NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

WATERING FACILITY

(No.)

CODE 614

DEFINITION

A permanent or portable device to provide an adequate amount and quality of drinking water for livestock and or wildlife.

PURPOSE

To provide access to drinking water for livestock and/or wildlife in order to:

Meet daily water requirements

Improve animal distribution

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and/or wildlife.

CRITERIA

Federal, State and Local Laws and Permits

Design, construction, operation and maintenance activities shall comply with all federal, state, and local laws, rules, and regulations governing activities in or along streams, floodplains or wetlands as well as pollution abatement, health, safety or utility activities.

Permits may be required from the following agencies as well as others:

1. ***US Army Corps of Engineers (USACE)***
2. ***West Virginia Department of Environmental Protection (WV DEP) – Division of Water and Waste Management (DWWM); Dam Safety (Non-Coal) or Stormwater Program***
3. ***WV Department of Natural Resources (WVDNR) Public Land Corporation (PLC) Stream Access Application***
4. ***US Fish and Wildlife Service (USFWS)***
5. ***WV Division of Forestry***
6. ***Local, state and county ordinances***

The owner or operator is responsible for securing all permits or approvals and for performing in accordance with such laws and regulations. NRCS employees do not procure permits, rights, or approvals, or enforce laws and regulations. NRCS may provide the landowner or operator with technical information needed to obtain the required rights (or approvals) to construct, operate, and maintain the practice.

All required permits shall be acquired before construction implementation.

General Criteria Applicable to All Purposes

Design watering facilities with adequate capacity and supply, ***which may include supplemental water supply,*** to meet the daily water requirements of the livestock and/or wildlife planned to use the facility. Include the storage volume necessary to provide water between periods of replenishment. Refer to the National Range and Pasture Handbook, ***WVENG Watering Facility 614 Design Guide and Worksheet or publications noted in the reference section,*** for guidance on livestock water quantity and quality requirements. For

wildlife, base water quantity and quality requirements on targeted species needs.

Locate facilities to promote even grazing distribution and reduce grazing pressure on sensitive areas.

Design the watering facility to provide adequate access to the animals planned to use the facility. Incorporate escape features into the watering facility design unless local knowledge and experience indicate that wildlife will not be at risk of drowning.

Include design elements to meet the specific needs of the animals that are planned to use the watering facility, both livestock and wildlife.

Protect areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns, Use criteria in NRCS Conservation Practice Standard 561, Heavy Use Area Protection to design the protection.

Install permanent ***or portable*** watering facilities on a firm, level, foundation that will not settle differentially. Examples of suitable foundation materials are bedrock, compacted gravel and stable, well compacted soils.

Design and install watering facilities to prevent overturning by wind and animals.

Design watering facilities and all valves and controls to withstand or be protected from damage by livestock, wildlife, freezing and ice damage,

Construct watering facilities from durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. Follow appropriate NRCS design procedures, for the material being used or industry standards where NRCS standards do not exist.

Use the criteria in NRCS Conservation Practice Standard 516, Pipeline, to design piping associated with the watering facility. Include backflow prevention devices on facilities connected to wells, domestic or municipal water systems.

Install automatic water level control devices, such as full flow valves and/or overflow pipes, on all troughs or tanks.

On-demand or automatic watering devices may be used where appropriate, when electrical requirements, waterline pressure (minimum and maximum) and flow rate meets the manufacturer's specifications.

CONSIDERATIONS

Design fences associated with the watering facilities to allow safe access and exit for area wildlife species. To protect bats and other species that access water by skimming across the surface, fencing material should not extend across the water surface. If fencing across the water is necessary it should be made highly visible by avoiding the use of single wire fences and using fencing materials such as woven wire or by adding streamers or coverings on the fence.

For watering facilities that will be accessible to wildlife, give consideration to the effects the location of the facility will have on target and non-target species. Also consider the effect of introducing a new water source within the ecosystem in the vicinity of the facility. This should include things such as the concentration of grazing, predation, entrapment, drowning, disease transmission, hunting and expansion of the wildlife populations beyond the carrying capacity of available habitat.

Consider the following guidelines for materials commonly used for watering facilities.

