Analysis of PWSS at GP level and Mechkarwadi Piped Water Scheme Failure and Success Analysis (Mograj GP)

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Table of Contents

Executive Summary 4

1 Introduction 5
1.1 Location 6
1.2 Water Availability 6
1.3 Demographics.....6
1.4 Drinking water scenario in the region 6
1.5 Major Stakeholders 7

2 All Schemes Brief Analysis…….8
2.1 Mograj 8
2.2 Bhalyachiwadi 11
2.3 Bhaktachiwadi 11
2.4 Ambivali 13
2.5 Anandwadi 14
2.6 Malegaon 15
2.7 Pimpalpada 16
2.8 Khandan 17

3 Mechkarwadi…….18
3.1 Description of the scheme 18
3.1.1 Scheme Facts 18
3.1.2 Components of the Scheme 18
3.1.3 Current State of the Scheme 19

4 Functional Scheme Success Analysis.....28
4.1 Methodology 28
4.2 Causes of success 28
4.2.1 Attitude towards public property…….28
4.2.1 Technical causes 28
4.2.2 Social / Cultural reasons 28
4.2.3 Financial / Organizational reasons 28

5 Failure Analysis 29
5.1 Methodology 29
5.2 Causes of failure 29
5.2.1 Financial / Organizational reasons 29
5.2.2 Technical causes 30
5.2.3 Social / Cultural reason.....30

References……..19
Appendix 1: Original scheme design 32
Appendix 2: Electricity Bill.....34
Appendix 3: Scheme Completion Certificate and handover certificate 35
Appendix 4: Design considering population 36
Appendix 6: MSEB(Electrical contractor's completion and test report)….....37

Executive Summary

The goal of this project, undertaken by CTARA, IIT Bombay is to analyse all the water supply schemes at *Gram Panchayat* (GP) level and then focus on a particular single village pipe water supply scheme (PWSS) and understand the reasons for its failure in one part of the Mechkarwadi village where as success in another part from economical and social perspectives. The focus of the study is a scheme proposed in the year 2004 covering two habitations, *Meckcharwadi 1* and *Mechkarwadi 2* which are part of Group Gram Panchayat *Mograj* of Karjat block in Raigad district, Maharashtra. Scheme analysis of other villages has been done in brief at the start where we intend to understand the functioning as well as the reasons for failure or success in general of pipe water supply schemes in different inhabitations.

The analyses of PWSSs were started by studying every scheme at the basic level and then drill down to get the core reasons out. Pipe Water Supply Schemes of Mograj, Pimpalpara, Malegaon, Anandwadi, Ambivali, Bhalyachiwadi, Bhaktachiwadi and Khandan are studied which also discusses other water sources which the villagers use. Failure reasons may be attributed to a combination of reasons such insufficient source; theft of motor or pipes, not paying of electricity bills etc. But, if we go to in-depth analysis, the reasons are some way or somehow related to each other.

Pipe Water Supply Scheme (PWSS) in Mechkarwadi was implemented by the Minor Irrigation department, Karjat, in the year 2004 for a total cost of Rs. 13.32 lakhs. The source of the water supply is a well, 100 metres from Mechkarwadi-1 and 300 meter from Mechkarwadi-2. According to the villagers of both the hamlets, the scheme was successfully completed, but became non-operational soon after. The scheme was again started in *Meckcharwadi 1* due to the efforts put up by the people of that particular part. In order to understand the history of events that led to the failure and success, numerous field trips were carried out, informal discussions were held with villagers from concerned hamlets and interviews were conducted with Sarpanch, Up-Sarpanch, President and Secretary of *Pani Samiti* from Mechkarwadi, Gram Sevak of *Mograj* Gram Panchayat and activists of Disha Kendra, an NGO active in this region. Government documents related to the scheme were acquired from the *Gram Sewak* and *Pani Samiti* and financial analysis was performed as well.

Based on the analysis, the failure of the scheme may be attributed to a combination of reasons. There was a financial problem in one of the wadis and thus they failed to pay the *pani patti*. Greater distance of the water tank from the houses in one the villages can also be an issue. Insufficient yield of the source well was another reason as dirty water came to some houses that were cited by some of the villagers which should be confirmed through yield tests. Social issue can also be present for not working of the Pani Samiti for the other wadi. Neighbouring habitation consists of people with different caste from that of the working scheme wadi.

The scheme can be started in other part also provided various aspects are needed to be taken care of. The village water committee must get involved to lead and own this initiative.

1 Introduction

This report presents an analysis of Pipe Water Suply Schemes (PWSS) implemented in villages of Mograj Gram Panchayat. The report further analyses the PWSS implemented in Mechkarwadi-1 and Mechkarwadi-2 in Mograj Gram Panchayat, Karjat Taluka, Raigad district of Maharashtra. The motivation for the study was to understand the challenges involved in implementing and sustaining a single-village scheme. The objectives of this study are to study the history of the scheme and understand the reasons contributing to implementation in one wadi while not in other, to analyse the financial, social, organisational and operational issues being faced by the scheme and also suggest interventions for reviving this scheme and to present recommendations for better implementation and sustainable operation of single-village scheme.

This work is analysis performed by two students from IIT Bombay, Smriti Shyamal and Sadavijay Vishwanathe.

The first chapter of this report is an introduction to the beneficiary villages of the various Pipe Water Supply Schemes. Chapter 2 describes the water situation, water sources and the schemes working/not working status of the villages in Mograj Gram Panchayat. The wadis are: Mograj, Bhalachiwadi, Bhaktachiwadi, Ambiwali, Anandwadi, Malegaon, Pimpalpara and Khanand. Chapter 3 describes the design and history of the scheme. Chapter 4 describes how the scheme was again revived and now working in terms of its construction status, operational status as well as financial status. A big component of the analysis of this project was the financial analysis of the scheme. Chapter 4 goes over the findings from this financial analysis. Chapter 5 provides various financial, social, operational and organisational challenges that are being faced by the scheme in the non working Wadi. Finally, Chapter 6 contains recommendations and scope for future work.

1.1 Location

Wadis *Mechkarwadi-1* and *Mechkarwadi-2* are located in *Karjat taluka* of *Raigad* district at a distance of about 30 kms from *Karjat* town. They are situated on the *Karjat –Kashele –Khandan* road. The nearest railway station is *Karjat* station. The two hamlets are well connected with each other via a road and are separated by a distance of less than 500 m. The hamlets fall within revenue boundary of *Mograj* group gram panchayat (GP). *Mograj* village is about 3-4 km. away from *Mechkarwadi*.

1.2 Water Availability

The region receives annual rainfall of about 3500 mm during monsoon season (June – September), but faces severe water scarcity in the months of April and May. The entire region is covered by basaltic lava flows known as Deccan traps. Groundwater occurs in weathered mantle, fractures and joints in these traps. Depth of the wells in the region ranges between 3.5 m –8.5 m below ground level. The yield of wells tapping in the region is poor to moderate. Majority of the wells go dry in summer season.

1.3 Demographics

According to the 1991 census data, based on which this scheme was designed; the total population of the target area was 340 souls (for both *Mechkarwadi-1 and 2*). Both of the habitations are primarily tribal villages. The population for *Mechkarwadi-1a*ccording to 1991 census was 340.
The major occupation here is agriculture. Primary crops are paddy and vegetables like brinjal during monsoon season. Due to acute scarcity of water apart from monsoon months, irrigation is impossible; hence farmers can only take one crop in a year. In dry months, some people work as daily wage labourers at nearby construction sites or NREGA sites or have small businesses. Majority of the houses are *kachcha*. Basic amenities like toilets were made in a sufficient number by government in the village. Electricity is available in the village. *Anganwadi* and primary school education till class 4 are available in the villages. Secondary and high school education can be pursued at *Dongarpada, Kashele* or *Karjat* town.

