

Appendix G. Compilation of partnership comments received on report, with summary responses

Comments received as of December 8, 2016 are provided below (verbatim).

Upon review of the comments, the Panel Coordinator determined that no comments required significant overhaul or changes to the substance of the panel's recommendations, which would require feedback and discussion from the full panel. The Panel Coordinator communicated with the Panel Co-Chairs and a subset of panel members as edits were made in response to comments. To accommodate an expedited review and approval timeframe this appendix does not have responses for each individual comment received. When provided, the responses are in red.

Changes made to the report can be viewed in the "track-changes" version of the report posted in conjunction with this document. As such, revised sentences or sections are not re-stated here but a page reference is provided. However, the "track-changes" report will not be added as part of this appendix when the report and appendices are posted online.

Please note that references to page or table/figure numbers may change slightly and will not be corrected following WQGIT approval of the report.

District of Columbia, Department of Energy and Environment, submitted by Mary Searing

Please note that the District of Columbia has recently developed a wetlands registry, which should be used over the NWI to the extent possible. Please contact Jennifer Dietzen (cc'd here) for more information on the District's registry.

Thank you for the opportunity to review and comment on the Wetland Expert Panel report.

DC staff should immediately communicate and work with CBPO GIS staff on this (contacts were provided via email exchange). The panel's land use recommendations were approved in Fall 2015. Development and review of all Phase 6 land use data is in the final stages. The data can be viewed online: <http://chesapeake.usgs.gov/phase6/map>

Maryland Department of Environment, submitted by Dinorah Dalmasy

1. The wetland restoration BMP efficiencies are based on an average mean reduction from available literature sources, including studies on natural wetlands currently existing on the landscape. However, these efficiencies are not applied to the natural, existing wetlands in the model (i.e., the wetland land-use acres). Is there a reason for not applying same science and method to the natural existing wetlands as the restored wetlands? MDE recommends that the upland efficiencies be applied to the natural, existing wetlands as defined by the Phase 6 model land-use.

This possibility was discussed by the panel, but based on their understanding of factors used to set land-to-water factors, and the use of water quality monitoring data to calibrate the Phase 6 Watershed Model, the panel acknowledged that the effect of wetlands that exist on the landscape is implicitly captured within the Phase 6 Watershed Model. The timing of data availability for spatial data and the effort required to analyze and evaluate an explicit effect, which could be distinguished from the land-to-water factor, prevented that path and the application of the panel's recommendations as suggested would risk double-counting the benefit of existing wetlands.

2. The upland acres treated are based on assumptions related to the hydro-geologic province a given wetland is located in. These assumptions relate hydraulic conductivity of the wetland in question to upstream drainage areas. For instance, hydraulic conductivity of floodplain wetlands in the Piedmont is assumed to be low due to assumed stream channel incision from anthropogenic sources. To set upland treatment acres, MDE suggests using data that is currently available in the model, i.e., streambank geometry and erosion data inputs to the Phase 6 model and average wetland distance from the segment reach, instead of making assumptions regarding channel incision. For instance, if the stream erosion input data for the applicable land-river segment indicates that the modeled reach is not incised, a greater hydraulic conductivity could be assumed. Furthermore, in phase 5.3.2, to determine a sediment delivery factor from EOF to EOS, the average land-use distance to the modeled reach was used. The same rationale could be used for wetland acres in a segment, i.e., the further the average distance to the modeled reach, the less upland area the wetlands treat, and vice versa.

Thank you for the opportunity to review and comment on this Expert Panel Report. Let us know if you have any questions or need any clarification.

After follow-up conversations with Jeff White, it was clarified that the second point was related to the first one, i.e. that the suggested methods in the second paragraph should be used to determine the area of upland treated by existing wetlands, per the first comment, and are thus not suggested as an alternative to the values recommended in Table 12 by the panel for the Phase 6 Wetland Restoration BMP.

We greatly appreciate MDE's comments, which are excellent ideas. Unfortunately, they cannot be incorporated into the Watershed Model within the timeframe necessary. MDE should discuss further with Gary Shenk (USGS, CBP Modeling Coordinator) or Modeling Workgroup leaders if desired.

