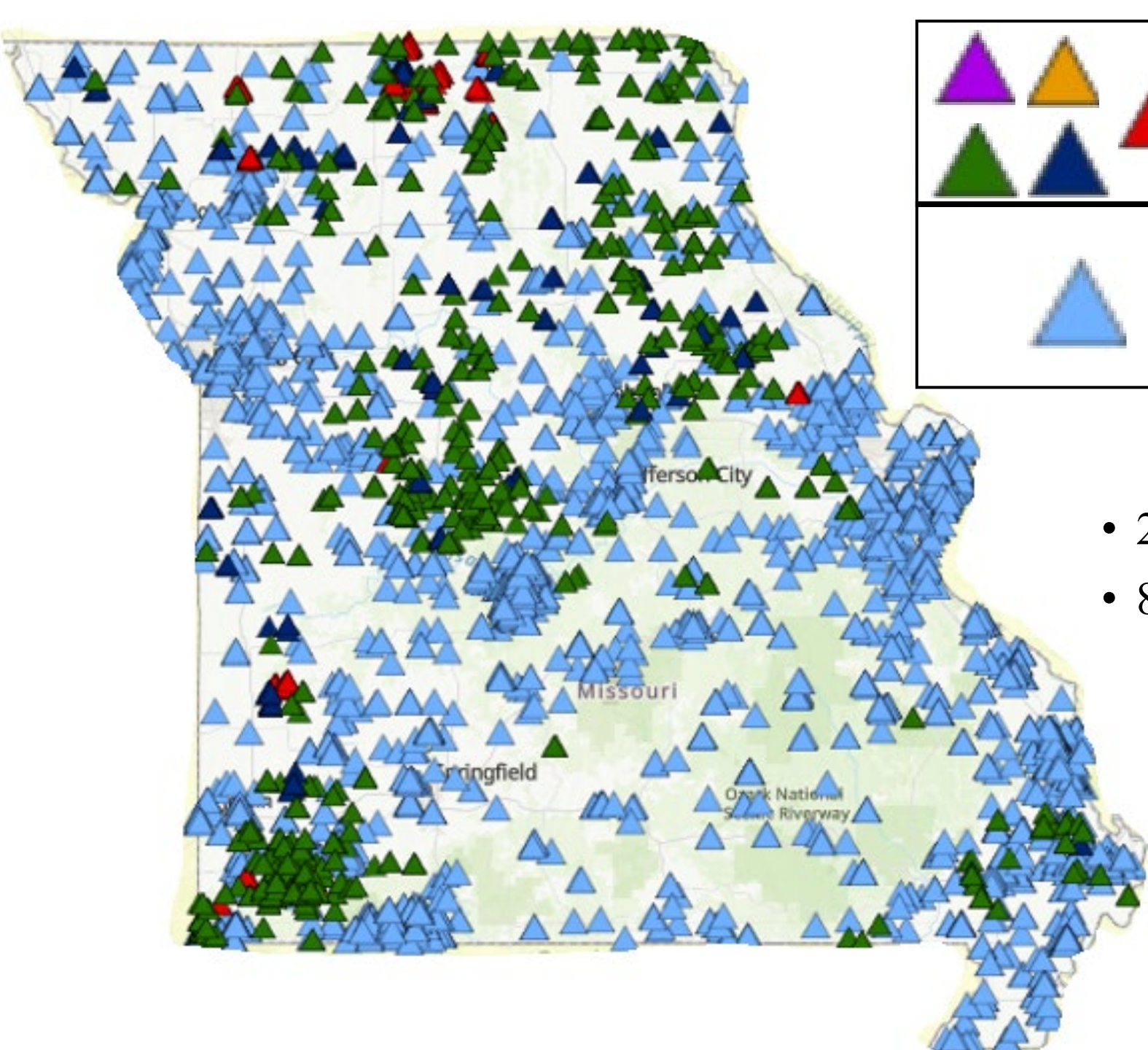


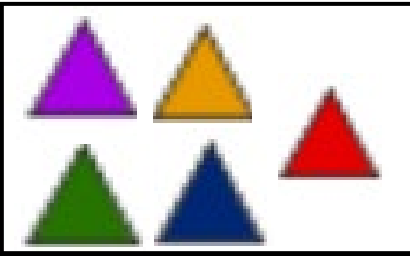
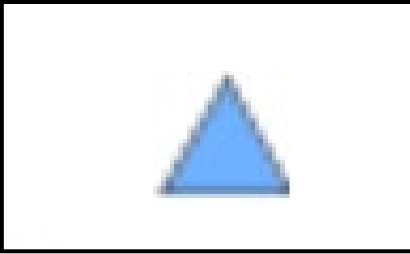
# Creative Ways to NOT Adopt a Criteria —Missouri's Total Phosphorus Rule

Owen Gallagher

Missouri Department of Natural Resources

Water Quality Standards Unit



	NPDES CAFO Permits
	NPDES Domestic/Industrial Permits

- 2,435 Domestic permits
- 881 Industrial/CAFO permits

# Purpose of a Criteria

- 40 CFR 131.11
  - Establish numerical values based on
    1. 304(a) Guidance; or
    2. 304(a) Guidance modified to reflect site-specific conditions; or
    3. Other scientifically defensible methods
- Numeric/Narrative values for protection of designated use

## STATE AND AUTHORIZED TRIBAL CRITERIA MUST:

Be based on sound scientific rationale

Contain sufficient parameters or constituents to protect the designated use

Support the most sensitive designated use of the waterbody

**EPA WQS Handbook:**  
Figure 3.1 Requirements of State and Authorized tribal Criteria under 40 CFR 131.11(a)(1)

# Missouri's Designated Uses



Aquatic Life Protection



Whole Body Contact

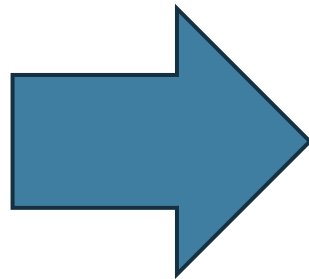


Secondary Contact Rec.

