

WELCOME!

OPEN HOUSE SUMMARY

Wetland Conversion of Upper Durant Lake

Wednesday, April 26, 2023

5:30 - 7:30 p.m.

Campbell Lodge at Durant Nature Preserve

Hosted by:

Raleigh Stormwater

Raleigh Parks

With support from:

WK Dickson

Toole Design Group



Visit <https://raleighnc.gov/projects/wetland-conversion-upper-durant-lake> to learn more!

WETLAND CONVERSION OF UPPER DURANT LAKE OVERVIEW

Project Background

In 2013, an engineering firm contracted by the City of Raleigh deemed the dam and spillway of the 6-acre Upper Lake to be deficient and in need of repair. In 2018 and 2019, under contract with the City, NCSU conducted a study to explore alternatives to maintain the area and protect the Preserve.

In 2020, City staff recommended and City Council approved a wetland conversion alternative to address the dam and spillway repairs, improve water quality in the Perry Creek watershed and the Neuse River Basin, and increase habitat diversity and provide new wildlife viewing opportunities for park patrons.

The *Wetland Conversion of Upper Durant Lake* project is currently in Design Phase 1. During this phase, City staff and our design consultant will identify the type of wetland best suited for the site. Feedback from neighbors and park users during this phase will help tailor design details of how the new wetland connects to the existing trail system.

How will this project affect me?

Design Phase 1 WINTER 2022-FALL 2023 (CURRENT PHASE)

- Project Team will be on trails, surveying, and conducting tests.
- Regular progress updates on the project webpage and engagement opportunities.

Design Phase 2 LATE 2023

- Additional surveying and tests may be conducted as needed.
- Fewer ongoing project updates while construction documents are developed.

Construction TO BE DETERMINED

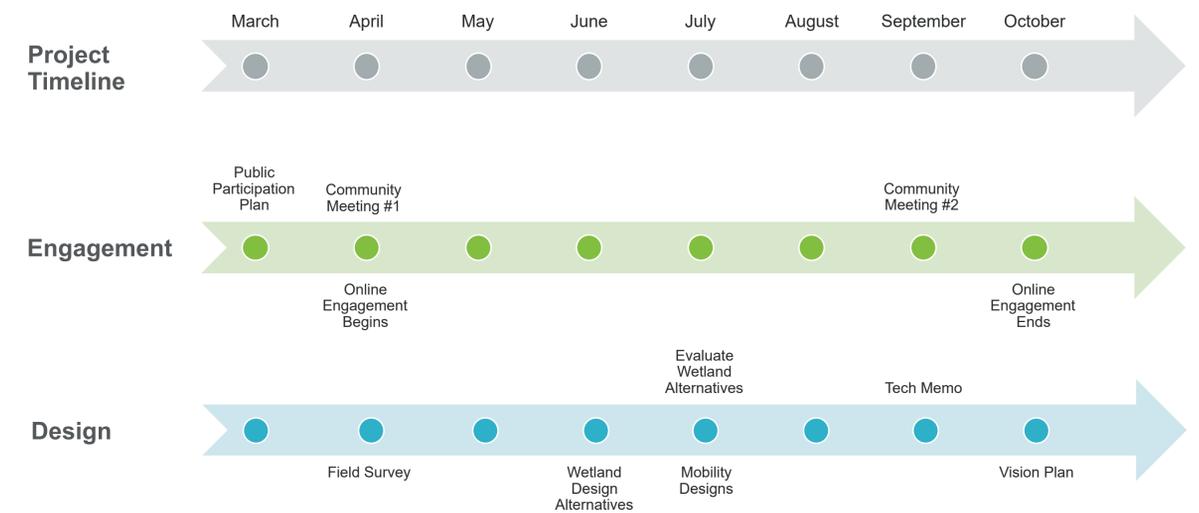
- Construction crews will work and stage materials within designated areas.
- Multiple temporary trail closures around the Upper Lake. Limited closures around the Lower Lake.
- Regular construction updates.

