WATERSHED MANAGEMENT PLANNING FOR THE TABLE ROCK LAKE WATERSHED

THE ENVIRONMENTAL PROTECTION AGENCY REGION 7 THROUGH THE MISSOURI DEPARTMENT OF NATURAL RESOURCES HAS PROVIDED PARTIAL FUNDING FOR THIS PROJECT UNDER SECTION 319 OF THE CLEAN WATER ACT. G22-NPS-03

Image Credit: wanderthemap.com

MISSOURI STATE UNIVERSITY
OEWRI
Ozarks Environmental and Water Resources Institute

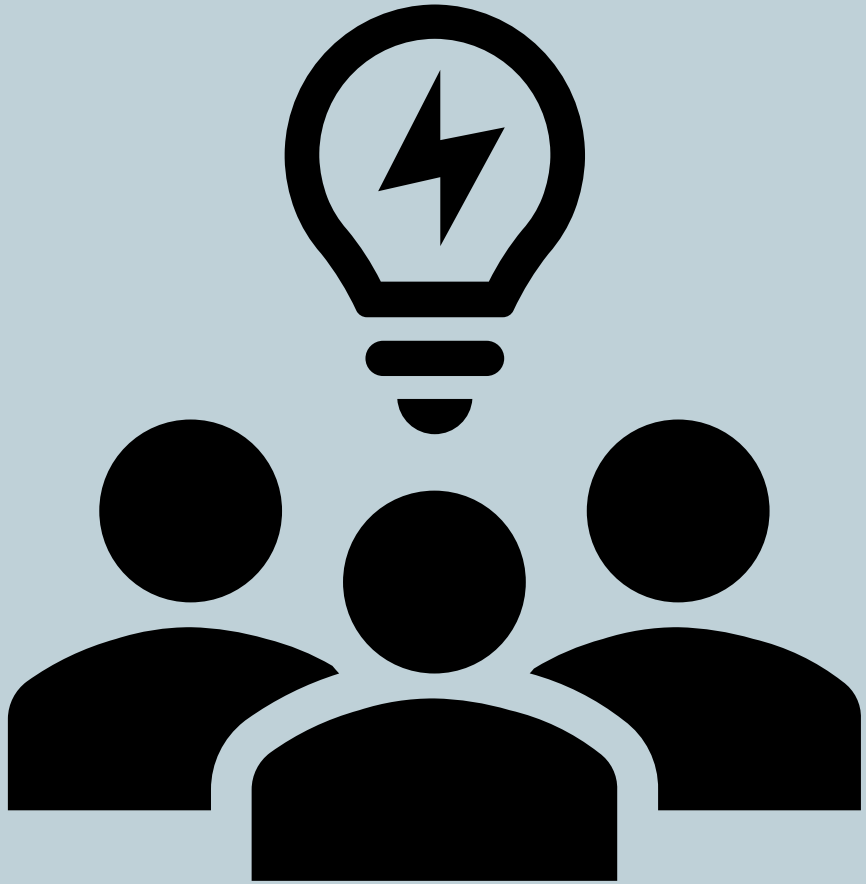
H2Ozarks
Cleaner Water Together!

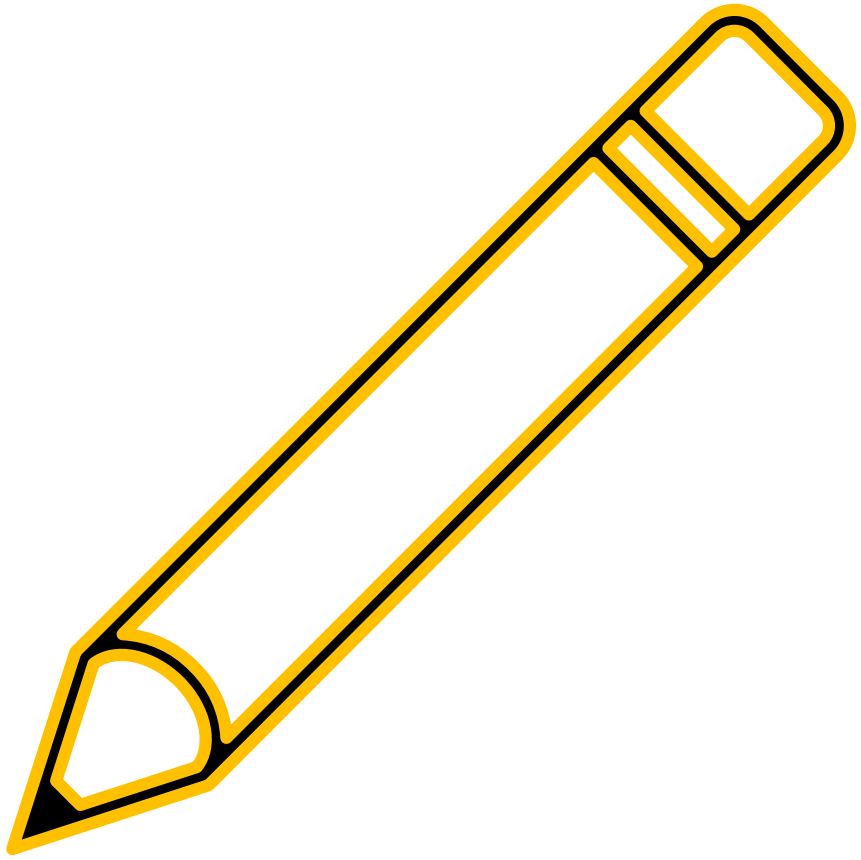
MISSOURI DEPARTMENT OF NATURAL RESOURCES

EPA
United States Environmental Protection Agency

WELCOME!!