1.4 Drinking water scenario in the region

There is one river in the region, *Chiri,* which is seasonal. *Thokalwadi* reservoir is one reservoir in this region.
The geology and geography of the region is such that groundwater here is not abundant in spite of receiving high rainfall during the monsoon season. Due to the typical nature of Deccan traps, the rainwater runs off instead of percolating into the ground. Hence groundwater is just found in the fractures and fissures of basaltic rocks. This results in low yields of the wells in the region. In spite of all this, the main source of drinking water for the people in the region remains groundwater, most of which is available only till January or early February. This results in acute water scarcity for the rest of the dry season. There are few wells or some bunds which last till the beginning of monsoons. Such wells or bunds are generally far away from the village in which case the women of the village have to travel considerable amount of distance with 4-5 *kalshis* (vessels ranging from 10 to 20 litres in capacity) on their heads every day to fetch water. This distance can even be 2-3 km. in some cases. To resolve the issue some villages have started their own drinking water schemes with bore wells within the village boundaries. Drinking water sources for hamlet *Mechkarwadi-1*nd nearby hamlets are shown in Table 1.

1.5 Major Stakeholders

A. The villagers

- The primary stakeholders and beneficiaries of this scheme are villagers of *Mechkarwadi-1 and B.*
- CTARA's team visited the beneficiary hamlets multiple times to interview the villagers. The Sarpanch and Upsarpanch of the Mograj GP have been also interviewed.
- *As both the wadis share the same source well*, hence villagers of both parts are important players in the functioning of the scheme in the other part.

B. Minor Irrigation department, Karjat

- The scheme is implemented by Minor Irrigation (MI) department, Karjat. It is located in Karjat town and is responsible for all Minor Irrigation schemes in Karjat tehsil.
- The Detailed Project Report (DPR) along with the cost estimation for the scheme was done by MI.

C. Contractor (Prasad Constructions)

- Tender for the scheme was awarded to Mr C. K. Rane of Shree Prasad Construction who is a registered contractor from Poshir in Karjat block.

D. Minor Irrigation department, Raigad Zilla Parishad (RZP), Alibag

- MI Karjat works directly under Executive Engineer, RZP, Alibag.
- The costing for the scheme is approved by Executive Engineer, MI, RZP, Alibag
- The funds for the scheme are allocated from the tribal sub plan to RZP Alibag, which are then transferred to MI Karjat and then to the contractor.
- If the contractor wants to extend the deadline for the project, the request has to be examined and approved by Executive Engineer, MI, RZP, Alibag

E. Disha Kendra

- Disha Kendra is an active NGO working in the Karjat block for many years.
- Nancy tai, Ashok bhau, Sushma tai, Leela tai are devoted activists of Disha Kendra who have in-depth knowledge about the problems faced by tribal people in the region.
- Disha Kendra has been in close contact with MI Karjat, BDO Karjat and Tehsildar Karjat regarding the drinking water problem of Mechkarwadi.

F. Maharashtra State Electricity Board

- The electric supply required for the scheme may demand extending electric supply to the pumping site, erection of electric poles and installation of meters. All these activities come under MSEB. The GP has to send an application to MSEB to carry out all the above activities. The response time of MSEB becomes very crucial in such cases. The scheme work may get delayed due to lack of immediate response from MSEB

G. Block Development Officer, Karjat & Tehsildar, Karjat

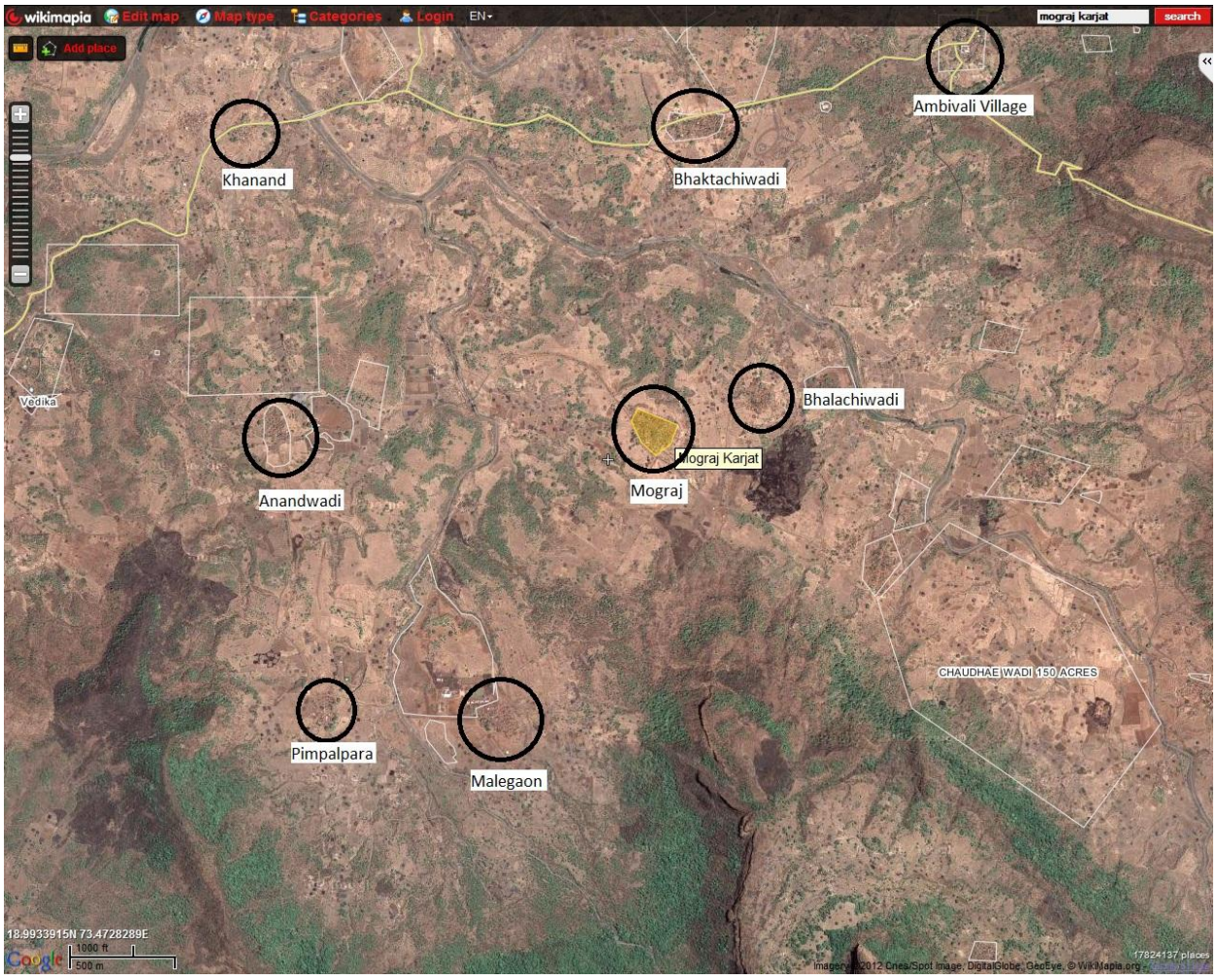
- Both these officers are not directly involved in the scheme. But in absence of a transparent handover process, villagers often approach them with issues related to the scheme.
- GP may leverage BDO and Tehsildar to get answers from MI Karjat.

Following figure shows the interaction and flow of funds between various stakeholders in the working of *Mechkarwadi* scheme.

2 All Schemes Brief Analysis

Scheme analysis of other villages has been done in brief at the start where we intend to understand the functioning as well as the reasons for failure or success in general of pipe water supply schemes in different inhabitations.

Mograj Gram Panchayat (Places Visited)



2.1 Mograj

(65 Houses) Village has 3 dug wells, 2 hand pumps, 1 pipe water scheme but still it faces water scarcity. Women spend most of their time in collecting water from some farmhouses in near locality, small collection of water in river bed.

