



## FREQUENTLY ASKED QUESTIONS

# RAIN BARREL AND CISTERN REBATE

### How do I determine what size cistern or number of barrels I need?

The size of your system depends on a number of factors, including the size of your roof, the storage capacity of your rain barrel or cistern, and how you intend to use the water. A rough guideline is that you can collect 600 gallons of water for every 1,000 square feet of roof area with every inch of rain.

### How much water can I save using rainwater?

Water savings vary depending on the size of your rainwater harvesting system, rainfall patterns, how you use the rainwater, and the size of your garden.

### Do I need a permit?

California rules state that a permit is not needed if your rain barrel or cistern meets the following requirements:

- Cistern capacity is less than 5,000 gallons
- Height to width ratio does not exceed than 2:1
- Captured rainwater is only used for non-spray irrigation
- Cistern is supported directly on grade
- Rainwater system does not require power or a makeup water supply connection

### Where can I get more information about code requirements for installing a rainwater harvesting system?

Full code requirements can be found in Chapter 16 of the 2022 California Plumbing Code.

<https://epubs.iapmo.org/2022/CPC/#p=368>

### What happens when my rain storage tank overflows?

Overflow water should be directed to a drain or preferably a suitable rain garden that can absorb water onsite at an appropriate rate. Overflow must be directed away from your home or neighboring properties.

### What is a first-flush diverter?

It is a device that diverts the season's first, most polluted flow of rainwater away from your rain barrel. You should install a first-flush diverter if you intend to water plants for consumption with your rainwater. First-flush rainwater should be diverted to rain gardens whenever possible.

## How long does it need to rain before the "first flush" has finished and the water is now "clean"?

Typical sizing for a first flush system is recommended to be 1 gallon for every 100 square feet of roof. This can be reduced on a cleaner roof (metal roofing, no tree cover) or increased for a dirtier roof (composite/tile/flat roof or tree cover) or when higher water quality is needed. There are a couple different guidelines. Some first flush systems are designed to hold one gallon for every 100 sf of roof. However, if your collection surface collects a lot of debris and animal droppings, you may want a larger first flush system. It also depends on how often you want to clean the sediment out of your tank. If you have a blue barrel system it is not a hassle at all to spray the inside of your barrel with a garden hose to flush out the sludge every few years. For that reason, blue barrel kits don't include first flush systems. If you have a tank that is more difficult to clean out, you might want to do more first flushing.

## It stops raining for an extended period of time, how long between storms does the system need before it requires another "first flush"?

Most first flush systems are designed to drain slowly, so will allow rapidly successive rain events to be fully captured but will divert water into the first flush system after some time has passed. If the collection surface has accumulated a lot of debris during long periods of no rain, the next rain event should be treated just like a first-of-the-season storm.

## How much maintenance is required for a rainwater harvesting system?

The most important maintenance tasks for rainwater systems are those required to keep the water as clean as possible and flowing freely from the roof to storage. Gutters and downspout screens should be cleaned a couple of times at the beginning of the rainy season at a minimum, and likely will need to be cleaned periodically through the season as debris accumulates. If your property has a lot of trees (especially conifers), more cleaning will be necessary. First flush diverters should be drained and cleaned at the end of the rainy season; for most locations once a year is sufficient. Once a year, flush out any debris or buildup that may have accumulated on the bottom of the cistern. You can clean your system annually with a non-toxic cleaner such as vinegar. Repair leaks immediately. Be sure to keep out debris, mosquitos, vermin, and light. If the tank allows in light, consider painting it to prevent algae growth.

## Do wet line conveyance systems require significantly more maintenance?

Systems with wet conveyance lines require minimally more maintenance than dry because water remains in the pipe even when it's not raining, but not significantly more. A drain valve is recommended to release water from the wet conveyance pipe at the end of the dry season. In areas where temperatures drop below freezing during the winter, pumps should be drained before winter and freeze protection provided to prevent the pump from freezing and cracking. Some landowners have had this happen, but protecting pumps from freezing is very straightforward.

## How long can rainwater be safely stored in tanks?

If the water is only for non-potable purposes, is properly screened, and light is completely excluded, there is no strict limit on how long the water can sit in your system. It is important to use good health and safety practices when using non-treated water and properly maintain the system. Be sure to inspect your system often and clean it as needed.

## Can rainwater catchment tanks be placed in full sun?

Yes – it is just not ideal because it will reduce the lifespan of the tank. As long as you use the water the same year for irrigation, and you keep debris out of the tank, the water quality won't be a problem. Tanks can also be painted to reduce the UV degradation for sun exposure.

## To use stored water for drip irrigation, how many feet of drop does it take to run the water through the drip system? Or do you always need a pump?

2.3 ft of elevation = 1 psi. Drip systems need anywhere from 10-25 psi depending on demand and type of emitters. So often a pump is required for systems that are on drip unless the tank is significantly higher than the irrigation system (for example, to get 20 psi from gravity alone would require 46 feet of elevation). Blue Barrel has a lower pressure drip irrigation system, but it requires careful layout of the irrigation zones to make sure the water drips out evenly. Some users design systems to connect to a small drip irrigation system that simply waters adjacent plants at a lower gallons/hour rate than emitters are designed to handle, and simply allow the system to run longer than a pressurized system would. Some low-pressure timers are available that can function at pressures as low as 5 psi.

## What is a rain garden, and do I need one for a rainwater catchment system?

A rain garden is a depression designed to slow and sink runoff from a surface such as a patio or roof. A rain garden can be helpful, or even necessary, to address overflow from a rainwater catchment system once the tanks are full. The current rebate program cannot be used to cover costs of raingarden installation.

## Are there seismic concerns for tanks or barrel systems?

Typically a single tank of 5,000 gallons or less (or any number of tanks this size) doesn't require a building permit and shouldn't have seismic concerns. There is also a requirement that the height to width ratio is less than 2:1. Placing tanks on a solid foundation of either a concrete slab or 6 inches of compacted gravel will be sufficient.

## What should I do if my tank has a height to width ratio greater than 2:1?

Tanks with a height to width (or diameter) ratio greater than 2:1 need to be securely strapped to the studs of a structural wall of the house or other sturdy structure, and on a solid level foundation. It is recommended to use two metal straps (one on the bottom half and one on the top half) with at least 1 ½ inches thickness and 16 gauge steel, such as an earthquake water heater strap. Perforated metal plumber's tape is not sufficient.

If a structural wall or other sturdy structure is not present at the desired tank location, it is recommended to use 6 x 6 posts concreted 30" into the ground next to the tank and strapped.

## Additional resources

American Rainwater Catchment Systems Association: [www.arcса.org](http://www.arcса.org)

Greywater Action: [www.greywateraction.org](http://www.greywateraction.org)

Rainwater Harvesting for Drylands and Beyond: [www.harvestingrainwater.com](http://www.harvestingrainwater.com)

Sonoma-Marin Saving Water Partnership - Water Smart Gardens Maintenance Manual: [www.savingwaterpartnership.org/programs-rebates](http://www.savingwaterpartnership.org/programs-rebates)

Daily Acts: [www.dailyacts.org/savewater](http://www.dailyacts.org/savewater)