SUSTAINABLE WATER MANAGEMENT PROJECT
IMPLEMENTATION PHASE

CONSERVATION MEASURES TO MAINTAIN SUSTAINABLE SUPPLY OF WATER IN & AROUND IKEA SUPPLIER FACTORIES

Micro-Watershed Plans for Project Villages

Submitted by

advit foundation

Submitted to

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Chapter – 1: Introduction

1.1 Background

The detailed study conducted by Advit Foundation revealed that the entire belt of villages falling under the project area is possibly the driest part of the Jaipur district. The area is suffering from a disproportionately poor availability of water when compared to its day to day demand. The situation has worsened over time due to a rapid increase in use-related parameters. The population growth rate in the villages is also high. Demand for water for agriculture, sanitation and drinking needs has been growing apace. The supply, however, has remained unchanged. The primary source is the scanty and uncertain rainfall, confined to just two months of the year. The area can be categorized as semi arid, which implies that the area is suffering from recurrent water scarcity.

The rainfall in the area is not only inadequate, but also varies sharply from year to year. Consequently, droughts are now almost a normal occurrence. Fluctuations in rainfall influence both surface and ground water availability. The water balance analysis of the area indicates towards a moderate recharge of only 14%. Due to the dry climate, the evapo-transpiration losses are very high (57%). The excessive pumping of groundwater is one of the major reasons for poor recharge in the area. The volume of runoff (6.67 %) is also very low due to the dryness of the soil. The analysis of monthly rainfall and monthly evaporation data indicates that there is a small period when the evaporation is lesser than the rainfall (mid-July to end-September). This is the period when maximum harvesting of rainwater should be done to increase the groundwater charging. The water stored in water harvesting structures can reduce the pressure on ground water resources.

The analysis of last ten years of rainfall pattern indicates that the area recently has faced the drought for 5-years i.e. from year 1999 to 2003. This scenario indicates that the area requires immediate attention for taking up water conservation and management programs. Also there is a need to conserve the rainwater at places to increase the ground water recharge. Water harvesting will also be able to support the drinking water needs for people and their livestock.

An Implementation Strategy Report developed by Advit Foundation identified the need for complete program planning and designing based on the detailed field survey along with construction of water conservation structures in some select villages where water availability is very poor. This report presents the results of the detailed survey conducted in the project villages and the micro-watershed wise plans prepared with the help of survey.

1.2 Project Area

The project area consists of 15 villages located in Phagi block of Jaipur district with names as follows:

S. N.	Name of Village	HQ Panchayat
1.	Rotwada	Rotwada
2.	Kunjbiharipura	Rotwada
3.	Sanwal	Rotwada
4.	Kunchiyawas	Rotwada
5.	Bhimpura	Rotwada
6.	Harbanspura	Rotwada
7.	Kiratpura	Rotwada
8.	Jhund	Rampuranwali
9.	Anokpura	Rampuranwali
10.	Mandor	Mandor
11.	Chandwas	Sanganer
12.	Gohandi	Sanganer
13.	Navalkishorepura	Sanganer
14.	Amarpura	Sanganer
15.	Sahu ka bas	Sanganer

1.3 Methodology

The methodology used to develop the detailed village wise micro-watershed plans is described below:

1. **Detailed base line survey focusing water resources in the project villages:**

    a. Field visit and collection of information focusing existing water resource scenario in the respective project village with various tools (survey formats, focus group discussions, and site visits).

2. **Identification of viable project activities for the augmentation of water resources:**

    a. Discussion with village communities to gather their views about the possible interventions in the micro-watersheds.
    b. Site visit and identification of suitable locations and type of activities/ structures for augmentation of natural resources (village ponds, wells etc.).
    c. Site visit and identification of suitable locations for recharges or dilution of saline groundwater sources to be utilize for irrigation purposes.

3. **Carryout level surveys and measurements for identified project activities:**

    a. Carryout field engineering level survey with the help of Dumpy/ Auto Level for measurement and demarcation of micro-water shed areas in each project village.

4. **Preparation of Micro-watershed Plan & maps for each village:**

a. Preparation of Micro-watershed plans based on field survey and discussions with communities.
b. Preparation of GIS based thematic maps after collection, geo-referencing and digitization, superimposition and analysis of available village maps, GT sheets and Satellite imagery along with field engineering surveys.
c. Demarcation of participatory project activities identified during the study on prepared micro-watershed plans.
d. Preparation of technical design and estimate report supported with drawings for identified project activities.

1.4 Field Engineering Survey

Field Engineering Survey was planned to collect primary data necessary for assessing the characteristics of groundwater and land-use pattern and planning & designing of field activities. The data and the tools used in field engineering survey included the following:

Field Level Survey

To demarcate the micro-watersheds within the project village's ridge information is very important. To identify the ridge line, field level survey with the help of Auto Level was conducted in each village.

GPS survey

To update the information on villages / site location, water bodies and other topographical features a field survey of the project area was carried out with the help of GPS (Global positioning system). The GIS coordinates of the potential sites was obtained with the help of GPS. GPS is an instrument, which takes the GIS co-ordinate readings of any location using satellite where it is positioned. The data/ information collected were downloaded in the computer through GIS software to demarcate the location of each individual potential site on the micro watershed plan.

Soil and Groundwater Quality Testing

There is an erratic, unusual and unpredictable variation in quality content in groundwater and soil in both vertical and horizontal directions. That situation has been further worsened recently due to frequent occurrences of drought in the region. No readily information is available on this context. Hence soil and groundwater quality data available from secondary sources has been collected to demarcate quality contours for future planning interventions in drinking water, irrigation and crop selection inside the project villages.

1.5 Data Processing and Analysis

All information collected from various sources was analyzed for it accuracy using a computer base model. The analyzed data was arranged village-wise to form the digital database of the project area. The collected maps were scanned, geo-referenced and digitized & updated using GPS data.

Data Analysis

The processed and analyzed data arranged village wise was used to represent existing scenario of the project villages. This can be used as a bench mark for the activities proposed for future interventions in the project villages.

Structural Design and Drawings

The information/ data utilised as input parameters was extracted from the digital database developed for each village. Mathematical Calculation with design formulas were carried out to generate accurate specifications of the proposed activities/ structures. Computer aided drawings were generated based on the designed dimensions. Cost was calculated with the designed dimensions and the relevant BSR and local available material rates for each activity/ structure individually.

Thematic Mapping

All the maps were digitized in GIS environment through appropriate geo-referencing with the help of latest available tools and technology. This information in different layers were superimposed and analyzed to generate thematic (Micro-watershed) maps of the project village.

Chapter – 2: Project Area Profile

The project area is located about 40 km south-west of Jaipur city in Phagi block of Jaipur district. The geographical location of the project villages can be described in terms of GIS coordinates with its geographical area as below:

Table No. - 1: Geographical Location of Project Villages

Village Name	GIS Coordinates (in degrees)		Geographical Area* (Hectare.)
	X	Y	
Amarpura	75.5764	26.7061	472.0
Anoppura	75.5386	26.7440	208.0
Bheempura	75.5660	26.7428	457.0
Chandawas	75.7083	26.6908	334.0
Gohandi	75.5932	26.6875	819.0
Harbanshpura	75.5657	26.7188	160.0
Jhund	75.5295	26.7385	281.0
Keeratpura	75.5684	26.7120	472.0
Koonchyawas	75.5525	26.7445	225.0
Kunj Biharipura	75.5260	26.7273	311.0
Mandor	75.5344	26.7053	1155.0
Nawal Kishorpura	75.5772	26.6963	297.0
Rotwara	75.5429	26.7315	254.0
Sahu ka Bas	75.5543	26.6903	381.0
Sanwal	75.5193	26.7301	196.0

(Geographical area as per census 2001)*

2.1 Demographic Profile

Demographic profile of the project villages can be summarized as given in the table no.2.

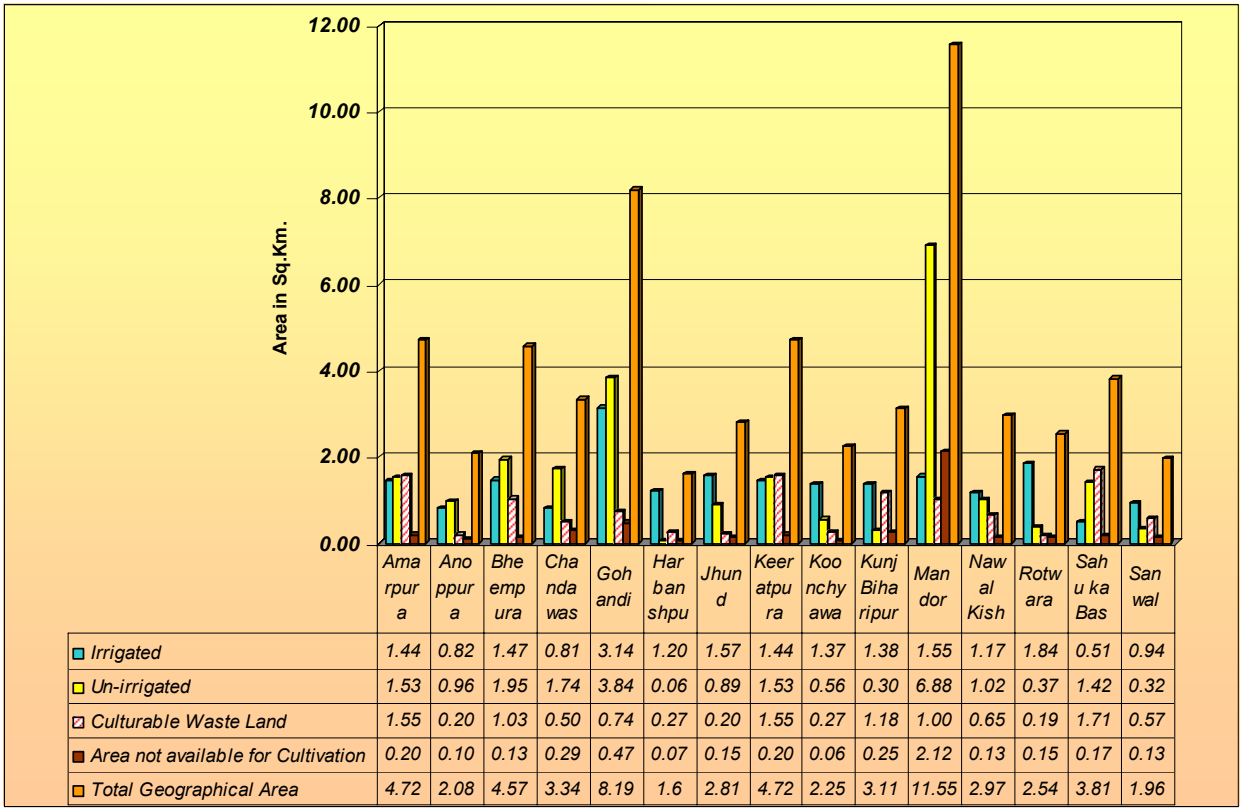
Table No.-2 Demographic details of the project villages

S. N.	Village	House Holds	Total Population			Schedule Caste			Schedule Tribes		
			Male	Female	Total	Male	Female	Total	Male	Female	Total
1	Amarpura	78	301	236	537	134	89	223	21	15	36
2	Anoppura	58	253	238	491	18	14	32	0	0	0
3	Bheempura	73	337	286	623	0	0	0	0	0	0
4	Chandawas	61	253	234	487	36	27	63	0	0	0
5	Gohandi	149	566	476	1042	128	114	242	2	1	3
6	Harbanshpura	51	234	193	427	41	41	82	50	43	93
7	Jhund	85	338	303	641	43	43	86	0	0	0
8	Keeratpura	78	301	236	537	134	89	223	21	15	36
9	Koonchyawas	51	248	231	479	41	36	77	0	0	0

10	Kunj Biharipura	52	202	179	381	83	66	149	0	0	0
11	Mandor	158	618	573	1191	52	72	124	17	18	35
12	Nawal Kishorpura	50	230	209	439	7	5	12	0	0	0
13	Rotwara	72	247	275	522	36	29	65	0	0	0
14	Sahu ka Bas	18	102	115	217	11	14	25	0	0	0
15	Sanwal	65	258	239	497	199	183	382	3	1	4

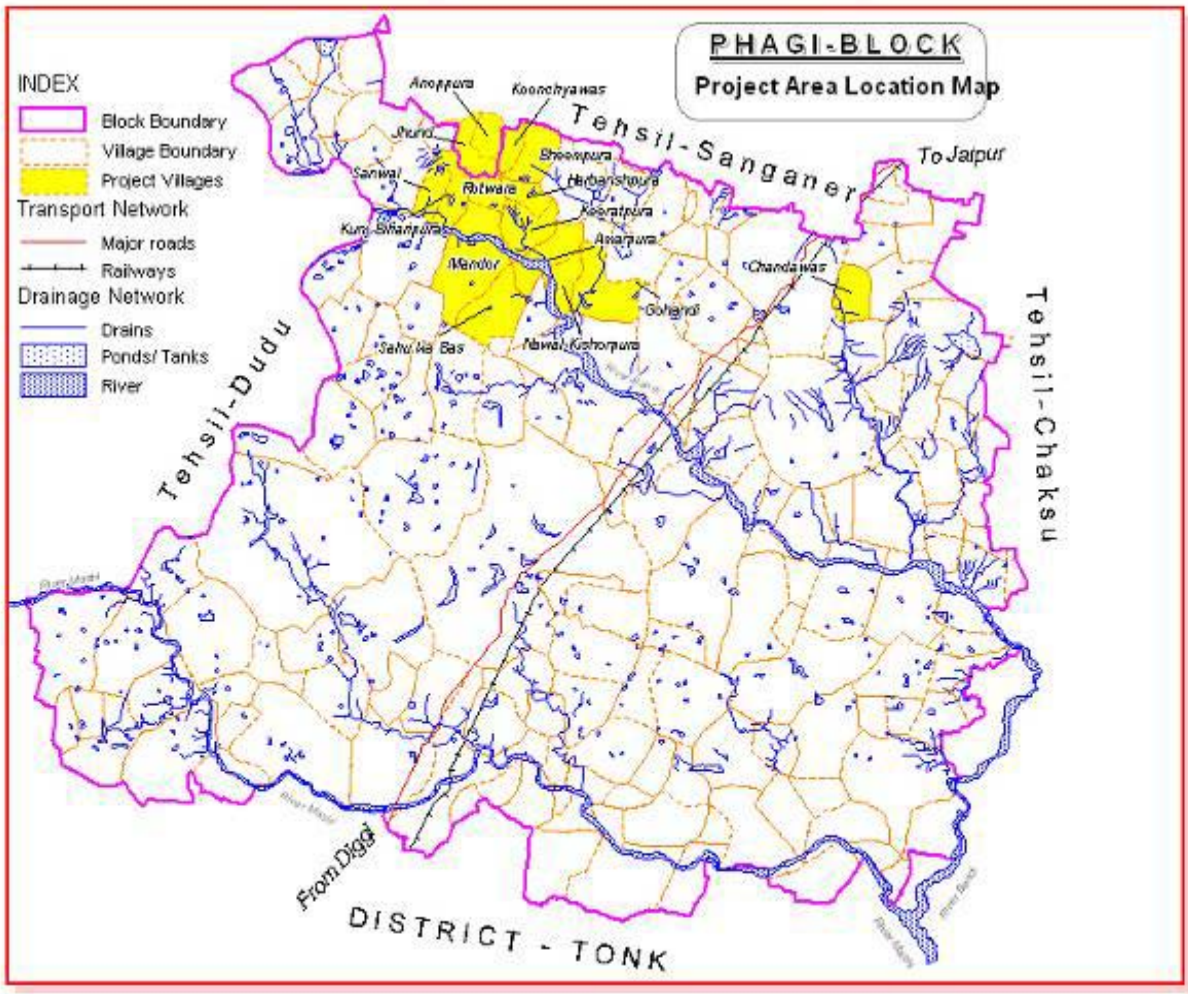
2.2 Land use Pattern

Majority of rural population is engaged in agricultural activities. Agricultural production largely dependent on rainfall as almost entire irrigation is rain fed. The existing tube wells are either dried or have less yield due to deficit rainfall in the region. As per Census-2001 record following graph represent the land utilization pattern in the project villages.



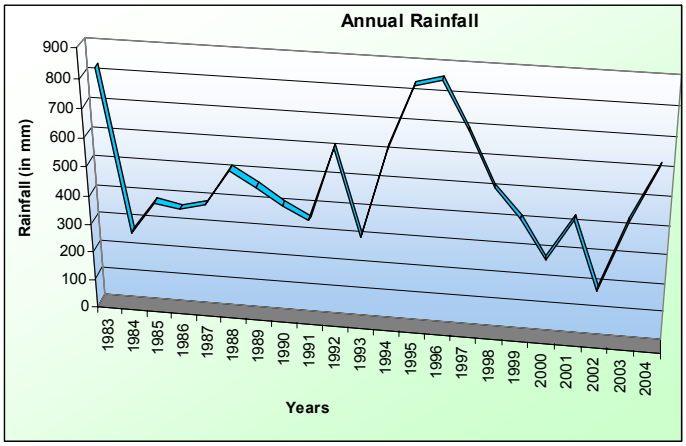
	Amarpura	Anoppura	Bhempura	Chandawas	Gohandi	Harbanshpu	Jhund	Keeratpura	Koonchyawa	Kunj Biharipur	Mandor	Nawal Kish	Rotwara	Sahu ka Bas	Sanwal
Irrigated	1.44	0.82	1.47	0.81	3.14	1.20	1.57	1.44	1.37	1.38	1.55	1.17	1.84	0.51	0.94
Un-irrigated	1.53	0.96	1.95	1.74	3.84	0.06	0.89	1.53	0.56	0.30	6.88	1.02	0.37	1.42	0.32
Culturable Waste Land	1.55	0.20	1.03	0.50	0.74	0.27	0.20	1.55	0.27	1.18	1.00	0.65	0.19	1.71	0.57
Area not available for Cultivation	0.20	0.10	0.13	0.29	0.47	0.07	0.15	0.20	0.06	0.25	2.12	0.13	0.15	0.17	0.13
Total Geographical Area	4.72	2.08	4.57	3.34	8.19	1.6	2.81	4.72	2.25	3.11	11.55	2.97	2.54	3.81	1.96

BAGRU WATER PROJECT
PROJECT AREA LOCATION MAP
(Year - 2007)



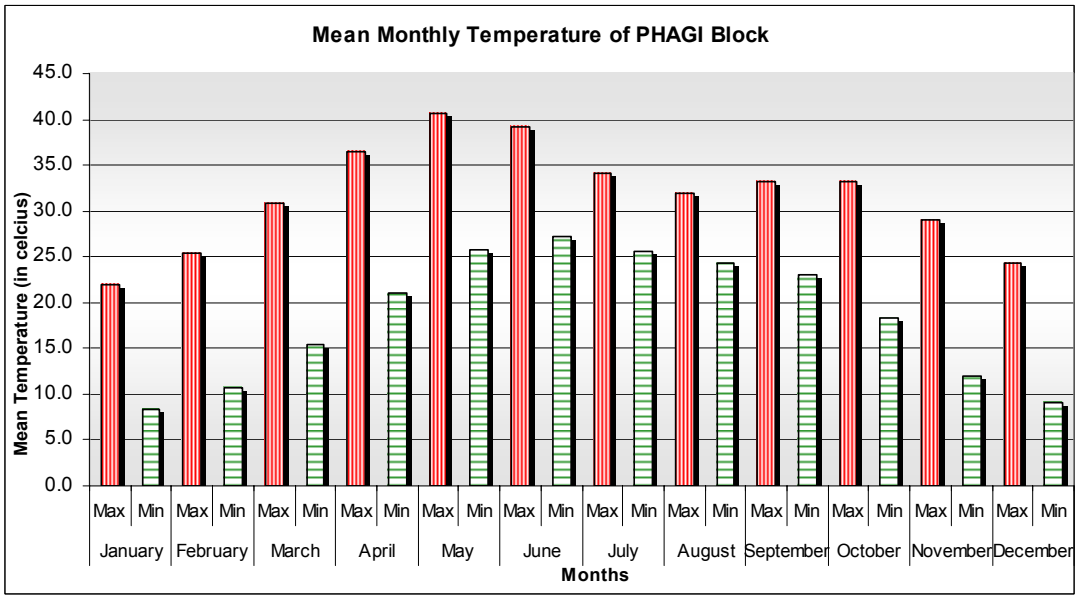
2.3 Climatic Characteristic

The Jaipur region falls in the semi-arid region under the agro-eco climatic classification in Rajasthan. The rainy season in Rajasthan is govern by south west Monsoon. About 90% of the total annual rainfall is received in four months i.e., June, July, August and September.



Following graphs indicate the pattern followed by annual rainfall received during the last 24 years in the project area.

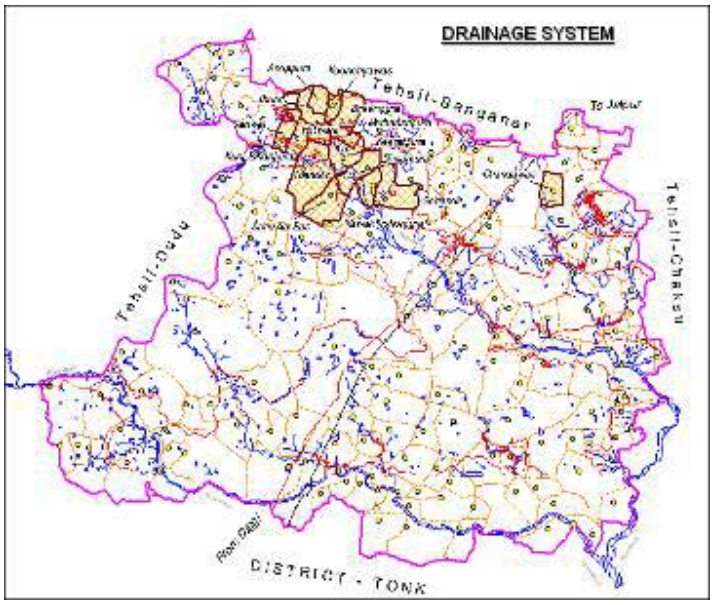
As the area falls under semi arid category the temperatures in the winter season remains low and summer season experiences high temperature conditions. Following graph represent mean monthly maximum and minimum temperatures recorded.



2.4 Water Resource scenario

Groundwater is the only source of water to meet the drinking and irrigation water needs of the project villages. During past few decades the water table in the regions has fallen significantly resulting decrease in quantity (low yield) and deterioration on quality (especially fluoride contents).

Increase in agricultural production has induced irrigation water draft. Similarly increase in human and cattle population has increased drinking water draft manifold since past few decades. This has resulted in the imbalance between the demand and supply.



The subsurface layer in the region contains feldspar rocks which is the main source of fluoride concentration in groundwater and increases with the depth.

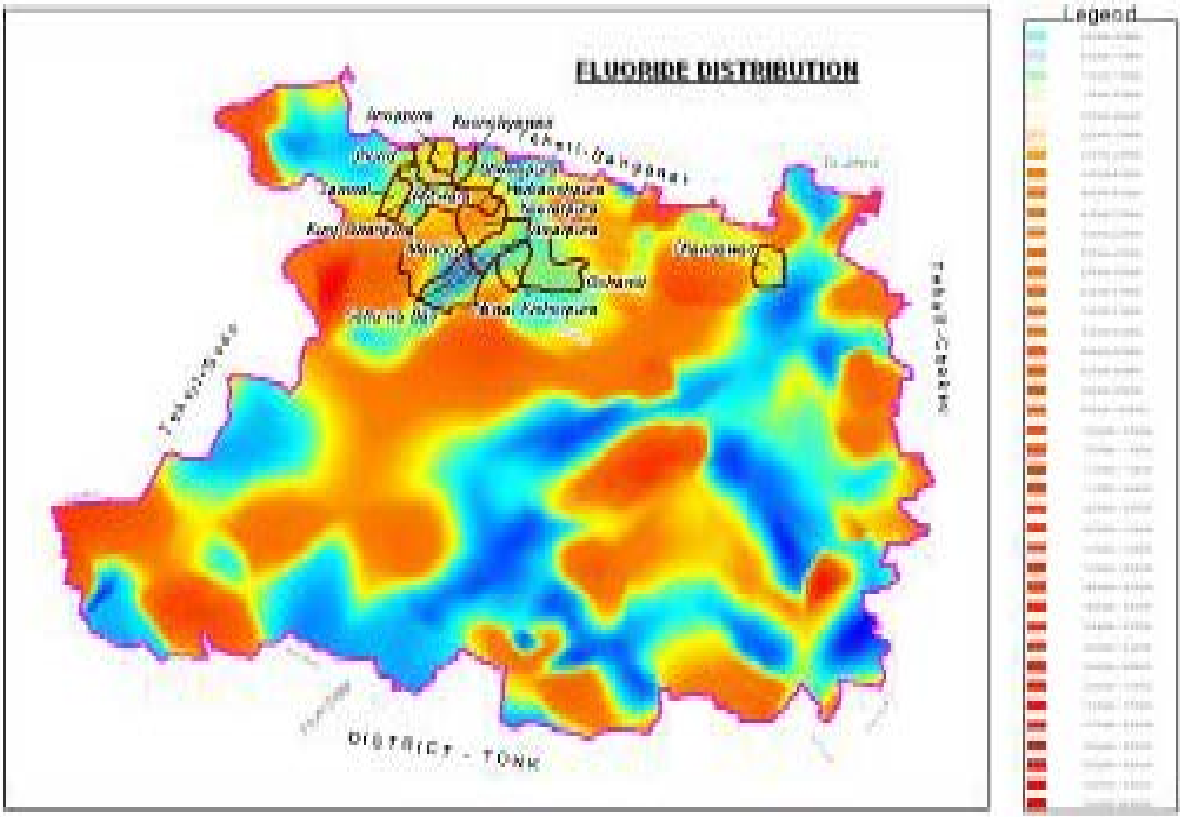
The ground profile is generally flat, however there exist a definite drainage system consisting river and natural drains. The width of the drain is quite large with respect to the depth. At some places it appears flat. These drains are visible only in monsoon season.

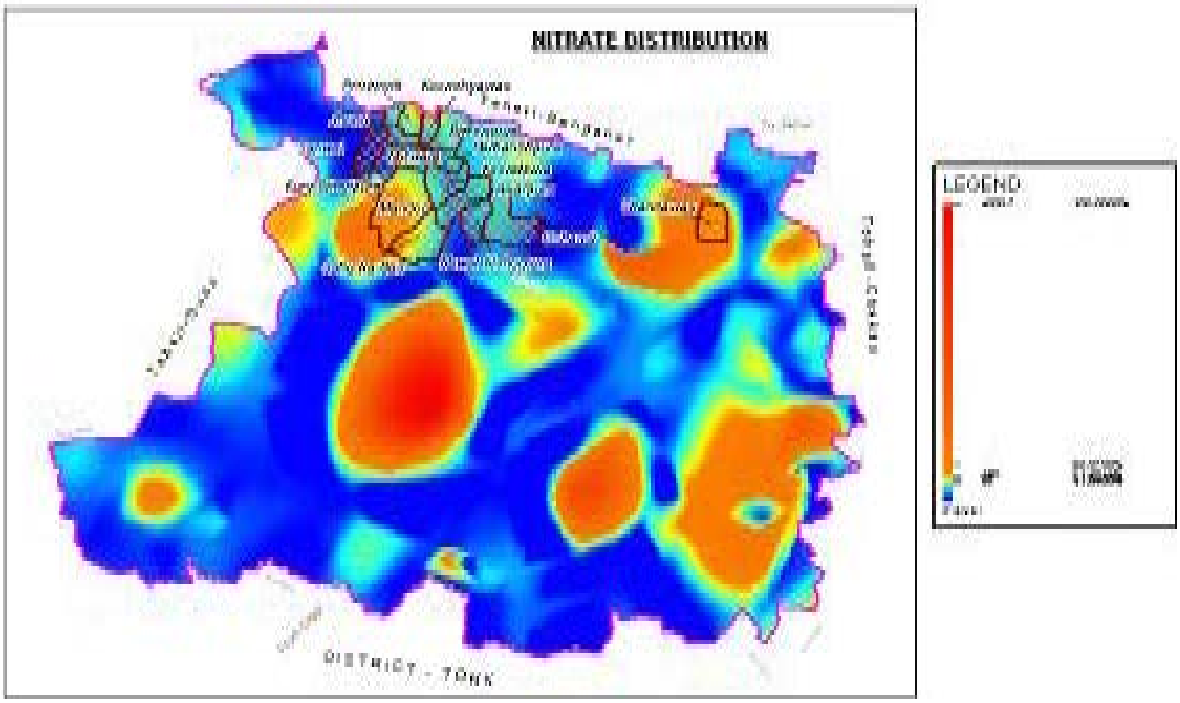
There exist few depressions where runoff water is stored after the rainfall. Generally, village ponds or tanks are located on such spots from historical time. Few of them are well maintained while other are damaged requiring repair or renovations.

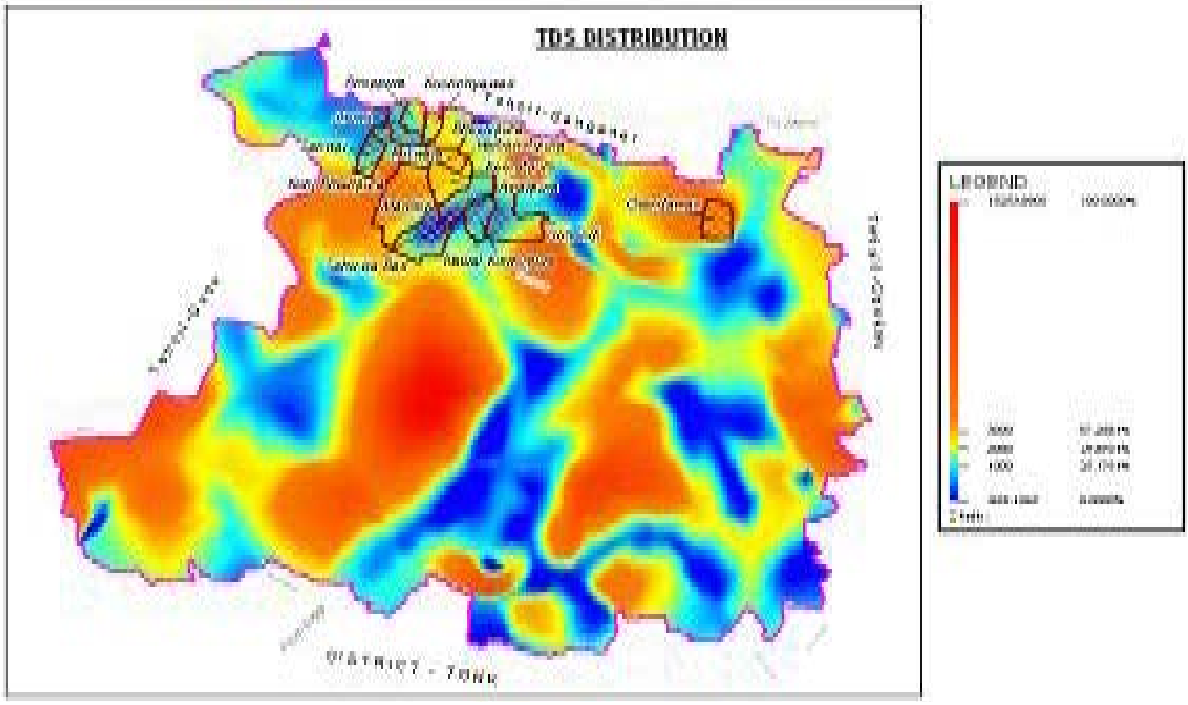
Most of the project villages are covered by PHED water supply system with varying categories like RWSS (Regional Water Supply System), PSP (Public Stand Post) or H.P. schemes. These schemes are suffering badly due to less or no yield from source wells or deterioration in quality parameters. Also non-maintenance have resulted no or little use of these schemes. As a result of which the village population has identified some other alternative and dependable sources to meet their drinking water needs. Open wells near the village ponds/ tanks are the main source of drinking water in the project villages. The distances of such sources vary from village t village. Some of these sources dry up during peak summer season causing more pressure on remaining sources.

Cattle population depends on natural surface water collected in natural depression or village ponds/tanks. They have to cover more distances during summer seasons.

Groundwater quality scenario can be visualized from the following groundwater quality (Fluoride, Nitrate and Total Dissolved Solids) maps:


FLUORIDE DISTRIBUTION
DISTRICT - TONK
Legend


NITRATE DISTRICT
DISTRICT - TONK
LEGEND


TDS DISTRIBUTION
LEGEND

Chapter – 3: Village-wise Micro-watershed Plans

This chapter presents the village wise watershed plans for each project village. The plans are the outcome of detailed planning for water conservation in each village.

MICRO-WATERSHED PLAN OF VILLAGE - AMARPURA

Village Location

Amarpura village is located at $75^0$34'35.04" east longitude and $26^0$42'21.96"north longitude with a geographical area of 381 hec at about 45.50 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Amarpura village.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Block HQ: **22 km**		=
Distance to be covered by all weather roads:	=	**10 km**
Distance of village from district HQ	=	**45.5 km**
Nearest market & its distance from the village: *(Bagru)* **10 km**		=
Distance to nearest Middle School **5 km**		<
Distance to nearest College **10 km**		>
Nearest Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 18 families (baseline survey – 2007) residing in the village AMARPURA .

A. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	217	Total House Holds	18
Total male Population	102	SC House Holds	1
Total Female Population	115	ST House Holds	-
Child Population (0-6 yr)	36	BPL House Holds	-

B. Dhani-wise breakup of the population distribution:

S. N.	Village/ Dhani	House Holds			Population			
		TOTAL	SC	ST	Male	Female	Child	Total
1	**Amarpura**	18	1	0	102	115	36	217
	Total	**18**	**1**	**0**	**102**	**115**	**36**	**217**

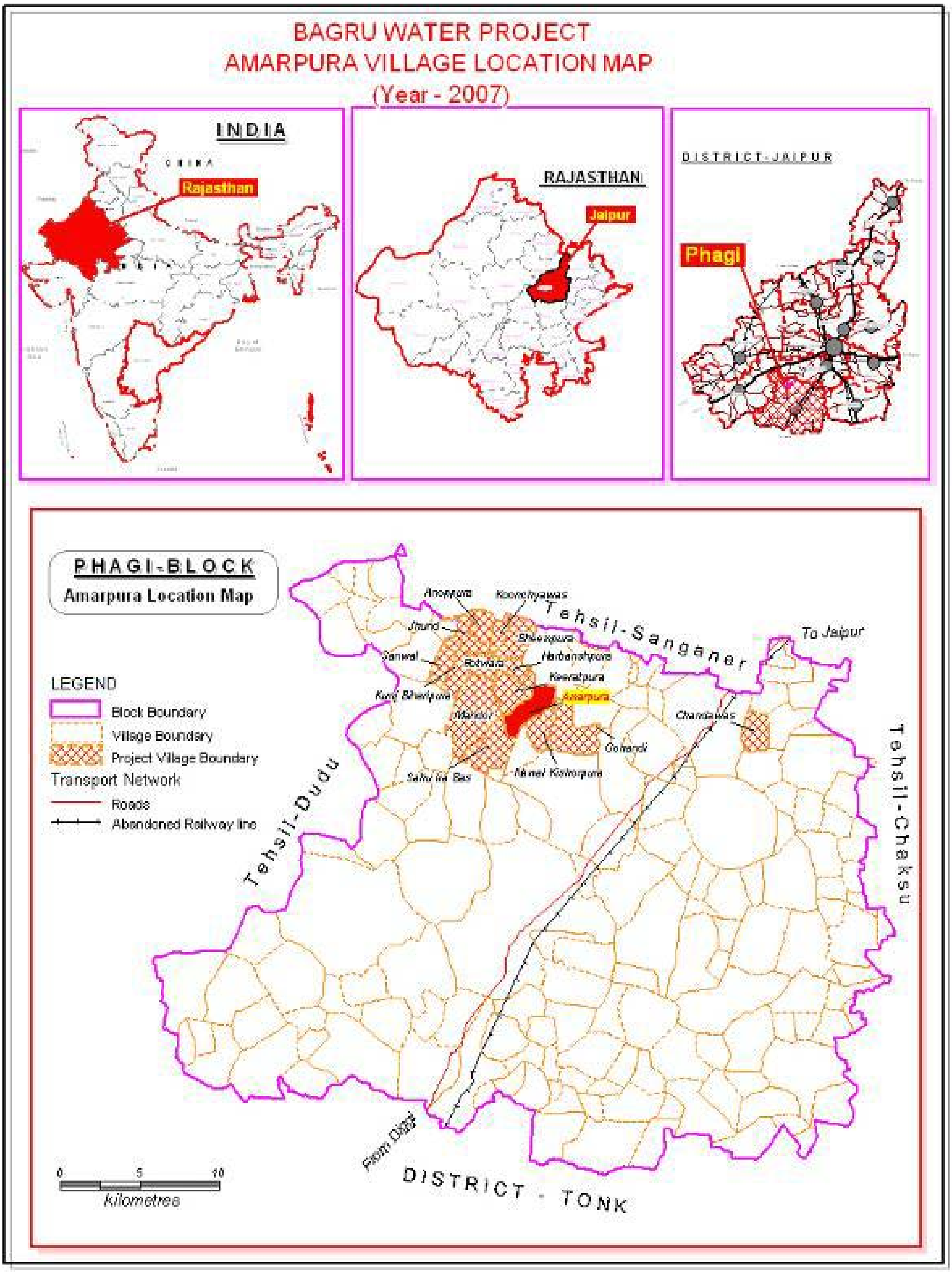

BAGRU WATER PROJECT
AMARPURA VILLAGE LOCATION MAP
(Year - 2007)
INDIA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Amarpura Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Tehsil-Sanganer
To Jaipur
Tehsil-Chaksu
Tehsil-Dudu
DISTRICT - TONK
From Diggi
Amarpura
Chandawas
0 5 10
kilometres

Figure No.-1

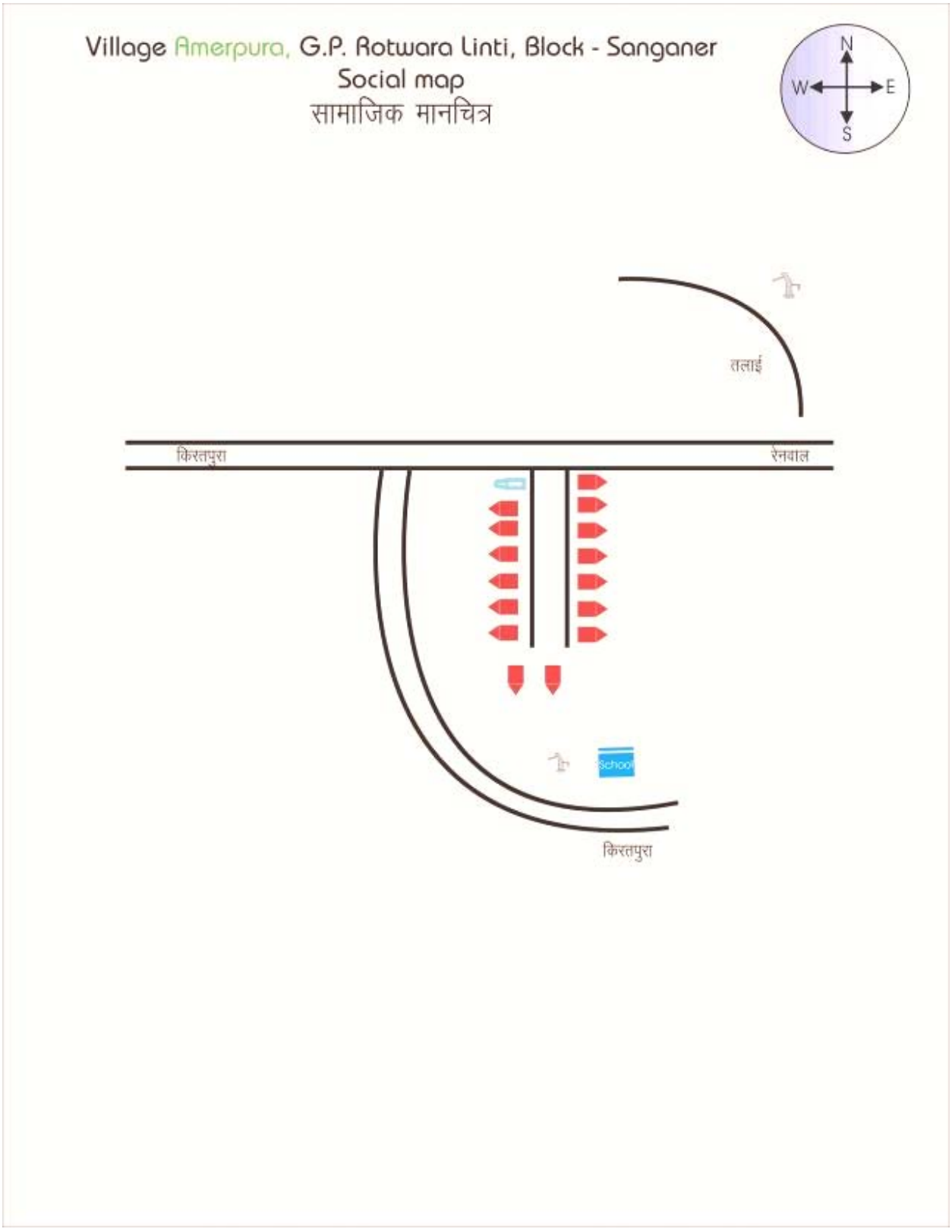

Village Amerpura, G.P. Rotwara Linti, Block - Sanganer
Social map
सामाजिक मानचित्र
N
W
E
S
तलाई
किरतपुरा
रैनवाल
School
किरतपुरा

Figure No.-2

The sex ratio in Amarpura village is 784 females per 1000 males. The child population is about 17.32% of the total population. SC community leads in households with about 41.53% families in the village.

ocio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

- Overall Literacy rate is 51.77%. Male literacy rate is 66.45% while female literacy rate is 33.05%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- A primary health sub-center facility is available in the village.

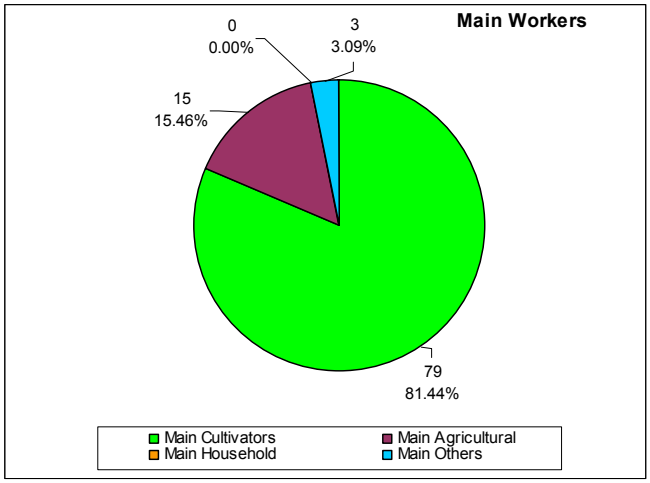
Work and Work force

The workers population available in the village Amarpura can be tabulated as below:

A.	**Main Worker Population**	***In Numbers***	***In % to total population***
	Male Worker	52	50.98%
	Female Worker	61	53.04%
	Total Workers	**113**	**52.07%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	5	4.90%
	Female Marginal Worker	11	9.57%
	Total Marginal Workers	**16**	**7.37%**
C	**Non Worker Population**		
	Male Non Worker	50	49.02%
	Female Non Worker	54	46.96%
	Total Non Workers	**104**	**47.93%**

Main Workers

In Amarpura village total main workers population is about 44.70% of the total population. Females lead in main workers category in % to their respective total population. Following graph represents the % of people engages in different categories of works in village Amarpura.



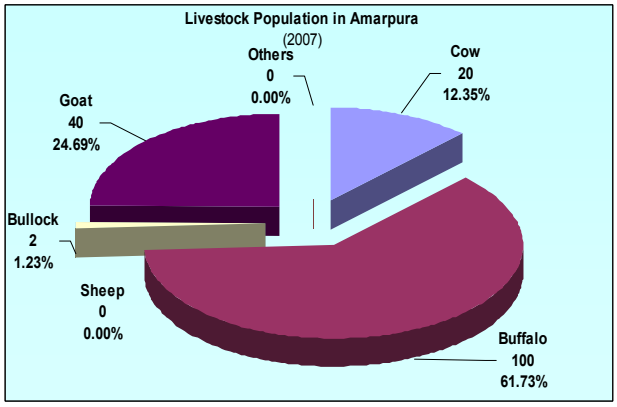
Cultivators

About 81.44% of main worker population is engaged in cultivation activity. About

92% marginal workers are engaged in agricultural activities.

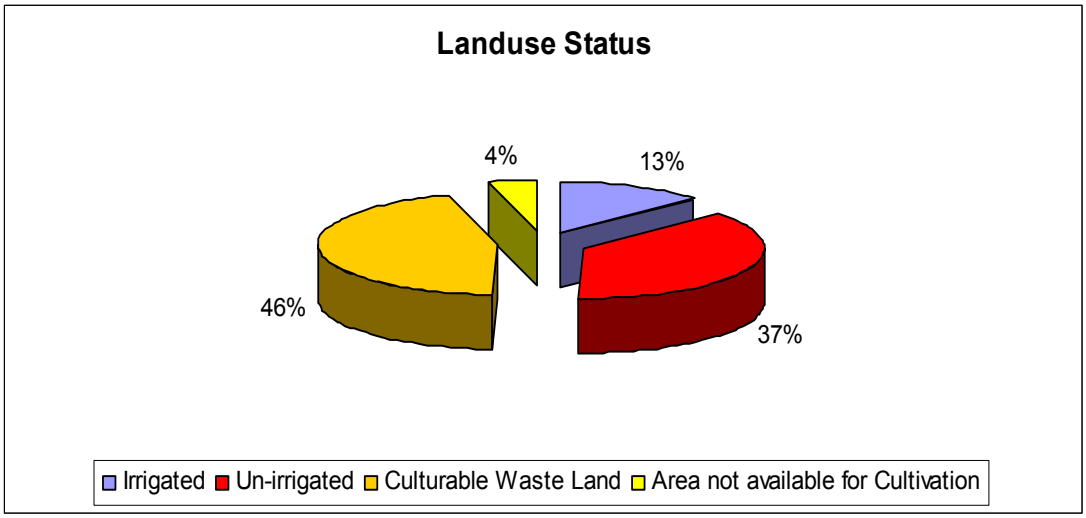
Livestock

As per the base line survey, the 18 households in the village own a total number of 168 cattle. Bffaloes and goat is the major contributor (about 86%) to the livestock population. The village has 68% buffalo's, 12% cows and 25% of goats.



Land-Use Pattern

The major part of the village economy is still dependent on agricultural production. Hence most of the land available is being put to agricultural activities. Out of the total land only 13% is irrigated (by tube wells) and about 37% land falls in the category of un-irrigated land. About 46% of the land is culturable waste land followed by 37% un-irrigated land reflecting potential unutilized land resources in village Amarpura. Following graph represent status of land utilization in village Amarpura.



The overall land utilization and settlement scenario is given in figure no.-4.

Satellite image map well represent the present land-use features in different textures as shown in figure no- 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

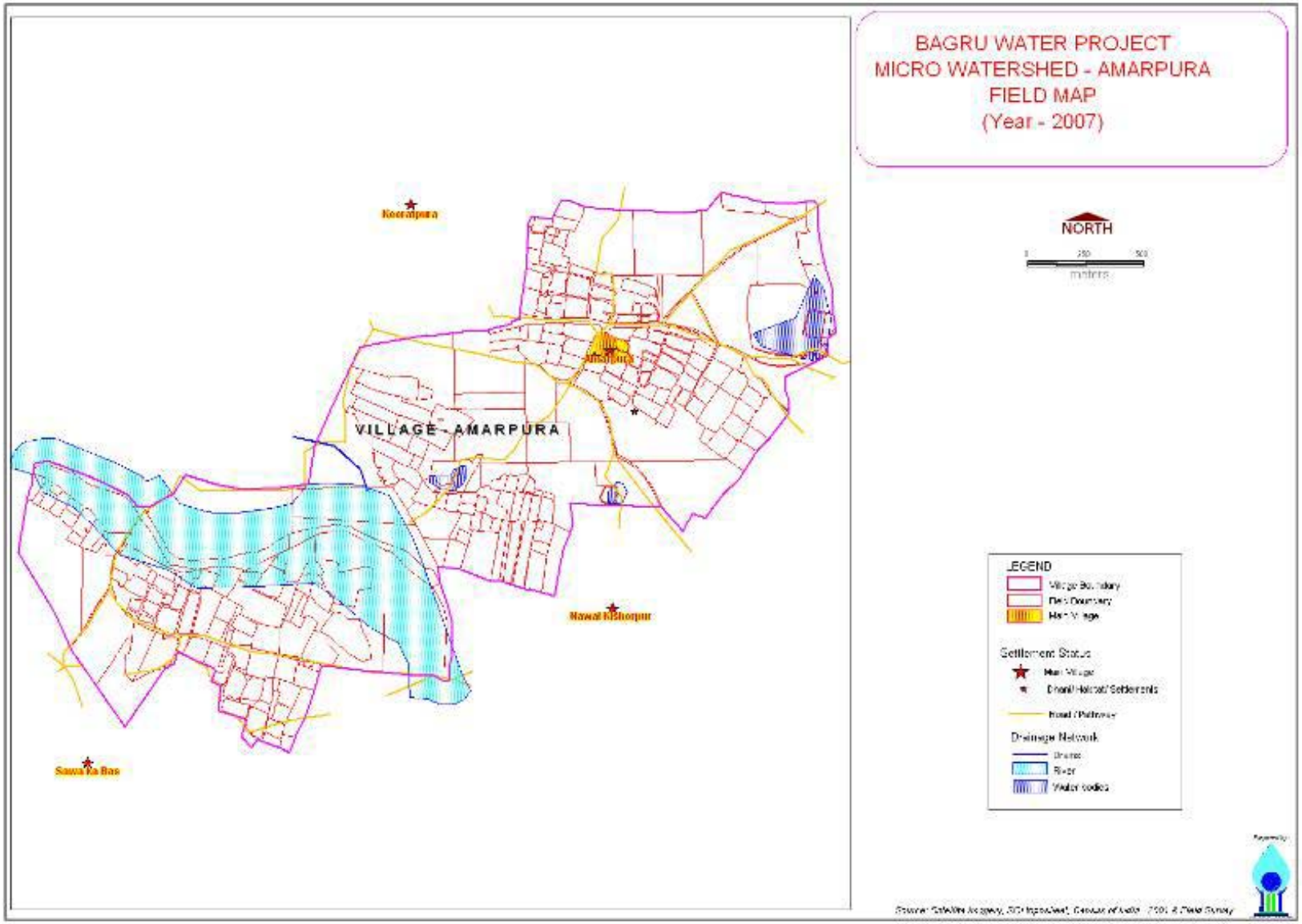

BAGRU WATER PROJECT
MICRO WATERSHED - AMARPURA
FIELD MAP
(Year - 2007)
NORTH
VILLAGE - AMARPURA
Keerampura
Nawal Kishorpur
Sawa Ka Bas
LEGEND
Settlement Status
Drainage Network

Figure No.-4

BAGRU WATER PROJECT
MICRO WATERSHED - AMARPURA
Satellite Image MAP
(Year - 2007)

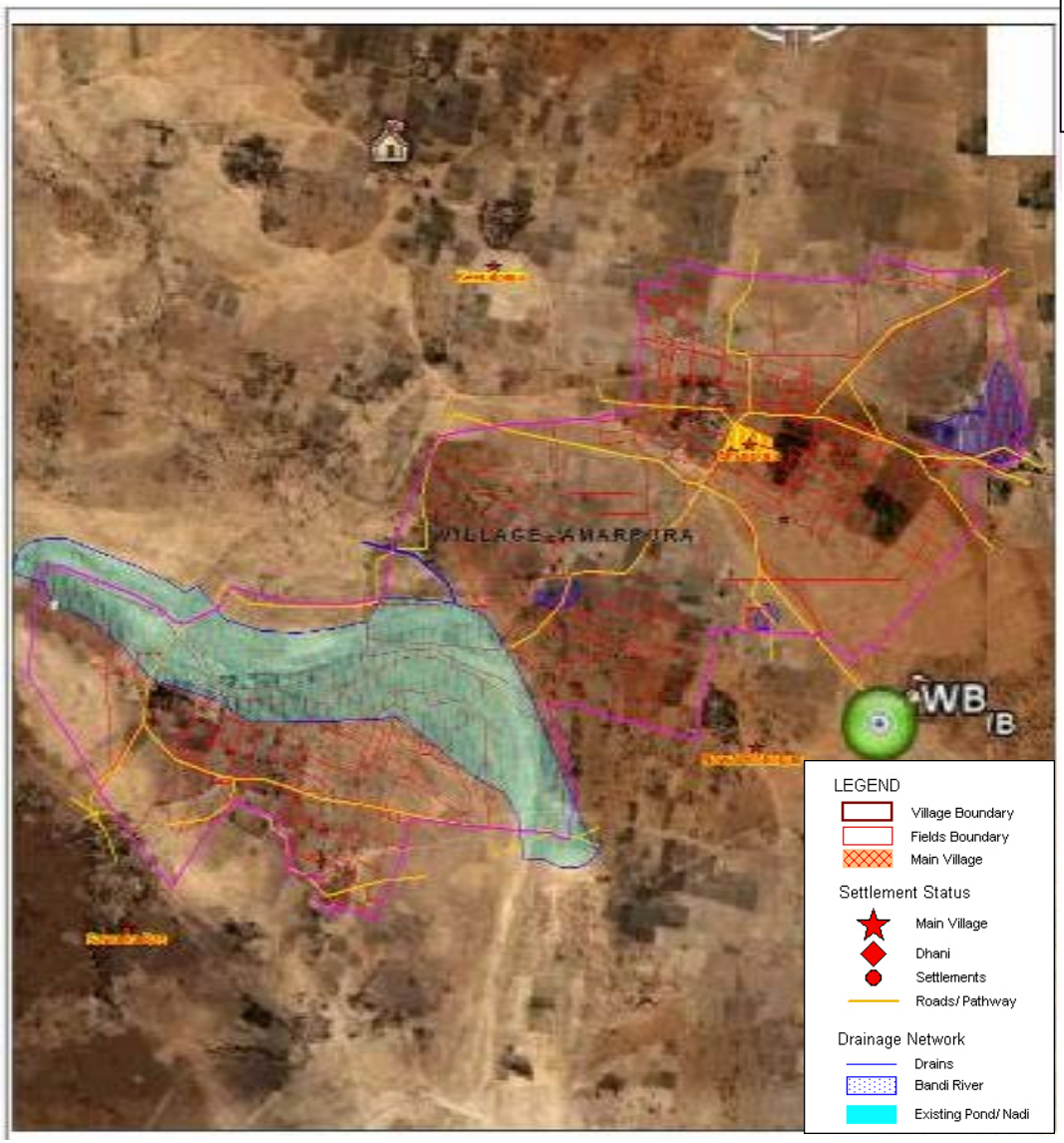


Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

Water Resource Profile

Physiographic Profile - The general ground profile is flat and having gentle slope towards south direction. The runoff water during rainfall period follows ground slope and drains in to natural depression at the middle of the village. Figure No. 6 shows the location of contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern - The drainage system of the Amarpura follows north east to south west direction. There are two distinct natural slope ways with gentle slope and wider bed width. These natural flow paths are obstructed by agricultural fields and at some of the places it has been completely destroyed. At most places the drainage lines flow parallel to the village roads. Figure No. 6 gives a clear view of the drainage pattern in village Amarpura.

Water Sources - The water resource scenario is given in the table below.

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	20	-	20
Bore well	-	-	-
Hand pumps	2	-	2
Village Ponds	-	1	1

According to the baseline study followed by field survey it was found that:

- Most of the wells dry up during the summer months. Also the yield of groundwater reduces considerably.
- The ground water is generally saline. The salinity increases with depth.
- The depth of water table varies from 20 feet to 65 feet depending upon the location.
- Rock formations are visible at depth varying from 15 feet to 45 feet from the ground level at different locations.

Drinking Water Sources - No sources provided by the Public Health Engineering Department (PHED) exists in village Amarpura. Two hand pumps installed in the village are functional but yield saline water. The water is not potable and used for secondary purposes only. Open wells close to the low lying areas close to water bodies do yield sweet water and the entire population draw drinking water from these sources. The numbers of such sources are limited and are not sufficient to cater for entire drinking water needs of the village. During summer months people travel long distances to get the drinking water.

Irrigation Water Sources - Out of total wells about 20 are functional. The prime use of these wells is for irrigation. The wells are used by the owner as well as neighbors for drinking water. The location of wells and hand pumps are shown Figure No. 7.

