Summary of Comments Received on Phase 6.0 Nutrient Management BMP Expert Panel Draft Report

(Version 8/1/16)

Section 2: Practice Definitions

West Virginia:

*Specific comments/questions from WV in italics:

"It is essential that an initial baseline for NM implementation is established that allows estimation of progress over time." *What year will be used for this baseline?*

"Spreader/applicator calibration: The equipment being used to perform the nutrient applications by the farm operator needs to be documented and verified that the machine(s) have been calibrated either according to manufacturer specifications or by standard calibration practices within one year of the application." *Need flexibility on this point in both verification methodology and length of time between calibration. Would recommend removing "within one year of the application" language.*

"Verified documentation of manure mineralization N credits are included as part of the nutrient balance to account for at least the three prior years." *This seems like overkill and while it may not be so much of an issue with small farms, it would be a sizeable issue for large farms. It would be very time consuming for plan writers to sit down with farmers to retrieve all the data needed for this exercise.*

"Rather, independent documentation and verification that all of the required elements of the N Core NM BMP were implemented is required." *We were surprised that the panel did not require plans to be written by a certified plan writer. This represents significant flexibility while other portions of the document did not.*

New York Upper Susquehanna Coalition: Recommending that farms receive credit for setbacks under the condition that they follow state guidelines for setback widths is problematic in that some states may have narrower setbacks than others, therefore causing a disparity between the states. While every farm should be following their state's requirements for setbacks, we feel that the credit in the Bay Model should be given to all states at the same setback distance. We recommend setting a standardized setback distance in which all states can receive credit for "Placement Adjustment" in the Bay Model, regardless of their state's minimum setback requirements.

> **Chesapeake Bay Commission:** Is there a minimum setback in order to receive credit?
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> **Comment reiterated by Maryland Department of Agriculture.**

Environmental Integrity Project: The report is not clear about how split applications will be treated. Split P applications appear in only one category on pages 11 and 25, but appear in both rate and timing categories on page 17. The report should be revised to make it internally consistent on this point.

Overall, it would help to have a more complete explanation of how split N or P applications should be reported.

Chesapeake Bay Commission: "One single NM Supplemental BMP efficiency may be credited for each of the N Rate, N Timing, and N Placement categories." - So, this means that there is a single credit per category, correct? Not that only one practice per category can be credited? These questions also apply to P.

Regarding Table 7: PSNT is listed in Table 4 as an Assessment Tool. Assessment tools are described on p. 8 as not representing an efficiency credit in and of themselves. Therefore, why is PSNT given credit here?

Page 16: "Cropping/manure history at field management unit level, and Federal and/or state certified Nutrient Management Plan not required" – These two practices are listed under P, but the descriptive language discusses how they relate to N. Perhaps a cut and past error.

Page 16 N Rate Adjustment Practices: "By implementing one or more of the practices listed, an additional N credit will be applied. However, implementing more than one of the practices captured under each supplemental practice category will only result in one credit for the practice adjustment." - This limit (one credit per category) is only listed in the Rate section, so I assume it does not apply to the Placement or Timing categories. Is that correct? "Split applications over time per crop. Total amount of N application may or may not change, but the application is divided into multiple, lower-rate applications throughout the year." - What if the total of the split applications is greater than the Core NM rate?

Page 17: "By implementing one or more of the practices listed, an additional P credit will be applied. However, implementing more than one of the practices captured under each supplemental practice category will only result in one credit for the practice adjustment." - This limit (one credit per category) is only listed in the Rate section, so I assume it does not apply to the Placement or Timing categories. Is that correct? "Split applications over time per crop. Total amount of P application may or may not change, but the application is divided into multiple, lower-rate applications throughout the year." - What if the total of the split applications is greater than the Core NM rate?

Page 17 Section 2.5: "Subsurface injection or incorporation of applied inorganic N." - P instead of N?

Page 19, Secton 3.1.3: "These efficiencies apply multiplicative modifiers to edge-of-stream delivery of N, on the output side of the CBP modeling scheme, and can only be applied if the requirements for N Core NM BMP are met." - Is there an order in which the efficiencies are applied? In other words, apply the Rate efficiency, and then the Placement and then the Timing? Does it matter? Given the differences in efficiencies, it seems like there would be different outcomes depending on the order in which efficiencies were applied. This question also applies to P.

