Infrastructure Investment and Jobs Act: EPA's Gulf Hypoxia Program

Mississippi River Gulf of America Watershed Nutrient Task Force

State Cooperative Agreement Workplans

The Gulf Hypoxia Program (GHP) is funded through the 2021 Infrastructure Investment and Jobs Act (IIJA), which provides $60 million over five years for EPA to issue grants to advance the goals of the Gulf Hypoxia Action Plan.

Through the GHP, Task Force member states, tribes, sub-basin committees, and Land Grant Universities have the resources to make significant progress toward reducing nutrient loads and track the results. States are awarded $4.2 million to advance nutrient reduction work through 2030. These funds support efforts to improve water quality in the Gulf and throughout the Mississippi River/Atchafalaya River Basin. Through improved water quality, communities across the basin will benefit from safer drinking water, protected fisheries, and a more stable economy. Partnerships will provide farmers and urban communities with a more resilient landscape, improved local water quality and support to implement watershed plans and expand business plans to include conservation systems.

In FY22, EPA awarded the first GHP grants to the HTF member states. In FY25, HTF member states received a second GHP grant award. This document presents the HTF member states' second workplans, which support the following four strategic outcomes:

- Support staff to implement the workplan;
- Use state-level water quality programs and actions to advance nutrient reductions;
- Implement projects in prioritized watersheds with the greatest opportunities for nutrient reductions; and
- Collaborate across state boundaries with HTF partners.

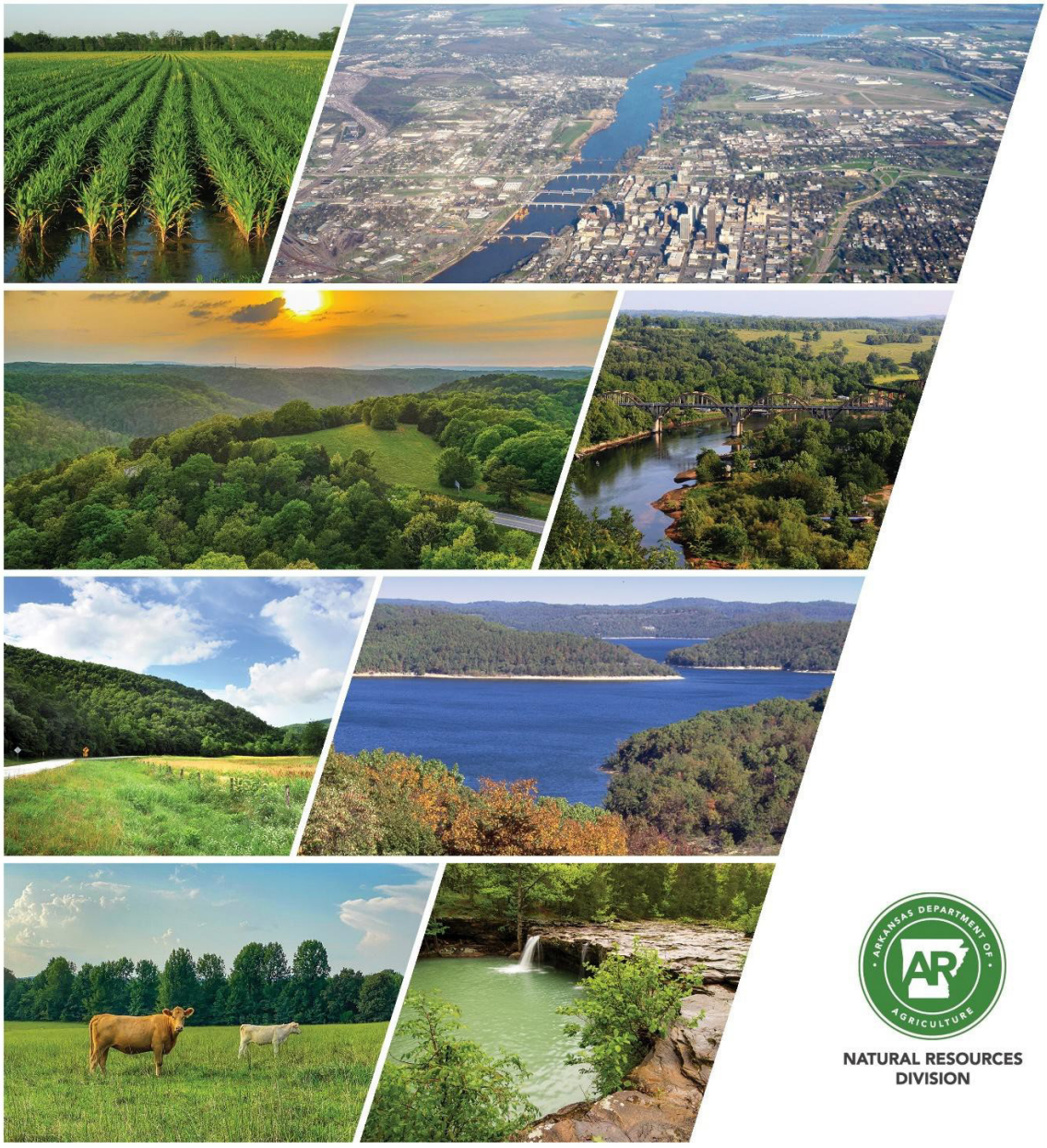
More Information

Read more about the Hypoxia Task Force, the Gulf Hypoxia Action Plan, HTF member State Nutrient Reduction Strategies and the EPA's Gulf Hypoxia Program.

State Cooperative Agreement Workplans

Table of Contents

FY24-26 Arkansas Workplan
for the
Gulf Hypoxia Program



NATURAL RESOURCES DIVISION

Summary of Arkansas Workplan

Project Title: Continuing Arkansas Nutrient Reduction Strategy Implementation for 2025-2030
Organization:
Arkansas Department of Agriculture Natural Resources Division
1 Natural Resources Drive, Little Rock, AR 72205
Blake Forrest, 501-682-3914, Blake.Forrest@agriculture.arkansas.gov
Proposed Funding Request: $ 2,514,116
Brief Project Description:
Arkansas will use Gulf Hypoxia Program funding to advance the goals and objectives of the 2022 Arkansas Nutrient Reduction Strategy (ANRS). The ANRS is designed to address nutrient pollution in Arkansas waterways and reduce the state's contribution to the hypoxic zone in the Gulf of America. This workplan contains nine projects and will implement conservation practices in priority watersheds, enhance water quality monitoring, assist the optimization of wastewater treatment plants, and conduct outreach and education in most priority watersheds. Additionally, the funding will support the update of the ANRS best management practices tracker and the publication of the next major ANRS report which includes a statewide water quality analysis and nutrient reduction data.

Environmental Results:
Three projects focus directly on lowering nutrients in Arkansas waters.

1. The University of Arkansas's Arkansas Discovery Watershed (ADW) program will collaborate with farmers in the Brush Creek-Beaver Lake watershed, which includes a 303(d)-listed tributary. Farmers participating in the program can expect to reduce fertilizer runoff to less than 5%. This project will provide clear, evidence-based insights into how field-level conservation practices can effectively improve water quality on a watershed scale.
2. The Nature Conservancy's (TNC) Upper Cache River project will focus on reducing sediment and nutrient loads in the Upper Cache River watershed. This will be achieved by partnering with drainage districts to develop a roadmap utilizing GIS analysis and field reconnaissance. This effort will inform the implementation of grade stabilization structures and ditch management practices, such as two-stage ditches and gully remediation, which will cut sediment and nutrient loads by up to 50%.
3. The Wastewater Treatment Plant Optimization Plan will aim to enhance nutrient removal from Arkansas waters by improving the performance and efficiency of publicly owned treatment works (POTWs).

Place of Performance:
The place of performance is statewide with certain ANRS priority watersheds (Tier 1 and Tier 2) receiving more focus. Statewide benefits include the ANRS update, a statewide comprehensive water quality assessment, printed resources, and updates to the state website and interactive dashboards. Education and outreach programs will target Tier 1 and Tier 2 watersheds. Conservation efforts will focus on implementation in the Brush Creek- Beaver Lake Watershed and the Cache River Watershed. Both watersheds are designated Tier 2 priority watersheds due to the need for both nutrient reduction and enhanced monitoring. Both watersheds were listed on the 2018-2023 Nonpoint Source (NPS) priorities. The Beaver Watershed is also a priority in Arkansas's 2024-2029 priority list.

Project Period: October 1, 2025 – September 30, 2030

Contents

List of Abbreviations

Abbreviation	Definition
ADW	Arkansas Discovery Watershed
ANRS	Arkansas Nutrient Reduction Strategy
AWRC	Arkansas Water Resources Center
AWS	Arkansas Watershed Stewardship
BABA	Build America, Buy America Act
BMP	best management practices
BWA	Beaver Watershed Alliance
DEQ	Arkansas Department of Energy and Environment's Division of Environmental Quality
ESA	Endangered Species Act
GHP	Gulf Hypoxia Program
GRTS	Grants Reporting and Tracking System
NEPA	National Environmental Policy Act
NPS	Nonpoint Source
POTWs	publicly owned treatment works
QAPP	Quality Assurance Protection Plan
SHPO	State Historic Preservation Office
TNC	The Nature Conservancy
WQX	Water Quality Exchange

Project Approach

Arkansas will utilize Gulf Hypoxia Program funding to support the goals and objectives of the 2022 Arkansas Nutrient Reduction Strategy (ANRS). This strategy focuses on combating nutrient pollution in Arkansas waterways and minimizing the state's impact on the hypoxic zone in the Gulf of America. The 2022 ANRS update introduced a prioritization methodology to evaluate nutrient trends and magnitude statewide. This statistical approach assessed available water quality monitoring data to classify watersheds into a tiered system (Figure 1):

- Tier 1 watersheds: These are a focus for nutrient reduction based on available monitoring data.
- Tier 2 watersheds: These are a focus for enhanced monitoring and nutrient reduction. Generally, they have limited water quality data and cannot be fully evaluated in the water quality assessment. However, existing evidence suggests that nutrient reduction efforts are necessary, making them also a priority for nutrient reduction.
- Tier 3 and Tier 4 watersheds: These have the least supporting evidence for nutrient reduction needs and are not prioritized for project funding.

The updated 2022 ANRS provides a specific, strategic framework for implementing goals and strategies to address nutrient pollution in Arkansas waterways and reduce the state's contribution to the hypoxic zone in the Gulf of America. Gulf Hypoxia Program (GHP) funding will support these efforts through the implementation of conservation practices and the enhancement of water quality monitoring in two Tier 2 priority watersheds. Outreach and education initiatives will also be conducted across most Tier 1 and Tier 2 watersheds. Furthermore, the funding will facilitate the update and publication of the next major ANRS report, which will include a comprehensive statewide water quality analysis.

Alignment with EPA's Strategic Plan

Arkansas's GHP workplan aligns with the EPA's "*Gulf Hypoxia Program 2025 Guidance for State Cooperative Agreements*". The workplan includes:

- Implementing conservation practices in two Tier 2 priority watersheds.
- Enhancing water quality monitoring to evaluate the effectiveness of conservation practices.
- Conducting outreach and education to build community support for watershed projects.

Conservation practices will also promote the long-term viability of agricultural producers by providing solutions that mitigate soil and nutrient loss while conserving water. GHP funding will also support the Arkansas Department of Agriculture's Natural Resources Division in advancing ANRS initiatives, ensuring that conservation efforts are data-driven and strategically targeted to achieve maximum environmental impact.

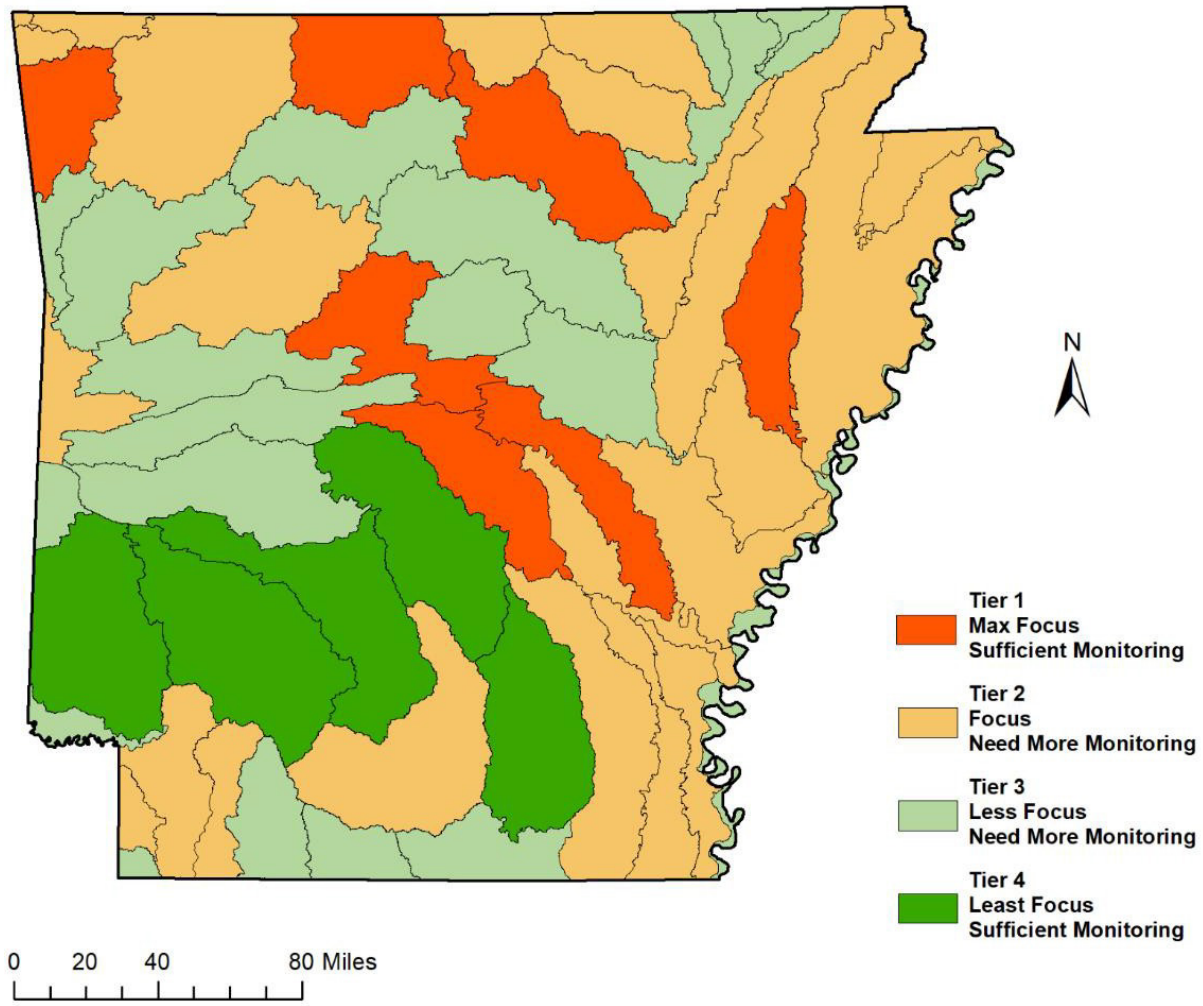


Figure 1: Four Tiers of HUC 8 Watersheds

Areas for Enhanced Monitoring

Approximately one-third of Arkansas lacks sufficient water quality data to evaluate long-term trends and magnitude of nitrogen and phosphorus levels. Given the decreasing availability of external monitoring resources, Arkansas must enhance its internal capacity for water quality analysis. This includes investments in laboratory equipment to ensure reliable assessments. To focus limited resources, an inventory of monitoring sites in Tier 2a and Tier 2c watersheds (Table 1) was completed. This data discovery process involved reviewing monitoring locations included in the 2022 ANRS update as well as sites projected for inclusion in future updates. Gaps were identified where monitoring data was insufficient, either due to a historical lack of sampling or the termination of monitoring at key locations. Monitoring locations were prioritized based on their potential to provide sufficient data for the next ANRS update. Five priority watersheds for water quality monitoring were identified, which were the Lower St. Francis, Cache River, Bayou Bartholomew, Dardanelle Reservoir, and Strawberry.

Table 1: Tier 2 Categories of HUC 8 Watersheds

Tier 2a: Max. Focus, Enhance Monitoring	Tier 2b: Focus, Continue Monitoring	Tier 2c: Focus, Enhance Monitoring	Tier 2d: Likely Focus, Design Monitoring
Lower St. Francis	Lower Ouachita-Smackover	Dardanelle Reservoir	Lake O' The Cherokees
Lower Sulphur	Beaver Reservoir	Little River Ditches	Lower Neosho
Mckinney-Posten Bayous	Spring	North Fork White	Upper White-Village
Bodcau Bayou	Poteau	Cache	Big
Bayou Bartholomew		Strawberry	Lower White
Elk			Lower Arkansas
			Boeuf
			Bayou Macon

Managing Subgrantees

Proactive Communication: Maintain consistent and proactive communication, offering additional support if subgrantees fall behind schedule.

Timely Processing: The Arkansas Department of Agriculture's Natural Resources Division will process semiannual reports and payment requests within a timely manner.

Problem Resolution: Collaborate with subgrantees to address challenges and seek EPA guidance when necessary.

Ensuring Success: Focus on fostering collaboration and providing resources to ensure the successful completion of all projects.

Fiscal Accountability: The Arkansas Department of Agriculture's Natural Resources Division will carefully review all reports and payment requests, ensuring that payments are only granted upon satisfactory completion of work.

Payment Procedures: The Arkansas Department of Agriculture's fiscal department will finalize payments after thorough review by the Arkansas Department of Agriculture's Natural Resources Division.

Budget Oversight: Both the Arkansas Department of Agriculture's Natural Resources Division and the fiscal department will meticulously track and verify the budget to ensure accuracy and compliance.

Monitoring Subgrantees

All GHP projects will maintain regular communication with Arkansas Department of Agriculture's Natural Resources Division for close monitoring and compliance.

Semiannual Reporting: Subgrantees will submit semiannual reports detailing updates on tasks and actions taken on each subtask.

Annual Reports: An annual report will consolidate all projects into a standardized format for easy comparison and progress tracking. This report summarizes project activities and achievements.

Final Reports: Upon completion, each project will submit a final report which typically includes: Executive Summary, Introduction, Goals and Objectives, Project Milestones and Accomplishments, Methodology/Data Collection, Challenges and Barriers, Recommendations and Future Strategies, and a Conclusion.

Semiannual Review Meetings: Subgrantees will participate in semiannual meetings to provide updates on progress and actions completed.

Coordination Meetings: Projects benefiting from collaboration, particularly those with outreach or educational components (e.g., GHP-25-100, -300, -400, -600), will have group meetings as needed to ensure alignment and efficiency.

Site Visits:

- The Nature Conservancy's (TNC) Cache River project will be inspected pre- and post-construction for at least two sites to ensure compliance and completion.
- At least two Arkansas Discovery Watershed's (ADW) monitoring sites will be visited to help evaluate the impact of implementation of conservation practices.
- Beaver Watershed Alliance's (BWA) Outreach Campaign activities will be observed at least once on-site.

Stakeholder Communication:

- The results of all projects will be integrated into the ANRS update.
- Tetra Tech's ANRS Update Design Support will enhance the appeal and accessibility of the ANRS update.
- The ANRS update will be published online and printed for distribution.
- Arkansas Water Resource Center's (AWRC) project GHP-25-200, ANRS Water Quality Analysis Update, will be published with the ANRS update and publicly available.
- The Arkansas Nutrient Reduction Viewer, an online interactive dashboard to convey nutrient reduction at the state and HUC 8 level, will be updated and available online.
- Stakeholder workgroups will be formed and information gathered will be incorporated into the ANRS update.
- A stakeholder conference will be held near the end of the GHP grant to present the culmination of project outcomes.
- All water quality data gathered will be analyzed and publicly available on Water Quality Exchange (WQX).
- Project outcomes and outputs will be recorded on the EPA Grants Reporting and Tracking System (GRTS) website.

Results

Quantitative Measurements:

- The state will track and measure environmental outcomes, including pollutant load reductions for nitrogen, phosphorus, and other co-benefits, using the most up-to-date nutrient efficiency data available within the state. If state-specific data is unavailable, comparable data from nearby or similar states or relevant research may be used.
- Olsson's project GHP-25-700, Updating best management practice (BMP) Tracking and ANRS Support, is focused on gathering quantitative data to assess the impact of conservation practices at both the state and HUC 8 levels. This project will also account for external factors such as changing land use patterns.

Qualitative Measurements:

- Outreach, education, and campaign outcomes will be evaluated based on subgrantee work plans and additional information requested by the Arkansas Department of Agriculture's Natural Resources Division.
- Metrics such as survey results, event attendance, workgroup participation, and outcomes, along with data from the ANRS conference, will be included.

Reporting:

- All results will be compiled, analyzed, and reported to the EPA in semiannual, annual, and final reports. These reports will include both quantitative and qualitative data as it becomes available.

Compliance

- All GHP projects will comply with all local, state, and federal laws.
- Three projects that will be analyzing water quality parameters (GHP-25-100 ADW's AR Discovery Watershed Program, GHP-25-200 AWRC's Water Quality update, and GHP-25-800 Arkansas's Water Quality Monitoring in Priority Watersheds) require a Quality Assurance Protection Plan (QAPP). All QAPPs will be approved by Arkansas Department of Agriculture's Natural Resources and EPA before any work is permitted on the project.
- All projects (specifically TNC's Enhancing Arkansas agricultural drainage in the Upper Cache River watershed) will adhere to Clean Water Act requirements, National Environmental Policy Act (NEPA) including any impacts to waters of the United States, Build America, Buy America Act (BABA), State Historic Preservation Office (SHPO), and Endangered Species Act (ESA) standards.
- All projects will follow Title VI of the Civil Rights Act of 1964 which prohibits discrimination based on race, color, or national origin in programs and activities that receive federal financial assistance.

Environmental Results

Strategic Outcomes

This workplan aligns with the EPA's four strategic outcomes and supports the primary goals and objectives of the ANRS (Figure 2).

ANRS Goals and Objectives (Abbreviated)

Goal 1: Reduce Nutrient Loads in Tier 1 Watersheds

Objective A: Update and maintain watershed management plans for Tier 1 watersheds.

Objective B: Implement conservation practices on agricultural and forest lands in Tier 1 watersheds to reduce nutrient loads.

Objective C: Refine the pilot Septic Tank Removal Program using lessons learned.

Objective D: Develop and execute a communication plan to engage partners and stakeholders in Tier 1 watersheds.

Goal 2: Enhance Monitoring for Tier 2 Watersheds

Objective A: Improve coordination among water quality monitoring agencies to expand coverage and reduce overlap.

Objective B: Leverage funding to implement conservation practices that reduce nutrient loads in Tier 2 watersheds.

Goal 3: Maintain Progress Across All Watersheds

Objective A: Incorporate data and analysis into biennial progress reports.

Objective B: Create a framework for tracking and reporting nutrient reductions.

Objective C: Publish biennial reports summarizing strategic actions and outcomes.

Objective D: Conduct comprehensive analyses of nutrient concentrations across all watershed Tiers.

Objective E: Update nutrient reduction efficiencies for conservation practices.

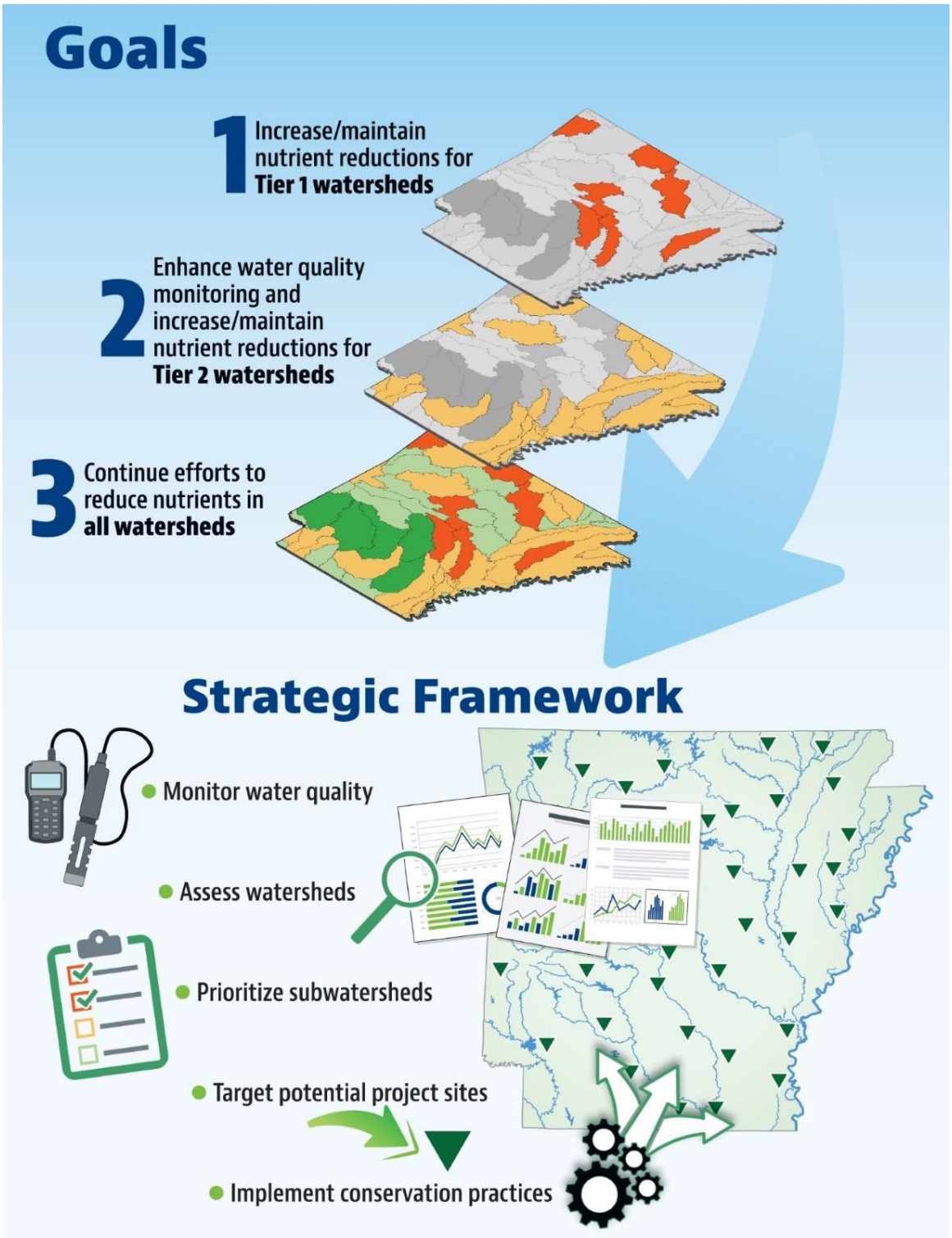


Figure 2. Arkansas Nutrient Reduction Strategy goals and strategic framework for implementation.

Strategic Outcomes for GHP

Arkansas will achieve three of EPA's four strategic outcomes (Table 2 & 3)

1. **Support staff to implement the workplan.**

The Arkansas Department of Agriculture's Natural Resource Division employs staff to implement the Gulf Hypoxia Program but does not use GHP funds for employee salaries. The EPA is aware of this arrangement.

2. **Use state-level water quality programs and actions to advance nutrient reductions.**
    a) Implement conservation practices and initiatives to address nonpoint source nutrient pollution (ANRS: Goal 1, Objective B).
    b) Conduct field demonstrations for gully remediation projects through partnerships with organizations like The Nature Conservancy (ANRS: Goal 1, Objective B).
    c) Reassess water quality trends for the 58 HUC 8 watersheds, supporting ANRS recommendations (ANRS: Goal 3, Objective D).
    d) Provide watershed leadership training to enhance local capacity for management plan implementation (ANRS: Goal 3, Objective C).
    e) Use state-level water quality programs and actions to advance nutrient reductions by applying lessons from the ADW to demonstrate field-level conservation practices that improve water quality at the watershed scale (ANRS: Goal 1, Objective B and Goal 2, Objective B).
    f) Promote the adoption of POTW optimization strategies to further statewide nutrient reduction efforts, reducing nitrogen and phosphorus discharges and ensuring compliance with evolving regulatory standards (ANRS: Goal 1, Objective B and Goal 2, Objective B).

3. **Implement projects in prioritized watersheds with the greatest opportunities for nutrient reductions.**
    a) Prioritize nutrient reduction projects in Tier 1 and Tier 2 watersheds to achieve the greatest impact (e.g., Upper Cache River and Beaver Watersheds) (ANRS: Goal 1, Objective B and Goal 2, Objective B).
    b) Develop partnerships with drainage districts to enhance water quality and agricultural drainage through best management practices, such as two-stage ditches and gully remediation (ANRS: Goal 1, Objective B).
    c) Evaluate success through measurable outcomes like public engagement and adoption of conservation programs (ANRS: Goal 3, Objective A).
    d) Demonstrate a clear, evidence-based understanding of how field-level conservation practices effectively improve water quality at the watershed scale (ANRS: Goal 2, Objective B).
    e) Enable partner-led trainings, support farmer-led education and demonstrations, and employ new outreach approaches to increase participation of landowners (ANRS: Goal 3, Objective A).
    f) Use GIS analysis to create a roadmap for drainage districts and The Nature Conservancy to use in the Cache River watershed to inform the implementation of BMPs such as two-stage ditches and gully remediation (ANRS: Goal 2, Objective B).
    g) Utilize water quality analysis to evaluate the effectiveness of conservation practices in the Upper Cache River Watershed and Beaver Watershed (ANRS: Goal 2, Objective A).
    h) Implement projects in prioritized watersheds with the greatest opportunities for nutrient reductions, leveraging evidence-based insights from the ADW to achieve measurable and scalable water quality improvements (ANRS: Goal 1, Objective B and Goal 2, Objective B).
    i) Target wastewater treatment facilities in key watersheds for process optimization, ensuring that reductions in nutrient loads from point sources complement broader watershed-scale nutrient reduction efforts (ANRS: Goal 1, Objective B and Goal 2, Objective B).

4. **Collaborate across state boundaries with HTF partners.** Arkansas will:
    a) Leverage resources to work with HTF members and stakeholders on tracking and reporting progress toward the Gulf Hypoxia Action Plan (ANRS: Goal 3, Objective B).
    b) Form workgroups to support engagement and implementation of ANRS strategies (ANRS: Goal 3, Objective A).
    c) Coordinate and improve access to shared data to communicate nutrient load trends effectively at state, regional, and basin-wide levels (ANRS: Goal 3, Objective D)
    d) Communicate estimations of baseline and current nutrient loads by HUC8 and statewide to help other states and HTF partners (Goal 3, Objective B).
    e) Share best practices for POTW nutrient optimization with neighboring states, fostering regional collaboration to enhance treatment efficiencies and accelerate nutrient reductions in shared watersheds (Goal 3, Objective B).

Table 2: Subgrantee Information

Subgrantee Information		
Project	Subgrantee	Title
GHP-25-100	University of Arkansas Systems	Arkansas Discovery Watershed Program
GHP-25-200	Arkansas Watershed Resource Center (AWRC)	Water Quality Analysis Update
GHP-25-300	The Nature Conservancy (TNC)	Enhancing Arkansas Agricultural drainage in the Upper Cache River watershed
GHP-25-400	University of Arkansas Systems	Continuing Arkansas Watershed Steward Program
GHP-25-500	Tetra Tech	Arkansas Nutrient Reduction Strategy Update Design Support
GHP-25-600	Beaver Watershed Alliance (BWA)	Outreach Campaign for Farmers
GHP-25-700	Olsson	Updating BMP Tracking and ANRS Support
GHP-25-800	Arkansas Department of Agriculture (ADA)	Water Quality Monitoring in Priority Watersheds
GHP-25-900	Arkansas Department of Energy and Environment Division of Environmental Quality (DEQ)	Wastewater Treatment Plant Optimization Plan

Table 3: Subgrantee's Strategic Outcomes, GHP Priorities, and NEPA Category

Strategic Outcome					Other Environmental Benefits	Clean and Safe Water for Communities	NEPA Category		
Project	1	2	3	4			1	2	3
GHP-25-100		X	X		X	X	X		
GHP-25-200				X			X		
GHP-25-300			X		X	X	X		X
GHP-25-400			X		X	X	X		
GHP-25-500		X					X		
GHP-25-600			X	X	X	X	X		
GHP-25-700							X		
GHP-25-800		X	X			X	X		
GHP-25-900		X	X		X		X	X	

This workplan not only advances the goals of the ANRS but also supports the objectives outlined in the GHP Action Plan by:

1. Reducing Nutrient Loading: Reduce the amount of nitrogen and phosphorus entering the Mississippi River Basin to decrease the size of the hypoxic zone in the Gulf of America.

2. Mitigating Hypoxic Zone Size: work towards achieving a five-year running average size of the hypoxic zone of 5,000 square kilometers (1,930 square miles) or less by implementing targeted actions.
3. Enhancing Quality of Life: Improve water quality in the Mississippi River Basin and Gulf of America while improving communities and economic conditions of the region's resources.

This workplan aims to deliver measurable environmental results in multiple watersheds by achieving nutrient reductions through targeted conservation practices. Specifically, the ADW program and TNC's Upper Cache River Project will implement strategies to reduce nutrient and sediment loads, yielding significant environmental benefits.

EPA Five Pillars

Pillar 1: Clean Air, Land, and Water for Every American

This workplan is comprised of projects that will provide benefits to air, land, and water by addressing the important issues of excess sediment and nutrient pollution.

Pillar 3: Permitting Reform, Cooperative Federalism, and Cross-Agency Partnership

The projects in this workplan benefit from cooperative federalism and cross-agency partnership aimed to ensure the efficient use of federal funds distributed by EPA through the Arkansas Department of Agriculture's Natural Resources Division.

Arkansas Discovery Watershed Project

Overview

The ADW program focuses on the Brush Creek-Beaver Lake watershed (HUC 12: 110100010702), a key tributary to Beaver Lake—a critical drinking water source in Northwest Arkansas currently threatened by erosion and nutrient runoff. There are over 20 animal feeding operations for poultry production in the watershed, and pasture lands for cattle grazing make up approximately 45% of the watershed area.

Brush Creek is listed as impaired for aquatic life due to bacteria, pathogens, and turbidity, which contribute to poor water quality, diminished aquatic habitats, and reduced recreational use.

Goals and Approach

The ADW program will expand on the successful Arkansas Discovery Farm Program to scale up conservation efforts across agricultural landscapes. These efforts will:

- Enhance Soil and Water Health: Implement targeted conservation practices to reduce nitrogen, phosphorus, and sediment runoff, addressing eutrophication and soil erosion.
- Improve Aquatic Ecosystems: Increase dissolved oxygen levels, mitigate 303(d) impairments, and enhance aquatic habitats.
- Engage the Community: Empower farmers to adopt sustainable practices that improve soil health, water retention, and productivity, fostering long-term commitment to watershed sustainability.
- Support the ANRS: Provide critical data to inform future conservation efforts.

Key Activities

- Continue Baseline Sampling: Collect data from Brush Creek to understand nutrient movement and identify conservation targets (Figures 3-5).
- Upload data: Enter water quality data into the Water Quality Exchange (WQX) with the Project ID marker “GHP.”
- Project outcomes and outputs will be recorded on the EPA Grants Reporting and Tracking System (GRTS) website.
- Implement Conservation Measures: Target areas with high nutrient concentrations for intervention in Brush Creek. Incrementally scale conservation efforts across Brush Creek to achieve measurable water quality improvements.
- Expand the Program: Expand the ADW Program to two additional watersheds in the state.
- Outreach and Stakeholder Engagement: Work with local farmers and stakeholders to align conservation goals.

Brush Creek Watershed Characteristics

- Size: 20.5 square miles, with a total elevation loss of 1,200 feet.
- Land Use: 45% pasture for cattle grazing, 42% forested, and 6% developed.
- Challenges: High soil erosion hazard potential (>45%) and dissolved oxygen concerns in an impaired tributary.
- Significance: The watershed is vital for maintaining the water quality of Beaver Lake, which serves as the region’s primary drinking water source.

Figure 4: Collecting water samples at BRM01, the watershed outlet

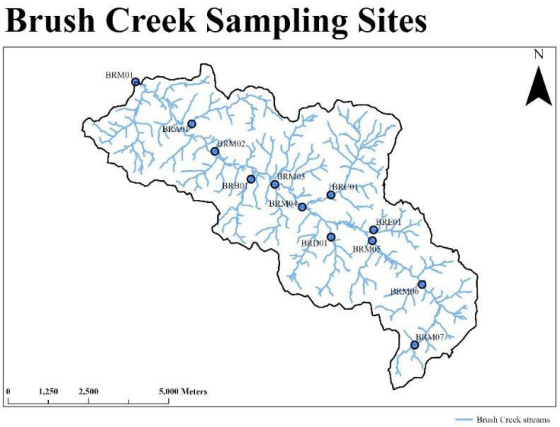


Figure 3: Discover Watershed Monitoring Locations

Figure 5: Collecting Data for Water Quality

The Nature Conservancy's Upper Cache River Project

Overview

The Upper Cache River watershed (HUC #08020302) faces significant challenges from sediment and nutrient loads due to extensive row crop agriculture (67.6%) and limited intact wetlands. The watershed is listed as impaired for turbidity and total dissolved solids, which negatively impact water quality and aquatic habitats.

Goals and Approach

The project will implement conservation practices and drainage stabilization to:

- Reduce Sediment and Nutrient Loads: Implement BMPs to reduce sediment and nutrient loads by up to 50%, improving water quality and reducing pollution in downstream waters.
- Improve Aquatic Habitats: Enhance substrate quality and reduce erosion to support healthier aquatic ecosystems and improve habitat conditions.
- Support the ANRS: Contribute to the goals of the ANRS in this Tier 2 watershed by addressing key environmental challenges.

Key Activities

- GIS analysis: The design will be guided by GIS analysis and hydrologic curves developed by TNC with assistance from Ohio State University.
- Gully Remediation: Drop pipe installations will address erosion hotspots and reduce nutrient runoff.
- Two-Stage Ditch Construction: Documented to reduce sediment and nitrate concentrations between 15-82% and 3 to 24-fold, respectively (Mahl et al. 2015). Similar work in Indiana documented a 22% and 50% reduction of total suspended solid load and concentration, while total phosphorus loads and concentrations were reduced by 40% and 50%, respectively (Hodaj 2016). (See Figures 6-8)
- Compliance and Monitoring: All TNC projects will adhere to Clean Water Act requirements (including any impacts to waters of the United States), NEPA, BABA, SHPO, and coordination with US Fish and Wildlife Service for ESA compliance.

Budget Allocation

- Two-Stage Ditches: Estimated at $16-$18/linear foot, potentially covering 5.7-6.4 miles with the allocated budget.
- Gully Remediation: Estimated at $3,000-$6,000 per site, addressing up to 181 gullies.
- Combination Approach: Final allocation will optimize BMP coverage for maximum impact.

Expected Outcomes

- Nutrient and Sediment Reduction: Significant improvements in water clarity and reduced turbidity, benefiting aquatic life and downstream water quality.
- Enhanced Ecosystem Stability: Reduced erosion and sediment loads will improve habitat stability in the face of storm events and land-use changes.

- Stakeholder Collaboration: Engaged farmers and stakeholders will foster long-term commitment to sustainable watershed management.

These efforts will serve as a model for addressing similar environmental challenges in other agricultural landscapes, delivering measurable improvements in water quality, ecosystem health, and watershed stability.

Figure 6: Ditch 32 Cash, AR before construction

Figure 7: Ditch 32 Cash, AR after construction

Figure 8. Aerial image of Ditch 32

Arkansas Wastewater Treatment Optimization Project

Overview

The Arkansas Wastewater Treatment Optimization Project focuses on enhancing the operational efficiency, energy usage, and nutrient removal capabilities of publicly owned treatment works (POTWs) across Arkansas. These facilities are essential to the state's water quality management, yet many are burdened by aging infrastructure and inefficient processes. By optimizing nutrient removal and reducing energy consumption, this project aims to improve the overall water quality of Arkansas's rivers and streams, ensuring a more sustainable future for both the facilities and the communities they serve.

Goals and Approach

The project will work with the Arkansas Department of Energy and Environment's Division of Environmental Quality (DEQ) to implement wastewater treatment improvements that address key environmental concerns. The primary goals are:

- Enhance Nutrient Removal: Improve nutrient removal efficiency to meet or exceed regulatory standards, thereby reducing nitrogen and phosphorus pollution in downstream waters.
- Reduce Energy Use and Costs: Optimize treatment processes to reduce energy consumption, resulting in operational cost savings and a reduction in the carbon footprint of wastewater treatment operations.
- Increase Infrastructure Stability: Build long-term stability in wastewater infrastructure, ensuring that POTWs can effectively adapt to future regulatory changes and support regional growth.

Key Activities

- Optimize Treatment Processes: Engage in systematic evaluations to enhance wastewater treatment efficiency and reduce energy consumption at select POTWs.
- Benchmark Energy Performance: Utilize energy consumption benchmarking to track energy use, identify areas for improvement, and assess the impact of new technologies like variable frequency drives on energy savings.
- Implement Nutrient Reduction Strategies: Adjust treatment processes to achieve significant reductions in nitrogen and phosphorus loads, improving water quality in nearby rivers and streams.
- Provide Technical Assistance: Offer support and guidance to participating POTWs to help them integrate optimized processes and technologies into their daily operations.
- Measure and Report Results: Track and report on energy savings, nutrient reduction, and operational cost improvements through semiannual and annual progress reports.

Expected Outcomes:

- 10-20% reduction in energy usage: By optimizing aeration processes, introducing more efficient equipment, and implementing other energy-saving measures, these reductions represent significant savings on operational costs and reduced carbon footprints.
- 15-25% decrease in operational costs: These cost reductions stem from energy savings, as well as improved operational efficiencies that reduce the demand on labor and maintenance.

- Up to 25% reduction in nitrogen and phosphorus loads: This estimate is based on benchmark data from similar optimization efforts in comparable facilities nationwide and will be further refined as the project proceeds.
- This project aligns with the ANRS and Nonpoint Source Pollution Management Plan, addressing nutrient pollution in priority watersheds and ensuring cleaner water for the future.

Milestone Schedule

Phase 1: Planning and Preparation (October–December 2025)

- Develop QAPPs: Draft, revise, and finalize all QAPPs in collaboration with subgrantees and EPA (ADW, AWRC, TNC, and Arkansas Department of Agriculture laboratory).
- Develop Cache River Roadmap: Identify drainage districts and boundary areas to create a roadmap (TNC).
- Procure Equipment: Initiate the bid process for laboratory and field supplies; set up new and existing equipment (Arkansas Department of Agriculture laboratory).
- Monitoring Tier 2 Site Setup: Finalize water quality monitoring locations in Tier 2 watersheds (Arkansas Department of Agriculture's Natural Resources Division).

Phase 2: Initial Implementation and Data Collection (October 2025 –September 2026)

- Baseline Sampling in Brush Creek: Conduct biweekly sampling at 12 sites for water quality parameters (e.g., nutrients, turbidity) (ADW).
- Data Collection and Analysis: Begin analyzing collected samples and record related data (ADW & Arkansas Department of Agriculture).
- Public Awareness Campaign: Develop message and partner with local stations to increase outreach (BWA).
- Social Media Strategy: Create targeted content, launch platforms, and engage audiences (BWA).
- Trend Analysis: Begin analyzing trends and generating maps for water quality analysis (AWRC).
- Create Matrix for Ranking of POTWs: Develop ranking system for wastewater treatment plants (DEQ).
- Rank Potential POTWs: Conduct ranking and prioritization process (DEQ).
- Identify High-Priority POTWs for Participation: Select wastewater treatment plants for inclusion (DEQ).
- Meet with POTW Leadership: Engage plant leadership for collaboration. (DEQ)
- Establish Agreements with POTWs and DEQ: Develop agreements outlining participation (DEQ).

Year 2026

Phase 3: Conservation Area Expansion and Outreach (January–September 2026)

- GIS Analysis: Perform GIS analysis of drainage systems and boundary areas (TNC).
- Priority Identification and Outreach: Identify priority conservation areas based on baseline sampling data (ADW).
- Landowner Engagement: Begin outreach and education for local landowners (ADW).
- Workshops and Training: Begin promoting workshops and Arkansas Watershed Stewardship (AWS) training programs for landowners and stakeholders (AWS).
- Issue RFQ for Engineering Firm: Release request for qualifications for engineering services (DEQ).
- Identify and Contract Engineering Firm: Select and establish contract with engineering firm (DEQ).
- Develop Criteria for Selecting Operators: Define standards for recruiting plant operators (DEQ).

Phase 4: Site Selection and Implementation (July–December 2026)

- Site Selection: Finalize site selections for potential conservation practices (TNC).
- Field Verification and Surveying: Conduct in-field verifications and initiate surveys for two-stage ditch designs (TNC).
- BMP Implementation: Begin implementing Best Management Practices (e.g., two-stage construction) (TNC).
- Stakeholder Collaboration: Coordinate meetings to present preliminary findings and gather feedback (TNC & ADW).
- Create and Distribute Call for Operator Participation: Recruit wastewater treatment operators (DEQ).
- Evaluate Applications and Select Operators: Review applications and choose operators for optimization program (DEQ).
- Pair Selected Operators with POTWs: Assign operators to participate in wastewater plants (DEQ).
- Provide Orientation and Initial Training to Operators: Begin training programs for selected operators (DEQ).
- Evaluation and Benchmarking of POTWs: Conduct initial assessment and benchmarking (DEQ).

Year 2027

Phase 5: Monitoring and Documentation (January–June 2027)

- Conservation Expansion: Incrementally increase conservation efforts across the watershed (ADW).
- Trend Monitoring: Analyze water quality data trends and document changes (AWRC).
- Evaluate Current Systems and Operations: Assess energy usage and nutrient removal efficiency (DEQ).
- Evaluate Current Treatment Capabilities: Examine pollutant removal effectiveness (DEQ).
- Benchmarking Against Similar Facilities: Compare participating wastewater plants to peer facilities (DEQ).
- Identify Metrics for Measuring Success: Develop key performance indicators (DEQ).
- Report on outcomes of training workgroups and meetings (AWS)

Phase 6: BMP Implementation & Monitoring (July–December 2027)

- In-Stream BMP Implementation: Continue Best Management Practices for two-stage construction and conservation (TNC & ADW).
- Trend Analysis: Generate maps and visual reports summarizing water quality trends (AWRC).
- Finalize Data: Write a final report and collaborate with stakeholders (AWRC).
- Make Process Adjustments and Test: Implement operational changes for optimization (DEQ).
- Install Technology Upgrades and Test Effectiveness: Deploy and test new treatment technologies (DEQ).
- Monitor Effluent Quality: Assess water discharge quality post-optimization (DEQ).
- Adjust Processes as Necessary: Modify operational approaches based on test results (DEQ).

Year 2028

Phase 7: Expansion to New Watersheds (January–June 2028)

- Watershed Selection: Identify and secure two additional watersheds for project expansion (ADW).
- Expanded Monitoring: Begin water quality monitoring in new areas (ADW).
- Update Design: Enhance the 2022 ANRS with new graphics, charts, and a redesigned front cover, while also creating an educational resource for public outreach (Tetra Tech).

Phase 8: Stakeholder Materials and Outreach (July–December 2028)

- Stakeholder Engagement: Convene ANRS coordination meetings to align strategies (AWS & Arkansas Department of Agriculture's Natural Resources Division).
- Stakeholder Education: plan, promote, and conclude AWS trainings (AWS).

Year 2029

Phase 9: Finalization of Reports and Reviews (January–June 2029)

- Tools for Estimating Nutrient Loads: Finalize and validate tools and workflows developed for estimating nutrient loads and reductions through agriculture BMPs (Olsson).
- Procedure and Tools for Nutrient Reduction Agriculture BMPs: Finalize methodologies and tools for calculating nutrient reductions achieved through agricultural BMPs (Olsson).
- Update ANRS: Finalize four new graphics/charts, extensive review/editing, update cover, develop an educational resource to disseminate (Tetra Tech).
- Discovery Watershed Expansion: Identify and secure two additional watersheds (ADW).
- Water Quality Monitoring: Conclude water quality monitoring at all project locations in Tier 2 watersheds. Complete the analysis of collected samples, ensuring all data is processed, validated, and recorded in WQX (Arkansas Department of Agriculture).
- Project outcomes and outputs will be recorded on the EPA Grants Reporting and Tracking System (GRTS) website.
- BMP effectiveness: Review effectiveness of conservation measures (ADW).

Phase 10: Comprehensive Reporting and Documentation (July–December 2029)

- Review and compile all project reports, ensuring they align with the ANRS framework (Arkansas Department of Agriculture's Natural Resources Division).
- Finalize ANRS update: Finalize editing of ANRS update (Tetra Tech)
- Final Comprehensive Report: Submit to EPA the final project report documenting results (Arkansas Department of Agriculture's Natural Resources Division).
- Public Dissemination: Share results with stakeholders and publish findings (Arkansas Department of Agriculture's Natural Resources Division).

Transferability of Results and Dissemination to Public

The findings from this project will inform future revisions of the Cache River Watershed and Beaver Reservoir's 9-Element Watershed Management Plans, the ANRS, and the Nonpoint Source Annual Report. Additionally, data may be used to develop success stories that highlight improvements in impaired water quality segments achieving water quality criteria and designated use attainment. Project outcomes will be shared through the HTF newsletter and partner websites. Dissemination will extend to partners such as the Lower Mississippi River Basin group and HTF states, with findings also presented at the annual Arkansas Agriculture, Forests, and Water Conference.

Near the completion of the GHP workplan, an ANRS conference will showcase the results, partnerships, and impacts on water quality and agriculture. To further promote project outcomes, organized trainings and/or events, such as field days and demonstrations, will engage stakeholders like drainage districts, farmers, NRCS staff, Arkansas Conservation Districts, Farm Bureau, and others. These trainings and/or events will emphasize project implementation, partnerships, and the resulting water quality and economic benefits for local producers. This multi-faceted dissemination strategy ensures the transferability of results and fosters stakeholder engagement across agricultural and watershed communities.

Local farmers and stakeholders within the Brush Creek-Beaver Lake and Cache River watersheds will participate in planning and implementing conservation practices. The program will expand to include outreach to additional watershed communities across Arkansas and involve local farmers and stakeholders in establishing monitoring sites in multiple Tier 2 watersheds. Collaboration will increase by analyzing and sharing statewide water quality data with other states via the Gulf to Great Lakes website. This data will also serve as the foundation for the next ANRS update, with support from AWRC. Arkansas will partner with other lower Mississippi Basin states for water quality monitoring projects. Outcomes of the GHP workplan will be publicly available on the ANRS website and printed copies will be available to stakeholders.

All water quality monitoring data collected will be entered into the WQX and tagged with "GHP" as the Project ID, enabling easy identification of data generated through GHP funding. The Water Quality Exchange is publicly accessible, ensuring that the data will be available for future research and projects. Project outcomes and outputs will be recorded on the EPA Grants Reporting and Tracking System (GRTS) website.

Additionally, AWRC's analysis of statewide and HUC 8-level water quality data will be incorporated into the ANRS update. Olsson's analysis of nutrient trends over time at the statewide and HUC 8 levels, as well as the impacts of BMPs, land use changes, and other factors, will be featured on the ANRS website via an interactive dashboard.

Technical Support

Staff at the Arkansas Department of Agriculture's Natural Resources Division Nonpoint Source Pollution Program will provide technical assistance and support to subgrantee recipients in the form of QAPP development, site-selection, data entry, and reporting as needed. Arkansas Department of Agriculture's Natural Resources Division will closely review all QAPPs and make sure subgrantees meet EPA requirements.

Detailed Budget Narrative

BUDGET CATEGORIES INFORMATION				
FROM SF424A, SECTION B				
Enter Total Federal Program Costs (Attach Separate Sheet(s) if necessary)				
OBJECT CLASS CATEGORIES:				
a. Personnel: Include vacant positions Position Title	Number in Position Class	Annual Salary Rate	Work Years	Personnel Costs
(1)	(2)	(3)	(4)	(5)
			TOTAL PERSONNEL	**$-**
b. Fringe Benefits:				
			TOTAL FRINGE BENEFITS	**$-**
c. Travel: Include estimates of mileage in State or private vehicles, per diems, air fare, and conference fees.				
			TOTAL TRAVEL	**$-**
d. Equipment:				
(1) List each item costing $10,000 or more to be purchased for this project:				
Inductively Coupled Plasma Mass Spectrometry (ICP-MS)				$200,000
Ion Chromatography (IC)				$20,000
Total Organic Carbon / Total Nitrogen (TOC/TN)				$75,000
(2) List items costing less than $10,000. You may list items by groups, as appropriate.				
			TOTAL EQUIPMENT	**$295,000**
e. Supplies: List by groups				
3 Multiparameter water quality sondes with sensors (pH, conductivity, etc.)				$25,000
			TOTAL SUPPLIES	**$25,000**
f. Contractual: List each planned contract separately, type of service, procurement method (i.e. small purchase, formal advertising, competitive/non-competitive negotiations) and the estimated cost. Indicate if the proposed contract period will go beyond the budget period.				
			TOTAL CONTRACTUAL	**$-**
g. Construction				
			TOTAL CONSTRUCTION	**$-**
h. Other: Explain by major categories any items not included in above standard budget categories.				
Other				$2,194,116
			TOTAL OTHER	**$2,194,116**
i. TOTAL DIRECT CHARGES: (Sum of Items a through h)				**$2,514,116**
j. INDIRECT COSTS: (Attach a copy of your latest indirect cost agreement)				
33% OF MTDC				
k. TOTAL PROPOSED PROGRAM COSTS (Sum of Items i and j)				**$2,514,116**
			SHARE: FEDERAL	100%
			SHARE: GRANTEE	0% $-

Quality Assurance

Arkansas will comply with all QAPPs requirements by developing and implementing comprehensive plans that ensure data integrity and reliability. Detailed QAPPs will be created for each environmental parameter, in collaboration with subgrantees and the EPA, to define success criteria and quality benchmarks for water quality metrics such as nutrients, turbidity, dissolved oxygen, and sediment levels. These QAPPs will guide all phases of data collection and analysis and will be submitted to the EPA for approval to meet federal and state standards.

To ensure successful implementation, Arkansas will provide training to staff and stakeholders to standardize data collection procedures. Routine quality control checks, including equipment calibration and cross-verification of results, will be conducted to maintain consistency and accuracy. All collected data will undergo rigorous validation and verification, including statistical analyses and comparisons to historical datasets, to detect any anomalies or errors.

The water quality data collected under these QAPPs will determine the effectiveness of BMPs, guide priority conservation area identification, and inform adaptive management strategies. Regular progress reports will ensure transparency and provide stakeholders with updates on data collection and analysis results, fostering collaboration and accountability. By adhering to QAPP requirements, Arkansas will ensure that water quality measurements provide reliable and actionable data. This will support informed decision-making for conservation implementation and ultimately achieve measurable improvements in water quality across the state.

Appendix A: GHP-25-100 Arkansas Discovery Watershed

Gulf Hypoxia Program
Project Summary Page
Project GHP-25-100

1. **Title of Project:** Arkansas Discovery Watershed Program

2. **Project Goals/Objectives:** Develop a collective understanding of how to best address water quality issues across scales in agricultural landscapes

3. **Project Tasks:** 1) Quality Assurance Protection Plan (QAPP) 2) Financial Reporting 3) Continue Baseline Sampling 4) Conservation Implementation 5) Expand the program 6) Reporting

4. **Measures of Success:** This project will be considered successful if it demonstrates a clear, evidence-based understanding of how field-level conservation practices effectively improve water quality at the watershed scale, providing measurable and scalable outcomes.

5. **Project Location:** Brush Creek-Beaver Lake HUC 12: 110100010702

6. **Total Project Cost:** $600,572

7. **Project Management:**
   Dr. Shannon Speir
   Assistant Professor, University of Arkansas
   slspeir@uark.edu | 479-575-4118
   https://speirlab.weebly.com/

8. **Project Period:** October 2025 - September 2029

Project GHP-25-100
Arkansas Discovery Watershed Program
Gulf Hypoxia Program

Introduction

The loss of agriculturally derived nutrients and sediments to adjacent freshwaters is of concern in the Mississippi River Basin (USA). Downstream impacts range from eutrophication, harmful algal blooms, habitat degradation, and biodiversity loss (Carpenter and Caraco 1998; Carpenter et al. 2011; Paerl et al. 2018). Therefore, there is a critical need for research on conservation practices that reduce nutrient and sediment loss from agricultural lands, allowing farmers to maintain profitable agricultural operations, while protecting adjacent ditches, streams, and critical downstream ecosystems.

The Arkansas Discovery Watershed (ADW) Program aims to scale up conservation efforts across agricultural landscapes in Brush Creek, an agricultural watershed that serves as a critical tributary to the Beaver Lake Reservoir, a primary drinking water source in Northwest Arkansas. The ADW Program will build on the Arkansas Discovery Farm Program, which currently involves 12 farms across the state, where conservation practices improving soil health and water quality are evaluated at the edge-of-field on working lands. The Discovery Farm Program features strong producer and stakeholder relationships that can be leveraged to successfully implement the ADW Program. By expanding the program to the watershed-scale, this project will understand how the effects of conservation practices conducted at the field-scale manifest at the watershed-scale. As such, this project can identify areas with the highest nutrient concentrations and implement targeted in-stream and on-land practices to enhance downstream water quality by reducing nutrient and sediment loads to Beaver Lake.

The project will cover the Brush Creek-Beaver Lake (HUC 12: 110100010702) watershed in the Ozark Highlands and Boston Mountain ecoregions. Brush Creek is one of the key tributaries discharging into the Beaver Lake Reservoir in Northwest Arkansas, the region's primary drinking water sources. The watershed is located in Washington and Madison Counties, with the watershed outlet near Goshen, AR. The drainage area of the Brush Creek watershed is 20.5 square miles. The total elevation loss across the watershed is 1200 feet, with a maximum slope of 25% and an average slope of 3.1% across the stream network.

There are >20 animal feeding operations for poultry production in the watershed, and pasture lands for cattle grazing make up approximately 45% of the watershed area. The Brush Creek Watershed is not considered urbanized (6% developed), and forested land cover makes up 42% of the watershed area. Soil type is variable across the watershed; however, the Beaver Lake Watershed management plan has indicated that >45% percent of the Beaver Lake Watershed is ranked moderate to severe in soil erosion hazard potential, presenting significant risk for sediment loss to waterways. Brush Creek has a tributary that has been included on the Arkansas 2018 303(d) list of impaired waters. This tributary is specifically listed for dissolved oxygen concerns.

Goals

1. Continue Baseline Sampling: Collect data from Brush Creek to understand nutrient movement and identify conservation targets. Enter data into the water quality exchange (WQX).
2. Implement Conservation Measures: Target areas with high nutrient concentrations for intervention in Brush Creek. Incrementally scale conservation efforts across Brush Creek to achieve measurable water quality improvements.
3. Expand the Program: Expand the ADW Program to 2 additional watersheds in the state.
4. Outreach and Stakeholder Engagement: Work with local farmers and stakeholders to align conservation goals.
5. Data Reporting: Provide regular reports summarizing progress and outcomes.

Approach

Phase 01 (Task 3) - Baseline Sampling: Ongoing sampling of 12 sites along Brush Creek's mainstem and tributaries for nutrients, streamflow, and water quality indicators like dissolved oxygen, turbidity, and conductivity. Enter water quality data into the WQX. (Figure 1)
Phase 02 (Task 4) - Conservation Implementation: Using the baseline data to help implement conservation practices in priority areas, particularly downstream of nutrient pools, to maximize impact.
Phase 03 (Task 5) - Expansion: Establish additional watersheds dominated by other forms of agriculture (e.g., row crops, forestry) to scale conservation efforts across multiple agricultural landscapes in Arkansas.

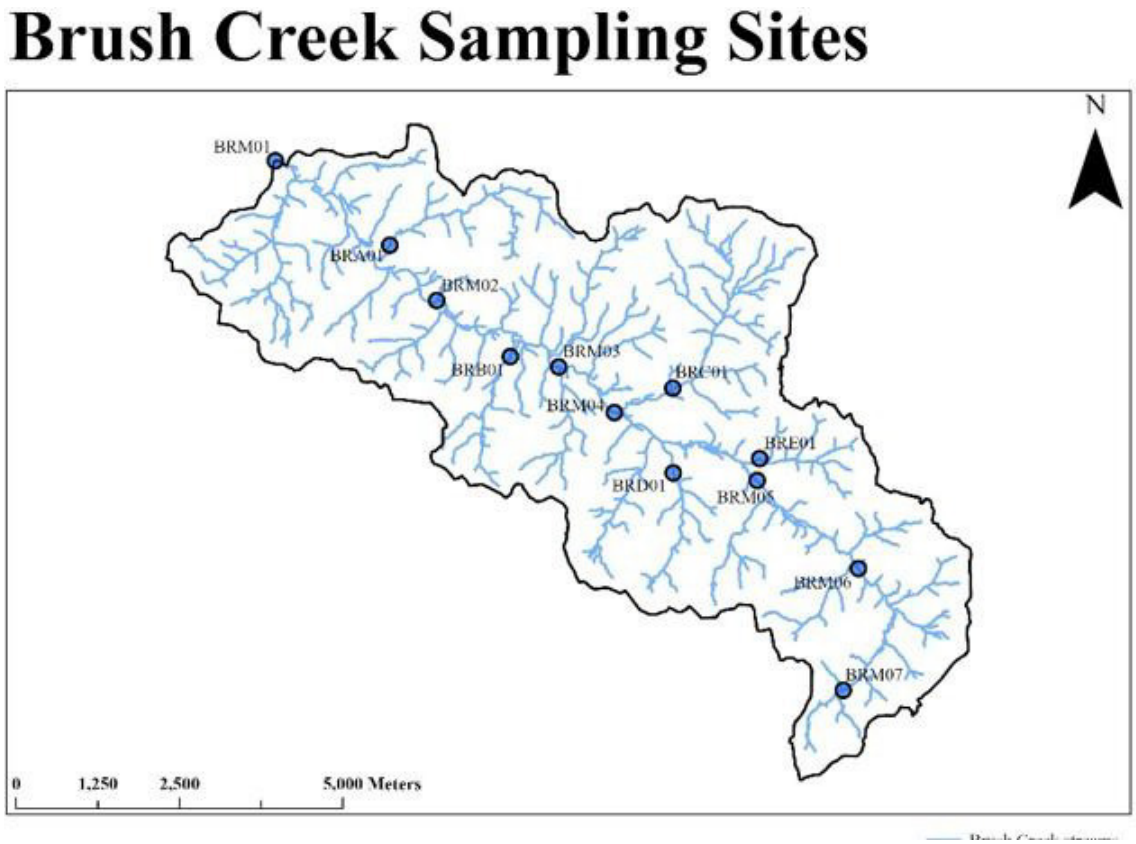


Figure 1: Brush Creek Monitoring Locations

Sampling Approaches for Low Flow Conditions

Given the intermittent nature of the study streams, which is characteristic of the majority of waterways across Arkansas, we have contingency protocols to ensure data collection continuity and validity during periods of reduced flow due to drought or low precipitation events.

Site Assessment Protocol: During every sampling event, field teams visit and assess all designated sites without exception. We do not assume flow conditions or skip sites based on anticipated conditions. At each site, we systematically document and record flow conditions using three categories: flowing, pooled, or dry. This comprehensive approach draws upon our extensive historical dataset, which documents flow conditions and provides statistical context for interpreting current conditions relative to long-term patterns. Additionally, the lower half of the watershed typically flows continuously over the course of the water year (n= X of 12 sites), regardless of drought conditions.

At sites where flow has ceased but isolated pools remain, we employ modified collection techniques specifically designed for lentic conditions, with appropriate quality assurance measures and documentation of altered habitat conditions.

Data Validity Considerations: All sampling modifications are thoroughly documented. Given our historic work in intermittent streams, our analytical approach has been designed specifically to incorporate flow conditions as a key environmental variable. This contextual analysis strengthens rather than compromises our ability to assess water quality trends and make informed management recommendations.

The intermittent nature of these systems is not a limitation but rather a fundamental characteristic that our methodology is specifically designed to accommodate and interpret within the broader ecological context of Arkansas stream systems.

Scope of Work
Project GHP-25-100

Task 1: Finalization and approval of Quality Assurance Project Plan (QAPP)

	Cost	
Total Cost	**Federal**	**Non-federal**
$12,072	$12,072	$0

Objectives: Ensure success of project data collection. Include protocols, methods, and procedures to collect, preserve, store, analyze, and report the gathered environmental measurements. An approved and finalized QAPP will be signed by appropriate partners, staff, and personnel.

Subtask 1.1: Draft QAPP.
Subtask 1.2: Edit and revise the QAPP per review comments.
Subtask 1.3: Finalize QAPP.

Deliverables:

1. An EPA approved QAPP

Task 2: Financial Review

Total Cost	Cost Federal	Non-federal
$15,000	$15,000	$0

Objective: Ensure transparent and accurate financial management of the project through regular reviews and audits of financial records.

Subtask 2.1: Conduct a fiscal review.

Deliverables:

1. Documentation of financial review at the end of the project.

Task 3: Continue Baseline Sampling (Phase 1)

Total Cost	Cost Federal	Non-federal
$119,712	$119,712	$0

Objective: Collect comprehensive baseline water quality data for Brush Creek to inform conservation decisions through September 2026.

Subtask 3.1: Conduct sampling of 12 designated sites for nutrients, streamflow, conductivity, turbidity, and dissolved oxygen approximately twice per month (every other week).
Subtask 3.2: Analyze collected data and compile findings for periodic reporting.
Subtask 3.3: Following initial analyses, expand sampling to additional sites if deemed necessary to capture more comprehensive data.

Deliverables:
Semiannual analysis reports summarizing trends in streamflow and nutrient export from the watershed.
Presentations of project results at local and (inter)national conferences.

Task 4: Conservation Implementation (Phase 2)

Total Cost	Cost Federal	Non-federal
$184,376	$184,376	$0

Objective: Implement targeted conservation practices in areas identified as having the highest nutrient concentrations.

Subtask 4.1: Identify at least two priority subwatersheds for conservation implementation based on baseline sampling data.

Subtask 4.2: Engage with local landowners and stakeholders via outreach and education to facilitate implementation of conservation.
Subtask 4.3: Begin implementation of in-stream practices (e.g., stream bank restoration) and other BMPs (Best Management Practices), such as livestock fencing, manure/fertilizer management, and riparian restoration, in targeted areas in partnership with local conservation districts and district conservationists. Specific practices will be selected based on their suitability for a given priority area.
Subtask 4.4: Incrementally increase conservation across the watershed over the duration of the project.
Subtask 4.5: Continue monitoring at the 12 sites to document the effectiveness of implemented conservation measures over the course of and after implementation.

Deliverables:
List of prioritized conservation areas with justification based on baseline data.
Report on engagement with local landowners (i.e., type of events, number of attendees)
Report on the types and locations of conservation practices implemented.
Monitoring reports showing the impact of conservation efforts on nutrient reduction and the time required to see reductions following conservation implementation.

Task 5: Expand the Program (Phase 3)

	Cost	
Total Cost	**Federal**	**Non-federal**
$155,360	$155,360	$0

Objective: Scale up the Arkansas Discovery Farm Program by adding additional watersheds with varying agricultural profiles.

Subtask 5.1: Identify and secure two additional watersheds dominated by row crops and forestry, respectively.
Subtask 5.2: Expand water quality monitoring efforts to collect baseline data in new watersheds, replicating the Brush Creek model.
Subtask 5.3: Engage local stakeholders in the new watersheds to align goals and practices.

Deliverables:
Documentation of newly added watersheds and their agricultural profiles.
Stakeholder engagement reports from new areas.
Initial baseline data collection from expanded watersheds.

Task 6: Reporting

	Cost	
Total Cost	**Federal**	**Non-federal**
$114,052	$114,052	$0

Objective: Provide comprehensive updates on project progress through regular reporting to stakeholders and funding agencies.

Subtask 6.1: Submit semiannual reports, including progress on baseline sampling, conservation efforts, and financial status.
Subtask 6.2: Submit annual reports by October 1 each year summarizing overall project activities and achievements.
Subtask 6.3: Present project progress at semiannual review meetings.
Subtask 6.4: Submit a final report upon project completion. Suggested sections: Executive Summary, Introduction, Goals and Objectives, Project Milestones and Accomplishments, Methodology/Data Collection, Challenges and Barriers, Recommendations and Future Strategies, Conclusion

Deliverables:
Semiannual reports with updates on each project task.
Annual reports submitted by October 1 each year of the project.
Presentations and supporting materials for semiannual review meetings.
Final project report

Overall Schedule of Tasks and Outputs:

Task	Subtask Number	Description	Start Date	End Date
1	1.1	Draft QAPP.	Oct-25	Oct-25
	1.2	Edit and revise the QAPP per review comments.	Oct-25	Oct-25
	1.3	Finalize QAPP.	Oct-25	Dec-25
2	2.1	Conduct a fiscal review.	Oct-25	Aug-29
3	3.1	Conduct sampling of 12 designated sites for nutrients, streamflow, conductivity, turbidity, and dissolved oxygen approximately twice per month (every other week).	Oct-25	Sep-26
	3.2	Analyze collected data and compile findings for periodic reporting.	Oct-25	Sep-26
	3.3	Following initial analyses, expand sampling to additional sites if deemed necessary to capture more comprehensive data.	Apr-26	Sep-27
4	4.1	Identify at least two priority subwatersheds for conservation implementation based on baseline sampling data.	Jan-26	Sep-26
	4.2	Engage with local landowners and stakeholders via outreach and education to facilitate implementation of conservation.	Jan-26	Aug-29
	4.3	Begin implementation of in-stream practices and other BMPs in targeted areas in partnership with local conservation districts and district conservationists. Specific practices will be selected based on their suitability for a given priority area.	Oct-26	Apr-27
	4.4	Incrementally increase conservation across the watershed over the duration of the project.	Oct-26	Aug-29
	4.5	Continue monitoring at the 12 sites to document effectiveness of implemented conservation measures over the course of and after implementation.	Oct-26	Aug-29

5	5.1	Identify and secure two additional watersheds dominated by row crops and forestry, respectively.	Jan-28	Jan-29
	5.2	Expand water quality monitoring efforts to collect baseline data in new watersheds, replicating the Brush Creek model.	Apr-28	Aug-29
	5.3	Engage local stakeholders in the new watersheds to align goals and practices.	Jan-28	Aug-29
6	6.1	Submit semiannual reports, including progress on baseline sampling, conservation efforts, and financial status.	Oct-25	Aug-29
	6.2	Submit annual reports by October 1 each year summarizing overall project activities and achievements.	Oct-25	Aug-29
	6.3	Present project progress at semiannual review meetings.	Oct-25	Aug-29
	6.4	Submit a final report upon project completion.	Sep-29	Sep-29

Coordination, Roles and Responsibilities:
The Speir Lab at the University of Arkansas will lead project coordination, execution, and reporting. Dr. Shannon Speir (Assistant Professor) will serve as the project lead, Alana Strauss (Program Associate) will coordinate analyses and fieldwork, and graduate students (to be hired) will assist with project needs. Mike Daniels (Extension Professor) will assist with program expansion to the Arkansas Delta Region and Southern Arkansas to aid in selecting the location for the two new Discovery Watersheds

Public Participation:
Local farmers and stakeholders within the Brush Creek watershed will participate in planning and implementing conservation practices. The program will expand to include outreach to additional watershed communities across Arkansas and involve local farmers and stakeholders in establishing monitoring sites in the two new watersheds.

