COMMUNITY CONVERSATION ON THE FUTURE OF LAKE MONROE

FRIENDS OF LAKE MONROE

Maggie Sullivan, Lake Monroe Watershed Coordinator

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Lake Monroe – Largest Lake in Indiana

(Technically a Reservoir – Constructed 1964)

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Lake Monroe

Recreation

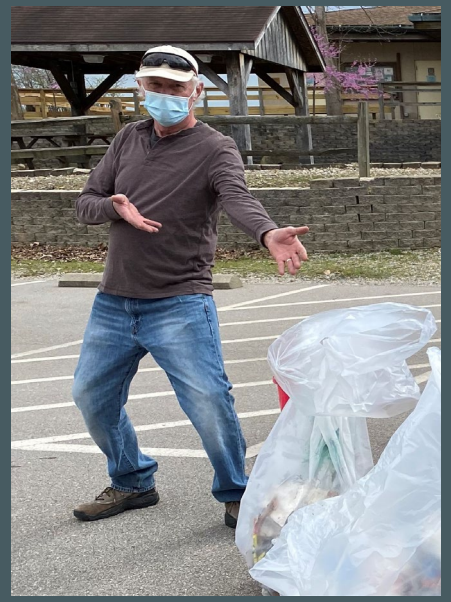
Drinking Water

Wildlife

Flood Control

Friends of Lake Monroe

- Non-profit Organization
  - Founded 2016
  - Preserve & Enhance Lake Monroe
  - Coordinated Development of Watershed Management Plan



2022 Lake Monroe Watershed Management Plan

- Developed 2019 – 2022
- Multiple Funding Sources
  - 319 Grant
  - City of Bloomington
  - Monroe County Stormwater
- Steering Committee
  - 20 members representing stakeholders in Monroe, Brown, and Jackson Counties.

What is a Watershed Management Plan?

- Clear plan of action for addressing water quality goals
- Identifies problems and proposes solutions
- Considers the water body AND its watershed

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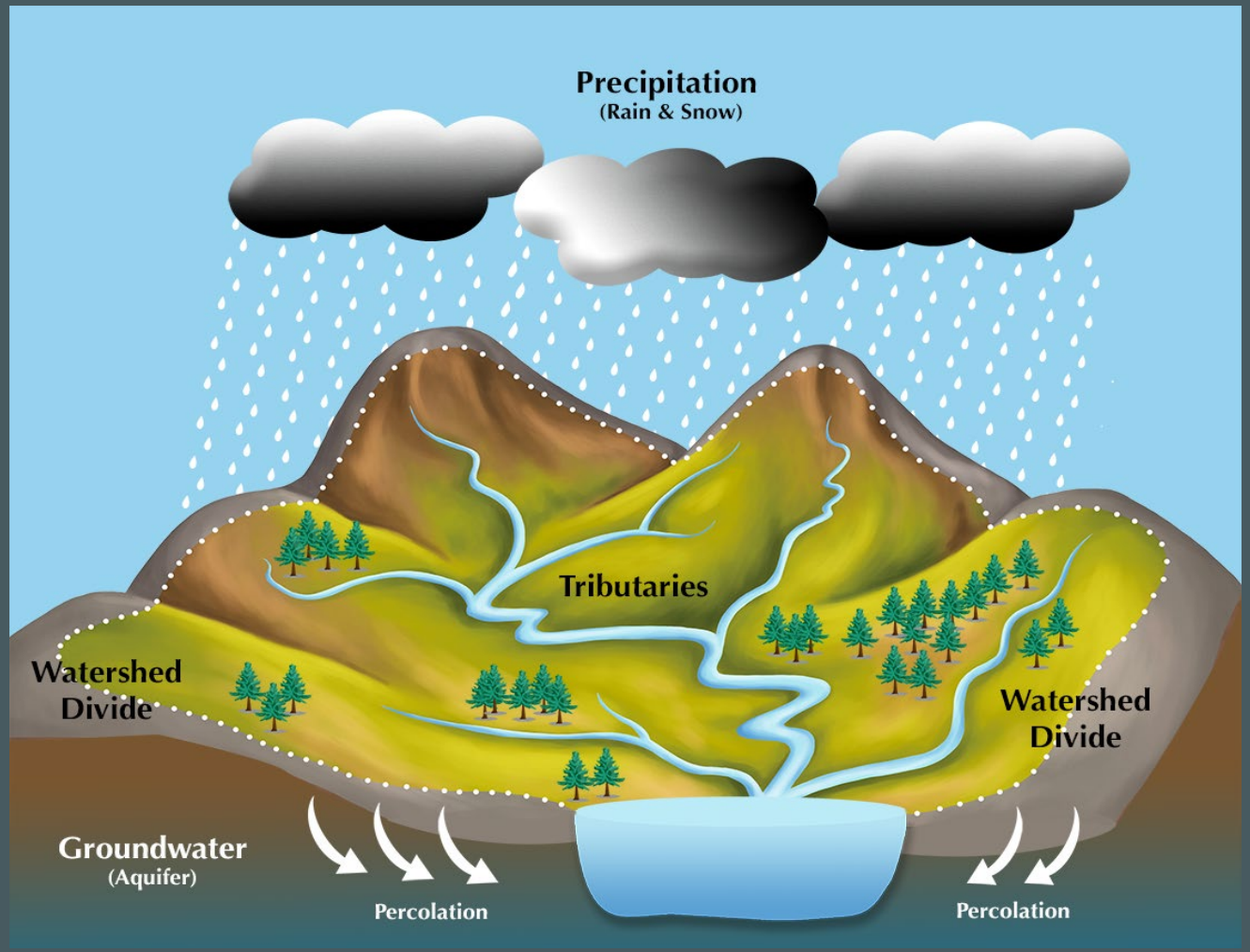
What is a Watershed?



The area of land that drains to a particular water body.

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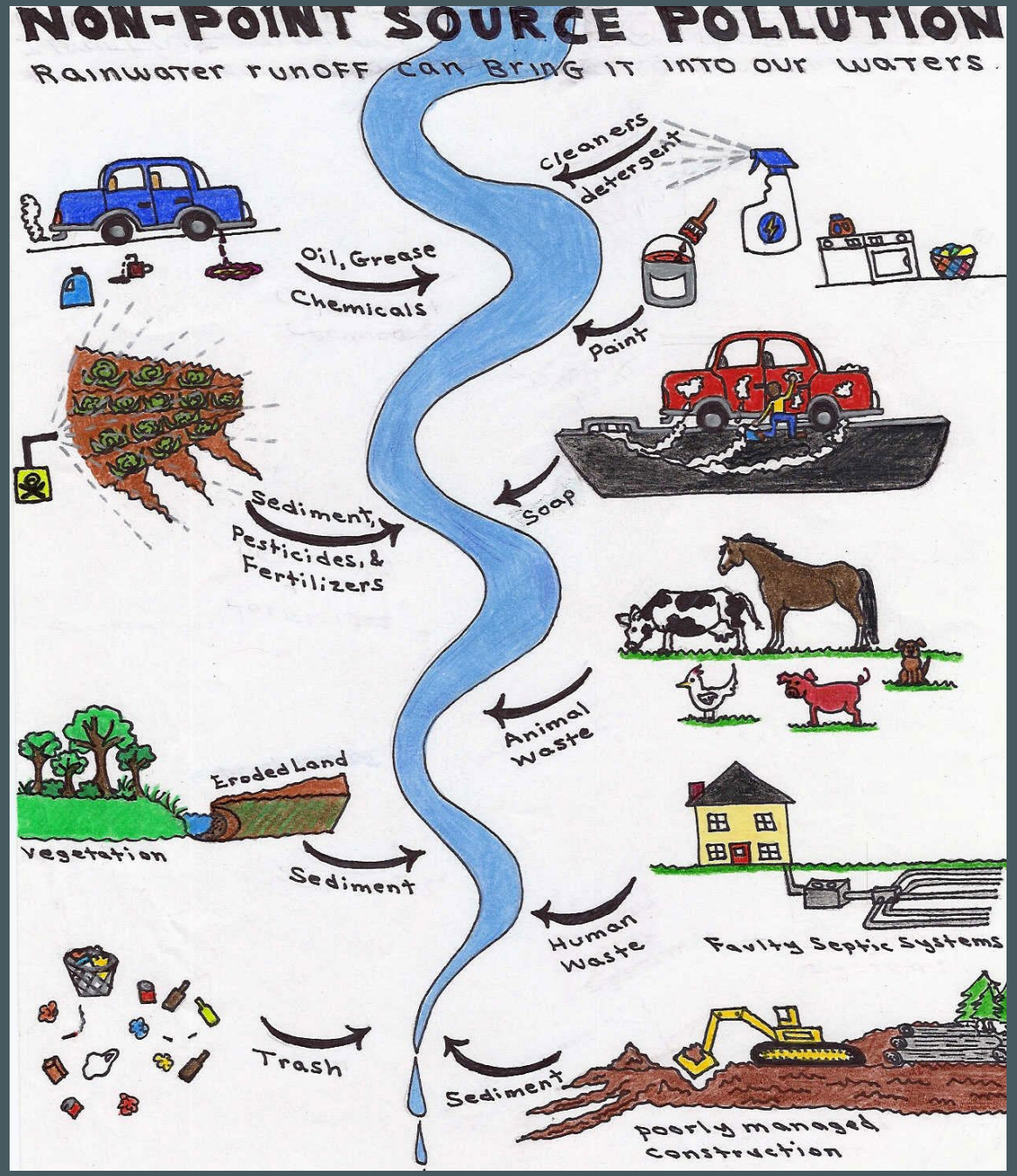
Why Do Watersheds Matter?

Anything on the ground in the watershed can get washed into the lake when it rains.



