

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE MONITORING PLAN**

PRESCRIBED GRAZING

(Ac.)

CODE 528

A monitoring plan is a requirement of the Prescribed Grazing Standard (528). NRCS is required by the standard to provide the following with all grazing plans to the producer in regards to monitoring:

A monitoring plan will be developed with appropriate records to determine whether the grazing strategy is resulting in a positive or upward trend and is meeting objectives. Identify the key areas and key plants that the manager should evaluate in making grazing management decisions.

Monitoring data and livestock/grazing records will be used on a regular basis with the prescribed grazing plan to insure that objectives are being met, or to make necessary changes in the grazing plan to meet objectives.

The producer is responsible for monitoring, but as a service to the client when 528 is included in the conservation plan NRCS will, at a minimum, annually evaluate the grazing plan with the landowner/operator to accomplish the following:

- Review livestock and grazing records – determine how the actual strategy was implemented vs. the planned management, discuss what worked, what didn't work, and evaluate possible alternatives in grazing strategies.
- Work cooperatively with the landowner/operator to confirm and adjust for next year's grazing strategy.
- Certify practice completion to standard/specification requirements.

Livestock and Grazing Records

An annual record of livestock and grazing management needs to be collected to use in conjunction with vegetation monitoring to make adjustments as needed. This actual-use record should include the following:

- Field name and/or number (corresponding to the conservation plan map)
- Number of livestock, kind and class
- Move in date(s)
- Move out date(s)
- Utilization rates (rangeland) or stubble heights (pasture), based on key species
- Salting/feed supplement information, dates and locations (as appropriate, especially if used for distribution issues)
- Waters (as appropriate, especially if used for rotational purposes)
- Riding/herding dates and effect (as appropriate)
- Other uses and effects (as appropriate, wildlife use, recreational use, observation on weather effects, etc.

Other important information which is helpful both for NRCS and the landowner to distinguish management effects from precipitation effects is recording monthly precipitation records and taking an annual photograph.

Much of this information must be supplied by the landowner; some items (such as utilization) may require technical assistance and a visit to the field in order to complete certification. The Grazing Land Conservation Initiative (GLCI) Grazing Lands Record Book is a convenient tool to use to record this information. The Colorado Resource Monitoring Initiative (CRMI) Colorado Rangeland Monitoring Guide provides guidance on different monitoring techniques, or you may refer to any of the guidance documents cited below in references.

Which techniques are selected should be determined by the goals and objectives, as well as the grazing land assessment to determine what and where to monitor.

For Standard Monitoring Scenarios:

At least one long-term or short-term monitoring indicator will be selected. Selection will be based on the plan objectives and any assessments conducted during the planning inventory (i.e. rangeland health, proper functioning condition, pasture condition score sheet). Monitoring can be accomplished with NRCS technical assistance if necessary.

For Intensive Monitoring Scenarios:

At least one short-term monitoring indicator and one long-term indicator or two or more long-term indicators will be selected. Selection will be based on the plan objectives and any assessments conducted during the planning inventory (i.e. rangeland health, proper functioning condition, pasture condition score sheet). Monitoring should be accomplished by the landowner with minimal government technical assistance.

Short-Term Monitoring Indicators

- Productivity (pre-grazing forage)
- Residual (post-grazing forage)
- Nutrition (fecal analysis with NUTBAL)
- Grazing Response Index
- Streambank alteration (hoof shearing)
- Other indicators approved by NRCS

Long-Term Monitoring Indicators

- Permanent photo plots
- Composition by annual production
- Composition (greenline)
- Structure and/or age class
- Cover – foliar and ground
- Frequency
- Gap
- Density
- Soil stability
- Streamside stability (for riparian)
- Stream metrics (i.e. width, depth, substrate)
- Other indicators approved by NRCS

Key Areas and Monitoring Units:

A monitoring unit is the largest contiguous area with the same plant community potential (i.e., ecological site or range site) that is expected to respond similarly to management changes (Herrick et al. 2009).

At a minimum a key area shall be set up on each ecological site or each representative area and identified on the conservation plan map. Although it is recommended that one key area representing one monitoring unit should be set up in each grazed field.

Additional key areas will be identified if appropriate based on the following:

- Riparian areas
- Diverse pasture – all ecological sites in the grazed area are highly susceptible to change in management and need to be monitored to make management decisions.
- Size of pasture dictates multiple management responses.
- Sensitive species habitat
- Invasive species
- Other reasons as identified in the monitoring plan.

Frequency of Monitoring:

Short-term monitoring may be repeated at any time interval and is designed to check whether or not the management strategy is meeting short-term objectives. Long-term monitoring method is designed to document changes in the condition of the land and/or plant community to determine trend.

Each key area will be visited at least annually to monitor and/or keep records of the grazing management. Some methods may require multiple visits within a year depending on grazing management or the objectives. When a new monitoring plan is being implemented determining trend is important. After 3 years of annual monitoring, the frequency of monitoring can be lengthened from 1-5 years to get the monitoring into a rotation that is manageable by the landowner.

Data Analysis and Interpretation:

Specific guidance on monitoring data interpretation and analysis should be referenced for the monitoring method or technique chosen for the selected indicators.

For standard monitoring scenarios the intended analysis should be outlined in the 528 Grazing Management Plan. Completed analysis and interpretation will be included in the customer file(s) and used for documenting grazing management changes or plan revisions.

For intensive monitoring, planned analysis and interpretation need to be provided by the client to NRCS for approval. Completed analysis/interpretations need to be provided to NRCS and included in the plan file and used for documenting grazing management changes or plan revisions.

Monitoring Methods and Techniques:

A clear monitoring plan needs to be developed. This will include what indicators will be monitored, monitoring locations, methodology, data sheets, as well as analysis that will be completed.

If the landowner is developing their own monitoring plan, this should be reviewed and approved by NRCS prior to acceptance.

The following list is a limited group of resources that provide guidance on building a monitoring program, considerations of what goes into a monitoring program, and provide techniques as well as data forms. There are other acceptable resources available. A sound resource should clearly identify methods, frequency, and techniques used when developing the monitoring plan for consistency over time on the individual operation.

Colorado Rangeland Monitoring Guide, Coordinated Resource Monitoring Initiative
<http://www.coloradocattle.org/crmi.aspx>

National Range and Pasture Handbook, NRCS GLTI 2003 Chapter 4: Inventorying and Monitoring Grazing Land Resources.
<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=STELPRDB1043084>

Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems Volume I and II, USDA - ARS Jornada Experimental Range, Las Cruces, New Mexico, Reprinted 2009
<http://jornada.nmsu.edu/monit-assess/manuals/monitoring>

Measuring and Monitoring Plant Populations, Caryl L Elzinga et al. BLM Technical Reference 1730-1 BLM/RS/ST-98/005+1730 <http://www.blm.gov/nstc/library/pdf/MeasAndMon.pdf>

Sampling Vegetation Attributes, 1996. Interagency Technical Reference, Technical Reference TR 173-4 http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044175.pdf

Utilization Studies and Residual Measurement, 1996. Interagency Technical Reference, Technical Reference 1734-3 <http://www.blm.gov/nstc/library/pdf/utlilstudies.pdf>

Measuring Indicator Monitoring (MIM) of Stream Channel and Streamside Vegetation, 2011. Timothy A. Burton et al. BLM Technical Reference 1737-23 <http://www.blm.gov/nstc/library/pdf/MIM.pdf>