

New Targeting Strategy for Advancing of the Arkansas Nutrient Reduction Strategy

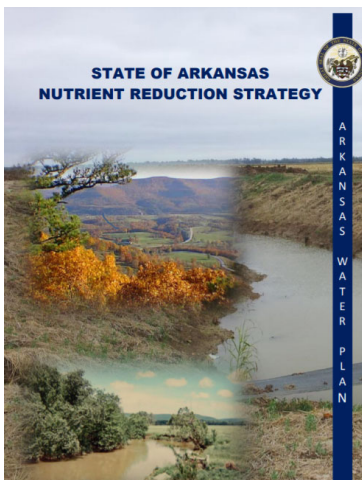


**NATURAL RESOURCES
DIVISION**

**Tate Wentz
Water Quality Section Manager**

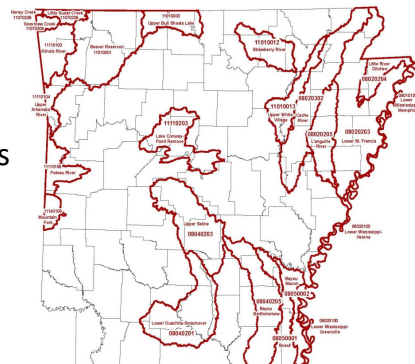
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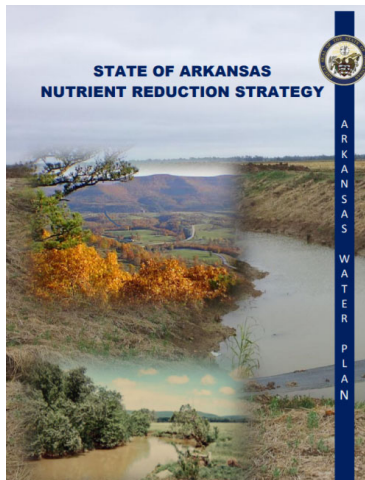
2014 ANRS priority areas focused on:

- Integrated Water Quality Assessment
- NRCS priorities
- Interstate water quality issues
- Watershed models
- Local Conservation District goals
- AR NPS Management Plan
- State Water Plan



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2014 ANRS:

- Cannot adequately show that the resources expended has resulted in a documentable positive effect on in-stream water quality statewide
- Detailed report of the work being done in the State related to nutrients but does not present a strategy for future work
- Lacks a clearly defined goal
- No method to evaluate progress or lack of progress
- Targeting strategy based on where we are doing work and not based on in-stream nutrient loads or concentration

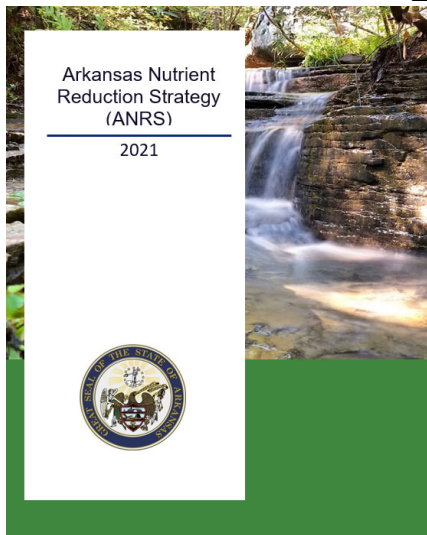


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2018-2021 ANRS Update:



- Defined Nutrient Focus Watersheds
- Clear goals and strategies for focus watersheds
- Updated nonpoint source and point source implementation strategies

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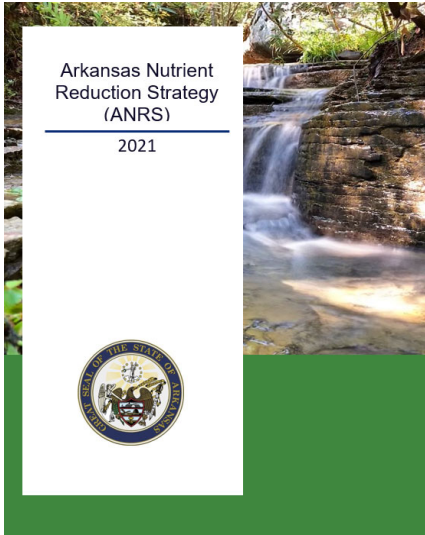
2018-2021 ANRS Update:

Defined Nutrient Focus Watersheds

- Project funded through Arkansas Water Resource Center
- Statewide prioritization framework based on statistical analysis of measured in-stream nutrient concentrations

Goals

- Assess TN & TP concentration trends (1990-2019) at HUC-8 level
- Screen TN & TP concentrations to identify HUC-8's where nutrients are elevated relative to ecological thresholds
- Site-specific trend analysis for flagged HUC-8



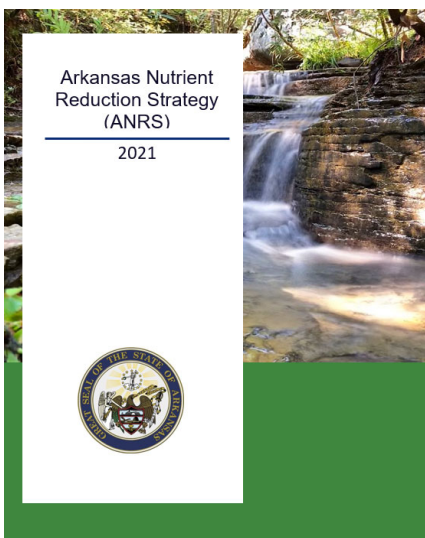
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HUC-8 Trend Analysis

➤ Methods

- Evaluated Arkansas DEQ WQX data 1990-2019
 - Required 10+ years & 50% of years in POR for HUC-8
- Calculated site median 75th percentile for TN & TP
- Linear regression and Mann-Kendall test
- Significance $p < 0.05$



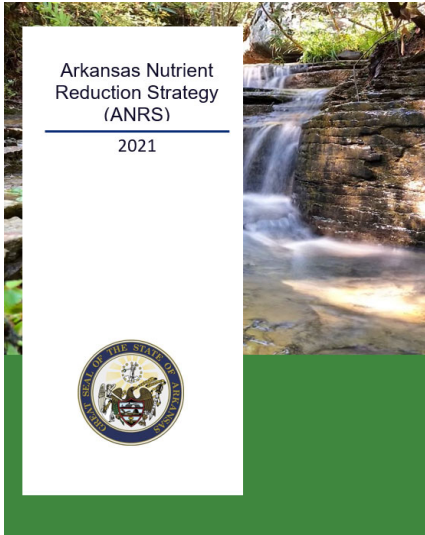
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Site-Specific Analysis

➤ Methods

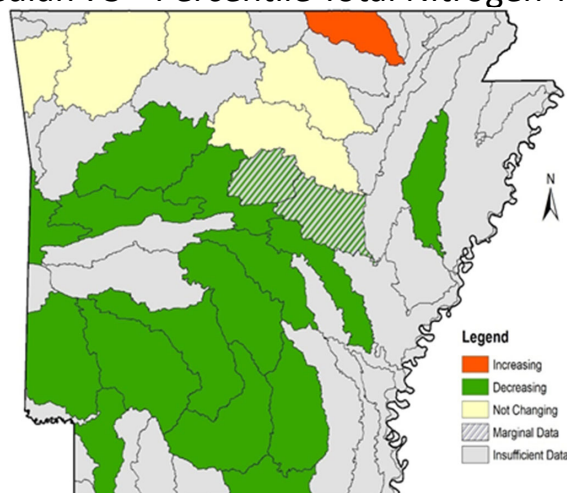
- Evaluated Arkansas DEQ WQX data 2000-2019
 - Sites (n=50) identified through magnitude evaluation
- Calculated site median 75th percentile for TN & TP
- Linear regression, Mann-Kendall test, and seasonal Kendall test
- Significance $p < 0.05$



