



Practical Rain Water Harvesting

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Rain Water Systems

 48 Reviews

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Downspout Cleaning

1. Licensed Contractor since 1998
2. Lead designer/trainer at No Thirsty Child
3. Southern Californias most prolific installer
4. Instructor at Cuyamaca College
5. Product presentation for Bushman USA
6. Hundreds of residential installations
7. Jobs in California, Nevada, Utah, Hawaii and in Rwanda, Africa.



Overview- **Practical Rain Water Harvesting**

California is not a desert, it is a mediterranean type climate where we receive an average of twelve inches of rain per year. Rain water harvesting is not only a sound concept in this area if done right, it is the **ONLY** practical solution for the water needs for a growing population.

We have a limited amount of water that can be imported or extracted from the ground, and both of those methods are environmentally destructive.



What practical rain water harvesting is NOT:

A typical 50 gallon rain barrel available from the big box stores holds fifty gallons, has dimensions of about 26" width/depth and 36" height. It has a poorly designed overflow and is often made from plastic containing chemical toxins. They often have leaky and fragile fittings and are, in my opinion, a 'bucket list' type of product that is meant to make you feel good but is designed not to collect enough to be useful, work good enough to be valuable or last long enough to create a good experience. These are modern culture throw away items, destined for landfills.



What Practical Rain Water Harvesting Is:

It is a system large enough to catch AT LEAST one inch of rain from the roof area, ideally large enough to collect two inches of rain.

It has an overflow directed at least ten feet away from the base of the tank.

It has a cleanout basket and/or a sediment trap.

It has BOTH a pump and a gravity discharge.

It is fully automated (has no manual valves to flip, ties in to the irrigation system, has run-dry back up so the system can operate year round no matter the rainfall amount).

It is used judiciously on edible foods and drought tolerant plants through zoning and irrigation, i.e., grass should always be on city water as it consumes vast quantities of water to be lush, whereas fruits and vegetables will show dramatic results from rain water.



Small/Medium sized system: 865 Gallons. Polyethylene construction. Dimensions 5'1" diameter, 6'3" height.

This installation example is set away from the home in a "[wet system](#)".

The right pipe is the feed pipe from the downspouts on the home. It is routed underground to allow the tank to be placed away from the home. It discharged in to a strainer basket that can be removed and cleaned as a 'second stage filtration'.

The larger center pipe is a free standing 'first flush device' that is a sediment trap. It is designed to slowly drain between rains or be opened quickly to flush roof muck out. We also usually build a cleanout in to the feed lines from the house.

The small pipe on the left is the city water back up. It is activated by a float valve inside the tank that is set to fill the tank with about 10% of its volume with city water so that the pump system can operate in periods of no rain.

This shows the only time when it is safe to not have a robust discharge routed away from the tank: when the tank is on a concrete pad.

The Math

An average home in San Diego yields **MORE** rainwater than it is practical to store: if an average roof is 1,000 square feet, the yield is 600 gallons per inch of rain

http://countrystudies.us/united

El Cajon Weather

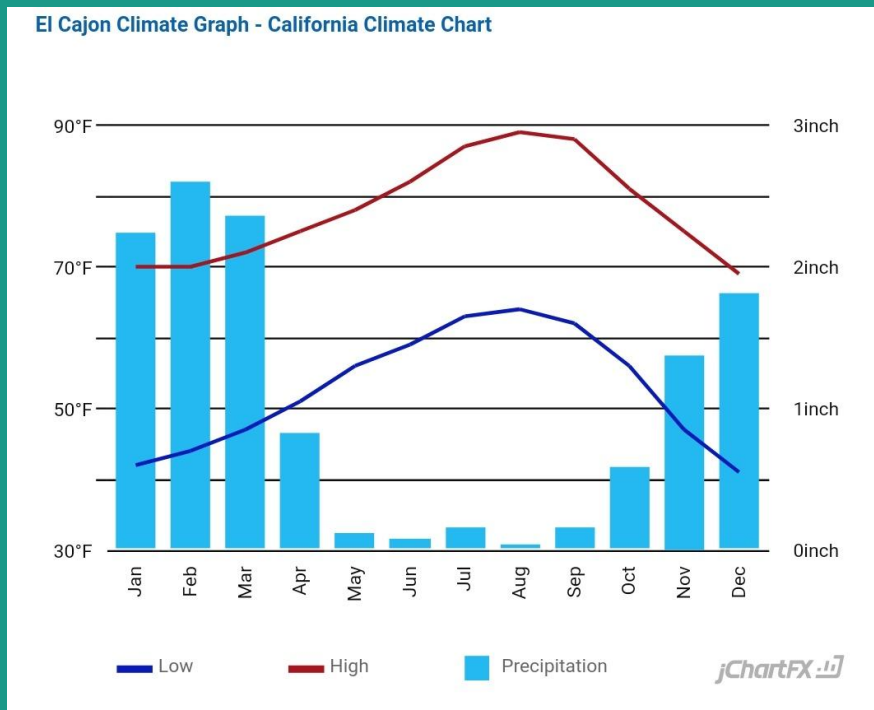
[US Geography](#) / [US Weather](#) / [California Weather](#) / El Cajon

