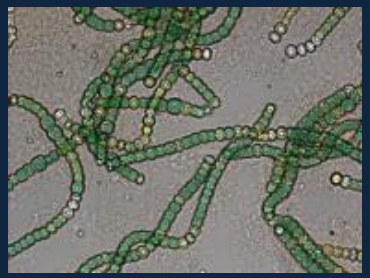



UTAH DEPARTMENT *of*
ENVIRONMENTAL QUALITY
WATER
QUALITY

Harmful Algal Bloom Program Update - 2020

Erica Brown Gaddis, PhD, Director

Harmful Algal Blooms

High concentrations of cyanobacteria that may produce toxins

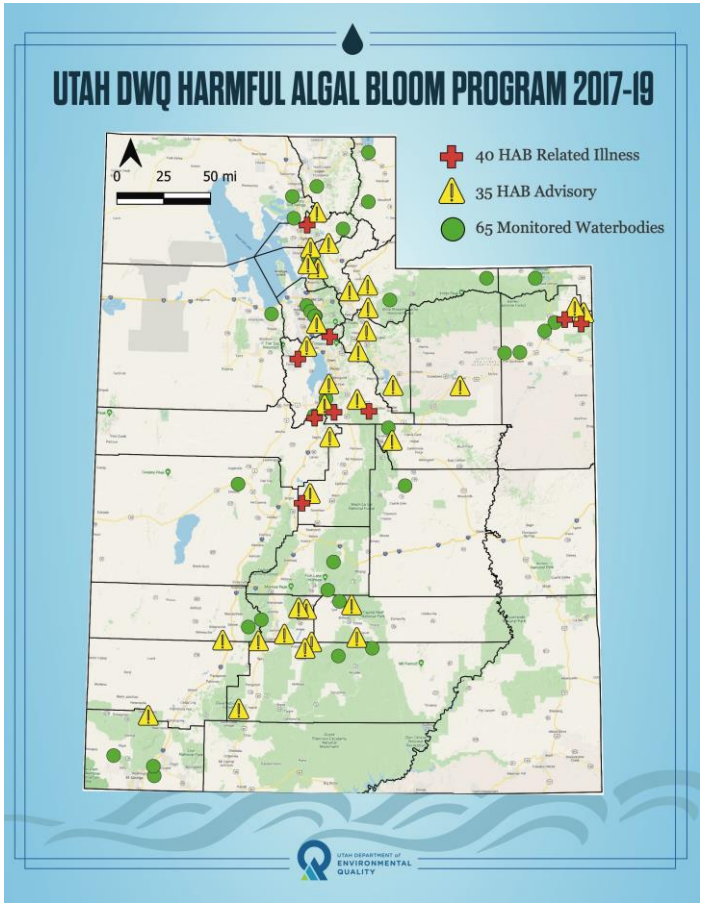
Utah Poison Control Center HAB Reports

Cases reported

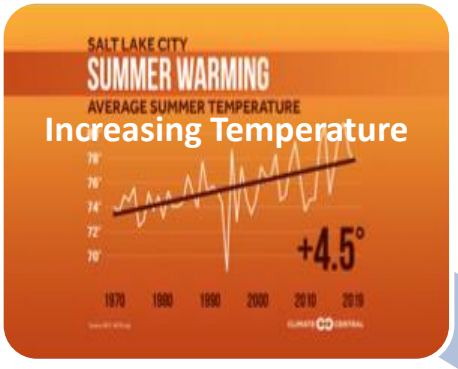
- 2016: 676 cases (32% adverse effects)
- 2017: 173 cases (30% adverse effects)
- 2018: 224 cases (30% adverse effects)
- 2019: 285 cases (23% adverse effects)
- 2020 (Aug 9): 114 cases (38% adverse effects)

Symptoms reported

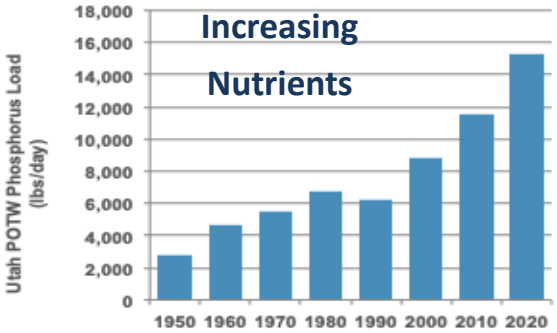
- Gastrointestinal: diarrhea, nausea, vomiting, and abdominal pain
- Skin: irritation
- Neuro: headache, dizziness



