

# Agriculture Workgroup (AgWG)

Aug 17th, 2017

10:00 AM – 3:00 PM

## AgWG Face-to-Face Meeting Summary

Meeting materials:

[http://www.chesapeakebay.net/what/event/agriculture\\_workgroup\\_conference\\_call\\_august\\_2017](http://www.chesapeakebay.net/what/event/agriculture_workgroup_conference_call_august_2017)

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### **Actions & Decisions:**

DECISION: The AgWG approved the nominations for the Agricultural Stormwater and Nursery Capture and Reuse Management EPEG.

ACTION: The AgWG approved a motion to impanel a group to determine how to interpret soil P data on different land uses in order to help achieve consensus at the WQGIT by 8/28/17.

DECISION: The AgWG agreed to move forward with not changing the methods to lower soil P values on crops not receiving manure.

DECISION: The AgWG did not reach consensus to modify their original recommendation of using 25 years to define the time-scale for future P scenarios in Phase 6.

ACTION: Jurisdictions should submit proposed modifications to cover crops and manure incorporation/injection BMPs in the Phase 6 E3 scenario for agriculture to Jeff Sweeney and Mark Dubin, CC Loretta Collins by noon Tuesday August 22<sup>nd</sup>.

### **Welcome, introductions, roll-call, review meeting minutes**

Workgroup Chairs

- Meeting minutes from the August 3<sup>rd</sup> Face-to-Face Meeting were approved, with the amendment as proposed by Bobby Long:
- DECISION: The AgWG made a strong recommendation to the CBP Partnership that conducting an uncertainty analysis of the Bay Model should be a high priority moving forward during the Mid-Point Assessment and Phase III WIP development process. Conducting an uncertainty analysis will exemplify the CBP strategy of adaptive management and stakeholder engagement.

### **EPEG Panel Nominations**

Loretta Collins

Nominations for the Agricultural Stormwater and Nursery Capture and Reuse Management practices Expert Panel Establishment Group (EPEG) were requested following the June AgWG Face-to-Face meeting.

### *Discussion:*

- Jason Kepler and Chris Brosch motioned to approve the membership.

DECISION: The AgWG approved the nominations for the Agricultural Stormwater and Nursery Capture and Reuse Management EPEG.

### **Recap of Water Quality GIT Outcomes**

Loretta Collins

The AgWG recommendations for Phase 6 fatal flaw review, as presented at the August 14<sup>th</sup> Water Quality GIT Conference Call, were shared. Resulting outcomes from that meeting were briefly discussed with the Workgroup.

### **Resolving Soil Phosphorus Comments**

Matt Johnston

Following the advice of the Water Quality GIT, the CBPO put together a list of responses to comments regarding soil phosphorus in the Phase 6 Model. Matt reviewed the responses, and workgroup members were asked to determine if:

- 1) The responses are adequate
- 2) An alternative resolution is needed
- 3) If an alternative resolution is needed, members will need to approve a path forward.

If an alternative resolution cannot be identified, the workgroup will need to return to the Water Quality GIT for their response and decision.

#### *Discussion:*

- Chris Brosch: APLE isn't peer reviewed for the scale it's being applied to in the model because APLE was designed as a field-scale tool.
- Regarding proposal for STAC workshop to investigate methods to incorporate soil P in the urban sector:
  - Lindsay Thompson asked how the AgWG felt about a proposed STAC workshop to investigate future use of soil P in the urban sector for the phase 7 model.
  - Gary Shenk and Alisha Mulkey supported the proposal.
  - Chris Brosch: I don't think it's appropriate for STAC to investigate this because of the schedule.
  - Alisha Mulkey noted that data for MD and VA is available, but that they were never asked to provide it.
  - Chris Brosch: I don't see how using APLE in this way is any more defensible than using it on urban.
  - Gary Shenk: We've made all of these decisions that we're going to use APLE and soils data for agriculture, but there hasn't been a concurrent process for urban. There was never a discussion to do anything different than what was presented for the urban nutrient management panel – they would use their own information to set the sensitivity. We've been through these years, under intense study of this issue, and at the last minute we can't just create all of that for urban.
  - Chris Brosch: I've expressed concerns about the quality of this data since the new year, and the Bay Program has asked for alternative options. I've suggested not using APLE, and they all have different scheduling impacts. Without evaluating what those alternatives are, and what the schedule impacts are, DE has no confidence in the use of this method today. I've briefed my secretary and deputy secretary in my department, and they've advised that if this is the way this proceeds, then they want to incorporate Administrator Pruitt into the discussion.
  - Chris Brosch: The agriculture data that's been applied here is not sufficient for us to have confidence in its application to DE.
  - Mark Dubin: Could Tom Scheuler address the question of the urban consideration of soil P in the APLE model?
    - Tom Scheuler: We've never really seen the APLE model; we had the Urban Nutrient Management Expert Panel, and we looked at loading rates that were put together in Phase 5.3.2. The workgroup was very satisfied because the basis

