



United States Department of Agriculture



# USDA Conservation Programs Relevant to Pesticide Runoff Mitigation

National Headquarters

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Resources  
Conservation  
Service



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December 4, 2018 | Lindsay Haines National Pest Management & Organic Systems Specialist

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## Natural Resources Conservation Service

**Vision – Productive Lands – Healthy Environment**

**Mission – Helping People Help The Land**

**NRCS provides products and services that enable people to be good stewards of the Nation's soil, water, and related natural resources on private lands.**



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# Primary Customers

- **Farmers and ranchers, people who own, operate, or live on farms and ranches**
- **Other members of the private sector who support production agriculture and natural resource conservation**
- **Governments and units of government with responsibility for natural resource use and management**
- **Non-government organizations whose mission aligns with aspects of natural resource management**



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## NRCS Technical Assistance

**9 Step Conservation Planning Process**  
**44 Natural Resource Concerns**  
**170+ Conservation Practice Standards**  
**Filter strip**

**Conservation Plans – Record of Landowner Decisions and Schedule**

**Technical Resources**  
**Handbooks**  
**Technical Notes**  
**Assessment Tools**

## NRCS Financial Assistance

**Environmental Quality Incentives Program (EQIP)**  
**Conservation Innovation Grants (CIG)**  
**Edge Of Field Monitoring (EOFM)**  
**Conservation Security Program (CSP)**

## FSA Financial Assistance

**Conservation Reserve Program (CRP)**  
**Emergency Forest Restoration Program (EFRP)**



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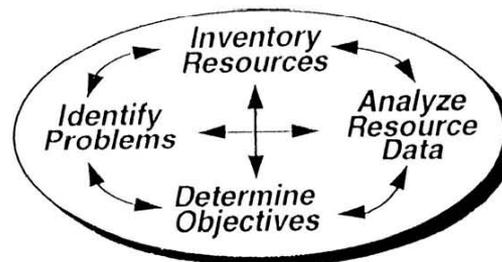
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## *Planning Process*

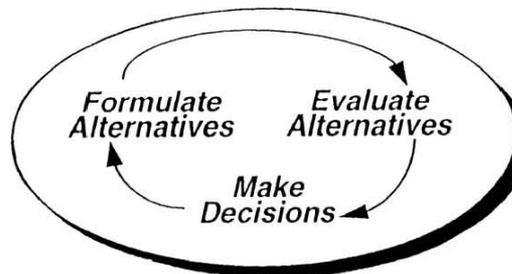
### *Phase I*

**Collection and Analysis**



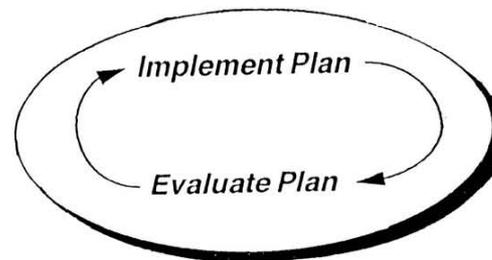
### *Phase II*

**Decision Support**



### *Phase III*

**Application and Evaluation**





## Conservation Planning Process

August 2017



**Step-1 - Problem ID**  
**Step-2 - Objectives**

*CPA-52 E/D*

- ✓ Establish Relationship
- ✓ Soil Erosion
- ✓ Soil Quality
- ✓ Water Quality
- ✓ Water Quantity
- ✓ Plant Degradation
- ✓ Fish/Wildlife Habitat
- ✓ Livestock Limits
- ✓ Air Quality
- ✓ Energy
  - Cropland
  - Pasture
  - Rangeland
  - Forest
  - Farmstead



→ *ENG - I&E*

- ✓ Survey
- ✓ Hydrology
- ✓ Soils/Geological

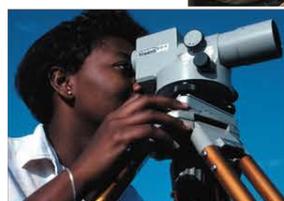
*FOTG-I, II, and III*

**Step-3 – Inventory**  
**Step-4 – Analyze**

*CPA-52 F/G*

- ✓ Quantify Benchmarks
- ✓ = **Quality Criteria?**
- ✓ = **Evaluation Criteria?**
  - No = EQIP
  - Yes = CSP (2 RCs)

- ❖ IET
- ❖ RSET
- ❖ MP (pending)



- ✓ Preliminary/Concept Design
- ✓ Cost Estimate

*FOTG-I, IV, and V*

**Step-5 – Formulate**  
**Step-6 – Evaluate**

*CPA-52 H - I/J*

- ✓ Conservation Practices (170)
- ✓ Quantify to **Quality Criteria**
- ✓ Enhancements/Bundles (220+)
- ✓ Meet Additional RC
- ✓ Cost Estimator



# CAPs

**Step-7 – Decision**

*CPA-52 K/M/P/S*

- ✓ Component Plans (certified TSPs)
- ✓ RFO Certification
- ✓ **Conservation Plan**
  - Maps (location, soils planned practices)
- Final CAET Acres
- ❖ Toolkit/CD
- ❖ NPAD



**Step-8a – Design**

- ✓ Plans and Specifications/Job Sheets
- ✓ Detailed Geological Investigation
- ✓ Final Design
- ✓ Design Folder
- ✓ Permitting

→ *ENG - Design*

**Step-8b – Contracting**

- ✓ Application
- ✓ Eligibility
- ✓ Screening
- ✓ Ranking
- ✓ Contract
- ✓ Schedule of Operations
- ✓ Contract Modifications



- ❖ CCG
- ❖ DMS
- ❖ PSS
- ❖ Protracts
- ❖ FA Tracker

**Step-8c – Installation**

- ✓ Non-Eng. Practice Installation
- *ENG - Constr.*
- ✓ Pre-Construction Meeting
- ✓ Construction Inspection
- ✓ As-Built Plans
- ✓ JAA Practice Check-Out
- ✓ O&M Plan



**Step-8d – Certification**

- ✓ Line Officer Practice Certification
- ✓ Financial Payment



**Step-9 – Evaluation**

- ✓ How Effective
- ✓ CEAP
- ✓ Maintain Relationship



Natural Resources Conservation Service



# Natural Resource Concerns



Human  
Concerns

Plant  
Concerns

Animal  
Concerns

Soil  
Concerns

Water  
Concerns

Air  
Concerns



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**Natural Resources Conservation Service  
CONSERVATION PRACTICE STANDARD**

**FILTER STRIP**

**Code 393**

**(Ac)**

**DEFINITION**

A strip or area of herbaceous vegetation that removes contaminants from overland flow.

**PURPOSE**

- Reduce suspended solids and associated contaminants in runoff and excessive sediment in surface waters.
- Reduce dissolved contaminant loadings in runoff.
- Reduce suspended solids and associated contaminants in irrigation tailwater and excessive sediment in surface waters.

**CONDITIONS WHERE PRACTICE APPLIES**

Filter strips are established where environmentally sensitive areas need to be protected from sediment, other suspended solids, and dissolved contaminants in runoff.

**CRITERIA**

**General Criteria Applicable to All Purposes**

Overland flow entering the filter strip will be uniform sheet flow.

Concentrated flow will be dispersed before it enters the filter strip.

The maximum gradient along the leading edge of filter strip will not exceed one-half of the up-and-down-hill slope percent, immediately upslope from the filter strip, up to a maximum of five percent.

Filter strips will not be used as a travel lane for equipment or livestock.

**Additional Criteria to Reduce Dissolved Contaminants, Suspended Solids and Associated Contaminants in Runoff and Excessive Sediment in Surface Waters.**

The filter strip will be designed to have a 10-year life span, following the procedure in Agronomy Technical Note No. 2, "Using Revised Universal Soil Loss Equation, Version 2 (RUSLE2) for the Design and Predicted Effectiveness of Vegetative Filter Strips (FVS) for Sediment," based on the amount of sediment delivery to the upper edge of the filter strip and ratio of filter strip flow length to length of flow path from the contributing area. The minimum flow length through the filter strip will be 20 feet for suspended solids and associated contaminants in runoff and 30 feet for dissolved contaminants and pathogens in runoff.

The filter strip will be located immediately downslope from the source area of contaminants.

The drainage area immediately above the filter strip will have a slope of one percent or greater.

**Vegetation.** The filter strip will be established to permanent herbaceous vegetation.

Species selected will be—

- Able to withstand partial burial from sediment deposition.
- Tolerant of herbicides used on the area that contributes runoff to the filter strip.
- Stiff stemmed and a high stem density near the ground surface.
- Suited to current site conditions and intended uses.
- Able to achieve adequate density and vigor within an appropriate period to stabilize the site sufficiently to permit suited uses with ordinary management activities.

