Wake County
One Water Update

Growth and Economic Strength Committee

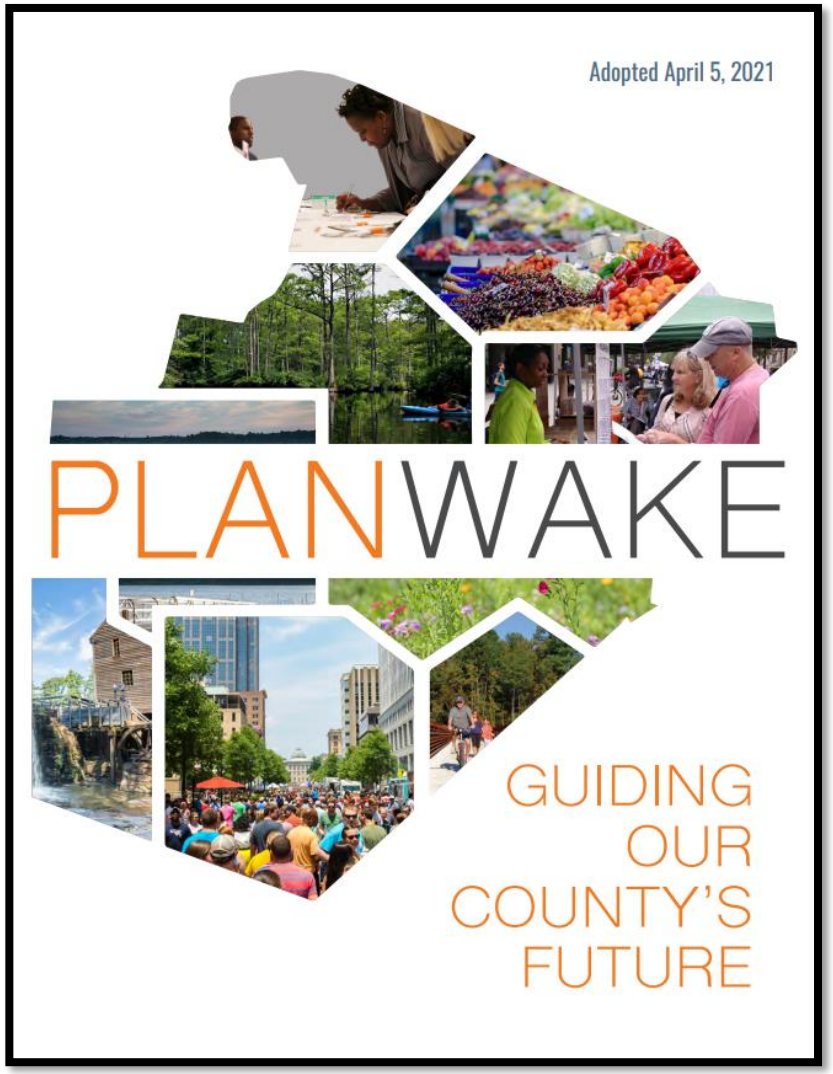
Final v8

April 21, 2025

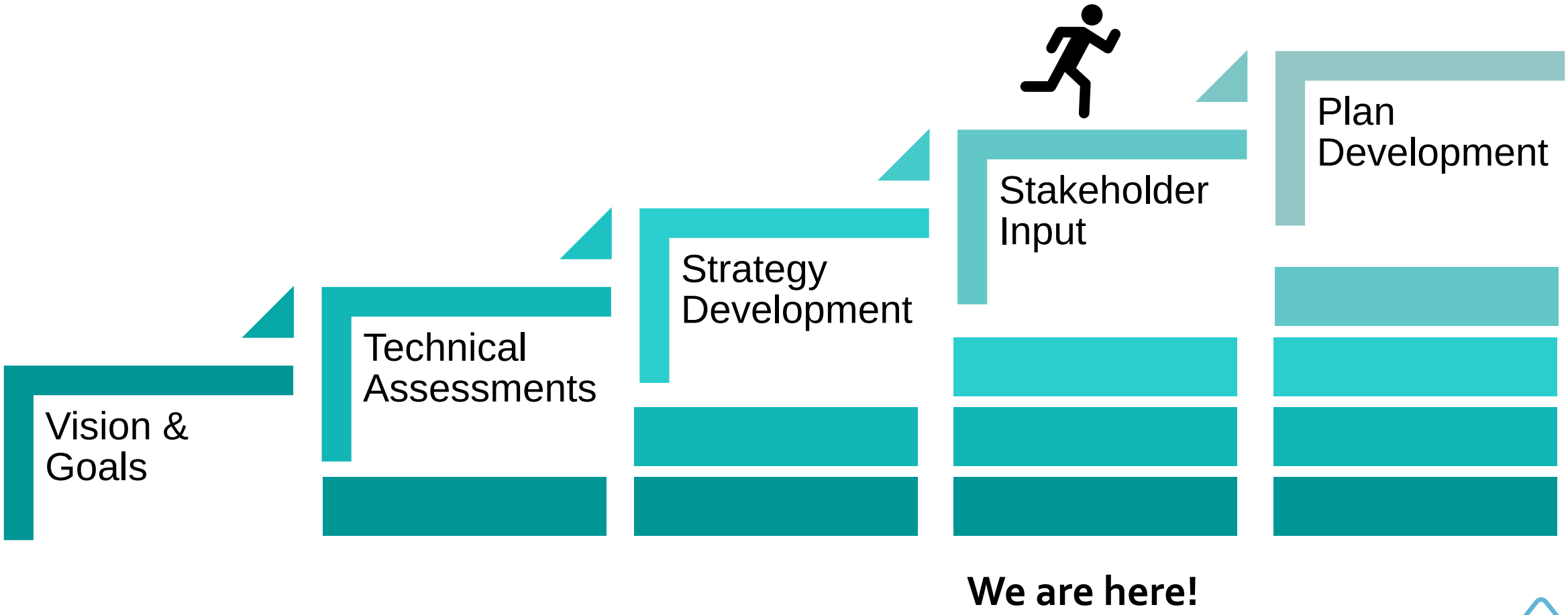
One Water Plan

- 50-year water supply plan
- Integrates water planning with development and transportation planning
- Supports a growing population while preserving limited natural resources

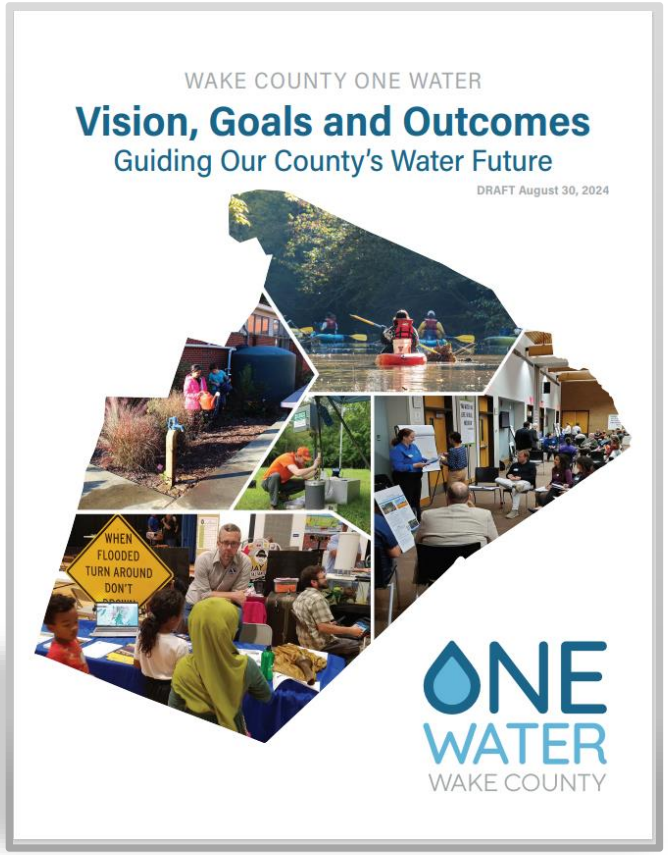
Vision Alignment



Our Process


Vision &
Goals
Technical
Assessments
Strategy
Development
Stakeholder
Input
Plan
Development
We are here!

Vision and Goals



Vision Document's Overarching Goals

1. Build Knowledge, Collaboration and Partnerships
2. Increase Community Resilience to Inclement Weather
3. Cultivate Community Support
4. Advance Access to Clean Water for All
5. Support Local Economy and Fiscal Accountability

Technical Assessments & Strategies

Strategy focus areas:

- Water Supply
- Drought
- Groundwater
- Stormwater
- Flood Resilience
- Wastewater Treatment
- Nutrient Pollution

Impacts of Future Land Use

Water Quantity

Average stream flow	Stormwater volume	Frequency of high flow events	Baseflow	Groundwater recharge
—	↑	↑	↓	↓
No significant changes	Increases	Increases	Decreases	Decreases

Impacts of Future Land Use

Water Quality

Small changes in the amount of pollution generally present

Large increases in pollution during and after storms

More pollution comes from stormwater runoff than other sources

Pollutants of concern are nitrogen, phosphorus, and sediment

Changes in pollution amounts in streams vary by location and type of pollution

Impacts of Future Weather Events

The future is uncertain, but our models provide a range of possible risks.