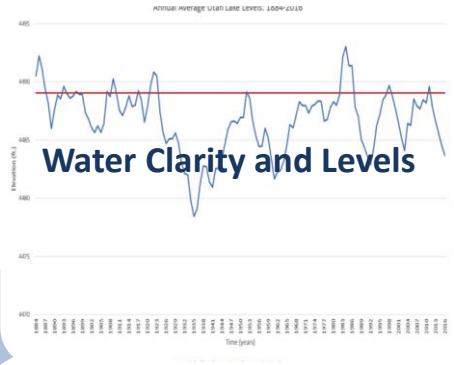
Factors Contributing to Algal Blooms



Increasing Temperature



Increasing Nutrients



Water Clarity and Levels

Harmful Algal Blooms

Harmful Algal Bloom Management

Prevention

- Root causes
- Utah Lake Study

Mitigation

- Health advisories
- Education

Treatment

- Algaecides
- Harvesting

Monitoring

DWQ HAB Advisory Process

Monitoring

Routine
Monitor prioritized lakes on a monthly basis

Response
Monitor lakes on advisory on a weekly basis

Data Collected
Microcystin and Anatoxin-a
Cell Count (Taxonomy)

Detection

Inform LHD
Present data collected along with DWQ recommendation. Assist in answering site specific questions.

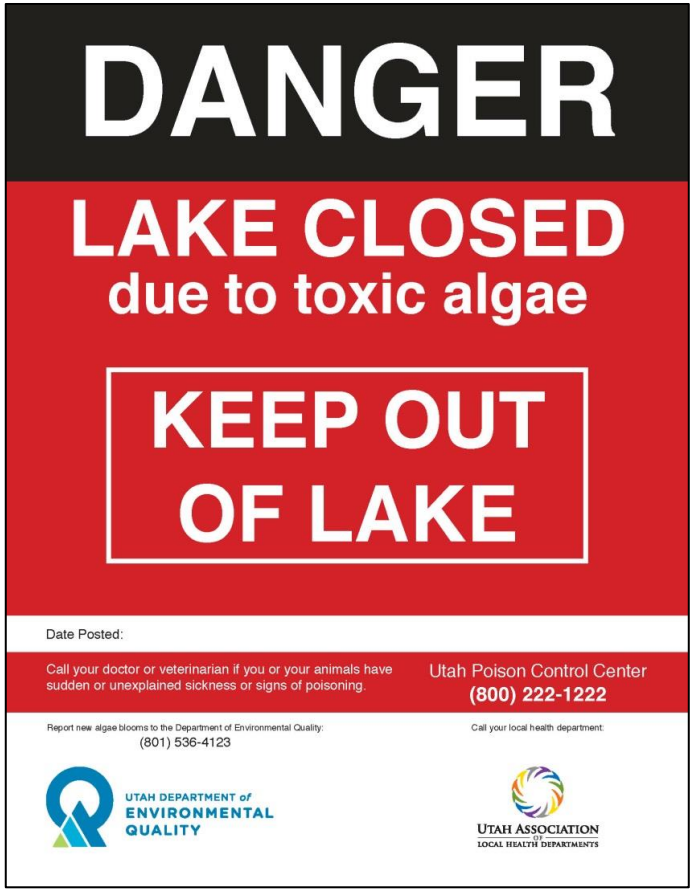
Communication
Phone call with all stakeholders (i.e. DNR, USFS, etc.) for site specific context