Pennsylvania DEP:

Concerns and questions regarding language on pages 7-8 on specific definitions of "field management unit", the meaning of the term "volume", and the specific requirements of manure spreader calibration. For example, Pennsylvania would like to see the language regarding manure spreader calibration read "Spreader calibration and/or application rate documentation", as we have concerns about our ability to document calibration for prior developed manure management plans, but we can document manure application rates relating to plan implementation.

Table 2 (and Table 3 where appropriate): We have a number of comments regarding this table: What does "and Verified" mean? Each state has their own verification plan document and QAPP, so this

reference seems redundant if that is the reference. Is this referencing some other verification? We need a clearer definition of "field management unit". We would like to see this read; "N rate according to LGU recommendations at crop or field management unit". Maybe the definition buried on pg 14 could be brought forward? We have concern about the term volume and would like to see "and volume" stricken or alternatively to read "Manure analysis and applied volume". For spreader calibration we would like to see this read "Spreader/applicator calibration and/or application documentation". We have concerns about our ability to document calibration but we can document mass applied over area. The yield estimate line would be more correct if it read "Planned crop and yield estimate at the field management unit" Cropping plan implies a multi-year plan for an annual practice.

Table 5: Need clarification: Is split application for a total reduced rate below LGU rate?
Table 6: We take this to mean the state-required setback.
Table 11: We are not sure that we would ever be able to provide this detail. This is actually done during the development of the plan and is effectively "baked into the cake".
Page 14, 'Spreader/Applicator Calibration': We are unaware of manufactures' actually developing these specifications and suggest modifying the last part of the sentence to: "according to recommended LGU practice or by jurisdictional regulation requirements within one year of the application."

Section 3: Effectiveness Estimates

Kelly Shenk: A significant shortcoming of the Panel's report is that it does not provide sufficient documentation on how the Panel arrived at the nutrient reduction efficiencies. Citing a collective 150 years of experience, the use of Best Professional Judgement, and listing references evaluated is insufficient detail in justifying the final efficiencies. Developing nutrient management efficiencies is the crux of the Panel's charge and having sufficient documentation to justify the efficiencies derived is critical. I recognize the extensive nutrient management expertise of the Panel members and trust that the Panel can write a section in the report that provides explains how they arrived at the efficiencies. *Recommendation:* Provide further description of how the panel arrived at the nutrient reduction efficiencies that covers: what data were evaluated for what geographic regions, the range of efficiencies evaluated, how the panel distilled all the data into one number for N and P for the entire watershed, justification for why the efficiencies are representative of the watershed, the level of confidence in the efficiencies and any caveats that need to be highlighted, indication of the level of conservatism the efficiencies represent, and any comparative analysis if appropriate that sets the efficiencies in the context of any similar efforts throughout the country.

> **Reiterated by Delaware:** First, this report draws from unprecedented levels of best professional judgement. The conclusions are drawn from numerous primary source, peer-reviewed, documents without a transparent connection. While Nutrient Management is a worthwhile enterprise for reaching TMDL goals and the benefits of this activity as parameterized by this report service that goal, a higher standard of rigor should be brought to the Agriculture Workgroup.
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> **Reiterated by Jeff Sweeney:** The report is thorough regarding 1) BMP definitions, 2) recommended verification procedures, and 3) descriptions of how to apply information in the models. However, the report does not adequately describe the basis of the recommended efficiencies and, therefore, does not follow the BMP Protocol. Section 3.2 "Justification for Effectiveness Estimates" should be the most detailed section in this report – and among all CBP

Expert Panel reports. The BMPs are, in part, designed to minimize excess nutrients from manure and chemical fertilizers, the greatest source of pollution to the Chesapeake Bay and many other waterbodies in agronomic regions throughout the world. Clear justifications of why the efficiencies are what they are is essential. What's needed are changes similar to revisions to the initial draft Phase 5 Nutrient Management report. Following the protocol, there should be a matrix of relevant specific studies and data that yielded quantifications of the recommended load reductions for each element of Nutrient Management. There should be documentation of greater weight being given to study findings that are more relevant, local, recent, etc. It needs to go considerably beyond BPJ and a reference section for BMPs designed to maximize production and profitability and minimize consequences to the environment.

