



# Bipartisan Infrastructure Law Gulf Hypoxia Program



## State Cooperative Agreement Workplans

The Gulf Hypoxia Program (GHP) is funded through the 2021 Bipartisan Infrastructure Law (BIL), which provides \$60 million over five years for EPA to issue grants to advance the goals of the Gulf Hypoxia Action Plan. The BIL provides, for the first time, funding specifically authorized to implement the Gulf Hypoxia Action Plan, and this historic investment will allow the HTF to make significant strides towards achieving the HTF's goals.

Through the GHP, Task Force member states, Tribes, sub-basin committees, and Land Grant Universities will have the resources to make significant progress toward reducing nutrient loads and track the results. These efforts will 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 and improved local water quality and support to implement watershed plans and expand business plans to include conservation systems.

In FY22, EPA awarded the first BIL Gulf Hypoxia Program (GHP) grants to the HTF member states. In FY24, EPA will begin awarding a second grant to HTF member states. This document presents the HTF member states' workplans. State workplans support the following five strategic outcomes:

- Support staff to implement the workplan;
- Reduce nonpoint source nutrient pollution as articulated in state strategies;
- Prioritize and target watersheds with the greatest opportunities for nutrient reductions;
- Collaborate across state boundaries with HTF partners; and
- Use state-level water quality programs and actions to better support nutrient reductions.

## More Information

Read more about the [Hypoxia Task Force](#), the [Gulf Hypoxia Action Plan](#), HTF member [State Nutrient Reduction Strategies](#) and the [Gulf Hypoxia Program](#).

# State Cooperative Agreement Workplans

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**Project Title:** Arkansas Implementation of 2022 Nutrient Reduction Strategy

**Organization:** Arkansas Department of Agriculture Natural Resources Division, 10421 W. Markham St., Little Rock, AR 72205, Tate Wentz, 501-682-3914, Tate.wentz@agriculture.arkansas.gov

**Proposed Funding Request:** \$1,713,333

**Project Description:** Arkansas proposes to utilize the first two years of Gulf Hypoxia Program (GHP) funding to implement goals and strategies identified in the recently updated [Arkansas Nutrient Reduction Strategy](#) (ANRS). Additionally, the 2022 ANRS updated how the state will prioritize watersheds (i.e. Tiers) for nutrient reduction. Nutrient reduction prioritization was Tier 1 (Maximum Focus), Tier 2 (Focus for Reduction, but needs monitoring data), and all other watersheds (Tier 3 and 4). Projects implemented will focus on water quality monitoring and conservation practice implementation in Tier 1 and Tier 2 watersheds.

**Environmental Results:** Arkansas anticipates funding to support staff implementation of the recently updated 2022 [Arkansas Nutrient Reduction Strategy](#) (ANRS). The 2022 ANRS identifies all 58 HUC8 watersheds into four distinct tiers of nutrient reduction needs. Funding will be utilized to support reduction goals identified in the strategy in areas of greatest reduction potential (i.e. Tier 1 and Tier 2). Also, in support of EPA’s April 2022 Nutrient Reduction Memorandum, “Accelerating Nutrient Pollution Reductions in the Nation’s Waters”, the ANRS specifically identifies supporting existing partnerships with NRCS and programs such as the Mississippi River Basin Initiative. Arkansas intends to utilize year one and year two funding to support water quality monitoring and conservation measure implementation within Tier 1 and Tier 2 watersheds in-line with goals and objectives of the 2022 ANRS.

**Place of Performance:** Tier 1 and Tier 2 watersheds identified in the 2022 ANRS (Figure 1).

Name	HUC	Tier
Lake Conway-Point Remove	11110203	1
Illinois	11110103	1
L’Anguille	08020205	1
Bayou Meto	08020402	1
Middle White	11010004	1
Lower Arkansas-Maumelle	11110207	1
Bull Shoals	11010003	1
Lower St. Francis	08020203	2
Lower Sulphur	11140302	2
McKinney-Post Bayous	11140201	2
Bodcau Bayou	11140205	2
Bayou Bartholomew	08040205	2
Elk	11070208	2
Lower Ouachita-Smackover	08940201	2
Beaver Reservoir	11010001	2
Spring River	11010011	2
Poteau River	11110105	2
Dardanelle Reservoir	11110202	2
Little River Ditches	08020204	2

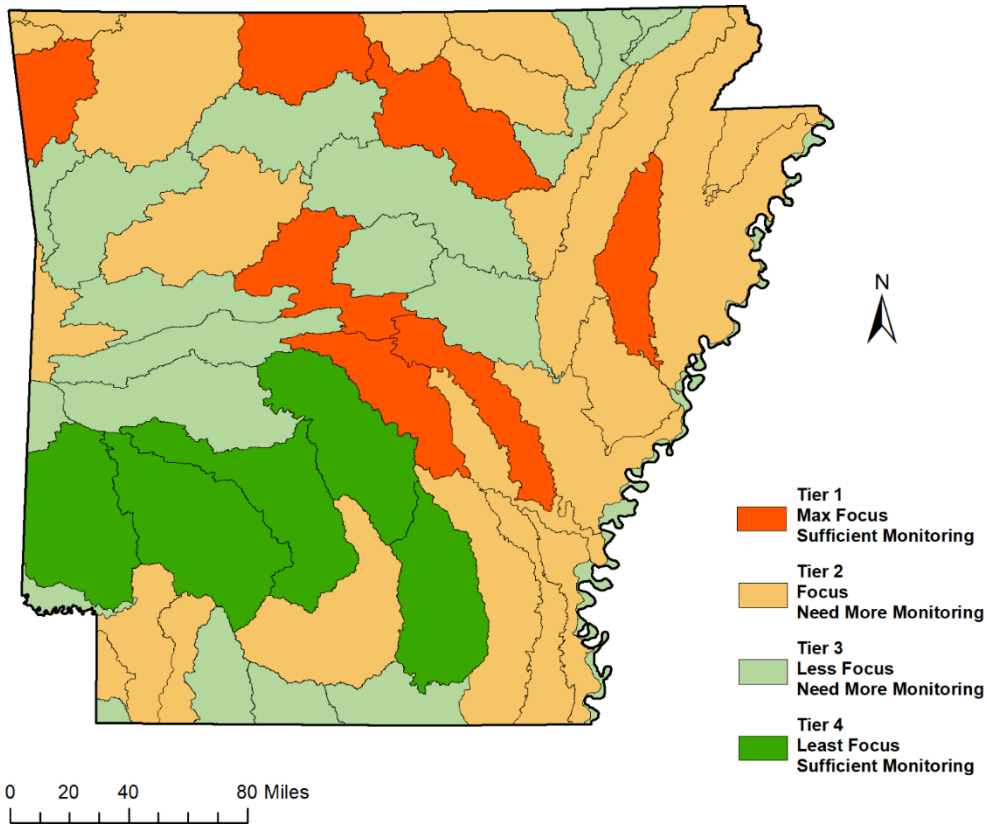
Name	HUC	Tier
North Fork White River	11010006	2
Cache River	08020302	2
Strawberry River	11010012	2
Lake O' The Cherokees	11070206	2
Lower Neosho	11070209	2
Upper White-Village	11010013	2
Big Creek	08020304	2
Lower White River	08020303	2
Lower Arkansas River	08020401	2
Boeuf	08050001	2
Bayou Macon	08050002	2

**Project Period:** October 1, 2022 – September 30, 2027

### **Project Workplan**

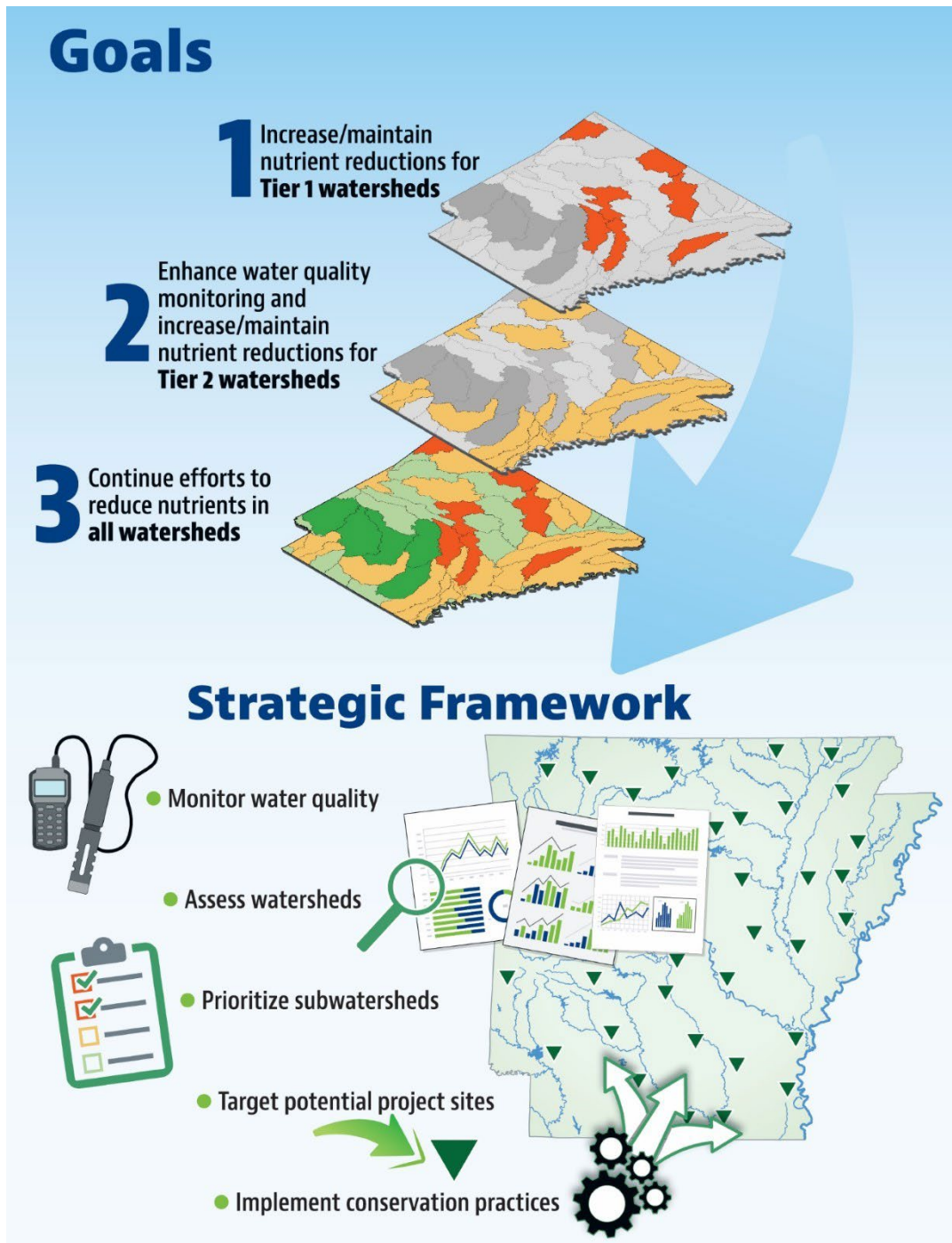
**Project Approach:** Arkansas GHP workplan will support EPA's FY 22-26 Strategic Plan Goal 5, Objective 5.2: Protect and Restore Waterbodies and Watersheds by enhancing water quality monitoring efforts to evaluate conservation practice implementation efficacy on nonpoint source nutrient inputs. Additionally, conservation practices will focus on the long-term viability of agricultural producers offering climate resiliency options to mitigate soil and nutrient loss as well as water conservation.

Fiscal Year 22 and 23 GHP funding will be utilized to support Arkansas Natural Resources Division staff's implementation of the recently updated Arkansas Nutrient Reduction Strategy (ANRS). The 2022 ANRS identifies seven HUC8 watersheds as Tier 1, which are maximum focus areas for nutrient reduction (Figure 1). An additional 23 HUC8 watersheds are identified as Tier 2 which are focus watersheds but could need additional water quality monitoring data to evaluate long-term water quality trends, specifically nitrogen and phosphorus.



**Figure 1.** Map of Arkansas HUC8 that were categorized across four tiers in the 2022 Arkansas Nutrient Reduction Strategy update. Proposed Gulf Hypoxia Program funding for nutrient reduction implementation projects or water quality monitoring will be focused on Tier 1 and Tier 2 watersheds.

The 2022 ANRS identifies three main goals: increase or maintain downward nutrient trends for Tier 1 watersheds, enhance water quality monitoring and increase or maintain downward nutrient trends in Tier 2 watershed, and continue efforts to reduce nutrients in all other watersheds (Figure 2). Year one funding will support water quality monitoring efforts in the Upper Cache River (08020302) watershed to evaluate pre-restoration water conditions. Year two funding will be used to support implementation of two-stage ditches in the Upper Cache River basin.

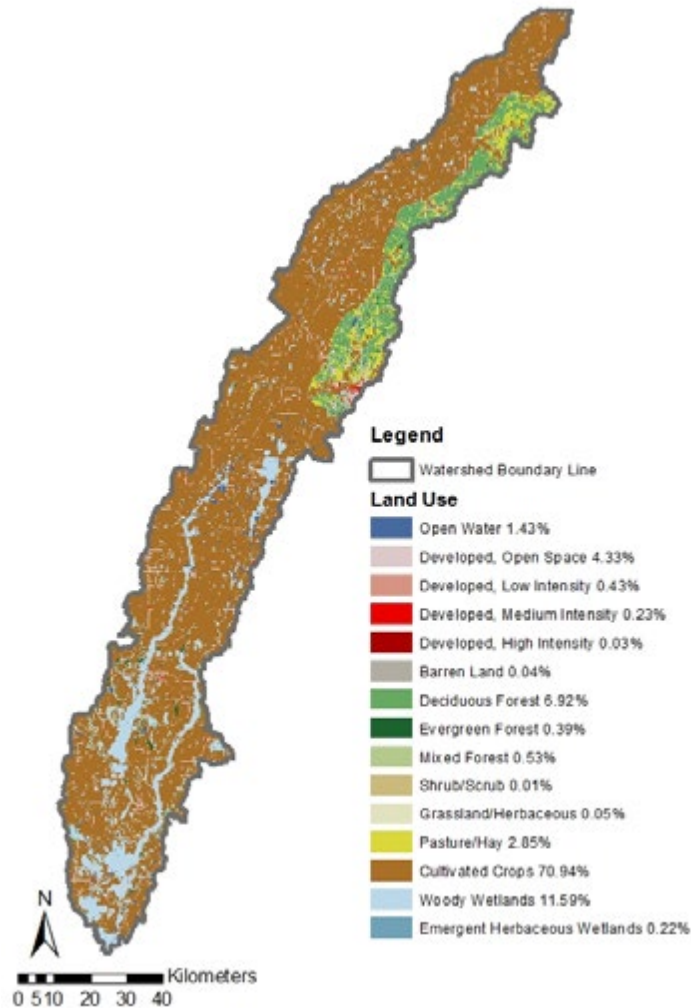


**Figure 2.** Arkansas Nutrient Reduction Strategy goals and strategic framework for implementation.

### Introduction of Watershed Area

This project is supporting implementation of the Arkansas Nutrient Reduction Strategy (ANRS) by increasing water quality in a Tier 2 watershed as well as providing data prior to management

practices to reduce nutrients and sediments from the Upper Cache River watershed. The sites have been identified as ‘hot spots’ with consistently high nutrient and sediment concentrations reported in a prior Upper Cache River Monitoring project (17-200). The Cache River Watershed (HUC# 08020302) begins in Southeast Missouri with >90% of the watershed located in the Delta Ecoregion of Eastern Arkansas. The watershed covers a total of 1,956 mi<sup>2</sup> and land-use consists primarily of row crop agriculture (67.6%) and 19.2% of the watershed is forested (Arkansaswater.org) (Figure 3). The Upper Cache River is highly channelized with few remaining intact wetlands which create a challenge to control sediment and nutrients entering the Cache River.



**Figure 3.** Land use of the Cache River Watershed based on the most recent U.S. Geological Survey’s National Land Cover Data (Homer et al., 2015).

Utilizing Climate and Economic Justice Screening Tool for areas of the Upper Cache River watershed, portions of Clay County (including the community of Rector) are identified as exceeding the 90<sup>th</sup> percentile of expected population loss rate, above the 65<sup>th</sup> percentile for low income, above the 80<sup>th</sup> percentile for high education non-enrollment, above the 90<sup>th</sup> percentile for

energy burden, and above the 90<sup>th</sup> percentiles for heart disease and low life expectancy. With the development of new floodplain benches, a new larger cross-sectional area than the previous trapezoidal channel will be developed. Thus, construction of two-stage ditches in the Upper Cache River watershed will have direct impacts to local communities through increased flood mitigation benefits from enhanced flood retention capacity while reducing nutrient and sediment loss (Kridler et al. 2017).

### **Problem/Need Statement**

The Cache River Watershed has many different uses. The watershed offers year-round recreational activities including hunting, fishing, hiking, kayaking, birding and camping. Many large farms operate at a high level of resource management in this watershed. The Cache River Watershed was chosen as a target watershed for two-stage ditch construction and has been cited as a source of nutrients and suspended solids contributing to the hypoxia in the Gulf of Mexico. Recent monitoring funded by Nonpoint Source Pollution Grant Program grant 17-200 (see Upper Cache Monitoring 17-200 final report) has noted the contaminant contributions from subwatersheds of the Cache River. Conservation projects have recently been initiated on the Cache River Watershed. Designated uses in the watershed include fisheries, aquatic life, agricultural and industrial water supply (ADEQ, 2008).

According to the more recent 303(d) list, the major causes of the impairment are listed as excessive turbidity, total dissolved solids, and lead (ADEQ, 2016) and include the main channel of the Cache River which can be contributed to an accumulation of upstream agriculturally dominated watersheds. Agricultural activities within the watershed are thought to be the major source of the contamination. The alluvial soil associated with the Delta Ecoregion is very erodible and soil disturbances as part of row-crop agriculture contribute to the suspended sediment in this watershed. In addition, silt and total suspended solid inputs during storm events from the unpaved farm roads, construction sites and other land disturbances are adding a significant loading and increasing in-stream turbidity concentrations during and following storm events.

The proposed sampling sites were identified as “hot spots” for sediments and nutrients entering the Cache River (Upper Cache River Monitoring 17-200). Many of these proposed sites had turbidity consistently above the State standard for stormflow; East Slough (EASL) monitoring resulted in exceedance of 250 NTU 35% of the time. This subwatershed is 89% row crop and other proposed subwatersheds ranged from 48-92% row crop. Cache River Ditch #1 (CRDO) represents an Upper Cache River main channel site and in the previous study had a mean turbidity of 211 NTU and range of 9.9-1660 NTU.

### **General Project Description**

The Cache River Watershed, listed as impaired due to turbidity and total dissolved solids is a watershed of enormous environmental and economic significance and steps must be taken to ensure its continued use. To address nutrient and secondarily sediment reduction, the NRD is



proposing to utilize Bipartisan Infrastructure Law funding for the newly created Gulf Hypoxia Program (GHP) to implement newly updated Arkansas Nutrient Reduction Strategy (ANRS). As proposed, the project will be separated into water quality monitoring and two-stage ditch implementation. We are proposing sub-awarding funds to Arkansas State University to continue water quality data collection efforts and to Arkansas Field Office of The Nature Conservancy for implementation of two-stage ditches in the Upper Cache River Watershed.

Tasks for Arkansas State (A-State) Ecotoxicology Research Facility (ERF) include the following water quality parameters:

1. Total Suspended Solids (TSS)
2. Turbidity
3. Dissolved Oxygen (DO)
4. pH
5. Nitrates
6. Nitrites
7. Orthophosphate
8. Total Nitrogen
9. Total Phosphorus

These parameters will be collected by A-State personnel and tested on all samples delivered to the ERF. All WQ parameters will be tested according to APHA protocol (2005) as stated in the QAPP. The sampling approach will follow EPA BIL GP Water Quality Monitoring Tier One Strategies. All water quality data will be entered into Water Quality Exchange (WQX) database. Sampling protocol is described below:

Monitoring data are to be collected weekly upstream and downstream of the proposed construction sites over a 3-year period. Water samples will be collected from the vertical centroid of flow, where the water is actively flowing and well mixed.

Specific monitoring sites will be selected based on the selection of two-stage ditch implementation areas. Construction of two stage ditches will not occur until years two and three of the proposed workplan. It is anticipated that water quality monitoring will be structured as standard before-after-control-implementation (BACI) study design.

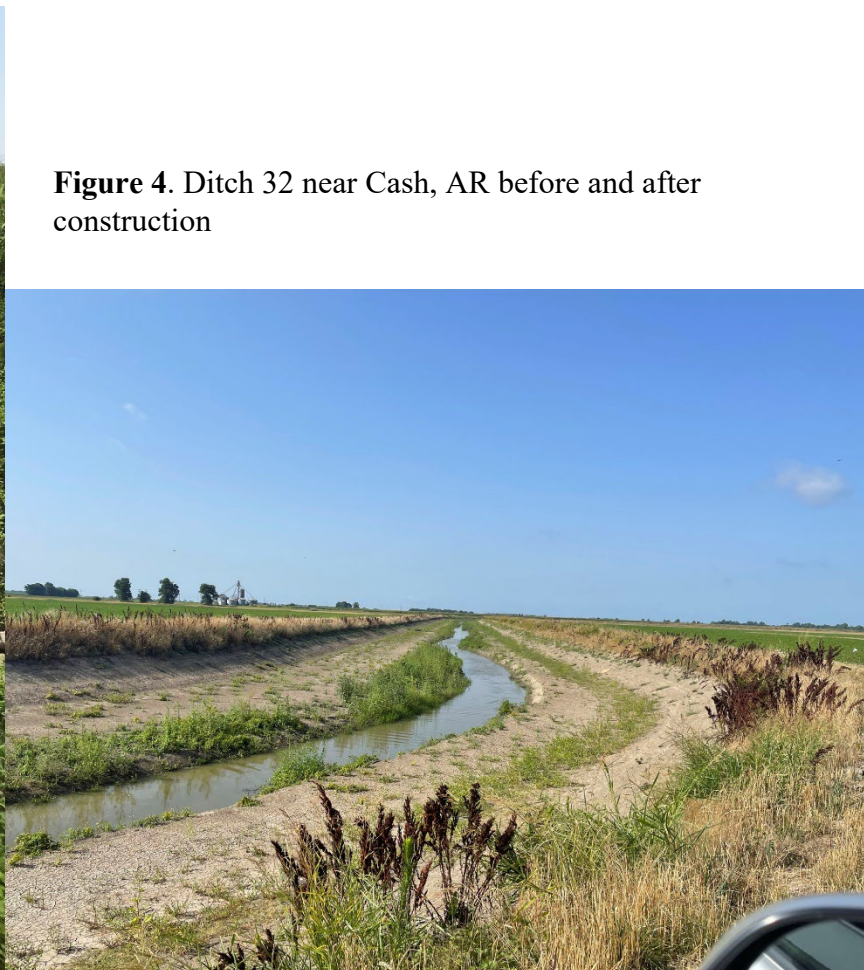
Construction of two-stage ditch floodplains have been documented to reduce sediment and nitrate concentrations between 15-82% and 3 to 24-fold, respectively (Mahl et al. 2015). Similar work in Indiana documented a 22% and 50% reduction of total suspended solid load and concentration, while total phosphorus loads and concentrations were reduced by 40% and 50%, respectively (Hodaj 2016). Over the last two years, Arkansas Field Office of The Nature Conservancy has constructed three separate two-stage ditch projects in the Upper Cache River watershed. Historic projects were in Ditch 32, Tupelo Slough, and Cunningham Smith and totaled over 8,000 linear feet (Figures 4-5). Two-stage ditch construction design was assisted by Dan Mecklenburg, an Ecological Engineer from The Ohio State University. With assistance from Ohio State University, Arkansas Field Office of The Nature Conservancy developed regional hydrologic curves to assist with design calculations for the appropriate slope and inner berm

dimensions based on watershed size for two-stage ditches. Pre-and-post channel dimensions will be reported in the final report to evaluate volume storage capacity.

Additionally, staff from TNC and NRD will work to develop methodologies to evaluate post-implementation impacts to local producers. This may include, but not 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.

Target implementation goals for two-stage ditch is set at 22,000 linear feet in the Upper Cache River watershed. 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. It is anticipated that work would not occur until years two through four of the five-year workplan. Throughout the project lifespan data will be entered into the EPA Grant Reporting and Tracking System (GRTS).



**Figure 4.** Ditch 32 near Cash, AR before and after construction



**Figure 5.** Aerial image of Ditch 32 near Cash, AR post-construction.

## **Cross-Cutting Priorities:**

### *Disadvantaged Communities*

Pre-and-post channel dimensions will be reported in the final report to evaluate volume storage capacity as to potential impacts to local communities. Additionally, staff from TNC and NRD will work develop methodologies to evaluate post-implementation impacts to local producers. This may include, but not limited to number of inundation days reduced, drainage acreage improved, or feet/miles of transportation accessibility gained.

### *Climate Adaptation*

The short- and long-term water quality and landscape scale implications from this project are difficult to immediately predict. However, literature clearly supports implementation of two-stage ditches result in improved water quality from the reduction of suspended sediment and nutrients. In-channel floodplain restoration is a FEMA approved methodology for flood mitigation and further cited by EPA as nature based approach (<https://www.epa.gov/watershedacademy/lessons-learned-integrating-water-quality-and-nature-based-approaches-hazard>).

### *Title VI*

The Arkansas Department of Agriculture offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or disability. Implementation of GHP programmatic funding will follow compliance with Title VI.

### *American Workforce and Domestic Manufacturing*

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.

## Environment Results:

This workplan accomplishes the goals set by the GHP and the ANRS. The following are a list of the five strategic outcomes and the activities included to reach them in this workplan.

1. Support staff to implement the ANRS.
  - a. Update and review watershed management plans for Tier 1 watersheds to focus on comparing and analyzing strategies. (See Goal 1, Objective A of ANRS)
  - b. Convene and engage stakeholders in priority MARB watersheds, and support NRCS in their conservation practices (See Goal 1, Objective B of ANRS). Local NRCS staff have assisted the Arkansas Field Office of The Nature Conservancy collect pre-construction survey data on previous two-stage ditch projects in the Upper Cache River Watershed. It's anticipated that NRCS will engage in field demonstration days or construction design surveys or review of NRCS 582 conservation practice.
2. Reduce nonpoint source nutrient pollution as articulated in the ANRS.
  - a. Implementing conservation practices (See ANRS goals and strategic framework).
    - i. NRCS 582 conservation practice of constructing two-stage ditch construction in Upper Cache River Watershed
    - ii. Review needs of local soil and water conservation districts for the development of nutrient management plans in Tier 1 and Tier 2 watersheds.
    - iii. Develop field demonstration days to highlight project implementation.
    - iv. Implementation of two-stage ditches has been documented to reduce nonpoint source pollutants, specifically nutrients and sediment, by up to half of the pre-implementation load.
  - b. Analyze water quality data before-after two-stage ditch construction to evaluate year one and two post-construction impacts on nonpoint source reductions.
3. Prioritize and target watersheds with the greatest opportunities for nutrient reductions.
  - a. Arkansas will focus project implementation in high-impact watersheds and critical areas (Tier 1 and Tier 2 watersheds) where the greatest nutrient reductions can be achieved (Figure 1).
  - b. Fiscal Year 22 and 23 funds will be utilized to collect additional water quality data as well as implement nutrient reduction best management practices in the Upper Cache River Watershed (Tier 2).
4. Collaborate across state boundaries with HTF partners.
  - a. Arkansas will leverage funds to engage 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 scales.
    - i. Arkansas will form workgroups to keep engagement in the ANRS as well as ensure successful implementation.
    - ii. Includes presentations and annual reports to EPA and the Hypoxia Task Force.
  - b. Arkansas will coordinate, consolidate, and improve access to data collected by state, tribal, and federal agencies, and present basin-wide and sub-basin progress towards Gulf Hypoxia Action Plan goals.

5. Use state-level water quality programs and actions to better support nutrient reductions.
  - a. Arkansas will leverage funding and expand programs such as CWA Section 319
  - b. Data will be entered into Water Quality Exchange (WQX) and Grant Tracking and Reporting System (GRTS) database for access by all entities.
  - c. Information collected will be utilized to update information in the ANRS for future prioritization cycles.

**Milestone Schedule:**

<b>Year 1</b>				
<b>Task</b>	<b>Subtask Number</b>	<b>Description</b>	<b>Start Date</b>	<b>Completion Date</b>
<b>1</b>	<b>1.1</b>	<b>Finalize contract b/t ASU and ANRD</b>	Oct 22	Nov 22
	<b>1.2</b>	<b>Development of a QAPP</b>	Oct 22	Nov 22
	<b>1.3</b>	<b>QAPP Review/ Approval</b>	Nov 22	Dec 22
<b>2</b>		<b>Financial Review</b>		
	<b>2.1</b>	Annual Financial Reviews (TNC)	Jan 23	Jan 24
<b>3</b>		<b>Purchase of equipment, laboratory certification, lab and office supplies</b>		
	<b>3.1</b>	Purchase of equipment/supplies for TSS	Jan 23	Dec 26
	<b>3.2</b>	Purchase of equipment/supplies for nutrients	Jan 23	Dec 26
	<b>3.3</b>	Purchase of equipment/supplies for nutrient digestion	Jan 23	Dec 26
<b>4</b>		<b>Installation/set up of new equipment</b>		
	<b>4.1</b>	Installation of vacuum pumps, manifolds, and filter funnels	Jan 23	Dec 26
	<b>4.2</b>	Set up and calibration of refrigerator, nutrient analyzer, and drying oven	Jan 23	Dec 26
<b>5</b>		<b>Identification of sampling sites</b>		
	<b>5.1</b>	Determination of sampling sites with Arkansas Natural Resource Division	Jan 23	Feb 23
<b>6</b>		<b>Sample collection</b>		
	<b>6.1</b>	Sample collection year 1	Jan 23	Jan 24
<b>7</b>		<b>Analysis</b>		
	<b>7.1</b>	Sample analysis year 1	Jan 23	Jan 24
<b>8</b>		<b>Data entry</b>		
	<b>7.1</b>	WQX & GRTS Data entry for year 1	Jan 23	Jan 24
<b>9</b>		<b>Reporting</b>		
	<b>9.1</b>	1 <sup>st</sup> Quarterly progress report	Jan 23	Mar 23
		2 <sup>nd</sup> Quarterly progress report	April 23	June 23
		3 <sup>rd</sup> Quarterly progress report	July 23	Sept 23
		4 <sup>th</sup> Quarterly progress report	Oct 23	Dec 23
	<b>9.2</b>	1 <sup>st</sup> Annual report	Jan 23	Oct 23
<b>Year 2</b>				
<b>Task</b>	<b>Subtask Number</b>	<b>Description</b>	<b>Start Date</b>	<b>Completion Date</b>
<b>2</b>		<b>Financial Review</b>	Oct 23	Jan 24
<b>3</b>		<b>Supplies purchase</b>		

	3.1	Purchase of equipment/supplies for TSS	Oct 23	Sept 24
	3.2	Purchase of equipment/supplies for nutrients	Oct 23	Sept 24
	3.3	Purchase of equipment/supplies for nutrient digestion	Oct 23	Sept 24
6		<b>Sample collection</b>		
	6.2	Sample collection year 2	Oct 23	Sept 24
7		<b>Analysis</b>		
	7.2	Sample analysis year 2	Oct 23	Sept 24
8		<b>Data entry</b>		
	8.2	WQX &GRTS Data entry for year 2	Oct 23	Sept 24
9		<b>Reporting</b>		
	9.1	<b>Quarterly Reports</b>		
		5 <sup>th</sup> Quarterly progress report	Jan 24	Mar 24
		6 <sup>th</sup> Quarterly progress report	April 24	June 24
		7 <sup>th</sup> Quarterly progress report	July 24	Sept 24
		8 <sup>th</sup> Quarterly progress report	Oct 24	Dec 24
	9.2	2nd Annual report	Jan 24	Oct 24
10		<b>Finalize contract b/t TNC and ANRD</b>	Oct 22	Apr 23
11		<b>Finalize two-stage ditch construction sites</b>	Oct 22	Feb 23
	11.1	Finalize all landowner construction agreements	Jan 23	Dec 23
	11.2	Complete all necessary construction designs with NRD or NRCS approval	Jan 23	Dec 23
	11.3	Complete all stated and federal permitting	Jan 23	Dec 23
	11.4	Complete all NEPA, SHPO, and EPA requirements	Jan 23	Dec 26
12		<b>Finalize construction contractor agreements</b>	Jan 23	Sep 27
13		<b>Initiate two-stage ditch implementation</b>	Jul 23	Sep 27
15		<b>Review nutrient related needs from Conservation District</b>	Oct 23	Sept 27
<b>Year 3</b>				
<b>Task</b>	<b>Subtask Number</b>	<b>Description</b>	<b>Start Date</b>	<b>Completion Date</b>
1	1.4	<b>QAPP extension (if needed)</b>		
2		<b>Financial Review</b>		
	2.2	Financial review years 1-3 (ASU)	Jan 23	Jan 25
3		<b>Supplies purchase</b>		
	3.1	Purchase of equipment/supplies for TSS	Oct 24	Sept 25
	3.2	Purchase of equipment/supplies for nutrients	Oct 24	Sept 25
	3.3	Purchase of equipment/supplies for nutrient digestion	Oct 24	Sept 25
6		<b>Sample collection</b>		
	6.3	Sample collection year 3	Oct 24	Sept 25
7		<b>Analysis</b>		
	7.3	Sample analysis year 3	Oct 24	Sept 25
8		<b>Data entry</b>		
	8.1	WQX & GRTS Data entry for year 3	Oct 24	Sept 25
9		<b>Reporting</b>		
	9.1	Final report (ASU)		Dec 25
11		<b>Finalize two-stage ditch construction sites</b>	Oct 22	Feb 23
	11.1	Finalize all landowner construction agreements	Jan 23	Dec 23
	11.2	Complete all necessary construction designs with	Jan 23	Dec 23

		NRD or NRCS approval		
	11.3	Complete all stated and federal permitting		
	11.4	Complete all NEPA, SHPO, and EPA requirements	Jan 23	Dec 26
12		<b>Finalize construction contractor agreements</b>	Jan 23	Sep 27
13		<b>Initiate two-stage ditch implementation</b>	Jul 23	Sep 27
14		<b>Reporting</b>		
	14.1	TNC 2nd Annual report	Oct 23	Sept 24
<b>Year 4</b>				
<b>Task</b>	<b>Subtask Number</b>	<b>Description</b>	<b>Start Date</b>	<b>Completion Date</b>
2		<b>Financial Review</b>	Oct 25	Jan 26
9		<b>Reporting</b>		
	9.1	Final report		Dec 25
11		<b>Finalize two-stage ditch construction sites</b>	Oct 22	Feb 23
	11.1	Finalize all landowner construction agreements	Jan 23	Dec 23
	11.2	Complete all necessary construction designs	Jan 23	Dec 23
	11.3	Complete all stated and federal permitting		
	11.4	Complete all NEPA, SHPO, and EPA requirements	Jan 23	Dec 23
12		<b>Finalize construction contractor agreements</b>	Jan 23	Sep 27
13		<b>Initiate two-stage ditch implementation</b>	Jul 23	Sep 27
14		<b>Reporting</b>		
	14.1	TNC 3rd Annual report	Oct 22	Sept 23
15		<b>Review nutrient related needs from Conservation District</b>	Oct 23	Sept 27
<b>Year 5</b>				
<b>Task</b>	<b>Subtask Number</b>	<b>Description</b>	<b>Start Date</b>	<b>Completion Date</b>
2		<b>Financial Review</b>	Oct 26	Jan 27
8		<b>Final WQX and GRTS Entry</b>	Oct 22	Dec 27
9		<b>Reporting</b>		
	9.3	Final report	Oct 22	Dec 27
11		<b>Finalize two-stage ditch construction sites</b>	Oct 22	Feb 23
	11.1	Finalize all landowner construction agreements	Jan 23	Dec 23
	11.2	Complete all necessary construction designs with NRD or NRCS approval	Jan 23	Dec 23
	11.3	Complete all stated and federal permitting		
	11.4	Complete all NEPA, SHPO, and EPA requirements	Jan 23	Dec 26
12		<b>Finalize construction contractor agreements</b>	Jan 23	Sep 27
13		<b>Initiate two-stage ditch implementation</b>	Jul 23	Sep 27
14		<b>Reporting</b>		
	14.1	TNC 3rd Annual report	Oct 22	Sept 23
15		<b>Review nutrient related needs from Conservation District</b>	Oct 23	Sept 27



**Deliverables:**

**Task 1**

Submission of a completed subgrant agreement between Arkansas Natural Resources Division and Arkansas State University and EPA approved Quality Assurance Project Plan (QAPP) for water quality monitoring

**Task 2**

Completed annual financial reviews for The Nature Conservancy. A final completed financial review from Arkansas State University at conclusion of subgrant.

**Task 3**

Documentation of completed quotes and equipment purchase for Subtask 3.1-3.3

**Task 4**

No deliverables

**Task 5**

Documentation of all selected monitoring sites including GPS coordinates and maps

**Task 6**

No deliverables

**Task 7**

No deliverables

**Task 8**

Documentation of data entry in Water Quality Exchange (WQX) and Grant Reporting Tracking System (GRTS)

**Task 9**

Submission of all quarterly, annual, and final reports from Arkansas State University and Arkansas Field Office of The Nature Conservancy.

**Task 10**

Completed subgrant agreement between Arkansas Natural Resources Division and Arkansas Field Office of The Nature Conservancy

**Task 11**

Submission of all landowner contractual agreements; state and federal permits (if required), including, but not limited to: short term activity authorization, Section 401/404, all NEPA, SHPO, and ESA documentation; and, of two-stage ditch design engineered specifications. Notification to EPA prior to construction implementation.

**Task 12**

Finalized contracts between Arkansas Field Office of The Nature Conservancy and construction firms

**Task 13**

Photo documentation of construction progress, including before and after photos

**Task 14**

Quarterly, semi-annual, and annual reports that will be utilized to develop presentations, infographics, or other supplemental material to highlight project successes to EPA and the Hypoxia Task Force.

**Task 15**

Identified project scope for aiding conservation districts with FY24-26 GHP funding for BMP implementation

**Transferability of Results and Dissemination to Public:** Information gathered from this project will be utilized to inform future revisions of the Cache River 9-Element Watershed Management Plan and the Arkansas Nutrient Reduction Strategy. Additional information may be used to develop success stories if impaired water quality segments achieve water quality criterion and designed use attainment. Field demonstration days with draining districts, NRCS staff, Arkansas Conservation Districts, Farm Bureau, and other will be organized to highlight project implementation, partnerships, and overall water quality and economic benefits to local producers.

**Technical Support:** Staff at the Natural Resources Division Nonpoint Source Pollution Program will provide technical assistance and support to staff of Arkansas State University and Arkansas Field Office of The Nature Conservancy in the forms of Quality Assurance Project Plan development, site-selection, data entry, and/or reporting.

**Detailed Budget Narrative:**

BUDGET CATEGORIES INFORMATION (FROM SF424A, SECTION B TOTALS) Enter Total Program Costs, i.e., Federal (Attach Separate Sheet(s) if necessary)				
<b>OBJECT CLASS CATEGORIES:</b>				
<b>a. Personnel:</b> (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)
<b>b. Fringe Benefits:</b> Total				
<b>c. Travel:</b> 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.				
<b>TRAVEL: TOTAL</b>				
<b>d. Equipment:</b> (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.				
<b>TOTAL EQUIPMENT</b>				
<b>f. Contractual</b> (two stage ditch construction by contractor)				

<b>h. Other:</b> Explain by major categories any items not included in above standard budget categories. <u>Caution:</u> 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.	
Subawards to Arkansas State University and Arkansas Field Office of The Nature Conservancy	
<b>OTHER TOTAL</b>	<b>\$1,713,333</b>
<b>i. TOTAL DIRECT CHARGES:</b> (Sum of Items a. through h.)	<b>\$1,713,333</b>
<b>j. INDIRECT COSTS:</b>	
<b>k. TOTAL PROPOSED PROGRAM COSTS</b> (Sum of Items I and j.)	<b>\$1,713,333</b>

**Quality Assurance (QA):** Test QA for each parameter will determine success and performance of WQ parameters. Water Quality measurements will uphold the success/failure of BMP implementation decisions through the MRBI project decisions by the ANRD.



# Illinois Environmental Protection Agency

## Gulf Hypoxia Program

### Work Plan #1



Submitted July 26, 2022



**ILLINOIS**  
NUTRIENT LOSS  
REDUCTION STRATEGY

Improving our  
water resources  
with collaboration  
and innovation



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## 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 FY22 Guidance for State Cooperative Agreements” memorandum distributed by USEPA on June 9, 2022.

Illinois’ initial GHP work plan will cover FY22 and FY23 funding. The work plan will be five years in length. There are five projects under FY22 funding and four projects under FY23. 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](https://go.illinois.edu/NLRS)

# FY 2022 and FY 2023 Funding Projects

## A. Priority Watershed Outreach and Planning

### Project Approach

The University of Illinois Extension employs two watershed outreach associates in Nutrient Loss Reduction Strategy (NLRs) priority watersheds to:

- conduct watershed outreach and education
- assist in locally led watershed-based planning and implementation
- participate in agronomic research specific to nutrient reduction.

Watershed outreach associates provide technical assistance and information regarding the implementation of both agriculture and urban stormwater best management practices to local organizations and stakeholders. This includes assisting local soil and water conservation districts, civic organizations, watershed groups, and individual landowners. Educational programming includes presentations at field days, trainings, workshops, watershed meetings. Podcasts will also be developed, focusing on agriculture and urban stormwater conservation practices recommended in the NLRs.

**EPA Strategic Plan:** This project supports EPA GHP Strategic Plan Goal 5: *Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds* by 1) Developing water quality plans to restore and protect waters and wetlands, and 2) Implement programs to prevent or reduce nonpoint source pollution, including nutrients.

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

1. Support Staff to implement the work plan
2. Reduce nonpoint source pollution as articulated in state strategies
3. Prioritize and target watersheds with greatest opportunities for nutrient reductions

**Subawards:** Illinois EPA will administer a subcontract with the University of Illinois Extension to provide for two watershed outreach associates to execute this project. An Intergovernmental Agreement will detail a scope of work and budget. Illinois EPA staff will manage the deliverables and invoices. FY 22 Gulf Hypoxia program funds will be used to fund approximately 8 months of work. Once completed, a new Agreement to extend this work will be executed using state funds by Illinois EPA.

**Outreach:** Outreach will be conducted through public meetings, field days, workshops, and podcasts. The Watershed Outreach associates will develop an outreach and education work plan to Illinois EPA which will include the specific dates and locations, as they are often organized by other partners.

**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 80<sup>th</sup> 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 Watershed Outreach Associates will focus their work in four NLRS priority HUC-8 watersheds: Embarras River watershed, Little Wabash River watershed, Lower Rock River watershed, and Mississippi River Central (Flint/Henderson creeks). Combined, these watersheds contain 429 square miles of disadvantaged communities, which includes a total population of 247,832.

## Environmental Results

Local stakeholders and organizations will be provided with information on the risks associated with nutrient loss and the actions that can be implemented to mitigate those losses. This knowledge will translate to adoption of field-level best management practices that reduce nutrient loads to local water bodies, which achieves local water quality goals and goals established to protect the Gulf of Mexico.

**Outputs:** Field days, watershed meetings, trainings, podcasts, workshops and watershed planning development and implementation. Podcasts will be recorded approximately monthly and provide topical information focusing on agriculture conservation practices.

**Outcomes:** Local stakeholders gain knowledge of nutrient pollution issues in the priority watersheds, resulting in actions taken to mitigate nutrient loss from agriculture and urban stormwater sources.

## Milestone Schedule

See Appendix A

## Transferability of Results and Dissemination to Public

Watershed Outreach Associates will lead and participate in public meetings to disseminate information on the NLRS, current watershed planning efforts, and implementation. Podcasts will be developed to provide easily accessible information on a variety of topics related to implementing the NLRS, with special attention to agriculture conservation practices. Approved watershed plans in priority watersheds will be housed on the Illinois EPA website. A summary of this work will appear in the 2023 NLRS Biennial Report.

## Technical Support

Illinois EPA staff work closely with the watershed outreach associates to provide guidance and answer questions related to implementation of the NLRS and watershed planning activities.

## Detailed Budget Narrative

See Appendix B

## Quality Assurance:

N/A

## B. Continuous Nutrient Monitoring Network

### Project Approach

This effort will conduct nutrient monitoring at eight 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 two years. Discrete water-quality samples will be collected to verify continuous sensor data and describe how well the sensor locations represent the streams. Annual data summaries will be provided, and a formal, citable report will be written in the final year of the project. In addition to the load computation using the surrogates, the USGS will complete Weighted Regression on Time Discharge and Season (WRTDS) modeling for total phosphorus loads and linear interpolation for nitrate loads (or WRTDS-K for both) at the eight sites. See Table 1 for continuous nutrient monitoring station information.

**Table 1.** Continuous nutrient monitoring station information.

[USGS, U.S. Geological Survey; ID, identification; km<sup>2</sup>, square kilometer]

River	USGS ID	Station drainage area (km <sup>2</sup> )	Station drainage area in Illinois (km <sup>2</sup> )	Basin drainage area in Illinois (km <sup>2</sup> )	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 <sup>1</sup>	03381495	7,998	7,998	8,298	100	5.5
Rock	05446500	24,732	10,290	13,789	42	7.1
Green <sup>2</sup>	05447500	2,598	2,598	2,927	100	1.8
Illinois <sup>3</sup>	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

<sup>1</sup>Drainage area numbers are for the nearby streamgauge at Little Wabash River at Carmi, Illinois (U.S. Geological Survey identification number 03381500).

<sup>2</sup>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.

<sup>3</sup>Drainage area numbers are for the nearby streamgauge 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:

3. Prioritize and target watersheds with greatest opportunities for nutrient reductions
5. Use state-level water quality programs and actions to better support nutrient reductions

**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 October 2022 to

October 2024 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. Information will also be summarized in the 2023 NLRS Biennial Report. 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 80<sup>th</sup> 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 80<sup>th</sup> 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 and discussion will be included in the 2023 NLRS Biennial Report.

**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 and discussion will be included in the 2023 NLRS Biennial Report. Illinois plans to present during Hypoxia Task Force Coordinating Committee calls.

## 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.

## C. Cover Crop Premium Discount Program

### 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. Reduce nonpoint source pollution as articulated in state strategies; Advances water quality actions that have climate adaptation or mitigation co-benefits

**Subawards:** Illinois EPA will execute an Intergovernmental Agreement with IDOA to provide funding for this project. Funding will be dispersed annually for FY 22 and FY 23.

**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 80<sup>th</sup> 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 130,000-140,000 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 100,000 acres. GHP will fund the remaining 30,000-40,000 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 three years.

## Detailed Budget Narrative

See Appendix B

## Quality Assurance

N/A

## D. Groundwater Nitrate Monitoring Analysis

### Project Approach

Illinois Department of Agriculture (IDOA) administers the state's Groundwater Monitoring Well Network to monitoring levels of pesticides in shallow groundwater. The monitoring network currently consists of 133 shallow groundwater monitoring wells located throughout the state. All wells are located in the public rights-of-way adjacent to row-crop fields and are installed in areas where aquifer materials occur within 50 feet of land surface. Each well in the network is sampled once during a two-year period. In 2000, IDOA enhanced the monitoring program to include testing for nitrate concentrations. However, due to state funding cuts the nitrate analysis was terminated in 2014. Funding from GHP will be used to purchase nitrate analysis equipment to resume collecting nitrate concentration data in groundwater.

This monitoring project involves collecting Tier One data, nitrate-nitrogen.

**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:

3. Prioritize and target watersheds with greatest opportunities for nutrient reductions
5. Use state-level water quality programs and actions to better support nutrient reductions

**Subawards:** Illinois EPA will execute an Intergovernmental Agreement with IDOA to provide funding for this project.

**Outreach:** Monitoring results and analysis will be made available through an annual groundwater nitrate monitoring report made available online.

**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 80<sup>th</sup> 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 Groundwater Nitrate Monitoring occurs at 133 shallow wells distributed throughout Illinois. Action will be taken to identify the monitoring wells that are located within or near disadvantaged community areas and noted in the annual groundwater nitrate monitoring report.