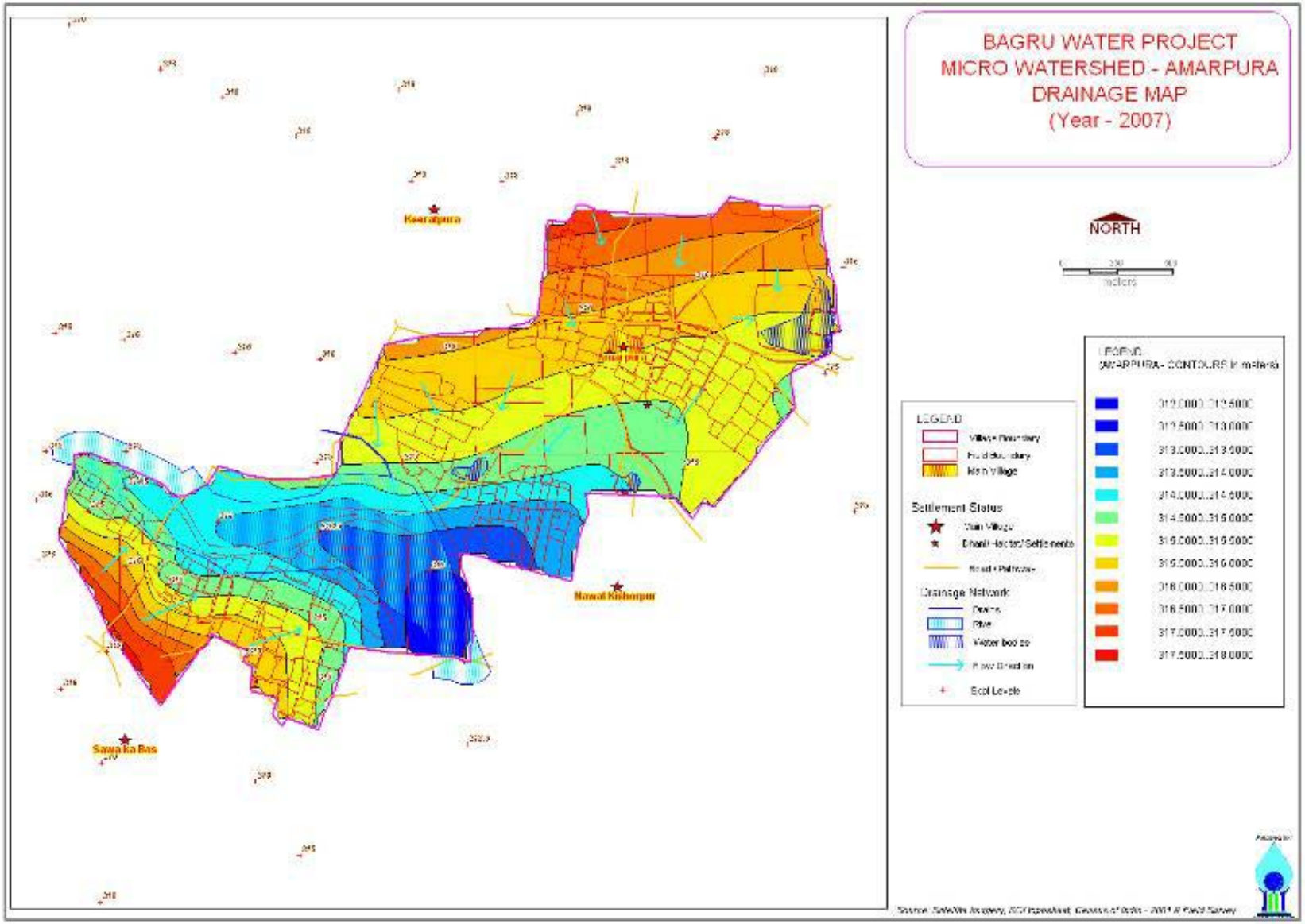

BAGRU WATER PROJECT
MICRO WATERSHED - AMARPURA
DRAINAGE MAP
(Year - 2007)
NORTH
Keeratpura
Nawal Kishorpura
Sawa Ka Bas
LEGEND
Settlement Status
Drainage Network

Figure No.-6

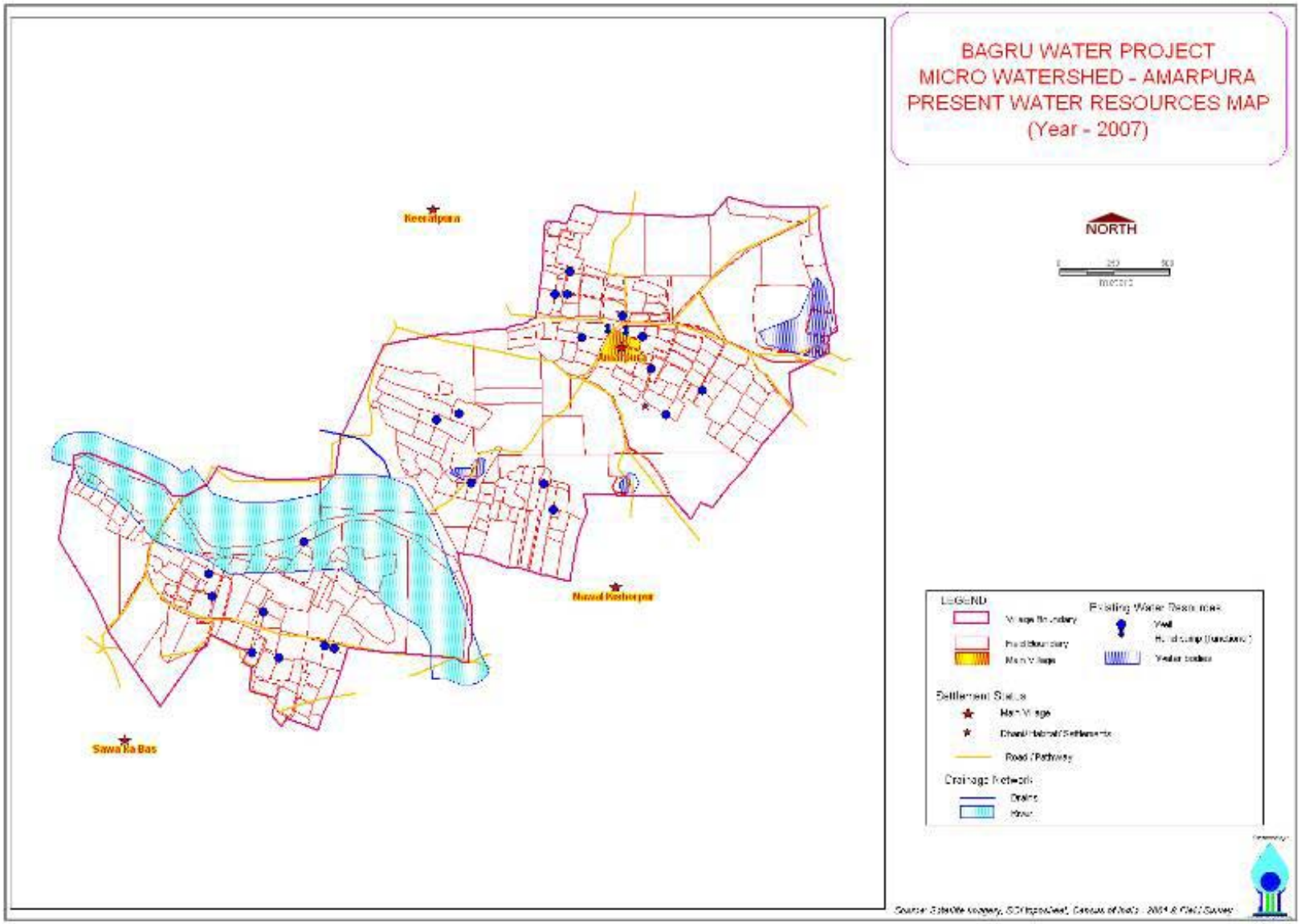

BAGRU WATER PROJECT
MICRO WATERSHED - AMARPURA
PRESENT WATER RESOURCES MAP
(Year - 2007)
NORTH
Meters
LEGEND
Existing Water Resources
Settlement Status
Road / Pathway
Drainage Network
Drains
Flow
Sawa Ka Bas

Figure No.-7

Micro-Watershed Plan

Micro Watershed – Based on the remote sensing data, GIS based analysis and field survey and measurements, the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to three micro-watersheds draining towards south direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	**Geographical Area** (In Hectares)
Watershed no.-1	67.2969
Watershed no.-2	171.1755
Watershed no.-3	83.8062
Total	**472.00**

The drainage system is comparatively well defined in micro-watershed no.-1 as compare to other watersheds. Natural flow of runoff water from micro-watershed no.-2 & 3 have been obstructed by the field boundaries hence the water flows through the pathways used for transportation. The micro-watershed no-3 is at the bottom of the village and is quite clumsy.

Proposed Measures

Following table gives detailed description of the recommended measures:

S. N.	**Suggested Measures**	**Activities**
1	**Rainwater Harvesting on natural drainage lines**	• Construction of one Anicut structure at suitable locations on main drain.
2	**Moisture Conservation in the farm fields**	• Construction of cut and fill furrow bunds in the agricultural fields to check the flow and retain moisture. • Construction of small tanks/ ponds at the sloping end of the agricultural farm.
3	**Construction of irrigation water sources**	• Construction of Nadi (village pond) for collection of rainwater runoff in side the sloping end of the field. • Construction of Roof Top rain water harvesting recharge/ collection system for reuse of water for drinking purpose at suitable locations.
4	**Pasture land development**	• Land grading and bunding. • Plantation of suitable plant/ fruit plant which can survive in local conditions. • Linking with government horticultural scheme suitable for the project area.

S. N.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Rainwater Harvesting on natural drainage**	• Construction of one Anicut structure.	• In between Micro-watershed No.-1 and 2	• Field (Khasra*) No.-133 (on main Bandi River)
2	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields	• Micro-watershed No.-2	• **Cluster-1** (Field no.-141 to 160): About 2000m field bunds spread over 20 Fields in north west & • **Cluster- 2** (Field no.-166 to 180 and 369 to 390): 1500m spread over 35 (Refer figure no.-9 for details)
		• Construction of small tanks/ ponds at agricultural farm.	• Micro-watershed No.-2	• **Cluster-1** (Field no.-141 to 160): two tanks at suitable locations • **Cluster- 2** (Field no.-166 to 180 and 369 to 390): Three tanks at suitable locations. (Refer figure no.-9 for details)
3	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1 • Micro-watershed No.-2	• Field No.- 273 • Field No.- 365
		• Construction of Roof Top Rainwater Harvesting System	• Micro-watershed No.-2	• At Community (Panchayat) Building in main village
4	**Pasture Land Development & Horticulture**	• Land grading and bunding. • Plantation of suitable plant/ fruit plant. • Linking with government horticultural scheme.	• Micro-watershed No.-2	• Field (Khasra) No.-186 & 187 (Government Pasture Land)

Numbers/ quantities of proposed activities are summarized in following table:

S. N.	Activities	Numbers/ Details	
1	Anicut construction	1	No.'s
2	Roof Top Rainwater Harvesting System	1	No.'s
3	Nadi construction/ renovation	1	No.'s
4	Farm Tanks/ ponds	5	No.'s
5	Farm Field Bunding	3500	Meters
6	Pasture Land Development	25	Hectare

The location of the proposed activities are shown in figure no. - 9

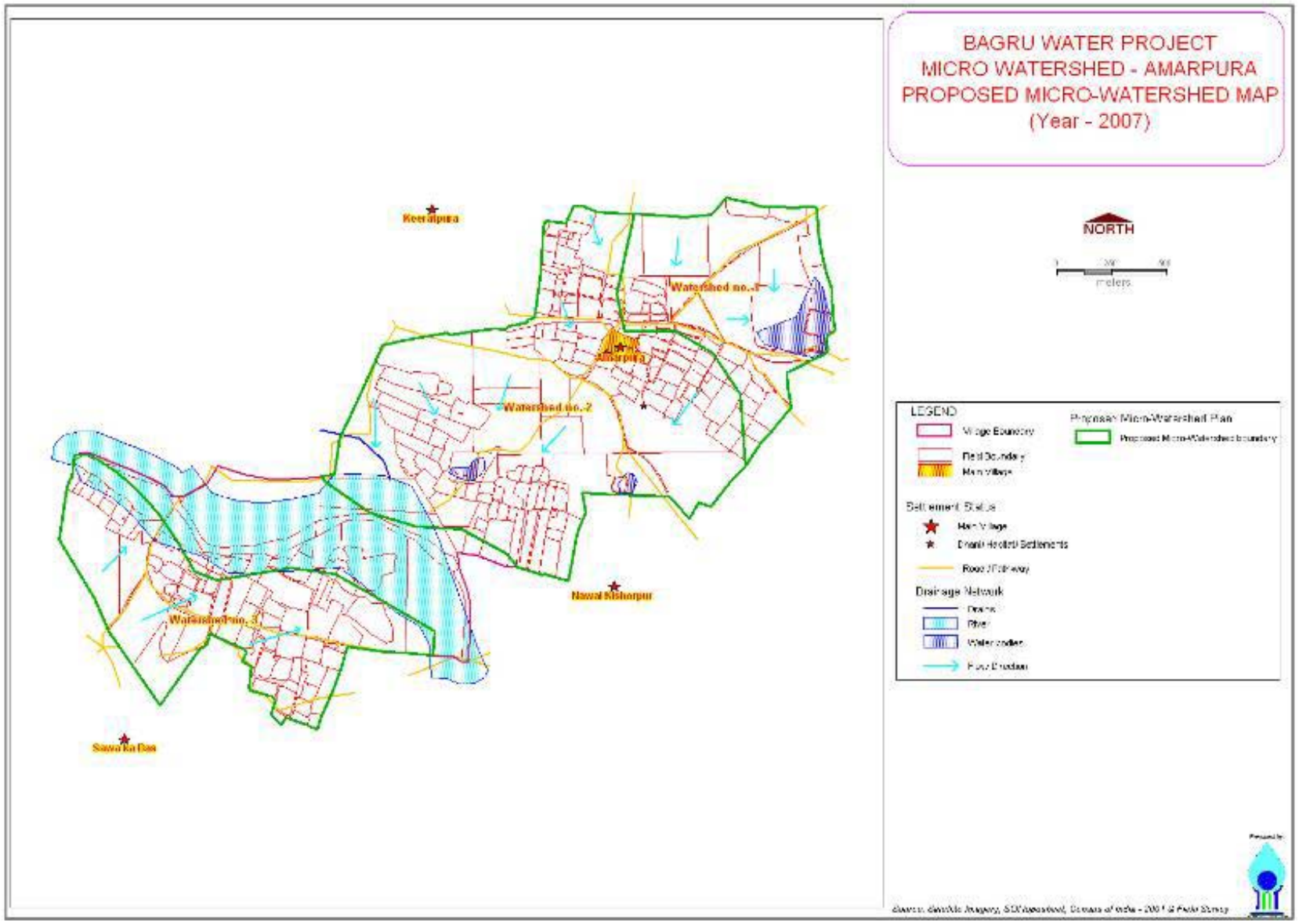

BAGRU WATER PROJECT
MICRO WATERSHED - AMARPURA
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
Meters
Keerapura
Watershed no.-1
Amarpura
Watershed no.-2
Nawal Kishorpur
Watershed no.-3
Sawa Ka Das
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Settlement Status
Main Village
Drain Header Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction

Figure No.-8

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given below:

S. N.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Anicut construction About 150m wide in main drain	1	No.'s	20,000.00	**3,000,000.00**
2	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**20,0000.00**
3	Nadi construction/ renovation	2	No.'s	LS	**400,000.00**
4	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50,000.00	**250,000.00**
5	Farm Field Bunding	3500	Meters	30.00	**105,000.00**
6	Pasture Land Development	20	Hectare	10,000.00	**200,000.00**
Grand Total					**4,155,000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area may result in increase/ decrease in the estimated cost.

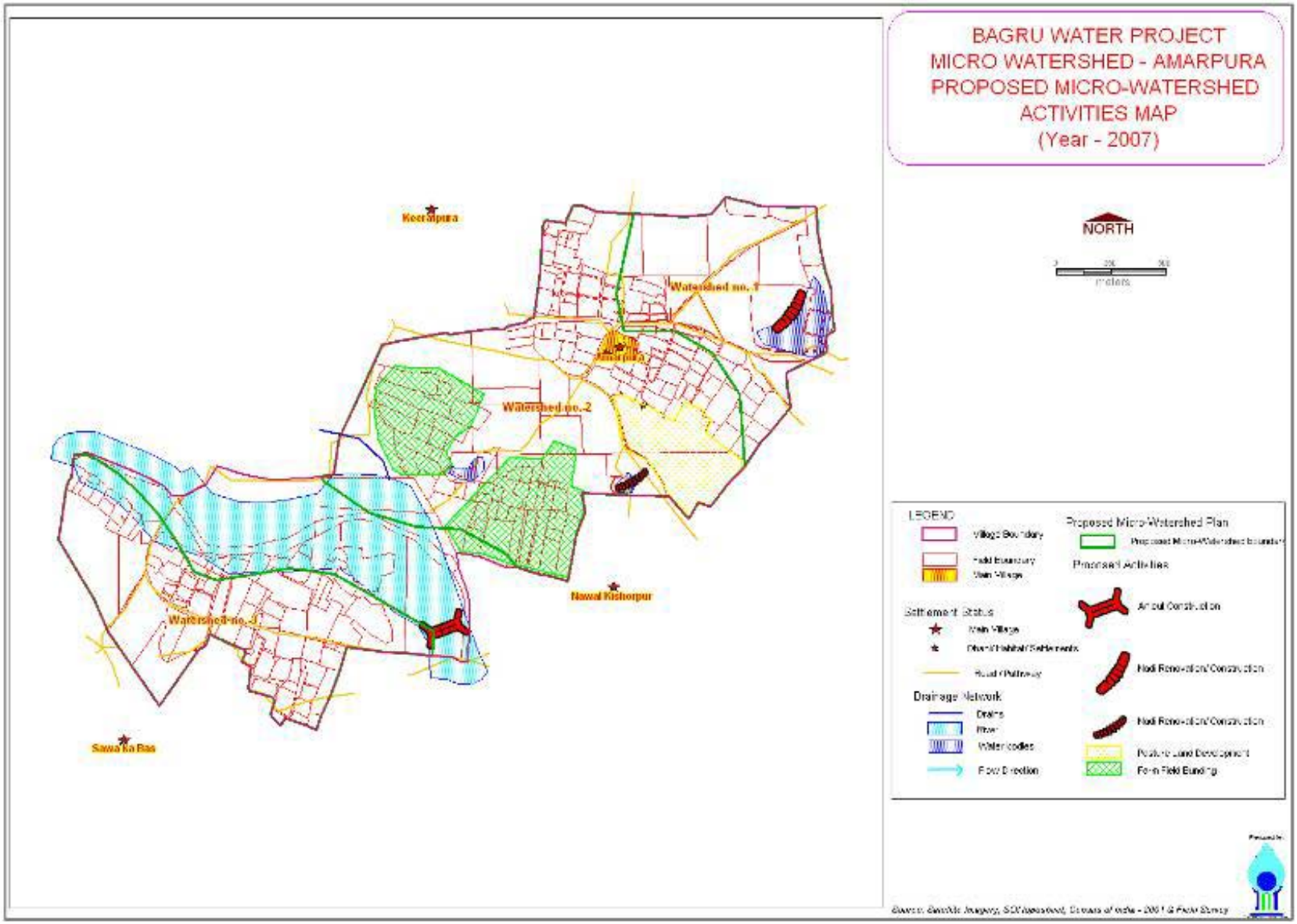

BAGRU WATER PROJECT
MICRO WATERSHED - AMARPURA
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
NORTH
Keerapura
Watershed no. 1
Amarpura
Watershed no. 2
Nawal Kishorpur
Watershed no. 3
Sawa ka Bas
LEGEND
Village Boundary
Proposed Micro-Watershed Plan
Proposed Activities
Settlement Status
Main Village
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Anicut Construction
Nadi Renovation/ Construction
Nadi Renovation/ Construction
Farm Field Bunding

Figure No.-9

MICRO-WATERSHED PLAN OF VILLAGE - ANNOPURA

Village Location

Anoppura village is located at $75^0$32'18.96" east longitude and $26^0$44'38.40" north longitude with a geographical area of 208 Hectare at about 52 km south-west of Jaipur city in Sanganer block. Figure no.-1 gives location of Anoppura village.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**10 km**
Distance from Block HQ:	=	**30 km**
Type of approach road to the village: *(Kachcha 4km and Pacca 6 km)*	=	**10 km**
Distance of village from district HQ	=	**52 km**
Nearest market & its distance from the village: *(Bagru)*	=	**10 km**
Distance to nearest Middle School	>	**5 km**
Distance to nearest College	>	**10 km**
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 61 families living in the village. The village has one dhani (hamlets) located outside the main village.

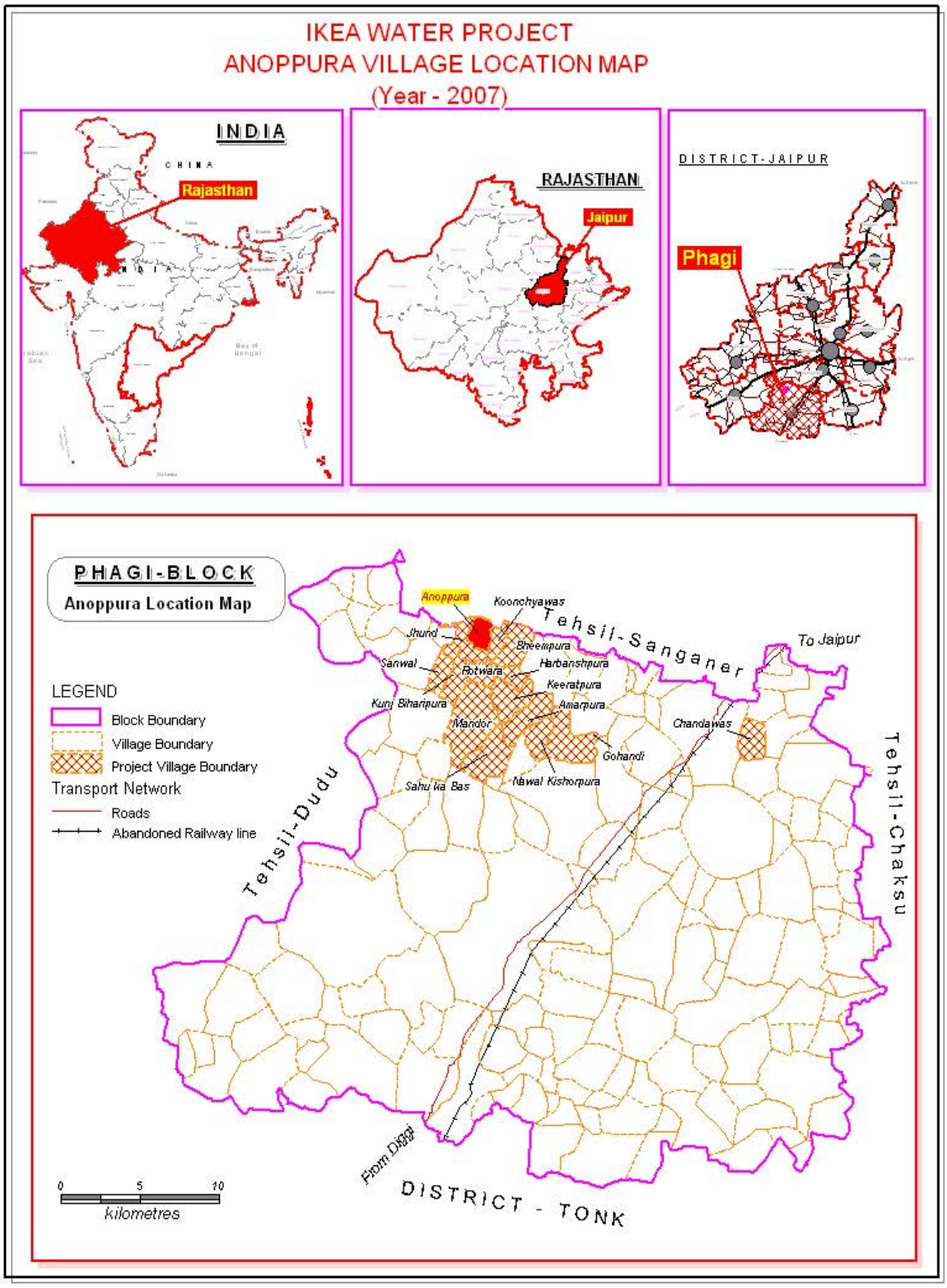
A. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	No.		No.
Total Population	382	Total House Holds	61
Total male Population	193	SC House Holds	5
Total Female Population	189	ST House Holds	-
Child Population (0-6 yr)	90	BPL House Holds	-

B. Dhani-wise breakup of the population distribution

S. N.	Village/ Dhani	House Holds			Population			
		TOTAL	SC	ST	Male	Female	Child	Total
1	Anoppura	43	5		102	115	57	217
2	Dhani	18			91	74	33	165
	Total	**61**	**5**	**0**	**193**	**189**	**90**	**382**



The sex ratio in Anoppura village is 915 females per 1000 males. The child population is about 34.85% of the total population. SC community leads in households with about 47% families in the village.

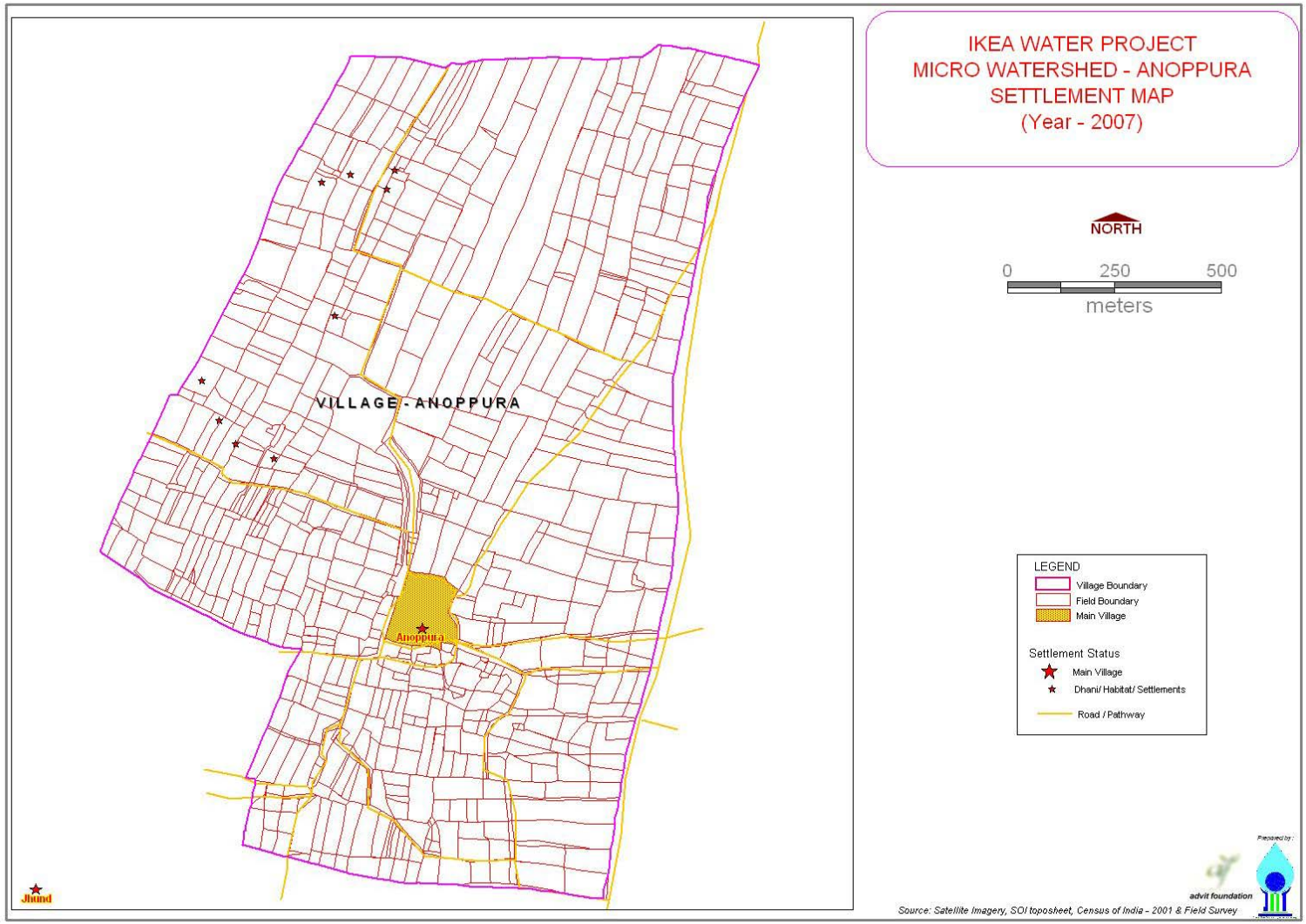

IKEA WATER PROJECT
MICRO WATERSHED - ANOPPURA
SETTLEMENT MAP
(Year - 2007)
NORTH
0
250
500
meters
VILLAGE - ANOPPURA
Anoppura
Jhund
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

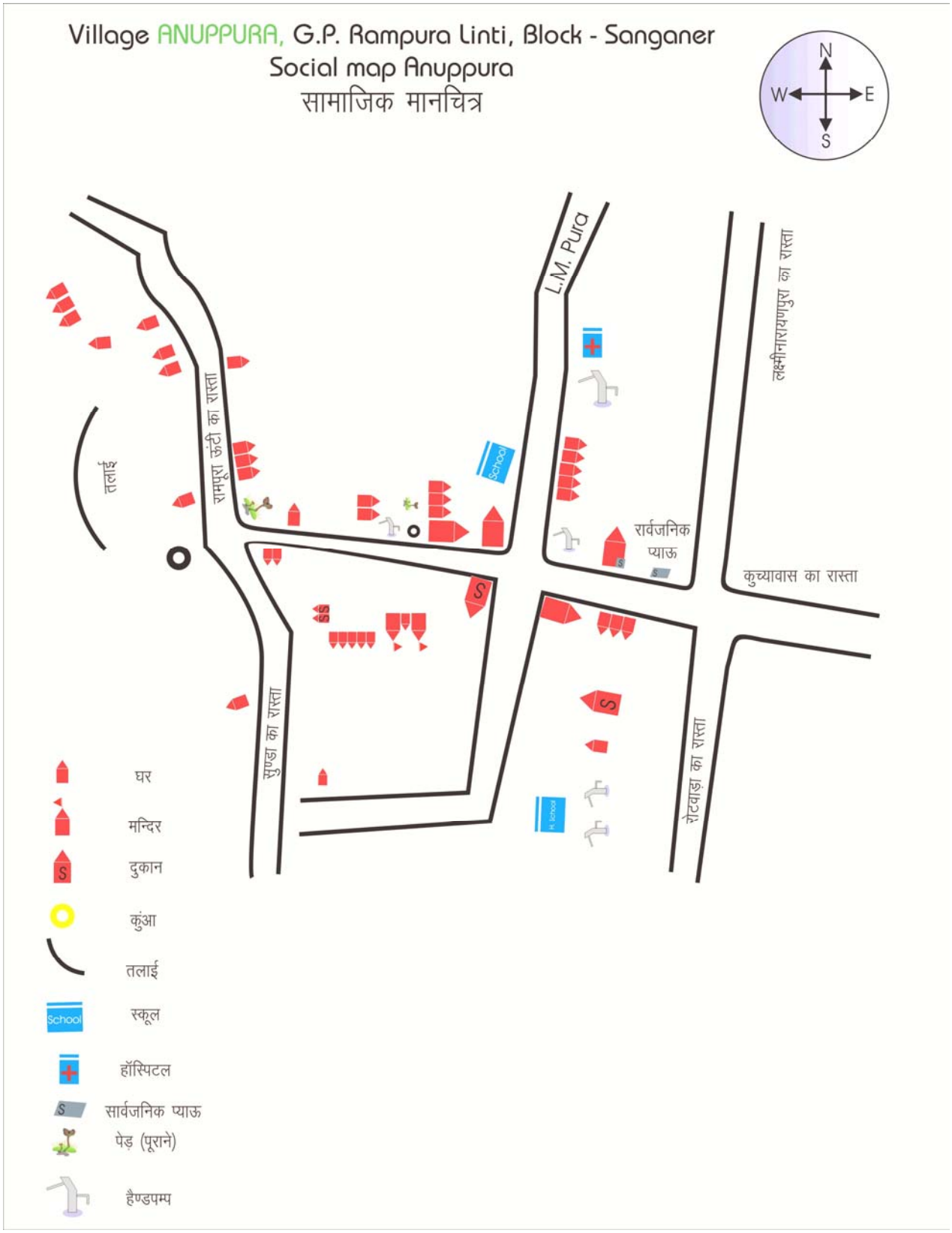

Village ANUPPURA, G.P. Rampura Linti, Block - Sanganer
Social map Anuppura
सामाजिक मानचित्र
N
W
E
S
L.M. Pura
लक्ष्मीनारायणपुरा का रास्ता
रामपुरा ऊंटी का रास्ता
तलाई
School
सार्वजनिक प्याऊ
कुच्यावास का रास्ता
सुण्डा का रास्ता
रेटवाड़ा का रास्ता
H. School
घर
मन्दिर
दुकान
कुंआ
तलाई
स्कूल
हॉस्पिटल
सार्वजनिक प्याऊ
पेड़ (पूराने)
हैण्डपम्प

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

- Overall Literacy rate is 61.91%. Male literacy rate is 79.84% while female literacy rate is 42.86%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office are more than 5 away from the village.
- No Health facilities are available in the village. The nearest health facilities are more than 10 km away from the main village.

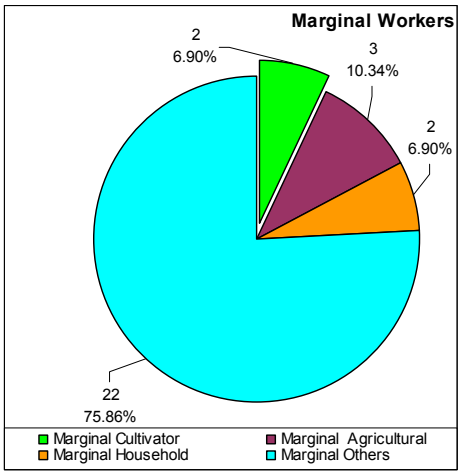
Work and Work force

The workers population available in the village Anoppura is tabulated below:

A.	**Main Worker Population**	***In Numbers***	***In % to total population***
	Male Worker	124	49.01%
	Female Worker	126	52.94%
	Total Workers	**250**	**50.92%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	13	5.14%
	Female Marginal Worker	16	6.72%
	Total Marginal Workers	**29**	**5.91%**
C	**Non Worker Population**		
	Male Non Worker	129	50.99%
	Female Non Worker	112	47.06%
	Total Non Workers	**241**	**49.08%**

Main Workers

The total main workers population is about 45.01% of the total population. Females lead in main workers category in % to their respective total population. Following graph represents the % of people engages in different categories of works in village Anoppura.

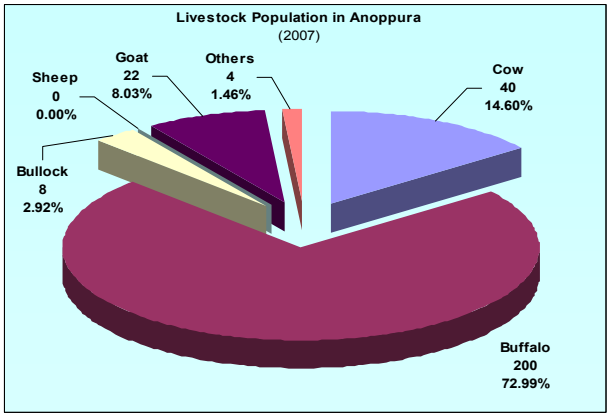


Cultivator

About 74.21% of main worker population is engaged in cultivation activity. About 6.90% of marginal workers are engaged in agricultural activity.

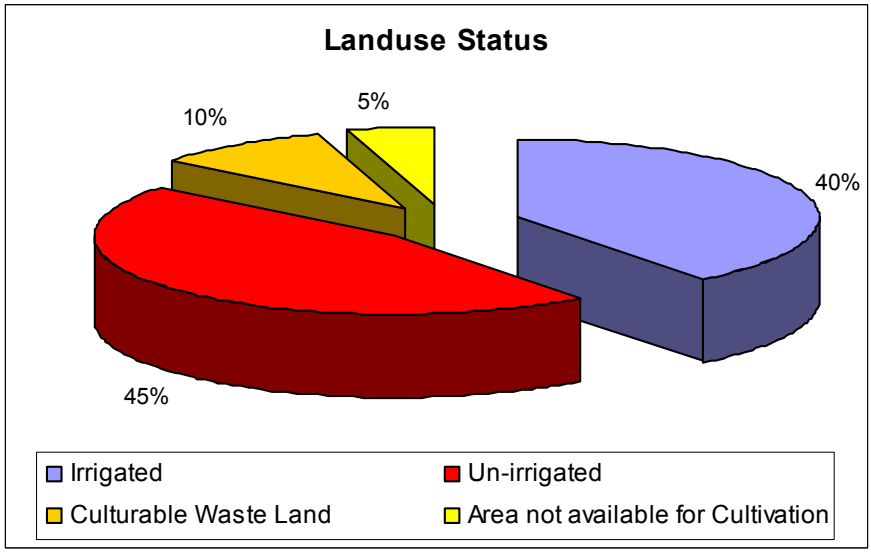
Livestock

As per the base line survey carried out in Anoppura village there are 274 cattle variably distributed among 61 families living in the village. Cow and buffaloes is the major contributor (about 88%) to the livestock population primarily being utilised for dairy purpose (milk production). The camele popupation is 1.46%.



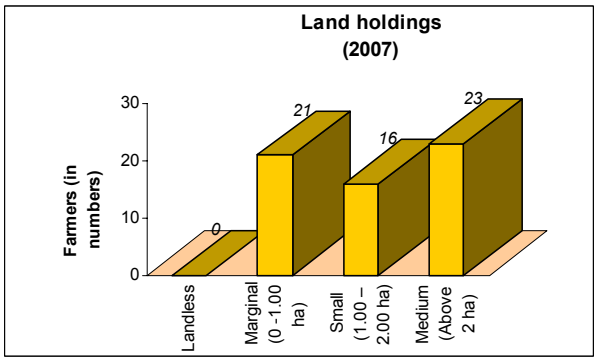
Land-Use Pattern

The economy of Anoppura village depends upon agricultural production. Out of the total land area, only 40% is irrigated (by tube wells) and about 45% land is un-irrigated. About 10% of the land is culturable waste land in the village Anoppura.



Approximately 10.7 hectare area is available as government waste land. There is no panchayat and other category land available in the village. Cultivable fallow land or private waste land is also not available in the village.

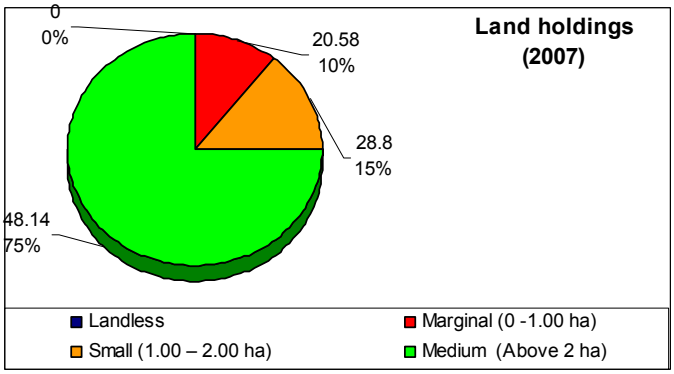
The overall land utilization and settlement scenario is given in figure no.-4.



Satellite image map well represent the present land-use features in different textures as shown in figure no- 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

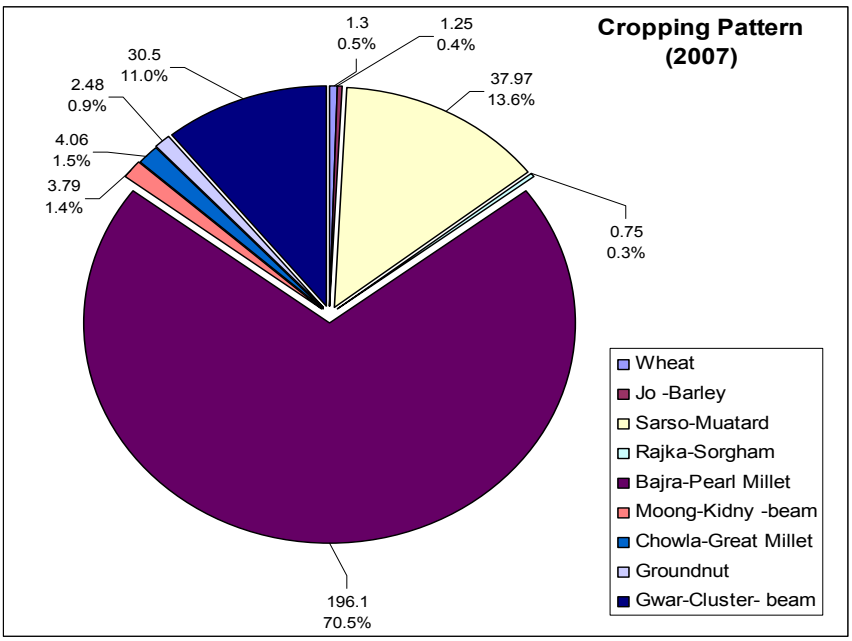
Land Holdings

There is no landless farmer in the village. About 38.33% farmers have more than 2.0 hectare land. These farmers own 75% of the landholdings in the village. Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 15% of the total geographical area of the village. Marginal farmers (0 to 1.00 ha.) own 10% of the total land in the village.



Cropping Pattern

As shown in the graph, bajra – Pearl Millet (70.5%) is the major crop in all the three seasons. The other major crops are Sarso- Mustard (13.6%) and Gwar – Cluster beam (30.5%).



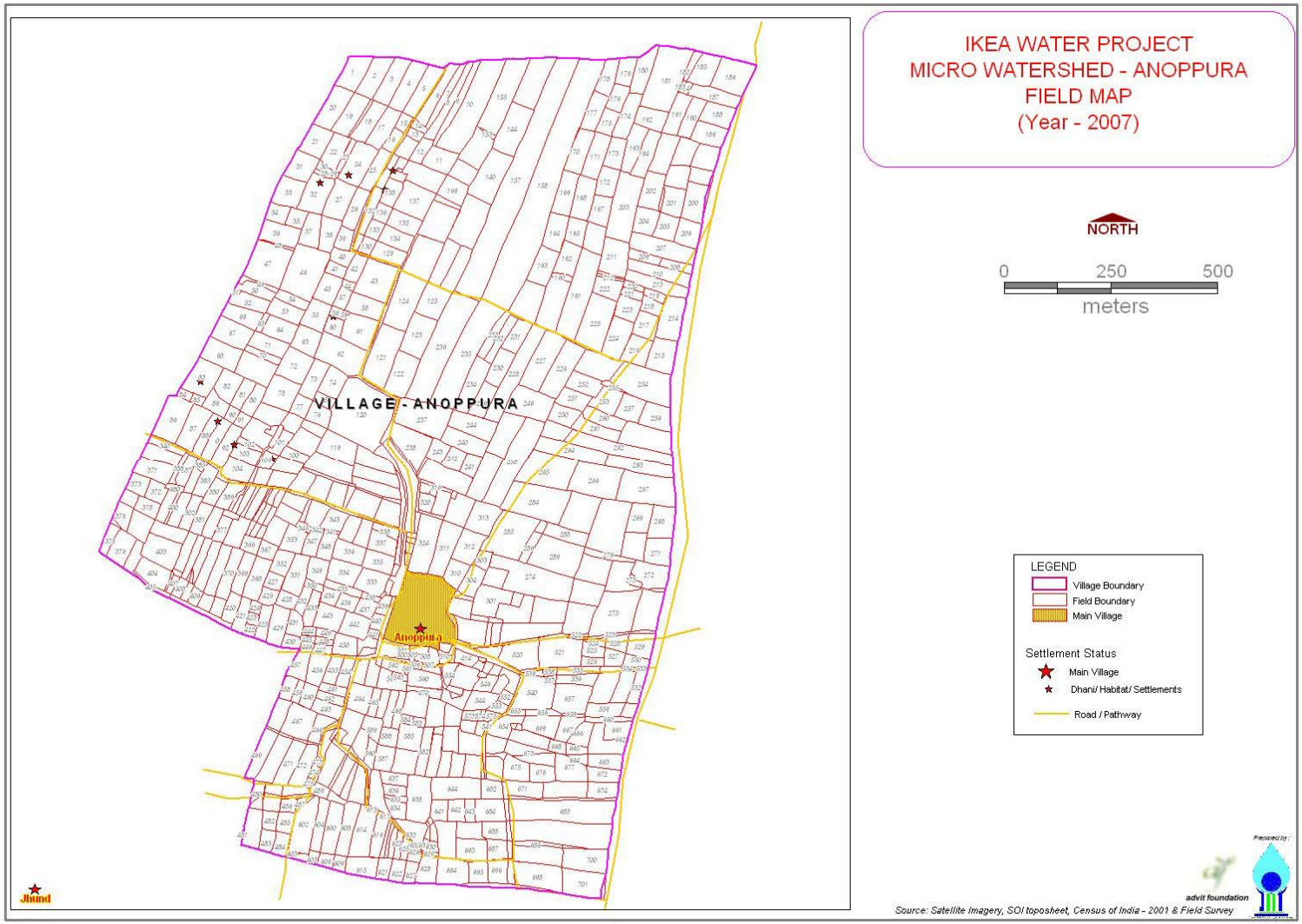
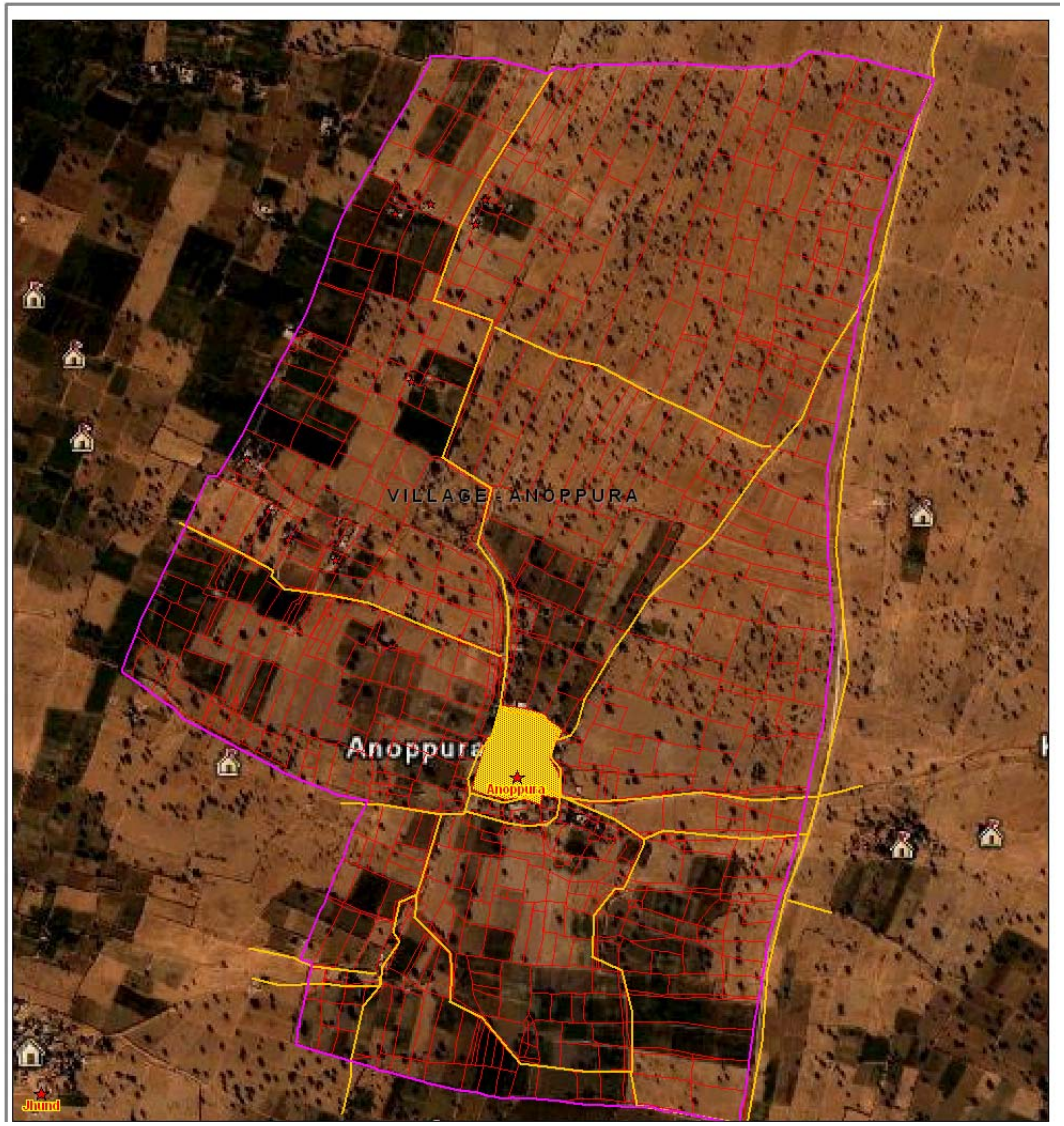

IKEA WATER PROJECT
MICRO WATERSHED - ANOPPURA
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
VILLAGE - ANOPPURA
Anoppura
Jhund
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

BAGRU WATER PROJECT
MICRO WATERSHED - ANOPPURA
Satellite Image MAP
(Year - 2007)



LEGEND
- Village Boundary
- Fields Boundary
- Main Village

Settlement Status
- Main Village
- Dhani
- Settlements
- Roads/ Pathway

Drainage Network
- Drains
- Bandi River
- Existing Pond/ Nadi

Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

S. N.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif+Zaid)
					Irrigated	Un - irrigated	
1.	Wheat	Rabi	4.5	March	1.3	0.0	1.3
2.	Jo -Barley	-do-	4	March	1.25	0.0	1.25
3.	Sarso-Muatard	-do-	4	Feb.-March	3.75	34.22	37.97
4.	Rajka-Sorgham	-do-			0.75	0.0	0.75
5.	Bajra-Pearl Millet	Kharif	4	Oct.	0.0	196.10	196.10
6.	Moong-Kidny-beam	-do-	3	Sep.	0.0	3.79	3.79
7.	Chowla-Great Millet	-do-	3	Sep.	0.0	4.06	4.06
8.	Groundnut	-do-	4	Oct.	0.0	2.48	2.48
9.	Gwar-Cluster-beam	-do-	4	Oct.-Nov.	0.0	30.50	30.50
Total					**7.05**	**271.15**	**278.20**

Water Resource Profile

Physiographic profile – The general ground profile is flat with gentle slope towards east. The runoff water follow ground slope and drains in to local depression in the east from all over the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets and field survey generated by GIS based modeling software.

Drainage pattern – There is no well defined drainage system in the village Anoppura. Runoff water from the higher altitude flows towards the local depression located at lower ground level in the east of the village. Figure No. 6 gives a clear view of the drainage pattern in the village.

Water Sources – The present status of water source can be represented by the following table:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	17	-	17
Bore well	2	-	2
Hand pumps	5	2	7
Village Ponds	-	1	1

According to the baseline study followed by field survey it was found that:

- Most of the wells dry up in the summer season.

- The ground water is saline. The salinity increases with depth.
- Depth to water table varies from 20' to 65'.
- Rock formations are visible at depth varying from 15' to 45' from the ground level.

Drinking Water Sources – No sources provided by the Public Health Engineering Department (PHED) exists in village Anoppura. Out of the five hand pumps, only three are functional but yielding saline water. This water is used for secondary purposes other than drinking for both human and cattle population. Open wells near the depression yield sweet water and the entire population draw drinking from those sources. The number of such sources is limited and is not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to travel long distances to get the potable water to meet their drinking water needs.

Irrigation Water Sources – About 17 wells in total are in functional state. The prime use of these well is for irrigation purposes. The owner family and nearest community members also utilise this water for their drinking need as it is comparative lesser saline than water from hand pump. The farmers draw water with the help of diesel engine. The operating hours of these engines depend upon the requirement of irrigation water.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting water sources scenario in the village Anoppura.

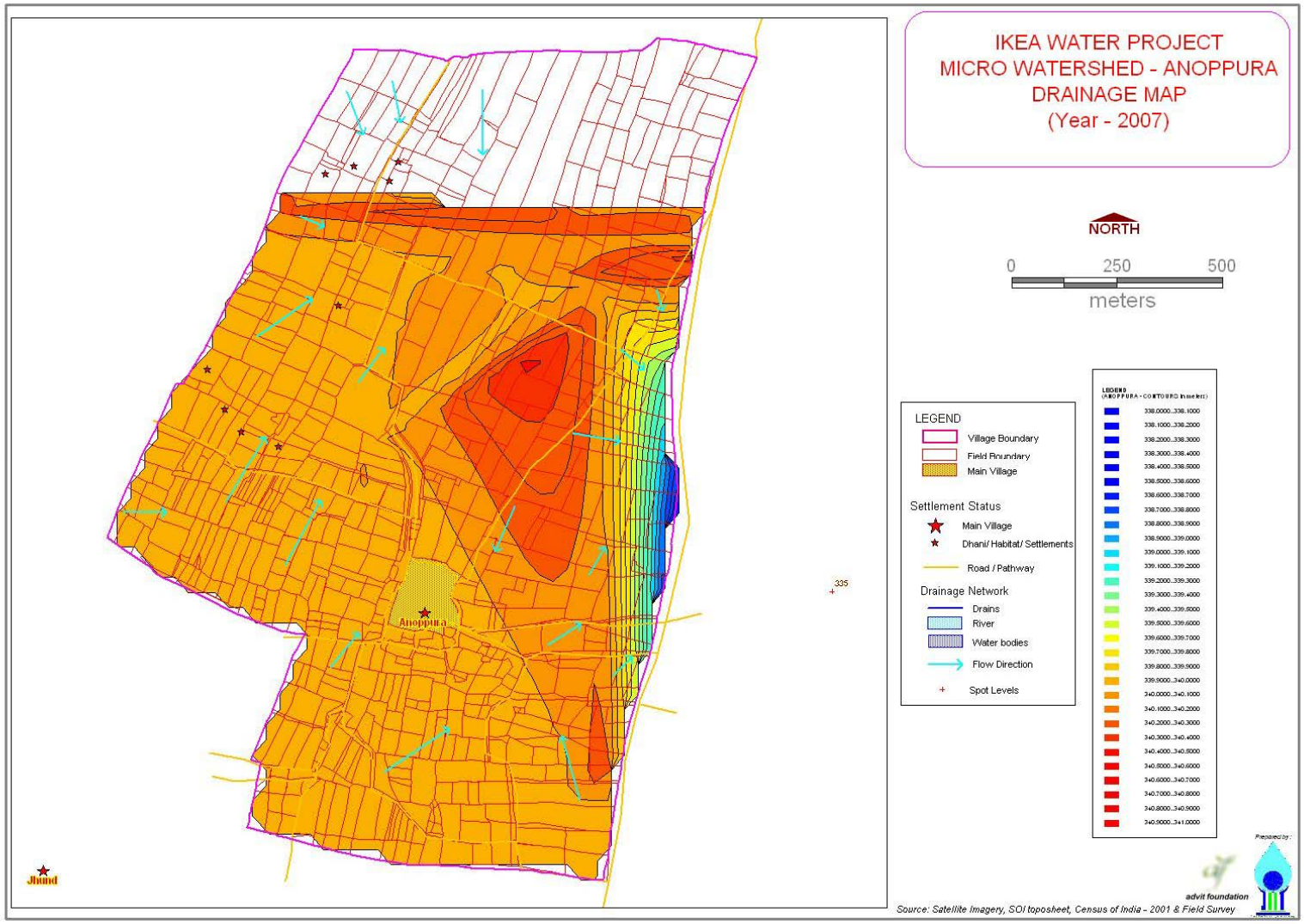

IKEA WATER PROJECT
MICRO WATERSHED - ANOPPURA
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
Anoppura
Jhund
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

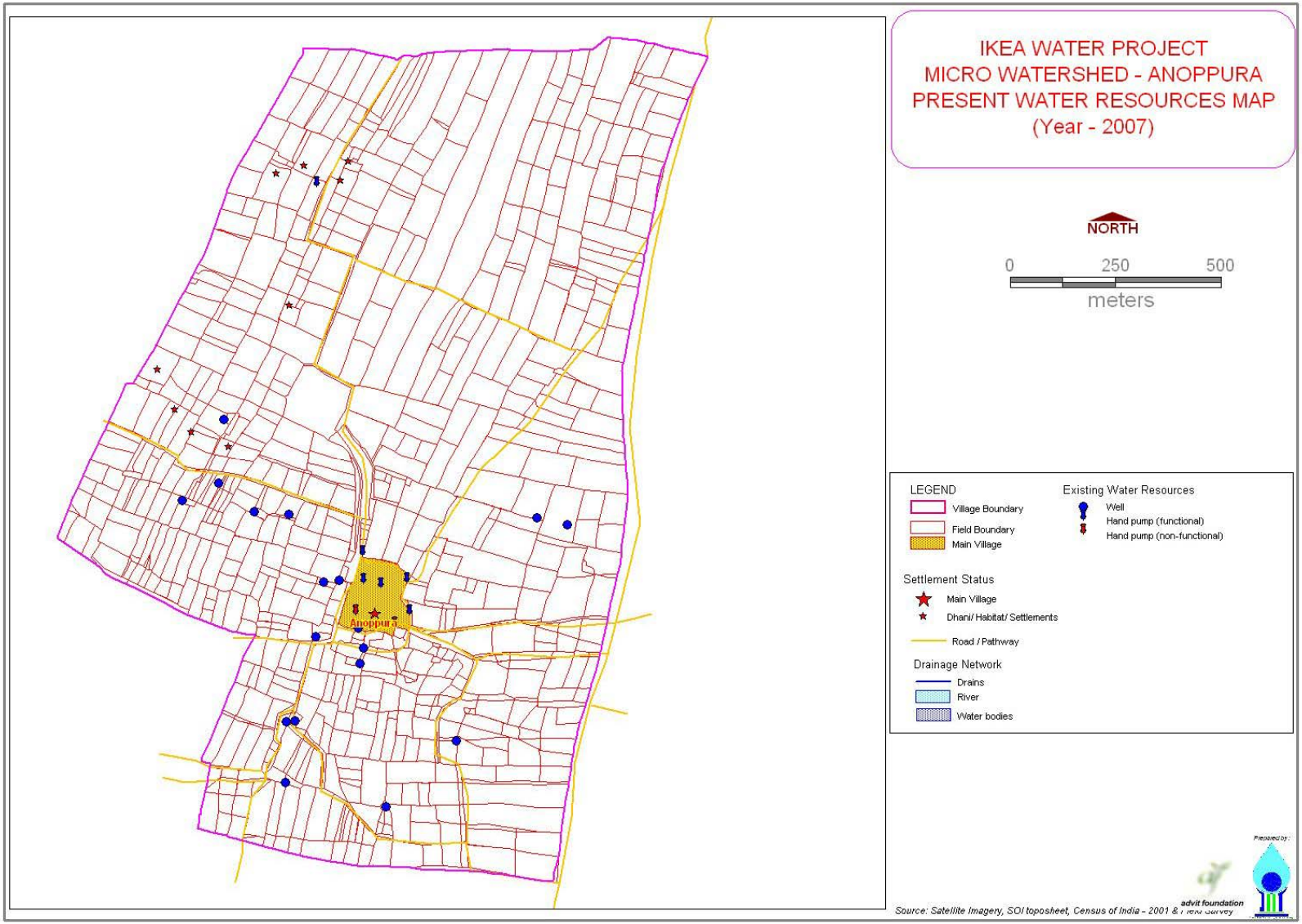

IKEA WATER PROJECT
MICRO WATERSHED - ANOPPURA
PRESENT WATER RESOURCES MAP
(Year - 2007)
NORTH
0
250
500
meters
Anoppura
LEGEND
Village Boundary
Field Boundary
Main Village
Existing Water Resources
Well
Hand pump (functional)
Hand pump (non-functional)
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 &

Figure No.-7

Micro-Watershed Plan:

Micro Watershed – Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map, the entire village area can be subdivided in to four micro-watersheds draining towards south direction. Watershed numbers and the geographical area in each watershed is given in following table.

Watershed	**Geographical Area** (In Hectares)
Watershed no.-1	77.3204
Watershed no.-2	63.5265
Watershed no.-3	28.6394
Watershed no.-4	31.0649
Total	**200.5512**

The dark shed reflected in satellite imagery of year 2007 clearly indicate that agriculture practices are more intense in watershed no.-1 & 2. The drainage system is not visible in all the four watersheds. Natural flow of runoff water from micro-watershed no.-1 & 2 have been obstructed by the field boundaries hence the water flows through the pathways used for transportation. The watershed no-3 & 4 are in east and northern part with almost flat region with lesser fertile land and degraded groundwater quality and quantity.

Proposed Measures

As identifying of water harvesting activities on watershed basis was the main objective of the project a set of activities have been discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location envisaged during the project study shared and recommended by the local village community of village Anoppura:

S. N.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields	• Micro-watershed No.-1	• **Cluster-1**: About 1500m field bunds spread over 100 Fields in west of the main village

			• Micro-watershed No.-2	• **Cluster-2:** About 1500m field bunds spread over 100 Fields in south of the main village (Refer figure no.-9 for details)
		• Construction of small tanks/ ponds at agricultural farm.	• Micro-watershed No.-1	• **Cluster-1**: Two tanks at suitable locations
			• Micro-watershed No.-2	• **Cluster- 2:** Three tanks at suitable locations. • (Refer figure no.-9 for details)
2	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.- 120
		• Construction of Roof Top Rainwater Harvesting System	• Micro-watershed No.-2	• At Community (Panchayat) Building in main village
3	**Pasture Land Development & Horticulture**	• Land grading and bunding. • Plantation of suitable plant/ fruit plant. • Linking with government horticultural scheme.	• Micro-watershed No.-2	• Field (Khasra) No.-120 (Government common Land)

Numbers/ quantities of proposed activities are summarized in following table:

S. N.	Activities	Numbers/ Details
1	Roof Top Rainwater Harvesting System	1 No.'s
2	Nadi construction/ renovation	1 No.'s
3	Farm Tanks/ ponds	5 No.'s
4	Farm Field Bunding	3000 Meters
5	Pasture Land Development	5 Hectare

The location of the proposed activities is shown in figure no- 9.

