USDA Natural Resources Conservation Service
Science and Technology

2015 Webinars

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Upcoming Webinars

Date	Title
09/09/2015	Use of NRCS Conservation Practice Standards and Specifications
09/22/2015	Land Application Methods of Animal Manures and Potential Environmental Impacts
09/23/2015	Environmental Benefits of Organic Agriculture: Water Quality
09/30/2015	Irrigation Water Management Plan - An Overview
10/06/2015	Climate Change and Organic Agriculture

* View an updated list of USDA NRCS ***Planned Conservation Webinars*** for the current year.

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http://conservationwebinars.net

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SREF

How to Use:
Conservation Practice Standards and Conservation Practice Specifications

USDA-NRCS

Joel K Poore: Conservation Agronomist

CNTSC – Fort Worth, TX

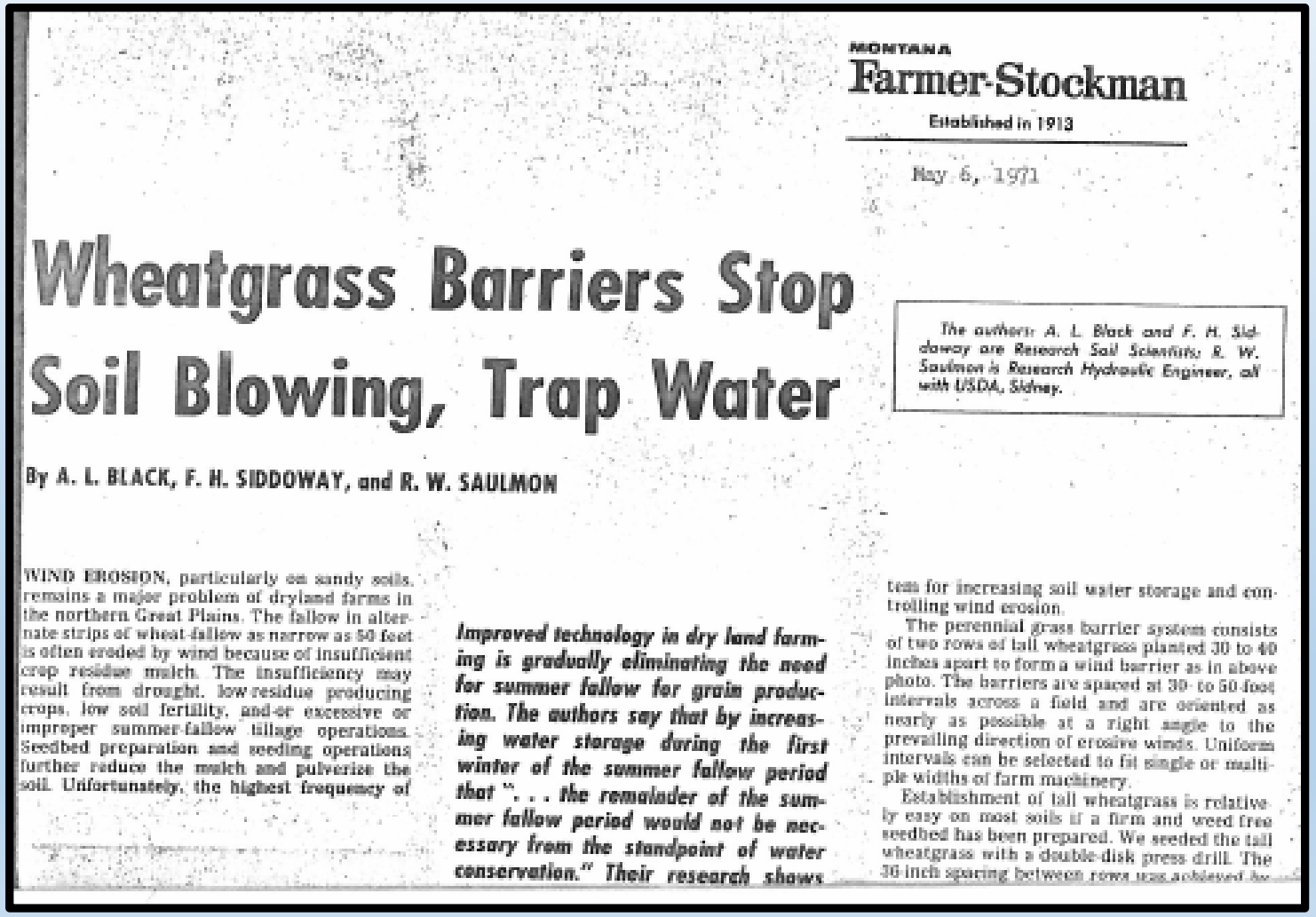
How to Use: Conservation Practice Standards and Conservation Practice Specifications

- **Webinar Outline**
- Conservation Practice Standards and Specifications: Definitions
- Conservation Planning Process: Relationship to Conservation Practice Standards (CPS)
- Selecting Effective CPS and Purpose(s) CPPE, Physical Effects Matrix, Local experience, Client
- Building CP Specifications: Working with Client to build Practice Specifications
- Example Disciplines: NRCS use of Conservation Practices, Standards and Specifications
- Summary Take Home:

Primary References: National Handbook of Conservation Practices NHCP

National Planning Procedures Handbook NPPH

Conservation Practice: A specific treatment, such as a structural or vegetative measure, or management technique, commonly used to meet specific needs in planning and implementing conservation, for which standards and specifications have been developed.



MONTANA
Farmer-Stockman
Established in 1913

May 6, 1971

Wheatgrass Barriers Stop Soil Blowing, Trap Water

The authors: A. L. Black and F. H. Siddoway are Research Soil Scientists; R. W. Saulmon is Research Hydraulic Engineer, all with USDA, Sidney.

By A. L. BLACK, F. H. SIDDOWAY, and R. W. SAULMON

WIND EROSION, particularly on sandy soils, remains a major problem of dryland farms in the northern Great Plains. The fallow in alternate strips of wheat-fallow as narrow as 50 feet is often eroded by wind because of insufficient crop residue mulch. The insufficiency may result from drought, low residue producing crops, low soil fertility, and-or excessive or improper summer-fallow tillage operations. Seedbed preparation and seeding operations further reduce the mulch and pulverize the soil. Unfortunately, the highest frequency of

Improved technology in dry land farming is gradually eliminating the need for summer fallow for grain production. The authors say that by increasing water storage during the first winter of the summer fallow period that ". . . the remainder of the summer fallow period would not be necessary from the standpoint of water conservation." Their research shows

tem for increasing soil water storage and controlling wind erosion.

The perennial grass barrier system consists of two rows of tall wheatgrass planted 30 to 40 inches apart to form a wind barrier as in above photo. The barriers are spaced at 30- to 50-foot intervals across a field and are oriented as nearly as possible at a right angle to the prevailing direction of erosive winds. Uniform intervals can be selected to fit single or multiple widths of farm machinery.

