

# Components of a HAB Management Plan

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NJDEP Harmful Algal Bloom Workgroup

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## HARMFUL ALGAL BLOOM EXPERT TEAM



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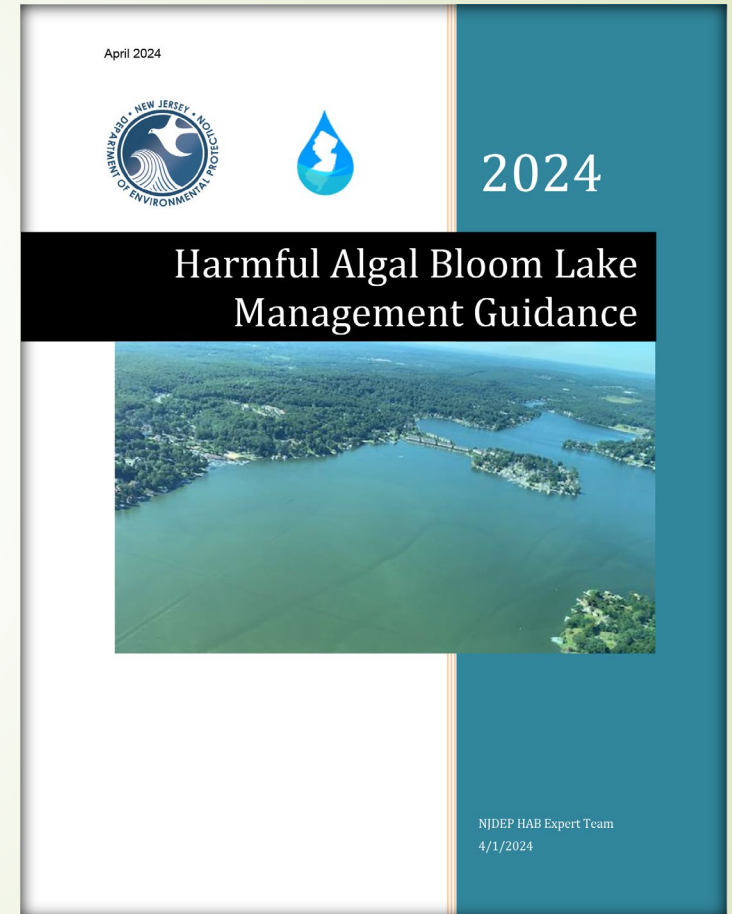


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# Components of a HAB Management Plan

- Lake Background
- Public Participation and Outreach
- Water Quality Monitoring and Lake Conditions
- Identifying Existing Data and Data Gaps
- Algae and HABs Summary
- Pollution Sources
- Lake Management and Water Quality Goals
- Selection of Actions





# Common Themes to Keep in Mind

- All waterbodies are unique
- Focus on long term improvements, evaluate impact short term fixes will have on long term goals
- Nutrient control is a priority
  - Focus on Phosphorus but not at the expense of Nitrogen. Maintaining proper N:P ratios is important
- Recommend HAB composition and problem are well understood prior to selecting and taking any actions
- Climate change – plan for increased variability with rain events and temperature
- Coordination among groups working on the waterbody is critical



# Lake Background

- Physical description, morphology, hydrology, chemical and biological characteristics
  - Flow of water in/out of the waterbody
  - Special features - coves
- Designated uses – Swimming, fishing, boating, etc.
- Land use within watershed
- Stratified or well mixed – Increasing variability in rain and temperature can potentially change this



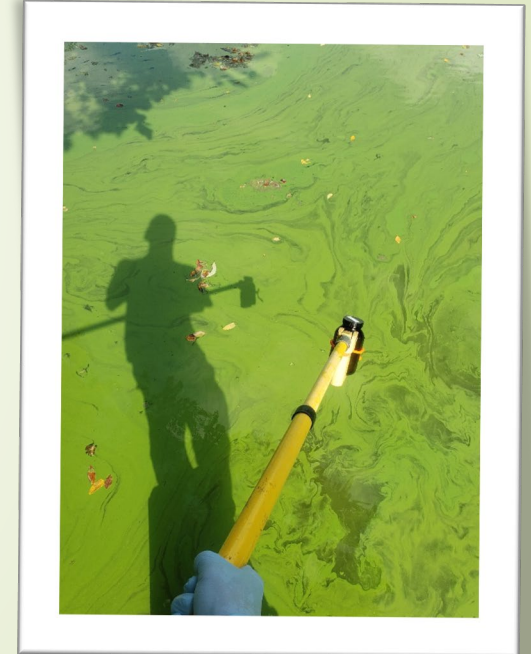
# Public Participation and Outreach

## Two-Tiered Approach

- Identify all the resources needed and engage potential partners to assist in the development
  - Funding, research, outreach
  - Historical account of water quality conditions
- Education on the causes of HABs
  - Behavior changes
  - Encourage participation implementing the plan

# Water Quality Monitoring and Lake Conditions

- Regulatory for determining advisories
- Investigative to learn about the chemical and biological composition of the waterbody
  - Nutrients, cyanobacteria species, presence/absence of cyanotoxins
  - The public can provide vital information on:
    - Observable conditions
    - Conditions improving or getting worse



