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Climate Institute

Climate Change and Agriculture in New Jersey

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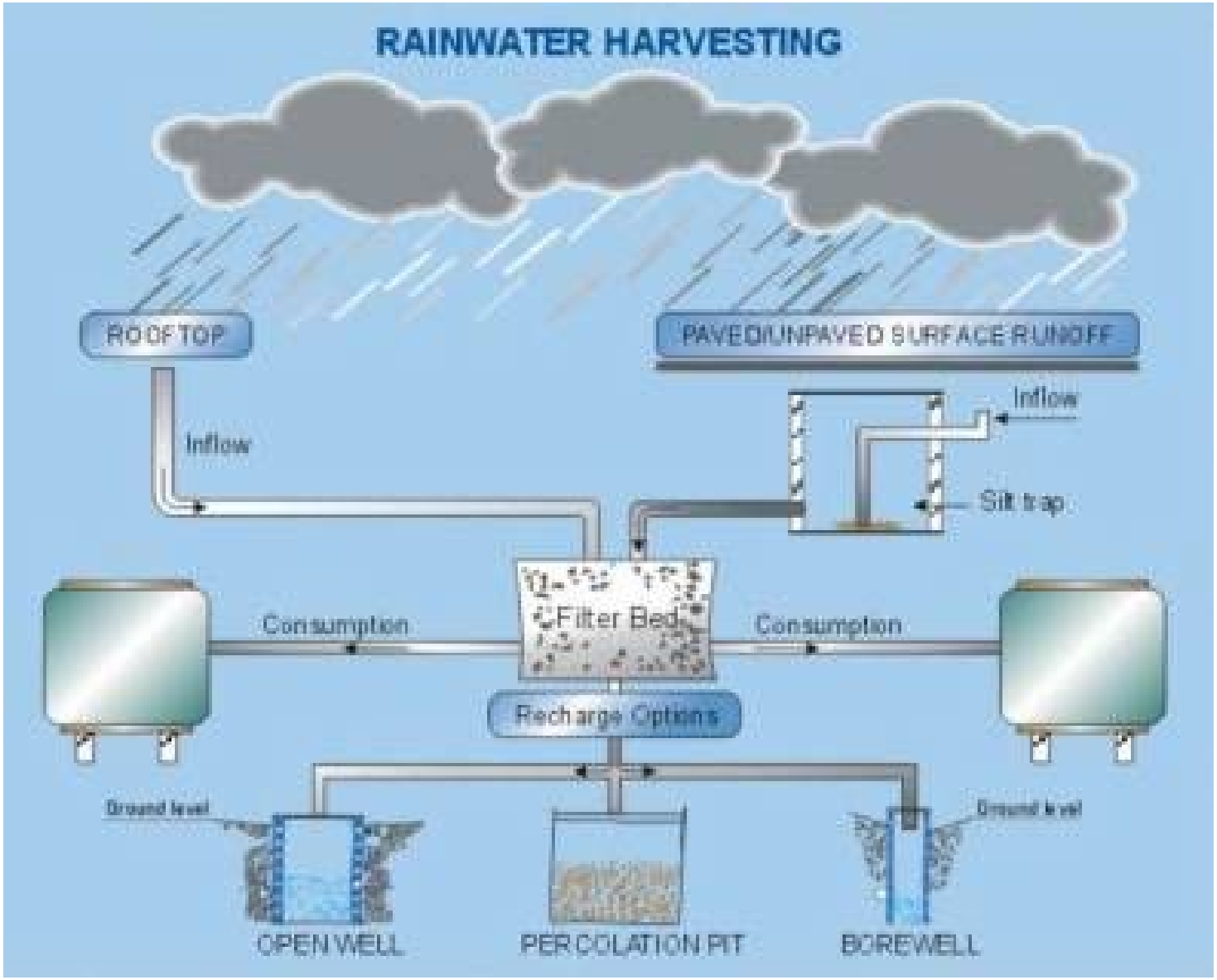
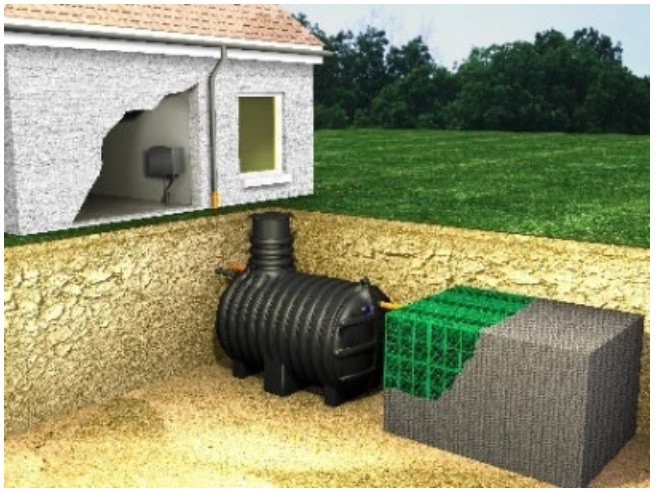
What does the future hold for New Jersey?