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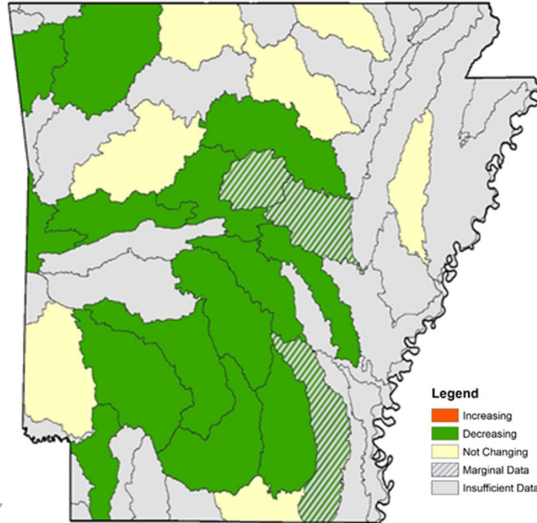
1990-2019 Site Median 75th Percentile Total Nitrogen Trends



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1990-2019 Site Median 75th Percentile Total Phosphorus Trends

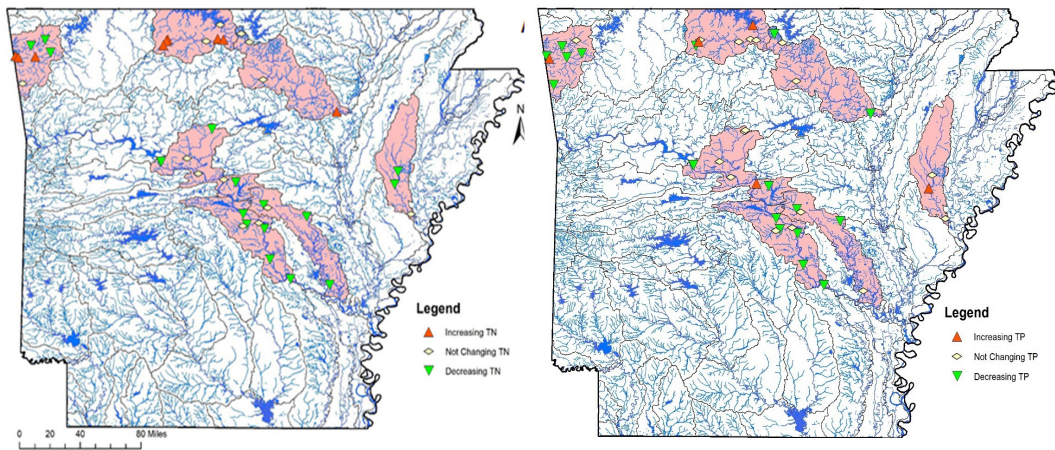


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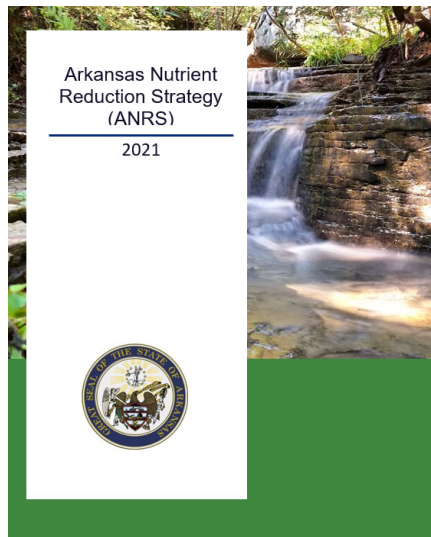
2000-2019 Site-Specific Trends



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HUC-8 Categories

➤ Data analyses will inform final priority categorizations:

1. **Focus**, with robust data
2. **Possible focus**, but more data needed
3. **Not a Focus**, with robust data
4. **Likely Not a Focus**, but more data needed

➤ Categories 1 and 2 represent priority status for nutrient reduction activities and for data collection to support future assessment, respectively

