NATURAL RESOURCES CONSERVATION SERVICE

PRACTICE SPECIFICATION

PRESCRIBED GRAZING

(AC)

CODE 528S

PLANS AND SPECIFICATIONS

The following specifications, procedures and technical information supplement the requirements for carrying out selected considerations of Conservation Practice Standard 528, Prescribed Grazing.

The extent of the conservation plan and prescribed grazing plan will be determined by the goals and objectives of the land manager. If the manager's objective is to treat only a portion of the operation, such as when a pasture, paddock or field is being treated to control invasive species or additional water added to existing field(s) to improve grazing distribution, the conservation plan and prescribed grazing plan may be limited to the fields being addressed with the planned conservation treatment(s).

A prescribed grazing plan will consist of the following items for the fields being addressed in the conservation plan:

1. Goals and Objectives
2. Resource Inventory
3. Forage Inventory (amount of forage available)
4. Animal Inventory (amount of forage needed)
5. Forage Balance
6. Grazing Schedule
7. Contingency Plan
8. Monitoring Plan

1. Goals and Objectives:
Nebraska Grazing Land Assistance Questionnaire (NE-ECS-63) may be used to record preliminary information about the producer's operation, concerns, objectives and goals. The land managers goals and objectives for the grazing land being planned will be clearly stated on the *Prescribed Grazing Jobsheet, (NE-ECS-528).*

2. Resource Inventory:
The resource inventory will document the physical structures, facilities, soils and plant communities present in each pasture, paddock or field. Information from the resource inventory will be displayed in a manner to be understood by the producer. The conservation plan map will document the following:

- Existing and planned fences
- Existing and planned water developments (wells, pipelines, troughs, tanks, lakes and ponds)
- Locations of resource concerns (distribution issues, erosion, stream bank trampling, and noxious weed infestations, etc), if present.

A summary of the resource concerns will be documented on *Nebraska Environmental Evaluation Worksheet* (*NE-CPA-52*).

2a. Rangeland:

The following is required for each pasture, paddock or field included in the conservation plan:

- The ecological sites will be determined and documented on the conservation plan map.
- The current plant community as listed in the Ecological Site Descriptions will be determined.
- If the similarity index is determined, it can be documented on the conservation plan map.
- Where ecological site descriptions are not available, range sites and condition ratings will be determined and documented on the conservation plan map.
- Key grazing areas and/or monitoring locations will be documented on the plan map.
- Key species will be documented on *Proper Grazing Use Worksheet (NE-ECS-414).*
- The quality and trend of the rangeland will be determined at the key area(s) and will be documented on A*pparent Range Trend Worksheet, (NE-ECS-12)*.

Options for describing the current plant community, existing resource concerns and forage production include:

- Detailed conservation technical assistance notes
- *Range Inventory Worksheet (NE-ECS-1)*
- *Worksheet for Estimating Similarity Index or Range Condition (NE-ECS-66)*
- *Worksheet for Determining Similarity Index (NE-ECS-9)*
- *Range Inventory Summary (NE-CPA-17)*
- Locally developed formats

Determination of the similarity index during the resource inventory phase of planning is encouraged when the information will assist in analyzing the success of the conservation plan. The similarity index rating may be determined by estimation, estimation and harvest (double sampling), or harvest. When determined, the similarity index may be noted on the conservation plan map or a separate ecological site/similarity index map may be generated.

When the land manager's goals include improving the composition of the plant community, soil health or hydrologic function, a rangeland health assessment can be completed and recorded on *Rangeland Health Assessment Worksheet, (NE-ECS-11).*

2b. Pastureland: The forage suitability group (FSG) and pasture condition score will be determined and documented on the conservation plan map for each pasture included in the conservation plan. The Pasture Condition Score sheet*, (NE-ECS-13),* will be used to rate key indicators and factors when evaluating the condition of pastures. Additional information is contained in the *Guide to Pasture Condition Scoring*. Primary forage species will be documented on the Degree of Use Worksheet for Pastures (*NE-ECS-14*).

3. Forage Inventory:

The expected forage production for the year will be estimated and documented. Production estimates may be made from information obtained from the producer, production clippings, on-site estimates or Ecological Site Descriptions or Forage Suitability information. *Prescribed Grazing Jobsheet, (NE-ECS-528)* will be used to summarize the forage inventory in terms of expected AUM's in each field, pasture or paddock. Information about field procedures for inventorying forage resources can be found in the National Range and Pasture Handbook, Chapter 4 and in *Procedures for Conducting a Grazing Land Inventory*, *Technical Note 15*.

