

Drinking Water Model 1

Rural Drinking Water Project with the construction of Dug well & Pump set, Rising Main, Over Head Tank and Stand posts

Lecture Notes
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Introduction

*NGO is a nongovernmental organization which was established in 1974 and is working in the areas of development of water resources and other livelihood activities. The foundation is working in the tribal belts of Gujarat, Rajasthan and Madhya Pradesh. The projects they are involved with are construction of lift irrigation schemes, water harvesting structures, water shed projects in addition to social forestry, horticulture development etc. They are also involved in forming and training Self Help Groups and involving them in water harvesting projects in addition to other income generating activities.

Proposal

The project can broadly be considered as Rural Drinking Water Project with the construction of Dug well & Pump set, Rising Main, Over Head Tank and Stand posts in the * village of Dahod taluka of Dahod district.

The brief description of the same is as under:

Water Demand and Availability:

The water demand has been estimated at year 10 for a population of 1100 and a cattle population of about 840 at the rate of 70 lpcd for humans and 50 lpcd for cattle. Thus the total water requirement is estimated at about 1, 30,900 liters per day. Though the estimates are correct, the water availability for four hours pumping at the rate of 32725 liters/hour is very difficult unless the Govt gives permission to lift water from their tank and put into the dug well. The hydro geological formations in the area consist of hard rocks and the water requirement of the order of 32725 liters/ hour is not possible. The dug wells constructed in the area can not give so much water. At the most, the amount of water that can yield from the well, especially as the well is located near by the tank, would be in the order of 18000 liters per hours for 4 hours in Rabi and about 2 hours in summer. The village has to manage with the available water unless special permission would be taken from Govt as this is for the drinking water purposes.

Design of dug well:

The dug well is proposed with a 6 m diameter and 15 m depth, with an outer diameter of 7.5 m for about 3 m. This is acceptable.

Design of Pump set.

Considering the discharge of 9 lps, the estimated 7.5 hp is in order. However, the NGO proposes two submersible pump sets of 7.5 HP each. As a drinking water project, a standby is allowed. However, submersible pump set is not required as the water level would be shallow. One of the standbys can be a diesel pump set so that in case, the electricity is not available, the diesel set can be operated and also, if need arises, the diesel set can be operated from the tank directly, with permission from Govt.

Design of rising main.

The rising main of 650 m is proposed with 110 mm diameter. Normally, 110 mm is not required as that much of water is not available. However, considering the requirement for the next 10 years and also availability of near by tank and likely hood of getting permission from the Govt authorities in case of emergencies, we may accept the design of 110 mm. pipe.

Design of over head tank and stand posts:

The tank is designed for 77000 liters capacity. This is acceptable. Ten Stand posts are proposed. This is also acceptable.

Operation and Maintenance:

The NGO did not indicate how the system would be operated and maintained. It is easy to construct any structure but is very difficult to maintain unless the people are involved. The people who would be benefited should be involved in operation and maintenance of the project. The people should contribute at least 10 % of the cost of the project in the beginning and should pay monthly a fixed amount for operation and maintenance of the structures.

Cost of the Project

The cost of the project is as under.

Details	Unit	Total cost (Rs)	Peoples' contribution	Balance
i. Construction of dug well	1	148967	14897	134070
ii. Pump set	2	25000	2500	22500
iii. Electrical devices etc	1	15000	1500	13500
iv. Electrification	1	80000	8000	72000
v. Over head tank	1	329125	32913	296213
vi. Rising Main				
a. Valves and fittings		15000	1500	13500
b. PVC pipe of 110 mm diameter	650 m	123106	12311	110795
vi. Stand posts (10 Nos)	10	50000	5000	45000
vii. Cattle troughs	3	45000	4500	40500
Total		831198	83120	748078
Contingencies	3%	24936	2494	22442
Grand total		856134	85613	770521

The total cost of the project is of Rs 8.56 lakhs, out of which Rs 0.85 lakhs is would be contributed by the people.

Peoples' Participation

The success of the scheme depends mainly on the people's participation especially after the construction of the various activities. The maintenance of the structures constructed is one of the major problems, as people do not own the structures. As such, the NGO should convene a meeting of the stake holders and insist that they should pay for maintenance at the rate of Rs 15 to 20 per family per month and collect and keep the same in the Pani Committee specially formed under this programme. The money can be utilized for repairs of the structures and the balance can be utilized for any community work they deem fit. There should be one Pani Committee per village and sub or mohalla committees to look after the activities in their own areas. The members should meet at least once in a month

and collect the money and explain the expenditure to the committee members for transparency of the activities.

Disbursement of funds and Monitoring

The NGO should complete the project in about 6 month's time. The work may be divided into 4 phases. The NGO may conduct monitoring study at different phases or as and when they release funds, but a quarterly monitoring study is necessary to see that the projects are progressing satisfactorily.

Demonstration effect

The purpose of this programme is to show how a drinking water programme can effectively solve the drinking water needs of the community. The demonstrative effect would be on the local villagers as well as on the people from near by villages. To achieve that, a detailed board should be displayed at the site regarding the project with details in Gujarati and English language. The NGO may collect people in the village and near by village and explain briefly the benefits of the project. The local Pani Committee members may be requested to give the details to the gathering regarding the methodology followed by them for the sustainability of the scheme.