MDE Comments on Anne Arundel County's Patuxent River PCB SW-WLA WIP

The following table documents comments received from MDE on Anne Arundel County's Watershed Implementation Plan (WIP) for the Polychlorinated Biphenyl (PCB) impairment of the Patuxent River, submitted to MDE in January 2019. MDE comments were received on November 5, 2019 and are addressed here.

Comment	Response
1. On page 8, the County states: "The County's plan relies heavily on an initial monitoring phase to determine the locations of specific contamination." MDE IWPP commends the County for this outlook. That being said, with regard to the County's modeling approach, MDE IWPP recommends that the WTM not be revised annually, and maintain the current product in the plan for potential future work if PCBs are found to be ubiquitous in the County. At the current time, MDE IWPP recommends the County focus on source track down and ensure this approach to WIP development considered to completion; when all data are made available.	Comment noted. No edits needed. However, we did not use the WTM for this WIP, we used CAST to model sediment and used PCB enrichment factors.
2. On page 11, the County states: "Determining the baseline sediment load and associated PCB load using CAST performs both the model translation and disaggregation process simultaneously since the jurisdiction and load sources in CAST were selected to exclude state and federal lands, and regulated construction," MDE IWPP recommends the County remain cognizant of the presence of these types of potential sources of PCBs when evaluating the dynamics of impairment in the watershed.	Comment noted. No edits needed. While not included in baseline sediment load calculations, state, federal, and construction sources of PCBs are considered and included in the source analysis and trackdown study. If PCB contamination is found at those sites, clean up would not be the County's responsibility.
3. MDE IWPP requests literature citations and/or references to support the following statements found on page 12 so that information that is supporting decision making is preserved in the WIP: a. All PCBs from regulated point sources are from NPDES regulated stormwater.	These statements are not citable, they are assumptions made in order to apply CAST TSS modeling to PCB loads.

b. 100% of PCBs conveyed via stormwater are adsorbed to sediment. c. PCB concentrations are uniform across the watershed in surface soils at 3.3 ng/g.	
4. On page 14 of the plan, the County states: "This restoration plan was prepared in accordance with the EPA's nine essential elements for watershed planning." MDE IWPP recommends that the County be flexible in its approach to developing the structure of this WIP document since toxic contaminants do not behave entirely like traditional nonpoint source pollutants, and the "a-i criteria" mainly focus on implementation to reduce nonpoint source pollutants.	Comment noted. No edits needed. We did modify the plan organization as a result of the nature of PCB restoration, as noted on page 10 "…because the plan relies on an initial monitoring phase to identify areas of contamination, specific restoration sites and estimates of future load reductions are not known at this time, but will be added and reported as monitoring data becomes available".
5. With regard to Section 2 'Watershed Characteristics", MDE IWPP recommends that the County refrain from providing generic information about the watershed without tying this information to a specific impairment. For example, providing risk ranking information associated with Section 2.3 "Soils," would give this otherwise generic information bearing on the plan and its components by potentially illustrating which of the hydrologic soil groups might be contributing to the mobilization of PCBs more than others.	Will add discussion of relationship between PCBs and the soils of the watershed (Section 2.3). Will add/swap hydrologic soil group map/analysis with soil erodibility factor data and explain that soils that are more highly erodible will be more likely to transport any PCB contamination in that soil. Other subsections of Section 2 do include an explanation of how the watershed characteristics (land use, impervious surfaces) relate to PCB contamination.
6. Section 3.1 "Use Class Designations" presents an opportunity for the County to begin to consider how to concurrently prioritize management of toxic pollutants like PCBs and other natural resource assets delineate by designated uses or other means. MDE IWPP recommends expanding this section, and would be willing to discuss this approach further with the County if the County would like.	The watershed includes Use Class I, Class I-P, and Class II. Will add a map of use class designations of the streams in the watershed and add a discussion of the spatial relationship of the three use classes and areas of known and potential PCB sources. Use class designations will be another point of consideration during track down phase and restoration prioritization.
7. On page 24 the County states: "PCBs preferentially adsorb to organics and sediments and are relatively insoluble in water." Does the County have literature describing these dynamics in more	Added the following text: "PCBs are often found in the highest concentrations in organic rich and fine-grained sediments, but can also be found freely dissolved in water. When dissolved in water, PCB transport is dependent on hydrodynamic conditions of the stream,

