

Agricultural Ditch BMP Panel: Update/Review

Prepared for the Agriculture Workgroup
11/16/2017



Nutrient Management Section
DELAWARE DEPARTMENT
OF AGRICULTURE



Panel Membership

Panelist	Affiliation
Ann Baldwin	National Resource Conservation Service (DE)
Ray Bryant (chair)	USDA Agricultural Research Service (PA)
Brooks Cahall	DE - DNREC Drainage Program
Laura Christianson	University of Illinois
Clint Gill	DE – DoAg Nutrient Management Program
Dan Jaynes	USDA Agricultural Research Service (IA)
Chad Penn	USDA Agricultural Research Service (IN)
Stuart Schwartz	University of Maryland, Baltimore County
Andy Ward	Ohio State University
Chesapeake Bay Program	Mark Dubin, Jeremy Hanson, Lindsey Gordon, Matt Johnston, Jeff Sweeney, Loretta Collins



Best Management Practices for Agricultural Ditch Management in the Phase 6 Chesapeake Bay Watershed Model

Jeremy Hanson



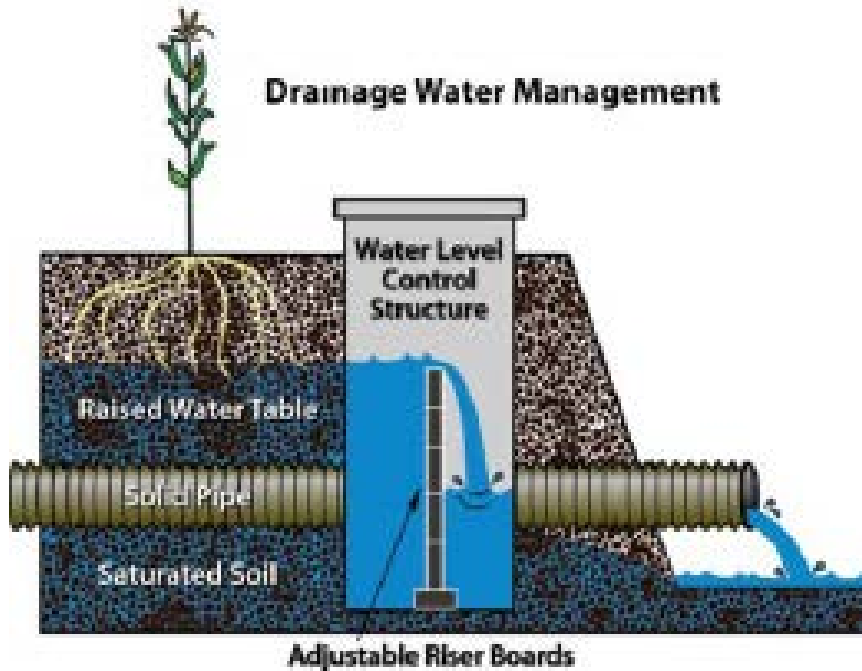
BMPs

Panel met Oct. 31,2017

- Drainage Water Mgmt. / incl. Water Control Structures
- Subsurface Drain (Do not include or more research needed?)
- Denitrifying Bioreactors
- Vegetated Subsurface Outlet/Saturated Buffer
- Open Channel/Two-Stage Ditch
- Phosphorus Removal System
- Gypsum Curtain
- Blind Inlet
- Ditch Dipouts (More Research Needed)



