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Princess Falls, KY

2022 NONPOINT SOURCE POLLUTION

ANNUAL REPORT



DEC 2022 // KENTUCKY NONPOINT SOURCE PROGRAM





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NONPOINT SOURCE MANAGEMENT IN KENTUCKY


The Kentucky Nonpoint Source Management Program's mission is to protect surface and groundwater from nonpoint source pollution, abate pollution threats, and restore degraded waters to meet water quality standards and support beneficial uses. Given its diffuse nature, nonpoint source pollution (NPS) management requires partnering with a wide variety of organizations; alongside federal, state, local, and private partners, the NPS team promotes complementary regulatory and non-regulatory pollution control initiatives at both statewide and watershed levels.

The Nonpoint Source Management Program administers and implements the Kentucky Division of Water's 319(h) federal grant program. The Environmental Protection Agency (EPA) awards the Kentucky Division of Water (DOW) with grant funds each year for the purpose of addressing problems associated with nonpoint source pollution. A 40 percent non-federal match is required on all projects that receive funding. During the ranking period, priority is given to projects involving watershed-based plan development and implementation in impaired waters, as well as protection of Special Use Waters with identified threats.

In Federal Fiscal Year (FFY) 2022, DOW received \$2.8 million from Clean Water Act Section 319(h) funding to execute the Nonpoint Source Management Program. This year, communities and organizations shared \$1.4 million in federal funding to implement projects that control nonpoint source pollution within watershed planning areas. DOW awarded those funds to implement best management practices (BMPs) in 12 watershed planning areas, help develop four watershed plans, coordinate statewide nutrient management, and provide technical assistance and training to agricultural producers on water quality issues.

This report features accomplishments aligned with the NPS program's goals that occurred during FFY 2022 (October 1, 2021 – September 30, 2022).

INTRODUCTION



Chapter 1 THE WATERSHED APPROACH

WATERSHED PLANNING AND IMPLEMENTATION

Division of Water (DOW) staff provide technical assistance to watershed groups and other partners as they develop watershed plans and implement nonpoint source pollution abatement strategies identified through the watershed planning process. During FFY 2022, DOW staff reviewed four draft watershed plans: Upper Paint Lick Creek, Middle Fork Beargrass Creek, West Hickman Creek, and Lower Pitman Creek; the Middle Fork Beargrass Creek watershed plan was officially accepted by the EPA during FFY 2022.

Watershed plan reviews are coordinated by the Kentucky Interbranch Watershed Implementation Workgroup, which provides the opportunity for all DOW branches to comment or offer constructive feedback on watershed plans prior to acceptance. Currently, 29 watershed plans have been accepted for full implementation with Clean Water Act Section 319(h) funding. At present, an additional ten watershed plans are under development (Figure 1).

Ten watershed plans are currently being implemented through one or more Clean Water Act Section 319(h)-funded contracts during FFY 2022. Watershed coordinators are integral to the success of implementation projects, managing on-the-ground best management practices to reduce nonpoint sources ranging from urban stormwater to agricultural inputs. Watershed coordinators also work through many channels to conduct watershed-focused environmental education and outreach to the public, local officials, and school-aged children.

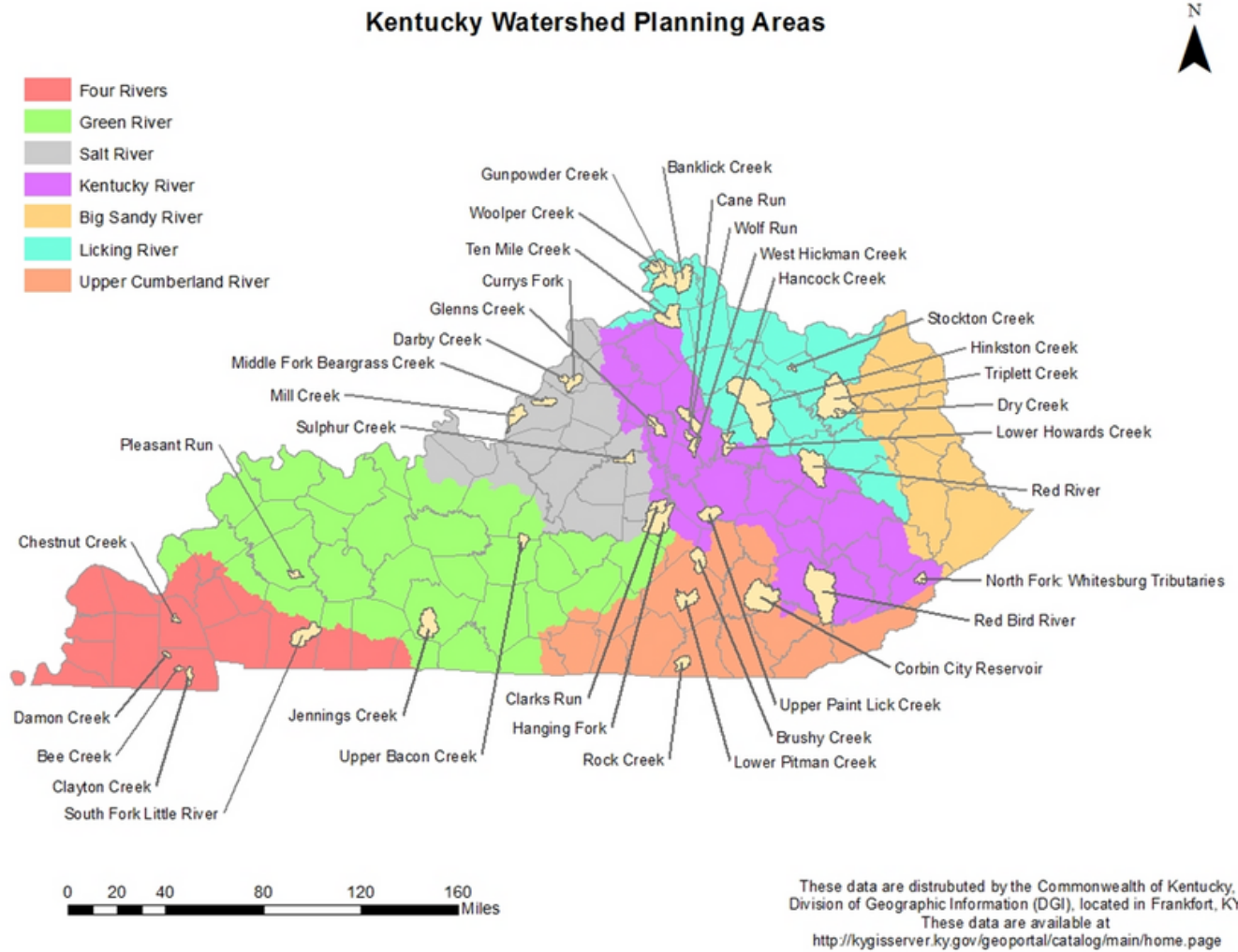


Figure 1. Approved watershed planning areas and areas containing watershed plan development for Federal Fiscal Year 2022 are indicated in yellow.

NONPOINT SOURCE SUCCESS STORY

Watershed Planning and Partnerships Lead to Gunpowder Creek Delisting

The Kentucky Division of Water (DOW) added a 15-mile segment of Gunpowder Creek (mile 0.0-15.0) to the 2002 Clean Water Act (CWA) section 303(d) list/Integrated Report as impaired (nonsupport) for warm water aquatic habitat (WAH) due to siltation and

land development. After years of local improvements to stormwater controls, agricultural conservation practices, watershed planning, and stream restoration efforts, macroinvertebrate community data collected in 2014 indicated the segment fully supports its WAH designated use. As a result, DOW delisted the sedimentation/siltation impairment for this Gunpowder Creek segment in the 2018/2020 Integrated Report to Congress.

Problem

Gunpowder Creek drains into the Ohio River in northern Kentucky (Figure 2). Gunpowder Creek is approximately 21.9 miles long and drains a 58.2-square-mile watershed dominated by forest (42%), urban areas (32%), and agriculture (24%) in Boone County. The drainage area is made up of two subwatersheds (Upper and Lower Gunpowder creeks) and includes the cities of Florence and Union. Biological sampling of Gunpowder Creek (miles 0.0–15.0) in 1995–1999 indicated that siltation caused this segment to fail to support the aquatic life designated use, resulting in its

placement on the 2002 CWA section 303(d) list. Additional biological monitoring in 2011 confirmed this impairment, and the stream remained listed on the 2016 CWA 303(d) list.

Story Highlights

In 2009, the CWA Section 319(h) program awarded over \$501,000 to the Boone County Conservation District to develop a Gunpowder Creek watershed plan. This plan funded an extensive monitoring, planning, and collaboration effort that identified stormwater-driven sediment and bacteria as the primary pollution sources of concern. Partners, including the Boone County Conservation District, the cities of Florence and Union, Sanitation District No.1 of Northern Kentucky (SD1), and DOW, identified practices such as stream restoration, stormwater retention, and riparian buffers to mitigate siltation issues. Northern Kentucky University's (NKU's) Stream and Wetland Restoration Program helped restore 2,700 feet of stream in Florence with a history of erosion and flooding (Figure 3). Restoration monitoring between 2009 and 2013 demonstrated that successful tree plantings (more than 2,000 plantings/acre) widened riparian buffers and improved stormwater storage, which helped to reduce erosion.

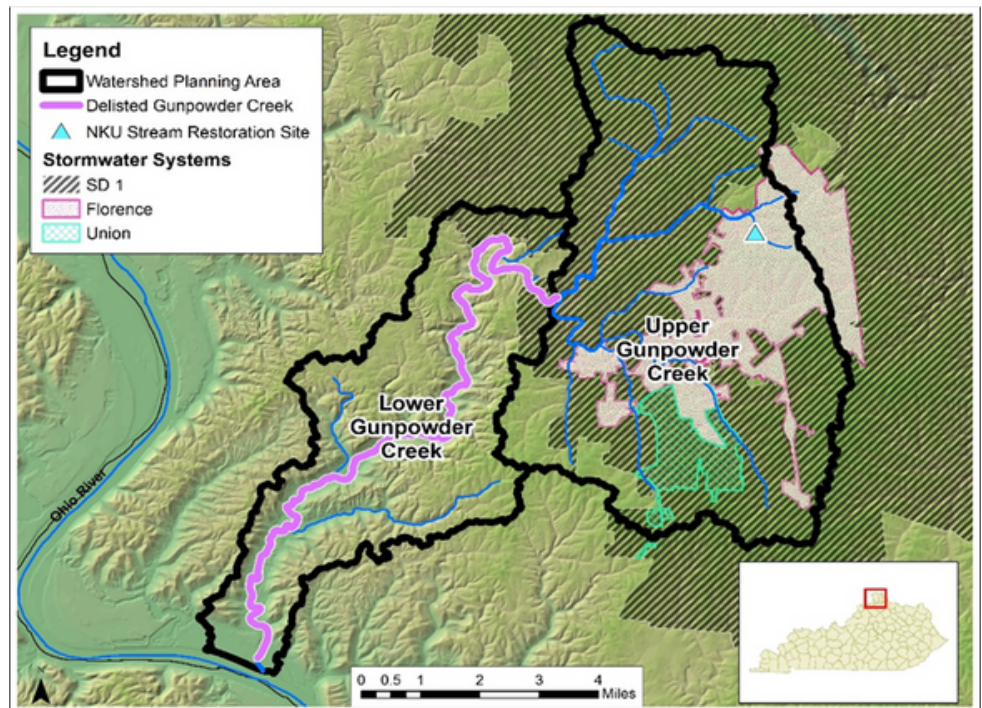


Figure 2. Gunpowder Creek in northern Kentucky.



Figure 3. Stream restoration project in Gunpowder Creek watershed.

Additionally, several partners revised their stormwater rules to limit stormwater runoff, including the City of Florence (in 2005), Boone County (in 2012 and 2015), and SD1 (in 2011 and 2012). SD1 further developed a regional stormwater management program credit (in 2012) allowing property owners to receive a bill credit for implementing best management practices (BMPs) that improve water quality or stormwater runoff intensity.

Between 2000 and 2014, partners applied agriculture BMPs to over 10,000 acres in the Upper and Lower Gunpowder Creek watersheds with financial or technical assistance from the Natural Resources Conservation Service (NRCS). Additionally, over 14,800 linear feet of fence were installed to support rotational grazing, stream exclusion, and other erosion-mitigating agricultural practices.

Results

Following substantial watershed planning and collaboration, new data demonstrate the Gunpowder Creek segment (miles 0.0–15.0) now supports the WAH designated use. Sampling between 1995 and 1999 classified the biological community as poor due to siltation. In 2011, the macroinvertebrate community was found to be fair using the macroinvertebrate biological index (MBI). In 2014, the macroinvertebrate community improved, and Gunpowder Creek scored in the good MBI range. As a result, Gunpowder Creek (miles 0.0–15.0) now meets its WAH designated use and was delisted as part of the 2018/2020 Integrated Report to Congress.

Partners and Funding

The Gunpowder Creek watershed received significant partner engagement, catalyzed through the Gunpowder Creek Watershed Plan. In addition to EPA and DOW, key partners include the Boone County Conservation District, the cities of Florence and Union, SD1, NKU, and Kentucky NRCS. In addition to CWA Section 319 program funding (\$501,056) for watershed planning, NKU contributed \$239,000 towards stream restoration, and Kentucky NRCS funded \$94,560 in agricultural BMPs

(primarily in the Lower Gunpowder Creek subwatershed). The lasting impact of watershed planning is evident in ongoing collaborative investments, including installing new stormwater basins, upgrading existing stormwater basins (retrofits), constructing a bankfull stormwater wetland (2017), and adding stream exclusion fencing for livestock. Multiple stormwater improvement projects are being developed with SD1, the City of Florence, NKU, and the Cincinnati/Northern Kentucky International Airport—these are likely to improve water quality for years to come.

FEATURED PROJECT

Chestnut Creek Watershed

Chestnut Creek (HUC14 number 06040006040670) is a small, 8.05 square mile watershed located within Marshall County in western Kentucky. Most of its tributaries are listed on the 2018/2020 303(d) list of impaired waters; in the years since the development and approval of the Chestnut Creek Watershed Based Plan, Chestnut Creek has gone from being partially supporting to non-supporting for Warm Water Aquatic Habitat and Primary Contact Recreation. A large portion of Chestnut Creek has an approved TMDL for E. coli and it has been identified as a priority watershed in the state.

Land uses in the watershed are mostly agriculture (46%) and forest (42%) while development represents about 9% of the land cover. Although Chestnut Creek is a small and relatively undeveloped watershed, community members are impacted by severe erosion, frequent flooding, and high levels of bacteria and nutrients in certain areas. These NPS pollution issues are compounded because Chestnut Creek drains into the Clarks River at the Clarks River National Wildlife Refuge, which was established in 1998. The refuge encompasses one of the largest remaining bottomland hardwood forests in the region. These river swamps serve a critical role by providing areas to store floodwater, filter nutrients, and reduce sediment.

Watershed Plan Implementation

Since the approval of the Chestnut Creek Watershed Based Plan in early 2016, there have been four 319 implementation projects in the watershed (Figure 4). The majority of the best management practices (BMPs) address bacteria and nutrient pollution from failing onsite wastewater systems; agricultural BMPs have also been implemented in the watershed. Below are short summaries of each of these projects.

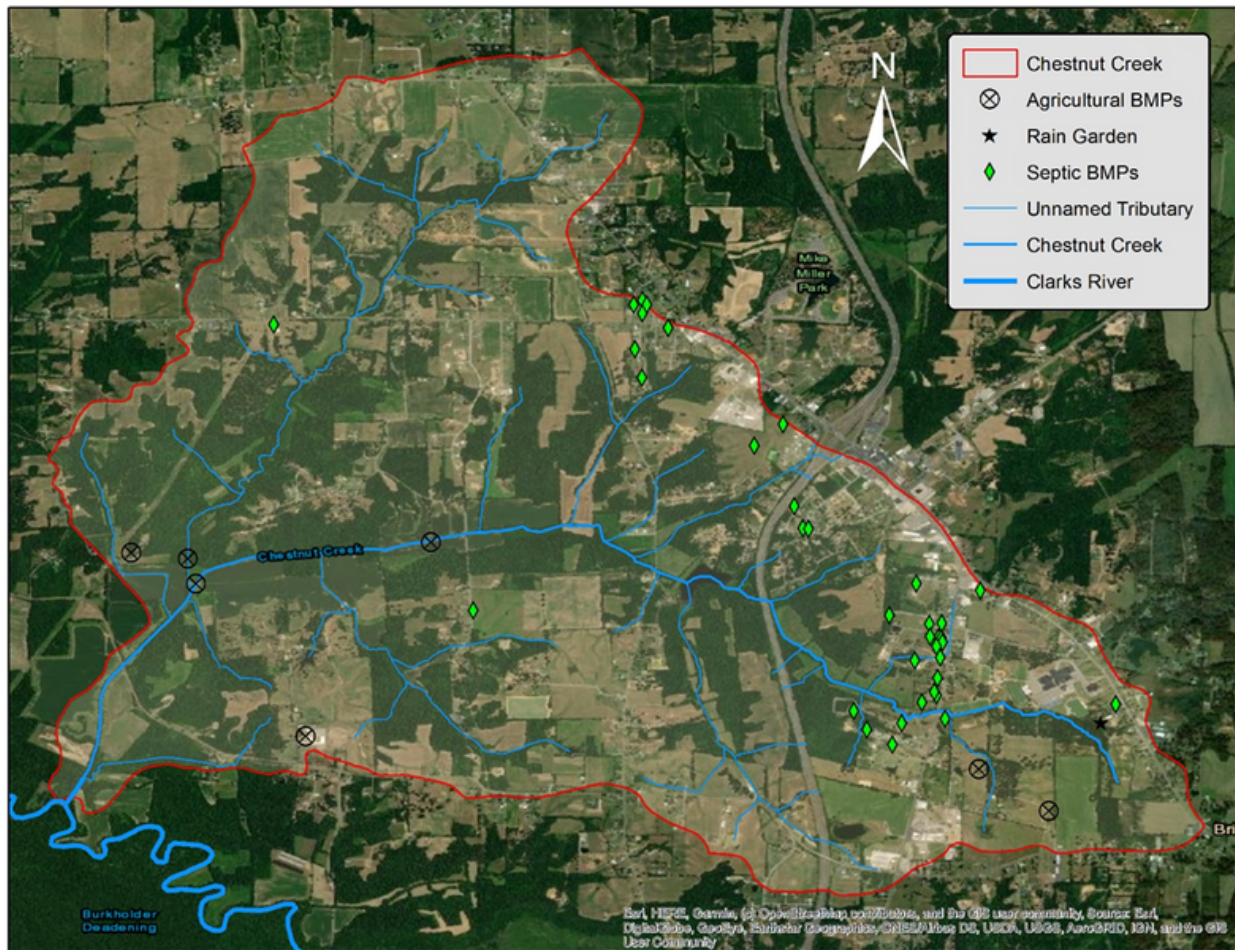


Figure 4. BMP Implementation in the Chestnut Creek Watershed.

Watershed Coordinator & Implementation in Chestnut Creek (14-06)

The first implementation project to take place after the approval of the *Chestnut Creek Watershed Based Plan* started 02/01/2016 and ended 09/30/2018. Through this 319 project (14-06), the Friends of Clarks River National Wildlife Refuge hired a part-time Watershed Coordinator. The Watershed Coordinator helped facilitate implementation of agricultural and stream stabilization BMPs; a septic repair and replacement program; and education and outreach activities focused on water resources, NPS pollution, water quality, and solutions for the local community. BMPs implemented through this project were:

- (1) Vegetated Filter Strip – this BMP was created by adding felled trees from the property to the eroded ditches to slow runoff, incorporating erosion fabric, and then seeding with Johnson Grass.
- (1) Grassed Waterway – facilitates the movement of water while filtering and slowing erosion into the headwaters of Chestnut Creek.

- (3) Hardened Stream Crossings – these crossings help tractors cross streams to access their crop fields without damaging the stream banks.
- (1) Culvert Retrofit and Control Berm – culvert was replaced and size increased to help prevent the landowner's road from being washed away. A hardened berm was constructed to keep water away from the road.
- (4) Septic System Replacements – replacement of failing septic systems to prevent sewage from surfacing.
- (1) Rain Garden – implemented at Marshall County High School.

Watershed Coordinator & Implementation in Chestnut Creek (17-14)

This 319 implementation project is a continuation from the first and started 11/01/2018 and ended 09/30/2021; the Friends of Clarks Run National Wildlife Refuge continued to employ a part-time Watershed Coordinator. This project was impacted in 2020 by the COVID-19 pandemic which caused delays in implementation. Despite this, the Watershed Coordinator facilitated the implementation of multiple septic BMPs, a couple of agricultural BMPs, and education and outreach activities focused on water resources, NPS pollution, water quality, and solutions for the local community. BMPs implemented through this project were:

- (6) Septic Tank Pump-outs – to qualify for the septic pump-out program, applicants were required to attend informational septic system workshops hosted by the local Health Department.
- (1) Septic System Repair – leach field repairs were made to prevent sewage from surfacing.
- (1) Septic System Replacement – replacement of a failing septic system to prevent sewage from surfacing.
- Exclusion Fencing – 14,600 feet of fencing was installed to prevent cattle from accessing a stream (Figure 5).
- (8) Alternative Waterers – water troughs with hardened pads were installed within pastures to provide fresh water to the cattle.



Figure 5. New Livestock exclusion fencing installed to protect a streambank and riparian buffer.

Marshall County Homeowner Assistance Program (18-10)

319 grant funds were awarded to the Marshall County Fiscal Court (MCFC) to implement a homeowner assistance program (HAP) for connections to a new section of sanitary sewer line. This project ran from 01/15/2019 to 09/30/2022 in conjunction with project 17-14. The Chestnut Creek Watershed Coordinator worked with the MCFC and the Marshall County Sanitation District #2 (SD2) to advertise the program, accept and review applications, work with contractors, and process payments. The program provided 90% funding assistance to all applicants. Metal and plastic septic tanks were decommissioned in place. Homeowner contributions (10%), waived tap-on fees from SD2, and operating costs from MCFC were used as matching funds. A total of 18 homes were connected to the new sanitary sewer line and their septic systems were decommissioned, therefore reducing the chances of NPS pollution from failing onsite wastewater systems (Figure 6) in the Chestnut Creek watershed.



