

REVIVAL OF ANCIENT WATER SYSTEM OF CHITRADURGA CITY THROUGH RAINWATER HARVESTING – A SUCCESS STORY

Water is an elixir of life on earth. Water is the world's most precious natural source. It is the support of life. The source of all water is Rain. Rain is Living water.

I. Background:

Rainwater is a renewable, sustainable and a high quality water source for our existence on this universe. Rainwater harvesting is an ancient technique that is commonplace in many areas of the world and is being revived in India. The main reason for reviving the rainwater systems is basically due to the erratic rainfall and fast dwindling or depletion of underground water.

Rainwater is soft, neutral in pH, free from salts, minerals, and other natural and man-made contaminants that cause staining, and pipe corrosion or smell. As well as being "nature's watering agent" for gardening, disinfected rainwater is an excellent water source for general household use - either on its own or as a supplement.

Rainwater harvesting is an ancient technique that is enjoying a big revival in popularity around the world because of its inherent qualities. Archeological evidence supports the capture of rainwater as far back as 4000 years ago and ruins of cisterns built as early as 2000 BC are still standing in Israel. Rainwater has a culture, it is attractive to our senses, and to some it is sacred. It is called sky supply, water from heaven, and nature's watering agent.

The ancient water system in Chitradurga is unique in many ways. The engineering marvel, the skillful storage of water is astounding. The Rulers of Chitradurga have made significant contribution by building tanks; Kalyanis (Hondas) and open well to store rainwater, preserve water and recharge the underground water. Their forethought is astonishing.

II. Situation prior to the initiative:

Water in Chitradurga City was the most sensitive issue for the last 5 years. This District has faced 59 droughts in 100 years. Due to regular drought situations, the underground water has suffered severe stress. In addition to this, the grand neglect of the traditional water bodies has also resulted in fast depletion of underground water. Many of the ancient **Water Vessels** (Kalyanis), which were used as garbage and debris pit were automatically converted as mosquito breeding centers and spreading epidemics. In this backdrop the success story of the City of Chitradurga has commenced.

Channakeshavaswamy Honda (Kalyani) – Before Revival

(This Kalyani has a storage capacity of 5.40 million liters)



Sihineeru Honda (Kalyani) – Before Revival

What was found inside the Honda! Bizarre waste



The water body had become a dumping place for all sorts of solid waste



III. Objective and Aims:

The District Administration in association with Chitradurga City Municipality has made elaborate attempt to revive the ancient water bodies which are abundant and located within the city limits. The aim was to rejuvenate the Open wells, Kalyanis, Hondas etc. and make the local water supply system sustainable.

IV. Strategies adopted and implementation process:

To implement the project of rejuvenation of water bodies through Rainwater harvesting, following steps were followed:

1. Awareness Programs:

Several workshops were held at various places of Chitradurga to educate the people about RWH. During the workshop, posters and pamphlets in local language were distributed to people for better understanding. On every specified day, people used to gather for interaction at predetermined convention centers to discuss the problems of water. It helped them to plan effectively the program of RWH. Street processions along with renowned pontiffs were also held to motivate the people of Chitradurga city to support the RWH initiative. Recently, people of Chitradurga are also being educated on Rooftop Rainwater Harvesting.

2. Identification of catchment areas:

The catchment areas were determined based on the natural inter-connected nullas with the help of local Hydro-geologists and water resource experts. Residents from neighboring localities of the water bodies of Chitradurga have played an important role in identifying and removing the encroachment of natural water ways (Drainage pattern). The officials of various departments along with the local MLA also took immense responsibility in creating awareness on importance of water pockets and significance of rainwater harvesting.

