



REGENT EDUCATION & RESEARCH FOUNDATION
GROUP OF INSTITUTIONS

PROJECT REPORT
ON
RAINWATER HARVESTING
REGENT EDUCATION AND RESEARCH FOUNDATION
GROUP OF INSTITUTIONS



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Rain Water Harvesting Project in Regent Education and Research Foundation Group of Institutions

Introduction:

Rainwater harvesting is an important environment friendly approach – dubbed as a Green Practice which has double benefit in both keeping the groundwater table undisturbed and charging the aquifer. Such a green practice encouraged in form of Community Development Program can find its popularity when it shows the manifold benefits of, in one hand, bringing people together to collective thinking on 'green' approaches, innovating approaches to save earth by harping on their creative notes, achieving nobler feelings saving water for future; on the other hand, rainwater as well as run- off storm water stored in a planned way save the earth from soil erosion, flood; recharge the aquifers to give a shot in the arm to the decreasing groundwater table.

The increasing urbanization lead to concentrated population density at places resulting into uneven drawing of ground water. This is ensuing into draught and drying up of river beds at places where domestic and industrial use of water is rising. This places if shift focus towards using rainwater, the groundwater there may gradually fall back to its normal level thus ensuring the eco-balance not lost. The extensive and unplanned usage of groundwater not only disturbed the natural water table but also has made the groundwater contaminated and, in many a place, totally unfit for any use. The groundwater in these places required to be immediately left to revive. Collecting rainwater, and harvesting the storm water run-offs, in these places, surely would minimize the risk of the future population here.

Rainwater harvesting, besides being eco-friendly, is an economic practice as well. The cost of digging a catchment area even can be saved by a roof-top collection of rainwater. The freshwater canals or rain-fed natural ponds too can be used for harvesting. Sand-gravel filters for purifying rainwater is again something that can be easily arranged. The catchments and settlement tanks built in the area easily free the spot and the vicinity from the curse of flood or water logging, thus saving money of pumping outdirty muddy storm water. The presence of a water body in the region also reduces the ground heat and acts as a natural cooler.

The best part of the practice of rainwater harvesting, however, is that in one hand it is checking one from leaning towards using groundwater as rainwater is obtained in abundance in many countries; on the other hand, if remains unused or extra, this rainwater, collected in say natural ponds or evenin artificial tanks can pour back to the ground thus charging the natural aquifer to boost the groundwater level.

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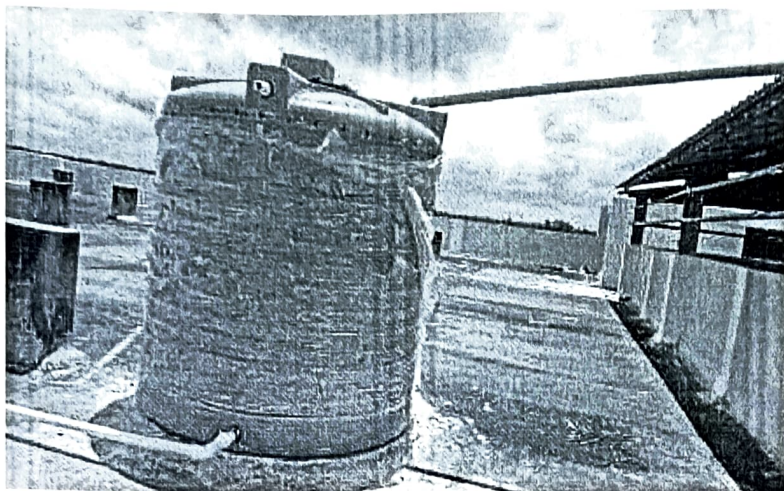
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Rain Water Collected in Tank

Objectives:

- To increase recharge of groundwater by capturing and storing rainwater, by rainwater harvesting from rooftop run-offs.
- To store the water for gardening & washing purpose.