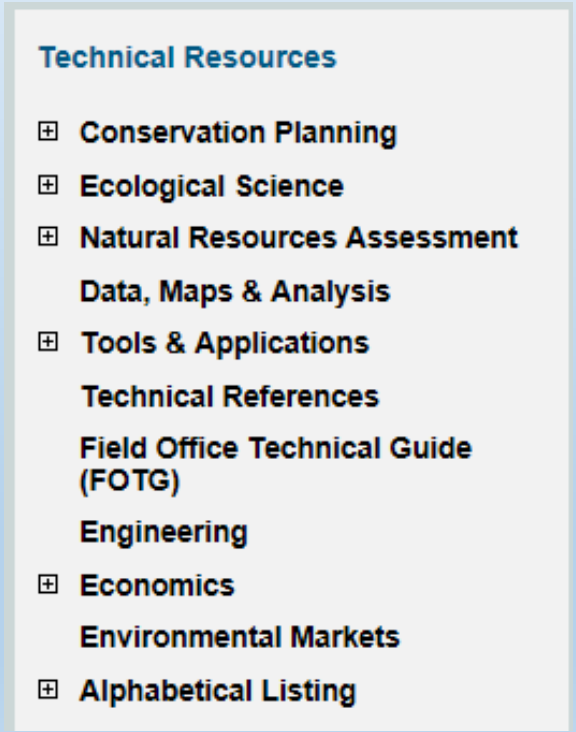
Establishment of tall wheatgrass is relatively easy on most soils if a firm and weed free seedbed has been prepared. We seeded the tall wheatgrass with a double-disk press drill. The 36-inch spacing between rows was obtained by

Technical information use for Conservation Practice Standards and Specifications,

What is FOTG?
Technical guides are the primary scientific references for NRCS. They contain technical information about the conservation of soil, water, air, and related plant and animal resources.

Technical guides used in each field office are localized so that they apply specifically to the geographic area for which they are prepared. These documents are referred to as Field Office Technical Guides (FOTGs).

Appropriate parts of the Field Office Technical Guides are automated as data bases, computer programs, and other electronic-based materials such as those included in these web based pages.



http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/

Technical information use for Conservation Practice Standards and Specifications,

What information is located in FOTG

Section I — General References
In this section you will find general state maps, descriptions of Major Land Resource Areas, watershed information, and links to NRCS reference manuals and handbooks. Section I contains links to researchers, universities, and agencies we work. Section I also contains conservation practice costs, agricultural laws and regulations, cultural resources, and information about protected plant and animal species.

Section II — Soil and Site Information
In this section you will find detailed information about soil, water, air, plant, and animal resources. NRCS Soil Surveys, Hydric Soils Interpretations, Ecological Site Descriptions, Forage Suitability Groups, Cropland Production Tables, Wildlife Habitat Evaluation Guides, Water Quality Guides, and other related information can be found here as it becomes available.

Section III — Conservation Management Systems
In this section you will find information on NRCS Quality Criteria, which establish standards for resource conditions that help provide sustained use.

Section IV — Practice Standards and Specifications
In this section you will find the NRCS Conservation Practices. Practice Standards define the practice and where it applies. Practice specifications are detailed requirements for installing the practice in the state.

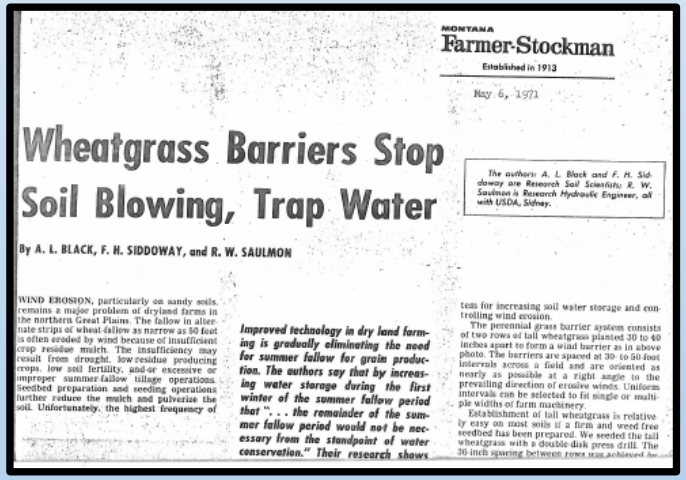
Section V — Conservation Effects
In this section you will find background information on how Conservation Practices affect each identified resource concerns in the state.

http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/fotg/

Practice Standard —Practice standards define the practice and where it applies, and prescribes the minimum level of application and quality of materials. NPPH

Conservation Practice Standards

The conservation practice standard contains information on why and where the practice is applied, and it sets forth the minimum quality criteria that must be met during the application of that practice in order for it to achieve its intended purpose(s). NHCP



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NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

HERBACEOUS WIND BARRIERS

(Ft.)

CODE 603

DEFINITION

Herbaceous vegetation established in rows or narrow strips in the field across the prevailing wind direction.

PURPOSE

- Reduce soil erosion from wind.
- Reduce soil particulate emissions to the air.
- Protect growing crops from damage by wind or wind-borne soil particles
- Enhance snow deposition to increase plant-available moisture.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to lands where crops or forages are grown.

Conservation Practice Specifications:

The conservation practice job sheets provide detailed guidance on the application of the practice and contain worksheets that can be used to document the practice plan and design for a specific site. National conservation practice job sheets are available for a limited number of practices. NHCP

Example Herbaceous Wind Barrier CPS 603:
Plans and specifications for the establishment and maintenance of this practice shall include:

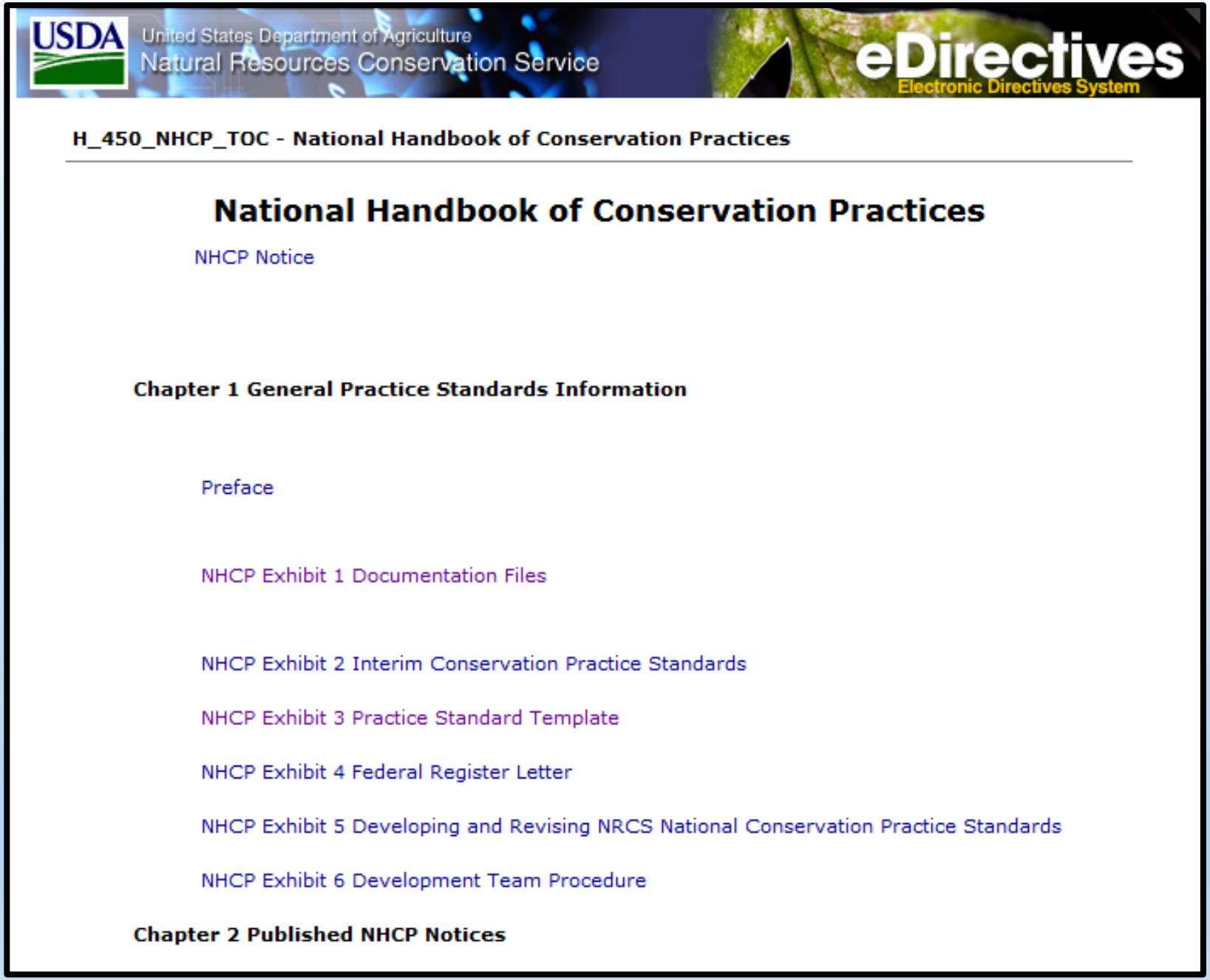
PLANS AND SPECIFICATIONS

1. Purpose
2. For individual barriers
    a. Vegetation type (annual or perennial)
    b. Species
    c. Number of rows per barrier
    d. Distance between barrier rows
    e. Seeding/planting rate
    f. Seeding/planting depth
    g. Planned effective barrier height
    h. Barrier width

PLANS AND SPECIFICATIONS continued

3. For a barrier system a. Number of barriers in system
    b. Distance between barriers
    c. Total area in barriers
    d. Total amount of seed/number of plants required
4. Site preparation requirements
5. Method of seeding/establishment
6. Fertilizer and soil amendments needed
7. Mulch material (if required)

Specifications are recorded using approved specification sheets, implementation requirements, job sheets or other acceptable documentation. The plans shall include a sketch map or photograph of the field showing the approximate location of the barriers.



http://directives.sc.egov.usda.gov/viewerFS.aspx?hid=22299

Conservation Practice Standards: NHCP Exhibit 3 Practice Standard Template

NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD

NAME, (UNITS)
Established nationally and not to be altered or supplemented by States.

Code (code #)
Established nationally and not to be altered or supplemented by States.

Conservation Practice Standards: Sections of the CPS; NHCP Exhibit 3 Practice Standard Template

DEFINITION:

PURPOSE (S):

CONDITIONS WHERE PRACTICE APPLIES:

CRITERIA:

CONSIDERATIONS:

PLANS AND SPECIFICATIONS:
This section lists information that needs to be in the plans and for the conservation practice to ensure that the technology in the practice standard is properly applied in the field and functioning as intended.

OPERATION AND MAINTENANCE:
Include required management actions and corrective actions that contribute to the longevity and functioning of the conservation practice.

REFERENCES:

http://directives.sc.egov.usda.gov/viewerFS.aspx?hid=22299

NRCS Disciplines: Conservation Practice Standards

NRCS conservation practice standards are developed and implemented by a wide range of disciplines and technical discipline leads to address site specific resource concerns for a land use system.

AE—Agricultural Engineer
Agron—Agronomist
AH—National Leader Animal Husbandry
AqEco—Aquatic Ecologist
AQS—Air Quality Specialist
ARS—Atmospheric Resource Specialist
CE—Construction Engineer
CED—Conservation Engineering Division
DE—Design Engineer
EE—Environmental Engineer
EG—Engineering Geologist
ESD—Ecological Sciences Division
For—Forester
Graz Land Sp—Grazing Land Specialist
HE—Hydraulic Engineer
LA—Landscape Architect
NM—Nutrient Management Specialist
PM—Pest Management Specialist
SE—Soils Engineer
WBio - Biologist
WME—Water Management Engineer

Conservation Practice Standards

Structural Practice.—A practice that involves a constructed facility, land shaping, or permanent vegetative cover designed to preserve soil; reduce runoff of nutrients, sediment, and pesticides; enhance wildlife habitat; or for other purposes.

Management Practice.—A conservation practice that requires regular input from the land manager.

Facilitating Practice: A conservation practice that facilitates management or the function of another practice, or both, but does not achieve the desired effects on its own.

Conservation activities: actions, undertaken using acceptable tools and protocols, that are used to identify, inventory, assess, evaluate, or otherwise measure the presence and extent of a natural resource concern and to identify potential alternatives how to address the natural resource concern(s) through one or more conservation practices.

http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/cp/ncps/?cid=nrcs143_026849

Conservation Practice Standards and supporting documents

National Conservation Practice Standards

National conservation practice standards are presented in a table, in alphabetical order by practice name. The table also contains links to:

- Conservation practice information sheets
- Conservation Practice Physical Effects (CPPE) worksheets
- Conservation practice job sheets
- National templates for statements of work associated with each conservation practice
- Network effects diagrams

Updated or new National conservation practice standards are released with National Handbook of Conservation Practices (NHCP) notices.Â The NHCP notices are maintained in eDirectives.

http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/cp/ncps/

How to use Conservation Practice Standards: Location of National CPS

Technical Resources

- ⊟ Conservation Planning
  - National Conservation Practice Standards
  - National Conservation Activities
- ⊞ Ecological Science
- ⊞ Natural Resources Assessment
- Data, Maps & Analysis
- ⊞ Tools & Applications
- Technical References
- Field Office Technical Guide (FOTG)
- Engineering
- ⊞ Economics
- Environmental Markets
- ⊞ Alphabetical Listing

Conservation Practices

Alphabetical Index

A-C, D-F, G-I, K-M, N-P, Q-R, S-T, U-Z

Conservation Practice Name (Units) (Code) (Date Issued)	Standard PDF	Standard Word	Info Sheet/ Practice Overview	CPPE	Job Sheet/ Implement Require	National Statement of Work Template	Network Effects Diagram
Access Control (Ac.) (472) (9/10)	PDF	DOC	PDF	PDF	DOC	DOC	PDF
Access Road (Ft.) (560) (9/14)	PDF	DOC	PDF	PDF		DOC	PDF
Agrichemical Handling Facility (No.) (309) (9/14)	PDF	DOC	PDF	PDF		DOC	PDF

http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/cp/ncps/?cid=nrcs143_026849

Selecting an appropriate conservation practice for the site and situation

Effects of NRCS Conservation Practices - National

Access Control

The temporary or permanent exclusion of animals, people, vehicles, and/or equipment from an area.