# Criteria

- Criteria serves a specific purpose
  - Protection of Designated Use
- Magnitude, Duration, Frequency
- Time intensive process
- Not all water quality improvements need to be criteria

**Me beginning a  
criteria review**



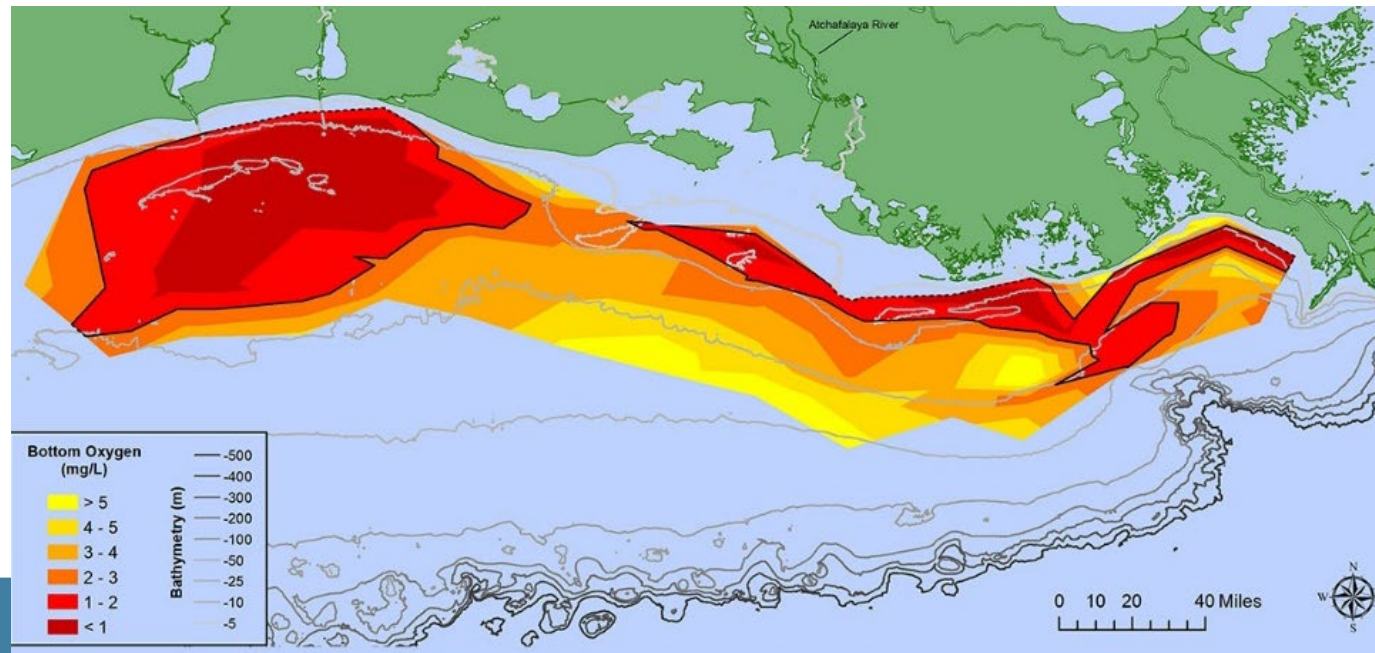
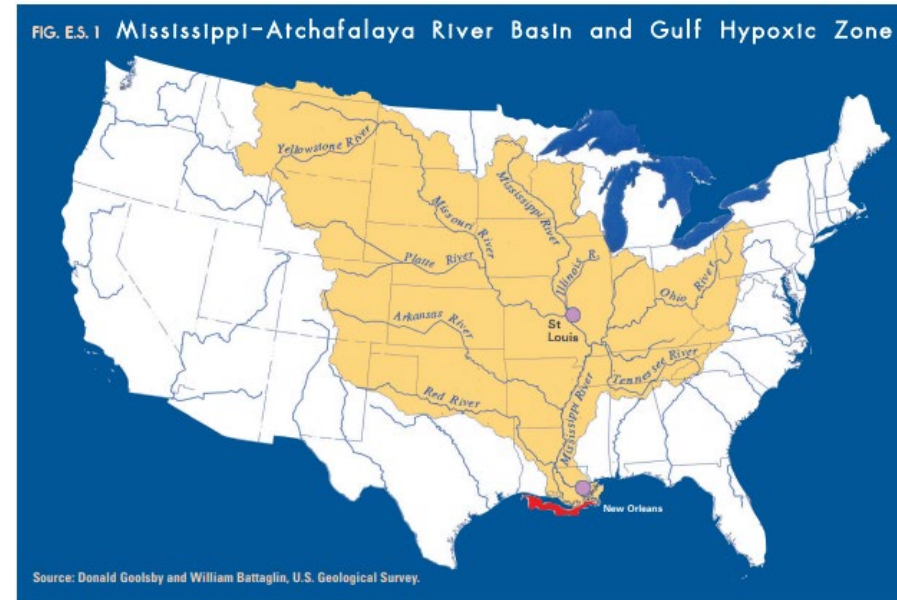
**Me finalizing criteria**