for the P loading rates from urban-pervious and urban-impervious were based on the National Stormwater Quality Dataset, which has 10,000 samples of runoff collected around the country. When that's combined with concentration data, the workgroup felt that the simulation was good. We haven't, as a workgroup, followed the APLE issue – there was earlier discussion of having a STAC workshop, and I think the USWG would be happy to participate in that workshop. But for the urban sector, it's late in the game for this issue to be raised, and we may have missed it because it didn't come through to our membership until a week or two ago. We discussed it at our meeting on Tuesday, and Norm stated that this is not an USWG issue, but rather a modeling workgroup issue.

- Matt Johnston: Have you had any representatives from DE bring forward the APLE issue?
- Tom Scheuler: Randy Greer on the stormwater side had some issues with documentation of P loads for urban, but it wasn't an APLE issue – it was just clarification. I haven't heard anything; I don't believe Norm has heard anything either.
- Chris Brosch: Randy Greer was briefed and included in DE's fatal flaw letter.
- Gary Shenk: I can't understand how those suggestions are workable. I think the suggested path forward where we get STAC to think about it is a reasonable way to go. We certainly know that some counties have high and low P, but to say that that soil P has no effect flies in the face of what we've learned the past number of years.
- Chris Brosch: I'm totally comfortable with eliminating soil P as a determinant of load from agriculture. It's disingenuous to have soil P as a load from agriculture and not have it as a load from urban. For the purposes of our WIP, it's critical to model that in a similar fashion.
- Kelly Shenk: Is there a possibility of DE doing that analysis to inform your goal setting, regardless of whether it's done watershed-wide? Could you employ the dataset you have to inform how you would change goal-setting in your planning process? I know a lot of states are using other tools besides just the Watershed Model.
- Chris Brosch: I can't identify anyone in my staff that would be qualified to run APLE, especially within the schedule laid out.
- Kelly Shenk: We've known for years that we're ignoring a load from P soils in the model. STAC did that workshop, we had the P symposium where the LGUs said they agreed, and there's 10 years of data backing this up. We're at the same situation we've been at with a lot of modeling – we have to use the best available data we have. Sharing soil P data is a big issue in the watershed. We don't have it all, and we know there are ways to work better with our partners to get access to that information. I'm pleased to hear DE's efforts to build public soil P data, and that will only help improve data sources. My feeling is that we have to go with the data we have, and continue to work on improving public accessibility to that data, using methods from the Poultry Litter Subcommittee. I'd like to see us move forward with following up on STAC's recommendation.
- Chris Brosch: The soil P load is always captured, but what we have a major problem with is how that load is determined from such a small set of soil P data. We don't know the contribution from sectors other than agriculture.
- Kelly Shenk: We don't have access to that information – you have access to private-sector soils data at a state-wide scale. Ed Kee was able to get agreement that could be

used. And then you have turf data, but unless it's publicly accessible, we can't use it. That's where we're up against a wall.