Reiterated by Chesapeake Bay Foundation: We are very concerned, however, with the lack of scientific support for the pollution removal efficiencies associated with the supplemental BMPs. The scientific justification can be summarized by this statement from page 20: "The entire body of research represented by the citations presented in the References section provided the foundation for the Panel's professional assessment of the effectiveness of the proposed NM BMPs." With all due respect to the very capable and qualified members of the panel, there needs to be more specific documentation regarding how these efficiencies were derived. As noted in the Appendix (p 56 and 57) and is specified in guidance for BMP expert panels, the expert panel reports should include: "Justification for the selected effectiveness estimates.. including a detailed discussion of how each reference was considered, or if another source was investigated, but not considered." This level of analysis and transparency is not included in this report. As noted in the introduction, NM BMPs apply to literally millions of acres, so ensuring the science is sound and decision-making is transparent, is critical – for the integrity of the scientific underpinnings, but also for the credibility of the Chesapeake Bay Program. So, we respectfully request that the panel more closely follow the expert panel guidelines and provide the rationale and scientific foundation for decisions regarding pollution removal efficiencies as well as the land uses/crop types to which the supplemental BMP should be applied (e.g., do we expect that variable rate nitrogen on wheat would have the same benefits on corn? explicitly consider geographic variation e.g., were data representative of the different soils, ecotones we have in the Bay region? As well as note what range of efficiencies were noted in the reviewed data? e.g, are estimates conservative or do they represent the "mean"? and on a related note, what level of confidence do you have in the numbers? Was there lots of information for some practices, but little for others? From the information that was presented in the draft report, we have no idea of the answers to these questions.

Reiterated by Environmental Integrity Project: The Phase 6 panel is presenting much higher efficiencies than the Phase 5.3.2 panel, with no explanation of how these efficiencies were derived. The report does not explain how the efficiency recommendations relate to the scientific literature.

Reiterated by Pennsylvania DEP: While it is recognized that best professional judgement of the Expert Panel was necessary to determine the BMP efficiencies on pages 18-20, it is difficult to

determine the basis for the development of the non-NM efficiencies. Some explanation of this would be useful, particularly if it is possible to address in simple terms.

Jim Copper: I hesitate though using the term Non-Nutrient Management BMP Efficiency in tables 12, 13, and 16 and in figures 3 and 4 captions and Contents, titles for figures 3 and 4. I would drop BMP out of the term as non-nutrient management is no best management practice. It is a farming practice but certainly not a best one. My greatest fear with this exercise is that we completely discredit the use of nutrient management to reduce the availability of nutrients. An efficiency value of 1 for both non-nutrient management and nutrient management does that. An average is not very meaningful because it does not indicate the range that created that average. Today if someone was to do a nutrient management plan on pasture and implement it, they appear to get no credit for doing it even though they may have been putting down a lot of extra N and P inadvertently. It makes it look like the practice has no practical value. If that is the case, then the practice name is a misnomer. It does depend on the purpose by which nutrient management is applied - improve water quality or improve yields. They can work counter to each other if they used apart from each other.

Gene Yagow: I think the terminology used in Appendix A is much more straight-forward in referring to the Core Application Goal modifiers as "multipliers", rather than as "efficiencies", as used in the body of the report. I think it is very confusing and a mis-use of the term "efficiency".

Delaware: The combination of disparate application rate goals between nutrient management and non-nutrient management acres under the CORE lacks equity amongst the states while the final distribution of fertilizer sales is the true measure of application rates. The synthesis of CORE NM coverage and distributed fertilizer sales will result in states with higher adoption and compliance rates. This will force neighboring states to absorb additional fertilizer, in effect double-counting the detrimental effect non-NM acres. A more equitable solution to apply the benefit of NM or detriment of non-NM acres, could be to summarize current levels of CORE NM across the watershed and simulate disparate application goals in scoping runs that yield a resulting efficiency credit for acres of CORE NM which could be applied universally. This credit could be calculated by an average or other arithmetic method following the scoping runs, to be reviewed by the AMS and Agriculture Workgroup. Attempting to apply 30% more P to non-NM corn for grain acres and instead forcibly applying upwards of 40% more to counties with lagging implementation, will cause fluctuating benefits through time and across jurisdictions as implementation creeps towards 2025 goals. Documented levels of effort can be run in the models, resulting in an average benefit that can be substituted for this variable rate that works much the same as Phase 5's land use change method for credit. This would have the benefit of increasing equity of BMPs and consistency through simulations and progress runs that better communicate exceedances and shortfalls in nutrient reduction goals. Recent surveys and lab data have found that regionally, over 80% of farmers have current manure and/or soils analysis and 75% are maintaining appropriate levels of soil fertility. Such evidence is supportive of the conservativeness of recent state implementation rates and the consistency of implementation across vast areas of agriculture.