# Gulf of Mexico Hypoxic Zone

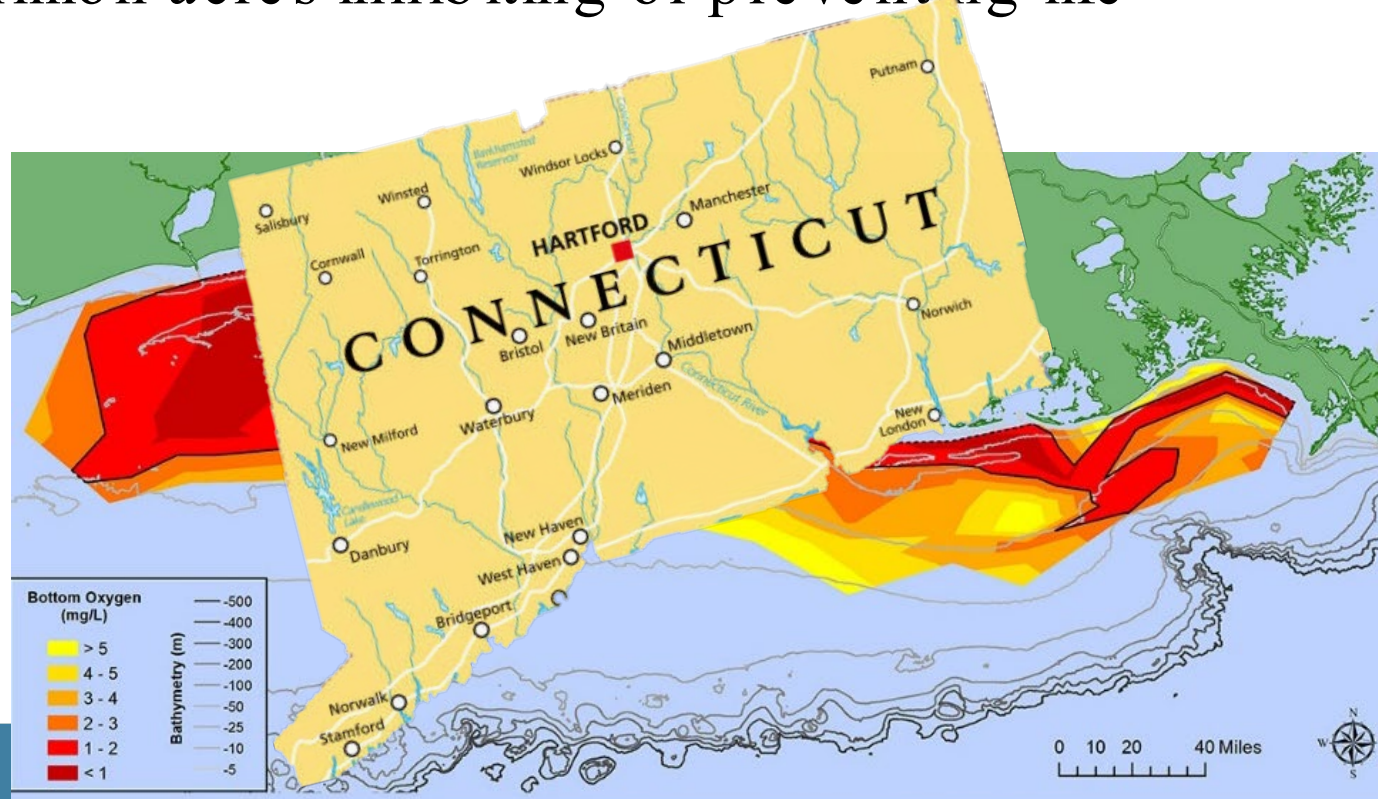
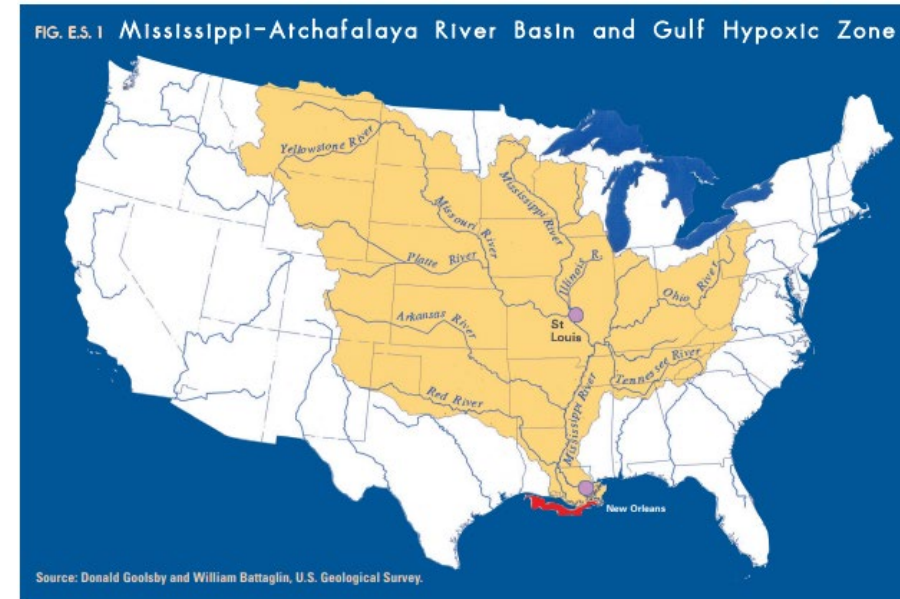
- Gulf of Mexico Hypoxic Zone
  - 1980-1996 data shows zone expansion ~40%
- 5-year Average size = 5,380 miles<sup>2</sup>
  - 3.4 million acres inhibiting or preventing life



