

Agricultural Ditch BMP Panel: Update/Review

Prepared for the Agriculture Workgroup
6/27/2017



Nutrient Management Section
DELAWARE DEPARTMENT
OF AGRICULTURE



Panel Background

- Existing and soon to be approved NRCS BMPs related to ditches are not currently credited in Chesapeake Bay Model
- BMPs installed in ditch systems represent a potentially significant source of nutrient/sediment reductions
- 70% of Delaware's tax ditches and most of Maryland's 821 miles of ditches are in the Chesapeake Bay watershed



Panel Charge

- Define which specific BMPs have sufficient research to warrant inclusion in the CBWM.
- Define the conditions in which a reporting agency can receive a nutrient and/or sediment reduction credit for a BMP.
- Define the units to report practices to the CBWM.
- Recommend procedures for reporting, tracking and verification of the BMPs.
- Analyze any potential unintended consequences associated with the BMPs.



Panel Membership

Panelist	Affiliation
Ann Baldwin	National Resource Conservation Service
Ray Bryant	USDA Agricultural Research Service
Brooks Cahall	DNREC Drainage Program
Laura Christianson	University of Illinois
Dan Jaynes	USDA Agricultural Research Service
Chad Penn	USDA Agricultural Research Service
Stuart Schwartz	University of Maryland, Baltimore County
Andy Ward	Ohio State University

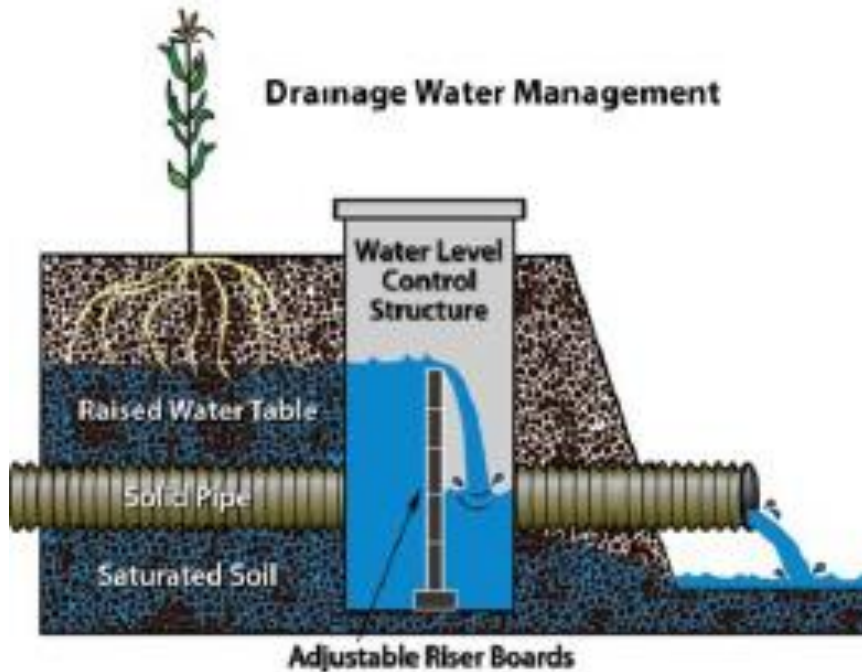


BMPs

- Drainage Water Management/Structure for Water Control
- Channel Bed Stabilization
- Subsurface Drain
- Denitrifying Bioreactors
- Vegetated Subsurface Outlet/Saturated Buffer
- Open Channel/Two-Stage Ditch
- Phosphorus Removal System
- Gypsum Curtain
- Blind Inlet
- Ditch Dipouts



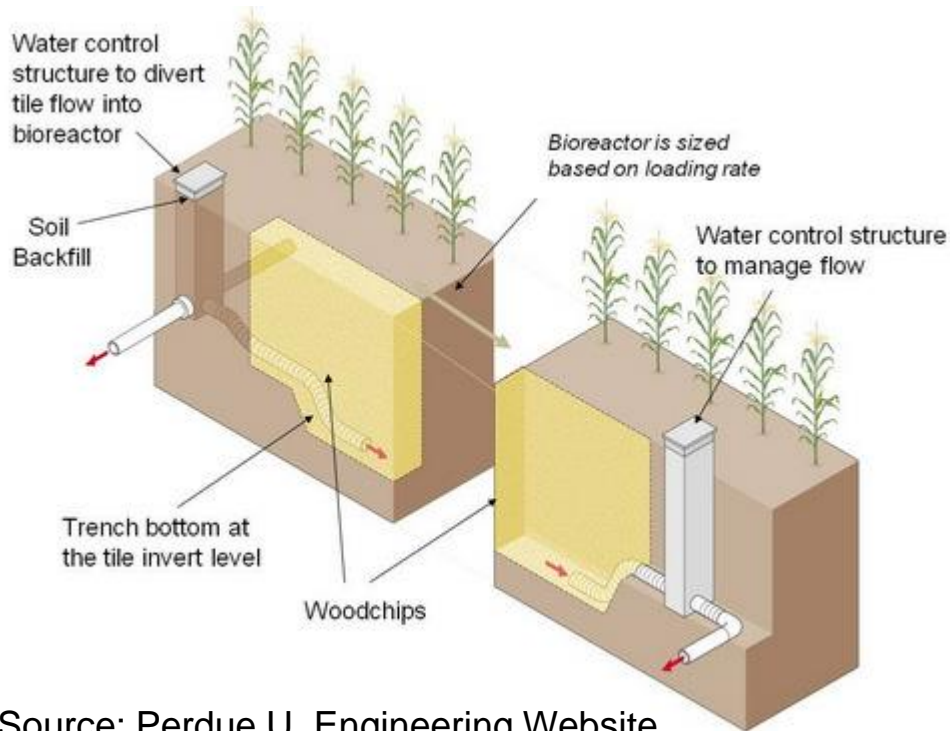
Drainage Water Management/ Structure for Water Control



