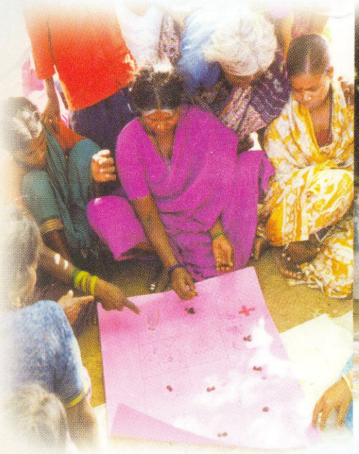
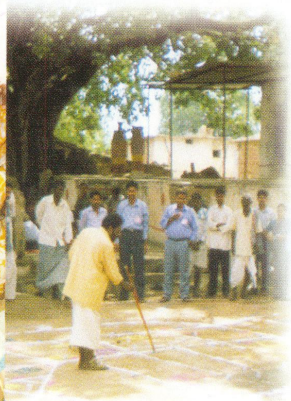
WATER VISION





Training Manual for Gram Panchayat Working Committee members involved in village-level Water Management

Mission Support Unit,
Water Conservation Mission
Hyderabad

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FOREWORD

Man's very existence is dependent on water. Water is of vital importance to every living organism on this Earth. It is nature's boon for sustenance, evolution and progress. From the moment he enters this world till he breathes his last he depends on water at every step. He needs water for drinking, for agriculture as well as for cattle breeding. In other words, life without water is unimaginable. All our industries that provide us with practically everything are dependent on water for functioning.

What if water were to become extinct on this planet? What would happen to all the living organisms on earth that are solely dependent on water? Isn't the very thought spine chilling? Scarcity of water is very evident in the plains and plateau regions. If this state of affairs were to continue, we may soon have to face dire consequences. Therefore, it is imperative that water conservation programs be taken up on a war footing. This requires the coordinated efforts of local people and local governmental agencies to device strategies and promote solutions for sustainable water resources conservation and management programs – so that people themselves shoulder the responsibility to implement strategies for sustainable groundwater use.

We are aware that as a part of this programs, the AP Water Conservation Board has identified districts and mandals which have been experiencing acute water shortage. With the active participation of voluntary organizations, the Board has launched projects at *Gram Panchayat* levels to achieve sustainable water use. This programs consists of three phases, of which the first phase has been successfully completed. The objective was to create awareness among rural people about the importance of water resources and the need to conserve them by disseminating accurate information and highlighting the consequences of water resources misuse. People were informed about the various programs being conducted by the government concerning water and its conservation. Based on this information, further water conservation and management strategies will have to be evolved.

To design strategies for effective water management and improve the productivity of water, it is essential to assess the existing village water resources, the problems surrounding them and promote solutions, after a thorough analysis. To arrive at effective water management strategies, the entire community has to come to an understanding. To facilitate this, a Participatory Rural Appraisal (PRA) has to be conducted with the active participation of all the people, taking into account their ideas, observations, priorities etc. Therefore the idea behind the program is to facilitate people in developing and designing water management strategies by themselves. This book is being published to educate and help facilitators implement these programs effectively.

INTRODUCTION

This manual describes a two-day training at local level in making micro-plans for groundwater management. The training was conducted in 970 villages in Andhra Pradesh, Indai as phase two of a program of capacity building in local water management. The was imparted to the Working Committee Members – Natural Resources Conservation Committee of *Gram Panchayat*s (local governments). The preceeding first part of this program focused on setting the scene for local groundwater management. The objectives of the first phase were:

[1] To create awareness about the responsibilities and regulations of to be followed with regard to water resources conservation and management.

[2] To create awareness about various water related governmental programs, watershed programs, various irrigation projects, drinking water purification schemes, the AP Government's Water, Land & Trees Act etc.

[3] To identify problems surrounding water resources in villages, conduct investigative studies about the causative factors, disseminate accurate and refined understanding about the problem and discuss solutions.

In the first phase of training, people were given a direct and broad picture of the following issues:

- Why should natural resources be conserved?

- How does the conservation of natural resources will help to sustain our lives?

- A comparative study of the state of our natural resources in the past and at present.

- Experiences and ideals
    - Experiences of the people of Kandipeta and Mogalichetla Thanda in the conservation of groundwater resources
    - Experiences of the people of Pedda Samudram and Nazeerabad with regard to drinking water
    - Experiences of the people of Parvatagiri and Ootlakunta regarding the use of lake silt
    - Experiences of the people of Rajmmapeta and Sangam Sanghapur regarding common lands

- Awareness in people about government schemes:
    - Water Conservation and Utilization Committee
    - AP Water, Land & Trees Act - 2002
    - Watershed projects
    - Reforms in village water supply and distribution
    - The role of *Panchayat*s in resource management
    - Forest Conservation Committees

Before embarking on the second phase, described in this manual, a quick recapitulation of the first phase was undertaken.

THE SECOND PHASE OF TRAINING – ITS OBJECTIVES AND IMPLEMENTATION

In the first phase of training, we were able to identify water resources, their existing condition and the factors responsible. In the second phase of training, we would have to take into account the problems and solutions identified during the first phase and make an in-depth study of all the various aspects (through participatory methods) and design water management strategies.

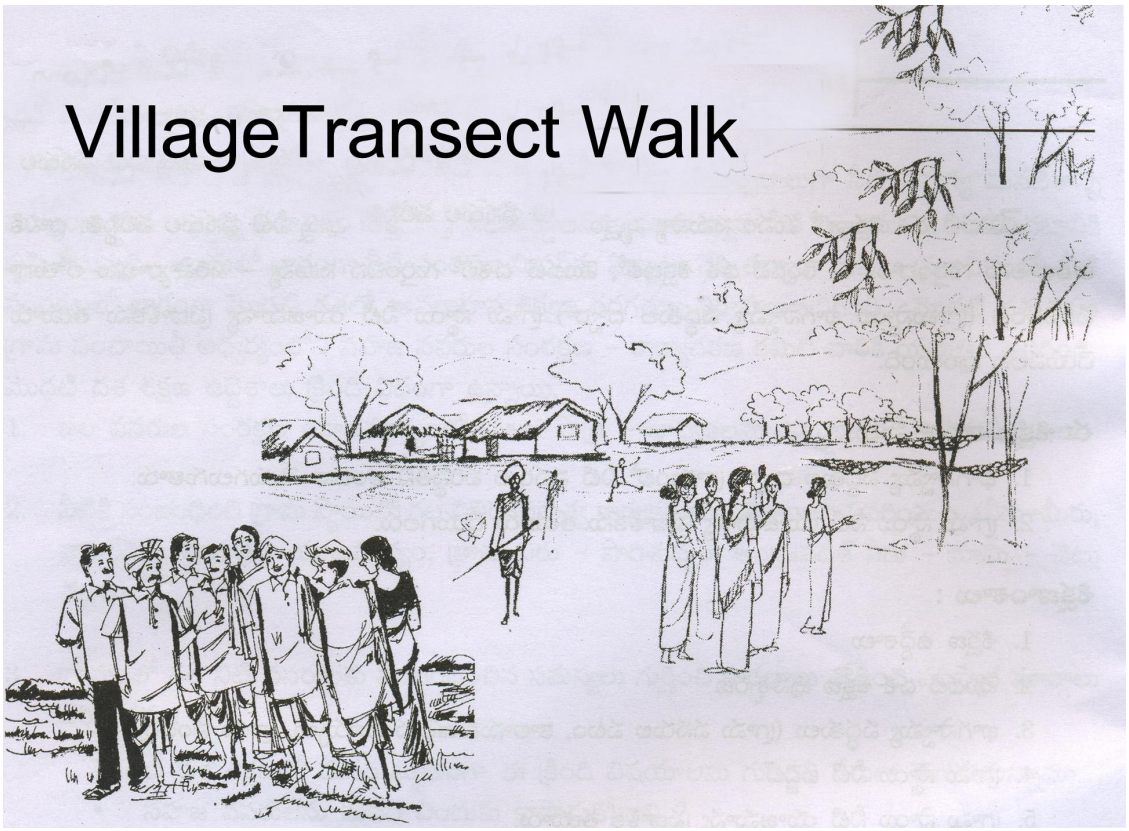
This training will enable one to:
[1] To estimate the existing condition of water resources through farmer-led participatory methods
[2] To device village level water management strategies

The following topics will be covered in the training program:
[1] The objectives of the training
[2] To recapitulate/re-evaluate the first phase
[3] Participatory management system (map of village resources, changing trends, village visits)
[4] Preparing a water-budget at the village level
[5] Designing water resources management at the village level

Who is the training meant for?
All those members of the Natural Resources Conservation Committee of *Gram Panchayat*s who participated in the first phase will be required to attend the second phase of training.

