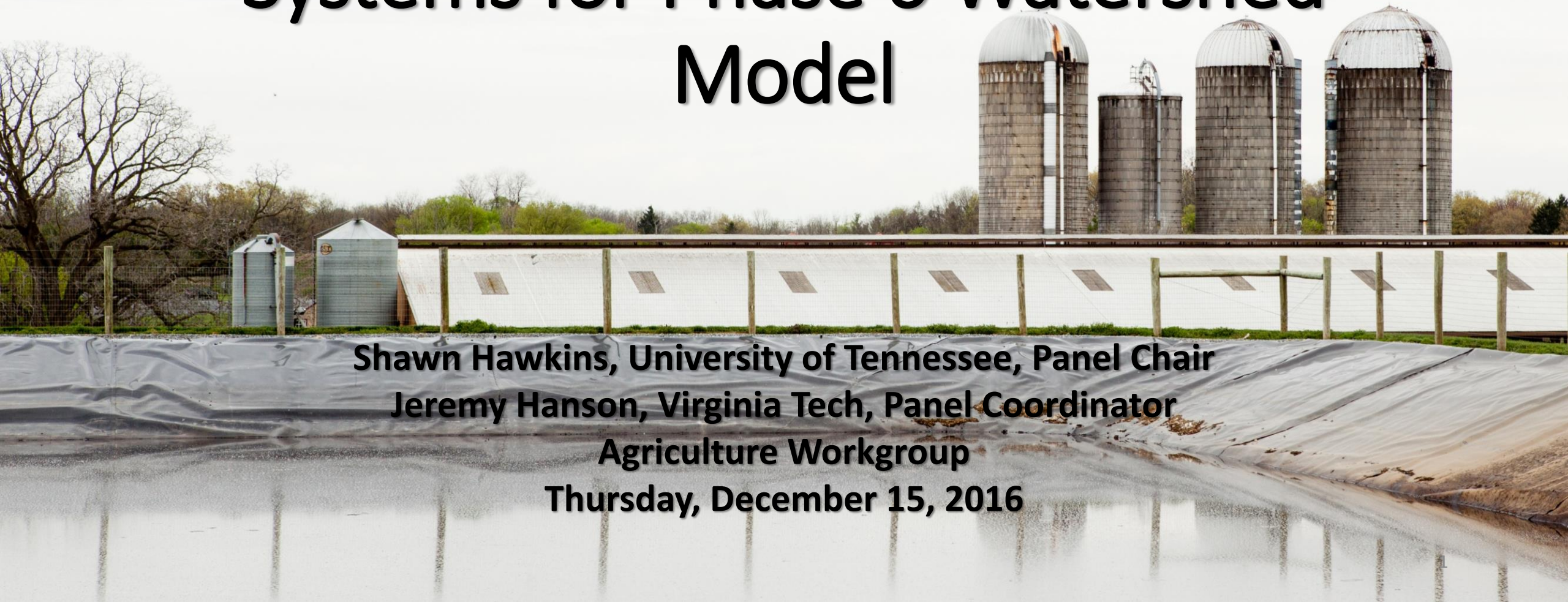
Animal Waste Management Systems for Phase 6 Watershed Model



Shawn Hawkins, University of Tennessee, Panel Chair
Jeremy Hanson, Virginia Tech, Panel Coordinator
Agriculture Workgroup
Thursday, December 15, 2016

