

Water Quantity & Quality Benefits of Water Funds

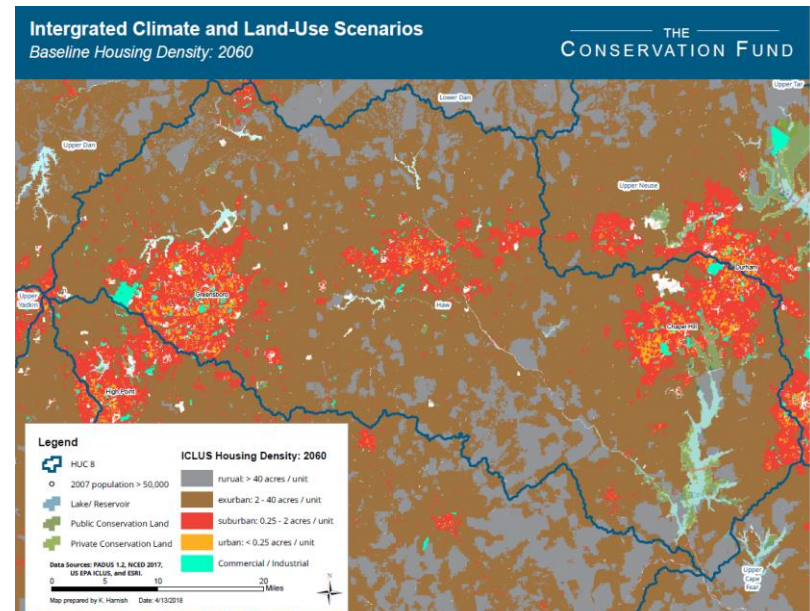
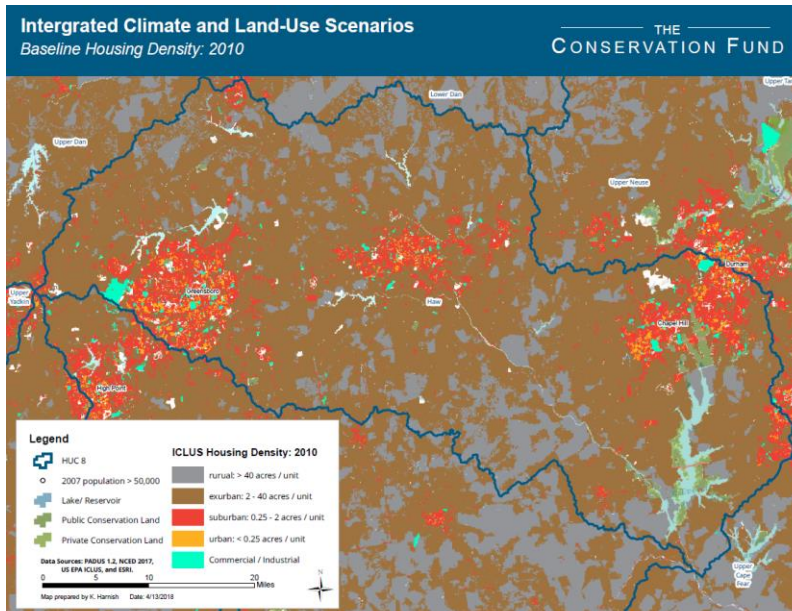
Water Allocation Committee
NC Environmental Management Commission
May 9, 2018

Water Challenges/Opportunities

- * Population growth
 - * Demand growth
- * Land use change
 - * Stormwater runoff
 - * Groundwater recharge
- * Sedimentation & nutrients
- * More productive & intensive agriculture
- * Climate change
- * One Water