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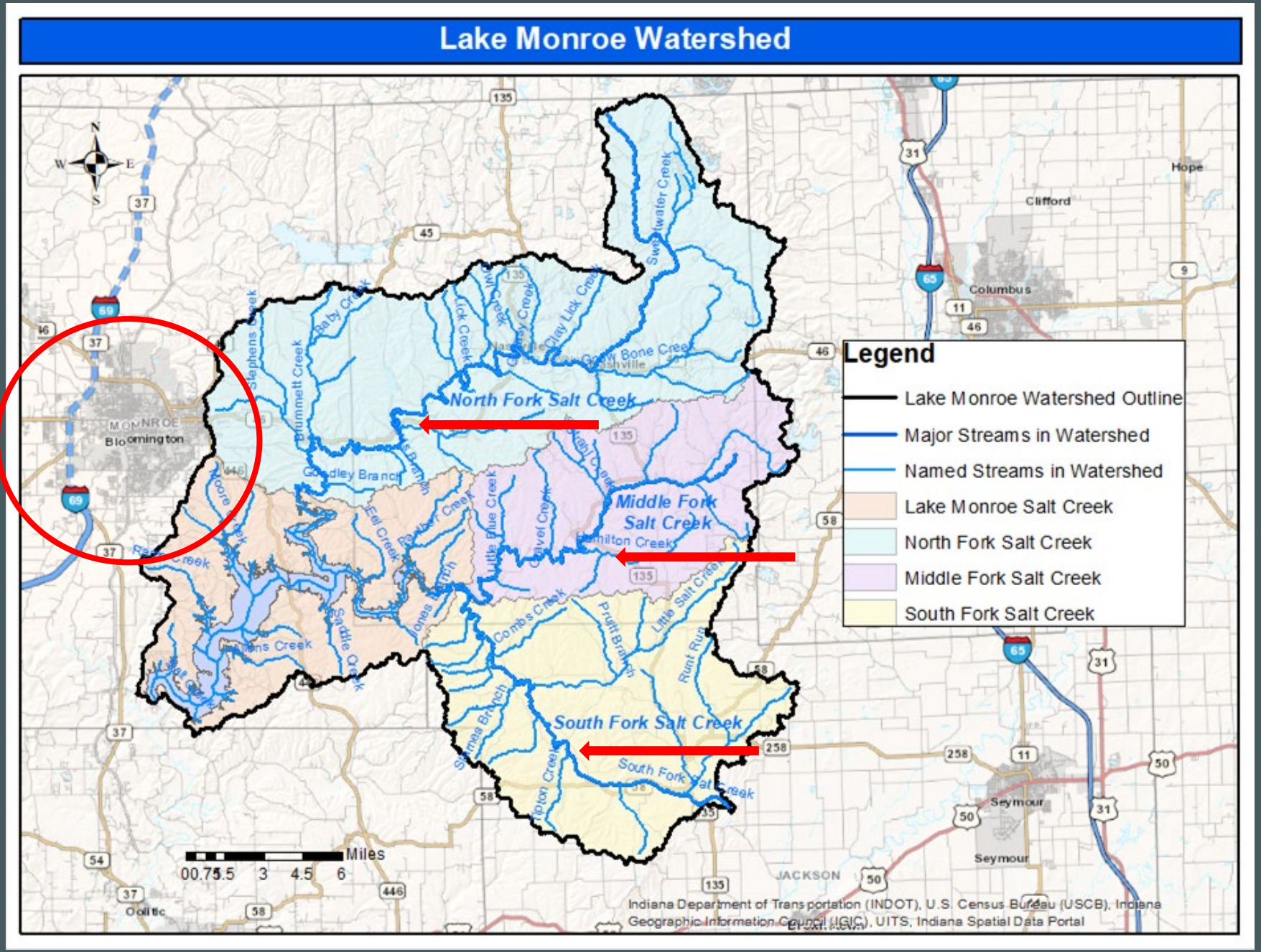
Lake Monroe Watershed by County

- 56% Brown
- 21% Monroe
- 21% Jackson
- 2% Bartholomew
- <1% Lawrence

~440 square miles

Note that Bloomington lies outside the watershed (it does not drain to Lake Monroe).



Planning Components

- Gathering Data
- Analyzing Data
- Setting Goals
- Creating Action Plan

- Education and Outreach!!

Education and Outreach

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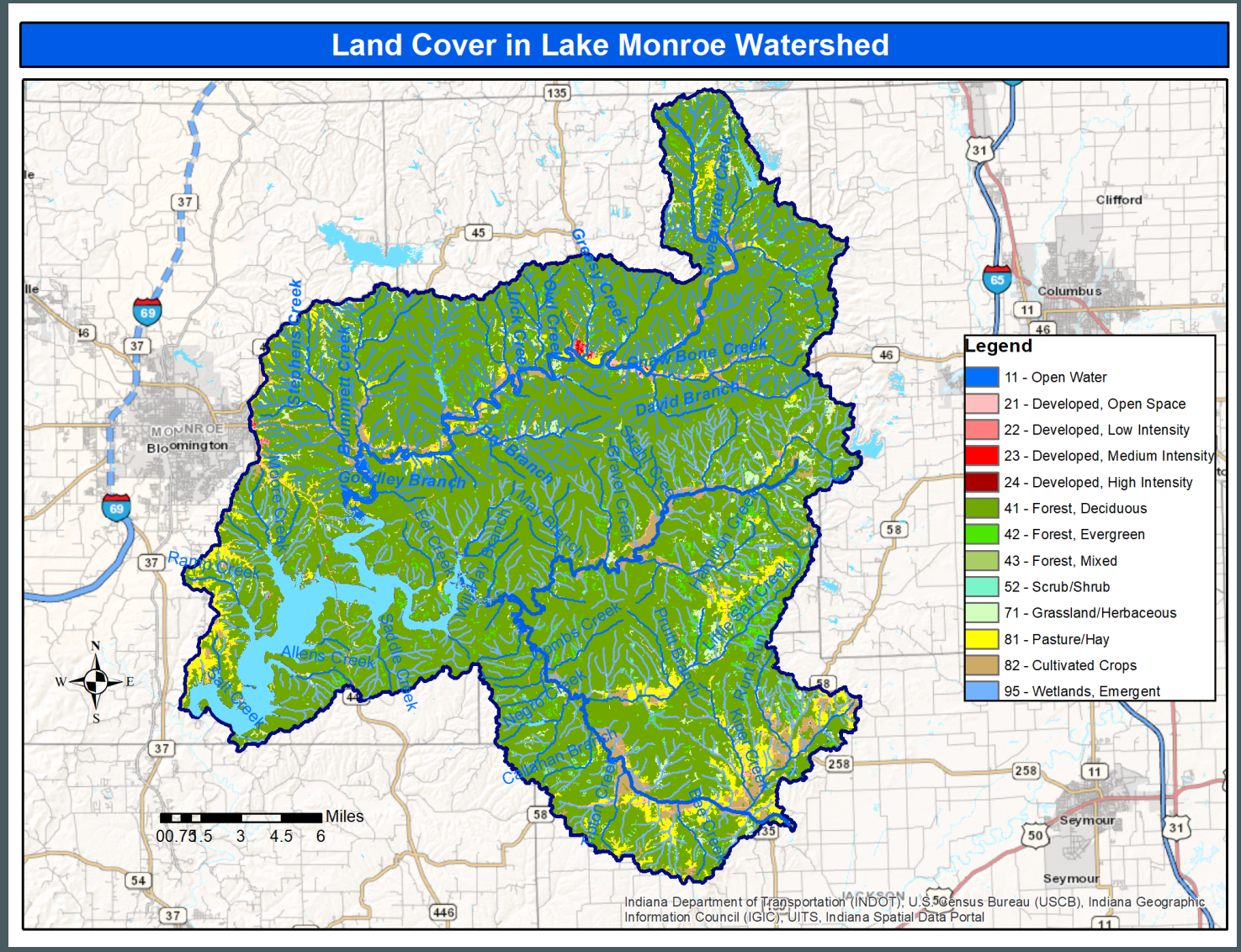
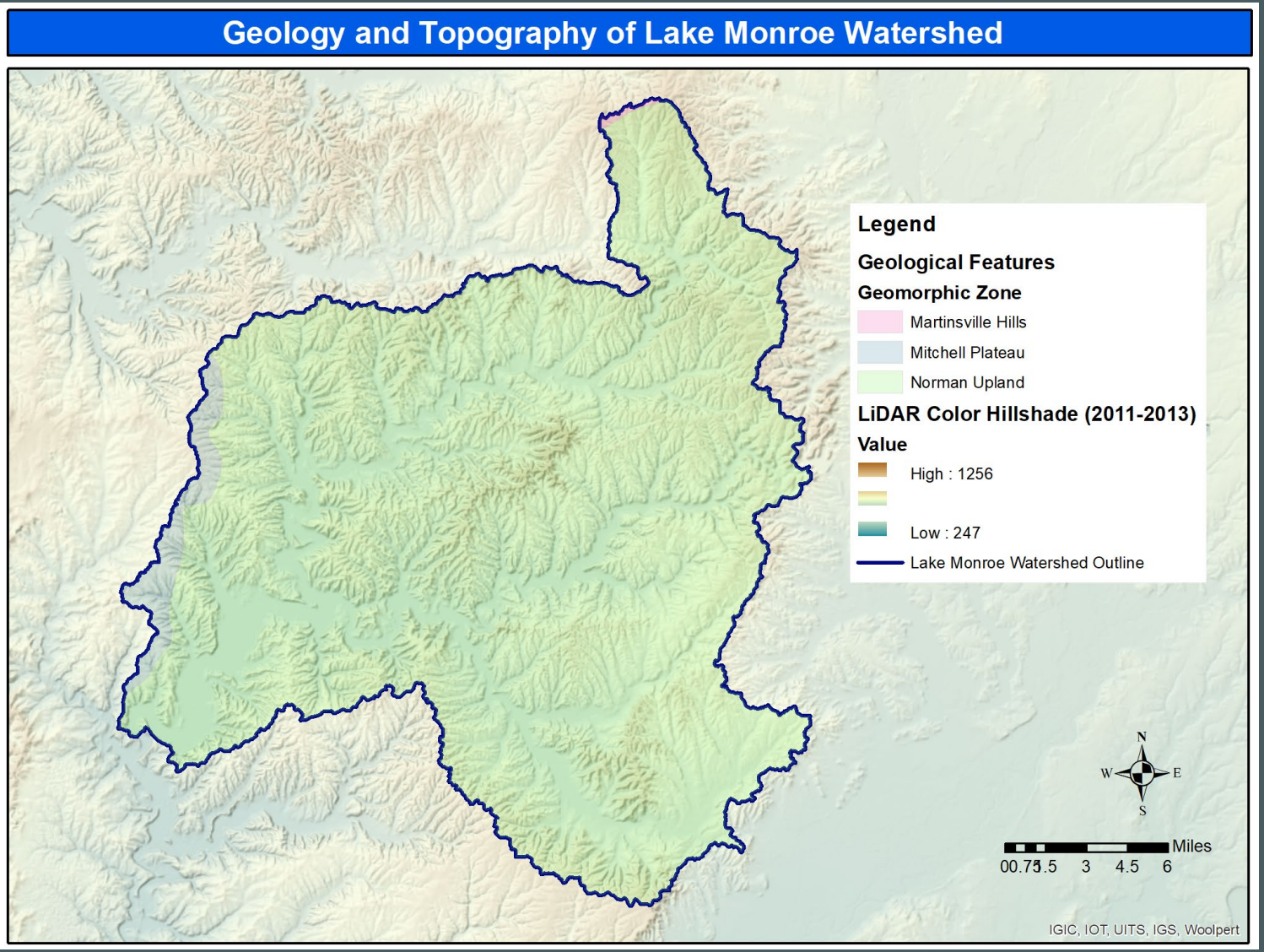
Gathering Data

