

**NATURAL RESOURCES CONSERVATION SERVICE
INTERIM CONSERVATION PRACTICE STANDARD
MONITORING AND EVALUATION**

(No.)

CODE 799

DEFINITION

Monitoring and evaluation are the actions and activities, using acceptable tools and protocols, to measure the effectiveness of conservation systems on reducing contaminants in ground and/or surface water quality.

PURPOSE

Sample and measure water quality parameters to evaluate conservation system performance.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all land uses where conservation systems have been applied to address water quality and there is a need to determine the effects and performance on the targeted resource concerns. This practice is not intended to be used beyond the farm boundary.

CRITERIA

General Criteria Applicable to All Purposes

Water quality parameters to be monitored shall be appropriate indicators of the resource(s) concerns to be evaluated.

Data collection methods shall be commensurate with established scientific protocols to address benchmark and implemented practice or system. Units of measure and monitoring protocols shall be consistent between benchmark and implemented conservation system monitoring.

Monitoring data shall be collected for an appropriate period (seasons / years) based on the water quality parameters to be evaluated.

Timing and frequency of data collection shall be

consistent to ensure accurate results, and shall be determined based on established protocols and the requirements of the models in which the data will be used, if appropriate.

Collection, analysis, and the interpretation of the data shall comply with standard scientific protocols.

Monitoring shall take place within the farm boundary where the conservation system is applied or the edge of the field.

Edge-of-field monitoring conducted shall be similar in protocol across the study area in order to compare results.

CONSIDERATIONS

It is recommended to partner with other agencies, nongovernmental organizations, universities, etc., who are experienced with nutrient, pesticide, and sediment water quality monitoring.

Monitoring and evaluation are most effective when results can be compared to a baseline (existing or pre-treatment conditions).

It is advisable to involve the producer as much as possible in the data collection phase. This will facilitate evaluation of the data in the conservation planning process.

PLANS AND SPECIFICATIONS

Plans and specifications shall be prepared in accordance with the criteria of this standard.

As a minimum, the plans and specifications shall provide the following:

1. Description and documentation of the baseline conditions (including current management system).

2. Description of soils, and hydrologic conditions within the monitored land unit(s).
3. Description of the parameters to be monitored and evaluated and how they relate to specific resource concern(s).
4. The method to be used to collect the monitoring and evaluation data (or referenced protocol).
5. The time and sampling frequency of the data collection (or referenced protocol).
6. The electronic format to store and analyze the data collected.
7. Responsibilities and a schedule of operations for the producer and vendor, to conduct monitoring and evaluation activities.
8. Written land owner permission for NRCS to use and/or share the data and analysis from the completed monitoring and evaluation.
9. For data collection to support water quality monitoring, the plan must describe the data elements (i.e. fertilizer rates, timing, source and method, tillage practices, crop rotations, crop yields, etc.), appropriate units of measure, and/or observations that need to be made to determine the practice effectiveness and inputs for the water quality analysis. In addition, the plan must allow for input from the land user, such as their observations, comments, and recommendations for improvements.

OPERATION AND MAINTENANCE

Prepare annual and final reports of the monitoring and evaluation.

Final reports should be reviewed by appropriate subject matter expert(s) at the NRCS state office.

NRCS and the land owner will annually review the monitoring and evaluation process and products to ensure the intended purpose(s) are being achieved.

Annual and final reports shall include:

1. Hard copy (and electronic copy for NRCS) of data collected, including statistical analyses, trend graphs (where appropriate), and descriptions of data gaps and data quality.
2. Annual conference between NRCS, the land owner, and other entities as appropriate to evaluate on-going progress to determine any immediate adaptations which should be applied.
3. The final report shall summarize practice effectiveness on the resource(s) of concern and potential modifications in practice implementation.

REFERENCES

USDA – NRCS. National Planning Procedures Handbook (NPPH)
<http://directives.sc.egov.usda.gov/RollupViewer.aspx?hid=17088>

USDA – NRCS. 1996. National Handbook of Water Quality Monitoring, Part 600, National Water Quality Handbook.

USDA – NRCS. 2002. Analysis of water quality monitoring data (draft). Part 615, National Water Quality Handbook.

National Water Quality Handbook 2003 Parts 614 and 615

Standard Methods for the Examination of Water and Wastewater (APHA 1989)

Methods for Chemical Analysis of Water and Wastes (USEPA 1983).

US EPA 1990, Simpson 1991).