## Environmental Results

**Outputs:** Annual nitrate concentration data and annual reports detailing the water quality monitoring results and trends over time. Water quality data will be uploaded to WQX by Illinois Department of Agriculture staff.

**Outcomes:** Data generated from this monitoring project will be used to determine hotspots for high nitrate concentrations in groundwater. This information can be used by homeowners and businesses that rely on groundwater as their drinking water source and may also be analyzed to determine the effects and influence groundwater nitrates have on surface water nitrate loads, particularly in NLRS priority watersheds.

## Milestone Schedule

See Appendix A

## Transferability of Results and Dissemination to Public

Monitoring results and analysis will be made available through an annual report made available online.

## Technical Support

Technical support for this program is not required. IDOA will train staff to operate and maintain the lab equipment and data analysis.

## Detailed Budget Narrative:

See Appendix B

## Quality Assurance

A Quality Assurance Project Plan will be developed by IDOA and submitted to USEPA prior to the start of data collection.

# E. Nutrient Loss Reduction Strategy 2023 Biennial Report

## Project Approach

Every two years a Nutrient Loss Reduction Strategy (NLRS) Biennial Report is developed to inform the public on the progress Illinois has made in implementing the NLRS. The report serves a dual purpose to detail implementation activities and also as a mechanism to update the NLRS, so that it functions as a living document. The report structure follows the logic model shown in Figure 1.

Figure 1 NLRS Logic Model



### RESOURCES

The logic model starts with the category of resources. Resource measures refer to financial investment. These include funding, grants, and the staff who administer them.



### OUTREACH

Outreach leads to shifts in people's knowledge, attitudes, behavior, and investment. The outreach measures include field days, presentations, conferences, meetings, print or media, radio or television, social media, newsletters, awards, and surveys.



### LAND AND FACILITIES

The land and facilities measures are adoption of best management practices, such as agricultural conservation practices, upgrades to wastewater treatment facilities, and stormwater management practices. These physical changes on the land can affect change in water quality.



### WATER

The final measure of change is water. Water measures, which reflect nutrient loads, are presented in the Science Assessment Update chapter.



Metrics such as resources, outreach, and land and facilities measures are included in sector chapters that include agriculture, point sources, and urban stormwater. The water metric is included in the Science Assessment chapter, which also includes additional science assessment updates. A chapter discussing summaries of NLRs Policy Working Group and subgroup meetings held during the reporting period is also included. The report ends with an adaptive management chapter that assesses implementation activity benchmarks, long term water quality trends, and recommends future action items and priorities.

Policy Working Group members are given an opportunity to review and provide edits and comments to a draft version of the Biennial Report. NLRs Biennial Report stakeholders also include local, state, and federal partners to help to garner support (including financial) to expand implementation of the NLRs.

**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:

1. Support staff to implement the work plan
2. Reduce nonpoint source nutrient pollution as articulated in state strategies.

**Subawards:** Illinois EPA will administer an Intergovernmental Agreement with the University of Illinois Extension to conduct NLRs Biennial Report development.

**Outreach:** A joint new release by the Illinois EPA and Illinois Department of Agriculture will be disseminated upon the release of the 2023 Biennial Report. The full Biennial Report, Executive Summary, and appendices are placed on the Illinois EPA NLRs webpage. Hardcopies will be made available upon request. The 2023 Biennial Report will be summarized during the annual NLRs Conference. A “Common Message” NLRs presentation will be developed and placed on the NLRs website for organizations or stakeholders to use when informing the general public about the NLRs and 2023 Biennial Report.

**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 80<sup>th</sup> 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 NLRs 2023 Biennial Report is available to the general public and Illinois legislature to inform on the progress made on implementing the NLRs. The 2023 Biennial Report will include a section discussing the locations of disadvantaged communities in Illinois, particularly the areas and populations within existing NLRs priority watersheds. Stakeholder and partner organizations may incorporate this information into existing programming or future programs and projects to better serve these areas.

## Environmental Results

**Outputs:** A Biennial Report will be developed, including an executive summary, appendices, and presentation package. All materials will be posted on the Illinois EPA NLRS website and made available to all NLRS partners.

**Outcomes:** NLRS partner organizations, stakeholders, and the general public will understand the progress made in implementing the NLRS and the work still to do. This translates to the creation of new and continued projects, programs, and activities implemented to meet the water quality goals outlined in the NLRS.

## Milestone Schedule

See Appendix A

## Transferability of Results and Dissemination to Public

Separate Executive Summary documents are also developed, along with a joint news release by the Illinois EPA and Illinois Department of Agriculture. The full Biennial Report, Executive Summary, and appendices are placed on the Illinois EPA NLRS webpage. A minimum number of hardcopies are also made available. The Biennial Report is summarized during the annual NLRS Conference the year the report is released. A “Common Message” NLRS presentation is developed and placed on the NLRS website for organizations or stakeholders to use when informing the general public about the NLRS and most recent Biennial Report. A copy of the NLRS is provided to the members of the Illinois legislature.

## Technical Support

Illinois EPA and Illinois Department of Agriculture staff will work closely with Extension staff as they develop the Biennial Report, providing program writeups, data reviews, and report layout and edits.

## Detailed Budget Narrative

See Appendix B

## Quality Assurance

N/A

# F. Ag Retailer 4R Nutrient Management Metrics 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:

3. Prioritize and target watersheds with greatest opportunities for nutrient reductions
4. Collaborate across state boundaries with HTF partners

**Subawards:** Illinois EPA will post a competitive Request for Proposal (RFP) to select an entity to conduct the work for this project.

**Outreach:** Survey results will be disseminated through annual reports, presentations, and summarized in future NLRs Biennial Reports. Data results from the Illinois survey can compliment 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 80<sup>th</sup> 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 both statewide and on a regional or watershed basis. The results will be reviewed to associate identifying areas and populations with disadvantaged communities.

## 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 Biennial Reports.

## Technical Support

Illinois EPA staff will work with the successful Request For Proposal applicant 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 by the subrecipient to ensure accuracy and integrity in data collection and analysis.

## G. NLRS Implementation in Priority Watersheds

### 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 in 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. Reduce nonpoint source nutrient pollution as articulated in state strategies
3. Prioritize and target 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 80<sup>th</sup> 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

## **BIL -GHP HTF grant Workplan**

### **Summary Information Page (two-page limit)**

#### **Project Title:**

Staffing Capacity, Soil Sampling, and Science Assessment

#### **Organization Information:**

Indiana State Department of Agriculture, Division of Soil Conservation

Trevor Laureys

One North Capitol Avenue, Suite 600

Indianapolis, IN 46204

(317) 476-1106

[tlaureys@isda.in.gov](mailto:tlaureys@isda.in.gov)

#### **Proposed Funding Request:**

\$1,713,333.00 (first two years)

#### **Brief Project Description:**

The Indiana State Department of Agriculture is proposing to hire a staff person to help manage these new HTF dollars, and to provide support with the [State Nutrient Reduction Strategy](#)<sup>1</sup> efforts. This staff person will manage and coordinate the soil sampling program that will be developed under this work plan and coordinate other on-farm trial programs. These programs will aim to increase the frequency in which landowners soil sample as well as improve nutrient use efficiency.

ISDA is also proposing the creation of the Indiana Nutrient Research & Education Program that will focus on the work of the [Indiana Science Assessment](#)<sup>2</sup>. This program will allow for continued management and research analysis under Indiana's Science Assessment to determine efficiency of conservation practices on improving water quality.

#### **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.

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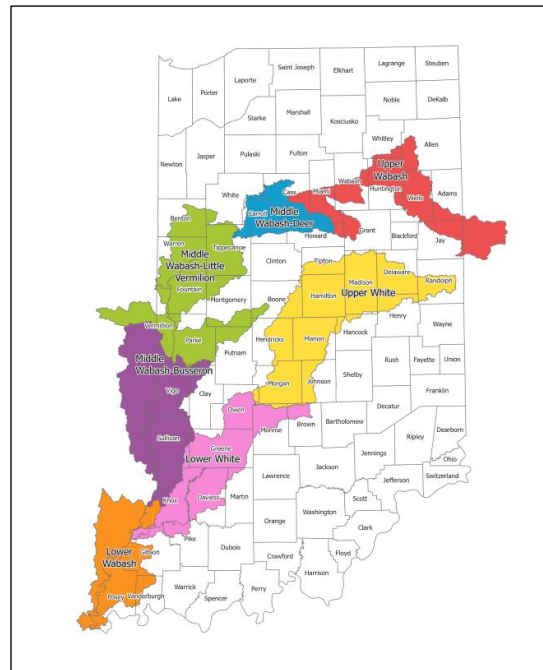
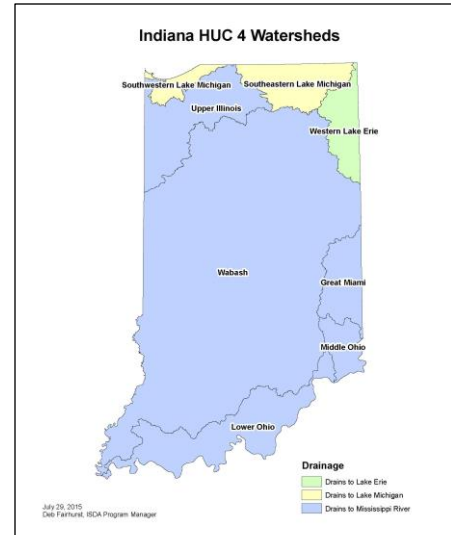
<sup>1</sup> <https://www.in.gov/isda/divisions/soil-conservation/indiana-state-nutrient-reduction-strategy/>

<sup>2</sup> <https://www.in.gov/isda/divisions/soil-conservation/indiana-state-nutrient-reduction-strategy/indiana-science-assessment/>

**Place of Performance:** Work by the new staff person(s) 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 HUC<sup>3</sup> 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, 2022 through September 30, 2025

<sup>3</sup> 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 (no page limit)**

### **Project Approach:**

The funding provided to Indiana through the Bipartisan Infrastructure Law (BIL)-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 (page 56):

- Implement programs to prevent or reduce nonpoint source pollution, including nutrients and plastic pollution.
- Use geographic partnership programs to implement consensus-based actions that address critical issues such as climate resiliency and water equity and quality in watersheds and communities.

This workplan will cover three main focus areas:

- 1) Expanding **staff capacity** to manage the BIL-GHP funds, and support the Indiana State Nutrient Reduction Strategy (SNRS), Indiana Conservation Partnership<sup>4</sup> efforts, 4R soil sampling program, and on-farm trial programs.
- 2) Development and expansion of a **soil sampling program** aimed at increasing 4R stewardship, nutrient use efficiency on Indiana farmland, non-point source pollution reduction, greenhouse gas reductions, and water quality improvements.
- 3) Creation of an **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.

### **1) Staff Capacity**

As part of this grant proposal, the Indiana State Department of Agriculture's (ISDA) Division of Soil Conservation will hire a staff person to 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. This position will be responsible for managing the funds from the USEPA through the BIL-GHP. A job description has been created for this position.

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<sup>4</sup> 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.



## **2) Soil Sampling Program**

This project seeks 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 is 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)<sup>5</sup> 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 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)<sup>6</sup>. IANA’s goal is 100% of farmers in Indiana regularly performing soil sampling. This project will 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.

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<sup>5</sup> 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.ncforestservation.gov/water\\_quality/what\\_are\\_bmps.htm](http://www.ncforestservation.gov/water_quality/what_are_bmps.htm)

<sup>6</sup> 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.

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. ISDA will work with partners to leverage existing programs to educate CCA's in the project area on soil health, nutrient management plans, and the 4R principles.

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 already collecting soil samples on their farmland or who have not collected samples in the last 4 years,
- 2) have soil analysis tests run by qualified soil testing labs,
- 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 soil sampling protocol that will be utilized, and within that protocol the soil test that is to be conducted is known as the "S1" soil test, which includes organic matter, 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 a number of soil testing laboratories in Indiana and surrounding states. We will develop criteria and qualifications that we want to have within this program, and landowners can have the option of which soil testing lab they want to use as long as the lab meets the criteria and qualifications of the program.

Initially, ISDA field staff will gather the soil samples using the developed sampling protocols. The samples will be sent or delivered to the soil test laboratories for the analysis to be performed. After the soil samples are analyzed, the participating farmer/producer will receive an informational letter informing them of the results of the analysis. If the soil results show medium or high levels of nutrients, an ISDA field staff and/or a CCA will contact them to discuss the results. At this point, nutrient recommendations can be determined for their farm(s).

During the second half of year 2, ISDA will 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 nutrient management plans with the participants. ISDA will work with the CCAs through the life of the project, but most of the funds will be utilized during year 2 and year 3. 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. This will essentially increase the use of nutrient management by farmers within the priority watershed areas.

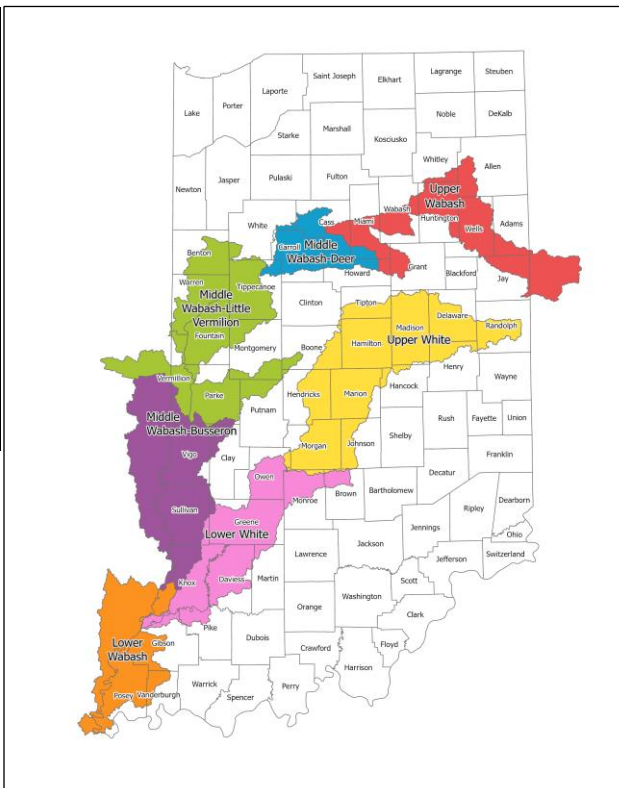
To ensure the CCAs understand the program requirement and expectations, ISDA will hold a kickoff meeting geared toward them. The meeting will include a discussion on how the soil sampling program will work and education on how to interpret the soil analyses done. Any CCAs will be invited to hear and

learn about the program. Our goal is to meet with the CCAs annually to gain their insight and sign-up new CCAs.

Through the course of this project, ISDA will work with partners to hold a soil fertility and nutrient management workshop. Participants will learn about agronomy, the importance of soil fertility, nutrient management, how to pull soil samples and read lab results. They will also tour their local lab to see how scientists and analysts process soil samples. Different nutrient sources will 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. These HUC8 watersheds are listed in the table below, and are shown on the 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 will pursue 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 Bipartisan Infrastructure Law funds will allow INREP to provide the scientific foundation for documenting nutrient reductions from conservation practice implementation, prioritizing those that are most effective, and which are critical components of the Indiana State Nutrient Reduction Strategy.

It will build 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 will allow 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 proposed Indiana Nutrient Research & Education Program will be to provide a scientific foundation to inform and improve nutrient stewardship in the State. Specific objectives are to:

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.**

- Develop and support an Advisory 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 of INREP activities and collaborations for external audiences.
- Seek sustained funding for the Program after the 5-year USEPA funding.

**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 for proposals in collaboration with the Science Committee. Funding will focus on 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.

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 and leader 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 contract between ISDA and Purdue University:
  - For the current Indiana Science Assessment work that is being done, 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.

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 in order to continue the work of the Science Assessment, and a contract will need to be drawn up between ISDA and Purdue for this as well. 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, a packet will be developed for each CCA. This will contain the required sign-up form that each landowner must fill out, the Nutrient Management Plan, informational items on the 4Rs, and other relevant information. During the CCA informational meeting, an employee from the LGs Business office will be in attendance to ensure that the participants understand the process and to ask billing 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 would 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 were approved for 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):
  - Since the soil sampling program will cover several watershed areas, ISDA will review the current QAPP with two respected labs and make any changes. 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. Once the labs have been selected, ISDA will work with the Business Office to handle the contracts. Afterward, ISDA will update the 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.

#### Public meetings

Educational workshops for the Soil Sampling program will be held for participants to earn credits on how to read and interpret soil sample test results and how to apply the results toward nutrient management on their farms. The plan is to hold the first session of workshop series at a socially disadvantaged location, such as a beginning farmer, minority farmer, or veteran farmer's farm. Each workshop is a series of 3 separate workshops, which will be held each year for the participants. These will be planned to be held at 5 regional locations, with the possibility of 2 virtual workshops.

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. ISDA will leverage an existing partnership with the Indiana Veterans group and hold a workshop at their farm in Hendricks County.

There will also be the kickoff meeting with CCAs during the first year of the program to discuss how the soil sampling program will work, and the program requirements and expectations.

The new ISDA staff person will handle the planning and logistics of all the meetings and workshops, with assistance provided from other ISDA personnel.

#### Disadvantaged communities

Disadvantaged communities refers to areas which most suffer from a combination of economic, health, and environmental burdens. These burdens include low-income, linguistically isolated, low percentage with high school education, high unemployment, low-life expectancy, air and water pollution, and presence of hazardous wastes. This project will advance Gulf Hypoxia Action Plan goals in disadvantaged communities by ensuring that a portion of the project dollars will be used to assist landowners in disadvantaged communities and historically underserved producers. This project will target underserved audiences with our programs and outreach efforts.

Historically underserved audiences targeted with previous outreach efforts will include but are not limited to 1) various underserved communities served through a partnership with Legacy: Taste Of the Garden (an organization that empowers under-served communities to engage in conservation, agriculture, and sustainable living) and 2) through groups such as Women's Conservation Learning Circles (<http://women4theland.iaswcd.org/>), 3) through outreach to Latino producers via Spanish-speaking workshops held by initiative partners such as CCSI, and 4) leverage existing projects that work with our beginning, veteran, Amish, and Native American communities.

In this project, ISDA will utilize staff and leverage the strength of partners' programs like Women4Land, Natural Resources Conservation Service, and IN AgrAbility, which will be used for education and outreach efforts. Outreach and education are critical to ensuring the successful adoption of practices. The outreach and educational efforts targeting historically underserved producers and disadvantaged communities will include a minimum of one field day/workshop & one media event annually statewide, and ISDA will set aside 10% of our soil sampling budget to ensure that the historically underserved and landowners in disadvantaged communities have ample opportunities to receive funds.

#### Climate change co-benefits

Central to this project is an understanding that our soil sampling program and nutrient management plans are part of the systems approach to conservation, and part of that systems approach to conservation is improving soil health. Healthy soil can store carbon, more water, and more nutrients and make those nutrients available for growing crops, thus improving water quality by storing water, which reduces stormwater and nutrient runoff from cropland. Soil samples are an essential tool for nutrient management planning. Developing a soil sampling program will allow our landowners to determine their soil properties and fertility levels. This, in turn, will enable our landowners to make good management decisions about fertilizer usage so that there is not an abundance of nutrients in the soil and prone to stormwater runoff. Also, the continued work on the Indiana Science Assessment will help us identify research gaps that will allow us to identify ag-related greenhouse gas emissions, sequester greenhouse gases and build resiliency to climate change impacts for all communities in Indiana.

### 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.

- 3,000 soil samples collected and analyzed in priority watershed areas
- 2,000 soil samples collected and analyzed in non-priority areas
- 200 nutrient management plans developed
- 400 acres impacted by nutrient management plans
- Each quarter we will send out 100 postcards in the sampling watersheds that contain information about the program. We will geo-reference these.
- A minimum of one workshop/field day will be held to educate on the importance of soil health, project status and/or water quality.
- Goal is to have at least 10 producers attend each workshop.

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.



**Milestone Schedule:**

# Hypoxia Workplan

Period Highlight: 1   N/A 

ACTIVITY <small>* based on federal fiscal years</small>	PLAN START	PLAN DURATION	2022				2023				2024				2025			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Project Management</b>																		
Develop and disseminate Press Release to announce and close project	2022	2025																
Develop promotional materials	2022	2025																
Kickoff Event - project wide	2023	2023																
Wrap-Up Event project wide	2024	2025																
Develop and disseminate Semi-annual news releases	2023	2025																
Quarterly advisory committee mtgs.	2023	2025																
Create and disseminate customizable social media posts	2022	2025																
Meet with supporting partners	2022	2025																
Prepare and submit progress reports as requested	2022	2025																
<b>Education/Outreach/Training</b>																		
Summer education event	2022	2025																
Conduct educational events as needed	2022	2025																
Science Assessment meetings	2022	2025																
Review and revise the soil fertility and nutrient management workshop as needed.	2023	2025																
Review CCA program with participants	2023	2025																
<b>Staff Capacity</b>																		
Develop job description with HR	2022	2025																
Post job description, interview and select candidate	2022	2025																
Develop training plan for employee	2022	2025																

<b>Soil Sampling/Nutrient Management Plans</b>																				
Develop QMP and QAPP	2022	2025																		
Develop informational items for sampling program (landowner and CCA)	2023	2025																		
Develop CCA program materials	2023	2025																		
Hold CCA informational workshops	2023	2025																		
Hold educational workshop for staff	2023	2025																		
Gather from partners and distribute educational materials on the 4Rs and other soil health practices	2023	2025																		
Organize soil fertility and nutrient management workshop	2023	2025																		
Host workshops - one a year	2023	2025																		
Hold annual review meeting with CCA's to receive feedback	2023	2025																		
<b>IN Nutrient Research and Education Program</b>																				
Develop network list of scientist and agencies	2022	2024																		
Work with Science committee to develop consensus on reduction practices	2022	2024																		
Identify new research and share with Science Committee	2022	2024																		
Review current research gaps and work with partners to address those	2023	2024																		
Work with partners to unify current education around current BMPs	2023	2024																		
Work with partners on ensuring the best education/outreach method is used for sharing BMP knowledge.	2023	2024																		

**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. 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 current 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:**

Purdue University will be a subawardee under this grant wherein the Indiana Nutrient Research and Education Program (INREP) will be housed at Purdue University, College of Agriculture. The focus of INREP is to continue the work of the Indiana Science Assessment, which ISDA is heavily involved in as a project 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:**

***Personnel***

As mentioned above, a staff position will be created at the Indiana State Department of Agriculture in the Division of Soil Conservation that will 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 for ISDA in efforts to improve water quality through the Division of Soil Conservation and the Indiana Conservation Partnership. This position will be responsible for managing the funds from the USEPA through the BIL-GHP. This will be one full-time employee @ \$45,000 annually for 3 years.

(\$45,000 x 3 = \$135,000)

<b>ISDA Personnel</b>	<b>Costs (Year 1)</b>	<b>Costs (Year 2)</b>	<b>Costs (Year 3)</b>	<b>Total</b>
Salaries and Wages	\$45,000	\$45,000	\$45,000	<b>\$135,000</b>

***Fringe Benefits***

Fringe benefits for the ISDA staff are in addition to the salary for the position. One full-time ISDA employee @ \$25,000 annually for 3 years. (\$25,000 x 3 = \$75,000)

	<b>Costs (Year 1)</b>	<b>Costs (Year 2)</b>	<b>Costs (Year 3)</b>	<b>Total</b>
Fringe Benefits	\$25,000	\$25,000	\$25,000	<b>\$75,000</b>

### 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 Mexico Hypoxia Task Force; for trainings necessary for employee 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<sup>7</sup> and include mileage reimbursement (based off state mileage rate) to educational workshops and 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 \$1,000 annually per employee for 3 years. (\$1,000 x 3 = \$3,000)

Travel & Training	Costs (Year 1)	Costs (Year 2)	Costs (Year 3)	Total
-Attendance at meetings related to activities of this workplan, related to the SNRS and Science Assessment efforts, and related to Gulf of Mexico HTF -trainings necessary for employee to effectively carry out the work plan activities -periodic landowner visits related to the soil sampling program	\$1,000	\$1,000	\$1,000	\$3,000

### Supplies

Supplies will include a laptop computer and related electronic computer supplies, and a cell phone for the ISDA employee. Costs are estimated to be approximately \$1,500 in the first year.

Supplies	Costs (Year 1)	Costs (Year 2)	Costs (Year 3)	Total
For ISDA employee: Laptop Computer, headset, webcam, and cell phone	\$1,500	\$0	\$0	\$1,500

This category will also include the estimated costs of supplies for the soil sampling program. Supply costs are requested to purchase and replace soil sampling materials in order 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 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 collection of the soil samples, so supplies and equipment will be needed for all of these employees. There will also be costs to purchase GPS Handheld devices in the first year to mark sampling locations. Costs are estimated to be approximately \$4,140 in the first year, and then approximately \$2,740 in the second and third year. (\$4,140 + \$2,740 + \$2,740 = \$9,620).

This category also includes estimated costs for postcards that will be used for the annual outreach to landowners and farmers to introduce them to the program and to draw up some interest in the

<sup>7</sup> The Indiana Department of Administration travel policy can be found here: <https://www.in.gov/idoa/state-purchasing/travel-services/>.

program, as well as mailing labels and stamps for these outreach activities. Costs are estimated at \$2,000 per year for 3 years. ( $\$2,000 \times 3 = \$6,000$ )

Supplies	Costs (Year 1)	Costs (Year 2)	Costs (Year 3)	Total
For Soil Sampling: Buckets, foot pedals, gloves, soil probes, record cards, soil sampling bags, GPS handheld device	\$4,140	\$2,740	\$2,740	\$9,620
Postcards, mailing labels, shipping labels and stamps	\$2,000	\$2,000	\$2,000	\$6,000
Other supplies as necessary include AA batteries for GPS devices, 2-pocket folders, pens, field notebooks, and field-form holder/clipboard	\$600	\$600	\$600	\$1,800
<b>Total</b>	<b>\$6,740</b>	<b>\$5,340</b>	<b>\$5,340</b>	<b>\$17,420</b>

### **Contractual**

Soil Sampling Analysis - The regular cost for a soil sample analysis is \$9.75/sample. Approximate number of samples includes 500 samples per priority watershed, totaling 3,500 samples, plus 500 samples outside of priority watersheds (statewide) = 4,000 samples. Total cost for the soil sample analysis is \$9.75/sample x 4,000 samples x 3 years = \$117,000. Estimated costs for shipping and handling is \$500 annually. Soil Sample Analysis done is the "S1" test – Organic Matter, 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. More work by the CCAs will be done in years 2 and 3, thus more dollars will be used toward this in those years. Contractual costs of \$852,188 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. The cost of developing a NM plan can vary depending on how many acres the plan covers. Costs can range from \$1,700 all the way up to about \$3,600 for each plan that is developed. If it becomes necessary, ISDA will evaluate the need to establish an acreage cap per farmer participant and/or CCA retailer.

Contractual	Costs (Year 1)	Costs (Year 2)	Costs (Year 3)	Total
Soil Sampling Analysis lab costs: 500 samples per priority watershed + 500 samples outside of priority watersheds (statewide) per year = 4,000 samples - 4,000 x \$9.75/sample	\$39,000	\$39,000	\$39,000	\$117,000
S&H of samples to labs	\$500	\$500	\$500	\$1,500
Contract with CCA's to collect samples, discuss results of analysis with farmer, and develop NM plans.	\$199,500	\$326,344	\$326,344	\$852,188
<b>Total</b>	<b>\$239,000</b>	<b>\$365,844</b>	<b>\$365,844</b>	<b>\$970,688</b>

**Other**

Costs requested under this category include educational workshops for participants to earn credits on how to read and interpret soil sample test results and how to apply the results toward nutrient management on their farms. Goal is to hold the first session of workshop series at a socially disadvantaged location, such as a beginning farmer, minority farmer or veteran farmer’s farm. Each workshop is a series of 3 separate workshops, which will be held each year for the participants. These will be planned to be held at 5 regional locations, with the possibility of 2 virtual workshops. Costs are estimated to be \$125/workshop series x 5 locations = \$875. These costs include facility rental, speaker fees, and audio/video fees.

There is also the cost of printing postcards for educational and program outreach and to invite participants to the workshops, for the development and printing of educational materials, as well as development and printing of annual reports and the final report to show the success of the program. Other costs also include dollars to cover subscription services for computer software such as GIS, cell phone annual service charge fees, and the Indiana Office of Technology (IOT) Seat Charge, which includes all IT services and security for the ISDA employee.

<b>Other</b>	<b>Costs (Year 1)</b>	<b>Costs (Year 2)</b>	<b>Costs (Year 3)</b>	<b>Total</b>
Soil Sampling program - soil fertility and nutrient management workshop: \$125/workshop x 5 = \$875	\$875	\$875	\$875	<b>\$2,625</b>
Printing of postcards for program outreach to invite participants, and postage costs	\$1,600	\$1,600	\$1,600	<b>\$4,800</b>
Development and printing of education materials	\$400	\$400	\$400	<b>\$1,200</b>
Development and printing of annual report and final report to show success of program	\$200	\$200	\$200	<b>\$600</b>
Computer subscription services, cell phone annual service charge fees, and the Indiana IOT Seat Charge	\$500	\$500	\$500	<b>\$1,500</b>
<b>Total</b>	<b>\$3,575</b>	<b>\$3,575</b>	<b>\$3,575</b>	<b>\$10,725</b>

This category also includes costs to a subawardee for the creation of the Indiana Nutrient Research and Education Program. The costs includes salary and benefits for the hiring of a Purdue Extension Associate and INREP Manager who will manage the center and education efforts; for a research associate who will conduct research and synthesis for the Science Assessment, and for student research assistants who will work under an internship-type employment 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 \$100,000 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.

<b>Other - INREP</b>	<b>Costs (FY2022 funds)</b>	<b>Costs (FY2023 funds)</b>
Extension Associate and INREP Manager (0.5 FTE)	\$35,000	\$35,000
Research Associate (1 FTE)	\$60,000	\$60,000
Student research assistants	\$20,000	\$20,000
Fringe benefits (for all staff)	\$30,000	\$30,000
Grants to other researchers and administration	\$100,000	\$100,000
Professional services	\$3,000	\$3,000
Travel	\$2,000	\$2,000
<b>Total</b>	<b>\$250,000</b>	<b>\$250,000</b>

**Total Budget Summary – Estimated Yearly Funding Needed**

<b>Overview of use of funds</b>				
<b>Object Class Category</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Total Requested from EPA</b>
Personnel	\$45,000	\$45,000	\$45,000	<b>\$135,000</b>
Fringe	\$25,000	\$25,000	\$25,000	<b>\$75,000</b>
Travel	\$1,000	\$1,000	\$1,000	<b>\$3,000</b>
Supplies	\$8,240	\$5,340	\$5,340	<b>\$18,920</b>
Contractual	\$239,000	\$365,844	\$365,844	<b>\$970,688</b>
Other	\$253,575	\$253,575	\$3,575	<b>\$510,725</b>
<b>Total</b>	<b>\$571,815</b>	<b>\$695,759</b>	<b>\$445,759</b>	<b>\$1,713,333</b>

**Quality Assurance:**

The aforementioned Soil Sampling program is an expansion of an existing soil sampling program developed in the state of Indiana for the Western Lake Erie Basin that has an established QAPP. This QAPP will be updated to add additional soil testing labs that the program will partner with, and 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.

Project Title: Expanding the Network of Iowa Conservation Agronomists

Organization: Iowa Department of Agriculture and Land Stewardship  
Wallace State Office Building  
502 East 9<sup>th</sup> Street  
Des Moines, IA 50319

Contact: Matt Lechtenberg  
Phone: 515-281-3857  
Email: [matthew.lechtenberg@iowagriculture.gov](mailto:matthew.lechtenberg@iowagriculture.gov)

Proposed Funding Request: \$2,060,880.00

**Brief Project Description:**

This project will support implementation efforts of the Iowa Nutrient Reduction Strategy and advance the Gulf Hypoxia Action Plan through advancing the voluntary adoption of proven nutrient reduction practices on private lands, that also provide multiple benefits (wildlife habitat, carbon sequestration, etc.). The project will focus on expanding an innovative approach to leverage farmers' trusted advisors to identify, plan, and support implementing these practices in priority watersheds. This approach is critical in providing additional capacity to reach additional farmers and provides a more streamlined approach to connecting with and delivering these practices more efficiently.

**Environmental Results:**

This project is expected to directly support implementation of practices that will lead to an estimated reduction of:

- 2 million lbs. of nitrogen
- 57,000 lbs. of phosphorus
- 235,000 tonnes 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 River
- Turkey River
- Middle Cedar River
- South Skunk River
- Skunk River

Project Period: October 1, 2022 through September 30, 2026



Project Workplan:

The Conservation Agronomist (CA) concept has evolved based on the last several years of experience and partnerships fostered from a host of groups and organizations. It is well documented that ag retailers are the trusted advisors of the majority of farmers in Iowa. The concept of leveraging the advisors to promote and drive adoption of conservation practices has been discussed for years and until recently has only experimented with this idea. These pilot scale efforts have served a critical learning environment that has helped advance the concept to where it is today.

The current CA model has depended on short term funding support from a variety of sources. This project will help expand the network through extending existing CA positions (3 of 8 total current positions) beyond the available funding term and growing the network by two (2 FTE) CAs to support priority watersheds. Outside funding support for the network will continue to be a component and this funding will help leverage continued outside investments.

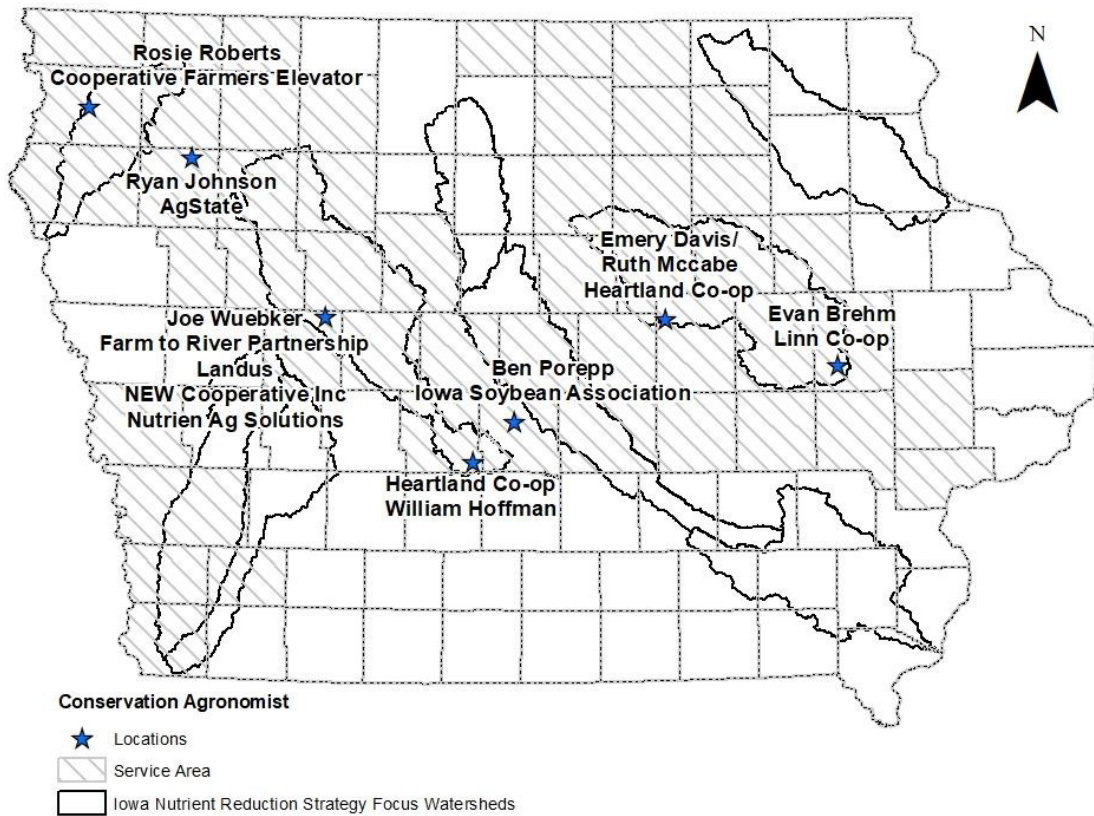


Figure 1. Map of Existing Iowa Conservation Agronomists and Iowa NRS Priority Watersheds

This partnership project will further strengthen the CA network by connecting CAs with additional ag retail locations/companies, reaching more farmers and landowners. The network will also benefit from a stronger alignment with available financial assistance for practice adoption provided by IDALS, technical support, and other existing or new funding channels. This has been a component of the network that has been identified as a critical gap in the evolution of this practice delivery method.

Enhancements of the existing network provided through this project will be:

1. Enhance the coordination and joint project development between the conservation agronomists and ag retail staff relationships and with watershed coordinators/other conservation professionals to advance priority practice implementation.
2. Connect farmers with technical and financial assistance to install priority in-field (cover crops, reduced tillage, 4Rs, etc.) and edge-of-field practices and (saturated buffers, bioreactors, multipurpose oxbows, water quality wetlands, etc.)
3. Continue to grow ag retail engagement and knowledgebase in conservation and nutrient reduction practices to augment agronomic and production expertise.
4. Emphasize outreach efforts and prioritize opportunities for individuals in underserved communities, within priority watersheds, for participation in installing conservation practices.

Because this effort builds upon the network, it will take advantage of and augment existing systems to track and report deliverables these CAs will provide through the life of the project. Based on existing experience, the expected practices installed/deliverables with farmers/landowners for the life of the project are illustrated below:

<b>Expanding the Iowa Conservation Agronomist Network Target Summary</b>					
<b>Deliverable</b>	<b>Project Year 1</b>	<b>Project Year 2</b>	<b>Project Year 3</b>	<b>Project Year 4</b>	<b>Project Total</b>
<b><i>Practices</i></b>					
New cover crop (acres)	10,000	15,000	20,000	25,000	<b>70,000</b>
Improved mgmt. of established cover crops (acres)	20,000	30,000	45,000	70,000	<b>165,000</b>
<b>Total Cover Crops</b>	<b>30,000</b>	<b>45,000</b>	<b>65,000</b>	<b>95,000</b>	<b>235,000</b>
4Rs (acres)	5,000	5,000	5,000	5,000	<b>20,000</b>
Reduced tillage systems - No-till/Strip-till (acres)	3500	4500	5500	5500	<b>19,000</b>
Edge Of Field practices	10	30	50	70	<b>160</b>
<b><i>Outreach</i></b>					
One-on-one outreach (people)*	125	150	175	200	<b>650</b>
Media outreach (people)*	600	600	600	600	<b>2400</b>
Ag retail staff outreach (people)	40	50	50	60	<b>200</b>

\*emphasis on and separate tracking of underserved individuals/communities reached

These deliverables are estimated to provide the following outcomes (based on estimates using the Iowa NRS-Science Assessment/USDA-COMET models)

- 2 million lbs. of nitrogen
- 57,000 lbs. of phosphorus
- 235,000 tonnes of carbon dioxide equivalents (CO<sub>2</sub>e)

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 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.

Workplan support of the required five strategic outcomes described in guidance:

Outcome 1: Project will support IDALS staff to implement and administer the workplan. Staff members being supported by this funding will directly lead and coordinate with the CA network and partners through subaward to advance Iowa NRS activities in priority watersheds. Activities will also include:

- a. Utilize available data to assess priority areas to focus and prioritize efforts. Priorities will be based on a host of factors including:
  - i. Likelihood the practice will work in the watershed/farm utilizing the Agricultural Conservation Planning Framework and/or watershed plans designed to identify practice opportunities.
  - ii. Proximity to or ability to address tribes and/or disadvantage communities.
  - iii. Willingness to participate by the affected landowner(s).
  - iv. Local capacity and partnerships with counties, municipalities, farm and conservation organizations, etc. to assist in the development and installation of the practices.
- b. Providing technical and financial support to foster practice installation.
- c. Collaborating with partners on information sharing of results and progress of the project to EPA, other HTF states, stakeholders, and the public.

Outcome 2: Activities conducted through this project will directly lead to reductions in nonpoint source nutrient losses detailed in the Iowa Nutrient Reduction Strategy. This project will directly address section 1.4, paragraph 4: Agricultural Areas, specifically the bullet points listed under “Strengthen Outreach, Education, Collaboration. It will accelerate the implementation through the unique partnership between the agricultural sector and public sector programs to installed conservation practices on private lands. It will further build upon an innovative batch and build concept” of delivering EOF, infrastructure-based practices that will primarily lead to significant reductions in nitrogen lost to waterbodies. Project will advance and augment tracking and assessment tools to continue to refine and report progress. Reporting will include additional details related to ancillary benefits (wildlife, carbon, etc.) of practices installed and participation/connections to disadvantaged communities.

Outcome 3: Through the Iowa NRS, 9 HUC 8 watersheds were identified 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. Many factors were assessed but were based on available data that indicated the most need for nutrient reductions, the most ability to implement practices that address nutrients, and where existing, successful efforts were taking place that could be replicated/expanded upon. This project will expand efforts in those watersheds and aim to focus implementation-based stakeholder input and ability to install priority practices.

Outcome 4: Through the HTF meetings and workgroups (Innovative Practices, etc.) established, IDALS and partners engaged in the Conservation Agronomist network will provide information sharing for states and other partners to learn about the successes and lessons learned from the project. Activities/reports developed through this project will also be an option for consideration to include in the HTF Newsletter as well.

Outcome 5: This project will directly leverage the Iowa Water Quality Initiative (WQI), a state-sponsored water quality program, solely focused on advancing the Iowa Nutrient Reduction Strategy. The majority of WQI funding will be utilized to support the financial assistance needed to implement priority conservation practices identified in the Iowa NRS-Science Assessment (NRS-SA) and help buy down the costs of installation. Annual appropriations of the WQI have been consistently at \$10.5 million per year 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. As of 2020, there were 25 approved watershed plans and 4 under development. 13 of the 25 are or were active project areas. Of the active project areas, there are likely several that could be supported/leveraged by this project.
- 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 17 recently award and/or active RCPP projects in the state totaling over \$100 million in federal investment over the next several years. These projects have broad geographies and majority directly support funding to install/utilize practices in the Iowa NRS-SA.

#### Managing Subawards:

IDALS manages several partnership agreements to facilitate conservation implementation projects. IDALS staff will support the administration of the proposed 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 assure project is meeting objectives.

#### Outreach Strategies:

The CA network will focus the vast majority of their time in building relationships with farmers and landowners on an individual basis. This will be through sought through existing ag retail engagement with existing clients, but also through “cold call” outreach directly to prospective landowners and farmers based on identified likelihood of installing priority practices.

For infrastructure-based practices, the new “batch and build” concept will be deployed in strategic locations within the priority watersheds. This method of outreach blends existing relationships with direct, “cold call” type communication to new individuals for participation in the project. The basic steps of the process include:

1. Identifying prospective locations for practice siting and current ownership/tenants of ID’d parcels.
2. Provide a summary of the program and mail to prospective landowners
3. Track and manage responses and follow-up directly with individuals that didn’t respond to the mailer.
4. Obtain permission to access property to investigate practice feasibility and follow-up with landowners/applicants based on findings and with preliminary designs.
5. Move to final design and complete permitting (environmental compliance) and assemble bid packages for construction.

6. Install practices and provide oversight/certification installed practices meet design specifications.
  - a. Installation is an opportune time to provide partner and public outreach to showcase progress and will be an important outreach tool for the project.

For in-field, agronomic management practices, IDALS and the CAs will work to coordinate broader outreach to more farmers and landowners as these practices are less site specific as EOF practices. Outreach will tailor to individual farmers based on their experience level with these practices. Those with little experience using cover crops or reduced tillage will likely need more assistance and advice in properly managing these new practices. More experienced users of these practices will continue to need this support but may be more willing to innovate and/or try experiment with different seeding methods, rates, or species of cover crops which can enhance environmental benefits. Having this multi-pronged approach helps increase understanding of these different variables, enhances the CA's understanding of how these practices can fit in a specific client's operation, and identifies/engages local farmer champions.

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 support conservation agronomic needs of their farmland.

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 installed 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 report the estimate outcomes, using existing models, that address reductions in carbon (CO<sub>2</sub>e) emissions.

Tracking and Accountability:

Because this is a partnership project, IDALS will provide administrative, technical, and financial support to the project. This link provides an opportunity to build upon and augment existing CA network tracking purposes. IDALS staff will develop and manage the subaward with a selected NGO with experience and a strong track record of successfully managing similar projects. IDALS agreements and reporting requirements will align with the proposed workplan reporting commitments to regularly report and quantify progress of the project. IDALS staff have experience in developing and managing several QMP/QAPPs and will budget time and resources to develop them for this project, should they be required by EPA. No monitoring will be conducted with project funds, so no data will be available for the Water Quality Exchange (WQX). Where project activities overall with 319 projects, the applicable information will be provided through the normal reporting procedures of the Iowa DNR through their 319 reporting processes.

Reporting Progress:

Estimated goals/targets for this project are listed below. This includes both social indicators and land use/practices changes that will result from outreach to prospective participants.

<b>Expanding the Iowa Conservation Agronomist Network Target Summary</b>					
<b>Deliverable</b>	<b>Project Year 1</b>	<b>Project Year 2</b>	<b>Project Year 3</b>	<b>Project Year 4</b>	<b>Project Total</b>
<b><i>Practices</i></b>					
New cover crop (acres)	10,000	15,000	20,000	25,000	<b>70,000</b>
Improved mgmt. of established cover crops (acres)	20,000	30,000	45,000	70,000	<b>165,000</b>
Total Cover Crops	30,000	45,000	65,000	95,000	<b>235,000</b>
4Rs (acres)	5,000	5,000	5,000	5,000	<b>20,000</b>
Reduced tillage systems - No-till/Strip-till (acres)	3500	4500	5500	5500	<b>19,000</b>
Edge Of Field practices	10	30	50	70	<b>160</b>
<b><i>Outreach</i></b>					
One-on-one outreach (people)*	125	150	175	200	<b>650</b>
Media outreach (people)*	600	600	600	600	<b>2400</b>
Ag retail staff outreach (people)	40	50	50	60	<b>200</b>

\*emphasis on and separate tracking of underserved individuals/communities reached

These deliverables are estimated to provide the following outcomes (based on estimates using the Iowa NRS-Science Assessment/USDA-COMET models)

- 2 million lbs. of nitrogen
- 57,000 lbs. of phosphorus
- 235,000 tonnes of carbon dioxide equivalents (CO<sub>2</sub>e)

The INRS-Science Assessment developed a summary of expected performance of select practices to reduce nutrients. This process provides the ability for the state to prioritize and quantify the anticipated reductions of nutrients based on the practices installed. This project will provide a quantity of nutrients reduced based on practices deployed through this project in priority watersheds. Practices delivered through this project will not utilize any financial assistance from the project and will instead leverage existing state, federal, and/or private funding. These programs, where applicable, will follow existing environmental compliance (NEPA, ESA, 404, etc.) procedures of the respective programs to ensure compliance with these requirements.

For reductions in carbon equivalents (CO<sub>2</sub>e), the project will quantify the reductions through existing models (likely USDA-COMET tool) for practices installed that have an impact on CO<sub>2</sub>e emissions. Similar to the nutrient estimates, the project will assess and estimate the practices installed to quantify CO<sub>2</sub>e impacts.

For social indicators, quantitative measures will be based on direct outreach from the CA network based on individuals reached and the specific demographics/categories of these individuals. The existing CA network has already integrated tracking of outreach into their processes and this project will build in demographic/underserved community tracking into the system.

