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Agriculture Workgroup (AgWG)

Meeting Minutes

December 19th, 2024

10:00 AM – 12:00 PM

[Meeting Materials](#)

Summary of Actions and Decisions

Decision: The AgWG approved the [minutes](#) from the November AgWG meeting.

Action: Please continue filling out the *Beyond 2025: Actions of Interest for the AgWG* [Mentimeter survey](#).

Email Eric Hughes (hughes.eric@epa.gov) and Caroline Kleis (kleis.caroline@epa.gov) with additional feedback on AgWG priorities and potential office hours.

Action: Caroline Kleis and Eric Hughes will follow-up with information about the February in-person meeting as soon as it is available. Please contact Eric (hughes.eric@epa.gov) with specific scheduling concerns.

Intro & Announcements

10:00 **Welcome, roll call, review meeting minutes**

Kathy Brasier, AgWG Chair

- Roll call of the governance body and meeting participants - *Please enter name and affiliation under "Participants" or in "Chat" box*
- **Decision:** The AgWG approved the [minutes](#) from the November AgWG meeting.

Data

10:05 **Advancing the Science of Nutrient Fluxes from Small Agricultural Catchments in Maryland: Current Research and Collaboration Opportunities – 50 minutes (presentation and discussion)**

Dr. Gurpal Toor, University of Maryland

Losses of nutrients (nitrogen, phosphorus) from agricultural lands continue to plague efforts to protect and improve water quality in the Chesapeake Bay Watershed. As part of our ongoing projects in Maryland, we have established a network of small agricultural catchments (acres scale) on farmer's fields to investigate the origin, sources, and mechanisms driving nutrient losses. These small agricultural catchments are instrumented with various instruments to determine rainfall and flow, collect water samples for lab analysis, and determine concentrations using in situ sensors. This presentation outlined the ongoing efforts in Maryland and how the data generated could be useful in developing and fine-tuning best management practices to keep nutrients in farmers' fields and protect water quality in receiving waters.

Discussion

Scott Heidel: Excellent presentation. I'm curious, did you document the BMPs that were being implemented on those watersheds?

Gurpal Toor: This is a tremendous amount of work. We have detailed information about every click that farmers are doing on the field including when they actually planted, when they

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harvested, when they applied pesticides. It's a tremendous amount of data that we are digesting. So, yes, we do have all that.

Dave Graybill: Great presentation. My question is was there precision farming on any of those catchments?

Gurpal Toor: We have two catchments where there is precision irrigation. Other than that, I don't think there are any other farmers who are doing any precision. We are doing a lot of soil sampling in these fields. But, no, other than precision irrigation management, there is not much. There is drainage water management. We are working on one of the catchments where we've installed drainage water management. This is remotely monitoring. You can actually control the board at different points, and you get tremendous amount of data, and that's one of the practices that people use in the Midwest. The idea is that after you harvest crops, you can actually have water standing in the field because nothing is growing. If you are able to close, in some way, the pipe that is draining, you can keep the water there. The idea is that if you are able to do that for the winter time period, you can keep the nutrient loads and hopefully some of them might be de-nitrified or sequestered. Early spring you open the board and that's where all the things start running. I think there are some concerns people have, but that was the idea. Although it's a good idea, I will tell you from our monitoring that it's actually creating a lot of messy situations. There's a program that it opens the board at different sides, and we don't want it to open because we are collecting the samples on the other side. But, we are testing and seeing how that is working out.

Ken Staver: Gurpal, amazing scale of the effort. I know it's early and you've got this massive number of samples to look through, but what's your sense in terms of steering management and the whole TMDL effort? Where do you think this is going to change what we are doing?

