NONPOINT SOURCE SUCCESS STORY

Kentucky

Triplett Creek Benefits from Decades of Watershed Planning and Stormwater Investment

Waterbody Protected

The Kentucky Division of Water (DOW) added an approximately 6-mile segment of Triplett Creek (miles 5.9–12.4) to the 2004 Clean Water Act (CWA) Section 303(d) List of Impaired Waters/Integrated Report as impaired (non-support) for siltation, nutrients and organic enrichment in 2001. Following significant Section 319 Program investment in the watershed to fund streambank stabilization, wetland creation, rain garden installation, and agricultural conservation practices, water quality collected in 2019 and 2020 indicated the segment meets water quality criteria for nutrients and organic enrichment. In 2022, Kentucky DOW delisted this stream segment for nutrients and organic enrichment.

Water Quality Challenge

Triplett Creek drains into the Licking River in northeast Kentucky (Figure 1). Triplett Creek is approximately 23 miles long and drains an 83.4-square-mile watershed dominated by forestland and growing development around the City of Morehead in Rowan County. Biological sampling data of Triplett Creek in 1999 indicated the stream only partially supported its aquatic life designation. While not part of the listing methodology, water quality modeling collected as part of the Triplett Creek Watershed-Based Plan in 2013 also suggested a need for ammonia reductions, with five samples on Triplett Creek exceeding the water quality criteria of 0.05 milligrams per liter (mg/L).

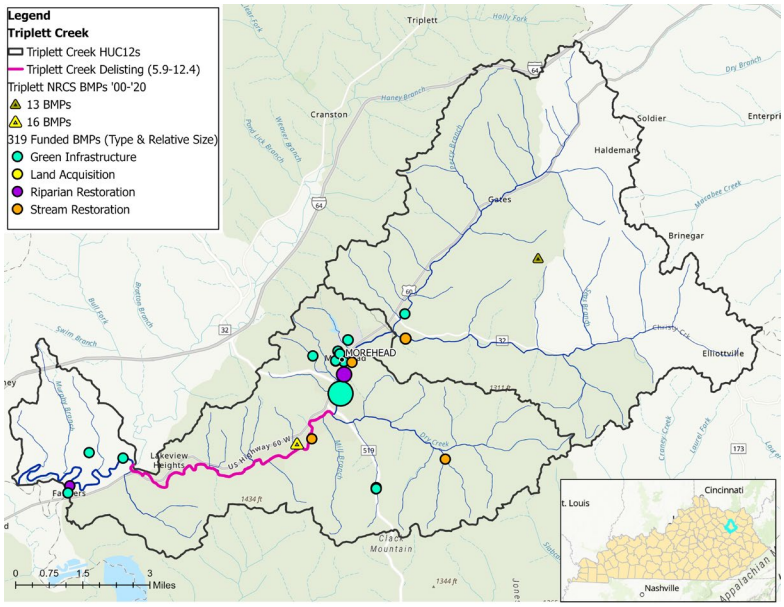

Figure 1. The Triplett Creek watershed in northeastern Kentucky.

Project Highlights

In 2002, the City of Morehead and surrounding areas experienced severe flooding. This led to engagement between concerned citizens and the City of Morehead to identify proactive solutions. Subsequently, Morehead formed the Triplett Creek Committee, consisting of Rowan County concerned citizens, the Rowan County Solid Waste and Floodplain Coordinator, the U.S. Forest Service, Kentucky Department of Fish and Wildlife Resources, the U.S. Department of Agriculture's Natural Resources Conservation Service, and Kentucky DOW. In 2008, Morehead State University received a $658,617 grant to develop the Triplett Creek Watershed-Based

Plan. This grant also funded adding 520 feet of streambank stabilization on Dry Creek, creating eight ephemeral wetlands and two stormwater wetlands on the main stem of Triplett Creek, building seven rain gardens, and acquiring 11 acres to protect riparian habitat.

The Triplett Creek Watershed-Based Plan was released in October 2013 and highlighted the need for additional investment in riparian stabilization, stormwater management and livestock management. In 2013, a $376,893 grant was awarded to Morehead State University to install additional best management practices outlined in the watershed plan. Watershed plan investments resulted in the development of Boone Hollan Wetland and Nature Park, which boasts 6 acres of wetlands, native plants and walking paths (see Figure 2).