**Schedule and Timelines:**

Objective:	Year				
	2022	2023	2024	2025	2026
Develop cooperative agreement with NGO to lead and administer CA network expansion	x				
Gather input from stakeholders to determine location, structure, etc. for new positions	x				
Hire 2 new Conservation Agronomist positions and provide onboarding support	x	x			
Provide training and connect CAs with local conservation professionals	x	x			
Coordinate and initiate outreach to landowners for batch and build effort in phased approach	x	x	x	x	x
Conduct field investigations and provide technical assistance for practices installations.	x	x	x	x	x
Report CA Network accomplishments to EPA, the public and stakeholders annually	x	x	x	x	x
Provide final report to EPA and public/stakeholders					x

**Budget Narrative:**

Workplan Budget					
Line Item	Year 1	Year 2	Year 3	Year 4	Total Over 4 Years
Personnel	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 25,000.00	\$ 100,000.00
Fringe Benefits	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 20,000.00
Other	\$ 480,000.00	\$ 480,000.00	\$ 480,000.00	\$ 480,000.00	\$ 1,920,000.00
Indirect Costs (17.4%)	\$ 5,220.00	\$ 5,220.00	\$ 5,220.00	\$ 5,220.00	\$ 20,880.00
<b>Total</b>	<b>\$ 515,220.00</b>	<b>\$ 515,220.00</b>	<b>\$ 515,220.00</b>	<b>\$ 515,220.00</b>	<b>\$ 2,060,880.00</b>

Personnel/Fringe Benefits: Staff budget and benefits for IDALS staff to support reporting, QMP/QAPP development, 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 4 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 17.4% for the Personnel/Fringe Benefit budget line items.

Other: A subaward will be made to an NGO that will provide the Conservation Agronomists staffing and coordination support for this workplan. This project anticipates extending 3 current CA positions and 2 new CAs in strategic areas based on feedback from partners/stakeholders. IDALS anticipates this will be a competitive process to establish this subaward. The NGO will be responsible for providing the staffing support for the Conservation Agronomists that will utilize these funds to extend and expand the work detailed in this workplan.



## **Kentucky GHP Project Summary Information**

Project Title: Nutrient Staffing & Implementation (NSI)

Organization Information:

- Organization- Kentucky Division of Water
- Address – 300 Sower Boulevard
- Contact person – Carey Johnson
- Phone Number – 502-782-6990
- Email – carey.johnson@ky.gov

Proposed Funding Request: \$1,713,333 (FFY 2022 - \$965,000; FFY 2023 - \$748,333)

Brief Project Description: Kentucky's Nutrient Staffing & Implementation (NSI) workplan will provide staffing for grant administration, nutrient reduction strategy deployment, and nutrient management planning. Additionally, the plan will prioritize nutrient investments in municipal stormwater and wastewater treatment systems and increase funding for agriculture conservation practices. Funding will expand outreach and marketing of Kentucky's new Agriculture Water Quality Act Planning Tool and fill gaps in Kentucky's streamgaging network.

Environmental Results: This workplan will fund staff to administer the grant, and to develop nutrient management plans. Additional staff funding will direct rollout, public engagement, and tracking of

Kentucky's Nutrient Reduction Strategy Update. The workplan will fund nutrient focused training modules for municipal separate storm sewer systems (MS4s), while also funding nutrient optimization training for wastewater treatment systems. Funding will result in installation and annual maintenance of 1-2 new USGS streamgaging stations in Western Kentucky. Outreach and marketing will be conducted to engage stakeholders on the Agriculture Water Quality Act Planning Tool, and additional funding for 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 receipt of funds in federal fiscal year 2022, and continue for up to five years, ending in federal fiscal year 2026.

## Kentucky GHP Project Workplan 1- FFY 2022/2023

### Project Approach:

Kentucky's Nutrient Staffing & Implementation (NSI) 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**). This workplan supports EPA's Strategic Goal 5, Objective 5.2 by deploying resources to rural, and urban sources of water pollution, and prioritizing funding resources to data-driven [Nutrient Priority Areas](#) of greatest need.

EPA identifies five strategic outcomes for workplans, including:

1. Supporting staff to implement the workplan;
2. Reducing nonpoint source nutrient pollution as articulated in state strategies;
3. Prioritizing and targeting watersheds with the greatest opportunity for nutrient reduction;
4. Collaborating across state boundaries with HTF partners; and
5. Using state-level water quality programs and actions to better support nutrient reductions.

Kentucky's NSI 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, lagoon pumpouts, etc.) to the Division of Conservation (DOC) and local conservation districts (NRS **Section 5.1**). This workplan builds on Kentucky's prior Hypoxia Task Force workplan by marketing Kentucky's innovative Agriculture Water Quality Act (AWQA) [Planning Tool](#) (NRS **Section 4.1**). Staffing provided by the grant will continue DOW and DOC's efforts to quantify multi-agency best management practice (BMP) load reductions using EPA's STEPL/PLET program (NRS **Section 5.1.1**).

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's 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.

Staff funding will enable Kentucky to build upon existing engagement with the Tennessee Department of Environmental Quality (TDEC) and Tennessee Department of Agriculture to fulfill strategic outcome #4. GHP funding will also facilitate travel for Hypoxia Task Force representatives to engage with other states and federal agencies.

The NSI workplan will support strategic outcome #5 by providing training on innovative nutrient practices for municipal stormwater and wastewater treatment systems (MS4s). Additionally, DOW intends to expand its [nutrient and energy optimization program](#) across the state, and will leverage GHP funds to conduct multi-year optimization trainings for wastewater treatment plant (WWTP) operators. Wastewater optimization provides important climate co-benefits by reducing WWTP energy consumption, while also improving nutrient treatment.

Kentucky will manage and monitor subawards by hiring a federal funded time-limited (FFTL) position to manage the grant using the Nonpoint Source Program Grants Reporting and Tracking System (GRTS). Kentucky has successfully leveraged GRTS for almost two decades to manage subawards and subawardees.

DOW is actively engaged with POTW stakeholders on nutrient optimization through its Clean Water and Drinking Water Advisory Committee. DOW will continue engaging stakeholders quarterly on its nutrient optimization permitting approach, and what training setups will best serve the regulated community. DOW and DOC engage the agriculture community through quarterly meetings of the AWQA Authority, which provides a forum for discussion of the Nutrient Reduction Strategy Update and AWQA Planning tool marketing, outreach, and enhanced conservation practice funding. Additional meetings will be held quarterly with other stakeholder focus groups in 2022 and 2023 on the Nutrient Reduction Strategy Update.

Kentucky will defer to EPA's Climate and Economic Justice Screening Tool (CEJST) and its final definition of disadvantaged communities. The current Justice40 Interim Disadvantaged Communities Indices suggest there is significant overlap with DOW's Nutrient Priority Areas. Training resources for MS4s and WWTPs will benefit small to mid-sized systems that meet one or more disadvantaged community indices, and often lack the resources to employ new techniques and technologies (strategic outcome #1).

Quality assurance planning for the planned expansion of Kentucky's U.S. Geological Survey (USGS) streamgauge 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 as the sites are installed and begin operation.

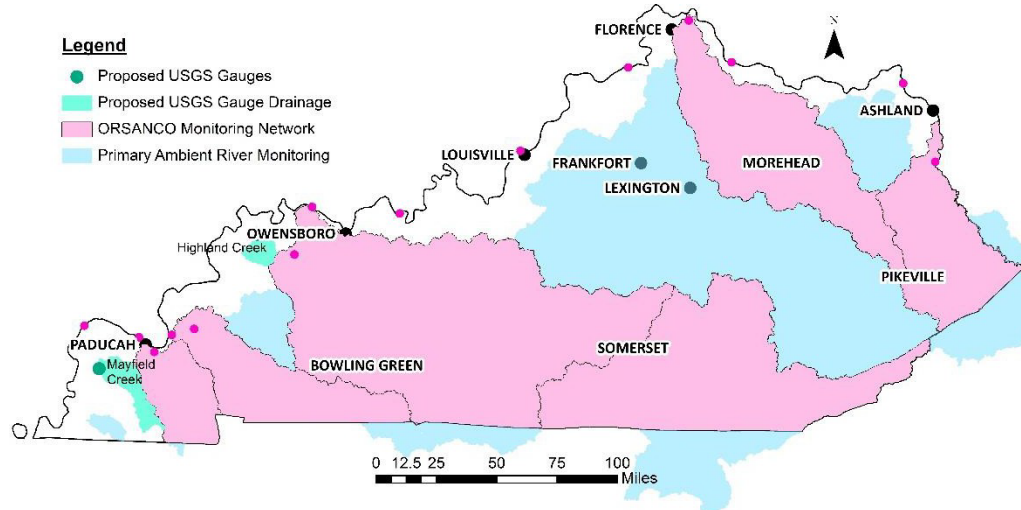
#### Environmental Results:

Kentucky will track qualitative and quantitative results using the GRTS management tool and estimate nutrient load reductions using the STEPL/PLET program.

#### Outputs

- GHP Grant Coordinator
  - Will track and manage subawardee contracts, track milestones, and manage the flow of funds.
  - Will provide technical support for subawardees, such as modeling partner load reductions and providing nutrient guidance on MS4 training modules.
- Nutrient Reduction Strategy Coordination Staff
  - Will conduct outreach and engagement on the NRS Update starting in 2022.
  - Will direct DOW's collaboration among partners on AWQA, POTW optimization, MS4 training, nutrient reduction tracking, and biennial reporting.
- Nutrient Management Planning Staff
  - Will develop nutrient management plans
- AWQA Marketing
  - Will produce multimedia advertising materials and run advertisements for Kentucky's AWQA Planning Tool

- MS4 Nutrient Training Development
  - Will produce a training tool to assist Phase II MS4 systems meet nutrient related requirements in their Stormwater Quality Management Plan’s Minimum Control Measures when the permit renews in 2023.
- POTW Nutrient Optimization Training
  - Will produce training modules for POTW permits with a nutrient optimization requirement.
  - Will provide regular training with industry experts to improve nutrient treatment tailored for specific POTW facilities where optimization or numeric limits are permitted.
- USGS Gage Station Expansion
  - Will install two new USGS streamgage stations to measure daily discharge associated with existing DOW ambient river monitoring sites.
    - DOW ambient river sites monitor Total Kjeldahl Nitrogen (TKN), Nitrate, Nitrate, Total Phosphorus, Total Suspended Solids, and temperature on a bi-monthly or monthly frequency, depending on the basin rotation schedule.



- Will provide annual operation and maintenance funding.
- New streamgage stations will regularly provide discharge data to the [USGS National Water Dashboard](#).
- Additional streamgage data will be incorporated into future iterations of DOW’s [Loads & Yields Study](#) nutrient study.
- Conservation BMP Funding
  - Will fund agriculture conservation best management practices 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 STEPL/PLET.

- Travel
  - Kentucky HTF representatives will participate in annual HTF meetings and collaborate with other HTF member states on nutrient reduction progress.
  - Staff may use travel funds to attend regional NRS/AWQA meetings and outreach events.

#### Outcomes

- The NSI workplan funding will assist MS4 systems in disadvantaged areas to improve stormwater education and outreach.
- POTW systems will reduce wastewater nutrient discharges through optimization training.
- Nutrient losses in agriculture landscapes will decrease through conservation practice installation and nutrient management planning.
- DOW will learn more about nutrient flows and flooding in Western Kentucky waterways that will improve resource prioritization and climate resiliency.
- DOW will improve stakeholder engagement on nutrients through Nutrient Reduction Strategy workgroups and outreach campaigns.
- The NSI workplan will build upon the goals of Kentucky's 2019/2020 104b3 HTF workplan that funded the AWQA Planning Tool, volunteer training efforts, and AWQA outreach.

#### Milestone Schedule:

See budget narrative tables.

#### Transferability of Results and Dissemination to Public:

NSI grant results will be disseminated to the public through existing and renewed outreach avenues. The grant will leverage existing stakeholder engagement forums such as the Clean Water Advisory Council's Nutrients Subcommittee to both provide upfront input on MS4 and POTW training material approaches, and to provide feedback on ways to improve. The NRS & Success Coordinator will help re-engage stakeholders on a Nutrients Workgroup that last met in 2015. DOW engages with the AWQA Authority at quarterly meetings, which will provide a forum to build on AWQA Planning Tool marketing efforts.

Nutrient management plans and any nutrient load reductions achieved through targeted BMP installations will be reported through GRTS, and highlighted in 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 Water Resources Research Institute's [annual symposium](#), and regionally with Tennessee's Nutrients Workgroup.

#### Technical Support:

Technical support to subawardees will be provided by the NSI Coordinator, who will track grant progress and estimate load reductions using EPA's STEPL/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 NSI Coordinator's technical assistance, DOW's Surface Water Permitting Branch, and the Clean Water Advisory Council's Nutrients Subcommittee will provide technical expertise for the MS4 & POTW training grants.

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.

<b>Budget Categories</b>	<b>FFY2022 Funds</b>	<b>FFY2023 Funds</b>
Personnel (includes fringe, indirect)	\$935,984	\$233,096
Contractual	\$25,000	\$150,000
Supplies	\$0	\$0
Equipment	\$0	\$0
Travel	\$4,016	\$1,237
Other	\$0	\$364,000
Total	\$965,000	\$748,333

Budget Expenditures	2022	2023	2024	2025	2026
GHP Coordinator (FFTL)		\$138,098	\$138,098	\$138,096	
<i>Milestones</i>	Hire by December 2022	Provide grant management- Develop and track MS4, POTW, Gauge Contracts in GRTS	Provide grant management -Track GRTS Contracts & calculate load reductions	Provide grant management - Track GRTS contracts	Closeout contracts in GRTS
DOC Staff		\$95,000	\$95,000	\$95,000	
<i>Milestones</i>		Develop and track # of nutrient management plans	Develop and track # of nutrient management plans	Develop and track # of nutrient management plans	
DOW NRS & Success Coordinator		\$156,596	\$156,596	\$156,596	
<i>Milestones</i>		Conduct NRS Update stakeholder outreach & collaboration planning	Track goals/ objectives/tasks of NRS Update	Prepare biennial NRS Update report	
Marketing		\$25,000			
<i>Milestones</i>		Award marketing contract	Complete marketing tasks for AWQA Planning Tool	Closeout contract in GRTS	
MS4 Training Contracts		\$100,000	\$100,000		
<i>Milestones</i>		Award yr 1 contract for MS4 training content	Award yr 2 contract for MS4 training content	Track training development and deployment	Contract closeout in GRTS
POTW Technical Assist Contracts/Staffing		\$75,000	\$75,000		
<i>Milestones</i>		Award yr 1 contract for tech assist	Award yr 2 contract for tech assist	Closeout contracts in GRTS	
Add USGS Gauges		\$68,000	\$28,000		
<i>Milestones</i>		Contract USGS to install two USGS gauges and fund yr1 O&M	Contract USGS for yr 2 O&M on two gages	Contract closeout in GRTS	
DOC/BMP Implementation		\$68,000			



<b>Budget Expenditures</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
<i>Milestones</i>		Award funds to local conservation districts in Nutrient Priority Areas	Track implementation progress	Estimate load reductions in GRTS for installed BMPs.	Contract closeout in GRTS
Travel		\$4,016	\$1,237		
<i>Milestones</i>		Fund HTF & NRS travel for staff	Fund HTF travel for staff	Expend unspent travel funds	
<b>Funding Year</b>	<b>FFY 2022</b>	<b>FFY 2023</b>			
<i>Total Budget</i>	<i>\$965,000</i>	<i>\$748,333</i>			

Quality Assurance:

Data collection associated with the GHP grant will be conducted using USGS streamgaging stations. [USGS Streamgaging Network](#). New streamgages will be installed and 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**

**State of Louisiana**

**FY22-FY23 Workplan**

**Project Title:**

Louisiana Nutrient Reduction & Management Strategy Implementation

**Estimated Project Period:**

October 2022 to September 2025

September 9, 2022

**Submitted by:**

Louisiana Department of Environmental Quality (LDEQ)

**Submitted to:**

U.S. Environmental Protection Agency (EPA)

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## Summary Information Page

**Project Title:** Louisiana Nutrient Reduction & Management Strategy Implementation

**Organization Information:** Amanda Vincent, Louisiana Department of Environmental Quality, P.O. Box 4303, Baton Rouge, LA 70802, (225) 219-3188, [amanda.vincent@la.gov](mailto:amanda.vincent@la.gov)

**Proposed Funding Request:** \$1,713,333 (FY22 to FY23)

**Brief Project Description:** This workplan will target implementation of agricultural best management practices within prioritized tracts in northeast Louisiana, and will conduct transect monitoring in coastal Louisiana. Best management practices will be targeted within the Lake St. Joseph and Cypress Bayou watersheds to reduce agriculture-induced nutrient loading and provide other water quality improvements. Coastal monitoring will occur along a transect extending from Barataria Pass, Louisiana to the inner shelf of the Gulf of Mexico to inform the interactive effects of multiple ecosystem change drivers (restoration, riverine nutrient loading, hypoxia, climate change) on living resources in the Gulf of Mexico.

### **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 two projects for implementation.

#### *Project 1: 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.

#### *Project 2: Pilot Transition to Autonomous Monitoring from Inshore to Offshore in Coastal Louisiana*

The goal of the Coastal Transect Monitoring project is to complete a multi-site, 60-month survey of water quality parameters recorded at the surface (measured 0.5 m from surface), mid, and bottom (measured within 1 m of bottom) at each selected monitoring site. The monitoring transect will be an open-water complement to the Coastal Protection and Restoration Authority of Louisiana (CPRA) estuarine System Wide Assessment and Monitoring Program. Intended outputs

include a minimum of three to four sampling events per year that will provide baseline data conditions, and provide needed data for numerical modeling of nutrient dynamics and nutrient uptake potential of diversion projects. The transect will provide, on an expanded scale, data for isohaline mapping of water quality parameters and will be invaluable for calibration and validation of riverine, estuarine and coastal numerical models to support adaptive management of the Louisiana Coastal Master Plan, Louisiana's Nutrient Reduction and Management Strategy, and the Gulf of Mexico Hypoxia Task Force Action Plan. Regional and basin-level assessment and reporting will also be produced by CPRA incorporating a synthesis of water quality data.

**Place of Performance:** The project area is within the state of Louisiana within the Mississippi/Atchafalaya River Basin (MARB<sup>1</sup>) in Hydrologic Unit Code (HUC) 08.

**Project Period:** October 1, 2022 to September 30, 2025

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<sup>1</sup> EPA BIL GHP Guidance. 2022. 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](#)<sup>2</sup> (Strategy), developed in 2014 and updated in 2019, 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<sup>3</sup> (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 workplans of the two subawardee projects for implementation:

#### *Project 1: 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 to reduce agriculture-induced nutrient loading (Louisiana Department of Agriculture and Forestry, LDAF)

#### *Project 2: Pilot Transition to Autonomous Monitoring from Inshore to Offshore in Coastal Louisiana*

Coastal monitoring will occur along a transect extending from Barataria Pass, Louisiana to the inner shelf of the Gulf of Mexico to inform the interactive effects of multiple ecosystem change drivers (restoration, riverine nutrient loading, hypoxia, climate change) on living resources in the Gulf of Mexico (Coastal Protection and Restoration Authority of Louisiana, CPRA)

#### *EPA Strategic Plan, Goal 5*

The workplan supports the FY 2022-2026 EPA Strategic Plan, Goal 5: Ensure Clean and Safe Water for all Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds<sup>4</sup> through implementation of programs to prevent or reduce nonpoint source pollution, monitoring, and information sharing.

#### *EPA Five Strategic Outcomes*

The workplan reflects the five strategic outcomes from the BIL GHP FY 22 guidance:

1. Support staff to implement the workplan.

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<sup>2</sup> 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*. 2019. <https://www.deq.louisiana.gov/page/nutrient-management-strategy>

<sup>3</sup> EPA Gulf Hypoxia Program <https://www.epa.gov/ms-htf/gulf-hypoxia-program>

<sup>4</sup> FY 2022-2026 EPA Strategic Plan. <https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-strategic-plan.pdf>

2. Reduce nonpoint source nutrient pollution as articulated in state strategies.
3. Prioritize and target watersheds with the greatest opportunities for nutrient reductions.
4. Collaborate across state boundaries with HTF partners.
5. Use state-level water quality programs and actions to better support nutrient reductions.

Detailed descriptions of the activities within Projects 1 and 2 that support the five strategic outcomes are given below.

#### *Disadvantaged Community*

The state's activities will advance Gulf Hypoxia Action Plan goals in disadvantaged communities by restoring and protecting waters through implementation of nutrient and sediment reduction actions; collaboration with state, federal, and other partners; and improved land management and incentive-based approaches.

The LDEQ Clean Water State Revolving Fund (CWSRF) Intended Use Plan (IUP)<sup>5</sup> defines a "Disadvantaged Community" as one that meets one of the three "Affordability Criteria".

- a. Median Household Income (MHI) is less than the state average MHI
- b. Unemployment % is greater than state average unemployment %
- c. Population growth (2-yr) is less than state average population growth

Applying these CWSRF IUP Affordability Criteria indicates that the project area does include disadvantaged communities. For Project 1 for nutrient loading reduction in the Lake St. Joseph watershed does meet the Affordability Criteria as disadvantaged community (Table 1). There are numerous census tracts for the area of Project 2 for Coastal Transect Monitoring and the screen using the state Affordability Criteria is in development. In addition, the Climate and Economic Justice Screening Tool (CEJST)<sup>6</sup> indicates that the area for Project 1 is identified as disadvantaged communities, and the CEJST also shows that the watershed area for Project 2 includes disadvantaged communities. Communities in the Project 1 area includes town of Newellton and unincorporated areas of Somerset and Flowers Landing. The Project 2 area includes communities of Crown Point, Live Oak, and Lafitte, among others.

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<sup>5</sup> Louisiana Department of Environmental Quality. Clean Water State Revolving Fund (CWSRF), FY2022 Intended Use Plan. <https://deq.louisiana.gov/page/clean-water-state-revolving-fund-iup-priority-list-annual-reports>

<sup>6</sup> Climate and Economic Justice Screening Tool. Beta Version. <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>



Table 1. Disadvantaged community. Clean Water Act State Revolving Fund Intended Use Plan Affordability Criteria applied to Lake St. Joseph watershed location in Tensas Parish, Louisiana.

GIS Census GEOID	CEJST Tract	US Census	MHI	Population Growth	Unemployment	Disadvantaged
221070001001 221070001002	22107000100	Tensas Parish Census Tract 1	<b>\$34,917</b>	2020(5-yr)=>1512 2018(5-yr)=>1846 =-18.1%	<b>11.2%</b> {MOE=9.9%+/-}	Y (all 3)
221070002001	22107000200	Tensas Parish Census Tract 2	<b>\$36,042</b>	2020(5-yr)=>1050 2018(5-yr)=>1098 =-4.4%	<b>29.9%</b> {MOE=13.0%+/-}	Y (all 3)
		SOURCES	<u>Census Table S1903</u>	<u>Census Table DP05</u>	<u>Census Table DP03</u>	
		State of Louisiana	<b>\$50,800</b>	2019(1-yr)=>4,648,794 2017(1-yr)=>4,684,333 =-0.76% 2020(5-yr)=>4,664,616; 2018(5-yr)=>4,663,616; =0.02%	<b>6.6%</b> {MOE = 0.2%+/-}	

MHI = Median Household Income; MOE = Margin of Error

### *Environmental Justice and Climate Goals*

The activities in this workplan will support environmental justice and climate goals. The state of Louisiana recently developed a Louisiana Climate Action Plan<sup>7</sup> (LCAP). The LCAP charts a path for climate action in Louisiana in ways that effectively reduce greenhouse gas (GHG) emissions and meet the target of net zero by 2050, while also improving equity, public health and quality of life, preserves and protects the environment, builds confidence and awareness among the public, and makes us more resilient and adaptable to changing environmental conditions.

This workplan aligns with the strategies and actions within the LCAP. Specifically, Project 1 aligns with LCAP strategy 16 to address the role of agriculture and forestry best management practices in sequestering GHG emissions. The LCAP aims to encourage conservation practices that sequester carbon and to increase access to regenerative agriculture and forestry practices. Project 2 supports the LCAP strategy 15 to restore and conserve Louisiana's wetlands to maximize climate mitigation and adaptation goals. Project 2 supports the LCAP by investing in ecosystem restoration that has the value-added benefit of assimilating and removing nutrients from the Mississippi River, sequestering carbon, and attenuating floodwaters, thereby increasing the resilience of the ecosystem and unique coastal communities to rising sea levels. Restoration of the coastal deltaic ecosystem encompasses preparations for a changing climate.

### *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<sup>8</sup>. 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.

### *American Workforce and Domestic Manufacturing*

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 subawardees will comply with all applicable laws.

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<sup>7</sup> Climate Initiatives Task Force, Louisiana Climate Action Plan, February 2022, [https://gov.louisiana.gov/assets/docs/CCI-Task-force/CAP/Climate\\_Action\\_Plan\\_FINAL\\_3.pdf](https://gov.louisiana.gov/assets/docs/CCI-Task-force/CAP/Climate_Action_Plan_FINAL_3.pdf)

<sup>8</sup> Louisiana Department of Environmental Quality. Notice of Nondiscrimination. <https://www.deq.louisiana.gov/page/notice-of-nondiscrimination>

### *Environmental Compliance*

The project types in this workplan include BMP implementation and water quality monitoring. The agencies have conducted these types of projects in its programs previously, and environmental compliance has not been applicable. LDEQ and subawardees 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<sup>9</sup> (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 environmental results include the anticipated outputs for the five 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. Project-specific environmental results are further described below within each project-specific workplan.

### **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 2022, with subaward agreements and QAPPs being approved by December 2022. Project 1 includes purchase of equipment in Year 1, and BMP implementation, sampling and analysis, and final data preparation through Years 1 and 2. Project 2 is divided into Phases, with Phase 1 in Year 1 being boat-based implementation and data collection, and Phase 2 beginning in Year 2 being a transition from boat-based to autonomous vehicle data collection.

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<sup>9</sup> <https://www.epa.gov/nps/grants-reporting-and-tracking-system-grts>

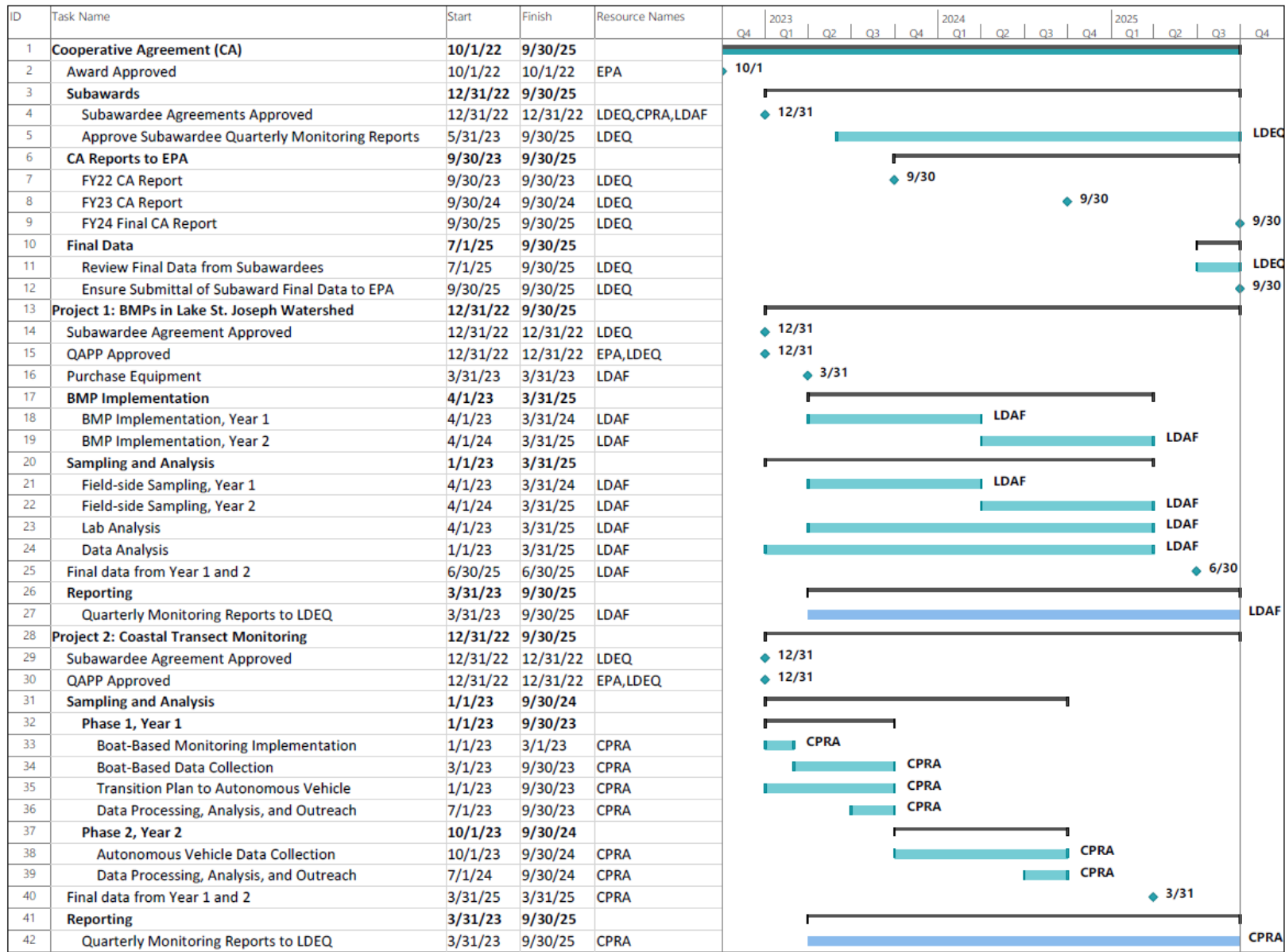


Figure 1. Milestone schedule.

### **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<sup>10</sup>,
- 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 subawardees comply with quality assurance, financial, and reporting requirements. From inception of the cooperative agreement, LDEQ will handle all communications with EPA, submitting proposed workplan(s), negotiations of the final workplan, submittal of deliverables, and revisions to the workplan(s). LDEQ will communicate and participate on a monthly/quarterly basis with subawardees 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.*

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<sup>10</sup> 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 subawardees work activities through telephone, electronic and personal communications, document reviews and meetings;
4. Meeting with the subawardees as necessary to provide guidance or answer questions;
5. Ensuring that deliverables are submitted within the timeframe of the cooperative agreements;
6. Reviewing data collected during the course of the cooperative agreements; 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 cooperative agreement between EPA and LDEQ is expected to be for the FY22 and FY23 state allocation at \$1,713,333. The expected state allocation for FY22 through FY26 is \$4,174,999. LDEQ will then have cooperative agreements with each of the subawardees, the LDAF and the CPRA. These subawards are categorized as ‘Other’ for \$1,661,933 in the SF-424A form shown in Table 2. A description of activities for each subawardee is located in subsequent sections of this document by subawardee project. LDEQ will use 3% of the funds (\$51,400 in Personnel, Fringe, and Indirect) for staff time to manage the cooperative agreement and subawards.

*Table 2. FY22 and FY23 SF-424A Budget Categories.*

<b>Budget Category</b>	<b>Amount</b>
a. Personnel	\$20,757
b. Fringe Benefits (52.77%)	\$10,954
c. Travel	\$0
d. Equipment	\$0
e. Supplies	\$0
f. Contractual	\$0
g. Construction	\$0
h. Other	\$1,661,933
i. Total Direct Charges (sum a-h)	\$1,693,643
j. Indirect Charges (62.09%)	\$19,689
k. Totals (sum i and j)	\$1,713,333

While this cooperative agreement is to cover the FY22 and FY23 expected funding allocation, it is anticipated that the FY24, FY25, and FY26 funding allocations will comprise a second cooperative agreement at a later date. The state of Louisiana plans to continue Projects 1 and 2 for that FY24-FY26 anticipated funding; thus the anticipated funding allocation for FY22 to FY26 is shown in Table 3.

*Table 3. Expected FY22-FY23 funding under this cooperative agreement. Anticipated FY24-FY26 funding under another cooperative agreement and projected subawardee amounts.*

	<b>FY22-FY23 Years 1 - 2</b>	<b>FY24-FY26 Years 3 - 5</b>	<b>FY22-FY26 Years 1 - 5</b>
<b>LDEQ</b>	\$51,400	\$73,850	\$125,250
<b>Subawardee Amounts</b>	Project 1 \$1,616,933 Project 2 \$45,000	Project 1 \$2,327,816 Project 2 \$60,000	\$4,049,749
<b>Funding Allocation</b>	\$1,713,333	\$2,461,666	Total Cost \$4,174,999

**Quality Assurance:**

The LDEQ Quality Management Plan (QMP)<sup>11</sup> 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.

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<sup>11</sup> Louisiana Department of Environmental Quality. Quality Management Plan.

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 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 1 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 4, 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.

Progress will be measured via water quality monitoring and in-stream monitoring conducted by the Louisiana Department of Environmental Quality 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. A no-till grain drill will be purchased for rental to producers in the project area for crop residue management in conservation cover and row crop production.

The no-till drill will be housed by the Tensas-Concordia SWCD. The rental fee will be charged by the Tensas-Concordia SWCD for maintenance and storage of the equipment and will allow for the grain drill to be available for use by the landowners through this program. The reduction of soil erosion is measured in tons of soil saved per acre. Land that is conventionally-tilled erodes above the soils ability to remain productive. The results of this activity 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 initial purchase. The Tensas-Concordia SWCD will manage, maintain and make available to producers the use of the no-till grain drill through a rental program. The Tensas-Concordia SWCD will maintain ownership of equipment after grant expires conducting similar work and will follow proper SWCD processes for disposal.

#### Project's support of the [Louisiana Nutrient Reduction and Management Strategy](#):

- Implementation Focus Area 2, Non-point Source Management (pg. 5, pp. 56-69)
- Strategic Action 1.c, Identify and Promote Partnerships/Leveraging Opportunities
- Strategic Action 4.e, Promote BMP by Farm in Priority Watersheds
- Strategic Action 5.d, Document BMP Implementation in Watersheds

- Strategic Action 6.f, 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 and Technical) for BMP Implementation
- Strategic Action 9.b, Monitor Water Quality Relative to BMP Implementation

Table 4. Lake St. Joseph watershed land use data.

Land Use / Land Cover	Clark Bayou Acres	Cypress Bayou Acres	Total Acres
<b>Agriculture</b>			
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
<b>Non-Agriculture</b>			
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			

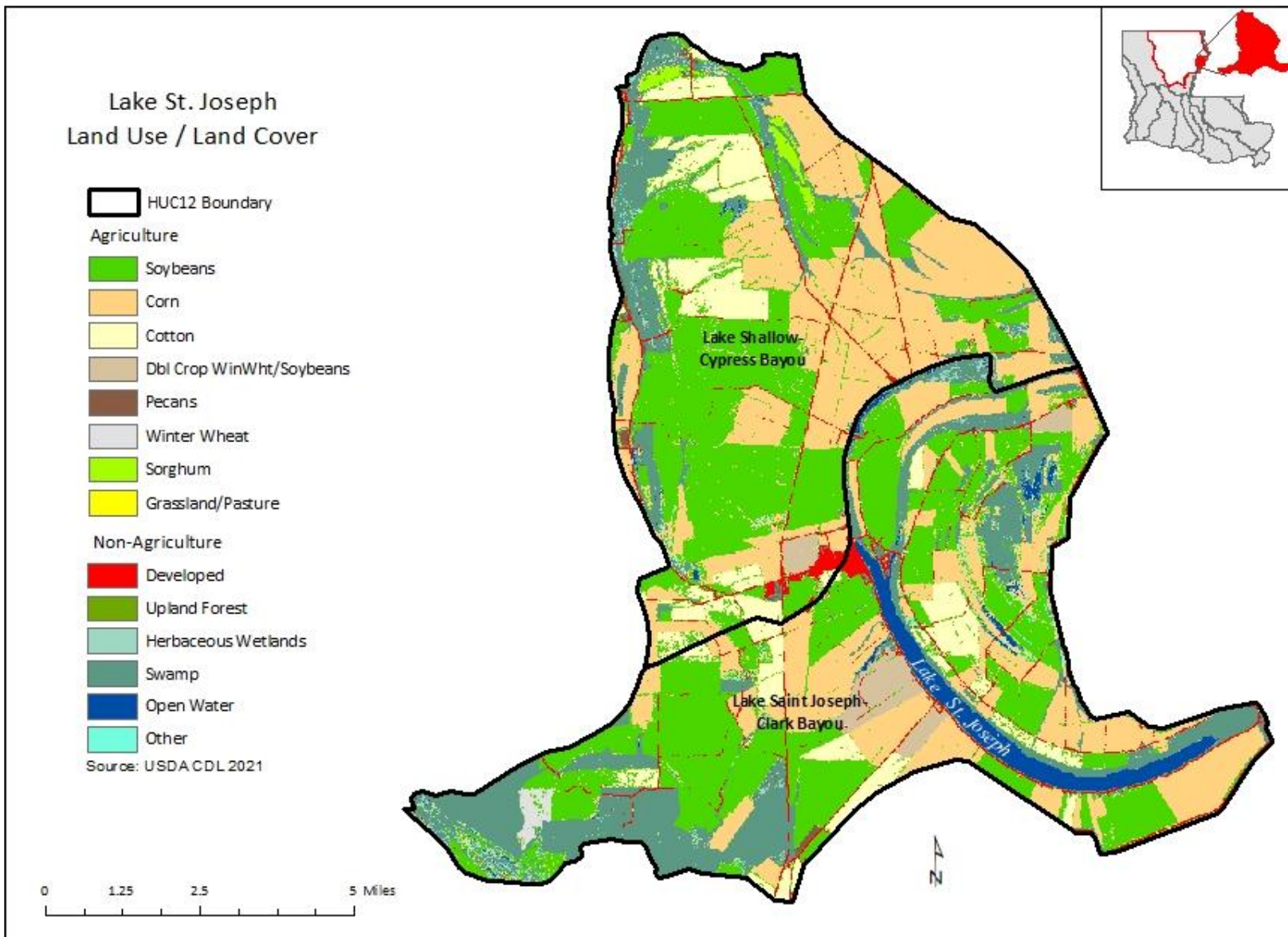


Figure 2. Lake St. Joseph watershed land use and land cover map.

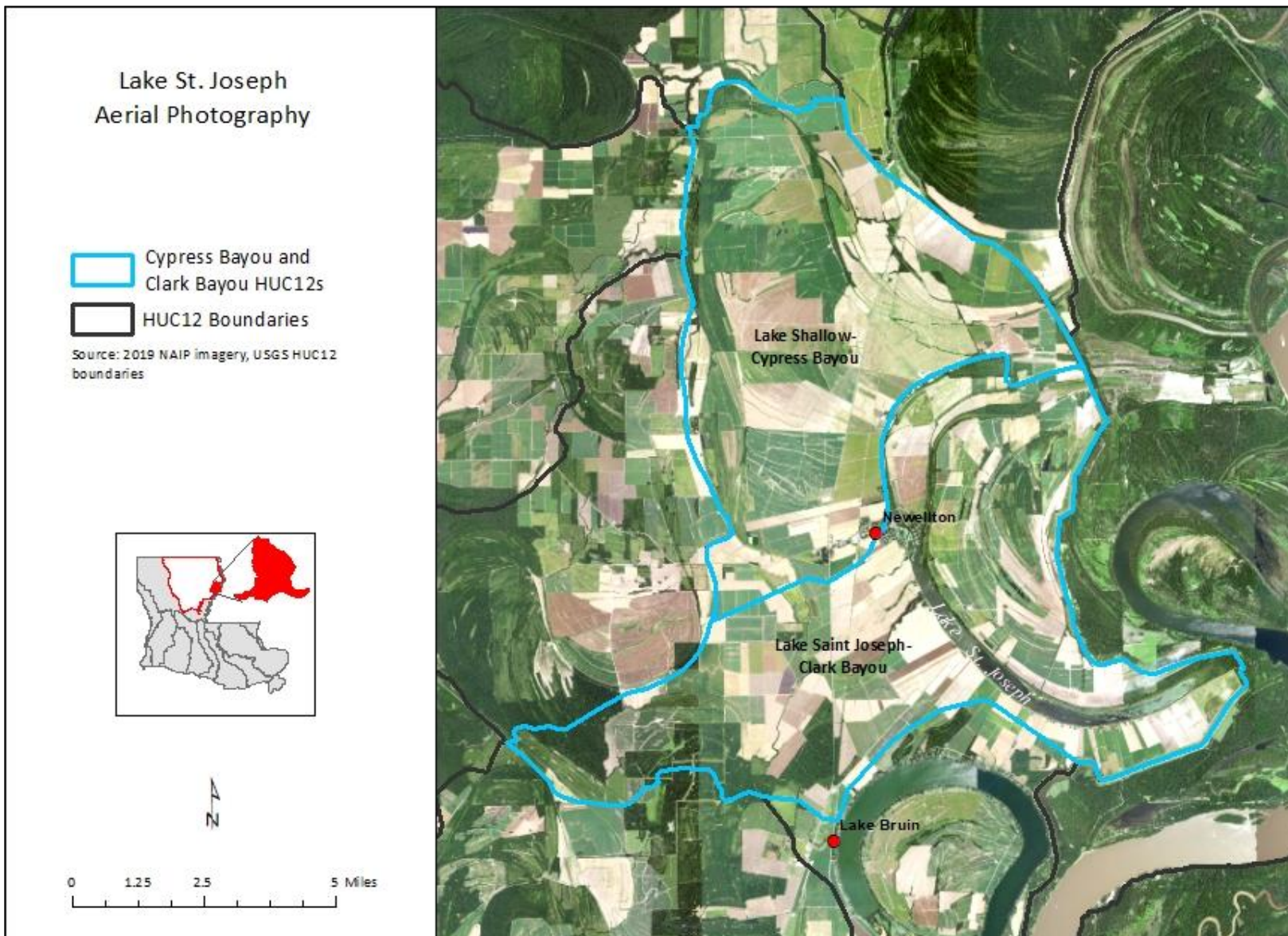


Figure 3. Lake St. Joseph watershed aerial imagery.

### **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. 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 Project 1 is given in Figure 1.

**EPA Strategic Plan, Goal 5, Objective 5.2, Protect and Restore Waterbodies and Watersheds:** This project will accommodate EPA Strategic Plan Goal 5, Objective 5.2 by aiding implementation of programs to prevent or reduce nonpoint source pollution, including nutrients.

### **EPA Five 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 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.
- Tensas-Concordia Soil & Water Conservation District (SWCD) will contact and work with project participants at the local level, including stakeholders of disadvantaged communities.
- 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. Reduce nonpoint source nutrient pollution as articulated in the [Louisiana Nutrient Reduction and Management Strategy](#):** Project participants with eligible, ranked and SWCD-approved contracts will receive BMP implementation cost-share payments. Contract extensions

beyond the normal 1-, 3- and 5-year contracts will be incentivized, possibly to 7 – 10 years. 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 accelerate landowner buy-in and conservation implementation in year one of the project, a 20 ft Great Plains No-till grain drill will be made available first to producers within the upper Cypress Bayou portion of the project area, then throughout both HUC-12's as the project progresses. 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.

### **3. Prioritize and target 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, disadvantaged communities 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. Application ranking criteria will favor those tracts nearest the affected waterbodies.

**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.

### **5. Use state-level water quality programs and actions to better support nutrient reductions.**

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 is occurring 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 project area 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.

#### **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 5, 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<sup>12</sup> and individual conservation plans.

*Table 5. NRCS Best Management Practices.*

<b>NRCS Practice Code</b>	<b>Best Management Practice (BMP)</b>
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 5 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 6 and described below.

For this workplan, Year 1 activities include purchase of equipment (no-till grain drill) at \$45,000, SWCD salaries at \$80,000, BMP implementation at \$771,300, and field-side sampling and analysis at \$18,000. Year 2 activities include SWCD salaries at \$100,000, BMP implementation at \$584,633, and field-side sampling and analysis at \$18,000. The total for Years 1 and 2 budget is \$1,616,933.

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<sup>12</sup> USDA NRCS Field Office Technological Guide.  
<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/>



Table 6. Project 1 Budget.

<b>Project 1 Budget</b>	Federal Year 1 22/23	Federal Year 2 23/24	Federal Year 3 24/25	Federal Year 4 25/26	Federal Year 5 26/27	Federal Total
Equipment: 1-20 ft, GP No-Till Grain Drill	\$45,000	\$0	\$0	\$0	\$0	\$45,000
SWCD salary	\$80,000	\$100,000	\$100,000	\$100,000	\$100,000	\$480,000
BMP Implementation	\$771,300	\$584,633	\$630,716	\$625,716	\$717,384	\$3,329,749
Field-side sampling; lab analysis & equipment	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$90,000
<b>TOTAL</b>	<b>\$914,300</b>	<b>\$702,633</b>	<b>\$748,716</b>	<b>\$743,716</b>	<b>\$835,384</b>	<b>\$3,944,749</b>
	<b>FY22-FY23 \$1,616,933</b>		<b>FY24-FY26 \$2,327,816</b>			

**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.

## Project 2 Workplan

### Pilot Transition to Autonomous Monitoring from Inshore to Offshore in Coastal Louisiana

#### Project Approach:

##### *Goals and Objectives*

A quarter of Louisiana's productive coastal landscape has been lost over the past century due to factors including climate change and disconnection of the Mississippi River from coastal wetlands, with greater losses predicted in the future. Coastal Louisiana also faces the aggregate effects of nutrients introduced to the Mississippi River watershed, a key controlling factor for the development of summertime hypoxia off the Louisiana-Texas coast. Nutrient over-enrichment and hypoxia threaten resources and ecosystem services, impacting Louisiana's coastal communities. Louisiana's Coastal Master Plan<sup>13</sup> identifies a number of river diversion projects designed to divert freshwater, sediment, and nutrients from the Mississippi River into adjacent coastal wetlands in an effort to restore deltaic land-building processes that were interrupted by the construction of levees on the river (CPRA, 2012; 2017). Restoring that link by diverting Mississippi and Atchafalaya River flows into the State's coastal wetlands has been a significant component of every coastal restoration strategy since the 1990s (CPRA, 2007; 2012; 2017; Gagliano and Van Beek, 1993; Louisiana Coastal Wetlands Conservation and Restoration Task Force, 1998; USACE, 2004), and recommended by numerous external advisory panels (Boesch et al., 2006; Group, 2006; Teal et al., 2012).

**Support of EPA Strategic Plan Goal 5 Objective 5.2, Protect and Restore Waterbodies and Watersheds:** River diversions constructed for the purposes of rebuilding and sustaining Louisiana's coastal wetlands have the value-added benefit of assimilating and removing nutrients, and provide a means of intercepting nutrients from the main stem of the Mississippi River and reducing the amount of nutrients reaching the Gulf of Mexico.

**Climate Adaptation and Mitigation Co-Benefits:** Planned river sediment diversions constructed for the purposes of rebuilding and sustaining Louisiana's coastal wetlands increase the resilience of the ecosystem and unique coastal communities to rising sea levels and increased storm intensity driven by climate change. Restoration of the deltaic ecosystem encompasses preparations for a changing climate, and restores both coastal wetlands and ecosystem services, including the value-added benefits of assimilating and removing nutrients from the Mississippi River, sequestering carbon, and attenuating floodwaters.

**Benefits Realized by Disadvantaged Communities:** Many of the Louisiana's coastal communities are marginalized and disadvantaged, including low to moderate income communities, historically Black and Indigenous communities, and ones with close ties to fishing industries (Colten and Day, 2018; Colten et al., 2018; CPRA, 2017). The Coastal Master Plan, including its river diversion projects, seeks to increase the social, cultural, and economic resilience and adaptability of Louisiana's coastal communities to natural disasters, long-term land loss, and other environmental stressors (CPRA, 2017; Laska, 2020).

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<sup>13</sup> Louisiana Coastal Master Plan. <https://coastal.la.gov/our-plan/2023-coastal-master-plan/technical-resources/>

### *Implementation of Louisiana's Nutrient Reduction and Management Strategy*

Louisiana's Nutrient Reduction and Management Strategy<sup>14</sup> leverages the capacity of river diversions to intercept nutrients that have already entered the river either from within Louisiana or from up-basin states, and preventing those nutrients from reaching the Gulf of Mexico. As one of the key focus areas of the Louisiana Nutrient Reduction and Management Strategy, these large-scale and innovative river diversion projects are included as viable solutions to nutrient reduction in the Mississippi River and to the Gulf of Mexico.