Higher temperatures

More pollutants from highly urban areas

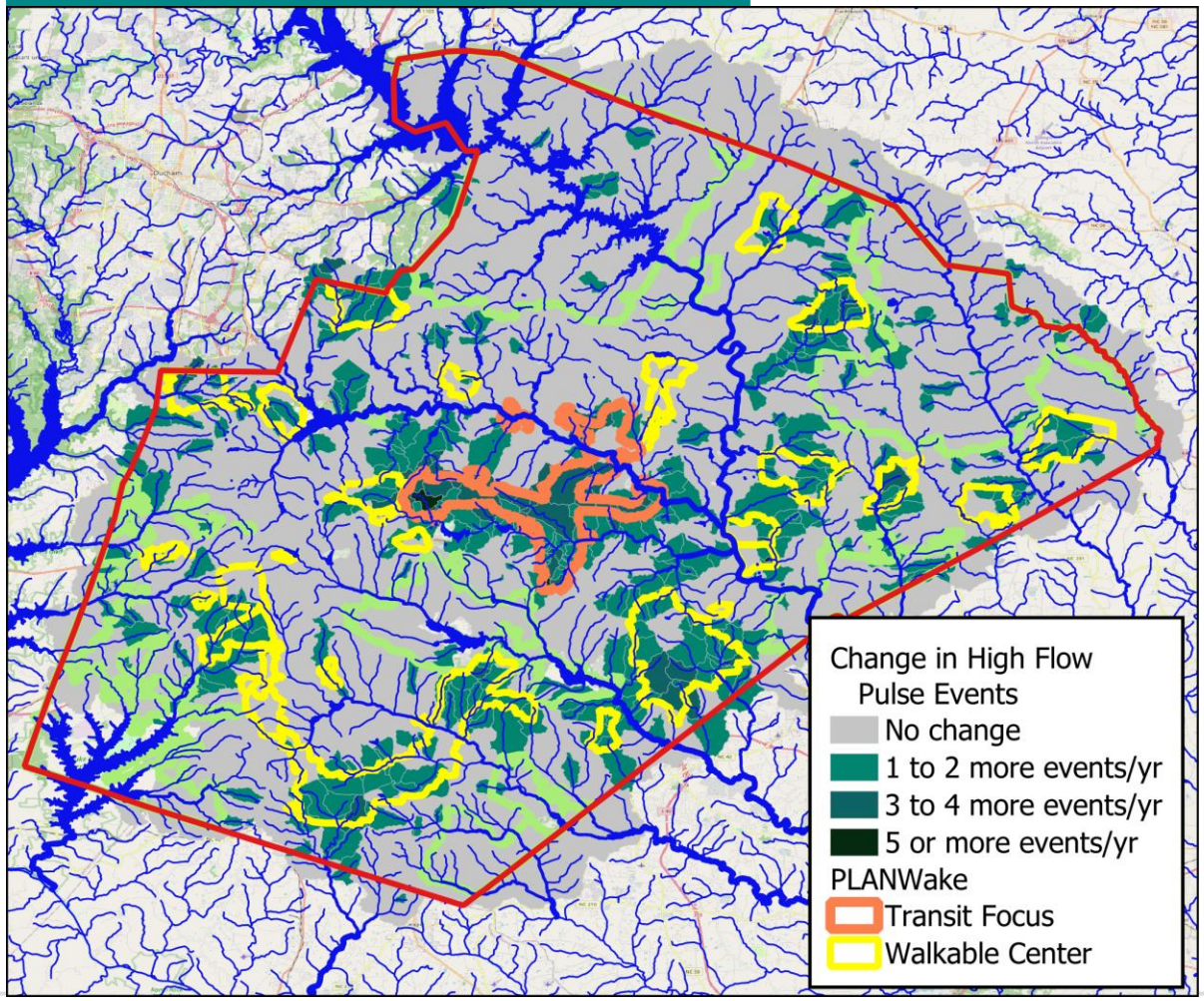
More extreme events and more flooding

Increased risks for groundwater aquifers

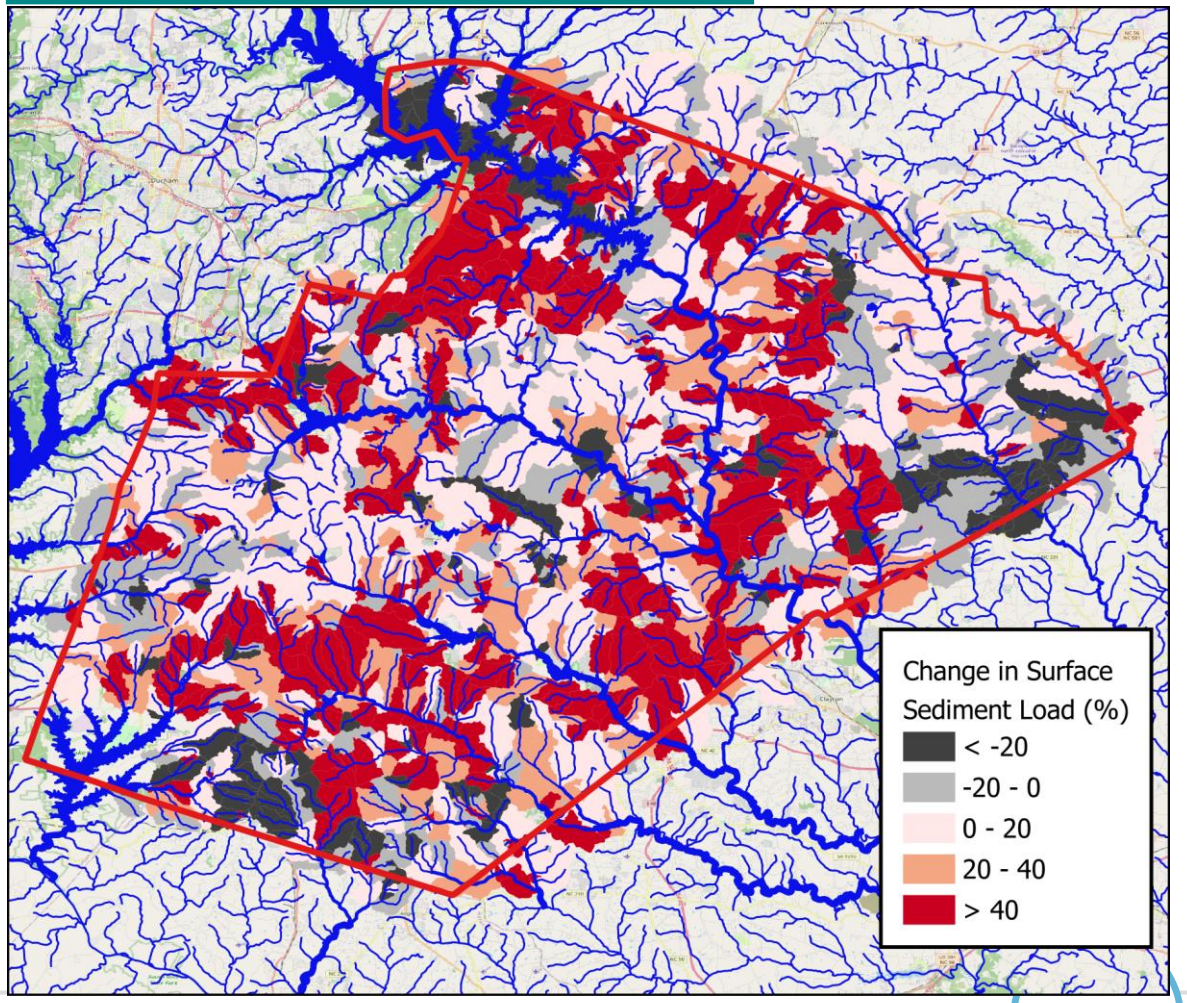
Runoff is expected to increase

Stormwater in Wake County

Water Quantity



Water Quality



Strategy Development

- Organizational Tools
- Technical Tools
- Implementation Tools

Stormwater: Strategy Options

Green infrastructure improves **water quality** and **water quantity** control efforts by storing and slowing stormwater and allowing it to soak into the ground.

Roof drain disconnection

Alternative landscaping practices

Permeable pavement

Tree planting

Rain barrel or cistern

Rain gardens

Stormwater: Strategy Options

Blue infrastructure improves **water quality** and **water quantity** control efforts by incorporating water features in developed environments.