- ✓ Be vocal.
- ✓ Be respectful, not personal.
- ✓ Be in the room, not the parking lot.
- ✓ Be COMFORTABLE.





HOUSEKEEPING ITEMS

IN PERSON	VIRTUAL
Did you sign in?	Add your name to the chat.
Do you have a name tent?	Handouts are available online: www.h2ozarks.org/trlwmp
Did you grab handouts?	Utilize the chat at will.

Photo Credit: Breakfastinamerica.me

- Introductions
- Role of OEWRI & H2Ozarks
- Watershed Management Planning Overview
- History of the Table Rock Lake Watershed Management Plan
- Stakeholder Role
- Project Timeline & Current Progress
- Watershed Overview

OZARKS ENVIRONMENTAL AND WATER RESOURCES INSTITUTE (OEWRI)

MISSOURI STATE UNIVERSITY

Ozarks Environmental and Water Resources Institute

- **Water Research Center of Missouri State University**
- **Located in Springfield, Missouri**
- **Mission**: to advance our scientific understanding of water resource quantity, quality, and distribution in Ozarks watersheds
- **Provides technical expertise, analytical capability, and student training to support environmental research, watershed monitoring programs, and watershed group activities in the Ozarks**
- **Completed the EPA accepted Lake Taneycomo WMP** (Josh Hess, 2024)
- **Provided technical assistance on both the Cuivre and Blue River WMPs**

WHO ARE WE?

MARC OWEN, DIRECTOR

Handling technical oversight for Table Rock WMP modeling

JOSH HESS, RESEARCH SPECIALIST

Completed the Lake Taneycomo WMP; working on Stone County Septic System Project

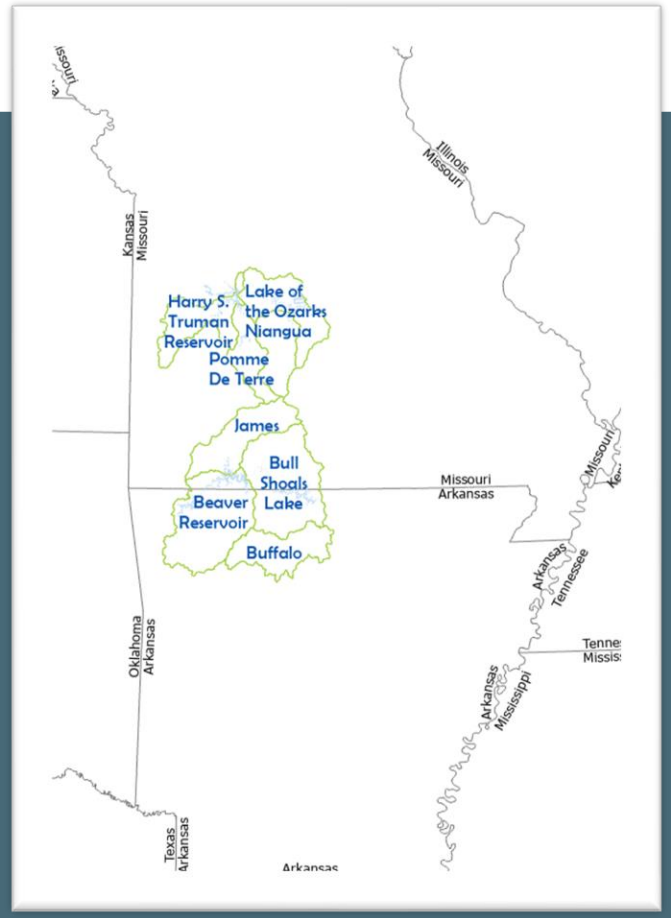
BRIANNE EDWARDS, RESEARCH SPECIALIST

Completing the Table Rock Lake WMP, including mapping, modeling, and report composition

RACHEL HETH, WATERSHED SCIENTIST

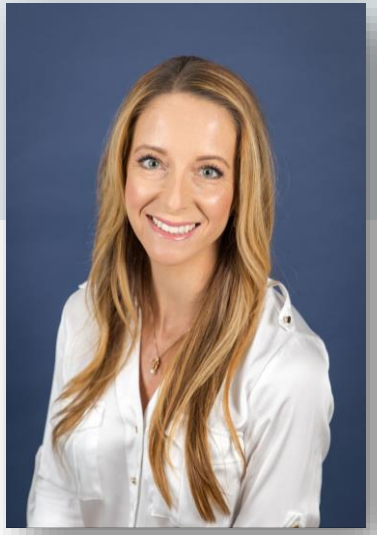
+ Graduate Student Assistants:

-Katherine Brand
-Kaiser Mostafiz
-Marcell Toth



- **501(c)3 Nonprofit, charitable organization established in 2001.**
- **Located in Kimberling City, Missouri and Rogers, Arkansas**
- **Mission**: to protect and improve water in the Ozarks by promoting community commitment, public policy, research, and local solutions.
- **Facilitated stakeholder involvement for the EPA accepted Lake Taneycomo WMP** (Josh Hess, 2024)
- **Developing a WMP for the Upper White River watershed in Arkansas.**
- **Supporting communities in southwest and south-central Missouri, and northwest Arkansas.**

WHO ARE WE?



CARIN LOVE, COO

TRL WMP project lead. Oversees stakeholder involvement and develops effective strategies to optimize stakeholder input.

ERIN SCOTT, SENIOR POLICY & PROGRAM DIRECTOR

Technical review for TRL WMP. Project lead for development of the UWR WMP in Arkansas.