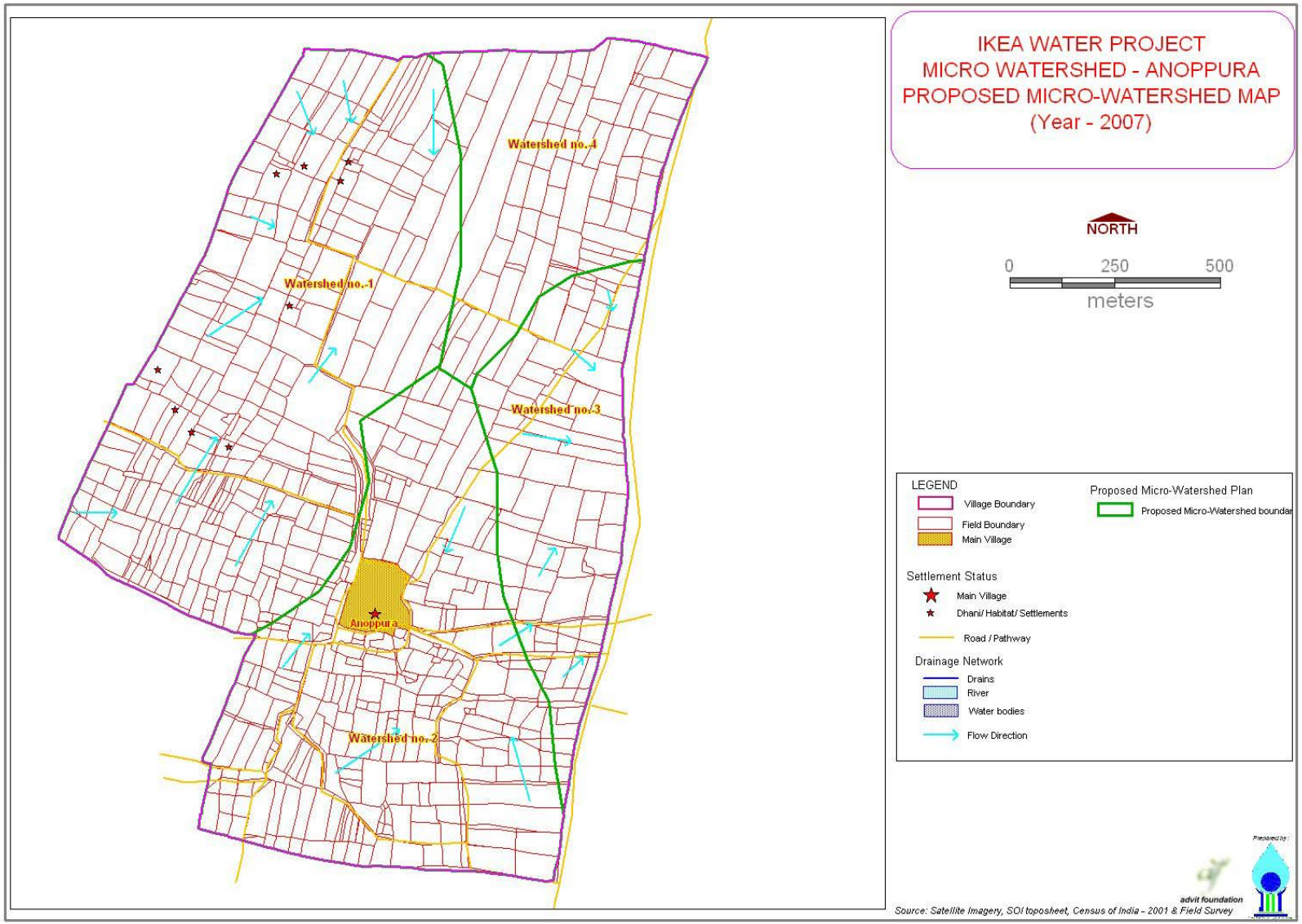
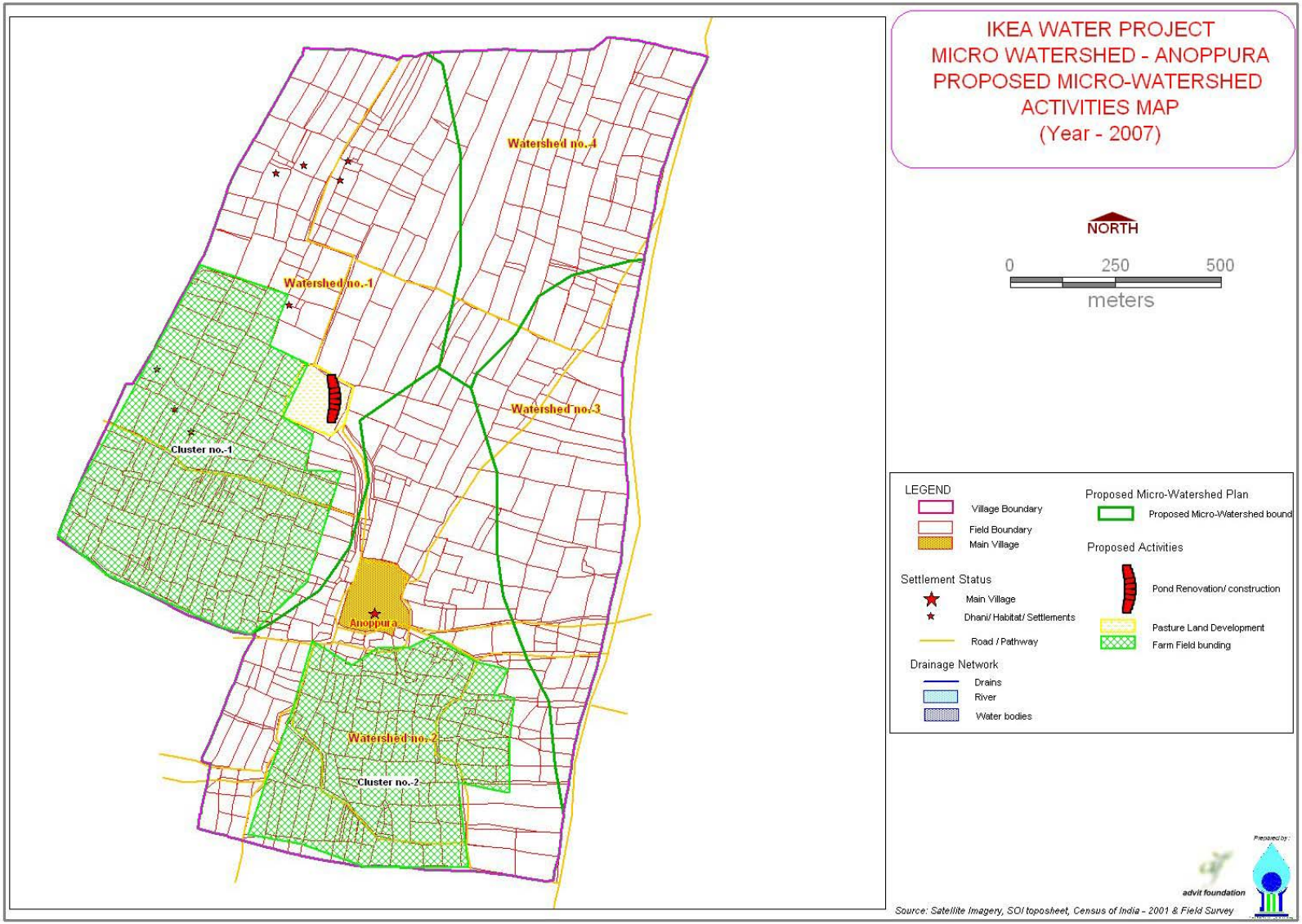

IKEA WATER PROJECT
MICRO WATERSHED - ANOPPURA
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
Watershed no.-4
Watershed no.-1
Watershed no.-3
Anoppura
Watershed no.-2
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundar
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8


IKEA WATER PROJECT
MICRO WATERSHED - ANOPPURA
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
NORTH
0
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meters
Watershed no.-4
Watershed no.-1
Watershed no.-3
Cluster no.-1
Anoppura
Watershed no.-2
Cluster no.-2
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Proposed Micro-Watershed Plan
Proposed Micro-Watershed bound
Proposed Activities
Pond Renovation/ construction
Pasture Land Development
Farm Field bunding
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Estimated Budget

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. N.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200,000.00**
2	Nadi construction/ renovation	1	No.'s	Lumpsum	**200,000.00**
3	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50000.00	**250,000.00**
4	Farm Field Bunding	3000	Meters	30.00	**90,000.00**
5	Pasture Land Development	5	Hectare	10000.00	**50,000.00**
				GRAND TOTAL	**790,000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

MICRO-WATERSHED PLANNING OF VILLAGE - BHEEMPURA

Village Location

Bheempura village is located at $75^0$33'57.60" east longitude and $26^0$44'34.08"north longitude with a geographical area of 457 hectare at about 50 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Bheempura w.r.t Jaipur, Rajasthan and India.

Nearest facilities available from the main villages are tabulated as below:

Distance of village from Factory:	=	**10 km**
Distance from Block HQ:	=	**18 km**
Type of approach road to the village: *(Kachcha 4km and Pacca 6 km)*	=	**10 km**
Distance of village from district HQ	=	**45 km**
Nearest market & its distance from the village: *(Bagru)*	=	**10 km**
Distance to nearest Middle School	<	**5 km**
Distance to nearest College	>	**10 km**
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 95 families (as per baseline survey – 2007) residing in the village Bheempura which are spread up in main village. (Refer fig. - 1 and 2)

C. Population distribution

DEMOGRAPHIC PROFILE

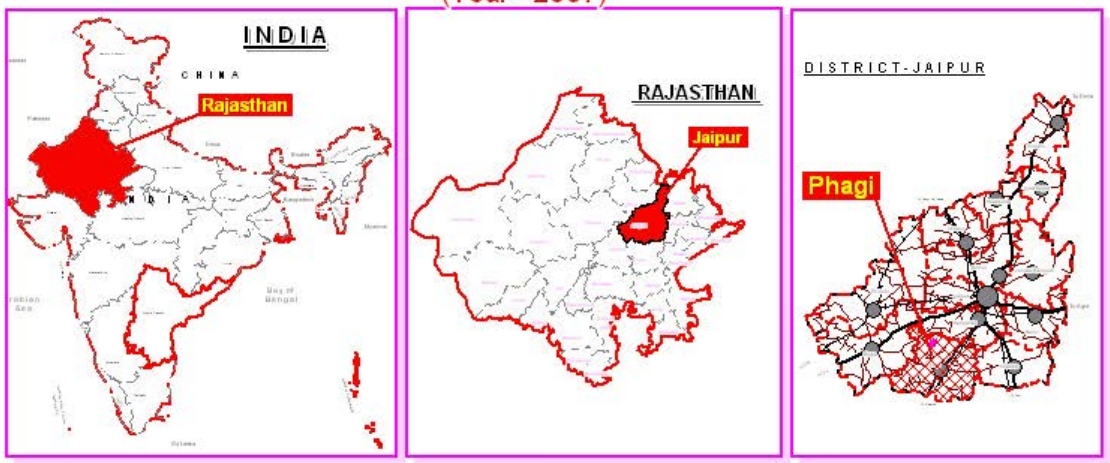
POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	623	Total House Holds	95
Total male Population	337	SC House Holds	-
Total Female Population	286	ST House Holds	7
Child Population (0-6 yr)	123		

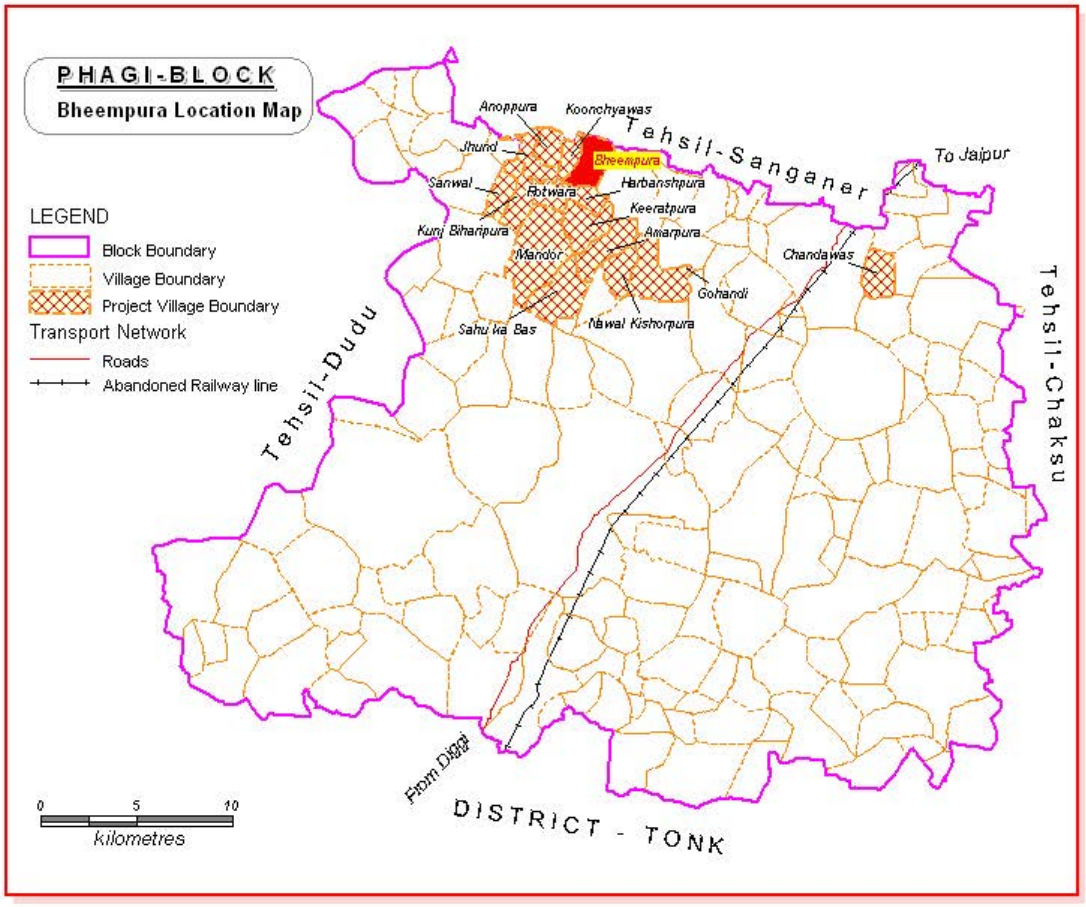
D. Dhani-wise breakup of the population distribution:

S. No.	Village/ Dhani	House Holds			Population			
		TOTAL	SC	ST	Male	Female	Child	Total
1	**Bheempura**	95	0	7	337	286	123	623
	Total	**95**	**0**	**7**	**337**	**286**	**123**	**623**

The sex ratio in Bheempura village is 849 females per 1000 males. The child population is about 19.74% of the total population.

IKEA WATER PROJECT
BHEEMPURA VILLAGE LOCATION MAP
(Year - 2007)





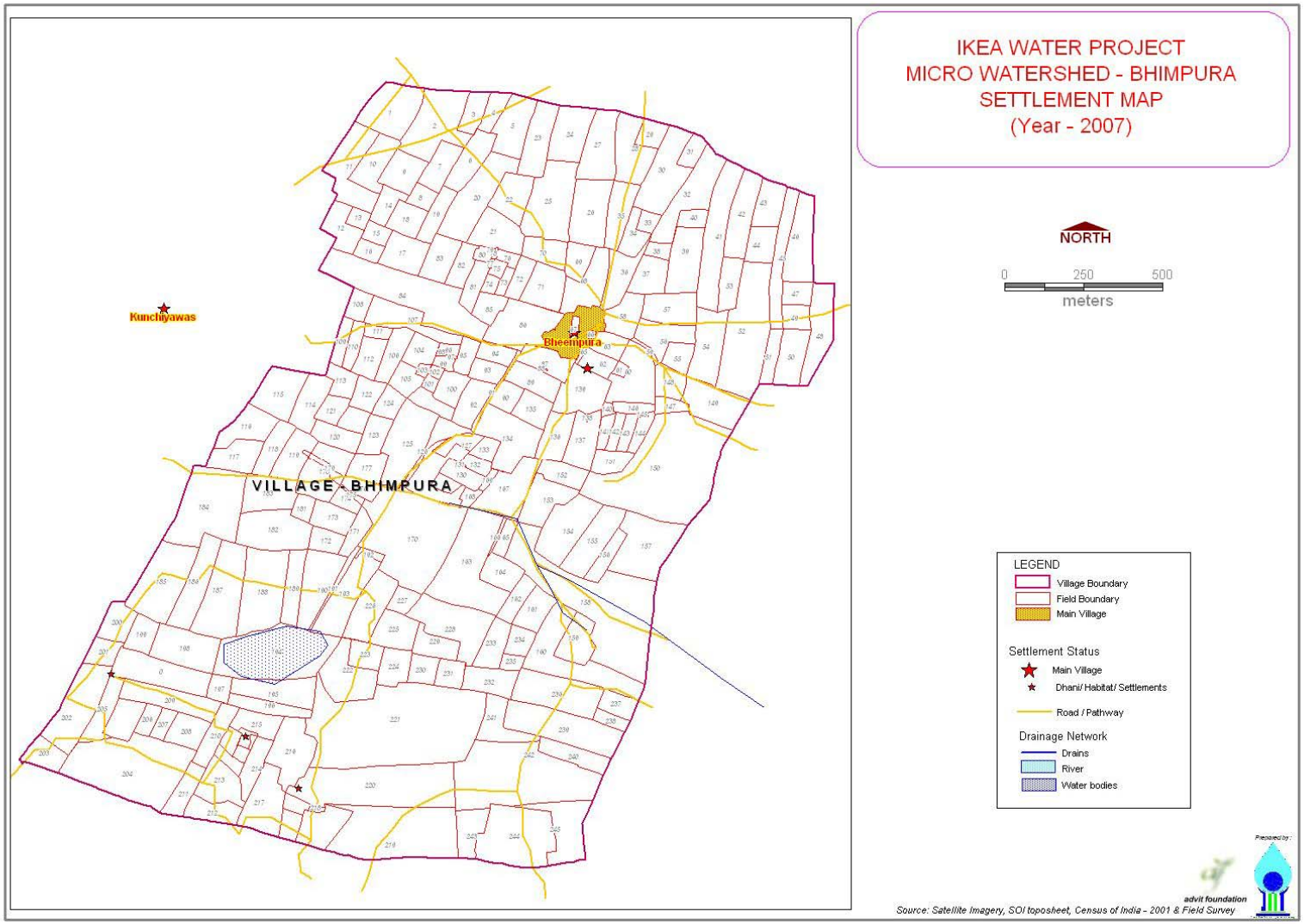

IKEA WATER PROJECT
MICRO WATERSHED - BHIMPURA
SETTLEMENT MAP
(Year - 2007)
NORTH
0
250
500
meters
Kunchiyawas
Bheempura
VILLAGE - BHIMPURA
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

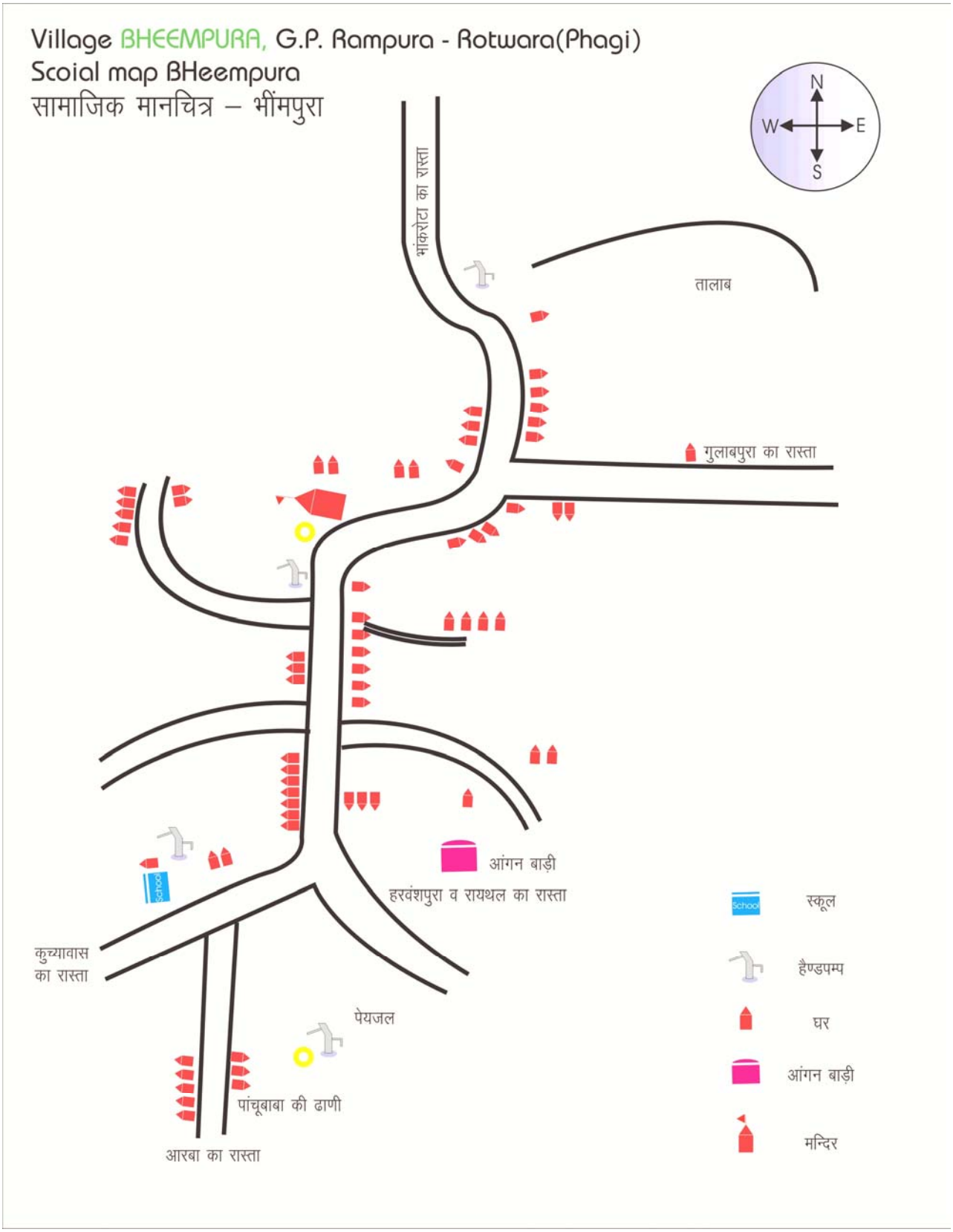

Village BHEEMPURA, G.P. Rampura - Rotwara(Phagi)
Scoial map BHeempura
सामाजिक मानचित्र – भींमपुरा
N
W
E
S
भांकरोटा का रास्ता
तालाब
गुलाबपुरा का रास्ता
आंगन बाड़ी
हरवंशपुरा व रायथल का रास्ता
कुच्यावास
का रास्ता
पेयजल
पांचूबाबा की ढाणी
आरबा का रास्ता
School
स्कूल
हैण्डपम्प
घर
आंगन बाड़ी
मन्दिर

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

- Overall Literacy rate is 36.12%. Male literacy rate is 52.52% while female literacy rate is 16.78%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- A primary health sub-center facility is available in the village.

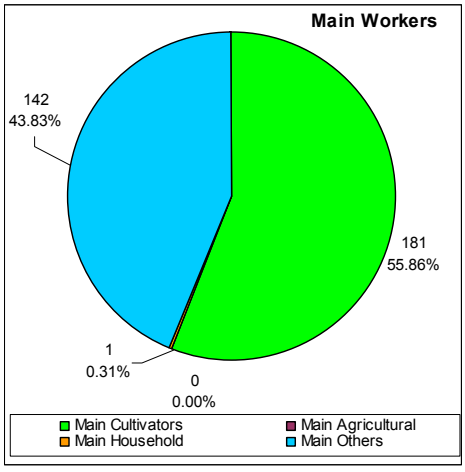
Work and Work force

The workers population available in the village Bheempura (According to Census- 2001) can be tabulated as below:

		In Numbers	*In % to total population*
A.	**Main Worker Population**		
	Male Worker	179	53.12%
	Female Worker	146	51.05%
	Total Workers	**325**	**52.17%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	0	0.00%
	Female Marginal Worker	1	0.35%
	Total Marginal Workers	**1**	**0.16%**
C	**Non Worker Population**		
	Male Non Worker	158	46.88%
	Female Non Worker	140	48.95%
	Total Non Workers	**298**	**47.83%**

Description of the workers population classification is explained in the following paragraphs:

Main Workers: In Bheempura village total main workers population is about 52.01% of the total population. Following graph best represents the % of people engages in different categories of main works in village Bheempura.



Marginal Workers: there is only one person engaged in marginal worker category in Bheempura village as per the record.

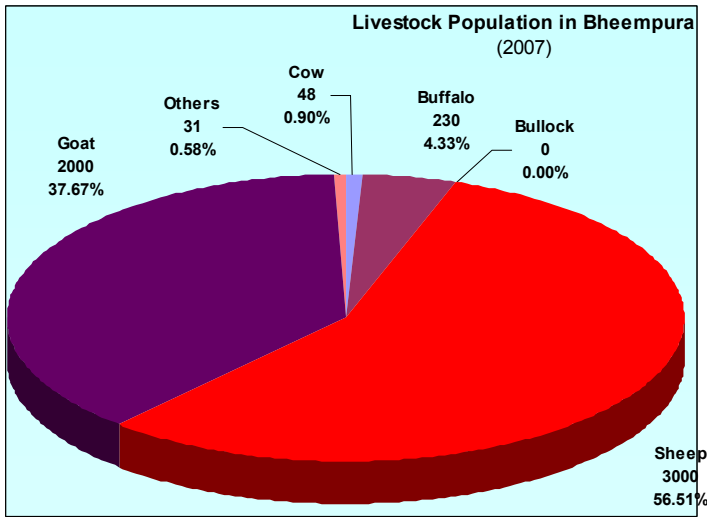
Cultivator: About 55.86% of main worker population is engaged in cultivator work in the village itself. Only person in marginal workers category engaged in cultivation activities.

Agricultural Labourer: In Bheempura village negligible people in main workers and nil in marginal workers are engaged in this category of work.

Household Industry Workers: In Bheempura village almost none of the worker is engaged in household works.

Other Worker: 'Other Works' constitute major part after cultivator category in workers population. About 43.83% in main workers are engaged in this type of work category.

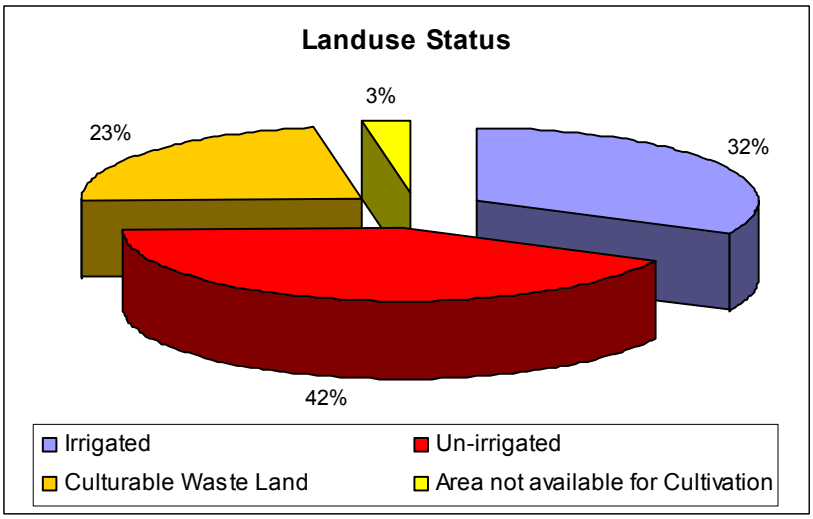
Livestock



As per the base line survey carried out in Bheempura village there are 5309 cattle variably distributed among 95 families living in the village. Goats and sheep are the major contributor (about 95%) to the livestock population. Buffaloes and cows amount to 5% of the cattle population primarily being utilised for dairy purpose (milk production).

Land-Use Pattern:

Agricultural production is the major component of the village economy. Most of the land available is being put to agricultural activities. Out of the total land 32% is irrigated (by tube wells) and about 42% land falls in the category of un-irrigated land. About 23% of the land is culturable waste land in the village Bheempura. Following graph gives status of land utilization in village Bheempura. Looking to the statistics there are ample opportunities in the field of agriculture. Increase in irrigation facilities could result in more cropped area in the village.



Location of fields with its khasra number has been shown in figure no.-4 giving overall scenario of the land utilization and settlement in village Bheempura.

Satellite image map representing the present land-use features in different textures are shown as figure no. - 5. The field boundaries and habitat locations have also been superimposed on the image map to give visual impression of the field location and its status.

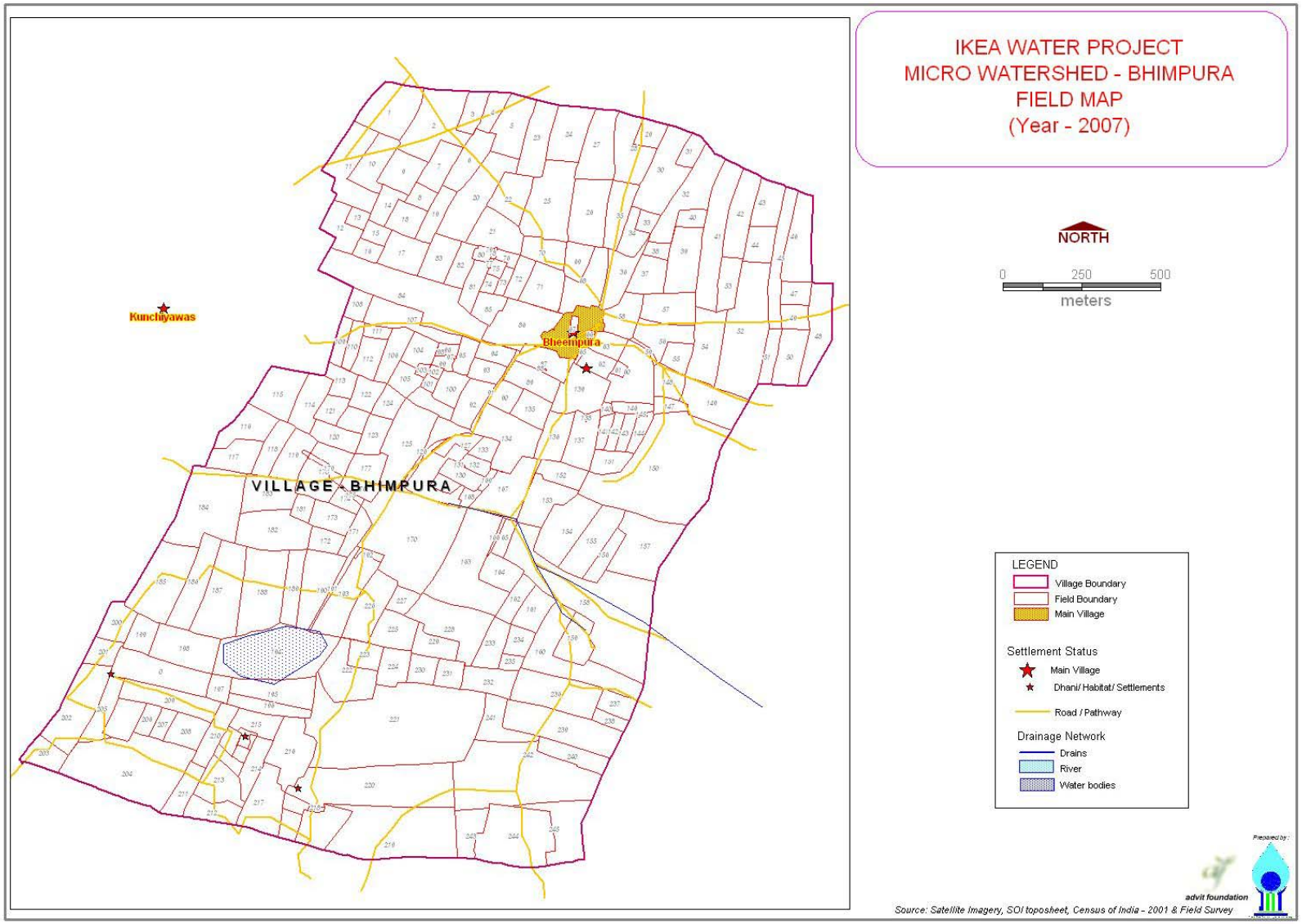

IKEA WATER PROJECT
MICRO WATERSHED - BHIMPURA
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
Kunchiyawas
Bheempura
VILLAGE - BHIMPURA
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

IKEA WATER PROJECT

MICRO WATERSHED - BHEEMPURA

Satellite Image MAP

(Year - 2007)

LEGEND

- Village Boundary
- Fields Boundary
- Main Village

Settlement Status

- Main Village
- Dhani
- Settlements
- Roads/ Pathway

Drainage Network

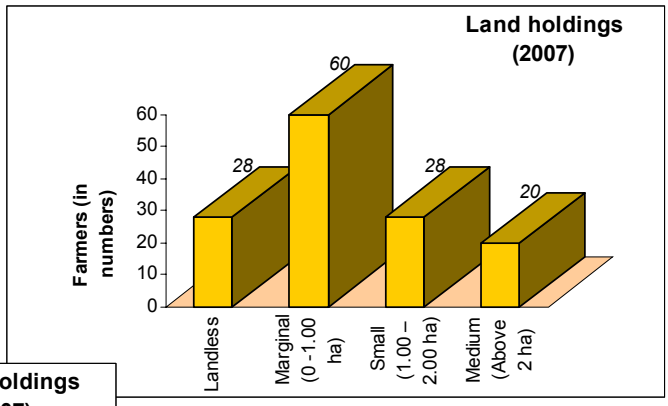
- Drains
- Bandi River
- Existing Pond/ Nadi

Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

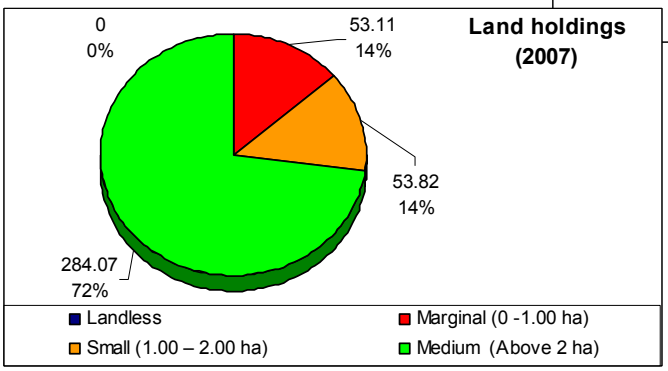
Land Holdings

Category-wise numbers of farmers and their land holdings are presented in the following graphs.



The base line survey indicates that

- Out of 136 farmers in the village about one fifth (20.59%) i.e. 28 farmers are landless.
- About 14.71% farmers (20 no.'s) have more than 2 hectare land. These farmers have more than 72% of the landholdings in the village.
- Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 14% of the total geographical area of the village.
- Marginal farmers (0 to 1.00 ha.) have lands about 14% of the total area of the village Bheempura.

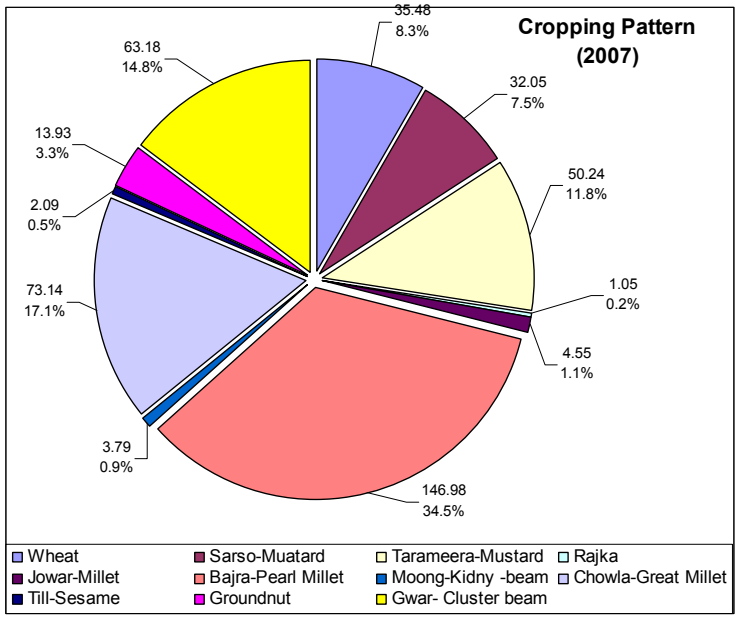


Cropping Pattern

In Bheempura village the type of crops sown in different seasons recorded in the base line survey are tabulated below:

S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
10.	Wheat	Rabi	4.5	March	15.20	20.28	35.48
11.	Jo -Barley	-do-	4	Feb.-March	14.56	17.49	32.05
12.	Gram	-do-	4	Feb.-March	1.28	48.96	50.24
13.	Sarso-Muatard	-do-			1.05	0.0	1.05
14.	Tarameera-Mustard	Kharif	4	Oct.	0.0	4.55	4.55
15.	Bajra-Pearl Millet	-do-	4	Oct.	0.0	146.98	146.98
16.	Moth	-do-	3	Sep.	0.0	3.79	3.79
17.	Moong-Kidny - beam	-do-	3	Sep.	0.0	73.14	73.14
18.	Chowla-Great Millet	-do-	4	Oct.	0.0	2.09	2.09
19.	Groundnut	-do-	4	Oct.	0.0	13.93	13.93
20.	Gwar-Cluster-beam	-do-	4	Oct.-Nov.	0.0	63.18	63.18
Total					**32.09**	**394.39**	**426.48**

According the data it is found that Bajra – Pearl Millet (34.5%) are the major crop in all the three seasons in the area followed by Chawla – Great Millet (17.1%) and Gwar – Cluster beam (14.8%). The percentage figures of the cropping pattern have been represented in the following graph.



Water Resource Profile:

Physiography & Drainage pattern:
The general ground profile is flat and having gentle slope towards middle of the village from all the direction. The runoff water during rainfall period follows ground slope and drains in local depression (village pond) and there after a natural drain which ultimately joins the Bandi River flowing through the south east of the village. The natural pathway of runoff water area obstructed by agricultural fields and at most of the places it has been completely destroyed. In the present scinario most of the places runoff water follows the path way/ village katcha-roads to meet accumulate in the pond or local depression or join the natural drains.

Figure No. 6 gives pictorial view of the ground profile and drainage pattern by contours having one meter intervals through interpolation of spot level obtained from GT sheets and field measurement generated by GIS based modeling software.

Water Sources: The existing water resource status in village Bheempura can be tabulated as below:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	30	-	30
Bore well	1	-	1
Hand pumps	5	1	6
Village Ponds	-	1	1

According to the study and field surveys following important points were observed:

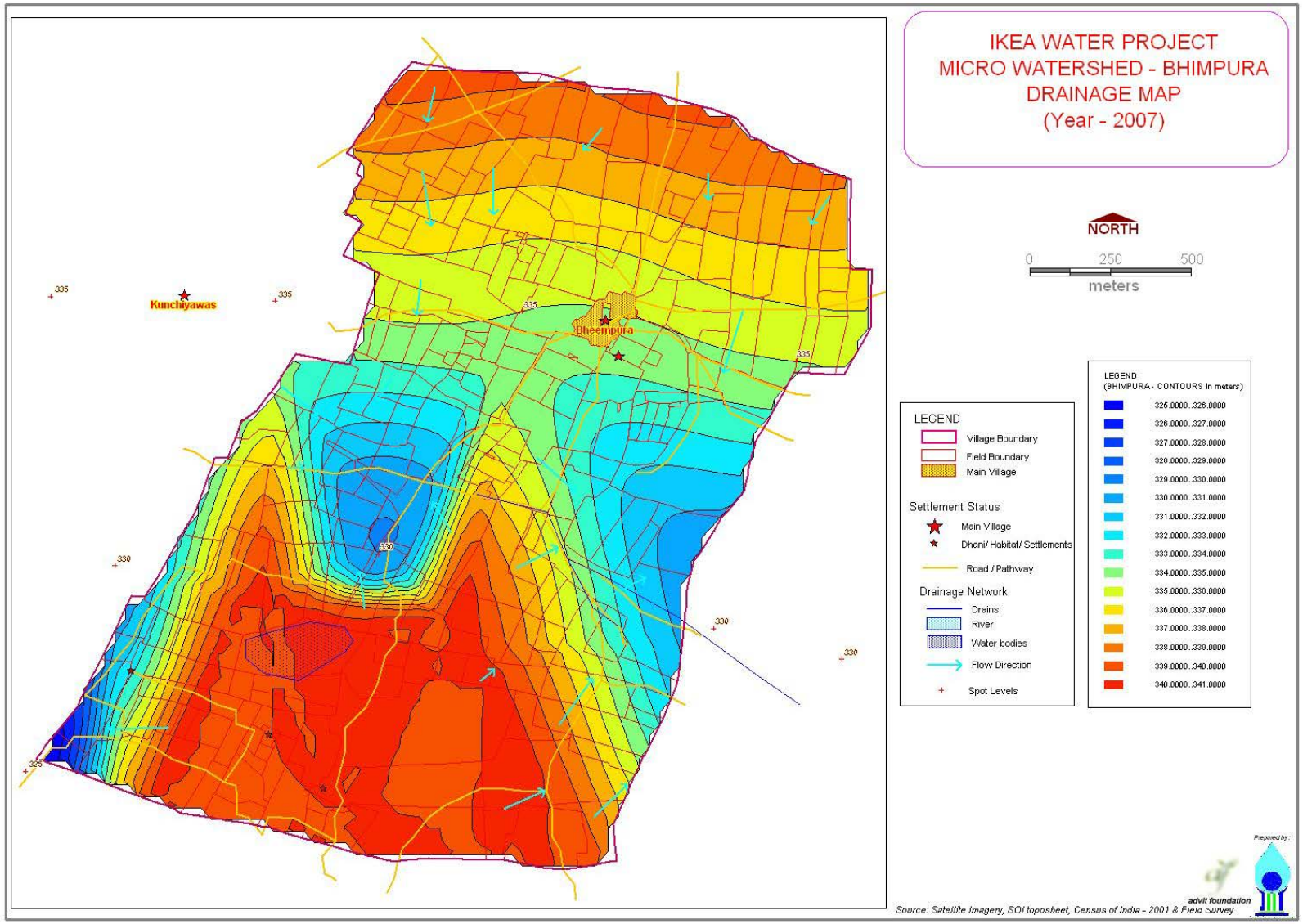
- In Bheempura too most of the wells dry up in the summer season. The yield of groundwater has reduced considerably since past decades.
- The ground water in this area is saline in nature. The salinity increases with depth.
- Depth to water table varies from 20' to 65' depending upon its location in the village.
- Rocky formations are visible at depth varying from 15' to 45' from the ground level at different locations in the village.

Drinking Water Sources: Public Health Engineering Department (PHED) has installed Regional Water Supply Scheme with Ground Level Reservoir (GLR) with tape connection all around it in village Bheempura. The scheme and its various components are in working condition but not sufficient in

quality and quantity standards. Although the scheme is functional yet people do not prefer it for drinking as it contains high fluoride (> 3ppm) and taste salty. Even cattle do not drink this water. The source is not at all dependable as it functions occasionally. Most of the time it remains closed. The hand pumps installed in the village are functional but also yield saline water. This water is used for secondary purposes other than drinking for both human and cattle population. Open wells near some depression and at village pond do yield sweet water and the entire population draw drinking from such sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to travel long distances to get the sufficient quantity of drinking water. Hence there is a need of sustainable drinking water source in the village.

Irrigation Water Sources: Out of total wells about 30 are in functional state. The prime use of these well are for irrigation. Most of them now dry up in extreme summer conditions. The owner family members also use this water for drinking purpose as it is less saline than water from hand pump. Most of the farmers have dug open bore in the bed of the open well to draw water with help of diesel engine in the village.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting water sources scenario in the village Bheempura.


IKEA WATER PROJECT
MICRO WATERSHED - BHIMPURA
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
Kunchiyawas
Bheempura
335
330
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
(BHIMPURA - CONTOURS In meters)
325.0000..326.0000
326.0000..327.0000
327.0000..328.0000
328.0000..329.0000
329.0000..330.0000
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331.0000..332.0000
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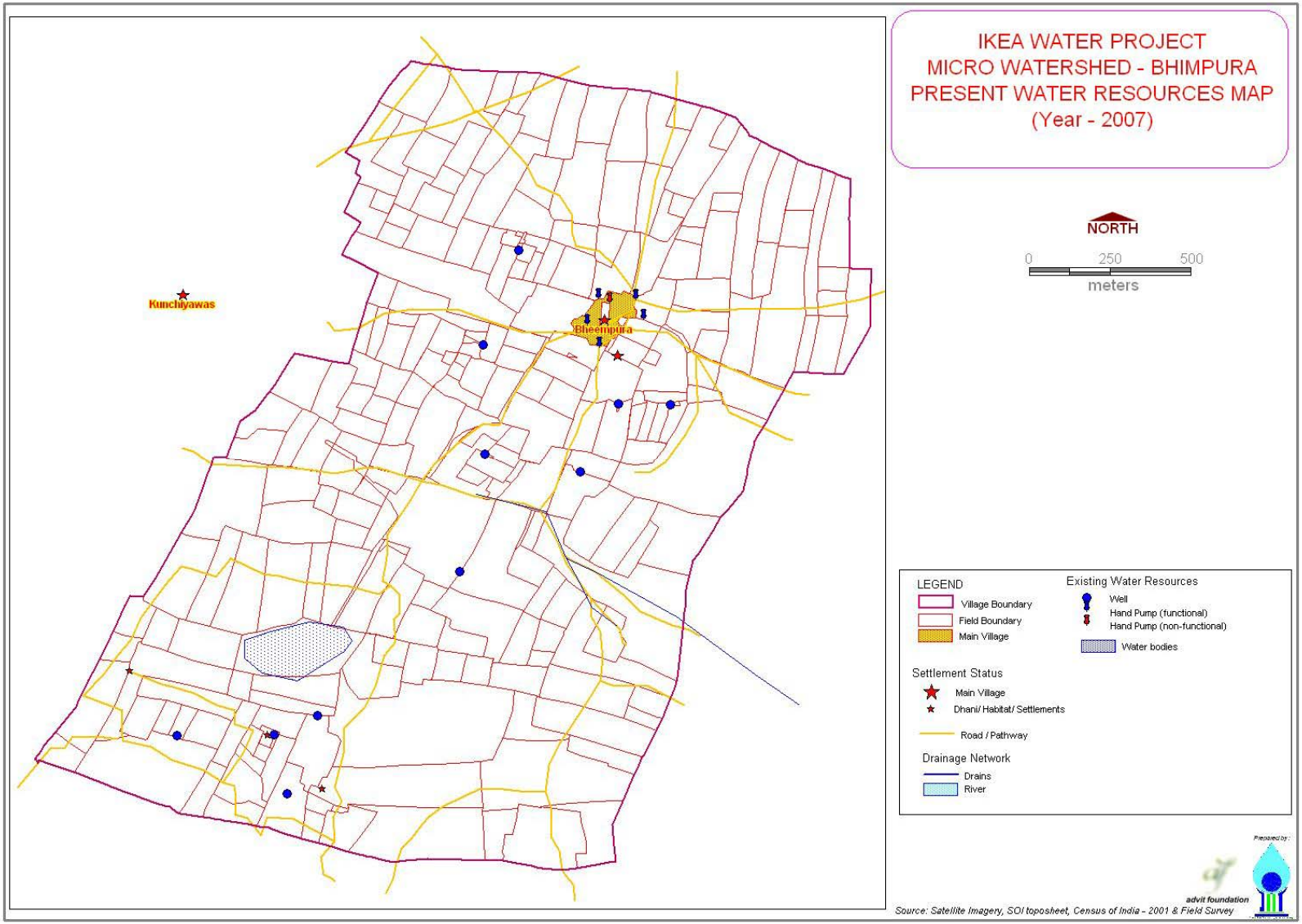
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6


IKEA WATER PROJECT
MICRO WATERSHED - BHIMPURA
PRESENT WATER RESOURCES MAP
(Year - 2007)
NORTH
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250
500
meters
Kunchiyawas
Bheempura
LEGEND
Village Boundary
Field Boundary
Main Village
Existing Water Resources
Well
Hand Pump (functional)
Hand Pump (non-functional)
Water bodies
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data and subsequent GIS based analysis and field survey and measurements (Level survey) the entire village area can be subdivided in to four micro-watersheds. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	101.7329
Watershed no.-2	87.0593
Watershed no.-3	79.3040
Watershed no.-4	106.5032
Total	**374.5994**

The boundaries of micro-watershed have been identified and demarcated and presented in figure no. 8.

Although the watershed no.-4 is big in geographical area and average field size inside its boundary but watershed no-1 is more productive and having higher intensity of irrigation facilities. The dark shed reflected in satellite imagery of year 2007 clearly indicate that agriculture practices are more intense in watershed no.-1.

The drainage system is completely undefined in all the watersheds except watershed no.-1 as compare to other watersheds where a natural pond is in existence at localized depression. Natural flow of runoff water from all the watersheds have been obstructed by the field boundaries and the runoff water follows the pathways used for transportation.

Proposed Activities: As identifying of water harvesting activities on watershed basis was the main objective of the project a set of activities have been discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location envisaged during the project study shared and recommended by the local village community of village Bheempura:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields	• Micro-watershed No.-1	• **Cluster-1**: About 1500m field bunds spread over 25 Fields in south-west of the main village (field no.-185 to 214)
			• Micro-watershed No.-1 & 2	• **Cluster-2:** About 1000m field bunds spread over 10 Fields in south of the main village (Refer figure no.-9 for details)
			• Micro-watershed No.-3 & 4	• **Cluster-3:** About 1000m field bunds spread over 200 Fields in North-west of the main village (Refer figure no.-9 for details)
		• Construction of small tanks/ ponds at	• Micro-watershed No.-1	• **Cluster-1**: Two tanks at suitable locations

		agricultural farm.	• Micro-watershed No.-2	• **Cluster- 2:** Three tanks at suitable locations. (Refer figure no.-9 for details)
2	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.- 165 (About 1300m south-west of main village)
			• Micro-watershed No.-4	• Field No.- 136 (About 200m south of main village)
		• Construction of Roof Top Rainwater Harvesting System	• Micro-watershed No.-4	• At Community (Panchayat) Building in main village
3	**Pasture Land Development & Horticulture**	• Land grading and bunding. • Plantation of suitable plant/ fruit plant. • Linking with government horticultural scheme.	• Micro-watershed No.- 1 & 2	• Field (Khasra) No.-221
			• Micro-watershed No.-4	• Field (Khasra) No.-150 (Government common Land)

Numbers/ quantities of proposed activities for village Bheempura are summarized in following table:

S. No.	Activities	Numbers/ Details
1	Roof Top Rainwater Harvesting System	1 No.'s
2	Nadi construction/ renovation	2 No.'s
3	Farm Tanks/ ponds	5 No.'s
4	Farm Field Bunding	3500 Meters
5	Pasture Land Development	20 Hectare

The location of the proposed activities are shown in figure no.- 9

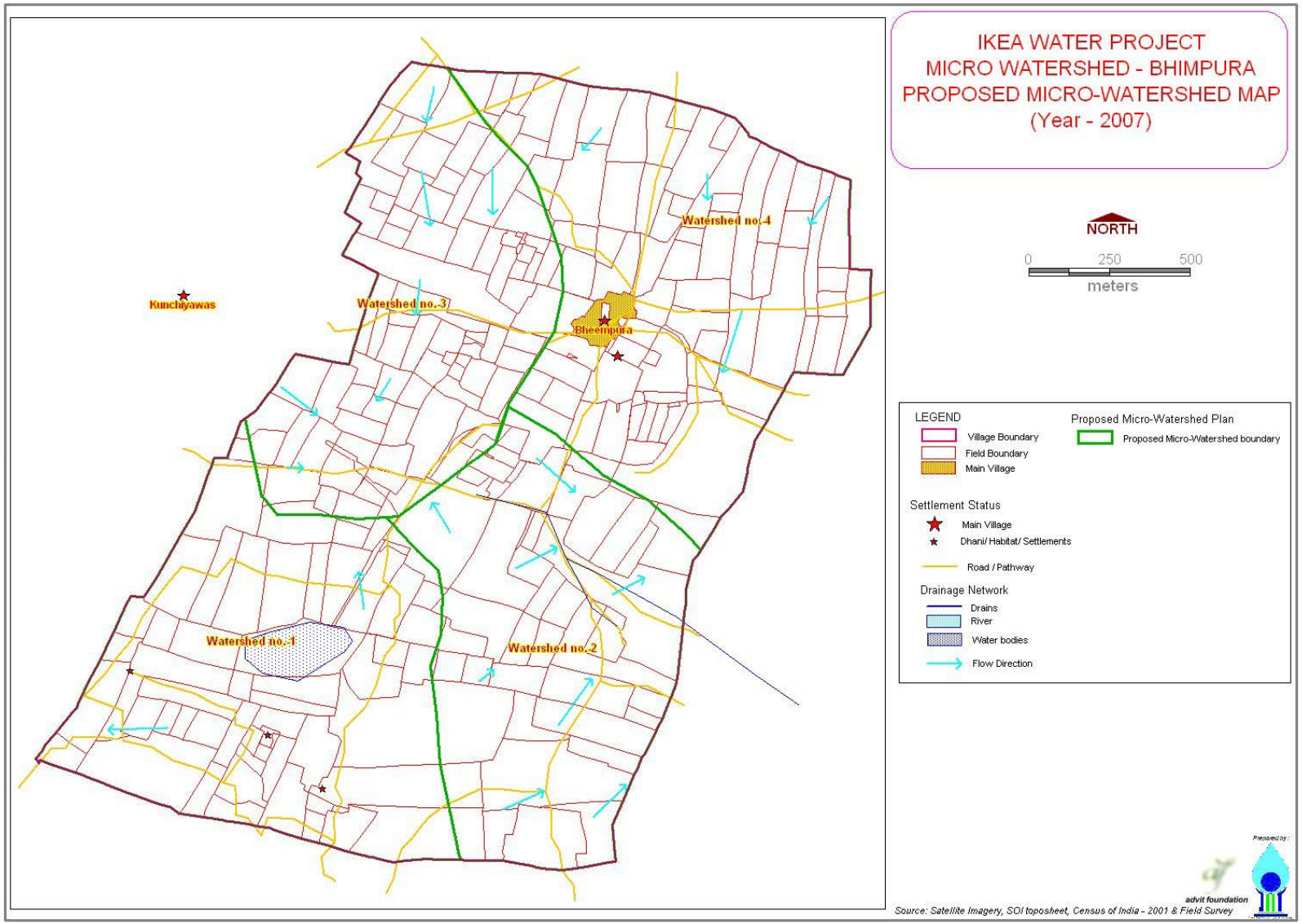
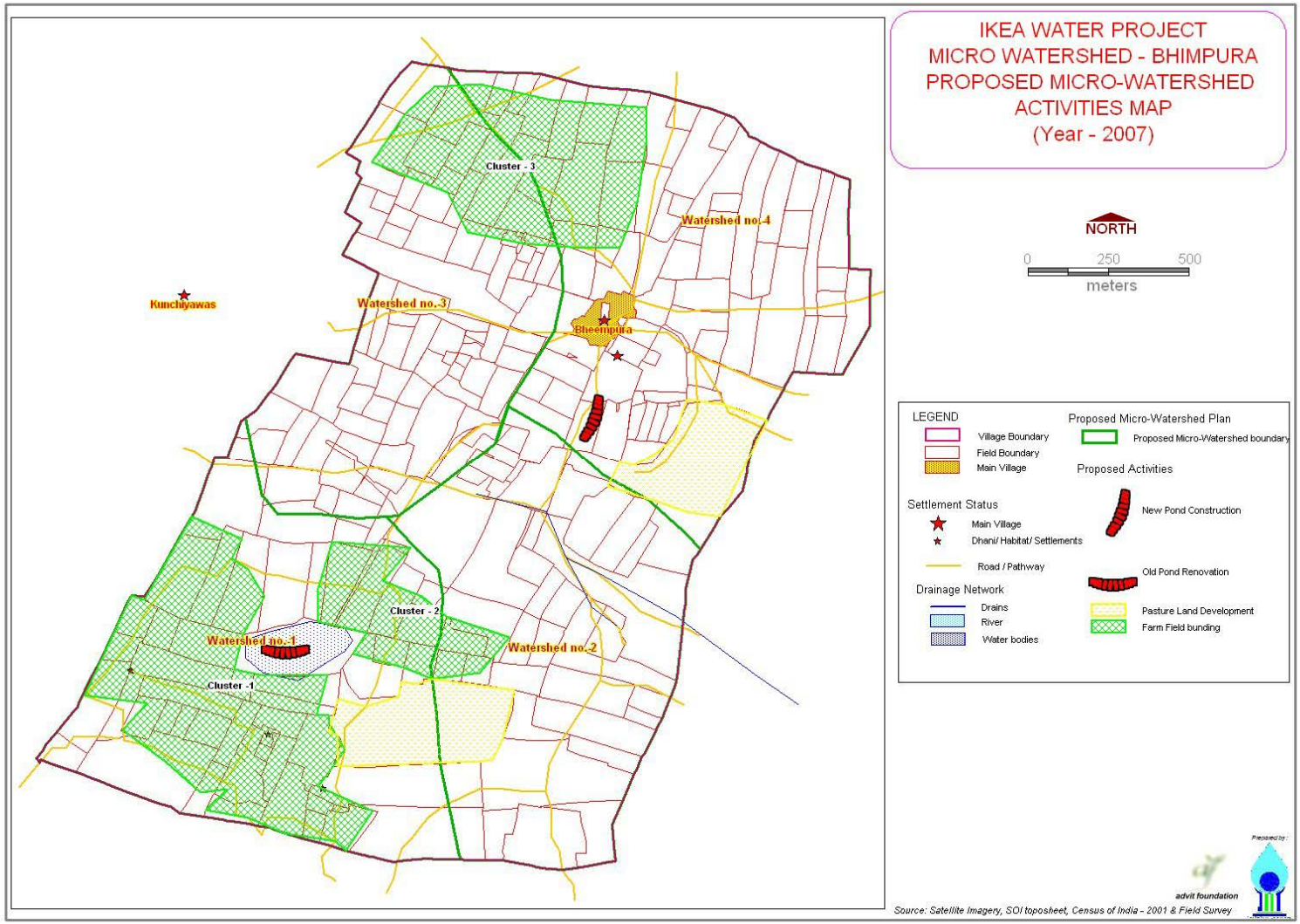

IKEA WATER PROJECT
MICRO WATERSHED - BHIMPURA
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
Kunchiyawas
Watershed no.-3
Bheempura
Watershed no.-4
Watershed no.-1
Watershed no.-2
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8


IKEA WATER PROJECT
MICRO WATERSHED - BHIMPURA
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
NORTH
0
250
500
meters
Cluster - 3
Watershed no.-4
Kunchiyawas
Watershed no.-3
Bheempura
Cluster - 2
Watershed no.-1
Watershed no.-2
Cluster -1
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Proposed Activities
New Pond Construction
Old Pond Renovation
Pasture Land Development
Farm Field bunding
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200000.00**
2	Nadi construction/ renovation	2	No.'s	Lumpsum (Rs.200000.00 Per Nadi)	**400000.00**
3	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50000.00	**250000.00**
4	Farm Field Bunding	3500	Meters	30.00	**105000.00**
5	Pasture Land Development	20	Hectare	10000.00	**200000.00**
				GRAND TOTAL	**1155000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

MICRO-WATERSHED PLANNING OF VILLAGE - CHANDAWAS

Village Location

Chandawas village is located at $75^0$42'29.88" east longitude and $26^0$41'26.88"north longitude with a geographical area of 334 hectare at about 33 km south of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Chandawas w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**18 km**
Distance from Block HQ:	=	**18 km**
Type of approach road to the village: *Pacca*	=	0 **km**
Distance of village from district HQ	=	**33 km**
Nearest market & its distance from the village: *(Renwal)* **3 km**		=
Distance to nearest Middle School **5 km**		<
Distance to nearest College **10 km**		>
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 86 families (as per baseline survey – 2007) residing in the village Chandawas which are spread up in main village. (Refer fig.- 1 and 2)

E. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	487	Total House Holds	86
Total male Population	253	SC House Holds	-
Total Female Population	234	ST House Holds	-
Child Population (0-6 yr)	88		

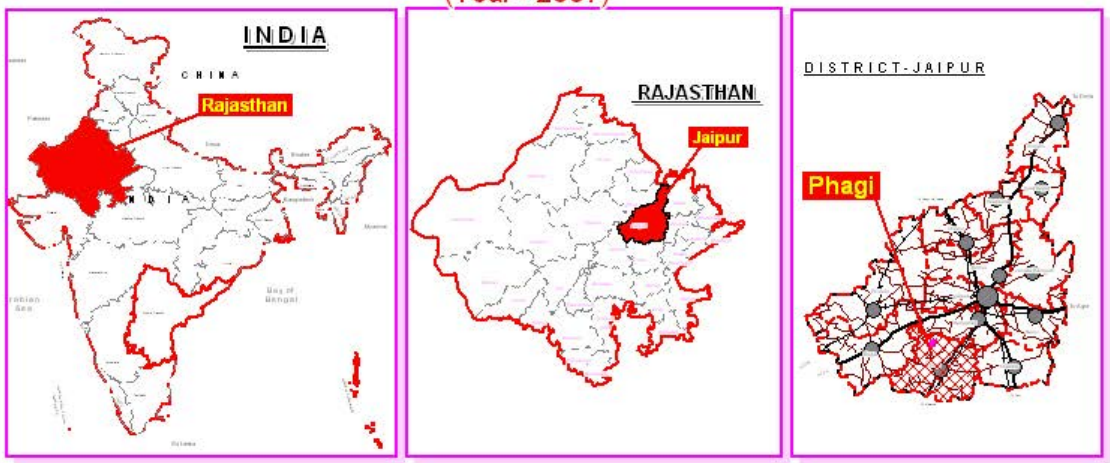
The sex ratio in Chandawas village is 925 females per 1000 males. The child population is about 18.07% of the total population.

