Catawba River Nutrient Study

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N.C. Division of Water Resources
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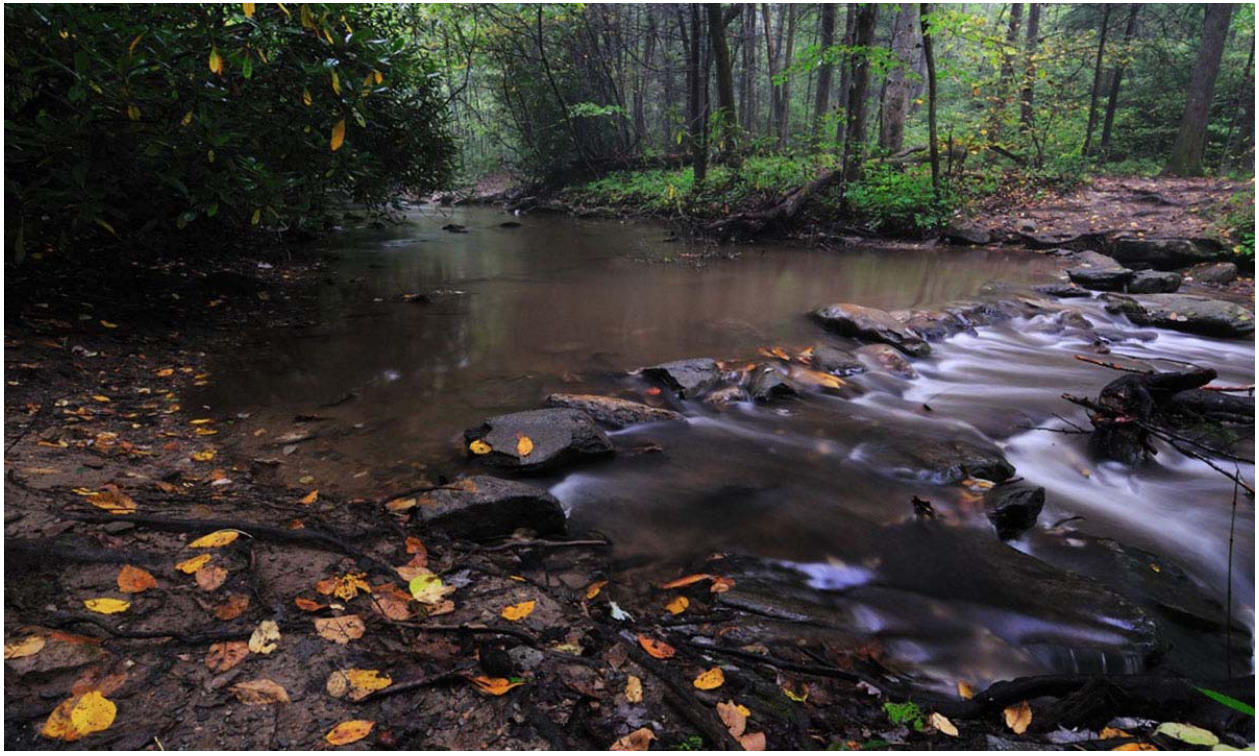
DWR
Division of Water Resources

Talking Points

- Study Origin and Study Area Refinement
- Study Concept
- Existing Data
- Data So Far
- Next Steps



Catawba River Nutrient Study Origin

- Session Law 2017-209, House Bill 56
- Section 12 states:

The Division of Water Resources of the Department of Environmental Quality shall conduct a water quality sampling program for nutrients along the mainstem of the Catawba River, which includes sampling for nutrients above, in, and below each major tributary of the Catawba River. No later than October 1, 2018, the Division shall report the results of the study to the Environmental Review Commission.

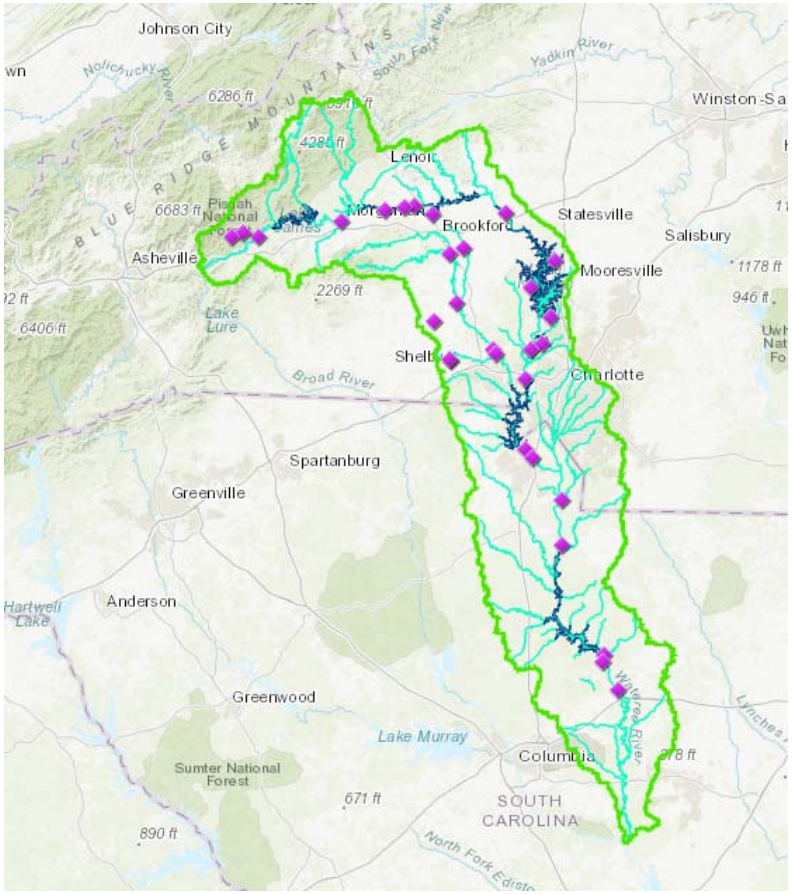
EPA

FEDERAL REGISTER
The Daily Journal of the United States Government

NC

Study Area

- Catawba River watershed is big.
- NC portion is approximately 225 miles long, and the watershed covers approximately 3,300 square miles.
- Watershed includes a variety of land uses including agriculture, forests, urban and suburban areas.

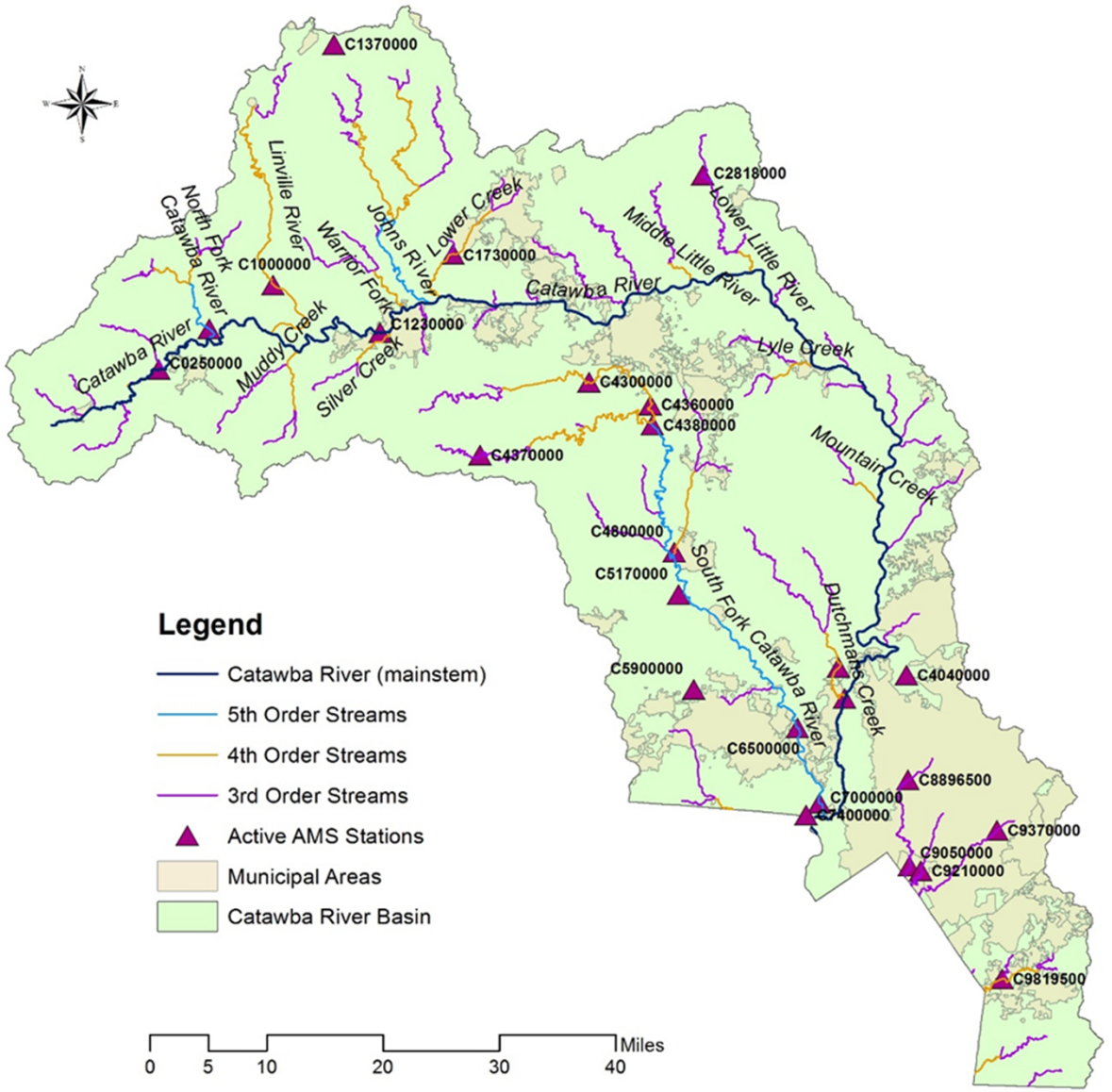


Major Tributaries

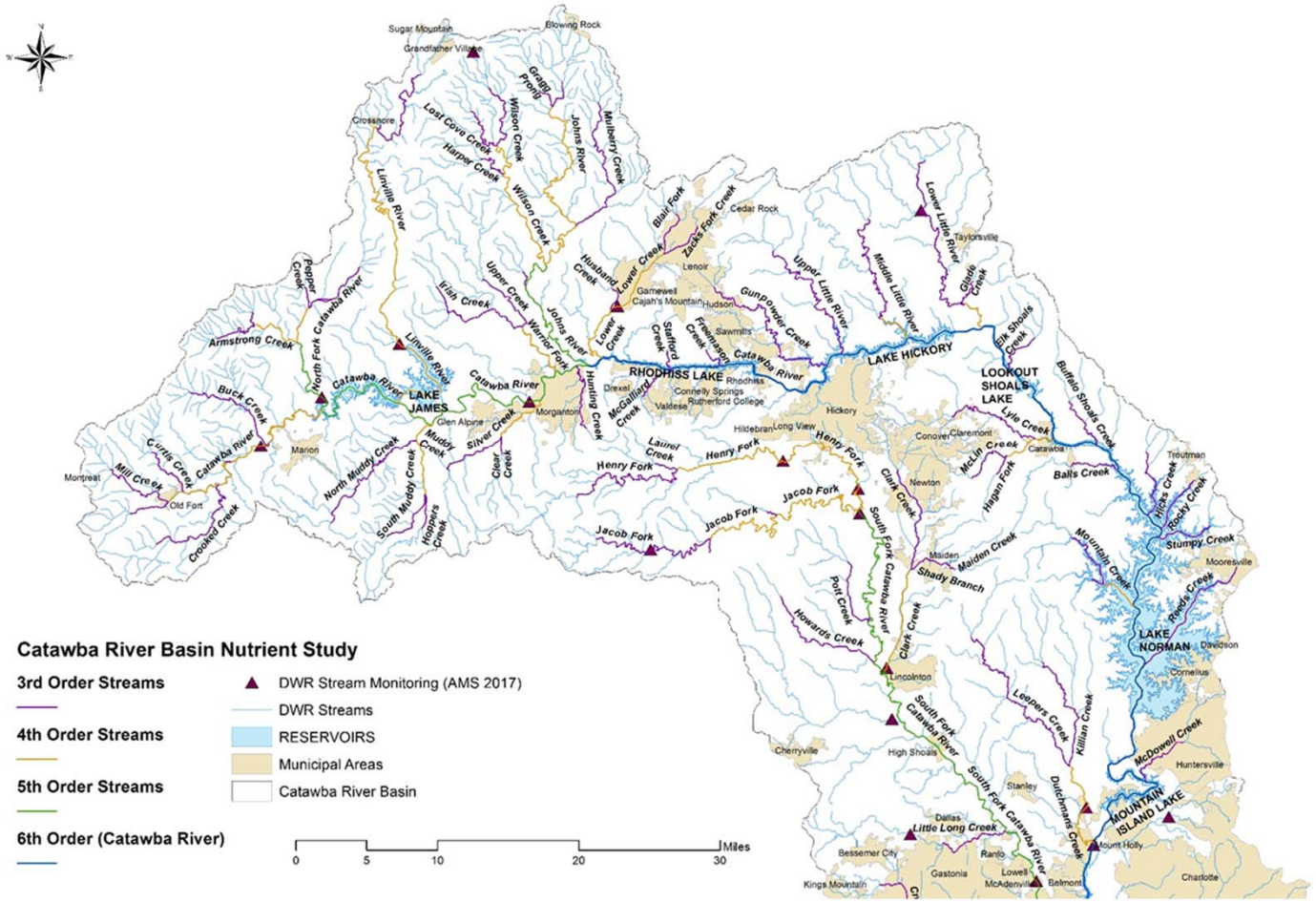
- "Major tributary" analysis
- Conducting upstream, downstream, and instream monitoring on major tributaries could be labor and cost intensive.