Concrete	3000 psi compressive strength
Galvanized Steel	20 gauge thickness
Plastic	Ultraviolet resistance
Fiberglass	Ultraviolet resistance

Where water is supplied continuously or under pressure to the watering facility consider the use of automatic water level controls to control the flow of water to the facility and to prevent unnecessary overflows.

Watering facilities often collect debris and algae and should be cleaned on a regular basis. Consider increasing the pipe sizes for inlets and outlets to reduce the chances of clogging. Maintenance of a watering facility can be made easier by providing a method to completely drain the watering facility.

Steep slopes leading to watering facilities can cause erosion problems from overuse by animals as well as problems with piping and

valves from excess pressure. Choose the location of watering facilities to minimize these problems from steep topography.

PLANS AND SPECIFICATIONS

Plans and specifications for watering facilities shall provide the information necessary to install the facility. As a minimum this shall include the following:

- A map or aerial photograph **with topographic** information showing the location of the facility, ***relevant*** **associated** ***practices and elevations***.
- ***WV ENG Standard Drawings for Watering Facilities (614).***
- Detail drawings showing the facility, necessary appurtenances (such as foundations, pipes and valves) and stabilization of any areas disturbed by the installation of the facility
- Construction specifications describing the installation of the facility.
- ***Construction Specification Watering Facility (614).***
- ***Include relevant associated conservation practices such as Heavy Use Area Protection (561), Animal Trails and Walkways (575), Pipeline (516), Pumping Plant (533), Fence (382, etc. on the plan.***
- ***Cost estimate and materials list.***

OPERATION AND MAINTENANCE

Provide an O&M plan specific to the type of watering facility. to the landowner. As a minimum include the following items in the plan:

- a monitoring schedule to ensure maintenance of adequate inflow and outflow;
- checking for leaks and repair as necessary;
- if present, the checking of the automatic water level device to insure proper operation;
- checking to ensure that adjacent areas are protected against erosion;
- if present, checking to ensure the outlet pipe is freely operating and not causing erosion problems;
- a schedule for periodic cleaning of the facility.

REFERENCES

Brigham, William and Stevenson, Craig, 1997, Wildlife Water Catchment Construction in Nevada, Technical Note 397.

Tsukamoto, George and Stiver, San Juan, 1990, Wildlife water Development, Proceedings of the Wildlife Water Development Symposium, Las Vegas, NV, USDI Bureau of Land Management.

Yoakum, J. and W.P. Dasmann. 1971. Habitat manipulation practices. Ch. 14 in Wildlife Management Techniques, Third Edition. Ed. Robert H. Giles, Jr. Pub. The Wildlife Society. 633 pp.

National Engineering Handbook, Part 650 Engineering Field Handbook, Chapters 5, 11 & 12, USDA Natural Resources Conservation Service.

National Range and Pasture Handbook, Chapter 6, Page 6-12, Table 6-7 & 6-8, USDA-Natural Resources Conservation Service.

National Research Council, 1996 Nutrient Requirements of Domestic Animals, National Academy Press.

NRCS National and State Utility Safety Policy (NEM Part 503-Safety, Subpart A-Engineering Activities Affecting Utilities (503.00 through 503.06)

WV FOTG Section IV-Practice Standards and Specifications
http://www.nrcs.usda.gov/technical/efog

WV5-Engineering Field Handbook, Appendix A-Quick Reference Design and Construction Support Data for Conservation Practices.

http://policy.nrcs.usda.gov/ Handbooks: Title 210-Engineering; NRCS National Engineering Handbook; Part 650 Engineering Field Handbook

Title 190 – Ecological Sciences; Part 601-National Cultural Resources Procedures Handbook

Selection of Alternative Livestock Watering Systems (UT Extension PB 1641)

Solar-Powered Livestock Watering Systems (UT Extension PB 1640)

Watering Systems for Serious Graziers, NRCS
http://www.mo.nrcs.usda.gov/news/Missouri_Publications.html

LPES Small Farm Fact Sheets The ABC's of Livestock Watering Systems by Ben Bartlett, Michigan State University

North Carolina State Cooperative Extension Publication No. EBAE 161-92
http://www.bae.ncsu.edu/programs/extension/publicat/wqwm/ebae161 92.html

NRCS-Tennessee Watering Facility Fact Sheet (March 2003)