Gulf Hypoxia Zone, July 25-31, 2021  
(LUMCON/NOAA)

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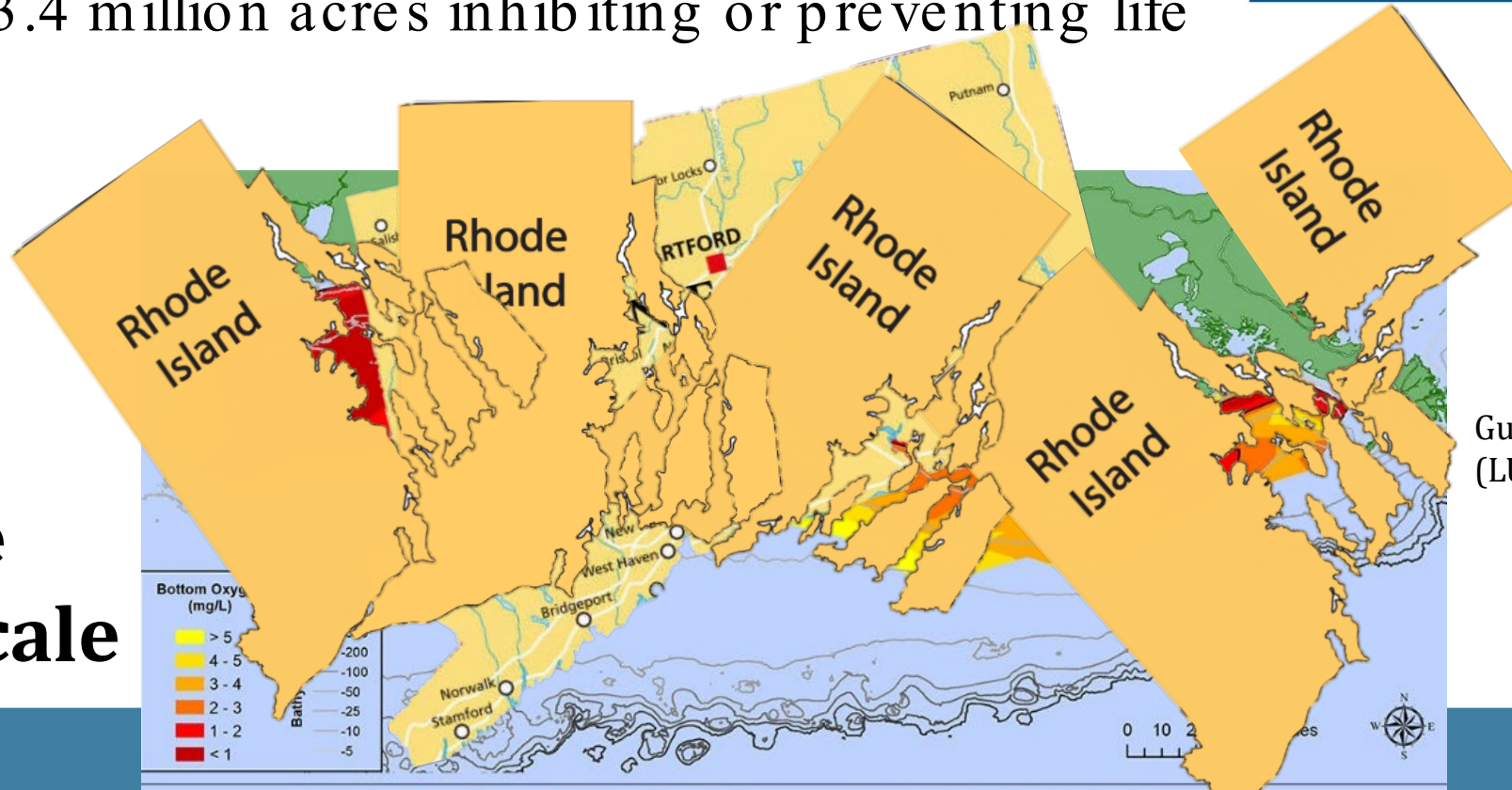
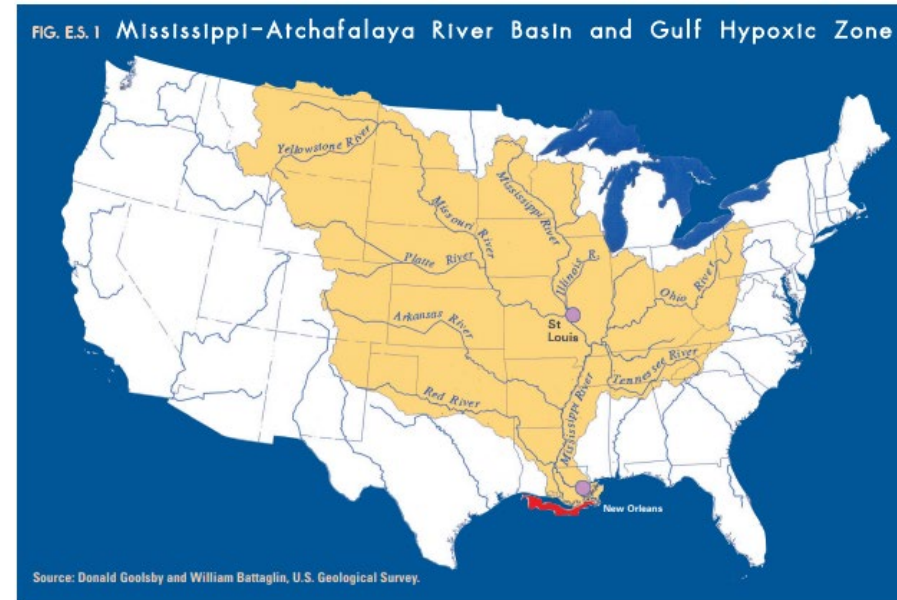
**\*Picture  
not to scale**

