

CHESAPEAKE BAY PROGRAM
RESOURCE IMPROVEMENT PRACTICE
DEFINITIONS AND VERIFICATION VISUAL INDICATORS
REPORT

Presented by the Agriculture Workgroup’s Resource Improvement Technical
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Introduction

As Chesapeake Bay states implement local Watershed Implementation Plans to meet the new Total Maximum Daily Load requirements for the Chesapeake Bay Watershed, a more accurate accounting of all conservation measures on agricultural lands is critical to ensure that appropriate nutrient load reductions are being credited in the Bay Watershed Model. Traditionally, states have relied upon both State and Federal Cost-Share Programs as the source of conservation implementation data for progress to report in their Watershed Implementation Plans.

Recognizing that many conservation measures have been, and are being, implemented without Federal or State financial assistance, the Chesapeake Bay Program has agreed to credit Best Management Practices that meet CBP or NRCS definitions and standards and Resource Improvement Practices that have been implemented without public cost-share funds provided they are providing a reduction of sediment and nutrients to the Chesapeake Bay. This document will provide the process for identification and verification of these two types of practices.

Objective

The objective of this Report is to provide what is required for the collection and verification of non-cost-shared agricultural best management practices that meet CBP definitions and establish definitions and verifications methods for Resource Improvement Practices. The goal is to account for all verified farmer implemented conservation practices that result in nutrient and sediment reductions. In order for practices to be counted in the Bay Model, data will have to be tracked, verified and reported and then transmitted to the Chesapeake Bay Program via the National Environmental Information Exchange Network (NEIEN).

The process of identifying Non-cost shared practices will normally happen when local Conservation District or other trained technical staffs are on farms working with cooperators and landowners assisting them with the planning process to correct any potential environmental concerns that the landowner may have. It is extremely important for technical staff to establish a dialogue with landowners to encourage the proper use and maintenance of all BMPs. It is the intent of this document is to provide guidance for jurisdictions to develop verification protocols for the reporting all non cost-shared conservation practices for crediting toward progress in their state Watershed Implementation Plans.

Why Is It Important To Report Non Cost shared BMP's?

- ◆ **Farmers and Agricultural Landowners** voluntarily install many BMP's outside of state or federal cost share programs or cannot accept a government subsidy:
 - ✓ Plain Sect Farmers (Amish, Mennonite Farmers as examples)
 - ✓ Farms owned by corporations that cannot accept federal funding due to the payment limitations.
- ◆ **Some state nutrient regulations** require farmers to install practices that provide water quality protection and need to be verified for compliance with state laws. These state requirements may result in practices that are not required to meet NRCS Standards and Specifications:
 - ✓ Stream Exclusion (fencing type or distance from stream)
 - ✓ 10' and 35' buffers for fertilizer and manure application setbacks
- ◆ **Watershed Organizations, Environmental Organizations, Conservation Organizations, and NGOs** are all helping Farmers and Agricultural Landowners to meet WIP goals to protect water quality by installing BMPs:
 - ✓ Shenandoah RC&D Council - Stream exclusion fencing with narrow width tree plantings
 - ✓ Nanticoke Watershed Alliance – 10' Buffers on Drainage Ditches
 - ✓ Chester River Association - Switch grass plantings for field buffers
 - ✓ Mid-Shore Riverkeeper Conservancy - Water Control Structures on Field Ditches

Non Cost-Shared Practices that Provide Resource Improvement

Resource Improvement Best Management Practices (RI) are non-cost shared BMPs that are typically financed by the operator or other non-public entity or source and may or may not meet the practice standards associated with federal and state cost-share programs. RI practices may lack the contractual provisions of cost-shared BMPs as well as the corresponding implementation and maintenance oversight. ***“Resource Improvement BMP’s are practices which provide similar annual environmental benefits for water quality but may not fully meet all the design criteria of existing governmental design standards. RI BMP’s are usually identified during a visit with the farmer. RI BMP’s are implemented by a farmer and are not cost shared through a federal or state program. RI BMP’s can be the result of a farmer choosing not to completely follow all the details of the design standard from the District or NRCS, but will contain all the critical elements for water quality resource improvement. Approved CBP RI BMP’s definitions contain descriptions of the practice with Visual Indicators. A Visual Indicator is a means of assessing the presence of key elements that must be present to achieve the water quality benefits of the RI practice and to be reported in Jurisdictional WIPs. The re-verification interval of an agricultural Resource Improvement BMP may be more frequent than practices meeting state or federal programs to insure proper functioning.”***

Resource Improvement Practices are Multi-Year Visual Assessment Practices

The Resource Improvement Practices (RI) discussed in this Report fall under Visual Assessment BMPs - Multi-Year Practices in the Chesapeake Bay Program Partnership Agricultural Workgroup’s “Agricultural BMP Verification Guidance”. These are practices can be visually assessed and have a protracted physical presence on the landscape, i.e., of more than one year when properly maintained and operated.

Verification and Quality Assurance of Non Cost-Shared Practices

Currently the Chesapeake Bay Program (CBP) can accept non-cost shared practices that fully meet NRCS practice standards and address CBP BMP definitions for credit. This Report further develops definitions and suggested methods to verify and document the existence of Resource Improvement Practices (RI), non-cost shared practices, which do not fully address all NRCS practice standards but do comply with appropriate CBP BMP definitions. Each state will develop a method to verify and document these two types of non-cost shared practices and include it in their State Jurisdictional Protocols. Jurisdictions will utilize approved AgWG recommended quality assurance methods and frequency for spot-checking all non-cost shared and RI practices per The Chesapeake Bay Program Partnership Agricultural Workgroup’s Agricultural BMP Verification Guidance.

How Were Resource Improvement Practices and Visual Indicators Developed?

The development of Resource Improvement Practices started in July of 2013 with the Maryland Department of Agriculture requesting that their “Non Cost-Shared Management Practice Verification Procedures Manual” be approved by the AgWG. The November 2013 version of their verification document was the original document the Technical Panel reviewed and used for the development of this Report. The process for the development of this Report included the following actions by MDA and the Technical Panel:

- 1) Starting in 2011, through the review of practices that farmers have installed without cost sharing, the Maryland Department of Agriculture determined there were fourteen practices that they considered to be what was first called Functional Equivalent Practices (FE). MDA’s first verification procedures manual (Version 1) created documentation worksheets that consisted of open ended and fill-in the blank questions. Upon review by MDA, it was determined at this method of documentation resulted in wide variations in interpretation and what was reported as a FE Practice. Note: Virginia also conducted a trial of collecting Non-Cost shared practices in 6 Districts, but did not provide any information to the Panel for this process.

