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STROME WATER COLLECTION AND DISTRIBUTION NETWORK USING JAL TANTRA SOFTWARE

krutik Churi[1] ,Vishal jaishwar[2] , Suraj Male[3] ,Jimit Chotai[4]

1(Civil Engineering, Viva Institute of Technology / University of Mumbai, India)
2(Civil Engineering, Viva Institute of Technology / University of Mumbai, India)
3(Civil Engineering, Viva Institute of Technology / University of Mumbai, India)
4(Civil Engineering, Viva Institute of Technology / University of Mumbai, India)

Abstract : *Fresh water today is a scarce resource, and it is being felt the world over. Water is important in all aspect such as transportation, irrigation in agriculture,domestic consumption and for other use purpose. The availability of water in any area is comefrom rainfall or precipitations. Rainwater harvesting is atechnology used for collecting and storing rainwater from rooftops, the land surface or rock catchments using simple techniques and proper distribution or supply system is required for utilization of the harvested rainwater.*
Keywords - *Collect the storm water , Effective use , Designing ,Water distribution network.*

I. INTRODUCTION

Water is important in all aspect such as transportation, irrigation in agriculture, domestic consumption and for other use purpose. The availability of water in any areais come from rainfall or precipitations. Rainwater harvesting is a technology used forcollecting and storing rainwater from rooftops, the land surface or rock catchments using simple techniques such as jars and pots as well as more complex techniques suchas underground check dams. Rainwater harvesting can be used for landscape irrigation, cleaning and washing, source of drinking water supply in rural areas and other uses.

To overcome these problems, we have planned a system addition to the storm water drains which will be connected to the kerbs of road so that the water percolatingfrom the porous kerbs will flow through these drains. The carriageway will be given such a slope that the rainwater from it will slip into the shoulders and from here rainwater will seepage into the sub base layer which will be of lean concrete. There would be a percolating steel mat whose opening cross-section will be smaller than particle size i.e., about 1mm2 so that Pervious concrete and lean cement would not flow with the water, which would be attached to tube wells from where the water canbe used later and pumped to EST station for further transportation of the storm water to the reservoirs.

II. LITERATURE REVIEW

Nikhil Hooda, OM Damani Reservoir costs are an important component of the capital cost of a piped water network. Reservoir locations and elevations are currently inputs to the optimizer. But these can also be made variables and be part of the optimization problem by adding the reservoir costs to the objective function and adding relevant constraints relating to allocation of nodes to reservoirs.

Dragan Slavic, Helena Mal- Jetmarova, Nargiz Sultanova The review of the research literature over the last 30 years show the absolute dimension metaheuristics WDS analysis. The period has witnessed a remarkable transformation in the efficiency of optimization algorithm and the scale and complexity WDS problem that can be solved.

Pradeep P. Kalbar, Pradeep N. Gokhale, Anuj Kumar Ghorpade, Abhishek Kumar Sinha currently, there is the need to create WSS that delivers water with good pressure with expected liters per capita per day, and their should not be inequality in the distribution. Several solution such as multi outlet tanks, shafts, many folds, and master piece introduced in this paper can help alleviate the current situation. This low cost intervetation will help in controlling head in the system and removing the access head and facilities the increase in supply hours.

Need of Study/Project

Currently, there is a need to create a WSS that delivers water with good pressure with expected liters per capita per day, and there should not be inequality in the distribution. Solutions such as multi-outlet shafts introduced in this report can help alleviate the current situation. These low-cost interventions will help in controlling head in the system and removing excess head, which is the key to achieving service improvements. These interventions will facilitate the increase in supply hours and equitable distribution. Additionally, these interventions are easy to implement, can be locally fabricated, and easy to operate and repair by low-skill operational staff. Hence, there is a need to study about the solutions that can help in better and efficient water supply system, the use of these interventions not only help Jal Jeevan Mission (Rural and Urban) but also help realize the goals of the Atmanirbhar Bharat mission. Once, the improvement in intermittent water supply is achieved these interventions will lead a way to achieve 24x7 water supply.

Problem Statement

The Storm water run-off creates a lot of problems including overflowing from the existing storm water drains and causing water logging issues in various parts of the city, also the water from storm water drain finds its exit to the seas and oceans which means all the amount of run-off water carried by the storm water drains is wasted and no use of it is availed. The huge of amount of storm water sufficient for the needs of the whole city. Some villages and towns in other neighboring districts are having water scarcity crises. Rural areas with increasing population realize the need to improve or expand the water distribution network for meeting the water requirements of the increasing population. Constructing various traditional elevates storage reservoirs comes at a great cost, and the storage tanks are to be located centrally at a locality for uniform distribution, the single outlet of the storage tanks also add up a load on the locality's distribution network. This costlier approach needs a more cost efficient approach for improving the existing water supply system.

Aim of Project

- To reduce cost of water supply system.
- To boost Jal Jeevan and Har Ghar Jal mission.

1.5 Objective of Project

- To collect the storm water and for using it more efficiently designing a water distribution network, following are the main objectives of our project.
- To use Google Earth pro for mapping the locations of ESR (Elevated Storage Reservoir), Source and other reservoirs.
- To a design water distribution system.
- To study and use JalTantra Software for Designing Distribution System.
- Cost Estimation and Analysis of the project.

III. METHODOLOGY

3.1 Identifying location using Google Earth

As of early 2015, Google Earth Pro, which used to be a $400 product, is now free. This is a powerful yet simple tool for viewing information geographically—whether it is viewing climate information, analyzing change over time, seeing the world the same way you are used to seeing, or remembering routes taken while on vacation. In this tutorial you will learn how to create placemarks (points of interest), analyze elevation changes over the landscape, import images, utilize the built-in library (3D buildings, weather, photo gallery, etc.), view historical imagery, navigate to a city with the directions module, import shape files, geocode addresses, and create a route.

3.2 Designing of Water Distribution System using JalTantra Software.

JalTantra is an open-source freeware software for optimization of water supply network. Entire water distribution can be designed in sequence or simultaneously depending on user preference. For example, user can decide to design pumping main and gravity main separately or user can opt for designing both simultaneously. JalTantra is a system used to optimize piped water networks. Given the relevant information about a network it will provide the user with the optimal pipe diameters so that capital cost is minimized. Jal Tantra provides an easy-to-use interface with key result table. Methodology of design using Jal Tantra can be broadly classified into three categories: i) Preprocessing, ii) Optimization, iii) Post Processing.

IV. CONCLUSION

Google Earth Pro is used to identify and locate the location as per the needs of project. JalTantra software was used to design water distribution system which is adopted by government engineers. Result shows that water distribution system can be successfully designed as per the need of the project. Water logging can be solved and water crises can be overcome by using this method. Cost of the initial project is high but revenue generated from it is notable hence this can be applied practically for a long term. The overall objective of the project was to research and recommend sustainable, reliable solutions for rural drinking water supply system(s) which could be scaled up to increase coverage for rural areas, while ensuring that quality of the drinking water is not adversely affected. Four related activities were pursued: 1. Use of solar pumps and for water pumping and billing 2. Optimizing costs of piped water systems. Feasibility of cost-effective technologies for providing rural populations with safe affordable and sustainable drinking water. Feasibility to provide cost-effective and sustainable solar-based drinking water supply.

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