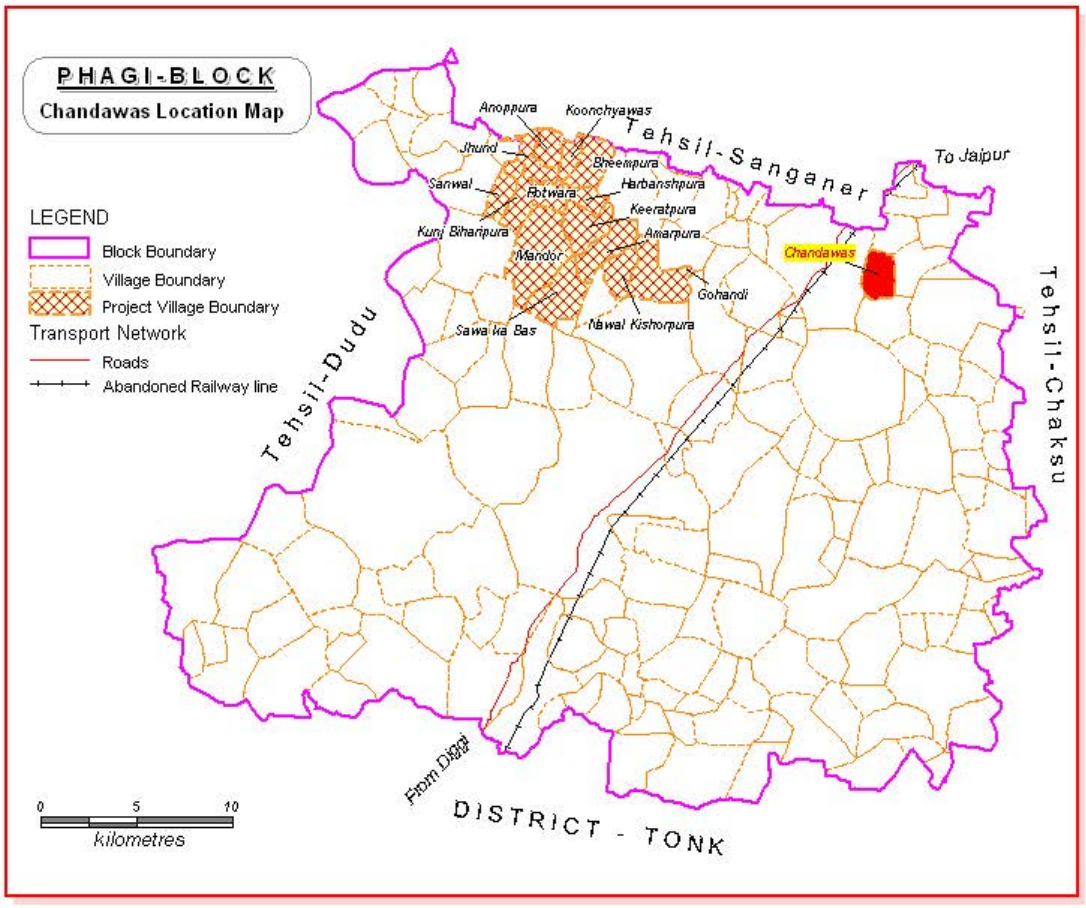
Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

- Overall Literacy rate is 53.59%. Male literacy rate is 61.66% while female literacy rate is 41.87%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.

IKEA WATER PROJECT
CHANDAWAS VILLAGE LOCATION MAP
(Year - 2007)





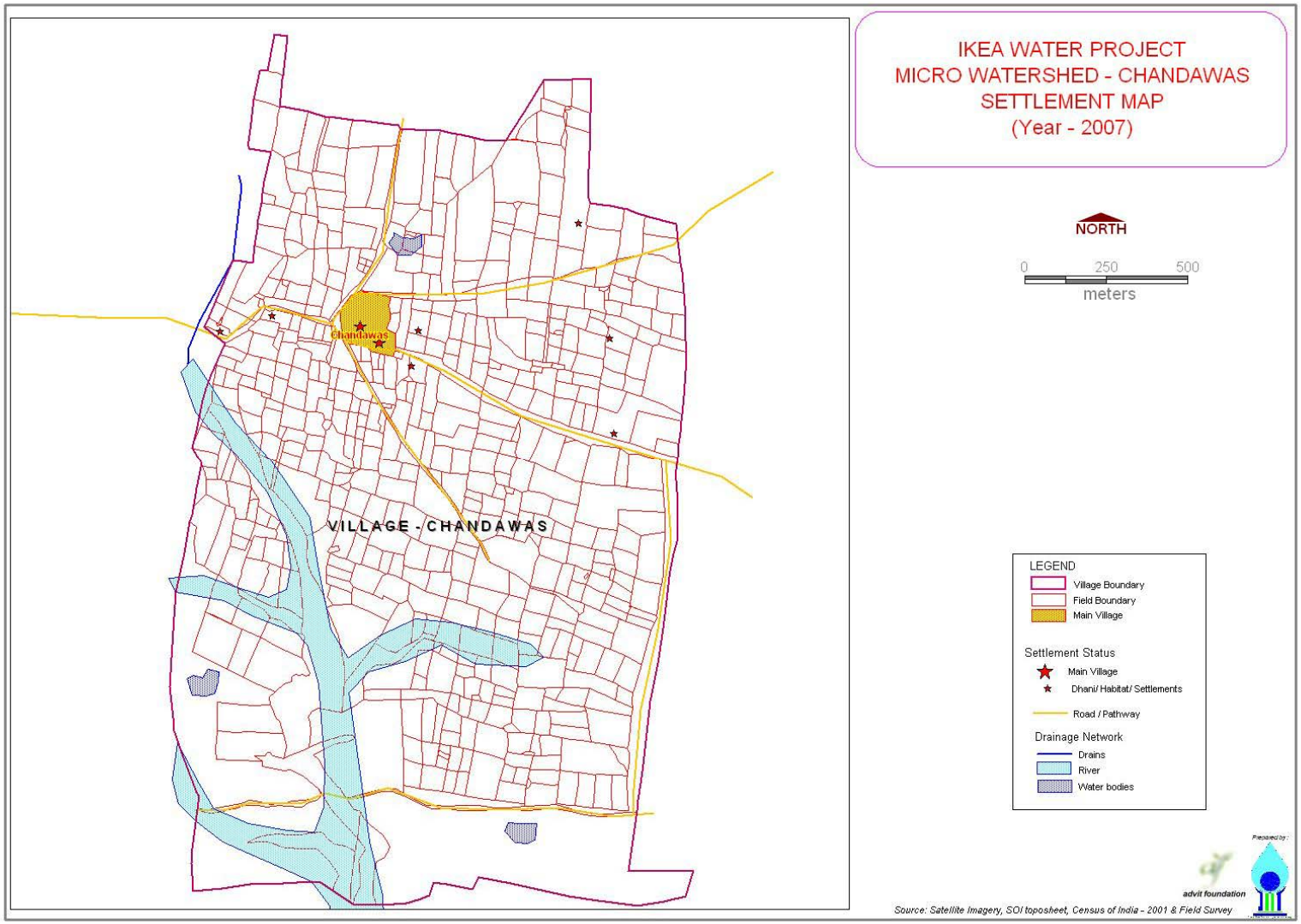

IKEA WATER PROJECT
MICRO WATERSHED - CHANDAWAS
SETTLEMENT MAP
(Year - 2007)
NORTH
0
250
500
meters
Chandawas
VILLAGE - CHANDAWAS
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

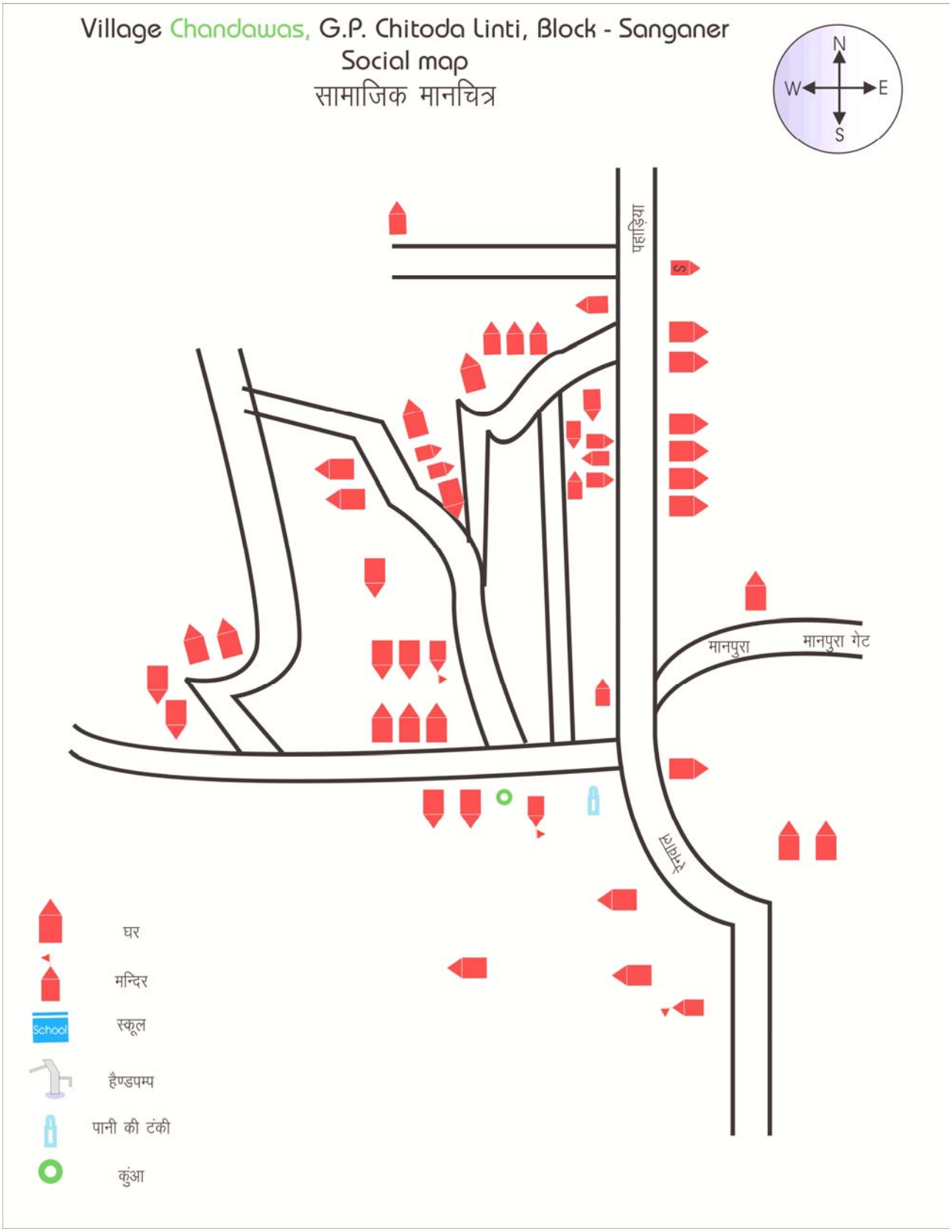

Village Chandawas, G.P. Chitoda Linti, Block - Sanganer
Social map
सामाजिक मानचित्र
N
W
E
S
पहाड़िया
मानपुरा
मानपुरा गेट
पगडंडी
घर
मन्दिर
School
स्कूल
हैण्डपम्प
पानी की टंकी
कुंआ

Figure No.-3

- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- No medical facilities exist in the village itself.

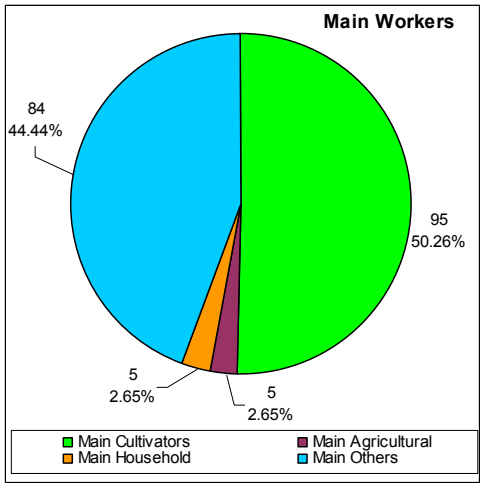
- **Work and Work force**

The workers population (As per Census 2001) available in the village Chandawas can be tabulated as below

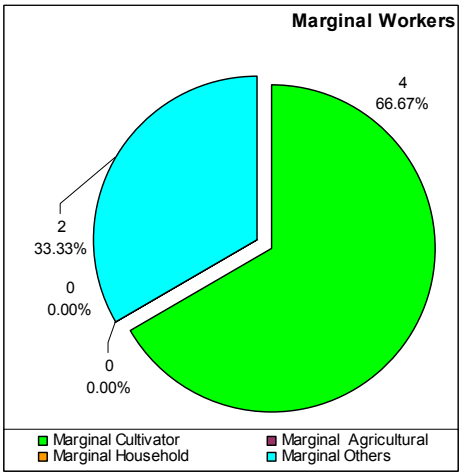
		In Numbers	*In % to total population*
A.	**Main Worker Population**		
	Male Worker	140	55.34%
	Female Worker	55	23.50%
	Total Workers	**195**	**40.04%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	4	1.58%
	Female Marginal Worker	2	0.85%
	Total Marginal Workers	**6**	**1.23%**
C	**Non Worker Population**		
	Male Non Worker	113	44.66%
	Female Non Worker	179	76.50%
	Total Non Workers	**292**	**59.96%**

Description of the workers classification is explained in the following paragraphs:

Main Workers: In Chandawas village total main workers population is about 38.81% of the total population. Following graph best represents the percentage of people engages in different categories of main works in village Chandawas.



Marginal Workers: Following graph represent the present status of the marginal workers in the village Chandawas.



Cultivator: In Chandawas about 50.26% of main worker population is engaged in cultivator work in the village itself. In Marginal workers category two third of marginal workers population (66.67%) is engaged in cultivation field.

Agricultural Laborer: In Chandawas village 2.66% people in main workers and none in marginal workers are engaged in this category of work.

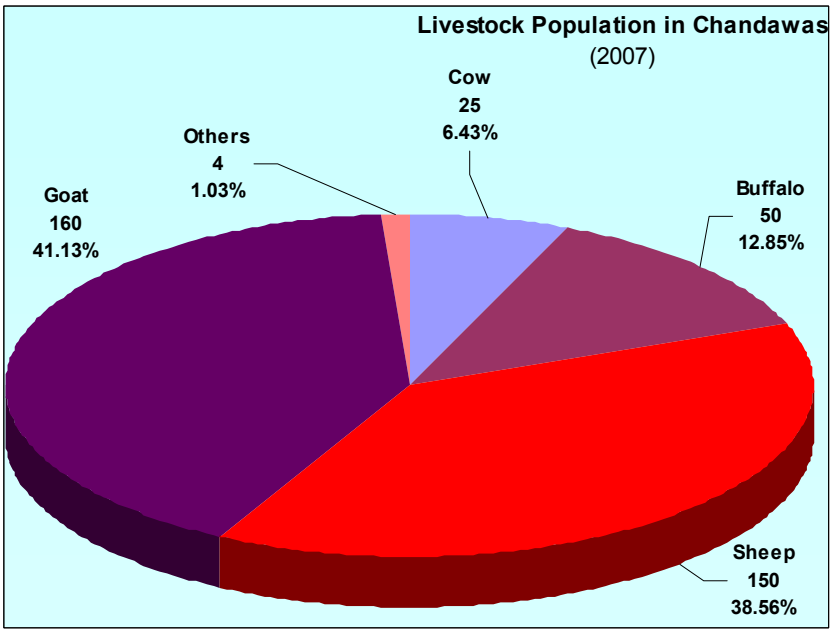
Household Industry Workers: In Chandawas village almost none of the people are engaged in household works.

Other Worker: In Chandawas village about 44.44% population of main worker and 33.33% of marginal worker category are engaged in this type of work category. In this category Males population leads the female population.

Livestock

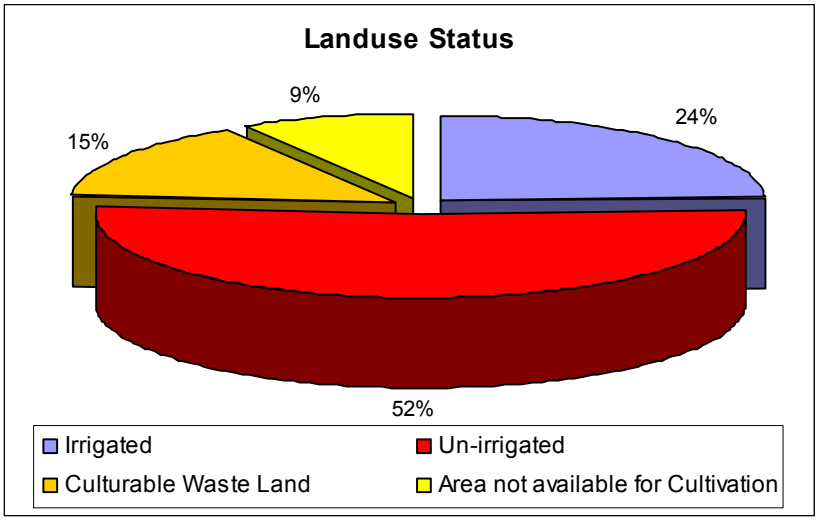
According to the base line survey data there are 389 cattle variably distributed among 86 families living in Chandawas village.

Goats and sheep are the major contributor (about 80%) of the livestock population. Buffaloes and cows amount to 19.0% of the cattle population primarily being utilised for dairy purpose (milk production).



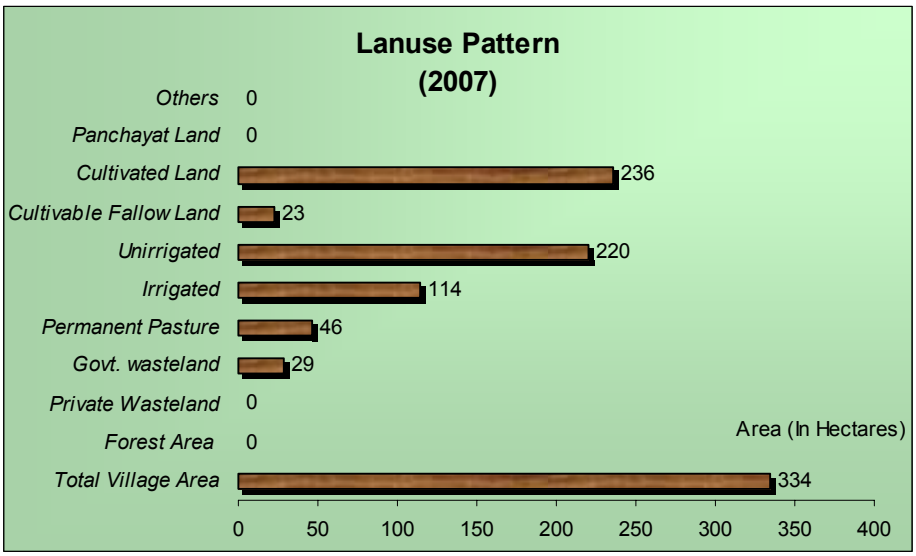
Land-Use Pattern:

Although the village much near to Jaipur urban area but still the major part of the village economy is dependent on agricultural production. Most of the land available is being put to agricultural activities. According to broad classification out of the total land only 24% is irrigated (by tube wells) and more than half of the land (52%) falls in the category of un-irrigated land. About 15% of the land is culturable waste land in the village Chandawas. Following graph gives status of land utilization in village Chandawas.



Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Chandawas. Satellite image map well represent the present land-use features in different textures as shown in figure no. - 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

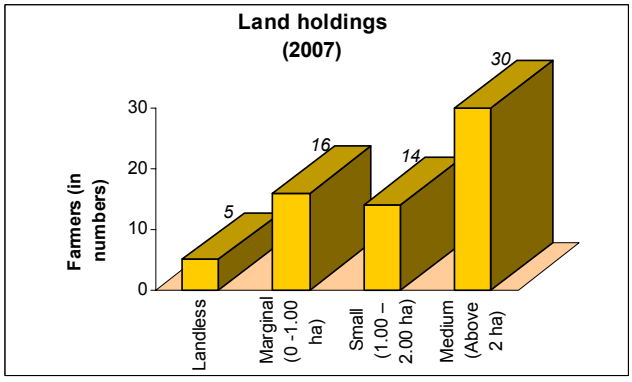
Further, about 46 hectare land is permanent pasture land and 29 hectare is government waste land. There is no panchayat and other category land available in the village. Cultivable fallow land or private waste land is about 23 hectare.



Looking to these statistics there are ample oppertunities in the field of agricultural interventions. Increase in irrigation facilities could result in more cropped area in the village and thus add to the economics of the farmers living in the village Chandawas.

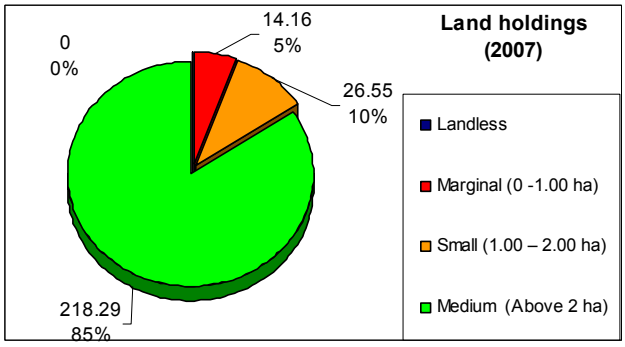
Land Holdings:

The base line survey revealed that out of 65 farmers in the village about one fifth (7.69%) (5 no.'s) farmers are landless. About 46.15% farmers (320 no.'s) have more than 2 hectare land.



Category-wise numbers of farmers and their land holdings are presented in the following graphs.

Further, on the basis of survey data it could be concluded that about7.69% farmers do not have landholdings in the village while 46.15% of the farmers have more than 85% of the landholdings in the village. Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 10% of the total geographical area of the village. Marginal farmers (0 to 1.00 ha.) have lands about 5% of the total area of the village Chandawas.



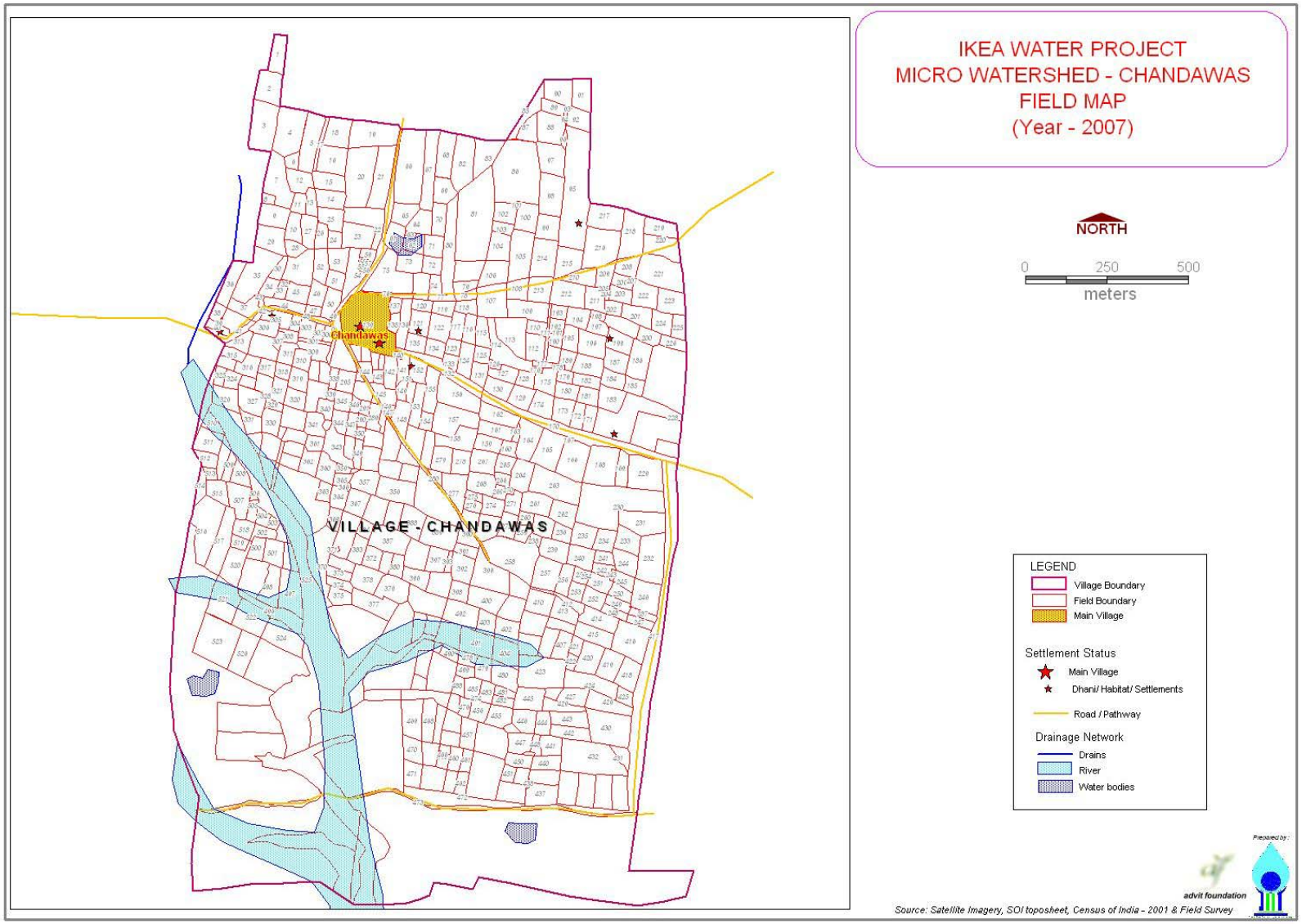
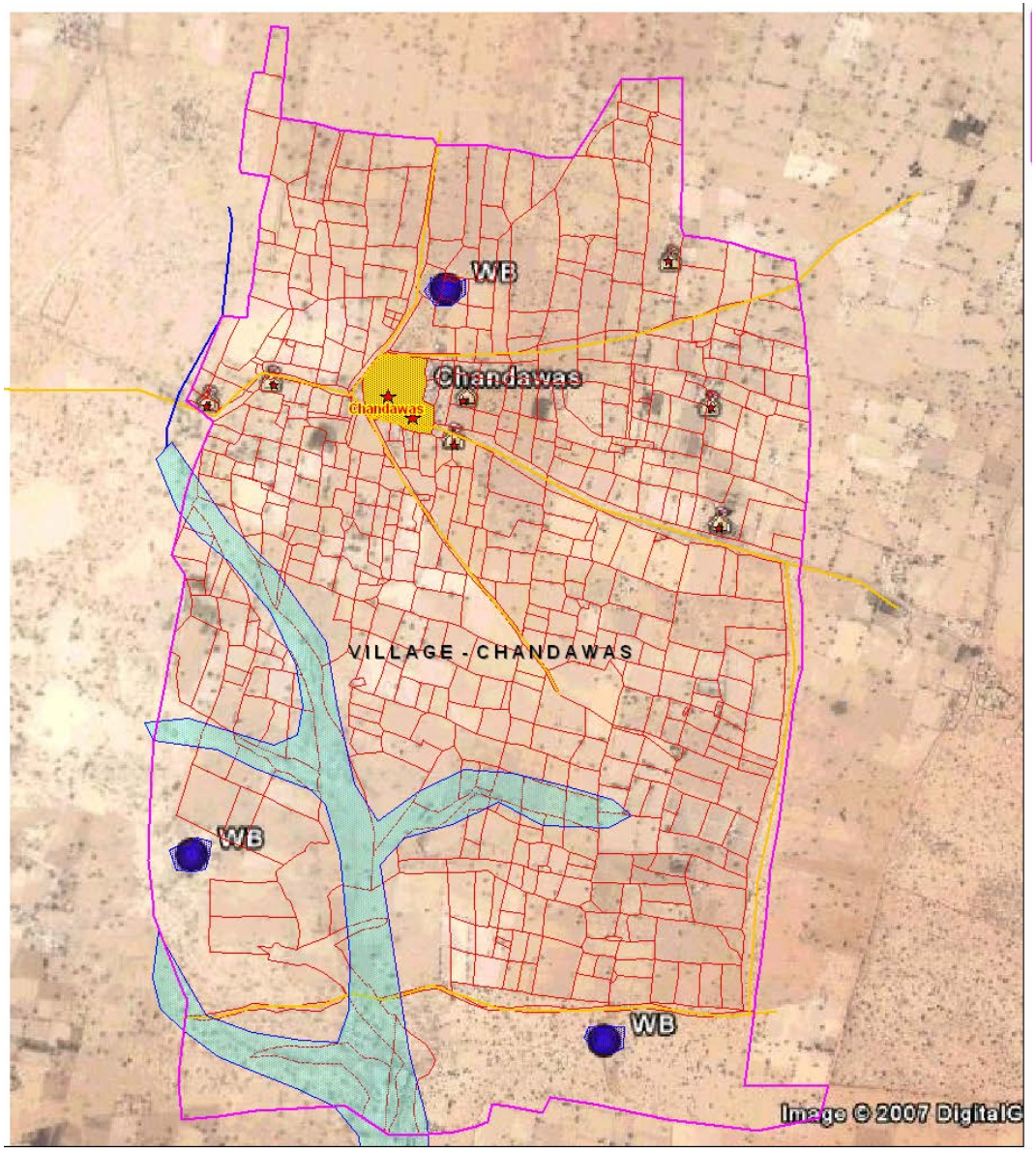

IKEA WATER PROJECT
MICRO WATERSHED - CHANDAWAS
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
Chandawas
VILLAGE - CHANDAWAS
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

BAGRU WATER PROJECT
MICRO WATERSHED - CHANDAWAS
Satellite Image MAP
(Year - 2007)



LEGEND
- Village Boundary
- Fields Boundary
- Main Village

Settlement Status
- Main Village
- Dhani
- Settlements
- Roads/ Pathway

Drainage Network
- Drains
- Bandi River
- Existing Pond/ Nadi

Figure No.-5

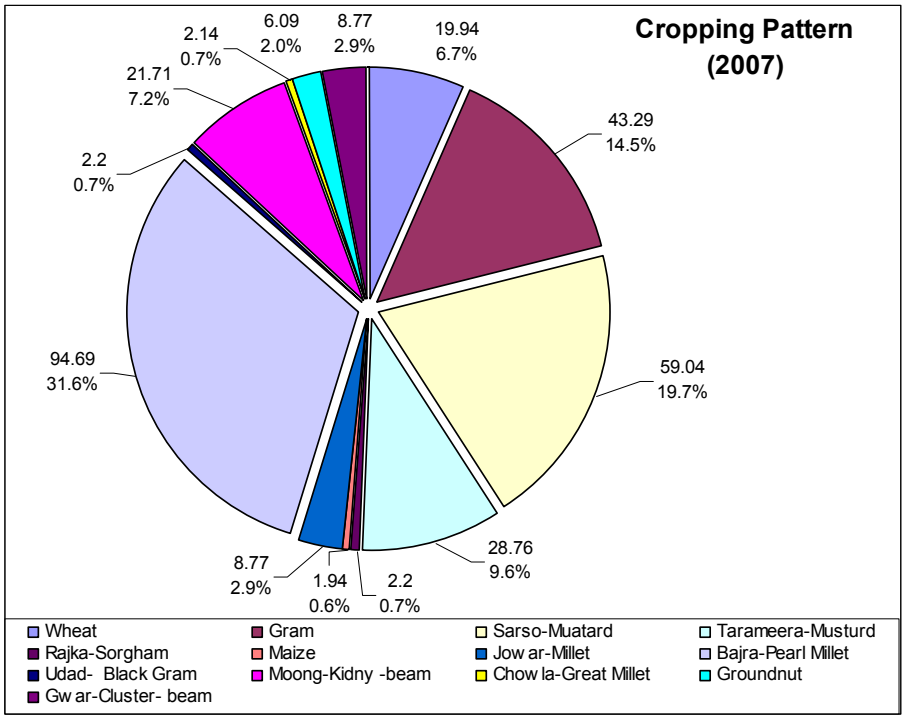
Source: Google Earth Year – 2007 and Field Survey

Cropping Pattern:

In Chandawas village the type of crops sown in different seasons recorded during the base line survey are tabulated below and the graph represent the current scenario about the copping pattern in the village

S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
21.	Wheat	Rabi	4.5	March	15.94	4.00	19.94
22.	Gram	-do-	4	March	0.0	43.29	43.29
23.	Sarso-Muatard	-do-	4	Feb.-March	11.70	47.34	59.04
24.	Tarameera-Musturd	-do-	4	Feb.-March	0.0	28.76	28.76
25.	Rajka-Sorgham	-do-			0.0	2.20	2.20
26.	Maize	Kharif	3	Sep.	0.0	1.94	1.94
27.	Jowar-Millet	-do-	4	Sep.	0.0	8.77	8.77
28.	Bajra-Pearl Millet	-do-	4	Oct.	0.0	94.69	94.69
29.	Udad- Black Gram	-do-	4	Oct.	0.0	2.20	2.20
30.	Moong-Kidny -beam	-do-	3	Sep.	0.0	21.71	21.71
31.	Chowla-Great Millet	-do-	3	Sep.	0.0	2.14	2.14
32.	Groundnut	-do-	4	Oct	0.0	6.09	6.09
33.	Gwar-Cluster-beam	-do-	4	Oct-Nov.	0.0	8.77	8.77
Total					**27.64**	**271.9**	**299.54**

According the data it could be well concluded that Bajra – Pearl Millet (31.6%) is the major crop in all the three seasons in the area followed by Sarso - Mustard (19.7%) and gram (14.5%).



Wheat requires irrigation at regular interval hence it is cropped in area where irrigation facilities exists. Jo-Barley is also sown in the area where irrigation facilities exist. Other crops are dependent on rain fed irrigation. Hence rainfall plays major role in the village economy as production is largely dependent on it.

***Water Resource Profile*:**

Physiography: The general ground profile is

flat and having gentle slope towards south direction. The runoff water during rainfall period follows ground slope and drains in to Bandi River flowing at the south of the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: The drainage system of the Chandawas follows north to south direction. There are one distinct natural drain with gentle slope and wider bed width. These natural paths are obstructed by agricultural fields and at most of the places it has been completely destroyed. In present condition at most of the places drainage system follows the path way/ village katcha-roads. Figure No. 6 a gives a clear view of the drainage pattern in village Chandawas.

Water Sources: The existing water resource status can be well represented by following and table:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	38	3	41
Bore well	-	-	-
Hand pumps	3	-	3
Village Ponds	-	1	1

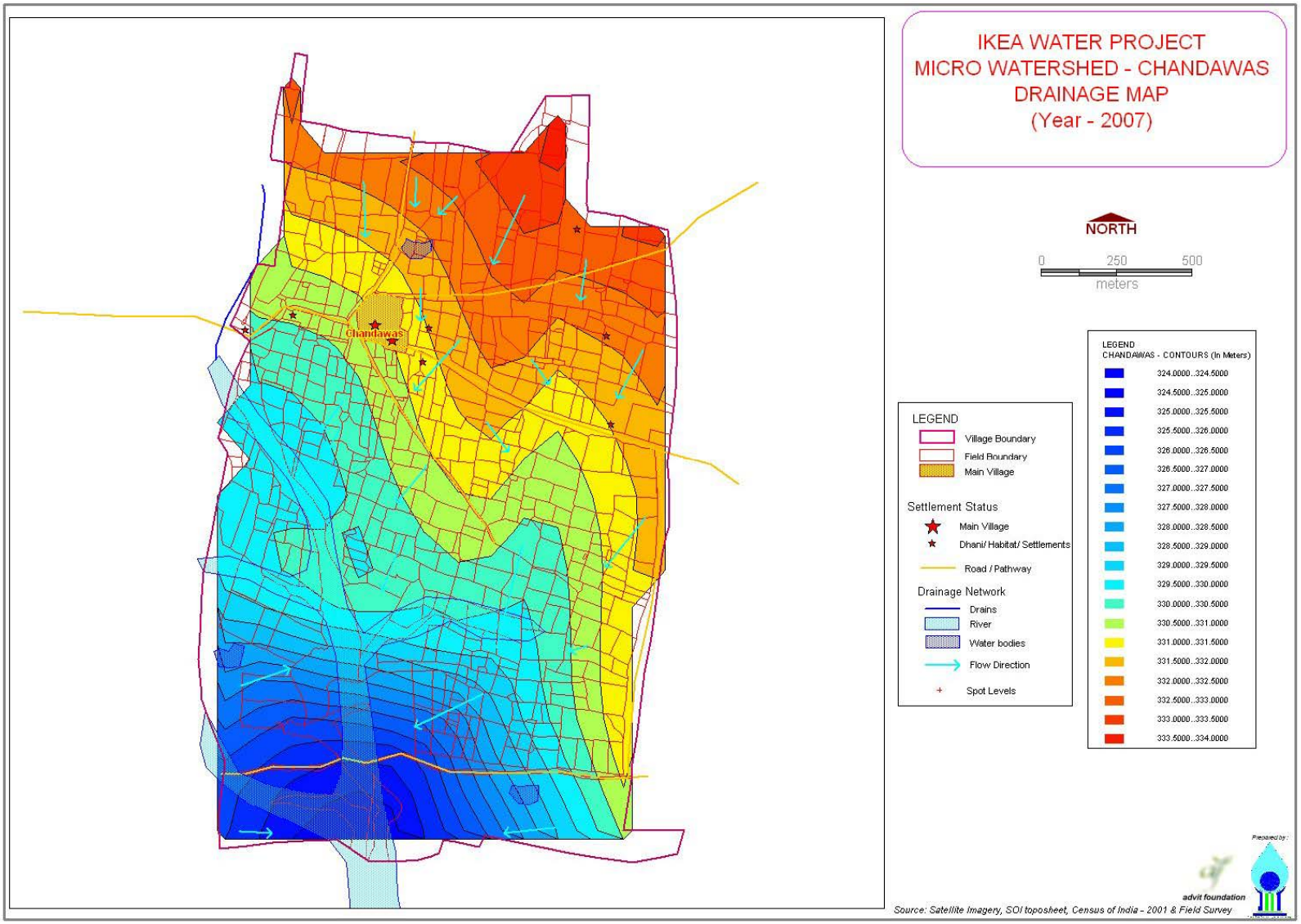
Following important points were observed during baseline study in village Chandawas:

- Most of the wells dry up in the summer season. Also the yield of groundwater has reduced considerably since past few years.
- Salinity in groundwater has increased many folds since few years which also increase with depth. Fluoride concentration has also increased in the village.
- Rock formations are exposed near the drain bed and depth to bed varies upto 45' from the ground level at different field locations.

Drinking Water Sources: Public Health Engineering Department (PHED) has not installed any Regional Water Supply Scheme in village Chandawas. The hand pumps installed in the village are functional but yield saline water. This water is used for secondary purposes other than drinking for both human and cattle population. Open wells near some depression and at village pond yield sweet water and the population nearby draw drinking water from those wells. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to search alternate sources, which are often at long distances to get the sufficient quantity of drinking water.

Irrigation Water Sources: Out of total 41 wells about 38 are in functional state. Most of them dry up in summer season. The depleting trend of water table would result in dry up condition of most of the wells in coming years. The prime use of well in the fields are for irrigation and drinking of the owner family and nearest community members as it is less saline than water from hand pump.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting drinking water sources scenario in the village Chandawas.


IKEA WATER PROJECT
MICRO WATERSHED - CHANDAWAS
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
Chandawas
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
CHANDAWAS - CONTOURS (In Meters)
324.0000..324.5000
324.5000..325.0000
325.0000..325.5000
325.5000..326.0000
326.0000..326.5000
326.5000..327.0000
327.0000..327.5000
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331.5000..332.0000
332.0000..332.5000
332.5000..333.0000
333.0000..333.5000
333.5000..334.0000
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

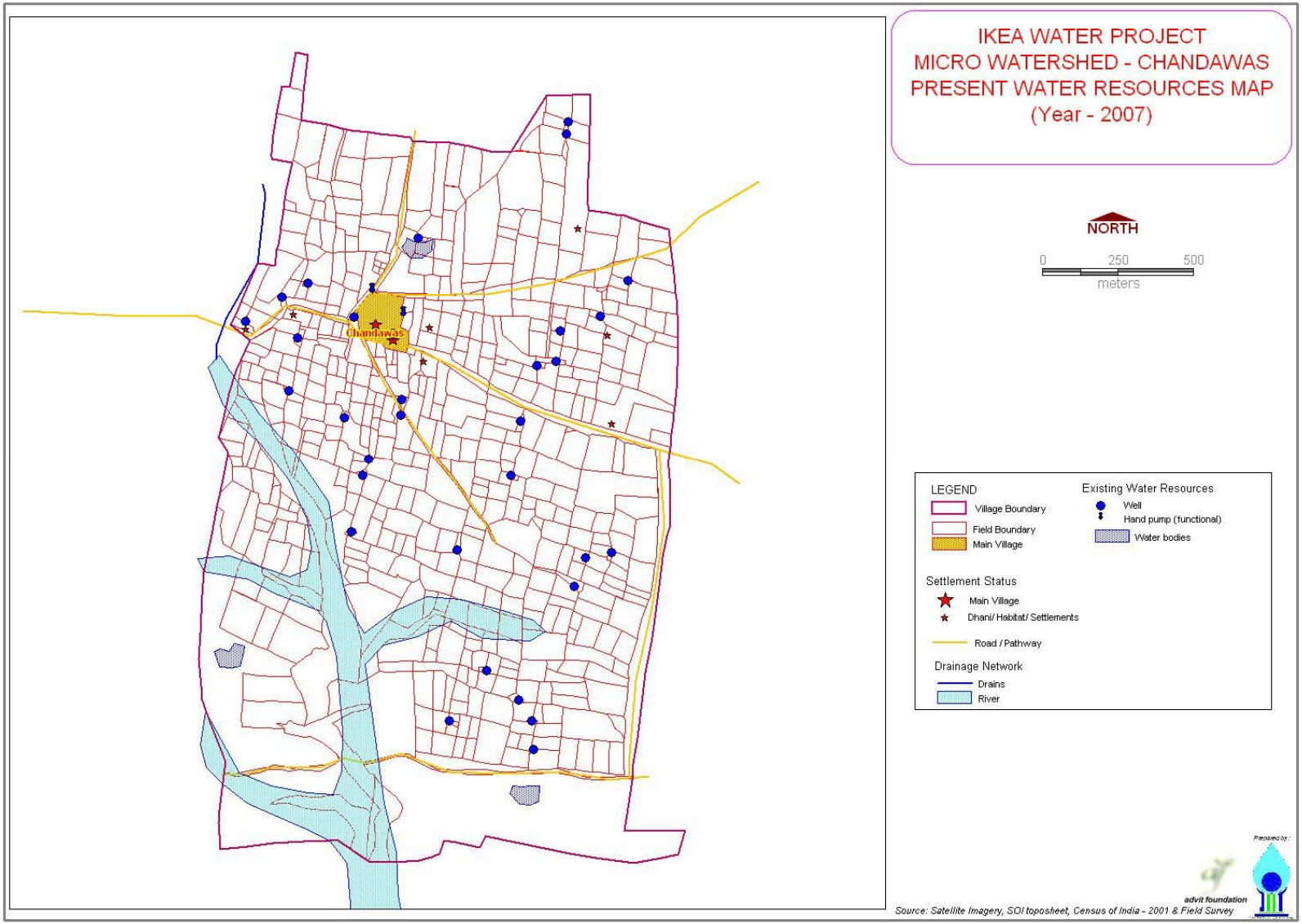

IKEA WATER PROJECT
MICRO WATERSHED - CHANDAWAS
PRESENT WATER RESOURCES MAP
(Year - 2007)
NORTH
0
250
500
meters
Chandawas
LEGEND
Village Boundary
Field Boundary
Main Village
Existing Water Resources
Well
Hand pump (functional)
Water bodies
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

The entire village area can be subdivided in to three micro-watersheds draining towards south direction. Watershed numbers and the geographical area in each watershed are calculated and reflected in the following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	109.7664
Watershed no.-2	137.1536
Watershed no.-3	27.5010
Total	**274.421**

All the watersheds in village Chandawas are having equal profile. Intensity of irrigation is quite similar. Groundwater quality and availability is also not different. Proposed Urbanisation i.e., colonization by the government authorities and private builders are going to affect the drainage and land-use system in coming years.

Proposed Activities: All possible interventions were discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal) for the village Chandawas. Also, these agreed activities were assured by the village community by giving full support in implementation and further maintenance.

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields	• Micro-watershed No.-1	• **Cluster-1**: About 2500m field bunds spread over 80 Fields just south of the main village (field no.-305 to 386)
		• Construction of small tanks/ ponds at agricultural farm.	• Micro-watershed No.-1	• **Cluster-1**: Five farm tanks at suitable locations (field no.-305 to 386)
2	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.- 66 (About 300m North of main village)
		• Construction of Roof Top Rainwater Harvesting System	• Micro-watershed No.-4	• At Community (Panchayat) Building in main village

Numbers/ quantities of proposed activities for village Bheempura are summarized in following table:

S. No.	Activities	Numbers/ Details
1	Roof Top Rainwater Harvesting System	1 No.'s
2	Nadi construction/ renovation	1 No.'s
3	Farm Tanks/ ponds	5 No.'s
4	Farm Field Bunding	2500 Meters

The location of the proposed activities are shown in figure no.- 9

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200000.00**
2	Nadi construction/ renovation	1	No.'s	Lumpsum	**200000.00**
3	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50000.00	**250000.00**
4	Farm Field Bunding	2500	Meters	30.00	**75000.00**
				GRAND TOTAL	**725000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

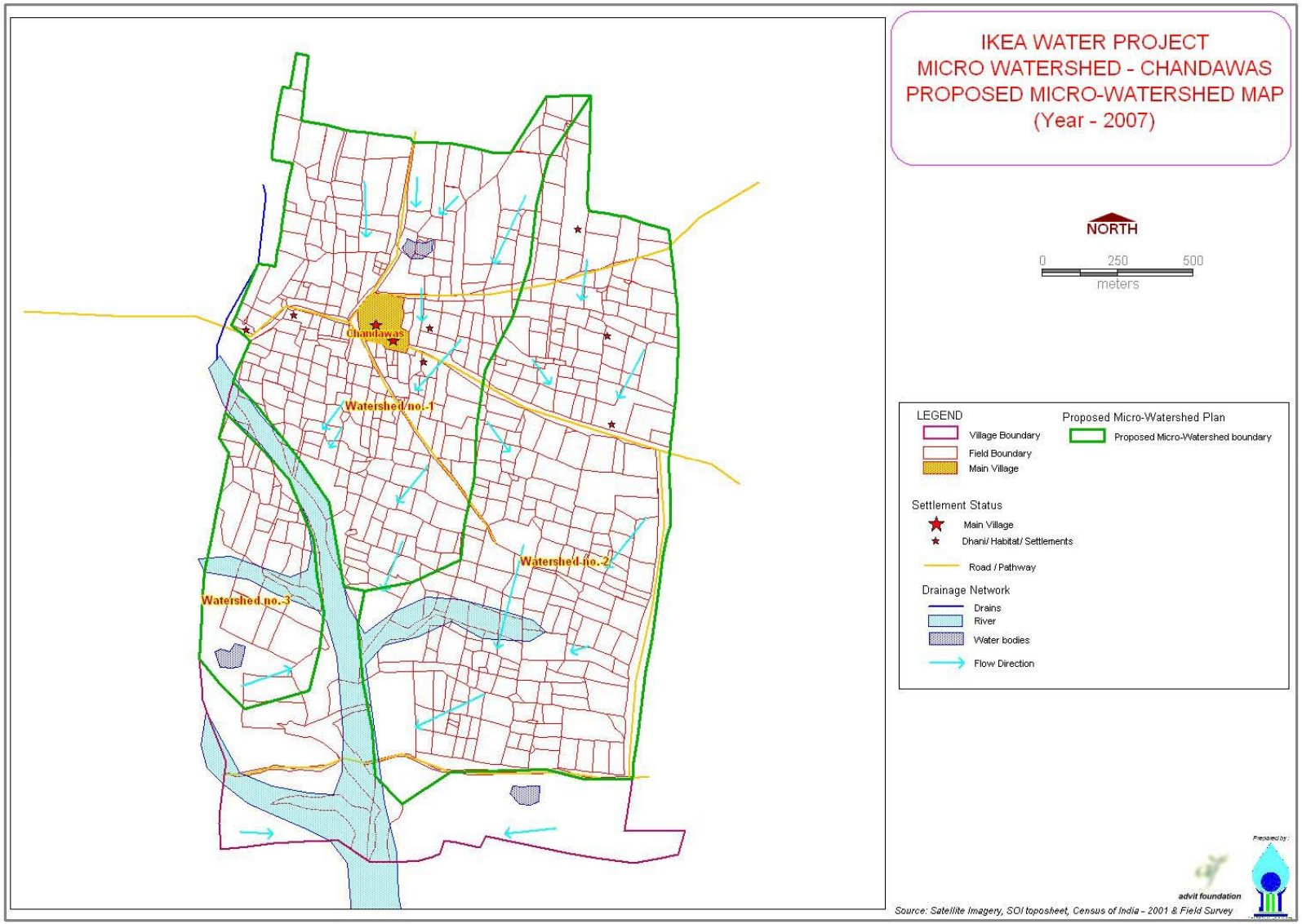

IKEA WATER PROJECT
MICRO WATERSHED - CHANDAWAS
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
Chandawas
Watershed no.-1
Watershed no.-2
Watershed no.-3
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

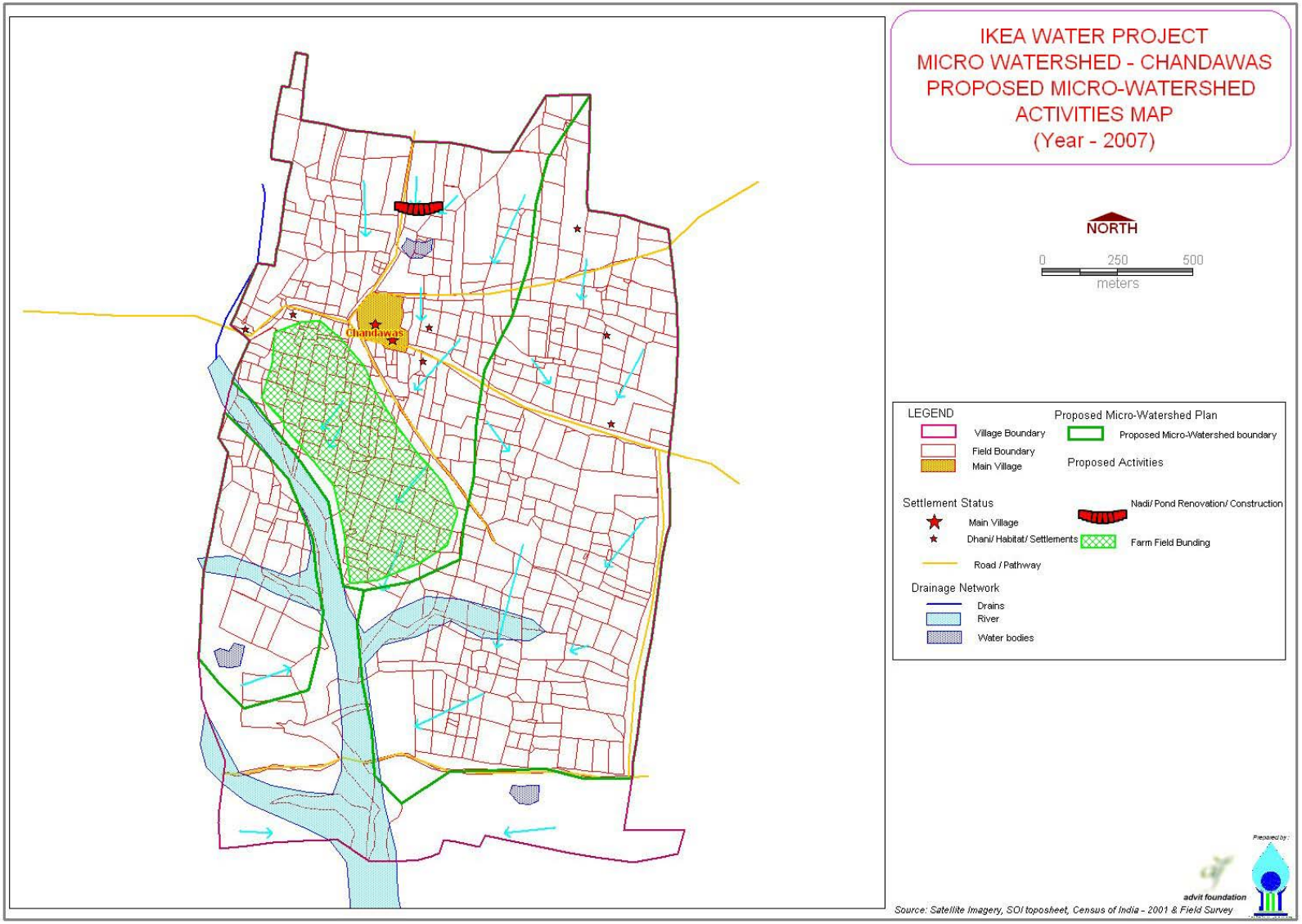

IKEA WATER PROJECT
MICRO WATERSHED - CHANDAWAS
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
NORTH
0
250
500
meters
Chandawas
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Proposed Activities
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Nadi/ Pond Renovation/ Construction
Farm Field Bunding
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE - GOHANDI

Village Location

Gohandi village is located at 75^{0}35'35.52" east longitude and 26^{0}41'15"north longitude with a geographical area of 819 hectare at about 43 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Gohandi w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**23 km**
Distance from Block HQ:	=	**21 km**
Type of approach road to the village: *(Pacca Road)*		=
0 km		
Distance of village from district HQ	=	**43 km**
Nearest market & its distance from the village: *(Renwal)*		=
8 km		
Distance to nearest Middle School		<
5 km		
Distance to nearest College		>
10 km		
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 282 families (as per baseline survey – 2007) residing in the village Gohandi which are spread up in main village and one dhani (hamlet) located inside the village boundary (refer fig.- 1 and 2)

F. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	1042	Total House Holds	282
Total male Population	566	SC House Holds	51
Total Female Population	476	ST House Holds	3
Child Population (0-6 yr)	229		

The sex ratio in Gohandi village is 841 females per 1000 males. The child population is about 21.98% of the total population. SC community leads in households with more than 25% households in the village Gohandi.