Maryland Department of Agriculture, submitted by Alisha Mulkey

- The Panel recommends a loading rate analogous to forest (rather than % efficiency) for TN, TP, and TSS for nontidal wetlands? If yes, will the NWI or other data layers determine the extent available of non-tidal wetlands in a county, or is a jurisdiction expected to report that detail to NEIEN? Correct, the loading rate for the new wetland land uses is equal to Forest in the Phase 6 modeling tools. Jurisdictions have the option to provide improved, more recent data if available for the purpose of defining acres of

existing wetlands. Otherwise, NWI will be used determine the acres. The land uses were then subject to the same development and review as all the Phase 6 land uses. Only the BMP acres are reported through NEIEN.

- The language (pg. 45-46) on wetlands as a land use versus other options is very "soft". Most of this section was adapted from fall 2015 memo to the WQGIT...the land uses were approved so I wanted to document the arguments we used last year. I realize the panel is simply making recommendations but more context on the likely plan for P6 could be helpful. I think you're asking for more info about how the land use acres are determined? Box 1 (p25-26) has a little more info on this, but we wanted to keep it fairly general for the panel report audience. I'd defer to any documentation from the modeling or GIS team for more detailed or technical information.
- Table 9 and the following narrative suggest the Panel proposes the mean % reduction of "all" is the best available option due to limited literature. Are these proposed efficiencies for wetland restoration only? **Correct, only for Phase 6 wetland restoration BMP.**
- Similarly Table 12 (pg 58) reports a % efficiency but also includes an upland acre treatment component, for "other" and "floodplain". It is hard to decipher what wetland types and categories (creation, restoration, etc.) these values are relevant to? **Only for wetland restoration; the other 3 categories have placeholders rates until a future panel works on there other cetegroies.**
- Table 13 appears specific to restoration in tidal areas. I have no knowledge of the "protocols" referenced in the Table. Is this a new level of detail to track and report? **It's referring to the Shoreline Management BMP panel's protocols. For reporting through NEIEN you'd report wetland restoration in tidal areas as Shoreline Management. The partnership needs to consider how to keep the reporting as efficient as possible for other CBP purposes (e.g., so that tidal wetland restoration acres reported as Shoreline Mngmt through NEIEN are still counted for Watershed Agreement outcomes for wetland restoration/creation).**
- Last section pg. 60 acknowledges several BMPs not addressed by the panel. What is the plan time forward to credit these remaining wetland options in P6? **The Wetland Workgroup approved "placeholder" rates in September, so Wetland Creation, Wetland Enhancement and Wetland Rehabilitation are available for reporting in Phase 6, but the efficiency is equal to the average TN, TP and TSS reductions for the Phase 5 wetland restoration BMP and treats 1 upland acre per acre of implementation (same ratio as Phase 5.3.2 restoration BMP). I don't know what the specific timeframe will look like, but we hope the wetland workgroup and others work to develop the charge/scope for that panel early in 2017 so the panel can be formed and launched with minimal delay.**
- Chapter 6, item #4 pg. 63 - this is not the protocol that MDA has ever used for reporting ag-related wetlands. Will our reporting options and details remain available? **Chapter 6 is intended to be more general than just NEIEN since the CBP does track wetland BMPs for**

other purposes such as the Agreement outcomes. I'll defer to Erin on the specifics, but I don't believe we're changing anything besides adding multiple BMPs in NEIEN where there was only one in Phase 5.3.2. Maybe Appendix C helps?

- Erin: In reference to your question below, the only change to current reporting will be the addition of the Wetland Enhancement and Wetland Rehabilitation categories. Whatever process for reporting you have set-up with Denise Clearwater should not change. Denise sends DNR an Excel spreadsheet with the columns listed under 4. Tracking, and asks us to fill-in as much information as we can. Your process with Denise may be different. Chapter 6 was just an attempt to show the information reported to Bay Program for tracking wetland restoration progress.
- FYI - the items listed in #4 are collected annually by MDE and later reconciled with MDA; however, there are a number of issues with project details and timing that make this reconciliation difficult. MDA has a better tracking and reporting option for ag-related wetland practices and would prefer to use our existing system.

In summary, I found this report difficult to navigate in the short comment window requested. I would recommend an Executive Summary of tables to distinguish the proposed credits and a much improved Technical Appendix from Chapter 6 to assist myself and others for NEIEN reporting purposes. I completely agree but unfortunately ran out of time to write an Executive Summary. I can work to add an Executive Summary for the WQGIT-approved report. The Technical Appendix for Scenario Builder (Appendix C) is now available, which certainly adds more clarity for NEIEN reporting purposes.