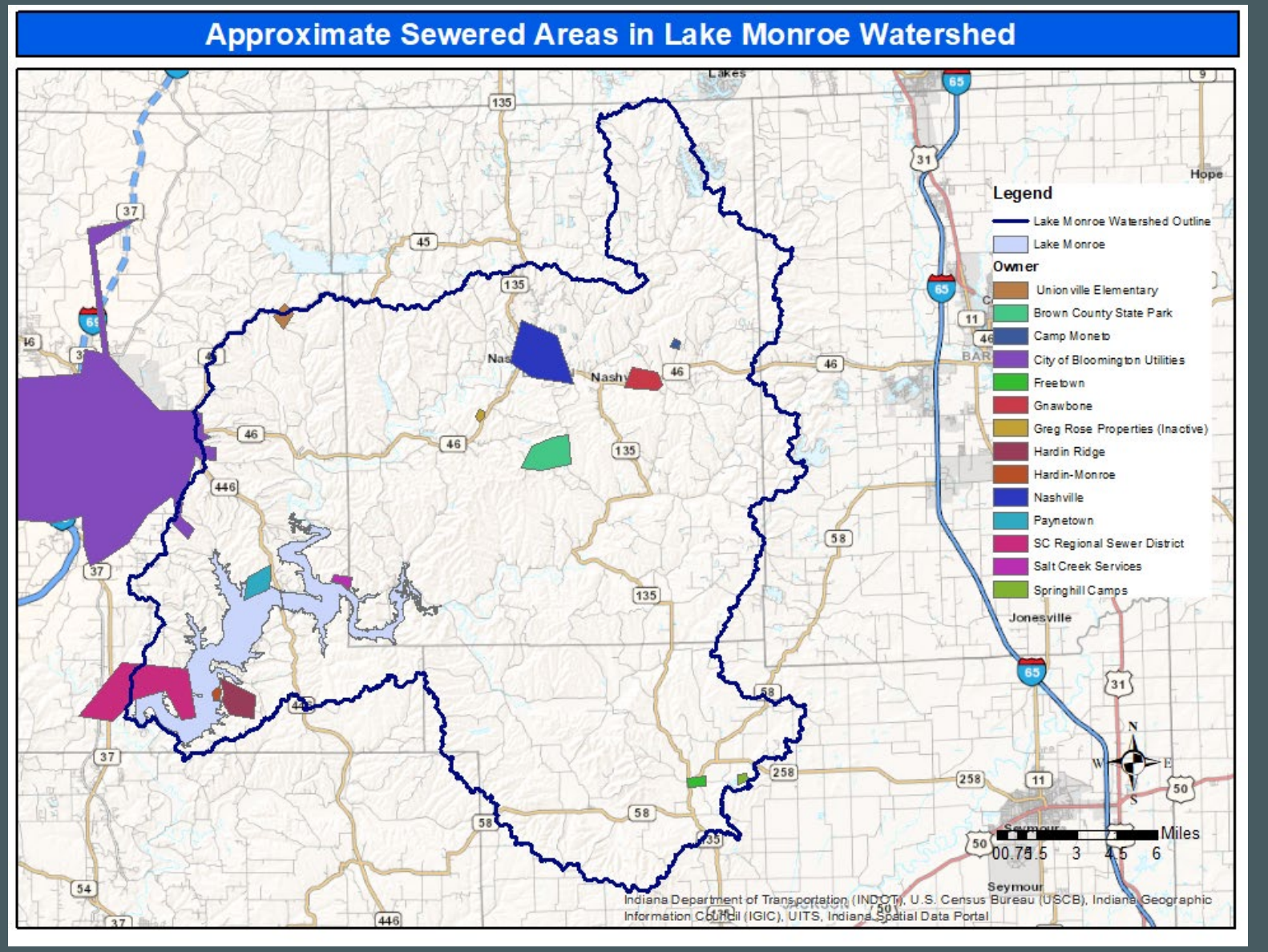
Existing Data – Land Cover



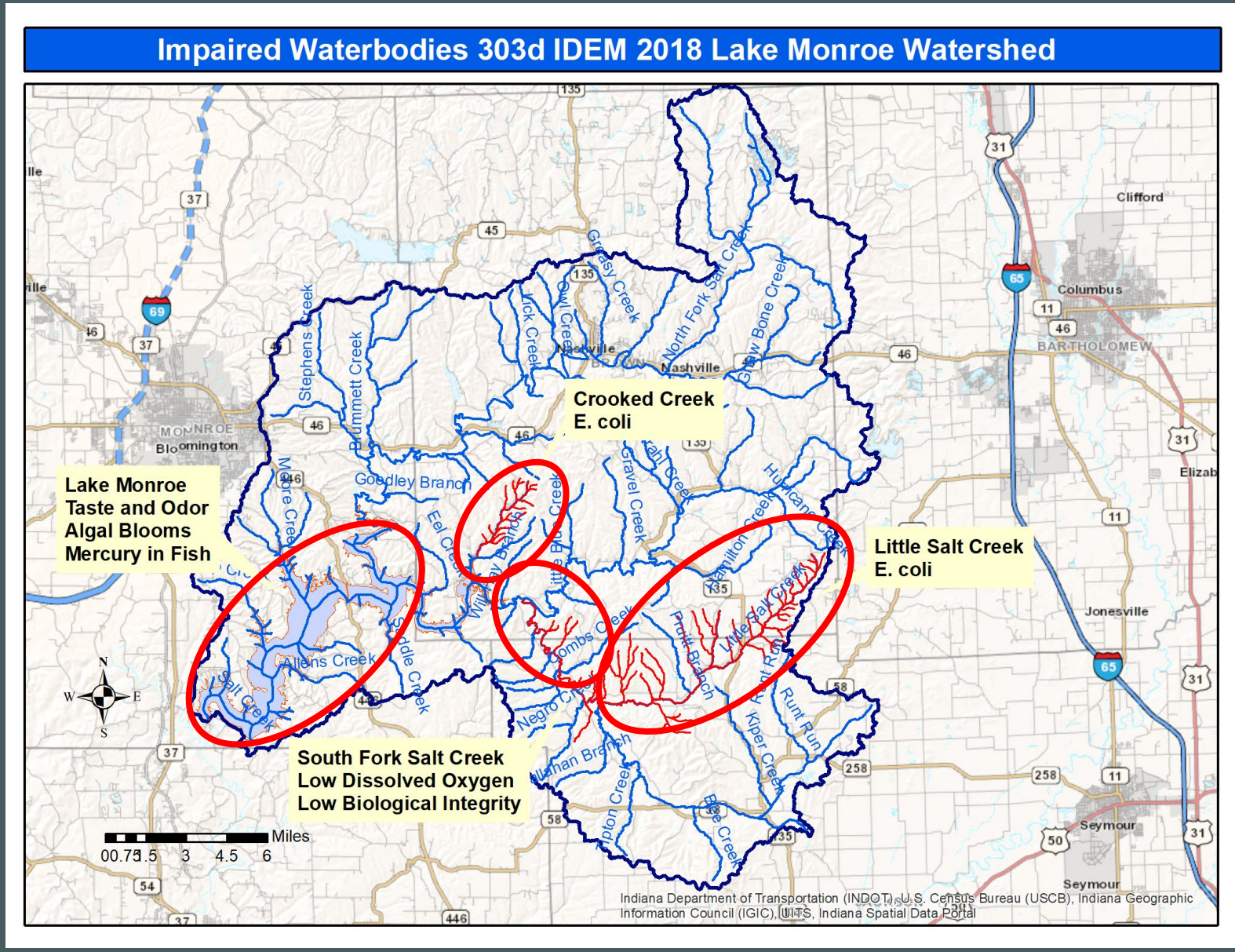
Existing Data – Topography



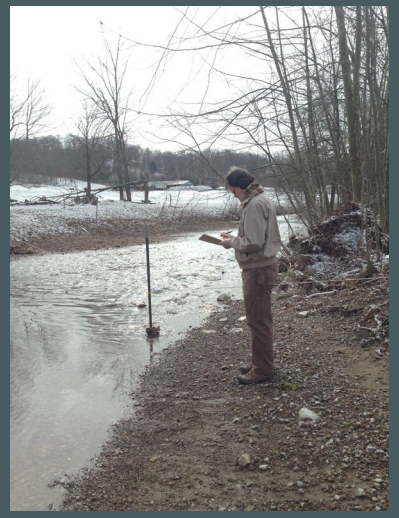
Existing Data – Sewer Services

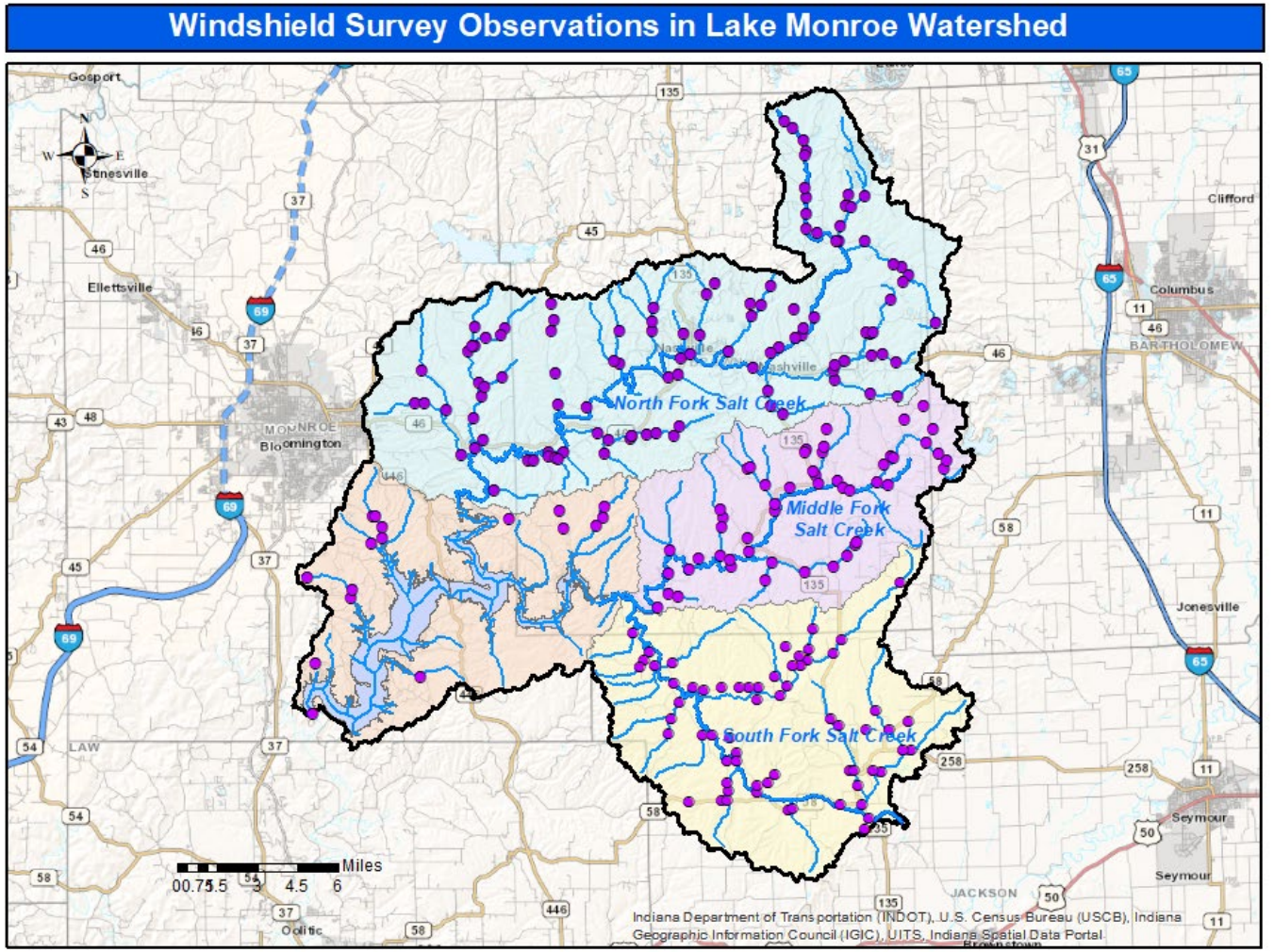


Existing Data – Known Impairments



Observation of 242 Stream Crossings





- Erosion
- Land Use
- Issues

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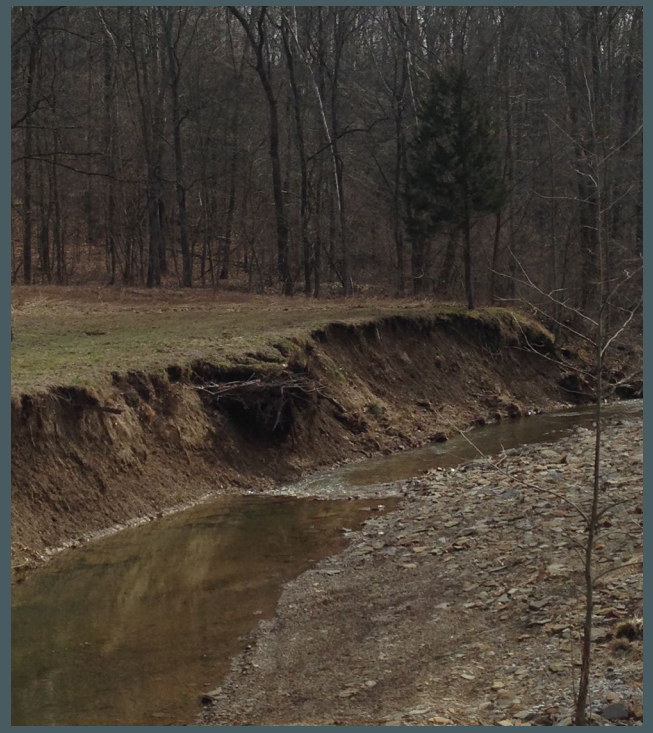