Gulf Hypoxia Zone, July 25-31, 2021  
(LUMCON/NOAA)



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Gulf Hypoxia Zone, July 25-31, 2021  
(LUMCON/NOAA)

**\*Picture  
not to scale**

# Gulf of Mexico Hypoxia Task Force

- 12 states in the Mississippi Watershed
- 2008 Plan
  - 45% nutrient reduction by 2035
    - 20% nutrient reduction interim target by 2025
- Missouri's 2014 Nutrient Loss Reduction Strategy



# Total Phosphorous Rule

- Goal: Implement Missouri's 2014 Nutrient Reduction Strategy
  - Reduce phosphorus leaving Missouri entering Gulf
- Why?
  - What is purpose of reduction?
    - For protection of a designated use?
  - Is a criteria needed?

Effective October 30<sup>th</sup> 2023





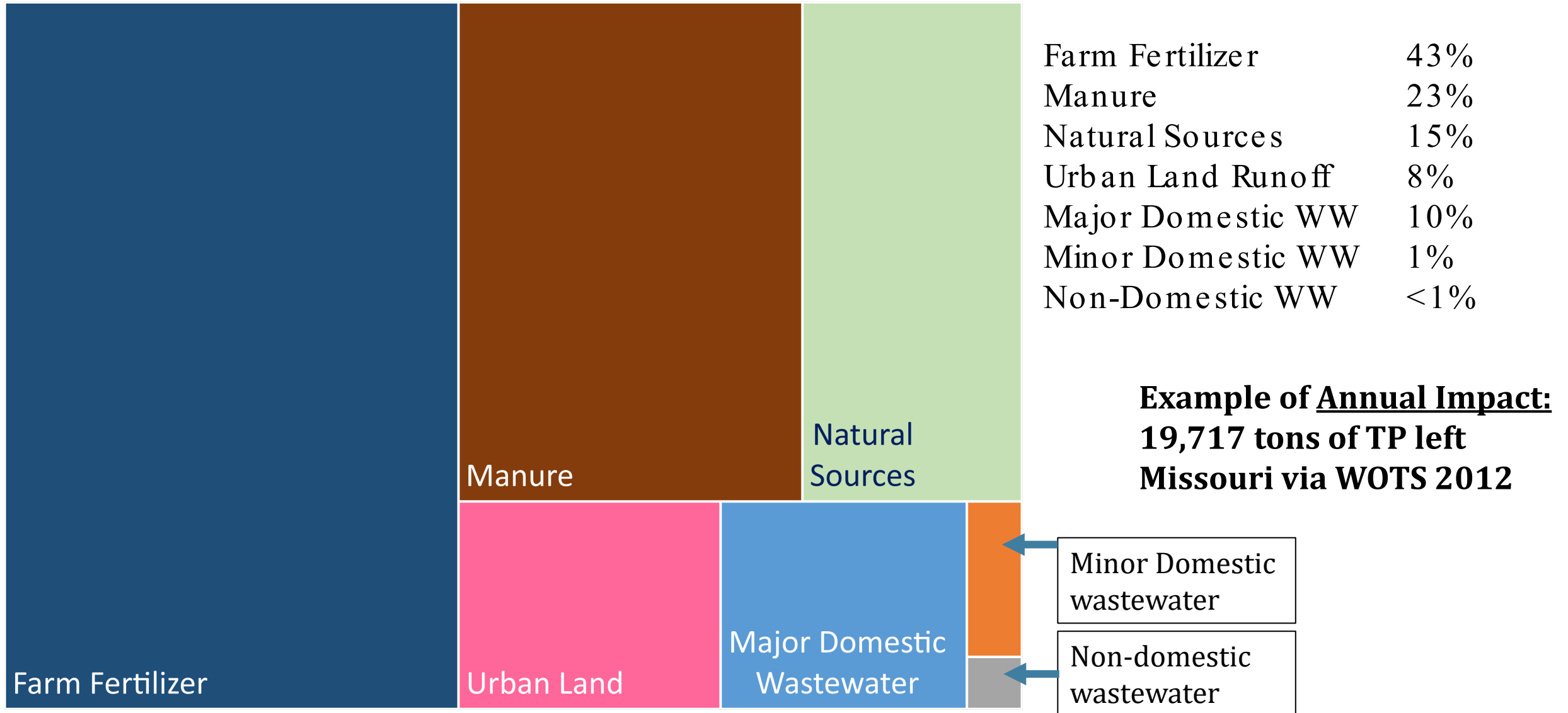
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RULES OF  
**Department of Natural Resources**  
**Division 20—Clean Water Commission**  
**Chapter 7—Water Quality**