The expected AUM's will be based on the estimated production and the planned harvest efficiency. The planned harvest efficiency will be based on the land manager's resource objectives and the planned type of grazing management. See Table 1: Suggested Harvest Efficiencies and Utilization Guidelines for Typical Management Strategies. These levels assume normal weather, good plant vigor, uniform grazing patterns, and even consumption.

Adjustments are needed when variables that prevent uniform grazing are present to ensure that palatable plants are not significantly over-utilized. Variables include rough topography, a plant composition that includes plants that are low palatability and other variables will prevent an even harvest efficiency.

Supplemental Feed (Hay and Grain) Inventory (optional): Feed supplementation for the operating unit or portion of the operating unit should be considered in the inventory of forage and within the forage balance as needed by the operator*. Prescribed Grazing Jobsheet (NE-ECS-528)* will be used to summarize the supplemental feed inventory.

4. Animal Inventory:

An inventory of grazing animals occupying or planned to occupy a pasture, field or paddock is necessary so that forage demand can be compared to forage production. A physiological factor will be used to adjust the animal inventory into standardized animal unit equivalents when determining forage demand. See the animal unit equivalent guide located in the *National Range and Pasture Handbook*, Table 6-5. The amount of forage required by wildlife should also be considered in the animal inventory. Prescribed Grazing Jobsheet*, (NE-ECS-528)* will be used for documentation.

5. Forage-Animal Balance:

A forage-animal balance will be determined to ensure that forage production or availability meets forage demand by livestock and/or wildlife. Estimates of forage surpluses and deficits will be documented on *Prescribed Grazing Jobsheet (NE-ECS-528)*. If the current or planned annual forage demand exceeds existing forage availability by 20% or more, a re-evaluation of the resource objectives with the land manager should be scheduled. An assessment should be made as to whether the resource objective can be achieved under the current or proposed stocking rate.

6. Grazing Schedule:

The grazing schedule will identify periods of grazing, deferment and rest and other treatments or prescriptions over a period of years that will achieve the land manager's resource objectives. Adequate plant recovery/rest periods during the growing season will help meet the needs of both the plant resources and grazing animal. Alternatives to the number of pastures and the number of times an individual pasture is grazed during the grazing season should be discussed with the land manager in terms of maintaining forage balance and maintaining plant productivity, health and vigor.

The grazing schedule should be based on the physiology of the key forage plants. Generally, when pastures are grazed in a rotation, individual paddocks should be grazed during different time periods in consecutive years. Exceptions include situations that require grazing during a specific time period to control undesirable or invasive plants. Livestock movements should be based on plant growth and utilization. The grazing schedule should be flexible in terms of adjusting to climatic conditions and other factors. Calendar dates should only be used as a ***guide*** when developing grazing schedules. For more information on grazing management systems, see the *National Range and Pasture Handbook, Chapter 5.*

The grazing schedule will include:

- Recommended stocking rates
- Approximate grazing dates
- Rest and/or deferment periods
- Minimum recovery period – See Table 2 Recovery Guidelines, Nebraska Grazinglands

The prescribed grazing schedule will be recorded in a manner that is readily understood by the producer. The schedule of grazing, rest, and deferment periods by pasture, paddock or field will

be planned through one cycle. *Prescribed Grazing Jobsheet*, *(NE-ECS-528)* can be used to document grazing schedules. Alternative methods of displaying the grazing schedule include, but are not limited to, dates on the conservation plan map or in a narrative grazing plan.

A follow-up of the grazing plan with the land manager should be conducted following the first year of implementation at a minimum. Any necessary adjustments to the grazing treatments or schedule should be discussed with the land manager so that progress toward the grazing land objectives can be achieved.

7. Contingency Plan:
Advance planning for unpredictable events, such as flood, fire, drought, hail, and insects, can minimize the potential damage to grazing lands. A contingency plan should consider and provide economically feasible alternatives when unforeseen circumstances reduce the amount of available forage. The contingency plan will guide the land manager in making adjustments to ensure that the resource objectives can be achieved. A general contingency plan is included in *Prescribed Grazing Jobsheet, (NE-ECS-528)* and can be customized as needed for the individual operation.

