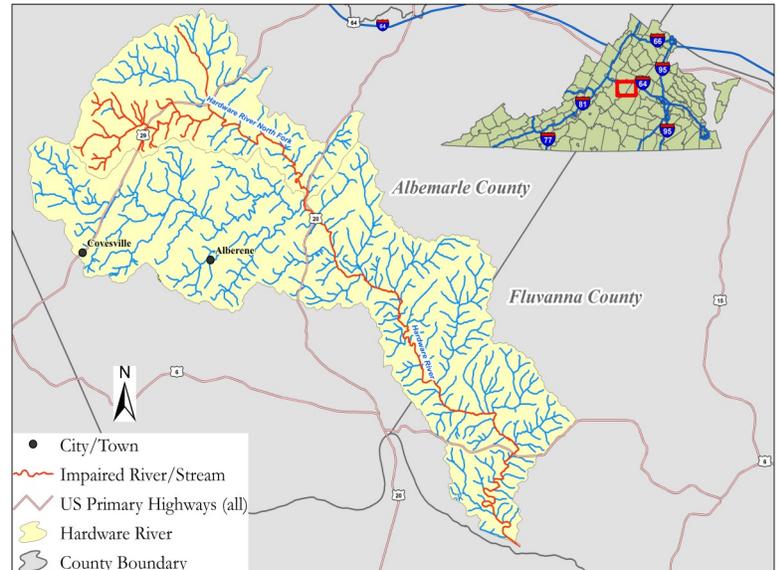


Project Location and Background

The Hardware River implementation watershed is located in the James River Basin in Albemarle and Fluvanna Counties, Virginia. The Hardware River watershed is approximately 65,632 acres in size, while the North Fork Hardware River encompasses 22,457 acres. Land use in both watersheds is predominantly forested (76.8%), and agricultural (69.4%), respectively. Hardware River was listed as impaired on Virginia’s 2002 Section 303(d) Total Maximum Daily Load (TMDL) Priority List and Report due to violations of the state’s water quality standards for fecal coliform bacteria; the North Fork Hardware River was added in 2006. The Hardware River TMDL was completed in July 2007 and revised in October 2015 to address several modeling errors discovered in the original TMDL. A TMDL implementation plan was completed in November 2015, and the 319-funded implementation project started in September 2016; however, state agricultural cost-share programs started as of January 2016.



Implementation Highlights

The Hardware River TMDL implementation project is administered by the Thomas Jefferson Soil and Water Conservation District (TJSWCD). TJSWCD’s grant award is focused on agricultural and residential septic BMP implementation.

Table 1 shows BMPs implemented since 2016 and overall implementation goals for the project area. As of June 2019, nineteen fencing practices have been installed to exclude livestock from nearly 20 miles of stream. The project has also installed over 100 acres of riparian buffers, which is 85% of the implementation goal. The residential septic implementation program started slowly, but interest and participation have increased significantly. In addition to septic system pump-outs, failing and improperly functioning septic systems have also been addressed with six system repairs and six new systems installed.

(continued on page 2)

Table 1: Hardware River BMP Summary : January 2016 —June 2019

Control Measure	Units	Goal	Installed	%
Agricultural				
Stream Exclusion Fencing	F	90,077	104,666	116
Stream Exclusion Fencing	S	31	19	61
Reforestation of Pasture	A	239	0	0
Improved Pasture Management	A	7,463	0	0
Grazing Land Management	A	1,317	1,092	83
Permanent Veg. on Critical Areas	A	52	0	0
Cover Crops	A	51	458	898
Riparian Buffers	A	124	106	85
Residential Septic				
Septic Tank Pump-out	S	468	51	11
Septic System Repair	S	95	6	6
Septic System Installation	S	234	6	3
Alternative Waste Treatment System	S	176	0	0

A = Acres, F = Linear Feet, S = System; **Note:** BMP counts only include 319-funded and state VACS. NRCS EQIP funded practices are not included.

Implementation Highlights— Continued

To generate interest and participation in the program, TJSWCD staff have hosted events, made presentations about the program, distributed flyers and newsletters, and mailed over 5,000 postcards to landowners in the watershed. The TJSWCD has worked with a number of partner agencies and organizations to promote and implement both the agricultural and residential septic programs. Bacteria reductions resulting from agricultural and residential septic BMP installations are summarized in Table 2 below.

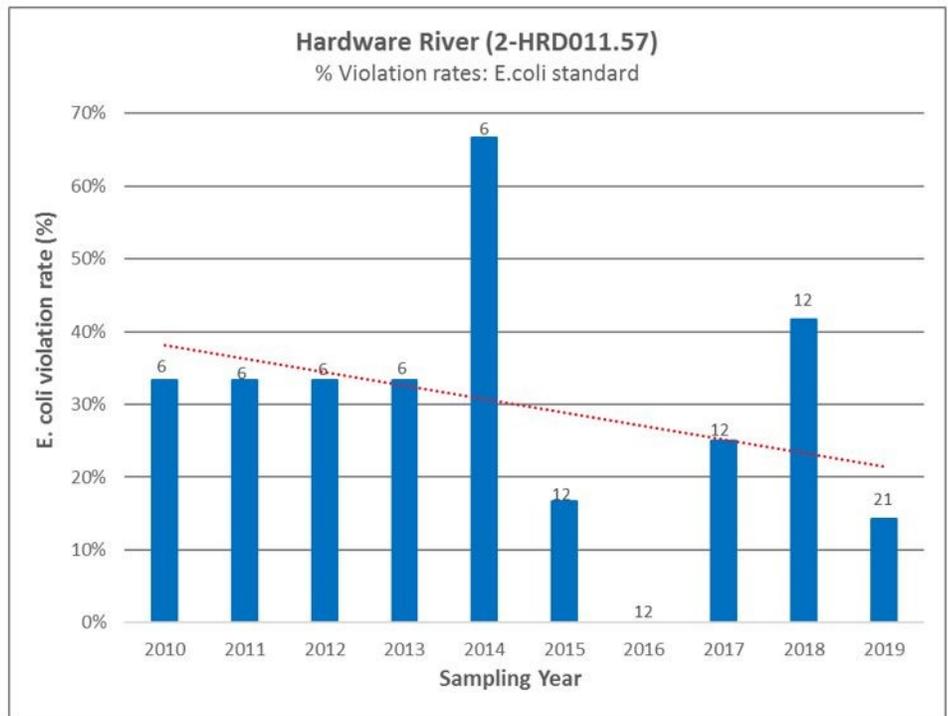
Period	Pathogens (Coliform) (CFU)
July 2016—June 2019	2.19E+15

Table 2: Pollution Reductions for Hardware River Watershed

Water Quality Monitoring Results

Water quality data collected by DEQ for the period of 2010 through 2019 were analyzed to determine the impact of BMPs implemented in the project area on *E. coli* violation rates and associated long-term trends, if any, in water quality. The bar graph at right shows the percent violation rate for samples collected annually at monitoring station 2-HRD011.57, which 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 a potentially decreasing trend in violation rates over the sampling period, indicating possible water quality improvements in the Hardware River.

It should be noted that monitoring frequency increased in 2015 and again in 2019. Monitoring over a longer period of time with consistent trends is needed to corroborate water quality changes.



Graph 1: E. coli data for Hardware River (Station 2-HRD011.57), 2010-2019

For More Information Please Contact:

Sara Bottenfield, DEQ TMDL NPS Coordinator,
Sara.Bottenfield@DEQ.Virginia.gov, (540) 574-7800

Anne Coates, TJSWCD District Manager
anne.coates@tjswcd.org, 434-975-0224, Ext. 100

