



# The Reservoir Update – 2022

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# Projects

- **On-going**

- Reservoir monitoring
- Zebra Mussel monitoring
- Harmful Algal Proliferations (HAPs)
- Sediment Nutrient Mitigation
- Sediment bedforms and Microplastics

- **New Projects**

- HAP monitoring at spring sites in collaboration with USGS
- HAP monitoring over 12-month period in collaboration with LCRA
- Supervisor Duties!



# Austin Lakes Index

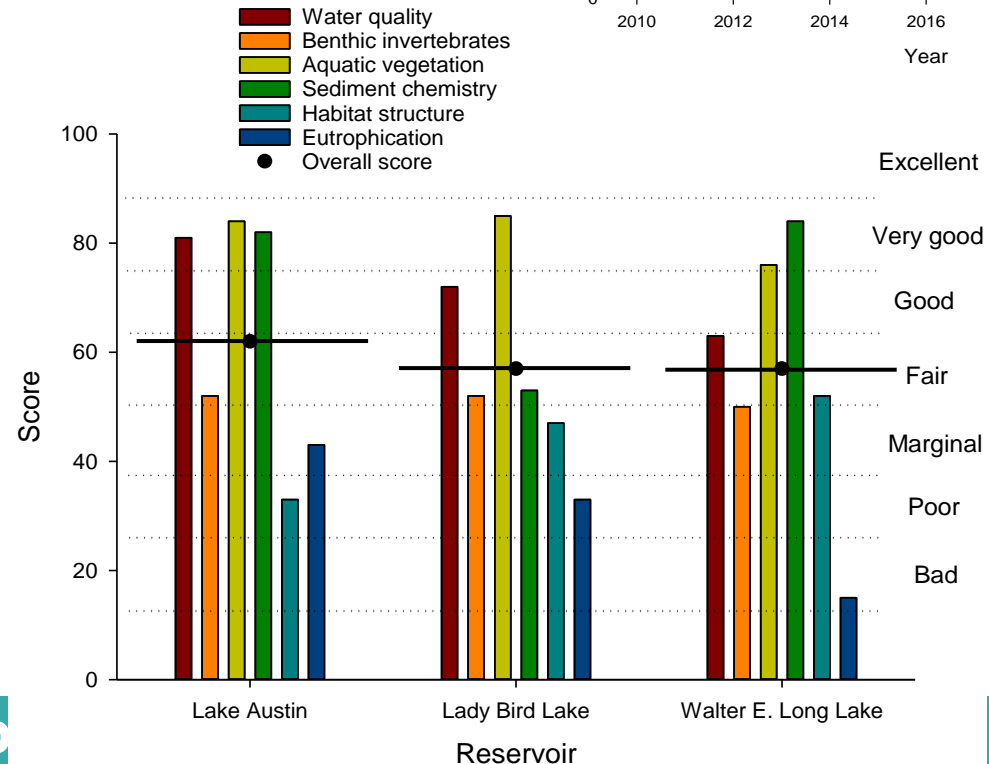
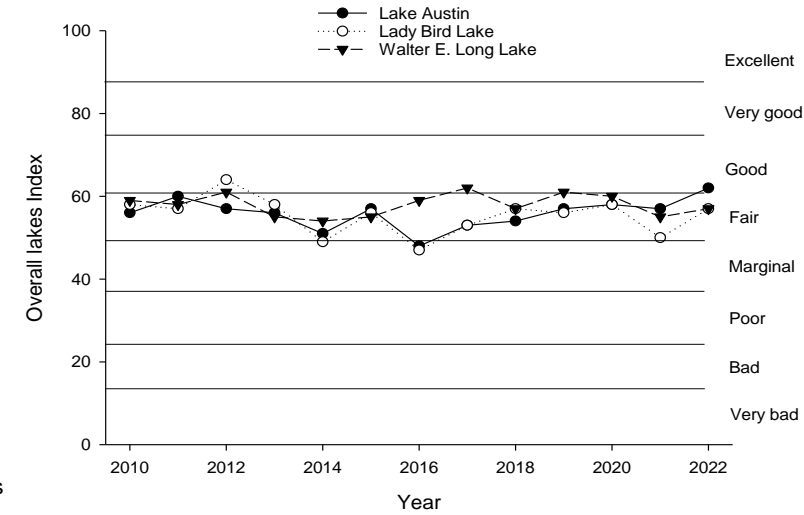


Reservoirs maintaining  
“fair-to-good” condition

System stressors:

Over-development of Lake Austin shoreline; but, aquatic vegetation starting to come back!

Excess nutrients in Lady Bird and Walter Long; plenty of aquatic vegetation in each reservoir

