

#### Nutrient Loadings and Trends in the Jordan Lake Watershed

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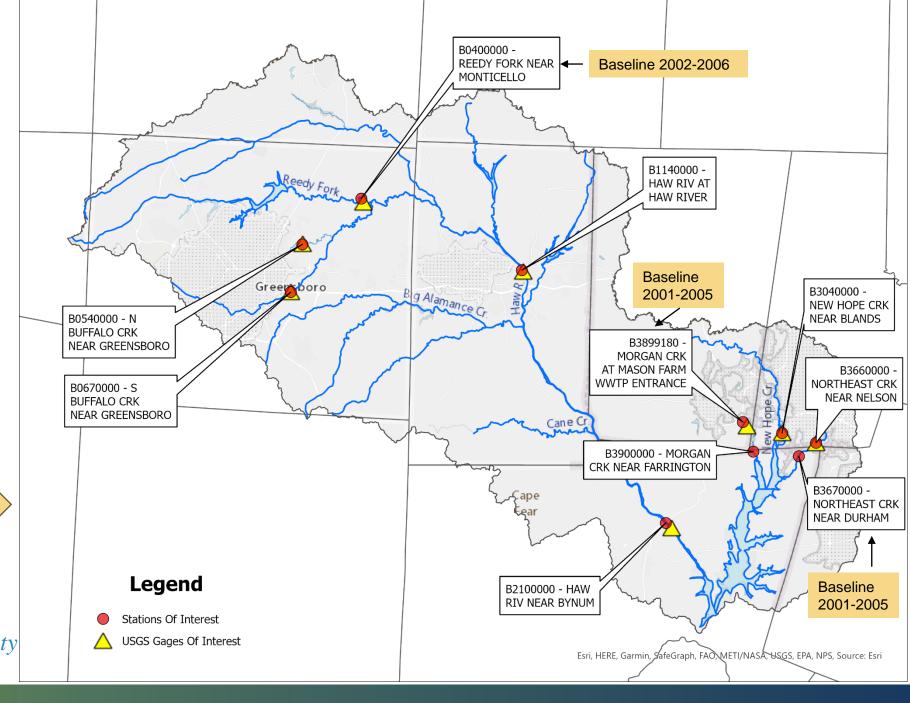


### Objective

- Evaluate change in nutrient loading from the baseline period (1997-2001) to 2016-2020.
- Create a StoryMap of the findings.

Selected stations with flow used for the analysis.





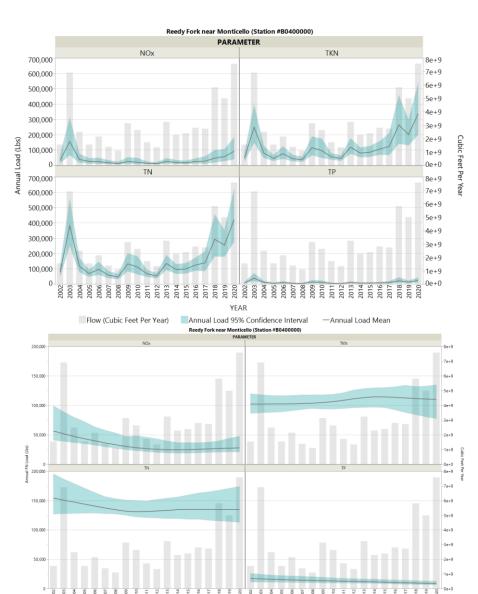
#### Methods

- USGS Loadest:
  - Develops regression models to estimates monthly loads.
  - Preserves flow history, good for understanding actual delivered loads.



- Weighted Regressions on Time, Discharge, and Season (WRTDS):
  - Reduces or eliminates the influence of year-to-year streamflow variability on estimates of trends in concentration and load.
  - More useful to observe nutrient changes from the watershed.