Jeff Sweeney: In order for "efficiencies (that) apply multiplicative modifiers to edge-of-stream delivery of N," the recommended benefits needed to be grounded in studies that looked at monitored in-stream

changes in loads or concentrations, e.g. paired watershed studies. Is this the case – or did most studies used in the panel's evaluations look at, for example, edge of field changes?

Gene Yagow: On page 21, the supplemental BMP efficiencies are referred to as being "additive", whereas Table 16 and the examples show that they are instead "multiplicative". For further clarification, an example should be given that shows how the math works out when more than one supplemental credit is applied. Currently, all the examples just show one supplemental BMP being credited at a time.

> **Reiterated by Chesapeake Bay Commission:** What is the process by which C, D and E are "additive"? How is the final calculation made when multiple adjustments (rate, placement and timing) are present? This question applies to the P calculation below as well.

Pennsylvania DEP: It would be valuable to understand the impact of non-NM efficiencies within the Phase 6 modeling structure.

Virginia:

Core Nutrient Management:

1. We recognize core is meant to be the base or lowest level of recognized implementation. However and more importantly, core is the foundation on which any nutrient management credit, including the enhancements, will rest upon. Shouldn't that base be built upon such fundamental, agronomically sound building blocks for nutrient management as actual soil and manure test values not book values? The only time manure book values should be acceptable for core nutrient management is at start up for new operations that have yet to produce manure. Only local or mid-Atlantic based book values should be considered reasonable even then. This allowance should only be valid for initial planning purposes and a manure analysis should be attained and utilized to adjust recommendations when manure is first available for land application and from that point forward. There should be no exception to using soil test at the field level less than 3 years old as the basis for phosphorus core nutrient management. Even on fields testing too high for a land grant university phosphorus recommendation, the soil test value is generally a component of a phosphorus loss assessment tool to determine if phosphorus may be applied. Using an assumed soil test value based on a waiver with such tools may allow greater phosphorus application on fields than an actual soil test value used with the tool would indicate for that field. We recognize some jurisdictions currently utilize such waivers to achieve nutrient management or manure management planning. These jurisdictions will need a ramp up or grace period to begin implementation of core nutrient management without such waivers. Three years seems to be recognized as a typical plan life cycle and could be considered as a timeframe for such a ramp up. **New York Upper Susquehanna Coalition supported this comment. Maryland Department of Agriculture reiterated this comment.**

2. The report states "Federal and/or state certified Nutrient Management Plan not required. The NM Panel did not define the N (or P) Core NM BMP to require a comprehensive and/or certified Nutrient Management Plan (NMP) in order to receive the BMP credit". Upon initial review these statements did not seem overtly alarming or concerning. However, following more in depth

thought and discussions with colleagues they do present some troublesome undertones. Nutrient management or manure management plans (aka: plan(s)) have been the core of nutrient management programming efforts in essentially every jurisdiction within the Chesapeake Bay Watershed since inception of these state run programs. Eliminating the requirement for plans to serve as the mechanism to deliver and report the core elements of nutrient management may very well serve to erode the validity of these plans and the programs we have worked so diligently to develop. Currently, plans are required for a multitude of purposes such as permitting and cost share of various practices. How can we return to our respective states and still assert that a plan is required for any purpose if we have agreed it is not necessary to achieve credit for core nutrient management? Not only that, but nowhere in the proposal does implementing a plan garner credit. Producers and organizations that have fought the development of plans for years could very easily demand such plans be eliminated based on our agreement they are not an essential part of core nutrient management. As stated above, plans serve as the current mechanism for reporting. Many of our activities and efforts revolve around attaining, maintaining and especially reporting plans. Without this framework called a plan what mechanism will be utilized to capture core nutrient management acres? How much time, effort and money would be needed to facilitate use of a new or additional reporting process? How would we attain the needed data on these core practices without a plan? The point being, the plan has been a valuable tool that has been adapted and utilized over nearly three decades. To discard or even minimize it now without careful deliberation may well prove to be an error in judgement.

