

Mississippi's Nonpoint Source Management Program



2016 Annual Report
GY 2013 (10/1/12 - 9/30/17)



MISSISSIPPI DEPARTMENT OF
ENVIRONMENTAL QUALITY

Prepared Pursuant to Section 319 of the Clean Water Act
Mississippi Department of Environmental Quality
April 2017

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GY13 NPS PROGRAMS

1. Statewide NPS Program Administration

The Mississippi Department of Environmental Quality (MDEQ), Office of Pollution Control (OPC) serves as the lead agency in Mississippi for water quality management. Therefore, OPC is responsible for the development and implementation of the State's NPS Management Program. To do this, OPC performs several key administrative functions to ensure statewide implementation of NPS initiatives and funding under this element supports those functions.

The overall completion date for the NPS Administration activity is the same as the grant period which is September 30, 2017. Funding to support the Program Administration functions represent 8% of the overall grant and therefore is in compliance with EPA's requirements that administration cost cannot exceed 10% of the grant.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 10, 12, 13, and 14 within the current 5-Year NPS Management Plan.

2. Statewide NPS Program Implementation

The Office of Pollution Control (OPC) coordinates the statewide NPS Program and funding under this element supports the staff that implement this program and the elements that follow.

Education and Outreach

A primary objective of the Statewide NPS Program is to increase public awareness of nonpoint source pollution and ways to reduce its impacts at the individual, community and watershed levels. Targeted audiences include private citizens, teachers, students, scout troops, civic leaders, contractors, farmers, urban neighborhood groups, civic organizations, lake community groups, environmental groups, foresters, and government resource agencies. To increase participation in program activities, funds may be allocated to procure refreshments and facilities for meetings with our target audiences as needed. Described below are routine programs/activities implemented as part of the statewide NPS focused education and outreach program:

Environmental Teacher Workshops

Teacher workshops are a major component of MDEQ's NPS education program each year. The teacher workshops include interactive classroom activities and field trips with some of the best environmental/natural resource speakers in Mississippi instructing the classroom teachers and environmental educators. Through funding from this grant, workshops were held in three regions of Mississippi at 16 workshops with 338 educators participating. Educators were provided Continuing Education Units (CEUs) ranging from 0.5-3 CEUs per workshop. Workshops were held in northeast Mississippi, central Mississippi (Grenada, Vicksburg, Jackson), and southeast Mississippi. These workshops include sessions on water quality, NPS

pollution prevention, green infrastructure, low-impact development, water chemistry, benthic macroinvertebrate community measures, and hands-on, water related activities. Educators can use all the information provided in these workshops to teach students about natural resource stewardship. In addition, the NPS program assists with workshop support for the following curricula: *Project Learning Tree*; *Project WET*; *Project WILD*; *Project Aquatic WILD*; *Project Food, Land and People*; *Private Eye*; and others.

Project Earth Teacher Workshops

Workshops teach participants about NPS pollution, water quality, conservation ecology, and environmental problems and solutions. MDEQ partnered with Hinds County Soil & Water Conservation District to conduct a workshop on June 10-12, 2014, at the Central MS Research & Extension Center on the campus of Hinds Community College in Raymond, MS. There were 16 teachers in attendance from four central Mississippi counties. *Ecology Day Camps* for students are also a part of this program.

Make-A-Splash Event

The *Make-A-Splash, A Water Education Event* is held each September at the Mississippi Museum of Natural Science in Jackson, Mississippi where students visit water-related interactive booths and guided museum exhibits to learn about polluted runoff, wildlife, water use, groundwater, surface water, macroinvertebrates, and other water quality and ecosystem indicators. At the September 2014 event, 10 schools attended with a total of 789 students participating and 24 teachers receiving (0.5) Continuing Education Units (CEUs) of credit.

In addition to the activities mentioned above, and to better support MDEQ's focus on strategic nutrient-reduction activities, the Statewide NPS Education and Outreach Program was expanded to include the following program:

Mississippi Statewide Forestry Water Quality Protection Program - The Mississippi Forestry Commission (MFC) evaluates the implementation and use of voluntary Best Management Practices for forestry activities throughout the state of Mississippi. By monitoring these voluntary practices on a continuous cycle and widely distributing the results, best management practice implementation rates will increase. The MFC works with other forestry related groups in promoting water quality within the State and implements monitoring of Best Management Practices, conducts educational workshops, and distributes outreach materials.

Agricultural NPS Implementation Assistance – MDEQ's Nonpoint Source Management Branch needs assistance to implement educational and demonstration projects in conservation districts. The Mississippi Soil and Water Conservation Commission (MSWCC) supports the NPS program by providing assistance to conservation districts to implement the aforementioned projects. Funds are used to support staff time. Projects that MSWCC has been involved with include Envirothon, Tarebreeches Creek-Tuscumbia River Canal, Bell Creek-West Prong Muddy Creek, Little Topashaw Creek, and Jasper Creek. These projects will improve water quality through the reduction of nonpoint source pollution from agricultural and urban sources by promoting the use of best management practices.

Water Resources Management System - The *Water Resources Management System (WRMS)* is a custom implementation of *Watershed-The System*, a GIS-enabled solution developed by Cengea Solutions, Inc. MDEQ contracted *Cengea* to support configuration of the software to help meet grant tracking obligations for the NPS Management Program. The NPS Management Branch uses the WRMS to enter, manage, map, analyze, and report information about the NPS program, budget, and activities.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 9, 10, 13, and 14 within the current 5-Year NPS Management Plan.

3. NPS Watershed Planning

MDEQ's Basin Management Approach supports planning efforts for the NPS program. As part of planning efforts, staff conduct basin team meetings to target watersheds for implementation plan development. To develop fully-approvable 9 Key Element watershed based plans, the pollutant, or primary cause of impairment, needs to be identified. Sampling of biological community data and stressor identification play important roles in this process and provide the information necessary to develop TMDLs and to fully answer the questions in 9 Key Elements.

Delta Hills Taxonomy

The purpose of this study is to collect algal community data along with concurrent and antecedent physical, chemical and other biological data to characterize stressor-response relationships between water quality (including habitat and channel morphology information) and valued ecological attributes, such as macroinvertebrate assemblage structure, algal assemblage structure, periphyton biomass, and dissolved oxygen. This effort supports the development of nutrient criteria for Delta/Bluff Hills streams and may be applicable to other coastal plain fluvial systems. This study also provides baseline information for development of water quality expectations for streams in this region. Twenty-six samples were collected as part of this project.

Stressor Identification

MDEQ has a strong team of scientists and engineers focused on evaluating water quality data and identifying stressors in water bodies that have been listed as being biologically impaired using benthic macroinvertebrate community data. If biological community data indicate that a water body segment is impaired, an investigative, stressor identification analysis using a strength-of-evidence approach is conducted to determine the cause(s) of the impairment. Such causes may range from specific pollutants (e.g. Total Nitrogen) to other causes of pollution such as sedimentation, habitat loss or hydrologic alteration. In most cases, nonpoint sources contribute, or are the primary causes of impairment. MDEQ relies upon all available monitoring and assessment data and conducts additional monitoring to gather the necessary data and information to help determine both the causes and sources of impaired waters. The *U.S. Environmental Protection Agency (EPA) Stressor Identification Process and Stressor Identification Guidance Document* (USEPA, 2000), is used to identify most probable stressors

causing biological impairment to provide the information necessary to develop required TMDLs that will guide restoration activities. Funding under this grant supports staff time to conduct SI studies. Information resulting from these analyses are then used to develop TMDLs for impaired waters and are used to develop 9 Key Element watershed plans.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 9, 10, 13, and 14 within the current 5-Year NPS Management Plan.

GY13 NPS PROJECTS

4. NPS Watershed Project Implementation

To implement the nutrient/pollutant reduction strategy, \$319 NPS funding is being used to support projects in all regions of the state.

Tarebreeches Creek-Tuscumbia River Canal

Due to the high level of stakeholder interest and its listing on Mississippi's 303(d) list of impaired waters, the Tarebreeches Creek-Tuscumbia River Canal Watershed was selected by MDEQ as a priority watershed for restoration activities in the Tennessee-Tombigbee/North Independent Streams Basin. Therefore, a joint effort by MSWCC, MDEQ, EPA, NRCS, and the Alcorn County Soil and Water Conservation District (SWCD) resulted in a proposal and subsequent implementation of a project to significantly reduce the amount of sediment and nutrient loadings entering Tuscumbia River by demonstrating the effectiveness of selected Best Management Practices (BMPs).

The 204,311-acre Tuscumbia River Canal Watershed is located in portions of Alcorn and Prentiss County, Mississippi. The current land uses in the Tuscumbia River Canal Watershed include 31,795 acres of cropland (15.6%), 33,293 acres of pasture land (16.3%), 72,214 acres of timber land (35.3%), 18,380 acres of urban land (9%), 22,143 acres of barren land (10.8%), 23,156 acres of wetlands (11.3%), and 3,330 acres of water (1.6%). This project targeted the 16,721-acre Tarebreeches Creek-Tuscumbia River Canal Sub-watershed. Within this watershed, the project was implemented on an area of approximately 9,240 acres, containing about 2,000 acres of pasture land.

The primary goals of the project were: (1) to improve water quality and protect high quality waters by demonstrating the economic benefits and effectiveness of selected BMPs in targeted areas; (2) to apply BMPs to agricultural land in the project area to reduce runoff, cattle access/nutrients to the stream, and sedimentation, and; (3) to inform and educate the public about BMPs that benefit water quality. Information/education activities carried out under this project included demonstration farms, educational field days, news articles, and over 1,000 distributed fact sheets detailing the practices installed and the soil savings from those practices.

Summary of Best Management Practices Installed

| Practice Name | Number of Practices | Number of Acres Affected | Total Tons of Soil Saved* |
|-----------------------------------|---------------------|--------------------------|---------------------------|
| 410-Grade Stabilization Structure | 16 | 21.1 | 2,312 |
| 512-Pasture & Hayland Planting | 9 | 381.9 | 430.9 |
| 468-Lined Waterway | 1 | 1 | 32 |
| 590-Nutrient Management | 3 | 170.4 | 170.4 |
| 561-Heavy Use Area Protection | 5 | 5 | |

| | | | |
|---------------------------------------|-----------|--------------|----------------|
| 614-Tank/Trough | 2 | | |
| 580-Streambank & Shoreline Protection | 6 | 550 ft | 245.3 |
| 578-Stream Crossing | 1 | | |
| 382-Fencing | 1 | 1,660 ft | |
| WQ-7 Check Dams | 1 | | |
| Totals | 45 | 579.4 | 3,190.6 |

*The soil savings is on a per year basis. Calculated using RUSLE.



Grade Stabilization Structure - Before



Grade Stabilization Structure - After



Heavy Use Area - Before



Heavy Use Area - After



Fencing Cattle Out of Stream - Before



Fencing Cattle Out of Stream - After

Bell Creek-West Prong Muddy Creek

Due to the high level of stakeholder interest and its listing on Mississippi's 303(d) list of impaired waters, the Bell Creek-West Prong Muddy Creek Watershed was selected by MDEQ as a priority watershed for restoration activities in the Tennessee-Tombigbee/North Independent Streams Basin. Therefore, a joint effort by Mississippi Soil and Water Conservation Commission (MSWCC), MDEQ, EPA, NRCS, and the Tippah County Soil and Water Conservation District (SWCD) resulted in a proposal and subsequent implementation of a project to significantly reduce the amounts of nutrients and sediment entering Bell Creek-West Prong Muddy Creek by implementing selected Best Management Practices (BMPs).

The 63,682-acre Muddy Creek Watershed is in Tippah County, Mississippi. The current land uses in the Muddy Creek Watershed include 7,724 acres of cropland (12.1%), 12,692 acres of pasture land (19.9%), 24,982 acres of timber land (39.2%), 3,974 acres of urban land (6.2%), 10,097 acres of barren land (15.9%), 3,362 acres of wetlands (5.3%), and 851 acres of water (1.3%). This project targeted the 19,277-acre Bell Creek-West Prong Muddy Creek Sub-watershed. Within this watershed, the project was implemented on an area of approximately 3,940 acres, containing about 2,167 acres of pasture land.

The primary goals of the project were: (1) to improve water quality and protect high quality waters by demonstrating the economic benefits and effectiveness of selected BMPs in targeted areas; (2) to apply BMPs to agricultural land in the project area to reduce runoff, cattle access/nutrients to the stream, and sedimentation, and; (3) to inform and educate the public about BMPs that benefit water quality. Information/education activities carried out under this project included demonstration farms, educational field days, news articles, and over 1,000 distributed fact sheets detailing the practices installed and the soil savings from those practices.

Summary of Best Management Practices Installed

| Practice Name | Number of Practices | Number of Acres Affected | Total Tons of Soil Saved* |
|---------------------------------------|----------------------------|---------------------------------|----------------------------------|
| 342-Critical Planting Area | 1 | 14.5 | 130.5 |
| 382-Fencing | 2 | 2,742 ft | |
| 410-Grade Stabilization Structure | 30 | 28.6 | 602.1 |
| 512-Pasture & Hayland Planting | 2 | 27 | 181 |
| 580-Streambank & Shoreline Protection | 35 | 5,277 ft | 813 |
| 590-Nutrient Management | 4 | 146 | 344 |
| 614-Tank/Trough | 4 | | |
| 638-Water & Sediment Control Basin | 3 | 3 | 54 |
| Totals | 81 | 219.1 | 2,124.6 |

*The soil savings is on a per year basis. Calculated using RUSLE.



Streambank & Shoreline Protection (1) - Before



Streambank & Shoreline Protection (1) - After



Streambank & Shoreline Protection (2) - Before



Streambank & Shoreline Protection (2) - After



Grade Stabilization Structure - Before



Grade Stabilization Structure - After

Waste Pesticide Disposal Program

The primary goal of this project is to help Mississippi farmers and property owners minimize the environmental risks associated with the disposal of waste pesticide products by providing an opportunity to dispose of products in a safe and efficient manner. Three events have been held in 2016, one in Tallahatchie County on February 24, one in Noxubee County on March 1, and one in Sunflower County on November 10. The Tallahatchie and Sunflower events were planned in areas of high agricultural productivity in the Mississippi Delta while the other event was held in Noxubee County because of several requests for assistance in that region of the state. For the first two events held in 2016 in Tallahatchie and Noxubee Counties, 34,301 lbs. of agricultural waste pesticides were collected for a cumulative total of 124,041 lbs. thus far on this grant agreement.

Advancing Innovative Conservation Systems and Strategies in the MS Delta

The purpose of this project is to advance regional conservation implementation through planning, education, demonstration, and evaluation. This project has surpassed its goal of securing 120 producer contracts with the National Resource Conservation Service (NRCS) for implementation of irrigation-water and soil-health management practices. Over 1,714 applications have been received by NRCS, requesting \$9.6 million in conservation funding. As part of this project, 72 producers were directly engaged during the 2014, 2015, and 2016 irrigation seasons, which surpasses the initial goal of 30 producers; 24 of these producers were directly engaged in 2016. A Conservation Plan for the Delta Portion of the Yazoo River Basin will have been developed by the conclusion of this project.

Support for Watershed Projects Implementation

The NPS Management Program is designed to support a wide variety of technical assistance, environmental education, technology transfer, demonstration, monitoring, analysis, and watershed protection and restoration projects. The NPS Program provides financial assistance to state agencies, local governments, resource agency partners, universities, and non-profit organizations to support the development and implementation of these projects.