Source: USDA-NRCS Website



Denitrifying Bioreactor



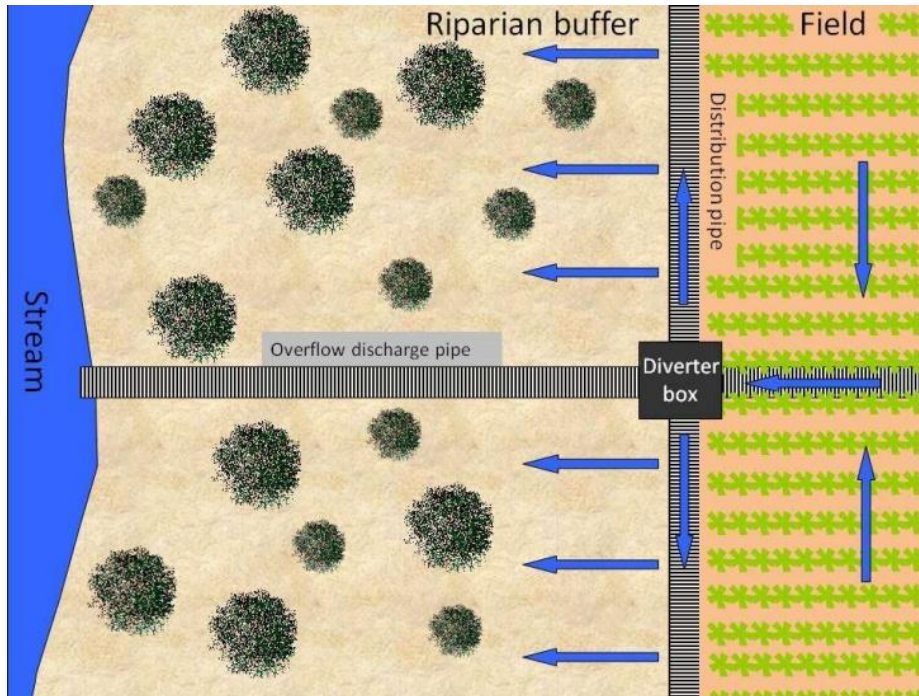
Source: Perdue U. Engineering Website



Source: Upper Susquehanna Coalition Website



Vegetated Subsurface Outlet/ Saturated Buffer



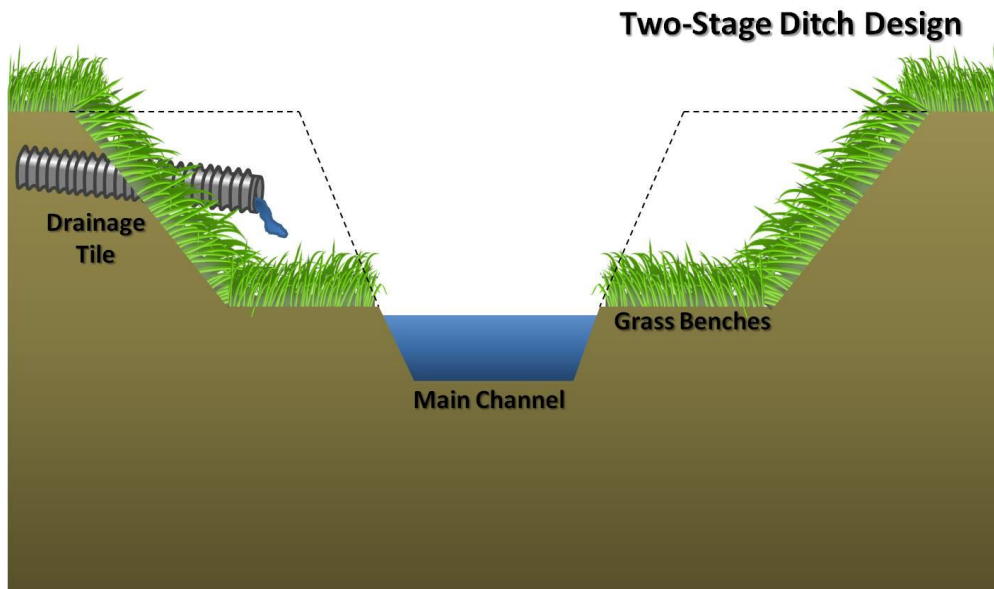
Source: Bruce Atherton, NRCS



Source: FarmWeekNow.com



Open Channel/Two Stage Ditch



Source: Livable Future Blog



Source: Perdue U. Engineering Website



Phosphorus Removal System



Source: C. Penn USDA-ARS



Gypsum Curtain



Source: CSA News Magazine



Source: Bay Journal



Blind Inlet

Alternative Surface Drainage

Tile Riser



Blind Inlet



Source: Douglas Smith, USDA-ARS



Source: Times Bulletin



Ditch Dipouts



Source: American Fisheries Society



Current/Future Steps

- Public stakeholders meeting complete
- As sections are finished, they will be released to the panel membership for review, Denitrifying Bioreactor, Two-Stage Ditch, Blind Inlet out for panel review
- Panel will review sections, Bay Program staff will help with shaping the review and logistics