Plant species, rates of seeding (lbs/ac), vegetative planting (plants/ac), minimum quality of planting stock (pure live seed [PLS] or stem caliper), and method of establishment shall be specified before application. Only viable, high quality seed or planting stock will be used.

Perform site preparation and seeding/planting at a time and in a manner that best ensures survival and growth of selected species. Successful establishment parameters, (e.g., minimum percent ground/canopy cover, percent survival, stand density) will be specified before application.

Schedule planting dates during periods when soil moisture is adequate for germination and establishment. Seeding will be timed so that tillage for adjacent crop does not damage the seeded filter strip.

Where the purpose is to remove phosphorus, remove (or harvest) the filter strip aboveground biomass at least once each year.

The minimum seeding and stem density will be equivalent to the seeding rate for a [high quality](#) grass hay seeding rate for the climate area or the density of vegetation selected in current water erosion technology to determine trapping efficiency, whichever is the higher seeding rate.

**Additional Criteria to Reduce Suspended Solids and Associated Contaminants in Irrigation Tailwater and Excessive Sediment in Surface Waters.**

Filter strip vegetation will be a small grain or other suitable annual plant.

The seeding rate shall be sufficient to ensure that the plant spacing does not exceed 4 inches (about 16–18 plants per square foot).

Establish filter strips prior to the irrigation season so that the vegetation is mature enough to filter sediment from the first irrigation.

**CONSIDERATIONS**

**General Considerations.**

Filter strip width (flow length) can be increased as necessary to accommodate harvest and maintenance equipment.

Filter strips with the leading edge on the contour will function better than those with a gradient along the leading edge.

Seeding rates that establish a higher stem density than the normal density for a [high quality](#) grass hay crop will be more effective in trapping and treating contaminants.

When needed, invasive plant species may be controlled through mowing, herbicides, and hand weeding.

393-CPS-3

393-CPS-4

## Consideration for Reducing Suspended Solids and Associated Contaminants in Runoff.

Increasing the width of the filter strip beyond the minimum required will increase the potential for capturing more contaminants in runoff.

**Considerations for Creating, Restoring or Enhancing Herbaceous Habitat for Wildlife and Beneficial Insects and Pollinators.** Filter strips are often the only break in the monotony of intensively-cropped areas. The wildlife and pollinator benefits of this herbaceous cover can be enhanced by the following:

- When appropriate, use native grass species that fulfill the purpose(s) of the practice while also providing habitat for priority wildlife.
- Adding herbaceous plant species (including native forbs) to the seeding mix that are beneficial to wildlife and pollinators and are compatible for one of the listed purposes. Changing the seeding mix should not detract from the purpose for which the filter strip is established.
- Increasing the width beyond the minimum required. The additional area can increase food and cover for wildlife and pollinators.
- Management activities on filter strips (mowing, burning, or light disking), should not be done more often than every other year with frequency dependent on geographical location to maintain the purpose(s) of the practice.
- Management activities should be completed outside of the primary nesting, fawning, and calving seasons. Activities should be timed to allow for regrowth before the growing season ends.
- Organic producers should submit plans and specifications to their certifying agent for approval prior to installation, as part of the organic producer's organic system plan.

**Considerations to Maintain or Enhance Watershed Functions and Values.** Filter strips may be used to enhance connectivity of corridors and noncultivated patches of vegetation within the watershed, enhance the aesthetics of a watershed, and be strategically located to reduce runoff, and increase infiltration and groundwater recharge throughout the watershed.

**Increase Carbon Storage.** Increasing the width of the filter strip beyond the minimum required will increase potential for carbon sequestration.

## PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice will be prepared for each field or treatment unit. Record the specifications using the implementation requirements document. The specifications will identify at a minimum the following:

- Practice purpose(s).
- Length, width (width refers to flow length through the filter strip), and slope of the filter strip to accomplish the planned purpose(s).
- Plant species selection and seeding/planting/sprigging rates to accomplish the planned purpose.
- Planting dates and planting method(s).
- Specific care and handling requirements of the seed or plant material to ensure that planted materials have an acceptable rate of survival.
- A statement that only viable, high quality, and adapted seed will be used.
- Site preparation instructions sufficient to establish and grow selected species.

## OPERATION AND MAINTENANCE

For the purposes of filtering contaminants and nutrients (phosphorus), permanent filter strip vegetative plantings will be harvested and removed as appropriate to encourage dense growth, maintain an upright growth habit and remove nutrients and other contaminants that are contained in the plant tissue.

Control undesired weed species, especially State-listed noxious weeds.

If Conservation Practice Standard (CPS) Prescribed Burning (Code 338) is used to manage and maintain the filter strip, an approved burn plan must be developed.

Inspect the filter strip after storm events and repair any gullies that have formed, remove unevenly deposited sediment accumulation that will disrupt sheet flow, reseed disturbed areas and take other measures to prevent concentrated flow through the filter strip.

Apply supplemental nutrients as needed to maintain the desired species composition and stand density.

Periodically regrade and reestablish the filter strip area when sediment deposition at the filter strip-field interface jeopardizes its function. Reestablish the filter strip vegetation in regraded areas, if needed.

If grazing is used to harvest vegetation from the filter strip, the grazing plan must ensure that the integrity and function of the filter strip is not adversely affected.

## REFERENCES

Dillaha, T.A., J.H. Sherrard, and D. Lee. 1986. Long-Term Effectiveness and Maintenance of Vegetative Filter Strips. VPI-VWRR Bulletin 153.

Dillaha, T.A., and J.C. Hayes. 1991. A Procedure for the Design of Vegetative Filter Strips: Final Report Prepared for U.S. Soil Conservation Service.

Foster, G.R. Revised Universal Soil Loss Equation, Version 2 (RUSLE2) Science Documentation (In Draft). USDA-ARS, Washington, DC. 2005.

Renard, K.G., G.R. Foster, G.A. Weesies, D.K. McCool, and D.C. Yoder, coordinators. 1997. Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE). U.S. Department of Agriculture. Agriculture Handbook 703.

Revised Universal Soil Loss Equation Version 2 (RUSLE2) Web site (checked May 2007): [http://fargo.nserl.purdue.edu/rusle2\\_dataweb/RUSLE2\\_Index.htm](http://fargo.nserl.purdue.edu/rusle2_dataweb/RUSLE2_Index.htm).

M.G. Dosskey, M.J. Helmers, and D.E. Eisenhauer 2008. A Design Aid for Determining Width of Filter Strips. Journal of Soil and Water Conservation. July/Aug 2008—vol. 63, no. 4.



NATURAL RESOURCES CONSERVATION SERVICE  
CONSTRUCTION SPECIFICATION  
382A - FENCE - BARBED, WOVEN, OR WOODEN

1. SCOPE

The work shall consist of furnishing and installing permanent non-electrified fences and related essential components.

2. MATERIALS

Unless otherwise shown on the drawings or specified in Section 7, materials for barbed, woven, or wooden fencing shall conform to the following requirements:

Wire

Fencing wire shall be galvanized barbed wire or woven wire. Where high-tensile metal is utilized it shall have Class III galvanization. Gauge required as a minimum shall be as listed in Table 1.

**Table 1 – Gauge Wire Required for Conventional Barbed or Woven and High-Tensile Wire**

Material	Conventional	High-Tensile
Barbed Wire	12-1/2 g.	15-1/2 g.
Barbs	4 pt – 14 g.	16-1/2
Top & Bottom Woven	10-1/2g.	10-1/2
Remaining Woven	11 g.	12-1/2g.
Stay Wires	11 g.	12-1/2 g.

Where electrified wire is used, refer to NRCS NY Construction Specification 382B FENCE – HIGH TENSILE SMOOTH AND COATED WIRE AND BRAIDED ELECTRIFIED ROPE

Note: Under no circumstances shall barbed or woven wire be intentionally electrified. All reasonable measures shall also be taken to ensure such wires will not be accidentally electrified.

Fasteners

The staples shall be; Class III galvanized, slash cut point, minimum of 9 gauge wire staples. When used for fastening to hardwoods, staples will have a minimum length of 1 1/4 inches. For softwood posts, staples must have barbs and have a minimum length of 1 1/2 inches.

Where preservative pressure treated wood (0.40 lbs. /cubic foot CCA or equivalent non-CCA treatment) is used, the fasteners shall be either hot-dipped galvanized, stainless steel, or other material recommended by the hardware manufacturer.

For steel, fiberglass and composite posts the fasteners shall be a minimum of 16 gauge galvanized wire.