Duration of the training:
Two days.
On the first day, the training will be in class rooms through participation and exchange of views.
On the second day, there will be a village visit and a water management plan will be designed based on the information gathered.

In the second phase, the following steps will be implemented:
- Orientation walk through the village (Transect walk)
- Observation and analysis of changes/trends
- Preparation of a village map
- An estimate of water requirement – to prepare a budget
- Water management plan and implementation



We have been residing this village for decades. Our ancestors had also lived in this village. There is nothing that we don't know about the village. Our personal observations, experiences and what we have learnt from our elders have helped us in acquiring a lot of information about our surroundings. However, we are so preoccupied with our personal lives that we don't pay much importance to our surroundings.

Through a transect walk we get to develop a better understanding and awareness of our surroundings that will help us to look at everything around us from a different perspective.

For instance, we will be able to understand the boundaries of our village, where we get drinking water from, what are the various crops being cultivated by different people. What is the intrinsic nature of our soil? Exactly how many lakes and ponds do we have, and what is their condition? What are the various programs that have been undertaken to promote water
conservation, and what progress has been made in that direction? These are some very important questions that need to be considered. The transect walk enables us to observe our surroundings with a better understanding. For instance, we may have been aware of the depleted water table, which could be due to the inherent nature of the local soil, but the

transect walk would provide us with better understanding of such things when we get to see a well or a pond from close quarters.

The transect walk also helps us to observe what is happening in the outskirts of the village and how do our activities contribute to the village water management. For instance, during our walk we may across taps without nozzles, or taps without basins creating slush or taps without proper channels to drain away excess water. We may have seen them earlier but never gave a thought to them or tried to find solutions to rectify them. A close look at such problems changes our outlook.

The transect walk also enables us to observe what others in the village are already doing towards improving water resources management. We too could contribute to such projects by actively participating and making helpful suggestions. We can study these activities in detail and decide what best can be done by us to contribute to the betterment of the village water management.

The transect walk also provides us with an opportunity to view all the activities that have been taking place in the village from a new angle and relate them to the new projects that are being undertaken and if required make necessary changes. Through transect walk, we get an opportunity to meet a number of people with whom to share our experiences and analyze them. Therefore it is necessary that as many people as possible be encouraged to participate in the walk.

Experienced people as well as youngsters must both be encouraged to participate in the transect walk. The experiences of the elders will help the young people to get a better understanding of the village and its surroundings which in turn will not only give them a better idea of the state of affairs but also enable them to take part in future village projects with greater enthusiasm.

Since the purpose of the transect walk is to create awareness about water resources management in the village, we should select a path that would cover all the various sources of water such as streams, lakes, ponds, wells, hillocks etc. It is important that we stop at each water body and discuss every relevant aspect in detail. Care should be taken to select a route that would provide us with a clear picture of the conditions prevailing in the village.

As the name indicates, the transect walk has to be naturally done on foot, and it is therefore time consuming. Sufficient time has to be allocated for the walk which will provide us with vital information for our future water management plans. An integrated approach coupled with patience and enthusiasm is a must.

To complete the walk we may require half a day, so we should be prepared to spend that much time and also remember to carry sufficient drinking water.

As a part of this walk, we would have to make notes from time to time of our findings and observations. This could be done by the literate people in the group. It is also necessary to check if the facilitators accompanying us are taking down our views and observations.

The transect walk may not provide us with an opportunity to cover the entire village or enable us to see every nook and corner of the village – as an alternative, we could go to the village outskirts and from a hillock we could have an overview of the entire village. This will give us an idea of some of the water sources we could not cover during the walk.

Attached are some specimen maps of certain villages covered during such transect walks. After the transect walk through your own village you will be able to make a map of your village on similar lines.

Change is a natural and inevitable part of life and an essential process of evolution. We all would have observed changes that have been taking place in our immediate surroundings since our childhood. Our future generations too will be able to perceive changes in their neighborhood. We come to know about certain outdated practices and customs through our elders.

The changes that have been taking place in our village can broadly be observed in the following areas:

[1] Rainfall
[2] Lakes or ponds and their depth; the amount of silt in lake/pond beds
[3] Food habits
[4] Population
[5] Livestock
[6] Water table
[7] Farming methods/practices
[8] Influence of modern technology (bore wells/toilets)
[9] Changes in occupation
[10] Land and its uses

There are sure to be changes in all the above given areas. What were the changes that occurred? How did these changes occur? Was there an upward or downward trend, and what underlying factors led to these changes can be gathered through interaction through residents of the village. As we are chiefly concerned with water resources, we would have to focus on the changing trends of village water resources and analyze them.

For instance, maize, *ragi* and corn were the staple diet of a majority of the rural people that have of late given way to rice. Now paddy cultivation requires large quantities of water, which has necessitated the sinking of more bore wells that in turn has resulted in the depletion of groundwater levels.

While we are aware of these changes, we can get a clearer picture when all the information and observations are compiled in a systematic manner. The causes of these changes can also be better understood, which in turn will help us to find solutions to problems plaguing us.

It is rather difficult to pinpoint the exact time a particular change may have taken place in the past, therefore it is advisable to broadly connect the change with some other event for our convenience (for example, a particular event may have taken place during Ramayya's tenure as *Sarpanch*) and noted down.

If all the information thus gathered is depicted with the help of pictures (on the village map) it would facilitate our discussions with the local people.

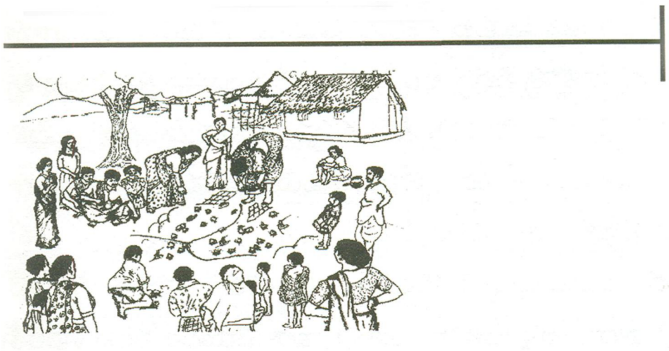
Let us see how the analysis of changing trends will help us in creating a water management plan for the village. Through the transect walk, we were able to gather necessary information about water resources in the village as well as those in the outskirts. All this will once again be discussed comprehensively in the village with the help of the map that will help us to identify the water bodies and their exact location. A cleaner picture will emerge with the help of 'the analysis of changing trends', to enable us to understand the situation better.

For instance, if it is observed that over a period of time the storage capacity of lakes/ponds has decreased or that they have started overflowing after even a slight rainfall, it is indicative that the ponds have become shallow.

Similarly, over a period of time, in places where there is a rise in wet crop cultivation, a steady depletion of groundwater reserves can be noted. If we take the case of cattle – we can observe an increase in the growth rate of smaller cattle compared to larger cattle as a result of mechanization and modern farming techniques.

This means the changing trends will provide us the direction in designing a water resources management plan for the villages. The village map serves as an effective tool in doing so.

Likewise, keeping in mind existing practices, we may be able to estimate what our water condition would be at any given time in the future with the help of analysis of changing trends.



The Village map

The very mention of our village conjures up a vivid picture of our streets, lanes and roads, buildings, public taps, bore wells etc. However, we may not be as familiar with the rest of the village as we are with our immediate neighborhood as we have never seen our village map. A village map gives us a clear picture of all the water resources, their condition and their exact location.

It is advisable to refer to the map drawn during the implementation of the AP Government's *Velugu* project. Similarly, if projects like Watershed or forest conservation activities had been implemented in the village earlier, they too would have drawn village maps that can be used as base maps for our purpose now. All we would have to do is incorporate changes that took place in the village into these maps since they were drawn.

Such a village map is usually drawn on the ground instead of on paper so that everyone can see it. On a paper, it would be very difficult for everyone to view and make necessary changes from time to time. Therefore, a village map is drawn on the ground with the participation of everyone.

As most of us would not be familiar with drawing or have any previous experience in map drawing, the 'facilitator' can help us and show us how to do it.

Starting at a point in the village, houses, streets, public taps etc can be identified and covered. Likewise all the water bodies, surrounding the village such as streams, lands, lakes, ponds as well as wastelands, hillocks etc can be covered.

As we would have already gathered enough information through the transect walk regarding the resources in the residential areas within the village and outside the village, this information will aid us in drawing the map.

