

## Water Harvesting Techniques: Cisterns

A rainwater cistern is a great addition to your passive rainwater harvesting system. However, installing a cistern should be done after careful site planning, earthworks development, and always reevaluating. The cistern provides a longer-term storage option for all of the rain falling on your impermeable surfaces (i.e. rooftop). The cistern and corresponding plumbing (overflow and supply line) should be carefully planned ahead of time to ensure convenience and accessibility.

There are many different types and sizes of cisterns including plastic and metal cisterns. You can learn how to install a cistern yourself or hire a business to install one for you.

### Recommendations to get started on planning and installing a cistern

1. Go on a water harvesting tour or visit public demonstration sites with cisterns
  - a. Visit Watershed Management Group's demonstration sites
    - i. Originate Natural Building Materials Showroom
    - ii. The Nature Conservancy's Tucson Conservation Center
    - iii. Ward III Council Office
  - b. Visit [www.harvestingrainwater.com](http://www.harvestingrainwater.com) for upcoming tour dates
2. Attend a cistern installation workshop
  - c. Visit [www.watershedmg.org](http://www.watershedmg.org) or call 396-3266 to sign up for upcoming workshops
  - d. Visit [www.harvestingrainwater.com](http://www.harvestingrainwater.com) to see calendars of upcoming water harvesting workshops
3. Check out these businesses that install cisterns:
  - e. Technicians for Sustainability, [www.techniciansforsustainability.com](http://www.techniciansforsustainability.com)  
#520-740-0736
  - f. Southern Arizona Rain Gutters, [www.southernarizonaraingutters.com](http://www.southernarizonaraingutters.com)  
#520-299-7246
  - g. Oasis Water Harvesting, [www.oasisrainwaterharvesting.com](http://www.oasisrainwaterharvesting.com), #520-234-7681

### Preparation for installing a cistern:

1. Always call Blue Stake (1-800-782-5348) for the area you want to place a cistern and/or do earthworks. Also do not locate your cistern above utility lines.
2. Size cistern volume based on a 1 – 3” rain storm. In general, if your cistern catches more than 3 inches it is oversized, and if it catches less than 1 inch it is undersized.
3. Locate the cistern close to your home, but at least 1 foot from the wall to provide access all around.
4. Plan out the basins to where you will direct overflow from the cistern. Be sure basins can handle full amount of water coming off roof.
5. Plan how you will use your cistern water and whether you will use a gravity fed system, hook into drip irrigation, or use a pump.

**Cistern capacity:**

Diameter x height:

4' x 5' = 469gal

4' x 6' = 564gal

4' x 7' = 657gal

4' x 8' = 751gal

Diameter x height:

5' x 7' = 1027gal

5' x 8' = 1174gal

5' x 9' = 1321gal

5' x 10' = 1468gal

\*Note: You must order at least 1' taller cistern in order to reach the capacities listed above as 4" will be embedded in concrete, 4" or more will be lost in the "sludge layer" and 6" will be lost for the inflow pipe.

**Cross Section Culvert Cistern**

