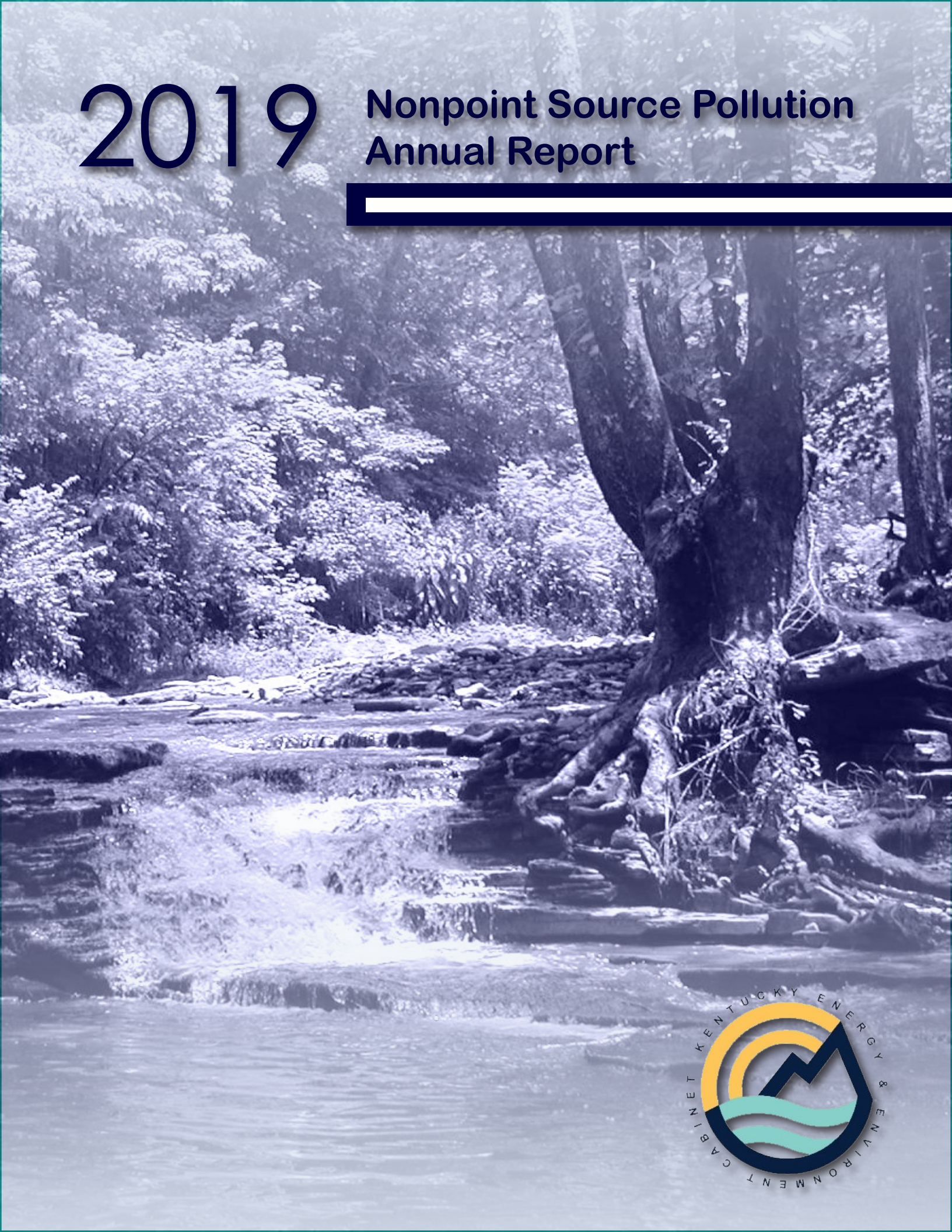
2019 Nonpoint Source Pollution Annual Report



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Kentucky
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Introduction

Nonpoint Source Management in Kentucky

The Kentucky Nonpoint Source Management Program's mission is to protect surface and groundwater from nonpoint source pollution, to abate pollution threats, and to restore degraded waters so water quality standards are met and beneficial uses are supported. Management of nonpoint source pollution requires partnering with a wide variety of organizations to develop, coordinate, and implement the Kentucky Nonpoint Source Management Plan.

The program works with federal, state, local, and private partners to promote 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. Each year, the EPA awards the Kentucky Division of Water (DOW) with grant funds 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.

This report features accomplishments aligned with the program's goals that occurred during the Federal Fiscal Year (FFY) 2019 (October 1, 2018 – September 30, 2019).

In FFY 2019, the DOW received $2.82 million from the Clean Water Act Section 319(h) funding to operate the Nonpoint Source Management Program. This year, communities and organizations shared $1.17 million in federal funding to implement projects that control nonpoint source pollution within watershed planning areas. The DOW awarded those funds to implement BMPs in eight (8) watershed planning areas, help develop four (4) new watershed plans, develop new water quality assessment and tracking systems, coordinate Agriculture Water Quality Authority efforts at a statewide level, and provide technical assistance and training to agricultural producers on water quality issues including nutrient management.

Chapter 1
The Watershed Approach

Watershed Planning and Implementation

DOW staff provided technical assistance to watershed groups for the development of watershed plans by conducting reviews of two (2) Quality Assurance Progress Plans (QAPPs) and two (2) draft watershed plans during FFY 2019 (October 1, 2018 – September 30, 2019). The Cane Run watershed plan has been approved by DOW staff and has been submitted to EPA Region 4 staff for approval. Chapters of the North Fork: Whitesburg Tributaries watershed plan are currently being reviewed by DOW staff as well.

Watershed plan reviews continue to be coordinated through the Kentucky Interbranch Watershed Implementation Workgroup, which provides the opportunity for all DOW branches to comment on or offer constructive feedback on watershed plans prior to acceptance. Currently, twenty-seven (27) watershed plans have been accepted for full or partial implementation with Clean Water Act Section 319(h) funding (see Fig. 1). An additional four (4) watershed plans are currently under development.

There are fifteen (15) watershed plans currently being implemented through one or more Clean Water Act Section 319(h) funded contracts during FFY 2019. Implementation projects are anchored by the employment of watershed coordinators who manage the implementation of on-the-ground best management practices to reduce of nonpoint source pollution coming from urban stormwater, failing on-site wastewater systems, agriculture, and the loss of riparian zones around water bodies. Watershed coordinators also work through many channels to conduct water focused environmental education and outreach to the public, local officials, and school-aged children.

Watershed Planning Areas FFY 2019

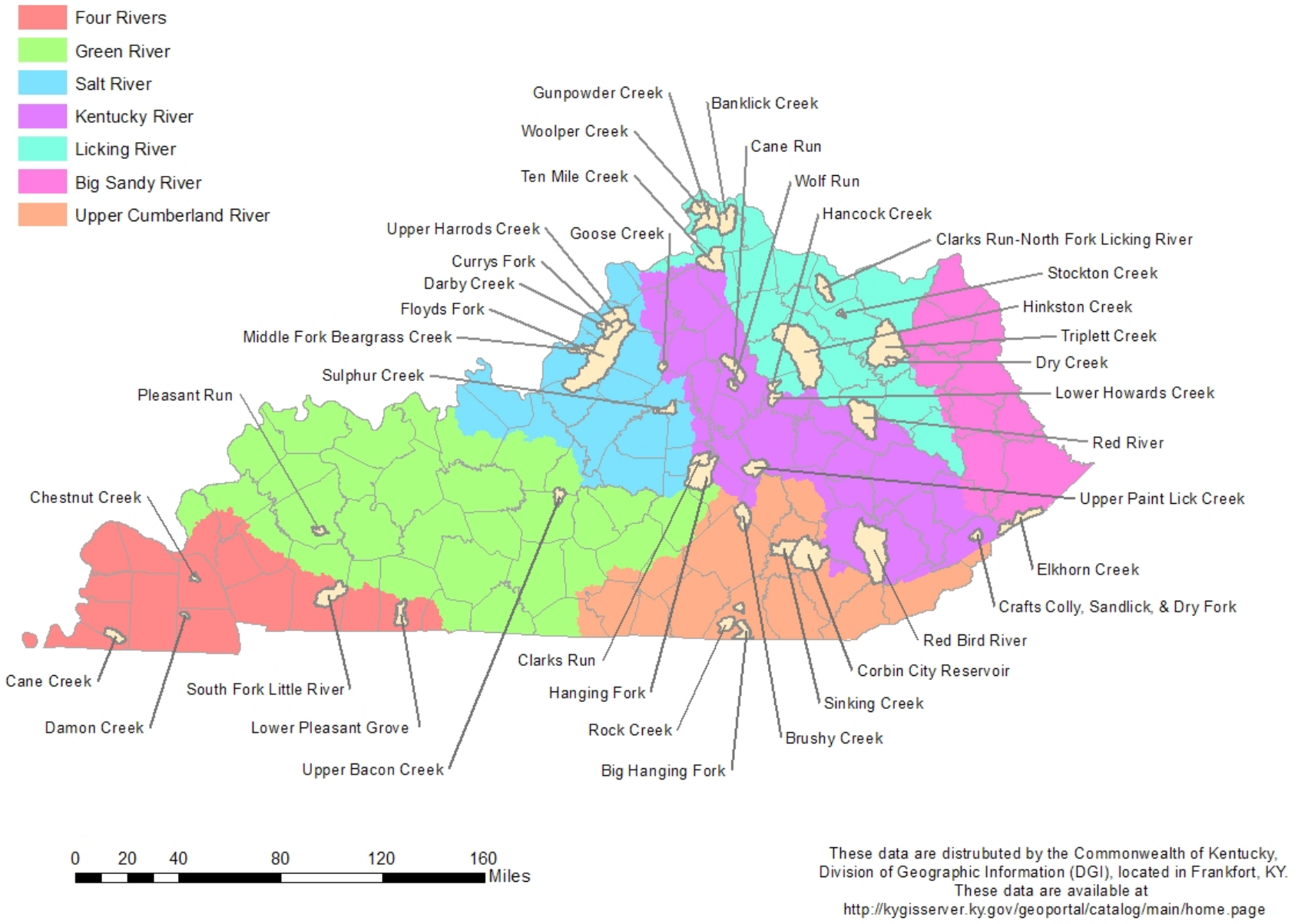

Figure 1. Watershed planning areas FFY 2019 indicated in yellow. Map includes EPA approved plans and plans in development.

NPS Success Story

Agricultural Education and Implementation of Best Management Practices Reduce Bacteria in Stoner Creek

A 12.8-mile segment of Stoner Creek (river miles 17.3–30.1) was assessed and added to the 2010 Clean Water Act (CWA) section 303(d) list/Integrated Report as impaired for primary contact recreation (PCR) due to elevated *Escherichia coli* bacteria. An investigation of land use and demographics determined the source of the impairment to be nonpoint sources, such as animal feeding operations, livestock grazing, unrestricted cattle access to the stream, and municipal point source discharges. Following implementation of various agricultural best management practices (BMPs), monitoring conducted in 2013 showed that bacteria levels in stream miles 23.5–30.1 had declined, leading to a delisting in the 2016 Integrated Report to Congress.

Problem

Stoner Creek is in central Kentucky, and is a major tributary of the South Fork Licking River in Bourbon and Clark counties. Stoner Creek flows through both the inner and outer Bluegrass regions. There are four subwatersheds within the 128,227-acre Stoner Creek watershed: Kennedy Creek-Stoner Creek, Harrods Creek-Stoner Creek, Donaldson Creek-Stoner Creek, and the Headwaters of Stoner Creek (Figures 2 and 3). The delisted segment is in the 112-acre Harrods Creek-Stoner Creek watershed (HUC 051001020203).

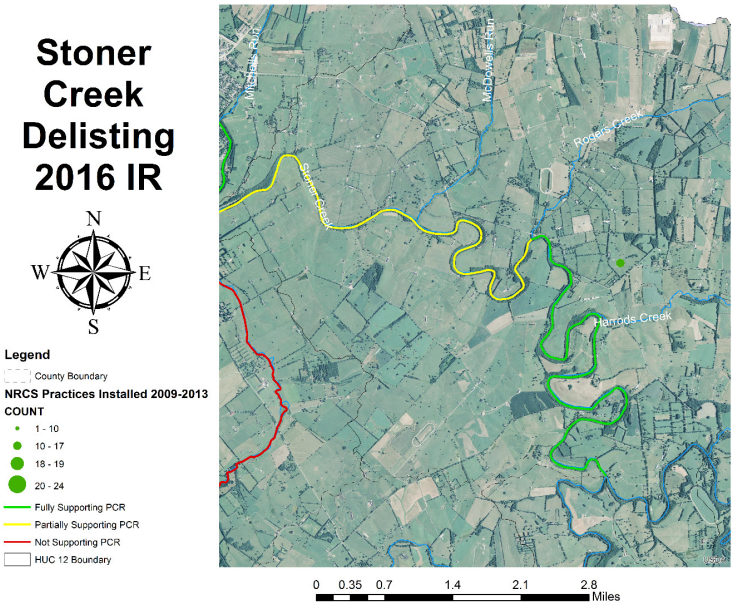

Figure 2. Stoner Creek in 2016, river miles 23.5-30.1 highlighted in green. Previously listed on the 303(d) list as not meeting standards for Primary Contact Recreation (PCR), it was assessed as Fully Supporting PCR in the 2016 Integrated Report to Congress.

Kentucky's water quality standard (WQS) for meeting the use of PCR has two parts: the *E. coli* concentration as a geometric mean based on at least five samples collected during a 30-day period during PCR season must not exceed 130 colonies per 100

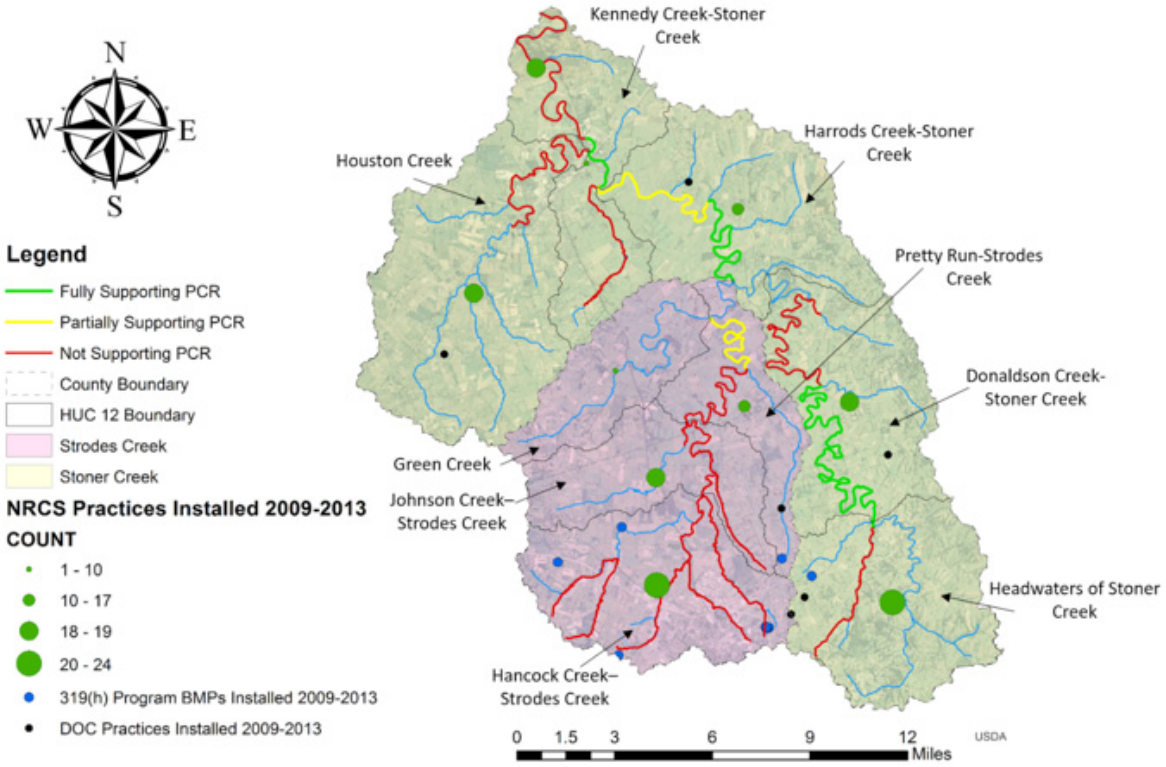

Figure 3. PCR status of assessed water bodies in Stoner Creek Watershed (yellow; HUC 10) and Strodes Creek Watershed (pink, HUC 10) as of the 2016 Integrated Report to Congress. The map shows where extensive BMP implementation took place in the headwaters of both Strodes and Stoner creeks in 2009–2013.

millilitres (mL); additionally, concentrations cannot exceed 240 colonies per 100 mL in 20 percent or more of all samples taken during the 30-day period. Monitoring for a proposed total maximum daily load (TMDL) in 2009 demonstrated the segment was not meeting the WQS for PCR due to *E. coli* bacteria levels exceeding water quality standards. Although no TMDL has been completed for this section of the creek, the segment was placed on the 2010 CWA section 303(d) list as partially supporting the PCR use. The sources of the impairments were listed as nonpoint sources (animal feeding operations, livestock grazing and unrestricted cattle access) and municipal point source discharges.