Figure 6. Wastewater straight pipe from a home in the Chestnut Creek watershed.

Marshall County Homeowner Assistance Program (18-10)

This is the most recent, and currently ongoing, 319 implementation project in the Chestnut Creek watershed. It is a continuation of all the previous projects, including the HAP project from 2018. The Watershed Coordinator is continually facilitating implementation of agricultural and streambank focused BMPs (Figure 7) while running a follow-up Homeowner Assistance Program to help additional homeowners connect to new sanitary sewer lines in Marshall County.



Figure 7. Hardened stream crossings installed to protect streambanks while accessing crop fields.

FEATURED PROJECT

Louisville Metro

Thanks to leadership by Louisville/Jefferson County Metropolitan Sewer District (MSD), the first EPA-approved watershed-based plan for Louisville Metro was released in 2022, and a second plan is under development. The completed plan focuses on Middle Fork Beargrass Creek's watershed and the new planning effort encompasses communities in the Mill Creek watershed.

Middle Fork Beargrass Creek Watershed

A partnership between MSD and the Division of Water resulted in two years (2019 – 2021) of extensive water quality monitoring to inform development of the Middle Fork Beargrass Creek watershed-based plan for this central area of Louisville Metro (319 Project 18-04). Subsequently, partners collaborated to identify and prioritize best management practices needed to address pollutants: salt, sediment, nutrients, and bacteria. In the near term, high priorities include hiring a watershed coordinator, developing extensive outreach programming, providing incentives for waterway bank stabilization, promoting existing stormwater credit and downspout disconnection programs, and reducing bacteria levels within prioritized subwatersheds. MSD anticipates taking a proactive approach to adaptive management in the Middle Fork Beargrass Creek watershed by creating a steering committee that will review and evaluate the watershed-based plan on a five-year cycle.

To celebrate EPA's approval of the Middle Fork Beargrass Creek Watershed-based Plan, MSD held a July 2022 press event in a community park within the watershed (Figure 8). During the event, DOW Assistant Director John Webb highlighted two key components that distinguish this plan from others in Kentucky: 1) The plan addresses a fully urbanized watershed with diverse



Photo by: John Nation
Beargrass Creek



Figure 8. Images from the media event held to recognize the Middle Fork Beargrass Watershed-based Plan, with MSD Executive Director Tony Parrott welcoming DOW Assistant Director John Webb (left) and MSD's Project Manager Colette Easter describing best management practices planned for the watershed.

land use and populations. 2) The types of partnerships that were fostered and leveraged to better characterize the watershed were unique. Since this is the first urban watershed plan for Louisville Metro, MSD collaborated with a group of consultants, local nonprofits, and the University of Louisville to contribute to the planning effort. After presentations by leaders from MSD and the Division of Water, MSD representatives led a tour of a restored and conserved riparian area to highlight the kinds of additional best management practices planned for the Middle Fork Beargrass Creek watershed.

Mill Creek Watershed

During 2022, MSD launched a new watershed-based planning project (319 Project 21-06) for the Mill Creek watershed in southwestern Louisville Metro—an area where communities are largely identified as disadvantaged by the [Climate and Economic Justice Screening Tool](#). MSD is one of several partners working in the watershed to improve water quality, recreational access, and wildlife habitat.

To connect more fully with those who live in the watershed, MSD developed a partnership with the University of [Louisville Resilience Justice Project](#). Under the leadership of Professor Tony Arnold, researchers conduct interviews across communities in the Mill Creek watershed to not only inform the watershed planning process but also “improve knowledge about watershed planning, environmental justice, and community resilience.”

Other partners involved in planning improvements to the area envision a [Mill Creek Greenway](#)—a restored stream ecosystem and riparian zone flanked by a community recreation corridor. Kentucky Fish and Wildlife plans ecological restoration, and Louisville Parks and Recreation is collaborating with community members to plan multiple uses of the greenspace. The Nature Conservancy supports design of a trail system that would connect with other Louisville-area trails, including and not limited to the [Louisville Loop](#). The 2008 Mill Creek Bridge Project in the area connected a contiguous 23-mile section of the Loop with other sections of the Loop established and maintained by MSD and partners.

PROJECTS STARTED IN FFY 2022

Table 1. Projects Started in Federal Fiscal Year 2022.

STATE PROJECT NUMBER	PROJECT TITLE	CONTRACT EXECUTED
21-03	Four Rivers Basin Coordinator	4/1/2022
21-04	Bacon Creek Ag. BMP Implementation	2/1/2022
21-05	Glens Creek WSP	12/16/2021
21-06	Mill Creek WSP	2/15/2022
21-07	Lower Howards Creek BMP Implementation	12/16/2021
21-08	Jennings Creek WSP	4/15/2022
22-02	UK CES Ag. Water Specialist	1/1/2022

PROJECTS COMPLETED IN FFY 2022

Table 2. Projects completed in Federal Fiscal Year 2022.

STATE PROJECT NUMBER	PROJECT TITLE	DATE COMPLETED
18-03	Four Rivers Basin Coordinator	3/31/2022
18-04	Middle Fork Beargrass Creek WSP	3/31/2022
18-05	Upper Paint Lick Creek WSP	9/30/2022
18-07	Red River BMP Implementation	3/31/2022
18-08	South Fork Little River BMP Implementation	9/30/2022
18-10	Marshall County Homeowner Assistance Program	4/15/2022
19-04	UK CES Ag. Water Specialist	3/31/2022

LOAD REDUCTIONS

Table 3 contains a compilation of load reduction estimates from BMPs implemented during FFY 2022 (October 1, 2021 – September 30, 2022). Load reductions were derived from direct calculation or by utilizing the EPA's Spreadsheet Tool for Estimating Pollutant Loads (STEPL) tool and then entered into the EPA's Grant Reporting and Tracking (GRTS) database.

Table 3. Load reduction estimates for projects from Federal Fiscal Year 2022.

Award Year	State Project Number	Project Title	Load Reductions			
			Nitrogen (lbs/year)	Phosphorus (lbs/year)	BOD Reduction (lbs/year)	Sediment (tons/year)
2018	18-07	Red River Gorge Implementation	103.3	27.8	388.8	13.6
2018	18-08	South Fork Little River Implementation	191.9	38.4	1055.5	0.0
2019	19-02	Currys Fork Watershed Implementation	183.8	36.8	907.0	0.7
2019	19-05	Clarks Run, Hanging Fork, & Hinkston Creek Implementation	170.2	34.4	922.3	0.8
2019	19-06	Bacon Creek Homeowner Septic System Program	73.1	14.6	402.1	0.0
2019	19-07	Banklick Implementation Project Continued	170.7	38.8	668.0	2.5
2019	19-09	Red Bird River Implementation Project II	137.1	27.4	753.9	0.0
2019	19-10	Brushy Creek Watershed Implementation	3027.8	756.6	3448.5	538.8
2020	20-02	Georgetown/Scott County South Sewer Extension HAP	2704.9	541.0	14877.0	0.0
2020	20-03	Improving Water Quality in Currys Fork Watershed	411.4	82.3	2262.0	0.1
2020	20-06	Continued Improvements to Banklick Creek Wetland	419.5	161.5	839.0	262.2
2021	21-04	Upper Bacon Creek Ag. Implementation	210.069	49.283	219.793	34.343



Chapter 2 BASIN COORDINATION

KENTUCKY DIVISION OF WATER BASIN COORDINATORS

Communication with and coordination of watershed stakeholders is critical when attempting to achieve long-term improvements in water quality. Many parties share common interests and goals surrounding watershed health, and the best results are always found when these parties work together to share resources and knowledge.

The Kentucky Division of Water Basin Coordinators serve as catalysts in the watershed management process by acting as facilitators for agency activities and as points of contact for local organizations interested in addressing water quality and pursuing watershed planning. Basin Coordinators enhance communication with stakeholders by invigorating regional basin teams and stakeholder groups (local, state, and federal agencies, universities, non-governmental organizations, industry, and community groups) that work actively in the basin. These groups meet regularly to discuss current projects, needs, and strategies related to basin-wide ecosystem health. Basin Coordinators help facilitate discussions, gather feedback for DOW, and communicate with members via regular newsletter releases. In addition to the basin teams, Basin Coordinators help involve the public in setting management priorities, developing watershed plans, providing grant assistance, supplying water-focused education and outreach, and exploring innovative ways to improve water quality at the community level.

Currently, the Kentucky Division of Water directly employs five Basin Coordinators (Big Sandy, Little Sandy, and Tygarts Rivers Basin, Green and Tradewater Rivers Basin, Licking River Basin, Upper Cumberland River Basin, and the Salt River Basin) and two through outside contractors (Four Rivers and Kentucky River Basins), covering all seven of the state's watershed management units (Figure 9).

BASIN TEAM PRIORITY WATERSHEDS

Each of Kentucky's major river basins are supported by basin teams, community members, and partners working to address water quality issues. The basin team model provides an opportunity for networking, information sharing, and leveraging funding with other resources. Basin teams help select priority watersheds through a balance of two factors: where work is being done and where work is needed. They provide the Division with information on capacity, active and developing watershed plans, and areas with higher chances for implementation. They also provide local knowledge to help identify emergent issues and communities interested in pursuing clean water policies. While ideally watershed planning occurs on a HUC 12 scale, our partners often think more at a city, county, or regional scale. Restricting the size and number of watersheds to a certain number of HUC 12s is inhibiting to the conversation, so instead all feedback is collected regardless of size. The Division then narrows down selected areas by using existing data on watershed plans, source water protection areas, known impairments, outstanding state resource waters, high nutrient yield watersheds, TMDLs, and demographics (low-income and communities of color data).

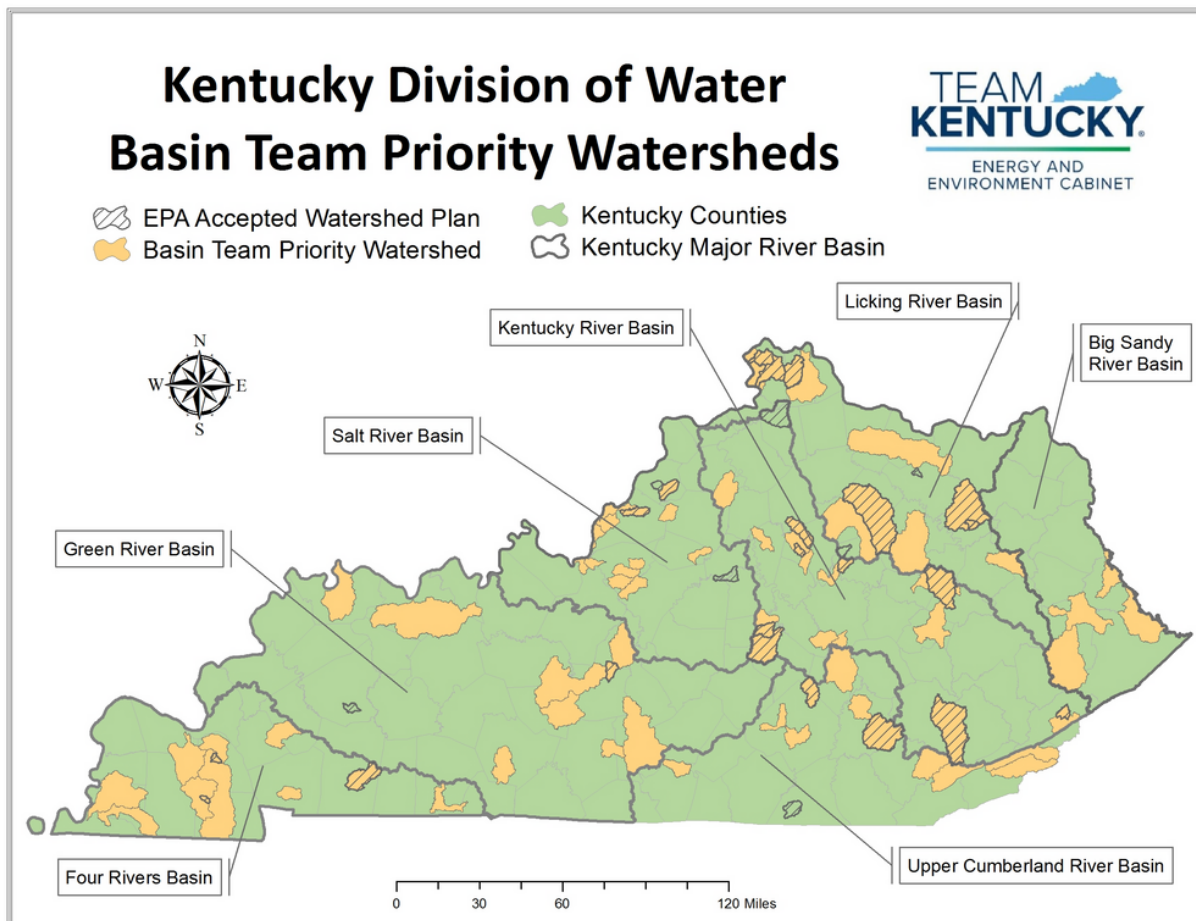


Figure 9. Basin Team Priority Watersheds in Kentucky.

NUTRIENT PRIORITY WATERSHEDS

In 2022 the Kentucky Division of Water (KDOW) updated Kentucky's Nutrient Reduction Strategy (eec.ky.gov/nutrientreduction) to prioritize investments and enhance cooperative efforts that will help decrease excess nutrients that fuel harmful algal blooms (HABs), and contribute to Gulf of Mexico hypoxia. KDOW used over 40 years of water monitoring data to create Kentucky's Nutrient Priority Areas (Figure 10) that balance the needs of drinking water sources, open water recreation, and areas with greater nutrient concentrations (i.e., high yield watersheds). The high nutrient yield watersheds represent areas that ranked highest in KDOW's 2019 and 2021 Nutrient Loads and Yields Studies. Prioritizing nutrient-focused source water protection areas reflects an interagency focus by KDOW and NRCS to invest in community drinking water sources (see Hypoxia Task Force Success Stories). Combined with confirmed HAB watersheds, these Nutrient Priority Areas allow KDOW to prioritize investments from the Gulf Hypoxia Program, 319 Grant Program, Clean Water State Revolving Fund (CWSRF) Program, and the Kentucky Division of Conservation's (KDOC) State Cost Share Program. Applicants located in Nutrient Priority Areas are ranked higher, which increases their likelihood of being funded. Agriculture producers in source water portions of Nutrient Priority Areas are also eligible for a higher federal cost sharing rate from NRCS, which has already benefitted approximately 432,000 acres in Kentucky.

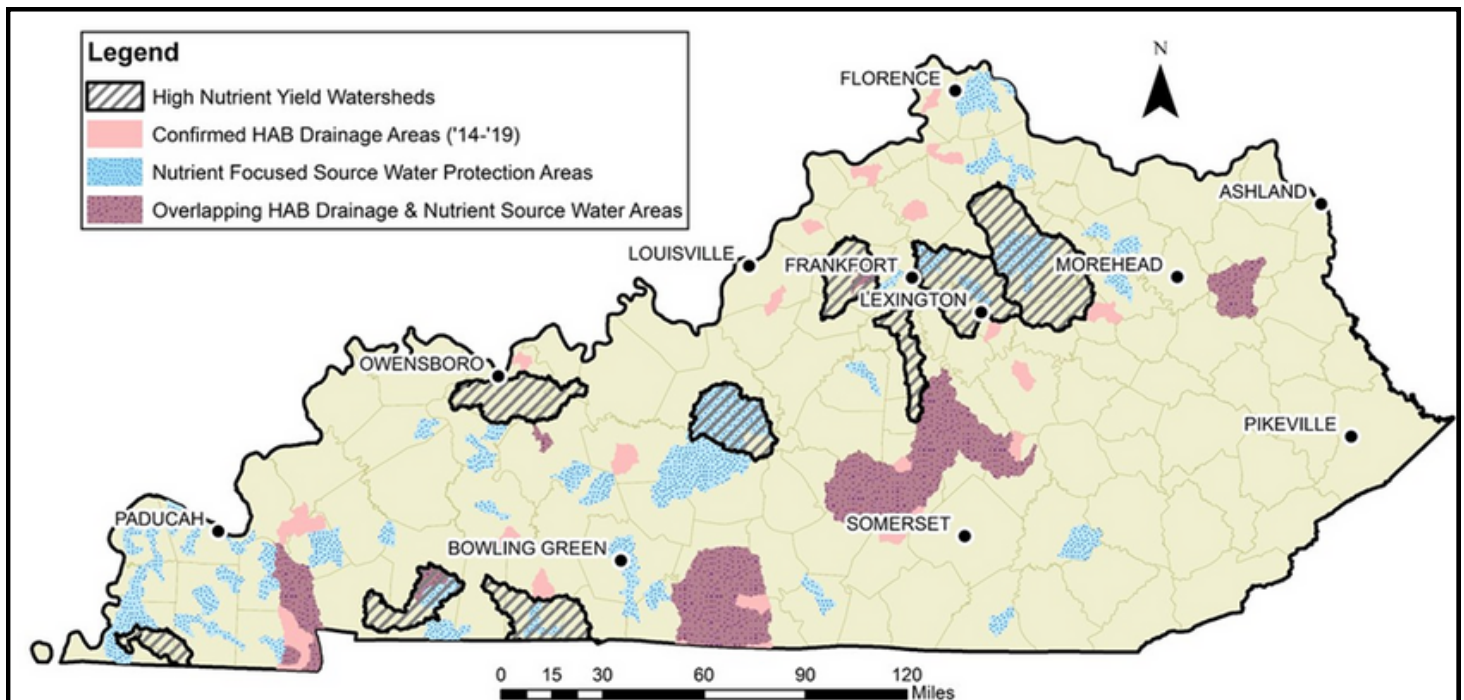


Figure 10. Kentucky Division of Water Nutrient Priority Watershed Map.

DIVISION OF WATER PRIORITY WATERSHEDS

Together, the Basin Team Priority Watersheds and Nutrient Priority Watersheds create the Division of Water Priority Watersheds (Figure 11). The Division uses the identified watersheds to direct resources toward potential water quality improvements. For example, extra points are given to priority watersheds in the ranking process for the Clean Water Act §319 (h) NPS grant and the Clean Water State Revolving Fund (CWSRF). Priority watersheds are not the only places the Division focuses its efforts and they are not the only Division priorities. However, this process is a way to address areas with known problems and area capacity.

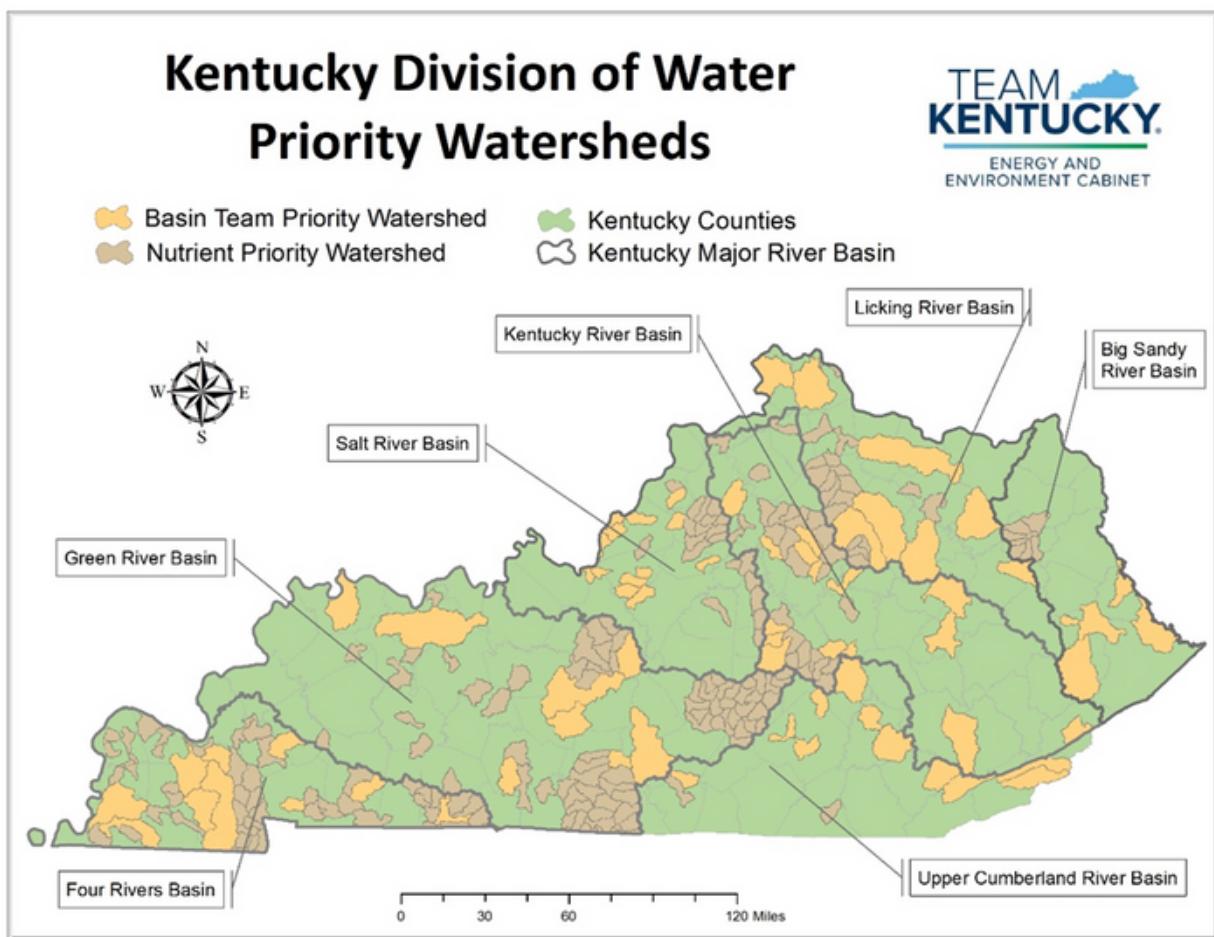


Figure 11. Kentucky Division of Water Priority Watershed Map.