Source		Status
Wells	DW-1	Working till March
	DW-2	Working till April
	Private well	Working
Hand pumps	Handpump-1	Not Working
	Handpump-2	Working

Mograj Dug Well-1

Well was dug many years ago however only Cementery was done- 2-3 years ago under NREGA scheme also every year mud is taken out under the same scheme. It is only 40 ft deep residents of village can get water only up to month of March.

Mograj Dug Well-2

This well is about ----- m away from the village and is situated on the line of paddy fields. It is 40 m deep and diameter of 6m. Cementing was done under NREGA scheme in 2008-2009. It serves village for another 1-1.5 month after DW-1 well gets dried up.

Mograj Pipe Water (PWSS)-1

We interviewed Mr. Balu Agivale (Ex-Sarpancha) of Mograj who lives right on the opposite side of the water tank of Piped water scheme. According to him description of scheme and reasons for failure is as follows:
It was a combined Mograj-Anandwadi Piped Water Supply Scheme (PWSS) implemented by Minor Irrigation (MI) department. The scheme is not working for last 11 years in this village.

Reasons for failure of scheme

1) Source was insufficient for the two villages (Anandwadi and Mograj)
2) Pipe Stolen and Pump was burnt.

Due to insufficient water in the well; water pump was burnt afterwards water supply stopped and eventually pipe connecting source well and tank in the mograj village was stolen.


Mr. Balu Agivale (Ex-sarpanch) of Mograj Village

2 Hand Pumps (1 Working 1 Not Working)

2.2 Bhalyachiwadi

There is only one well in the wadi which is the only drinking water source. When it dries up villagers dig river bed up to 2-3 ft and get muddy drinking water.

2.3 Bhaktachiwadi

Dug Well-3

This well is near river bed and contains sufficient water for the entire village for whole year but 3-4 years ago some lady committed suicide in this well so villagers are reluctant to use its water.

School Tank

This school water tank has a source well on river bed which is dug by school authorities. It supplies water for entire year for school. There are 2 stand posts in the premises of school. It is sufficient for 450 students in the school.

Bhaktachiwadi MVS Scheme (PW-5 Tank)

This tank had source well on river of jambharuk village. This is a part of a Multi Village Scheme (MVS) which was completed in 1992 covering 5 villages namely Pinglas, Ambivali, Tembhare, Bhaktachiwadi, Shindole. It worked for first 6 months. At that time it provided water twice a day. Water rent was Rs 20/month/household. According to villagers, they could not pay MSEB bills on time so they took meter away and ceasing water supply and afterwards pipe was stolen.

History of MVS (Multivillage scheme)

This MVS was completed in 1992 for Pinglas, Ambivali, Bhaktachiwadi, Tembhare, Shindole these wadis. This scheme is currently working for Tembhre and Sindole villages. Ambivali has got its new working scheme. Pinglas and Bhaktachiwadi are still facing water scarcity.

In Bhaktachiwadi we met Mr. Bhalchandra Kadam (President, Water Committee, Pinglas)

He told that new scheme has been proposed since 2009 for Pinglas village and is ready with estimate and all other things but due to lack of money work is progressing.

2.4 Ambivali

Interviewed Vilas Khedekar (Up-Sarpanch)

This scheme is totally maintained by villagers any kind of government intervention is not entertained. Scheme was funded by GP and designed by an engineer from MI department. Maintained solely by water tariff collected in the village. Water is provided once a day for 2 hours. Some houses have private connection, some use stand post. Private connection holders pay Rs 50/month and stand post user pays Rs 30/month. Scheme is functional for 12 months. There are 2 communities in the village (Aadiwasi and Maratha) but n social discrimination regarding water supply has not been found

2.5 Anandwadi

(48 houses) This is a combined scheme for both Anandwadi and Mograj. This was functional for 4-5 years in Anadwadi village. It was providing 2 hours of daily water supply. Water tariff was fixed at Rs 10/month/household. 3 years ago 1 hand pump (HP3) was provided by grampanchayat. Villagers said that it is sufficient for the entire village for most of the time. In case of emergency DW-5 is used as it is near road. Water is transported in bullock cart. In emergency condition there is also one bore well in Swami Dham Ashram.

(*Interviewed Sarpanch and Laksman Kharat*)

2.6 Malegaon

There are 3 hand pumps, 2 wells and 1 PWSS in the village. Out of which 2 hand pumps are built by Grampanchayat and one by Maharaj of Shiv Dham (Majorly used).

Usage of Hand pumps by Grampanchayat: 1 of them is far away from wadi and also requires more effort to pump it so, it is used very less, and another one is used by nearby people.

One well is being constructed by shiv dham and other is very old.

Failed PWSS Scheme

Source well for the (Malegaon–Pimpalpada) scheme was near the river bed. Operator (Gajanan Deshmukh) did not get salary on time so he left his work, he left and due to irresponsibility of villagers water pump burnt and then pipe was stolen, hence resulting in failure of scheme. There is no social problem in the village.

2.7 Pimpalpada

Failed PWSS

As written on PWSS tank, work was completed in 1999-2000. It has capacity of 10000L. After burning of water pump pipes were stolen. Scheme worked for 2-3 years. It provided water for 5-6 hours a day for the village. Now there is 1 hand pump it completes most of the demand but in case of emergency maharaj of Shiv Dham provides water.

2.8 Khandan

1 Well

This well is capable of supplying water to village for most of the time but just before (15-20 days) first rain it dries up. Then villagers dig river bed 2-3 ft and get water. For all other purposes river water is used.

PWSS

There is no PWSS scheme in the village. Percolation Lake is being built for enhancing the water level of the existing well.

3 Mechkarwadi

There is working PWSS scheme in Mechkarwadi. They have pipe connection in every house. Detailed analysis of this scheme is done in this report further.

3.1 Description of the scheme

3.1.1 Scheme Facts

The scheme was sanctioned in the financial year 2002-2003. Budget of the scheme was 13.32 L rupees.

The scheme was designed to supply piped drinking water to Mechkarwadi. According to 1991 census population of the wadi was 340 souls. Scheme was designed for 594 souls.

The scheme was proposed to provide 40 litres per capita per day (LPCD) to the beneficiaries. For the population of 594, it translated to a daily requirement of 23,760 litres per day (LPD).

According to the investigation by Groundwater Survey and Development Agency (GSDA), the suitable place of source well for the scheme was identified to near river bed in the farm of Mr. Lakshman Mechkar, which is in the middle of both part of the wadi.

3.1.2 Components of the Scheme

A. Source well

- Built a new well near the river bank for PWSS.
- Dimensions of the well: depth 7.5 m, diameter 6 m

B. Pumping machinery

- Two 5.00 HP pumps (one for each wadi)
- Discharging capacity –7,334 litres per hour (LPH)
- Daily 3 hours of pumping

C. Bandhara

- Schematic of bandhara is given in Appendix-1
- It was intended to serve as a percolation tank