#### **Project's support of the [Louisiana Nutrient Reduction and Management Strategy](#):**

- Implementation Focus Area 1, River Diversions (pg. 5, pp. 48-55)
- Strategic Action 4, Management Practices & Restoration Activities (pp. 17-20)
- Strategic Action 5, Status & Trends (pp. 21-24)
- Strategic Action 9, Monitoring (pp. 39-44)
- Implementation Focus Area 2b, Floodplain Reconnection (pp. 68-70)

The integration of science-based nutrient management and restoration approaches in Louisiana is ongoing, with the CPRA of Louisiana focusing on increasing understanding of the nutrient uptake potential of restoration activities. CPRA uses numerical models to predict potential nitrogen and phosphorus uptake by wetlands receiving river water input. Assimilation capacity of existing river diversions (Davis Pond, Caernarvon, Naomi, and West Pointe a la Hache) are estimated at 4,381 tons of total nitrogen (TN) and 129 tons of total phosphorus (TP) annually. The implementation of all planned diversions constructed and operational as outlined in Louisiana's Coastal Master Plan has the potential to remove thousands of tons of TN and TP. This, in turn, prevents these nutrient loads from reaching the GOM, with extrapolation from USGS watershed modeling estimates (i.e. Louisiana contributes 1.7% of TN and 2.4% of the TP reaching the GOM) suggesting that river diversions could remove more than twice of Louisiana's modeled TN input and nearly half of Louisiana's modeled TP input from the Mississippi-Atchafalaya River Basin to the Gulf of Mexico.

The Mid-Barataria Sediment Diversion is a large-scale project designed to reconnect the Mississippi River to wetlands and open water bodies by mimicking natural land building processes using an "engineering with nature" approach. The Delft3D water quality model, D-WAQ, is being used to simulate dissolved nutrient dynamics in the Barataria and Breton receiving basins. CPRA has conducted feasibility and engineering and design analyses that projected the Mid-Barataria Sediment Diversion would create and sustain 28 square miles of land. The Mid-Barataria Sediment Diversion Draft Environmental Impact Statement (DEIS) was released in March 2021, and evaluates potential impacts of the project on numerous factors including water quality, socioeconomics, fisheries, and storm surge/flooding, and reasonable alternatives to those actions. The Mid-Breton Sediment Diversion project is in the early stages of the federal permitting process. Additional river diversion projects are being planned on east side of the Mississippi River and the Atchafalaya River, which will contribute to the nutrient reduction and carbon sequestration potential of coastal projects.

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<sup>14</sup> Louisiana Nutrient Reduction and Management Strategy. 2019.  
<https://edms.deq.louisiana.gov/app/doc/view?doc=11972009>

### *Critical Data Gap*

The State of Louisiana Coastal Monitoring Workgroup (LCMW) was convened in 2017 to develop a cooperative and sustainable nutrient monitoring program in Louisiana coastal waters to support Gulf-wide efforts. The LCMW group, including representatives from state and federal agencies, universities, and nonprofits, worked collaboratively to determine critical data needs/gaps for nutrient monitoring. As the top priority, the LCMW recommended that regular water quality monitoring be implemented along a transect extending from Barataria Pass, LA to offshore. This region is a key intersect for the interactive effects of multiple ecosystem change drivers (e.g., restoration projects, riverine nutrient loading, hypoxia, oil pollution, climate change) on living resources in the Gulf of Mexico.

### *Project Design*

The objective of this project is to fill the identified critical water quality monitoring gap by continuation and transition to autonomous data collection of an established monitoring transect extending from Barataria Pass, Louisiana, to the inner shelf (Figure 4). Continuing this transect is vitally important for understanding of: 1) baseline conditions for coastal restoration projects and nutrient uptake assessment, 2) inshore to offshore water quality dynamics, 3) changes in extent and severity of hypoxia, and 4) linking inshore nutrient dynamics with offshore annual measurements of hypoxia.

Due to the highly variable circulation driven by buoyancy and local wind forcing (Wang and Justić, 2009), transect stations need to be positioned at relative proximity to each other. The monitoring transect is a complement to CPRA's estuarine System Wide Assessment and Monitoring Program, which samples water quality in the estuarine bays across coastal Louisiana, including the Barataria Basin. The coastal transect additionally links System Wide Assessment and Monitoring Program water quality monitoring with the annual hypoxia offshore cruise by filling the spatial gap between the two. The transect will also provide, on an expanded scale, data for isohaline mapping of water quality parameters, important for calibration and validation of riverine, estuarine and coastal numerical models to support adaptive management of the Louisiana's Coastal Master Plan, [Louisiana's Nutrient Reduction and Management Strategy](#), and the Gulf of Mexico Hypoxia Task Force Action Plan.

A partnership with CPRA, LDEQ, Louisiana State University, and Tulane University developed the Coastal Monitoring Transect (Figure 4) with funding from the Gulf of Mexico Alliance (GOMA) Gulf Star Grant (2018-2019) that was continued with EPA funding in 2020-2022. The transect has been monitored with a boat-based survey approximately three times a year for nitrogen (TKN, NO<sub>3</sub>NO<sub>2</sub>, NH<sub>3</sub>), phosphorus (TP, PO<sub>4</sub>), silica (SiO<sub>2</sub>), chlorophyll a, total suspended solids (TSS), turbidity, dissolved oxygen (DO), dissolved oxygen percent saturation, temperature, salinity, specific conductivity, and pH (see Table 7). Data were collected at stations TS1, TS2, TS4, and TS6 (Figure 4, location information in Table 8); sampling at stations TS3, TS5, and a continuous station at CSI-9 were not included in previous efforts due to funding and logistical limitations.

Electronic meter readings and water quality samples will be taken at three depths – surface, mid, and bottom. Boat-based sample runs and analysis will be conducted over an approximately 12-

month period. The coastal transect monitoring cruises are tentatively planned for March, May, July, August, and September 2023.

#### *Pilot Transition to Autonomous Vehicle Transect Monitoring*

Highly energetic offshore conditions make boat-based sample collection very challenging. Therefore, this proposal incorporates continuation of approximately one year of boat-based data collection, with a transition to autonomous technologies for data collection. An autonomous vehicle is being developed and tested through the project Unmanned Surface Vehicle for Autonomous Hypoxia Monitoring<sup>15</sup> (support provided by the NOAA IOOS OTT Program) with Principal Investigator Dr. Stephan Howden from the University of Southern Mississippi and partners L3Harris<sup>16</sup>, Integral Consulting Inc.<sup>17</sup>, Texas A&M University<sup>18</sup>, GCOOS<sup>19</sup> (Gulf of Mexico Coastal Ocean Observing System), the EPA, and the National Oceanic and Atmospheric Administration (NOAA). The vessel has a 0.91 m draft, and can operate in <5 m to 50 m depths, and is being tested in the offshore environment in 2022. The vessel will occupy a previously boat-based monitored transect from Bay St. Louis, Mississippi to the 20 m isobaths, and the autonomous vessel will be shadowed by a boat doing computed tomography casts for data comparison. A data management system from vessel to Integral Consulting cloud server to GCOOS is being developed. The vessel is diesel powered, with a range of ~68 nautical miles, with 8.5 hours at 8 knots plus three hours max at stations. This is sufficient for monitoring all six stations in the monitoring transect (Figure 1); the depths of the coastal transect range from 5.0 m to 20 m, which are within the range of the autonomous vessel. The vessel has an avoidance system while transecting, and the communication system is being upgraded. The autonomous vessel can be transported on a trailer, and needs a boat launch.

#### *Autonomous Vehicle Data Parameters*

The profiling package used is a Valeport MIDAS CTD, Valeport VA500 altimeter, Cyclops Chlorophyll fluorometer, Optode DO, Idronaut pH, and Seaport turbidity. The sensors obtain continuous data in the water column, and there is the capability of collecting multibeam data to obtain density layer information. Data are collected on downcast and upcast. The autonomous vessel collects CHLA and DO, which are the endpoints interested in for water quality monitoring and modeling, and used in fisheries models. The autonomous vessel does not currently collect nutrient (N and P) data, and part of the transition planning for this project will be investigating the addition of additional digital nutrient probes to the autonomous vessel. For near-surface nutrients, an instrument package of continuous nutrient sensors could be integrated as a package on the autonomous vehicle hull (personal communication with Stephan Howden). The models used at CPRA can be calibrated and validated to the CHLA and DO data currently collected by the autonomous vehicle, used in conjunction with nutrient information in the Mississippi River.

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<sup>15</sup> <https://ioos.noaa.gov/project/ott-asv-hypoxia/>

<sup>16</sup> <https://www.l3harris.com/>

<sup>17</sup> <https://www.integral-corp.com/>

<sup>18</sup> <https://www.tamu.edu/>

<sup>19</sup> <https://gcoos.org/>

### *Transition Plan*

A transition plan to operations is being developed by the investigators with NOAA, which could include NOAA development of the vessel for operational use, and the incorporation of digital probes for nutrient data collection. A comparison and analysis of nutrients collected via boat-based and probe/autonomous vessel would need to be conducted. The GHP project team will also work on leveraging external funding, including from GOMA for the procurement of nutrient probes. The University of Southern Mississippi has developed a day rate for autonomous vessel rental. There is a possibility that NOAA will make this autonomous vessel system operational, whereby the vessel would be outfitted, and ship time could be provided by NOAA.

### *Data Analysis and Synthesis*

Data will be analyzed and synthesized with System Wide Assessment and Monitoring Program (SWAMP) data, hypoxia cruise data, and other environmental data by CPRA, and integrated into regional and basin-level assessment and reporting that CPRA is developing.

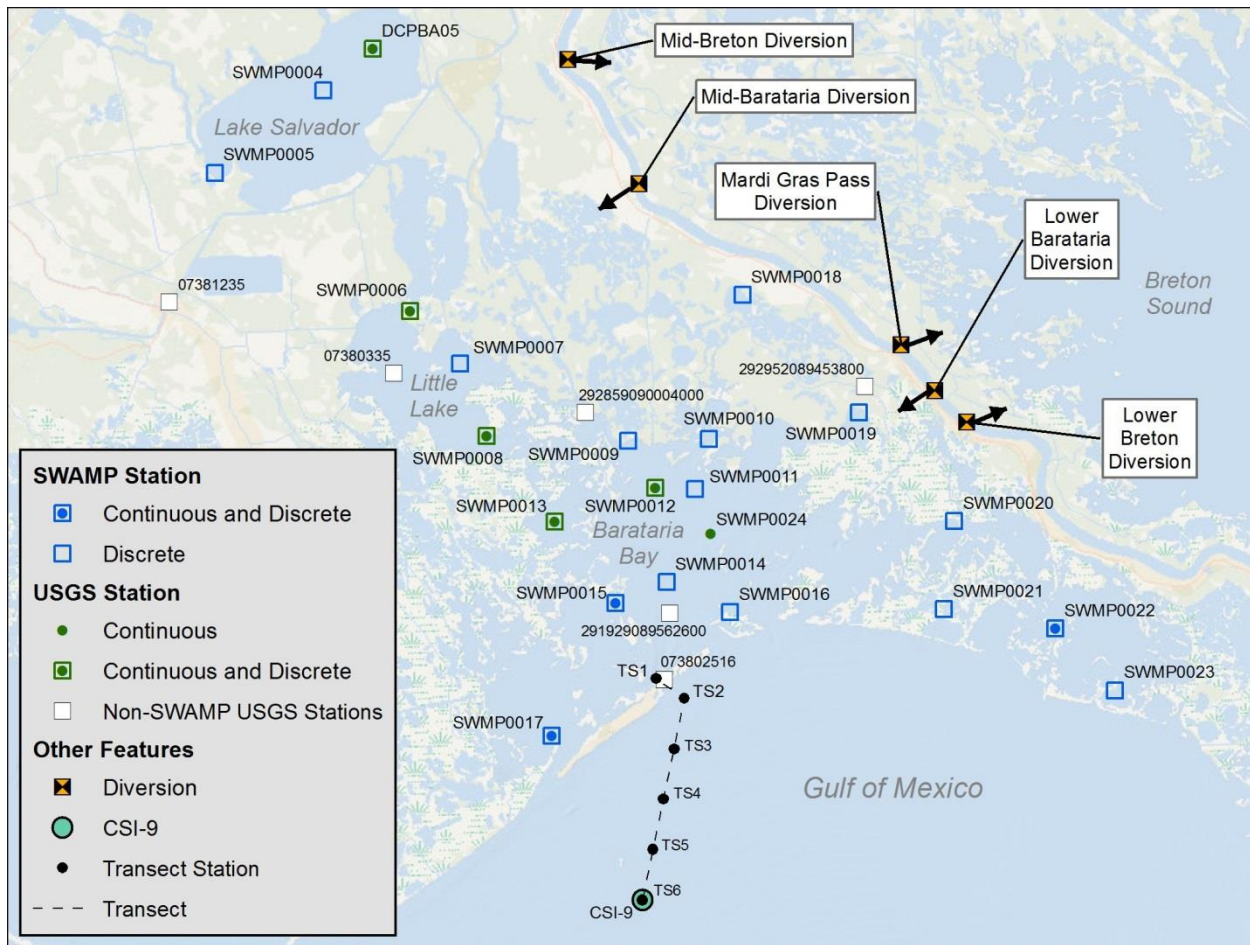


Figure 4: Water quality monitoring transect from Barataria Pass to WVCIS CSI-9, with six discrete monitoring stations (TS1 to TS6, station locations in Table 1). Data at four stations TS1, TS2, TS4, and TS6 were collected for previous monitoring. Data at all six stations will be included following transition to autonomous data collection. Also included on map for reference are CPRA System Wide Assessment and Monitoring Program and U.S. Geological Survey (USGS) continuous and discrete water quality stations in Barataria Basin.

Table 7: Monitoring Parameters for Boat-Based Survey

<b>Monitoring Variable</b>	<b>Location</b>	<b>Sampling Frequency (Tentatively Proposed Data Collection Cruise Dates)</b>	<b>Sampling Depths</b>
Nitrogen (TKN, NO <sub>3</sub> NO <sub>2</sub> , NH <sub>3</sub> )	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface*, mid, bottom**
Phosphorus (PO <sub>4</sub> , TP)	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom
Silica (SiO <sub>2</sub> )	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom
Chlorophyll <i>a</i>	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom
Total Suspended Solids (TSS)	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom
Turbidity	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom
Dissolved Oxygen	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom
Dissolved Oxygen Percent Saturation	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom
Temperature	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom
Salinity	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom
pH	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom
Specific Conductivity	TS1, TS2, TS4, and TS6	March, May, July, August, and September 2023	Surface, mid, bottom

\* Surface samples will be measured 0.5 m from surface

\*\* Bottom samples will be measured within 1 m of bottom



Table 8: Water Quality Transect Station Locations

Station Name	Longitude	Latitude	Sampled in this Project
TS1	-89° 57' 16.200"	29° 16' 26.400"	Yes
TS2	-89° 55' 46.200"	29° 15' 28.200"	Yes
TS3	-89° 56' 24.050"	29° 13' 7.509"	No
TS4	-89° 57' 1.867"	29° 10' 46.812"	Yes
TS5	-89° 57' 39.650"	29° 8' 26.109"	No
TS6	-89° 58' 19.212"	29° 6' 6.017"	Yes

### Outreach and Engagement

CPRA has developed an Adaptive Management strategy that includes an outreach and engagement plan encompassing both stakeholder engagement and information dissemination within and outside of CPRA. Dialogue, deliberation, and two-way communication with stakeholders about baseline water quality conditions acquired through this proposal will be an essential component of communications. Findings will also be communicated internally through all-staff presentations, and externally as a component to conference and board meeting presentations, and publically through presentation at a CPRA Board meeting and a Hypoxia Task Force (HTF) state presentation. Outreach and engagement will also be coordinated with the GOMA Water Resources Team.

### EPA Five Strategic Outcomes:

- 1. Support staff to implement the workplan.** CPRA will be the lead agency for project implementation, responsible for overall management of this project and will provide guidance for monitoring instrumentation and data collection and analysis, develop the QAPP, manage data collection transition to autonomous planning, coordinate regular project updates and reporting, manage one or more data collection and analysis subcontracts, analyze and synthesize data, technical writing, and outreach and engagement.
- 2. Reduce nonpoint source nutrient pollution as articulated in state strategies.** River diversions are included as one of the key Louisiana Nutrient Reduction and Management implementation focus areas as they have been shown through modeling and other lines of evidence to provide ecosystem restoration benefits, including nutrient reduction capabilities.
- 3. Prioritize and target watersheds with the greatest opportunities for nutrient reductions.** Louisiana’s Coastal Master Plan identifies a number of sediment diversions across the coastal area which models predict will build wetlands that have the ability to assimilate nitrogen and phosphorus. The Barataria Basin east of the Mississippi River is prioritized since it includes a large-scale Mid Barataria Diversion Project (estimated cost over \$1.4 B) that is prioritized for the first project implementation period, with the Environmental Impact Statement expected to be finalized in 2022.
- 4. Collaborate across state boundaries with HTF partners.** This project will include a collaboration with an academic institution in Mississippi, our neighboring HTF state. Project data will be analyzed and synthesized, and with data and reports made publically available through CPRA’s Coastal Information Management System (CIMS)<sup>20</sup>. Progress

<sup>20</sup> CPRA Coastal Information Management System (CIMS). <https://cims.coastal.la.gov/>

will be included in [Louisiana's Nutrient Reduction and Management Strategy](#) updates, integrated into basin reporting, and communicated internally and externally. Collaboration with GOMA, of which the state of Mississippi is also a member, has already been initiated, and will be continued through communication and potential leveraging of funds.

- 5. Use state-level water quality programs and actions to better support nutrient reductions.** This project will conduct discrete and continuous water quality monitoring, and support better, more cost-effective technology for water quality monitoring. The pilot transition to autonomous data collection will support more cost-effective technology for water quality monitoring by incorporating all stations in the water quality transect, and using an autonomous vessel in challenging environmental conditions.

### **Environmental Results:**

The goal of the Coastal Transect Monitoring project is to complete a multi-site, 60-month survey of water quality parameters recorded at the surface (measured 0.5 m from surface), mid, and bottom (measured within 1 m of bottom) at each selected monitoring site (Figure 4). The monitoring transect will be an open-water complement to the CPRA's estuarine System Wide Assessment and Monitoring Program. Intended outputs include a minimum of three to four sampling events per year that will provide baseline data conditions, and provide needed data for numerical modeling of nutrient dynamics and nutrient uptake potential of diversion projects. The transect will provide, on an expanded scale, data for isohaline mapping of water quality parameters and will be invaluable for calibration and validation of riverine, estuarine and coastal numerical models to support adaptive management of the Louisiana Coastal Master Plan, [Louisiana's Nutrient Reduction and Management Strategy](#), and the Gulf of Mexico HTF Action Plan. Regional and basin-level assessment and reporting will also be produced by CPRA incorporating a synthesis of water quality data.

### **Milestone Schedule:**

The milestone schedule for Project 2 is given in Figure 1, and activities conducted by CPRA are described below.

#### **Phase One, Year 1:**

Project start date – October 1, 2022

Subaward and QAPP approved – December 31, 2022

Boat-based monitoring implementation – January 1, 2023 through March 1, 2023

Boat-based transect monitoring – cruises (6) in March, May, July, and August, and September 2023

Transition plan to autonomous vehicle – January 1, 2023 through September 30, 2023

Data processing and analysis/outreach and engagement/final report preparation period – July 1, 2023 through September 30, 2023

Project Year 1 end date – September 30, 2023

#### **Phase Two, Years 2-5:**

Autonomous data collection – October 1, 2023 through September 30, 2026

Data processing and analysis/outreach and engagement/final report preparation period – July 1, 2024 through September 30, 2026

**Detailed Budget Narrative:**

The budget is shown in Table 9 and described below.

**Phase One, Year 1: Boat-based data collection and laboratory analysis, and transition plan to autonomous \$25,000.00**

The cost estimate for labor, equipment, material and overhead costs necessary to perform the discrete data collection and analysis is \$20,000 for an estimated four data collection events over a one-year period January 1, 2023 through September 31, 2023 or until funds are expended. The costs of developing a transition plan to autonomous data collection, including personnel costs, is \$5,000.

Boat-based data collection and laboratory analysis	\$20,000.00
Transition plan to autonomous collection	\$ 5,000.00

**Phase Two, Years 2-5: Autonomous data collection and sample analysis \$80,000.00**

The University of Southern Mississippi has developed a day rate that is approximately \$3,000 for rental of the autonomous survey vessel. Vessel transport is an additional \$500, and satellite communications is \$500, making the cost per data collection trip \$4,000. Costs are for 5 autonomous data collection trips per year.

Autonomous data collection processing	\$80,000.00
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**Total Budget (Years 1-5): \$105,000**

*Table 9. Project 2 Budget.*

<b>Project 2 Budget</b>	Federal Year 1 22/23	Federal Year 2 23/24	Federal Year 3 24/25	Federal Year 4 25/26	Federal Year 5 26/27	Federal Total
Phase 1 Data Collection / Data Analysis	\$25,000	\$0	\$0	\$0	\$0	\$25,000
Phase 2 Autonomous Data Collection / Sample Analysis	\$0	\$20,000	\$20,000	\$20,000	\$20,000	\$80,000
<b>TOTAL</b>	<b>\$25,000</b>	<b>20,000</b>	<b>20,000</b>	<b>20,000</b>	<b>\$20,000</b>	<b>\$105,000</b>
	<b>FY22-FY23</b>		<b>FY24-FY26</b>			
	<b>\$45,000</b>		<b>\$60,000</b>			

**Technical Support and Quality Assurance:**

The CPRA and its partners will follow all conditions set forth in the subaward agreement with LDEQ. The CPRA and its implementation partners will abide by the LDEQ’s QMP and will collect and use environmental data according to an approved QAPP. Monitoring work will be conducted under a QAPP to provide documentation and increase the utility of the data. CPRA has developed and documented policies, standard operating procedures, data conventions, and quality

assurance/quality control procedures (QA/QC) for data collection of all data generated in support of the coastal protection and restoration program. In conjunction with the development of the CIMS system, CPRA and USGS develop and maintain metadata for all CPRA data using Federal Geographic Data Committee (FGDC) standards. Data stewardship is provided by the CPRA Data Management Team and associated consultants. Data integrity will be checked with very detailed and complex QA/QC software routines prior to input to the database and additional automated routines when input into the database. The CPRA will utilize CIMS to make output from this proposal publically available. Quality assurance issues identified and resolved during the course of the project will be documented by CPRA in its subawardee monitoring reports to LDEQ.

## References

- Boesch, D.F., Shabman, L., Antle, L.G., Day Jr, J., Dean, R., Galloway, G.E., Groat, C.G., Laska, S., Luettich Jr, R. and Mitsch, W. 2006. A new framework for planning the future of coastal Louisiana after the hurricanes of 2005. Science, U.o.M.C.f.E. (ed), p. 24, Cambridge, MD.
- Colten, C. and Day, J. 2018. Sustainable Coastal Design and Planning. Mossop, E. (ed), pp. 209-222, CRC Press/Taylor & Francis, Boca Raton, FL.
- Colten, C.E., Simms, J.R.Z., Grismore, A.A. and Hemmerling, S.A. 2018. Social justice and mobility in coastal Louisiana, USA. Regional Environmental Change 18(2), 371-383.
- CPRA. 2017. Coastal Master Plan, 2017 Coastal Master Plan Appendices. Authority, L.C.P.a.R. (ed).
- CPRA. 2007. Louisiana's Comprehensive Master Plan for a Sustainable Coast.
- CPRA. 2012. Louisiana's Comprehensive Master Plan for a Sustainable Coast, p. 188, Coastal Protection and Restoration Authority, State of Louisiana, Baton Rouge, Louisiana.
- CPRA. 2017. 2017 Coastal Master Plan: Appendix E: Flood Risk and Resilience Program Framework, p. 66, Coastal Protection and Restoration Authority, Baton Rouge, Louisiana.
- Gagliano, S.M. and Van Beek, J.L. 1993. A long-term plan for Louisiana's coastal wetlands. Louisiana Department of Natural Resources, Office of Coastal Restoration, Baton Rouge, LA.
- Group, T. 2006. Envisioning the Future of the Gulf Coast Conference, p. 11, New Orleans, Louisiana.
- Laska, S. 2020. Louisiana's Response to Extreme Weather: A Coastal State's Adaptation Challenges and Successes, Springer Nature.
- Louisiana Coastal Wetlands Conservation and Restoration Task Force, L. 1998. Coast 2050: Toward a Sustainable Coastal Louisiana. Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority, 173.
- Teal, J.M., Best, R., Caffrey, J., Hopkinson, C.S., McKee, K.L., Morris, J.T., Newman, S. and Orem, B. 2012. Mississippi River Freshwater Diversions in Southern Louisiana: Effects on Wetland Vegetation, Soils, and Elevation. Lewitus, A.J., Croom, M., Davison, T., Kidwell, D.M., Kleiss, B.A., Pahl, J.W. and Swarzenski, C.M. (eds), p. 49.
- USACE, L. 2004. Louisiana Coastal Area (LCA), Louisiana: Ecosystem Restoration Study. New Orleans, LA: US Army Corps of Engineers, Louisiana Department of Natural Resources, 506.
- Wang, L. and Justić, D. 2009. A modeling study of the physical processes affecting the development of seasonal hypoxia over the inner Louisiana-Texas shelf: Circulation and stratification. Continental Shelf Research 29(11-12), 1464-1476.

## Summary Information Page – Minnesota

**Project Title:** Minnesota improving strategic directions to reduce nutrients entering rivers flowing to the Gulf of Mexico

**Organization Information:** Minnesota Pollution Control Agency, 520 Lafayette Road St. Paul MN 55155. David Wall 651-757-2806. [David.wall@state.mn.us](mailto:David.wall@state.mn.us)

**Proposed Funding Request.** Total dollar amount requested from EPA is \$1,713,333 – allocations to the state for FFY22 and FFY23.

### **Brief Project Description.**

Minnesota’s work plan focusses on eight areas integral to Minnesota’s nutrient reduction goals. This work will set strategic directions for scaling up the most critical agricultural BMPs to achieve the remaining nutrient reduction goals at the state lines and at the upstream watershed outlets. Point source nitrogen reduction management plan templates will be developed for use at the highest priority municipal wastewater facilities. Priority watersheds will be mapped, and tools for local watershed nutrient reduction planning will be made more effective. Minnesota’s Nutrient Reduction Strategy and tracking system will be updated to more effectively achieve and track nutrient reductions through 2035.

**Environmental Results:** Minnesota’s work will chart the course for making large-scale nutrient load reductions, emphasizing: nitrate coming from drained agricultural lands, phosphorus coming from agricultural and urban areas vulnerable to loosing phosphorus into waters, wastewater nitrogen discharges, and nitrate leaching from row crops to vulnerable groundwaters. Ultimately, these efforts will help protect and restore local lakes, rivers and drinking water sources, as well as improve waters downstream all of the way to the Gulf of Mexico.

**Place of Performance:** This work will focus on the parts of Minnesota that drain toward the Mississippi River system. Statewide nutrient reduction strategy planning updates additionally include strategic directions related to flow into the Red River and Lake Superior systems, consistent with EPA’s guidance.

**Project Period:** The estimated project period for this work plan will begin in Fall 2022 and end in by Fall 2025.

## **Project Workplan**

### **Overall Approach:**

Minnesota’s work plan is written for the first two years of EPA allocations to the states (out of the five allocations provided for Gulf of Mexico Hypoxia work). Provided below is a detailed narrative for each of the eight work plan elements supported by these first two years of allocations. Funding from the first two years of allocations largely supports improving and updating Minnesota’s strategic directions for the next decade (2025-2035). Minnesota anticipates that the last three appropriation years (FY24, FY25, FY26) will largely be used to implement an updated nutrient strategy and for ongoing tracking of progress toward strategy goals.

The eight work plan elements are integral to Minnesota’s goals to reduce nutrient loads into the Mississippi River Basin that ultimately drains to the Gulf of Mexico. These elements are summarized in table 1, below, and are described in more detail in the narratives that follow.

**Table 1 – Project overview work plan elements**

<b>Work plan element</b>	<b>1<sup>st</sup> year allocation</b>	<b>2<sup>nd</sup> year allocation</b>
1. <b>BMP needs, effects &amp; priorities</b> – From existing research, identify the most promising agricultural best management practices (BMPs), associated nutrient reduction efficiencies, and new adoption acreage needs to reach our nutrient strategy goals.	\$280,000 U of MN	\$150,000 U of MN
2. <b>Scaling up BMP adoption</b> - Develop specific options and recommendations for how Minnesota can best scale-up and accelerate adoption of the most promising agricultural practices.	\$150,000 MDA	\$150,000 MDA
3. <b>Tools for watershed planning</b> - Support and increase use of watershed decision support tools for local nutrient reduction planning and strategic implementation of effective practices at the local watershed scale.	\$150,000 BWSR staff and MPCA contracted work	\$50,000 BWSR staff and MPCA contracted work
4. <b>Remaining loads &amp; geographic priorities</b> – Update Minnesota’s river nutrient load estimates for each source sector, remaining river nutrient load reduction needs at the state lines and watershed outlets, and watershed priorities for nutrient management efforts.	\$90,000 MPCA contracted work	\$40,000 MPCA contracted work
5. <b>Point Source Wastewater N reduction</b> – Identify facilities with high nitrogen loads and those potentially contributing to aquatic life harm from nitrate, and provide technical assistance to pilot site(s) to achieve nitrogen reduction.	\$71,000 MPCA staff/contractual	\$71,000 MPCA staff/contractual
6. <b>Tracking System</b> - Design a progress-tracking system for displaying ongoing progress with nutrient reduction efforts and results.	\$50,000 to support agency staff (BWSR, MPCA, MDA)	\$43,333 \$36K to support agency staff, \$7.33K to contract out.
7. <b>Strategy Revision</b> – Update and revise Minnesota’s Nutrient Reduction Strategy to more effectively achieve point and nonpoint nutrient load reductions to waters through 2035.	\$50,000 MPCA staff & contracted work	\$130,000 MPCA staff & contracted work
8. <b>Manage and coordinate the EPA grant</b> – manage and coordinate subcontracting, reporting, financial, multi-state collaboration, and other project management work to accomplish parts 1-7.	\$124,000 MPCA staffing	\$114,000 MPCA staffing
<b>Total</b>	<b>\$965,000</b>	<b>\$748,333</b>

## 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  
U of MN – University of Minnesota

**Alignment with EPA’s priorities and objectives:** All five EPA-required strategic outcomes are addressed with Minnesota’s eight work plan elements, including staff for managing, coordination, collaborations and reporting on all these efforts.

These efforts support EPA’s Strategic Plan Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds. Minnesota’s Watershed Restoration and Protection Strategies (completed for each of 75 watersheds) identify those waterbodies and areas needing restoration and those needing protection. Efforts from this work plan will help to integrate the larger-scale water restoration and protection needs with local planning and action.

Work plan elements that specifically include the five EPA priorities outlined in EPA’s guidance and strategic plan are:

1. Support staff to implement the workplan (work plan elements 8, 3, 6)
2. Reduce nonpoint as articulated in state strategies (work plan elements 1, 2, and 3; work plan element 7 does not directly reduce nonpoint pollution, but will show how Minnesota’s strategy will lead to more effective nonpoint source nutrient reduction)
3. Prioritize and target watersheds with greatest opportunities for nutrient reduction (work plan elements 1, 3, 4)
4. Collaborate across state boundaries with HTF partners (work plan element 8 supports staff to ensure collaboration, but all work plan elements will be conducted in communication and collaboration with the other task force states).
5. Use state-level water quality programs and actions to better support nutrient reductions (workplan elements 4, 5, and 7; work plan element 2 will consider existing and new water quality programs that hold strong promise for accelerating BMP adoption, including those listed in EPA priority 5)

The detailed narratives for each workplan element more specifically describe the work consistent with the above priorities.

**How the state will manage and monitor subawards:** A large fraction of the money will be sub-awarded to a combination of the University of Minnesota, Minnesota Department of Agriculture, Minnesota Board of Water and Soil Resources and private industry environmental consultant contractors. The MPCA will require regular meetings (i.e. monthly) with sub-awardees to assure that all expectations and requirements are being met, and that reporting is received for conveying back to EPA.



Additionally, a multi-organization Steering Team will be organized and will regularly discuss the status and results of each project element.

**Outreach strategies:**

The MPCA will reach out to stakeholders in several work plan elements, particularly those that involve how we are considering scaling up practice adoption of point and nonpoint source pollution reduction practices. Strategies to reach stakeholders will include personal invitation to meetings, email and existing newsletter updates. Additionally, in subsequent allocation years, the MPCA will coordinate a stakeholder/public review process for the draft revised Nutrient Reduction Strategy.

**Advancing Gulf Hypoxia Action Plan goals in disadvantaged communities:**

Many under-served people in Minnesota live in the rural and urban environments along our major river corridors impacted by nutrients. This effort will help our underserved populations in Minnesota, and all the way down to the Gulf of Mexico, as we work together to ensure healthy waters for recreation, drinking water, spirituality, fish/shellfish harvests, industrial uses, and more. The Minnesota Pollution Control Agency (MPCA) has developed an environmental justice framework along with environmental justice policies and maps <https://www.pca.state.mn.us/about-mpca/mpca-and-environmental-justice>. We are committed to upholding the agency’s environmental justice framework and policies as we work on each of the work elements in this grant proposal. This work plan will aim to set strategic directions that will especially benefit disadvantaged communities in the future. For example, disadvantaged communities will be one of the factors assessed when re-evaluating priority watersheds (work plan element 4c). Underserved populations and the disadvantaged will also be included when new approaches to scale-up adoption are considered (work plan element 2b), to ensure that the State is setting up approaches that benefit the underserved populations. Disadvantaged communities will be a priority for wastewater N assistance, if requested by the communities, under part 5c. Minnesota will consider both the EPA and Minnesota maps of disadvantaged and underserved communities. Additionally, the MPCA will specifically reach out to coordinate with Minnesota tribal organizations seeking GHP funds, including eligible communities in table 1.

Table 1. Tribal communities in Minnesota which are located within the Mississippi River Basin (provided by EPA)

Tribe	Estimated tribal lands in Mississippi River Basin (acres)
Fond du Lac Band (part of this land in Wisconsin)	3,826
Prairie Island Indian Community	3,417
Shakopee Mdewakanton Sioux Community of Minnesota	3,088
Lower Sioux Indian Community in the State of Minnesota	1,751
Mille Lacs Band	103,445
Minnesota Chippewa	168
Leech Lake Band	735,476
Ho-Chunk Nation of Wisconsin (part of this land in Wisconsin)	9,303
White Earth Band	62,679
Upper Sioux Community, Minnesota	1,502

### **Advancing climate-related goals:**

Minnesota recently developed a comprehensive Climate Action Framework <https://climate.state.mn.us/minnesotas-climate-action-framework>. The Framework emphasizes how we manage our working lands, such as agricultural lands. The agricultural practices being promoted for reducing greenhouse gasses, storing carbon and adapting to climate change are largely the same practices that we need for nutrient reduction. Key considerations in selecting the practices and approaches in Minnesota for nutrient reduction will focus on are those that have co-benefits of greenhouse gas reduction, carbon storage, and resiliency to our changing climate (see work plan elements 1a, 1b, 1c, 2b). Climate change effects will also be evaluated when we re-consider current nutrient load reduction needs (workplan element 4b). Changing climate considerations will be strongly reflected in a revised Nutrient Reduction Strategy (workplan element 7).

**Quality Management Plan (QMP) or Quality Assurance Project Plan (QAPP):** Not applicable for this particular workplan.

### **Overall Environmental Results:**

#### **Outputs and outcomes related to EPA's strategic outcomes 1–5:**

*Support Staff* – 0.6 FTE Project Manager at MPCA for managing the workplan. Staff will also be supported at MDA, BWSR, and U of MN.

*Reduce nonpoint as identified in state strategies* - nonpoint priority BMPs will be identified; nonpoint BMP efficiencies will be quantified; nonpoint BMP adoption scenarios will be developed for reaching final load goals; new approaches to accelerate nonpoint BMP adoption will be identified and included in a revised Nutrient Reduction Strategy.

*Prioritize and target watersheds* – Maps will be updated showing highest priority watersheds; Minnesota's Nutrient Reduction Strategy will be revised to identify priority sources and areas; better guidance will be developed to help direct use of watershed decision support tools and models to better prioritize and target implementation in local watersheds.

*Collaborate across state boundaries* – Minnesota will have multi-agency participation in Hypoxia Task Force meetings and Coordination Committee meetings, Upper Mississippi River Basin Association meetings and workshops, along with other activities to collaborate and coordinate among the states.

*Use state-level WQ programs and actions to better support nutrient reductions* – Wastewater facilities will be identified where causing aquatic life harm or contributing high loads, and nitrogen management plan templates will be developed to optimize nutrient reduction. River monitoring and watershed modeling results will be used to update load reduction targets at various scales.

#### **Products resulting from completion of the work plan:**

An important product resulting from this work plan will be a draft revised Nutrient Reduction Strategy that can be taken to stakeholders for review and comment.

Supporting documents, guidance and technical reports for Minnesota’s Nutrient Reduction efforts will be developed to address the following topics:

1. Remaining water nutrient reduction and protection needs/goals
2. Sources and pathways of nutrients in Minnesota Waters
3. Priority areas, watersheds, and land uses
4. Agricultural practices effectiveness for nutrient reduction and co-benefits
5. Scale of change/adoption needed to achieve load reduction goals
6. Nutrient-reducing programs - strategies for scaling-up practice adoption
7. Guidance for using Minnesota’s suite of watershed decision support tools
8. Wastewater nitrogen reduction – priority sites and ways to achieve results
9. A nutrient progress tracking system design that identifies the key metrics

**Measuring, tracking, and reporting environmental results and pollutant load reductions:**

Minnesota has a robust monitoring system that is used to evaluate load trends throughout the state <https://www.pca.state.mn.us/water/river-and-stream-monitoring>. The MPCA will coordinate trends evaluations and collaborate with other states and the U.S. Geological Survey so that nutrient load trends can be most efficiently assessed and tracked.

Minnesota also has a comprehensive web site 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>. The MPCA will ensure that existing and newly developed systems will be updated to adequately track new BMP adoption levels in a way that links to the state’s Nutrient Reduction Strategy.

**Milestone Schedule:**

The Milestone schedule for all work plan elements and major tasks is shown in Table 2.

Table 2. Milestone schedule for all work plan elements and major tasks.

Task	Oct - Dec 2022	Jan – Mar 2023	Apr – Jun 2023	Jul – Sept 2023	Oct – Dec 2023	Jan – Mar 2024	Apr – Jun 2024	Jul – Sept 2024	Oct – Dec 2024	Jan – Mar 2025	Apr – Jun 2025
1a	X	X	X	X	X	X					
1b	X	X	X	X	X	X					
1c	X	X	X	X	X	X					
1d					X	X	X				
2a	X	X	X	X							
2b			X	X	X	X					
2c						X	X				
3a	X	X	X								
3b			X	X	X	X	X				
3c							X	X			
4a		X	X	X	X						
4b		X	X	X	X						
4c		X	X	X	X	X	X				
5a	X	X									
5b			X	X	X	X					

Task	Oct - Dec 2022	Jan – Mar 2023	Apr – Jun 2023	Jul – Sept 2023	Oct – Dec 2023	Jan – Mar 2024	Apr – Jun 2024	Jul – Sept 2024	Oct – Dec 2024	Jan – Mar 2025	Apr – Jun 2025
5c							X	X	X	X	X
6a		X	X	X							
6b					X	X	X				
7a		X	X	X							
7b					X	X	X	X	X		
7c			X	X	X	X	X	X	X	X	X
7d									X	X	X
8a	X	X	X	X							
8b		X	X	X	X	X	X	X	X	X	X
8c	X	X	X	X	X	X	X	X	X	X	X
8d				X	X	X	X	X	X	X	X
8e	X	X	X	X	X	X	X	X	X	X	X

**Transfer of Results and Dissemination to Public:**

The support person working on this project work plan will work with technical leads and subawardees to collect and disseminate information, which will include the following activities:

- Gather and share information and lessons learned from the project(s),
- Develop Summaries to be shared with the public at HTF meetings,
- Assemble materials to share on EPA’s GHP website,
- Collect relevant write-ups to send to EPA for publication in the Hypoxia Task Force Newsletter,
- Share strategy revision materials to share with state stakeholders and partners, and
- Add key materials to web site.

**Technical Support:**

The MPCA’s lead technical people working on the Hypoxia Task Force and Nutrient Reduction Strategy (i.e. David Wall and an expert to be hired from funds apart from this cooperative agreement) will provide ongoing technical support and review to subawardees. Wastewater support will be provided by wastewater technical leads at the MPCA (i.e. Marco Graziani and engineering support).

**Detailed narrative and budget of each work plan element**

Minnesota’s work plan is written for the first two years of EPA allocations to the states (out of the five allocations provided for Gulf of Mexico Hypoxia work). Provided below is a detailed narrative for each of the eight work plan elements that will be supported by these first two years of allocations. The first two allocations of the Gulf Hypoxia Program (GHP) monies from the Bipartisan Infrastructure Law will be used to for seven areas/elements needing further development and strengthening. These seven elements are integral to Minnesota’s goals to reduce nutrient loads into the Mississippi River Basin that ultimately drains to the Gulf of Mexico. An eighth element includes staff for managing and coordinating the work activities.

In general, funding from the first two years of allocations will largely support improvements and updating of Minnesota's strategic directions for the next decade (2025-2035). Minnesota anticipates that the last three appropriation years (FY24, FY25, FY26) will largely be used to implement the revised strategy and for ongoing tracking of progress toward strategy goals.

The narrative below describes the eight work plan elements, along with the major tasks (i.e. part 1a, 1b, 1c, etc.) associated with each of the eight work plan elements.

**1. BMP needs, effects & priorities - From existing research, identify the most promising agricultural best management practices (BMPs), associated nutrient reduction efficiencies, and new adoption acreage needs to reach our nutrient strategy goals.**

Experts at the University of Minnesota will lead an effort to review the most up-to-date published science to determine the nitrogen and phosphorus reduction effectiveness ranges and averages for various kinds of agricultural practices that can reduce nutrients leaving fields and entering waters under Minnesota conditions. Teams of scientists from the University of Minnesota and government agencies in Minnesota will converge on findings in four main categories of practices:

- Nitrogen management (in-field applications)
- Phosphorus management (in-field applications)
- Continuous soil cover with vegetation and crop residue management
- Edge of field practices (including channel and near channel design/mgmt)

**Part 1a** - Studies will be collected, evaluated, and then will synthesize the collective body of research related to field-scale nutrient loss prevention effectiveness. The team of scientists will build on Iowa's literature searches and existing Minnesota compilations, as well as work in other upper Midwest states that is transferable to the soils, climate and conditions found in Minnesota. While the emphasis will be on published research findings, where published data gaps do exist, we will also include unpublished work and other studies where reliable monitoring data have been collected that only needs to be analyzed and summarized.

UMN and agency scientists will converge on the best way to represent effectiveness of individual practice results (nutrient *load* and *concentration* reductions) for use in updating MN Nutrient Reduction Strategy, and related other uses possibly including: MN Agricultural BMP Manual, UMN Extension educational materials, and assumptions used in various watershed decision support tools. A report with the findings will be developed, including summary tables and visuals.

**Part 1b. Potential to scale-up the practices** - The potential for scaling-up each practice will be evaluated by considering: i) acreages suitable in Minnesota for each practice, where the right soil, climate and landscape characteristics are found, ii) available information on the cost of adoption and social barriers and opportunities with each practice, and iii) other benefits of the practices to farmers and society (in addition to nutrient loss reduction) that will increase motivation for implementing the practices. Related to these three considerations:

- i) Where land suitability data gaps are identified for critical practices, analysis will be conducted to evaluate the extent of lands that would likely be suitable for the practices.
- ii) Human elements, including economics, will be considered when prioritizing practices for scaling-up in Minnesota.
- iii) Practices will be evaluated under part 1a specifically for nitrogen loss reduction and phosphorus loss reduction. Under part 1b, the U of MN will identify the additional benefits of these practices (where readily available information exists), potentially including: soil health; long-term crop production; habitat; sediment loss reduction; pesticide reduction; greenhouse gas reduction; carbon storage; hydrologic benefits such as flood reduction and reduced near-channel erosion; groundwater nitrate reduction; etc.

**Part 1c.** The most promising BMPs will be identified and prioritized by a process that includes the experts at the University of Minnesota, BWSR, MDA, and NRCS who studied the BMP effectiveness, social science, co-benefits, and land suitabilities of practices. Organizations involved with work on nutrient reduction. Practices will be prioritized as most-promising based on a combination of BMP effectiveness for nutrient reduction, potential scales of adoption, multiple benefits, and cost considerations. The UMN and agency experts working on this will provide recommendations concerning which BMPs the State should emphasize most in Minnesota over the coming decade, and beyond. The Minnesota Nutrient Reduction Strategy (NRS) focuses most on those practices that can potentially be applied widespread across much of our agricultural lands.

**Part 1d.** The results of parts 1a-1c will be used to select the practices to be used in developing modeled scenarios showing the acreages of BMP adoption that will be needed in combination to achieve NRS goals in the Mississippi and Red River Basins. Existing tools (i.e. NP-BMP, PTMapp, and HSPF-SAM) will be compared and used to develop the scenarios, working in collaboration with agency tool experts. Scenarios will be developed for reaching interim and final goals at the state lines. Multiple scenarios will be developed that will achieve similar nutrient load reduction outcomes, if possible, to emphasize that there is more than one way to reach the goals. Net costs will be estimated using the NP-BMP tool, along with other cost-estimation approaches and risk management considerations.

The findings for parts 1a-1d will be provided and summarized in a report(s) that will be used for advancing state-level, regional and watershed strategies, as well as improved models, tools, educational materials, and other uses. The report will also provide recommendations on how to keep BMP science up-to-date into the future. Reports and products will be made available at Minnesota's Nutrient Reduction Strategy web page.

**Activity Leads** for 1a-1d will include the University of Minnesota Water Resources Center staff and existing U of MN subject matter experts. Staff at the University of Minnesota will be funded through this project (GHP monies) to assist with all parts. Agency experts from the Minnesota Department of

Agriculture, Minnesota Pollution Control Agency, Minnesota Board of Water and Soil Resources, and Minnesota office of the Natural Resources Conservation Service will be invited to participate in discussions, decisions, and product review for each part.

**Budget:** The \$430,000 budget for this element will be sub-awarded to the University of Minnesota, who will use it to support staff to work on items 1a-1d and overall coordination for this work plan element.

**Timeframe:** This work will start as soon as possible after the first allocation is received by the MPCA and contracts can be arranged with the University of Minnesota (likely in December 2022), with tasks 1a-1c completed by January 2024, and task 1d completed by June 2024.

## **2. Scaling-up BMP adoption - Develop specific options and recommendations for how Minnesota can best scale-up and accelerate adoption of the most promising agricultural practices.**

Minnesota's Nutrient Reduction Strategy (NRS) identified existing and developing programs that could be used to increase adoption of BMPs that reduce nutrients going into waters. During the first 5 years of NRS implementation, Minnesota advanced almost every major state-level program area identified in the 2014 Strategy. At the state and regional levels, Minnesota has initiated and/or expanded more than 30 programs associated with Strategy recommendations. While several programs are prompting changes on hundreds of thousands of acres, effects of other programs are more difficult to quantify or need much more time to reach their full potential. Despite the many advancements, as well as local government program activity, and independent efforts of farmers, most practice adoption indicators show that during the past 5 to 10 years Minnesota has not been on track to reach the needed scales of change in agriculture and wastewater sectors to accomplish NRS goals.

The Minnesota Department of Agriculture (MDA) will invest resources in summarizing and understanding key factors related to conservation adoption and reviewing current and new approaches to practice implementation. The goal is to promote greater adoption of vegetative cover practices and other nutrient-reducing BMPs across the state as part of the NRS goals.

In order to provide the best recommendations for how to scale-up adoption, the MDA will lead an effort to: a) collect, assess and synthesize information on social science research related to motivations and barriers for making changes to practices/systems that result in nutrient loss reduction, b) evaluate existing programs in Minnesota and elsewhere in the Upper Midwest that show potential for scaling-up the most important types of practices and possible new approaches to conservation delivery and implementation, and c) convene key partners in the agricultural community, through an advisory team, to identify the highest priority approaches to scale up and propose for implementation in years 3-5 of this funding.

**Part 2a – Review social science research findings to inform actionable items-**

MDA staff will collect and synthesize existing documented social science evaluations of farmers and those working with farmers which summarize the primary barriers, opportunities, and factors affecting decisions related to new adoption of nutrient-reducing practices. The MDA will also evaluate historic and current adoption of nutrient reducing conservation practices, and based on literature from the Upper Midwest, determine primary barriers, and opportunities. This information will be added to ongoing work being synthesized at the University of Minnesota Center for Changing Landscapes.