Alex Echols (in chat): Drainage management control structures can now be automated and that is fully supported by NRCS cost share. That eliminates the need to travel to the site and allows for remote tracking of management

Gurpal Toor: We have about three years of data. We are just beginning to look at the data, to be honest. This is a question that I struggle with. What is the message? What could we really realistically do at the field scale? One of the challenges is that you are going to need a lot of years of data to really make meaningful conclusions. I think it would be irresponsible for us to go around with two years of data and then start suggesting those BMPs. In that case, we are very cautious, because we want to make sure that we do the right thing. One thing that has been interesting was that if you look at some of the nitrate losses, where do we see most of the nitrate loss? We actually see a lot of nitrate loss in tile drainage systems because, biogeochemically when the water and nitrate moves through the soil profile, you could actually drink that water. I wouldn't suggest that. Some of them are tile drainage catchments. It's super clean water, but it's loaded with nitrate. What that means is, it has very little carbon. So, there are very little opportunities for denitrification of that nitrate. When you go to lower shore ditch scale, it's loaded with carbon. It's loaded with microorganisms. So, most of your nitrate is already sequestered and taken away in that type of system. So, when we're thinking about how do you actually control the losses, you're going to have to go with different flow mechanisms that exist in different parts of the state. A blanket recommendation to fix losses, I don't think that's going

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to work. You know that it's different in different places. I do not have a very specific answer for you yet, but we're working on it, and we welcome your input anytime you are available.

Ruth Cassilly: I didn't want to assume, but I'm thinking that all of these farmers are conventional farmers. Making that correlation between the carbon level and the nitrate runoff, was anybody a regenerative or organic farmer in this study?

Gurpal Toor: I would say they have all been conventional farmers because many of these fields are higher than the Maryland regulatory limit of phosphorous levels. In our case in Maryland, for example, any field that has more than 500 milligrams per kilogram Mehlich-3, farmers cannot apply manure. At that point you are not using manure in that field, which also means no fertilizer application, although they will use nitrogen fertilizer. So, yes, if you are looking at a traditional definition, it will fall into this category. Another project that we are doing is we're looking at carbon. As you know, in the state of Maryland, there is a Maryland Climate Change Commission, and there's a tremendous amount of interest in how you could verify soil carbon levels and what you can do with that. So, we are working on another project with folks from Colorado State to figure out how good the models are in some of those catchments, and we're getting some really good information. Partly because we have so much other information including field management, the samples that we are collecting, and we are throwing some models there to better capture that. But, it's a combination.

Alex Echols (in chat): To capture the N in tile it is easy to install edge of field practices like bio reactors and saturated buffers. Simply holding back the water when drainage is not required typically reduces N loss by 50%

Nick Hepfl: Maybe something to think about from an engineer's perspective is how does this data inform us for possibly the installation of the denitrifying bioreactors at the end of some of these flow catchments? What I think you've created is a lot of characteristics on flow rate, field characteristics that could guide the development of that practice further, to help us position those BMPs in places on fields that could have the maximum amount of benefit. But, also understanding the management and how those BMPs are limiting based on what the farmer's management is. So, is that BMP right for this farm, based on what you've seen? I think it's a suggestion to think about moving forward from an engineer's perspective of what we're looking at here.

Kathy Boomer (in chat): So exciting to see focus on how water management affects soil health processes driving nutrient transfers to waterways, atmospheric emissions, and crops. Invaluable and underinvested research!

Gurpal Toor: That's a great point. There's a lot of engineering that went into that. We actually had a civil engineering post doc as a part of the project in early phases, and he did a tremendous job. The challenge with BMPs is you are not going to be able to have a denitrifier at the end of every single field. Even if you have all the resources, the hydrology is just not going to work. In this case, what we are interested in is if there something we can give back to the farmers in each of those catchments. To us, they're case studies because there are similar farms and scenarios that exist in different parts of the state. We don't want to overburden them with ten ideas, because we know that doesn't work. So if there is one or two concrete ideas that could work as sort of case study examples, that would be a great way to do that. It's a real challenge because controlling losses after they've left the field is almost impossible because you are dealing with a

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tremendous amount of flow and water. We are interested in that idea, and we would love for you to experiment on some of these sites because, in the second part of our project, we will be very interested in using and testing some of those BMPs because we have a good understanding of hydrology and other characteristics. I would love to have more of you think about what you could do. We are very open to collaborating with people, so if you have an expertise and a unique angle that you want to test out, come talk to us.

Nick Hepfl: Very good, thank you.

Ken Staver: I was thinking about your phosphorous spike in your tile drain, which is a big problem out in the upper Midwest with the whole Toledo water supply. Was that a no till?

Gurpal Toor: Most of our sites are no till. Sometimes there's a little bit of minimum till because you have got to plant. Generally, they all are no till.

