

Review on Design of A Rainwater Harvesting System For MIT-WPU Campus

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Abstract- *The technical aspect of this project is to collect the rainwater flowing on the surface road i.e. runoff flowing on the roads of MIT-WPU campus. The field is set at an oversized space of regarding sixteen acres with strength of regarding 5500 students and of about 250 workers. Water is the natural resource that is being perpetually in high demands by students and workers. If this demand isn't met, then it'll result in water deficiency. Therefore, Rain water harvesting system is the best resolution for fighting against deficiency of water. Moreover, due to its easy technique's easy construction and installation and low value of investment, this method once more suites for implementation within. The field will meet potable and non-potable water demands. The easy technique tends to extend the greenery of the land and round the whole field, increasing aesthetic factor for a right residential institute to live in. Required information like structure areas, precipitation information, runoff groundwater condition etc. are collected and calculated. Then a recharge pit of appropriate capability and capacity is built. Optimum location of recharge pit was done. The price of the project is additionally calculated. So as to conserve the groundwater water. This project also will raise awareness of the importance of rainwater harvesting for recharging water. The rain water gathered in MIT-WPU field contains various water assortment and percolating pits at totally different locations. Therefore, keeping in mind of these positive aspects, Rain water harvesting is suggested for this field.*

Keywords- Catchment Area, Rainwater Harvesting, Runoff, Rainfall Data, Recharge.

I. TO STUDY FOR RAINWATER HARVESTING

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Rain water harvesting is the process of accumulation and storing of water before it is received by the aquifer. This water is used for different uses like drinking, irrigation, livestock as well as other typical uses to water. The rainwater collected from the roofs of tents, houses, and local institutions plays an important role for contribution of availability of

drinking water in the society. The water collected from the ground, especially some places are prepared for this purpose, this is known as the Storm water harvesting. In some cases, rainwater is the only source available and is also economical for drinking. Rainwater harvesting system can be constructed with the help low cost local materials and are most potential successful in most habitable locations.

II. RAIN WATER HARVESTING – A CAMPUS STUDY

Abhijeet Keskar, Satish Taji, Rushikesh Ambhore, Sonali Potdar, Prerana Ikhar, Regulwar D.G.

Water is the major problem created throughout the whole world in both rural and urban community. Urbanization, industrial development and increase in agricultural field and production which results in overexploitation of groundwater and surface water resources and resultant deterioration in water quality. Therefore, conventional water resources like well, river and reservoirs, etc. are very important for fulfilling the demands of water due imbalance rainfall. Due to the rainwater harvesting system investigate a new water resource. The aim of rainwater harvesting is concept used for conservation of the nature. This study of rainwater harvesting leads to analyses an alternative source of water in the campus of government college of engineering, in the Aurangabad state of Maharashtra, India. In this study we get an outcome of development of rainfall harvesting system for catchment areas of campus from parking area, workshop area, some electronics department area up to Hostel A. This analysis show that the present Rainwater harvesting has the capacity storage of 53,96,816 liters/year and the total cost is of Rs. 5lakhs respectively and reasonably well in comparison with conventional water sources. This development system satisfies requirement and this can be implemented in rural areas considering almost all aspects.

III. RAIN WATER HARVESTING PLAN AND DESIGN FOR MANGALAYATAN UNIVERSITY CAMPUS, ALIGARH” UTTAR PRADESH, INDIA”

Harit Priyadarshi, Waseem Ahmad Khan, Ashish Jain, Rituraj Singh.