Advanced Nutrient Management

1. Manure analysis < 3 years old is listed as an “Advanced N Assessment” and an “Advanced P Assessment” in the report. Soil test < 3 years old and P index Assessment are also shown as “Advanced P Assessment” items in the report. Each of these are also enumerated in the required elements for core nutrient management. Soil and manure testing are specifically detailed in the core table while the p loss assessment is included as an option under Land Grant University recommendations used to determine p application goals at the field level. Depicting these items as both core and advanced elements may be confusing and, possibly, suggestive of an attempt to garner undo double crediting for these items.
2. Elements required to attain core nutrient management credit for n or p or both cannot be considered as advanced nutrient management. Also, elements that may be used to attain core nutrient management credit for n or p or both, such as p loss assessment, cannot be considered as advanced nutrient management.
3. Soil testing at lesser intervals than 3 years (for instance, soil test < 1 year old) should not be considered for “advanced p assessment”. Inclusion of such a practice will only entice some groups to seek cost share funding for these practices based solely on their inclusion on a list of advanced n or p assessment in the model. Funding for such additional practices that may garner little benefit is not feasible or prudent.

Similar Comments from Chesapeake Bay Foundation: Table 6 and 10: It is unclear why "credit" would be given for setbacks from water. Doesn't the application of "core NMPs" require there to be some setbacks from water? Table 8: Having a soil test for P that is less than 3 years old is a parameter for the core NMP BMP credit, so why is it also listed for supplemental timing credit? Similarly manure nutrient analysis and use of a Phosphorus index are also listed as a core requirements, but also listed as an examples of advanced nutrient management. This should be clarified.

VA DEQ: PSNT is listed in Advanced Assessment Tool and N Timing Adjustment. So is it that a PSNT is recommended in the plan or actually done? And if done does it get credit for timing and advanced assessment or just timing? It is possible once a PSNT is done that additional N fertilizer is not needed. Would that also not be a rate adjustment since additional N fertilizer is not used?

New York Upper Susquehanna Coalition: The supplemental P efficiencies on page 20 of the report for Legume Hay should also be used for Other Hay. We ask the panel to develop non-zero supplemental N management practice efficiencies for Other Hay, perhaps at similar percentages to those used for P.

Pennsylvania DEP:

Table 12: Legume hay has a "penalty" applied but there is no NM BPB that can be applied against it. This seems unfair to LH-rich jurisdictions and suggest that this value be 1.00 without supporting information as to why it should be 1.20.

Table 13: 3x LGU rate seems high. Is there scientific literature to establish this? Otherwise, it needs further explanation like the prior table. Would 2.5 be a better number? And what is the overall effect (sensitivity) of changing this multiplier?

Section 4: Review of Literature and Data Gaps

Jeff Sweeney: What's the status of the "second independent source of data representing historic Nutrient Management implementation [that] has been requested from the USDA NRCS CEAP – based on the two existing reports published on the Chesapeake Bay Watershed"? Is this statement about HUC-4 scale information still relevant and, if so, are there results that can be used in the Nutrient Management report?

Section 5: Application of Practice Estimates

Kelly Shenk: Significant Improvements from Phase 5 Approach**:** The following are significant improvements to the Phase 5 approach that will help increase transparency in verifying, reporting, and crediting nutrient management activities that are resulting in verified actions that will reduce nutrient losses. Improvements include: Moving away from crediting "plans" to crediting specific suites of verified practices that are implemented to manage nutrients related to source rate, timing, and placement. Crediting the supplemental practices only after the core nutrient management BMP is implemented to ensure a baseline level of nutrient management on which to build the more advanced approaches. Crediting supplemental practices only when implementation of adjustments in nutrient

rates, placement or timing is verified so that we are crediting the nutrient reductions that are happening due to these advanced practices.

Jeff Sweeney: In section 5.8 Practice Limitations, "These practices may be applied to all agricultural land use categories in the CBW" – yet it appears there's no recommendation for benefits of pasture and nursery nutrient management for practices similar to those in the report. In other words, if pasture nutrient management is anything beyond, for example, prescribed or rotational grazing, alternative watering and fencing, please clearly describe in this report – and for nursery as well. There's been uncertainty about what, exactly, should be reported for pasture nutrient management so this is the time to resolve the issue.