Measures of Success and Performance:
The success and performance of this project will be determined by the ability to provide clear, evidence-based assessments demonstrating how field-level conservation practices positively impact water quality at the watershed scale. Performance will be measured through the collection of data that shows measurable improvements in water quality, scalability of conservation efforts, and the effectiveness of targeted interventions across the watershed.

Project Lead:
Dr. Shannon Speir
Assistant Professor, University of Arkansas
slspeir@uark.edu | 479-575-4118
https://speirlab.weebly.com/

Appendix 1
Estimated Project Budget

Personnel	**Annual Salary**	**Years**	**Cost**	**Federal**	**Non Federal**
PhD Student	28,000	5	$ 140,000		
Hourly Student Worker	1,720	5	$ 8,600		
Total Personnel			**$ 148,600**	$ 148,600	$0
Fringe Benefits		**Percent**			
PhD Student	5.0	5.20%	$ 7,280		
Hourly Student Worker	5.0	0.10%	$ 10		
Total Fringe			**$ 7,290**	$ 7,290	$0
Total Personnel including Fringe			**$ 155,890**	$ 155,890	$0
Travel					
73,020 miles @ .65/mile to conduct fieldwork			$ 47,463		
Local Conference Attendance for 2 people (Arkansas Water Resources Conference and Discovery Farms Conference)			$ 8,320		
(Inter)National Conference Attendance for 2 people			$ 19,040		
Total Travel			**$ 74,823**	$ 74,823	$0
Materials and Supplies	**Annual Cost**	**Years**			
Brush Creek Field Supplies	5000	5	$ 25,000		
Row Crop Watershed Field Supplies	5000	2.5	$ 12,500		
Forestry Watershed Field Supplies	5000	1.5	$ 7,500		
General Lab Supplies	2000	5	$ 10,000		

Chemicals & Reagents for Water Chemistry	2500	5	$ 12,500		
Water Chemistry Consumables	2500	5	$ 12,500		
Total Materials and Supplies			**$ 80,000**	$ 80,000	$0
Other Direct Costs					
Journal Publication Fees	3000	2	$ 6,000		
GIS License	200	5	$ 1,000		
Desktop Computer	3500	1	$ 3,500		
Field Laptop	2500	1	$ 2,500		
SEAL AA500 Annual Maintenance	6000	5	$ 30,000		
Total Other Direct Costs			**$ 43,000**	$ 43,000	$0
Equipment					
Water Quality Sensor Stations (n=2)	70000	1	$ 70,000		
Total Equipment			**$ 70,000**	$ 70,000	$0
Total Direct Charges			**$ 352,613**		
Indirect (50% of MTDC)			**$ 176,859**		
Equipment (Excluded from Indirect Cost Calculation)			**$ 70,000**		
Grand Total			**$ 600,572**		

Appendix 2
PROJECT BUDGET JUSTIFICATION WORKSHEET

BUDGET CATEGORIES INFORMATION				
FROM SF424A, SECTION B				
Enter Total Federal Program Costs (Attach Separate Sheet(s) if necessary)				
OBJECT CLASS CATEGORIES:				
a. Personnel: Include vacant positions Position Title	Number in Position Class	Annual Salary Rate	Work Years	Personnel Costs
(1)	(2)	(3)	(4)	(5)
PhD Student	1	$ 28,000	5.0	$ 140,000
Hourly Student Worker	2	$ 1,720	5.0	$ 8,600
			TOTAL PERSONNEL	**$148,600**
b. Fringe Benefits:				
PhD Student				$ 7,280
Hourly Student Worker				$ 10
			TOTAL FRINGE BENEFITS	**$ 7,290**
c. Travel: Include estimates of mileage in State or private vehicles, per diems, air fare, and conference fees.				
73,020 miles @ .65/mile to conduct fieldwork				$ 47,463
Local Conference Attendance for 2 people (Arkansas Water Resources Conference and Discovery Farms Conference)				$ 8,320
(Inter)National Conference Attendance for 2 people				$ 19,040
			TOTAL TRAVEL	**$ 74,823**
d. Equipment:				
Water Quality Sensor Stations (n=2)				$ 70,000
			TOTAL EQUIPMENT	**$ 70,000**
e. Supplies: List by groups				
Brush Creek Field Supplies				$ 25,000
Row Crop Watershed Field Supplies				$ 12,500
Forestry Watershed Field Supplies				$ 7,500
General Lab Supplies				$ 10,000
Chemicals & Reagents for Water Chemistry				$ 12,500
Water Chemistry Consumables				$ 12,500
			TOTAL SUPPLIES	**$ 80,000**
f. Contractual: List each planned contract separately, type of service, procurement method (i.e. small purchase, formal advertising, competitive/non-competitive negotiations) and the estimated cost. Indicate if the proposed contract period will go beyond the budget period.				
			TOTAL CONTRACTUAL	**$ 0**
g. Construction				
			TOTAL CONSTRUCTION	**$ 0**
h. Other: Explain by major categories any items not included in above standard budget categories.				
Journal Publication Fees				$ 6,000
GIS License				$ 1,000

Desktop Computer		$ 3,500
Field Laptop		$ 2,500
SEAL AA500 Annual Maintenance		$ 30,000
TOTAL OTHER		**$ 43,000**
i. TOTAL DIRECT CHARGES: (Sum of Items a through h, excluding equipment)		**$352,613**
j. INDIRECT COSTS: (Attach a copy of your latest indirect cost agreement)		**$176,859**
50% OF MTDC		
k. EQUIPMENT (DOES NOT ACCRUE INDIRECT COSTS)		$ 70,000
l. TOTAL PROPOSED PROGRAM COSTS (Sum of Items i and j)		**$600,572**
SHARE: FEDERAL	100%	
SHARE: GRANTEE	0%	$ -

Travel for Conferences:

Local Conferences				
AWRC Conference (Registration only)				
Cost	#people		Yrs	**Cost/Yr**
$100	3		5	$300
Discovery Farm Conference				
Trip/yr	Miles/Trip	Cost/Mile	Yrs	**Cost/Yr**
1	400	$0.65	5	$260
	^^to 4H center			
Lodging				
Cost	Rooms	Nights	Yrs	**Cost/Yr**
$150	2	2	5	$600
Food				
Cost	#people	Days	Yrs	**Cost/Yr**
$59	2	3	5	$354
Registration				
Cost	#people		Yrs	**Cost/Yr**
$50	3		5	$150
National Conferences				
Registration				
Cost	#people		Yrs	**Cost/Yr**
$600	2		5	$1,200

Lodging				
Cost	Rooms	Nights	Yrs	**Cost/Yr**
$150	2	5	5	$1,500
Food				
Cost	#people	Days	Yrs	**Cost/Yr**
$59	2	6	5	$708
Taxi, Other Incidentals				
Cost	#people		Yrs	**Cost/Yr**
$200	2		5	$400

Local conference travel funds are requested to cover lodging, travel, registration, and other costs associated with presenting at the Arkansas Water Resources Conference in Fayetteville, AR (registration only = $150/person x 2 people x 5 years = $1,500) and the Discovery Farms Conference in Little Rock, AR ($682/person x 2 people x 5 years = $6,820) for PI Speir and the project PhD student.

National/International conference travel funds are requested to cover lodging, travel, registration, and other costs associated with presenting at one national/international conference for PI Speir and the project PhD student in each year of the project ($1,904/person x 2 people x 5 years = $19,040)

Appendix B: GHP-25-200 Arkansas Water Resources Center

Summary Page

Project GHP-25-200
ANRS Water Quality Analysis Update

1. Title of Project: Water Quality Analysis Update

2. Project Goals/Objectives: The primary objective is to provide a comprehensive reassessment of water quality magnitude and trends of nutrients for the 58 HUC 8 watersheds across Arkansas, based on the data available. It will also provide support for the recommendations and goals of the ANRS.

3. Project Tasks: 1) Quality assurance project plan (QAPP) finalization, 2) Financial review 3) Water quality analysis for trends and magnitudes of all HUC 8 watersheds 4) Support for the Arkansas Nutrient Reduction Strategy 5) Provide Logistical Support for Geospatial Analysis and Materials 6) Reporting

4. Measures of Success: This project will be considered successful if it demonstrates a clear, evidence-based understanding of water quality trends and magnitudes at the watershed scale statewide.

5. Project Location: Statewide

6. Project Costs: $208,753

7. Project Management: Brian Haggard, Director, Arkansas Water Resources Center, and Professor, Division of Agriculture of the University of Arkansas AWRC Support: Erin M. Grantz, Program Manager, Arkansas Water Resources Center

8. Project Period: October 2025 – July 2029

Project GHP-25-200
ANRS Water Quality Analysis Update

Introduction of Watershed Area

This project is statewide and will cover all HUC 8 watersheds of Arkansas.

Problem/Need Statement

To achieve Goal 3 of the Arkansas Nutrient Reduction Strategy (ANRS) — continuing efforts in all watersheds — the Arkansas Water Resources Center (AWRC) will integrate the latest water quality data and analysis into the ANRS five-year update. AWRC will also provide logistical support and technical expertise throughout the process.

Watershed categorization will be based on multiple levels of information, including site-specific trends and percentile nutrient concentrations at both the HUC 8 and eco-region levels. The objective is to evaluate nutrient concentrations and trends in relation to eco-regional baselines and watershed-wide land use. This will help determine whether a watershed should be prioritized for nutrient reduction, considered low priority due to sufficient data showing good water quality, or identified as needing additional data collection to clarify its status as a potential focus or non-focal watershed.

General Project Description

This project supports the Arkansas Nutrient Reduction Strategy (ANRS). The ANRS is a plan to improve water quality in Arkansas by outlining goals and tasks to lower nutrient pollution. It aims to get people, researchers, and groups involved in protecting the state's waters. A statewide HUC 8 water quality analysis is vital to the ANRS to determine where the state needs to focus conservation and water quality monitoring efforts.

In 2021, the Natural Resources Division in partnership with the Arkansas Water Resources Center (AWRC) conducted a water quality analysis of all subbasin level watersheds (Appendix A) for the 2022 ANRS update. The goal was to prioritize watersheds based on extensive statewide water quality monitoring data. All watersheds were classified into four Tiers. Tier 1 had the greatest potential for both nitrogen and phosphorus reduction based on sufficient data. Tier 2 had the greatest need for future monitoring investments due to demonstrated nutrient reduction needs, data limitations, or both. Tier 3 and Tier 4 did not have high demonstrated nutrient reduction needs; however, Tier 3 needed to expand data with more monitoring sites. Tier 4 needed to focus on continuing efforts already in place of conservation practices and monitoring efforts.

Every five years the water quality for the state of Arkansas will be reassessed with the latest water quality available and the ANRS will be updated accordingly. This project will mainly focus on the five-year comprehensive reassessment of water quality magnitude and trends of nutrients for the 58 HUC 8 watersheds across Arkansas, based on the data available.

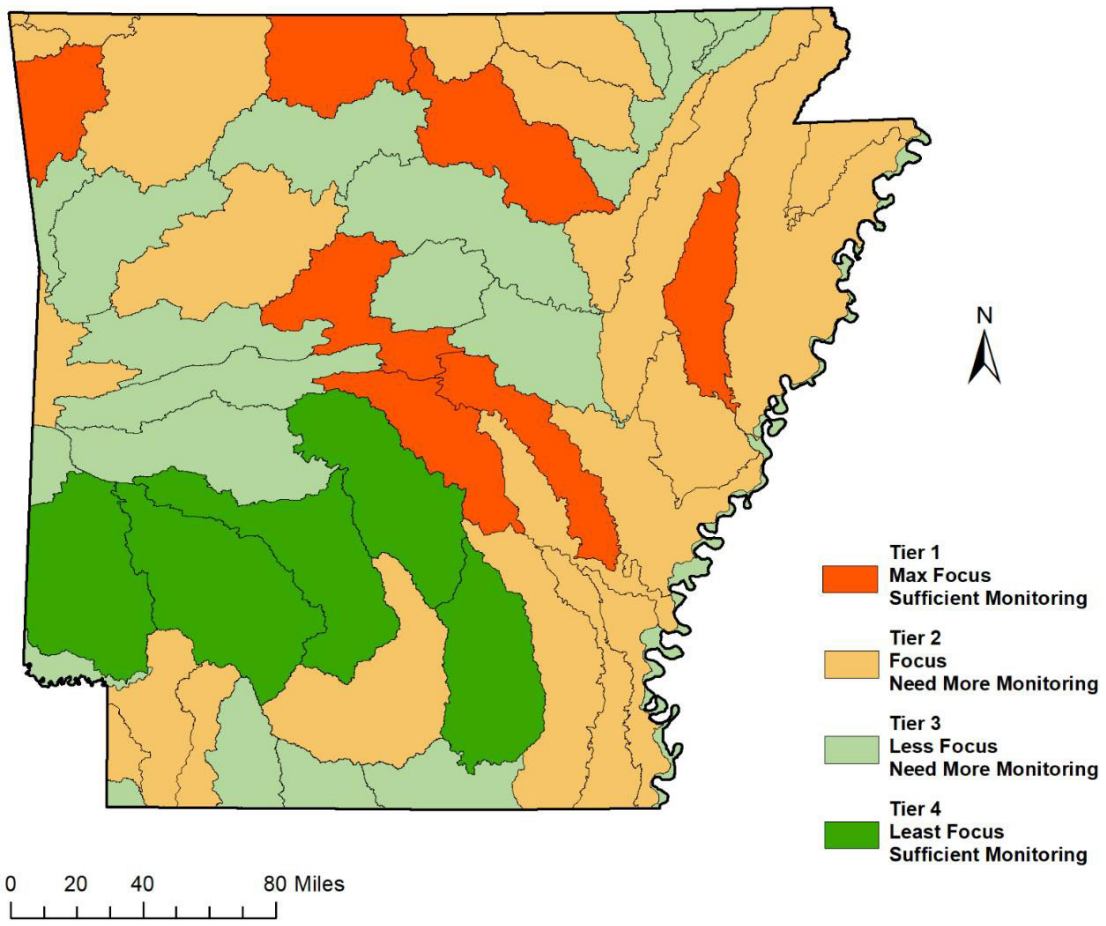


Figure 1: ANRS four-tier HUC 8 watersheds

Two main workgroups formed in the spring of 2023 to begin the work on specific needs of the ANRS: Innovation (Science & Research) Workgroup and the Communication (Outreach & Education) Workgroup. AWRC will put effort toward answering one of the big questions from the stakeholder process, i.e. what nutrient concentration percentile best captures loads. This answer will help support Recommendation 3 from the ANRS Innovation (Science and Research) Workgroup (Appendix B) regarding stream load estimates at limited gauging stations.

The Innovation Workgroup established a subcommittee that was tasked with prioritizing monitoring among the Tier 2a and 2c watersheds based on projections of future data availability. It was projected that only one watershed (Cache River) may possibly qualify was both the trends and magnitude data threshold needed to be eligible for Tier 1 status in 2027. The Innovation Workgroup recommended that Arkansas establish a network of ANRS water quality monitoring sites across partners, with funds and technical support available to fill coverage gaps were possible. AWRC will support this recommendation by providing a forum for water quality organizations throughout the state to meet during the AWRC conference to coordinate efforts for water quality monitoring and discussing plans with limited funding.

In addition, AWRC will review the framework of the analysis and make any changes, modifications, or additions. This may include, but not limited it:

- Reviewing the current four-tiered HUC 8 watersheds system (Figure 1) for the possibility of an alternate route for qualifying for Tier 1, prompted by previous findings of data scarcity.
- Reviewing the criteria for changing a HUC 8 watershed's tier classification
- Considering if a cap on the number of Tier 1 watersheds is needed
- Modifying Tier 2 categories if necessary

Innovation (Science and Research) Recommendations:

Recommendation 1 – Establish a network of ANRS Water Quality Monitoring Sites across partners, with funds and technical support available to fill coverage gaps. The data discovery shows that having these watersheds consistently meet requirements for the ANRS data analysis in subsequent updates is unlikely to occur without coordination among monitoring partners. The identified entities do not currently operate in coordination with each other or with a lead organization, such as NRD. In these prioritized watersheds, the committee also recommends establishing gauging stations as a companion to the monitoring.

Recommendation 2 – Establish alternative routes to fully qualify for Tier 1. The 2022 ANRS data analysis required that a HUC 8 have sufficient data for all components of the analysis to be eligible for Tier 1 status. This means that a watershed must have four sites with 10+ years of data under the current approach to analysis. This requirement was in place to make certain the State has the necessary data to track progress after investing in nutrient reduction projects. However, it may be appropriate to revise this requirement to a HUC 8 having a full 4 – 5 years within the present analysis window and a plan in place for continued monitoring during the next window. Other continency options may also be needed, such as tracking nutrients at HUC 8 outlet sites without summarizing across sites at the watershed scale.

Recommendation 3 – Conduct Research on stream load estimates on limited gauging stations. If gauging stations are funded or a watershed can be located that has multiple gauging stations, then the committee envision having a robust data set to explore correlations of estimated loads for with various percentile estimates of concentration to determine what areas of the data distribution would best represent loading and if these relationships are site-specific or more global as a mean of characterizing and reducing error in loading estimates. It should be noted that this is a research need and will not be used in the evaluation or prioritization of watersheds for the ANRS.

Project GHP-25-200
ANRS Water Quality Analysis Update

Scope of Work

Tasks, Objectives, Subtasks, Schedules, Deliverables, and Estimated Costs

Task 1: Finalization of QAPP for water quality data management

Objective: The Arkansas Water Resources Center (AWRC) will develop a secondary data QAPP, which will be submitted to the Arkansas Department of Agriculture's Natural Resources Division (Natural Resources Division) and the US Environmental Protection Agency (USEPA) for review and approval. The QAPP will be developed using prior approved secondary data QAPPs and following the USEPA guidance [https://www.epa.gov/quality/epa-qar-5-epa-requirements-quality-assurance-project-plans].

Subtask 1.1: Draft QAPP and submit to NRD.
Subtask 1.2: Revise QAPP and submit to EPA.
Subtask 1.3: Submit Final QAPP for EPA approval.

Deliverables:
Draft QAPP
Final EPA Approved QAPP

Task 2: Financial Audit

Objective: Review of all financial records following agreed upon procedures.

Subtask 2.1: Financial review at conclusion of grant

Deliverables:
Report of financial review for entirety of grant

Task 3: Water quality analysis for trends and magnitudes of all HUC 8 watersheds

Objective: Evaluate and analyze water quality trends and magnitudes across HUC 8 watersheds in Arkansas, with possible inclusion of smaller HUC 10 and HUC 12 watersheds if sufficient data is available. The analysis will focus on identifying changes in nutrient concentrations over time and understanding both broad watershed trends and site-specific variations to inform the ANRS.

Subtask 3.1: Percentile Trends

The focus of this task will be on trends in percentile distributions (i.e., 75th percentile) of nutrient across the major hydrologic unit code 8 (HUC 8) watershed across Arkansas; if sufficient geospatial data exists within the Arkansas Department of Energy & Environment's

Division of Environmental Quality (DEQ) database, then these smaller (e.g., HUC 10 and 12) watersheds will be evaluated also. Statistical summaries including percentile distribution in nutrient concentrations will be calculated for each HUC 8, 10 and 12 (if sufficient geospatial designation exists in the DEQ database) watershed on an annual basis. The trends in percentile distributions of nutrient concentrations will be evaluated using Mann Kendall Test or other statistical techniques of interest.

Subtask 3.2: Site Specific (Magnitude) Trends

The HUC 8 (and possibly HUC 10 and or 12 level) watershed trends will be reviewed to evaluate which watersheds need further investigation into site specific trends in nutrient concentrations. The selected stream sites will be analyzed for site specific trends in water quality, using a three-step process (Simpson and Haggard 2018 modified from White et al. 2004):

1) Data will be log-transformed to account for the typical log-distribution of chemical concentrations observed in streams with large databases,

2) If streamflow exists for a selected stream site, the chemical concentrations will be flow-adjusted using a smoothing technique, removing the potential influence of stream flow on chemical concentrations (see Simpson and Haggard, 2018),

3) And, then various statistical techniques (e.g., simple linear regression for monotonic changes, LOESS for fluid changes over time, and or seasonal Kendall's Tau to adjust for seasonal changes) will be used to evaluate trend in nutrients.

Flow-adjustment of nutrient concentrations will be limited to those sites that overlap with discharge or stage monitoring stations and have flow records available in the DEQ database or that can be paired with flow records from other available sources, e.g. the U.S. Geological Survey's National Water Information Systems database. As needed, trends can be evaluated using the seasonal Kendall's Tau on sites where discharge or stage is not available to provide guidance on directional change in water quality, which still gives directional change sand can be used to estimate a slope (percent change per year).

Task 4: Support for the Arkansas Nutrient Reduction Strategy

Objective: Support the Arkansas Nutrient Reduction Strategy (ANRS) by conducting research to determine the optimal nutrient concentration percentile that most effectively captures stream load estimates. This task will contribute directly to the recommendations made for the ANRS.

Subtask 4.1: Analyze nutrient concentration percentiles to identify which value best represents nutrient loads across Arkansas watersheds, supporting the establishment of a network of ANRS Water Quality Monitoring Sites to fill data gaps in collaboration with various partners. AWRC will also explore alternate routes for qualifying watersheds for Tier 1 status and review the current four-tiered HUC 8 watershed system, ensuring accurate classification based on the latest data.

Subtask 4.2: Review the criteria for changing a watershed's tier classification and assess the need for a cap on Tier 1 watersheds. AWRC will also consider modifying Tier 2 categories to better reflect data availability and nutrient reduction needs.

Task 5: Provide Logistical Support for Geospatial Analysis and Materials

Objective: Provide logistical and technical support to the Natural Resources Division by creating geospatial analyses and visual materials to illustrate nutrient concentration changes across Arkansas watersheds. This task will also involve reviewing and refining the analytical framework used for watershed assessments.

Subtask 5.1: Generate statewide and watershed-specific digital maps that highlight areas of water quality improvement or decline. AWRC will review criteria for watershed classification and support any needed revisions of criteria. AWRC will review the monitoring strategies based on the findings of the Innovation Workgroup, including recommendations on gauging stations and monitoring coordination among partners.

Subtask 5.2: Collaborate with Natural Resources Division and other stakeholders to provide visual aids and methodology to refine watershed prioritization, especially in Tier 1 and 2 watersheds. AWRC will ensure all changes or modifications in the framework are incorporated into the geospatial analysis and materials to support informed decision-making. If applicable, AWRC will work with Great Lakes to Gulf (GLTG) to provide them data results and review the data they post, ensuring accuracy and relevance.

Task 6. Reporting

Objective: Provide comprehensive updates on project progress through regular reporting to stakeholders and funding agencies.

Subtask 6.1: Submit semiannual reports.

Subtask 6.2: Submit annual reports by October 1 each year summarizing overall project activities and achievements.

Subtask 6.3: Present project progress at semiannual review meetings.

Subtask 6.4: Submit a draft final report upon project completion.

Subtask 6.5: Submit a final report. Suggested sections: Executive Summary, Introduction, Goals and Objectives, Project Milestones and Accomplishments, Methodology/Data Collection, Challenges and Barriers, Recommendations and Future Strategies, Conclusion

Deliverables:
Semiannual reports with updates on each project task
Annual reports submitted by October 1 each year of the project
Presentations and supporting materials for semiannual review meetings
Final project report

Overall Schedule of Tasks and Outputs:

Task	Subtask Number	Description	Start Date	Completion Date
1	1.1	Draft QAPP and submit to NRD.	Oct-25	Dec-25
	1.2	Revise QAPP and submit to EPA.	Oct-25	Dec-25
	1.3	Submit final QAPP for EPA approval.	Oct-25	Dec-25
2	2.1	Financial review at project end	Oct-25	Jul-29
3	3.1	Percentile Trends	Oct-25	Jun-27
	3.2	Site Specific (Magnitude) Trends	Oct-25	Jun-27
4	4.1	Analyze Data.	Oct-25	Sep-27
	4.2	Review Criteria.	Oct-25	Sep-27
5	5.1	Generate Maps.	Oct-25	Oct-27
	5.2	Collaborate with NRD and Stakeholders.	Oct-25	Oct-27
6	6.1	Submit semiannual reports.	Oct-25	Apr-29
	6.2	Submit annual reports by October 1 each year summarizing overall project activities and achievements.	Oct-25	Oct-28
	6.3	Present project progress at semiannual review meetings.	Oct-25	Oct-28
	6.4	Submit a draft final report upon project completion.	Oct-25	Nov-27
	6.5	Submit a final report.	Oct-25	Dec-27

Coordination, Roles and Responsibilities:

The Arkansas Water Resources Center (AWRC) will collaborate with relevant ANRS workgroups/teams to offer its expertise in water quality analysis. AWRC will also engage with Natural Resources Division and other organizations and stakeholders as needed to advance the project's goals and ensure comprehensive support for water quality initiatives.

Public Participation:

AWRC actively engages in educating the public about water quality issues across Arkansas. This project will build on that effort by providing valuable information and increasing awareness of water quality improvements and challenges statewide.

Measures of Success and Performance:

Success will be measured by the project's ability to deliver accurate, evidence-based assessments of nutrient pollution at the HUC 8 watershed level, providing actionable insights to support nutrient reduction efforts in Arkansas.

Project Lead:
Brian Haggard, Director, Arkansas Water Resources Center, and Professor, Division of Agriculture of the University of Arkansas
AWRC Support: Erin M. Grantz, Program Manager, Arkansas Water Resources Center

Appendix 01
Estimated Project Budget
Project GHP-25-200
AWRC State

Personnel	Annual Salary	Years	Cost	Federal	Non Federal
Director	$ 184,500	**0.19**	**$ 35,022**	$ 35,022	$0
Program Manager	$ 57,500	**0.38**	**$ 21,829**	$ 21,829	$0
Research Scientist 1	$ 67,500	**0.08**	**$ 5,310**	$ 5,310	$0
Research Scientist 2	$ 45,000	**0.88**	**$ 39,820**	$ 39,820	$0
Total Personnel			**$ 101,981**	$ 101,981	$0
Fringe Benefits		**Percent**			
Fringe Benefits (28.60%)	$ 101,981	**28.60%**	**$ 29,168**	$ 29,168	
Total Fringe			**$ 29,168**	$ 29,168	$0
Total Personnel including Fringe			**$ 131,149**	$ 131,149	$0
Travel (Domoestic)			**$ 3,610**	$ 3,610	
Computer			**$ 3,000**		
Office Supplies			**$ 750**		
Total Supplies			**$ 3,750**	$ 3,750	$0
Other Direct Costs			**$ 3,500**	$ 3,500	$0
Total Direct Charges			**$ 142,009**	$ 142,009	$0
Indirect (33% of MTDC)			**$ 66,744**	$ 66,744	$0
Grand Total			**$ 208,753**	$ 208,753	$0

Appendix 02
Budget Justification

BUDGET CATEGORIES INFORMATION

FROM SF424A, SECTION B

Enter Total Federal Program Costs (Attach Separate Sheet(s) if necessary)

OBJECT CLASS CATEGORIES:

a. Personnel: Include vacant pos	ber in Position	Annual Salary Rat	Work Years	Personnel Costs
Director	1	$ 184,500	0.19	$ 35,022
Program Manager	1	$ 57,500	0.38	$ 21,829
Research Scientist 1	1	$ 67,500	0.08	$ 5,310
Research Scientist 2	1	$ 45,000	0.88	$ 39,820
		TOTAL PERSONNEL		**$ 101,981**
b. Fringe Benefits:				
Fringe Benefits (28.60%)				$ 29,168
		TOTAL FRIDGE BENEFITS		**$ 29,168**
c. Travel: Include estimates of mileage in State or private vehicles, per diems, air fare, and				
		TOTAL TRAVEL		**$ 3,610**
d. Equipment:				
(1) List each item costing $5,000 or more to be purchased for this project:				
(2) List items costing less than $5,000. You may list items by groups, as appropriate.				
		TOTAL EQUIPMENT		**$ -**
e. Supplies: List by groups				
		TOTAL SUPPLIES		**$ 3,750**
f. Contractual: List each planned contract separately, type of serive, procurement metho				
		TOTAL CONTRACTUAL		**$ -**
g. Construction				
		TOTAL CONSTRUCTION		**$ -**
h. Other: Journal Publication Fees.				
		TOTAL OTHER		**$ 3,500**
i. TOTAL DIRECT CHARGES: (Sum of Items a through h)				**$ 142,009**
j. INDIRECT COSTS: (Attach a copy of your latest indirect cost agreement)				**$ 66,744**
33% OF MTDC				
k. TOTAL PROPOSED PROGRAM COSTS (Sum of Items i and j)				**$ 208,753**
		SHARE: FEDERAL	100%	
		SHARE: GRANTEE	0%	$ -

Appendix C: GHP-25-300 The Nature Conservancy

Gulf Hypoxia Program
Project Summary Page
Project GHP-25-300

1. **Title of Project:** Enhancing Arkansas agricultural drainage in the Upper Cache River watershed

2. **Project Goals/Objectives:**

TNC will develop partnerships with drainage districts to identify issues in existing drainage infrastructure and to develop and implement site-appropriate best management practices (BMPs) with a goal to reduce sediment and improve channel stability, in turn improving both water quality and agricultural drainage while also alleviating long-term maintenance for the producers. We will accomplish this by creating a roadmap utilizing GIS analysis and field reconnaissance for drainage districts within the Cache River watershed to inform the implementation of BMPs such as two-stage ditches and gully remediation.

3. **Project Tasks:** 1) Financial Audit; 2) GIS analysis and roadmap; 3) Landowner and Farmer Outreach; 4) BMP implementation; 5) Reporting

4. **Measures of Success:** This project will be considered successful if roadmaps are completed and implementation of BMPs occur in at least two of four targeted drainage district's boundaries, improving five miles of drainage systems by 2029.

5. **Project Type:** Statewide ( ) Watershed (X) Demonstration ( )

6. **Waterbody Type:** River (X) Groundwater ( ) Other ( )

7. **Project Location:** Upper Cache River Watershed

8. **Key Project Activities:** Hire Staff ( ) Monitoring ( ) Technical Assistance (x) Education (x) BMP Implementation (X) Demonstration Project ( ) Other ( ) Planning (x)

9. **Project Costs:** Federal: $750,000 Non Federal: $0 Total: $750,000

10. **Project Management:**

Primary:
William Gray
Agricultural Program Manager
william.gray@tnc.org

Secondary:
Jeff Fore
Director of Agriculture and Freshwater
jfore@tnc.org

11. **Project Period:** October 2025 – August 2029

Project GHP-25-300
General Project Activities and Tasks
Enhancing Arkansas agricultural drainage in the Upper Cache River watershed

Task 1: Financial Audit: An internal (TNC) financial review of all financial records by a CPA following agreed upon procedures.

Task 2: GIS analysis and drainage district roadmaps: Conduct a GIS analysis within drainage district boundaries to identify degradation and aggradation areas and to create a roadmap to inform two-stage ditch and gully remediation sites.

Task 3: Landowner and Farmer Outreach: Conducting landowner and farmer engagement and outreach on potential project implementation sites in the Upper Cache River Watershed.

Task 4: BMP Implementation: BMP locations and types will be informed by data from the GIS analysis. BMPs will include practices such as: two-stage ditch design and construction ($16-18/LF), remediation of gullies through installation of drop pipes ($3k-6k/gully), and grade stabilization structures to control erosion and prevent the formation or advancement of gullies (varying cost).

If the entire $543,724 budget were allocated solely to two-stage ditches, it would cover approximately 31,984 feet (or 6 miles). Alternatively, if entirely spent on gully remediation, the budget would address approximately 121 gullies. However, a combination of practices is anticipated, so the exact coverage for each practice will depend on the final allocation.

Task 5: Reporting: All reports will be prepared and submitted according to the grant requirements.

1. Semiannual reports will be submitted utilizing the format/forms provided electronically by the Arkansas Division of Agriculture's Natural Resources Division (Natural Resources Division) and will briefly state accomplishments for each subtask. Semiannual reports will also include implementation documentation (forms provided electronically by Natural Resources Division) that contains the following information: Name and USDA-NRCS practice number, farm number in which BMP was implemented, GPS or latitude/longitude of the BMP, number or acres affected, and the date BMP implementation was completed.
2. Annual reports will be submitted to Natural Resources Division by October 1 of each year in which the project is/was active. The Annual Report will contain a summary of the BMP implementation documentation utilizing a form provided (electronically) by Natural Resources Division. This requirement will be in addition to a narrative summary of the project activities that occurred in the previous Federal Fiscal year (October 1 – September 30).
3. Attendance at a semiannual project review meetings may be required. The project cooperator is responsible for presenting an overview of the project, status, activities to date, and any data collected. A copy of the presentation and/or documentation of project activities will be provided to Natural Resources Division at the meetings.
4. A Final Report will be submitted to Natural Resources Division at the completion or the end date for the project. A Final Report Guidance may be provided by Natural Resources Division. The guidance will be in outline form. The Final Report should be a narrative description and should encompass all activities (from start to finish) related to the project. An executive summary as well as a final outcome and/or conclusion section shall be contained in the Final Report. Due to the potential size and content (photographs, tables, charts, graphs, etc.) of the Final Report, the report may be submitted on two flash drives. A minimum of two copies of the report are required.

Tasks, Objectives, Subtasks, Schedules, Deliverables, and Estimated Costs

Task 1: Financial Review

Costs		
Federal	**Non-Federal Match**	**Total**
$0	$0	$0

Objectives: A financial review of all financial records via a Single Audit report conducted annually by TNC.

Subtask 1.1: Financial review year 1
Subtask 1.2: Financial review year 2
Subtask 1.3: Financial review year 3
Subtask 1.4: Financial review year 4
Subtask 1.5: Financial review year 5

Deliverables:

1. A copy of TNC's Single Audit for the fiscal year ending June 30 will be provided by January 31 of the following year.

Task 2: Perform GIS analysis and field reconnaissance for drainage district roadmaps

Costs		
Federal	**Non-Federal Match**	**Total**
$143,167	$0	$143,167

Objectives: To contract for a GIS analysis within drainage district boundaries to identify degradation and aggradation areas and to create a roadmap to inform two-stage ditch and gully remediation sites.

Subtask 2.1: Identify drainage districts and boundary area for roadmap.
Subtask 2.2: Perform GIS analysis of drainage systems.
Subtask 2.3: Identify areas of channel aggradation and degradation and construct roadmap, including proposed solutions and costs to implement solutions.

Deliverables:

1. Drainage stability roadmap
2. Project site recommendations derived from roadmap

Task 3: Landowner and Farmer Outreach

Costs		
Federal	**Non-Federal Match**	**Total**
$63,109	$0	$63,109

Objectives: (1) Identify sites for BMP implementation. (2) Conduct landowner and farmer outreach who owns the land adjacent to those sites

Subtask 3.1: Identify sites for potential practice implementation based off roadmap results.
Subtask 3.2: Conduct landowner and farmer outreach of potential project sites.

Subtask 3.3: Finalize site selections for practice implementation.

Deliverables:
1. Locations of potential sites for BMP implementation
2. Calendar dates of outreach completed for each potential site
3. Final selection of sites for practice implementation

Task 4: BMP Implementation

Costs		
Federal	**Non-Federal Match**	**Total**
$543,724	$0	$543,724

Objective: Implement BMPs on drainage ditches in the Upper Cache River watershed

Subtask 4.1: Perform in-field verification and analysis of project sites.
Subtask 4.2: Complete surveys for two-stage ditch engineering design on selected sites with design approval from Natural Resources Division or NRCS engineer.
Subtask 4.3: Design parameters for other BMP project sites.
Subtask 4.4: Implement BMPs (two-stage construction, pipe installation, etc.).

Deliverables:
1. Survey data points and design parameters for selected project sites
2. Pictures of before, during, and after BMP implementation

Task 5: Reporting

Federal	**Non-Federal Match**	**Total**
$0	$0	$0

Objective: Provide Natural Resources Division information regarding the progress of this project on a semiannual basis; furthermore, provide a Draft and a Final Report detailing the project.

Subtask 5.1: Semiannual Reports that include implementation documentation.
Subtask 5.2: Annual Reports
Subtask 5.3: Attend and participate in semiannual project review meetings, if requested.
Subtask 5.4: Draft Final Report
Subtask 5.5: Final Report

Deliverables:
1. Semiannual Reports with implementation documentation
2. Annual Reports submitted by October 1st each year of the project
3. Presentation and a copy of presentation/documentation of project activities provided at annual review meetings
4. Draft Final Report at the conclusion of the project activities
5. Submit Final Report

Overall Schedule of Tasks and Outputs:

Task	Subtask Number	Description	Start Date	Completion Date
1	**1.1**	Financial Review year 1	Oct 2025	Feb 2026
	1.2	Financial Review year 2	Mar 2026	Feb 2027
	1.3	Financial Review year 3	Mar 2027	Feb 2028
	1.4	Financial Review year 4	Mar 2028	Feb 2029
	1.5	Financial Review year 5	Mar 2029	Aug 2029
2	**2.1**	Identify drainage districts and boundary area for roadmap.	Oct 2025	Apr 2025
	2.2	Perform GIS analysis of drainage systems	Oct 2025	Oct 2025
	2.3	Identify areas of channel aggradation and degradation and construct roadmap, including proposed solutions and costs to implement solutions	Nov 2025	Jan 2026
3	**3.1**	Identify sites for potential practice implementation based off roadmap results	Feb 2026	Feb 2029
	3.2	Conduct landowner and farmer outreach of potential project sites	Mar 2026	Sep 2028
	3.3	Finalize site selections for practice implementation	Apr 2026	Sep 2028
4	**4.1**	Perform in-field verification and analysis of project sites	May 2026	Sep 2028
	4.2	Complete surveys for two-stage ditch engineering design on selected sites with design approval from Natural Resources Division or NRCS engineer	Jun 2026	Dec 2028
	4.3	Design parameters for other BMP project sites	Jul 2026	Dec 2028
	4.4	Implement BMPs (two-stage construction, pipe installation, etc.)	Aug 2026	Jun 2029
5	**5.1**	Semiannual Reports with implementation documentation	Oct 2025	Jun 2029
	5.2	Annual Reports submitted by October 1st each year of the project	Oct 2025	Jun 2029
	5.3	Attend and participate in semiannual project review meetings, if requested	Oct 2025	Aug 2029
	5.4	Draft Final Report	Jan 2029	Jul 2029
	5.5	Final Report	Jul 2029	Aug 2029

Appendix 01
Estimated Project Budget

Project GHP-24-300
The Nature Conservancy
Enhancing Arkansas agricultural drainage in the Upper Cache River watershed

Personnel	Annual Salary	Years	Cost	Federal	Non Federal
TNC Employee	18,259	3	$ 54,777		
Total Personnel			**$ 54,777**	$ 54,777	$0
Fringe Benefits		**Percent**			
TNC Employee	3.0	44.68%	$ 24,475		
Total Fringe			**$ 24,475**	$ 24,475	$0
Total Personnel including Fringe			**$ 79,252**	$ 79,252	$0
Travel			$ -		
Total Travel			**$ -**	$ -	$0
Vehicle lease for project duration at a rate of $550/month			$ 33,000		
Total Equipment			**$ 33,000**	$ 33,000	$0
Total Supplies			**$ -**	$ -	$0
BMP construction by contractor			$ 415,416		
GIS analysis & roadmap contractor			$ 100,000		
Total Contractual			**$ 515,416**	$ 515,416	$0
Total Construction			**$ -**	$ -	$0
Other			**$ -**	$ -	$0
Total Direct Charges			**$ 627,668**	$ 627,668	$0
Indirect (19.49% of MTDC)			**$ 122,332**	$ 122,332	
Grand Total			**$ 750,000**	$ 750,000	$0

Appendix 02
PROJECT BUDGET JUSTIFICATION WORKSHEET

BUDGET CATEGORIES INFORMATION				
FROM SF424A, SECTION B				
Enter Total Federal Program Costs				
OBJECT CLASS CATEGORIES:				
a. Personnel: Include vacant positions Position Title	Number in Position Class	Annual Salary Rate	Work Years	Personnel Costs
(1)	(2)	(3)	(4)	(5)
TNC Employee	1	$ 18,259	3.0	$ 54,777
			TOTAL PERSONNEL	**$ 54,777**
b. Fringe Benefits:				
TNC Employee				$ 24,475
			TOTAL FRINGE BENEFITS	**$ 24,475**
c. Travel: Include estimates of mileage in State or private vehicles, per diems, air fare, and conference fees.				
				$ -
			TOTAL TRAVEL	**$ -**
d. Equipment:				
(1) List each item costing $5,000 or more to be purchased for this project:				
(2) List items costing less than $5,000. You may list items by groups, as appropriate.				
			TOTAL EQUIPMENT	
e. Supplies: Vehicle lease for project duration at a rate of $550/month				
			TOTAL SUPPLIES	**$ 33,000**
f. Contractual: List each planned contract separately, type of service, procurement method (i.e. small purchase, formal advertising, competitive/non-competitive negotiations) and the estimated cost. Indicate if the proposed contract period will go beyond the budget period.				
			BMP construction by contractor	$ 415,416
			GIS analysis & roadmap contractor	$ 100,000
			TOTAL CONTRACTUAL	**$ 515,416**
g. Construction				
			TOTAL CONSTRUCTION	**$ -**
h. Other: Explain by major categories any items not included in above standard budget categories.				
			TOTAL OTHER	**$ -**
i. TOTAL DIRECT CHARGES: (Sum of Items a through h)				**$ 627,668**
j. INDIRECT COSTS:				**$ 122,332**
19.49% OF MTDC				
k. TOTAL PROPOSED PROGRAM COSTS (Sum of Items i and j)				**$ 750,000**
			SHARE: FEDERAL	100%
			SHARE: GRANTEE	0% $ -

Budget explanation: The Nature Conservancy (TNC) also plans to provide resources in the form of personnel time, benefits, planning, and supplemental two-stage ditch construction costs as additional leverage, not to be construed as match. These funds will not be tracked or reported to Natural Resources Division.

Appendix D: GHP-25-400 Arkansas Watershed Stewardship

Gulf Hypoxia Program
Project Summary Page
Project GHP-25-400

1. **Title of Project:** Continuing Arkansas Watershed Stewardship Program

2. **Project Goals/Objectives:** Conduct Arkansas Watershed Stewardship (AWS) and Tap Your Potential: Farmer Watershed Leadership trainings to expand watershed leadership throughout Arkansas. The goal is to increase the capacity for implementing watershed management plans and to make continued progress toward the Arkansas Nutrient Reduction Strategy (ANRS) objectives.

3. **Project Tasks:**
   Task #1: Financial Review
   Task #2: Conduct AWS and ANRS trainings, workshops, and presentations; launch public awareness campaign
   Task #3: Engage in capacity building, install water quality demonstrations, and track progress
   Task #4: Reporting

4. **Measures of Success:** The project's success will be reflected in broader engagement of Arkansans with water quality information, resulting in increased awareness and proactive watershed stewardship. It will empower new watershed stewards and farmer watershed leaders to address water quality issues and foster collaboration. Tools developed by the EPA and the Arkansas Department of Agriculture's Natural Resources Division will continue to be utilized and updated, alongside the creation of new resources to support watershed initiatives. Watershed organizations across the state will experience strengthened capacity to achieve ANRS goals, contributing to tangible improvements in water quality statewide.

5. **Project Location:** ANRS Tier 1 HUC8 Watersheds and 2024-2029 Nonpoint Source Priority Watersheds

6. **Project Costs:** $211,673

7. **Project Time Frame:** October 2026 – October 2028

8. **Project Management:**
   John Pennington, Water Quality Educator
   UA System Division of Agriculture
   2301 S University Ave, Little Rock AR 72204
   870-534-1033 jhpennington@uada.edu

Gulf Hypoxia Program
Project GHP-25-400

Continuing Arkansas Watershed Stewardship Program

Introduction:
This project seeks to continue progress toward the goals of the Arkansas Nutrient Reduction Strategy (ANRS) and the Arkansas's 2018-2023 and 2024-2029 Nonpoint Source (NPS) Pollution Management Plans by providing the Arkansas Watershed Steward (AWS) program and Tap Your Potential Training: A Training to Grow Farmer Watershed Leadership in the Mississippi Atchafalaya River Basin, in Tier 1 and NPS priority watersheds of Arkansas.

Currently, these watershed areas and others across Arkansas lack sufficient support for natural resource management, hindering individuals and organizations from effectively implementing existing watershed management plans. Furthermore, these areas need more stakeholders to better understand water quality, available water quality tools and resources, and their role and approaches to participating in watershed management. The University of Arkansas System Division of Agriculture Cooperative Extension Service (UAEX) has been working collaboratively with communities, businesses, agencies, and landowners throughout watersheds of Arkansas, including the priority watersheds, and will continue to provide the AWS and Tap Your Potential programs to further advance proactive watershed management and water quality improvements in watersheds throughout Arkansas in accordance with the ANRS to meet goals for reducing the size of the hypoxic zone in the Gulf of America.

Watershed Area:
Arkansas is part of two major regional watersheds: the Arkansas-Red-White and the Lower Mississippi River basins. The state contains 58 eight-digit hydrologic unit codes (HUC 8s). Of these, twelve have been designated as priorities under the Arkansas NPS Pollution Management Plan, with seven identified as ANRS Tier 1 watersheds (see Tables 1 and 2). Three watersheds overlap both programs within the Arkansas Department of Agriculture's Natural Resources Division.

Despite the extensive drainage landscape represented by the 58 HUC 8s in Arkansas, only ten non-profit watershed groups are active, with half of them concentrated in the Illinois and Beaver Reservoir watersheds. To enhance water quality protection and improvement, more collaborative stewardship among stakeholders is essential. This includes securing additional conservation resources, promoting awareness of nutrient reduction practices in daily life, and encouraging the adoption of farming and development systems that prioritize cost savings, increased efficiency, and sustainability. These efforts are critical to achieving nutrient reduction goals that improve water quality in Arkansas and downstream in the Gulf of America.

Table 1: Tier 1 Watersheds

ANRS Tier 1 Watersheds
Lake Conway-Point Remove
Illinois
L'Anguille
Bayou Meto
Middle White
Lower Arkansas-Maumelle
Bull Shoals Lake

Table 2: 2024-2029 Nonpoint Source (NPS) Priority Watersheds

2024- 2029 NPS Priority Watersheds	ANRS Tier Category
Illinois River	Tier 1
Beaver Reservoir	Tier 2b: Focus, Continue Monitoring
Middle White River	Tier 1
Little Red River	Tier 2c: Focus, Enhance Monitoring
Cadron Creek	Not listed directly in Tier 1 or Tier 2
Lake Conway-Point Remove	Tier 1
Lower White-Bayou Des Arc	Not listed directly in Tier 1 or Tier 2
Bayou Bartholomew	Tier 2a: Max. Focus, Enhance Monitoring
Lower Saline	Not listed directly in Tier 1 or Tier 2
Ouachita Headwaters	Not listed directly in Tier 1 or Tier 2
Lower Little	Not listed directly in Tier 1 or Tier 2
Poteau River	Tier 2b: Focus, Continue Monitoring

Problem/Need Statement

Water quality impairments and nutrient loading to surface waters exist throughout the State of Arkansas and non-profit, municipal, state, and federal government resources to address these impairments and associated issues are limited. The AWS program and Tap Your Potential programs have been developed to support efforts of stakeholders in Arkansas to assist in nonpoint pollution reduction efforts. Additionally, these programs are working and may be further utilized to support nutrient reduction efforts in Arkansas as part of the ANRS and NPS programs.

General Project Description

This project seeks to expand the AWS and the Tap Your Potential trainings to advance the goals of the ANRS. By strengthening these programs, the project aims to encourage stronger collaboration in watershed stewardship and expand leadership across Arkansas. It will enhance the capacity to implement watershed management plans and make continued progress toward ANRS objectives, promoting sustainable practices that address water quality challenges.

Workshops, trainings, and webinars will provide Arkansas citizens, including farmers and community leaders, with opportunities to grow their understanding of water quality issues, nutrient reduction strategies, and practical approaches to watershed management. Participants will gain the knowledge, skills, and confidence to initiate and support stewardship programs, apply sustainable farming and development practices, and contribute to achieving NPS Pollution Management Plan goals efficiently and cooperatively. A public awareness campaign will complement these efforts, further engaging stakeholders in proactive water quality protection.

The project will consist of AWS and ANRS trainings and workshops, and capacity-building activities that strengthen the ability of watershed organizations to address water quality issues. Water quality demonstration projects will be installed, showcasing best practices and innovative solutions, while progress will be tracked to measure the impact of these efforts. Reporting will document outcomes and ensure transparency and accountability to stakeholders and funding entities.

Success will be reflected in broader engagement with water quality information and an increased awareness of watershed issues among Arkansans. The project will empower new watershed stewards and farmer leaders, encouraging collaboration and fostering a culture of proactive stewardship. Existing tools developed by the EPA and the Arkansas Department of Agriculture's Natural Resources Division will be utilized and updated, alongside the creation of new resources to support watershed initiatives. Strengthened watershed organizations will contribute to

achieving ANRS goals, driving tangible improvements in water quality statewide and in downstream areas, including the Gulf of America.

Implementation:

The program will primarily focus on ANRS Tier 1 HUC 8 watersheds and priority watersheds identified in the 2024-2029 NPS Pollution Management Plan, most of which are in historically farming communities. These areas will be the main target for programming, although the AWS program will remain adaptable, accommodating requests and opportunities to offer training in other watersheds where there is demonstrated need or interest. At least 20 ANRS and AWS workshops will be conducted, with a focus on Tier 1 and NPS priority watersheds. In addition, the program will be delivered virtually via webinars to ensure participation from those unable to attend in-person training sessions.

Local county agencies and organizations—including conservation districts, extension offices, cattlemen's associations, Farm Bureau, and watershed organizations—will be approached to participate and collaborate in promoting and delivering the program. The focus will be on places like Bull Shoals, Middle White, Bayo Meto, L'Anguille, Lake Conway Point Remove, and Lower Arkansas Maumelle. However, the program will remain flexible to include other areas as needed.

To support NPS pollution reduction and nutrient management, 20 water quality demonstration projects will be established. These demonstrations will address a range of practices, including riparian buffer establishment and enhancement, nutrient management, pasture forage and grazing management, rain gardens, stormwater management, phytoremediation, and native plant landscaping.

The AWS program will align with the objectives of both the ANRS and the NPS Pollution Management Plan to increase public awareness and engagement in watershed management plans, promote the implementation of conservation practices, and improve communication and collaboration among stakeholders. Feedback from participants and progress updates will inform future updates to the ANRS, ensuring the program continues to meet evolving needs.

Subtasks, Objectives, Schedules, Deliverables and Estimated Costs

Task 1: Financial Review

Costs		
Federal	**Non-Federal Match**	**Total**
$22,731	$0	$22,731

Objectives: Conduct financial review

Subtask 1.1 Financial review year 1

Subtask 1.2 Financial review year 2

Deliverables:
1. Reports of annual financial review for 2026-2028

Task 2: Conduct AWS and ANRS trainings, workshops, and presentations

Costs		
Federal	**Non-Federal Match**	**Total**
$129,436	$0	$129,436

Objectives:

Subtask 2.1 Reconvene AWS and ANRS work group

Subtask 2.2 Conduct ANRS coordination meetings

Subtask 2.3 Plan workshops

Subtask 2.4 Promote and conduct workshops

Subtask 2.5 Conduct PSA campaign mentioned in the ANRS

Deliverables:
1. Minutes from work group meetings to include date, time and agenda
2. Sign in/registration sheets from programs
3. Promotion materials
4. Training registration and participation

Task 3: Engage in Capacity Building, Install Demonstrations, Track progress of trained AWS / Farmer Watershed Leadership participants

Federal	**Non-Federal Match**	**Total**
$24,753	$0	$24,753

Objective: Continue to grow capacity of watershed organizations, install demonstrations, and utilize AWS reporting system and participant follow-ups to document stewardship activities, outputs and outcomes

Subtask 3.1 Build capacity of community and farmer watershed organizations

Subtask 3.2 Create an activity report of trainee's outputs and outcomes

Subtask 3.3 Install water quality demonstrations

Task 4: Reporting

Costs		
Federal	**Non-Federal Match**	**Total**
$34,753	$0	$34,753

Objective: Provide the Natural Resources Division information regarding the progress of this project on a semi-annual and annual basis and provide a Final Report detailing the project.

Subtask 4.1 Semiannual Reports that include implementation documentation

Subtask 4.2 Annual Reports summarizing overall project activities and achievements

Subtask 4.3 Present project progress at semiannual review meetings

Subtask 4.4 Final Report upon project completion. Suggested sections: Executive Summary, Introduction, Goals and Objectives, Project Milestones and Accomplishments, Methodology/Data Collection, Challenges and Barries, Recommendations and Future Strategies, Conclusion.

Deliverables:

1. Semiannual Reports with implementation documentation
2. Annual Reports submitted by October 1st each year of the project
3. Final Report at the conclusion of the project activities

Overall Schedule of Tasks and Outputs:

(Note: You may use the month after project initiation for start and completion dates)

Task	Subtask Number	Description	Start Date	Completion Date
1	1.1	Financial Review Year 1	Oct 2026	Oct 2027
	1.2	Financial Review Year 2	Oct 2027	Oct 2028
2	2.1	Reconvene AWS and ANRS Work group	Oct 2026	Jan 2028
	2.2	Conduct ANRS Coordination Meetings	Oct 2026	Nov 2028
	2.3	Plan Workshops	Oct 2026	Aug 2028
	2.4	Promote and Conduct Workshops	Oct 2026	Aug 2028
	2.5	Conduct ANRS PSA campaign	Feb 2027	Aug 2028
3	3.1	Build capacity of community and farmer watershed organizations	Nov 2026	Feb 2028
	3.2	Create an activity report of trainee's outputs and outcomes	Aug 2027	Oct 2028
	3.3	Install WQ Demonstrations	Oct 2027	Oct 2028
4	4.1	Semiannual Reports	Mar 2027	Oct 2028
	4.2	Annual Reports	Oct 2027	Oct 2028
	4.3	Review Meetings	Oct 2027	Oct 2028
	4.4	Final Report	Sept 2028	Oct 2028

Coordination, Roles and Responsibilities:

The University of Arkansas System Division of Agriculture Cooperative Extension Service will be responsible for coordinating all activities associated with this project and ensure that project milestones will be met according to the work plan schedule.

Public Participation:

- Arkansas Watershed Steward Trainings
- Arkansas Nutrient Reduction Strategy Programs
- Water Quality Demonstrations

Measures of Success and Performance:

- Increased Public awareness and engagement in Tier 1 and 2 watersheds regarding ANRS
- Increased farmer participation in watershed groups and water quality conservation efforts
- Increased promotion and use of conservation practices and nutrient reduction efforts within watersheds
- Output goals / milestones of the ANRS will be achieved

Reference to Project in the NPS Management Program:

This project will advance watershed-based implementation, voluntary action, and building local capacity for water quality improvements in Arkansas as listed under Element 1 of the 2018-2023 NPS Pollution Management Plan

Project Lead:

John Pennington
Water Quality Educator / Instructor
University of Arkansas System Division of Agriculture Cooperative Extension Service
2301 S. University Ave
Little Rock, AR 72204
870-329-7009
jhpennington@uada.edu

List of Appendices:

Appendix #01 Estimated project budget
Appendix #02 Project budget justification

Appendix #01 Estimated Project Budget

Personnel	**Salary**	**m/yrs**	**Cost**	**Federal**	**Non Federal**
Extension WQ Educator	$69,782	1.6	$111,651	$111,651	$0
Sub-Total Personnel			**$111,651**	**$111,651**	**$0**
Fringe Benefits 31.6%			$35,282	$35,282	$0
Total Personnel including Fringe			**$146,933**	**$146,933**	**$0**
Travel					
11,538 mile @ .52/mile to conduct programs across AR			$12,220	$12,220	$0
Total Travel			**$12,220**	**$12,220**	**$0**
Equipment					
Total Equipment			**$0**	**$0**	**$0**
Supplies					
Total Supplies			**$0**	**$0**	**$0**
Total Direct Charges			**$159,153**	**$159,153**	**$0**
Indirect @ 33%			**$52,520**	**$52,520**	**$0**
Grand Total			**$211,673**	**$211,673**	**$0**

Appendix #02
PROJECT BUDGET JUSTIFICATION WORKSHEET

BUDGET CATEGORIES INFORMATION (FROM SF424A, SECTION B TOTALS) Enter Total Program Costs, i.e., Federal and Non-Federal Funds Combined				
OBJECT CLASS CATEGORIES:				
a. Personnel: (Program Staffing – include and indicate vacant positions) Position Title	Number in Position Class	Annual Salary Rate	Work Years	Personnel Costs
Water Quality Educator	1	$69,782	1.6	$111,651
Personnel Category Totals				**$111,651**
b. Fringe Benefits: Total				**$35,282**
c. Travel: Include estimates of In-State and Out of State travel including if appropriate, mileage in State or private vehicles, Per Diems, air fare and conference fees.				
In State: 11,538 mile @ .52/mile to conduct programs across AR				$12,220
Out of State				$0
			TRAVEL: TOTAL	**$12,220**
d. Equipment: (1) List each item costing $5,000 or more to be purchased for this project:				
				$0
(2) List items costing less than $5,000. You may list items by groups, as appropriate.				$0
			COMBINED EQUIPMENT TOTAL	**$0**
e. Supplies: List by groups, as appropriate				
			SUPPLIES TOTAL	**$0**
f. Contractual: List each planned contract separately, type of service to be procured, proposed procurement method (i.e. small purchase, formal advertising, competitive negotiations or non-competitive negotiations) and the estimated cost. Also, please indicate if the proposed contract performance period will go beyond the budget period of assistance for which this application is submitted.				
Competitive Negotiations (Request For Quotation)				
Non-Competitive Negotiation:				
			COMBINED CONTRACTUAL TOTAL	**$0**
g. Construction:				
			TOTAL CONSTRUCTION	**$0**
h. Other: Explain by major categories any items not included in above standard budget categories. Caution: Do not include or propose as a direct project cost, any cost that is indirect in nature (see OMB Circular A-87) or is included in the indirect cost pool on which the indirect cost rate (item j) is based.				
			OTHER TOTAL	**$0**
i. TOTAL DIRECT CHARGES: (Sum of Items a. through h.)				**$159,153**
j. INDIRECT COSTS: (Attach a copy of your latest indirect cost agreement)				$52,520

k. TOTAL PROPOSED PROGRAM COSTS (Sum of Items I and j.)	**$211,673**
SHARE: FEDERAL 100%	$211,673
GRANTEE 0%	$0

Project Personnel Justification Summary:

Extension Water Quality Educator will work 1.6 full-time equivalent (FTE) total and will be responsible for executing the grant work plan, tracking participation and match, and reporting.

Schedule of Payments
Continuing Arkansas Watershed Stewardship Program
Project 25-400 FY 2025 GHP

UA System Division of Agriculture
2301 S. University Ave
Little Rock, AR 72204

Subtask	Description	Number of Units	Unit Cost	Total Cost
1.1	Financial Review Year 1	1	$11,365	$11,365
1.2	Financial Review Year 2	1	$11,366	$11,366
2.1	Reconvene AWS and ANRS Work group	1	$2,000	$2,000
2.2	Conduct ANRS Coordination Meetings	1	$2,000	$2,000
2.3	Plan Workshops	1	$5,000	$5,000
2.4	Promote and Conduct Workshops	20	$3,000	$60,000
2.5	Conduct ANRS PSA campaign	1	$60,436	$60,436
3.1	Build capacity of community and farmer watershed organizations	1	$5,000	$5,000
3.2	Create an activity report of trainee's outputs and outcomes	1	$5,000	$5,000
3.3	Install WQ Demonstrations	1	$14,753	$14,753
4.1	Semiannual Reports	6	$2,500	$15,000
4.2	Annual Reports	2	$2,500	$5,000
4.3	Review Meetings	2	$2,000	$4,000
4.4	Final Report	1	$10,753	$10,753
TOTAL				**$211,673**

Appendix E: GHP-25-500 Tetra Tech

Gulf Hypoxia Program
Summary Page
Project GHP-25-500

1. **Title of Project:** Arkansas Nutrient Reduction Strategy Update Design Support

2. **Project Goals/Objectives:** The primary objective is to (1) update the 2022 Arkansas Nutrient Reduction Strategy (ANRS) to include new graphics/charts, clearly worded text, and an updated cover, and (2) to develop an educational resource to disseminate specific nutrient reduction information identified by Arkansas Department of Agriculture. This effort will make information in the updated ANRS more easily understood and make the document more visually appealing to viewers. Additionally, development of an educational resource for targeted audiences will help with education of targeted stakeholders and ultimately reduce nutrients.

3. **Project Tasks:** (1) Four meetings, including one kickoff call, two meetings to talk to specific stakeholders (i.e., workgroups/AWS/TNC), and one final meeting to finalize the deliverables; (2) four graphics/charts; (3) one educational resource; (4) an edited version of the ANRS; (5) an updated cover for the ANRS; (6) a final report (showing completed work) and a request for payment form.

4. **Measures of Success:** This project will be considered successful once the four graphics and a new cover are developed, a technical edit of the ANRS is completed, and the educational resource is produced.

5. **Project Type:** Statewide (X) Watershed ( ) Demonstration ( )

6. **Waterbody Type:** River ( ) Groundwater ( ) Other (X)

7. **Project Location:** Statewide

8. **Key Project Activities:** Hire Staff ( ) Monitoring ( ) Technical Assistance ( ) Education (X) BMP Implementation ( ) Demonstration Project ( ) Other ( ) Planning ( )

9. **Project Costs:** Federal: $44,970 Non-Federal: $0 Total: $44,970

10. **Project Management:** Dacia Mosso, Project Manager, Tetra Tech

11. **Project Period:** June 2028 to August 2029

Project 25-500
2022 ANRS Update Support
Gulf Hypoxia Program

Introduction of Watershed Area

This project will support statewide efforts to reduce nutrients through an updated ANRS and development of an education resource related to nutrient reductions.

Problem/Need Statement

Arkansas Department of Agriculture will soon be updating the 2022 ANRS. The purpose of the ANRS is to reduce nutrient concentrations in Arkansas's watersheds, providing local benefits and helping to shrink the Gulf hypoxic zone. This is accomplished by working closely with stakeholders to adaptively manage and aggressively implement relevant practices and programs to safeguard state and regional economic prosperity, environmental quality, and recreational opportunities for current and future generations.

Educational and promotional materials are needed to fully engage the public. Almost all the programs and practices to reduce nutrients are voluntary and need to reach a public audience to be implemented. For the ANRS to succeed, wide understanding and adoption of voluntary practices and programs is needed. This project will help to improve the design of the ANRS, and thus, will help the ANRS better promote BMP adoption and succeed. Additionally, it will result in development of an educational resource that will support the ANRS and other NPS pollution management efforts.

General Project Description

What are you going to do?
The project will result in an updated ANRS with new graphics and a cover page. The ANRS will also undergo a technical edit by a technical editor to ensure grammatical correctness and ease of understanding. Additionally, the final project will result in an educational resource (e.g., a brochure) to help disseminate information identified by the state and select state partners.

When will you do this or that?
All deliverables will be completed no later than August 2029.

How to stay on schedule?
A kickoff meeting will occur within two weeks of project award.

During the kickoff meeting, the team will determine when the two calls with stakeholders will occur and when deliverables (e.g., graphics, edited ANRS) are needed. Calls should be scheduled within a month of the kickoff call.

The meeting to finalize all deliverables will take place no later than 2 months before the end of the project period.

Regular check-in calls will be scheduled with the Arkansas Department of Agriculture.

Conclusions
Project success will be measured by an updated ANRS with four new graphics, a new cover, and text that has been edited for correct grammar and ease of understanding. Additionally, development of an educational resource will also be accomplished.

Task 1: Meetings: There will be a total of four meetings, including a kickoff meeting to discuss project goals and the schedule. During this call, Arkansas and the contractor will ensure agreement of project scope. There will also be two calls with workgroups/AWS/TNC to further discuss needs for an educational resource. There will also be one final meeting to finalize the deliverables. Between meetings, Arkansas and the contractor will correspond by email and check-in calls and provide input/feedback on draft deliverables.

Task 2: Graphics/Charts: A total of four graphics/charts will be developed to enhance the ANRS and make it more easily understood. The contractor will first discuss graphic needs with Arkansas and then determine next steps. The contractor will propose ideas for summarizing information graphically and work closely with Arkansas to finalize concepts. The contractor will then develop draft deliverables, incorporate feedback from Arkansas, and finalize the deliverables.

Task 3: Educational Resource: An educational resource will be developed that targets audiences and topics identified by Arkansas. The contractor will work closely with Arkansas to determine the desired information to include, audience, and format of the resource.

Task 4: Edited ANRS: The contractor will conduct a technical edit of the draft ANRS to ensure that grammar is correct and the document is easily understood. The deliverable will be submitted as a track changes version for Arkansas to review and accept edits.

Task 5: Updated ANRS Cover: The contractor will update the 2022 ANRS cover page for use in the updated ANRS.

Task 6: Final Report: At the conclusion of the project, the contractor will submit a brief final report (showing completed work) and a request for payment form. The final report will be submitted electronically, as a Word or PDF file.

Tasks, Objectives, Subtasks, Schedules, Deliverables, and Estimated Costs

Task 1, Meetings

Costs		
Federal	**Non-Federal Match**	**Total**
$2,400.00	$0	$2,400.00

Objectives: Conduct four meetings to discuss the project goals, scope, action items, and feedback.

Subtask 1.1 Participation in a kickoff meeting

Subtask 1.2 Participation in an initial meeting with stakeholders

Subtask 1.3 Participation in a second meeting with stakeholders

Subtask 1.4 Participation in a final meeting

Deliverables:
1. Kickoff meeting
2. Initial meeting with stakeholders
3. Second meeting with stakeholders
4. Final meeting

Task 2, Graphics/Charts

Costs		
Federal	**Non-Federal Match**	**Total**
$28,460.00	$0	$28,460.00

Objectives: Develop four graphics to enhance the ANRS and make it more easily understood.

Subtask 2.1 Development of four draft graphics to enhance ANRS messaging

Subtask 2.2 Development of revised four draft graphics to enhance ANRS messaging

Subtask 2.3 Development of four final graphics to enhance ANRS messaging

Deliverables:
1. Four draft graphics
2. Four revised draft graphics
3. Four final graphics

Task 3, Educational Resource

Costs		
Federal	**Non-Federal Match**	**Total**
$6,850.00	$0	$6,850.00

Objective: Develop an educational resource to better disseminate information identified by Arkansas Department of Agriculture.

Subtask 3.1 Development of an educational resource

Subtask 3.2 Development of a final educational resource, incorporating Arkansas feedback

Deliverables:
1. Draft educational resource
2. Final educational resource

Task 4, Edited ANRS

Costs		
Federal	**Non-Federal Match**	**Total**
$2,770.00	$0	$2,770.00

Objective: Conduct a technical edit of the draft ANRS to ensure grammatical correctness and ease of understanding for readers.

Subtask 4.1 A technical edit of the updated ANRS

Deliverables:
1. Edited (track/changes) version of the draft ANRS

Task 5, Updated ANRS Cover

Costs		
Federal	**Non-Federal Match**	**Total**
$2,110.00	$0	$2,110.00

Objective: Update the cover from the 2022 ANRS.

Subtask 5.1 Development of an updated draft cover

Subtask 5.2 Development of a revised draft cover, incorporating Arkansas feedback

Subtask 5.3 Development of a final updated cover

Deliverables:
1. Updated draft cover
2. Revised updated cover
3. Final updated cover

Task 6, Final Report

Costs		
Federal	**Non-Federal Match**	**Total**
$2,380.00	$0	$2,380.00

Objective: Develop a final project report.

Subtask 6.1 Development of a final report

Deliverables:

1. Final report

Overall Schedule of Tasks and Outputs:

(Note: You may use the month after project initiation for start and completion dates)

Task	Subtask Number	Description	Start Date	Completion Date
1	**1.1**	Kickoff Meeting	Jun-28	Jul-28
	1.2	Initial Meeting with Stakeholders	Jul-28	Aug-28
	1.3	Second Meeting with Stakeholders	Aug-28	Sep-28
	1.4	Final Meeting	Sep-28	Oct-28
2	**2.1**	Four Draft Graphics	Oct-28	Nov-28
	2.2	Four Revised Draft Graphics	Nov-28	Dec-28
	2.3	Four Final Graphics	Dec-28	Jan-29
3	**3.1**	Draft Educational Resource	Jan-29	Feb-29
	3.2	Final Educational Resource	Feb-29	Mar-29
4	**4.1**	Edited ANRS	Mar-29	Apr-29
5	**5.1**	Updated Draft Cover	Apr-29	May-29
	5.2	Revised Updated Cover	May-29	Jun-29
	5.3	Final Updated Cover	Jun-29	Jul-29
6	**6.1**	Final Report	Jul-29	Aug-29

Coordination, Roles and Responsibilities:
The grantee (Tetra Tech) will coordinate with the Arkansas Department of Agriculture to conduct the project.

Public Participation:
Arkansas expects participation from workgroups, AWS, and TNC. These groups will provide feedback on the educational resource needed.

Measures of Success and Performance:
This project will be considered successful once the four graphics and a new cover are developed, a technical edit of the ANRS is completed, and the educational resource is produced. All products will be approved as final by Arkansas Department of Agriculture.