All the people who had participated in the transect walk would be required to take an active part in drawing the map. The residential and non-residential areas can be demarcated with the help of landmarks.

Those of us, who participated in the transect walk can take the initiative and start drawing the map while others watching the process can offer helpful suggestions and make necessary corrections. In this manner even people who had not participated in the walk can be of help in drawing the map.

While drawing the map, we may identify a number of natural resources, but as the purpose of the map is to highlight water resources we will have to pay special attention to all the water resources within the residential areas and those in non-residential areas. All the drinking water taps, hand pumps and wells have to be identified and marked. Cess pools have to be identified. All the irrigation wells, bore wells, ponds and streams in non-residential areas as well as lands that have acute water scarcity, structures for water storage and supply erected earlier should be marked and identified.

Once the map is drawn with the help of information gathered through the transect walk, it is essential to cross check with the local people whether all the areas have been covered.

After this, we can proceed to the next stage, which is to assess the condition of all the water resources – whether the taps are in working condition, about leaks in water taps, tanks and their condition. Similarly, assess the present condition of ponds, lakes and check dams and note the time they came into existence and the factors responsible for their present condition. All these will have to be discussed in detail with the help of data synthesized from the 'analysis of changing trends'.

Data and information got from the analysis of changing rends would have to be placed once again before all the people. This would enable us to understand why the condition of ponds, lakes and wells/bore wells has deteriorated so much and that it is our own habits and practices that are responsible for our present state of affairs.

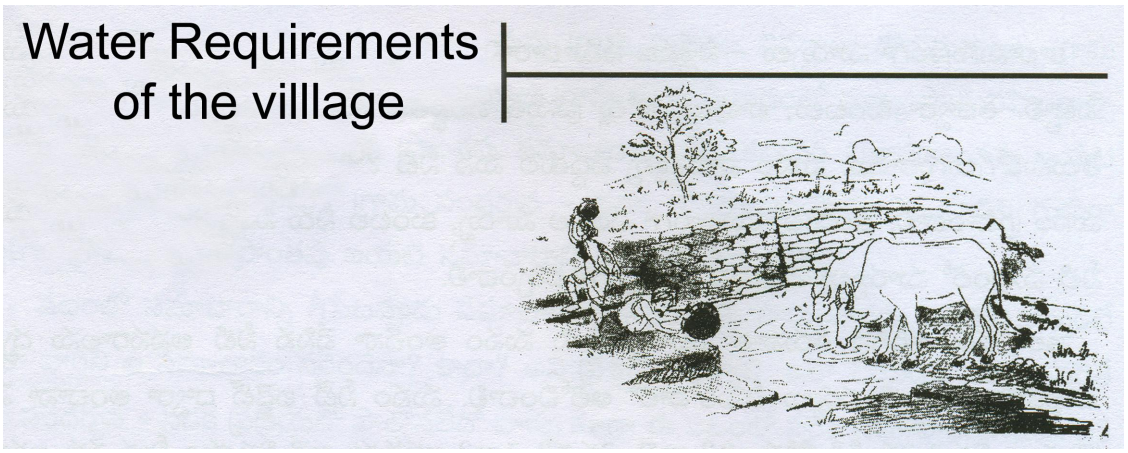
Some of the important underlying factors such as changes in cultivation practices, decreased storage capacity of ponds, fall in water tables etc have to be discussed in detail in these forums.

After a comprehensive discussion, we would be able to prepare a water-budget for the village and decide what steps should be taken to solve the problem. Based on the discussion, we must now decide on the steps to be taken. We have the map before us; we have already estimated the water requirements. As per the water-budget estimate, we identified that there would be some excess water. Where will it go? Where do we stop it and how? This must be discussed here. Similarly, we prepared estimates for our water requirements 90% of which is for the purpose of irrigation. How to limit it to 10% of groundwater reserves?

What modifications will be required in the utilization of water for irrigation in the area of agriculture? A further thorough discussion on such matters of importance is required.

The village map not only indicates our existing water resources, their condition and causative factors, but also helps us understand the gap between supply and demand. With the help of this information, we will have to decide what steps have to be taken for water management and based on that we can design our strategies. All this can be incorporated in our water management plans.

The village map should give us an accurate account of the village water condition. The map can be drawn with the help of locally available material – chalk powder, stones, pebbles, twigs, branches etc. As a map drawn on the ground cannot be preserved for a long time, it would have to be copied on a paper (chart) that has to be prepared carefully for future use as it contains vital details required for our future water management plans.



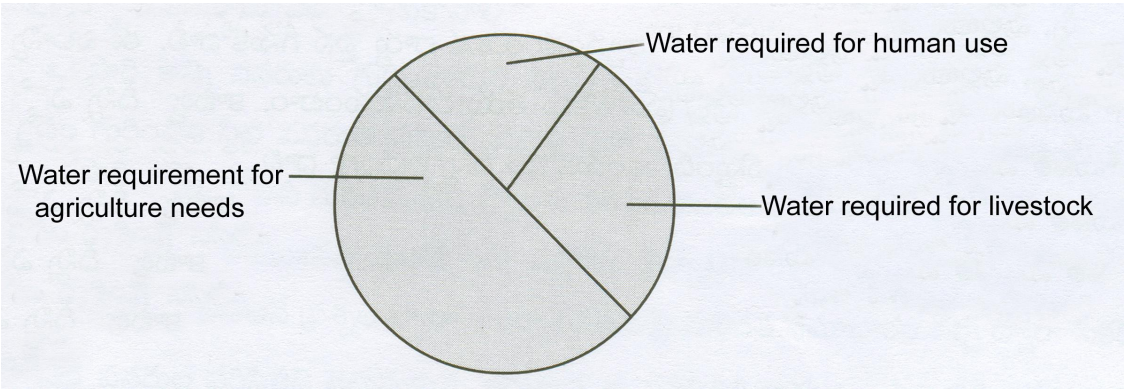
To formulate water resources management strategies, it is important to understand why we require water and how much water is required. The requirements are as follows:

[a] Water for drinking (for people and livestock)
[b] Water for irrigation (for paddy cultivation/ drip irrigation)

Drinking water includes other uses (such as water for cooking and other household needs).

Crops that are dependent on rain water are not taken into account as they survive on 70% rain water and the moisture content of soil.

The pictograph given below indicates the village water requirement for various activities.



The diagram indicates that 80 paise worth of water out of every rupee is utilized for agriculture.

The water requirement for a single individual is estimated at 60 – 70 liters a day for all of his needs. Likewise, the requirement of a single animal is estimated at 70 – 100 liters a day. In other words, almost double the quantity required by a

single human being. Interestingly, a large amount of water expended by human beings finds its way into the earth. We need to note that a large quantity of water is wasted near public taps. If this problem goes unchecked, we would be wasting huge quantities of water. Further, this wasted water ends up in the form of cess pools that could contaminate drinking water leading to spread of water borne diseases often resulting in epidemics.

One of the greatest uses of water is in cultivation. This water is usually available from two sources. Lakes and ponds are the first source, and their water is used for irrigation through trenches and canals. The second source is groundwater that is pumped out through bore wells/draw wells. The water available in lakes and ponds is flood water deposited in these low lying areas; therefore utilizing this water for irrigation has practically no impact on our groundwater reserves. However, the groundwater used for irrigation through bore wells and draw wells needs special monitoring and attention while making water management plans.

The very objective of water management is to achieve maximum productivity from minimum use of water. For this we need to have a clear idea of the ground water levels (water table) and how much water can be safely used. This needs a thorough understanding of various crops and their requirement of water.

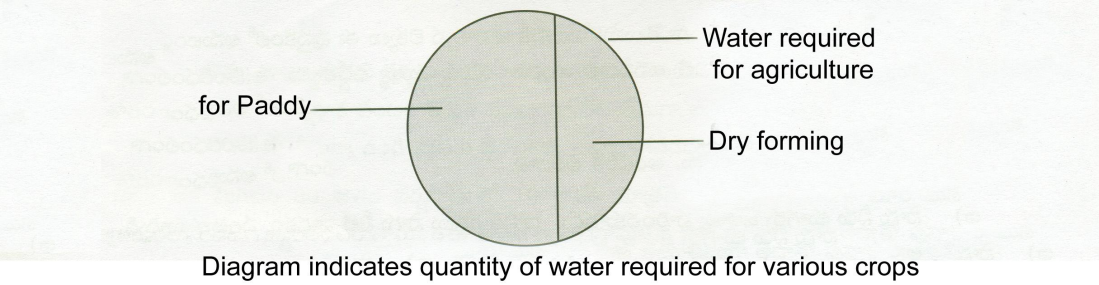


Diagram indicates quantity of water required for various crops

This diagram will prove useful in our water management plans. We would be able to make necessary changes in the water management of paddy irrigation etc. For instance, paddy crops don't require ½ inch deep water all the time. Another practice is to irrigate paddy crops just because we have the resources.