Advisory

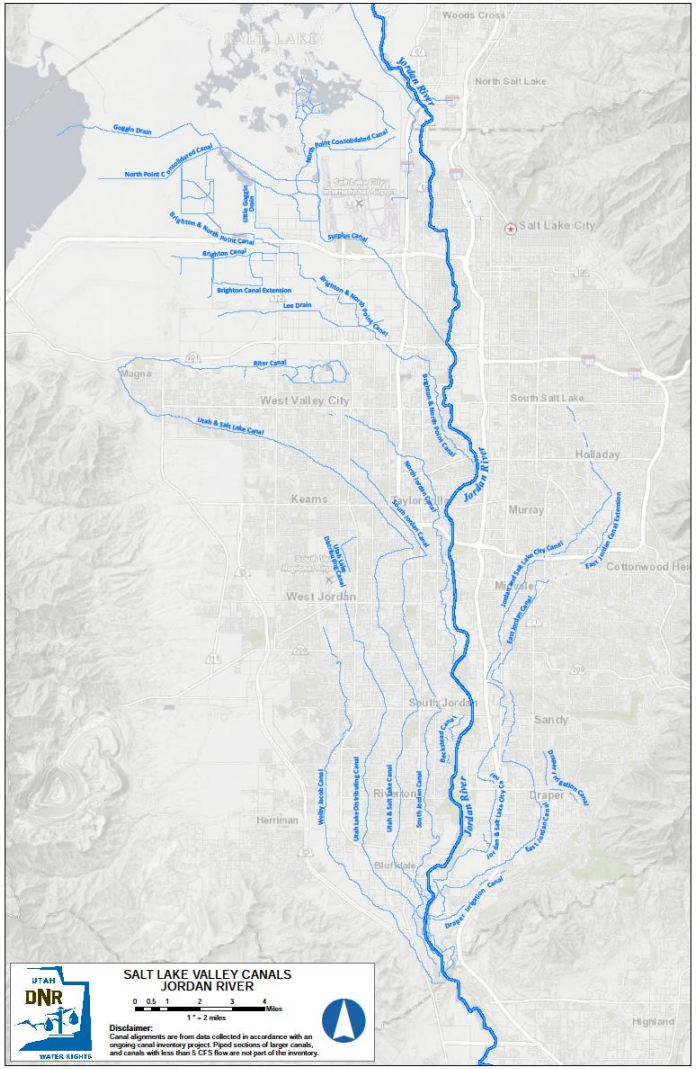
Signs
Work with LHD and partners to post signs, make sure signs get posted

Communication
Alert stakeholders to advisory decision. Post information, maps, and narrative about advisory on habs.utah.gov

2016 Utah Lake



2016 Utah Lake → Jordan River



2016 Scofield Reservoir

- Fish kill
- Bat and bird mortalities
- Threatened Price City drinking water intake

Water Quality Health Advisory Panel

Established in 2016

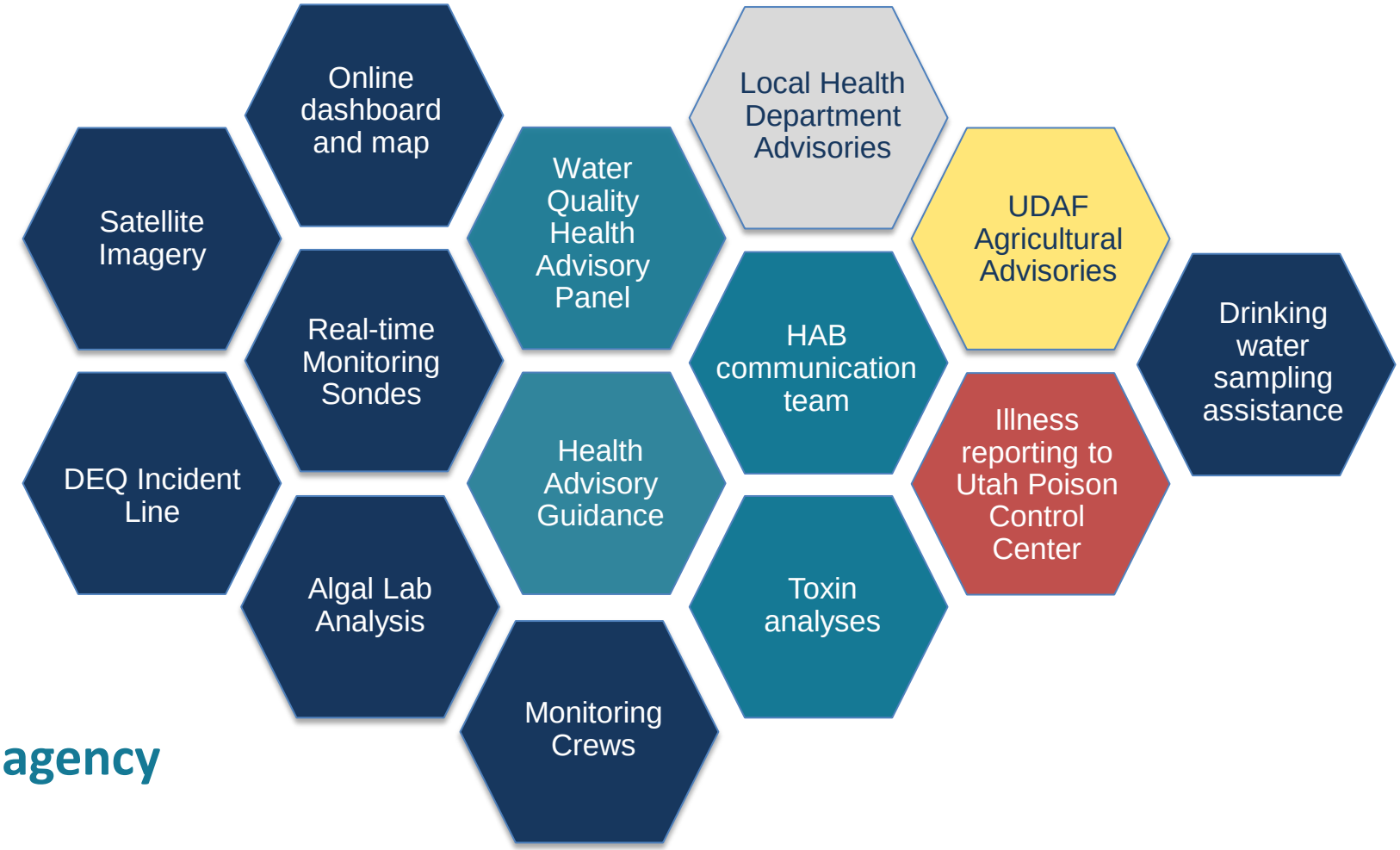
Coordinate and communicate on water quality issues associated with public health