Reference to Project in the NPS Management Program:
The project provides support for increasing implementation of best management practices (BMPs) and other related behavioral changes that have the cumulative effect of improving water quality.

Project Lead:
Dacia Mosso, Project Manager, Tetra Tech

List of Appendices:

Appendix 01	Estimated Project Budget
Appendix 02	Project Budget Justification Worksheet

Literature Cited:
Not applicable.

Appendix 01
Estimated Project Budget

Tetra Tech, Inc.

2025			**Rate**	**Hours**	**Amount**
Dacia Mosso or Other	Sr Project Manager/Principal	$	72.65	48	$3,487.20
Regina Scheibner or Other	Sr Graphics Designer	$	65.25	120	$7,830.00
Mike Shupryt or Other	Sr Environmental Scientist	$	53.24	40	$2,129.60
Olivia Vargo or Other	Environmental Scientist	$	25.55	40	$1,022.00
Total Labor				**248**	**$14,468.80**
Intercompany Subcontractor					
Kathryn Phillips or Other	Sr Environmental Scientist		$84.44	24.0	$2,025.00
Total Sub				**23.9815**	**$2,025.00**
Travel			$0.00		$0.00
Total Other Direct Costs					**$0.00**
Fringe on Total Labor Only				49.41%	**$7,149.03**
Add Indirect Costs*				79.74%	**$17,238.98**
Total Labor & Fringe & IDC					**$38,856.81**
Add Subcontractor					**$2,025.00**
Add Other Direct Costs					**$0.00**
Add G&A on ODCs					**$0.00**
Add Fee on Labor and Subcontractor				10%	**$4,088.18**
Total All In					**$44,970.00**

*82.99% applied to sum of Total Labor and Fringe.

Appendix 02
PROJECT BUDGET JUSTIFICATION WORKSHEET

BUDGET CATEGORIES INFORMATION (FROM SF424A, SECTION B TOTALS) Enter Total Program Costs, i.e., Federal and Non-Federal Funds Combined (Attach Separate Sheet(s) if necessary)				
OBJECT CLASS CATEGORIES:				
a. Personnel: (Program Staffing – include and indicate vacant positions) Position Title	Number in Position Class	Annual Salary Rate	Work Years	Personnel Costs
(1)	(2)	(3)	(4)	(5)
Sr Project Manager/Principal		$72.65	48	$3,487.20
Sr Graphics Designer		$65.25	120	$7,830.00
Sr Environmental Scientist		$53.24	40	$2,129.60
Environmental Scientist		$25.55	40	$1,022.00
Personnel Category Totals				**$14,468.80**
b. Fringe Benefits: Total				**$7,149.03**
c. Travel: Include estimates of In-State and Out of State travel including if appropriate, mileage in State or private vehicles, Per Diems, air fare and conference fees.				
In State				$0
Out of State				$0
				TRAVEL: TOTAL **$0**
d. Equipment: (1) List each item costing $10,000 or more to be purchased for this project:				
				$0
				$0
				$0
(2) List items costing less than $10,000. You may list items by groups, as appropriate.				
				$0
				COMBINED EQUIPMENT TOTAL **$0**
e. Supplies: List by groups, as appropriate				
				$0
				$0
				SUPPLIES TOTAL **$0**
f. Contractual: List each planned contract separately, type of service to be procured, proposed procurement method (i.e. small purchase, formal advertising, competitive negotiations or non-competitive negotiations) and the estimated cost. Also, please indicate if the proposed contract performance period will go beyond the budget period of assistance for which this application is submitted.				
Tetra Tech Intercompany costs				$2,025.00
				COMBINED CONTRACTUAL TOTAL **$2,025.00**

g. Construction:	
	$0
	$0
TOTAL CONSTRUCTION	**$0**
h. Other: Explain by major categories any items not included in above standard budget categories. Caution: Do not include or propose as a direct project cost, any cost that is indirect in nature (see OMB Circular A-87) or is included in the indirect cost pool on which the indirect cost rate (item j) is based.	
	$0
	$0
OTHER TOTAL	**$0**
i. TOTAL DIRECT CHARGES: (Sum of Items a. through h.)	**$23,642.83**
j. INDIRECT COSTS: (Attach a copy of your latest indirect cost agreement)	$21,327.16
k. TOTAL PROPOSED PROGRAM COSTS (Sum of Items I and j.)	**$44,970**
SHARE: FEDERAL 100%	$44,970
GRANTEE 0%	$0

Appendix F: GHP-25-600 Beaver Watershed Alliance

Gulf Hypoxia Program
Project Summary Page
Project GHP-25-600

1. **Title of Project:** Outreach Campaign to Farmers

2. **Project Goals/Objectives:** Create a reproducible public awareness campaign that emphasizes the role of land management practices for conservation in protecting water quality. The campaign will showcase farmers who adopt conservation practices to protect the watershed. Using radio and social media, the campaign will increase visibility, promote community engagement, and serve as a model for similar outreach efforts.

3. **Project Tasks:** 1) Financial Review 2) Implement Radio Campaign 3) Launch Social Media Campaign 4) Evaluate Campaign Impact 5) Reporting

4. **Measures of Success:** This project will be considered successful if it demonstrates increased public awareness and community support for water quality conservation, demonstrated through higher engagement rates with social media and an increased interest in conservation programs attributed to radio advertisements.

5. **Project Location:** Initially in the Beaver Reservoir Watershed - HUC 8: 11010001

6. **Total Project Cost:** $40,000

7. **Project Management:**
   Becky Roark, Executive Director
   Beaver Watershed Alliance
   162 Doolin Dr. | PO Box 762
   Elkins, AR 72727
   479-750-8007
   becky@beaverwatershedalliance.org
   www.beaverwatershedalliance.org

8. **Project Period:** October 2025 - September 2026

Project GHP-25-600
Campaign for Water Quality Conservation
Gulf Hypoxia Program

Introduction

The need to balance productive agriculture with freshwater preservation is increasingly critical. In agricultural regions like the Mississippi River Basin, nutrient and sediment loss to water bodies poses significant risks, leading to issues such as eutrophication, harmful algal blooms, and biodiversity loss.

The Beaver Watershed Alliance (BWA), in collaboration with the Arkansas Discovery Watershed (ADW) program, aims to address these challenges by increasing conservation practices that benefit farmers within the watershed. The ADW program's research and expertise on conservation at scale will support BWA's efforts to target and implement best practices for nutrient and sediment reduction. Through campaigns such as "Thank a Farmer," and other creative campaigns, BWA will engage the community by highlighting the importance of farmers implementing conservation measures to protect water quality. This campaign is designed to be a reproducible model, which can be applied to other ADW initiatives as well as to other Tier 1 and Tier 2 watersheds in the Arkansas Nutrient Reduction Strategy (ANRS). By fostering awareness and promoting sustainable practices, BWA and ADW strive to protect Beaver Lake's water, support resilient agriculture, and engage communities across Arkansas in water conservation efforts.

ADW is located within the Beaver Reservoir Watershed. BWA will prioritize Brush Creek Watershed while working with ADW to find common outreach goals and strategies for the area. Approximately 45% of the Brush Creek Watershed area is agricultural. Soil type is variable across the watershed; however, the Beaver Lake Watershed management plan has indicated that over 45% percent of the Beaver Lake Watershed is ranked moderate to severe in soil erosion hazard potential, presenting significant risk for sediment loss to waterways. Brush Creek has a tributary that has been included on the Arkansas 2018 303(d) list of impaired waters. This tributary is specifically listed for dissolved oxygen concerns.

Goals

- Raise public awareness on the importance of water conservation and local farmers' role in preserving water quality.
- Survey agricultural producers on preferred methods of outreach.
- Engage rural residents through multiple outreach channels.
- Inspire support for conservation efforts by highlighting farmers' stories and practices, aiming for increased public support and participation in conservation programs.

Approach

- Radio Campaign: Partner with local radio stations to air brief, impactful farmer messages or stories, emphasizing the role of conservation in protecting water quality for future generations.
- Social Media: Use targeted social media outreach and/or advertisements to reach local residents with engaging content, which may include farmer spotlights, educational graphics, and short videos.

- Conduct a survey of producers on outreach effectiveness and preference of outreach methods.

Metrics

- Track available metrics such as:
    - radio reach through station analytics
    - social media engagement through likes, shares, and comments.
- Collect qualitative feedback from surveys, community events and social media to assess public sentiment and message retention.
- Monitor inquiries related to conservation practices and increased followers on social media as indicators of campaign impact.
- The Alliance will compile results from past conservation initiatives within the Beaver Lake watershed, including the USDA NRCS National Water Quality Initiative for Brush Creek (2020-2023), to establish a baseline of completed conservation plans and producer engagement. Throughout the project, the Alliance will continue to monitor and track all inquiries, engagement and conservation plan development in their internal landowner database and work with local conservation districts to collect application data.

Scope of Work
Project GHP-25-600

Task 1: Financial Review

	Cost	
Total Cost	**Federal**	**Non-federal**
$2,000	**$2,000**	**$0**

Objective: Ensure transparent and accurate financial management of the project through financial records.

Subtask 1.1: Conduct a fiscal review.

Deliverables:
1. Documentation of financial review at the end of the project.

Task 2: Implement Radio Campaign

	Cost	
Total Cost	**Federal**	**Non-federal**
$14,563	**$14,563**	**$0**

Objective: Reach rural audiences with compelling messages about conservation through local radio.

Subtask 2.1: Develop at least one 15- to 30-second radio ad that features a story or message from or to a farmer(s) about the benefits of conservation practices.
Subtask 2.2: Partner with local radio stations that target agricultural audiences.
Subtask 2.3: Schedule radio spot(s).

Deliverables:
1. Scripted radio segments approved for airing.
2. List of partnered radio stations with any information on the reach, demographics, and listener profiles.

Task 3: Launch Social Media Campaign

	Cost	
Total Cost	**Federal**	**Non-federal**
$10,000	**$10,000**	**$0**

Objective: Engage residents, landowners, and community leaders in the watershed area with educational and inspirational conservation content.

Subtask 3.1: Create targeted outreach and/or advertising.
Subtask 3.2: Develop engaging content (e.g. farmer spotlight stories, educational graphics on conservation's impact on water quality, and short videos featuring local farmers).
Subtask 3.3: Set up and manage social media platforms which may include Facebook ads.

Deliverables:

1. Include ad metric information in at least one semiannual report. Information should include engagement metrics (likes, shares, comments) and insights on audience reach.
2. Content calendar with scheduled information such as posts, graphics, and videos.
3. Final report should include information summarizing any analytics on increased followers and engagement trends.

Task 4: Evaluate Campaign Impact

	Cost	
Total Cost	**Federal**	**Non-federal**
$6,937	**$6,937**	**$0**

Objective: Measure the campaign's effectiveness in raising awareness and fostering support for conservation in Brush Creek watershed and surrounding area.

Subtask 4.1: Collect and analyze quantitative metrics, including radio listener data and social media (e.g. Facebook ad) engagement statistics.
Subtask 4.2: Gather qualitative feedback from surveys, community outreach events and social media to assess public perception of farmers' roles in conservation.
Subtask 4.3: Track any increase in inquiries or applications related to conservation initiatives, compared to established baseline, following the campaign period.

Deliverables:

1. Comprehensive report on campaign metrics including radio and social media (e.g. Facebook) engagement.
2. Summary of feedback from outreach events and social media comments.
3. Analysis of inquiries and applications related to conservation initiatives, showing campaign impact on public interest in conservation initiatives.

Task 5: Reporting

Cost		
Total Cost	**Federal**	**Non-federal**
$6,500	**$6,500**	**$0**

Objective: Provide comprehensive updates on project progress through regular reporting.

Subtask 5.1: Submit semiannual reports
Subtask 5.2: Submit annual reports and attend annual review meetings if requested.
Subtask 5.3: Submit a final report upon project completion. Suggested sections: Executive Summary, Introduction, Goals and Objectives, Project Milestones and Accomplishments, Methodology/Data Collection, Challenges and Barriers, Recommendations and Future Strategies, Conclusion

Deliverables:

1. Semiannual reports with updates on each project task.
2. Annual reports submitted by October 1 each year of the project.
3. Final project report, summarizing all findings, successes, and lessons learned.

Overall Schedule of Tasks and Outputs:

Task	Subtask	Description	Start Date	Completion Date
1: Financial Review	**1.1**	Conduct a fiscal review.	Oct-25	Sep-26
2: Implement Radio Campaign	**2.1**	Develop 15- to 30-second radio ads.	Dec-25	Jan-26
	2.2	Partner with local radio stations.	Dec-25	Feb-26
	2.3	Schedule and run radio spot(s).	Feb-26	Mar-26
3: Launch Social Media Campaign	**3.1**	Create targeted social media outreach and/or advertising.	Jan-26	Feb-26
	3.2	Develop engaging social media content.	Jan-26	Sep-26
	3.3	Set up and manage social media platforms.	Jan-26	Sep-26
4: Evaluate Campaign Impact	**4.1**	Collect and analyze quantitative metrics.	Mar-26	Sep-26
	4.2	Gather qualitative feedback.	Mar-26	Sep-26
	4.3	Track increases in inquiries or applications.	Mar-26	Sep-26
5: Reporting	**5.1**	Submit semiannual reports.	Mar-26	Sep-26
	5.2	Submit annual reports.	Mar-26	Sep-26
	5.3	Submit a final project report.	Aug-26	Sep-26

Coordination, Roles and Responsibilities:
The Beaver Watershed Alliance (BWA) will lead the campaign, overseeing campaign strategy, content development, and outreach. BWA will collaborate closely with the Speir Lab at the University of Arkansas's Arkansas Discovery Watershed in Brush Creek Watershed (HUC 12), a key area within the larger Beaver Reservoir Watershed (HUC 8). This partnership will help achieve higher conservation practice implementation within Brush Creek Watershed and surrounding areas.

Public Participation:
The campaign aims to engage and educate the public on the vital role that local farmers and stakeholders play in protecting water quality within the Brush Creek Watershed (HUC 12) and the greater Beaver Reservoir Watershed (HUC 8). The campaign will promote conservation practices that farmers use to benefit water quality and encourage public support for these initiatives. The campaign will be able to be reproduced in other Arkansas Discovery Watersheds and throughout Arkansas.

Measures of Success and Performance:
This project will be deemed successful if it achieves measurable increases in public awareness and community support for water quality conservation. Success metrics include:

- Increased engagement rates on social media channels, indicating that messages resonate with the public.
- Heightened interest in conservation programs, as observed through inquiries and participation following radio advertisements.
- Broad public awareness of water conservation and the essential role of local farmers, leading to more visible community support and participation in conservation programs.

Project Lead:
Becky Roark, Executive Director
Beaver Watershed Alliance
162 Doolin Dr. | PO Box 762
Elkins, AR 72727
479-750-8007
becky@beaverwatershedalliance.org
www.beaverwatershedalliance.org

Appendix 1
Estimated Project Budget

Personnel	Annual Salary	Years		Cost
Executive Director	95,980	0.09	$ 8,638.20	
Outreach Coordinator	46,000	0.38	$ 17,480.00	
Total Personnel			**$ 26,118.20**	
Fringe Benefits		**Percent**		
Outreach Coordinator		31.60%	$ 5,523.68	
Total Fringe			**$ 5,523.68**	
Total Personnel including Fringe			**$ 31,641.88**	
Travel				
~3980 miles@ .67/mile to conduct surveys, campaign programs			$ 2,658.12	
Total Travel			**$ 2,658.12**	
Equipment				
NA			$ -	
Total Equipment			**$ -**	
Supplies				
Printing 100-200 Surveys			$ 200.00	
Graphic Design Software Upgrades (Annual $500 x3)			$ 1,500.00	
Total Supplies			**$ 1,700.00**	
Contractual				
Radio Campaign 2-4 week campaign			$ 2,000.00	
Social Media Campaign (boosting posts/ads)			$ 1,000.00	
Streaming Audio Campaign			$ 1,000.00	
Total Contractual			**$ 4,000.00**	
Construction				
NA				
Total Construction			$ -	
Total Direct Charges			**$ 40,000.00**	
Indirect			**$ -**	
Grand Total			**$ 40,000.00**	

Appendix 2
PROJECT BUDGET JUSTIFICATION WORKSHEET

BUDGET CATEGORIES INFORMATION				
FROM SF424A, SECTION B				
Enter Total Federal Program Costs (Attach Separate Sheet(s) if necessary)				
OBJECT CLASS CATEGORIES:				
a. Personnel: Include vacant positions Position Title	Number in Position Class	Annual Salary Rate	Work Years	Personnel Costs
(1)	(2)	(3)	(4)	(5)
Executive Director	1	$ 95,980	0.1	$ 8,638.20
Outreach Coordinator	1	$ 46,000	0.4	$ 17,480.00
			TOTAL PERSONNEL	**$26,118.20**
b. Fringe Benefits:				
Outreach Coordinator				$ 5,523.68
			TOTAL FRINGE BENEFITS	**$ 5,523.68**
c. Travel: Include estimates of mileage in State or private vehicles, per diems, air fare, and conference fees.				
~3980 miles@ .67/mile to conduct surveys, campaign programs				$ 2,658.12
			TOTAL TRAVEL	**$ 2,658.12**
d. Equipment:				
(1) List each item costing $5,000 or more to be purchased for this project:				
(2) List items costing less than $5,000. You may list items by groups, as appropriate.				
			TOTAL EQUIPMENT	**$ -**
e. Supplies: List by groups				
			TOTAL SUPPLIES	**$ 1,700.00**
Radio Campaign 2-4 week campaign				$ 2,000.00
Social Media Campaign (boosting posts/ads)				$ 1,000.00
Streaming Audio Campaign				$ 1,000.00
			TOTAL CONTRACTUAL	**$ 4,000.00**
g. Construction				
			TOTAL CONSTRUCTION	**$ -**
h. Other: Explain by major categories any items not included in above standard budget categories.				
			TOTAL OTHER	**$ -**
i. TOTAL DIRECT CHARGES: (Sum of Items a through h)				**$40,000.00**
j. INDIRECT COSTS:				**$ -**
k. TOTAL PROPOSED PROGRAM COSTS (Sum of Items i and j)				**$40,000.00**
			SHARE: FEDERAL	100%
			SHARE: GRANTEE	0% $ -

Appendix G: GHP-25-700 Olsson

Summary Page

Project GHP-25-700
Updating BMP Tracking and ANRS Support

1. Title of Project: Updating Best Management Practices Tracking and ANRS Support

2. Project Goals/Objectives: Olsson will review, enhance, and improve Arkansas's BMP tracking framework by addressing data quality issues and ensuring consistency across datasets. Nutrient loads will be estimated for current conditions to update the 2019 loads. Other objectives include incorporating new data sources and engaging stakeholders via a conference.

3. Project Tasks: 1) Financial Review, 2) Secondary data QAPP, if needed, 3) Review and update Processing BMP code for data integration, 4) BMP Analysis, 5) Finalization of ANRS framework, 6) Reporting

4. Measures of Success: This project will be considered successful if it provides reasonable estimations of baseline and current nutrient loads by HUC8 and statewide, and the procedures and results are communicated effectively.

5. Project Location: Statewide

6. Project Costs: $100,000

7. Project Management:
Kelsey Criswell, P.E.
Olsson
3537 N. Steele Blvd, Suite 310
Fayetteville, AR 72703
(479) 443-3404
kcriswell@olsson.com

8. Project Period: October 2025 – July 2029

Project GHP-25-700
Updating BMP Tracking

Objective of Project

The goal of this project is to review, update, and optimize Arkansas's Best Management Practice (BMP) tracking tool while equipping staff with the knowledge and skills to sustain its use. The Arkansas Department of Agriculture's Natural Resources Division relies on this tool to monitor and report statewide nutrient reductions at the Hydrological Unit Code (HUC) 8 watershed level. The project will enhance the tool's ability to process data and display results through user-friendly graphics and tables, supporting progress updates and informing the Arkansas Nutrient Reduction Strategy (ANRS).

Problem/Need Statement

Efforts to reduce nutrient pollution in the Mississippi River Basin align with the 2007 recommendation from the Science Advisory Board Panel for a dual nutrient reduction strategy, targeting a 45% reduction in nitrogen and phosphorus loads entering the Gulf of America. This strategy supports the Hypoxia Task Force (HTF) goal of shrinking the Gulf's hypoxic zone to a five-year average of 5,000 km^2, with a revised target timeline extended to 2035.

To evaluate progress toward these goals, it is critical to track BMP implementation and account for related factors such as land-use changes. Arkansas's BMP tracking tool plays a vital role in assessing the effectiveness of nutrient reduction strategies statewide and within high-priority Tier 1 and Tier 2 watersheds. This project focuses on updating and refining the tool to ensure accurate reporting on nonpoint source nutrient reductions and to provide the insights needed to meet statewide and HTF objectives.

General Project Description

The Arkansas Department of Agriculture's Natural Resources Division is undertaking a project to enhance its Best Management Practice (BMP) Tracking Tool. This tool is essential for monitoring and visualizing nutrient reductions across the state, particularly at the Hydrological Unit Code (HUC) 8 watershed level. It provides valuable data for informing the Arkansas Nutrient Reduction Strategy (ANRS) and ensuring compliance with state and federal environmental goals. By updating this tool, the project aims to improve data accuracy, streamline processes, and equip staff with the knowledge and resources to manage future updates effectively.

Olsson will lead the initiative to review and optimize the pre-processing framework of the BMP tracking tool. This involves rigorous quality control to identify and resolve data inconsistencies, validate datasets, and refine the system for processing raw BMP data. Leveraging tools like Python and Excel, Olsson will analyze quality-controlled data to estimate annual nutrient reductions. Using various data inputs—including National Land Cover Data, USDA statistics, and nonpoint source project data—the updated tool will provide robust calculations and visualizations of nutrient reduction trends at the watershed, regional, and state levels.

The project will also enhance the visualization and reporting capabilities of the tool by developing Python-based graphic outputs and Excel models. These visualizations will present nutrient changes in user-friendly formats, supporting reports to the Arkansas Natural Resources Commission and the EPA, as well as updates to the Arkansas Nutrient Reduction Viewer. Documentation will ensure clarity in the preparation and interpretation of all inputs, outputs, and illustrations.

Another core focus is the development of a comprehensive, sustainable workflow for the ANRS framework. This includes documenting data sources, such as NLCD and Cropland Data Layer (CDL), and finalizing a step-by-step guide for data preparation, processing, and reporting. Data from 2019 to the present will be analyzed to highlight significant nutrient reduction outcomes compared to the baseline load already estimated.

To ensure long-term success, the project emphasizes knowledge transfer and staff training. This includes review meetings, instructional videos, and the creation of a detailed how-to guide for updating datasets and maintaining the BMP tracking framework. Training sessions will equip staff with the tools to manage the system independently, adapting it to future changes and challenges. Through collaborative efforts with the Natural Resources Division, Olsson will finalize the updated workflow and documentation, providing a robust and user-friendly tool for ongoing nutrient reduction tracking and reporting.

Analysis and Integration of New Information

This component of the project aims to enhance the Arkansas Nutrient Reduction Strategy (ANRS) framework by integrating new data sources such as satellite imagery and LiDAR. These advanced tools will improve the accuracy of BMP tracking by providing detailed insights into land use, water retention, and nutrient management practices. LiDAR data will be incorporated to refine the framework and better capture BMP impacts on nutrient reduction.

Machine learning will play a key role in identifying statewide BMP practices by utilizing satellite imagery. This approach may include the Normalized Difference Water Index (NDWI) from Sentinel imagery to monitor water retention in BMPs across different seasons or months using platforms like Google Earth Engine.

Conference Participation and Stakeholder Engagement

This phase of the project focuses on attending a conference or meeting to present updates on the ANRS tracking framework. The event will serve as a platform for engaging stakeholders, gathering feedback, and fostering dialogue on the future direction of nutrient reduction strategies in Arkansas. By facilitating collaboration and input from partners, the conference will help ensure that the ANRS framework reflects a broad range of perspectives and expertise.

Key activities include preparing materials such as presentations or handouts. The event will bring together stakeholders to share progress, discuss challenges, and explore potential improvements to the framework. Feedback collected during the conference will be summarized and incorporated into the project's ongoing efforts. Deliverables for this phase include the conference agenda, presentation materials, and a comprehensive summary of stakeholder feedback.

Project GHP-25-700
Updating BMP Tracking

Scope of Work
Tasks, Objectives, Subtasks, Schedules, Deliverables, and Estimated Costs

Task 1: Financial Review

Total Cost (all Federal): $2,000

Objectives: A review of selected financial records to address requirements in 2 CFR 200.201(b)(4) for grant subrecipients.

> **Subtask 1.1:** At the conclusion of the project, Olsson will generate a listing of all the labor and expenses charged to this project (a printout directly from Olsson's accounting system with no additional analysis or formatting). The Olsson project manager will review this listing and provide to Natural Resources Division a written statement confirming that all expenditures were incurred in accordance with 2 CFR 200.403.

Deliverables:
- Written confirmation that all expenditures were incurred in accordance with 2 CFR 200.403 (listing of labor and expense charges will be available to Natural Resources Division upon request).

Task 2: Secondary Data QAPP, if needed

Total Cost (all Federal): $3,000

Objective: Research and/or develop an agreed upon practice or if applicable Quality Assurance Project Plan for usage of secondary data and generation of calculated data.

> **Subtask 2.1:** Research/Develop draft practices/QAPP following EPA guidance.
>
> **Subtask 2.2:** Research/Develop final practices/QAPP by addressing comments from Arkansas Department of Agriculture's Natural Resources Division and/or EPA.

Deliverables:
- Draft Practices/QAPP
- Final Practices/QAPP

Task 3: Procedure and Tools for Estimating Nutrient Reduction Agriculture BMPs

Total Cost (all Federal): $25,000

Objectives: Review, modify, and document process and tools to estimate nutrient reduction agriculture BMPs for a given year using files provided annually by NRCS, and data retrieved from GRTS and the Census of Agriculture. This will include quality control: identifying and resolving data issues, validating data, and ensuring the correct processing of raw BMP data. Estimates will be calculated for all reported nutrient reduction agriculture BMPs and for the 10 Arkansas agriculture BMPs, by HUC8.

Subtask 3.1: With client, develop specifications for process and tools for estimating agriculture BMPs for a given year, e.g., data retrieval, standardized file structure and naming conventions, output format and program compatibility, data sources, data trends, expected changes, and how to use data that is not updated annually, e.g., Census of Agriculture. This may also involve identifying BMP data sources not previously used.

Subtask 3.2: Identify nutrient-reducing EQIP and CSP BMPs and develop process and/or tool for extracting records for these BMPs from NRCS and 319/GRTS export files and Census of Agriculture for a given year and combining them into a working file.

Subtask 3.3: Identify and document data issues in raw data (e.g. when acreage is reported as 0) from NRCS, 319/GRTS, and Census of Agriculture data from years 2019 to 2023 or 2024, whichever is the most recent year of data available. Develop or revise process and/or tool for QC checking data and resolving issues. Draft a brief report on how data issues were addressed and any python script or excel issues or limitations. Include any troubleshooting advice. Finalize report on how data issues were addressed, incorporating Natural Resources Division's feedback.

Subtask 3.4: Modify or prepare new Python script for pre-processing nutrient reduction BMP working file to assign land use (cropland, rice, pasture), treatment areas and sunset date. Identify analysis year and nutrient reduction BMPs with NRCS lifespans greater than one year. Develop procedure and/or tool to extract records for BMPs with long lifespans from historical files and add them to the working file. Develop procedure and/or tools to calculate number of nutrient reduction BMPs and total area treated by HUC8 and by data source for the analysis year.

Subtask 3.5: Review and revise existing Python script to extract 10 Arkansas BMPs from working nutrient reduction BMPs file, implement Framework process for preparing BMP records, and calculate number of Arkansas BMPs and the area they treat by HUC8 and by data source for the analysis year. HUC8 values can be aggregated to provide results for Priority 1 watersheds and the whole state.

Subtask 3.6: Draft a python workflow for processing BMP data for estimation of BMP numbers (with screen shots and instructions) to use as a how-to guide for processing raw BMP data. Test and finalize python workflow for processing BMP data (with screen shots and instructions) and incorporate Natural Resources Division's feedback.

Deliverables:

- Draft BMP QC review process report
- Final BMP QC review process report
- Draft BMP pre-processing workflow
- Final BMP pre-processing workflow
- Updated pre-processing Python code

Task 4: Procedure and Tools for Estimating Nutrient Loads and Presenting Agriculture BMPs Usage and Nutrient Load Reduction

Total Cost (all Federal): $35,000

Objectives: Olsson will review, revise, and document a procedure to prepare STEPL inputs and process STEPL outputs using excel and/or Python. This procedure will be used to prepare agricultural BMP and nutrient load reporting information for 2020 through 2024.

Subtask 4.1: Identify STEPL inputs that can change from year to year and the data sources for these inputs. With Natural Resources Division, develop procedure for deciding the version of source data to use and procedure for use of data that is not updated annually, e.g., non-crop land cover (NLCD), Census of Agriculture animal numbers.

Subtask 4.2: With client, clarify specifications for process and tools to update STEPL models to a given year, e.g., retrieve data from online, standardized file structure, naming conventions, worksheet format, data sources, data trends, expected changes.

Subtask 4.3: Review existing Python scripts and Excel worksheets for development of STEPL HUC8 model inputs and STEPL models for a given year and revise as needed.

Subtask 4.4: With client, develop specifications for nutrient reduction reporting products/graphics for use in Commission and EPA reports, and Arkansas Nutrient Reduction Viewer, e.g., file structure, naming conventions, program compatibility, graphics formatting.

Subtask 4.5: Review existing Python script for compiling STEPL output for analysis year for use in the Arkansas Nutrient Reduction Viewer and revise as needed.

Subtask 4.6: Collaborate with Natural Resources Division to develop graphics that illustrate nutrient reductions and/or agriculture nutrient reduction BMPs for use in Commission and EPA reports. Finalize reporting products incorporating Natural Resources Division feedback. Revise or develop procedures and/or tools for preparing graphics/products using STEPL model output.

Subtask 4.7: Draft a workflow for updating STEPL models, compiling output, and preparing graphics, using Python script(s). Test and finalize python workflow and incorporate Natural Resources Division's feedback.

Subtask 4.8: Analyze data outputs of the ANRS framework from baseline to 2019 to present day. Write a brief report on most notable outcomes.

Deliverables:

- Draft workflows and Python scripts for updating estimates of nutrient loads and preparing BMP use and nutrient load reduction reporting products
- Final workflows and Python scripts for updating estimates of nutrient loads and preparing BMP use and nutrient load reduction reporting products.
- Summary report of ANRS Framework results from Subtask 4.8.

Task 5: Finalization of ANRS Measurement Framework Update Procedure and Tools

Total Cost (all Federal): $20,000

Objectives: Olsson will prepare an overall Measurement Framework update procedure guidance tested and approved by Natural Resources Division. Natural Resources Division personnel will be trained in the procedure and use of associated tools so they can perform future updates.

Subtask 5.1: Prepare guidance for overall workflow that includes selecting source file versions; pre-processing of raw data files; development of STEP-L inputs; extraction of STEP-L outputs; preparation of BMP use and load reduction summaries by HUC8, Priority 1 watersheds, and state-wide; and preparation of graphics for reports. As appropriate, include screen shots. Prepare draft guidance.

Subtask 5.2: Test and finalize guidance, incorporating feedback from Natural Resources Division.

Subtask 5.3: Conduct up to six hours of virtual training sessions on data update procedures to ensure consistency. These sessions may be recorded for future reference.

Deliverables:

- Draft guidance document
- Final guidance document
- Training and associated materials

Task 6: Reporting

Total Cost (all Federal): $15,000

Objective: Provide comprehensive updates on project progress through regular reporting to stakeholders and funding agencies.

Subtask 6.1: Prepare and submit semiannual reports

Subtask 6.2: Prepare and submit annual reports summarizing overall project activities and achievements.

Subtask 6.3: Present project progress at semiannual review meetings.

Subtask 6.4: Prepare and submit a final report upon project completion. Suggested sections: Executive Summary, Introduction, Goals and Objectives, Project Milestones and Accomplishments, Methodology/Data Collection, Challenges and Barriers, Recommendations and Future Strategies, Conclusion

Deliverables:

- Semiannual reports with updates on each project task.
- Annual reports submitted by October 1 each year of the project.
- Presentations and supporting materials for semiannual review meetings.
- Final project report, summarizing findings, successes, and lessons learned.

Overall Schedule of Tasks and Outputs:

Task	Description	Start Date	Completion Date
1	Financial Review	Oct-25	Jul-29
2	Research/Secondary Data QAPP (if applicable)	Oct-25	Dec-25
3	Procedure and Tools for Estimating Nutrient Reduction Agriculture BMPs	Oct-25	Jan-29
4	Procedure and Tools for Estimating Nutrient Loads and Presenting Agriculture BMPs Usage and Nutrient Load Reduction	Oct-25	Feb-29
5	Finalization of ANRS Measurement Framework Update Procedure and Tools	Nov-25	Mar-29
6	Reporting	May-26	Jun-29

Coordination, Roles and Responsibilities:

The subgrantee (Olsson) will coordinate with the Arkansas Department of Agriculture to conduct the project.

Public Participation:

Olsson will share project outcomes at a conference attended by water quality stakeholders, researchers, professionals, and/or the public.

Measures of Success and Performance:

This project will be considered successful if it provides reasonable estimations of baseline and current nutrient loads by HUC8 and statewide, and the procedures and results are communicated effectively. All products will be approved as final by Arkansas Department of Agriculture.

Project Management:

Kelsey Criswell, P.E.
Olsson
3537 N. Steele Blvd, Suite 310
Fayetteville, AR 72703
(479) 443-3404
kcriswell@olsson.com

List of Appendices:

Appendix 01	Estimated Project Budget
Appendix 02	Project Budget Justification Worksheet

Appendix 01

Estimated Project Budget

Personnel	Hourly Rate	Hours	Cost	Federal	Non-Federal
Senior Engineer	$212	37	$ 7,844		
Senior Scientist	$188	115	$ 21,620		
Engineer	$162	366	$ 59,292		
Associate Scientist	$116	84	$ 9,744		
Administrative Coordinator	$85	17.65	$ 1,500		
Total Personnel			**$ 100,000**	$ 100,000	$0
Fringe Benefits					
Total Fringe			**$0**	$0	$0
Total Personnel including Fringe			**$ 100,000**	$ 100,000	$0
Travel					
Total Travel			**$0**	$0	$0
Total Direct Charges			**$ 100,000**	$ 100,000	$0
Indirect (zero)			**$ -**		
Grand Total			**$ 100,000**	$ 100,000	$0

Appendix 02

Project Budget Justification Worksheet

BUDGET CATEGORIES INFORMATION				
FROM SF424A, SECTION B				
Enter Total Federal Program Costs (Attach Separate Sheet(s) if necessary)				
OBJECT CLASS CATEGORIES:				
a. Personnel: Include vacant positions Position Title	Number in Position Class	Hourly Rate	Hours	Personnel Costs
(1)	(2)	(3)	(4)	(5)
Senior Engineer	1	$212	37	$ 7,844
Senior Scientist	1	$188	115	$ 21,620
Engineer	2	$162	366	$ 59,292
Associate Scientist	1	$116	84	$ 9,744
Administrative Coordinator	1	$85	17.65	$ 1,500
			TOTAL PERSONNEL	**$ 100,000**
b. Fringe Benefits:				
			TOTAL FRINGE BENEFITS	**$0**
c. Travel: Include estimates of mileage in State or private vehicles, per diems, air fare, and conference fees.				
			TOTAL TRAVEL	**$0**
d. Equipment:				
(1) List each item costing $5,000 or more to be purchased for this project:				
(2) List items costing less than $5,000. You may list items by groups, as appropriate.				
			TOTAL EQUIPMENT	**$0**
e. Supplies: List by groups				
			TOTAL SUPPLIES	**$0**
f. Contractual: List each planned contract separately, type of serive, procurement method (i.e. small purchase, formal advertising, competitive/non-competitive negotiations) and the estimated cost. Indicate if the proposed contract period will go beyond the budget period.				
			TOTAL CONTRACTUAL	**$0**
g. Construction				
			TOTAL CONSTRUCTION	**$0**
h. Other: Explain by major categories any items not included in above standard budget categories.				
			TOTAL OTHER	**$0**
i. TOTAL DIRECT CHARGES: (Sum of Items a through h)				**$ 100,000**
j. INDIRECT COSTS: (Attach a copy of your latest indirect cost agreement)				**$0**
k. TOTAL PROPOSED PROGRAM COSTS (Sum of Items i and j)				**$ 100,000**
		SHARE: FEDERAL	100%	
		SHARE: GRANTEE	0%	

Appendix H: GHP-25-800 Water Quality Monitoring

Gulf Hypoxia Program
Project Summary Page
Project GHP-25-800

1. **Title of Project:** Water Quality Monitoring in Priority Watersheds

2. **Project Goals/Objectives:** Expand the analytical capabilities of the Arkansas Department of Agriculture laboratory to fill critical gaps in water quality data in support of the state's Arkansas Nutrient Reduction Strategy (ANRS) priority watershed monitoring and other water monitoring programs.

3. **Project Tasks:**

   Task 1: Quality Assurance Project Plan
   Task 2: Financial Review
   Task 3: Purchase of equipment and laboratory supplies
   Task 4: Finalization of Water Quality monitoring sites
   Task 5: Install Equipment, Collect, and Analyze Water Quality Measures
   Task 6: Technical Transfer of Data
   Task 7: Reporting

4. **Measures of Success:** Demonstrable time and cost savings for sample analyses and report delivery by processing water quality samples in-house.

5. **Project Type:** Statewide ( ) Watershed (X) Demonstration ( )

6. **Waterbody Type:** Lake ( ) River (X) Groundwater ( ) Other ( )

7. **Project Location:** ANRS Tier 2 priority watersheds for enhanced monitoring (e.g. Cache River, Bayou Bartholomew, Dardanelle Reservoir, Strawberry, and Lower St. Francis)

8. **Key Project Activities:** Hire Staff ( ) Monitoring (X) Technical Assistance ( ) Education ( ) BMP Implementation ( ) Demonstration Project ( ) Other ( ) Planning ( )

9. **Project Costs: Federal: $357,398 Non-Federal: $0 Total: $357,398**

10. **Project Management:**
    Dr. Sharon Pulla
    Laboratory Director
    Arkansas Department of Agriculture
    Arkansas Veterinary Diagnostic Laboratory
    (501) 823-1730
    sharon.pulla@agriculture.arkansas.gov

11. **Project Period:** October 2025 – July 2029

Introduction to Priority Watersheds

The Arkansas Nutrient Reduction Strategy (ANRS) focuses on reducing nutrient levels in Arkansas's waters and the Gulf of America by targeting watersheds with the greatest potential for nutrient reduction and the highest need for enhanced water quality monitoring. Monitoring locations are prioritized based on their possibility to provide enough comprehensive data to qualify for the next ANRS update. While many watersheds in Arkansas would benefit from enhanced monitoring, five priority watersheds have been selected: Lower St. Francis, Cache River, Bayou Bartholomew, Dardanelle Reservoir, and Strawberry. The following Hydrological Unit Code (HUC) 8 watersheds have been selected as priority because limited, incremental changes to existing monitoring is projected to result in significant increases in data quality in support of the ARNS:

Bayou Bartholomew (HUC 08040205)
Spanning 1,157 square miles south of Pine Bluff, the Bayou Bartholomew watershed flows through seven Arkansas counties before joining the Ouachita River. The watershed is characterized by a mix of forested areas in the Southern Coastal Plain and cropland in the Alluvial Plain. It has a history of impairment, with portions listed under the 2018 303(d) report for turbidity and surface erosion. The watershed's nine-element plan, among the first developed in Arkansas, has undergone updates to guide nutrient reduction strategies. This proposal addresses Chapter 3 of the watershed's Element 9 Plan to improve monitoring and management.

Cache River (HUC 08020302)
The Cache River watershed, known for its agricultural significance, has been a focus for advanced conservation practices, including 2-stage ditch construction to address nutrient and sediment contributions. Impairments in this watershed include excessive turbidity and total dissolved solids, originating primarily from upstream row-crop agriculture and highly erodible soils of the Delta Ecoregion. Conservation projects in the area aim to mitigate sediment transport and nutrient runoff, contributing to the overall goal of reducing downstream impacts, including Gulf of America hypoxia.

Dardanelle Reservoir (HUC 11110202)
Covering approximately 1,329 square miles, the Dardanelle Reservoir watershed is dominated by the Arkansas River and provides critical resources for irrigation, recreation, and local communities. The watershed's hydrology is shaped by runoff from the Ouachita and Ozark Mountains, with nutrient and sediment loads impacting water quality. Efforts to reduce these pollutants through best management practices have shown promise in preserving the watershed's aquatic ecosystems and supporting diverse plant and animal life.

Lower St. Francis (HUC 08020203)
The Lower St. Francis watershed faces significant impairments from agricultural activities. High turbidity and sediment loads result from traditional tillage methods, drainage modifications, and channelization. These challenges are compounded by the need for improved conservation practices to address sediment and nutrient runoff, which directly impact the health of the river system and its tributaries.

Strawberry River (HUC 11010012)
Encompassing 761.2 square miles in north-central Arkansas, the Strawberry River watershed is noted for its ecological significance and designation as Extraordinary Resource Waters and a Natural and Scenic Waterway. The watershed supports diverse aquatic life, including the endemic Strawberry River darter, and is predominantly rural, with agriculture and forestry as major land uses. Expanding poultry

operations and pastureland along streams pose potential risks to water quality, highlighting the need for monitoring to safeguard this high-quality resource.

Problem/Need Statement

The Arkansas Water Resource Center's (AWRC) comprehensive water quality analysis based on 30 years of statewide monitoring data found significant gaps in data. Approximately one-third of Arkansas's HUC 8 watersheds lacked adequate data for inclusion in the analysis, posing a significant challenge to the ANRS statewide prioritization framework. Addressing this gap will require additional funding to expand water quality monitoring for future updates to the ANRS.

Consistent and robust monitoring is essential to the success of the ANRS. Many of Arkansas's surface waters are listed as impaired or of concern on the state's 303(d) list, which is submitted to the Environmental Protection Agency (EPA) by the Arkansas Department of Energy & Environment's Division of Environmental Quality (DEQ). Nonpoint Source (NPS) pollutants, such as sediment and nutrients, account for the majority of impairments. Previous assessments and studies consistently indicate that sediment and nutrients are the most prevalent NPS pollutants, significantly impacting aquatic ecosystems throughout the state.

To advance nutrient reduction goals and enhance monitoring efforts, the ANRS Innovation (Science & Research) Workgroup conducted an inventory of monitoring sites in Tier 2a and Tier 2c watersheds (Table 1). This inventory included a review of monitoring locations used in the 2022 ANRS update as well as sites proposed for inclusion in future updates. The review identified gaps in monitoring coverage caused by a historical lack of sampling or the cessation of monitoring at key locations. The Workgroup identified five priority watersheds for expanded water quality monitoring efforts: Lower St. Francis, Cache River, Bayou Bartholomew, Dardanelle Reservoir, and Strawberry. While these watersheds lacked adequate monitoring, they fell only slightly short of the target. The Workgroup's analysis suggests that relatively small monitoring resource commitments could result in dramatically better data in the next ANRS, giving critical insight into the effectiveness of past efforts and helping guide future efforts.

This project is a valuable opportunity to enhance the ANRS by increasing the number of long-term monitoring sites in data-deficient Tier 2a and Tier 2c watersheds, such as Cache and Bayou Bartholomew. Ensuring that at least four monitoring sites in these watersheds have comprehensive datasets is critical for advancing the ANRS. However, many monitoring sites have been discontinued in recent years, highlighting the urgent need for ongoing funding to sustain and expand long-term monitoring efforts across Arkansas.

Also, water quality monitoring has been lacking in Arkansas. By collecting water quality data that will impact funding for conservation projects and opportunities.

Table 1: Arkansas Nutrient Reduction Strategy Tier 2 Subcategories

Tier 2a: Max. Focus, Enhance Monitoring	Tier 2b: Focus, Continue Monitoring	Tier 2c: Focus, Enhance Monitoring	Tier 2d: Likely Focus, Design Monitoring
Lower St. Francis	Lower Ouachita-Smackover	Dardanelle Reservoir	Lake O' The Cherokees
Lower Sulphur	Beaver Reservoir	Little River Ditches	Lower Neosho
Mckinney-Posten Bayous	Spring	North Fork White	Upper White-Village
Bodcau Bayou	Poteau	Cache	Big
Bayou Bartholomew		Strawberry	Lower White
Elk			Lower Arkansas
			Boeuf
			Bayou Macon

General Project Description

The Arkansas Department of Agriculture's Natural Resources Division, in collaboration with AWRC and stakeholder workgroups, plans to enhance monitoring efforts. These initiatives aim to ensure that future updates to the ANRS have more watersheds qualifying for AWRC's analysis. By addressing critical data gaps, these efforts will bolster the success of the ANRS. Recommendations for water quality sampling sites include, but are not limited to:

Bayou Bartholomew
- EQUILIBRIUM-D5
- EQUILIBRIUM-C2
- BB near Portland AR gage

Cache River
- USGS gage Bayou DeView near Morton
- USGS gage CR at Patterson
- USGS Gage Cache River at Egypt
- Equilibrium sites or ASUERF sites

Dardanelle
- USGS-07257699
- USGS gage 07257500

Lower St Francis
- 2 Equilibrium sites on major tributaries of the St. Francis River

Strawberry
- WHI0245
- WHI0246

In addition to providing additional monitoring sites in high-value watersheds, this project will provide the Arkansas Department of Agriculture with the ability to perform analysis in a more cost effective and reliable manner, ending the Department's dependence on costly external laboratory support. With the decline in external monitoring resources, it is essential for Arkansas to build its internal capacity for water quality analysis. This initiative includes investing in laboratory equipment and supplies to ensure accurate and reliable assessments. By following established protocols and analytical standards, the state can guarantee high-quality data collection and analysis.

These improvements will enable comprehensive trend analyses, nutrient concentration evaluations, and the development of targeted conservation strategies, enhancing Arkansas's efforts to meet its water quality goals. Processing water quality samples in-house will result in significant time and cost savings for sample analyses and report delivery, ensuring more efficient and effective program implementation.

Staff from the Arkansas Department of Agriculture will collect water quality samples, which will be analyzed according to the Quality Assurance Protection Plan (QAPP) sampling protocol. The following parameters to be measured may include but are not limited to:

- Total Suspended Solids (TSS)
- Turbidity
- Dissolved Oxygen (DO)
- pH
- Nitrates
- Nitrites
- Orthophosphate
- Total Nitrogen
- Total Phosphorus

The outcomes of this monitoring effort will establish a reliable foundation for future water quality assessments and provide essential data to inform the prioritization and implementation of nutrient reduction strategies in Arkansas's most critical watersheds.

Tasks, Objectives, Subtasks, Schedules, Deliverables, and Estimated Costs

Task 1: Finalization and approval of Quality Assurance Project Plan (QAPP)

	Cost	
Total Cost	**Federal**	**Non-federal**
$0	$0	$0

Objectives: Ensure success of project data collection. Include protocols, methods, and procedures to collect, preserve, store, analyze, and report the gathered environmental measurements. An approved and finalized QAPP will be signed by appropriate partners, staff, and personnel.

Subtask 1.1 Draft QAPP.
Subtask 1.2 Edit and revise the QAPP per review comments.
Subtask 1.3 Finalize QAPP.

Deliverables:
1. An EPA approved QAPP

Task 2: Financial Review

	Cost	
Total Cost	**Federal**	**Non-federal**
$0	$0	$0

Objectives: A financial review of all financial records by CPA following agreed upon procedures.

Subtask 2.1: Financial review at conclusion of grant

Deliverables:
1. CPA report of financial review for entirety of grant

Task 3: Purchase of laboratory and field supplies

	Cost	
Total Cost	**Federal**	**Non-federal**
$357,398	$357,398	$0

Objective: To purchase supplies, equipment, and laboratory certification for water quality analyses. A minimum of three bids will be obtained on supplies/equipment totaling over $ 5,000 utilizing the State of Arkansas bidding procedures.

Subtask 3.1 Bid and purchase of supplies (e.g. supplies of analysis, laboratory supplies, and field and/or lab equipment)

Deliverables:
1. Copy of laboratory certification.

2. Copy of paid receipt for supplies/equipment
3. Supplies and certifications obtained and placed at the testing laboratory

Task 4: Finalization of Water Quality monitoring sites

	Cost	
Total Cost	**Federal**	**Non-federal**
$0	$0	$0

Objective: Finalize water quality monitoring sites

Subtask 4.1 Finalize water quality monitoring sites (see project description in workplan)

Deliverables:
1. Spreadsheet of monitoring locations with GPS coordinates

Task 5: Install Equipment, Collect, and Analyze Water Quality Measures

	Cost	
Total Cost	**Federal**	**Non-federal**
$0	$0	$0

Objective: Install lab equipment (e.g. mass spectrometer), collect grab samples, and analyze samples.

Subtask 5.1 Set up and calibrate new and existing equipment.
Subtask 5.2 Collect grab samples and QAQC samples at proposed locations on agreed upon schedule.
Subtask 5.3 Record stage data and/or flow data (if applicable)
Subtask 5.4 Conduct water quality analysis which may include, but are not limited to:
- Turbidity
- Dissolved Oxygen (DO)
- pH
- Nitrates
- Nitrites
- Orthophosphate
- Total Nitrogen
- Total Suspended Solids (TSS)
- Total Phosphorus

Deliverables:
- Maps and descriptions of locations.
- Spreadsheet detailing:
    - Date and time samples were collected.
    - Collected data information.
- Water quality analysis and sample results.

Task 6: Technical Transfer of Data

Total Cost	Cost Federal	Non-federal
$0	$0	$0

Objectives: Annually, import the collected water quality data via Water Quality Exchange (WQX) into the data warehouse.

Subtask 6.1 Annually prepare data into a compatible format that meets the requirements of WQX.
Subtask 6.2 Annually import the collected water quality data into the data warehouse via WQX.
Subtask 6.2 Annually validate the importation of data in the data warehouse.

Deliverables:

1. Provide screenshots and/or web links of imported data into database.

Task 7: Reporting

Total Cost	Cost Federal	Non-federal
$0	$0	$0

Objective: Provide NRD information regarding the progress of this project on a semiannual and annual basis; furthermore, provide a Draft and a Final Report detailing the project.

Subtask 7.1 Semiannual Reports that include implementation documentation
Subtask 7.2 Draft Final Report
Subtask 7.3 Final Report

Deliverables:

1. Semiannual Reports with implementation documentation due on April 15 each year.
2. Draft Final Report at the conclusion of the project activities.
3. Final Report at the conclusion of the project.

Overall Schedule of Tasks and Outputs:

Task	Subtask Number	Description	Start Date	End Date
1	1.1	Draft QAPP	Oct-25	Oct-25
	1.2	Edit and revise the QAPP per review comments	Oct-25	Oct-25
	1.3	Finalize QAPP	Oct-25	Oct-25
2	2.1	Financial review at conclusion of grant	Oct-25	Jul-29
3	3.1	Bid and purchase of supplies (e.g. supplies of analysis, laboratory supplies, and field and/or lab equipment)	Oct-25	Jul-29
4	4.1	Finalize water quality monitoring sites	Oct-25	25-Oct
5	5.1	Set up and calibrate new and existing equipment	Oct-25	Jul-29
	5.2	Collect grab samples and QAQC samples at proposed locations on agreed upon schedule.	Oct-25	Jul-29
	5.3	Record stage data and/or flow data (if applicable)	Oct-25	Jul-29
	5.4	Conduct water quality analysis	Oct-25	Jul-29
6	6.1	Annually prepare data into a compatible format that meets the requirements of WQX.	Mar-26	Jul-29
	6.2	Annually import the collected water quality data into the data warehouse via WQX.	Mar-26	Jul-29
	6.3	Annually validate the importation of data in the data warehouse.	Mar-26	Jul-29
7	7.1	Semiannual Reports that include implementation documentation.	Oct-25	Jul-29
	7.2	Draft Final Report	Oct-25	Jul-29
	7.3	Final Report	Oct-25	Jul-29

Coordination, Roles, and Responsibilities

This project will adhere to the Arkansas Department of Agriculture's Natural Resources Division 2025 Quality Management Plan. The Arkansas Department of Agriculture is responsible for overseeing the project and ensuring coordination between its laboratory staff and field collection teams. All personnel involved in field sampling and laboratory analysis will receive thorough training to follow established protocols and comply with the QAPP. This training will ensure consistency, accuracy, and adherence to project standards.

Public Participation

Water quality analysis results will be made publicly accessible through the Water Quality Portal (WQP), a platform that allows anyone, including the general public, to retrieve water monitoring data submitted to the Environmental Protection Agency (EPA). The data will be uploaded to the WQX, which serves as the primary mechanism for data partners to submit water quality monitoring data to the EPA. As a result, the data will be visible to the public and incorporated into the ANRS, a publicly available document.

Measures of Success

Project success will be measured by the successful reporting of water quality data for priority Tier 2 watersheds, which will be used to inform the water quality analysis component of the next ANRS update. Achieving comprehensive data coverage for priority watersheds will demonstrate progress in addressing monitoring gaps and advancing nutrient reduction goals. Processing water quality samples in-house will ensure time and cost savings for sample analyses.

Project Manager

Dr. Sharon Pulla
Laboratory Director
Arkansas Department of Agriculture
Arkansas Veterinary Diagnostic Laboratory
(501) 823-1730
sharon.pulla@agriculture.arkansas.gov

List of Appendices

Appendix 1 Estimated Project Budget
Appendix 2 Budget Justification

Literature Cited:

Aquaview, 2024. https://experience.arcgis.com/experience/57e4fa8751524d54bd69ab58a7296e3e/

Bayou Bartholomew Watershed Nine Element Plan. By. William G. Layher, Ph.D. Layher BioLogics RTEC, Inc. 7233 Camden Cutoff Road. Pine Bluff, AR. Accessed 2024.

EPA, 2024. https://www.epa.gov/nps/national-nonpoint-source-monitoring-program. Accessed 2024.

Little Red Nine Element Plan. https://www.agriculture.arkansas.gov/wp-content/uploads/2022/05/2018-2023-NPS-Pollution-Management-Plan-8-22-18.pdf. Accessed 2024.

NRD, 2024. https://www.agriculture.arkansas.gov/natural-resources/divisions/water-management/nonpoint-source-management/. Accessed 2024.

Appendix 1
Estimated Project Budget

Project GHP-25-800					
ADA Water Quality Monitoring					
Arkansas Department of Agriculture					
Personnel			**Cost**	**Federal**	**Non Federal**
			$ -		
Total Personnel			**$ -**	$0	$0
Fringe Benefits					
			$ -		
Total Fringe			**$ -**	$0	$0
Total Personnel including Fringe			**$ -**	$0	$0
Travel					
Total Travel			**$ -**	$ -	$0
Equipment					
(1) List each item costing $10,000 or more to be purchased for this project:					
Inductively Coupled Plasma Mass Spectrometry (ICP-MS)			$ 200,000	$ 200,000	$ -
Ion Chromatography (IC)			$ 20,000	$ 20,000	$ -
Total Organic Carbon / Total Nitrogen (TOC/TN)			$ 75,000	$ 75,000	$ -
(2) List items costing less than $10,000. You may list items by groups, as appropriate.					
Total Equipment			**$ 295,000**	**$ 295,000**	**$ 0**
Supplies					
3 Multiparameter Sondes			$ 25,000	$ 25,000	$0
Total Supplies			**$ 25,000**	$25,000	$0
Contractual				$0	$0
Total Contractual			**$ -**	$0	$0
Construction				$0	$0
Total Construction			**$ -**	$0	$0
Other – variance in equipment bid prices				$37,398	$0
Total Other			**$ -**	$37,398	$0
Total Direct Charges			**$ 357,398**	**$ 357,398**	$0
Indirect			**$ -**		$0
Grand Total			**$ 357,398**	**$ 357,398**	$0

Appendix 2
Budget Justification

BUDGET CATEGORIES INFORMATION				
FROM SF424A, SECTION B				
Enter Total Federal Program Costs (Attach Separate Sheet(s) if necessary)				
OBJECT CLASS CATEGORIES:				
a. Personnel: Include vacant positions Position Title	Number in Position Class	Annual Salary Rate	Work Years	Personnel Costs
(1)	(2)	(3)	(4)	(5)
		$ -	-	$ -
			TOTAL PERSONNEL	**$ -**
b. Fringe Benefits:				
				$ -
			TOTAL FRINGE BENEFITS	**$ -**
c. Travel: Include estimates of mileage in State or private vehicles, per diems, air fare, and conference fees.				
				$ -
			TOTAL TRAVEL	**$ -**
d. Equipment:				
(1) List each item costing $5,000 or more to be purchased for this project:				
Inductively Coupled Plasma Mass Spectrometry (ICP-MS)				$ 200,000
Ion Chromatography (IC)				$ 20,000
Total Organic Carbon / Total Nitrogen (TOC/TN)				$ 75,000
(2) List items costing less than $5,000. You may list items by groups, as appropriate.				
			TOTAL EQUIPMENT	**$ 295,000**
e. Supplies: List by groups				
3 Multiparameter water quality sondes with sensors (pH, conductivity, etc.)				$ 25,000
			TOTAL SUPPLIES	**$ 25,000**
f. Contractual: List each planned contract separately, type of service, procurement method (i.e. small purchase, formal advertising, competitive/non-competitive negotiations) and the estimated cost. Indicate if the proposed contract period will go beyond the budget period.				
			TOTAL CONTRACTUAL	**$ -**
g. Construction				
			TOTAL CONSTRUCTION	**$ -**
h. Other: Explain by major categories any items not included in above standard budget categories.				
Variance in equipment bid prices			**TOTAL OTHER**	**$ 37,398**
i. TOTAL DIRECT CHARGES: (Sum of Items a through h)				**$ 357,398**
j. INDIRECT COSTS: (Attach a copy of your latest indirect cost agreement)				**$ -**
k. TOTAL PROPOSED PROGRAM COSTS (Sum of Items i and j)				**$ 357,398**
			SHARE: FEDERAL	100%
			SHARE: GRANTEE	0% $ -

Appendix I: GHP-25-900 Wastewater Treatment Plant Optimization

Gulf Hypoxia Program Summary Page
Project GHP-25-900

1. **Title of Project:** Wastewater Treatment Plant Optimization Plan

2. **Project Goals/Objectives:**
   - Enhance Nutrient Removal: Improve nutrient removal efficiency to meet or exceed regulatory standards, contributing to overall water quality improvement.
   - Reduce Energy Use and Costs: Lower energy consumption and operational costs by optimizing treatment processes and potentially integrating new technology.
   - Increase Infrastructure Resilience: Enhance the adaptability and resilience of publicly owned treatment works (POTW) infrastructure to meet future regulatory changes and support regional growth.

3. **Project Tasks:** 1) Financial Review; 2) Identification and Agreements; 3) Engineering Firm Selection; 4) Identify and assign qualified operators to partner with POTWs for the optimization assessment 5) Evaluation and Benchmarking; 6) Optimization Implementation; 7) Monitoring and Evaluation 8) Reporting

4. **Measures of Success:** This project will be considered successful if it results in:
   - Energy Savings: A measurable reduction in energy costs for participating POTWs.
   - Enhanced Nutrient Removal: Demonstrated improvement in nutrient removal leading to better water quality in downstream waters.
   - Regulatory Preparedness: Improved readiness for future nutrient-related regulatory standards.
   - Long-Term Cost Savings: Reduced operational costs through sustained efficiency improvements.

5. **Project Type:** Statewide (X) Watershed ( ) Demonstration ( )

6. **Waterbody Type:** River ( ) Groundwater ( ) Other (X)

7. **Project Location:** This project will be implemented statewide, with priority given to Tier 1 watersheds identified in the Arkansas Nutrient Reduction Strategy (ANRS). Secondary priority will be given to the 2024 Nonpoint Source Priority Watersheds and Tier 2 ANRS watersheds.

8. **Key Project Activities:** Hire Staff ( ) Monitoring ( ) Technical Assistance ( ) Education ( ) BMP Implementation (X) Demonstration Project (X) Other ( ) Planning (X)

9. **Project Costs:** Federal: $200,000 Non-Federal: $0 Total: $200,000

10. **Project Management:** Stacie R. Wassell, Associate Director, Division of Environmental Quality, Office of Water Quality, Arkansas Energy & Environment

11. **Project Period:** October 2025 – September 2029

Project GHP-25-900
Wastewater Treatment Plant Optimization Plan

Introduction of Watershed Area

This project aligns with the Arkansas Nutrient Reduction Strategy (ANRS) and the 2024-2029 Nonpoint Source Pollution Management Plan, targeting nutrient reduction across Arkansas's wastewater treatment facilities.

Across the state, publicly owned treatment works (POTWs) struggle to keep up with technological advancements and operational efficiencies. Many communities in Arkansas are underserved and suffer from aging infrastructure. These communities face unique challenges in optimizing nutrient removal. These communities would greatly benefit from increased nutrient removal capacity and energy cost savings, ultimately leading to more sustainable operations and better water quality.

Watershed Area:

Arkansas's two main basins, the Arkansas-Red-White and Lower Mississippi River, drain into the Gulf of America. Together, these basins comprise 58 eight-digit Hydrological Unit Codes (HUCs) across Arkansas. The Arkansas Nonpoint Source Pollution Management Plan highlights 12 priority HUCs, with 7 of these designated as Tier 1 watersheds under the ANRS. Approximately 30 additional watersheds are designated as Tier 2, with three watersheds overlapping programs managed by the Arkansas Department of Agriculture's Natural Resources Division.

Through this project, enhanced nutrient management in these watersheds will support healthier ecosystems by addressing excess nitrogen and phosphorus, the primary contributors to Gulf Hypoxia. This targeted optimization approach will build a more resilient water quality infrastructure, protecting Arkansas's watersheds and contributing to the reduction of nutrient loadings impacting the Gulf of America.

Table 1: Tier 1 Watersheds

ANRS Tier 1 Watersheds
Lake Conway-Point Remove
Illinois
L'Anguille
Bayou Meto
Middle White
Lower Arkansas-Maumelle
Bull Shoals Lake

Table 2: 2024-2029 NPS Priority Watersheds

2024- 2029 NPS Priority Watersheds	**ANRS Tier Category**
Illinois River	Tier 1
Beaver Reservoir	Tier 2b: Focus, Continue Monitoring
Middle White River	Tier 1
Little Red River	Tier 2c: Focus, Enhance Monitoring
Cadron Creek	Not listed directly in Tier 1 or Tier 2
Lake Conway-Point Remove	Tier 1
Lower White-Bayou DeS Arc	Not listed directly in Tier 1 or Tier 2
Bayou Bartholomew	Tier 2a: Max. Focus, Enhance Monitoring
Lower Saline	Not listed directly in Tier 1 or Tier 2
Ouachita Headwaters	Not listed directly in Tier 1 or Tier 2
Lower Little	Not listed directly in Tier 1 or Tier 2
Poteau River	Tier 2b: Focus, Continue Monitoring

Problem/Need Statement

Data from the 2024 Nonpoint Source Pollution Management Plan, the ANRS, current Clean Water Act assessments, and monitoring reports indicate that nutrient pollution remains a significant problem across priority watersheds, especially in ANRS Tier 1 and Tier 2 areas. Optimizing facilities will contribute directly to nutrient load reductions in downstream water bodies, including those water bodies discharging to the Gulf of America, addressing regional hypoxia concerns.

General Project Description

This project outlines a strategy to optimize operations at selected POTWs to improve efficiency, reduce energy consumption, and enhance nutrient removal. Through systematic process evaluations and targeted enhancements, this project aims to ensure the sustainability of treatment operations, reduce operational costs, and improve water quality outcomes.

Energy consumption benchmarking is a powerful tool for wastewater treatment facilities to monitor and improve energy performance over time. By regularly tracking energy use and comparing it to past performance, operators can identify areas where energy efficiency may be decreasing, indicating potential maintenance needs or process inefficiencies. This tracking allows facilities to catch early signs of increased energy consumption, ensuring that equipment continues to operate at peak efficiency and maintenance needs are proactively addressed.

When energy efficiency improvements are implemented, such as the installation of variable frequency drives (VFDs) on lift stations, benchmarking data offers a way to validate the impact of these upgrades. For example, operators can analyze the difference in energy intensity before and after installing VFDs. If energy use does not decrease as expected adjustments to settings can help regain efficiency. Yearly benchmarking also helps facilities evaluate their performance against similar facilities, guiding future upgrades.

Through the optimization measures outlined in this project, participating POTWs are expected to achieve:

- 10-20% reduction in energy usage: By optimizing aeration processes, introducing more efficient equipment, and implementing other energy-saving measures, these reductions represent significant savings on operational costs and reduced carbon footprints.
- 15-25% decrease in operational costs: These cost reductions stem from energy savings, as well as improved operational efficiencies that reduce the demand on labor and maintenance.
- Up to 25% reduction in nitrogen and phosphorus loads: This estimate is based on benchmark data from similar optimization efforts in comparable facilities nationwide and will be further refined as the project proceeds.

Benchmarking data collected throughout the project will help monitor these gains, enabling operators to measure the long-term benefits of optimizations and to continuously refine processes for further efficiency improvements. (https://smartenergy.illinois.edu/benchmarking-for-water-and-wastewater-treatment-plants/)

The optimization project will be carried out in several phases, with some phases performed by a contracted engineering firm.

Milestones

The following milestones will guide project progress and help ensure adherence to timelines:

- Engineering Firm Contracted: Within 6 months of project start.
- Development of Optimization Assessment Process: Within 6 months of firm selection.
- Evaluation and Benchmarking Completed: 6 months after the POTW enters into an agreement to participate in the project.
- Process Adjustments and Upgrades Implemented: By year two of the project.
- Interim Reduction Milestones: A 10% reduction in nitrogen and phosphorus by the end of year two.
- Final Reduction Milestones: Achieve up to a 25% reduction in nutrients and a 15% reduction in energy costs by project end.

These milestones will also be referenced in the semiannual and annual project reports to track progress against established goals.

Conclusions

Success will be measured by:

- Nutrient reduction levels (in pounds of nitrogen and phosphorus).
- Reduction in energy consumption and associated cost savings.
- Number of POTWs implementing optimized practices or new technology.
- Documented improvements in effluent quality.
- Project Sustainability

The project aims to create sustainable practices that POTWs can maintain beyond the initial funding period. By improving operational efficiency and lowering costs, facilities will be better positioned to sustain these practices independently after project completion.

Tasks, Objectives, Subtasks, Schedules, Deliverables, and Estimated Costs

Task 1, Financial Review

Costs		
Federal	**Non-Federal Match**	**Total**
$6,000	$0	$6,000

Objectives: A financial review of project expenditures conducted annually to ensure compliance and accountability.

Subtask 1.1 Financial review conducted annually.

Deliverables:
1. Annual financial review reports

Task 2, Identification and Agreements

Costs		
Federal	**Non-Federal Match**	**Total**
$20,000	$0	$20,000

Objectives: Identification of POTWs and establishment of participation agreements.

Subtask 2.1 Create a ranking matrix to evaluate potential POTWs in Appendix D, prioritizing Tier 1 ANRS watersheds. Additional considerations may include priority watersheds in the 2024-2028 Nonpoint Source Pollution Management Plan and Tier 2 ANRS watersheds
Subtask 2.2 Rank POTWs in Appendix D using the matrix developed.
Subtask 2.3 Identify high-priority POTWs for participation.
Subtask 2.4 Meet with leadership from identified POTWs to discuss participation requirements and expected benefits.
Subtask 2.5 Establish participation agreements between each POTW and the Division of Environmental Quality (DEQ), detailing the roles and obligations of both parties.

Deliverables:
1. Ranked list of POTWs.
2. Documentation of POTWs contacted.
3. Copies of all participation agreements.

Task 3, Engineering Firm Selection

Costs		
Federal	**Non-Federal Match**	**Total**
$20,000	$0	$20,000

Objectives: Procure and contract an engineering firm to develop the optimization assessment process.

Subtask 3.1 Request for quote (RFQ) for engineering firm to develop the optimization assessment.
Subtask 3.2 Identify engineering firm and write agreements between POTW and engineering firm setting forth the obligations of each party participating in the project.

Deliverables:
1. Copy of all agreements with engineering firm.

Task 4, Identification and Assignment of Operators to POTWs

Costs		
Federal	**Non-Federal Match**	**Total**
$23,000	$0	$23,000

Objective: Identify and assign qualified operators to partner with POTWs for the optimization assessment

Subtask 4.1 Develop criteria for selecting operators, including qualifications, experience, and alignment with project objectives.
Subtask 4.2 Create and distribute a call for participation to recruit operators interested in leading optimization assessments.
Subtask 4.3 Evaluate applications and select operators based on predefined criteria.
Subtask 4.4 Pair selected operators with appropriate POTWs based on location, expertise, and project needs.
Subtask 4.5 Provide orientation and initial training to operators on their roles and expectations within the project.

Deliverables:
1. Documentation of operator selection criteria and recruitment process.
2. List of selected operators and their assigned POTWs.
3. Copies of training materials and attendance records.

Task 5, Evaluation and Benchmarking

Costs		
Federal	**Non-Federal Match**	**Total**
$60,000	$0	$60,000

Objective: Conduct a baseline assessment of POTWs, evaluating nutrient removal, energy usage, and treatment capacities.

Subtask 5.1 Evaluation and benchmarking of POTWs
Subtask 5.2 Evaluate current systems and operations, energy usage, and nutrient removal efficiency.
Subtask 5.3 Evaluate current treatment capabilities and pollutant removal based on laboratory analyses of influent and effluent samples.
Subtask 5.4 Benchmarking against similar facilities to identify areas of improvement.

Subtask 5.5 Identify metrics for measuring success.

Deliverables:

1. Evaluation and benchmarking report that identifies metrics for measuring success.

Task 6, Identification of Areas for Optimization

Costs		
Federal	**Non-Federal Match**	**Total**
$50,000	$0	$50,000

Objective: Identification of Areas for Optimization

Subtask 6.1 Make process adjustments and test for effectiveness in nutrient removal, energy use, and other operational metrics.
Subtask 6.2 If applicable, install technology upgrades and test for effectiveness in nutrient removal, energy use, and other operational metrics.