RIVER BASIN UPDATES

Big Sandy River Basin

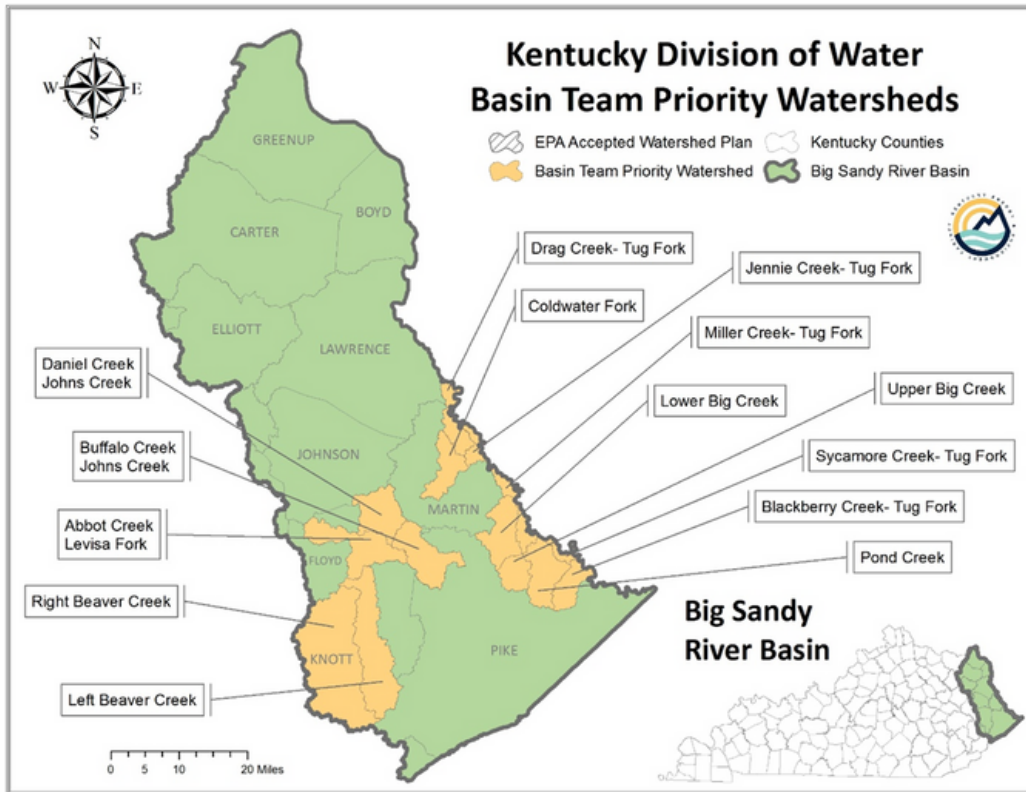


Figure 12. Priority Watersheds identified by the Big Sandy River Basin.

Prestonsburg, Floyd County Watersheds (Buffalo Creek Johns Creek, Abbot Creek Levisa Fork, Daniel Creek Johns Creek)

Recognizing the importance of clean water to community and economic health, the City of Prestonsburg has expressed interest in the watershed planning process for its surrounding watersheds. The city would like to improve the ecological health of its waterways while improving upon recreational opportunities. The Big Sandy River Basin Coordinator is working with the city to prepare for watershed planning efforts.

Beaver Creek Watersheds (Upper Left Fork, Upper Right Fork, Middle Right Fork, Lower Left Fork, Lower Right Fork)

The Beaver Creek watersheds have an existing TMDL and assessment data available. The Big Sandy River Basin Coordinator is attempting to gather local capacity and inspire interest to best use the available data. Development of an E. coli focused plan began in the summer of 2022.

Tug Fork Tributaries (Blackberry Creek, Miller Creek, Pond Creek, Sycamore Creek, Lower Big Creek, Upper Big Creek, Coldwater Fork, Drag Creek, Jennie Creek)

The Tug Fork and Big Sandy Rivers form most of the border between Kentucky and West Virginia. In October of 2016, a Facebook group called the Friends of the Tug Fork was formed to share fishing photos and recreation information from the Tug Fork River. Today, that group is now a 501(c)3 not for profit organization with over 17,000 followers and has pursued greater efforts to improve the water quality of their river. Among their efforts are establishing a blue water/flat water trail along the Tug Fork, beginning volunteer water monitoring partnerships with both West Virginia's Save Our Streams Programs and Kentucky's Watershed Watch in Kentucky Program, and conducting tire cleanups in cooperation with both states. To date, the Friends of the Tug Fork's efforts have removed over 8,770 tires from the river. In 2022 the group succeeded in removing 851 tires from the Kermit/Warfield area of the river, 781 tires in the Williamson area of the river, and 2,043 tires from the Matewan/McCarr area of the river. Additionally, the group worked with West Virginia DEP to arrange a trailer for tire disposal and several tire disposal events to reduce the number of tires entering the river. The tire trailer has collected over 1,070 tires so far and tire disposal events are every 2nd and 4th Saturdays of the month.

As this group expands and matures, the potential for significant, multi-state watershed projects increases. The Big Sandy River Basin Coordinator is working actively with the Friends of the Tug Fork, Watershed Watch in Kentucky, Save Our Streams, and West Virginia's River Basin Coordinators to bolster projects in the area.



Photo by: John Barnett
Tug Fork

Green River Basin

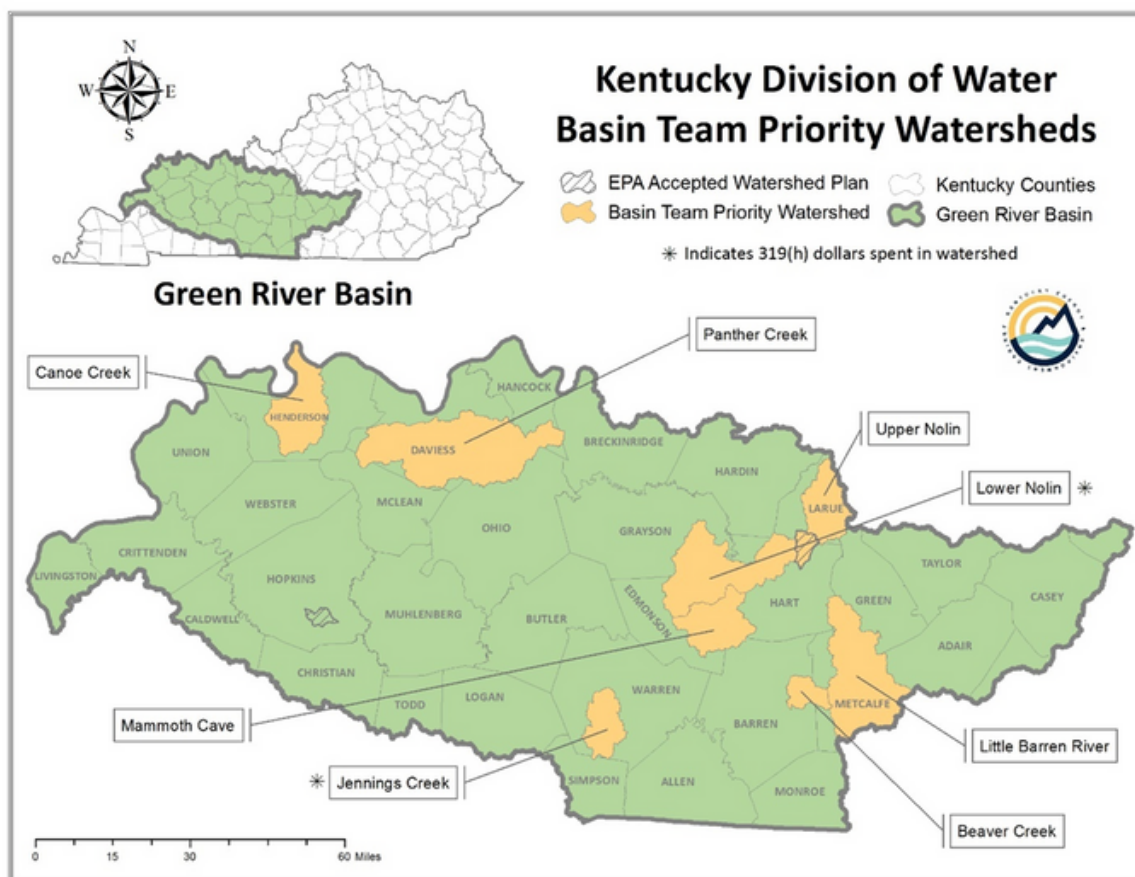


Figure 13. Priority Watersheds identified by the Green River Basin

Jennings Creek

Western Kentucky University was awarded 319(h) funds in February 2022 to begin developing a watershed plan for the Jennings Creek watershed, located in Bowling Green, KY. Previously, students collected water quality data over several years, providing a foundation for watershed planning efforts. The University and KDOW will partner together to collect updated water quality data. Since Jennings Creek is located in a high karst region, the watershed plan will provide a unique perspective by combining springshed and watershed data. The plan is expected to be completed in early 2024.

Panther Creek

Panther Creek was identified as a priority watershed for the NRCS Mississippi River Basin Initiative program and started implementation in FFY22. The Division of Water also identified it as a high priority for nutrient reduction. The Nature Conservancy (TNC) has expressed interest in Wetland Restoration for the Owensboro area and has been working with the Soil Health Partnership to implement agricultural BMPs. The Basin Coordinator has met with locals to discuss nature-based solution projects that have already been implemented, and the need for more in the region. The Basin Coordinator plans to continue to build relationships within the watershed in the upcoming year.

Canoe Creek

Canoe Creek was added to the priority watershed list due to local concerns and impending work in the area. This watershed encompasses an underserved community in Henderson, Kentucky where failing septic systems are a known issue. Multiple partners have expressed interest in focusing efforts within the watershed. The Natural Resources Conservation Service has selected it as a National Water Quality Initiative (NWQI) project for FFY 2023 and indicated it as a prime location for wetland restoration. Kentucky Division of Conservation identified it as a good candidate for state cost-share. The new Green River National Wildlife Refuge also lies within the watershed boundaries, highlighting the need for watershed protection. The Basin Coordinator plans to work closely with all involved partners and the community in the upcoming year.

Nolin River

Upper Nolin River

The LaRue County Fiscal Court was awarded a FFY 2022 319(h) grant to work with Palmer Engineering to write a watershed plan for two HUC12 watersheds, McDougal Creek and Castleman Creek, creating the Upper Nolin-North Fork watershed. The main interest for the plan is to protect drinking water, as it is in a Zone 1 Source Water Protection Area. Division of Water has recently collected data for this watershed and will be working closely with LaRue County throughout the process.

Lower Nolin River

The Lower Nolin River Watershed includes Bacon Creek where LaRue County Conservation District has received a FFY21 319(h) grant (21-04) to continue implementing their watershed plan by increasing agriculture education and best management practices. Funded projects have included improvements to heavy-use areas, forage and biomass plantings, watering facility, livestock pipeline, roof runoff, subsurface drain, and exclusion fencing.



Photo by: Madeline Pruszenski
Green River

The Community Action Kentucky – Rural Community Assistance Partnership received 319(h) funds in the spring of 2020 (Project # 19-06) to implement a homeowner septic system program within the Bacon Creek Watershed. This year, they have been successful at utilizing most of their funds on septic repairs and replacements. It is anticipated this project will be completed early 2023.

Salt River Basin

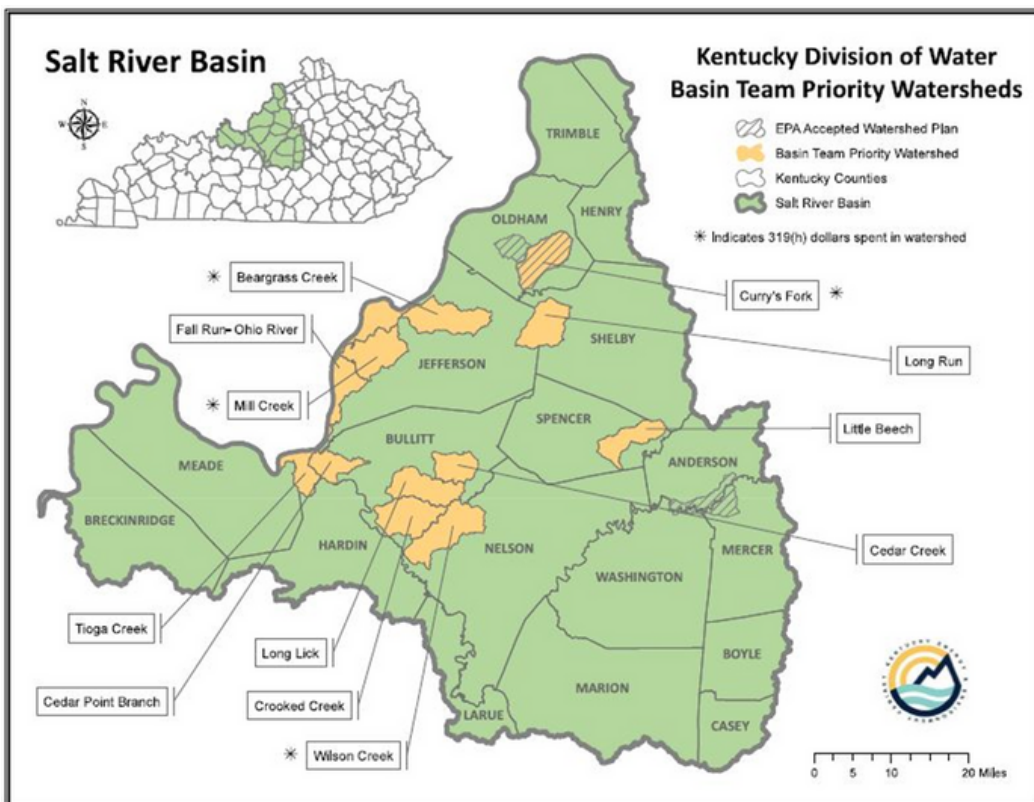


Figure 14. Priority Watersheds identified by the Salt River Basin.

Middle Fork Beargrass Creek and Mill Creek

As described above in the "Featured Projects" section, during 2022 the Louisville Metropolitan Sewer District (MSD) completed a full draft of a watershed management plan for Middle Fork Beargrass Creek and began the planning process for Mill Creek watershed.

Currys Fork Watershed

During 2022, implementation of the Currys Fork Watershed Plan continued in subwatersheds of the target area. Education and outreach efforts are widespread and include tree planting events, live-staking workshops, mini-septic system workshops, rain garden planting demonstrations, stream crossing signs, rain barrel installations, and stream erosion prevention projects. Future plans include more intentional integration of stormwater management and nonpoint source pollution mitigation through implementation of nature-based solutions with FFY 2022 funding.

Integrated water quantity and quality management in Currys Fork serves the dual purpose of improving waterways in the immediate area as well as those downstream in the larger Floyds Fork watershed.

Sulphur Creek Watershed

Over the past several years, considerable work has been done to reduce E. coli contamination of Sulphur Creek. In FFY 2018, the Sulphur Creek Septic System Reclamation project installed 13 new septic systems and provided two pump-outs. The Sulphur Creek Watershed Agricultural Implementation project presented two farm field days and one special watershed tour. In FFY 2019, seven agricultural BMPs were implemented, and a farm field day was hosted. In FFY 2020, Conservation District staff supported implementation of 19 agricultural BMPs and organized one farm field day. With new FFY 2022 funding, more agricultural BMPs are planned in the Sulphur Creek watershed.

Four Rivers Basin

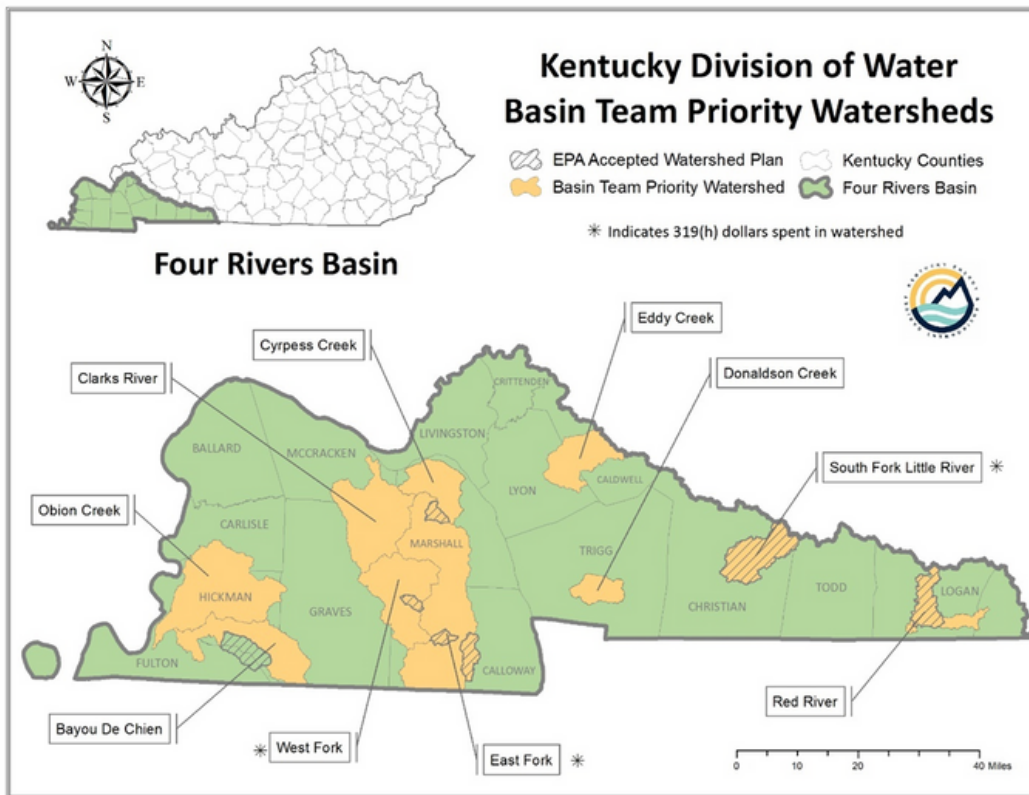


Figure 15. Priority Watersheds identified by the Four Rivers Basin.

Clarks River

In 2015, The Friends of Clarks River National Wildlife Refuge partnered with Murray State University and Third Rock Consultants to complete a watershed plan for Chestnut Creek. The watershed plan identifies several causes of water quality impairments: E. coli and excess nitrogen sourced from a local wastewater treatment plant, failing septic systems additionally loading E. coli into waterways, and agriculturally borne nutrient and sediment exceedances. The Marshall County Fiscal Court and Marshall County Sanitation District Number 2 have worked diligently over the past four years to address the failing local wastewater treatment plant, including mending equipment and instituting a fats, oils, and greases ordinance to prevent accumulation in sewer collection systems. To support wastewater centralization, a recent tap-on ordinance requires residences and businesses within 500 feet of a sewer line to tap on. Work is continuing to connect approximately 70 households to this new sewer line within the Chestnut Creek Watershed.

Through 319(h) Project 17-14, the Friends group employed a Watershed Coordinator to work with the Division of Water, NRCS, U.S. Fish and Wildlife Service Partners Program, and other local partners to recruit landowners in Marshall County and the Chestnut Creek Watershed in implementing pathogen, nutrient, and sediment related best management practices, all of which are reinforced by continuous public education. Additionally, working with Marshall County Fiscal Court on Project 18-10, the Watershed Coordinator helped facilitate residential connections to a newly installed sanitary sewer line. In 2020, 9 homes were connected to Sanitation district 2. The connection to the sewer line included the decommissioning of each of their septic tanks. In 2021 the Chestnut Creek Watershed Coordinator helped another 9 homeowners connect to the new sewer line. This Homeowners Assistance Program is ongoing through project 22-07 and is projected to tap on 20 more homes that are all within 500 feet of the sanitary sewer line.

Within the Clarks River watershed there are additional efforts underway to develop watershed-based plans for two HUC-12 watersheds utilizing volunteer monitoring data: Bee Creek and Clayton Creek. In 2018, Four Rivers Watershed Watch conducted a study in the Clayton Creek watershed in Calloway County with a pathogen (*E. coli*) focus. Similar monitoring of Bee Creek was initiated in 2019, jointly supported by the City of Murray and Four Rivers Watershed Watch. The resulting plans will focus on identifying pathogen-reducing best management practices. Clayton Creek and Bee Creek Watershed plans are currently being developed with plans to submit them to the DOW and EPA.

South Fork Little River

The Little River Water Quality Consortium has a watershed plan utilizing data collected by the U.S. Geologic Survey from a three-year study on the South Fork Little River. The watershed plan has been approved by DOW and EPA with a best management practice implementation plan. The Little River Water Quality Consortium received a 2018 319(h) grant (Project 18-08) to hire a South Fork Little River Watershed Coordinator to oversee BMP implementation. The coordinator was hired in 2019 and is working to connect with local landowners to implement best management practices aimed at improving water quality. In 2022 approximately 60 home septic systems were pumped out and seven homes had new septic systems installed.

Donaldson Creek

Donaldson Creek Watershed has been submitted as the 2022 EQIP Focused Conservation Project. If the proposal is approved, stream bank and wildlife restoration BMPs will be installed to improve water quality and habitat within the Donaldson Creek Watershed.

Eddy Creek Watershed Focused Conservation Project (FCP)

This FCP is an individualized Environmental Quality Incentives Program (EQIP) that provides technical and financial assistance to producers in Caldwell, Lyon, and Trigg Counties to address soil erosion and impaired water quality in the Eddy Creek Watershed. Eddy Creek Watershed covers 47,811 acres with a majority of acres (over 65 percent) in agricultural production. Eddy Creek also serves as the municipal water source for the cities of Princeton and Eddyville. Significant water quality degraders include sediment, nutrients, and pathogens. Natural Resources technical staff will work with landowners within this watershed to develop a conservation plan that will address the resource concerns.



