FAQ's

What are the steps involved in rain water harvesting?

1. Surface runoff harvesting
2. Roof top rainwater harvesting

Rainwater harvesting is the collection and storage of rainwater for reuse on-site, rather than allowing it to run off. These stored waters are used for various purposes such as gardening, irrigation etc. Various methods of rainwater harvesting are described in this section.

1. Surface runoff harvesting

In urban area rainwater flows away as surface runoff. This runoff could be caught and used for recharging aquifers by adopting appropriate methods.

2. **Roof Top rainwater harvesting**

It is a system of catching rainwater where it falls. In rooftop harvesting, the roof becomes the catchments, and the rainwater is collected from the roof of the house/building. It can either be stored in a tank or diverted to artificial recharge system. This method is less expensive and very effective and if implemented properly helps in augmenting the ground water level of the area.

The system mainly constitutes of following sub components:

- Catchments
- Transportation
- First flush
- Filter

Catchments

The surface that receives rainfall directly is the catchment of rainwater harvesting system. It may be terrace,

courtyard, or paved or unpaved open ground. The terrace may be flat RCC/stone roof or sloping roof. Therefore the catchment is the area, which actually contributes rainwater to the harvesting system.

Transportation

Rainwater from rooftop should be carried through down take water pipes or drains to storage/harvesting system. Water pipes should be UV resistant (ISI HDPE/PVC pipes) of required capacity. Water from sloping roofs could be caught through gutters and down take pipe. At terraces, mouth of the each drain should have wire mesh to restrict floating material.

First Flush

First flush is a device used to flush off the water received in first shower. The first shower of rains needs to be flushed-off to avoid contaminating storable/rechargeable water by the probable contaminants of the atmosphere and the catchment roof. It will also help in cleaning of silt and other material deposited on roof during dry seasons Provisions of first rain separator should be made at outlet of each drainpipe.

Filter

There is always some skepticism regarding Roof Top Rainwater Harvesting since doubts are raised that rainwater may contaminate groundwater. There is remote possibility of this fear coming true if proper filter mechanism is not adopted. Secondly all care must be taken to see that underground sewer drains are not punctured and no leakage is taking place in close vicinity. Filters are used for treatment of water to effectively remove turbidity, colour and microorganisms. After first flushing of rainfall, water should pass through filters. A gravel, sand and 'netlon' mesh filter is designed and placed on top of thestorage tank. This filter is very important in keeping the rainwater in the storage tank

clean. It removes silt, dust, leaves and other organic matter from entering the storage tank. The filter media should be cleaned daily after every rainfall event. Clogged filters prevent rainwater from easily entering the storage tank and the filter may overflow. The sand or gravel media should be taken out and washed before it is replaced in the filter.

What are recharge wells?

Basically it is the direct opposite of a pumping well. A recharge well pushes back surface water into the groundwater system. Usually, a recharge well is one metre in diameter and six metres deep, lined with concrete rings having perforations. These perforations let water seep from the sides. The rings line the recharge well from bottom to top with a steel or concrete ring closing it.

Rainwater that gushes down terrace drains, and surface water flowing in storm water drains, can be filtered, de-silted and recharged in open wells.Complemented by an aquifer – an underground layer of water-bearing permeable rock or unconsolidated material such as sand, gravel, or silt – a recharge well helps increase the groundwater table.

In the larger scheme of things, enough water to never go without this elixir of life. When groundwater levels increase, there is more for bore wells to pull out for basic consumption. According to India Water Portal, in Bangalore alone, as much as 3,000 million litres falls daily as rain during the monsoon. On one acre, this works out to roughly 3.6 million litres annually. If the city manages to recharge even 30% of the rainwater it gets, it will have more that what the Cauvery River is supplying currently to the city, minus the huge energy bill.

What is watershed management?

Watershed management is the study of the relevant

characteristics of a watershed aimed at the sustainable distribution of its resources and the process of creating and implementing plans, programs, and projects to sustain and enhance watershed functions that affect the plant, animal, and human communities within a watershed boundary.[1] Features of a watershed that agencies seek to manage include water supply, water quality, drainage, stormwater runoff, water rights, and the overall planning and utilization of watersheds. Landowners, land use agencies, stormwater management experts, environmental specialists, water use surveyors and communities all play an integral part in watershed management.

Objectives of watershed management

The different objectives of watershed management programs are:

- To protect, conserve and improve the land of watershed for more efficient and sustained production.
- To protect and enhance the water resource originating in the watershed.
- To check soil erosion and to reduce the effect of sediment yield on the watershed.
- To rehabilitate the deteriorating lands.
- To moderate the floods peaks at down stream areas.
- To increase infiltration of rainwater.
- To improve and increase the production of timbers, fodder and wild life resource.
- To enhance the ground water recharge, wherever applicable.
- To reduce the occurrence of floods and the resultant damage by adopting strategies for flood management.
- To provide standard quality of water by encouraging vegetation and waste disposal facilities.

Discuss the steps involved in watershed management.

- **Site selection:** The site is selected in consultation with the concerned state and central development agencies and local bodies based on the following criteria prevailing soil and agro-climatic zones, nature of soil conservation problems and land-use, socio-economic conditions of the region and its people, approachability and demonstration value.
- **Resource survey:** Components of the survey include physiography, climate, soil survey, engineering survey, land-use survey, vegetation survey, hydrologic survey, land capability survey and socio-economic survey.
- **People's participation:** It is essential to discuss the project with the people at the time of preparation and finalization of details of the ground plan.
- **Watershed development project plan:** Project plans should be prepared based on the basic data on resources potentials, needs and problems, the type and intensity of treatments, land-use plans and development of resources and infrastructures.
- **Treatment of watersheds:** Fuel, fodder and fibre plantations, orchards with suitable species and conservation measures will be useful in providing vegetative cover and economic produce apart from soil and water conservation for non-arable lands.