- 2) MDA worked with representative Conservation Districts to develop Versions 2 and 3 of the MDA Non-Cost Shared Verification Manual. It included a new FE worksheet that contained NRCS practice design criteria and FE design criteria. It was tested and updated from input by the representative Conservation Districts in Maryland.
- 3) MDA presented this document to the AgWG in July 2013 and the Partnership endorsed the concept and requested approval from Water Quality Goal Implementation Team (WQGIT). The WQGIT requested that the AgWG work through a technical review process for final approval. The AgWG then requested a Partnership Technical Review Panel be created to review the MDA document and provide recommendations back to the AgWG for final approval.
- 4) AgWG sent out a notice to the jurisdictions for Technical Review Panel member nominations. In this notice, the AgWG requested technically qualified members from State Agencies, Conservation Districts, NRCS technical personal and the NGO Community. States submitted nominees and NRCS agreed to participate as technical members in an advisory role (See letter from Rich Sims in Appendix A). December 12, 2013, the AgWG selected Technical Review Panel members.
- 5) The Technical Review Panel held a teleconference January 29, 2014 to receive an introduction to the issue and their panel charge.
- 6) The Technical Review Panel met in person on March 2, May 8, 2014 and then held a May 29, 2014 teleconference for working sessions to develop the definitions and documentation checklists for the practices. During these sessions, the following overall document changes were made:
 - a) Change in name from Functional Equivalent (FE) to Resource Improvement Practices (RI)
 - b) Change FE Criteria test to Visual Indicators (VI), following the WQGIT approved process developed by the Storm Water Sector for verification of homeowner BMPs.
 - c) The NRCS design criteria were removed from the documentation checklists. The NRCS Practice standards will only be used as a reference practices along with CBP BMPs for assistance in identifying if a practice should be reported and a Non-Cost Shared Practice that meets a NRCS standard or a RI.
 - d) Final definitions and VI's for each practice were developed.
 - e) Two practices were deleted: Concentrated Area Protection and Wetland Development. It is recommended by the Technical Review Panel that these two be provided back to the appropriate CBP program Expert Panel or Sector for assistance on the development of an appropriate RI practice.
 - f) It was decided to make a jurisdictional neutral document and recommendations were made on the appropriate Agricultural Verification BMP Methods, documentation requirements and re-verification for RI practices using the Agricultural Workgroup's Agricultural BMP Verification Guidance (July 2014).
- 7) The document was presented by the Technical Panel to the AWG for review on June 19, 2014.
- 8) Comments were provided by the AWG members and the Technical Panel reviewed and incorporated or made changes to the RI documents as appropriate July 10, 2014 and July 25, 2014.
- 9) The document was approved by the AgWG on August 8, 2014.
- 10) The document was approved the WTWG and the WQGIT on August 11, 2014.
- 11) The final approved document provided for jurisdictions in August 2014.
- 12) Jurisdictions that choose to report RI's will develop the specified guidance and will get approval the appropriate CBP approval process. If states propose additional RIs they will need the appropriate AgWG and CBP approval.
- 13) CBP approved RI practices will be collected by approved jurisdictional verification processes and reported through NEIEN for credit in the Jurisdictional TMDL Watershed Improvement Plan progress runs.

Resource Improvement Practices and Visual Indicator Requirements

RI Practices and Visual Indicators (VI) meet the follow requirements:

- a) RI and their associated VI's are usually found as part of a state or NGO entity working with farmers. They typically would not be designed by Agencies or NGOs, but by the farmer who has an interest in resolving a conservation water quality problem on their farm and they implemented a RI to meet that need. To receive credit for the practice, the VI's for each RI are required to be present and are verified by

- an approved CBP Verification Method with the appropriate documentation provided to the certifying agency for approval before credit is provided in Jurisdictional WIPs (see Matrix in Appendix B)
- b) VI's will meet the appropriate federal, state and local regulations.
 - c) VI's provide for the safe functioning of the practice for humans or animals.
 - d) VI's will provide water quality or resource improvement as implemented.
 - e) Some RI standards will have more than one reportable code to record the appropriate buffer widths, vegetation or type of animal, or animal units, etc. (See Appendix C- Animal Units)
 - f) Nutrient Exclusion Areas that are less than CBP Buffer widths (i.e. <35') are will receive "land use change" credit only as previously approved by the AgWG.
 - g) RI practice names, units and CBP credit will be finalized through the appropriate NEIEN Appendix process and timelines to be credited to the Jurisdiction WIP.
 - h) All RI practices have reduced re-verification intervals and must be recertified to ensure they are being properly maintained and functioning.

How are Visual Indicators Evaluated and Recorded?

In the process of working with a farmer, RI practices may be mentioned by the farmer or discovered by the technical specialist during a farm visit. Jurisdictions may use any approved AgWG verification method (See Appendix B) to determine if the practice will meet the RI definitions and VI's. In order for a RI practice to be considered reportable the technical specialist will look at the RI practice Visual Indicators and see if they are present. All Visual Indicators must either have a Y or NA marked. If a N is marked on the checklist, the technical specialist may not report the RI practice, but they may use the opportunity to discuss the deficiency with the farmer.

Jurisdictional Checklist Requirements

Jurisdictions may use any format or design (i.e. paper, electronic, etc.) for their state checklist to document if the practice meets an approved RI definition and all elements of a RI are present with appropriate VI's. The Checklists that are included in this Report are one example of recording all the elements required for RI verification documentation.

Jurisdictional RI checklist will contain the following information for each RI:

- 1) Date of verification and name of certifying official;
- 2) Landowner information: such as address, county, etc.;
- 3) Location of RI on the landscape such as: marking on an aerial map or conservation plan map, GPS location or Latitude/Longitude coordinates, etc.;
- 4) Presence of the required VIs (as appropriate);
- 5) Date the practice was installed by the farmer;
- 6) Appropriate reported units for state database and NEIEN;
- 7) Visual documentation such as a photo of the practice, drawing or other description;
- 8) Other notes as needed for additional documentation or re-verification.

The RI checklist and associated information will be placed the farmer's conservation plan or other jurisdictional approved location.

Modifications to Approved VI's: Upon CBP partnership approval, jurisdictions are allowed to make individual VI's stricter than the approved definition per state program requirements, regulations, etc. Where "state or local regulations or requirements" are mentioned, jurisdictions may insert specific state regulation or requirement references in the VI. A jurisdiction may not make a VI less restrictive or weaker than found in the CBP approved Report. If jurisdictions wish to propose less restrictive VI's or additional RI's, they must be first reviewed and approved following the AgWG and CBP approval process.

Who can report RI practices?

RI BMPs may be reported by using any approved AgWG Verification method (See Appendix B). Any trained and/or certified technical field staff person that has the required knowledge and skills to determine if the practice meets the applicable RI definition and VIs may conduct the RI practice review. Jurisdictions will have final oversight and will be the certifying entity of all information that is provided and approved for entry into the CBP NEIEN reporting system. The appropriate spot-checking will be completed during annual Quality Assurance Reviews and the appropriate actions will be taken if information submitted is incorrect such as: removal of RI practice from reporting system; potential re-training of technical staff; removal of certification of the individual, NGO or other entities that may report RI's, etc.

RI BMP Re-verification

RI practices shall be re-verified at a more frequent interval since their design may not be as extensive as similar state funded or NRCS practices Therefore a technical person must visit the RI BMP on a more frequent basis to review the efficacy of the RI BMP and the farmer's operation and maintenance of the BMP. RI re-verification intervals are found in the below table. When a jurisdiction re-verifies the practice it must determine if required VIs are still present and functioning for the appropriate water quality credit or it will be removed from the jurisdictional and NEIEN database.

RI BMP Re-verification Intervals:

RI BMP Name	RI Re-Verification Intervals (Years)
Dry Waste Storage Structure	5
Animal Compost Structure	5
Alternative Crop/Switchgrass	5
Watercourse Access Control (Narrow, Grass, Trees)	5
Grass Nutrient Exclusion Area on Watercourse and Grass Buffer on Watercourse	5
Forest Nutrient Exclusion Area on Watercourse and Forest Buffer on Watercourse	10
Vegetative Environmental Buffer for Poultry, Grass	3
Vegetative Environmental Buffer for Poultry, Trees	5
Conversion to Pasture or Hayland	3
Rotational Grazing	3
Barnyard Clean Water Diversion	5
Water Control Structure	5
Watering Trough	5

Resource Improvement Practices

There are 19 Resource Improvement Practices. Some practices have multiple options for different widths or vegetation:

	Resource Improvement Practice Name	Additional Practice Information
RI-1	Dry Waste Storage Structure	
RI-2	Animal Compost Structure	
RI-3	Alternative Crop/Switchgrass	
RI-4a	Watercourse Access Control-Narrow Grass	10'-34' Width Exclusion Area, Natural Grass or planted
RI-4b	Watercourse Access Control-Narrow Trees	10'-34' Width Exclusion Area, Native Trees or planted
RI-5	Watercourse Access Control-Grass	35'+ Width Exclusion Area, Natural or planted Grass
RI-6	Watercourse Access Control-Trees	35'+ Width Exclusion Area, Natural or planted Trees
RI-7	Grass Nutrient Exclusion Area on Watercourse	10'-34' Width Nutrient Exclusion Area
RI-8	Grass Buffer on Watercourse	35'+ Width Buffer
RI-9	Forest Nutrient Exclusion Area on Watercourse	10'-34' Width Nutrient Exclusion Area
RI-10	Forest Buffer on Watercourse	35'+ Width Buffer
RI-11	Vegetative Environmental Buffer for Poultry-Grass	Warm Season Grass
RI-12	Vegetative Environmental Buffer for Poultry-Trees	Trees
RI-13	Conversion to Pasture	
RI-14	Conversion to Hayland	
RI-15	Rotational Grazing	
RI-16	Barnyard Clean Water Diversion	
RI-17	Water Control Structure	
RI-18	Watering Trough	

RI-1: DRY WASTE STORAGE STRUCTURE Resource Improvement Practice Definition**Reported Units: Number of Systems; Animal Type; Animal Units****DEFINITION**

A waste storage structure for dry stackable manure constructed by fabricating a structure, or by fabricating a field-stacking pad. This does not include the temporary stacking of poultry manure in a field that would be moved to different locations each year.

PURPOSES

To temporarily store dry stackable manure.

CONDITIONS WHERE PRACTICE APPLIES

To temporarily store dry stackable manure.

CRITERIA

Size of the facility should be large enough to store all accumulated dry animal manure, for the maximum period during which such wastes cannot be applied to the land for reasons such as operational restrictions, weather, or crops.

Storage of stackable manure must meet all state and local regulations. All runoff is controlled and non-polluting.

Exclude clean runoff to the fullest extent practical.

Waste handling equipment shall be available to remove waste materials from agricultural waste storage facility and apply it to the land at the locations, times, and rates per local, county or state regulations.

OPERATION AND MAINTENANCE

Re-verification of animal waste structures is required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- Animal Waste Management Systems (AWMS); NRCS -313 Waste Storage Facility

RI-1: Dry Waste Storage Structure Example Checklist Verification Date:

Cooperator Name, Address, and Phone #		FSA Farm / Tract Field Number:	SCD	Inspection Type	
				<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____	
RI-1 Practice: Dry Waste Storage Structure					Supporting Data & Documentation:
Re-Verification Interval: 5 years			Y	N	N/A
RI-1 Visual Indicators					
1	Does facility operate without polluting waters?				Visual observation
2	Facility is located \geq 100' from wells, unless there is a Health Dept. waiver or per State, County or Local Regulation				Estimate by paces
3	Facility is 100 feet from top of bank of any stream or per state, county or local regulation.				Estimate by paces
4	Volume per sizing sheet for NRCS Spec or describe management methodology used by farmer				Owner interview
5	Offsite runoff is excluded or accounted for in storage				Visual observation
6	Storage of stackable manure must meet all state and local regulations. All runoff is controlled and non-polluting.				Visual observation and Owner interview
7	No safety concerns present.				Visual observation
8	Slab on grade, or may be other stabilized impervious surface.				Visual observation
9	Retaining wall if used is straight, not in imminent danger of failure				Visual observation
Meets RI-1 Visual Indicators					
RI-1 Installation Date:					
RI-1 Reportable Units:					
Number of Systems:					
Animal Type: AU:					
CERTIFICATION DATE/INITIALS:					
RE-VERIFICATION DATE/INITIALS:					

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-2: ANIMAL COMPOST STRUCTURE Resource Improvement Practice Definition**Reported Units: Number of Systems; Animal Type; Animal Units****DEFINITION**

An on-farm facility for the treatment or disposal of livestock and poultry carcasses for a small numbers of animals. (Typically less than 80 Animal Units total on the farm)

PURPOSES

Provide proper disposal of carcasses to decrease non-point source pollution of surface and groundwater resources.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where animal carcass treatment or disposal must be considered as a component of a waste management system for livestock or poultry operations. This practice includes disposal of normal, not catastrophic, animal mortality.

CRITERIA

The facility shall be designed to handle normal mortality.

Contaminated runoff from any mortality facility without a roof must be controlled.

The appropriate carbon source to animal carcass volume is utilized resulting in appropriate biological decomposition.

Leachate should not occur from any composting facility.

Operators should receive proper training on the use of the facility.

OPERATION AND MAINTENANCE

Re-verification of animal mortality facilities is required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- Mortality Composters (MortalityComp); NRCS- 316 Animal Mortality Facility

RI-2: Animal Compost Structure Example Checklist**Verification Date:**

Cooperator Name, Address, and Phone #		FSA Farm / Tract		SCD		Inspection Type		
		Field Number:				<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____		
RI-2 Practice: Animal Compost Structure						Supporting Data & Documentation:		
Re-Verification Interval: 5 years						Y	N	N/A
RI-2 Visual Indicators								
1	Does facility operate without polluting waters?							Visual observation
2	Facility is located \geq 100' from wells, unless there is a Health Dept. waiver or per State, County or Local Regulation							Estimate by paces
3	Facility is 100 feet from top of bank of any stream or per state, county or local regulation.							Estimate by paces
4	Facility meets pollution control requirements of state & local agencies and regulations							Visual observation
5	The appropriate carbon source to animal carcass volume was utilized resulting in appropriate biological decomposition.							Visual observation
6	The resulting product is utilized according to state and local regulations							Owner Interview
Meets RI-2 Visual Indicators								
RI-2 Installation Date:								
RI-2 Reportable Units:								
Number of Systems:								
Animal Type: AU:								
CERTIFICATION DATE/INITIALS:								
RE-VERIFICATION DATE/INITIALS:								

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-3: ALTERNATIVE CROP/SWITCHGRASS Resource Improvement Practice Definition**Reported Unit: Acres****DEFINITION**

Conversion of cropland to a herbaceous alternative crop of switchgrass.

PURPOSES

Improve water quality and sequester atmospheric carbon dioxide; Promote desired plant growth; improve or provide wildlife habitat.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to alternative crops plantings of switchgrass on land that was previously used for crop production.

This practice does not apply to plantings that are intended to function primarily as field borders, hedgerows, or riparian buffers, for which other standards are applicable.

OPERATION AND MAINTENANCE

Re-Verification of the alternative crop are required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- AlternativeCrop (CarSeqAltCrops); NRCS-327 Conservation Cover

RI-3: Alternative Crop/Switchgrass Example Checklist**Verification Date:**

Cooperator Name, Address, and Phone #		FSA Farm / Tract		SCD		Inspection Type		
		Field Number:				<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____		
RI-3 Practice: Alternative Crop/Switchgrass						Supporting Data & Documentation:		
Re-Verification Interval: 5 years						Y	N	N/A
RI-3 Visual Indicators								
1	Pure switchgrass planting							Visual Observation
2	Appropriate lime & fertilizer applied per state regulations							Owner Interview
3	Livestock are excluded							Visual Observation
4	75% switchgrass cover is present							Visual Observation
Meets RI-3 Visual Indicators								
RI-3 Installation Date:								
RI-3 Reportable Units:								
Acres:								
CERTIFICATION DATE/INITIALS:								
RE-VERIFICATION DATE/INITIALS:								

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-4a,4b,5,6: WATERCOURSE ACCESS CONTROL Resource Improvement Practice Definition**Reported Units: Feet Length, Feet Width**

RI Code	RI BMP Name	Additional Practice Information
RI-4a	Watercourse Access Control-Narrow Grass	10'-34' Width Exclusion Area, Natural Grass or planted
RI-4b	Watercourse Access Control-Narrow Trees	10'-34' Width Exclusion Area, Native Trees or planted
RI-5	Watercourse Access Control-Grass	35'+ Width Exclusion Area, Natural or planted Grass
RI-6	Watercourse Access Control-Trees	35'+ Width Exclusion Area, Natural or planted Trees

DEFINITION

A constructed barrier to livestock. A field border will be present of either herbaceous materials or trees between the watercourse and the barrier or fence. The RI grass or tree exclusion area width behind the barrier will be either 10 to 34 feet, or 35 feet or greater.