A report will be written that summarizes what this collective body of research tells us about likely ways to achieve greater success working with land managers on changing practices and potentially adjusting cropping systems. The report will summarize key information and support discussions with conservation professionals, the agricultural stakeholder group and NRS Steering team related to accelerating adoption of BMPs in part 2c.

The collected social information will be used to understand and segment target populations of the farming community in an effort to develop effective messages, engagement strategies, incentives, and policy tools to support greater adoption of conservation practices. In addition to the social science findings, Minnesota will also incorporate findings on scaling approaches that have been successful locally and in neighboring states.

**Part 2b – List and summarize existing and new approach options** - Identify existing and proposed programs, approaches, and partnerships in Minnesota and other upper Midwest states (throughout private industry, government and/or NGOs; for example, the Central Iowa Blitz Project) that could be used and built-upon for accelerating priority BMP adoption throughout large areas of Minnesota. The MDA will also identify overlap between approaches, which may encourage multiple conservation related contacts for each farmer/decision-maker. Some of the programs to assess include those that use market-based approaches for multiple economic and environmental benefits, programs that support a dedicated technician to provide high-quality customer service and frequent interactions with specific landowners, targeted ‘batch and build’ conservation delivery model, and others that involve non-operating landowners (leasing out land), or other segments found from 2a. For each program, staff will review information and communicate directly with key agency and project partners, and if needed visit project sites. Lessons learned from local efforts will also be included. Examples of successful programs include the Minnesota Agricultural Water Quality Certification Program and the Root River Field to Stream Partnership where substantial landowner collaborations have occurred.

Findings from 2a and 2b, along with discussions/consultation with conservation delivery partners (local Soil and Water Conservation Districts and NRCS), will be used to develop a list of options to bring first to an agricultural stakeholder group and then to our Nutrient Reduction Strategy Steering Team. The agricultural stakeholder group will be involved through a facilitated process and will be asked to provide feedback and to advise the state on the most promising approaches. Each potential approach will include pros and cons, advantages and disadvantages, and other considerations that include how well the approach would achieve the following:



- Accelerate adoption of nutrient-reducing practices identified by UMN-led team under part 1;
- increase practices that address climate issues (carbon, GHG, resilience);
- benefit underserved populations;
- provide agricultural resiliency for the short term and long term through sustainable practices;
- show potential to be economically viable (i.e. with new research and development);
- reach the people who have the most influence on farm management and have the potential to benefit millions of acres;
- benefit both local and downstream waters;
- fall under priorities identified in State-level plans including the Minnesota’s Climate Action Framework, EQB State Water Plan and the Clean Water Council (CWC) Strategic Plan;
- limit consequences and promote co-benefits (i.e. groundwater protection, increase wildlife and pollinator habitat; reduce flooding and sediment loss, climate change mitigation, etc.).

**Part 2c – Select high-priority recommended approaches** - From the list of options developed in part 2b, MDA will develop recommendations for new and/or improved approaches believed to show the most promise to customize conservation delivery and inspire land managers to adopt practices and systems for reducing nutrient losses in critical/targeted areas of the landscape. Associated co-benefits will also be considered, since many co-benefits fit well within other state priorities or frameworks. The highest priority approaches will be discussed with the agricultural stakeholder group and then by a multi-agency NRS Steering Team for potential inclusion in the draft revised NRS and/or other implementation avenues. Key project partners identified in earlier steps may also be included in this process. The goal is to identify the highest priority approaches to scale up and propose for implementation in years 3-5 of GHP funding and throughout the 2025-2035 decade.

**Activity Leads:** The Minnesota Department of Agriculture will lead this effort, working in conjunction with the NRS Steering Team and possibly contracting with the University of Minnesota. The Minnesota Department of Agriculture will actively seek out and work closely with local, state, and federal organizations that support agricultural BMP adoption programs as well as develop new ideas.

**Budget:** Year 1: \$150,000; Year 2: \$150,000

- MDA has allocated up to \$60,000 for contracting, likely through the University of Minnesota for assistance with part 2a.
- MDA will support a fraction of an FTE (~0.75) in years 1 and 2: \$120,000 in each year.

**Timeframe:** This work will start as soon as possible after funds are distributed. Work by the University of Minnesota will commence as soon as contract can be arranged and signed. Completion of 2a will be finalized in Fall of 2023. Reviewing existing and new approaches (2b) will start as soon as possible and be finalized in winter of 2024. Selection of high priority approaches (2c) will be finalized in Spring 2024.

### **3. Tools for watershed planning - Support and increase use of watershed decision support tools for local nutrient reduction planning and strategic implementation of effective practices at the local watershed scale.**

Each of our 81 watersheds in Minnesota develops and updates strategies and plans for addressing nutrient reduction needs, as well as other impairments and water quality goals. These plans are increasingly aimed at meeting goals nested at different scales, from local lakes and streams, to large in-state rivers, to the Mississippi River down to the Gulf of Mexico.

Decision support models and tools have been developed and used in some watersheds for purposes of: a) nutrient and sediment load reduction outcome scenario development using combinations of BMPs, b) prioritizing geographic areas and sources, and c) local BMP selection and siting. Minnesota has invested considerably in the development of the watershed decision support tools PTMApp and HSPF-SAM, with additional investment in NP-BMP, ACPF and others. While the tools are being used in some watersheds, they are generally not being used to their full potential for nutrient reduction planning. One reason hindering tool use is insufficient training and guidance on how best to use the suite of available tools.

We will develop a succinct guidance for tool users that will bring clarity about how to maximize use of the tools individually and sequentially. In addition to the guidance document, we will explore other on-line ways to inform and communicate with tool users. The guidance will be developed in three parts that will parallel the three tool purposes identified above. The guidance will be developed in collaboration with all lead organizations who develop and use the tools, ensuring that the agencies converge on the most helpful and consistent content and messages to local watersheds and their consultants. The process to develop the guidance will build and unify understanding among various state agencies and watersheds on what each tool can best inform (at each scale and for each primary audience).

An initial step for each part of this effort includes conducting tool user-assessments to better understand the barriers and challenges to using the existing versions of these tools, so that the guidance can be most helpful in leading local watersheds to effectively reduce nutrients for the benefit of local and downstream waters. As part of the analysis, we will also seek input on potential future enhancements that will help increase adoption and usability of these tools. Future enhancements could possibly include tool consolidation, streamlining functionality, and addressing gaps.

The guidance will describe how watersheds could/should use the suite of multiple tools together in sequence, and which tool is the best for specific situations. Success stories will be included regarding how watersheds have effectively used individual tools and multiple tools in sequence to achieve better outcomes for each intended purpose. Additionally, the guidance will describe situations where tools are insufficient and full-blown modeling with HSPF or SWAT or other models is recommended.

**Part 3a.** Conduct tool user-assessments to better understand the barriers and challenges to using the existing versions of these tools, so that the guidance can be most helpful in leading local watersheds to effectively reduce nutrients for the benefit of local and downstream waters. As part of the analysis, we will also seek input on potential future enhancements that will help increase adoption

and usability of these tools. Future enhancements could possibly include tool consolidation, streamlining functionality, and addressing gaps.

**Part 3b.** Develop three types of guidance that parallel the three primary uses for the various tools, as described below.

- i) Develop guidance on tool use for outcome estimation (quantifying past or future benefits from BMPs and other landscape changes). This work will consider the following:
  - Which tools work well for each different watershed outcome estimation need;
  - Strengths and weaknesses of each tool in estimating nutrient reduction from individual and collective BMPs;
  - Ideal ways to use the tools separately and together for outcome estimation;
  - The amount of time and user expertise needed for using each tool to complete various tasks;
  - Availability of each tools in watersheds around the state - currently & plans for the future;
  - Which tools can predict outcomes for urban pollution sources, as well as agricultural and rural;
  - How tools can be used to predict outcomes at the following delivery points: field edge, nearest water, HUC12 outlet, HUC10 outlet, HUC8 outlet, further downstream, and shallow groundwaters; and
  - Future needs related to enhancing existing outcome estimation tools, filling gaps, and assessing multiple benefits of nutrient-reducing practices.
  
- ii) Develop guidance on tool use for identifying priority subwatersheds for pollutant reduction. This work will consider the following:
  - Areas of highest nutrient load/concentration contributions to downstream waters and to local waters within a HUC8;
  - Areas of highest TMDL-related needs;
  - Areas with lakes/streams most sensitive to nutrient additions (i.e. protection needs);
  - Areas where there is the most opportunity for improvement;
  - Past successes (i.e. story maps) where tools were used to achieve improved geographic prioritization; and
  - Future needs for tools to be of greater utility in identifying priority subwatersheds.
  
- iii) Develop guidance on tool use for selecting the best BMPs for a given area (large or small scale) and where to place practices within the subwatersheds. This work will consider the following:
  - How each tool can best be used to select the type of BMPs that should be used in the areas of interest (including NRCS BMPs and non-NRCS practices);
  - Strengths and weaknesses of each tool for selecting BMPs;
  - How tools can be used to evaluate BMPs for combined water quality and ecosystem benefits;
  - Ideal ways to use the tools separately or together when selecting BMPs;
  - How much user expertise is needed for each tool and expected time investment to complete BMP selection work;
  - Which tools predict the best BMPs for urban pollution sources, agricultural sources, and forestland sources;

- Future tool advancement needs for improving tools for BMP selection, which may include how new high definition Lidar could improve tool accuracy;
- Best tools for siting BMPs at the local level including questions on which BMPs are included and which ones are not included in tools that enable proper siting and placement of the practices;
- Differences and pros and cons with each tool used to locate where BMPs should go within subwatersheds;
- How each tool determines BMP siting and the reliability of this information. What kind of site-specific follow-up is needed after tool use?
- What parts of the state are these tools ready to be used right now, and which areas are expected to be ready into the future? and
- Past successes (i.e. story maps) where tools were used to site/place new BMPs.

**3c.** The draft guidance will be tested with three watersheds. Feedback from the watershed staff will be used to improve the guidance and associated communications, trainings, and web support associated with the guidance in the future.

**Activity Leads:** The MPCA will support staff from sources outside of the EPA grant to coordinate the technical aspects of these efforts to increase and improve how we use the tools. Funding from this GHP effort will support 0.3 FTE at the Minnesota Board of Soil and Water Resources (BWSR) to work with MPCA staff, other agencies, and a consultant organization to accomplish the above objectives. The work of developing the guidance will be contracted out to an organization with expertise in the use of these tools.

**Budget:** \$200,000 combined amount from the two federal allocations.

\$100,000 will be used to support the 0.3 FTE staffing at BWSR for two years – including personal, fringe benefits and indirect. Staffing at BWSR will be able to bridge the work conducted by local watershed planning and work by contracted consultants. Staff will be able to assist with the tool user-assessment, helping with guidance content and review, and providing expertise with PTMApp and ACPF tools.

\$100,000 will be contracted out to develop the guidance documents (part 3a) and testing the draft guidance (part 4a). The contracted organization will be contracted to objectively evaluate the tools used in Minnesota and develop guidance, while working closely with BWSR, MPCA and MDA staff. The MPCA will aim to contract with an organization that has minimal ownership or bias with any single existing tool used in Minnesota.

**Timeframe:** This work is expected to start in December 2022 and be completed by May 2024.

**4. Remaining loads & geographic priorities – Update Minnesota’s river nutrient load estimates for each source sector, remaining river nutrient load reduction needs at the state lines and watershed outlets, and watershed priorities for nutrient management efforts.**

Since 2014, Minnesota has been using its [Nutrient Reduction Strategy](#) (NRS) as a large-scale framework for reducing phosphorus and nitrogen in Minnesota’s waters and those downstream (figure 1). The NRS

describes the milestone and final load goals at state borders (table 3) and the point source and nonpoint source (NPS) new practice adoption levels that would achieve the milestone goals, along with important steps and programs to advance adoption of priority practices.



Figure 1 – Three major drainage pathways for Minnesota waters to flow downstream and out of the state.

Table 3 - Goals and milestones outlined in the Minnesota Nutrient Reduction Strategy.

Major basin	Milestone 2014 to 2025	Final Goal 2025 to 2040
Mississippi River (Also includes Cedar, Des Moines, and Missouri Rivers)	12% reduction in phosphorus from the baseline loads	Achieve <b>45%</b> total reduction from 1980-1996 baseline and meet in-state lake and river water quality standards
	20% reduction in nitrogen	Achieve <b>45%</b> total reduction from 1980-1996 baseline
Red River (Lake Winnipeg Basin)	10% reduction in phosphorus	Achieve final reductions identified through joint efforts with Manitoba (about 50% from the 1998 to 2001 period)
	13% reduction in nitrogen	
Lake Superior	Maintain protection goals, no net increase from 1970s	
Groundwater/Source Water	Meet the goals of the 1989 Groundwater Protection Act	

As we approach writing a draft revision to the NRS in 2024, Minnesota will need to update our estimates of the remaining load reduction needs by using the most up-to-date monitoring and modeling information. Recent loads and remaining load reductions will be determined for: a) Major river basin drainages at the state lines, and b) the HUC8 watershed outlets.

**Part 4a. Nutrient load reduction needs for major river basin drainages at the state lines.** An analysis of river nutrient load monitoring and modeling over 10-year periods that ended between 2012 and 2018 indicated that Minnesota still needed much of the nutrient load

reductions identified in the 2014 NRS (Table 4). This load analysis work will be further updated to reflect the most recent monitoring and modeling so that it is most relevant for revisions to Minnesota’s NRS. This will be done in a way that is directly linked to the loads in HUC8 watershed outlets (part 4b) so that load reduction goals and tracking for aggregated HUC8 watersheds align with major basin goals at the state lines.

The remaining load reduction needs will also be categorized by agricultural, wastewater and other sectors, reflecting the large-scale reductions needed by each sector to do their sector’s part for achieving the load reduction goals at the state lines. An important upfront step will be to review nutrient source analysis information from existing models and reports (HSPF, SPARROW, WRAPS, MPCA wastewater tableau) and compare with the source assessment provided in the original NRS. Based on all updated load goals and source assessments, MPCA and its partners will determine the needed nutrient reductions from each source sector that will result in meeting the downstream goals.

Table 4 - Recent 10-year average load estimates, final goals and remaining reductions for the Minnesota portion of four major basins, for total phosphorus (TP) and total nitrogen (TN) in units of Metric Tons (MT).

Description	Mississippi River		Red River		Rainy River	Lake Superior
	Upper Mississippi, Minnesota, St. Croix Cedar, Des Moines, Missouri		TP	TN	TP	TP
	TP	TN	TP	TN	TP	TP
<b>Recent sum of modeled loads at state line (MT)</b>	3,478	87,271	991	8,247	237	257
<b>Final goal at state line (MT)</b>	2,544	50,089	700	4,763	218	248
<b>% load reduction still needed to meet final goals</b>	26.9%	42.6%	29.4%	42.3%	8.1%	3.5%

When meeting the load reduction goals to address Minnesota’s contributions to the Gulf of Mexico, Minnesota will concurrently be achieving needed nutrient and sediment load reduction in Minnesota’s waters. Our State needs to better understand how the nested scales of reduction needs relate to each other so that strategies can be developed with the aim of achieving nutrient reduction needs for both in-state and downstream purposes together.

We will compare *phosphorus* load reduction needs at the state lines with three other scales: i) phosphorus reduction needs for TMDLs in large downstream lakes such as Lake Pepin and Lake St. Croix, ii) phosphorus reduction needs to meet major river eutrophication standards, and iii) phosphorus reduction needs to meet lake and river eutrophication standards within the HUC8 watersheds. The reduction needs for all three of these scales will be compared where this information is readily available.

We will compare *nitrogen* load reduction needs at the state lines with two other scales: i) nitrate reduction needs to address surface and drinking water sources where drinking water standards are exceeded, and ii) potential nitrate reduction needs to address concerns for

aquatic life potentially affected by nitrate toxicity in local stream reaches. The nitrogen reduction needs for these two purposes will be compared, where this information is readily available.

**Part 4b. Nutrient Load Reduction Needs for HUC8 watershed outlets**

Since the goals at the state border cannot be achieved unless each watershed does its part, Minnesota also needs to update the estimated load reduction needed from each HUC8 watershed to collectively meet our nutrient reduction needs at the state lines. Monitoring and modeling throughout Minnesota continues to improve. Additionally, changes occur with climate, land uses/mgmt., BMP adoption, etc. Therefore, the MPCA and its sub-awardees intend to update not only the state-line large river goals, but also goals for watershed outlets. These watershed load reduction goals can be used by local water planners to understand long-term needs to address waters outside of their watershed boundaries. HUC8 watershed load reduction targets were identified in the 2014 NRS to address interim goals for 2025, and were updated with an HSPF modeling approach in 2022 that identifies final load reduction goals to collectively meet Minnesota’s commitments for Gulf of Mexico hypoxia. Through this work plan, Minnesota will further update and finalize these watershed outlet nutrient targets.

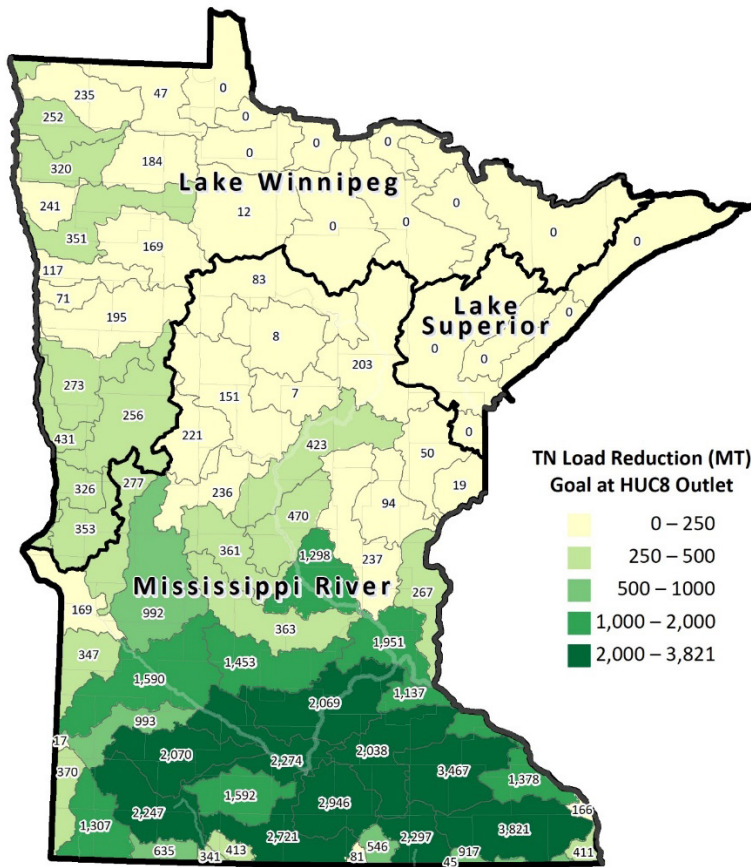


Figure 2 – Planning goals for nitrogen load reduction needs at watersheds outlets to collectively achieve downstream goals in the NRS.

**Part 4c. Priority watersheds for nutrient reduction and protection** - Minnesota’s NRS priority HUC8 watersheds were determined from estimates of nutrient yields (lbs/acre/yr delivered to the watershed outlet), along with the added phosphorus consideration of river reaches not meeting the pending river eutrophication standards (Figure 3). The previously completed watershed priority maps do not account for lake sensitivity to nutrients, drinking water impacted by nitrate, aquatic life sensitivity to nitrate, or location of disadvantaged populations. The nutrient priority maps will be updated as we consider this additional in-state information. We will develop three or more sets of maps related to: a) priorities for downstream nutrient needs, b) priorities for in-state nutrient needs, and c) a combination of the two. This revision will more accurately portray where we need to focus our efforts in Minnesota for nutrient reduction. The watershed nutrient priority maps will be mapped at different watershed scales.

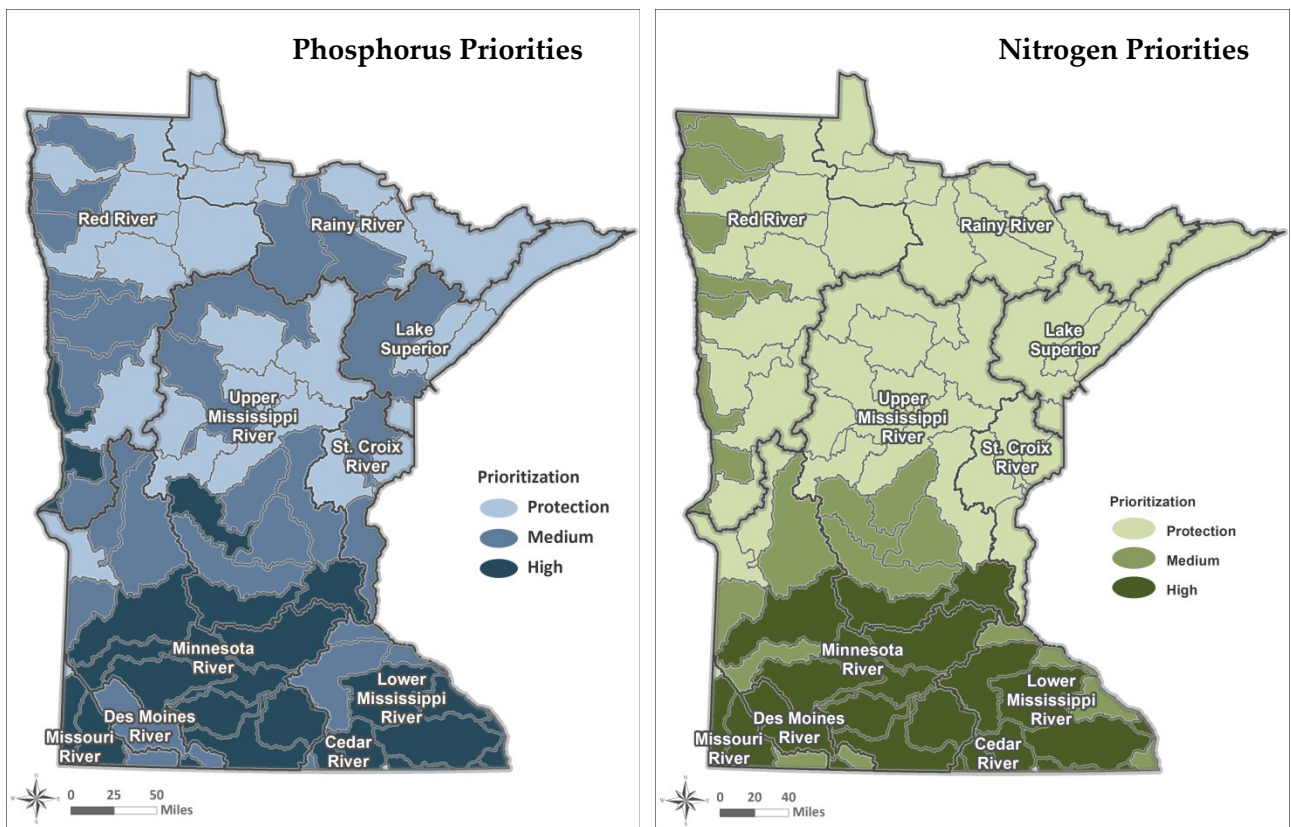


Figure 3 – Priority watersheds identified in Minnesota’s 2014 Nutrient Reduction Strategy.

**Activity leads:** The MPCA technical leads for the nutrient reduction strategy will lead and coordinate this work element, and will contract with consultants to accomplish the work in the needed timeframe. This work will be closely coordinated with the University of Minnesota which is also working to identify water quality priority areas for other purposes.

**Budget:** This work will be contracted with a contractor who has experience working to prioritize watersheds, and who can therefore capitalize on the past experiences, data, and approaches, and therefore most efficiently use the \$130,000 budgeted for these activities.



**Timeframe:** This work will begin in Fall 2022 with a goal of completing by Winter 2024.

**5. Point Source Wastewater N reduction – Identify facilities with high nitrogen loads and those potentially contributing to aquatic life harm from nitrate, and provide technical assistance to pilot site(s) to achieve nitrogen reduction.**

Minnesota has made tremendous progress with wastewater phosphorus reduction but has only a few places in the state where total nitrogen has been reduced by optimizing both phosphorus and nitrogen treatment. The University of Minnesota has recently completed optimization modeling, showing the potential for effluent nitrogen reduction at most mechanical municipal wastewater treatment plants. Additionally, the MPCA has assembled a team of experts to improve and advance a strategy that will move the state towards total nitrogen treatment in municipal wastewater in priority areas. Several needs have been raised by this Wastewater Nitrogen Reduction Team, some of which will be addressed in Minnesota's first work plan.

**Part 5a.** Identify those facilities in the Mississippi River Basin within Minnesota where nitrate discharge is a potential concern for aquatic life. As well, identify those facilities contributing large nitrogen loads to the Mississippi River system. Determine which of these priority facilities are located in underprivileged communities so that they can inform part 5c.

**Part 5b.** Identify and document municipal wastewater facilities in Minnesota and in other states which have reduced nitrogen and optimized phosphorus and nitrogen treatment. Describe how they achieved the reductions technically and financially, and what prompted the nitrogen treatment. Using this information and other recently completed optimization analysis, develop a nitrogen management plan template(s).

**Part 5c.** Work with high priority facilities within the Mississippi River System that were identified in step 5a and document pilot efforts showing how nutrient reduction optimization (including total nitrogen reduction) can be achieved, and the expected effects on receiving waters. The Environmental Justice status of the identified high priority facilities will inform the MPCA's engagement efforts and the level of technical assistance provided.

**Activity Leads:** MPCA wastewater program experts will lead this effort and potentially also contract some of the work with other organizations, as needed. The MPCA will work closely with the Metropolitan Council, which was involved with the original State NRS development and the NRS five-year progress report.

**Budget:** At the time of this proposal, the determination of whether to conduct this work through MPCA staff or through a consultant with MPCA oversight has not yet been made. It is possible that approximately half of the \$142,000 for this work plan element will be used for MPCA staff, with the remaining amount to be contracted out to an organization specializing in wastewater treatment. Regardless of which approach is taken, the same total budget will be needed.

**Timeframe:** This work will begin in Fall of 2022 and will be completed by Summer 2024.

## **6. Progress Tracking System - Design a progress-tracking system for displaying ongoing progress with nutrient reduction efforts and results.**

Chapter 7 of Minnesota's Nutrient Reduction Strategy (NRS) describes the types of tracking needed to evaluate progress over time, which includes load trends in rivers, new BMP adoption levels, and state program advancements. Our NRS [five-year progress report](#) documented tracking measures and outcomes for the first five years of strategy implementation.

Through this work plan element, the MPCA and partner agencies will design a tracking system that can be regularly updated and readily available to the public on the web, using up-to-date measures, metrics and data.

**Part 6a. Metrics and measures** – Minnesota agencies will determine the best measures, metrics and methods for evaluating nutrient reduction progress, building on the 2014 NRS, NRS 5-year progress report, Gulf Hypoxia Task Force Report to Congress, Hypoxia Task Force Nonpoint source measures report, Healthier Watersheds website, and trends work conducted by the USGS and others.

**Part 6b. Tracking system design** – The State will design a system to track and report quantified BMP adoption progress and in-stream trends. The system will describe how needed information will be collected, and at what scales, locations and frequencies. A web dashboard will also be conceptually designed for ongoing tracking and display of all key NRS-related metrics. As part of the design process, we will work in collaboration with other states to explore how other states such as Iowa are displaying progress metrics and what can be learned from their experiences. River nutrient trend evaluations will be coordinated with other trend evaluations conducted by the USGS and others.

**Activity leads:** The MPCA will coordinate this work closely with the MDA, BWSR, NRCS, USGS and others on the NRS Steering Team. To finish this work in alignment with the timing of the revised NRS, the MPCA will receive assistance for this work from a consulting firm.

**Budget:** Of the total \$93,333 budgeted for this work plan element, \$46,000 will support MPCA staff and \$40,000 will be used to support other agency staff time investment (BWSR, MDA), who will assist with evaluating the best metrics and measures and ways to track progress, and review work drafted by the contracted consultant. With the remaining budget (\$7,333), a consultant will be contracted to assist with design of communications of the tracking system. The actual work to integrate the tracking system onto websites and to populate the key metrics and measures on the website will be completed in the future with IT support, and will be specified in future work plans using future allocations.

**Timeframe:** This work will begin in Winter 2023 and be completed by Spring of 2024

## **7. Nutrient Reduction Strategy Revision – Update and revise Minnesota's Nutrient Reduction Strategy to more effectively achieve point and nonpoint nutrient load reductions to waters through 2035.**

By October 2024, Minnesota's Nutrient Reduction Strategy (NRS) will have served the state for ten years. We have learned a lot and made many advancements. To be most effective and influential for guiding the State into the 2025-35 timeframe, several areas of update and improvement will be needed. This will keep Minnesota's strategy credible, relevant, and useful. Minnesota will incorporate results

from the above tasks into a revised succinct and user-friendly on-line strategy that is developed from more detailed support documents. Important information to be incorporated includes the following:

- Updated nutrient loads, load goals, nutrient source assessments, and priority watersheds, since they have been affected by past progress, climate change, water quality standard updates, improved monitoring and modeling, improved progress-tracking methods, and other changes/advancements.
- Work of the MPCA Wastewater Nitrogen Team to include an updated strategy for wastewater nitrogen reduction.
- Agricultural BMP effectiveness and BMP scenarios that show what it will take to achieve the NRS goals – which BMPs and how many acres of new adoption, and how those BMPs will provide other benefits beyond nutrient reduction.
- Priority watersheds re-evaluation.
- New approaches for scaling-up and accelerating BMP adoption.
- Watershed decision support tool use for improving local planning and targeting of key practices.
- Updates and development of an on-line progress-tracking system.

A stakeholder review and feedback process will be used at critical points of development to improve the document and its general support.

**Part 7a. Vision/framework/outline** - Develop the vision and corresponding framework and outline of how the updated/revised strategy will be organized and presented – aiming for simplicity, understandability, conciseness, and visually appealing.

**Part 7b. Write a draft** - Building from the outcomes of the above efforts (elements 1-7), the original 2014 NRS, the NRS 5-year progress report, Gulf of Mexico Hypoxia reports and related important information, Minnesota will write a revised draft Nutrient Reduction Strategy.

**Part 7c. Steering Team guidance** – Those working on designing and writing the draft revised strategy will bring options and decision needs to the multi-agency NRS Steering Team to receive input and decisions on strategic direction.

**Part 7d. Stakeholder review** – while certain pieces of the strategy components will receive stakeholder review and input as it is being assessed and developed, the more complete draft of the strategy will also be made available for stakeholder review and comment.

**Activity leads:** The MPCA will coordinate this work effort and will contract with a consulting firm to accomplish this work in the needed timeframe. The MPCA will work with a multi-organization NRS Steering Team to guide decisions related to the best direction and approaches.

**Budget:** The \$180,000 will be used to support staff at the MPCA (i.e. \$107,333) with the rest contracted out to help with the design, assembling, writing, communications and review process of the revised strategy.

Support documents that will serve as building blocks for a revised strategy will be written through the processes described in parts 1-7 above.

**Timeframe:** This work will begin in winter 2023 and be completed by summer 2025.

**8. Manage and coordinate the EPA grant - Manage and coordinate subcontracting, reporting, financial tracking, multi-state collaboration, and other project management work to accomplish parts 1-7.**

**8a. Contractual** - Set up contracts and interagency agreements to sub-awardees, including working with MPCA contracting staff and tracking all steps in the MPCA's TEMPO system. Assist lead technical staff with writing contract and interagency agreement work plans.

**8b. Tracking and reporting** - Keep track of 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 the needed information. Any water monitoring results will be reported in EPA Water Quality Exchange (not expected) and other project reporting activities will be reported in EPA's Grant Reporting and Tracking System, as specified by EPA.

**8c. Collaboration** - Assist MPCA with coordinating interagency Steering Team for the Nutrient Reduction Strategy. Participate with collaborative Gulf of Mexico Hypoxia Task Force communications and coordination among states and federal organizations, including the Upper Mississippi River Basin Association.

**8d. Revising Nutrient Reduction Strategy** – Assist MPCA Nutrient Strategy technical leads in the work needed to ensure completion of a revised Nutrient Reduction Strategy.

**8e. Communications** - Communicate nutrient reduction needs, efforts, and progress to multiple audiences. Gather and share information and lessons learned from the project(s), including: a written summary to be shared with the public at HTF meetings, materials to share on EPA's GHP website, summaries to send to EPA for publication in the Hypoxia Task Force Newsletter, any targeted materials to share with state stakeholders and partners.

**Activity leads:** The MPCA will employ a project manager to accomplish the work identified in part 6, with approximately 0.6 FTEs being dedicated for this work. The MPCA anticipates that this position will continue beyond these first two years and will be supported through future Gulf Hypoxia Program allocations.

**Budget:** \$238,000 from the first two years of EPA allocations, with an approximate breakout, as follows:

Personnel - \$131,134

Fringe - \$44,585

Travel - \$8,000 (2 people traveling to 3-4 Hypoxia Task Force meetings, including: plane tickets, lodging, airport transfers, meals during traveling, MSP airport parking).

Indirect Charges - \$54,281

**Timeframe:** This work will begin in Fall 2022 and end Fall 2024. However, we intend to continue staffing support for future work plans using future allocations.

**MISSISSIPPI'S  
GULF HYPOXIA PROGRAM WORK PLAN  
FOR FISCAL YEARS 2022 and 2023**



MISSISSIPPI DEPARTMENT OF  
ENVIRONMENTAL QUALITY

Prepared for  
United States Environmental Protection Agency

Prepared by  
The Mississippi Department of Environmental Quality  
Basin Management and Nonpoint Source (NPS) Branch  
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July 26, 2022

# Background

**BIL Funding:** In November 2021, the U.S. Congress passed the Bipartisan Infrastructure Law (BIL) which allocated \$60 million to address hypoxia issues in the Gulf of Mexico. The 12 states of the Hypoxia Task Force (HTF) – a collective that provides executive-level guidance and support for nutrient management – will receive BIL funding under the new Gulf Hypoxia Program (GHP) grant administered by the U.S. Environmental Protection Agency (EPA). Over the next five years, the Mississippi Department of Environmental Quality’s (MDEQ) Nonpoint Source (NPS) Pollution Control Program will receive funds. In years 1 and 5, the state will receive \$965,000 and in years 2 through 4 it will obtain \$748,000. To receive these funds, each HTF state is required to submit a work plan outlining the nutrient reduction activities that will be completed using this funding.

**Supporting EPA’s Strategic Plan and Agency-wide Priorities:** The activities described in this work plan support EPA’s Strategic Plan (2022) Goal 5 which aims to ensure clean and safe water for all communities. In particular, the work plan focuses on strategies to achieve Objective 5.2 that seeks to protect and restore waterbodies and watersheds through means abbreviated below:

- **Conduct monitoring and assessments.**
- **Collect and share data...to inform policy and community decision making.**
- **Implement programs to prevent or reduce nonpoint source pollution.**
- **Improve tools.**
- **Develop climate-related tools...to protect and improve water quality and habitat, while also providing climate mitigation and adaptation benefits.**

This work plan also provides support for EPA Agency-wide priorities using the various means outlined below:

- **Ensure benefits are realized by disadvantaged communities:** Over the course of this GHP grant, Mississippians in eligible areas (watersheds and counties that are part of the Mississippi/Atchafalaya River Basin (MARB) as depicted in Figure 2), particularly those in disadvantaged communities, are expected to receive direct and indirect benefits from improvements to the agriculture, fisheries, and recreation sectors.

For the purposes of this funding, MDEQ is using the U.S. Department of Treasury and U.S. Department of Housing and Urban Development’s annual household low-income threshold of \$40,626 to identify disadvantaged communities. This federally developed value represents a national benchmark for a low-income household of 3 people, the average household size in Mississippi. To identify potential disadvantaged areas, MDEQ assessed whether the median household income for the county is less than or equal to the low-income threshold. Additionally, MDEQ staff used the margin of error included in county level data to expand access for more communities on the verge of the threshold. In a preliminary analysis, 38 of the 49 eligible counties, approximately 78%, are classified as disadvantaged. Furthermore, when these data are applied at the watershed level, 81% of the total area eligible to receive funding (part of the MARB) meets disadvantaged designation for low income.

- **Advance water quality actions that have climate adaptation or mitigation co-benefits:** The tools, monitoring network, and strategy update being outlined in this work plan have direct or indirect climate adaptation and/or mitigation co-benefits.

The Nutrient Reduction Estimation Tool will provide 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 will provide direction for implementing climate mitigation initiatives such as carbon-sequestering cover crops. As context-specific information about the nutrient reduction strategies are determined, 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 index will enable MDEQ staff to assess the performance of existing nutrient reduction practices by utilizing a direct measure of nutrient response through the collection of algal community data. This information will also support management decisions such as prioritizing the implementation of climate mitigating BMPs.

Continuous nitrate (NO<sub>3</sub>) monitoring provides supporting information that can be used to evaluate climate adaptation capacity. 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 update to the MS Nutrient Reduction Strategy Report will include evaluation of impacts from climate adaptation helping to build awareness. Increased heat and droughts have implications on crop rotation, irrigation efficiencies, and other implementation actions. Increased flooding also impacts practices and strategies utilized to mitigate nutrient impacts. A goal of the update will be to inform residents about the ways they can practically mitigate/adapt to impacts to their local infrastructure and environment.

- **Fully enforce 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 identified in 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 IJA 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.

**Addressing Gulf Hypoxia Goals and Priorities with Strategic Outcomes:** The suite of activities contained within this work plan address, either directly or indirectly, the **goals** of the Gulf Hypoxia Action Plan (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.

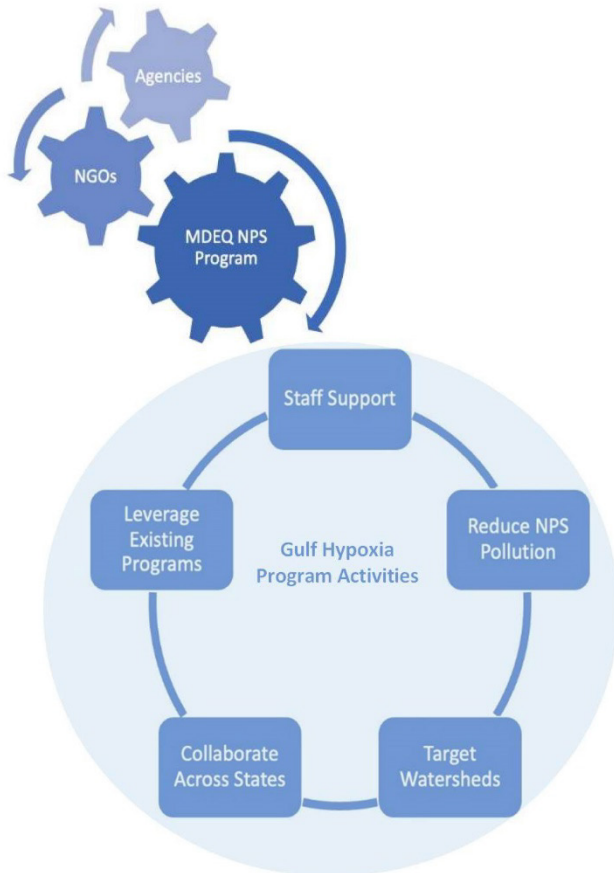
The BIL funding formalizes the Gulf Hypoxia Program. Activities from this work plan broadly align with the following **GHP priorities**:

- Support states as they scale up implementation of their nutrient reduction strategies.
- Support tribes in leveraging existing nutrient reduction strategies or developing new ones to advance HTF goals.
- Advance multi-state collaboration through support for multi-state organizations that will help to achieve the goals of the Gulf Hypoxia Action Plan.
- Document and communicate progress towards HTF goals at the Basin scale.
- Advance research in support of nutrient reduction strategies.
- Leverage resources and coordinate with other federal, foundation, state, and tribal programs.

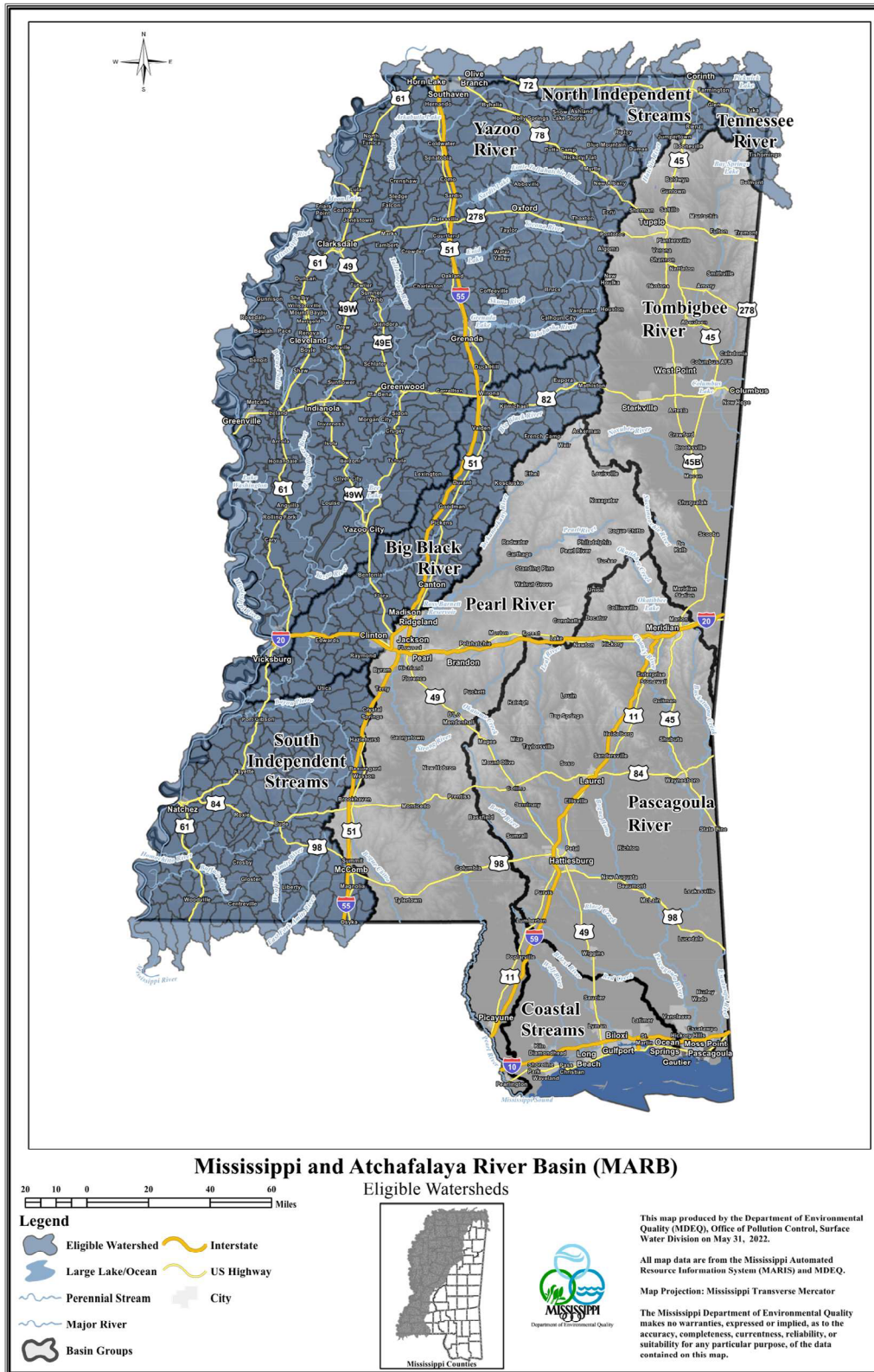
The work plan pursues progress on five **strategic outcomes** to achieve the GHAP goals:

1. Support staff to implement the work plan.
2. Reduce nonpoint source nutrient pollution as articulated in state strategies.
3. Prioritize and target watersheds with the greatest opportunities for nutrient reductions.
4. Collaborate across state boundaries with HTF partners.
5. Use state-level water quality programs and actions to better support nutrient reductions.

As shown in Figure 1, MDEQ’s stakeholder outreach process influenced the development of GHP activities proposed in this work plan. All activities address one or more of the five strategic outcomes. A cross walk of work plan activities and GHP strategic outcomes has been provided in Appendix A of this work plan. Figure 2 identifies the specific watersheds eligible for funding. Mississippi’s, eligible watersheds are those located in the Tennessee, North Independent, Yazoo, Big Black, and South Independent Streams Basins. 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. Stakeholder engagement in activity development will continue to be a critical component of work plan development as GHP funds are allocated. 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: MDEQ’s Stakeholder Outreach Impacts the Development of the Gulf Hypoxia Program’s Grant Activities that Address Five Strategic Outcomes**



**Figure 2: Mississippi’s Eligible Watershed for Gulf Hypoxia Program Funding**

## Introduction

As part of the Bipartisan Infrastructure Law that was passed, Congress appropriated \$60 million to address nutrient reduction efforts in the states adjacent to the Mississippi River to mitigate the impacts of Gulf Hypoxia. The BIL states that the funding will be distributed among the states that make up the Hypoxia Task Force. These funds will be distributed as part of the newly established the Gulf Hypoxia Program administered by EPA. Mississippi will receive \$4.175M in grant funding over the next 5 years (federal fiscal years (FY) 2022-2026). Funding must be spent in watersheds that drain into the MS River and are part of the Mississippi/Atchafalaya River Basin.

Included within this workplan are the projects planned for completion using FY22 and FY23 GHP funds. This first set of GHP funded activities focuses heavily on collecting data and building tools that can help Mississippi establish a strong foundation for making management decisions. Specifically, these activities will support program staffing, characterize delivered nitrogen loads to the Mississippi River (background nutrient contribution), estimate load reductions achieved through implementation conservation practices using data from 2008-present (load reductions achieved), and build a new biological response metric that can help measure success of nutrient reduction activities (success measure).

The actions identified in this work plan will be implemented in accordance with Mississippi's EPA approved Nonpoint Source (NPS) 5-Year Management Program Plan (2020) and established regional and statewide nutrient reduction strategies (2008-2012). The is work will help Mississippi to address the four guiding principles identified in the nutrient reduction strategies: (1) approximate achievable levels of nutrient reduction at various time horizons (2) estimate the costs associated with nutrient reduction levels across different time horizons (3) determine the value of nutrient reduction efforts to different stakeholder groups, and (4) estimate the level of nutrient reduction necessary to protect state waterbodies and benefit the Gulf of Mexico.

## Grant Management, Administration, and Staffing

**Overall Budget and Grant Administration:** Many grant implementation activities are handled through sub-grants with other agencies and the utilization of support from qualified contractors. Funding will be utilized to support staff to manage the work outlined in the work plan. Appropriate management of funds is a critical component of any grant program. Federal grant money provided to MDEQ under the new Gulf Hypoxia Program grant will be managed following the established protocols and mechanisms used to implement Mississippi's Section 319 grants.

All GHP funds will be tracked and reported separately from other funding sources to ensure funds are used to support the nutrient reduction activities identified in this work plan. 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,
- Reporting on expenditures and deliverables, and
- Development grant close-out reports.

The MDEQ Office of Administrative Services has staff that that 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. A program summary budget is provided in Appendix B which outlines how funds under this grant will be allocated and spent.

**Developing and Managing Subgrants and Contracts:** The process of developing and management sub-grants and contracts is critical to maintaining an effective management program. Much of the work identified in the work plan 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 also specify how the funds will be used and how the overall project will ultimately help address GHP goals in Mississippi and throughout the MARB. Program staff work with partners to develop work plans, budgets, and sub-grant agreements. Staff also are responsible for maintaining project budgets, monitoring expenditures, approving invoices, performing project audits, and maintain an 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 through the use of 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 to ensure that all funded activities 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, and making stakeholder meetings open to the public. 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 strategic outcomes and/or goals of the Gulf Hypoxia Action Plan
- Description of actions that provide climate adaptation or mitigation co-benefits
- Conservation practices and systems implemented

**Quality Assurance:** MDEQ is committed to providing technical support and transparent, rigorously vetted data through the use of appropriate quality assurance standards, protocols, and procedures. In particular, 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 SOPs. Data collected in conjunction with the USGS is entered into the NWIS data system and is publicly available via their website. 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.