And……other experts and stakeholders

2020 Advisory Thresholds

	Warning	Danger
Relative Probability of Acute Health Risk	Moderate	High
Cyano Cell Density (cells/mL) **Toxigenic species only**	~~20,000~~ 100,000	10,000,000
Microcystin (ug/L)	~~4~~ 8	2,000
Cylindrospermopsin (ug/L)	~~8~~ 15	~~8~~ 15
Anatoxin-a (ug/L)	~~Detection~~ 15	90
Health Risks	-Potential for long-term illness -Short term effects (e.g. skin and eye irritation, nausea, vomiting, diarrhea)	-Potential for acute poisoning -Potential for long-term illness -Short term effects (e.g. skin and eye irritation, nausea, vomiting, diarrhea)

HAB Advisory Program Elements

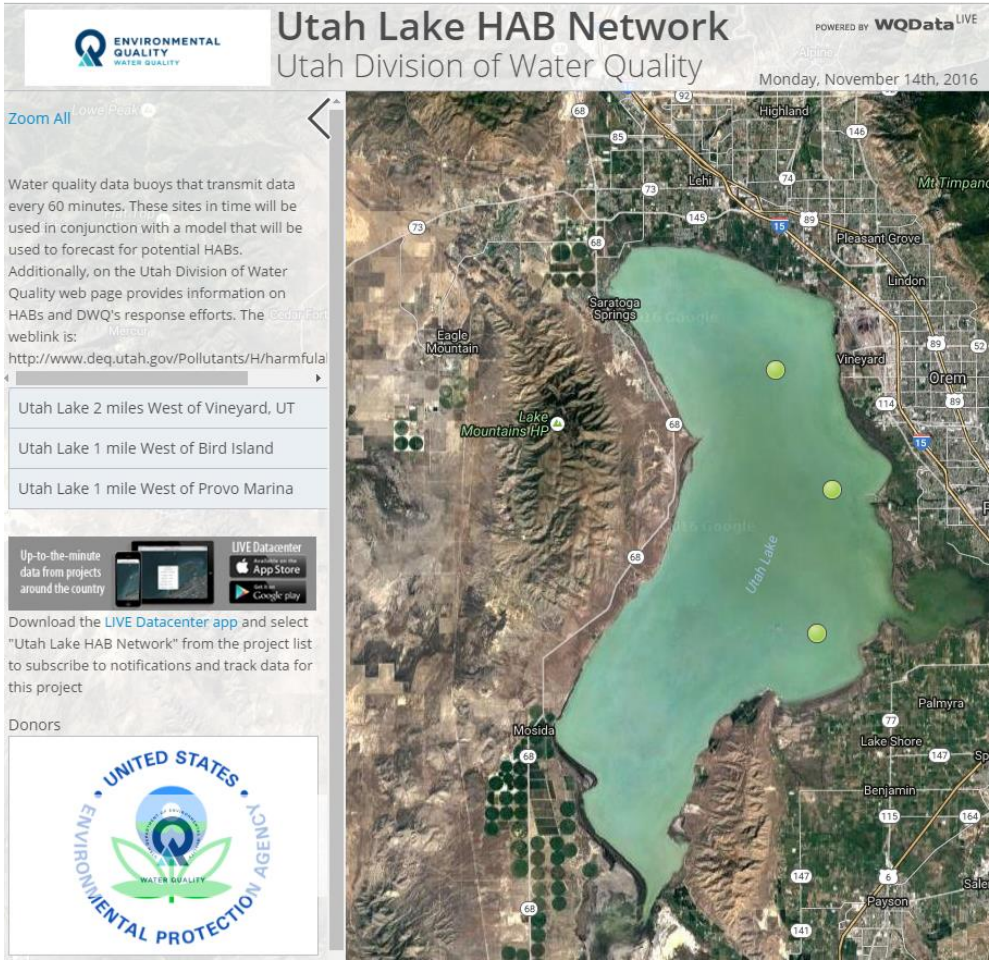


UDEQ

Multi-agency

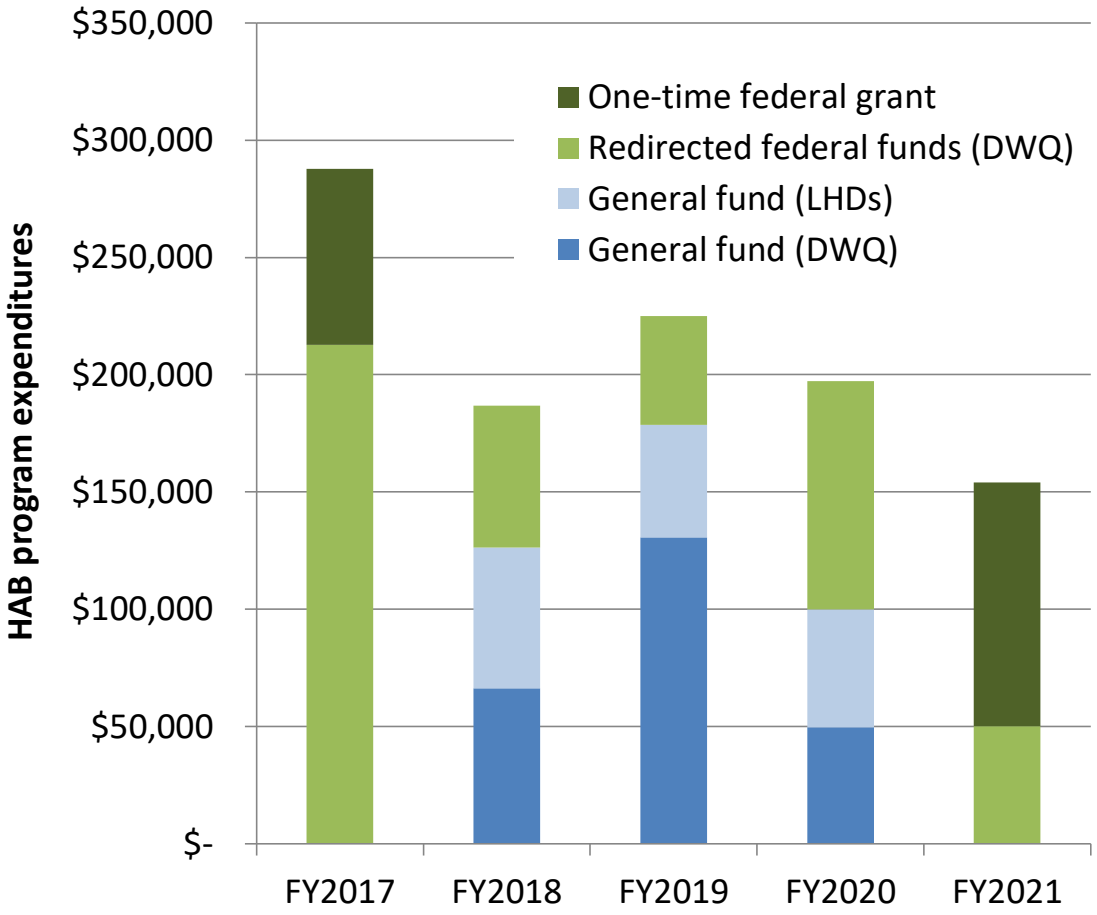
2017 HAB Program Improvements

- Early warning system in high risk waters: Utah Lake, Scofield, Deer Creek
- New testing capability in-state at Utah Public Health Laboratory
- Updated guidance for local health departments
- Coordinated response planning across local and state agencies