Photo by: Rhonda Lamb
Kentucky Lake in the Four Rivers Basin

Kentucky River Basin

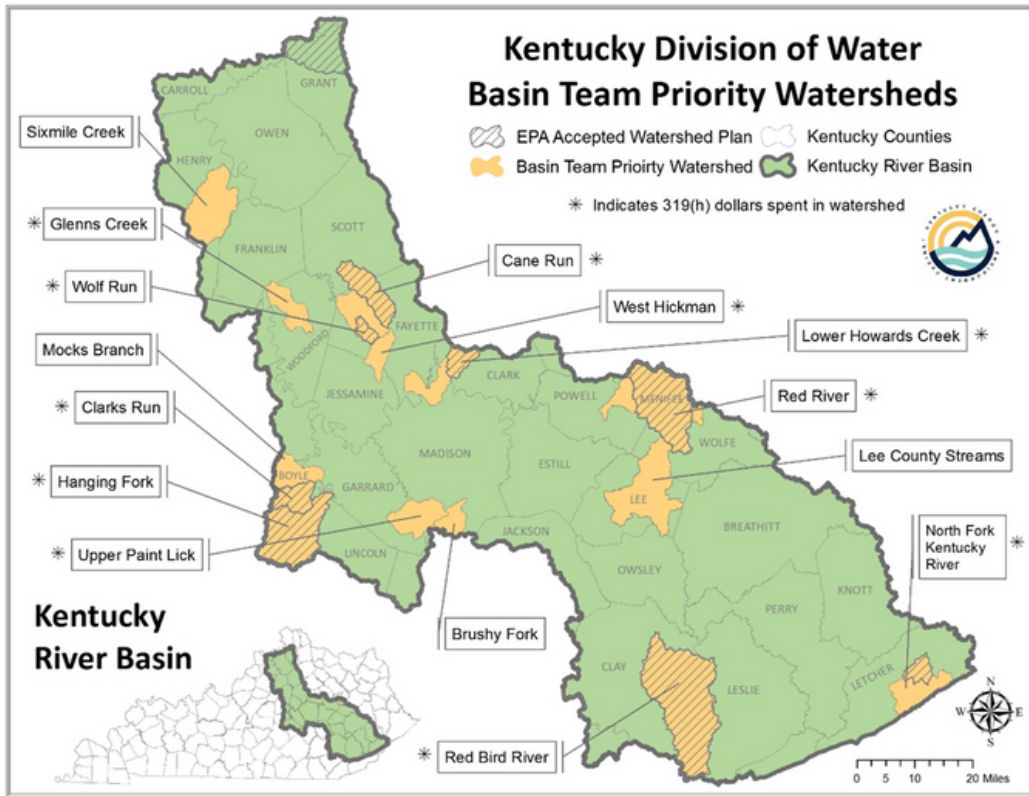


Figure 16. Priority Watersheds identified by the Kentucky River Basin.

Cane Run of North Elkhorn

For years, the sewage from two privately owned, large mobile home communities in Scott County has been directed to failing wastewater treatment package plants, leading to high biological oxygen demand (BOD) values and excessive levels of E. coli, ammonia/nitrogen, and phosphorus in nearby stream, Cane Run (Figure 17). Throughout the 2010s, KPDES violations were recurring, resulting in remedial actions and fines. Despite this, the underlying problems were not addressed.

Due to an expansion of the Georgetown Municipal Water and Sewer Service (GMWSS) line, a project to connect the two mobile home communities to the new sanitary sewer line began in 2021.

Section 319(h) funds are being used to provide a Homeowner Assistance Program; the program provides financial assistance to residents of the mobile home parks for the costs associated with tapping on to the new sewer extension (Figure 18). There have been 148 mobile homes connected to the new sanitary sewer line; over 400 connections are expected by the end of the project. This will eliminate pollution from the failing wastewater treatment package plants and will significantly reduce the BOD values and excessive levels of E. coli and nutrients found within Cane Run.



Figure 17. Cane Run, flowing parallel to the mobile home parks, in the summer of 2022



Figure 18. The main sewer line from a mobile home connects to a freshly installed clean-out leading the new sanitary sewer line.

Clarks Run and Hanging Fork

Through continued 319(h) grant funding to Bluegrass Greensource and the efforts of the Clarks Run Environmental and Educational Corporation (CREEC), implementation activities in these two Dix River subwatersheds continued in 2022. Project activities in 2022 included activities funded by a mini-grant program to stimulate small-scale implementation projects throughout the watersheds. These activities included an intensive water quality sampling effort at sites along Clarks Run, educational activities with the Boyle County 4H Stream Team, and educational signage at a Lincoln County Park. Additionally, Bluegrass Greensource utilized a separate grant from the Kentucky River Authority to conduct Junior Water Festivals, focusing hands-on educational activities for local children (pre-K through 2nd grade) and their families (Figure 19).

In the Hanging Fork watershed, the Lincoln County Sanitation District has begun Phase II of the sewer expansion project that will transition approximately 365 septic systems to sanitary sewer connections. This project helps to fulfill one of the Hanging Fork watershed plan's primary recommendations: to add municipal sewer service to an area previously served by primarily failing onsite septic systems. A 319h grant to the Sanitation District is enabling a second round of homeowner assistance funding to help offset sewer connection costs.

Using grant funds from the Kentucky River Authority, the Ridgewater consulting company completed the Clarks Run Watershed Based BMP Feasibility Study. This study makes recommendations for various stream enhancements along the segment of Clarks Run that flows through downtown Danville. Proposed projects include the removal of an unused low-head dam, bank stabilization, and mitigation of utility crossing migration barriers. CREEC and the City of Danville are in discussion about how best to proceed with these recommendations.



Figure 19. Bluegrass Greensource staff interact with local youth during the Junior Water Explorer Festival along Clarks Run in Danville.



Figure 20. Demonstration of stormwater model at Woodford County Farm Tour, July 2022.

Glenns Creek

A 2021 319(h) grant was awarded to the Kentucky Water Resources Research Institute (KWRRRI) to complete a watershed plan using monitoring data collected between 2021 and 2022. The plan is being developed electronically using ArcGIS software so that it can be continually updated and possibly utilized as a model for other watershed planning efforts across Kentucky.

Initial watershed characterization components of the plan are posted as a Story Map (<https://glenns-creek-watershed-plan-uky-edu.hub.arcgis.com/>). Additionally, KWRRRI has conducted various outreach and education activities for the community (Figure 20).

As part of the planning effort, KWRRRI has formed a Glenns Creek Watershed leadership committee and is conducting stakeholder interviews to better understand local water interests and needs. A recently completed parallel research study conducted by KWRRRI also provided significant insights about the challenges and willingness of the area's horse farm community to utilize conservation practices. The watershed also hosts several bourbon distilleries and there are plans to further engage the distilleries in efforts to improve and protect water quality.

Lower Howards Creek

The City of Winchester applied for and received a 2021 319(h) grant to install a stormwater bioretention basin along an upstream tributary of Lower Howards Creek. This basin will reduce flooding and help inform the public about the importance of upstream retention and the impact that high velocity stream flows have on siltation, hydromodification, and in-stream habitat. It will also provide educational opportunities for the nearby school and visitors its sports complex.

The city provided water quality education classes to all of the 8th grade science classes at Conkwright Junior High School, reaching approximately 380 students.

The BMP Implementation Plan was submitted and approved in August 2022, and construction on the bioretention basin is expected to begin in May of 2023.

North Fork Kentucky River Headwaters

Implementation of the recommendations in the North Fork Whitesburg Tributaries Watershed Plan was stalled in 2022 due to turnover at the lead local organization, Headwaters, Inc., and record-breaking flooding that occurred in July (Figure 21). New leadership at Headwaters and focused flood recovery efforts by many government agencies and non-profit organizations will hopefully lead to a renewed focus to address local waterways in ways that mitigate future flooding impacts, while also improving water quality conditions.



Figure 21. Photo of Whitesburg from Louisville Courier-Journal, July 2022.

Upper Paint Lick

Using funding from a 319(h) grant, Copperhead Consulting developed a watershed plan for the upper reaches of the Paint Lick Watershed. The plan is under final revisions with DOW and should be submitted for EPA approval in early 2023.

The Garrard County Sanitation District was formed in 2021 to enable the construction of a cluster system that could treat sewage waste from businesses and homes along Paint Lick Creek. The District will continue to look for opportunities to expand coverage and add additional homes to the new system. Additionally, land purchased to enable the system's construction are being used to create a scenic recreational trail along the creek as it flows through the small community of Paint Lick.

Red River

Red River Watershed Plan implementation activities continued to be carried out by the watershed coordinator, although outreach efforts were challenging. The Red River Festival had to be carried out virtually, with lower attendance than usual. Some septic system education was possible through online workshops.



Figure 22. Red River Canoe Race during Wild and Scenic Red River Fest, May 2022.

As a result, several septic system repairs and installations were funded through the 319(h) implementation grant. A Red River Paddle Fest was held in May 2022 and other outdoor activities, such as cleanups and tree plantings were successfully carried out (Figure 22).

The majority of implementation efforts in the Red River Gorge watershed focused on rehabilitating unauthorized trails and campgrounds that have been causing erosion impacts throughout the area.

West Hickman Creek

The West Hickman Creek Watershed Plan is currently under development.

The associated stakeholder group, the Hickman Creek Conservancy (HCC), continued to grow and work toward water quality improvements. HCC hired its first executive director, Clay Turner, in the summer with the goal of steadily increasing its impact on the community. The Hickman Creek Conservancy worked with Earth Cycle on a feasibility study regarding ways to reduce stormwater runoff and soil erosion in the Lansdowne-Merrick area and hosted an informational meeting to educate the public on the issues. The Hickman Creek Conservancy also took part in Lexington-wide events such as Nature Hop and Water for Life and hosted several stream walks and trash cleanups (Figure 23). The Hickman Creek Conservancy is partnering with the Bluegrass Chapter of Trout Unlimited to create an outdoor classroom along West Hickman Creek in Veterans Park and is engaged in several environmental education opportunities with Fayette County Public Schools through collaborations with Bluegrass Greensource.



Figure 23. In association with Lexington's Nature Hop in September 2022, Hickman Creek Conservancy led a macroinvertebrate hunt in West Hickman Creek.

Wolf Run

Sanitary sewer measures identified in the 2013 watershed plan were implemented, eliminating a number of sanitary sewer overflows and inflow and infiltration issues. This has led to a significant reduction in raw sewage entering the Wolf Run Watershed. Watershed Watch in Kentucky volunteer sampling efforts provided preliminary evidence of this improvement in decreasing E. coli concentrations in the past year (figure 24 & 25).

The Lexington-Fayette Urban County Government (LFUCG) has been working to actively manage riparian buffers on city-owned property, capitalizing on productive partnerships with contractors and grassroots efforts, mostly led by the Friends of Wolf Run. The Friends of Wolf Run has received successive Stormwater Incentive Grants from LFUCG, which enabled the implementation of multiple riparian buffer education and enhancement activities.

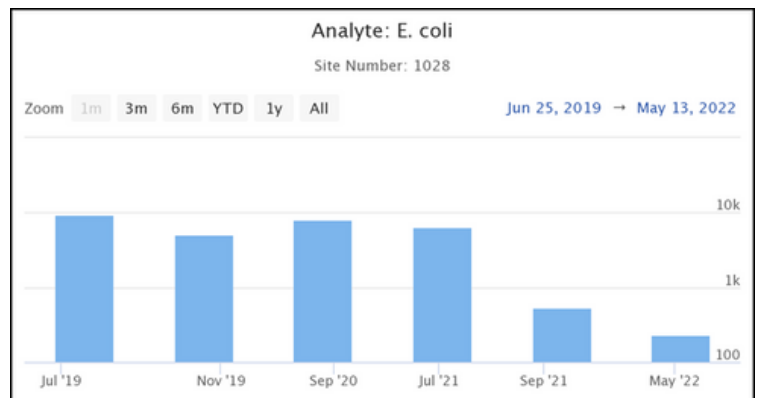


Figure 24. Watershed Watch in Kentucky Wolfe Creek stream monitoring data June 2019 to May 2022.

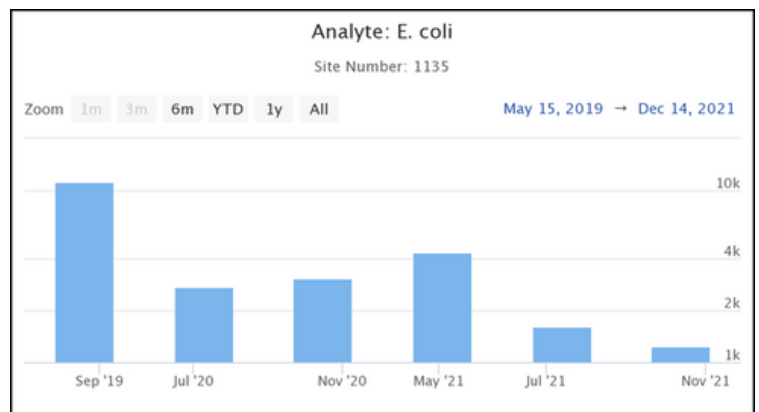


Figure 25. Watershed Watch in Kentucky Wolfe Creek stream monitoring data June 2019 to May 2021.

Licking River Basin

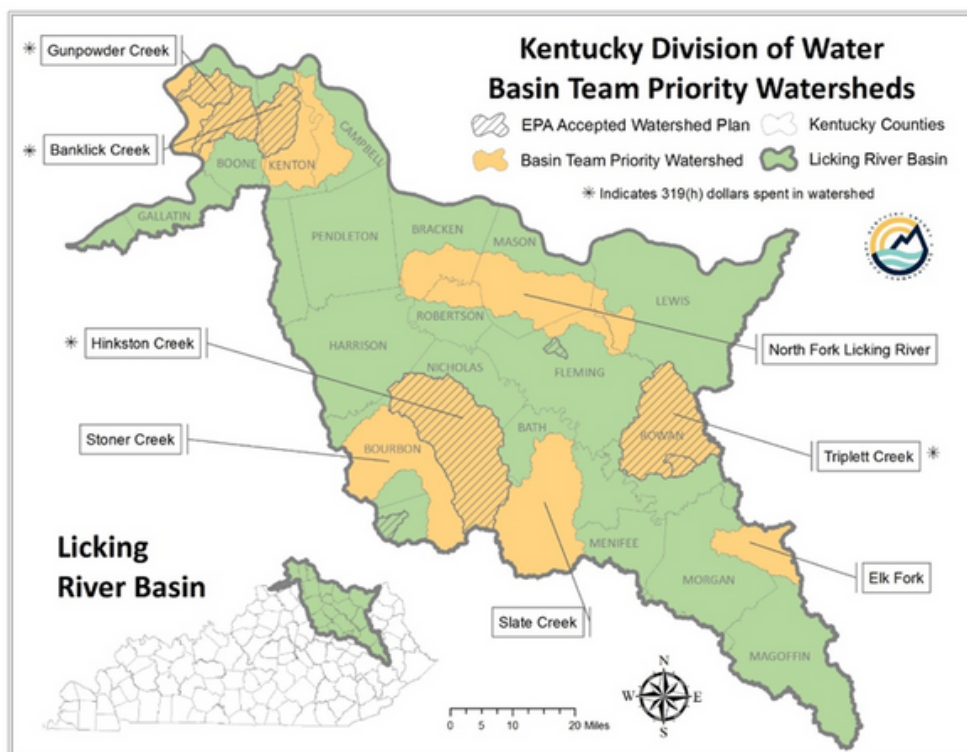


Figure 26. Priority Watersheds identified by the Licking River Basin

Northern Licking River Basin (Gunpowder Creek and Banklick Creek)

There is significant momentum in the northern parts of the Licking River Basin. Both Gunpowder Creek and Banklick Creek have active, EPA-approved, watershed plans, and Banklick Creek has a contracted watershed coordinator. Gunpowder Creek contains the state’s only TMDL Alternative Plan and was recently delisted from the state’s list of impaired waterways. Both watershed groups are highly interested in implementing nature-based solutions to reduce erosive stormwater flows and protect water quality. Some other groups working within these watersheds include SD1, Kenton County Conservation District, Kenton Conservancy, and EPA Office of Research and Development.

In Gunpowder, the Boone County Conservation District is using conservation funds from KDFWR FILO program and mitigation credits to conduct stream and wetland restorations. The properties that have been assessed and are in various stages of negotiation with landowners include the Gunpowder Creek Nature Park (120 acres),

building wetlands near the Boone County YMCA Camp Ernst (250 acres), a stream and wetland rebuild project near Camp Michaels (2 miles of the main stem of Gunpowder and multiple tributaries (700 acres)), and the Browne Tract adjacent to Camp Michaels (291 acres).

Banklick Watershed Council (BWC) is an active, local nonprofit that implements the watershed’s management plan and is led by their watershed coordinator. The BWC had a busy FFY 2022 year and their projects included continued development of a TMDL-alternative for Banklick Creek (in conjunction with Northern Kentucky’s Sanitation District, SD1), 3 repaired septic systems, 1 straight pipe removal and septic installation, 2 storm water retrofits installed and 2 under construction, 10 future basins under evaluation for possible restoration, invasive plant removals and replanting of natives, annual tree giveaway, and assistance with development of a

Tree Board for the City of Independence. In addition, working with BWC community partners, they have developed and submitted a FEMA application for buyouts of flood-prone properties, conducted 3 waterway cleanup events, and are developing plans to convert a 250-acre golf course back into native habitat, including stream hydromodifications and native, riparian habitat planting.

This year, Sanitation District 1 (SD1) has been continuing to implement their long-term infrastructure initiatives, including design of an EQ Tank for sanitary sewer overflow elimination and combined sewer overflow storage, drafting the Bullock Pen watershed master plan to address flooding and stream erosion, and maintaining the W6 pump station and pipe upsizing at SD1 wetlands to reroute storm water from Banklick into the wetlands during heavy rainstorm events. In addition, SD1 received \$12M in ARPA funding to address septic hotspot neighborhoods.

The Kenton County Conservation District has been monitoring the post-installation of the bottom-land hardwood forest, which was part of the FEMA-Banklick buyouts from the Meldahl Hydroelectric Project and are working on a plan for invasive-plant removal and restoration on donated property near Elsmere Elementary School. Finally, the EPA Office of Research and Development has been conducting a comparison study of bacteria sources in three of Banklick Creek's subwatersheds.

Central Licking River Basin (North Fork Licking River, Stoner Creek, Hinkston Creek, Slate Creek, Triplet Creek)

Within the central region of the basin, there are varying levels of stakeholder interest. Most priority watersheds had some level of activity during the year. Of the five priority watersheds in this region, two have EPA-approved watershed plans (Triplett and Hinkston Creeks) and one has a hired watershed coordinator (Hinkston). Two high-level resource documents have been produced by U.S. Army Corps of Engineers for Triplett Creek, including an Initial Watershed Assessment (2019) and a Planning Assistance to States Study Flood

Risk Reduction on Triplett Creek (2018). There is significant local interest from the City of Morehead's Floodplain Coordinator and Morehead Plant Utility Board regarding stormwater management and flash flooding impacting water treatment plants and wells. Morehead will also be the state's newest MS4 Program as a result of the 2020 Census. The Licking River Basin Coordinator has been in conversation with program staff to strategize 319(h)/MS4 synergies.

Hinkston Creek has seen a strong uptick in activity this year. Bluegrass Greensource and their Hinkston Creek watershed coordinator (Chris Howard) had 22 septic repair projects approved, and of those, 10 are completed, 8 are in progress, and 4 were canceled due to homeowners failing to pay their 20%. They completed 2 riparian planting projects and approved 3 septic pump outs, for a total of 9 completed in the Hinkston watershed in 2021/2022. In conjunction with UK Cooperative Extension, NRCS, Conservation Districts, and Kentucky Cattlemen's Association, they are funding a farmer-led conservation program (Farmer-to-Farmer) for disadvantaged farmers to help increase widespread conservation practice and BMP implementation. They are currently developing plans for a stream rebuild, wetland installation, education and outreach, and public greenspace of Hinkston Creek in the heart of Mt. Sterling, KY. The Bourbon County Conservation District has also been involved in the Hinkston watershed with their Fall Farm Field Day to promote conservation, local pasture seeding cost-share program (to encourage better forages because this watershed is primarily pasture land), promoting Soil Stewardship Week in the local schools, assisting landowners in the development of Agriculture Water Quality Plans, providing technical assistance to address conservation related issues, and a tree seedling giveaway with the goal of increasing hardwood tree density in Bourbon County.

Copperhead Consulting has also been active in the Hinkston watershed, partnering with Bluegrass Greensource and Licking Valley Adventures, LLC for the Hinkston Creek 2022 Water Quality Mini Grant Application (Millersburg to Ruddles Mill). This project is a study of approximately 14.5 miles of Hinkston Creek from Millersburg to the confluence with Stoner Creek

near Ruddells Mills. The Study will include background research of water quality, threatened and endangered species, existing conditions, access, area history, and a paddling survey of this part of Hinkston Creek. It will produce a study report, fact sheet, water trail story map, and virtual tour (short video) of the Hinkston Creek Study Corridor, which are project concepts identified by Hinkston Creek Stakeholder Groups. The study will analyze water trail potential and consider measures to enhance water trail usage to promote Hinkston Creek as an outdoor recreation and tourism asset. The mini grant program is designed to support innovative projects in the Hinkston Creek watershed that will result in improvements to local waterways and/or feature local waterways more prominently in the community. The Hinkston Creek Study is one of the project concepts prioritized by the Hinkston Creek Stakeholder Groups (e.g., water trail map, virtual tour, and overview of Hinkston Creek). Copperhead consulting is also involved with the Kentucky American Water Grant - Hinkston Creek 2022 Water Quality and Biological Monitoring (Millersburg to Ruddell's Mills). This study intends to evaluate water quality in Hinkston Creek in Bourbon County using bivalve (mussel) in situ growth studies and fish index of biotic integrity (IBI). The goal of this project is to determine if nitrogen or E. coli are affecting fish and bivalve fauna as well as additional water quality or habitat variables. This analysis will help determine if Hinkston Creek is a good site for future mussel propagation efforts. A long-term goal is to restore mussel populations as a method to improve water quality.

In Stoner Creek, the community group Friends of Stoner Creek have taken the lead. This year they have done water quality testing with the Kentucky Division of Water and Watershed Watch of Kentucky, removed 107 tires (1200 tires to date) with a local boy scout group, worked with Bluegrass Greensource to deliver an environmental education program about the water cycle/watershed to both public middle schools and St Mary and Bourbon Christian Academy, and sponsored a water cycle/watershed art contest that was displayed during the Art Walk to create watershed awareness.

