

Proposed Resolution of the Identified Policy Issues Coming out of the Manure Treatment Technologies BMP Expert Panel

November 8, 2016

Background

The Manure Treatment Technologies BMP Expert Panel Chair and Coordinator brought forth a series of four policy issues to the attention of the Chesapeake Bay Program (CBP) partnership's Management Board members at their June 16, 2016 meeting. The descriptions of the four policy issues, as presented to the Management Board, are provided below.

For each of the Panel identified policy issues, Chesapeake Bay Program Office staff recommended a proposed resolution. Three of the four policy issues are really technical issues and the fourth are a series of questions to be dealt with by either the Partnership's technical workgroups or individual state trading programs.

The proposed resolutions of these four policy issues, coming directly from the Manure Treatment Technologies BMP Expert Panel, were then distributed to the two Management Board members, Nicki Kasi, Pennsylvania Department of Environmental Protection, and Russ Baxter, Virginia Secretariat of Natural Resources, along with Jason Kepler, Maryland Department of Agriculture's representative on the Agriculture Workgroup, and Patricia Gleason, U.S. EPA Region 3 and CBP staff coordinator for the Offsets and Trading Workgroup. All four individuals were identified by the Management Board at its June 16, 2016 meeting to take the lead on determining what are policy issues which need to be resolved by the Management Board versus which are technical issues to be resolved by the Partnership's existing technical workgroups.

The following proposed issue resolutions factor in comments and feedback from all four above referenced colleagues along with more recent decisions by the Chesapeake Bay Program partnership's Agricultural Modeling Subcommittee, Agriculture Workgroup, and Modeling Workgroup.

Proposed Resolution of Identified Policy Issues

Replacement nutrients. In some cases the treated/transported manure may be replaced by field application of fertilizer. The policy group could consider what reasonable assumptions could be made for trading purposes.

Proposed Resolution: This is a technical issue best resolved by the Partnership's existing technical workgroups. The CBP Agricultural Modeling Subcommittee has developed methodologies to account for manure and fertilizer nutrient applications as a result of Manure Transport in future scenarios. Their recommended methodologies have since been approved by the CBP Agriculture Workgroup and implemented in the Phase 6 Watershed Model by the Modeling Workgroup for application across all jurisdictions in future progress runs and management scenarios.

The fate and re-deposition of reactive nitrogen emissions (NO_x, ammonia). The CBP Modeling Workgroup has already working on how the Partnership should account for BMPs associated with reactive nitrogen emissions in the Partnership's Airshed Model and Watershed

Model. This accounting procedure would apply to more than just the thermochemical and composting BMPs recommended by the Manure Treatment Technologies (MTT) BMP Expert Panel. The Modeling Workgroup discussed this issue at their August 2016 Modeling Quarterly meeting and then made specific decisions at their September 2016 conference call.

Proposed Resolution: This is a technical issue best resolved by the Partnership's existing technical workgroups¹. The CBP Modeling Workgroup discussed the issue of volatilization and re-deposition of reactive forms of nitrogen (e.g., NH₃, NO_x) associated with agriculture BMPs at its Modeling Quarterly meeting on August 9, 2016. This technical model simulation issue includes manure treatment technologies, lagoon covers, manure incorporation/injection, and other existing and new BMPs in the Phase 6 modeling tools which involve NO_x or ammonia emissions and re-deposition. The CBP Modeling Workgroup agreed to work with Chesapeake Bay Program Office technical staff (Gary Shenk, USGS, and Matt Johnston, University of Maryland) to define a small reduction for the overall nitrogen reduction efficiencies for processes which produce more reactive nitrogen than untreated manure. This slight reduction in the efficiencies would incorporate nitrogen air deposition science that suggests some of the reactive nitrogen emitted back into the atmosphere is coming back down within the Chesapeake Bay watershed, reducing the overall nitrogen pollutant loading benefit of the practices.

Also during its August 9th Modeling Quarterly Review², using draft calculations, the Modeling Workgroup made the decision to credit the aggregate effect of these practices and technologies on atmospheric nitrogen delivery to the tidal waters directly back to the appropriate land use. A decision was also made to apply the method consistently to those practices and technologies that increased volatilization and those that decreased volatilization. On its September 22nd conference call³, the Modeling Workgroup finalized the percentages used in the calculation, which now incorporate both deposition to land that is then delivered to the tidal waters as well as direct deposition to tidal waters.