The NPS Program business process focuses primarily on targeting priority watersheds, identified under the State's *Basin Management Approach* and *Prioritization Framework* by implementing specific watershed protection and restoration projects. In most instances, TMDLs provide the NPS program with the measurable water quality load reduction goals needed to restore waterbodies to their designated use. Important activities supported under this element include: water quality monitoring, data gathering, and assessment; water quality data analysis and evaluation; iterative watershed characterization and tracking of land-use practices; watershed plan implementation; and watershed plan evaluation and if needed, modification.

The Office of Pollution Control staff, in cooperation with the Office of Land and Water, the National Resource Conservation Service (NRCS), the U.S. Geological Survey (USGS) and Mississippi Soil and Water Conservation Commission, will continue to act as resource agencies for information on managing NPS project support for watershed projects. Public education and

technical support for these projects are provided for all categories of NPS pollution. The purpose of this support in funding is to aid ongoing Watershed Nutrient Reduction Projects, NPS demonstration projects, active *National Water Quality Initiative* (NWQI) and *Mississippi River Basin Initiative* (MRBI) watershed projects, and previously funded watershed implementation projects where continued monitoring is needed to show success. Milestones/Outputs for the technical assistance activities associated with watershed project support include participating in Basin Team meetings, conservation education, project tracking, monitoring, and other watershed project type activities that are directly supporting a NPS Watershed project. Specific examples of watershed project support activities include:

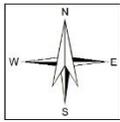
USGS Monitoring

USGS - Mississippi Water Science Center and MDEQ have an ongoing partnership to develop and implement watershed monitoring plans to include pre- and post- monitoring for selected §319-funded restoration projects. Water quality data (e.g. biological, physical, chemical, and/or stream flows) is collected annually at various locations throughout the State in waters that have been assessed as impaired and where BMPs have been implemented in the recent past. All final data are available on USGS’s publicly facing data warehouse [NWIS \(National Water Information System\)](#) and interpretations will be published as an interpretive report after each individual project. All MDEQ monitoring funded by EPA grants is carried out under QAPPs prepared in accordance with the EPA QAPP Guidelines. The USGS station numbers for monitoring sites funded through this project are as follows:

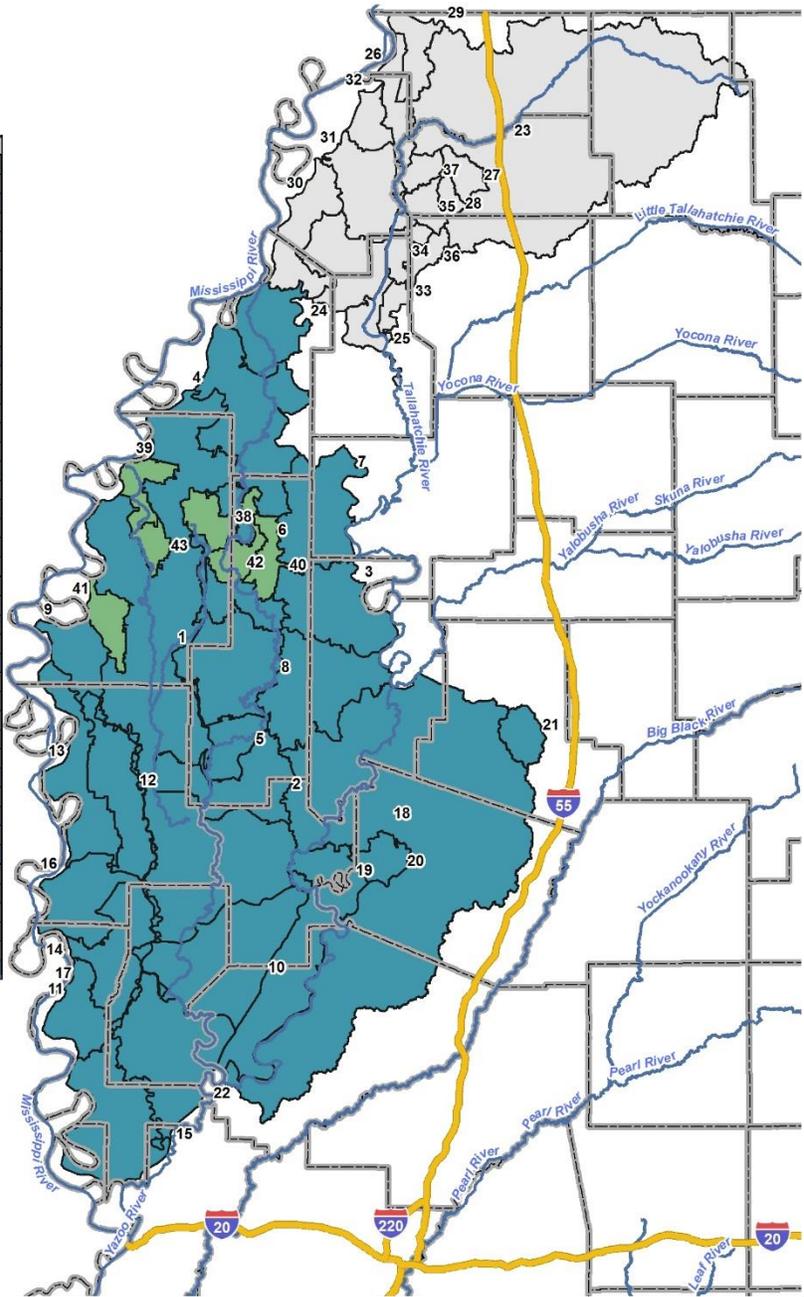
| USGS Station Number | enSPIRE ID | USGS Station Name and Description |
|----------------------------|-------------------|---|
| 333420090445900 | 111A24 | Porter Bayou Trib No. 1 NW Frazier, MS |
| 333830090394600 | | Porter Bayou Trib No. 4 near Shaw, MS |
| 07288521 | 111B40 | Porter Bayou at Stephenville, MS |
| 333601090450000 | | Porter Bayou near Shaw, MS |
| 341404090385600 | 111D07 | Overcup Slough Trib No. 1 near Farrell, MS |
| 341550090391300 | 113A30 | Overcup Slough Trib No. 2 near Farrell, MS |
| 07288068 | 111B37 | Harris Bayou at Palmer Rd East of Alligator, MS |
| 07288048 | 111A14 | Riches Bayou at Sherard, MS |
| 330304090210100 | 111D04 | Bee Lake Tributary No. 1 near Thornton |

NRCS Agreement

The NPS Program is implemented in cooperation with several agencies, organizations, and groups at all levels of government and in the private sector. A great focus is given to activities that promote consensus building and partnering to increase the overall effectiveness of the State's NPS Program. One key partnership to increase this overall effectiveness of the program is with the USDA NRCS. MDEQ's memorandum of agreement with NRCS allows for greater collaboration and consistency in selecting priority areas within the state of Mississippi. This agreement allows for more leveraging between agencies and other partners to target the same areas, increasing the impact of the programs NRCS offers and the Section 319 funding MDEQ receives. Using the assessment tools, such as the Mississippi Watershed Characterization and Ranking Tool (MWCRT), and monitoring data have allowed for more informed decisions to be made regarding water quality issues in Mississippi. A couple of these collaborations include acquiring funding for the MRBI and the NWQI programs. This collaboration of agencies has brought in \$35,570,452 (MRBI) and \$3,975,672 (NWQI) in funding to install conservation practices to address water quality issues in Mississippi between FY 2013 to FY 2017. This funding was in addition to the regular funding that NRCS receives through the Environmental Quality Incentive Program (EQIP). This agreement has also helped in leading efforts to add two more NWQI watersheds in Mississippi in FY2017 with funding dedicated specifically for planning activities. Phase I of MRBI was active from FY2010 to FY2014, Phase II was active from FY2011 to FY2015, and Phase III is currently active for FY2016 to FY2017. Maps for MRBI and NWQI watersheds can be viewed below.



| NAME | PHASE | ID |
|--|-------|----|
| Big Sunflower River | I | 1 |
| Dawson Bayou-Big Sunflower River | I | 2 |
| Fighting Bayou-Quiver River | I | 3 |
| Harris Bayou-Big Sunflower River | I | 4 |
| Indian Bayou-Big Sunflower River | I | 5 |
| Mound Bayou-Big Sunflower River | I | 6 |
| Parks Bayou-Quiver River | I | 7 |
| Porter Bayou-Big Sunflower River | I | 8 |
| Rolling Fork Creek-Upper Deer Creek | I | 9 |
| Silver Creek-Big Sunflower River | I | 10 |
| Deer-Steele | I | 11 |
| Black Bayou | I | 12 |
| Granicus Bayou | I | 13 |
| Indian Bayou-Steele Bayou | I | 14 |
| Lower Deer Creek-Steele Bayou | I | 15 |
| Washington Bayou-Steele Bayou | I | 16 |
| Whiting Bayou-Steele Bayou | I | 17 |
| Upper Yazoo River | I | 18 |
| Lower Tchula Lake-Yazoo River | I | 19 |
| Tchula Lake Cutoff-Tchula Lake | I | 20 |
| Upper Pelucia Creek | I | 21 |
| Will M. Whittington Auxiliary Channel | I | 22 |
| Coldwater River | II | 23 |
| Muddy Bayou-Coldwater River | II | 24 |
| Lower Coldwater River | II | 25 |
| Lower Lake Cormorant Bayou-Coldwater River | II | 26 |
| Middle Arkabutla Creek | II | 27 |
| Patent Creek-Strayhorn Creek | II | 28 |
| Upper Lake Cormorant Bayou | II | 29 |
| Phillips Bayou-Yazoo Pass | II | 30 |
| White Oak Bayou-Coldwater River | II | 31 |
| Buck Island Bayou | II | 32 |
| Burrell Bayou | II | 33 |
| David Bayou | II | 34 |
| Egypt Creek-Strayhorn Creek | II | 35 |
| Indian Creek | II | 36 |
| Lower Arkabutla Creek | II | 37 |
| Beaver Bayou-Mound Bayou | III | 38 |
| Brook Bayou | III | 39 |
| Burrell Bayou | III | 40 |
| Christmas Lake Bayou | III | 41 |
| Long Lake | III | 42 |
| Tommie Bayou | III | 43 |



Legend

- MRBI Watersheds
 - Phase I (light blue)
 - Phase II (medium blue)
 - Phase III (dark blue)
- County (thin black line)
- Major River (blue line)
- Interstate (yellow line)

MRBI Watersheds
Phases I - III



Mississippi Counties

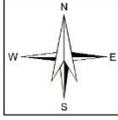


This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on April 26, 2017.

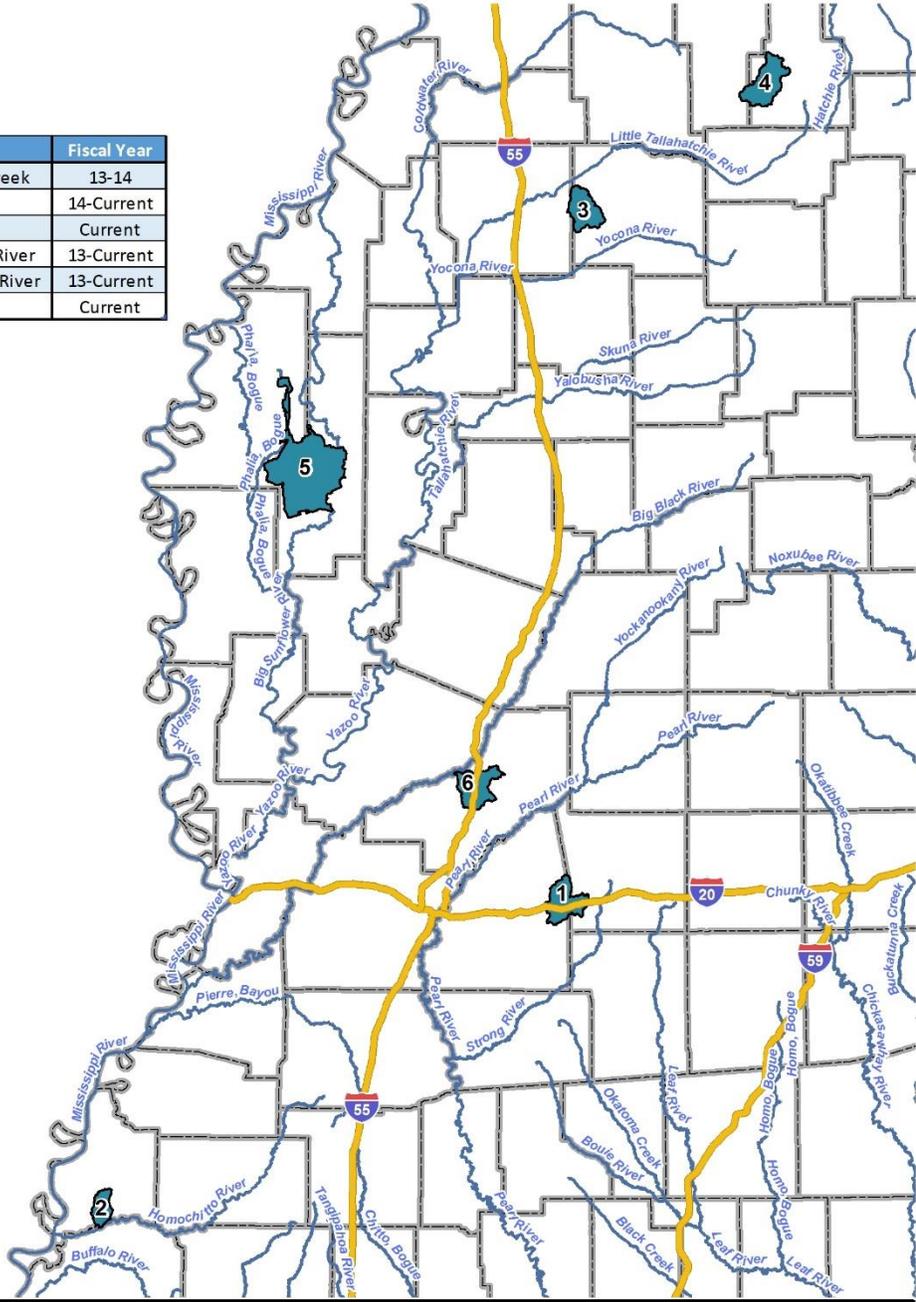
All map data is from the Mississippi Automated Resource Information System (MARIS), and MDEQ.

Map Projection: Mississippi Transverse Mercator

The Mississippi Department of Environmental Quality makes no warranties, expressed or implied, as to the accuracy, completeness, currentness, reliability, or suitability for any particular purpose, of the data contained on this map.



| ID | NAME | Fiscal Year |
|----|----------------------------------|-------------|
| 1 | Ashlog Creek-Pelahatchie Creek | 13-14 |
| 2 | Chase Bayou-Sammy Creek | 14-Current |
| 3 | Hudson Creek-Clear Creek | Current |
| 4 | North Tippah Creek-Tippah River | 13-Current |
| 5 | Porter Bayou-Big Sunflower River | 13-Current |
| 6 | Tilda Bogue-Bear Creek | Current |



- Legend**
- NWQI Watershed
 - Major River
 - Interstate
 - County

NWQI Watersheds
FY 13- Current FY



Mississippi Counties



This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on April 27, 2017.

All map data is from the Mississippi Automated Resource Information System (MARIS), and MDEQ.