Code: 472
Units: ac

C-Crop
F-Forest
R-Range
P-Pasture
Pr-Protected
FS-Farmstead
D-Developed
W-Water
O-Other
AL-Ass Land

Typical Landuse: C F R P Pr FS D W O AL

Soil Erosion	Effect	Rationale
Soil Erosion - Sheet and Rill Erosion	3	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Soil Erosion - Wind Erosion	1	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Soil Erosion - Ephemeral Gully Erosion	4	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Soil Erosion - Classic Gully Erosion	4	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Soil Erosion - Streambank, Shoreline, Water Conveyance (	4	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Soil Quality Degradation		
Organic Matter Depletion	1	Control of animals, people and vehicles help maintain conditions of soil and vegetation.
Compaction	4	Control of animals, people and vehicles lessens compactive forces on soil.
Subsidence	0	Not Applicable
Concentration of Salts or Other Chemicals	0	Control of animals, people and vehicles will influence plant growth and alter infiltration a
Excess Water		

NRCS approved assessment tools and procedures when planning for Identified Resource concerns, Partial List
Used for planning design and Implementation of a conservation practice

Tools Relative to Resource Concerns

Soil Erosion and Soil Quality

RUSLE2, WEPS - (Integrated Erosion Tool)	Soil Erosion - (Sheet – Rill and Wind)
SCI (RUSLE2)	Soil Quality - Organic Matter Depletion
Crop Tolerance Table (Wind Erosion)	Plants – Health and Productivity

Pasture

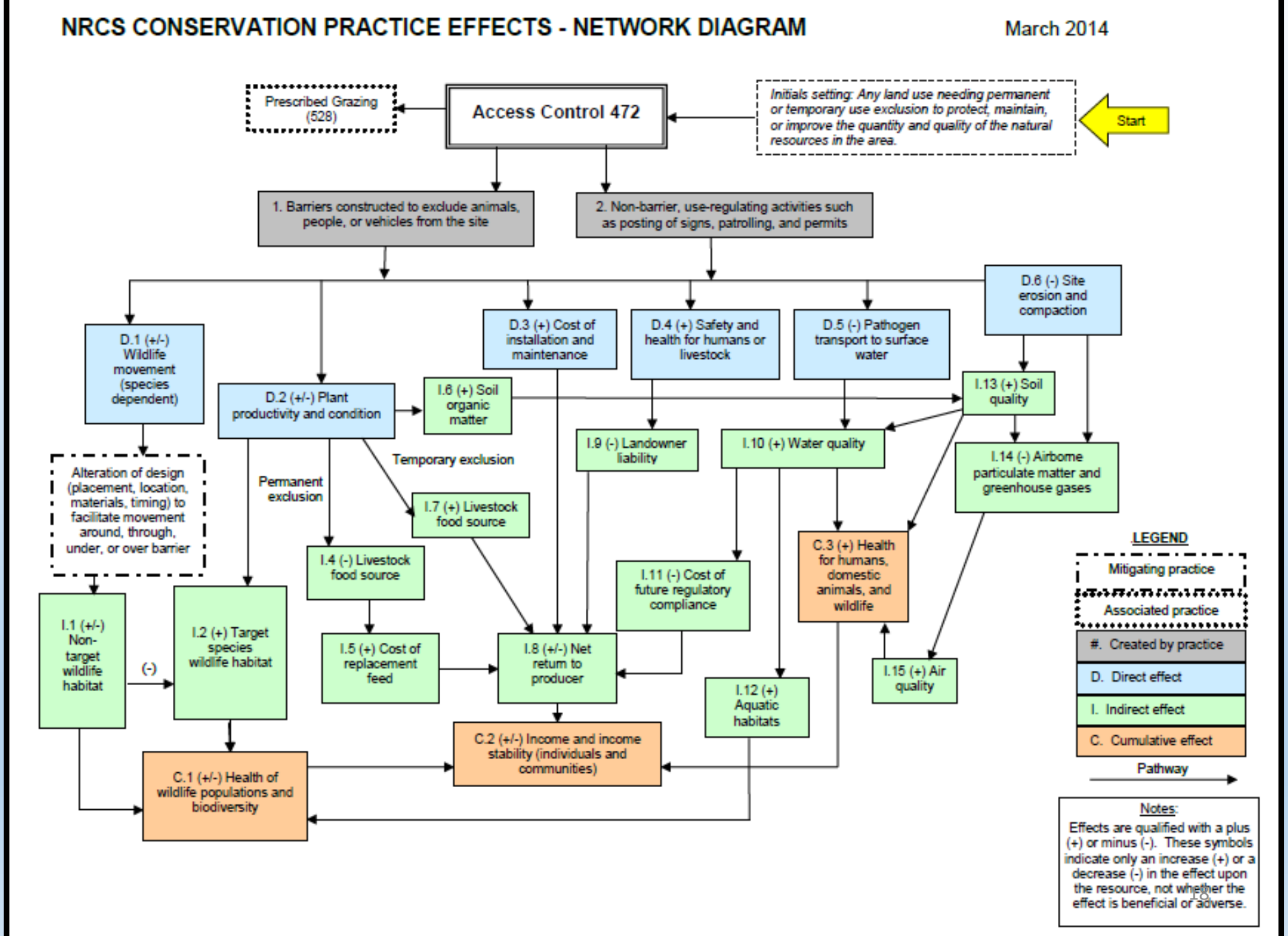
Pasture Condition Score	Soil Erosion - Streambank Erosion Soil Quality – Compaction Soil Quality - Organic Matter Depletion Plants - Plant productivity and health Insufficient Water - Inefficient moisture management Water Quality - Sediment

Range

Range Hydrology Erosion Model (RHEM)	Range - Plant productivity and health
Rangeland Health Assessment (RHA)	Range - Plant productivity and health
Ecological Site Descriptions (ESD)	Range - Plant productivity and health

Selecting
Conservation
Practice
That fits
The system

Direct
Indirect
Cumulative
EFFECTS



USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Conservation Practice Standard Overview

Access Control (472)

Access control includes temporary or permanent exclusion of animals, people, vehicles, and/or equipment from an area.