The remaining three watersheds, North Fork of the Licking, Triplett, and Slate creeks, have kept up with regular water quality monitoring. Kirby Rosser with Licking River Watershed Watch has been sampling the North Fork of the Licking regularly this year and Morehead State University (MSU) professor, Dr. Geoff Gearner has conducted regular sampling and in-house analysis for Triplett Creek, as part of a MSU research grant and partnership with Kentucky Division of Water. In Slate Creek, the local health department is concerned about failing septic systems in the watershed and subsequently, there is interest in an SRF project to address septic issues. Local partners voiced interest in educational awareness efforts

around the Outstanding Water Resource in Slate Creek area. Slate Creek was also identified as a Mississippi River Basin Initiative watershed for NRCS (planning began FFY 2022), but currently there is no activity in Slate Creek.

Headwaters Licking River Basin (Elk Fork Creek)

Historically, there have been no 319(h) dollars awarded to the headwaters of the Licking River and there is no current activity in Elk Fork Creek. Recently, a local water district approached the Licking River Basin Coordinator with interest in engaging in more watershed-focused conservation efforts, particularly surrounding septic and straight pipe issues. The local health department has expressed interest as well. The goal for next year is to spend more time in the Licking Basin headwaters and help foster more community involvement in this area.

Upper Cumberland River Basin

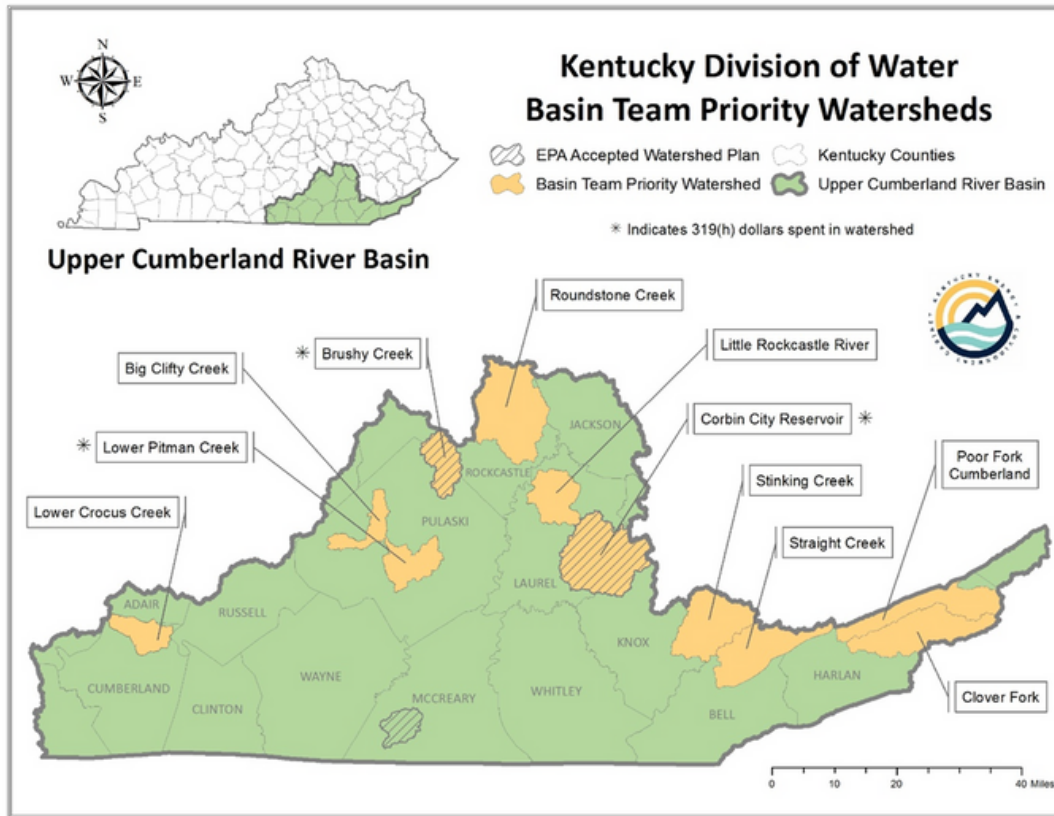


Figure 27. Map of Upper Cumberland River Basin Team Priority Watersheds.

Roundstone Creek Watershed

Located in the Roundstone Creek Watershed, Lake Linville is the primary drinking water source for Rockcastle County, Kentucky. While the water is considered safe for consumption, residents report frequent algal blooms, sediment plumes, and taste and odor issues. An analysis of the area suggests these issues may be the results of runoff from surrounding agricultural, forestry, and urban land use.

In 2019, the Natural Resources Conservation Service and the Division began to lay the groundwork for water quality improvements in the watershed. NRCS approved two subwatersheds of Roundstone Creek for focused conservation projects. The Division conducted an intensive water quality survey for the Renfro Creek

watershed and a bacteria study in Roundstone. Watershed planning through the 319(h) program is expected to start in the next two years.

Lower Pitman Creek

The City of Somerset was approved for a 319(h) grant to address water quality concerns in the Lower Pitman Creek watershed. The watershed is a heavily karst area, so the Division’s groundwater section is finalizing a study to identify the location and flow patterns of sinkholes, springs, and the groundwater under the city. In addition, the Division’s water quality branch is conducting a surface water intensive study to assess the watershed conditions. The city hired a watershed coordinator and a watershed council is in the initial stages of formation.

Brushy Creek

In 2019, the Pulaski County Conservation District (PCCD) was selected to receive additional Clean Water Act 319(h) funding to continue reducing agricultural runoff in the Brushy Creek Watershed (Project 19-10). An exciting part of the project is the inclusion of new technology; the PCCD purchased a drone with a normalized difference vegetation index (NDVI) sensor to analyse plant health. This technology enables farmers to gain a bird's eye view of crops and use the visual display to indicate areas of poor plant health. The drone is then able to zoom in to identify if areas of declining health are due to insect infestations, lack of nutrition, or other types of crop damage. Once a determination is made, the farmer is then able to take a targeted approach to chemical applications, thus reducing the potential for nonpoint source pollution on the property.

A farm tour demonstrated this process to the community. The 2019 project kicked off with another farm tour, this time hosted virtually at the Somerset Drive-In. The event was a partnership with the Pulaski County Cattlemen's Association, Natural Resources Conservation Service, the Kentucky Beef Network, and the University of Kentucky's Cooperative Extension Service. The project will continue through 2023 with a focus on highlighting and installing agricultural best management practices.



Photo by: April Dudgeon
Lake Cumberland

EDUCATION AND OUTREACH

The Division of Water provides nonpoint source pollution education and outreach activities across the Commonwealth in addition to what is offered by 319(h) sub-grantees. The Basin Coordinators in the Nonpoint Source and Basin Team Section strive to reach a diverse audience, providing outreach and educational resources to create a more informed population and improve Kentucky's water quality.

During 2022 the Nonpoint Source & Basin Team Section worked with colleagues in the Watershed Management Branch to develop and pilot an ArcGIS-based tool to track education and outreach events. The tool uses a publicly facing [Survey123 interface](#) to gather information about events, thereby allowing participation by the two Basin Coordinators who are not state employees. The tool compiles geolocated data in both map and table format and gives us the ability to collect event attributes uniformly which facilitates more efficient sorting and analysis of the data. By ensuring that Basin Coordinators and Technical Advisors are all able to upload data through the Survey123 interface, our process is streamlined.

Tables four and five detail educational programming accomplished in FFY 2022. Basin Coordinators and Technical Advisors of the Nonpoint Source and Basin Team section typically reach thousands of stakeholders through outreach activities each year.

Table 4. Education and outreach activities by action item. Through these events, DOW reached more than 5,000 people.

Action Items	Accomplishments
Action Item 1.1: Continue effective messaging for the Division of Water	<ul style="list-style-type: none"> • I Love KY Water Facebook Page was created in 2016 and has been maintained by the Basin Coordinator Staff. In 2022, the name changed from I Love KY Water to KY Wild Waters. The page has increased followers from 21,124 (2021) to 21,527 followers (2022). • The Basin Coordinators used MailChimp for monthly to quarterly newsletters. The mailing list contains 1,354 recipients
Action Item 1.2: Partner with organizations on environmental education and outreach opportunities	<p>Partnered with the following organizations:</p> <ul style="list-style-type: none"> • Kentucky Conservation Districts • Kentucky Water Resources Research Institute • Jackson Purchase Foundation • Kentucky Association for Environmental Education • Kentucky Department of Conservation • University of Kentucky Cooperative Extension • Watershed Watch in Kentucky • Kentucky Waterways Alliance • Kentucky Association of Mitigation Managers • Friends of Waterfront Park • Kentucky Center for African American Heritage • Louisville Free Public Library • Louisville MSD • Louisville Photo Biennial • Louisville Photographic Society • Louisville Water • River City Paddle Sports • University of Louisville • Ohio River Basin Alliance • The Nature Conservancy
Action Item 1.3: Develop content for social media, basin newsletters, and other print and non-print outlets	<p>Social Media:</p> <ul style="list-style-type: none"> • Basin Coordinators have sent out quarterly newsletters • Each Basin Coordinator provides content for the Facebook Page • Participated in the following social media campaigns to promote various aspects of water: Water Week in Kentucky, Earth Day, Drinking Water Week, and Source Water Protection Week • Produced Land, Air, and Water webzine articles

Table 4. Continued

Action Item 1.4: Coordinate and conduct public events and/or exhibits	<ul style="list-style-type: none"> • Ripple Effects Photography Contest for K – 12 students in Louisville Metro region • Ripple Effects Exhibit at the Kentucky State Fair • Stream Table Exhibit at Living Arts & Science Center
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Table 5. Education and outreach activities by type.

Type	Description	Community Reached
Presentations	<p>Conducted presentations at various conferences and meetings throughout the State to educate the public about:</p> <ul style="list-style-type: none"> • Watershed Planning • Nature-Based Solutions • Nonpoint Source Pollution and Hazard Mitigation Planning • Priority Watersheds • General Water Quality • Watershed Watch in Kentucky • Four Rivers Basin Team • Licking River Basin Team • Salt River Collaborative • Water Quality and Best Management Practices • Community Monitoring • Project WET 	<p>Conducted 14 formal presentations reaching over 800 community members of all ages</p>
K-12 Environmental Education	<p>Conducted various water related activities at partner events:</p> <ul style="list-style-type: none"> • St. Mary’s Elementary School • Calloway County Middle School • Red River Festival • Envirothon Trainings (2) • Wolf Creek Dam Eco Event • Four Rivers Sustainability Festival • Greenup County Conservation District Field Day • Pulaski County 4-H Environmental Camp • Land-between-lakes Nature Station Homeschool Field Day • Mason County High School Biodiversity Project • Elkhorn Middle School 	<p>Conducted Environmental Education programs reaching ~1100 students</p>
Workshops (Hosted)	<p>Conducted the following Workshops:</p> <ul style="list-style-type: none"> • Watershed Watch in Kentucky Training 	<p>At the 12 workshops held throughout the State, ~75 community members and partners were taught by the Division of Water</p>
Workshops (Attended)	<p>The Basin Coordinators attended the following trainings for Professional Development:</p> <ul style="list-style-type: none"> • Kentucky Association of Mitigation Managers Training • Nonpoint Source Technical Exchange Workshops • National Nonpoint Source Training Workshop • 303(d) Workshop Kentucky Association for Environmental Education Outdoor Learning Symposium • North American Lake Management Society Communicating Science Workshop • Ripple Effects Photography Workshop 	

Table 5. Continued

<p>Community Meetings Attended</p>	<ul style="list-style-type: none"> • Dix River Watershed Council Meeting • Headwaters Advisory Team Meeting • West Hickman Watershed Council Meeting • Area Development District Meetings • Banklick Watershed Council Meetings • Calloway County Conservation District Board Meeting • Farmer to Farmer Meeting • Dix River Watershed Councilg • Friends of Clarks River National Wildlife Refuge • Little River Water Quality Consortium Meeting • Mammoth Cave Biosphere Reserve Meeting • NRCS Region Workgroup Meetings • Obion Creek Watershed Conservancy • Ohio River Restoration Workgroup 	<p>Attended over 100 community meetings throughout the State</p>
<p>Watershed plan development areas</p>	<p>The Basin Coordinators and Technical Advisors have worked in the following areas related to current or future watershed plan development:</p> <ul style="list-style-type: none"> • Banklick • Red River • Brushy Creek • Red Bird River • Hinkston Creek • Bacon Creek • Sulphur Creek • Upper Paint Lick • South Fork Little River • Cane Run • Chestnut Creek • North Fork: Whitesburg • Currys Fork • Lower Pitman Creek • Mill Creek (Louisville) • Beaver Creek • Dry Branch – Salt River • Buck Creek • McDougal Creek • Hanging Fork • Clarks Run 	

PROJECT WET

Kentucky Division of Water is the host institution for Project WET (Water Education Today) in Kentucky. The Project WET Foundation (PWF) is an international not-for-profit water resources education program. Project WET’s goal is to provide scientifically accurate and educationally sound water resources education materials, training courses, and networking services to citizens, organizations, governments, and corporations. The Kentucky Project WET Coordinator has multiple roles: training facilitators and educators across the Commonwealth; ensuring certified facilitators have all required forms to support their workshops; managing activity guide orders; developing and maintaining a database of certified facilitators and educators in Kentucky; and providing an annual report to PWF

detailing Project WET workshops. Kentucky Division of Water has formed a partnership with the Kentucky Association for Environmental Education (KAEE) to coordinate project trainings and further promote state-wide water education.

In FFY 2022, KAEE continued work using Project WET in collaboration with the Next Generation Science Standards (NGSS), a model that is now used by Project WET coordinators nationwide. This work incorporating the Next Generation Science Standards is crucial to ensuring that environmental education is integrated into academic curricula; formal educators, guided by state-required and -assessed standards, can easily justify how Project WET activities correlate with NGSS. This carries further weight for non-formal educators engaging with formal educators and addressing their NGSS-driven scholastic needs.

During FFY 2022, KAEE's Project WET program conducted eighteen educator workshops and reached 214 educators, including (K-12) educators, university educators, pre-service educators, and non-formal educators. Slowly, working through the transition to being back in person due to the COVID-19 pandemic, precautions were taken and the 2022 facilitator trainings were virtual with in-person opportunities provided in some workshops. Kentucky Association for Environmental Education is working with educators and facilitators around the state to improve the number of trainings held in the coming year and hopefully begin incorporating some in person trainings in the near future.

OUTREACH

Educational Equipment

The Division of Water has a large supply of environmental educational equipment that is available for checkout, allowing teachers and other professionals to use various pieces of equipment for educational events in their regions. The equipment available includes items such as stormwater models, Enviroscares, display boards, and a stream table. In addition, an Ollie the Otter, DOW's Mascot, costume is available for events. During 2022, the Division of water loaned Enviroscares for six events and the Ollie the Otter costume for three appearances. In addition, the stream table has been checked out for a year-long exhibit at the Living Arts and Science Center in Lexington.

Outreach Material

As part of DOW's mandate to improve understanding of NPS issues within the Commonwealth of Kentucky, the NPS Section has worked with stakeholders, educators, journalists, and regulators to develop online outreach and print publications about water quality, DOW initiatives, and best management practices.

Naturally Connected Blog and Land, Air, & Water Articles

The Energy and Environment Cabinet maintains several publications including a blog, Naturally Connected, and the Cabinet's webzine, Land, Air, & Water. During water-related events, the NPS team worked with these publications to publicize the 319(h) Grant Program and a variety of other programs.

Social Media

In 2019, the [Kentucky Nonpoint Source Management Plan](#) was approved by the Environmental Protection Agency (EPA) as a five-year planning tool for the KY EPA Section 319(h) program. In this plan, education and outreach are noted as essential components of realizing improvements in Kentucky's watersheds. Specifically, the education and outreach summary states:

"Every citizen in the Commonwealth is a contributor to nonpoint source pollution, thereby impacting water quality. By helping citizens and businesses link their lifestyles and activities directly to our waters, we raise awareness and concern, affecting improvements in watershed health. Through a diverse array of tools, DOW aims to extend water knowledge to every citizen in the Commonwealth, and to build and strengthen partnerships with businesses, citizen groups, schools, and local governments. Together we can increase understanding in our communities, reduce nonpoint source pollution, and positively transform the way we all interact with our watersheds."

One of the most effective outreach tools is social media. Its interactive nature provides an opportunity to adapt outreach messages based on immediate feedback. Social media platforms offer an opportunity to build an online community to influence change and create a trusted space for environmental conversations.

After examining the “I Love KY Water” Facebook audience, basin coordinators identified two missing factors: the younger demographic and Kentucky’s visitors. In response, the Division adopted two major changes. To capture the younger demographic, the social media platform was expanded to include Instagram, Twitter, and TikTok. Secondly, the social media handle was changed to @kywildwaters to increase awareness with the Kentucky’s outdoor tourism industry. According to the Kentucky Department of Fish and Wildlife Resources, outdoor recreation in Kentucky (hunting, fishing, boating, and wildlife watching) has a total economic impact of \$5.9 Billion and supports about 70,000 jobs. Community members who depend on the outdoor recreational economy have a vested interest in protection of natural resources. While outdoor recreation won’t be the exclusive audience for social media, it does encompass many of our audience members.

Webpages

The Nonpoint Source and Basin Team maintains the [Nonpoint Source Pollution](#), [Basin Coordination](#), and [Watershed Planning](#) webpages on the Energy and Environment Cabinet’s website. From these pages, users have access to the Kentucky Water Health Guide, Watershed Planning Guidebook for Kentucky Communities, EPA’s Watershed Planning Module, and the newly created 319 Grant Reporter. Users can also access the [Water Maps Portal](#), which contains user-friendly interactive maps that display water data ranging from water quality impairments to harmful algal blooms, as well as drought potential tools. The DOW [Story Map Gallery](#) also provides useful tools for users to explore specific projects, watershed planning initiatives, and programs. Additional online resources available through the Division of Water include the Integrated Report Hub Site.

Basin Coordinator Quarterly Newsletters

The Basin Coordinators create and send out quarterly newsletters. During 2022, these newsletters transitioned from Basin-specific to statewide, thereby allowing a team

approach to developing content. The information in these newsletters includes everything from Basin Team updates and highlights of basin successes to information on best management practices and watershed management-related funding updates. The statewide approach allows river basin stakeholders to learn about and engage with NPS efforts outside of their basin.

Agriculture Water Quality Act (AWQA) Outreach

Kentucky is reinvesting in AWQA planning tools to help farmers and foresters develop plans for protecting water quality using best management practices (BMPs). The Division of Water used EPA grant funding to build an interactive AWQA Planning Tool that streamlines conservation planning, while improving access to funding, technical, and water quality information. Additionally, DOW invested in a statewide AWQA outreach campaign consisting of radio, video, and print media (Figure 28). The Division of Water is also working with the Kentucky Division of Conservation, the University of Kentucky Cooperative Extension, and others to distribute AWQA-branded grazing sticks and fencepost signs at livestock and commodity training events to promote completing and implementing AWQA plans.



Figure 28. Example from print media developed to promote Agricultural Water Quality Plan development.

Earth Day

To celebrate 2022 Earth Day, the NPS team participated in a celebration and clean-up on the Ohio River. This celebration and clean-up was scheduled to include a press conference, a 2.5 mile exploration by paddle craft to Sand Island and a cleaning up of Sand Island and a local Olmstead Park – Shawnee Park. Due to high water levels and in the interest of safety, the paddle portion of the day had to be canceled. The event still included river music from a local artist, a press conference with speakers that ranged from local officials to nonpoint source staff and other local community leaders. The clean-up portion of the celebration was held near the Shawnee Park Boat Ramp and at the Falls of the Ohio State Park nearby. The Artist Al Gorman led a group found-art sculpture creation at the Falls of the Ohio State Park.

Four Rivers Watershed Sustainability Festival and Summit

In celebration of the 50th Anniversary of the Clean Water Act, The Jackson Purchase RC & D Foundation (JPF), The City of Murray, Murray State University's (MSU) Watershed Studies Institute, Four Rivers Watershed Watch, the Calloway County Public Library and the MSU Arboretum focused their Sustainability Festival & Summit on the importance of clean water. The Festival & Summit included a family day/festival, consisting of educational games, activities and general information on clean water, conservation and sustainability, an academic summit featuring state and local presenters who spoke about environmental issues and clean water, several environmentally themed movies, and a "Beast Feast" where wildlife students at Murray State cooked wild game and fish.

The Four Rivers Watershed Sustainability Festival and Summit grew from backyard conservation workshops, which were one-day events held by the JPF, City of Murray, Calloway Conservation, and Calloway County Extension and 4-H. They offered informational tables on storm water runoff, nonpoint source pollution, pollinator gardens, composting and recycling, previous concrete, planting and maintaining gardens, soil health and fertilizer application, and the function and installation of rain barrels and rain gardens.

In 2018, the event was moved to the MSU campus and the sponsors added a series of presentations in addition to the usual tabling. Speakers included presentations about environmental projects in the area, such as the Kentucky Division of Water's 319(h) projects: Damon Creek Watershed Implementations and Chestnut Creek Watershed Implementations. Other speakers presented information about the importance of our abundant water resources in Western Kentucky and the local partners and projects that work toward improving and protecting water quality. These presentations were popular and considered a success.

After a successful event in 2018, the sponsors decided to try a festival type setting in the month of April. The Public Library and additional MSU departments joined the planning committee. Plans were made to transition from a one-day event to multiple events throughout April to celebrate Earth Week and clean water.

The Four Rivers Watershed Sustainability Festival and Summit has grown into multiple events evolving around water quality, conservation, environmental education, and sustainability. In 2022, the first of which is a Sustainability Festival/Family Day, filled with NPS demonstration models (Figure 29), tabling's about macro invertebrates (Figure 30), Watershed Watch in Kentucky data, and tables featuring information on pollination, invasive species, beekeeping, and wildlife. The main attraction was Mr. Hooked on Science, Jason Lindsey. Jason performed science experiments for the audience that focused on water. The Sustainability Festival was followed by an international showing of 500 Days in the Wild at the MSU Curris Center Theater. Additionally, Waters Way: Thinking Like a Watershed and Beavers are Cool were shown later in the week at the Murray Central Park Amphitheater. In addition, the Four Rivers Watershed Academic Summit included presentations about green living, invasive species, chemical breakdowns in our wastewater, and the effect of the December 10th tornado on our waterways. Events also included the "Beast Feast," sponsored by the Murray State Wildlife Society and the Murray State Backcountry Hunters and Angler's clubs. They cooked assorted wild game and fish for the community.