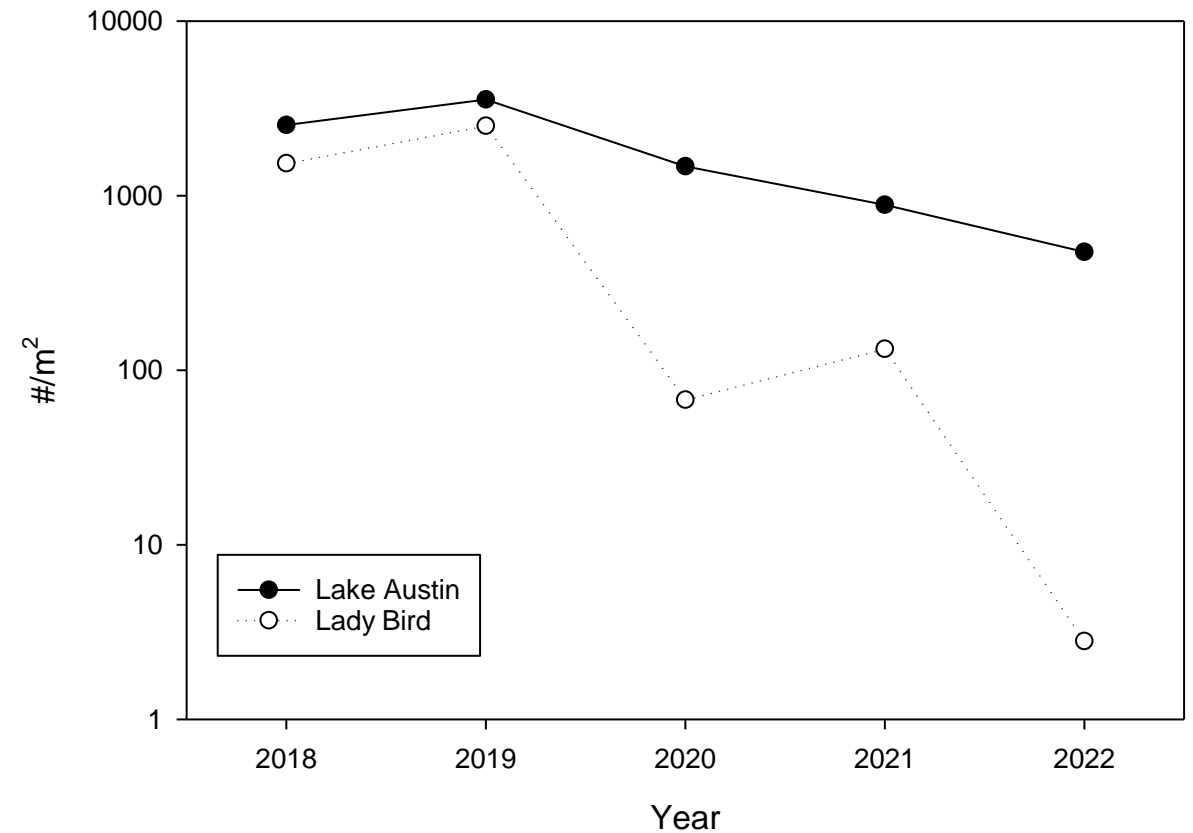




# Zebra Mussels

Population continues to vary between sites, but went through a crash

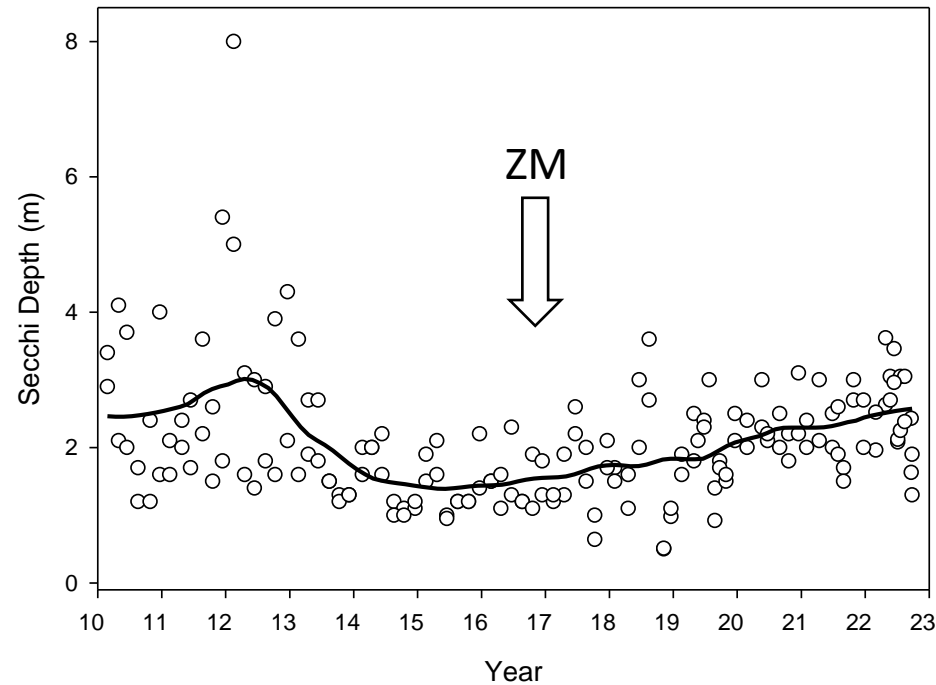
- However, in both reservoirs, populations appear to be rebounding in 2023 based on recent visual observations



