

### Wake Water Trend #1: Reduced Infiltration

The amount of water that soaks into the ground is expected to decrease due to land use changes and changing weather patterns.



Infiltration

#### Drivers and Expected Impacts

Land use changes, in particular increases in impervious surfaces, reduce infiltration because hard and compacted land surfaces do not absorb water at the same rate as natural, vegetated surfaces. Current and future weather trends predicted by Wake County’s 50-year One Water Plan include longer dry periods and more intense, short-duration rainfall. After a long period without rainfall, soils become very hard and dry. During intense rainstorms, the ground does not have sufficient time to absorb the stormwater before it runs off. Together, these land use and climate-related impacts lead to less infiltration occurring under future climate conditions.

#### Related Trends



Higher stormwater volume



More frequent flooding



Less baseflow



Less groundwater recharge

#### Future Trends

With higher temperatures and more variable precipitation, models predict increases in runoff, which will result in decreased groundwater recharge. The following impacts are expected (Tetra Tech and RTI 2025<sup>1</sup>):

- Less infiltration is expected in urban areas of Wake County as a larger portion of rainfall enters the stream through runoff rather than through groundwater flow.
- Groundwater recharge is expected to broadly decrease due to increased runoff, fewer days with precipitation, and increased evapotranspiration.
- Groundwater vulnerability is likely to increase in the County.

Approximately 15% of the Wake County population currently relies on groundwater for drinking water. Under high-growth population projections, the areas that are most vulnerable to negative groundwater effects are those outside of municipal service areas that rely on groundwater as a primary water source. For more details, see Section 1 of the Wake One Water Plan.



Homes with private wells rely on safe groundwater for drinking water.  
(Source: Wake County)

<sup>1</sup> Tetra Tech and RTI (Research Triangle Institute International). 2025. *Baseline Analysis Memorandum*. Report 2.3.5. Prepared for Wake County Government by Tetra Tech and RTI, Research Triangle Park, NC.