

## Bullpasture River TMDL: Technical Advisory Committee Meeting

December 12, 2018

Stonewall Ruritan Hall, McDowell

### Meeting Participants

Michael Sponaugle (landowner)

Bill Jones (CRPA)

Tim Abbott (VDH)

Tara Wyrick (VDEQ)

Sara Bottenfield (VDEQ)

Nesha McRae (VDEQ)

Richard Brooks (CRPA)

Karen Kline (VTBSE)

Cynthia Baroody (CRPA)

Roger Baroody (CRPA)

Emily Smith-McKenna (VTBSE)

### Meeting Summary

Nesha McRae began the meeting with a recap of the last advisory committee meeting and reviewed the agenda for the afternoon. Participants introduced themselves and Karen Kline shared a presentation on her work to model *E.coli* sources in the watershed and develop associated bacteria allocations. Karen explained the watershed modeling process, noting how the model is calibrated both with respect to bacteria concentrations and hydrology of the river. A participant asked about the source of precipitation data that was used in the model. Karen responded that data from several different climate stations were used to develop the watershed model, but that most of the precipitation data was collected from the station in Williamsville. Some data was also collected from a climate station in Mustoe. The participant responded that he would prefer the data come from sites directly in the watershed, noting that there may be some differences in rainfall amounts at these sites. Karen agreed that this is always preferable. Karen shared land use data for the upper and lower portions of the watershed and reviewed the extent of the impaired stream segment, explaining how these data were used to develop bacteria load estimates for the watershed. Karen shared VA Department of Environmental Quality (DEQ) bacteria monitoring data from the upper and lower monitoring stations on the Bullpasture River. She explained how these data were used to calibrate and validate the model for different time periods to ensure that it was capturing the observed data. A participant asked how flow and precipitation were related to the model and estimates of bacteria concentrations in the river. Karen explained that precipitation drives *E.coli* concentrations in the river through runoff processes, while also impacting concentrations based on the volume of water in the river at a given time. Karen noted that the purpose of the calibration exercise is to make sure that the simulated values closely match observed concentrations. We are looking for these simulated values to fall a little above and a little below observed values. We also want to be sure that the model captures any seasonality observed in the data. Karen noted that the calibration for the Bullpasture River was successful in capturing actual observations.

Karen reviewed the source characterization for the watershed and bacteria loads listed by land uses in the watershed. A representative from the Health Department noted that there is a permitted discharge (a single family home) right above the monitoring station in the watershed. He was concerned that this discharge could be influencing bacteria concentrations at the monitoring site if the system was not being operated correctly. Karen explained that this permit is accounted for in the model at a flow rate

of 1,000 gpd, and at a permitted concentration of 126 cfu/100 mL. Nesha McRae explained that we must assume that the domestic sewage facility is being operated in accordance with the permit conditions unless evidence is presented otherwise. **Follow up note: Following the meeting, DEQ and VT staff reviewed permit data and found record of only one domestic sewage discharge permit in the impaired project area. This permit is located downstream of the monitoring station at Route 250 in McDowell.** The representative from VDH noted that there are only two systems within the watershed that are installed within close proximity to the river, and that these were installed in 2004 and should be functioning properly. The group discussed the need for additional monitoring stations in the watershed to better understand the sources of bacteria and to determine whether septic systems or straight pipes are a problem. Nesha noted that the Cowpasture River Preservation Association (CRPA) is collecting *E.coli* data in the watershed and could serve as a great resource in coordinating future monitoring to better understand bacteria sources in the watershed. A participant explained that there had been some interest in collecting samples from a few locations in the watershed and sending them off to a private lab for analysis. Nesha explained that these data would not be used by DEQ for assessment purposes (listing or de-listing an impairment) and was unclear on the intent of this sampling. She suggested that those interested in additional monitoring in the watershed contact her and work with the CRPA to see about adding monitoring stations in the watershed. Nesha asked representatives from the organization present at the meeting to discuss this possibility with their volunteers, noting that DEQ may be able to provide assistance with extra monitoring supplies for 1-2 more sites in the watershed if they had volunteers available to do the monitoring.

The group returned to Karen's presentation on model development and establishment of allocations for sources. A participant asked how the load from livestock in the stream is estimated versus the load from pasture. Karen explained that observational data from research studies regarding the amount of time livestock spend in the stream versus on pasture or in confinement over a given year is used to develop estimates of *E.coli* directly deposited in the stream versus bacteria running off from pastures. Karen noted that the model considers the fact that some of the bacteria deposited by grazing livestock on pasture does not make it all the way to the stream due to die off of bacteria.

