

## Nine Element Summary of the Peruque Creek-Lake St. Louis Watershed Restoration Plan



### What is a Nine Element Plan?

A Nine Element Watershed Plan (9E) is a coordinated plan detailing a community's concerns and efforts to improve water quality conditions in a designated watershed. Development of 9E Plans are directed by groups and individuals (stakeholders) from within the watershed with the support of local, state, and federal agencies. The nine minimum elements are developed to ensure all contributing sources and causes of nonpoint source pollution are identified, to maintain stakeholder involvement and planning, and confirm protections are occurring as designed to restore water quality conditions.

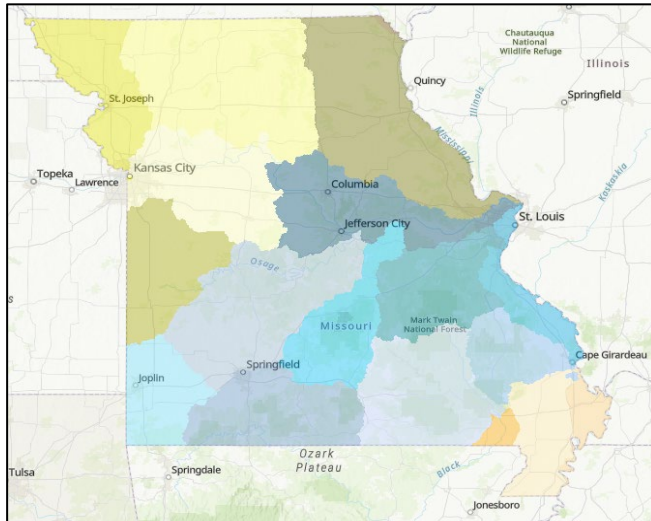
### How are the Nine Elements integrated into the Peruque Creek-Lake St. Louis (PCLSL) Watershed Restoration Plan?

#### Element A. – Pollutant Identification

Sediment, or total suspended solids (TSS), is the primary pollutant of concern for the PCLSL watershed. Nonpoint source loading associated with exposed soils, unregulated constructions activities and streambank failures are common sources of sediment loading found in the watershed. Water quality sampling occurring throughout the watershed determines TSS concentrations for sampled waterbodies.



Peruque Creek, Warren County MO



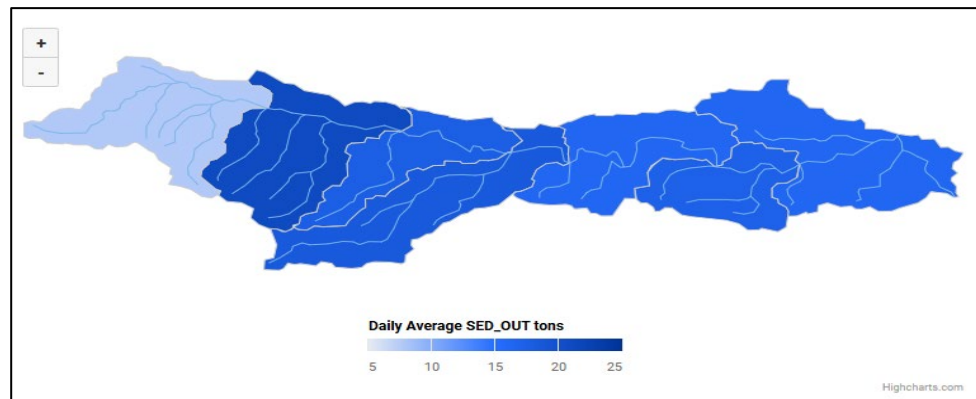
**Missouri Ecoregions**

**Element B. – Determine Reductions**

Sediment load reductions for the PCLSL watershed are established by referencing eco-regional TSS concentrations of surrounding stream systems. A concentration of 18 mg/L TSS is the calculated target concentration from ecoregional streams for the PCLSL waterbodies. Load reductions are set to achieve this in-stream target concentration throughout the watershed.

**Element C. –  
Plan  
Reductions**

Water quality models provide insight into water quality changes for a modeled watershed and are used to determine pollutant load and associated reductions. The



**Water Quality Model Output**

estimated number, or acreage of best management practices (BMPs) required to achieve the targeted TSS load reductions for the PCLSL watershed were determined using the Pollutant Load Estimate Tool (PLET) watershed model. PLET integrates a variety of watershed (e.g. land use, rainfall) and water quality parameters to estimate pollutant loads and corresponding load reductions associated with BMP implementation.



## Element D. – Technical and Financial Support

Technical resources and financial assistance can be sourced from a variety of local, state, and federal agencies, non-for-profit agencies, or local interest groups (non-governmental organization). Private businesses, companies, and organizations located within the watershed may also have interest in providing technical and financial support to improve local water quality conditions. Federal grant application guidance and support will be provided by Missouri Department of Natural Resources’ (MoDNR) 319 Nonpoint Source Unit, applications will then be submitted annually to

acquire the necessary funding to implement BMPs under the Peruque Creek nine-element watershed plan schedule. Additional in-kind funding will be necessary to meet the application requirements of federal 319 grant funding, examples of in-kind funding include monetary matches, material donations, and volunteer hours.