The grantee and partners also restored 900 feet of streambank along Triplett Creek, planted nearly 7 acres of native seeds, installed 15,775 square feet of cattle high-use areas, planted over 400 trees and retrofitted a detention basin (see Figure 3). Efforts to update stormwater ordinances saw progress in 2015 with the approval of new ordinances. In addition to this work, the City of Morehead and Gateway Area Development District are planning for a series of off-channel basins (aka “Green Sinks”) that will help mitigate the recurring flooding in Morehead, capture significant amounts of stormwater runoff from the City of Morehead, and create a new public greenspace/trail system along Triplett Creek.

Figure 2. Green infrastructure wetlands installed in the watershed.

Best Management Practice	Number Installed	Units
Vegetative Buffer Strips	7200	SQUARE FEET
Wetland Creation	2.75	AC
Raingarden/ bioretention basin	0.1	AC
Raingarden/ bioretention basin	120	FT
Wetland Acquisition-protection	2	AC
Dredging	280	FT
Animal Trails and Walkways	15375	SQUARE FEET
Channel Bank Vegetation	8	AC
Invasive Species/Noxious Weed Control	6000	SQUARE FEET
Restoration And Management of Declining Habitats	9	AC
Recreation Area Improvement	180	SQUARE FEET
Riparian Herbaceous Cover	0.4	AC
Streambank & Shoreline Protection	655	FT
Ext Detention Pond	0.1	AC
Cistern	66	<>
Native Plant Community Restoration and Management	3.5	AC
Native Plant Community Restoration and Management	6000	SQUARE FEET
Tree/Shrub Establishment	1	AC
Stream Channel Stabilization	490	FT

Results

Following substantial watershed planning, riparian restoration and stormwater installations, new data demonstrate that the Triplett Creek segment from miles 5.9 to 12.4 is meeting water quality criteria for nutrients and organic enrichment. In 2019 and 2020, DOW monitoring results were compared against water quality indicators for eutrophication and organic enrichment; these data revealed no impairments for nutrients or organic enrichment. No exceedances of Kentucky's water quality standard for un-ionized ammonia (0.05 mg/L) were recorded in the 12 samples taken at DOW site LRW007 in 2019 and 2020. As a result, Triplett Creek (miles 5.9–12.4) now meets its warmwater aquatic designated use for eutrophication and organic enrichment, which were delisted with the 2022 Integrated Report to Congress.

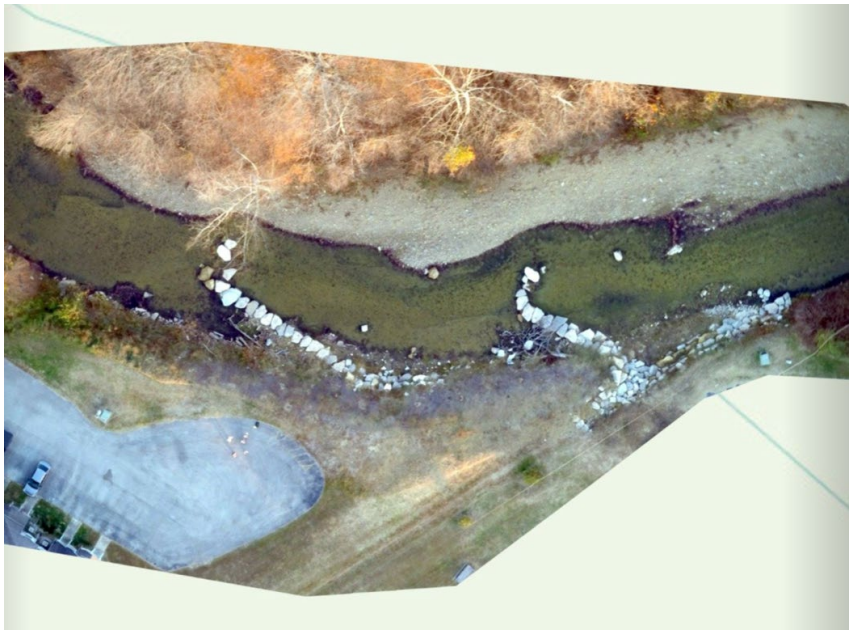

Figure 3. Triplett Creek riparian restoration

Partners and Funding

Partner Type	Agency	Funding	Notes
Federal	FOREST SERVICE	-	
Federal	USDA-NRCS	-	
Federal	Clean Water Act Section 319 Program	-	
State	Kentucky Department of Fish and Wildlife Resources	-	
State	Northern Kentucky Health Department	-	319 funds
City	City of Morehead	$60,215	Matching funding.
County	Rowan County	-	
University/College	Morehead State University	$190,072	Matching funding.

U.S. Environmental Protection Agency
Office of Water
Washington, DC

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