

**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.

Design the watering facility to provide adequate safe access and escape opportunities by the animals planned to use the facility. Incorporate escape features such as ramps out of the watering facility design.

**PURPOSE**

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

- Meet daily water requirements
- Improve animal distribution

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.

**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.

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.

**CRITERIA**

***General Criteria Applicable To All Purposes***

Design watering facilities with adequate capacity and 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 for guidance on livestock water quantity and quality requirements. For wildlife, base water quantity and quality requirements on targeted species needs.

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.

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

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.

**Criteria for Wildlife Facilities**

Site Location

1. The site chosen for wildlife watering development or gallinaceous guzzler will serve as a covey center. Escape cover must be provided adjacent to the water. A clump (5 or more plants) of gooseberry, wild rose, mesquite, quailbush, scrub oak or other shrubs furnishes favorable escape, forage and loafing cover near the installation and increases its effectiveness as a covey center. Brush piles can be used for temporary cover until vegetation can be established at the site. If quail roosting cover is limited, a site within 100 to 200 yards of a good roost tree is desirable. Chukars roost in the open on the ground.
2. An abundant food supply must be present and the necessity for water in the area should be positively established. The area will be thoroughly checked for permanent water, however, one should remember a small amount of water is sufficient if it is permanent.
3. If possible, guzzlers will be located where excavation work and maintenance can be easily accomplished. A gentle slope for soil surface type water collecting aprons is desirable. Do not locate the guzzler where silt or debris laden floodwater will flow into the tank, or in heavy cover where leaves from trees too close to the installation will fill the collecting basin.
4. If water is to be hauled to a storage tank, it must be located near an access road.

Water Storage Tank Capacity

The recommended size of a water storage tank for a guzzler can be estimated by the minimum average rainfall, as follows:

Minimum <u>Average Rainfall</u>	Tank Storage <u>Capacity Req.</u>
10 inches or over	500 gallons
5-10 inches	750 gallons

Water Collecting Apron

A water collecting apron can be used to fill and maintain water in a guzzler tank. The size of the water collecting apron is determined by the least annual rainfall on record for the site, and the tank storage capacity. Use the following formula in making this determination for circular, rectangular, or metal roof-type aprons.

A. Size (radius) of circular collecting apron:

$$r = \frac{(8 \text{ feet}/100 \text{ gallons})g}{a}$$

WHERE: r = radius in feet, a = least annual rainfall in inches, and g = size of tank in gallons.

B. Area of rectangular collecting apron:

$$A = \frac{(316 \text{ SF}/100 \text{ gal})g}{a}$$

WHERE: A = area in square feet, a = least annual rainfall in inches, and g = size of tank in gallons.

C. Standard 16x16 foot metal collecting apron will supply:

A 500 gallon tank in 6 inches or more annual rainfall

A 750 gallon tank in 9 inches or more annual rainfall, or

A 1000 gallon tank in 12 inches or more annual rainfall

Temporary guzzlers

Temporary "guzzlers" can be created by modifying barrels and filling them as needed with water hauled to the site. A fifty-five gallon steel drum can be connected by pipe to a small basin at ground level. Water flow is regulated by atmospheric pressure or a float valve. Barrels should not contain any residue of contaminant harmful to wildlife.

## 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 over use 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.

## Considerations For Wildlife Facilities

### Typical wildlife water use:

Antelope	1-2 gal/animal/day
Mule deer	1-2 gal/animal/day
Elk	5-8 gal/animal/day
Chukar	750 gal/covey/year
Quail	750 gal/covey/year
Wild turkey	500 gal/flock/year
Pheasant	2-5 gal/day yearlong
Mourning dove	2-5 gal/day yearlong
Songbirds	1-2 gal/day yearlong

### Site Spacing

1. Wildlife watering facilities may be provided if:
  - (a) The range of the desired species of wildlife might be extended by providing additional water developments;
  - (b) present population densities of the desired species can be increased by further water development; or
  - (c) new habitat can be created.
2. The distance the desired species will travel for water is the main criteria that should be used for spacing of wildlife watering facilities.
  - a. California quail - The suggested spacing pattern for California quail is at least one installation per 160 acres. Water should be located one to two miles apart on California quail ranges. Water should be placed at one-half mile intervals for optimum utilization.
  - b. Mountain quail and chukar - Water should be available at about two mile intervals in mountain quail and chukar range, however, the type of terrain, feed and cover may alter the necessary distribution of water for good coverage of the area.
  - c. Gambel's and desert quail - Less conclusive evidence is available on the

summer radius of Gambel's or desert quail, but from data based on field observations, it is thought that watering sites should be available at intervals of three to five miles.

3. Consider these estimates of distance some wildlife will travel to water:

Species	Optimum (Miles)	Maximum (Miles)
Antelope	2	3
Mule deer	1	3
Elk	1	3
Chukar	1	2
Mountain quail	1	2
California quail	0.5	1
Gambel's quail	1	4
Desert quail	1	4
Pheasant	0.5	1
Turkey	1	2
Mourning dove	3	5
Songbirds	0.25	0.5

### Cultural Resources

NRCS policy is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice or associated practices in the plan could have an effect on cultural resources. The National Historic Preservation Act may require consultation with the California State Historic Preservation Officer. The primary website for cultural resources information is <http://www.nrcs.usda.gov/technical/cultural.html>. The California Environmental Handbook and the California Environmental Assessment Worksheet also provide guidance on how the NRCS must account for cultural resources. The e-Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

### Endangered Species

If during the Environmental Assessment NRCS determines that installation of this practice, along with any others proposed, will have an effect on any federal or state listed Rare, Threatened or Endangered species or their habitat, NRCS will advise the client of the

requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the client selects one of the alternative conservation treatments for installation; or with concurrence of the client, NRCS initiates consultations concerning the listed species with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game.

### 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
- 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

### 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

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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.

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