However in view of the decrease in groundwater levels and increase in the number of bore wells going dry, we need to bring about certain changes in our farming practices.

It is a well known fact that for the past few years we have been experiencing severe drought in most of our districts. Farmers have been spending a lot of money to sink bore wells. Very often their efforts have proved futile. What needs to be considered is even if water were to be struck in a few places, would it be wise to grow crops like paddy that need to be grown in flooded conditions and require large quantities of water? In view of all this we need to opt for alternate crops.

By diversifying from paddy to irrigated dry (ID) crops, we would be able to cultivate larger areas using less water.

Therefore, estimate of water requirements would elucidate where water is being utilized beneficially and where it is wasted.

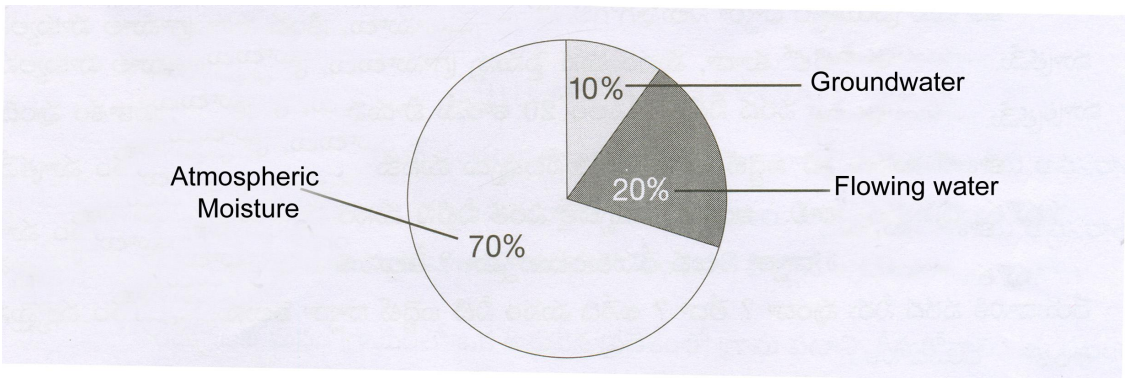
Our objective is to achieve maximum productivity from a liter/cubic foot of water. For this we could either opt for irrigated dry cultivation or drip irrigation/ micro irrigation, that would not only minimize wastage of water but also enable us to cultivate larger areas. What's more is that to promote such techniques, the government has come forward to offer 90% subsidy for micro irrigation projects such as drip irrigation or spray irrigation. We should avail of such opportunities.

To gain a better understanding of water requirements, an annexure is attached with statistics. While making a water-budget, the following points have to be taken into account:

[a] Drinking water should not be wasted. It should be made available to everyone.
[b] Groundwater should not be over-exploited for irrigation – diversification of crops and economy in irrigation methods should be practiced wherever possible.
[c] Water should be made available to cattle throughout the year.
[d] It is essential to gather information through discussions regarding the availability of water to know whether there is adequate water for drinking and irrigation.
We would have to find out from the Groundwater Survey Department, the groundwater reserves, and water availability in the village – which would enable us to formulate a well-structured water management plan.

VILLAGE WATER-BUDGET

To formulate a water management plan for our village/*Panchayat* we would have to make an estimate of our water resources – in other words we need to have a clear idea of the quantity of water available to us. We can arrive at figures in a number of ways but the diagram given below gives us a clear idea and is easy to follow.



This diagram clearly indicates that of 70% of the rainwater a substantial amount is available to us in the form of moisture – for rain-fed crops. The rest, which is in the form of water vapor, is absorbed by trees and is not of much use for agriculture.

Of the 30% rainfall, only 10% is converted into groundwater and forms the water-table of the village. However, the percentage may vary a little from village to village.

The rest of the 20% water forms the surface water that flows through canals and streams and gets deposited in ponds and lakes, as well as in check dams, ponds contour trenches

(and other such structures) constructed for storing water. This water, after getting deposited in low lying areas flows out of the village in the form of floods.

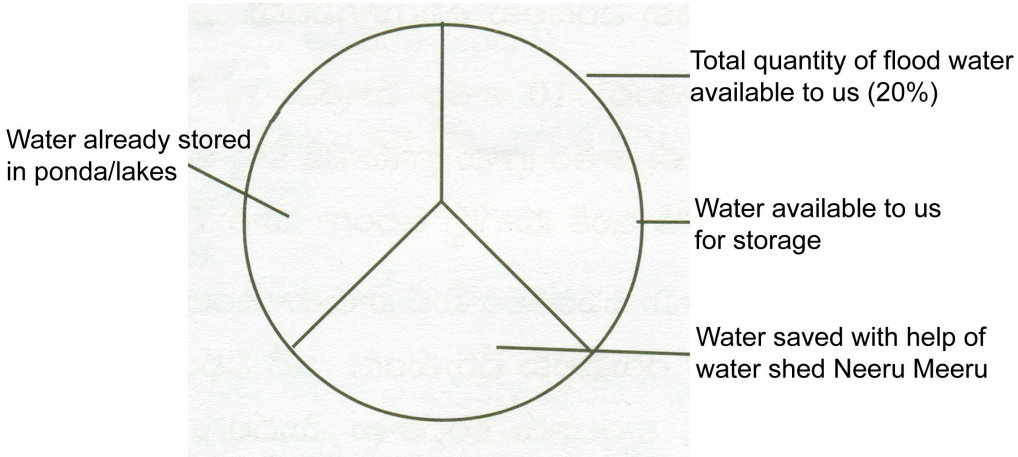
However, what we need to understand is that the 70% of water which is in the form of moisture is available to rain-fed crops that evaporate in due course of time. Therefore, it cannot be stored or conserved in any manner. To retain this moisture content for a longer period on the soil surface, we need to build bunds etc.

About 10% of rainwater converts itself into groundwater. Though this percentage may vary depending on the nature of the soil, on the whole the conversion rate remains very close to 10%. This water percolates through various layers of the soil and reaches the water table. The construction of check dams and contour trenches during projects such as *Neeru – Meeru,* Watershed etc., aids in the increase of groundwater reserves.

It is only 20% of flood water/ flowing water that can be conserved by human effort. Of this water again, its just 20% that can be conserved in every village keeping in view various factors like allocation of water to surrounding villages in the path of flow etc.

Therefore, while planning the water-budget, we should take into account that only 20% of flood water is available for use. We also need to know how much of this water is already being stored in the existing ponds, lakes and check dams, and whether or not there is any surplus water. This information will be of vital importance for our future plans.

Given below is a simple diagram to plan our village water-budget.



Quantity of floos water that can be saved/stored

After making an estimate of the surplus flood water available to us, we would have to think of means to conserve this water. What can be done to conserve this water? In this regard, we could either increase the storage capacity of existing ponds and lakes or undertake new schemes with the help of available resources.

To make a detailed budget, readers could go through the annexures attached to this book.

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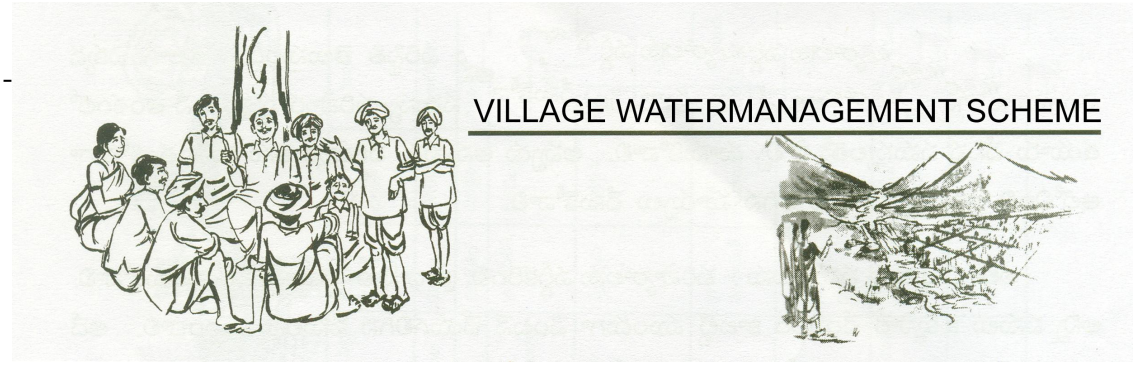


We have already discussed transect walk, synthesis of periodic changes, water requirements and preparation of a budget. To convert information gathered through all these activities into a feasible plan, an opportunity should be provided for all people to participate.

