James River Tributaries 3rd TAC Meeting Summary

May 9, 2022 10-11:30 am at Clover Hill Library

11 TAC members were in attendance.

Introductions of all in attendance (see sign in sheet).
Role of TAC members was explained.
Agenda was reviewed.
Discussed the DEQ Water Wheel and what phase project is currently in.
Project area map was shown.
Q&A Session 1: TAC members ask questions, DEQ responds

1. Is the VSCI monitoring taking place in the spring?
   Yes the monitoring takes place during the spring and fall seasons.

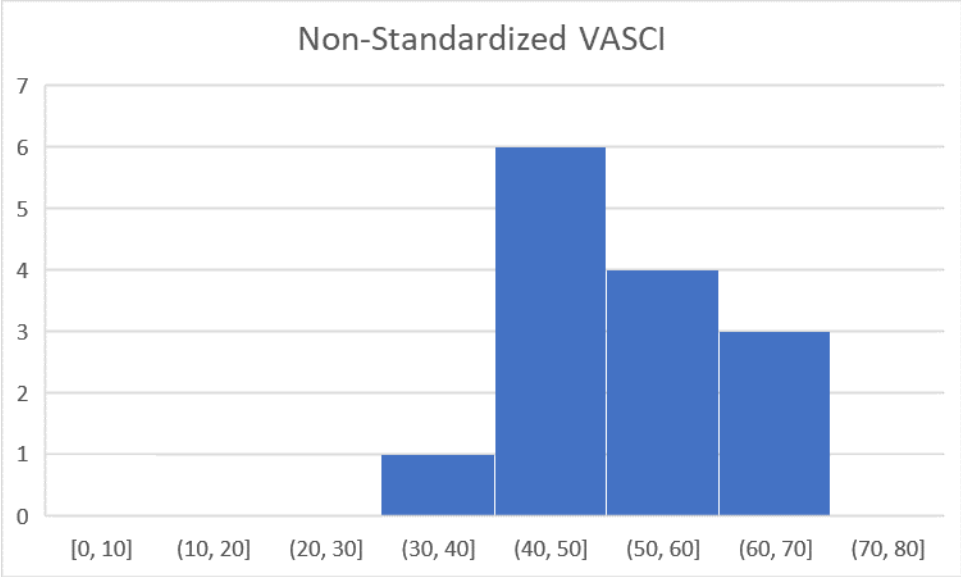
Summary of permitted sources within the watershed was shown.
Typical non-point source contributors were discussed.
Modeling approach (GWLF modeling) and setting targets reviewed.
Sediment and Phosphorus TMDL Endpoint approach- All Forested Load multiplier (ALL for X). All 6 steps for the All for X approach and watershed selection were explained.

Q&A Session 2: TAC members ask questions, DEQ responds

1. Question about regressions in the modeling, were the regressions tested for normality, if not how will that be accounted for? How are you drawing significance based on so few data points? How will DEQ account for variabilities and their threat to validity? Standard normality testing needs to be performed; it will help determine where the outliers are. Which statistical packages were used (R, Strata, SPS, SAS?) If any of these were used normality testing would be included in the analysis.

   The AllForX regression methodology is used to develop targets for pollutants lacking numeric water quality criteria. It is, in most scenarios, an improvement over the previous frequently used methodology of a single reference watershed. The AllForX regression methodology uses multiple comparison watersheds to avoid many of the problems associated with using a single reference watershed, however, it is still limited by the amount and quality of data available within the watersheds. Generally, there are only 15-20 monitoring stations loosely meeting the criteria for inclusion in the AllForX regression for a given TMDL study. This lack of available data limits the applicability of many statistical assessments, including assessing normality of the data. In an otherwise normally distributed data set, assessing a limited number of samples has the potential to lead to a false conclusion that the data set is not normally distributed simply because too few samples were included in the analysis. Due to the limited number of data points generally available for the AllForX regression development, the data are not typically assessed for normality and instead it is assumed that the data are normally distributed based on the nature of the data and the real-world contributing factors.