Stream Order	Number of Tributaries	Mean Drainage Area (sq. mi.)	Number of Stations
5th	3	318	9
4th	10	84	30
3rd	18	23	54

Tributaries and Existing Monitoring Stations



Study Area Refinement



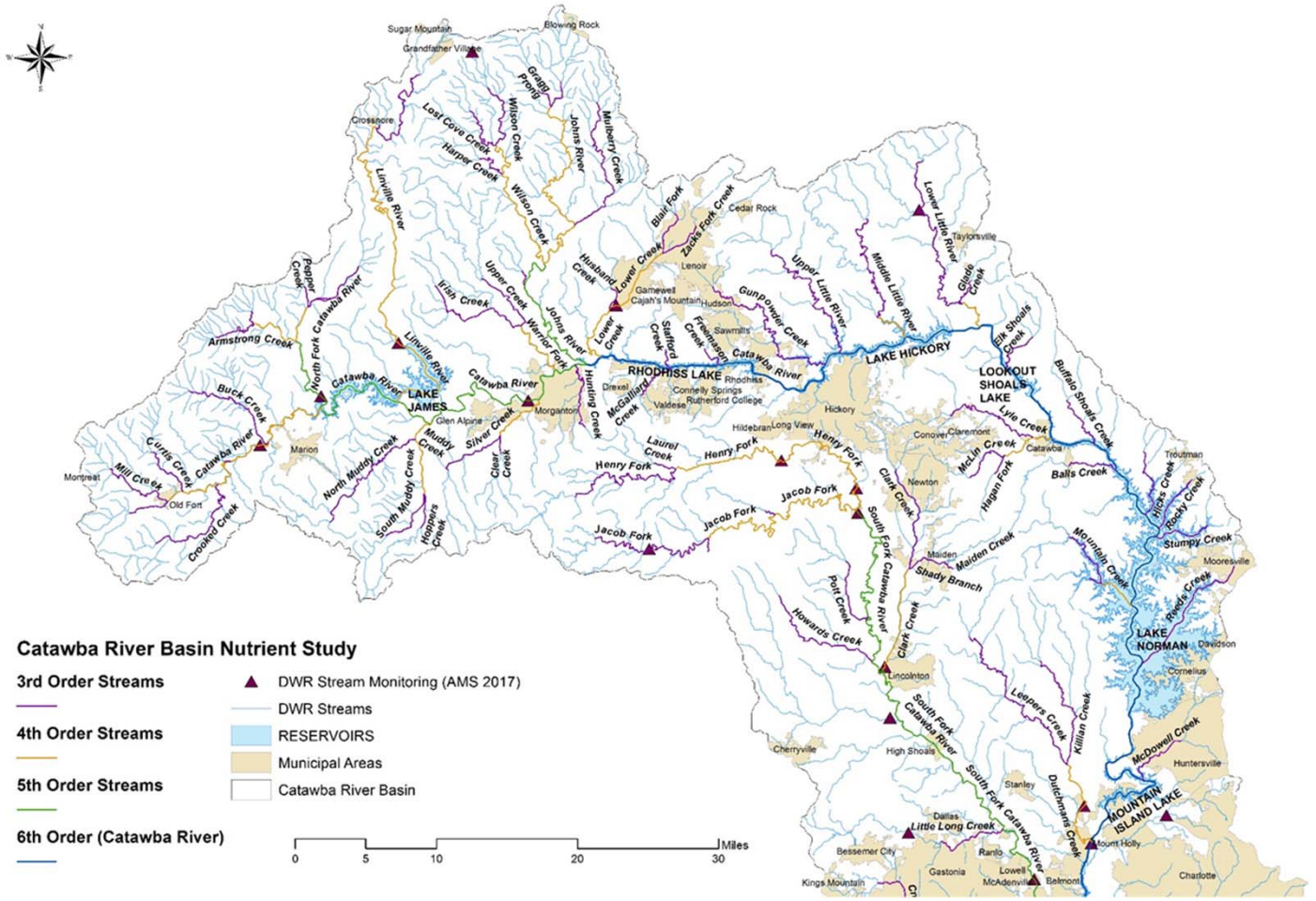
Map compiled by NC DWR Water Sciences Section, Oct. 17, 2017

Study Concept

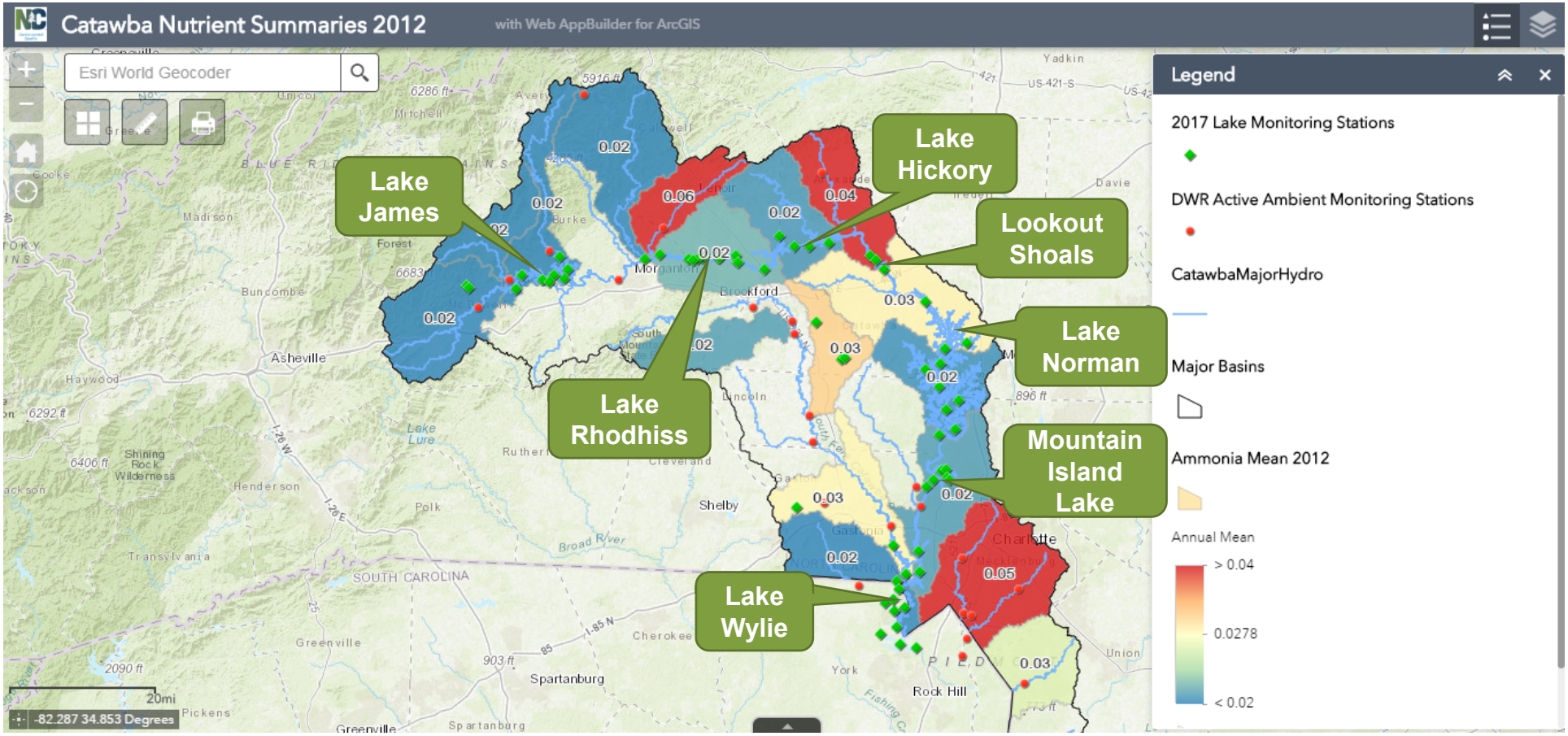
- Look at existing data and land uses
  - Ambient Monitoring System, past nutrient studies, municipalities, etc.
- Identify data gaps and hotspots
- Look for opportunities to expand monitoring
- Determine potential nutrient sources