**Reporting:** In compliance with federal requirements, MDEQ will prepare a retrospective 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.

**Schedule:** The overall completion date for all actions identified in this workplan is consistent with the end of the grant period which is September 30, 2027. An individual milestone schedule for each activity is included in the GHP Work Plan Activities section and a comprehensive schedule is outlined in Appendix C.

## **GHP Work Plan Activities**

**Activity 1: Diatom Index:** 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.

- **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 water bodies 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 long-term indicator of nutrient loading and overall stream health.

- **Indicator of Strategy Success:** Because diatoms exhibit strong linkages between nutrients and species composition, diatom-based biological indices currently represent the best available early indicator metric of nutrient enrichment yielding an economical way to assess impacts from nutrient reduction strategies/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, and track improvements from nutrient BMPs.

**Milestone Schedule:**

Milestones	2023	2024	2025	2026	2027
Planning, Site selection, Quality Assurance	X				
Data collection		X	X	X	
Identification of diatoms; Data analysis		X	X	X	
Assimilation of data into database				X	X
Diatom index development					X

**Activity 2: Nutrient Reduction Estimation Tool:** Work under this grant will continue the implementation, refinement, and enhancement of MDEQ’s decision support tools. These models are helpful because they can provide estimates of pollutant loads before and after implementation, assess how successful implementation of NPS conservation practices can be, and be utilized to expand BMP implementation through education and outreach purpose.

- **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 all watershed within the MARB area for a multi-year period thereby filling a critical data gap for Mississippi. A platform will be developed and maintained enabling Mississippi to track and report the results of varied forms of BMP implementation through time (2008- present) and at multiple scales (watersheds, basins and MARB region). Updates to the tool will better contextualize impacts from nutrient reduction actions including changes in land use types, performance of BMPs, and estimation of background nutrient loading.
- **Automated Updates:** The resulting tool will incorporate NRCS’s annual BMP implementation data, combine NRCS data with state specific implementation data, and generate updated nutrient load reduction details. These updates will standardize the model and improve estimations for Mississippi allowing results to be reported at multiple scales (watershed, regional, and MARB).

**Milestone Schedule:**

Milestones	2023	2024	2025	2026	2027
Compile computational strengths from existing nutrient reduction estimation tools	X	X			
Update BMP calculations and efficiency estimations under various land use types		X			
Develop code and interface to provide nutrient reduction calculations			X	X	
Develop batch upload functionality to incorporate updated datasets			X	X	
Build capability for data entry and reporting				X	X
Test with stakeholders and address pertinent issues					X

**Activity 3: Continuous Nitrate (NO3) Monitoring:** The HTF has prioritized the expansion of in-flow monitoring networks in the MARB to better establish trends and track nutrient and sediment loads. Collecting continuous nitrate data from Mississippi’s major tributaries allows for 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.

- **Clarify Nutrient Contributions:** The nationwide continuous NO3 monitoring network maintained by the USGS has grown to nearly 150 sites 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 NO3 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 NO3 monitoring stations are proposed for 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 relationship to stressors.



**Milestone Schedule:**

Milestones	2023	2024	2025	2026	2027
Planning, site prep, and monitoring for 3 continuous NO3 sensors: Yazoo River, Steele Bayou and Buffalo River	X				
Planning, site prep, and monitoring for 3 continuous NO3 sensors: Bayou Pierre, Big Black and Homochitto Rivers		X			
Data collection	X	X	X	X	X
Operation and maintenance of the expanded NO3 sensor network	X	X	X	X	X

**Activity 4: Nutrient Reduction Strategy 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 will be reviewed and updated as needed. The review will include not only an assessment of what has been effective, but also evaluate if changes are needed to improve the implementation of the strategies. The process will be completed through engagement of subject matter experts, resource agency partners, and input from researchers.

**Milestone Schedule:**

Milestones	2023	2024	2025	2026	2027
Identify and evaluate progress in nutrient reduction efforts, science-based initiatives, and lessons learned	X	X	X	X	X
Reflect program changes and successes toward meeting GHP and NPS Program goals		X	X	X	X
Synthesize findings and draft an update				X	X
Publish update on dashboard or public platform					X

## Awareness, Education, and Outreach

**Transferability of Results and Stakeholder Engagement:** MDEQ has an existing practice of contributing funding, information, and staff resources to many programs that promote awareness, education, and training about nutrient pollution and prevention/mitigation efforts. Key areas of public outreach 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 the awareness, education, and outreach activities will be posted on MDEQ's website and social media platforms, tracked, and reported upon annually.
- **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 medial platforms like 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.

**Appendix A: Crosswalk - GHP 5 Strategic Outcomes and Goals from Mississippi's Nutrient Reduction Strategies**

Grant Activities and Elements	EPA Strategic Outcomes					Goals of the Mississippi Nutrient Reduction Strategies			
	Support staff to implement the work plan	Reduce nonpoint source nutrient pollution as articulated in state strategies	Prioritize and target watersheds with the greatest opportunities for nutrient reductions	Collaborate across state boundaries with HTF partners	Use state-level water quality programs and actions to better support nutrient reductions	Approximate achievable levels of nutrient reduction at various time horizons	Estimate the costs associated with nutrient reduction levels across different time horizons	Determine the value of nutrient reduction levels to different stakeholder groups	Estimate the level of nutrient reduction necessary to protect state waterbodies and benefit the Gulf of Mexico.
<b>Diatom Index:</b> Nutrient response measure used as ecological indicator of nutrient impairment or progress			X		X				X
<b>Continuous NO3 Monitoring Sensors:</b> Implement, operate, and maintain continuous NO3 monitoring at 6 major tributaries to the MS River		X	X	X	X				X
<b>Nutrient Reduction Estimation Tool:</b> Improved estimates of nutrient and sediment loads and modeled reductions.		X	X	X	X	X	X		X
<b>Nutrient Reduction Strategies Update:</b> Updates on changes, particularly science-based outcomes.		X	X		X		X	X	
<b>Grant Administration and Technical Support:</b> Staffing to support management, oversight, implementation and reporting on GHP funded activities.	X					X	X	X	X

**Appendix B: Program Budget Summary FY 2022 & FY 2023 Mississippi Gulf Hypoxia Program Grant**

<b>Object Class Category (Non-construction)</b>	<b>Total Budget Period Cost</b>
Personnel	\$206,621
Fringe Benefits	\$69,218
Travel	\$15,000
Equipment	\$1,500
Supplies	\$1,000
Contractual	\$804,418
Construction	\$0
Other	\$500,000
Total Direct Charges	\$1,597,756
Indirect Costs	\$115,576
Program Income	\$0
<b>Total EPA Amount Award</b>	<b>\$1,713,333</b>
<b>Total Grant Award</b>	<b>\$1,713,333</b>

**Appendix C: Milestone Schedule for FY 2022/FY 2023 GHP Work Plan Activities**

Grant Activities	Tasks	2023	2024	2025	2026	2027
Diatom Index	Planning, Site selection, Quality Assurance	X				
	Data collection		X	X	X	
	Identification of diatoms; Data analysis		X	X	X	
	Assimilation of data into database				X	X
	Diatom index development					X
Continuous NO3 Monitoring Sensors	Planning, site prep, and monitoring for 3 continuous NO3 sensors: Yazoo River, Steele Bayou, and Buffalo River	X				
	Planning, site prep, and monitoring for 3 continuous NO3 sensors: Big Black River, Bayou Pierre, and Homochitto River		X			
	Data collection	X	X	X	X	X
	Operation and maintenance of the expanded NO3 sensor network	X	X	X	X	X
Nutrient Reduction Estimation Tool	Compile computational strengths from existing nutrient reduction estimation tools	X	X			
	Update BMP calculations and efficiency estimations under various land use types		X			
	Develop code and interface to provide nutrient reduction calculations			X	X	
	Develop batch upload functionality to incorporate updated datasets			X	X	
	Build capability for data entry and reporting				X	X
	Test with stakeholders and address pertinent issues					X
Nutrient Reduction Strategies Update	Identify and evaluate progress in nutrient reduction efforts, science-based initiatives, and lessons learned	X	X	X	X	X
	Reflect program changes and successes toward meeting GHP and NPS Program goals		X	X	X	X
	Synthesize findings and draft an update				X	X
	Publish update on dashboard or public platform					X



## **Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program**

### **2022 Workplan Summary Project Period October 1, 2022 - September 30, 2027**

**Overall Brief Workplan Description:**

Missouri Department of Natural Resources’ Water Protection Program, as the curator of the Missouri Nutrient Loss Reduction Strategy, will implement five separate projects under this Gulf Hypoxia Program workplan that achieve actions promised under the state’s nutrient strategy. Project deliverables include the development of a statewide nutrient progress tracking dashboard, expansion of water quality monitoring capabilities at stations on three of the state’s largest rivers, studying municipal wastewater nutrient removal optimization, investment in gulf hypoxia public outreach and education, and the funding of an academic study to evaluate nutrient reduction effectiveness for a selection of common agricultural best management practices.

**Total/Overall Gulf Hypoxia Program State Funding Request:**

FFY 2022	FFY 2023	FFY 2024	FFY 2025	FFY 2026	TOTAL
\$965,000	\$748,333	\$748,333	N/A	N/A	\$2,461,666

**Project 1 – Missouri Nutrient Reduction Progress Tracking Dashboard**

A public, web-based, interactive data dashboard for the purpose of tracking and publicizing data and performance indicators relevant to various Nutrient Loss Reduction Strategy goals and initiatives.

**Project 2 – Expansion of Missouri’s Ambient Nutrient Monitoring**

Expand the capability of (at least) four existing United States Geological Survey (USGS) water quality monitoring stations to include continuous nitrate and flow monitors. 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.

**Project 3 – Missouri Municipal Wastewater Nutrient Optimization Pilot**

Implement and evaluate voluntary strategies at six participating municipal wastewater facilities to optimize operational and maintenance practices to reduce nutrient loads without requiring large capital expenses. Findings will then be disseminated to all wastewater systems and stakeholder in the state and made public for wider consumption.

**Project 4 – Gulf Hypoxia Outreach and Education Exhibit**

Partner with an existing high profile science education and outreach organization in the St. Louis region to deliver a high-‘reach’ public education exhibit to raise awareness of nutrient pollution in the Mississippi River Basin, the Midwest’s role in Gulf of Mexico Hypoxia, and actions the public can take to help reduce their personal nutrient pollution footprint.

**Project 5 – Refining Nutrient Reduction Models with Subsurface Nutrient Transport Measurement**

Partnership with Lincoln University, one of Missouri’s Land Grant Universities (LGU), in addition to one of Missouri’s Historically Black Colleges and Universities (HBCU), to perform a study aimed at further refining nutrient loss reduction estimates for common agricultural best management practices (BMPs).

**Annual Project Spending:**

<b>Project #</b>	<b>FFY 2022</b>	<b>FFY 2023</b>	<b>FFY 2024</b>	<b>TOTAL</b>
Project 1	\$99,999	\$99,999	\$99,999	\$299,997
Project 2	\$565,004	\$372,846	\$448,336	\$1,386,186
Project 3	\$99,999	\$75,490	\$0	\$175,489
Project 4	\$99,999	\$99,999	\$99,999	\$299,997
Project 5	\$99,999	\$99,999	\$99,999	\$299,997
<b>TOTAL</b>	<b>\$965,000</b>	<b>\$748,333</b>	<b>\$748,333</b>	<b>\$2,461,666</b>

**Organizational Information:**

Project Manager:  
Justin Sherwood  
Environmental Program Supervisor  
Water Protection Program  
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Grant Management Contact:  
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# Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

## Project 1 Summary Information Page

**Project Title:**

Missouri Nutrient Reduction Progress Tracking Dashboard

**Organizational Information:**

Project Manager:  
 Justin Sherwood  
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**Proposed Funding Request:**

FFY 2022	FFY 2023	FFY 2024	FFY 2025	FFY 2026	TOTAL
\$99,999	\$99,999	\$99,999			\$299,997

**Brief Project Description:**

Missouri’s Water Protection Program, as the curator of the Missouri Nutrient Loss Reduction Strategy, seeks to develop a public, web-based, interactive data dashboard for the purpose of tracking and publicizing data and performance indicators relevant to various Nutrient Loss Reduction Strategy goals and initiatives.

**Environmental Results:**

This project is designed to fulfil a guiding principle of the state’s nutrient strategy. As highlighted in the strategy, establishing clear, comprehensive, and quantifiable goals, and indicators of progress, then subsequently measuring progress and publicizing results, are important in maintaining leadership commitments and public support for the strategy. Furthermore, outcomes of this project may serve as high level planning tools with regards to efficient and targeted implementation of future conservation efforts, projects, and funding.

**Place of Performance:**

Project outcomes will occur entirely within the confines of the State of Missouri and within the Mississippi/Atchafalaya River Basin.

**Project Period:**

Anticipated Project Start Date: October 1, 2022  
 Anticipated Project Completion Date: September 30, 2024  
 Grant Project Period: October 1 2022 – September 30, 2027





# Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

## Project 1 Workplan

### Project Title:

Missouri Nutrient Reduction Progress Tracking Dashboard

### Project Approach:

*Describe the approach and include any maps, charts, and/or figures.*

Missouri’s Water Protection Program seeks to develop a public, web-based, interactive data dashboard for the purpose of tracking and publicizing data and performance indicators relevant to various Missouri Nutrient Loss Reduction Strategy (MNLRS) goals and initiatives.

<https://dnr.mo.gov/document-search/missouri-nutrient-loss-reduction-strategy>

This project is designed to fulfil Guiding Principle #9 of the state’s nutrient strategy. As explicitly stated in the strategy, “Establishing clear, comprehensive, and quantifiable goals, and indicators of progress,” then subsequently, “measuring progress and publicizing results are important in maintaining leadership commitments and public support (MNLRS Page 9).” Furthermore, outcomes of this project may serve as high level planning tools with regards to efficient and cost-effective targeted implementation of future conservation efforts, projects, and funding.

The Department seeks to deliver this project through a qualified subcontractor that will be identified through a public request for proposals (RFP) pursuant to state procurement procedures.

*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 Missouri Nutrient Reduction Progress Tracking Dashboard (Dashboard) 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 empower the state-level water quality programs to more effectively plan and target nutrient reduction initiatives, and more efficiently use public funds when implementing actions under the Missouri NLRs.

*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: Reduce nonpoint source nutrient pollution as articulated in state strategies.*
- Strategic Outcome 3: Prioritize and target watersheds with the greatest opportunities for nutrient reductions.*
- Strategic Outcome 4: Collaborate across state boundaries with HTF partners.*
- Strategic Outcome 5: Use state-level water quality programs and actions to better support nutrient reductions.*

The Dashboard will directly reflect Strategic Outcomes 3 and 5 and indirectly support Strategic Outcomes 2 and 4. The Dashboard is a tool intended to track and display progress and performance metrics of multiple Missouri NLRS initiatives. Tracking monitoring data and performance metrics side by side through this Dashboard will enable our state-level water quality programs to better identify and prioritize target watersheds, understand performance of existing initiatives, and enable better-informed decisions when planning and implementing nutrient reduction activities in the state. More efficient planning and implementation of nutrient conservation practices and initiatives will drive greater reductions in the state under existing levels of public funding for conservation practices.

This Dashboard is also intended to be publicly available. Other state, HTF, and conservation partners will have full access to this information which may be useful in their own planning and conservation implementation initiatives. The Department also intends to collaborate with the Hypoxia Task Force's metrics and trends workgroup to help align some metrics chosen for this dashboard with other regional, sub-basin, or HTF metrics developed by the HTF workgroup.

Also in support of Strategic Outcome 1, the Department intends to use the Dashboard from this project to update Missouri's NLRS by developing and enshrining explicit nutrient reduction priorities and goals.

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.

*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 submit 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 does not anticipate the need to conduct specialized public outreach or hold any dedicated public meetings in order to deliver this project. The final deliverable, the Dashboard, will be hosted on the Department website for public view and use. Once the Dashboard is finalized, the Department will announce the Dashboard launch via GovDelivery to all subscribers to the Department's Clean Water Stakeholders Forum and Missouri Clean Water Commission. The Department will also conduct public presentations to share the outcomes of this project with the Department's Clean Water Stakeholders Forum and Missouri Clean Water Commission.

*Include a discussion of how state activities will advance Gulf Hypoxia Action Plan goals in disadvantaged communities.*

This project is intended to indirectly support ALL statewide nutrient reduction and gulf hypoxia activities by allowing the state-level water quality programs to more effectively plan and target conservation, and more efficiently use public funds for conservation.

*Include the definition that the state will use to define disadvantaged communities.*

The only formal definition currently being employed by the Department, through its Financial Assistance Center, currently defines a disadvantaged community as a community that:

1. Has a population of three thousand three hundred (3,300) or less based on the most recent decennial census;
2. Has a median household income at or below seventy-five percent (75%) of the state average median household income as determined by the most recent decennial census or by an income survey overseen by a state or federal agency.

The Department utilizes the following two tools to aid in identifying disadvantaged communities pursuant to the above definition:

- <https://modnr.maps.arcgis.com/apps/dashboards/06725b83dc024823a2b5c74794f6756b>
- <https://modnr.maps.arcgis.com/apps/dashboards/489051108e0d468885157975af88854a>

*States should identify and prioritize eligible activities in their FY 22 GHP workplans that will advance EJ and climate goals. States should ensure that the development and implementation of their Nutrient Reduction Strategies and projects proposed for the GHP cooperative agreements are in compliance with the requirements of Title VI.*

<https://www.epa.gov/environmentaljustice/title-vi-and-environmental-justice>

As the direct recipient of the grant award, the Department will assume 100% responsibility for ensuring that all activities associated with this project are in compliance with the requirements of Title VI.

### **Environmental Results:**

*Describe anticipated outputs and outcomes for strategic outcomes 1–5 defined in Section 5 of this guidance (qualitative and quantitative, include social indicator(s)).*

The Missouri Nutrient Reduction Progress Tracking Dashboard (Dashboard) will directly reflect Strategic Outcomes 3 and 5 and indirectly support Strategic Outcome 4. The Dashboard is a tool intended to track and display progress and performance metrics of multiple Missouri Nutrient Loss Reduction Strategy (NLRS) initiatives. Tracking monitoring data and performance metrics side by side through this Dashboard will enable our state-level water quality programs to better identify and prioritize target watersheds, understand performance of existing nutrient reduction strategy goals and initiatives, and enable better-informed decisions when planning and implementing nutrient reduction activities in the state. This Dashboard is also intended to be publicly available. Other state, HTF, and conservation partners will have full access to the information displayed on the dashboard which may be useful in their own planning and conservation implementation initiatives.

Also, as highlighted in the NLRS, “Measuring progress and publicizing results are important in maintaining leadership commitments and public support (MNLRS Page 9).” Therefore, the Dashboard will assist the Department in maintaining public support with nutrient reduction initiatives undertaken by the Department’s water quality programs and will use the Dashboard to maintain and deliver commitments originally promised in the 2014 NLRS.

*Describe the anticipated products/results which are expected to be achieved from accomplishment of the project.*

This project is designed to fulfil a guiding principle of the state’s nutrient strategy. As highlighted in the strategy, establishing clear, comprehensive, and quantifiable goals, and indicators of progress, then subsequently measuring progress and publicizing results, are important in maintaining leadership commitments and public support for the strategy. This project will result in a public, web-based, interactive data dashboard for the purpose of tracking and publicizing data

and performance indicators relevant to various Missouri NLRS goals and initiatives. Furthermore, outcomes of this project may further serve as high level planning tools with regards to efficient and targeted implementation of future nutrient reduction efforts, conservation efforts, projects, and funding that are not established in Missouri’s NLRS.

*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.*

*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 a semi-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.

**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.*

<b>Project Phase and Subtasks</b>	<b>Anticipated Timeframe</b>	<b>Description</b>
Draft RFP	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.  This task is not intended be funded using GHP funds.
Open RFP Process <ul style="list-style-type: none"> <li>● Public RFP Open</li> <li>● RFP Close</li> <li>● Evaluations</li> <li>● Award Contract</li> </ul>	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.  This task is also not intended to be funded using GHP funds.
Planning and Coordination <ul style="list-style-type: none"> <li>● 1<sup>st</sup> Planning Meeting</li> </ul>	Months 5-6	This marks the start of all subcontracted hours. All billable hours by the contractor will be funded using GHP funds.  DNR costs associated with coordinating this project are not intended to be funded using GHP funds.

<b>Project Phase and Subtasks</b>	<b>Anticipated Timeframe</b>	<b>Description</b>
Core Contract Work Period <ul style="list-style-type: none"> <li>• Regular Coordination</li> <li>• Identifying Suitable Metrics and Data Visualizations</li> <li>• Identify Data Sources</li> <li>• Collate Data/Database Connections</li> <li>• Draft Mock Dashboard</li> <li>• Draft Webpage(s)</li> <li>• Publish Live Webpage</li> </ul>	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.  DNR costs associated with coordination and oversight of the subcontractor are not intended to be funded using GHP funds.
Conclusion and Final Reporting <ul style="list-style-type: none"> <li>• Maintenance and Continuation Planning</li> <li>• Final Report Drafting</li> </ul>	Months 15-18	All billable hours by the contractor will be funded using GHP funds.  DNR costs associated with coordination and oversight of the subcontractor 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.*

The final outcome of the Dashboard project is designed to be a public facing, interactive performance and progress tracking dashboard for the Missouri NLRS and any related nutrient reduction initiatives and metrics. The Dashboard and deliverables of this project are designed to be for public use. Other state, regional, HTF, and conservation partners will have full access to this information which may be useful in their individual planning and conservation implementation efforts as well as providing easy access to Missouri nutrient data for the purpose of basin-wide progress tracking.

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. The Department intends to publicize the successful launch of the Dashboard including, but not limited to, publication in the HTF Newsletter, HTF success stories webpage, and presentations to the Missouri Clean Water Commission and Clean Water Stakeholders Forum.

**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.*

The Department will directly and regularly coordinate with the subcontractor across all phases and subtasks of this project. Team members will provide direct technical assistance to the subcontractor to provide accessibility to Department data and databases as well as the Department

website and communications team members when building the public facing webpage to host the dashboard. The Department does not anticipate any activities carries out to deliver project outcomes will require QAPPs.

**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.*

**Total Budget Summary**

	<b>Requested from EPA</b>	<b>Cost Share provided by applicant (if applicable)</b>	<b>Total</b>
Personnel	\$0	\$0	<b>\$0</b>
Fringe Benefits	\$0	\$0	<b>\$0</b>
Travel	\$0	\$0	<b>\$0</b>
Equipment	\$0	\$0	<b>\$0</b>
Supplies	\$0	\$0	<b>\$0</b>
Contractual	\$299,997	\$0	<b>\$299,997</b>
Other	\$0	\$0	<b>\$0</b>
Indirect Costs	\$0	\$0	<b>\$0</b>
<b>Total</b>	<b>\$299,997</b>	<b>\$0</b>	<b>\$299,997</b>



## Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

### Project 2 Summary Information Page

**Project Title:**

Expansion of Missouri’s Ambient Nutrient Monitoring

**Organizational Information:**

<p>Project Manager: Justin Sherwood Environmental Program Supervisor Water Protection Program Missouri Department of Natural Resources 1101 Riverside Drive Jefferson City, MO 65101 <a href="mailto:justin.sherwood@dnr.mo.gov">justin.sherwood@dnr.mo.gov</a>; 573-751-3131</p>	<p>Grant Management Contact: Samantha Horrocks Program Coordinator Water Protection Program Missouri Department of Natural Resources 101 Riverside Drive Jefferson City, MO 65101 <a href="mailto:samantha.horrocks@dnr.mo.gov">samantha.horrocks@dnr.mo.gov</a>; 573-522-9647</p>
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**Proposed Funding Request:**

FFY 2022	FFY 2023	FFY 2024	FFY 2025	FFY 2026	TOTAL
\$565,004	\$372,846	\$448,336	\$0	\$0	\$1,386,186

**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 expand the capability of a minimum of four US Geological Survey water quality monitoring stations to include continuous nitrate and flow monitors. 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 improving the quantity and quality of water quality data in the state. Improvements in water quality monitoring will improve the Department’s ability to more accurately 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 grant project to deliver the Missouri Nutrient Reduction Progress Tracking Dashboard by improving data quality and quantity.

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 Mexico 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.

**Place of Performance:**

Project outcomes will occur entirely within the confines of the Mississippi/Atchafalaya River Basin.

**Monitoring Locations:**

- Missouri River at Napoleon
- Grand River near Sumner
- Mississippi River at Keokuk
- Mississippi River at Alton

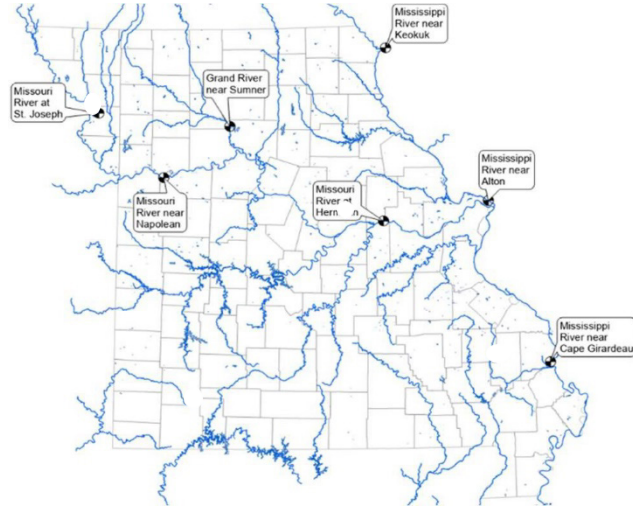
**Priority Parameters:**

**Tier One:**

- Nitrate

**Tier Two:**

- Temperature
- Dissolved Oxygen
- Turbidity
- pH



**Project Period:**

- Anticipated Project Start Date: October 1, 2022
- Anticipated Project Completion Date: September 30, 2027
- Grant Project Period: October 1, 2022 – September 30, 2027



## Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

### Project 2 Workplan

**Project Title:**

Expansion 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 (MNLRS), the Department seeks to expand the capability of four United States Geological Survey (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 (MNLRS Page 17).”

Missouri currently partners with the USGS to fund an ambient water quality monitoring program. The program currently spans 61 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 MNLRS, Missouri is proposing to add continuous nitrate and water quality monitoring at additional sites. 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 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.

**Monitoring Locations:**

- Missouri River at Napoleon
- Grand River near Sumner
- Mississippi River at Keokuk
- Mississippi River at Alton

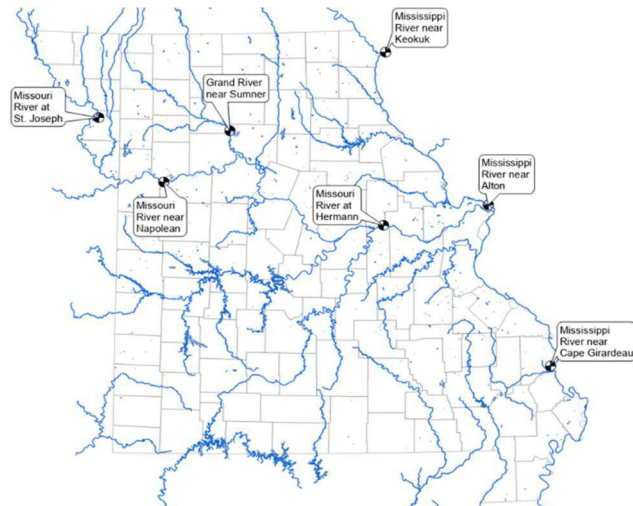
**Priority Parameters:**

**Tier One:**

- Nitrate

**Tier Two:**

- Temperature
- Dissolved Oxygen
- Turbidity
- pH



All proposed locations identified in this project for the nitrate sensors already have, or will 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 United States Geological Survey (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.

**Funding Request Schedule for GHP:**

FFY 2022	FFY 2023	FFY 2024	FFY 2025	FFY 2026	TOTAL
\$565,004	\$372,846	\$448,336	\$0	\$0	\$1,386,186

Depending on the success and actual costs of other Missouri GHP projects identified in the overall Workplan 1, the Department has provided cost estimates for two additional sites in the event that this project workplan can be amended to incorporate one or two additional sites based on available funding. The overall budget estimate, including the contingency sites, can be found below in the Total Budget Summary for Spending.

*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>*

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 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: Reduce nonpoint source nutrient pollution as articulated in state strategies.*
- Strategic Outcome 3: Prioritize and target watersheds with the greatest opportunities for nutrient reductions.*
- Strategic Outcome 4: Collaborate across state boundaries with HTF partners.*
- Strategic Outcome 5: Use state-level water quality programs and actions to better support nutrient reductions.*

Expansion of Missouri’s Ambient Nutrient Monitoring will directly reflect Strategic Outcomes 5 by providing new 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. Increases to the quantity and quality of water quality data will enable Missouri’s 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.

*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 and expansion of scope 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 goals in disadvantaged communities.*

All four primary targeted 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.

*Include the definition that the state will use to define disadvantaged communities.*

The only formal definition currently being employed by the Department, through its Financial Assistance Center, currently defines a disadvantaged community as a community that:

1. Has a population of three thousand three hundred (3,300) or less based on the most recent decennial census;
2. Has a median household income at or below seventy-five percent (75%) of the state average median household income as determined by the most recent decennial census or by an income survey overseen by a state or federal agency.

The Department utilizes the following two tools to aid in identifying disadvantaged communities pursuant to the above definition:

- <https://modnr.maps.arcgis.com/apps/dashboards/06725b83dc024823a2b5c74794f6756b>
- <https://modnr.maps.arcgis.com/apps/dashboards/489051108e0d468885157975af88854a>

*States should identify and prioritize eligible activities in their FY 22 GHP workplans that will advance EJ and climate goals. States should ensure that the development and implementation of their Nutrient Reduction Strategies and projects proposed for the GHP cooperative agreements are in compliance with the requirements of Title VI.*

As the direct recipient of the grant award, the Department will assume 100% responsibility for ensuring that all activities associated with this project are in compliance with the requirements of Title VI.

*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 new 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

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 a semi-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	<p>This phase includes the drafting and approval of the revised agreement to expand the scope of the existing agreement between MODNR and USGS to deliver the Ambient Water Quality Network.</p> <p>Costs associated with coordinating this phase are not intended to be funded using GHP funds.</p>
Planning and Coordination	Months 3-6	<p>This will consist of the initial coordination and planning between MODNR watershed monitoring staff and USGS in order to plan the purchase, installation, and onboarding of the new equipment at the identified sites.</p> <p>Department costs associated with this phase are not intended to be funded using GHP funds.</p>
Interim Reporting	Semi-Annual	<p>This will consist of the core monitoring period. Monitoring at the sites will occur pursuant to the existing Ambient Water Quality Monitoring procedures. MODNR staff will provide semi-annual progress reports pursuant to the GHP grant requirements.</p> <p>Department costs associated with this phase are not intended to be funded using GHP funds.</p>
Conclusion and Final Reporting <ul style="list-style-type: none"> <li>• Final Report Drafting</li> <li>• Continuation Planning</li> </ul>	Year 5	<p>This phase includes the aggregation of data and evaluation of performance for the entire project period from start to date and will be delivered through the final report to satisfy the requirements of the GHP grant.</p> <p>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.</p> <p>Department costs associated with this phase are not intended to be funded using GHP funds.</p>

**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.

**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 MoDNR.

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.*

Please see below for table of budget summary.

**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.

**Project 2 - Total Budget Summary of Spending**

USGS Station Number	Station Name	Data to be collected	Purpose	Cost Year 1* 10/1/2022 - 09/30/2023	Cost Year 2 10/1/2023 - 09/30/2024	Cost Year 3 10/1/2024 - 09/30/2025	Cost Year 4 10/1/2025 - 09/30/2026	Cost Year 5 10/1/2026 - 09/30/2027	Cost 5 Year Total 10/1/2022 - 09/30/2027
06818000	Missouri River at St. Joseph	Operate and maintain continuous water-quality and nitrate monitor	Captures water quality conditions above the KC metro area and the Kansas River	Currently funded	Currently funded	Currently funded	Currently funded	Currently funded	Currently funded
06894650	Missouri River at Napoleon (previously at Sibley)	Install continuous WQ and Nitrate monitor	Captures water quality conditions below the KC metro area and the Kansas River	\$79,600	--	--	--	--	\$79,600
		Operation and Maintenance of WQ Monitor		\$24,563	\$32,751	\$34,388	\$36,108	\$37,913	\$165,722
		Operation and Maintenance of Nitrate Monitor		\$13,500	\$18,000	\$18,900	\$19,845	\$20,837	\$91,082
		Ambient sampling 12 times per year		\$0	\$0	\$0	\$0	\$0	\$0
06934500	Missouri River at Hermann	Operate and maintain continuous water-quality and nitrate monitor	Captures water quality conditions below the Grand and Osage Rivers	Currently funded	Currently funded	Currently funded	Currently funded	Currently funded	Currently funded
06902000	Grand River near Sumner	Install continuous WQ and Nitrate monitor	Captures water quality conditions from the Grand River watershed	\$79,600	--	--	--	--	\$79,600
		Operation and Maintenance of WQ Monitor		\$24,563	\$32,751	\$34,388	\$36,108	\$37,913	\$165,722
		Operation and Maintenance of Nitrate Monitor		\$13,500	\$18,000	\$18,900	\$19,845	\$20,837	\$91,082
		Ambient sampling 12 times per year		\$0	\$0	\$0	\$0	\$0	\$0
07020850	Mississippi River near Cape Girardeau	Operate and maintain continuous water-quality and nitrate monitor	Captures water quality conditions near the end of Missouri	Currently funded	Currently funded	Currently funded	Currently funded	Currently funded	Currently funded
05587500	Mississippi River at Alton	Install continuous WQ and Nitrate monitor	Captures water quality conditions above the St. Louis metro area and the Missouri River	\$85,200	--	--	--	--	\$85,200
		Operation and Maintenance of WQ Monitor		\$24,563	\$32,751	\$34,388	\$36,108	\$37,913	\$165,722
		Operation and Maintenance of Nitrate Monitor		\$13,500	\$18,000	\$18,900	\$19,845	\$20,837	\$91,082
		Ambient sampling 12 times per year		\$31,480	\$33,054	\$34,707	\$36,442	\$38,264	\$173,947
05474500	Mississippi River at Keokuk	Install continuous WQ and Nitrate monitor	Captures water quality conditions above Missouri. This site already has a WQ monitor, but it will need to be upgraded for the nitrate sensor.	\$59,000	--	--	--	--	\$59,000
		Operation and Maintenance of WQ Monitor		\$0	\$0	\$0	\$0	\$0	\$0
		Operation and Maintenance of Nitrate Monitor		\$13,500	\$18,000	\$18,900	\$19,845	\$20,837	\$91,082
		Ambient sampling 12 times per year		\$0	\$0	\$0	\$0	\$0	\$0
<b>Total:</b>				\$462,569	\$203,306	\$213,471	\$224,145	\$235,352	\$1,338,843

\* Year 1 O&M costs are prorated for 9 months for anticipated supply chain associated delays, subsequent years are full 12 months. For subsequent years an anticipated 5% increase is included due to inflation or other costs increases. Yearly cooperative agreements will be drafted to get accurate costs increases each year.

If funding allows for two additional sites:									
TBD	TBD#	Install continuous WQ and Nitrate monitor	Captures water quality conditions from Missouri watershed with large nutrient contributions	\$79,600	--	--	--	--	\$79,600
		Operation and Maintenance of WQ Monitor		\$24,563	\$32,751	\$34,388	\$36,108	\$37,913	\$165,722
		Operation and Maintenance of Nitrate Monitor		\$13,500	\$18,000	\$18,900	\$19,845	\$20,837	\$91,082
		Ambient sampling 12 times per year		\$31,480	\$0	\$0	\$0	\$0	\$31,480
TBD	TBD#	Install continuous WQ and Nitrate monitor	Captures water quality conditions from Missouri watershed with large nutrient contributions	\$79,600	--	--	--	--	\$79,600
		Operation and Maintenance of WQ Monitor		\$24,563	\$32,751	\$34,388	\$36,108	\$37,913	\$165,722
		Operation and Maintenance of Nitrate Monitor		\$13,500	\$18,000	\$18,900	\$19,845	\$20,837	\$91,082
		Ambient sampling 12 times per year		\$31,480	\$0	\$0	\$0	\$0	\$31,480
<b>Total for two additional sites:</b>				\$298,286	\$101,501	\$106,576	\$111,905	\$117,500	\$735,769
<b>Grand Total:</b>				\$760,855	\$304,807	\$320,048	\$336,050	\$352,853	\$2,074,613

# Possible locations include, but are not limited to: Gasconade River, Chariton River, Cuivre River, Platte River, Lamine River, and Meramec River





## Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

### Project 3 Summary Information Page

**Project Title:**

Missouri Municipal Wastewater Nutrient Optimization Pilot

**Organizational Information:**

Project Manager:  
 Scott Adams, P.E.  
 Engineering Section  
 Water Protection Program  
 Missouri Department of Natural Resources  
 1101 Riverside Drive  
 Jefferson City, MO 65101  
[scott.adams@dnr.mo.gov](mailto:scott.adams@dnr.mo.gov); 573-751-9122

Grant Management Contact:  
 Samantha Horrocks  
 Program Coordinator  
 Water Protection Program  
 Missouri Department of Natural Resources  
 1101 Riverside Drive  
 Jefferson City, MO 65101  
[samantha.horrocks@dnr.mo.gov](mailto:samantha.horrocks@dnr.mo.gov); 573-522-9647

**Proposed Funding Request:**

FFY 2022	FFY 2023	FFY 2024	FFY 2025	FFY 2026	TOTAL
\$99,999	\$75,490	\$0	\$0	\$0	\$175,489

**Brief Project Description:**

Missouri’s Water Protection Program will conduct a pilot to implement and evaluate voluntary strategies at six participating municipal wastewater facilities to optimize operational and maintenance practices to reduce nutrient loads without requiring large capital expenses. Strategies proven or disproven for success through this pilot project will be communicated across the broader statewide and regional municipal wastewater community for voluntary uptake and implementation across the state and region.

**Environmental Results:**

This objective is designed to support Missouri’s NLRS by resulting in direct reductions to up to 6 pilot facilities and indirectly result in reductions in future years as strategies for optimization learned through this pilot study are implemented at other municipal facilities across the state.

**Place of Performance:**

The participating municipalities have not been identified yet. However, all participating facilities will be located entirely within the confines of the State of Missouri and all project outcomes will occur within the Mississippi/Atchafalaya River Basin.

**Project Period:**

Anticipated Project Start Date: October 1, 2022  
 Anticipated Project Completion Date: April 1, 2024  
 Grant Project Period: October 1, 2022 – September 30, 2027



## Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

### Project 3 Workplan

#### Project Title:

Missouri Municipal Wastewater Nutrient Optimization Pilot

#### Project Approach:

*Describe the approach and include any maps, charts, and/or figures.*

This project is designed to implement and evaluate voluntary strategies at six participating municipal wastewater facilities to optimize operational and maintenance practices to reduce nutrient loads without requiring large capital expenses. Strategies proven or disproven for success through this pilot project will be communicated across the broader municipal wastewater community for voluntary uptake and implementation across the state.

*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 Missouri Municipal Wastewater Nutrient Optimization Pilot 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 attempt to directly reduce nutrient discharges from six participating municipal wastewater systems through voluntary nutrient optimization practices. Furthermore, this pilot will result in optimization strategies that will be communicated to wastewater treatment systems across the entire state and may result in further nutrient reductions from point source loads.

*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: Reduce nonpoint source nutrient pollution as articulated in state strategies.*
- Strategic Outcome 3: Prioritize and target watersheds with the greatest opportunities for nutrient reductions.*
- Strategic Outcome 4: Collaborate across state boundaries with HTF partners.*
- Strategic Outcome 5: Use state-level water quality programs and actions to better support nutrient reductions.*

This project directly reflects Strategic Outcome 5 by further reducing nutrient loads from point sources as well as equipping Missouri's Water Protection Program with proven and recorded strategies for operational and maintenance optimization practices specifically designed to reduce nutrient loads. Direct reductions in nutrient discharges to the MARB may be seen as an immediate outcome of this project from the participating facilities. Subsequent reductions from

point source dischargers will be seen in later years following the distribution of the pilot project's final report and recommended optimization strategies.

This project will also indirectly support Strategic Outcome 2 via its support of 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.

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 point source optimization projects by technical knowledge and data sharing and final report collaboration.

This project has the potential to support Strategic Outcome 3 through the prioritization of participating partner facilities located in priority watersheds. While participation in this project is voluntary, the Department will endeavor to prioritize and recruit partner facilities that are located in priority watersheds, which include, but are not limited to, watersheds with approved 9-element watershed plans and watersheds listed on the Missouri 303(d) list of impaired waters for nutrient related impairments.

*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.

*Include proposed public meeting dates, locations, and outreach strategies.*

The Department informally announced at a public May 23, 2022, Clean Water Stakeholder Forum its intention to conduct this pilot project and is seeking volunteer municipal systems to participate in this project. Department engineers continue to conduct one on one targeted outreach to municipal systems of all sizes in an effort to recruit a diverse set of participating systems.

*Include a discussion of how state activities will advance Gulf Hypoxia Action Plan goals in disadvantaged communities.*

The Department will prioritize municipal systems that serve disadvantaged communities when selecting the final participating systems.

Include the definition that the state will use to define disadvantaged communities. The only formal definition currently being employed by the Department, through its Financial Assistance Center, currently defines a disadvantaged community as a community that:

1. Has a population of three thousand three hundred (3,300) or less based on the most recent decennial census;
2. Has a median household income at or below seventy-five percent (75%) of the state average median household income as determined by the most recent decennial census or by an income survey overseen by a state or federal agency.

The Department utilizes the following two tools to aid in identifying disadvantaged communities pursuant to the above definition:

- <https://modnr.maps.arcgis.com/apps/dashboards/06725b83dc024823a2b5c74794f6756b>
- <https://modnr.maps.arcgis.com/apps/dashboards/489051108e0d468885157975af88854a>

*States should identify and prioritize eligible activities in their FY 22 GHP workplans that will advance EJ and climate goals. States should ensure that the development and implementation of their Nutrient Reduction Strategies and projects proposed for the GHP cooperative agreements are in compliance with the requirements of Title VI.*

<https://www.epa.gov/environmentaljustice/title-vi-and-environmental-justice>

As the direct recipient of the grant award, the Department will assume 100% responsibility for ensuring that all activities associated with this project are in compliance with the requirements of Title VI.

As part of the data gathering aspects of this project, the Department will request participating facilities to record energy consumption rates with regards to facility operations and performance. The purpose will be to track any changes in energy demand as result of operational changes and optimization efforts. Any changes that result in an increase in nutrient reduction performance while maintaining or reducing the energy demand of the facility from pre-optimization levels, would also translate to reductions in carbon emissions from energy consumption. However, if optimization efforts result in an increase in energy demand at the facility, that information will be equally valuable in understanding the relationship between nutrient and climate goals.

### **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)).*

*This project directly reflects Strategic Outcome 5 by further reducing nutrient loads from point sources as well as equipping Missouri’s Water Protection Program with proven and recorded strategies for operational and maintenance optimization practices specifically designed to reduce nutrient loads.*

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 point source optimization projects by technical knowledge and data sharing and final report collaboration.

- *Describe the anticipated products/results which are expected to be achieved from accomplishment of the project.*

This project will deliver a deliver confirmation of success or failure of various optimization facilities for domestic wastewater treatment facilities of various sizes and complexities. The Department will use this information to directly assist wastewater treatment facilities with future optimization efforts far beyond the scope and timeline of this 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.*

Success of nutrient reduction practices and operational changes will be tracked through existing Discharge Monitoring Reports (DMRs) as required by each facility’s permit. Through the Missouri Clean Water Information System (MoCWIS), the Department can easily determine the effluent conditions prior to any project changes and track effluent quality through monthly reports

over the project lifespan. DMR nutrient data will be compared to determine whether or not the optimization processes implemented through the project were successful at reducing nutrient effluent loads.

Interim Reports – The Department will provide EPA with interim reports (performance and financial) on a semi-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.

**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.*

<b>Project Phase and Subtasks</b>	<b>Anticipated Timeframe</b>	<b>Description</b>
Draft RFP Finalize List of Participating Facilities if Not Completed	Month 1	This will include the drafting and internal approval process prior to the publishing of the RFP.  This task is not intended be funded using GHP funds.
Open RFP Process <ul style="list-style-type: none"> <li>• Public RFP Open</li> <li>• RFP Close</li> <li>• Evaluations</li> <li>• Award Contract</li> </ul>	Month 2-3	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.  This task is also not intended to be funded using GHP funds.
Planning and Coordination <ul style="list-style-type: none"> <li>• 1<sup>st</sup> Planning Meeting</li> </ul>	Months 4-5	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 not intended to be funded using GHP funds.

<b>Project Phase and Subtasks</b>	<b>Anticipated Timeframe</b>	<b>Description</b>
Primary Contract Work Period <ul style="list-style-type: none"> <li>• Regular Coordination</li> <li>• Initial Site Visits and Development of Optimization Strategies with Individual Facilities</li> <li>• Implementation of Chosen Practices</li> <li>• Monthly Operational Control Testing</li> <li>• Effluent Monitoring</li> </ul>	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 not intended to be funded using GHP funds.
Conclusion and Final Reporting <ul style="list-style-type: none"> <li>• Collate Data and Results</li> <li>• Publish and Disseminate Success Stories and Strategies</li> <li>• Final Report Drafting</li> </ul>	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 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.*

One outcome of this project is to publish the results of all six optimization strategies and disseminate them to all municipal wastewater stakeholders in Missouri. This will be done multiple ways. The Department will publish all results and final reports on the Department webpage and notify all relevant stakeholders via GovDelivery announcements. The Department will also share the results of this project through public presentations at the earliest available Missouri Clean Water Commission and the Missouri Clean Water Stakeholder Forum.

- *Efforts to support state, regional and basin-wide progress tracking.*

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.*

Depending on the services provided in the final approved proposal/contract, Department wastewater engineers will be available to provide technical support to subawardees and participating facilities. The Department will ensure any QAPPs submitted by subawardees meet EPA requirements by publicizing this as a contract requirement in the RFP.

**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.

**Total Budget Summary**

	<b>Requested from EPA</b>	<b>Cost Share provided by applicant (if applicable)</b>	<b>Total</b>
Personnel	\$0	\$0	<b>\$0</b>
Fringe Benefits	\$0	\$0	<b>\$0</b>
Travel	\$0	\$0	<b>\$0</b>
Equipment	\$20,250	\$0	<b>\$20,250</b>
Supplies	\$0	\$0	<b>\$0</b>
Contractual	\$0	\$0	<b>\$0</b>
Other	\$155,239	\$0	<b>\$155,239</b>
Indirect Costs	\$	\$0	<b>\$0</b>
<b>Total</b>	<b>\$175,489</b>	<b>\$0</b>	<b>\$175,489</b>



## Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

### Project 4 Summary Information Page

**Project Title:**

Gulf Hypoxia Outreach and Education Exhibit

**Organizational Information:**

Project Manager:  
Justin Sherwood  
Environmental Program Supervisor  
Water Protection Program  
Missouri Department of Natural Resources  
1101 Riverside Drive  
Jefferson City, MO 65101  
[justin.sherwood@dnr.mo.gov](mailto:justin.sherwood@dnr.mo.gov); 573-751-3131

Grant Management Contact:  
Samantha Horrocks  
Program Coordinator  
Water Protection Program  
Missouri Department of Natural Resources  
1101 Riverside Drive  
Jefferson City, MO 65101  
[samantha.horrocks@dnr.mo.gov](mailto:samantha.horrocks@dnr.mo.gov); 573-522-9647

**Proposed Funding Request:**

FFY 2022	FFY 2023	FFY 2024	FFY 2025	FFY 2026	TOTAL
\$99,999	\$99,999	\$99,999			\$299,997

**Brief Project Description:**

The Department seeks to partner with St. Louis Science Center (SLSC), a Smithsonian Institution Affiliate, to deliver a high-‘reach’ public education exhibit to raise awareness of nutrient pollution in the Mississippi River Basin, Gulf Hypoxia, and actions the public can take to help reduce their nutrient pollution footprint. This new exhibit will showcase nutrient concerns from domestic wastewater, urban stormwater, and agricultural stormwater. The agricultural stormwater section of the exhibit will be curated by SLSC’s popular and existing GROW Pavilion and Gallery. The Department will also invite point source and nonpoint source stakeholders to collaborate and so-sponsor this outreach project.