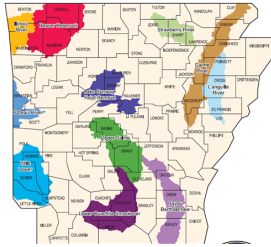
Priority Categorization Synthesis

Category	Prioritization criteria	Data sufficiency criteria
1 – Focus, Sufficient Data	<ul style="list-style-type: none"> • Analysis shows nutrient reduction need in both TN and TP 	<ul style="list-style-type: none"> • Min 4 sites for ≥ 50% of years • Qualified for both analyses
2 – Possible Focus, Limited Data	<ul style="list-style-type: none"> • Analysis shows nutrient reduction need in TN and/or TP (one must be flagged by Scenario 1) • MRBI priority or Nutrient Surplus Area (if no data) 	<ul style="list-style-type: none"> • < 4 sites for ≥ 50% of years • Did not qualify for one or both analyses
3 – Not a Focus, Sufficient Data	<ul style="list-style-type: none"> • Nutrient reduction need not indicated, or indicated for only one nutrient 	<ul style="list-style-type: none"> • Min 4 sites for ≥ 50% of years • Qualified for both analyses
4 – Likely Not a Focus, Limited Data	<ul style="list-style-type: none"> • Nutrient reduction need not indicated, or indicated for TN and/or TP by Scenario 2 only • NOT an MRBI priority or Nutrient Surplus Area (if no data) 	<ul style="list-style-type: none"> • < 4 sites for ≥ 50% of years • Did not qualify for one or both analyses

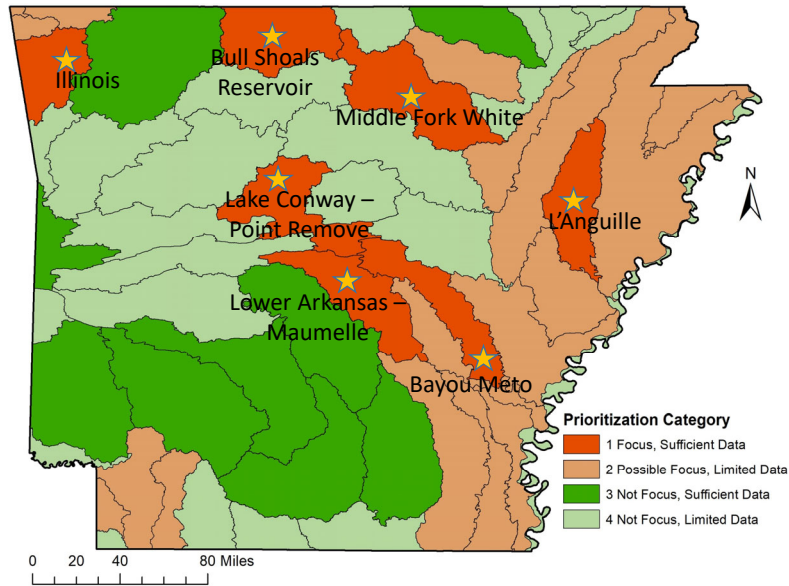
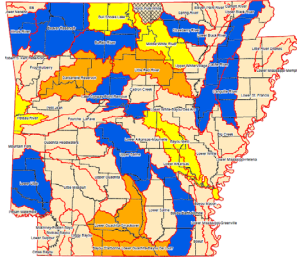


Prioritization Map

2018-2023 NPS
Priority Watersheds



NPS Watershed Plans
(8 Digit HUC's)



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ANRS Update Goals and Strategies

The three main goals of ANRS are:

1. Increase or maintain downward nutrient trends in Tier I watersheds
2. Enhance water quality monitoring stations and increase or maintain downward nutrient trends in Tier 2 watersheds
3. Continue efforts to reduce nutrients in all watersheds



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ANRS Update: Next Steps

- Finalize goal and strategy revisions
- Review from focus group
- Release for comment to extensive stakeholder group
- Public notice
- Programmatic implementation and incorporation to NPS Program



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Questions

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