AGEN-PU-025 08/22

RAINWATER HARVESTING IN TEXAS

Billy Kniffen*

Rainwater harvesting was a common method of providing water for many of the first settlers in Texas. However, much has changed in the past 100 years. As urban areas grew, wells and lakes were dug and municipal water supplies were established. But with the growth of the population and the demand for fresh water, spring flow was reduced or dried up, and rivers became polluted and their flow diminished.

Population growth and urban sprawl has led to more buildings, pavements, and other impervious cover. Rangeland is dominated more by woody plants and shorter grasses because of livestock grazing and the absence of fire. These factors increase stormwater runoff, decrease water absorption into the soil, and affect water quality in Texas.

Captured rainwater can save large amounts of water both outside and inside the home. As Texas' population grows, conserving water becomes more vital. Capturing rainwater is one tool in this process because of:

- The need to have enough high-quality water available now and in the future.
- Environmental and economic costs of providing water through municipal systems or wells.
- Health concerns linked to the source and treatment of water.
- The relatively low cost of rainwater harvesting.
- Rainwater's high quality.

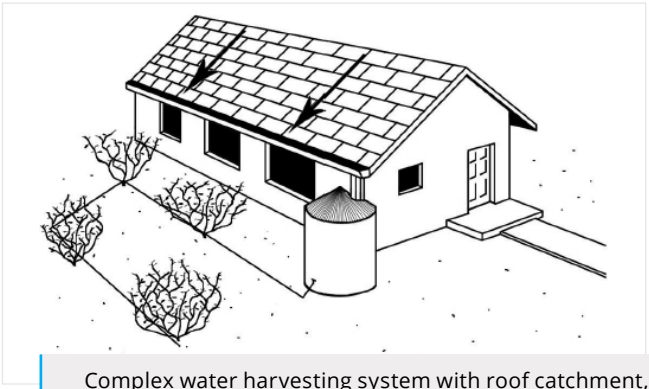
*Water Resource Specialist, The Texas A&M System

COLLECTING WATER FOR POTABLE AND NON-POTABLE USES

Captured rainwater can be used on landscapes and gardens, and for pets, wildlife and livestock. Rainwater can be filtered, disinfected, and used in homes and businesses in place of other sources of water. The process is simple and often less expensive than drilling a well.

How Much Rainwater is Available for Collection?

Use this formula to estimate the amount of rainwater that can be harvested from a catchment surface—defined as any surface used to collect rainwater, such as a roof: About 0.6 gallons of water falls on each square foot of roof area in a 1-inch rain. That means a 1,000-square-foot roof could yield 600 gallons of water for each inch of rainfall.



Complex water harvesting system with roof catchment, gutter, downspout, storage, and drip distribution system.

Water Uses

Landscape: Drip irrigation is the most practical way to use rainwater on landscapes because it can be applied by gravity alone or used in combination with mechanical equipment.

Wildlife: Water guzzlers are rainwater collection systems built in remote areas to provide water for

wildlife. A roof, storage tank, and watering device are the only items needed. Rainfall also can be collected off existing barns, deer blinds, or other structures.

Water for livestock and pets: One horse or cow can consume 7 to 18 gallons of water per day; collecting enough rainwater from roof surfaces for large herds of livestock would be difficult. But rainwater can be used for livestock in addition to a low-water production well and large existing storage tank. Smaller herds, individual animals, or pets could benefit from the collected rainwater.

Water for the home: Rainwater supplies many homes worldwide and is becoming more common for homes in Texas. The storage capacity of a rainwater harvesting system must be large enough to provide several months' supply of water.

Select rainwater harvesting components to reduce the risk of contaminants in the water. The system must include pre-filters, pump, pressure tank, filters and a sanitizing device such as an ultraviolet light to provide high-quality water for drinking and cooking. Non-potable uses for the home include commodes and clothes washers.

In Texas, rainwater harvesting has been encouraged through the elimination of the sales tax on collection system supplies. Several cities have waived permit fees, offered rebates on tanks, waived property taxes and provided rain barrels, irrigation audits, low-flow toilets, and/or demonstration sites to help encourage and educate the public. Check with local officials and visit these websites for more information:

- Texas A&M AgriLife Extension Service Rainwater Harvesting: *https://rainwaterharvesting.tamu.edu/*
- The Texas Water Development Board: *https://www.twdb.texas.gov/*
- American Rainwater Catchment Systems Association: *http://www.arcsa.org/*
- Texas Rainwater Catchment Association: *http://www.texrca.org/index.html*
- Texas A&M AgriLife Learn (*https://agrilifelearn.tamu.edu/*) has these publications available:
  - *Rainwater Harvesting*, AGEN-PU-078
  - *Harvesting Rainwater for Wildlife*, AGEN-PU-004
  - *Harvesting Rainwater for Livestock*, AGEN-PU-049

OTHER RESOURCES

Texas Manual on Rainwater Harvesting: *https://www.twdb.texas.gov/*

Harvesting, Storing, and Treating Rainwater for Domestic Indoor Use: *https://www.tceq.texas.gov/*