Thanks for the opportunity to review.

Amy Jacobs, TNC, Wetland Workgroup Co-Chair

I have one request that I wanted to submit for your consideration as you finalize the report. What would be very helpful for the WWG and other wetland restoration practitioners would be a few examples of how the efficiencies and upland acres treated information translates to pounds of nutrients and sediment reduced/ credits in the model. I understand that this will depend on where the site is located and the land use in that segment but even a high and low end example applied to the various wetland types and physiographic regions would be very helpful to help practitioners and managers understand the benefits of restoration and how they are being credited in the model. We agree some specific examples and materials could help; PA DEP made a similar request (see below for that response and Chapter 8 for newly added language).

PA DEP, submitted by Jill Whitcomb

Overall, the *Recommendations of the Wetland Expert Panel for the incorporation of wetland best management practices (BMPs) and land uses in the Phase 6 Chesapeake Bay Watershed Model*

is a well written evaluation. Pennsylvania DEP wetlands staff met with Jeremy Hanson, Panel Coordinator on Wednesday, November 30 to work through the Wetlands Expert Panel (WEP) report. In attendance at this meeting was expert panel representation from Pennsylvania as well as other expert panel representation via conference call. We appreciate the time and efforts of Jeremy and Panel members to work with us and incorporate our comments in the report. Below summarizes the outstanding comments that were discussed at that meeting:

- Pennsylvania recommends the following language to be included in the Expert Panel report: “The statements and procedures outlined in this Expert Panel Report are intended to supplement existing jurisdictional requirements. Nothing in the Expert Panel Report shall affect jurisdictional regulatory and other legal requirements.” **Added to Chapter 2, page 7.**
- Table 2 – move “re-establishing needed vegetation...” and “native wetland meadow planting” from Wetland Restoration examples to Wetland Rehabilitation examples. **Done.**
- Provide additional language to recognize that the recommended values for upland treatment acre ratios in Table 12 reflect best professional judgment. Given the inherent uncertainty, the Partnership should revisit those recommendations when additional data becomes available. Pennsylvania will accept the current in values in Table 12, with the above acknowledgment placed in the report. **Edited the language preceding Table 12.**
- The four BMP categories/definitions add potential for confusion as to how various state, federal, or non-governmental restoration activities should be tracked and reported.
 - The Partnership should consider available mechanisms to provide outreach and informational materials for the broader community that will be the implementers as well as the reporters of the BMP implementation. This may be similar to the resources provided to the stormwater community through the Chesapeake Stormwater Network. **Added a “fifth” point in Chapter 8 with a recommendation for such materials. Specific types of materials and the mechanism for providing these materials are TBD, and should be discussed by the Wetland Workgroup and others interested in the materials.**
- We have considerable concern regarding the Wetland Restoration BMP’s recommended efficiencies compared with existing Riparian Forest Buffer BMP efficiencies. The existing efficiencies for Riparian Forest Buffer BMP’s are greater than the recommended Phase 6 efficiencies for the Wetland Restoration BMP. This difference is contrary to a basic premise of the Wetland Expert Panel that wetlands provide additional water quality benefits compared to Forests (Chapter 1. Charge and membership of the expert panel). There is evidence to suggest that wetlands are more likely to intercept and reduce nutrients in groundwater pathways that are not within the root zone of a Forested Buffer¹, particularly on sites with legacy sediment or where streams have been relocated to valley margins².

This is a good point and some panel members have participated on past Forest Buffer expert panels for the CBP so the panel did discuss how it may relate to wetland BMPs. However, the panel’s scope is limited to the wetland practices in its Charge and this issue falls to the partnership – specifically the WQGIT, Forestry Workgroup, in consultation with the Wetland Workgroup and Agriculture Workgroup – to consider. The most recent expert panel report to

evaluate forest buffers was approved in October 2014 by the WQGIT. That panel concluded “there is insufficient new information on buffer efficiencies at this time to make comprehensive changes to the current set of efficiencies for buffers.” They did provide an adjustment to TN removal for Forest Buffers established on both sides of the stream, but otherwise the effectiveness values applied to upland acres for the Riparian Forest Buffer (RFB) BMP remained unchanged from Simpson and Weammert (2009). As with the proposed Wetland Restoration BMP, the RFB practice is a land use change, plus additional treatment of a given ratio of upland acres. For the RFB practice, 4 upland acres are treated for each acre of buffer for TN; 2 upland acres are treated for TP and TSS. The most recent panel stated in its report that “the Panel realizes that buffer width and vegetation type are likely to be less important than whether a buffer actually treats nutrient-laden water (hydrologic flow path). The efficiencies for riparian buffers should be reconsidered when, but not before, these flow paths are better understood and can be accounted for in the Chesapeake Bay Watershed Model.” (page 3, http://www.chesapeakebay.net/documents/Riparian_BMP_Panel_Report_FINAL_October_2014.pdf)

