



Agricultural Work Group Bulletin- November 2013

Crab Creek Water Quality Improvement Plan, Montgomery County, VA

The Commonwealth of Virginia is currently working on an effort to improve water quality in Crab Creek. The awareness and engagement of the agricultural community is essential for achieving water quality improvements in this watershed due to the substantial amount of agricultural land present. The Virginia Department of Environmental Quality is requesting input from the agricultural community on the development of a plan that can be used to improve water quality through the implementation of voluntary agricultural management practices.

The Benefits of Producing Cleaner Water from Agricultural Lands

Benefits to Communities:

- Lower risk of people becoming sick as a result of swimming in streams
- Lower treatment costs for drinking water supplies
- Healthier populations of desirable aquatic life such as aquatic insects and sport fish

Benefits to Agricultural Producers:

- Management practices that improve water quality also help keep essential raw materials (soil, water, nutrients, and organic matter) on the farm rather than exporting them off the farm in water run-off. This results in greater soil fertility and greater vegetation productivity which can translate into reduced feed and fertilizer bills, increased crop and forage production, and greater profitability.
- Cleaner water indicates decreased exposure of livestock to waterborne disease. Improved herd health will lower veterinarian bills and result in higher animal weight gains.
- Cleaner water results in greater public appreciation and support of soil and water conservation efforts by farmers.

Example of soil and water conservation practice installation in the Middle Fork Holston River watershed near Glade Spring, VA. Photos courtesy of the Holston River Soil and Water Conservation District



Before: soil erosion occurred at an accelerated rate and the sparse vegetation had little ability to filter sediment and fecal bacteria from run-off.



After: soil erosion has been reduced and improved streamside vegetation substantially reduces fecal bacteria and sediment inputs to the stream.



Current Water Quality Conditions in the Crab Creek Watershed

The Commonwealth of Virginia has identified elevated levels of fecal bacteria (*E. coli*) and sediment accumulation as impairments to the water quality in the Crab Creek watershed.

Fecal bacteria - Monitoring by the Virginia Department of Environmental Quality (DEQ) has shown that *E. coli* levels in Crab Creek commonly exceed water quality standards intended to protect the health of humans who have direct contact with stream water through activities such as swimming, wading, fishing and kayaking.

Bacteria in livestock manure deposited directly into streams or washed into streams by rain and snowmelt accounts for 99% of the total *E. coli* load being delivered into Crab Creek¹. All other sources combined (e.g. septic systems, straight pipes, wildlife) account for about 1% of the total load¹.

In general, the most effective ways to reduce fecal bacteria in streams originating from livestock manure are to:

- 1) prevent livestock from having uncontrolled access to streams, which reduces the amount of fecal matter deposited into streams
- 2) increase vegetative cover along stream banks, which filters more bacteria from upland run-off (and reduces soil erosion)
- 3) improve the health of soils and vegetation on upland pasture, which increases the amount of water that is filtered through the soil and decreases the amount of water flowing over the land surface, washing manure into streams.

¹As estimated by VA DEQ in the Crab Creek TMDL study from 2004.

Sediment - Crab Creek does not meet Virginia's general standard for water quality, due to an excessive accumulation of sand, silt, and clay on the streambed. These stressors impact the health of the aquatic community, specifically the benthic macroinvertebrates, which can be monitored to assess the overall ecological integrity of a watershed.

Sedimentation in streams is a continual process often accelerated by human activity. During runoff events, sediment is transported to streams from pervious land areas such as fields. Agricultural management activities such as overgrazing, high tillage operations, livestock concentrations (along the stream edge, with uncontrolled stream access, etc.), forest harvesting, and construction all tend to accelerate erosion

Sediment reductions can be achieved in part through the implementation of agricultural best management practices including riparian buffers, livestock exclusion from streams, and improved pasture management.



This riverbank along the Middle Fork Holston River is being reforested to help protect water quality. The project was completed through the Virginia Conservation Reserve Enhancement Program (CREP).

Photo Courtesy of the Holston River Soil and Water Conservation District



How Can the Agricultural Community Become Involved in the Crab Creek Water Quality Improvement Planning Process?

The Commonwealth of Virginia has an established process for developing water quality improvement plans. The plans are based on a pollution budget that has been established by Virginia DEQ. The development of a water quality improvement plan for the Crab Creek watershed will provide a flexible “roadmap” for improving water quality through voluntary actions. The completion of the plan makes additional funding available for projects that will benefit both water quality and agricultural operations in the affected watersheds.

The water quality improvement planning process provides a forum for addressing issues, ideas, and concerns related to land use and water quality. Participation by the agricultural community in the development of a water quality improvement plan for Crab Creek will help to ensure that the implementation of the plan is achievable.

Individuals may participate in one or more of the following ways:

- Participating on the agricultural work group (described below)
- Serving on the steering committee which will review recommendations by the agricultural, residential, and government work groups
- Providing comments on the draft plan during the public comment period
- Informing members of the agricultural community about opportunities to improve water quality

The Role of the Agricultural Work Group (AWG)

AWG's typically consist of farmers, landowners, local citizen organizations, and local, state and federal agency representatives. The AWG will address the sources of bacteria that can be attributed to agricultural operations.

The AWG will:

- Identify constraints to the implementation of best management practices
- Consider alternative best management practices that are both effective and affordable for the participants
- Identify alternative funding sources/partnerships that will promote implementation
- Identify appropriate measurable objectives (e.g. 50% of stream fencing installed within 10 years, fecal bacteria reduced by 75% in 10 years)
- Identify a timeline for achieving implementation goals
- Review implementation strategies from an agricultural perspective

If you have questions, please contact Patrick Lizon, Virginia Department of Environmental Quality by phone at (276) 676-4803 or by email at patrick.lizon@deq.virginia.gov.