



Presidio County
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2012 Rainwater Harvesting Result Demonstration

Summary

The Marfa Activity Center (MAC) rainwater collection system is designed to provide water for drip irrigation to native landscaping and a small wildlife and bird water. It includes two collection tanks and irrigation systems that irrigate native landscaping and therefore creates a more aesthetic atmosphere while providing an educational opportunity.

Objective

Catching and utilizing rainwater previously lost by means of rainwater catchment tanks and irrigation to native landscaping and bird/wildlife water.

Materials and Methods

The site utilizes one 1,500 gallon collection tank that collects from about 1,800 sq. ft. of roof, through two downspouts. Because 0.6 gallons of rainwater can be collected per inch of rainfall per sq. ft. of roof area, this tank can potentially collect 1,080 gallons of water per inch of rainfall. The second and larger polyethylene tank holds 3,000 gallons. It is catching water from about 4,200 sq. ft. of roof via four downspouts on the north side of the building. It can potentially collect 2,520 gallons of water for every inch of rainfall. Both are feeding a drip irrigation line and emitters, and the water is supplied through gravity water pressure alone. A 4 inch PVC line connects the downspouts to the storage tanks. An attached overflow line feeds into a dry stream bed to prevent erosion. Landscaping of native plants and rock improves the water catching and holding ability of the soil. The collected rainwater is also used for a concrete watering device for birds and wildlife. To improve it's appearance, the 1,500 gallon tank has been covered with fencing lumber and metal flashing.

Results and Discussion

Marfa's average rainfall is 16 inches. The section of roof collected from the two downspouts on the south side could potentially capture an average of 17, 280 gallons of rainwater per year. The north side section with four downspouts could potentially capture an average of 40, 320 gallons of rainwater per year. The building has approximately 24,000 sq. ft. of roof surface. Without rainwater harvesting, an average of 230, 400 gallons of water runs off the roof annually. This water runs off to the railroad tracks and into the streams and runs into the Rio Grande. In 2012, the two tanks were filled up twice and more rainwater could have been captured with the addition of more storage. It has provided a focal point for rainwater catchment enthusiasts, Master Naturalists, and tourists, therefore providing a unique and educational site.

Conclusions

Because of population growth and urban sprawl, Texas is increasingly covered by impervious surfaces such as asphalt, and rangeland is more dominated by woody plants and shorter grasses. These changes increase water runoff and decrease water filtration into the soil, greatly impacting water quantity and quality. Rainwater harvesting, and demonstration plots such as this, are crucial to the educational changes needed to utilize rainfall and save money. The brochure, "Rainwater Harvesting at the Marfa Activity Center" has been a very important and instructional asset to the site. Additional storage capacity would be beneficial to the site.

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