Need for rainwater harvesting -

- Increasing water demand The rapid rise in human population has made optimum use of fresh water imperative.
- Urban water supply systems in particular are under tremendous pressure to meet the needs of the population as well as industry and large-scale construction.
- The increased need for water results in lower groundwater levels and depleted reservoirs.
- Consumption of polluted water creates health hazards.
- The use of rainwater is a useful alternative

Responsibilities towards protecting Nature -

- Using more of rainwater helps to conserve & augment the storage of ground water
- It helps to arrest sea water intrusion in coastal areas
- It helps to avoid flood & water stagnation in urban areas
- Reduces water and electricity bills

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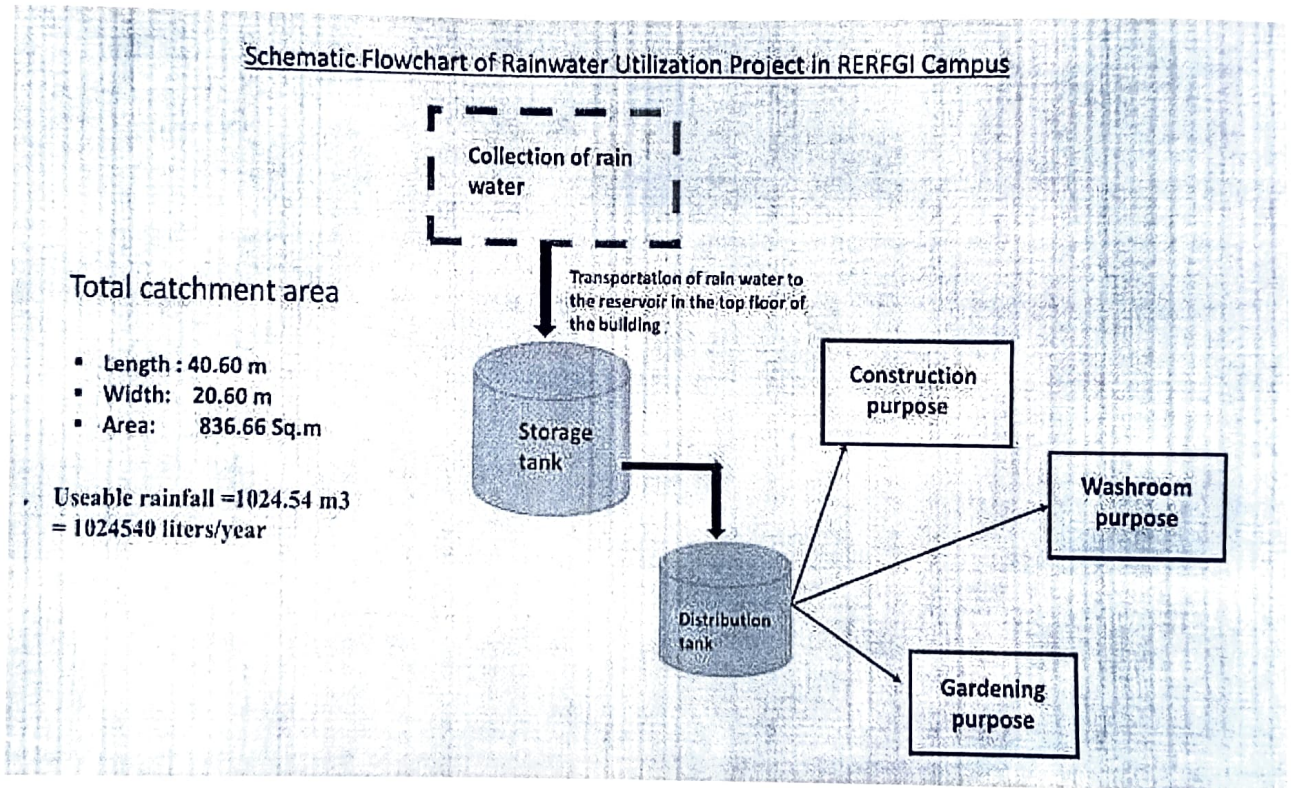


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Advantage of collection and storage near the place of use -