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## 393 – Filter Strip Implementation Requirements

**Producer:**  **Project or Contract:**   
**Location:**  **County:**   
**Farm Name:**  **Tract Number:**

**Practice Location Map**  
*(showing detailed aerial view of where practice is to be installed on farm/site, showing all major components, stationing, relative location to any landmarks, and survey benchmarks)*

- Index**
- Cover Sheet
  - Specifications
  - Drawings
  - Operation & Maintenance
- Utility Safety/One-Call System Information
- 

**Description of work:**

**NRCS Review Only**

**Designed By:**  **Date:**   
**Checked By:**  **Date:**   
**Approved By:**  **Date:**

## 393 – Filter Strip Implementation Requirements

- Practice Purpose(s)** (check all that apply)
- Reduce suspended solids and associated contaminants in runoff.
  - Reduce dissolved contaminant loadings in runoff.
  - Reduce suspended solids and associated contaminants in irrigation tail water.

**Field number/location:**  **Acres installed:**  **Seeding date:**

**Average Width:**  **Minimum Width:**  **Filter Strip Length:**

**Site preparation:**

**Planting method:**

**Planting Description** (e.g., warm season grasses only, etc.):

**Seeding Rates and Species** (woody species units are plants/linear ft)

Plant species	lbs/acre of seed (PLS)	Total lbs of seed for planned acreage
1 plant species	lbs/acre seed	total lbs seed
2 plant species	lbs/acre seed	total lbs seed
3 plant species	lbs/acre seed	total lbs seed
4 plant species	lbs/acre seed	total lbs seed
5 plant species	lbs/acre seed	total lbs seed
6 plant species	lbs/acre seed	total lbs seed
7 plant species	lbs/acre seed	total lbs seed
8 plant species	lbs/acre seed	total lbs seed
9 plant species	lbs/acre seed	total lbs seed
10 plant species	lbs/acre seed	total lbs seed
<b>TOTALS =</b>	<b>0</b>	<b>0</b>

\* To figure pure live seed (PLS) rates, multiply the percent purity by the percent germination. Divide the seeding rate by the percent PLS to find the bulk seed needed per acre.  
For example: 98% purity X 60% germination = 0.588% PLS 10 lbs/acre X 0.588% PLS = 17 lbs/acre.

**Fertilizers and Amendments**

Fertilizer Element	Fertilizer Form	Fertilizer Amount (lbs/acre)
N	e.g., DAP	lbs/acre as N
P	e.g., DAP	lbs/acre as P <sub>2</sub> O <sub>5</sub>
K	e.g., K <sub>2</sub> SO <sub>4</sub>	lbs/acre as K <sub>2</sub> O
S	e.g., K <sub>2</sub> SO <sub>4</sub>	lbs/acre as S
Lime	form	lbs/acre
Gypsum	form	lbs/acre

## 393 – Filter Strip Implementation Requirements

**Operation and Maintenance:** (check all that apply)

- For the purposes of filtering contaminants, permanent filter strip vegetative plantings shall be harvested as appropriate to encourage dense growth, maintain an upright growth habit, and remove nutrients and other contaminants that are contained in the plant tissue.
- Control undesired weed species, especially State-listed noxious weeds.
- If prescribed burning is used to manage and maintain the filter strip, an approved burn plan must be developed.
- Inspect the filter strip after storm events and repair any gullies that have formed, remove unevenly deposited sediment accumulation that will disrupt sheet flow, reseed disturbed areas, and take other measures to prevent concentrated flow through the filter strip.
- Apply supplemental nutrients as needed to maintain the desired species composition and stand density of the filter strip.
- Periodically regrade and reestablish the filter strip area when sediment deposition at the filter strip-field interface jeopardizes its function. Reestablish the filter strip vegetation in these regraded areas, if needed.
- If grazing is used to harvest vegetation from the filter strip, the grazing plan must ensure that the integrity and function of the filter strip is not adversely affected.

**Certification Statement:**

I certify that implementation of this conservation practice is complete, meets criteria for the stated purpose(s), and meets the NRCS conservation practice standard and specifications.

X

Planner/Technical Service Provider



# Conservation Practice Standards

**170+ National Conservation Practice Standards (CPS)**

**Set: define, purpose, where applies, criteria etc.**

**Revised every 5 years**

**National Team**

**Internal Review**

**USDA review**

**Federal Partners**

**Federal Register**

**Leadership Decisions**

**Posted**

**Each States can: adapt and make more strict, propose interim standards to try new practices and develop specifications.**