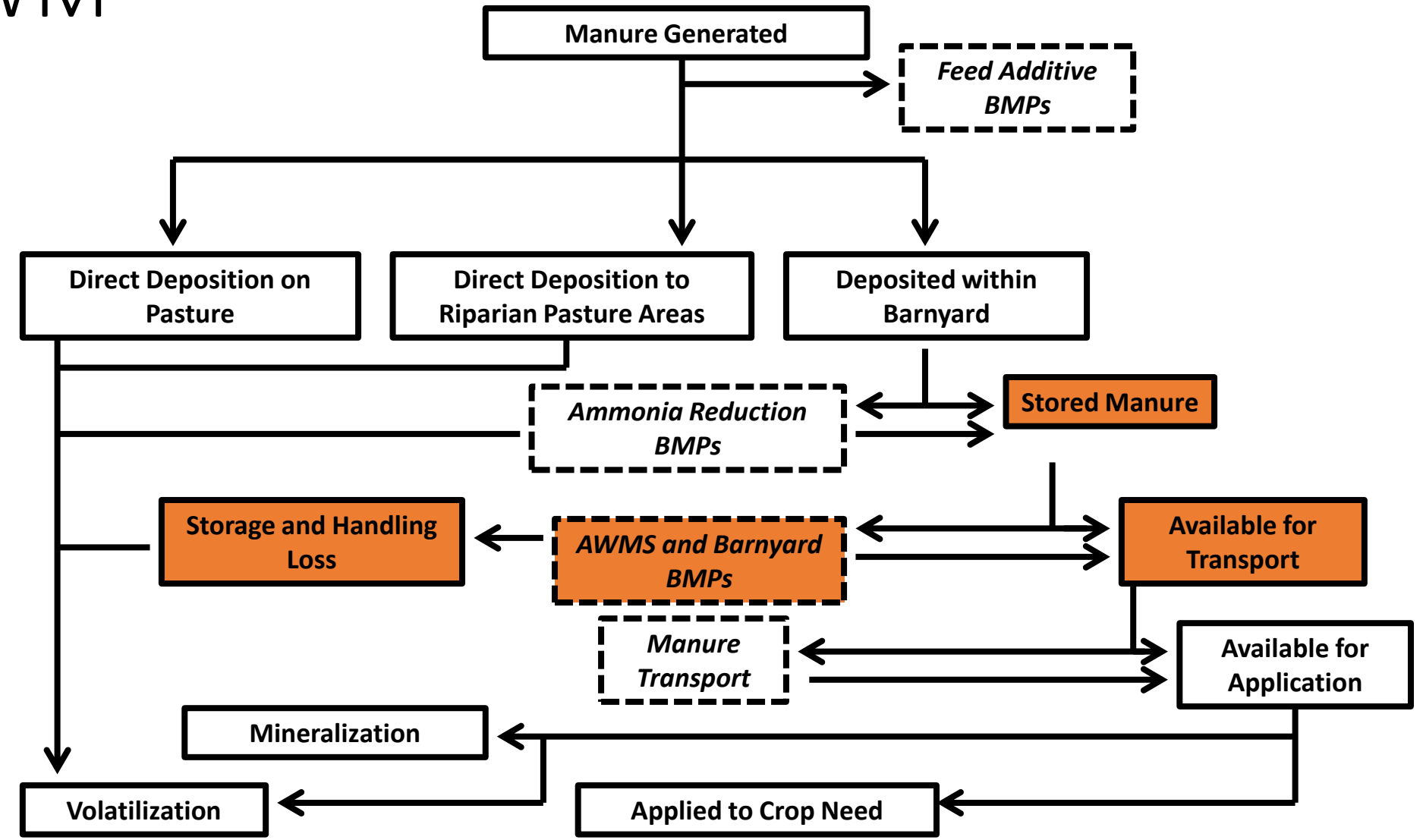
Panel roster

Shawn Hawkins, Ph.D., P.E. 	Panel Chair, Animal Waste Management Specialist University of Tennessee
Doug Hamilton, Ph.D., P.E. 	Animal Waste Management Specialist Oklahoma State University
Jonathan Moyle, Ph.D. 	Poultry Extension Specialist University of Maryland Extension
Pete Vanderstappen, P.E. 	Pennsylvania Assistant State Engineer USDA-NRCS-Pennsylvania
Mark Risse, Ph.D. 	Director of Marine Outreach University of Georgia
Bridgett McIntosh, Ph.D. 	Equine Extension Specialist Virginia Tech
Mark Dubin	University of Maryland Extension, CBPO, AgWG coordinator
Jeremy Hanson	Virginia Tech, CBPO, Panel Coordinator
Ashley Toy	EPA Region 3
Matt Johnston	University of Maryland, CBPO
Greg Albrecht	NYS Dept. of Ag and Markets

Panel charge/recap

- Review Phase 5.3.2 BMP definition and efficiencies, assumed storage/handling loss
- Consider concrete heavy use area poultry pads
- Provide recommendations for Phase 6
- Convened for first call: March 2016
- Public stakeholder meeting: April 2016
- Preliminary recommendations approved by AgWG for beta-4: September 2016
- Draft report available, comments requested by COB December 12th