Satellite Imagery: Helps inform and guide

HAB program funding history



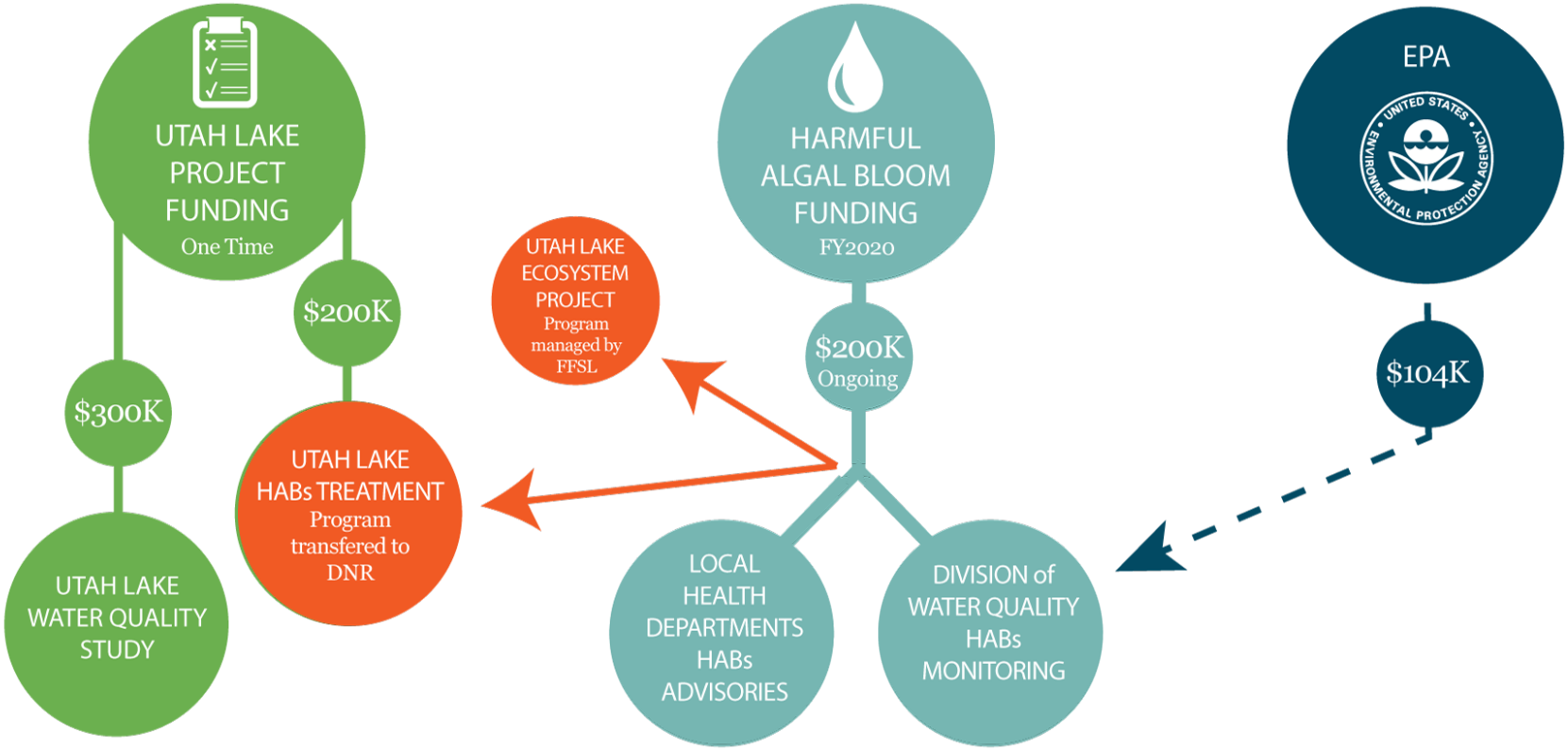
General Fund Building Blocks

FY18 (supplemental): $126,000
FY19 (one-time): $178,500
FY20 (ongoing): $200,000
FY20 (supplemental): $-100,000
FY21: $0