- Lindsay Thompson: It doesn't sound like we can reach consensus on this equity issue. Are there any other potential paths forward, or suggestions at this time?
- Alisha Mulkey: Is there an option for a very state-specific conversation within jurisdictions to look at lessening where APLE is applied? If those terms could be reached between now and 8/31, could we stick to the schedule?
- Gary Shenk: The way that the Land Use Loading Rates sub-committee produced their report, is that where you group crops together, the spatial differentiation in those groupings is determined by soil P. If you have some soil P in those land uses, you must have a value for anything else. If you have some counties that are fixed and unchanging at a low number, and other counties that are high and dynamic, then manure transport would not work in the fixed and unchanging counties.
- Matt Johnston: If you're moving manure in Phase 6 into a county with little bits of manure that's already 'in balance', it should not go up because we're not replacing P fertilizer. Your manure just replaced the P fertilizer leaving the county around the same area.
- Lindsay Thompson: Alisha had suggested over the next 2 weeks, having jurisdictions convene among themselves with the CBP to investigate whether it's a viable option to apply APLE differently among counties.
  - Alisha Mulkey: I'd like to start building a better dataset with time, beginning a similar process with urban, and for the time being discussing the potential use of APLE only in certain counties over the next 2 weeks.
  - Kelly Shenk: In theory, if this method made sense, would that even be a viable option moving forward?
  - Chris Brosch: We'd participate.
  - There was discussion of Alisha Mulkey's proposal with regard to meeting CBP deadlines. Gary noted that if a resolution was reached on August 30, then it could be implemented with sufficient time.
- Lindsay Thompson: Would it be amenable to the AgWG to create a small contingent to meet with the CBP Modeling Team to discuss potential options for the application of APLE in agriculture over the next week? The AgWG would have to have a conference call between now and the 8/28 WQGIT meeting, wherein this potential resolution could be resolved during that time.
- Delaware moved to impanel a group to determine how to interpret soil P data on different land uses in time in order to help achieve consensus at the WQGIT by 8/28/17. Seconded by Maryland.

**ACTION:** The AgWG approved a motion to impanel a group to determine how to interpret soil P data on different land uses in order to help achieve consensus at the WQGIT by 8/28/17.

- Regarding proposal to refresh soil P data every milestone period to incorporate new data and improve confidence in the results:
  - Jill Whitcomb: Who will be collecting soil P data every two years?
  - Matt Johnston: In the grant guidance, the CBP lays out what's expected from states, but the AgWG has said that if states can't provide new data, then they will continue to use what's already in the model.
  - Chris Brosch: Until the finer details get worked out, I don't want to commit that this is a path forward that DE can agree with. Part of the problem is the non-random nature with

which UD collects and supplies soil P data. To continue to use them as the sole source of data is a concern.

- Gary Shenk: I support what Chris said, but want to go back to the point of the Watershed Model – to set planning targets based on potential change in load due to management actions. It's not absolute load, in terms of the real decision we're making. Since soil P is one of the main determinants of that load and the change in load, if we go from data collected in one way to data collected in another way, it doesn't reflect a change on the ground. This proposal says that the intention is to always use the best data available, and your point is that we have to think very carefully about how new data relates to data collected before.
- Matt Johnston suggested potentially setting up a process over the next 6-8 months to develop how the data will be collected and incorporated into the model over the milestone period.
- Lindsay Thompson suggested saying the AgWG is committed to improving the collection of soil P data, and to forming an ad hoc committee to determine the process by which the new data will be incorporated.
- Matt Johnston clarified that these changes would be implemented in the 2021 milestone period.
- AgWG raised no issues regarding the proposed resolution.
- Proposed resolution: The AgWG is committed to improving the collection of soil P data, and to forming an ad hoc committee to determine the process by which the new data will be incorporated.
  - Jeremy Hanson suggested involving experts from the urban sector within the ad hoc committee.
  - Motion was not approved by the AgWG.
- Regarding lowering soil P values on crops not receiving manure:
  - Chris Brosch: There's plenty of vegetable crops with long-term histories of soil P and applications.
  - Matt Johnston or CBPO?: Specialty crops are separated and different from row crops. Row crops in this context include grains and soybeans.
  - Lindsay Thompson: It sounds like the AMS had already recommended some average condition across these crops, so we wouldn't see any large swings. Since there's no recommended change, is this response sufficient to quell the concerns of the original commenter?
  - Bobby Long: We don't have regional distinctions based on manure concentration and historical biosolids for this methodology, do we?
    - Matt Johnston: The method to determine how many acres of row crops receive manure is based upon the number of animals in your county relative to the row crop acres – so we do have an understanding of animal-poor/manure-poor counties not having a lot of acres.
    - Bobby Long: Applying that to soil P values – you're using one method across the Bay region?
    - Matt Johnston: We use a single statistical method to determine the history of soil P, but actual values by county vary based on the area's soil P data. So we do have county-by-county data, so it does vary.
  - Mark Dubin: I think the AMS's recommendations are accurate. Just because you didn't put manure on, doesn't mean your soil P is different.

- Proposed resolution: Move forward with not changing the methods to lower soil P values on crops not receiving manure.