Figure 2. Manure application processes in P6 CBWM



Phase 6 AWMS definition

- September preliminary report had explicit definition, but it was not adapted into Dec. 5th draft. We've added it to Exec. Summary, Chapter 9, and Appendix A.
  - "…for annual BMP progress reporting in Phase 6, an Animal Waste Management System is any structure designed for collection, transfer, and storage of wastes generated from the confined portion of animal operations and complies with NRCS 313 (Waste Storage Facility) or NRCS 359 (Waste Treatment Lagoon) practice standards. Reduced storage and handling loss is conserved in the manure and available for land application or export from the farm."
- Credit duration in the model: 15 years (same as Phase 5.3.2)

Animal Type	Robert L. Kellogg *et al.* (2000)							USDA Natural Resources Conservation Service (2003)[a]		RECOMMENDED RECOVERABILITY FACTORS	
	Confined Manure % Recoverability	Overall manure Recoverability									
		DE	MD	NY	PA	VA	WV	Before CNMP	After CNMP	Before AWMS BMP	After AWMS BMP
Beef cows	98	10	10	10	5	10	0	-	-	-	-
Confined Heifers	98	70	70	70	65	70	70	60-65	80-85	60	99
Fattened cattle	90	85	85	85	85	85	98	60	75	60	99
Milk cows & calves	98	80	80	80	80	60	80	45-60	50-75	75	95
Hogs, breeding	95	80	80	80	80	80	75	80	97	90	99
Hogs, slaughter	95	80	80	80	80	80	75	80	97	90	99
Chickens, layers	98	90	90	90	95	98	98	85	95	90	99
Chickens, pullets	98	90	90	90	95	98	98	85	95	90	99
Chickens, broilers	98	95	95	95	95	98	98	85	98	90	99
Turkeys, breeding	98	95	95	95	95	98	98	80	98	90	99
Turkeys, slaughter	98	95	95	95	95	98	98				
Equine, small ruminants										95	98

[a] Continuous loafing / grazing (0% recoverable).

[b] Continuous confinement with confined manure recoverability.

[c] **Confined Heifers** – Northeast (RF#1 - RF#2); **Fattened Cattle** – PA, NY, NJ, > 35 AU/farm (AF#1: feedlot scrape, stack); **Milk cows** –Northeast, > 35 AU/farm (RF#1-RF#4); **Breeding Hogs** – Northcentral, Northeast > 35 AU/farm (RF#2: confinement, liquid, no lagoon); **Hogs for Slaughter** – Northcentral, Northeast, > 35 AU/farm (RF#2: confinement, liquid, no lagoon); **Layers** – North Central & Northeast, > 35 AU/farm (RF#1 and RF#3); **Pullets** – North Central & Northeast, (RF#1 layer type confinement house); **Broilers** – Southeast, (RF#1: confinement, standard broiler house); **Turkeys** – East, <35 AU/farm (RF#1: confinement house).

Overview of comments received

THANK YOU TO EVERYONE WHO READ THE REPORT. EXTRA BIG THANK YOU TO THOSE WHO TOOK TIME TO PROVIDE COMMENTS.

- Comments received from: DC DOEE, PA DEP, EPA, MDA
- The following slides summarize comments to indicate changes made. See Appendix E and revised report (dated “14Dec2016”) for more information.
- Comments are being addressed with clarifying additions or edits.
- No comments required substantive changes, i.e. changes to key recommended values for AWMS manure recoverability.
- More minor editing is expected to improve grammar, formatting, picture selection. This will occur post-WQGIT approval.
- A second revised draft won’t be provided prior to 12/19 week unless necessary.

Comments received

- DC DOEE
  - Confirmed no comments.
- CBF (Beth McGee, on Monday's WQGIT)
  - Volatilization? Panel provides recommended recoverability for manure, defers to partnership's methods/assumptions for nutrients and nitrogen volatilization.
- EPA, water permits division
  - Broiler open air access; note on short term storage practices (NRCS code 318). Currently, open air access is insignificant; better addressed by BMPs other than CPS 313. CPS 318 are now acknowledged in report but are temp structures and as such are not eligible for AWMS credit like 313s or 359s.