Jim Cropper: More consideration should be given to pasture and the nutrient inputs it receives, either from manure, poultry litter, or commercial fertilizer. N application rates on pastures based on forage production removal rates, as if they were hayfields with no grazing livestock on them, is not a valid method of determining N requirements for pastures. This has the same effect (or larger) as saying that it takes 1.2 pounds of N to produce a bushel of corn. On average 85 percent of the N ingested by the grazing animal is returned to the pasture, therefore there is no need to import large amounts of N to a pasture any more than to import coal to Newcastle. I am hopeful this is not a problem with LGU's within the Chesapeake Bay. I know it is a procedure used elsewhere as I have been to their websites and have seen it mentioned in popular agricultural press. To do otherwise, is to thoroughly discount any of the N returned to the pasture by the grazing animal as being available for plant uptake. N applied either with commercial fertilizer or manures must be reduced to account for N being returned by the wastes excreted on the pasture by the grazing animal, imported feeds N contributions, and also N contributed by legumes growing in the pasture if they compose greater than 10 percent of the forage mass produced. In other words, a mass balance of N needs to be done before making any additional N fertilizer recommendations on pasture. We really do need to get a handle on how many acres of pasture do receive manure. It also appears that we need to know where exported manure goes and its rate of application that is spread off the farm producing it. I know this is a touchy subject, but it would appear if the manure is going off the farm that every place it goes to must be a part of the whole nutrient management plan for the producing farm, not just cover the producing farm acreage. The data should be available in each state doing nutrient management planning, but it may be incomplete if exported manure is not tracked.

Jim Copper: The zero baseline has to be when P-based requirements were initiated by each State as it relates to pastures that receive poultry litter. Unfertilized pastures may as well have the baseline be 1985. For pastures where supplemental feeding of hay or TMR occurred, the zero baseline would be when nutrient mass balances were initiated that began to limit additional P into the feeding system as operators began following the protocols.

> **VA DEQ:** We are very concerned that this panel is indicating no benefit to NM on "other hay" and pasture. Other hay would include Bermuda grass hay where hog or other animal wastes are applied. In these situations permitted operations must have a NMP. Yet this panel would seem to indicate no benefit to such a plan or permit requirement??? How can this be considering the prospect of disposal rates verses LGU recommendations? Basically looking at land use as provided by CBP Virginia's agriculture is roughly 50% pasture, 25% hay, and 25% cropland.

Without knowing the use of legumes within planned acres of hay there is a concern that CBP will default to all NM reported by VA on hay as applied to other hay? This would seem to relegate 75% of Virginia's agriculture to not needing a NMP or no benefit to reporting them. This does not seem congruent with the educational aspects a NMP has for a farm or with VA being able to meet our Bay TMDLs reduction goals or situations where animal wastes or biosolids are utilized on pastures, pastures that are also hayed and dedicated hay production fields. A preponderance of the reported NM acres on pasture in VA are associated with biosolids permits and applications. Is this panel actually saying there is no benefit to NM planning on these sites? It seems that the panel is only focused on fertilizer applications to pasture and hay and is ignoring organic sources. Suggest the panel reconsider NM planning benefits to pasture and other hay especially in situations where they are tied to manure and biosolids applications.

Section 6: Practice Monitoring and Reporting

Jeff Sweeney: The panel recommends that the highest level of Nutrient Management implementation be represented in the models at reported 2015 acres. However, most states did not have a strong quantitative basis for their reported acres that would satisfy the guidelines for verification – that the panel recommends is needed. There was a compliance "cross-walk" of acres in various state nutrient management programs; however, there were often weak connections between that information and what was reported for the 2015 model assessment. How do we rectify this situation?

Delaware: Second, states' tracking protocols should use a simple approach to tracking and reporting. This is best accomplished by using a menu or check list of advanced NM tools enumerated in the report beyond CORE. While the science behind elements of advanced NM techniques, like PSNT, variable rate nutrient application and banding of nutrients are documented, a common interpretation of an index, tool or test is to in-fact implement no change. Please continue to make this point to non-state stakeholders to prevent any confusion.

VA DEQ: Suggest a single statement on the needs for NM practices to be developed consistent with each states verification program. As is the current report use of the terms related to verification (verified, implemented and verified) is redundant and unnecessary. It is not needed in multiple tables, figures, and repeatedly within the same paragraph (page 11). Current use in this report is overkill when a single statement or paragraph could suffice.