- This discrepancy could have some negative unintended consequences like installation of Forest Buffers to simply maximize reduction credits on sites where Wetland Restoration would be the appropriate ecosystem to restore. Practitioners may arbitrarily install a Forest Riparian Buffer on sites where Wetland Restoration would provide greater water quality benefits than what are expressed in the recommended BMP efficiencies.
 - There are improvements and co-benefits from wetland restoration BMPs that are not captured in the nitrogen, phosphorus, and sediment efficiency values. The efficiency values only offer part of the full picture of the benefits of wetland restoration. *We’ve added some new language in Chapter 8 to this effect. It should also be noted here that there are ongoing efforts by the partnership to gather and build more info into planning tools such as CAST related to habitat benefits.*
 - It is possible, yet not confirmed that the studies that were used to set the RFB values evaluated sites that would be better described as forested wetlands, and thus, set a skewed value for buffer efficiencies. This is not a critique of the practice or effectiveness values that were evaluated by experts and approved by the partnership using the best science and best professional judgment available at that time. However, the Partnership should look into any additional research and information as well as interest in revisiting the current efficiencies for RFB. We suggest that the Forestry Workgroup and Wetland Workgroup collaborate to determine how to proceed, as well as collaborate on the formation of an expert panel, if one is necessary. *Agree that the workgroups (and WQGIT) should take this into consideration as this goes beyond the Wetland Expert Panel’s charge.*
 - A stronger communication of uncertainty may also help practitioners to make informed decisions and to prioritize BMPs more effectively. This may include providing information about which BMP effectiveness values rely more heavily on best professional judgment or fewer empirical observations -- and are thus ready in the cycle

of reevaluation by the partnership – and which BMP effectiveness values based on extensive empirical values and peer-reviewed data are less likely to warrant revision by the CBP in the near term. This is an overarching suggestion beyond the Wetlands Expert Panel report. We've added language preceding Table 12 as noted above, and support the suggestion that the partnership build on previous discussions of overall uncertainty in the modeling tools by exploring ways to depict or convey uncertainty to planners and decision-makers beyond the written expert panel reports alone. Albeit may only be feasible to express uncertainty qualitatively for many BMPs, the information would still supplement decision making.

- We generally agree that the conceptual model/framework is a good foundation moving forward. That said, there is room for improvement in specific values that have uncertainty such as the upland acre ratios. There also is opportunity, as well as a need, for development and improvement of tools and data to better understand prior-converted areas that may offer the best opportunities for targeted (and likely more effective) wetland restoration activities overall. This statement has been added to Chapter 8 (third point, bullet 5).

Thank you for the opportunity to comment.

¹ Sullivan, P.L., et al., CZ-tope at Susquehanna Shale Hills CZO: Synthesizing multiple isotope proxies to elucidate Critical Zone processes across timescales..., Chem. Geol. (2016), <http://dx.doi.org/10.1016/j.chemgeo.2016.05.012>

² Merritts, et al., 2011. Anthropocene streams and base-level controls from historic dams in the unglaciated mid-Atlantic region, USA. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences 369, no. 1938 (March 13, 2011): 976 -1009.

USACE Comments on "Wetlands and Wetland Restoration. Recommendations of the Wetland Expert Panel ...,"First draft ...11/22/2016. (Comments from CS and BB.)