Streambank Erosion



Riparian Buffer

Riparian Buffer – The vegetation growing along a lake or stream. Perennial vegetation stabilizes the stream bank and filters runoff. Trees have the added benefit of shade, which lowers water temperatures and increases dissolved oxygen levels.

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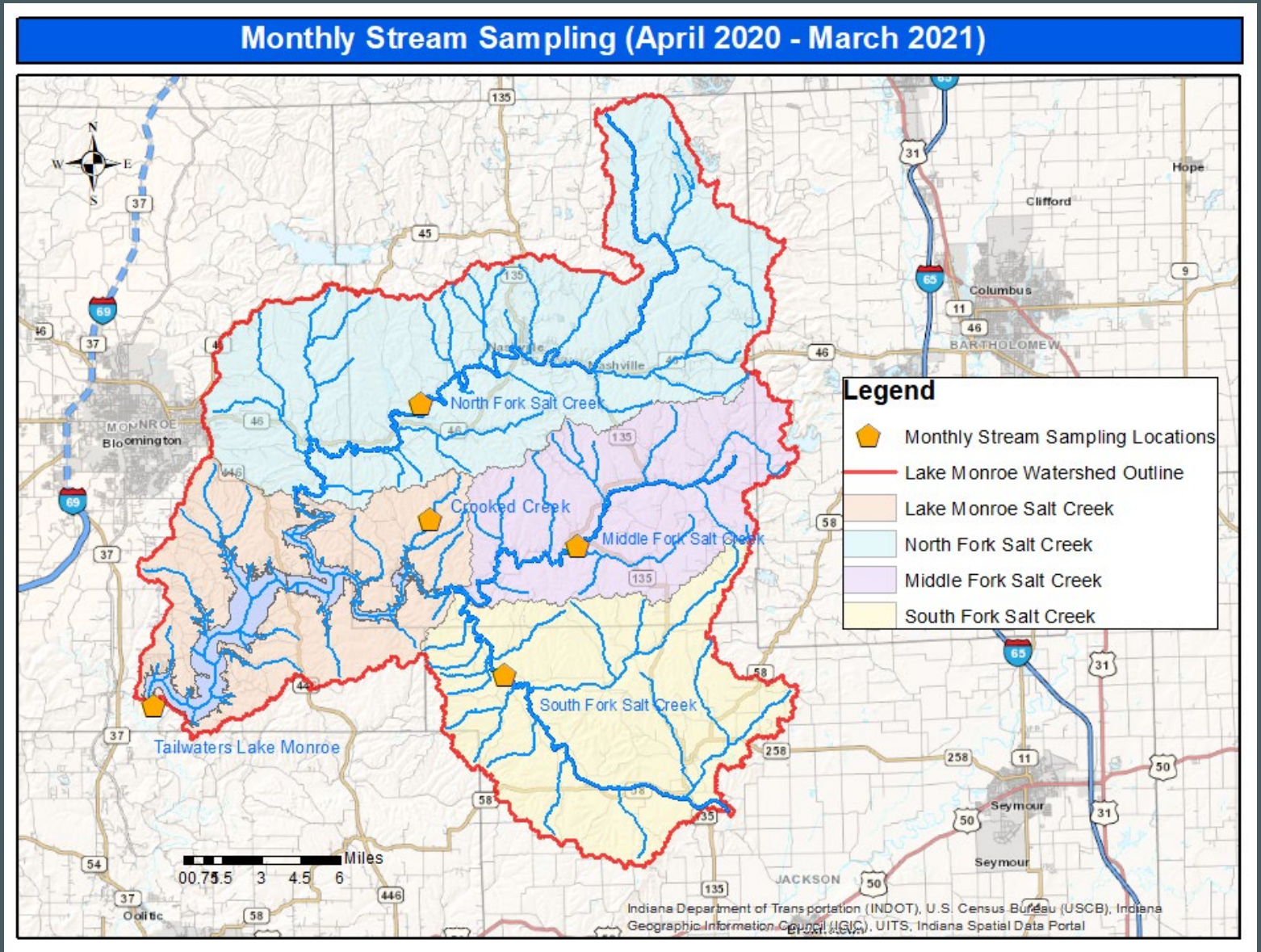
Water Quality Monitoring