The overall technical aspect of this paper is the rainwater harvesting carried out on the rooftop catchment area of Mangalayatan University Campus, Aligarh. The strength of this university is of 2700 students and including the strength of Staff of about 250 which is situated at the distance of 39 km from Aligarh city on a large area. Water is a natural resource required in a lot of amount which has a high demand by the student and the staff. If the demand for water is not met, then there is a high possibility of water scarcity. Due to which problems are created. Therefore, the best solution for this problem is Rainwater harvesting for reducing the scarcity of water. Moreover, owing the simple techniques ease of construction and installation and low-cost investment, the technique suites for implementation inside. The demand is for both potable and non-potable water in the large campus. This simple Techniques increase the greenery in the institute which increases the aesthetic appearance of the whole campus for proper residential institute to live in. For this whole process the data we need is the Catchment area, rainfall data, runoff ground conditions etc is collected and calculated. Then a pit of suitable capacity is designed and construction. The location of this recharge pit is done using hydrological analysis from the available data. The cost is also calculated. For conserving the groundwater, a paper was found which was cost effective and this paper was so useful for recharging the groundwater. And it is observed that this paper is going to be a very useful thing for different organizations which plan for promoting rainwater harvesting and to supplement existing water systems. This will spread an important message and awareness of rainwater harvesting for recharging the groundwater. In this Mangalayatan University campus water percolating pits and numerous water collections are situated at different locations. Therefore, keeping in mind such positive ideas and different aspects, rain water harvesting is recommended for campus.

IV. A PROJECT REPORT ON DESIGN OF RAINWATER HARVESTING SYSTEM FOR LINGAYA'S UNIVERSITY CAMPUS

Manender Kumar, Amit Kumar, Amit Vashisth, Deepak Chhabra, Dushyant Sehgal.

Rain water can be utilised for future use and rain can be conserved through Method of Rainwater Harvesting. As this water can be utilised directly, stored water can be utilized to increase the ground water table and improve its quality.

Now-a-days, there is less fresh water availability. Though most of the planet is covered with water, but most of it is salt water that can only be utilised by humans and other species of earth by process of expensive refining of oceanic water, which is an expensive and uneconomic process. Many limitations such as droughts further limit the consumption and utilisation of clean and fresh water, so people need to understand the Importance of water conservation and save water as much as possible. In some parts of the world, access to safe water is limited due to problem of contamination and impurity. People who have ample quantity of fresh water available have to conserve water as much possible and must avoid wastage of water.

The Project of Rain Water Harvesting is was carried out by: Manender Kumar, Amit Kumar, Amit Vashisth, Ashish, Deepak Chhabra, Dushyant Sehgal.

Faridabad region is situated in Haryana state which lies between 27° 39', 28° 31' in north and 76°40' and 77°32' in east longitudes. The Lingaya Institute of Management and Technology an educational campus is situated in Faridabad which is wide spread over an area of around 15 acres. Around 2500 students' study in the main campus, where daily requirement of these students has to be fulfilled. Due to the ample number of student's study in the college, water shortage may occur in future. Nearby Ground water table is being reduced highly due to the usage. This water is also being procured and utilised for nearby agricultural fields. Thus, to counteract this situation the whole area can be utilized for the purpose of Rainwater Harvesting. With the annual rainfall of around 542 mm and an intensity of 20mm per hour in this area of Faridabad provides good opportunities for conserving the rain water through the method of Rainwater Harvesting. The students carried out the survey as well as fund out the catchment area of the universities according to the GROUND ELEVATION of the surface. They have included and considered all the major buildings having large rooftop areas. Hence, study area of this project includes all the 9 block, 1 playground, 1 workshop, 1 canteen. They carried out survey of the average rainfall of Faridabad District of about last 8 Years, which is from 2002 to 2010. According to the survey, normal annual rainfall was 542mm & monsoon rainfall 460mm was found out. The rooftop surface of the institutional buildings and hostels is considered as a catchment area of the project. In this project of rainwater harvesting system which was carried out in the Lingaya Institute of Faridabad consisted of various structures like pits, trenches, dugwells, handpumps recharge well, recharge lateral shafts.

V. CONCLUSION

As we know that scarcity of water is a very serious issue in India. So, to overcome this issue we have tried to save water on small scale. After finding the slopes of our campus (MIT College Kothrud) we have designed drainage at suitable locations. These designed drainages will carry the flowing water and will pass it into the ground. This will help in increasing the ground water table. And this increased ground water table can be used for gardening, cleaning, etc.

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