JERRY HARMAN, PROGRAM DIRECTOR

OWTS Remediation project lead. Coordinates resources for TRL WMP and monitors stakeholder engagement.

H2Ozarks Cleaner Water Together!

PROJECT ROLES

Complete technical scientific components and write watershed management plan

Organize public outreach and engagement, oversee technical and stakeholder advisory groups

WHAT IS A WATERSHED?

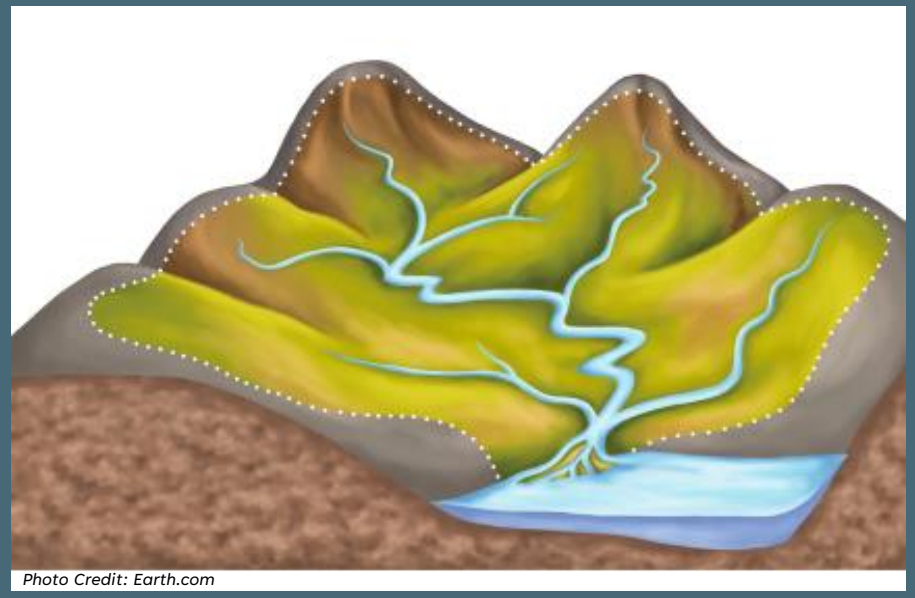


Photo Credit: Earth.com

A watershed is the area of land that drains into a particular water system

NONPOINT SOURCE POLLUTION (NPS):

- **Pollution that <u>cannot</u> be traced back to a single source or point (MDNR)**

- **Storm sewers, ineffective septic systems, construction sites, mining areas, crop fields, paved surface runoff, agricultural runoff**

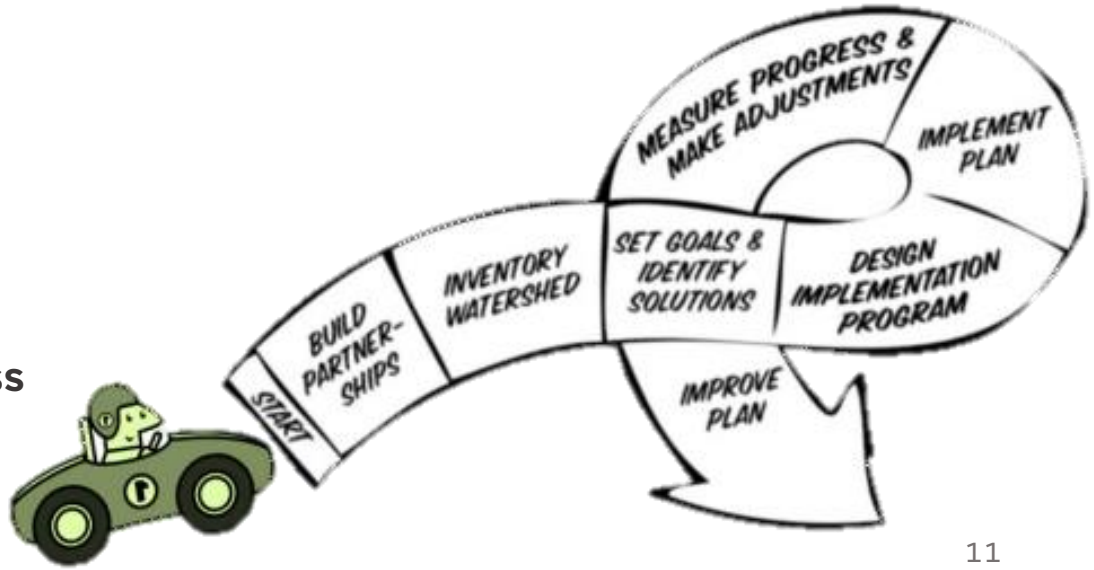
Pollutants:

- **Nutrients (N & P)**
- **Sediment**
- **Bacteria (*E. coli*)**

9-ELEMENT WATERSHED MANAGEMENT PLAN

United States Environmental Protection Agency

1. Identify Causes and Sources Of Pollution
2. Estimate Watershed Pollutant Loads and Load Reductions Needed to Meet Water Quality Standards
3. Describe Management Measures That Will Achieve Load Reductions
4. Estimate Amounts of Technical & Financial Assistance and the Relevant Authorities Needed to Implement Plan
5. Develop an Information/Education Component
6. Develop a Project Implementation Schedule
7. Describe the Interim, Measurable Milestones
8. Identify Indicators to Measure Pollutant Reduction Progress
9. Develop a Monitoring Component



PROJECT HISTORY:

MISSOURI DEPARTMENT OF NATURAL RESOURCES – SECTION 319 NONPOINT SOURCE WATERSHED BASED PLANNING

2 WMPs developed in late 2000s (*East* and *West* Table Rock Lake)

2012: Accepted by MODNR under condition of including additional details before EPA acceptance

Due to time constraints, the plans were not accepted by EPA due to lacking parts of the required 9 elements

2024: OEWRI & H2Ozarks begin on updating Table Rock Lake WMP as combined document

Updated plan will include pollutant modeling and estimated load reductions as required by EPA

Goal: Develop a nonpoint source WMP for the Table Rock Lake Watershed that includes the 9 Key elements required by USEPA and MODNR

WHAT TO EXPECT FOR PROJECT INVOLVEMENT?