Environmental Integrity Project: The report is not clear about the mechanics of verification reporting, or the consequences for failure to fully document verification results. We assume that the panel intends to give credit for all nutrient management acres, not just the acres with a verification inspection and paper trail. As we understand the mechanics of BMP verification to work, each state will verify a subset of BMP acres and use the results of that sub-sampling to discount total reported BMP acres. That process raises a few questions for the NM BMP, which is in practice not a single BMP, but a suite of BMPs:

- Should each state estimate the rate of overall noncompliance with nutrient management BMPs and use that noncompliance rate to discount total nutrient management acres?
- If so, what constitutes noncompliance? For example, if a farmer intends to implement three supplemental practices to be eligible for all three categories of supplemental N credit, but only

implements two, with the result that the farmer is only eligible for two categories of credit, would that be compliance, noncompliance, or something in between?

- Perhaps, instead, the panel would like to see each state sampling, and reporting with sampling-based discounts, each category. For example, Maryland might sample all "N Rate Adjustment Practices" and discount the total reported "N Rate Adjustment Practices" by the noncompliance rate found in sampling.
- Or perhaps the panel would like to see each state sampling and reporting at the practice level (e.g., split N applications).

The expert panel should clearly state how verification results should be used to discount BMP reporting. For example, the panel could say something like the following: "Nutrient management acres fail verification inspections if the farmer has not implemented all of the "core elements." Nutrient management acres additionally fail verification inspections for each category of supplemental BMP if the farmer has failed to adequately implement at least one practice within that category. For example, if a farmer claims credit for a P Timing BMP, but has not limited P application to the "lower P-loss risk season," then that farm will have failed the verification inspection. Regardless of whether a BMP undergoes subsequent corrective action, the results of the initial inspection shall be used as representative of the success or failure of that BMP. Each state should calculate a cumulative failure rate for all nutrient management BMPs and apply that rate to discount the reporting of each nutrient management BMP."

Chesapeake Bay Commission: Page 30 - **"**The Panel recommends that NM BMP implementation tracking, verification, and reporting on a county-by-county or state-by-state basis be based on the premise that they represent annual Non-Visual Assessment BMPs." - Given the discussion below of how visual and non-visual assessments can be applied, this blanket statement is not appropriate here.

Pennsylvania DEP: Pg. 30, "Since it is an annually reported BMP, the most important criteria (i.e. NM Core N and Core P elements) should be documented somewhere in the records available to the applicable state agency." *Comment: Understand that plans are written for a three-year period of time.*

Appendix A: Technical Requirements for Reporting and Simulating Nutrient Management BMPs in the Phase 6 Watershed Model

Gene Yagow: Appendix A also defines the supplemental BMPs as percent reductions, while the main body of the report talks about efficiencies (1 - percent reductions). Percent reductions are additive, while efficiencies are multiplicative, though not exactly so. Take the following example with 100 lbs of P applied to Grain w/o Manure with rate, placement, and timing percent reductions of 5%, 10%, and 1%, respectively.

Percent Reduction Basis: 100 * (1 - (0.05 + 0.10 + 0.01)) = 84.0

Efficiency Basis: 100 * 0.95 * 0.90 * 0.99 = 84.645

These are not fully equivalent, so whichever basis is used, it should be used consistently both in the document and in the reporting requirements as in Appendix A.

> **Similar comments reiterated by Environmental Integrity Project:** Cumulative nutrient reductions can be much higher in Phase 6 than they were in Phase 5, and supplemental BMP efficiency values should not be additive.

VA DEQ: Not all farms have manure so when it says all elements must be implemented and verified suggest you preface manure sampling with the words if applicable. Not sure how a NM plan writer can verify the spreader/applicator equipment of a custom applicator (fertilizer dealer) is calibrated. Likewise not sure how to verify a farmer actually implements the plan recommendations without tracking fertilizer sales receipts by farm and field. Similar for cropping history in that a planner might document such a history in the plan but not sure how one actually verifies a farmer did what he said he did in terms of which crops were planted in which field in any given year. Again suggest instead of saying implemented and verified so often have one blanket statement somewhere in the report indicating consistency with state verification guidelines.

Environmental Integrity Project: It is not clear how this BMP will interact with the Bay Model. Our understanding of BMP efficiencies is that they will be used to modify Bay Model edge-of-stream load estimates. Yet the expert panel is also suggesting changes to the "input side". If the expert panel recommendations are in fact changing the "input side" of all agricultural acres, it will be a substantial change in the mechanics of the Phase 6 model that deserves broader discussion. Adding to the confusion are discussions of a comparison between "the modified LGU recommendations for application of supplemental inorganic N fertilizer" and an "alternative approach based on county-level redistribution of AAPFCO N fertilizer sales." This is confusing because it is not clear how this comparison affects the expert panel's recommendations, the "alternative approach" appears to be the Phase 6 Model approach, and these discussions only address supplemental inorganic fertilizer, and not manure.