PURPOSES

This practice is to prevent, restrict, or control access of livestock into surface water or environmentally sensitive areas.

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on any area adjacent to surface water or environmentally sensitive areas where the control of livestock is needed. Fences are not required where natural barriers or other methodologies will meet this purpose.

CRITERIA

The barrier shall be appropriately installed and maintained sufficient to control or restrict the access of livestock.

The minimum buffered width between barrier and surface water and or environmentally sensitive area shall be no less than 10 feet measured horizontally on a line perpendicular to the water body, beginning at the top of bank. In order to adequately address water quality, the buffer width may need to be expanded to include important resource features such as wetlands, steep slopes, areas that are occasionally or seasonally flooded, or critical habitats. Vegetation in the buffer between the barrier and surface water should be of a density to help reduce sediment, organic material, nutrients, pesticides and other pollutants in surface runoff.

OPERATION AND MAINTENANCE

Fencing materials, if used, shall be of high quality and durability, and constructed to meet the intended purpose of the practice.

Re-verification of the barrier is required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP Stream Access Control with Fencing (PastFence), Tree Planting (TreePlant), Streamside Grass Buffers (GrassBuffersTrp), Streamside Forest Buffers (ForestBuffersTrp) NRCS-382 Fence, 472 Access Control

RI-4a, 4b,5,6: Watercourse Access Control Example Checklist**Verification Date:**

Cooperator Name, Address, and Phone #		FSA Farm / Tract	SCD			Inspection Type	
		Field Number:				<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____	
RI-4,5,6 Practice: Watercourse Access Control						Supporting Data & Documentation:	
Re-Verification Interval: 5 years					Y	N	N/A
RI-4,5,6 Visual Indicators							
1	Exclusion method controls the intended animals						Owner interview Visual Observation
2	Livestock concentration and grazing are minimized in riparian (wetland, stream) areas						Visual Observation
3	If fencing is used then there is a 10' minimum setback from the top of bank of watercourse						Estimate by paces
4	Areas around fence are stabilized						Visual Observation
5	Vegetation in buffer between the barrier and surface water should be of a density to help reduce sediment, organic material, nutrients, pesticides and other pollutants in surface runoff.						Visual Observation
6	Exclusion method is determined to be critical to confinement/exclusion from environmental area						Visual Observation
Meets RI-4,5,6 Visual Indicators							
RI Installation Date:							
RI-4a,4b,5,6 Reportable Units: Feet							
Check RI Reporting and Record Length in Feet:							
RI-4a: 10'-34' – Narrow-Width Access Control, Natural Grass or planted Length Feet: Width Feet:							
RI-4b: 10'-34' – Narrow-Width Access Control, Native Trees or planted Length Feet: Width Feet:							
RI-5: 35'+ Width Access Control, Natural or planted Grass Length Feet: Width Feet:							
RI-6: 35'+ Width Access Control, Natural or planted Trees Length Feet: Width Feet:							
CERTIFICATION DATE/INITIALS:							
RE-VERIFICATION DATE/INITIALS:							

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-7,8: GRASS NUTRIENT EXCLUSION AREA or BUFFER on Watercourse Resource Improvement**Practice Definition****Reported Units: Feet Length, Feet Width**

RI Code	RI BMP Name	Additional Practice Information
RI-7	Grass Nutrient Exclusion Area on Watercourse	10'-34' Width Nutrient Exclusion Area
RI-8	Grass Buffer on Watercourse	35'+ Width Buffer

DEFINITION

Grasses, grass-like plants, and forbs that are established **on converted cropland** that receive no nutrients and are managed to provide a herbaceous buffer located **adjacent to and up-gradient** from water bodies or a strip or area of herbaceous vegetation that inhibits nutrients and sediment from overland flow located adjacent to cropland. This includes areas that function as nutrient exclusion area or riparian herbaceous buffers.

PURPOSES

This practice is to create a nutrient exclusion area or buffer, reduce excess amounts of sediment, organic material, nutrients, pesticides and other pollutants in surface runoff and reduce excess nutrients and other chemicals in shallow ground water flow and to increase carbon storage in plant biomass and soils.

CONDITIONS WHERE PRACTICE APPLIES

This practice qualifies if applied on cropland on stable areas adjacent to permanent or intermittent streams, ditches and tidal waters. **It may only be reported on cropland without a fence (otherwise see RI-4 or RI-5 Watercourse Exclusion)**. Exclusion areas will be 10 to 34 feet, or buffers of 35 feet or greater.

CRITERIA

To create a grass nutrient exclusion area or buffer, reduce excess amounts of sediment, organic material, nutrients, pesticides and other pollutants in surface runoff and reduce excess nutrients and other chemicals in shallow ground water flow.

For areas adjacent to surface water, the minimum width shall be at least 10 feet measured horizontally on a line perpendicular to the water body, beginning at the top of bank or wetland edge. There should be at least 75% perennial grass cover. In order to adequately address water quality, the buffer width may need to be expanded to include important resource features such as wetlands, steep slopes, areas that are occasionally or seasonally flooded, or critical habitats. Plant and animal pest species shall be controlled to the extent feasible to achieve and maintain the intended purpose of the vegetative cover. Noxious weeds shall be controlled as required by state law.

OPERATION AND MAINTENANCE

Re-verification of the grass exclusion areas or buffers is required at least every 5 years for practices meeting RI specifications. Control concentrated flow or mass soil movement up gradient of the exclusion area or buffer to maintain function. Species shall have stiff stems and high stem density near the ground surface.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- Land Retirement to Hay Without Nutrients (LandRetireHYO), Grass Buffers; Vegetated Open Channels for Agriculture (GrassBuffers); NRCS-390 Riparian Herbaceous Cover

RI-7,8: Grass Nutrient Exclusion Area or Buffer on Watercourse Example Checklist**Verification Date:**

Cooperator Name, Address, and Phone #		FSA Farm / Tract	SCD		Inspection Type
		Field Number:			<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____
RI-7,8 Practice: Grass Nutrient Exclusion Area or Buffer on Watercourse					Supporting Data & Documentation:
Re-Verification Interval: 5 years			Y	N	N/A
RI-7,8 Visual Indicators					
1	Horizontal buffer width \geq 10', measured perpendicular to top-of-bank intermittent stream, ditch or tidal area				Estimate by paces
2	Width is \geq 35' if receiving dissolved contaminants (e.g. nutrients, pesticides)				Estimate by paces Visual Observation
3	Overland flow through buffer is maintained as sheet flow				Visual Observation
4	All excessive sheet-rill and concentrated flow are controlled in areas immediately adjacent & up gradient of buffer, before entering				Visual Observation
5	No livestock are present nor have access				Visual Observation Owner Interview
6	Plant species are native (preferred), or introduced and non-invasive, with stiff stems and high stem density				Visual Observation
7	Plants are compatible in growth rate, tolerant of flooding/saturation and shade				Visual Observation
8	Minimum of 75% perennial grass cover is present				Visual Observation
Meets RI-7,8 RI Visual Indicators					
RI Installation Date:					
RI-7,8 Reportable Units: Feet					
Check RI Reporting and Record Length in Feet:					
RI-7: 10'-34' Width Nutrient Exclusion Area					
Length Feet:		Width Feet:			
RI-8: 35'+ Width Buffer					
Length Feet:		Width Feet:			
CERTIFICATION DATE/INITIALS:					
RE-VERIFICATION DATE/INITIALS:					

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-9,10: FOREST NUTRIENT EXCLUSION AREA or BUFFER on Watercourse Resource Improvement Practice Definition

Reportable Units: Feet Length, Feet Width

RI Code	RI BMP Name	Additional Practice Information
RI-9	Forest Nutrient Exclusion Area on Watercourse	10'-34' Width Nutrient Exclusion Area
RI-10	Forest Buffer on Watercourse	35'+ Width Buffer

DEFINITION

An area predominately trees and/or shrubs established **on converted cropland** located adjacent to and up-gradient from streams, ditches or tidal waters.

