

NATURAL RESOURCES CONSERVATION SERVICE
WILDLIFE WATERING FACILITY (NUMBER)
CODE 648
MONTANA CONSERVATION PRACTICE SPECIFICATION

SCOPE: The work shall consist of excavation, shaping, and placing earth materials for dam, pit, pond, or dugout construction and construction and placement of aprons, tanks, and other required components of a wildlife watering facility. Construction details and vegetative plantings shall be as specified and shown on drawings.

MATERIALS AND TYPES OF FACILITIES

Rain Traps (guzzlers). A guzzler is a permanent watering facility consisting of a storage tank, filled by rainwater, from a collecting apron made of sheet metal, fiberglass, concrete, or other suitable materials. Birds and small mammals enter the storage tank through an opening and access the water via a short ramp. Larger guzzlers can be designed for big game animals and livestock. There are two primary types of guzzlers: (1) pre-constructed, commercial models made from fiberglass or (2) various custom designs.

Apron for water collection. Rainfall is collected on an apron, which directs water into the storage tank. The apron is commonly constructed as an elevated metal or fiberglass roof above the storage tank, although other materials such as asphalt-surfaced cement or butyl rubber are also used.

Tank. Tanks for guzzlers can be made of concrete, fiberglass, metal, or other suitable material. Tanks previously used for other purposes should be thoroughly cleaned and then inspected and certified for use by an NRCS technician. See Field Office Technical Guide (FOTG), Section IV–Practice Standards and Specifications, 614–Watering Facility.

Piped water. Water flow to the basin is usually controlled by a float valve.

Wildlife Access. Wildlife access can be directly to the storage tank or water can be piped to a separate watering basin. Wildlife watering devices should provide access for juvenile birds and other small wildlife.

NOTE: Always use escape ramps on tanks that have open water, so small animals will not get trapped.

Temporary guzzlers can be constructed by modifying barrels and filling them with water hauled to the site; i.e., a fifty-five gallon steel drum is connected by a pipe to a small basin at ground level. Water flow is regulated by atmospheric pressure or by a float valve.

Spring developments, which supply water to ground level wildlife watering tanks, provide a very dependable source of drinking water. See FOTG, Section IV–Practice Standards and Specifications, 574–Spring Development and 614–Watering Facility.

Buried pipelines transport water from a well source or storage tank to wildlife watering tanks. See FOTG, Section IV–Practice Standards and Specifications, 516–Pipeline and 614–Watering Facility.

Dugouts, pits and dams supplied by surface runoff, stream diversion or spring flow. See applicable NRCS engineering standards and specifications.

Specification MT648-2

SPECIFICATIONS

Wildlife watering facilities will be planned to supplement existing habitat conditions and to meet water requirements of the target wildlife species being managed. The need for wildlife water will be based on a habitat assessment using the NRCS Wildlife Habitat Appraisal Guides or other suitable method. Wildlife watering facilities may be considered if:

- the range of the target wildlife species might be extended by providing additional water;
- population densities of the target species can be increased, at least in part, due to water development;
- new habitat can be created for the target wildlife species;
- crop depredation can be reduced or eliminated by providing needed habitat elements elsewhere;
- adequate food and cover will be present for the target wildlife species following development of wildlife watering facilities.

NOTE: Wildlife water developments could potentially cause problems for wildlife and landowners. These include the spread of disease as animals are concentrated near water, crop depredation, habitat degradation, and increased predation. Consider obtaining input from NRCS, U.S. Fish and Wildlife Service, or Montana Fish, Wildlife and Parks biologists prior to implementation of this practice.

Wildlife watering facilities will be designed to provide permanent water during identified periods of shortage for the target species.

Dugouts, ponds, pits, spring developments, guzzlers, etc. will meet the appropriate standards and specifications from the Field Office Technical Guide.

Wildlife watering facilities will be located in or adjacent to suitable cover for the target wildlife species and placed to avoid damage from flooding and siltation, and, to minimize evaporative loss and excessive warming of water.

Wildlife watering facilities will be protected from damage by livestock and/or big game animals.

Facilities will be designed to provide water at the approximate ground level—no greater than 20 inches above the ground for big game. All facilities with deep water or steep sides will have small animal escape ramps installed.

Wildlife watering facilities will be designed to complete the habitat requirements of the target wildlife species. Design considerations will include spacing of water points and daily/seasonal water requirements of the animals.

Water collection aprons for guzzlers will be placed to minimize turbulence (and resulting damage) from high winds.

Specifications for construction and installation of wildlife watering facilities are detailed in the enclosed job sheet.