To facilitate this, we should find a suitable place to draw the map and identify our village, houses, buildings, drinking water resources, accumulation of silt, cess pools etc. We should similarly identify all the places we had seen during the Transect walk such as fields, lakes, canals, rivers, streams, wells, waste lands etc. and other natural formations.

The map can aid us in a detailed discussion of all the resources available to us, their existing condition and their exact location. The purpose of this entire exercise is to chalk out a plan.

After gathering the necessary information from the transect walk, and identifying the available resources on the map, we need to discuss the condition of these resources and the factors affecting their present condition. A recapitulation of the periodic changes and their analysis becomes necessary. This is to help us find out the relationship of periodic changes on the existing condition of our water resources. For instance, the influence of the changes in crops on the levels of water in bore wells, tube wells and draw wells. The mode of drinking water supply and how wastage affects drinking water supply. The inter-relation of water resources management and the breaches in ponds and lakes after even a slight rainfall.

In this manner, if we are able to connect one thing with the other and discuss everything in detail, we will be able to evolve strategies for effective water management.

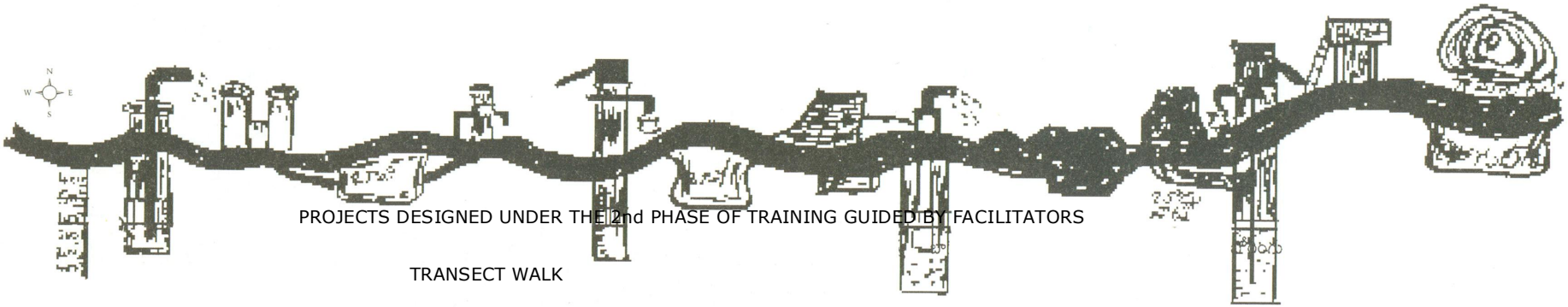
The village map will serve as a tool to assess the existing water conditions. Similarly existing problems will become evident. Now, these problems will have to be evaluated with the help of 'Problem and Solution Trees' by a comparative study. The solutions can then be revised and restructured.

Now these problems and solutions have to be evaluated and classified according to their order of priority and urgency. While some problems require expending money, other problems like water wastage near public taps has to be identified and the users of the tap have to be made responsible for the misuse. Likewise, when there is a problem with the draining system of the lakes/ ponds, the farmers/users should be made accountable for the repair.

Major projects can be worked out, and approval can be got from the government. However, the programs identified must be placed before the *Gram Panchayat* before giving them a final shape. This approach would make planning and implementation easy. Once funds are sanctioned by the *Gram Panchayat* or government, we would be in a position to utilize the money in a systematic manner.

At the village level, there are two kinds of projects that can be undertaken. Maintenance of existing resources is one approach, and the second is to undertake new programs. Many of the existing structures (tanks, ponds etc) built earlier are in disuse. The management and effective utilization of all these structures should be taken up collectively by the local people as part of short-term planning. Further, new projects should be undertaken as part of long-term planning

These plans can be compared against the water management scheme drawn up. This study will help us understand specific problems being faced and the opportunities available to deal with these problems.