Existing Data

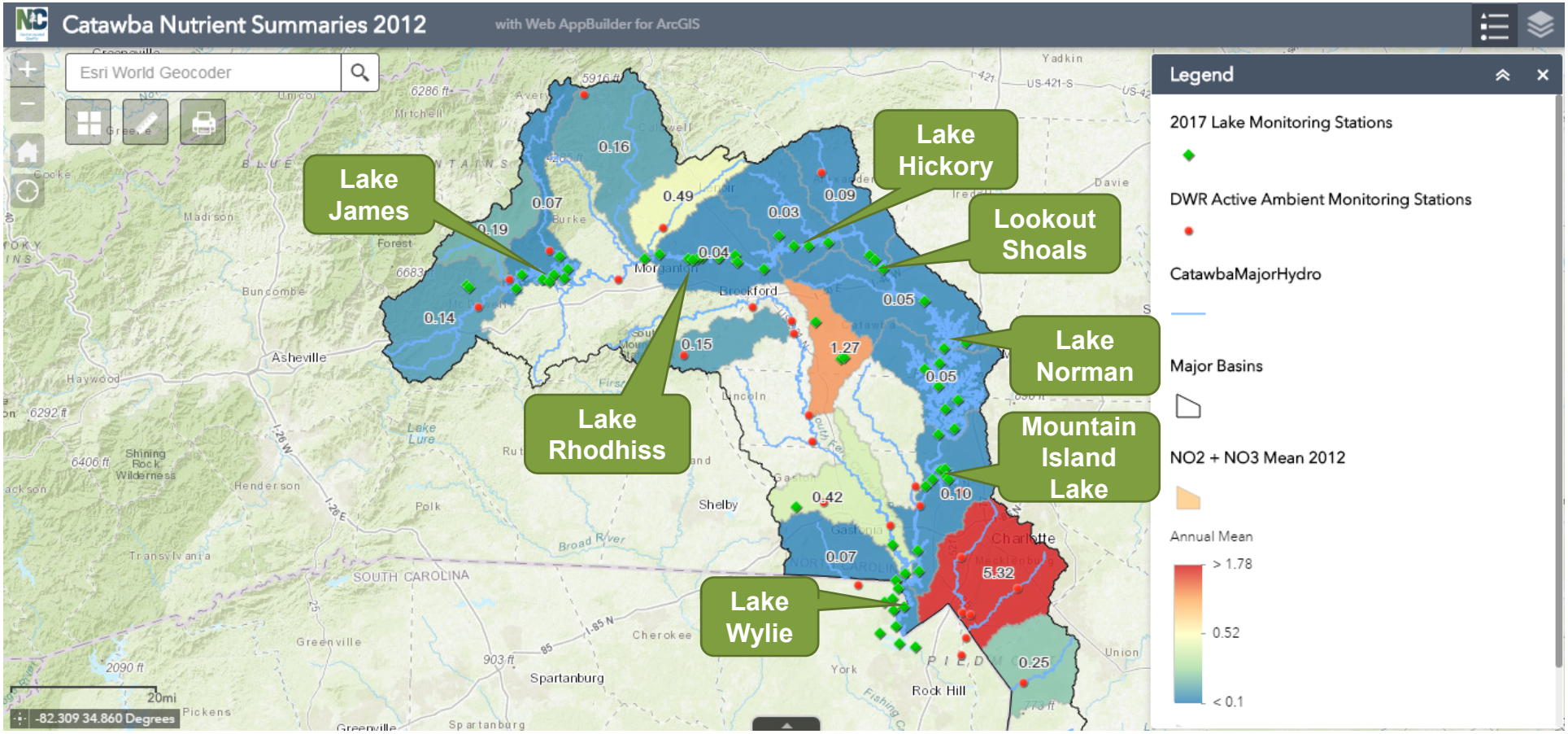
- AMS stations



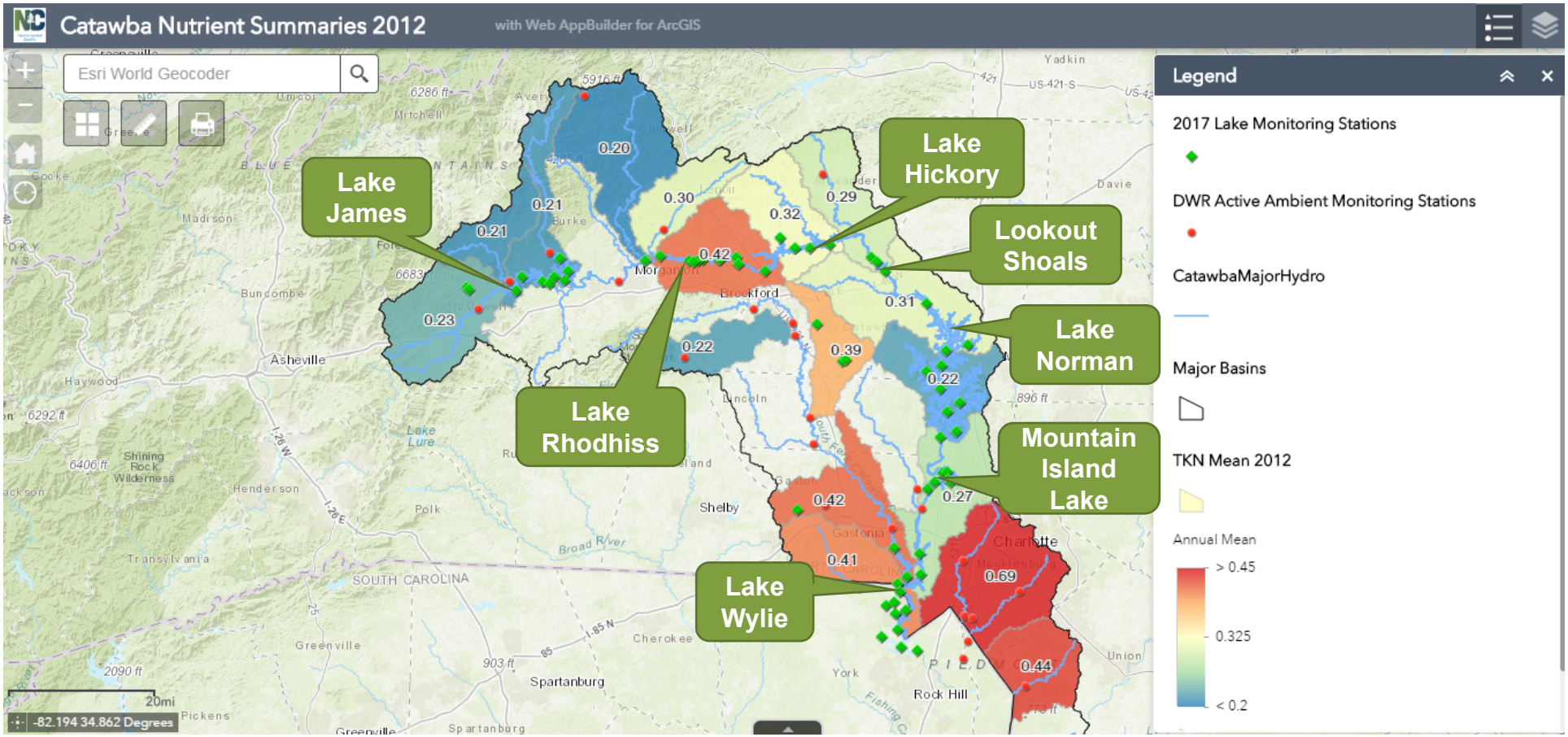
Ammonia Means for 2012



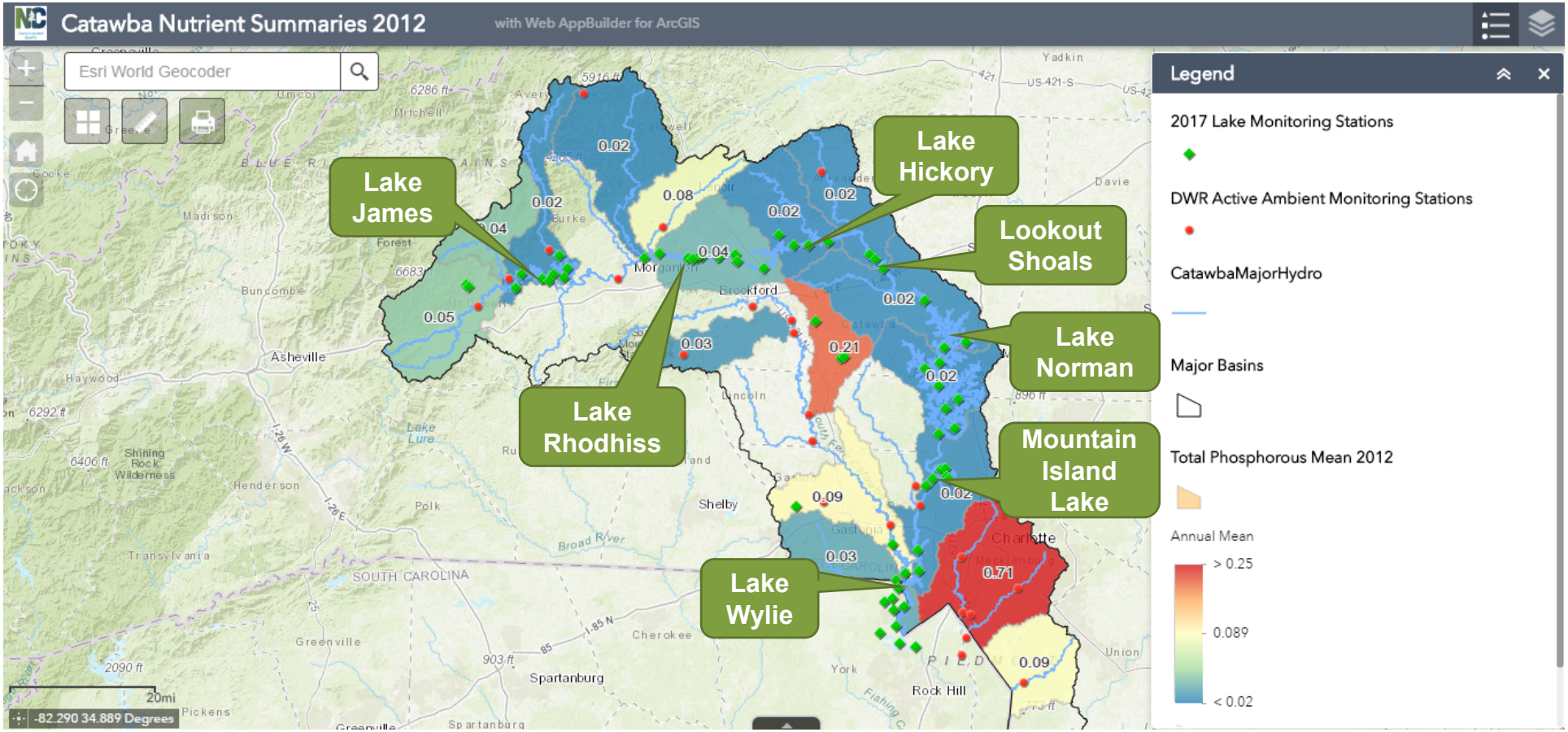
NO2 + NO3 Means for 2012



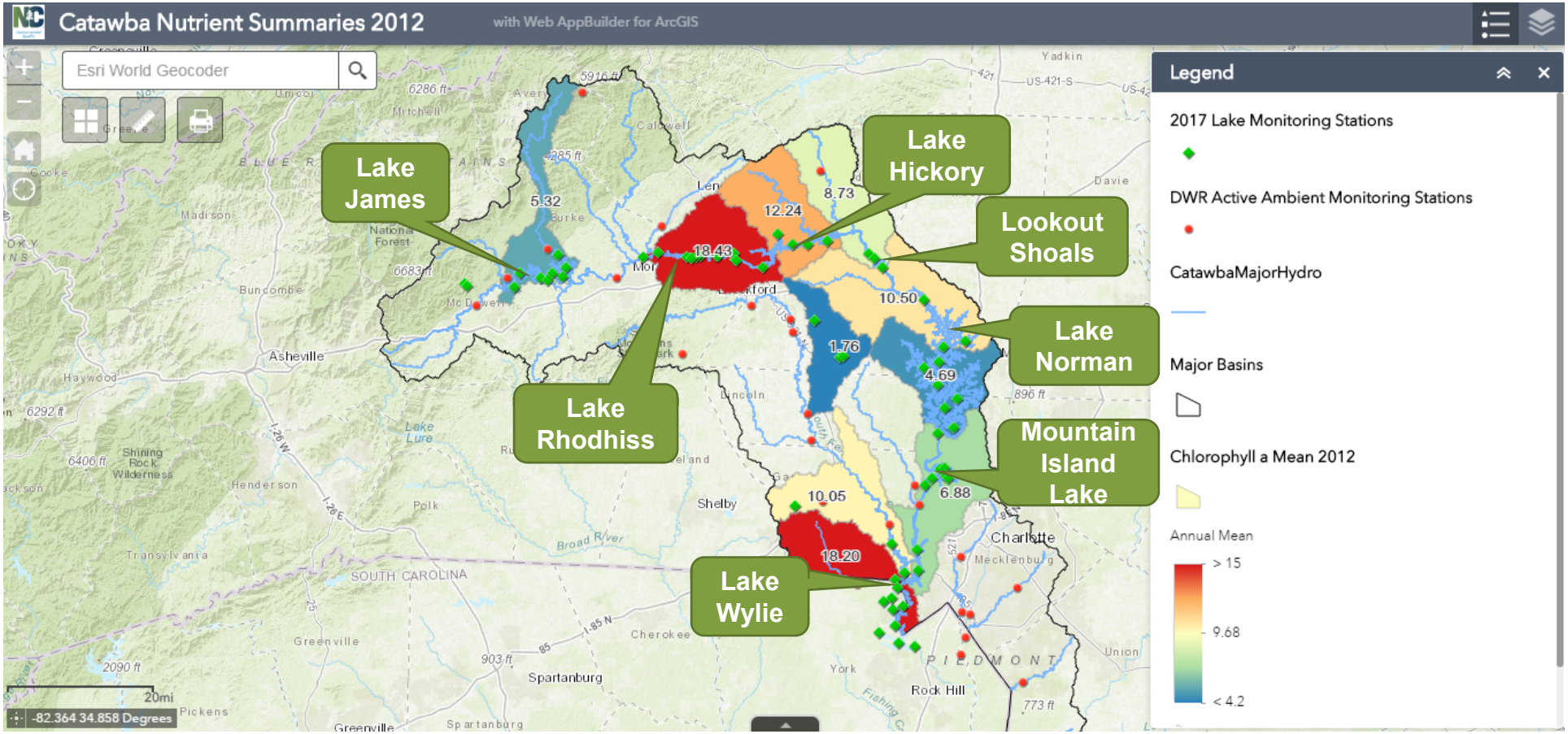
TKN Means for 2012



