Benthic TMDL Study on Deep Run, Dover Creek, and Upham Brook Watersheds in Henrico County, Goochland County, and the City of Richmond

Community Engagement Meeting #3 Summary
February 21, 2025 @ 1:00 pm
VA DEQ-PRO Training Room, 4949-A Cox Rd., Glen Allen, VA 23060

Attendees: 18

Ashley Hall – Stantec/VDOT
Carl Blackwell – Thalboro, LLC
Catherine Pierce – Resident, VA Master Naturalist
Craig Lott – VA DEQ
Deana Williams – Henrico
Denise Moyer – VA DEQ
Harris Wolfe – Hanover
Henry Pollard – Williams & Mullen
Jennifer Palmore – VA DEQ
Joe Parfitt – VDOT
Katie Shoemaker – WSSI
Keith Burgess – Monacan SWCD
Kelley West – VA DEQ
Maddie Wiley – Monacan SWCD
Robin Wilder – Henrico DPW
Shawn Weimer – VA DEQ
Sean Kellogg – Henrico
Stephen Dombroski – WSSI

DEQ started the meeting and discussed the handout titled Benthic TMDL Study on Deep Run, Dover Creek, and Upham Brook Watersheds in Henrico County, Goochland County, and the City of Richmond Community Engagement Meeting #3 (CEM3) Handout which can be located at the following web address https://www.deq.virginia.gov/our-programs/water/water-quality/tmdl-development/tmdls-under-development. The subsequent references to pages, tables, and figures in these notes refer specifically to the 'CEM3 Handout' unless otherwise noted.

Watersheds

DEQ reviewed the three main watersheds 1) Upham Brook, 2) Deep Run and 3) Dover Creek and their locations on the map (Figure 1).

Updates Since Last Meeting

Landcover – The land use categorization updates to the Chesapeake Bay Program (CBP) 2017/2018 land use/landcover (LULC) dataset that have occurred since the previous meeting were reviewed. The land use updates included athletic fields and golf courses that were mistaken for cropland and pasture that are more accurately represented in the model as turfgrass. There were no further comments about the land use.

Septic Systems - Based on the feedback from the previous community engagement meeting, the number of septic systems were reassessed (Table 1). DEQ reached out to Henrico County who provided updated septic system counts. The new counts in Dover Creek were obtained using parcel boundaries and aerial imagery in GIS and tallying parcels in the watershed with visible residences. A SWCD member indicated the updated Dover Creek septic numbers look more accurate. There were no further comments about the septic changes. DEQ is thankful to Henrico, VDH, and the SWCD for helping us collect the most up-to-date and accurate septic numbers.

All Forest Load Multiplier (AllForX) Endpoint Approach – The AllForX regression changes that have occurred since the previous meeting were reviewed. Instead of one regression the watersheds were separated into three regressions to better represent the varied watersheds in the study. The regressions that were discussed included the small watersheds (for sediment and phosphorus), large watersheds (for sediment and phosphorus), and Jordans Branch (Figures 2 to 6). For example, the Small Watersheds regression table for sediment was reviewed (Figure 2). The regression indicates that a ratio of 7.5 correlates to a predicted SCI value of 60 or above, which is the target level score for benthic aquatic life. The CEM2 handout has more information; these are just revisions to the AllForX model from the previous meeting.

Question from Community Member - Stony Run and Stony Run UT are both part of the Deep Run watershed; why are they separated out? It was explained that during the stressor analysis the streams showed a variety of indicated pollutants, so the thought was to break them out to best determine what the pollutant problem was. Some of the data points also helped determine how we break out some of the tributaries; some smaller tributaries may not have data while some do. We knew there was an issue with Stony Run and Stony Run UT [since they have been sampled and are on the impaired waters list] so we were able to break them out and look at them more specifically. The Community Member was concerned that Stony Run and Stony Run UT will have their own WLA scenarios.

Using the TMDL Equation to create Allocation Scenarios

It was discussed that the goal of this benthic TMDL study is to look at what the current pollutant load is and how much we need to reduce the load to meet the standard. The TMDL equation was discussed in detail. TMDL (Total Maximum Daily Load) = Wasteload Allocation (for Permitted sources & future growth) + Load Allocation (for Non-point sources) + Margin of Safety.

Total Maximum Daily Load (TMDL)

The target total maximum daily loads for each watershed were provided and broken out into a table for sediment and a table for phosphorus (Tables 2 and 3).

Wasteload Allocation (Permitted Loads)

The various types of permitted sources and allocated loads were mentioned (Tables 4 to 8). Currently, the types of general permits within the watersheds are industrial stormwater, concrete products, potable water, and construction general permits. There are also MS4 general and individual permits.

Question from Community Member - How are the existing sediment loadings calculated, especially the impervious areas as opposed to other areas? It was explained that although water droplets falling on a hardened surface do not pick up as much sediment directly, the water gains energy in the form of higher velocity and also has a higher volume leaving the area (due to less infiltration). This higher energy / higher volume water transfers to the curbs, gutters, and other stormwater conveyances and the flowing water then has more potential to gain sediment. This is done through eroding stream banks and incising stream channels, which then can undermine the existing streambanks and root systems of remaining streamside trees and

impact the integrity of roads, bridges, and other structures. It was also explained that the GWLF model that is used takes land cover types and overlays that over soil information and other variables to give each section its own attributes and then it runs through the model and it gives an output based on slope, soil type, land cover, weather, and land use, and that will give a peak flow. The full watershed models are modeled over a long period of time, such as a 10-year period, so they don't use one particular storm event to go by like other modeled BMPs.

