

Woods Creek TMDL

Fifth Technical Advisory Committee meeting

March 16, 2017 at 2pm

Attendees: Phyllis Fevrier (RACC), Dave Agnor, Mike Kennedy and Jeff Martone and Thomas Wagner (Lexington), Steve Richards, Morris Trimmer and Kip Brooks (NBSWCD and W&L), Elise Sheffield (Boxerwood), Paul Low (W&L), Jeff Karlstrand (Lexington Golf Course), Barbara Walsh (RACC), Gene Yagow, Wesley Tse & Ebrahim Ahmadisharaf (VT-BSE) and Nesha McRae, Peter Olivares & Tara Sieber (DEQ)

Tara Sieber, the Water Monitoring and Assessments Manager for the Valley Regional Office of DEQ, opened the meeting by welcoming folks and asking everyone to introduce themselves (attendees listed above). She recapped the agenda for the meeting, which would start with quick time for questions regarding the benthic (or aquatic life) issue, then continue with a discussion of the next iteration of reduction scenarios for the bacteria impairment. Finally, the group would have a quick review of Coliscan (bacteria monitoring designed for citizens) sampling and methods to being coordinating a watershed-wide bacteria monitoring effort.

BENTHIC DISCUSSION – Tara gave a brief, quick overview of the benthic impairment and the two “Most Probable” stressors as identified in the Benthic Stressor Analysis, which were Hydrologic modification of the watershed as a whole and Organic Matter. Due to the fact that these stressors are indicators of pollution and not a specific pollutant, it was decided that a narrative approach to describe the issues at work, analyze possible sources, and suggest reductions would be the best approach. However, this presents a unique problem to the “bean counters” of DEQ’s Central Office who only count as “TMDLs” those watershed plans with numeric loadings and reductions from specific pollutants. Virginia Tech (VT) and the Valley Regional Office (DEQ-VRO) have made the case to DEQ’s Central Office that a plan to address this benthic impairment will also be addressed by actions and best management practices designed to address the bacteria issue. A participant wanted to clarify the relationship between the two impairments: bacteria will be the driver of the TMDL itself and possible future Implementation Plan, but all that we do to help bacteria will also offset and improve the two stressors to the aquatic life? Gene Yagow, VT, responded affirmatively and outlined the following possible practices that would be beneficial to both issues: Riparian buffers, lining potentially leaky pipes, ongoing improvement efforts, improved pasture management. He suggested focusing on implementation strategies that would provide a synergy of IP practices. Another participant asked about spot-specific erosion from large precipitation events, such as small tributary from Boxerwood Gardens that travels onto golf course property. Gene said that should be addressed in the IP, broader plan to address water quality issues across the watershed. Nesha McRae, Nonpoint Source Coordinator for DEQ-VRO, also mentioned that TMDLs address sources of the pollutant of concern, not broader issues which can be better addressed in Implementation Plans. Nesha also recommended that stakeholders have a series of specific issues (costs and descriptions) ready to list as this watershed goes into Implementation Plan development and

can that way, they can be rolled into reality faster. Tara invited attendees to send additional questions to either herself or Gene in the coming weeks.

BACTERIA DISCUSSION – Tara again gave an overview of where the group has been and summarized the bacteria allocation scenarios but reminded the TAC that they had requested some “tweaking” to reflect concerns about the Moores Creek Overflow pipe and the rigors of pasture loading reductions. The TAC turned to the handout with the newest iteration of the sources. Wesley and Ebrahim, VT, reminded the group that the goal of de-listing Woods Creek from the impaired waters (or “dirty waters” list) was to meet water quality standards (235 cfu/100 mL) more than 90.4% of the time. The group discussed the Lexington Reservoir inflow pipe and the super clean water that actually provides a dilution factor to the in-stream flow of Woods Creek. The group discussed that the Moores Creek inflow pipe may not be around forever, and what would happen to the quality of Woods Creek if it was lost. This was addressed in allocation scenarios #27, 28 & 29. These modeling scenarios tell us that without the dilution influence of the Moores Creek water, Woods Creek flow almost dries up and the bacteria factor increases exponentially, which means that unrealistic reductions from bacteria sources are needed to meet water quality standards. The City reminded folks that the watershed built out in 1976 when reservoir pipe discharged to Woods Creek so there hasn’t been that much new land use change since that time. Another participant gave a more long-term, historical perspective of woods creek which is that there was “enough” flow to fish/recreate and asked where was that flow coming from (prior to the pipe contributions). Many of the group had concerns regarding the quality of groundwater and whether groundwater was contaminated as well. Tara pointed out that in Karst topography there was a great deal of interaction between surface water and groundwater. The comment was made that from a historic perspective, there was more groundwater recharge in the past. Most of the watershed has been deforested from landcover from 100 years ago. The point was that water stored was in the ground in the past, but TODAY, little water is stored in the ground and the impact to streamflow from precipitation is very flashy due to the hard (otherwise known as impervious) surfaces increase in watershed. Another participant used this lesson to make the point that in order to restore Woods Creek, more trees are needed. One attendee wondered if the city could increase the flow of the reservoir pipe in order to address water quality issues in Woods Creek. The City responded that it doesn’t believe that is doable; the flow is what it is and the pump series needed to bring the water all the way down to the city is considerable.

