



NONPOINT SOURCE SUCCESS STORY

Virginia

Installing Best Management Practices Improves Water Quality in Spring Creek

Waterbody Improved

Spring Creek was listed in 1998 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 resulted in improved water quality of Spring Creek. As a result, the Virginia Department of Environmental Quality (DEQ) removed Spring Creek from the 2020 CWA section 303(d) impaired waters list.

Problem

Spring Creek is part of the James River basin (U.S. Geological Survey Hydrologic Unit Code 02080207) and the Appomattox River basin (Figure 1). The Spring Creek portion is a 5.47-mile segment in south-central Virginia's Prince Edward County that was added to the CWA 303(d) list of impaired waters in 1998 for not meeting its designated recreational (swimming) use. Water quality samples were collected under DEQ's ambient water quality monitoring program. Data at the monitoring site 2-SPA001.46 showed an exceedance rate of two out of 12 (16.7%) during the 2016 assessment cycle and two out of 17 (12%) in the 2018 assessment cycle. When originally listed in 1998, the violation rate was 11%, which exceeded the no greater than 10% exceedances water quality standard for *E. coli* bacteria.

The total watershed consists of approximately 137,100 acres; Spring Creek comprises 22,000 acres, with woodland as the primary land use (14,327 acres, or 68% of the total), followed by pasture land (5,168 acres, or 21% of the total). Other land uses include barren land (4%), wetlands (3%), croplands (3%), and residential and commercial land (1%).

In 2004, DEQ developed a TMDL for the Appomattox River watershed. The 2004 TMDL identified the primary sources of the bacteria impairment as livestock, pets, failing septic systems, and wildlife. In 2008, the Virginia Department of Conservation and Recreation

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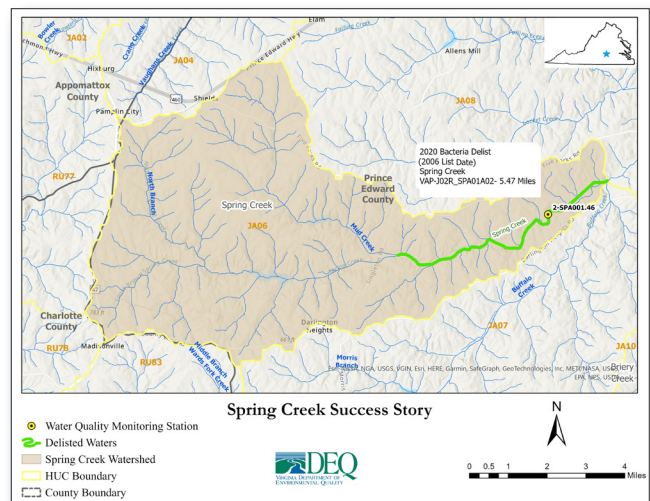


Figure 1. Spring Creek is in south-central Virginia.

(DCR) developed an implementation plan for bacteria with inputs from federal, state, and local government agencies; the Piedmont Soil and Water Conservation District (PSWCD); and various watershed stakeholders.

Story Highlights

DEQ, in coordination with other state agencies, developed a TMDL implementation plan in 2008 and quantified various control measures required to attain water quality goals. BMPs in the Spring Creek watershed have been implemented since 2008, with joint efforts among Virginia DCR, the PSWCD other local and government agencies, and stakeholders.

From 2008 to 2020, several agricultural and septic BMPs were installed along Spring Creek, including six residential septic projects; over 31,000 linear feet of livestock stream exclusion fencing; and 164 acres of riparian buffer. PSWCD held workshops, presented information at many community events, distributed information through all types of media and utilized many partners to provide information about the septic pump-out program and proper septic maintenance. This outreach includes brochures provided throughout the watershed (Figure 2).

Results

Installing the above-listed BMPs resulted in water quality improvement as shown by the decreased bacteria exceedances in Spring Creek. Twenty-nine water quality samples collected in 2013–2018 for the 2020 assessment period at monitoring station 2-SPA001.46 showed only three exceedances of the *E. coli* standards. Exceedances were less than 10% of collected bacteria samples, resulting in full support of the designated recreation use (Figure 3). Due to these improvements, Spring Creek was delisted from Virginia’s 2020 Integrated Report.

Partners and Funding

The water quality improvements in Spring Creek were a result of the combined efforts of the PSWCD, Virginia DEQ, Virginia DCR, 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. Cost-share programs invested over \$300,000 in BMPs in the area, including \$181,000 by the Conservation Reserve Enhancement Program and over \$5,000 by CWA section 319 funding for septic pump-outs and repairs.

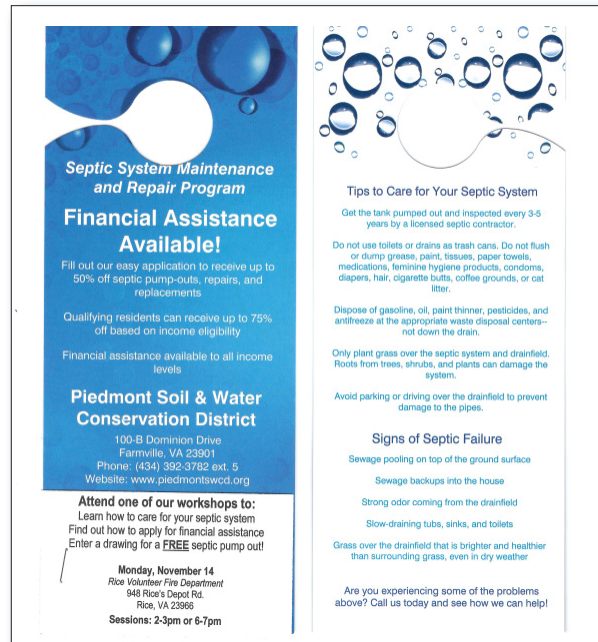


Figure 2. PSWCD issued a septic-focused hangtag.

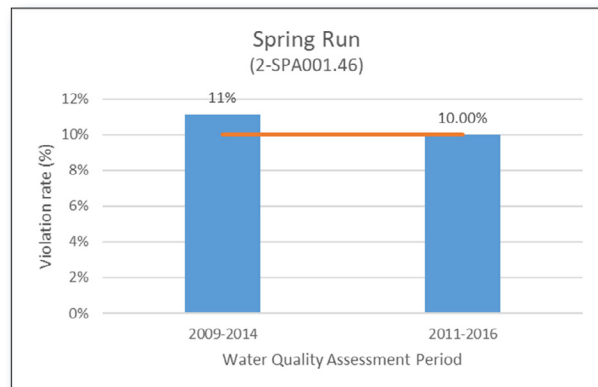


Figure 3. The *E. coli* exceedance rate has declined.



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For additional information contact:

Deanna Fehrer
 PSWCD
dfeherrer@piedmontswcd.org

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