James River, Maury River, and Jackson River PCB TMDL Technical Advisory Committee (TAC) Meeting #1
Meeting Summary

February 24, 2021

3:00 p.m. until 5 p.m. via GoToMeeting

Meeting Recording: https://transcripts.gotomeeting.com/#/s/5697fe17502a61a699b76722a12485cbd7ad1533eb06b02417f8d10f8b0cc7b1

Attendance

Thirty-three TAC members, five Department of Environmental Quality (DEQ) and Virginia Tech Biological Systems Engineering (VTBSE) project team members, and twenty-one non-TAC members/unknown attendees attended the virtual meeting.

Todd Asselborn, Greif Packaging-Riverville Mill
Jackie Austin, City of Lynchburg
David Blye, Environmental Standards Inc. & VMA
Stravos Calos, Albemarle County
Ramona Carter, Dutoy Creek WWTP
Renee Clark, VDOT
Jen Cobb, Henrico County
Susan Davis, Dominion Energy Bath County Power Station
Jeffrey Ferguson, VDOT
Scott Flanigan, Chesterfield County
Patricia Greene, Tenaska Virginia Generating Station
Ashley Hall, Stantec
John Heerwald, Falls of the James Scenic Advisory Committee
Ryan Hendrix, VAMWA
Gabrial Irigaray, Roanoke Valley-Alleghany Regional Commission
Roseanne Lee, WestRock
Grace LeRose, City of Richmond
Mark Lester, Bontex Inc
Kerry McAvoy, One Environmental Group & VMA
Philip McKalips, Ivy Materials Utilization Center
Gabriel Mens, Sonoco Recycling LLC
Nicole Paynotta, Griffin Pipe Products Co LLC
Tricia Pearsall
Erin Reilly, James River Association
Tyler Saunders, Modine Manufacturing
Dick Sedgley, Aqualaw & VAMWA
Oula Shehab-Dandan, Dominion Energy - Bear Garden Generating Station & Bremo Power Station
James Sigler, BWXT Nuclear Operations
Barbara Walsh, Rockbridge Area Conservation Council
Eddie Wells, Roanoke Valley-Alleghany Regional Commission
Jess Wenger, University of Virginia
Bill Wilson, Jackson River Preservation Association
Joe Wood, Chesapeake Bay Foundation
Steve Barten, Waste Management*
Sara Bottenfield, DEQ*
Ann Marie Gathright, Environmental Standards Inc.*
Paige Haley, DEQ*
Tracey Harmon, VDOT*
Lawrence Hoffman, CHA Companies*
Will Isenberg, DEQ*,†
Karen Kline, VTBSE*,†
Jim M, HRSD*
Nesha McRae, DEQ*,†
Jennifer Palmore, DEQ*
Mark Richards, DEQ*
Jen Rogers, DEQ*,†
Jason Shelton, New River Geographics*
Katie Shoemaker, Wetland Studies and Solutions Inc.*
Lucy Smith, DEQ*,†
Tara Wyrick, DEQ*

*Non-TAC member
† DEQ and VTBSE Project Team

Project Background

Will Isenberg shared an outline of the meeting objectives including an overview of the TMDL development process and the role of the Technical Advisory Committee in this effort. Will reviewed DEQ's water quality process and how the development of Total Maximum Daily Loads (TMDLs) fit within this process. TMDLs identify the reductions needed in current pollutant loads to meet water quality standards. Will shared Virginia's water quality criterion and thresholds for PCBs including the Virginia Department of Health (VDH) and DEQ fish tissue thresholds. VDH has issued three fish

consumption advisories in the study area for this project. In addition, a series of five PCB impairments have been identified by DEQ.

PCB Background

Will provided an overview of PCBs including the fact that they are very stable and heat resistant and include a class of 209 distinct PCB compounds. Deliberate manufacturing of PCBs was banned in the 1970's, though inadvertent production has been allowed and is relatively common. Fish consumption represents the most significant exposure pathway for people who consume the fish that they catch from contaminate waterways.