10 CSR 20-7.015	Effluent Regulations .....	3
10 CSR 20-7.031	Water Quality Standards .....	13

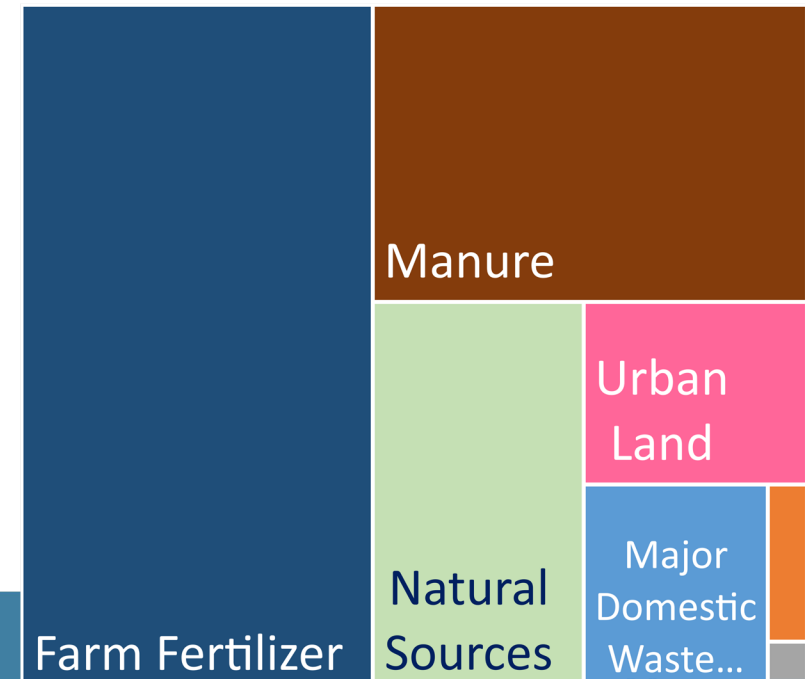
Water Quality Standards VS Effluent Regulations

# Sources of Phosphorus



# Total Phosphorous Rule

- Goal: Implement Missouri's 2014 Nutrient Reduction Strategy
  - Reduce phosphorus leaving Missouri entering Gulf
- How: Robust Stakeholder Conversations!
  - Does not meet goal of WQS, best as effluent regulation
  - Effluent reg for TP reductions in effluent of Major Dischargers
    - Domestic facilities  $\geq 1$  MGD
    - Major industrial facilities
    - 92% of all Missouri wastewater flow
      - 141 facilities
      - 3,316 total facilities in Missouri



# Why Phosphorus?

- Limiting nutrient in Missouri
- Eutrophication leading to hypoxic events
- Wastewater systems more equipped to treat
  - Chemical treatments (Al, Fe, REEs)



Left: Cyanobacteria  
Bloom in Sedalia  
2022



Right: Schindler et al  
1971

# Total Phosphorous Rule

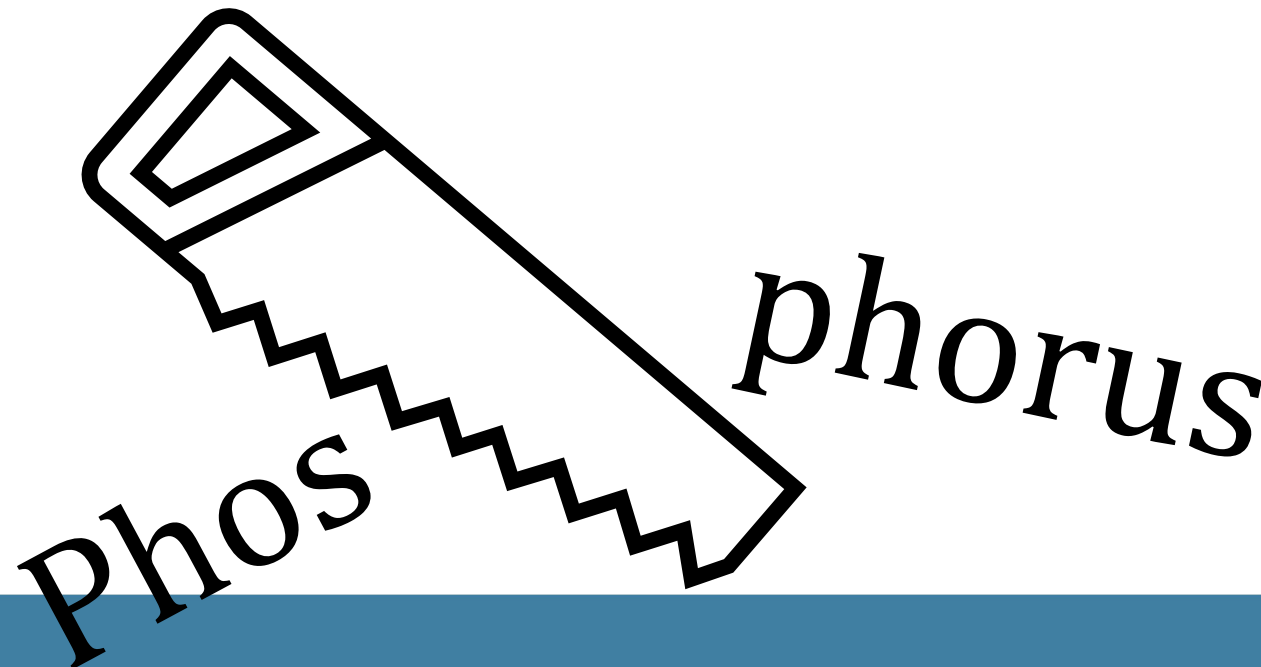
- Targeted Reduction Levels
  - Not Water Quality Criteria
  - Not Water Quality Based Effluent Limit
  - Not Technology Based Effluent Limit
- Flexibility in implementation
- Establishes Nutrient Trading
- Does not need EPA approval
  - Faster implementation