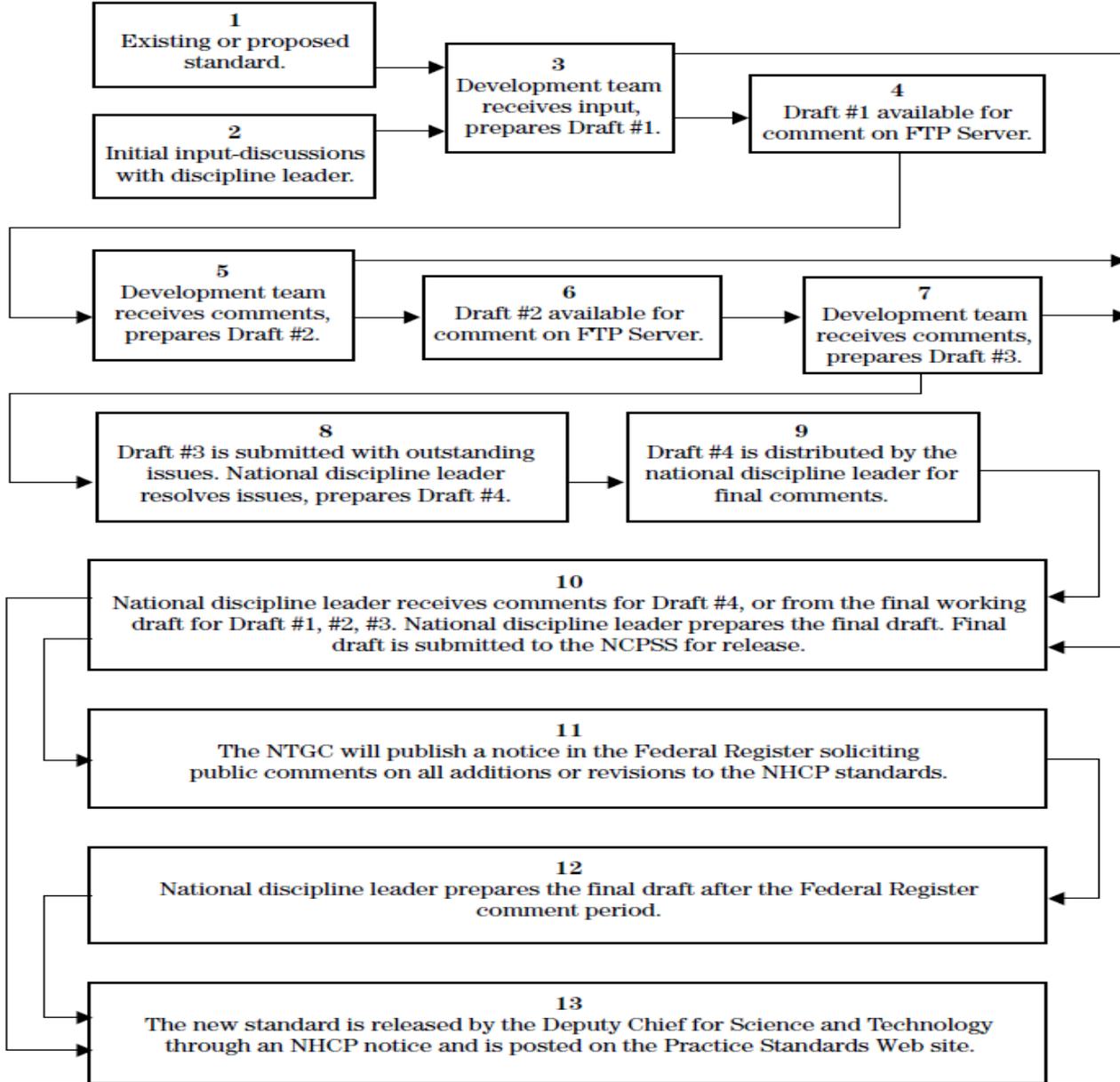


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# Standard Update Process

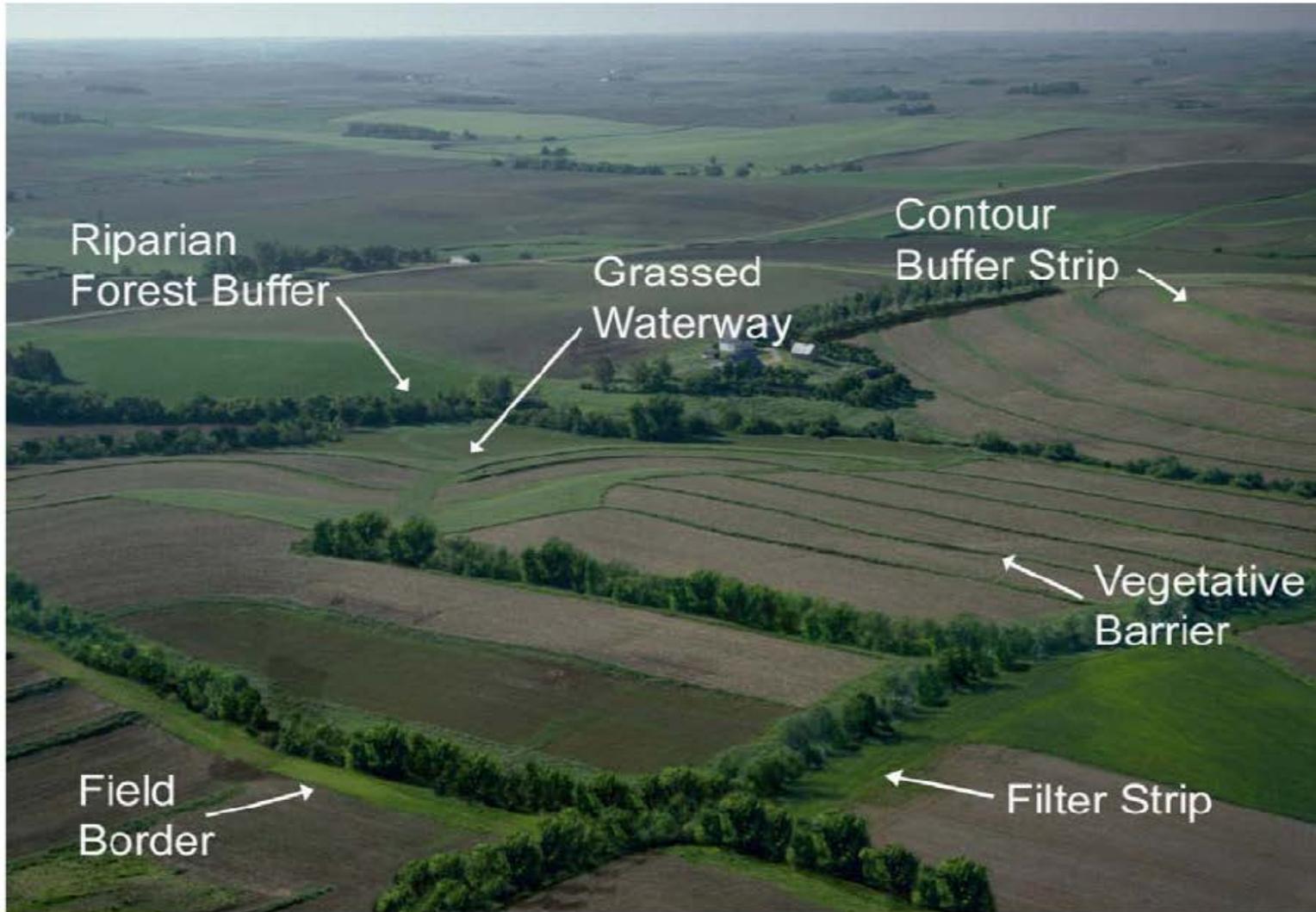


## Ten common conservation buffer practices

1. Alley cropping
2. Contour buffer strips
3. Cross wind trap strips
4. Field borders
5. Filter strips
6. Grassed waterways with filters
7. Herbaceous wind barriers
8. Riparian forest buffers
9. Vegetative barriers
10. Windbreaks/shelterbelts

11. Tile inlet buffers
12. Prairie Strips





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**Figure 4-1. Illustration of several vegetative buffer types (photo courtesy of USDA-NRCS).**

# Filter Strip



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## Conservation Practice Standard Overview

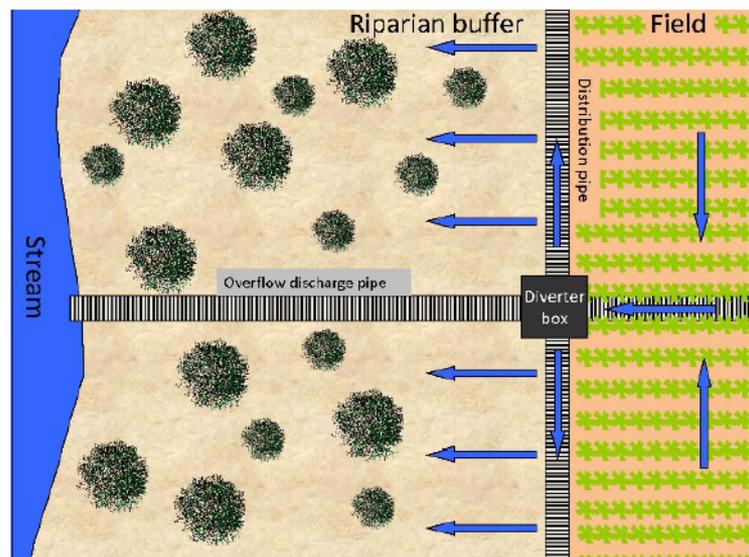
May 2016

### Saturated Buffer (Code 604)

A saturated buffer is a vegetated, riparian buffer in which the water table is artificially raised by diverting much of the water from a subsurface drainage system along the buffer to reduce nitrate loading to surface water via enhanced denitrification.

### Practice Information

The saturated buffer is one of several practices that may be used to help prevent excessive nitrate contribution from tile drainage water leaving crop fields.



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## PRACTICE INTRODUCTION

### Practice Standard 605



## Definition

The denitrifying bioreactor is a structure containing a carbon source, installed to reduce the concentration of nitrate nitrogen in subsurface agricultural drainage flow via enhanced denitrification.



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## Conservation Buffers to Reduce Pesticide Losses



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March 2000



Conservation Buffers to Reduce Pesticide Losses is a joint product of the United States Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) National Water and Climate Center and the United States Environmental Protection Agency (USEPA) Office of Pesticide Programs. It was conceived by an ad hoc joint committee formed in 1994. Participants were Joe Bagdon, USDA-NRCS National Water and Climate Center, Ron Parker, USEPA Office of Pesticide Programs, Tom Gilding, American Crop Protection Association, Nick Poletika, Dow AgroSciences LLC, and Dick Fawcett, Fawcett Consulting. The committee would like to express its thanks to reviewers from the following organizations for comments on and additions to the publication:

Iowa State University - Department of Agricultural Engineering

Michigan Agricultural Cooperative Marketing Association

New York State Department of Environmental Conservation

Rachel Carson Council, Inc.

United States Geological Survey

USDA Agricultural Research Service

USDA-NRCS Science and Technology Consortium and National Headquarters

USEPA Regional Offices

USEPA Office of Water

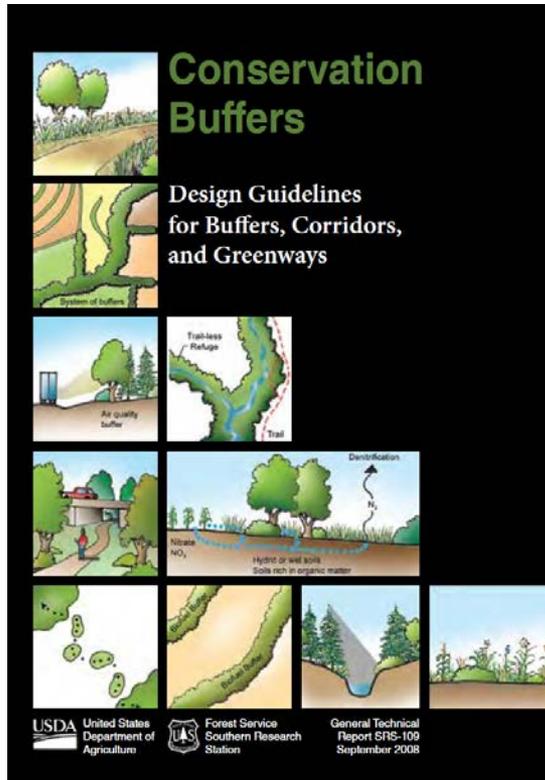
Virginia Polytechnic Institute - Dept. of Biological Systems Engineering

The committee hopes that the production of this document will demonstrate the opportunities for intergovernmental as well as public - private cooperation in furthering goals of common interest. While all of the above mentioned organizations share the common goal of reducing pesticide losses, not all items in the publication necessarily represent the official policy of each organization. The cooperation of the Federal agencies does not imply endorsement of any commercial product or service mentioned in this publication.