Tributary Sampling

Monthly at five locations

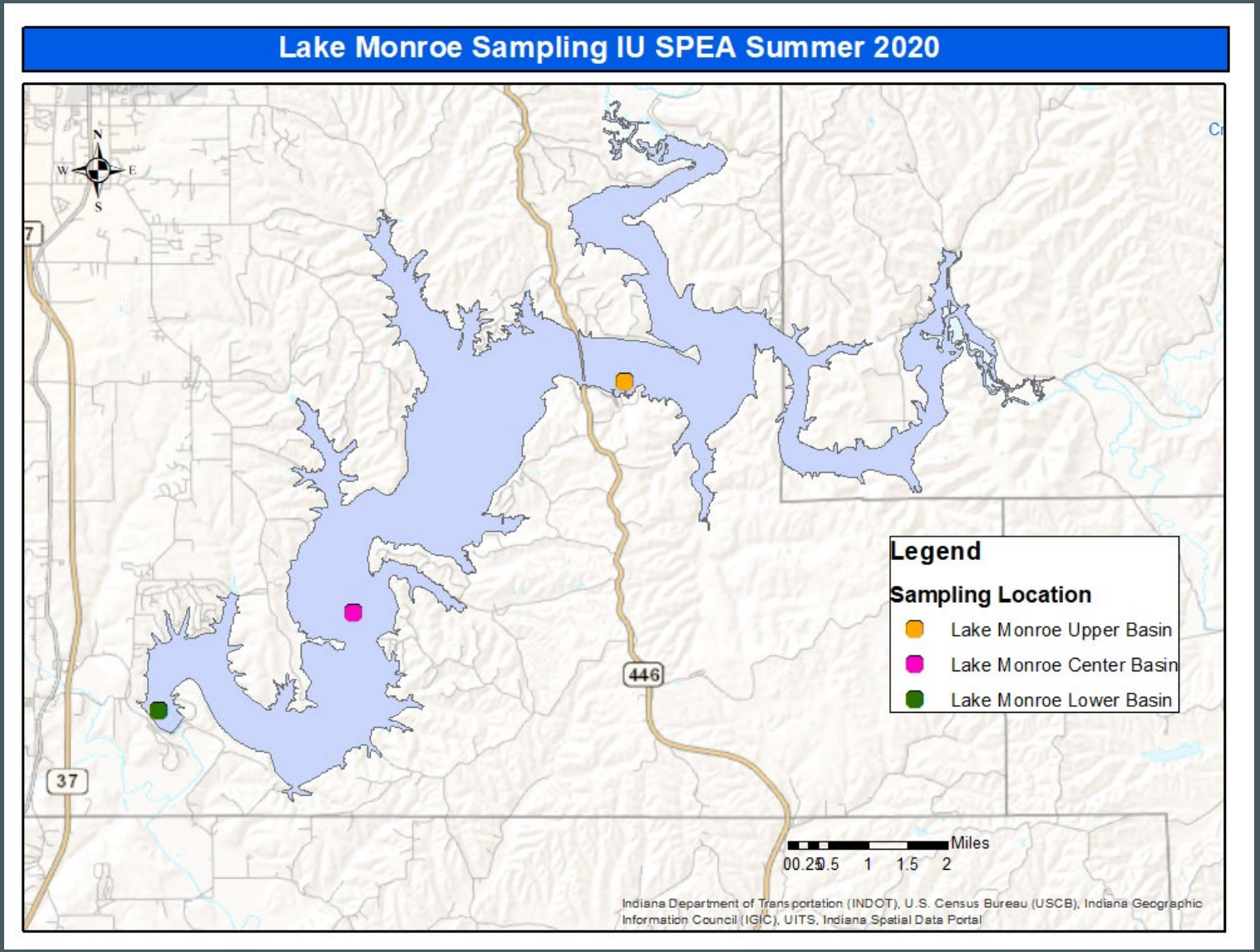
- North Fork Salt Creek
- Middle Fork Salt Creek
- South Fork Salt Creek
- Crooked Creek
- Lake Monroe Tailwaters



Lake Monroe Sampling

Monthly Apr– Oct 2020

- 3 sample locations
- 2 depths

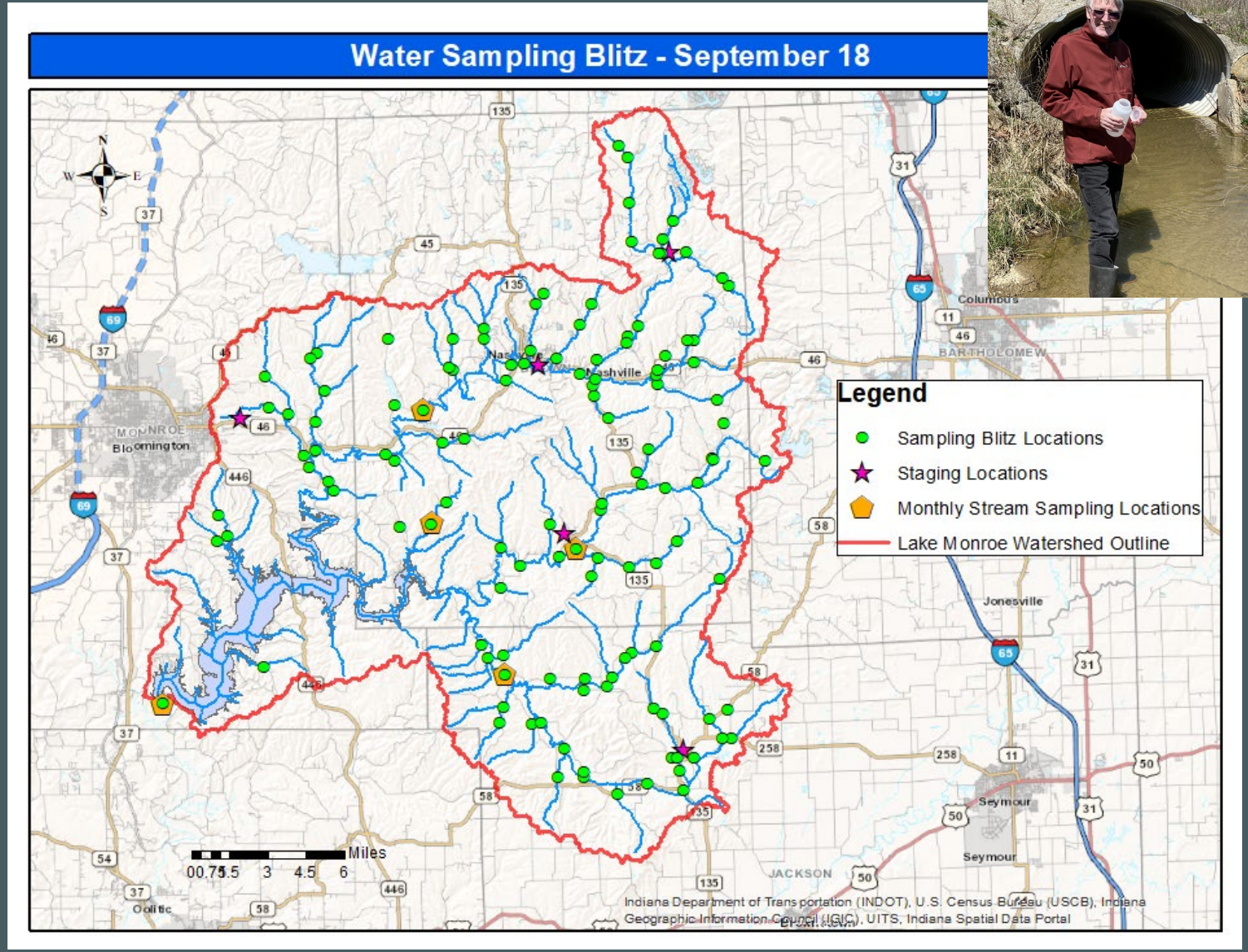


Watershed Sampling Blitz

Watershed Sampling Blitz

- 125 locations
- 70+ Volunteers
- 2 sampling dates
  - Fall 2020 (September 18)
  - Spring 2021 (April 2)

Snapshot view of water quality.
Help identify potential sources.