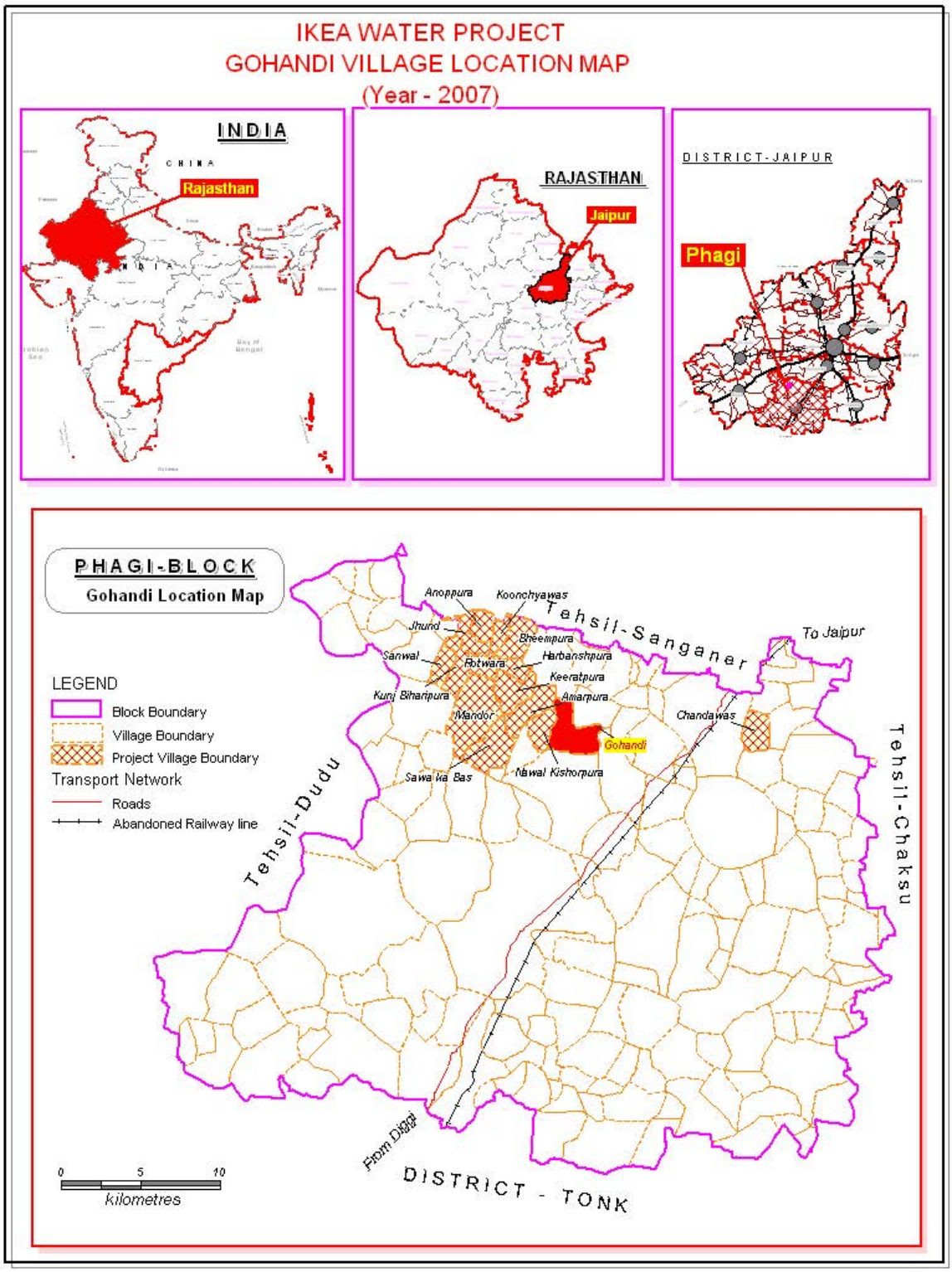

IKEA WATER PROJECT
GOHANDI VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Gohandi Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Harbanshpura
Sanwal
Rotwara
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Gohandi
Chandawas
Sawai ka Bas
Nawal Kishorpura
Tehsil-Sanganer
To Jaipur
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0
5
10
kilometres

Figure No.-1

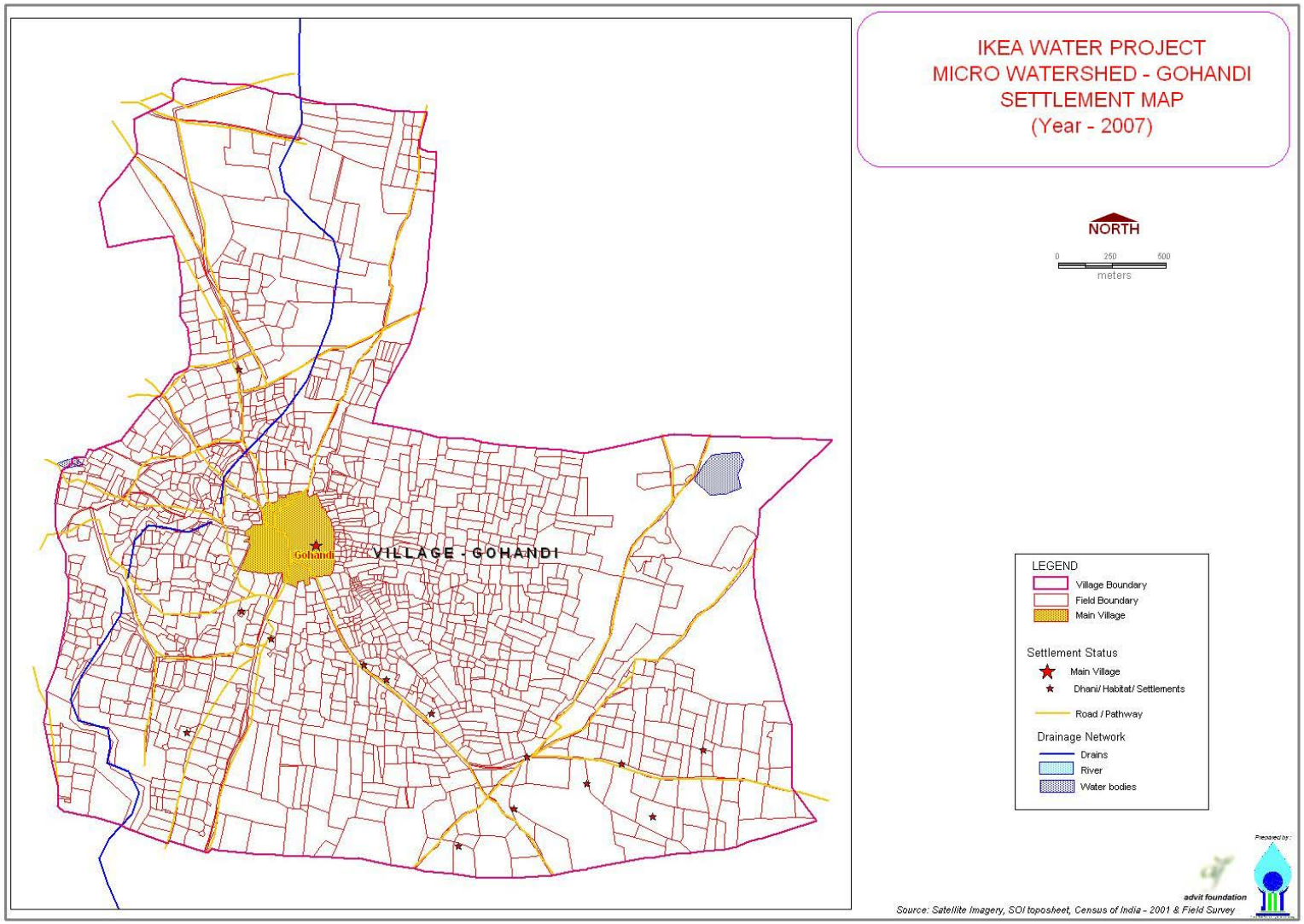

IKEA WATER PROJECT
MICRO WATERSHED - GOHANDI
SETTLEMENT MAP
(Year - 2007)
NORTH
0
250
500
meters
Gohandi
VILLAGE - GOHANDI
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2


Village Gohandi
Gohandi Phagi Jaipur (Rajasthan)
N
W
E
S
दरोगा की ढाणी
ज्ञानकी नाथपुरा का रास्ता
अमरपुरा का रास्ता
नवलकिशोर पुरा
रैगरो का मौहल्ला
खातीयो का मौहल्ला
यादवों का मौहल्ला
School
D
ब्राह्मणों का मौहल्ला
इन्द्रा कॉलानी
PP
GP
मालीयो का मौहल्ला
हरसूलिया रोड
आनन्दपुरा
लदाना का रास्ता
नेताजी की ढाणी
कजोड कुमावत की ढाणी
घर
स्कूल
डेयरी
मन्दिर
सामूदायिक भवन
प्राथमिक स्वास्थय केन्द्र
हैण्डपम्प
नाड़ी तलाई
पानी की टंकी
पटवारी भवन
ग्राम पंचयात भवन

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

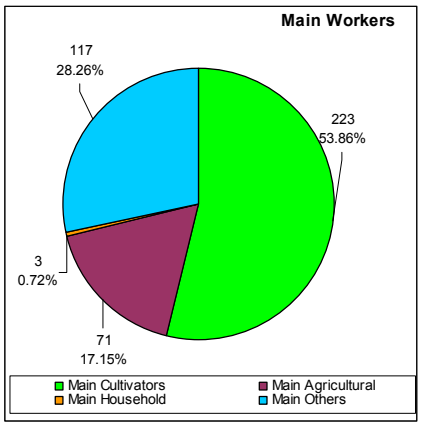
- Overall Literacy rate is 46.93%. Male literacy rate is 57.95% while female literacy rate is 33.82%.
- There is one government primary school and Middle school and no college facility exists in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- A community health worker except other health facilities is available in the village.

- **Work and Work force**

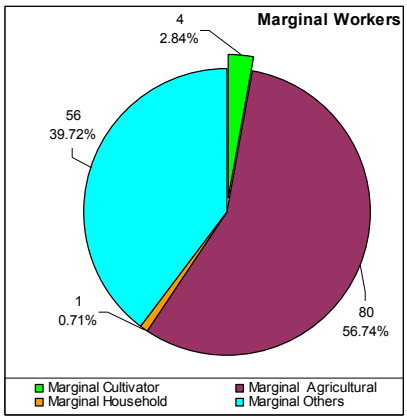
The workers population (As per census-2001) available in the village Gohandi can be tabulated as below:

		In Numbers	*In % to total population*
A.	**Main Worker Population**		
	Male Worker	289	51.06%
	Female Worker	266	55.88%
	Total Workers	**555**	**53.26%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	22	3.89%
	Female Marginal Worker	119	25.00%
	Total Marginal Workers	**141**	**13.53%**
C	**Non Worker Population**		
	Male Non Worker	277	48.94%
	Female Non Worker	210	44.12%
	Total Non Workers	**487**	**46.74%**

Details of workers classification is explained in the following paragraphs:



Main Workers: In Gohandi village total main workers population is about 39.73% of the total population. Females lead the male in main workers population in % to their respective total population.



Marginal Workers: The marginal workers population is well represented by the following graph.

Cultivator: About 53.86% of main worker population is engaged in cultivator work in the village itself. Similarly in Marginal workers category only 2.84% marginal workers are engaged in cultivation field.

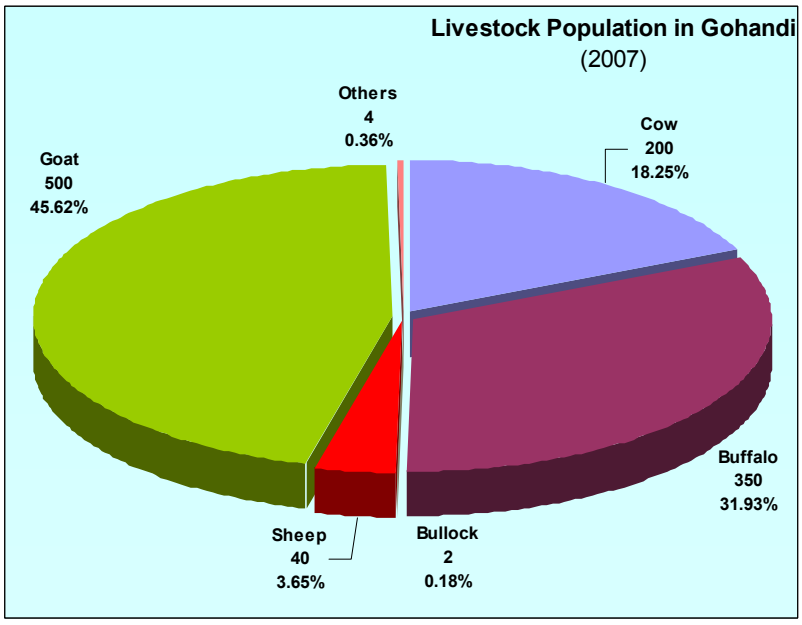
Agricultural Labourer: In Gohandi village lesser number i.e. 17.15% in main workers and considerable size i.e. 56.74% in marginal workers are engaged in this category of work.

Household Industry Workers: In Gohandi village almost negligible number of people is engaged in household works.

Other Worker: About 28.26% in main worker and 39.72% in marginal worker category are engaged in this type of work category. In this category Males population leads the female population.

Livestock

The base line survey carried out in Gohandi village indicates that total of 1096 cattle are variably distributed among 282 families living in the village.
Goats are the major contributor (about 45.62%) to the livestock population. Buffaloes and cows amount to half (50%) of the cattle population, primarily utilised for dairy purpose (milk production).

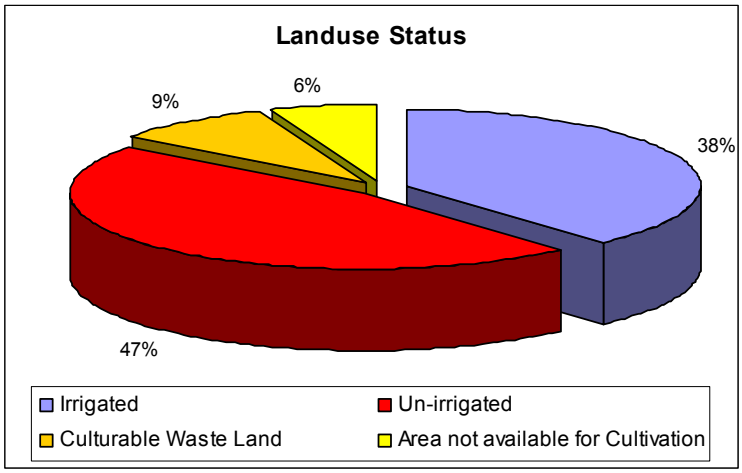


Following graph represent the category-wise cattle population in the village Gohandi.

Land-Use Pattern:

The major part of the village economy is agricultural dependent. Most of the land available is being put to agricultural activities. According to broad classification out of the total land 38% is irrigated (by tube wells) and about 47% land falls in the category of un-irrigated land. About 9% of the land is culturable waste land in the village Gohandi. Following graph represent the status of land utilization in village Gohandi.

Further, about 53 hectare land is permanent pasture land and 46 hectare is government waste land. There is no panchayat and other category land available in the village. Cultivable fallow land or private waste land is about 38 hectare. Looking to the statistics and graph there are ample oppertunities in the field of agricuture. Increase in irrigation facilities could result in more cropped area in the village.
Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Gohandi.

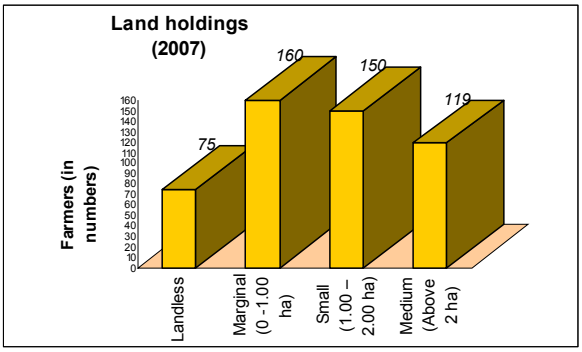


Satellite image map well reflects the existing land-use features in different textures is shown in figure no. - 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

Land Holdings

The base line survey data indicate that out of 504 farmers in the village about one third (14.88% i.e. 75 no.'s) farmers are landless. About 23.61% farmers (119 no.'s) have more than 46% of the total landholdings in the village.

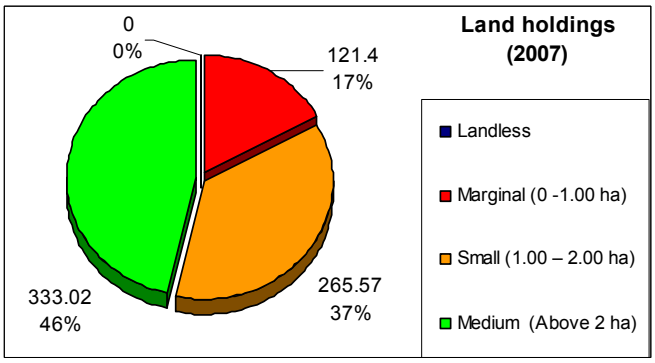
Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 37% of the total geographical area of the village. Marginal farmers (0 to 1.00 ha.) have lands about 17% of the total area of the village Gohandi.

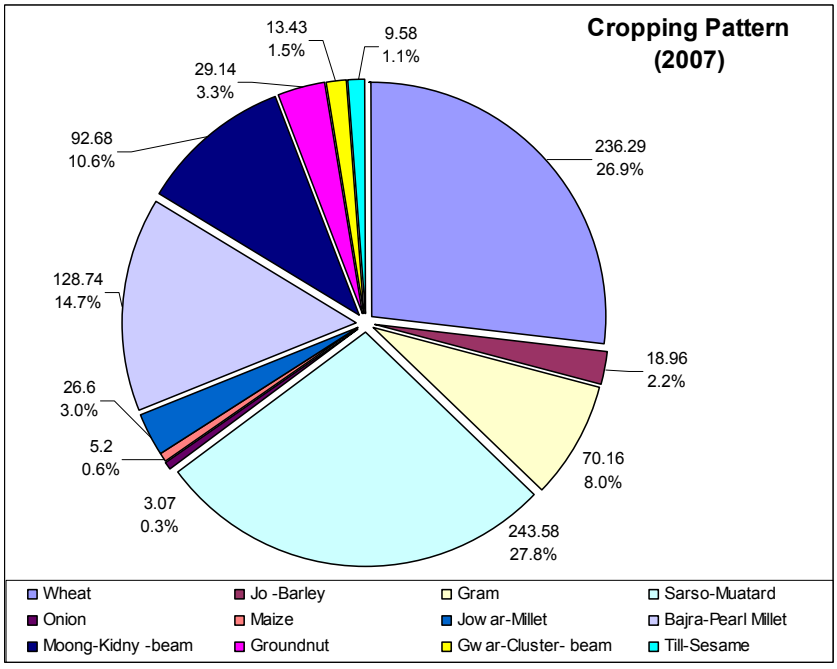


Category-wise numbers of farmers and their land holdings are presented in the following graphs.

Cropping Pattern

In Gohandi village the type of crops sown in different seasons recorded during the base line survey are graphed and tabulated below:
According the data Sarso-Mustard (27.8%) is the major crop in all the three seasons in the area followed by Wheat (26.9%) and Bajra-Pearl Millet (14.7%).
As the majority of the crops are dependent of rain fed irrigation, rainfall plays major role in the village economy.





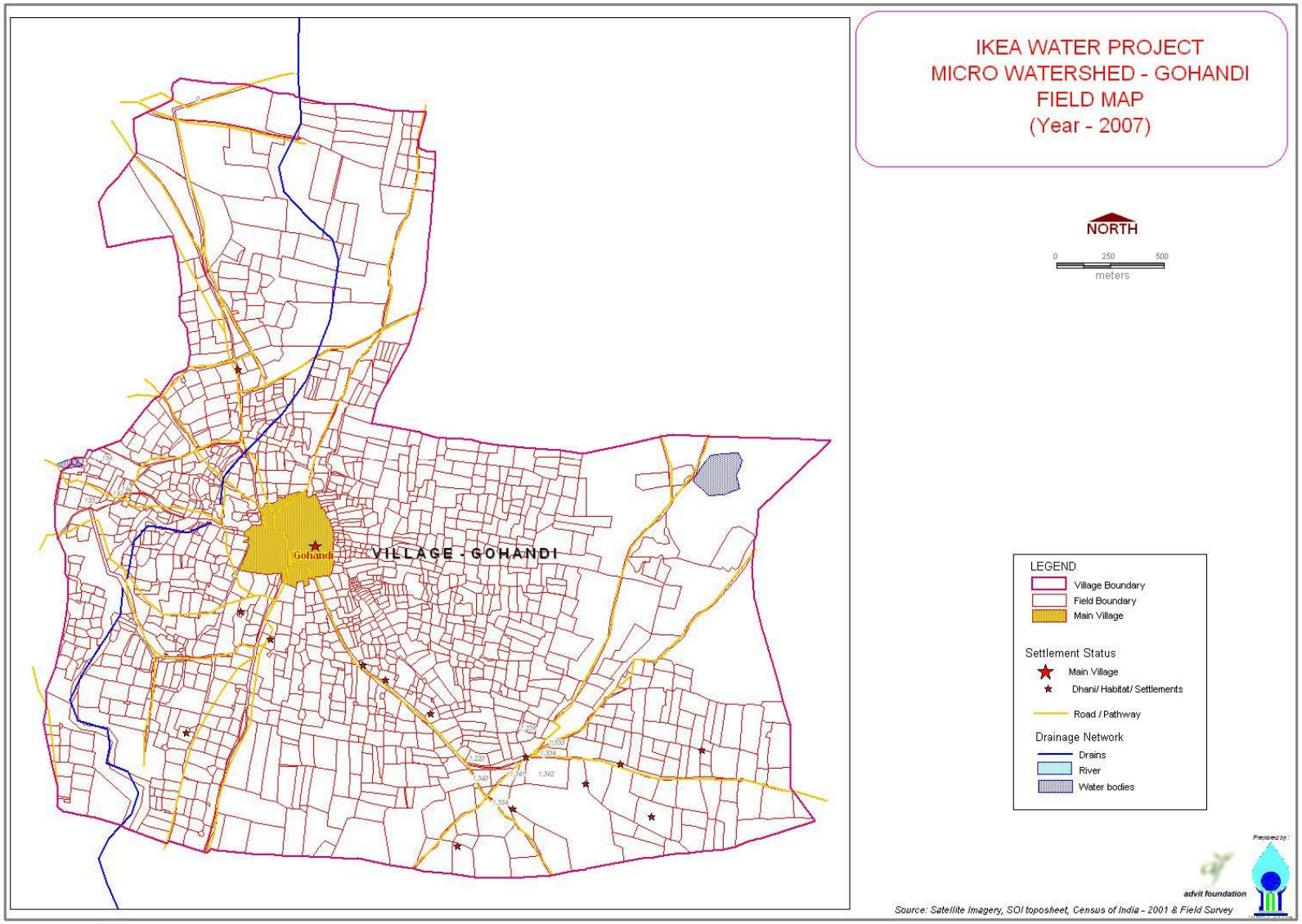

IKEA WATER PROJECT
MICRO WATERSHED - GOHANDI
FIELD MAP
(Year - 2007)
NORTH
0 250 500
meters
VILLAGE - GOHANDI
Gohandi
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

BAGRU WATER PROJECT
MICRO WATERSHED - GOHANDI
Satellite Image MAP
(Year - 2007)

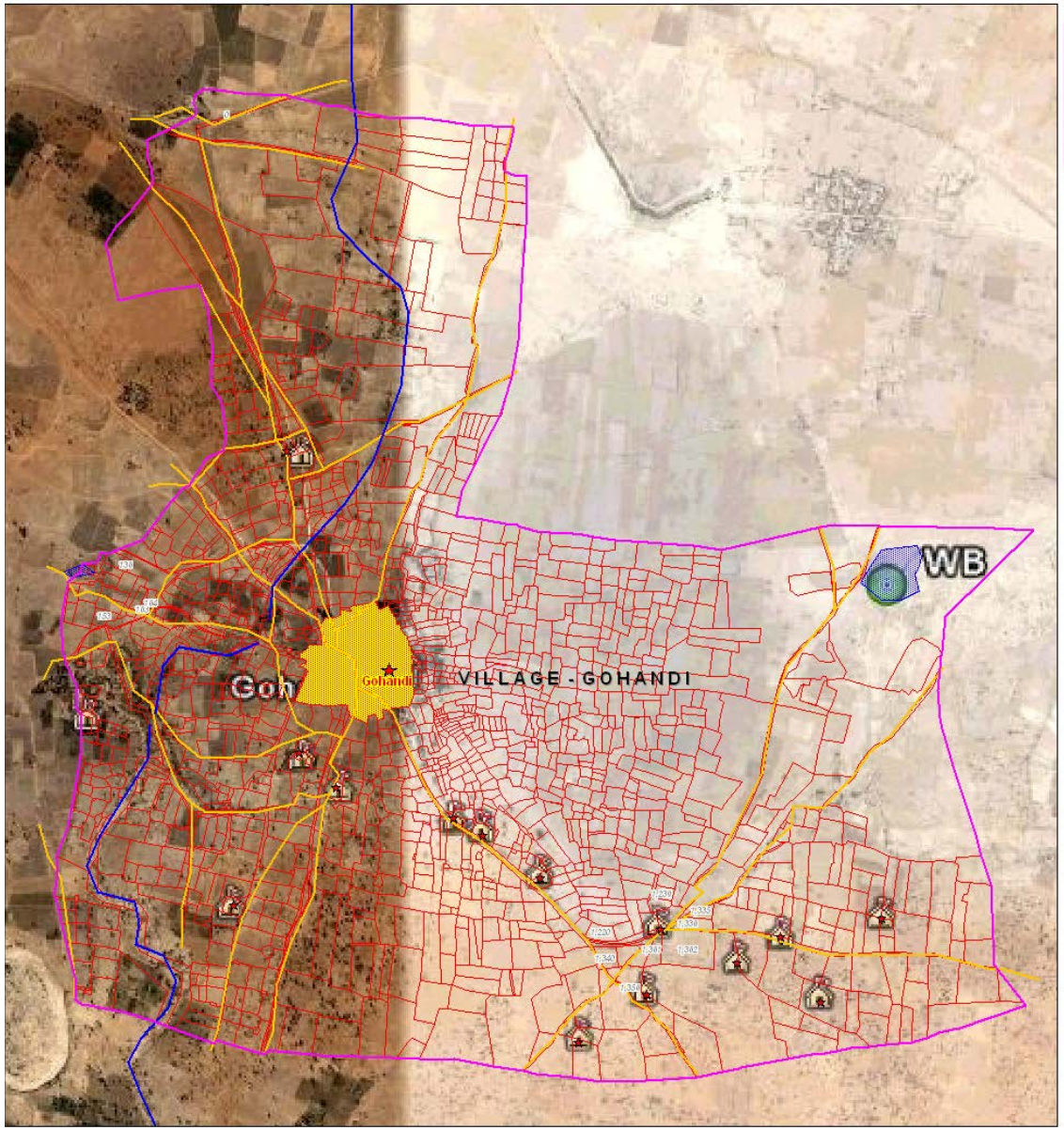


Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
34.	Wheat	Rabi	4.5	March	158.36	77.93	236.29
35.	Jo -Barley	-do-	4	March	18.96	0.0	18.96
36.	Gram	-do-	4	March	0.0	0.0	70.16
37.	Sarso-Muatard	-do-	4	Feb.-March	80.02	163.56	243.58
38.	Onion	-do-			3.07	0.0	3.07
39.	Maize	Kharif	3	Sep.	1.28	3.92	5.2
40.	Jowar-Millet	-do-	4	Sep.	0.0	26.60	26.60
41.	Bajra-Pearl Millet	-do-	4	Oct.	0.0	128.74	128.74
42.	Moong-Kidny - beam	-do-	3	Sep.	2.35	90.33	92.68
43.	Groundnut	-do-	4	Oct	2.55	26.59	29.14
44.	Gwar-Cluster-beam	-do-	4	Oct.-Nov.	0.0	13.43	13.43
45.	Till-Sesame	-do-	3.5	Oct.	0.0	9.58	9.58
Total					**266.59**	**540.68**	**877.43**

Water Resource Profile:

Physiography: The general ground profile is flat in general and having gentle slope. There are two high level local points, one at center and another at south-west of the village the village. Also two local depressions are also present on the village causing accumulation of the runoff water.

Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets and field survey generated by GIS based modeling software.

Drainage pattern: The drainage system of the Gohandi largely dependent on local conditions. Runoff from all the area drain towards the two distinct depressions. One distinct natural drain flows from north to south direction connecting the two depressions and joins to the Bandi River in the south of the village. The natural pathways are obstructed by agricultural fields and at some of the places it has been completely destroyed. In present condition at most of the places drainage system follows the path way/ village katcha-roads.

Figure No. 6 a gives a clear view of the drainage pattern in village Gohandi.

Water Sources: The water resource status in the village Gohandi can be well represented by following table:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	200	-	200
Bore well	-	-	-
Hand pumps	4	-	4
Village Ponds	-	1	1

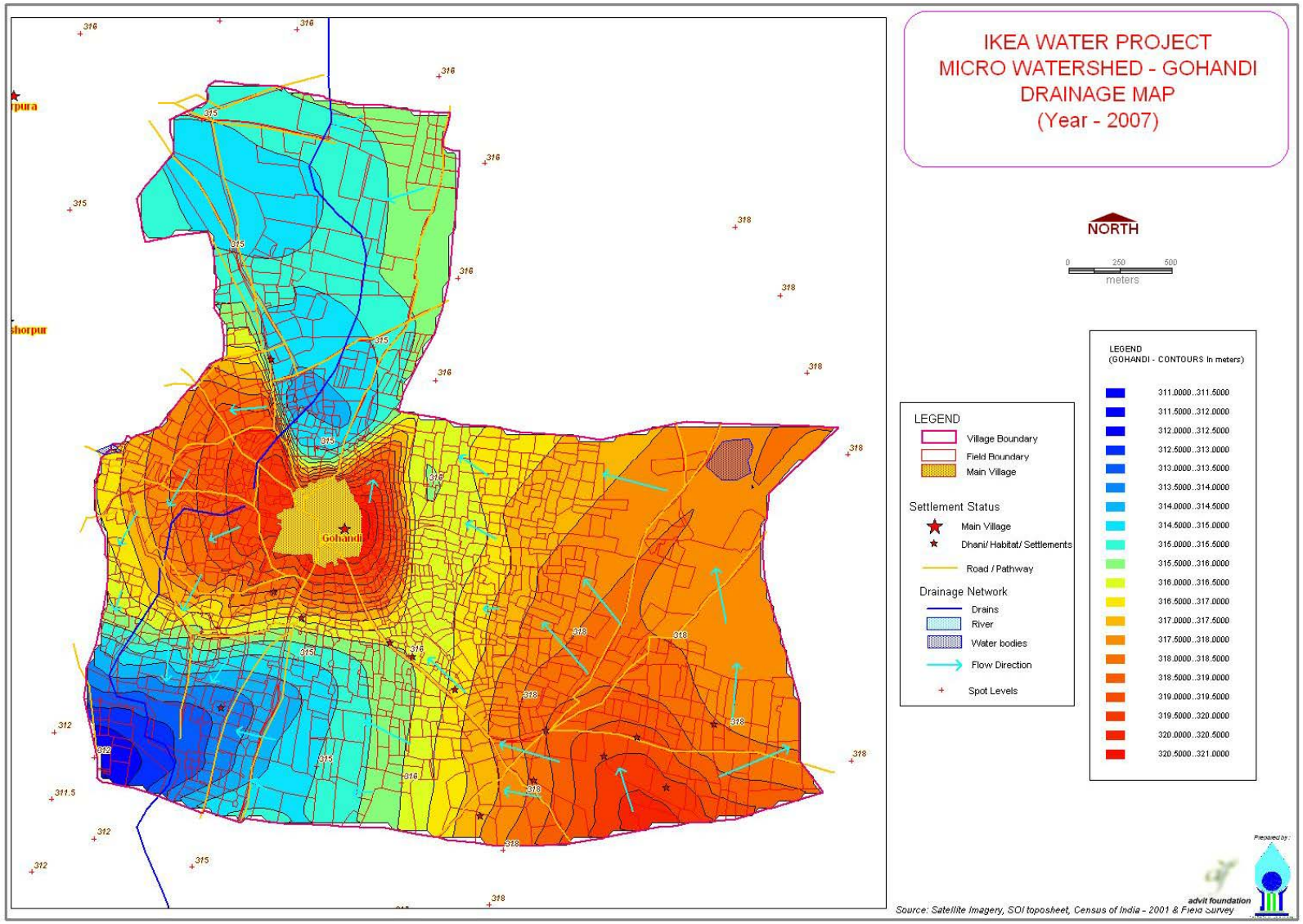
According to the baseline study followed by field survey it was found that:

- Water table in most of the wells depleted considerable in the summer season. Also yield in lesser quantity since last decades.
- Depth to water table varies from 12' to 65' depending upon its location.
- Rock formations are visible at depth varying from 0' to 45' from the ground level at different locations.

Drinking Water Sources: Public Health Engineering Department (PHED) has installed Regional Water Supply Scheme in village Gohandi. Although the scheme is functional but people do not prefer it for drinking as it contains high fluoride (> 3ppm) and taste salty.. The hand pumps installed in the village are functional but have quality problems. This water is preferred for secondary uses (other than drinking) by both human and cattle population. Open wells near depressions do yield sweet water and the entire population draw drinking from such sources. The numbers of such sources are sufficient to cater entire drinking water need of the village population at present but in coming years for extreme summer period people will have to identify alternate sources to get the sufficient quantity of drinking water as the water table is depleting quite fast.

Irrigation Water Sources: Out of total wells about 200 are in functional state. The prime use of these well are for irrigation. The farmers generally dug open bore in the bed of the open well to draw water with help of diesel engine. The operating hours of this set depends upon the irrigation water requirement, recoup time of water. Generally the recovery time varies from 24 hours to 3 hours depending upon its location. Old big village pond plays an important role in groundwater recharge and its availability. Since past few years this pond has not been filled to its capacity due to lesser rainfall and obstructed catchment area resulting lesser recharge to nearby well in the region. This has started affecting adversely the irrigation water availability in the village and thus the crop production.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting drinking water sources scenario in village Gohandi.


IKEA WATER PROJECT
MICRO WATERSHED - GOHANDI
DRAINAGE MAP
(Year - 2007)
NORTH
0 250 500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
(GOHANDI - CONTOURS in meters)
311.0000..311.5000
311.5000..312.0000
312.0000..312.5000
312.5000..313.0000
313.0000..313.5000
313.5000..314.0000
314.0000..314.5000
314.5000..315.0000
315.0000..315.5000
315.5000..316.0000
316.0000..316.5000
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317.5000..318.0000
318.0000..318.5000
318.5000..319.0000
319.0000..319.5000
319.5000..320.0000
320.0000..320.5000
320.5000..321.0000
Gohandi
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

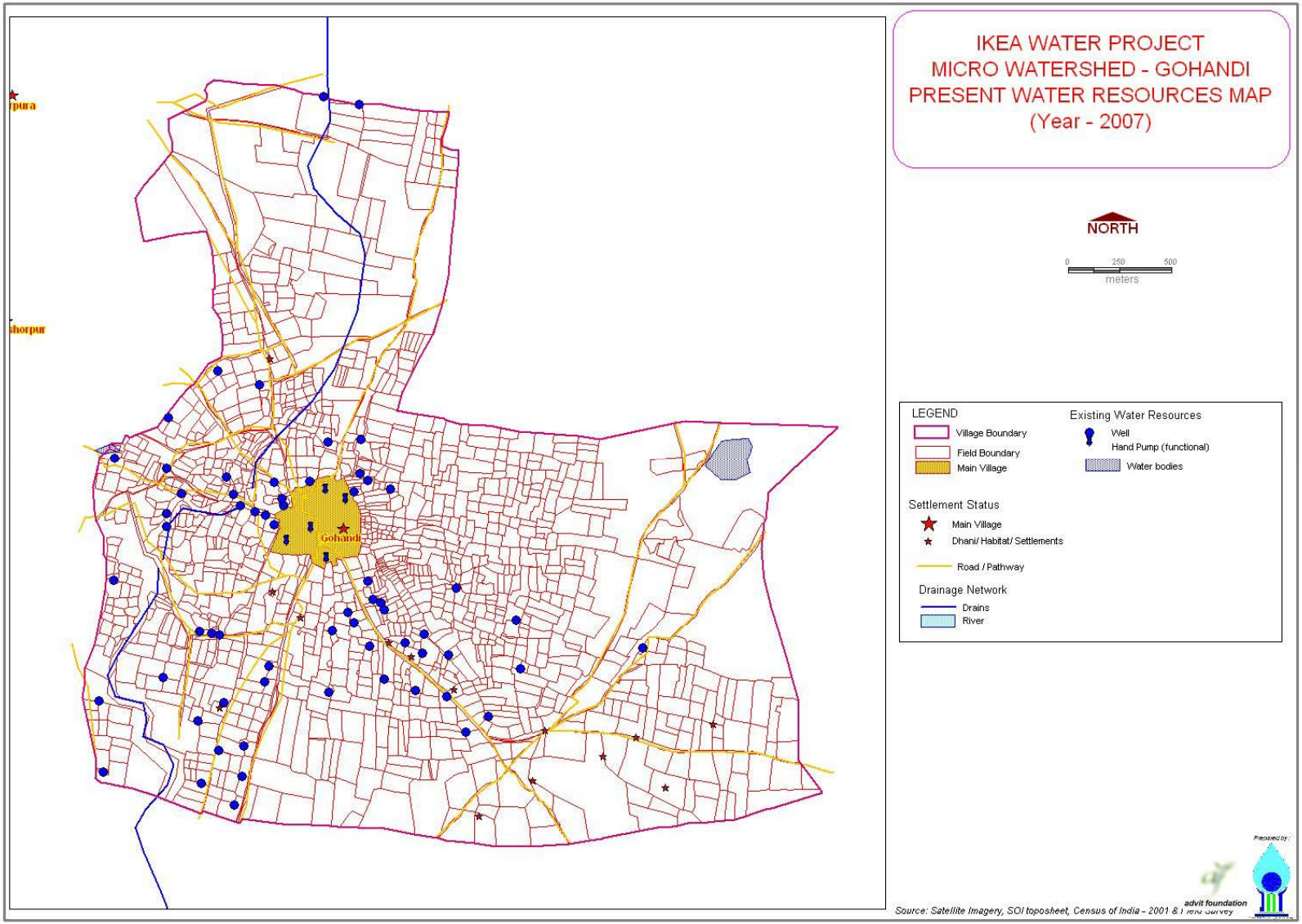

IKEA WATER PROJECT
MICRO WATERSHED - GOHANDI
PRESENT WATER RESOURCES MAP
(Year - 2007)
NORTH
0
250
500
meters
Gohandi
LEGEND
Village Boundary
Field Boundary
Main Village
Existing Water Resources
Well
Hand Pump (functional)
Water bodies
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 &

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to three micro-watersheds draining towards south direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	345.4187
Watershed no.-2	323.5246
Watershed no.-3	150.2420
Total	**819.1853**

All the three watersheds have similar characteristics as far as soil type and groundwater is concerned. The dark shed reflected in satellite imagery of year 2007 (refer fig. no.- 5) clearly indicate that agriculture practices (due to sustainable irrigation source) are more intense in those patches in watershed no.-1, 2 & 3.

The drainage system is comparatively well defined in watershed no.-1 as compare to other watersheds. Natural flow of runoff water from watershed no.-2 & 3 have been obstructed by the field boundaries hence the water flows through the pathways used for transportation. The watershed no-3 is at the bottom of the village and is quite clumsy.

Proposed Activities: As identifying of water harvesting activities on watershed basis was the main objective of the project a set of activities have been discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location envisaged during the project study shared and recommended by the local village community in Gohandi village:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Rainwater Harvesting on natural drainage**	• Construction of three check dams	• Micro-watershed No.-1	• Between Field (Khasra*) No.-500 and 501 • Near Field No.-427 • Field no.- 330 (Refer figure no.-9 for details)
2	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields	• Micro-watershed No.-2	• About 3500m field bunds spread over more than 540 Fields in east of main village. (Field no-700 to 1240)
		• Construction of small tanks/ ponds at agricultural farm.	• Micro-watershed No.-2	• Suitable location in area spread over more than 540 Fields in east of main village. (Field no-700 to 1240)
3	**Drinking/ Irrigation water**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.-217 (About 100m north west of main

	source			village)
			• Micro-watershed No.-2	• Field No.-1277 (Government common Land)
		• Construction of Roof Top Rainwater Harvesting System	• Micro-watershed No.-1	• At Community (Panchayat) Building in main village
4	**Pasture Land Development & Horticulture**	• Land grading and bunding. • Plantation of suitable plant/ fruit plant. • Linking with government horticultural scheme.	• Micro-watershed No.-2	• Field (Khasra) No.-1277 (Government common Land)

Numbers/ quantities of proposed activities are summarized in following table:

S. No.	Activities	Numbers/ Details	
1	Check dam construction	3	No.'s
2	Roof Top Rainwater Harvesting System	1	No.'s
3	Nadi construction/ renovation	2	No.'s
4	Farm Tanks/ ponds	5	No.'s
5	Farm Field Bunding	3500	Meters
6	Pasture Land Development	25	Hectare

The location of the proposed activities are shown in figure no.- 9

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Check dam construction (About 10m wide on main drain)	3	No.'s	10000.00 per meter	**300000.00**
2	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200000.00**
3	Nadi construction/ renovation	2	No.'s	Lumpsum	**400000.00**
4	Farm Tanks/ ponds (20000 Lt capacity)	5	No.'s	50000.00	**250000.00**
5	Farm Field Bunding	3500	Meters	30.00	**105000.00**
6	Pasture Land Development	20	Hectare	10000.00	**200000.00**
				GRAND TOTAL	**1455000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

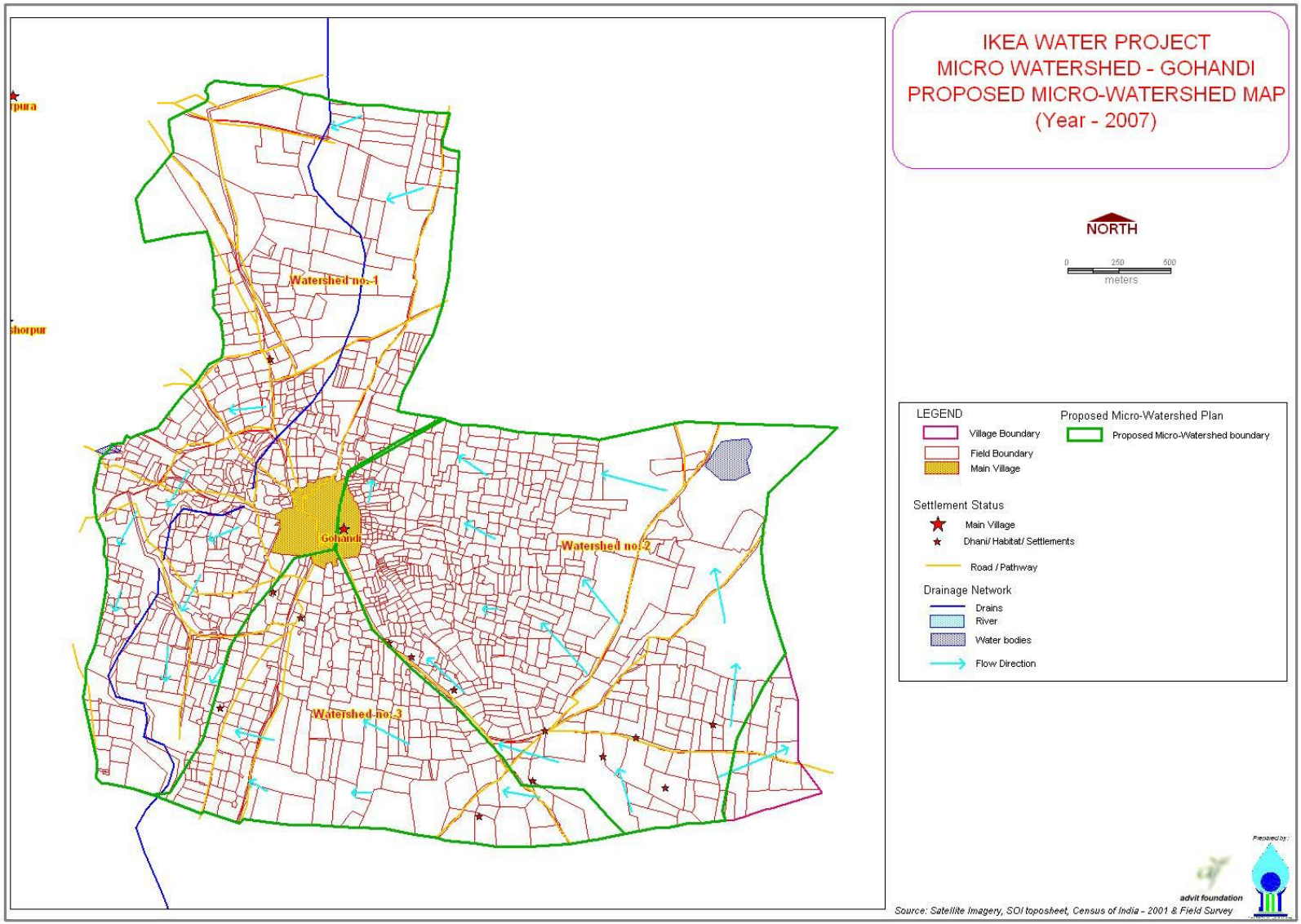

IKEA WATER PROJECT
MICRO WATERSHED - GOHANDI
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0 250 500
meters
Watershed no.-1
Watershed no.-2
Watershed no.-3
Gohandi
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

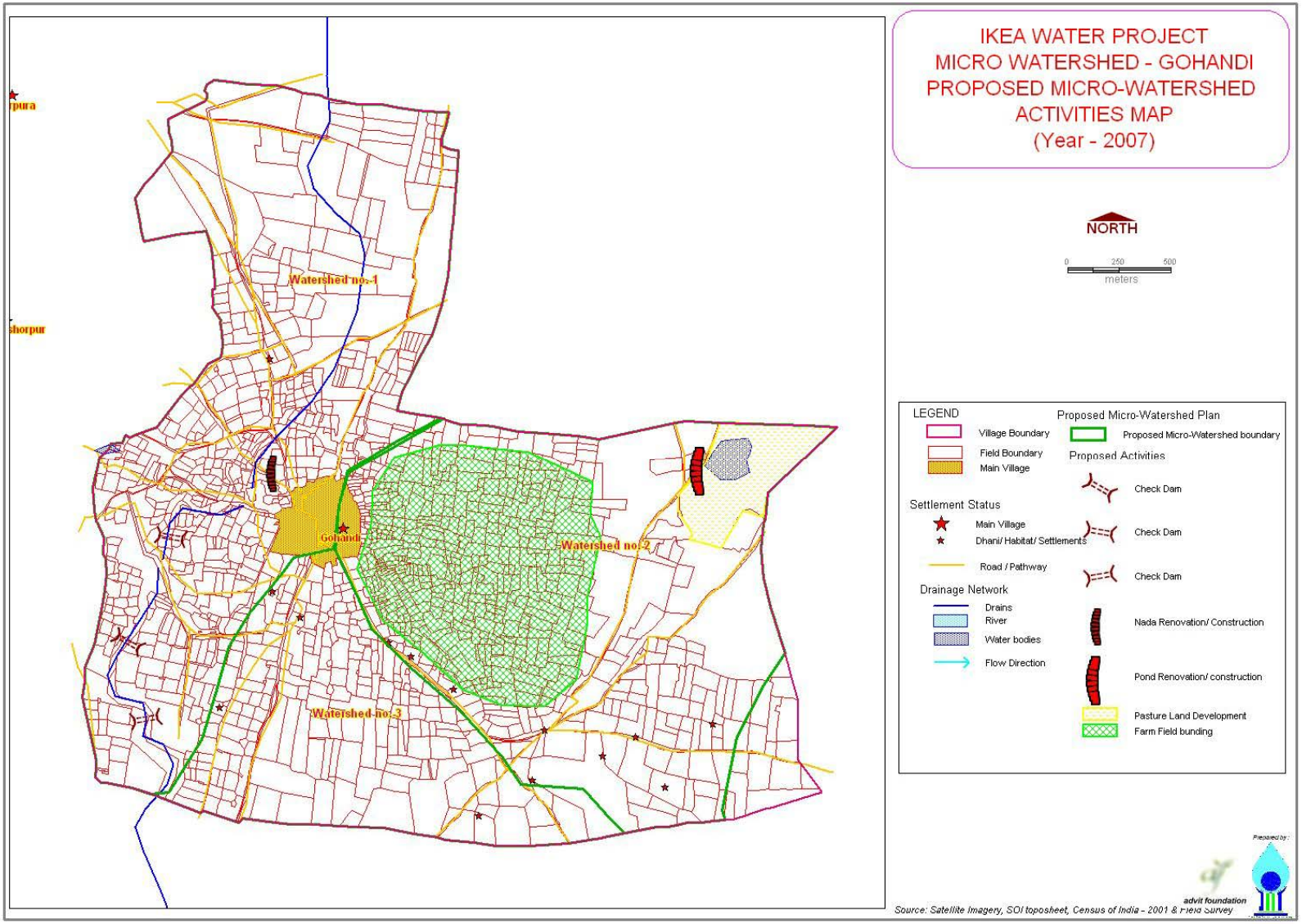

IKEA WATER PROJECT
MICRO WATERSHED - GOHANDI
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
NORTH
0 250 500
meters
Watershed no.-1
Watershed no.-2
Watershed no.-3
Gohandi
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Proposed Activities
Check Dam
Check Dam
Check Dam
Nada Renovation/ Construction
Pond Renovation/ construction
Pasture Land Development
Farm Field bunding
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE - HARBANSPURA

Village Location

Harbanspura village is located at 75^{0}33'56.52" east longitude and 26^{0}43'7.68"north longitude with a geographical area of 160.0 hectare at about 52 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives the respective location of Harbanspura with major settlements.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**12 km**
Distance from Block HQ:	=	**26 km**
Type of approach road to the village: *(Kachcha 6km and Pacca 6 km)*	=	**12 km**
Distance of village from district HQ	=	**45 km**
Nearest market & its distance from the village: *(Bagru)*	=	**12 km**
Distance to nearest Middle School	<	**5 km**
Distance to nearest College	>	**10 km**
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 77 households (as per baseline survey – 2007) residing in the village Harbanspura which are spread up in main village and two dhanies (hamlets) located inside the village boundary (refer fig.- 1 and 2)

G. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	497	Total House Holds	77
Total male Population	163	SC House Holds	18
Total Female Population	155	ST House Holds	18
Child Population (0-6 yr)	179	BPL House Holds	

H. Dhani-wise breakup of the population distribution:

S. No.	Village/ Dhani	House Holds			Population			
		TOTAL	SC	ST	Male	Female	Child	Total
1	**Harbanspura**	35	18		55	52	66	173
2	**Meena Ki Dhani**	18		18	41	37	40	118
3	**Yadvon ki Dhani**	24			67	66	73	206
	Total	**113**	**18**	**18**	**163**	**155**	**179**	**497**

The sex ratio in Harbanspura village is 825 females per 1000 males. The child population is about 18.74% of the total population.

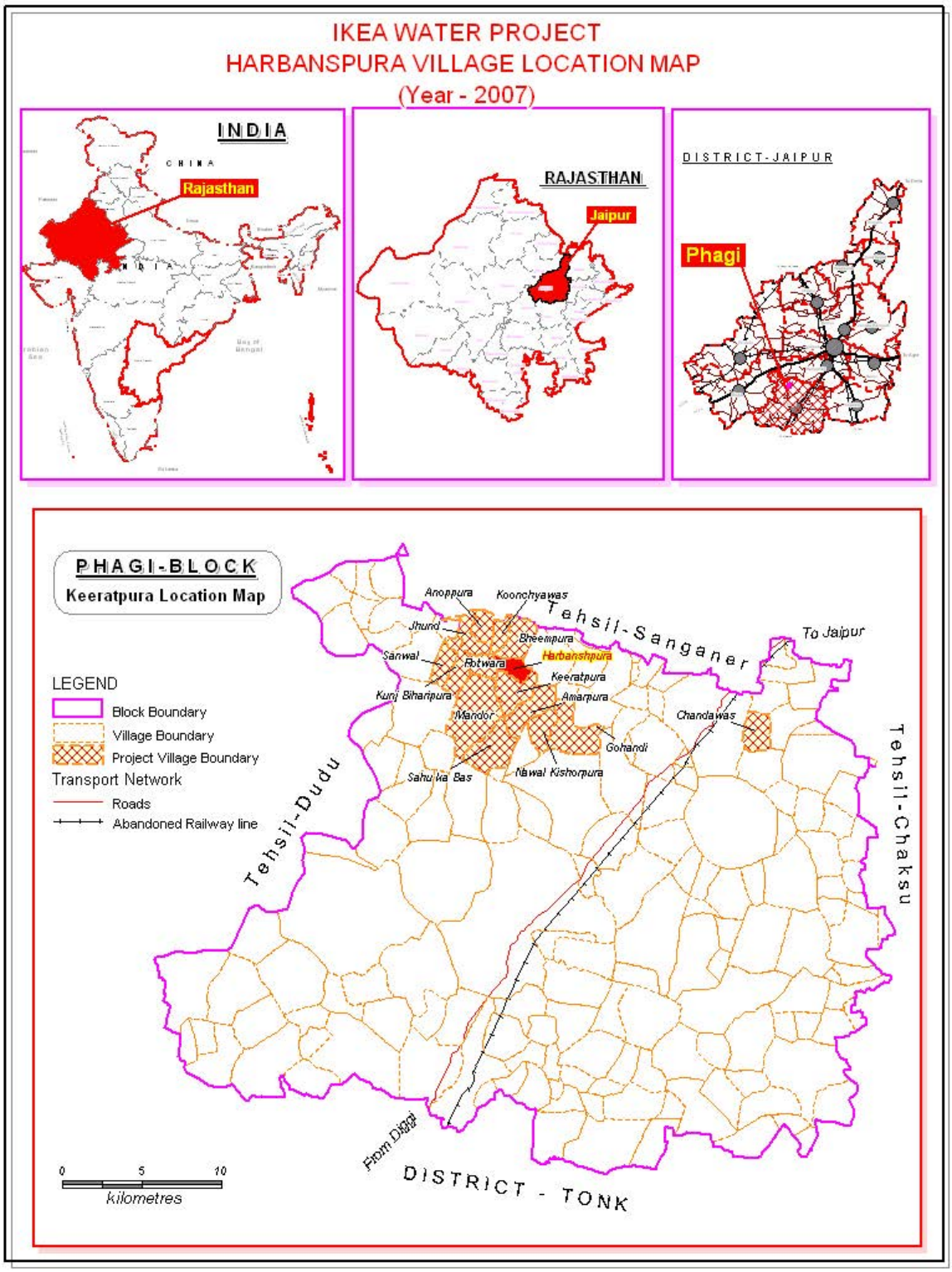

IKEA WATER PROJECT
HARBANSPURA VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Keeratpura Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Harbanshpura
Sanwal
Rotwara
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Chandawas
Gohandi
Sahu ka Bas
Nawal Kishorpura
Tehsil-Sanganer
To Jaipur
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0
5
10
kilometres

Figure No.-1

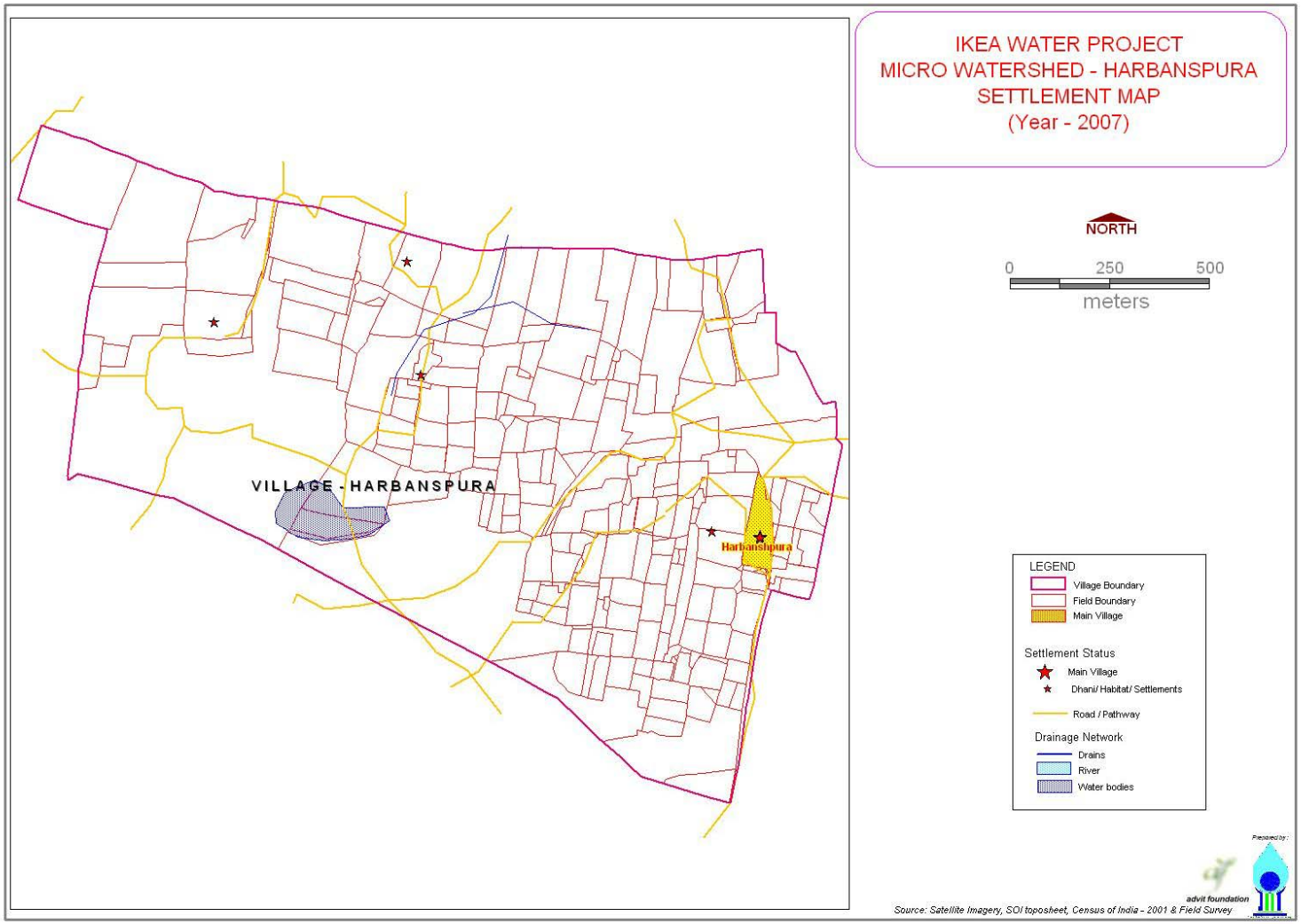

IKEA WATER PROJECT
MICRO WATERSHED - HARBANSPURA
SETTLEMENT MAP
(Year - 2007)
NORTH
0
250
500
meters
VILLAGE - HARBANSPURA
Harbanshpura
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

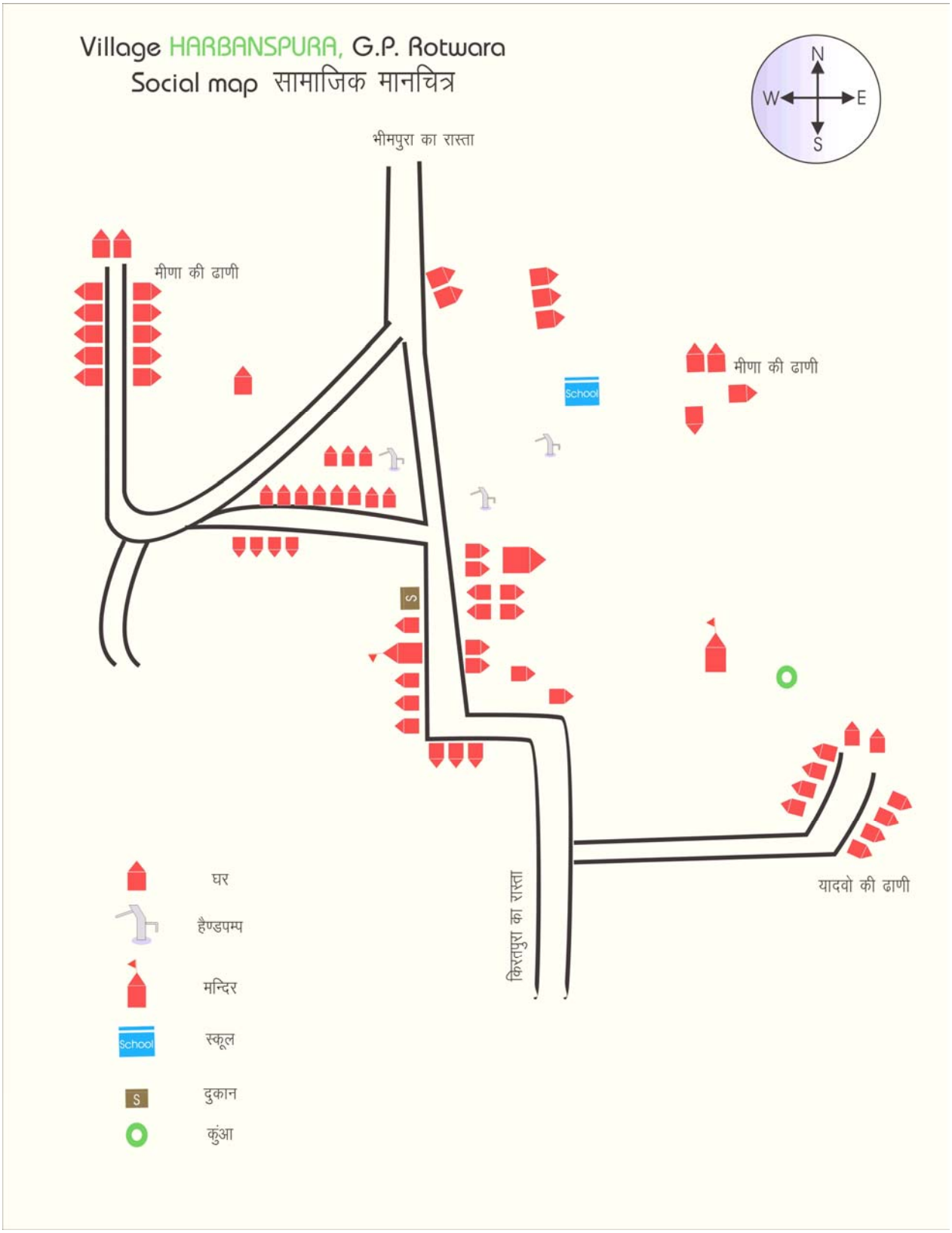

Village HARBANSPURA, G.P. Rotwara
Social map सामाजिक मानचित्र
N
W
E
S
भीमपुरा का रास्ता
मीणा की ढाणी
मीणा की ढाणी
School
S
किरतपुरा का रास्ता
यादवो की ढाणी
घर
हैण्डपम्प
मन्दिर
School
स्कूल
S
दुकान
कुंआ

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

- Overall Literacy rate is 40.28%. Male literacy rate is 50.85% while female literacy rate is 27.46%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- No health facility is available in the village.