The refined volatilization and re-deposition of reactive forms of nitrogen numbers were presented to the CBP Agricultural Workgroup at its August 24th meeting and were summarized for the CBP Watershed Technical Workgroup at its September 1st meeting. The Partnership's Manure Treatment Technologies BMP Expert Panel's technical recommendations and conclusions will remain unchanged as far as their assessment of the nutrients that remain in the primary manure stream post-treatment for field application or transport; these recommendations are described in the respective chapter for each type of technology. However, the efficiencies used to simulate the net effect of the BMPs in the Partnership's Phase 6 Watershed Model (see Tables ES.1 and A.2 in the Panel's report) will be updated to reflect the final methods and numbers consistent with the CBP Modeling Workgroup's decision on exactly how to simulate the volatilization and re-deposition of reactive forms of nitrogen.

These CBP modeling-related crediting decisions could be expanded to include discussions on how the states may account for reductions in NO_x or ammonia emissions and resultant re-

¹ Given this issue is beyond the scope of the charges to the Partnership's Agriculture Workgroup and the Trading and Offsets Workgroup, the CBP Modeling Workgroup was determined to be the most appropriate technical workgroup to determine how to account for the fate and re-deposition of N emissions as a result of MTT BMPs.

² <http://www.chesapeakebay.net/calendar/event/24232/>

³ <http://www.chesapeakebay.net/calendar/event/24331/>

deposition in their jurisdiction's trading programs. Each state's air quality regulations for NO_x or their applicable permitting programs for MTT operations may also inform how the states would prefer to account for potential NO_x or ammonia emissions from MTTs within their trading programs. The CBP Trading and Offsets Workgroup's state regulators sub-workgroup would have the lead for undertaking these discussions on behalf of the Partnership.

Differences in field application, field runoff of nutrients. Each state's nutrient management programs or other programs may inform the conditions or expectations for how treated manure is land applied. The policy group could consider what reasonable assumptions could be made in their trading programs when the treated manure is land applied to crops.

Proposed Resolution: This is a technical issue best resolved by the Partnership's existing technical workgroups, specifically the Agriculture Workgroup and its Agricultural Modeling Subcommittee. Manure treatment technologies may alter the plant-available nutrients within the manure pile, but unfortunately, the Manure Treatment Technologies BMP Expert Panel did not have the scientific data necessary to determine the magnitude of these potential changes, other than describing how ammonia and NO_x emissions change. The Phase 6 Watershed Model does divide manure nitrogen and phosphorus into plant-available and non-plant available forms, allowing the tool to apply treated manure in accordance with plant-available recommendations provided by a typical nutrient management plan. This approach will be applied across all states. Additionally, states have the option to report manure treated on a dry weight basis. Because dry manure has greater nutrient concentrations, this will impact the application rates of nutrients on fields and resultant field runoff perspective in the Phase 6 watershed model.

Crediting Manure Treatment Technologies and manure transport/elimination. Further discussions are needed to determine how manure taken from the application stream should be credited for trading purposes. Questions to consider include:

- How exactly are credits generated via Transport/Treatment?
- What are the assumptions that are implicit in the credit calculation?
- What constitutes baseline and is there a need to factor in existing Nutrient Management Regulations in establishing that baseline?
- What would have been the nutrient load to waters in the absence of Transport/Treatment happening?
- What would have been the nutrient load to waters as the result of Transport/Treatment?
- What regulatory conditions would need to be established to ensure that the assumptions implicit in the credit calculation occur?
- What credit calculation tools are necessary?

Proposed Resolution: Decisions on methodologies and assumptions related to the model simulation and pollutant load reduction crediting of manure treatment technologies and manure transport/elimination should be and have been made to date by the appropriate Partnership's technical workgroups—Agricultural Modeling Subcommittee, Agriculture Workgroup and Modeling Workgroup—and be consistently applied across all watershed jurisdictions.

The jurisdictions ultimately certify and verify nutrient credits associated with BMP implementation. Therefore, answers to the other questions listed above beyond questions related

directly to the crediting the BMPs' nutrient load reductions are state trading program specific decisions.

Finally, the CBP Trading and Offsets Workgroup's state regulators sub-workgroup has been providing a forum for an ongoing state/EPA dialogue and collective problem solving on these and related questions, with the next such forum scheduled for November 30th.

Submitted by Rich Batiuk on August 30, 2016 to Nicki Kasi, Russ Baxter, Jason Kepler, and Patricia Gleason for review and feedback.

Submitted by Rich Batiuk on November 8, 2016 to the CBP Management Board for their review and approval.