PURPOSES

This practice is to create a nutrient exclusion area, reduce excess amounts of sediment, organic material, nutrients, pesticides and other pollutants in surface runoff adjacent to streams.

CONDITIONS WHERE PRACTICE APPLIES

This practice qualifies if applied on stable areas adjacent to permanent or intermittent streams, ditches or tidal water. **It may only be reported on converted cropland without a fence (otherwise see RI-4 or RI-6 Watercourse Access Control).** Exclusion areas will be 10 to 34 feet, buffers will be 35 feet or greater.

CRITERIA

To create a forested nutrient exclusion area or buffer, reduce excess amounts of sediment, organic material, nutrients, pesticides and other pollutants in surface runoff.

The minimum width shall be at least 10 feet measured horizontally on a line perpendicular to the water body, beginning at the top of bank or wetland edge. In order to adequately address water quality, the buffer width may need to be expanded to include important resource features such as wetlands, steep slopes, areas that are occasionally or seasonally flooded, or critical habitats. Dominant vegetation (>50% canopy cover) consists of existing, naturally regenerated, or planted trees and/or shrubs.

OPERATION AND MAINTENANCE

Re-verification of the forested nutrient exclusion area/buffers is required at least every 10 years for practices meeting RI specifications.

Control concentrated flow or mass soil movement up gradient of the forested nutrient exclusion areas or buffers to maintain function.

Manage the dominant canopy to maintain maximum vigor of over story and understory species.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- Tree Planting (TreePlant), Forest Buffers (ForestBuffers); NRCS-391 Riparian Forest Buffer

RI-9,10: Forest Exclusion Area or Buffer on Watercourse Example Checklist Verification Date:

Cooperator Name, Address, and Phone #		FSA Farm / Tract		SCD		Inspection Type	
		Field Number:				<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____	
RI-9,10 Practice: Forest Nutrient Exclusion Area or Buffer on Watercourse							Supporting Data & Documentation:
Re-Verification Interval: 10 years				Y	N	N/A	
RI-9,10 Visual Indicators							
1	Dominant vegetation (>50% canopy cover) consists of existing, naturally regenerated, or planted trees and/or shrubs						Visual Observation
2	Perpendicular distance from top-of-bank of stream, ditch or tidal area ≥ 10' minimum average for width of buffer						Estimate by paces
3	Overland/sheet flow through buffer is maximized (no concentrated flow)						Visual Observation
4	Structural measures are present where vegetation practice is insufficient to control erosion						Visual Observation
Meets RI-9,10 Visual Indicators							
RI Installation Date:							
RI-9,10 Reportable Units: Feet							
Check RI Reporting and Record Length in Feet:							
RI-9: 10'-34' Width Nutrient Exclusion Area							
Length Feet: Width Feet:							
RI-10: 35'+ Width Buffer							
Length Feet: Width Feet:							
CERTIFICATION DATE/INITIALS:							
RE-VERIFICATION DATE/INITIALS:							

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-11,12: VEGETATIVE ENVIRONMENTAL BUFFER FOR POULTRY (Grass or Trees) Resource Improvement Practice Definition

Reportable Units: Feet Length, Feet Width

RI Code	RI BMP Name	Additional Practice Information
RI-11	Vegetative Environmental Buffer for Poultry-Grass	Warm Season Grass
RI-12	Vegetative Environmental Buffer for Poultry-Trees	Trees

DEFINITION

Vegetative Environmental Buffers are a minimum of two staggered rows of trees/ shrubs or warm season grasses in linear configurations adjacent to poultry house fans.

PURPOSES

This practice applies to buffers around poultry operations that are designed to improve air and water quality by reducing and intercepting airborne particulate matter.

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on any area where linear plantings of woody plants or warm season grasses are desired and are suitable for the intended purpose.

Vegetative Environmental Buffers are generally not used solely for purposes of enhancing aesthetics or providing wildlife habitat. These are usually secondary purposes that may complement a primary purpose.

Consider that water and air quality benefits may arise from using vegetative environmental buffers to intercept airborne particulates and to trap sediment-attached substances. Vegetative environmental buffers may also benefit air and water quality by assimilating plant nutrients in leaves and roots.

This practice does not apply to plantings that are intended to function primarily as field borders, or riparian forest buffers, for which other standards are applicable.

CRITERIA

Plant species shall be selected based on the planned purpose(s) of the vegetative environmental buffer, preferences of the client, and conditions of the site.

Use staggered spacing in multiple row plantings. Vegetative environmental buffers may be established using trees, shrubs, and/or perennial bunch grasses producing erect stems attaining avg. heights of at least 3 feet and persisting over winter.

OPERATION AND MAINTENANCE

Re-verification of the vegetative environmental buffers is required at least every 3 for grass buffers and 5 years for tree buffers for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- Grass (None), Tree Planting: Vegetative Environmental Buffers Poultry (TreePlant); NRCS-422 Hedgerow Planting

RI-11,12: Vegetative Environmental Buffer for Poultry Example Checklist Verification Date:

Cooperator Name, Address, and Phone #		FSA Farm / Tract	SCD		Inspection Type		
		Field Number:			<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____		
RI-11,12 Practice: Vegetative Environmental Buffer for Poultry (grass or trees)					Supporting Data & Documentation:		
Re-Verification Interval: 3 years for grass or 5 years for trees					Y	N	N/A
RI-11,12 Visual Indicators							
1	Plant species are trees, shrubs, and/or perennial bunch grasses \geq 3' tall						Visual Observation
2	Used for poultry house ventilation-outlet filtering and must be living and within 100' of fans.						Visual Observation
3	Hedgerow is \geq 2 rows wide. Row vegetation heights should be: 1'-2' (bunch grass), 2'-4' (shrubs), 6'-12' (deciduous trees), 6'-10' (evergreen trees) as appropriate.						Visual Observation
4	If using trees, one row should contain deciduous trees and the other evergreen trees.						Visual Observation
5	Livestock are controlled or excluded						Visual Observation Owner interview
6	Hedgerow is located between poultry house and sensitive areas if appropriate. Use N/A if no sensitive area.						Visual Observation
7	Hedgerows plants will be staggered with no gaps greater than 1' when fully mature.						Visual Observation
Meets RI-11,12 Visual Indicators							
RI Installation Date:							
RI-11,12 Reportable Units: Acres							
RI-11=Warm Season Grass							
Length Feet: Width Feet:							
RI-12=Trees/Shrubs							
Length Feet: Width Feet:							
CERTIFICATION DATE/INITIALS:							
RE-VERIFICATION DATE/INITIALS:							

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-13,14: CONVERSION TO PASTURE OR HAYLAND Resource Improvement Practice Definition**Reportable Units: Acres****DEFINITION**

Conversion of cropland to pasture or hayland for the purpose of forage production through the establishment of native or introduced forage species.