DESIGN CRITERIA

Wildlife Watering Facility Spacing Criteria. The target wildlife species' cruising radius is the general rule for spacing of wildlife watering facilities following identification of feeding, nesting, and roosting habitat. The following are estimates of the distance that selected wildlife species will travel to water; and, therefore, are the suggested spacing guidelines for each species:

SPECIES	DISTANCE SPECIES WILL TRAVEL TO WATER	
	OPTIMUM (MILES)	MAXIMUM (MILES)
Pronghorn	2	3
Mule deer	0.5	3
Elk	0.75	3
Chukar	0.5	1
Pheasant	0.5	1
Turkey	1	2
Sage grouse	1	?
Mourning dove	3	5
Songbirds	0.25	0.5

Determining Storage Needs. Determine water storage needs for the number and species of animals expected to use the facility (see TABLE A). In the plan, document the water storage requirement.

Storage Tank Sizes:

- For small animals—i.e., birds, small mammals:
Provide 100 gallons of storage for every 0.6 gallons/day required at peak demand.
- For large animals—i.e., pronghorn, deer, elk:
Provide a minimum of 100 gallons storage for every 0.75 gallons/day required at peak demand.

TABLE A. Wildlife Water Requirements

Elk	5-8 gal./animal/day
Mule deer	1-2 gal./animal/day
Pronghorn	1-2 gal./animal/day
Chukar	750 gal./covey/year
Pheasant	2-5 gal./flock/day AVAILABLE YEAR LONG
Mourning dove	2-5 gal./flock/day
Songbirds	1-2 gal./flock/day
Wild turkey	7 gal./100 head/day

NOTE: Snow generally meets wildlife water requirements during winter. Mourning doves and many other songbirds migrate south during winter. For these species, guzzlers will meet water requirements from March to the end of October.

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Water Collection Apron Size.

NOTE: The slope of the collecting apron should be a minimum of 2% and no steeper than 5%. Be sure to allow ample clearance between the bottom of the apron and the access ramp to permit unimpeded passage by the watering animals.

The size of the water-collecting apron is determined by the average annual rainfall and the tank storage capacity. Use the following formulas to calculate the required square feet of collecting surface:

Small Animals

$$\text{AREA (sq. ft.)}^* = \frac{\text{TANK (gal.)} \times 1.6}{\text{AVERAGE ANNUAL PRECIPITATION (in.)}}$$

Large Animals

$$\text{AREA (sq. ft.)}^* = \frac{\text{TANK (gal.)} \times 2.83}{\text{AVERAGE ANNUAL PRECIPITATION (in.)}}$$

* Apron area equations are based on use of steel roofing (90% capture efficiency). If other material is used, then adjust roof area according to ratio of capture efficiencies (0.98/selected material efficiency). See TABLE B.

EXAMPLE A: Procedure for determining guzzler water storage requirements and water collection apron size for small animal guzzlers:

Given: Water 1 flock of 20 pheasants

AVERAGE PRECIPITATION = 10 in./year

1. From TABLE A: 2–5 gal./ day required (USE 3 GALLONS).
2. Small animal formula: 3 gal./ day / 0.6 x 100 = 500 gal. storage.
3. Collection Surface: AREA (sq. ft.) = 500 gal. x 1.6 / 10 in. = 80 sq. ft.

EXAMPLE B: Procedure for determining guzzler water storage requirements and water collection apron size for large animal guzzlers:

Given: Water 7 mule deer

AVERAGE PRECIPITATION = 10 in./year

1. From TABLE A: 2 gal./ day each x 7 deer = 14 gal./ day required.
2. Large animal formula: 14 gal./ day / 0.75 x 100 = 1,867 gal. storage.
[USE A COMMERCIALY AVAILABLE 2,000 GAL. TANK]
3. Collection Surface: AREA (sq. ft.) = 2,000 gal. x 2.83 / 10 in. = 566 sq. ft.

TABLE B. Water Collector Efficiency.

APRON MATERIAL	EFFICIENCY PERCENT %	LIFE SPAN YEARS
Steel	98	25
Asphalt Roofing	86–92	8
Plastic Covered w/ 1-inch of Gravel	66–87	8–15
Butyl Rubber	98	15–20
Asphalt Paving	95	15

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Protection. All livestock should be excluded from wildlife watering facilities by fencing, unless the development is for livestock and modified separately for wildlife use. Aboveground facilities should be camouflaged or screened to reduce damage from vandalism if necessary.

All wildlife-watering facilities shall be designed to prevent damage from freeze/thaw events.

Environmental Concerns. Visual impacts of metal or concrete collecting aprons can be reduced by the use of paints or dyes to reduce contrast. Vegetative plantings can be used to screen the facility in addition to providing food and/or cover for desired wildlife species.

MAINTENANCE

Guzzlers will be checked during early spring at a minimum. Debris will be removed from the tank. Fiberglass mat and epoxy resin can be used to patch holes in fiberglass tanks. Holes or cracks in the collecting apron should be repaired. Vegetation around the opening of the entrance ramp should be cut back so that the ramp opening is visible. The tank should be at least 2/3 full at the start of the water season (March/April). Manual filling to achieve this level may be required.