Practice Information

Controlling access is often used to protect, maintain, or improve the quantity and quality of natural resources in an area. The purpose also includes aesthetic resources as well as human health and safety.

Access control can play a role in establishing, protecting, and maintaining vegetation, and is often essential to conserving the other natural resources.

The barriers constructed for access control must be adequate to prevent intrusion of the target animals, vehicles, or people. Barriers are usually fences, but may also be natural and artificial structures such as logs, boulders, earth fill, gates, signs, or similar structures.

Common Associated Practices

Access Control (472) is commonly applied with conservation practices such as Prescribed Grazing (528), Tree/Shrub Establishment (612), Vegetative Treatment Area (635), and Wetland Creation (658).

For further information, contact your local NRCS field office.

Conservation Practice Standards CPS

Specifications

ACCESS CONTROL CPS 472 EXAMPLE

FROM PLANS AND SPECIFICATIONS SECTION OF PRACTICE STANDARD

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each area and recorded using approved specification sheets, job sheets, and narrative statements in the conservation plan, or other acceptable documentation.

Conservation Practice Standards CPS

Specifications Job Sheet Implementation Requirements

Forms But Plans and Specs in CPS must be met

NRCS
Natural Resources Conservation Service
(State)

ACCESS CONTROL - 472

Conservation Practice Specifications/Job Sheet

NOVEMBER 2006

Client/Operating Unit:		Tract:		Farm No.:	
Farm/Ranch Location:		Field No.:		Program:	
Specifications Date:			Planned Installation Date:		
Proposed Treatment Acres:	:				

Installation shall be in accordance with the following specifications, drawings, and other requirements. NO CHANGES ARE TO BE MADE IN THE SPECIFICATIONS WITHOUT PRIOR APPROVAL BY AN AGENCY REPRESENTATIVE.

Specifications

1. Entity to be monitored and managed (mark all that apply):

☐ Animals, ☐ People, ☐ Vehicles, ☐ Equipment, ☐ Other _____

Intent(s) of control and explanation of specific conditions that are at risk:

Example Access Control CPS 472, Job Sheet, Implementation requirements, continued

2. Names of controlled-use activities (posting of signs, patrolling, gates, fences and other barriers, permits) and explanation of the intensity, amounts, and timing of use for entities marked in item 1 above, mitigating measures if their use influences other resource concerns, and monitoring requirements.

3. Describe placement, location, dimensions and materials (for signs, structures, etc.), and frequency of use (e.g., continuous, specific season, specific dates) for each activity:

4. Soils, site factors, and timing of application must be suitable for any ground-based equipment that may be utilized for installing the named activities to avoid erosion and sedimentation. For safety purposes and to protect site resources, treatment methods involving equipment are generally not applied on slopes exceeding 35 percent.

5. List emergency preparedness agency information (optional), e.g., local fire/wildfire control agency and pumper truck water sources on or near the area:

6. All actions associated with applying activities and measures under this practice shall be monitored periodically, maintained, and comply with federal, state, tribal and local laws and regulations. It is the landowner's responsibility to obtain appropriate permits and/or applications prior to commencing an activity.

Example Access Control CPS 472

Practice Specifications Approval and Completion Certification

DESIGN AND INSTALLATION/LAYOUT APPROVAL:

I have job approval authority and certify this practice has been designed with specifications to meet the conservation practice standard and that the client has been advised of installation and layout elements:

NRCS Representative name and title (type or print):		
NRCS Representative Signature:		Date:

LANDOWNER/OPERATOR ACKNOWLEDGES:

a. They have received a copy of the specifications and understand the contents including the scope and location of the practice.
b. They have obtained all necessary permits and/or rights in advance of practice application, and will comply with all ordinances and laws pertaining to the application of this practice.
c. No changes will be made in the installation of the job without prior concurrence of the NRCS.
d. Maintenance of the installed work is necessary for proper performance during the life of the practice. The practice life is _____.

I have reviewed all specifications and agree to install as specified:

Landowner/operator name and title (type or print):		
Landowner/operator Signature:		Date:

RECORD OF COMPLETION AND CHECK OUT CERTIFICATION:

Treated Acres:	Date Completed by Client:	Date Certified:	Approver's Initials:

I have job approval authority and certify this practice has been applied and meets design specifications:

NRCS Representative name and title (type or print):		
NRCS Representative Signature:		Date:
Notes:		

United States Department of Agriculture | Natural Resources Conservation Service

STATEMENT OF WORK
Access Control (472)
National Template

These deliverables apply to this individual practice. For other planned practice deliverables refer to those specific Statements of Work.

DESIGN

Deliverables:

1. Design documents that demonstrate criteria in NRCS practice standard have been met and are compatible with planned and applied practices.
    a. Practice purpose(s) as identified in the conservation plan (specified products, environmental services, and/or mitigating actions to maintain resource concerns at acceptable levels)
    b. List of required permits to be obtained by the client
    c. Practice standard criteria-related computations and analyses to develop plans and specifications including but not limited to:
        i. Use-regulating activities (e.g., signage, patrolling, gates, permitting) shall be monitored and achieve the intended purpose including mitigating associated resource concerns to acceptable levels
        ii. Each activity or measure will identify the entity to be monitored and managed (animals, people, vehicles and equipment) and specify the intent, intensity, amounts, and timing of use by that entity.
        iii. Placement, location, dimensions and materials (e.g., signs, gates), and frequency of use (e.g., continuous, specific season, or specific dates) shall be described for each activity including the frequency of monitoring.
2. Written plans and specifications including sketches and drawings shall be provided to the client that adequately describe the requirements to install the practice and obtain necessary permits.
3. Documentation of needed operation and maintenance.
4. Certification that the design meets practice standard criteria and comply with applicable laws and regulations.
5. Design modifications during installation as required.

Note: *State-Specific Deliverables may be added as appropriate.*

United States Department of Agriculture | Natural Resources Conservation Service

STATEMENT OF WORK
Access Control (472)
National Template

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INSTALLATION

Deliverables

1. Pre-application conference with client.
2. Verification that client has obtained required permits.
3. Layout and, as applicable, field staking or marking of the practice, measure or activity according to plans and specifications including applicable layout notes.
4. Application guidance as needed.
5. Facilitate and implement required design modifications with client and original designer.
6. Advise client/NRCS on compliance issues with all federal, state, tribal, and local laws, regulations and NRCS policies during installation.
7. Certification that the application process and materials meet design and permit requirements.

Note: *State-Specific Deliverables may be added as appropriate.*

CHECK OUT

Deliverables

1. Records of application.
   a. Extent of practice units applied
   b. Actual mitigation measures used and applied
2. Certification that the application meets NRCS standards and specifications and is in compliance with permits.
3. Progress reporting.

