m

Preliminary Analysis Design

Parameter Group	Parameters
Field	Temperature, DO, TDS, Conductivity, pH; Chlorophyll-a, Phycocyanin
FHAB	Chlorophyll-a, Phycocyanin; Cyanobacteria microscopy Cyanotoxins by ELISA Cyanotoxin genes by qPCR
Chemistry	Nutrients (N, P)

Next Steps

- Study design refinement
- SWAMP project plans
- Project kickoff meeting - Mid April
- Field practice run – Early to mid May
- Official start – around Memorial Day