- Collecting and storing water close to households improves the accessibility and convenience of water supplies.
- It costs less to collect rainwater than to exploit groundwater.
- Only traditional knowledge, skills and materials can be used to collect the water and no government technical assistance is required for repair and maintenance.
- Collecting rainwater is the only way of recharging water sources and revitalizing dry open wells

Typical details for Rain Water harvesting tanks and systems: -



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Practice:

- In the RERFGI campus rainwater harvesting system has been installed on the roof of exactly 836.36 m² of the shade area of the rooftop. The rainwater is collected through a network of pipelines and stored in the tank. There are two 5000 liters tanks on the campus rooftop where the roof runoff water is stored. The roof runoff water is allowed to use for washrooms, Gardening, and construction purposes. Total Area of tin shade of rooftop in RERF 836.36 m². Our civil Engineering departmental students was involved in this project. A budget proposal was Rs 4,00,000 and subsequent approval of institute authority was Rs 337881.50 (Rupees Three lakhs thirty seven thousand eight hundred eighty one and paisa fifty)

Area m ²	Average Depth of Rainfall (m) *	volume of Runoff m ³	30 % losses	Total Quantity m ³
836.36	1.75	1463.63	439.09	1024.54

* Reference -

(<https://wbindustries.gov.in/Climate.html#:~:text=Most%20of%20the%20annual%20average,plains%20and%20western%20plateau%20region>)

- Useable rainfall = 1024.54 m³ = 1024540 liters/year

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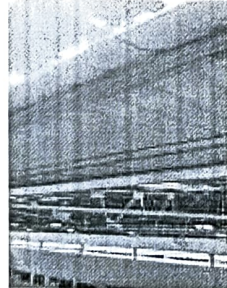
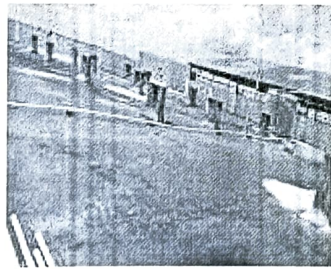
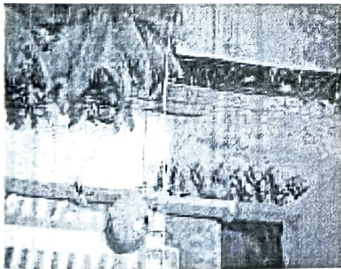
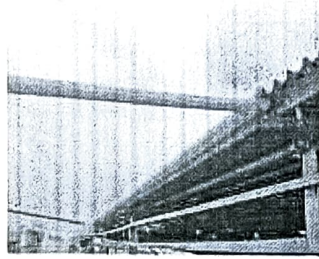
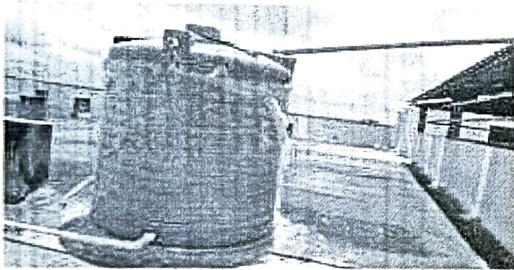
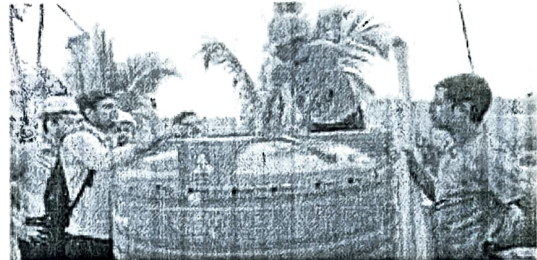
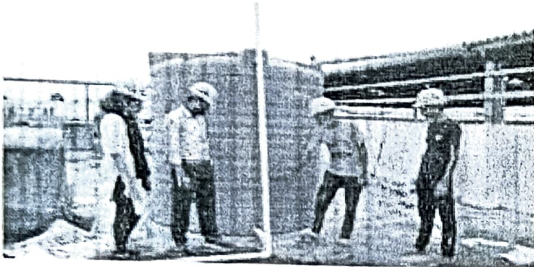
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Photography of Rainwater Harvesting Project