PURPOSES

This practice may be applied to establish forage species for the purposes of forage production, primarily intended for grazing or harvesting, which may balance forage supply, reduce soil erosion and improve water quality.

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on cropland or other agricultural lands where forage production is feasible or desired. This only applies where grazing or harvesting is the primary consideration.

CRITERIA

Select forage species for planting based on the intended use, realistic yield goals, maturity stages, compatibility with other species, and level of management that the client is willing and able to provide. This is intended for multi-year hay crops with a minimum life span of at least 3 years.

Select plants that will provide adequate perennial ground cover of at least 75% cover, root mass, and resistance to water flow when site conditions require erosion protection.

Removal of herbage should be consistent with site production limitations, rate of plant growth, and the physiological needs of specific forage plants to maintain plant reserves for regrowth, winter survival, and drought survival.

OPERATION AND MAINTENANCE

Re-verification of the plantings is required at least every 3 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- Land Retirement to Pasture (LandRetirePast), Land Retirement to Hay Without Nutrients (LandRetireHYO); NRCS- 512 Forage and Biomass Planting

RI-13,14: Conversion to Pasture or Hayland Example Checklist

Verification Date:

Cooperator Name, Address, and Phone #		FSA Farm / Tract		SCD		Inspection Type		
		Field Number:				<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____		
RI-13,14 Practice: Conversion to Pasture or Hayland						Supporting Data & Documentation:		
Re-Verification Interval: 3 years						Y	N	N/A
RI-13,14 Visual Indicators								
1	Lime & fertilizer rates are applied according to state regulations							Owner Interview
2	75% perennial grass cover is established and maintained as "pasture or hayland in good condition"							Visual Observation
3	Plants are either native or non-invasive introduced							Visual Observation
Meets RI-13,14 Visual Indicators								
RI Installation Date:								
RI-13,14 Reportable Units: Acres								
RI-13=Conversion to Pasture Acres:								
RI-14=Conversion to Hayland Acres:								
CERTIFICATION DATE/INITIALS:								
RE-VERIFICATION DATE/INITIALS:								

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-15: Rotational Grazing Resource Improvement Practice Definition

Reported Units: Acres

DEFINITION

Managing the controlled harvest of vegetation with grazing animals.

PURPOSES

This practice utilizes a range of pasture management and grazing techniques to improve the quality and quantity of the forages grown on pastures and reduces the impact of animal travel lanes, animal concentration areas or other degraded areas.

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied as a part of conservation management system to achieve one or more of the following:

- Improve or maintain desired species composition and vigor of plant communities.
- Improve or maintain quantity and quality of forage for grazing animals' health and productivity.
- Improve or maintain surface and/or subsurface water quality and quantity.
- Improve or maintain riparian and watershed function.
- Reduce accelerated soil erosion, and maintain or improve soil condition.

CRITERIA

Frequency and intensity of grazing shall be managed to promote ecologically and economically stable plant communities (of at least 75% perennial grass cover) that meet the producer's objectives. Use stubble height target levels in conjunction with monitoring to help ensure that resource conservation and producer objectives are met.

Minimize concentrated livestock areas, trailing, and trampling to reduce soil compaction, excess runoff and erosion. Pasture fencing layouts shall provide laneways that are least prone to livestock trail erosion and provide protection to sensitive areas, such as wetlands.

Provide all livestock on pasture with free access to clean water.

OPERATION AND MAINTENANCE

Apply prescribed grazing on a continuing basis throughout the occupation period of all grazing units. Adjust intensity, frequency, timing and duration of grazing and/or browsing to meet the desired objectives for the plant communities and the associated resources, including the grazing and/or browsing animal.

Manage kind of animal, animal number, grazing distribution, fencing, length of grazing and/or browsing periods and timing of use to provide grazed plants sufficient recovery time to meet planned objectives. The recovery period of non-grazing can be provided for the entire year or during the growing season of key plants.

Re-verification of the grazing system is required at least every 3 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- Prescribed Grazing (PrecRotGrazing); NRCS-528 Prescribed Grazing

RI-15: Rotational Grazing Example Checklist**Verification Date:**

Cooperator Name, Address, and Phone #		FSA Farm / Tract	SCD			Inspection Type	
		Field Number:				<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____	
RI-15 Practice: Rotational Grazing						Supporting Data & Documentation:	
Re-Verification Interval: 3 years					Y	N	N/A
RI-15 Visual Indicators							
1	75% perennial grass cover is maintained in all grazing areas through the appropriate use of fencing as needed						Visual Observation
2	Livestock have limited (restricted) access to streams, seeps, ponds, and other surface waters in compliance with state regulations						Visual Observation
3	Livestock have close access to clean water, which meets their average daily water requirements						Visual Observation
4	Grazing system (watering, feeding and HUA's) minimizes erosion and protects sensitive areas						Visual Observation
5	Nutrient Management is applied in accordance with state regulations						Owner Interview
6	Owner has a grazing objective for all grazing units and manages the grass height						Visual Observation of grass height and Owner Interview
7	Landowner has a plan for movement of animals to maintain appropriate forage cover						Owner Interview
Meets RI-15 Visual Indicators							
RI-15 Installation Date:							
RI-15 Reportable Units:							
Acres:							
CERTIFICATION DATE/INITIALS:							
RE-VERIFICATION DATE/INITIALS:							

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-16: BARNYARD CLEAN WATER DIVERSION Resource Improvement Practice Definition

Reported Unit: Number of Systems

DEFINITION

This practice includes the installation of practices to control clean water runoff from barnyard areas, such as roof runoff control, diversion of clean water from entering the barnyard and control of runoff from barnyard or poultry barn areas. This is not associated with dirty water that requires treatment before release.

PURPOSES

To prevent roof runoff water from mixing with barnyard wastes and/or to divert clean water away from the barnyard or areas of heavy animal concentration to prevent erosion or pollutants (nutrients, sediment, and animal wastes) from reaching the waters of the State.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to situations where roof runoff or clean water needs to be diverted away from structures, poultry houses or contaminated areas, such as barnyards or other concentrated animal areas. Such structures include, but are not limited to, erosion-resistant channels or subsurface drains with rock-filled trenches along building foundations below eaves, roof gutters, downspouts, and appurtenances.

CRITERIA

Roof gutters should have a minimum top width of 5 inches and supports no greater than 24 inch spacing.

All downspouts, gutters and outlets should be protected from damage by livestock and equipment.

The water from roof runoff structures may empty into surface drains or underground outlets, or onto the ground surface and should be directed away from foundations, structures or contaminated areas.

Stone filled trenches with an underground outlet, under the roof drip line, may be used in lieu of roof gutter. Locate the trench so the trench centerline follows the roof drip line.

OPERATION AND MAINTENANCE

Inspect collection and storage devices, valves, outlets and pipelines at least biannually. Make repairs as needed.