Comments received

- PA DEP
  - References in the dairy section to small “unregulated” farms and large farms that are subject to “regulatory oversight by EPA as CAFOs and/or DEP as CAOs.”
  - ∗ Reference to “unregulated” farms will be deleted because, as DEP pointed out, all operations that produce or land apply manure in PA are regulated. ∗ Reference to regulatory oversight now includes a parenthetical note that permitting and oversight has been delegated by EPA to PA DEP. ∗ Reference to regulation of CAOs now include a parenthetical reference to PA Chapter 83, Act 38 with regulatory oversight by PA DEP.

Comments received

- PA DEP
  - Discussion of following Poultry Summary section statement: “Heavy Use Areas (HUAs) are farm locations that are protected from rutting with concrete.” Request to change term to Heavy Use Area Protection. Request to clarify protection is not necessarily concrete.
  - ∗ ”Protection” was added to term definition and will be throughout the document. ∗ The Summary section will be changed to indicate that the HUA is “protected from rutting typically with concrete.” ∗ The report already indicates in the definition section that “HUA protections are usually made with concrete...” . ∗ Note that CPS 561 is not reportable as an AWMS component for CBP purposes.

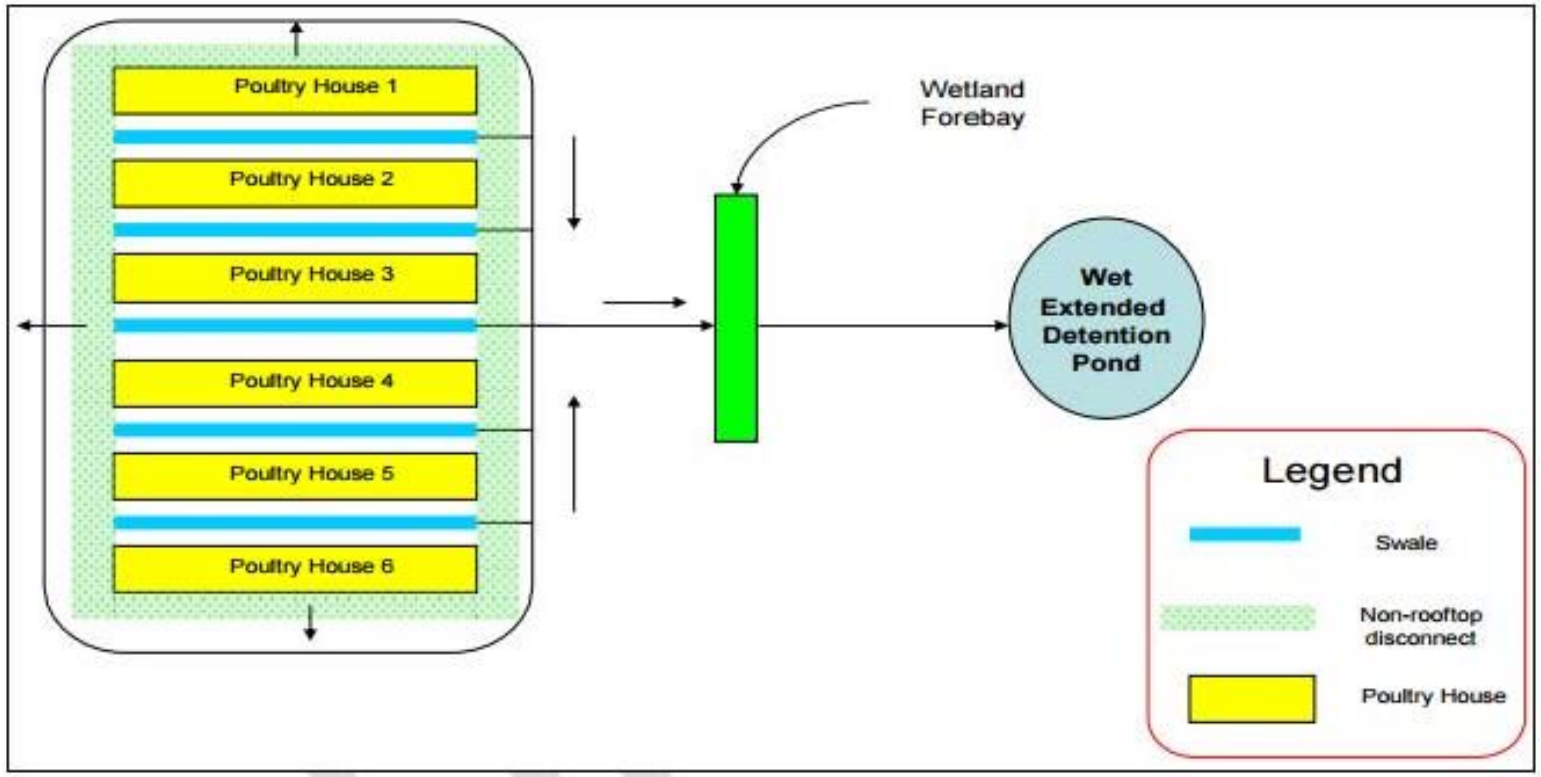
Comments received

- PA DEP
  - Discussion of following statement: “Poultry litter, after it is removed from production facilities, is now typically stored under roof prior to use as a fertilizer.” Request was made to acknowledge that for larger SE PA broiler farms, the majority of the litter is send to the mushroom industry outside of the CBW.
  - ∗Tentative text was added at the end of the sentence to indicate the litter can be used as a fertilizer following transport. ∗ AWMS panel recommendations don’t affect the ability to apply Manure Transport practice.

Current broiler litter management practices in the CBW are well known. Poultry litter, after it is removed from production facilities, is now typically stored under roof prior to use as a fertilizer, either on nearby fields or following transportation elsewhere. Litter is less often applied immediately to crops with brief field storage. In some cases, litter is field stored for several

Comments received

- PA DEP
  - Discussion of following statement: “New broiler farms now being constructed (MD, DE) are graded to collect stormwater and divert it through grass swales to a wetland.” Request was made that PA stormwater practices, both during construction and particularly post-construction stormwater management requirements, should be referenced.