DECISION: The AgWG agreed to move forward with not changing the methods to lower soil P values on crops not receiving manure.

- Regarding only using soil P in manure-heavy counties, or lowering the soil P values in manure-poor counties:
  - Greg Albrecht: Would this be fully or modestly addressed with higher resolution soil test P data in the future?
    - Matt Johnston: Absolutely. The more data we get, the more the Bayesian statistical model has confidence in the soil P for a county.
- Regarding the proposal to only use soil P values where sufficient data exists to satisfy a reasonable confidence level (BMP Verification Standards for model BMP inputs was 80% confidence +/- 10% margin of error):
  - Chris Brosch: What about counties where no data exists?
    - Matt Johnston: In the absence of soil P test data in a county, the resulting soil P data that's used is much closer to what APLE would predict it would be based on historic applications.
  - Alisha Mulkey: What do you do in the absence of an observed starting point?
    - Andrew Sommerlot: We use a warm-up period so that we don't shoot high or low for a county, but rather use an average from a growing region (cut by state to the watershed).
    - Alisha Mulkey: What's the source of data for growing region soil P?
    - Andrew Sommerlot: It's the data we have, aggregated for the spatial scale, through time.
  - Chris Brosch: Would any county's simulation be thrown out as a result of this suggested resolution?
    - Gary Shenk: I bet it would happen a lot of places. And we don't have any other way forward without that estimate of soil P.
    - Chris Brosch: In general, there's a disparity between MD data and every other jurisdiction.
  - Ted Tesler: I want to mention that we are concerned about the quality of data being used. From what I've seen, this will require a special research effort to bolster that data to use it in the way we're proposing to do. I'm leery of what we have in hand.
  - Matt Johnston: If the group does not reach consensus on APLE, what's the other direction that we go? And in two weeks, how will we come up with it?
  - Gary Shenk: The discussion about the quality of the data reminds me of the discussion of quality for all the data we've ever had. But research efforts through the Bay Program helped us get better data.
    - Lindsay Thompson: I personally have a certain level of discomfort moving forward with data we don't have great confidence in, that may have a big impact on the model.
    - Gary Shenk: I haven't heard any alternative to using APLE in the data. If we don't use APLE at all, then all cropland would have the same load, except it would only be the WEP, the stormwater runoff, and sediment wash-off.
    - Gary Shenk: I don't know if we could calibrate if we took this out. If we did, it would be sector-less P loads.
  - Jill Whitcomb: So is this a technical question or policy question?

- Matt Johnston: The AgWG is now stuck in the place to figure out what we're going to do here, after it's come before us and the WQGIT.
- Bill Angstadt: I would think we need to stay the course and try to make it better.
- Clint Gill: Is it possible to run APLE backwards from better data in recent years to get to a reasonable starting point in the calibration period?
  - Gary Shenk: That's sort of what we did initially – to optimize our initial point, which is essentially running it backward. However, we ended up going a different route. The Bayesian method puts a lot of confidence in later data, and now a lot of confidence in the earlier data – this essentially creates a situation where the trend line runs through the later data.

### Defining the Time-scale for Future P Scenarios

Gary Shenk

Gary Shenk, USGS, provided a presentation on potential options for defining the length of time conditions that will be held in place for a given scenario to estimate changes in P runoff, including simulations of 1, 10, 25, 50, and 100 year time-scales. Gary also addressed follow-up questions regarding model results presented on the July 20<sup>th</sup> Conference Call.