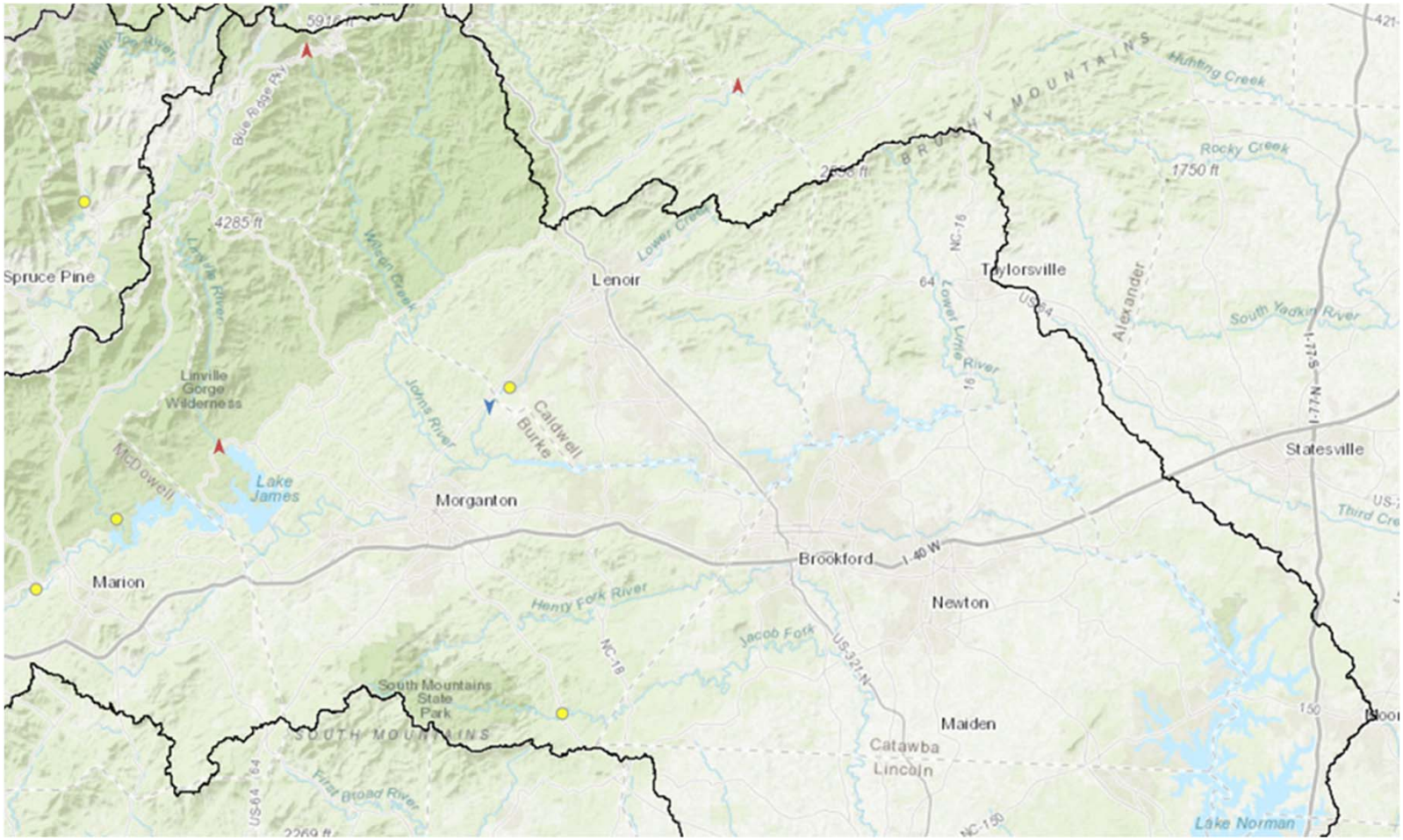
Total Phosphorous Means for 2012



Chlorophyll a Means for 2012

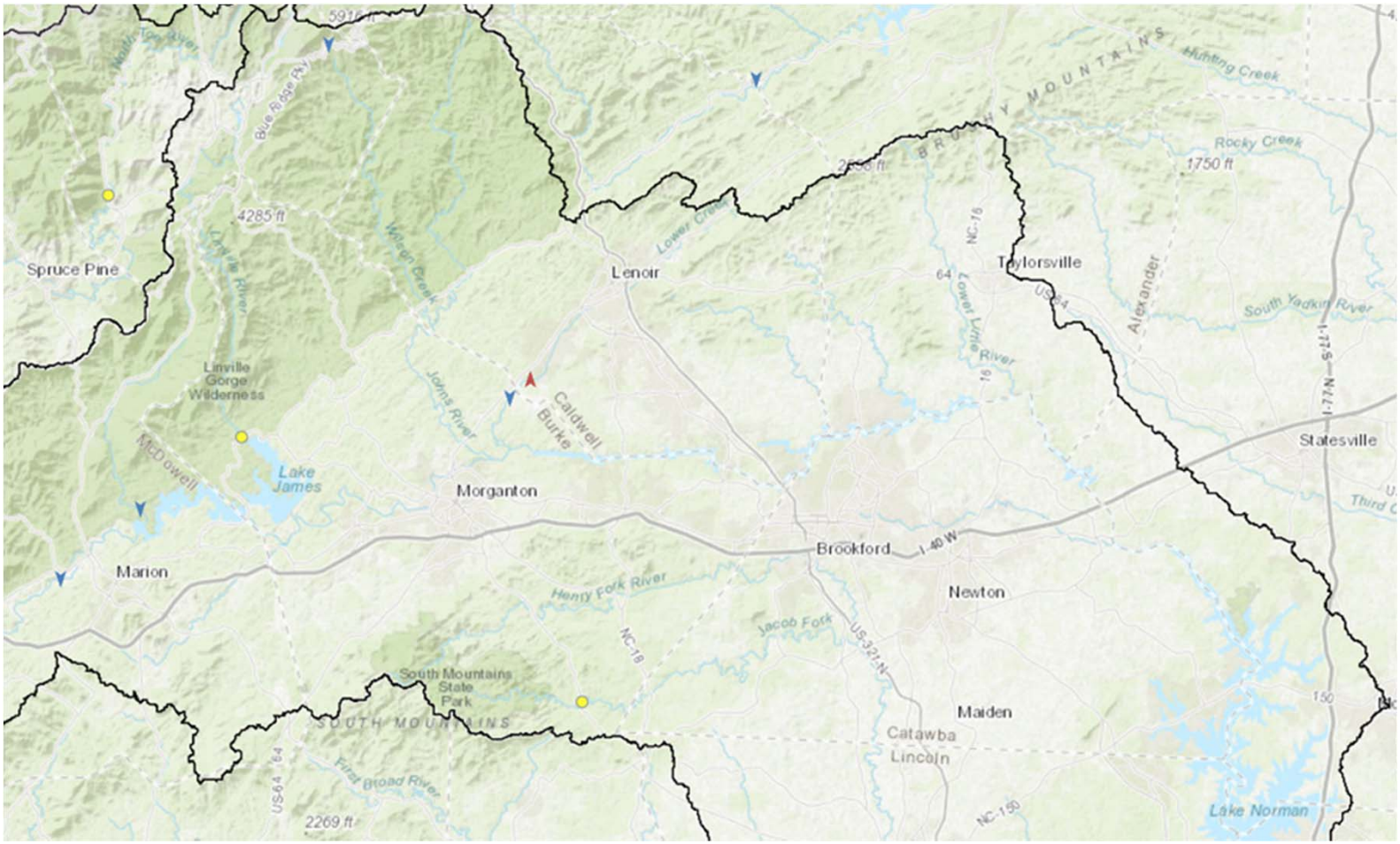


Trend Data for Ammonia



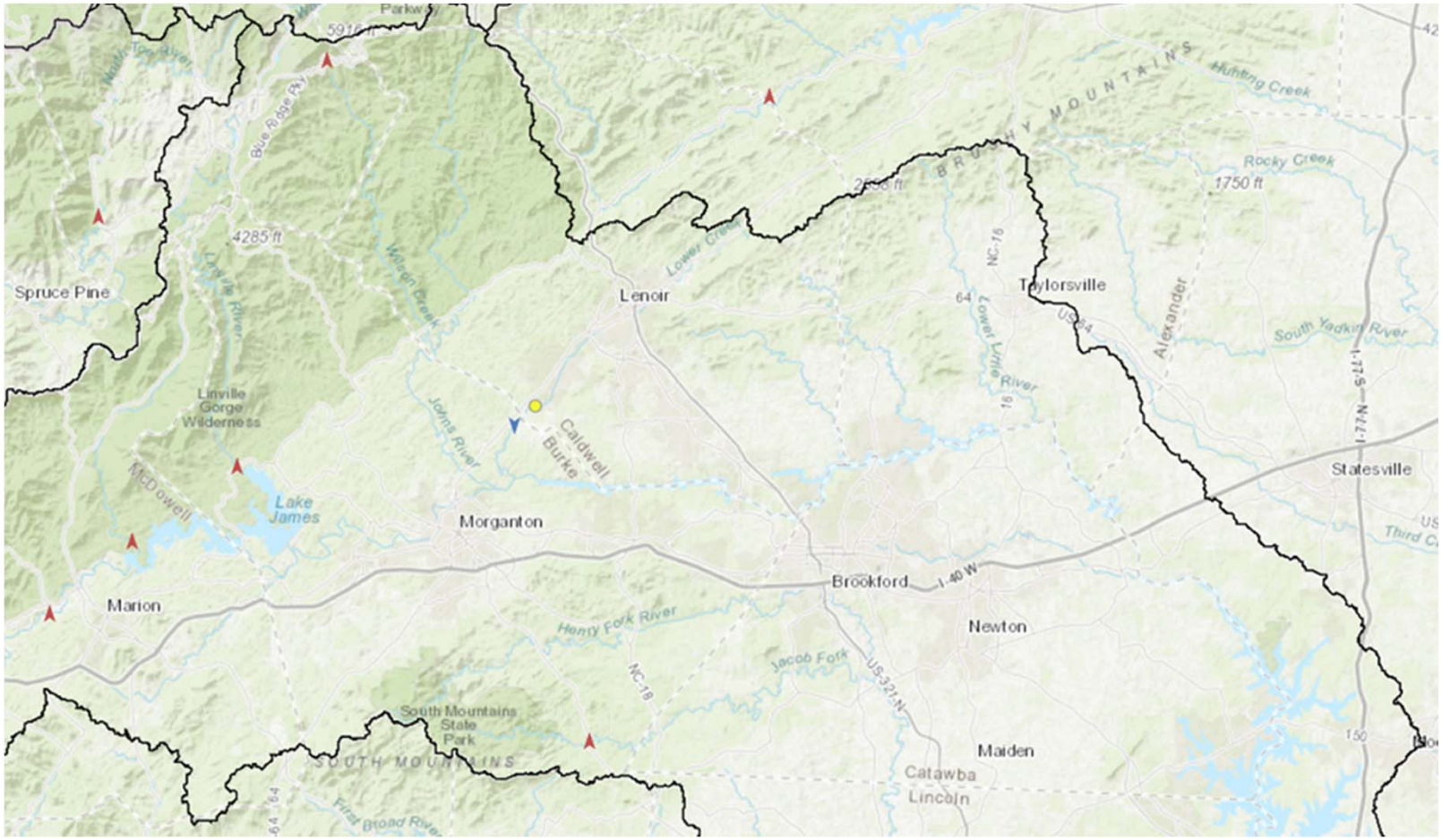
Downward trend Upward trend No significant trend