Ken Staver: Do you think with a little incorporation and getting better soil contact that the tile drain numbers might be a little lower in that situation? What's your sense there?

Gurpal Toor: The tile drainage makes it a little bit more complicated in our area. If you look traditionally in the pattern tile, that's like a tube about 3-4 feet deep. In that case your loss is very little because soils have a lot of capacity to fix phosphorous as it's going around. We also have another tile riser or tile well type of drainage system. To me, that's actually a surface inlet. So, when you have a surface inlet in the middle of the field, and when you have even 2-3 inches of storm falling, it's going to take all the phosphorous in it. So, it's funny because in some of our earlier data, we're seeing in the pattern tile high nitrate and low phosphorous. Then you look at another tile system which is under tile risers, we're seeing low nitrate and high phosphorous which, to me, makes sense based on the chemistry and hydrology of the sites. I think there is something you could do with the tile risers. I think at some point, I would like to test a buffer around that. I think that could potentially work to reduce any particulate losses from just getting into that hole.

Dave Graybill (in chat): Sounds like a great field trip possibility to see how the catchment sites actually work.

Eric Hughes (in chat): I like the way you think, Dave!

Ken Staver: Ok, thanks. They are pushing what they call blind inlets. I don't know if you've seen those yet, but NRCS has that. I think they have cost share for it, or MDA does. They actually don't have an open riser, it's a buried riser.

Gurpal Toor: I think we need more data, to be honest. I think we have some data that we could use. I know that's NRCS practice. I think they are used heavily in the Midwest. Many of our BMPs are actually common sense. I think we need more science based, better practices that we can tell farmers they'll actually work and get rid of the ones that don't do anything.

Alex Echols (in chat): I can set up a field trip if there is interest and can bring in people who know their stuff on this.

Kathy Boomer: This is a really important topic of research- connecting water management to soil health. Even thinking about water management as an essential set of tools for soil health is not on our collective radar screens at all. The Foundation for Food and Agriculture is excited to fund this kind of research. I wanted to share that with everyone because, like NFWF, we have to have matching dollars. We also recognize that this will require all hands on deck to really tackle and

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understand. So, Gurpal, I really appreciate you not only sharing some great work, but also raising awareness and inspiring community action, and FAR is ready to help with that, so let's follow up.

Gurpal Toor: If anyone is interested, feel free to reach out to us. We are very easy to talk to.

Kathy Brasier: I see in the chat there is a suggestion about doing a field trip. I love that, Dave. We will definitely be talking about that.

Gurpal Toor: Kathy, we will welcome the idea to organize a field trip for the group if there is interest, hopefully when it is better weather.

Alex Echols: I have organized several field trips to go look at these. I'd be happy to do that again for this group. We can make it so that we can hit a variety of different practices in half a day. There's been a huge change in the technology in the past 20 years. Most of these practices can now be automated. They're all supported by NRCS cost share. Participation in the Chesapeake is very low, mostly because people don't know about it. What is particularly attractive is many of these practices actually improve farm profitability. So, we're not pushing something that we're going to get a whole bunch of resistance to in many cases. Not all of them are going to work in every place. It's dependent on the topography, the soil types, etc. So, it's not a magic wand that we can just wave, but it probably has the highest environmental return on investment out of any suite of practices that are out there.

CBP Assignments

10:55 A Deeper Dive into Beyond 2025 – 55 minutes (presentation and discussion)

Bo Williams, EPA-CBPO; Eric Hughes, AgWG Coordinator

Building on the presentations given by KC Filippino and Ruth Cassilly at the July 2024 AgWG meeting, Eric highlighted elements from Phase 1 of the Beyond 2025 process that are relevant to the workgroup. The purpose of this presentation was to suggest additional topics to consider as the AgWG works to identify its 2025-2026 priorities. Bo provided the workgroup with an overview of recent Management Board actions related to Beyond 2025 Phase 2. This will support a discussion about potential synergies between the AgWG's ongoing planning effort and the partnership's Beyond 2025 Phase 2 activities.

Discussion

Kathy Boomer (in chat): We need time for discussion! For one, I would share insights from B25 process and also share concerns about how these questions are framed.