- **Work and Work force**

The workers population (as per census-2001) available in the village Harbanspura can be tabulated as below

A.	**Main Worker Population**	***In Numbers***	***In % to total population***
	Male Worker	114	48.72%
	Female Worker	105	54.40%
	Total Workers	**219**	**51.29%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	0	0.00%
	Female Marginal Worker	0	0.00%
	Total Marginal Workers	**0**	**0.00%**
C	**Non Worker Population**		
	Male Non Worker	120	51.28%
	Female Non Worker	88	45.60%
	Total Non Workers	**208**	**48.71%**

Details of workers classification is explained in the following paragraphs:
Main Workers: In Harbanspura village total main workers population is about 54.75% of the total population. Females lead the male in main workers population in % to their respective total population.

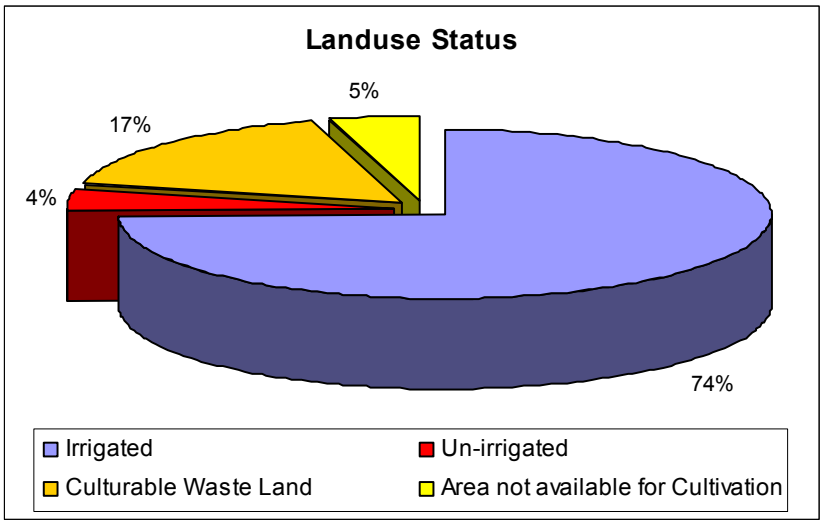
Marginal Workers: In village Harbanspura there is no marginal worker in the population.
Cultivator: Majority of population, 95.89% of main worker population is engaged in cultivator work in the village itself.
Agricultural Labourer: In Harbanspura village very less number i.e. 2.28% in main workers are engaged in this category of work.
Household Industry Workers: In Harbanspura village none of population is engaged in household works.
Other Worker: Since the village is not too far from Jaipur city 'Other Works' constitute major part after cultivator category in workers population. About 1.83% in main worker category is engaged in this type of work category. In this category Males population leads the female population.

- **Livestock**

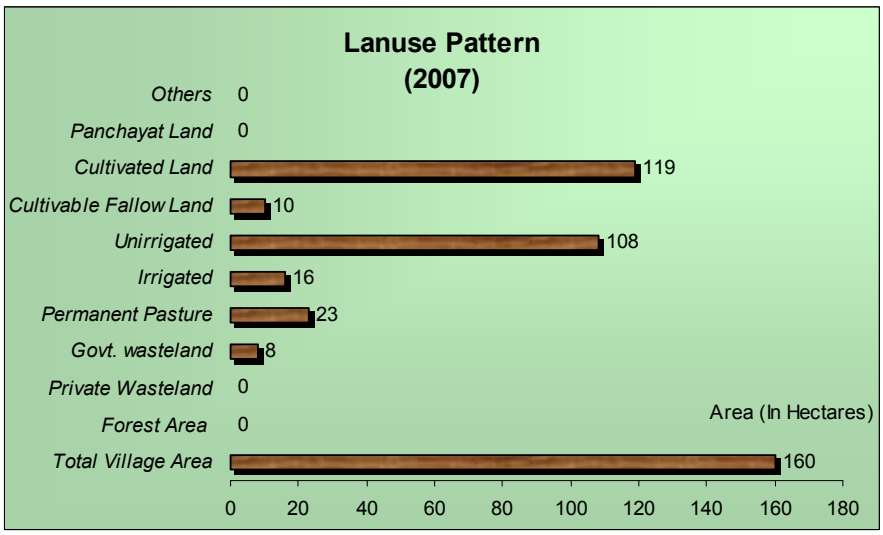
As per the base line survey carried out in Harbanspura village there are 1585 cattle variably distributed among 77 families living in the village. Some families are having more than 50 cattle whereas some have none. sheep are the major contributor (about 63.09%) to the livestock population. Buffaloes and cows amount to one fifth part of the cattle population primarily being utilised for dairy purpose (milk production).

Land-Use Pattern:

The major part of the village economy is still dependent on agricultural production. Hence most of the land available is being put to agricultural activities. Out of the total land majority of fields, about 74% is irrigated (by tube wells) and about only 4% land falls in the category of un-irrigated land. About 17% of the land is culturable waste land in the village Harbanspura. Following graph gives status of land utilization in village Harbanspura.



Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Harbanspura.



Satellite image map well represent the present land-use features in different textures as shown in figure no.- 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

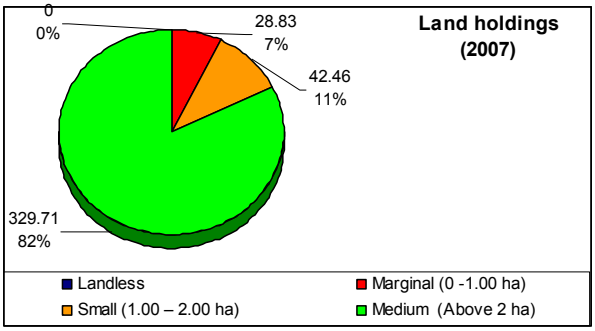
Further, about 23 hectare land is permanent pasture land and 8 hectare is government waste land. There is no panchayat and other category land available in the village. Cultivable fallow land or private waste land is about 75 hectare. Looking to the statistics there are ample oppertunities in the field of agricuture. Increase in irrigation facilities could result in more cropped area in the village.

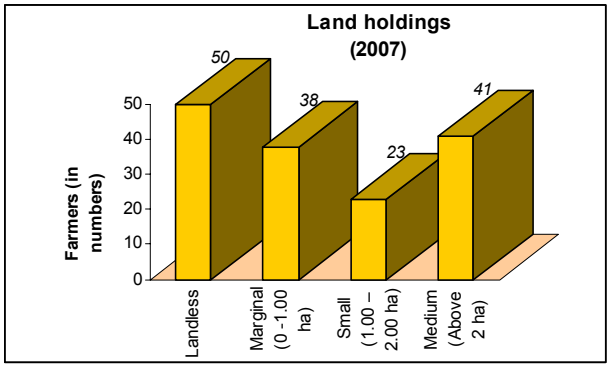
Land Holdings

Category-wise numbers of farmers and their land holdings are presented in the following graphs.

The base line survey revealed that

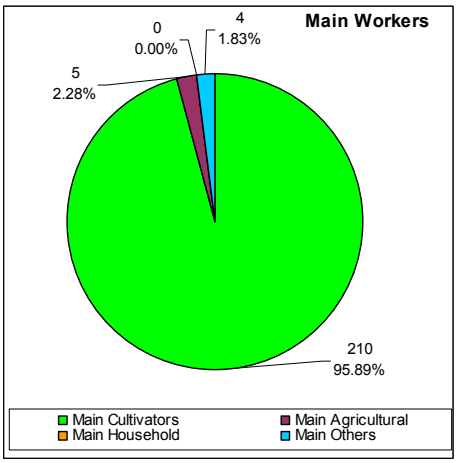
- Out of 152 farmers in the village about one third (32.8%) i.e. 50 farmers are landless.
- About 27% farmers (41 no.'s) have more than 2 hectare land. These have more than 82% of the landholdings in the village.
- Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 11% of the total geographical area of the village.
- Marginal farmers (0 to 1.00 ha.) have lands about 7% of the total area of the village Harbanspura.

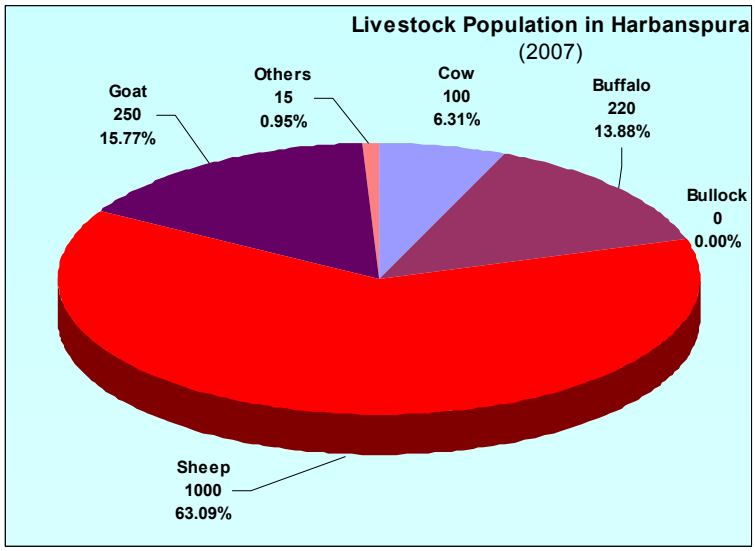




Cropping Pattern

The type of crop sown in an area depends on many factors such as irrigation facilities, type of soil, rainfall characteristics, distance from market places and infrastructure facilities. In Harbanspura village the type of crops sown in different seasons recorded during the base line survey are graphed and tabulated as below:





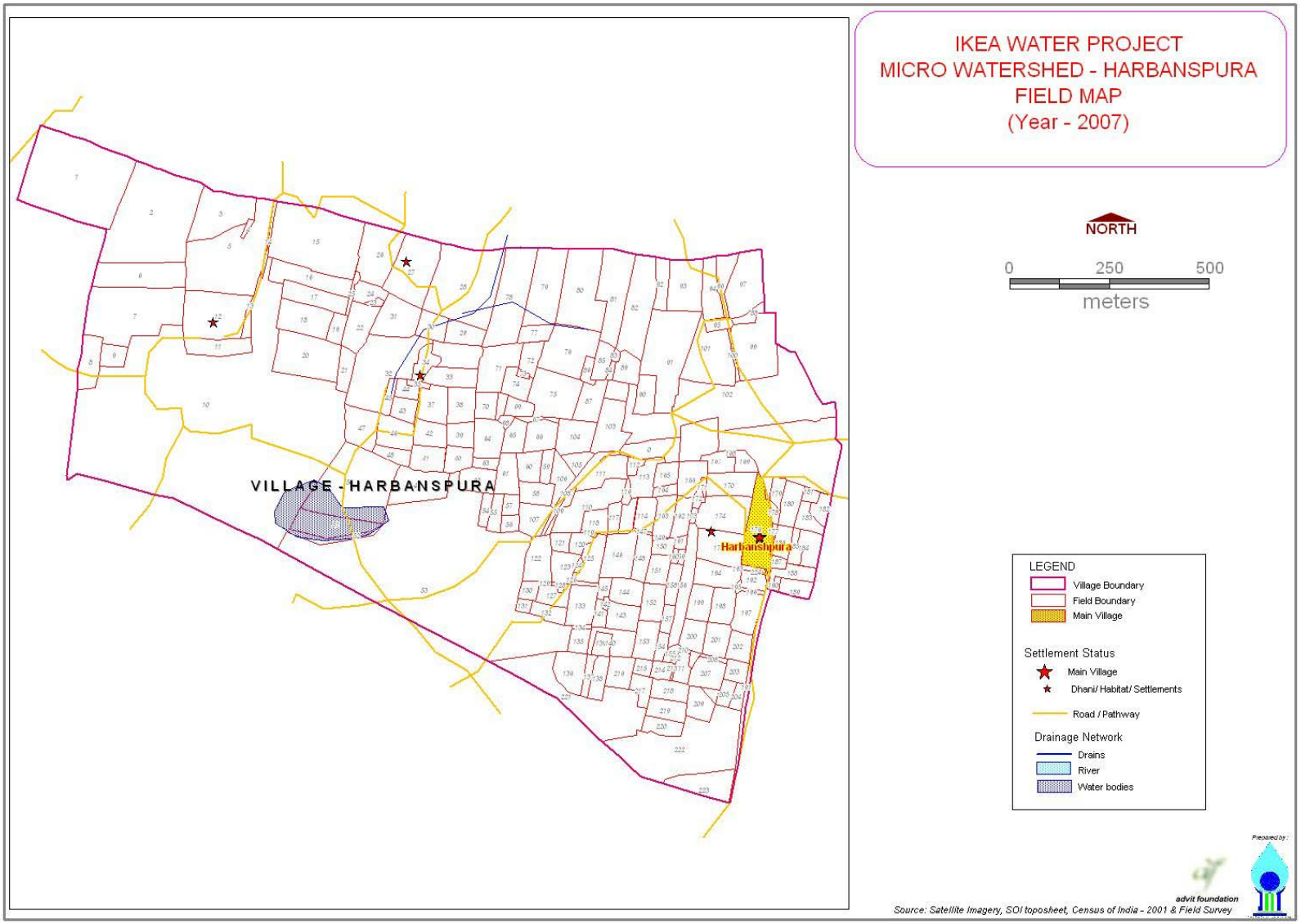
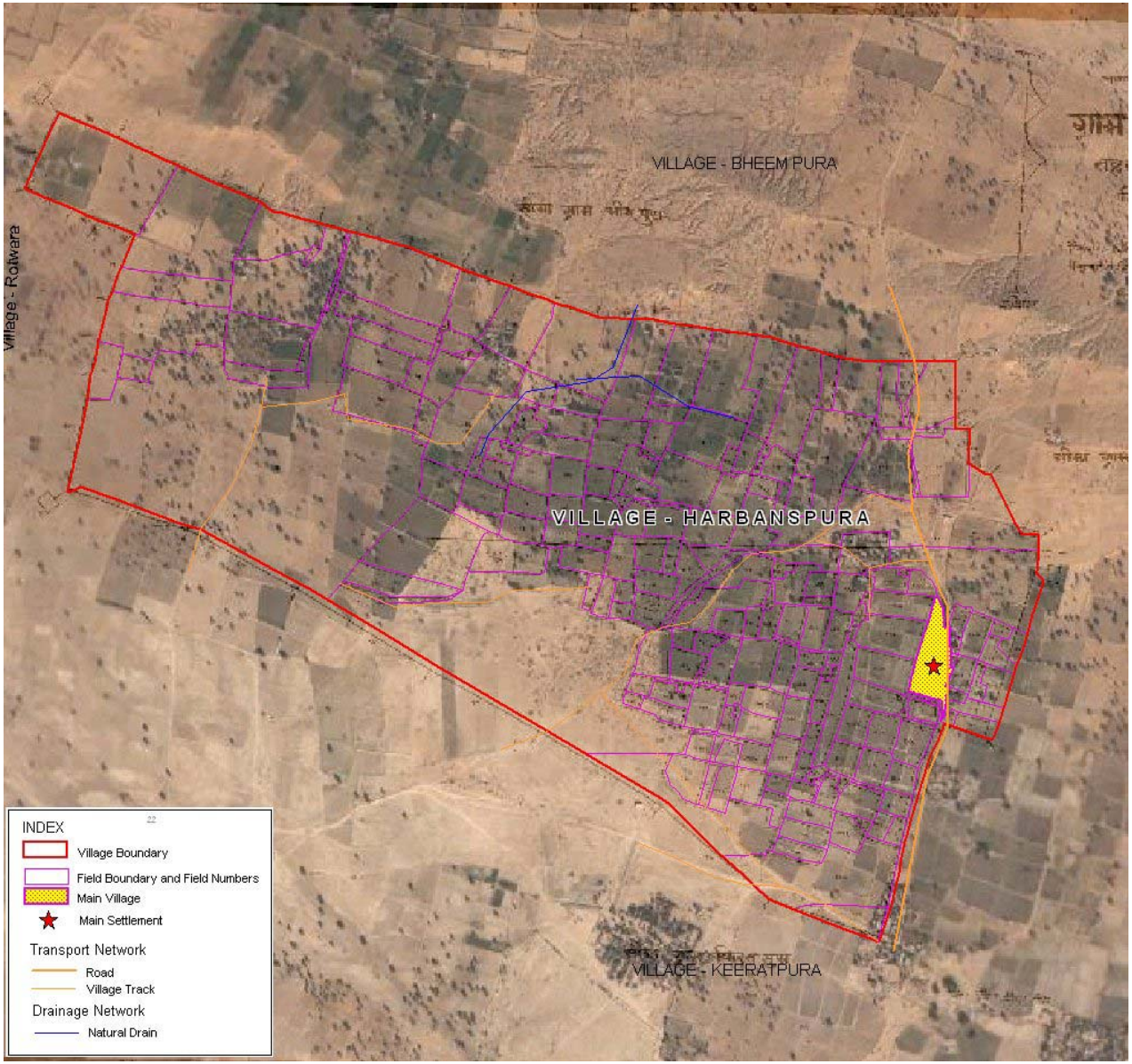

IKEA WATER PROJECT
MICRO WATERSHED - HARBANSPURA
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
VILLAGE - HARBANSPURA
Harbanshpura
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4



IKEA WATER PROJECT

MICRO WATERSHED - HARBANSPURA

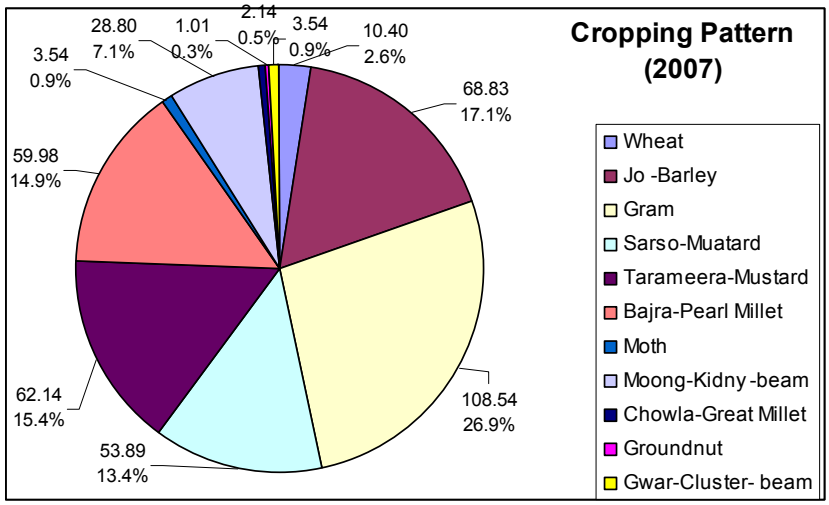
Satellite Image MAP

(Year - 2007)

Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

According the data it could be well concluded that Gram (27%) is the major crop in all the three seasons in the area followed by Jo-Barley (17%) and Pearl Millet & Great Millet (15%). Wheat require irrigation at regular interval hence it is cropped in area where irrigation facilities exists. Jo-Barley is also sown in the area where irrigation facilities exist. Other crops (68.4%) are dependent on rain fed irrigation. Hence rainfall plays major role in the village economy as production is largely dependent on it.



S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
46.	Wheat	Rabi	4.5	March	10.40	0.0	10.40
47.	Jo -Barley	-do-	4	March	68.83	0.0	68.83
48.	Gram	-do-	4	March	0.0	108.54	108.54
49.	Sarso-Muatard	-do-	4	Feb.-March	0.0	53.39	53.89
50.	Tarameera-Mustard	-do-	4	Feb.-March	0.0	62.14	62.14
51.	Bajra-Pearl Millet	Kharif	4	Oct.	0.0	59.98	59.98
52.	Moth	-do-	3	Oct	0.0	3.54	3.54
53.	Moong-Kidny - beam	-do-	3	Sep.	0.0	28.80	28.80
54.	Chowla-Great Millet	-do-	3	Sep.	0.0	2.14	2.14
55.	Groundnut	-do-	4	Oct.	0.0	1.01	1.01
56.	Gwar-Cluster-beam	-do	3	Sep.	0.0	3.54	3.54
Total					**79.23**	**323.08**	**402.31**

Water Resource Profile:

Physiography: The general ground profile is flat and having gentle slope towards south direction. The runoff water during rainfall period follows ground slope and drains in to natural depression forming village pond at the south of the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: The drainage system of the Harbanspura follows north east to south west direction. There are two natural depressions in the village. These natural paths of flow of water are obstructed by agricultural fields and at some of the places it has been completely destroyed. In present condition at

most of the places drainage system follows the path way/ village katcha-roads. Figure No. 6 a gives a clear view of the drainage pattern in village Harbanspura.

Water Sources:

The existing water resource status can be well represented by following graphs and tables:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	30	-	30
Bore well	2	-	2
Hand pumps	7	-	7
Village Ponds	-	1	1

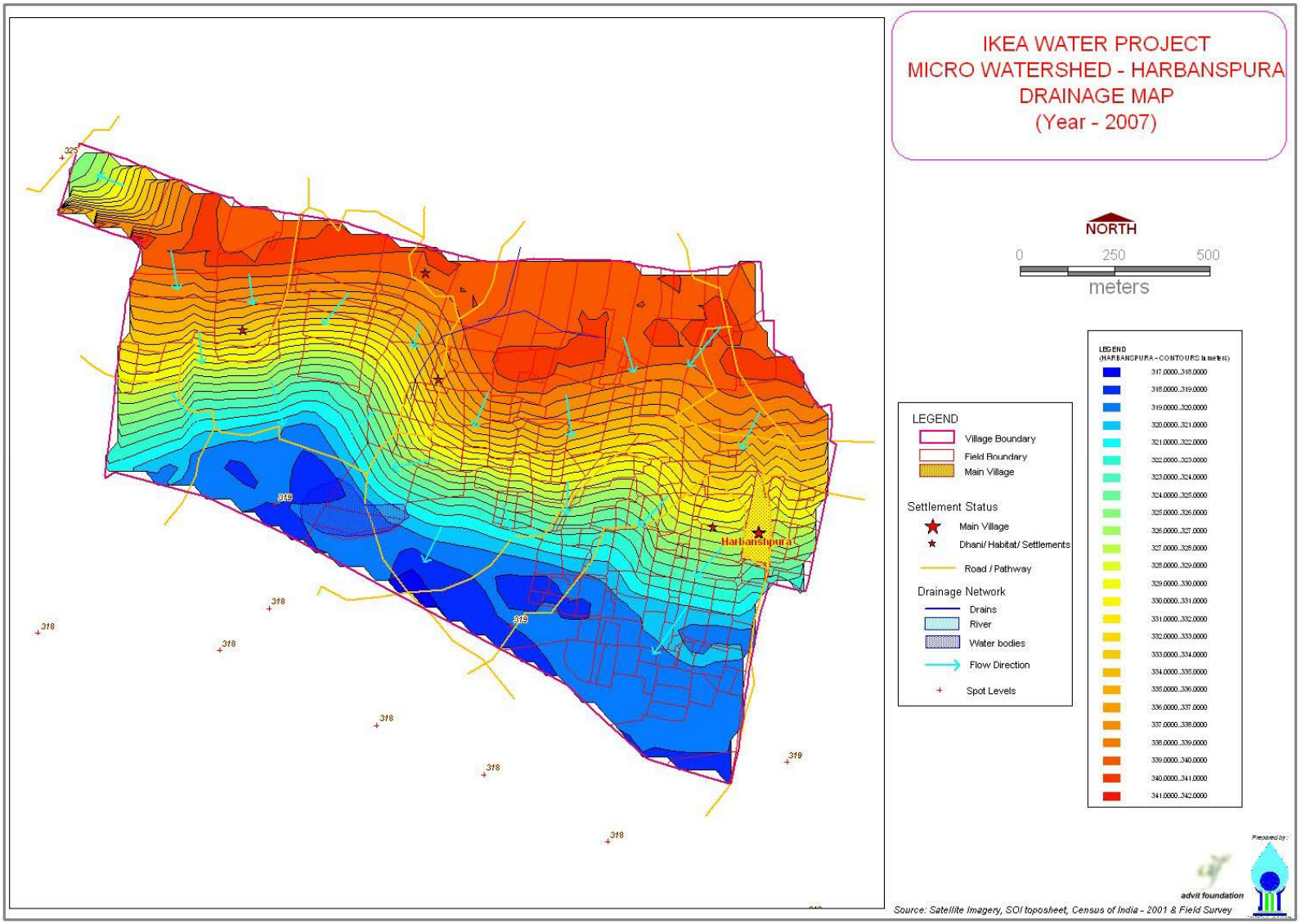
According to the baseline study followed by field survey it was found that:

- Most of the wells dry up in the summer season. Also the yield of groundwater has reduced considerably since last decades.
- The ground water is generally saline. The salinity increases with depth.
- Depth to water table varies from 20' to 65' depending upon its location.
- Rock formations are visible at depth varying from 15' to 45' from the ground level at different locations.

Drinking Water Sources: Public Health Engineering Department (PHED) has not installed any Regional Water Supply Scheme in village Harbanspura. Only one hand pumps from all the installed hand pumps in the village are functional and yield sweet water. This water is used for drinking for both human and cattle population. Open wells near some depression and at village pond do yield sweet water and the entire population draw drinking from such sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to travel long distances to get the sufficient quantity of drinking water.

Irrigation Water Sources: Out of total wells about 30 are in functional state. The prime use of these well are for irrigation. These sources are inadequate to meet the crop water requirement of the fields in village Harbanspura.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting drinking water sources scenario in village Harbanspura.


IKEA WATER PROJECT
MICRO WATERSHED - HARBANSPURA
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
(HARBANSPURA - CONTOURS in meters)
317.0000..318.0000
318.0000..319.0000
319.0000..320.0000
320.0000..321.0000
321.0000..322.0000
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333.0000..334.0000
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335.0000..336.0000
336.0000..337.0000
337.0000..338.0000
338.0000..339.0000
339.0000..340.0000
340.0000..341.0000
341.0000..342.0000
Harbanspura
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

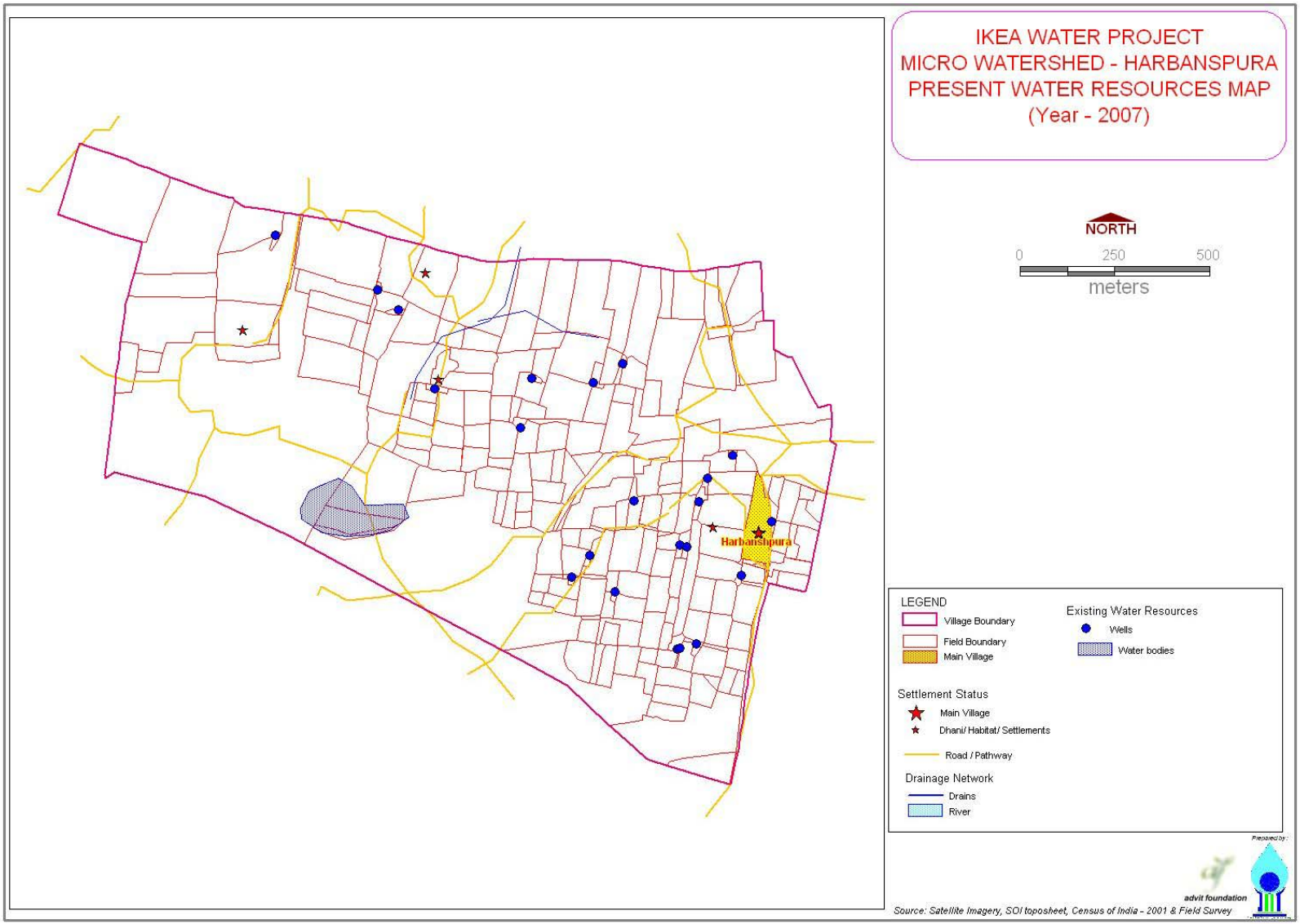

IKEA WATER PROJECT
MICRO WATERSHED - HARBANSPURA
PRESENT WATER RESOURCES MAP
(Year - 2007)
NORTH
0
250
500
meters
Harbanshpura
LEGEND
Village Boundary
Field Boundary
Main Village
Existing Water Resources
Wells
Water bodies
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to five micro-watersheds draining towards south direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	70.4822
Watershed no.-2	68.2912
Watershed no.-3	25.4050
Watershed no.-4	12.1979
Watershed no.-5	9.0862
Total	**185.4625**

Although the watershed no.-1 and 2 are big in coverage area and average field size inside its boundary and are more productive and having higher intensity of irrigation facilities. The dark shed reflected in satellite imagery of year 2007 (figure no.-5) clearly indicate that agriculture practices are more intense in those patches of watersheds.

The drainage system is not well defined in all the watersheds. Natural flow of runoff water from watershed has been obstructed by the field boundaries hence the water flows through the pathways used for transportation. Watershed no.-5 have reverse slope as compared to others i.e. in northern direction due presence of local depression.

Proposed Activities: As identifying of water harvesting activities on watershed basis was the main objective of the project a set of activities have been discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location envisaged during the project study shared and recommended by the local village community in Harbanspura village:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields	• Micro-watershed No.-1	• **Cluster-1**: About 1000m field bunds spread over 14 Fields in North-west of the main village (in between field no.-3 & 22)
			• Micro-watershed No.-1, 2 & 3	• **Cluster-2:** About 3000m field bunds spread over more than 60 Fields in west of the main village (Refer figure no.-9 for details)
		• Construction of small tanks/ ponds at	• Micro-watershed No.-1	• **Cluster-1**: One tanks at suitable locations

		agricultural farm.	• Micro-watershed No.-1, 2 & 3	• **Cluster- 2:** Four tanks at suitable locations. (Refer figure no.-9 for details)
2	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.- 51 (About 1000m west of main village)
			• Micro-watershed No.-2	• Field No.- 53 (About 750m west of main village)
		• Construction of Roof Top Rainwater Harvesting System	• Micro-watershed No.-3	• At Community (Panchayat) Building in main village
3	**Pasture Land Development & Horticulture**	• Land grading and bunding. • Plantation of suitable plant/ fruit plant. • Linking with government horticultural scheme.	• Micro-watershed No.- 1 & 4	• Field (Khasra) No.-10
			• Micro-watershed No.-1 & 2	• Field (Khasra) No.-53 (Government common Land)

Numbers/ quantities of proposed activities are summarized in following table:

S. No.	Activities	Numbers/ Details	
1	Roof Top Rainwater Harvesting System	1	No.'s
2	Nadi construction/ renovation	2	No.'s
3	Farm Tanks/ ponds	5	No.'s
4	Farm Field Bunding	4000	Meters
5	Pasture Land Development	38	Hectare

The location of the proposed activities are shown in figure no.- 9

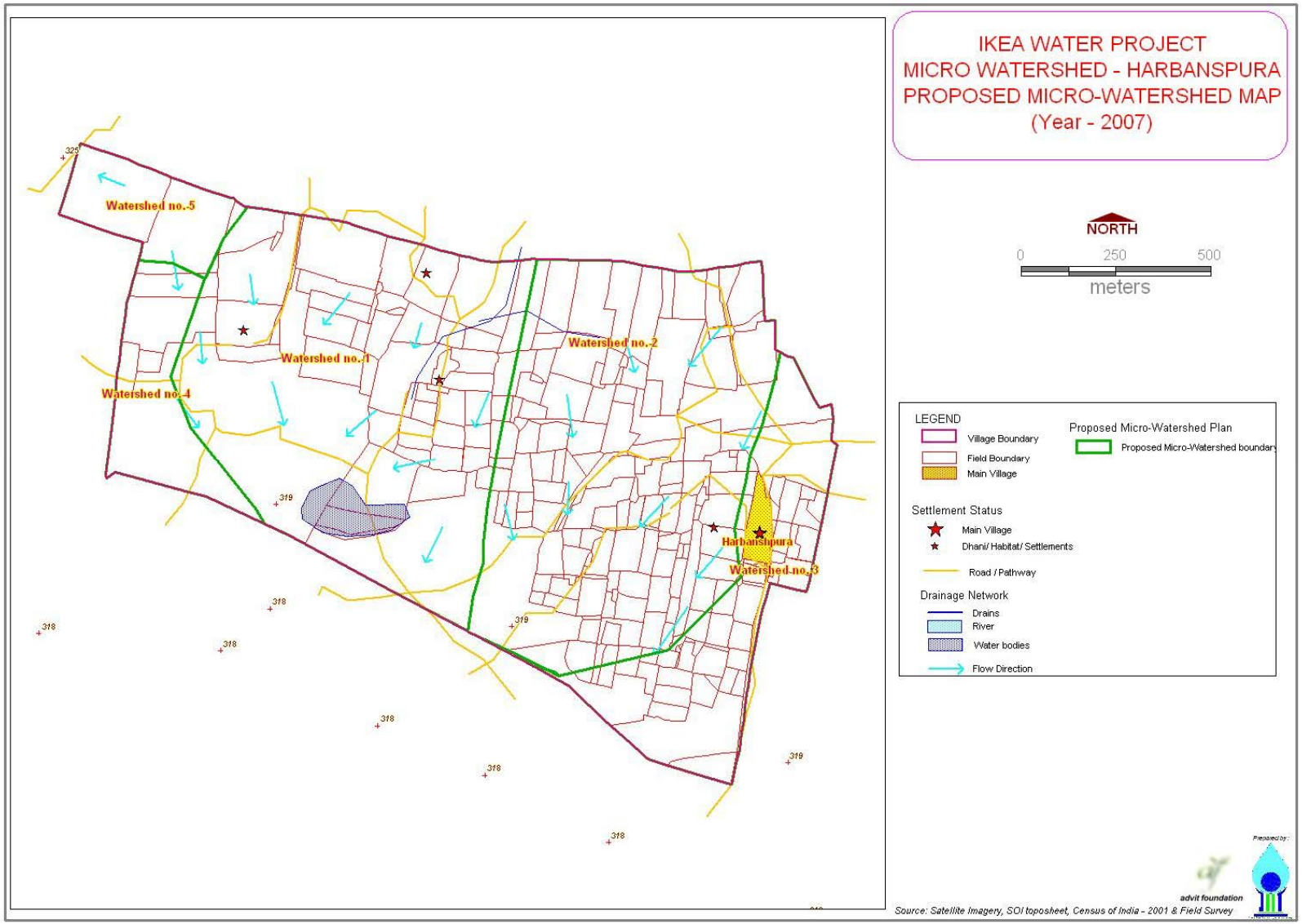

IKEA WATER PROJECT
MICRO WATERSHED - HARBANSPURA
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
Watershed no.-5
Watershed no.-1
Watershed no.-2
Watershed no.-4
Watershed no.-3
Harbanshpura
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200000.00**
2	Nadi construction/ renovation	2	No.'s	Lumpsum	**400000.00**
3	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50000.00	**250000.00**
4	Farm Field Bunding	4000	Meters	30.00	**120000.00**
5	Pasture Land Development	38	Hectare	10000.00	**380000.00**
				GRAND TOTAL	**1350000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

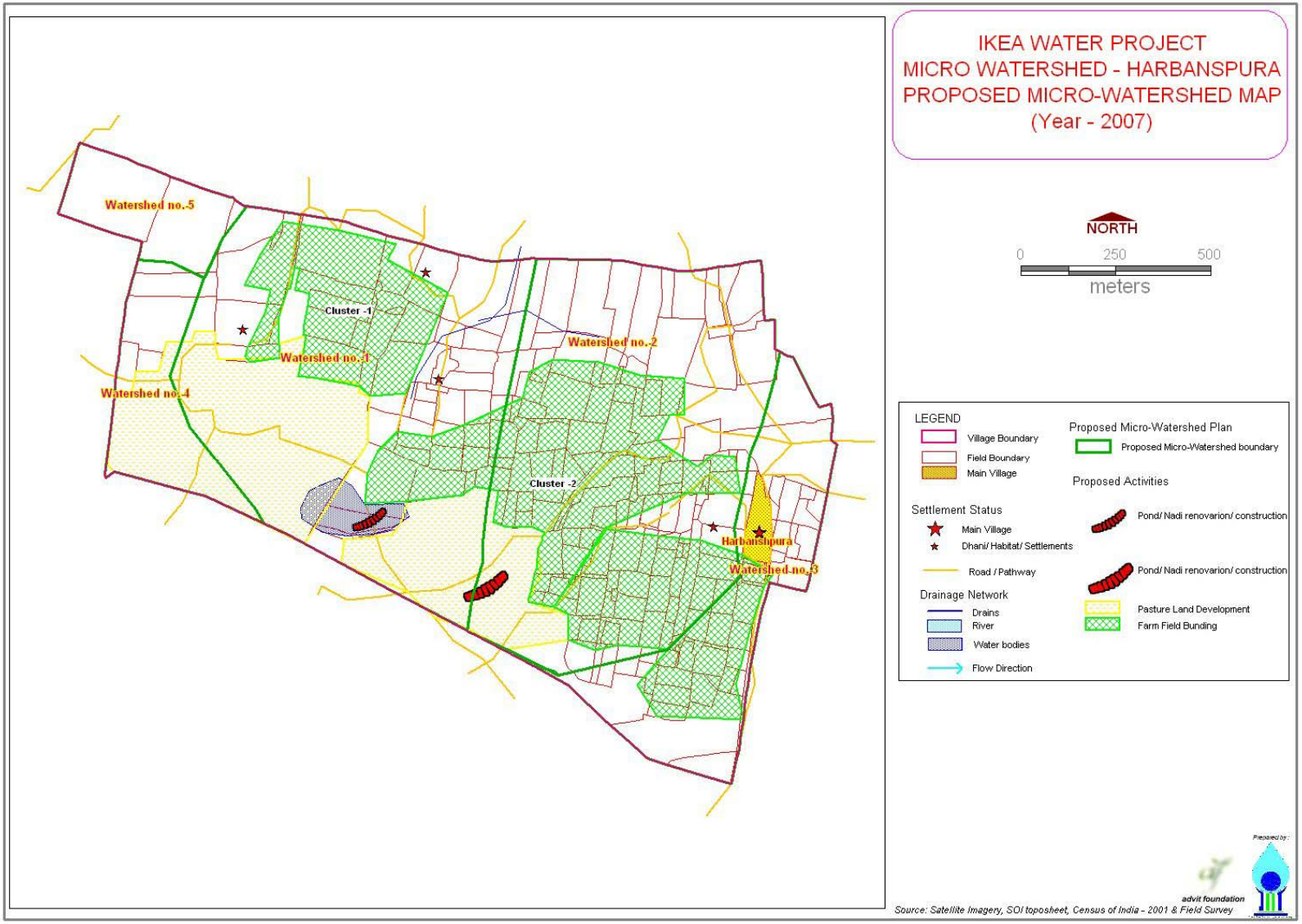

IKEA WATER PROJECT
MICRO WATERSHED - HARBANSPURA
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
Watershed no.-5
Cluster -1
Watershed no.-1
Watershed no.-2
Watershed no.-4
Cluster -2
Harbanshpura
Watershed no.-3
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Proposed Activities
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Pond/ Nadi renovarion/ construction
Road / Pathway
Pond/ Nadi renovarion/ construction
Drainage Network
Drains
River
Water bodies
Pasture Land Development
Farm Field Bunding
Flow Direction
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE - JHUND

Village Location

Jhund village is located at 75^{0}31'46.2" east longitude and 26^{0}44'18.60"north longitude with a geographical area of 281 hectare at about 52 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Jhund w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**11 km**
Distance from Block HQ:	=	**22 km**
Type of approach road to the village: *(Kachcha 5 km and Pacca 6 km)* **11 km**	=	
Distance of village from district HQ	=	**52 km**
Nearest market & its distance from the village: *(Bagru)* **11 km**	=	
Distance to nearest Middle School **5 km**	<	
Distance to nearest College **10 km**	>	
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 85 families (as per baseline survey – 2007) residing in the village Jhund which are spread up in main village and two dhanies (hamlets) located inside the village boundary (refer fig.- 1 and 2)

I. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	641	Total House Holds	85
Total male Population	338	SC House Holds	13
Total Female Population	303	ST House Holds	-
Child Population (0-6 yr)	112		

J. Dhani-wise breakup of the population distribution:

S. No.	Village/ Dhani	House Holds			Population			
		TOTAL	SC	ST	Male	Female	Child	Total
1	**Jhund**	64	13		232	219	52	503
2	Bagro ki Dhani	11			24	23	34	81
3	Kandira Dhani	10			17	14	26	57
	Total	**85**	**13**		**273**	**256**	**112**	**641**

The sex ratio in Jhund village is 896 females per 1000 males. The child population is about 17.47% of the total population.

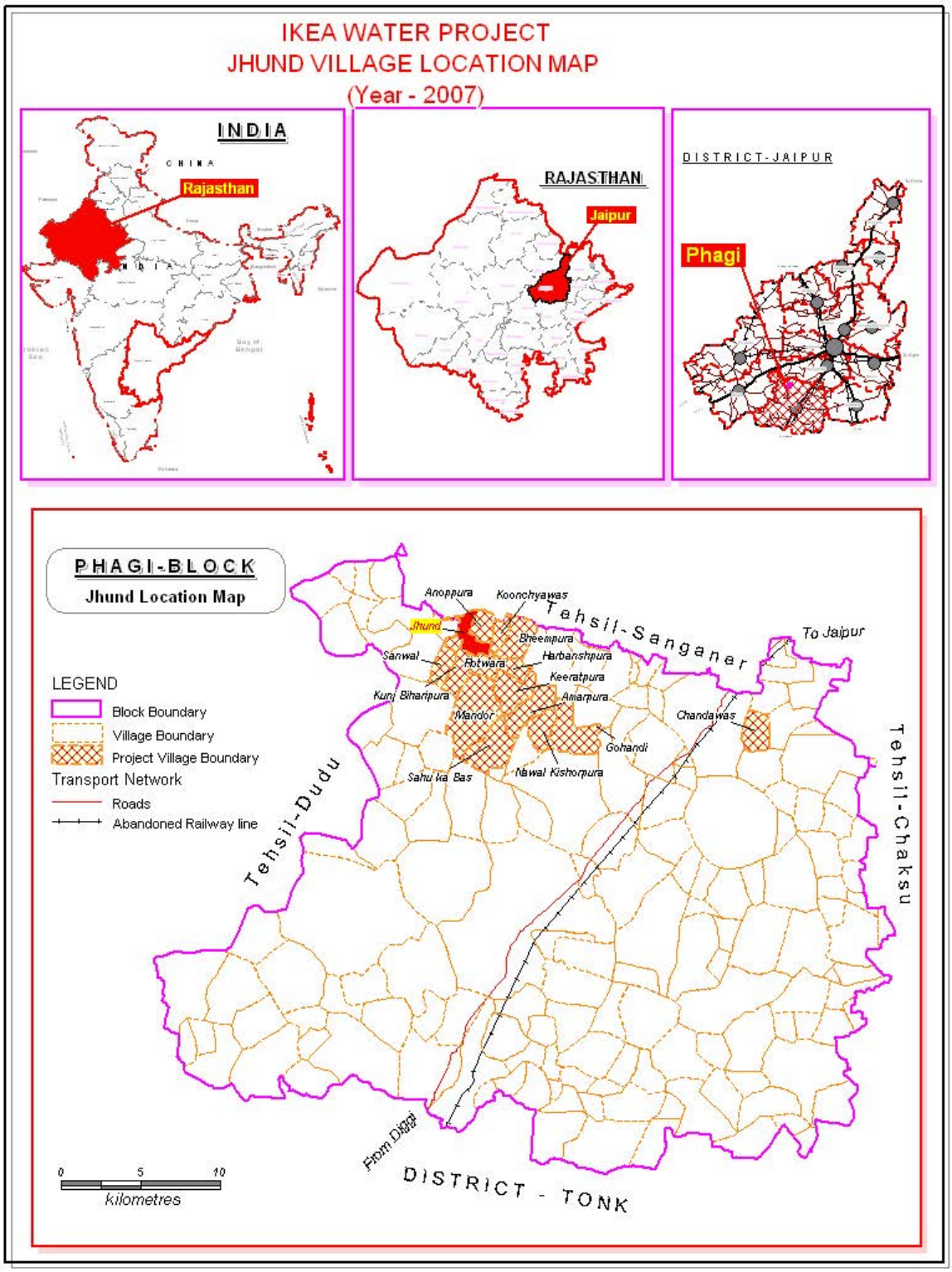

IKEA WATER PROJECT
JHUND VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Jhund Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Harbanshpura
Sanwal
Rotwara
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Chandawas
Gohandi
Sahu ka Bas
Nawal Kishorpura
Tehsil-Sanganer
To Jaipur
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0
5
10
kilometres

Figure No.-1

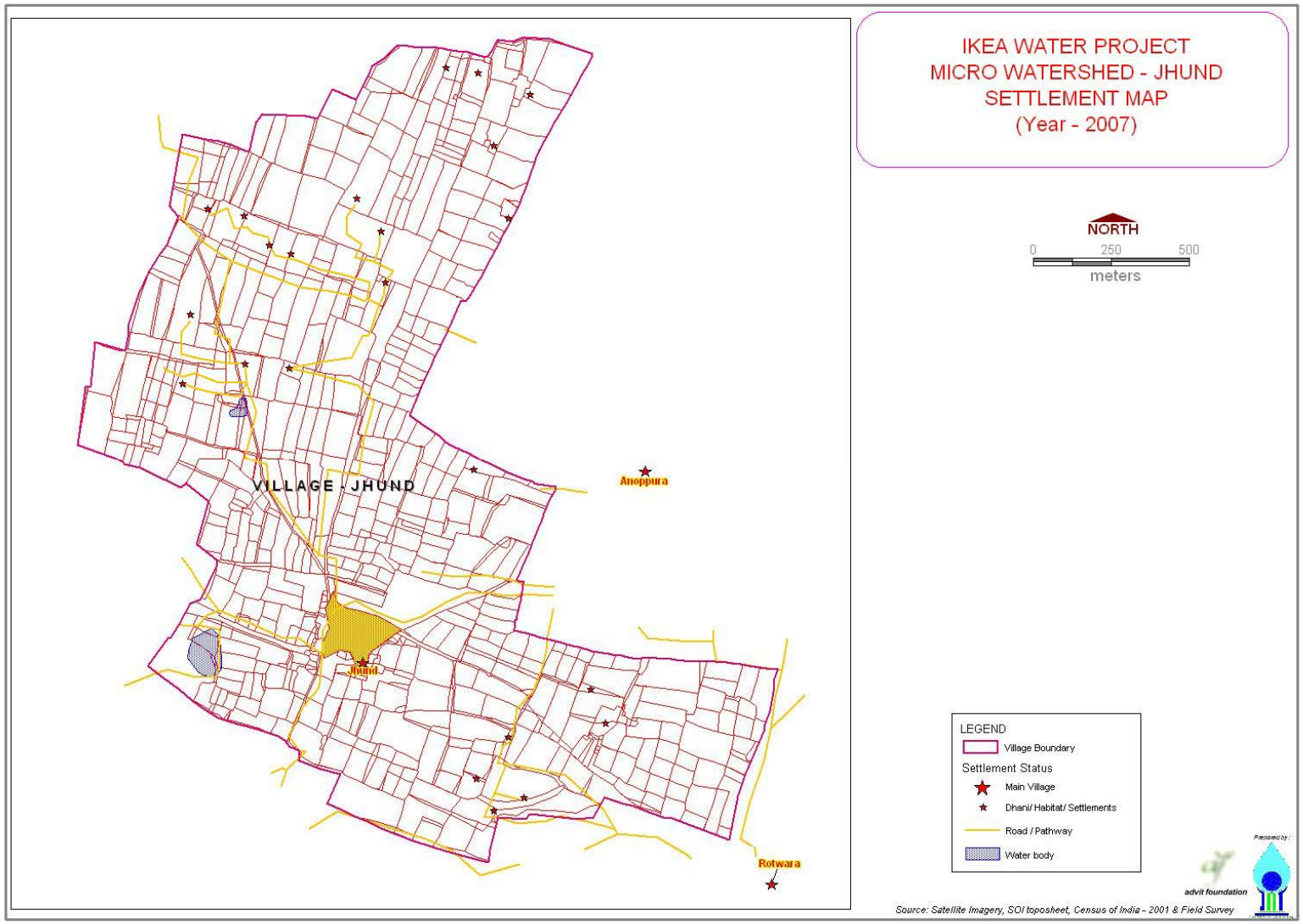

IKEA WATER PROJECT
MICRO WATERSHED - JHUND
SETTLEMENT MAP
(Year - 2007)
NORTH
0
250
500
meters
VILLAGE - JHUND
Anoppura
Jhund
Rotwara
LEGEND
Village Boundary
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Water body
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

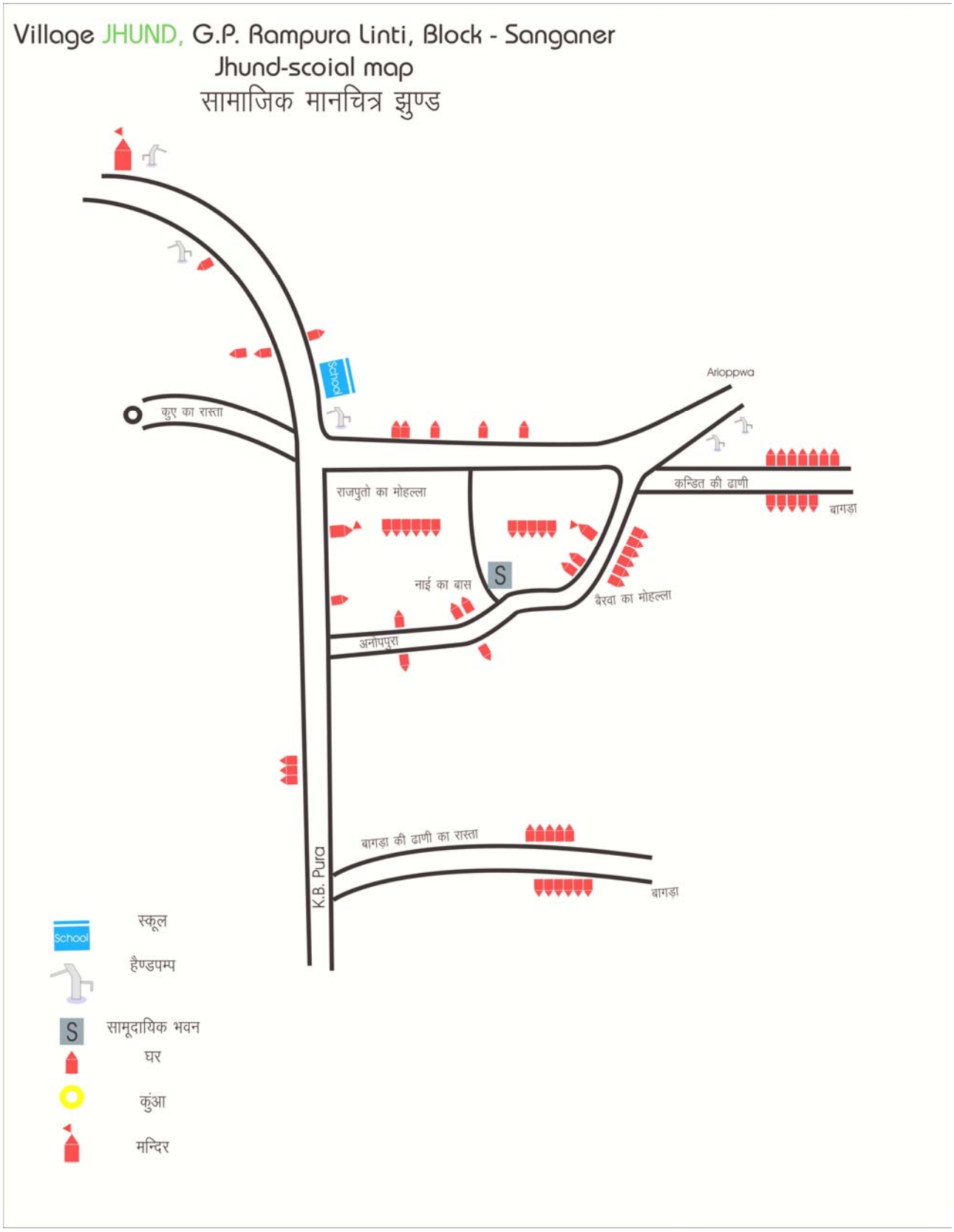

Village JHUND, G.P. Rampura Linti, Block - Sanganer
Jhund-scoial map
सामाजिक मानचित्र झुण्ड
School
Arioppwa
कुए का रास्ता
राजपुतो का मोहल्ला
कन्डित की ढाणी
बागड़ा
नाई का बास
S
बैरवा का मोहल्ला
अनोपपुरा
K.B. Pura
बागड़ा की ढाणी का रास्ता
बागड़ा
School
स्कूल
हैण्डपम्प
S
सामूदायिक भवन
घर
कुंआ
मन्दिर

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated through following important points:

- Overall Literacy rate is 46.65%. Male literacy rate is 62.72% while female literacy rate is 28.71%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- No health facility is available in the village.

- **Work and Work force**

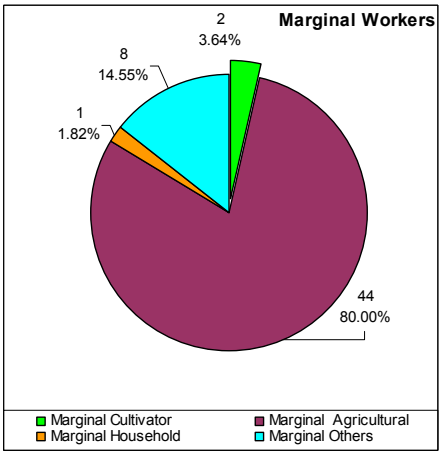
The workers population (as per the census- 2001) available in the village Jhund can be tabulated as below:

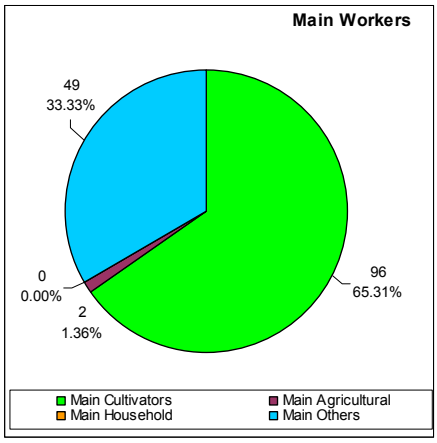
		In Numbers	*In % to total population*
A.	**Main Worker Population**		
	Male Worker	138	40.83%
	Female Worker	64	21.12%
	Total Workers	**202**	**31.51%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	11	3.25%
	Female Marginal Worker	44	14.52%
	Total Marginal Workers	**55**	**8.58%**
C	**Non Worker Population**		
	Male Non Worker	200	59.17%
	Female Non Worker	239	78.88%
	Total Non Workers	**439**	**68.49%**

Description of the classification is explained in the following paragraphs:

Main Workers: In Jhund village total main workers population is about 22.93% of the total population. Female leads the male in main workers population in % to their respective total population.

Marginal Workers: The marginal workers with their different categories are shown in the following graph.





Cultivator: About 65.31% of main worker population is engaged in cultivator work in the village itself. Similarly in Marginal workers category about 3.64% marginal workers are engaged in cultivation field.