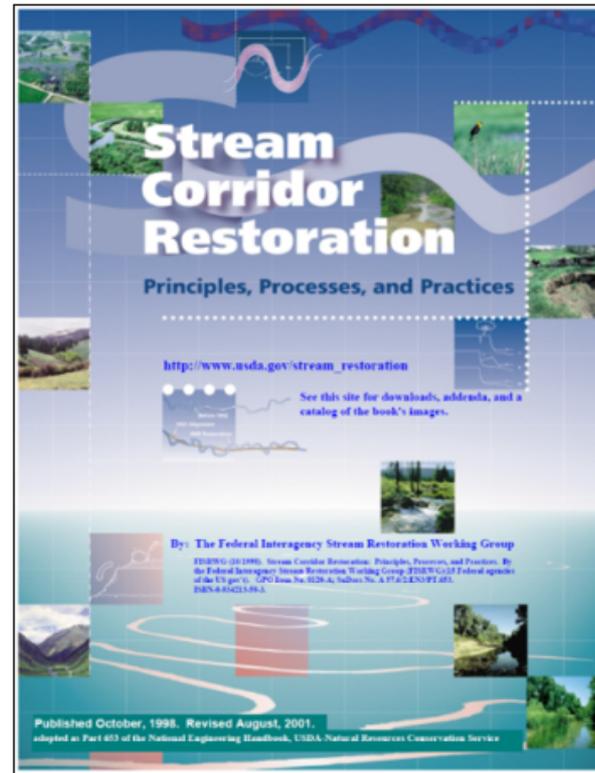


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Bentrup, Gary 2008. Conservation buffers: design guidelines for buffers, corridors, and greenways. Gen. Tech. Rep. SRS-109. Asheville, NC: Department of Agriculture, Forest Service, Southern Research Station.



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# Fact Sheet

## Pollutant Loading Modeling Environment— **AGNPS**

**Agricultural Non-Point Source Pollution Modeling System – Continuous Version**

United States Department of Agriculture

Natural Resources Conservation Service

Agricultural Research Service

May 2018

### Developers

U. S. Department of Agriculture, Natural Resource Conservation Service and Agricultural Research Service.

### National Model Leaders

Fred Theurer, NRCS Lead Scientist (Retired), National Water & Climate Center, Beltsville, Maryland, and Ron Bingner, Agricultural Engineer, USDA-ARS-National Sedimentation Laboratory, 598 McElroy Dr., Oxford, Mississippi 38655. Information requests, copies of the model, and model documentation can be directed to the **AGNPS** WEB site at: <http://www.ars.usda.gov/Research/docs.htm?docid=5199> or contact Fred at email: [Fred.Theurer@verizon.net](mailto:Fred.Theurer@verizon.net) or Ron at 662-232-2966 (email: [Ron.Bingner@ars.usda.gov](mailto:Ron.Bingner@ars.usda.gov))

### Description

The **AGNPS pollutant loading** (PL) modeling environment is comprised of several modules enabling users to develop appropriate input parameters for evaluations of best management practices using simulations for their watershed system. **AnnAGNPS** is the pollutant loading modeling module designed for risk and cost/benefit analyses. **AnnAGNPS** is the next generation of the **AGNPS 5.0** single event model developed by USDA. **AnnAGNPS** is a batch-process, continuous-simulation, surface-runoff, pollutant loading (PL) computer model written in standard ANSI Fortran 2015. The model was developed to simulate long-term runoff, sediment and nutrient transport from agricultural watersheds for conservation practices management planning. The basic modeling components are hydrology, sediment, nutrient, and pesticide transport. Land area (cell) geometric representations of a watershed are used to provide landscape spatial variability. Each cell homogeneously represents the landscape within the respective cell boundary, including the capability to distinguish sheet & rill erosion and ephemeral gully erosion and the impact of conservation practices, such as riparian buffers and wetlands on these processes. The physical or chemical constituents are routed from their origin within a cell and are either deposited within the stream channel system or transported out of the watershed. Pollutants can then be identified at their source and tracked as they move through the watershed system.

### Uses

**AGNPS** can be used to evaluate the long term impact of non-point source pollution from agricultural watersheds. Effects of implementing various conservation management alternatives within the watershed can be evaluated. The loadings predicted are: (1) water; (2) sediment by particle size class & source of erosion; and (3) chemicals—nitrogen, phosphorus, organic carbon, & pesticides. PL's are generated from cells and routed through stream systems on a daily basis. Special land use components such as feedlots (nutrients), ephemeral and classic gullies (sediment and chemicals), point sources (water and nutrients), riparian buffers, and wetlands are included.

### Features

- Loading, transport, and tracking of pollutants from their source to the outlet or any other location within a watershed system.
- Ephemeral gully erosion can be simulated, separate from sheet & rill erosion.
- Nutrient concentrations from feedlots and other point sources can be simulated.
- Riparian buffers, wetland and prairie pothole effects can be derived anywhere in the watershed.
- An integrated interface allowing the automatic determination of cell boundaries, flow routing, ephemeral gully and channel properties, and riparian buffer, wetland, and pothole characterizations. This program utilizes topographic analysis tools using readily available DEM's.
- A graphical input data preparation editor facilitating data input and revisions.
- Tools to rapidly evaluate the contribution of pollutants throughout the watershed.
- Capabilities to execute programs in 32-bit or 64-bit operating systems.
- Advanced channel evolution and stream corridor restoration capabilities provided through the enhanced integration with **CONCEPTS**.
- RUSLE2 erosion science integration.

### System Requirements

**AGNPS** is expected to run on any PC (Pentium or higher) under Windows XP, 7, 8, or 10. Actual memory requirements are dependent upon the number of cells selected. A practical minimum memory limit would be 2GB for user data entry and **AnnAGNPS** execution.

### Planned Developments

The following components are planned as enhancements to **AGNPS**:

- Lake water quality components.
- Integration of NEXRAD technology.
- Land-atmosphere exchanges needed for global climate change evaluations.
- Enhanced organic carbon components.
- Continued enhancements of ephemeral gully, buffer and wetland components.
- Enhanced snowfall, snowmelt, and soil temperature capabilities.

# NRCS Pest Management Policy

The NRCS pest management policy is contained in available at:  
<http://directives.sc.egov.usda.gov/RollupViewer.aspx?hid=17015>

The NRCS pest management policy states that conservation planners have four roles in pest management:

- Evaluate environmental risks associated with a client's probable pest suppression strategies
- Provide technical assistance to clients to mitigate identified environmental risks
- Assist clients to adopt IPM techniques that protect natural resources
- Assist clients to—
  - inventory, assess, and suppress noxious and invasive weeds on noncropland
  - suppress weeds to ensure successful implementation and/or maintenance of permanent vegetative conservation practices (e.g., buffer-type conservation practices)



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<https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=35618.wba>



United States  
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Agriculture

February 2014

## Agronomy Technical Note No. 5

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# Pest Management in the Conservation Planning Process



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# Assessing Relative Pesticide Hazards Windows Pesticide Screening Tool or WIN-PST

The NRCS-supported technical tool that is used to assess relative pesticide leaching, solution runoff, and adsorbed runoff hazards to water quality. Based on:

- Soil properties.
- Pesticide physical properties.
- Pesticide toxicity data.
- Broadcast/banded/spot treatment.
- Surface-applied/incorporated/foliar.
- Standard/low rate/ultra-low rate.
- Humid/dry (no irrigation).



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# Pesticide Loss Pathways

The major components of the NRCS nonpoint source water quality pesticide hazard analysis are—

The potential for pesticide loss in—

- Water that percolates below the root zone.
- Water that runs off the edge of the field.
- Sediment that leaves the field in runoff.

**Chronic (long-term) pesticide toxicity to humans in drinking water and fish in aquatic habitat.**

**The combination of pesticide loss potential with pesticide toxicity to humans and fish to provide site-specific ratings for offsite pesticide hazards in leaching, solution runoff, and sediment adsorbed runoff.**



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**NRCS does not “recommend” any pesticide, rate, formulation, or timing**

**All changes in pesticide management must be done with the help of Extension and crop consultants**



# Resource Concerns



**WIN–PST provides ratings for five different categories of resource concerns:**

- **Human Hazard Leaching.** For leaching risk to drinking water.
- **Fish Hazard Leaching.** For leaching risk to aquatic habitat (lateral flow to streams).
- **Human Hazard Solution.** For solution runoff risk to drinking water.
- **Fish Hazard Solution.** For solution runoff risk to aquatic habitat.
- **Fish Hazard Adsorbed.** For adsorbed runoff risk to aquatic habitat including benthic organisms.