## Element E. – Education and Outreach

Examples of 2024 initial outreach and education activities include watershed and lake tours, volunteer water quality sampling, and both agency and watershed group led outreach events or public meetings. Future events will be scheduled throughout the implementation schedule and be integrated into future watershed planning activities. The Missouri Department of Natural Resources intends to provide local outreach and educational opportunities during the public notice and comment period associated with the Peruque Creek



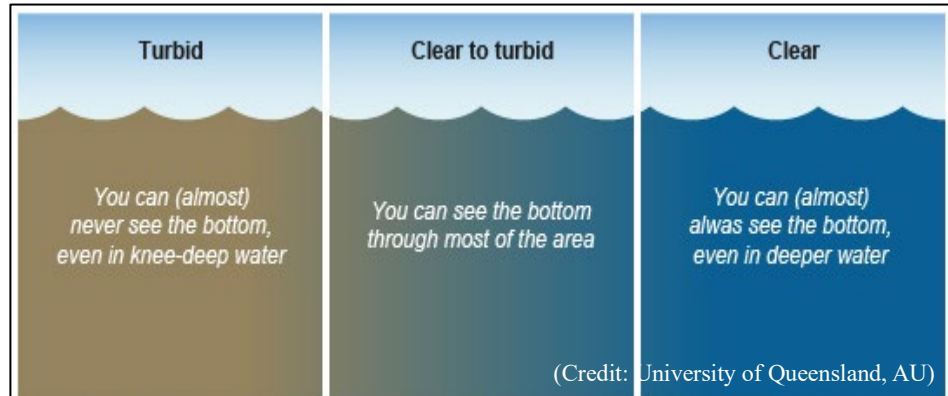
**Missouri Stream Team Volunteers**

and Lake St. Louis TMDLs. Additionally, the department has a statewide watershed coordinator to help facilitate outreach opportunities in these watersheds. During the planned public notice period for this document the Department will coordinate a public meeting, at a location in the watershed, to address any stakeholder questions or concerns. Stakeholder roles are under development and should consist of local watershed residents, businesses, and municipality representatives. In addition, local and region planning commissions are often established in impacted watersheds and can be a valuable partner during the restoration planning process.



## Element I. - Monitoring

In stream and lake sampling over the course of the PCLSL watershed plan will provide the necessary water quality data to determine the overall progress of

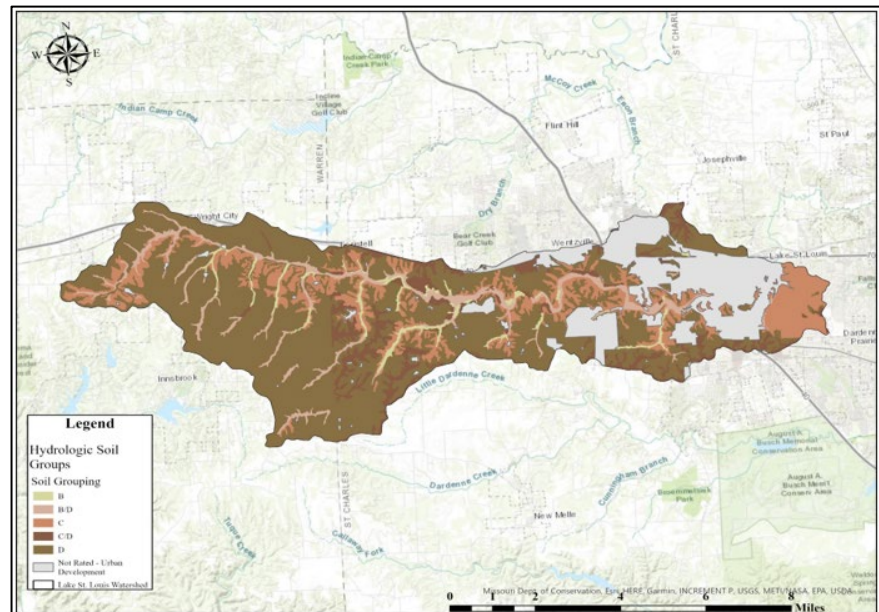


TSS load reduction. Monitoring scheduling should be frequent enough to identify seasonal variation across the watershed, with samples collected from appropriate waterbodies. New sampling efforts should reflect water quality changes caused by BMP installation, with continued baseline monitoring conducted at established monitoring locations with existing water quality data sets.

## Which PCLSL watershed conditions must be identified or addressed to improve water quality?

The following watershed conditions or characteristics play a critical role in the development of the PCLSL 9E plan and best management practice implementation;

- Class D hydrologic soils dominant the watershed, these soils are low infiltration and have high run-off potential;
- Watershed development and land use changes impact how run-off waters enter Peruque Creek;
- Exposed soils and lack of best



**Peruque Creek Watershed Hydrologic Soils Group Map**

- management practices to control site run-off leads to excessive pollutant loading;
- Identification of potential pollutant loading sources (e.g. wastewater treatment facilities, septic tanks, streambank failures, riparian corridor impacts, exposed soils);
  - Climatic and precipitation patterns have changed over the last twenty years, with intense rainfall events occurring more frequently.

## **Additional Information**

- Total Maximum Daily Load (TMDL) Planning: <https://dnr.mo.gov/water/what-were-doing/water-planning/quality-standards-impaired-waters-total-maximum-daily-loads/tmdls>
- Missouri Section 319 Watershed Planning: <https://dnr.mo.gov/water/what-were-doing/nonpoint-source-pollution-section-319/watershed-based-planning>
- Missouri Department of Conservation's (MDC) Best Management Practices for Construction and Development Projects Affecting Missouri Rivers and Streams: [https://mdc.mo.gov/sites/default/files/2022-10/202209\\_Streams.pdf](https://mdc.mo.gov/sites/default/files/2022-10/202209_Streams.pdf)

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