Agricultural Labourer: In Jhund village very less number i.e. 1.36% in main workers and 80% in marginal

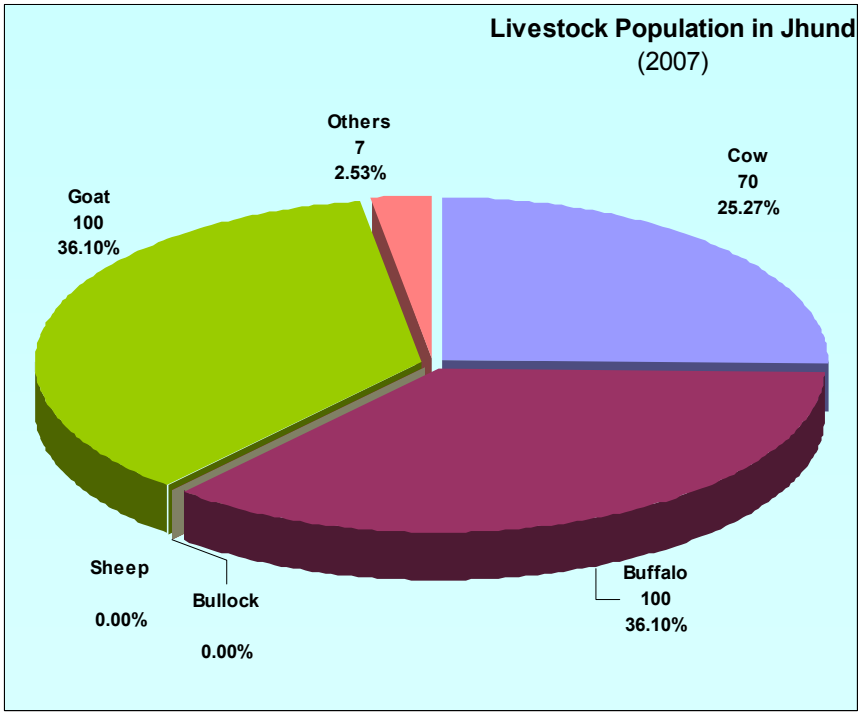
workers are engaged in this category of work.

Household Industry Workers: In Jhund village almost negligible numbers of people are engaged in household works.

Other Worker: About 33.33% in main worker and 14.55% in marginal worker category are engaged in this type of work category. In this category Males population leads the female population.

Livestock

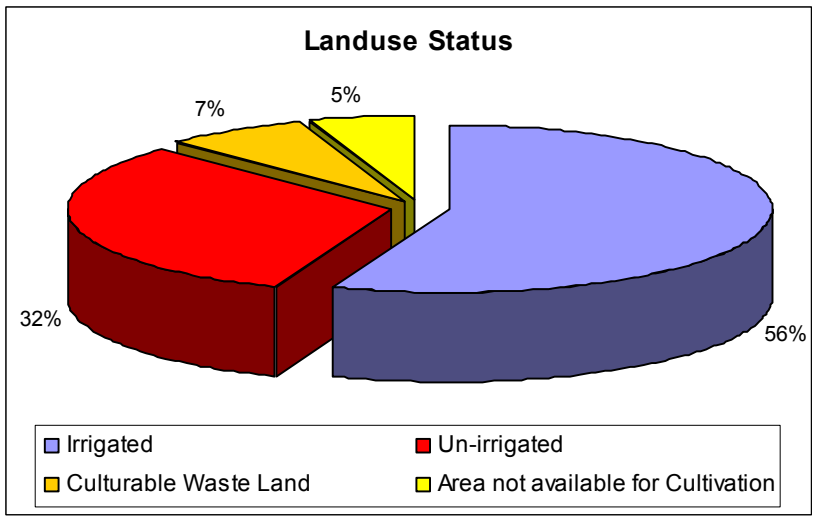
According to the data collected during the base line survey, in Jhund village there are total 277 cattle variably distributed among 85 families living in the village. Some families are having more than 50 cattle whereas some have none. Buffaloes and Goats are the major contributor (about 36.10% each) to the livestock population. Buffaloes and cows amount to 60% of the cattle population primarily being utilised for dairy purpose (milk production).



Land-Use Pattern:

The major part of the village economy in Jhund village is dependent on agricultural production. Following graph gives status of land utilization in village Jhund.

According to broad classification out of the total land 56% is irrigated (by tube wells) and about 32% land falls in the category of un-irrigated land. About 7% of the land is culturable waste land in the village Jhund.



Further, no land is available as permanent pasture land and 15.68 hectare is government waste land. There is no panchayat and other category land available in the village. Cultivable fallow land or private waste land is about 13.55 hectare. Looking to the statistics there are ample oppertunities in the field of agricuture. Increase in irrigation facilities could result

in more cropped area in the village.

Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Jhund.

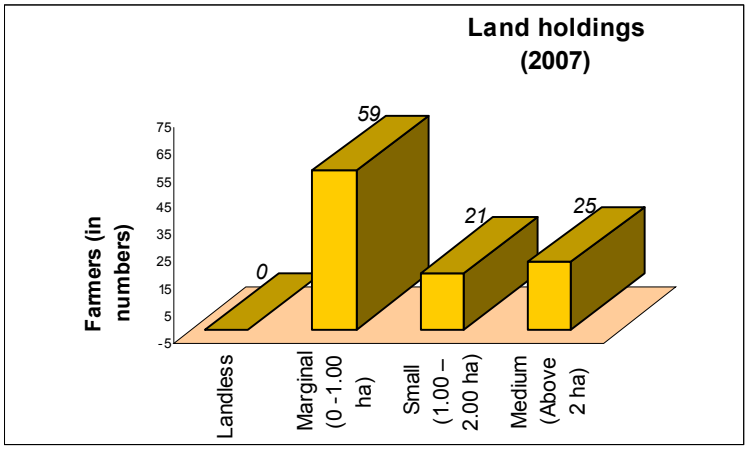
Satellite image map well represent the present land-use features in different textures as shown in figure no.- 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

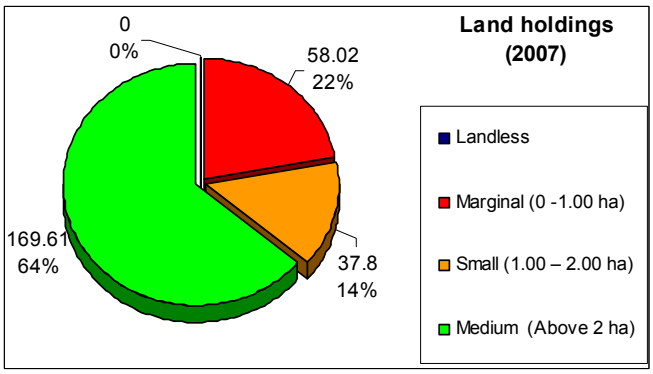
Land Holdings

Category-wise numbers of farmers and their land holdings are presented in the following graphs.

The base line survey revealed that:

- Out of 105 farmers in the village none of them are landless.
- About 23.81% farmers (25 no.'s) have more than 2 hectare land. These farmers have more than 64% of the landholdings in the village.
- Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 14% of the total geographical area of the village.
- Marginal farmers (0 to 1.00 ha.) have lands about 22% of the total area of the village Jhund.





Cropping Pattern

The type of crop sown in an area depends on duration and quantum of monsoon rainfall in region. In Jhund village the type of crops sown in different seasons recorded during the base line survey are tabulated and graphed as below:

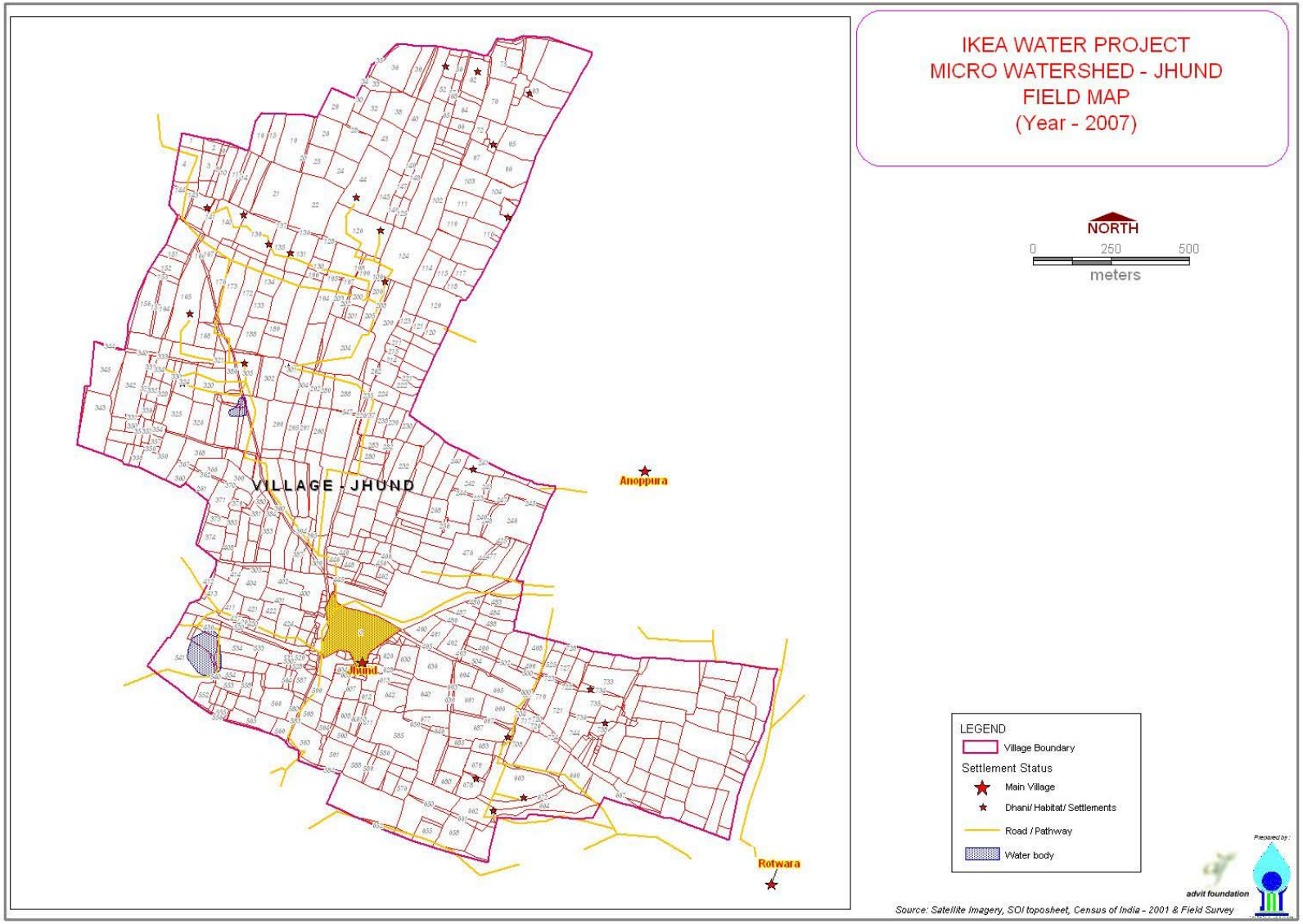

IKEA WATER PROJECT
MICRO WATERSHED - JHUND
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
VILLAGE - JHUND
Anoppura
Jhund
Rotwara
LEGEND
Village Boundary
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Water body
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

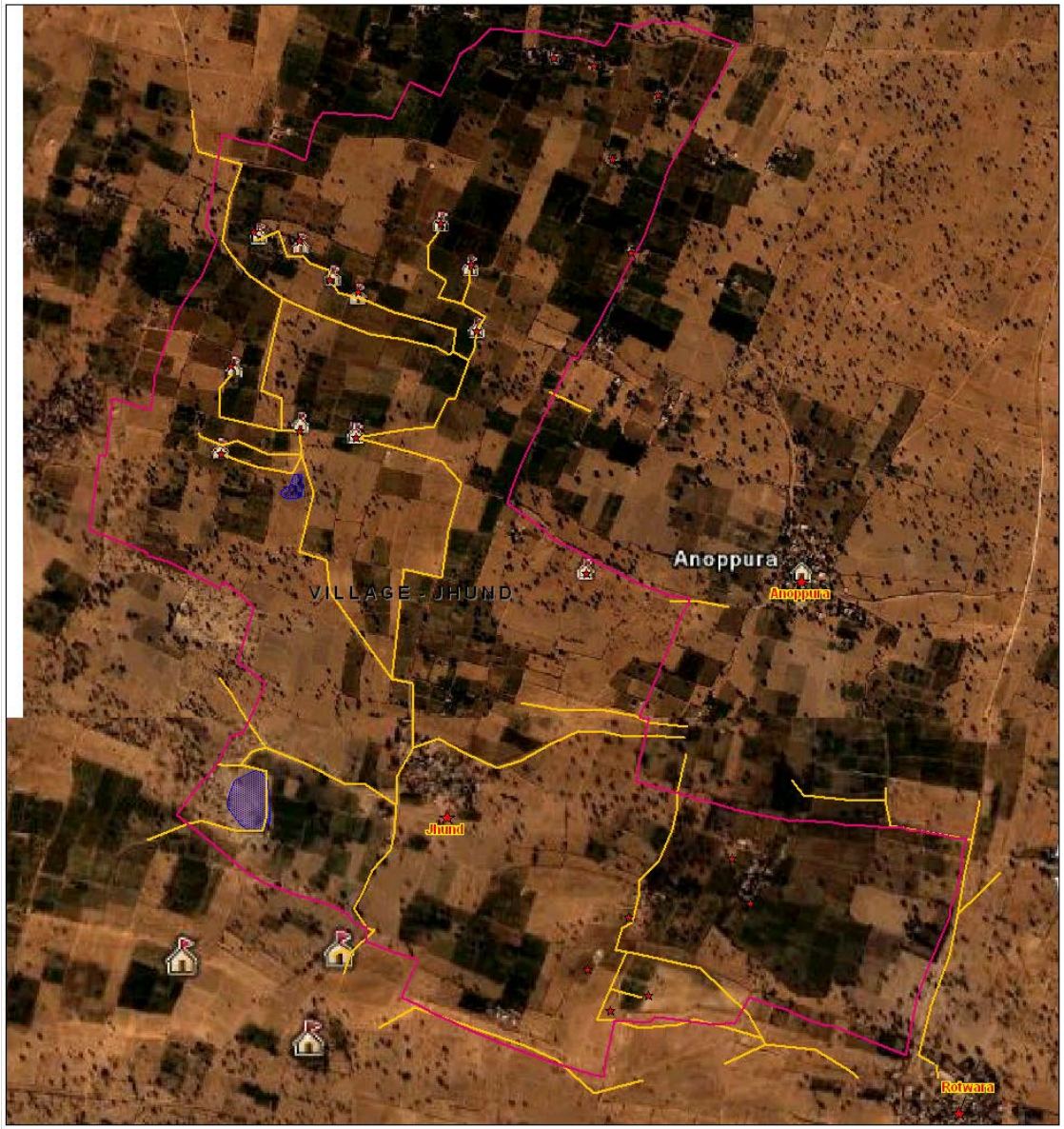
Figure No.-4

IKEA WATER PROJECT

MICRO WATERSHED - JHUND

Satellite Image MAP

(Year - 2007)



LEGEND

- Village Boundary
- Fields Boundary
- Main Village

Settlement Status

- Main Village
- Dhani
- Settlements
- Roads/ Pathway

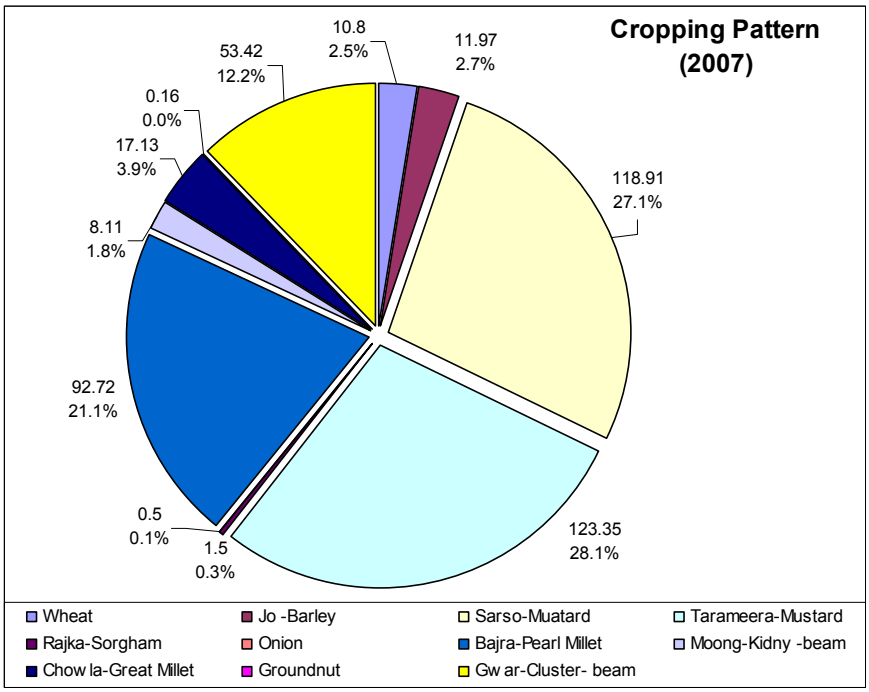
Drainage Network

- Drains
- Bandi River
- Existing Pond/ Nadi

Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
57.	Wheat	Rabi	4.5	March	10.80	0.0	10.80
58.	Jo -Barley	-do-	4	March	11.97	0.0	11.97
59.	Sarso-Mustard	-do-	4	Feb.-March	98.25	20.67	118.91
60.	Tarameera-Mustard	-do-	4	Feb.-March	103.35	20.00	123.35
61.	Rajka-Sorgham	-do-			1.5	0.0	1.5
62.	Onion	-do-			0.5	0.0	0.5
63.	Bajra-Pearl Millet	Kharif	4	Oct.	0.0	92.72	92.72
64.	Moong- Kidny -beam	-do-	3	Sep.	0.0	8.11	8.11
65.	Chowla-Great Millet	-do-	3	Sep.	0.0	17.13	17.13
66.	Groundnut	-do-	4	Oct.	0.0	0.16	0.16
67.	Gwar-Cluster-beam	-do-	4	Oct.-Nov.	0.0	53.42	53.42
Total					**226.37**	**212.21**	**438.57**



According to the data it could be well concluded that Tarameera-Mustard (28.1%) is the major crop in all the three seasons in the area followed by Sarso-Mustard (27.1%) and Bajra-Pearl Millet (21.1%).

Water Resource Profile:

Physiography: The general ground profile is flat and having gentle slope towards south-west direction. The runoff water during rainfall period follows ground slope and drains in to natural depression forming a pond at the south-west boundary of the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: There is no well defined drainage system observed in the village Jhund. The drainage pattern of the Jhund is such that the runoff water follows north east to south west direction. The north- eastern part is almost flat region having sandy strata. These natural pathways of drainage system are obstructed by agricultural fields and at most of the places it has been completely destroyed. Presently, drainage system follows the path way/ village katcha-roads in the village area. Figure No. 6 a gives a clear view of the drainage pattern in village Jhund.

Water Sources:
The existing water resource status can be represented by following table:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	52	-	52
Bore well	1	-	1
Hand pumps	1	5	6
Village Ponds	-	2	2

Following important points were observed during the baseline survey:

- Similar to other villages, here too, most of the wells dry up in the summer season. The yield of groundwater has reduced considerably since last few years due to lesser monsoon rainfall.
- The ground water is generally saline nature which increases with depth.
- Depth to water table varies from 120' to 135' depending upon its location in the village area.
- Rocky formations are visible at depth varying from 40' to 160' from the ground level at different locations.

Drinking Water Sources: There is no Public Health Engineering Department (PHED) water supply system except hand pumps installed in the village. Only one out of six hand pumps installed in the village is functional and yield sweet water. This water is used for drinking purposes for human population. Open wells near some depression and at village pond also yield sweet water and the entire village population draw drinking from such sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the human and cattle population of the village. In extreme summer period people have to travel long distances to get the sufficient quantity of drinking water. The only bore well in the village yield saline water and is used for bathing purpose by the villagers and cattle.

Irrigation Water Sources: Out of total wells about 52 are in functional state. The prime use of these well are for irrigation.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting drinking water sources scenario in village Jhund.

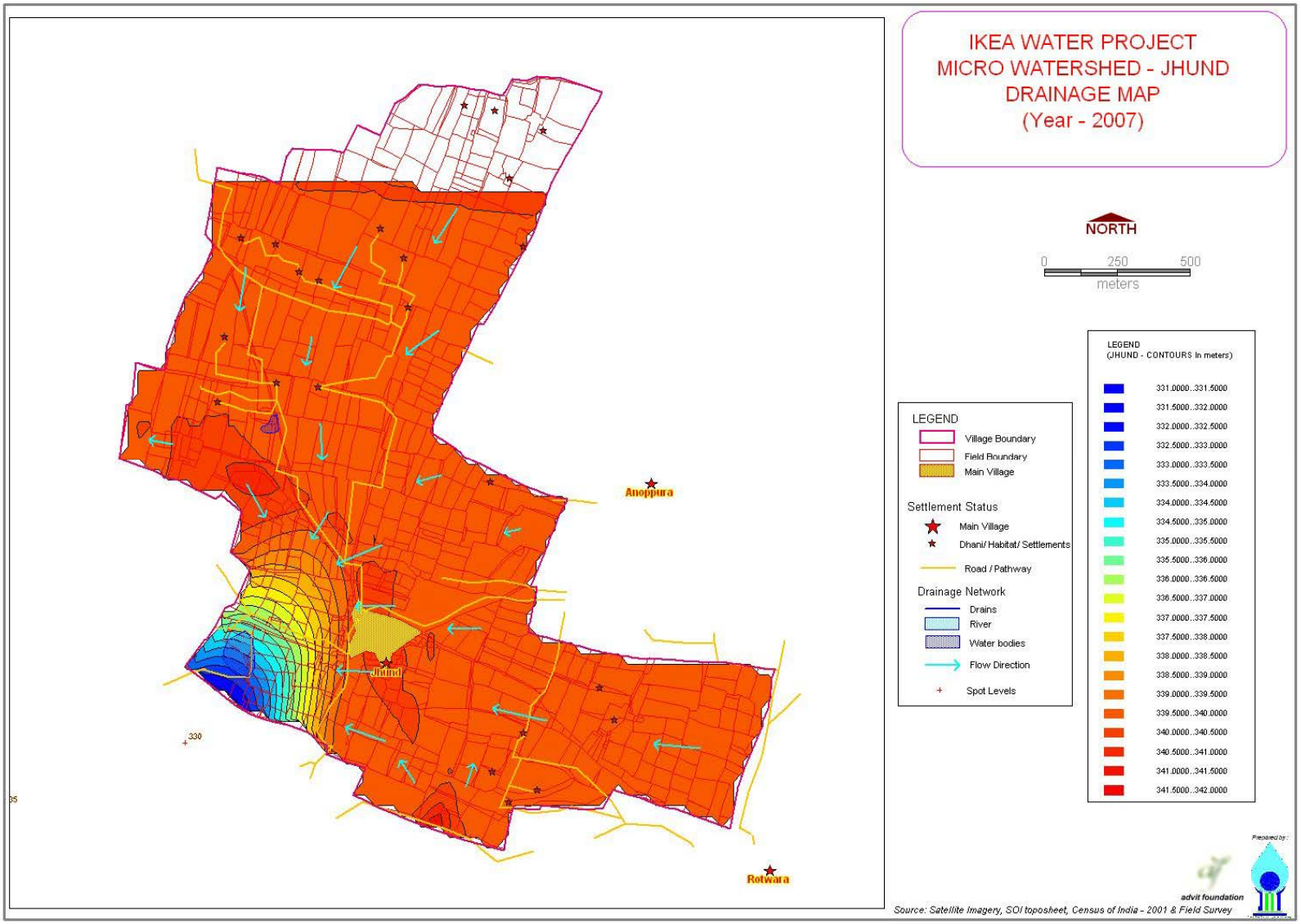

IKEA WATER PROJECT
MICRO WATERSHED - JHUND
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
(JHUND - CONTOURS In meters)
331.0000..331.5000
331.5000..332.0000
332.0000..332.5000
332.5000..333.0000
333.0000..333.5000
333.5000..334.0000
334.0000..334.5000
334.5000..335.0000
335.0000..335.5000
335.5000..336.0000
336.0000..336.5000
336.5000..337.0000
337.0000..337.5000
337.5000..338.0000
338.0000..338.5000
338.5000..339.0000
339.0000..339.5000
339.5000..340.0000
340.0000..340.5000
340.5000..341.0000
341.0000..341.5000
341.5000..342.0000
Anoppura
Jhund
Rotwara
330
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

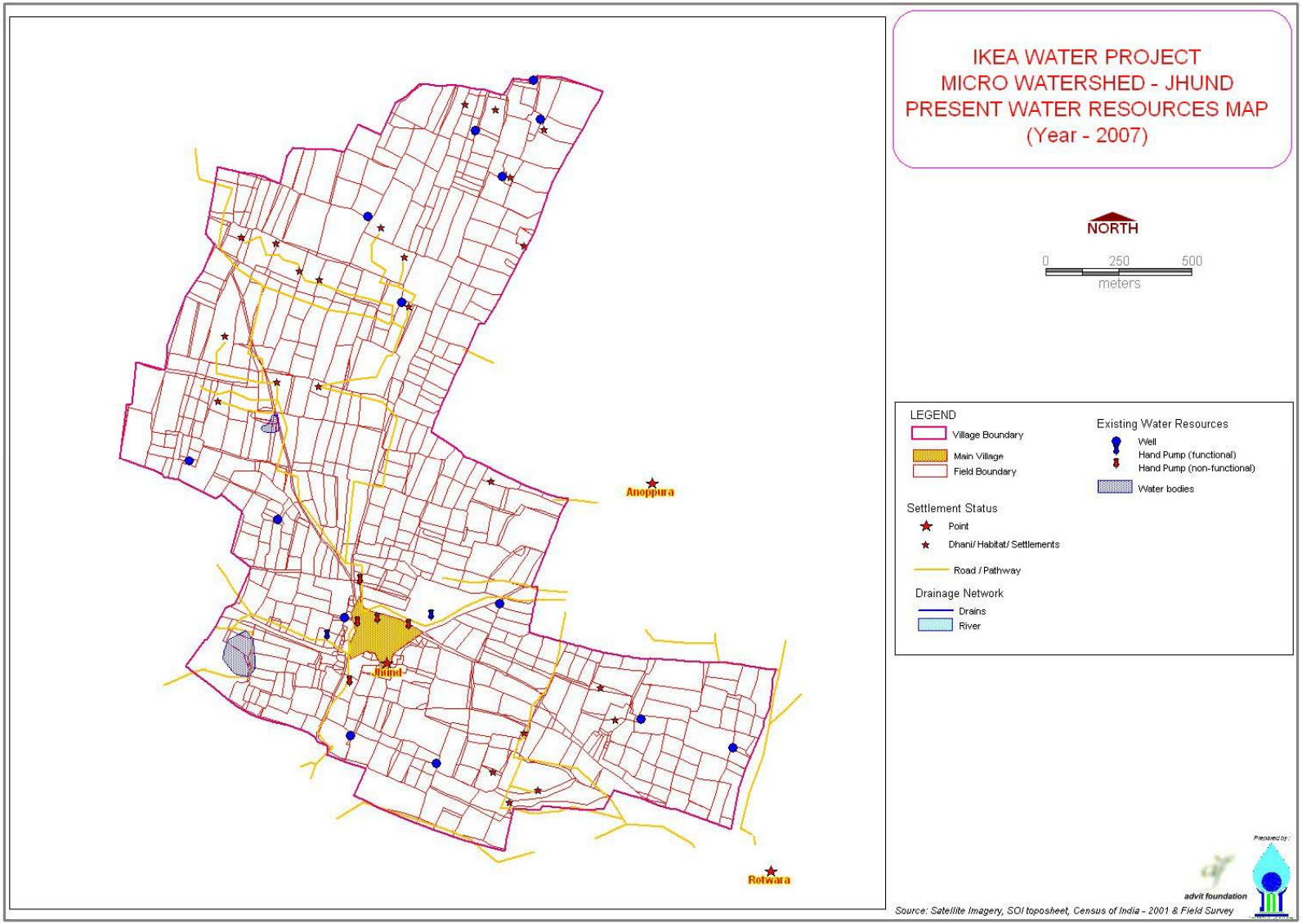

IKEA WATER PROJECT
MICRO WATERSHED - JHUND
PRESENT WATER RESOURCES MAP
(Year - 2007)
NORTH
0
250
500
meters
LEGEND
Village Boundary
Main Village
Field Boundary
Existing Water Resources
Well
Hand Pump (functional)
Hand Pump (non-functional)
Water bodies
Settlement Status
Point
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Anoppura
Jhund
Rotwara
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to two distinct micro-watersheds draining towards depression located at south-western direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	183.9343
Watershed no.-2	92.8606
Total	**276.7949**

The watershed no.-1 is big in coverage area and average field size inside its boundary. Both the watershed are having similar soil type and groundwater conditions. The dark shed reflected in satellite imagery of year 2007 (figure no-5) clearly indicate that agriculture practices (due to sustainable irrigation sources) are more intense in watershed no.-1 & 2.

The drainage system is not clearly visible in both the watersheds. Natural flows of runoff water in watershed no/-1 is from north to south while it is from east to west in watershed no.-2. The natural flow of runoff water has been obstructed by the field boundaries hence the water flows through the pathways used for transportation.

Proposed Activities: All possible water harvesting activities on watershed basis were discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). The agreed activities were assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location envisaged during the project study shared and recommended by the local village community in Jhund village:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields	• Micro-watershed No.-1	• **Cluster-1**: About 1000m field bunds spread over 16 Fields in North-west of the main village (in between field no.-3 & 22)
				• **Cluster-2:** About 2000m field bunds spread over more than 50 Fields in north of the main village (Refer figure no.-9 for details)
			• Micro-watershed No.-1 & 2	• **Cluster-3:** About 750m field bunds spread over more than 20 Fields in west of the main village • (Refer figure no.-9 for details)
			• Micro-watershed No.- 2	• **Cluster-5:** About 250m field bunds spread over more than 15 Fields in south of the main village

				• (Refer figure no.-9 for details)
				• **Cluster-6:** About 1500m field bunds spread over more than 30 Fields in east of the main village (Refer figure no.-9 for details)
		• Construction of small tanks/ ponds at agricultural farm.	• Micro-watershed No.-1 & 2	• **Cluster-1 to 4 and 6**: One tanks at suitable locations in each cluster except cluster 4.
2	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.- 304 (About 700m north of main village)
				• Field No.- 241 (About 400m west of main village)
		• Construction of Roof Top Rainwater Harvesting System	• Micro-watershed No.-2	• At Community (Panchayat) Building in main village

Numbers/ quantities of proposed activities are summarized in following table:

S. No.	Activities	Numbers/ Details
1	Roof Top Rainwater Harvesting System	1 No.'s
2	Nadi construction/ renovation	2 No.'s
3	Farm Tanks/ ponds	5 No.'s
4	Farm Field Bunding	6500 Meters

The location of the proposed activities are shown in figure no.- 9

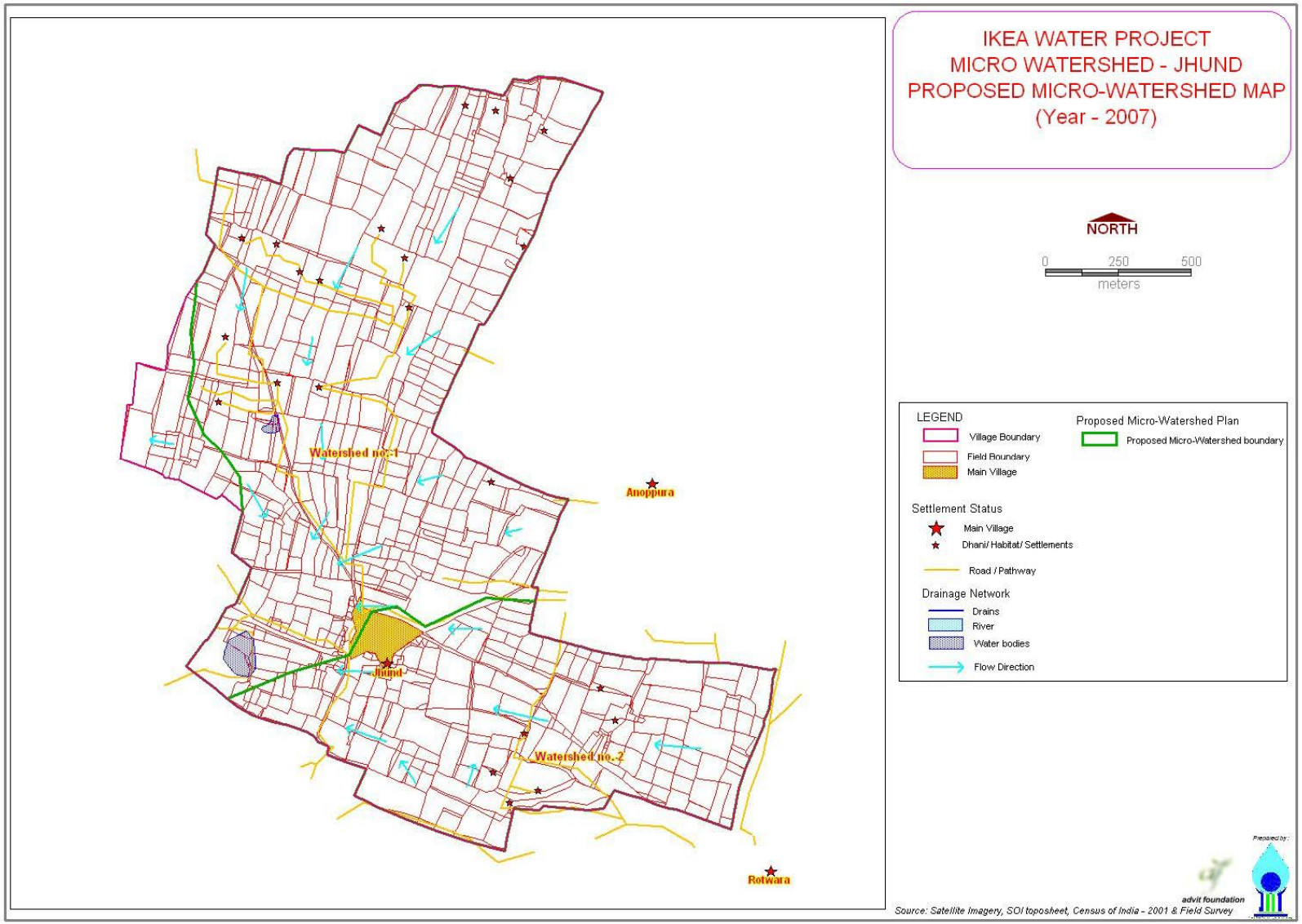

IKEA WATER PROJECT
MICRO WATERSHED - JHUND
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Watershed no.-1
Watershed no.-2
Anoppura
Jhund
Rotwara
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200000.00**
2	Nadi construction/ renovation	2	No.'s	Lumpsum	**400000.00**
3	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50000.00	**250000.00**
4	Farm Field Bunding	6500	Meters	30.00	**195000.00**
				GRAND TOTAL	**1045000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

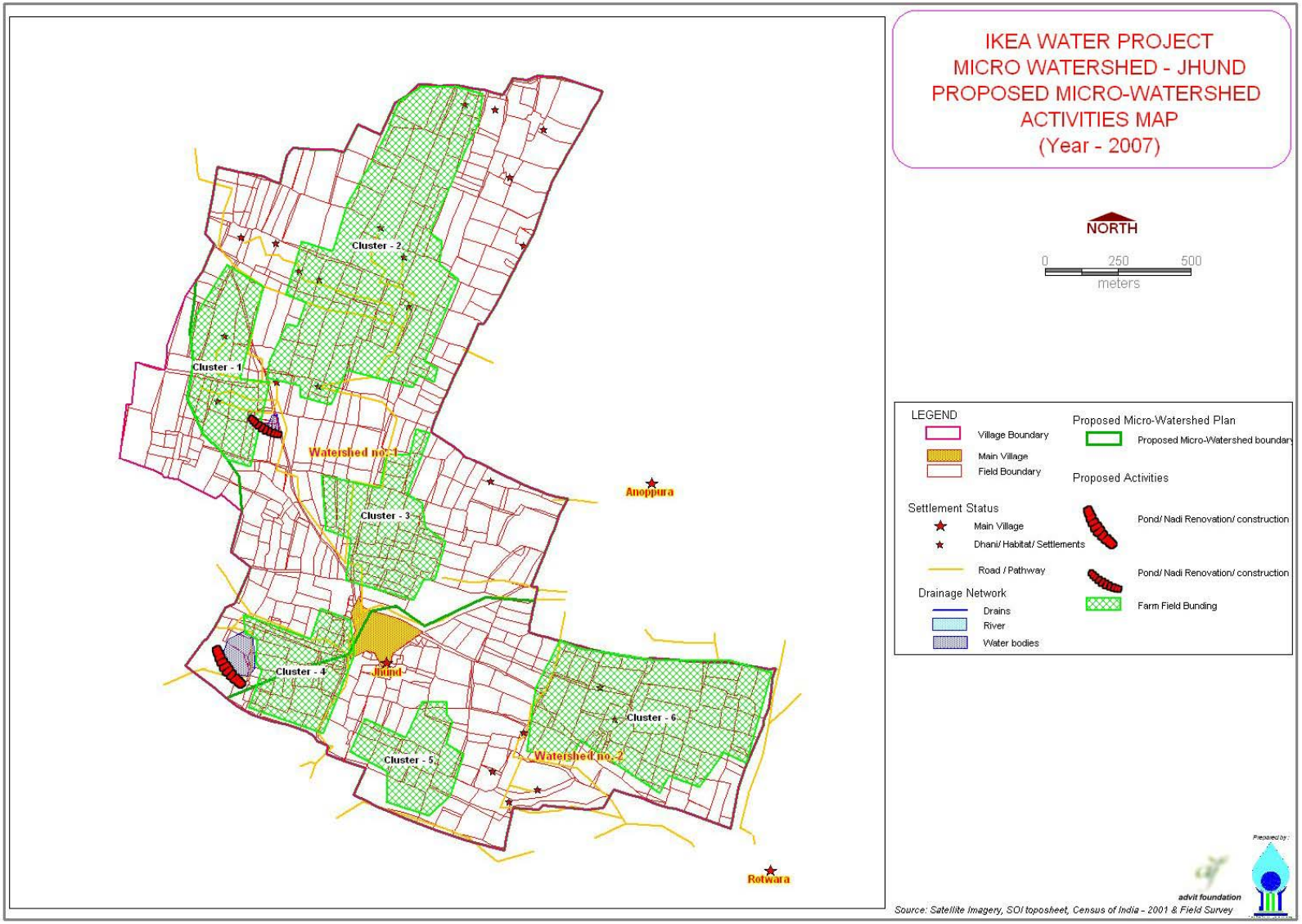

IKEA WATER PROJECT
MICRO WATERSHED - JHUND
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
NORTH
0
250
500
meters
Cluster - 1
Cluster - 2
Cluster - 3
Cluster - 4
Cluster - 5
Cluster - 6
Watershed no.-1
Watershed no.-2
Anoppura
Jhund
Rotwara
LEGEND
Village Boundary
Main Village
Field Boundary
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Proposed Activities
Pond/ Nadi Renovation/ construction
Pond/ Nadi Renovation/ construction
Farm Field Bunding
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE - KEERATPURA

Village Location

Keeratpura village is located at 75^{0}34'6.2" east longitude and 26^{0}42'43"north longitude with a geographical area of 472 hectare at about 50 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Keeratpura w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**14 km**
Distance from Block HQ:	=	**24 km**
Type of approach road to the village: *(Kachcha 8km and Pacca 6 km)*	=	**14 km**
Distance of village from district HQ	=	**45 km**
Nearest market & its distance from the village: *(Bagru)*	=	**14 km**
Distance to nearest Middle School	<	**5 km**
Distance to nearest College	>	**10 km**
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 591 families (as per baseline survey – 2007) residing in the village Keeratpura which are spread up in main village and five dhanies (hamlets) located inside the village boundary (refer fig.- 1 and 2)

K. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	591	Total House Holds	113
Total male Population	201	SC House Holds	53
Total Female Population	184	ST House Holds	8
Child Population (0-6 yr)	206	BPL House Holds	

L. Dhani-wise breakup of the population distribution:

S. No.	Village/ Dhani	House Holds			Population			
		TOTAL	SC	ST	Male	Female	Child	Total
1	**Keeratpura**	38	2	3	49	47	53	149
2	**Meena Dhani**	5		5	13	11	16	40
3	**Bagra Dhani**	2			5	4	3	12
4	**Regar Dhani**	1	1		3	1	1	5
5	**Yadav Dhani**	17			38	31	36	105
6	**Bairva Dhani**	50	50		93	90	97	280
	Total	**113**	**53**	**8**	**201**	**184**	**206**	**591**

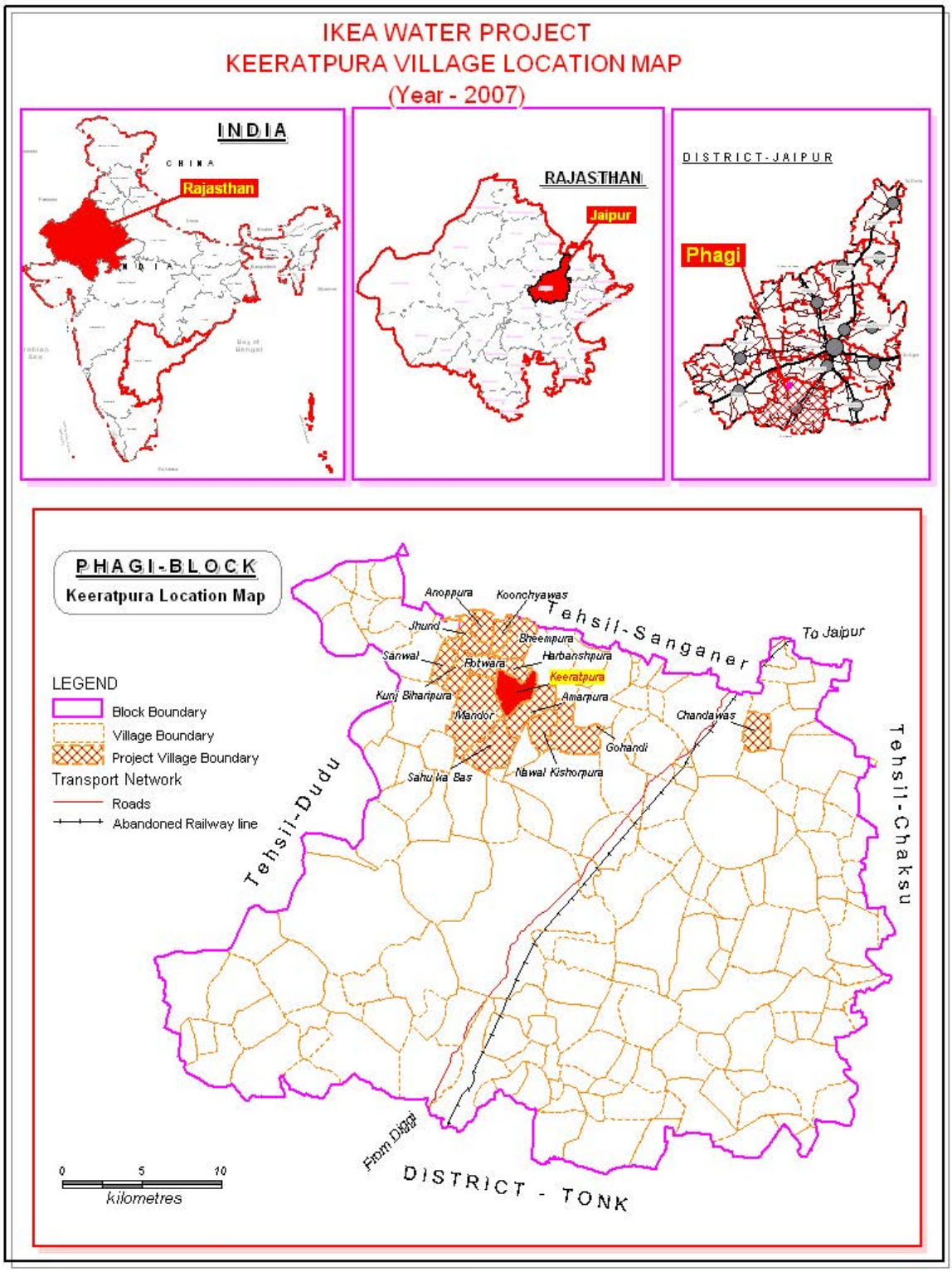

IKEA WATER PROJECT
KEERATPURA VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Keeratpura Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Harbanshpura
Sanwal
Rotwara
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Chandawas
Gohandi
Sahu ka Bas
Nawal Kishorpura
Tehsil-Sanganer
To Jaipur
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0
5
10
kilometres

Figure No.-1

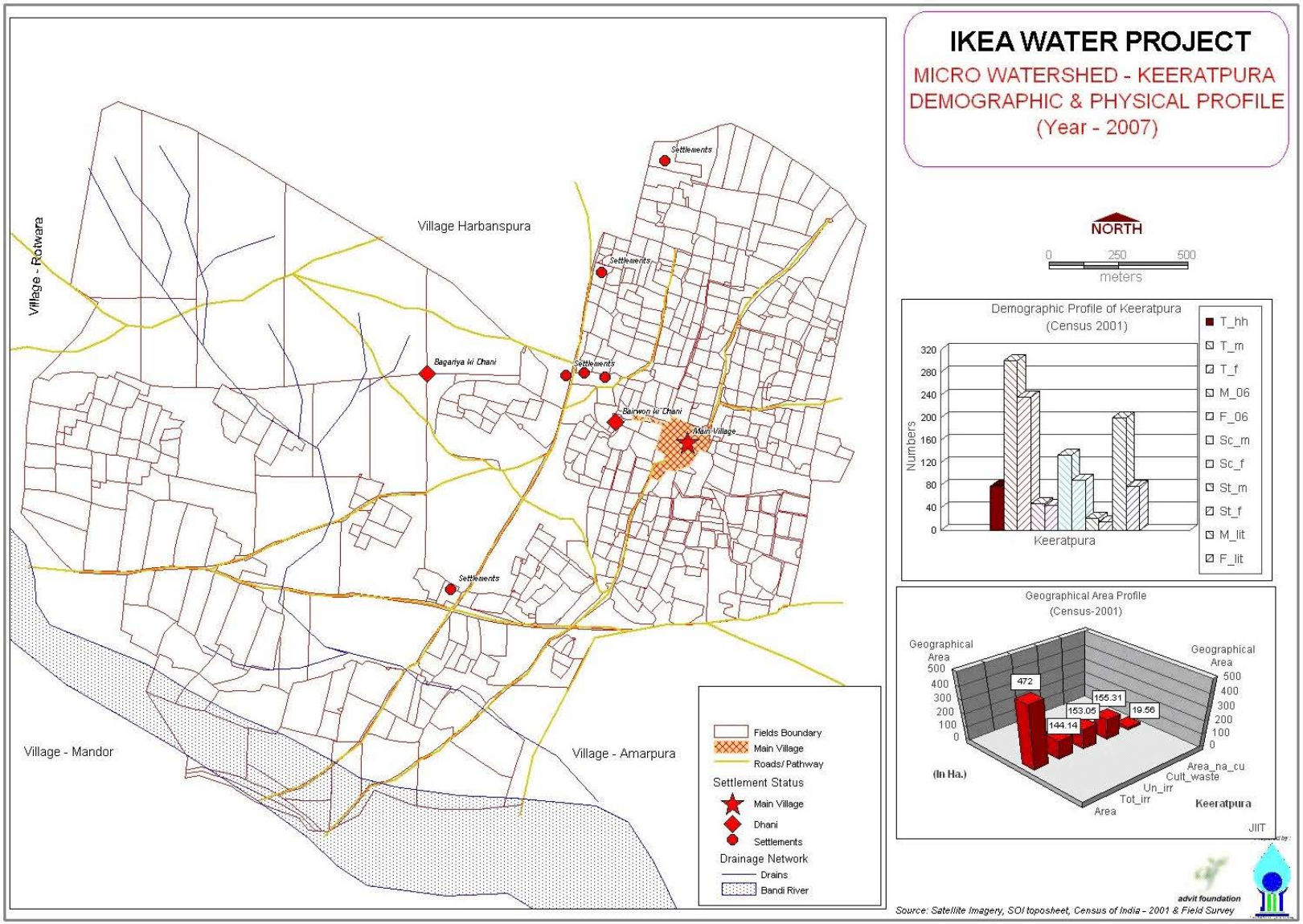

IKEA WATER PROJECT
MICRO WATERSHED - KEERATPURA
DEMOGRAPHIC & PHYSICAL PROFILE
(Year - 2007)
Village Harbanspura
Village - Rotwara
Village - Mandor
Village - Amarpura
Settlements
Bagariya ki Dhani
Bairwon ki Dhani
Main Village
Fields Boundary
Main Village
Roads/ Pathway
Settlement Status
Main Village
Dhani
Settlements
Drainage Network
Drains
Bandi River
NORTH
0 250 500
meters
Demographic Profile of Keeratpura
(Census 2001)
Numbers
Keeratpura
T_hh
T_m
T_f
M_06
F_06
Sc_m
Sc_f
St_m
St_f
M_lit
F_lit
Geographical Area Profile
(Census-2001)
Geographical Area
(In Ha.)
472
155.31
153.05
144.14
19.56
Area_na_cu
Cult_waste
Un_irr
Tot_irr
Area
Keeratpura
JIIT
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

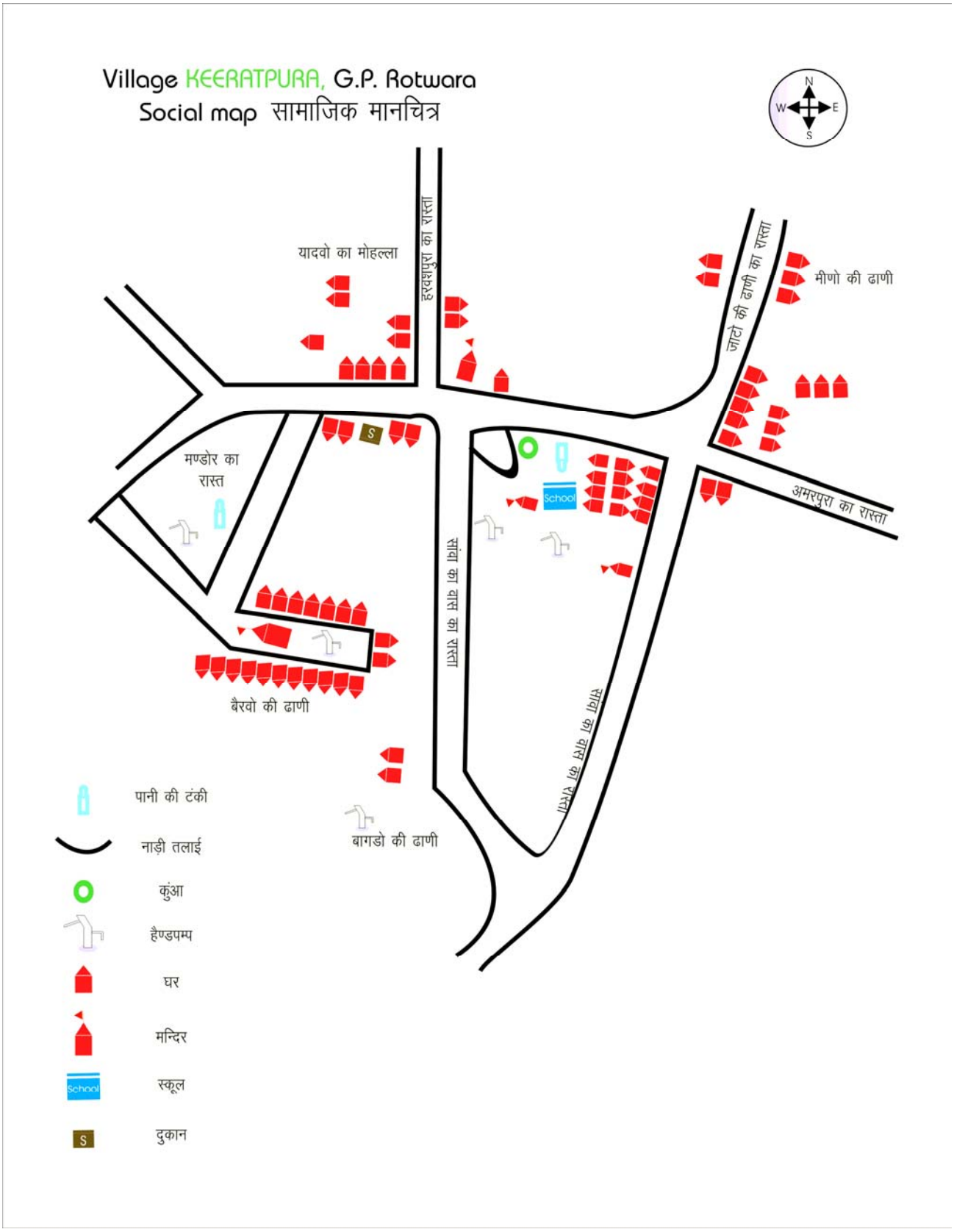

Village KEERATPURA, G.P. Rotwara
Social map सामाजिक मानचित्र
N
W
E
S
यादवो का मोहल्ला
हरवधपुरा का रास्ता
जाटो की ढाणी का रास्ता
मीणो की ढाणी
मण्डोर का रास्त
School
अमरपुरा का रास्ता
बैरवो की ढाणी
बागडो की ढाणी
पानी की टंकी
नाड़ी तलाई
कुंआ
हैण्डपम्प
घर
मन्दिर
स्कूल
दुकान

Figure No.-3

The sex ratio in Keeratpura village is 915 females per 1000 males. The child population is about 34.85% of the total population which is a very healthy sign of future of the village. SC community leads in households with about 47% families in the village.

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

- Overall Literacy rate is 51.76%. Male literacy rate is 66.44% while female literacy rate is 33.05%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- A primary health sub-center facility is available in the village.

Social profile of village Keeratpura is represented in Figure no.-3.

- **Work and Work force**

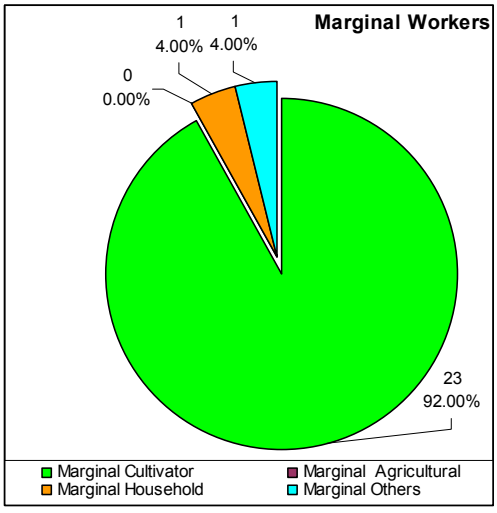
The workers population (in numbers and percentage) available in the village Keeratpura is tabulated below:

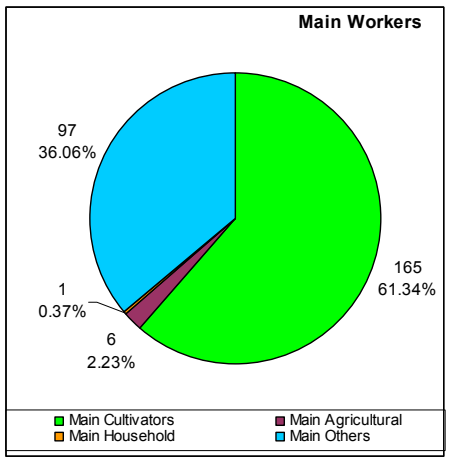
A.	**Main Worker Population**	***In Numbers***	***In % to total population***
	Male Worker	159	52.82%
	Female Worker	135	57.20%
	Total Workers	**294**	**54.75%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	2	0.66%
	Female Marginal Worker	23	9.75%
	Total Marginal Workers	**25**	**4.66%**
C	**Non Worker Population**		
	Male Non Worker	142	47.18%
	Female Non Worker	101	42.80%
	Total Non Workers	**243**	**45.25%**

In Keeratpura village total main workers population is about 54.75% of the total population. Females lead the male in main workers population in % to their respective total population.

About 61.74% of main worker population is engaged in cultivator work in the village itself. Similarly in Marginal workers category about 92% marginal workers are engaged in cultivation field.

Following graph best represent the main worker population distribution by activities.





In Keeratpura village very less number i.e. 2.23% in main workers and nil in marginal workers are

engaged in this category of work. Almost negligible number of people are engaged in household works.

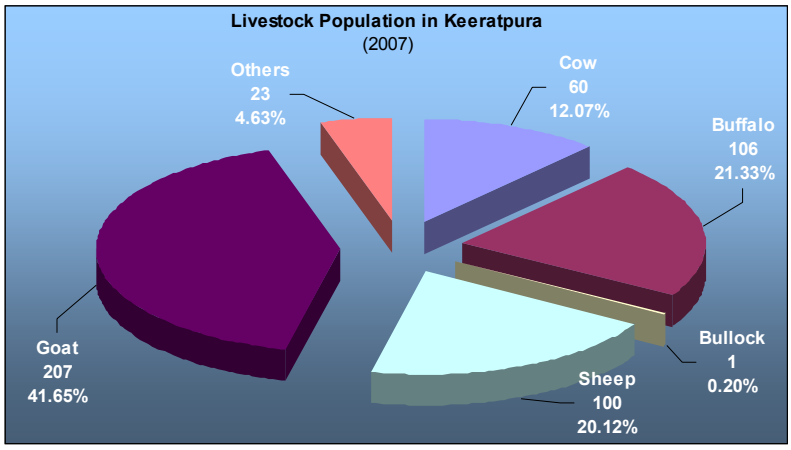
About 36.06% in main worker and 4% in marginal worker category are engaged in this type of work category. In this category Males population leads the female population.

Activity-wise population distribution of Marginal workers has been represented by the following graph.

Livestock

As per the base line survey carried out in Keeratpura village there are 497 cattle variably distributed among 113 families living in the village. Some families are having more than 50 cattle whereas some have none. Goats and sheep are the major contributor (about 60%) to the livestock population.

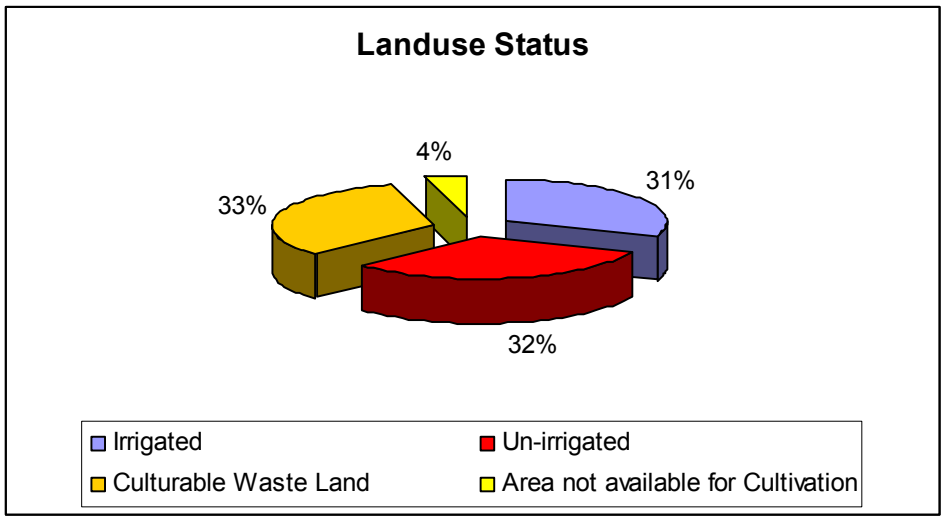
Buffaloes and cows amount to one third part of the cattle population primarily being utilised for dairy purpose (milk production).