Story Highlights

The 112-acre watershed containing the delisted segment (Hancock Creek-Stoner Creek) has not seen extensive BMP implementation. However, high interest in agricultural BMPs (Figure 4), riparian zone improvements, and septic improvements in the surrounding, connected watersheds have resulted in the installation of a variety of BMPs upstream of the impaired area. The Strodes Creek watershed and the Hancock Creek watershed, both upstream of Stoner Creek, have had BMPs targeted through an implemented watershed plan (the Hancock Creek Watershed plan) using available funding from the Natural Resource Conservation Service (NRCS) and state

Figure 4. Fecal contamination from livestock was determined to be a major contributing factor to E. coli levels in the watershed, leading stakeholders to implement agricultural BMPs in order to reduce loading. Agricultural BMPs that reduce the amount of bacteria entering the stream include limiting livestock access to waterways and providing alternative water with heavy use protected areas to prevent erosion.

cost share dollars through the Kentucky Division of Conservation (DOC). The NRCS installed 112 agricultural BMPs in the headwaters of Stoner Creek, including comprehensive nutrient management planning, cover crops, critical area planting, heavy use protected areas, and riparian forest buffers. In the Strodes Creek watershed, 90 BMPs were funded through NRCS in the period between 2009 and 2013, including critical area planting, grassed waterways, heavy use protected areas, and watering facilities.

Grant funding through the CWA section 319(h) has also been in play in the upper sections of the Strodes Creek watershed and, to a limited extent, in Stoner Creek. From 2010 to 2013 the Hancock Creek Watershed Improvement Initiative worked in the Hancock Creek region installing riparian buffer zones, tree plantings, rain garden installations, and one septic replacement (Figure 2). The project improved the public's knowledge of watershed issues and increased public involvement in watershed plan implementation.

The Kentucky DOC also engaged with stakeholders in both Stoner and Strodes Creeks to fund a rotational grazing system and several heavy use feeding areas (Figure 2).

Results

Water quality improved due to bacteria loading reduction achieved largely through implementation of agricultural BMPs that limited access of livestock to the streams, prevented erosion, and slowed stormwater runoff. Water quality results collected in 2013 by the Kentucky Division of Water (DOW) in collaboration with the Friends of Stoner Creek showed that the 12-mile segment was fully supporting of the PCR designated use, with a geometric mean below the standard of 130 colonies per 100 mL (Figure 5). As a result, DOW removed it from the impaired waters list in the 2016 Integrated Report.

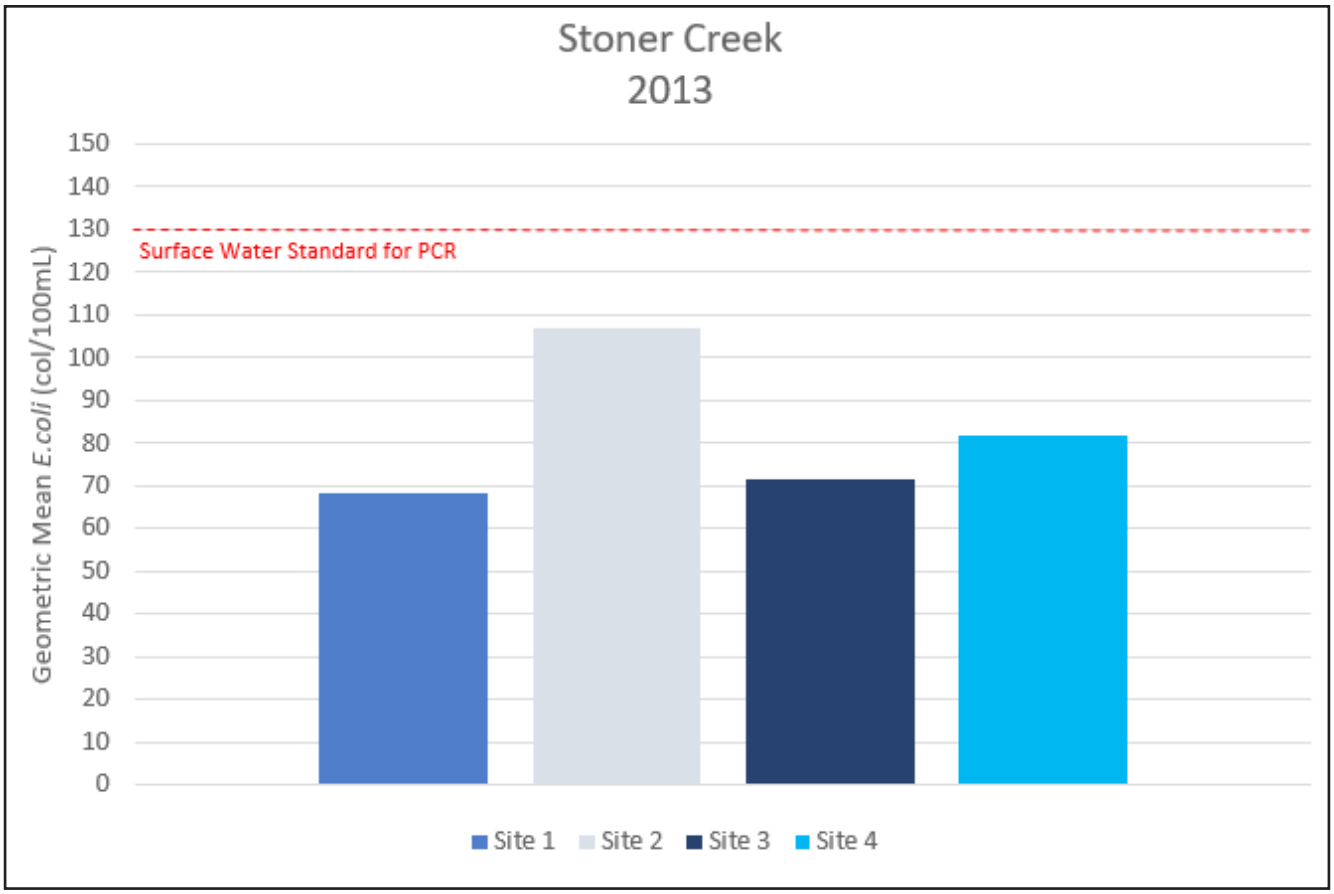

Figure 5. Geometric mean of E. coli levels from water sampling at 4 sites on Stoner Creek from May-September 2013 indicated no exceedances of surface water standards for Primary Contact Recreation (PCR).

Partners and Funding

Key partners in the watershed effort include the NRCS, the Kentucky DOC, the Friends of Stoner Creek, the Strodes Creek Conservancy, and local producers and farmers. The NRCS was the driving agency in the implementation of the agricultural BMPs, using funding and technical resources from the NRCS Environmental Quality Incentives Program and Conservation Technical Assistance Program. The Friends of Stoner Creek facilitated the collection of monitoring data and community involvement to quantify changes in the water quality of the segment. DOC facilitated agricultural BMP installation through utilization of state cost share dollars.

The CWA section 319(h) grant that supported implementation of the watershed plan in the Hancock Creek watershed totaled $218,570. The DOW's Nonpoint Source and Basin Team Section provided technical assistance throughout implementation of these projects and coordinated with the NRCS and DOC to best direct funding in the basin and surrounding regions.

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FFY 2019 Projects

Featured Project:

Banklick Creek Watershed Plan Implementation

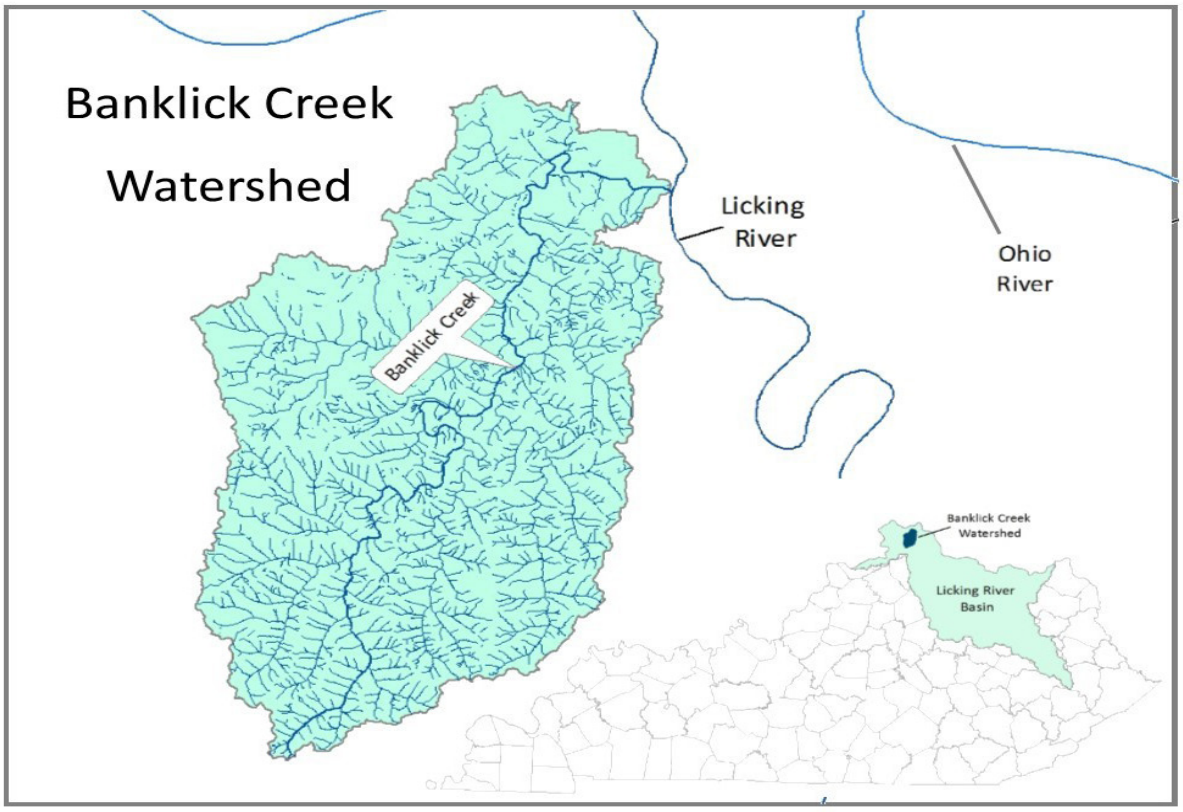


Figure 6. Banklick Creek Watershed.

Introduction

The Banklick Watershed Council was the recipient of two separate 319(h) grants to address the needs identified in the Banklick Creek Watershed Based Plan. Actions included protecting riparian areas, advancing programs within the agriculture community, addressing septic system failures, installing bankfull wetlands, purchasing land for protection, and installing additional best management practices (BMPs) to improve stormwater management. The following featured project summary contains excerpts from reports submitted by the watershed coordinator to the DOW.

The Banklick Watershed (Fig. 6), one of the largest in Northern Kentucky, is 58 square miles and lies in both Kenton and Boone Counties. The 19-mile long creek begins near the Boone County line, and then runs to the north, discharging into the Licking River approximately 4.7 miles from the Licking's confluence with the Ohio River.

There are several tributaries to Banklick Creek. The major tributaries are Wolf Pen Branch, Brushy Fork, Fowler Creek, Wayman Branch, Bullock Pen Creek, Holds Branch, and Horse Branch.

At the inception of the Banklick Watershed Council in 2002, water quality impairments, including habitat alteration and overall stream health within Banklick Creek, were large concerns and led to the development of the Watershed Based Plan in 2010. While Sanitation District No. 1 (SD1) was making progress towards addressing combined sewer overflows (CSOs), sanitary sewer overflows (SSOs), and various other stormwater issues, there were still impairments of Banklick Creek that were not being addressed because they fell outside the realm of traditional sanitary and stormwater agencies' work. Examples of excluded impairments may include nonpoint source runoff, stream channelization, habitat alteration, and reduced riparian corridors. A holistic approach of remediating both traditional and non-traditional impairments was needed to truly improve the Banklick Creek Watershed.

Banklick Creek.

FFY 2015 grant project summary

Implementation efforts for this grant focused on completing the Council's first agriculture-related project, preserving a key wetland and riparian corridor area, assisting homeowners with septic repairs, retrofitting detention basins to prevent erosion, and advocacy to bring additional projects into the watershed. The elements of the plan that were successfully implemented during this grant cycle include:

- Riparian Buffer Protection: Acquisition of 56 acres of threatened riparian wetland and forest by securing $85,000 in local funding to complete the land purchase, and restarting a stalled reforestation mitigation project at the Federal Emergency Management Agency (FEMA) buyout sites.
- Agricultural: Completed construction of a manure holding pond. Targeted education to individual livestock owners and other possible cattle operations within the watershed.
- Septic Systems: Repaired two failing septic systems. Conducted outreach to previous septic program participants.
- Stormwater Management: Installed two detention basin retrofit projects.
- Watershed Advocacy: Promoted stream and wetland mitigation projects to the Kentucky Department of Fish and Wildlife resources, educated local officials and city administration on stream erosion, and encouraged regulations for riparian corridor protection.

FFY 2017 grant project summary

This project funding was used to construct a wetland in Wolsing Woods adjacent to the mainstem of Banklick Creek as well as two filter berms, rock armoring, and toe protection along the bank of the creek. In addition, two stone riffles crossing the creek were installed along with educational signage. Considerable cost saving practices throughout this installation process allowed the Banklick Watershed Council to put extra funds towards the purchase of the Brushy Fork property, a parcel containing a 1.8 acres of wetland and 9.6 acres of floodplain.

Wolsing Woods educational signage.

Featured Project:

Homeowner's Assistance Programs (HAPs)

Introduction

During development of the Hanging Fork Watershed Plan, water quality monitoring studies exposed cases of elevated *E. coli* concentrations, at times 1,000 times greater than statewide limits for safe wading or swimming in waterways (240 cfu/100 mL), largely sourced from human waste despite the dominate agricultural land use of the watershed. In 2011, the Lincoln County Sanitation District formed with the aim to provide residents of west Lincoln County, who live almost entirely within the Hanging Fork Watershed, sanitary sewer service. During implementation of the watershed plan, a new sanitary sewer line was constructed June 2017 in west Lincoln County, effectively expanding services to roughly 600 un-sewered homes, which once connected, would mitigate nonpoint pollutants, such as *E. coli*, from failing septic systems.

Sewer connection costs, however, became a concern for Lincoln County residents. As a result, a partnership between Lincoln County Sanitation District, Kentucky Division of Water (DOW), and Rural Community Assistance Partnership (RCAP) generated the creation of the Homeowners Assistance Program to address local concerns.

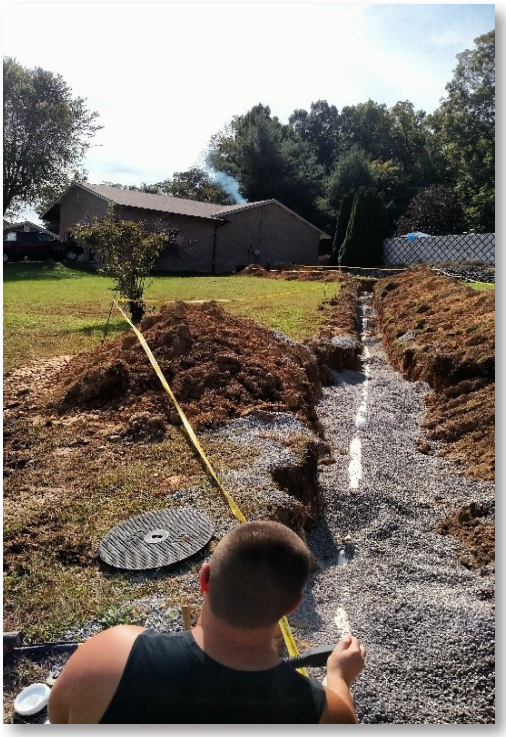
Homeowners Assistance Program for Sanitary Sewer Line Connections

The Homeowners Assistance Program (HAP) is a reimbursement program for homeowners to assist with costs associated with connecting to sewer lines for regional wastewater treatment plants. Along with improving water quality through elimination of marginal or failing on-site wastewater systems, one of HAP's goals is easing the financial burden of connecting to sewer lines. Reimbursement rates are generated based on the homeowner's annual income. All

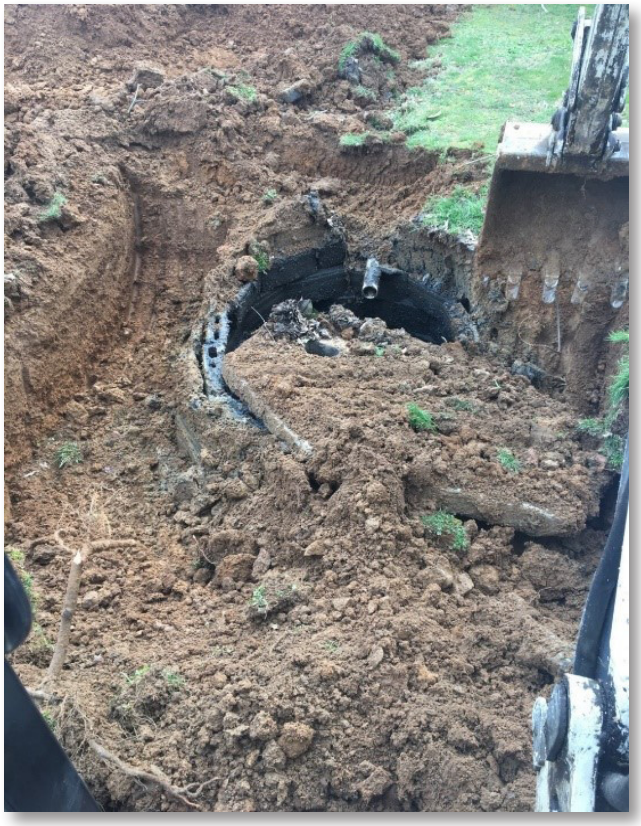
homes are eligible for 20% reimbursement of the total eligible expenses; however, homeowners whose total gross household income qualifies as 'Low', 'Very Low', or 'Extremely Low' based off of the U.S. Department of Housing and Urban Development's income limits will be eligible for reimbursement of 90% of the total eligible expenses . Through this program, sanitation districts (or other administering agencies) can improve their public perception by developing professional community relationships and engaging in water quality education, while simultaneously gaining financial support from a growing customer base.