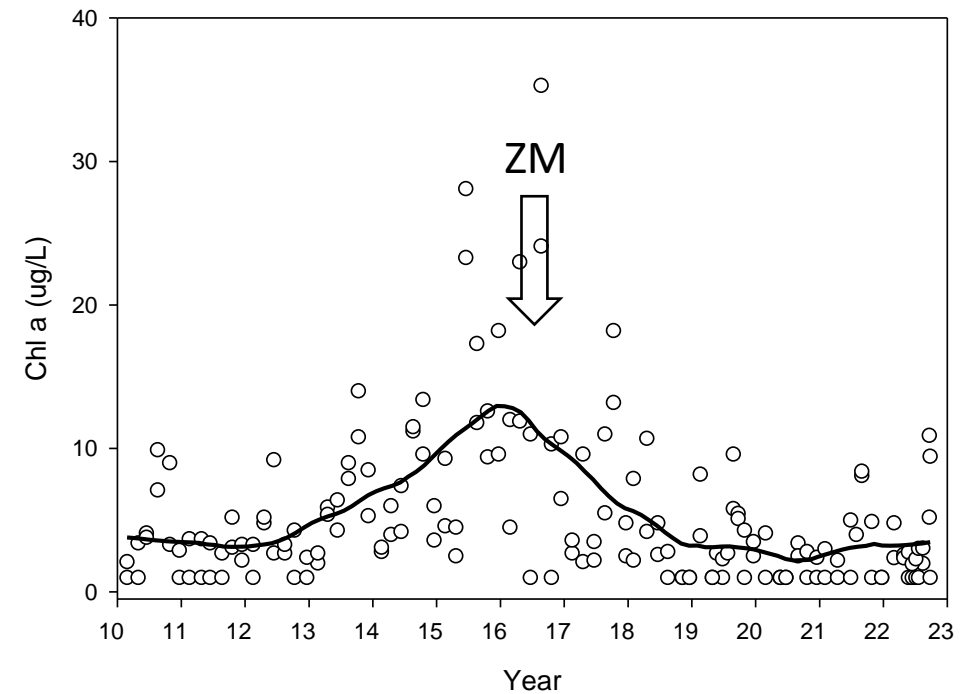


# Water Quality Impacts – L. Austin

**Secchi Disk Depth (i.e.,  
water clarity)**



**Chlorophyll *a* (i.e.,  
planktonic algal biomass)**

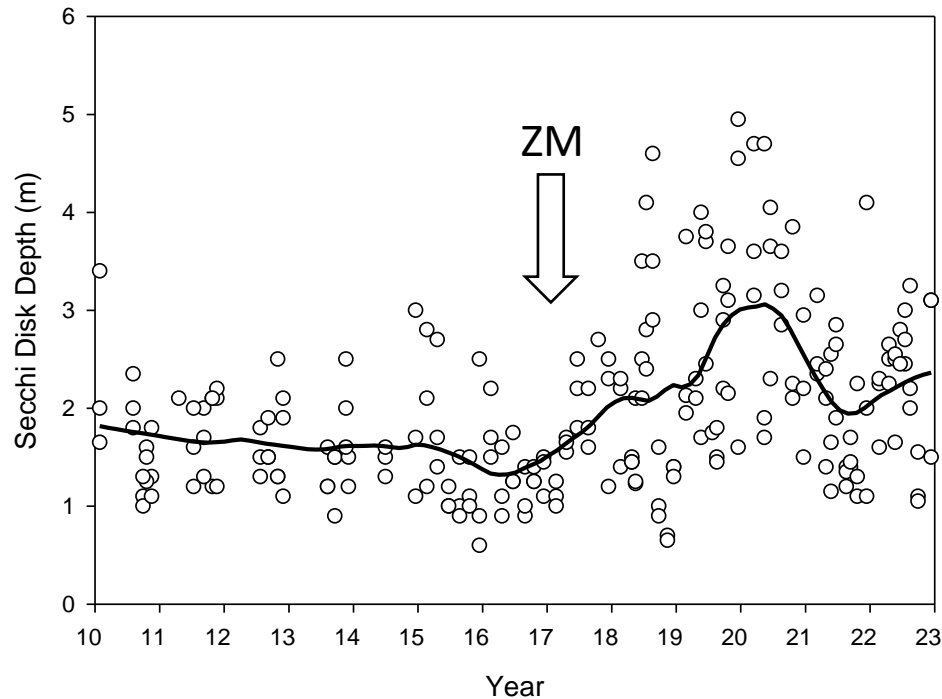




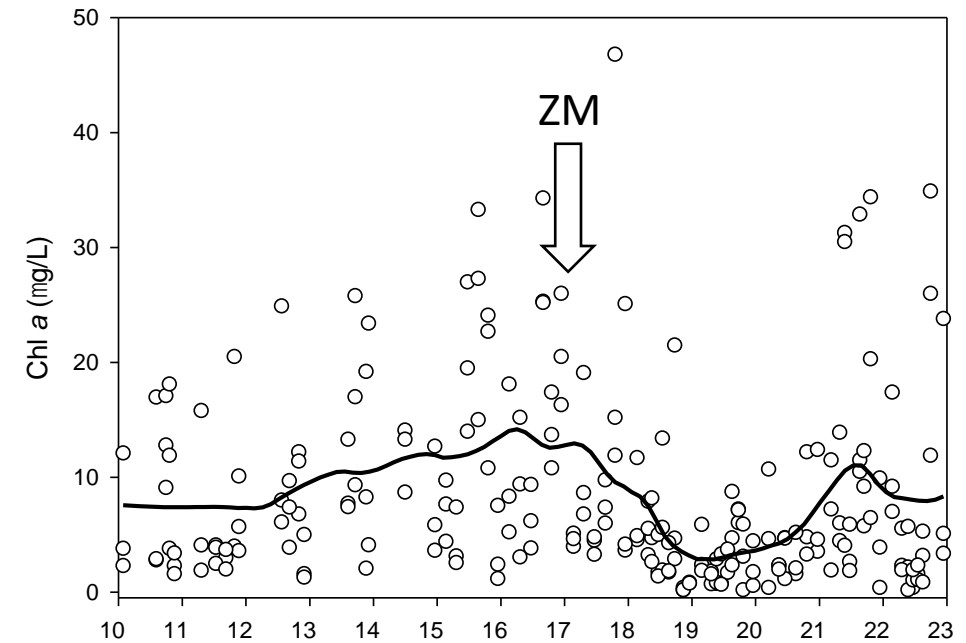
# Lady Bird



## Secchi Disk Depth (i.e., water clarity)



## Chlorophyll *a* (planktonic algal biomass)





# Harmful Algal Proliferations