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Stakeholder Concerns

Community Concerns

Two community forums

- Bloomington
- Nashville

Over 100 attendees

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Top Threats

- Sediment
- Nutrients
- E Coli

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Sediment

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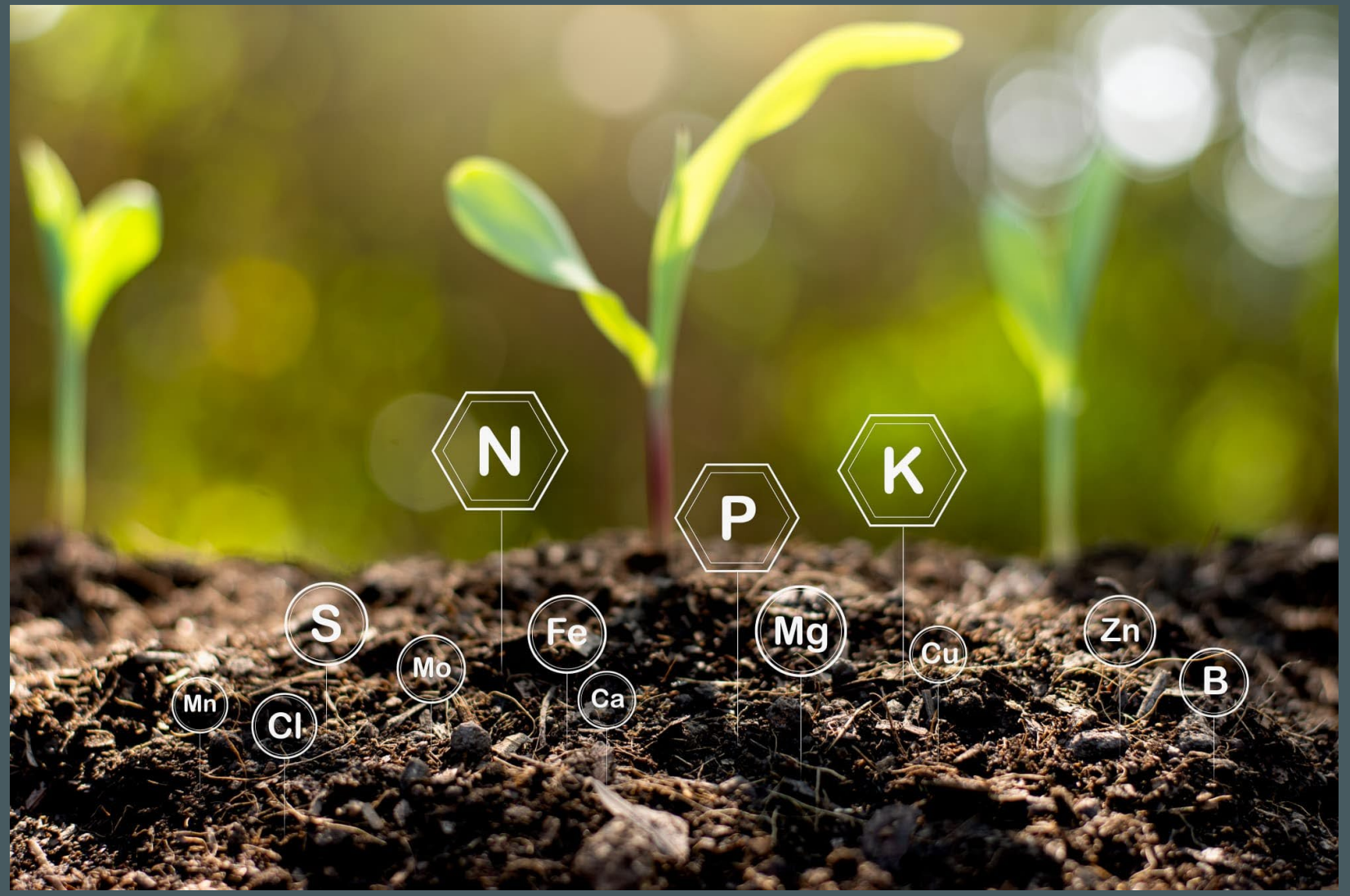
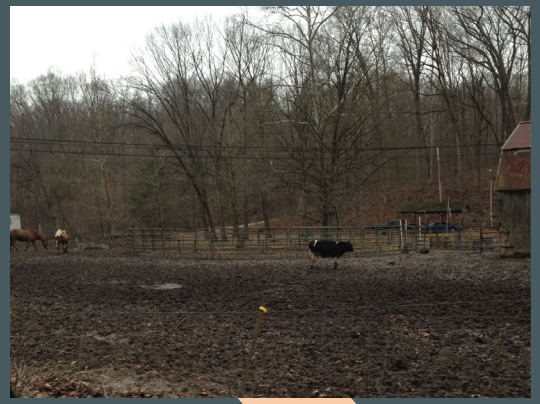
Sediment → Not Just Soil



Sediment – Potential Sources



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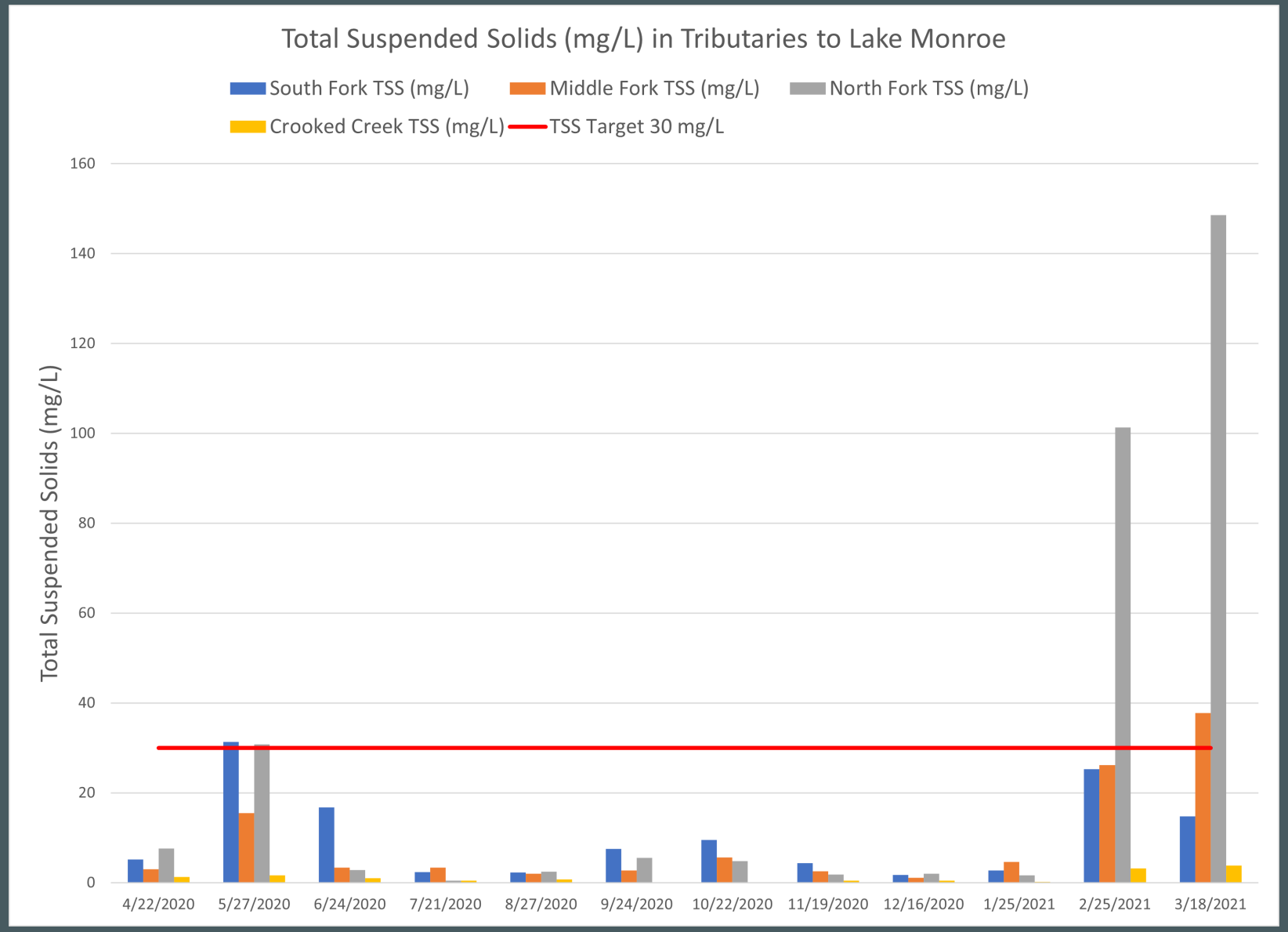
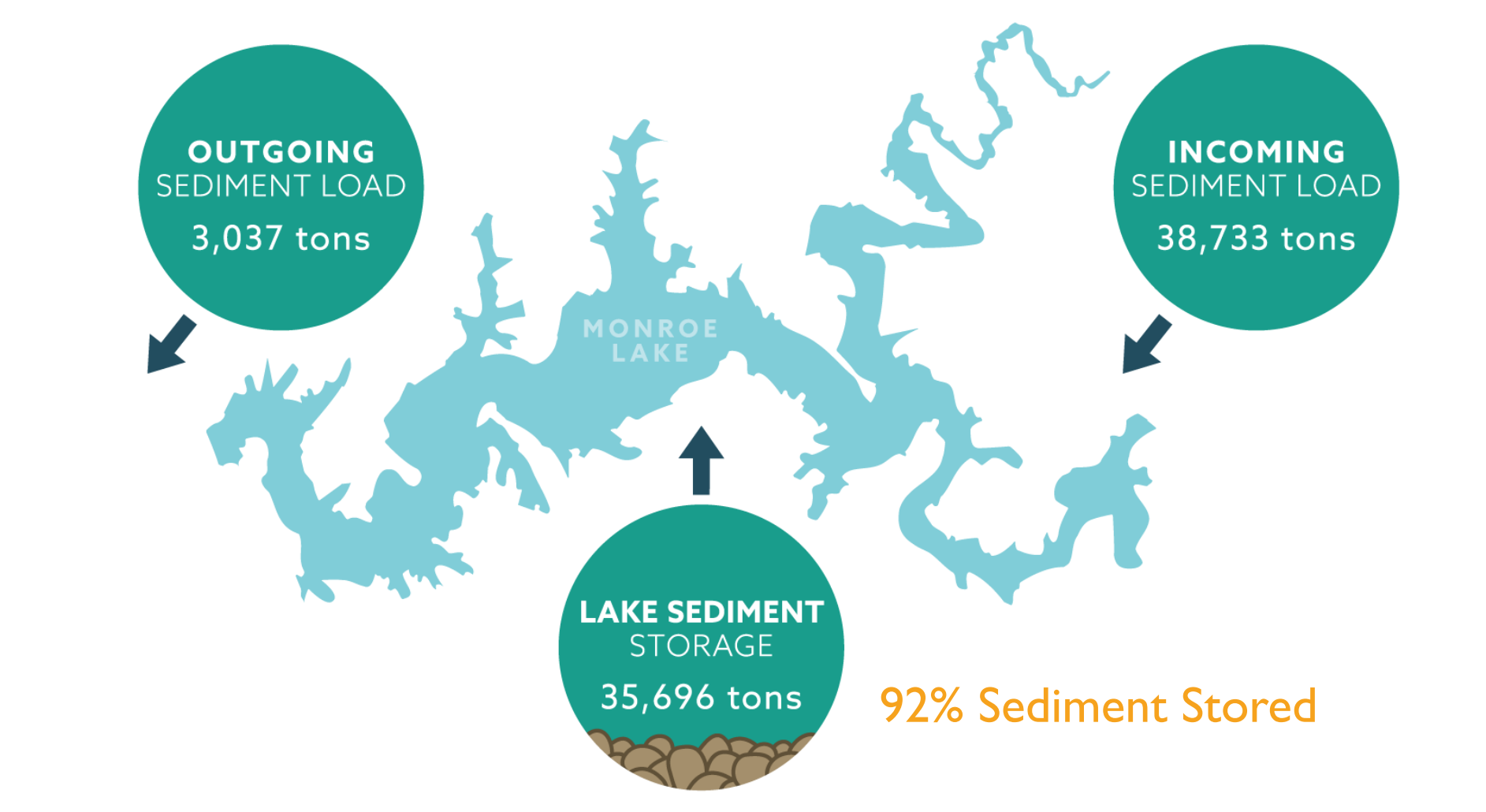
Sediment Load is Variable