Rapid Land Use Change in NC



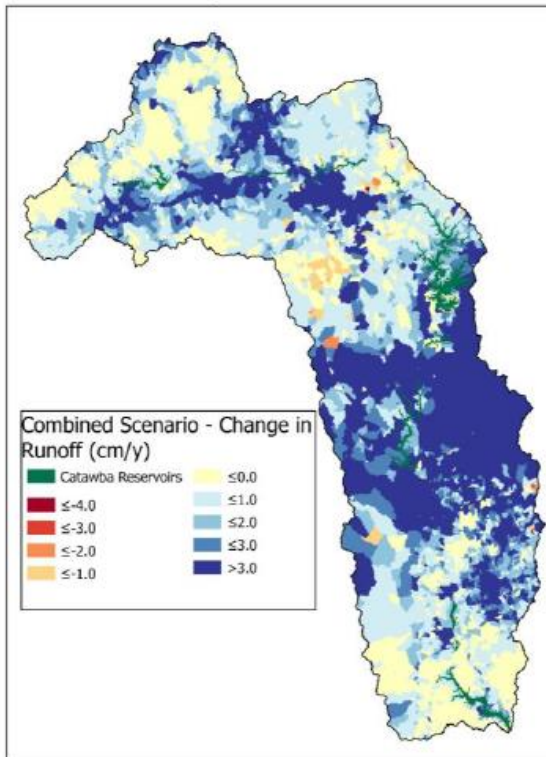
Water Challenges/Opportunities



Combined Future Scenario Runoff

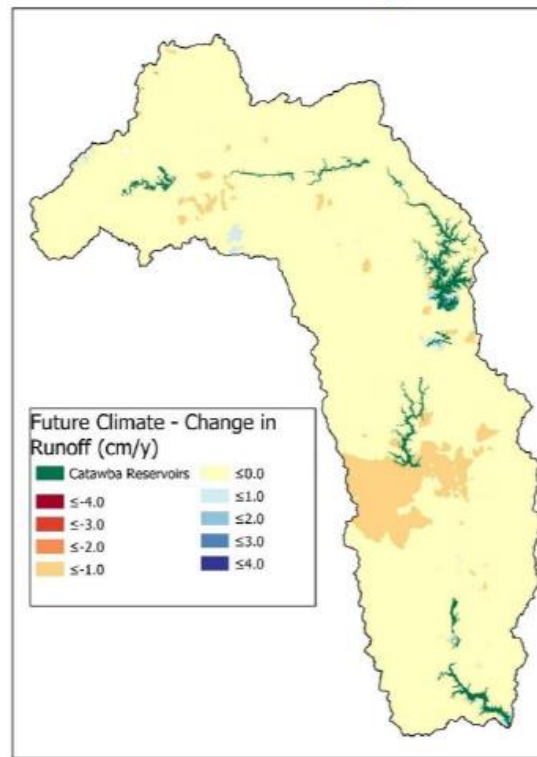
- Change in runoff are primarily due to land use change

Combined (Climate + Land Use)