**Note: There is no WIN–PST rating for Human Hazard Adsorbed since human exposure to sediment is minimal.**



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## Mitigation Requirements in the NRCS IPM Conservation Practice

**For water quality concerns related to pesticide leaching, solution runoff, and adsorbed runoff, WIN–PST must be used to evaluate potential hazards to humans and/or fish as appropriate for each pesticide to be used.**

**Human hazard is represented by the potential for chronic impacts to drinking water, and aquatic habitat hazard is represented by the potential for chronic impacts to fish.**



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## The minimum level of mitigation required for each resource concern is based on the final WIN–PST Soil/Pesticide Interaction Hazard ratings:

WIN–PST identified final hazard rating	Minimum mitigation index score level needed
Low or very low	None
Intermediate	20
High	40
Extra High	60



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# Mitigation requirements can be met with IPM techniques

**Table 1:** IPM techniques for reducing pesticide environmental risk

IPM techniques <sup>1</sup>	Mitigation index value <sup>4</sup> (by pesticide loss pathway)				Function and performance criteria
	Leaching	Solution runoff	Adsorbed runoff	Drift	
Application timing—ambient temperature				5	<ul style="list-style-type: none"> <li>Reduces exposure—spraying during cooler temperatures (e.g., early morning, evening or at night) can help reduce drift losses</li> <li>Avoid spraying in temperatures above 90 °F</li> </ul>
Application timing—rain	15	15	15		<ul style="list-style-type: none"> <li>Reduces exposure—delaying application when significant rainfall events are forecast that could produce substantial leaching or runoff can reduce pesticide transport to ground and surface water</li> </ul>
Application timing relative humidity				5	<ul style="list-style-type: none"> <li>Reduces exposure—spraying when there is higher relative humidity reduces evaporation of water from spray droplets thus reducing drift losses</li> </ul>
Application timing—wind				10	<ul style="list-style-type: none"> <li>Reduces exposure—delaying application when wind speed is not optimal can reduce pesticide drift</li> <li>Optimal spray conditions for reducing drift occur when the air is slightly unstable with a very mild, steady wind between 2 and 9 miles per hour</li> </ul>
Formulations and adjuvants <sup>2,3</sup>	5	5	5	5	<ul style="list-style-type: none"> <li>Reduces exposure—specific pesticide formulations and/or adjuvants can increase efficacy and allow lower application rates; drift retardant adjuvants can reduce pesticide spray drift</li> </ul>
Monitoring + economic pest thresholds	15	15	15	15	<ul style="list-style-type: none"> <li>Reduces exposure—reduces the amount of pesticide applied with preventative treatments because applications are based on monitoring that determines when a pest population exceeds a previously determined economic threshold</li> </ul>
Partial treatment	15	15	15	10	<ul style="list-style-type: none"> <li>Reduces exposure—spot treatment, banding and directed spraying reduces amount of pesticide applied</li> <li>Assumes less than 50 percent of the area is treated</li> </ul>
Precision application using smart sprayers	10	10	10	10	<ul style="list-style-type: none"> <li>Reduces exposure—using smart sprayer technology (i.e., green sensors, sonar-based sensors, GPS-based variable rate application, <u>computer controlled</u> spray nozzles, etc.) can substantially reduce the amount of pesticide applied</li> </ul>
Setbacks	5	5	5	10	<ul style="list-style-type: none"> <li>Reduces exposure—reduces overall amount of pesticide applied; reduces offsite pesticide drift</li> <li>Assumes that the setbacks with no application are at least 30 feet wide</li> </ul>
Soil incorporation <sup>2,3</sup>		15	15		<ul style="list-style-type: none"> <li>Reduces exposure—reduces solution and adsorbed runoff losses, but potentially increases leaching losses, especially for low KOC pesticides</li> <li>Applicable to shallow mechanical or irrigation incorporation</li> </ul>



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# Mitigation requirements can be met with IPM techniques

IPM techniques <sup>1</sup>	Mitigation index value <sup>4</sup> (by pesticide loss pathway)				Function and performance criteria
	Leaching	Solution runoff	Adsorbed runoff	Drift	
					<ul style="list-style-type: none"> <li>Not applicable if pesticide leaching to groundwater is an identified natural resource concern</li> <li>Not applicable if soil erosion is not adequately managed</li> </ul>
Spray nozzle selection, maintenance, and operation				10	<ul style="list-style-type: none"> <li>Reduces exposure—selecting appropriate nozzle and pressure for the application, with an emphasis on higher volume spray nozzles run at lower pressures, will produce larger droplets and a narrower droplet size distribution, which reduces spray drift</li> <li>Proper nozzle spacing, boom height, and boom suspension, along with frequent calibration and replacement of worn nozzles and leaking tubing, can increase efficacy and reduce drift potential</li> </ul>
Substitution—cultural, mechanical, or biological controls	15	15	15	15	<ul style="list-style-type: none"> <li>Reduces risk—partial substitution of alternative cultural, mechanical, or biological pest suppression techniques reduces the application of a pesticide that poses a hazard to an identified natural resource concern</li> <li>Not applicable if hazards from alternative suppression techniques are not adequately managed</li> </ul>
Substitution—lower risk pesticides <sup>2,3</sup>	15	15	15	15	<ul style="list-style-type: none"> <li>Reduces risk—partial substitution of an alternative lower risk pesticide reduces the application of a pesticide that poses a hazard to an identified natural resource concern</li> <li>Not applicable if the alternative pesticide is not explicitly recommended by Extension or an appropriately certified crop consultant because the NRCS cannot make pesticide recommendations</li> </ul>
Substitution— <u>semiochemicals</u>	15	15	15	15	<ul style="list-style-type: none"> <li>Reduces risk—using <u>semiochemicals</u> (e.g., mating disruption pheromones) to decrease reproductive success or control population density/location reduces the application of a pesticide that poses a hazard to an identified natural resource concern</li> </ul>

<sup>1/</sup> Additional information on pest management mitigation techniques can be obtained from Extension pest management publications including IPM Guidelines and Crop Profiles, pest management consultants, and pesticide labels.

<sup>2/</sup> The pesticide label is the law—all pesticide label specifications must be carefully followed, including required mitigation. Additional mitigation may be needed to meet NRCS pest management requirements for identified resource concerns.

<sup>3/</sup> NRCS does not make pesticide recommendations. All pesticide application techniques must be recommended by Extension or an appropriately certified crop consultant and selected by the producer.

<sup>4/</sup> Numbers in these columns represent index values that indicate relative effectiveness of IPM mitigation techniques to reduce hazardous pesticide losses through the identified pathways.





**Table 2:** Conservation practices for reducing pesticide environmental risk

Pesticide mitigation conservation practices <sup>1,2</sup>	Mitigation index value <sup>4</sup> (by pesticide loss pathway)				Function and performance criteria
	Leaching	Solution runoff	Adsorbed runoff	Drift	
Alley Cropping (Code 311)	5	5	10	10	<ul style="list-style-type: none"> <li>Increases infiltration and uptake of subsurface water; reduces soil erosion; can provide habitat for beneficial insects, which can reduce the need for pesticides; <u>also</u> can reduce pesticide drift to surface water</li> </ul>
Anionic Polyacrylamide (PAM) Erosion Control (Code 450)		5	15		<ul style="list-style-type: none"> <li>Increases infiltration and deep percolation; reduces soil erosion</li> </ul>
Bedding (Code 310)	5	5	5		<ul style="list-style-type: none"> <li>Increases surface infiltration and aerobic pesticide degradation in the root zone</li> </ul>
Conservation Cover (Code 327)	10	10	10		<ul style="list-style-type: none"> <li>Increases infiltration; reduces soil erosion; and builds soil organic matter in perennial cropping systems such as orchards, vineyards, berries, and nursery stock</li> </ul>
Conservation Crop Rotation (Code 328)	10	10	10		<ul style="list-style-type: none"> <li>Reduces the need for pesticides by breaking pest life cycles</li> <li>Rotation shall consist of at least two crops in the rotation and <u>no crop grown more than once before growing a different crop</u></li> </ul>
Constructed Wetland (Code 656)	5	5	10		<ul style="list-style-type: none"> <li>Captures pesticide residues and facilitates their degradation</li> </ul>
Contour Buffer Strips (Code 332)		10	10		<ul style="list-style-type: none"> <li>Increases infiltration; reduces soil erosion</li> </ul>
Contour Farming (Code 330)		5	5		<ul style="list-style-type: none"> <li>Increases infiltration and deep percolation; reduces soil erosion</li> </ul>
Contour Orchard and Other Fruit Area (Code 331)		5	5		<ul style="list-style-type: none"> <li>Increases infiltration and deep percolation; reduces soil erosion</li> </ul>
Cover Crop (Code 340) that is incorporated into the soil	5	5	5		<ul style="list-style-type: none"> <li>Increases infiltration; reduces soil erosion; builds soil organic matter</li> <li>Assumes at least 4,000 pounds per acre of live biomass at the time of tillage</li> </ul>
Cover Crop (Code 340) for weed suppression that is mulch tilled or no-tilled into for the next crop	10	10	10	10	<ul style="list-style-type: none"> <li>Increases infiltration; reduces soil erosion; builds soil organic matter</li> <li>Requires at least 4,000 pounds per acre of live biomass at the time of tillage and at least 30 percent ground cover at the time of the pesticide application</li> </ul>
Cross Wind Ridges (Code 588)			5 <sup>3/</sup>		<ul style="list-style-type: none"> <li>Reduces wind erosion and adsorbed pesticide deposition in surface water</li> <li>Assumes the pesticide is applied while the field is in the ridged state</li> </ul>
Cross Wind Trap Strips (Code 589C)			10 <sup>3/</sup>		<ul style="list-style-type: none"> <li>Reduces wind erosion and adsorbed pesticide deposition in surface water; traps adsorbed pesticides</li> </ul>