detail; for example, a size limit of sediments that limits adsorption?	and can also be volatilized. PCBs sorbed to particles are transported with the sediment, and can settle, re-suspend, and be buried. Finally, PCBs associated with dissolved organic carbon are able to move between sediments and the water column, and can move between surface and sub-surface sediments (National Research Council, 2001)."
8. On page 25, the County states: 'If BMP sediments containing PCBs are removed and disposed of property," it appears "property" needs to be changed to "properly".	Will edit to "properly"
9. MDE IWPP requests that the County include information related to past and future dredging in the watershed, as this can contribute to PCB mobilization and confound existing planning and management endeavors.	No dredging has been performed or is proposed in the Patuxent along the County boundary.
10. MDE IWPP commends Anne Arundel County on its thorough desktop analysis outlined in Section 3.3 'Source Analysis," and encourages the County to further pursue risk-based planning based on layering cuts of information preferably in a geospatial format.	Comment noted. No edits needed.
11. Does the County have more detailed metadata describing the data presented in Table 9? If so, this information should be presented and maintained in the WIP.	The metadata of each data source in Table 9 is described on pages 21-23. Will ensure the name of each data source matches the heading in metadata description and will add when each data source was accessed.
12. In the section "Stormwater BMPs" it appears that the County maybe pursuing a similar source tracking study that MDE IWPP is undertaking. MDE IWPP would be interested in speaking with County about their work on this so as to eliminate redundancies and potentially add-value to the work being done in Maryland to manage PCBs, which is often times an interjurisdictional issue.	The County is not yet engaged in a tracking study of stormwater management facilities. The stormwater BMP data was used to develop the trackback methods and prioritize areas in the tracking study. The County looks forward to learning about MDE's source tracking study to eliminate redundancies.
13. MDE IWPP requests the County explain the contents of Table 10 with greater detail; for example, provide details in the WIP about why the "Built Date" is separated by the year 2000. MDE IWPP assumes this was due to new stormwater regulations that went in	The oldest stormwater BMP in the watershed has a built date of 1981, therefore pre-PCB era BMPs do not exist in this watershed. The year 2000 served as a natural cutoff in the effort to prioritize the older stormwater management facilities, and was unrelated to the new stormwater regulations that went into place. An explanation of this will be added to the plan text.

place, but either way, the WIP should stand on its own as a detailed repository of information for all intended audiences current and future. In addition, if a distinction between pre- and post- 2000 is being used to target PCB hot spots, MDE has concerns regarding the utility of this assumption.	
14. On page 31, the County states: "A total 127 Tier 2 sites and 418 Tier 3 sites were identified," MDE IWPP requests the County present more detailed information about these tiers. If this information is presented in the WIP, please provide a specific location.	Pages 21 and 30 both state: "Sources with known contamination or presence of PCBs are classified as Tier 1 while those whose contamination is unknown are Tier 2 or 3." Will add a better description of distinction between Tier 2 and 3.
15. MDE IWPP requests the County provide more information on Section 4.2.2 "Pilot Subwatershed," with regard to what the County is hoping to achieve through such a study?	The "Pilot Subwatershed" will be renamed "Targeted Subwatershed". An explanation of the reasoning behind targeted subwatershed study will be added to the plan. A "pilot" track back study in the targeted/ priority subwatershed will be conducted because this subwatershed has the most known and potential PCB sources. The study will test the effectiveness of the track back method to locate PCB sources while also collecting data in the highest priority watershed, and is therefore the best use of the County's limited resources. The County will coordinate with MDE on the PCB monitoring and trackback methods before initiating the work.
16. On page 40, the County states: "The ability to identify a specific congener can also aid in identifying a source because congeners can be specific to a particular use or industry," does the County have a list of these pairs of chemical-and-source? If so, please include in the WIP.	The County has a list of all 209 congeners as well as common PCB aroclors and homologs obtained from USEPA's PCB webpage (https://www.epa.gov/pcbs). The County does not have a comprehensive list linking individual PCBs to particular industrial or other sources.
17. On page 43, the County states: "Passive sampling will occur for a minimum of four (4) weeks at each location." Does the County have a citation to support this minimum deployment time? MDE requests this so that information that is supporting decision making is preserved in the WIP document.	Personal communication with SiREM (Jeff Roberts, Senior Manager) on November 6, 2018. The County will coordinate with MDE on the PCB monitoring and trackdown methods before initiating the work.
18. On page 43, the County states:	The County will consider the use of the modified 8082