Re-verification of the barnyard or poultry barn runoff control structures is required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- Barnyard Runoff Control (BarnRunoffCont); NRCS-558 Roof Runoff Structure

RI-16: Barnyard Clean Water Diversion Example Checklist**Verification Date:**

Cooperator Name, Address, and Phone #		FSA Farm / Tract	SCD			Inspection Type
		Field Number:				<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____
RI-16 Practice: Barnyard Clean Water Diversion						Supporting Data & Documentation:
Re-Verification Interval: 5 years			Y	N	N/A	
RI-16 Visual Indicators						
1	Surface outlet is stable; downspouts have elbow and dissipation device directed away from buildings, as appropriate.					Visual Observation
2	Gutter-less system has stone-filled, collection trench under entire roof drip line: width ≥ 24 ", depth ≥ 24 "					Visual Observation Owner interview
3	Drip line stone extends along sides of and over pipe					Visual Observation
4	Gutter is K-style, half-round or box-type on good-condition vertical fascia board, free floating on supports, and ≥ 5 " top width. Roof rafter ends are sound					Visual Observation
5	Downspout avoids mix with waste					Visual Observation
6	The system is sound and functioning					Visual Observation
7	Downspouts are securely fastened @ top & bottom, with intermediate supports $\leq 10'$, installed appropriately					Visual Observation
8	Gutter & downspout are protected from livestock. Otherwise made of steel pipe, Sch40, or similar					Visual Observation
9	Clean surface runoff is directed away from barnyard area					Visual Observation
Meets RI-16 Visual Indicators						
RI-16 Installation Date:						
RI-16 Reportable Units:						
Number of Systems:						
CERTIFICATION DATE/INITIALS:						
RE-VERIFICATION DATE/INITIALS:						

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-17: WATER CONTROL STRUCTURE Resource Improvement Practice Definition

Reported Unit: Number of Systems

DEFINITION

A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation in **drainage ditches for water de-nitrification purposes**.

PURPOSES

The purpose of this practice is to reduce nutrient loading from agricultural drainage systems into downstream receiving waters.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies wherever a permanent structure is needed as an integral part of a water control system to serve one or more of the following functions:

1. To control the elevation of water in drainage or irrigation ditches. Typical structures: checks, flashboard risers, check dams.
2. To control the water table level, remove surface or subsurface water from adjoining land, flood land for frost protection or manage water levels for wildlife or recreation. Typical structures: water level control structures flashboard risers, pipe drop inlets, and box inlets
3. To provide silt management in ditches or canals. Typical structure: sluice.

CRITERIA

Structures should be designed and installed consistent with all federal and state rules and regulations.

The structure capacity shall be appropriate for the intended practice or purpose.

The structure shall be fenced, if necessary, to protect the vegetation from grazing livestock.

Protect outlets to the extent that design flows will not result in erosion downstream of the structure.

OPERATION AND MAINTENANCE

Structures will be checked and necessary maintenance, including removal of debris, shall be performed after major storms and at least semiannually. Water level management and timing shall be adequately described wherever applicable.

Re-verification of the water control structure is required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- Water Control Structures (WaterContStruc); NRCS-587 Structures for Water Control

RI-17: Water Control Structure Example Checklist**Verification Date:**

Cooperator Name, Address, and Phone #		FSA Farm / Tract		SCD		Inspection Type		
		Field Number:				<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____		
RI-17 Practice: Water Control Structure						Supporting Data & Documentation:		
Re-Verification Interval: 5 years						Y	N	N/A
RI-17 Visual Indicators								
1	No active erosion on ditch banks or at the structure							Visual Observation
2	Structure has no effect on septic filter fields							Visual Observation
3	No un-approved backwater on neighbors							Visual Observation
4	Structure complies with applicable federal, state and local regulations							Visual Observation
5	Outlet is protected if necessary							Visual Observation
6	Inlets have non-clog trash rack if needed							Visual Observation
7	Structure is function correctly and managed for intended use							Visual Observation
Meets RI-17 Visual Indicators								
RI-17 Installation Date:								
RI-17 Reportable Units:								
Number of Systems:								
CERTIFICATION DATE/INITIALS:								
RE-VERIFICATION DATE/INITIALS:								

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

RI-18: WATERING TROUGH Resource Improvement Practice Definition

Reported Unit: Number of Systems

DEFINITION

A permanent or portable device to provide an adequate amount and quality of drinking water for livestock.

PURPOSES

To provide watering facilities which will bring about the desired protection of vegetative cover to prevent erosion and pollutants (nutrients, sediment, and animal wastes) from reaching the waters of the State. The primary purpose is not to provide livestock water, but to improve animal distribution to protect water quality.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all land uses where there is a need for alternative watering facilities for livestock. The source of water supplied to the facilities can be from any source including pipelines, spring developments, water wells, and ponds.

CRITERIA

Locate facilities to promote even grazing distribution and reduce grazing pressure on sensitive areas.

Provide fencing as necessary to exclude livestock from sensitive areas and encourage use of facility.

Locate as far away from streams and drainage ways as practical.

Design the watering facility to provide adequate access for the animals planned to use the facility.

Install troughs on sites that are well drained, or provide drainage.

OPERATION AND MAINTENANCE

Inspect collection and storage devices, valves, outlets and pipelines at least biannually. Make repairs as needed.

Check valves, automatic water level devices, and overflow pipes for proper operation as appropriate.

Re-verification of the watering facilities is required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

Reference Practices: CBP- Off Stream Watering Without Fencing (OSWnoFence); NRCS-614 Watering Facility

RI-18: Watering Trough Example Checklist**Verification Date:**

Cooperator Name, Address, and Phone #		FSA Farm / Tract		SCD		Inspection Type	
		Field Number:				<input type="checkbox"/> Initial Inspection <input type="checkbox"/> QA Spot Check <input type="checkbox"/> Re-verify <input type="checkbox"/> Other _____	
RI-18 Practice: Watering Trough							Supporting Data & Documentation:
Re-Verification Interval: 5 years				Y	N	N/A	
RI-18 Visual Indicators							
1	There is an adequate water supply						Owner interview
2	Area around trough does not create a resource concern						Visual Observation
3	Automatic water level control is functioning without overtopping						Visual Observation
4	Overflow is piped to acceptable outlet						Visual Observation
5	Backflow prevention is installed and working, where connected to wells, domestic or municipal water systems and meets state and local regulations						Visual Observation
Meets RI-18 Visual Indicators							
RI-18 Installation Date:							
RI-18 Reportable Units:							
Number of Systems:							
CERTIFICATION DATE/INITIALS:							
RE-VERIFICATION DATE/INITIALS:							

All Visual Indicators must either have a Y or NA marked. If an N is marked on the checklist, the RI may not be reported until the deficiency is addressed.

Additional Notes/Documentation about RI:

Appendix A: USDA, NRCS Letter of Support

United States Department of Agriculture

MAR 20 2014

SUBJECT: Chesapeake Bay Functional Equivalent Technical Review Panel

TO: Jack Bricker, Virginia State Conservationist File Code: 120
Denise Coleman, Pennsylvania State Conservationist
Jon Hall, Maryland State Conservationist
Don Pettit, New York State Conservationist
Kasey Taylor, Delaware State Conservationist
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The issues surrounding counting and assigning value to conservation treatments and practices in the Chesapeake Bay Model are important. Clearly all efforts towards conservation on the land have some value. The outcome of this effort, as we understand it, is to further define and credit voluntary non-cost shared treatment on the land by accurately assessing and accounting for this treatment. Establishing a measure of credit in the Bay Model for voluntary non-cost shared treatment would be the next step.

The NRCS members of the review panel are being tasked with:

- A) Reporting of non-cost shared practices that meet NRCS standards:
- 1) How do you develop a distinct definition for a non-cost shared practice that meets NRCS standards that is more descriptive than what the Bay program currently has?
 - 2) How do you document that it has been verified?
- B) Defining "functionally equivalent" practices. Once you settle on the "definition", each state will also have to develop a method to verify these and document procedure.

Guidance: NRCS Standards are described in the "Field Office Technical Guide." Conservation practices identified as implemented in Toolkit meet NRCS standards. At a minimum this requires NRCS employees or partners with specific Job Approval Authority (JAA). NRCS fully support the jurisdictions effort to identify freestanding non-cost shared conservation practices that meet NRCS standards and allowing them to receive "credit" in the Bay model in the same manner as cost-shared practices.