- Attend and participate in occasional meetings
- **Next meeting:** October 15th – Water Quality Group Meeting for TAG
- **TAG** – Six (6) meetings.
  - Two (2) in 2024
  - Three (3) in 2025
  - One (1) in 2026
- **SAG** – One (1) meeting each project year (total of three).

Technical Advisory Group (TAG)

- **Monitors scientific work / progress of the plan**
- **Evaluates data**
- **Provides feedback and input on methodology**

Stakeholder Advisory Group (SAG)

- **Receives information / reports from the TAG and OEWRI**
- **Advises TAG and OEWRI on their concerns / solutions**

VALUE OF A STAKEHOLDER

Watershed planning has a greater chance of success when stakeholders participate in the process. *(CWP 1996)*

- **Local Knowledge**
- **Diverse Perspectives**
- **Resource Sharing**
- **Collaboration & Trust-Building**
- **Innovative Solutions**
- **Advocacy & Support**

PROJECT TIMELINE

2024

- Historical Data Compilation and Summary
- Introduction and Impairment
- Publish press and news releases
- Begin TAG/SAG meetings
- Model pollutant loads for 16 subwatersheds

2025

- Develop information and education plan
- Use STEPL to evaluate and optimize BMP plans to reduce pollutant loads
- Determine sources of technical and financial assistance

2026

- Submit draft reports for public review by April 2026
- Submit Final WMP by January 2027