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. High	68	68	68	72	74	77	84	84	84	78	74	68
Avg. Low	44	45	47	50	54	57	61	64	61	56	48	44
Mean	57	58	58	61	64	68	74	74	72	68	61	57
Avg. Precip.	2.3 in	2.0 in	2.5 in	1.1 in	0.3 in	0.1 in	0.0 in	0.1 in	0.3 in	0.5 in	1.8 in	1.8 in

Degrees in Fahrenheit

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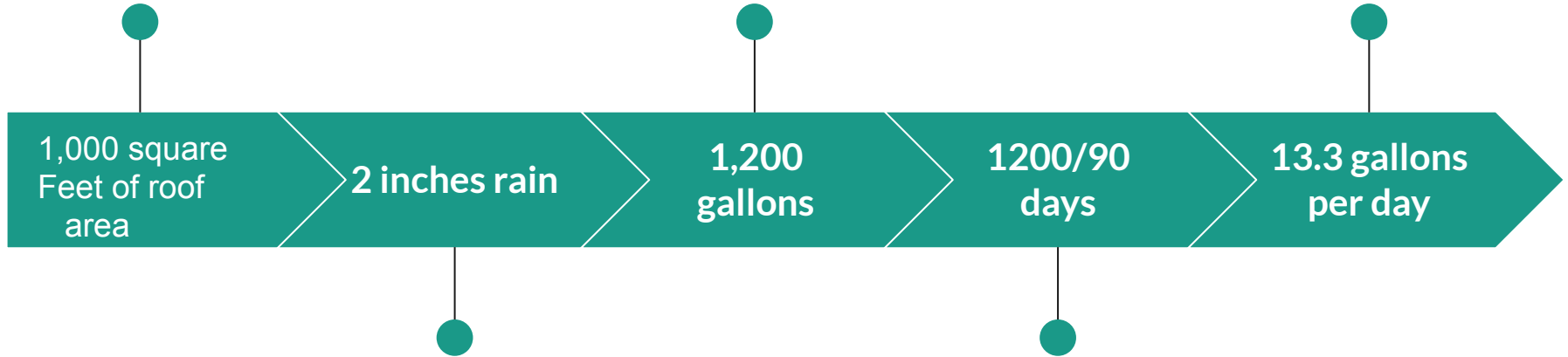
For seven months of the year the minimum rain yield is 600-1200 gallons from PART of a small roof.



An average home in San Diego is 1,400 square feet.

Yield per two inches of rain on one thousand square feet of area

Amount per day to distribute for 90 days with full 1,200 gal. system



Not uncommon to have 2-3 inches fall over a strong storm

Average time between measurable rain, or reasonable guess.



Other ideas

Water gardens and infiltration basins

For smaller rainwater systems engineer the overflow of the tank to a water garden or bio-swale where the excess water that cannot be stored can have a chance to infiltrate into the aquifer. Or, where tanks are not practical or desired run the downspout drainage in to a drywell or infiltration basins.

Recirculation systems for large grass areas

New yard installations could have drainage at the yards end that re-directed the irrigation runoff back in to a storage tank or in to an infiltration basin, so the excess irrigation does not run to the concrete culverts.



THE BENEFITS OF HARVESTING HVAC CONDENSATION

How to keep good water — and good money — from going down the drain.



A large commercial air conditioning unit, such as on a Home Depot Can yield an astonishing 15 gallons per minute.

Typically this water is discarded behind the buildings through downspouts to the blacktop. Wide spread use of evaporative cooling systems pulls an enormous amount of moisture from the air, and forward thinking property owners can easily reclaim this water and repurpose it for use.



Links and resources

1. [Photo archives from Rain Water Systems](#)
2. [Bushman Rain Tanks](#)
3. Local Tank Suppliers: [San Diego Drums and Totes](#) [Tank Source](#)
4. [Misc. Supplies](#)
5. [Seamless Rain Gutters](#)
6. How To: [Wet Systems](#)
7. [Irrigation Pumps](#)
8. [First Flush Devices](#)
9. [Dry Wells/Flo-wells](#)
10. [Designing Storm Water Systems](#)

RAIN GUTTER REBATES

The City of
SAN DIEGO

Rain Gutter rebates up to
\$500 available
now.

City of San Diego water customers in single-family homes may be eligible to receive rain gutter rebates up to \$500 per property.

For eligibility terms and program guidelines, visit wastewater.org or call **619-533-4126**

This program is made possible through funding from the City of San Diego Transportation & Storm Water Department. The program is administered by the Public Utilities Department's Water Conservation Program.

Material Type	Amount per Linear Foot	Linear Feet Rebated	Maximum Rebate Amount
PVC	\$0.25	250'	\$62.50
Aluminum	\$1.25	250'	\$312.50
Steel	\$2.00	250'	\$500.00

Rebates now available for rain gutters.