8. Monitoring Plan:
A monitoring plan assists the land manager and conservation planner in determining whether resource objectives are being met. Observations of climatic conditions, short-term monitoring information, and long-term monitoring information should be included in the plan. The monitoring plan should provide enough information so that the land manager can make informed decisions concerning grazing schedules and stocking rates. The land manager should become familiar with the process and be able to complete monitoring independently.

At a minimum, short-term monitoring will consist of estimating utilization levels for rangeland (Form *Proper Grazing Use Worksheet (NE-ECS-414A)* or stubble heights for rangeland, pastureland, or cover crops (Form *Proper Grazing Use Worksheet (NE-ECS-414B)*. A least one key grazing area and key forage species will be designated for each pasture. The key grazing area and key forage species will be used to determine the degree of use in the pasture or paddock. The degree of use determination will be made at or near the end of the growing season.

At a minimum, long-term monitoring will consist of evaluating trend on rangeland and pasture condition on pastureland. These assessments will be conducted on a minimum of two locations across the land included in the conservation plan. When sites and plant communities are variable, monitoring should be completed in additional locations to ensure that all major ecological sites and states are evaluated.

In cases where invasive species control is the land manager's primary objective a minimum of one photopoint will be established in each pertinent pasture, paddock or field and the information recorded in *Photopoint Worksheet (NE-ECS-2).*

8a. Utilization:
Observation of utilization (degree of use) on rangeland is a short-term monitoring method that can be used by the land manager to adjust stocking rates and to schedule grazing periods. Utilization includes herbage removed by domestic livestock as well as wildlife, insects, etc. Utilization levels can be used to estimate the actual harvest efficiency. See Table 1: Suggested Harvest Efficiencies and Utilization Guidelines for Typical Management Strategies.

Proper Grazing Use Worksheet (NE-ECS-414) will be used to document degree of use on rangeland. Utilization monitoring should be conducted in each field, pasture, or paddock included in the conservation plan. When the number of paddocks exceeds ten, monitoring may be limited to 10 paddocks selected to ensure dissimilar sites, plant communities and time of grazing are sampled.

8b. Minimum Residual Heights:
Managing the beginning and ending residual growth levels for a key plant species will facilitate improvement in pastureland. See Table 3: Recommendations for Beginning and Ending Grazing for Nebraska Pastures. On pastureland, planned residual heights for key forage species will be documented on *Degree of Use Worksheet for Pastures (NE-ECS-14)*.

8c. Ground Cover:
For grazed cover crops on cropland, the planned residual ground cover or residual heights of the cover crop will be documented on *Prescribed Grazing Jobsheet (NE-ECS-528)*. Adequate cover must remain to prevent excessive soil loss as determined by WEPS and/or RUSLE2.

8d. Analysis of Utilization and Documentation:
If actual utilization levels exceed those planned, or residual forage heights or ground cover are lower than planned, the reason should be documented in the conservation technical assistance notes. Grazing records will be evaluated to determine whether adjustments should be made to the length of time in individual pastures, adjustments should be made to stocking rates, and/or adjustments should be made to the planned sequence for the grazing system. The prescribed grazing schedule and/or the livestock/forage balance will be re-planned for the following year, incorporating necessary changes that will enable the resources objectives to be met.

The use of grazing exclosures or utilization cages can be a useful aide in estimating utilization and production. The land manager can compare the proportion of herbage consumed by animals to that produced in the current year. Utilization cages should not disrupt normal vegetative growth and should be moved annually at the beginning of a grazing period. See *Utilization Studies and Residual Measurements, Interagency Technical Reference, 1996* for information about utilization cages and design.

8e. Photo Monitoring:
A photographic record is a qualitative method for documenting short-term and long-term effects of the prescribed grazing plan. A photo point will be established at the key grazing area or monitoring location before implementation of the conservation practices when photo monitoring is selected as a monitoring method. Photos should be re-taken on a schedule planned with the land manager and recorded in *Photopoint Worksheet (NE-ECS-2).* For further guidance, see *Tech Note 16, Establishing Photo Points for Grazing Land Monitoring.*

8f. Apparent Trend:
The impact of the conservation treatment should be evaluated at least once every five years utilizing the *Apparent Range Trend Worksheet, (NE-ECS-12)* on rangeland or the *Pasture Condition Score sheet, (NE-ECS-13*) on pastureland. The results will be compared with the evaluation made during the conservation planning process to determine if adjustments need to be made to the conservation plan.