Lincoln County HAP

The HAP in the Hanging Fork Watershed, of which the western portions of Lincoln County are located , has received multiple 319(h) grants



Connecting home to sewer system. Picture from: Lincoln County Homeowner Assistance Program Final Report.



Collapsed concrete block septic tank in Lincoln Co. Picture from: Lincoln County Homeowner Assistance Program Final Report.

(Project Numbers 15-13, 16-08, and 16-09). During its time, the Lincoln County HAP received over 300 qualified homeowners applications; of these applications, 289 homes qualified as eligible to receive financial assistance. The successes of this program lie on the collaborative efforts held by multiple partners. Consistent support from a dedicated stakeholder team allowed RCAP, the partner tasked with providing administrative and financial oversight (as well as education and outreach support), to organize effective community engagement events, including contractor trainings and advertising campaigns. It should be noted that local elected officials, such as Lincoln County Judge-Executive Jim Adams and Lincoln County Sanitation District Chair Bill Payne, stated that the district would not have received as

many users without the help of the HAP. Based off the successes of this program, similar HAPs have been developed across Kentucky in Boone and Marshall County (discussed below).

As of FFY 2019, all 319(h) projects funding the Lincoln HAP have been closed out.

Boone County HAP

In FFY 2018, 319(h) funding was awarded to Boone County Fiscal Court, in conjunction with Sanitation District No. 1 of Northern Kentucky (SD1), to execute a HAP in the Gunpowder Creek Watershed (Project Number 18-09). In 2009, DOW partnered with Boone County Conservation District and Sustainable Streams LLC to develop a Watershed Plan for Gunpowder Creek (Fig. 7), which was later EPA-approved in 2015. In 2018, SD1 and DOW partnered to develop a TMDL (Total Maximum Daily Load) alternative plan, which became a supplement to the original Watershed Plan; once EPA-approved , implementation from both plans began, targeting nonpoint source pollution (e.g., *E. coli*) from failing septic systems. Further urgency stemmed from sewage-contaminated groundwater that was earlier detected by the Northern Kentucky Health Department in 2017.

Construction of a new sanitary sewer line granted potential access to roughly over 100 homes in the South Fork Gunpowder Creek Watershed. As of FFY 2019, 38 homes have been approved for connection; of these, 9 homes have been connected, along with 10 septic

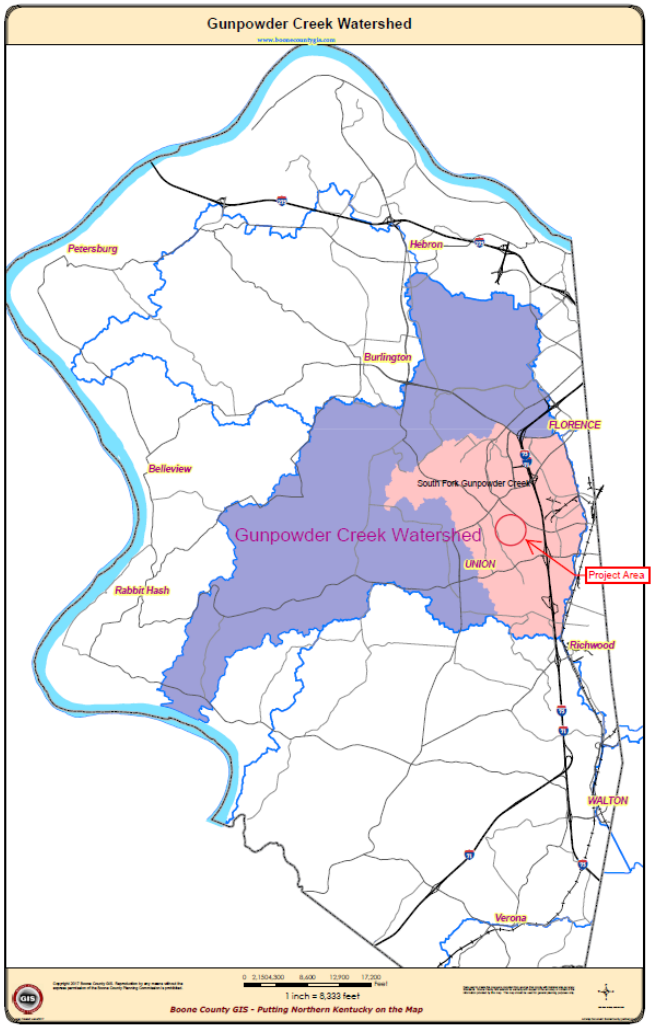


Figure 7. Gunpowder Creek Watershed in Boone County.

tanks decommissioned and replaced with sewer connections. Project construction will continue through FFY 2020.

Marshall County HAP

In Marshall County, located in Western Kentucky, 319(h) funding (FFY 2018) was awarded to the Fiscal Court and Friends of Clarks River National Wildlife Refuge to execute a HAP in the Chestnut

Creek Watershed as part of the implementation plan of an earlier watershed plan developed in 2012 (Project Number 18-10). The impetus, not unlike Lincoln and Boone County HAPs, originated from a limited sanitation district characterized by several failing on-site wastewater systems or straight pipes within the watershed. In 2016, the Marshall County Fiscal Court worked with Marshall County Sanitation District #2 (SD2) to repair a failing sanitary sewer facility, thus allowing SD2 to expand services to include an additional 70-80 residential connections to the system. The Marshall County Sanitation District #2 has additionally been waiving the $1,000 sewer line tap on fee as further incentive to increase participation in the program.

As of FFY 2019, 5 homes have been connected.

Projects Started FFY 2019

Table 1. Projects started in FFY 2019.

State Project Number	Project Title
18-04	Watershed Plan for Middle Fork Beargrass Creek
18-05	Watershed Plan for Upper Paint Lick Creek
18-06	Sulphur Creek Phase II Ag Implementation Project - Mercer Co.
18-07	Red River Implementation Project
18-08	South Fork Little River Implementation Project
18-09	Boone County Homeowner Assistance Program
18-10	Chestnut Creek Homeowner Assistance Program

Completed Projects FFY 2019

Table 2. List of projects closed in FFY 2019. Data is currently being entered into GRTS.

State Project Number	Project Title	Date Completed
14-11	South Fork Little River Watershed Plan Development	3/8/2019
15-04	Cane Run Watershed Plan Development	9/30/2019
15-05	Red Bird River Watershed Plan Implementation	9/30/2019
15-06	Red River Watershed Plan Implementation	9/30/2019
15-11	Banklick Creek Implementation of WBP	9/30/2019
15-12	Brushy Creek Watershed Plan Implementation	9/30/2019
15-13	Lincoln County Homeowner Assistance Program CAK	9/30/2019
16-08	Lincoln County Homeowner Assistance Program CAK	9/30/2019
16-09	Lincoln County Homeowner Assistance Program LCSD	9/30/2019
17-05	Mini-Grant: Big Sandy Watershed Watch	3/1/2019
17-07	Mini-Grant: Pennyrile RCD Four Rivers	3/1/2019
17-08	Mini-Grant: Clarks Run Licking River	3/1/2019
17-09	Mini-Grant: KYH2O Podcasts	4/1/2019
17-10	Mini-Grant: Wolf Creek Fish Hatchery	4/1/2019

Load Reductions

Table 3 contains a compilation of load reduction estimates from Best Management Practices (BMPs) that were implemented during FFY 2019 (October 1, 2018 – September 30, 2019). Load reductions were derived by direct calculation or by utilizing STEP-L BMP Modelling, and then entered into the EPA's Grant Reporting and Tracking (GRTS) database prior to the February 15, 2019 deadline.

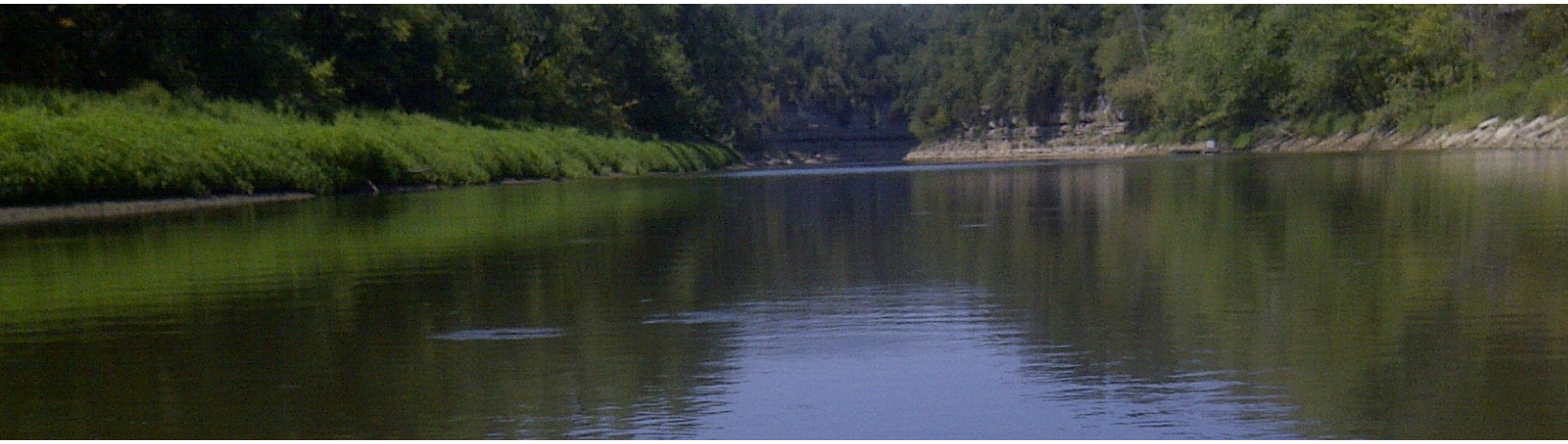
Table 3. Load reductions for projects from FFY 2019*.

Award Year	State Project Number	Project Title	Load Reductions		
			Nitrogen (lbs/year)	Phosphorus (lbs/year)	Sediment (tons/year)
2015	15-05	Red Bird River Watershed Plan Implementation	658	132	0
2015	15-06	Red River Gorge Implementation Project	119	24	0
2015	15-11	Banklick Creek Watershed Based Plan Continued Implementation	3073	300	1
2015	15-12	Brushy Creek Watershed Project	2763	521	232
2016	16-06	Curry's Fork Watershed Onsite Wastewater/Stream Restoration Design Project	247	49	0
2016	16-07	Watershed Implementation Project: Clarks Run, Hanging Fork, & Hinkston Creek Watersheds	416	87	11
2016	16-08	Lincoln County Homeowner Assistance Program	247	49	0

**** Continued in Table 4***

Table 4. Continued from Table 3. Load reductions for projects from FFY 2019.

Award Year	State Project Number	Project Title	Load Reductions		
			Nitrogen (lbs/year)	Phosphorus (lbs/year)	Sediment (tons/year)
2017	17-02	Wolsing Woods Wetland Construction	20	8	2
2017	17-13	Bacon Creek Agriculture Best Management Implementation	1033	189	126
2017	17-14	Agriculture/Watershed Coordinator for Chestnut Creek	18	4	0
2017	17-15	Watershed Plan Implementation for Hinkston Creek in Nicholas County KY	3070	709	477
2017	17-17	Sulphur Creek Watershed Ag BMP Implementation Plan	5276	932	640
2017	17-18	Implementation of the Damon Creek Watershed Management Plan	10	4	5
2018	18-09	Boone County Evergreen/ Ridgeview Drive Sanitary Sewer Project	27	6	0
2018	18-10	Marshall County Fiscal Court Chestnut Creek Implementation	91	18	0



Herrington Lake.

Kentucky Division of Water
2019 NPS Project Load Reductions

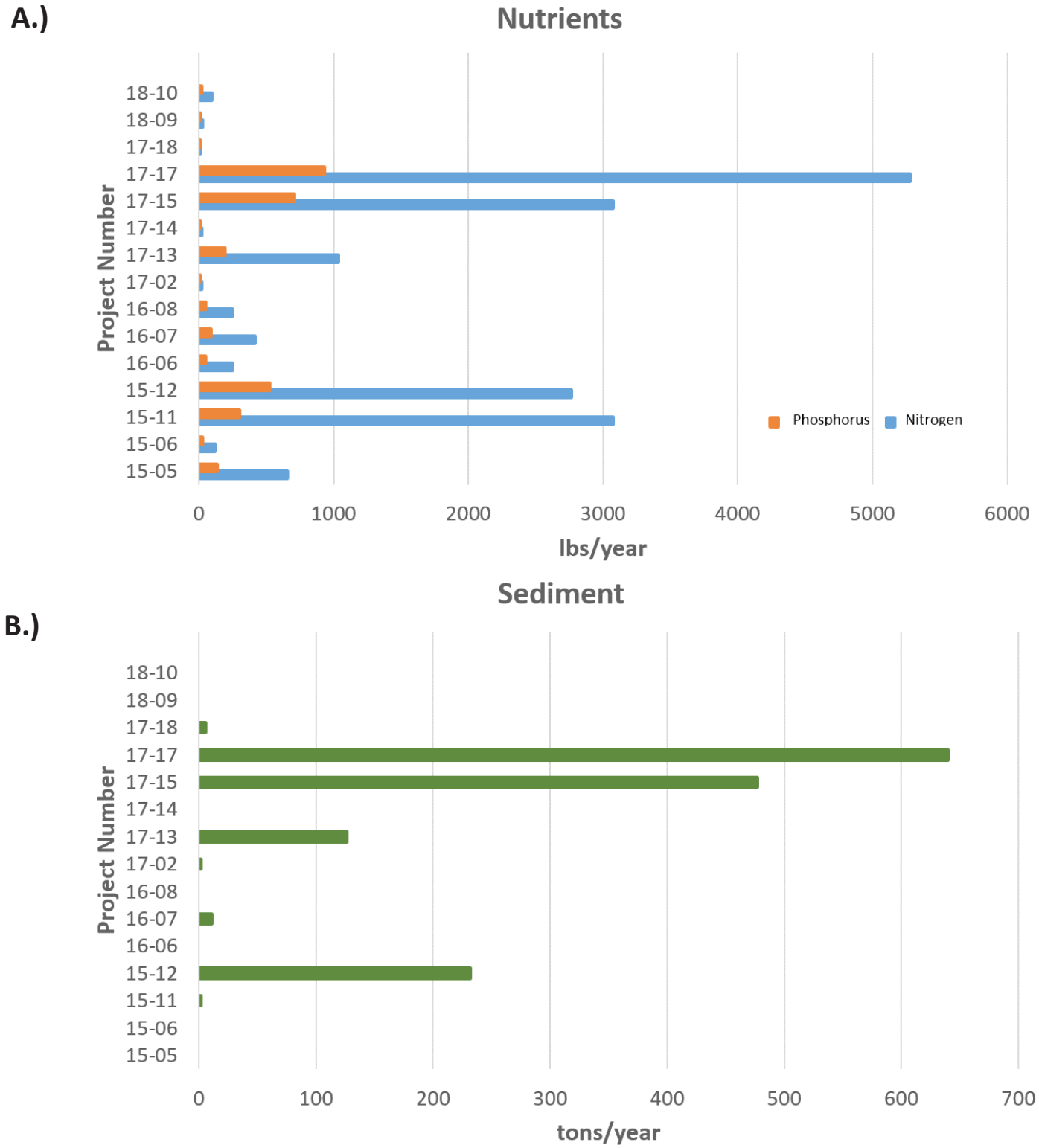


Figure 8. The figures above reflect the load reductions reported in Tables 3 and 4. Projects shown were reported from FFY 2019. A.) Nutrients; B.) Sediment.

Chapter 2

Basin Coordination

Kentucky Division of Water Basin Coordinators

Basin Coordinators serve an essential function in the watershed management process by acting as facilitators for agency activities and as points of contact for local organizations interested in addressing water issues. In the beginning of FFY 2019, there were several vacant basins. However the Kentucky Division of Water and partners were able over the course of the year to hire Basin Coordinators to cover all of the vacancies and fill a position in the Big Sandy/Little Tygarts Basin that has been vacant for approximately ten years (Figure 9).

Basin Coordinators enhance communication with stakeholders via regular newsletter releases and Basin Team Meetings in addition to program facilitation and multiple forms of Education and Outreach. They help involve the public to set management priorities, develop watershed plans, provide grant assistance, and search for innovative ways to improve water health at the community level.