Kathy Boomer: I would contend it's really important for the AgWG to stay involved. I want to acknowledge Ruth Cassilly. She made tremendous contributions to the Beyond 2025 report. It was really a small minority of us who were raising awareness about the value of soil health not only for addressing climate concerns, but, more importantly, addressing water quality concerns, and even perhaps most importantly, engaging the ag community in thinking about the solutions to restoring the Bay ecosystem. So, if we don't keep beating that drum, I don't know if the focus will remain. I think there's a really great opportunity for us to have effective and meaningful engagement with developing solutions for the Bay restoration.

Kathy Brasier: I appreciate that, Kathy. February will be an opportunity for us to meet in person and hash out some of what we want to do as top priorities for the group. Maybe we could have a

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little bit more of a pre-discussion around some of these during the January meeting. Maybe that's something Eric and Caroline can toss around. It looks like there is interest in office hours. That's also something we've kicked around. I know Eric has been really interested in doing it. So, I think that will probably happen here in January.

Eric Hughes: Absolutely, Kathy. That's something that I am interested in doing. I know Tom's model for the AMT is great. I don't know that it would look exactly the same for us, but definitely interested in engaging with folks on this call to determine how we can make that a valuable use of everybody's time. The point about the in-person, I know we haven't gotten much information about that. There's still a lot in the works. I am operating on a 40-day timeline. I want to get everybody information at least 40 days in advance. If scheduling is going to be an issue for any of you, or you need more time, please let me know. That was based on some outreach that I did. Kate, I appreciate your input there, specifically. Please let me know what your constraints are.

Marel King (in chat): Office hours, please.

Kate Bresaw (in chat): I support office hours.

Hunter Landis (in chat): Office hours, please.

Eric Hughes (in chat): I am glad to hear that there is interest in having office hours. I will reach out to you to determine how, specifically, you would like to spend that time.

Bo Williams (in chat): Happy to participate in an office hours as well.

Action: Please continue filling out the *Beyond 2025: Actions of Interest for the AgWG Mentimeter survey*. Email Eric Hughes (hughes.eric@epa.gov) and Caroline Kleis (kleis.caroline@epa.gov) with additional feedback on AgWG priorities and potential office hours.

Action: Caroline Kleis and Eric Hughes will follow-up with information about the February in-person meeting as soon as it is available. Please contact Eric (hughes.eric@epa.gov) with any specific scheduling concerns.

Wrap-up

11:50 **New Business, Announcements & Updates**

- **Agricultural Modeling Team (AMT)**

Tom Butler: We had our meeting for the AMT last Friday. We talked extensively about agricultural land uses, and we are trying to seek out details so that we are able to run a test of a change to those land uses for Phase 7. That's the big one that we did. Everything else is in the works for January.

- **2025-2026 At-Large Membership**

- The terms of 6 at-large members expire in the coming months
- Call for nominations was distributed after the October AgWG meeting
- Self-nominations and renomination of members with expiring terms are accepted

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- Please submit all nominations to Caroline Kleis (kleis.caroline@epa.gov) and Eric Hughes (hughes.eric@epa.gov) by **COB Thursday, January 9th, 2024**.
 - Include nominee name, affiliation, email address, and short resume, C.V., or bio
- **Executive Council Update**
 - [Beyond 2025 Charge](#)
 - Revise the 2014 Chesapeake Bay Watershed Agreement, pursuant to the Governance and Management Framework for the Chesapeake Bay Program.
 - Develop a simplified and streamlined structure and process for the partnership that supports all partners as they work toward achieving their commitments in an effective, efficient and inclusive manner.
 - [Agricultural Advisory Committee Directive](#)
 - The Agricultural Advisory Committee Directive establishes an Agricultural Advisory Committee that will consist of farmers, including urban farmers, and other agricultural industry stakeholders, who will use their knowledge of farming operations and best management practices to directly advise the Chesapeake Bay Program on how agriculture can be part of the solution for a healthier Chesapeake Bay and watershed.
- **Governor Glenn Youngkin Signs Executive Directive Ten on Chesapeake Bay Restoration Efforts**
 - On December 5, 2024, Virginia Governor Glenn Youngkin signed Executive Directive Ten, directing the Secretary of Natural and Historic Resources and agencies under his oversight to take a leadership role in amending the Chesapeake Bay Watershed Agreement with a focus on measurable and attainable results; reevaluate and assess all investments in the Bay; develop streamlined guidance for available agriculture and forestry conservation resources; and launch strategic initiatives focused on the holistic, science-based protection of living resources. The full executive directive can be accessed via the following [link](#).
- **Chesapeake Agroforestry Network (CAN) Meeting**
 - Jan 7, 2025 from 11:00-12:30
 - The Agriculture Workgroup has been invited to participate in the Chesapeake Agroforestry Network meeting scheduled for January 7th, 2025. Please see the calendar invitation and agenda summary sent by Caroline Kleis on 12/6 for additional information.
 - Please reach out to Ruth Cassilly (rcassilly@chesapeakebay.net) with any questions about the meeting.
- **Other Announcements?**
 - Send to Caroline Kleis (Kleis.Caroline@epa.gov) for inclusion in “Recap” email.