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Materials Required For Rainwater Harvesting System and Cost

QUOTATION					
To		OUR REF.:-	SS/Q-21/2023-24		
REGENT EDUCATION & RESEARCH FOUNDATION		DATE:	05-07-2023		
BARA KANTHALIA, BARRACKPORE		YOUR REF.:-	What's app		
Site:- BARA KANTHALIA, BARRACKPORE		DATE:	05-07-2023		
SL.No.	MATERIALS DESCRIPTION	QTY.	UNIT	NET RATE	AMOUNT
1	5000 Ltr. (Four Layer Foam) Water Tank (Rel. Classic)	2	Pcs.	38000.00	76000.00
2	2000 Ltr. (Four Layer Foam) Water Tank (Rel. Classic)	4	Pcs.	15600.00	62400.00
3	1½" UPVC Tank Connector	14	Pcs.	67.00	938.00
4	1½" UPVC Ball Valve	8	Pcs.	390.00	3120.00
5	1½" UPVC Elbow	135	Pcs.	54.00	7290.00
6	1½" UPVC Tee	30	Pcs.	80.00	2400.00
7	1½" UPVC Passover	10	Pcs.	177.00	1770.00
8	1½" UPVC China Clamp	180	Pcs.	11.00	1980.00
9	1½" UPVC 45° Elbow	18	Ft.	42.00	756.00
10	1½" UPVC Socket	98	Pcs.	31.00	3038.00
11	1½" X 1" UPVC Reducing Socket	35	Pcs.	32.00	1120.00
12	1½" X 1½" UPVC Reducing Socket	8	Pcs.	33.00	264.00
13	1½" X 1" UPVC Reducing Elbow	30	Pcs.	69.00	2070.00
14	1½" X 1" UPVC Reducing Tee	25	Pcs.	57.00	1425.00
15	1½" UPVC End Cap	12	Pcs.	22.00	264.00
16	1½" UPVC Pipe	950	Ft.	49.00	46550.00
17	1½" PVC Ball Cock	10	Pcs.	905.00	9050.00
18	237ml UPVC Solvent Cement	38	Pcs.	225.00	8550.00
19	1" UPVC Pipe	760	Ft.	29.00	22040.00
20	1" UPVC Elbow	95	Pcs.	23.50	2232.50
21	1" UPVC Tee	28	Pcs.	32.00	896.00
22	1" UPVC Socket	50	Pcs.	19.00	950.00
23	1" X ¾" UPVC Reducing Elbow	38	Pcs.	21.00	798.00
24	1" X ¾" UPVC Reducing Tee	12	Pcs.	33.00	396.00
25	1" X ½" UPVC Reducing Elbow (Metal)	24	Pcs.	90.00	2160.00
26	1" X ½" UPVC Reducing Tee (Metal)	14	Pcs.	122.00	1708.00
27	1" UPVC Ball Valve	28	Pcs.	240.00	6720.00
28	1" UPVC China Clamp	210	Pcs.	8.50	1785.00
29	¾" UPVC Pipe	130	Ft.	20.00	2600.00
30	110mm X 10' PVC Pipe S/S	30	Pcs.	520.00	15600.00
31	110mm PVC End Cap	12	Pcs.	56.00	672.00
32	1" X 1" UPVC Elbow (Metal)	12	Pcs.	210.00	2520.00
33	Teflon Tape	48	Pcs.	25.00	1200.00
34	250gm. BOND SET (M-seal)	18	Pcs.	75.00	1350.00
35	1½" C.I. Hook	36	Pcs.	11.50	414.00
36	¾" UPVC Ball Valve	25	Pcs.	140.00	3500.00
37	¾" UPVC China Clamp	42	Pcs.	7.50	315.00
38	Tap	400	Pcs.	400.00	160000.00
39	Tank connector	1	Pcs.	400.00	400.00
40	Service & Labour Charge				17000.00
(including GST) SUB TOTAL AMOUNT (NET)					337881.50
Discount on Labour Charge					7700
Total Amount					337881.50

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