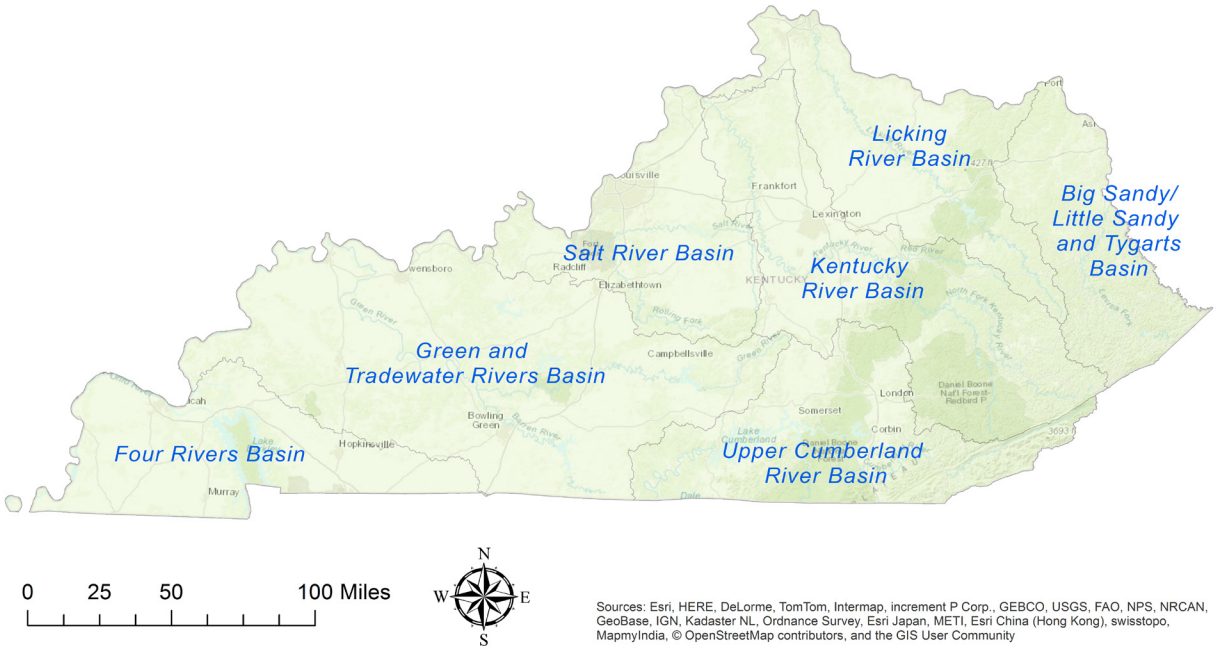


Figure 9. Kentucky's Major River Basin Management Units.

Priority Watersheds: 2019

Priority watersheds are selected based on factors such as the degree of water quality impairment and potential for recovery through implementation of Best Management Practices. The purpose of selecting these areas is to focus limited resources on areas where positive change is reasonably attainable. A priority watershed should ideally have a completed watershed plan in process of implementation or an ongoing watershed planning effort and a potential for strong community support for implementation of recommended watershed projects.

The Basin Team's knowledge and input is valuable to helping the Basin Coordinators and DOW make the watershed selections with the most current and localized knowledge. Basin Team Meetings were utilized in FFY 2016 to assist in establishing the current priority watersheds of the Commonwealth. From all the identified watersheds, three priority watersheds were selected for each major river basin in Kentucky, taking into consideration Basin Team input. These watersheds will be considered for focused funding and technical support in state agency programs, including US EPA 319 (Nonpoint Source) Grant Program funding, state revolving funds for water and wastewater infrastructure, and state agricultural cost-share programs (Figure 10).

No new priority watersheds were selected in 2019 due to short staffing which meant that basin teams were not meeting to discuss potential watersheds. Currently we anticipate reevaluation of Priority Watersheds to take place in 2020.

Sediment from erosion is the most prevalent type of NPS pollution in the Commonwealth.

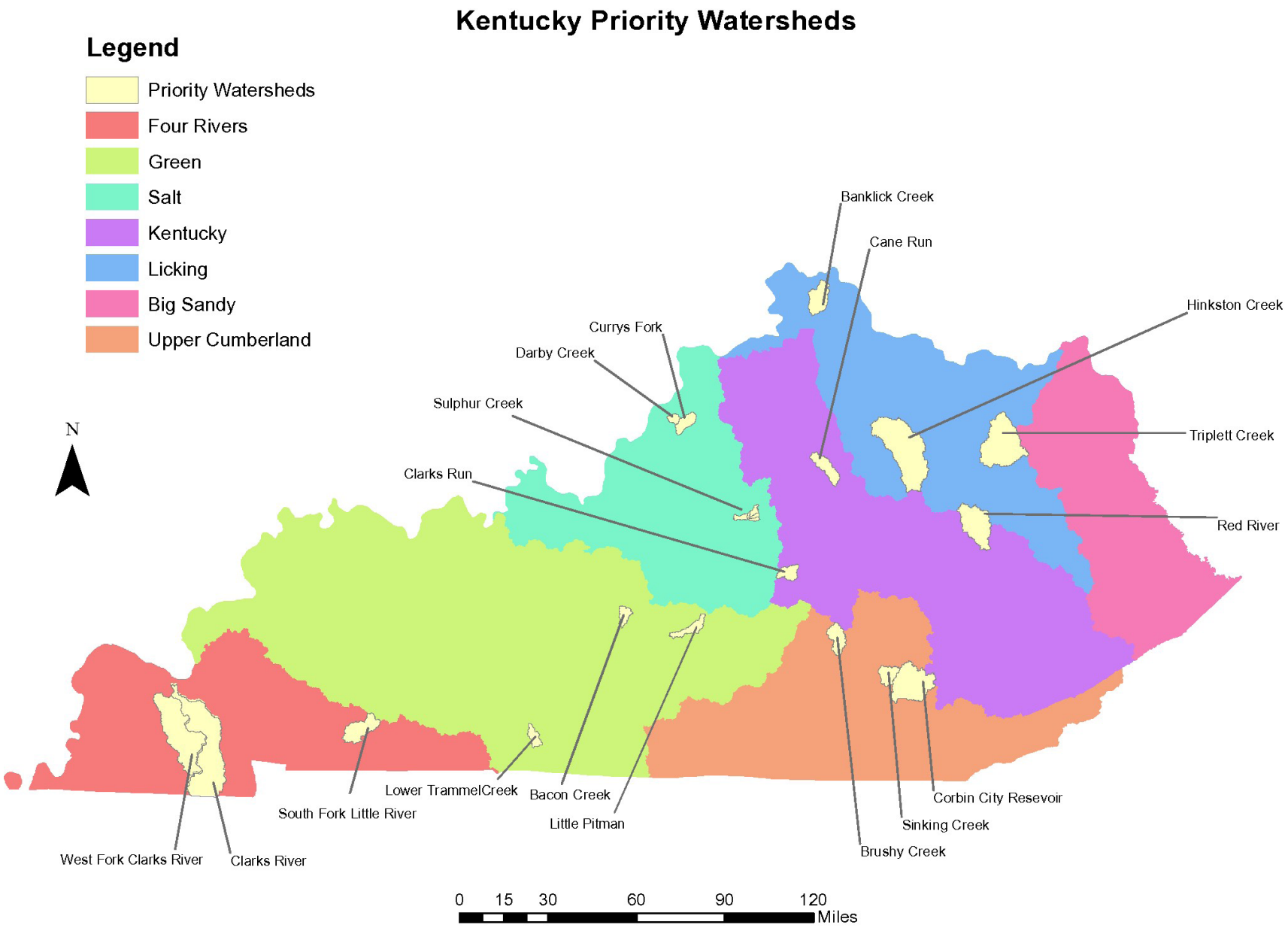


Figure 10. Priority watersheds in Kentucky.

Priority Watersheds: Updates

Green River Basin

Bacon Creek Priority Watershed
The LaRue County Conservation District has been using 319(h) funds to increase agriculture education and best management practices within the boundaries of the Bacon Creek Watershed. The Watershed Coordinator for this project advertised to all eligible landowners the opportunity to implement BMPs on their property. Then, there was an application process to rank all qualified projects. Overall, the project has been successful with 9 Agriculture BMPs on five different farms in 2019. Projects have included improvements to heavy use areas, forage and biomass plantings, watering facility, livestock pipeline, roof runoff, subsurface drain, and exclusion fencing. This year, the LaRue County and Hart County Conservation Districts hosted a field day for community members, as well as 4-H and Future Farmers of America groups. The goal was to showcase projects implemented with 319(h) funds, and to educate the public on best management practices.

Little Pitman Priority Watershed
With *E. coli* samples collected in 2016, basic watershed planning has begun. Education and outreach remains the priority in the watershed to cultivate interest and activity. The Soil Conservation District is the current driver of interest in the watershed.

Trammel Creek Priority Watershed
Initial water quality sampling took place during FFY 2018, and basic watershed planning has begun for the Trammel Creek Watershed. Education and outreach remains the priority in the watershed to cultivate interest and activity. No further action was taken in 2019 due to the departure of the Green River Basin Coordinator. The Green River Basin Team will reevaluate the watershed's priority status in 2020.

Jennings Creek
Western Kentucky University is independently collecting data in preparation for watershed planning in a subwatershed of Jennings Creek. The university will be working with Kentucky Division of Water and Kentucky Water Resources Research Institute to determine planning steps, resources, and 319(h) grant funding availability. In addition, the Green River Basin Team may vote to include Jennings Creek as a Priority Watershed in 2020.

Salt River Basin

Darby Creek Priority Watershed
Implementation of the Darby Creek Watershed Plan was put on hold after the completion of the most recent grant, largely due to the departure of the watershed coordinator. There has yet to be an organization to step into the roll to reinvigorate the project, and Darby may be re-evaluated as a priority watershed by the Salt River Basin Team in 2020. In the meantime, DOW is searching for interested stakeholders who would be interested in working in the watershed to continue working to implement the watershed plan.

Curry's Fork Priority Watershed
Curry's Fork Watershed hired a new watershed coordinator who continued the work of the Watershed plan in the subwatersheds of the target area. Education and outreach efforts were widespread and has included tree planting events, septic system workshops, onsite wastewater pumpout/repair/replacement

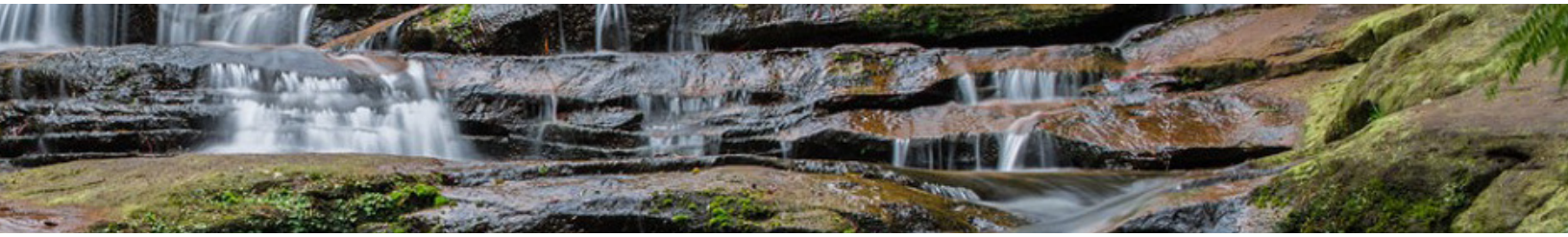
programs, and stream erosion prevention projects. The watershed coordinator applied for further funding in FFY 2019, so will be continuing implementation for the next two years.

Sulphur Creek Priority Watershed
In FFY 2019 the Sulphur Creek Septic System Reclamation project (15-09) and Sulphur Creek Ag (15-10) were closed out. Project 17-11 completed inspection of the final septic lagoon installation of the project in 2019. In addition, the Sulphur Creek Watershed Ag BMP Implementation project (18-06) began work, reaching out to the community through participation in the Mercer County Field Day in September 2019, and holding meetings of the oversight committee.

Four Rivers Basin

West Fork Clarks River
The Jackson Purchase Foundation developed a watershed plan for the Damon Creek subwatershed in Calloway County that was approved by Kentucky Division of Water and EPA on 7/27/2019. The Calloway County Watershed Coordinator is now working with landowners in the watershed to implement best management practices identified in the plan and improve water quality in Damon Creek by reducing runoff and fecal pollution, preventing erosion, and building a more educated community.

Clarks River
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 in 2015. The watershed plan identifies several sources of water quality impairments, including the local wastewater treatment plant as a source of *E. coli* and nitrogen exceedances, failing septic systems as a source of *E. coli*, and agriculture as a source of nutrient and sediment exceedances. The Marshall County Fiscal Court and the Marshall County Sanitation District Number 2 have worked diligently over the past two years to address the failing local wastewater treatment plant identified through the Chestnut Creek Watershed Plan, fixing equipment at the plant, instituting a fats, oils, and greases ordinance to prevent these substances from accumulating in the sewer collection system, and creating a tap on ordinance requiring residences and businesses within 500 feet of a sewer line to tap on to that sewer line. Through a 2018 project, the Friends group is continuing to employ a Watershed Coordinator to work in conjunction with NRCS, the U.S. Fish and Wildlife Service Partners Program, and other local partners to recruit landowners in Marshall County and the Chestnut Creek Watershed to implement best management practices that will address problems with *E. coli*, nutrients, sediment and altered hydrology, including agricultural practices, the repair of failing septic systems, septic pump outs, and public education. Additionally, this



Watershed Coordinator is working with the Marshall County Fiscal Court on their 2018 grant to connect residences to a newly installed sanitary sewer line running along a main highway in the watershed, by serving as the main point of contact for landowners interested in participating in that project.

In 2018, Four Rivers Watershed Watch conducted a study in the Clayton Creek watershed in Calloway County, focusing on *E. coli* in the watershed. Data collection efforts were completed in October of 2018, and Four Rivers Watershed Watch is working in conjunction with the Four Rivers Basin Coordinator and the Calloway County Watershed Coordinator to create a Watershed Plan for Clayton Creek that focuses on *E. coli* sources in the watershed.

In 2019, Four Rivers Watershed Watch conducted a study in the Bee Creek watershed in Calloway County, focusing on *E. coli* in the watershed. Data collection efforts were completed in October of 2019, and Four Rivers Watershed Watch is working in conjunction with the City of Murray, the Four Rivers Basin Coordinator and the Calloway County Watershed Coordinator to create a Watershed Plan for Bee Creek that focuses on *E. coli* sources in the watershed.

South Fork Little River

The Little River Water Quality Consortium has completed a watershed planning project to utilize data collected over a three year period by USGS to develop a watershed plan identifying water quality threats to the South Fork Little River and best management practices that could be implemented to address these threats. The watershed plan has been reviewed and approved by the Kentucky Division of Water. A more specific BMP Implementation Plan has been developed and approved by the Kentucky Division of Water. The Little River Water Quality Consortium received a 2018 grant to hire a Watershed Coordinator to oversee implementation of BMPs in the South Fork Little River Watershed. The group is in the process of hiring staff to complete the tasks in this project.

Kentucky River Basin

Clarks Run and Hanging Fork

Ruritan Park, Hustonville Riparian Buffer Installation (May 2019).

Bluegrass Greensource, County Health Departments, Clarks Run Environmental and Educational Corp. (CREEC), and others are partnering to implement a watershed plan in Clarks Run/Hanging Fork. The Watershed Coordinator has been working to continue the septic system education and repair/replacement program, stormwater education, and initiate a riparian buffer education and assistance program in this region.

Ruritan Park stream-side day poster.

Five riparian buffer projects were completed in 2019 with 319(h) funding assistance. One of these took place at a city park in Hustonville, which is heavily utilized by area residents and should serve as an effective demonstration tool. A watershed grant from the Kentucky River Authority provided additional funding for plant materials and associated signage.

The headwaters of the Hanging Fork watershed were also selected by the Natural Resources Conservation Service as a focus area for additional EQIP funding to support agricultural practices that will limit nutrient and bacteria contributions to these rural tributaries. Funding for this project will span over five years and is expected to include supplemental water monitoring to track BMP effectiveness and water quality changes.

Cane Run of North Elkhorn

Third Rock Consultants has been working to expand and implement the Cane Run Watershed plan to include the lower reaches of the watershed in southern Scott County. This plan has been submitted to the Kentucky Division of Water and the USEPA for review.

The City of Georgetown and Scott County made agreements to fund a "South Sewer Extension" project which will remove significant human sewage inputs to Cane Run. Leveraging funding from multiple sources, 16,000 linear feet of collector sewers and service laterals have been installed, along with a pump station and force mains, such that residents of two mobile home parks will be served by the Georgetown Municipal Water and Sewer Service. For many years, the mobile home parks have been served by failing/inadequate private package wastewater treatment plants that contribute pathogens to the nearby Cane Run Creek. The ongoing water quality problems associated with lack of adequate sewer service gained publicity and the sewer extension project achieved traction after being highlighted by the Cane Run Watershed plan. Plans are being discussed to use 2019 319(h) funding to provide supplemental assistance for

residents to extend lateral lines from their homes to the new municipal sewer lines.

Red River

The Red River Watershed Plan is being implemented by the U.S. Forest Service, Kentucky Waterways Alliance, Eastern Kentucky PRIDE, and the Red River Gorge Trail Crew. These groups have been successful at building a functional program by solidifying partnerships with local residents and organizations through meetings, events, and a septic improvement program. In 2019, the Red River watershed coordinator held multiple cleanup and educational events, including a 2nd Annual Red River Festival with a river cleanup, canoe and kayak paddling, live music and food, and several educational booths for festival goers. Water education was also provided during the third consecutive offering of an Environmental Field Day for all 6th graders in Wolfe County.