"Furthermore, MDE currently recommends EPA method 1668 for analysis of total PCBs for addressing the PCB Stormwater-Waste Load Allocations." While not in the guidance, MDE also suggests a comparable low detection level congener-based method would be sufficient (e.g., modified 8082 by UMBC/UMCES).	method in lieu of method 1668 if that approach is acceptable to MDE.
19. On page 47, the County states: "Benoit et al. (2016) provides a methodology for sampling depositional sediments in streams as an additional line of evidence for PCB trackdown studies," MDE IWPP requests the County include information on costing (at least qualitative).	The County will look into costs for sediment sampling and will add more information about sediment sampling methods.
20. MDE IWPP commends the County for its attention to information and data flow on page 43 with regard to MDE's Land and Materials Administration (LMA).	Comment noted. No edits needed.
21. On page 43, the County states: "If the PCB concentration of the material removed is less than 50 ppm, in most cases the material may be disposed of in a municipal landfill or equivalent." MDE IWPP requests specifically what the County is considering to be "equivalent".	Will remove "or equivalent" from this statement.
22. With regard to Section 5 "Expected Load Reduction", MDE IWPP is responsible for aggregating information from Maryland jurisdictions to understand distributions and modeling at the watershed scale. Therefore, MDE IWPP would like to reiterate that the County focus on source track down.	Comment noted. No edits needed.
23. With regard to Section 5.3 and 5.4, MDE IWPP recommends that the County focus on fish tissue end-points instead of modeled WLA reductions in the WIP. This will ensure that the resource at stake is put front-and-center for management purposes.	After discussions with MDE it is clear that the County is not responsible for fish tissue studies to demonstrate compliance. This would be conducted at the state level; however the County will add reference to fish tissue end-points in additional to modeled WLA reductions in the WIP.
24. On page 53, the County states: "The	Comment noted. No edits needed.

County will also use the results of the monitoring to refine the PCB load modeling." MDE IWPP recommends the County focus on source track down at this time and hold off on refining the PCB load modeling.	Agreed. What we are indicating here is that we can use results of the monitoring to refine the load modeling with watershed specific data.
25. MDE recommends including a reference site for the track down study that is representative of background conditions where sources of PCBs are not expected outside of atmospheric deposition. MDE IWPP is developing criteria for reference site selection.	A reference site(s) will be added based on MDE's criteria for reference site selection. Please provide the selection guidance to the County when available. The County will coordinate with MDE on the PCB monitoring and trackdown methods before initiating the work.
26. On page 19, include TMDL endpoints for water column in sediment in Table 8.	Water column and sediment tPCB threshold concentrations for PAXOH and PAXTF (PAXMH not within Anne Arundel County) will be added to Table 8.
27. MDE recommends expanding desktop analysis to include the following categories: 1) PCB era construction, 2) stormwater outfalls, 3) SSO locations, 4) active/historical industrial stormwater facilities identified through MDE's Wastewater Permit Portal http://mes-mde.mde.state.md.us/WastewaterPermitPortal/, and 5) identify unpermitted active/historical industrial and commercial facilities with the potential to discharge PCBs (e.g., tax records/business licenses). MDE IWPP is developing a guidance that will have a comprehensive list of datasets for use in a desktop analysis.	Will expand desktop analysis to include 1) PCB era construction 2) stormwater outfalls and 3) SSO locations (based on search from: https://mde.maryland.gov/programs/Water/Compliance/Pages/ReportedSewerOverflow.aspx) 4) Active/historical industrial stormwater facilities.
28. MDE recommends modifying the Stormwater BMP Prioritization approach by replacing BMP build date with PCB era and non-PCB era construction and breaking out residential and commercial land uses.	The oldest stormwater BMP in the watershed has a built date of 1981, therefore pre-PCB era BMPs do not exist in this watershed. The year 2000 served as a natural cutoff in the effort to prioritize the older stormwater management facilities, and was unrelated to the new stormwater regulations that went into place. An explanation of this will be added to the plan text. Stormwater BMPs in industrial land use will be prioritized at first. If additional prioritization needs to happen in later phases of source tracking, commercial land use can be broken out and prioritized from the residential.