Section	Comment / Suggested Revision	Rationale Red text with status/response from panel reps
General	Consider ways to reduce length of supporting text in Chapters 1-4 to only that necessary to support Chapters 5 onward	Document has substantial background information in first 43 pages that ultimately is of uncertain necessity to support recommendations. Unable to do this in short-time frame required
Cover Page	Add term "Non-tidal" at end or beginning of title	To clarify that this document refers almost explicitly to non-tidal wetlands Edit made (track-changes functions oddly with even simple additions to titles/sub-titles, so the line is in red font to indicate change)
Table of Contents	"List of Figures" need only include figure caption to first "." Remainder can be deleted (e.g., Fig 3 delete "Water infiltrates ...")	Standard practice, although you may have to fight Microsoft Word to do so! Done, but yes - Word will fight back later.
p. iv	Add TSS	Acronym used in report Added
p. 1, para 2, line 3	Add word "position" after word "landscape"	To introduce term and for consistency with remainder of report. Added
p. 2, top bullet	Clarify whether impacts to other land uses also of concern for report	Confusing to reader Not added as this is directly from initial panel charge.
p. 4, "Reestablishment (restore)"	This definition must further define wetland reestablishment as a wetland that is planned, designed, and implemented so that it results in a wetland that resembles an ecological	Definition must not assume that a gain in wetland acres automatically results in a gain in function, and definition should be very clear and consistent with current USACE definition.

	reference site based on characteristics of an intact wetland of the same type that exists naturally in the region. This definition should also indicate that the "Results in a gain in wetland acres AND FUNCTIONS".	Not added. This is the existing Phase 5.3.2 definition for the BMP, and the inconsistency you noted is one reason for this panel's formations and its recommendations.
p. 4, para. mid-way through page	After "same as forests" add something like "(forests in model include both wetland and upland forest areas at this time)"	Somewhat confusing as forested wetlands are a type of wetland, but not all forests are wetlands nor all wetlands forests Added
p. 5, "Former wetland or historic wetland"	This definition needs more details to identify that a former wetland habitat type previously existed at the specific site.	The available evidence that will be accepted must be described as collected from aerial photographs, prior delineations, historical maps, and forensic soil analysis. Added
p. 6, bottom paragraph, line 10	Add "(Table 2)" after "for CBP purposes."	Clarify to reader where information will be found Added
p. 7, top para., first sentence	Change sentence to "Some other practices also include wetland restoration,..."	Floodplain wetlands are a type of wetland as this report goes into great length to cover later. If concern is preventing double-counting benefits, then state that. Revision made with slightly different language
p. 7, Table 2, Row "Restoration"	Proposed BMP Category of "Restoration" should be relabeled as "Re-establishment"	To coincide with definitions provided above on "reestablishment(restore)" and "former wetland or historic wetland" above and reduce any confusion. The proposed definition should also include that re-establishment results in gain in wetland acres AND Functions.

		All acreage gain is functional gain, but not all function gain is acreage gain. We want to avoid adding words that confuse the division.
p. 7, Table 2 Row "Restoration," "Practice and Project Examples"	To table title add "on agricultural land" after "wetland BMPs"	All practices and examples referred to occur on ag land as best I can tell Added. The examples are ag practices, but the definitions are not limited to ag. I would not make this insertion.
p. 8, Table 2, Row "Creation," "Practice and Project ..."	Consider deleting "tidal" wetland example or change it to "non-tidal"	Report otherwise appears to almost exclusively cover non-tidal wetlands Deleted "tidal"
p. 8, Table 2, Row "Rehabilitation," Practice and Project ..."	Insert example change being made to a "moist soil management" wetland	Ongoing management wouldn't be restoration. Presumably a change is required such that new/modified wetland or impoundment would qualify as "rehabilitated" No edit as of 12/12/16, will need to follow-up if specific example needed, but this may be better addressed by next panel or in outreach resources provided as outlined in Chapter 8.
p. 9, top of page	Add sentence stating that compensatory mitigation projects are tracked separately by state and federal agencies.	Clarify that they're not "off the books", just not a restoration given TMDL credit Edit made
p. 10, bottom para., line 10	Add "grading down the floodplain" after "bringing up the stream bed"	Common practice in urban areas, also presumably practiced in agricultural settings (?) Added, but can remove if confirmed this isn't practiced in ag settings
p. 11, para. 2, line 5	After phrase "...not included in Table 5" add "because that topic is not included in the charge to the panel" or similar words	Assuming comment correct, this is important simple point - ag only (?) The sentence is discussing urban, edit not needed.