Deliverables:

1. Report on identified areas of optimization

Task 7, Monitoring and Evaluation

Costs		
Federal	**Non-Federal Match**	**Total**
$15,000	$0	$15,000

Objective: Monitoring and Evaluation

Subtask 7.1 Monitor effluent quality, water quality of receiving stream, energy consumption, and operational costs to evaluate project success.
Subtask 7.2 Adjust processes as necessary for optimization.

Deliverables:

1. Report on monitoring and evaluation of project success.

Task 8, Reporting

Costs		
Federal	**Non-Federal Match**	**Total**
$6,000	$0	$6,000

Objective: Provide information regarding the progress of this project on a semiannual basis and provide a Final Report detailing the project.

Subtask 8.1 Semiannual reports

Subtask 8.2 Annual Reports due on October 1 annually

Subtask 8.3 Attend and participate in semiannual project review meetings

Subtask 8.4 Submit a final report upon project completion. Suggested sections: Executive Summary, Introduction, Goals and Objectives, Project Milestones and Accomplishments, Methodology/Data Collection, Challenges and Barriers, Recommendations and Future Strategies, Conclusion

Deliverables:

1. Semiannual reports
2. Annual Reports submitted by October 1 each year of the project
3. Final Report at the conclusion of the project activities

Overall Schedule of Tasks and Outputs:

Task	Subtask	Description	Start Date	Completion Date
1	**1.1**	Financial Review	Oct-25	Sep-29
2	**2.1**	Create Matrix for Ranking of POTWs	Oct-25	Mar-26
	2.2	Rank Potential POTWs	Oct-25	Mar-26
	2.3	Identify high-priority POTWs for participation	Oct-25	Mar-26
	2.4	Meet with POTW leadership	Oct-25	Mar-26
	2.5	Establish agreements with POTWs and DEQ	Oct-25	Mar-26
3	**3.1**	Issue RFQ for engineering firm for optimization project	Mar-26	Sep-26
	3.2	Identify and contract engineering firm	Mar-26	Sep-26
4	**4.1**	Develop criteria for selecting operators	Mar-26	Sep-26
	4.2	Create and distribute a call for participation to recruit operators	Sep-26	Mar-27
	4.3	Evaluate applications and select operators	Sep-26	Mar-27
	4.4	Pair selected operators with appropriate POTWs	Sep-26	Mar-27
	4.5	Provide orientation and initial training to operators	Sep-26	Mar-27
5	**5.1**	Evaluation and benchmarking of POTWs	Sep-26	Mar-27
	5.2	Evaluate current systems and operations, energy usage, and nutrient removal efficiency.	Mar-27	Sep-27
	5.3	Evaluate current treatment capabilities and pollutant removal	Mar-27	Sep-27
	5.4	Benchmarking against similar facilities	Mar-27	Mar-28
	5.5	Identify metrics for measuring success	Mar-27	Mar-28
6	**6.1**	Make process adjustments and test	Mar-27	Sep-28
	6.2	Install technology upgrades and test for effectiveness	Sep-27	Sep-28
7	**7.1**	Monitor effluent quality	Sep-27	Sep-28
	7.2	Adjust processes as necessary	Sep-27	Sep-28
8	**8.1**	Semiannual Reports	Oct-25	Sep-28
	8.2	Annual Reports	Oct-25	Jan-29
	8.3	Semiannual Review Meetings	Oct-25	Jan-29
	8.4	Final Report	Jan-29	Apr-29

Coordination, Roles and Responsibilities:

Division of Environmental Quality
DEQ will coordinate and lead the project, providing oversight, technical assistance, and guidance on meeting nutrient reduction and efficiency goals.

Publicly Owned Treatment Works
POTWs will be responsible for implementing optimization measures, providing operational data, collaborating with DEQ and the paired optimization assessment operator and/or engineering firm, and ensuring adherence to agreed protocols.

Arkansas Department of Agriculture's Natural Resources Division
Arkansas Department of Agriculture's Natural Resources Division will administer and oversee the grant, ensuring that all project activities and expenditures comply with grant requirements.

Public Participation:
POTWs may engage the public as desired. Progress updates and final outcomes will be made publicly available on the ANRS and DEQ websites. This transparency will allow stakeholders and the community to stay informed on improvements to water quality and resource efficiency in their local areas.

Measures of Success and Performance:

This project will be considered successful if it achieves:

- Energy Savings: A measurable reduction in energy costs for participating POTWs.
- Enhanced Nutrient Removal: Demonstrated improvement in nutrient removal leading to better water quality in downstream waters.
- Regulatory Preparedness: Improved readiness for future nutrient-related regulatory standards.
- Long-Term Cost Savings: Reduced operational costs through sustained efficiency improvements.

Project Lead:
Stacie R. Wassell, Associate Director, Division of Environmental Quality, Office of Water Quality, Arkansas Energy & Environment

List of Appendices:
Appendix A Project Budget Justification Worksheet

Appendix A
PROJECT BUDGET JUSTIFICATION WORKSHEET

BUDGET CATEGORIES INFORMATION (FROM SF424A, SECTION B TOTALS) Enter Total Program Costs, i.e., Federal and Non-Federal Funds Combined (Attach Separate Sheet(s) if necessary)				
OBJECT CLASS CATEGORIES:				
a. Personnel: (Program Staffing – include and indicate vacant positions) Position Title	Number in Position Class	Annual Salary Rate	Work Years	Personnel Costs
				$
			PERSONNEL TOTAL	**$**
b. Fringe Benefits:				$
			FRINGE BENEFITS TOTAL	**$**
c. Travel: Include estimates of In-State and Out of State travel including if appropriate, mileage in State or private vehicles, Per Diems, air fare and conference fees.				
			TRAVEL TOTAL	**$**
d. Equipment: (1) List each item costing $5,000 or more to be purchased for this project:				
(2) List items costing less than $5,000. You may list items by groups, as appropriate.				
			EQUIPMENT TOTAL	**$**
e. Supplies: List by groups, as appropriate				
			SUPPLIES TOTAL	**$**
f. Contractual:				
Engineering Firm to be selected				$148,000
			CONTRACTUAL TOTAL	**$148,000**
g. Construction:				
			CONSTRUCTION TOTAL	**$**
h. Other:				
Oversight of POTW optimization				$52,000
			OTHER TOTAL	**$52,000**
i. TOTAL DIRECT CHARGES: (Sum of Items a. through h.)				**$200,000**
j. INDIRECT COSTS: (Attach a copy of your latest indirect cost agreement)				
k. TOTAL PROPOSED PROGRAM COSTS (Sum of Items I and j.)				**$200,000**
SHARE: FEDERAL 100%				
GRANTEE 0%				

Illinois Environmental Protection Agency

Gulf Hypoxia Program

Work Plan #2

November 1, 2024

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Improving our water resources with collaboration and innovation

Table of Contents

Overview

Illinois EPA is pleased to submit this work plan detailing how the Gulf Hypoxia Program (GHP) funding will be allocated to advance the implementation of the Illinois Nutrient Loss Reduction Strategy (NLRS). This work plan addresses all elements discussed in the "Bipartisan Infrastructure Law: Gulf Hypoxia Program FY24 Guidance for State Cooperative Agreements" memorandum distributed by USEPA on July 10, 2024.

Illinois' initial GHP work plan will cover FY24 through FY26 funding. The work plan will be five years in length funding 4 projects. Build America, Buy American (BABA) provisions will be applied to projects, if applicable. A Quality Assurance Project Plan (QAPP) will be submitted to USEPA 60 days prior to data collection for projects that require one. Illinois EPA staff will enter information for the work plan's cooperative agreement into the Nonpoint Source Program Grants Reporting and Tracking System GHP module as detailed in the guidance document. Illinois EPA will ensure environmental compliance for the National Environmental Policy Act, Endangered Species Act, and Section 404 of the Clean Water Act for projects where applicable. Illinois EPA will work with USEPA to ensure environmental compliance is sufficiently addressed before construction.

The work plan is laid out by specific project and documents how the project will be implemented, its environmental results, transferability of results and dissemination to the public, technical support, and quality assurance. The Milestone Schedule is summarized in Appendix A and the Budget Narrative is summarized in Appendix B.

For more information on the Illinois NLRS, visit: go.Illinois.edu/NLRS

FY 2024 - FY 2026 Funding Projects

A. Continuous Nutrient Monitoring Network (Phase 2)

Project Approach

This effort will conduct nutrient monitoring at eight United States Geological Survey (USGS) continuous monitoring stations in Illinois. Water quality data will be logged approximately 15 minutes. The data will be used to characterize nutrient concentrations and compute constituent loadings that are exported from the state. The continuous monitoring stations will be operated for three years. Discrete water-quality samples will also be collected to verify continuous sensor data and describe how well the sensor locations represent the streams. USGS will utilize the Covariate-based Bayesian Imputation Model to calculate total phosphorus and nitrate-N loads at the eight sites. Annual data summaries will be provided, and a formal, citable report will be written in the final year of the project. See Table 1 for continuous nutrient monitoring station information.

Table 1. Continuous nutrient monitoring station information.

[USGS, U.S. Geological Survey; ID, identification; km^2, square kilometer]

River	USGS ID	Station drainage area (km^2)	Station drainage area in Illinois (km^2)	Basin drainage area in Illinois (km^2)	Percent of station drainage area in Illinois	Areal percent of Illinois
Vermilion	03339000	3,341	3,105	3,372	93	2.1
Embarras	03346500	6,042	6,042	6,307	100	4.2
Little Wabash[1]	03381495	7,998	7,998	8,298	100	5.5
Rock	05446500	24,732	10,290	13,789	42	7.1
Green[2]	05447500	2,598	2,598	2,927	100	1.8
Illinois[3]	05586300	69,264	58,666	64,009	84	40.2
Kaskaskia	05595000	13,439	13,439	15,045	100	9.2
Big Muddy	05599490	5,592	5,592	6,180	100	3.8

[1]Drainage area numbers are for the nearby streamgage at Little Wabash River at Carmi, Illinois (U.S. Geological Survey identification number 03381500).

[2]The Green River is part of the Rock River drainage basin and is included in the 13,789 square kilometer Rock River drainage area in Illinois.

[3]Drainage area numbers are for the nearby streamgage at Illinois River at Valley City, Illinois (U.S. Geological Survey identification number 05586100).

The benefits of this project are not only statewide but also coincides with many national and regional USGS and USEPA priorities in addition to supporting the goals of the NLRS. For the State of Illinois, this project will provide vital information on nutrient concentrations and loads leaving the state. Such information will help inform the NLRS Policy Working Group and subcommittees and target land and water management activities and strategies to maintain and improve watershed resources.

As an additional benefit, this project will further goals in the USGS Water Science Strategy (Evenson et al., 2013) such as:

1. Advancement of monitoring networks and techniques for determining water quality and their ability to meet human and ecosystem needs.
2. Predict changes in the quality of water in response to changing climate, population, land-use, and management scenarios.
3. Delivery of hydrologic data to support water resource decisions.

This project will also enhance the newest water mission area directives related to the Next Generation Water Observing System (NGWOS) by enhancing current water quality observing networks nationwide. These sites will be critical in evaluating long-term trends in water quality, as well as the ability to predict and model future trends.

Table 2 below shows the continuous parameters monitored at each site. In addition, approximately 15 discrete water quality samples will be collected at each site annually, including high flow events. Tier One parameters include nitrate and orthophosphate. Tier Two parameters include turbidity. For all sites except the Kaskaskia and Illinois rivers, previous monitoring data and modeling has determined that turbidity data can be effectively used as a surrogate parameter for calculating total phosphorus loads (see Continuous monitoring and Bayesian estimation of nutrient and sediment loads from Illinois watersheds, for water years 2016–2020 (usgs.gov) as justification for using this approach.) Total phosphorus analysis will be included for the 15 discrete water samples.

Table 2. List of sites and continuous parameters monitored at each site.

Site	Nitrate	Turbidity	Phosphate	DO	pH	Spec Cond	Temp
Big Muddy (05599490)	X	X					
Kaskaskia (05595000)	X	X	X				
Illinois (05586300)*	X	X	X	X	X	X	X
Green (05447500)	X	X					
Rock (05446500)	X	X					
Little Wabash (03381495)	X	X					
Embarras (03346500)	X	X					
Vermillion (03339000)	X	X					

*Funded by USGS NGWOS Funds

EPA Strategic Plan: This project supports EPA Strategic Plan Goal 5: *Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds* by conducting monitoring and assessments.

Strategic Outcomes- This project achieves Gulf Hypoxia Program strategic outcomes:

2. Use state-level water quality programs and actions to advance nutrient reductions.
4. Collaborate across state boundaries with Hypoxia Task Force partners.

Subawards: Illinois EPA will administer a Joint Funding Agreement (JFA) with the United States Geological Survey (USGS) to provide for operation of the eight continuous monitoring stream gages. Gulf Hypoxia funding will be used to finance work conducted from March 1, 2025, to

March 31, 2027, under this work plan. Illinois EPA plans to continue this project under the second GHP work plan.

Outreach: Annual reports will be produced to inform the public on statewide annual nutrient loads and yields, including five-year running averages and watershed trends. Reports will be posted on the NLRS website. Presentations will be given during NLRS Policy Working Group meetings, Illinois Nutrient Monitoring Council meetings and annual Illinois Nutrient Loss Reduction Strategy workshops and conferences. Real-time data will also be available on the USGS website.

Advancing the Gulf Hypoxia Action Plan in Disadvantaged Communities: Illinois will use the USEPA Justice40 Interim Disadvantaged Communities Indices developed utilizing the EJScreen methodology, using the 80th percentile coverage for the purpose of defining disadvantaged communities in Illinois. USEPA has provided Illinois EPA with data detailing the disadvantaged community geographic area and associated populations both statewide and on a HUC-12 watershed basis within existing NLRS priority watersheds.

The Continuous Nutrient Monitoring Network collects and analyzes statewide water quality data, benefiting the whole state of Illinois. Illinois has 4,816 square miles of disadvantaged communities with a population of 4,525,895 statewide according to the 80th percentile for USEPA EJ Supplementary Index factors. Data analysis from the continuous nutrient monitoring network may help identify where water quality concerns affect these communities.

Environmental Results

Outputs: These include annual statewide nutrient loading reports and public presentations by USGS staff. Annual statewide nutrient loading data analysis will be available through NLRS annual reporting and on the USGS website.

Outcomes: Water quality data analysis and results inform policymakers and stakeholders on the progress being made by implementing the NLRS. Watershed trends analysis will be used to target and prioritize future implementation efforts and identify data gaps.

Milestone Schedule

See Appendix A

Transferability of Results and Dissemination to Public

Annual statewide nutrient loading reports will be published and posted on the NLRS website. Public presentations will be given at Nutrient Monitoring Council meetings and annual NLRS conferences. Nutrient loading analysis will be included in the annual NLRS reporting.

Technical Support

Illinois EPA will consult USGS to ensure the requirements of the JFA are being met. Illinois EPA staff will review draft annual statewide nutrient loading reports and Biennial Report write-ups prior to being published.

Detailed Budget Narrative

See Appendix B

Quality Assurance

USGS will operate under a Quality Assurance Project Plan reciprocity agreement with USEPA. A QAPP specific to this project will be provided to USEPA.

B. Cover Crop Premium Discount Program (Phase 2)

Project Approach

Illinois Department of Agriculture (IDOA) Cover Crop Premium Discount Program is offered for acres of cover crops installed outside of federal and state program incentives (e.g., EQIP, CSP and state cost share). Eligible applicants will receive a $5/acre insurance premium discount on the following year's USDA Risk Management Agency's crop insurance invoice for every acre of cover crop enrolled and verified in the program.

EPA Strategic Plan: This project supports EPA Strategic Plan Goal 5: *Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds* by

1. Developing climate-related solutions to protect and improve water quality and habitat, while also providing climate mitigation and adaptation benefits, and
2. Implement programs to prevent or reduce nonpoint source pollution, including nutrients.

Strategic Outcomes: This project achieves Gulf Hypoxia Program strategic outcomes:

2. Use state-level water quality programs and actions to advance nutrient reductions.

Subawards: Illinois EPA will execute an Intergovernmental Agreement with IDOA to provide funding for this project. Funding will be dispersed annually for FY 25 - FY 27.

Outreach: IDOA will post programmatic information and directions for applying for the program on its website and through all 97 Soil and Water Conservation Districts websites. Prior to the application period, a news release will be disseminated to publicize the program and provide information on how to apply.

Advancing the Gulf Hypoxia Action Plan in Disadvantaged Communities: Illinois will use the USEPA Justice40 Interim Disadvantaged Communities Indices developed utilizing the EJScreen methodology, using the 80th percentile coverage for the purpose of defining disadvantaged communities in Illinois. USEPA has provided Illinois EPA with data detailing the disadvantaged geographic area and associated populations both statewide and on a HUC-12 watershed basis within existing NLRS priority watersheds.

The Cover Crop Premium Discount program is open to all agricultural producers who intend to plant cover crops the following growing season. The application process is based on a first-come-first-served basis until the allotted acres have been met.

Environmental Results

Outputs: Approximately 190,000 acres of cover crops will be planted annually through this program co-funded by Illinois and USEPA GHP. The State of Illinois will fund the first 150,000 acres. GHP will fund the remaining 40,000 additional acres.

Outcomes: This program will realize benefits to both greenhouse gas and nutrient loss reductions. Statewide carbon dioxide, nitrate, and total phosphorus reductions will be quantified annually.

Milestone Schedule

See Appendix A

Transferability of Results and Dissemination to Public

A significant aspect of the Fall Covers Spring Savings program is the delivery of compelling messages on cover crop use and impacts as an important step to increasing adoption. As such, IDOA in partnership with statewide partners strive to share compelling impact of the program, cover crop use and shared policy efforts. Results from the program are disseminated to the public via the IDOA webpage, partner webpages, IDOA and statewide industry partners social media outlets, along with statewide presentations at conferences and field days. Additionally, press releases and messaging is extended to industry partners to share with their stakeholders via their newsletters, press releases and other communication channels.

Technical Support

Technical support for this program is not required. IDOA has implemented this program for the past five years.

Detailed Budget Narrative

See Appendix B

Quality Assurance

N/A

C. Illinois Ag Retail Survey

Project Approach

A survey will be conducted at agricultural retail facilities to collect data on the implementation of nutrient management practices in Illinois, following the principles of 4R's of nutrient management: right rate, right time, right place, right source. The survey methodology will be based on the survey used by the Iowa Nutrient Research and Education Council to support Iowa's nutrient reduction strategy.

EPA Strategic Plan: This project supports EPA Strategic Plan Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds by implementing programs to prevent or reduce nonpoint source pollution, including nutrients.

Strategic Outcomes: This project achieves Gulf Hypoxia Program strategic outcomes:

2. Use state-level water quality programs and actions to advance nutrient reductions.
4. Collaborate across state boundaries with HTF partners

Subawards: Illinois EPA will enter into a contract with a qualified vendor to conduct the ag retailer survey.

Outreach: Survey results will be disseminated through annual reports, presentations, and summarized in future NLRS Biennial Reports. Data results from the Illinois survey can complement the Iowa survey results for comparison.

Advancing the Gulf Hypoxia Action Plan in Disadvantaged Communities: Illinois will use the USEPA Justice40 Interim Disadvantaged Communities Indices developed utilizing the EJScreen methodology, using the 80th percentile coverage for the purpose of defining disadvantaged communities in Illinois. USEPA has provided Illinois EPA with data detailing the disadvantaged community geographic area and associated populations both statewide and on a HUC-12 watershed basis within existing NLRS priority watersheds.

The Ag Retailer 4R Nutrient Management Metric Survey methodology relies on randomly selected ag retail locations and fields serviced by those retailers. Data results will be reported statewide.

Environmental Results

Outputs: Statewide and regional survey results from the agriculture retail sector on the implementation of 4R nutrient management adoption in Illinois will be included in an annual report.

Outcomes: Survey results will provide information on statewide and regional implementation of 4R nutrient management adoption in Illinois. Data will be analyzed for trends so that resources can be targeted to watersheds with the greatest need of educational programming and implementation to ensure widespread and equitable adoption of nutrient management practices. Illinois survey results can be compared to Iowa's survey results to gain a more regional view of adoption of nutrient management practices.

Milestone Schedule

See Appendix A

Transferability of Results and Dissemination to Public

Survey results will be disseminated through annual reports, presentations, and summarized in future NLRS annual reporting.

Technical Support

Illinois EPA staff will work with the vendor to ensure contract deliverables are accurate and executed in a timely manner.

Detailed Budget Narrative

See Appendix B

Quality Assurance

A Quality Assurance Project Plan will be developed and maintained by the subrecipient to ensure accuracy and integrity in data collection and analysis.

D. NLRS Implementation in Priority Watersheds (Phase 2)

Project Approach

Funding will implement nonpoint source best management practices that address nutrient loss. Eligible practices will include those recommended in the NLRS, such as in-field and edge-of-field agriculture conservation practices and urban stormwater green infrastructure practices. Funding will be focused on priority watersheds listed in the Nutrient Loss Reduction Strategy, with an emphasis on source water protection areas (public water supplies) and disadvantaged communities. Potential for subawards to Soil and Water Conservation Districts to help private landowners implement recommended conservation practices through a competitive application process.

EPA Strategic Plan: This project supports EPA Strategic Plan Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds by implementing programs to prevent or reduce nonpoint source pollution, including nutrients.

Strategic Outcomes

This project achieves Gulf Hypoxia Program strategic outcomes:

2. Use state-level water quality programs and actions to advance nutrient reductions.
3. Implement projects in prioritized watersheds with greatest opportunities for nutrient reductions.

Subawards: Illinois EPA will post a Notice For Funding Opportunity (NOFO) to solicit applications to select an entity to conduct the work for this project.

Outreach: The selected entity will be required to conduct outreach activities within the project area. In addition, a project report will be developed and posted on the NLRS website.

Advancing the Gulf Hypoxia Action Plan in Disadvantaged Communities: Illinois will use the USEPA Justice40 Interim Disadvantaged Communities Indices developed utilizing the EJScreen methodology, using the 80th percentile coverage for the purpose of defining disadvantaged communities in Illinois. USEPA has provided Illinois EPA with data detailing the disadvantaged community geographic area and associated populations both statewide and on a HUC-12 watershed basis within existing NLRS priority watersheds.

The NLRS Implementation in Priority Watersheds project will be administered by Illinois EPA as a grant program with the ultimate result to provide financial assistance to landowners to install multiple best management practices that will reduce nonpoint sources of nutrients. Priority will be given to applications that will most benefit disadvantaged communities and source water protection areas.

Environmental Results

Outputs: Implementation of nonpoint source best management practices recommended in the NLRS, located in priority watersheds with approved watershed-based plans or total maximum

daily loads, with an emphasis on NLRS priority watersheds with public water supplies affecting disadvantaged communities.

Outcomes: Reduction in nitrogen, phosphorus and sediment loads in priority watersheds. These metrics will be quantified using the USEPA Region V StepL model for each best management practice implemented. Improved public water supply and quality of life in disadvantaged communities.

Milestone Schedule

See Appendix A

Transferability of Results and Dissemination to Public

Subaward recipients will issue press releases detailing the awarding of funding and specifics about the projects. A final project report will also be developed.

Technical Support

Illinois EPA staff will work closely with the selected entities to ensure grant contract requirements are met and deliverables are submitted in a timely manner.

Detailed Budget Narrative

See Appendix B

Quality Assurance

N/A

GHP HTF grant Workplan

Summary Information Page (two-page limit)

Project Title:

Indiana's Second Gulf Hypoxia Program Workplan Submitted 2025

Organization Information:

Indiana State Department of Agriculture, Division of Soil Conservation
Julie Harrold
One North Capitol Avenue, Suite 600
Indianapolis, IN 46204
260.341.6698
jharrold@isda.IN.gov

Proposed Funding Request:

$2,514,116 (up to five years)

Brief Project Description:

ISDA is continuing work of previously established programs offered including a soil sampling program aimed at increasing the frequency in which landowners soil sample with the intent to improve nutrient efficiency. The Indiana Nutrient Research & Education Program will continue its focus on the work of the Indiana Science Assessment[1], allowing for continued management and research analysis under Indiana's Science Assessment to determine efficiency of conservation practices on improving water quality. ISDA will also partner with the United States Geological Survey to provide Super Gage support for gathering water quality data. ISDA staff support will also be included.

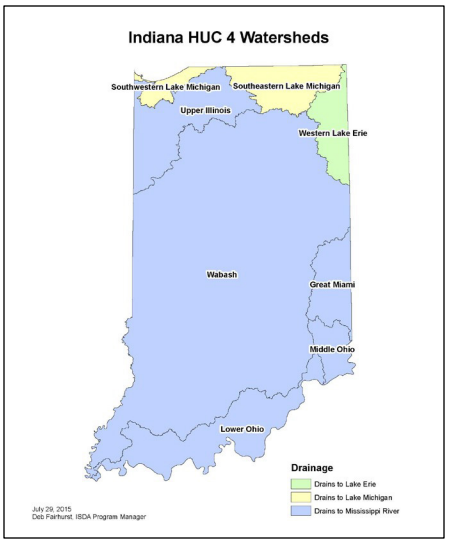
Environmental Results:

Major environmental results anticipated from this project:

- Consistent soil testing and 4R stewardship
- Nutrient management plan development and improved nutrient use efficiency aimed at positive impacts for water quality.
- Understanding how to better quantify impacts of agricultural conservation practices that are strategic to addressing the State Nutrient Reduction Strategy (SNRS)
- Conduct more accurate reporting of practice impacts on water, soil, and air quality including additional nutrient constituents such as different forms of nitrogen and phosphorus.
- Supporting USGS Super Gages at specific locations within the Mississippi River Basin system in Indiana will allow for continuation of monitoring for sediments and nutrients in order to keep long-term data collection going.

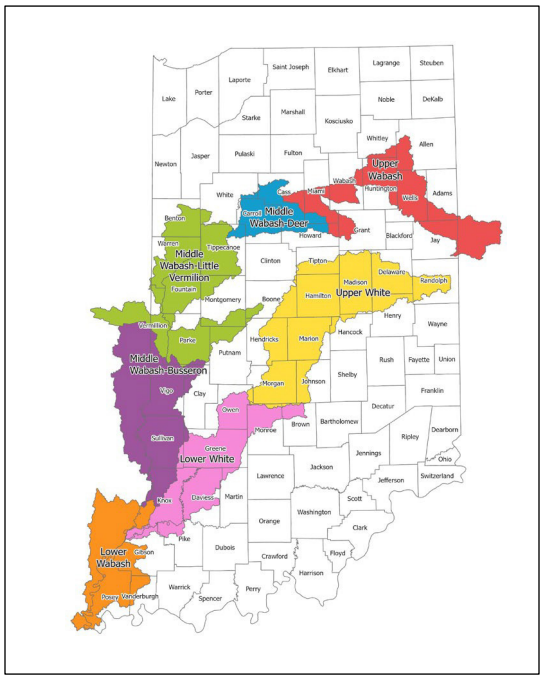
[1] https://www.in.gov/isda/divisions/soil-conservation/indiana-state-nutrient-reduction-strategy/indiana-science-assessment/

Place of Performance: Work by ISDA staff will be done in the Mississippi River Watershed in the state of Indiana, which includes the Kankakee River watershed, the Wabash River watershed, the White River watershed, the Great Miami watershed and the Ohio River watershed. (blue shaded area on map)



The soil sampling program will be available statewide, but the target focus area will be the current seven HUC8[2] priority watersheds outlined in the Indiana SNRS that are within the Mississippi River Basin. These HUC8 watersheds include:

- 05120101 - Upper Wabash
- 05120105 - Middle Wabash-Deer
- 05120108 - Middle Wabash-Little Vermillion
- 05120111 - Middle Wabash- Busseron
- 05120113 - Lower Wabash
- 05120201 - Upper White
- 05120202 - Lower White



Project Period:

October 1, 2025 through September 30, 2030

[2] Hydrologic unit codes (HUC) are a way of identifying all of the drainage basins in the United States in a nested arrangement from largest (Regions) to smallest (Cataloging Units). The term watershed is often used in place of drainage basin. The smaller the HUC number, the larger the drainage area. For example, a HUC 8 watershed is larger than a HUC 12.

Project Workplan

Project Approach:

The funding provided to Indiana through the Gulf Hypoxia Program (GHP) will support the *EPA Strategic Plan Goal 5: Ensure Clean and Safe Water for all Communities, Objective 5.2 – Protect and Restore Waterbodies and Watersheds*. Specifically, it supports the following goals under Objective 5.2 (pages 65-66):

- Implement programs to prevent or reduce nonpoint source pollution, including nutrients and plastic pollution.
- Support others conducting water quality monitoring and assessments.
- Develop tools and technical assistance to protect and improve water quality and habitat, while also providing climate mitigation and adaptation benefits.

This workplan will cover four main focus areas:

1) Continue efforts connected to staff support to oversee the management of GHP funds, and support the Indiana State Nutrient Reduction Strategy (SNRS), Indiana Conservation Partnership[3] efforts, 4R soil sampling program, on-farm trial programs, and increase outreach effectiveness towards stakeholder/landowner-led educational opportunities.
2) Expansion of the current soil sampling program established during first workplan aimed at increasing 4R stewardship, nutrient use efficiency on Indiana farmland, non-point source pollution reduction, greenhouse gas reductions, and water quality improvements.
3) Support of the Indiana Nutrient Research and Education Program (INREP) to continue and expand the work of the Indiana Science Assessment, which focuses on quantifying nutrient reduction from conservation practices and determining conservation practice effectiveness. The work of the Indiana Science Assessment to improve the method of determining nutrient load reductions and conservation practice efficiency could in-turn provide assistance and information to the other Hypoxia Task Force states who are working on how to gather conservation practice implementation data and moving toward determining nutrient load reductions, as well as wanting to know the effectiveness of conservation practices on water quality.
4) Financial support for USGS Super Gages on the Wabash River and in the Kankakee River watershed. Support will be for the Super Gages on the Wabash River at New Harmony, IN and on the Iroquois River at Foresman, IN. In addition to that, we will help to fund two different sites in the Kankakee River watershed to continue monitoring for nutrients so that we can keep this long-term data set going.

[3] The Indiana Conservation Partnership is comprised of eight agencies including the State Soil Conservation Board (SSCB), USDA Farm Service Agency (FSA), USDA Natural Resources Conservation Service (NRCS), Indiana Association of Soil and Water Conservation Districts (IASWCD), Indiana State Department of Agriculture's Division of Soil Conservation (ISDA-DSC), Indiana Department of Natural Resources (IDNR), Indiana Department of Environmental Management (IDEM), and the Purdue Cooperative Extension Service (CES). The ICP agencies work together to provide technical, financial and educational assistance needed to implement economically and environmentally compatible land and water stewardship decisions, practices and technologies.

1) Staff Support

During the first workplan, the Indiana State Department of Agriculture's (ISDA) Division of Soil Conservation strategically hired a Nutrient Stewardship Program Manager to support the goals of the GHP. These goals included, but were not limited to:

- Convening public meetings
- Supporting state, regional and basin-wide progress tracking
- Implementing, facilitating and advancing a new state program aimed at reducing nutrient pollution to help meet GHP priorities and advance the goals of the Gulf Hypoxia Action Plan
- Participating in non-state programs, multi-state collaborations and agriculture-sector led convenings for coordination and knowledge sharing
- Coordinating and engaging partners and stakeholders in priority MARB watersheds from the local level to state and regional levels
- Providing focused assistance and support to the Water Quality Initiatives Program Manager in efforts related to the Indiana State Nutrient Reduction Strategy, as well as ISDA in efforts to improve water quality through the Division of Soil Conservation and the Indiana Conservation Partnership.

This role will transition into a state-funded position by August 2025. ISDA absorbing this position is a key success indicator of long-term program commitment and program support. This position will continue to manage GHP grant activities, including the oversight of program implementation and administration of funding from the USEPA through the GHP. Although this position's salary and benefits is no longer supported by GHP, this funding will continue to pay for travel and training related expenses.. Funds will also be utilized in paying for supplies, equipment, and training support for staff within our ISDA Soils Division who work with landowners within the Mississippi River Basin, as well as stakeholder and landowner-led educational opportunities.

2) Soil Sampling Program

A project that started during the first work plan will resume efforts to increase conservation adoption by landowners in the seven HUC8 priority watersheds outlined in the Indiana SNRS that are within the Mississippi River Basin, as well as statewide. The focus will remain to increase the collection and use of soil sampling and analysis to provide the necessary information in the development of a nutrient management plan and improve nutrient use efficiency. Conservation Best Management Practices (BMPs)[4] adopted and installed voluntarily by landowners can contribute significant efforts toward reducing sediment and nutrients from entering waterbodies. One such BMP, nutrient management, minimizes agricultural non-point source pollution and protects air quality through management of the rate, source, placement, and timing of plant nutrients and soil amendments.

Nutrients are essential for plant and animal life, however when there is an excess of nutrients, it can cause water quality impairments and excess nutrients can play a significant role in the degradation of water and air quality. Conducting a soil sample provides an opportunity to check the nutrient levels in

[4] Best Management Practice (BMP) means a practice, or combination of practices, that is determined to be an effective and practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals. http://www.ncforestservice.gov/water_quality/what_are_bmps.htm

the soil and is critical for the development of a nutrient management plan. This proposal will allow us to work with producers on managing their nutrient levels in the soil and to use nutrients efficiently.

Section 6 of the Indiana State Nutrient Reduction Strategy discusses the importance of promoting nutrient management by "optimizing inputs and uptake by crops through employing nutrient efficiency practices of the "4Rs" specific to the cropping system namely, applying the right nutrient source at the right rate at the right time in the right place." The principles of the 4Rs is an important tool to use in promoting and expanding the use of nutrient management in the farming community because these principles promote a practice designed to ensure that the right sources of fertilizers and manures are applied at the right rate at the right time and in the right place. A key component to the 4R's is soil sampling because it allows the producers and their Certified Crop Advisor (CCA), which are private consultants that advise farmers and landowners on a daily basis with many different aspects of farming, to make the right nutrient recommendations and decisions for the fields. A soil test is essential to determine soil fertility levels for making accurate nutrient and field-placement recommendations. Appropriate nutrient applications can increase yields, reduce production costs, and prevent surface and groundwater pollution.

In addition, increasing the use of soil sampling to determine nutrient management needs on farms is a top goal for the Indiana Agriculture Nutrient Alliance (IANA)[5]. IANA's goal is 100% of farmers in Indiana regularly performing soil sampling. This project will carry on work toward achievement of this goal. Furthermore, Section 8 of the Indiana SNRS, under Agricultural Initiatives, discusses IANA and its goals, as well as the 4R Nutrient Stewardship Program in Indiana.

Furthermore, because CCAs work so closely with farmers and landowners on a daily basis with many different aspects of farming, it is important to communicate with and educate the CCAs so they can provide better information on soil health and on conservation BMPs such as nutrient management, including the 4R principles of nutrient management.

Through this grant proposal, the ISDA would like to:

1) Utilize a soil sampling protocol to work with landowners/producers to have soil samples taken on their farms, targeting those who are not regularly collecting soil samples to be analyzed,
2) have soil analysis tests run by a qualified soil testing lab,
3) work with landowners to read and interpret soil test results (either through educational workshops or using Certified Crop Advisors), and
4) use the soil analysis and test results to develop basic nutrient management plans and nutrient efficiency practices on their farms.

ISDA already has a previously established soil sampling protocol that will be utilized, and within that protocol the soil test that is to be conducted is known as the "Basic Test 2" soil test, which includes

[5] Indiana Agriculture Nutrient Alliance (IANA) partners include: Agribusiness Council of Indiana, Indiana Farm Bureau, Indiana Soybean Alliance, American Dairy Association of Indiana, Indiana Beef Cattle Association, Indiana Corn Marketing Council, Indiana Dairy Producers, Indiana Pork, Indiana Poultry Association, Indiana State Department of Agriculture, Indiana Association of Soil and Water Conservation Districts, USDA-Natural Resources Conservation Service, Purdue University-College of Agriculture, and The Nature Conservancy of Indiana.

available phosphorus, exchangeable potassium, magnesium, calcium, soil pH, buffer pH, cation exchange capacity, and percent base saturation of cation elements. Through this project we plan to partner with soil testing laboratories in Indiana and surrounding states. We have developed criteria and qualifications that we want to have within this program.

ISDA field staff will gather the soil samples using the developed sampling protocols. The samples will be submitted to the soil test laboratory for analysis. After the soil samples are analyzed, the participating farmer/producer will receive an informational letter informing them of the results of the analysis, as well as information pertaining to interpreting soil analyses. ISDA will be committed to general follow-up with landowners and if more in-depth conversations are requested from landowners this can be done through ISDA field staff on an as-needed basis. At this point, nutrient recommendations can be determined for their farm(s).

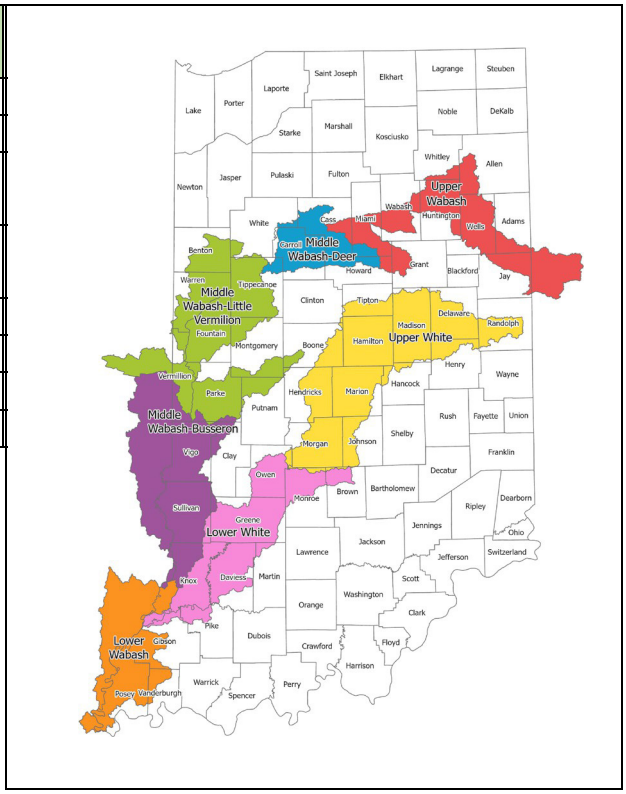
ISDA will continue to work with CCAs to assist with the collection of soil samples, and to work with and discuss the results of soil test analysis with participating farmers, and in turn use those results to determine nutrient requirements and develop lite nutrient management plans with the participants. This will allow for more "boots on the ground" to encourage farmer adoption of regularly performing soil testing in the state, thereby increasing the number of collected samples. These efforts should reflect the effort being made in regards to the amount of increased education related to nutrient management for our Indiana landowners within the priority watersheds.

To ensure the CCAs understand the program requirements and expectations, ISDA's goal is to meet with the CCAs as it is warranted either individually or collectively to explain the program, gain their insight, allow for questions and discussion, as well as seek interest from any potential new CCAs who are interested in signing up for the program.

Through the course of this project, ISDA plans to hold a soil fertility and nutrient management workshop and/or educational webinar for staff and landowners. Topics may include agronomy, pasture/hay acreage management, the importance of soil fertility, nutrient management, how to pull soil samples, read lab results, and different nutrient sources may also be discussed during later sessions to provide participants with the knowledge they need to correctly determine which source is best for different field situations. ISDA has found that these workshops lead to more adoption of conservation practices and enrollment into the soil sampling program.

The soil sampling program will be available statewide, but the target focus area will be the current seven HUC8 priority watersheds outlined in the Indiana SNRS that are within the Mississippi River Basin. There is the possibility that the priority watersheds will change within the Indiana SNRS by the end of 2025, thus changing the priority focus areas within the soil sampling program. Should this happen a revision of this workplan can be submitted at a later date following the final decision related to priority watersheds. The current HUC 8 watersheds are listed in the table and map below.

HUC8 #	HUC8 Watershed Name	Watershed Acres
05120101	Upper Wabash	853,082
05120105	Middle Wabash-Deer	428,178
05120108	Middle Wabash-Little Vermillion	1,322,401
05120111	Middle Wabash-Busseron	719,031
05120113	Lower Wabash	426,723
05120201	Upper White	1,740,658
05120202	Lower White	1,070,919
	Total acreage =	6,560,992



3) Indiana Nutrient Research and Education Program

The Indiana Nutrient Research & Education Program (INREP) will develop and deliver knowledge that optimizes the management of conservation practices and nutrients across the Indiana landscape. Based at Purdue University, it is pursuing science-based approaches by assessing the performance of current and emerging conservation and nutrient management practices, building consensus-based recommendations and analyses, and informing nutrient reduction strategies.

The funds are allowing INREP to provide the scientific foundation for documenting nutrient reductions from conservation practice implementation, prioritizing those that are most effective, which are critical components of the Indiana State Nutrient Reduction Strategy.

It is building on the Indiana Science Assessment process that has already made substantial progress, bringing together an active Science Committee that has achieved consensus on the basic process and practices to assess. This funding is allowing for continued progress towards our goal of having widespread agreement on a tool and method for (1) tracking nutrient losses from decisions and practices that have already been implemented, and (2) prioritizing practices that are most cost effective for future implementation. Prioritization will need to include an economic analysis which is not funded in the current project.

Goals

The overall goal of the Indiana Nutrient Research & Education Program is to provide a scientific foundation to inform and improve nutrient stewardship in the State. Specific objectives include:

1. Sustain and strengthen the network of scientists and agencies collaborating to provide the scientific foundation for the Indiana State Nutrient Reduction Strategy and related efforts.
2. Lead a continual process of refining and improving the Science Assessment.
3. Increase the availability of data from Indiana research on nutrient loss reduction.
4. Synthesize and deliver the knowledge to conservation partners and the agricultural community.

Activities

Goal 1: Sustain and strengthen the network of scientists and agencies collaborating to provide the scientific foundation for the Indiana State Nutrient Reduction Strategy and related conservation efforts.

- Maintain and support a Science Committee consisting of scientists who participate in the Science Assessment and the Core Team of agency and NGO staff that lead it.
- Advance collaboration among researchers and with other partners through regular meetings, participation in partner events, and facilitation of scientific interactions in the State.
- Produce an annual report on INREP activities and collaborations for external audiences.
- Seek sustained funding for the Program after the USEPA funding had ended.

Goal: 2: Lead a continual process of refining and improving the Science Assessment.

- Work with the Science Committee to drive scientific consensus on the methods to assess effectiveness of nutrient reduction practices.
- Expand the number of practices assessed, including urban practices.
- Initiate work on costs to eventually deliver cost effectiveness (i.e., lbs. reduction per dollar spent) to better prioritize practices.
- Work with the State to develop strategies for applying the Science Assessment findings to the conservation practices implemented by Indiana Conservation Partnership agencies, and eventually to privately funded practices as well.
- Identify new relevant research and integrate results into the Science Assessment process.
- Analyze research gaps and develop research goals and strategies to encourage Indiana researchers to address them.

Goal 3: Increase the availability of data from Indiana research on nutrient loss reduction

- Support grants to advance nutrient loss reduction research and make it available to the science community and the public.
- Develop a strategy and request proposals in collaboration with the Science Committee. Funding will focus on research and making data accessible for use in the Science Assessment and for other research syntheses.
- Consider funding the best proposals in partnership with the Indiana Water Resources Research Center which already has a program that funds small grants at all universities around the state.
- Develop a database that includes the data from funded projects and others who agree.

Goal 4: Synthesize and deliver the knowledge to conservation partners and the agricultural community.

- Strive to unify current education efforts around conservation practices' nutrient reduction benefits. Support ICP staff, crop advisors, others to inform their clientele about these practices.
- Inform state decision makers, farmers, and residents of the findings of the assessment and increase the capacity for wise decisions.
- Develop a series of Purdue Extension expert-reviewed, accessible publications on the findings about conservation practice effectiveness. These may be developed at two levels: Intermediate level that includes data supporting the findings, and a high-level synthesis that provides "at a glance" findings to compare practices.
- Work with partners on education products such as webinar series, field tours of research, podcast series, publications, and other appropriate educational materials.

4) USGS Super Gage Support

Financial support under this GHP workplan is for USGS Super Gages on the Wabash River and in the Kankakee River watershed and will be for the continuation of monitoring for continuous nutrients, sediment, chlorophyll, and phycocyanin fluorescence near the Indiana state line, more specifically for the super gage on the Wabash River at New Harmony, IN, the super gage on the Iroquois River at Forsman, IN, the super gage on the Kankakee River at Dunns Bridge, IN, and the super gage on the Kankakee River at Davis, IN. The Iroquois gage is important because this data has been used for the trends analysis that was completed for the Science Assessment, and the other two sites with the Kankakee will become important in future trend analysis on more interior sites and in more smaller watersheds in the state.

Currently, the U.S. Geological Survey (USGS) maintains multiple super gages near the Indiana, Illinois state line. These super gages provide rich long term data sets that can be used to better understand Indiana's contribution of nutrients and sediment to the Mississippi Basin and eventually the Gulf of America and to determine trends in constituents linked to remediation efforts. Some super gages in the network have been collecting continuous water quality for 10 or more years. Super gages can be outfitted with a variety of water monitoring equipment including continuous streamflow, water quality sondes that can measure water temperature, specific conductance, pH, dissolved oxygen, turbidity, and chlorophyll fluorescence, and continuous nutrient monitors including in-situ optical nitrate plus nitrite sensors, and wet-chemistry phosphate analyzers. Discrete water quality samples can also be collected to compare to discrete date to build surrogate models that can allow for continuous estimates of constituents that cannot be measured by water-quality sensors or monitors, including total nutrients and suspended sediment. The super gages are visited regularly to maintain water-quality monitors and sensors and collect discrete samples following published USGS protocols (Wagner and others, 2006; Pellerin and others, 2013).

Many cooperators contribute to the super gages that provide vital information on water quality leaving Indiana in the Kankakee River, Iroquois River, White River and Wabash River in cooperation with USGS. Indiana Department of Environmental management and the Kankakee River Yellow River Development Commission help to fund sites on the Kankakee and Yellow Rivers, some starting as far back as 2013. IDEM funds a super gage on the Kankakee and has funded the super gage on the Iroquois River for the

past 3 years. The super gage on the Wabash at New Harmony has previously been funded by national USGS match, The Nature Conservancy (TNC), IDEM, and ISDA.

Additionally, the USGS, TNC and Gybe are partnering to collocate GybeSensors at the super gage to explore the use of satellite data and these sensors remotely monitor nitrates and turbidity. This technology has been collocated at other USGS super gages within the Mississippi River Basin. Deployment of this technology at the New Harmony, IN site is expected to be two years. The TNC is covering all costs associated with this additional technology.

Scope and Objectives

This study includes the continuation of operation and maintenance of continuous water-quality monitors at the Wabash River at New Harmony, IN (USGS station ID 03378500), Iroquois River near Foresman, IN (USGS station ID 05524500), and Nitrate sensors at Kankakee River at Dunn's Bridge, IN (USGS station ID 05517500) and Kankakee River at Davis, IN (USGS station ID 05515500) from FY26 through FY30. The sites will be visited at least 18 times annually to clean and check calibration of water-quality sensors, and discrete water quality samples will be collected at least 10 times annually over the range of hydrologic conditions.

The specific objectives of this proposed study are to:

Task A. Routinely maintain and calibrate continuous water-quality measurements at four sites. Parameters are site dependent (Table 1) and can include nitrate plus nitrite, phosphate, water temperature, specific conductance, pH, dissolved oxygen, turbidity, chlorophyll and phycocyanin fluorescence to ensure quality data. All continuous water-quality data are provided provisionally in real-time on the National Water Information System website (NWISweb) interface.

Table 1. List of USGS super gage sites that provide data on water quality leaving the state of Indiana that are part of the study and supported by this grant, and the continuous parameters proposed for funding in this study and parameters funded through other cooperative agreements at each site. [Q, streamflow; TBY, turbidity; temp, temperature; SED, suspended sediment; NOx, Nitrate plus nitrite; fChl, chlorophyll fluorescents; DO, dissolved oxygen; SC, specific conductance; PO4, phosphate]

River Basin	Site	USGS Station ID	Continuous Parameters for Proposed Study	Continuous Parameters Monitored Through Other Cooperative Agreements
Kankakee	Davis	05515500	NOx	Q, Temp, DO, pH, SC, TBY
	Dunns Bridge	05517500	NOx	Q, Temp, DO, pH, SC, TBY, fChl
Iroquois	Foresman	05524500	Temp, DO, pH, SC,TBY, NOx	Q
Wabash	New Harmony	03378500	Temp, DO, pH, SC,TBY, NOx, PO4, fChl	Q

Task B. Collect discrete nutrient and sediment samples that will be analyzed by a laboratory to quality assure the sensor data at the Wabash New Harmony, IN and Iroquois River at Foresman, IN. Collect discrete nutrient samples at Kankakee at Dunns Bridge, IN and Kankakee at Davis, IN to validate nitrate sensors. Cross-sectional water-quality measurements, depth- and width-integrated samples, and discrete point samples will be

used to quality assure the sensor data. Discrete water-quality data are provided in approved format on the Water Quality Portal (https://waterqualitydata.us). Quality-control samples, blanks and replicates will be used to determine potential variability in measurements. Each year a blank and replicate will be collected and evaluated for sample contamination or laboratory bias. In the event that contamination or bias is identified, the water science center may choose to collect additional samples to further evaluate any systematic problem. (Discrete sampling at the Wabash gage is covered by USGS National Water Quality Network sampling.)

Task C. Annual surrogate model validations and review.

Timeline

The proposed continuous constituents and discrete sampling at the super gage sites will be maintained for 60 months under the proposed study. See the table 'Milestone Schedule' section for a timeline of project activities.

EPA Strategic Outcomes:

1. Support staff to implement workplan
2. Use state-level water quality programs & actions to advance nutrient reductions
3. Implement projects in prioritized watersheds with the greatest opportunities for nutrient reductions
4. Collaborate across state boundaries with the HTF partners

	EPA Strategic Outcome			
Project	**#1**	**#2**	**#3**	**#4**
Staff Engagement & Support	X		X	X
ISDA Mississippi River Basin Soil Sampling Program	X	X	X	
IN Nutrient Research and Education Program	X	X	X	X
USGS Super Gage Agreement		X	X	X

The results of the water quality trends analysis determined in the first component of the Science Assessment is going to be used to compare the basins, which over the next couple of years, will be used as a resource tool to re-prioritize the watersheds in the State Nutrient Reduction Strategy. Through Component 1 of the Science Assessment, it will be determined which watersheds or basins have the highest total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS) trends. This information will give conservation organizations the information needed to strategize on future conservation goals, such as knowing the watersheds where more conservation work needs to be done. Through the work of Component 2 of the Science Assessment, the effectiveness of specific BMPs will be evaluated and further used to strategize on which BMPs are best suited to address the most pressing water quality goals in specific watersheds or across Indiana. These practices can be promoted and encouraged in the watersheds with the highest sediment and nutrient load trends.

In order for the State to manage and monitor subawards and contractual work under this grant for successful completion of projects, the following will be done:

- For the Indiana Nutrient Research and Education Program:
  - ISDA will continue to provide support to Purdue University, College of Agriculture by being

a member of the Indiana Science Assessment Core Team, which is the team that oversees the carrying out of the Indiana Science Assessment. ISDA will continue to participate in Core Team meetings as well as the Science Committee meetings.

- Through a subawardee agreement between ISDA and Purdue University:
  - Under the first workplan using GHP dollars, ISDA has a contract with Purdue University, College of Agriculture to carry out the work and comply with the requirements and activities of the workplan, as well as with the QAPP that was developed, and that contract will be amended for this second workplan to continue the work. This includes providing ISDA with information for completing semi-annual reports and invoices for payment of services. Under this grant, Purdue University will be a subawardee for the Indiana Nutrient Research & Education Program to continue the work of the Science Assessment. ISDA will work with the LG's Business office to draw up this contract and will work with Purdue University to make sure the requirements are carried out for this contract.
- For Certified Crop Advisors in the Soil Sampling Program:
  - ISDA will work with the State Grants and Business office to develop written guidelines on required paperwork for reimbursement, dates, when invoices must be received by and other relevant information. For the soil sampling and nutrient management program, bids ISDA will focus on identifying interested CCAs who are interested in participating in the soil sampling program. ISDA will work with Lieutenant Governor's Grant Services personnel and Indiana Department of Administration to procure interested CCA services using the proper channels. During a CCA informational meeting, an employee from the LGs Business office may be asked to be in attendance to ensure that the participants understand the contract bidding process and to ask invoicing questions. ISDA staff will create a checklist of required steps that must be completed prior to a CCA being reimbursed for their work.
- Any outside vendor for marketing materials SNRS:
  - Through the life of this project, the state may have a need to seek outside expertise from vendors that could aid in developing marketing materials and/or printing of products. To ensure that guidelines and protocols are followed, ISDA will work with the State LG's Business office. There is an approved vendor list (AVL) for these types of services. These marketing and printing companies are approved by the State, and ISDA would be allowed to secure their services. If an outside vendor is hired, written guidelines would be given on required paperwork for reimbursement, dates, when invoices must be received by and other relevant information.
- Soil Sampling Lab(s):
  - Under the first workplan, ISDA will continue to work with Waters Agricultural Lab to continue to provide support for submitting soil samples and receiving analysis back for landowners. Since the soil sampling program will cover several watershed areas, ISDA will maintain the current QAPP under the first workplan and will make changes as necessary. If additional labs are needed to handle the capacity of soil samples, ISDA will draft a Request for Proposals to ensure that suitable labs are chosen, after which ISDA will update a QAPP. The contracts with the labs will contain all the guidelines and procedures that must be followed to ensure they are reimbursed for their work.
- Through a sub-award agreement between ISDA and USGS:
  - ISDA will have a contract with the USGS, Ohio-Kentucky-Indiana Water Science Center to carry out the work and comply with the requirements and activities of the workplan related to USGS Super Gage support. This includes providing ISDA with information for completing semi-annual reports and invoices for payment of services. ISDA will work with

the LG's Business office to draw up this contract and will work with the USGS to make sure the requirements are carried out for this contract.

Public meetings

Educational workshops for the Soil Sampling program will be held for participants, some may offer the opportunity to earn continuing education credits for CCAs or chemical applicators needing to earn credits towards renewal of licenses on how to read and interpret soil sample test results and how to apply the results toward nutrient management on their farms. A combination of in-person and/or virtual learning opportunities are being considered to be offered. Learning opportunities could include on farm field day workshops, industry tours, virtual programs, subject relevant training sessions, etc. A minimum of two learning opportunities a year is the goal for this workplan. The overall reaching goal of the educational component is to work with our ICP partners to hold educational and outreach workshops that focus on soil health, nutrient management, Best Management Practices (BMPS), and other topics relevant to water quality and the Gulf Hypoxia. The ISDA staff person who serves as Nutrient Stewardship Program Manager will handle the planning and logistics of the meetings and workshops, with assistance provided from other ISDA personnel.

Title VI of the Civil Rights Act of 1964 prohibits discrimination based on race, color, or national origin in programs and activities that receive federal financial assistance. The development and implementation of Indiana's Nutrient Reduction Strategy and projects proposed in this workplan for the GHP cooperative agreements are and will continue to be following the requirements of Title VI of the Civil Rights Act.

Environmental Results:

For the Soil Sampling program, ISDA staff and CCAs will work with landowners and stakeholders in the watersheds to provide agronomic technical assistance focused on soil health and water quality, and more specifically focused on soil sampling and providing nutrient management recommendations based on analyzed samples. Nutrient management plan development and improved nutrient use efficiency will make a positive impact for water quality. Below are goals and expected outputs of the soil sampling program, as well as the outcomes that will be achieved within the program. These will be used to measure and monitor the successful results of the grant.

- 75 soil samples collected and analyzed in priority watershed areas
- 225 soil samples collected and analyzed in non-priority areas
- 25 lite nutrient management plans developed
- 200 acres impacted by lite nutrient management plans
- A minimum of one learning opportunity a year that could include a combination of in-person and/or virtual learning program may be offered that might consist of: on farm field day workshops, industry tours, virtual programs, subject relevant training sessions, etc. Goal is to have at least 10 producers attend each learning opportunity and invite other ISDA Division of Soils Staff, ICP partners, industry representatives and other technical staff who may benefit from program being offered.

Goals and outcomes for the INREP are listed under the description of that above under the "Project Approach" section, and in the Milestones table below.

Supporting USGS Super Gages at New Harmony on the Wabash, at Foresman on the Iroquois River, and at Dunns Bridge and Davis, IN on the Kankakee River will allow for continuation of monitoring for sediments and nutrients in order to keep these long-term data sets going. The site at New Harmony, IN on the Wabash River and the site at Foresman, IN on the Iroquois River are both important because the data set has been used for the trends analysis that was completed for the Science Assessment, and the other two sites on the Kankakee River may become important in the future if we decide to do trend analysis on more interior sites and in more smaller watersheds.

Milestone Schedule:

It is ISDA's understanding that the allowable timeframe for this grant is FY2026-FY2030.

(Q1: Oct-Dec; Q2: Jan-March; Q3: April-June; Q4: July-Sept)

Task	Year 1 (FY2026)				Year 2 (FY2027)				Year 3 (FY 2028)				Year 4 (FY 2029)				Year 5 (FY 2030)			
Staff Engagement & Support																				
Convening public meetings	X				X				X				X				X			
Supporting state, regional and basin-wide progress tracking	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Participate in non-state programs, multi-state collaborations and agriculture-sector led convenings for coordination and knowledge sharing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Coordinate and engage partners and stakeholders in priority MARB watersheds from the local level all the way up to state and regional levels	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Provide focused assistance and support to the Water Quality Initiatives Program Manager in efforts related to the Indiana State Nutrient Reduction Strategy, as well as ISDA in efforts to improve water quality through the Division of Soil Conservation and the Indiana Conservation Partnership.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ISDA Mississippi River Basin Soil Sampling Program																				
Follow QMP and QAPP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Update informational items for sampling program (landowner and CCA)	X		X		X		X		X		X		X		X		X		X	
Update CCA program materials	X		X		X		X		X		X		X		X		X		X	
Hold CCA consultations as needed	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hold educational opportunities for ISDA staff		X		X		X		X		X		X		X		X		X		X
Gather and distribute educational materials from partners on 4Rs and other soil health practices	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Organize soil fertility and nutrient management workshop				X				X				X				X				X

Partner on educational opportunities for landowners/participants annually				X				X				X				X				X		
IN Nutrient Research and Education Program																						
Continually update network list of scientists and agencies	X		X		X		X		X		X		X		X		X		X	
Work with Science Committee to develop consensus on reduction practices	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Identify new research and share with INREP Manager and Science Committee	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Review current research gaps and work with partners to address	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Work with partners on ensuring the best education/outreach method is used for sharing BMP knowledge		X		X		X		X		X		X		X		X	X	X	X			
USGS Super Gage Agreement																						
Routinely maintain/calibrate continuous water-quality measurements at four sites.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Collect discrete nutrient and sediment samples to be analyzed	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Compile annual surrogate model validations to be reviewed					X				X				X				X					

Transferability of Results and Dissemination to Public:

The state will gather and share information and lessons learned from the soil sampling program and the INREP and will include a written summary to be shared with the public at future Hypoxia Task Force meetings and other relevant informational meetings involving the public. Annual reports for both the soil sampling program and the INREP will be developed to show the results and success of the programs and can be shared with EPA to upload onto the GHP website. Articles and updates about the projects under this grant can be sent to EPA to include in the Hypoxia Task Force quarterly newsletter. Educational materials that will be developed as a result of the soil sampling program will be shared with state stakeholders and partners, as well as participating farmers.

The focus of Component 2 of the Indiana Science Assessment is to improve the method that the Indiana Conservation Partnership uses to estimate sediment and nutrient load reductions from the implementation of conservation practices, as well as determine conservation practice efficiency. Through this assessment, ISDA and partners are working on developing a new tool or model to better estimate sediment and nutrient load reductions for conservation practices implemented across the state. This will allow Indiana to have a more accurate assessment of our contributions to downstream water quality issues. Furthermore, as Indiana learns more about the effectiveness and efficiency of conservation practices on water quality through the Science Assessment, information can be shared with other Hypoxia Task Force states who have completed past Science Assessments, as well as other Hypoxia Task Force states who are working on how to gather conservation practice implementation data and moving toward determining sediment and nutrient load reductions.

Technical Support:

The Indiana Nutrient Research and Education Program (INREP) will be housed at Purdue University, College of Agriculture. As such, Purdue University will be a subawardee under this grant. The focus of INREP is to continue the work of the Indiana Science Assessment, which ISDA is heavily involved in as an effort under the State Nutrient Reduction Strategy. Therefore, ISDA will continue to provide support to Purdue University by being a member and leader of the Indiana Science Assessment Core Team, which is the team that oversees the carrying out of the Science Assessment. ISDA will continue to participate in Core Team meetings as well as the Science Committee meetings. The Science Committee is made up of established researchers and experts from five academic institutions in Indiana, and two federal science agencies (USDA-ARS and USGS) who conduct research related to nutrients and water quality in Indiana and provide scientific input and evaluation of the assessment processes.

Through the current work of the Indiana Science Assessment, a QAPP was developed, submitted, and approved by EPA. This QAPP will continue to be followed and may be updated as necessary. If updates are necessary, ISDA will work with Purdue University to ensure that the updates are made.

Budget Narrative:

Travel

Travel by the ISDA will be for the purpose of the proposed project activities including attendance at meetings related to activities of this workplan, to State Nutrient Reduction Strategy efforts and Science Assessment efforts, and meetings related to Gulf of America Hypoxia Task Force; for trainings necessary for staff to effectively carry out the workplan activities; and periodic landowner visits related to the soil sampling program. Costs will be in accordance with the Indiana Department of Administration's travel policy[6] and include travel reimbursement to educational workshops, GHP work related meetings, landowner visits, approved block rates for overnight lodging, per diem reimbursement rates (based on state policy), and air transportation costs for Hypoxia Task Force meetings. Costs are figured at approximately $13,500 during Year 1 and subsequent Years 2-5, $25,500 annually for ISDA employees for 4 years. ($13,500 + $25,500 x 4 = $115,500).

Travel & Training	Costs (Year 1)	Costs (Year 2)	Costs (Year 3)	Costs (Year 4)	Costs (Year 5)	Total
- Attendance at meetings related to activities of this workplan, related to the SNRS and Science Assessment efforts, and related to Gulf of America HTF - Trainings necessary for employee to effectively carry out the work plan activities - Periodic landowner visits related to the soil sampling program	$13,500	$25,500	$25,500	$25,500	$25,500	**$115,500**

[6] The Indiana Department of Administration travel policy can be found here: https://www.in.gov/idoa/state-purchasing/travel-services/.

Equipment

Equipment needs for ISDA during this workplan will include the purchase of vehicles for two specific staff members who work directly with managing the GHP dollars and carrying out the projects that these dollars fund. Currently both employees are using personal vehicles to transport themselves in completing work under the first workplan which has significantly increased the mileage as well as wear and tear on personal vehicles. Based on guidance received related to vehicle purchase from the appropriate state department, the approximate cost of these two vehicles is $40,000 each for a total of $80,000.

As part of the MRB Soil Sampling program that the ISDA offers to landowners within the MRB region, two utility task vehicles (UTV) and two trailers to haul UTVs to field locations where soil samples will be pulled for analysis will be purchased for field staff usage to help ensure their workload is more manageable and efficient while working in the field. Based on research and guidance from purchasing department, the approximate costs for two UTVs and two trailers is $15,000 per UTV and $5,000 per trailer for a total of $40,000. The total amount of GHP dollars that we plan to utilize to purchase needed equipment is $120,000. All of the equipment purchased will have a usage life by ISDA staff for much longer than the life of the second GHP workplan that is set to end in FY2030 which will mean that the dollars will have an extended benefit towards water quality and nutrient stewardship work being done in Indiana.

Equipment	Costs (Year 1)	Costs (Year 2)	Costs (Year 3)	Costs (Year 4)	Costs (Year 5)	Total
Vehicle purchase to fulfill GHP related work for Soil Sampling Program and other projects	$80,000	$0	$0	$0	$0	**$80,000**
UTV purchase (qty 2) for field staff to use in collecting soil samples as part of MRB Soil Sampling Program	$30,000	$0	$0	$0	$0	**$30,000**
Trailer purchase (qty 2) to haul UTVs for field staff completing MRB Soil Sampling work	$10,000	$0	$0	$0	$0	**$10,000**
TOTAL	**$120,000**	**$0**	**$0**	**$0**	**$0**	**$120,000**

Supplies

Supplies will include any technology and equipment needed by staff to help manage and track GHP dollars accurately. Additionally, soil sampling equipment and tools will need to be purchased to replace worn-out equipment purchased under the first workplan for field staff directly working with landowners when pulling soil samples. Supply costs are requested to purchase and replace soil sampling materials to collect the soil samples, such as buckets, foot pedals, gloves, soil probes, record cards, and sampling bags. There will be on-going costs with these types of materials due to continued usage along with wear and tear, which is why the purchase of the supplies is preferred over the rental of these supplies. There are 20 field employees within the ISDA Division of Soil Conservation that will assist with collecting soil samples, so supplies and equipment will be needed for all of these employees. Supply costs are

estimated to be approximately $4,916 in the first year, and then approximately $2,436 in the remaining years of grant (Years 2-5). ($4,916+ $2,436+ $2,436+ $2,436 + $2,436 = $14,660).
This category also includes estimated costs for any promotional materials that will be used for the outreach to landowners and farmers to introduce them to the program and to draw up interest for the program, as well as mailing labels, stamps, envelopes and other postal mailing supplies needed for these outreach activities. Office supplies and postal mailing supplies will also be needed to mail soil analysis results to participating landowners. With the increasing amount of postage rates, costs are estimated at $2,280 per year for 5 years. ($2,280 x 5= $11,400).
Lastly, a category for other supplies (batteries, folders, pens, field notebooks, as well as any other miscellaneous items) needed to help with conducting other GHP related tasks is included, $763 for 5 years ($763 x 5 = $3,815).

Supplies	Costs (Year 1)	Costs (Year 2)	Costs (Year 3)	Costs (Year 4)	Costs (Year 5)	Total
For Soil Sampling: Buckets, foot pedals, gloves, soil probes, record cards, soil sampling bags, hammers and tips, forage field guides, other miscellaneous items for soil sample collection	$4,916	$2,436	$2,436	$2,436	$2,436	**$14,660**
Postcards, mailing labels, shipping labels and stamps	$2,280	$2,280	$2,280	$2,280	$2,280	**$11,400**
Other supplies as necessary include AA batteries, 2-pocket folders, pens, field notebooks, and field-form holder/clipboard	$763	$763	$763	$763	$763	**$3,815**
Total	**$7,959**	**$5,479**	**$5,479**	**$5,479**	**$5,479**	**$29,875**

Contractual

Soil Sampling Analysis - The regular cost for a soil sample analysis is $7.00/sample. The approximate number of samples includes 75 samples per priority watershed, totaling 525 samples, plus 225 samples outside of priority watersheds (statewide) = 750 samples. Total cost for the soil sample analysis is $7.00/sample x 750 samples x 5 years = $28,125. Estimated costs for shipping and handling is $500 in the first fiscal year because of the no-cost extension from the first workplan and then $1,000 annually in Years 2-5 for an overall total of $4,500 for shipping of soil samples to soil analysis lab(s). Soil Sample Analysis done is the "Basic Test 2" test – Available Phosphorus, Exchangeable Potassium, Magnesium, Calcium, Soil pH, Buffer pH, Cation Exchange Capacity, and Percent Base Saturation of Cation Elements.
Certified Crop Advisor (CCA) Assistance – CCAs will assist with collecting soil samples and meeting with program participants to discuss nutrient recommendations based off of the soil sample analyses done. Contractual costs of $671,666 is requested to cover the cost of the technical assistance that will be provided by the CCAs to program participants on the collection of soil samples, and on development of nutrient management plans or providing accurate nutrient management recommendations. As it will likely become necessary, ISDA will determine the need to establish an acreage cap per farmer participant and/or CCA retailer.

Because of the previously approved no-cost extension that ISDA applied for in 2025, GHP dollars for this Contractual category may not start to be utilized until FY2027.

Contractual	Costs (Year 1)	Costs (Year 2)	Costs (Year 3)	Costs (Year 4)	Costs (Year 5)	Total
Soil Sampling Analysis lab costs: 75 samples per priority watersheds + 225 samples outside of priority watersheds (statewide within MRB) per year – 750 total samples	$2,625	$5,250	$5,250	$5,250	$5,250	**$23,625**
S&H of samples to labs	$500	$1,000	$1,000	$1,000	$1,000	**$4,500**
Contract with CCA's to collect samples, discuss results of analysis with farmer, and develop NM plans.	$31,666	$160,000	$160,000	$160,000	$160,000	**$671,666**
Total	**$34,791**	**$166,250**	**$166,250**	**$166,250**	**$166,250**	**$699,791**

Other

Costs requested under this category include educational opportunities and workshops for participants to potentially earn credits towards applicator recertification, CCE's for Certified Crop Advisor credits, other CEC's for other continuing educational needs, or other professional development options such as how to read and interpret soil sample test results, how to apply the results toward nutrient management on their farms, and other topics related to better nutrient management decisions. The intent is to hold workshops as they are needed within the general MRB region during various times of the year. Because of the previously approved no-cost extension that ISDA applied for in 2025, GHP dollars for this 'Other' category may not start to be utilized until FY2027. Workshops may be a combination of in-person with hands-on demonstrations or offered virtually as well. Costs requested for hosting workshops and other learning opportunities related to water quality and nutrient stewardship are $1,200 annually for workplan Years 2-5 ($1,200 annually x 4 years = $4,800). These costs could include facility rental fees, speaker fees, audio/video fees or other incurred costs associated with providing educational opportunities.

There is also the cost of printing promotional items for educational and programming outreach, to invite participants to the workshops, and for the development and printing of educational materials. The creation and sharing of any annual and/or final project reports can all be completed 'in-house' electronically and be made available online to show successes of workplan programs but will not incur any actual costs to complete.