Water Supply in Wake County

Population Growth of Municipal Water System Service Areas

Water Utility	Population[1]	
	2021	2070
Raleigh Water	610,000	1,514,000
Town of Cary	212,109	242,554
Town of Apex	71,988	182,000
Town of Holly Springs	45,058	117,000
Town of Fuquay-Varina	34,152	126,000

[1] 2022 Local Water Supply Plans accessed via https://www.ncwater.org/WUDC/app/LWSP/

Water Demand Growth

Water Utility	Water Demand (mgd)	
	2021	2070
Raleigh Water	53.0	124.4
Town of Cary	20.2	34.0
Town of Apex	5.6	14.4
Town of Holly Springs	3.2	11.1
Town of Fuquay-Varina	2.8	10.7

Increased demand will lead to greater levels of stress on regional supply sources and the need to develop new water supply sources

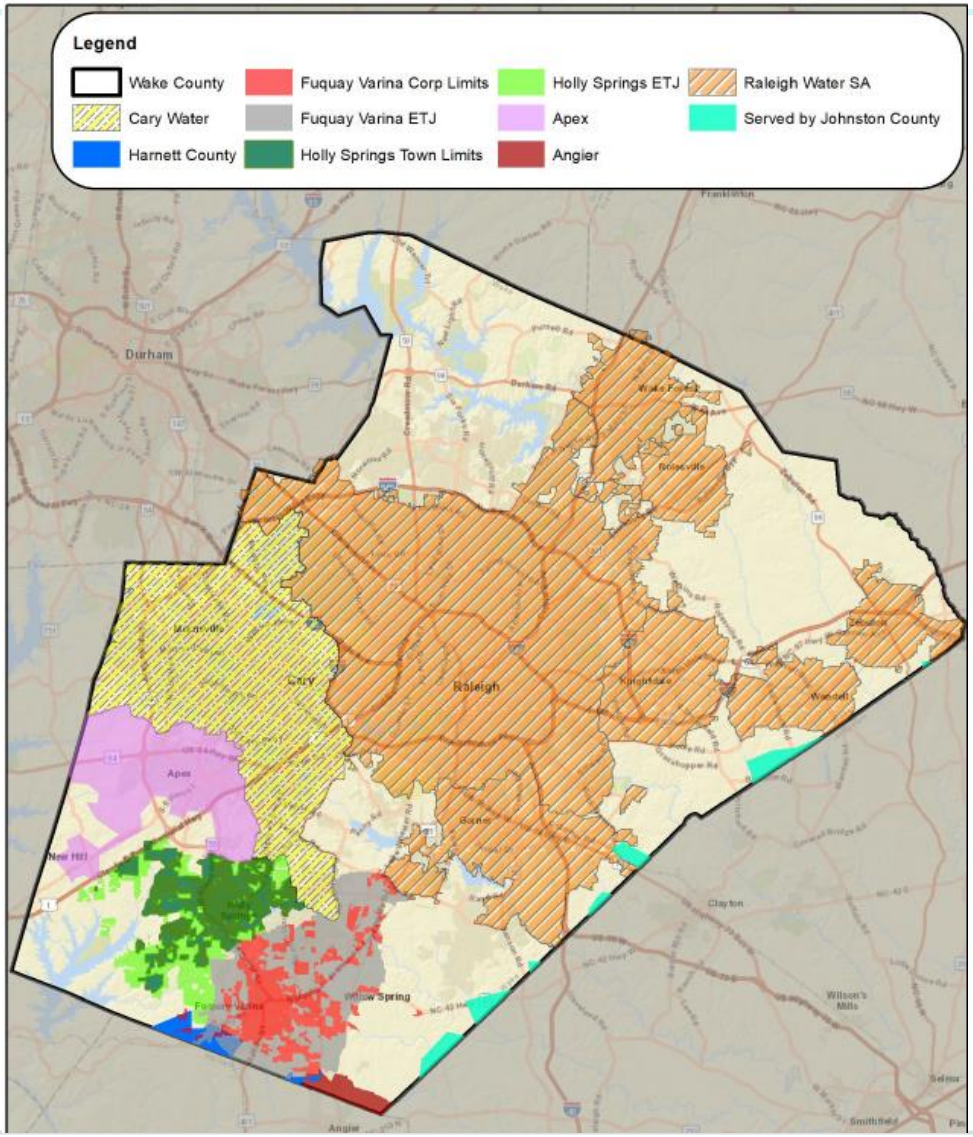
Water Supply: Municipal Strategy Options