   With that said, the 15 data points used in developing the AllForX regression were evaluated for normality both visually via histogram comparison to the anticipated normal distribution curve and mathematically using a Chi-Squared goodness-of-fit test as well as a Shapiro-Wilk test for normality, as presented below.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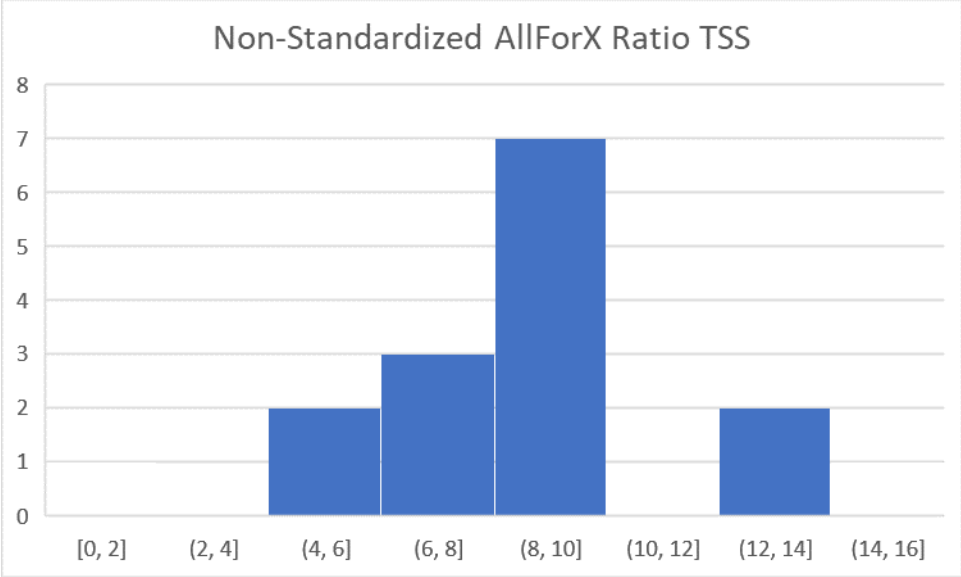
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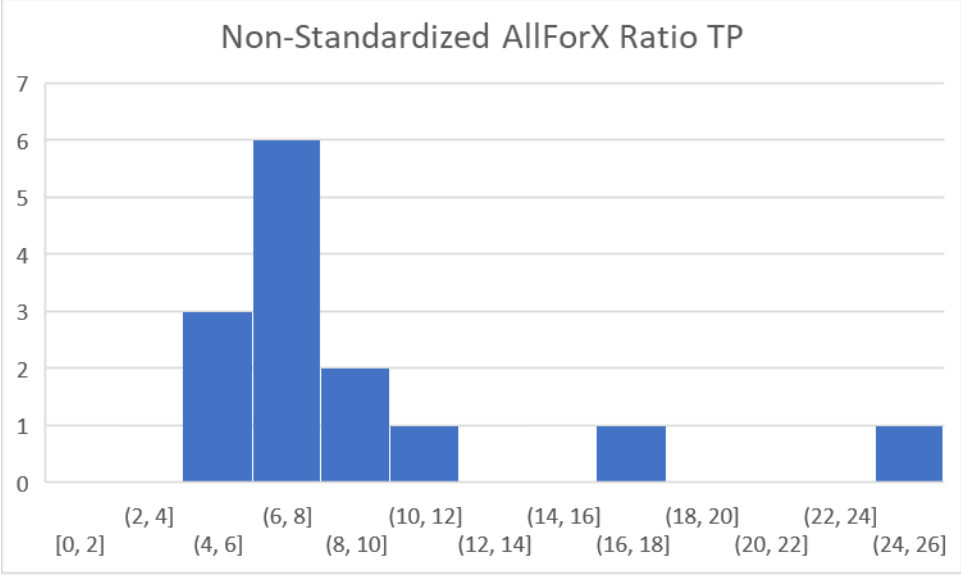
Non-Standardized AllForX Ratio TP
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Data	Visual Normality (histogram)	Chi^2 p-value (assume normality if >0.05)	Shapiro-Wilks W (assume normality if >0.881)
VSCI score	yes	0.949839	0.97257
TSS AllForX ratio	yes	0.388602	0.939049
TP AllForX ratio	possible	0.081738	0.774416

The distribution of VSCI scores and TSS AllForX ratios are clearly identified as normally distributed even with the limited number of samples available. It is possible that the statistical tests would indicate the highest AllForX TP ratio could be classified as an outlier. However, given the complex interactions of factors contributing to stream benthic health, the standard practice for identifying and eliminating data points from use in an AllForX regression is much more reliant on identifying tangible reasoning for elimination associated with various physical parameters. For example, watersheds were eliminated from use in these regressions based on watershed size (far different than study watersheds), land cover distribution (heavy agriculture compared to all the other watersheds), and the presence of additional, largely unrelated, impairments (pH). Using this site specific, physically based reasoning for eliminating a watershed from use in the regression lends greater levels of credibility and utilizes an understanding of watershed health factors in the decision-making process, which provides a more complete explanation to stakeholders than simple elimination via statistical analyses.