Question from Community Member - Is there a way to determine on an annual basis the amount of flow and how to incorporate that information? It was explained that flow rate is not analyzed very often in the outputs on this model but may be helpful during the upcoming implementation planning phase to be able to design stormwater BMPs to hold the particular storm flows that were outputs from the model.

Question from Community Member – Why is the City of Richmond MS4 associated with North Run if North Run is not located in the City of Richmond? This was a mistake, and North Run should not have been associated with the MS4 of the City of Richmond. Table 7 was updated after the meeting and Table 10 was updated and recalculated after the meeting.

Question from handout - Do the MS4 permittees prefer to be included in the TMDL by WLA as an aggregate load by watershed or disaggregate values for each permit? VDOT says a lot of the lines cross, and they would be happy with aggregating. City of Richmond agrees to aggregate. DEQ added that the default practice with current TMDL development efforts is to aggregate these loads to encourage and facilitate collaboration between MS4 permittees.

Future Growth

The margin of safety (MOS) is typically 10% and future growth is 2% and those percentages are standardized but could be adjusted. Models can't account for everything so the 10% is a starting point and for this type of modeling and calculation approach considered a conservative practice, supporting the reasonable assurance that implementing the TMDL reductions will lead to stream restoration and benthic aquatic life water quality use attainment.

Question from handout - Does a 2% set-aside for future permitted loads seem reasonable for these watersheds? A Community Member requested more detail on how this translates for Dover Creek and asked if the 2% will cover the future development of Dover creek? It was explained that the 2% future growth will only account for permitted point sources in the future so we will not have to redo a TMDL if one or more new permittees come into the watershed and requests a 2% or less WLA.

Margin of Safety

This TMDL includes both an implicit and an explicit margin of safety. Implicit MOS is the exclusion of BMPs with lifespans that are no longer in the window, and the fact that we represented the permitted sources' loading for their permitted amounts even though they may not discharge that much.

Question from handout - Does the Margin of Safety presented seem reasonable for these watersheds? No concerns were raised.

Load Allocation Scenarios (Non-point Source Loads)

Participants were asked to look over the tables and provide feedback (Tables 9 to 18). Participants were asked to keep in mind the questions from the handout during the review.

Question from handout –
Which load allocation scenarios do you prefer?
Is a reasonable option presented for each watershed?
Are there other scenarios that would be useful to see?
Is the 20% reduction on agricultural lands preferred, or would another reduction percentage make more sense?

Looking at Table 9 for Upham Brook, it was explained that different scenarios don't change the numbers much since this is a more urban watershed. It was explained that Scenario 1 is where everyone has the same reductions. Scenario 2 is where the focus is more on urban and less on agricultural reductions. Scenario 3 is where the focus is more on urban and less on agriculture but with less focus on streambank erosion.

One participant wanted to know how the existing load was calculated and how they would get an 86% reduction on sides of the road and wondering if there are any real-world suggestions. Reopening TMDLs will be difficult, and they want to get it right, new and redevelopment projects are leaving watersheds better than they were, but they aren't sure how to get this much reduction. It was said that feasibly it's better to be at 70% or less reductions but since this and many of the watersheds in this project are highly urbanized, their reductions are high like these. Moving towards a healthy stream overall is a great target. For example, Henrico County and City of Richmond do not use sand on their roads during winter storms.

There was some discussion about BMPs and that VDOT has a Virginia roads map that shows their BMPs, that Henrico manages their own roads, and that the City of Richmond GIS also shows all their BMPs. A Community Member asked how do BMPs fit into the formula, is there a certain number that is built into the project for the sources? It was explained that during the Implementation Planning phase (the next steps after the TMDL is completed) we will look at the efficiencies. Also, a snapshot of existing BMPs at the time of the monitoring data pull (which becomes basis for the modeling period we narrow down to the 'existing condition' time frame), are currently accounted for within the model.

A Community Member said stream restoration is cost effective and there is a large bang for the buck spent on these projects.

A Community Member asked why is streambank erosion a source when essentially, it's the symptom of the other causes in the watershed? It was explained that this loading accounts for mass wasting of the streambank (also called incision and scour) which will continue to contribute sediment loads once the stream is degraded. In urban settings, the more impervious surfaces you have from roads, roofs, and other hardened surfaces, the faster the water tends to flow or 'sheet off' causing more energy and velocity of the water to be directed into the stream channels. Dealing with the symptoms is only one of the solutions, partnering with adjoining jurisdictional areas, and increasing leaf canopy and riparian buffers where possible helps to

encourage infiltration and slow down the velocities and energy the increased runoff brings to the stream channel. DEQ encourages collaboration between individual property owners, residents, localities, and other folks who enjoy and use the watersheds.

Tables 9 to 15 are Sediment Scenarios:

Tables 9 to 11. Following discussions, a blanket decision from everyone is that for Tables 9 to11 Community Members agree that scenario 1 is the best choice.

Table 12. Community Members agree scenario 1 is the best choice.

Tables 13 to 14. It was explained that Tables 13 to 14 have different scenarios that do not include agriculture and to please review these and confirm which scenario you prefer. Community Members prefer Scenario 1.

Table 15. It was indicated that Dover Creek is less urban and has more Agriculture. Community Members prefer Scenario 1.

Tables 16 to 18 are Phosphorus Scenarios:

Table 16. Community Members chose Scenario 1.

Table 17. Community Members chose Scenario 1.

Table 18. Community Members chose Scenario 1.

Overall, Scenario 1 with uniform reductions was voted as the preferred reduction scenario for each watershed.

Next steps

DEQ plans to make updates based on the feedback provided in this meeting. We then plan to move forward with the completion of the TMDL Study followed by a Public Meeting and a 30-day comment period.

Everyone was thanked for attending the meeting, and the meeting was adjourned.