Trend Data for NO_2+NO_3



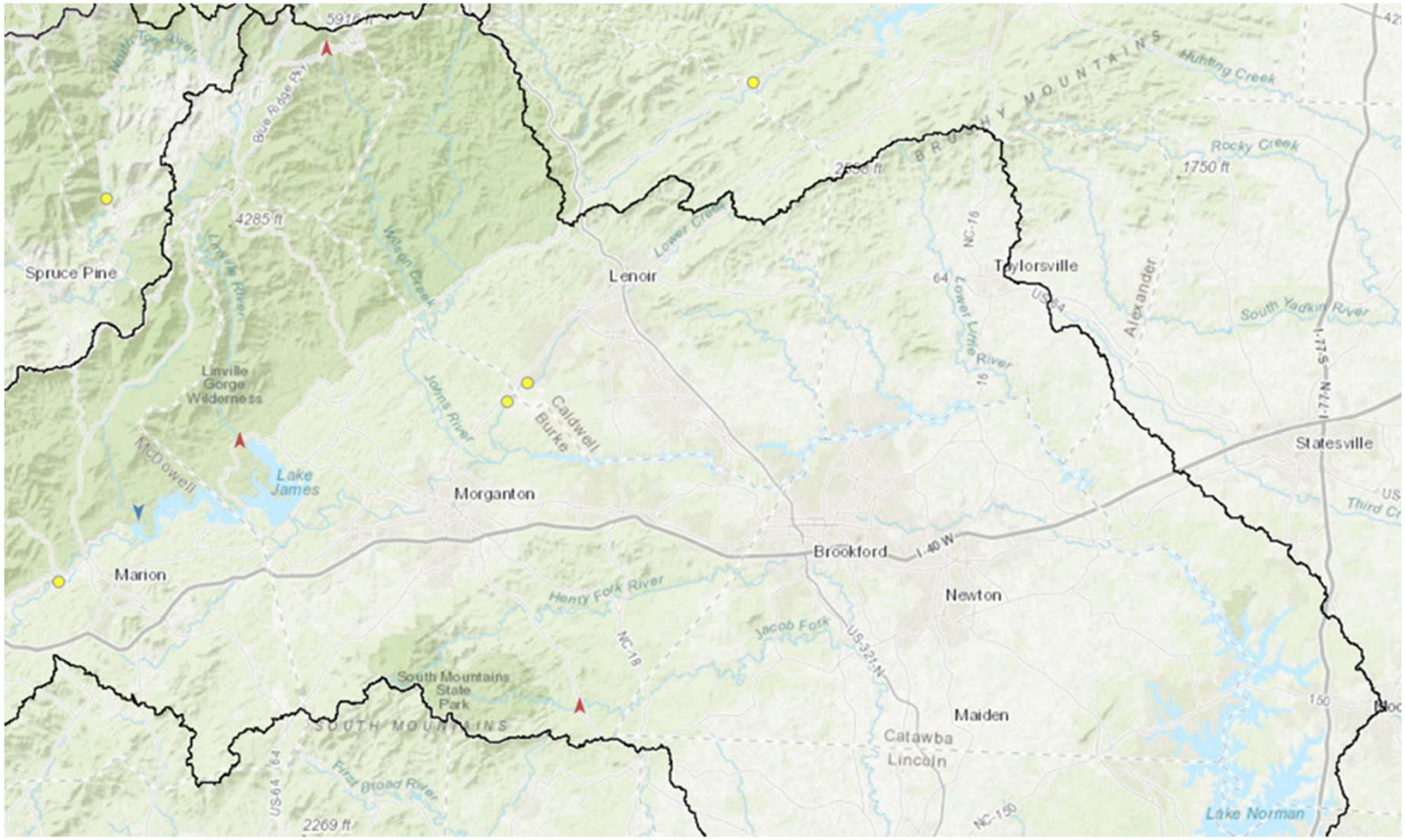
Downward trend Upward trend No significant trend

Trend Data for TKN



Downward trend Upward trend No significant trend

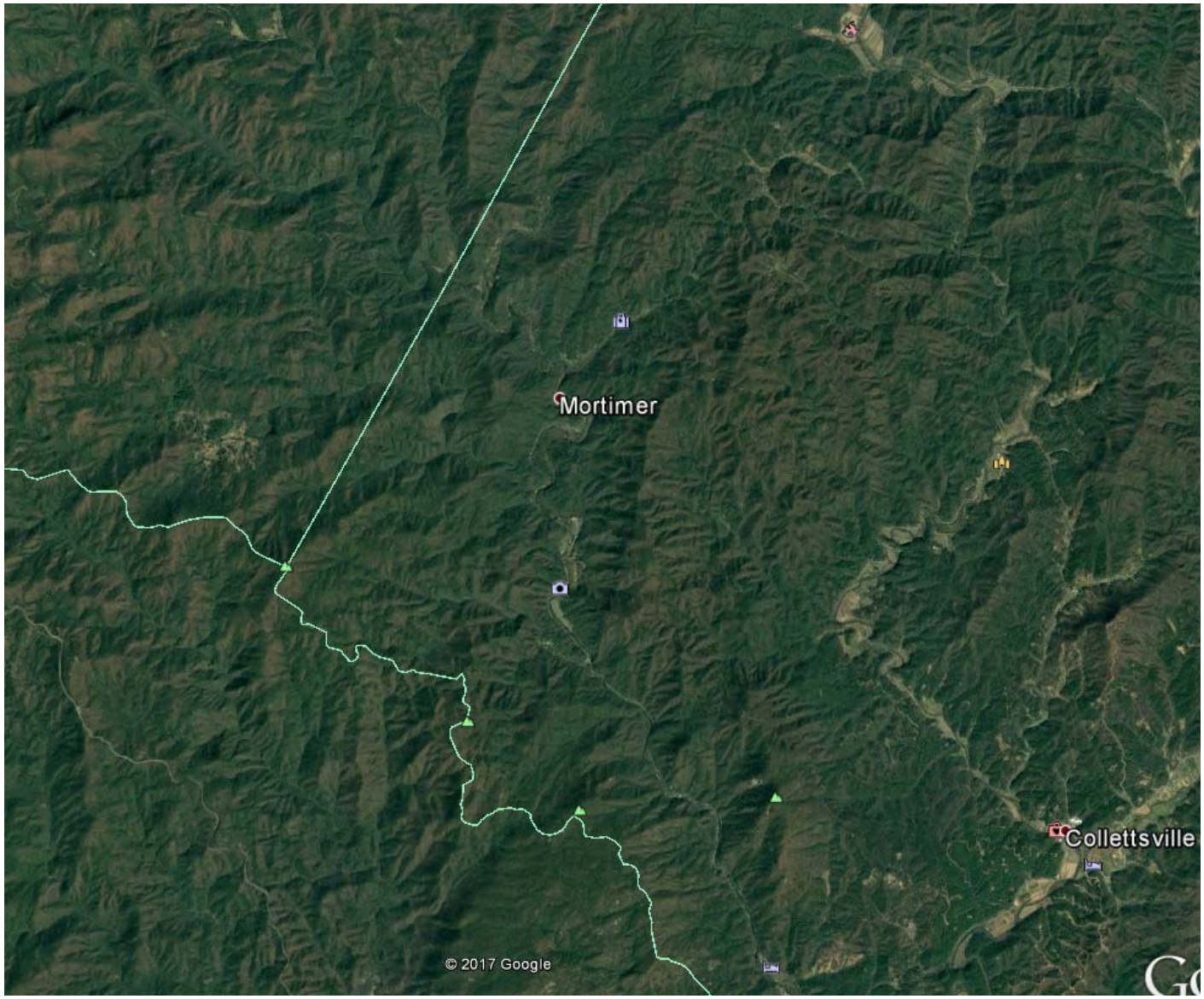
Trend Data for TP



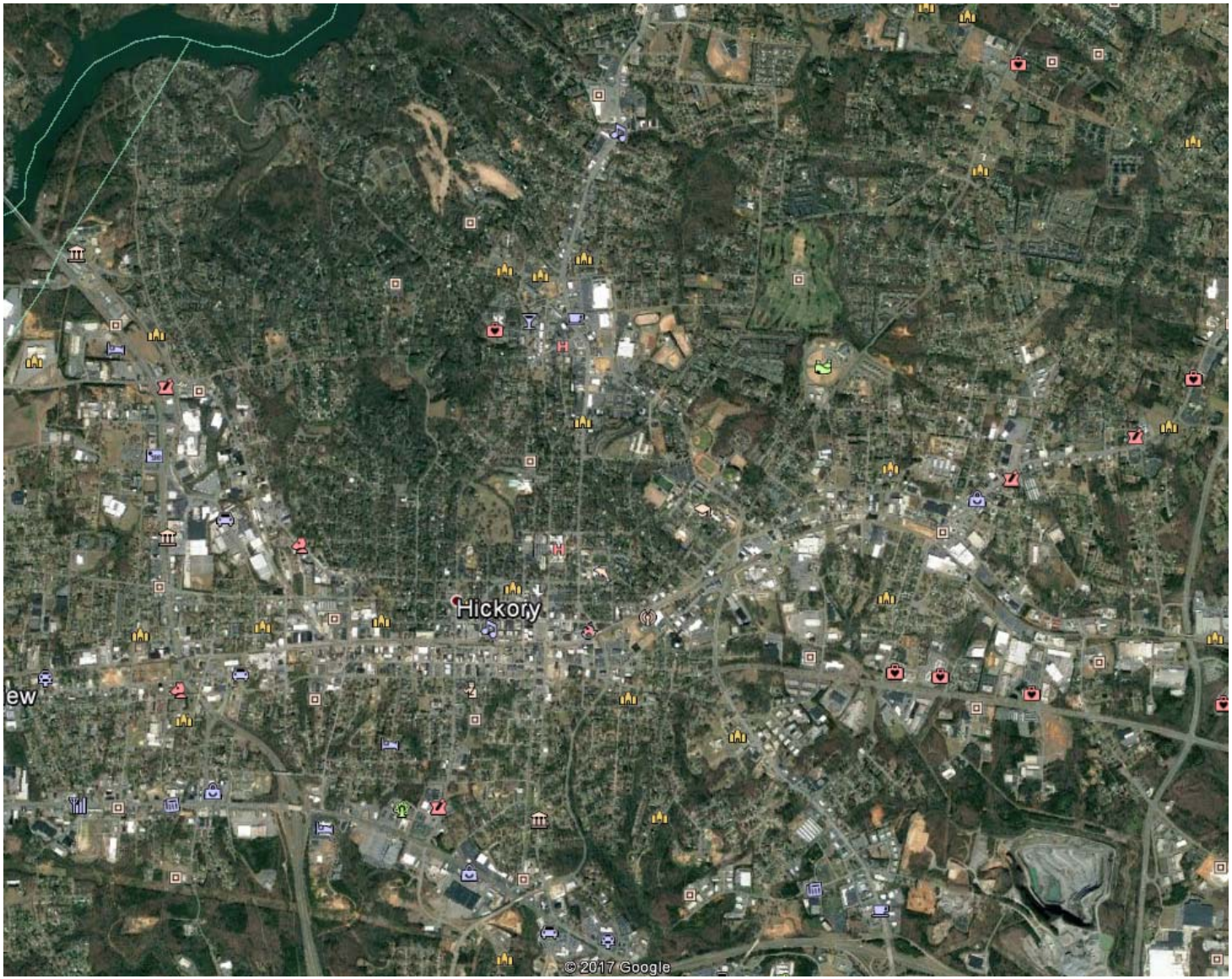
Downward trend Upward trend No significant trend