p. 13, para 2, line 8	After word "phosphorus" add "from eroded soils" prior to "to streams"	P content of regolith, bedrock, saprolite, etc. relatively low. It's erosion of soils containing P that matters. <i>Added</i>
p. 14, bullet 2, line 3-4	Change "thus often limiting in-stream biota" to "and have limited instream biota"	Headwater streams generally fewer aquatic species because of limited physical availability of aquatic habitat exacerbated by effects of occasional droughts that further limit life - even in absence of anthropogenic effects. Excess sediment is a factor limiting life there, but certainly not the only one nor even necessarily predominant one <i>Added</i>
p. 15, after top para	Add subheading above bullets, something like "Wetland HGM Types"	Improve readability <i>Will add this later; adding a header now disrupts Figure 2 and causes ripple effect with page numbers we want to avoid right now</i>
p. 15, para. 1 "Flats," line 2	After word "Accordingly," add "seasonal water tables"	As written, fails to identify winter wet summer dry factor of great importance to coastal plain flats. <i>Added</i>
p. 16, Figure 2	Change "physiographic regions" to "physiographic settings"	Many of these are not "physiographic regions" as that term commonly used <i>Done</i>
p. 16, Figure 2	Add reference for "physiographic regions"	These are not standard physiographic regions of geographers or geologists. Need to clarify their source. <i>Done. GIS data for modified from Brakebill and Kelley (2000).</i>
p. 17, "The Importance of Physiographic Setting"	Simplify this to "Physiographic Setting"	It actually doesn't clarify importance very well, but does explain the various relevant settings <i>Edit not made as of 12/12/16.</i>
p. 17, para. 3, line 4	Delete "the evolution of"	Not needed, confusing <i>Done</i>
p. 17, para. 3, line 9	After "(see Figure 2)" add something like "For the purposes of this report, 10	Improve readability, inform reader of bulleted paragraphs coming up. Added new sentence, also referring to Table C3 which cross-reference's the panels 9

	physiographic settings are recognized"	regions with the HGMRs used in the Watershed Model.
p. 17, "Appalachian Plateau" paragraph, line 4	Add word "mudrock" after "sandstone"	Mudrocks (shale and siltstone) constitute decent proportion of rocks in region Added
p. 17-23	Either consistently include sentence on wetland areas in physiographic region for each and site source, or delete for all	Presented as end sentence for some settings but not others. Inconsistent. Also, if including, source of extant resources/loss estimate needed. Edit not made; ran out of time to make this change and the numbers are still subject to change as P6 land uses are finalized.
p. 18, Figure 3	Add to caption that glacial deposits present in northern PA and NY portion of watershed that are not depicted.	Important regional distinction, and mentioned later in report Added
p. 18, Figure 3	Consider deleting "saline water" from figure and caption	Information otherwise irrelevant to report, and then necessitates further explanation (i.e., originates from dissolution of salt deposits) Fine as-is, since this is modified from another source.
p. 19, "Appalachian Ridge and Valley" paragraph	Consider deleting three types of springs and text on these.	Information otherwise irrelevant to report. What is important is carbonate vs non-carbonate. Prefer to leave as-is.
p. 20, Figure 5	Add to caption that contact between physiographic provinces causes deeper than typical regolith in this particular case at toe of slope.	Graphic useful, but notable difference in rock type, structural geology, and other factors likely produce thicker wedge of colluvium/regolith at toe of slope compared to other valleys not at physiographic province boundaries Edit not made as 12/12/16; specific suggested language requested.
p. 20, "Blue Ridge Province" para, lines 4-5	Delete sentence "As a result, the groundwater system..."	Unnecessary and incorrect. Blue Ridge province has only limited sedimentary rock (Triassic Basins), is mostly metamorphic. Groundwater of Piedmont where sedimentary rock occurs is presumably typical of other