## Continued monitoring 3 sites in Lake Austin and Lady Bird Lake

- Abundance/distribution of mats remains very stochastic
- Red Bud remained most consistently positive, but toxic mats popped up at all sites throughout summer



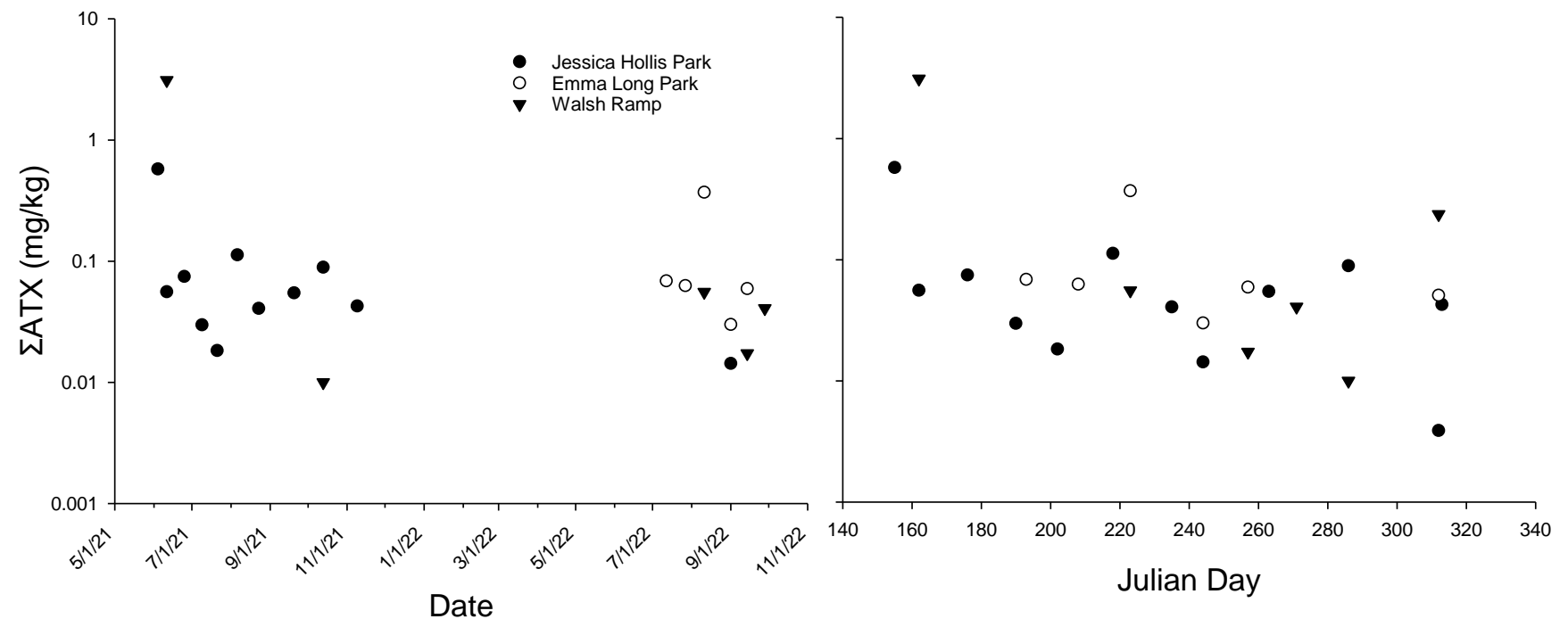


# Toxin contents



## Lake Austin

- Detection not consistent among sites;
- Contents generally similar through observation period

