INTERIM WILDLIFE WATERING FACILITY (GUZZLERS AND RAIN TRAPS)

SPECIFICATION

A permanent wildlife watering facility composed of a storage tank filled by rainwater. Storage tanks are usually fully or partially buried below ground. Water collection aprons are often used to supply adequate water quantities.

SCOPE

The work shall consist of excavating, shaping, and placing earth materials for the placement of aprons, tanks and other required components. Construction and vegetation plantings shall be specified and shown on the drawings.

MATERIALS

- Water Collection Apron. The apron can be constructed of asphalt, concrete, soil cement, butyl rubber, plastic, fiberglass, or metal.
- Storage Tank. Tanks can be made of concrete, prefabricated plastic or fiberglass, or metal. Tanks previously used for other purposes will be thoroughly cleaned before use.
- Access and Escape Ramps. Wildlife access can be directly to the storage tank or water can be piped to a separate watering basin. Facilities will include access and escape ramps for small wildlife. Ramps may be made from any durable material that provides stable nonslip footing. Acceptable access ramp materials may include compacted earth, gravel, expanded sheet metal, concrete, rock, wood, plastic or fiberglass. Access ramps should be 2:1 or flatter. Escape ramp materials may include expanded sheet metal, concrete, rock, wood, plastic or fiberglass. Escape ramps will have a 2.5:1 slope or flatter.
- Watering Basin or Trough. A basin or trough supplied with water from a storage tank should be equipped with a suitable vacuum or float valve. Troughs or basins can be made of concrete, prefabricated plastic or fiberglass, or metal.

WATER STORAGE DESIGN

Water storage capacity will be based on local precipitation records and the monthly water consumption of the wildlife anticipated to use the facility. The minimum storage capacity will be 200 gallons. Local precipitation records were used to develop the design factors provided in Figure 648-1. Needed storage is determined by multiplying the water storage factor times the monthly consumption (**S = sf * C**). Where **S** = the water storage capacity needed in gallons, **sf** = the water storage factor from Figure 648-1, and **C** = the monthly water consumption in gallons.

WATER COLLECTION APRON DESIGN

The size of the water collection apron is determined by dividing the water collection apron factor by the efficiency of the apron material and taking the result times the monthly consumption **{A = (af/e) * C}**. Where **A** = the water collection apron needed in square feet, **af** = the water collection apron factor from Figure 648-1, **E** = the efficiency of the apron material, and **C** = the monthly water consumption in gallons.

Efficiency and life spans of apron materials are (Kie, et al. 1996):

Steel - 98%, 25 years
Butyl rubber - 98%, 15-20 years
Asphalt paving - 95%, 15 years
Liquid asphalt soilwater - 90%, 5 years
Asphalt roofing - 86-92%, 8 years
Plastic covered with 1 inch of gravel - 66-87%, 8-15 years

Other materials are estimated as:

Aluminum - 98%, 20 years
Fiberglass - 98%, 10 years
Plastic - 98%, 10 years
Concrete - 95%, 25 years
Soil cement - 80%, 5-10 years

EXAMPLE DESIGN

For a tract in Box Butte County, total daily water consumption is calculated to be 22 gallons per day. Therefore, total monthly consumption is 660 gallons (22 gallons/day times 30 days/month). The landowner wishes to install one or more guzzlers using collection aprons made from steel roofing material. How much storage and how large a collection apron will be needed?

From Figure 1, the water storage factor for Box Butte County is 1.6. Multiplying 1.6 times 660, we find that 1,056 gallons of storage are needed.

From Figure 648-1, the water collection apron factor for Box Butte County is 1.2. Dividing 1.2 by the efficiency of 98% for steel, we get 1.22. Multiplying 1.22 times 660, we calculate that 805.2 square feet of water collection apron is needed.

The needed wildlife water could be provided with one storage tank ten feet in diameter and two feet deep (approximately 1,100 gallons) and a steel collection apron measuring 28.5 feet by 28.5 feet (approximately 812 square feet). It could also be satisfied with four storage tanks eight feet in diameter and one foot deep (approximately 365 gallons), each having a steel collection apron measuring 14.5 by 14.5 feet (approximately 210 square feet).