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Pesticide mitigation conservation practices <sup>1,2</sup>	Mitigation index value <sup>4</sup> (by pesticide loss pathway)				Function and performance criteria
	Leaching	Solution runoff	Adsorbed runoff	Drift	
Field Border (Code 386)		5	10	5	<ul style="list-style-type: none"> <li>Increases infiltration and traps adsorbed pesticides; often reduces application area resulting in less pesticide applied; can provide habitat for beneficial insects, which reduces the need for pesticides; can provide habitat to congregate pests, which can result in reduced pesticide application; <u>also</u> can reduce inadvertent pesticide application and drift to surface water</li> <li>Assumes 20-foot minimum width</li> </ul>
Filter Strip (Code 393)		10	15	10	<ul style="list-style-type: none"> <li>Increases infiltration and traps adsorbed pesticides; often reduces application area resulting in less pesticide applied; can provide habitat for beneficial insects which reduces the need for pesticides; can provide habitat to congregate pests, which can result in reduced pesticide application; <u>also</u> can reduce inadvertent pesticide application and drift to surface water</li> <li>Assumes 30-foot minimum width</li> </ul>
Hedgerow Planting (Code 442)			10 <sup>3/</sup>	10	<ul style="list-style-type: none"> <li>Reduces adsorbed pesticide deposition in surface water; <u>also</u> can reduce inadvertent pesticide application and drift to surface water</li> </ul>
Herbaceous Wind Barriers (Code 603)			5 <sup>3/</sup>	5	<ul style="list-style-type: none"> <li>Reduces wind erosion; traps adsorbed pesticides; can provide habitat for beneficial insects, which reduces the need for pesticides; can provide habitat to congregate pests, which can result in reduced pesticide application; and can reduce pesticide drift to surface water</li> </ul>
Riparian Forest Buffer (Code 391)	5	15	15	10	<ul style="list-style-type: none"> <li>Increases infiltration and uptake of subsurface water, traps sediment, builds soil organic matter, and reduces pesticide drift</li> <li>This assumes 30-foot minimum width</li> </ul>
Riparian Herbaceous Cover (Code 390)	5	10	10	5	<ul style="list-style-type: none"> <li>Increases infiltration, traps sediment, builds soil organic matter, and reduces pesticide drift.</li> <li>Assumes 30-foot minimum width</li> </ul>
Windbreak/Shelterbelt Establishment (Code 380)			10 <sup>3/</sup>	10	<ul style="list-style-type: none"> <li>Reduces wind erosion; reduces adsorbed pesticide deposition in surface water; traps adsorbed pesticides; reduces pesticide drift</li> </ul>



# Buffer impacts...



- **Trap sediment (and adsorbed and absorbed pesticides)**
- **Slow runoff (for sheet flow)**
- **Increase infiltration**
- **Biological degradation**
- **Cuts down on drift**



# Many studies...



- **Trapping efficiencies of 50% or more**
- **Increasing water infiltration is the most important factor in trapping pesticides**
- **Without buffers, edge of field losses can range from 1 to as much as 10%**



# ...Not the total solution

- **“Conservation buffers are not a substitute for careful pesticide selection and use”**
- **“They are a tool to further improve water quality...when used along with other practices”**



## Soil Organic Carbon-Water Partitioning Coefficient (Koc)

The soil organic carbon-water partitioning coefficient is the ratio of the mass of a chemical that is adsorbed in the soil per unit mass of organic carbon in the soil per the equilibrium chemical concentration in solution. It is the "distribution coefficient" (Kd) normalized to total organic carbon content. KOC values are useful in predicting the mobility of organic soil contaminants; higher KOC values correlate to less mobile organic chemicals while lower KOC values correlate to more mobile organic chemicals.

Koc Value Influence on Buffers for Pesticides		
Koc Value	Adsorption and Movement	Buffer Recommendation
< 500	Adsorbs weakly, movement with water	Maximize water infiltration and runoff contact time with soil and vegetation Generally requires wider buffers
> 500	Adsorbs strongly, movement with sediment	Maximize sediment trapping in buffer Narrower buffers may be sufficient



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# Pesticide trapping...



- **Function of how tightly the pesticides are adsorbed to soil particles ( $K_{oc}$ )**
- **Pesticides with low  $K_{oc}$  values (generally less than 500) tend to move more in water than on sediment**
- **To trap low  $K_{oc}$  pesticides effectively, buffers need to increase water infiltration and max. contact with soil and vegetation.**



# Some research results...



Group	$K_{oc}$	Percent pesticide trapped	Pesticide
Highly adsorbed pesticides	1,100 8,000	72-100% 86-96%	Lindane Trifluralan
Low to Moderately adsorbed pesticides	20 100 600	70% 11-100% 65%	2,4-D Atrazine Norflurazon



# Designing buffers for efficient pesticide trapping...

- **location, location, location**
- **water must run through the system by sheet flow, not concentrated flow**
- **grading may be necessary**
- **maintenance should be planned**
- **wider strips encourage sheetflow and infiltration**
- **most effective at the top of the watershed!**



# Considerations...



- **greatest volume of runoff enters the watershed from the small streams**
- **intermittent and 1st and 2nd order streams require more buffer protection**
- **relatively little “new” water enters 3rd and 4th order streams over banks**
- **buffers along larger streams have many other benefits but less for pesticide interception and water quality**



# How wide?



## subject of considerable debate factors

- soil type (drainage, permeability, zone of seasonal saturation, % organic matter)
- antecedent moisture
- soil structure and compaction
- climate and storm events
- slope
- condition of vegetation, etc.



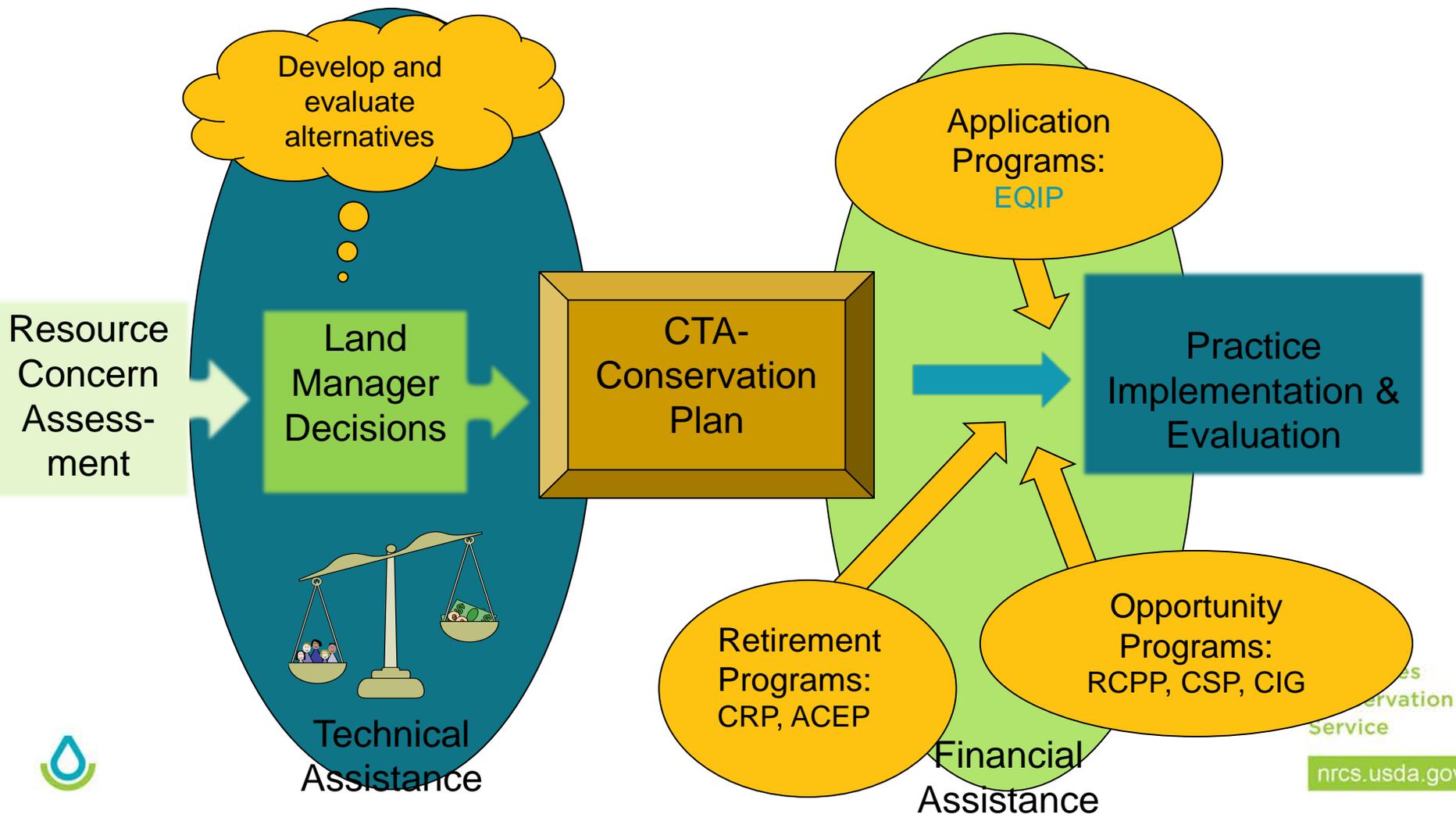
# Research findings...