**Environmental Results:**

The overarching goal of the objective is to expand public awareness of Gulf of Mexico hypoxia and collective actions that can be taken by all individuals to assist in reducing nutrient pollution to the Mississippi River and other Missouri waters.

This project directly supports a public outreach and education objective in the Missouri Nutrient Loss Reduction Strategy.

**Place of Performance:**

This educational and outreach exhibit will be hosted at St. Louis Science Center, a Smithsonian Institution Affiliate, and member of the Association of Science-Technology Centers and the American Alliance of Museums. The SLSC is located in the bi-state St. Louis metropolitan area



but will have a reach that extends beyond the eastern-Missouri/Southern Illinois area. The location was chosen due to having a number of existing organizations that may perform this project, having the largest outreach potential in the state, and serves a symbolic purpose due to St. Louis being located at the confluence of the Missouri and Mississippi Rivers.

**Project Period:**

Anticipated Project Start Date: October 1, 2022

Anticipated Project Completion Date: September 30, 2027

Grant Project Period: October 1, 2022 – September



## Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

### Project 4 Workplan

**Project Title:**

Gulf Hypoxia Outreach and Education Exhibit

**Project Approach:**

Describe the approach and include any maps, charts, and/or figures.

The Department seeks to partner with St. Louis Science Center (SLSC), a Smithsonian Institution Affiliate, to deliver a high-‘reach’ public education exhibit to raise awareness of nutrient pollution in the Mississippi River Basin, Gulf Hypoxia, and actions the public can take to help reduce their nutrient pollution footprint. This new exhibit will showcase nutrient concerns from domestic wastewater, urban stormwater, and agricultural stormwater. The agricultural stormwater section of the exhibit will be curated by SLSC’s popular and existing GROW Pavilion and Gallery.

“When many of the nutrient reduction actions for municipal and industrial point sources outlined in this strategy have been adopted... public outreach and education will be important... the importance of nutrient reduction should be delivered in a well thought-out and understandable manner. Public outreach and education efforts should reflect a focus on properly characterizing... the sources of nutrients, the reason for concern, the types of actions being taken and the costs” (MNLRS Page 53).

*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>*

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 using a trusted scientific educational institution and platform to design and amplify public educational messaging on the issues and sources of Gulf of Mexico Hypoxia, nutrient pollution as a whole, and strategies for individuals to take to reduce their impacts on local water quality, which translates to improved water quality downstream.

*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: Reduce nonpoint source nutrient pollution as articulated in state strategies.*

*Strategic Outcome 3: Prioritize and target watersheds with the greatest opportunities for nutrient reductions.*

*Strategic Outcome 4: Collaborate across state boundaries with HTF partners.*

*Strategic Outcome 5: Use state-level water quality programs and actions to better support nutrient reductions.*

This project directly reflects Strategic Outcome 2 by sharing information with municipal residents on how they can directly reduce their nutrient discharges at the personal scale, which will have a collective impact on local municipal stormwater quality in the local MS4 and any home municipality of an audience member. This is a direct goal outlined in the Missouri NLRs and therefore advances the Gulf Hypoxia Plan. This project will also highlight the strategies for agricultural partners to reduce their nutrient pollution from agricultural nonpoint sources and drive more uptake of state and federal conservation programs.

With additional 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.

This project may also indirectly support progress under Strategic Priority 3 by providing public outreach and education to residents of a priority watershed with an approved 9-Element Watershed Plan. Both the Deer Creek Watershed (HUC # 071401010504) and Hamilton Creek Watershed (HUC # 071401021001) are in close proximity to SLSC and can be considered within its primary audience catchment. Residents of both watersheds will be part of the core audience of this public outreach and education initiative. Therefore, best practices learned through this outreach project will likely be implemented in both the Deer Creek and Hamilton watersheds and result in stormwater/MS4 related water quality improvements to both.

This project will directly increase awareness of public funded nutrient conservation programs and indirectly drive an increase in participation and uptake of urban and agricultural nutrient conservation practices across Missouri AND neighboring states.

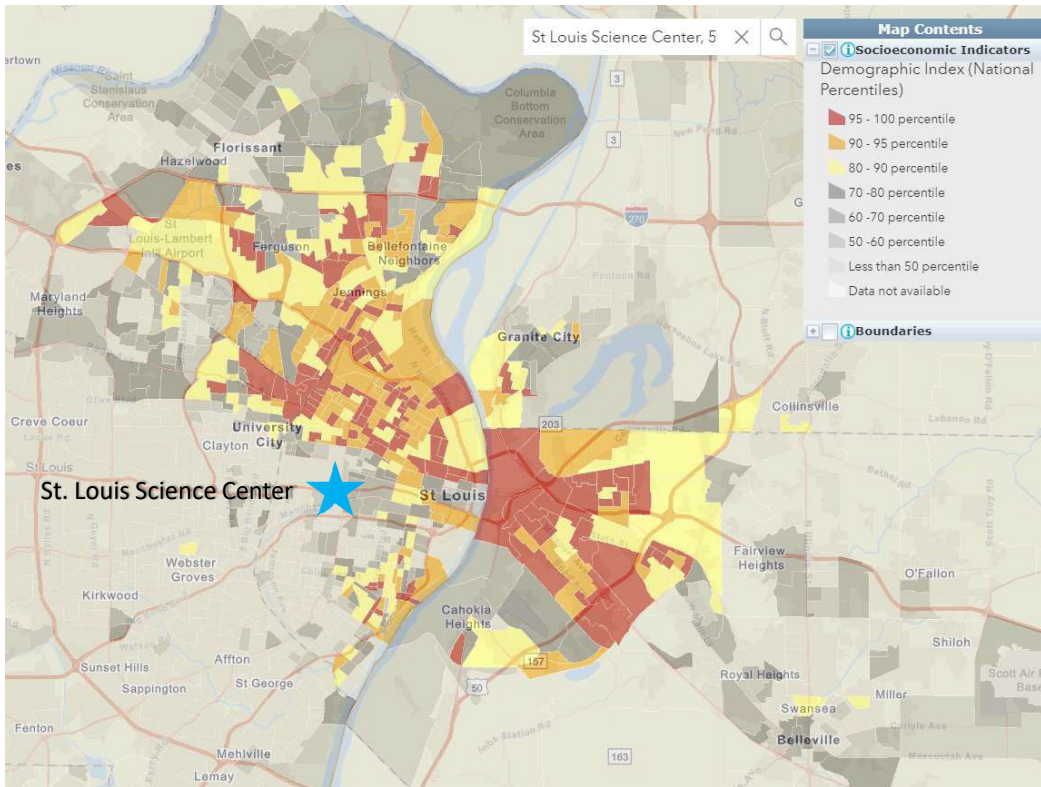
*Include information about how the state will manage and monitor subawards for successful completion of projects, and ensure subawardees comply with quality assurance, financial, and reporting requirements.*

The Department intends to subaward this project via a direct cooperative agreement to the St. Louis Science Center to design, construct, and host this exhibit and any associated activities. The cooperative agreement will be established in accordance with state procurement procedures. However, 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.

*Include a discussion of how state activities will advance Gulf Hypoxia Action Plan goals in disadvantaged communities.*

The St. Louis Science Center is one of the only free nonprofit science museums in the country, and serves more than one million people each year, making it one of the largest science centers in the U.S. and abroad.

Over one million people visited the Science Center in 2018, 63% of whom reside within the St. Louis Metropolitan area. Visitor demographics include multiple ethnicities, age ranges from infants to octogenarians, family and school groups, adult groups, and a racial/ethnic distribution that reflects that of the region.



Map generated through EJSCREEN displaying overall Demographic Index Indicators of the St. Louis Metropolitan Area.

*Include the definition that the state will use to define disadvantaged communities.*

The only formal definition currently being employed by the Department, through its Financial Assistance Center, currently defines a disadvantaged community as a community that:

1. Has a population of three thousand three hundred (3,300) or less based on the most recent decennial census;
2. Has a median household income at or below seventy-five percent (75%) of the state average median household income as determined by the most recent decennial census or by an income survey overseen by a state or federal agency.

The Department utilizes the following two tools to aid in identifying disadvantaged communities pursuant to the above definition:

- <https://modnr.maps.arcgis.com/apps/dashboards/06725b83dc024823a2b5c74794f6756b>
- <https://modnr.maps.arcgis.com/apps/dashboards/489051108e0d468885157975af88854a>

*States should identify and prioritize eligible activities in their FY 22 GHP workplans that will advance EJ and climate goals. States should ensure that the development and implementation of their Nutrient Reduction Strategies and projects proposed for the GHP cooperative agreements are in compliance with the requirements of Title VI.*

As the direct recipient of the grant award, the Department will assume 100% responsibility for ensuring that all activities associated with this project are in compliance with the requirements of Title VI.

The Department will work with St. Louis Science Center to develop and ensure at least one aspect of this exhibit/program clearly showcases and promotes the subject that conservation practices implemented in Missouri and MARB for the primary or initial purpose of nutrient pollution

mitigation do undoubtedly provide additional climate related co-benefits and/or ecosystem services. Such co-benefits of urban and agricultural conservation practices increase ecosystem and community resiliency against extreme weather events, whether they are storm or drought related. Conservation practices employed on landscapes to mitigate nutrient pollution are also great tools at increasing floodwater retention and sequestering atmospheric carbon among other things.

### **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.*

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 a semi-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.

### **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.*

<b>Project Phase and Subtasks</b>	<b>Anticipated Timeframe</b>	<b>Description</b>
Contracting Phase	Month 1-3 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. This task is not intended be funded using GHP funds.
Planning and Coordination <ul style="list-style-type: none"> <li>1<sup>st</sup> Planning Meeting</li> </ul>	Months 3-5	This will be the kickoff and onboarding strategic planning meeting(s). Department costs associated with coordinating this project are not intended to be funded using GHP funds.
Exhibit Design and Development	Months 7-16	This will consist of the in-depth design and development of all outreach and educational content. Construction of any physical exhibits will occur at the end of this phase. Department costs associated with coordinating this project are not intended to be funded using GHP funds.
Exhibit Launch and Monitoring	Months 16 +	SLSC will monitor and track social and outreach metrics in relation to the public participation and interaction with this exhibit or program as they do with all existing museum projects. Department costs associated with coordinating this project are not intended to be funded using GHP funds.
Conclusion and Final Reporting <ul style="list-style-type: none"> <li>Maintenance and Continuation Planning</li> <li>Final Report Drafting</li> </ul>	September 2027	This will include conclusion and wind-down meetings for the project, any planning on sunsetting the project or its continued life and funding options. DNR will take final outcomes data from SLSC and draft the final project report in order to close out the grant project. Department costs associated with coordinating this project 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.*

The final project deliverable is designed to be a high-traffic public education exhibit with the goal of educating museum audiences of all ages. SLSC is a free museum and attracts over 1 million visitors each year. The SLSC estimate that their individual exhibits serve an audience size of 500,000 – 600,000 individuals annually.

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.*

The Department will support subawardee (SLSC) curators in their knowledge and understanding of nutrient pollution in the state and Mississippi River Basin, its primary sources, and strategies for addressing hypoxia in the Gulf of Mexico as the curators design and deliver this public education exhibit. SLSC curators will be relied upon to serve as the scientific education and communication experts in the exhibit design and methods for communicating this complex scientific issue to a public audience.

**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.*

**Total Budget Summary**

	<b>Requested from EPA</b>	<b>Cost Share provided by applicant (if applicable)</b>	<b>Total</b>
Personnel	\$0	\$0	<b>\$0</b>
Fringe Benefits	\$0	\$0	<b>\$0</b>
Travel	\$0	\$0	<b>\$0</b>
Equipment	\$0	\$0	<b>\$0</b>
Supplies	\$0	\$0	<b>\$0</b>
Contractual	\$0	\$0	<b>\$0</b>
Other	\$299,997	\$0	<b>\$299,997</b>
Indirect Costs	\$0	\$0	<b>\$0</b>
<b>Total</b>	\$299,997	\$0	<b>\$299,997</b>



## Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

### Project 5 Summary Information Page

**Project Title:**

Lincoln U. MO Subsurface Nutrient Transport Measurement

**Organizational Information:**

Project Manager:  
 Jake Wilson  
 Environmental Manager  
 Soil & Water Conservation Program  
 Missouri Department of Natural Resources  
 1101 Riverside Drive  
 Jefferson City, MO 65101  
[jake.wilson@dnr.mo.gov](mailto:jake.wilson@dnr.mo.gov); 573-522-8281

Grant Management Contact:  
 Samantha Horrocks  
 Program Coordinator  
 Water Protection Program  
 Missouri Department of Natural Resources  
 1101 Riverside Drive  
 Jefferson City, MO 65101  
[samantha.horrocks@dnr.mo.gov](mailto:samantha.horrocks@dnr.mo.gov); 573-522-9647

**Proposed Funding Request:**

FFY 2022	FFY 2023	FFY 2024	FFY 2025	FFY 2026	TOTAL
\$99,999	\$99,999	\$99,999	0	0	\$299,997

**Brief Project Description:**

Piezometers will be used to trace sources of water to characterize hydrologic flow paths and better understand nonpoint source nutrient transport mechanisms. This data will be used to inform and refine a proprietary nutrient reduction estimation model, which will then be run simultaneously with soil and water assessment tool to further refine Nutrient loss reduction estimates for common best management practices. Results from this monitoring and modeling will also be incorporated into watershed stewardship workshops designed to help beginning, limited resource, minority, and underserved farmers learn about nutrient loss reduction best management practices.

**Environmental Results:**

Better understanding of hydrologic flow paths and more refined nutrient tracking models will result in better targeting management practices to specific land use situations. Over time, this will result in more accelerated nutrient loss reductions.

**Place of Performance:**

Monitoring and modeling will take place within the Lower Missouri-Moreau basin. In addition to instrumentation for this project, there are already continuous water quality monitoring stations at both the headwaters and outlet of this watershed and a network of climate sensors on the same farm. Workshops and other educational/outreach events will open to farmers from all over Missouri and data will be publicly available.

**Project Period:**

Anticipated Project Start Date: October 1, 2022  
 Anticipated Project Completion Date: August 1, 2025  
 Grant Project Period: October 1, 2022 – September 30, 2027





## Noncompetitive Assistance Agreements to Hypoxia Task Force States under the Bipartisan Infrastructure Law: Gulf Hypoxia Program

### Project 5 Workplan

#### Project Title:

Lincoln U. MO Subsurface Nutrient Transport Measurement

#### Project Approach:

*Describe the approach and include any maps, charts, and/or figures.*

The Department's Soil and Water Conservation Program (SWCP) will partner with Lincoln University (LU), one of Missouri's land grant universities, to perform a study aimed at further refining nutrient loss reduction estimates for common agricultural best management practices (BMPs). Piezometers will be used to trace sources of water to characterize hydrologic flow paths and better understand NPS nutrient transport mechanisms. This data will be used to inform and refine a proprietary nutrient reduction estimation model, which will then be run **simultaneously** with soil and water assessment tool (SWAT) to further refine Nutrient loss reduction estimates for common BMPs. Results from this monitoring and modeling will also be incorporated into watershed stewardship workshops designed to help beginning, limited resource, minority, and underserved farmers learn about nutrient loss reduction best management practices.

*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>*

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 empower the state-level water quality programs to more effectively plan and target nutrient reduction initiatives, and more efficiently use public funds when implementing actions under the Missouri Nutrient Loss Reduction Strategy (NLRs)

*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: Reduce nonpoint source nutrient pollution as articulated in state strategies.*

*Strategic Outcome 3: Prioritize and target watersheds with the greatest opportunities for nutrient reductions.*

*Strategic Outcome 4: Collaborate across state boundaries with HTF partners.*

*Strategic Outcome 5: Use state-level water quality programs and actions to better support nutrient reductions.*

This project reflects Strategic Outcome 5 by building and sharing on the knowledge of the rates of nutrient reduction effectiveness of agricultural BMPs implemented through state cost-share programs in Missouri.

This project indirectly supports Strategic Outcome 2, through its support of 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.

By providing the state conservation programs and statewide soil and water conservation districts (two of the primary drivers in the implementation of agricultural conservation practices) with clearer evidence of the effectiveness of the conservation practice types studied under this project, it will drive an increase in uptake and implementation of the practice types that result in greater nutrient reductions at more efficient cost rates.

*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's SWCP will provide oversight of this project and subawardee to ensure that the contract is being completed in accordance with the schedule. The Department will conduct regular coordination and progress update meetings throughout the lifetime of the project.

Quality assurance practices will be implemented by the subawardee to maintain accuracy of water quality data similar to methods used by Lerch et al. 2015. Duplicates, standards, and blank analyses will be run. Duplicates outside an acceptable threshold of 20% error will be re-run. Samples that do not duplicate within the acceptable threshold will be flagged for review and the most precise pair will be averaged and logged. Chemical standards of known concentrations will be used to assess accuracy of chemical analyses. When blank concentrations exceed the zero standard used for calibration, results from blanks will be subtracted from sample chemical concentrations. Additionally, "trip blank" will be placed in a water sample cooler to assess for contamination in transit.

A non-parametric statistical approach will be used to test for significant differences in groundwater flow, temperature, and biogeochemistry given that hydrologic data are commonly not normally distributed. Kruskal-Wallis and Dunn's post-hoc multiple comparison tests will be used to test for significant differences (CI=95%,  $p < 0.05$ ) in median observed groundwater flow regimes, temperature, and biogeochemical species between sites (Lerch et al. 2015).

*Include proposed public meeting dates, locations, and outreach strategies.*

The Department's SWCP will participate in several Watershed Stewardship Workshops that will be organized by LU faculty. These workshops will leverage existing LU extension client contacts with small, underserved, minority, and socially disadvantaged landowners to deliver information about soil and water conservation best management practices. These workshops will incorporate information learned through the proposed research and model refinement.

*Include a discussion of how state activities will advance Gulf Hypoxia Action Plan goals in disadvantaged communities.*

This project will result in better understanding and quantification of nutrient loss reductions that are generated through common soil and water conservation BMPs. This will benefit all Missourians and all communities down stream.

*Include the definition that the state will use to define disadvantaged communities.*

The only formal definition currently being employed by the Department, through its Financial Assistance Center, currently defines a disadvantaged community as a community that:

1. Has a population of three thousand three hundred (3,300) or less based on the most recent decennial census;
2. Has a median household income at or below seventy-five percent (75%) of the state average median household income as determined by the most recent decennial census or by an income survey overseen by a state or federal agency.

The Department utilizes the following two tools to aid in identifying disadvantaged communities pursuant to the above definition:

- <https://modnr.maps.arcgis.com/apps/dashboards/06725b83dc024823a2b5c74794f6756b>
- <https://modnr.maps.arcgis.com/apps/dashboards/489051108e0d468885157975af88854a>

*States should identify and prioritize eligible activities in their FY 22 GHP workplans that will advance EJ and climate goals. States should ensure that the development and implementation of their Nutrient Reduction Strategies and projects proposed for the GHP cooperative agreements are in compliance with the requirements of Title VI.*

<https://www.epa.gov/environmentaljustice/title-vi-and-environmental-justice>

As the direct recipient of the grant award, the Department will assume 100% responsibility for ensuring that all activities associated with this project are in compliance with the requirements of Title VI.

### **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)).*

This project reflects Strategic Outcome 5 by conducting discrete monitoring of a select number of agricultural BMPs in order to determine their explicit effectiveness in relation to Missouri specific conditions. This project also supports Strategic Outcome 5 by building and sharing on the knowledge of the rates of nutrient reduction effectiveness of agricultural BMPs implemented through state cost-share programs in Missouri.

- *Describe the anticipated products/results which are expected to be achieved from accomplishment of the project.*

Advanced surface and subsurface water flow monitoring will be incorporated into existing nutrient loss reduction models. This will allow conservation professionals and landowners to better choose the appropriate BMPs for a given property which will result in more efficient use of public and private dollars and larger nutrient loss reductions from the fields they manage. In addition, many current farmers/landowners will be educated about these results and the applicability on their farms.

- *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.*

One of the main objectives of this subaward is to refine existing models that will then be used to better track nutrient reductions that result from the thousands of BMPs that are implemented across the state each year.

Interim Reports – The Department will provide EPA with interim reports (performance and financial) on a semi-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.*

Tasks	2022 - 2023				2023 - 2024				2024 - 2025			
	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer
Instrumentation	X	X	X									
Data Collection			X	X	X	X	X	X	X	X		
Data Analysis				X	X	X	X	X	X	X	X	
Modeling		X	X	X						X	X	
Workshop					X	X	X		X	X	X	
BMP demo								X				X
Publication										X		X
Presentation									X	X	X	

**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.*

Accomplishments will be broadly (locally, regionally, nationally, and internationally) disseminated throughout the scientific community, students, and the target audience of LU and other 1890 institutions. Lincoln University is committed to improve communication amongst stakeholders (LU Strategic Goal #5, Objective #1), and thus, results will be disseminated via a fact sheet, a guide sheet, and a newsletter during the study. Posters and/or oral presentations will be presented locally at an LU seminar, regionally at Missouri Natural Resources Conference (MNRC) held during February, a national event at Association of 1890 Research Directors (ARD) Annual Conference held during March, and an international event at American Geophysical Union (AGU) Fall Meeting held during December. Additionally, at minimum of two articles will be written and submitted to peer-review journals for publication during the study.

After publication, data and key findings will be made publically available on a website with a citable DOI.

## **Stakeholder Participation**

### **Collaborative Adaptive Management**

A collaborative adaptive management (CAM) team will be assembled including members from Missouri Department of Natural Resources, Missouri Department of Conservation, Soil and Water Conservation Districts, Lincoln University of Missouri, University of Missouri, and most importantly stakeholders. A CAM team will meet monthly to discuss science and management efforts with stakeholders. Meetings will either be held on Zoom or in person on Lincoln University campus. Thus, this proposed project will promote partnership and collaborative efforts to promote stakeholder participation to control NPS nutrient pollution in the Midwest US.

### **Watershed Stewardship Workshop for Disadvantaged Farmers:**

A watershed stewardship workshop will be developed to help inform stakeholders and disadvantaged farmers of BMP planning and implementation. Lincoln University of Missouri has an outreach program named Innovative Small Farmer's Outreach Program (ISFOP). Lincoln's ISFOP was created to help small farmers and ranchers of Missouri, especially those who are socially disadvantaged and underserved, to raise the level of efficiency on their farms while taking good care of the soil, water, and the environment. Currently, ISFOP includes a network of over 256 small farms across 20 counties in Missouri (Figure 3). Demographics associated with the 256 families directly contacted by ISFOP included racial minorities (n = 56), female sole proprietors (n = 75), U.S. military veterans (n = 15), physically disabled (n = 9), and Amish/Mennonite (n = 6) during 2016. In the currently proposed work, invitations will be sent through ISFOP to directly contact and invite disadvantaged farmers to participate in watershed stewardship workshops. Attendees that attend five (5) training sessions and implement a desired BMP to control NPS nutrient pollution will receive a watershed stewardship certification. Attendees will be granted monetary incentive (\$2,000) to attend watershed stewardship workshop and implement a desired BMP. Each year, attendees will be invited to BMP demonstrations at Busby Farm. Watershed stewards will be guided through BMP processes including (but not limited to) planning, implementation, monitoring, and reevaluating/adapting to help ensure stakeholder success. Attendees will be informed of MDNR cost share program to promote BMP's including (but not limited to) cattle exclusion fencing, riparian buffers, nutrient management strategies, and cover cropping.

### **HTF Coordination:**

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.*

SWCP team members will serve as members of the collaborative adaptive management team. Team members will also independently verify modeling results and give LU access to our robust BMP data for the state of Missouri.

### **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.

**Total Budget Summary**

	<b>Requested from EPA</b>	<b>Cost Share provided by applicant (if applicable)</b>	<b>Total</b>
Personnel	\$0	\$0	<b>\$0</b>
Fringe Benefits	\$0	\$0	<b>\$0</b>
Travel	\$0	\$0	<b>\$0</b>
Equipment	\$0	\$0	<b>\$0</b>
Supplies	\$0	\$0	<b>\$0</b>
Contractual	\$0	\$0	<b>\$0</b>
Other	\$299,997	\$0	<b>\$299,997</b>
Indirect Costs	\$0	\$0	<b>\$0</b>
<b>Total</b>	\$299,997	\$0	<b>\$299,997</b>

## Ohio Gulf Hypoxia Program Project Workplan

**Project Title:** Ohio Gulf Hypoxia Project 2022

**Organization Information:** Ohio Environmental Protection Agency, Division of Surface Water

Contact Name: John Mathews  
Address: 50W. Town St., Suite 700  
P.O. Box 1049  
Columbus, OH 43216-1049  
Phone: 614-265-6685  
e-mail: [john.mathews@epa.ohio.gov](mailto:john.mathews@epa.ohio.gov)

**Proposed Funding Request:** Federal Request - \$1,713,333  
Applicant Contribution - \$0

### Project Description:

This multi-component project consists of:

- Increasing training and technical staff available for planning and designing management and structural practices that reduce agricultural nutrient loading;
- Assessing home septic treatment systems maintenance and disposal of septage
- Increase watershed-based planning to develop implementation projects;
- Updating Ohio's Nutrient Reduction Strategy;
- Measuring effectiveness of cascading waterways and/or other innovative practices so that they may be utilized in concert with USDA efforts;
- Increasing staff assigned to Ohio River Basin implementation strategies and evaluation of nutrient reduction strategy; and
- Maintaining and continuing water quality monitoring at three newly established monitoring network gages in the Ohio River Basin.

### Environmental Results:

Each of the eight (8) project objectives are expected to decrease nutrient delivery in the Ohio River Basin, although indirectly. These programmatic support changes are not specific implementation practices that have measurable pollution load reductions. Therefore, no pollution load reduction is given. Outputs and products are provided with each proposed project objective described individually.

Ohio utilizes water quality monitoring at gage stations along with monitoring wastewater treatment systems and environmental assessments on particular watersheds (supporting the states Integrated Water Quality Report) to qualitatively and quantitatively measure and track environmental results. Nutrient Loads are reported in Ohio's Mass Balance Report. Specific projects such as the HSTS/Septage project will be evaluated for the ability to monitor local reductions, while programmatic projects or changes will be monitored using the measures given above with each numbered item.

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 HSTS or Septage 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.

**Place of Performance:** Reynoldsburg, Ohio and Athens, Ohio

**Project Period:** October 1, 2022 through September 30, 2024

## **Proposed Work:**

### **1. Update Ohio's Nutrient Reduction Strategy – (Subgrant to an Ohio university, governmental or nonprofit entity) \$200,000**

Ohio's Nutrient Reduction Strategy (ONRS) has not been updated since 2016 and is without the informing of what has occurred since then or from actions, research or technical assistance in Northwest Ohio in the Western Lake Erie Basin or in other portions of Ohio. The loss of the City of Toledo's water system for four days focused action towards the Western Lake Erie Basin and the pressing needs there, but similar needs exist in inland lakes, the Ohio River, upstream contributing streams and downstream in the Mississippi River and Gulf of Mexico. Therefore, this objective is to update the ONRS with relevant strategies that can be evaluated and measures and progress that can be tracked. An important need in this update is to establish average load over the 1980–1996 against which nutrients reductions are to be measured with confidence for far-field goal calculations. All of this work is planned to be accomplished through a subgrant to an Ohio university or governmental or nonprofit entity and will be assisted by the staff member that Ohio EPA describes in objective 4.

The ONRS will allow learning from other state's successful strategic actions and help to build a process for verifying progress. This progress can document successful lowering of loads, restoration of beneficial uses and examine opportunities to tie the strategy to Ohio's biennial Mass Balance Report. Lastly tracking will be focused on following up on goals and adaptively managing programmatic efforts of the state agencies and other partners.

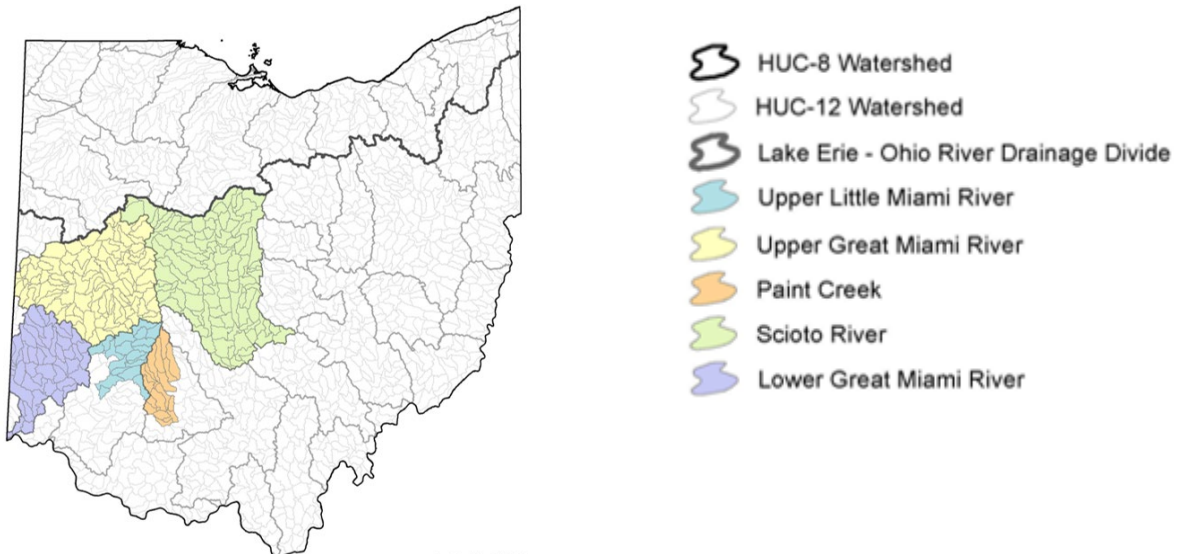
#### **Measures of Progress:**

- Selection of subgrantee.
- Review of existing ONRS and other relevant Ohio materials.
- Review of accomplished, in-progress and uninitiated objectives.
- Suggested additions or adjustments based on research, other state experience.
- Suggested means of regular evaluation and update.
- Final draft of ONRS.



## 2. Increase Nutrient Management Technical Assistance – (Subgrant to ODA) \$250,000 (2 years)

The Department of Agriculture will be adding a fulltime **Nutrient Management Specialist** that will be providing 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 be on priority agricultural watershed areas shown in the following map, although some subwatersheds 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 consider as H2Ohio spreads to Ohio River Basin watersheds.



This position is planned to be posted and filled in summer of 2023 (therefore, the budget includes 1.7 FTEs, .7 for the first year and 1 for the second year). And after orientation will begin setting up educational trainings and workshops focused on developing nutrient management plans that guide fertilizer and manure application according to soil test data, agronomic needs and NRCS 590 standards.

### Measures of Progress:

- Posting and hiring of Nutrient Management Specialist.
- 4 Training/workshops developed and provided annually.
- 45 SWCD/other Consultations regarding nutrient management or NMPs.
- Develop 30 Nutrient Management Plan Reviews.

## 3. Increase Conservation Practice Design Technical Assistance (Subgrant to ODA) \$300,000 (2 years)

The Department of Agriculture will also be adding a fulltime **Conservation Engineer** that will be providing 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 will support implementation of practices, training or other activities that help to implement Ohio's nutrient reduction goals. This initiative will 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 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 climate change by offering increased storage of larger, more frequent storm events.

The position will also focus 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:

- Posting and hiring of Conservation Engineer.
- Provide evaluation of 4 ditches under maintenance for self-formed or 2-stage channel restoration.
- Support inventory and evaluation of 20 SWCD/other Consultations regarding nutrient reduction practices.
- Develop nutrient reduction practice plan reviews and approvals.

**4. Increase Ohio EPA Staff Support for Nutrient Reduction Activities and Evaluation to Support HTF Goals.**

Ohio EPA will add 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 will assist in updating the Ohio Nutrient Reduction Strategy and help to develop evaluation measures in coordination with the subgrantee of Objective 1. Additionally, they will evaluate potential point and nonpoint measures that should be added to the ONRS and assist with regular evaluation of ONRS progress. This position will evaluate areas where communities need extra outreach, information, or accommodation to increase access or involvement of disadvantaged communities. They will work closely with monitoring, assessment and TMDL staff to keep the ONRS focuses on areas and issues of greatest importance. They will also support development of nonpoint source implementation strategies that include Gulf Hypoxia far-field targets.

Measures of Progress

- Post and hire environmental specialist to support Ohio River Basin nutrient reduction.
- Monthly coordination meetings with ONRS update subgrantee.
- Hold stakeholder meeting regarding ONRS update recommendations.
- Assist in finalizing ONRS.
- Set up future annual evaluation of ONRS and Hypoxia Task Force objectives.
- Schedule future four or five-year update of ONRS.
- Support development of new HUC 9-Element NPSIS in objective 5.
- Monitor progress of Gulf Hypoxia Program subgrants
- Collaborate with Land Grant Universities and subbasin organizations to produce similar monitoring and reports of progress

**5. Support Development of Additional HUC12 Nonpoint Source Implementation Strategies (NPSIS) Subgrants \$119,333**

This objective will provide subgrants for development of HUC12 Nonpoint Source Implementation Strategies (NPSIS) that utilize the Agricultural Conservation Planning Framework (ACPF) to conceptualize potential nutrient reducing practices and/or reduce peak nutrient in spring flows through drainage water management, sediment reduction, water retention or reuse. These NPSIS shall conform to 9-Element criteria and contain far-field targets against which NPSIS projects can be tracked. This objective will support 12 to 17 new NPSIS. The benefit of these are the critical stakeholder process of

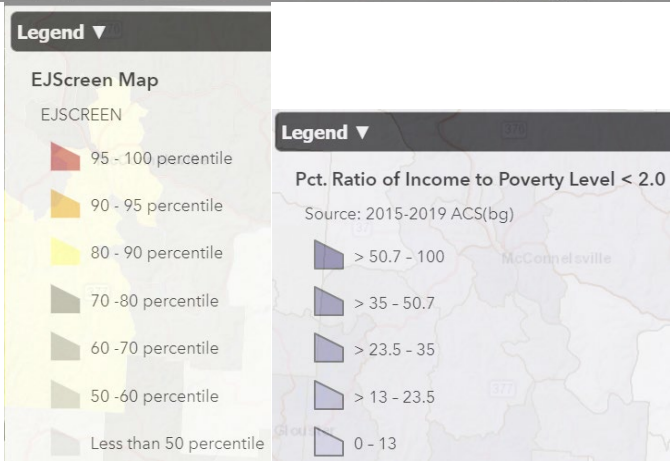
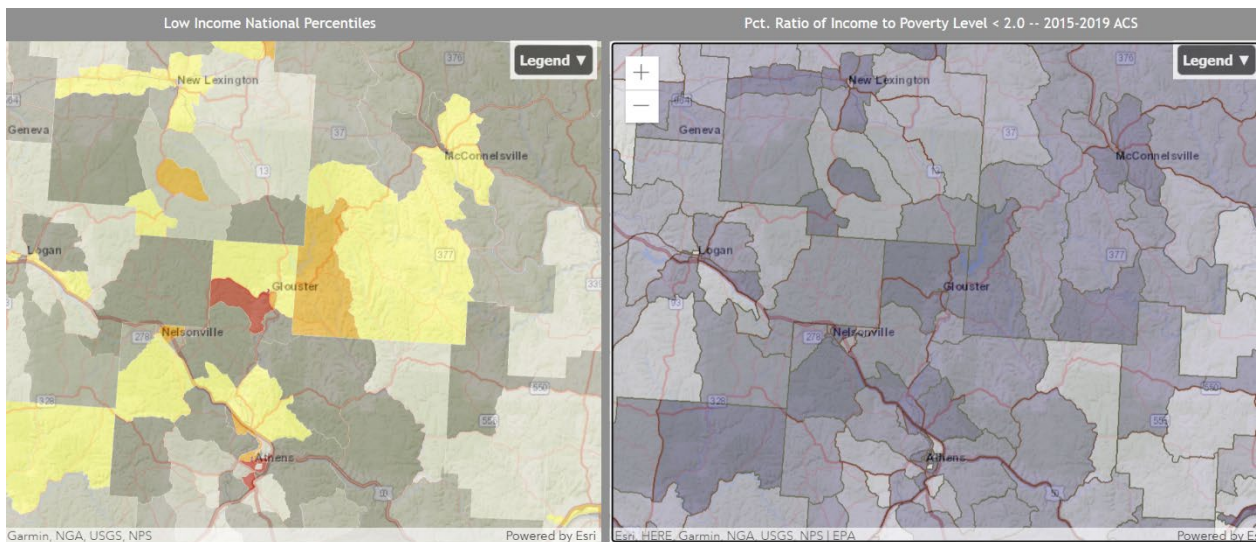
developing projects that reduce impairment, address the critical issues of the small watershed and contain ready-to-implement projects many of which are eligible for funding nonpoint source programmatic funding. Efforts will be made to include outreach to communities showing measures of disadvantage according to EJscreen.

#### Measures of Progress

- 2022 Request for Proposals for 9-Element NPSIS development (\$78,000)
- Information/consultations regarding 9-Element NPSIS development and benefits
- 3 Meetings to support plan sponsors
- Collect resulting projects in spreadsheet or database for potential funding opportunities
- 2023 Request for Proposals for 9-Element NPSIS development (\$41,333)
- Information/consultations regarding 9-Element NPSIS development and benefits
- 3 Meetings to support plan sponsors
- Collect resulting projects in spreadsheet or database for potential funding opportunities

**6. Develop a program that reduces nutrients from Home Septic Treatment Systems (HSTS) or Septage from disadvantaged communities in Southeast or Southern Ohio (Subgrant) \$200,000**

While discharges from failing systems is not Ohio's main source of nutrients, it is a significant source especially where poor installation, undersized leach fields, limited soil areas, poor maintenance and limited income to perform maintenance reduce treatment capability. This objective will address this source by evaluating maintenance of HSTS and access to affordable local septic cleanout. Although land application is allowed and Ohio Administrative Code application to the agronomic need of the vegetation over-application has been a problem. This may be due to the great distance that haulers must go for a wastewater treatment plant that will receive septage. After evaluation, this project will evaluate whether more local access can be provided to increase affordability and reduce land application and over application. Other methods of treatment for septage may be considered such as waste to isolated nutrients for the production of fertilizer products. Additionally, use of Clean Water State Revolving Funds may be sought based upon need for HSTS repair or better maintenance solutions. The figure below shows the low-income national percentiles for portions of 4 Counties around Athens Ohio as well as the percent of income to poverty level from the U.S. EPA mapping application, EJScreen. This project will select a study area in Southeast Ohio near Athens Ohio based upon predicted HSTS need and income levels.



#### Measures of Progress

- **Request for Proposal**
- Selection of target watershed(s)
- Assessment of Evaluation of HSTS/Septage Management in target watershed and greater area
- Proposed development program to increase beneficial maintenance and/or beneficial septage disposal that will increase access and affordability of HSTS maintenance
- Quarterly fiscal reports and biannual reports
- Initial, biannual meetings to discuss progress
- Final Report including social indicators of success

#### **7. Measure the Effectiveness of New Innovative Practices (Subgrant) \$140,000 (2 years)**

This project will evaluate the effectiveness of cascading waterways and/or other innovative nutrient reducing practices. The first cascading waterway was built in Maryland and less than five have been built in Ohio, but without monitoring to show effectiveness. Using aspects of NRCS conservation practice standards, the waterway is built with wetland or retention pools within the waterway. This project will pay for monitoring of this practice to establish whether it is a suitable candidate for an interim and eventually established NRCS standard practice

#### Measures of Progress

- **Request for Proposal**
- Selection of sites
- Installation of monitoring equipment
- First year report of collected data
- Second year report of collected data
- Quarterly fiscal reports and biannual reports
- Final Report

#### **8. Support the continued maintenance of USGS gage water quality monitoring at three monitoring points in the Ohio River Basin. (Subgrant to USGS) \$220,000**

Ohio recently established water quality monitoring at three USGS gages on the Hocking River, the East Fork of the Little Miami and the Little Miami at Milford. This project proposes to begin funding the maintenance of these gages in order to continue to collect water quality data (specifically nutrient load, concentrations and flow) indefinitely. Water quality parameters include: Nitrogen-Ammonia, Total Kjeldahl Nitrogen (TKN), Dissolved Reactive phosphorus, Total Phosphorus, Suspended Solids, and Calculated Load (using flow data).

Results from this gage monitoring is utilized in the biennial Ohio's Mass Balance Report. This is the main means of measuring and communicating nutrient loads on the larger watersheds in Ohio and is critical to monitoring and communicating progress towards Gulf Hypoxia Task Force Goals. This is high quality data that is continuously monitored for flow and sampled at frequent intervals by USGS.

#### Measures of Progress

- Agreement with USGS
- First year report of collected data
- Quarterly fiscal reports and biannual reports

**Compatibility with Ohio Nutrient Reduction Strategy (2013):**

<b>Gulf Hypoxia Program Activity</b>	<b>Nutrient Reduction Strategy Reference</b>
1. Update Ohio's Nutrient Reduction Strategy	Acknowledgement that Ohio's Nutrient Reduction Strategy needs an update/rewrite. As such, many items below will be covered in more succinct way in update strategy.
2. Increase Nutrient Management Technical Assistance	Chapter 1: Resource professionals agree that nutrient enriched waters have reached a critical stage and that immediate actions must be taken to reduce the amount of nutrients reaching our waterways. Ohioans will need to use innovation and initiative to solve these problems and protect Ohio's water.
3. Increase Conservation Design Technical Assistance	Same as above
4. Increase OEPA staff support for Nutrient Reduction Activities	Same as above
5. Support for new 9-Element Nonpoint Source Implementation Strategies	<p>Section 4; Watershed priorities. Table 1 Priority Watersheds:</p> <p>Great Miami River (GMR) 05080001 05080002 Upper GMR Lower GMR:            -Contributes significant nutrient loading from both agricultural land use and urban nonpoint and point sources; achieving load reductions would help reach Gulf hypoxia goals.</p> <p>Scioto River 05060001 05060002 05060003 Upper Scioto Lower Scioto Paint            -Contributes significant nutrient loading from both agricultural land use and urban nonpoint and point sources; achieving load reductions would help reach Gulf hypoxia goals.</p> <p>Wabash River 05120101 Upper Wabash            -Agricultural NPS nutrient loading impacting Grand Lake St. Marys; declared a distressed watershed under state regulations (ORC: 1501:15-5-20 D</p>
6. Home Sewage program-disadvantaged communities	New section will need added to account for specific on this proposed program.
7. Measure Effectiveness of New Practices	New section will need to be added to account for this program objective.
8. Support the continued maintenance of USGS gage water quality monitoring at three monitoring points in the Ohio River Basin.	New section needed to account for this gauging station support item.
Ohio Nutrient Reduction Strategy: <a href="https://epa.ohio.gov/static/Portals/35/wqs/ONRS_final_jun13.pdf">https://epa.ohio.gov/static/Portals/35/wqs/ONRS_final_jun13.pdf</a> (June 2013)	

## Issues for Proposal

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:

- Increasing training and technical staff available for planning and designing both management and structural practices that reduce nutrients from agricultural fields;
- Assessing home septic treatment systems (HSTS) maintenance and disposal of septage in order to reduce field application and cost of regular septic system maintenance);
- Increase HUC12 watershed-based planning to develop implementation projects making progress toward far-field nutrient targets;
- Updating Ohio's Nutrient Reduction Strategy (ONRS)
- Measuring effectiveness of cascading waterways and/or other innovative practices so that they may be utilized in standard NRCS practices;
- Increasing staff assigned to Ohio River Basin implementation strategies and evaluation of nutrient reduction strategy
- And maintaining and continuing water quality monitoring at three newly established monitoring network gages in the Ohio River Basin.

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. Four 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 subawardees comply with quality assurance, financial, and reporting requirements.

This proposal does require that outreach and stakeholder and coordination meeting and trainings occur, but they will not be scheduled until after October 2022.

**How will this proposal target and define disadvantaged communities?** Project six above specifically targets low income and disadvantaged communities that have septic and septage disposal problems in Southeast Ohio. This project should increase availability and affordability of maintenance on septic systems in that location. Additionally, the Ohio EPA staff will be examining ways of increasing access to nutrient reduction programs and nonpoint source pollution control grants to disadvantaged communities especially in target watersheds. Some watersheds may be selected because of the environmental justice status of the community and nonpoint source implementation strategies developed for their watershed, thus preparing projects for potential federal Section 319 funding. Ohio will use a definition of disadvantaged communities that is those communities with median household incomes less than the statewide median household income and communities with a poverty rate greater than a statewide poverty rate. Other factors such as access to clean water, proximity to public health risks such as wastewater discharges, unemployment, population growth, age distribution of population, and other socio-economic factors may be used.

## **Prioritization of Eligible Activities to advance EJ and climate goals:**

Ohio has included priority actions on items to advance climate change goals of increasing services and resilience of these channels given larger and more frequent storm events. Regarding environmental justice, Ohio EPA staff will be examining nonpoint source programming and looking for opportunities to increase access to subgrant opportunities and watershed-based planning that are a prerequisite for federal funding. Ohio will make assurances that the projects contained in this proposal are and will be in compliance with the requirements of Title VI.

In increasing Ohio EPA staff focused on the ONRS and Ohio River Basin nutrient issues, time and resources are being provided for any necessary Quality Management Plan (QMP) or Quality Assurance Project Plan (QAPP) and reporting progress and sharing project information.

**Environmental Compliance:**

Ohio EPA is not using this funding request to complete WQ monitoring activities directly. While no WQ monitoring activities will be completed with grant funds, Ohio EPA meets Appendix 3 WQ guidance with all WQ monitoring activities; according to OEPA'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 decrease nutrients to the Ohio River indirectly through these programmatic support changes and through the applied projects, but these are not specific practices that have measurable pollution load reductions yet, therefore no pollution load decrease is given. Outputs and products have been provided with each proposal project.

Ohio utilizes water quality monitoring at gage stations along with monitoring wastewater treatment systems and environmental assessments on particular watersheds (supporting the states Integrated Water Quality Report) to qualitatively and quantitatively measure and track environmental results. Nutrient Loads are reported in Ohio's Mass Balance Report. Specific projects such as the HSTS/Septage project will be evaluated for the ability to monitor local reductions, while programmatic projects or changes will be monitored using the measures given above with each numbered item.

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 HSTS or Septage 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					
	4 <sup>th</sup> Qtr	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	1 <sup>st</sup> Qtr	2 <sup>nd</sup> Qtr	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr		
<b>6 Nutrients from HSTS or Septage Project</b>																							
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											
<b>7 Effectiveness of New Innovative Practices</b>																							
Request for Proposals	X																						
Install Equipment						X																	
1 <sup>st</sup> year report of monitoring										X													
2nd year report of monitoring														X									
Final Report															X								
Subgrant Closed																X							
<b>8 USGS gage water quality monitoring</b>																							
Subgrant Agreement			X																				
1 <sup>st</sup> year report of monitoring								X															
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				

## **Bipartisan Infrastructure Law: Gulf Hypoxia Program State of Tennessee Work plan FY 22 and FY 23**

### **Background**

In 2015 Tennessee developed the Tennessee Nutrient Reduction Framework as part of our efforts to accomplish long-term nutrient reduction in our water resources. Tennessee Department of Environment and Conservation (TDEC) and Tennessee Department of Agriculture (TDA) partnered together to draft the nutrient reduction framework to guide permitting and voluntary non-point source coordination. In 2019, TDEC and TDA convened a multi-disciplinary stakeholder group, The Tennessee Nutrient Strategy Taskforce (Tennessee Taskforce), drawing from state and local government, wastewater treatment plant operators, consulting engineers, academia and non-governmental organizations to represent the following sectors: point sources, agriculture, urban stormwater, municipalities, industry, commerce, and transportation. More than 50 various stakeholders from all major sectors, private and public, state, federal and local are actively participating in the Tennessee Taskforce. The Tennessee Taskforce is working towards developing a comprehensive state framework for nutrient reductions and builds upon TDEC's and TDA's Nutrient Reduction Framework as part of comprehensive efforts to accomplish long-term nutrient reduction in Tennessee. Together, the taskforce and its workgroups are working to:

- Prioritize watersheds for taking actions to address nutrients
- Set watershed nutrient load reduction goals
- Ensure effectiveness of point source permits
- Develop implementable watershed plans that maximize the effectiveness of BMPs
- Encourage nutrient reductions from urban runoff
- Establish watershed-based monitoring programs to evaluate effectiveness
- Document and report implementation activities

### **Project Proposal for FY22 and FY23 requesting total of \$1,713,333.00 of the first two years of the BIL GHP funding**

Tennessee is submitting a work plan for the first two years of funding under the BIL GHP for total of \$ 1,713,333.00. The work plan will be revisited in FY23 and the remaining \$ 2,461,666.00 will be requested for the next three years. Tennessee workplan supports the five strategic outcomes of BIL funding for the Gulf Hypoxia Action Plan and is described below.

