

Components of Bill's System

Bill has a steel roof, with steel gutters that drain into barrels, and then into a 9000 gallon steel cylindrical tank cistern buried in the ground. He installed a pressure pump with 35 gallon storage capacity in his basement to pump from the cistern into his home's plumbing system. He uses this water for everything except drinking, and collects more water than he can use, but he is only a part-time resident.

He suggests that in areas where it snows in the winter, the gutters should be hung lower, to allow snow to drop over them as it slides off the roof, and thus not damage the gutters. Heat strips could be added to the roof, to allow collection of the moisture in the snow.

Filtration is deployed at several parts of the system. The first is a steel window screen where the gutters join the downspout. Then another screen set into the top of the barrels, to minimize debris entering the barrels and cistern. The barrels allow for much of the sediment to settle, so that it doesn't enter the cistern; the barrels are easier to clean out than the cistern.

Sediment and charcoal filters are added to the water line on the house side of the pump. A UV light could also be utilized to kill bacteria and make water potable, but since he has access to neighbor's drinking water, he chose not to do this.

The cistern is made of 10 gauge galvanized steel, a little more than 1/8" thick. 8600 gallon capacity. It is a 12 foot high, 12 foot diameter cylinder, that has a neck protruding about 18" above ground, fitted with a lid and a ladder (for use in cleaning out the tank).

Cost of Cistern

The steel tank was made by a man from Fort Benton (Wilray Manufacturing, 406 622-3861). The cost at the time of installation was \$3850 plus \$150 to transport it. Because of the rising cost of steel and fuel, the cost is now \$8500 plus \$500 to transport. The company sells about 10 tanks a year now, mostly on the East Side, because of the recent drought years.

Roof Formula

To determine how much rain water you can expect to collect:

1. Multiply: (square foot of roof) times (0.55) to get gallons per inch of rain
2. Then multiply that result by the average annual rainfall for your area to get total gallons water.

Or in algebraic terms:

$$G = 0.55 AR$$

where 'G' is total gallons, 'A' is total roof area (sq. ft.), 'R' is average annual rainfall

Book

Bill recommends "*Tank Town*," a book from Dripping Springs, Texas. 512-894-0861 or see <https://rainwater.org/store/>. See also www.rainwatercollection.com/ for more info. Fiberglass water tanks won't work in NW Montana because of winter freezing, but the basic information is still good.

Discussion

Jean Helps (Creston) has an artesian well, and originally tried a concrete cistern to store water from the well. But she had trouble with worms and other contamination getting into the cistern, so installed a pump in the well instead of using the cistern.

Dean Marsh (Kalispell) lives off the grid (except for propane), with solar for electricity and rainwater collection instead of a well. He uses his water for drinking; installed a UV light and had his water tested. Both untreated and UV-treated water tested the same: clean for drinking.