Other	Costs (Year 1)	Costs (Year 2)	Costs (Year 3)	Costs (Year 4)	Costs (Year 5)	Total
Workshop and other learning opportunity facilitation fees (could include fees related to rental	$0	$1,200	$1,200	$1,200	$1,200	**$4,800**

facilities, guest speakers, workshop equipment needs, and other associated costs)						
Printing of postcards for program outreach to invite participants, and postage costs	$0	$500	$250	$250	$250	**$1,250**
Development and printing of education materials	$100	$100	$100	$100	$100	**$500**
Total	**$100**	**$1,800**	**$1,550**	**$1,550**	**$1,550**	**$6,550**

This category also includes the request to support two different subawardees. The first is for the continuation of the Indiana Nutrient Research and Education Program. The costs include salary and benefits for the continued employment of an INREP Manager who will manage the program and education efforts; for a research associate who will conduct research and synthesis for the Science Assessment and assist in developing databases and analyzing data. Costs also include providing funding to support grants for necessary research projects to advance nutrient loss reduction research and conservation practice effectiveness research for a total of approximately $110,000 per year, including administration by the Indiana Water Resources Research Center. Funding will focus on making data accessible for use in the Science Assessment and for other research syntheses. Lastly, funds are also requested for professional services such as publication design, layout, and illustrations. A small amount of travel funds is needed for events where results will be presented. Because of the previously approved no-cost extension that ISDA applied for in 2025, GHP dollars for this Contractual category may not start to be utilized until FY2027.

Other - INREP	**Costs (FY2027 funds)**	**Costs (FY2028 funds)**	**Costs (FY2029 funds)**	**TOTAL**
Senior Researcher/INREP Manager	$90,000	$90,000	$90,000	**$270,000**
Research Associate (0.5 FTE)	$34,000	$34,000	$34,000	**$102,000**
Fringe Benefits (for all staff)	$10,372	$10,372	$10,372	**$31,116**
Grants to other researchers	$110,000	$110,000	$110,000	**$330,000**
Professional services	$4,128	$4,128	$4,128	**$12,384**
Travel	$1,500	$1,500	$1,500	**$4,500**
Total	**$250,000**	**$250,000**	**$250,000**	**$750,000**

The second subawardee in this 'Other' category is for the support of the USGS super gages. This budget covers all cost for the operation and maintenance of the continuous water-quality monitors and sensors at the Wabash River at New Harmony, IN, the Iroquois River at Foresman, IN and continuous nitrate monitors at the Kankakee River Davis and Dunn's Bridge super gages (Table 1). This includes salary and travel, standards, equipment repair and maintained, data review and approval, and surrogate model validation and discrete sampling cost at the Iroquois and Kankakee sites.

Other - USGS	**Costs (FFY26)**	**Costs (FFY27)**	**Costs (FFY28)**	**Costs (FFY29)**	**Costs (FFY30)**	**Total**
ISDA Support	$134,500	$156,400	$161,100	$167,500	$172,900	**$792,400**

Total Budget Summary – Estimated Yearly Funding Needed

Overview of use of funds						
Object Class Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total Requested from EPA**
Travel	$13,500	$25,500	$25,500	$25,500	$25,500	**$115,500**
Equipment	$120,000	$0	$0	$0	$0	**$120,000**
Supplies	$7,959	$5,479	$5,479	$5,479	$5,479	**$29,875**
Contractual	$34,791	$166,250	$166,250	$166,250	$166,250	**$699,791**
Other	$134,600	$408,200	$412,650	$419,050	$174,450	**$1,548,950**
Total	**$310,850**	**$605,429**	**$609,879**	**$616,279**	**$371,679**	**$2,514,116**

Quality Assurance:

The aforementioned Soil Sampling program is an expansion of an existing soil sampling program that is being done with Indiana's first workplan. This QAPP will be updated if additional soil testing labs are added to the program and ISDA will make necessary updates.

As mentioned before, the Indiana Science Assessment that is currently underway, has a QAPP that was developed, submitted, and approved by EPA for the collection and analysis of research data being used. Since the Science Assessment will continue in the future under the new Indiana Nutrient Research and Education Program (INREP), that QAPP will continue to be followed and will be updated as necessary.

USGS has a quality management plan with QAQC standards from their National Field Manual that will be used and followed for the collection of the water quality monitoring data and analysis of environmentally related data. For more information on USGS methods:

- https://protect.checkpoint.com/v2/r01/ http://pubs.usgs.gov/tm/01/d5/ .YzJ1OnN0YXRlb2ZpbmRpYW5hOmM6bzo0NzE2YmZiMzRjYzU5Nzc4MzllZjQwMjk3OTY1ODA1Yjo3OjkyNDU6MTBjMjM4Y2RjNGE3ODc0YWZmNjk0OTAzNjFlZDVjZjljNGRmN2ZmZWFjY2NiMDBmMTE3NjBiN2JhZjEzZDgyYjp0OlQ6Tg
- http://pubs.usgs.gov/circ/1367/
- http://pubs.water.usgs.gov/tm1d3

Project Title: Advancing Nutrient Reduction Strategy Priority and Emerging Practices

Organization: Iowa Department of Agriculture and Land Stewardship
Wallace State Office Building
502 East 9th Street
Des Moines, IA 50319
Contact: Matt Lechtenberg
Phone: 515-281-3857
Email: matthew.lechtenberg@iowagriculture.gov

Proposed Funding Request: $2,166,569.00

Brief Project Description:

This project will help advance several key initiatives to support the implementation efforts of the Iowa Nutrient Reduction Strategy (NRS) and the Gulf Hypoxia Action Plan. These initiatives will assist in advancing the voluntary adoption of non-point source practices to reduce the loss of nutrients, that also provide co-benefits. The project will deploy new technologies to better understand effectiveness in Iowa, address barriers to adoption of priority nutrient reduction practices, and work to advance wastewater treatment plant optimization for nutrient reduction to help increase the pace and scale of implementing the Iowa NRS www.nutrientstrategy.iastate.edu/.

Environmental Results:

This project is expected to directly support the implementation of practices that will lead to an estimated reduction of:

- 300,000 lbs. of nitrogen
- 8,000 lbs. of phosphorus
- 220 MT of carbon dioxide equivalents (CO2e)

Place of Performance:

State of Iowa (entirely within the Mississippi River Basin), with emphasis in the NRS identified priority watersheds (HUC 8s):

- North Raccoon River
- Boone River
- Floyd River
- East & West Nishnabotna Rivers
- Turkey River
- Middle Cedar River
- South Skunk River
- Skunk River

Project Period: January 1, 2025 through December 31, 2029

Project Approach:

This project will advance several key initiatives identified by IDALS and Iowa Nutrient Reduction Strategy (INRS) implementation partners.

1. New/Innovative Practices/Systems: Resources to provide technical and financial assistance to implement new technologies currently not included in the INRS-Science Assessment. Main practices to be deployed (with primary NRCS practice code) through the project:
    a. Drainage Water Recycling (447)
    b. P-Removal Structures (782)
    c. 2-Stage Ditches (582)
    d. Nutrient Management (590) – particularly N rate reduction
2. Barriers to Water Quality Wetland Restoration: Advance efforts to mitigate barriers to implementation of water quality wetlands.
    a. Establish science panel of experts in stream restoration and water quality wetlands to provide recommendations for advancing stream restorations and water quality wetlands.
    b. Conduct wetland delineations of existing WQ wetlands installed in Iowa to determine if they meet the ACOE definition of a wetland.
    c. Partner with HTF states to develop WQ wetlands in their states
    d. Develop mitigation banking instrument to support offsets for converting degraded wetlands/ditches/streams to water quality wetlands
3. Wastewater Treatment Facility Optimization: Provide more resources in advancing wastewater treatment optimization to reduce nutrient and energy use.

Project Support of EPA Strategic Plan Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds:

This effort will support advancing EPA Strategic Plan Goal 5 through directly installing proven and emerging practices that protect clean and safe water for all communities. These activities are aimed at directly protecting and restoring waterbodies/watersheds through installation of conservation practices on private lands and supporting water quality improvements at several point source facilities.

1) New/Innovative Practice Demonstrations

The original INRS-Science Assessment finalized in 2013 and updated since, was a first-of-its kind effort to coalesce a group of scientists and experts to establish a comprehensive summary of Iowa-based (and surrounding state) research on the effectiveness and impact of a host of practices and their corresponding effects on nutrient losses from cropland. Because this assessment is dynamic and can be updated as new research and technologies are developed, there's a need to be more targeted and intentional in exploring new practices and assessing their impacts. There are several practices being utilized in other states for nutrient reduction but aren't in the Iowa Science Assessment. Because these practices aren't currently in the NRS-SA there are limited opportunities to install and research these practices to determine their effectiveness for nutrient reduction in Iowa conditions.

The GHP funding provides an opportunity to prioritize funds to establish these practices which will allow them to be measured and improve understanding of their effects, setting the stage for future implementation efforts.

All practices will be implemented through agreements with or on behalf of the landowner. This mimics the same process that IDALS and NRCS utilize to incentivize incentives/financial assistance to landowners and farmers who agree to install and maintain best management practices (BMPs).

Technical assistance for design, planning, permitting etc. for the select BMPs will be provided by IDALS or partner staff. Practices requiring engineering will be done through professional services agreements that will be procured through the State of Iowa bidding procedures. The State's procurement process provides additional opportunities to businesses registered on the Targeted Small Business (TSB) program as women, individuals with minority status, service-connected disabled veterans, and individuals with disabilities. This program provides early notice and additional support to TSBs interested in seeking State of Iowa contracts for professional services.

Drainage Water Recycling (DWR) is a system that diverts subsurface drainage water from cropland into on-farm ponds or reservoirs, where it is stored until it can be used by the crop later in the season through supplemental irrigation. Drainage used in conjunction with irrigation provides an opportunity to allow the system to operate in a more closed system. Although a new concept in agricultural areas reliant on rainfall, results have been promising from where they have been installed in Iowa and other states. Early results have shown significant increases in crop production and also in reductions of nutrients leaving the system. These findings provide justification for demonstrating this type of system and the potential for scale up to be driven by market forces. This project aims to replicate up to 3 of these DWR systems, on farms in Iowa, and investigate the performance, economics, and applicability to inform expanded implementation. Special emphasis will be to support systems that utilize subsurface irrigation methods due to the need to investigate this DWR method in particular.

P Removal Structures are an emerging conservation practice used to reduce dissolved reactive P (DRP) losses. Much like edge-of-field practices for N reductions, P removal structures rely on diverting water from high P delivery areas through an appropriately designed structure filled with media with affinity to soluble P. Research in Ohio suggests these systems are capable of reducing 12-72% of DRP from reaching surface waters. Because the majority of P losses in Iowa are delivered by P attached to sediment, this project will prioritize these structures to targeted, "higher value" locations where DRP is more of a concern locally. In Iowa, these areas will be targeted above recreational lakes/streams and/or active research farms where there is more need but also the ability to cooperate with adjacent farmers to work towards a concerted effort to reduce soil test P levels. This project proposes installing up to 3 P removal structures in key areas of the state to further expand the understanding of implementation and efficiency of nutrient removal.

2-Stage Ditches are a new twist on a common agricultural water management practice to improve conservation outcomes compared to a traditional ditch system. 2-stage ditches are promoted in other states have been shown to reduce nutrients and limit maintenance by providing 2 stages for flows through the ditch. The base flows are more confined which reduces sediment deposition/build up while the 2nd stage serves as a floodplain bench that is vegetated and provides more surface area for assimilating nutrients as they flow through the system. This project will engage with drainage

district trustees/other partners to install up to 2,500 of 2-stage ditches in existing drainage ditches. 2-stage ditches have added costs for design by a professional engineer, construction, and use more land/space to install and utilize GHP funding to support.

Nutrient Management is a critical practice to ensure profitability for farmers, but also limits the risk of nutrients lost downstream. Iowa farmers experience challenges every year in planning the right amount of nutrients to apply to their crops without knowing what kind of growing conditions (weather) the crop will experience, the price of the crop sold, or the costs of fertilizer or various application methods. Tools that farmers use to minimize this risk to manage their nutrients using what's commonly referred to the 4Rs. This can mean adjusting/tailoring rates, timing of application, varying the sources of N, and/or placement of nutrients. One emerging tool to assist with the uncertainty of nutrient management is using biological sources that support N fixation in non-leguminous crops like corn. Some products advertise the ability to supplement up to 40 lbs. of commercial N. These products have the potential to support about 15-25% of the average N application rates used in Iowa. Research conducted in Iowa indicates that biologicals have measured N loss rates in line with the corresponding reduced N rate without use of the product. Essentially providing an opportunity for farmers to have confidence in being able to apply less N from commercial/manure sources but maintain yields, resulting in less risk of N loss to surface waters or other pathways. This project proposes to encourage farmers to innovate and come up with alternatives that will help them reduce N rates by 40 lbs. or 15% of their current rates on up to 100,000 acres to minimize N losses for climate and water quality protection.

2.) *Barriers to Water Quality Wetland Restoration:*

The process to identify, develop, permit and ultimately install water quality wetlands has changed dramatically since Iowa began prioritizing this practice. One of the most impactful changes that is limiting implementation is the 404 permitting through the Rock Island District (RID) of the Army Corps of Engineers (ACOE). Iowa's landscape has been severely altered to facilitate the conversion of prairies and wetlands to agriculture. Many areas that were historically wetlands were converted to streams/ditches/erosional features to lower the water table in order to benefit crop production. While these changes were often incentivized/led by federal and state policies at the time, current policies are leading to their preservation/inability to mitigate for these conversions. Vast networks of wetlands and swales pre-settlement are now a series of drainage ditches and erosional features that function as streams due to increased surface runoff. ACOE asserts jurisdiction on these areas as streams and limits any "impacts" to these areas that are serving as cropland drainage and prevents "conversion" from streams back to wetlands even though many of these areas were wetland rather than stream features pre-settlement.

ACOE-RID believes stream restoration will provide the same/similar benefits vs. conversion to wetlands. The Iowa Nutrient Reduction Strategy (INRS) relies heavily on water quality wetlands to accomplish the 45% reduction (41% for NPS). Of all the scenarios, with maximizing all other available practices, would still require ~50% of the load reductions to come from water quality wetlands. This represents the need of 4,000 to 7,000 wetlands, to reduce N loading from about 4-7M acres of cropland. Current ACOE restrictions have forced WQ wetlands to smaller drainage areas which will force the overall number of wetlands needed to increase due to the reduced level of efficiency these individual, smaller sites have on N reduction.

The project proposes to address Army Corps of Engineers (ACOE) Rock Island District (RID) stream mitigation policy in several ways:

1) Establish a panel of experts in wetlands and stream restoration to conduct a review of science and policy related to Iowa streams and water quality wetland implementation to comprise a summary of the current state of stream restoration impacts on water quality, water quality wetlands impact on streams and the historical perspective of wetlands and streams in the Iowa landscape.
    a. Investigate/research the effects of stream restoration projects specifically for nutrient reductions. Water quality wetland effectiveness is well understood but stream restoration project monitoring of nutrient impacts is limited in Iowa and mostly based on perception/assumptions or from other regions of the country that are not similar to Iowa conditions.
    b. Compare/model effectiveness of intersection where WQ wetlands and altered/manipulated streams exist and compare estimated outcomes to determine most cost-effective approach to achieve nutrient load reductions.
2) Conduct wetland delineations of existing water quality wetland sites.
    a. During recent interagency meetings working through permitting challenges, the RID asserted doubt that water quality wetlands met the ACOE definition of wetlands. Hiring consultants to use ACOE approved wetland delineation methodology will help determine if water quality wetlands are really wetlands.
3) Partner with other Midwest states to develop prospective water quality wetlands for implementation.
    a. Many states have indicated interest in deploying WQ wetlands similar to Iowa for advancing their own NRS efforts. Due to a variety of factors (funding, staff resources, etc.), states have been limited in the ability to deploy this practice. Dedicated resources to navigate the layers of implementation (landowner contact, permitting, design, easements, etc.) will assist in demonstrating and developing the process to advance water quality wetlands in other states.
    b. There is a lack of consistency/interpretation of permitting in other ACOE districts related to conservation practices, wetlands, and stream mitigation requirements. Conducting a summary of similar projects in surrounding states will assist in achieving consistency in permitting water quality wetlands.
4) Assist in the development of a stream mitigation bank instrument to assist in providing stream mitigation needs to offset the ACOE's determined adverse impacts of establishing water quality wetlands.

    In the event where WQ wetlands require stream mitigation, the ability to streamline and permit these wetlands quickly would help provide clarity and assurance wetlands could be installed. A sole-user stream mitigation bank could be established to provide credits to worthy projects with benefits that outweigh the impacts of restoring wetlands Iowa's altered agricultural streams. However, there is significant work that needs to be done to establish an approved mitigation instrument and find viable sites for the bank. IDALS doesn't have experience in establishing these banks and would partner with those with expertise in navigating the ACOE's process to

develop, establish, and maintain approved stream mitigation banks. This would allow IDALS staff to work more on the practice implementation side vs. mitigation bank development.

3) *Optimization of Wastewater Treatment Facilities*

The wastewater treatment plant optimization program has two purposes: 1) To further reduce point source nutrient output to Iowa's rivers and streams and 2) reduce energy consumption. The Optimization program helps wastewater treatment facilities optimize their treatment process for energy savings and improved nutrient reduction through partnership with a team of qualified wastewater experts. This program is a collaboration between the Iowa Wastewater and Waste to Energy Research Program (IWWERP), Iowa Water Environment Association (IAWEA), Iowa Rural Water Association (IRWA) and DNR. GHP funding will help expand and provide assistance to more facilities through a contractual arrangement.

The program has been running in somewhat of a pilot mode for the last 3 years, partnered with 27 facilities to date, and is primed for expansion that this funding could provide. We've seen examples of improved nutrient reductions and energy savings at Iowa wastewater treatment plants. One example, the City of Atlantic, has seen improved nutrient removal at their plant in addition to $8,000 of energy cost savings by implementing the recommended changes in operations. This funding will allow for more thorough visits and coaching once a plan is in place to ensure improved operations are realized and persist. The program would also like to begin including industrial wastewater treatment plants such as JBS Pork, Cargill, and Tyson facilities as a few examples. Facilities taking advantage of this program are typically communities that are limited resource, disadvantaged, and/or historically underserved.

Task 1: Engage and Visit Facilities

Engage with up to 5 facilities from the list by curated by IWWERP and DNR. Initial meetings will coordinate pre-visit data collection, compilation, and analysis. Facilities will schedule and attend pre-visit training webinars and do an in-depth assessment of process control at each plant and talk through strategies to help achieve better nutrient removal through optimization. Facilities and the DNR will receive documented strategies via reports and developed reference documents.

Task 2: Facilitate Monthly Communication

Regular communication with all facilities via webinars, phone calls, and emails to help jump start a best practice (i.e., treatment excellence) operator community. These communications shall mostly be group oriented but can include individual facility meetings. Progress will be documented and provided to facility reps and DNR.

Task 3: Complete Final Summary Report

A final summary report that provides an overview of each facility, what strategies are being implemented or will be implemented as a result of the engagement, and what progress has been or is expected to be achieved.

The current program operates by DNR contracting with the University of Iowa. Dr. Craig Just is the contract manager for the University. IDALS proposes to develop a subaward with DNR to facilitate GHP funding to grow the program through a similar arrangement of the current project to expand to more facilities.

The overall workplan developed will support all four strategic outcomes:

1) Support staff to implement the workplan – resources available to implement nutrient strategies and climate resiliency are unprecedented compared to when the Gulf Action Plan was released. While these resources are a great opportunity to help advance these efforts, the ability and process to implement them has increased as well. Resources from this workplan will assist IDALS and partner staff by increasing the pace and scale of implementation through streamlining the process, adding staff assistance through subcontractors, and innovating/deploying emerging technologies that may promote more options to achieving nutrient and climate goals.
2) Use state-level water quality programs and actions to advance nutrient reductions – the State of Iowa's investment in water quality and climate has also seen a marked increase along with federal resources. The Water Quality Initiative (WQI) is a state-level program developed solely to advance the INRS. This workplan will infuse resources to strategically scale the WQI and other available funding sources beyond what these resources can do on their own. Annual appropriations of the WQI have been consistently at $10.5 million per year for the last several years. In 2018, WQI was further boosted by the Iowa legislature by an additional $15 million per year for infrastructure-based practices.

   Project activities will further leverage outside funding through a variety of applicable programs where opportunities that overlap exist:

   - EPA 319 program funding where overlap exists in watersheds with new/existing 9 element watershed plans.
   - Iowa Lake Restoration Program where priorities overlap to deploy practices that benefit local communities with lakes and downstream.
   - NRCS-RCPP projects – Iowa has been very successful in receiving RCPP projects that leverage state (WQI and others) and private contributions. Currently there are about 23 recently awarded and/or active RCPP projects in the state totaling over $142 million in federal investment over the next several years. These projects have broad geographies and the majority directly support funding to install/utilize practices in the Iowa NRS-SA.
3) Implement projects in prioritized watersheds with the greatest opportunity for nutrient reductions - Through the Iowa NRS, cropland represents the greatest need for practice implementation to reduce nutrients. The INRS also designates 9 HUC 8 watersheds as priority watersheds for focusing state and partner resources to address nutrient reductions. These watersheds were identified through a collaborative approach of public and private sector recommendations for designating the watersheds as priorities. Within these INRS priorities, the workplan will assist with targeting and deploying these and supporting resources to address nutrient losses from Iowa's cropland.
4) Collaborate across state boundaries with the HTF partners - Through the HTF meetings and workgroups (Innovative Practices, Communications, etc.) established, IDALS and partners will provide information sharing for states and other partners to learn about the successes and lessons learned from the project. Outreach materials developed can be shared through HTF channels such as the HTF newsletter, Coordinating Committee and/or full HTF Meetings.

   The water quality wetland component of the workplan will most directly address this outcome by working with other states to specifically target and implement WQ wetlands.

National Environmental Policy Act (NEPA) Compliance

Implementing these practices is expected to require both category #2 and #3 of NEPA activities. Structural practices (DWR, P removal structures, and 2-Stage Ditches) are expected to fall under category #3. IDALS will lead and partner with experienced groups/consultants to ensure NEPA compliance. IDALS is familiar with these processes through other federally funded programs.

Component	Strategic Outcome				GHP Priorities		NEPA Activity Category		
	#1 - Support staff to implement	#2 - Use state-level WQ programs	#3 - Implement in priority WSs	#4 - Collaborate across state w/ HTF partners	Climate Change Co-Benefits	Benefits to Disadvantaged Communities	#1	#2	#3
New/Innovative Practice Demos	X	X	X	X	X	X		X	X
Barriers to WQ Wetland Restorations	X	X	X	X		X	X		
Optimization of WWTP		X	X	X	X	X	X		

Technical Support/Managing Contracts/Subawards:

IDALS manages several partnership agreements to facilitate conservation implementation projects. IDALS staff will support the administration of the proposed contracts/subaward through IDALS procurement procedures and accounting processes. These agreements will require deliverables that align with this workplan and periodic reporting and coordination between IDALS and partners to ensure project is meeting objectives and based on the milestone schedule.

Efforts to support tribal and disadvantaged communities:

This project will use multiple approaches to define disadvantaged communities. The basis of this definition will start with the Justice40 Interim Disadvantage Communities Indices to identify locations within the priority watersheds and with the ability to address nutrient runoff from cropland. This tool will also serve as a means to identify downstream communities of the practices installed that will benefit from the protection/benefits these practices provide. For other efforts, the project will also make specific emphasis to address disadvantaged communities within the watersheds not identified through this mapper. In the project areas, this will most likely involve women and minority farmers/landowners and/or young/beginning farmers that will benefit from additional support to assist in the process to conservation practice implementation on their farm(s).

Regarding support to tribes, the project will directly engage with all eligible tribes within Iowa's borders to seek opportunities to engage and advance nutrient reduction efforts on tribal lands. IDALS has engaged with the Regional Tribal Operations Committee to share overall program updates and offer future partnership in developing projects with tribes in Iowa.

The project will support disadvantaged communities on two levels: 1) prioritize connections with historically underserved farmers and landowners in the priority watersheds and provide opportunity for them to participate, voluntarily, in the program(s) and 2) conduct activities that lead to conservation practices in priority watersheds with disadvantaged communities downstream and benefit from the improvements/protections provided by the practices.

The project will accomplish this through targeted outreach to these communities, within the priority watersheds identifying specific geographical areas and through outreach with partners that represent or host programming to support underserved individuals and communities. and women farmers and landowners by leveraging existing programs. The project will also connect this outreach with financial assistance to help disadvantaged communities with limited resources to install priority practices.

Advancing EPA Goals for Environmental Justice and Climate:

Project activities will provide equal and equitable opportunity to participate in the available programs that support conservation practice implementation. Since this program is voluntary and because the specific locations and demographics are not known/in flux, the project will commit to tracking and reporting efforts as component of the overall project deliverables.

Because this project is putting an emphasis on priority practices with multiple benefits, it provides the opportunity to also report the estimated outcomes, using existing models, that address reductions in carbon (CO2e) emissions.

Environmental Results:

This project is expected to directly support the implementation of practices that will lead to an estimated reduction of:

- 300,000 lbs. of nitrogen
- 8,000 lbs. of phosphorus
- 220 MT of carbon dioxide equivalents (CO2e)

Actual estimates will be derived based on the practices implemented and assessed based on reliable models to estimate their impact. Since some of these practices aren't currently in the INRS, the INRS-Science Assessment may not be able to be used to quantify their impact. IDALS will work with Iowa State University (ISU) researchers to review applicable tools to estimate their outcomes. This will be done in the interim as monitoring will be conducted on these sites. Monitoring costs will be provided by ISU, IDALS, and/or partners and not utilize GHP funds.

Milestone Schedule:

Objective:	Year				
	2025	2026	2027	2028	2029
New/Innovative Practices/Systems					
Work with partners to identify prospective locations for practice installations	X	X			
Secure landowner agreements and procure engineering services	X	X	X		
Finalize design, permitting, and bidding	X	X	X		
Install practices and finalize financial assistance		X	X	X	X
Coordinate monitoring of practices		X	X	X	X
Host field days/outreach events to showcase installed practices and lessons learned			X	X	X
Barriers to WQ Wetland Restoration					
Establish a panel of water quality wetland and stream restoration experts to review the science and policy implications in Iowa	X	X			
Procure services for wetland delineations of a selection of existing water quality wetlands to assess if they meet the ACOE definition of wetlands to better inform panel discussions.	X	X			
Host coordination meetings with the group to discuss the issue and guide the panel to come up with a report detailing their results and recommendations for ways for IDALS to address this barrier	X	X	X		
Assemble a group of states to work out the steps to ID, plan, and develop prospective water quality wetlands in their states. Serve as a resource for navigating the process to plan, design, permit, construct and monitor completed sites.	X	X	X	X	
Procure services to identify and develop a potential sole-user stream mitigation banking instrument.	X	X			
Wastewater Treatment Facility Optimization					
Engage with prospective facilities and visit with local leaders about the project.	X	X	X	X	X
Conduct monthly virtual meetings to talk through potential optimization opens and develop operational plans.	X	X	X	X	X
Complete final reports for participating facilities.	X	X	X	X	X
Complete final report to EPA at the conclusion of the project term					X

Transferability of Results and Dissemination to the Public:

The project will provide results for the public through several means and depending on the component detailed below:

1) New/Innovative Practices/Systems – IDALS and partners will host field days/webinars about the project to disseminate information to the public about the project, the process, and results learned. This information is typically hosted by the landowner and showcases their leadership in adopting these BMPs to provide a peer-to-peer networking opportunity that is more often well received by other landowners and farmers.
    a. Emerging practices are currently tracked on the dashboard, but the intent is to get these practices beyond the "novel" stage and collect enough information to move them to "proven" or quantifiable in the State. Once at that stage and if the results align with those of other states, IDALS and partners are then able to have more details to make an informed decision to prioritize and scale-up these practices.

2) Barriers to Water Quality Wetland Restoration – outcomes from this component will be disseminated to the public through a webinar that will be hosted live but will be recorded and shareable by partners. Any reports produced by this group will also be provided through posting on IDALS/partner website(s).
    a. Addressing barriers to water quality wetlands could facilitate the scale-up of wetlands deployed in Iowa and surrounding states that is tracked on the INRS Dashboard. The scale could address not only more sites installed annually, but also improved efficiency to remove N, more landowners willing to participate, larger impact sites in terms of estimate N reduction/habitat/etc. and/or reduced staff time to develop sites.
3) Wastewater Treatment Facility Optimization – results will be shared through reports generated from individual facilities, but also through the Great Wastewater Treatment Tour Across Iowa. Participating facilities can host tours and share results from participation in this program. The Tour provides for a great opportunity for the public and other communities to learn about the program and how it may be able to benefit them.
    a. PS facilities utilizing optimization as a tool to meet NRS goals are reported annually on the INRS Dashboard and may align with the HTF PS workgroup reports.

All components of the workplan are conducive to providing results at future HTF meetings, the GHP website, and HTF newsletter. IDALS will work with EPA to adapt and develop materials to align with these opportunities.

Detailed Budget Narrative:

Workplan Budget					
Line Item	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total Over 5 Years**
Personnel	$ 12,000.00	$ 12,000.00	$ 12,000.00	$ 12,000.00	$ 12,000.00	$ 60,000.00
Fringe Benefits	$ 2,400.00	$ 2,400.00	$ 2,400.00	$ 2,400.00	$ 2,400.00	$ 12,000.00
Other	$ 364,584.20	$ 635,000.00	$ 565,000.00	$ 347,500.00	$ 120,000.00	$ 2,032,084.20
Indirect Costs (17.34%)	$ 2,496.96	$ 2,496.96	$ 2,496.96	$ 2,496.96	$ 2,496.96	$ 12,484.80
Total	$ 381,481.16	$ 651,896.96	$ 581,896.96	$ 364,396.96	$ 136,896.96	$ 2,116,569.00

Personnel/Fringe Benefits: Staff budget and benefits for IDALS staff to support reporting, procurement, outreach/information sharing and overall partner project coordination. Day-to-day activities would include subaward development, stakeholder engagement, and financial accounting and tracking. Personnel costs were calculated assuming annual costs for IDALS staff to coordinate the 5 year term of the project to support these activities. Fringe costs were calculated assuming 20% of Personnel costs.

Indirects: Indirects were calculated using the current approved rate of 17.344% for the Personnel/Fringe Benefit budget line items.

Other: Contractual agreements will be made to support the design and technical assistance requirements of innovative BMPs that require engineering assistance. Service agreements will be procured and managed by IDALS following State of Iowa procurement procedures.

Contractual agreements with the landowners that agree to install innovative practices detailed in this workplan. For structural practices, landowners may agree to install themselves or IDALS may bid construction depending on landowner preference and/or the costs of the practice. For management practices IDALS intends to provide financial assistance through the current Financial and Reports

Management System (FARMS). This is an online portal for farmers/landowners to enroll in State and other programs to support the distribution of financial assistance and maintenance agreements for BMP installation. IDALS is able to adapt this system to manage non-IDALS funds to deliver financial assistance to applicants in return for the BMPs they install.

A contractual agreement will be developed to facilitate the WQ wetland work. This would help assist in reviewing applicable policy, coordinating panel attendance/meetings, and research to support this deliverable. It's anticipated that this contract will be supported by an NGO or University.

A subaward will be utilized with DNR support the Wastewater Optimization Facility Optimization component for this workplan. This project anticipates providing resources for 5 facilities to conduct detailed review and optimization of their facilities to reduce nutrients and energy usage. DNR will be responsible for managing any agreements and reporting results to IDALS for this component.

Quality Assurance:

No GHP funds will be used to support monitoring/collection of environmental data related to this workplan.

Kentucky GHP Project Summary Information

Project Title: Sustained Nutrient Advancement in Kentucky (SNAK)

Organization Information:

- Organization- Kentucky Division of Water
- Address – 300 Sower Boulevard
- Contact person – Sarah Gaddis
- Phone Number – 502-782-6953
- Email – sarah.gaddis@ky.gov

Proposed Funding Request: $2,514,116 (FFY24-26)

Brief Project Description: The Sustained Nutrient Advancement in Kentucky (SNAK) workplan will maintain staffing for program management, nutrient reduction strategy implementation, and nutrient management planning. Additionally, the plan will prioritize nutrient investments in municipal stormwater and agriculture conservation practices. Funding will maintain marketing of Kentucky's Agriculture Water Quality Act Planning Tool and support long-term funding of Kentucky's stream gaging network expansion.

Environmental Results: This workplan will fund staff to administer the grant, implement Kentucky's Nutrient Reduction Strategy, study Kentucky's nutrient progress, and support public engagement. Additional staff funding will support develop nutrient management plans. The workplan will fund nutrient focused stormwater tools for municipal separate storm sewer systems (MS4s) that builds on works from the first Gulf Hypoxia Program workplan. Funding will also provide annual maintenance of 2 USGS stream gaging stations established in Western Kentucky. Outreach and marketing will be conducted to engage stakeholders on the Agriculture Water Quality Act (AWQA) Planning Tool, and additional funding for installation of agriculture best management practices (BMPs) will assist with this effort.

Place of Performance: Work will be conducted across the Commonwealth of Kentucky, which is entirely within the MARB drainage area.

Project Period: The project will begin with the receipt of funds and continue for five years.

GHP SNAK Project Workplan

Project Approach:

The SNAK workplan leverages the vision of the state's Nutrient Reduction Strategy Update to appropriately staff contributing programs, fund training on new and innovative management techniques (NRS Goal 1, **Appendix A**), strategically deploy conservation funding (NRS Goal 2, **Appendix A**), and engage stakeholders (NRS Goal 5, **Appendix A**).

EPA identifies four strategic outcomes for workplans, including:

1. Supporting staff to implement the workplan;
2. Use state-level water quality programs and actions to advance nutrient reductions;
3. Implement projects in prioritized watersheds with the greatest opportunities for nutrient reductions; and
4. Collaborating across state boundaries with HTF partners.

This workplan will achieve strategic outcome #1 by funding staff to deploy and manage Nutrient Reduction Strategy efforts, assist farmers with nutrient management plans, and administer the grant. Strategic outcome #2 will be achieved through increased conservation practice funding of non-structural practices (i.e., cover crops, no-till equipment, etc.). DOW staffing will also lower costs for utilities through nutrient optimization training for wastewater utilities that reduces energy consumption. Technical assistance for the Red River and No-Till Cost Share funding will improve producer outcomes with conservation practices that mitigate the loss of productive farmland to erosion. The USGS Gage Maintenance project supports two gages where flooding is common and gaging data is needed to support disaster declarations.

The Kentucky Division of Water spent three years developing Nutrient Priority Areas that will receive prioritization for funding under this grant (NRS **Section 5.1**). DOW has leveraged a data-driven approach to select high yield watersheds, nutrient sensitive drinking water source areas, and confirmed harmful algal bloom (HAB) drainage areas that support strategic outcome #3. The Nutrient Reduction Strategy identifies a need to conduct ongoing outreach in Nutrient Priority Areas on the AWQA Planning Tool (NRS **Section 4.1**). Funding AWQA marketing in Nutrient Priority Areas will support strategic outcomes #2 & #3 by providing printed materials and digital media to support producer adoption of the Planning Tool.

The Gulf Hypoxia Program will also support strategic outcome #2 & #3 through subawards for a Municipal Separate Storm Sewer System (MS4) toolkit module and cost-sharing for a no-till equipment program in Nutrient Priority Areas. The MS4 module funded with this grant will address an outstanding need for post-construction stormwater best practices that provide long-term erosion protection of Kentucky's phosphatic soils. Many of Kentucky's MS4s are located in Nutrient Priority Areas. This module also leverages a long-standing partnership with the University of Kentucky and the Kentucky Stormwater Association. Additionally, GHP funding will provide match for the Division of Conservation's Equipment Revolving Loan Program to fund no-till seed drills in Nutrient Priority Areas. This equipment cost-sharing maximizes new and existing funds and supports soil conservation tools that can be shared among farmers. Both elements of this workplan support existing state-level programs, while also providing tools for partners in Nutrient Priority Areas.

Staff funding will enable Kentucky to build upon existing wastewater and agriculture engagement with the Tennessee Department of Environmental Quality (TDEC) and Tennessee Department of Agriculture to fulfill strategic outcome #4. Meetings between Tennessee and Kentucky agencies in 2023 and 2024 identified a few shared nutrient priority watersheds for collaboration and mutual investment. The top watershed identified by that effort is the Red River watershed that spans Todd, Christian, Logan, and Simpson counties in Kentucky and Robertson, Sumner and Montgomery counties in Tennessee. GHP funding will support technical assistance staffing in a local conservation district in coordination with the NRCS Conservation Technical Assistance Program in the Red River watershed in Kentucky to improve conservation implementation. GHP funding will also facilitate travel for Hypoxia Task Force representatives to engage with other states and federal agencies.

Kentucky will manage and monitor subawards with funded staff using the Nonpoint Source Program Grants Reporting and Tracking System (GRTS). Kentucky has successfully leveraged GRTS for almost two decades to manage subawards and sub-awardees.

DOW is actively engaged with POTW stakeholders on nutrient optimization through the Kentucky Water Utilities Advisory Committee. DOW will continue engaging stakeholders quarterly on its nutrient optimization permitting approach, and through onsite training with the regulated community. DOW engages the agriculture community through quarterly meetings of the AWQA Authority, and the NRCS State Technical Committee. DOW nutrient workgroups meet multiple times a year to engage agriculture, utilities, non-government organizations and public agency partners in emerging nutrient issues.

Quality assurance documentation for ongoing maintenance of Kentucky's U.S. Geological Survey (USGS) stream gage network will be conducted by USGS staff in keeping with existing protocols for the network. Quality Assurance Project Plans (QAPPs) will be provided through the GRTS grant management system.

Table 1 – SNAK Funding and Outcomes

	Strategic Outcome				NEPA Activity Category		
Project	#1 - Staff support	#2- Use state WQ programs	#3 - Implement in priority areas	#4 - Work with other states & partners	#1- No impact	#2- Categorical Exclusion 2(ii)	#3 - EPA Review required
DOW Staffing	X		X		X		
DOC NMP Staff	X	X			X		
AWQA Marketing		X	X		X		
Red River NRCS TA Support		X	X	X	X		
USGS Gage Maintenance		X	X	X	X		
MS4 Stormwater BMP Toolkit		X	X		X		
No-till Equipment Program		X	X			X	

Environmental Results:

Kentucky will track qualitative and quantitative results using the GRTS management tool and estimate nutrient load reductions using the PLET program.

Outputs

- DOW Staff
    - Funds 2 FTE staff for 5 years.
    - Will facilitate partnerships, Nutrient Reduction Strategy implementation, and reporting.
    - Will direct DOW's nutrient and energy optimization efforts with wastewater treatment facilities.
        - FFTL staff will provide nutrient optimization technical support for utilities.
        - ESC staff will develop and track internal tracking of
    - Will coordinate with contractors, subawardees, and partners on funded projects.
        - ESC staff will coordinate with AWQA Marketing & Outreach efforts, USGS Gage Stations and MS4 training efforts
        - FFTL staff will coordinate with partners on no-till equipment funding and Red River support
    - ESC staff will facilitate nutrient workgroups and newsletters to advance nutrient reduction efforts.
    - ESC staff will update DOW's Nutrient Loads and Yields Study biennially with additional data.
    - ESC staff will revise and add to HTF Success Story content for Kentucky.
    - ESC staff will develop biennial Nutrient Reduction Strategy reports and HTF Report to Congress materials.
    - ESC staff will develop and update nutrient reduction viewers and GIS resources used by partners and stakeholders.
    - ESC & FFTL staff will quantify programmatic nutrient load reductions.
- Nutrient Management Planning Staff
    - Funds 1 FTE staff for 4 years.
    - Will develop nutrient management plans for producers to reduce nutrient loss and qualify applicants for state cost share funding.
    - Based on existing assistance rates, staff will likely support ~40 nutrient management plans per year.
    - Staff assist producers with Ag. Water Quality Plans, likely supporting ~20 AWQA plans per year based on existing assistance rates.
- Red River NRCS TA Support
    - Funds ¼ of FTE staff for 2 years as match to NRCS funding that will fund the other ¾ FTE.
    - Will provide technical assistance for conservation districts to speed up BMP installation in a Nutrient Priority Area for state cost share and NRCS programs.
    - Will provide technical assistance on AWQA plan development.
- AWQA Marketing & Outreach
    - Will produce multimedia advertising materials and run advertisements for Kentucky's AWQA Planning Tool and lawncare management.

    - AWQA marketing materials will be available statewide, with a focus on Nutrient Priority Areas.
    - AWQA marketing supports the adoption of the revamped planning tool, which is a state required plan for farms over 10 acres to protect water quality. The tool connects producers with technical and funding resources that accelerate nutrient reduction efforts and support sustainable practices. The AWQA is a key element of the state Nutrient Reduction Strategy.
- USGS Gage Station Maintenance
    - Will maintain two new USGS streamgage stations (see below) installed in 2023 to measure daily discharge associated with existing DOW ambient river monitoring sites.
        - Mayfield Creek at Lovelaceville, KY - USGS Water Data for the Nation
        - Obion Creek Near Arlington, KY - USGS Water Data for the Nation
    - Will provide annual operation and maintenance funding.
    - New streamgage stations will regularly provide discharge data to the USGS National Water Dashboard.
    - Streamgage data will be incorporated into future iterations of DOW's Loads & Yields Study and address data needs in Nutrient Priority Areas.
- MS4 Nutrient Training Development
    - Will produce a training module on post-construction best practices to assist Phase II MS4 systems meet nutrient related requirements in their Stormwater Quality Management Plan's Minimum Control Measures.
    - This project will also produce a post-construction design and maintenance manual to provide guidance on design, inspection and maintenance.
    - This training module will be available statewide for MS4 operators through UK's stormwater website at www.kyms4.org.
- No-Till Equipment Funding
    - Will fund agriculture conservation equipment purchase for no-till seeders through the Division of Conservation and local Soil and Water Conservation Districts in Nutrient Priority Areas.
        - Note: NEPA considerations are anticipated to be minimal since funded BMPs will not require engineering design, or ground disturbance outside of seed planting on existing farmland. DOW will lean on existing policy from the Kentucky Heritage Council for 319 projects with minimal or no ground disturbance.
    - Load reductions from BMPs will be calculated using PLET based on conservation district reported treatment acreage.
    - Funding will provide the match required to purchase no-till seeders through the Division of Conservation Equipment Loan program.
    - Conservation BMPs will focus implementation in Nutrient Priority Areas. Installed acreage cannot be estimated in advance but cover crops and no-till seeding historically realized robust nutrient load reductions in Kentucky's conservation programs.
- Travel
    - Kentucky HTF representatives will participate in annual HTF meetings and collaborate with other HTF member states on nutrient reduction progress.

- ESC and FFTL staff may use travel funds to conduct site visits to local wastewater plants for optimization, host and attend nutrient workgroups and other outreach engagements.

Outcomes

- The workplan will fund a post-construction stormwater guide to complete the MS4 toolkit.
- POTW systems will reduce wastewater nutrient discharges and reduced energy consumption through optimization training.
- Nutrient losses in agriculture landscapes will decrease through conservation practice installation and nutrient management planning.
- USGS gages will enable DOW to learn more about nutrient flows and flooding in Western Kentucky waterways that will improve resource prioritization and disaster resiliency.
- DOW will improve stakeholder engagement on nutrients through Nutrient Reduction Strategy workgroups, agriculture outreach, and partnership development.

Milestone Schedule:

DOW will provide annual GRTS updates for the Gulf Hypoxia Program by December 31st of each year, and summary reports annually based on the award date. See budget narrative tables details on actions by year. The following milestones apply to project outputs:

- DOW Staff
  - ESC and FFTL Staff will maintain records of outreach and training events, publications, and resources developed annually in GRTS.
  - ESC staff will post quarterly Nutrient Program highlights in DOW's Nutrient Newsletter.
  - ESC staff will facilitate regular Nutrient Reduction Strategy workgroup meetings and goal setting.
  - ESC & Geospatial staff will support a Loads Study to be conducted in 2026 and 2028 that incorporates additional data years and identify nutrient trends.
  - ESC staff will develop Nutrient Reduction Strategy Biennial Reports and Kentucky-focused content for the biennial HTF Report to Congress.
  - FFTL staff will provide regular nutrient optimization technical support with the KPDES permit program, including site visits.
  - ESC and FFTL staff will conduct annual load reduction calculations for multiple programs including but not limited to Gulf Hypoxia funded projects.
  - ESC staff will annually evaluate and update applicable Kentucky HTF Success Stories.
- Nutrient Management Planning Staff
  - Staff will provide quarterly updates including the number of nutrient management plans and AWQA plans completed, starting in 2026.
- Red River NRCS TA Support
  - TA support will be provided to the Kentucky Association of Conservation Districts to hire staff in the Red River service area with NRCS starting in 2026.
  - Annual metrics of federal BMP funding spent and coverage acres will be available during the funded years.

    - A summary of implementation supported by this TA will be provided after expenditure of funds.
- AWQA Marketing & Outreach
    - An AWQA marketing contract will be solicited and awarded in 2027 to enhance AWQA Planning Tool outreach and adoption.
- USGS Gage Station Maintenance
    - Annual maintenance for two USGS flow gages will be provided annually during the grant.
- MS4 Nutrient Training Development
    - UK will develop a post-construction stormwater manual with work deliverables aligning with milestones under Kentucky's first GHP grant.
- No-Till Equipment Funding
    - A subaward for no-till equipment loan program match will be awarded to the Division of Conservation in 2025 that will be available until expended.
- Travel
    - ESC and FFTL staff will travel annually to Hypoxia Task Force meetings.
    - ESC and/or FFTL staff will travel annual for Tennessee Nutrient Task Force meetings.

Transferability of Results and Dissemination to Public:

Grant results will be disseminated to the public through existing outreach avenues. The grant will leverage existing stakeholder engagement forums such as Kentucky's Nutrient Workgroups to both provide upfront input on stormwater and agriculture approaches, and to provide feedback on ways to improve. DOW staff will engage stakeholders in partner workgroups such the Clean Water Advisory Workgroup, NRCS State Technical Committee, and Nutrient Workgroups. DOW engages with the AWQA Authority at quarterly meetings, which will provide a forum to build on AWQA marketing efforts.

Nutrient management plans and nutrient load reductions achieved through targeted BMP installations will be reported through GRTS, and highlighted in DOW & Hypoxia Task Force Newsletters, or Hypoxia Task Force Success Stories. Data from the new USGS gaging stations will be communicated through the USGS National Water Dashboard, and synthesized with watershed nutrient data in future Loads & Yields Study updates. Kentucky already shares Loads & Yields Study results at statewide forums such as the Kentucky Agriculture Science and Monitoring Committee (KASMC), Kentucky Nutrients Workgroups, and regionally with Tennessee's Nutrient Task Force.

Technical Support:

Technical support to subawardees will be provided by GHP funded DOW staff, who will track grant progress and estimate load reductions using EPA's PLET program. This grant management and technical support role is familiar to DOW, where existing Nonpoint Source Program Technical Advisors provide similar services to grantees through federal 319(h) Program funding. QAPPs developed or applied for USGS streamgaging stations will follow existing federally and state approved procedures, which will be provided through GRTS.

In addition to the DOW's technical assistance, the Kentucky Agriculture Water Quality Authority, Kentucky NRCS, the Ohio, Kentucky & Indiana USGS Field Office, Kentucky Division of Conservation, and

Clean Water Advisory Council's Nutrients Subcommittee will provide technical expertise for contracts and subawards provided under the SNAK workplan.

Detailed Budget Narrative:

Proposed staff roles and activities are detailed in *Environmental Benefits* Section. A detailed breakdown of funding type, category, expenditure year, and funding year source is provided below. Please see the *budget justification worksheet* in the SF-424A application for an explanation of personnel, fringe, and indirect benefits.

Budget Categories	**FFY 2024-2026 Funds**
Personnel (includes fringe, indirect)	$2,160,478
Contractual	$10,000
Supplies	$0
Equipment	$0
Travel	$17,638
Other	$326,000
Total	$2,514,116

Budget Categories	**2025**	**2026**	**2027**	**2028**	**2029**
DOW ESC	$158,517	$190,984	$190,984	$190,984	$190,984
	Coordinate Loads & Yields Study update and workgroups	Prepare biennial NRS Update report	Provide Loads & Yields Study Update and workgroups	Prepare biennial NRS Update report	Grant metrics analysis & closeout
ESV FFTL	$144,696	$174,332	$174,332	$174,332	$174,332
	Facilitate GHP partnership expansion and engagement tracking.	Facilitate GHP partnership expansion and engagement tracking.	Facilitate GHP partnership expansion and engagement tracking.	Facilitate GHP partnership expansion and engagement tracking.	
DOW Staff - Loads Study		$8,000		$8,000	

Budget Categories	2025	2026	2027	2028	2029
		DOW staff support for Loads & Yields Study update		DOW staff support for Loads & Yields Study update	
DOC Staff		$95,000	$95,000	$95,000	$95,000
		Develop state nutrient management plans for producers	Develop state nutrient management plans for producers	Develop state nutrient management plans for producers	Develop state nutrient management plans for producers
AWQA Marketing	$0	$0	$10,000	$0	$0
			Award marketing contract for AWQA media	Complete marketing tasks for AWQA Planning Tool & closeout contract in GRTS	
DOC/Con. Dist. TA Red River		$70,000			
	.	Develop cost sharing agreement for TA staffing. TA provided to Red River watershed.	TA provided to Red River watershed to multiply NRCS funding	Closeout report of investment and project impact.	
Post-Construction MS4 Manual	$70,000				
	Finalize scope of work for a stormwater BMP construction manual.	Draft manual developed for review.	BMP manual finalized and released.		

Budget Categories	2025	2026	2027	2028	2029
No-till Equipment Program	$70,000				
	Identify recipients of cost-share on cover crop seeding equipment.	Provide matching funds for equipment until funds expended.	Provide matching funds for equipment until funds expended.	Provide matching funds for equipment until funds expended.	Summary report provided of investment match.
USGS Gages		$29,000	$29,000	$29,000	$29,000
		Fund year 4 O&M for two gages with USGS	Fund year 5 O&M for two gages with USGS	Fund year 6 O&M for two gages with USGS	Fund year 7 O&M for two gages with USGS
Travel	$2,638	$4,000	$4,000	$4,000	$3,000
	Travel for POTW visits, HTF and KY Nutrient work.	Travel for POTW visits, HTF and KY Nutrient work.	Travel for POTW visits, HTF and KY Nutrient work.	Travel for POTW visits, HTF and KY Nutrient work.	Travel for POTW visits, HTF and KY Nutrient work.

Quality Assurance:

Data collection associated with the GHP grant will be conducted using USGS streamgaging stations. USGS Streamgaging Network. New streamgages will be operated according to these established quality assurance procedures and reported through the USGS National Water Dashboard.

Bipartisan Infrastructure Law (BIL)
Gulf Hypoxia Program (GHP)
EPA-I-OW-OWOW-HTF-01

FY24-FY26 Workplan
Project Title:
Louisiana Nutrient Reduction & Management Strategy Implementation
Estimated Project Period:
October 2025 to September 2028

Louisiana Department of Environmental Quality
Office of Environmental Assessment
Water Planning and Assessment Division
P.O. Box 4314
Baton Rouge, Louisiana 70821-4314

Table of Contents

Contents

List of Figures

List of Tables

Summary Information Page

Project Title: Louisiana Nutrient Reduction & Management Strategy Implementation

Organization Information: Rachael Mathews, Louisiana Department of Environmental Quality, P.O. Box 4303, Baton Rouge, LA 70802, (225) 219-3188, Rachael.Mathews@la.gov

Proposed Funding Request: $2,514,116 (FY24 to FY26)

Brief Project Description: This workplan will target implementation of agricultural best management practices within prioritized tracts in northeast Louisiana, within the Lake St. Joseph and Cypress Bayou watersheds, to reduce agriculture-induced nutrient loading and provide other water quality improvements.

Environmental Results:
The Louisiana Nutrient Reduction and Management Strategy provides a framework for implementing nutrient reduction and management activities within the state of Louisiana. Through the Bipartisan Infrastructure Law Gulf Hypoxia Program funding provided by the U.S. Environmental Protection Agency, the state of Louisiana will be able to implement key strategic actions that address nonpoint source management and employ innovative technologies. This workplan is comprised of one project for implementation.

Project: Lake St. Joseph, Louisiana, Nutrient Loading Reduction
The goal of the Lake St. Joseph Nutrient Loading Reduction project is to reduce the concentrations of nitrogen and phosphorus in the Lake St. Joseph and Cypress Bayou watersheds within the Tensas River Basin. Agriculture is the suspected source for nutrients in these watersheds. Offsite impacts of nutrient loading into Lake St. Joseph resulting from agricultural processes will be significantly reduced or eliminated, as is anticipated for other known impairments such as turbidity and sedimentation. Empirical data from within the project area will optimally demonstrate improved water quality and water clarity, lessened siltation, enhanced submerged aquatic vegetation, balanced biological oxygen demand, enhanced macroinvertebrate and aquatic wildlife diversity, enhanced project area flood and drought resilience, enhanced nesting and brooding cover for resident upland ground-nesting birds, improved feeding habitat for migratory birds and more. Reduced nutrient loading into Lake St. Joseph will contribute to the overall reduction of Gulf Hypoxia.

Place of Performance: The project area is within the state of Louisiana within the Mississippi/Atchafalaya River Basin (MARB[1]) in Hydrologic Unit Code (HUC) 08.

Project Period: October 1, 2025 to September 30, 2028

[1] EPA BIL GHP Guidance. 2024. The MARB is defined as HUC Codes 05, 06, 07, 08, 10, and 11 (https://water.usgs.gov/GIS/huc.html).

Project Workplan

Project Approach:

Introduction

The Louisiana Nutrient Reduction and Management Strategy[2] (Strategy), developed in 2014 and updated in 2019 and 2022, provides a framework for implementing nutrient reduction and management activities within the state of Louisiana. The Strategy includes ten components comprised of multiple strategic actions that guide implementation. Through the Bipartisan Infrastructure Law (BIL) Gulf Hypoxia Program[3] (GHP) funding provided by the U.S. Environmental Protection Agency (EPA), the state of Louisiana will be able to implement key strategic actions that address nonpoint source management and employ innovative technologies.

The Louisiana Department of Environmental Quality (LDEQ) will be the lead state agency for the cooperative agreement with EPA. This workplan is comprised of a general project workplan to address LDEQ's responsibilities as the lead Louisiana state agency for the BIL GHP cooperative agreement, followed by specific workplan of the subawardee project for implementation.

Project: Lake St. Joseph, Louisiana, Nutrient Loading Reduction

Targeted agricultural best management practices (BMPs) will be implemented on prioritized tracts within the Lake St. Joseph and Cypress Bayou watersheds according to U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) practice standards or by LDAF specifications to reduce agriculture-induced nutrient loading (Louisiana Department of Agriculture and Forestry, LDAF).

EPA Strategic Plan, Goal 5

The workplan supports EPA Strategic Plan, Goal 5: Ensure Clean and Safe Water for all Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds[4] through implementation of programs to prevent or reduce nonpoint source pollution, monitoring, and information sharing. The workplan also supports EPA's 2025 "Powering the Great American Comeback" Initiative[5] pillar that every American should have access to clean air, land, and water. Specifically, this project supports *Pillar 1: Clean Air, Land, and Water for Every American* as BMP implementation is intended to improve water quality through reducing nutrient and sediment runoff from produced land. This project also supports *Pillar 3: Cooperative Federalism* as BMP implementation at project sites is managed through collaboration between federal (USDA NRCS), state (LDAF), and local (Tensas-Concordia SWCD) government agencies to facilitate and monitor BMP implementation by contracted producers.

---

[2] Louisiana Nutrient Reduction and Management Strategy Interagency Team. *Louisiana Nutrient Reduction and Management Strategy: Protection, Improvement, and Restoration of Water Quality in Louisiana's Water Bodies*. 2022. https://www.deq.louisiana.gov/page/nutrient-management-strategy

[3] EPA Gulf Hypoxia Program https://www.epa.gov/ms-htf/gulf-hypoxia-program

[4] FY 2022-2026 EPA Strategic Plan. https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-strategic-plan.pdf

[5] EPA. March 13, 2025. https://www.epa.gov/system/files/documents/2025-03/ghp-state-implementation-memo_march-2025_508.pdf

EPA Strategic Outcomes

The workplan reflects the four strategic outcomes from the *Gulf Hypoxia Program 2025 Guidance for State Cooperative Agreements* guidance:

1. Support staff to implement the workplan.
2. Use state-level water quality programs and actions to better support nutrient reductions.
3. Implement projects in prioritized watersheds with the greatest opportunities for nutrient reductions.
4. Collaborate across state boundaries with HTF partners.

Detailed descriptions of the activities that support the strategic outcomes are given below in the project-specific workplan.

National Environmental Policy Act & Cross-Cutting Authorities

Some project activities may require environmental assessments under the National Environmental Policy Act (NEPA). In such cases, an *Environmental Evaluation Questionnaire and Supporting Document Checklist* will be completed. This includes the *Crosscutting Authorities Review Table* to determine the applicability of any of the Cross-cutting requirements and to proceed with relevant compliance actions as appropriate. Together this will provide the environmental evaluation (EE) completed by the state and reviewed by the EPA to inform the conservation and green infrastructure practices and assist the agency's compliance with NEPA.

Build America, Buy America Act

The EPA GHP guidance recommends support of the American worker and build a strong conservation workforce, as well as support for domestic manufacturing. LDEQ and subawardee will comply with all applicable laws including, but not limited to, the Build America, Buy America Act.

Title VI

The LDEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in the administration of its programs or activities, in accordance with applicable laws and regulations[6]. The LDEQ has designated responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination requirements, as implemented by 40 C.F.R. Parts 5 and 7 to a Title VI/Nondiscrimination Coordinator.

LDEQ's Title VI coordinator, in cooperation with LDEQ's Office of Management and Finance, is responsible for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination under all laws including Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, Title IX of the Education Amendments of 1972, and Section 13 of the Federal Water Pollution Control Act Amendments of 1972, as well as state non-discriminatory laws of the same nature.

[6] Louisiana Department of Environmental Quality. Notice of Nondiscrimination. https://www.deq.louisiana.gov/page/notice-of-nondiscrimination

Environmental Compliance
The project type in this workplan include BMP implementation and water quality monitoring. The agency has conducted these types of projects in its programs previously, and environmental compliance has not been applicable. LDEQ and subawardee will comply if applicable.

Reporting
EPA has indicated in the GHP guidance that EPA is building out a simplified GHP module in the existing Nonpoint Source Program Grants Reporting and Tracking System[7] (GRTS) that will be used to house GHP annual reports. Cooperative agreement information will be reported into GRTS. Water quality monitoring data will be reported into the Water Quality Exchange (WQX).

Environmental Results:
The project-specific environmental results are described below within the project-specific workplan. This includes the anticipated outputs for the four EPA strategic outcomes, description of the anticipated products/results expected to be achieved from the project, and description of the measures to track pollutant load reductions and report those results to EPA.

Milestone Schedule:
The milestone schedule covers each year of the total project period requested and provides a breakout of the project activities into phases with associated tasks and a timeframe for completion of tasks. Figure 1 shows the milestone schedule for the cooperative agreement. It is anticipated the project will start October 2025, with subaward agreement and QAPP being approved by December 2025.

Task Name	Start	Finish	Resource Name
Cooperative Agreement (CA)	10/1/2025	9/30/2028	LDEQ, EPA
Award Approved		10/1/2025	EPA
Subawardee Agreement Approved	10/1/2025	12/31/2025	LDEQ, LDAF
QAPP Approved	10/1/2025	12/31/2025	LDEQ, EPA
BMP Implementation, Year 3	1/1/2026	9/30/2026	LDAF
Field-side Sampling, Year 3	1/1/2026	9/30/2026	LDAF
Review Data from Subawardee	3/1/2026	9/30/2028	LDEQ
Subawardee Quarterly Monitoring Reports to LDEQ	3/31/2026	9/30/2028	LDAF
FY 25 CA Report to EPA	6/30/2026	9/30/2026	LDEQ
BMP Implementation, Year 4	10/1/2026	9/30/2027	LDAF
Field-side Sampling, Year 4	10/1/2026	9/30/2027	LDAF
FY 26 CA Report to EPA	6/30/2027	9/30/2027	LDEQ
BMP Implementation, Year 5	10/1/2027	9/30/2028	LDAF
Field-side Sampling, Year 5	10/1/2027	9/30/2028	LDAF
FY 27 Final CA Report to EPA	6/30/2028	9/30/2028	LDEQ
Submittal of Final Data to EPA	6/30/2028	9/30/2028	LDEQ

Figure 1. Milestone schedule.

[7] https://www.epa.gov/nps/grants-reporting-and-tracking-system-grts

Transferability of Results and Dissemination to Public:
Results from this project workplan will be made available to transfer to similar projects and be disseminated to the public. Means of transferability of results and dissemination to the public may include:

- Written summary to be shared with the public at Hypoxia Task Force (HTF) meetings,
- Share materials on EPA's GHP website,
- Blurbs for the EPA HTF Newsletter[8],
- Postings on the Strategy website, and
- Content in the Strategy Annual Reports.

Technical Support:
The LDEQ, as lead agency for BIL GHP funds, will serve as liaison with EPA; manage and monitor subawards for successful completion of projects; and ensure the subawardee complies with quality assurance, financial, and reporting requirements. From inception of the cooperative agreement, LDEQ will handle all communications with EPA, submitting proposed workplan, negotiations of the final workplan, submittal of deliverables, and revisions to the workplan. LDEQ will communicate and participate on a monthly/quarterly basis with the subawardee and as needed for successful completion of all activities.

LDEQ's financial responsibilities include submittal of the cooperative agreement application packages, financial reports, disbursement of grant funds, and grant close-out. All procedures are in accordance with the LDEQ's standard operating procedures and protocols regarding state and federal policies.

The following guidelines will be used in managing BIL GHP funds and activity:

- *All cooperative agreement applications/work plans and subsequent awards are approved by the LDEQ Office of Environmental Assessment (OEA) / Water Planning Assessment Division (WPAD); Office of Management and Finance (OMF) / Financial Services (FS); and the Governor-appointed LDEQ Secretary or designee.*
- *LDEQ will ensure that the collection, analysis and quality of its environmental data is sufficient for its intended uses.*
- *The quality system is implemented in accordance with applicable federal and state laws and rules, standards, requirements documents, guidance documents, contractual requirements, and sound management practices.*
- *All items charged against EPA Grants must be approved by LDEQ OEA/WPAD and OMF FS.*
- *Tasks to be charged must be placed on requisition/invoice/credit card for payment and approved by LDEQ OEA/WPAD and OMF FS.*
- *Claim for payment is audited, processed, and approved by LDEQ OEA/WPAD and OMF FS. Appropriate supporting documentation is included with designated grant coding at time of processing.*
- *Expenditure summaries are queried at the end of each month/quarter and charged against the referenced EPA cooperative agreement. A request for funds is then made.*
- *The summary and request for funds is reviewed by the LDEQ OEA/WPAD and OMF FS.*

[8] Hypoxia Task Force Newsletters https://www.epa.gov/ms-htf/hypoxia-task-force-newsletters

- *All records and supporting documentation are maintained with LDEQ OEA/WPAD and OMF FS until disposition authorization is provided by the appropriate agency.*
- *State and federal funds are audited by the Louisiana State's Legislative Auditor's office to ensure compliance with applicable federal and state laws and rules.*
- *Expenditures are cost reimbursable monthly/quarterly as applicable and charged against the referenced EPA cooperative agreement. A request for funds is then made.*

LDEQ's Project Manager will monitor the progress of the subawards by:
1. Reviewing all deliverables and submittals, requiring correction as necessary;
2. Ensuring that deliverables are submitted within the time frame of the cooperative agreement;
3. Monitoring the subawardee work activities through telephone, electronic and personal communications, document reviews and meetings;
4. Meeting with the subawardee as necessary to provide guidance or answer questions;
5. Ensuring that deliverables are submitted within the timeframe of the cooperative agreement;
6. Reviewing data collected during the course of the cooperative agreement; and
7. Assessing the progress of the project through site inspections, if applicable.

LDEQ's Project Manager will measure the successful performance of the subawardee by reviewing and evaluating the acceptability of all deliverables and submittals and require revisions as necessary, and accept deliverables and submittals. LDEQ will be available for assistance to the subawardee in solving problems or answering questions that may arise and will meet with the subawardee as necessary.

Detailed Budget Narrative:
The total state allocation for FY22 through FY26 is $4,227,449. This cooperative agreement between EPA and LDEQ is expected to be for the FY24, FY25 and FY26 state allocation at $2,514,116. LDEQ will then have a cooperative agreement with a subawardee, the LDAF. This subaward is categorized as 'Other' for $2,438,693 in the SF-424A form shown in Table 1. A description of activities for the subawardee is located in subsequent section of this document. LDEQ will use 3% of the funds ($75,423 in Personnel, Fringe, and Indirect) for staff time to manage the cooperative agreement and subaward.

Table 1. FY24-FY26 SF-424A Budget Categories.

Budget Category	**Amount**
a. Personnel	$30,660
b. Fringe Benefits (53.27%)	$16,333
c. Travel	$0
d. Equipment	$0
e. Supplies	$0
f. Contractual	$0
g. Construction	$0
h. Other	$2,438,693
i. Total Direct Charges (sum a-h)	$2,485,686
j. Indirect Charges (60.5%)	$28,430
k. Totals (sum i and j)	$2,514,116

While this cooperative agreement is to cover the FY24-FY26 anticipated funding allocation, it continues the efforts of the previous FY22-FY23 cooperative agreement. The state of Louisiana plans to continue the FY22-FY23 Project 1 for the FY24-FY26 anticipated funding, thus the anticipated funding allocation for FY22 to FY26 is shown in Table 2.

Table 2. FY22-FY23 funding under previous cooperative agreement. Anticipated FY24-FY26 funding under another cooperative agreement and projected subawardee amount.

	FY22-FY23 Years 1 - 2	**FY24-FY26 Years 3 - 5**	**FY22-FY26 Years 1 - 5**
LDEQ	$51,400	$75,423	$126,823
Subawardee Amounts	Project 1 $1,641,951 Project 2 $19,982	Project 1 $2,438,693	$4,100,626
Total Funding Allocation	$1,713,333	$2,514,116	$4,227,449

Quality Assurance:
The LDEQ Quality Management Plan (QMP)[9] describes a management system established by the department to ensure that the collection, analysis and quality of its environmental data is sufficient for its intended uses. The plan outlines the procedures to be used to generate quality data, the means to verify accuracy and completeness, and corrective action procedures to promote continual improvement. The plan conforms to EPA QA/R-2 – EPA Requirements for Quality Management Plans and is in support of the Quality Management Statement of Policy. The quality system is implemented in accordance with applicable federal and state laws and rules, standards, requirements documents, guidance documents, contractual requirements, and sound management practices. It is LDEQ's policy that data of the appropriate type and quality be used by the department in all of its environmental programs and decision making processes.

Each environmental data collection project conducted by or for the LDEQ shall follow the systematic planning process according to the QMP. Project stakeholders, including contractors, will be represented during the planning of environmental data projects. Quality Assurance Project Plans (QAPPs) will be developed and revised by individuals that have expertise in the subject of the QAPP. All personnel conducting reviews must have a working knowledge of the project objectives and training in QAPP review. QAPPs involving contractors shall, at a minimum, also be approved in writing by the contractor's Project Manager. Analytical services provided by a contractor are an exception. In these cases, specific language is included in all contracts for agreement to comply with all Louisiana Environmental Laboratory Accreditation (LELAP) standards and all applicable LDEQ QAPPs for which services shall be provided by the contractor. Signature of an official laboratory representative on an approved analytical services contract serves as contractor approval and compliance with all applicable LDEQ QAPPs.

QAPPs integrate all technical and quality aspects of a project, including planning, implementation, and assessment. The purpose of the QAPP is to document planning results for environmental data operations and to provide a project-specific "blueprint" for obtaining the type and quality of environmental data needed for a specific decision or use. Project specific QAPP(s) will be developed for the collection or use environmental data or information. QAPPs will be reviewed

[9] Louisiana Department of Environmental Quality. Quality Management Plan.

and approved by EPA prior to environmental data collection or use, and QAPPs will be updated as necessary to reflect project revisions. The agencies will comply with the QMP and associated project QAPPs to meet quality assurance requirements. Project-specific QAPPs will be developed, and reviewed and approved by EPA prior to data collection.

The technical support for project planning will address each of the following and document in the resulting QAPP: a. Determine the project goal(s) and objectives based on the questions to be answered and issues to be addressed. b. Determine resources available to implement the project. c. Determine responsibilities for each activity. d. Determine project schedules and milestones. e. Outline specific requirements that will determine quality and quantity of data needed for the project. For example, are there action levels that will require very low analytical sensitivity levels or other quality requirements? f. Outline any other performance requirements for measuring quality of the data (precision, bias, etc.). g. Determine and document assessment methods that will be used to determine if project is being implemented according to plan and pertinent SOPs and if data are meeting quality criteria. h. Describe sample collection and analysis methods, frequency of sample collections and the monitoring design (where samples will be collected and number of samples). If a generic QAPP is developed and does not cover these details, these details will be incorporated into a Sampling and Analysis Plan (SAP) i. Specify constraints on data collection, for example, critical seasons. j. Describe data management process. k. Describe how data will be reviewed, and who will do the review, to determine its quality and usefulness for the project. l. If data are not directly collected for the project, for example, if data are used from existing literature sources, the quality requirements and review for these indirect data must be documented in the QAPP.

Project Workplan

Lake St. Joseph, Louisiana Nutrient Loading Reduction

Project Approach:

Targeted agricultural best management practices (BMPs) will be implemented on prioritized tracts within the Lake St. Joseph and Cypress Bayou watersheds according to Natural Resources Conservation Service (NRCS) practice standards to reduce agriculture-induced nutrient loading and dissolved oxygen impairments. This project is in the Lake St. Joseph-Clark Bayou watershed (HUC-12 080500030406) and the adjacent Cypress Bayou watershed (HUC-12 080500030405) (see Table 3, Figure 2, and Figure 3), combined portions of each comprising most of the LDEQ subsegment LA081202. This area is within Tensas Parish, Louisiana in the Tensas River Basin, within the Ouachita River Basin of the Lower Mississippi River Alluvial Plain. Primary watercourse conveyances of preliminary significance in the Lake St. Joseph-Clark Bayou watershed are Grudge Ditch which drains into the lower east side of Lake St. Joseph from cropland to the east, and Clark Bayou which drains from the midsection of Lake St. Joseph westward to the Tensas River. Primary watercourse conveyances of preliminary significance in the Cypress Bayou watershed are Bayou du Rosset and Cypress Bayou which both influence Lake St. Joseph.

Table 3. Lake St. Joseph watershed land use data.