Drainage Water Management/ Structure for Water Control



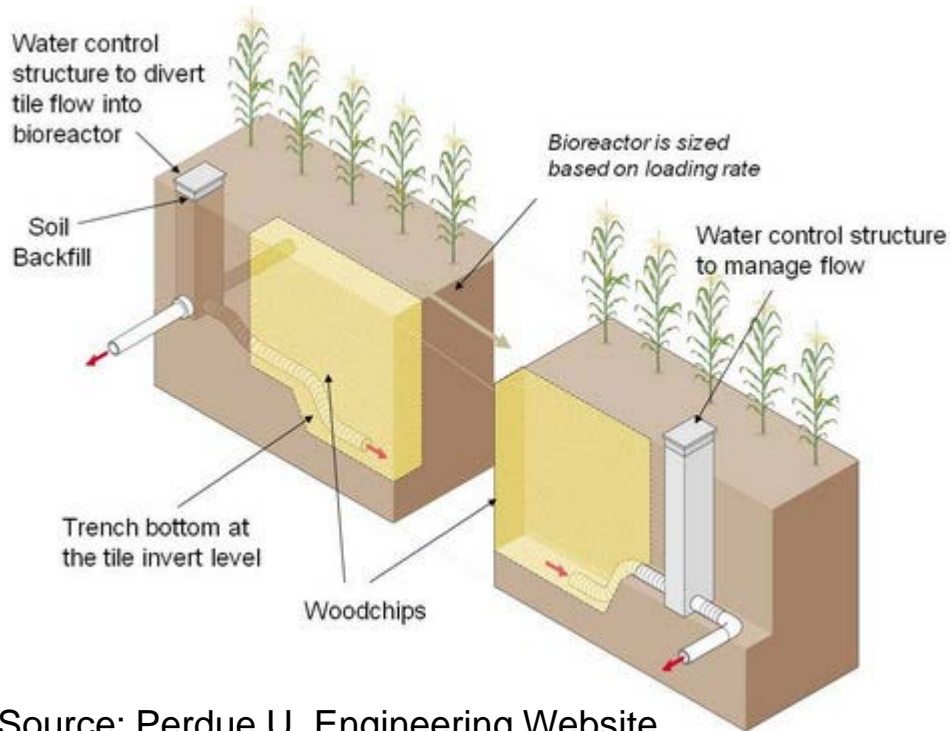
Source: USDA-NRCS Website



Brooks Cahall, Dan Jaynes and Stuart Schwartz



Denitrifying Bioreactor



Source: Perdue U. Engineering Website

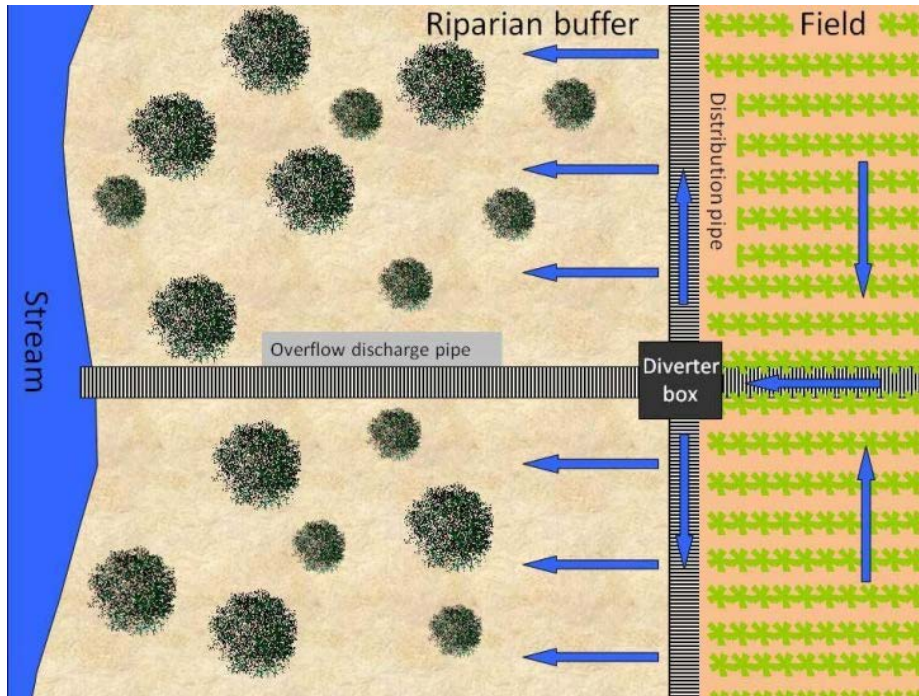


Source: Upper Susquehanna Coalition Website

Laura Christianson, Ann Baldwin, and Ray Bryant



Vegetated Subsurface Outlet/ Saturated Buffer



Source: Bruce Atherton, NRCS

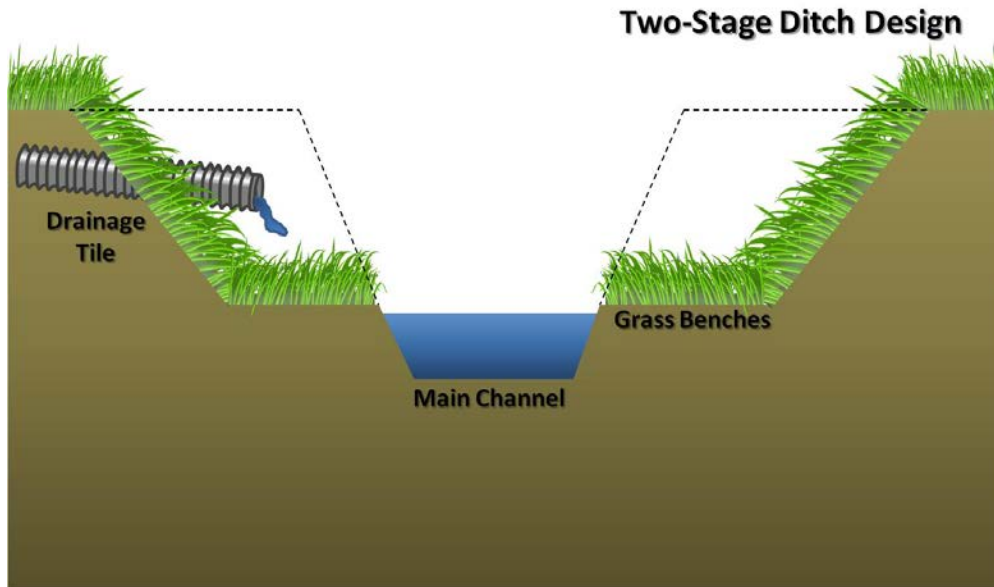


Source: FarmWeekNow.com

Laura Christianson, Ann Baldwin, and Dan Jaynes



Open Channel/Two Stage Ditch



Source: Livable Future Blog



Source: Perdue U. Engineering Website

Brooks Cahall and Ann Baldwin



Phosphorus Removal System



Source: C. Penn USDA-ARS

Chad Penn, Clint Gill, and Ray Bryant



Gypsum Curtain



Source: CSA News Magazine



Source: Bay Journal