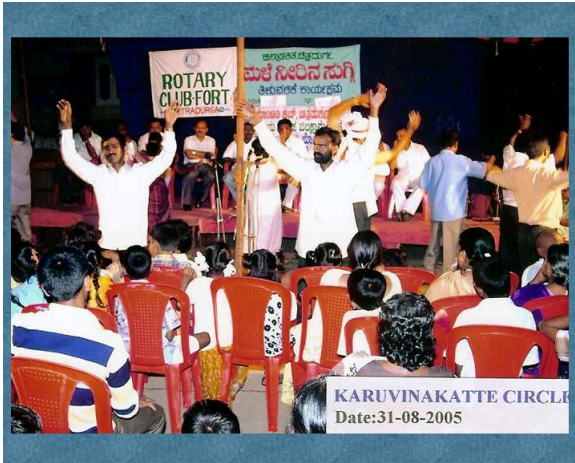
Honorable DC addressing a RWH workshop



Awareness programme on Male Neeru



Awareness through Street Plays



Through demonstration – during rains



Through songs on RAIN WATER



Awareness through Harikathas and Kirtans



Rotary Club, Inner wheel club, Resident Welfare Associations of Chitradurga, Teachers Welfare Association etc. were used for extensive awareness programmes in the city. The District Administration conducted competition for slogan writing, poem writing and debates on Rainwater Harvesting. Students from the SJM Institute of Technology, Government Colleges and High Schools participated in this competition.

ROOFTOP RAINWATER HARVESTING - A MONUMENTAL EXAMPLE OF DEPUTY COMMISSIONER, CHITRADURGA

The charity began at Home - The Residence of Deputy Commissioner is been adopted for Rooftop Rainwater Harvesting.

The following are the features of the Residence of the Deputy Commissioner:

**The portico has been built for RWH
Roof area: 120 x 80 ft = 9600sft.
Annual Rainfall: 486 mm**



**The water from Portico is collected in 12 swan ponds. Capacity : 5000 litres
Roof area: 20 Sq Mtrs.**



The entire roof water is conveyed through a pipe system with necessary filtration to the sump built in front of the house. The water is collected at two levels of the rooftop. The first level collection of water is stored in plastic tanks of 1000 litres capacity and used to flush bathrooms on the rear side of the building.

Second level water is collected and used for bathrooms at the ground level.



Model of Rainwater harvesting: (Demonstration purpose)



From the Tarpaulin Roof: 20 Sq Mts.
Water Tank Capacity: 1000 litres
Water Sump capacity: 50000 litres

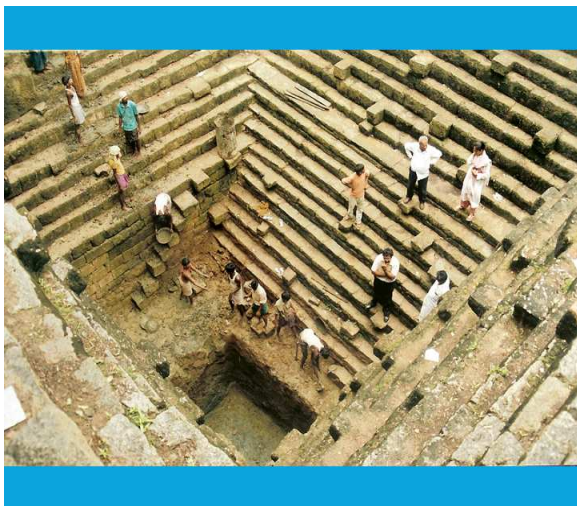
The water from the sump is used for drinking, washing, bathing and gardening. The sump was full several times and empties every time. Every drop of rain from the large roof area of residence is collected and stored in the underground sump.

V. Situation after implementation of Initiative:

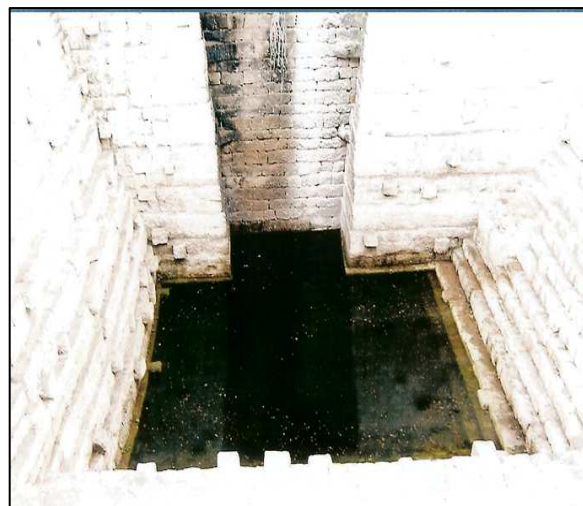
1. It was found that this water body (Channakeshavaswamy Honda) was a great source of water in this area. Nearly 52 bore wells, which were yielding brackish (salt) water, are now yielding sweet water.