Rainwater Harvesting - Functions

- Collecting, filtering and storing water from roof tops, paved and unpaved areas for multiple uses.
- Harvested water can be used for nonpotable or potable purposes after testing and treatment.
- Surplus water after usage can be used for recharging ground water.
- Systems can range in size from a simple PVC tank or cistern to a contractor designed and built tank/sump with water treatment facilities.

Rainwater Harvesting – Components





Sizing

- The rule of thumb is 600 gallons of water per inch of rain per thousand square feet of catchment area.
- Not all the rain that falls can actually be collected. Efficiency is usually presumed to be 75% depending on system design and capacity.

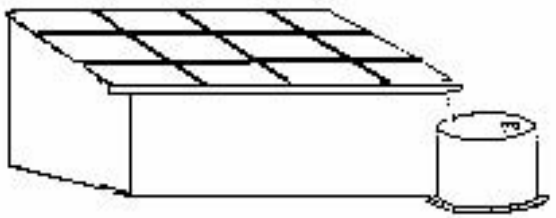
Sizing Formula

Here is the basic formula for calculating the potential amount that can be collected:

$$\frac{\textit{(Catchment area) x (inches of rain) x (600 gallons) x (.75)}}{\textit{1000 square feet}}$$

Design Example

The sample roof shown below has a catchment area that is 40 feet wide and 30 feet long. Hence, it has a 1200 square feet roof (40 feet wide x 30 feet long). Assume that it rains 2 inches. We can now plug this information into our general formula (see equation above).



Catchment Area = 1200 square feet

Amount of Rain = 2 inches

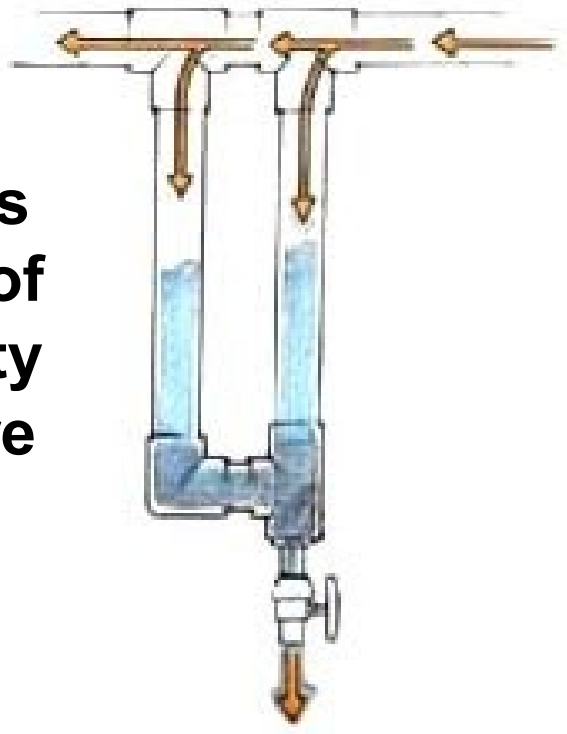
Gallons of water collected per inch of rain per 1000 square feet = 600 gallons

Percent Efficiency = 75% or .75

$$\frac{(1200 \text{ square feet}) \times (2 \text{ inches of rain}) \times (600 \text{ gallons}) \times (.75)}{1000 \text{ square feet}} = 1080 \text{ gallons}$$

First Flush Diverter or Roof Washer

The rule of thumb is one to two gallons of roof washer capacity for every 100 square feet of catchment area.



- **A one foot length of 6 inch diameter PVC pipe holds 1.5 gallons.**
- **A one foot length of 4 inch diameter PVC pipe holds 0.66 gallons.**

Construction

- The most stable place to position the cistern is against a stable wall on level ground as close to the downspout as possible.
- Gravity moves water downhill. Be sure there is available space for a downward pitch in all pipes.
- The cistern on its platform is the highest point of the garden but the lowest point of the system.
- The overflow pipe should be directed toward a rain garden not toward pathways or structures.
- The overflow pipe should flow from the cistern's highest point.
- The spigot should be at the cistern's lowest point.

Irrigation

Erosion from Sever Events

Cover Crops and Grassed Waterways


QUESTIONS?