PROJECTS DESIGNED UNDER THE 2nd PHASE OF TRAINING GUIDED BY FACILITATORS

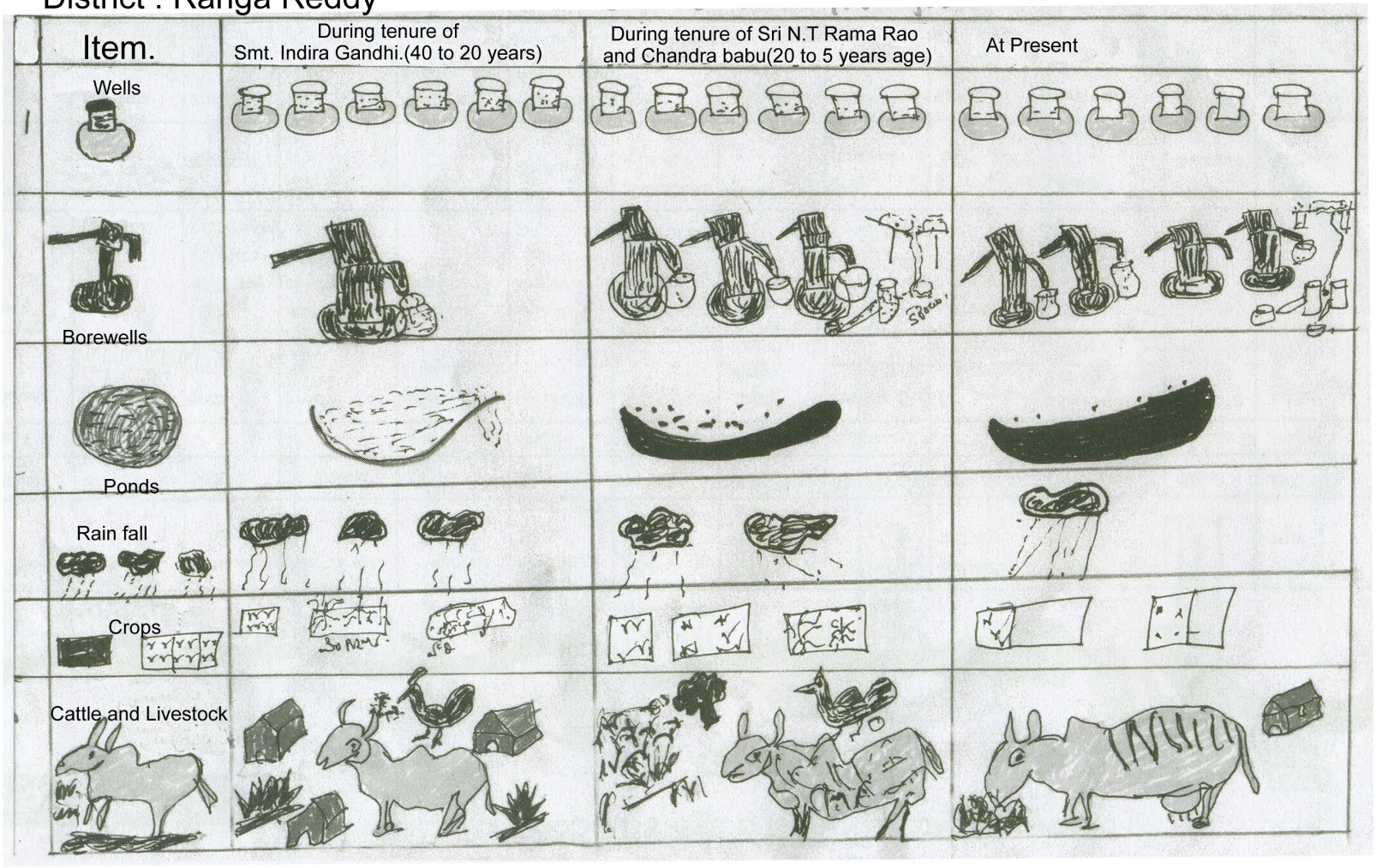
TRANSECT WALK

Scale		Cement tar	30 years ag	Tap	HP First bo 30 years a	10 years	Walk along Checkdam '	Bore well	Water pits v mud walls	Gabian structure	Bore wel	Scale	
Quantity or ca	250 feet	5000 liters	30 feet		95 feet	5 yards	3 feet	380 feet	2 feet	3 feet	280 feet	Quantity or capacity	251 feet
Quality	Safe		Safe	Safe				Safe			Safe	Quality	Safe
Use	Drinking water	Storage of drinking wa	For drinkin	Sufficient drinking fo families	For drinkir	For agricult	To increase groundwate	To supply to villages	Water stora increase in groundwate	Water st and incre groundwa levels	For drink	Use	Drinking wat
Timings	Throughout the gram panchaya	Throughou year, but n disuse	Monsoon	Throughou year for '3	Throughou year	As per requiremer during mor	Monsoon	Throughou year	Monsoon	Monsoon	In use al time	Timings	Throughout t gram pancha
Management	Power cuts, fail management	Gram panc	Village peo	Gram pan	Gram panc	5 families c farming communitie	Farmers	Gram pan	Farmers	Farmers	Gram panchay	Managemen	Power cuts, f of manageme
Problems		In a state c neglect	Blocked an surrounded filth	Lack of a regulator	No provisi drainage (platform)	Blockage	Leakage, bl	Power cut	Blockage	Blockage	Water sh in summ	Problems	
Suggestions	To control wast	Should be for storing	Bore should installed an wall constr	Caps shou provided	Platform h be repaire	Clear depos	Repairs, cle sediments	Dig ponds	Clear sedim deposits	Clear sed		Suggestions	To control wa
Miscellaneous	Take steps to c wastage		Can be use making pic									Miscellaneou	Take steps to wastage

Village :Ellakonda
Mandal : Nawabpet
District : Ranga Reddy

ANALYSIS OF CHANGING TRENDS

Date : 29-6-2004



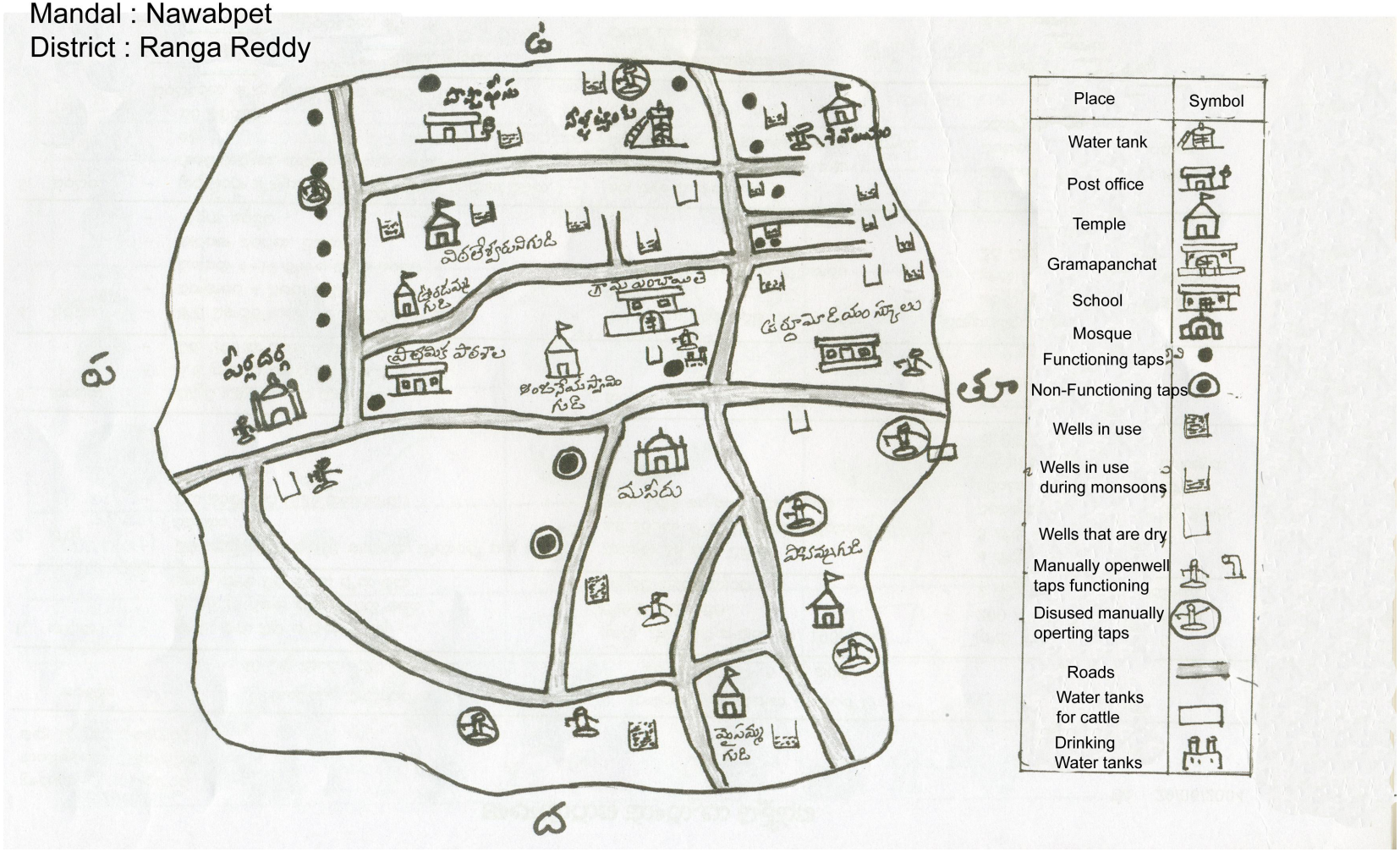
Village: Ellakonda
Mandal: Nawabpet
District: Ranga Reddy

ANALYSIS OF CHANGING TRENDS Date: 29 - 06 - 2004

S. No.	Item	During tenure of Smt Indira Gandhi (4 20yrs)	During tenure of Sri NT Rama Rao and Chandra Babu (20 to 5yrs ago)	At present
1	Wells	Drinking and irrigation wells struck wa depths of 60, 9, 15 and 20 yards. There was no scarcity of water	Drinking and irrigation wells struck wa depths of 60, 100 yards. Water scarcit begun.	Drinking and irrigation wells: water wa struck even at depths of 60 to 200 yar Except 2 wells, all well have gone dry.
2	Bore wells	There were only hand pumps, and eac these would supply water to 525 famili	About 16 bore wells were provided. power driven bore well was installed (Chandrababu's tenure). Drinking water shortage	Only 4 bore wells are functioning. 3 bo wells have been removed.One year ag power driven bore wells were installed Power driven bore wells are the only s of water. Barely 10 - 12 families have taps. There is an acute shortage durin summer.
3	Ponds	There was only a small pond (pulikunt The water of the pond was sufficient fo from 5 - 6 neighboring villages. Water requirement of 200 calves could met.	The condition of ponds was good.	The ponds are blocked with deposits.T ponds are not able to retain water.
4	Rainfall	Heavy rainfall right from the onset of monsoon. Rainfall was adequate for 4 months. There would be incessant rain - 10 days at a time. Often villages wer flooded. The climate was cool and plea	Rainfall did not last for more than a m but conditions were not bad either Farmers would sow seeds and hope for	Practically no rains. Farmers have star sowing seeds in accordance to weathe conditions. An acute scarcity of water drinking as well as for irrigation. The w continues to remain hot.
5	Crops	The main crops under cultivation were barley, black gram, red gram, green g sesame, turmeric, bengal gram, onion Condition of paddy crops not known. R and maize staple diets for most people	Paddy cultivation had begun. Cotton, r gram, turmeric also were cultivated As rice became the staple diet, irrigatio assumed importance	Practically no crops. Water shortage ha to chaos and farmers facing hardships water is insufficient for paddy, and the unable to revert to old habits)
6	Cattle and lives	Every family owned livestock like oxen calves, goats, sheep, buffakloes, goats poultry. Sale of livestock was a means income.	People began to dispose off livestock a maintenance became difficult	Except poultry, very few people can af maintain livestock. Water has become Frequent mortality of cattle People are forced to dispose off cattle

