

Falls Lake Nutrient Management Study Research Symposium

# UNRBA's Re-examination: What We've Learned & What It Means for Falls Lake

April 19, 2023



# UNRBA Regulatory Support


- Support compliance efforts for Stage I of the Rules, particularly for existing development
- Reexamine Stage II of the Rules
  - Conduct scientific evaluations
  - Collaborate with researchers and stakeholders
  - Propose recommendations for a revised nutrient management strategy




Land conservation site; photo courtesy of Person County

# Stage I is Being Fully Implemented


## New development

- Rules in place since 2012
  - Limits nutrient loading from developed sites
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## Agriculture

- Stage I reductions have been met and production acres have declined by 44%
  - Nutrient management plans, conservation tillage, best management practices near full implementation
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## Wastewater treatment plants (WWTPs)

- Exceeded reduction requirements and reduced loading (2018 versus 2006)
    - 38 percent for total nitrogen
    - 81 percent for total phosphorus
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## Existing development

- Installation of more than 350 retrofit projects
  - UNRBA nutrient credits project to expand list of credited practices
  - Interim Alternative Implementation Approach (IAIA) allows for full compliance
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# UNRBA Approach to the Re-examination of Stage II

## Science-based approach to water resource management

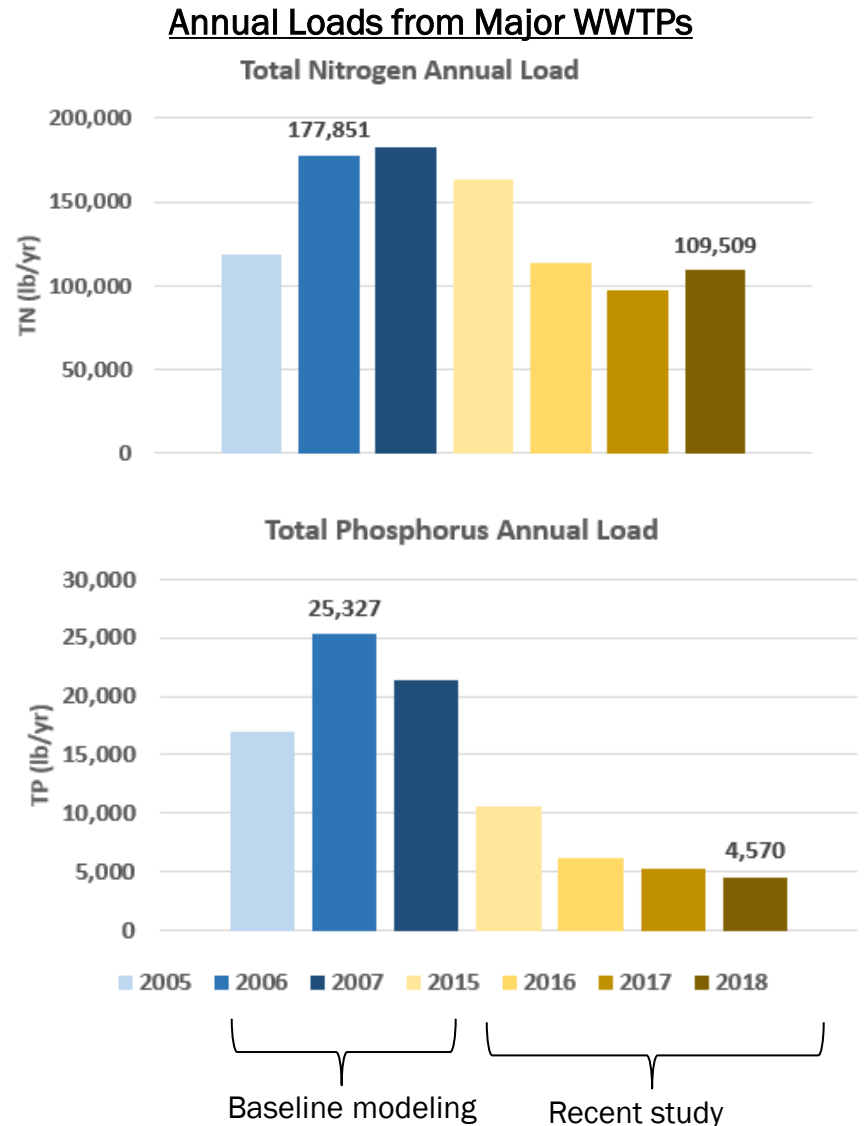
- Monitoring with annual reports (2015 to 2019)
- Modeling (four separate models)
- Approved Quality Assurance Project Plans for monitoring and modeling
- Information sharing with Collaboratory
- Ongoing review and input from third-party, subject matter experts

## Collaborative approach to management and evaluation

- Status updates and stakeholder input at UNRBA Board, Committee, and Workgroup meetings
- Extensive stakeholder review and input
- Agency review and approval of evaluation process