Note: *State-Specific Deliverables may be added as appropriate.*

REFERENCES

- NRCS Field Office Technical Guide (eFOTG), Section IV, Practice Standard – Access Control, 472
- NRCS National Environmental Compliance Handbook, NRCS Cultural Resources Handbook

Note: *State-Specific references may be added as appropriate.*

Conservation Practice Standards CPS associated with the Conservation Planning Process

The way NRCS does business

Land Use

Cropland, forestland, pastureland, and rangeland comprise the major land uses in the United States and the land uses receiving the majority of the conservation treatment that address our soil, water, air, plant, and animal resources.

It is the NRCS role to provide national leadership and technical assistance for the conservation of our natural resources to ensure the continued production of food and fiber.

Major land use natural resource concerns include: (1) erosion by wind and water, (2) maintaining and enhancing soil quality, (3) water quality and quantity, (4) plant condition and health, and (5) wildlife habitat.

The formal list of Resource Concerns (RC) is maintained in Section III of the Field Office Technical Guide (FOTG), with Quality Criteria for assessing each resource concern.

Use Conservation practices that match up to site specific Resource concerns,

These are identified during the planning process. The way NRCS does business

SOIL EROSION

- Sheet, Rill, & Wind Erosion
- Concentrated Flow Erosion

(Classic Gully & Ephemeral Erosion)

- Excessive bank erosion from streams, shorelines or water conveyance channels

EXCESS / INSUFFICIENT WATER

- Ponding, Flooding, Seasonal High Water Table, Seeps and Drifted Snow
- Inefficient Moisture Management
- Inefficient Use of Irrigation Water

DEGRADED PLANT CONDITION

- Undesirable Plant Productivity and Health
- Inadequate Structure and Composition
- Excessive Plant Pest Pressure
- Wildfire Hazard, Excessive Biomass Accumulation

LIVESTOCK PRODUCTION LIMITATION

- Inadequate Feed and Forage
- Inadequate Livestock Shelter
- Inadequate Livestock Water

INEFFICIENT ENERGY USE

- Equipment and Facilities
- Farming/Ranching Practices and Field Operations

SOIL QUALITY DEGRADATION

- Subsidence
- Compaction
- Organic Matter Depletion
- Concentration of Salts and other Chemicals

WATER QUALITY DEGRADATION

- Excess nutrients in surface and ground waters
- Pesticides transported to surface and ground waters
- Excess pathogens and chemicals in surface waters and ground waters from manure, bio-solids or compost applications
- Excessive Salts in surface waters and ground waters
- Petroleum, Heavy Metal and other pollutants transported to waters
- Excessive Sediment in surface waters
- Elevated Water Temperature

INADEQUATE HABITAT FOR FISH AND WILDLIFE

- Habitat Degradation

(Food, Water, Cover/Shelter and Habitat Continuity / Space)

AIR QUALITY IMPACTS

- Emissions of Particulate Matter (PM) and PM Precursors
- Emission of Greenhouse Gases (GHGs)
- Emissions of Ozone Precursors
- Objectionable Odors

How to Use:
Conservation Practice Standards and Conservation Practice Specifications

Conservation Plan.—A record of the client's decisions and supporting information for treatment of a unit of land meeting planning criteria for one or more identified natural resource concerns as a result of the planning process.

The plan describes the schedule of implementation for practices and activities needed to solve identified natural resource concerns and takes advantage of opportunities.

The plan may include components such as comprehensive nutrient management plan, grazing plan, integrated pest management plan, etc.

The needs of the client, the resources, and Federal, State, Tribal, and local requirements will be met.

(180-VI-NPPH, Amend. 5, January 2013)

CPS: part of the NRCS Conservation Planning Process:

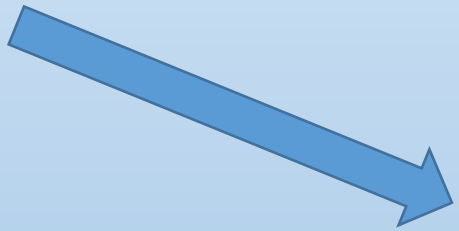
The three-phase, nine-steps: **Make land use and treatment decisions.**
Plan, design and apply conservation treatments

Where do Standards and Specifications fit in the Planning Process?
What is an Alternative?

Phase I: Collection and Analysis

- **Step 1: Identify Problems and Opportunities**
- **Step 2: Determine Objectives**
- **Step 3: Inventory Resources**
- **Step 4: Analyze Resource Data**

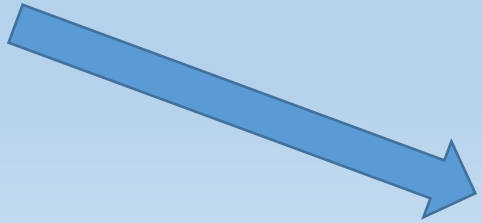
Practice Standards



Phase II: Decision Support

- **Step 5: Formulate Alternatives**
- **Step 6: Evaluate Alternatives**
- **Step 7: Make Decisions**

Specifications



Phase III: Application and Evaluation

- **Step 8: Implement the Plan**
- **Step 9: Evaluate the Plan!!!!!**

(180-VI-NPPH, Amend. 5, January 2013)

Conservation Practices: Agronomy
Norm Widman: National Agronomist: NRCS_NHQ, Washington, DC

Understand the planning process, resource concerns, assessment tools, and what the documents are

Conservation Practice Standards (CPS)
Each CPS defines a unique technology; address a unique resource problem(s)
The unique resource problem(s)/resource concerns translate into practice purpose(s)
Each CPS defines the site conditions where this unique technology applies
Each CPS provides minimum acceptable criteria for the technology to be Effective
General criteria applies to all purposes; Additional criteria applies to specific purposes

Conservation Practice Specifications
CP specification define in detail HOW the technology and criteria in a CPS will be applied to a specific site.

The CP specification take into account the unique soil, water, air, plant, and animal characteristics of the site.

As part of the plans and specification
unique details on how to operate/manage/maintain the technology to assure continued functions.

The plans, specifications, and operation and maintenance are recorded in the “Implementation Requirements”
Documents designed for each unique CPS. (progress with automation)

Conservation Practices: Wildlife
Lee Davis: Biologist: NRCS_CNTSC, Fort Worth, TX

CPS use: national and regional; accountability, program activity, response to congress

CPS use: local: written for NRCS: Building blocks of conservation plan development, sideboards for minimum resource quality criteria and intended for site specific purposes

CPS: Selection: Fit what NRCS **AND** Client want: Objectives, Initiatives, Programs, Opportunities, Benchmark inventory/assessment, site specific resource concerns and Purposes in CPS selected.

NRCS and Client select conservation to apply and what CPS (s) will fit.
Once selected, this is how the CPS will be designed and applied. CPS is written for NRCS
If CPS suite fits the need and selected by client: move to criteria this is not a specification

Considerations: not required, techniques to improve effectiveness.
Criteria: don't look for specification checklist how, ------- not there

NRCS advisors or planners are supposed to be practitioners and multi disciplinary
Understand assessment tools and terminology used in CPS (esp criteria and Plans and Specifications) FOTG

Search engines, supervisor, area office specialists, fellow employees-experience, FOTG. Problems can snowball if technical skills and tools and planning process not in place.