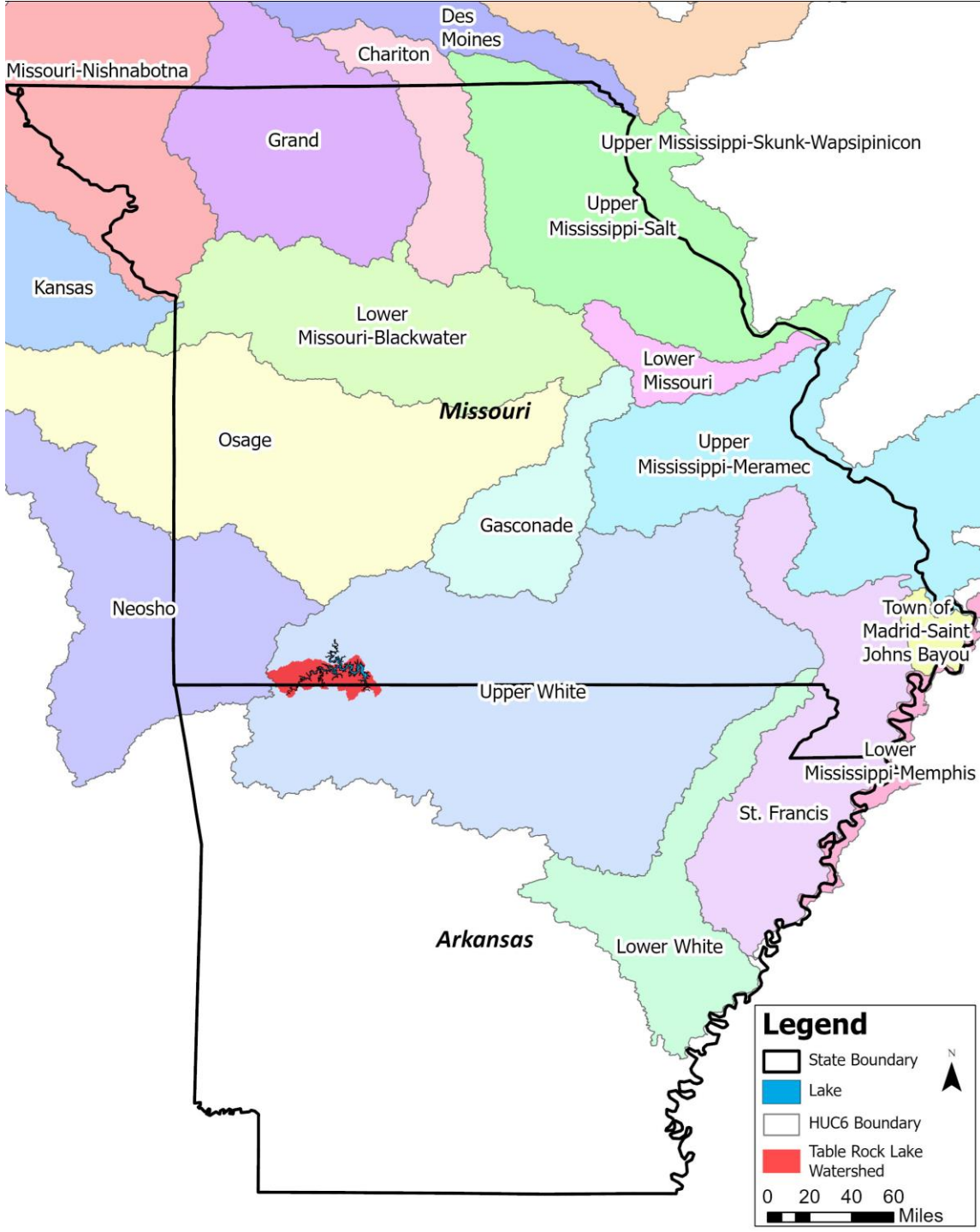
WATERSHED OVERVIEW: TABLE ROCK LAKE

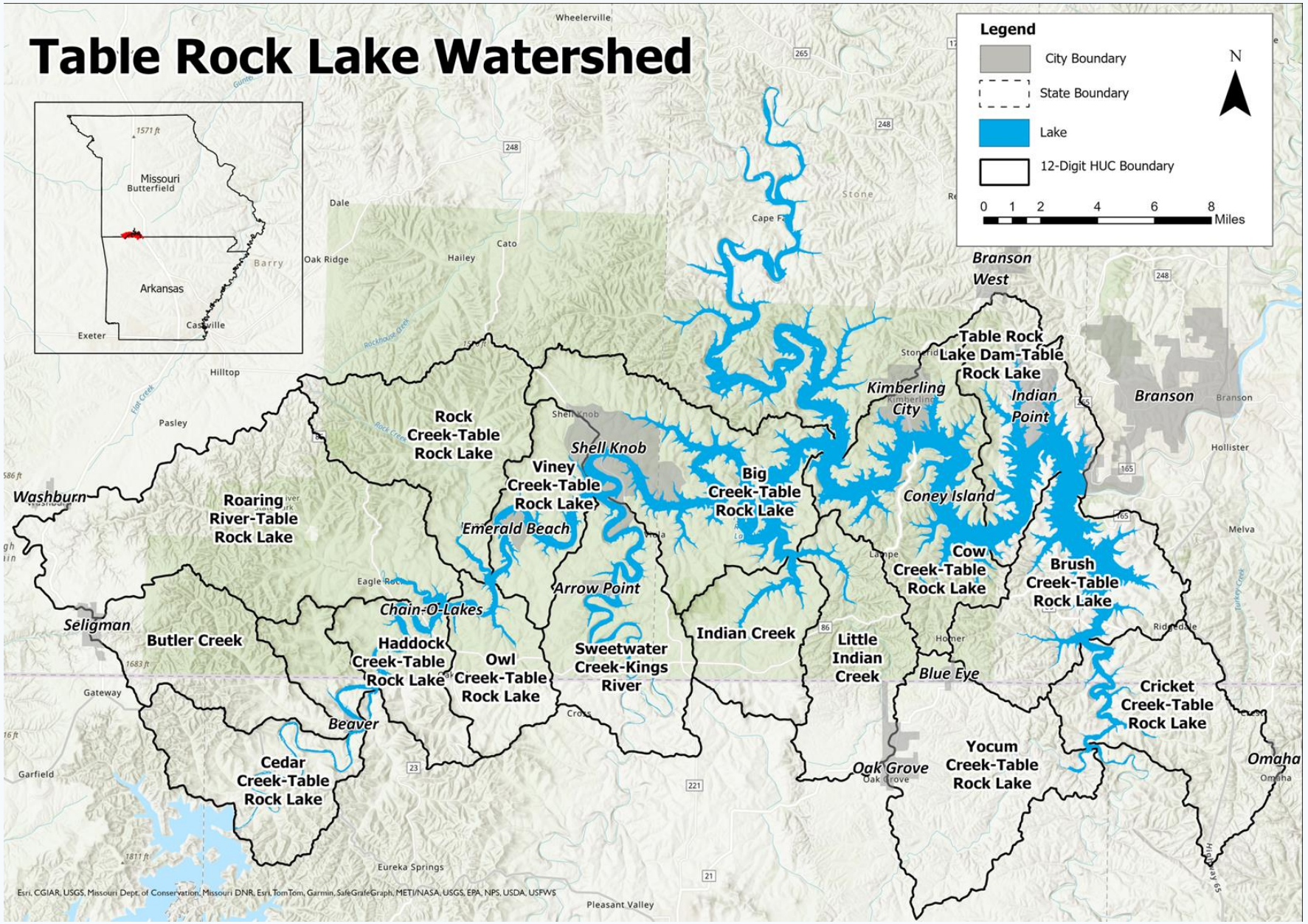
TABLE ROCK LAKE WATERSHED

- HUC6 – Upper White River Basin
- HUC8 – Beaver Reservoir Subbasin

- Covers portions of MO and AR
  - Plan will focus on MO

- Watershed area = 522 mi^2
  - 73% in Missouri



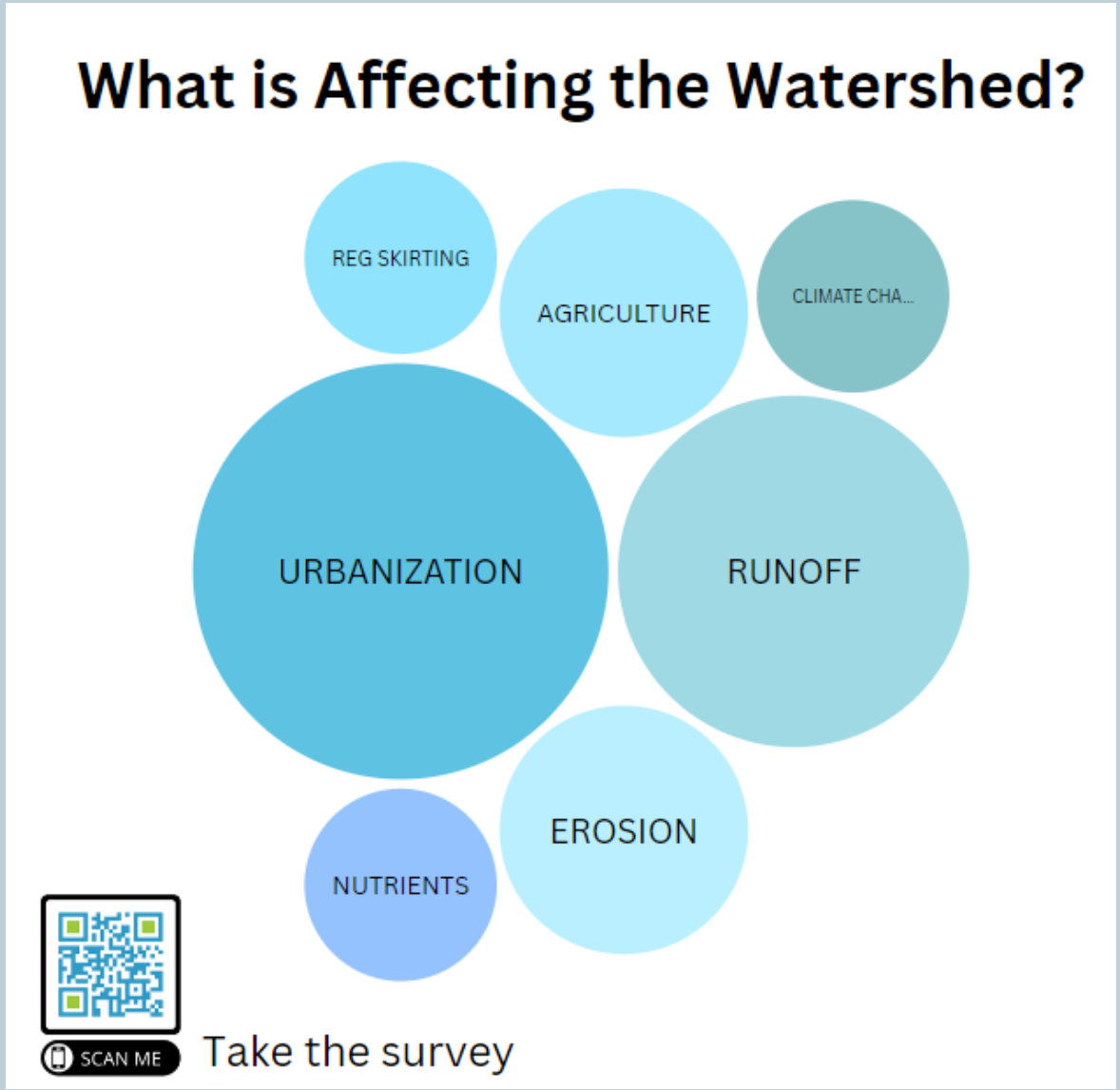


- Plan includes 16 HUC-12 subwatersheds in the Beaver Reservoir Subbasin
- Plan excludes James R. arm due to MODNR TMDL
- History of issues with eutrophication / algal growth

STAKEHOLDER INPUT

Stakeholders were asked:

"What do you think are the current & emerging threats to water quality or quantity in the watershed?"



WATER QUALITY ISSUES AND IMPAIRMENTS

- **Table Rock Lake Included on MO 303(d) Impaired Waters List**
  - ***First listed in 2002***
  - ***Impaired for the Protection of Aquatic Life due to elevated levels of:***
    - ***Nitrogen (N)***
      - *James R. Arm*
      - *Septic Systems*
      - *Agriculture*
    - ***Chlorophyll-a***
      - *Algal Blooms / HABs*
      - *Driven by excess N & P*