Regional water supply planning

Treatment process efficiencies

Drought response coordination

Water reuse



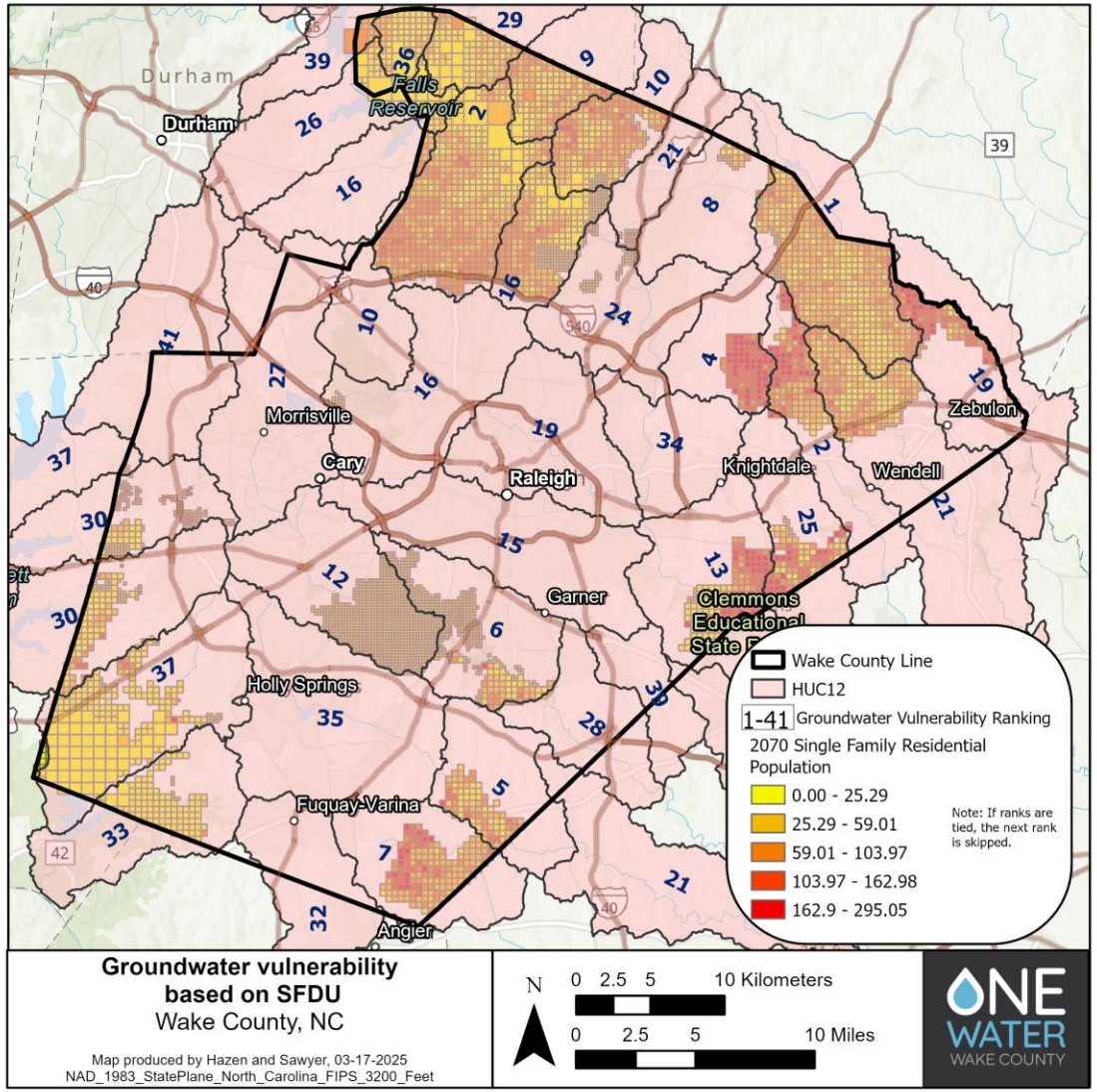
Groundwater

There are approximately 40,000 private water supply wells in Wake County. Well water supply and quality can be impacted by:

Natural geology, including naturally occurring contaminants

Number of wells drawing from the same source

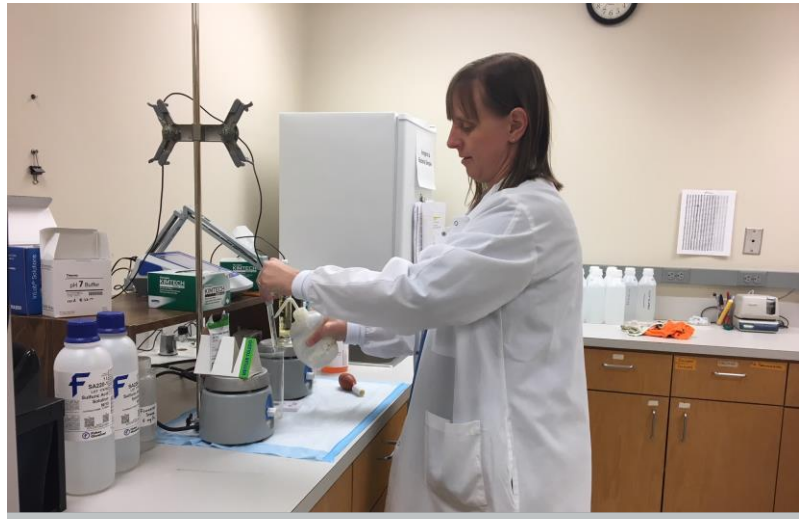
Drought



Water Supply: Groundwater Strategy Options

Monitoring Network

Education and Awareness



Well Testing

Water Supply: Reuse Strategy Options

Access to water is becoming a challenge for communities across the US. Many localities have realized drinking water is not needed for many household activities

Rainwater harvesting

"Grey water" reclaim and reuse

What is "grey water"?

Grey water is water from sinks, showers, and laundry that is recycled and treated for limited types of reuse, such as irrigation.

Photo credits:
(1) City of Raleigh Rainwater Rewards Program
(2) https://climatebiz.com/greywater-system/

Wastewater Growth

Expansion Needs

Utilities	Treatment Plant	Permitted Capacity	Constructed Capacity	80%	90%
Raleigh*	Neuse River RRF	75	75	2023	2026
	Smith Creek RRF	3	3	2020	2023
	Little Creek RRF	2.2	2.2	2024	2026
Apex	Apex WRF	3.6	3.6	2032	2037
	Western Wake WRF	6.12	6.12	2035	2040
Cary	North Cary WRF	12	12	>2070	>2070
	South Cary WRF	16	12.8	>2070	>2070
	Western Wake WRF	11.88	11.88	>2070	>2070
Holly Springs	Utley Creek WRF	8	6	2040	2050
Fuquay-Varina	Brighton Creek WWTP	0.117	0.117	NA	NA
	Terrible Creek WWTP	6	3	2042	2047
	Harnett County Regional WWTP	2.6	2.6	NA	NA

*Median growth

North Carolina 2T Rules

≤80%: Permittee shall submit an engineering evaluation of future wastewater treatment, utilization and disposal needs.

≤90%: Permittee shall obtain permits for expansion of wastewater treatment, utilization, or disposal systems.

Nutrients

Managing nutrient pollution is essential to support future growth in Wake County.

Major Nutrient Sources

- Wastewater treatment plant releases
- Stormwater runoff
- Failing septic systems/ Wastewater treatment systems
- Agriculture