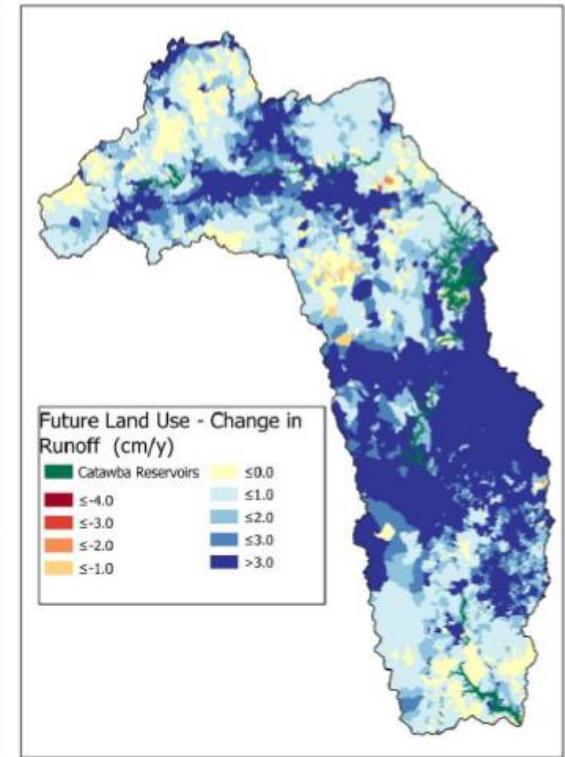
**+0.29 MAF/yr
(+32.9%)**

Climate Change



**-0.03 MAF/yr
(-3.9%)**

Land Use Change



**+0.33 MAF/yr
(+37.5%)**



Regulations --
not enough

- Collaboration
- Incentives
- Education

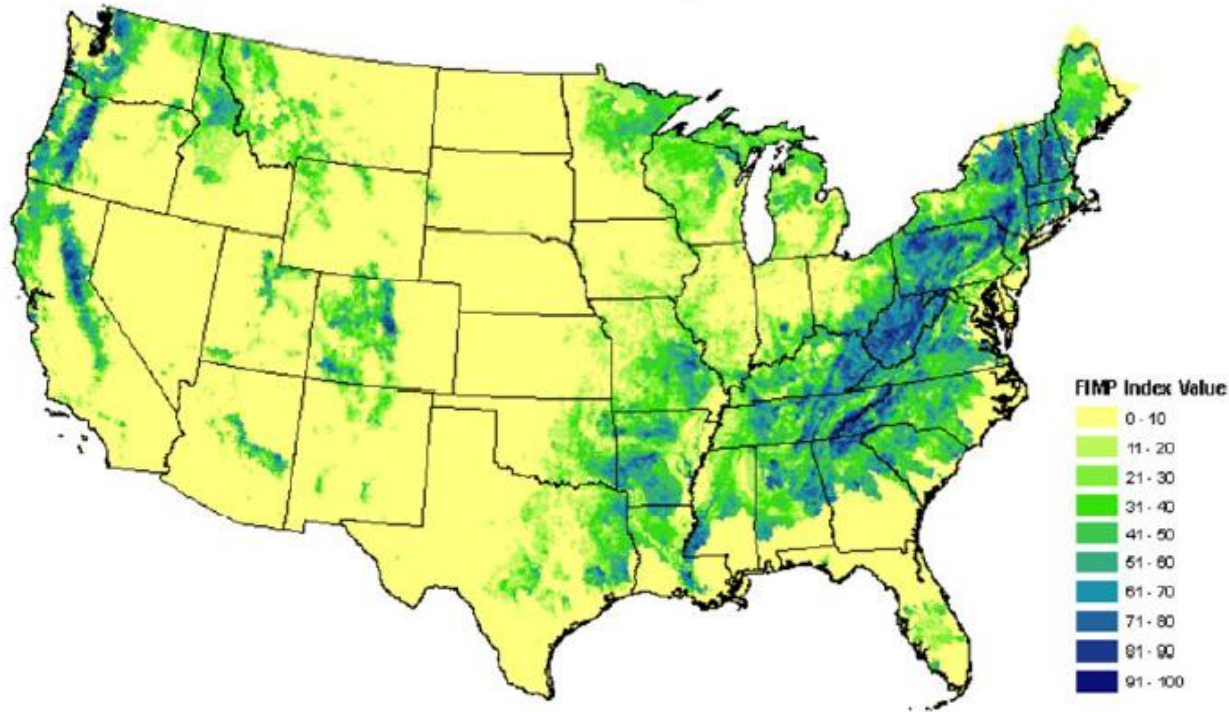
Watershed Services

Multiple Public Benefits



- * Water purification
- * Surface flow regulation
- * Groundwater recharge
- * Erosion control
- * Flood reduction
- * Shade for algae & temperature control
- * Recreation
- * Working lands
- * Wildlife habitat

Forest Importance



THE INDEX OF FOREST IMPORTANCE TO SURFACE DRINKING WATER, *FIMP*, IDENTIFIES THOSE SUB-WATERSHEDS WHERE FOREST LANDS ARE MOST IMPORTANT IN PROTECTING SURFACE DRINKING WATER.