Sediment Storage in Lake Monroe



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Nutrients

Nutrients → Harmful Algal Blooms

- Limits Recreation
- Potential Health Impact
- Increases Complexity of Drinking Water Treatment

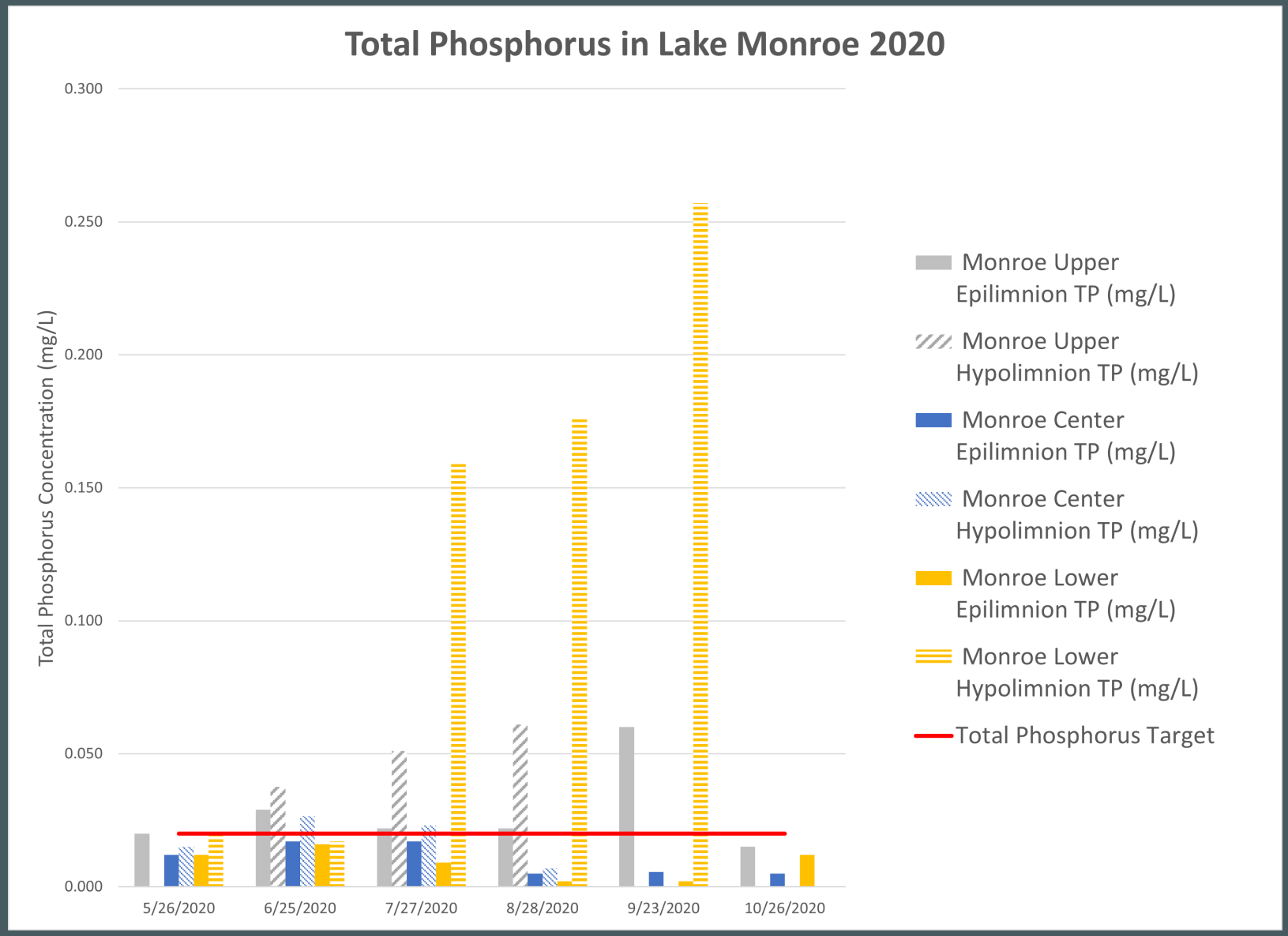
Harmful Algal Blooms

Contributing Factors

- High Nutrient Levels
- Low Flow/Movement
- Warm Temperatures

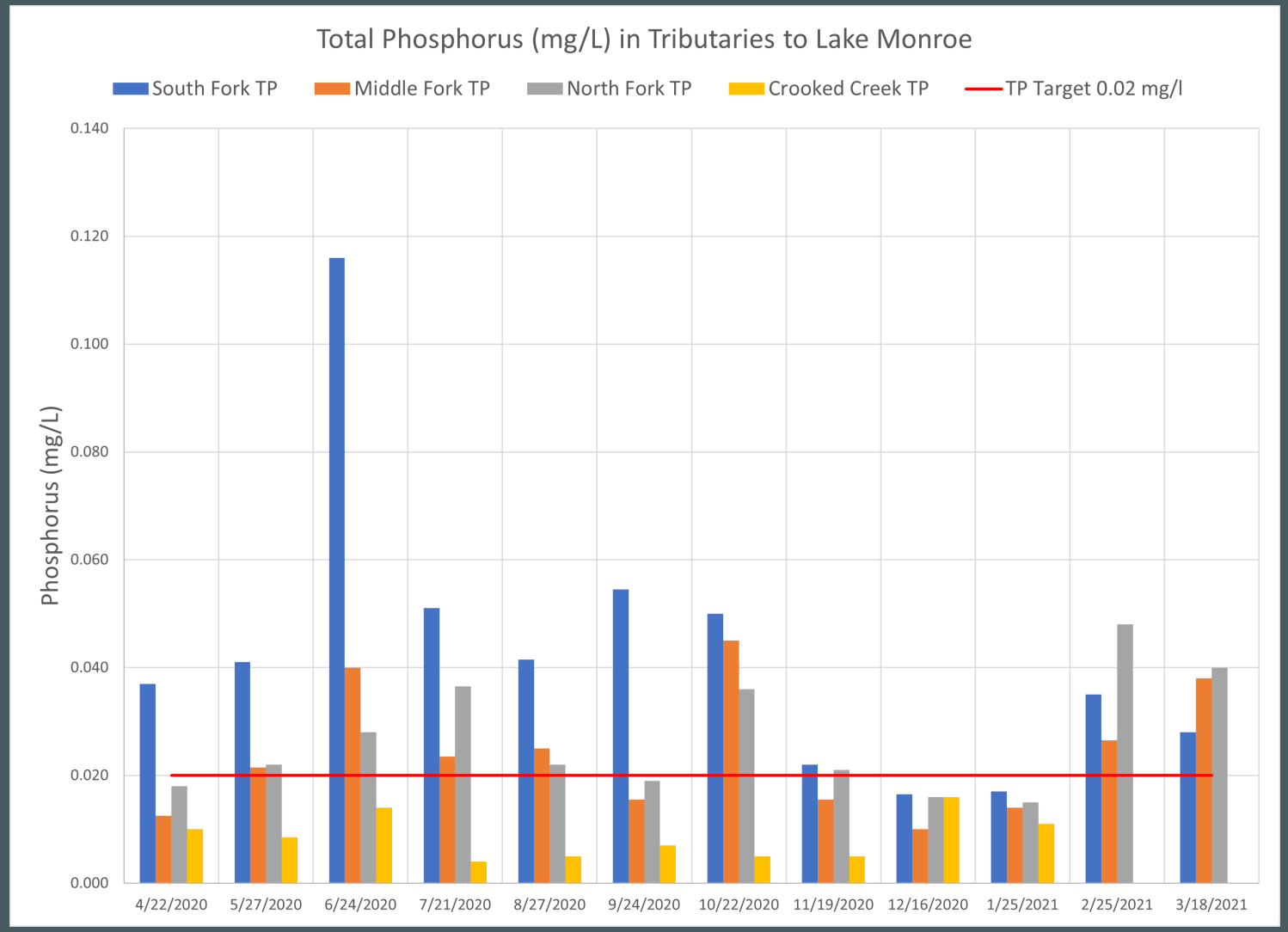
Nutrients – Potential Sources

Phosphorus Concentrations in Lake Monroe



- 86% of hypolimnion samples > 0.02 mg/L
- 25% of epilimnion samples > 0.02 mg/L
- Eutrophic

Phosphorus Concentrations in Main Tributaries



Samples > 0.02 mg/L

- 83% of South Fork
- 58% of Middle Fork
- 67 % of North Fork

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E. coli

Why is E. coli a Problem?