The Four Rivers Watershed Festival and Summit has grown from five initial partners (JPF, City of Murray, Calloway Conservation, Calloway County Extension and 4-H) to an array of sponsors, partners, and volunteers to organize, plan and execute our event. The main supporters and partners are:

- Jackson Purchase RC & D Foundation
- Murray State's Watershed Studies Institute
- MSU Hancock Biological Station
- City of Murray
- The Arboretum at MSU
- The Calloway County Public Library
- Calloway Conservation Office
- UK Extension Offices
- Four Rivers Watershed Watch
- Friends of Clarks River National Wildlife Refuge
- Friends of the Calloway County Public Library
- Kentucky Division of Water
- MSU Department of Agriculture
- MSU Department of Humanities & Arts
- MSU Department of Biology
- MSU Bill Cherry Expo Center
- Local Master Gardeners
- MSU Wildlife Fisheries Society
- MSU Backcountry Hunters & Anglers
- Cinema International

Plans are already in process for the 2023 events to be held during the month of April. The event is looking into adding a couple of new speakers or tables and a water focused photograph contest.



Figure 29. Stormwater demonstration model at the 2022 Four Rivers Sustainability Festival



Figure 30. Macroinvertebrate table at the 2022 Four Rivers Sustainability Festival



Chapter 3 TOOLS FOR CLEANER WATER

SPOTLIGHT: 319(H) GRANT PROGRAM UPDATES

During early spring 2022, the Nonpoint Source & Basin Team Section (NPSBT) evaluated the 319(h) Grant Program and process. After receiving feedback from partners and previous applicants, it was determined that the NPSBT's process was labor intensive and could potentially exclude partners throughout the state. Previously, partners were required to submit a two-page proposal which was reviewed and ranked by the NPSBT. Only proposals that ranked highest were invited to apply. Often times the proposal was not enough to fully explain the project, did not include an accurate budget, or included ineligible activities.

The NPSBT Section had four major goals to improve the 319(h) Grant Program: (1) streamline the application process for both partners and NPSBT staff (2) update the application and supporting documentation (3) incorporate [environmental justice](#) into the application process and (4) increase available resources to ease the application process.

Goal one: Streamline the application process for partners and NPSBT staff. Taking both partner feedback and staff time into consideration, the proposal process was removed from the 319(h) Grant Program. In order to streamline the process for the program, the follow schedule was created:

- Early October: 319(h) Grant cycle begins.
- Mid November: The [Letter of Intent](#) is due. Although the Letter of Intent is strongly encouraged, it is not a requirement to apply for 319(h) Grant funds.
 - The Letter of Intent notifies the NPSBT section that a partner plans to apply and provides the opportunity to work alongside the partner to complete the application.
- Early February: The final [application](#) must be submitted. Applications will be reviewed and ranked by the NPSBT Section. Projects will be funded in the order they rank.

Goal two: Update the application and supporting documentation. Since most of the documents—including the application—were updated on an as-needed basis, it was determined that all documents needed to be reviewed and revised. Both the application and letter of intent form were modernized to a fillable form PDF document. The [Grant Guidance](#) and [Application Instructions](#) were also reviewed and revised.

Goal three: Incorporate environmental justice into the application process. With the announcement of the [Justice40](#) Initiative released under President Biden's administration, the NPSBT worked to begin identifying, evaluating, and incorporating environmental justice into the 319(h) Grant Program. Future applicants are now asked to identify and address environmental justice in their project. Resources were created to help partners identify environmental justice and disadvantaged communities in their project area.

Goal four: Increase available resources to ease the application process. In early spring 2022, the NPSBT section compiled a list of resources that could be beneficial to partners as they apply for the 319(h) Grant Program. The following resources were developed this year and are available for partners this grant cycle:

- Application Process Resources: These documents are intended to assist applicants as they are completing their applications:
 - 319(h) Rank Criteria:
 - [Watershed Plan Implementation Criteria](#)
 - [Watershed Plan Development Criteria](#)
 - [Statewide Education & Outreach Criteria](#)
 - [Environmental Justice Resource Guide](#): This document provides resources to assist partners in identifying disadvantaged communities in their project area.
- 319(h) Grant Reporter Viewer: This interactive tool provides applicants with the ability to locate Division of Water specific data that is required for the application. This reporter provides HUC12 numbers, approved TMDL information, Priority Watersheds, and any data driven information needed for the nonpoint source project.
- [319\(h\) Budget Worksheet with Tabs](#): This interactive worksheet assists applicants in calculating the match required for their application.
- Existing Project Resources: These documents are for partners currently under contract for the 319(h) Grant Program. This section also serves to show future partners required documentation for potential projects.
 - [319\(h\) Invoicing Form with Instructions](#)
 - [319\(h\) Progress Report Form with Instructions](#)
 - [Annual Load Reduction Report Spreadsheet](#)
 - [BMP Implementation Plan Guidelines](#)
 - [Final Report Guidelines](#)
- General Guidance: These general documents are intended to assist partners as they develop their projects.
 - [319\(h\) Ineligible Expenses](#)
 - [SHPO Section 106 Guidelines 2022](#)
- [Frequently Asked Questions](#): This document highlights answers to some of the most frequently asked questions for the 319(h) Grant Program.
- The [319\(h\) Grant Program Storymap](#) was developed to communicate the goals and objectives of the 319(h) Grant Program.

MAPPING RESOURCES

The Division has a tremendous amount of data for the State's streams, rivers, lakes, springs and groundwater. That data can often be cumbersome for the general public or other interested organizations to find and analyze. To alleviate this burden, the Division published a couple of resources in FFY 2022 to better communicate the Division's data and assist with the 319(h) Grant Program.




Water Health Portal 2.0




The Water Health Portal (WHP) is a one-stop-shop for all the Commonwealth's water health information. This viewer provides the status of surface water uses for all assessed streams, springs and lakes. From swimming designation to fishing to drinking water use, this viewer provides detailed information in an easily accessible format (Figure 31).

The WHP also identifies Kentucky's Outstanding State Resources Waters and connects to studies and reports on various streams. Each assessed segment includes an Assessment Unit Summary which provides additional details on the assessed designated use, county, assessment date and description (Figure 32).

Assessment Unit Summary

- **Unit Name:** Rolling Fork 40.7 to 53.6
- **AU ID:** KY-2859
- **Description:** Pottinger Creek to 0.8 River Mile Upstream of KY-84 Stiles Road/Howardstown Road
- **County:** Nelson, Larue
- **Overall Category:** 2
- **Assessment Date:** 12/16/2019

Warm Water Aquatic Habitat is full support, category 2
Basis for Listing: Designated use found to be fully supporting, basis for listing is not applicable.

Monitoring:

- **Data Types:** Biological
- **Sampling Date:** 06/09/1999
- **Program:** Intensive Surveys - Third Party






-  **Primary Contact Recreation is not assessed, category 3**
-  **Secondary Contact Recreation is not assessed, category 3**
-  **Fish Consumption is not assessed, category 3**
-  **Domestic Water Supply is not assessed, category 3**
-  **Outstanding State Resource Water is not applicable**

Figure 32. Assessment Unit Summary from the Water Health Portal.

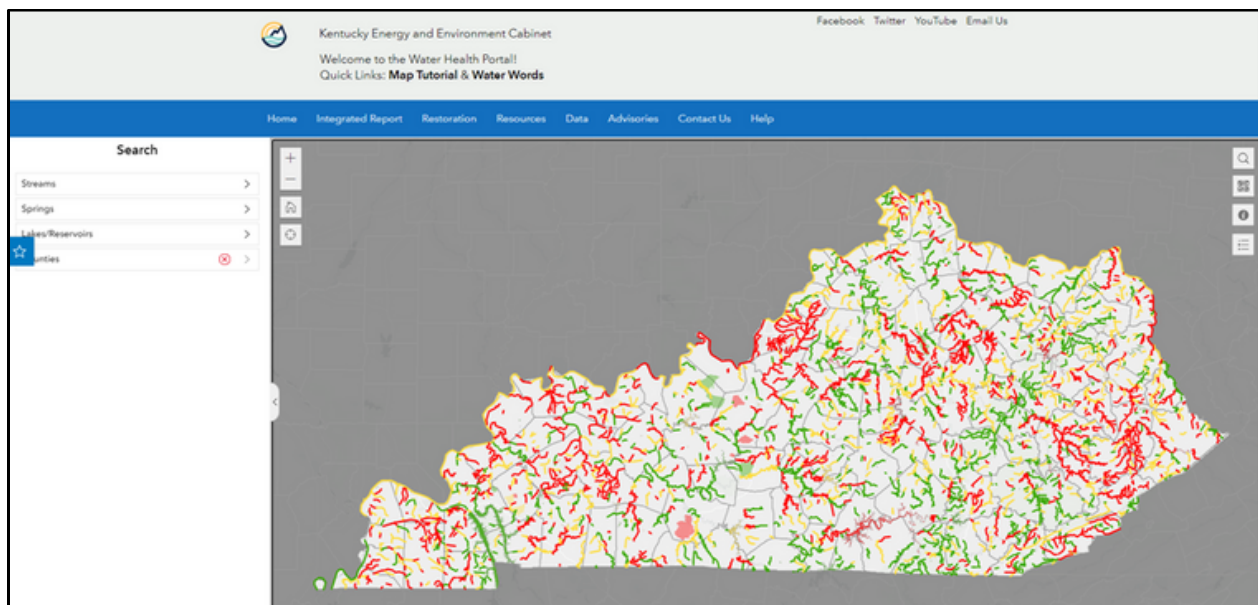


Figure 31. Water Health Portal landing page.

319 Grant Reporter

The 319 Grant Reporter is an online mapping and report generating tool that allows users to search for their watershed of interest and identify information that is necessary for submitting 319(h) Clean Water Act Nonpoint Source Funding applications. Users will be able to search for their watershed using stream name, county, Hydrologic Unit (HUC), or by scrolling to its location (figure 33).

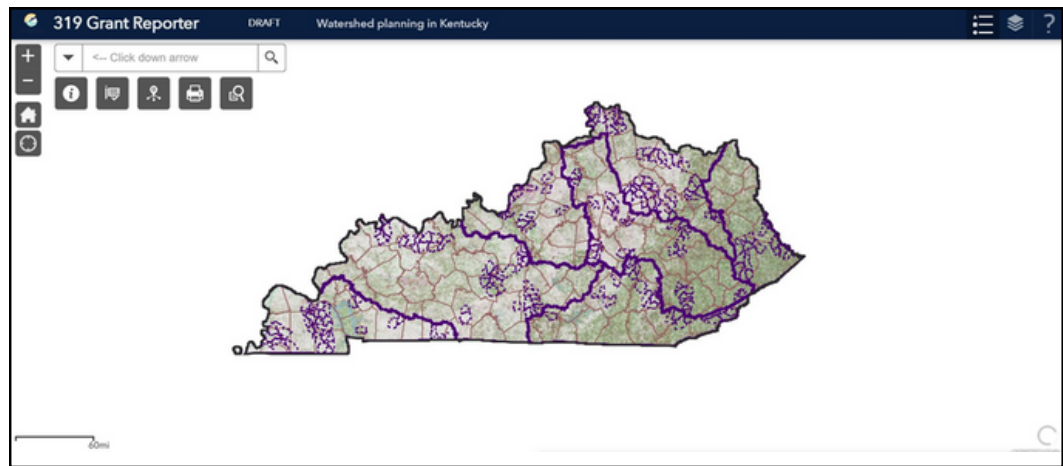


Figure 33. 319 Grant Reporter landing page

Once the correct watershed is selected, users will know what major river basin it's in, whether it has been assessed to meet its designated uses, has a Total Maximum Daily Load Allocation (TMDL), if it is in a Source Water Protection Zone (SWPP), and if it has any assigned special designations such as an Outstanding State Resource Water (OSRW) or Division of Water Priority Watershed. Users can download and print a copy of the report and attach it to their 319(h) application or use it for any other uses they see fit.

For more information about the 319 Grant Program please check out the Kentucky Division of Water's [319\(h\) Grant Program Funding page](#).

ENVIRONMENTAL JUSTICE (EJ) EFFORTS

The nonpoint source program recognizes the importance of environmental justice (EJ) efforts and is exploring how the program may expand investments for pollution reduction projects that ensure fair and equitable access to improve water quality. Our program works to address challenges that disadvantaged communities (DACs) are facing in the Clean Water Act (CWA) Section 319(h) grant process and works toward bringing historically underrepresented voices to the conversation about water quality benefits. Currently, we have incorporated EJ into our application process and have taken the time to identify and address EJ in our overall program. Our future applicants are asked to identify and address environmental justice in their projects. Resources were created by NPS staff to help

partners identify environmental justice and disadvantage communities in their project areas. Disadvantaged communities are largely identified using either the Climate and Economic Justice Screening Tool (CEJST) suggested by the Justice40 initiative or the EPA's EJ Screening 2.1 tool. We actively develop partnerships with organizations that are focused on EJ work, including a partnership with the University of Louisville's Resilience Justice Project. Other efforts include the program's participation in a NPS Recovery Potential Screening (RPS) Equity tool analysis with the EPA.

Our staff continues to stay updated on the latest EJ information as it comes out regarding Justice40 and EJ efforts in EPA's NPS program through the attendance of the NPS program quarterly calls on EJ efforts, technical exchange webcasts, as well as participation in workshops provided by the EPA regarding the national NPS program and its incorporation of EJ.



Chapter 4

WORKPLAN REPORTING

FFY2022 GOALS AND OBJECTIVES

The Kentucky Division of Water's Nonpoint Source Program committed to meeting specific goals, objectives, and action items within each year of the 2019 Nonpoint Source Management Plan. The table below includes both the five-year Management Plan commitments as well as summary descriptions of the work accomplished during FFY 2021 toward the completion of those commitments. In addition to the NPS Management Plan, Kentucky's NPS Program makes operational work commitments within the Annual Workplan submitted to EPA Region 4. Summary descriptions of the FFY 2021 Program annual workplan commitments and the work accomplished toward their completion are also included in the following tables.

Long Term Goal 1: Restore Nonpoint Source Impaired Waters				Targeted Completion					Annual Reporting
Objective 1:	Prioritize watersheds for restoration potential.			2019	2020	2021	2022	2023	
	Action 1:	Utilize EPA Recovery Potential Screening Tool to select watersheds for implementation, within existing watershed planning areas.							
		Tracking measure:	Number and list of watersheds identified as recoverable within areas of watershed plans.		X		X	X	In early 2017, state specific metrics at the 24K level matching KY's NHD data set were completed. The updated RPT was rolled out to DOW in February 2017, allowing watershed prioritization across multiple programs. In 2020 DOW began the process of adding an Environmental Health index and Demographic index to further refine priority watershed selection. Sulphur Creek was identified as being highly recoverable for pathogens, and the NPS program has actively been implementing Ag and wastewater BMPs in the watershed for several years. Sulphur Creek Watershed was awarded a FFY22 319(h) contract for implementation.
		Tracking measure:	Number and list of recoverable watersheds receiving targeted implementation.			X	X	X	In FFY 2022, DOW's Conservation District partners were able to support work in the Sulphur Creek watershed. Conservation District staff supported implementation of seventy two (72) agricultural BMPs (with 18-06 funds) for the whole of the project and the project's Final Report was received.

	Action 2:	Utilize EPA Recovery Potential Screening Tool to identify 303(d) listed impaired watersheds that have a high potential of showing measureable water quality improvement after targeted implementation							
		Tracking measure:	Number of watersheds identified as recoverable for pathogens.		X	X	X	X	In early 2017, state specific metrics at the 24K level matching KY's NHD data set were completed. The updated RPT was rolled out to DOW in February 2017, allowing watershed prioritization across multiple programs. Sulphur Creek was identified as being highly recoverable for pathogens, and the NPS program has actively been implementing Ag and wastewater BMPs in the watershed for several years. A list of watersheds ID'd as recoverable for pathogens was not developed in FFY 2022, due to efforts to update the Recovery Potential Tool.
		Tracking measure:	Number of recoverable watersheds receiving targeted implementation.					X	
Objective 2:	Monitor and assess Kentucky's water			2019	2020	2021	2022	2023	
	Action 1:	Conduct monitoring and perform assessments of targeted watersheds for the development of new watershed plans or to revise existing plans.							
		Tracking measure:	Number of stream miles assessed.	X	X	X	X	X	Kentucky's 2018/2020 Intergrated Report was approved by EPA in February 2022. The IR reports 13,061.6 river miles monitored and assessed by DOW programs. The next IR is scheduled to be released in 2023.

		Tracking measure:	Number of stream miles impaired by NPS pollution.	X	X	X	X	X	The 2018/2020 Integrated Report documents 8,939.6 river miles are known to be impaired by NPS causes and sources (categories 5, 4A, 4B, 4C).
		Tracking measure:	Number of pollutant/waterbody combinations impaired by NPS pollution.	X	X	X	X	X	The 2018/2020 Intergrated Report has 2,809 pollutant- waterbody known to be impaired by NPS causes.
	Action 2:	Conduct monitoring and perform assessments of targeted watersheds for the development of new watershed plans or to revise existing plans.							
		Tracking measure:	Number of stream miles with assessments completed in preparation for watershed plan development or improvement.	X	X	X	X	X	Assessment documents were completed for all watershed plan development baseline water quality data collection. Additional assessments and data is being sent to the DOW 303(d) and TMDL programs as it is completed.
		Tracking measure:	Number of streams with monitoring being conducted in preparation for watershed plan development or improvement.	X	X	X	X	X	During FFY 2022, DOW staff or contractors conducted water quality monitoring in four (4) watersheds in preparation for watershed plan development. <ul style="list-style-type: none"> • Glenss Creek • Lower Pitman Creek • Jennings Creek • Roundstone Creek
	Action 3:	Conduct monitoring and perform assessments of watersheds targeted through the Division of Water’s Success Monitoring Program.							

		Tracking measure:	Number and list of streams prioritized through the Division's Success Monitoring program with completed assessments.	X	X	X	X	X	Final approval of the 2018/2020 Integrated Report was obtained by EPA in FFY 2022. The following priority watersheds for Success Monitoring have completed assessments in five (5) streams: <ul style="list-style-type: none"> • Little Pitman Creek of Green River (includes Trace Fork and Buckhorn Creek) • Martis Branch of Green River • North Fork Kentucky River Tributaries (includes Sandlick Creek, Dry Fork, Dry Fork UT, Little Dry Fork, Company Branch, and Crafts Colly Creek) • Pleasant Run (includes Pleasant Run UT) • Rock Creek (includes White Oak Creek and Rock Creek UT)
		Tracking measure:	Number and list of streams that have a documented change in use support awaiting EPA approval.	X	X	X	X	X	Currently there are no streams awaiting EPA approval for a documented change in use support.

		Tracking measure:	Number and list of streams that have a documented delisting approved by EPA.	X	X	X	X	X	<p>The 2018/2020 Integrated Report was released in 2022. There were sixteen (16) stream segment delistings in the following streams:</p> <ul style="list-style-type: none"> • Benson Creek • Clarks River • Fleming Creek • Green Creek • Gunpowder Creek • Hancock Creek • Hinkston Creek • Johnson Creek • Mocks Branch • Mud River • Obion Creek • South Elkhorn Creek • UT of Hickman Creek • West Hickman Creek • Wolf Lick Creek • Woodruff Creek
	Action 4:	Continue to implement a Division level watershed Success Monitoring Program.							
		Tracking measure:	Maintain and continue to update GIS layers for BMP implementation tracking tool.	X	X	X	X	X	<p>Spreadsheets of on the ground BMP implementation data is compiled from internal and external state and federal agencies at least annually. GIS coverages were completed in 2019 and are updated with continuing implementation and used to evaluate potential for changes in watershed status.</p>
		Tracking measure:	Number of watersheds identified as needing success monitoring.	X	X	X	X	X	<p>In FFY 2022, monitoring was conducted in three (3) new watersheds identified as needing baseline data for success monitoring and watershed planning:</p> <ul style="list-style-type: none"> • Jennings Creek • Roundstone Creek • Sinking Creek.

		Tracking measure:	Conduct annual meeting to coordinate locations appropriate for success monitoring within the watershed framework.	X	X	X	X	X	DOW staff is actively conducting meetings with NRCS, KY Division of Conservation, and the Division of Abandoned Mine Lands to gather information about on the ground BMP implementation as well as coordinating locations for program effectiveness or success monitoring. Additionally, internal DOW meetings are regularly being held to develop success monitoring program annual monitoring targeted watersheds.
	Action 5:	Conduct post-BMP implementation Water Quality Monitoring for National Water Quality Initiative (NWQI) watersheds.							
		Tracking measure:	Evaluate NWQI watersheds annually to determine needs, and design success monitoring plan as appropriate.	X	X	X	X	X	Due to a lack of interest in farm bill conservation programs, NRCS elected to withdraw from the NWQI in 2020. As an alternative, NRCS instituted Focused Conservation Projects, that implement water focused agricultural best management practices in each of their 12 districts. DOW assisted NRCS with selection of project areas and has been providing technical support in the form of monitoring and data in the Roundstone Creek watershed in 2022. NRCS restarted NWQI planning in 2021, with implementation starting in 2022. DOW met with NRCS multiple times in FFY 2022 and provided detailed analysis and recommendations for selection of FFY 2023 Planning Year Watersheds.

		Tracking measure:	Implement NWQI success monitoring as needed.	X	X	X	X	X	Since restarting NWQI, NRCS remains in the implementation phase for the Clarks River watershed. DOW is coordinating with NRCS and anticipates providing NWQI monitoring of the Clarks River watersheds to begin in 2025.
		Tracking measure:	Compile water quality data for trend analysis in NWQI watersheds as needed.	X	X	X	X	X	DOW provided extensive water quality data and supporting documentation to NRCS for the selection of 2023 NWQI planning year watersheds. DOW provided information on water quality conditions, watershed characteristics, environmental justice considerations, and partner resources.
		Tracking measure:	Number of NWQI BMPs per selected HUC 12.	X	X	X	X	X	With the continued emphasis by NRCS on Focused Conservation Projects, NRCS did not complete the first full year of implementation for NWQI watersheds in FFY2022. DOW will work with NRCS to assess the success of BMP implementation in NWQI watersheds as implementation years are completed.
Objective 3:	Implement the Nonpoint Source component of Approved TMDLs of restoration strategies in prioritized impaired watersheds.			2019	2020	2021	2022	2023	
	Action 2:	Coordinate with the Division's TMDL Program to implement the nonpoint source pollution component of approved TMDLs in areas with approved watershed plans.							

