

Proposed Statement of Work (SOW)
Animal (Livestock and Poultry) Mortality Management BMP Expert Panel
Submitted for consideration to the
Chesapeake Bay Program (CBP) partnership
Water Quality Goal Implementation Team (WQGIT), Agriculture Workgroup (AgWG),
Watershed Technical Workgroup (WTWG) and advisory committees

August 8, 2018

Overview

Fate of nutrients (Total Nitrogen, TN, and Total Phosphorus, TP) released by animal mortality disposal are not explicitly covered in the Chesapeake Bay Program (CBP) Phase 6.0 Watershed Model (CB Model). The only disposal method currently covered by the Bay Model is composting, and there is no mechanism for entering the mass of TN and TP contributed by mortality composting to the model.¹

This statement of work describes how the proposed expert panel will be brought together to write a report to the CBP Agriculture Workgroup (AgWG) recommending estimated loadings and BMP effectiveness values of TN and TP to the CB Model from disposal of routine poultry and livestock mortalities.

As requested by the AgWG² the panel will evaluate, define and describe disposal methods, which will include (but may not be limited to): burial, composting, landfilling, incineration or gasification, and refrigerated storage followed by rendering. The panel will determine the environmental fate of TN and TP in the defined disposal methods relative to a background method (burial). The panel will recommend how mortality management can be represented in the CB Model. The panel will provide Best Management Practices (BMP) verification guidance for the defined mortality management methods to supplement existing AgWG BMP Verification Guidance as needed. The panel will address other hazards and concerns with mortality disposal, such as potential microbial contamination of surface and ground waters and spread of animal and human diseases.

The total panel will consist of seven members identified here: the panel chair, five land grant university panelists representing a wide range of expertise, and a representative of USDA who is familiar with relevant USDA-Natural Resources Conservation Service (NRCS) conservation practice standards. Three additional non-voting representatives from the CBP Watershed Technical Workgroup (WTWG), the CBP modeling team, and EPA Region III office will be identified by the CBP prior to formation of the panel.

The panel will be supported under Virginia Tech's cooperative agreement with the EPA-CBP for Expert Panel Management. This includes facilitation and administrative support by Virginia Tech's Panel Coordinator (Jeremy Hanson), plus resources for panelists' travel to in-person meetings and a portion of the Panel Chair's time to compensate for the significant effort required as Panel Chair.

Proposed Expert Panel Membership

Letters of collaboration, curriculum vitae and Conflict-of-Interest Disclosure forms for the proposed panel members are provided in Attachments A, B and C for consideration by the CBP partnership.

Douglas W. Hamilton (Panel Chair), PhD, PE Doug Hamilton is Associate Professor and Extension Waste Management Specialist at Oklahoma State University. Dr. Hamilton has previously chaired the CBP expert panel on Manure Treatment Technologies, and served on the Animal Waste Management Systems expert panel. He has developed guidance for successful operation of routine poultry mortality composters and lead carcass disposal efforts during recovery from wildfires in Oklahoma during spring 2018. Dr. Hamilton will provide expertise in evaluating Nutrient Management Plans and document preparation.

Thomas M. Bass Tommy Bass is an Associate Extension Specialist at Montana State University. He conducts research and provides extension programming in environmental and emergency management of livestock and poultry production, as well as, sustainability in local/regional food systems. He has conducted agricultural and food waste composting research and consulting for 12 years, including routine and mass animal mortality composting. He has also been a nutrient management planner and CAFO permit coach in Montana and Georgia. Mr. Bass will provide expertise in sustainable livestock systems, nutrient management planning, and carcass disposal methods.

Amanda Abnee Gumbert, PhD Amanda Gumbert is an Extension Specialist for Water Quality at the University of Kentucky. Dr. Gumbert currently serves as lead co-chair of SERA-46, a multi-state land grant university team focused on reducing nutrient losses in the Mississippi River Basin. She provides leadership on agricultural water quality policy in Kentucky and develops educational materials with practical approaches for farmers (including two extension publications focused on proper disposal of animal mortalities). Dr. Gumbert will provide expertise in on-farm water quality best management practices and task group facilitation.

Ernest P. Hovingh, PhD Ernest Hovingh is an Associate Research Professor and Extension/Field Investigation Veterinarian at the Pennsylvania State University. He is leader of the Veterinary Extension Program Team at Penn State. Dr. Hovingh has conducted research in the epidemiology of antimicrobial-resistant and zoonotic bacteria from livestock facilities. He has been trained as an expert in large animal carcass management. Dr. Hovingh will provide expertise in biosecurity and lend the perspective of veterinary medicine to the panel.

Mark Hutchinson Mark Hutchinson is Extension Professor at the University of Maine. He is director of the famed Maine Composting School and a USDA Subject Matter Expert in Animal Carcass Composting. He has also provided extension programming in organic vegetable production. Mr. Hutchinson will provide expertise in carcass composting methods, compost quality evaluation, and incorporation of composting in sustainable livestock systems.

Teng Teeh Lim, PhD, PE Teng Lim is an Associate Professor of Agricultural Systems Management at the University of Missouri. Dr. Lim has extensive research experience in dust, odor, and gaseous emissions in animal agriculture. He has conducted research and has provided extension programming in biosecurity and animal mortality management. He co-wrote the ASABE standard for animal mortality composting. Dr. Teng will provide expertise on engineered systems for sustainable production and mortality disposal methods.