One attendee summarized the overall issue as follows: Woods Creek is Out of balance.... But why? He made the case that something else that we aren’t addressing is at work here. The group agreed; but another participant argued that understanding and addressing the bacteria impairment will go a long way towards fixing other issues, like diminished aquatic health and erosion issues.

The other suggestion from the TAC that Wesley and Ebrahim were able to model was to attempt to lower pasture reductions to levels that was seen as more realistic and achievable (Nesha suggested around 60% or so). Unfortunately, livestock contributions from pasture were so significant that it was more logical to keep pasture reductions at a higher level (70%) in order to keep other source reductions at reasonable levels. Scenarios #21, 23, and 26 show how additional reductions from livestock direct

deposit and residential contributions would be needed to meet water quality standards when pasture loads were only reduced 60-65%.

Next, the group discussed the two different perspectives of TMDL endpoint versus implementation goals (meeting water quality standards). Tara explained that EPA required all TMDLs to include a “pie in the sky” scenario where water quality standards were never violated (both the Geometric Mean and the Single Sample Maximum were at 0% violation). The group discussed this scenario (#9) and the “Implementation” scenario (#10) where Woods Creek would be de-listed because water quality standard for the Single Sample Maximum would again be met. Folks noted that this additional reduction of 15% of livestock DD meant considerably more work and more stringent implementation goals. Tara asked the group for their perspective in presenting this information at the public meeting. The TAC decided that both scenarios (EPA-required #9 and Implementation-driven #10) should be presented with the emphasis being on the Implementation Scenario, which means the most to people. Woods Creek will continue to be monitored by DEQ for at least the remainder of the year, but additional stations with samples taken by citizen monitors will be very helpful to fill in the gaps between the two DEQ monitoring stations. One participant asked Nesha to give her thoughts on Implementation actions that would be needed to bring Woods Creek back to a healthy and safe condition. She said this could be a realistic scenario to implement, but it was usually hard to accomplish more than 50% pasture reduction without needing to plant trees and riparian buffers (only 2x width treatment = 50% reduction). She suggested targeting denuded areas with poor farming practices and work with the Soil and Water Conservation District to do some outreach and stabilization practices. In her experience, it has been difficult to get more than 50% Livestock direct deposit reductions due to sheer amount of fencing needed.

Next, Tara gave a very brief and succinct Coliscan Training, which was a review for many of the TAC members. The group discussed sampling protocols, the laboratory methods for plating the samples, and how to count bacteria colonies on the media plate. Tara will disseminate additional information, data sheets and the DEQ website for checking colony colors as well. The group then gathered around a few maps that the City created with suggested monitoring locations. It was decided that a Wikipage or shared data sheet online that could be revised and added to by multiple parties would work really well in this case. A follow up meeting will be hosted by the City in the upcoming weeks (probably before the Public Meeting on April 18).

Tara again thanked the group for their diligence, their time and efforts to attend multiple meetings over the last 6 months, and told them how wonderful it has been work with a conservation-minded community who prioritizes their local streams! Many folks will be instrumental in putting the finishing touches on the public meeting to introduce the plan to the local community. This has been a fantastic experience – thanks to engaged and involved people like these TAC members!

Table 1. Bacteria Allocation Scenarios for Woods Creek.

Scenario	E. Coli Loading Reduction (%)					% Violation of <i>E. coli</i> Standard	
	Livestock Direct Deposit	Wildlife Direct Deposit	Pasture	Failing Septic Systems ¹	Residential ²	Geometric Mean	Single Sample Maximum
<u>Scenarios Presented at TAC</u>							
Baseline	0	0	0	0	0	41.7%	27.6%
01 (Wildlife Only)	100	0	100	100	100	0%	0%
02	0	0	0	0	0	43.1%	28.5%
03	0	0	0	0	0	55.6%	39.6%
04	100	0	0	0	0	0%	13.6%
05	100	0	0	100	0	0%	13.6%
06	100	0	0	100	50	0%	13.5%
07	100	0	50	100	50	0%	11.7%
08	100	0	70	100	50	0%	9.9%
09	85	0	70	100	25	0%	10.0%
10	70	0	70	100	25	11.1%	10.1%
<u>Lower Pasture Reduction Scenarios</u>							
21	100	0	65	100	35	0%	10.5%
23	90	0	65	100	35	0%	10.5%
26	100	0	60	100	85	0%	10.4%
<u>Turned off Lexington Reservoir Inflow</u>							
27 (Wildlife Only)	100	0	100	100	100	2.8%	0.1%
28 (Wildlife Only)	100	35	100	100	100	0%	0.1%
29 (Wildlife Only)	100	0	100	100	100	1.4%	0.1%

¹ Assumed no straight pipes in Woods Creek watershed

² Does not include loads from failing septic systems