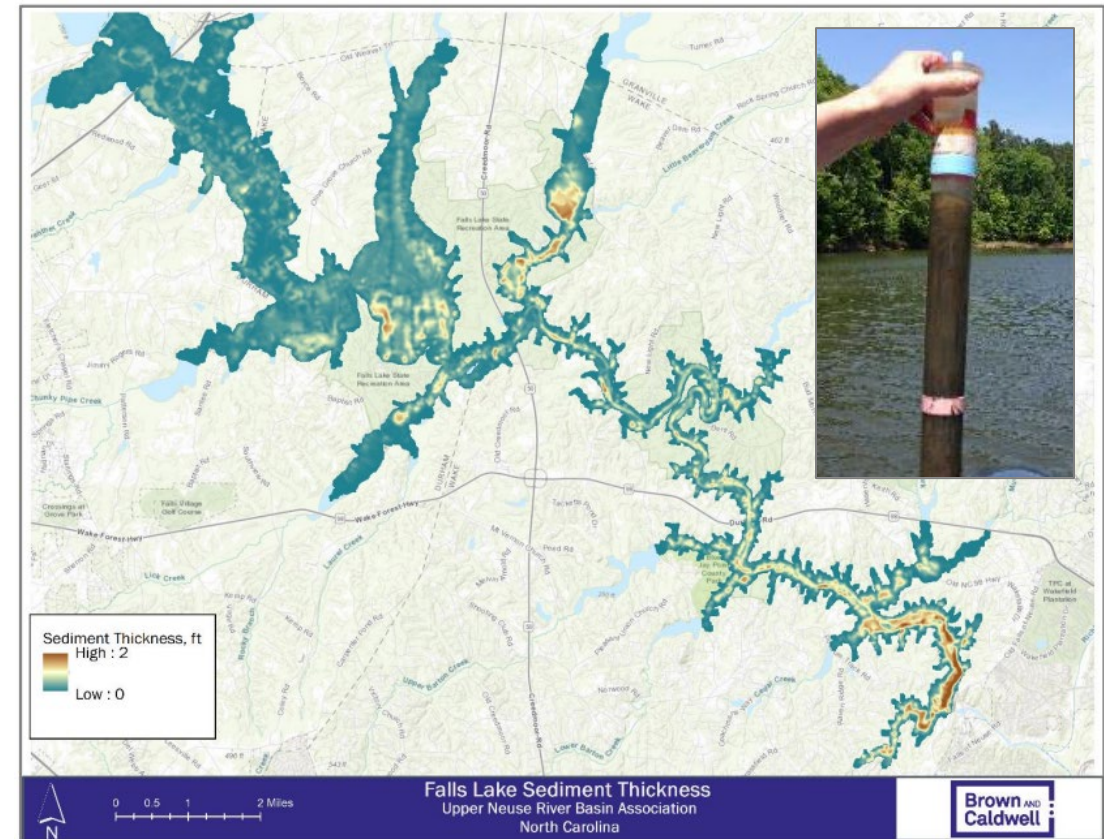
# Key Findings from the Watershed Studies

- Watershed changes have reduced nutrient loads since 2006 (baseline year for the rules)
- Soils store and cycle nutrients for decades
- US Forest Service monitoring studies measured nutrient loads during dry to average rainfall conditions; used to compare to models
- Rainfall is the key driver of nutrient loads
- Little opportunities remain to further reduce loading from the watershed
- Progress will be incremental



# Key Findings from the Lake Models and Data

- Watershed hydrology and lake residence time are main drivers of chlorophyll-a
- Chlorophyll-a in the lower half of the lake has been stable since the reservoir was constructed
- Lake sediments will continue to cycle nutrients for decades
- Changes in loading will not have immediate impacts on chlorophyll-a
- Algae have not been linked to a fish kill since the late 1980s (soon after filling)
- Algal toxins are below EPA guidelines for drinking water and recreation