Land Use Types: Agriculture

Land Use Types: Forests

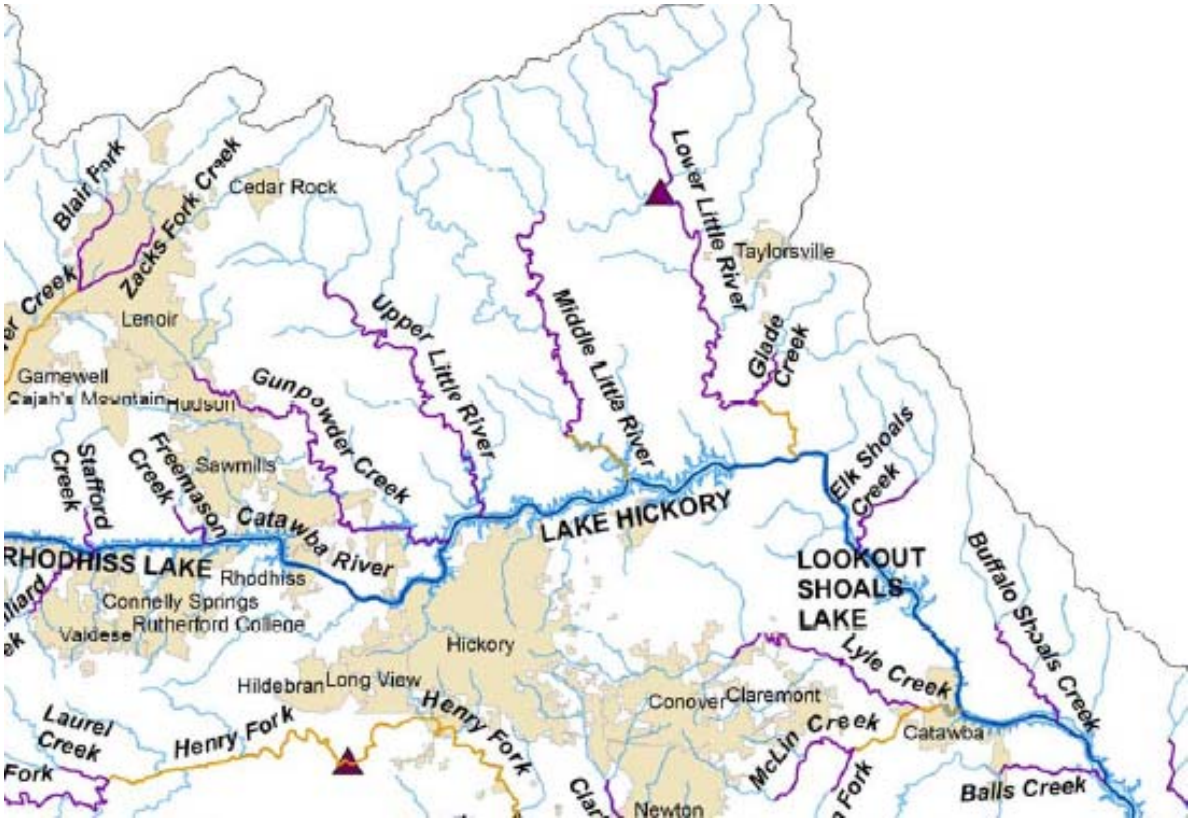


Land Use Types: Urban/Suburban



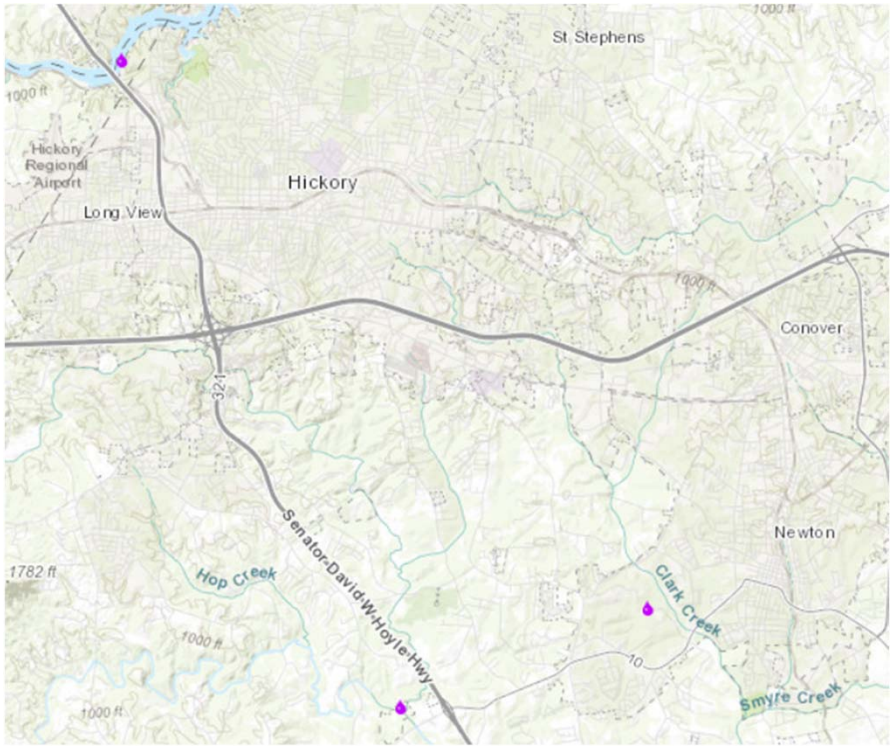
Next Steps: Data Gaps

- Limited data for mainstem watershed between Rhodhiss Lake and Lake Norman.
- Not all stations have nutrient monitoring

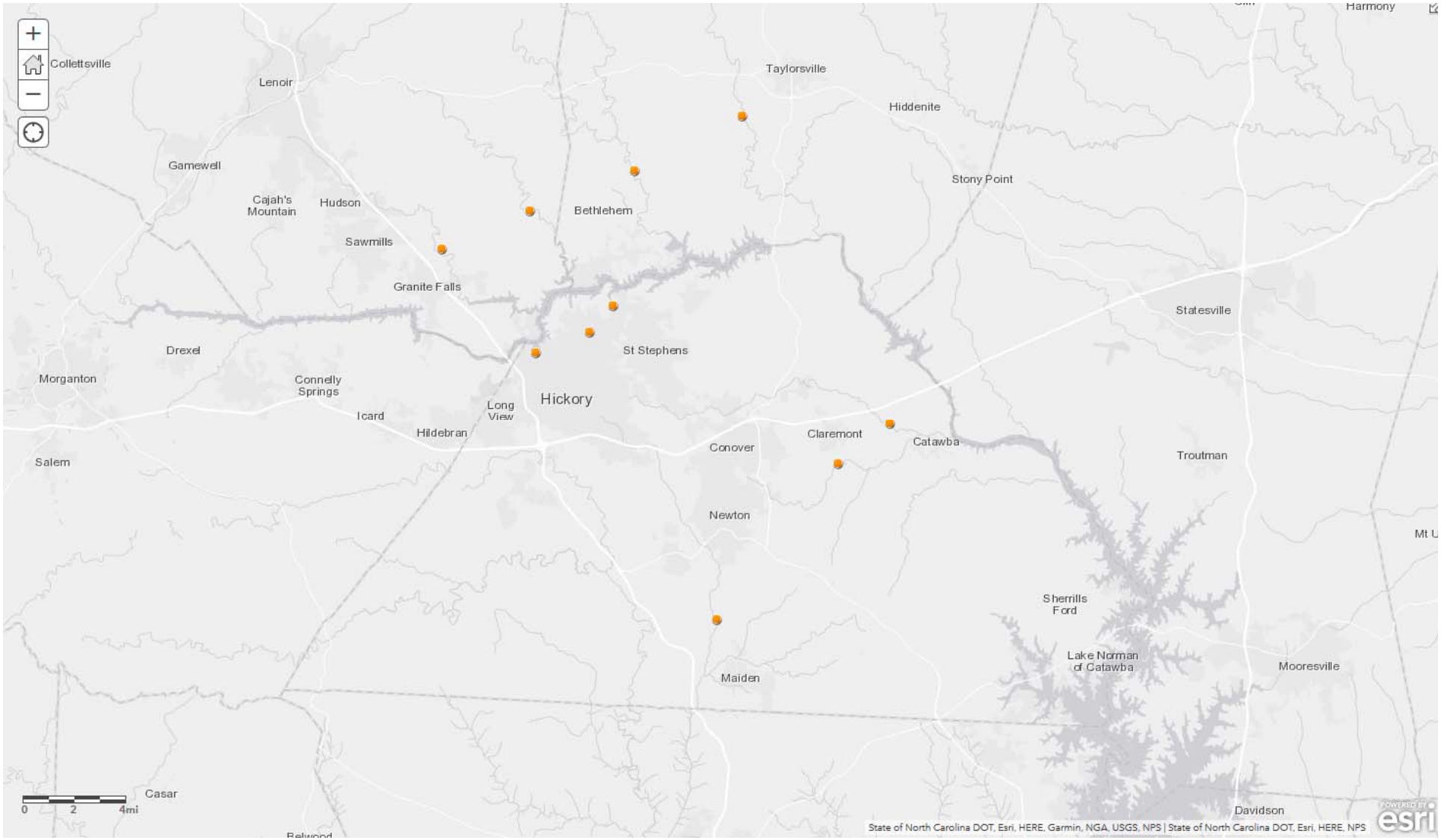


New Stations and Data

- Ten new monitoring stations
  - Upper, Middle, and Lower Little Rivers, Gunpowder Creek, Horseford Creek, Falling Creek, Lyle Creek, McLin Creek, and Clark Creek
- Monitoring data from water intakes at City of Hickory and City of Newton.
- Began monitoring nutrients at all Catawba stations.



New Monitoring Station Locations



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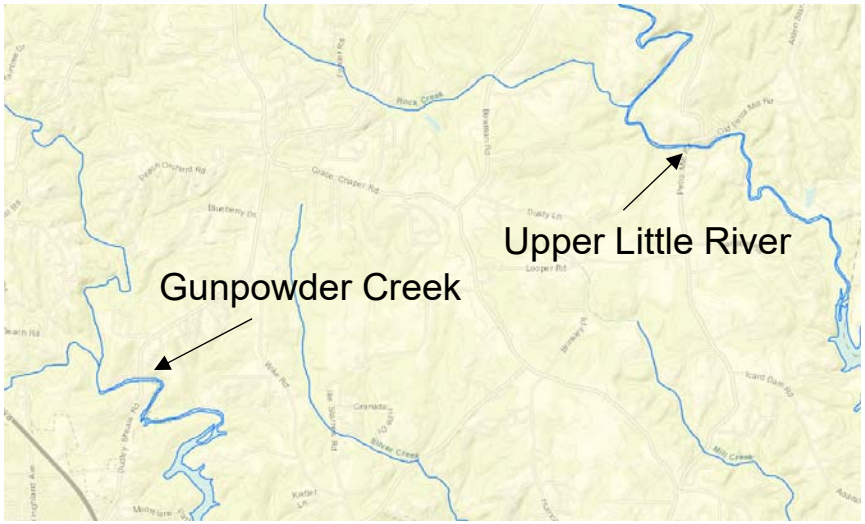
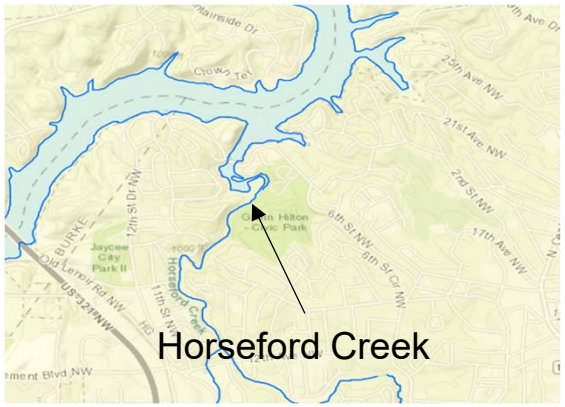
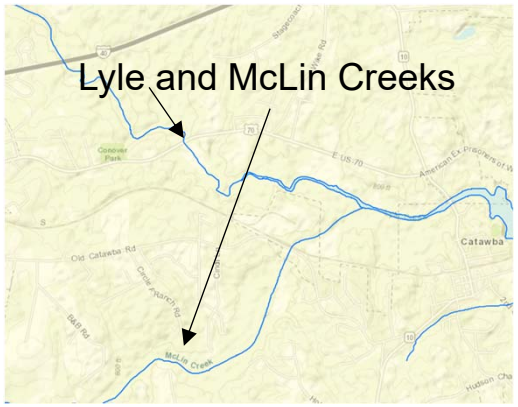
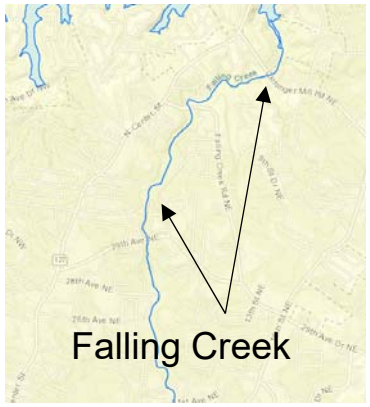
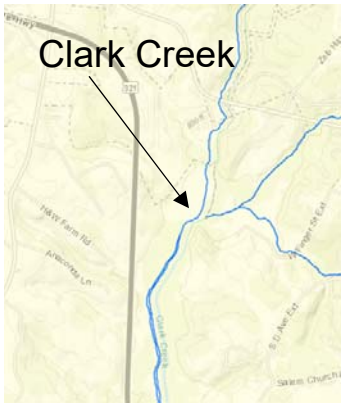




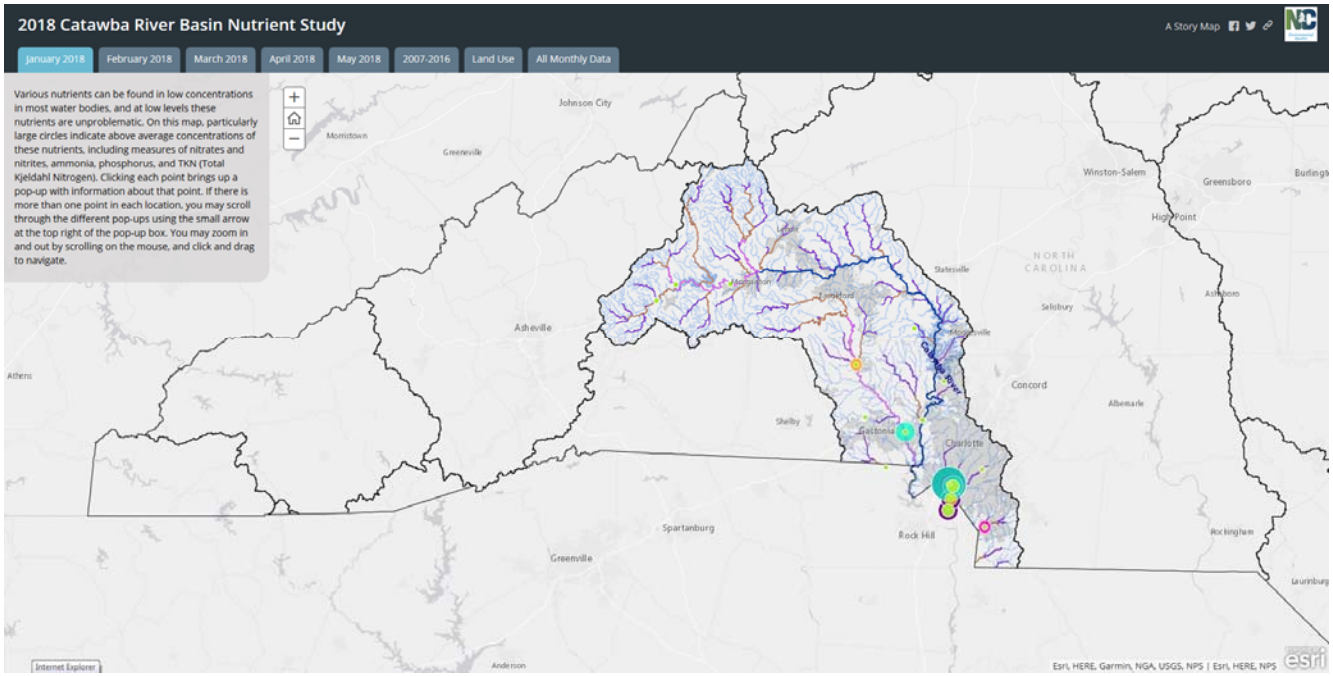






Catawba Nutrient Study Story Map

- Data presented in a story map for enhanced understanding of results and locations.
- Catawba Nutrient Study: https://ncdenr.maps.arcgis.com/apps/MapSeries/index.html?appid=fd48cb721ea2455682c10d79c397659c