		Tracking measure:	Coordinate with the Division's TMDL Program to implement the nonpoint source pollution component of approved TMDLs in areas with approved watershed plans.	X	X	X	X	X	NPS personnel are part of a TMDL Workgroup that met nine (9) times in FFY 2022. Workgroup priorities include but are not limited to improved communication of program timelines and priorities, identification of potential TMDL Alt watersheds, and implementation strategies in TMDL watersheds. The group is also used to set coordinated monitoring priorities between NPS Success Monitoring and the TMDL section.
		Tracking measure:	Number of sub-grantee projects implementing BMPs in watersheds with approved TMDLs.	X	X	X	X	X	In FFY 2022, seven (7) sub-grantees implemented BMPs in watersheds with TMDLs: <ul style="list-style-type: none"> • Bacon Creek • Chestnut Creek • Clarks Run and Hanging Fork • Currys Fork • Cane Run • Gunpowder Creek • South Fork Little River
	Action 2:	Coordinate with the Division's TMDL program to prioritize, develop, and/or implement TMDL Alternative Plans.							
		Tracking measure:	Number and list of watersheds prioritized for TMDL Alternative Plan development.	X	X	X	X	X	Three (3) watersheds are currently prioritized for Alternative Restoration Plan development. In 2021, Sanitation District 1 in Northern Kentucky indicated to DOW they are pursuing Alternative Restoration Plans for the Banklick Creek, Woolper Creek and Threemile Creek watersheds. Banklick and Woolper Creek watersheds both have an EPA accepted watershed plan.
		Tracking measure:	Number and list of watersheds with approved TMDL Alternative Plans.	X	X	X	X	X	Currently the state of Kentucky has completed two (2) TMDL Alternative Plans: <ul style="list-style-type: none"> • Gunpowder Creek • Threemile Creek

Objective 4:	Implement restoration strategies for prioritized impaired watersheds that will result in measurable water quality improvements.		2019	2020	2021	2022	2023		
	Action 1:	Continue development and implementation of accepted watershed plans.							
		Tracking measure:	Number and list of watershed plans currently under development.	X	X	X	X	X	During FFY 2022, DOW worked with contractors toward development of nine (9) additional watershed plans: <ul style="list-style-type: none"> • Jennings Creek • Lake Linville • Upper Paint Lick Creek • Lower Pitman Creek • Glenns Creek • Bee Creek • Mill Creek, • West Hickman • Clayton Creek.

		Tracking measure:	Number and list of watershed plans approved by EPA Region 4 for implementation.	X	X	X	X	X	<p>During FFY 2022, the DOW had twenty-nine (29) watershed plans accepted by the EPA.</p> <ul style="list-style-type: none"> • Bacon Creek • Banklick Creek • Brushy Creek • Cane Run • Chestnut Creek • Clark’s Run- Dix River • Corbin City Reservoir • Curry’s Fork • Damon Creek • Darby Creek • Dry Creek • Gunpowder Creek • Hancock Creek • Hanging Fork- Dix River • Hinkston Creek • Lower Howards Creek • Middle Fork Beargrass Creek • North Fork Kentucky River • Pleasant Run • Red Bird River • Red River Gorge • Rock Creek • South Fork Little River • Stockton Creek • Sulphur Creek • Ten Mile (Eagle Creek) • Triplett Creek • Wolf Run • Woolper Creek
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		Tracking measure:	Number and list of watershed plans approved by EPA Region 4 for implementation actively being implemented.	X	X	X	X	X	<p>During FFY 2022, the DOW had thirteen (13) watershed plans approved by EPA Region 4 for implementation actively being implemented.</p> <ul style="list-style-type: none"> • Bacon Creek • Banklick Creek • Brushy Creek • Cane Run • Chestnut Creek • Clark’s Run - Dix River • Currys Fork • Hanging Fork - Dix River • Hinkston Creek • Gunpowder Creek • Red Bird River • Red River Gorge • South Fork Little River
	Action 2:	Work to develop local capacity and implement actions necessary to address the pollution in prioritized watersheds.							
		Tracking measure:	Number of active watershed groups.	X	X	X	X	X	<p>During FFY 2022, DOW documented thirty three (33) active watershed groups in the state each with multiple supporting organizations. The River Basin Coordination Program is actively working to support and coordinate with these existing watershed groups as well as increase the number of watershed groups working on water quality issues.</p>

		Tracking measure:	Number of partner and/or stakeholder meetings attended.	X	X	X	X	X	NPS personnel attended approximately 150 partner meetings in FFY 2022.
Objective 5:	Decrease input of pollutants from agricultural sources.			2019	2020	2021	2022	2023	
	Action 1:	Support projects that educate the agricultural community.							
		Tracking measure:	Number of sub-grantee projects with an agricultural BMP demonstration event or educational component.	X	X	X	X	X	Agricultural BMP demonstration events were held in one watershed project area during FFY22: Brushy Creek (19-10). Three (3) projects include an agricultural education component: Clarks Run (19-05), Brushy Creek (19-10) and Bacon Creek Ag II (21-04).
		Tracking measure:	Provide financial and technical support to educate producers about the Agriculture Water Quality Act and nutrient management strategies.	X	X	X	X	X	Funded a new AWQA Planning Tool, and facilitated stakeholder testing and training. Coordinated and funded an education and outreach campaign, which included radio, internet and print advertisements for AWQA, and provided quarterly updates to the AWQA Authority. Engaged AWQA members to advertise in quarterly stakeholder periodicals, and developed updated web presence with agency partners.
	Action 2:	Provide financial and/or technical support for the implementation of BMPs that reduce nonpoint source pollution from agricultural sources.							

		Tracking measure:	Number of sub-grantee projects implementing BMPs to address agricultural sources of nonpoint source pollution.	X	X	X	X	X	During FFY 2022, the Nonpoint Source Program had three (3) projects implement BMPs to address agricultural sources of NPS pollution. •Brushy Creek (19-10); •Chestnut Creek (20-05); •Bacon Creek Ag II (21-04)
		Tracking measure:	Coordinate with KY DOC to fund BMPs in priority watersheds.	X	X	X	X	X	In FFY 2022, (3) projects coordinated with KY DOC to fund BMPs in their respective river basins: •Brushy Creek (19-10) •Chestnut Creek (20-05) •Bacon Creek Ag II (21-04)
		Tracking measure:	Coordinate with NRCS to fund BMPs in priority watersheds.	X	X	X	X	X	In FFY2022, (3) projects coordinated with NRCS to fund BMPs in priority watersheds: •Brushy Creek (19-10) •Chestnut Creek (20-05) •Bacon Creek Ag II (21-04)
	Action 4:	Coordinate with NRCS to identify and prioritize NWQI watersheds.							
		Tracking measure:	Number of NWQI watersheds identified.	X	X	X	X	X	In FFY 2022, DOW prepared an recommendation memo for NRCS that identified five (5) watersheds for NWQI designation: • Upper Bacon Creek, •Hopkinsville, •Upper Nolin, •Long Run, •Bayou De Chien. Ultimately, NRCS selected the Upper Nolin watershed for a 2023 planning year, and implementation starting in 2024.

	Action 5:	Participate in state wide meetings and conferences that have a focus on Agriculture and Water Quality							
		Tracking measure:	Attend two (2) USDA NRCS State Technical meetings per year. Track number attended.	X	X	X	X	X	NRCS did not hold State Technical committee meetings in FFY 2022, but DOW did engage with NRCS to track sourcewater watershed investment. DOW summarized the results of this collaboration in the Hypoxia Task Force success stories story map.
		Tracking measure:	Participate in the four (4) quarterly Kentucky Agriculture Water Quality Authority Meetings per year.	X	X	X	X	X	DOW participated in all quarterly AWQA meetings during FFY 2022.
		Tracking measure:	Participate in the Kentucky Agriculture Science and Monitoring Committee meetings.	X	X	X	X	X	DOW participated in, and presented at the KASMC meetings on November 16, 2021, and May 4, 2022.
		Tracking measure:	Number of staff attending agriculture related technical training.	X	X	X	X	X	NPS personnel attended agriculture related trainings/webinars including events such as: <ul style="list-style-type: none"> •HAB webinar series, •National Training Workshop on Water Quality, •Grassland 2.0 workshops, •Soil Health Nexus webinar series
		Tracking measure:	Present information or a booth at one (1) agriculture related event each year.	X	X	X	X	X	NPS personnel presented information at the following agriculture related event (Ky State Fair)in FFY 2022: <ul style="list-style-type: none"> •Ripple Effects Booth •Energy and Environment Cabinet Booth. DOW also presented on the AWQA planning tool and marketing efforts to agriculture stakeholders at the 2022 annual meeting of the AWQA Authority at the Kentucky State Fair.

Objective 6: Decrease input of pollutants from developed lands.		2019	2020	2021	2022	2023			
	Action 1:	Provide financial and technical support for the implementation of green infrastructure (GI), low-impact-development (LID), and stormwater management BMPs.							
		Tracking measure:	Number of sub-grantee projects implement GI, LID, and/or stormwater management BMPs.	X	X	X	X	X	During FFY 2022, four (4) projects implement GI, LID, and/or stormwater management BMPs. •Currys Fork (19-02); •Dix River and Hinkston Creek (19-05); •Banklick Creek (19-07); •Banklick Creek (20-06)
		Tracking measure:	Attend a minimum of one (1) stormwater management training event per year.	X	X	X	X	X	NPS staff attended the Kentucky Stormwater Association (KSA) Annual Conference in FFY 2022. This conference serves as a forum for information and technology transfer with regards to GI practices, general stormwater management strategies, and MS4 program implementation. NPS personnel also attended KSA quarterly meetings as they occurred.
	Action 2:	Coordinate with Kentucky Emergency Management to incorporate GI, LID, and/or stormwater management BMPs that address nonpoint source pollution into the State Hazard Mitigation Plan.							

		Tracking measure:	Participate in "Incorporating Green Infrastructure and Low Impact Development into State Hazard Mitigation Plan" grant project.	X	X	X	X	X	In FFY 2022, NPS staff continued to meet with Area Development Districts about incorporating nature-based solutions into their Regional Hazard Mitigation Plans.
		Tracking measure:	Number of NPS BMPs included in the State Hazard Mitigation Plan.					X	As of FFY 2022 no NBS recommendations were integrated into the State Hazard Mitigation Plan; however, NPS staff are working closely with key partners to add NBS as a Mitigation Goal in our SHMP.
		Tracking measure:	Provide updated GIS resources to KAMM program annually.	X	X	X	X	X	GIS layers are updated annually. NPS staff presented at the 2022 KAMM Annual Conference on the future of Kentucky's wetlands as a critical resource for hazard mitigation.
	Action 3:	Support Kentucky's MS4 program.							
		Tracking measure:	Number of Kentucky Stormwater Association meetings attended.	X	X	X	X	X	In FFY 2022 NPS staff attended two (2) virtual Kentucky Stormwater Association meetings, and the 2022 Annual Conference.

		Tracking measure:	Provide technical and/or educational support to MS4 communities.	X	X	X	X	X	Planning efforts between DOW's NPS Program and the KSA Board to develop a strategic plan for using 319(h) funding to increase the effectiveness of local stormwater programs on a statewide basis. NPS personnel normally seek ways to support MS4 communities in meeting their MCM 1 and 2 goals by providing environmental education material and support for field days and events.
				X	X	X	X	X	NPS personnel and the DOW MS4 program are in regular communication to establish methods of supporting Kentucky's MS4 communities.
				X	X	X	X	X	GIS layers are updated annually and are available by request from DOW.
Objective 7:	Preserve the critical ecosystem functions which forestlands provide and reduce NPS pollution resulting from forestry related activities.			2019	2020	2021	2022	2023	
	Action 1:	Support watershed projects that focus on sustainable forestry management with water quality being the primary concern.							
		Tracking measure:	Number of sub-grantee projects that incorporate forest management BMPs to protect water quality.	X	X	X	X	X	During FFY 2022, the DOW had one (1) projects implement forest management BMPs: Red River (18-07)

	Action 2:	Work with partners to protect and enhance forestlands for the purposes of protecting or restoring water quality, water supply, and aquatic habitat.							
	Tracking measure:	Attend at least one (1) Forest Conservation Act BMP Board meeting per year.	X	X	X	X	X		The KFCA Board did not hold a meeting in FFY 2022.
	Tracking measure:	Provide technical and/or educational support for Forest Conservation Act BMP implementation.	X	X	X	X	X		The University of Kentucky Forestry Extension is distributing and training on the updated KY Forestry BMP Field Guide that was completed in FFY 2018. The DOW also provides support through maintenance of the Special Use Waters interactive map, which shows waters of special concern for logging operations.
	Tracking measure:	Number of active partnerships working on forestry related projects to reduce NPS pollution in Kentucky.	X	X	X	X	X		The NPS section is working with partners on forestry related projects including: the Rockcastle Conservation Initiative, the University of Kentucky Department of Forestry and Natural Resources, the Office of State Nature Preserves and the Kentucky Woodland Owners Association.
Objective 8:	Protect and monitor Kentucky's groundwater.		2019	2020	2021	2022	2023		
	Action 1:	Provide technical and/or financial support for the assessment of groundwater impacts from nonpoint source pollution.							
	Tracking measure:	Number of springs sampled.	X	X	X	X	X		Thirty (30) springs were sampled in FFY 2022.

		Tracking measure:	Number of groundwater samples collected for <i>E. coli</i> .	X	X	X	X	X	Zero (0) groundwater samples were collected for <i>E. coli</i> in FFY 2022.
		Tracking measure:	Number of groundwater samples collected for pesticides.	X	X	X	X	X	132 groundwater samples were collected for pesticides in FFY 2022.
	Action 2:	Provide technical and/or financial support for groundwater protection plans (GPP).							
		Tracking measure:	Number of GPP field reviews conducted.	X	X	X	X	X	There were seven (7) field reviews conducted in FFY 2022.
		Tracking measure:	Number of GPPs approved.	X	X	X	X	X	There were nine (9) GPPs approved in FFY 2022.
Objective 9:	Decrease nonpoint source pollution from onsite wastewater sources in Kentucky's water bodies			2019	2020	2021	2022	2023	
	Action 1:	Provide financial, technical, and/or educational support to projects that decrease the negative impacts on water quality from sewage.							
		Tracking measure:	Number of sub-grantee projects that implement the onsite wastewater components of an accepted watershed plan.	X	X	X	X	X	During FFY 2022, DOW had nine (9) projects implement onsite wastewater BMPs: <ul style="list-style-type: none"> •Red River (18-07); •Marshall County HAP (18-10); •Currys Fork (19-02); •Dix River & Hinkston (19-05); •Red Bird River (19-09); •Currys Fork (20-03); •South Fork Little River (18-08); •Cane Run HAP (20-02); •Bacon Creek (19-06)

		Tracking measure:	Number of sub-grantee projects with an educational component for onsite wastewater treatment.	X	X	X	X	X	During FFY 2022, DOW had ten (10) projects with an educational component for onsite wastewater treatment: <ul style="list-style-type: none"> •Red River (18-07); •South Fork Little River (18-08); •Marshall County HAP (18-10); •Currys Fork (19-02); •Dix River and Hinkston (19-05); •Bacon Creek (19-06); •Banklick (19-07); •Red Bird River (19-09); •Currys Fork (20-03), •Cane Run HAP (20-02)
	Action 2:	Coordinate with partners to decrease impacts from onsite wastewater.							
		Tracking measure:	Number of partner meetings attended.	X	X	X	X	X	NPS personnel attended fourteen (14) partner meetings to decrease impacts from onsite wastewater.
Objective 10:	Protect and restore waters at risk from recreational impacts.			2019	2020	2021	2022	2023	
	Action 1:	Provide technical and/or financial support for Kentucky's Volunteer Lakes Monitoring Program (for the identification of harmful algal blooms (HABs))							
		Tracking measure:	Number of active volunteers.	X	X	X	X	X	There were thirty-seven (37) active lake monitoring volunteers in FFY 2022.
		Tracking measure:	Number of volunteers receiving trainings.	X	X	X	X	X	No volunteers received VLMP training in FFY 2022.
		Tracking measure:	Number of sites sampled.	X	X	X	X	X	There were forty-nine (49) sites monitored in FFY 2022, with 253 monitoring reports.
	Action 2:	Provide technical and/or financial support for projects that implement BMPs in watersheds with recreation use impairments.							

		Tracking measure:	Number of sub-grantee projects implementing BMPs in watersheds with recreation use impairments.	X	X	X	X	X	During FFY 2022, DOW had thirteen (13) projects implementing BMPs in recreation-impaired watersheds: <ul style="list-style-type: none"> •Red River (18-07); •Marshall County HAP (18-10); •Currys Fork (19-02 & 20-03); •Dix River & Hinkston (19-05); •Bacon Creek (19-06 & 21-04) •Banklick (19-07 & 20-06); •Red Bird (19-09); •Brushy Creek (19-10); •Chestnut Creek (20-05); •Cane Run HAP (20-02)
	Action 3:	Provide technical and/or educational support for Harmful Algal Bloom issues.							
		Tracking measure:	Number of meetings and/or technical support provided .	X	X	X	X	X	NPS personnel are actively engaged in internal and external efforts to address Harmful Algal Blooms. Within the Division we coordinate with the Water Quality Branch to provide coordination with local volunteer monitors to address identification, reporting, and safety issues with HABs. NPS personnel continue to collaborate with the creators of the BloomWatch App to roll out the app to volunteer monitors in the Commonwealth through Watershed Watch in Kentucky's Lakes Monitoring Program.
Objective 11:	Decrease nonpoint source pollution from resource extraction.			2019	2020	2021	2022	2023	

	Action 1:	Provide technical and/or financial support for reducing nonpoint source pollution due to resource extraction activities.							
		Tracking measure:	Coordinate with the KY Division of Abandoned Mine Lands to prioritize restoration of acid mine drainage sites on a statewide basis and within watershed planning areas.	X	X	X	X	X	DOW Staff are actively coordinating with the KY Division of Abandoned Mine Lands to target implementation of AMD sites on a statewide basis and within watershed planning areas.
		Tracking measure:	Number of sub-grantee projects implementing BMPs in areas with resource extraction activities.	X	X	X	X	X	In FFY 2022, there were no active projects implementing BMPs in resource extraction areas. DOW staff are working to build capacity for implementation in areas affected by resource extraction.
Objective 12:	Decrease the negative impacts of excessive sedimentation in Kentucky's Streams.			2019	2020	2021	2022	2023	
	Action 1:	Provide financial, technical, and/or educational support for projects that implement sediment control BMPs.							
		Tracking measure:	Develop and/or distribute guidance and/or educational materials for stream and riparian buffer maintenance.	X	X	X	X	X	DOW routinely distributes the Central Kentucky Backyard Stream Guide and has developed several fact sheets about the importance of riparian buffer zones. These resources are available upon request or online.

		Tracking measure:	Number of sub-grantee projects implementing riparian buffer BMPs or tree plantings.	X	X	X	X	X	During FFY 2022, DOW had five (5) projects implementing riparian buffer BMPs or tree plantings: <ul style="list-style-type: none"> •Red River (18-07); •Currys Fork (19-02); •Dix River and Hinkston (19-05); •Banklick (19-07); •Chestnut Creek (20-05)
		Tracking measure:	Number of projects monitoring for sediment impairments.	X	X	X	X	X	During FFY 2022, DOW had two (2) projects monitoring for sediment impairments: <ul style="list-style-type: none"> •Lower Pitman (20-07); •Glenns Creek (21-05)
	Action 2:	Target additional sources of funding for stream restoration projects that will positively address sediment impaired streams.							

		Tracking measure:	Coordinate efforts with the USDA Natural Resources Conservation Service to help target conservation program funding toward priority watersheds and the implementation of accepted Watershed Plans.	X	X	X	X	X	<p>There are two primary methods that the NPS Program targets NRCS Farm Bill funding toward the implementation of watershed plans. The first is direct programmatic coordination between DOW and NRCS by requesting that priority and impaired watersheds receive priority funding through NRCS programs.</p> <p>The second method is to coordinate on-the-ground implementation efforts with County Conservation Districts and local NRCS staff. The goal of both methods is that CWA Section 319(h) funding be used to augment the Farm Bill funding provided to agricultural producers by paying for companion practices or paying for nonstandard BMPs to address water quality problems on farming operations. This coordination is done by meeting with local NRCS, Conservation District, and Division of Conservation staff.</p>
		Tracking measure:	Coordinate stream restoration efforts with the KY Department of Fish and Wildlife Resources and Northern KY University to help target Fees in Lieu of Mitigation (FILO) funding toward priority watersheds and the implementation of accepted Watershed Plans.	X	X	X	X	X	DOW consistently seeks opportunities for watershed projects to pursue Fees in Lieu of Mitigation funding. No projects used FILO funding in FFY 2022.
Objective 13:	Support education and outreach.			2019	2020	2021	2022	2023	

	Action 1:	Support education and outreach efforts across Kentucky.							
		Tracking measure:	Number of student and/or stakeholder contacts per year.	X	X	X	X	X	NPS personnel interacted with approximately 5,000 stakeholders at educational events, meetings, and outreach events across the Commonwealth.
		Tracking measure:	Number of educational events participated in.	X	X	X	X	X	NPS personnel attended approximately thirty-five (35) educational events in FFY 2022.
	Action 2:	Update nonpoint source website pages, and continue social media presence.							
		Tracking measure:	Number of followers for the I Love KY Water Facebook page.	X	X	X	X	X	The KY Wild Waters Facebook page (renamed in 2022 to reach a broader audience) is up to 21,527 followers during this reporting period.
		Tracking measure:	Annually update information on DOW NPS website.	X	X	X	X	X	The DOW Nonpoint Source Program web pages are updated quarterly at a minimum. The NPS grant web pages are updated once per year.
	Action 3:	Develop and maintain nonpoint source pollution educational materials.							

