



NONPOINT SOURCE SUCCESS STORY

Virginia

Implementing a Water Quality Improvement Plan Restored Turpin Creek in the Slate River Basin

Waterbody Improved

Turpin Creek was listed in 2008 as impaired on Virginia's Clean Water Act (CWA) section 303(d) list of impaired waters. The impairments were due to not attaining the Commonwealth's *Escherichia coli* (*E. coli*) bacteria water quality standards (WQS) for designated recreation (swimming) use. A total maximum daily load (TMDL) study identified livestock, failing septic systems, pets, and wildlife as primary pollutant sources. The best management practices (BMPs) installed under a water quality improvement plan led to improved water quality of Turpin Creek. As a result, Turpin Creek was removed from the impaired waters list in Virginia's 2018 CWA section 305(b)/303(d) Water Quality Assessment Integrated Report (Integrated Report).

Problem

Turpin Creek (HUC 020802031401) is a part of the Slate River watershed in Buckingham County, Virginia (Figure 1). The Slate River watershed consists of approximately 156,940 acres and is comprised of forest (87%), pasture/cropland (10%), water/wetland (2%), and residential (1%) land uses.

Virginia's Department of Environmental Quality (DEQ) listed the 7.31-mile Turpin Creek from its headwaters to its mouth on the Slate River as impaired for recreation (swimming) use in 2008 due to *E. coli* exceedances at monitoring station 2-TPN003.59 (H22R-03-BAC).

The WQS requires that samples not exceed 235 colony-forming units (cfu) per 100 milliliters (mL) of water for more than 10% of the time, based on a minimum of 12 samples collected monthly or bimonthly. Four of the 12 samples (33%) measured for the 2005–2010 for the 2012 assessment cycle exceeded the limit. More samples were collected from 2013–2018, leading to the delisting. The creek is within the study area for the James River (Slate River) Watershed Bacteria TMDL, which was approved by EPA on 9/20/2007 and by the State Water Control Board on 7/31/2008.

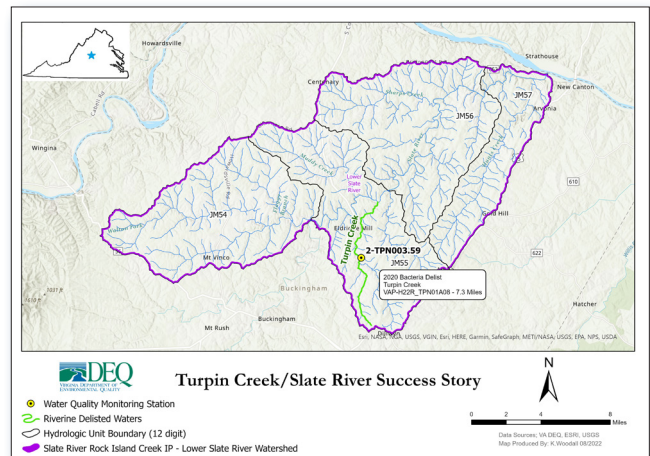


Figure 1. Turpin Creek is in central Virginia.

Story Highlights

DEQ, in coordination with other state agencies, developed a TMDL implementation plan in 2010 and quantified various control measures required to attain water quality goals. BMPs along Turpin Creek have been implemented since 2013, with joint efforts among Virginia's Department of Conservation and Recreation, the Piedmont Soil and Water Conservation District (PSWCD), other local and government agencies, and stakeholders.



Figure 2. An animal waste/mortality facility installed along Turpin Creek.

From 2013 to 2020, agricultural and several septic BMPs were installed along Turpin Creek, including 60 residential septic projects; 21,471 linear feet of livestock stream-exclusion fencing; and 472 acres of stream-exclusion practices that added a buffer of 345 feet. Stream protection practices resulted in almost 1,400 cattle being excluded to protect water quality. Additional BMPs focused on reducing animal waste entering the waterway at animal waste control facilities (Figure 2).

PSWCD held workshops, presented information at many community events, distributed information through all types of media and collaborated with many partners to provide information about the septic pump-out program and proper septic maintenance. This outreach includes brochures provided throughout the watershed. PSWCD also worked closely with the Prince Edward County Health Department to conduct outreach on septic practices in the watershed. The efforts resulted in a significant improvement in water quality of Turpin Creek, which is [contributing to improved water quality in the overall Slate River watershed.](#)

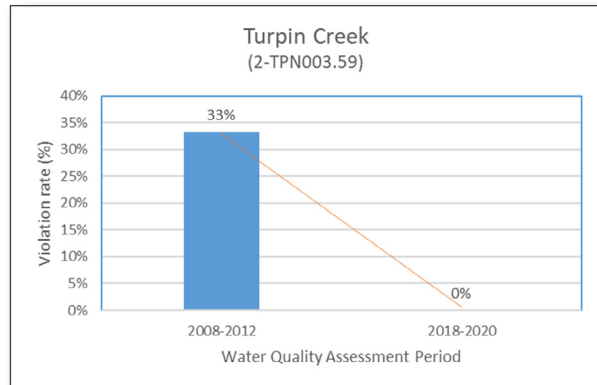


Figure 3. *E. coli* violation rates (exceeding 235 cfu/100ml standard) in Turpin Creek have dropped.

Results

Installing the above-listed BMPs resulted in water quality improvements, which were reflected in decreased bacteria exceedances. Zero out of the 13 samples collected in 2013–2018 during the 2020 assessment cycle showed an exceedance; therefore, the stream was delisted (Figure 3). Turpin Creek now meets its designated recreational use. Monitoring has continued since 2018 at site 2-TPN003.59 to ensure its attainment of the standard.

Partners

The water quality improvements in Turpin Creek were a result of the combined efforts of the PFSWCD, Virginia DEQ, Virginia Department of Conservation and Recreation, and local stakeholders. The PSWCD organized community outreach and administered BMP implementation projects. State-funded PSWCD staff work with stakeholders and landowners in the project area. CWA section 319 funded DEQ staff support for funding management and assistance to PSWCD. Overall, over \$700,000 was spent on BMPs in the watershed, with over \$600,000 in cost-share provided (including over \$300,000 in CWA section 319 funding) and the remaining coming from the Virginia Agricultural Best Management Practices Cost-Share Program.



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For additional information contact:

Deanna Fehrer
PSWCD
dfehrer@piedmontswcd.org

Justin Williams
Virginia DEQ
Justin.Williams@deq.virginia.gov