Map Projection: Mississippi Transverse Mercator

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Mississippi Department of Environmental Quality

MDEQ provides monitoring support to NPS projects through funding under this element. Project data is sent to STORET as part of MDEQ’s CWA Section 106 data flow. The projects and their corresponding streams and (environmental Surface water Portal for Information Repository and Exchange) enSPIRE IDs are as follows:

| Project | Stream Names | enSPIRE ID |
|---|--|--|
| Lake Washington (GY07) | Unnamed Creek Lake Washington | 111B53 YZ322 |
| Ross Barnett Reservoir (GY08, GY10, GY11, GY15) | Ross Barnett Reservoir Ross Barnett Reservoir Ross Barnett Reservoir Ross Barnett Reservoir | 549RBR01 549RBR02 549RBR03 549RBR04 |
| Porter Bayou (GY09, GY14) | Porter Bayou Porter Bayou | 111A24 111B40 111D21 111F01 113A37 113A38 113A39 113A40 113A41 113A42 113A43 113A44 |
| Harris Bayou (GY09, GY14) | Richies Bayou Harris Bayou Overcup Slough Overcup Slough Overcup Slough Overcup Slough | 111A14 111B37 111D07 111D08 111D09 113A30 |
| Bee Lake (GY10) | Bee Lake | 111D04 |
| Rotten Bayou (GY10, GY11) | Rotten Bayou Bayou La Terre Eutaetachee Creek Hickory Creek Bayou Lasalle Mill Creek Rotten Bayou Pellaphalia Creek Rotten Bayou | 02481663 02481665.18 112A16 112C68 112D64 112D67 112D99 113A47 113B82 |
| Coldwater River (GY11) | Walnut Lake White Oak Bayou | 113D87 113D88 |
| Sunflower Restoration Project | Big Sunflower River Turkey Bayou | 07288621 111A49 |

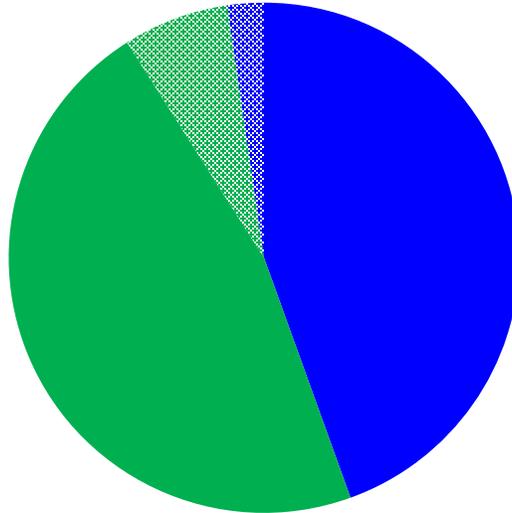
| | | |
|--|--|--|
| (2012) | Quiver River Parks Bayou Quiver River Quiver River | 113B21 113B22 113B23 A1350019 |
| Bell Creek-West Prong Muddy Creek (GY10, GY13) | North Prong Muddy Creek West Prong Muddy Creek North Prong Muddy Creek North Prong Muddy Creek North Prong Muddy Creek Muddy Creek Muddy Creek Bell Creek | 112D69 112D52 113B77 113B79 113B80 113B81 NI015 NI016 |
| Tarebreeches Creek (GY10, GY13) | Tarebreeches Creek Tarebreeches Creek Eastes Creek Little Cane Creek Tarebreeches Creek Little Cane Creek | 112B42 112D62 112D63 113B75 113B76 113B78 |
| North Tippah Creek (GY11) | North Tippah Creek North Tippah Creek South Tippah Creek Medlock Branch North Tippah Creek | 112B44 112B80 113A45 113A46 113B66 |
| Jasper Creek (GY15) | Jasper Creek Jasper Creek | YZ408 YZ409 |
| Little Topashaw Creek (GY15) | Little Topashaw Creek Little Topashaw Creek | YZ091 112D71 |
| Catalpa Creek (GY16) | Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek | 111F08 111F09 111F10 111F11 111F12 111F13 112B83 |
| Dry Creek (GY 16) | Dry Creek Dry Creek Dry Creek | PA024 PA347 111D23 |

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11 within the current 5-Year NPS Management Plan.

GRANT BUDGET SUMMARY

Funds



■ Project (spent) ■ Program (spent) ■ Program (balance) ■ Project (balance)

Mississippi's Nonpoint Source Management Program



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GY 2014 (10/1/13 - 9/30/18)



MISSISSIPPI DEPARTMENT OF
ENVIRONMENTAL QUALITY

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GY14 NPS PROGRAMS

1. Statewide NPS Program Administration

The Mississippi Department of Environmental Quality (MDEQ), Office of Pollution Control (OPC) serves as the lead agency in Mississippi for water quality management. Therefore, OPC is responsible for the development and implementation of the State's NPS Management Program. To do this, OPC performs several key administrative functions to ensure statewide implementation of NPS initiatives and funding under this element supports those functions.

The overall completion date for the NPS Administration activity is the same as the grant period which is September 30, 2018. Funding to support the Program Administration functions represent 8% of the overall grant and therefore is in compliances with EPA's requirements that administration cost cannot exceed 10% of the grant.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 10, 12, 13, and 14 within the current 5-Year NPS Management Plan.

2. Statewide NPS Program Implementation

The Office of Pollution Control (OPC) coordinates the statewide NPS Program and funding under this element supports the staff that implement this program and the elements that follow.

Education and Outreach

A primary objective of the Statewide NPS Program is to increase public awareness of nonpoint source pollution and ways to reduce its impacts at the individual, community and watershed levels. Targeted audiences include private citizens, teachers, students, scout troops, civic leaders, contractors, farmers, urban neighborhood groups, civic organizations, lake community groups, environmental groups, foresters, and government resource agencies. To increase participation in program activities, funds may be allocated to procure refreshments and facilities for meetings with our target audiences as needed. Described below are routine programs/activities implemented as part of the statewide NPS focused education and outreach program:

Environmental Teacher Workshops

Teacher workshops are a major component of MDEQ's NPS education program each year. The teacher workshops include interactive classroom activities and field trips with some of the best environmental/natural resource speakers in Mississippi instructing the classroom teachers and environmental educators. Through funding from this grant, workshops were held in six regions of Mississippi at 31 workshops with 1,269 educators participating. Educators were provided Continuing Education Units (CEUs) ranging from 0.5-5 CEUs per workshop. Workshops were held at Alcorn State University, in several Mississippi Delta counties of

northwest Mississippi, in north central Mississippi, in central Mississippi (Grenada, Vicksburg, Jackson), in southeast Mississippi, and in the coastal counties. These workshops include sessions on water quality, NPS pollution prevention, green infrastructure, low-impact development, water chemistry, benthic macroinvertebrate community measures, and hands-on, water related activities. Educators can use all the information provided in these workshops to teach students about natural resource stewardship. In addition, the NPS program assists with workshop support for the following curricula: *Project Learning Tree*; *Project WET*; *Project WILD*; *Project Aquatic WILD*; *Project Food, Land and People*; *Private Eye*; and others.

Make-A-Splash Event

Make-A-Splash, a water education event, is held each September at the Mississippi Museum of Natural Science in Jackson, Mississippi where students visit water-related interactive booths and guided museum exhibits to learn about polluted runoff, wildlife, water use, groundwater, surface water, macroinvertebrates, and other water quality and ecosystem indicators. At the September 2015 event, eight schools attended with a total of 571 students participating and 45 teachers receiving (0.5) Continuing Education Units (CEUs) of credit.

Envirothon

The Envirothon High School Competition tests student knowledge about water, soils, forestry, wildlife, and current environmental issues each year. The competition measures success by student oral presentations made to a panel of judges where each team applies their knowledge and field experiences to a real life environmental problem/situation. It also includes both written and field tests. The Mississippi competition is sponsored by MDEQ's NPS Program and the Mississippi Association of Conservation Districts and is coordinated by the Mississippi Soil and Water Conservation Commission. In 2015, 335 high school students (67 teams) and their advisors participated in four area competitions. A total of about 110 students (22 teams) participated at the state-level competition which was held at Roosevelt State Park on May 1, 2015. The Oxford High School *Envirothon Team* won the State's competition and traveled to Missouri State University in Springfield, Missouri to compete in the *National Conservation Foundation Envirothon* which was held on August 2, 2015.

Project Learning Tree

Project Learning Tree workshops and training activities create an awareness of nonpoint source water pollution that will lead to habit and behavior changes to improve water quality in Mississippi. The Mississippi Forestry Foundation assists MDEQ's Nonpoint Source Pollution Education Program with the conduct of *Project Learning Tree* environmental education workshops, training, and meetings. During this project, 31 workshops were held across the state with 508 teachers in attendance.

Summer Ecology Day Camp

During 2015, the NPS program sponsored four (4), one-week summer camp sessions at the *University of Mississippi Center for Water and Wetland Resources*. Fifty students attended. These camps train students on environmental topics such as water quality, land use, forestry, wildlife, and NPS pollution. A pre-test/post-test method is used to measure increased knowledge as an indicator of program success. Additionally, NPS presentations were made at

eight summer camps/after school programs including the *Mississippi Soil and Water Conservation Commission Youth Camp* for high school students, girl scout and boy scout camps, and the *Jackson Environmental Learning Center Camp*.

Water Resources Management System – The *Water Resources Management System (WRMS)* is a custom implementation of *Watershed-The System*, a GIS-enabled solution developed by Cengea Solutions, Inc. MDEQ contracted *Cengea* to support configuration of the software to help meet grant tracking obligations for the NPS Management Program. The NPS Management Branch uses the WRMS to enter, manage, map, analyze, and report information about the NPS program, budget, and activities.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 9, 10, 13, and 14 within the current 5-Year NPS Management Plan.

3. NPS Watershed Planning

The NPS Management Program implements strategies that target priority watersheds throughout the State. Prioritization of these watersheds is an evolving process identified in coordination with resource agency partners as part of the Basinwide Approach to Water Quality Management. Mississippi’s collaborative, leveraged approach focuses on the development and implementation of 9 Key Element watershed plans. The target audience for the strategic planning and implementation includes local agencies and organizations with a mission for environmental and water quality restoration and protection, and local, state and federal agencies with the authority to develop and implement watershed plans.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 9, 10, 13, and 14 within the current 5-Year NPS Management Plan.

GY14 NPS PROJECTS

4. NPS Watershed Project Implementation

Incremental Implementation Funding for Upper Porter Bayou, Middle Porter Bayou, and Overcup Slough Watershed Plans

The purpose of this agreement is to implement conservation practices in accordance with priority watershed based plans and to assess improvements in water quality within major watersheds of the Yazoo River Basin. The subgrantee, Delta F.A.R.M., implements water control structures and two-stage ditch/weir systems in the Upper Porter Bayou, Middle Porter Bayou, and Overcup Slough watersheds and incorporates new evaluation tools into monitoring programs for these watersheds. These conservation practices are in support of Conjunctive Water Management and Nutrient Reduction Strategies in the Yazoo River Basin. Delta F.A.R.M., in coordination with MDEQ, NRCS, and private landowners, has implemented the following BMPs:

- Upper Porter Bayou
 - Water Control Structures (ea) = 23
 - Two-Stage Ditch(ft) = 19,695
 - Low-Grade Weirs (ea) = 8
 - Land Leveling (ac) = 245
- Middle Porter Bayou
 - Water Control Structures (ea) = 17
 - Two-Stage Ditch(ft) = 7,700
 - Low-Grade Weirs (ea) = 3
 - Land Leveling (ac) = 70
- Overcup Slough
 - Water Control Structures (ea) = 36
 - Two-Stage Ditch(ft) = 9,100
 - Low-Grade Weirs (ea) = 4



The reported load reductions in these watersheds for FY16 are as follows: 832 lbs/yr of nitrogen, 414 lbs/yr of phosphorus, and 414 tons/yr of sediment.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 6, 7, 10, and 11 within the current 5-Year NPS Management Plan.

5. Support for Watershed Projects Implementation

The Nonpoint Source (NPS) Management Program is designed to support a wide variety of technical assistance, environmental education, technology transfer, demonstration, monitoring, analysis, and watershed protection and restoration projects. The NPS Program provides financial

assistance to state agencies, local governments, resource agency partners, universities, and non-profit organizations to support the development and implementation of these projects.

The NPS Program business process focuses primarily on targeting priority watersheds, identified under the State’s *Basin Management Approach* and *Prioritization Framework* by implementing specific watershed protection and restoration projects. In most instances, TMDLs provide the NPS program with the measurable water quality load reduction goals needed to restore waterbodies to their designated use. Important activities supported under this element include: water quality monitoring, data gathering, and assessment; water quality data analysis and evaluation; iterative watershed characterization and tracking of land-use practices; watershed plan implementation; and watershed plan evaluation and if needed, modification.

The Office of Pollution Control staff, in cooperation with the Office of Land and Water, the National Resource Conservation Service (NRCS), the U.S. Geological Survey (USGS) and Mississippi Soil and Water Conservation Commission, will continue to act as resource agencies for information on managing NPS project support for watershed projects. Public education and technical support for these projects are provided for all categories of NPS pollution. The purpose of this support in funding is to aid ongoing Watershed Nutrient Reduction Projects, NPS demonstration projects, active *National Water Quality Initiative* (NWQI) and *Mississippi River Basin Initiative* (MRBI) watershed projects, and previously funded watershed implementation projects where continued monitoring is needed to show success. Milestones/Outputs for the technical assistance activities associated with watershed project support include participating in Basin Team meetings, conservation education, project tracking, monitoring, and other watershed project type activities that are directly supporting a NPS Watershed project. Specific examples of watershed project support activities include:

United States Geological Survey

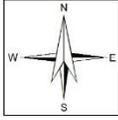
USGS - Mississippi Water Science Center and MDEQ have an ongoing partnership to develop and implement watershed monitoring plans to include pre- and post- monitoring for selected §319-funded restoration projects. Water quality data (e.g. biological, physical, chemical, and/or stream flows) is collected annually at various locations throughout the State in waters that have been assessed as impaired and where BMPs have been implemented in the recent past. All final data are available on USGS’s publicly facing data warehouse [NWIS \(National Water Information System\)](#) and interpretations will be published as an interpretive report after each individual project. All MDEQ monitoring funded by EPA grants is carried out under QAPPs prepared in accordance with the EPA QAPP Guidelines. The USGS station numbers for monitoring sites funded through this project are as follows:

| USGS Station Number | enSPIRE ID | USGS Station Name and Description |
|----------------------------|-------------------|--|
| 333420090445900 | 111A24 | Porter Bayou Trib No. 1 NW Frazier, MS |
| 333830090394600 | | Porter Bayou Trib No. 4 near Shaw, MS |

