319H TMDL Implementation Project Report

SMITH CREEK

Virginia Nonpoint Source
MANAGEMENT PROGRAM

Project Location and Background

The Smith Creek watershed is located in the Potomac River Basin in Shenandoah and Rockingham counties, with a small portion of the headwaters located in the City of Harrisonburg, Virginia. The watershed is approximately 67,900 acres in size and land use is predominantly forest and agricultural. Smith Creek was listed as impaired on Virginia's Section 303(d) Total Maximum Daily Load Priority List due to violations of the State's Water Quality Standards for fecal coliform bacteria and violations of the General Standard (benthic). The Smith Creek TMDLs were completed in April 2004. A stressor analysis was performed during development of the benthic TMDL, and sediment was identified as the primary stressor causing the aquatic life use impairment in Smith Creek. A TMDL implementation plan was completed for Smith Creek in February 2009. Shortly after completion of the implementation plan, Smith Creek was designated as a Showcase Watershed by NRCS.

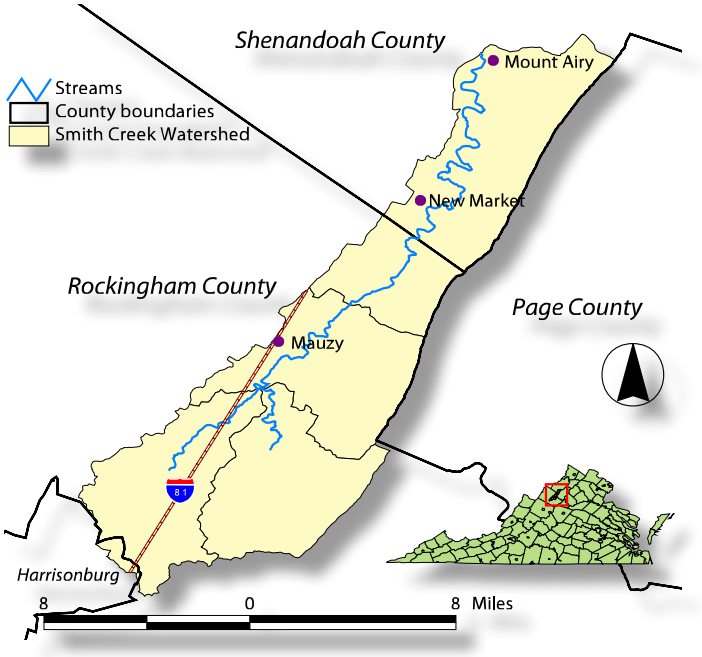


Table 1. Smith Creek BMP Summary: January 2012 – June 2015

Control measure	Units	Need	Instal.	%
Agricultural				
Livestock exclusion fencing	F	913,150	37,953	4
Riparian buffers	A	436	32	7
Pasture management	A	20,235	103	<1
Manure storage facility	S	8	5	63
Urban/Residential				
Pet waste program	P	1	1	100
Vegetated buffer	A	44	0	-
Rain gardens	A	109	0	-
Bioretention	A	45	102	227
Residential septic				
Septic tank pumpout	S	1,108	184	17
Connection to sewer	S	7	0	-
Septic system repair	S	8	19	238
Septic system installation	S	19	4	21
Alternative waste sewage system	S	70	3	4

NOTE: BMP counts only include 319 funded projects and BMPs funded by the VA Agricultural Cost Share and Conservation Resrce Enhancement Programs; A = Acres, S = System, F = Feet

Implementation Highlights

The Smith Creek TMDL implementation project is administered by the Shenandoah Valley Soil and Water Conservation District (SVSWCD). Table 1 shows BMPs implemented in the watersheds since the project began in January 2012 and overall implementation goals.