Pennsylvania DEP:

Q1/A1 (pg. 41): These sections should reflect the final report text. Consider "Calibration of spreader/applicator and/or application documentation". We have concerns on our ability to report calibration data but are more confident on mass/area reporting.

Q6/A6 (pg. 45) regarding land use reporting to NEIEN: We may have difficulty reporting to this level of detail for most data sources.

Appendix B: Methods to Estimate Historic Implementation

General Comments

Jeff Sweeney: Most lines and sections in the report are repeated several times throughout. It gives the impression of a lot of filler to make it look long. I suggest not repeating lines and sections as in a solid professional report.

Delaware: Finally, as states' programs evolve to this report and more importantly, to science, some consideration for the legislative and administrative procedural pace needs to be given. For that reason, I suggest one outcome of the report should be a dialog with states about timelines to modify their NM programs in order to adaptively manage necessary updates.

> **Similar comment from West Virginia:** Most notably, because Nutrient Management Programs vary drastically throughout the jurisdictions, flexibility needs to be incorporated as to how each state achieves the core elements and how these core elements are verified. This will obviously be addressed specifically in the states' verification programs. With this being said, it seems redundant how much verification language is included throughout the document, to the point that it detracts from the Nutrient Management focus.

Also, due to new definitions and requirements West Virginia would request that a three-year ramp up period be implemented to allow all states to make the necessary changes or adjustments to their programs to ensure that they can still receive full credit for Nutrient Management Plans.

Similar comment from VA DEQ: Many aspects of the proposed changes in this report have not been tracked or reported in the past. Actual rates, placement, timing, PSNT, CSNT, P-index use amongst other things are currently not tracked. This is a significant change that will require time to implement assuming nothing changes based on comment and subsequent workgroup and WQGIT meetings/approval. A ramp up period will be needed.

Similar comment from PA DEP: The Phase 6 Nutrient Management approach is considerably different from the past and it would be very useful to have a functional "phase-in period" to ensure that jurisdictions receive full credit for nutrient management plans similar to the "Tier 2" crediting, until additional tracking mechanisms can be established to document implementation of individual Core and Supplemental BMPs. The existing PA Chapter 83 NM Program could include some elements of the NM Supplemental BMPs, however not all operations with a Chapter 83 NM Plan utilize all of the Supplemental BMPs and PA's program does not have any collection mechanism for each of these Supplemental NM BMPs.

Maryland Dept. of Agriculture: The new Supplemental Adjustment BMPs have not been tracked or evaluated to the same degree as the Core Nutrient Management practices. Modification in the Nutrient Management Program reporting requirements will be necessary to quantify the extent of implementation in Maryland. The Department therefore requests flexibility in reporting until new program reporting requirements can be established. Further, jurisdictions should be given the opportunity to estimate historical Supplemental BMP implementation as it would be extremely difficult to glean actual supporting data.

VA DEQ: It is not clear how this panel's recommendations square with the p5 AgNM panel recommendations that produce various tiers of NM planning and benefit. Under the tier system NM on pasture and other hay did produce a reduction. Did the phase 5 NM panel consider science the phase 6 panel did not? Or has there been new science since the p5 NM panel report was finalized? A cross walk from the phase 5 tier system to the proposed phase 6 panel recommendations is needed to fully understand the potential impacts to the historical representation of AgNM in phase 6 as earlier versions of phase 6 utilized the tier system for the historical reporting.

Appendix D: Approved Nutrient Management Expert Panel Meeting Minutes

Chesapeake Bay Foundation: Appendix D, the minutes from the Panel meetings was not included. We find this information extremely useful as it provides insights to the discussions and deliberations of the Panel members and can highlight areas where there was consensus and areas where there was more debate. We encourage the CBP to include this information in draft reports of other expert panels.

Comments Submitted by:

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Gene Yagow, Virginia Tech

Delaware Department of Agriculture

Virginia Department of Conservation & Recreation

Virginia Department of Environmental Quality

West Virginia Department of Agriculture

Pennsylvania Department of Environmental Protection

Maryland Department of Agriculture

New York – Upper Susquehanna Coalition

Chesapeake Bay Commission

Chesapeake Bay Foundation

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