Karen explained how two different allocation scenarios were developed for the watershed, one demonstrating what is needed in order to meet the water quality standard 100% of the time and one showing what is needed to remove the river from the impaired waters list. Karen showed an initial reduction scenario that still resulted in violation of the geometric mean standard wherein direct deposit loads were to be reduced by 60% and other sources by 100%. She showed that by increasing the direct deposit reduction to 65%, reductions from other land based sources (excluding septic systems and straight pipes) were no longer needed. Thus, this was identified as the successful TMDL scenario for the watershed. The Stage 1 scenario that Karen shared with the group would be expected to result in delisting of the impaired stream segment, and included a 15% reduction in direct deposit and a 100% reduction in straight pipes and malfunctioning septic systems. Nesha commented that the Stage 1 scenario is probably the more important of the two since it would result in delisting of the stream with the understanding that it may occasionally experience spikes in *E.coli* during high flow events. A participant asked how many livestock would be included in a 15% reduction from livestock in the stream and how many straight pipes and failing septic systems would need to be addressed in the watershed. Karen explained that she did not have these data at the moment, but could pull together these estimates. Nesha offered to include these figures with the meeting summary when she distributed it to

participants. ***Follow up note: We estimated that there are approximately 60 failing septic systems and 10 straight pipes in the watershed. A 15% reduction in direct deposition from livestock equates to fencing of 15% of the river where livestock have access, or about 6.2 miles of fence based on preliminary estimates using aerial imagery and land use data. It is expected that this figure will come down with additional input from local residents regarding where livestock have access to the stream and where land is actively grazed.***

A follow up question was asked regarding how the runoff rates from various land uses in the watershed compare to each other. Karen explained that pasture has the highest runoff rate when compared to cropland and hay. He asked about runoff rates from forest in the watershed as well. Karen explained that there is not as much water running off from forest. The participant noted that runoff from forest on steep slopes can be high. Nesha asked participants whether they thought some reduction in runoff from pasture should be included in the TMDL. She noted that this wouldn't change the reduction in direct deposition needed, but that it could account for the fact that some farmers might choose to install cross fencing and use rotational grazing if they installed stream exclusion fencing. She asked participants if they thought that many farmers in the watershed would be interested in trying rotational grazing, or if the size of their operations made this impractical. A participant suggested checking with the Soil and Water Conservation District.

The group discussed next steps in the process. Nesha explained that original project plans included transitioning directly into development of an implementation plan, which would spell out the best management practices, costs and benefits and implementation timeline needed to achieve water quality goals. However, based on input from the committee at the last meeting, DEQ staff has decided to put the process on hold and collect public input at the final public meeting regarding interest in proceeding with the TMDL process. Nesha explained that having an implementation plan in place opens up funding options for financial cost share for agricultural and residential septic practices, but that committee members expressed considerable resistance to proceeding with the process. Therefore, the public comment period following the final public meeting will include an opportunity for stakeholders to comment formally on next steps as well. Nesha asked for suggestions regarding timing, location and format for the final public meeting. One participant asked that it be held in the evening, noting that afternoon meetings were very challenging for him to attend. Nesha said that would be fine and that she hoped to hold the meeting in February at the Ruritan Hall. She discussed outreach methods used for the last meeting and invited representatives from the CRPA to present at the meeting on their volunteer monitoring program in the watershed along with their other activities.

The group discussed interest in adding volunteer monitoring stations in the watershed to monitor *E.coli*. One participant noted that the CRPA monitoring data did not indicate an impairment in the watershed, only the DEQ data. Participants asked about the process in getting data certified for purposes of listing or delisting an impairment. Karen Kline commented that the volunteer monitoring data was used in model development with respect to calibration and validation. A volunteer monitor noted that there was a straight pipe present upstream of one of their monitoring locations in the watershed that was corrected about three years ago. It was also noted that CRPA volunteers typically do not sample during high flow events due to safety concerns. Consequently, the DEQ data may capture more of the higher *E.coli* concentrations present in the river at higher flows.

Participants asked to receive copies of the powerpoint presentation from the meeting as well as previous powerpoint presentations. Nesha thanked participants for attending and the meeting was adjourned.