TMDL Background

A TMDL is defined as the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. Will explained that a TMDL is broken into different components that add up to the TMDL. The components of a TMDL equation include:

- A wasteload allocation (permits)
- A load allocation (runoff)
- A margin of safety

Will shared a map of the project area and explained that the project area will be broken out into four watersheds, with each receiving its own TMDL equation. The goal of these TMDLs will be to meet an endpoint concentration that does not exceed the water quality criterion nor the DEQ fish tissue threshold. DEQ has completed the initial step of identifying the problem through the fish consumption advisory and watershed monitoring. DEQ is currently working to develop numeric targets, and to complete a source assessment of PCB sources in the watershed. Following these steps, VTBSE will develop models for the watershed, which will be used to generate PCB TMDL allocations.

Q&A Session #1

A participant asked whether the study should be focused on VDH fish tissue threshold for PCBs rather than DEQ's lower threshold of 18 ppb. The participant noted that the use of multiple values presents a conflict and suggested that the TMDL should focus on VDH's fish tissue threshold. Will responded that DEQ's goal is to maintain environmental health, while VDH is charged with providing public health guidance regarding fish consumption in contaminated waterways. Will agreed that DEQ's lower threshold will impact TMDL targets and may result in the identification of larger reductions when compared to VDH's targets. VDH's objective is risk communication, while DEQ is focused more on baseline environmental health. The participant responded that this seems like a narrow distinction between the two agency's tasks and asked which value came first. Will noted that DEQ's 18 ppb threshold for fish tissue is a direct result of EPA guidance, and the equation that gives the fish tissue value was also used to derive the water quality criterion based on a bioconcentration factor.

Technical Advisory Committee Roles and Expectations

Will explained that the TAC will play a key advisory role in the TMDL development process to ensure that the end result meets water quality standards, is realistic and reflective of local conditions, and is reasonable. While DEQ will work to accommodate all of the input received from the committee, there are limitations to the extent to which all input can be incorporated into the TMDL. Will shared a timeline for TAC meetings with the second and third meetings being held in the summer and winter of 2021, respectively. Will noted that this timeline is intended to serve as a road map. Will then explained the purpose behind drafting TAC member shared expectations as this process can put unspoken expectations into agreed upon guidelines, make sure that everyone's input is heard, and provide a guide for decision making. Will shared the results from the survey of TAC member expectations including that DEQ and VTBSE be transparent, communicate clearly, and listen carefully. Will highlighted specific expectations for DEQ and VTBSE and for fellow TAC members. A participant suggested the most obvious point sources get together for a targeted discussion regarding the intentions of this project to avoid an antagonistic relationship developing down the road. This could be used as an opportunity to show our trust in their reporting of information from their operations and ask for their cooperation in this project. Will responded that sharing the list of TAC members along with contact information could be a good way to

help this discussion along. A participant representing a Municipal Separate Storm Sewer System (MS4) requested that the TMDL development consider practices that can be credited within a MS4 area to meet permit requirements. Will explained that the TMDL will not specify individual practices as this happens during implementation plan development. A participant commented that point sources are not the only contributor to PCB impairments. Will concluded the discussion noting that participants can submit additional expectations via the survey through March 10. Following that deadline, DEQ will summarize the Shared Expectations, share them with TAC members before the next TAC meeting, and finalize them at that meeting.

Modeling Process

Karen Kline of VTBSE provided the group with an overview of the modeling process that will be used to develop the PCB TMDLs. Karen explained that the Hydrologic Simulation Program in Fortran (HSPF) model will be used for this project. The model includes three major components:

1. Hydrology: a water balance model, calibrated using USGS stream flow data (numerous gauges are located in the James River watershed)
2. Sediment: serves as the main transport mechanism for PCBs, includes runoff, erosion and instream scouring and deposition of sediment. DEQ has provided suspended sediment concentration data to calibrate this component of the model
3. PCB fate and transport: this component of the model accounts for attachment, detachment, and re-attachment to sediment particles in the stream. Data collected by DEQ will be used to calibrate this component of the model.

Karen discussed how the model is used including model development, simulation of watershed processes, calibration, and evaluation of multiple pollutant reduction scenarios. Once multiple scenarios are developed, stakeholders will work with DEQ and VTBSE to select an acceptable scenario.

Karen discussed the watershed inputs needed to develop the model including meteorological data, watershed topography (slope, length of slope), stream network (use the most recent NHD data), land use (VA Geographic Information Network, 2016 VA Land Cover dataset) and soil types (USDA SSURGO data) to determine infiltration rates and modeling sediment given different erosion coefficients.