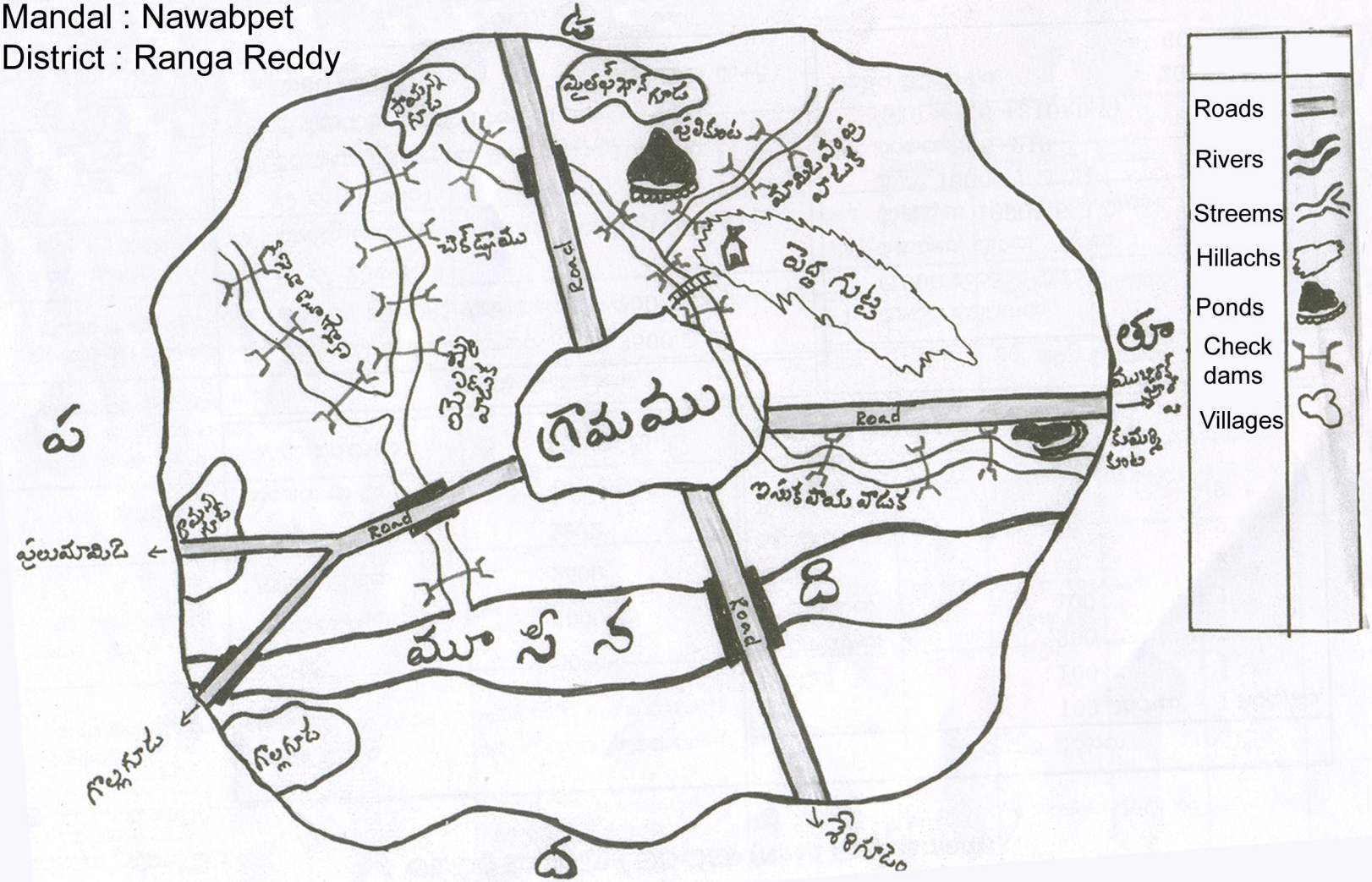
VILLAGE MAP

Village :Ellakonda
Mandal : Nawabpet
District : Ranga Reddy



Village Resources Map

Village :Ellakonda
Mandal : Nawabpet
District : Ranga Reddy



NEEDS ASSESMENT

Date: 29 - 06 - 2004

Village:	Ellakonda
Mandal:	Nawabpet
District:	Ranga Reddy

Village area	5215 acres
Hamlets	4
Population	5085
Livestock	1000
Sheep, goats	2500
Irrigated area	2932 acres
Dry land	140 acres
Average rainfall	700 m.m.

Crops dependent on rainfall		
	100 acres	1 crop/year
Turmeric	100 acres	1
Vegetables	200	2
Flowers	100	1
Wheat	50	2
Onions	50	2
Garlic	10	2
Total kharif irrigated	610	
Total rabi irrigated	310	

Details of income		
[a]	Total quantity of rainfall	3500 a.m.
[b]	Quantity of flood water (20% of [a])	700 a.m.
[c]	Groundwater (10% of [a])	350 a.m.
[d]	Water accumulated in ponds, check dams (15% of [b])	105 a.m.
[e]	Total water available ([c] + [d])	455 a.m.

Details of expenditure		
[1]	Human needs (at an average of 4 a.m. for 1000 people)	20 a.m.
[2]	Livestock (at an average of 6 a.m. for 1,000 animals)	8.5 a.m.
[3]	Crops 366 + 210 (610 x 0.6 + 310 x 0.7)	576 a.m.
	Total use	605 a.m.

Total income - total use	**=**	**455 am - 605 am**
	=	**(-) 150 am**

VILLAGE WATER PLA

Village:	Ellakonda
Mandal:	Nawabpet
District:	Ranga Reddy

Date: 29 - 06 -

S. No.	Problem	Causes	Solutions	Responsibility	Cost		Duration		Problems faced
					Tot	Donat	Star	Finisl	
1	Wastage of water from and pumps	Lack of caps	18 taps were fixed with	Gram panchay	36		7/2/20	7/4/20	
2	Wastage of water from motors	Lack of 'on - off' regulators	Install regulator switch	Gram panchay	10		7/2/20	7/5/20	
3	Lack of water pipelines taps in the harijan colo		180 yards of pipeline t installed	Gram panchay	900		7/10/2	8/30/2	
4	Lack of pipeline and connection to animal s		55 yards of pipeline to isntalled	Gram panchay	500		7/6/20	9/10/2	
5	Accumulation of silt in dams	Accumulation of s	Silt to be removed	Watershed Committee (W	950		7/6/20	9/10/2	
6	Accumulation of dirty w in pot holes	Due to neglect	Channel dirty water int grazing fileds for cattle	Gram panchay					
7	Leakage in check dams		Leakage to be plugged	Watershed Committee (W	100		7/10/2	7/20/2	

GRAM PANCHAYAT WORKING COMMITTEE AND OTHER COMMITTEES APPOINTED THROUGH SPECIAL LAWS

In accordance with Section 40 of the AP *Panchayat Raj* Act of 1994, in an attempt to strengthen local governmental agencies and appoint *Gram Panchayat* working committees and implement *Gram Janmabhoomi* Development Schemes (GJDS), the Government of Andhra Pradesh *Panchayat Raj* Rural Development Department (Pts IV) GOMS issued an ordinance to abolish the committees formed earlier vide GO304 dated 5-10-2001, GO25 dated 21-1-2002, GO 107 dated 26-3-2002, GO 248 dated 29-6-2002 and GO 209 dated 29-6-2002 – and in their place appointed five new committees vide GOMS 174 dated 4-6-2003.

The five working committees are as follows:

[1] Natural Resources Management Working Committee (agriculture, horticulture, dairy farming, fisheries, water conservation etc will be under the jurisdiction of this committee).

[2] Human Resources Development Working Committee (education, health, women and child welfare)

[3] Employment and Self-help Groups Working Committee

[4] Finance Management Planning Committee

[5] Works and Basic Amenities Working Committee

The objectives of these committees is to design projects to meet the requirement of the village, to assimilate necessary resources and distribute them in a proper manner, to supervise development programs using creative and innovative ideas, to help *Gram Panchayat*s in fulfilling their responsibilities to meet their goals.

FORMATION AND COMPOSITION OF THE WORKING COMMITTEES

[1] The *Gram Panchayat Sarpanch* is appointed the Chairman of the Working Committee. In his absence, the deputy *Sarpanch* presides over the committee meetings.

[2] At the moment, there are a minimum of 7 ward members and a maximum of 21. Hence in each working committee, there has to be at least one ward member – and there can be five members who can be co-opted members.
The selection of ward member into various committees is decided at the *Gram Panchayat* assembly. It is desirable that there are an equal number of ward members in all the committees. The village secretary has to send out a circular regarding the resolutions passed at the *Gram Panchayat* meeting.

> [a] It is mandatory that in every committee of co-opted members, at least one of them should belong to SC/ST/BC or women.
> [b] Except the *Sarpanch*, at any given time, a ward member cannot be a member of more than one committee.

[3] [a] If a *Gram Panchayat* has only one MPTC, he/she would have to be a co-opted member in all the five working committees.
[b] If there are more than one MPTCs in a *Gram Panchayat*, which MPTC would be a member of which committee is decided by the board of the *Gram Panchayat*. However, an MPTC cannot be a co-opted member of more than two committees at any given time.
[c] In case an MPTC happens to represent more than one *Gram Panchayat*, this MPTC has to be a co-opted member of all the committees of those *Gram Panchayat*s.