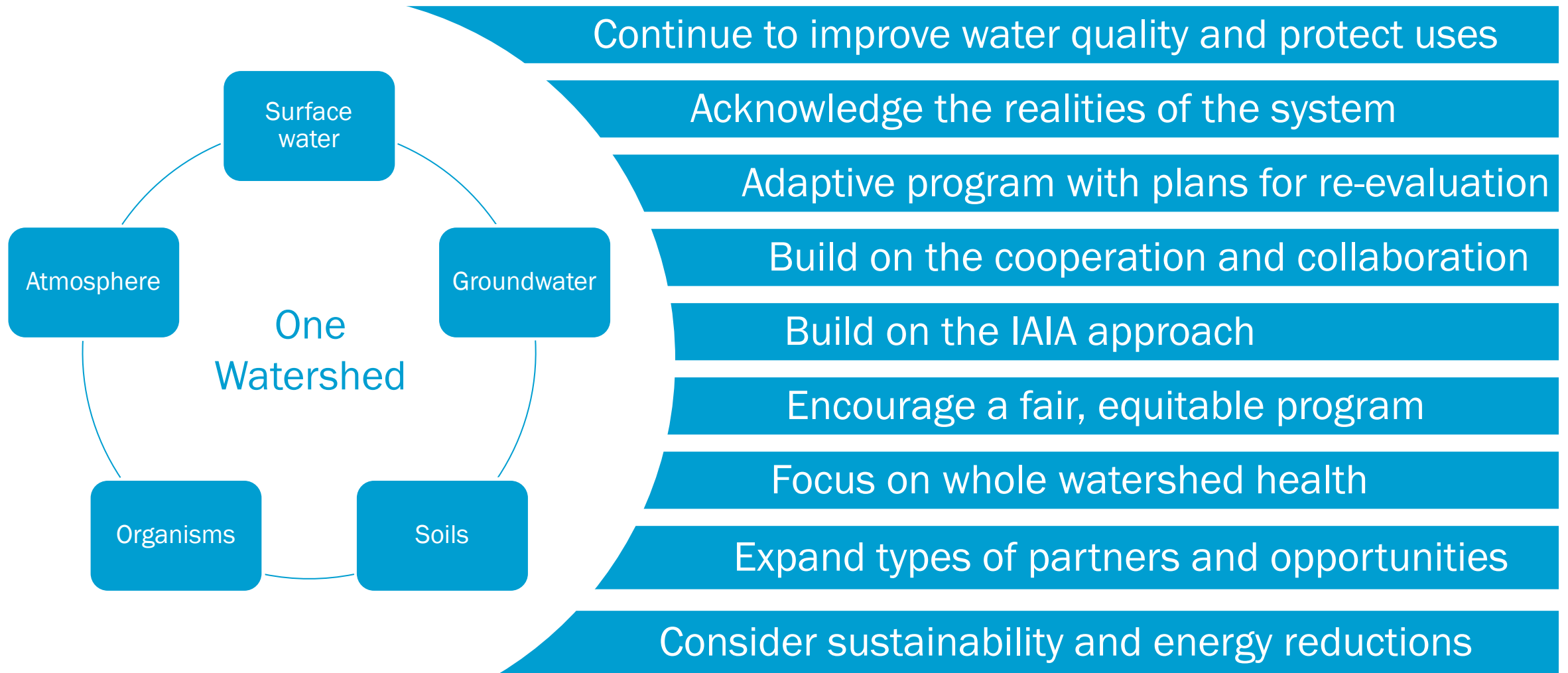


# Implications for a Revised Nutrient Management Strategy

- Additional large-scale nutrient load reductions are not achievable
- Long-term nutrient management is the most effective approach
- Ongoing action is needed to protect this resource and maintain uses
- A more appropriate site-specific chlorophyll-a standard would be helpful



# Evolving Principles for a Revised Strategy





# Nutrient Reduction Opportunities

## Existing Lands

- Stream, wetland, buffer restoration
- Floodplain expansion
- Road and logging best practices
- Controlled burns, harvesting, forest and vegetation management
- Educate owners of stormwater control measures on proper maintenance
- Stormwater retrofits\*

## New development

- Continue implementing rules
- Update local ordinances to allow innovative stormwater solutions

## Wastewater related

- Track best available technologies and costs
- Work with minor facilities to improve effluent quality\*
- Identify and remedy illicit discharges\*
- Track and address failing OWTS\*

## Atmosphere

- Tree planting along busy roads
- Air pollution reduction technologies
- Public transportation
- Green energy sources

# Next Steps for Developing the Recommendations

- Present concepts and principles to hear stakeholder feedback
  - WRRRI Annual Conference (held in March)
  - Joint Symposium with Collaboratory (today)
  - Technical Stakeholder Workshop (this Fall)
  - Regulatory Forum in Spring 2024
  - Expanded outreach within the watershed
- Develop a final document to describe recommendations (due Dec. 2023)
- Update Consensus Principles



# Would you like to participate in upcoming activities to further the development of the revised nutrient management strategy?

Potential activities (please check all that you are interested in using the QR Code to the right)

- UNRBA email distribution lists
- Fall 2023 UNRBA Technical Stakeholders Workshop
  - Learn more about the UNRBA data and models
  - Share your feedback on the updated draft UNRBA recommendations for the revised nutrient management strategy
- Spring 2024 UNRBA Regulatory Forum
  - Learn about the Falls Lake Rules Review Process being led by DWR
- Review proposed revisions to Rule language (2024)
- Attend DWR-led stakeholder meetings regarding revising the Falls Lake Rules



<https://bit.ly/NMSActivities>

# Additional Information

- Comprehensive website  
<https://www.unrba.org/>
- General information website  
<https://upperneuse.org/>
- Reference documents
  - [UNRBA Infographic](#)
  - [UNRBA Fast Facts](#)
  - [Overview of the Work of the UNRBA](#)
  - [Comprehensive UNRBA Monitoring Data Report](#)
- NC Collaboratory Falls Lake Study website -  
<https://nutrients.web.unc.edu/resources/>

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