		<p>provinces having relatively flat sedimentary rock (such as Appalachian Plateau). Groundwater of Piedmont in crystalline (metamorphic and a little bit of igneous) rock areas may be similar to groundwater in Blue Ridge (although latter has much greater vertical relief).</p> <p>Edit not made as 12/12/16. Need more input from panel members that wrote this first.</p>
p. 21, top para., line 2	Change/amend sentence to state that Piedmont settings can include regolith 10s of meters thick on hilltops. Also, add term saprolite to the paragraph and its definition.	<p>Although not soil, saprolite of fundamental importance for Piedmont in non-glaciated areas. Surficial aquifer at contact in upland areas at base of saprolite/uppermost occurrence of crystalline rock.</p> <p>Edit not made as of 12/12/16; specific suggested language requested.</p>
p. 21, Carbonate deposits	(None)	Of particular notoriety with regard to discriminating between physiographic provinces - which this isn't - versus a setting, which this is.
p. 22, Coastal Plain, line 5	Provide reference for subdivision of coastal plain.	<p>These subdivisions not typically used by geologists, so reference is important. Reference perhaps: U.S. GEOLOGICAL SURVEY Open-File Report 93-40 (Water-Quality Assessment of the Delmarva Peninsula, Delaware, Maryland, and Virginia-Effects of Agricultural Activities on, and Distribution of, Nitrate and Other Inorganic Constituents in the Surficial Aquifer)</p> <p>Modified from Brakebill and Kelley (2000), as clarified with earlier edits to Figure 2.</p>
p. 23, top para., line 8	Change "contamination by" to "polluted by"	<p>Term contamination generally restricted to toxins</p> <p>Done</p>
p. 25, Box 1, para 1, line 1	Change words "provides a summary of" to "provides methods ..."	Last paragraph of box starting on 5th line ("With respect...") provides summary (also see comments below)
p. 25, Box 1, para 2, line 4	Provide reference for 2m elevation as discriminating	Generally, tidal is fairly claimed up to spring high water such as Titus and Strange (2008) http://papers.risingsea.net/EPA-sea-

	elevation between tidal vs nontidal	level-rise-elevations-wetlands-ecosystems-2008.html
p. 25, Box 1, para 3, lines 1 & 4	Change physiographic "province" to physiographic "setting"	As per comments above. Changes made to key instances (tables, etc. as noted above). Can change other instances in text later, if needed, but need input from panelists first.
p. 25, Box 1, para 3, line 5	Break out new paragraph starting at "With respect..." or move this text into main body of report, and explicitly reference Table 6	This text doesn't cover methods (see comment above) but does summarize inventory from Table 6 Edit made. This box is not intended to cover methods in depth here, as that is covered in model documentation.
p. 26, Table 6, Coastal Plain row	Provide summary acreage for inner + outer, etc.	Can make this change later.
p. 26, Table 6, Karst Terrain	Add footnote that no karst terrain occurs in coastal plain province	It does occur in coastal plain further south (North Carolina southward) Not added; the table is specific to the Chesapeake Bay Watershed.
p. 27, para 1, Nitrogen...	Add to end of paragraph simple statement that wetlands have widest range of biogeochemical conditions on landscape with both oxidizing and reducing environments in close proximity. Wetlands have immense N transformation capability because ultimate sink is atmosphere.	Of fundamental importance to discriminate wetlands from uplands. While streams can also have anoxic substrates and anoxic water column, the total areas of these environments is small compared to that of wetlands. (Could instead cover this topic in para 1 of p 28 also). Added, but the new language could be better; specific suggestions welcome. We could add that N ₂ gas can be lost to the atmosphere to the previous statement about denitrification.
p. 28, para 2, line 2	Clarify that particulate N trapped on floodplains is poorly bioavailable compared to dissolved N forms	Of major importance - not all N species/forms of equal value in terms of treatment need. (Side note: TN is a particularly poor N metric as it lumps bioavailable (labile) and refractory N forms together as if they are equal in impact to waters). Added sentence.
p. 29, Phosphorus	Somewhere in this section that wetlands have finite P	Points of fundamental importance.

	storage capability, once that reached, they release P. There is no gaseous P form of relevance such as there is for N	Two sentences added at bottom para of p29 and top para of p30.
p. 32, top para., line 12	Add word "slope" after "...limited human impacts to"	Floodplain wetlands conversely in some areas Added
p. 32, top para.	Add coverage of historic and extant wetlands on mined lands	Of local importance, and relevant here in biogeochemistry section As of 12/12/16 no change made; more context needed about "mined lands."
p. 32, bottom para, line 2	Add sentence on research on comparable wetlands outside watershed	Unclear why research needs to be spatially restricted to be of value
p. 33, Summary para., line 6	Clarify whether sloping wetlands that occur on floodplain valley sidewalls might be of great importance.	What these don't capture could then be treated in floodplain itself. Potentially combination of high value.
p. 44, 1st bullet (Wetlands provide ...), line 1	Delete word "supplies" after water	Supplies implies human use only Done
p. 44, 3rd bullet, line 1	Delete "there is strong evidence demonstrating that"	Unnecessary. Fundamental point of entire document. Not done, you make a great point, but it's worth leaving the statement for repetition/emphasis.
p. 44, bullet 4, line 3	Change word "flooding" to "saturation"	Hydroperiod not restricted to flood conditions Done
p. 47, (3), Sentences 3 onward	These sentences ("The recommended wetland...") are fundamental explanation that should also be included near beginning of document	These sentences cleared up lots of confusion for me, should've been introduced earlier. Edit not made; unable to think of specific place to introduce these points earlier, unless we add an Executive Summary.
p. 48, paras 2, 3	Add sentence explaining why TN used as metric	I believe USEPA convention standard. However, arguably poor metric as lumps labile and refractory N forms such that obscures pollutant treatment capabilities of various ecosystems (and BMPs)