Figure 8 | Sample of Cities that Have Invested in Forest-Based Natural Infrastructure



Water Utilities & Watershed Protection

Salt Lake – 1885

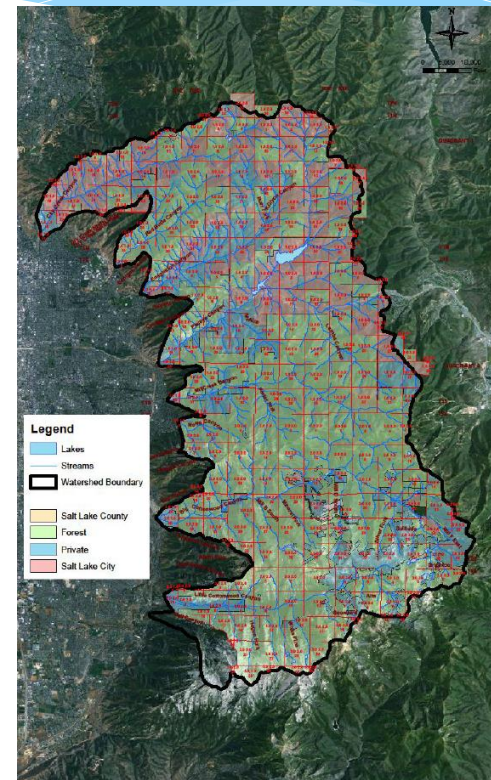
- 24,000 acres

Seattle Utilities – 1899 - 1962

- 99,000 acres

Austin Water – 1996

- 39,000 acres



Cost Effective

Greater Forest Cover, Lower Water Treatment Costs

% of Watershed Forested	Treatment and Chemical Costs <i>per mil gal</i>	% Change in Costs	Average Treatment Costs <i>per day at 22 mil gal</i>
10%	\$115	19%	\$2,530
20%	\$93	20%	\$2,046
30%	\$73	21%	\$1,606
40%	\$58	21%	\$1,276
50%	\$46	21%	\$1,012
60%	\$37	19%	\$814

Table 1. Water treatment and chemical costs based on percent of forested watershed

For every 10% > in forest cover, treatment and chemical costs
decreased by 20%

2002 study by TPL and American Water Works¹¹ Association of 27 water suppliers.

Raleigh's Watershed Protection Program (Upper Neuse Clean Water Initiative)

- * **Mission:** Partnership effort to prioritize and, through voluntary actions, protect those lands most critical to the long term safety and health of all drinking water supplies for the communities in the Upper Neuse River Basin.



Upper Neuse Accomplishments Since 2005

98 Properties conserved
89 Miles of stream buffered
8049 Acres protected
\$75 M Value of Property
\$21 M Value donated
\$5.8 M Raleigh Investment
Great collaboration between
Raleigh, Durham, land
trusts and other
governments



Pollutants Avoided

- * Water Quality Benefits Estimation Tool
 - * Quantify one benefit of land protection
 - * Estimate nitrogen, phosphorous, and sediment prevented from entering water
- * Raleigh/Upper Neuse Projects
 - * **3,361 acres** evaluated
 - * If developed without BMPs
 - * **6 x** more nitrogen/year
 - * **6 x** more phosphorous/year
 - * **4 x** more sediment/year

Partnership Opportunities

Quantity & Quality

- * Water & stormwater utilities
- * Electric utilities
- * Conservation groups
- * Other water users
- * Farm and forest landowners
- * Business community
- * Soil & water conservation districts
- * EMC & DEQ



Bill Holman
NC State Director
The Conservation Fund

bholman@conservationfund.org

919-948-6189

77 Vilcom Center Drive, Suite 340
Chapel Hill, NC 27514