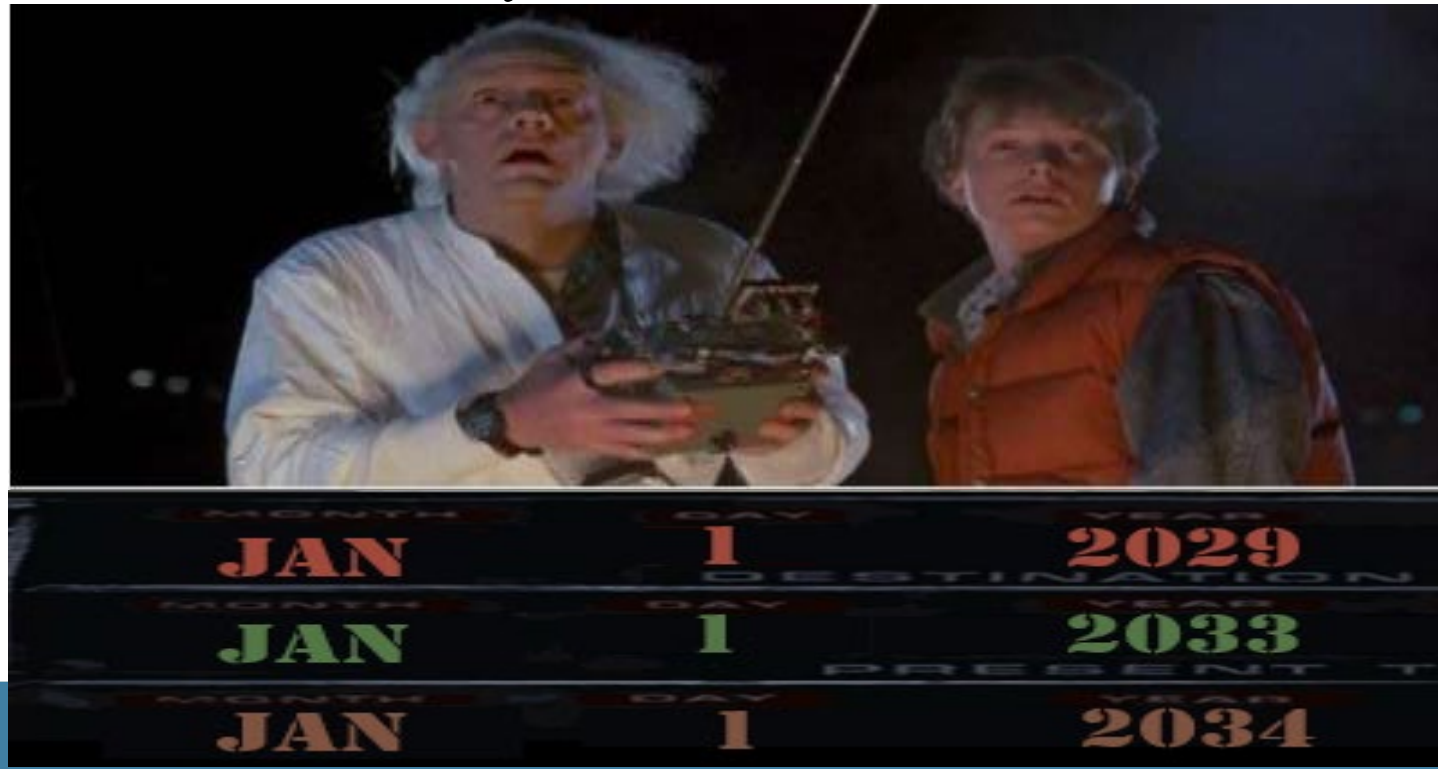
# Flexibility in Target Reduction Options

- Provide flexibility in how we permit facilities
  - 1.0 mg/L average effluent concentration
  - Mass-based equivalent of 1.0 mg/L at design flow
  - 75% reduction from influent to effluent
  - 75% reduction from effluent to effluent



# Flexibility in Implementation

- Rule effective October 30<sup>th</sup>, 2023
- Domestic facilities  $\geq$  15MGD design flow – January 1, 2029
- Domestic facilities 1 – 15 MGD design flow – January 1, 2033
- Industrial facilities – January 1, 2034



# Flexibility in Alternative Implementation Dates

- Alternative implementation dates available
  - Affordability analysis
  - Integrated management plans
  - Regionalization
  - Nutrient Reduction Master Plan
  - Aggregate assessment or allocations
  - Combined sewer systems