- **10 to 650 feet**
- **under most conditions at least 50 feet**
- **NRCS draft standard**
  - min. 30 ft. for trapping sediment and adsorbed pesticides
- **wider is not always better, depends on soils, climate, vegetation, & pesticide!**
- **Relatively narrow buffers can still have big impacts (narrow is better than none)**



# CTA Program Conservation Planning and NRCS Farm Bill Programs



# EQIP



## Environmental Quality Incentives Program

From weather to pests, and from a lack of time to markets, each American farmer faces a unique set of challenges. The Environmental Quality Incentives Program (EQIP) helps agricultural producers confront those challenges – all while conserving natural resources like soil, water and air.

This voluntary conservation programs helps producers make conservation work for them. Together, NRCS and producers invest in solutions that conserve natural resources for the future while also improving agricultural operations.

Through EQIP, NRCS provides agricultural producers with financial resources and one-on-one help to plan and implement improvements, or what NRCS calls conservation practices. Using these practices can lead to cleaner water and air, healthier soil and better wildlife habitat, all while improving agricultural operations. Through EQIP, you can voluntarily implement conservation practices, and NRCS co-invests in these practices with you.

### HOW EQIP WORKS

To get started, NRCS first works one-on-one with you to develop a conservation plan that meets your goals and vision for the land. This becomes a roadmap for which conservation practices best meet your needs.

Financial assistance covers part of the costs from implementing conservation practices. NRCS offers about 200 practices depending on where your land is located. These practices are geared towards working farms, ranches and forests and provide producers with many options for conservation. [See a list of practices.](#)

The best way to learn if EQIP is a good fit for you is by contacting your local NRCS office. If you choose to move forward, your local NRCS conservationist will guide you through applying for the program.

Applications are ranked, and if yours is funded, NRCS will offer you an EQIP contract to receive financial assistance for the cost of implementing practices. [Payment rates](#) for conservation practices are reviewed and set each fiscal year. More information on this process is available on our [How Do I Apply webpage](#).



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# CIG

Many projects relating to buffers have been funded.

## Conservation Innovation Grants



## Conservation Innovation Grants

On July 26, 2018, NRCS announced that the agency awarded \$10.6 million to 22 projects through its 2018 national CIG competition. [Learn more and view the project list.](#)

### Conservation Innovation for America's Working Lands

Conservation Innovation Grants (CIG) are competitive grants that drive public and private sector innovation in resource conservation. Authorized by the 2002 Farm Bill, CIG uses Environmental Quality Incentives Program (EQIP) funds to award competitive grants to non-Federal governmental or nongovernmental organizations, American Indian Tribes, or individuals. Producers involved in CIG funded projects must be EQIP eligible.

Through the NRCS CIG program, public and private grantees develop the tools, technologies, and strategies to support next-generation conservation efforts on working lands and develop market-based solutions to resource challenges. Grantees leverage the federal investment by at least matching it.

NRCS understands the importance of supporting historically underserved, new and beginning and military veteran producers in farming and ranching. These producers are a part of the fabric of American agriculture and our communities. Annually, a portion of CIG funding is set aside for projects that support these producers.

CIG projects inspire creative problem-solving that boosts production on farms, ranches, and private forests - ultimately they improve water quality, soil health, and wildlife habitat.



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Monitoring stations enable NRCS to measure the amount of nutrients and sediment in water at the edge of farm field



This edge-of-field monitoring station has a calibrated flume to measure water flow and loading of nutrients and sediment.



This calibrated flume used by the U.S. Geological Survey is used to measure water flow and loading of nutrients and sediment.



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- **Voluntary**
- **N, P and Sediment**
- **Enables ag producers and scientists to quantify the impacts of conservation work on water quality.**
- **NRCS works with producers and conservation partners, such as universities, agencies, and non-governmental organizations, to measure the amount of nutrients and sediment in water runoff from a field**
- **Compare the improvements under different conservation systems.**
- **The results of data collected will be maintained confidentially for farmers' use and for use by the conservation partners responsible for monitoring.**



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# CSP



## Conservation Stewardship Program

### Your Stewardship Goals. Our Assistance.

Have you ever looked across your property and thought about some land management goals you would like to take to the next level? Maybe we can help.

No one knows more about your land than you do, and no one knows more about conservation than we do. Together we can develop a plan tailored to your land and your goals to help you increase productivity and protect the value of your land.

Our Conservation Stewardship Program (CSP) helps you build on your existing conservation efforts while strengthening your operation. Whether you are looking to improve grazing conditions, increase crop yields, or develop wildlife habitat, we can custom design a CSP plan to help you meet those goals. We can help you schedule timely planting of cover crops, develop a grazing plan that will improve your forage base, implement no-till to reduce erosion or manage forested areas in a way that benefits wildlife habitat. If you are already taking steps to improve the condition of the land, chances are CSP can help you find new ways to meet your goals.



**CSP applications must be received by March 2, 2018 to be considered for this funding period.**

chances are CSP can help you find new ways to meet your goals.

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# ACEP



The Agricultural Conservation Easement Program (ACEP) provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. Under the Agricultural Land Easements component, NRCS helps American Indian tribes, state and local governments and non-governmental organizations protect working agricultural lands and limit non-agricultural uses of the land. Under the Wetlands Reserve Easements component, NRCS helps to restore, protect and enhance enrolled wetlands.

## Celebrating 25 Years of Easements



Over the past 25 year, NRCS has worked with landowners to protect more than 4.4 million acres of wetlands and agricultural lands, a value of over a billion dollars in a diversified real estate portfolio that has resulted in improved soil health, water and air quality and wildlife habitat. Read more about the easement successes around the nation.

### What's New in ACEP?

NRCS plans to invest \$250 million in conservation easements in fiscal 2018. People and groups wanting to protect critical wetlands, agricultural lands and grasslands through easements are recommended to contact their local USDA service center.

[Read our Nov. 16, 2017 news release for more information.](#)

[View comments on the ACEP Interim Final Rule on the Regulations.gov website](#)

A summary of the changes is on the NRCS [Farm Bill Rules page](#).

[FY 2015 ACEP - ALE Minimum Deed Terms \(PDF, 399KB\)](#)

[ACEP Program Manual \(3.8MB PDF\)](#)

### Other Documents



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# CRP



## Conservation Reserve Program

### Prospective Participants/General Public

#### What is the Conservation Reserve Program (CRP)?



The Conservation Reserve Program (CRP) is a land conservation program administered by the [Farm Service Agency \(FSA\)](#). In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Contracts for land enrolled in CRP are 10-15 years in length. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat. If you would like to watch an informational video on CRP, please click [here](#).

#### Why is CRP important?

Signed into law by President Ronald Reagan in 1985, CRP is the largest private-lands conservation program in the United States. Thanks to voluntary participation by farmers and land owners, CRP has improved water quality, reduced soil erosion, and increased habitat for endangered and threatened species. [For success stories, click here.](#)



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# EFRP

## Emergency Forest Restoration Program (EFRP)

### In The News

Check back for updates!

### Forest Restoration Program

#### What Is The Emergency Forest Restoration Program?



The Emergency Forest Restoration Program (EFRP) helps the owners of non-industrial private forests restore forest health damaged by natural disasters.

The EFRP does this by authorizing payments to owners of private forests to restore disaster damaged forests.

The local FSA County Committee implements EFRP for all disasters with the exceptions of drought and insect infestations. In the case of drought or an insect infestation, the national FSA office authorizes EFRP implementation.

Fact Sheet: [Emergency Forest Restoration Program](#).

#### Why Is The EFRP Important?

Forests provide shelter for wildlife, help provide nutrients for soil, and help protect water supplies. By restoring forests and forest health the EFRP works to protect natural resources and wildlife habitats.

[Learn more about enrolling in EFRP because of severe drought or damage to a forest you own.](#)



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