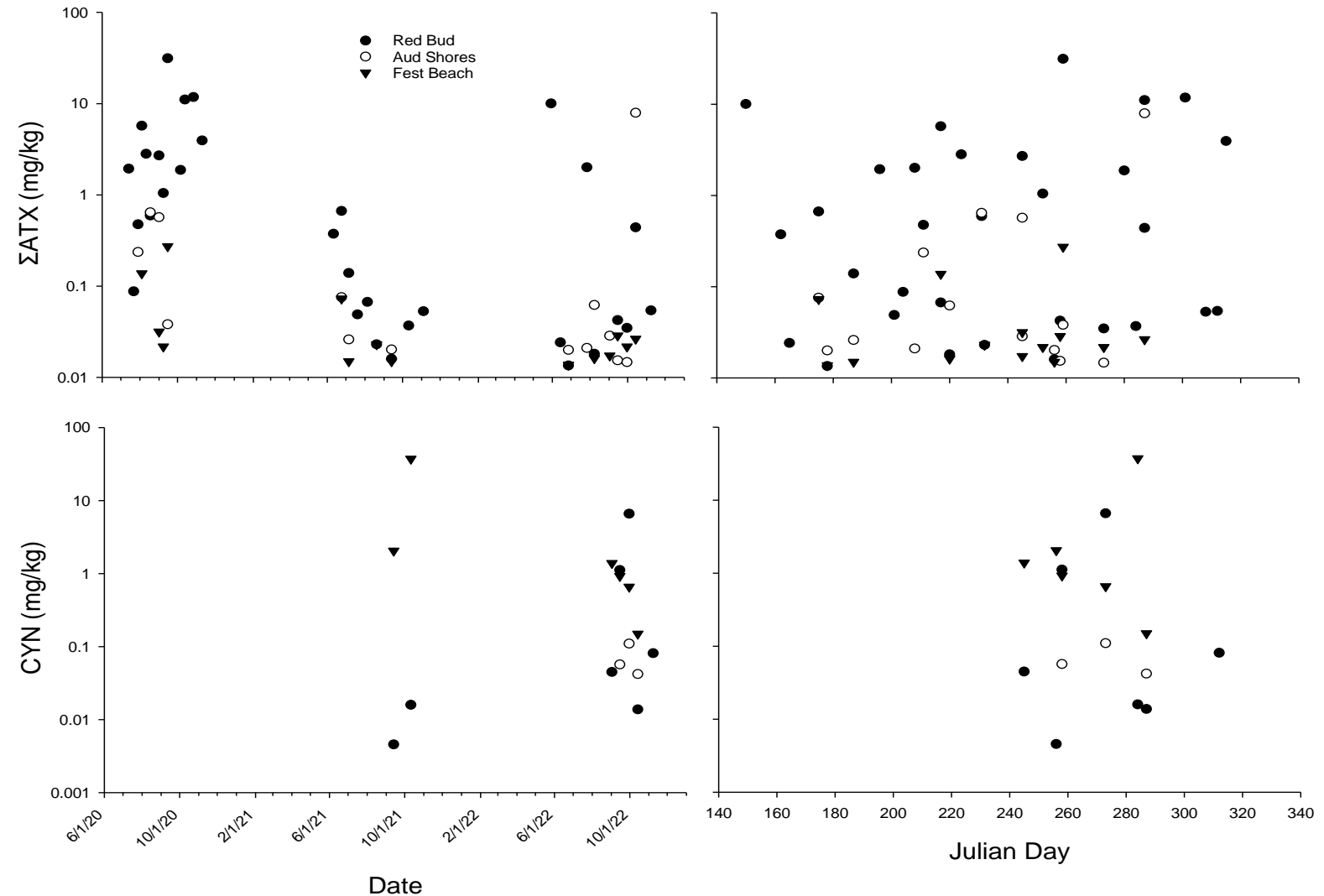






## Lady Bird

- Continued general decline through time
- Late summer/fall peak in contents
- Cylindrospermopsin now appearing in fall





# Sediment Nutrient Mitigation



## Year 3 of applying lanthanum-modified bentonite

- In addition to Red Bud, applied product at Festival Beach
- New site has different sediment chemistry, also impacted much more by urban tributaries