  - ∗Tentative language has been added to indicate that these practices vary by regulatory jurisdiction, but these matters are beyond the scope of the AWMS panel. ∗ It may be more appropriate to delete the reference and discussion of this figure? ∗The impact of stormwater BMPs will be considered by an upcoming EP.



- New broiler farms now being constructed (MD, DE) are graded to collect storm water and divert it through grass swales to a wetland (Figure 8~~Figure 8~~). This reduces nutrients from the small amounts of dust exhausted from poultry houses and present in stormwater. It should be noted that jurisdictions each have their own stormwater requirements in cases when construction of new production houses or earth disturbance activites occur. Post-construction stormwater management practices may include grass swales or other practices as defined by the respective jurisdiction. Such stormwater practices are not a part of the AWMS practice described in this report for the Phase 6 CBWM, but may be covered under other forthcoming CBP practices if the necessary conditions are met.

Comments received

- PA DEP
  - Report has summary tables for dairy, layer, beef and swine (Tables 4, 12, 16, 19, respectively) but not for turkeys or broilers. Why not include these (two) tables? - -
  - ∗Purpose of Tables 4, 12, 16, and 19 was to summarize farm herd-flock size in formulating model farm. ∗ Such data were not available for turkeys & broilers. ∗ Turkey population is described in text for top three Virginia counties. ∗ Broiler population is described in text for top three Maryland counties and one Virginia county. If the AgWG agrees, we will enhance text to better describe relative scale of production; if the AgWG prefers, tables can be added, but will not reference farm size.

Comments received

- PA DEP
  - Objections were made to Image B on Page 40 and Image A on Page 42 as not indicative of how fed cattle are raised in PA/CBW. Instructed to delete or replace with PA-specific pictures in beef section.
  - ∗ Image B is captioned as a “small mid-western feedlot”; Image A is now captioned as a “mid-western farm.” ∗ These series of pictures were provided so the reader can understand AWMS definitions for fattened cattle. ∗ If these images are retained, we will enhance existing disclaimers to indicate they are not representative of PA/CBW practices. ∗ Appendix E now shows some of the possible pictures we may use to replace the pictures in questions, but it may still be appropriate to define a feedlot and include at least one of the images with disclaimers?

Figure 11. A. Pasture finishing beef cattle using a mobile feeder with shade (Beefproducer.com). B. Feedlot finishing beef cattle on a small mid-western feedlot (Americancattlemen.com). Images are for illustrative purposes only and may not be representative of actual beef operations in the Chesapeake Bay watershed.