29. MDE recommends using PE/POM passive samplers instead of SPMDs to reduce cost and simplify sampling and analytical procedures. Both sampling techniques are integrated and will provide a dissolved PCB concentration. SPMDs are typically used to emulate bioaccumulation which is not necessary for track down purposes.	The County will consider the use of PE/POM passive samplers instead of SPMDs to reduce cost and simplify sampling and analytical procedures.
30. MDE recommends including in-stream sediment sampling to provide multiple lines of evidence in the source track down approach. While the document states "Sediment sampling is generally more useful when investigating smaller areas, keeping in mind that the results don't necessarily characterize local conditions since the source of the sediment may be far upstream (Tetra Tech, 2016)", it still provides evidence of sources upstream of a specific location; this information will be useful when further refining bracketing of a stream network to hone in on these upstream sources.	The County will look into the use of in-stream sediment sampling to provide multiple lines of evidence in the source track down approach. Further discussions with MDE and/or guidance will likely be required to pursue this approach. The County will coordinate with MDE on the PCB monitoring and trackdown methods before initiating the work.
31. MDE recommends applying a reference threshold in Phase 1 instead of presence/absence to determine which subwatersheds to sample upstream as PCBs are likely to be present in all samples due to background levels from atmospheric deposition.	The County is considering the use of a reference site in an undeveloped and predominantly forested watershed within the region to help determine that reference threshold. Further discussions with MDE and/or UMBC likely required to determine if a shared reference site would be appropriate.
32. MDE recommends applying a subwatershed wide stream bracketing approach that can be further refined in subsequent rounds of sampling for Phase 2 instead of a bifurcated track back approach. Please refer to the recommendations provided by MDE on Anne Arundel's Baltimore Harbor Trackdown Proposal for further explanation.	Based on the recommendations provided by MDE on the Baltimore Harbor Trackdown Proposal, the County will consider applying a subwatershed wide stream bracketing approach instead of a bifurcated track back approach for Phase 2. The County will coordinate with MDE on the PCB monitoring and trackdown methods before initiating the work.
33. Section 4.3 provides an overview of the remediation process based on a presentation by MDE on MS4 guidance related to Montgomery County's PCB TMDL (MDE 2014e); however, the steps	Added the sentence "The State has the authority to regulate contaminated sites through the Controlled Hazardous Substance Enforcement Division (State Superfund) if a site does not qualify for the National Priority List (NPL) under EPAs Superfund Program." to

laid out in identifying contaminated sites and reporting them to the EPA for potential TSCA cleanup actions may not be required under the MS4 permit. If the source track down process identifies a potential site with PCB contamination, the State will work with the county through MDE's Land and Materials program to determine the appropriate course of action. The State does have the authority to regulate contaminated sites through the Controlled Hazardous Substance Enforcement Division (State Superfund) if a site does not qualify for the National Priority List (NPL) under EPAs Superfund Program.	Section 4.3.
34. On page 36, Table 14 is missing the cost of UMBCs lab analysis.	The County will reach out to the UMBC lab for information on lab analysis costs.
35. On page 48, under "Technical Needs" it states the "County's contract consultants will seek assistance when needed from local experts in PCB sampling at UMBC…" MDE does recommend passive sampling (e.g., PE samplers) be conducted by UMBC, however, MDE is not aware of UMBC having expertise in SPMD deployment and analysis.	The County is now considering the use PE passive samplers and will seek expert guidance from UMBC, if needed. The County will coordinate with MDE on the PCB monitoring and trackdown methods before initiating the work.