#### *Discussion:*

- Chris Brosch: I'm not sure the utility of simulating this for a short period of time. Nutrient management may be a 1-year practice, but that doesn't mean it should be simulated for a year.
- Kelly Shenk: I would think ultimately the high soil P counties should go down to 150 and stop. Farmers aren't going to continue to reduce manure and P applications at levels below 150. That's not what they're telling some of Delmarva in any case. Economically, from a yield standpoint, that would be a risk. I'm thinking we should never have a time frame that takes you below 150 – we shouldn't be simulating lower levels beyond that.
- Mark Dubin: Could we agree on some time periods that the group isn't interested in?
- Alisha Mulkey: MD's position is 10 years. I agree with Gary that we have a little more confidence, and this is easier to communicate with audiences in terms of WIP schedules. But I know on the landscape that Somerset is not on the uptake, so now it's up to MD to capture the data that would translate into APLE that would move towards a downward curve. My concern is that if I already know I'm behind the game for data collection, that advocating for 25 or 50 years is setting Somerset up for failure.
- Motion on the table from MD to use 10 years as the projection for soil P scenarios in the Phase 6 model. Gary Felton seconded.
  - Kelly Shenk: Is there a situation if, when you hit 10 years, that any ag county that was high P is below 150 or 100?
  - Gary Shenk: That change in behavior once you hit a threshold is not part of the model. What we're saying is if you continue doing what you were doing, defined as applying a certain amount with a set of crops and BMPs, then this is the long-term effect of that. I haven't looked to see whether they're crossing thresholds. But in any time period other than 1, I'm sure there's a county that's hitting that.
  - Alisha Mulkey: In MD's opinion, 10 years is the most realistic time to get this done.
  - Lindsay Thompson: Under what model conditions, in a county receiving no additional P, and manure is being transported, why would the P go up?
  - Alisha Mulkey: Our concern is that we know that Somerset county will be moving towards a drawdown phase, but that's not getting reflected in this graph. So that's our goal, is to reconcile that issue.

- DE objected to using 10 years, provided an alternative of 50 years.
- Chris Brosch: DE believes that 50 years is reflective of the change in behavior we are looking to achieve, in getting soils to 150 ppm based on DE's, and other jurisdictions' regulatory NM programs.
  - Gary Felton: I have a problem with that timeframe, because ag changes so much in that timeframe. 50 years ago, I was working in the biggest chicken house on the shore with 14,000 birds. We wouldn't reflect what was really going on; the inputs would be different.
  - Bobby Long: Tim and I would agree more with 50 years than with 10 years. 25 would also be an appropriate time-frame.
  - Greg Albrecht: Looking at the data, it comes back to a practical element that Alisha mentioned about being able to explain it on a timescale that we framed our BMPs with. I would've been supportive with 10, and if we've gone to another bookend of 50, where does that negotiate us to? 25 years?
- Bill Angstadt: WQGIT approved 25 years, and then we've examined the other options to see if we want to change, I would say we could essentially go with 25. I need a good explanation for WQGIT of why we would want to deviate from 25 years.
- Lindsay Thompson asked if, in the absence of consensus on changing 25 years, whether the original recommendation of 25 years would stand, which has additional approval of the WQGIT.
  - Group members agreed.

DECISION: The AgWG did not reach consensus to modify their original recommendation of using 25 years to define the time-scale for future P scenarios in Phase 6.

### Phase 6 E3 and No Action Scenario

Jeff Sweeney and Mark Dubin

Jeff Sweeney, EPA-CBPO, and Mark Dubin, UM, reviewed refinements to the revised DRAFT Phase 6 agricultural E3 and No Action Scenario approved by the Workgroup on July 20<sup>th</sup> Conference Call. Per request of the WQGIT on July 24<sup>th</sup>, the Workgroup has been asked to provide a final Phase 6 agricultural E3 and No Action Scenario for presentation to the WQGIT on August 28<sup>th</sup>. The WQGIT request included a Workgroup review of the implementation levels for BMPs and possible geographic limitations of Phase 6 E3/ No Action BMPs. Refinements for the following Phase 6 E3/ No Action BMPs will be specifically discussed: manure incorporation, manure injection, manure transport, and shoreline erosion control.

#### *Discussion:*

- Jill Whitcomb: I have concern about 100% implantation of cover crops in the northern regions of my jurisdiction.
  - Mark Dubin: Our numbers assume you would be able to make management adjustments to be able to incorporate cover crops in your rotation.
  - Jeff Sweeney: And we have had 100% implementation on cover crops since we developed the TMDL.
- Jim Cropper: I agree with Jill – as you go north, the chances for cover crops decreases dramatically. Unless you're going to inter-seed it.
  - Mark Dubin: Those points were considered by the Cover Crop BMP panel.
- AgWG members raised concerns about using only one type of cover crop in the implementation. Jason Keppler suggested using early drilled rye and a cover crop with lesser efficiency to account for some of that variability.
  - Mark Dubin: You could look at standard planting or late planting.