D. Ground Storage Reservoir (GSR)

- Two 10000 litres capacity R.C.C. cistern for each

E. Pipeline

- Rising main 65 mm diameter
- Distribution network 50 mm diameter

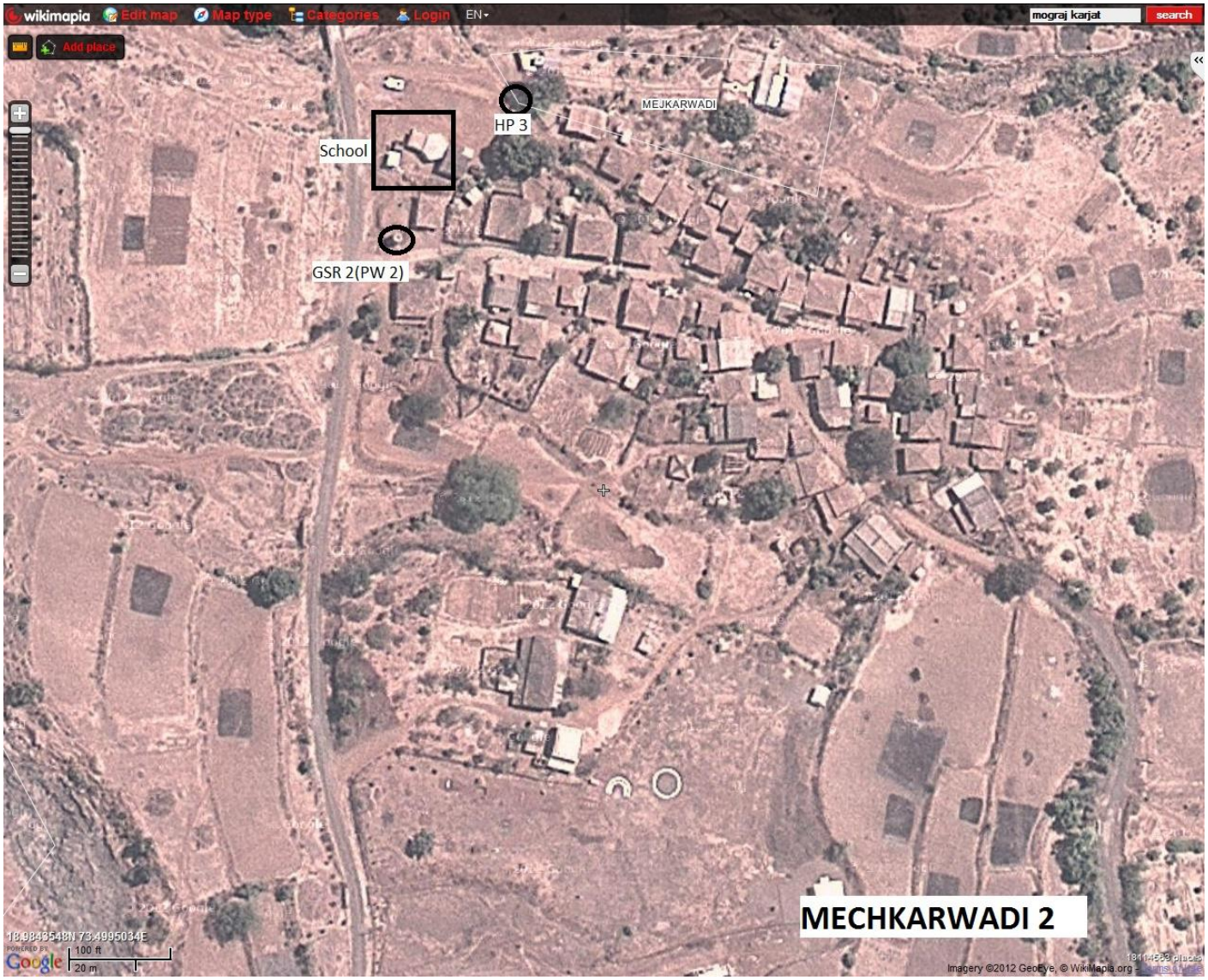
3.1.3 Current State of the Scheme

- Scheme is restarted in Mechkarwadi-1 about 1 year ago.
- Scheme is not functional in the Mechkarwadi-2.
- People of Mechkarwadi-2 rely on hand pump which is at most 200 m away from houses of wadi. After March they have to walk to Dug Well 3 to fetch water.
- Pipe crossing the road is removed due to hindrance in traffic.
- Two pumps are present in pump house, out of which one is currently used for Mechkarwadi-1.
- Since second pump is not used for many years it may not work due to jamming and rusting.
- RCC cistern is not in good condition for Mechkarwadi-2
- Stand post is not used in Mechkarwadi-1 as everyone has got home connection.
- Bandhara is not serving its intended purpose as there are only cracked stones and no sand in the river bed. So all water percolates through cracks.

MAP of Mechkarwadi 1

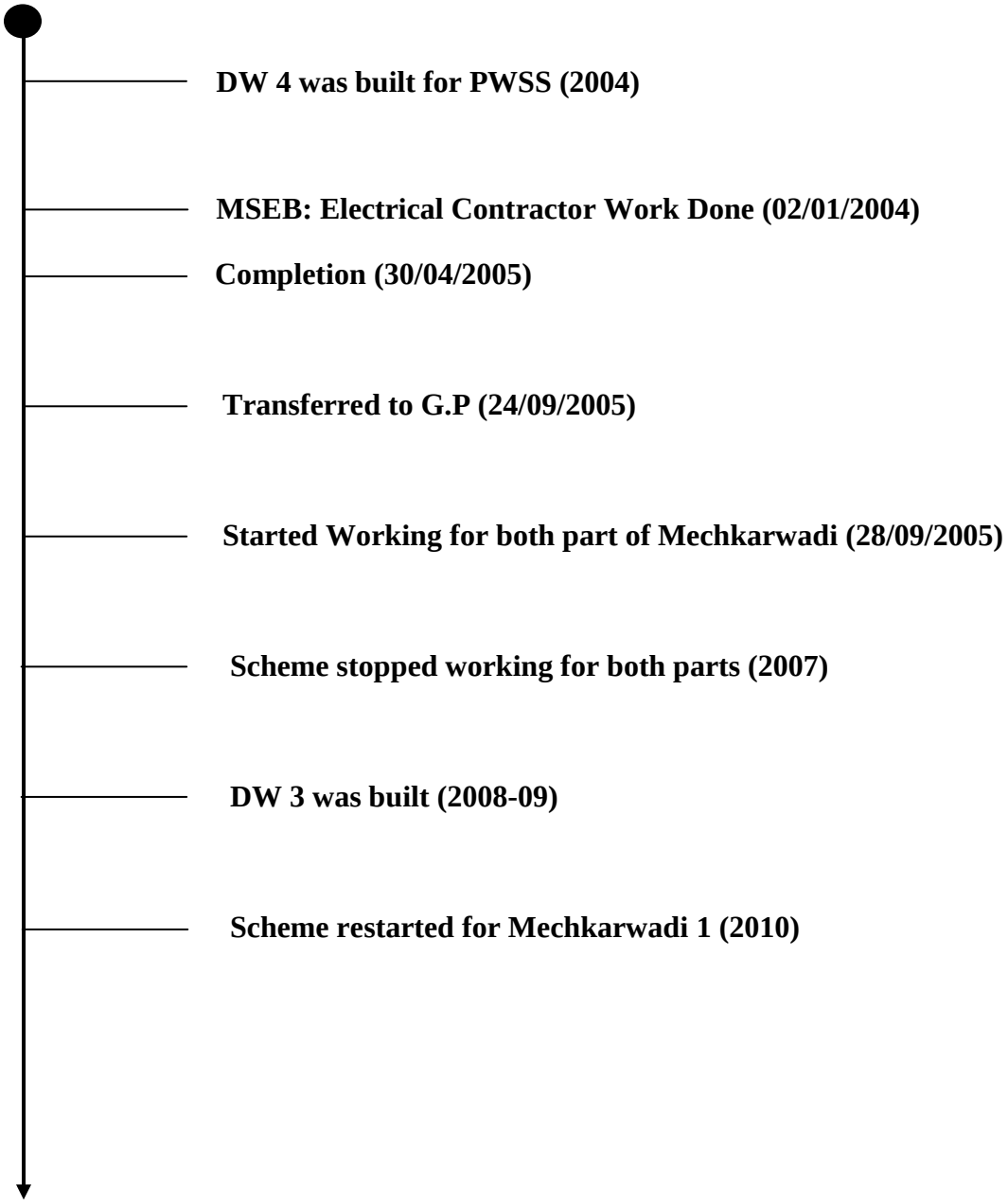
This part (Part-1) of the Mechkarwadi is currently running a PWSS scheme which is completely handled by villagers. Dug Well-4 (DW-4) is source well for PWSS. Dug well 3 is used by 3-4 houses which are nearby that well. All other houses in the wadi use water from PWSS. Ground Service Reservoir-1 (GSR-1) of 10000L capacity is located near anganwadi.