Specific conservation practices require significant engineering or management with technical assistance. After the fact installation (without technical assistance) of conservation practices, would seriously hamper any effort to verify if a conservation treatment meets standards and specs. This does not disallow some form of credit and it is within the full purview of the jurisdiction to determine the credit. These conservation treatments should not be associated as meeting NRCS standard and specs.

Summary:

- We believe that this proposal is in alignment with Executive Order 12508 on the Chesapeake Bay in which USDA agreed to assist states to get a full accounting of conservation practices both cost and non-cost shared practices (sometimes called voluntary practices) that have been implemented in the Bay Region.
- NRCS is not funded or staffed appropriately to have an authentication or validation role for freestanding conservation treatments.
- We are willing to discuss this effort in an advisory capacity to achieve comprehensive Bay model credit for applied conservation treatment of identified resource concerns. This includes the consideration of human concerns toward achieving sustainable agriculture; consideration for the effects of planned actions on interrelated geographical areas within Bay watershed; and identifying areas where knowledge, science, and technology need to be advanced.
- As stated above, the issues surrounding counting and assigning value to conservation treatments and practices in the Chesapeake Bay Model are important. All efforts achieving conservation on the land have some value and should be identified by the jurisdictions.



Richard Sims
Regional Conservationist, Northeast



James E. Tillman, Sr.
Regional Conservationist, Southeast

cc:

Leonard Jordan, Associate Chief for Conservation, Washington, DC
Martin Lowenfish, Team Leader, Initiatives, Washington, DC

APPENDIX B: Verification Methods/RI Practices and Documentation

Agricultural BMP Verification Methods	Assessment Method	Verification Expectation	Resource Improvement (Non-Spec)	Eligible RI Practices	Documentation Necessary
1.) Permit Issuing Programs	Verified compliance with federal NPDES (CAFO) or state agricultural operational permit program requirements.	Non-annual frequency of permit compliance inspections for all or sufficient statistical percentage of permitted operations during permit life span. Review of office/farm records.	Not Eligible	N/A	
2.) Regulatory Programs	Verified compliance with federal or state agricultural regulatory requirements (non-operational permit).	Non- annual frequency of regulatory compliance inspections for all or sufficient statistical percentage of regulated operations. Review of office/farm records.	Not Eligible	N/A	
3.) Financial Incentive Programs	Verified compliance with federal program contractual requirements.	Non- annual frequency of contractual compliance inspections for all or sufficient statistical percentage of contracted operations during contractual life span. Review of office/farm records.	Not Eligible	N/A	
4.) Financial Incentive Programs	Verified compliance with state or county program contractual requirements.	Non-annual frequency of contractual compliance inspections for all or sufficient statistical percentage of contracted operations during contractual life span. Review of office/farm records.	Potentially Eligible	All RI Practices are eligible if done in accordance with state or county funding requirements and meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation

5.) Financial Incentive Programs	Verified compliance with NGO program contractual requirements.	Non-annual frequency of contractual compliance inspections for all or sufficient statistical percentage of contracted operations during contractual life span. Review of office/farm records.	Potentially Eligible	All RI Practices are eligible if done in accordance with NGO funding requirements and meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation provided to certifying entity.
6.) Farm Inventory	Farm inventory by trained and certified federal, state, and/or county agency personnel.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation
7.) Farm Inventory	Farm inventory by trained and certified NGO personnel.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation provided to certifying entity.
8.) Farm Inventory	Farmer completes self-certified inventory survey and trained and certified federal, state and/or county personnel verify on-site.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation provided to certifying entity.
9.) Farm Inventory	Farmer completes self-certified inventory survey and trained and certified NGO personnel verify on-site.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation provided to certifying entity

10.) Farm Inventory	Farmer completes in-office self-certified inventory with assistance of trained and certified federal, state and/or county agency personnel. No on-site verification.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Not Eligible	N/A	
11.) Farm Inventory	Farmer completes in-office self-certified inventory with assistance of trained and certified NGO personnel. No on-site verification.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Not Eligible	N/A	
12.) Farm Inventory	Farmer with training and certification completes self-certified inventory survey.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	
13.) Farm Inventory	Farmer without training and certification completes self-certified inventory survey.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	
14.) Office Records	Review of existing office records by trained and certified federal, state and/or county agency personnel. No on-site verification.	Non-annual frequency of office records review and verification for all or sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	
15.) Farm Records	Review of existing on-farm records by trained and certified federal, state and/or county agency personnel. No on-site verification.	Non-annual frequency of on-farm records review and verification for all or sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	

16.) Farm Records	Review of existing on-farm records by trained and certified NGO personnel. No on-site verification.	Non-annual frequency of on-farm records review and verification for all or sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	
17.) Transect Survey	Statistically designed and recognized transect survey completed by trained and certified federal, state and/or county personnel.	Non-annual frequency of statistical transect surveys for a sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	
18.) Transect Survey	Statistically designed and recognized transect survey completed by trained and certified NGO personnel.	Non-annual frequency of statistical transect surveys for a sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	
19.) CEAP Survey	CEAP statistical survey conducted in-person at field-level scale following NASS verification protocols.	Non-annual frequency of statistical CEAP surveys for a sufficient statistical percentage of operations during BMP life span may limit verification.	Potentially Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	NRCS/NASS provide Visual Indicator Checklist; photo/description; Location documentation certifying entity.
20.) NASS Survey	NASS statistical survey conducted at farm-level scale following NASS verification protocols.	Non-annual frequency of statistical NASS surveys for all or sufficient statistical percentage of operations during BMP life span.	Potentially Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	NASS provides Visual Indicator Checklist; photo/description; Location documentation to certifying entity.
21.) NRI Point (NRCS) or some other statistically selected sites	Statistical survey conducted in-person at field-level with NASS trained and certified personnel.	Non-annual frequency of statistical NRI surveys for a sufficient statistical percentage of operations during BMP life span may limit verification.	Potentially Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	NRCS provides Visual Indicator Checklist; photo/description; Location documentation to certifying entity.

22.) Remote Sensing	Statistically designed and recognized remote sensing surveys with supporting field-level scale ground-truthing verification.	Non-annual frequency of statistical remote sensing surveys implemented by trained and certified agency personnel, for all or sufficient statistical percentage of operations during BMP life span.	Potentially Eligible	All RI Practices are eligible if RI Visual Indicators and can be identified by approved methodology and remote sensing signatures.	Inventory Entity provides Visual Indicator Checklist; photo/description; Location documentation to certifying entity
23.) Remote Sensing	Statistically designed and recognized remote sensing surveys with supporting field-level scale ground-truthing verification.	Non-annual frequency of statistical remote sensing surveys implemented by trained and certified NGO personnel, for all or sufficient statistical percentage of operations during BMP life span.	Potentially Eligible	All RI Practices are eligible if RI Visual Indicators and can be identified by approved methodology and remote sensing signatures.	Inventory Entity provides Visual Indicator Checklist; photo/description; Location documentation to certifying entity

APPENDIX C:**ANIMAL UNIT EQUIVALENCIES**

One animal unit is generally defined as 1,000 pounds of live animal weight. The numbers given below represent averages for different types of livestock. It may serve as a guideline for the number of animals of a certain type that would constitute eight animal units for purposes of nutrient management regulations. If actual weights are available from a certified scale, use them. For animals not listed here, contact MDA for guidance on weight calculations.

Animal type	Animal weight (average in pounds)	Number of animals that would equal 8 animal units (AU)
Horses (any animal 3 months or older)	1,000	8
Feed Cattle	1,000	8
Dairy Cattle	1,000	8
Sheep	200	40
Goat	89	90
Alpaca	107	75
Llama	320	25
Emu	133	60
Ostrich	267	30
Broilers/fryers	4	2,000
Ducks	7	1,200
Geese	12	650
Turkeys	19	425

Source: Maryland Dept. of
Agriculture 2000