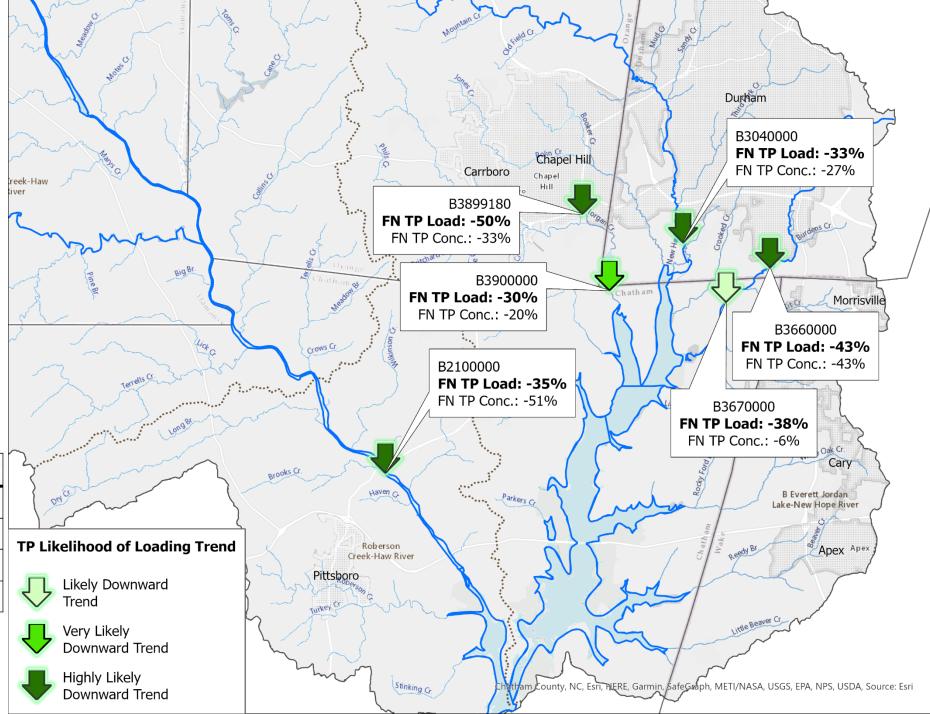




# Flow Normalized TP Loading Change

Baseline vs 2016-2020

Likelihood designation	Range of likelihood values
Highly likely	0.95 to 1.00
Very likely	0.90 to <0.95
Likely	0.67 to <0.90
Uncertain (About as likely as Not)	0.50 to <0.67



# Flow Normalized TP Loading Change

Baseline vs 2016-2020

B0400000 **FN TP Load: -41%** FN TP Conc.: -49% Stokesdale Townsend Summerfield B0540000 **FN TP Load: -77%** Ossipe FN TP Conc.: -99% B1140000 **FN TP Load: -13%** FN TP Conc.: -48% Green Level Gibsonville Greensboro Burlington Elon Whitsett Mebane Sedalia Haw River Burlington Greensboro B0670000 Graham FN TP Load: 18% FN TP Conc.: -6% Swepsonville Haw Cr Alamance Pleasant Garden Marys Cr Chape Carrboro Hill Cane Cr. B2100000 **TP Likelihood of Loading Trend FN TP Load: -35%** Lick Cr. FN TP Conc.: -51% Likely Upward Trend Likely Downward Trend Highly Likely Esri HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, U. Pittsboro DA, Source: Esri **Downward Trend** 

## Flow Normalized TP Mean Concentrations

2016-2020

B0400000 Townsend 0.03 mg/L B0540000 Ossipe 0.01 mg/L B1140000 0.19 mg/L Gibsonville Elon Level Greensboro Burlington River Mebane Sedalia Burlington B0670000 Whitsett Graham 0.07 mg/L Alamance Swepsonville B3040000 0.22 mg/L leasant Garden Durham Mountains Marys Cr B3660000 Carrboro Chapet Hill 0.25 mg/L B3899180 0.05 mg/L Chatham B3900000 Morrisville Lick Cr. 0.15 mg/L B3670000 0.26 mg/L Cary B2100000 0.11 mg/L TP FN 2016-2020 Concentration Values (mg/L) **Pittsboro** 0.26 Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA 0.010