Potential PCB Sources

Karen provided an overview of PCB sources including contaminated sites (e.g., former manufacturing facilities, rail yard, and electrical substations). These sites are modeled as nonpoint sources since they do not have a defined outlet and only enter the stream during runoff events. PCB spills are another type of contaminated site, and are considered acute events that are modeled as a single event in the model. They are modeled as either an input directly to the stream or as runoff into the stream depending on the nature of the event. DEQ's PReP database is used to identify these events. Permitted sources of PCBs are modeled as point sources since they have a defined outlet. DEQ's discharge monitoring reports from these facilities allow us to determine monthly flow. MS4s are modeled as surface runoff, though they have a defined outlet. Atmospheric deposition is modeled as a daily load of PCBs and is applied to the entire land surface. Atmospheric deposition and in-stream sediment are considered legacy source of PCBs. As such, these loads will not be reduced in the allocation scenarios. Karen shared a map of the main tributaries in the project area, along with a map of 265 subwatersheds constituting the project area.

Q&A Session #2

One participant asked whether climate change is being incorporated into the model. Karen responded that the model is based on existing conditions. Another participant commented that they felt that our modeling target/output should focus on the long term intent of an average water quality/PCB concentration that reflects the intent/basis of our target numbers. Mark Richards (DEQ) noted that a harmonic mean flow is used for a one year period, which accounts for the duration aspect of the water quality criterion. However, the criterion does not specify the exceedance frequency that should be allowed, it just states a value not to be exceeded. In the New River PCB TMDL development process, this issue was raised as well. Scenarios considering average concentrations over time were evaluated, but suggested nothing

needed to be done to address the impairment, which was incorrect since the impairment exists. Another participant asked whether a flood projection or projected rainfall chart is used to estimate what will happen in the next 5-20 years. Karen explained that weather station data for 4-6 year windows is used to simulate different flow regimes used to calibrate the model. Will noted that this information and guidance for this approach is currently not available, though it would be helpful.

Another participant asked how different outfalls from one facility will be handled in the model. Karen responded that each outfall is modeled separately. A participant asked for clarification on the atmospheric deposition rate of 1.6 $\mu g/m^2$. Karen responded that this is per day. **However, it was noted after the meeting that this was incorrect. The rate is per year (1.6 $\mu g/m^2/yr$).** This participant also asked how the instream sediment concentration is modeled over time (if it changes when the water column concentration drops). Karen responded that as the PCB inputs to the stream decrease, the model will reflect decreases in those sediment concentrations as well. One participant asked for the reference to the air deposition study being used and Karen agreed to provide that. Another participant asked whether the model assumes a uniform loading rate for all MS4 acreage. Karen explained that a single loading rate is used, but transport to the stream varies based on precipitation and other factors. Another participant asked whether a TMDL endpoint can be met if the instream legacy concentration of PCBs is above the 18 ppb target. Karen responded that we have not observed this in other project areas to date. Karen added that currently the model is not exceeding that target based on the streambed sediment concentrations.

TMDL Source Categories

Will reviewed the Virginia Pollution Discharge Elimination System (VPDES) permitted facilities in the project area including 26 municipal WWTP, two of which are Combined Sewer Systems (CSS). VPDES industrial sources (73) break down into individual and general permitted facilities. There are 11 MS4 permits across the project area. Will shared a map showing the location of these permits.

Will shared examples of contaminated sites within the watershed, noting that Brownfields, Voluntary Remediation sites, rail yards and spurs, spills and electric utility transformer pads all exist within the watershed.

Permittee Load Calculations

Will reviewed the general approach to accounting for point source loads both with respect to existing loads and wasteload allocations. This approach is applicable to municipal wastewater treatment plants, industrial stormwater general permits and individual industrial stormwater permits. When possible, the existing condition load is determined using permittee generated PCB data. If these data are not available, a default concentration is used based on the Standard Industrial Classification (SIC) code. The concentration used to derive the wasteload allocation for permits is based on the TMDL endpoint. Will shared information on the flow used in calculations for each permit type (e.g., monthly average flow, design flow, outfall drainage acreage and impervious acreage, average daily or daily max flow).