MAP of Mechkarwadi 2

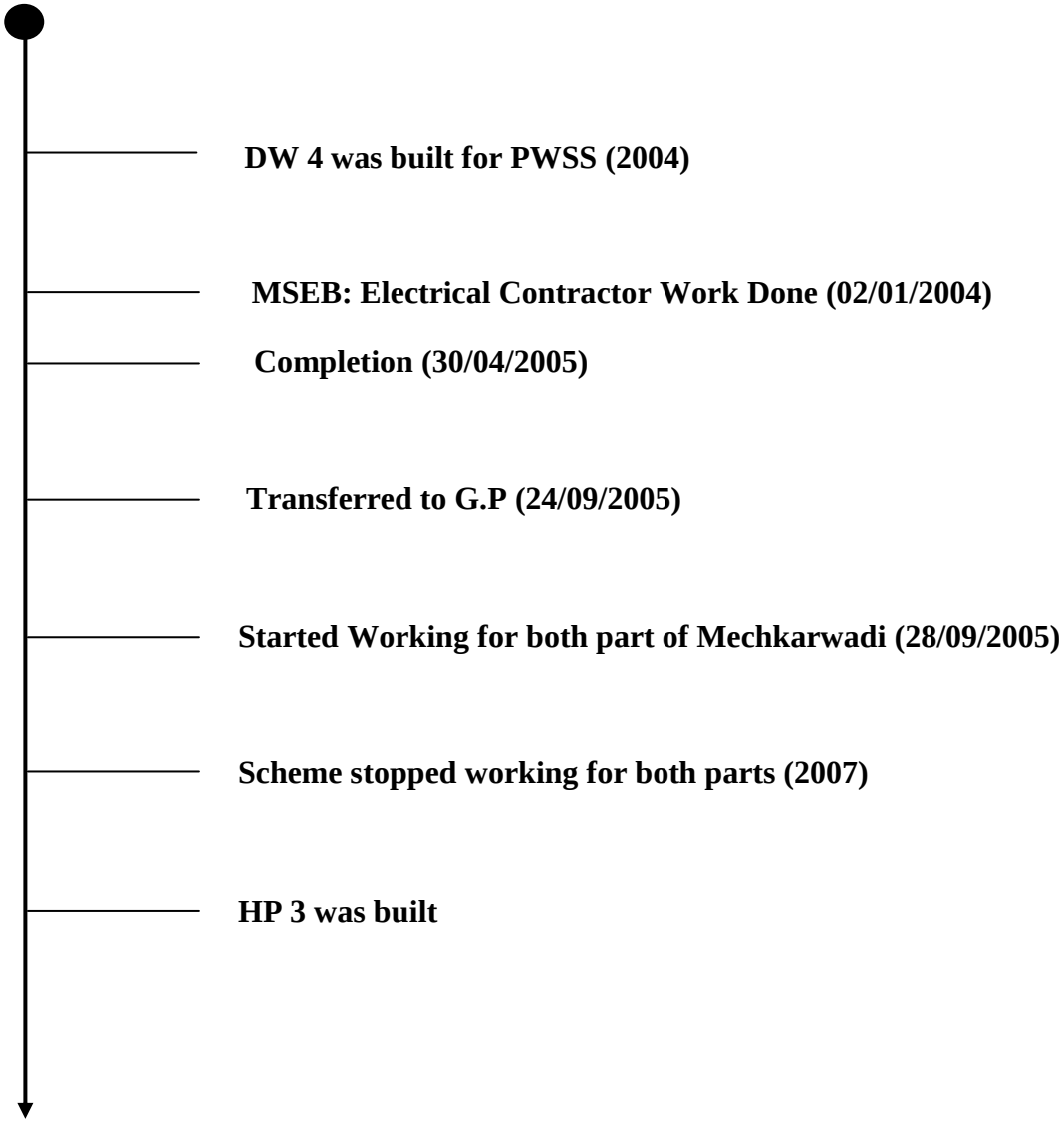


Mechkarwadi-2 has 45 houses. They use Hand Pump 3 to satisfy their water needs. After diwali whole wadi cannot get water from hand pump they go to Dug well and Dug well 4 for water.

TIMELINE for Mechakarwadi 1



TIMELINE 2


DW 4 was built for PWSS (2004)
MSEB: Electrical Contractor Work Done (02/01/2004)
Completion (30/04/2005)
Transferred to G.P (24/09/2005)
Started Working for both part of Mechkarwadi (28/09/2005)
Scheme stopped working for both parts (2007)
HP 3 was built

SOURCES

PWSS for Mechkarwadi1

PWSS for Mechkarwadi2

Dugwell 4

Dug Well-4 is the source well for PWSS. It was built as a part of scheme in 2004. It is 30 ft deep. This well is also used by people of Mechakarwadi-2 after their hand pump is not sufficient for all. Diameter is 6 meters. Water in the well is present for all 12 months which is only sufficient for drinking purpose.

Dugwell 3

It is used by 3-4 households which are away from the main wadi. This is sufficient for them for the whole year. It is 30 ft deep. It was built in 2008-2009. Used only for drinking purpose.

Dugwell (Not numbered)

It is used by 4-5 households from wadi 2 which are near to it. This is not sufficient for them for all the 12 months. It is 30 ft deep. Used only for drinking purpose.

Borewell

Water remains till holi, after that due to low water content villagers have to wait till bore well fills again. Remaining villagers go to DW 4 for water. This water is used only for drinking purpose. Due to poor maintenance it is hard to operate.

Bandhara

It was built in 2004 as a part of PWSS scheme. According to villagers it is useless because water percolated under the bandhara. Plates are also not placed just after the rainy season.

River

River water is used for all other purposes than drinking. In the river bank where there are natural water stoppages, water is stored in it and used for the whole year.

4 Functional Scheme Success Analyses (Mechkarwadi-1)

4.1 Methodology

Scheme is functional in Mechkarwadi-1. Methodology adapted is as follows

- Field visit
- Meeting with villagers of Mechkarwadi-1

4.2 Causes of success

4.2.1 Attitude towards public property

- Success and failure of public property greatly depends on attitude of local leaders and residents towards that property.
- Mr. Ashok Mechkar (President of Pani Smiti) believes that government is providing us with facility then we should take care of it because we are the beneficiary of that scheme. This is the main motivation in villagers and leaders in Mechkarwadi-1 which is lacking in Meckarwadi-2 and also other so many villages in the Mograj Gram Panchayat.
- Due to this attitude of the scheme is functional.
- One NGO contributed towards restarting of scheme, but unfortunately only people of Mechkarwadi-1 took initiative and benefited themselves.

4.2.2 Technical causes

- All houses are on the lower elevation than the Ground Service Reservoir.

4.2.3 Social / Cultural reasons

- All houses are of same community in Mechkarwadi-1.

4.2.4 Financial / Organizational reasons

- There is an operator in Mehckarwadi-1 who takes care of switching on-off. In his absence any other villager is given this responsibility.He is paid Rs 300 for this work.
- There are 30 houses in the Part-1. Water tariff is Rs 50/household/month. They are able to collect 1500 per month and after operator salary, Electricity bill is spent they still have 900 per month. This is with pani samiti and if there is any sudden failure in scheme they use this money to resolve the issue as soon as possible.
- If someone fails to pay water tariff by 10^{th} of the month then fine of Rs 10 is charged and he has to pay Rs 60 + Rs 50 in the next month. This compels villagers to pay on time and smooth functioning of the scheme.