- Chris Brosch: We also have to consider what's done on the percentage of acres that are soybeans.
  - Jill Whitcomb: That's our point here – you can plant the cover crop, but that doesn't mean it will be germinating and meeting the definition of a cover crop. Norm Goulet's statement at WQGIT stuck with me – they considered the technical feasibility of actually implementing a practice in certain places.
- Jill Whitcomb suggested looking at land mass to determine the relative proportions of land in certain growth regions.
  - Chris Brosch: You can't change the type of cover crop without also limiting the amount of coverage.
- Suggested alternative option for cover crops: modify such that soybeans will be excluded, and change early planting to a late rye planting for commodity and traditional crops, north of the Mason Dixon line.
  - Mark Dubin: I wouldn't recommend eliminating soybeans altogether, but maybe you could restrict it.
  - Revised alternative proposal suggested by DE/MD: reduce overall implementation between traditional and commodity from 100% to 70%, and maintained the same split so that no land uses were explicitly excluded
- Motion from DE to change all early planted traditional cover crops and commodity crops to standard or late for jurisdictions north of the Mason Dixon line, covering only crop growth regions PA 1, PA 2, PA 3, and NY 1.
- Motion for corn for silage and specialty crops to have a standard planting date; corn for grain and soybeans to be late planting date for growth regions north of the Mason Dixon line.
- Kelly Shenk: If you can't grow crops in these areas, then they shouldn't be part of E3. I think it will be hard for Jill and Greg to do this on the fly, as we're trying to do. We want to pick the areas and conditions where you absolutely don't have cover crops. If you need time to look at references and talk to colleagues, then could they come back with a refined estimate?
  - Mark Dubin: This will be presented at the 8/28 WQGIT meeting.
- Greg Albrecht: It would be standard drilled rye on corn silage and high input specialty for NY and PA. On corn grain and soybeans in NY and northernmost PA, there would be 0 cover crops.
- Mark Dubin suggested working on this separately with the jurisdictions and bringing the E3 back to the AgWG.
- Bill Angstadt: The WQGIT saw that AgWG has been more aggressive on E3 than the USWG, and that's the question before us, whether the jurisdictions are satisfied with their E3.
  - Lindsay Thompson: I think there's consensus on the fact that cover crops needs to be tweaked. There was a comment that we should run any changes by the cover crops panel, but that panel has been sunsetted and this is a charge for the AgWG.

**ACTION:** Jurisdictions should submit proposed modifications to cover crops and manure incorporation/injection BMPs in the Phase 6 E3 scenario for agriculture to Jeff Sweeney and Mark Dubin, CC Loretta Collins by noon Tuesday August 22<sup>nd</sup>.

- Greg Albrecht: Quick check on manure incorporation/injection land uses – are they the same associated with the practice in the expert panel report? Does that include full season soybeans?
  - Agreement that there will have to be additional work on this BMP.

### **Review of Action and Decision Items**

Lindsey Gordon

Lindsey will review the action and decision items from the meeting.

- Monday, August 21<sup>st</sup> from 1-3 PM will be a small meeting to discuss soil test P in Phase 6.
- The AgWG will have an interim conference call on Thursday August 24<sup>th</sup> from 10-12 PM.

**Next meetings:**

1. Interim Conference Call Thursday, August 24 from 10:00 – 12:00 PM
2. September 20<sup>th</sup> Face-to-Face Quarterly Meeting at the Western Maryland Research and Education Center (WMREC) in Keedysville, MD

**Participants:**

<b>Name</b>	<b>Affiliation</b>
Lindsay Thompson	DE-MD Agribusiness Assoc.
Loretta Collins	UMD
Mark Dubin	UMD
Lindsey Gordon	CRC
Chris Brosch	DDA
Clint Gill	DDA
Amir Sharifi	DC DOEE
Jason Keppler	MDA
Alisha Mulkey	MDA
Julie McGivern	MDA
Greg Sandi	MDE
Robin Pellicano	MDE
Greg Albrecht	NYS
Amanda Barber	NY
Emily Dekar	USC
Ted Tesler	PA DEP
Matt Monroe	WV DEP
Dave Montali	WV DEP
Bobby Long	VA DEQ
Kelly Shenk	EPA
Gary Felton	UMD
Jeff Hill	Lancaster County Conservation District
Peter Hughes	Red Barn Consulting Inc.
Bill Angstadt	Angstadt Consulting
Ron Ohrel	ADANE
Jeremy Hanson	VT
Lucinda Power	EPA
Jim Cropper	Northeast Pasture Consortium
Andrew Sommerlot	UMCES
Gary Shenk	USGS
Kim Snell-Zarcone	Choose Clean Water