Land Use / Land Cover	Clark Bayou Acres	Cypress Bayou Acres	Total Acres
Agriculture			
Soybeans	10,547	10,557	21,105
Corn	7,432	8,867	16,299
Cotton	2,046	2,608	4,654
Dbl Crop WinWht/Soybeans	910	205	1,116
Herbaceous Wetlands	295	186	481
Pecans	108	170	277
Winter Wheat	237	12	249
Sorghum	3	222	225
Grassland/Pasture	30	15	45
Non-Agriculture			
Swamp	6,608	2,674	9,282
Developed	1,196	844	2,040
Open Water	1,457	46	1,503
Upland Forest	10	6	16
Other	221	100	321
Data source: USDA Cropland Data Layer 2021			

The reduction of soil erosion is measured in tons of soil saved per acre. Land that is conventionally tilled erodes beyond the soils ability to remain productive. The results of this project will be less

soil erosion, increased soil carbon and improved water quality. Each year the number of acres that are planted using no-till or crop residue management would contribute to these results. This activity would be self-sustaining after the completion of this project. A no-till grain drill is available to producers in the project area for crop residue management in conservation cover and row crop production.

Project's support of the Louisiana Nutrient Reduction and Management Strategy:

- Implementation Focus Area 2, Non-point Source Management;
- Strategic Action 1.c, Identify and promote partnerships/leveraging opportunities;
- Strategic Action 4.e, Promote BMP implementation by Farm in priority watersheds;
- Strategic Action 5.d, Document and determine trends for BMP implementation in watersheds;
- Strategic Action 6.g, Develop/leverage watershed nutrient reduction and management projects for priorities;
- Strategic Action 7.a, Promote voluntary participation in incentive-based programs;
- Strategic Action 7.c, Promote assistance (financial or technical) for BMP implementation; and
- Strategic Action 9.b, Monitor water quality relative to BMP implementation.

Project Water Quality Monitoring Strategies

Progress will be measured via water quality monitoring and in-stream monitoring conducted by the Louisiana Department of Environmental Quality[10] and field side monitoring to be conducted by the Tensas-Concordia Soil & Water Conservation District (SWCD) and the Louisiana State University (LSU) AgCenter. Field-side monitoring will focus on those parameters for which agriculture is a suspected source of impairment; these parameters are nitrate/nitrite, total phosphorus, dissolved oxygen and turbidity. Field-side samples will be collected from rainfall and/or irrigation runoff at edge of field. One or more samples will be collected per month following a rain event to provide a composite sample at each site.

[10] LDEQ. LEAU Web Portal. Available at: https://waterdata.deq.louisiana.gov/.

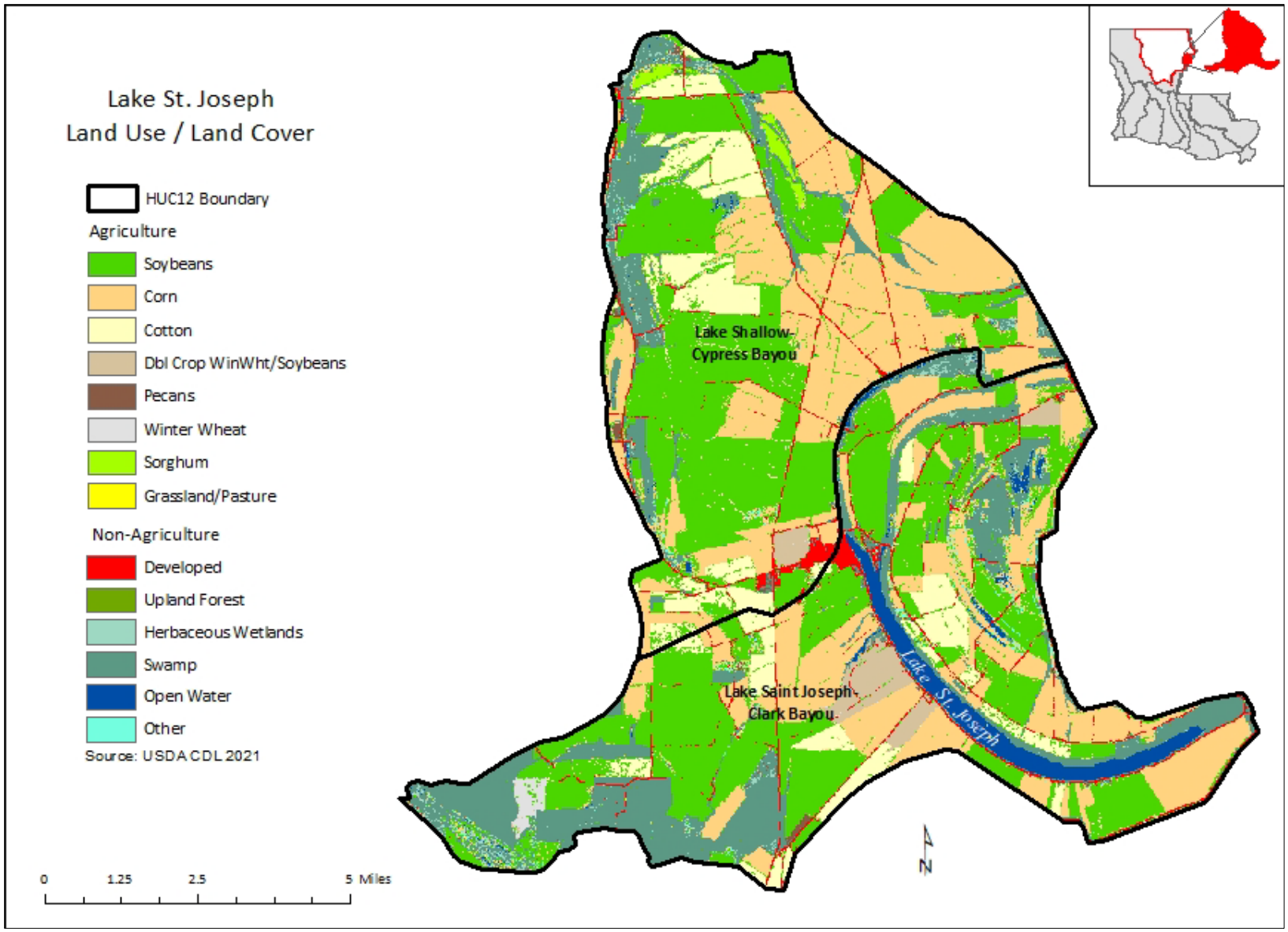


Figure 2. Lake St. Joseph watershed land use and land cover map.

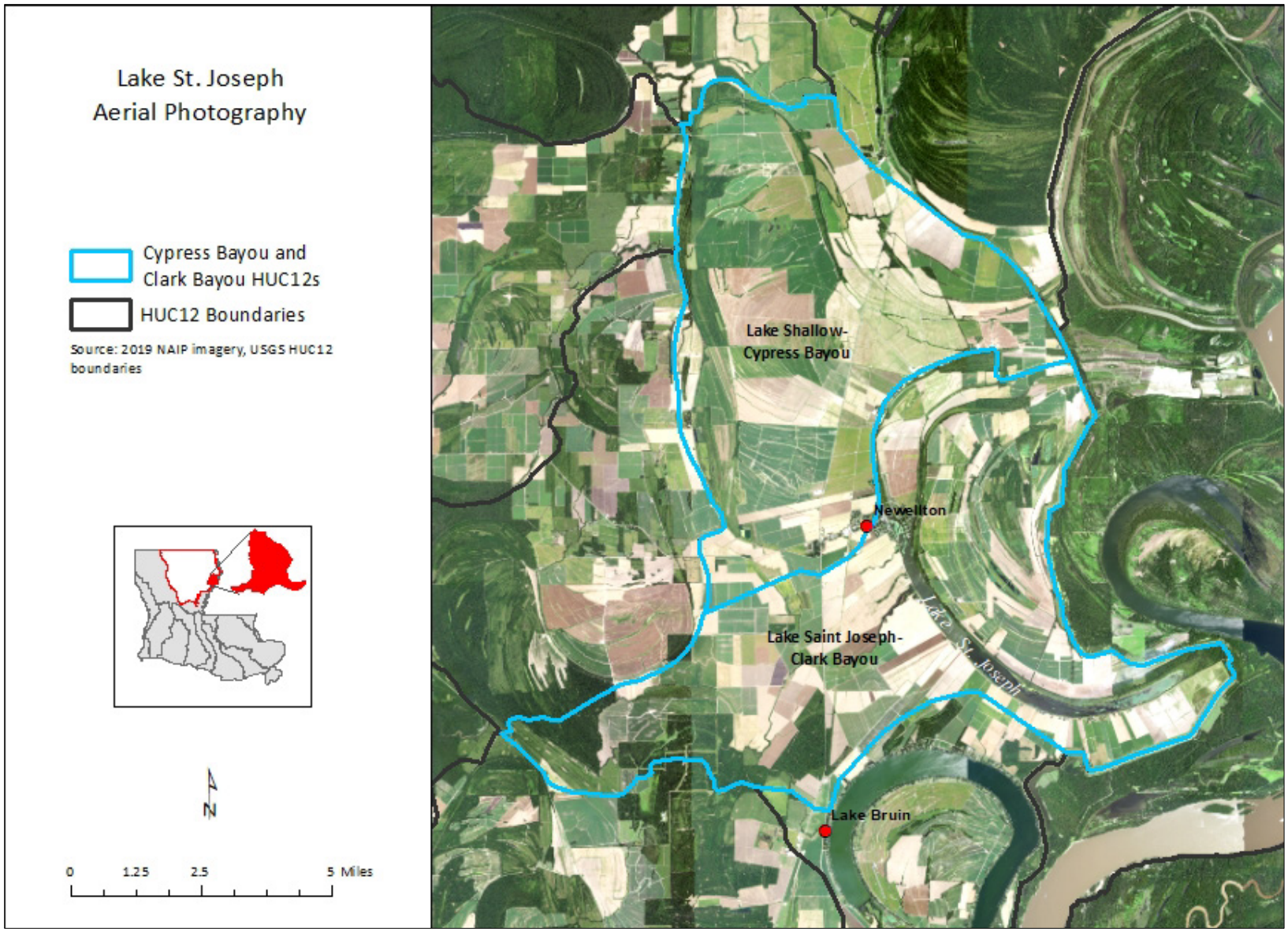


Figure 3. Lake St. Joseph watershed aerial imagery.

Environmental Results:
This project aims to reduce the concentrations of nitrogen and phosphorus in the Lake St. Joseph and Cypress Bayou watersheds within the Tensas River Basin. Agriculture is the suspected source for nutrients in these watersheds. Implementation of targeted BMPs by area producers is expected to result in significantly decreased nutrient and sediment runoff. Approximately 9,056.6 acres have been contracted for BMP implementation by area producers; these practices include nutrient management, planting cover crops, and reduced tillage practices. The goal for this project is 100% BMP implementation on these contracted acres each year of the project. As a result, offsite impacts of nutrient loading into Lake St. Joseph resulting from agricultural processes will be significantly reduced or eliminated, as is anticipated for other known impairments such as turbidity and sedimentation. Empirical data from within the project area will optimally demonstrate improved water quality and water clarity, lessened siltation, enhanced submerged aquatic vegetation, balanced biological oxygen demand, enhanced macroinvertebrate and aquatic wildlife diversity, enhanced project area flood and drought resilience, enhanced nesting and brooding cover for resident upland ground-nesting birds, improved feeding habitat for migratory birds and more. Reduced nutrient loading into Lake St. Joseph will contribute to the overall reduction of Gulf Hypoxia.

Milestone Schedule:
The milestone schedule for this Project is given in Figure 1.

EPA Strategic Plan, Goal 5, Objective 5.2, Protect and Restore Waterbodies and Watersheds: This project will support EPA Strategic Plan Goal 5, Objective 5.2 by aiding implementation of programs to prevent or reduce nonpoint source pollution, including nutrients. The project supports EPA's 2025 "Powering the Great American Comeback" Initiative pillar that every American should have access to clean air, land, and water.

EPA Four Strategic Outcomes:
1. Support staff to implement the workplan.
Coordination, roles and responsibilities are included for the following partners:

- Louisiana Department of Agriculture & Forestry (LDAF)-Office of Soil and Water Conservation (OSWC) will be the lead agency for project implementation, providing project management on a day-to-day basis, assist development and implementation of project geographic priorities, participant ranking criteria, conservation plans, and reimburse participants for approved cost-share expenses. OSWC will track land use and BMP implementation within each project watershed and assemble reports as required.
- USDA-Natural Resources Conservation Service (NRCS) of the St. Joseph, LA Service Center may assist the OSWC and other partners in collecting technical information, including identification of cropland within the project area, and in development of project-ranking criteria. The NRCS staff will assist with ensuring that Resource Management System - level conservation plans developed for this project meet NRCS planning standards.
- Tensas-Concordia Soil & Water Conservation District (SWCD) will contact and work with project participants at the local level, including stakeholders from communities that have limited access to federal grant resources.

- Louisiana State University (LSU) AgCenter provides research based educational materials, venues and expertise, technical expertise in field side sampling design, equipment calibration and deployment, and quality assurance.

2. Use state-level water quality programs and actions to better support nutrient reductions. This project supports the **Louisiana Nutrient Reduction and Management Strategy.** LDEQ and the LSU AgCenter have been essential conservation partners for many years and continue assisting LDAF and local SWCDs with water quality monitoring and assessment planning assistance, data analysis and sharing, equipment and more, many of these benefits extending to this project. In watersheds shown to be impaired by inadequate rural home sewage systems, SWCDs often successfully deliver system upgrade incentives via approved Clean Water Act (CWA) 319 workplans, which may be replicated here as approved.

Existing state-level water quality programs funded through means other than this GHP award will provide leveraging to further support the activities of this GHP workplan. The LDEQ conducts routine ambient water quality monitoring throughout the state. LDEQ Site Number 0800 Lake St. Joseph in Newellton, LA is monitored monthly on a four-year rotation. The most recent LDEQ ambient water quality monitoring at Site 0800 occurred monthly from October 2021 to September 2022, with previous monitoring occurring in prior cycles of 2017-2018, 2013-2014, 2005-2006, 1999. It is anticipated that LDEQ ambient water quality monitoring will occur again in the Lake St. Joseph watershed within the next four years.

In addition, the LDEQ Nonpoint Source (NPS) Program has conducted prior monitoring in this watershed that may provide additional background information. The LDEQ NPS Program also plans to collect water quality data in the watershed during the time period of this GHP funded project.

The U.S. Geological Survey (USGS) also has two monitoring stations located in the watershed (USGS-07369647 Lake St. Joseph Newellton, Louisiana and USGS-320129091112500 Lake St. Joseph southeast near Newellton, Louisiana) which may provide historical or current information.

3. Implement projects in prioritized watersheds with the greatest opportunities for nutrient reductions.
In many respects the Lake St. Joseph watershed is situated for such success in that a relatively small number of producers farm the area, the connecting water courses are accessible for base data collection and field side sampling. Additionally, this watershed is an agriculture related nutrient impairment. The nearby communities of St. Joseph, Newellton and Lake Bruin are isolated communities with limited access to federal grant resources that will greatly benefit from the environmental enhancements to be gained from this project.

Project milestones will be measured against watershed specific metrics such as acres newly enrolled in conservation tillage, number of whole farm conservation plans per participant, acres enrolled in 5-7- or 7-10-year conservation contracts, and measured reductions in current nutrient load and dissolved oxygen impairments. Project participants with eligible, ranked and SWCD-approved contracts will receive BMP implementation cost-share payments. Application ranking criteria favor those tracts nearest the affected waterbodies. BMP implementation supports this goal by facilitating engagement in innovative agriculture-water sector collaborations that implement

projects to improve water quality. Furthermore, the edge-of-field monitoring conducted in conjunction with BMP implementation represents discrete water quality monitoring to quantify water quality improvements. Contract extensions beyond the normal 1-, 3- and 5-year contracts will be incentivized, possibly to 7 – 10 years depending on availability of alternate funding sources. Cost-share or incentive payments will be based on the current year Environmental Quality Incentives Program (EQIP) Cost List unless otherwise indicated or approved. To facilitate BMP conservation implementation, a 20 ft Great Plains No-till grain drill was also purchased for this project, and this equipment will be made available to producers within the project area. This project will also provide an opportunity to strengthen the current LDAF partnership with the National Wildlife Federation (NWF) to conduct farmer-led conservation outreach in the area, especially regarding cover crop implementation.

4. Collaborate across state boundaries with HTF partners.
The LDAF and partners welcome the opportunity to collaborate with HTF members, partners, and stakeholders to assess, track, report, and communicate progress to the HTF member states and the public at the state, regional, and MARB levels. A National Water Quality Initiative (NWQI) Project is currently being planned for Bayou Bartholomew in upper northeast Louisiana with collaboration of southeast Arkansas; this project is expected to serve as leverage to gain an additional NWQI project here in the lower northeast Louisiana alluvial plain. Project updates are shared with partners and the public at HTF public meetings, and reported in Louisiana's Nutrient Reduction Strategy. Final water quality data from this project will be uploaded to the USEPA Water Quality Data Portal.

Description of Site-Specific Conservation Practices:
In cropland, cover crops will be utilized seasonally and during any fallow periods to increase soil health and decrease the need for additional nutrient applications. Field borders will be utilized to slow and filter rainwater and irrigation runoff. Residue and tillage management will help with the management of crop residue, such as retaining seasonal grain crop residue rather than fall tillage or burning. This will be for the benefit of erosion control, soil nutrient retention and soil health during production cycles, and to allow direct drilling into the previous crop's residue. Nutrient management, at a minimum, involves soil testing and record keeping to determine the correct amounts of nutrients to be applied. Precision agriculture techniques and field grid sampling can be utilized.

In pastureland, fencing and forage and biomass planting will help with prescribed grazing, which involves rotating cattle for efficient use of forage and distribution of nutrients to reduce overgrazing, soil compaction, and runoff of nutrients and sediments. Access control and stream crossings can be utilized for exclusion from specific sites and streams where cattle tend to congregate causing increased manure in streams and streambank soil erosion. If cattle are excluded from streams, heavy use area protection with watering facilities will be added to the system. Heavy use area protection ensures that highly trafficked areas are protected from constant soil loss from erosion and compaction. Residue and tillage management will be used for direct seeding of forage, with the addition of critical area plantings as needed in highly erodible areas.

In addition to the BMPs listed in Table 4, planting spin ditches and quarter drains, small in-field agricultural drainage ditches for removal of excess irrigation water or rainwater during crop season

and in fallow periods, would be a beneficial innovation to regard for this initiative. These small ditches are created using tractor mounted rotary ditchers or blades and are typically 4 – 10 inches deep. In this project, landowners will be encouraged to plant and maintain cool-season vegetation such as wheat or ryegrass along these ditches in association with seasonal residue management, reducing soil erosion and nutrient loss. Practice payment will be based on that of Practice Code 393: Filter Strip at the minimal per acre payment rate. All other practice identified for use within the project areas to address the resource management concerns are based entirely off the established NRCS conservation practice standards. All practices will be implemented by the project participants as identified in the NRCS Field Office Technical Guide[11] and individual conservation plans.

Table 4. NRCS Best Management Practices.

NRCS Practice Code	Best Management Practice (BMP)
104	Nutrient Management Plan
216	Soil Testing
327	Conservation Cover
328	Conservation Crop Rotation
329	Residue and Tillage Management – No Till/Strip-Till
340	Cover Crops
342	Critical Area Planting
345	Residue and Tillage Management – Reduced Till
386	Field Border
393	Filter Strip
410	Grade Stabilization Structure
590	Nutrient Management

The referenced list in Table 4 will be used in this project, but there may be a need to add practices on a case-by-case basis to achieve the optimum water quality improvements depending on site specific needs. The BMPs listed in this table will be implemented as part of a comprehensive conservation plan with the benefit of cost-share payments, incentive payments, and in-kind services. The cost of implementing these BMPs not covered by federal assistance will be borne by the individual project participants to extend this opportunity to a broader pool of eligible participants. BMP unit costs will follow the current NRCS statewide average cost list.

First-Time Participant Incentives: Higher cost-share rates may be offered for first time conservation program participants. Based on local interactions in prior conservation efforts here, many area producers were reluctant to remove acreage of any amount from production, with an obvious concern for their bottom line. A higher cost-share rate for a short-term seasonal or 1-year contract for reluctant producers to trial a BMP may lead to more participation once their reluctance is overcome.

Detailed Budget Narrative:
The budget is shown in Table 5 and described below.

[11] USDA NRCS Field Office Technological Guide.
https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/

Year 1 activities for this project included SWCD salaries at $65,000; supplies at $5,000; BMP implementation at $691,893; and field-side sampling, analysis, and travel at $45,758. Year 2 activities included an equipment purchase of $45,000; SWCD salaries at $65,000; supplies at $5,000; BMP implementation at $673,542; and field-side sampling, analysis, and travel at $45,758. The total for Years 1 and 2 budget is $1,641,951.

For this workplan, Year 3 activities for this project will include SWCD salaries at $56,160; LDAF salaries at $3,500; supplies at $1,500; BMP implementation at $701,609; and field-side sampling, analysis, and travel at $50,128. Year 4 activities will include SWCD salaries at $56,160; LDAF salaries at $3,500; supplies at $1,500; BMP implementation at $701,610; and field-side sampling, analysis, and travel at $50,128. Year 5 activities will include SWCD salaries at $56,160; LDAF salaries at $3,500; supplies at $1,500; BMP implementation at $701,610; and field-side sampling, analysis, and travel at $50,128. The total for Years 3, 4 and 5 budget is $2,438,693.

Table 5. Project Budget.

Project Budget	Federal Year 1 22/23	Federal Year 2 23/24	Federal Year 3 25/26	Federal Year 4 26/27	Federal Year 5 27/28	Federal Total
SWCD salary	$65,000	$65,000	$56,160	$56,160	$56,160	$298,480
LDAF salary	$0	$0	$3,500	$3,500	$3,500	$10,500
Supplies	$5,000	$5,000	$1,500	$1,500	$1,500	$14,500
Equipment	$0	$45,000	$0	$0	$0	$45,000
BMP Implementation	$691,893	$673,542	$701,609	$701,610	$701,610	$3,470,264
Field-side sampling; lab analysis & equipment; and travel	$45,758	$45,758	$50,128	$50,128	$50,128	$241,900
TOTALS	**$807,651**	**$834,300**	**$812,897**	**$812,898**	**$812,898**	**$4,035,644**
	FY22-FY23 cooperative agreement $1,641,951		**FY24-FY26 cooperative agreement $2,438,693**			**$4,080,644**

Technical Support and Quality Assurance:
The LDAF and its partners will follow all conditions set forth in the subaward agreement with LDEQ. The LDAF and its implementation partners will abide by the LDEQ's QMP and will collect and use environmental data according to an approved QAPP. Quality assurance issues identified and resolved during the course of the project will be documented by LDAF in its subawardee monitoring reports to LDEQ.

Appendix A. Example Subawardee Contract Language

3.0 CONTRACTOR TASKS

Services provided by the Contractor shall include the following tasks:

3.1 Tasks

3.1.1 LDAF OSWC Activities

LDAF OSWC will be the lead Contractor for project implementation, providing project management on a day-to-day basis through assisting in development and implementation of project geographic priorities, participant ranking criteria, conservation plans, and reimburse participants for approved cost-share expenses. OSWC will track land use and BMP implementation within each project watershed; see *Table 1. NRCS Best Management Practices and NRC Practice Codes*. Depending on site-specific needs, additional BMPs may be needed on a case-by-case basis to achieve optimum water quality improvements. OSWC will also assemble reports as required, and provide a Final Report as outlined in Task 3.2.

LDAF OSWC will coordinate with USDA NRCS of the St. Joseph, LA Service Center who will assist the OSWC and other partners in collecting technical information, including identification of cropland within the project area, and in development of project-ranking criteria. NRCS staff will assist the OSWC and the SWCDs with pre-activity outreach and education activities to ensure sufficient awareness of the conservation opportunity. The NRCS staff will assist with ensuring that Resource Management System-level conservation plans developed for this project meet NRCS planning standards.

Deliverables include but are not limited to the following:

a) LDAF OSWC Timesheets including full-time equivalent (FTEs)
b) Compilation and maintenance of all expenditures, BMPs implemented, and tracking all other aspects of project. Including specific problems or issues encountered during the course of the project.
c) Provide ranking criteria to be used prior to selecting agricultural lands that will be targeted for inclusion in the project.
d) A list of potential participants selected in the priority ranking, a list of BMPs that will be used in the priority area, and copies of the signup announcements.
e) Reports listing project participants that received technical assistance and a list of BMPs by cropland tracts that will likely be implemented.
f) Reports providing status of BMP plans implemented and follow-up assistance provided to project participants.
g) Reports documenting cost-share assistance payments and matching contribution by the landowner or operator in accordance with Scope of Services (SOW), Section 2.3. Documentation will include a listing of payments made by the SWCD to landowners or operators for cost-share BMPs implemented and a determination if the BMPs are being implemented on schedule. The cost of implementing non-cost share BMPs will provide the state's in-kind match for this project.

h) Provide a list of new landowner/producers contacted inside and outside project areas and a listing of BMPs they have implemented as a result of this special effort.
i) Provide copies of educational and informational materials, flyers, and brochures utilized for the outreach program. A copy of field day programs and a listing of participants and attendees will be provided.
j) Provide a draft comprehensive BMP plan that includes all management practices. Provide a copy of an actual BMP plan that will be implemented in the project area.
k) Provide Quarterly Progress Reports of all activity within the reporting period. Including but not limited to:
    1) Work completed to date (percentage)
    2) Tasks and/or milestones accomplished (including dates)
    3) Tasks and/or milestones not accomplished with explanation of assessment of:
        i. nature of problems encountered
        ii. remedial action taken or planned
        iii. whether minimum criteria for measure can still be met
        iv. likely impact upon achievement
    4) Deliverables
    5) Other discussion of special note
    6) Match summary
l) Provide Annual Progress Reports of information supporting the GHP within the reporting period. This information is necessary to report to EPA in the Grants Reporting and Tracking System (GRTS) for the grant. Including but not limited to:
    1) State FTEs funded by the GHP cooperative agreements (number)
    2) Dollars awarded to sub-recipients, grants, and contracts (amount)
    3) Project title (narrative)
    4) Project description (overview narrative, objective, and methods)
    5) Project budget (breakdown per federal/GHP/other, state, in-kind, etc.)
    6) This project will/did result in pollutant load reductions for nitrogen (yes/no), estimate (narrative: load reduction amount, units, method, (model name, or direct measure/monitoring data).
    7) Will/did result in pollutant load reductions for phosphorus (yes/no); estimate (narrative: load reduction amount, units, method).
    8) Will/did result in pollutant load reductions for sediment (yes/no); estimate (narrative: load reduction amount, units, method).
    9) Description of anticipated outputs and outcomes (qualitative and quantitative), referenced by strategic outcome in the EPA GHP BIL Guidance (narrative).
    10) Description of additional anticipated outputs and outcomes that support the goals of the Gulf of America Action Plan (narrative).
    11) Description of planning and review of GHP workplan and implementing activities to ensure compliance with Title VI (narrative).
    12) Nonpoint source staffing subsection, if "nonpoint source state staff activities" is applicable.
    13) Public meetings convened, location, date, and number of participants (narrative).
    14) Sources of point and nonpoint source pollution.
    15) Watershed Plan (narrative title and attachment or website link).
    16) Project schedule (start date and completion date).
    17) Waterbody information (waterbody type, facilitate with ATTAINS link if possible.

18) Drainage areas (if ATTAINS link is used, HUC 12 may auto-populate; otherwise manually enter area of work into the mapping tool.
19) Conservation practices and systems implemented (acres, feet, etc.); identify the drainage area treated by these practices and systems (acres).
20) Project progress reports and final reports (attachments: state uploads reports submitted by sub-recipients)

m) Subaward Performance Reporting Annually

The recipient must report on its subaward monitoring activities under 2 CFR 200.332(d). Examples of items that must be reported if the pass-through entity has the information available are:

1) Summaries of results of reviews of financial and programmatic reports.
2) Summaries of findings from site visits and/or desk reviews to ensure effective subrecipient performance.
3) Environmental results the subrecipient achieved.
4) Summaries of audit findings and related pass-through entity management decisions.
5) Actions the pass-through entity has taken to correct deficiencies such as those specified at 2 CFR 200.332(e), 2 CFR 200.208 and the 2 CFR Part 200.339 Remedies for Noncompliance.

<u>Laboratory Analysis (refer to Task 3.1.3)</u>

- Monitoring activities will be conducted in accordance with an EPA-approved Quality Assurance Project Plan (QAPP) to be revised as necessary.
  - *Laboratory(s) shall be in accordance with the EPA-Approved QAPP.*

Deliverables:

a) Provide site-specific data sets to LDEQ S&A Section as outlined in Section 3.0 Contractor Tasks, Task 3.1.3. Refer to Appendix A, Laboratory Analysis Criteria.
b) Submit data to LDEQ Water Quality Standards & Assessment (S&A) Section formatted for the LDEQ data standards and the EPA's Water Quality Exchange (WQX) data portal. The Contractor will provide the data in LDEQ data standard, and the data will be housed and managed within the LDEQ water quality database. LDEQ will submit final datasets to EPA's WQX portal

<u>Transferability of Results and Dissemination to Public:</u>

Results from this project will be made available to transfer to similar projects and be disseminated to the public. Means of transferability of results and dissemination to the public may include:

Deliverable:

- Written summary to be shared with the public at Hypoxia Task Force (HTF) meetings,
- Materials for EPA's GHP website
- Blurbs for the EPA HTF Newsletter
- Postings for the Strategy website
- Content for Strategy Annual Reports

Schedule: Months 1-36
Payment: Federal: $ Total: $

3.1.2 Tensas-Concordia SWCD Activities

Through LDAF OSWC, Tensas-Concordia SWCD will contact and work with project participants at the local level, including stakeholders of communities that have limited access to federal grant resources. Field side sampling in coordination with LSU AgCenter.

Coordinate BMP Implementation through the OSWC and producers. Costs associated with BMPs include but not limited to: labor, seed, fuel, equipment rental / tractor lease, equipment maintenance, fence structures / polyvinyl chloride (pvc) drain or metal pipes, etc.

Purchase 20ft no-till grain drill for rental to producers in the project area for crop residue management in conservation cover and row crop production.
**Equipment to be ordered and purchased within the first month

The Tensas-Concordia SWCD works within their individual district and under the coordination and direction of LDAF OSWC.

Deliverables* include but are not limited to the following:
a) Tensas-Concordia SWCD Timesheets including FTEs
b) Supply receipts
c) Purchase Order and Bill of Sale receipt for 20' GP no-till grain drill.
d) Provide field data sheets, a signed chain of custody form; raw (original) laboratory data; and photo documentation (when applicable) of field side sampling events.
e) Report final results upon completion of field side sampling. A final report which includes tabulated data, an analysis of the data collected, a summary of activities within the LSJ watershed, and discussion of results and findings with respect to nutrient reduction in the watershed. Data will also be provided in electronic file format.

Schedule: Months 1-36
Payment: Federal: $ Total: $
**Tensas-Concordia SWCD shall provide deliverables to LDAF OSWC for reporting to LDEQ.*

3.1.3 LSU AgCenter Activities

Through LDAF OSWC, LSU AgCenter will provide research based educational materials, venues and expertise, technical expertise in field side sampling design, equipment calibration and deployment, and quality assurance. LSU will collect samples and deliver to LSU AgCenter laboratory for analysis.

Deliverables* include but are not limited to the following:
a) LSU AgCenter timesheets including FTEs
b) Supply receipts
c) Travel logs
d) Equipment receipts
e) Provide field data sheets, a signed chain of custody form; raw (original) laboratory data; and photo documentation (when applicable) of field side sampling events.

f) Report final results upon completion of field side sampling. A final report which includes tabulated data, an analysis of the data collected, a summary of activities within the LSJ watershed, and discussion of results and findings with respect to nutrient reduction in the watershed. Data will also be provided in electronic file format.

Schedule: Months 1-36
Payment: Federal: $ Total: $
**LSU AgCenter shall provide deliverables to LDAF OSWC for reporting to LDEQ.*

3.2 Final Report

a) Provide comprehensive final report detailing accomplishment of activities and findings from all work adhering to Section 3.0, Task 3.1.1 – 3.1.3 during the project period.
b) Provide raw data upon conclusion of the project.

Appendix B. Laboratory Analysis Criteria

The Contractor shall provide a signed chain of custody, analytical data results, and analytical report. Data shall be submitted in LDEQ Electronic Data Deliverable (EDD) formats quarterly following reporting requirements. The final draft report shall contain EDD of final data collection events. LDEQ reserves the right to reject improperly formatted data.

Refer to the Department's public web page for the Department's EDD Submittal Requirements Manual and List of Valid Values: http://deq.louisiana.gov/page/leadms-resource-page.

EDD's should be submitted to: amanda.marshall@la.gov

Criteria for rejection of deliverables shall include, but shall not be limited to:

- Not meeting holding time
- Consistently not meeting required reporting limits
- Contractor using incorrect method
- Contractor QC not according to method
- Contractor QC not acceptable
- Improper reporting (including no EDD, no raw data)
- Incorrect EDDs

The Contractor or subcontractor shall have the capability of producing analytical summary data reports.

The narrative of the analytical summary data reports must address any issues with chain-of-custody, preservation, condition of the sample upon receipt by laboratory personnel, unacceptable QA/QC, and any other notable concerns or issues with the sample and its analytical results. Preparation methods, as well as any clean up procedures, must be identified in the Analytical Report. When revisions/corrections are requested, the narrative must be revised to describe the reason for change.

The analytical summary data reports must include at a minimum all requirements of LAC 33:I:5313 for reporting. Copies of the chain of custodies must also be included. The data deliverable package shall be one complete document, paginated, with reproduction quality such that all pages are legible. The Contractor shall check the EDD with the EQUIS® Electronic Data Processor (EDP) and be free of errors. The analytical summary data report must include the date of report preparation, and a cross-reference between the Department sample identifications and the laboratory identifications. The report must define any data qualifiers contained in the analytical results. Associated QC data must be included in the analytical report and the EDD.

Summary Information Page – Minnesota

Project Title: Implementing Minnesota's Revised Nutrient Reduction Strategy

Organization Information: Minnesota Pollution Control Agency, 520 Lafayette Road St. Paul MN 55155. Corrie Layfield. 651-757-2317. Corrie.Layfield@state.mn.us.

Proposed Funding Request. Total dollar amount requested from EPA is $2,514,116 – allocations to the state for FFY25 - FFY30.

Brief Project Description.
Minnesota's work plan focuses on implementing the actions identified through the revisions to the Minnesota Nutrient Reduction Strategy as priorities for reducing losses of nutrients (nitrogen and phosphorus) from rural and urban lands into lakes, streams, rivers and groundwater. These actions are: provide progress tracking and regular communication of nutrient trends and the actions taken to reduce nutrients; retain staff to manage the nutrient reduction program; maintain and update foundational models and tools used to more efficiently reduce nutrient losses; establish and maintain a nutrient-related research and outreach program at the state's Land Grant University; scale-up successful agricultural assistance programs.

Environmental Results: Minnesota's clean water work and programs provide a solid foundation to protect and restore its lakes, rivers, drinking water sources, and other ecosystem services, across the state. However, increased support of programs addressing the top causes of excess nutrients are needed to ensure that local nutrient reductions will also improve waters downstream in the Mississippi River Basin.

Place of Performance: This work will focus on the parts of Minnesota that drain toward the Mississippi River system. While other statewide nutrient reduction strategy work includes the Rainy and Red Rivers and Lake Superior systems, this specific work will be funded with state dollars consistent with EPA's guidance.

Project Period: The estimated project period for this work plan will begin April 1, 2025, and end December 31, 2030.

Project Workplan

Acronyms and abbreviations

BMP – Best Management Practice
BWSR—Minnesota Board of Water and Soil Resources
EPA—U.S. Environmental Protection Agency
GHP – Gulf Hypoxia Program
MDA – Minnesota Department of Agriculture
MPCA – Minnesota Pollution Control Agency
N – Nitrogen
NRS—Nutrient Reduction Strategy
P—Phosphorus
UMN – University of Minnesota
WRAPS – Watershed Restoration and Protection Strategies

Project Approach:

Minnesota's work plan covers five years of EPA allocations to Mississippi River Basin states to implement Gulf Hypoxia work. Provided below is a detailed narrative for each of the five proposal elements supported by these allocations. Funding supports implementing Minnesota's strategic directions for the next decade (2025-2035), closing research gaps, building and revising tools, and supporting scaled-up approaches to agriculture best management practices (BMPs) adoption.

The five project elements are integral to Minnesota's goals to reduce nutrient loads into the Mississippi River Basin. These elements are summarized in Table 1, below, and are described in more detail in the following narratives. These elements are designed to efficiently meet EPA's Objective 5.2: Protect and Restore Waterbodies and Watersheds in its Strategic Plan (FY 2022-2026) goals for watersheds in Minnesota. Proposal activities will address sources of nutrients in waters by developing nutrient-focused tools to assist in local watershed planning and facilitating the installation of agricultural BMPs in Minnesota where they are most needed to protect drinking water.

Statement of Need:

Importance of the Mississippi River

The Mississippi River is a vital waterway that supports a variety of ecosystems and uses and an important resource for local and regional economies, recreation, and wildlife that depend on its ecological services. The river provides drinking water to 2.5 million Minnesotans, approximately 44% of state residents. The river simultaneously supports abundant fish and wildlife while providing water for irrigation and processing for agriculture and industry that contribute to a robust state economy. Historically, the Mississippi supported transportation, energy, trade, and sustenance. Contamination of its waters by excess nitrogen and phosphorus has wide-ranging impacts on human and ecosystem health, economic activities, and recreation through fueling harmful algal blooms and damaging water quality. Decreasing contaminants in the Mississippi River ensures quality drinking water, healthy economies, recreation, wildlife, and fisheries for all Minnesotans as well as for the millions who access its waters downstream.

Impacts Downstream

The Mississippi River is a critical waterway that is essential for maintaining the health of vast ecosystems

that support fish, birds, and plant life on which Minnesota and other states and their residents depend. Nearly 20 million residents along the Mississippi River rely on the river for drinking water. According to the National Wildlife Federation, the river also supports a billion-dollar shipping industry and over a million jobs. Clean water contributes to the productivity of agriculture and industries in Mississippi River Basin states and is important to fishing, boating, and tourism. Managing water quality upstream is necessary for preventing contamination and maintaining healthy communities and economies downstream.

Table 1 – Project overview proposal elements

	Strategic Outcome				NEPA Activity Category		
Project	#1	#2	#3	#4	#1	#2	#3
1	x	x	x	x	x		
2	x	x	x	x	x		
3	x	x	x		x		
4	x	x	x	x	x		
5	x	x	x			x	

Manage and monitor subawards:

A large portion of requested funds will be sub-awarded through interagency agreements to the University of Minnesota and other state agencies to provide support to local watersheds and farmers for installation of agriculture best management practices and tool development. Contracts may be established with private industry to provide technical support for the development of the NRS Dashboard. The MPCA will require regular meetings with sub-awardees and written reports to accompany invoice submissions. This will ensure that all expectations and requirements are met, and that reporting is received for communication back to the EPA. Both the scope and due dates for deliverables will be established through joint power agreements or contracts that will be fully monitored and enforced.

Outreach activities

Many of the elements of this project are outreach activities to either increase adoption of agriculture best management practices or to show the progress of NRS implementation. The NRS Dashboard (Element 1) will be a permanent and regularly maintained avenue to communicate progress on both water quality goals and implementation goals. A short annual report will be posted to the NRS Dashboard to interpret the data and trends presented on various data trackers. One of the responsibilities for the NRS Coordinator (Element 2) is to maintain a communications program for the NRS; this will take various forms, but may include webinars, public meetings, or a newsletter as well as the annual NRS report and maintenance of the NRS Dashboard. Finally, the NRS Research and Education Initiative based out of the University of Minnesota is intended to contain an outreach component that will include UMN Extension activities to share nutrient reduction related research and tools broadly around the state.

These outreach activities will be tracked to determine impact. The NRS Dashboard will track site visits, including use of tracking and data visualization tools. As with all outreach events, MPCA will continue to

track attendance and log any audience member questions from webinars and public meetings. Tracking expectations will be shared with the University of Minnesota and included in the joint powers agreement to establish the research and education work. The NRS Revisions include a chapter on tracking nutrient reduction progress. Those metrics will be incorporated into NRS tracking into the future, and will be included in annual or five-year progress reports as well as the NRS Dashboard.

Quality Management Plan or Quality Assurance Project Plan

Any data collection will follow MPCA's Quality System. An appropriate quality management plan or quality assurance project plan will be established in conjunction with the development of research sampling methods. MPCA will actively engage with EPA to ensure that all plans meet EPA standards.

Environmental Results

Overall Environmental Results:

Outputs and outcomes related to EPA's strategic outcomes 1–4:
Support Staff – a project manager will be retained at MPCA for managing the work plan and implementation activities. Some of the funds designated for UMN will also be used to support staff time for development of educational materials and other agricultural BMP installation activities.

Use state-level water quality programs and actions to advance nutrient reductions – central to Minnesota's water quality work is its Water Management Framework. The Watershed Framework was implemented in 2014 to guide evaluation of all 80 major watersheds in Minnesota through the Watershed Restoration and Protection Strategy (WRAPS) process. WRAPS documents are then used as the basis of developing locally led Comprehensive Watershed Management Plans through the One Watershed One Plan program that is implemented by the state and local partners. The review process for the NRS revisions found that while many WRAPS and Comprehensive Watershed Management Plans mentioned the NRS, there were opportunities to expand their treatment of downstream waters in order to meet NRS water quality goals. This work plan will develop the additional tools, guidance, tracking, and coordination local watersheds have requested to help them reduce excess nitrogen and phosphorus.

Implement projects in prioritized watersheds with the greatest opportunities for nutrient reductions – Maps (see Figure 1) are being developed during the NRS revisions to identify the highest priority watersheds with the greatest need and potential for nutrient reductions. Revisions also helped to identify priority sources of nutrient losses to water, such as agriculture or wastewater treatment plants, for each area of the state. Expanded guidance is currently being developed to assist with direct use of these maps, and it will also include priority watershed decision support tools and models to improve prioritization and focus implementation in local watersheds. This will lead to improvement for in-state high nutrient waters as well as those priority watersheds that are key for decreasing downstream nutrient loads.

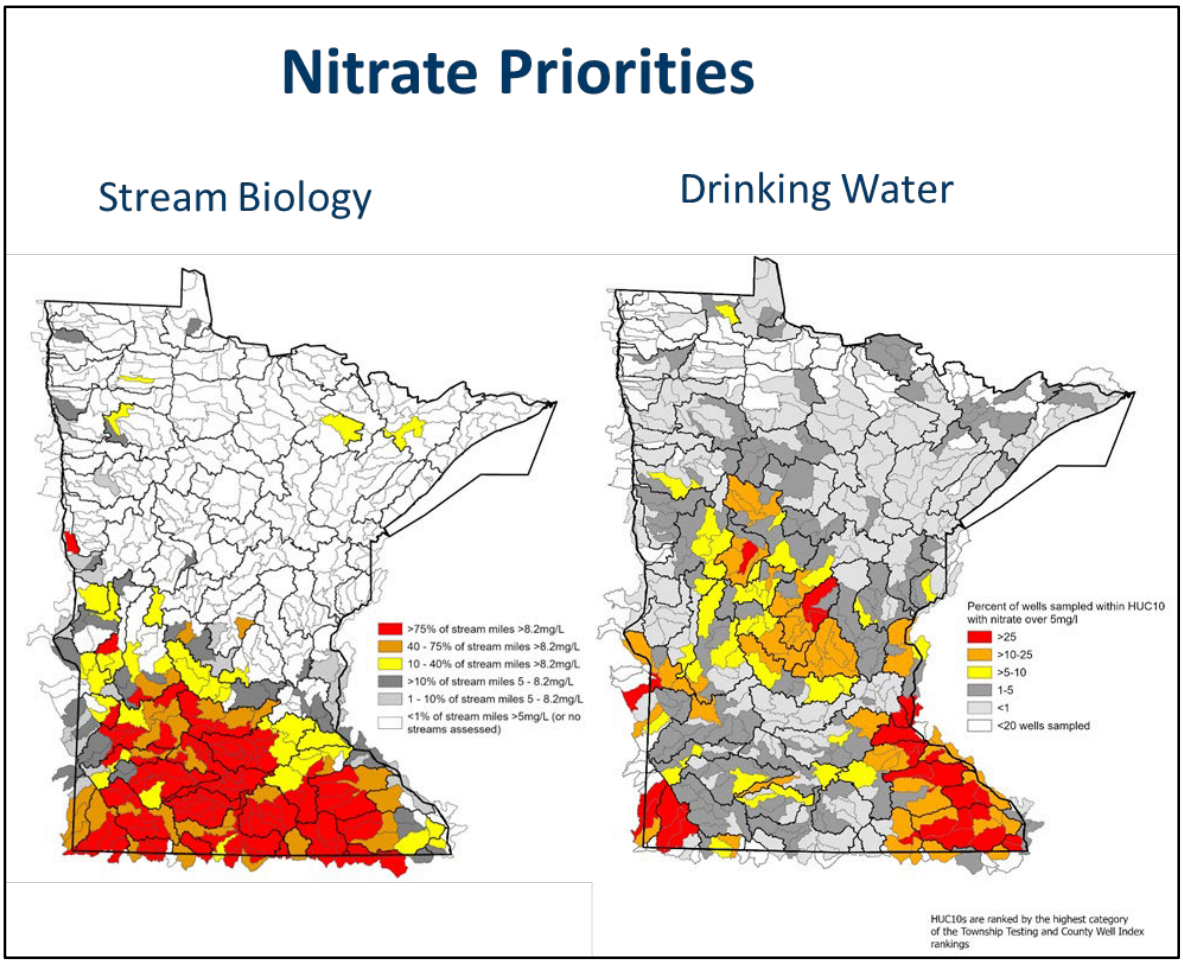


Figure 1. Watersheds with high nitrate levels in surface waters

Collaborate across state boundaries – Minnesota actively participates in regular meetings and/or workshops with the multi-agency Hypoxia Task Force, Coordination Committee meetings, and Upper Mississippi River Basin Association, along with other activities to maximize collaboration and coordination among the states and with the 11 federally recognized tribes in Minnesota.

Anticipated products and results from completing the proposed work:
The central product of this work plan is a stronger, updated nutrient reduction program deployed across the state of Minnesota, both in the Mississippi River Basin, but also in other major watersheds as supported by state funds. A suite of products will be developed or enhanced to meet proposal objectives. Additional products and results include:

1. A nutrient progress tracking and reporting system built, deployed, and used by stakeholders across Minnesota, and updated with annual reports and timely content.
2. Updated foundational models—HSPF-SAM application and companion Tableau-based tools will be updated with the agriculture BMP efficacy, nutrient transport, and hydrology research findings from the NRS revisions.
3. A Living Cover Index will be developed to generate more accurate assessments of vegetative cover and perennial crops.

4. A Nutrient Balance Model is currently under development, which will be maintained and updated to guide fertilizer and manure use in key regions of the state.
5. Economic tools like the NP-BMP tool will be used to build stronger economic components to Minnesota's other nutrient loss reduction tools, allowing the cost of implementing agriculture portions of the Nutrient Reduction Strategy to be more accurately calculated so that cost-effective practices are installed.
6. A nutrient-focused research and outreach program will be expanded and maintained at UMN to advance nutrient and agricultural BMP research and share it broadly with growers, agronomists, and others who most need it.
7. Programs to expand agricultural BMP adoption by making it easier for farmers will be scaled-up and supported.

Measuring, tracking, and reporting environmental results and contaminant load reductions: Minnesota has a robust water quality monitoring system that is used to evaluate load trends throughout the state https://www.pca.state.mn.us/water/river-and-stream-monitoring. There is a comprehensive website tool for evaluating the level of state and federally funded BMPs https://www.pca.state.mn.us/water/best-management-practices-implemented-watershed and https://www.pca.state.mn.us/water/tracking-bmp-progress. These tools and those developed through the NRS revisions will be combined into a NRS Dashboard hosted by MPCA. This dashboard will be updated annually with new data as well as annual reports interpreting the data trends. The dashboard will improve and streamline coordination, collaboration, outreach, and education essential to strategic implementation of Nutrient Reduction Strategy.

Milestone Schedule

Table 2. Milestone schedule for all proposal elements and major tasks

Task	Jan-July 2025	Aug-Dec 2025	Jan-July 2026	Aug-Dec 2026	Jan-July 2027	Aug-Dec 2027	Jan-July 2028	Aug-Dec 2028	Jan-July 2029	Aug-Dec 2029	Jan-July 2030	Aug-Dec 2030
1a	x	x	x	x	x	x						
1b	x	x	x	x	x	x	x	x	x	x	x	x
1c			x	x	x	x	x	x	x	x	x	x
1d					x	x	x	x	x	x	x	x
2a		x	x	x	x	x	x	x	x	x	x	x
2b		x	x	x	x	x	x	x	x	x	x	x
2c		x	x	x	x	x	x	x	x	x	x	x
2d		x	x	x	x	x	x	x	x	x	x	x
2e		x	x	x	x	x	x	x	x	x	x	x
2f		x	x	x	x	x	x	x	x	x	x	x
2g			x	x	x	x	x	x	x	x	x	x
3a			x	x	x	x	x	x	x	x	x	x
3b			x	x	x	x	x	x	x	x	x	x
3c			x	x	x	x	x	x	x	x	x	x
3d			x	x	x	x	x	x	x	x	x	x
4a			x	x	x	x	x	x	x	x	x	x
4b			x	x	x	x	x	x	x	x	x	x
4c			x	x	x	x	x	x	x	x	x	x
4d			x	x	x	x	x	x	x	x	x	x
4e			x	x	x	x	x	x	x	x	x	x
5a	x	x	x	x	x	x	x	x	x	x	x	x
5b	x	x	x	x	x	x	x	x	x	x	x	x

Transferability of Results and Dissemination to Public:

Much of this work plan focuses on increasing the transparency of Minnesota's nutrient reduction program. We will accomplish this through two efforts. Firstly, we'll providing greater context for the research, analysis, and planning needed for revising and implementing a nutrient reduction strategy so that data make sense, and secondly, we will improve the organization of the data so that those not familiar with the program can find things easily. The primary vehicle for dissemination is the NRS Dashboard and supporting visualization tools (Element 1). While the Dashboard is designed for progress tracking, it is also a platform for sharing nutrient-related stories and research.

The intention is for the Dashboard to be a one-stop location for all nutrient news in Minnesota, including a posting location for new research studies, cross-sharing of success stories from multiple agencies and local units of government, and publishing of an annual NRS report. These materials will be shared with the EPA for the Hypoxia Task Force (HTF) Newsletter and at HTF

meetings, through MPCA, and sister agencies' communication channels. As part of the communication plan for the NRS revision process, several topical webinars have been held or are planned. Previous events have been well-attended, and the series of nutrient-related webinars will likely continue beyond publication of the NRS revisions. Potential topics may include agricultural BMP research updates, sharing NRS tool development (Element 3), and programs to scale up BMP adoption (Element 5). Webinars are recorded and shared on the current Reducing Nutrients webpage, but will be moved to the permanent NRS Dashboard landing page once it is built.

Technical Support:
The MPCA's lead technical staff working on the Hypoxia Task Force and Nutrient Reduction Strategy will provide ongoing technical support and review to sub-awardees. Wastewater support will be provided by wastewater technical leads at the MPCA (i.e. engineering support). Other Minnesota agencies and departments will also contribute technical support, continuing lead technical roles developed through the NRS revision process.

Detailed Budget Narrative:

Detailed narrative and budget of each proposal element

1. Progress Tracking and Communication System – Develop, test, and maintain a progress-tracking system for reporting ongoing progress with nutrient reduction activities and results.

Activity leads: The MPCA will coordinate this project closely with the MDA and BWSR. MPCA will receive assistance from either a consulting firm, the University of Minnesota, or another college or university.

Part 1a.–Tracking system and dashboard development – Using the best measures, metrics, methods, and designs for evaluating nutrient reduction progress identified during the NRS revisions, continue to develop the web-based system, and incorporate all existing progress-tracking displays using a user- friendly interface. Place-holders will also be incorporated for future inclusion of tracking system elements needing further development.

Part 1b. Tracking system management—Annually update all tracking systems on the dashboard. Identify a process to ensure the necessary data and information are being collected, analyzed, and integrated into the system. Determine program support needs to ensure this task is accomplished annually.

Part 1c. Interpreting and reporting results – Tracking system results will be assessed, interpreted, and communicated out to the broader group of interested parties. Communications experts will be consulted to evaluate optimal methods of reaching intended audiences, and an annual interpretive summary will be posted on the NRS Dashboard at the end of each calendar year.

Part 1d. Incorporate improved foundational models needed for tracking systems – Several of the tracking systems are supported by foundational models. These models and tools will be updated and improved in accordance with Element 3. Following these improvements, tracking

systems will be adjusted to reflect the improved data.

Budget: $279,116 from the Gulf Hypoxia Program. Per discussion with EPA, statewide work in which tasks cannot be separated out by basin will be split by the percent area of the state which is covered by each major basin, and non-Mississippi River Basin areas will be covered by state funds. The percentage of the state drained by the Lake Winnipeg and Lake Superior Watersheds is approximately 39%, and Minnesota is contributing 39% of funding to this project.
Timeframe: January 2025 - end of FY 2030.
Corresponding 2025 NRS Component: This work plan element is the implementation of Chapter 7: Tracking in the Revised NRS. However, the data being tracked is discussed in depth in chapters 2-5 in the Revised NRS.

2. Maintain NRS Program—NRS Coordinator

Activity leads: The MPCA will retain a project manager to accomplish the tasks below.

2a. Continued Implementation of the Nutrient Reduction Strategy – Assist in the work needed to implement the revised Minnesota Nutrient Reduction Strategy, such as authoring guidance, updating tracking systems, facilitating partnerships, managing related research projects and products, and adapting the NRS to meet future challenges. Continue regular meetings of NRS teams to ensure implementation of revised NRS. Identify action items and pertinent follow-up as well as maintain a core team to meet regularly and discuss implementation. Identify needed groups for the various components of implementation. Enact plans to address gaps identified in the NRS revisions, including supporting updates to other statewide plans on NRS-related topics, such as sediment or continuous living cover.

2b. Grant administration- Track progress toward completion of all Minnesota work plan elements with EPA and sub-awardees. Coordinate all reporting to EPA, as required, working with MPCA and sub-awardees to collect required information. Meet with technical and grant officers for regular updates. Report project activities in EPA's Grant Reporting and Tracking System, as specified by EPA.

2c. Collaboration –

Hypoxia Task Force – Participate in and attend HTF meetings and Coordinating Committee (CC) events, providing additional assistance to the Hypoxia Task Force representative for Minnesota. Maintain coordination and communication with fellow state NRS coordinators and HTF and CC members. Communicate insights and progress from other states to colleagues at MPCA and other agencies.

International Red Rivers Watershed Board – (supported with non-GHP funds) Collaborate with International Red River Watershed Board, Red River Basin Commission, Red River Watershed Management Board and other partners on Red River nutrient reduction needs, strategies, progress and communications. Additionally, remain engaged with the Great Lakes Commission and ongoing activities in northern Minnesota.

2d. Communications - Communicate nutrient reduction needs, activities, successes, and progress to multiple audiences. Gather and share information and lessons learned from the project(s) through various media and platforms, such as a newsletter. Coordinate closely with MPCA Communications and the communication departments of other agencies to integrate NRS implementation into other state water quality work and share NRS

presentations state-wide as invited.

2e. Tracking Progress— Work with MPCA, BWSR, MDA, and other state, federal, and local agencies to establish the tracking system identified in Element 1. Identify meaningful results to share with the public, relevant governmental organizations, and other interested parties. Assist with maintaining and updating tracking system.

2f. Watershed Integration—Minnesota's Watershed Framework is key to local water quality planning and implementation. To achieve success in Minnesota's nutrient reduction goals, it is imperative that the NRS program maintain existing bridges with watershed programs. This may include involvement and support of watershed plan revision and development, authoring guidance, and providing training on modeling outcomes to estimate nutrient goals in watershed improvement projects.

2g. Demonstration Project Support—Work with MPCA partners, such as local soil and water conservation districts, watershed districts, counties, and local growers, as well as provide programmatic and administrative support for agriculture BMP demonstration projects within the Mississippi River Basin to provide real-world examples of effective BMP implementation in priority watersheds.

Budget: $725,000 for five years of EPA allocations, with an approximate breakout, as follows:
Personnel - $ 395,318
Fringe - $ 134,408
Travel - $20,000—two staff members x 5 HTF meetings, training/implementation travel in Mississippi River Basin within Minnesota, and conference attendance for presentations
Indirect Charges - $ 165,274
Demonstration Project - $10,000

Per EPA guidance, the NRS coordinator position is supported by the first allocation of GHP funds through August 2025 for statewide NRS revisions. After that time, state funding will be used for any work outside the Mississippi River Watershed.
Timeframe: Work will begin in FFY 2026 and end in FFY 2030
Corresponding 2025 NRS Component: Implementation of all components of the Revised NRS.

3. Updating and improving NRS support models and tools
Activity leads: The MPCA will coordinate these activities, working closely with MDA, BWSR, and University of Minnesota. MPCA will contract with a consulting firm to provide scientific and technological support to update and enhance watershed models and tools.

Certain foundational models for NRS work at watershed and state scales will be improved and updated with the latest data and technology to provide additional insights into water quality both within and leaving Minnesota.

Part 3a. HSPF-SAM – Update models based on the improved science associated with BMP efficacy, nutrient transport, and hydrology areas of research.

Part 3b. Living cover index modeling – Use of satellite imagery models to estimate progress with continuous living cover throughout the year will be further developed and updated.

Part 3c. Nutrient balance modeling – The nutrient balance models developed using Minnesota Clean Water Funds will be updated and improved with new information about manure and fertilizer nutrient sources, crop fertilizer needs, soil nutrient levels, and other related information.

Part 3d. Economics modeling conducted for NP-BMP tool – Improve and simplify agricultural economics evaluation potential that stem from the NP-BMP tool developed by the University of Minnesota, so that the most cost-effective solutions can be implemented.

Budget: $250,000 from the Gulf Hypoxia Program. Because these tools are statewide in nature and contain non-Mississippi River Watershed portions of the state, state funds via in-kind staff time will also be applied to this work.

Timeframe: Winter 2025 - FFY 2030

Corresponding 2025 NRS Component: These tools most closely correspond to Chapter 5 of the Revised NRS, which largely addresses agriculture-related nutrient losses to water. However, most of these tools are also for tracking nutrient reduction progress, as documented in Chapter 7; HSPF-SAM is a vital tool for watershed management in Minnesota, which is described in Chapter 6.

4. NRS Research and Education Initiative

Activity leads: The MPCA will coordinate these activities, contracting with the UMN to conduct most of the research and initiative-related education. Work will be closely coordinated with other NRS-partner organizations and focus on priority watersheds identified in the NRS revisions.

4a. Bridge NRS and UMN research and education – A designated team from UMN will stay connected, informed, and involved in MN NRS progress as NRS participants and will serve as a bridge between NRS agency staff and UMN research and education staff.

4b. Education on BMP efficiency science – Develop and implement an education and outreach program at the UMN Extension to rollout results of the NRS Ag BMP Science Assessments to farmers, farm advisors, watershed staff, and others employing agricultural nutrient reduction strategies. This may include developing training materials, presenting at events like the annual Nitrogen Conference or the Nitrogen Smart trainings, and establishing partnerships across the state and region to ensure easy access to the latest nutrient research for all interested parties. This may also include maintaining the simplified reporting system for farmers used in the Olmsted County soil health program that was developed and hosted by the University of Minnesota.

4c. Study potential in Minnesota for promising BMPs – Use the research gaps identified by NRS Agriculture BMP Science Assessment to prioritize needed research for nutrient reduction and other multiple ecosystem benefits. Partner with researchers from Minnesota and other states to initiate priority research aimed at effectively supporting the BMPs critical for Minnesota. Of particular interest is the potential for drainage water recycling, including identification of the required combination of soils, location, field management, weather/climate, cropping systems, and irrigation equipment essential for maximizing ecological benefits and favorable economic and agronomic outcomes. Evaluate benefits and costs for farmers, river nutrient levels, and resiliency to weather extremes. Document the findings related to the potential for future scalable and widespread adoption in Minnesota

of evaluated practices.

4d. Update BMP efficiency science reports and conclusions with updated research – Important research continues on nutrient BMPs in the Upper Midwest, and periodically this research will be reviewed to see if any changes are needed to the BMP nutrient science assessment work in MN.

4e. **Update the Ag BMP Handbook of Minnesota**—Incorporate the latest ag BMP research documented in the NRS Agriculture BMP Science Assessments into the MDA's Ag BMP Handbook for Minnesota.

Budget: $500,000 from the Gulf Hypoxia Program.

Timeframe: Winter 2026 - FFY 2030

Corresponding 2025 NRS Component: The research and education of this work plan component most closely correspond to Chapter 5 of the revised NRS, which largely addresses agriculture-related nutrient losses to water. However, the products and guidance generated from associated projects can also be applied within the Watershed Framework and so are also related to Chapter 6 of the Revised NRS.

5. Programs to support scaling-up BMP adoption, and advance programs that will lead to systems level improvements with nutrient management

Activity leads: MPCA will coordinate these activities with support from BWSR, MDA, other government- based partners, private industry, and local experts. Funds will be used to support local and regional programs through joint powers agreements or as needed, for contracting support to these organizations.

Multiple programs and initiatives exist across Minnesota to support the installation of agricultural best management practices to help address excess nutrient losses to waters from farm fields. Work from the NRS revisions has studied these programs and identified both commonalities of success and obstacles to program/BMP adoptions.

6a. Bridging programmatic gaps—while much BMP work is being done across Minnesota, not all sources of nutrient runoff are being addressed by current programs. Following additional analysis (Element 4**,** NRS Revisions, etc.), these gaps will be identified and prioritized by the NRS working groups, and tools to close those gaps developed. Several gaps that have been identified as high priority at this time are listed below. Additional priorities will be added as analyses are completed and pursued over the course of this project. GHP funds may be used as match to secure additional state funds for this work.

- **Support regional programs**—we will leverage existing and emerging successful local and regional programs to develop model programs that allow replication elsewhere in the Mississippi River Basin within the state. Several opportunities are possible, but depend on the timing of this award and partner plans. Some of these options are listed below:
    - Expand the highly successful cover crop programs that have been implemented in Olmsted County to at least one other Southeast Minnesota county with high nitrate levels in private wells. We aim to develop a model or toolkit based on the common, successful elements of

this program that can be implemented in other counties, and work with BWSR and the local soil and water conservation district to begin to deploy the Olmsted County model into another county.

    - The Southeast Minnesota Nitrate Work Group and the NRS technical working groups believe that a nitrate rider could be added to the highly successful and voluntary Minnesota Agriculture Water Quality Certification Program. GHP funding could be used by the Minnesota Department of Agriculture to develop that rider and begin its use in areas of the state with easily contaminated groundwater, such as the Karst regions of Southeast Minnesota.

- **Overcome obstacles to implementation**—some obstacles to BMP adoption are farmer beliefs about the effectiveness of a practice, knowledge, complicated conservation program structure, uncertain benefits, and trust. While state and local organizations cannot overcome all these difficulties, there are opportunities to address some of these obstacles to boost adoption. One such opportunity is to provide reliable knowledge sources to producers looking for BMP support. While the NRS team had explored the idea of the state developing a common website or app to provide BMP program information, we had concluded the cost to be prohibitive. In 2024, however, the Conservation Technology Information Center debuted the Conservation Connector, and they have indicated there may be opportunities to build-out state programmatic information on that platform. There may also be possibilities to expand work the University of Minnesota has done for the Olmsted County cover crop project that may warrant more support.

Part 6b. Bridging research gaps – While extensive research and demonstration projects have been conducted across the state, there remain gaps between available research and state agency needs for ag BMP program scale-up and adoption. State agencies will aggregate observed research gaps, identify additional funding opportunities, and help support researchers to address these topics.

Budget: $760,000 from Gulf Hypoxia Funds.

Timeframe: January 2026-2030

Corresponding 2025 NRS Component: The research and education of this work plan component most closely correspond to Chapter 5 of the Revised NRS, which largely addresses agriculture-related nutrient loss prevention. However, the products and guidance generated from associated projects can also be applied within the Watershed Framework and so are also related to Chapter 6 of the Revised NRS.

Mississippi Grant Workplan

INFRASTRUCTURE INVESTMENT AND JOBS ACT

GULF HYPOXIA PROGRAM

Fiscal Year Funding 2024-2026

Summary Information Page

Project Title: Mississippi's Gulf Hypoxia Program FY 2024-2026 Grant

Organizational Information:

Mississippi Department of Environmental Quality
P.O. Box 2339
Jackson, Mississippi
39225-2339

Contact:

Natalie Segrest
601-961-5150
nsegrest@mdeq.ms.gov

Proposed Funding Request: $2,514,116

Brief Project Description: Mississippi plans to use the Gulf Hypoxia Program funds (FY24-26) to continue collaborative work started under the previous grant award along with adding projects that will help determine success of nutrient reduction efforts and provide information to prioritize nutrient reduction actions. The work will characterize background loading from Mississippi to the Gulf; estimate load reductions from best management practices; build a nutrient response indicator (near term success measure); analyze data to establish long term nutrient trends (long term success measure); and develop a watershed model calibrated specifically for Mississippi which can be used to target watersheds for nutrient reduction activities.

Environmental Results:

- Collect nutrient information for waters flowing into the Mississippi River to better describe Mississippi's nutrient contribution to the river and Gulf.
- Develop an indicator that responds more quickly to nutrient reduction actions on the land (near term success measure).
- Analyze data to establish long-term nutrient trends to measure change through time.
- Create a robust model of nutrient inputs from Mississippi watersheds draining into the Gulf.
- Build a tool to predict nutrient reductions achieved from best management practices.
- Educate and engage stakeholders to advance Mississippi's nutrient reduction efforts.

Place of Performance: This grant award will be used to fund work in eligible watersheds within the Mississippi/Atchafalaya River Basin which comprises 48% of the watersheds in Mississippi. The state scale model and trends analysis work will be leveraged with other funding to account for the areas outside of the eligible watersheds.

Project Period: November 1, 2025 – October 31, 2030

Table of Contents

Table of Tables

Table of Figures

Background

Infrastructure Investment and Jobs Act

In November 2021, the U.S. Congress passed the Infrastructure Investment and Jobs Act (IIJA). This legislation allocated $60 million to fund the newly established Gulf Hypoxia Program (GHP) to address hypoxia issues in the Gulf of America under the oversight of the U.S. Environmental Protection Agency (EPA). The funding was allocated in annual allotments for fiscal years 2022-2026. Participants in the Mississippi River/Gulf of America Watershed Nutrient Task force (Hypoxia Task Force or HTF) – a collective that provides executive-level guidance and support for nutrient management – were eligible to receive funding under the GHP grant administered by the U.S. Environmental Protection Agency (EPA). In total, $4,227,449 was made available to Mississippi through the GHP FY 2022-2026 grant funds to support nutrient reduction efforts. As part of this grant opportunity, the Mississippi Department of Environmental Quality's (MDEQ) Nonpoint Source (NPS) Pollution Control Program is responsible for managing the grant funds available to implement actions in support of Mississippi's Nutrient Reduction Strategy (NRS). Mississippi applied for and was awarded $1,713,333 (fiscal years 2022-2023 funding allocation) to advance nutrient reduction efforts in Mississippi. The activities approved for funding in the FY 22-23 grant is on-going. The work outlined in this document describes actions that will be undertaken utilizing GHP funding allocated for fiscal years 2024-2026, totaling $2,514,116.

Addressing EPA's Powering the Great American Comeback Initiative

The activities described in this workplan supports EPA's Powering the Great American Comeback Initiative which outlines 5 pillars that are intended to guide EPA's work into the future. Actions described in this workplan support Pillar 1: Clean Air, Land, and Water for Every American and Pillar 3: Permitting Reform, Cooperative Federalism, and Cross-Agency Partnership. Projects proposed for funding under this grant will focus on working with federal resource agency partners and local stakeholders to improve the quality of Mississippi's water resources. In addition, all projects support EPA Strategic Plan Goal 5, Objective 5.2: Protect and Restore Waterbodies and Watersheds

Supporting Gulf Hypoxia Action Plan Goals

States, partnering federal agencies, tribal councils, nonprofit organizations, and researchers working in the 12 states that border the Mississippi and Ohio Rivers have been working collaboratively to address nutrient impacts on the Gulf of America. These entities make up the membership of the HTF. In 2001, this group developed the first Gulf Hypoxia Action Plan (GHAP) outlining long term goals for nutrient reduction. This plan was updated in 2008 and again in 2015. The suite of projects contained within this workplan address, either directly or indirectly, the **goals** of the GHAP which are summarized below:

- Coastal Goal (2008, updated 2015): To reduce the five-year running average areal extent of the Gulf of Mexico hypoxic zone...
- Within Basin Goal (2008): To restore and protect the waters of the 31 states and tribal lands within the Mississippi/Atchafalaya River Basin through implementation of nutrient and sediment reduction actions.
- Quality of Life Goal (2008): To improve the communities and economic conditions across the Mississippi/Atchafalaya River Basin, in particular the agriculture, fisheries and recreation sectors, through improved public and private land management and a cooperative, incentive-based approach.

Promoting Gulf Hypoxia Program Priorities

The passage of the IIJA created the Gulf Hypoxia Program and provided funding to further the advancement of nutrient reduction efforts at the local, state, and regional level for watersheds in the Mississippi/Atchafalaya River Basin (MARB). With the release of this funding opportunity, EPA provided a memorandum, *Gulf Hypoxia Program 2025 Guidance for State Cooperative Agreements*, in March 2025. Within this memorandum, EPA identified 4 strategic outcomes (see below) to guide the use of these grant funds. Projects outlined in this workplan broadly align with the **GHP strategic outcomes** outlined in the guidance:

1. Support staff to implement the workplan.
2. Use state-level water quality programs and actions to advance nutrient reductions.
3. Implement projects in prioritized watersheds with the greatest opportunities for nutrient reductions.
4. Collaborate across state boundaries with the HTF partners.