Red River Festival paddling clean up, (September 2019).

North Fork Kentucky River Headwaters

The Headwaters organization is working with the Kentucky Division of Water and the Kentucky Water Resources Research Institute to complete a watershed-based plan for three headwater subwatersheds of the North Fork Kentucky River. Sampling results have been analyzed, public outreach and input collected, and implementation recommendations are now being finalized. A draft plan is expected to be completed by January 2020.

Additionally, the Headwaters watershed coordinator provided a second offering of the "Kids on the Creek" day camp during the summer of 2019, during which a variety of water activities and lessons were provided to area children. The coordinator is continuing to work with several local partners to provide community outreach and education and gain insights about what water issues and priorities are important to residents.

"Kids in the Creek" day.

Red Bird River

The Red Bird River watershed coordinator continued to conduct implementation activities outlined in the Watershed Based Plan and subsequently funded by a 319(h) grant to the U.S. Forest Service. These activities included litter cleanups of streams in the watershed and septic system workshops, pumpouts and repairs. The septic improvement activities were also further

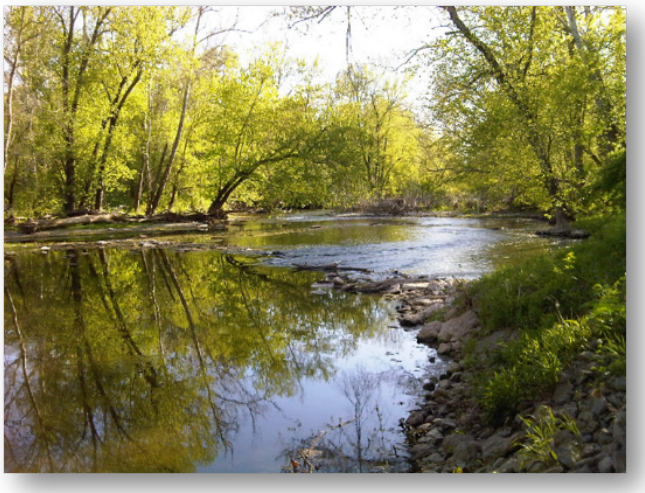
Red Bird River stream clean up.

funded through a watershed grant provided by the Kentucky River Authority.

Paint Lick Creek
A 319(h) grant is enabling Copperhead Consultants to develop a watershed-based plan for the upper reaches of the Paint Lick watershed. This largely agricultural watershed is expected to provide opportunities for farmers to have a positive impact on water quality. Sampling for this project began in 2019 through a cooperative arrangement between Kentucky Division of Water and Copperhead Consultants. Sampling will continue into 2020, after which Copperhead will complete data analysis and assessment, as well as community outreach aspects of the planning effort.

West Hickman Creek
Local residents successfully formed a nonprofit organization, the Hickman Creek Conservancy. The Conservancy group was a awarded a Watershed Grant from the Kentucky River Authority to assist with start-up expenses and conduct a community service project to improve water quality in the West Hickman Creek watershed.

Additionally, the Lexington-Fayette Urban County Government contracted with Palmer Engineering to develop a watershed-based plan that will incorporate sampling data collected through a joint partnership between the city-county government and Kentucky River Watershed Watch. Watershed Watch volunteers helped to collect samples from streams and stormwater outfalls throughout the West Hickman Creek watershed in 2019 and will continue to collect samples into 2020.



West Hickman Creek.

Licking River Basin

Hinkston Creek Priority Watershed
In FFY 2019, the Nicholas County Conservation Office continued work implementing the Hinkston Creek Watershed Plan and BMP Implementation Project (17-15). Through a cost-share agricultural-based BMP implementation program, participating farmers completed the following control measures: pasture renovation (using interseeding practices to improve stand establishment and sustainability), construction of a heavy-use winter feed area, and heavy-use area gateways to control erosion-associated livestock impacts. An additional producer

Construction of a heavy-use winter feed area to help reduce erosion from livestock-related physical disturbances.

completed livestock exclusion fencing and on-farm water conservation projects through the cost-share initiative. Simultaneously, the project managers continue to engage in community-focused education and outreach efforts to grow participation across the watershed. As momentum continues, the cost-share program will continue through FFY 2020.

In addition, the Bluegrass Greensource septic program project has been expanded to included work in the Hinkston Creek watershed. In FFY 2019, Bluegrass Greensource was awarded additional 319(h) funds to pursue implementation

MSU's Derrickson Agricultural Complex installed rainwater harvesting and erosion control measures partially funded by the 319(h) program.

of the Hinkston Creek Watershed Plan, including continuing septic repair and riparian buffer cost-share programs (Project Number 19-05).

Triplett Creek Priority Watershed

Within the Triplett Creek Priority Watershed, implementation has continued on Morehead State University's (MSU) research farm, the Derrickson Agricultural Complex. Projects in cooperation with the DOW, Natural Resources Conservation Service (NRCS), and the Governor's Office of Ag Policy have installed BMPs designed to prevent erosion, redirect stormwater, and capture rainwater for beneficial reuse on farm. The BMPs installed through this project are highly visible and will serve to educate the public about practices that benefit water quality. Specifically the project installed rainwater harvesting systems for use in livestock watering, animal and green house cooling systems, and prevention of erosion and water quality degradation.

Banklick Creek Priority Watershed

In FFY 2019, the Banklick Watershed Council (BWC) continued utilizing 319(h) funds to implement the Banklick Creek Watershed Plan (Project Number 15-11). Funding was successfully used to address livestock runoff, through construction of an agricultural waste storage facility (manure lagoon), and increase stormwater management efforts (continuation of the Riparian Buffer Conservation Program, repairing two failing septic systems, and completion of two detention basin retrofits) throughout the watershed.

A section of the Brushy Fork Woods and Wetland. Pictured is a constructed riffle, which doubles as a pedestrian trail that connects hikers to trails along Banklick Creek, accompanied with educational signage.

Most notably, the Council successfully completed their first land acquisition; the Brushy Fork Woods and Wetland, partially using 319(h) funds to assist with associated costs, was purchased as a joint project between the Kenton County Conservation District, the Kenton Conservancy, and the BWC. Brushy Fork was identified as an ecologically sensitive area, with 1.8 acres of wetland and 9.6 acres of floodplain, and integral to the function of the overall watershed. In addition to this year's newly added education signage, the Council has indicated future plans of establishing public access trails and possibly expanding the wetland; supplemental funding sources (Duke Energy Foundation) have been acquired to support the stewardship of this land.

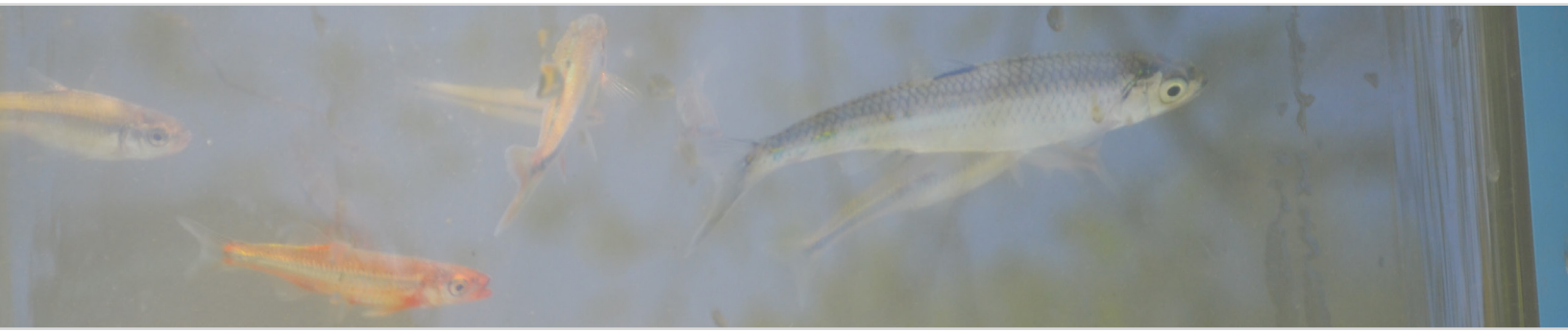
As of FFY 2019, Project 15-11 has been closed, though the BWC was granted 319(h) monies in FFY 2019 to continue implementation through FFY 2024 (Project Number 19-07). The Banklick Watershed Council continues to make significant advances for water quality and quantity issues within their watershed and the greater Licking River Basin. The Council's Watershed Coordinator plans to continue advancing relationships with landowners and outreach to potential project partners.

Upper Cumberland River Basin

Brushy Creek Priority Watershed
Brushy Creek is a tributary to Buck Creek, an Outstanding State Water Resource (OSRW) with over 30 species of freshwater mussels, 77 species of fish, and one endangered bat. Two tributaries to Brushy Creek are listed on the 2016 303(d) list due to agricultural concerns. In FFY 2019, the Pulaski County Conservation completed a 319(h) grant focused on agricultural BMP installations including seven heavy use areas, eight watering facilities, cover crops, nine pipelines, six spring developments, and nine fences. The Brushy Creek project was approved for additional funding in FFY 2019 and will be going under contract in early 2020. The new grant will utilize a drone with a normalized difference vegetation index (NDVI) sensor for plant health.

Corbin City Reservoir Priority Watershed
Corbin City Reservoir has an approved Watershed Based Plan, but no active 319(h) projects during FFY 2018 occurred. Work is anticipated to continue as opportunities arise.

Sinking Creek Priority Watershed
Sinking Creek has a partially completed Watershed Based Plan. Upon completion of the plan, likely in-house, the plan can be implemented.



Education and Outreach

The DOW 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 the citizens of the Commonwealth in order to create a more informed population and improve Kentucky's Water Health.

Tables 4 , 5, and Figure 11, detail the educational programming accomplished in FFY 2019. Basin Coordinators and Technical Advisors of the Nonpoint Source and Basin Team section reach thousands of stakeholders through outreach activities each year. In FFY 2019, they reached an estimated 4,358 students in K-12 educational programs.

Education and outreach activities reach a wide variety of stakeholders throughout the state. DOW focuses heavily on K-12 educational activities, such as the Bowling Green Streamside Field Day, featured above.

Table 5. Education and outreach activities by Action Item. DOW reached more than 5000 people through these events.

Action Items	Accomplishments
Action Item 1.1: Continue effective messaging for the Division of Water.	I Love KY Facebook Page was created in 2016 and has been maintained by the NPS Basin Coordinators. To date the page has 846 followers
	The Basin Coordinators continue to use MailChimp for quarterly newsletters. The mailing list contains 1,213 recipients
Action Item 1.2: Partner with organizations on environmental education and outreach opportunities	Partnered with the following organizations:
	Louisville Water Company
	University of Kentucky Cooperative Extension
	Franklin County
	Kentucky Department of Conservation
	Living Arts & Science Center Discovery Education
	Bowling Green/Warren County Stormwater programs
	Kentucky Association for Environmental Education
	Boone County
	Kentucky Conservation Districts
	Kentucky Water Resources Research Institute
	Jackson Purchase Foundation
Action Item 1.3: Develop content for social media, basin newsletters, and other print and non-print outlets	Social Media:
	Five basins (Salt, Licking, Cumberland, Big Sandy/Little Tygarts and Green) sent out quarterly newsletters in 2019
	Each Basin Coordinator provides content for the Facebook Page
	Participated in the following Social Media Campaigns to promote various aspects of water, including Water Week in Kentucky, EPA's Septic Smart Week, and Earth Day

Table 5 Cont'd. Education and outreach activities by Action Item. DOW reached more than 5000 people through these events.

Action Items	Accomplishments
Action Item 1.4: Coordinate and conduct public events and/or exhibits	DOW participated in tabling events throughout the state, including:
	Governor's Conference on Environment and Energy
	Louisville Adventures in Water
	Watershed Watch in Kentucky Training
	Children's Day at Frankfort Farmers Market
	Water is Life: Living Arts and Science Center
	KAEE Outdoor Learning Symposium
	Family Nature Day in Boone County
	Laurel County Cooperative Extension Eco-Adventures Camp
	Kentucky State University
	Four Rivers Watershed Sustainability Festival
	Lowertown Arts and Music Festival
	LBL Hummingbird Festival
	ORSANCO Aquarium Event
	Hanging Fork Watershed Festival
	Red River Festival
	Love Your Lake Event for Herrington Lake

Table 6. Education and outreach activities by type.

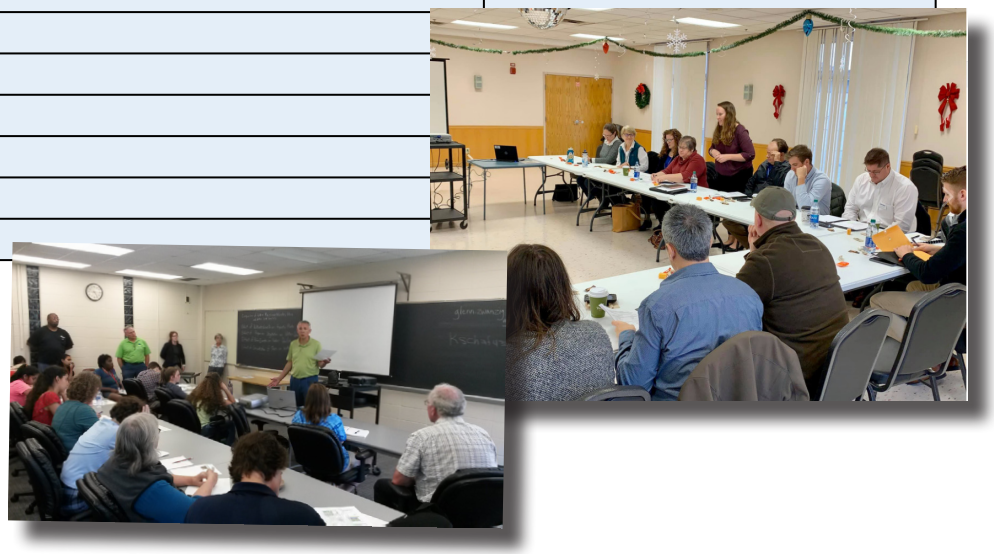
Type	Description	Community Reached
Presentation	Conducted presentations at various conferences and meetings throughout the State to educate the public about:	Conducted **11** formal presentations reaching over **700** community members of all ages
	On-Farm program and 319(h) grant program	
	Teaching Environmental Educators to incorporate stream education in lessons	
	Watershed Planning	
	Water Watch	
	Four Rivers Basin Team Meeting	
	Kentucky River Basin Team Meeting	
	Stormwater Demonstration	
	Homeowner Assistance Program	
	Herrington Lake Town Hall	
	Big Sandy Basin Summit	
K-12 Environmental Education	Conducted various water related activities using Project WET at partners events including:	Conducted **23** Environmental Education programs reaching ~ **4,385** students
	Louisville Water Company – Louisville Adventures in Water Festival	
	Warren County/Bowling Green Stormwater	
	Laurel County Cooperative Extension Event	
	Enviroscape at Frankfort Farmers Market	
	Water Monitoring Workshop with Mason County High School	
	Morehead Elementary Water Education	
	Kentucky Division of Conservation Envirothon training	
	Cumberland County Field Event	
	Greenup County Field Day	
	WHO Festival Field Day	
	Christian Fellowship Preschool	
	Ecothink Partnership	
	Homeschool Day at LBL Nature Station	

Table 6 Cont'd. Education and outreach activities by type.

Type	Description	Community Reached
K-12 Environmental Education, continued	Friends of Clarks River Event	
	Clark County Field Day	
	Danville School Event	
	Wolf County Environmental Field Day	
	UK Cooperative Extension Training	
Workshops (Hosted)	Conducted Workshops including:	At the **9** workshops held throughout the State, ~ **185** educators, volunteers, and partners received training
	Project WET	
	Watershed Forum	
	Watershed Academy	
	Jackson Purchase Foundation Summer Conservation Series Workshop	
	Volunteer Lake Monitoring Program	
Workshops (Attended)	The Basin Coordinators Attended the following Training for Professional Development:	
	Watershed Forum	
	Harmful Algal Bloom Workshop	
	Environmental Educator Course Certification	
	Riverlands Alliance Workshop	
	Great Lake to Gulf Watershed Leadership Summit	
Meetings Attended	Watershed Council Meetings	
	KY Stormwater Association Meetings	
	Ag Development Board Meeting	
	Watershed Coordinator Meeting	
	Watershed Watch Board Meetings	
	Watershed Watch Annual Meetings	
	Area Development District Meetings	
	NRCS Environmental Quality Incentives Program meeting	
	Friends of Clarks River Meeting	
	Cypress Creek Environmental Meeting	

Table 6 Cont'd. Education and outreach activities by type.