Developing a pollutant target for TSS and TP was discussed.
TMDL Equation, Margin of safety and Future growth was reviewed.
Watershed Allocation Scenarios for TSS and TP were shown broken down by pollutant and by watershed.

Q&A Session 3: TAC Member Questions to DEQ:

1. How will these reduction scenarios fit in with the Bay WIP/TMDL? Ex. If a MS4 has reductions in the Chesapeake Bay TMDL are they going to have to make more reductions on top of the reductions they already have to make for the bay TMDL to meet these scenarios?
   TAC members discussed that the overall understanding was that reductions would count for both TMDLs if it was in the watershed, so if you put a BMP in Nuttree it would count towards this TMDL reductions and the Bay TMDL.

2. What was the reason for removing streambank erosion in Nuttree Branch?
   Streambank restoration costs a significant amount per linear foot, so it was not included in the scenario. WSSI will be adding this scenario into each watershed.

3. The proposed streambank erosion reductions vary from each watershed, including Nuttree Branch which has zero reductions. Even in naturally occurring waters streambank erosion occurs, how will that be accounted for?
   The All for X modeling approach compares each watershed to naturally occurring conditions, so the comparison between the two watersheds would account for anything naturally occurring. Streambank restoration costs a significant amount per linear foot, and it was not added in the scenario due to the cost, however we will add this back in to all watersheds.

4. Are any reductions in Nuttree Branch for facilities?
   No reductions are included in scenarios for Nuttree Branch watershed.

5. Reductions are high for Rohoic Creek and the septic is zero which seems low, can that be increased? Also scenario 2 would be the best option for Rohoic Creek.
   We will update the septic allocation to match the reductions to the other phosphorus sources in the watershed.

6. What is the proposed Total Phosphorus (TP) limit for ISW permits for Rohoic Creek? Are the current TP limits based off the Bay TMDL criteria?
   The Industrial Stormwater General Permits (ISWGP) currently do not have effluent limitations for TP. Virginia estimated the loadings from industrial stormwater facilities using actual and estimated facility acreage information and TP, TN, and TSS loading rates from the Northern Virginia Planning District Commission (NVPDC) Guidebook for Screening Urban Nonpoint Pollution Management Strategies (Annandale, VA November 1979), prepared for the Metropolitan Washington Council of Governments. The loading rate for TP in the ISWGP is set at 1.5 lb/ac/yr. Due to characteristics of the watershed, the proposed reductions will be set to 50% of the current loading rate for TP in Rohoic Creek.

7. Rohoic Phosphorus slides - is there a percentage over which DEQ would reduce facilities more to bring down the other percentages that are 90% and might not be achievable?
   ISW facilities in this watershed have a loading rate of Total Phosphorus discharges in their permits of 1.5 lb/ac/yr based on the Chesapeake Bay TMDL. Further reductions are not imposed on facilities through the TMDL process unless reductions above 100% are needed to meet the TMDL. The TP in Rohoic Creek is above that threshold and it's currently proposed to reduce the ISW facilities TP loading rates by 50% more to meet these goals.

8. Some reductions show 80-90%; is that a feasible reduction?
   We want to make sure the TMDL is achievable but also protects water quality. It's not unheard of to have high percent reductions and have work in the watershed performed and still not meet water quality goals. Installed BMPs will improve water quality, and the access of funding to implement those BMPs is the ultimate goal.

9. One TAC member agreed that we should use an even split for all anthropogenic NPS sources, she felt that would be fair.

10. In the Swift Creek watershed the future growth is set at 2%. The county is in the final stages of rezoning 1800 acres of land into industrial that will also include some homes and schools. The future growth should be more along the line of 20%. Contact Steve Hosh, Assistant Director. The planning department has a comprehensive plan and they are currently rezoning; also Powhite Parkway will be extended to Hull Street and that will also bring growth. In addition, the construction permits have increased through the county.
    Chesterfield County has been contacted and DEQ is working with the county and WSSI to determine the proper future growth to apply in this watershed with the information that was provided during the TAC, once this is determined we will share the information with the TAC group.

Timeline was shown and next steps were discussed. Summer of 2022 is the timetable for the report to be completed and for the final meeting to be held.