5 Failure Analysis

5.1 Methodology

The methodology adopted for the present analysis is as follows:
1. Study of government documents (acquired from Gram Sewak and Pani Samiti)
2. Meetings with stakeholders: People from *Mechkarwadi A and B.* People from other wadis and Disha Kendra.

Since the scheme was implemented 7-8 years ago, there were multiple views about the causes of scheme failure and very limited data available in the *Mograj* GP office. Hence, this section is an attempt to piece the puzzle together to understand the failure of the scheme.

5.2 Causes of failure

Using the methodology mentioned above, financial, social and a brief technical analysis of the scheme was carried out. The analysis brought out different aspects regarding the failure of the scheme. It is very difficult to attribute the failure of the scheme to any single reason. There were multiple reasons working in parallel which might have led to the failure.

5.2.1 Financial / Organizational reasons

- **Lack of proper institutional mechanism**: Pani Samiti is the main institutional body for handling water related activities in villages. The pani samiti is also there in Mechkarwadi which has greatly affected the situation there. But, as the village is divided into two parts Mechkawadi A and B so is activity and presence of the Pani Samiti in two hamlets. The Pani Samiti is very active in Mechkarwadi A where as it is not in Mechkarwadi B. The reason may be the presence of Lakhsman Mechkar (President of Pani Samiti) and other important members of the samiti in Mechkarwadi A itself which has led to lack of awareness and enthusiasm among the people of Mechkarwadi B for reviving the scheme and paying the pani patti. People of the other part feel themselves out of the decision making activities and people of Mechkarwadi A always blaming the attitude of the people of Mechkarwadi B towards non paying of the pani patti. Also the operator was most of the time from Mechkarwadi A so may be voices of the Mechkarwadi B may not be heard.
- **Lack of trial period for the scheme:** All new schemes should have a trial period before the scheme is handled over to the GP. The contractor has to prove that scheme is working properly during the trial period. The period is generally of 6 months. If the scheme works as per expectation then only it should be transferred to GP. In case of this scheme, there was no such trial period.

- **People refuse to pay the *pani patti***: The main reason behind the failure of the scheme in Mechkarwadi B was due to the non payment of pani patti by the villagers of that region. This may be due to distance of the water tank from the houses. Some of the interior houses had to walk too much to reach the tank and take water. Where as in Mechkarwadi A, they have made stand posts for every house which made water using very easy. Also due to more population of Mechkarwadi A than B, some of the villagers said that they used to get dirty water sometimes. This may also be the reason not to pay the required rent and thus the non payment of electricity bills. Also there is a handpump very near by to Mechkarwadi B which made the people lazy as regard to revamping the scheme.

5.2.2 Technical causes

- **Insufficient water**: Some villages of Mechkarwadi b also said that they get dirty unclear water sometimes. This may be due to less capacity of the well. There should be proper yield test before setting up the scheme.
- **Presence of Main Pipe on the Road**: The location on tank in Mechkarwadi B can be a main problem leading to the stopping of the Pipe Water Supply Scheme. The tank is situated in such a way it is very close to a road going inside village. The problem that was pointed out by the villages was the main pipe going to the water tank. The pipe was not put deep inside the road making it very vulnerable to the daily travellers.
- **Irregular electric supply**: The electrical supply is not regular leading to motor burning and eventually making the scheme dead. Load shedding lead to non continuous and irregular supply of electricity.
- **Tank height difference in Mechkarwadi A and B:** This may also be the reason as there is quite a great difference between the heights of tanks in the two parts of Mechkarwadi.

5.2.3 Social / Cultural reasons

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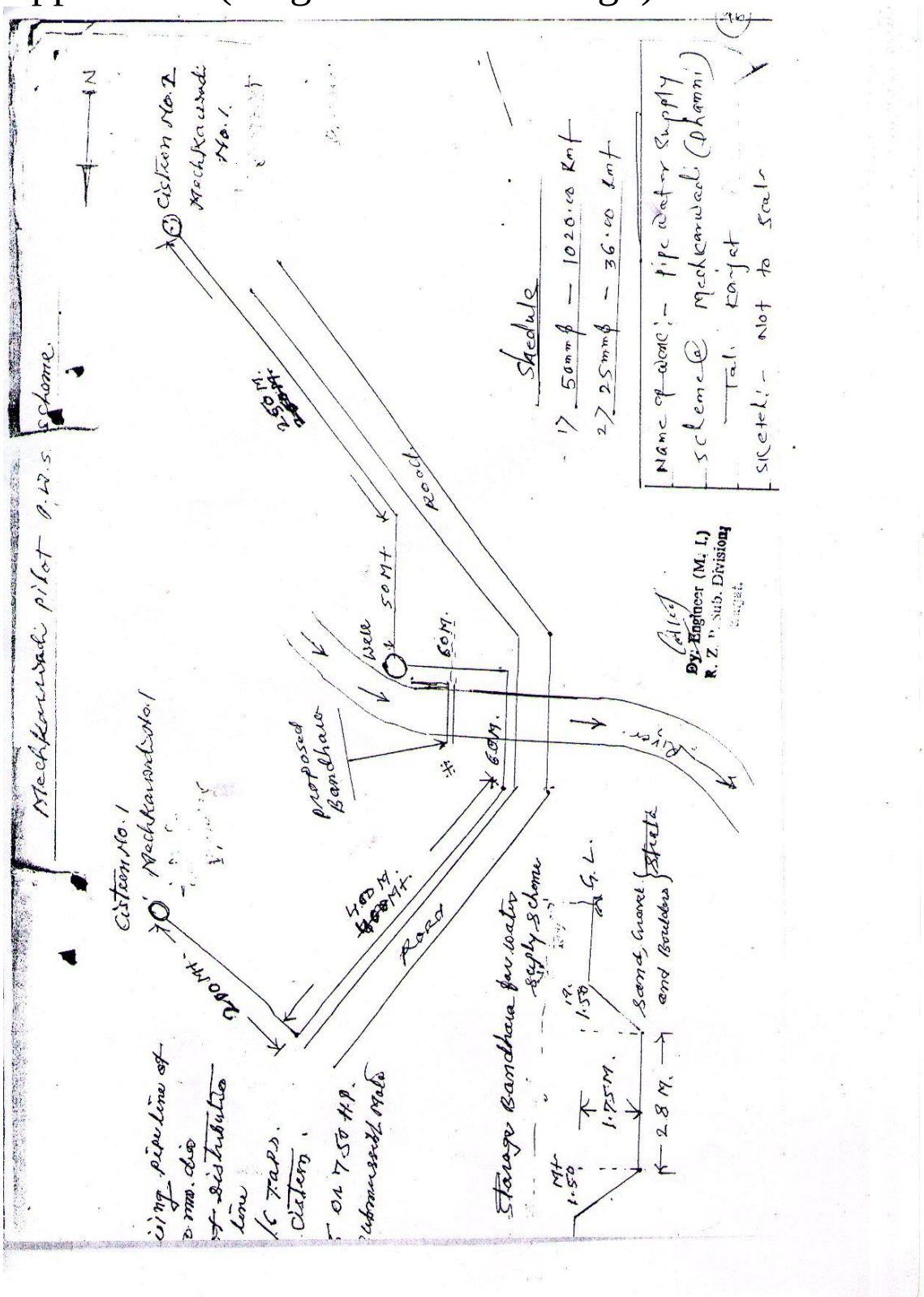
This section describes some of the social reasons that may have attributed to the scheme failure:

- **Conflict with neighbouring hamlets:** As observed by taking to the people of both the wadis, both side of people do not support the belief of the other side. They also do not help eachother in any case.their conflicting choice has made it difficult to restart the scheme in Mechkarwadi B.