8g. Additional monitoring:
In depth monitoring may be needed to determine the success of the conservation plan in meeting the land manager's goals and objectives. The most meaningful monitoring will be a method that the producer can complete independently. A variety of forms are available to document the appropriate monitoring. These forms include:

- *Step Point Cover Worksheet (NE-ECS-3)*
- *Utilization Documentation – Landscape Appearance (NE-ECS-5),*
- *Belt Transect Worksheet (NE-ECS-15)*
- *Sandhills Defoliation Response Index Worksheet (NE-ECS-65).*

Prescribed grazing Documentation on cropland:
Prescribed grazing on cropland (cover crops, newly seeded grass or crop residues) will be documented in the following manner:

1. Cover Crops – When prescribed grazing is being planned on cropland fields planted to cover crops *only*, form NE-ECS-528 Cover Crops will be used to document the grazing plan.
2. Newly seeded grass – When prescribed grazing is being planned on newly seeded grass only, form NE-ECS-528 Grass Seeding will be used to document the grazing plan.
3. Crop residue – When prescribed grazing is being planned on corn stalks only, use UNL Cornstalk Grazing Calculator to document the grazing plan.

Table 1: SUGGESTED HARVEST EFFICIENCIES and UTILIZATION GUIDELINES FOR TYPICAL MANAGEMENT STRATEGIES*

Resource Objective	Planned Grazing Management Strategy	Suggested Harvest Efficiency	Planned Utilization Level
Maintain or improve plant health and vigor on rangeland	Continuous, season long grazing	25%	50%
	Rotational Grazing System	30%	60%
	Dormant Season Grazing	30%	60%
Maintain or improve forage quantity and quality	Continuous, season long grazing	25%	50%
	Rotational Grazing System	30%	60%
	Intensive Rotational Grazing System – Pastureland	35%	70%
Riparian area protection	Continuous, season long grazing	20%	40%
	Rotational Grazing System	25%	50%
Provide or improve nesting cover for grassland nesting birds	Continuous, season long grazing	20%	40%
	Rotational Grazing System	25%	50%

**Utilization levels in excess of 60% may be used to manipulate undesired plants. Higher levels of use should be monitored closely and its purpose defined in the grazing plan.*

Table 2. RECOVERY GUIDELINES, NEBRASKA GRAZINGLANDS*

Location	*Rangeland*		*Pastureland*	
	Fast-growth May-June	Slow-Growth July- August	Fast- growth May-June	Slow- growth July-August
Western Nebraska	45 days	65 days	25 days	35 days
Eastern Nebraska	30 days	45 days	15 days	25 days

** Grazing and recovery periods should be adjusted to reflect actual growing conditions.*

[1/] *Table 3. Recommendations for Beginning and Ending Grazing (Heights and Dates) for Nebraska Pastures*				
Species	**Begin Grazing**		**End Grazing**	
	[2/]Minimum Height of Vegetative Growth (inches)	**Approximate Date***	**[2/]Minimum Residual Height (inches)**	**[2/]Minimum Residual Height Before Killing Frost (inches)**
Alfalfa, Alsike & red clover	6	May 15	3	6
Big & Sand bluestem	10	June 1	6	10
Birdsfoot trefoil	6	June 1	3	6
Cicer milkvetch	8	May 20	5	8
Creeping foxtail	6	May 1	3	6
Crested wheatgrass	4	April 20	3	6
Eastern gamagrass	18-20	June 1	8	10
Indiangrass	10	June 1	4	10
Intermediate wheatgrass	6	May 1	5	8
Meadow bromegrass	6	May 1	5	6
Orchardgrass	6	May 1	5	8
Pubescent wheatgrass	6	May 1	5	6
Reed canarygrass	8	May 1	4	8
Russian wildrye	6	May 1	3	4
Smooth brome	6	May 1	4	7
Switchgrass	10	June 1	6	10
Tall fescue	6	May 1	3	6
Tall wheatgrass	7	May 1	4	8
Timothy	6	June 1	4	5
Western wheatgrass	6	May 1	3	6

*[1/] Height is the average height when **leaves** are lifted in a vertical position.*
[2/] In Vegetative Zone I, the Panhandle of Nebraska, all heights listed in Table 4 should be adjusted downward by 25% for all species.