- Indicator of Fecal Contamination (a.k.a. Poop)
- Potential Health Impact
- Limits Recreation

Sources of E. Coli

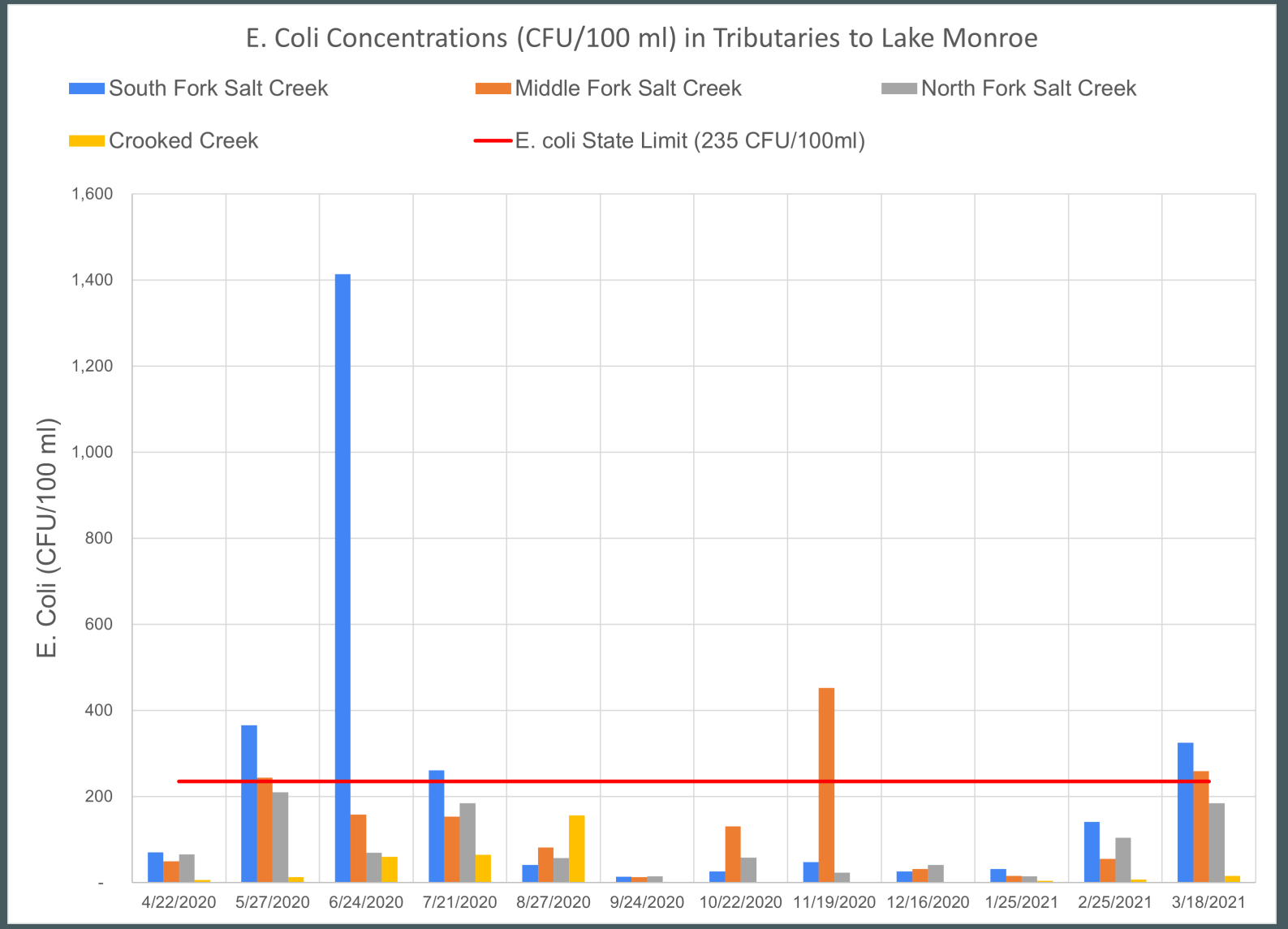
E. Coli in Lake Monroe

- Very Low Levels in 2020
  - < 15 CFU/100 ml
  - Well below state standard of 235 CFU/100 ml

- However, historic data from Hardin Ridge Beach shows exceedances in 2015 and 2016

8/6/2015	> 2,400	MPN/100 mL
8/27/2015	727	MPN/100 mL
7/20/2016	> 2,400	MPN/100 mL
8/22/2016	632	MPN/100 mL

E. Coli in Tributaries



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Set Goals

Calculating Needed Pollutant Reduction

	Current Phosphorus Load (lbs/yr)	Current Sediment Load (tons/yr)	Current Nitrogen Load (lbs/yr)	Current E. coli Load (CFU/yr)
Current Load	93,201	24,083	404,597	1.447E+15
Target Load	19,103	14,327	343,853	9.61E+14
Needed Reduction	**74,098**	**9,992**	**80,204**	**6.56E+14**

Percent Reduction	**80%**	**41%**	**20%**	**45%**

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Identify Critical Areas

Critical Areas – Source Defined

- Areas with active agriculture and resource concerns
- Forestry sites with active erosion
- Stream sections with insufficient riparian buffer (less than 20 feet)
- Stream sections with bank erosion
- Lakeshore sections with bank erosion, or
- Areas with failing septic systems.

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Develop Action Plan

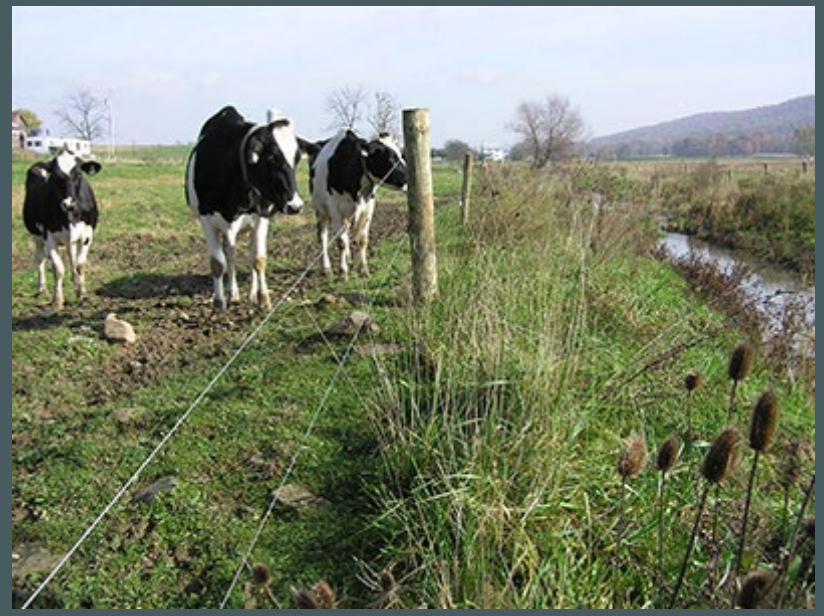
Action Plan

- Address sources of pollution in the watershed by changing land use practices
- Measure progress
  - How many acres impacted
  - How many tons of sediment kept out of lake

Action Plan = Voluntary

- Incentives
  - Cost-Share Program
- Education
  - Demonstration Sites
  - Field Days
  - Workshops
  - Brochures

Promote Agricultural Best Management Practices for Livestock



Fencing livestock out of streams.

Stabilizing areas with heavy livestock usage.

Promote Agricultural Best Management Practices for Crops

Low-till or no-till planting, cover crops, and grassy buffer strips

Promote Forestry Best Management Practices

Restore and Enhance Riparian Buffers

Restore and Preserve Floodplain

Promote Septic System Maintenance

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Stabilize Sections of Lakeshore and Streambanks

Educate, Educate, Educate

You're not just fertilizing the lawn.

nsp
neponset stormwater partnership

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Activate Community Members

Collaborate Between Groups

- Multiple Counties
- State Land
- Federal Land
- Farmers
- Foresters
- Conservationists
- Recreational Users

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Watershed Management Plan Implementation

Lake Monroe Community Action Initiative (Feb – Nov 2022)

- Promote the Lake Monroe Watershed Management Plan
- Educate about water quality issues
- Launch Pilot Septic System Maintenance Cost-Share Program in Monroe County

Implementation 319 Grant (Anticipated Nov 2022 – May 2025)

- Total Project Cost $299,200
  - Cost-Share Program for Best Management Practices
  - Agricultural, Forestry, and Septic Workshops
  - Educational Mailers
  - Boat Tours and Watershed Hikes

Long-Term Implementation

- Build Partnerships
- Identify Projects
- Acquire Funding
- Recruit Landowners
- Engage Community Members
- Educate, Educate, Educate

- Rinse and Repeat

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Thank You For Your Support!

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How Can Everyone Be a Watershed Protector?

- Pump your septic tank every 3 years
- Use fertilizers sparingly (especially phosphorus)
- Leave a buffer of plants along streams, lakes, and ponds
- Pick up after your pet
- Leave no trace when boating, hiking or otherwise enjoying Lake Monroe

- Join Friends of Lake Monroe

  www.friendsoflakemonroe.org/membership