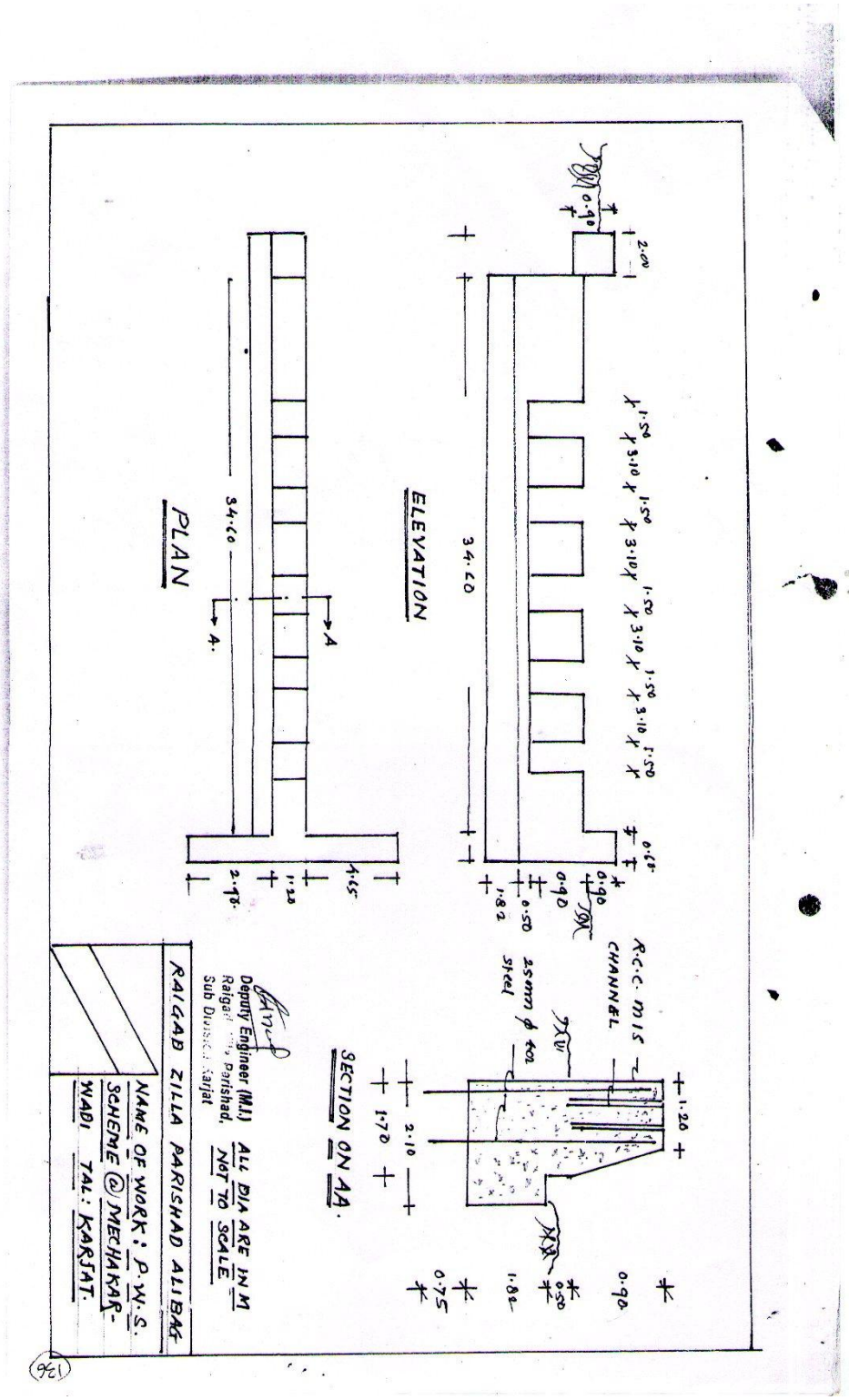
- **Non-usage of the scheme during monsoons:** Tribal people prefer fresh water instead of piped water during monsoon so the scheme becomes stagnant during this time. When water is available in wells and handpumps people use to rely on these sources rather than the pipe water supply scheme where they have to pay pani patti too.
- **Different caste of people living in both hamlets:** People living in both parts of Mechkarwadi are of different caste which can be a major factor of not working of Pani Samiti for Mechkarwadi B as Pani Samiti is overwhelmed by a particular caste. Also, people of both the parts have conflicting interests and they are always blaming each other for the failure of the scheme.

This is major view that the Pipe Water Supply Scheme failed due to non payment of the tariff for water the villagers use. But, there are also many basic reasons for non payment of the tariff as pointed out above. To make the PWSS operable the root causes must be omitted.

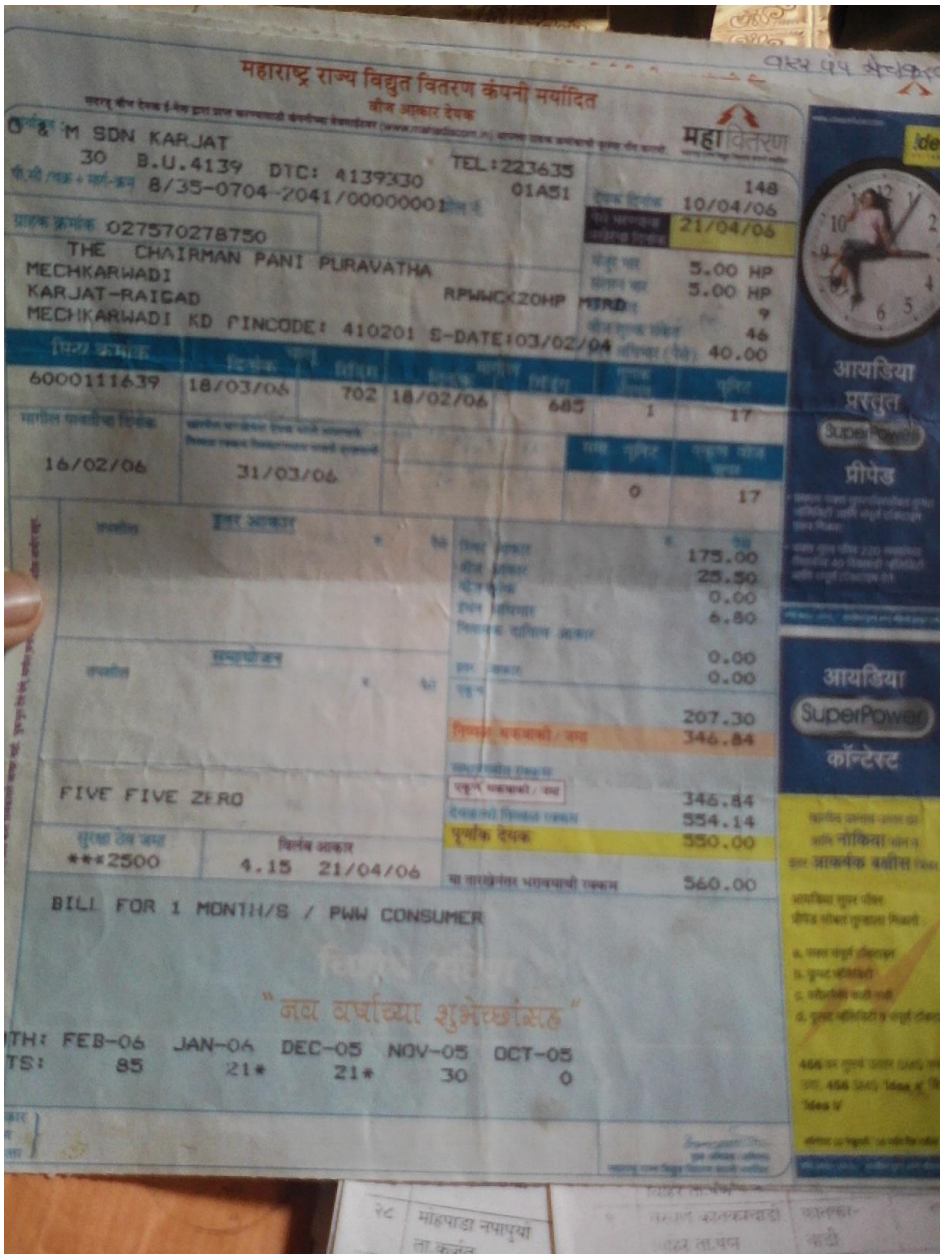
Appendix-1 (Original scheme design)