Chad Penn, Clint Gill, and Ray Bryant



Blind Inlet / Subsurface Drains

Alternative Surface Drainage

Tile Riser



Blind Inlet



Source: Douglas Smith, USDA-ARS



Source: Times Bulletin

Ann Baldwin, Clint Gill, Stuart Schwartz and Ray Bryant



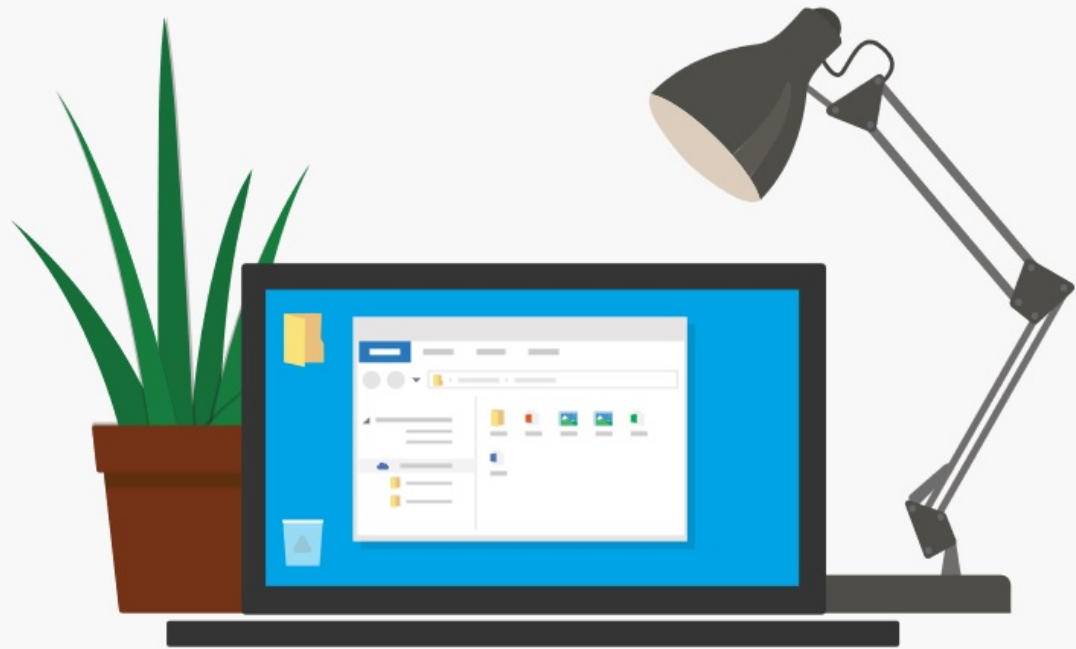
Ditch Dipouts



Source: American Fisheries Society

Brooks Cahall (more research needed)





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Current/Future Steps

- Report outline developed
- BMP assignments completed
- Microsoft OneDrive site established
- Chapter drafts due in 6 months
- Future panel meetings will discuss
 - the conditions in which a reporting agency can receive a nutrient and/or sediment reduction credit for a BMP.
 - the units to report practices to the CBWM.
 - recommended procedures for reporting, tracking and verification of the BMPs.