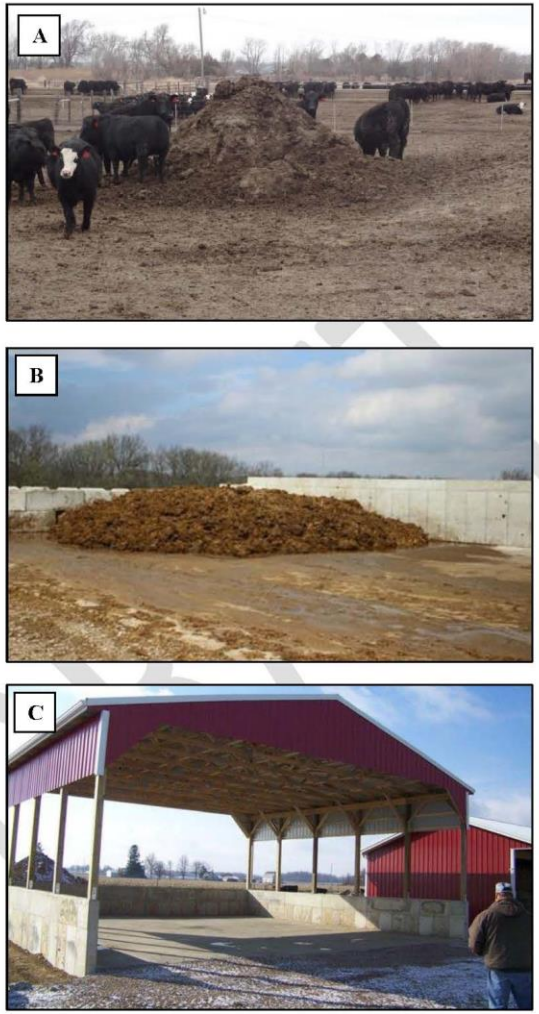
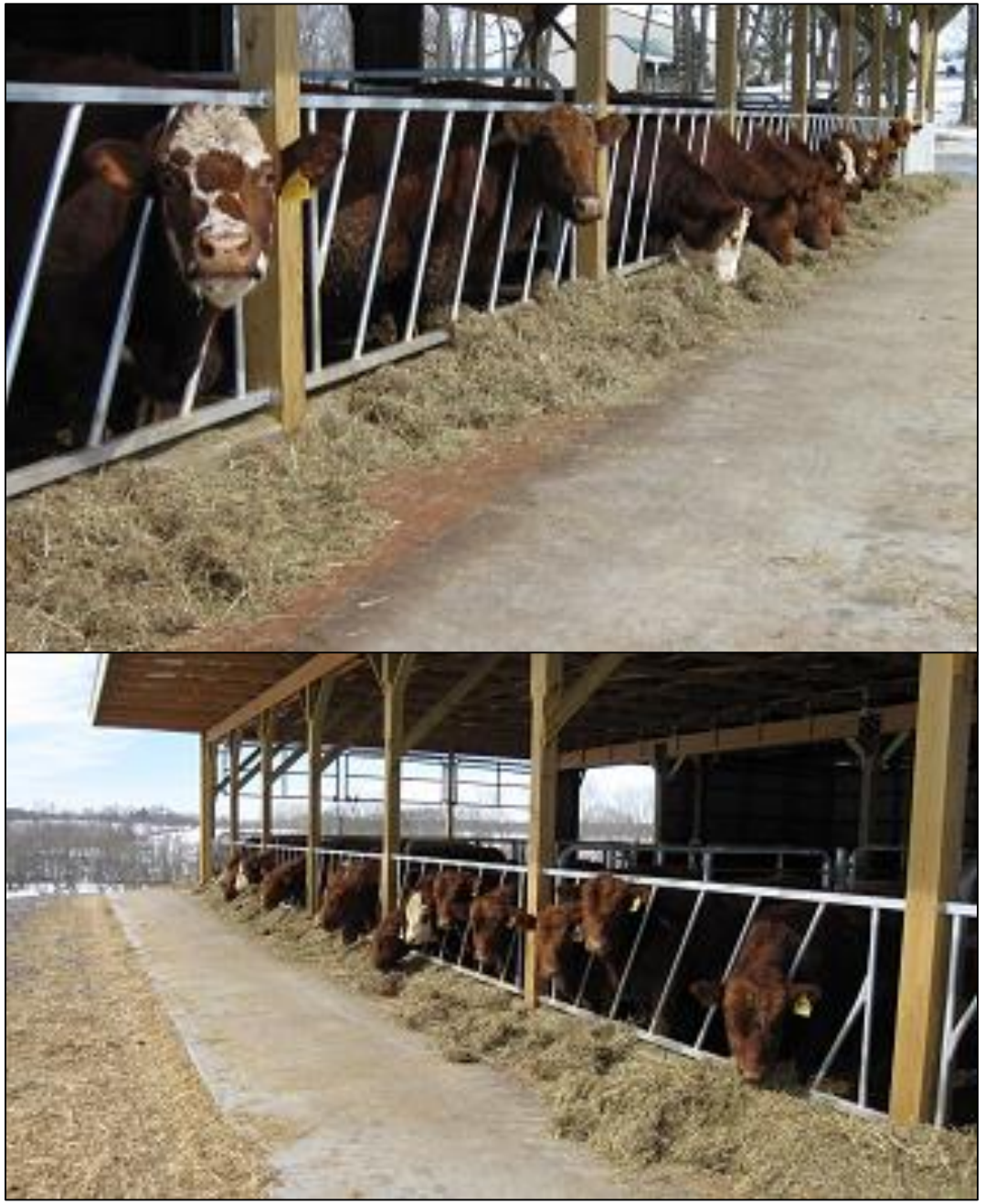


