

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

WATERING FACILITY

(No. 614)

CODE 614

DEFINITION

This practice pertains to any permanent or portable device to provide an adequate amount and quality of drinking water for livestock and or wildlife.

Design the watering facility to provide adequate access to the animals planned to use the facility.

Incorporate wildlife escape features into the watering facility design to prevent drowning. Several basic principles should guide the design and installation of all wildlife escape ramps. An effective escape ramp shall:

PURPOSE

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

- Meet daily water requirements
- Improve animal distribution

- extend down to the base and shall sit flush with the inside wall of the trough so animals swimming along the perimeter will find the ramp. This assists animals in avoiding becoming trapped behind or beneath it or missing it entirely
- reach to the bottom of the trough, so it will be effective even when water levels drop;
- be firmly secured to the trough rim so it will not be knocked loose by livestock or other animals
- be built of grippable, long-lasting materials, such as painted or coated metal grating, slip-resistant fiberglass, concrete, rock and mortar or high strength plastic composites
- have a slope no steeper than 45 degrees so animals can climb out without slipping back into the water

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

General Criteria Applicable To All Purposes

Design watering facilities with adequate capacity to meet the daily water requirements of the livestock and/or wildlife planned to use the facility. Include the storage volume required to provide water between periods of replenishment. Refer to the National Range and Pasture Handbook for guidance on livestock water quantity and quality requirements. For wildlife, water quantity and quality requirements should be based on targeted species needs.

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

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#), or download it from the [electronic Field Office Technical Guide](#).

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- e located in such a manner as to prevent interference with livestock

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 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. For water facilities to be located on sites other than bedrock, shall be cleared of all organic material and stripped down to bare mineral prior to placement of water facility. Placement of geotextile fabric between bare mineral soil and compacted gravel base is strongly recommended to reduce the potential for settlement.

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

All valves and controls used in the water facility shall be designed to withstand or be protected against damage from livestock, wildlife, freezing and ice damage.

Construct watering facilities from durable materials that have a life expectancy that meets or exceeds the planned life of the practice. Follow appropriate NRCS design criteria and specification 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 for facilities connected to wells and domestic or municipal water systems.

CONSIDERATIONS

Fences associated with the watering facilities shall be designed to allow for safe passage of all area wildlife. 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 is necessary avoid using single wire fences. Instead, consider using fencing materials such as woven wire or by adding streamers or coverings on the fence.

For watering facilities accessible to wildlife, consideration should be given to what impacts the facility will have on target and non-target species. The introduction of a new watering system can potentially change the dynamics of the existing ecosystem. Consideration should be given to potential impacts such as concentration of grazing, predation, entrapment, drowning, disease transmission, hunting and expansion of the wildlife populations beyond the carrying capacity of available habitat.

Refer to “Water For Wildlife: A Handbook for Ranchers and Range Managers” by Taylor and Tuttle (2007) for additional guidance on designing watering facilities that are safe for wildlife.

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

Concrete	minimum 2500 psi compressive strength
Galvanized Steel	20 gauge thickness
Plastic	Ultraviolet resistance
Fiberglass	Ultraviolet resistance

Where concrete is used minimum temperature and shrinkage steel should be provide to increase the long term durability of the structure. A minimum clear cover of 2” shall be provided for all reinforcing bars.

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. Consideration should be given to increasing pipe sizes for inlets and outlets to reduce the chances of clogging. In addition,

outlets should be installed at base of the watering facility to allow for complete draining of the watering facility during routine maintenance.

Steep slopes in the vicinity of watering facilities can cause erosion problems from overuse by animals as well as problems with potential leaking of piping and valves. Locate watering facilities away from steep topography to minimize these problems.

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 showing the location of the facility
- Detailed drawings showing location of the facility, all 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

OPERATION AND MAINTENANCE

A site specific O&M plan for the watering facility shall be provided to the landowner. As a minimum the plan should include the following information:

- 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.

Taylor, D.A.R. and M.D. Tuttle, 2007 Water for Wildlife: A Handbook for Ranchers and Range Managers, Bat Conservation International, 17pp.

<http://www.batcon.org/news2/pdf/bciwaterforwildlife.pdf>