		No edit made as of 12/12/16; additional context and clarification needed.
p. 52, bullet 3	State what period of time averaged to determine treatment efficiencies.	Presumably average over one year (?) to account for low N processing in winter but high in spring No edit made as of 12/12/16; waiting for clarification by specific panel member.
p. 54, Box 2	After "..effluent waters" add "and may be subject to periodic maintenance"	Not sure whether correct for ag wetlands, but thinking of SWM wetlands which are periodically dredged, grubbed, etc. Added, but new sentence reads awkwardly. Edited for grammar.
To read p. 54, para 3	Move sentences describing how carbonate bedrock combined into one class to "carbonate deposits" on p. 21	Needs to be earlier in document as displayed in Figure 2 Left alone, for now.
p. 56, Table 11	Change column heading "Physiographic Province" to "Physiographic Setting"	Consistency through document, plus these entries are not all physiographic provinces in traditional sense Edit made to table title and header row for Tables 10 and 11
p. 56, Table 11	State whether mined land wetlands considered in table	Of local importance in mined lands More info needed about mined lands
p. 60, para 1, last line	Add statement that accelerated rate of sea-level rise now means we're in for net loss of tidal wetlands in coming decades.	It is essentially impossible for watershed to now have increase in tidal wetlands to replace historic losses. We can't even keep what we have now due to drowning in place and erosion. No change made. Other CBP processes (Climate workgroup) and documents adequately speak to this issue, and absent additional language to address anticipated acreage and functional adverse effects of climate and human development on non-tidal wetlands, we should not include here
p. 63, "4 Tracking"	Reestablishment should track gains in functions as well as acres	Reestablishment does not always result in successfully establishing a highly functioning wetland. Often results in invasive species dominating the site and

		lower functioning site than the original area.
p. 68, para 2, last line	Change sentence to state that wetlands seen as sinks for N, but only temporary storage places for P	Substantial literature now on P release when P saturated (including when sediment capacity reached, as well as biogeochemical P release) <i>Edit made</i>
p. 69, para 2, line 3	Clarify that much of upland forest water budget is from precipitation (rather than surface or groundwater), thus lack interception opportunity of wetlands	While downstream loading rates from upland forests could be same as wetlands, their interception capability fundamentally different <i>No edit as of 12/12/16. Specific suggested language is requested.</i>
p. 69, bullet 1	Reword bullet to clarify why prioritization needed	TMDL seeking to provide nutrient load reductions, locals choose how to best do this based on many factors including cost. If decision which TMDL measure to pursue is chosen based on cost, total load reduction, and other factors, unclear why we need prioritization addressed here. It will depend on best opportunities in different places. <i>We've added more language in response to PA DEP comment that expands more on this issue, so no change made to this bullet. Project costs and reductions in the modeling tools are certainly factors but the panel must acknowledge other factors that should play role in setting priorities.</i>
p. 69, bullet 2	Delete term "shuffle zones", delete "an organic rich"	"Shuffle zones" not covered previously in document nor a commonly used term. Organic content of soils is function of other factors, including sedimentation rate, decay rates, etc., not necessarily groundwater/surface water interactions <i>Alternate edit made. "Shuffle zone" is not explicitly defined but the context of the sentence is sufficient to convey the point.</i>
p. 69, bullet 3	Add "soil depth, carbon content," prior to "mineralogy"	Mineralogy only one of several important factors <i>Added</i>

p. 69, bullet 4	Change to "Identify surface features indicating likely groundwater flow pathways and groundwatershed"	Subsurface feature investigation complex and probably costly (would be investigating structural geology and lithology, etc.) <i>Edit made</i>