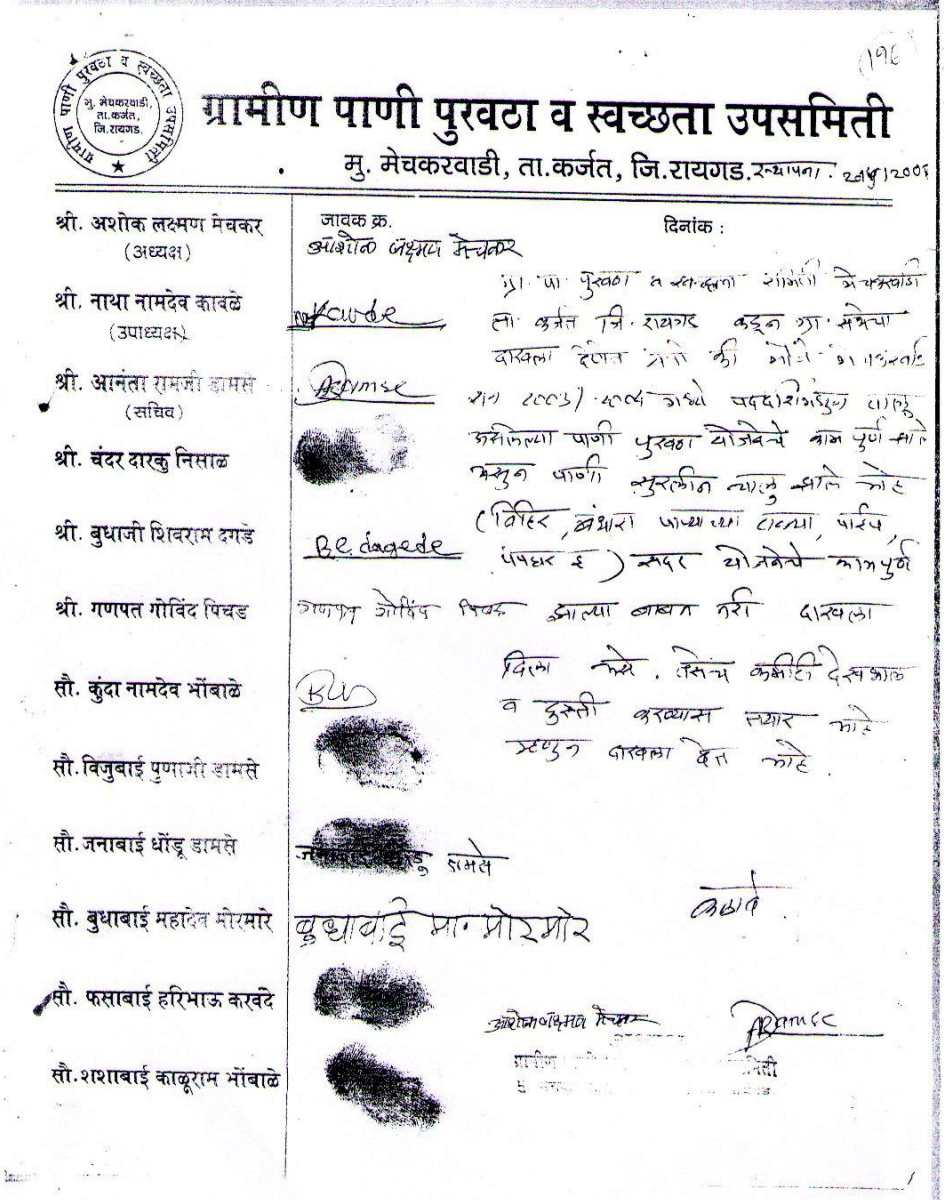
Design of Bandhara



Appendix-2(Electricity Bill)



Appendix-3(Scheme Completion Certificate and handover certificate)



ग्रामीण पाणी पुरवठा व स्वच्छता उपसमिती

मु. मेचकरवाडी, ता.कर्जत, जि.रायगड.

श्री. अशोक लक्ष्मण मेचकर (अध्यक्ष)

श्री. नाथा नामदेव कावळे (उपाध्यक्ष)

श्री. आनंता रामजी डामसे (सचिव)

श्री. चंदर दारकु निसाळ

श्री. बुधाजी शिवराम दगडे

श्री. गणपत गोविंद पिचड

सौ. कुंदा नामदेव भोंबाळे

सौ. विजुबाई पुणाजी डामसे

सौ. जनाबाई धोंडू डामसे

सौ. बुधाबाई महादेव मोरमारे

सौ. फसाबाई हरिभाऊ करवंदे

सौ. शशाबाई काळूराम भोंबाळे

Appendix-4 (Design considering population)

(3)

Name of Work :- Construction of [illegible] Scheme Meelicorwadi (Dhamni)
Tal:- Karjat

Main Features

Sr. No.	Item	Details
1)	Population as per 19[illegible]1 Census	340 Souls
2)	Present population	425 Souls
3)	Designed population 40% on present population	594 Souls
4)	Rate of water--------------	40 liter/day/head
5)	Daily demand of water	23,760 Lt
6)	Total estimated cost	Rs. ~~13,81,425~~ 1332907/-
7)	cost of per capita------	Rs. ~~2,326~~/- 2244/capita

Dy. Engineer (M. I.)
R. Z. P. Sub. Division.
Karjat.

Appendix-5(MSEB(Electrical contractor's completion and test report))

(112)

Form D-1

MAHARASHTRA STATE ELECTRICITY BOARD

Electrical Contractor's Completion & Test Report

Application No. ____________ Place Melkarwadi

To,

The Electricity Board, Date 2/01/04

Kalole (Local Office)

I / We beg to inform you that the installation at At Melkarwadi Tal. Karjat. Dist. Raigad.

Occupied by Kum./Smt./Shri. Rural Water Supply & [illegible] Committee at Melkarwadi

has been completed by me / us and is now ready for test. The details of the installation and test obtained as follows :-

Nature of Demand	No. of Points	Wattage of Points	Total Wattage	Insulation resistance to earth	Remarks No. of distribution boards P. F. Starter etc.
LIGHTING					[illegible] [illegible] [illegible] copper cable [illegible] 85 [illegible] Submersible water pump 2 set. 5HP. RPM - 2800 Pr NO. SL NO. 2407/49434 Capacitor - 3KVAR 2 KVAR 1 NO. [illegible] 2 NO Neutral Panel Board 2 NO. Total - 5HP [illegible] 1 motor standby [illegible].
Lights					
Fans					
Wall Pluge					
DOMESTIC APPLIANCES					
Cookers					
Refrigerators					
Water Heaters					
Other Purposes				10 MΩ	
Wall Pluge					
MOTORS	Nos.	BHP each	Total BHP		
Industrial					
Pumps — —	①	5HP.	5HP.		
Other Purposes					

The installation was tested by me/us on 2/01/04. and the result was 10 MΩ to Earth and 10 MΩ between Phases.

Supervisor's Signature [signature]

Certificate No. M. S. No. 22533

Dated 25-9-1990

Test Report

Received on ____________

Initial ____________

Wiring Contractor's Signature [signature]

Licence No. M.C.7719

Address Gaurav Electrical Engineers
Near Alibag Co-op.Bank
Karjat-410201 Dist.Raigad

References

Government files of schemes (Minor irrigation department)

www.indiawater.gov.in
www.censusindia.gov.in
www.wikipmepia.org
www.maps.google.com