As many houses surround this Kalyani and the catchment area is diminished due to the clearance of encroachment, the District Administration along with City Municipality has taken initiative to divert the roof rainwater through a pipeline from Urban Development Authority Office and the premises of All India Radio, which are located at the higher gradient of this Kalyani. This Kalyani got filled several times and the water just vanished (percolated) underground. Gradually this small initiative has resulted in keeping the level of water in all the bore wells around this Kalyani constantly at 50 to 70 ft. It looks strange but true!

The Honda (Kalyani) during cleaning operation



The glory of Kalyani is regained after cleaning



2. Venkatramanaswamy Honda. Water holding capacity: 6.80 million litres. It had totally covered with thorny shrubs and silt.

Venkataramanaswamy Honda – Before



Venkataramanaswamy Honda – After



A small canal was dug from the catchment area to make water to enter the Honda. After a few days it rained heavily and the result is astonishing... Now the Kalyani is full.



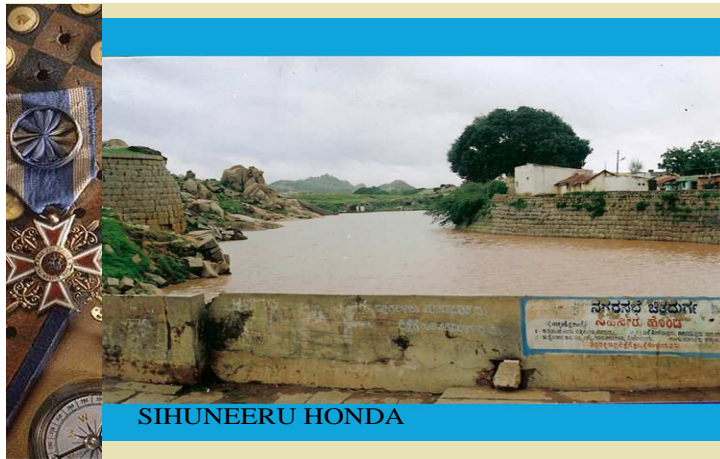
After cleaning, the Kalyani is looking neat and attractive

VI. Outputs and outcomes:

With replenishing of water bodies (Kalyanis, Hondas, Ponds etc.), the dried bore well in the vicinity have been yielding excellent water, both in quality and quantity. The forethought of our ancient rulers is just given a small push. The water scarcity in the area is relatively relieved.

The City Municipality along with District Administration has cleaned up nearly six big Kalyanis to hold maximum amount of water and the scarcity of water was never felt during the summer seasons of 2005-06, 2006-07 & 2007-08

Sihineeru Honda:



Sihineeru Honda is one of the major Hondas in Chitradurga, which covers a peripheral part of the fort. The water holding capacity of this Honda is 124 million liters. Due to abundant water available in this Honda, soil moisture of the surrounding area is increased along with the green cover. About 180 bore wells of the surrounding areas have been replenished because of the water holding.

The system is being inaugurated by the MLA Mr.Thippareddy



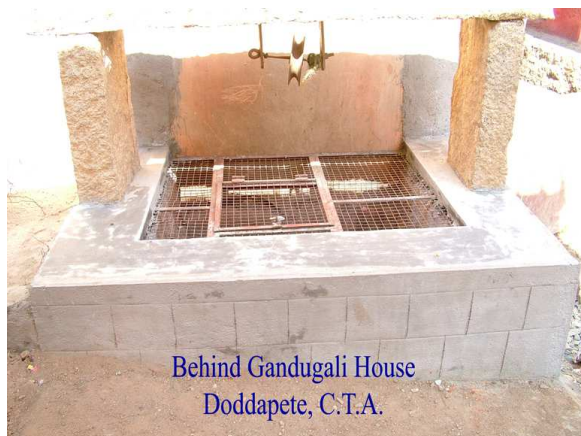
Rainwater Harvesting at City Municipal Council Building, Chitradurga



Before... Abandoned Open Well



After... The water level is at 3m depth



Another water body (Open well) – Before...



After Restoration...