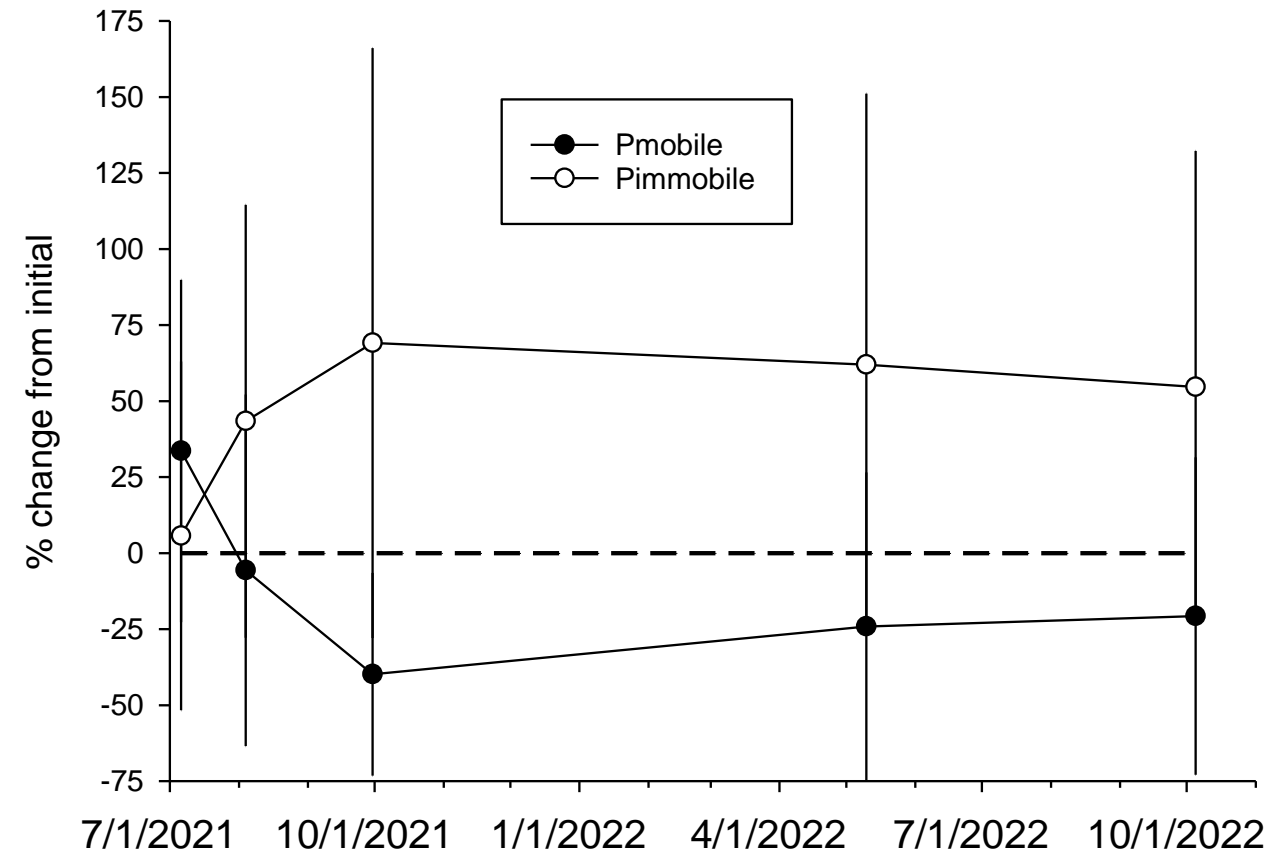




# Red Bud

## Over-winter, little change in sediment Phosphorus fractions

- Applied half as much LMB in 2022 to maintain low bioavailable(“Pmobile”) sediment P-contents
- Bioavailable P remains about 25% lower than the original content
- Unavailable P remains about 50% higher than before start of experiment





# Festival Beach

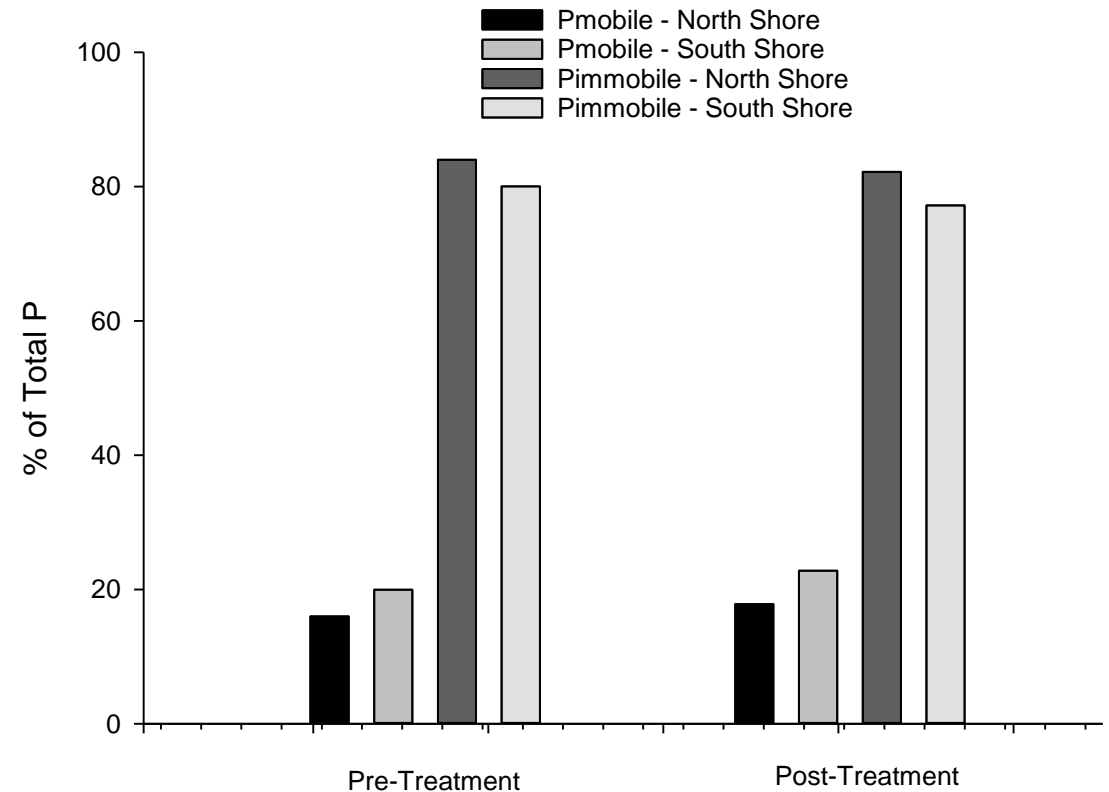


**Approximately same amount  
of LMB applied as year 2 of  
Red Bud**

- Treatment sites – North Shore
- Control Sites – South Shore

**Did not see any treatment  
effect**

- Large pulses of sediment from urban tributaries impacted this location throughout summer
- Will increase amount of LMB applied in 2023