# Flow Normalized TN Loading Change

Baseline vs 2016-2020

B3660000 Durham FN TN Load: -46% FN TN Conc.: -52% Chapel Hill B3040000 **FN TN Load: -16%** Carrboro FN TN Conc.: -5% B3899180 FN TN Load: -7% FN TN Conc.: 18% Big Br. B3900000 **FN TN Load: -12%** Morrisville FN TN Conc.: -17% B3670000 **FN TN Load: -61%** B2100000 FN TN Conc.: -65% **FN TN Load: 16%** FN TN Conc.: 9% Cary B Everett Jordan Parkers Cr Lake-New Hope River TN Likelihood of Loading Trend Roberson Apex Apex Creek-Haw River Highly Likely Pittsboro Upward Trend Upward/ Downward Trend As Likely As Not Highly Likely Stinking Cr. HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, Source: Esri **Downward Trend** 

# Flow Normalized TN Loading Change

Baseline vs 2016-2020

B0400000 FN TN Load: -8% FN TN Conc.: 0% Stokesdale Townsend Summerfield B0540000 FN TN Load: -65% FN TN Conc.: -79% B1140000 FN TN Load: 35% Green FN TN Conc.: 11% Level Haw Greensboro Elon Burlington Whitsett Gibsonville Mebane Sedalia Burlington Greensboro B0670000 Graham FN TN Load: 5% FN TN Conc.: -7% Swepsonville Haw Cr Alamance Pleasant Garden Mountains Marys Cr Chape Carrboro Hill **TN Likelihood of Loading Trend** Cane Cr. Highly Likely **Upward Trend** Lick Cr. B2100000 FN TN Load: 16% Likely Upward Trend FN TN Conc.: 9% Likely Downward Brooks Cr. Trend Highly Likely Esri HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, WDA, Source: Esri Pittsboro **Downward Trend** 

### Flow Normalized TN Mean Concentrations

Gibsonville Elon Mebane Sedalia 2016-2020 Burlington B0670000 Whitsett Graham 0.91 mg/L Alamance Swepsonville B3040000 4.02 mg/L leasant Garden Mountains Marys Cr Carrboro Chapet Hill B3899180 1.02 mg/L Chatham B3900000 Lick Cr. 3.8 mg/L B3670000 B2100000 2.5 mg/L 1.89 mg/L TN FN 2016-2020 Concentration Values (mg/L) 4.0 **Pittsboro** 0.69 Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, Source: Esri