Photo Credit: James River Basin Partnership

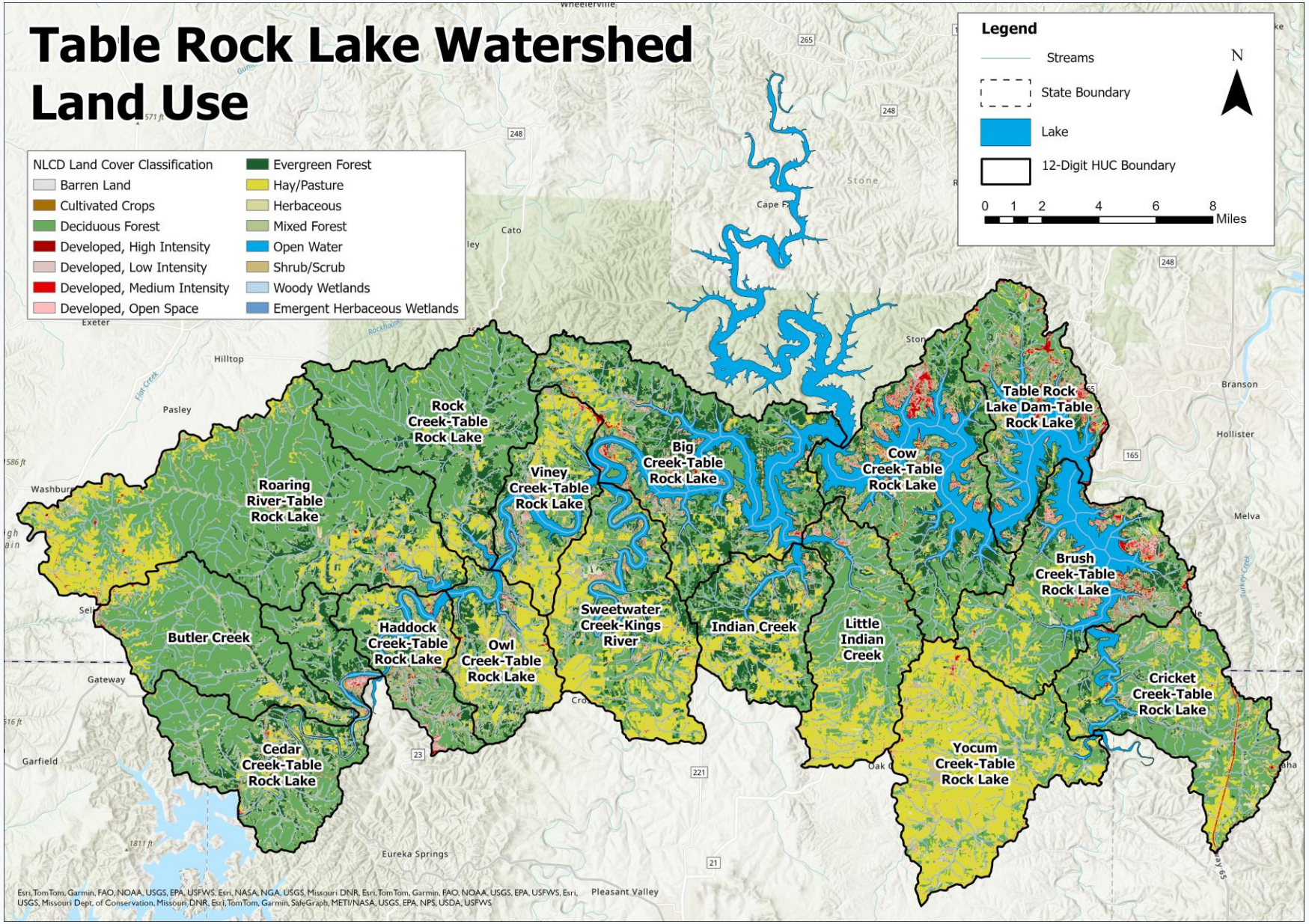
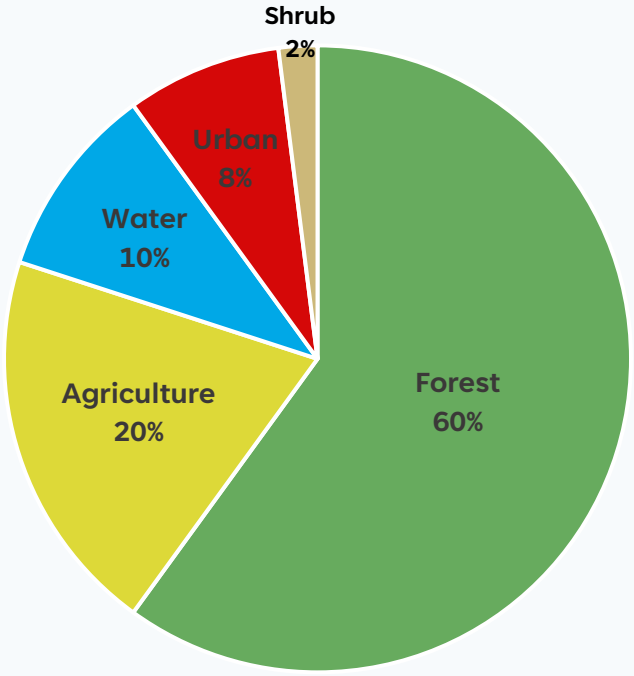
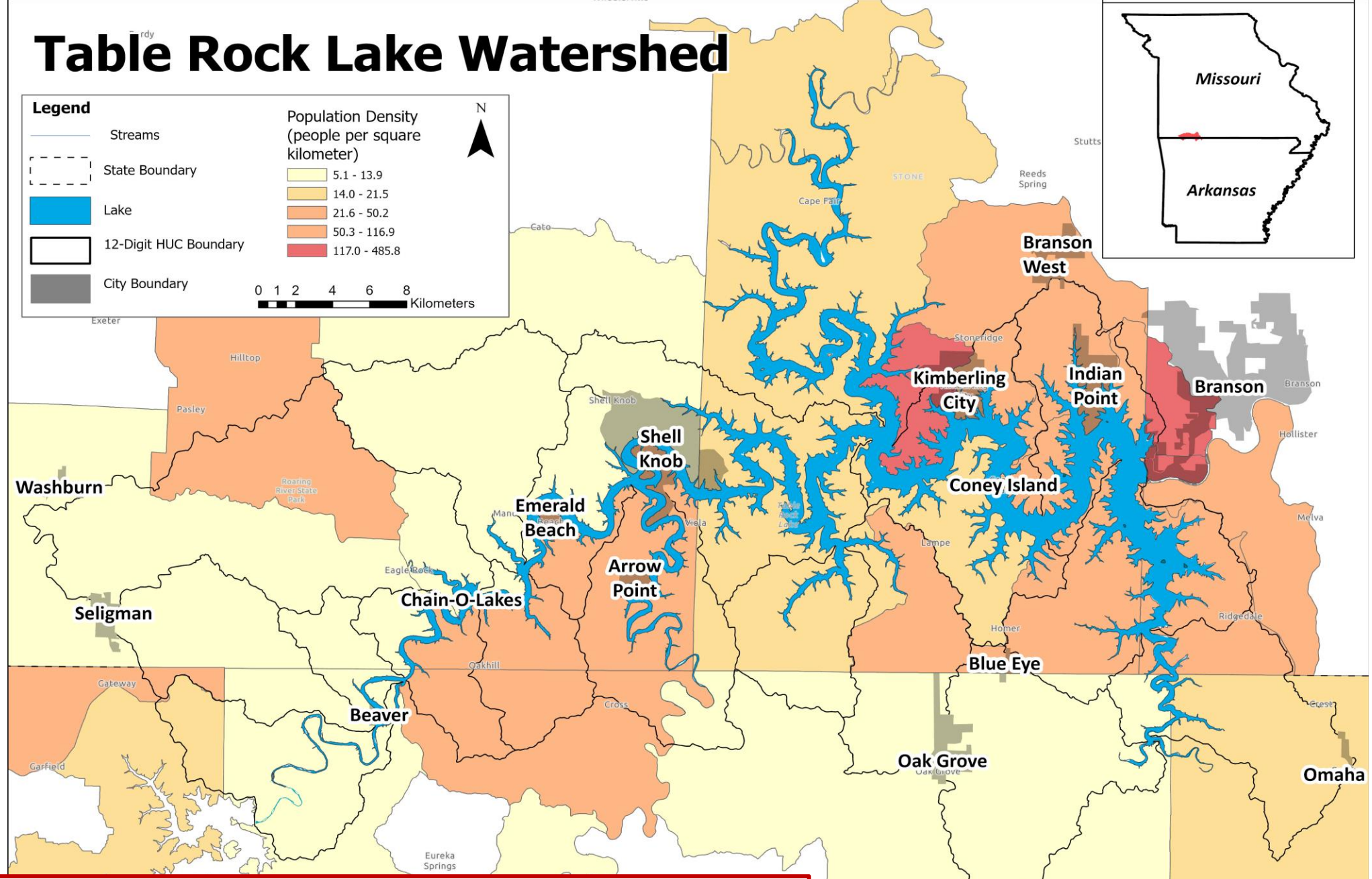