George (Bud) Malone Bud Malone is retired Extension Poultry Specialist with the University of Delaware. He currently consults part time as Malone Poultry Consulting. Mr. Malone has

extensive experience working with poultry litter and mortality management. He will provide expertise on poultry production and general animal agricultural practices on the DelMarVa peninsula.

Sandra L. Means, PE Sandy Means is an Environmental Engineer on the National Animal Manure Nutrient Management Team for USDA-NRCS at the East National Technical Support Center in Greensboro, North Carolina. Her responsibilities include development of policy, review of standards, and delivery of technical assistance and training nationally to assist in the transfer of innovative technologies to the field. She will act as representative of USDA and as an expert on USDA-NRCS practice standards, programs, and policy.

Narrative of Initial Timeline and Tasks to Fulfill Scope of Work

The process to create the recommendation report will adhere to *Protocol for the Development, Review and Approval of Loading and Effectiveness Estimates for Nutrients and Sediment Controls in the Chesapeake Bay Watershed Model² (BMP Protocol)*. Sequential steps to achieve this process are outlined as follows. An initial timeline to meet narrative goals is given in Table 1. As the panel progresses the timeline is subject to change to reflect partnership needs or panel capacity.

Kick-off Meeting: A two day, face-to-face meeting will initiate the project. The meeting location will be in a central location in the Chesapeake Bay Watershed (CBW). Before the meeting, the panel chair will provide an outline of project goals; the BMP Protocol; USDA-NRCS 590 Nutrient Management Standards, USDA-NRCS 316 Animal Mortality Facility Standards, and state rules for disposal of livestock and poultry carcasses for each state in the CBW. On the first day of the meeting, the panel member representing the CBP modeling team will brief expert panelists on the CBP model and how recommendations from the panel may affect the model. The panel will outline specific water quality and biosecurity concerns related to carcass disposal, and develop a specific timetable for panel goals. On the morning of the second day, the panel will finalize disposal options for consideration, form task groups to tackle goals, and assign tasks to achieve before the first panel conference call.

Public Forum: An open forum to garner input, aid in data set identification, and to identify any additional carcass disposal methods for consideration will be held in the CBW. This forum will be held on the afternoon of the first day of the initial face-to-face meeting. This forum will be organized and advertised by CBP.

Task Groups: In order to facilitate efficient collection of data, the expert panel will divide itself into several smaller task groups. These groups of two or three individuals will be self-forming. Task groups will collect data on fate of TN, TP, and pathogens, and will recommend BMP verification and biosecurity procedures for each carcass disposal method. Task groups will remain intact until the recommendation report is written.

Panel Communication: The panel chair will establish a common protected virtual space (for example a Google Team Drive or One Drive/Sharepoint) where panelists can securely share information and data. In addition to face to face meetings, panelists will communicate in monthly conference calls.

Collection of Data Sets: Task groups will gather data sets for the selected disposal methods and rank their validity using criteria of Table 1 of the *BMP Protocol*.

Analysis of Data: Using data sets and best professional judgment of the panelists, selected disposal methods will be analyzed. Each group will prepare a written report giving a detailed

definition of the disposal method and results of data analysis. This report will also include a list of references and a discussion of how each reference was considered.

Consensus of Results: A second face-to-face meeting will be held in which task groups will orally present the reports created during the data analysis phase. Draft reports will be available to all panelists before this meeting on the common virtual space. The panel will evaluate and provide feedback to each task group. Dissenting opinions of panelists will be noted and preparation will be made to add these dissenting views as an appendix to the recommendations report. The second face to face meeting will be held in a central location in the CBW.

Preparation of Draft Report: The Panel Chair will coalesce the task group reports into a draft final report. The Panel Chair will send the draft report to entire panel via the common virtual space. Panelists will return written comments to chair in one month.

Approval of Final Recommendation Report: After one month's review time, the expert panel will approve or disapprove of the document via voice vote in a conference call. In the case of non-unanimity, a separate dissenting report will be attached as an appendix. The Panel Chair will then forward the report to Agricultural Work Group as prescribed by the *BMP Protocol*.

References:

1. *Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model.* July 14, 2014. Chesapeake Bay Program Water Quality Goal Implementation Team.
2. *Recommendations for Livestock and Poultry Mortality Management.* March 15, 2018. Chesapeake Bay Program. Animal Mortality Expert Panel Establishment Group,

Table 1. Timeline to Meet Expert Panel Goals.

	2018			2019												2020		
	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Kick-Off Meeting	█																	
Public Forum																		
Final List of Disposal Methods and Animal Groups																		
Collection of Data Sets		█	█	█														
Analysis of Data				█	█	█	█	█										
Initial Reports Delivered to Panel by Task Groups								█										
Second Meeting to Come to Consensus on Nutrient Delivery, BMP Verification, Potential Modelling of Practice									█									
Panel Chair Coalesces and Writes Draft Report to CMP AgWG									█	█	█							
Approval of Draft Report by Panel										█	█	█						
Report Delivered to CBP AgWG											█	█						
CBP Partnership Review and Approval													█	█	█	█	█	█