B0400000

0.69 mg/L

Ossipe

B1140000 3.13 mg/L

Durham

B3660000

4.04 mg/L

Morrisville

Cary

Level

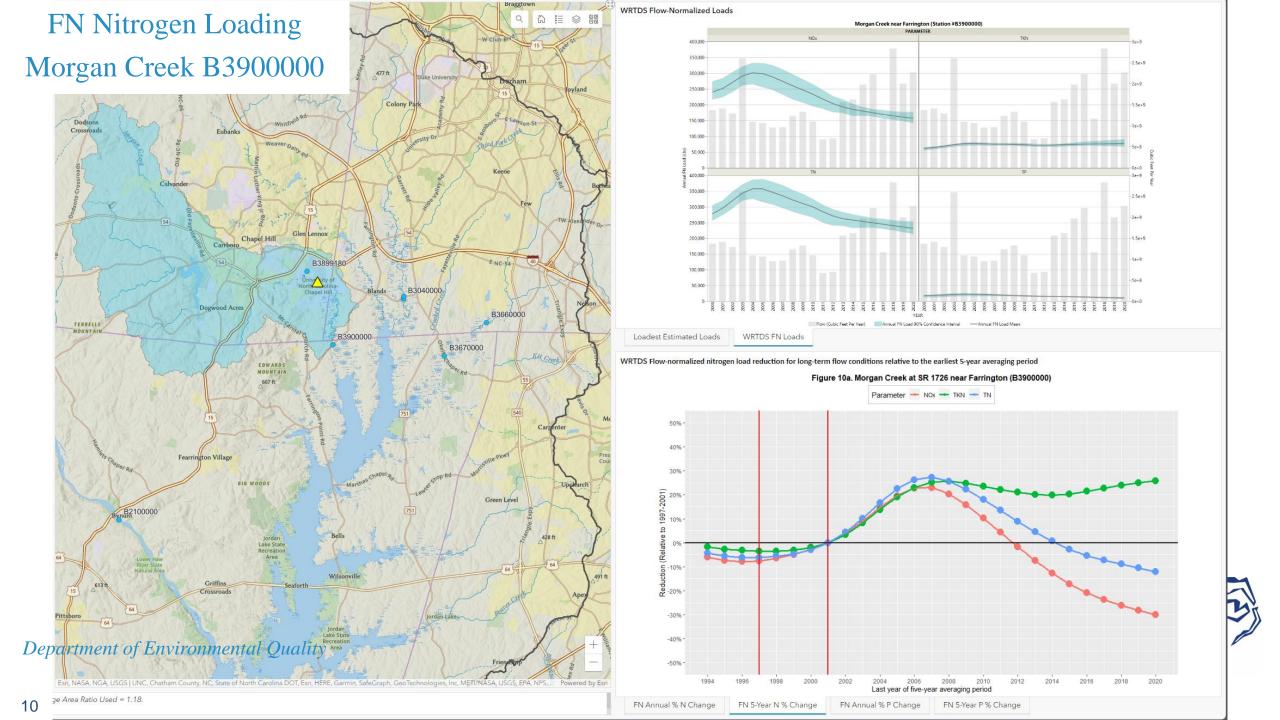
Burlington

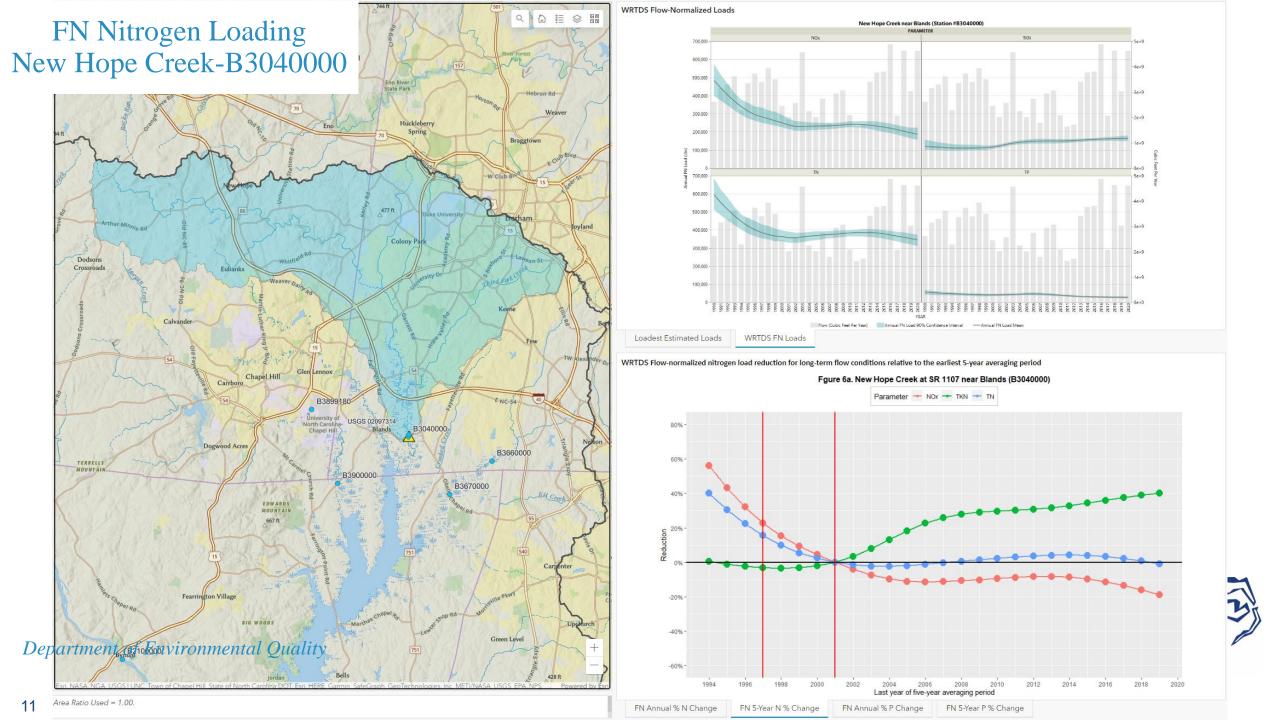
Townsend

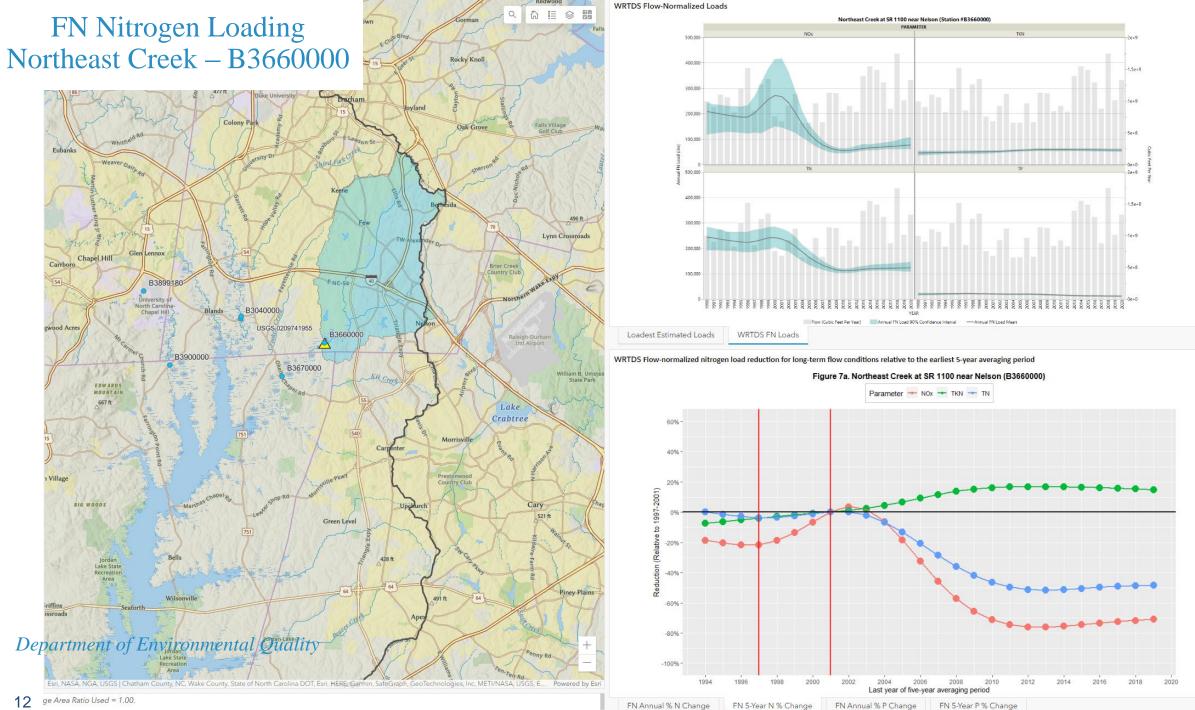
Greensboro