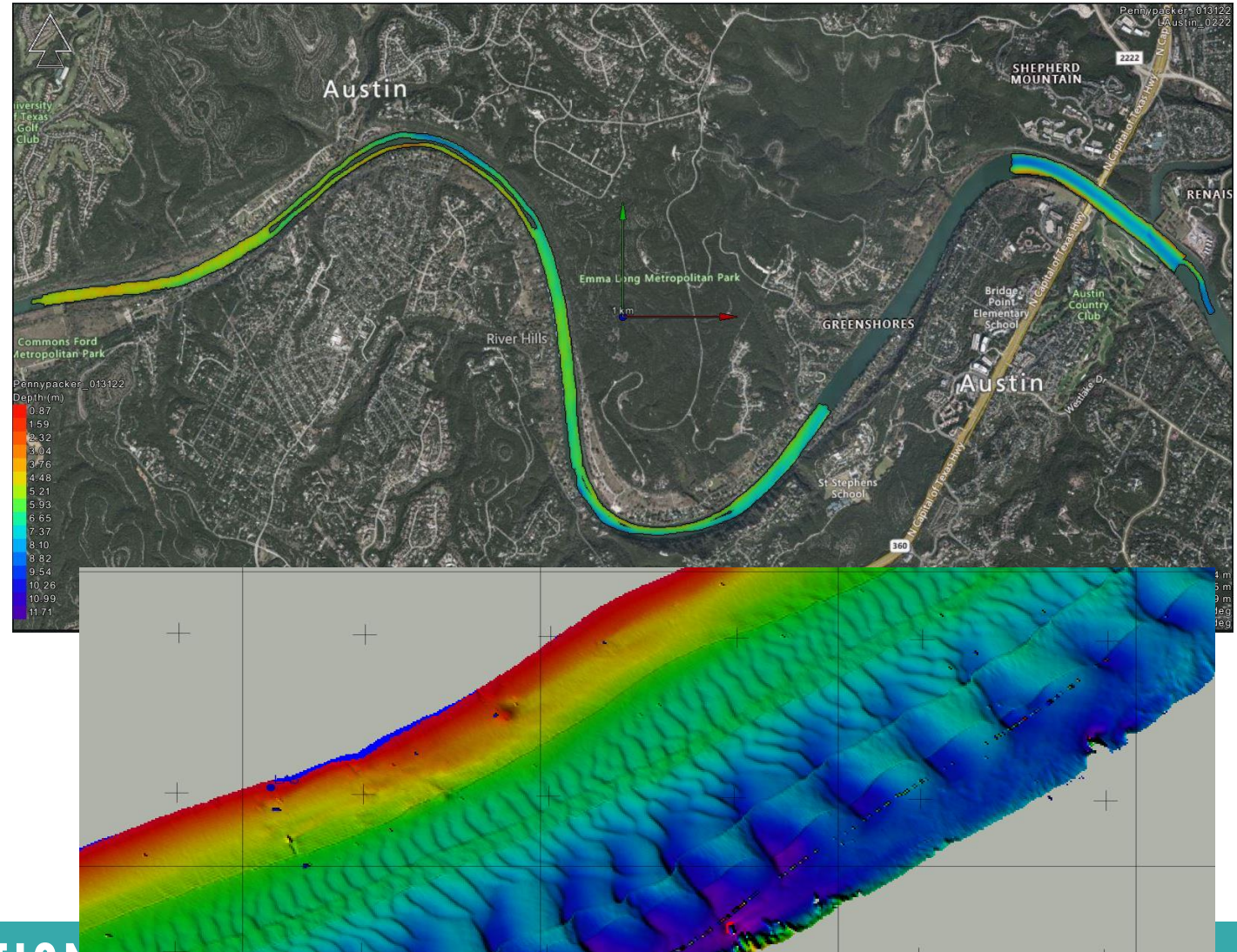
# Sediment Bedforms and Microplastics

## Continuing mapping sediment topography, in Lake Austin and Lady Bird with UT

- Modeling is looking at sediment movement, deposition dynamics by comparing bedforms between years

## Surface sediment samples have also been collected

- Being analyzed for microplastic and nutrient (carbon and nitrogen) contents and isotopic signatures