The residential septic program has been very successful since its inception. As a result, the grant contract was extended in 2014 to allow for completion of additional residential septic BMPs and a large stormwater BMP. This project includes a series of bioretention filters and wetland treatment cells receiving and treating stormwater runoff from a drainage area of 102 acres. This project was completed in partnership with the Center for Watershed Protection. Between July 2014 and June 2015, 83 septic tank pumpouts and seven septic system repairs were completed. In addition, three failing septic systems were replaced including one alternative waste treatment system. Three manure storage facilities were installed between July 2014 and June 2015, along with 4,805 linear feet of livestock stream exclusion fencing. In addition, 30 acres of cover crops and 720 linear feet of streambank stabilization were completed. Pollution reductions resulting from these BMP installations are summarized in the table below. In addition, the Showcase Watershed Designa-

tion has made technical assistance with program outreach available including articles in newsletters distributed to watershed landowners and other promotional materials. The Showcase Watershed Designation has resulted in considerable targeting of resources to encourage agricultural BMP implementation, some of this work is captured in the report. Since this project began, over 37,000 feet of livestock exclusion fencing has been installed in the watershed through CREP and the VACS Program. This total does not include additional fencing that was installed through Federal EQIP practices. In addition, five manure storage facilities have been installed, and 103 acres of improved pasture management.

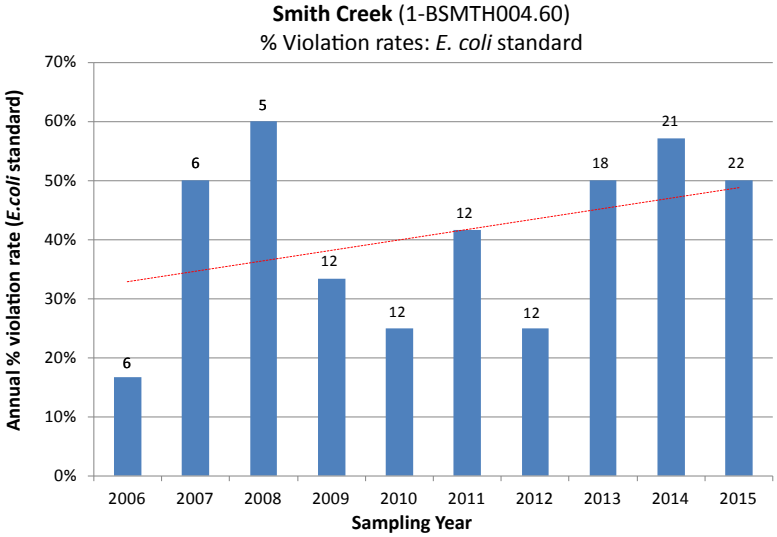
Pollution Reductions

Pollution reductions for bacteria, nitrogen, phosphorus and sediment for BMPs installed during the project period are summarized in Table 2.

Table 2. Pollution Reductions for Smith Creek: January 2012 - June 2015

Period	Pathogens: coliform (cfu/100mL)	Nitrogen (lbs/yr)	Phosphorous (lbs/yr)	Sedimentation-Siltation (T/yr)
July 2014-June 2015	8.42E+14	13,092	3,299	2,321
January 2012 -June 2015	2.72E+15	23,825	5,800	4,174

Water Quality Monitoring Results



Water quality data collected by VADEQ from 2006 through 2015 was analyzed to determine the impact of BMPs implemented in the project area on *E. coli* violation rates and associated long term trends.

The bar graph above shows the percent violation rate for samples collected annually at monitoring station 1BSMT004.60 near the mouth of Smith Creek that did not meet the water quality standard of 235 cfu/100 mL. The number of samples collected each year is shown above each bar. The linear regression fitted to the data shows an increasing trend in violation rates over the sampling period, indicating a lack of improvement in water quality in the greater Smith Creek watershed.

This Virginia Nonpoint Source Management Program is managed by Virginia Department of Environmental Quality and is funded, in part, through grants from the U.S. Environmental Protection Agency, under the Clean Water Act Section 319.

For more information regarding Virginia's Nonpoint Source Management Program, please visit us on the web at: http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/NonpointSourcePollutionManagement.aspx

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