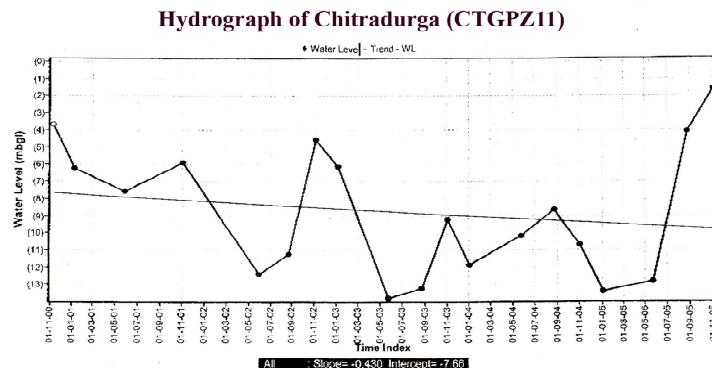
Everyday hundreds of children drink water from this rainwater tanks

Mettilu Baavi:

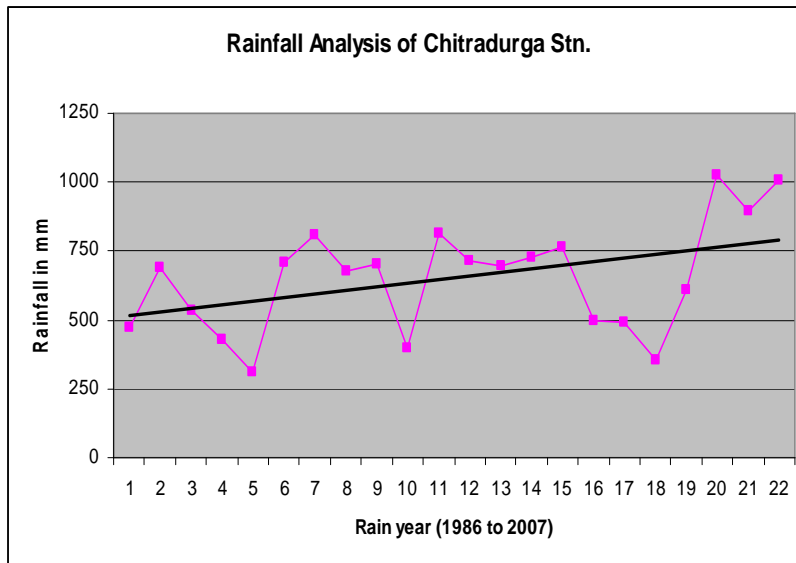
This is a masterpiece and an engineering marvel. This ancient well is cleaned and thrown open to the public for various purposes like drinking, washing and bathing. Now this has become one of the main sources of the city Chitradurga. The surrounding populace is depending on this water body for their domestic needs.



Improvement of water level after rainwater harvesting:



The district administration has been successful in harnessing the rainwater from rooftops as well as surface runoff. The net result is that there was no water transportation of water through tankers during the year 2005-06 & 2006-07.



Learnings: The city had been reeling under severe drought during the water years 2001-05 and faced acute scarcity of water and dryness of land. Due to creation of awareness and advocacy and demonstration of the uses of rainwater harvesting, there is a tremendous impact on the water conservation in the urban areas. The new houses are adopting the techniques of rainwater harvesting.

The district as well as local administration (CMC) has created a number of demonstration plots for the benefit of the urban populace. Every zone in the Municipal limit is having rainwater harvesting structure. People are witnessing perceptible changes in the town's water supply. All these happened under the leadership of the then Deputy Commissioner Sri K. Amaranarayana and is being continued now. He has conducted several awareness camps in the different wards of Chitradurga City and attached urban areas. This has gone a long way in protecting and preserving the ancient water bodies and adopting rainwater harvesting techniques.

VII. Sustainability:

The revival of the ancient water bodies has paid rich dividends, as the city, which was reeling under water scarcity, has become a city of water plenty. The people are very happy to follow the suit. The Government is also encouraging this type of initiative.

This Revival of water system (water body) through rainwater harvesting initiative is economically sustainable as the investment made in the project was very meager and the people participation is exemplary. This initiative has helped to solve the water supply problems of the City Municipality. It has also helped to create assets in the form water bodies.

VII. Potential for Replication:

This initiative is easily replicable in other parts of the state/ country where the similar nature of water bodies prevailed. Beside this, the Rooftop Rainwater Harvesting techniques can be disseminated and practiced through out the areas where the rainfall is below normal and the problem of water scarcity arises in lean period of the year (summer). This could be achieved in vulnerable urban local body (Municipality) with proper coordination among local community, concerned Government departments, elected representatives and the NGOs. Rotary club, Inner wheel club, Lion's club, community oriented organizations may also be included in the event of replication.