



MANAGEMENT & MITIGATION

Lessons Learned from Innovative HAB Projects on lakes Jesup & Minneola

Erich Marzolf, Ph.D., Director
Division of Water and Land Resources
St. Johns River Water Management District



PROJECT SUMMARY

- **Results of two DEP innovative funding grants**

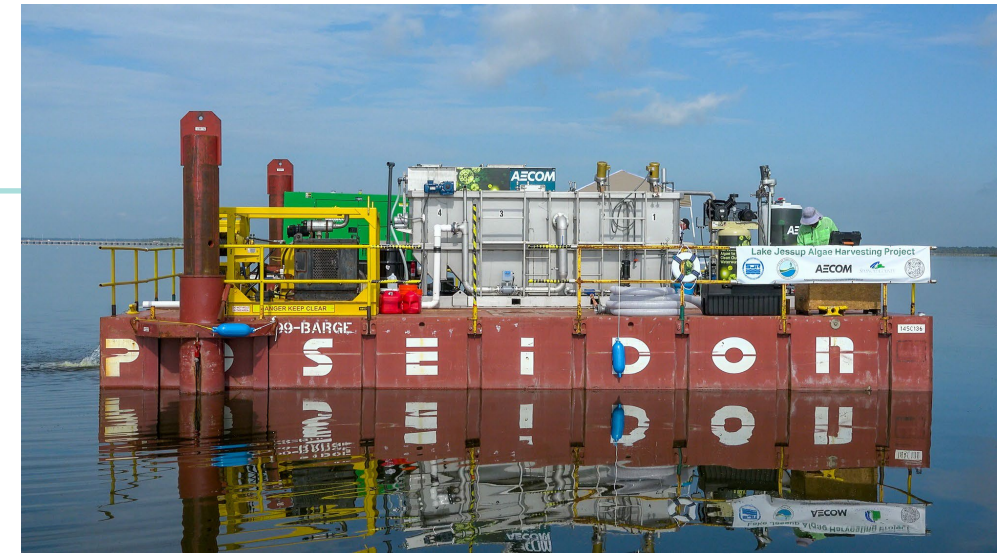
- **Lake Jesup** – Barge-based HAB harvesting via modified Dissolved Air Flootation process (Hydronucleation Flotation Technology)
- **Lake Minneola** – Use of Lake Guard™ Oxy algaecide to prevent HAB development



MAJOR TAKEAWAYS

Lake Jesup Harvest

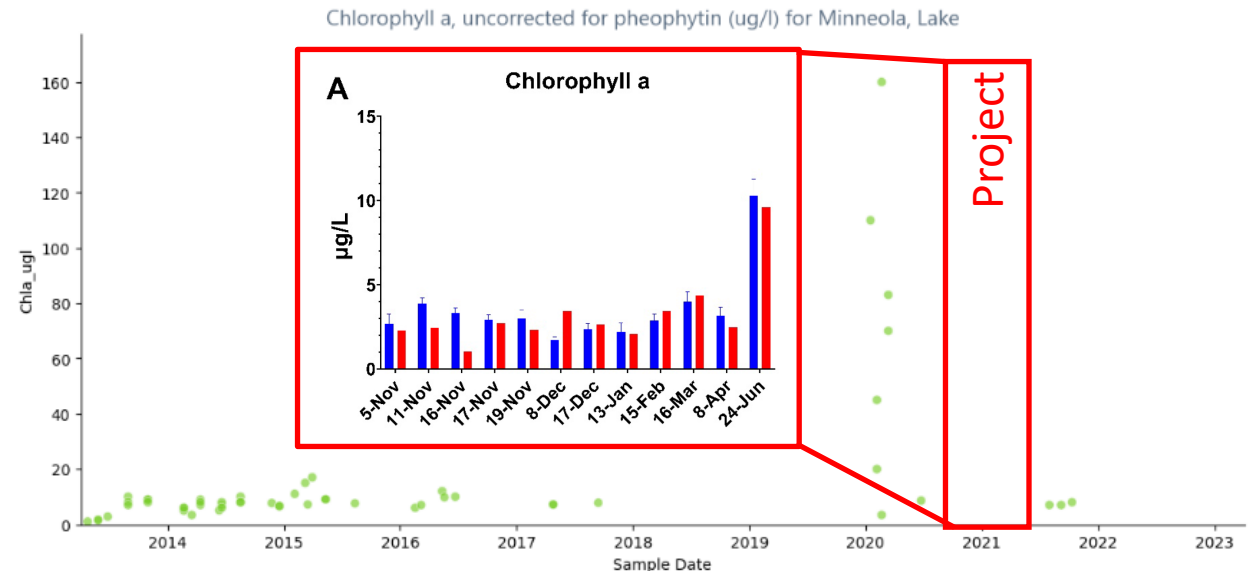
- HABs can be harvested via floating or land-based systems
- Cost-effectiveness
 - What do you do with harvested biomass? Waste product or commodity?



Lake Minneola Treatments

- Lake Guard™ Oxy is a floating pellet form of H₂O₂
- No HAB occurred during project
- Unreplicated design is unsatisfying
- Little evidence for selective treatment of cyanos

10 Year Graph Lake Minneola Chla (uncorrected)



ADDITIONAL RELEVANT INFO

- Harvester technology undergoing further evaluation on the Indian River Lagoon by Brevard County
- SJRWMD evaluating land-based algae / suspended sediment harvesting system on Lake Jesup
- SJRWMD using DEP funds to test a rapid Lake Guard™ Oxy algaecide-based HAB treatment capability (demonstration scale)

**STAY
TUNED**



RESEARCH PRIORITIES

HAB Harvest

- Control all nutrient pollution (N & P) – including different forms of N (urea, ammonia, etc)
- Develop blue-green algae control methods
- Evaluate and weigh engineering versus ecological approaches
- Determine a strategy for effective messaging to public regarding expectations, timelines, and costs

HAB Treatment

- Develop blue-green algae control methods
- Evaluate and weigh engineering versus ecological approaches
- Determine a strategy for effective messaging to public regarding expectations, timelines, and costs

Create a central database for alternative technologies – YES PLEASE



NEW DATA GAPS

HAB Biomass – Convert from waste to commodity at project scale

- SJRWMD's rough fish harvests are highly cost-effective because fish are valuable commodity

Global P Cycle – Substantial room for improvement exists to connect missing linkages. For instance, P recovery at WRFs

- Use of reclaimed water and biosolids are converting point sources to nonpoint phosphorus pollution

Which HAB – Need insights into which HABs will be worthy of treatment (toxin production, persistent, intense, N-fixation)



ACKNOWLEDGEMENTS

- **Innovative Grants – It Takes a Village To Innovate**

- Finance
- Budget
- Procurement
- General Council
- Executive Team
- Project Management
- Water Resource Information
- Water Resources

- **DEP for funding project**
- **FWC for providing presumptive permit**
- **Project reports available upon request**