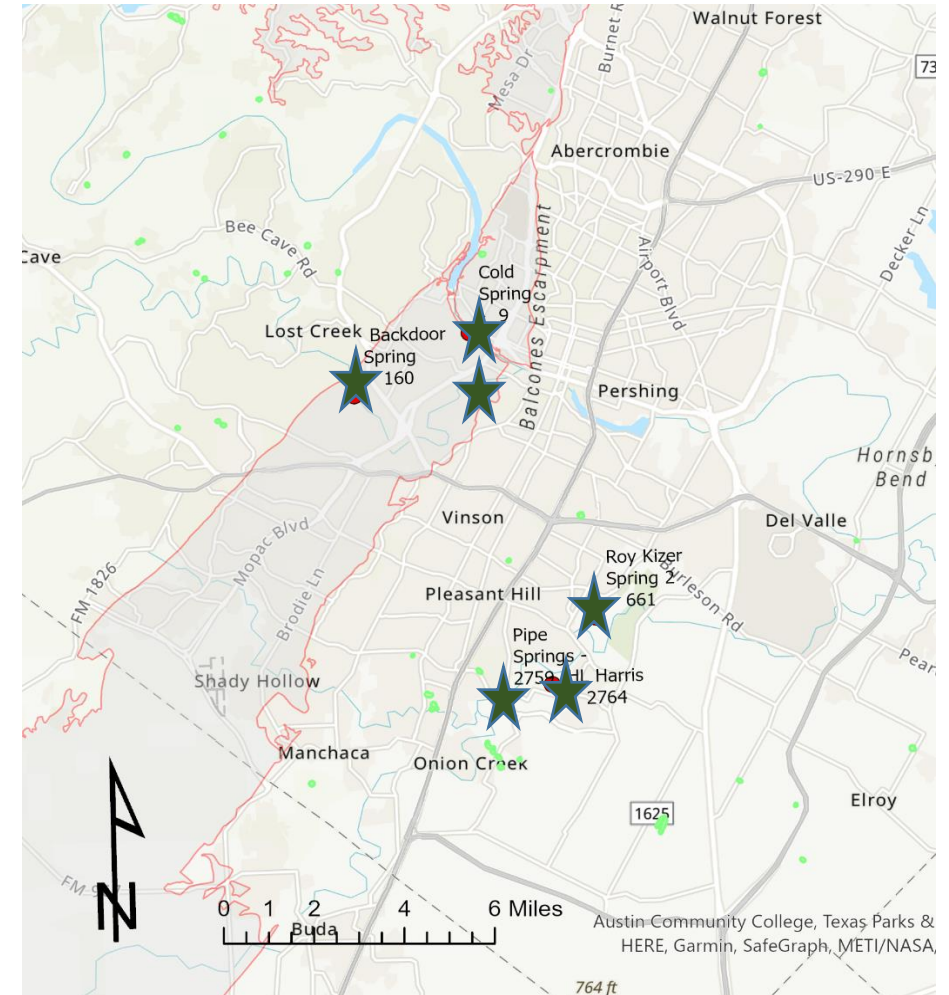




# New: Expansion of HAP monitoring

## Spring Sites

- 3 sites in Edwards, 3 sites in eastern prairies (still selecting appropriate sites)
- 4 discreet sampling events through 2023 of mats, sediments, water
- Continuous monitoring of spring discharges and water chemistry
- Modeling of current and historic water quality to find drivers of HAPs at site(s)



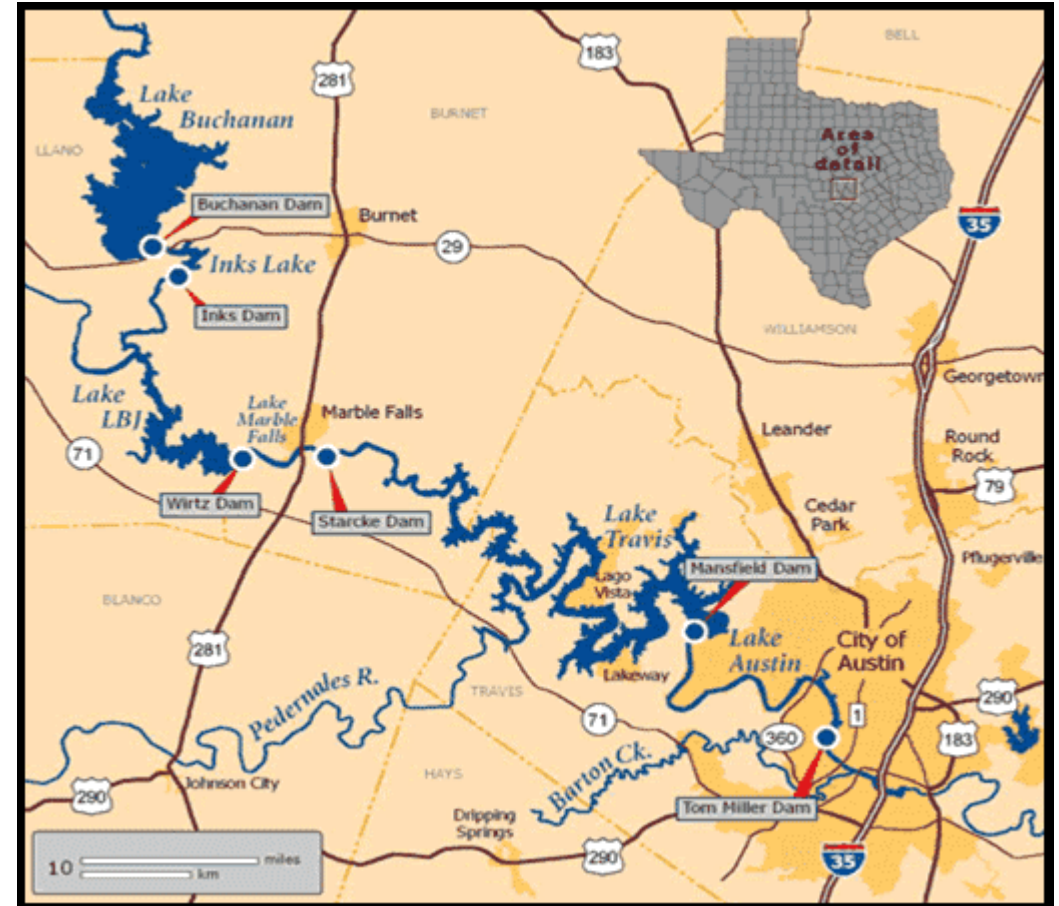




# Expansion of HAP monitoring

## LCRA Collaboration

- 12-month joint effort coupling sampling timing across 3 sites in 4 reservoirs – Inks, LBJ, Austin, Lady Bird
- Sampling water, mats, and sediments
- Understand temporal dynamics, similarities in sites supporting HAPs







# Questions?



WATERSHED PROTECTION