Funded Activities

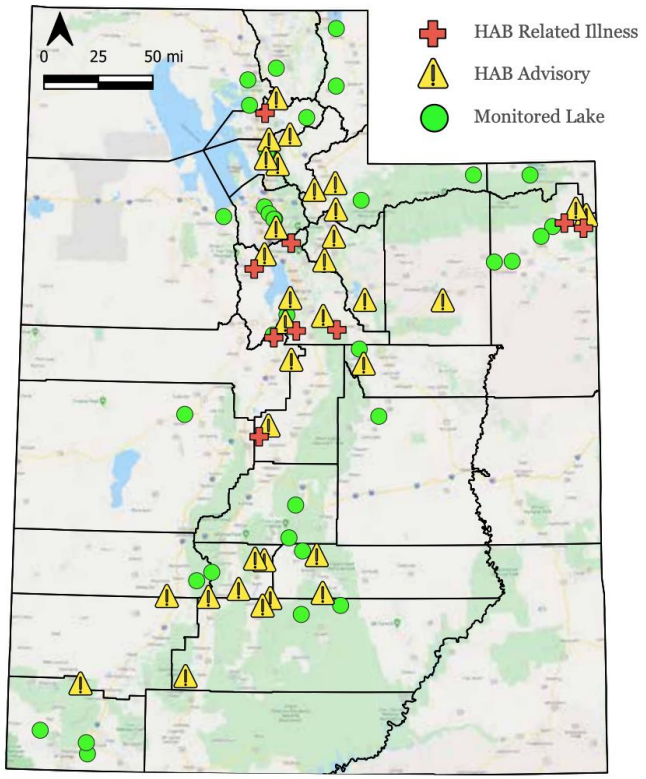
Monitoring of 60+ waterbodies
More frequent sampling
LHD Advisory Process

2020 Harmful Algal Bloom Funding Issues



2020 Reduced Program Activities

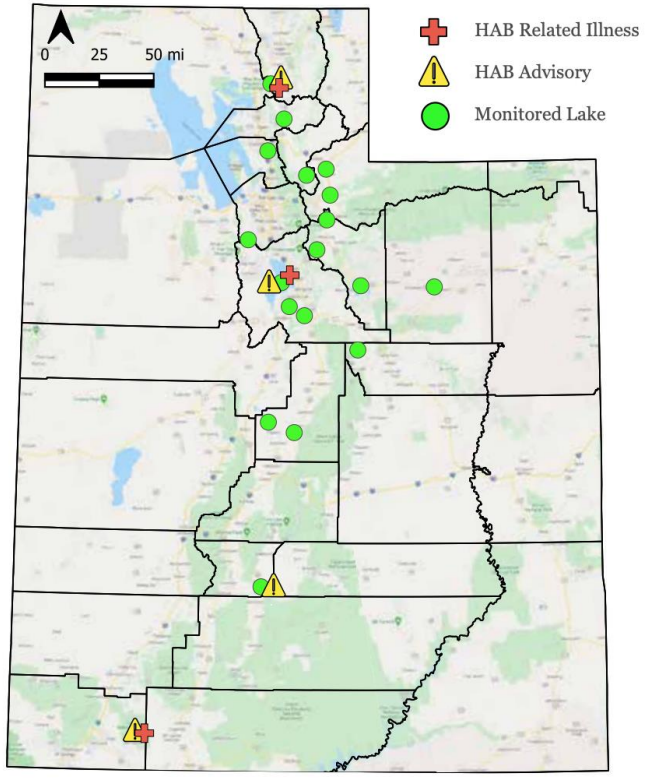
UTAH HARMFUL ALGAL BLOOM PROGRAM 2017-19



2017 - 2019

Water bodies monitored: 65
Water bodies with advisories: 35
HAB related illnesses: 40

UTAH HARMFUL ALGAL BLOOM PROGRAM 2020



2020

Water bodies monitored: 18
Water bodies with advisories: 4
HAB related illnesses: 43

Utah Lake Algal Treatments

Pilot test at 3 marinas over multiple weeks in summer 2020

- Utah Lake State Park, Lincoln Beach, and Lindon Marinas
- Less

Treatments

- SePRO: SeClear; PAK27 (copper based algaecide; copper sulfate); Phoslock (Lanthanum, Bentonite)
- ATS: EarthTec (Copper based algaecide)