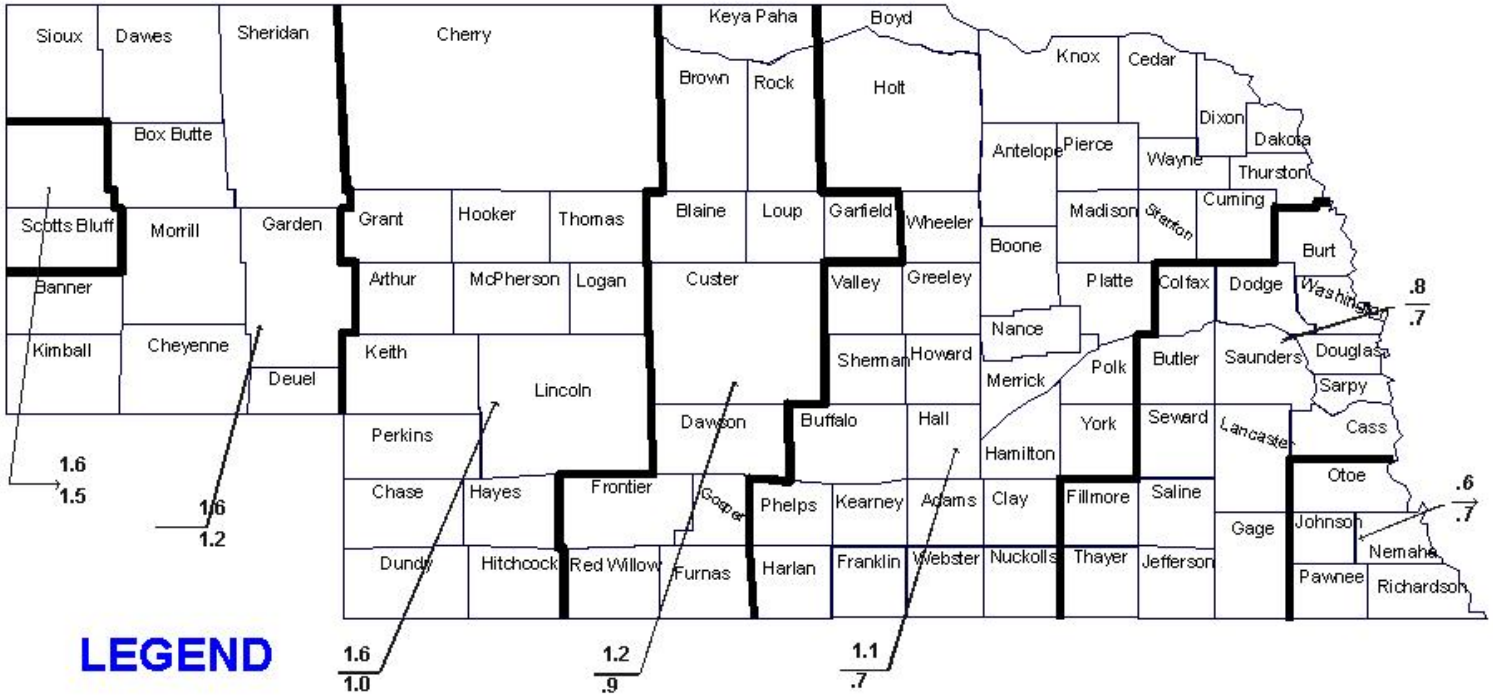
REFERENCES

Kie, J. G., V. C. Bleich, A. L. Medina, J. D. Yoakum, and J. W. Thomas. 1996. Managing Rangelands for Wildlife. Chapter 27 in Research and Management Techniques for Wildlife and Habitats, Ed. T. A. Bookhout. Pub. The Wildlife Society. 740 pp.

Figure 1

Wildlife Watering Facility - Guzzler Design Factors

Nebraska, November 1997



The top number is the water storage factor.
The bottom number is the water collection apron factor.