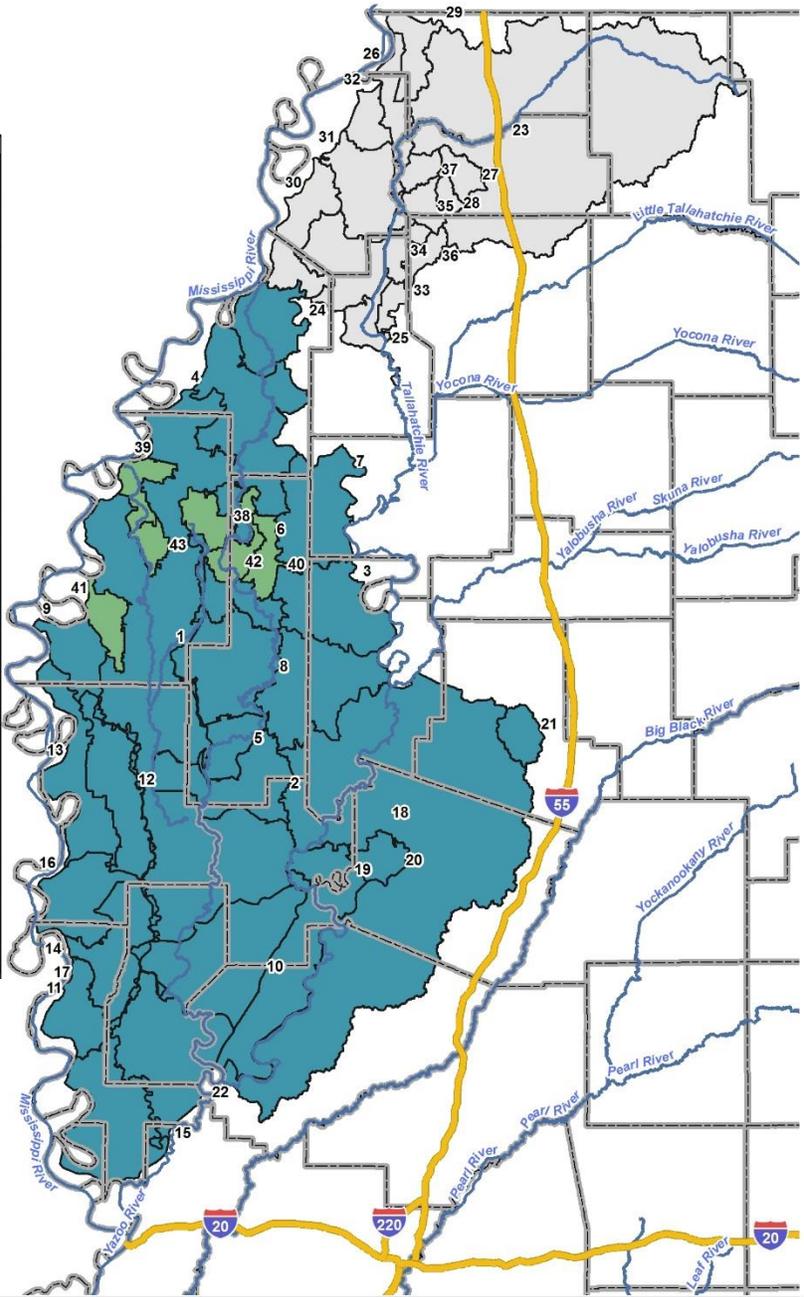
| | | |
|-----------------|--------|---|
| 07288521 | 111B40 | Porter Bayou at Stephenville, MS |
| 333601090450000 | | Porter Bayou near Shaw, MS |
| 341404090385600 | 111D07 | Overcup Slough Trib No. 1 near Farrell, MS |
| 341550090391300 | 113A30 | Overcup Slough Trib No. 2 near Farrell, MS |
| 07288068 | 111B37 | Harris Bayou at Palmer Rd East of Alligator, MS |
| 07288048 | 111A14 | Riches Bayou at Sherard, MS |
| 330304090210100 | 111D04 | Bee Lake Tributary No. 1 near Thornton |

Natural Resource Conservation Service

The NPS Program is implemented in cooperation with several agencies, organizations, and groups at all levels of government and in the private sector. A great focus is given to activities that promote consensus building and partnering to increase the overall effectiveness of the State’s NPS Program. One key partnership to increase this overall effectiveness of the program is with the USDA NRCS. MDEQ’s memorandum of agreement with the USDA NRCS allows for greater collaboration and consistency in selecting priority areas within the state of Mississippi. This agreement allows for more leveraging between agencies and other partners to target the same areas, increasing the impact of the programs NRCS offers and the Section 319 funding MDEQ receives. Using the assessment tools, such as the Mississippi Watershed Characterization and Ranking Tool (MWCRT), and monitoring data have allowed for more informed decisions to be made regarding water quality issues in Mississippi. A couple of these collaborations include acquiring funding for the MRBI and the NWQI programs. This collaboration of agencies has brought in \$25,228,790 (MRBI) and \$2,815,397 (NWQI) in funding to install conservation practices to address water quality issues in Mississippi between FY 2014 to FY 2017. This funding was in addition to the regular funding that NRCS receives through the Environmental Quality Incentive Program (EQIP). This agreement has also helped in leading efforts to add two more NWQI watersheds in Mississippi in FY2017 with funding dedicated specifically for planning activities. Phase I of MRBI was active from FY2010 to FY2014, Phase II was active from FY2011 to FY2015, and Phase III is currently active for FY2016 to FY2017. Maps for MRBI and NWQI watersheds can be viewed below.



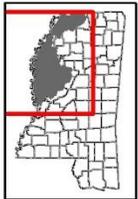
| NAME | PHASE | ID |
|--|-------|----|
| Big Sunflower River | I | 1 |
| Dawson Bayou-Big Sunflower River | I | 2 |
| Fighting Bayou-Quiver River | I | 3 |
| Harris Bayou-Big Sunflower River | I | 4 |
| Indian Bayou-Big Sunflower River | I | 5 |
| Mound Bayou-Big Sunflower River | I | 6 |
| Parks Bayou-Quiver River | I | 7 |
| Porter Bayou-Big Sunflower River | I | 8 |
| Rolling Fork Creek-Upper Deer Creek | I | 9 |
| Silver Creek-Big Sunflower River | I | 10 |
| Deer-Steele | I | 11 |
| Black Bayou | I | 12 |
| Granicus Bayou | I | 13 |
| Indian Bayou-Steele Bayou | I | 14 |
| Lower Deer Creek-Steele Bayou | I | 15 |
| Washington Bayou-Steele Bayou | I | 16 |
| Whiting Bayou-Steele Bayou | I | 17 |
| Upper Yazoo River | I | 18 |
| Lower Tchula Lake-Yazoo River | I | 19 |
| Tchula Lake Cutoff-Tchula Lake | I | 20 |
| Upper Pelucia Creek | I | 21 |
| Will M. Whittington Auxiliary Channel | I | 22 |
| Coldwater River | II | 23 |
| Muddy Bayou-Coldwater River | II | 24 |
| Lower Coldwater River | II | 25 |
| Lower Lake Cormorant Bayou-Coldwater River | II | 26 |
| Middle Arkabutla Creek | II | 27 |
| Patent Creek-Strayhorn Creek | II | 28 |
| Upper Lake Cormorant Bayou | II | 29 |
| Phillips Bayou-Yazoo Pass | II | 30 |
| White Oak Bayou-Coldwater River | II | 31 |
| Buck Island Bayou | II | 32 |
| Burrell Bayou | II | 33 |
| David Bayou | II | 34 |
| Egypt Creek-Strayhorn Creek | II | 35 |
| Indian Creek | II | 36 |
| Lower Arkabutla Creek | II | 37 |
| Beaver Bayou-Mound Bayou | III | 38 |
| Brook Bayou | III | 39 |
| Burrell Bayou | III | 40 |
| Christmas Lake Bayou | III | 41 |
| Long Lake | III | 42 |
| Tommie Bayou | III | 43 |



Legend

- MRBI Watersheds
 - Phase I (Blue)
 - Phase II (Light Blue)
 - Phase III (Green)
- County (Grey outline)
- Major River (Blue line)
- Interstate (Yellow line)

MRBI Watersheds
Phases I - III



Mississippi Counties

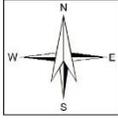


This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on April 26, 2017.

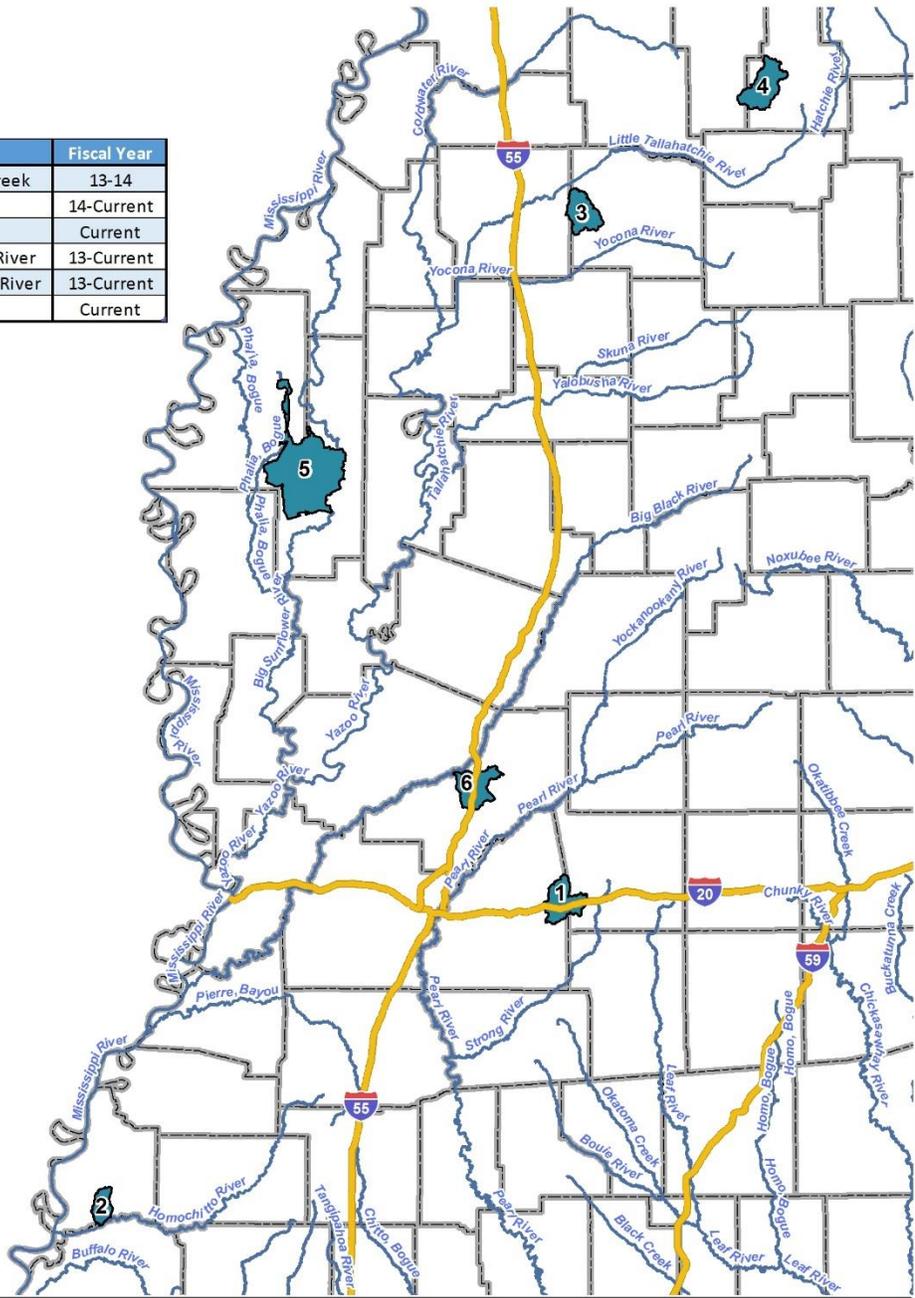
All map data is from the Mississippi Automated Resource Information System (MARIS), and MDEQ.

Map Projection: Mississippi Transverse Mercator

The Mississippi Department of Environmental Quality makes no warranties, expressed or implied, as to the accuracy, completeness, currentness, reliability, or suitability for any particular purpose, of the data contained on this map.



| ID | NAME | Fiscal Year |
|----|----------------------------------|-------------|
| 1 | Ashlog Creek-Pelahatchie Creek | 13-14 |
| 2 | Chase Bayou-Sammy Creek | 14-Current |
| 3 | Hudson Creek-Clear Creek | Current |
| 4 | North Tippah Creek-Tippah River | 13-Current |
| 5 | Porter Bayou-Big Sunflower River | 13-Current |
| 6 | Tilda Bogue-Bear Creek | Current |



- Legend**
- NWQI Watershed
 - Major River
 - Interstate
 - County

NWQI Watersheds
FY 13- Current FY



Mississippi Counties



This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on April 27, 2017.

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Mississippi Department of Environmental Quality

MDEQ provides monitoring support to NPS projects through funding under this element. Project data is sent to STORET as part of MDEQ’s CWA Section 106 data flow. The projects and their corresponding streams and (environmental Surface water Portal for Information Repository and Exchange) enSPIRE IDs are as follows:

| Project | Stream Names | enSPIRE ID |
|---|--|--|
| Lake Washington (GY07) | Unnamed Creek Lake Washington | 111B53 YZ322 |
| Ross Barnett Reservoir (GY08, GY10, GY11, GY15) | Ross Barnett Reservoir Ross Barnett Reservoir Ross Barnett Reservoir Ross Barnett Reservoir | 549RBR01 549RBR02 549RBR03 549RBR04 |
| Porter Bayou (GY09, GY14) | Porter Bayou Porter Bayou | 111A24 111B40 111D21 111F01 113A37 113A38 113A39 113A40 113A41 113A42 113A43 113A44 |
| Harris Bayou (GY09, GY14) | Richies Bayou Harris Bayou Overcup Slough Overcup Slough Overcup Slough Overcup Slough | 111A14 111B37 111D07 111D08 111D09 113A30 |
| Bee Lake (GY10) | Bee Lake | 111D04 |
| Rotten Bayou (GY10, GY11) | Rotten Bayou Bayou La Terre Eutaetachee Creek Hickory Creek Bayou Lasalle Mill Creek Rotten Bayou Pellaphalia Creek Rotten Bayou | 02481663 02481665.18 112A16 112C68 112D64 112D67 112D99 113A47 113B82 |
| Coldwater River (GY11) | Walnut Lake White Oak Bayou | 113D87 113D88 |
| Sunflower Restoration Project (2012) | Big Sunflower River Turkey Bayou | 07288621 111A49 |

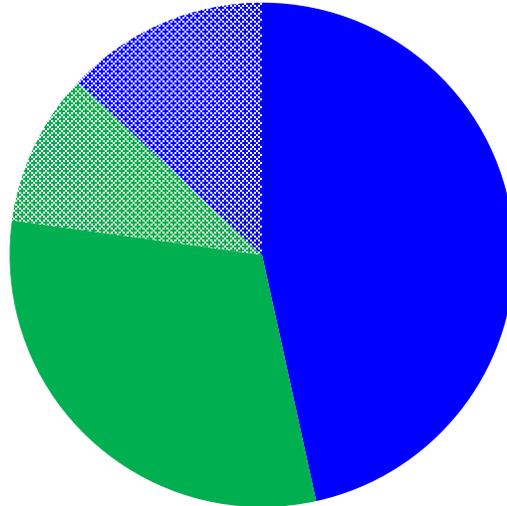
| | | |
|--|--|--|
| | Quiver River Parks Bayou Quiver River Quiver River | 113B21 113B22 113B23 A1350019 |
| Bell Creek-West Prong Muddy Creek (GY10, GY13) | North Prong Muddy Creek West Prong Muddy Creek North Prong Muddy Creek North Prong Muddy Creek North Prong Muddy Creek Muddy Creek Muddy Creek Bell Creek | 112D69 112D52 113B77 113B79 113B80 113B81 NI015 NI016 |
| Tarebreeches Creek (GY10, GY13) | Tarebreeches Creek Tarebreeches Creek Eastes Creek Little Cane Creek Tarebreeches Creek Little Cane Creek | 112B42 112D62 112D63 113B75 113B76 113B78 |
| North Tippah Creek (GY11) | North Tippah Creek North Tippah Creek South Tippah Creek Medlock Branch North Tippah Creek | 112B44 112B80 113A45 113A46 113B66 |
| Jasper Creek (GY15) | Jasper Creek Jasper Creek | YZ408 YZ409 |
| Little Topashaw Creek (GY15) | Little Topashaw Creek Little Topashaw Creek | YZ091 112D71 |
| Catalpa Creek (GY16) | Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek | 111F08 111F09 111F10 111F11 111F12 111F13 112B83 |
| Dry Creek (GY 16) | Dry Creek Dry Creek Dry Creek | PA024 PA347 111D23 |

Long Term Goals Supported:

Long Term Goals: See goals 4, 5, 8, 9, and 10 within the current 5-Year NPS Management Plan.