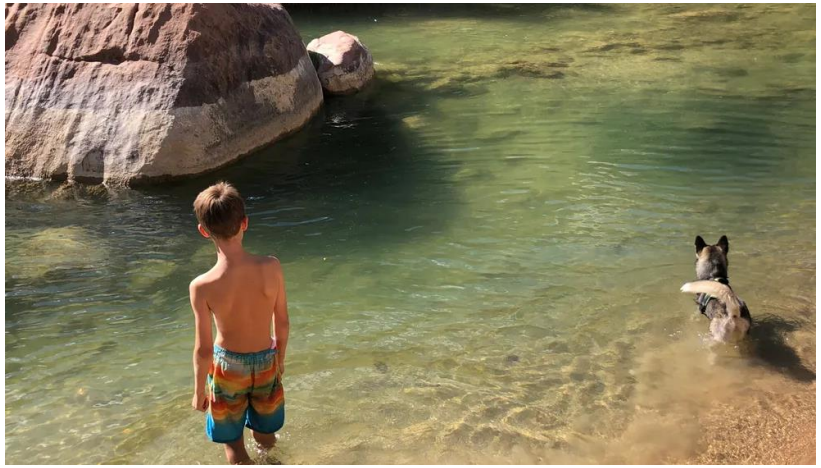
Results

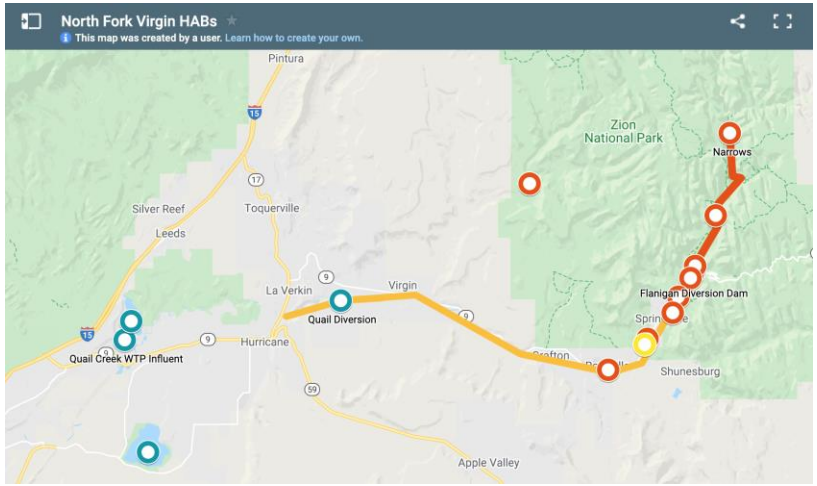
- Data analysis will occur this winter
- Effective at short-term reduction of cyanobacteria in marinas
- Longevity of results challenged by interaction with open lake

Next Steps

- More robust data analysis will occur winter 2020 - 2021
- Evaluation of long-term applicability and impacts
- Optimize treatments to maximize public benefit (high use areas and times)
- Permitting approach (general versus individual pesticide permit)

Virgin River - Zion National Park





Report of dog death after snapping at algae in Virgin River, Zion NP

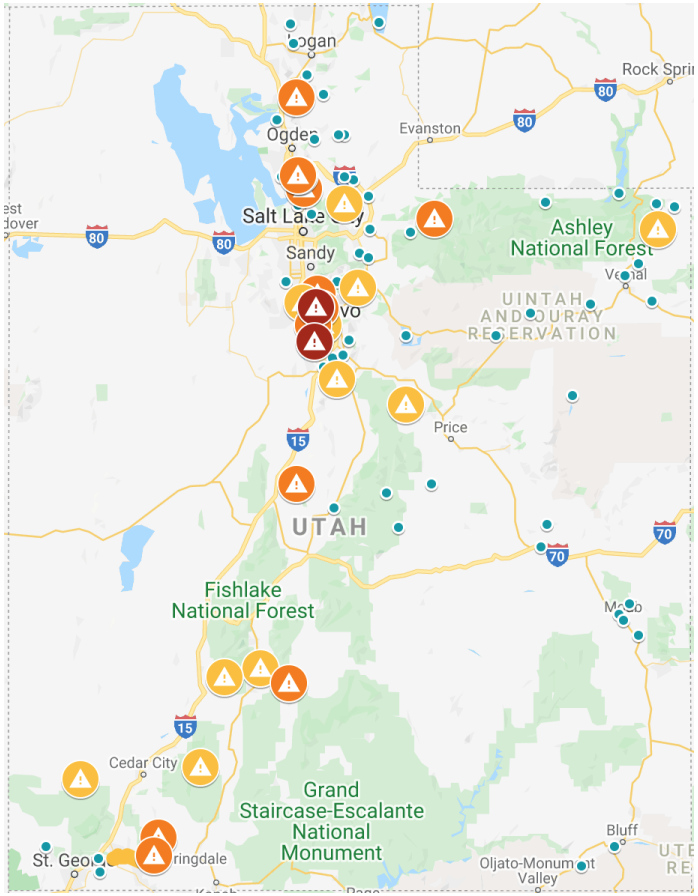
Anatoxin-a confirmed in algal mats

Zion NP and Southwest HD issued health advisories

Drinking water and secondary water for several communities – no indication of toxins

Monitoring is ongoing

Current Lake Advisories



Health Advisories

- Mantua Reservoir
- Otter Creek Reservoir
- Utah Lake – Open water, Lindon marina
- Andy Adams Reservoir
- Yuba Lake
- Whitney Reservoir

Danger Advisories

- Utah Lake: American Fork marina, Lincoln Marina


Questions &
Discussion