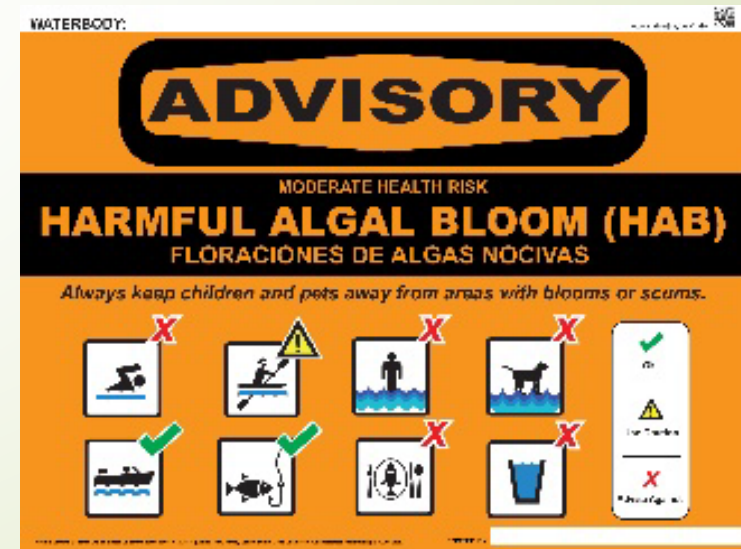


# Identifying Existing Data and Data Gaps

- Extensive body data exists
- Navigating all the resources can be difficult but the effort can help preserve resources
- Nutrients, volume flows, past HABs, treatments, and ongoing/planned actions
- Key Metadata – information on lab that conducted the analysis, detection limits, collected under a Quality Assurance Project Plan

# Algae and HABs Summary

- Documentation of previous HAB events along with DEP Alert Levels
  - Basic data – total occurrences, meteorological data leading up to HAB, cell counts, toxin levels
  - Actions taken – NJDEP Alerts, treatment
  - Impacts – wildlife, economic





# Pollution Sources

- Focus on identifying sources that contribute to HABs
  - External/internal nutrients, sediment, thermal
- GIS to identify land use and location/density of septic systems
- Stakeholders can be a great resource for observable conditions and verifying locations of stormwater inputs
- Important to consider how climate change can impact current sources and lead to new sources





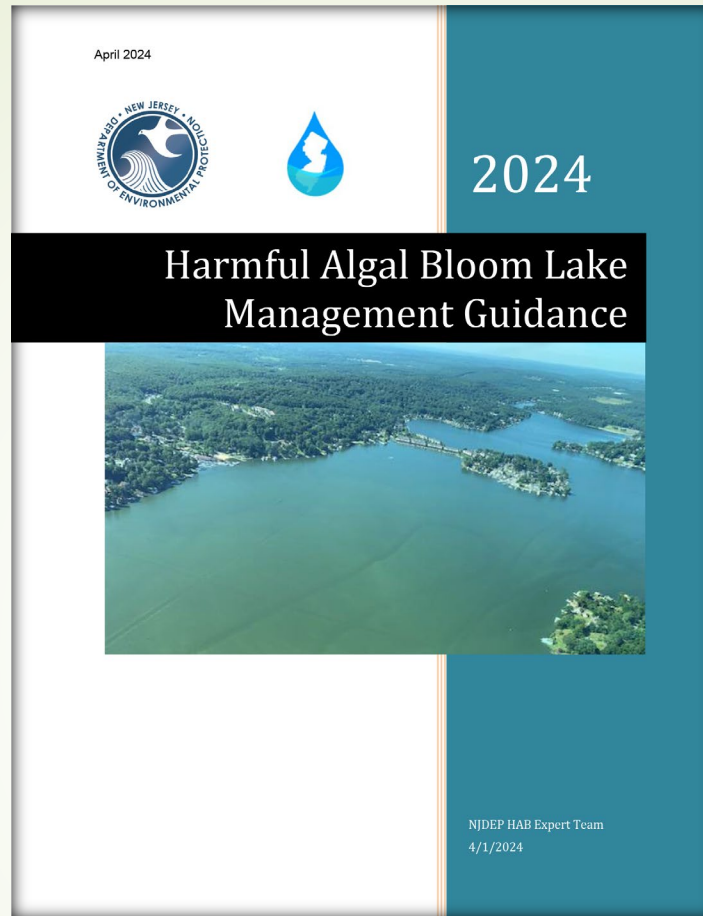
# Lake Management and Water Quality Goals

- Broad goals that focus on reducing nutrients
- Actions should provide long term benefits that reduce the occurrence of HABs
- Focus on changing the conditions that the dominant cyanobacteria species has exploited
- Maintaining and improving current uses of the waterbody



# Action Items

- Select Action Items that control nutrients inputs from external and internal sources
- Combination of short-term strategies to reduce severity/persistence of HAB and long-term strategies to reduce occurrence of HAB
- Restore proper N:P ratios; critical to preventing conditions favoring cyanobacteria
- Account for effects of climate change when choosing and designing long term strategies



Visit <https://www.nj.gov/dep/hab/> for the Guidance Document and other resources.