Will discussed how CSSs will be handled (City of Lynchburg, City of Richmond). Their existing load will be determined using flow and concentration data based on monthly flow reports and concentration data from the cities and DEQ. The WLA will be based on flow values modeled to match each CSS' long-term control plans. MS4 loads will be modeled as nonpoint source runoff.

Q&A Session #3

A participant asked how self-reported data from DEQ is verified. Will responded that DEQ monitors these facilities through regular inspections, but that DEQ largely relies on an honor system. Another participant commented that a more robust conversation on climate change is needed as this type of information is already incorporated into the Chesapeake Bay TMDL. From a fundamental protection perspective, it seems like an issue not to plan for this. Will responded with a request for resources from the Chesapeake Bay TMDL related to precipitation forecasts. This would allow DEQ to see what can or cannot be done within the framework of this effort. A participant asked whether a point source can collect data and supply it rather than relying on a default concentration, and whether this was preferred. Will responded that DEQ did reach out to permitted facilities requesting this data and that some did not respond. It is a little late in the process to incorporate new data, but DEQ can consider it. Another participant asked how biosolids

would be treated (as point or nonpoint sources). Will responded that biosolids are not explicitly modeled as a source, but are captured within nonpoint source estimates.

TMDL Endpoints

Will noted that each of the four watersheds (Jackson River, Maury River, Upper James River, and Lower James River) will receive their own TMDL endpoint. The TMDL will target two different endpoints (fish tissue and water quality criterion) and the objective will be to ensure that both are not being exceeded. These two values are based on the same EPA guidelines, but the water quality criterion includes a bioconcentration factor. Bioaccumulation includes pathways beyond just the water (e.g., food, sediment) whereas bioconcentration considers water as the only pathway. Will reminded TAC members that PCBs are lipophilic so they do not like to dissolve in water. Will shared a figure showing average fish tissue concentrations versus average water concentrations. Will highlighted those situations where the water quality criterion is being met, but the fish tissue threshold is not, suggesting the water quality criterion alone may not be enough to meet the fish tissue threshold.

Considering bioaccumulation factors (BAF) may help paint a more realistic picture of what is ending up in fish tissue. Will shared an overview of the BAF process, explaining that these values are calculated for each fish species in a TMDL watershed through a series of calculations that use site-specific data, which includes water PCB concentrations, fish tissue PCB concentrations, organic carbon and suspended sediment concentrations, and fish tissue lipid content. The TMDL endpoint is then based on some average of selected fish species BAF values. Will shared a spreadsheet with the committee prior to the meeting showing different fish species BAFs that were calculated for each TMDL watershed. The spreadsheet also proposed three difference scenarios for selection of a BAF-based TMDL endpoint. The first scenario used the BAFs of fish species of commercial/recreational interest with a sample size greater than or equal to 8. The second scenario used the BAFs of consumption advisory fish species regardless of sample size. The third scenario used the BAFs of consumption advisory species with a sample size greater than or equal to 8. A participant asked why N/A was listed for scenarios 2 and 3 for the Jackson River. Will explained that this is because there are no consumption advisory for the Jackson River.

Q&A Session #4

Will asked for input on the three scenarios presented. A participant asked whether edible shellfish were included in BAF endpoint calculations. Will answered that it does not include shellfish. A participant noted that freshwater mussels are illegal to consume in VA. Will suggested the TAC consider Scenario 1 since input was not received on a preference. This would provide a good starting place to run the model and return to evaluate results. A participant asked Will to review how the BAF fits within the equation to calculate the TMDL endpoint. Will explained that the BAF for each species would serve as a water column concentration that would be protective of that fish species' PCB concentration not exceeding 18 ppb. Therefore, some average of the BAF values would serve as a TMDL endpoint concentration that the TMDL would meet to safeguard the fish tissue concentrations of the fish species that the TAC thinks are important to protect. In this way, the TMDL would be protective of water quality standards.

Next Steps

DEQ is working to complete responses to public comments received during the first public comment period. Project resources are all posted on the DEQ website, and Will plans to let participants know when the responses are posted. Will plans to share the TAC contact list with participants since no objections have been shared. Future TAC meetings are planned for one in summer 2021 and another in winter 2021. Meeting feedback will be collected using a survey link and a virtual meeting comment form to be sent to the VA FOIA Council. With that, Will concluded the meeting and thanked participants for attending.