Type	Description	Community Reached
Meetings Attended, continued	McCracken County Meeting about Clarks River	
	NRCS Focus Conservation Project Meeting	
	Clarks Run Watershed Group	
	Hanging Fork Watershed Planning	
	Kentucky River Authority Meeting	
	South Elkhorn Water Quality Presentation	
	USGS Cooperator Meeting	
	Kentucky Utilities Public Meeting	
The Basin Coordinators are also responsible for watershed planning and implementation. In 2019 the Basin Coordinators and Technical Advisors have worked in the following areas related to current watershed or future watershed development	Cane Run	
	Red Bird River	
	Damon Creek	
	Red River	
	Hanging Fork	
	Hinkston Creek	
	Gunpowder Creek	
	Banklick Creek	
	North Fork Kentucky River/Whitesburg	
	Curry's Fork	
	Middle Fork Beargrass Creek	
	Sulphur Creek	
	Bacon Creek	
	Chestnut Creek	
	Upper Paint Lick Creek	



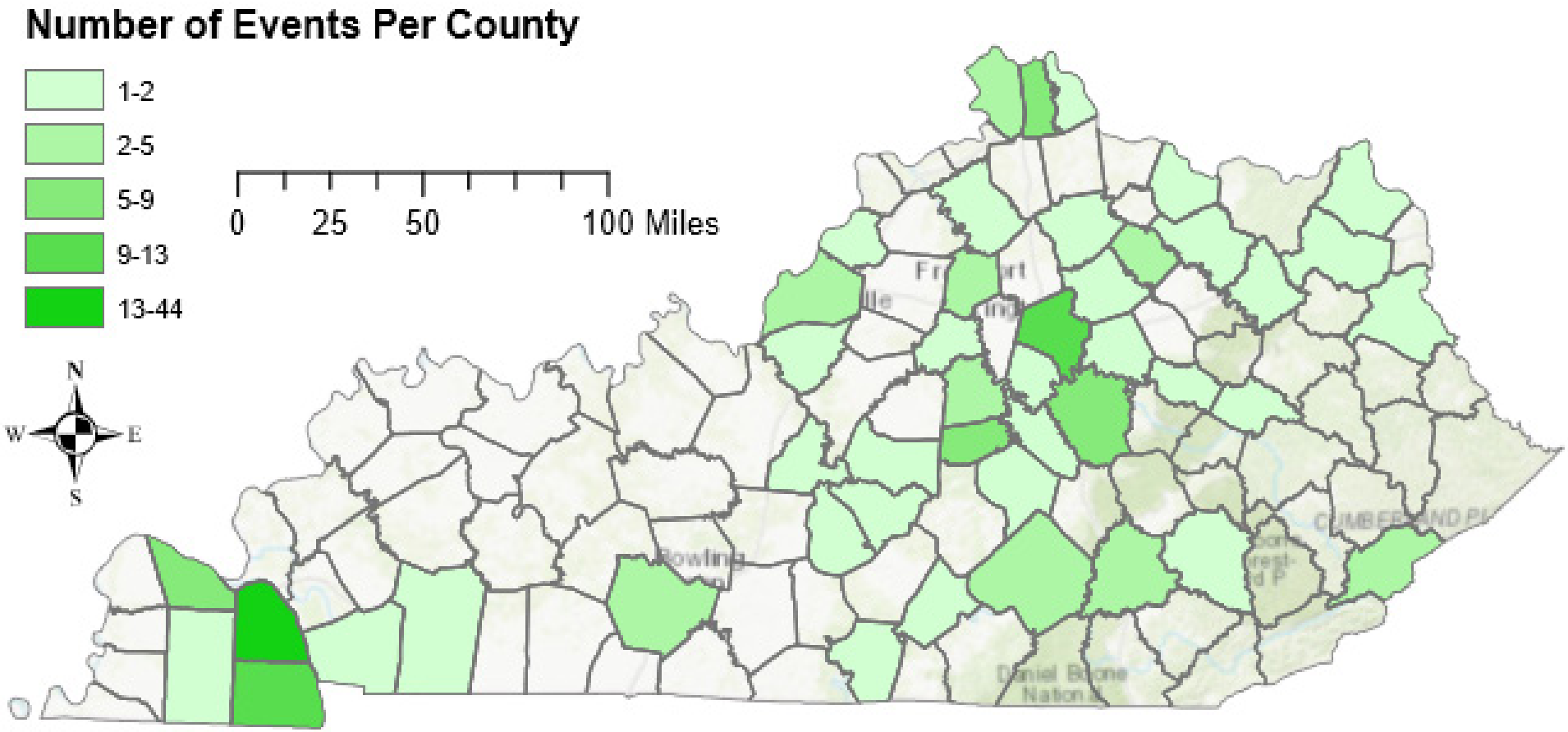


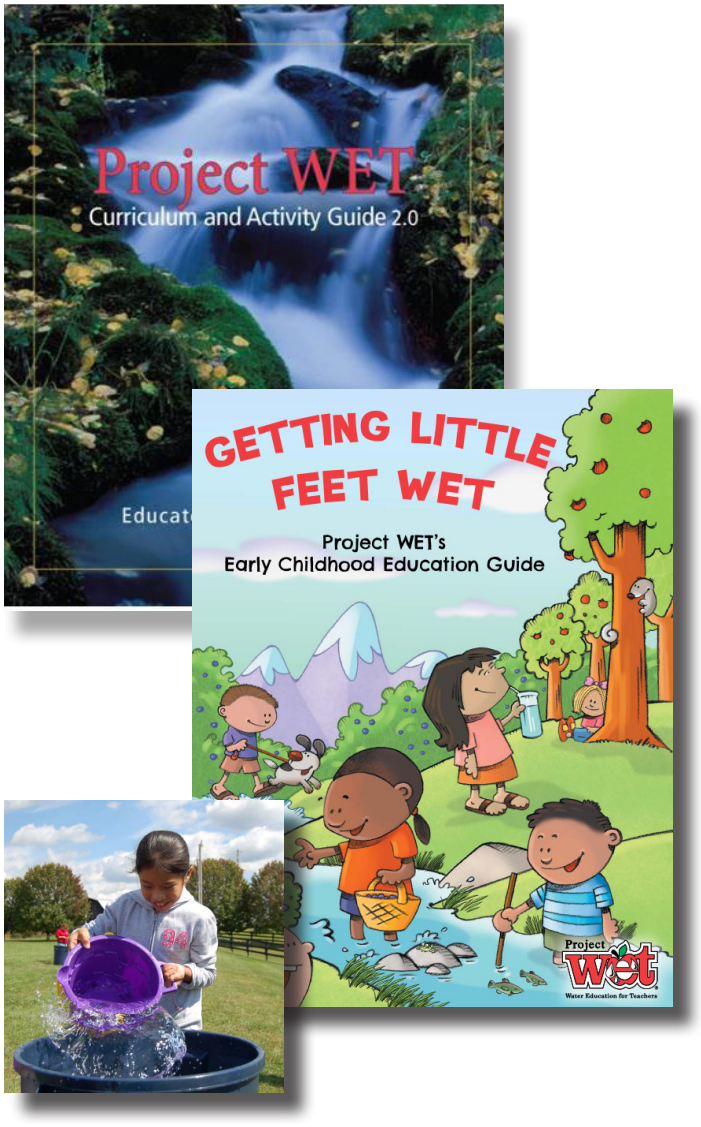
Figure 11. Counties in which E&O events were provided.

Project WET

DOW is the host institution for Project WET (Water Education for Teachers) 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-themed educational materials, training courses, and networking services to citizens, organizations, governments, and corporations. While DOW is the host institution for Project WET, it contracts with the Kentucky Association for Environmental Education (KAEE) to administer the program. KAEE and DOW work to train facilitators and educators across the Commonwealth, ensuring certified facilitators have all required forms to support their workshops.

The KAEE has been actively working to integrate Project WET curriculum with the Next Generation Science Standards (NGSS), modelling how the lessons can be used to meet the standards and make Project WET more relevant to formal educators. In September of 2019, the KAEE conducted an advanced training on this at the National Project WET Coordinators Conference in Arizona. They also hosted the second annual Project WET Outdoor Learning Symposium and a three day intensive environmental education boot camp for educators. This work incorporating the NGSS is crucial to ensuring that environmental education is taught in schools. NGSS-EE integration not only helps achieve required learning standards, but further enhances educational curriculum. Non-formal EE educators utilizing the standards helps to encourage school systems to participate in outdoor nontraditional educational programming.

During FFY 2019, the KAEE's Project WET program conducted three facilitator workshops and 18 educator workshops. Educator training reached 247 educators including in-service (K-12), university, pre-service, and non-formal educators. Facilitator training reached 38 facilitators that are now able to train educators in Project WET throughout the state.



Project WET and Getting Little Feet WET.

Equipment and Resource Development

Educational Equipment

The DOW 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 can be viewed and checked out on their website. Formal teachers love the website because it allows them to check out the equipment to accompany their lessons. Many non-formal environmental educators use the equipment as well.

In FFY 2019 the program had seven check outs of Educational Equipment including Enviroscapes, display boards, and the stream table. Ollie Otter, the DOW's Mascot, attended five events across the state. He is always a popular addition to any environmental gathering.

Ollie the Otter and friends.

Outreach Material

As part of the DOW's mandate to improve understanding of NPS issues within the state of Kentucky, the NPS Section has worked with stakeholders, educators, journalists, and regulators to develop online and print publications to teach the public about water health. The DOW maintains a library of materials available upon request and often works with other Divisions in the cabinet to develop new resources.

Stream Health Pocket Guide

Stream Health Pocket Guide

In FFY 2017 the NPS section developed the Stream Health Pocket Guide to teach the public how to use aquatic macroinvertebrates to assess water health. In 2019, this printable resource was distributed to school groups, Watershed Watch volunteers, and was made available online to the broader public. A simplified, more easily printed version of this resource that is more easily printed was also distributed at all tabling events attended by DOW NPS personnel.

Fact Sheet Development

In 2018, the Basin Coordinators developed four new Fact Sheets on topics related to water quality. These resources were developed in preparation for Water Week in KY 2018, but follow the standard DOW format and are useful in a variety of situations. Topics included, "*Mussels, Nature's Filters*", "I*nvasive Species*", "*Reducing Waste Comes Naturally*", and "*Natural Solutions for Gulf Hypoxia*". Each fact sheet contains general topic information and helpful suggestions about how the community can make choices in their daily lives that impact these issues.

Fact sheets developed for Water Week will be posted on the DOW website and available for the public's use.

Naturally Connected Blog and Land, Air, & Water Articles

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

Basin Coordinator Quarterly Newsletters

The basin coordinators also create and send out quarterly newsletters to their basins. The information in these newsletters includes everything from basin team updates and highlighted basin successes, to information on best management practices and nonpoint source funding. Each newsletter is catered to its basin's needs and interests.


In the FLOW

Publication of Watershed Management Branch

Big Sandy River Basin Edition
October 2019

The mission of the Watershed Management Branch is to protect and restore the beneficial uses of the waters of the Commonwealth by managing water quality and quantity, facilitating stewardship and promoting cooperation among stakeholders.

Visit Our Website

Follow Us On Facebook

Do you have an event you would like to promote through

News

Hello Big Sandy, Little Sandy, and Tygarts!

I am very excited to be working as your new Basin Coordinator for the Kentucky Division of Water! I moved to Kentucky in 2012 to attend the University of Kentucky and I have been in love with the state and its fantastic water features ever since! I have B.S. degrees in Natural Resources and Environmental Science and Equine Science and Management. I am currently finishing my M.S. degree in Forestry and Natural Resources from the University of Kentucky where I worked in high elevation Appalachian wetlands in West Virginia. Much of my graduate and undergraduate career work has been in freshwater ecosystems – from the swamps of western Kentucky to the montane streams of eastern Kentucky. Eastern Kentucky's topography means that it faces many challenges unique to that area of the state, and I hope to help face those challenges any way that I can. My goal is to listen to, learn from, and support your efforts to not only improve the basin's water quality, but to strengthen its communities as well.

— *Michaela*

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In the FLOW

Publication of Watershed Management Branch

alt River Basin Edition
lovember 2017

The mission of the Watershed Management Branch is to protect and restore the beneficial uses of the waters of the Commonwealth by managing water quality and quantity, facilitating stewardship and promoting cooperation among stakeholders.

Visit Our Website

Do you have an event you would like to promote through our newsletter? Send us an email!

Are you puzzled by TMDLs or want to know more about springs and caves in your area? Click on Kentucky's Health Guide to learn about all those topics and much more!

Five Star and Urban Waters Restoration Grant Program 2018 Request for Proposals

The National Fish and Wildlife Foundation (NFWF) and the Wildlife Habitat Council (WHC), in cooperation with the U.S. Environmental Protection Agency (EPA), USDA Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), FedEx and Southern Company are pleased to solicit applications for the 2018 Five Star and Urban Waters Restoration program. The Five Star and Urban Waters program will award approximately $2 million in grants nationwide.

The Five Star and Urban Waters Restoration grant program seeks to develop community capacity to sustain local natural resources for future generations by providing modest financial assistance to diverse local partnerships focused on improving water quality, watersheds and the species and habitats they support.

Projects include a variety of ecological improvements along with targeted community outreach, education and stewardship. For more information, visit the program website. Applications due Jan. 31, 2018.

Chapter 3

Spotlight: Testing the Waters

New Partnerships and Programming for Citizen Science

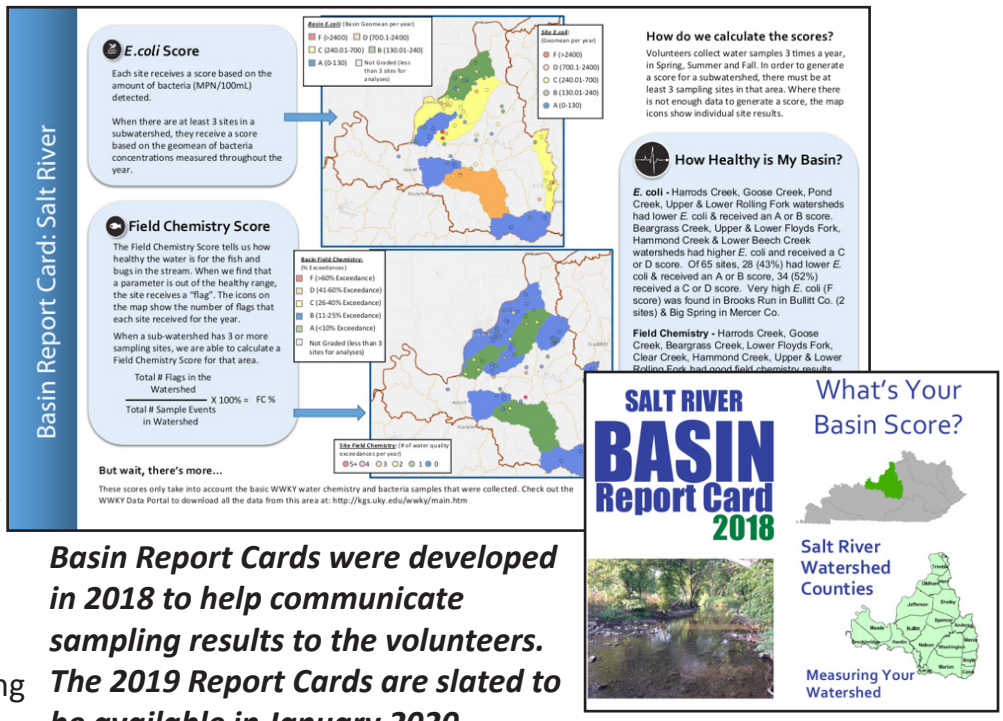
It is the mission of the Kentucky Division of Water to manage, protect, and enhance the quality and quantity of the Commonwealth's water resources for present and future generations through voluntary, regulatory, and educational programs. As part of that mandate, the Division must work to assess the condition of more than 90,000 miles of streams and more than 4,000 acres of lakes to ensure that the waters of Kentucky are drinkable, swimmable, and fishable. This is a daunting task, and limited personnel resources make it a practical impossibility to cover every mile of waterway in the state each year.

Watershed Watch in Kentucky (WWKY) volunteers.

Solving issues with water quality can be equally daunting, as problems with water quality often cannot be addressed by regulation alone. Community response is often required to take action to correct pollution and restore streams. Nonpoint source pollution by definition comes from multiple diffuse sources and most situations require a community response in order to address them. This requires a population that is well educated about water quality, that understands the science of water pollution and that is invested

in the condition of their local waterways.

Volunteer monitoring provides an avenue to governmental organizations to extend their data collection capabilities and to educate the public about water health. In volunteer monitoring programs, the public participates voluntarily in the scientific process by targeting areas of concern, collecting and analysing data, interpreting results, developing new technologies and applications, and developing action plans. In the Commonwealth of Kentucky, DOW partners with citizens through Watershed Watch in Kentucky.



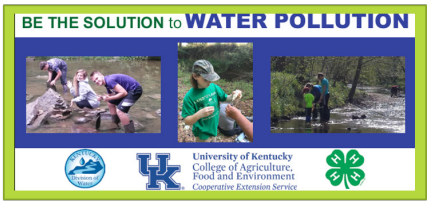
Basin Report Cards were developed in 2018 to help communicate sampling results to the volunteers. The 2019 Report Cards are slated to be available in January 2020.