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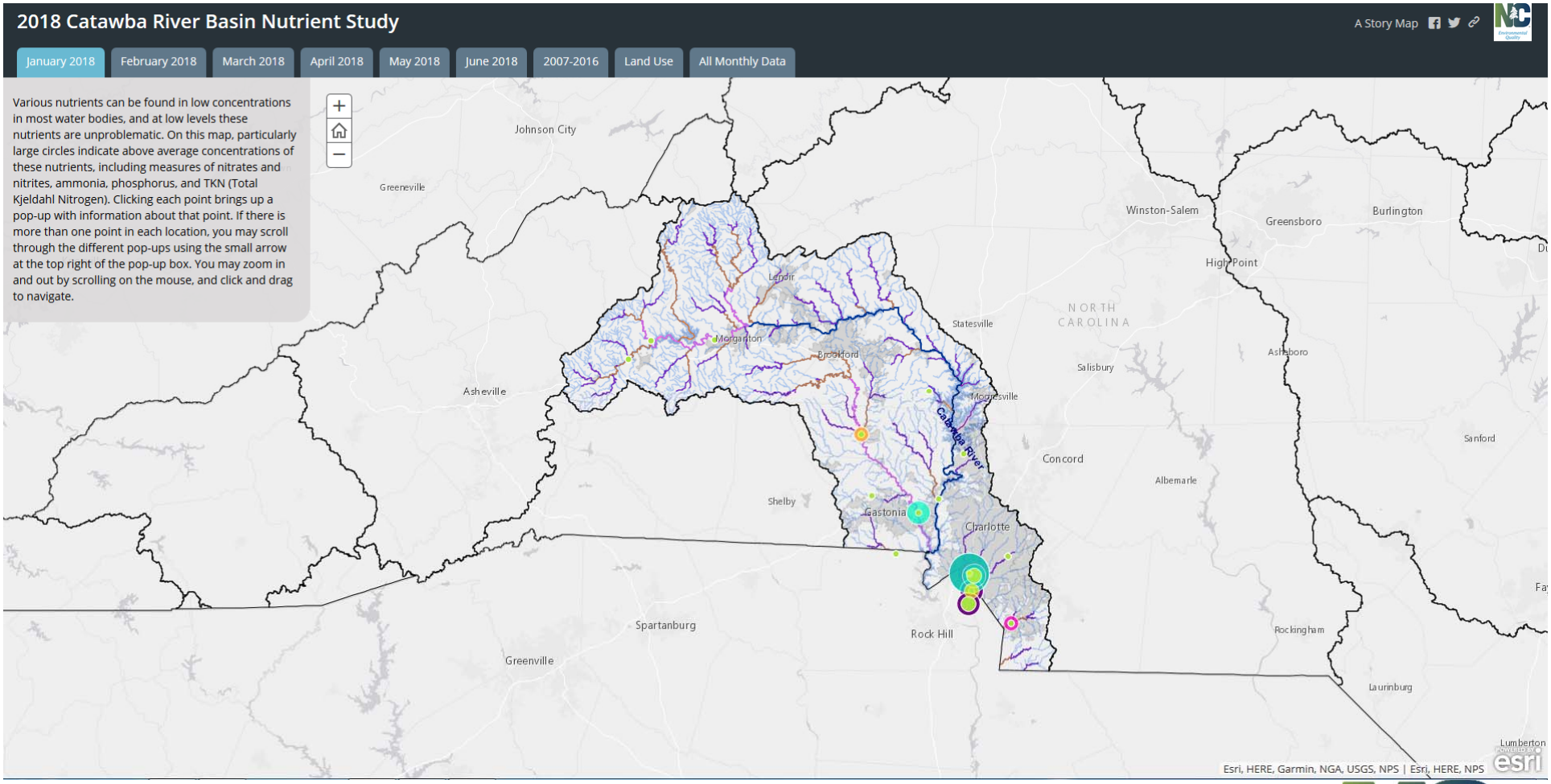

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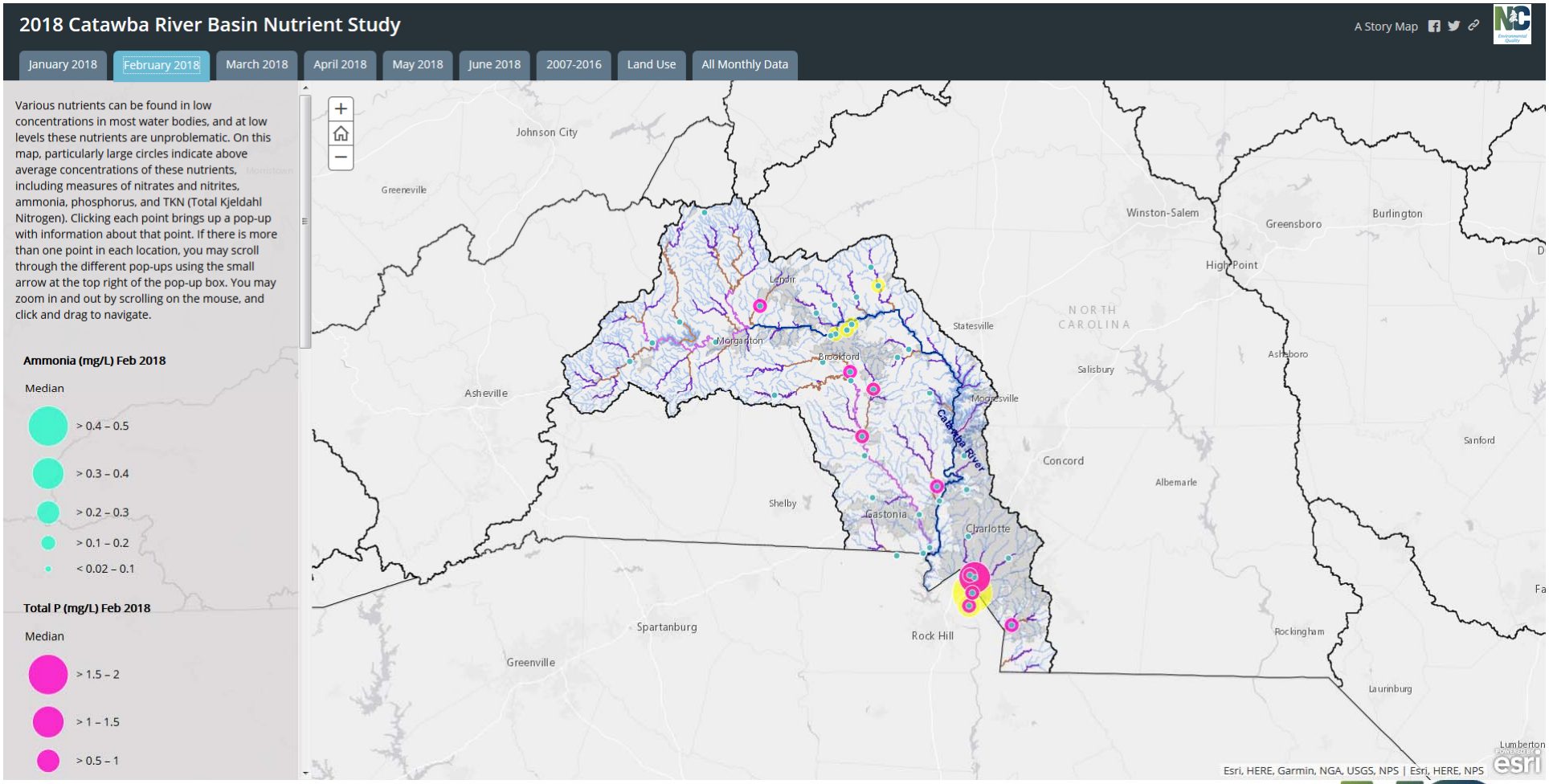


Catawba Nutrient Study Story Map

zoom in and out by scrolling on the mouse, and click and drag to navigate.