12:00 **Review of Action and Decision Items; Adjourn**

Next Meeting: Thursday, January 16th, 2025: 10:00AM-12:00PM (Virtual)

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Participants

Kathy Brasier, PSU
Caitlin Grady, GWU
Eric Hughes, EPA
Caroline Kleis, CRC
Kate Bresaw, PA DEP
Dylan Burgevin, MDE
Ruth Cassilly, UMD CBPO
Jenna Schueler, CBF
Emily Heller, EPA/CBPO
Dean Hively, USGS
Tyler Trostle, PA DEP
Emily Dekar, USC
Cindy Shreve, WVCA
Nick Hepfl, HRG
Greg Albrecht NYS AGM/SWCC
Kendrick Flowers, NRCS
Dave Graybill, Farm Bureau
Tyler Groh, Penn State University
Brady Seeley, SCC/PA
Tom Butler, EPA
Mark Dubin, UME/CBPO
Jeff Hill, York C.D
Paul Bredwell, US Poultry and Egg Association
Bo Williams, EPA/CBPO
Scott Heidel, PA DEP
Alex Echols, Campbell Foundation
Ken Staver, UMD Wye
Jim Riddell, VCA
Karl Blankenship, Bay Journal
Gurpal Toor, UMD
Jimmy Webber, USGS
Rosita Musgrove, DOEE
Seth Mullins, VA DCR
Grant Gulibon, PA Farm Bureau
Bailey Roberatory, UMCES/ DNR
Bradley Kennedy, UMD
Nicholas Santoro, USGS
Lydia Franks
Jeremy Daubert, VT Extension
Jeff Sweeney, EPA
Mark Nardi, USGS
Hunter Landis, VA DCR
Paul Bredwell, US Poultry and Egg Association
Marel King, Chesapeake Bay Commission
Clint Gill, DDA
Patrick Thompson, EnergyWorks Group
Kristen Hughes Evans, Sustainable Chesapeake
Patricia Steinhilber, UMD
Kate Bresaw, PA DEP
Doug Austin, EPA
Auston Smith, EPA
Kathy Boomer, Foundation for Food and
Agriculture Research

Acronym List

AgWG- [Agriculture Workgroup](#)
AMT- [Agricultural Modeling Team](#) (Phase 7)
BMP – Best Management Practice
CAST- [Chesapeake Assessment Scenario Tool](#) (user interface for the CBP Watershed Model)
CBP- [Chesapeake Bay Program](#)
CBPO- Chesapeake Bay Program Office
CBW- Chesapeake Bay Watershed
CTIC – Conservation Technology Information Center
CVN – Conservation Validation Network
EPA - [United States] Environmental Protection Agency

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FSA – Farm Service Agency

MLRI – Modeled Load Reduction Indicator

NRCS – Natural Resources Conservation Service

NFWF – National Fish and Wildlife Foundation

ORISE – Oak Ridge Institute for Science and Education

PADEP – Pennsylvania Department of Environmental Protection

PSC – [Principals' Advisory Committee](#) (CBP)

PSU- Penn State University

SWCD – Soil and Water Conservation Districts

WQGIT- [Water Quality Goal Implementation Team](#)

UMD - University of Maryland

USDA – United States Department of Agriculture

USGS – United States Geological Survey

USFS – United States Forestry Service