Watershed Watch in Kentucky (WWKY) is a statewide citizens monitoring effort to improve and protect water quality by raising community awareness and supporting implementation of the goals of the Clean Water Act and other water quality initiatives. The Kentucky Division of Water (DOW) has been an integral partner to the WWKY since its inception 20 years ago, serving as one of the founding members and committing staff support to the organization annually. Watershed Watch organizations across the state host training sessions for volunteers to educate them on water quality issues and proper sample collection methods, coordinate their Core Monitoring Program (three volunteer sampling events per year), and present data to volunteers at annual conferences. Science advisors assist volunteers with interpretation of their data, and coordinate additional sampling efforts or citizen action as needed. Since the inception of the program in 1997, over 4,500 volunteers across the state have been trained about water quality through the Watershed Watch program. The program covers more than 3,700 stream monitoring sites. Data collected by the volunteers has been instrumental in detecting problems and in forming the basis of many watershed plans. In addition, Watershed Watch volunteers are commonly important leaders in the watershed groups that are engaged in watershed planning.

WWKY Activities in FFY 2019

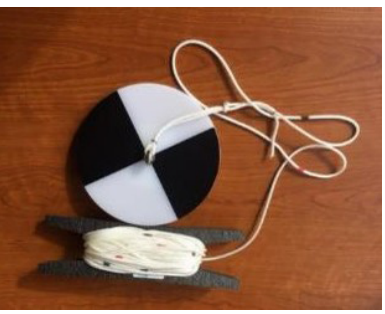
During 2019, WWKY built upon a strong foundation of statewide volunteer stream monitoring to create several new initiatives that led to new partnerships. WWKY's Core

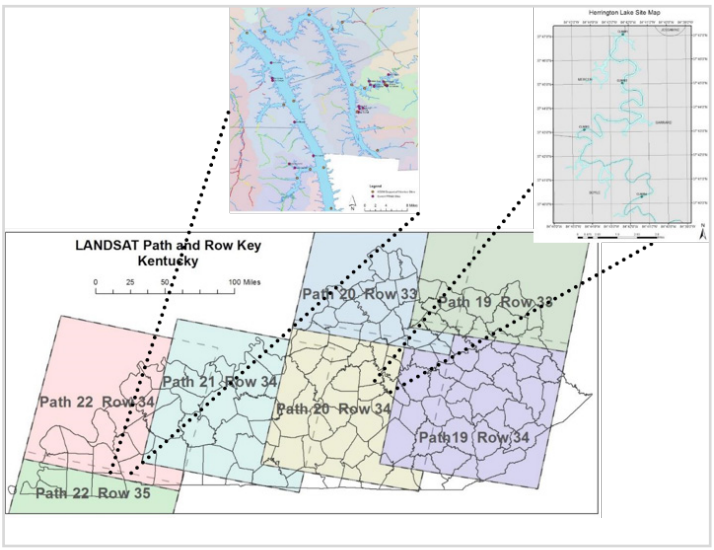
Monitoring Program, continues to support volunteers in monitoring the Commonwealth's streams and rivers. In addition, WWKY has added the following:



- Youth Stream Team Program – this fledgling program was established in partnership with Kentucky 4H Youth Development to engage youth across Kentucky, training them to be citizen scientists that have a broader understanding and appreciation of our water resources. Through this program, 4H leaders and volunteers learn about WWKY and are trained to make scientific field observations and collect *E. coli* data. Additionally, leaders and volunteers are given a variety of hands-on lessons related to water quality to perform with their stream teams. Stream teams collect samples throughout the year, analyze their data, and complete a community service project.

- Volunteer Lakes Monitoring Program (VLMP) – starting in 2017, this program was piloted on lakes in the Kentucky River Basin and Four Rivers Basins. In 2019, WWKY began to promote VLMP across Kentucky, with an initial focus on monitoring lakes that serve as drinking water sources. Through this program, volunteers collect basic data about the general condition of lakes in Kentucky that is then used in tandem with remote sensing models to identify waterbodies that may be impacted by various problems, including harmful algal blooms. This program now includes 28 volunteers and 52 sites in four river basins. In 2020, WWKY will continue to work toward statewide implementation of VLMP, in partnership with the Kentucky Rural Water Association.

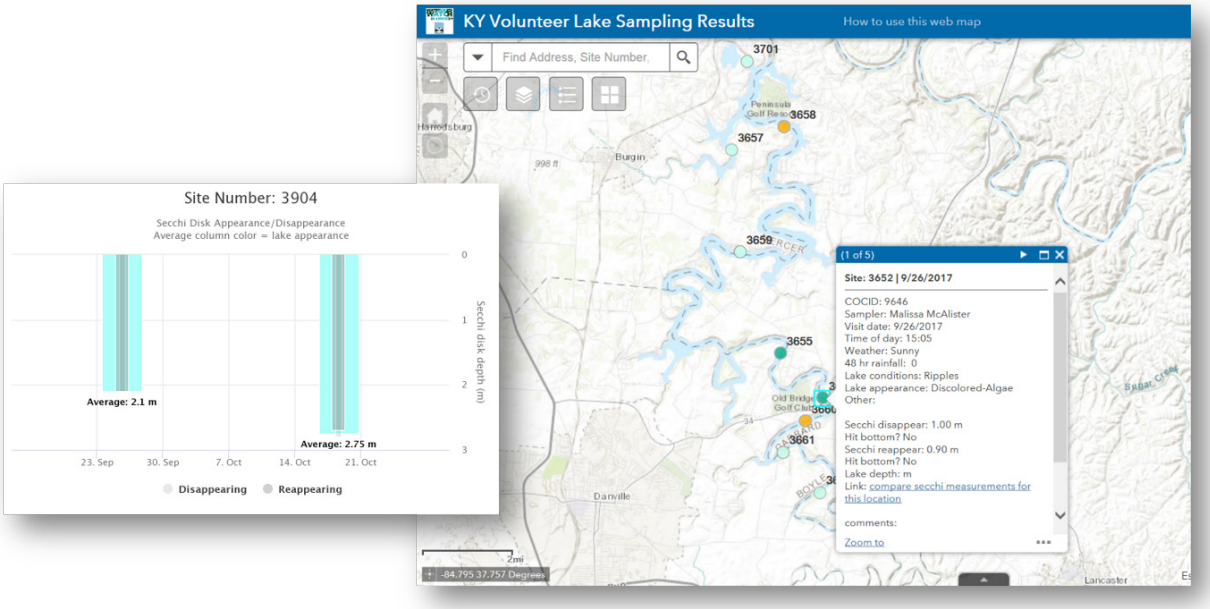




VLMP satellite flyover data is correlated with volunteer monitoring data.

- Distillery Teams – with support from the Kentucky Distilleries' Association, during 2019 WWKY recruited monitoring teams from eight distilleries in the Kentucky and Salt River Basins. In 2020, these teams will be paired for training with active volunteers monitoring nearby sites. Going forward, the teams will select new sites to monitor or choose from a number of inactive sites near distilleries.

- Cyanobacteria Monitoring – in 2019, the Kentucky Division of Water introduced "BloomWatch," an app for citizens to use in



VLMP Data Portal.

monitoring cyanobacteria (blue-green) algae blooms. As the number, intensity, and duration of cyanobacteria blooms increases across the Commonwealth, WWKY anticipates providing BloomWatch trainings in conjunction with both Core Monitoring and VLMP trainings in 2020. In addition, WWKY will partner with Northern Kentucky University, County Conservation Districts, and County Health Departments to provide information and monitoring tools to citizens concerned about blooms on agricultural and residential ponds.

Both continuing and new volunteers now have access to the WWKY Data Portal, a tool that supports citizens in reviewing and analyzing the monitoring data they collect with an eye toward informing their communities and inspiring action. This resource was developed with funding from the Virginia Environmental Endowment (VEE), an organization that also supports WWKY's Core Monitoring Program.

WWKY has always had a focus on collective impact and collaboration, partnering with multiple different organizations to accomplish their mission of supporting a citizen science effort to improve and protect water quality. Continuing partners include the Kentucky Division of Water, who utilizes volunteer monitoring data to identify areas in need of further monitoring; Kentucky Waterways Alliance, who has helped to form several watershed groups and projects based on data collected through the WWKY Core Monitoring Program; and the Sierra Club, who uses data from the WWKY Core Monitoring Program to advocate for clean water in Kentucky. In 2019, WWKY focused on outreach, trying to make other organizations aware of the work of WWKY, with a goal of broadening impact in the world of water quality. Going forward, with a final round of funding from VEE, WWKY anticipates that their Outreach Committee, Board of Directors, and a new Development Director will continue these efforts, gaining additional partners to address water quality issues across Kentucky, and securing new sources of funding for efforts to pursue clean water in Kentucky.

Chapter 4

Workplan Reporting

FFY 2019 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 2019 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 2019 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		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, allowing watershed prioritization across multiple programs. A new list of recoverable watersheds was not developed in 2019. Basin Coordinators will revisit the RPT and consult with Basin teams in 2020 to update priority areas.
	Tracking measure:	Number and list of recoverable watersheds receiving targeted implementation.			X	X	X	During FFY 2019, two (2) projects (15-09 and 15-10) implemented BMPs in the Sulphur Creek watershed (identified as recoverable by the RPT). At the end of FFY 2018, a new project (17-17) for BMP implementation work in Sulphur Creek started. In 2019 project 18-06 began implementation.

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, allowing watershed prioritization across multiple programs. A list of watersheds ID'd as recoverable for pathogens was not developed this year.
	Tracking measure:	Number of recoverable watersheds receiving targeted implementation.					X	
Objective 2:	Monitor and assess Kentucky's waters		2019	2020	2021	2022	2023	
Action 1:	Conduct monitoring and perform assessments of Kentucky's waters in conjunction with the watershed framework.							
	Tracking measure:	Number of stream miles assessed.	X	X	X	X	X	As of the 2016 Integrated Report (IR), 12,613.8 stream miles have been monitored and assessed by DOW programs. The next IR is scheduled to be released in 2020.
	Tracking measure:	Number of stream miles impaired by NPS pollution.	X	X	X	X	X	As of the 2016 Integrated Report, 2,631.11 miles are known to be impaired by NPS causes and sources as of 2016 IR (categories 5, 4A, 4B, 4C).

	Tracking measure:	Number of pollutant/ waterbody combinations impaired by NPS pollution.	X	X	X	X	X	As of the 2016 Integrated Report, 983 pollutant/waterbody combinations 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 are being sent to the DOW 303(d) and TMDL programs as they are 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 2019, DOW staff or contractors were conducting water quality monitoring on approximately five (5) watersheds in preparation for Watershed Plan development. • Bee Creek • Clayton Creek • Middle Fork Beargrass Creek • Paintlick Creek • West Hickman 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	• Gunpowder Creek was assessed prior to 2017. Current assessments will be done for the 2020 IR. •Lake Linville and associated tributaries - identified as a priority for assessment in 2020 prior to watershed plan development and proposed large scale BMP work through NRCS and partners. • Hinkston Creek - identified as a priority for future assessment. DOW staff are closely monitoring current implementation efforts to determine optimal time frame for assessment.
	Tracking measure:	Number and list of streams that have a documented change in use support awaiting EPA approval.	X	X	X	X	X	There are currently no streams awaiting EPA approval for a change in use support.
	Tracking measure:	Number and list of streams that have a documented change in use support approved by EPA.	X	X	X	X	X	Currently Trammel Creek (0.0 to 24.0) is awaiting EPA approval for a change in use support that should be listed in the upcoming Integrated Report to Congress. Data collection in the Gunpowder Creek watershed has segments submitted for the 2020 IR.

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	Spreadsheets of on the ground BMP implementation data is being compiled from internal and external state and federal agencies. GIS coverages are in development. Existing watershed plans are being evaluated for current and future success monitoring, and the data are being evaluated for changes
	Tracking measure:	Number of watersheds identified as needing success monitoring.	X	X	X	X	X	Three (3) watersheds (Middle Fork Beargrass Creek, West Hickman Creek, and Paintlick Creek) were all monitored for baseline data for success monitoring and watershed plan development.
	Tracking measure:	Conduct annual meeting to coordinate locations appropriate for success monitoring within the watershed framework.	X	X	X	X	X	DOW staff are 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 the success monitoring program, and to target watersheds for monitoring.

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 drop the Headwaters Hinkston Creek as an NWQI watershed after FFY 2015. DOW did not collect additional NWQI water quality monitoring data during FFY 2017. Baseline water quality data for Lee's Creek, a potential new NWQI watershed in the Licking River Basin as collected in 2018.
	Tracking measure:	Implement NWQI success monitoring as needed.	X	X	X	X	X	Baseline water quality data was collected in Hinkston Creek in 2014-15, and in Lee's Creek in 2018. No further sampling occurred in 2019.
	Tracking measure:	Compile water quality data for trend analysis in NWQI watersheds as needed.	X	X	X	X	X	While sampling at ten (10) locations in Lee's Creek occurred in 2018, there were no new sample sites in 2019.

	Tracking measure:	Number of NWQI BMPs per selected HUC 12.	X	X	X	X	X	The Hinkston Creek monitoring report was attached to the FFY 2016 NPS Program Annual Report as Appendix A, and is available upon request in the future.
Objective 3:	Implement the Nonpoint Source component of Approved TMDLs of restoration strategies in prioritized impaired watersheds.		2019	2020	2021	2022	2023	
Action 1:	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 six (6) times in FFY 2019. Workgroup priorities include, but are not limited to, improved communication of program time lines and priorities, identification of potential TMDL-alt watersheds, and implementation strategies in TMDL watersheds.
	Tracking measure:	Number of sub-grantee projects implementing BMPs in watersheds with approved TMDLs.	X	X	X	X	X	In FFY 2019, four (4) sub-grantees implemented BMPs in watersheds with approved TMDLs: Chestnut Creek, Curry's Fork, Clark's Run, and Hanging Fork.

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	The Sulphur Creek Watershed and the Cypress Creek Watershed were both considered for development of a TMDL alternative. The community groups in Cypress elected to delay the decision until more data is available and talks in Sulphur Creek are ongoing. Recent watershed plans were completed in Damon Creek, South Fork Little River, and Cane Run. All will be evaluated for potential TMDL-alt development in 2020.
	Tracking measure:	Number and list of watersheds with approved TMDL Alternative Plans.	X	X	X	X	X	Currently the state of Kentucky has completed one (1) TMDL Alternative Plan for Gunpowder 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 2019 DOW worked with contractors toward development of seven (7) additional watershed plans: Cane Run, South Fork Little River, Lees Creek and Clarks Run, Middle Fork Beargrass Creek, Lake Linville, North Fork Kentucky River, and Damon Creek.

	Tracking measure:	Number and list of watershed plans approved by EPA Region 4 for implementation.	X	X	X	X	X	During FFY 2019, the DOW had twenty-seven (27) watershed plans approved by the EPA. • Bacon Creek • Banklick Creek • Brushy Creek • Cane Run • Chestnut Creek • Clark's Run- Dix River • Corbin City Reservoir • Curry's Fork • Damon Creek • Darby • Dry Creek • Gunpowder Creek • Hancock • Hanging Fork- Dix River • Hinkston Creek • Lower Howards Creek • Pleasant Run • Red Bird • Red River Gorge • Rock Creek • South Fork Little River • Stockton Creek • Sulphur Creek • Ten Mile (Eagle Creek) • Triplett Creek • Wolf Run • Woolper Creek

	Tracking measure:	Number and list of watershed plans approved by EPA Region 4 for implementation actively being implemented.	X	X	X	X	X	During FFY 2019, the DOW had thirteen (13) watershed plans approved by EPA Region 4 for implementation actively being implemented. • Bacon Creek • Banklick Creek • Brushy Creek • Chestnut Creek • Clark's Run- Dix River • Curry's Fork • Damon Creek • Hanging Fork- Dix River • Hinkston Creek • Red Bird • Red River Gorge • South Fork Little River • Sulphur Creek
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	During FFY 2019 DOW documented fifty six (56) 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.

	Tracking measure:	Number of partner and/ or stakeholder meetings attended.	X	X	X	X	X	NPS personnel attended one hundred fourteen (114) partner meetings in FFY 2019.
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 two watershed project areas during FFY 2019: Brushy Creek (15-12) and Curry's Fork (16-06).
	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	DOW staff attended at least one (1) Ag Water Quality Authority meeting held during FFY 2019. DOW's NPS Program continued to fund the Water Quality Liaison position with the University of Kentucky Cooperative Extension Service.

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 2019, the Nonpoint Source Program funded the implementation of one hundred and four (104) on the ground agricultural conservation practices installed through a total of six (6) projects in six (6) different watershed planning areas. • Curry's Fork (10 BMPs, 16-06) • Banklick WC (1 BMP, 15-11) Wastewater Storage Facility • Brushy Creek (72 BMPs, 15-12) • Bacon Creek (9 BMPs, 17-13) • Hinkston Creek NCCD (6 BMPs, 17-15) • Sulphur Creek ACCD (6 BMPs, 17-17)
Action 3:	Coordinate with NRCS and KY Division of Conservation to implement BMPs.							
	Tracking measure:	Coordinate with KY DOC to fund BMPs in priority watersheds.	X	X	X	X	X	During FFY 2019, the DOW coordinated with DOC to fund BMPs in the Brushy Creek (15-12) priority watershed.
	Tracking measure:	Coordinate with NRCS to fund BMPs in priority watersheds.	X	X	X	X	X	During FFY 2019, the DOW coordinated with NRCS to fund BMPs in the Brushy Creek (15-12) priority watershed.