Mississippi's Approach for Utilizing GHP FY 24-26 Funding

The Mississippi Department of Environmental Quality (MDEQ) worked with resource agency partners and stakeholders to identify priorities and scope projects proposed for funding in this workplan. As shown in Figure 1, both external partners and internal programs worked collaboratively to select the projects outlined in this workplan. All of the projects were developed to address one or more of the 4 strategic outcomes identified in the GHP grant guidance. To gather ideas and prioritize near- and long-term needs in these areas, MDEQ surveyed, dialogued, and conducted listening sessions with key stakeholders including Mississippi State University Agricultural Extension Service, U.S. Geological Survey, Mississippi Farm Bureau, Mississippi Soil and Water Conservation Commission, the U.S. Department of Agriculture's Natural Resources Conservation Service, Delta F.A.R.M., private consultants, and other stakeholders. This type of collaborative approach facilitates an atmosphere of consensus building and provides opportunities to creatively leverage resources to increase the effectiveness of the state's GHP grant funding.

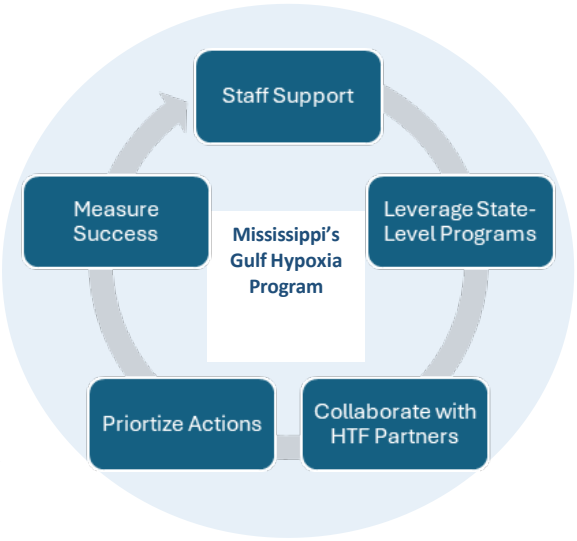


Figure 1: Mississippi's GHP Project Development and Implementation Process

According to the requirements of the GHP grant, funding can only be spent to support nutrient reduction efforts in watersheds that are part of the Mississippi/Atchafalaya River Basin. Although all the waters in Mississippi ultimately drain into the Gulf of America, only 48% of the streams and rivers flow into the Mississippi/Atchafalaya River Basin. Figure 2 shows the specific area eligible for funding under the GHP Program in Mississippi. The eligible watersheds in Mississippi for GHP funding are located in the Tennessee River, Northern Independent Stream, Yazoo River, Big Black River, and Southern Independent Streams Basins. Some projects outlined in this workplan are planned for delivery at a statewide scale. However, those projects will leverage resources from Mississippi's Section 319 grant to fund work in areas outside of the Mississippi/Atchafalaya River Basin drainage.

Figure 2: Mississippi/Atchafalaya River Basin Drainage – GHP Eligible Watersheds

Workplan Overview

Mississippi plans to use the Gulf Hypoxia Program funds (FY24-26) to continue work started under the previous grant award (FY22-23) along with adding projects that will help determine success of Mississippi's Nutrient Reduction Strategy and provide additional information to better prioritize nutrient reduction actions. This work focuses heavily on collecting data and building tools to establish a strong foundation to inform management decisions. Specifically, the actions included in this grant will characterize delivered nitrogen loads to the Mississippi River (background loading); estimate load reductions achieved through implementation of best management practices (load reductions achieved); build a nutrient response indicator to measure success of nutrient reduction actions (near term success measure); analyze data to establish long term nutrient trends (long term success measure); and work with the United States Geological Survey to develop a watershed model calibrated specifically for Mississippi that will estimate background loads for nitrogen, phosphorus, and sediment which can be used to target watersheds for nutrient reduction activities.

Included within this workplan are the projects planned for completion using FY 2024 – 2026 GHP funds. This second set of GHP funded activities focuses on extending and expanding on the projects funded from Mississippi's FY 22-23 GHP Grant (also referred to as Phase 1 GHP funding) along with funding two additional projects. New projects in this grant workplan include funding to develop long term nutrient status and trends leveraging data collected as part of MDEQ's ambient monitoring program and update Mississippi's SPAtially-Referenced Regression on Watershed attributes (SPARROW) model. Both projects will be completed in partnership with the United States Geological Survey (USGS) Lower Mississippi-Gulf Water Science Center (LMG).

MDEQ is committed to providing technical support, as needed, to fully implement the projects outlined in the workplan along with transparent, rigorously vetted data using appropriate **quality assurance** standards, protocols, and procedures. All MDEQ monitoring funded by EPA grants is carried out under Quality Assurance Project Plans (QAPP) prepared using EPA QAPP Guidelines. Monitoring activities conducted by MDEQ for parameters that are under the Mississippi Water Quality Standards are conducted in accordance with the Mississippi Consolidated Assessment and Listing Methodology (CALM) when possible. Laboratory procedures and data management are covered under approved MDEQ Standard Operating Procedures (SOPs). Data collected in conjunction with the USGS is entered into the National Water Information System (NWIS) data system and is publicly available through both the NWIS website and the Water Quality Portal (WQX). All data collected by MDEQ is also made available through WQX. The MDEQ maintains a quality management plan (QMP) for data management and prescribed procedures within the organization and funded GHP activities will continue to work within agency QMP guidelines.

The actions identified in this workplan will be implemented in accordance with Mississippi's EPA approved Nonpoint Source (NPS) Management Plan (2020) and established regional and statewide nutrient reduction strategies (2008-2012). This workplan outlines 7 projects for funding including allocating resources to support staffing and grant management/oversight needs. As stated above, 5 of the proposed projects in this workplan provide continued funding for work started using the FY22-23 GHP grant (Phase 1). Table 1 identifies projects included in this workplan address the 4 strategic outcomes for GHP funding and indicates the corresponding National Environmental Protection Act (NEPA) category as detailed in Appendix 2 of EPA's GHP 2025 guidance memo.

Table 1: Crosswalk of Mississippi GHP FY24-26 Projects with GHP Strategic Outcomes and NEPA

MS GHP FY 24-26	**Gulf Hypoxia Program Strategic Outcomes**				**NEPA Activity Category**		
Project Name	1. Staffing and Implementation Support	2. Use state-level programs to support nutrient reductions	3. Prioritize & Implement Nutrient Reduction Efforts	4. Collaborate Across Boundaries & with HTF Partners	Category 1	Category 2	Category 3
1. Grant Management, Administration, & Staffing	X	X	X	X	X		
2. Diatom Indicator Development		X	X	X	X		
3. Nonpoint Source Reduction Estimation Tool	X	X	X	X	X		
4. Continuous Nitrate Monitoring		X		X	X		
5. Nutrient Reduction Strategy Update	X	X	X	X	X		
6. Nutrient Status & Trends Analysis		X	X	X	X		
7. Mississippi SPARROW Model		X	X	X	X		

Project 1: Grant Management, Administration, and Staffing

Funding set aside under this workplan element is intended to ensure sufficient funding to support staff needed to implement the projects identified in the workplan; ensure effective management of grant funds; develop and provide oversight for necessary contracts and/or subgrants to complete necessary work; facilitate stakeholder engagement; track progress; meet reporting requirements; and ensure all projects are completed on time, within budget, and meet the goals of the program.

Overall Budget and Grant Administration:

Many grant implementation activities are handled through sub-grants with other agencies and through the utilization of support from qualified contractors. Funding will be utilized to support staff to manage the work outlined in the workplan. Appropriate management of funds is a critical component of any grant program. Federal grant money provided to MDEQ under the FY 24-26 Gulf Hypoxia Program grant will be managed following the established protocols and mechanisms used to implement Mississippi's Section 319 grants.

All GHP expenditures will be tracked and reported separately from other funding sources to ensure GHP funds are used to support the nutrient reduction activities identified in this workplan. Reporting on use of GHP funds, and other grant management activities, will be facilitated using established protocols and procedures utilized by MDEQ. Staff will coordinate within MDEQ as well as with project officers at EPA to provide the following outcomes:

- Grant preparation,
- Negotiation of grant agreements,
- Receipt of grant awards,
- Required Reporting (annual project progress, expenditure tracking, annual financial reports) and
- Development of grant close-out reports.

The MDEQ Office of Administrative Services has staff who specialize in grant applications, federal financial reporting, and in performing financial risk assessments for sub-grantees. These staff will work with the program staff to ensure the financial reporting requirements for the GHP grants are met. Table 2 provides a detailed program summary budget which outlines how funds under this grant will be allocated and spent.

Table 2: Detailed Budget Summary: Mississippi FY 24-26 Gulf Hypoxia Program Grant

Detailed Budget Summary Mississippi FY 24-26 Gulf Hypoxia Program Grant	
Object Class Category (Non-construction)	**Total Budget Period Cost**
Personnel	$182,968
Fringe Benefits	$63,123
Travel	$15,000
Equipment	$0
Supplies	$7,628
Contractual	$1,344,000
Construction	$0
Other	$806,800
Total Direct Charges	$2,419,519
Indirect Costs	$94,597
Program Income	$0
Total EPA Amount Award	$2,514,116
Total Grant Award	$2,514,116

Developing and Managing Subgrants and Contracts:

The development and management sub-grants and contracts is critical to maintaining an effective management program. Much of the work identified in this workplan will be implemented through sub-grants between MDEQ and other agencies, organizations, and institutions as well as through the utilization of contractual resources. Both contractual and sub-grant mechanisms include language to ensure compliance with EPA's quality assurance, financial, and reporting requirements as well as Title VI, Davis-Bacon, Build America – Buy America, and other federally required expectations. The formalized work agreements specify tasks to be completed along with identifying the funding allocated to complete those tasks. Program staff work with partners to develop workplans, budgets, and sub-grant agreements. Staff are also responsible for maintaining project budgets, monitoring expenditures, approving invoices, performing project audits, and maintaining active communication with project partners to ensure all goals and outcomes are met.

Tracking and Reporting Progress on GHP Activities:

MDEQ is committed to transparency in its programs using efficient tracking and reporting mechanisms. These mechanisms enable the program to provide necessary information to EPA and the public. Tracking and regularly reporting on projects, initiatives, and results are critical to ensure effective use of GHP funds. These actions provide information to stakeholders on the work the program is supporting, meet reporting requirements for EPA, and ensure projects remain on schedule and within budget. Transparency is integrated into the management of these funds in several ways, including making progress reports and other documents available online, making stakeholder meetings open to the public, and reporting outcomes at state and regional meetings and conferences. Examples of information tracked and reported for GHP grant purposes include:

- Public meetings convened, location, date, and number participants
- Estimated nitrogen, phosphorous, and sediment pollution load reductions achieved

- Results of water quality data collection activities in publicly accessible data systems
- Anticipated outputs impacting EPA's GHP strategic outcomes and/or goals of the Gulf Hypoxia Action Plan
- Conservation practices and systems implemented

Reporting:

In compliance with federal requirements, MDEQ will provide annual progress reports and federal financial reports in accordance with the reporting schedule outlined in the grant conditions. At the conclusion of the grant award, MDEQ will develop a final report describing the activities completed with the GHP grant funding. This will be submitted to EPA and made available to the public on the MDEQ website. The report will include:

- A summary of the GHP activities,
- An explanation of ways the activities have addressed EPA's GHP five strategic outcomes,
- A discussion of the activities' progress on MDEQ's nutrient reduction strategies, and
- A description of expenditures.

Milestone Schedule:

The timeframe for completion of work under this grant is 5 years. The overall completion date for all actions identified in this workplan is consistent with the end of the grant period which is October 31, 2030. **Note: Work is intended to take the full 5-year period allowed under the grant to complete. In the event there is a delay in the award, MDEQ will work with EPA to modify applicable milestone schedules and grant end date to allow the full 5-year period to complete tasks.**

Table 3: Milestone Schedule Project 1: Grant Management, Administration and Staffing

Milestones	2026	2027	2028	2029	2030
Project Progress Reports	X	X	X	X	
Data Delivery to WQX	X	X	X	X	X
Financial Reports	X	X	X	X	X
Final Grant Close-Out Report					X

Project 2: Diatom Indicator Development

The key to good watershed management is having a solid foundation upon which to inform management actions. Across the landscape of water programs, decision support tools are used to steer programs, make informed judgements about water management initiatives, and prioritize watersheds for project implementation. The work proposed under this project will build upon the data collected under Mississippi's GHP FY 22-23 grant to expand monitoring and analysis efforts. **Continued funding** will allow for additional data collection in the Tennessee River Basin and Northern Independent Streams Basin watersheds which are part of the larger Mississippi/Atchafalaya River Basin but were not included in the first phase of this project funded using Mississippi's FY 22-23 GHP grant. This increases the amount and geographic coverage of data included in the analysis and resulting understanding of relationships between algal communities and nutrient gradients. This project will be implemented in collaboration with the USGS LMG and the United States Department of Agriculture (USDA) Agricultural Research Service (ARS) National Sedimentation Laboratory (NSL) located in Oxford, Mississippi.

Environmental Results:

- **Nutrient Response Measure:** Biological organisms that live in stream environments, such as plants and fish, can be used to document and assess the health of water bodies. Non-vascular plants, such as algae and diatoms are commonly used as an indicator of water quality conditions. Algae and diatoms directly respond to nutrient availability in waterbodies and nutrient conditions can dictate what species of plants and algae become established. Studies have shown algae or diatom-based community traits and species composition are sensitive response measures to nutrient pollution in streams. These organisms serve as a near-term indicator of nutrient loading, response to nutrient reduction efforts, and overall stream health.

- **Indicator of Strategy Success:** Because diatoms exhibit strong linkages between nutrients and species composition, diatom-based biological responses currently represent the best available early indicator (metric) of nutrient enrichment yielding an economical way to assess impacts from nutrient reduction strategies and BMPs.

- **Robust Evidence to Support Decision Making:** Data representing a broader range of biological communities provides more evidence to support management decisions and conclusions regarding environmental factors that may be causing change. These data can be used to assess stream health, determine modeling endpoints, inform permitting decisions, establish water quality thresholds, prioritize/target areas for nutrient reduction, and track improvements from implemented BMPs.

- **Advance Scientific Understanding and Collaboration:** As nutrient enrichment in waters continues to garner wide-spread concern, many states, federal entities, researchers, and nonprofits are working to advance the science and understanding around understanding and measuring nutrient dynamics. Using partnerships established with USGS LMG and USDA ARS NSL, these groups were able to leverage data collection efforts funded from GHP Phase 1 efforts to further their agency research initiatives by collecting additional data and analyzing those data using different techniques. As a result, GHP Phase 1 is funding taxonomic identification of samples, with USDA ARS NSL and USGS are analyzing the samples using DNA sequencing.

Milestone Schedule:

The timeframe for completion of work under this grant is 5 years. The overall completion date for all actions identified in this workplan is consistent with the end of the grant period which is October 31, 2030. **Note: Work is intended to take the full 5-year period allowed under the grant to complete. In the event there is a delay in the award, MDEQ will work with EPA to modify applicable milestone schedules and grant end date to allow the full 5-year period to complete tasks.**

Table 4: Milestone Schedule Project 2: Diatom Indicator Development

Milestones	2026	2027	2028	2029	2030
Planning, Site Selection	X				
Data Collection		X	X	X	
Identification of Diatoms		X	X	X	
Data Aggregation; Data Analysis				X	X
Diatom Indicator Development					X

Project 3: Nonpoint Source Reduction Estimation Tool (NRET)

Work under this grant will continue the implementation, refinement, and enhancement of MDEQ's decision support tools. These tools are helpful because they provide data and information to prioritize nutrient reduction actions, support watershed plan development, and measure environmental outcomes achieved through implementation efforts. With GHP Phase 1 funding, MDEQ began the development of a database to store implementation data along with the information needed to calculate load reductions achieved from those BMPs. This database also stores background loading data for all watersheds from the Mississippi SPARROW model. The NRET model is intended to work similarly to EPA's Pollutant Load Estimation Tool (PLET) to estimate load reductions achieved through nutrient reduction actions implemented on the landscape. The work proposed under this project will provide **continued funding** for database and NRET model development efforts.

Environmental Results:

- **Standardized Approach to Measure Reductions:** Build upon existing approaches and models for calculating load reductions achieved from implementation of best management practices. The goal of this project is to better capture and report on load reductions achieved over time and at multiple scales. The output will provide estimates of nutrient and sediment load reductions achieved for watersheds within the MARB area for a multi-year period thereby filling a critical data gap for Mississippi. The work begun under GHP Phase 1 builds the infrastructure needed to house the BMP data and associated required metadata in a SQL database along with building the code for the model framework that will calculate load reductions achieved from those BMPs. Additional funding will be used to finalize the database and modeling platform, support automation of data imports, build standardized reports, and provide results to the public.

- **Support Planning, Prioritization, and Implementation of Nutrient Reduction Actions:** This database will track and report the results of varied forms of BMP implementation through time (2008- present) and at multiple scales (watersheds, basins and MARB region). The funding from GHP Phase 2 will be used to develop enhancements that will better contextualize impacts from nutrient reduction actions including changes in land use types, performance of BMPs, and refine background nutrient loading estimates. These funds will also be used to integrate outputs from Mississippi's state scale SPARROW Model to provide critical background loadings and support watershed planning efforts. This information is critical for prioritizing areas with the highest likelihood of achieving success from implementation efforts and is necessary for developing watershed plans.

- **Leveraged Outputs to Advance Nutrient Efforts:** The resulting tool will use annual BMP implementation data from NRCS (aggregated at the HUC 12 scale - no private information), combine NRCS data with state specific implementation data, and generate updated nutrient load reduction details. As a result, the model outputs can provide additional data to our partners to help link environmental outcomes with BMP funding spent across the different funding programs. These outputs can be provided at the state-wide, regional, watershed scale or even to link environmental outcomes to specific BMP types. This type of information can be used by stakeholders and partners to inform program development and estimate program impact. In addition to sharing outputs, the database and modeling platform can be shared with partners within the HTF for use in their own areas of interest.

Milestone Schedule:

The timeframe for completion of work under this grant is 5 years. The overall completion date for all actions identified in this workplan is consistent with the end of the grant period which is October 31, 2030. **Note: Work is intended to take the full 5-year period allowed under the grant to complete. In the event there is a delay in the award, MDEQ will work with EPA to modify applicable milestone schedules and grant end date to allow the full 5-year period to complete tasks.**

Table 5: Milestone Schedule Project 3: Nonpoint Source Estimation Tool (NRET)

Milestones	2026	2027	2028	2029	2030
Develop standard process and code to process implementation data for import		X	X		
Develop code to automate data imports using NRCS sanitized data			X	X	
Develop code to automate data imports for EPA Section 319 data			X	X	
Build standardized reports for data outputs			X	X	
Enhance database platform to store Mississippi SPARROW outputs (background nitrogen, phosphorus, and sediment loading)				X	X
Publish outputs to web platform for public access and use					X

Project 4: Continuous Nitrate (NO_3) Monitoring

The HTF has emphasized the need for additional nutrient data collection across the MARB; especially the need for expanded monitoring for state waters flowing into the Mississippi River. These data are critical to better establish trends and track nutrient and sediment loads. To address this need, Mississippi used GHP Phase 1 funding to deploy continuous nitrate sensors at 6 major tributaries to the Mississippi River: Steele Bayou, Yazoo River, Big Black River, Bayou Pierre, Homochitto River, and the Buffalo River. Collecting continuous nitrate data from Mississippi's major tributaries provides additional data to develop a more scientifically defensible estimate of Mississippi's contribution to the river and hypoxic zone. The Gulf Hypoxia Program grant guidance specifically identified continuous nitrate monitoring as a tier 1 priority for monitoring. The work proposed under this project will provide **continued funding** to extend continuous nitrate monitoring at these locations for an additional three years thereby vastly increasing the information available to refine nitrogen loading estimates. This work will be done in partnership with the USGS and data will be publicly available through NWIS and the Water Quality Portal.

Environmental Results:

- **Clarify Nutrient Contributions:** The nationwide continuous NO_3 monitoring network maintained by the USGS has grown over the last decade. There are 40-50 located within the MARB, but only three sites are monitored in the lower portion of the basin. Expanding the network to collect data from the state's major tributaries will help to clarify Mississippi's nutrient contributions to the Mississippi River.

- **Improve Estimations of Loads:** A continuous collection of NO_3 data from the state's major tributaries improves the current process of estimating nutrient loads (using monthly discrete samples). It also enables the consideration of natural variability like weather-related incidents to be used to refine load estimates. Establishing continuous nitrate sensors near the outlets of major tributaries generates required data to generate scientifically defensible estimates.

- **Increased Data Confidence:** Continuous NO_3 monitoring stations are installed on the Yazoo River, Big Black River, Bayou Pierre, Steele Bayou, Homochitto River, and Buffalo River. The Buffalo River monitoring location represents a mostly undeveloped forested area and could serve as a control/reference site to better evaluate variability in data and relationships to stressors.

- **Leveraged Outputs to Advance Nutrient Efforts:** This effort supports recommendations from the HTF to fill data gaps ensuring the collection of robust data to refine loading estimates for Mississippi waters but will also fill data gaps in USGS's larger monitoring network to collect continuous nitrate data in the MARB. These data will also be incredibly useful as USGS moves to refine loading estimates in the Mississippi River proper as well as in future refinements of the larger Midwest regional SPARROW model.

Milestone Schedule:

The timeframe for completion of work under this grant is 5 years. The overall completion date for all actions identified in this workplan is consistent with the end of the grant period which is October 31, 2030. **Note: Work is intended to take the full 5-year period allowed under the grant to complete. In the event there is a delay in the award, MDEQ will work with EPA to modify applicable milestone schedules and grant end date to allow the full 5-year period to complete tasks.**

Table 6: Milestone Schedule Project 4: Continuous Nitrate Monitoring

Milestones	2026	2027	2028	2029	2030
Operation and maintenance of sensors and equipment		X	X	X	X
Data collection at 6 locations		X	X	X	X
Data analysis and reporting					X

Activity 5: Nutrient Reduction Strategy (NRS) Report Update

Adaptive management is the key means by which the state's nutrient reduction strategies (NRS) are expected to be implemented. Therefore, on a routine basis, strategies should be updated to evaluate progress and document lessons learned. Mississippi's existing nutrient reduction strategies were developed 2008-2012. Using funds allocated under GHP Phase 1, work is ongoing to evaluate the current strategy documents and identify successes and/or lessons learned since they were first implemented. The work proposed under this project will provide **continued funding** to evaluate the content of the existing strategies and develop updates to bring Mississippi's NRS into alignment with current state of science. Updates will also be made to accommodate advancements in the overall business of nutrient management. This process will be completed through engagement of subject matter experts, resource agency partners, and input from researchers and incorporate changes needed

to improve the implementation of the strategies, report outcomes, update success measures, and improve access to nutrient reduction information.

Environmental Results:

- **Advance Stakeholder Understanding and Collaboration:** Resource agency partners, researchers, commodity groups, and nonprofits are working to advance the science and understanding of nutrient dynamics and impacts in waters across the state. Using partnerships established through Mississippi's Basin Management Approach, these groups work collaboratively to refine strategies and implement practices to mitigate nutrient pollution. Collective knowledge from these stakeholders will inform updates needed to ensure the advancement and success of Mississippi's nutrient reduction strategy. Funding from GHP Phase 2 will be used to re-engage partners, facilitate stakeholder meetings, solicit information and update Mississippi's nutrient reduction strategy.

- **Support Planning, Prioritization, and Implementation of Nutrient Reduction Actions:** Mississippi's nutrient reduction plan outlines 10 nested strategies that drive nutrient implementation efforts in watersheds. This information provides a framework for prioritizing efforts as well as identifying actions that should be considered to measure outcomes and plan for success. The funding from GHP Phase 2 will be used to update strategy resources to support advancements in data access and new planning tools. This information is critical for prioritizing areas with the highest likelihood of achieving success from implementation efforts and is necessary for developing watershed plans.

- **Leveraged Outputs to Advance Nutrient Efforts:** The outputs from this project will incorporate changes to reflect current state of science and ensure partners and stakeholders have access to new research findings. In addition, this will allow future partnerships to build upon current state of knowledge and provide opportunities to leverage resources to fund projects that will address shared nutrient related research objectives.

Milestone Schedule:

The timeframe for completion of work under this grant is 5 years. The overall completion date for all actions identified in this workplan is consistent with the end of the grant period which is October 31, 2030. **Note: Work is intended to take the full 5-year period allowed under the grant to complete. In the event there is a delay in the award, MDEQ will work with EPA to modify applicable milestone schedules and grant end date to allow the full 5-year period to complete tasks.**

Table 7: Milestone Schedule Project 5: Nutrient Reduction Strategy Report Update

Milestones	2026	2027	2028	2029	2030
Re-engage stakeholders and resource agency partners to update Mississippi's NRS	X	X	X	X	X
Report on progress made in nutrient reduction efforts, science-based initiatives, and lessons learned		X	X		
Communicate program changes and successes achieved in support of GHP and NPS program goals		X	X	X	
Facilitate feedback from stakeholder groups on changes needed and/or updates to existing NRS			X	X	
Synthesize feedback and update NRS as needed				X	X
Publish updated NRS to web platform for public access and use					X

Project 6: Nutrient Status and Trends Analysis

Nutrient enrichment (primarily nitrogen and phosphorus) is commonly cited as the principal reason for water-quality impairments. Elevated concentrations of nitrogen and phosphorus can lead to depletion of oxygen in water negatively impacting aquatic organisms and can lead to harmful algal blooms. Understanding nutrient conditions in waters and how those conditions vary spatially, seasonally, and across different flow conditions provide crucial information to inform management decisions, target actions on the landscape, and track success of nutrient management efforts. This work will enhance understanding of Mississippi's nutrient landscape by expanding data analysis to determine concentrations, yields, and loads for water bodies draining into the Mississippi River and downstream to the Gulf of America. The work proposed under this project will provide **new project funding** to develop flow normalized concentrations, yields, and loads using data from long-term ambient monitoring conducted by MDEQ. Current conditions of nutrient concentrations and loads have been estimated for 22 waterbodies across the state of Mississippi. This work will expand the analysis to include 6 additional years of water quality data at those 22 sites and will extend the analysis to include 23 additional locations for a total of 45 locations. As this is intended to be a statewide effort to help determine the success on Mississippi's NRS, data analysis efforts for stations outside of the MARB will be funded using Mississippi's Section 319 grant.

Environmental Results:

- **Quantify Nutrient Trends and Loads:** Mississippi established its first nutrient reduction strategy in 2008. This effort will utilize data collected from 2008-2024 to quantify current conditions of nutrient and sediment concentrations and loads. This analysis will provide a better understanding of how nutrient and sediment conditions vary spatially, seasonally, within the 16-year data window, and in response to streamflow.

- **Indicator of Strategy Success:** Analysis of outputs from data collected at the same location for a long period of time is critical to determining success of landscape level implementation actions within those watersheds while also helping to measure performance of Mississippi's nutrient

reduction strategies. The outcome of this analysis will be used to confirm approaches that are working and provide the necessary information to target areas that are seeing less success.

- **Leveraged Outputs to Advance Nutrient Efforts:** The outputs from this project will provide data and information that can be used by USGS to refine loading estimates in the Mississippi River proper as well as in future refinements of the larger Midwest regional SPARROW model.

Milestone Schedule:

The timeframe for completion of work under this grant is 5 years. The overall completion date for all actions identified in this workplan is consistent with the end of the grant period which is October 31, 2030. **Note: Work is intended to take the full 5-year period allowed under the grant to complete. In the event there is a delay in the award, MDEQ will work with EPA to modify applicable milestone schedules and grant end date to allow the full 5-year period to complete tasks.**

Table 8: Milestone Schedule Project 6: Nutrient Status and Trends Analysis

Milestones	2026	2027	2028	2029	2030
Data synthesis and preparation	X	X			
Data analysis		X	X		
Data interpretation			X	X	
Synthesis of results and reporting				X	X

Project 7: Mississippi SPARROW

Mississippi has more than 86,000 miles of streams and rivers draining through the state. Due to the density of Mississippi's stream network, it is extremely difficult to collect water quality data in these waters resulting in areas that have little or no water quality monitoring data available. Loadings contributed to downstream water bodies are difficult to measure without sufficient monitoring information. This is a challenge when understanding nutrient concentrations and loads is key to implementing nutrient reductions actions and measuring improvements in water quality from those actions. The work proposed under this project will provide **new project funding** to work with the USGS LMG to develop a dynamic SPARROW model calibrated for Mississippi. Using the new dynamic SPARROW modeling framework, expanded calibration data from Mississippi waterbodies will be used to develop watershed scale estimates of nutrient and sediment conditions where data are not available. The SPARROW model predicts loads in unmonitored watersheds by linking available monitoring data with watershed characteristics and pollutant sources. This modeling framework will also be updated to use current input data for both point and nonpoint sources thereby providing watershed loading outputs that are more current than those provided by the larger, regional SPARROW models developed by USGS.

Outputs from the nutrient status and trends analysis outlined in Project 6 above will be used to help calibrate Mississippi SPARROW along with water quality data collected at 38 additional locations where USGS maintains continuous flow gages. This is intended to be a statewide effort to help determine the success of Mississippi's NRS, provide watershed background loadings for use in NRET, and track impacts from changes in landuse. Collection of water quality samples will be conducted by USGS, and analysis support will be provided by MDEQ's laboratory. As such, data collection costs will be co-funded using Mississippi's Section 319 grant to support work in areas outside of the MARB. Funding to analyze the

samples will be provided from Mississippi's Section 319 grant. As with other data funded from Section 319 grants, results from the sampling efforts will be included in MDEQ's routine data uploads to WQX.

Environmental Results

- **Refine Sediment, Nitrogen, and Phosphorous Loads in Watershed:** Expand data available for model calibration by collecting water quality data in waters where USGS has existing continuous flow gages. This work will be leveraged with Mississippi's Section 319 grant funding to expand data collection statewide providing a more robust model output that can be utilized to inform management decisions and support planning efforts for at the watershed scale. Collection of water quality samples will be conducted by USGS, and analysis support will be provided by MDEQ's laboratory

- **Support Planning, Prioritization, and Implementation of Nutrient Reduction Actions:** SPARROW model outputs support prioritization and ranking for watersheds contributing nutrient and sediments loads helping identify areas where work is most needed and areas where the most benefit could be achieved. Mississippi SPARROW is also an integral component of Mississippi's Nonpoint Source Estimation Tool (NRET) by providing background loadings for watersheds. The NRET tool estimates load reductions achieved from practices implemented on the landscape. Utilizing these two outputs, percent reductions can be calculated for watersheds and aggregated into regions, basins, and for the entire state. This information is key to measuring and tracking success of the nutrient reduction strategies.

- **Leveraged Outputs to Advance Nutrient Efforts:** The outputs from this project will provide data and information that can be used by USGS to refine loading estimates in the Mississippi River proper as well as in future refinements of the larger Midwest regional SPARROW model. The information will also be available to the public via a map viewer in the same format as the one developed for the regional models. With public access to the information, researchers, partners, and planners can use the model outputs to advance science and target nutrient reduction actions.

Milestone Schedule:

The timeframe for completion of work under this grant is 5 years. The overall completion date for all actions identified in this workplan is consistent with the end of the grant period which is October 31, 2030. **Note: Work is intended to take the full 5-year period allowed under the grant to complete. In the event there is a delay in the award, MDEQ will work with EPA to modify applicable milestone schedules and grant end date to allow the full 5-year period to complete tasks.**

Table 9: Milestone Schedule Project 7: Mississippi SPARROW

Milestones	2026	2027	2028	2029	2030
Site selection to increase calibration data	X				
Data collection		X	X	X	
Update model input data for point and nonpoint sources		X	X	X	
Update to dynamic SPARROW model framework				X	X
Data delivery and launch of online map viewer					X

Transferability of Results and Stakeholder Engagement:

As part of established environmental programs, MDEQ routinely contributes funding, information, and staff resources to promote awareness, education, and training on nutrient pollution and prevention/mitigation efforts. Key components of these outreach efforts are outlined below.

- **Engage Stakeholders to Identify Consensus Building Projects and Priorities:** MDEQ recognizes that the level of success in developing, implementing, sustaining, and expanding effective GHP grant projects is greatly influenced by the level of stakeholder involvement both at the watershed and statewide levels. Accordingly, great focus is given to activities that promote consensus building and partnering throughout all phases of the GHP projects. Stakeholder engagement efforts (refer to Figure 1) are ongoing to ensure project results meet the overlapping needs prioritized by stakeholders, identified by GHP initiatives, and outlined in the state's NRS report.

- **Leverage MDEQ's Existing Initiatives:** A primary objective of the of this work is to increase public awareness of nutrient pollution and ways to reduce its impacts at the individual, community, and watershed levels. Environmental awareness programs sponsored by MDEQ target a wide range of audiences including formal and informal educators, school aged children, private citizens, urban neighborhood groups, civic organizations, elected officials, landowners, producers, communities, and government resource agencies. MDEQ's existing programs and outreach mechanisms will be leveraged during routine activities to amplify GHP project outcomes in the targeted watersheds and throughout the state. Dates, locations, and materials associated with awareness, education, and outreach activities will be posted on MDEQ's website and social media platforms.

- **Build Effective Knowledge Transfer Opportunities and Dissemination Pathways**: Once projects are implemented and yielding results, knowledge transfer can be realized in many forms: training courses, seminars, online tools, and guidance documents. It can also be realized using social media platforms like X (formerly Twitter) and Facebook and/or through media campaigns. To be successful, all these mechanisms should be utilized to provide the right information, in the right format, with an appropriate amount of detail for the targeted audience. For these reasons, knowledge transfer remains critical to ensure existing best practices are promoted while identifying new opportunities to communicate outcomes from GHP and nutrient reduction efforts.

Actions Supporting Resilience and Hazard Mitigation

The projects outlined in this workplan also provide resilience and/or hazard mitigation co-benefits. More information on how individual projects support these co-benefits is provided in the information below.

The Nutrient Reduction Estimation Tool provides estimates of nutrient and sediment load reductions, streamlining the state's efforts in tracking and reporting BMP implementation over time. The outputs from this tool can be used to target hazard mitigation initiatives such as carbon-sequestering cover crops on agricultural land and green infrastructure that provide both nutrient and flood mitigation benefits in urban landscapes. As context-specific information about the nutrient reduction strategies are determined (including data from the update of the Mississippi SPARROW model), results can be quickly disseminated to guide implementation across various scales and land use types; inform the understanding of various BMP performance efficiencies; and improve the overall impact of the state's nutrient reduction actions.

The development of a diatom indicator will help programs assess the performance of existing nutrient reduction practices by providing a more direct measure of nutrient response through the collection of algal community data. This information can also be used to inform placement and effects from the implementation of hazard mitigating BMPs.

Continuous nitrate (NO_3) monitoring provides supporting information that can be used to evaluate hazard adaptation capacity. Specifically, the expanded data collection network will facilitate a more granular look at the potential impacts to nutrient loadings from variable surface water flows influenced by meteorological events

The Nutrient Status and Trends Analysis will enhance understanding of Mississippi's nutrient landscape by expanding data analysis to determine concentrations, yields, and loads for water bodies draining into the Mississippi River and downstream to the Gulf of America. As the analysis of land-based trends expands, the outputs provide support to natural resource managers responsible for developing and implementing BMPs that need to be effective across varying rainfall conditions.

Compliance with Related Legislation

The information detailed below describes how MDEQ plans to ensure compliance with federal legislation included in the conditions of the grant.

Civil Rights:

Title VI of the Civil Rights Acts of 1964 states that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. MDEQ abides by all Title VI expectations. This is a long-standing condition required as part of traditional grant programs and as such, has been a cornerstone for all programs implemented by MDEQ. Through administration of this funding opportunity, MDEQ will work to ensure all parties comply with pertinent civil rights statutes and regulations. Language is included in the conditions for sub-awards and contracts such that subgrantees and contractors must agree to comply with all outlined terms and conditions.

Support the American Worker and Build a Strong Conservation Workforce:

MDEQ will abide by the most recent federal guidance on the Davis-Bacon Act's impact to the GHP work plans. Accordingly, the "Davis-Bacon wage rate requirements do not apply to Gulf Hypoxia projects

funded with Infrastructure Investment and Jobs Act (IIJA) funding. The Davis-Bacon Act (DBA) generally applies to Federal Government contracts for the construction, alteration, or repair of public buildings or public works. The DBA itself does not extend wage rate requirements to grant funded activities. However, the DBA does contemplate that other legislation, so-called Davis-Bacon related Acts (DBRA), will by their terms extend coverage to certain grant funded activities. The IIJA does not include a DBRA term for the Gulf Hypoxia funds."

Support Domestic Manufacturing:

With this grant application, MDEQ is not proposing to implement anything that would be considered infrastructure. Therefore, no additional requirements on domestic manufacturing such as compliance with the National Environmental Policy Act (NEPA) and/or Build America, Buy America (BABA) is necessary.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

Project Workplan

Overall Brief Workplan Description:

Missouri Department of Natural Resources, as the curator of the Missouri Nutrient Loss Reduction Strategy, will implement two separate projects under this Gulf Hypoxia Program workplan that achieve actions promised under the state's nutrient strategy. Project deliverables include continued funding of water quality monitoring established under the previous workplan and implementation of pilot filter strip/ field border practice, a project for blind inlet installation, and a two-stage ditch nutrient reduction project.

Total/Overall Gulf Hypoxia Program State Funding Request:

FFY 2025	FFY 2026	FFY 2027	FFY 2028	FFY 2029	TOTAL
$439,867	$503,157	$379,735	$253,157	$189,867	$1,765,783

Project 1 – Continued Funding of Missouri's Ambient Nutrient Monitoring

This funding will ensure the continued operation and maintenance of United States Geological Survey (USGS) water quality monitoring stations funded under the previous Gulf Hypoxia Program Grant Workplan. The four stations were selected to better capture and characterize the water quality conditions of key sub-sections of the Missouri River, Mississippi River, and Grand River.

Project 2 –Innovative Nutrient Loss Reduction Conservation Practices

This funding will be used towards implementation of three different nutrient loss reduction BMPs across the State of Missouri. The first practice would be to expand upon the efforts in Northeast Arkansas and establishing two-stage ditches in the bootheel region of Missouri. We believe the similar geography and farming practices from the Southeast portion of Missouri to that of Northeast Arkansas will translate to a similar application and benefit that Arkansas has seen with this practice. We will also use the "Batch and Build" approach with this practice for the efficiency to contract and install multiple projects to simplify the installation and project application.

The second BMP is to expand upon and incentivize an underutilized practice provided in the Department's Soil and Water Conservation Program (SWCP). Currently the SWCP has available a Filter Strip practice, which provides an out of production incentive. In this proposal, we would like to increase the incentives and reduce the maintenance life associated with this practice to make it more attractive and to help promote this BMP. This would be made available in cropland along riparian areas where sediment, nutrients, and chemicals are at risk of leaving the fields and entering the riparian areas or waterways. Water quality protection and reduction in nutrient loss will be derived by the filtering of pollutants and by providing erosion and streambank control from the vegetation holding the soil in place.

The third practice Missouri would like to propose is installation of Blind Inlets as a replacement of the traditional Hickenbottom inlet in tile terrace systems. This practice is currently being studied by the University of Missouri; the results are promising by helping to reduce the sediment and phosphorus losses from crop fields by forcing water to pass through a filter material before moving through the drainage system. The University has been studying the practice on a small scale and would like to expand the practice to additional demonstration sites.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

Project 1 Summary Information Page

Annual Project Spending:

Project #	FFY 2025	FFY 2026	FFY 2027	FFY 2028	FFY 2029	TOTAL
Project 1	$250,000	$250,000	$0	$0	$0	$500,000
Project 2	$189,867	$253,157	$379,735	$253,157	$189,867	$1,265,783
TOTAL	$439,867	$503,157	$379,735	$253,157	$189,867	$1,765,783

Organizational Information:

Project 1:

Project Manager:
Owen Gallagher
Special Projects Coordinator
Water Protection Program
Missouri Department of Natural Resources
1101 Riverside Drive
Jefferson City, MO 65101
Owen.Gallagher@dnr.mo.gov;
573-522-4506

Grant Management Contact:
Misty Lange
Fiscal Management Section Chief
Water Protection Program
Missouri Department of Natural Resources
1101 Riverside Drive
Jefferson City, MO 65101
Misty.Lange@dnr.mo.gov; 573-751-2994

Project 2:

Project Manager:
Josh Poynor
Environmental Program Supervisor
Soil and Water Conservation Program
Missouri Department of Natural Resources
1101 Riverside Drive
Jefferson City, MO 65101
Josh.Poynor@dnr.mo.gov; 573-891-4379

Grant Management Contact:
Diane Matthews
Fiscal and Admin Specialist
Soil and Water Conservation Program
Missouri Department of Natural Resources
1101 Riverside Drive
Jefferson City, MO 65101
Diane.Matthews@dnr.mo.gov; 573-751-1449

Project 1 Title:

Continued Funding of Missouri's Ambient Nutrient Monitoring

Organizational Information:

Project Manager:
Owen Gallagher
Special Projects Coordinator
Water Protection Program
Missouri Department of Natural Resources
1101 Riverside Drive
Jefferson City, MO 65101
Owen.Gallagher@dnr.mo.gov 573-522-4506

Grant Management Contact:
Misty Lange
Fiscal Management Section Chief
Water Protection Program
Missouri Department of Natural Resources
1101 Riverside Drive
Jefferson City, MO 65101
Misty.Lange@dnr.mo.gov; 573-751-2994

Proposed Funding Request:

FFY 2025	FFY 2026	TOTAL
$250,000	$250,000	$500,000

Brief Project Description:

In support of the guiding principles and data needs expressed in the Missouri Nutrient Loss Reduction Strategy, Missouri's Water Protection Program seeks to continue financial support for four US Geological Survey water quality monitoring stations funded under the first Gulf Hypoxia Program Grant Workplan. The four stations were selected in order to better capture and characterize the water quality conditions of key sub-sections of the Missouri River, Mississippi River, and Grand River. Data will be used to better quantify the state's total nutrient loads as well as aid in identifying and selecting priority watersheds for targeted conservation efforts.

Environmental Results:

This project is designed to support Missouri's Nutrient Loss Reduction Strategy (NLRS) by ensuring the continuity and quality of water quality data in the state. Continued funding of water quality monitoring will improve the Department's ability to understand nutrient sources and support better decision-making regarding targeted conservation efforts, priority watersheds, and targeted approaches to nutrient management. This objective will also directly improve the effectiveness of the Missouri Nutrient Reduction Progress Tracking Dashboard funded under the first Gulf Hypoxia Program Grant Workplan.

As specifically outlined in Missouri's NLRS, "We need to be able to estimate reductions in nitrogen and/or phosphorus loading to the nearby waters and, subsequently, to the Gulf of America in order to understand the water quality benefits in relation to overall cost effectiveness (MO NLRS, 2014)."

These locations are important to establish and track nutrient trends on the major rivers that receive large nutrient loads and will further help determine and track loads in the Missouri and Mississippi rivers bracketing major tributaries that contribute nutrients. By transecting the Missouri and Mississippi rivers with multiple monitoring stations, the Department can more effectively target high-nutrient loading watersheds and regions of the state for conservation practices.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

Project Workplan

Place of Performance:

Project outcomes will occur entirely within the confines of the Mississippi/Atchafalaya River Basin.

Project Period:

Anticipated Agreement Date: October 1, 2027
Anticipated Project Completion Date: September 30, 2029
Grant Project Period: October 1, 2027 – September 30, 2029

Project Title:

Continued Funding of Missouri's Ambient Nutrient Monitoring

Project Approach:

Describe the approach and include any maps, charts, and/or figures.

In support of the guiding principles and data needs expressed in the Missouri Nutrient Loss Reduction Strategy (NLRS), the Department seeks to expand the capability of four USGS water quality monitoring stations to include continuous nitrate and flow monitors. "The existing (water quality monitoring) network is not sufficient to address nutrient loading or other critical water quality parameters at a scale that would best inform policy and actions" (MO NLRS, 2014, Page 17).

Missouri partners with the USGS to fund an ambient water quality monitoring program. The program currently spans four sites on rivers throughout Missouri at which water quality samples have been collected over a long period of time.

In support of the Hypoxia Task Force and the NLRS, Missouri is proposing to continue funding in support of continuous nitrate and water quality monitoring established under the first Gulf Hypoxia Program Grant Workplan. These sites are important to establish and track nutrient trends on the major rivers that receive large nutrient loads. The locations in the table below will help determine and track loads in the Missouri and Mississippi rivers in or bracketing major tributaries that contribute nutrients.

All data collected by USGS is served through USGS's NWIS system and would be available to the public for use in trend analysis and load calculations. Continuous data assists with getting the complete picture of nutrient loading throughout the entire span of hydrologic conditions.

Figure 1. Map and List of Continuous Nitrate Sensors

Monitoring Locations:

Missouri River at Napoleon
Grand River near Sumner
Mississippi River at Keokuk
Mississippi River at Alton

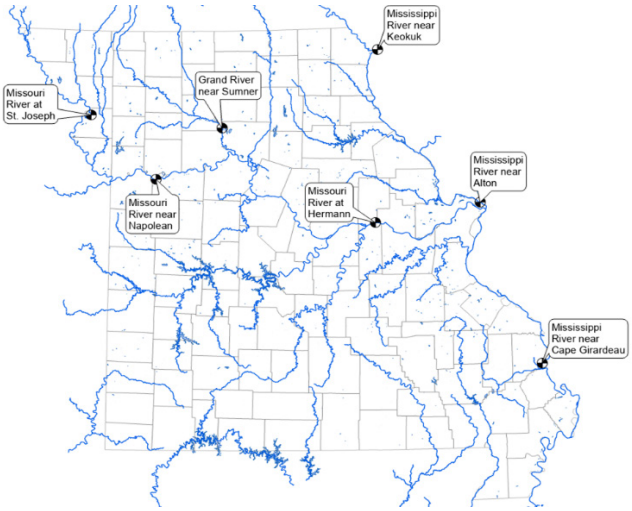
Priority Parameters:

Tier One:

- Nitrate

Tier Two:

- Temperature
- Dissolved Oxygen
- Turbidity
- pH



All locations identified in this project for the nitrate sensors already have routine samples (at some frequency between 4 to 12 times per year, depending upon location) for total phosphorus, orthophosphate, and many other parameters not explicitly identified in this project scope. Such monitoring activities are already funded through an existing contract agreement between the Department and USGS. Furthermore, based on guidance from USGS, most if not all of the sites are not conducive to continuous measurements of total phosphorus and grab samples are the preferred alternative. The funds from this grant will be utilized for the continued operation by USGS of the continuous nitrate sensors at the for gage locations (gage numbers 05474500, 05587498, 06902000, and 06894650). Samples collected will be grab samples in accordance with USGS sampling protocols.

Funding Request Schedule for GHP:

Workplan 1			**Workplan 2**		**TOTAL**
FFY 2022	**FFY 2023**	**FFY 2024**	**FFY 2025**	**FFY 2026**	
$565,004	$372,846	$448,336	$250,000	$250,000	$1,886,186

Include a sentence briefly stating how the project supports EPA Strategic Plan Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds. https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-strategic-plan-overview.pdf

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

Project Workplan

This project supports EPA Strategic Plan Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds because it will provide state, federal, and regional water quality programs with more accurate and timely nutrient loading data from a select number of high-priority monitoring locations in Missouri.

Workplans should reflect the required four strategic outcomes described in Section 3 and any further outcomes that are most suitable and beneficial to the state.

Strategic Outcome 1:	*Support staff to implement the workplan.*
Strategic Outcome 2:	*Use state-level water quality programs and actions to advance nutrient reductions.*
Strategic Outcome 3:	*implement projects in prioritized watersheds with the greatest opportunities for nutrient reductions.*
Strategic Outcome 4:	*Collaborate across state boundaries with HTF partners.*

Continued funding of Missouri's Ambient Nutrient Monitoring will directly reflect Strategic Outcome 5 by providing discrete and continuous real-time water quality monitoring for Tier 1 and Tier 2 priority parameters. Additionally, this project will indirectly support Strategic Outcomes 2, 3, and 4. Continued funding of water quality monitoring in Missouri will enable state-level water quality programs to more confidently and effectively identify and prioritize nutrient hotspots and target watersheds. This project also supports cross boundary collaboration because all water quality data collected through the ambient nutrient monitoring network will be openly shared. This data will be available for use by the public, other state, federal, regional, HTF, and conservation partners and may empower and inform their own planning and conservation implementation initiatives.

In regard to Strategic Outcome 2, this project supports Object 1.3 of the Missouri Nonpoint Source Management Plan 2020-2025, which is aimed at supporting the implementation of the Missouri Nutrient Loss Reduction Strategy. While Missouri 319 staff are not directly involved in the implementation of this project or Missouri's overall GHP workplan, coordination with 319 staff will occur as it relates to any project activities and outcomes that occur in any watersheds with EPA approved 9-element watershed plans. Additionally, continued monitoring will also support the Missouri Nutrient Loss Reduction Strategy as it will allow the state to view nutrient trends across the state, and aid in future Department actions.

Include information about how the state will manage and monitor subawards for successful completion of projects, and ensure subawardees comply with quality assurance, financial, and reporting requirements.

The management, oversight, and authority of this project will be delivered through an amendment of the existing contract between the Department and USGS to operate the Ambient Monitoring Network.

Include proposed public meeting dates, locations, and outreach strategies.
The Department does not anticipate the need to conduct public outreach or hold any dedicated public meetings in order to deliver this project. Successful implementation of this project will, however, be communicated to Missouri clean water stakeholders through existing public forums. Additionally, successful implementation and tracking of this project will be communicated to HTF partners through the existing HTF Coordinating Committee and annual public meetings.

Include a discussion of how state activities will advance Gulf Hypoxia Action Plan.
All four monitoring stations were chosen specifically due to their geographic location and with the intention to understand the explicit water quality conditions as described below:
Missouri River at Napoleon: To capture water quality conditions below the Kansas City metropolitan area and the Kansas River.
Grand River near Sumner: To capture water quality conditions from the Grand River watershed.
Mississippi River at Keokuk: To capture water quality conditions of the Mississippi River before the Iowa/Missouri state line.
Mississippi River at Alton: To capture water quality conditions above the St. Louis metropolitan area and above the Missouri River confluence.

Budget resources necessary for completing a Quality Management Plan (QMP) or Quality Assurance Project Plan (QAPP), if applicable, sharing project information broadly, and reporting progress, should be included.
Data collected by USGS falls under USGS's Quality Management System (QMS): The QMS is a structured and documented management system describing the requirements, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products, and services in laboratories.

All data collected from this monitoring expansion will be made public through existing Department and USGS Ambient Monitoring Network reporting methods.

Environmental Results: Include the following:

• *Describe anticipated outputs and outcomes for strategic outcomes 1–5 defined in Section 5 of this guidance (qualitative and quantitative, include social indicator(s).*
• *Describe the anticipated products/results which are expected to be achieved from accomplishment of the project.*
• *Describe how the state will qualitatively and quantitatively measure and track the environmental results and pollutant load reductions (nitrogen, phosphorus, and co-benefits) from subaward projects and report those results (outputs and outcomes) to EPA.*

Under Strategic Outcome 5, this project will provide continued support for discrete and continuous real-time water quality monitoring for Tier 1 and Tier 2 priority parameters listed below.
Priority Parameters being monitored with this project:

Tier One:
- Nitrate (continuous)

Tier Two:
- Temperature
- Dissolved Oxygen
- Turbidity
- pH

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

Project Workplan

This project will not result in the direct implementation of nutrient reducing practices or other practices with co-benefits.

Interim Reports – The Department will provide EPA with interim reports (performance and financial) on an annual basis until all commitments under each objective of this work plan are complete. Interim reports will include direct and indirect environmental results from that interim reporting period as well as any problems or issues encountered that may affect the quality of the project and what, if any, corrective actions were taken to mitigate the issues. The Department will submit annual progress reports through the GHP module in GRTS pursuant to GHP and GRTS guidance.

Final Report – The Department will provide EPA with a final report no later than 90 days after the assistance agreement project/budget period end date. The final report will be submitted electronically through GRTS pursuant to GHP and GRTS guidance.

Water Quality Monitoring Data Reporting – The Department will report water quality monitoring data collected as part of this project into the Water Quality Exchange (WQX) pursuant to GHP guidance.

Milestone Schedule:

Provide a milestone schedule that covers each year of the total project period requested (up to five years for the cooperative agreement) and provide a breakout of the project activities into phases with associated tasks and a timeframe for completion of tasks. The milestone schedule should show timeframes and major milestones to complete significant project tasks. Include an approach to ensure that (1) any subawards are completed in sufficient time to allow the state to aggregate results and lessons learned and to ensure subawardees have been reimbursed for eligible incurred costs and (2) awarded funds will be expended in a timely and efficient manner. The schedule must include a detailed table.

Project Phase and Subtasks	Anticipated Timeframe	Description
Revise Cooperative Agreement/MOU	Month 1-2	This phase includes the drafting and approval of the revised agreement to continue the existing agreement between the Department and USGS to deliver the Ambient Water Quality Network. Costs associated with coordinating this phase are not intended to be funded using GHP funds.

Interim Reporting	Annual	This will consist of the core monitoring period. Monitoring at the sites will occur pursuant to the existing Ambient Water Quality Monitoring procedures. Department staff will provide annual progress reports pursuant to the GHP grant requirements. Department costs associated with this phase are not intended to be funded using GHP funds.
Conclusion and Final Reporting • Final Report Drafting • Continuation Planning	Year 2	This phase includes the aggregation of data by USGS. Data will be stored and supplied publicly by USGS through USGS's Water Data services. Evaluation of performance for the entire project period will be delivered through the final report to satisfy the requirements of the GHP grant. This phase will also include planning and coordination discussions on the feasibility of funding and continuing the ambient monitoring for these sites outside of the GHP. Department costs associated with this phase are not intended to be funded using GHP funds.

Transferability of Results and Dissemination to Public:

Describe the plan to transfer results to similar projects and disseminate to the public, including:
• Gather and share information and lessons learned from the project(s) to include a written summary to be shared with the public at HTF meetings, materials to share on EPA's GHP website, blurbs to send to EPA for publication in the Hypoxia Task Force Newsletter, any targeted materials to share with state stakeholders and partners, and any other plans to share results from the proposed projects.
• Efforts to support state, regional and basin-wide progress tracking.

All water quality data collected through the ambient nutrient monitoring network will be openly available for use to the public, other state, federal, regional, HTF, and conservation partners and may empower and inform their own planning and conservation implementation initiatives.

The Department is willing and able to provide summaries, information, and progress updates to the public and HTF partners via HTF Coordinating Committee meetings and annual HTF public meetings upon request.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

Project Workplan

Technical Support:

Describe how the state will provide technical support to subawardees. Technical support should include a description of how the state will ensure QAPPs submitted by subawardees meet EPA requirements but could also include other forms of technical expertise.
Very little technical support is likely to be required by Department staff outside of the existing Ambient Monitoring Network agreement between USGS and the Department.

Data collected by USGS falls under USGS's Quality Management System (QMS): The QMS is a structured and documented management system describing the requirements, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products, and services in laboratories.

Detailed Budget Narrative:

Provide a detailed budget narrative referencing each category identified in the SF-424A (Document 2) and estimated funding amounts for each workplan component/task not easily understandable or that require additional information. Describe each item in sufficient detail for EPA to determine cost-effectiveness, reasonableness, and allowability of costs. Common examples where this is necessary are:

- *Description of the roles and responsibilities of personnel.*
- *Description of what supplies will be used for.*
- *Description of why the purchase of equipment is preferable to rental of equipment.*
- *Contract details such as whether it will be sole source or competed and why that choice was made.*
- *Description of activities of a subawardee, etc.*
- *All subaward funding should be located under the "other" cost category.*

States can refer to this guidance on budget development https://www.epa.gov/sites/default/files/2019-05/documents/applicant-budget-development-guidance.pdf, and specifically Appendix 2 for a sample Detailed Budget Narrative. In addition to this guidance, additional support that may be used by applicants when preparing budgets which can be found on EPA's General Budget Development Guidance for Applicants and Recipients of EPA Financial Assistance webpage.

For this project, the Department intends to partner directly with USGS to deliver the expansions to these monitoring stations. The Department and USGS will develop an agreement that will act almost identical to the existing agreement between the Department and USGS to operate and maintain the Ambient Water Quality Monitoring Network in Missouri. This agreement and funding is considered a pass-through subaward. Please see table below for a Total Budget Summary.

Total Budget Summary

	Requested from EPA	Cost Share provided by applicant (if applicable)	**Total**
Personnel	$0	$0	**$0**
Fringe Benefits	$0	$0	**$0**
Travel	$0	$0	**$0**
Equipment	$0	$0	**$0**
Supplies	$0	$0	**$0**
Contractual	$0	$0	**$0**
Other	$500,000	$0	**$500,000**
Indirect Costs	$0	$0	**$0**
Total	**$500,000**	**$0**	**$500,000**

Quality Assurance:

If the state or a subawardee plan to collect or use environmental data or information, explain how the state will comply with quality assurance requirements.

Data collected by USGS falls under USGS's Quality Management System (QMS): The QMS is a structured and documented management system describing the requirements, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products, and services in laboratories.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

Project 2 Summary Information Page

Project 2 Title:

Innovative Nutrient Loss Reduction Conservation Practices

Organizational Information:

Project Manager:
Josh Poynor
Environmental Program Supervisor
Water Protection Program
Missouri Department of Natural Resources
1101 Riverside Drive
Jefferson City, MO 65101
Josh.Poynor@dnr.mo.gov; 573-751-3131

Grant Management Contact:
Diane Matthews
Fiscal and Admin Specialist
Water Protection Program
Missouri Department of Natural Resources
1101 Riverside Drive
Jefferson City, MO 65101
Diane.Matthews@dnr.mo.gov; 573-751-1449

Proposed Funding Request:

FFY 2025	FFY 2026	FFY 2027	FFY 2028	FFY 2029	TOTAL
$189,867	$253,157	$379,735	$253,157	$189,867	$1,265,783

Brief Project Description:

This funding will be used towards implementation of three different nutrient loss reduction BMPs across the State of Missouri. The first practice would be to expand upon the efforts in Northeast Arkansas and establishing two-stage ditches in the bootheel region of Missouri. We believe the similar geography and farming practices from the Southeast portion of Missouri to that of Northeast Arkansas will translate to a similar application and benefit that Arkansas has seen with this practice. We will also use the "Batch and Build" approach with this practice for the efficiency to contract and install multiple projects to simplify the installation and project application.

The second nutrient loss reduction BMP is to expand upon and incentivize an underutilized practice provided in the Department's Soil and Water Conservation Program (SWCP). Currently the SWCP has available a Filter Strip practice, which provides an out of production incentive. In this proposal, we would increase the incentives and reduce the maintenance life that is currently offered by the Missouri Soil and Water Districts Commission associated with this practice to make it more attractive and to help promote this BMP. This would be made available in cropland along riparian areas where sediment, nutrients, and chemicals are at risk of leaving the fields and entering the riparian areas or waterways.

The third practice Missouri would like to propose is installation of Blind Inlets as a replacement of the traditional Hickenbottom inlet in tile terrace systems. This practice is currently being studied by the University of Missouri; the results are promising by helping to reduce the sediment and phosphorus losses from crop fields by forcing water to pass through a filter material before moving through the drainage system. The University has been studying the practice on a small scale and would like to expand the practice to additional demonstration sites.

Environmental Results:

This objective is designed to support Missouri's NLRS by achieving increased nutrient loss reductions at all of the pilot project locations and indirectly resulting in future projects, as lessons learned through this pilot study are implemented across the state through the Department's Soil and Water Conservation Program and Missouri Soil and Water Districts Commission.

Place of Performance:

All participating practices will be located entirely within the State of Missouri, which is located in the Mississippi/ Atchafalya River Basin. Two-stage ditches will be implemented in the bootheel or southeast portion of the state. This area was selected for two-stage ditch implementation due to the geography of this area of the state. It is similar to that of Northeast Arkansas due to the land leveling and widespread use of field drainage which has been present since the early 1900's. The field border project will be made available in the Lower Grand Watershed, this watershed has known water quality and sedimentation issues. Also present in this watershed are several USGS monitoring stations that can be used to help monitor water quality. The proposed Blind inlet practice will be planned in any watershed within the state that is using the traditional tile terrace system, which primarily is the northern half of the state. We expect most of these to be installed in central Missouri due to the proximity to the technical provider and the widespread use of the tile terrace practice in this region.

Figure 2 - Potential area for two-stage ditch project

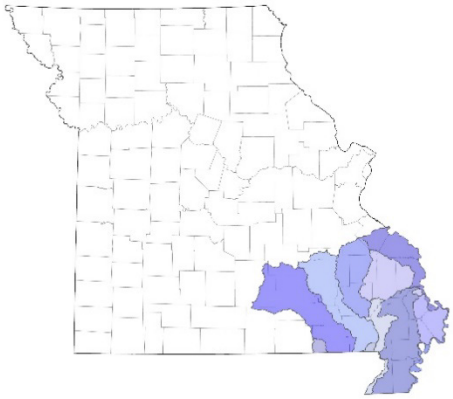
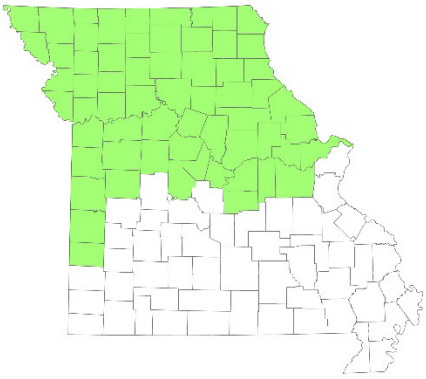


Figure 3 - Potential area for filter strip project

Figure 4 - Potential area for blind inlet project



Project Period:

Anticipated Project Start Date: October 1, 2025
Anticipated Project Completion Date: September 30, 2027
Grant Project Period: October 1 2025 – September 30, 2030

Project Title:

Innovative Nutrient Loss Reduction Conservation Practices

Project Approach:

Describe the approach and include any maps, charts, and/or figures.

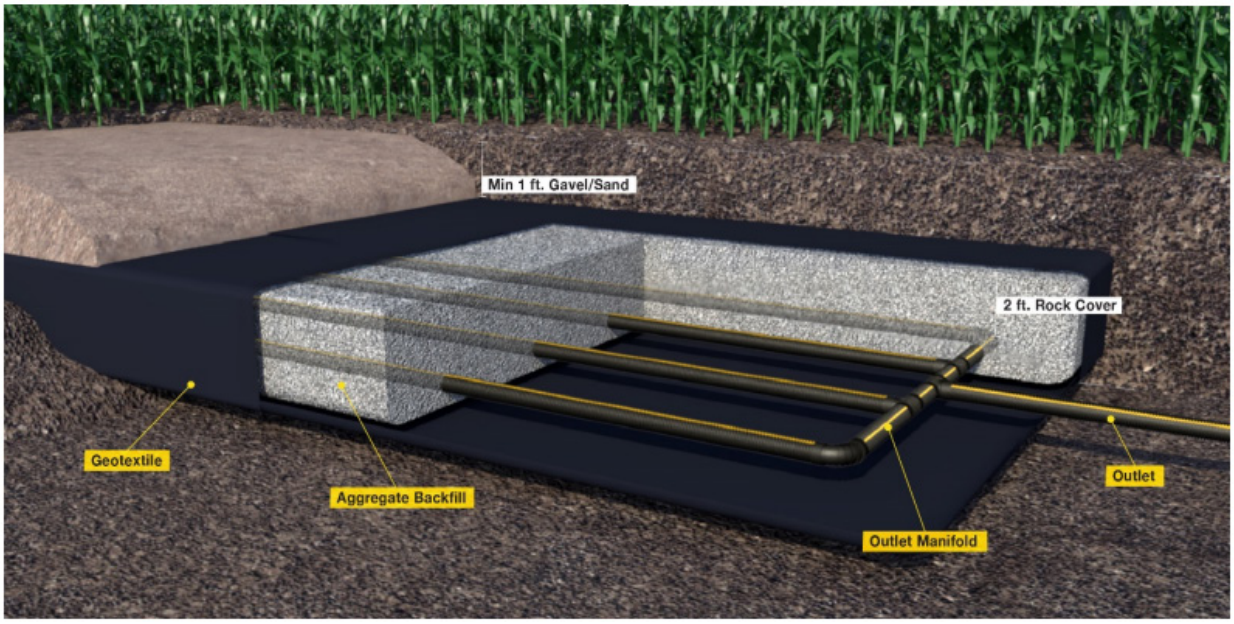
Missouri GHP workplan supports EPA's FY 22-26 Strategic Plan Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds because it will provide state, federal, and regional water quality programs with more accurate and timely nutrient loading data from a select number of high-priority monitoring locations in Missouri.

Construction of two-stage ditches in floodplains have been documented to reduce sediment and nitrate concentrations between 15-82% and 3- to 24-fold, respectively (Mahl et al. 2015). Similar work in Indiana documented a 22% and 50% reduction of total suspended solid load and concentration, while total phosphorus loads and concentrations were reduced by 40% and 50%, respectively (Hodaj 2016). Two-stage ditch construction design was assisted by Dan Mecklenburg, an Ecological Engineer from The Ohio State University, with assistance from Ohio State University. This design information is what is planned to be used for two-stage ditch design in Missouri. Pre-and-post channel dimensions will be reported in the final report to evaluate volume storage capacity. Additionally, the Department will coordinate with local soil and water conservation districts to develop methodologies to evaluate post implementation impacts to local producers. This may include, but not be limited to, number of inundation days reduced, drainage acreage improved, feet/miles of transportation accessibility gained, or qualitative measurements of success. Construction of the two-stage ditches will involve local contractor(s) and utilize local materials following appropriate guidance. In doing so, this project will support cross-cutting priority to support American workers and domestic manufacturing. Practice implementation will be dependent on actual cost per foot for two-stage ditch in Southeast Missouri and engineering costs. Construction of two-stage ditches would not occur until all state and federal permits are acquired and compliance with applicable Clean Water Act requirements, including any impacts to waters of the United States, are met. If required by each respective entity, this would include compliance with National Environmental Policy Act (NEPA), State Historic Preservation Office (SHPO), and coordination with US Fish and Wildlife Service for Endangered Species Act (ESA) compliance. Throughout the project lifespan, data will be entered into the EPA Grant Reporting and Tracking System (GRTS).

The second practice that is included in the proposal is a filter strip practice to be installed along crop fields in riparian corridors, which would create a vegetated stream buffer. This practice will include an increased out of production incentive over the current practice offered through Missouri's Soil and Water Conservation Program. In the current filter strip practice, an incentive of $1300 per acre is offered to convert cropland to a vegetated buffer; the practice in its current form has very little landowner interest. The Department would increase the practice incentive to $3,000 per acre plus provide a cost-share incentive for the seeding costs and reduce the maintenance life of the practice to 5 years from our current requirement of 10 years. We believe the current rate offered and required maintenance life is not attractive enough to generate landowner interest in the practice due to the value of cropland in Missouri. This proposal would be an attempt to discover if a higher financial incentive would encourage an increase in usage of this practice. If this is determined, a proposal will be made with final numbers from the installation of the practice installed by Missouri landowners to the Missouri Soil and Water Districts Commission showing the benefit of the practice and what modifications were necessary to generate landowner participation.

Water quality protection and reduction in nutrient loss will be derived by the filtering of pollutants and by providing erosion and streambank control from the vegetation holding the soil in place.
Missouri's blind inlet project will work to expand on work being done through the University of Missouri research in replacing surface inlets in tile terrace systems. A blind inlet is an inlet structure that allows

entry of surface water from depressions or potholes to a subsurface pipe conduit through a trench filled with clean coarse aggregate, to reduce sediment and other contaminants that can be transported to ditches, streams, or reservoirs. Blind inlets have been reported to reduce sediment loads by 79% and decreased P loads compared to a traditional riser. They have also been reported to reduce loss of 2,4-D, glysophate, atrazine, and S-metholachlor in the range of 11 to 58% in farmed potholes. Local contractors will be utilized to install blind inlets on landscapes that include existing multiple riser inlets and newly installed systems.



Construction of all projects will not occur until all state and federal permits are acquired and compliance with applicable Clean Water Act requirements, including any impacts to waters of the United States, are met. If required by each respective entity, this would include compliance with National Environmental Policy Act (NEPA), State Historic Preservation Office (SHPO), and coordination with US Fish and Wildlife Service for Endangered Species Act (ESA) compliance. Throughout the project lifespan, data will be entered into the EPA Grant Reporting and Tracking System (GRTS).

Follow-up surveys will be completed with all participating landowners to evaluate the actual costs of projects. The project will also evaluate any additional benefits or unintended outcomes/modifications that would need to be made before being made available in the State's regular cost-share program.

> *Include a sentence briefly stating how the project supports EPA Strategic Plan Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds. https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-strategic-plan-overview.pdf*

The projects proposed will advance Missouri's efforts to reduce nutrient loss from agricultural nonpoint source settings by informing the potential for implementing new or innovative nutrient loss BMPs by the state's parks, soil, and water sales tax. This will provide for increase reductions of nutrient loss across the state aiding in the reduction of nutrient pollution. This will contribute to improvement of water quality and having a positive impact on achieving surface water quality standards.

Workplans should reflect the required five strategic outcomes described in Section 5 and any further outcomes that are most suitable and beneficial to the state.

Strategic Outcome 1: *Support staff to implement the workplan.*
Strategic Outcome 2: *Use state-level water quality programs and actions to advance Nutrient reductions.*
Strategic Outcome 3: *Prioritize and target watersheds with the greatest opportunities for nutrient reductions.*
Strategic Outcome 4: *Collaborate across state boundaries with HTF partners.*

The Innovative Nutrient Loss Reduction Conservation Practices workplan makes progress on the 4 strategic outcomes by directly implementing Missouri NLRS objectives, reducing non-point source nutrient pollution, establishing priority areas/watersheds to focus nutrient loss work, collaborating with an adjoining state, and providing a state level collaboration by providing future practice recommendations to the Missouri Soil and Water Conservation Districts Commission.

Include information about how the state will manage and monitor subawards for successful completion of projects, and ensure subawardees comply with quality assurance, financial, and reporting requirements.
The Department intends to subcontract this project via an open request for proposals pursuant to state procurements procedures. As the direct recipient of the grant award, the Department will assume 100% responsibility for carrying out the commitments of this project work plan, including compliance with quality assurance, financial, and reporting requirements. The Department retains 100% responsibility for submitting progress reports through the GHP module in the Nonpoint Source Program Grants Reporting and Tracking System (GRTS).