Into the Future 2024 AND BEYOND

- Ribbon cutting and celebration!
- New experiences at Durant!

Project Schedule

The timeline below will be updated regularly as the project progresses.



Stay Involved!



SPREAD THE WORD

Let your neighbors, family, and friends know about the project.



JOIN US

Attend the open house in the fall to learn about plans and share your preferences for trail details.



STAY UP TO DATE

Follow along with project updates on our website. Scan the QR code below!



CONNECT

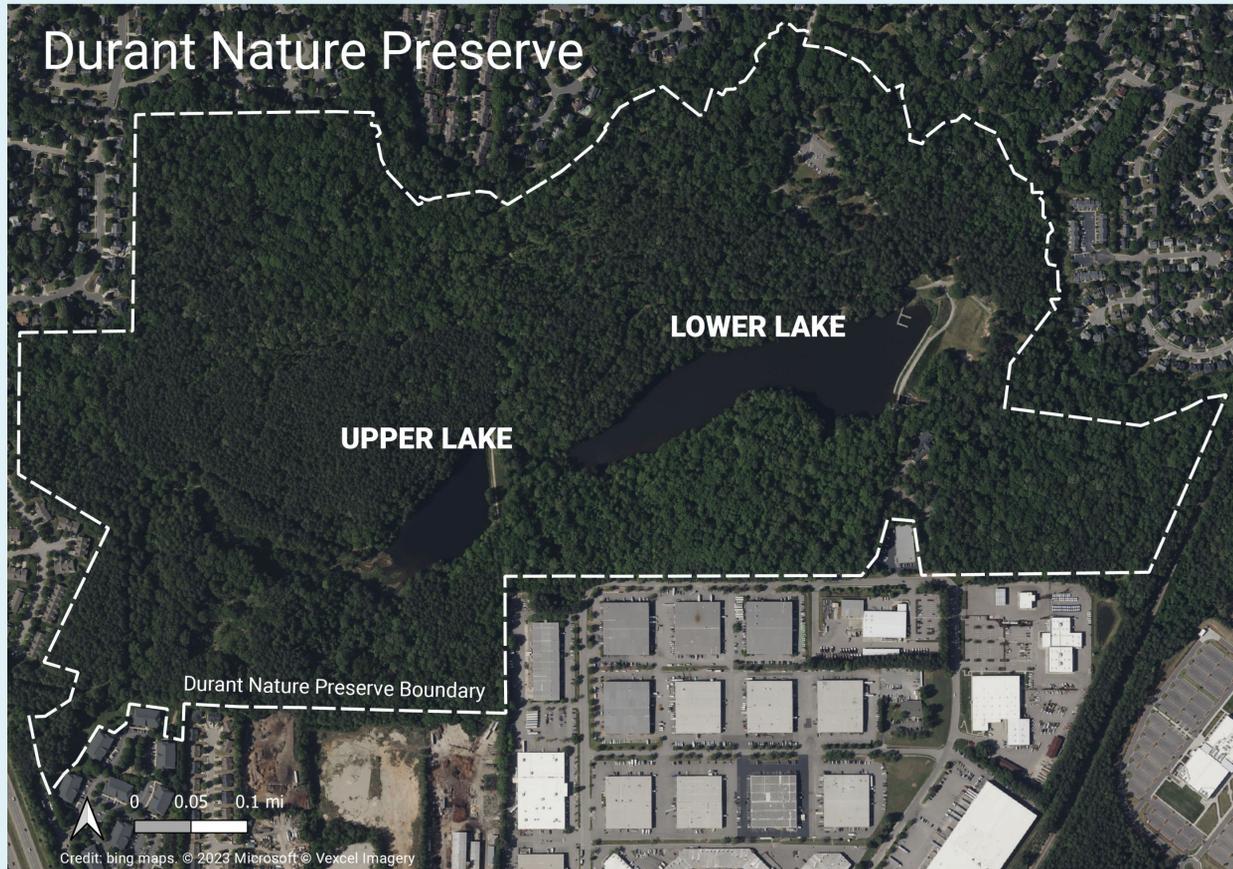
Reach out to the project team with ideas, questions, and concerns. Contact:

Raleigh Stormwater
Emily Smull, Project Manager
emily.smull@raleighnc.gov
919-996-5582



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PROJECT PURPOSE & GOALS



Priorities & Uses Throughout the Preserve

UPPER DURANT WETLAND

- Creation of new habitat for more wildlife diversity
- Water quality
- Recreation
 - » Hiking, wildlife viewing
- Programming

LOWER LAKE

- Preservation of habitat & wildlife
- Water quality
- Recreation
 - » Hiking, fishing, gathering
- Programming

The map above shows the location of the proposed Upper Durant Wetland (currently the Upper Lake) in relationship to the Lower Lake.

Community Goals for Upper Durant Lake

These were your goals in 2021! Do they still reflect your priorities? Make a check mark to cast your vote.

More recreational programming	<input type="checkbox"/>	Water quality	<input type="checkbox"/>
Preserve wildlife and habitat	<input type="checkbox"/>	Hiking trails with viewing areas	<input type="checkbox"/>
Limit fishing to the Lower Lake	<input type="checkbox"/>	Wildlife refuge preservation	<input type="checkbox"/>
More accessible walking trails	<input type="checkbox"/>	Other (write-in)	<input type="checkbox"/>

Goals of Nature Preserves in Raleigh

- 1 Serve as examples of high-quality plant or animal populations, natural communities, landscapes or ecosystems
- 2 Contribute to biodiversity and environmental health
- 3 Protect and manage significant natural resources
- 4 Provide opportunities for the public enjoyment of natural resource-based recreation and environmental education

Goals of the Upper Lake Wetland Conversion

- 1 Diversify ecological habitat
- 2 Improve water quality
- 3 Expand environmental education opportunities
- 4 Ensure long-term viability
- 5 Address deficient dam infrastructure



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GET TO KNOW WETLAND ECOSYSTEMS

Pop Quiz!

How much do YOU know about wetlands? Let's find out!

Definitions:

WETLAND

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season.

- EPA, 2022

PRESERVE

A tract of land managed so as to preserve its flora, fauna, physical features.

- Oxford Dictionary, 2023

Has the City of Raleigh created wetlands before?



Are all wetlands ponds?



Are wetlands only scenic in the summer?



Do wetlands require a lot of space?



Are wetlands filled with mosquitoes?



How do wetlands address water quality concerns?



Are wetlands too sensitive to support recreation?



Do wetlands help with climate change?



How deep is a wetland?



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Yes! The City created a demonstration wetland at the Walnut Creek Wetland Center, and has constructed wetlands in Fred Fletcher Park and Wooten Meadow Park.



No! Wetlands may be shallow ponds, but they can also be an interwoven system of small streams and pools with small vegetated islands.



No! The diversity of plants and animals supported by wetland ecosystems provide scenic beauty all year long. In winter, wetlands are particularly great spots for birding.



They can! It depends on the size of the local watershed, the volume of water the wetland receives, and the purpose of the wetland. Small, man-made wetlands exist in urban areas.



No! Wetlands contain lots of different animals, including many that reduce mosquito populations. Where cattail plants are overly dominant, mosquitoes can be problematic.



Wetlands help improve water quality by absorbing and storing fast moving water, which reduces erosion. Wetlands also filter sediment and chemicals from stormwater.



Not necessarily! Viewing platforms in wetlands can support many types of passive recreation. Some wetlands can support limited boardwalk or perimeter trails for walking.



Yes! Wetlands store carbon, clean the air, reduce ambient air temperatures, create habitat, and recharge groundwater.



