



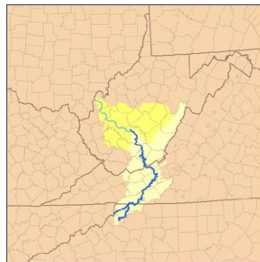
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
1200 Pennsylvania Avenue NW
Washington, D.C. 20004

February 11, 2020

ATTENTION: Virginia Tech Students

Dear STEM Students,

The U.S. Environmental Protection Agency's highest priority is to protect public health and the environment by implementing national efforts to reduce environmental risks based on the best available scientific information. This is a notice to inform you that the water quality of Stroubles Creek in Blacksburg, Virginia is below the national standards of water quality. The Stroubles Creek watershed includes the New River, which flows through Virginia, West Virginia, and North Carolina. Poor water quality has adverse effects on ecosystems, which can pose threats to the communities in all these areas.



Turbidity is a measure of the relative clarity of a liquid, and it serves as an indicator of water quality. Suspended particles, such as soil and clay can enter water from disturbed sites and affect water quality. When a body of water becomes highly turbid, light penetration and ecological productivity are affected, which poses threats to aquatic habitats and recreational activities. This is a key factor of Stroubles Creek that you will investigate.

The EPA requires your team's expertise to design a model of a filter to improve the quality of the water that flows from Stroubles Creek. The filter must be composed of mainly naturally occurring materials and demonstrate a decrease in water turbidity after filtration. Members of the EPA look forward to reviewing your design in order to protect the environment and to preserve the habitat of Stroubles Creek.

Sincerely,

The U.S. Environmental Protection Agency

Stroubles Creek



Site 1: Site 1 is the farthest from the Duck Pond. Located close to Thomas M. Murray Structures Lab, this site of the stream has a slope of $-\frac{1}{4}$.

Site 2: Site 2 is farther along Stroubles Creek, located around some farmland. The slope of the stream at this location is $-\frac{2}{3}$.

Site 3: Site 3 is closest to the Duck Pond. Located within Smithfield Plantation, this location on Stroubles Creek has a slope of $-\frac{5}{6}$.