[4] Two capable women leaders who belong to women's self help groups/organizations under the *Gram Panchayat* will be given co-opted membership.

[5] Every working committee can appoint two experts in that particular field. However, family members of the *Sarpanch*, MPTC or ward members are not eligible to become members.

[6] Village level 'anganwadi' workers, health workers (MPHA – F/M), agricultural distributors (MPEOs) head masters of local schools and other such government officials can be co-opted as members of committees as per the discretion of the *Gram Panchayat* selection board.

[7] The presidents of various organizations such as the existing Forest Conservation Board, School Education Committee,
Mother's Committee, Village Welfare Board, Watershed Committee, Water Users Association etc will have to become members of the concerned working committees. In case the jurisdiction of the above mentioned committees extends to more than one *Gram Panchayat*, the chairman of that particular committee will have to become a member of both the concerned working committees, or else he can appoint a member of his department to be his representative in that particular committee.

[8] The *Panchayat* secretary shall be the member-convener of all the working committees. He shall be required to record the minutes of all the meetings. The selection and appointment of co-opted members into various committees is done as per the resolutions passed at the *Gram Panchayat* board meeting.
All the draft resolutions taken by the working committees will have to get the approval of the *gram sabha*. The *Gram* sabha has the authority/right to approve, amend, reject or restructure the resolutions passed by the committees.

THE AREAS OF WORK ALLOCATED TO WORKING COMMITTEES

[1] Natural Resources Management Working Committee (agriculture, horticulture, dairy farming, fisheries, water conservation etc will be under the jurisdiction of this committee).

[1] To take care of conservation of groundwater and surface water, control wastage and overflowing of water, and to take precautionary measures to prevent wastage and overflow of water

[2] To implement water projects for drinking and other uses. Regulate supply and ensure availability and purity of water

[3] To clear deposits (silt) from lake beds

[4] Take appropriate steps wherever necessary to conserve water by constructing check dams and water pits

[5] To create awareness regarding natural resources such as sand (which aids absorption of water into soil and retains water for longer periods) and check its misuse

[6] Check illegal; encroachments of tank beds

[7] Preserve and protect local plant and animal life

[8] To maintain ecological balance by promoting and encouraging love for animals

[9] To form associations for forest conservation. To protect reserved forests in collaboration with the Forest Department.

[10] To promote and protect grasslands that are common property

[11] To promote pollution free industries. To protect lakes, rivers, canals, air etc from chemical pollutants.

[12] To set up plant nurseries and maintain them, to procure and store improved and superior variety of seeds

[13] To conserve resources that are useful for making compost and manure

[14] To create and promote awareness about modern farming practices, to help in planning and implementing kharif and rabi crops

WOMEN AND WATER

We all know that water is vital for our sustenance. Life can become an ordeal when water becomes scarce or when adequate water is not available. Procuring, storing and allocating water for various activities is an important part of our lives. This is known as water management and utilization.

Water utilization in developing countries falls almost entirely in the domain of womenfolk. People need water for cooking, washing, bathing, cleaning and for other household chores. Water for all these needs is arranged and managed by women. At the family level, therefore, women have a better understanding of the availability and quality of water.

Women are put to innumerable hardships due to problems pertaining to water such as drying up of canals and wells, or contamination of water. In certain regions, women are forced to trek long distances to fetch water, carrying water pots on their heads and sometimes they have to make several trips to and from water sources on rough, difficult and thorny terrain – an exercise that leaves them fatigued and dried out.

While in some regions, women have to expend a good deal of energy on drawing water from unusually deep wells, in towns women have to stand in queues for hours on end at public taps or water tankers to get water. As water supply in these places is meager in comparison to the demand, there is stiff competition. Often, women are seen spending sleepless nights near public taps to procure a few potfuls of water.

The responsibility of providing water for the entire household [in addition to domestic chores, farm work and child rearing] takes a heavy toll on the health of these women adding to their existing woes.

Most of the diseases occurring in people in developing countries are water borne, and it is mostly women and children who fall prey

to such diseases. Therefore, it is imperative women are given special training in storing water under hygienic conditions as well as conserving and using water economically. They should also be taught methods of recycling water which will lessen their hardships and prove helpful in maintaining ecological balance. For instance, using water from kitchens for growing vegetable patches or kitchen gardens is a good way to recycle water. Encouraging women to grow kitchen gardens is health promoting and an eco-friendly vocation.

Another factor responsible for water pollution is the release of industrial effluents into the surroundings in an irresponsible and callous manner. Yet another contributing factor is the unregulated and extensive use of insecticides, pesticides and synthetic manure.

VILLAGE WATER-BUDGET – A MODEL

This budget enables us to understand the available quantity of water, and the amount of water expended/used for various requirements – as a result of which there is a depletion of water resources or deposits/reserves.

Water availability in a village – a model

[1] The water available to a village can be calculated by the help of the area of a village in acres and annual rainfall in mm. For example, lets take the average rainfall to be 750mm. Then,

The amount of water received by the village = meter x area of village [acres] x average rainfall

= 1000 a x 750 mm (1 m = 1000 mm)

= 750 a.m

[2] Water thus received gets converted in three ways, such as:

(1) Groundwater 10% (75 a.m.)

(2) Flood/flowing water 20% (150 a.m.)

(3) Water absorbed by soil, water vapor absorbed by trees 70% (525 a.m.)

[3] A part of flowing water accumulates in lakes/ponds/canals as well as in structures such as check dams, ponds, tanks, contour etc

Water deposits in lakes, ponds, culverts = area of lake x 0.6 x maximum depth

For instance, lets say we have two ponds in our village.

S.No	Name of Pond	Area (acres)	Maximum depth	Amount of water (a.m.)
1.	Ramulamma kur	5	1.8	5.4
2.	Kishtappa kunta	10	2.0	12.0

	Total			**17.4**

Small structures may fill up more than once. A check dam – 4 times. Conduits – 10 times. Lakes – 15 times. Therefore we can conclude that the total amount of accumulated water in the village is 17.4 a.m.

The amount of water available for ground water productivity (20%) = 0.2 x 132.6 = 26.52 a.m.

Flowing water – accumulated water = 150 – 17.4 = 132.6 a.m.

Total available water = Groundwater + reserves + other sources (lets say 10 a.m.)

= 75 + 26.52 + 10 = 111.52 or 110.0 a.m.

WATER REQUIREMENT OF A VILLAGE – A MODEL

[1] The essential water requirements are – drinking water (for humans and cattle/ livestock) and for irrigation.
[2] The crops that are rainwater dependent don't require irrigation, hence they are not taken into account. The moisture in the soil is not enough to sustain them.
[3] The water requirement for humans and livestock is as follows:

[1] For 1,000 people = 4 a.m.[1]
[2] For 1,000 cattle (cows, buffaloes) = 6 a.m.
[3] For 1,000 sheep/goats = 1 a.m.
[4] For 1,000 fowl = 0.5 a.m.

Water required for crop cultivation

[1] Paddy – 10 acres Kharif = 10 a.m.
Rabi = 12 a.m.
[2] Sugarcane – 10 acres Rabi = 20 a.m.
[3] Dry crops – 10 acres = 5 a.m.
[4] Fruit groves/gardens – 10 acres = 7 a.m.
[5] Vegetables – 10 acres = 6 a.m.

To calculate the above, we need to know the area of the village. For example:

Village population = 2,000
Livestock = 1,500
Sheep/goats = 2,000
Paddy = 50 acres
Corn = 100 acres
Mango = 50 acres
Vegetables = 50 acres

With this above information, the requirement of the village can be calculated as shown below.

S.No	requirement	Area/ Number	Unit	Water required (a.
1.	Humans	2000	4.0/10	8.0
2.	Cattle	1500	6.0/10	9.0
3.	Sheep/Goats	2000	1.0/1.0	2.0
	Total			**19.0**
4.	Paddy	50	10/10	50.0
5.	Corn	100	5/10	50.0
6.	Mango	50	7/10	35.0
7.	Vegetables	50	6/10	30.0
	Total			**165.0**
	For entire villa			**184.0**

[1] The term "a.m." stands for acre-meter. This denotes the number of meters of water (in depth) that has accumulated in an area of one acre of land. Or, If a pond occupying an area of one acre has uniform water depth of one meter, then the total quantity of water in the pond can be indicated as 1 a.m.

The water budget of the village = Water available – Water utilized
= 110 – 184
= - 74 a.m.