Table Rock Lake Watershed Land Use
NLCD Land Cover Classification
Barren Land
Cultivated Crops
Deciduous Forest
Developed, High Intensity
Developed, Low Intensity
Developed, Medium Intensity
Developed, Open Space
Evergreen Forest
Hay/Pasture
Herbaceous
Mixed Forest
Open Water
Shrub/Scrub
Woody Wetlands
Emergent Herbaceous Wetlands
Legend
Streams
State Boundary
Lake
12-Digit HUC Boundary
N
0 1 2 4 6 8 Miles
Rock Creek-Table Rock Lake
Roaring River-Table Rock Lake
Viney Creek-Table Rock Lake
Big Creek-Table Rock Lake
Table Rock Lake Dam-Table Rock Lake
Cow Creek-Table Rock Lake
Brush Creek-Table Rock Lake
Butler Creek
Haddock Creek-Table Rock Lake
Owl Creek-Table Rock Lake
Sweetwater Creek-Kings River
Indian Creek
Little Indian Creek
Cricket Creek-Table Rock Lake
Yocum Creek-Table Rock Lake
Cedar Creek-Table Rock Lake
Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri, NASA, NGA, USGS, Missouri DNR, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri, USGS, Missouri Dept. of Conservation, Missouri DNR, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, USFWS


Shrub 2%
Urban 8%
Water 10%
Agriculture 20%
Forest 60%



Population Density Increases from West to East

CURRENT PROGRESS

Photo Credit: Branson Visitor's Guide

WATERSHED SETTING

- HISTORY & IMPORTANCE
- HYDROLOGY
- LAND USE
- TOPOGRAPHY AND FEATURES
- RAINFALL AND RUNOFF
- POPULATION
- PUBLIC WATER SUPPLIES
- POINT AND NONPOINT SOURCES
- NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEMS
- SHORELINE MANAGEMENT PLAN
- DECENTRALIZED WASTEWATER DEMONSTRATION PROJECT
- CONSTRUCTION AND DEVELOPMENT

WATERSHED CONDITIONS

- DESIGNATED USES
- SITE SPECIFIC NUTRIENT CRITERIA
- WATER QUALITY MONITORING SITES
- WATER QUALITY IMPAIRMENTS
- JAMES RIVER TOTAL MAXIMUM DAILY LOAD (TMDL)
- REGULATORY EFFLUENT LIMITS
- OUTSTANDING STATE RESOURCE WATERS
- SPECIES CONSERVATION CONCERNS

CURRENT PROGRESS

- **Project is in Q4**
- **Will begin on STEPL modeling soon**
- **WQG meeting on October 15th**

TASK	COMPLETED?
Historical Data Compilation and Summary	☑
STEPL Modeling QAPP Submittal	☑
Introduction and Impairment Description	☑
Assessment of previous TRL WMPs	☑
Press & News Releases	☑

NEXT STEPS

- **Decide on Next TAG Meeting Date:**
  - ***Feb 26th or 27th, 2025***
  - ***Mar 5th or 6th, 2025***

- **Technical Components:**
  - **STEPL Modeling & Pollutant Load Estimation**
  - **Best Management Practice Load Reduction Estimation**

- **Stay Connected:**
  - **Meeting documents and information is available online at www.h2ozarks.org/trlwmp**

THANK YOU

Brianne Edwards

OEWRI, Research Specialist

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Carin Love

H2Ozarks, COO

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Photo Credit: Breakfastinamerica.me