Include proposed public meeting dates, locations, and outreach strategies.
The Department will conduct public presentations outlining the project, progress, and completion at Soil and Water Districts Commission Meetings and with local Soil and Water Conservation Districts in the targeted areas.

Environmental Results:

Describe anticipated outputs and outcomes for strategic outcomes 1–4 defined in Section 5 of this guidance (qualitative and quantitative, include social indicator(s).
This project directly reflects Strategic Outcome 3 by further reducing nutrient loads from nonpoint sources as well as equipping Missouri's Soil and Water Program with new and innovative strategies for reducing nonpoint source pollution.

The Department will also endeavor to advance Strategic Outcome 4 in relation to this project by collaborating with other HTF states that are conducting similar nonpoint source projects by technical knowledge and data sharing.

Describe the anticipated products/results which are expected to be achieved from accomplishment of the project.
This project will contribute to research into the efficiency of all of the planned practices as best management practices for reducing nutrient transport. If successful, the Department will use this information to promote implementation of this practice through the Soil and Water Program's regular cost-share program.

Describe how the state will qualitatively and quantitatively measure and track the environmental results and pollutant load reductions (nitrogen, phosphorus, and co-benefits) from subaward projects and report those results (outputs and outcomes) to EPA.
Interim Reports – The Department will provide EPA with interim reports (performance and financial) on an annual basis until all commitments under each objective of this work plan are complete. Interim reports will include direct and indirect environmental results during that interim reporting period, as well as any problems or issues encountered that may affect the quality of the project and what, if any, corrective actions were taken to mitigate the issues. The Department will submit annual progress reports through the GHP module in GRTS pursuant to GHP and GRTS guidance.

Final Report – The Department will provide EPA with a final report no later than 90 days after the assistance agreement project/budget period end date. The final report will be submitted electronically through GRTS pursuant to GHP and GRTS guidance.

Milestone Schedule:

Provide a milestone schedule that covers each year of the total project period requested (up to five years for the cooperative agreement) and provide a breakout of the project activities into phases with associated tasks and a timeframe for completion of tasks. The milestone schedule should show timeframes and major milestones to complete significant project tasks. Include an approach to ensure that (1) any subawards are completed in sufficient time to allow the state to aggregate results and lessons learned and to ensure subawardees have been reimbursed for eligible incurred costs and (2) awarded funds will be expended in a timely and efficient manner. The schedule must include a detailed table.

Project Phase and Subtasks	**Anticipated Timeframe**	**Description**
Draft RFP Work with SWCDs to identify potential sites for projects	Month 1-2 The start date and estimated timing of all phases is subject to when GHP funds are allocated to the Department.	This will include the drafting and internal approval process prior to the publishing of the RFP. Department will assist the SWCD staff in promoting the practices that will be available for implementation with the GHP funding.
Open RFP Process • Public RFP Open • RFP Close • Evaluations • Award Contract Work with SWCDs to develop cost-share contracts with landowners to implement practices	Month 3-4	This phase covers the period between when the RFP is first made public and entering into formal contract with a subcontractor to deliver the project goals. Department staff will assist SWCD staff reviewing the cost-share contract for approval.
Planning and Coordination • 1st Planning Meeting	Months 5-6	This marks the start of all subcontracted hours. All billable

		hours by the contractor will be funded using GHP funds. Department costs associated with coordinating this project are intended to be funded using GHP funds.
Core Contract Work Period • Regular Coordination • Identifying Suitable Metrics and Data Visualizations • Identify Data Sources • Collate Data/Database Connections • Draft Mock Dashboard • Draft Webpage(s) • Publish Live Webpage Processing cost-share contracts through the districts for payment	Months 6-15	This phase can be described as the core of the project work phase. All billable hours by the contractor will be funded using GHP funds. Department costs associated with coordination and oversight of the subcontractor are intended to be funded using GHP funds. SWCP staff will assist SWCD staff with processing payments for practice implementation.
Conclusion and Final Reporting • Maintenance and Continuation Planning • Final Report Drafting	Months 15-18	All billable hours by the contractor will be funded using GHP funds. Department costs associated with coordination and oversight of the subcontractor are intended to be funded using GHP funds.

Transferability of Results and Dissemination to Public:

Describe the plan to transfer results to similar projects and disseminate to the public, including:

• Gather and share information and lessons learned from the project(s) to include a written summary to be shared with the public at HTF meetings, materials to share on EPA's GHP website, blurbs to send to EPA for publication in the Hypoxia Task Force Newsletter, any targeted materials to share with state stakeholders and partners, and any other plans to share results from the proposed projects.

• Efforts to support state, regional and basin-wide progress tracking.

The results of the implemented practices will be made available to the Soil and Water Conservation Districts Commission and the public during the commission's regular public meetings. At the meeting, an evaluation and decision will be made if the practices should be made available in the Program's regular cost-share. Results will also be shared in workshops at the annual Soil and Water Conservation Districts Training Conference, through newsletters, and field days where the practice will be presented to landowners and contractors.

Additionally, the Department is willing and able to provide summaries, information, and progress updates to the public and HTF partners via HTF Coordinating Committee meetings and annual HTF public meetings upon request.

Technical Support:

Describe how the state will provide technical support to subawardees. Technical support should include a description of how the state will ensure QAPPs submitted by subawardees meet EPA requirements but could also include other forms of technical expertise.

If the contract is directly with the landowner, staff will work to make sure the landowner is provided standards and specifications for construction. If the contract is provided through the batch and build process, the entity awarded the contract will be responsible for construction. The Department will support that contractor by verifying the project is constructed to meet the intended purpose. In either situation, we work to make sure the landowner is aware of the maintenance requirement of the practice and the need to communicate any issues with Department staff before, during, and after completion of the construction.

Detailed Budget Narrative:

Provide a detailed budget narrative referencing each category identified in the SF-424A (Document 2) and estimated funding amounts for each workplan component/task not easily understandable or that require additional information. Describe each item in sufficient detail for EPA to determine cost-effectiveness, reasonableness, and allowability of costs. Common examples where this is necessary are:

- *Description of the roles and responsibilities of personnel.*
- *Description of what supplies will be used for.*
- *Description of why the purchase of equipment is preferable to rental of equipment.*
- *Contract details such as whether it will be sole source or competed and why that choice was made.*
- *Description of activities of a subawardee, etc.*
- *All subaward funding should be located under the "other" cost category.*

States can refer to this guidance on budget development https://www.epa.gov/sites/default/files/2019-05/documents/applicant-budget-development-guidance.pdf, and specifically Appendix 2 for a sample Detailed Budget Narrative. In addition to this guidance, additional support that may be used by applicants when preparing budgets which can be found on EPA's General Budget Development Guidance for Applicants and Recipients of EPA Financial Assistance webpage.

For this project, the Department will issue a public request for proposals from interested third parties to conduct this work if a single feasible source provider is not available. The Department will then select and award the contract pursuant to state and federal contract and procurement requirements. Please see table below for a Total Budget Summary.

Total Budget Summary

	Requested from EPA	Cost Share provided by applicant (if applicable)	**Total**
Personnel	$150,000	$0	**$150,000**
Fringe Benefits	$88,605	$0	**$88,605**
Travel	$15,000	$0	**$15,000**
Equipment	$0	$0	**$0**
Supplies	$100	$0	**$100**
Contractual	$731,913	$0	**$731,913**
Other	$217,500	$0	**$217,500**
Indirect Costs	$62,665	$0	**$62,665**
Total	**$1,265,783**	**$0**	**$1,265,783**

Quality Assurance:

If the state or a subawardee plan to collect or use environmental data or information, explain how the state will comply with quality assurance requirements.

Data collected by USGS falls under USGS's Quality Management System (QMS): The QMS is a structured and documented management system describing the requirements, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products, and services in laboratories.

Ohio Gulf Hypoxia Program Project Workplan

Project Title: Ohio Gulf Hypoxia Project 2024

Organization Information: Ohio Environmental Protection Agency, Division of Surface Water

Contact Name: Josh Griffin
Address: 50W. Town St., Suite 700
P.O. Box 1049
Columbus, OH 43216-1049
Phone: 614- 644-287
e-mail: Joshua.Griffin@epa.ohio.gov

Proposed Funding Request: Federal Request - $2,461,666
Applicant Contribution - $0

Project Description:

This multi-component project consists of:

- Maintain Staff Capacity
    - Maintain funding for two staff at the Ohio Department of Agriculture (ODA) who provide training and technical assistance for planning and design of structural practices that reduce agricultural nutrient loading.
    - Maintain funding for one Ohio Environmental Protection Agency (EPA) staff assigned to Ohio River Basin implementation of Ohio's nutrient reduction strategy.
- Competitive Application for Planning and Implementation
    - Increase watershed-based planning to develop implementation projects
    - Implementation Projects
    - Evaluate and Track BMP Performance

Environmental Results:

Each of the two project objectives are expected to facilitate reductions in nutrients delivered in the Ohio River Basin. For projects that did not include direct implementation of practices with measurable pollution loads, reduction is not given.

These projects aim to decrease nutrient delivery through planning, education, implementation projects, and monitoring the effectiveness of Best Management Practices (BMPs) throughout the Ohio River Basin. The evaluation of Best Management Practices (BMP's) throughout the Ohio River Basin will sculpt a greater understanding of the most effective practices to implement for reducing. Ohio EPA and ODA positions will continue to provide technical assistance on nutrient reducing projects within the Ohio River Basin.

These proposed activities and results will be described in Ohio's Annual Nonpoint Source Program Report and made available on Ohio EPA's website. Lessons learned and progress that is transferable will be shared via the Hypoxia Task Force Coordinating Committee regular meeting structure and the newsletter created to describe Hypoxia Task Force or notable state activities and news. Access to technical assistance and

resources will be shared through media relevant to those interested parties, such as local news, the Ohio Federation of Soil and Water Conservation Districts meetings.

Place of Performance: Columbus, Ohio; Reynoldsburg, Ohio; and various implementation sites TBD following an RFP.

Project Period: October 1, 2025, through September 30, 2028

Proposed Work:

Budget Table: Total Budget - $2,461,666

1. Maintain Staffing	**$1,404,070**
1.A. Nutrient Management Specialist ODA	$533,279, 3 years
1.B. Conservation Engineer ODA	$389,546, 3 years
1.C. Ohio EPA Environmental Specialist	$387,000, 3 years
1.D. Indirect Expenses (Personnel)	$89,745, 3 years
1.E. Travel	$4,500, 3 years
2.Competitive App for Planning and Implementation	**$1,057,596**
2.A. HUC-12 NPS Implementation Strategy Development	Up to $120,000
2.B. Implementation Projects	Individual Project Cap $400,000
2.C. Evaluate BMP Performance	Individual Project Cap $100,000

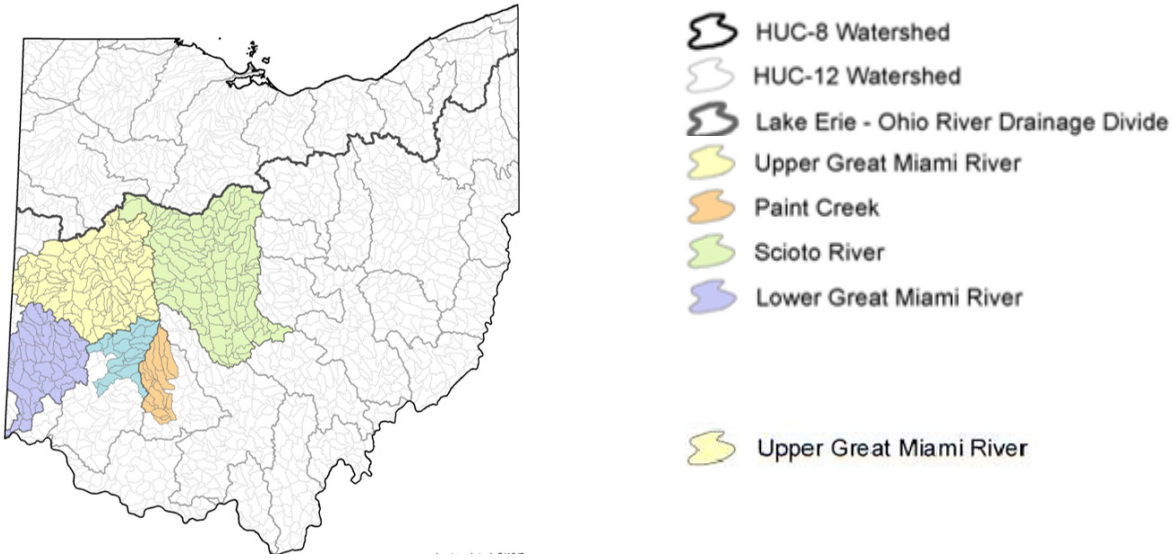
1. Maintain Staffing

Under Ohio's 2022 Workplan, three new staff were hired and will continue to be maintained under the 2025 workplan. The Ohio Department of Agriculture has a Nutrient Management Technical Assistant as well as a Conservation Engineer to help support nutrient reduction within the Ohio River Basin. These staff provide support to local farms, crop advisors, SWCD's as well as the approval and design of implementation practices and development of Nutrient Management Plan Reviews. Ohio EPA added a fulltime Environmental Specialist to assist with the goals of the Hypoxia Task force and support additional development of nonpoint source implementation strategies. This staff works closely with ODA staff to evaluate the State's Nutrient Reduction Strategy and determine updates and additions needed to address excess nutrients as well as the areas of greatest importance within the Ohio River Basin.

1.A. Increase Nutrient Management Technical Assistance – (Subgrant to ODA) $533,279 (3 years)

The Department of Agriculture has added a fulltime **Nutrient Management Specialist** that provides training and support to county Soil and Water Conservation District personnel, farm and crop advisors and farm producers. This follows a template that has occurred in Northwest Ohio of increasing technical resources to build up local staff and planning capabilities. In areas of severe nutrient runoff issues, these staff also review previously developed plans to increase the level of application between plans and producer actions (for nonpermitted farms). Their focus area will continue to be on priority agricultural watershed areas shown in the following map, although some sub watersheds outside of these areas may also be selected for workshops, training and assistance depending upon agricultural

nutrient issues. Development of Voluntary Nutrient Management Plans have been a required prerequisite to some H2Ohio programs, and this will be considered as H2Ohio spreads to Ohio River Basin watersheds.



The position provides educational trainings and workshops focusing on developing nutrient management plans that guide fertilizer and manure application according to soil test data, agronomic needs and NRCS 590 standards were set up. These trainings and workshops will continue to be developed and implemented.

Measures of Progress:

- Maintain Nutrient Management Specialist with ODA
- Training/workshops developed and provided annually
- SWCD/other Consultations regarding nutrient management or NMPs
- Develop Nutrient Management Plan Reviews

1.B. Increase Conservation Practice Design Technical Assistance (Subgrant to ODA) $389,546 (3 years)

The Department of Agriculture also added and will continue to employ a fulltime **Conservation Engineer** that provides engineering assistance to support approval and design of structural nutrient reduction practices such as two-stage ditches, wetlands, drainage water management, saturated buffers. This position supports the implementation of practices, training or other activities that help to implement Ohio's nutrient reduction goals. This initiative will continue to increase access to plan approval and design services and will precede planned expansion of Ohio's H2Ohio program to fund effective practices in areas beyond the Western Lake Erie Basin.

A strategic element of this work will be to support design of 2 stage and self-formed channels in ditches under maintenance. The conservation engineer will continue to work cooperatively with NRCS and SWCDs to support increase capture of nutrients, adding services to degraded channel systems and increasing storage or retention upstream of channels. This is a current practice that is beginning to be funded through the H2Ohio program and if continued by the legislature will be supported by this position in the Ohio River Basin. This is a practice that increases nutrient attenuation on

channelized streams and increases services needed in terms of resiliency and hazard mitigation by offering increased storage of larger, more frequent storm events.

The position also focuses on priority agricultural areas as shown in the preceding map, although some areas outside of these watersheds may be selected for assistance, or training depending upon agricultural and nutrient issues.

Measures of Progress:

- Provide Engineering Consulting Services
- Support inventory and evaluation of SWCD/other Consultations regarding nutrient reduction practices.
- Develop nutrient reduction practice plan reviews and approvals

1.C. Maintain Ohio EPA Staff Support for Nutrient Reduction Activities and Evaluation to Support HTF Goals $387,000 (3 years).

Ohio EPA added an additional fulltime environmental specialist to focus on supporting nutrient reduction activities in the Ohio River Basin to advance the goals of the Gulf Hypoxia Task force. This position assists with updating the Ohio Nutrient Reduction Strategy and the development of evaluation measures in coordination with the ODA staff funded under objective 1. They work closely with monitoring, assessment and TMDL staff to keep the ONRS focused on areas and issues of greatest importance. This position assists with the continuous development of nonpoint source implementation strategies that include Gulf Hypoxia far-field targets.

Measures of Progress

- Maintain an Environmental specialist to support Ohio River Basin nutrient reduction.
- Develop reports that support Hypoxia Task Force objectives.
- Support development of new HUC-12 9-Element NPSIS
- Monitor progress of Gulf Hypoxia Program subgrants and other nonpoint source program grants focused on nutrient management in the Ohio River Watershed

1.D. Indirect Expenses - $89,745 (3 years)

- The final indirect cost rate for SFY 26, as approved by the US EPA is 23.19%

1.E. Travel - $4,500 (3 years)

Travel under this award will be related to the State of Ohio's participation on the Mississippi River/Gulf of America Hypoxia Task Force, and the annual meeting, typically held in Washington DC. At the meeting states provide programmatic updates and interacts with U.S. EPA and other state staff to ensure efficient delivery of the Mississippi River/Gulf of America initiative in Ohio. This annual travel for each year of the three-year workplan is for two staff members but has been combined into a single amount and will be based on federal requirements and activities for State workplan budgets.

2. Competitive Application for Planning and Implementation

This objective will provide funding for planning, implementation, and research to help support nutrient management and reduction in the Ohio River Basin. Further development of 12-17 implementation strategies will be supported by this objective, followed by the implementation of 3-5 projects aimed to address and reduce excess nutrients and sediment within watersheds of the Ohio River Basin. Research will also be conducted following the implementation of projects to help evaluate BMP performances by region in reducing excess nutrients and improving water quality.

Measures of Progress

- 2025 Request for Proposals
- Subawards issued for development of NPS-IS
- Subawards issued for selected implementation and research projects

2.A. Planning: HUC-12 NPS Implementation Strategy Development (12-17 plans)

Proposals under this objective would be for the development of implementation strategies that aim to reduce nutrient delivery and concentrations within the Ohio River Basin. Project goals should improve local water quality and water resources, including restoring impaired streams and wetlands, reducing or eliminating nutrient delivery and addressing excess nutrient threats within the Ohio River Basin. These NPSIS shall conform to 9-Element criteria and contain far-field targets against which NPSIS projects can be tracked. Furthermore, implementation strategies should address the critical issues of the targeted watershed and contain ready-to-implement projects many of which are eligible for nonpoint source funding.

Measures of progress

- Information/consultations regarding Implementation Strategy development
- Collecting resulting projects in spreadsheet or database

2.B. Implementation Projects (3-5 Implementation Projects)

These projects will support water quality and nutrient management improvement through the implementation of ready to go projects within the ORB. Projects should align with Ohio's Nutrient Reduction Strategy and the eight strategies listed within to help decrease nutrient delivery and improve water quality.

Measures of Progress

- Pounds of phosphorus reduced
- Pounds of nitrogen reduced
- Pounds of sediment reduced
- Gallons of stormwater treated/reduced

2.C. Evaluate and Track BMP Performance.

Proposals under this objective would include the evaluation of BMPs and their performance in the Ohio River watershed. Evaluations should reflect new and innovative practices or regional influence of practices that have shown success in other parts of the state/country. Evaluations will improve knowledge to help determine the optimal BMPs for the Ohio River watershed.

Measures of Progress

- Identify a university to assist in the development of methods
- Develop methods to evaluate BMP performance and submit a Quality Assurance Project Plan
- Collect field data
- Calculate load/concentration by BMP

This project supports the **U.S. EPA Strategic Plan Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds** by:

- Maintaining increased training and technical staff available for planning and designing both management and structural practices that reduce nutrients from agricultural fields;
- Competitive Application for increased HUC12 watershed-based planning and implementation projects making progress toward far-field nutrient targets;
- Maintaining increased staff assigned to Ohio River Basin implementation strategies and evaluation of nutrient reduction strategy;
- Competitive Application for Planning and Implementation
    - Increase watershed-based planning to develop implementation projects
    - Implementation Projects
    - Evaluate BMP Performance

Ohio EPA Nonpoint Source staff will provide all needed administration and thorough oversight of the subgrant projects, requiring and providing reporting to meet all applicable federal award requirements. Five nonpoint source staff are currently available to assist with this task and this proposal will strengthen that as a fulltime person will focus on the Ohio River Basin nutrient issues and these subgrants. Quarterly fiscal reports Include information about how the state will manage and monitor subawards for successful completion of projects, and ensure sub awardees comply with quality assurance, financial, and reporting requirements.

This proposal does require that outreach and stakeholder and coordination meeting and trainings occur.

Environmental Compliance:

Ohio EPA meets Appendix 3 WQ guidance with all WQ monitoring activities; according to Ohio EPA's delegation agreement with U.S. EPA. All subgrantees will be routinely monitored for compliance with all permitting and certification and all other federal environmental requirements.

Environmental Results:

These proposals are expected to indirectly decrease nutrient delivery in the Ohio River Basin. Through these programmatic changes and the applied projects, leading causes of water quality impairment in the Ohio River Basin will be identified by region (4-5 regions) and the best corresponding BMP implemented to aid in water quality improvements. Additionally, the tracking of BMP performance by associated load reduction will help evaluate progress in reducing nutrient concentrations. For projects that were not specific practices yielding measurable pollution load reductions, no pollution load decrease is given. Outputs and products have been provided with each proposal project.

These projects aim to improve water quality by decreasing nutrient delivery and concentrations through education, implementation projects and monitoring throughout the Ohio River Basin. The planning,

implementation and evaluation of Best Management Practices (BMP's) throughout the Ohio River Basin by region will sculpt a greater understanding of Non-Point source impairments and the most effective practices to implement and track to reduce nutrients and improve water quality over time. Ohio EPA and ODA positions will continue to provide technical assistance on nutrient reducing projects within the Ohio River Basin with a focus on identifying and providing resources to disadvantaged communities.

These proposed activities and results will be described in Ohio's Annual Nonpoint Source Program Report and made available on Ohio EPA's website. Lessons learned and progress that is transferable will be shared via the Hypoxia Task Force Coordinating Committee regular meeting structure and the newsletter created to describe Hypoxia Task Force or notable state activities and news. Access to technical assistance and any new resources will be shared through media relevant to those interested parties, such as local news, the Ohio Federation of Soil and Water Conservation Districts meetings or news.

	22	2023				2024				2025				2026				2027			
	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Project Initiation	X																				
QAPP Development	X																				
Subgrantee Agreements		X			X																
1 ONRS Update																					
Selection of Subgrantee			X																		
Stakeholder Meeting					X	~~X~~	X	X	X	X											
Review of Ohio materials.				X																	
Review objectives & Summary					X																
Suggested additions Report							X														
Suggested evaluations and draft update.								X													
Completed Updated ONRS									X												
Final reports										X											
Subgrant Closed											X										
2&3 Agr NMSpec & Cons Eng																					
NMSpec Posted				X																	
NMSpec Hired		X		X																	

	22	2023				2024				2025				2026				2027			
	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Cons Eng Posted	X	X	X																		
Cons Eng Hired				X																	
Biannual reports			X		X		X		X		X										
Final reports												X									
Subgrant Closed													X								
4 Ohio EPA Staff																					
EPA Tech posted	X?																				
EPA Tech hired				X																	
Support Position Established	X																				
ONRS Stakeholder Meeting			X			X	X														
ONRS project monitoring & collaboration			X	-	-	-	-	-	-	-	X										
Assist in finalizing ONRS										X?											
NPSIS project support				X																	
Review GHP Progress & Reports			X		X		X		X	X											
5 NPS Implementation Strategy Development						X															

	22	2023				2024				2025				2026				2027			
	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Request for Proposals	X			X																	
50% Complete					X																
Draft NPSIS					X																
100% Complete (All Final NPSIS)									X												
Subgrant Closed									X												
6 Nutrients from HSTS or Septage Project																					
Selection of University	X																				
Selection of target watershed			X																		
Evaluate HSTS/Septage Management			X																		
Program Development			X	X	X																
Program Delivery					X	X	X	X	X	X											
Final Report											X										
Subgrant Closed												X									
7 Effectiveness of New Innovative Practices																					
Request for Proposals	X																				

	22	2023				2024				2025				2026				2027			
	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Install Equipment						X															
1st year report of monitoring										X											
2nd year report of monitoring														X							
Final Report															X						
Subgrant Closed																X					
8 USGS gage water quality monitoring																					
Subgrant Agreement			X																		
1st year report of monitoring								X													
~~2nd year report of monitoring~~													This row was a mistake in the original as the workplan text describes one year of operation and maintenance.								
Final Report /Evaluate for continuing in next workplan								X													
Subgrant Closed								X													
Semi-annual Report			X		X		X		X		X		X		X		X				
Final Report																		X			

State of Tennessee Work plan FY 24, FY 25, and FY 26
Bipartisan Infrastructure Law: Gulf Hypoxia Acton Program

Project Title: Tennessee Nutrient Reduction Incentives, Assistance, Monitoring. and Outreach

Organization Information: TDEC DWR, Davy Crockett Tower 500 James Robertson Parkway Nashville, TN 37243, Paula Mitchell, c. 615-924-4985, paula.mitchell@tn.gov,

Proposed Funding Request: $2,514,116.00

Brief Project Description: The Tennessee Department of Environment and Conservation and the Tennessee Department of Agriculture are advancing Tennessee's nutrient reduction strategy with support from the Gulf Hypoxia Action Plan (GHP). This project aims to reduce nutrient pollution in the Tennessee waters through monitoring, wastewater treatment optimization, agricultural cover crops, and research with support for the Tennessee Nutrient Stakeholder Taskforce. Engaging diverse stakeholders, the project ensures effective, long-term nutrient management, benefiting both the environment and local communities. (https://www.tn.gov/environment/program-areas/wr-water-resources/nutrient-management-in-tennessee.html)

Environmental Results: The project will result in reduced nutrient levels in wastewater effluent, and increased adoption of cover crops in priority watersheds. These efforts will contribute to improved water quality, benefiting Tennessee communities and helping to reduce the occurrence of Harmful Algal Blooms. Additionally, the project will raise awareness of nutrient management practices, while focusing on targeted watersheds and engaging local stakeholders. The four specific projects to provide results are itemized below:

1. Nutrient load monitoring, flow gaging and sampling
    - Will result in nutrient data collected at all flow gaging sites in Tennessee with the outcome of providing nutrient loading information to the Tennessee Stakeholders and Tennessee Nutrient Taskforce.
2. Nutrient optimization of municipal wastewater facilities
    - Will result in evaluating all municipal mechanical wastewater facilities with the outcome of reducing nitrogen and phosphorus discharges.
3. Nutrient loss reduction with cover crops in priority watersheds –
    - Will result in planting additional cover crops in all Tennessee priority watersheds identified for agricultural sources. The outcome of this

initiative will be to reduce sediment and nutrient loss from agricultural fields.

4. Research support
    - Will result in compiling necessary information and data for stakeholder engagement, science driven decisions, and reporting for the Tennessee Nutrient Taskforce with the outcome of better prioritization and tracking reductions of nutrients in the various sectors within Tennessee.

For more details, please refer to "Project Activities" and "Expected Outcomes" table.

Place of Performance: This project takes place in all watersheds in Tennessee which are a part of the Mississippi/Atchafalaya River Basin. The focus is on priority watersheds identified as significant contributors to nutrient loading (i.e. high levels of nitrogen and phosphorus). These watersheds are selected based on data from the USGS Tennessee SPARROW Model and includes locations with major sources of nutrient loading.

Project Period: The project is a continuation of the previous two years of funding starting from the first quarter of Federal FY 25 or the date of the award and extending for up to 5 years from the award (end of Federal FY30).

Project Workplan - Project Approach

Tennessee submitted a work plan for the first two years of funding under the BIL Gulf Hypoxia Program for a total of $ 1,713,333.00 in 2022. This workplan is a continuation of the previous work plan for the remaining $ 2,514,116.00. Tennessee's workplan continues to support EPA Strategic Plan Goal 5: Ensure Clean and Safe water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds by reducing nutrient load from municipal wastewater facilities and from agricultural crop fields. Tennessee's workplan supports the four strategic outcomes of BIL funding for the Gulf Hypoxia Action Plan and is described below.

	Strategic Outcome				**Other State Outcomes**	**NEPA Activity Category**		
Initiative	**#1 Support Staff**	**#2 State Programs**	**#3 Priority Watersheds**	**#4 Interstate Collaboration**	**Establish Nutrient Data**	**#1**	**#2**	**#3**
Nutrient Monitoring	x	x	x	x	X	X		

Treatment Plant Optimization	x	x	x	x	X	X		
Cover Crops	x	x	x	x			X	
Research Support	x	x	x	x	X	X		

Description of Projects

The success of Tennessee's nutrient reduction strategy relies on controlling point sources where TDEC has regulatory authority and working with the agriculture sector to reduce nonpoint sources through incentives, outreach, and education. Based on comments from the Tennessee Nutrient Stakeholder Taskforce, four projects leverage resources and coordination with our federal partners, advance research and communicate progress of nutrient reductions, advance multi-state collaboration and scale up implementation of Tennessee's nutrient reduction strategy. Tennessee's main form of stakeholder engagement is though the Tennessee Stakeholder Nutrient Taskforce where all projects are presented, and stakeholders are kept up to date on project progress.
The four projects of this workplan include:

1. Nutrient load monitoring, flow gaging and sampling
2. Nutrient optimization of municipal wastewater facilities
3. Nutrient loss reduction with cover crops in priority watersheds
4. Research support

In alignment with the strategic outcome 4 for interstate collaboration, Tennessee nutrient taskforce currently collaborates actively with the state of Kentucky. Tennessee provides updates and information to the HTF Plant Optimization Group lead by Kentucky in collaboration with other HTF states. Tennessee and Kentucky collaborate on NRCS projects (RCPP, MRBI) in several shared watersheds. Collaboration across state boundaries is also expected for Research Support for Nutrient Taskforce Projects as appropriate.

Prioritization of Watersheds

Using the USGS Tennessee SPARROW Model for nutrient yield delivered to the HUC 10 outlet, the top 10 watersheds for the most nitrogen and top 10 for the most

phosphorus were selected. We further identified watersheds that had high percentage contribution from each individual source.

Priority watersheds will be considered in the development of the Long-Term Nutrient Monitoring Network, in prioritization of Wastewater Treatment Plant Optimization schedules, and in informing Research Support for Nutrient Taskforce Projects as appropriate.

Work Product Details

1. *Nutrient Load Monitoring*
   Under the Tennessee Nutrient Taskforce direction, Tennessee Tech University provided compilation and analysis of long-term nitrogen and phosphorous water quality monitoring data in Tennessee. Working with USGS under an Interagency Agreement (joint-funding agreement), Tennessee will supplement the existing data by monitoring approximately 115 established USGS flow gages. Data from this effort will be included in the Tennessee Nutrient Database and reported to WQX database. The data from the 5-year monitoring data will be used to establish the first snapshot of nutrient loading across the state; however, due to the short timeframe (5 years), the data is not sufficient to evaluate load reductions. The GHP funds will be used to contract with USGS for professional services including collecting water samples. The joint funding agreement ensures data collection and analysis follow Tennessee Department of Environment and Conservation Quality Assurance Project Plan (EPA approved QAPP) and data from this effort will be included in the Tennessee Nutrient Database and reported to WQX database. S.O. No.1 – Although no new state staff is deployed, partnering with USGS brings in expanded capacity for state water quality monitoring program. S.O. No. 2 – Data from this effort directly expand water quality monitoring in Tennessee. S. O. No. 3 – Data collected in this effort will directly inform status of priority watersheds. S. O. No. 4 – Data collected in Tennessee is made available for sharing with interested states and partners.

2. *Treatment Plant Optimization*
   As a part of TDEC's integrated approach to nutrient management, TDEC's Division of Water Resources created a voluntary water quality program- The Tennessee Plant Optimization Program (TNPOP). The program provides resources to water and wastewater operators to achieve optimization in nutrient removal and energy use in their facilities through low-and-no-cost

measures. This project aims to fully scale up this effort and conduct education of wastewater plant operators, conduct site visits to up to 40 plants per year, provide technical assistance for optimization of up to 20 plants per year with the goal to evaluate all municipal mechanical plants in Tennessee by the end of year 2030. All communities with mechanical wastewater plants will be engaged in the program. TDEC executed a fee for services contract with a private consultant (Grant Tech, Inc.) to support TDEC staff in delivering training and technical support assistance. The contractor and TDEC staff will work with wastewater facilities to train their operators in biological nutrient removal, conduct site visits to develop and implement nutrient strategies specific to each facility, and provide ongoing technical assistance for 12 months. The contractor is required to provide quarterly updates and an annual report. The contract has payment contingent on approval of services. The state will use multiple factors including priority watersheds, potential for nutrient reductions and readiness to participate to place all mechanical municipal required reporting. Data collection and analysis and reporting at the wastewater facilities are scheduled into the 5-year period. The nutrient discharges are reported to ECHO, follow NPDES Permit and 40 CFR 136 approved methods and QA/QC requirements. S.O. No. 1 – While no new state staff is funded, the GHP funds will be fully deployed for the consultant who brings in expanded capacity for these activities. S. O. No. 2 – Optimization of wastewater facilities directly reduce nutrient loading in their effluent discharge. S. O. No. 3 – Priority watersheds with wastewater source will directly benefit from nutrient reduction achieved through this program. S.O. No. 4 – Tennessee actively collaborates with Kentucky and the HTF Plant Optimization group to share information and experience from TNPOP.

3. *Cover Crop Incentives in Priority Watersheds*
   TDEC executed an Interagency Agreement with the Tennessee Department of Agriculture. Through this agreement, TDEC supplements existing funding for cover crop implementation in nutrient priority watersheds. Tennessee Soil Conservation District administers this long-standing cover crop reimbursement program state-wide, and these funds will be added to the existing program in the nutrient priority watersheds to meet the outstanding interest and needs of local producers. S. O. No. 1 – While no new state staff is deployed, partnering with soil conservation districts leverages existing fund delivery mechanism and ensures 100% of the funds are used to put cover crops on the ground. S. O. No. 2 – Cover crop implementation directly reduces

nutrient loss from crop fields. S. O. No. 3. – Cover Crop incentive is directly targeted to nutrient collaboration in priority watersheds in Tennessee (MRAB). S. O. No. 4 – Tennessee actively collaborates with Kentucky on shared priority watersheds -specifically the Red River and Barren River watersheds shared with Kentucky. The GHP funds will be used to fund additional acres of cover crops in nutrient priority watersheds. They will not be used for state staff salaries or program administration.

4. *Research Support*

   To implement this work plan, support research will be funded for projects identified by TDEC and the Tennessee Nutrient Stakeholder Task Force. Projects currently considered are Web User Interface for the Tennessee Nutrient Database, Nutrient Trend Analysis Project, Report of Nutrient Reduction in TN's Municipal WWTPs, Mapping of Urban SCMs in TN and Estimation of Nutrient Reduction Performance, and prioritization of riparian buffers. TDEC executed an Interagency Agreement with Tennessee Technological University. Each year, the nutrient taskforce selects projects dependent on the current needs to support working group objectives of the taskforce. The GHP funds will be used to contract for completing selected projects. Project deliverables are reviewed by TDEC staff with each request for payment under the Interagency Agreement. S. O. No. 1 – While no new state staff is deployed, leveraging partnership with a university and their students and professors expands TDECs capacity to deliver project to the Tennessee Nutrient Stakeholder Taskforce. S. O. No. 2 – Research support provides information and presents collected data on advancing nutrient reductions in Tennessee. S. O. No. 3 – Research support makes data and information for priority watersheds. S. O. No. 4 – Tennessee includes Kentucky (DOW) staff on the Tennessee Nutrient Stakeholder Task Force and regularly provides mutual updates on nutrient reduction efforts.

Tennessee Nutrient Stakeholder Taskforce publishes meeting and outreach opportunities on their website (https://www.tn.gov/environment/program-areas/wr-water-resources/nutrient-management-in-tennessee/partnerships/tennessee-nutrient-reduction-task-force.html)

Project Budget

All four projects are currently underway, and the GHP funding will allow continuation.

- Nutrient Load Monitoring will be funded through continuing agreement with USGS. All GHP funds will be used to contract sample collections at gages. They will not be used for state staff support.
- Treatment Plant Optimization will be funded through continuing contract with a consultant. All GHP funds will be used to contract for professional services and will not be used for state staff support.
- Cover Crop Incentive Program will be funded through continuing Interagency Agreement with the Tennessee Department of Agriculture. TDEC allocated $700,000.00 in the previous cycle, but due to the demand, it exceeded the allocation and have increased the funding. Since the Tennessee Department of Agriculture was able to use existing delivery mechanism, all of the funds are spent to reimburse cover crops costs through GHP funds, and none go to program administration. Funds will not be used for state staff support or incentive program administration.
- Research Support will be funded by continuing Interagency Agreement with Tennessee Technological University or if needed by agreement with other academic institutions in the state where scope of work is described. All GHP funds will be used to fund task force projects. Funds will not be used for state staff support or incentive program administration.

Work Product Description	Budget Category	Total Project
Task 1. Nutrient Load Monitoring – USGS Gage Sampling Agreement	Other	$880,000.00
Task 2. Treatment Plant Optimization – Grant Weaver Consulting	Contractual	$325,500.00
Task 3. Cover Crop Incentive Program – TDA Interagency Agreement	Other	$943,624.00
Task 4. Research Staff Support – TTU Research Interagency Agreement	Other	$364,992.00
GRAND TOTAL:		**$2,514,116.00**

***** Portions will be split equally for each year of contract**

- USGS will collect nutrient samples at approximately 115 USGS stream gages. Samples will be analyzed at the Tennessee state lab and results will be reported to WQX. All work will be in accordance with the Tennessee monitoring QUAPP.
- Consultant with Grant Weaver Consulting will develop materials and strategies, provide technical assistance, training and optimization expertise for the Tennessee Plant Optimization Program. Tennessee Plant Optimization Program will lead mechanical wastewater facilities through a 12 month optimization process.
- Tennessee Department of Agriculture will provide funding to Soil and Water Conservation Districts in nutrient priority watersheds to reimburse producers for planted cover crops.
- Tennessee Technological University will provide staff time for annual reporting, staff support for Tennessee Nutrient Task Force, and research support for project annually identified by the Tennessee Nutrient Task Force.

Environmental Results - Project Outputs and Expected Outcomes

Strategic Outcomes Details:

Work Product	**Outcome 1**	**Outcome 2**	**Outcome 3**	**Outcome 4**
Nutrient Load Monitoring	while no new state staff is deployed, partnering with USGS brings in expanded capacity for state water quality monitoring program.	data from this effort directly expand water quality monitoring in Tennessee.	data collected in this effort will directly inform status of priority watersheds.	data collected in Tennessee is made available for sharing with interested states and partners.

Treatment Plant Optimization	while no new state staff is deployed, use of contract consultant brings in expanded capacity for scaling up state technical assistance to wastewater facilities.	Optimization of wastewater facilities directly reduce nutrient loading in their effluent discharge.	Priority watersheds with wastewater source will directly benefit from nutrient reduction achieved through this program.	Tennessee actively collaborates with Kentucky and the HTF Plant Optimization group to share information and experience from TNPOP.
Cover Crop Incentives in Priority Watersheds	while no new state staff is deployed, using soil conservation districts leverages existing fund delivery mechanism and ensures 100% of the funds are used to put cover crops on the ground.	cover crop implementation directly reduces nutrient loss from crop fields.	Cover Crop incentive is directly targeted to nutrient priority watersheds in Tennessee (MRAB).	Tennessee actively collaborates with Kentucky on shared priority watersheds - specifically, the Red River and Barren River.
Research Support	while no new state staff is deployed, leveraging partnership	research support provides information and presents	research support makes data and information for	Tennessee includes Kentucky (DOW) staff on the Tennessee Nutrient Stakeholder Task

	with a university and their students and professors expands TDECs capacity to deliver project to the Tennessee Nutrient Stakeholder Taskforce.	collected data on advancing nutrient reductions in Tennessee.	priority watersheds.	Force and regularly provides mutual updates on nutrient reduction efforts.

Project	Outputs	Expected Outcomes
1. Nutrient Load Monitoring	Collected grab samples and field parameters at all USGS gages in the state Quarterly transfer to databases	Complete set of nutrient information for the entire state (MARB watersheds). Strategic Outcomes: S.O. No.1 – While no new state staff is deployed, partnering with USGS brings in expanded capacity for state water quality monitoring program. S.O. No. 2 – Data from this effort directly expand water quality monitoring in Tennessee. S. O. No. 3 – Data collected in this effort will directly inform status of priority watersheds. S. O. No. 4 – Data collected in Tennessee is made available for sharing with interested states and partners. Measurement: • Total count of samples collected Engagement: • Annual update of Tennessee Nutrient Database (announced in Tennessee Nutrient Taskforce stakeholder meeting)

2. Treatment Plant Optimization	Training to Tennessee wastewater plant operators Technical Assistance to optimizing wastewater plants	Professional development of wastewater operators Reduced loading from 30% of municipal wastewater facilities. Reduced energy use at 10% of optimized facilities. Strategic Outcomes: S.O. No. 1 – While no new state staff is deployed, use of contract consultant brings in expanded capacity for scaling up state technical assistance to wastewater facilities. S. O. No. 2 – Optimization of wastewater facilities directly reduce nutrient loading in their effluent discharge. S. O. No. 3 – Priority watersheds with wastewater source will directly benefit from nutrient reduction achieved through this program. S.O. No. 4 – Tennessee actively collaborates with Kentucky and the HTF Plant Optimization group to share information and experience from TNPOP. Measurement: • Total count of continuing education credits and experience credits • Annual loading total from municipal wastewater facilities Engagement: • Annual Program Update published in Tennessee Nutrient Taskforce report or website

3. Cover Crop Incentive Program	Funding cover crop initiative on annual basis	Reduction in nutrient loss in priority watersheds annually Strategic Outcomes: S. O. No. 1 – While no new state staff is deployed, using soil conservation districts leverages existing fund delivery mechanism and ensures 100% of the funds are used to put cover crops on the ground. S. O. No. 2 – Cover crop implementation directly reduces nutrient loss from crop fields. S. O. No. 3. – Cover Crop incentive is directly targeted to nutrient priority watersheds in Tennessee (MRAB). S. O. No. 4 – Tennessee actively collaborates with Kentucky on shared priority watersheds -specifically, the Red River and Barren River. Measurement: • Total Acres of Cover crops Planted • Estimated nutrient loss reduction Engagement: • Annual incentive program summary announced in Tennessee Nutrient Taskforce stakeholder meeting

4. Research Support	Development and delivery of products selected by the Tennessee Nutrient Stakeholder Task Force	Increased access to information and tools for Nutrient Reduction in Tennessee Strategic Outcomes: S. O. No. 1 – While no new state staff is deployed, leveraging partnership with a university and their students and professors expands TDECs capacity to deliver project to the Tennessee Nutrient Stakeholder Taskforce. S. O. No. 2 – Research support provides information and presents collected data on advancing nutrient reductions in Tennessee. S. O. No. 3 – Research support makes data and information for priority watersheds. S. O. No. 4 – Tennessee includes Kentucky (DOW) staff on the Tennessee Nutrient Stakeholder Task Force and regularly provides mutual updates on nutrient reduction efforts. Measurement • List of new information on Tennessee Nutrient Stakeholder Website Engagement: • Provide research project updates in Tennessee Nutrient Taskforce stakeholder and working group meetings

Milestone Schedule

Federal Fiscal Year		2025			
	Start	10/1/2024	1/1/2025	4/1/2025	7/1/2025
	Quarter	Q1	Q2	Q3	Q4
Project 1	Nutrient Monitoring	begin year 2 monitoring	year 2 monitoring	year 2 monitoring	report, year 2 monitoring
Project 2	Treatment Plant Optimization	execute contract	year 1 work	year 1 work	report, year 1 work
Project 3	Cover Crops	year 2 planting	year 2 planting	year 2 reimbursements	report year 2
Project 4	Research Support	complete projects year 1	renew agreement, start projects year 2	projects year 2	report projects year 2

Federal Fiscal Year		2026			
	Start	10/1/2025	1/1/2026	4/1/2026	7/1/2026
	Quarter	Q1	Q2	Q3	Q4
Project 1	Nutrient Monitoring	revise agreement, begin year 3 monitoring	year 3 monitoring	year 3 monitoring	report year 3 monitoring
Project 2	Treatment Plant Optimization	year 2 work	year 2 work	year 2 work	report, year2 work
Project 3	Cover Crops	revise agreement, year 3 planting projects	year 3 planting	year 3 reimbursements	report year 3
Project 4	Research Support	year 3	project year 3	projects year 3	report projects year 3

Federal Fiscal Year		2027			
	Start	10/1/2026	1/1/2027	4/1/2027	7/1/2027
	Quarter	Q1	Q2	Q3	Q4
Project 1	Nutrient Monitoring	year 4 monitoring	year 4 monitoring	year 4 monitoring	report year 4 monitoring
Project 2	Treatment Plant Optimization	year 3 work	year 3 work	year 3 work	report, year 3 work
Project 3	Cover Crops	year 4 planting projects	year 4 planting	year 4 reimbursements	report year 4
Project 4	Research Support	year 4	projects year 4	projects year 4	report projects year 4

Federal Fiscal Year		2028			
	Start	10/1/2027	1/1/2028	4/1/2028	7/1/2028
	Quarter	Q1	Q2	Q3	Q4
Project 1	Nutrient Monitoring	year 5 monitoring	year 5 monitoring	year 5 monitoring	report, year 5 monitoring
Project 2	Treatment Plant Optimization	renew contract, year 4 work	year 4 work	year 4 work	report, year 4 work
Project 3	Cover Crops	year 5 planting projects	year 5 planting	year 5 reimbursements	report year 5
Project 4	Research Support	year 5	projects year 5	projects year 5	report project year 5

Federal Fiscal Year	2029

	Start	10/1/2028	1/1/2029	4/1/2029	7/1/2029
	Quarter	Q1	Q2	Q3	Q4
Project 1	Nutrient Monitoring	data evaluation	data evaluation	data evaluation	Evaluation report
Project 2	Treatment Plant Optimization	renew contract, year 5 work	year 5 work	year 5 work	report, year 5 work
Project 3	Cover Crops	project complete			
Project 4	Research Support	project complete			

Technical Support

TDEC will provide periodic check points with each partner or contractor to ensure adequate progress towards deliverable and receive annual reports detailing completion of deliverables.

Project Reporting and Quality Assurance

Nutrient Load Monitoring follows the EPA approved QAPP and QMP for Tennessee. USGS collected nutrient and water quality data will be reported to EPA's Water Quality Exchange (WQX) database. The Treatment Plant Optimization project collects only operational data. Compliance data is collected per facility NPDES Permit and complies with requisite permit conditions. Grant progress and tracking information will be reported to EPA's Grants Reporting and Tracking System (GRTS). Tennessee Nutrient Taskforce will share results and findings during stakeholder meetings, technical conferences, and make results available on its website and in public annual reports.

Gulf Hypoxia Program
Wisconsin Workplan for FFY 2024 to 2026 Cooperative Agreement

Summary Information Page

Project Title: Advancing Wisconsin's Nutrient Loss Reduction Strategy

Organization Information:

Applicant – Wisconsin Department of Natural Resources
Address – 101 S Webster St, Madison WI 53703
Contact – Karl Gesch, (608) 630-1171, karl.gesch@wisconsin.gov

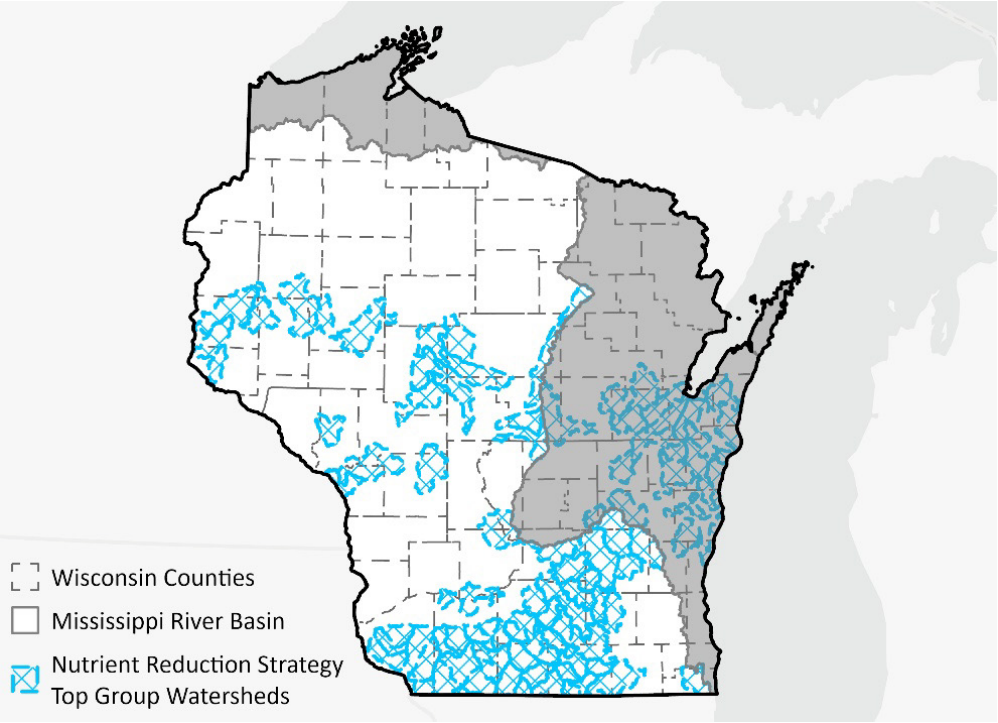
Proposed Funding Request: $2,514,116

Brief Project Description: Wisconsin requests to use Gulf Hypoxia Program funds to advance the state's Nutrient Loss Reduction Strategy (https://dnr.wisconsin.gov/topic/SurfaceWater/NutrientStrategy.html). Funding would support overall coordination, strategic implementation, and enhanced tracking of Wisconsin's Nutrient Loss Reduction Strategy.

Environmental Results: It is anticipated that this project will support reduced phosphorus and nitrogen losses to Wisconsin waters and the Mississippi River. Other environmental benefits may include sediment loss reduction and increased stakeholder engagement.

Place of Performance: Mississippi River Basin portion of Wisconsin (see map below)

Project Period: October 1, 2025 through September 30, 2030



Project Workplan

Project Approach

Overview, Strategic Outcomes & GHP Priorities

The Wisconsin Department of Natural Resources (WDNR) has developed this workplan for Gulf Hypoxia Program (GHP) federal fiscal years (FFY) 2024 through 2026 cooperative agreement funding from the U.S. Environmental Protection Agency (EPA). This work will support EPA Strategic Plan Goal 5 to ensure clean and safe water for all communities and Objective 5.2 to protect and restore waterbodies and watersheds by advancing programs and partnerships that reduce nutrient losses to Wisconsin waters within the Mississippi River Basin. These goals will be supported through overall coordination, strategic implementation, and enhanced tracking of Wisconsin's Nutrient Loss Reduction Strategy (NLRS).

Wisconsin's GHP FFY 2024-2026 workplan is organized into three tasks, each related to the state NLRS and with associated work activities. Table 1 summarizes tasks and activities, which are detailed below. For each task, Table 1 also summarizes the relevant GHP strategic outcomes, NEPA (National Environmental Policy Act) categories, and references to chapters in Wisconsin's current Nutrient Reduction Strategy (NRS; as of 2025, the state nutrient strategy is being redeveloped as the forthcoming Nutrient Loss Reduction Strategy).

Table 1. Project tasks and activities with associated GHP strategic outcomes, NEPA activity categories, and NRS chapters.

Task	Activity	GHP Strategic Outcomes				NEPA	WI NRS
		Support staff	State WQ programs	Watershed implementation	HTF partner collaboration	Category	Chapters
1	NLRS Coordination & HTF Collaboration	X	X		X	1	1, 2, 7, 9
2	Science Assessments to Advance Implementation		X		X	1	4, 5
	Water Quality Programs Integration & Collaboration	X	X	X			
	Agricultural Stakeholder Outreach & Engagement		X	X			
	Conservation Agronomy Training		X	X			
3	NLRS Stakeholder Survey		X		X	1	1, 2, 7, 8, 9
	Nutrients Mass Balance		X		X		
	Data Visualization		X		X		

Any subawards funded with this cooperative agreement will be established via interagency agreements or contracts and will be monitored according to WDNR financial management policies and procedures. Subawards will include scopes of work that specify deliverables, milestones, and reporting expectations. Public participation will focus on NLRS stakeholder engagement, and all activities will comply with Title VI. Specific dates and locations of public meetings will be determined as the project is implemented, and

development and deployment of outreach strategies will be a key activity within *Task 2: NLRS Implementation & Innovation* to further NLRS implementation.

Task 1 – NLRS Coordination & Collaboration
Budget for Task: $978,618

- ***Nutrient Loss Reduction Strategy Coordination & Hypoxia Task Force Collaboration*** – Dedicated support for Wisconsin's partners and stakeholders is a key need to advance NLRS implementation. Accordingly, WDNR will hire a project position from 2027 through 2030 to serve as the state NLRS Coordinator. NLRS Coordinator position duties will include ongoing overall leadership and coordination of state, partner, and stakeholder development and implementation of Wisconsin's NLRS, and 100 percent of the position staff time will support the Gulf Hypoxia Action Plan. In addition to facilitating partnerships and stakeholder participation in Wisconsin's NLRS, existing WDNR staff (e.g., water resources management specialists, program and policy analysts) will support NLRS implementation and tracking; administer GHP funds, subawards, and reports; and collaborate with Upper Mississippi River basin and Hypoxia Task Force (HTF) partners, with up to 30 percent of one full time equivalent of staff time totally annually used to support the Gulf Hypoxia Action Plan. Wisconsin state staff will attend HTF public meetings, HTF Coordinating Committee workshops, and Mississippi River basin partner meetings. This activity will be led by WDNR.

Task 2 – NLRS Implementation & Innovation
Budget for Task: $1,205,498

- ***Science Assessments to Advance Implementation*** – Nitrate concentrations are increasing in groundwater and surface water across Wisconsin, but there is a lack of quantitative baseline information on how differences in agricultural practices, soil types, and weather conditions influence the potential for nitrogen (N) loss. This work will estimate the current net agricultural N balance and the potential impacts/benefits of changes in management related to crop type, N rate, crop N removal, and cover crop adoption. The project will integrate spatial information on cropland extent, the existing distribution of crop types, and N input/output scenarios consistent with a range of actual agronomic practices and potentially feasible practices. Key deliverables of the project will include estimates and uncertainty of N balances and N concentrations in groundwater and runoff for a range of cropping systems and management practices. Current phosphorus (P) science assessment and planned N analysis will be supplemented with cost estimates of agricultural practices and calculations of cost per pound of avoided nutrient losses. This activity may be led by University of Wisconsin (UW).

- ***Water Quality Programs Integration & Collaboration*** – Leveraging state water quality programs will be a key action to advance nutrient loss reductions in Wisconsin. Through this activity, WDNR intends to further and more effectively engage with agricultural stakeholders on water quality and nutrient reduction related state programs such as source water protection, total maximum daily loads and watershed plans, and peer networks and other local groups. To increase capacity for this work, WDNR would hire a project position beginning during FFY 2026 for approximately two years (total funding available for position is based on two-year period), with duties that will include engaging agricultural partners and stakeholders, coordinating with state programs such as total maximum daily loads and source water protection, and supporting local agriculture- and/or water-focused organizations and networks. It is anticipated that 100

percent of the position staff time will support the Gulf Hypoxia Action Plan (if applicable, other duties would be funded by non-GHP funds). WDNR also intends to provide on-farm agricultural and water quality training for state and partner staff, along with ongoing assessment and continuous improvement of nutrient management (NM) and water quality (WQ) studies, guidelines, and plans for effective implementation. This activity will be coordinated by WDNR, in close coordination with local, state, federal, university, and agricultural partners.

- ***Agricultural Stakeholder Outreach & Engagement*** – To realize goals of the NLRS, a high level of stakeholder participation in implementation is needed. Through this activity, shared messaging, marketing materials, and outreach strategies will be developed. The primary audience intended for this work is agricultural advisors and services providers, i.e., individuals and organizations that conduct outreach and provide technical assistance to farmers, such as county conservation staff and local agronomists. By equipping these key messengers with consistent and shared messaging and techniques to support farmer decision making, it is anticipated that this activity will lay important groundwork for increased adoption of conservation practices that reduce nutrient loss. As available, findings from NLRS surveys (e.g., *Task 3*) may inform outreach and messaging. In addition to developing and deploying marketing materials to facilitate outreach, coordination support will be provided to bring partners and stakeholders together. A NLRS website will be maintained. Intended outputs from this activity may include outreach materials, groups of partners and stakeholders coordinated, and NLRS website. Partners for this work may include UW and/or nongovernmental organizations, and will be overseen by WDNR.

- ***Conservation Agronomy Training*** – To build upon current work to develop conservation agronomy curriculum, the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) will host 9 field-based conservation agronomy trainings (3 days per training) from 2026-2029, in collaboration with a diverse group of conservation partners. Two to three regional trainings per year are anticipated, with approximately 25 attendees at each event. The requested funds would cover venue and rental fees, lunch and break expenses, stipends for nongovernmental trainers and host farms, travel, and conservation agronomy outreach materials. This activity will be led by DATCP.

Task 3 – NLRS Tracking & Trends
Budget for Task: $330,000

- ***Nutrient Loss Reduction Strategy Stakeholder Survey*** – Anticipating the need for social science data to carry out Wisconsin's NLRS, this project would develop a survey to understand perspectives of farmers and rural land managers regarding nutrients and related land and water conservation issues. While this project will focus on survey development, the survey instrument may potentially be piloted in watersheds that align with other workplan activities (e.g., *Task 2*). The intention would be for periodic (potentially bi or tri-annual) repeat delivery of the survey to identify and document trends, opportunities, challenges, and emerging issues that influence NLRS activities. Over time, survey findings will inform outreach to agricultural stakeholders (e.g., *Task 2*). While necessarily focused on issues in Wisconsin's NLRS, survey development would aim for consistency and comparability with efforts of other states. Survey development would engage NLRS partner organizations to design and test a survey instrument and delivery process. This activity may be led by UW.

- ***Nutrients Mass Balance*** – The balance of nutrient imports and exports can be a major driver of nutrient loss. The main objective of this project is to describe the spatial distribution and temporal trends in nitrogen and phosphorus imports and exports across Wisconsin. Estimated imports and exports will be mapped at a county or finer spatial resolution and a 5-year temporal resolution starting from 2000 to 2025. All major nutrient sources (imports), including fertilizer and pesticide sales, animal feed demand, household food consumption, atmospheric deposition, and nitrogen fixation will be estimated. Export pathways will include crop and livestock product export, stream export, and atmospheric losses (for nitrogen). A river water quality trend analysis that directly measures stream export also will be updated and used to compare the magnitude and trends in inputs and river export. Partners for this work may include UW and/or U.S. Geological Survey.

- ***Nutrient Loss Reduction Strategy Data Visualization*** – This project would expand and enhance Wisconsin's capabilities to understand and communicate status and trends of nutrient loads and supporting conservation actions. As described in Wisconsin's GHP FFY 2022-2023 workplan, partners at the local, state, and federal level will continue to inform this work incorporating partner contributions and needs along with stakeholder input. Existing data resources will be synthesized and delivered in an anticipated web-based, interactive data visualization format. Available data and partner feedback will be used to develop a web platform (specific format to be decided) as the product of this activity. Project phases include: solicit partner/stakeholder feedback, compile data and information, and produce dashboard. The intended outcome is enhanced communication of NLRS status to Wisconsin and HTF partners. This activity will be coordinated by WDNR.

Environmental Results

Anticipated outputs and outcomes for the four GHP strategic outcomes include:

1. *Support staff to implement* – State staff and sub-awardee staff will engage with partners, communities, and stakeholders. Meetings, events, and participation will be tracked and quantified. Anticipated outcomes include increased awareness, better coordination across institutions and with stakeholder groups to implement social and environmental objectives, and communication of status and results related to Wisconsin's NLRS.

2. *Use state water quality programs* – Collaboration internally within WDNR and with interagency partners will facilitate coordination of ongoing state efforts, such as surface water and groundwater restoration; water quality restoration plans such as total maximum daily loads; source water protection; peer networks and other local groups; extension and outreach; and conservation training.

3. *Implement projects in watersheds* – Coordination, outreach, and training activities conducted in key watersheds will support implementation of plans and programs that strategically reduce nutrient losses (e.g., federal geographic initiatives like the Mississippi River Basin Healthy Watersheds Initiative or National Water Quality Initiative, total maximum daily loads, source water protection) and support local resilience. Outreach to agricultural stakeholders will facilitate identification of and support for watersheds with high levels of local readiness to increase adoption of practices that reduce nutrient loss.

4. *Collaborate with HTF partners* – Wisconsin will continue to actively participate in HTF and sub-basin committee (i.e., Upper Mississippi River Basin Association; UMRBA) meetings, workshops, and working groups. In addition to sharing progress with national and regional partners, WDNR also will coordinate with HTF partners on communications strategies, multi-state or regional planning, progress tracking, and other similar information sharing and knowledge transfer activities to facilitate coordination, innovation, and collaboration.

Anticipated results from *Task 1: NLRS Coordination & Collaboration* include ongoing coordination of Wisconsin's NLRS (e.g., development, partner and stakeholder engagement, reporting) and participation in relevant regional/sub-basin (e.g., UMRBA) and national (e.g., HTF) partnerships. Products expected from *Task 2: NLRS Implementation & Innovation* include synthesis reports from science assessments, increased integration of state water quality programs, consistent messaging and outreach strategies to engage stakeholders, and conservation-focused field trainings. Anticipated results from *Task 3: NLRS Tracking & Trends* include summary reports and interactive data visualization resources that summarize status and trends of stakeholder participation and nutrient loss reductions.

Some of the work activities may not directly reduce nutrient losses, but will support awareness, knowledge, and increased adoption of conservation practices that reduce nutrient losses, along with enhanced capabilities to track such practices and their environmental benefits. Nutrient load reductions (primary environmental results) and other associated benefits (e.g., sediment loss reduction, increased stakeholder engagement) achieved through subawards will be a subaward reporting requirement, and will be compiled and reported to EPA via annual progress reports and the Grants Reporting and Tracking System (GRTS) GHP module.

Milestone Schedule

Anticipated schedule for project activities is included in Table 2.

Table 2. Milestone schedule for Wisconsin GHP FFY 2024-2026 workplan.

Milestones by Activity	FFY 2026	FFY 2027	FFY 2028	FFY 2029	FFY 2030
NLRS Coordination & HTF Collaboration					
Facilitate partnerships and stakeholder participation in Wisconsin's NLRS.	X	X	X	X	X
Hire NLRS Coordinator for overall NLRS support.		X	X	X	X
Collaborate with Wisconsin, Upper Mississippi Basin, and HTF partners.	X	X	X	X	X
Science Assessments to Advance Implementation					
Evaluate agricultural nitrogen loss management and practice costs.	X	X	X		
Continue synthesizing and sharing nutrient loss reduction effectiveness.			X	X	
Water Quality Programs Integration & Collaboration					
Enhance state water quality programs engagement with agricultural stakeholders.	X	X	X		
Hire project position to engage agriculture and water partners.	X	X	X		
Provide on-farm agricultural and water quality training for state and partner staff.	X				
Assess NM and WQ studies, guidelines, and plans to improve implementation.	X	X	X		
Agricultural Stakeholder Outreach & Engagement					
Develop and deploy communications, marketing, and outreach materials.	X	X	X	X	
Provide ongoing facilitation and coordination for agricultural stakeholders.	X	X	X	X	

Conservation Agronomy Training					
Host field-based conservation agronomy trainings.	X	X	X	X	
NLRS Stakeholder Survey					
Develop survey for ongoing NLRS social assessment measures.	X	X			
Engage NLRS partners and other states to design survey and test deployment.	X	X	X		
Nutrients Mass Balance					
Map nitrogen and phosphorus mass balances from 2000 through 2025.	X	X	X		
Update river water quality trend analysis and compare to nutrient balances.	X	X	X		
NLRS Data Visualization					
Assess state resources and stakeholder needs for nutrient reduction information.	X				
Synthesize data resources and communicate NLRS status to Wisconsin and HTF partners.		X	X	X	X

Transferability of Results and Dissemination to Public

Project results will be shared with partners, stakeholders, and the public in Wisconsin and the Mississippi River Basin as applicable via HTF meetings, website, and newsletters. Results also will be summarized in Wisconsin's GHP cooperative agreement annual progress reports and in the GRTS GHP module. The NLRS website (https://dnr.wisconsin.gov/topic/SurfaceWater/NutrientStrategy.html) also will be used to communicate status, reports, and supporting documents related to development and implementation of Wisconsin's NLRS. Relevant outputs of GHP project tasks will be compiled and accessible via web.

Wisconsin will support progress tracking of the state's nutrient strategy and the Gulf Hypoxia Action Plan goals at state, sub-basin (i.e., Upper Mississippi), and river basin scales. Activities in *Task 3: NLRS Tracking & Trends* will summarize temporal trends and geographic distribution of nutrient losses, including interactive data resources for users to visualize key information. As applicable, Wisconsin will share available data on metrics such as conservation practice adoption or water quality trends.

Technical Support

State of Wisconsin staff will provide technical assistance to sub-awardees including partnership development and coordination; outreach, engagement, and training for partners and stakeholders; compiling information, results, and deliverables and preparing reports; and summarizing and communicating status and trends of Wisconsin's NLRS implementation. As applicable, technical support would be provided for quality assurance documentation.

Detailed Budget Narrative

Anticipated budget for each category is summarized in Table 3, with narrative descriptions following.

Table 3. Budget by category for Wisconsin GHP FFY 2024-2026 workplan.

Category	Total
Personnel	$688,085
Fringe Benefits	$334,272
Travel	$98,750
Supplies	$13,118
Contractual	$250,000

Other	$986,250
Indirect Costs	$143,641
Total	**$2,514,116**

Personnel – Personnel costs are estimated for portions of three positions, with an overall annual average of 1.5 FTE (full time equivalent) over 5 years:

- Nutrient Loss Reduction Strategy Coordinator – $368,826 for 1.0 FTE over 4 years (estimated hourly rate of $44.33). Duties will include ongoing overall leadership and coordination of state, partner, and stakeholder development and implementation of Wisconsin's NLRS.
- Water Resources Management Specialist and/or Program and Policy Analyst – $134,846 for 0.3 FTE over 5 years (estimated hourly rate of $43.22). Duties will include supporting Wisconsin's NLRS; administering GHP funds, subawards, and reports; and collaborating with Upper Mississippi River basin and HTF partners.
- Program and Policy Analyst – $184,413 for 1.0 FTE over 2 years (estimated hourly rate of $44.33). Duties will include engaging agricultural partners and stakeholders, coordinating with state programs such as total maximum daily loads and source water protection, and supporting local agriculture- and/or water-focused organizations and networks.

Fringe Benefits – Fringe benefits are calculated as 48.58% of personnel.

Travel – Travel costs are estimated to be $16,000 annually for 5 years for state staff to attend HTF public meetings, HTF Coordinating Committee workshops, and Mississippi River basin partner meetings (two national meetings at $1,500 each and two regional meetings at $500 each, for four staff annually), plus allocable travel expenses estimated at $3,750 per year, which are allocated according to WDNR accounting practices that proportion them to projects based on the amount of staff time spent on the project.

Supplies – Supplies costs are estimated at $1,874 annually for 5 years for office supplies and meeting materials, plus allocable supplies expenses estimated at $750 per year, which are allocated according to WDNR accounting practices that proportion them to projects based on the amount of staff time spent on the project.

Contractual – Contractual costs are estimated to include $150,000 for *Task 2: NLRS Implementation & Innovation* for outreach and marketing and $100,000 for *Task 3: NLRS Tracking & Trends* for WDNR information technology (IT), with anticipated partners that may include nongovernmental organizations, private organizations, and/or WDNR IT contractor(s). Contracts will be developed and competed as applicable according to State of Wisconsin and WDNR procurement policies and procedures.

Other – Other costs are estimated to include $70,000 for on-farm agricultural and water quality training for state and partner staff; allocable other expenses estimated at $5,250 per year, which are allocated according to WDNR accounting practices that proportion them to projects based on the amount of staff time spent on the project; and approximately 6 subawards totaling $890,000. Potential subawards are listed in Table 4.

Table 4. Potential subaward partners, estimated costs, and descriptions (UW: University of Wisconsin; DATCP: Wisconsin Department of Agriculture, Trade, and Consumer Protection; USGS: U.S. Geological Survey).

Task	Activity	Potential Partners	Estimated Cost	Description
2	Science Assessments to Advance Implementation	UW	$340,000	Evaluate agricultural nitrogen loss management and practice costs.
	Water Quality Programs Integration & Collaboration	UW	$125,000	Assess NM and WQ studies, guidelines, and plans to improve implementation.
	Agricultural Stakeholder Outreach & Engagement	UW	$125,000	Develop and deploy communications, marketing, and outreach materials. Provide ongoing facilitation and coordination for agricultural stakeholders.
	Conservation Agronomy Training	DATCP	$70,000	Host field-based conservation agronomy trainings.
3	NLRS Stakeholder Survey	UW	$80,000	Develop survey for ongoing NLRS social assessment measures.
	Nutrients Mass Balance	USGS, UW	$150,000	Map nitrogen and phosphorus mass balances from 2000 through 2025. Update river water quality trend analysis and compare to nutrient balances.

Indirect Costs – Indirect costs are calculated as 14.05% of personnel plus fringe benefits, per WDNR's negotiated indirect cost rate agreement.

Quality Assurance

Project activities are not anticipated to include collection of new environmental data or information. Activities associated with *Task 3: NLRS Tracking & Trends* would synthesize existing data resources and will rely on existing quality assurance systems (e.g., Wisconsin DNR's EPA-approved Quality Management Plan). Subaward agreements will specify quality assurance requirements as applicable.