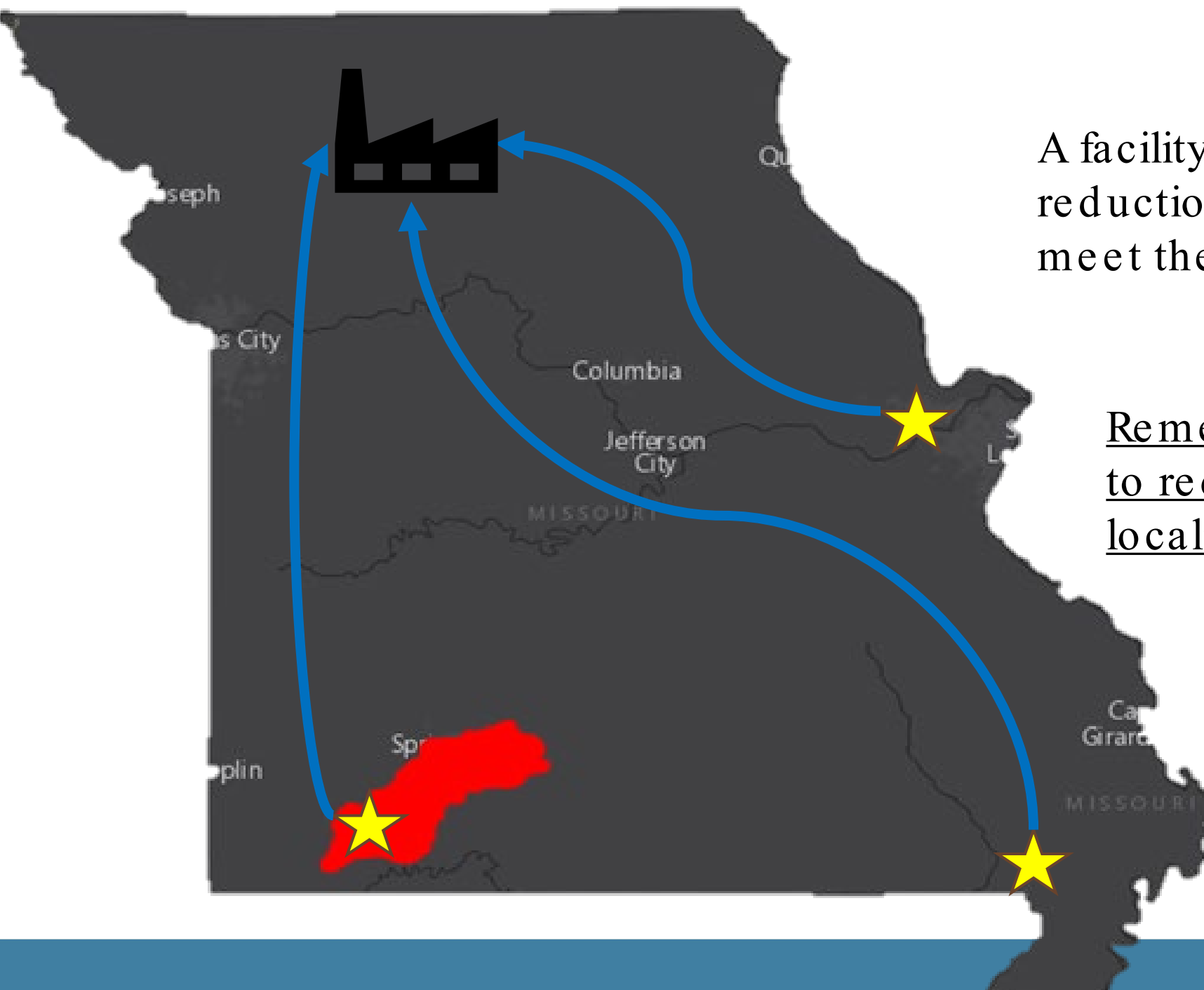
# Nutrient Trading Overview

- Compliance tool
  - May lower the cost of compliance
- May spur early adoption of upgrades, optimization, etc.
- Not just for major facilities



# Nutrient Credits

- Any facility can generate “credits”
  - Credit = Nutrient reductions
    - Reduce nutrient discharge below permitted effluent limit
    - One credit is equal to one pound of pollutant reduction below the Credit Generation Reference Point (CGRP)
- CGRP = effluent limitation, target reduction level, or current nutrient loading
- Credits can be transferred to other facilities
- Credits may not be used to:
  - reduce/eliminate/replace current nutrient reducing technologies
  - current level of treatment operating at a facility



A facility can use the nutrient reductions at other facilities to meet their permit limits

Remember: Goal of trading is to reduce TP in Gulf, not in localized Missouri watersheds

# Credit Lifespan

- Facilities may generate credits for future use/transfer
- Unrestricted Trading Zone
  - Statewide
  - Credit lifespan = 5 years
- Restricted Trading Zone
  - Imposed by department
  - TMDL or other impairment
  - Credit lifespan = 2 years inside restricted zone, 5 years if transferred out

# Credit Generation/Trading without Permitted Limits

- Facility without nutrient limits can request ability to trade
- Determine Credit Generation Reference Point (CGRP)
  - Submit 5 years of representative effluent data
- Must conduct monthly effluent monitoring
  - Reductions below CGRP = credit generation
- Not an “effluent limit”
  - No violation if in exceedance



# Nonpoint Source Trading Program

- Additional tool for compliance
- Being drafted
- Allow nonpoint source facilities to generate credits
  - Credits generated when field runoff is reduced
  - Installation of BMPs



# Trading: Supporting Links and Documents

Missouri's Nutrient Loss Reduction Strategy:

<https://dnr.mo.gov/water/what-were-doing/water-planning/nutrient-loss-reduction-strategy>

Missouri's Point Source Nutrient Trading Program:

<https://dnr.mo.gov/water/what-were-doing/initiatives/mo-nutrient-trading-program>

# Other Nutrient Effluent Rules



# Other Nutrient Effluent Rules

- 1999 – TP limits for Table Rock Lake & Lake Taneycomo
  - 0.5 mg/L TP at 138 facilities
- Not a WQS
  - Reduction not based on designated use



# Unique Ways to “not adopt a criteria”

- Understand the purpose of the criteria
- Can water quality be improved without focusing on a designated use?
- Effluent regulations and WQS must be viewed together
  - Two tools in same toolbox
  - Work together to increase water quality in different ways
- Criteria is not always needed



# Missouri's Triennial Review

- Mollusk Ammonia
- Bacteria and Pathogens
- Aluminum
- 304(a) Human Health

An aerial photograph of a river with a prominent white sand bar in the upper left. The water is a mix of light green and dark blue, with ripples and currents visible. The banks are covered in green vegetation.

## Discussion and Questions

### Contact Information

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WQS email – [wqs@dnr.mo.gov](mailto:wqs@dnr.mo.gov)