

Rain Barrels



Residents of the City of Woodland expressed interest in rain barrels through water conservation surveys conducted at various events during 2009. According to the U.S. Environmental Protection Agency, a rain barrel is a system that collects and stores rainwater from your roof that would otherwise be lost to runoff and diverted to storm drains. Usually a rain barrel is composed of a 55-gallon drum, a vinyl hose, PVC couplings, a screen grate to keep debris and insects out, and other off-the-shelf items. Rain barrels are relatively simple and inexpensive to construct and can sit conveniently under any residential down spout.

Rain barrels can increase water efficiency and aid in water conservation efforts. Rain barrels divert water from storm drains, store high-quality water for gardens, direct overflow water away from building foundations to desired locations, and can potentially reduce water and sewer bills. Stored rainwater is often used to irrigate landscaping because it is free of chlorine, calcium, and other minerals.

Rain barrels are one type of rainwater harvesting (collecting rainwater from impervious surfaces and storing it for future use). Other forms of rainwater harvesting include cisterns and rain gardens. Cisterns are larger than rain barrels and can be installed above or below ground. Cisterns often range from 100 gallons to millions of gallons (when used for schools or parks). Rain gardens are shallow basins that are planted with moisture-loving plants and roof runoff is directed into them so that the water will filter into the ground rather than running off the property into the nearest storm drain.

Rainwater Harvesting Calculation:

The rainwater harvesting potential of a roof can be measured by multiplying the area of the roof by the amount of rainfall in a year which is then converted to gallons per year.

$$\text{Collection Area (ft.}^2\text{)} \times \text{Rainfall (in./yr.)} / 12 \text{ (in./ft.)} = \text{Cubic Feet of Water/Year}$$
$$\text{Cubic Feet/Year} \times 7.48 \text{ (gallons/cubic foot)} = \text{Gallons/Year}$$

This calculation is for horizontal areas and does not take into consideration system losses through evaporation or leakage. The average annual precipitation for Woodland is 20.7 inches.

Links:

- American Rainwater Catchment Systems Association (<http://www.arcsa.org/resources.html>)
- California's Claimed Water Resources Education and Policy Center (<http://www.holyh2o.org/>)
- California Climate Action Team - Water-Energy Subgroup (<http://www.climatechange.ca.gov/wetcat/index.html>)
- EPA Guide to Building Your Own Rain Barrel (http://www.epa.gov/nps/toolbox/other/KSMO_buildarainbarrel.pdf)
- EPA Municipal Handbook on Rainwater Harvesting (http://www.epa.gov/npdes/pubs/gi_munichandbook_harvesting.pdf)
- Rainwater Harvesting for Drylands and Beyond (<http://www.harvestingrainwater.com/>)