Photo credit: https://waterkeeperscarolina.org/harmful-algal-blooms/

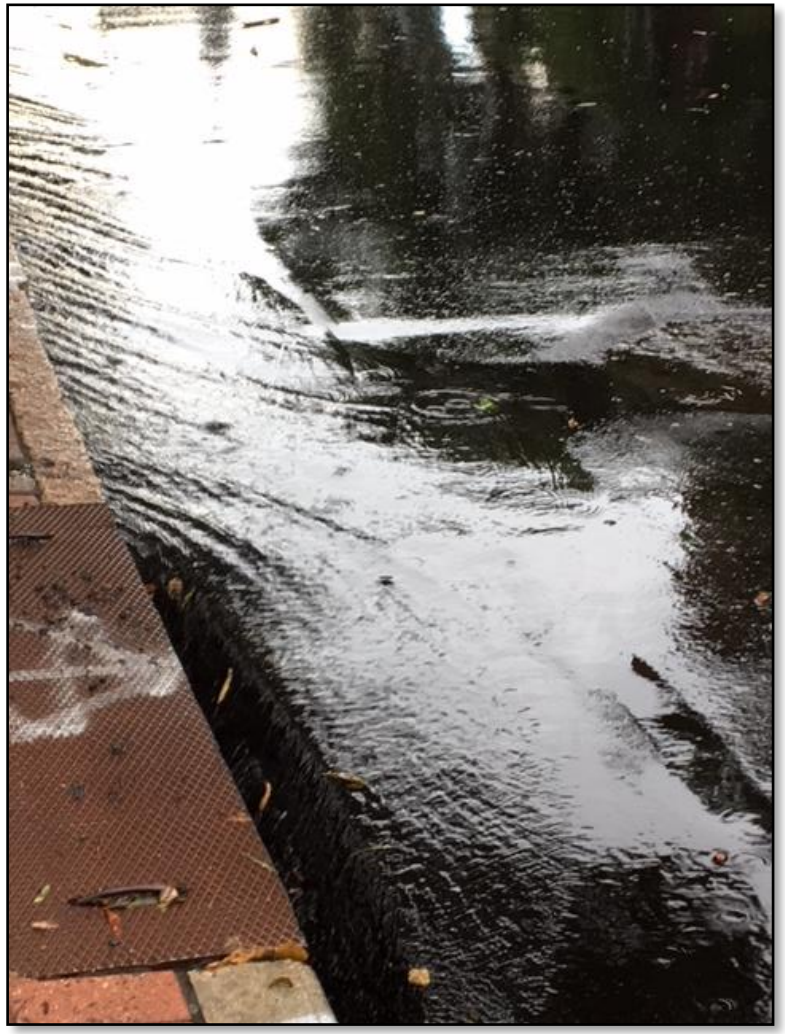
Nutrients: Public Wastewater Systems

Neuse Resource Recover Facility

Bioenergy Recovery Project

Nutrients: Stormwater Runoff

Stormwater runoff carries pollutants such as oils, nitrogen, phosphorous, and sediment that impact water quality.



Nutrients: Septic Systems

Failing septic systems and malfunctioning wastewater treatment systems can allow nutrient and bacteria pollution to reach our waterways.

Failure can occur due to:

- Insufficient maintenance
- System damage
- System age

Nutrients: Agriculture

Nutrients in:
- Fertilizer
- Imported foods
- Feedstock

Nutrients in our waterway:
- Wastewater
- Lawn wastes
- Stormwater runoff

Nutrient cycle benefits:
Selling local produce, composting

Nutrients: Strategy Options

Regional Coordination

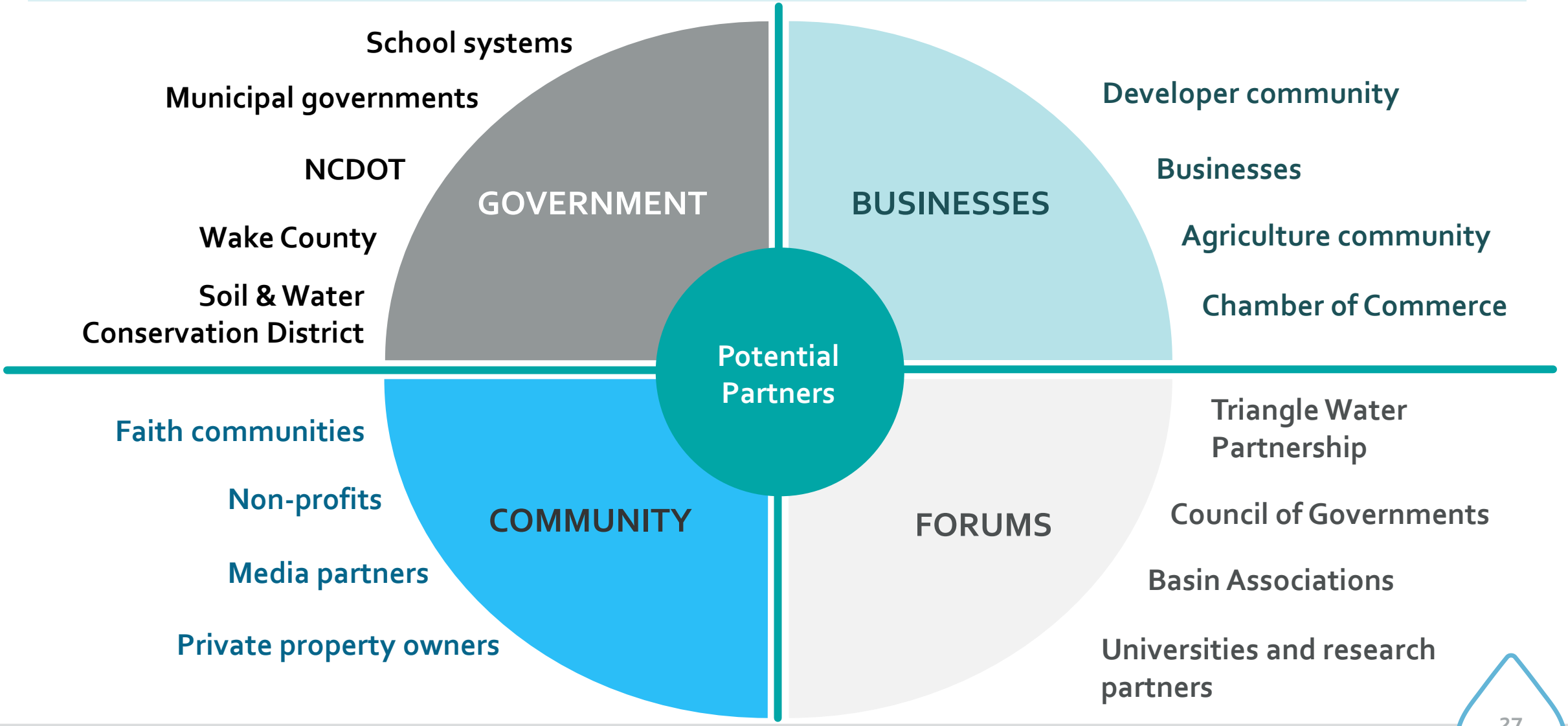
Wastewater recovery and reuse

Composting and agriculture best practices

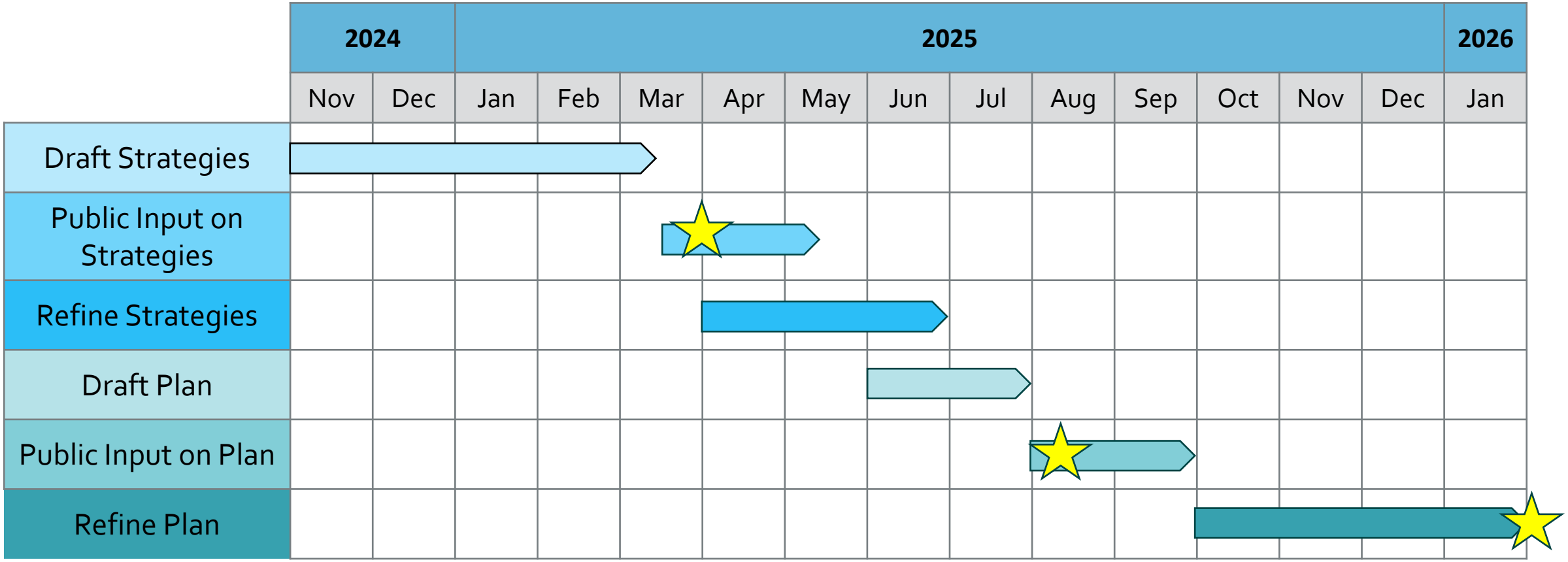
Septic system and wastewater treatment system management

Green and blue infrastructure

One Water Partnerships



One Water Plan Development Schedule

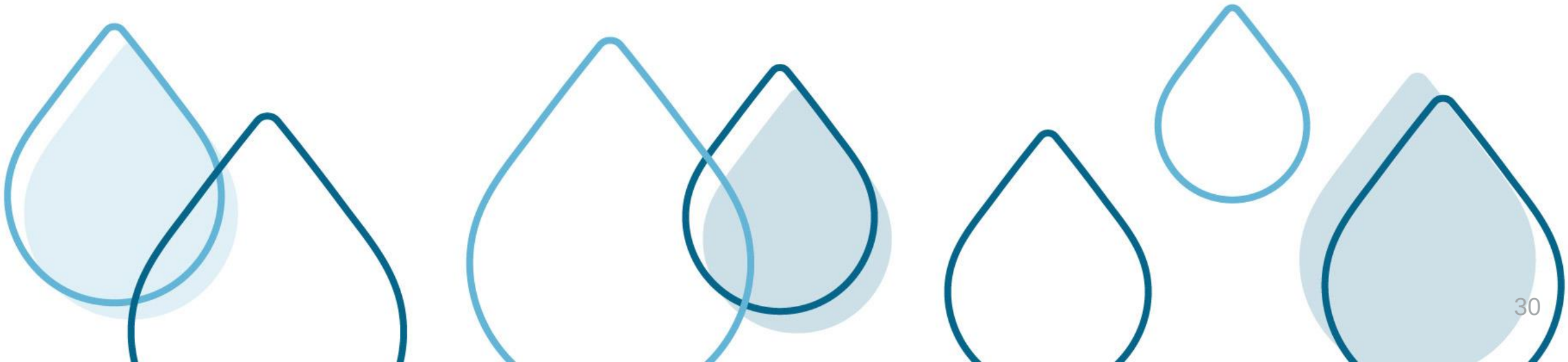


Presentation to County Leadership

Next Steps

- **Public Survey:** Ongoing through May 2
- **Draft Plan Development:** Summer 2025
- **Presentation of Draft Plan:** Summer/Fall 2025
- **Public Comment:** Fall 2025
- **Finalize Wake One Water Plan:** January 2026

Questions?



Presenter Information

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