Wetlands are typically less than 3 feet deep, and the depth of water throughout a wetland often varies!



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TECHNICAL FINDINGS

Previous Analysis and Findings

2013

LAKE ASSESSMENT

• Conclusion

- » The dams and spillways of the Upper Lake and the Lower Lake are structurally and hydraulically deficient.
- » Something must be done to preserve the wildlife habitat in and around both lakes.

2019

LOWER LAKE CONSTRUCTION

• Overview

- » Construction on the Lower Lake was completed in 2019, including its dam, spillway, and downstream channel, removing its deficiencies.

2020

UPPER DURANT LAKE RETROFIT ALTERNATIVE ANALYSIS

• Findings

- » Accumulated sediment is not hazardous.
- » Existing dam spillway does not provide adequate flood control.
- » The existing lake provides moderate water quality benefits (removes nitrate nitrogen, phosphorus, and sediment).
- » Habitat is limited upstream for macroinvertebrates (classified as Poor to Fair).

• Conclusion

- » After scoring four scenarios for restoring the Upper Lake, the Habitat Wetland was identified as the best solution.

Table 20. MCDA Summary.

MCDA Decision Criteria Variables	MCDA Rating (1-4)*								MCDA Score***	MCDA Rank****
	Water Quality	Flood Control	Habitat Enhancement	Educational/ Interpretive Opportunities	Risk to Downstream Lake	Project Implementation Time	Initial Capital Cost	Yearly Ongoing Cost		
Weighting Factor (1-4)	3	1	3	3	4	1	3	2		
Habitat Wetland	3	1	3	4	4	1	2	1	56	1
Stormwater Wetland	4	1	2	3	4	1	2	1	53	2
Stream Restoration	1	1	3	4	1	2	2	3	43	3
Lake As Is	2	1	1	1	4	3	1	2	39	4

*MCDA rating represent a relative rating of the retrofit alternatives. Ratings range from 1 (less favorable) to 4 (more favorable).
 **Weighting factors represent the importance of the decision criteria variables to the City. Higher values represent more important variables.
 ***Represents weighted score for each retrofit alternative.
 ****MCDA rank represents the final ranking of the retrofit alternative based on the MCDA score (1 represents the most favorable and 4 the least favorable).

Table 20. The chart above shows the results of a multi-criteria decision analysis (MCDA). The eight evaluation criteria were determined by the public during the engagement process led by NCSU to compare four scenarios for Upper Durant Lake.

This Current Project

2023

WETLAND CONVERSION OF UPPER DURANT LAKE

• Preliminary Findings

- » The wetland conversion does not have to use concrete structures. Natural materials such as wood, rocks, and earthwork (e.g., grading) can be used to construct the wetland.
- » There is potential to sustainably harvest some on-site materials for constructing the wetland (e.g., downed trees, easily propagated plants).
- » Exotic, invasive plant species are dominant directly upstream from the Upper Lake. This project is an opportunity to increase diversity of plant communities.

• Future Findings

- » The project team will package the findings from investigating specific wetland design alternatives into a technical memo for the City's review.
- » The City of Raleigh's preferred alternative will be showcased in a Habitat Wetland Vision Plan.

The images below show a few habitat features for ecosystem design within the wetland.



Beaver Dams naturally create wetland habitats by naturally slowing water flow, preventing erosion and extreme flooding



Snags provide habitat for bugs which are eaten by local birds



Wetlands are prime habitat for a variety of birds including many species of waterfowl



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HOW DO YOU ENJOY DURANT?

Use the pens to fill in the blanks below. We value all of your feedback!

QUESTIONS

EXCITEMENT

CONCERNS

OTHER



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THANK YOU!

HAVE QUESTIONS, EXCITEMENT, OR CONCERNS TO SHARE?

Contact:
Emily Smull, PE
Project Manager, Raleigh Stormwater
emily.smull@raleighnc.gov
919-996-5582



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