Figure 12. A. Manure stockpiled on a beef feedlot. B. Open stacked beef manure storage on a mid-western farm (Farmprogress.com). C. Empty Dry Stack Manure Storage (CrawfordSWCD). Images are for illustrative purposes only and may not be representative of actual beef operations in the Chesapeake Bay watershed.

(photo credit: Drager Farms, Lancaster County, PA)

∗ The grazing image is excellent, but the panel only considered manure recoverability during confinement, and did not consider time spent on pasture. ∗ Images from the PA Beef Council may be appropriate to include in the report.



(photo credit: PA Beef Coucil)

Comments received

- PA DEP
  - Point of clarification. In the swine section of the report, a misleading reference is made to “regulated” swine farms in PA. Point was made that all operations that produce or land apply manure are regulated in PA. Larger operations are permitted as CAFOs and/or regulated as CAOs under PA NPDES rules.
  - ∗ As used in the text, “regulated” was a reference to federal CAFO rules but this was not indicated. This and other references to “regulated” farms in the swine section will be removed.

Comments received

- PA DEP
  - Why are % N and P recovered identified in Table 20 for swine but not for other animal types?
  - ∗ These values were inadvertently left in the table from a time period when it was not clear whether the focus of the panel would be on physical manure recoverability, or losses of nutrients during storage. These values will be deleted.

Comments received

- **MDA**
  - MDA asked for clarification for poultry heavy use area concrete pads, which was included in initial panel charge.
  - ∗ Poultry heavy use area concrete pads or other heavy use area protection (NRCS Code 561): As stated in the report (page 24, bottom paragraph of revised report) these pads or protected areas facilitate recovery of manure that can inadvertently be removed by equipment used to harvest birds for transport, or by equipment used to manage or recover litter from the production house.
  - ∗ There is limited information to estimate their specific impact to overall recoverability at this time, though they are quite common and are included as part of the model farm used to set the “after-AWMS” recoverability factor for poultry.
  - ∗ While these practices are part of the overall model animal waste management system on poultry farms, the panel does not recommend these as a reportable practice under the Phase 6 AWMS BMP definition.

Timeline for CBP-approval

- December 12: Comments received by COB
- December 15: Seek AgWG + WTWG approval
- December 19: Seek WQGIT approval

CENTER FOR LEADERSHIP & ORGANIZATIONAL CHANGE
PARTNERING FOR RESULTS

Consensus Continuum

Stop	Hold	Stand Aside	Agreement with Reservations	Endorsement
"I do not agree and feel the need to stand in the way of this decision"	"I believe more work is needed before we make a decision"	"I trust the group and will not block this decision but need to register my disagreement"	"I can live with it"	"I like it"

Questions or comments?

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