GRANT BUDGET SUMMARY

Funds



■ Project (spent) ■ Program (spent) ■ Program (balance) ■ Project (balance)

Mississippi's Nonpoint Source Management Program



2016 Annual Report
GY 2015 (10/1/15 - 9/30/19)



MISSISSIPPI DEPARTMENT OF
ENVIRONMENTAL QUALITY

**Prepared Pursuant to Section 319 of the Clean Water Act
Mississippi Department of Environmental Quality
April 2017**

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GY15 NPS PROGRAMS

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Environmental Teacher Workshops

Teacher workshops are a major component of MDEQ's NPS education program each year. The teacher workshops include interactive classroom activities and field trips with some of the best environmental/natural resource speakers in Mississippi instructing the classroom teachers and environmental educators. Through funding from this grant, workshops were held in three regions of Mississippi at 10 workshops with 199 educators participating. Educators were provided 3 Continuing Education Units (CEUs) per workshop. Workshops were held in several Mississippi Delta counties in northwest Mississippi, in north central Mississippi, and in central Mississippi (Grenada, Vicksburg, Jackson). These workshops included sessions on water quality, NPS pollution prevention, green infrastructure, low-impact development, water chemistry, benthic macroinvertebrate community measures, and hands-on, water related activities. Educators may use all the information provided in these workshops to teach students about natural resource stewardship. In addition, the NPS program assists with workshop support for the following curricula: *Project Learning Tree*; *Project WET*; *Project WILD*; *Project Aquatic WILD*; *Project Food, Land and People*; *Private Eye*; and others.

Make-A-Splash Event

Make-A-Splash, a water education event, is held each September at the Mississippi Museum of Natural Science in Jackson, Mississippi where students visit water-related interactive booths and guided museum exhibits to learn about polluted runoff, wildlife, water use, groundwater, surface water, macroinvertebrates, and other water quality and ecosystem indicators. At the September 2016 event, 10 schools from all over the state attended with a total of 738 students participating and 28 teachers receiving (0.5) Continuing Education Units (CEUs) of credit.

Project Earth Teacher Workshops

Workshops teach participants about NPS pollution, water quality, conservation ecology, and environmental problems and solutions. MDEQ partnered with Hinds County Soil & Water Conservation District to conduct this workshop on June 7-9, 2016, at the Central MS Research & Extension Center on the campus of Hinds Community College in Raymond, MS. There were 12 teachers in attendance. Ecology Day Camps for students are also a part of this program.

Summer Ecology Day Camp

During 2016, the NPS program sponsored five (5), one-week summer-camp sessions at the *University of Mississippi Demonstration Technology Transfer Building*. Eighty-four students were trained. These camps train students on environmental topics such as water quality, land use, forestry, wildlife, and NPS pollution. A pre-test/post-test method is used to measure increased knowledge as an indicator of program success.

Project Learning Tree

Project Learning Tree workshops and training activities create an awareness of nonpoint source water pollution that will lead to habit and behavior changes to improve water quality in Mississippi. The Mississippi Forestry Foundation assists MDEQ's Nonpoint Source Pollution Education Program with the conduct of *Project Learning Tree* environmental education workshops, training, and meetings. During this project, 7 workshops were held across the state with 156 teachers in attendance.

Water Resources Management System – The *Water Resources Management System (WRMS)* is a custom implementation of *Watershed-The System*, a GIS-enabled solution developed by Cengea Solutions, Inc. MDEQ contracted *Cengea* to support configuration of the software to help meet grant tracking obligations for the NPS Management Program. The NPS Management Branch uses the WRMS to enter, manage, map, analyze, and report information about the NPS program, budget, and activities.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 9, 10, 13, and 14 within the current 5-Year NPS Management Plan.

3. NPS Watershed Planning

The NPS Management Program implements strategies that target priority watersheds throughout the State. Prioritization of these watersheds is an evolving process identified in coordination with resource agency partners as part of the Basinwide Approach to Water Quality Management. Mississippi's collaborative, leveraged approach focuses on the development and implementation of 9 Key Element watershed plans. The target audience for the strategic planning and implementation includes local agencies and organizations with a mission for environmental and water quality restoration and protection, and local, state and federal agencies with the authority to develop and implement watershed plans.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 9, 10, 13, and 14 within the current 5-Year NPS Management Plan.

GY15 NPS PROJECT FUNDS DRAWDOWN

4. NPS Watershed Project Implementation

Little Topashaw Creek

Little Topashaw Creek Watershed has been identified as a priority watershed by MDEQ and is listed on Mississippi's 2014 303(d) List of Impaired Water bodies for biological impairment. The Mississippi Soil and Water Conservation Commission (MSWCC), Webster County Soil and Water Conservation District (WSWCD), Chickasaw County Soil and Water Conservation District (CSWCD) and USDA Natural Resources Conservation Service (NRCS) thought a great impact on water quality could be made in this watershed. MSWCC submitted a proposal to educate landowners/operators about water quality and measures they can take to help improve the water quality in this watershed along with the installation of Best Management Practices (BMPs) to address these issues. This proposal was selected for funding by MDEQ and a contract was awarded to MSWCC. A Watershed Based Team has been assembled to identify/address other issues and concerns within the watershed and consequently, revise this Watershed Based Plan as needed.

The key natural resource problems in this watershed are thought to be nutrient loading and sedimentation. The Watershed Based Plan has the goals of reducing the nutrients and sediment entering the streams and creeks in the watershed, and meeting water quality standards in the Little Topashaw Creek Watershed. To help solve this problem, one of the management actions is to implement a §319 water quality project within the watershed. The targeted area for this project is land in Webster and Chickasaw Counties that lies within the watershed boundaries. The groups that will be implementing the management action of educating landowner/operators about water quality and installing BMPs include the WSWCD, the CSWCD, the NRCS, and the MSWCC.

Jasper Creek

Jasper Creek Watershed has been identified as a priority watershed by MDEQ and is listed on Mississippi's 2014 303(d) List of Impaired Water bodies for biological impairment. The Mississippi Soil and Water Conservation Commission (MSWCC), Union County Soil and Water Conservation District and USDA Natural Resources Conservation Service (NRCS) thought a great impact on water quality could be made in this watershed. MSWCC submitted a proposal to educate landowners/operators about water quality and measures they can take to help improve the water quality in this watershed along with the installation of Best Management Practices (BMPs) to address these issues. This proposal was selected for funding by MDEQ and a contract was awarded to MSWCC. A Watershed Based Team will be assembled to identify/address other issues and concerns within the watershed and consequently, revise this Watershed Based Plan as needed. The USGS will monitor waters within the watershed to determine water quality and if there is a need for implementation of additional Best Management Practices (BMPs).

The key natural resource problems in this watershed are thought to be nutrient loading and sedimentation. The Watershed Based Plan has the goals of reducing the nutrients and sediment entering the streams and creeks in the watershed, and meeting water quality standards in the

Jasper Creek Watershed. To help solve this problem, one of the management actions is to implement a §319 water quality project within the watershed. The targeted area for this project is land in Union and Tippah Counties that lies within the watershed boundaries. The groups that will be implementing the management action of educating landowner/operators about water quality and installing BMPs include the Union County Soil and Water Conservation District, the NRCS, and the MSWCC.

Ross Barnett Reservoir

Since its construction in the late 1960s, the Ross Barnett Reservoir has been an irreplaceable resource to Central Mississippi. It is the largest source of drinking water in the state, supplying over 15 million gallons of water to local residents, businesses, and industries.

As it has done for more than 50 years, this plentiful water resource provides outstanding recreational opportunities, supports economic growth as well as scenic beauty and vital wildlife habitats. The EPA has designated this area as a Priority Watershed.

To date, under a Memorandum of Agreement between MDEQ and the Pearl River Valley Water Supply District, along with other local partners and assigned contractors, the following demonstration projects and workshops have been completed during the 2015-2016 project period:

- Installation of Composting Toilets upriver at Flag Island to reduce the impact of potential bacteria and pathogens from entering the Reservoir.
- Lakeshore Park Garden Rehab to reduce storm water runoff from entering the Reservoir
- Old Trace Park Storm Water Design to retrofit parking lot to reduce stormwater runoff
- Education and Outreach Signage Development
- *Rezonate* kiosk Development and Implementation at Old Trace Park and Lakeshore Park to educate local citizenry.
- Turtle Creek Sediment Evaluation
- Development and Facilitation of Green Infrastructure and *Rezonate* Initiative Education and Outreach Workshops to various targeted audiences:
 - Elected Officials in Madison and Ridgeland, MS
 - Green Infrastructure Workshop, Ridgeland, MS
 - Green Infrastructure Workshop, Biloxi, MS
 - Elected Officials and City Engineers in Rankin County
 - Public Works Department and Engineers in Flowood, MS
 - Panel Discussion at the Mississippi Municipal League Summer Conference
 - Training Workshop at Mississippi Association of Builders and Contractors

The completed best management practice demonstrations, signage and workshops, were done to reduce nonpoint source impairments due to sediment and nutrients, because of urbanization and recreation. Interpretive signage for these sites and other existing BMP demonstration sites will also be placed to increase knowledge concerning water quality and protection. In addition,

educational workshops are being developed to target three key groups: decision makers (elected officials), professionals (architects, engineers and planners), and developers.

In a continuing effort to leverage resources and to promote the message of protecting and restoring the Reservoir, *Rezonate*, through MDEQ, has sponsored and helped facilitate several events in and around the Ross Barnett Reservoir. *Rezonate* was a major sponsor for the 5th annual *Project Rezway Recycle* fashion show that took place on April 24, 2016, at the Mississippi Craft Center in Ridgeland. The show featured apparel and accessories composed of at least 75 percent recycled materials. *Keep the Rez Beautiful* hosts this event annually with the aim of raising awareness of the importance of recycling and shows how commonly discarded items can be used again instead of littering the environment. Other major sponsors included Kathryn's Steakhouse, Waste Management, Barnett Reservoir Foundation, Mississippi Department of Transportation, Keep Mississippi Beautiful, and Pearl River Valley Water Supply District.

The sixth annual *Gator Bait Kayak Race*, a 5.5-mile race for competitive and recreational kayakers, canoeists, and SUP (standup paddle boarding) paddlers, is another event sponsored through the *Rezonate* initiative. The event was held at Pelahatchie Shore Park (September 17, 2016) on the Ross Barnett Reservoir, and had 94 kayakers from the local area and other states participate. Once again, this successful event raised awareness about the water quality of the Reservoir and the need to protect it through conservation education and litter control. The third annual *Gator Bait Hatchling Race* was held at Lakeshore Park (May 21, 2016), and its goal is to introduce kids to the sport of kayaking, foster a love for the outdoors, and instill a desire to protect the environment for generations to come. Other partners that contributed to both kayak events were the Pearl River Valley Water Supply District, Mississippi Wildlife Federation; Keep the Reservoir Beautiful, Academy Sports and Outdoors, Barnett Reservoir Foundation, MS Museum of Natural Science, Dogwood Pediatric Dentistry, Mosquito X and Marco's Italian Pizza.

Rezonate through MDEQ also partnered with the City of Ridgeland to increase awareness of our project mission and goals by reaching more defined targeted audiences. *Rezonate* also partnered with the Summer Library Programs in Hinds, Madison and Rankin counties to teach students about the importance of protecting drinking water sources especially in the Ross Barnett Reservoir watershed. Over 250 students and parents were reached through this effort. Updates and reports from this *Rezonate* Initiative can be found here: www.rezonate-ms.org.

The Basin Management Branch and MDEQ will continue to work in partnership with the Pearl River Valley Water Supply District, and other agencies on improving water quality and community engagement in the Ross Barnett Reservoir Watershed.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 6, 7, 10, and 11 within the current 5-Year NPS Management Plan.

5. Support for Watershed Projects Implementation

The Nonpoint Source (NPS) Management Program is designed to support a wide variety of technical assistance, environmental education, technology transfer, demonstration, monitoring, analysis, and watershed protection and restoration projects. The NPS Program provides financial assistance to state agencies, local governments, resource agency partners, universities, and non-profit organizations to support the development and implementation of these projects.

The NPS Program business process focuses primarily on targeting priority watersheds, identified under the State's *Basin Management Approach* and *Prioritization Framework* by implementing specific watershed protection and restoration projects. In most instances, TMDLs provide the NPS program with the measurable water quality load reduction goals needed to restore waterbodies to their designated use. Important activities supported under this element include: water quality monitoring, data gathering, and assessment; water quality data analysis and evaluation; iterative watershed characterization and tracking of land-use practices; watershed plan implementation; and watershed plan evaluation and if needed, modification.

The Office of Pollution Control staff, in cooperation with the Office of Land and Water, the National Resource Conservation Service (NRCS), the U.S. Geological Survey (USGS) and Mississippi Soil and Water Conservation Commission, will continue to act as resource agencies for information on managing NPS project support for watershed projects. Public education and technical support for these projects are provided for all categories of NPS pollution. The purpose of this support in funding is to aid ongoing Watershed Nutrient Reduction Projects, NPS demonstration projects, active *National Water Quality Initiative* (NWQI) and *Mississippi River Basin Initiative* (MRBI) watershed projects, and previously funded watershed implementation projects where continued monitoring is needed to show success. Milestones/Outputs for the technical assistance activities associated with watershed project support include participating in Basin Team meetings, conservation education, project tracking, monitoring, and other watershed project type activities that are directly supporting a NPS Watershed project. Specific examples of watershed project support activities include:

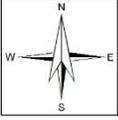
United States Geological Survey

USGS - Mississippi Water Science Center and MDEQ have an ongoing partnership to develop and implement watershed monitoring plans to include pre- and post- monitoring for selected §319-funded restoration projects. Water quality data (e.g. biological, physical, chemical, and/or stream flows) is collected annually at various locations throughout the State in waters that have been assessed as impaired and where BMPs have been implemented in the recent past. All final data are available on USGS's publicly facing data warehouse [NWIS \(National Water Information System\)](#) and interpretations will be published as an interpretive report after each individual project. All MDEQ monitoring funded by EPA grants is carried out under QAPPs prepared in accordance with the EPA QAPP Guidelines. The USGS station numbers for monitoring sites funded through this project are as follows:

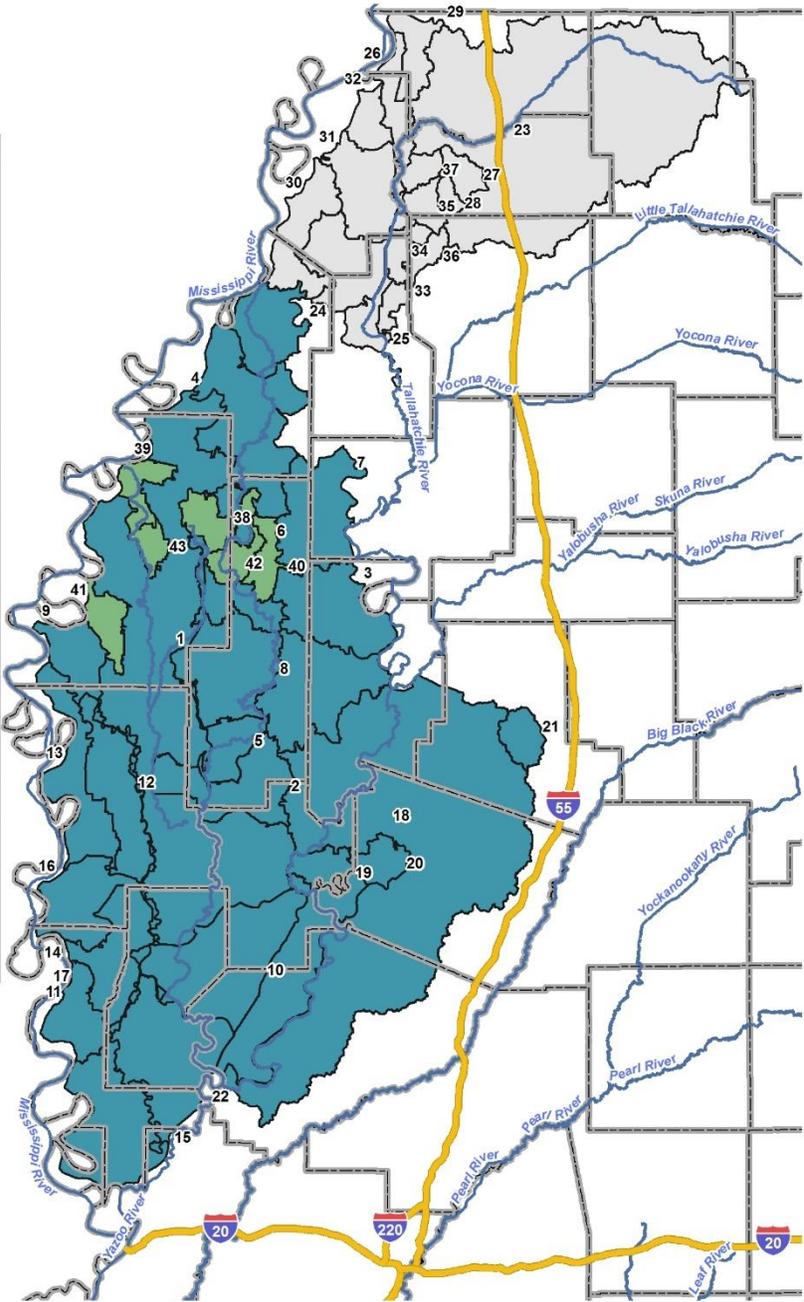
| USGS Station Number | MDEQ enSPIRE ID | USGS Station Name and Description |
|----------------------------|------------------------|---|
| 333420090445900 | 111A24 | Porter Bayou Trib No. 1 NW Frazier, MS |
| 333830090394600 | | Porter Bayou Trib No. 4 near Shaw, MS |
| 07288521 | 111B40 | Porter Bayou at Stephenville, MS |
| 333601090450000 | | Porter Bayou near Shaw, MS |
| 341404090385600 | 111D07 | Overcup Slough Trib No. 1 near Farrell, MS |
| 341550090391300 | 113A30 | Overcup Slough Trib No. 2 near Farrell, MS |
| 07288068 | 111B37 | Harris Bayou at Palmer Rd East of Alligator, MS |
| 07288048 | 111A14 | Riches Bayou at Sherard, MS |
| 330304090210100 | 111D04 | Bee Lake Tributary No. 1 near Thornton |

Natural Resource Conservation Service

The NPS Program is implemented in cooperation with several agencies, organizations, and groups at all levels of government and in the private sector. A great focus is given to activities that promote consensus building and partnering to increase the overall effectiveness of the State's NPS Program. One key partnership to increase this overall effectiveness of the program is with the USDA NRCS. MDEQ's memorandum of agreement with the USDA NRCS allows for greater collaboration and consistency in selecting priority areas within the state of Mississippi. This agreement allows for more leveraging between agencies and other partners to target the same areas, increasing the impact of the programs NRCS offers and the Section 319 funding MDEQ receives. Using the assessment tools, such as the Mississippi Watershed Characterization and Ranking Tool (MWCRT), and monitoring data have allowed for more informed decisions to be made regarding water quality issues in Mississippi. A couple of these collaborations include acquiring funding for the MRBI and the NWQI programs. This collaboration of agencies has brought in \$18,248,478 (MRBI) and \$1,683,102 (NWQI) in funding to install conservation practices to address water quality issues in Mississippi between FY 2015 to FY 2017. This funding was in addition to the regular funding that NRCS receives through the Environmental Quality Incentive Program (EQIP). This agreement has also helped in leading efforts to add two more NWQI watersheds in Mississippi in FY2017 with funding dedicated specifically for planning activities. Phase I of MRBI was active from FY2010 to FY2014, Phase II was active from FY2011 to FY2015, and Phase III is currently active for FY2016 to FY2017. Maps for MRBI and NWQI watersheds can be viewed below.



| NAME | PHASE | ID |
|--|-------|----|
| Big Sunflower River | I | 1 |
| Dawson Bayou-Big Sunflower River | I | 2 |
| Fighting Bayou-Quiver River | I | 3 |
| Harris Bayou-Big Sunflower River | I | 4 |
| Indian Bayou-Big Sunflower River | I | 5 |
| Mound Bayou-Big Sunflower River | I | 6 |
| Parks Bayou-Quiver River | I | 7 |
| Porter Bayou-Big Sunflower River | I | 8 |
| Rolling Fork Creek-Upper Deer Creek | I | 9 |
| Silver Creek-Big Sunflower River | I | 10 |
| Deer-Steele | I | 11 |
| Black Bayou | I | 12 |
| Granicus Bayou | I | 13 |
| Indian Bayou-Steele Bayou | I | 14 |
| Lower Deer Creek-Steele Bayou | I | 15 |
| Washington Bayou-Steele Bayou | I | 16 |
| Whiting Bayou-Steele Bayou | I | 17 |
| Upper Yazoo River | I | 18 |
| Lower Tchula Lake-Yazoo River | I | 19 |
| Tchula Lake Cutoff-Tchula Lake | I | 20 |
| Upper Pelucia Creek | I | 21 |
| Will M. Whittington Auxiliary Channel | I | 22 |
| Coldwater River | II | 23 |
| Muddy Bayou-Coldwater River | II | 24 |
| Lower Coldwater River | II | 25 |
| Lower Lake Cormorant Bayou-Coldwater River | II | 26 |
| Middle Arkabutla Creek | II | 27 |
| Patent Creek-Strayhorn Creek | II | 28 |
| Upper Lake Cormorant Bayou | II | 29 |
| Phillips Bayou-Yazoo Pass | II | 30 |
| White Oak Bayou-Coldwater River | II | 31 |
| Buck Island Bayou | II | 32 |
| Burrell Bayou | II | 33 |
| David Bayou | II | 34 |
| Egypt Creek-Strayhorn Creek | II | 35 |
| Indian Creek | II | 36 |
| Lower Arkabutla Creek | II | 37 |
| Beaver Bayou-Mound Bayou | III | 38 |
| Brook Bayou | III | 39 |
| Burrell Bayou | III | 40 |
| Christmas Lake Bayou | III | 41 |
| Long Lake | III | 42 |
| Tommie Bayou | III | 43 |



Legend

- MRBI Watersheds
 - Phase I (Blue)
 - Phase II (Green)
 - Phase III (Light Green)
- Major River (Blue line)
- Interstate (Yellow line)
- County (Grey outline)

MRBI Watersheds
Phases I - III



Mississippi Counties

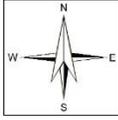


This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on April 26, 2017.

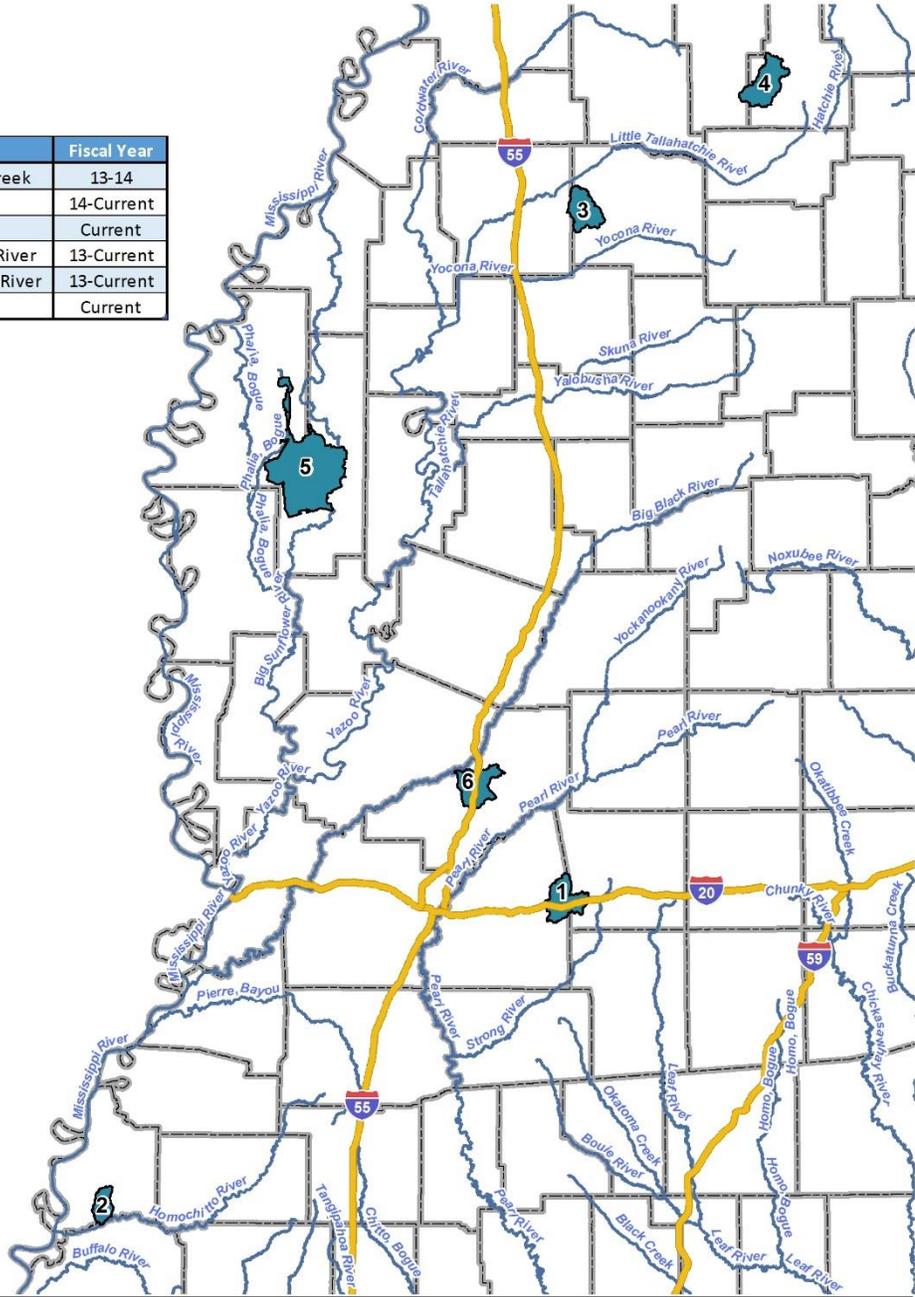
All map data is from the Mississippi Automated Resource Information System (MARIS), and MDEQ.

Map Projection: Mississippi Transverse Mercator

The Mississippi Department of Environmental Quality makes no warranties, expressed or implied, as to the accuracy, completeness, currentness, reliability, or suitability for any particular purpose, of the data contained on this map.



| ID | NAME | Fiscal Year |
|----|----------------------------------|-------------|
| 1 | Ashlog Creek-Pelahatchie Creek | 13-14 |
| 2 | Chase Bayou-Sammy Creek | 14-Current |
| 3 | Hudson Creek-Clear Creek | Current |
| 4 | North Tippah Creek-Tippah River | 13-Current |
| 5 | Porter Bayou-Big Sunflower River | 13-Current |
| 6 | Tilda Bogue-Bear Creek | Current |



- Legend**
- NWQI Watershed
 - Major River
 - Interstate
 - County

NWQI Watersheds
FY 13- Current FY



Mississippi Counties



This map produced by the Department of Environmental Quality (DEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on April 27, 2017.

All map data is from the Mississippi Automated Resource Information System (MARIS), and MDEQ.

Map Projection: Mississippi Transverse Mercator

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Mississippi Department of Environmental Quality

MDEQ provides monitoring support to NPS projects through funding under this element. Project data is sent to STORET as part of MDEQ's CWA Section 106 data flow. The projects and their corresponding streams and (environmental Surface water Portal for Information Repository and Exchange) enSPIRE IDs are as follows:

| Project | Stream Names | enSPIRE ID |
|---|--|--|
| Lake Washington (GY07) | Unnamed Creek Lake Washington | 111B53 YZ322 |
| Ross Barnett Reservoir (GY08, GY10, GY11, GY15) | Ross Barnett Reservoir Ross Barnett Reservoir Ross Barnett Reservoir Ross Barnett Reservoir | 549RBR01 549RBR02 549RBR03 549RBR04 |
| Porter Bayou (GY09, GY14) | Porter Bayou Porter Bayou | 111A24 111B40 111D21 111F01 113A37 113A38 113A39 113A40 113A41 113A42 113A43 113A44 |
| Harris Bayou (GY09, GY14) | Richies Bayou Harris Bayou Overcup Slough Overcup Slough Overcup Slough Overcup Slough | 111A14 111B37 111D07 111D08 111D09 113A30 |
| Bee Lake (GY10) | Bee Lake | 111D04 |
| Rotten Bayou (GY10, GY11) | Rotten Bayou Bayou La Terre Eutaetachee Creek Hickory Creek Bayou Lasalle Mill Creek Rotten Bayou Pellaphalia Creek Rotten Bayou | 02481663 02481665.18 112A16 112C68 112D64 112D67 112D99 113A47 113B82 |
| Coldwater River (GY11) | Walnut Lake White Oak Bayou | 113D87 113D88 |
| Sunflower Restoration Project (2012) | Big Sunflower River Turkey Bayou | 07288621 111A49 |

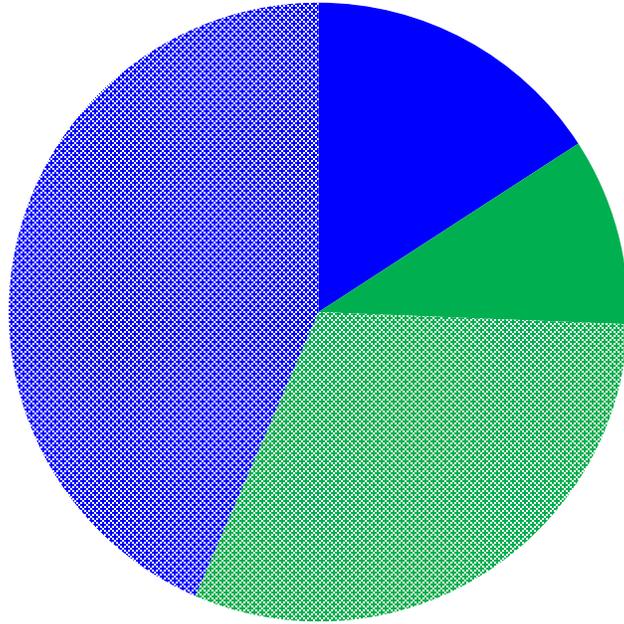
| | | |
|--|--|--|
| | Quiver River Parks Bayou Quiver River Quiver River | 113B21 113B22 113B23 A1350019 |
| Bell Creek-West Prong Muddy Creek (GY10, GY13) | North Prong Muddy Creek West Prong Muddy Creek North Prong Muddy Creek North Prong Muddy Creek North Prong Muddy Creek Muddy Creek Muddy Creek Bell Creek | 112D69 112D52 113B77 113B79 113B80 113B81 NI015 NI016 |
| Tarebreeches Creek (GY10, GY13) | Tarebreeches Creek Tarebreeches Creek Eastes Creek Little Cane Creek Tarebreeches Creek Little Cane Creek | 112B42 112D62 112D63 113B75 113B76 113B78 |
| North Tippah Creek (GY11) | North Tippah Creek North Tippah Creek South Tippah Creek Medlock Branch North Tippah Creek | 112B44 112B80 113A45 113A46 113B66 |
| Jasper Creek (GY15) | Jasper Creek Jasper Creek | YZ408 YZ409 |
| Little Topashaw Creek (GY15) | Little Topashaw Creek Little Topashaw Creek | YZ091 112D71 |
| Catalpa Creek (GY16) | Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek | 111F08 111F09 111F10 111F11 111F12 111F13 112B83 |
| Dry Creek (GY 16) | Dry Creek Dry Creek Dry Creek | PA024 PA347 111D23 |

Long Term Goals Supported:

Long Term Goals: See goals 4, 5, 8, 9, and 10 within the current 5-Year NPS Management Plan.