Ammonia (mg/L) Feb 2018

Median

- > 0.4 – 0.5
- > 0.3 – 0.4
- > 0.2 – 0.3
- > 0.1 – 0.2
- < 0.02 – 0.1

Total P (mg/L) Feb 2018

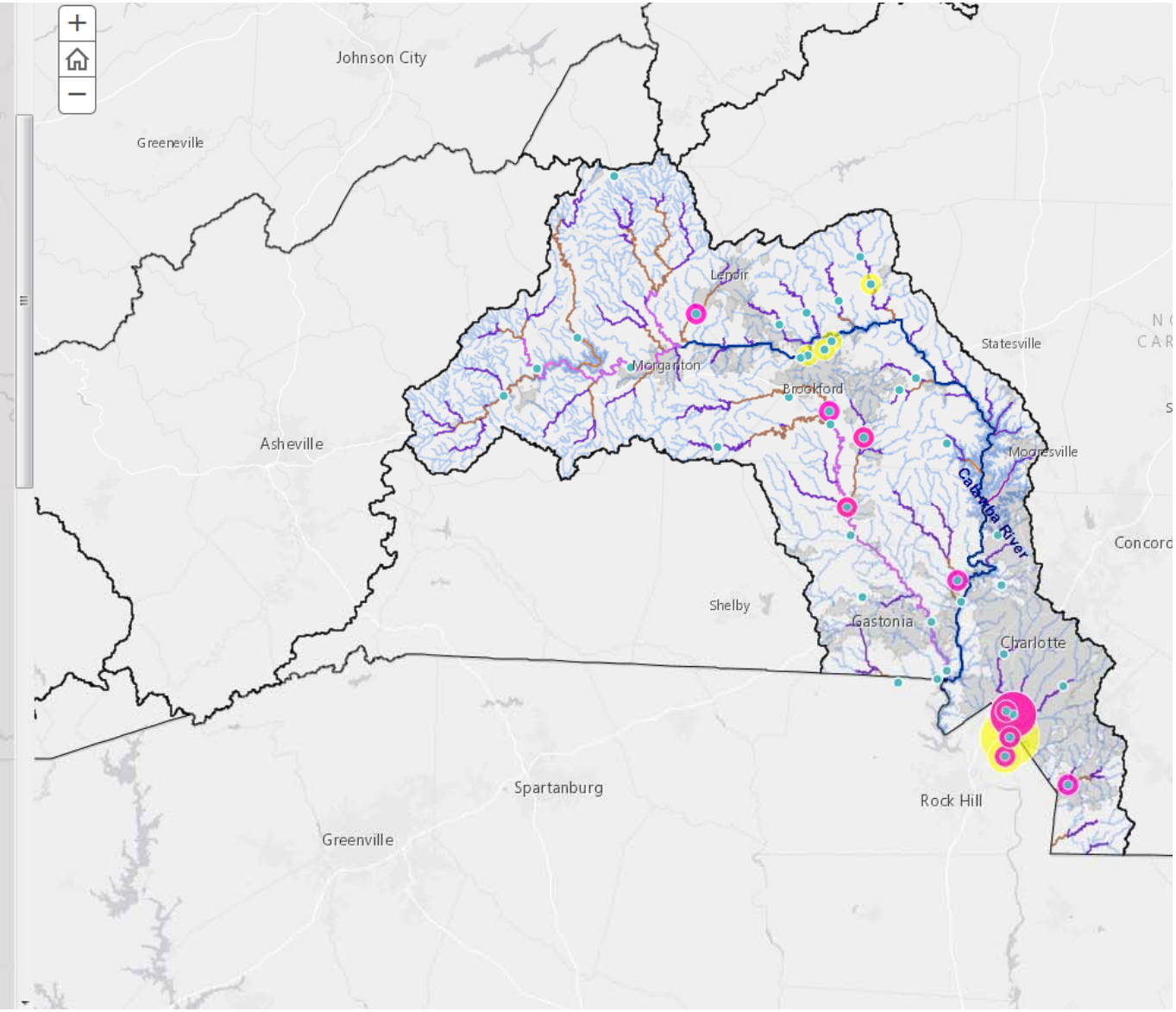
Median

- > 1.5 – 2
- > 1 – 1.5
- > 0.5 – 1
- > 0.1 – 0.5
- < 0.02 – 0.1

Nitrate+Nitrite (mg/L) Feb 2018

Median

- > 15 – 20
- > 10 – 15



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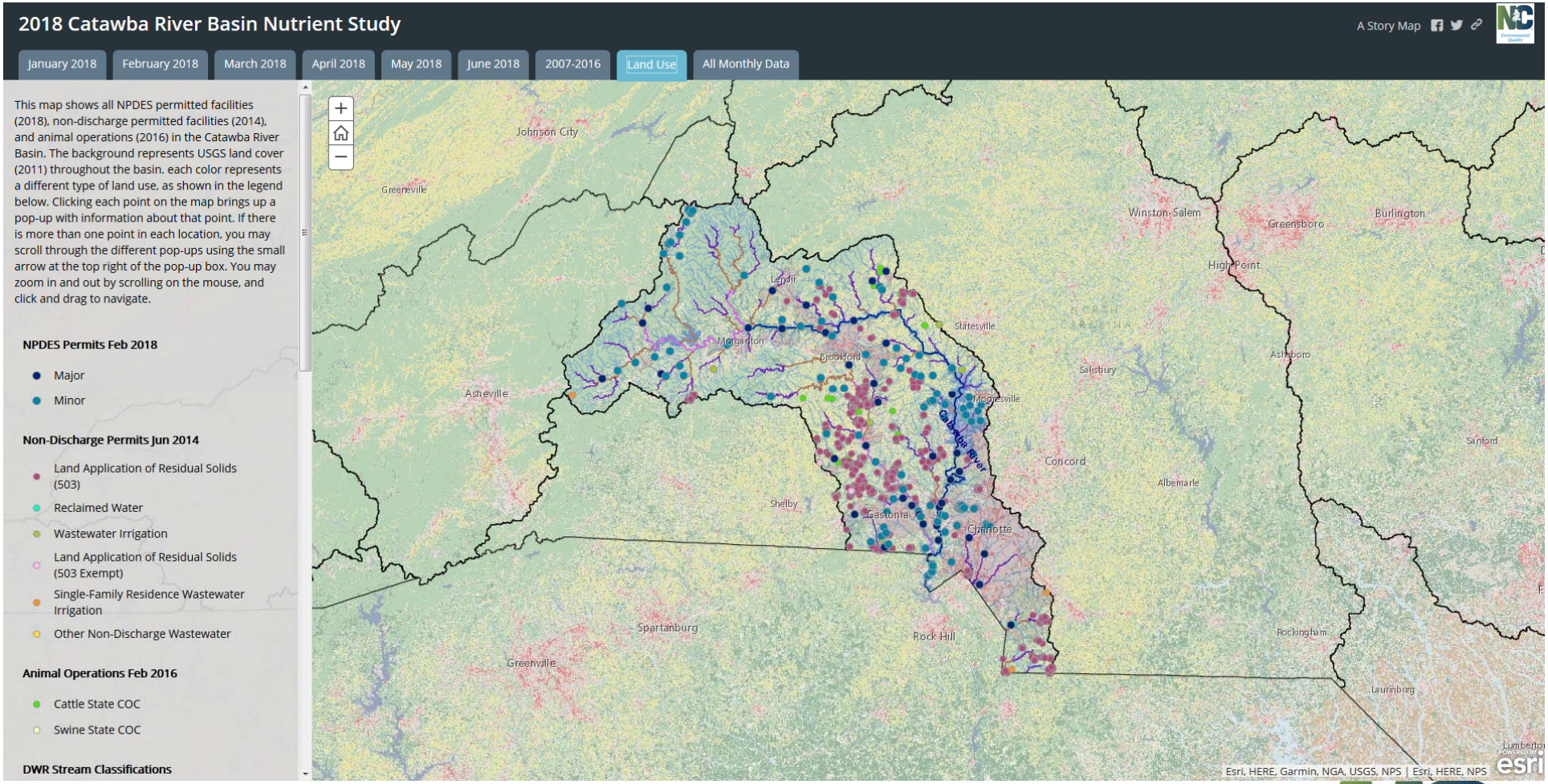

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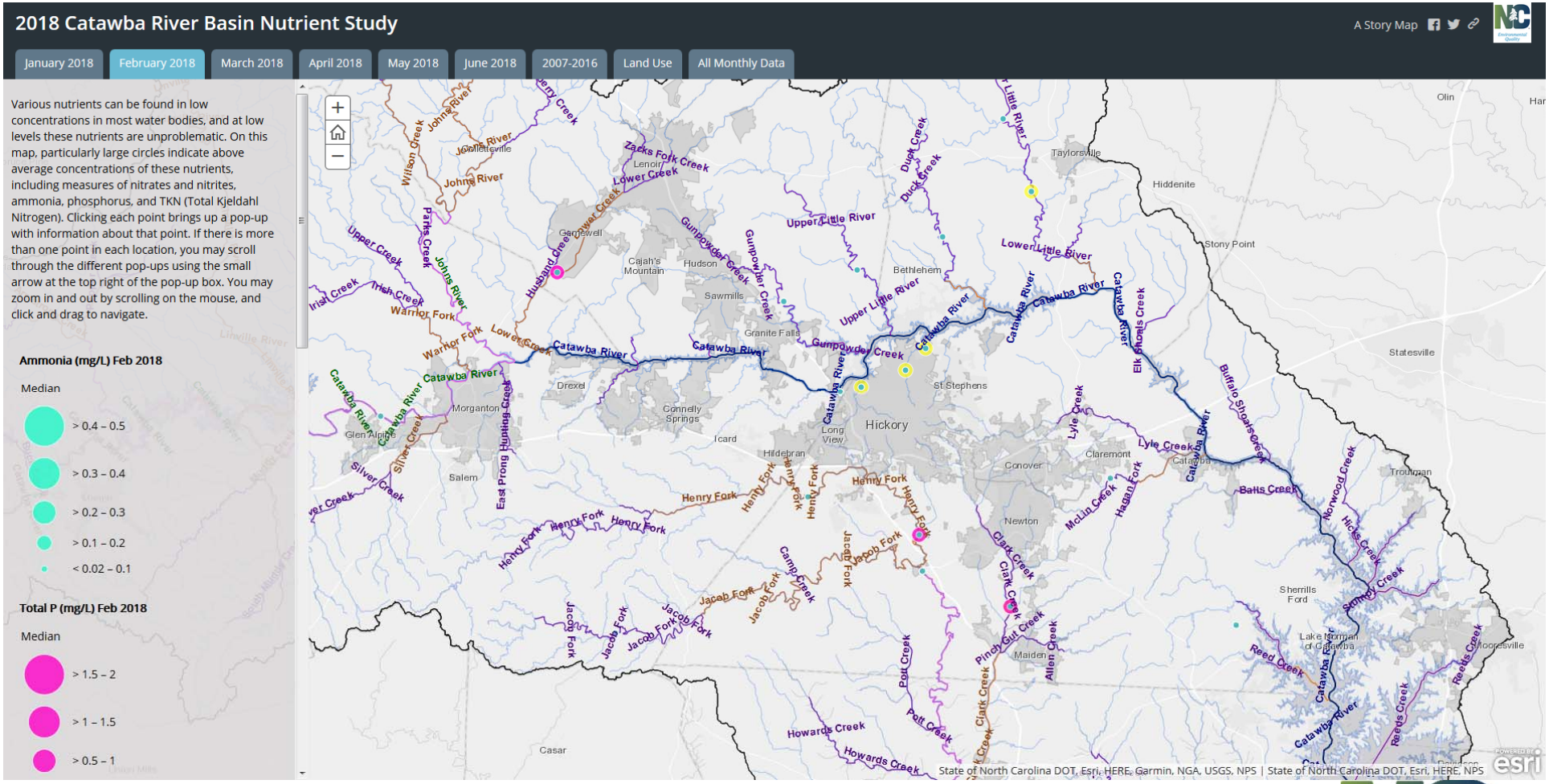

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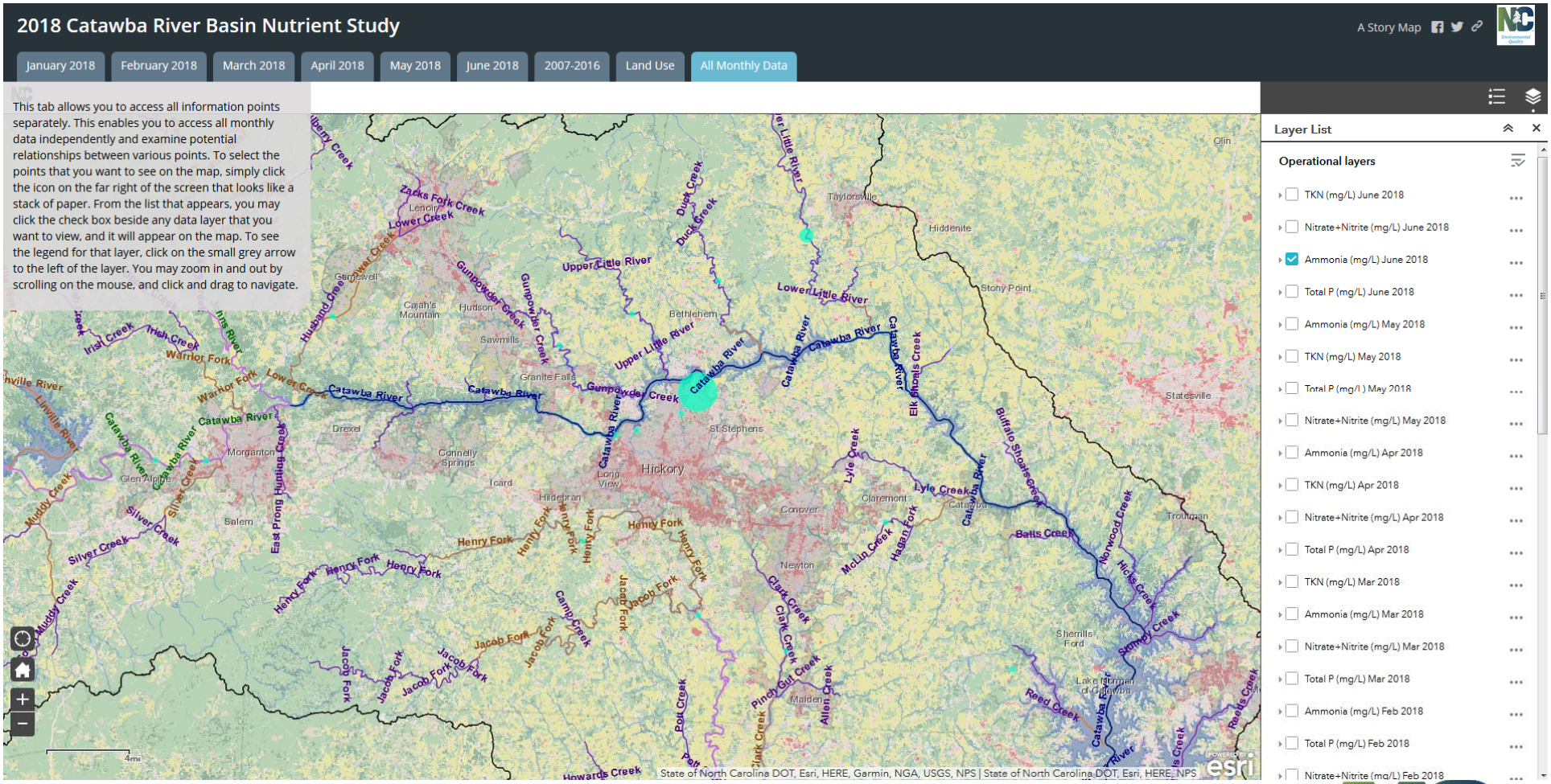

Next Steps

- Monthly monitoring at new stations from February to August 2018.
- Investigating isotopic, genetic tracking, and fluorescence analyses for identifying sources of nutrients.
- Report on results due October 2018.

Questions?

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