Conservation Practices: Wildlife
Lee Davis: Biologist: NRCS_CNTSC, Fort Worth, TX

Specifications: General and purpose specific criteria, methods, activities, sequence etc will be achieved and documented in CP specifications, Land manager objectives and logistics needs are met

Plans and specs section: **HOW** the practice will be installed.

This is required documentation how the client plans to install the practice.

NRCS insures that the criteria is met

Operation/Maintenance: Part of specification, required, too often ignored.

OM part of implementation, When is a CPS fully implemented? Not program related

CPS 327: Is CPS implemented after seed is planted? No

After successful establishment, perhaps the first mowing? Perhaps

CPS 340: Implemented following cover crop seeding?

Following Termination? Perhaps, Is termination part of CPS, then yes

Need a success measure to determine when criteria and OM is complete: practice is installed.

Not possible to install CPS and specification without a conservation plan and stay within NRCS policy".

Conservation Practices: Environmental Compliance
Matthew Judy: Ecologist, Environmental Compliance Specialist: NRCS-CNTSC, Fort Worth, TX

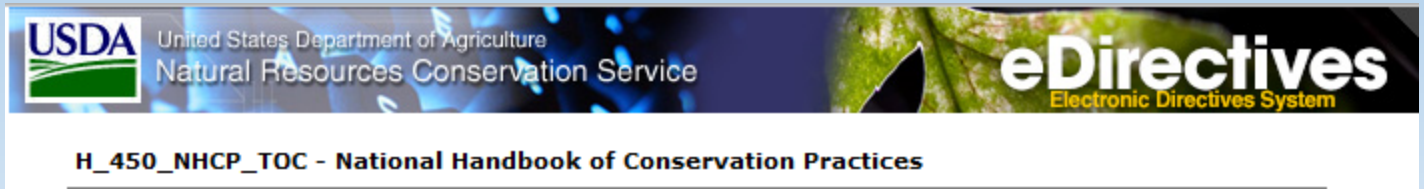
Clearly define the terms and understand the differences between Standards and Specifications

Conservation Practice Standards (CPS)

CPS' establish the minimum acceptable level of quality that is required to plan, design, install, operate, and maintain conservation practices.

Conservation Practice specifications

Conservation practice specifications are site-specific guides that establish the technical details and workmanship required to install the conservation practice in accordance with the requirements of the CPS. The CPS and Client Objectives guide the development of the site specific specification.



Conservation Practices: Environmental Compliance
Matthew Judy: Ecologist, Environmental Compliance Specialist: NRCS-CNTSC, Fort Worth, TX

"Alternative" is system of conservation practices and management activities
the analysis of the effects of the planned actions are dependent on the combination of CPS that make up each alternative
the developed specifications (site specific, plan specific) for implementing the standards also affect the impact analysis.

The following specification attributes should be considered: These are listed in Plans and Specifications section: each CPS

- extent
- method
- materials
- timing
- location

These attributes of a specification can be modified to **mitigate** the environmental impact of the practice implementation (short-term, long-term, and cumulative effects) as long as specification meets CPS criteria. Timing example

Note that mitigation is defined as:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.
(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
(e) Compensating for the impact by replacing or providing substitute resources or environments. (40CFR 1508.20)

Conservation Practices: Engineering
Kimberly Stine: Rangeland Management Specialist: NRCS_CNTSC, Fort Worth, TX

How to use a CPS:

After first 5 steps of planning, thorough system inventory and client objectives

Seldom a single CPS, Standard sets expectation of result of applied conservation practice

Specifications and CPS are different documents

Spec: Detail documentation how the client decides or chooses to apply a suite of Conservation Practices that meet Standard requirements.

Example of a management and facilitating Practice

Prescribed grazing management practice example and fencing or water development facilitating practices. Alternative system

Programmatic objectives of Client are considered after the specification is complete

Specification that meets standard, does no harm, unintended consequences minimized, synergism between CPS and activities are planned to meet the goal

Criteria: Resource management concept. Benchmark and alternatives.

Conservation Practices: Engineering

Sally Bredeweg: Environmental Engineer: NRCS_WNTSC, Portland, OR

CPS schedule for review: 5 years, update as technology changes.

CPS contains the minimum criteria determined for the structural design of the practice.

Engineer or designer: carefully read, understand and follow the CPS for the projects they design.
Important: Work with the most current CPS, design criteria may have changed.

engineering practice: Structures and System: element of liability.

All NRCS engineering work in a State: responsibility and PE License of the State Conservation Engineer.

NRCS engineered structure failure, associated death or injury, the agency is liable for damages.

In these situations there is an engineering investigation to determine the cause of the failure, and if there was any failure on the part of the inventory, design or installation of the practice.

Conservation Practices: Engineering

Sally Bredeweg: Environmental Engineer: NRCS_WNTSC, Portland, OR

Engineering a structure: site conditions and structural elements evaluated technically for risk of stability, strength and capacity to function safely as intended for the life of the practice.

Engineering practice standards developed, written to ensure that practices function properly.
When engineer/designer has job approval authority and has followed the design and application criteria in the practice standard as written, the agency will protect them in a liability case and will stand by their work.

The planning process and engineering practices.
Landowner ownership of the project is important: ensure better maintenance and operation of the facility.
The planning process should include project objectives of the Landowner.

If the landowner wants to add elements to the design, important that engineer know what the elements are, and include those features in the design if:

the design at a minimum meets the NRCS practice standard criteria.

Conservation Practices: Engineering
Sally Bredeweg: Environmental Engineer: NRCS_WNTSC, Portland, OR

Engineering Practice Specifications comments
NRCS engineering specifications: specific construction methods and materials used to install a Practice.

Practice Specifications are detailed instructions:
include installation design sheets and given to the landowner and contractor: installed meet NRCS criteria

Specifications are available in several varieties:
NRCS National Engineering Handbook (NEH), Title 210 Engineering, Part 642 Specifications which includes Contract Specifications, Construction Specifications and Material Specifications

State prepared specifications usually available on the State eFOTG website.

Conservation Practices: Engineering

Sally Bredeweg: Environmental Engineer: NRCS_WNTSC, Portland, OR

Common mistakes using Engineering Conservation practices and standards:

Not including the engineer with the site visit and inventory.

Not communicating up front with the landowner: Expectations of the contract with NRCS

Landowner always has the option of doing work on their own, but

If in a contract with NRCS: NRCS Practice Standard criteria must be followed.

Not understanding State requirements accepting used equipment and construction material.

Not making good communication a part of the process.

Frequent communication: landowner, planner and engineer: prevent many problems from occurring.

Conservation Practices: Engineering
Sally Bredeweg: Environmental Engineer: NRCS_WNTSC, Portland, OR

How is the decision made that a CPS is needed for the Alternative and is appropriate selection?

NRCS advantage: **IF** the staff can work together as a team.