		Tracking measure:	Number of educational materials developed or updated.	X	X	X	X	X	NPS created a variety of education and outreach materials for different audiences in FFY 2022 including: <ul style="list-style-type: none"> •social media content, •statewide and basin newsletters; •a new webpage focused on nature-based solutions (NBS); •storymaps documenting NBS examples across Kentucky and highlighting aspects of the 319(h) grant program •a water-focused exhibit for the Kentucky State Fair.
	Action 4:	Support the Watershed Watch program in Kentucky.							
		Tracking measure:	Number of active volunteers.	X	X	X	X	X	There are currently 965 active WWKY volunteers statewide.
		Tracking measure:	Number of volunteers receiving trainings.	X	X	X	X	X	Sixty-three (63) completed the online training. Of those, forty-eight (48) completed the in-person, hands-on training. Forty-eight (48) returning volunteers were recertified. Fifty-two (52) volunteers received an online training for the new simplified habitat methods.
		Tracking measure:	Number of sites sampled.	X	X	X	X	X	WWKY volunteers collected 859 <i>E. coli</i> samples in FFY2022.
	Action 5:	Provide financial and technical support for Project WET implementation in Kentucky.							

		Tracking measure:	Number of Project WET educator/facilitator trainings.	X	X	X	X	X	DOW has formed a partnership with the Kentucky Association for Environmental Education (KAEE) to coordinate project trainings and further promote water education in Kentucky. In FFY 2022, the Project WET program conducted eighteen (18) educator workshops.
		Tracking measure:	Number of teachers trained.	X	X	X	X	X	In FFY 2022, the Project WET program trained two hundred and fourteen (214) educators

Long Term Goal 2: Protect waters currently meeting designated uses			Targeted Completion					Annual Reporting	
Objective 1:	Promote the identification and protection of healthy watersheds throughout Kentucky.		2019	2020	2021	2022	2023		
	Action 1:	Provide technical and/or financial support for land conservation programs.							
		Tracking measure:	Coordinate annually between NPS and Wild Rivers program to prioritize land for conservation.	X	X	X	X	X	The Wild Rivers program has identified the Rockcastle River as a priority for conservation. Both the Wild Rivers program and the NPS section representatives are board members for the Rockcastle Conservation Initiative.
		Tracking measure:	Coordinate annually between NPS and Heritage Land Conservation program to prioritize land for conservation.	X	X	X	X	X	No new watersheds were identified as priorities for conservation with the Heritage Land Conservation Foundation in FFY 2022. Buck Creek is our most current recommendation.
	Action 2:	Provide technical and/or financial support for sub-grantee projects that implement the protection components of an approved watershed plan.							
		Tracking measure:	Number of sub-grantee projects implementing the protection component of an approved watershed plan.	X	X	X	X	X	In FFY 2022, five (5) sub-grantees implemented the protection component of a watershed plan: •Red River (18-07), •Banklick (19-07 & 20-06), •Red Bird (19-09), •Brushy Creek (19-10)

		Tracking measure:	Number of watershed planning areas with Special Use Waters.	X	X	X	X	X	To date, there have been four (4) watershed plans accepted for implementation with protection of a Special Use Water as their primary focus: Sulphur Creek, Red River, Red Bird River, and Brushy Creek. Other approved watershed plans that have Special Use Waters within their boundaries include: Rock Creek, Woolper Creek, Chestnut Creek, and Lower Howards Creek.
	Action 3:	Develop and implement a NPS Program strategy for better coordination with the Healthy Watersheds program.							
		Tracking measure:	Number and list of current priority Healthy Watersheds.			X	X	X	One hundred and eighty-eight (188) HUC12s in Kentucky scored in the top 25% of watershed health both within the state and their ecoregion. Among those Top 25% "healthiest" watersheds, forty-nine (49) have an elevated (>75th percentile) statewide vulnerability score.
		Tracking measure:	Number and list of new priority Healthy Watersheds.			X	X	X	Buck Creek has been identified as the first pilot healthy watershed partnership project. Funding options will be explored in FFY 2023.
Objective 2:	Prioritize Source Water and Wellhead Protection areas for protection from nonpoint sources of pollution.			2019	2020	2021	2022	2023	
	Action 1:	Coordinate with the Division's Source Water Protection Program to identify and reduce nonpoint source pollution in source water protection areas.							

		Tracking measure:	Number and list of Source Water Protection Areas with an approved watershed plan.	X	X	X	X	X	<p>There are currently twenty-three (23) approved watershed planning areas that include a designated Source Water Protection Area.</p> <ul style="list-style-type: none"> • Bacon Creek • Banklick Creek • Cane Run • Chestnut Creek • Clarks Run • Corbin City Reservoir • Currys Fork • Darby Creek • Dry Creek • Gunpowder Creek • Hancock Creek • Hanging Fork • Hinkston Creek • Lower Howards Creek • North Fork: Whitesburg Tributaries • Red Bird River • Red River • Rock Creek AML • South Fork Little River • Stockton Creek • Ten Mile Creek • Triplett Creek • Woolper Creek
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		Tracking measure:	Number and list of Source Water Protection Areas with an approved watershed plan that is being actively implemented.	X	X	X	X	X	There are currently twelve (12) active watershed plans that are actively implementing best management practices and education & outreach in Source Water Protection Areas. <ul style="list-style-type: none"> • Bacon Creek • Banklick Creek • Cane Run • Chestnut Creek • Clarks Run • Currys Fork • Gunpowder Creek • Hanging Fork • Hinkston Creek • Red Bird River • Red River • South Fork Little River
		Tracking measure:	Number of Source Water Protection Plans developed and/or updated.	X	X	X	X	X	Zero (0) Source Water Protection Plans were updated or developed in FFY 2022.
	Action 2:	Provide technical assistance for projects protecting source water and promoting groundwater recharge.							
		Tracking measure:	Staff attend at least one technical event per year on protection of drinking water sources.	X	X	X	X	X	DOW staff regularly attend Area Development District Water Management Council meetings, provide technical assistance for drafting and completing Source Water Protection Plan updates, in addition to attending and presenting at Source Water/Wellhead Protection planning public meetings.
	Action 3:	Coordinate with the Division's Wellhead Protection Program to identify and reduce nonpoint source pollution in wellhead protection areas.							

		Tracking measure:	Number and list of Wellhead Protection Areas with an approved watershed plan.	X	X	X	X	X	There are currently five (5) accepted watershed plans that contain DOW Wellhead Protection Areas. <ul style="list-style-type: none"> • Bacon Creek • Cane Run • Gunpowder Creek • Pleasant Run • Red River
		Tracking measure:	Number and list of Wellhead Protection Areas with an approved watershed plan that is being actively implemented.	X	X	X	X	X	There are four (4) active watershed plans that are currently being implemented that contain a DOW Wellhead Protection Area: <ul style="list-style-type: none"> • Green River Valley (Bacon Creek) • Georgetown Municipal (Cane Run) • Camp Turnabout (Gunpowder Creek) • Campton (Red River)
		Tracking measure:	Number of Wellhead Protection Plans developed and/or updated.	X	X	X	X	X	There were sixteen (16) Wellhead Protection Plans developed in FFY2022, eleven (11) of which have been approved.

Long Term Goal 3: Efficient and effective implementation of Kentucky's Nonpoint Source Program				Targeted Completion					Annual Reporting
Objective 1:	Develop NPS program components to increase program effectiveness and maintain current program staff.			2019	2020	2021	2022	2023	
	Action 1:	Develop tools for increased efficiency.							
		Tracking measure:	Complete development of a tracking spreadsheet for Watershed Based Plans.	X	X	X	X	X	The Watershed Plan tracking spreadsheet was developed during FFY 2014 and is updated annually. Watershed Plan summary documents are under development for all "Accepted" watershed plans. WSP summary documents are the next step to organize and share information regarding WSPs with stakeholders and work toward future implementation projects.
		Tracking measure:	Transfer electronic project management and storage for 319(h) projects to the Department's new ARM database.	X	X	X	x	x	During FFY 2016 all existing (active and historical) NPS sub-grantee project files were scanned into the Department's TEMPO (previously called ARM) database for permanent electronic storage purposes. During FFY 2022, significant revisions and updates were made to the NPS program workflow, and to TEMPO itself, to incorporate TEMPO into 319(h) project management. It is anticipated that the NPS program will use TEMPO for most 319(h) project mangament tasks starting in FFY 2023.
	Action 2:	Maintain staffing for effective NPS program coordination and on the ground implementation.							

		Tracking measure:	Number of DOW NPS technical staff.	X	X	X	X	X	During FFY 2022, two (2) Technical Advisors are currently staffed to run the 319(h) program. There is one vacant Technical Advisors position in the program.
		Tracking measure:	Number of Basin Coordinators.	X	X	X	X	X	DOW partners with and/or employs seven (7) River Basin Coordinators to cover Kentucky's major River Basin Management Units.
		Tracking measure:	Number of Watershed Coordinators implementing watershed plans.	X	X	X	X	X	DOW maintains eleven (11) watershed coordinators who implement accepted watershed plans.
	Action 3:	Provide professional development for watershed management to increase program effectiveness.							
		Tracking measure:	Number of training events hosted and/or attended.	X	X	X	X	X	In FFY 2022, the NPS team attended or hosted approximately twenty-five (25) training events.
Objective 2:	Meet federal requirements.			2019	2020	2021	2022	2023	
	Action 1:	Reduce KY's NPS Program Un-liquidated Funding Obligation to less than 20%, and maintain that level throughout the Federal Fiscal Year.							
		Tracking measure:	Drawdown percentage in comparison to ULO goal of 20%.	X	X	X	X	X	EPA no longer tracks ULO percentages. DOW records indicate a 31% ULO as of October 2022. The open project years are on track to be fully spent by the grant deadlines. That being said, KY's NPS Program will continue to make additional adjustments in an effort to keep the ULO percentage as low as possible.

		Tracking measure:	Continue to manage KY's NPS sub-grantee projects with the goal of completing work in a 2.0 to 3.0 year contract timeframe.	X	X	X	X	X	Sub-grantee project contracts continue to operate on a two or three year time frame.
	Action 2:	Complete EPA required Grants Reporting and Tracking (GRTS) information updates.							
		Tracking measure:	Enter new projects into GRTS within ninety (90) days after grant award.	X	X	X	X	X	All of the new projects selected for FFY 2022 funding are currently entered into GRTS.
		Tracking measure:	Complete bi-annual project status updates in March 30 and September 30 of each year.	X	X	X	X	X	Biannual project status updates were completed in FFY 2022 (March and September).
		Tracking measure:	Conduct bi-annual maintenance on EPA Mandated Elements.	X	X	X	X	X	Maintenance of the EPA Mandated Elements information was performed in GRTS to any/all applicable projects.
		Tracking measure:	Enter calculated project load reductions by February 28th of each year.	X	X	X	X	X	All load reductions generated during the FFY 2022 time period were calculated and entered into GRTS by the deadline.
	Action 3:	Submit Kentucky's Nonpoint Source Annual Report							
		Tracking measure:	Submission of Annual Report.	X	X	X	X	X	The FFY 2022 NPS Program Annual Report will be submitted to EPA Region 4.
	Action 4:	Submit at least one (1) Nonpoint Source Success Story to fulfill the requirements of WQ-10 by August 1st of each year.							
		Tracking measure:	Number of watersheds delisted and possible for WQ-10 development.	X	X	X	X	X	Seventeen stream segments were submitted with the combined 2018/2020 Integrated Report for approval of delisting. No new waters were proposed for delisting in the FFY2022.

		Tracking measure:	Number of success stories submitted to EPA Region 4 this year.	X	X	X	X	X	One (1) Nonpoint Source Success Story was submitted to EPA meeting this requirement. The Gunpowder Creek WQ-10 report was submitted in May and finalized prior to the September 30, 2022 deadline.
		Tracking measure:	Number of Kentucky Success stories on EPA webpage.	X	X	X	X	X	EPA has posted twelve (12) of Kentucky's Nonpoint Success Stories on their webpage. The 2022 NPS Success Story highlighting NPS driven collaboration in the Gunpowder Creek watershed was accepted and posted to EPAs webpage in July 2022.
	Action 5:	Review and approve all Nonpoint Source Sub-grantee Quality Assurance Project Plans (QAPP) prior to monitoring activities.							
		Tracking measure:	Number of approved sub-grantee QAPPs.	X	X	X	X	X	Quality Assurance Project Plans are developed and approved for all Nonpoint Source Program water quality data collection efforts conducted by sub-grantees. QAPPs are approved by Quality Assurance staff prior to data collection. In FFY 2022 two (2) QAPPs were approved; Jennings Creek (21-08) and Mill Creek (21-06).
		Tracking measure:	Number of data packages reviewed.	X	X	X	X	X	DOW Quality Assurance Staff reviewed one (2) data package for West Hickman and Upper Paint Lick from sub-contractors in FFY 2022.
Objective 3:	Provide technical assistance and support to the division regarding watershed impacts and the watershed perspective.			2019	2020	2021	2022	2023	
	Action 1:	Participate in DOW projects requiring technical experience from NPS staff.							

		Tracking measure:	Assist with finalizing and/or implementing the Kentucky Nutrient Reduction Strategy.	X	X	X	X	X	Staff from the Nonpoint Source Program have been integral to the development and refinement of Kentucky Nutrient Reduction Strategy (NRS) Update. Watershed planning, implementation, and outreach by NPS Program staff are critical to the success metrics built into the NRS Update. The NRS Update draft was released to the public in Q3 2022.
		Tracking measure:	Provide water quality monitoring data for inclusion in the Integrated Report.	X	X	X	X	X	All water quality data collected through the NPS Program, whether collected as pre-watershed plan development baseline or post-watershed plan implementation success monitoring is submitted to the DOW Water Quality Branch to be used in the assessment of watersheds for the Integrated Report and TMDL development if applicable.
	Action 2:	Update the Watershed Framework.							
		Tracking measure:	Number of Basin Status Updates and/or Report Cards issued.	X	X	X	X	X	The Basin Status Report template was replaced with a combination of education and outreach materials. The Kentucky Water Health Portal and Kentucky Integrated Report Hub Site serve as the primary resources to communicate information previously contained within Basin Status Reports. During FFY 2022 NPS personnel also collaborated with Watershed Watch in Kentucky to develop and produce Basin Report Cards based on volunteer data collected during the 2021 field season. Basin status updates are also regularly provided via quarterly newsletters.

		Tracking measure:	Annually update the Kentucky Water Health Portal.	X	X	X	X	X	The Kentucky Water Health Portal is updated with each new Integrated Report to Congress (IR) release. The most recent IR was released in late 2021. An improved and updated Water Health Portal was released in 2022.
		Tracking measure:	Update priority watersheds as determined by the River Basin Coordinators and Basin Team members.	X	X	X	X	X	During FFY 2022, Basin Team Priority Areas were finalized, published, and integrated into the 319 and State Revolving Fund programs.

FFY 2022 KY Nonpoint Source Program Commitments to EPA Region 4 (From the annual work plan):

General Program Management & Oversight	2022 Update
Provide Administrative, Financial, and Technical oversight for FFY 2022 NPS Program sub-grantee projects.	The KY Division of Water’s Nonpoint Source Program provides Administrative, Financial, and Technical support for approximately 50 sub- grantee projects at any given point in time. This work is in addition to providing the same type assistance to watershed groups, Health Departments, and Conservation Districts for the development of future projects. Coordination with local, state, and federal government agencies is also done on a regular basis to create synergistic on-the-ground watershed plan implementation efforts.
Obligate all grant funding within one year of grant award date.	Obligation of grant funding for FFY 2022 is complete.
Submit 2018 Grant closeout package to EPA R4.	The 2018 Grant closeout package was submitted to EPA R4 by the deadline.
Maintain NPS Program Watershed Project GIS Coverage.	Kentucky’s Nonpoint Source Program GIS Coverage was updated annually in December.
Maintain NPS Program webpages - Update Watershed Plans and Watershed Plan Maps.	Kentucky’s Nonpoint Source Program web pages were updated annually in December (at minimum). The web links to accepted Watershed Plans, and the Watershed Plan Maps have been updated.
Attend EPA Region 4 Biennial NPS Conference.	Representatives of the KY Division of Water, Watershed Management Branch Manager, Nonpoint Source Program attended the EPA Region 4 Biennial NPS Conference in Atlanta in 2018. In 2020 NPS personnel attended the conference virtually in November, due to Covid-19 restrictions. Conference were not held in 2021 or 2022.
Attend EPA National Biennial NPS Conference.	A representative of the KY Division of Water, Watershed Management Branch Manager, Nonpoint Source Program attended the National Nonpoint Source Program Conference in Colorado 2018. We anticipate attending the next National Conference when it is announced.

National Water Quality Initiative	
<p>Continue to support the Hinkston Creek Watershed Coordinator that will work toward increased implementation of the Hinkston Creek Watershed Plan.</p>	<p>A Hinkston Creek Watershed Coordinator position is being funded through a FFY 2020 sub-grantee project with Bluegrass Greensource (BGGs). While this watershed has been withdrawn from the NRCS' NWQI watershed list, DOW is assisting NRCS with an MRBI watershed initiative in this watershed. Hinkston Creek watershed was selected as a 2023 planning year watershed for the MRBI initiative, with two subsequent implementation years planned.</p>
<p>Work with KY NRCS on NWQI Pilot Project in "TBD" watershed.</p>	<p>DOW met with NRCS multiple times in FFY 2020 to plan new NWQI watersheds for the FFY 2022 and FFY 2023 implementation year. DOW provided recommendations, and will be assisting with monitoring success as needed in these watersheds. Five (5) NWQI watersheds were identified for FFY 2023: Upper Bacon Creek, Upper Nolin, Hopkinsville, Long Run, and Bayou De Chien.</p>
NRCS Focused Conservation Projects	
<p>Work with KY NRCS as needed to implement water focused best management practices throughout the Commonwealth through the new NRCS Focused Watershed Projects.</p>	<p>NPS staff participated in NRCS local working group meetings where water focused best management practices were discussed, and Focus Conservation Projects proposals were presented. DOW assisted NRCS with selection of project areas and has been providing technical support in one (1) watershed in FFY 2022: Roundstone Creek. DOW will continue to be in communication with NRCS staff throughout the implementation phases.</p>

Watershed Success Monitoring Program	
<p>Continue development of Success Monitoring Program by compiling watershed scale implementation data.</p>	<p>The Nonpoint Source Program continues to gather implementation data from several other state and federal programs. Compilation of this data into a format that is usable and comparative like GIS continues to be a significant hurdle in making management decisions for the Division’s Success Monitoring Program. To date, implementation information has been acquired from the NRCS, KY Division of Abandoned Mine Lands, DOW Nonpoint Source Program, State Revolving Fund, and the Division of Conservation Agriculture Water Quality State Cost Share Program. In FFY 2022, all known data was incorporated into a BMP tracking spreadsheet and GIS layer which is being used to evaluate implementation on a watershed scale.</p>
<p>Conduct baseline water quality monitoring prior to watershed plan development.</p>	<p>Kentucky’s watershed planning efforts are built on the foundation of good quality in-stream water quality data. Water quality data is analyzed and interpreted to identify the cause and source of pollution issues in every watershed plan. Additionally, pre-implementation water quality data sets a baseline for which post-implementation data can be compared to assess implementation effectiveness. During FFY 2022 Kentucky Division of Water Biologists and partners monitored water quality parameters in Glenss Creek, Lower Pitman Creek, Jennings Creek, and Roundstone Creek as part of a collaborative effort to develop watershed plans.</p>
<p>Conduct watershed success monitoring for watershed plan implementation projects.</p>	<p>The Kentucky Division of Water continues to develop its Success Program through enhanced communication between the Nonpoint Source Section and the Water Quality Branch in an effort to set joint priorities and determine standard operating procedures to trigger monitoring activities in areas with BMP implementation.</p>
Grant Reporting and Tracking System	
<p>Enter FFY 2022 Load Reductions into GRTS.</p>	<p>FFY 2022 Load Reductions for Nitrogen, Phosphorous, and Sediment were calculated for all projects that implemented on-the-ground Best Management Practices (BMP). Those load reductions were entered into the GRTS database by the March 30, 2022 deadline along with specific BMP description information.</p>

Attend National GRTS Conference.	DOW was not able to send staff to this training event in 2022. We anticipate attending the next National Conference when it is announced.
Complete GRTS project status updates.	All NPS sub-grantee project biennial status updates and mandated elements updates were completed by March 30 and September 30 respectively.
Enter FFY 2022 Sub-grantee projects into GRTS.	Final FFY 2022 Nonpoint Source Program sub-grantee projects have been preliminarily entered into GRTS.
EPA Required Reporting	
Submit Initial Annual Nonpoint Source Program Workplan to EPA R4.	An updated version of Kentucky's FFY 2022 Nonpoint Source Program Workplan was submitted to EPA Region 4 prior to the September 30, 2022 deadline.
Submit Annual Report to EPA R4.	Kentucky's Nonpoint Source Program Annual Report was submitted to EPA region 4 by the December 31, 2022 deadline.
Submit WQ-10 Nonpoint Source Success Story to EPA R4.	Kentucky's WQ-10 Nonpoint Source Success Story for Gunpwner Creek was submitted to EPA R4 in May 2022. The report was submitted through the GRTS database Nonpoint Source Success Story builder tool, revised based upon EPA Headquarters and Region 4 comments, and finalized by the September 30, 2022 deadline.
Submit Watershed Plans to EPA R4 for review and comment.	During FFY22 one (1) Watershed Plan was submitted to EPA for review: Middle Fork Beargrass Creek Watershed plan.
2019 KY NPS Management Plan Goals, Objectives, and Strategies	
The KY Division of Water will work to update the KY NPS Program 5-Year Management Plan.	In FFY 2019, the KY Division of Water revised and submitted the KY NPS Program 5-Year Management Plan. The plan was posted for public comment in May of 2019 and submitted to EPA region 4 on June 27, 2019. Over the course of this management plan cycle, DOW will continue to evaluate plan goals, objectives, and strategies to make improvements for the 2024 plan update for submittal in 2023.