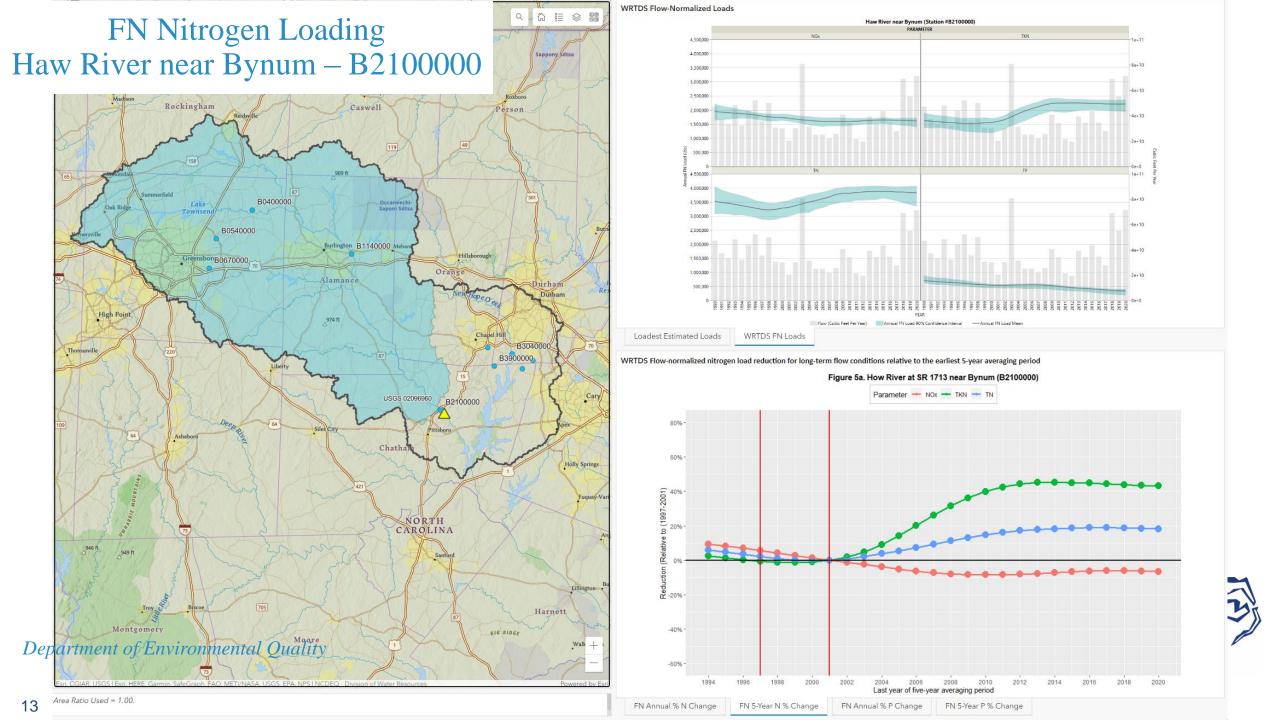
B0540000

2.77 mg/L



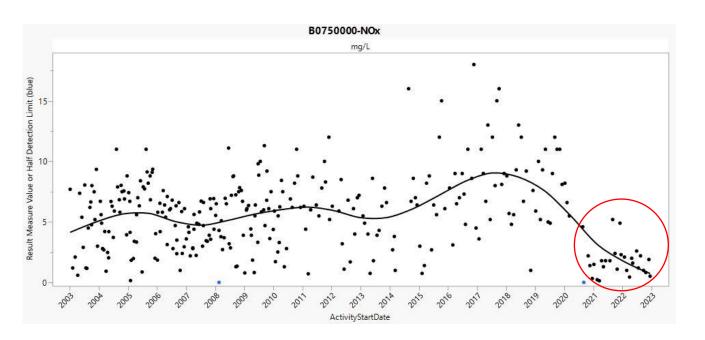




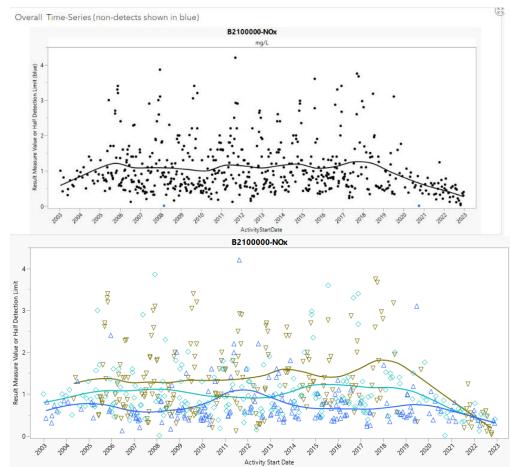


### 2021-2022 Data Update

#### B0750000 – S. Buffalo Creek at Harvest Road



#### B2100000 - Haw River near Bynum





### Thank you

#### Contact:

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### Jordan Loading and Trends Storymap:

- Google "Jordan nutrient trends"
- Or visit the "Special Studies" ->
   "Trends and Loading" section of
   the DWR Modeling and
   Assessment website.