Action 4:	Coordinate with NRCS to identify and prioritize NWQI watersheds.							
	Tracking measure:	Number of NWQI watersheds identified.	X	X	X	X	X	DOW provided information to NRCS in 2019 regarding current watershed planning areas and potential targeted watersheds for NWQI. No new NWQI watersheds were designated in 2019 by the NRCS.
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	DOW participated in all scheduled NRCS State Technical Committee meetings in FFY 2019.
	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 four (4) Agriculture Water Quality meetings during FFY 2019.
	Tracking measure:	Participate in the Kentucky Agriculture Science and Monitoring Committee meetings.	X	X	X	X	X	DOW participated in two (2) KASMC meetings held during FFY 2019.

	Tracking measure:	Number of staff attending agriculture related technical training.	X	X	X	X	X	In FFY 2019, nine (9) NPS personnel attended ag trainings, including agricultural field days, educational events, and a workshop on harmful algal blooms in farm ponds.
	Tracking measure:	Present information or a booth at one (1) agriculture related event each year.	X	X	X	X	X	NPS personnel presented at multiple ag related conferences and meetings in FFY 2019, including the KY Farm Bureau's Environmental Issues Forum, the Kentucky Women in Agriculture Conference and the On Farm Water Management Committee.
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	In FFY 2019, seven (7) projects implemented GI, LID and/or stormwater management BMPs • Red Bird (15-05) • Banklick Creek (15-11) • Wolsing Woods (17-02) • Red River (15-06) • Curry's Fork (16-06) • Clarks Run, Hanging Fork, and Hinkston Creek (16-07) • Damon Creek (17-18)

	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 2019. 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.
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				In FFY 2019, NPS Staff has been participating in the development of guidelines for the integration of GI/LID in State Hazard Mitigation Planning, focusing in on providing insights on how these methods may be applied in current watershed planning areas.
	Tracking measure:	Number of NPS BMPs included in the State Hazard Mitigation Plan.					X	Efforts to generate NPS BMP recommendations for the State Hazard Mitigation Plan are ongoing. No recommendations were integrated into the State Hazard Mitigation Plan in FFY 2019.
	Tracking measure:	Provide updated GIS resources to KAMM program annually.	X	X	X	X	X	GIS layers are updated annually. NPS personnel also attended the KAMM annual conference in FFY 2019.

Action 3:	Support Kentucky's MS4 program.							
	Tracking measure:	Number of Kentucky Stormwater Association meetings attended.	X	X	X	X	X	NPS staff participated in the Kentucky Stormwater Association Annual Conference and attended three (3) Kentucky Stormwater Association Quarterly Meetings in FFY 2019.
	Tracking measure:	Provide technical and/or educational support to MS4 communities.	X	X	X	X	X	DOW's NPS Program staff is working with 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 also 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.
	Tracking measure:	Provide technical and/or educational support for the DOW MS4 program.	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.
	Tracking measure:	Provide updated GIS resources to MS4 program annually.	X	X	X	X	X	GIS layers are updated annually and available on 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	In FFY 2019, three (3) projects actively implemented forestry BMPs to protect water quality: Red Bird River (15-05), Red River (15-06), and Banklick WC (15-11).
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 BMP Board did not hold a meeting in FFY 2019.
	Tracking measure:	Provide technical and/ or educational support for Forest Conservation Act BMP	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.

	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 funding three (3) programs working on forestry related projects. The NPS section is also actively working partners on forestry related issues, including the Rockcastle Conservation Initiative, the University of Kentucky, the Office on 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	Forty (40) springs were assessed and sampled
	Tracking measure:	Number of groundwater samples collected for *E. coli*.	X	X	X	X	X	Nine (9) groundwater samples included testing for pathogens, including *E. coli.*
	Tracking measure:	Number of groundwater samples collected for pesticides.	X	X	X	X	X	One hundred thirteen (113) groundwater samples collected for pesticides. Forty six (46) groundwater samples that tested positive for at least one pesticide.
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	In FFY 2019, DOW conducted four (4) GPP field reviews.

	Tracking measure:	Number of GPPs approved.	X	X	X	X	X	In FFY 2019, DOW approved two (2) GPP.
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	In FFY 2019, nine (9) projects actively implemented on-site wastewater BMPs. • Red Bird River (15-05) • Red River (15-06) • Curry's Fork (16-06) • Lincoln County HAP (16-08) • Lincoln County HAP (16-09) • Clarks Run Hanging Creek Hinkston (16-07) • Chestnut Creek (17-14) • Boone County HAP (18-09) • Marshall County Fiscal Court HAP (18-10)

	Tracking measure:	Number of sub-grantee projects with an educational component for onsite wastewater treatment.	X	X	X	X	X	In FFY 2019, ten (10) projects included an educational component to their on-site wastewater programs. • Red Bird River (15-05) • Red River (15-06) • Curry's Fork (16-06) • Lincoln County HAP (16-08) • Lincoln County HAP (16-09) • Clarks Run Hanging Creek Hinkston (16-07) • Chestnut Creek (17-14) • Boone County HAP (18-09) • Marshall County Fiscal Court HAP (18-10)
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 twenty-one (21) partner meetings.
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	Forty-four (44) active volunteers
	Tracking measure:	Number of volunteers receiving trainings.	X	X	X	X	X	Fifty (50) volunteers received training in FFY 2019
	Tracking measure:	Number of sites sampled.	X	X	X	X	X	Fifty-three (53) sites were sampled in FFY 2019

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	In FFY 2019, there were seven (7) projects implementing BMPs in watersheds with recreational use impairments. • Lincoln County HAP (16-08) • Lincoln County HAP (16-09) • Bacon Creek (17-13) • Chestnut Creek (17-14) • Hinkston Creek (17-15) • Damon Creek (17-18) • Boone County HAP (18-09)
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 (HABs). 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. We also have had meetings with the Foundation for Ohio River Education to discuss development of tools for HAB monitoring.

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 2019, there were no active projects implementing BMPs in resource extraction areas.

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	The 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	In FFY 2019 there were five (5) projects implementing riparian buffer BMPs: • Banklick Creek (15-11) • Hinkston Creek (16-07) • Wolsing Woods (17-02) • Hinkston Creek (17-15) • Damon Creek (17-18)
	Tracking measure:	Number of projects monitoring for sediment impairments.	X	X	X	X	X	Middle Fork Beargrass Creek (18-04) and Upper Paint Lick (18-05).

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	There are two (2) 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. This work was completed during FFY 2016 through attendance and coordination at the State Technical Committee and EQIP sub-committee meetings. 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 being 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 getting out of the office and meeting with local NRCS, Conservation District, and Division of Conservation staff.

	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 2019.
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 seven thousand seven hundred and ninety five (7,795) stakeholders at educational events, meetings, and outreach events across the Commonwealth. More than half of these were school-aged children.

	Tracking measure:	Number of educational events participated in.	X	X	X	X	X	NPS personnel attended approximately forty five (45) educational events in FFY 2019.
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 I Love KY Water Facebook page is up to eight hundred and thirty five (835) followers during this reporting period, a 26% increase over the last year.
	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 personnel updated the following resources: Septic System Care Guide, Social Media outreach, Stream Health Guide, NPS Fact Sheets, and Basin Newsletters.
Action 4:	Support the Watershed Watch program in Kentucky.							
	Tracking measure:	Number of active volunteers.	X	X	X	X	X	There are currently one thousand thirty two (1032) active WWKY volunteers statewide who collected water quality samples during three (3) annually scheduled sampling events.

	Tracking measure:	Number of volunteers receiving trainings.	X	X	X	X	X	WWKY trained twenty eight (28) new volunteers for stream monitoring and sixteen (16) new lake monitors.
	Tracking measure:	Number of sites sampled.	X	X	X	X	X	WWKY volunteers collected one thousand one hundred and ninety one (1191) stream samples during three (3) annually scheduled sampling events.
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 the Commonwealth. During FFY 2019, KAEE conducted three (3) facilitator workshops and eighteen (18) educator workshops.
	Tracking measure:	Number of teachers trained.	X	X	X	X	X	Project WET Educator training reached two hundred forty-seven (247) educators including in-service (K-12), university, pre-service, and non-formal educators. Facilitator training reached thirty-eight (38) facilitators that are now certified to train educators in Project WET throughout the state.

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 are active in a new group called 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	The Heritage Land Conservation Fund program has identified Lower Howards Creek as a priority for conservation.

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	During FFY 2019, the Banklick Watershed Council used 319(h) funding to purchase a 56 acre parcel of threatened riparian wetland and forest. The property was placed under protection through a deed with the Kenton County Conservancy.
	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: Woolper 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-six (186) HUC12s have been identified as Healthy Watersheds in Kentucky. Of that total, one hundred thirty eight (138) are considered "healthy" and forty-eight (48) are "healthy but at risk." Three (3) of the current DOW priority watersheds have EPA identified Healthy Watersheds within their boundaries: Triplett Creek, Red River, and Lower Trammel Creek.
	Tracking measure:	Number and list of new priority Healthy Watersheds.			X	X	X	DOW is partnering with a new group, the Rockcastle Conservation Initiative, to help target four new priority watersheds identified as "healthy." At the suggestion of the US Forestry Endowment, Healthy Watershed Consortium Grant manager, DOW reached out to the Southeastern Partnership for Forests and Water for future partnerships.

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	DOW has not completed developing a finalized NPS Program strategy for the development of Source Water and Wellhead Protection Plans that contain the nine-key elements of a watershed plan.

	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	DOW's NPS and Source Water Protection programs have worked cooperatively during FFY 2019. Source Water Protection Areas: • Corbin City Utilities Commission • Mountain Water District • Beech Fork Water Commission • Wilmore Water Works • Louisville Water Company • Northern KY Water District • Morehead State University • Cynthiana Municipal Water Works • Laurel County Water District #2 • Harrodsburg Municipal Water Department • Pikeville Water Department • Flemingsburg Utility System • Danville City Water Works • McCreary County Water District • Stanford Water Works • Kentucky-American Water Company River Station II/Hardins Landing Plant • Bullock Pen Water District • Winchester Municipal Utilities • Nicholasville Water System • Jenkins Water System Wellhead Protection Areas: • Green River Valley Water District • Georgetown Municipal Water & Sewer Service • Nortonville Water Works • Camp Turnabout • Mother Nature

	Tracking measure:	Number of Source Water Protection Plans developed and/or updated.	X	X	X	X	X	Monroe County Water District has developed a Source Water Protection Plan which is expected to be approved by DOW in the near future.
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 two (2) accepted watershed plans that contain DOW Wellhead Protection Areas: Gunpowder Creek and Bacon Creek.
	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 is one (1) watershed plan under development that contains a DOW Wellhead Protection Area: Cane Run.
	Tracking measure:	Number of Wellhead Protection Plans developed and/or updated.	X	X	X	X	X	One (1) Wellhead Protection Plan was developed in FFY 2019 Nortonville Water Works

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.							
Action 1:	Develop tools for increased efficiency.							
	Tracking measure:	Complete development of a tracking spreadsheet for Watershed Based Plans.	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. WBP summary documents are the next step to organize and share information regarding WBP's 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			During FFY 2016, all existing (active and historical) NPS sub-grantee project files were scanned into the Department's TEMPO (now called ARM) database for permanent electronic storage purposes. Revisions and updates to the existing electronic file storage system were made as needed during FFY 2019.

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	DOW has one (1) technical advisor and is in the process of hiring two (2) more.
	Tracking measure:	Number of Basin Coordinators.	X	X	X	X	X	DOW partners with and/or employees seven (7) 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 thirteen (13) 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 2019, the NPS team attended or hosted two hundred twelve (212) events.
Objective	Meet federal requirements.							
Action 1:	Reduce KY's NPS Program Un-liquidated Funding Obligation to less than 20%, and maintain that level throughout the Federal							
	Tracking measure:	Drawdown percentage in comparison to ULO goal of 20%.	X	X	X	X	X	DOW's NPS Program is reported by EPA as having a ULO of 14.5% for all open grant years. As was discussed in the Annual Site Visit with EPA Region 4 Staff in August of 2018, the ULOs calculated by EPA do not reflect the Kentucky record keeping. In addition, the EPA's shift from 7 year to 5 year grant frames, the 20% ULO goal set by EPA is no longer achievable. DOW records indicate a 37% ULO as of December 2019. 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

	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 time frame.	X	X	X	X	X	Starting with the FFY 2017 grant year, sub-grantee project contracts have been shifted to a two-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	X	X	X	X	X	All of the new projects selected for FFY 2019 funding are currently being entered into GRTS.
	Tracking measure:	Complete biannual 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 2019 (March and September).
	Tracking measure:	Conduct biannual 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 2019 time period were calculated and entered into GRTS by the deadline.
Action 3:	Submit Kentucky's Nonpoint Source Annual Report to EPA Region 4 by December 31st of each year.							
	Tracking measure:	Submission of Annual Report.	X	X	X	X	X	The FFY 2019 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	One (1) waterbody delisted in KY's 2014 Integrated Report was attributable to NPS Program efforts. Efforts are being made by staff to conduct targeted water quality success monitoring in an attempt to increase the number of impaired waterbodies being delisted through NPS Program implementation

	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 Stoner Creek WQ-10 report was submitted in August and finalized prior to the September 30, 2017 deadline.
	Tracking measure:	Number of Kentucky Success stories on EPA webpage.	X	X	X	X	X	EPA has posted seven (7) Nonpoint Source Success Stories on their web page. The 2019 NPS Success Story was accepted by EPA in Nov. 2019 and will be posted to the EPA page.
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 (QAPPs) 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 2019, 1 QAPP was under development: Paint Lick.
	Tracking measure:	Number of data packages reviewed.	X	X	X	X	X	DOW Quality Assurance Staff and Water Quality biologists did not approve any data packages in FFY 2019. However, they did receive data from one project: West Hickman.

Objective 3:	Provide technical assistance and support to the division regarding watershed impacts and the watershed perspective.							
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	Information from the current Nonpoint Source Management Plan was used in the construction of KY's Nutrient Reduction Strategy draft. DOW's Nonpoint Source Program will be directly involved in the implementation and reporting components of the Nutrient Reduction Strategy.
	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 Water Health Guide serve as the primary resources to communicate the information previously contained within the Basin Status Reports. In FFY 2019, NPS personnel also collaborated with Watershed Watch in Kentucky to develop and produce Basin Report Cards based on volunteer data for all of the major Basin Units in the Commonwealth. 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 next IR will be released in 2020.

FFY 2019 KY Nonpoint Source Program Commitments to EPA Region 4 (From the annual work plan):

General Program Management & Oversight	
Provide Administrative, Financial, and Technical oversight for FFY 2019 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 2019 is complete.
Submit 2015 Grant closeout package to EPA R4.	The 2015 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.

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.
National Water Quality Initiative	
Continue to support the Hinkston Creek Watershed Coordinator that will work toward increased implementation of the Hinkston Creek Watershed Plan.	A Hinkston Creek Watershed Coordinator position is being funded through the FFY 2016 sub-grantee project with Bluegrass Greensource (BGGS). Bluegrass Greensource applied for and was awarded a FFY 2019 grant to continue employment of the watershed coordinator and expand implementation of septic and riparian restoration efforts in the watershed. See project workplan for more information.
Work with KY NRCS on NWQI Pilot Project in “TBD” watershed.	Kentucky NRCS momentum on NWQI slowed in FFY 2019 with limited response to efforts to implement agricultural BMPs in the Hinkston Creek Watershed, and an internal shift in KY NRCS towards a new model of implementation in watersheds. Division of Water provided support and recommendations, but new pilot programs were started in 2019. In FFY 2020 KY NRCS will be rolling out Focused Conservation Projects to protect water quality as an alternative to NWQI.

Watershed Success Monitoring Program	
Continue development of Success Monitoring Program by compiling watershed scale implementation data.	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 Conservations Agriculture Water Quality State Cost Share Program. In FFY 2019, all known data was incorporated into a BMP tracking spreadsheet and GIS layer which is being used to evaluate implementation on a watershed scale.
Conduct baseline water quality monitoring prior to watershed plan development	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 2019, Kentucky Division of Water Biologists monitored water quality parameters in West Hickman Creek, Paintlick Creek, and Middle Fork Beargrass Creek as part of a collaborative effort to develop watershed plans. Division personnel also collaborated with volunteer monitoring groups to gather screening data on several streams in the Clarks Run watershed in preparation for potential watershed planning activities.

Conduct watershed success monitoring for watershed plan implementation projects.	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.
Grant Reporting and Tracking System	
Enter FFY 2018 Load Reductions into GRTS.	FFY 2018 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 February 15, 2018 deadline along with specific BMP description information.
Attend National GRTS Conference.	DOW was not able to send staff to this training event in 2019.
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 2019 Sub-grantee projects into GRTS.	Final FFY 2019 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 2019 Nonpoint Source Program Workplan was submitted to EPA Region 4 prior to the September 30, 2019 deadline
Submit Annual Report to EPA R4.	Kentucky's Nonpoint Source Program Annual Report was submitted to EPA region 4 by the December 31, 2019 deadline.

Submit WQ-10 Nonpoint Source Success Story to EPA R4.	Kentucky's WQ-10 Nonpoint Source Success Story for Stoner Creek in the Licking River Basin was submitted to EPA R4 in August 2019. 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, 2019 deadline.
Submit Watershed Plans to EPA R4 for review and comment.	Two (2) watershed plans were submitted to EPA Region 4 for review or comment during FFY 2019 (South Fork Little River and Damon Creek).

2019 KY NPS Management Plan Goals, Objectives, 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.

Copies of this publication are available for use through the KDOW NPS website:
eec.ky.gov/Environmental-Protection/Water/Pages/default.aspx

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