Utilize local conservationists and NRCS technical experts

Invite an engineer or technician *to visit the site in the planning stage with planner*

The engineer or technician provides input as to suitability of the site for the proposed structure/system

Discuss possible alternatives with the landowner and Planner.

Engineer or technician: Have Engineering Job Approval Authority for the practice(s) being considered.

Engineering JAA lists three levels of approval limits:

1) Inventory and Evaluation, 2) Design, and 3) Application.

‘Inventory and Evaluation’: critical skill, looking at a site, considering alternatives.

‘Design’: capacity and experience to properly engineer and design the practice.

‘Application’: experience insuring the practice applied as designed.

Conservation Practices: Engineering
Sally Bredeweg: Environmental Engineer: NRCS_WNTSC, Portland, OR

Does a resource concern need to exist then look for suitable practices ?
Yes, a resource concern needs to exist otherwise NRCS cannot justify investing public money or time in a private operation. Then look for suitable practices using a resource and inventory assessment, experience and technical expertise. Note: the landowner and operation objectives and capabilities need to be assessed along with the resources.

Are most engineering practices considered facilitating practices that fit into a system?
Yes. Most engineering practices by themselves do not make for a conservation plan. The engineering practices can provide the infrastructure to make the agricultural operation, planned Alternative system, function at a more sustainable level.

Conservation Practices: Engineering
Sally Bredeweg: Environmental Engineer: NRCS_WNTSC, Portland, OR

How does a planner decide to include a specific engineering/structural CPS?
The conservation planner should **not** be making that decision independently.
Art of the planning process: goals/ideas of the landowner, NRCS address natural resource concerns.

Engineered structures: associated management required, maintain the facility, function as designed.
NRCS staff working as a team: communicate and inform the landowner of these expectations.
If the landowner and NRCS staff determine a specific engineered structure will meet the needs of the operation, address the resource concerns and is feasible to construct on the site…. then… include it.

It is cheaper to build a project right the first time (even if it takes longer) than to have to build it twice.

Engineered projects need to fit the site **AND** the landowners operation and maintenance abilities.

Conservation Practices: Engineering

Sally Bredeweg: Environmental Engineer: NRCS_WNTSC, Portland, OR

How does a planner know when to ask the engineer to go with them. And visa versa if the engineer is the lead? Communication can be a challenge, planners, engineers and clients as well. Leadership provided by the Conservationist in a field office can facilitate this. The planner can visit casually or on a regular meeting basis with the engineer, to go over their projects or vice versa. When an office has good communication things work very well.

How do they know that a structural practice might fit well into an alternative system to reduce an identified resource concern(s).
This is all part of the skill in planning. If the landowner has an alternative system they want to use, the planner or engineer may have ideas about how it could work. The application of a practice to an alternative system should also include some regular visits from NRCS after the practices are installed to check on how well it is functioning.

There may be things that need to be modified or adjusted. NRCS staff should document this alternative and success or changes made. That is one of the ways we develop new/improved conservation technology and new practice standards.

Conservation Practices: Engineering
Jerry D. Walker: Agricultural Engineer (Water Management): NRCS_CNTSC, Fort Worth, TX

Use within the Conservation Planning Process framework
Identify resource concerns to select CPS, purpose(s), where practice applies.
Thorough inventory and benchmark assessment is needed.

Understand relationships between Resource Concerns, CPS(s), EFFECTS, Site and situation
Will implemented CP achieve Purpose.: Yes if criteria is met.

Prepare: List local CPS that have common uses in area and management systems.
Example specifications that commonly can be used as Templates, not final Specification.
Final specification (site specific implementation schedule) Meets CPS and client decision
Tech notes, eFOTG references, LGU research: techniques and technology available

Specification written for the client, minimum requirements of spec is in CPS (plans and specs section)
CPS selection, purpose and where CPS applies tied to Inventory and assessment
Understand criteria associated with each and all practices
Technical notes, notices and reference information in State eFOTG

Conservation Practices: Engineering
Jerry D. Walker: Agricultural Engineer (Water Management): NRCS_CNTSC, Fort Worth, TX

Common mistakes using CPS: Want to do something similar but not follow CPS

This is not how NRCS does business, we are unable to help them if it does not meet standard.

Not selecting appropriate standards, States can apply for interim if justified, generally not.

Often, requests are written too specific, takes away from Client and NRCS design

New technology, processes research does occur and new or update CPS is appropriate

Common problems:

Incomplete inventory and assessment of resources. Often too narrow, look around

Incorrect CPS selection: round peg, square hole", not appropriate for resource needs and objective.

Not addressing OM needs, not following complete planning process

No clear documentation as specification according to Plans and Specifications section

Letting a conservation program dictate CPS use

If communication with client is missing, tough to get back.

Conservation Practices: Wetlands
Richard Weber: Wetland Hydraulic Engineer,: NRCS_CNTSC, Fort Worth, TX

CP standard: provides technical sideboards and minimum design criteria to meet selected purpose and objectives, Design Alternative Systems. Multiple CPS

Understand wetland functions, technical documents, eFOTG references, assessments, data, tools

Important to understand the Definition of the CPS and Resource Concerns being addressed, examples

Wetland Enhancement	CPS 659
Wetland Restoration	CPS 657

Recognize associated practices to improve ecological functions system:

Examples: structural practices, dike, water control structure, stabilization or vegetative practice wetland wild life habitat, to improve effectiveness of the single practice.

Without a conservation planning process for plan development:

"horrible outcomes" when trying to apply one or more CPS

CPS is technical document: does not represent legal and programmatic decisions or rules.

Conservation Practices: Wetlands
Richard Weber: Wetland Hydraulic Engineer,: NRCS_CNTSC, Fort Worth, TX

Where it applies: only wetland sites w/ hydric soils and degraded condition.

“CPS is not “How”. criteria sets “sideboards” or functional outcome.

How to apply the CPS:

stay within “sideboards” in order for effectiveness for purposes selected.

CPS is not a Technical specification document.

Plans and specification section in each CPS outline required documentation for implementation.

The final site specific specification, separate document from CPS, is very clear and detailed:

so landowner, contractor or vendor etc can implement the specification independently.

Don’t forget Operation Maintenance and follow-up – monitoring – primarily as method of improving implementation and planning with the standard. – Learning.

Common mistakes:

No Follow-up and poor communication during the Planning Process

selected purpose does not match resource concerns, not applied as a system of CPSs

How to Use Conservation Practice Standards and Specifications

Summary: Take Away

Use with Conservation Planning Process: all 9 steps: Continuous communication with Client

Identify the Client Objectives and Resource concerns prior to selecting Practices:

Select Conservation Practices that address objectives and RCs that the Client wants to address

Develop Resource Management Systems RMS whenever possible

Understand the Standards for conservation practice delivery: EFFECTS

Understand Technical guides, Assessment Tools and Resource data available: eFOTG

Document your work

Practice Specifications and Operation Maintenance for each Practice

Follow up: Communicate and learn HOW to apply CPS efficiently and effectively, learn.