## A. Project description and priorities (Project Summary)

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, public meetings, outreach and education. Based on comments from the Tennessee Taskforce, four work products will 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. In support of BIL GHP Priority 1, TDEC and TDA will initiate public meetings for specific programs and initiatives. Major components of this workplan include:

- Nutrient load monitoring, flow gaging and sampling (in support of BIL GHP Priority 5)
- Nutrient optimization of municipal wastewater facilities (in support of BIL GHP Priorities 1 and 3)
- Nutrient loss reduction with cover crops in priority watersheds (in support of BIL GHP Priority 2)
- Research support (in support of BIL GHP Priorities 1, 4, and 5)

## B. Prioritization of watersheds - BIL GHP Priority 1, 2 and 3

Using the USGS Tennessee SPARROW Model for yield of HUC 10 delivered to the HUC 10 outlet, the top 10 watersheds for the most nitrogen and top 10 for the most phosphorus were selected. Of the top 20 watersheds, we identified those that had high percentage contribution from an individual source. Additional consideration will be given to watersheds with disadvantaged communities\*. Using all of this data, final prioritization of the watersheds will be determined in discussions with the Tennessee Taskforce.

*\*Disadvantaged community is defined as systems with a population (or population served) to 10,000 or less and an Ability to Pay Index ( ATPI ) of 50 or less. Additionally, Tennessee Association of Utility Districts has developed Opportunities List for SFY 2023 of Small and Disadvantaged Communities in Tennessee.*

## C. Work product details

### 1. Nutrient Load Monitoring Strategy – BIL GHP Priority 5 and 4

Under the Tennessee Taskforce direction, Tennessee Tech University provided compilation and analysis of long-term nitrogen and phosphorous water quality monitoring data in Tennessee. The data was collected from the various partners, reviewed, harmonized, and compiled into a database. Working in

cooperative agreement with USGS, Tennessee will supplement the existing monitoring with flow gages and sampling in areas where data gaps exist, in priority watersheds or in areas where loading trends are of interest. During the two years of this grant Tennessee will consult Appendix 3 of the GHP Guidance for suggested water quality monitoring strategies and procedures. After review of recommendations, Tennessee will develop supplemental program for nutrient monitoring and initiate monitoring activities. This work product supports prioritization within the Tennessee Nutrient Reduction Framework and BIL GHP Priority 5 and 4.

2. *Treatment Plant Optimization* - BIL GHP Priority 1 and 3

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. TDEC will initiate a public meeting before the next phase of TNPOP implementation. Fully scaling up this effort and optimizing up to 40 plants per year for the next 5 years would result in all mechanical plants in Tennessee attempting optimization. This work product supports the Tennessee strategy of regulated point sources nutrient reduction and BIL GHP Priority 1 and 3.

3. *Cover Crop Incentives in Priority Watersheds* – BIL GHP Priority 2

The TDA will develop an incentive non-point source program for applying cover crops on farmland in targeted watersheds selected from the recent SPARROW runs. TDA will initiate a public meeting before the implementation of this incentive. For example, at \$50 per acre, the funds allocated will provide landowner incentives on 14,000 acres of cover crops, but these won't be planted until the fall of 2023. The exact amount of the incentive payment will be dependent on the type of cover crop planted. Additionally, a portion of this funding would be possibly used for incentivizing nutrient management planning, and providing discounted soil tests, also in the targeted watershed areas. Tennessee has initiated discussions on collaboration in priority watersheds shared with other states. Specifically, the Red River Watershed shared with Kentucky. This work product supports the Tennessee agricultural nonpoint source nutrient reduction strategy and BIL GHP Priority 2.

4. *Research Staff Support* – BIL GHP Priority 1, 4 and 5

To implement this work plan, a support research staff position will be funded to coordinate research projects for needs identified by stakeholders and Tennessee Taskforce workgroups. 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 Urban SCMs in TN and Estimation of Nutrient Reduction Performance, Agriculture BMPs Heat Map and Nutrient Load Reduction Modeling.

D. Project Budget

Work Product	FY22	FY23	Work Product Total
1. Nutrient Load Monitoring (BIL GHP Priority 5 and 4)	\$120,000.00	\$100,000.00	\$ 220,000.00
2. Treatment Plant Optimization (BIL GHP Priority 1 and 3)	\$358,334.00	\$241,666.00	\$ 600,000.00
3. Cover Crop Incentive Program (BIL GHP Priority 2)	\$390,000.00	\$310,000.00	\$ 700,000.00
4. Research Staff Support (BIL GHP Priority 1, 4 and 5)	\$ 96,666.00	\$ 96,667.00	\$ 193,333.00
<b>Total</b>	<b>965,000.00</b>	<b>748,333.00</b>	<b>\$1,713,333.00</b>

E. Project Scope, Activities, and Expected Outcomes

Project Scope	Activities	Expected Outcomes	Milestones*
<p>1. Nutrient Load Monitoring</p> <p>Develop supplemental program for nutrient monitoring</p>	<p>Review Appendix 3</p> <p>Generate Recommendations for monitoring program</p> <p>Select sites, parameters, frequency, methods</p> <p>Select staff, partners, and resources for the monitoring program</p> <p>Develop/select SOPs, methods, protocols</p> <p>Develop/provide training if necessary</p> <p>Initiate monitoring</p>	<p>Supplemental Nutrient Monitoring Plan</p> <p>Initiate Supplemental Nutrient Monitoring</p>	<p>12 months to develop supplemental monitoring plan</p> <p>24 months to initiate supplemental monitoring</p>
<p>2. Treatment Plant Optimization</p> <p>Optimize Tennessee mechanical wastewater plants</p>	<p>Update TNPOP program resources</p> <p>Inventory all mechanical plants in TN</p> <p>Select staff, partners, and resources for plant optimization</p> <p>Optimize up to 40 plants annually for the next 5 years</p>	<p>Up to 80% of all mechanical plants in Tennessee attempted optimization</p>	<p>12 months for inventory and resource engagement</p> <p>24 months to review up to 40 plants</p>
<p>3. Cover Crop Incentive Program</p> <p>Plant cover crops in priority watersheds</p>	<p>Develop incentive program</p> <p>Select priority watersheds</p> <p>Select staff, partners, and resources for the initiative</p> <p>Implement the initiative on annual basis</p>	<p>Fund 7,000 acres of cover crops annually</p>	<p>12 months to initiate the program</p> <p>24 months to fund up to 14,000 acres</p>

\*Milestones are from the date of award; for Research staff support milestone is 24 months.

## F. Project Reporting

TDEC collected water quality data will be reported to EPA's Water Quality Exchange (WQX) and grant progress and tracking information will be reported to EPA's Grants Reporting and Tracking System (GRTS).

### **Work Plan Connectivity to BIL GHP Priorities**

- Full funding for work product 2, Treatment Plant Optimization, will support State of Tennessee in scaling up implementation of point-source reductions of nutrients under the Tennessee nutrient strategy.
- Full funding of work product 3, Cover Crop Incentives in Priority Watersheds, will advance multi-state collaboration with Tennessee neighboring states.
- Watershed prioritization and full funding of work product 4, Research Staff Support, will document and communicate progress Tennessee makes towards HTF goals at the basin scale.
- Full funding for work product 4, Research Staff Support, will advance research in support of nutrient reduction strategies in Tennessee.
- Full funding for work product 1, Nutrient Load Monitoring, will leverage resources as Tennessee works collaboratively with the USGS monitoring program.

### **Connectivity to BIL Cross-Cutting Priorities**

Fully funding the Tennessee Work plan will allow work to be based on prioritized watersheds with considerations to disadvantaged communities. In work product 2 and 3 specifically, funding will advance implementation of climate mitigating measures that reduce carbon footprint and increase resilience.

### **Support of BIL GHP Strategic Outcomes**

The state of Tennessee is submitting a workplan that meets all five strategic outcomes described in the BIL GHP Guidance. This agreement supports Goal 5 - Ensure Clean and Safe Water for All Communities, Objective 5.2 - Protect and Restore Waterbodies and Watersheds. It will fund activities that support and advance the state Nutrient Reduction Strategy. The recipient's work plan activities are consistent with the goal of making significant progress toward the Gulf Hypoxia Action Plan goals, by reducing nutrient loads that will improve water quality in the Gulf and throughout the MARB. Tennessee workplan supports the five strategic outcomes as described below.



1. Support staff to implement the workplan. States will strategically deploy staff to accomplish the goals of the GHP, convene stakeholder meetings, and support state, regional and basin-wide progress tracking. In work product 2 (Treatment Plant Optimization) and 4 (Research staff support) staff will undertake a range of activities, such as:

- Work to engage partners and stakeholders in priority MARB watersheds, including county and local governments, farmers and ranchers, and tribes.
- Lead and facilitate actions to reduce nutrient loads.

2. Reduce nonpoint source nutrient pollution as articulated in the Tennessee Nutrient Reduction Framework. States will utilize BIL funding for a range of projects, partnerships, and materials that concretely advance nonpoint source nutrient reduction goals. Under work outcome 2 Tennessee will invest in a range of interventions, such as:

- Support adoption of Cover Crops by developing a Cover Crop Incentive program
- Engage with farmers in efforts to utilize soil testing by expanding Soil Testing Incentive

3. Prioritize and target watersheds with the greatest opportunities for nutrient reductions. Tennessee will focus project implementation in those high-impact watersheds and critical areas where nutrient reductions can be achieved. Tennessee will:

- Identify major sources of nutrients and prioritize watersheds for implementation of high-impact load reduction actions.
- Work to develop milestones/interim goals (state- or watershed-wide) to measure progress.

4. Collaborate across state boundaries with HTF partners. Tennessee will leverage BIL funds to engage 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 scales. Tennessee will participate with other states to coordinate, consolidate, and improve access to data collected by state, tribal, and federal agencies, and present basin-wide and sub-basin progress towards Gulf Hypoxia Action Plan goals.

5. Use state-level water quality programs and actions to better support nutrient reductions. Tennessee Activities will include evaluation of discrete and continuous real-time water quality monitoring and development a supplemental monitoring plan, including in the ways described in Appendix 3 of the GHP Guidance.

1. Work product 4, Research Support Staff, specifically addresses strategic outcomes 1, 4 and 5, support staff to implement the work plan.
2. Work product 2, Treatment Plant Optimization specifically addresses strategic outcome 1 and 3, critical areas where the greatest nutrient reductions can be achieved as the state leads and facilitates actions to reduce nutrient loads.
3. Work product 3, specifically addresses strategic outcome 2 and 4, reduce nonpoint source nutrient pollution as articulated in the state strategy and with collaboration across state boundaries with HTF partners.
4. Prioritization of Watersheds based on the Tennessee-specific USGS SPARROW model addresses strategic outcome 3, prioritize and target watersheds with greatest opportunities for nutrient reductions.
5. Work product 1, Nutrient Load Monitoring, addresses strategic outcome 5 and 4, use state-level water quality programs and actions to better support nutrient reductions.

Gulf Hypoxia Program

Wisconsin Workplan for FFY 2022-2023 Cooperative Agreement

## **Summary Information Page**

**Project Title:** Wisconsin Nutrient Reduction Strategy Implementation

### **Organizational Information:**

Applicant: Wisconsin Department of Natural Resources  
Address: 101 S Webster St, Madison WI 53707  
Contact: Karl Gesch  
Nonpoint Source Program Coordinator  
(608) 630-1171  
[karl.gesch@wisconsin.gov](mailto:karl.gesch@wisconsin.gov)

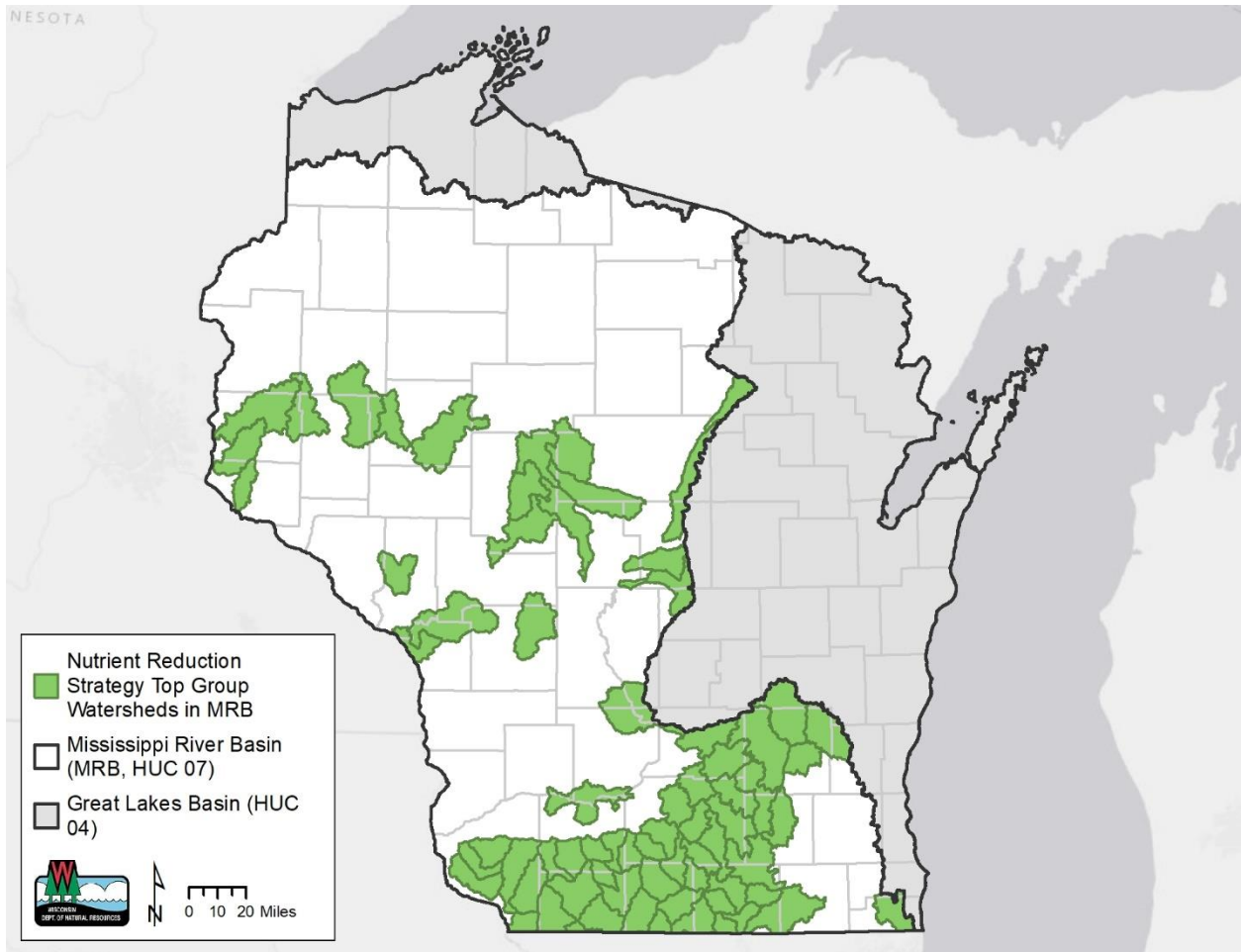
**Proposed Funding Request:** \$1,713,333.00

**Brief Project Description:** Wisconsin proposes to use Gulf Hypoxia Program funds to support implementation, coordination, and reporting of the state Nutrient Reduction Strategy (<https://dnr.wisconsin.gov/topic/SurfaceWater/NutrientStrategy.html>). Wisconsin intends to fund innovative practices and pilot projects to reduce agricultural nonpoint source nutrient losses, expand support for key initiatives related to agriculture and water quality, and improve state capability to track, report, and demonstrate progress.

**Environmental Results:** Major environmental results anticipated from this project include reductions in nitrogen and phosphorus loads to Wisconsin waters and the Mississippi River, particularly from agricultural nonpoint sources. Additional environmental co-benefits include sediment loss reduction along with carbon sequestration and climate change mitigation and adaptation via implementation of conservation systems that both improve water quality and build soil health. Disadvantaged communities will be given priority consideration.

**Place of Performance:** Mississippi River Basin portion of Wisconsin (HUC 07: Upper Mississippi), see map below.

**Project Period:** October 1, 2022 through September 30, 2025 (could extend no-cost through September 30, 2027)



## **Project Workplan**

### **Project Approach**

#### **Introduction**

The Wisconsin Department of Natural Resources (DNR) and Wisconsin Department of Agriculture, Trade and Protection (DATCP) collaborated to develop this workplan for the Gulf Hypoxia Program (GHP). The GHP was established in 2021 by the Bipartisan Infrastructure Law. This workplan is for the first two years of funding that will be provided to Wisconsin in federal fiscal years 2022-2023, totaling \$1,713,333.00, and includes a project period of up to five years to implement the proposed tasks and activities.

This project will contribute to Objective 5.2 of EPA's strategic plan (Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.2: Protect and Restore Waterbodies and Watersheds) by supporting, implementing, and tracking nutrient and sediment loss reductions to Wisconsin waters in the Mississippi River Basin. In addition to describing how nutrients will be reduced over time, Wisconsin's 2013 Nutrient Reduction Strategy (<https://dnr.wisconsin.gov/topic/SurfaceWater/NutrientStrategy.html>) identified watersheds with the highest loss of nitrogen or phosphorus to surface water (see map above) so strategy implementation actions could be prioritized first for these watersheds. The location of activities under this grant will be selected as much as possible from among these priority watersheds. Since the cost of directly implementing agricultural nonpoint source management practices at the scale needed to significantly reduce nitrogen and phosphorus loading far exceeds what was appropriated for the Gulf Hypoxia Program, Wisconsin has identified for this workplan activities that support direct implementation, pilot new approaches, or support complementary resources and systems to track and demonstrate progress. The workplan describes three tasks to be implemented. A description of each of the proposed elements follows.

#### **Task 1: Nutrient Reduction Strategy Support**

- *Contractual Support for Key Activities* This task will provide funding for partners to implement key aspects of the nutrient reduction strategy. The following activities will be funded through this GHP grant :
  - *Administrative Support for Producer-Led Watershed Groups* Producer-led groups ([https://datcp.wi.gov/Pages/Programs\\_Services/ProducerLedProjectSummaries.aspx](https://datcp.wi.gov/Pages/Programs_Services/ProducerLedProjectSummaries.aspx)) are effective in promoting and successfully implementing soil health and other nutrient loss reduction practices. The most mature of these groups have modeled reductions of several thousand pounds of phosphorus annually. There

are at least forty groups state-wide, with more being formed every year. The leadership of these groups has frequently articulated the need for administrative support to keep these groups functional and effective. Support duties include setting up meetings and events, developing newsletters/web content/other outreach materials, tracking activities, etc. DNR will contract with a third-party partner (e.g., University of Wisconsin, Resource Conservation & Development Council, environmental NGO, agriculture NGOs, etc.) to provide the needed administrative support

Support provided to producer-led groups also may serve disadvantaged communities and advance climate change mitigation and adaptation goals. Selecting from the producer-led groups identified above, administrative support will be prioritized first for those most in need, i.e., lacking staff for data processing, reporting, outreach, grant administration, etc. The next consideration will be whether a producer-led group being considered for funding serves a disadvantaged community, as defined below. The specific approach to prioritizing and awarding funding will be developed over the next 3-4 months. Climate change mitigation is expected through this activity because producer-led groups focus on promotion of soil health practices which are also climate-smart agricultural practices and are consistent with climate change mitigation recommendations for agriculture in Wisconsin (<https://wicci.wisc.edu/wp-content/uploads/wicci-report-to-governors-task-force.pdf>, p.35).

- *Development of 9 Key Element Watershed Management Plans* Wisconsin has relied upon watershed plans meeting EPA's 9 Key Elements to drive implementation of nutrient TMDLs at the HUC-12 scale. These are typically developed by county LCDs with technical assistance from DNR. Plan development is an additional duty for county conservation staff and not all counties are staffed to accommodate this additional workload. DNR would provide funding to county LCDs for developing a 9 Key Element Plan in a TMDL area or other priority watershed identified in the nutrient reduction strategy.
- *Nutrient Reduction Strategy Coordinator* Under this task, DNR will hire a project position (i.e., an employee that manages a specific project for 4-5 years, then the position ends) wholly dedicated to nutrient reduction strategy tracking, reporting, outreach and data visualization. This staff person will be a point of contact for internal and external partners and the public on the details of Wisconsin's nutrient reduction strategy. They will access and collate available internal and external (to state government) information on nutrient reduction implementation. Every two years, the Coordinator will develop a report on nutrient reduction strategy implementation progress and conduct outreach to EPA, the Hypoxia Task Force, conservation partners and other interested parties within the Mississippi River Basin on the findings and documented achievements. The

Coordinator will support Wisconsin's capability to visualize degree of implementation, nutrient reduction achievements, accounting for use of government funding of conservation, etc. by exploring data visualization user needs and consulting with other states to identify best options for appropriate data visualization tools/platforms. The Coordinator will also be responsible for administering Wisconsin's GHP grant, including managing subawards, ensuring that workplan elements are implemented in compliance with EPA guidance and that required reporting is completed. Nutrient reduction strategy outreach and the implementation of grant-funded activities will be focused within the portion of Wisconsin that is in the Mississippi River Basin. Because Wisconsin's nutrient reduction strategy is being implemented statewide, we anticipate that tracking, reporting and data visualization tasks will include collating statewide data on nutrient reduction progress. This latter activity will be a small percentage of the Coordinator's time, with the majority devoted to activities within the Mississippi River Basin.

## Task 2: Watershed Project Implementation

- *Pay-for-Performance* The customary model for incentivizing adoption of conservation practices focused on reducing nutrient losses to water is to provide cost-share ahead of implementation. Wisconsin, county land and water conservation departments (LCD), and NRCS have a menu of programs that fund agricultural nonpoint source control using this approach. An emerging practice is to structure payments that reward defined outcomes—the better the outcome produced, the higher the payments.. Wisconsin DNR, along with DATCP and other partners and stakeholders (e.g., county LCDs, conservation/environmental groups, agricultural organizations and producers, tribes, etc.) will work together to define the eligibilities and requirements, desired outcomes, as well as the meaningful level of payment. We envision that Gulf Hypoxia Program funding will be combined with other sources to maximize quantifiable nutrient load reductions.

Solicitation will be focused, as a first consideration, in watersheds with highest losses of phosphorus or nitrogen, or groundwater nitrate concerns within the Mississippi River Basin portion of Wisconsin as identified in the state Nutrient Reduction Strategy (see map above). Consideration also will be given to HUC-12 watersheds that are in phosphorus TMDL areas, that have 9 key element watershed management plans, that have local interest in implementation and/or that have known nitrate contamination of groundwater (nitrate in groundwater is a main source of nitrate in surface water). Additionally, solicitation and prioritization of project awards will be focused as much as possible on watersheds containing or affecting disadvantaged communities, as defined below. The approach to prioritization, including how disadvantaged communities will be considered, as well as other details about the pilot will be developed over the next 6-8 months.

Because these will be direct implementation projects, nutrient reduction (environmental results) will be quantifiable from the practices installed on an annual and multi-year basis, using Wisconsin's Soil Nutrient Application Planner (SNAPPlus) and other appropriate models. The agreements developed with landowners/producers will establish the expected timelines and milestones.

- *Innovation Grants* This task will support a popular existing DATCP program that offers funding to pilot agricultural nonpoint source management activities that are novel in the particular county or watershed. Activities funded by past innovation grants include harvestable buffers, no-till drill rental, alternative cropping for manure management, and incentives for no-till, soil health and/or cover crops. Funding will be added to the innovation grant award to support county staff time devoted to implementing the projects.

DATCP will work with county LCDs to solicit projects in watersheds identified in the nutrient reduction strategy as high-yielding for phosphorus and/or nitrogen or which are vulnerable to nitrate contamination of groundwater, and as much as possible contain or affect disadvantaged communities, as defined below. The approach for prioritizing, scoring and selecting grant recipients will be developed over the next 6 months.

The subawards developed for these grants will specify what implementation data will be collected to support calculation/estimation of nutrient loss reduction, as well as other information required for GHP grant reporting, as specified on p. 13-14 of EPA's BIL GHP guidance [https://www.epa.gov/system/files/documents/2022-06/BIL%20GHP%20State%20Guidance%20FY%202022%20-%20June2022\\_Final\\_signed.pdf](https://www.epa.gov/system/files/documents/2022-06/BIL%20GHP%20State%20Guidance%20FY%202022%20-%20June2022_Final_signed.pdf).

The details will depend on the type of project being funded. The subaward agreement will specify if QAPP/QMP development will be needed or will specify if an existing QAPP/QMP will cover the project(s) included in the subaward.

### Task 3: Visualizing Nutrient Reduction Achievements

Many partners in Wisconsin are investing time, money and effort at the local, state and federal level to reduce losses of phosphorus and nitrogen to surface water and groundwater. We'd like to be able to answer questions about degree of implementation, estimated reductions compared to TMDL goals, partner engagement, etc. as well as to integrate this information with water quality monitoring and other indicators of nutrient reduction progress. Implementation information is most meaningful when shown spatially at the county or (ideally) small watershed level. The ability to run reports and create maps will provide critical information to align with the state's nutrient reduction strategy and to better collaborate with partners (agencies, counties, producer-led groups, watershed associations, environmental groups, etc.). This capability will also enable greater data integration to see where priority areas are and how they align with resource



expenditures. However, the current capability to visualize and analyze nutrient reduction implementation in these ways is extremely limited.

There are several components to this task which will collectively allow Wisconsin to acquire this capability.

- *Data Visualization* In order to portray nutrient reduction progress, such as degree of implementation at a county or watershed scale, nutrient reduction achievements, success stories, accounting for use of government funding for conservation, etc., Wisconsin plans to use a portion of GHP funds to build a data visualization tool. We have seen some exemplary approaches used by nearby states and plan to consult with them, along with other experts, to identify the platform and other specifics that best meet the needs of Wisconsin users. We envision an interactive web-based tool that could produce maps, graphs, dashboards, and other communication products. Part of development will also include building data pipelines from DNR and DATCP databases containing nutrient reduction practice implementation information. In this workplan, the Nutrient Reduction Strategy Coordinator (see description above) will be funded to research best options for the data visualization tool. The next GHP workplan will include funding for building the tool.
- *Enhance DNR's BMP Implementation Tracking System (BITS)* DNR's existing BITS database contains implementation information for certain programs, including the Targeted Runoff Management and Notice of Discharge grants and the Multi-Discharger Variance for phosphorus. Additional modules (e.g., NR 151 implementation, Adaptive Management, Water Quality Trading, etc.) will make the DNR-funded implementation dataset more comprehensive. GHP funds will be directed to additional contractual hours to develop additional modules. Funding will allow the extension of the current BITS coordinator position (funded by the previous Hypoxia Task Force grant to Wisconsin) that oversees development, provides technical assistance to system users and improves end-user functionality. BITS will be a data source for the data visualization tool.
- *Modernize DATCP's Land and Water Data System* Current management of practice implementation data is outdated and fragmented. In its current form, implementation information for the various conservation programs that support nutrient reduction actions is not easily searchable and is not geospatial. The current status of data management systems make it challenging to fully understand and portray the nutrient reduction achievements and other soil and water quality activities at a county or watershed scale. The development of a comprehensive, integrated and geospatial data management system will not only increase our capacity for accountability for use of government funding for conservation, but it will enable integration across the state conservation partnership. This will improve project prioritization, implementation and reporting. In order to allow data from DATCP programs (Soil and Water Resource Management grants, Nitrogen Optimization pilot program, Producer-led Watershed Management grants, county LCD

reporting, etc.), to be accessible and visualized, the information must be managed in a modernized platform that is searchable, exportable and includes geospatial location. GHP funds will be directed to modernize the system in this way. DATCP's modernized system will be a data source for the data visualization tool.

GHP Strategic Outcomes

The table below summarizes which GHP strategic outcome(s) are supported by each proposed workplan activity. Also noted are activities that support climate change mitigation and/or are likely to benefit disadvantaged communities. Wisconsin believes that any activity that results in adoption of soil health or similar conservation practices for nutrient reduction means that “climate-smart agriculture” practices are being adopted. These have a greenhouse gas reduction and/or carbon sequestration benefit. . As noted above, this workplan reflects and is consistent with (but does not directly and formally implement) the agriculture component of state climate recommendations. The final column of the table notes what part of the 2013 Wisconsin Nutrient Reduction Strategy is being implemented by the workplan activity.

Workplan Activity	Staff Support	Reduce NPS	Target Watersheds	HTF Collaboration	Use State WQ Programs	Climate Benefit	Disadv. Comm.	NRS Cite
Producer-Led Group Support	X	X			X	X	X	Ch. 4
9 Key Element Plan Development	X	X	X		X	X		Ch. 4, 7
NRS Coordinator	X			X				Ch. 4, 7, 9
Pay-for-Performance Pilot		X	X	X		X	X	Ch. 4, 7, 9 <sup>1</sup>
Innovation Grants	X	X	X		X	X	X	Ch. 4
NR Data Viz				X				Ch. 7, 9
DNR BITS	X			X				Ch. 7, 9
DATCP Data System		X		X	X			Ch. 7, 9

Disadvantaged Communities

In alignment with BIL GHP priorities, Wisconsin will focus the nutrient reduction implementation actions funded through this grant to benefit disadvantaged communities and will

<sup>1</sup> 2013 Nutrient Reduction Strategy <https://dnr.wisconsin.gov/topic/SurfaceWater/NutrientStrategy.html> Chapter 4: Agricultural Nonpoint Nutrients; Chapter 7: Accountability and Verification Measures; Chapter 9: Reporting.

seek to engage community members in both watershed-based and program planning. This work will involve the state directly working with disadvantaged communities. The best opportunities for this will be as we develop and implement the pay-for-performance pilot program, enhance the existing innovation grants program and support 9 Key Element watershed-based planning. Solicitation and ranking of watershed implementation project grants will target watersheds that contain or affect disadvantaged communities. Community members will be consulted as both pilot programs and watershed plans are developed. Another opportunity for engagement will be to get input for what nutrient reduction data visualization will be most useful to members of disadvantaged communities.

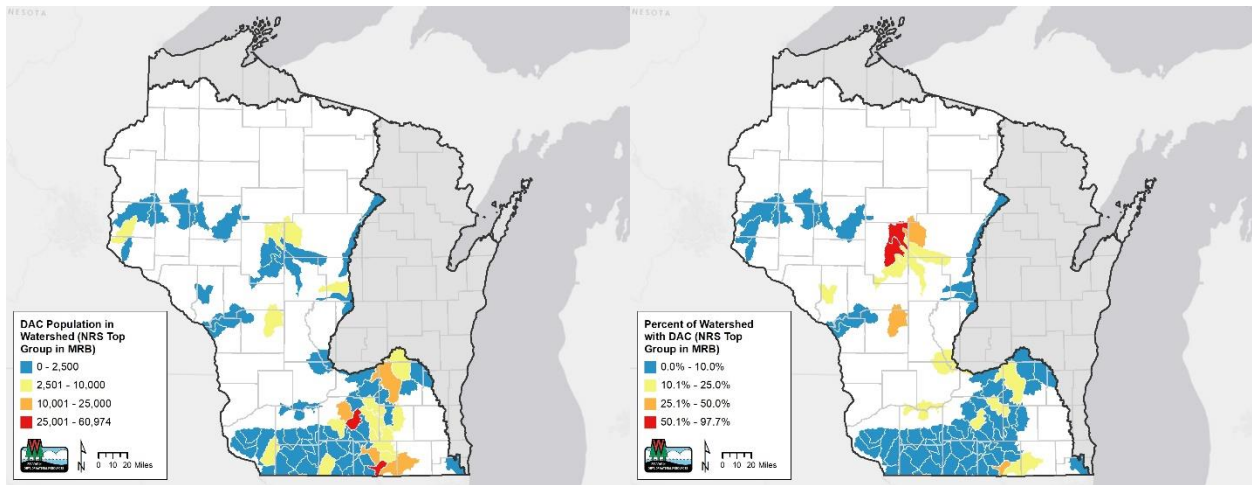
Wisconsin DNR does not have a standardized definition of disadvantaged communities at this time. For the purposes of this workplan, the EPA Justice40 Interim Disadvantaged Communities Indices will be utilized:

- Percent low-income
- Percent linguistically isolated
- Percent less than high school education
- Percent unemployed
- Low life expectancy

These indices will be supplemented by the indicators of economically disadvantaged communities that were developed by Wisconsin DNR for the Safe Drinking Water Loan Program and are detailed in the draft 2023 Intended Use Plan [https://dnr.wisconsin.gov/sites/default/files/topic/Aid/loans/intendedUsePlan/SDWLP\\_SF2023\\_IUP.pdf](https://dnr.wisconsin.gov/sites/default/files/topic/Aid/loans/intendedUsePlan/SDWLP_SF2023_IUP.pdf) on p. 12-14. A Wisconsin-specific tool for screening potentially disadvantaged communities is under development (<https://www.dhs.wisconsin.gov/climate/env-equity-tool.htm>), but the above approach will be used until that tool is finalized. In addition to emerging state-based approaches to identify and increase support for disadvantaged communities, we will continue to pursue collaboration with US EPA to leverage federal data and tools (e.g. EJSCREEN [<https://www.epa.gov/ejscreen>], WSIO [<https://www.epa.gov/wsio>]), including determination of appropriate criteria and data thresholds for Wisconsin. It is anticipated that this will be an ongoing process, and that an initial approach will be developed within 12 months, with the caveat that tools, data, and criteria to be used may evolve over time to better meet the needs of disadvantaged communities.

Wisconsin DNR has identified top watersheds for phosphorus, nitrogen and groundwater nitrate as part of its 2013 Nutrient Reduction Strategy. We will continue working with EPA on spatial analyses that will identify communities meeting the above criteria that are located in or affected by these priority watersheds for nutrient reduction. The resultant watersheds will be top candidates for work funded by this grant. Initial results of comparing disadvantaged communities (draft analysis courtesy of EPA) to the Nutrient Reduction Strategy top group watersheds are

displayed in the maps below. We anticipate ongoing collaboration between EPA and the state to define and identify disadvantaged communities, which may include Wisconsin-specific factors such as agricultural community trends and access to community-based conservation resources.



As implementation and support projects (described above) are selected, water quality and/or organizational need will be first priority in order to support the overall goal of increasing implementation of the nutrient reduction strategy. Supporting disadvantaged communities also is a high priority and will be considered as a key factor when identifying projects.

## Environmental Results

As noted above in the description of proposed projects, the pay-for-performance pilot and innovation grants are direct implementation projects. Nutrient reduction (environmental results) will be quantifiable from the practices installed on an annual and multi-year basis, using Wisconsin's Soil Nutrient Application Planner (SNAPPlus) and other appropriate models. Along with conservation practices implemented, load reductions and quantification methods will be reported annually in the new GRTS GHP module.

The Nutrient Reduction Strategy Implementation Support activities will not themselves have an environmental result, but will enable quantification of nutrient reduction. By providing administrative support to producer-led groups and making them more effective, the expectation is that adoption of nutrient reduction practices will increase, leading to measurable load reductions. This is based on the achievements to date of the more mature and well-supported groups in the state that can annually account for the pounds of phosphorus reduced or other metrics resulting from the actions of their members within the watershed, and can show an

upward trend in adoption of key practices<sup>2</sup>. Finally, 9 key element watershed-based plans are a key mechanism for implementing water quality restoration at the HUC 12 scale; supporting development of additional plans (potential subawards under this workplan) leads to targeted, effective nutrient reduction once the plans are finalized and implemented. The process of plan development leads to collaboration and buy-in among local watershed partners, which is an important precursor to widespread implementation.

The activities under the category of Visualizing Nutrient Reduction Achievements will be the primary mechanism for *articulating* environmental results achieved by adoption across Wisconsin's portion of the Mississippi River Basin to partners, other HTF states and the general public. These tasks will not have environmental results in and of themselves.

Anticipated outputs and outcomes for the five GHP strategic outcomes include:

1. *Support Staff* – State staff and subawardee organization staff will foster enabling conditions for landowners, farmers, tribes and additional conservation partners to increase implementation of conservation practices, increase nutrient load reductions, and track progress in doing so. It is anticipated and intended that this work and technical assistance will include disadvantaged communities. The state will ensure that work completed under this cooperative agreement will comply with Title VI requirements.
2. *Reduce NPS* – Pollutant load reductions of nitrogen, phosphorus, and/or sediment will be quantified for conservation practices funded through the Watershed Project Implementation task. Specific quantities will be determined and reported after practices are implemented. Enhanced state data systems and capabilities will facilitate reporting of future nutrient load reductions achieved with other (i.e., non-GHP) funding sources.
3. *Target Watersheds* – Watersheds in which the pay-for-performance pilot and innovation grants are implemented will be tracked, mapped, and reported to local, state, tribal, and basin stakeholders.
4. *HTF Collaboration* – Results will be provided to EPA and HTF partners, in addition to Wisconsin stakeholders. For relevant activities in this GHP workplan (e.g., pay-for-performance pilot, data visualization systems) Wisconsin intends to interface with other states to identify best practices, understand requirements, and collaboratively share

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The [2020-2021 impact report](#) for the Producer-Led Watershed Protection Grant Program shows that the total reported conservation practice acres rose to 978,881 acres in 2021 from 798,221 acres in 2020, a 23% increase in total conservation practices. More specifically, the program saw a 20% increase in cropland receiving cover crops, a 34% increase in acres managed using no-till practices and 46% increase in nutrient management planning.

experiences and information. In addition to reporting via GRTS, information related to the work completed under this cooperative agreement will be publicly accessible through formats such as reports and the Wisconsin DNR's nutrient reduction strategy webpage.

5. *State WQ Programs* – Collaboration internally and between Wisconsin DNR and DATCP water quality-related programs will ensure that GHP-funded activities are aligned with ongoing state programs such as producer-led watershed groups, nine key element watershed-based plans, and innovation grants.

### Milestone Schedule

The proposed tasks and activities to implement this project are anticipated to be completed within approximately three years. A project period of three years overall (October 1, 2022 through September 30, 2025 with option to extend through September 30, 2027) is requested to account for unanticipated delays, to manage and close subawards, and to complete project reporting. The following table provides major milestones and anticipated timelines for each task and activity in the project workplan.

Task	Activities and Milestones	2022			2023					2024					2025											
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	
Nutrient Reduction Strategy Support	<b>Producer-Led Group Administrative Support</b>																									
	Develop RFP for procuring contractual support																									
	Release RFP, review and score bids, award contract																									
	Contractor(s) provides admin support, reports activities																									
	<b>Nine Key Element Watershed-Based Plan Development</b>																									
	WDNR solicits applications from county LCDs																									
	Select 2 to 3 applications and award funds																									
	Provide technical assistance to LCDs for 9KE plan development																									
	Submit 9KE plans to EPA Region 5 for review/approval																									
	<b>Nutrient Reduction Strategy Coordinator</b>																									
Hire Nutrient Reduction Strategy Coordinator																										
Execute duties as described in project narrative																										
Watershed Project Implementation	<b>Pay-for-Performance Pilot</b>																									
	Identify partners, structure pilot with stakeholders, and leverage funding																									
	Subaward to third-party to contribute funds and secure leveraged funds																									
	Third-party solicits project proposals from potential grant recipients																									
	Third-party selects projects for the pilot program																									
	Third-party develops agreements and awards funding																									
	Project implementation, including regular progress reports																									
	Third-party develops and submits interim/final report																									
	<b>Innovation Grants</b>																									
	Subaward to DATCP for innovation grants program																									
DATCP solicits requests for proposals from potential grant recipients																										
Request proposals for staffing support for existing projects																										
Review proposals																										
Funds awarded/contracts drafted																										
2023 projects completed																										
Requests for extensions & progress reports due, or final reports due																										
Request for proposals for 2024 projects																										
Proposals due; allocation process followed and contracts drafted																										
2024 projects completed																										
Requests for extensions & progress reports due, or final reports due																										
Visualizing Nutrient Red. Achievements	<b>Enhance DNR's BMP Implementation Tracking System</b>																									
	Provide funds to existing DNR contract to build BITS modules																									
	Extend the BITS data system coordinator position; duties in narrative																									
	<b>Modernize DATCP's Land and Water Data System</b>																									
Procurement process for contractual assistance to build data system																										
Contracted support begins building data system																										

## **Transferability and Dissemination to the Public**

Wisconsin DNR commits to gathering and sharing information and lessons learned from the projects we implement, including a written summary to be shared with the public at HTF meetings, providing materials to share on EPA's GHP website, and drafting blurbs to send to EPA for publication in the Hypoxia Task Force Newsletter. We further commit to adding content to our existing Nutrient Reduction Strategy website that provides descriptions, status of implementation and outcomes of GHP-funded activities. Cooperative agreement information also will be reported in the GRTS GHP module.

Standing up the pay-for-performance pilot will draw together diverse stakeholders to envision a different model for incentivizing nutrient reduction and to develop the implementation details. Pilot results will be evaluated for broader implementation in other watersheds, in consultation with stakeholders. At the least, a specific website will be developed to communicate outcomes.

The results from projects funded through DATCP Innovation Grants are shared through final reports submitted by the project lead. A summary of funded projects is prepared and shared with diverse stakeholders and promoted at ag implementation partner meetings in an effort to encourage and support others to deliver similar nutrient reduction projects in other areas of the state. Dissemination of information is notably shared during events hosted by the Wisconsin Land + Water Association, which reaches conservation professionals and elected officials in all 72 counties. These events include an annual conference attended by nearly 400 conservation partners, and two county conservationist events attended by representatives of all 72 counties. Additional opportunities for sharing results of innovation projects include the state's Land and Water Conservation Board and through the annual soil and water annual report which goes to legislators and is posted on DATCP's website.

The main purpose of the activities proposed in the Visualizing Nutrient Reduction Achievements is to support state, regional and basin-wide progress tracking. As noted in the task description, we plan to greatly enhance our ability to not only track implementation data but also to make it easier for implementation partners and other states to analyze and report on Wisconsin's progress in reducing nutrient loads.

## **Technical Support**

Wisconsin DNR and Wisconsin DATCP (a subawardee) will provide technical assistance to partners and subawardees. State staff providing technical assistance will be funded via existing sources and also through this Gulf Hypoxia Program cooperative agreement. Technical support to subawardees may include: developing and coordinating partnerships; compiling information and preparing reports; enhancing and developing data management systems and visualization platforms; advising and/or administering implementation projects; and consulting on use of

environmental models, best management practices, and frameworks. As needed, quality assurance documents (e.g., Quality Assurance Project Plans, existing guidance or documentation, etc.) would be developed with support from DNR to meet applicable requirements.

### Detailed Budget Narrative

WDNR Gulf Hypoxia Grant: Year 1 and 2				
	Year 1	Year 2	Total	Description
<b>Personnel</b>				
1 project position at \$30.60/hr. X 2080 hrs. (existing)	\$63,648	\$63,648	\$127,296	BITS Data Coordinator: IS DATA SVCS SEN
1 new project position at \$31.72/hr X 2080	\$65,978	\$65,978	\$131,955	New Project Position - Water Resources Mgmt Spec-Senior: Nutrient Reduction Strategy Coordinator
LTE match time at \$20.17/hr X 425 hrs. (existing)				Water Resources Mgmt Specialist (state-funded related work)
<b>Fringe</b>				
FTE and Project (47.66%)	\$61,779.56	\$61,779.56	\$123,559	
LTE (28.90%)				
<b>TOTAL SALARY AND FRINGE</b>	<b>\$191,405</b>	<b>\$191,405</b>	<b>\$382,810</b>	
<b>Travel</b>				
<b>TOTAL TRAVEL</b>	<b>\$0</b>		<b>\$0</b>	
<b>EQUIPMENT</b>				
<b>Supplies</b>				
<b>TOTAL SUPPLIES</b>	<b>\$0</b>		<b>\$0</b>	
<b>Contractual</b>				
<b>TOTAL CONTRACTUAL</b>	<b>\$0</b>		<b>\$0</b>	
<b>Other</b>				
DATCP data management system		\$300,000	\$300,000	
WDNR BITS modules		\$31,955	\$31,955	
N innovation grants	\$75,000	\$75,000	\$150,000	source waiver since 2 NGOs working collaboratively on this as part of a larger existing project)
Pay-for-performance watershed project(s)	\$200,000	\$200,000	\$400,000	
UW agreement for nutrient reduction strategy implementation support activities	\$95,000	\$95,000	\$190,000	
UW Extension or 2-3 Interested County LCDs in 9-key element plans	\$95,000	\$95,000	\$190,000	
Other	\$2,300	\$2,300	\$4,600	Project position Other costs include computer/IT, phone, other support; these are annual costs distributed per staff for agency-wide shared services including but not limited to: telephone equipment and service, insurance, space rental,
<b>TOTAL OTHER COSTS</b>	<b>\$467,300</b>	<b>\$799,255</b>	<b>\$1,266,555</b>	
<b>TOTAL DIRECT</b>	<b>\$658,705</b>	<b>\$990,660</b>	<b>\$1,649,365</b>	
<b>INDIRECT (16.71%)</b>	<b>\$31,984</b>	<b>\$31,984</b>	<b>\$63,968</b>	
<b>TOTAL</b>	<b>\$690,689</b>	<b>\$1,022,644</b>	<b>\$1,713,333</b>	

### Quality Assurance

The table below summarizes the expectations for quality assurance (QA) by activity.

Activity	QA Assessment
Administrative Support for Producer-Led Watershed Groups	Not needed: Staffing and activities are not expected to involve environmental information
Development of 9 Key Element Watershed Management Plans	No additional quality documentation expected
Nutrient Reduction Strategy Coordinator	Staff support not expected to need quality document
Pay for Performance Pilot	Existing quality systems <ul style="list-style-type: none"> <li>- implementing NRCS technical standards.</li> <li>- existing WDNR program – Nitrate data models used and input data will be documented</li> </ul>



Innovation Grants	Additional quality document to be developed if BMPs proposed are beyond NRCS technical standards or existing modeled practice efficiencies, Models used and input data will be documented
Data Visualization	Visualization tool covered under WDNR QMP
Enhance DNR’s BMP Implementation Tracking System (BITS)	Database enhancement covered under WDNR QMP
Build DATCP’s BMP Implementation Database	Aid agreement with DATCP expected to cover quality & collaboration with DNR expected to ensure comparability and transferability

Quality assurance will be addressed and documented as applicable while this workplan is implemented. Existing QA systems including the Wisconsin Department of Natural Resources (WDNR) Quality Management Plan (QMP) along with other existing documentation will be referenced and followed for covered tasks. Conservation practices implemented through Task 2: Watershed Project Implementation are expected to meet USDA-Natural Resources Conservation Service (NRCS) conservation practice standards. We do not anticipate construction activities requiring environmental compliance and associated reporting; implemented practices are intended to include agricultural best management practices on existing cropland. While we do not anticipate need for environmental compliance and associated reporting, we commit to meeting applicable federal requirements. Documentation will be referenced and/or provided for models used to quantify nutrient load reductions (e.g., SNAPPlus, PLET). Contract or aid agreements with subawardees will specify data elements and QA requirements of any tracking data that may be reported. No QA documentation will be prepared for tasks involving staff for administrative operations (e.g., administrative support farmer-led groups).

It is anticipated that Task 3: Visualizing Nutrient Reduction Achievements will rely on existing processes for reporting, transfer, and visualization of data related to implemented best management practices. As applicable, Quality Documents (e.g., Quality Assurance Project Plans) will be referenced and/or developed. Although WDNR data system development is covered by the department’s QMP, Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) is not covered. It is intended that DATCP will coordinate and collaborate closely with WDNR to ensure data comparability and transferability. Data elements expected to be collected could include type, cost, date, and location of installed conservation practices. Supplemental quality documents beyond those contained in the inter-agency agreement will be developed as necessary.