GRANT BUDGET SUMMARY

Funds



■ Project (spent) ■ Program (spent) ■ Program (balance) ■ Project (balance)

Mississippi's Nonpoint Source Management Program



2016 Annual Report
GY 2016 (10/1/15 - 9/30/20)



MISSISSIPPI DEPARTMENT OF
ENVIRONMENTAL QUALITY

**Prepared Pursuant to Section 319 of the Clean Water Act
Mississippi Department of Environmental Quality
April 2017**

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GY16 NPS PROGRAMS

1. Statewide NPS Program Administration

The Mississippi Department of Environmental Quality (MDEQ), Office of Pollution Control (OPC) serves as the lead agency in Mississippi for water quality management. Therefore, OPC is responsible for the development and implementation of the State's NPS Management Program. To do this, OPC performs several key administrative functions to ensure statewide implementation of NPS initiatives.

The overall completion date for the NPS Administration activity is the same as the grant period which is September 30, 2020. Funding to support the Program Administration functions represent 8% of the overall grant and therefore is in compliance with EPA's requirements that administration cost cannot exceed 10% of the grant.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 10, 12, 13, and 14 within the current 5-Year NPS Management Plan.

2. Statewide NPS Program Implementation

The Office of Pollution Control (OPC) coordinates the statewide NPS Program and funding under this element supports the staff that implement this program and the elements that follow.

Education and Outreach

A primary objective of the Statewide NPS Program is to increase public awareness of nonpoint source pollution and ways to reduce its impacts at the individual, community and watershed levels. Targeted audiences include private citizens, teachers, students, scout troops, civic leaders, contractors, farmers, urban neighborhood groups, civic organizations, lake community groups, environmental groups, foresters, and government resource agencies. To increase participation in program activities, funds may be allocated to procure refreshments and facilities for meetings with our target audiences as needed. Described below are routine programs/activities implemented as part of the statewide NPS focused education and outreach program:

Environmental Education and Outreach Mobile Classroom

A mobile, interactive classroom activity targeted for 3rd through 6th grade students providing information about NPS pollution in watersheds and what people can do to improve water quality. Activities presented in the program align with the standards adopted by the Mississippi Department of Education.

Adopt-A-Stream

Workshops teach participants about watersheds, NPS pollution, land use, watershed delineation, water quality, and water quality indicators. Workshops are held in priority watersheds and various regions of Mississippi to promote NPS education. In addition to the workshops, the program promotes the use of the *Storm Drain Marking Campaign* by providing an information packet and contact information to assist communities with storm drain marking projects. The packet includes examples of storm drain markers with a variety of pollution prevention messages, e.g. “No Dumping, Drains to River”. Also included are examples of a NPS informational doorknob hanger, a sample press release and a “how to” brochure on conducting a storm drain marking program.

Urban and Community Forests and Trees Working Locally to Reduce NPS Pollution

In this project, the Mississippi Urban Forestry Council will assist MDEQ’s NPS Management Branch with personnel, facilities and materials to conduct an urban forestry campaign in Mississippi that focuses on the role of city governments in mitigating NPS pollution. This will be accomplished through the use of community forestry strategies and solutions.

Envirothon

The Envirothon High School Competition tests student knowledge about water, soils, forestry, wildlife, and current environmental issues each year. The competition measures success by student oral presentations made to a panel of judges where each team applies their knowledge and field experiences to a real life environmental problem/situation. It also includes both written and field tests. The Mississippi competition is sponsored by MDEQ’s NPS Program and the Mississippi Association of Conservation Districts and is coordinated by the Mississippi Soil and Water Conservation Commission.

Environmental Teacher Workshops

Teacher workshops are a major component of MDEQ’s NPS education program each year. The teacher workshops include interactive classroom activities and field trips with some of the best environmental/natural resource speakers in Mississippi instructing the classroom teachers and environmental educators. These workshops include sessions on water quality, NPS pollution prevention, green infrastructure, low-impact development, water chemistry, benthic macroinvertebrate community measures, and hands-on, water related activities. Educators can use all the information provided in these workshops to teach students about natural resource stewardship. In addition, the NPS program assists with workshop support for the following curricula: *Project Learning Tree*; *Project WET*; *Project WILD*; *Project Aquatic WILD*; *Project Food, Land and People*; *Private Eye*; and others.

Project Learning Tree

Project Learning Tree workshops and training activities create an awareness of nonpoint source water pollution that will lead to habit and behavior changes to improve water quality in Mississippi. The Mississippi Forestry Foundation assists MDEQ’s Nonpoint Source Pollution Education Program with the conduct of *Project Learning Tree* environmental education workshops, training, and meetings.

Summer Ecology Day Camp

The NPS program will sponsor five (5), one-week summer camp sessions at the *University of Mississippi Demonstration Technology Transfer Building* where students will be trained. These camps train students on environmental topics such as water quality, land use, forestry, wildlife, and NPS pollution. A pre-test/post-test method is used to measure increased knowledge as an indicator of program success.

Make-A-Splash Event

Make-A-Splash, a water education event, is held each September at the Mississippi Museum of Natural Science in Jackson, Mississippi where students visit water-related interactive booths and guided museum exhibits to learn about polluted runoff, wildlife, water use, groundwater, surface water, macroinvertebrates, and other water quality and ecosystem indicators.

Water Resources Management System - The *Water Resources Management System (WRMS)* is a custom implementation of *Watershed-The System*, a GIS-enabled solution developed by Cengea Solutions, Inc. MDEQ contracted *Cengea* to support configuration of the software to help meet grant tracking obligations for the NPS Management Program. The NPS Management Branch uses the WRMS to enter, manage, map, analyze, and report information about the NPS program, budget, and activities.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 9, 10, 13, and 14 within the current 5-Year NPS Management Plan.

3. NPS Watershed Planning

The NPS Management Program implements strategies that target priority watersheds throughout the State. Prioritization of these watersheds is an evolving process identified in coordination with resource agency partners as part of the Basinwide Approach to Water Quality Management. Mississippi's collaborative, leveraged approach focuses on the development and implementation of 9 Key Element watershed plans. The target audience for the strategic planning and implementation includes local agencies and organizations with a mission for environmental and water quality restoration and protection, and local, state and federal agencies with the authority to develop and implement watershed plans.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 9, 10, 13, and 14 within the current 5-Year NPS Management Plan.

GY16 NPS PROJECTS

4. NPS Watershed Project Implementation

Red Bud – Catalpa Creek

A phased implementation approach is planned for habitat and water quality restoration and protection activities in the Red Bud-Catalpa Creek Watershed.

The *Implementation Plan for the Red Bud-Catalpa Creek Watershed Phase 1* focuses on the implementation of Phase 1 activities. A subsequent plan will be developed for Phase 2 and future phases and both will be incorporated into a revised *Water Resources Management Plan for the Red Bud-Catalpa Creek Watershed*.

A two-step process was used to identify critical management areas targeted for the implementation of Phase 1 management practices. The first step in this process was the identification of management areas of concern throughout the watershed. The second step focused on identifying critical management areas in the headwaters of the watershed. Management areas of concern that focused on attributes related to soil erosion, nutrient loadings, and stream processes were identified throughout the Red Bud-Catalpa Creek Watershed.

The positioning of MSU's South Farm in the headwaters of the watershed as a willing landowner; the increased likelihood for leveraging of in-kind services; high visibility for the installed BMPs; opportunities to create experiential learning activities through planning, installation, monitoring, and education activities; proximity to pollutant sources; and resource eligibility all led to the selection of three Critical Management Areas on the South Farm as the focus of Phase 1 implementation.

Dry Creek

The Dry Creek watershed covers 13,224 acres in Covington County, Mississippi. This watershed contains many land-use types including agricultural land, pastureland, and forest areas; however, the dominant land-uses within the watershed, as identified in the 2011 National Land-use Data Coverage (NLDC), are forest (55.7%) and pasture/grass (31.7%).

Using biological community data, Dry Creek was assessed as impaired (segment ID MS082E) and was placed on the Mississippi 2002 Section 303(d) List of Impaired Water Bodies for biological impairment. A stressor identification study was completed to determine the most likely cause(s) of the impairment. This analysis identified sediment as the most probable stressor of the water body and a sediment TMDL was developed.

The most recent land-use data (NLCD 2011) attributes the land-use in the Dry Creek Watershed to be predominantly forest at 55.7%. Since 2011, much of the forest in this watershed was harvested and the land has been converted to pasture to support grazing operations. As such, some of the BMPs installed in this project will focus on managing these newly converted

pastures to mitigate the potential of increased sedimentation. Examples of potential BMPs include: Cross Fencing, Watering Facilities, Heavy Use Areas, Stream Crossings, Ponds, Sediment Basins, and Nutrient Management Practices.

The sediment TMDL for Dry Creek (MS082E) concluded that sediment yields would need to be reduced by 55%-66% in the watershed to reflect stable conditions. The National Resource Conservation Service (NRCS) has a list of approved BMPs to address sedimentation, and this list will be used to identify candidate BMPs in Dry Creek. The goal is to foster behavior changes and the use of “best management practices” that will improve water quality and, ultimately, the overall quality of life in the watershed.

Dry Creek has been submitted to EPA and MDEQ is working with EPA to address comments.

Long Term Goals Supported:

Long Term Goals: See goals 1, 2, 3, 4, 5, 6, 7, 10, and 11 within the current 5-Year NPS Management Plan.

5. Support for Watershed Projects Implementation

The NPS Management Program is designed to support a wide variety of technical assistance, environmental education, technology transfer, demonstration, monitoring, analysis, and watershed protection and restoration projects. The NPS Program provides financial assistance to state agencies, local governments, resource agency partners, universities, and non-profit organizations to support the development and implementation of these projects.

The NPS Program business process focuses primarily on targeting priority watersheds, identified under the State’s *Basin Management Approach* and *Prioritization Framework* by implementing specific watershed protection and restoration projects. In most instances, TMDLs provide the NPS program with the measurable water quality load reduction goals needed to restore waterbodies to their designated use. Important activities supported under this element include: water quality monitoring, data gathering, and assessment; water quality data analysis and evaluation; iterative watershed characterization and tracking of land-use practices; watershed plan implementation; and watershed plan evaluation and if needed, modification.

The Office of Pollution Control staff, in cooperation with the Office of Land and Water, the National Resource Conservation Service (NRCS), the U.S. Geological Survey (USGS) and Mississippi Soil and Water Conservation Commission, will continue to act as resource agencies for information on managing NPS project support for watershed projects. Public education and technical support for these projects are provided for all categories of NPS pollution. The purpose of this support in funding is to aid ongoing Watershed Nutrient Reduction Projects, NPS demonstration projects, active *National Water Quality Initiative* (NWQI) and *Mississippi River Basin Initiative* (MRBI) watershed projects, and previously funded watershed implementation projects where continued monitoring is needed to show success. Milestones/Outputs for the technical assistance activities associated with watershed project support include participating in Basin Team meetings, conservation education, project tracking, monitoring, and other watershed

project type activities that are directly supporting a NPS Watershed project. Specific examples of watershed project support activities include:

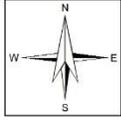
United States Geological Survey

USGS - Mississippi Water Science Center and MDEQ have an ongoing partnership to develop and implement watershed monitoring plans to include pre- and post- monitoring for selected §319-funded restoration projects. Water quality data (e.g. biological, physical, chemical, and/or stream flows) is collected annually at various locations throughout the State in waters that have been assessed as impaired and where BMPs have been implemented in the recent past. All final data are available on USGS’s publicly facing data warehouse [NWIS \(National Water Information System\)](#) and interpretations will be published as an interpretive report after each individual project. All MDEQ monitoring funded by EPA grants is carried out under QAPPs prepared in accordance with the EPA QAPP Guidelines. The USGS station numbers for monitoring sites funded through this project are as follows:

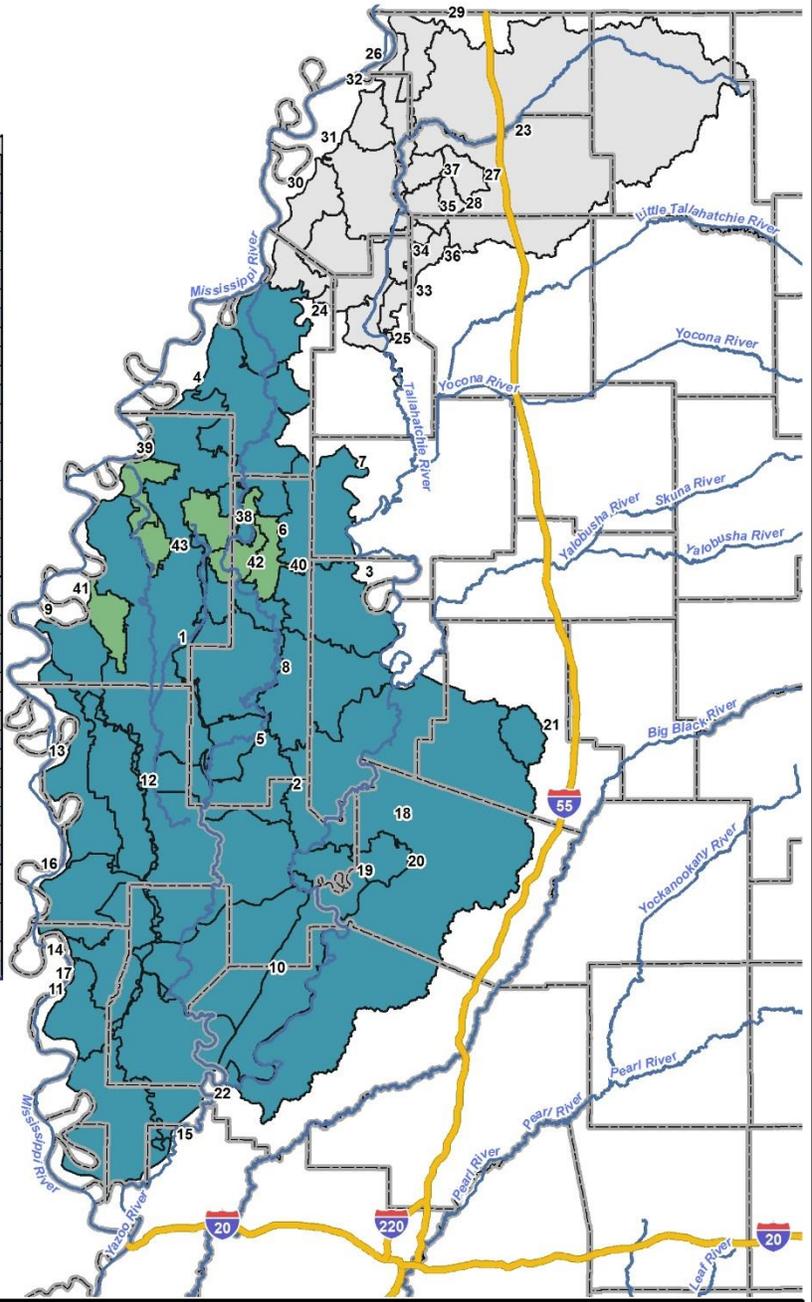
| USGS Station Number | enSPIRE ID | USGS Station Name and Description |
|----------------------------|-------------------|---|
| 333420090445900 | 111A24 | Porter Bayou Trib No. 1 NW Frazier, MS |
| 333830090394600 | | Porter Bayou Trib No. 4 near Shaw, MS |
| 07288521 | 111B40 | Porter Bayou at Stephenville, MS |
| 333601090450000 | | Porter Bayou near Shaw, MS |
| 341404090385600 | 111D07 | Overcup Slough Trib No. 1 near Farrell, MS |
| 341550090391300 | 113A30 | Overcup Slough Trib No. 2 near Farrell, MS |
| 07288068 | 111B37 | Harris Bayou at Palmer Rd East of Alligator, MS |
| 07288048 | 111A14 | Riches Bayou at Sherard, MS |
| 330304090210100 | 111D04 | Bee Lake Tributary No. 1 near Thornton |

Natural Resource Conservation Service

The NPS Program is implemented in cooperation with several agencies, organizations, and groups at all levels of government and in the private sector. A great focus is given to activities that promote consensus building and partnering to increase the overall effectiveness of the State's NPS Program. One key partnership to increase this overall effectiveness of the program is with the USDA NRCS. MDEQ's memorandum of agreement with the USDA NRCS allows for greater collaboration and consistency in selecting priority areas within the state of Mississippi. This agreement allows for more leveraging between agencies and other partners to target the same areas, increasing the impact of the programs NRCS offers and the Section 319 funding MDEQ receives. Using the assessment tools, such as the Mississippi Watershed Characterization and Ranking Tool (MWCRT), and monitoring data have allowed for more informed decisions to be made regarding water quality issues in Mississippi. A couple of these collaborations include acquiring funding for the MRBI and the NWQI programs. This collaboration of agencies has brought in \$9,235,029 (MRBI) and \$922,142 (NWQI) in funding to install conservation practices to address water quality issues in Mississippi between FY 2016 to FY 2017. This funding was in addition to the regular funding that NRCS receives through the Environmental Quality Incentive Program (EQIP). This agreement has also helped in leading efforts to add two more NWQI watersheds in Mississippi in FY2017 with funding dedicated specifically for planning activities. Phase I of MRBI was active from FY2010 to FY2014, Phase II was active from FY2011 to FY2015, and Phase III is currently active for FY2016 to FY2017. Maps for MRBI and NWQI watersheds can be viewed below.



| NAME | PHASE | ID |
|--|-------|----|
| Big Sunflower River | I | 1 |
| Dawson Bayou-Big Sunflower River | I | 2 |
| Fighting Bayou-Quiver River | I | 3 |
| Harris Bayou-Big Sunflower River | I | 4 |
| Indian Bayou-Big Sunflower River | I | 5 |
| Mound Bayou-Big Sunflower River | I | 6 |
| Parks Bayou-Quiver River | I | 7 |
| Porter Bayou-Big Sunflower River | I | 8 |
| Rolling Fork Creek-Upper Deer Creek | I | 9 |
| Silver Creek-Big Sunflower River | I | 10 |
| Deer-Steele | I | 11 |
| Black Bayou | I | 12 |
| Granicus Bayou | I | 13 |
| Indian Bayou-Steele Bayou | I | 14 |
| Lower Deer Creek-Steele Bayou | I | 15 |
| Washington Bayou-Steele Bayou | I | 16 |
| Whiting Bayou-Steele Bayou | I | 17 |
| Upper Yazoo River | I | 18 |
| Lower Tchula Lake-Yazoo River | I | 19 |
| Tchula Lake Cutoff-Tchula Lake | I | 20 |
| Upper Pelucia Creek | I | 21 |
| Will M. Whittington Auxiliary Channel | I | 22 |
| Coldwater River | II | 23 |
| Muddy Bayou-Coldwater River | II | 24 |
| Lower Coldwater River | II | 25 |
| Lower Lake Cormorant Bayou-Coldwater River | II | 26 |
| Middle Arkabutla Creek | II | 27 |
| Patent Creek-Strayhorn Creek | II | 28 |
| Upper Lake Cormorant Bayou | II | 29 |
| Phillips Bayou-Yazoo Pass | II | 30 |
| White Oak Bayou-Coldwater River | II | 31 |
| Buck Island Bayou | II | 32 |
| Burrell Bayou | II | 33 |
| David Bayou | II | 34 |
| Egypt Creek-Strayhorn Creek | II | 35 |
| Indian Creek | II | 36 |
| Lower Arkabutla Creek | II | 37 |
| Beaver Bayou-Mound Bayou | III | 38 |
| Brook Bayou | III | 39 |
| Burrell Bayou | III | 40 |
| Christmas Lake Bayou | III | 41 |
| Long Lake | III | 42 |
| Tommie Bayou | III | 43 |



Legend

- MRBI Watersheds
 - Phase I (Blue)
 - Phase II (Green)
 - Phase III (Light Green)
- Major River (Blue line)
- Interstate (Yellow line)
- County (Grey outline)

MRBI Watersheds
Phases I - III



Mississippi Counties

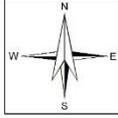


This map produced by the Department of Environmental Quality (DEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on April 26, 2017.

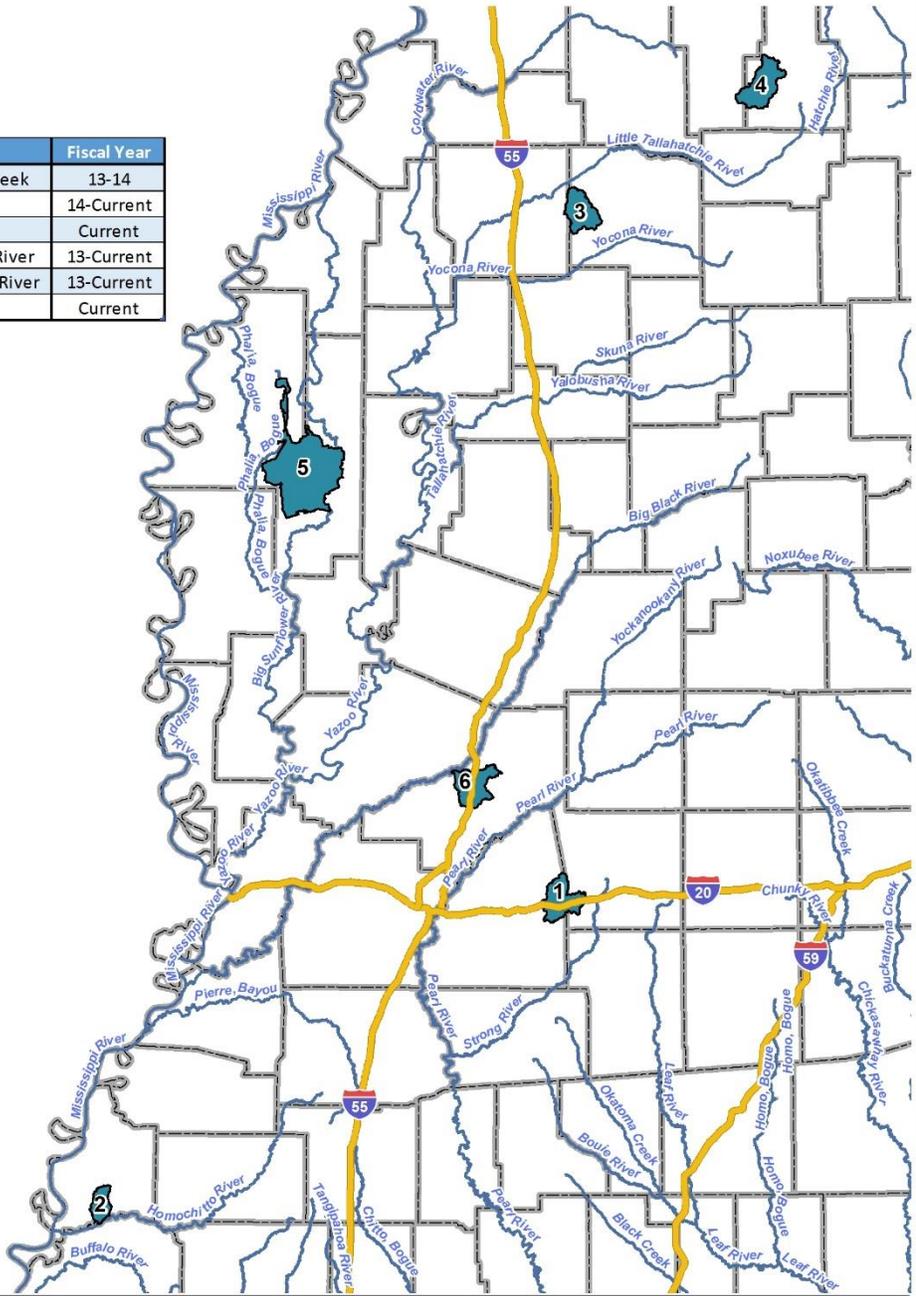
All map data is from the Mississippi Automated Resource Information System (MARIS), and MDEQ.

Map Projection: Mississippi Transverse Mercator

The Mississippi Department of Environmental Quality makes no warranties, expressed or implied, as to the accuracy, completeness, currentness, reliability, or suitability for any particular purpose, of the data contained on this map.



| ID | NAME | Fiscal Year |
|----|----------------------------------|-------------|
| 1 | Ashlog Creek-Pelahatchie Creek | 13-14 |
| 2 | Chase Bayou-Sammy Creek | 14-Current |
| 3 | Hudson Creek-Clear Creek | Current |
| 4 | North Tippah Creek-Tippah River | 13-Current |
| 5 | Porter Bayou-Big Sunflower River | 13-Current |
| 6 | Tilda Bogue-Bear Creek | Current |



- Legend**
- NWQI Watershed
 - Major River
 - Interstate
 - County

NWQI Watersheds
FY 13- Current FY



Mississippi Counties



This map produced by the Department of Environmental Quality (MDEQ), Office of Pollution Control, Surface Water Division, Standards, Modeling, and TMDL Branch on April 27, 2017.

All map data is from the Mississippi Automated Resource Information System (MARIS), and MDEQ.

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Mississippi Department of Environmental Quality

MDEQ provides monitoring support to NPS projects through funding under this element. Project data is sent to STORET as part of MDEQ's CWA Section 106 data flow. The projects and their corresponding streams and (environmental Surface water Portal for Information Repository and Exchange) enSPIRE IDs are as follows:

| Project | Stream Names | enSPIRE ID |
|---|--|--|
| Lake Washington (GY07) | Unnamed Creek Lake Washington | 111B53 YZ322 |
| Ross Barnett Reservoir (GY08, GY10, GY11, GY15) | Ross Barnett Reservoir Ross Barnett Reservoir Ross Barnett Reservoir Ross Barnett Reservoir | 549RBR01 549RBR02 549RBR03 549RBR04 |
| Porter Bayou (GY09, GY14) | Porter Bayou Porter Bayou | 111A24 111B40 111D21 111F01 113A37 113A38 113A39 113A40 113A41 113A42 113A43 113A44 |
| Harris Bayou (GY09, GY14) | Richies Bayou Harris Bayou Overcup Slough Overcup Slough Overcup Slough Overcup Slough | 111A14 111B37 111D07 111D08 111D09 113A30 |
| Bee Lake (GY10) | Bee Lake | 111D04 |
| Rotten Bayou (GY10, GY11) | Rotten Bayou Bayou La Terre Eutaetachee Creek Hickory Creek Bayou Lasalle Mill Creek Rotten Bayou Pellaphalia Creek Rotten Bayou | 02481663 02481665.18 112A16 112C68 112D64 112D67 112D99 113A47 113B82 |
| Coldwater River (GY11) | Walnut Lake White Oak Bayou | 113D87 113D88 |
| Sunflower Restoration Project (2012) | Big Sunflower River Turkey Bayou | 07288621 111A49 |

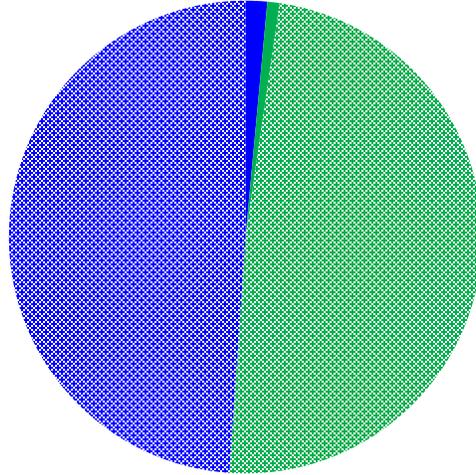
| | | |
|--|--|--|
| | Quiver River Parks Bayou Quiver River Quiver River | 113B21 113B22 113B23 A1350019 |
| Bell Creek-West Prong Muddy Creek (GY10, GY13) | North Prong Muddy Creek West Prong Muddy Creek North Prong Muddy Creek North Prong Muddy Creek North Prong Muddy Creek Muddy Creek Muddy Creek Bell Creek | 112D69 112D52 113B77 113B79 113B80 113B81 NI015 NI016 |
| Tarebreeces Creek (GY10, GY13) | Tarebreeces Creek Tarebreeces Creek Eastes Creek Little Cane Creek Tarebreeces Creek Little Cane Creek | 112B42 112D62 112D63 113B75 113B76 113B78 |
| North Tippah Creek (GY11) | North Tippah Creek North Tippah Creek South Tippah Creek Medlock Branch North Tippah Creek | 112B44 112B80 113A45 113A46 113B66 |
| Jasper Creek (GY15) | Jasper Creek Jasper Creek | YZ408 YZ409 |
| Little Topashaw Creek (GY15) | Little Topashaw Creek Little Topashaw Creek | YZ091 112D71 |
| Catalpa Creek (GY16) | Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek Catalpa Creek | 111F08 111F09 111F10 111F11 111F12 111F13 112B83 |
| Dry Creek (GY 16) | Dry Creek Dry Creek Dry Creek | PA024 PA347 111D23 |

Long Term Goals Supported:

Long Term Goals: See goals 4, 5, 8, 9, and 10 within the current 5-Year NPS Management Plan.

GRANT BUDGET SUMMARY

Funds



■ Project (spent) ■ Program (spent) ■ Program (balance) ■ Project (balance)