Land-Use Pattern:

The major part of the village economy is dependent on agricultural production. Most of the land available is being put to agricultural activities.
Following graph gives status of land utilization in village Keeratpura.
According to broad classification out of the total land only 31% is irrigated (by tube wells) and about 32% land falls in the category of un-irrigated land. About 33% of the land is culturable waste land in the village Keeratpura.

Further, About 51 hectare land is permanent pasture land and 20 hectare is government waste land. There is no panchayat and other category land available in the village. Cultivable fallow land or private waste land is about 75 hectare. Looking to the statistics there are ample oppertunities in the field of agriculture. Increase in irrigation facilities could result in more cropped area in the village.

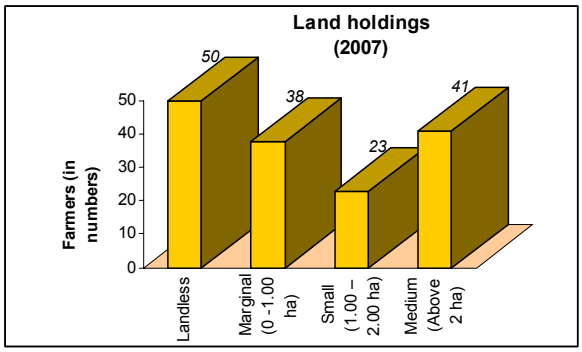


Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Keeratpura.

Satellite image map well represent the present land-use features in different textures as shown in figure no.- 5. The field

boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

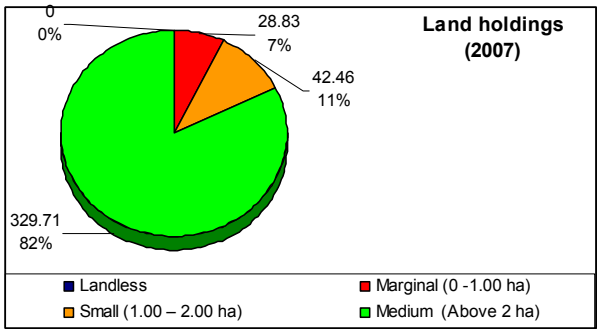
Land Holdings



Category-wise numbers of farmers and their land holdings are presented in the following graphs.

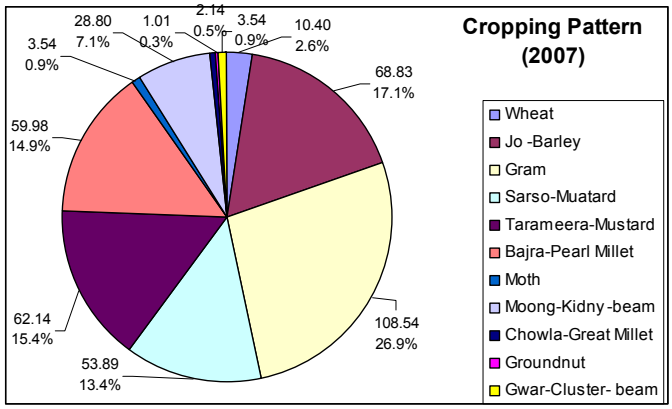
The base line survey revealed that

- Out of 152 farmers in the village about one third (32.8%) i.e. 50 farmers are landless.
- About 27% farmers (41 no.'s) have more than 2 hectare land. These farmers have more than 82% of the landholdings in the village.
- Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 11% of the total geographical area of the village.
- Marginal farmers (0 to 1.00 ha.) have lands about 7% of the total area of the village Keeratpura.



Cropping Pattern

The type of crop sown in an area depends on many factors such as irrigation facilities, type of soil, rainfall characteristics, distance from market places and infrastructure facilities. In Keeratpura village the type of crops sown in different seasons recorded during the base line survey are tabulated below:



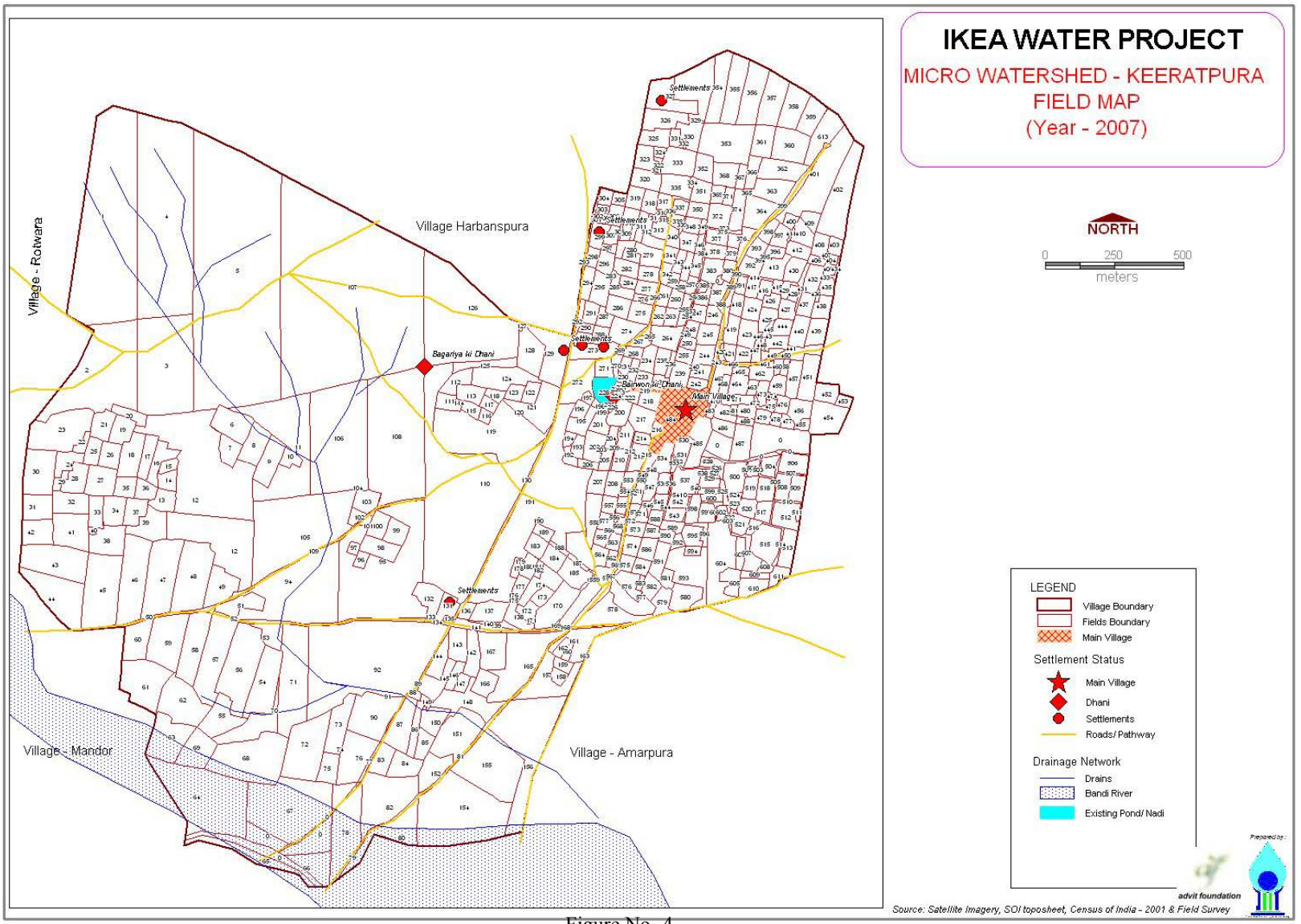

IKEA WATER PROJECT
MICRO WATERSHED - KEERATPURA
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
Village - Rotwara
Village Harbanspura
Bagariya ki Dhani
Settlements
Main Village
Village - Mandor
Village - Amarpura
LEGEND
Village Boundary
Fields Boundary
Main Village
Settlement Status
Main Village
Dhani
Settlements
Roads/ Pathway
Drainage Network
Drains
Bandi River
Existing Pond/ Nadi
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

IKEA WATER PROJECT

MICRO WATERSHED - KEERATPURA

Satellite Image MAP

(Year - 2007)

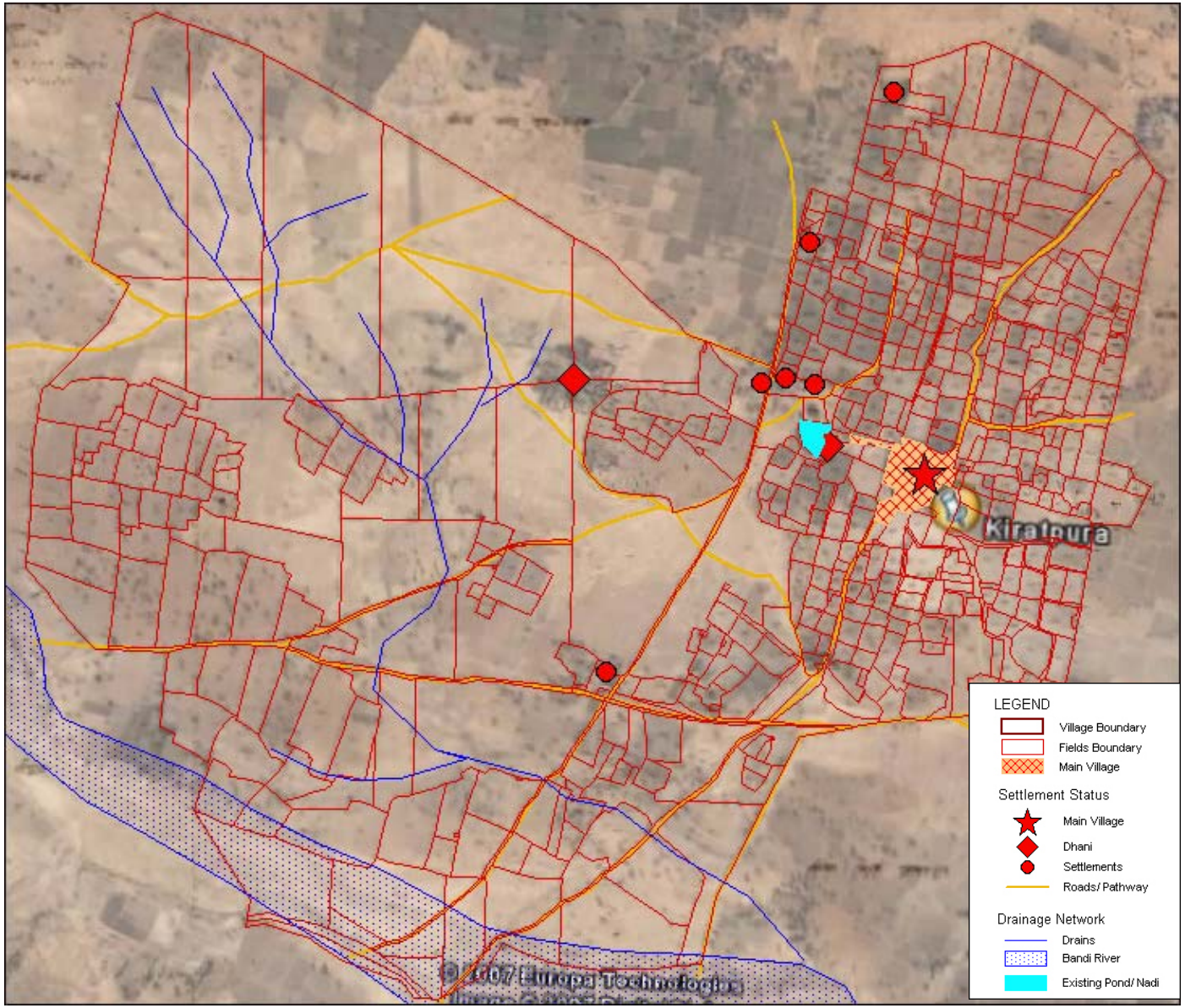


Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
68.	Wheat	Rabi	4.5	March	10.40	0.0	10.40
69.	Jo -Barley	-do-	4	March	68.83	0.0	68.83
70.	Gram	-do-	4	March	0.0	108.54	108.54
71.	Sarso-Muatard	-do-	4	Feb.-March	0.0	53.39	53.89
72.	Tarameera-Mustard	-do-	4	Feb.-March	0.0	62.14	62.14
73.	Bajra-Pearl Millet	Kharif	4	Oct.	0.0	59.98	59.98
74.	Moth	-do-	3	Oct	0.0	3.54	3.54
75.	Moong-Kidny - beam	-do-	3	Sep.	0.0	28.80	28.80
76.	Chowla-Great Millet	-do-	3	Sep.	0.0	2.14	2.14
77.	Groundnut	-do-	4	Oct.	0.0	1.01	1.01
78.	Gwar-Cluster-beam	-do	3	Sep.	0.0	3.54	3.54
Total					**79.23**	**323.08**	**402.31**

According the data it could be well concluded that Gram (27%) is the major crop in all the three seasons in the area followed by Jo-Barley (17%) and Pearl Millet & Great Millet (15%). Wheat requires irrigation at regular interval hence it is cropped in area where irrigation facilities exists. Jo-Barley is also sown in the area where irrigation facilities exist. Other crops (68.4%) are dependent on rain fed irrigation. Hence rainfall plays major role in the village economy as production is largely dependent on it.

Water Resource Profile:

Physiography: The general ground profile is flat and having gentle slope towards south-east direction. The runoff water during rainfall period follows ground slope and drains in to Bandi River flowing at the south of the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: The drainage system of the Keeratpura follows north east to south west direction. There are two distinct natural drains with gentle slope and wider bed width. These natural drains are obstructed by agricultural fields and at some of the places it has been completely destroyed. In present condition at most of the places drainage system follows the path way/ village katcha-roads. Figure No. 6 a gives a clear view of the drainage pattern in village Keeratpura.

Water Sources: The water resource scenario can be well represented by following graphs and tables:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	29	36	65
Bore well	-	-	-
Hand pumps	7	7	7
Village Ponds	-	1	1

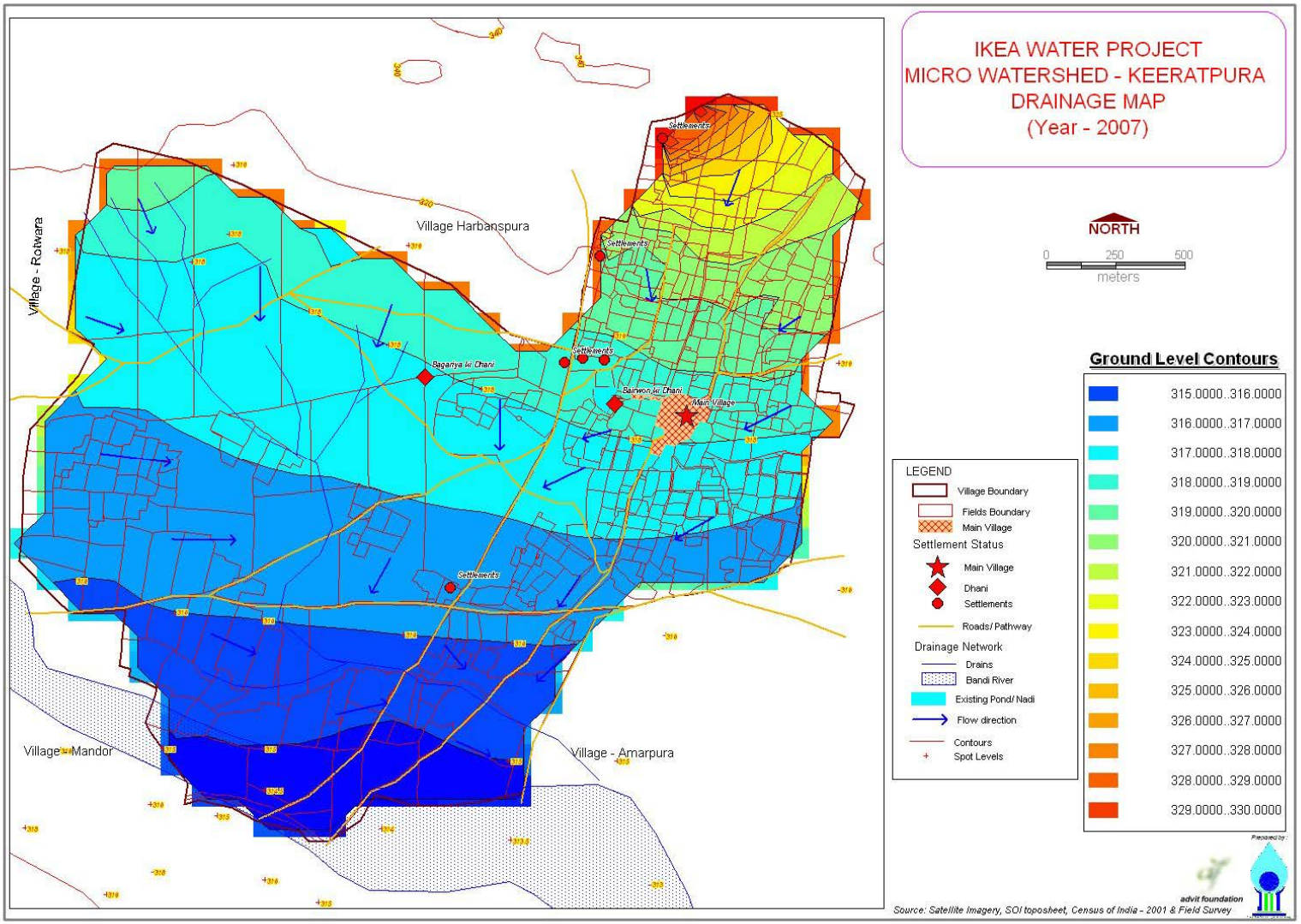
According to the baseline study followed by field survey it was found that:

- Most of the wells dry up in the summer season. Also the yield of groundwater has reduced considerably since last decades.
- The ground water is generally saline. The salinity increases with depth.
- Depth to water table varies from 20' to 65' depending upon its location.
- Rock formations are visible at depth varying from 15' to 45' from the ground level at different locations.

Drinking Water Sources: Public Health Engineering Department (PHED) has installed Regional Water Supply Scheme with Ground Level Reservoir (GLR) with tape connection all around it in village Keeratpura. The scheme and its various components are in working condition but not sufficient on quality and quantity aspect. Although the scheme is functional but people do not prefer it for drinking as it contains high fluoride (> 3ppm) and taste salty. Even cattle do not drink the water. The source is not at all dependable as it functions occasionally. Most of the time it remains closed. The hand pumps installed in the village are functional but yield saline water. This water is used for secondary purposes other than drinking for both human and cattle population. Open wells near some depression and at village pond do yield sweet water and the entire population draw drinking from such sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to travel long distances to get the sufficient quantity of drinking water.

Irrigation Water Sources: Out of total wells about 29 are in functional state. The prime use of these well are for irrigation. Although the owner family and nearest community members do use this water for drinking purpose as it is less saline than water from hand pump. The farmers generally dug open bore in the bed of the open well to draw water with help of diesel engine. The operating hours of this set depends upon the irrigation water requirement, recoup time of water. Generally the recovery time varies from 24 hours to 3 hours depending upon the location.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting water sources status in village Keeratpura.


IKEA WATER PROJECT
MICRO WATERSHED - KEERATPURA
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
Village Harbanspura
Village - Rotwara
Village - Mandor
Village - Amarpura
Settlements
Bagariya ki Dhani
Barwon ki Dhani
Main Village
Ground Level Contours
315.0000..316.0000
316.0000..317.0000
317.0000..318.0000
318.0000..319.0000
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328.0000..329.0000
329.0000..330.0000
LEGEND
Village Boundary
Fields Boundary
Main Village
Settlement Status
Main Village
Dhani
Settlements
Roads/ Pathway
Drainage Network
Drains
Bandi River
Existing Pond/ Nadi
Flow direction
Contours
Spot Levels
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

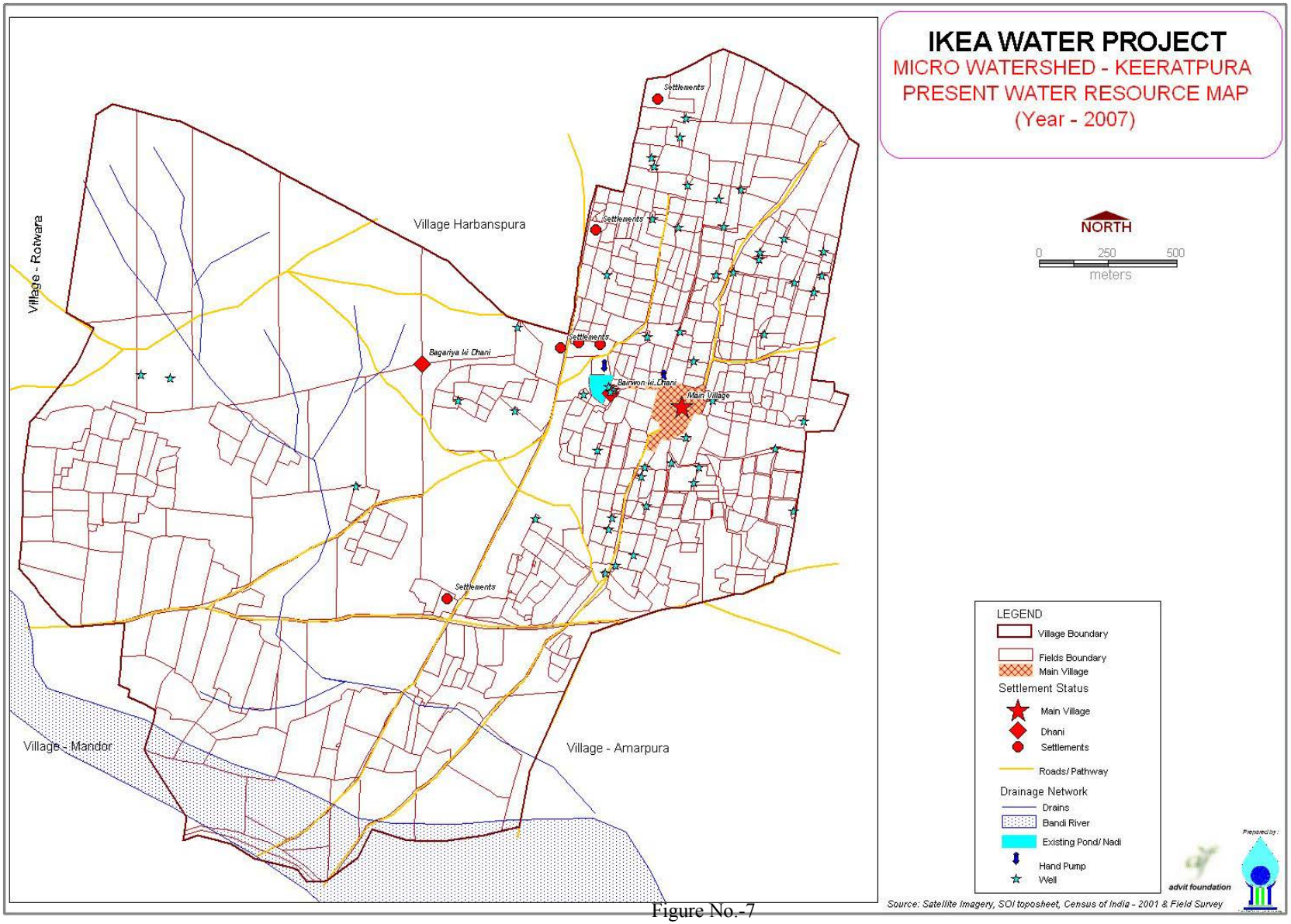

IKEA WATER PROJECT
MICRO WATERSHED - KEERATPURA
PRESENT WATER RESOURCE MAP
(Year - 2007)
NORTH
0
250
500
meters
Village - Rotwara
Village Harbanspura
Village - Mandor
Village - Amarpura
Settlements
Settlements
Settlements
Settlements
Bagariya Ki Dhani
Bairwon-ki-Dhani
Main Village
LEGEND
Village Boundary
Fields Boundary
Main Village
Settlement Status
Main Village
Dhani
Settlements
Roads/ Pathway
Drainage Network
Drains
Bandi River
Existing Pond/ Nadi
Hand Pump
Well
advit foundation
Prepared by :
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to four micro-watersheds draining towards south direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	233.90
Watershed no.-2	96.70
Watershed no.-3	119.80
Watershed no.-4	21.60
Total	**472.00**

Although the watershed no.-1 is big in coverage area and average field size inside its boundary but watershed no-2 and 3 are more productive and having higher intensity of irrigation facilities. The dark shed reflected in satellite imagery of year 2007 clearly indicate that agriculture practices are more intense in watershed no.-2 & 3.

The drainage system is comparatively well defined in watershed no.-1 as compare to other watersheds. Natural flow of runoff water from watershed no.-2 & 3 have been obstructed by the field boundaries hence the water flows through the pathways used for transportation. The watershed no-4 is at the bottom of the village and is quite clumsy.

Proposed Activities: As identifying of water harvesting activities on watershed basis was the main objective of the project a set of activities have been discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location envisaged during the project study shared and recommended by the local village community:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Rainwater Harvesting on natural drainage**	• Construction of one check dam • Construction of one Anicut structure.	• Micro-watershed No.-1 • Micro-watershed No.-1	• Field (Khasra*) No.-94 • Field No.-92
2	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields • Construction of small tanks/ ponds at agricultural farm.	• Micro-watershed No.-2 & 3 • Micro-watershed No.-2 & 3 (One in micro-watershed -2 and four in micro-watershed no.-3)	• About 500m field bunds spread over 20 Fields in north of main village in micro-watershed no.-2 and • About 3000m field bunds spread over more than 75 Fields in three clusters – one in north, second in north east and third in south of the main village. (refer figure no.-9 for details)
3	**Drinking/ Irrigation water**	• Construction of Nadi (village pond)	• Micro-watershed No.-2	• Field No.-110 (Government Pasture Land)

	source			
4	**Pasture Land Development & Horticulture**	• Land grading and bunding. • Plantation of suitable plant/ fruit plant. • Linking with government horticultural scheme.	• Micro-watershed No.-2	• Field (Khasra) No.-108 & 110 (Government Pasture Land)

The proposed activities can be summarized in following table:

S. No.	Activities	Numbers/ Details	
1	Anicut construction	1	No.'s
2	Check dam construction	1	No.'s
3	Nadi construction/ renovation	1	No.'s
4	Farm Tanks/ ponds	5	No.'s
5	Farm Field Bunding	3500	Meters
6	Pasture Land Development	25	Hectare

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Anicut construction About 95m wide in main drain	1	No.'s	20000.00	**1900000.00**
2	Check dam construction About 90m wide on main drain	1	No.'s	6000.00	**540000.00**
3	Nadi construction/ renovation	1	No.'s	Lumpsum	**300000.00**
4	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50000.00	**250000.00**
5	Farm Field Bunding	3500	Meters	40.00	**140000.00**
6	Pasture Land Development	25	Hectare	10000.00	**250000.00**
				GRAND TOTAL	**3380000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

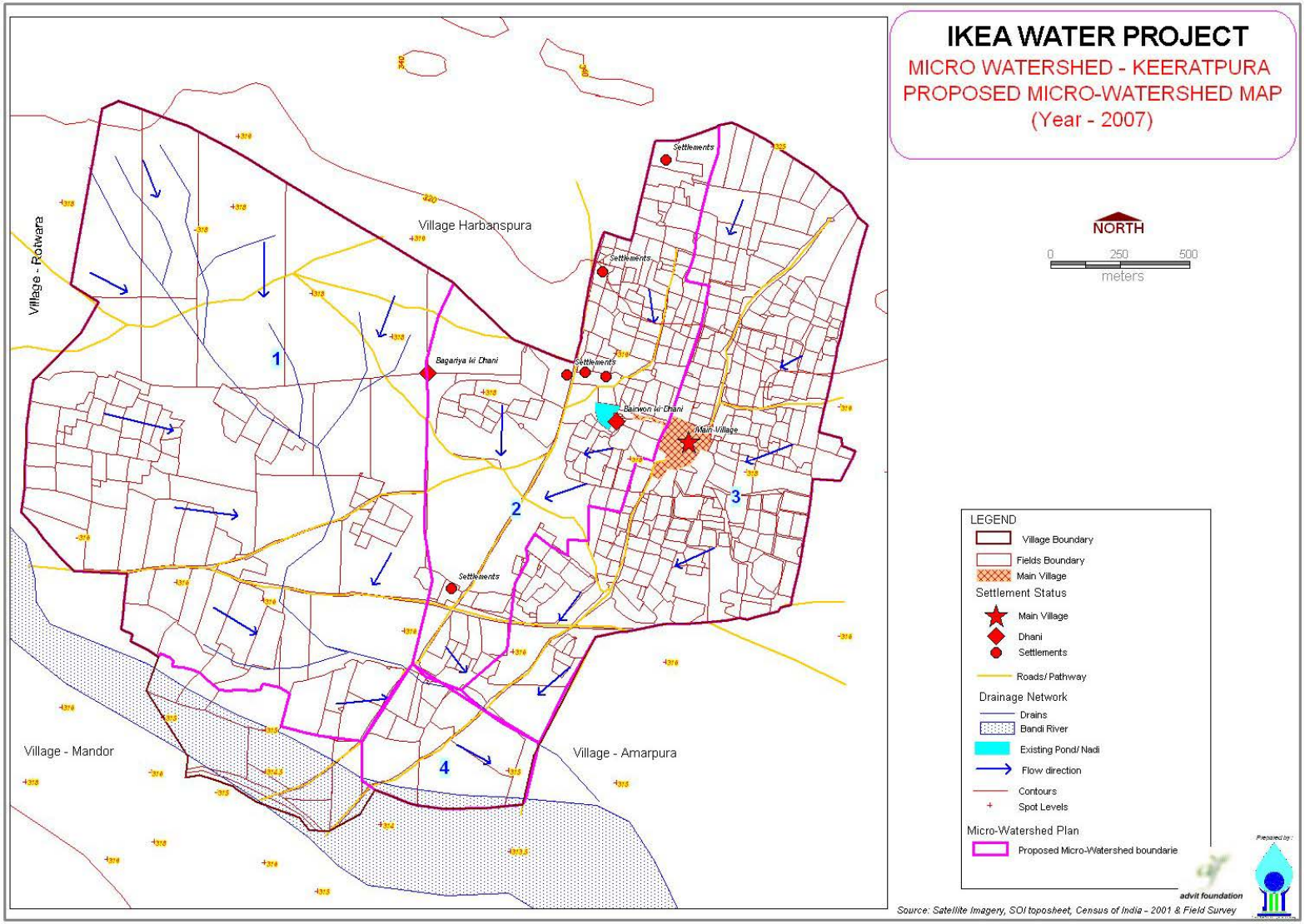

IKEA WATER PROJECT
MICRO WATERSHED - KEERATPURA
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
Village Harbanspura
Village - Rotwara
Village - Mandor
Village - Amarpura
Settlements
Bagariya ki Dhani
Bairwon ki Dhani
Main Village
1
2
3
4
LEGEND
Village Boundary
Fields Boundary
Main Village
Settlement Status
Main Village
Dhani
Settlements
Roads/ Pathway
Drainage Network
Drains
Bandi River
Existing Pond/ Nadi
Flow direction
Contours
Spot Levels
Micro-Watershed Plan
Proposed Micro-Watershed boundarie
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

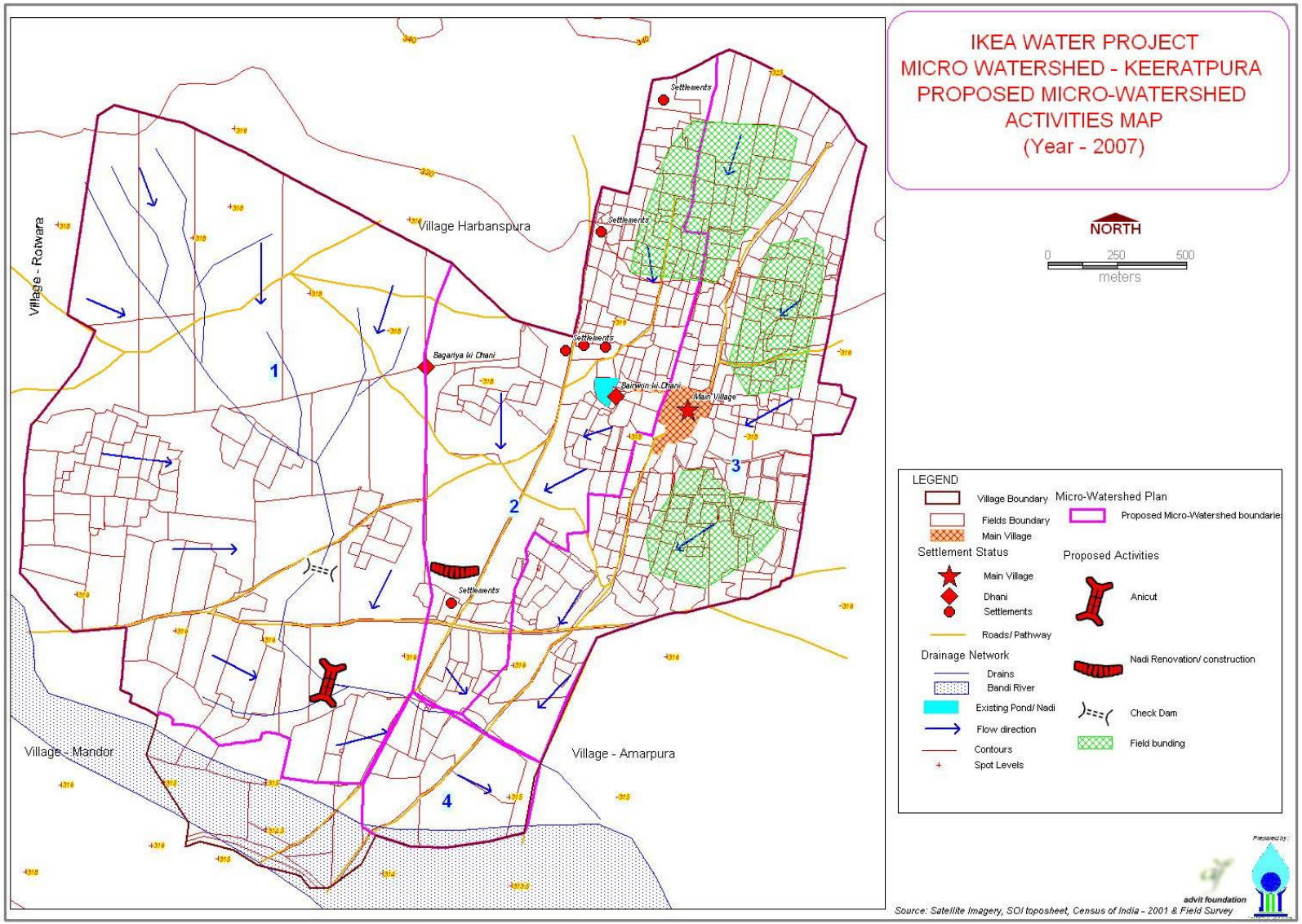

IKEA WATER PROJECT
MICRO WATERSHED - KEERATPURA
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
NORTH
0
250
500
meters
Village - Rotwara
Village Harbanspura
Village - Mandor
Village - Amarpura
Bagariya ki Chani
Bairwon ki Chani
Main Village
Settlements
1
2
3
4
LEGEND
Village Boundary
Fields Boundary
Main Village
Micro-Watershed Plan
Proposed Micro-Watershed boundaries
Settlement Status
Main Village
Dhani
Settlements
Roads/ Pathway
Proposed Activities
Anicut
Nadi Renovation/ construction
Check Dam
Field bunding
Drainage Network
Drains
Bandi River
Existing Pond/ Nadi
Flow direction
Contours
Spot Levels
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE - KUNCHIYAWAS

Village Location

Kunchiyawas village is located at $75^0$33'9.0" east longitude and $26^0$44'40.20"north longitude with a geographical area of 225 hectare sq.km at about 50 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Kunchiyawas w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	9 **km**
Distance from Block HQ:	=	**24 km**
Type of approach road to the village: *(Kachcha 3km and Pacca 6 km)* **9 km**	=	
Distance of village from district HQ	=	**50 km**
Nearest market & its distance from the village: *(Bagru)* **9 km**	=	
Distance to nearest Middle School **5 km**	<	
Distance to nearest College **10 km**	>	
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 51 families (as per baseline survey – 2007) residing in the village Kunchiyawas which are spread up in main village inside the village boundary (refer fig.- 1 and 2)

M. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	479	Total House Holds	51
Total male Population	248	SC House Holds	15
Total Female Population	231	ST House Holds	
Child Population (0-6 yr)	102	BPL House Holds	

The sex ratio in Kunchiyawas village is 931 females per 1000 males. The child population is about 21.29% of the total population.

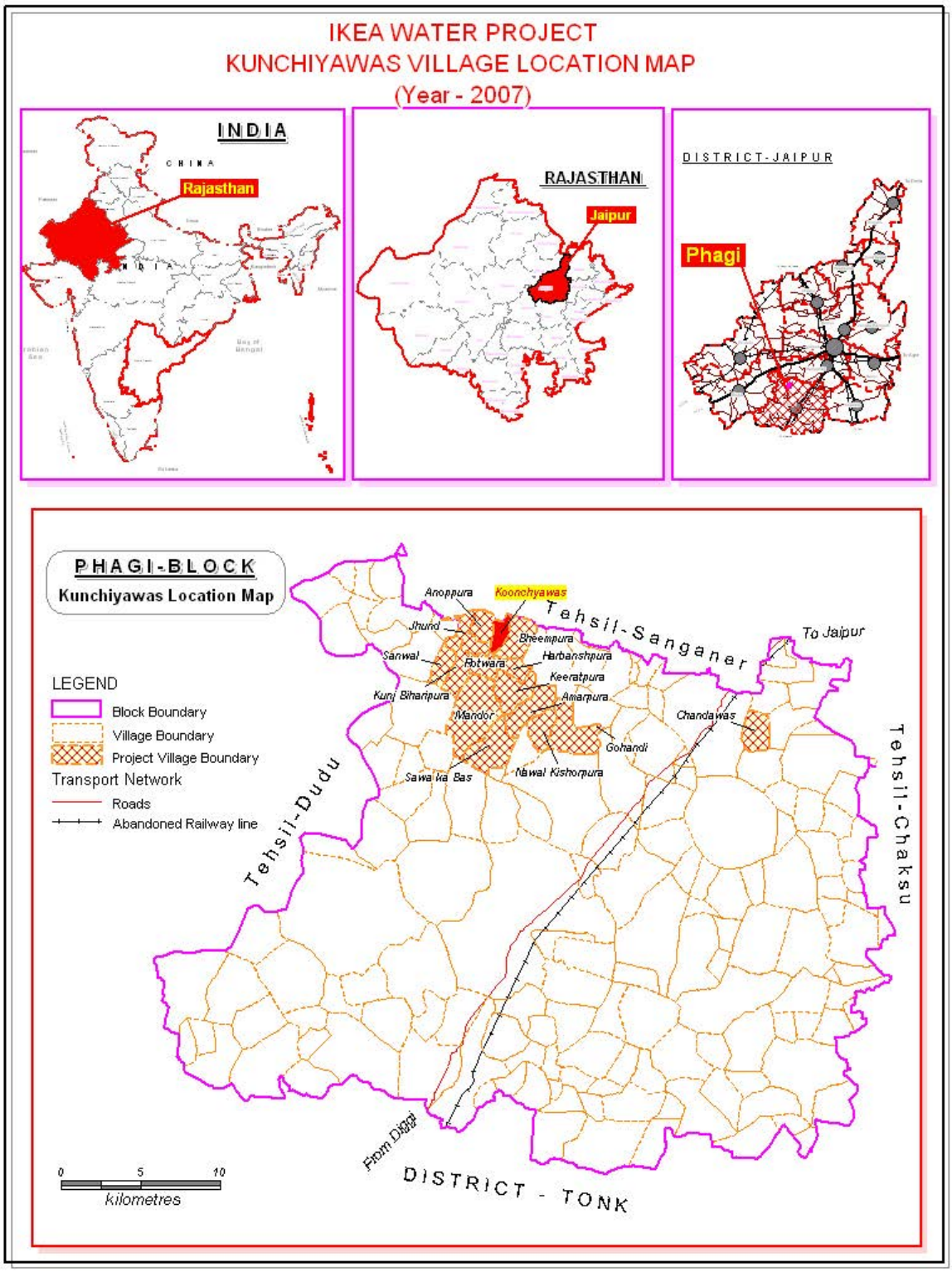

IKEA WATER PROJECT
KUNCHIYAWAS VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Kunchiyawas Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Harbanshpura
Sanwal
Rotwara
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Gohandi
Chandawas
Sawai ka Bas
Nawal Kishorpura
Tehsil-Sanganer
To Jaipur
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0
5
10
Kilometres

Figure No.-1

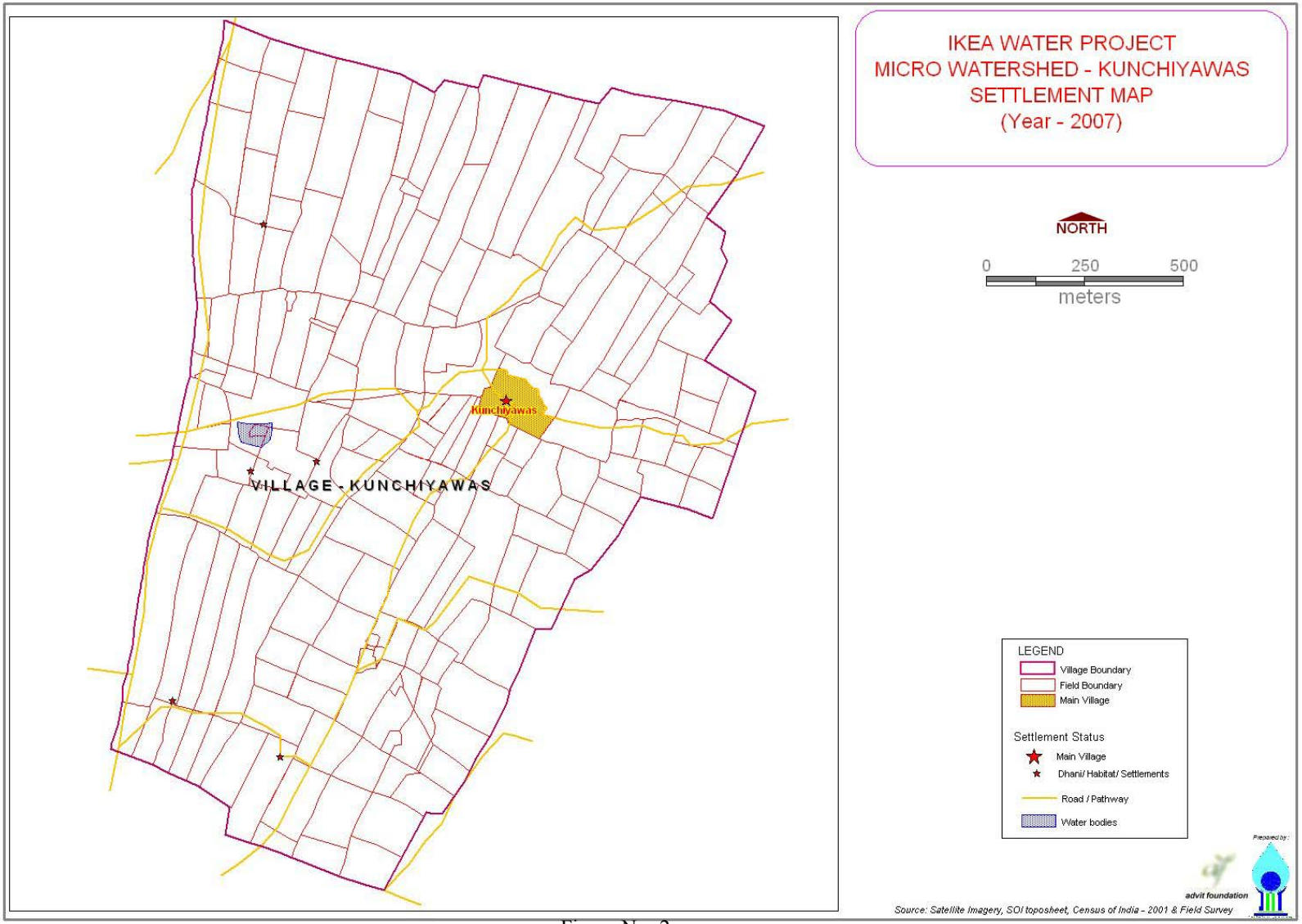

IKEA WATER PROJECT
MICRO WATERSHED - KUNCHIYAWAS
SETTLEMENT MAP
(Year - 2007)
NORTH
0
250
500
meters
Kunchiyawas
VILLAGE - KUNCHIYAWAS
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

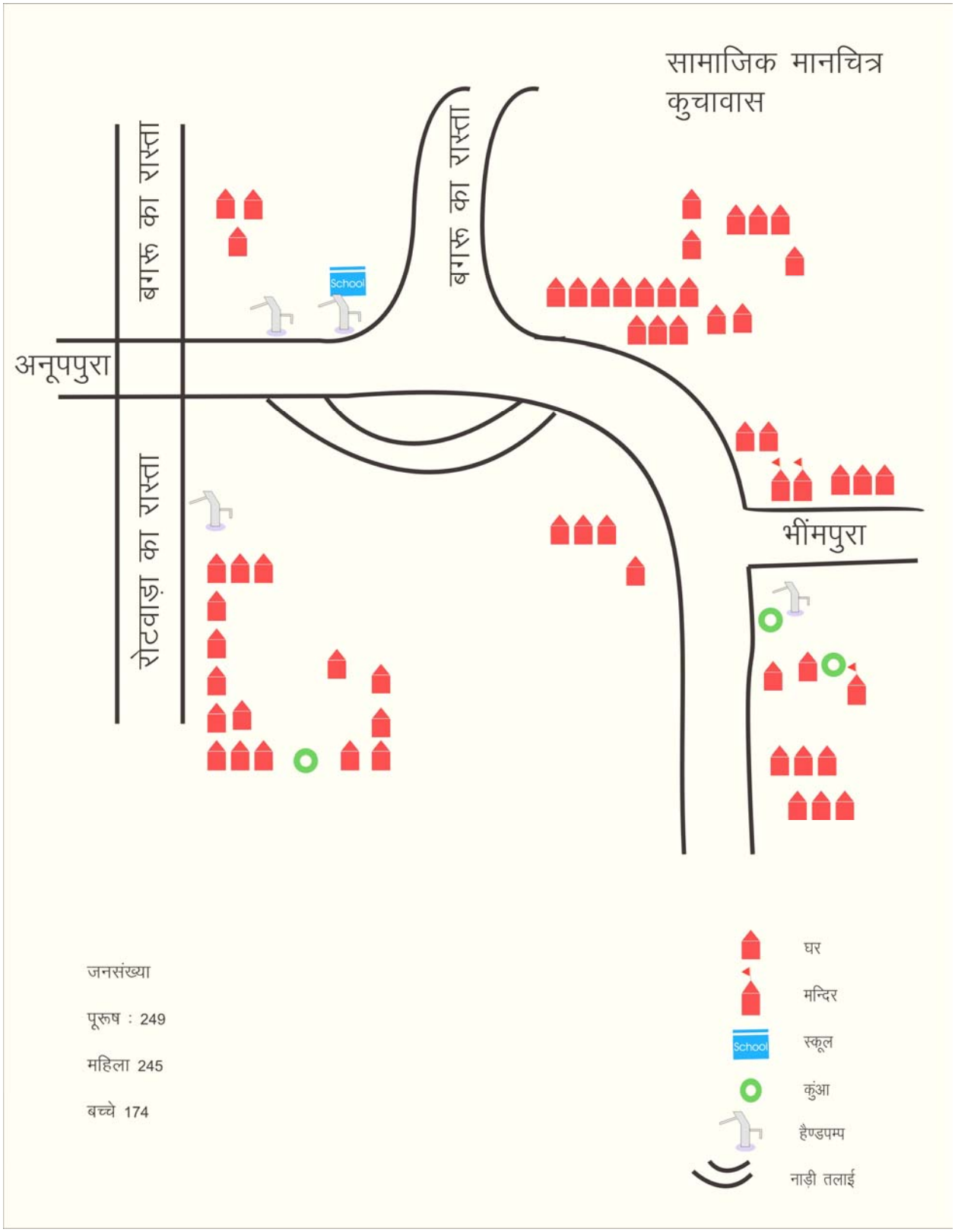

सामाजिक मानचित्र
कुचावास
बगरू का रास्ता
बगरू का रास्ता
School
अनूपपुरा
रेटवाड़ा का रास्ता
भींमपुरा
जनसंख्या
पूरूष : 249
महिला 245
बच्चे 174
घर
मन्दिर
School
स्कूल
कुंआ
हैण्डपम्प
नाड़ी तलाई

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

- Overall Literacy rate is 51.36%. Male literacy rate is 66.53% while female literacy rate is 35.06%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- No health facility is available in the village.

- **Work and Work force**

The workers population (as per census-2001) available in the village Kunchiyawas can be tabulated as below:

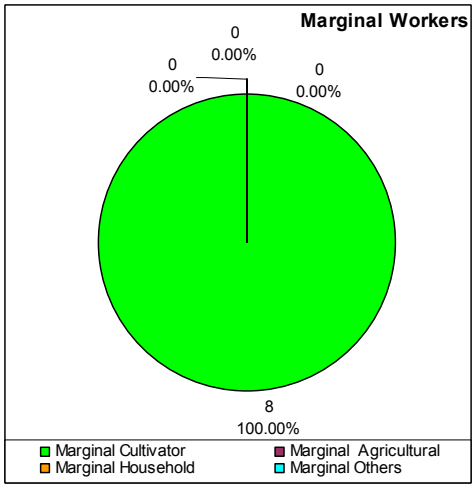
A.	**Main Worker Population**	***In Numbers***	***In % to total population***
	Male Worker	112	45.16%
	Female Worker	76	32.90%
	Total Workers	**188**	**39.25%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	0	0.00%
	Female Marginal Worker	8	3.46%
	Total Marginal Workers	**8**	**1.67%**
C	**Non Worker Population**		
	Male Non Worker	136	54.84%
	Female Non Worker	155	67.10%
	Total Non Workers	**291**	**60.75%**

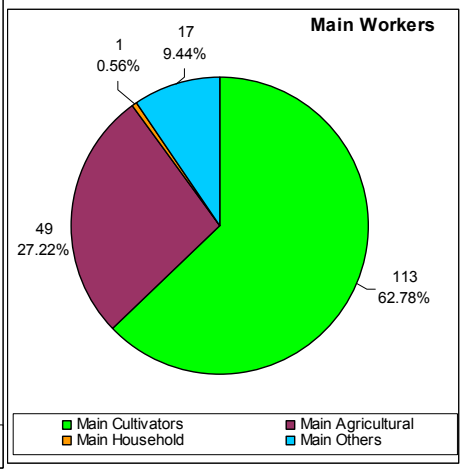
Description of workers population classification is explained in the following paragraphs:

Main Workers: In Kunchiyawas village total main workers population is about 37.58% of the total population. Female leads the male in main workers population in % to their respective total population.

Marginal Workers: There is total 8 marginal worker reported in census 2001 in village Rotwara.

Cultivator: About 62.78% of main worker population is engaged in cultivator work in the village itself. Similarly in Marginal workers category all marginal workers are engaged in cultivation field.





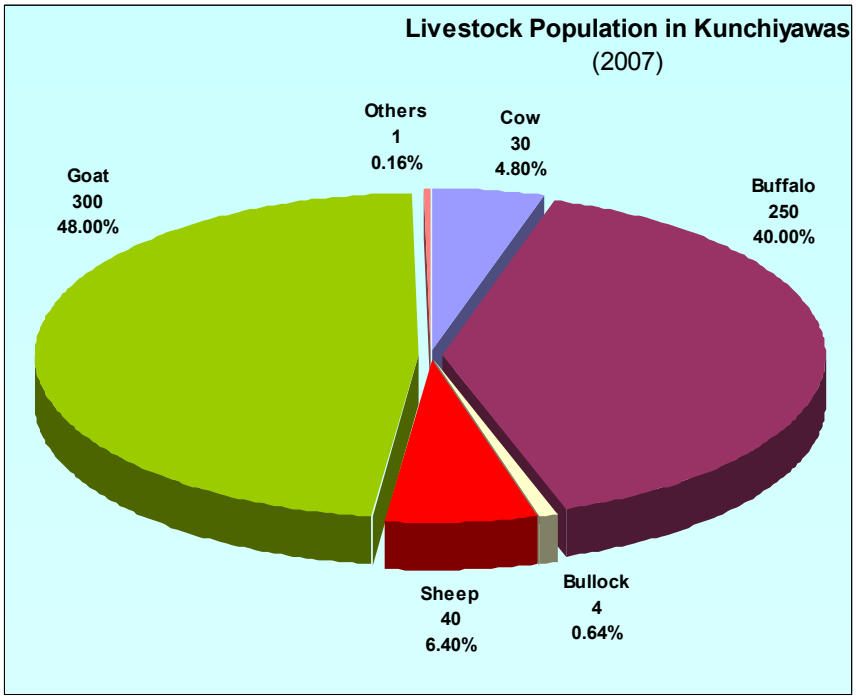
Agricultural Labourer: In Kunchiyawas village 27.22% in main workers and nil in marginal workers are engaged in this category of work.

Household Industry Workers: In Kunchiyawas village almost negligible number of people are engaged in household works.

Other Worker: About 9.44% in main worker are engaged in this type

of work category. In this category Males population leads the female population.

Livestock



As per the base line survey carried out in Kunchiyawas village there are 625 cattle variably distributed among 51 families living in the village.

Some families are having more than 50 cattle whereas some have none. Goats are the major contributor (about 48%) to the livestock population. Buffaloes and cows amount to 45% of the cattle population primarily being utilised for dairy purpose (milk production).

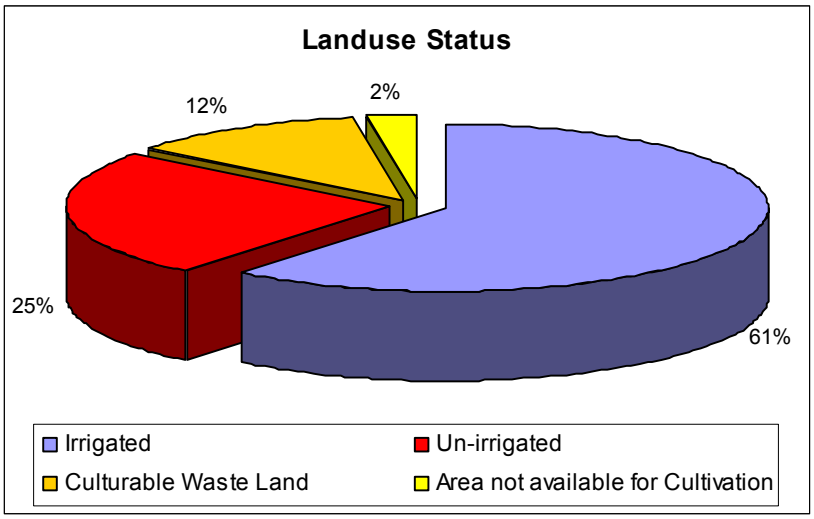
Land-Use Pattern:

Land utilisation pattern as observed in baseline survey can be represented by following graph.

According to broad classification out of the total land 61% is irrigated (by tube wells) and about 25% land falls in the category of un-irrigated land. About 12% of the land is culturable waste land in the village Kunchiyawas.

Further, no Panchayat and other category land available in the village. Cultivable fallow land or private waste land is about 30 hectare. Looking to the statistics there are ample opportunities in the field of agriculture. Increase in irrigation facilities could result in more cropped area in the village.

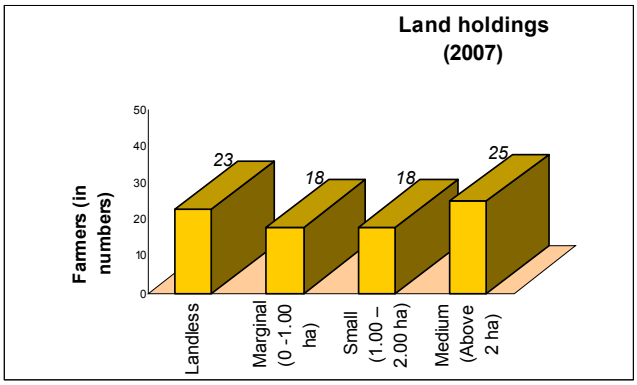
Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Kunchiyawas.

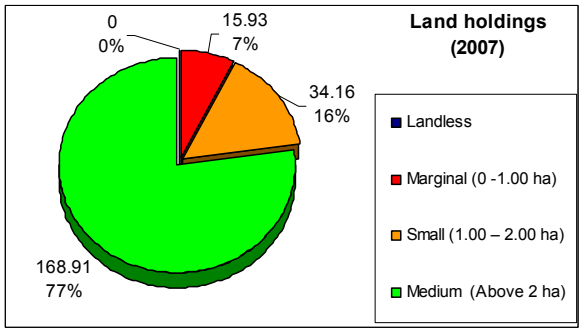


Satellite image map well represent the present land-use features in different textures as shown in figure no.- 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

Land Holdings

Category-wise numbers of farmers and their land holdings are presented in the following graphs.



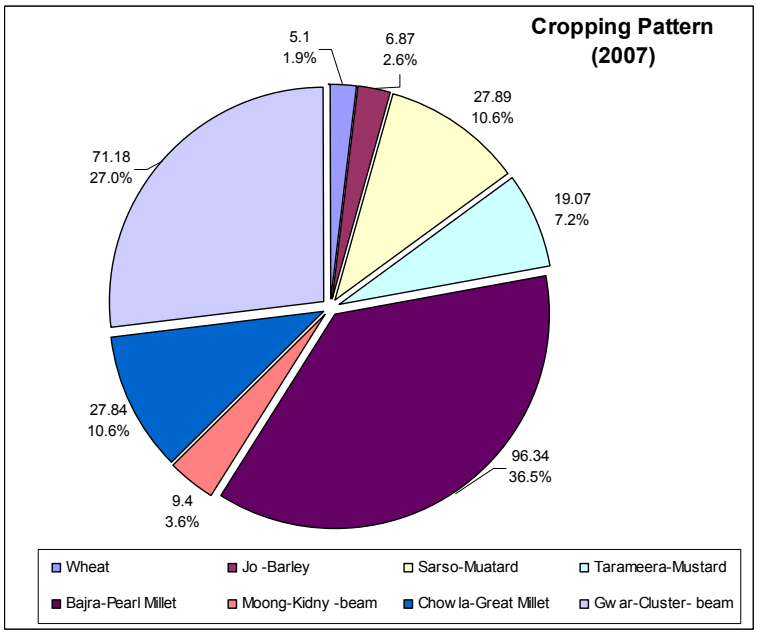


The base line survey revealed that

- Out of 84 farmers in the village more than one fourth (27.38%) i.e. 23 farmers are landless.
- About 29.76% farmers (25 no.'s) have more than 2 hectare land. These farmers have more than 77% of the landholdings in the village.
- Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 16% of the total geographical area of the village.
- Marginal farmers (0 to 1.00 ha.) have lands about 7% of the total area of the village Kunchiyawas.

Cropping Pattern

The type of crop sown in the village depends on many factors such as irrigation facilities, type of soil, rainfall characteristics etc. In Kunchiyawas village the type of crops sown in different seasons recorded during the base line survey are tabulated and graphed as follows:
According the data it could be well concluded that Tarameera-Mustard (36.5%) is the major crop in all the three seasons in the area followed by Gwar-Cluster- beam (27%) and Sarso-Muatard & Chowla-Great Millet (10.6% each).



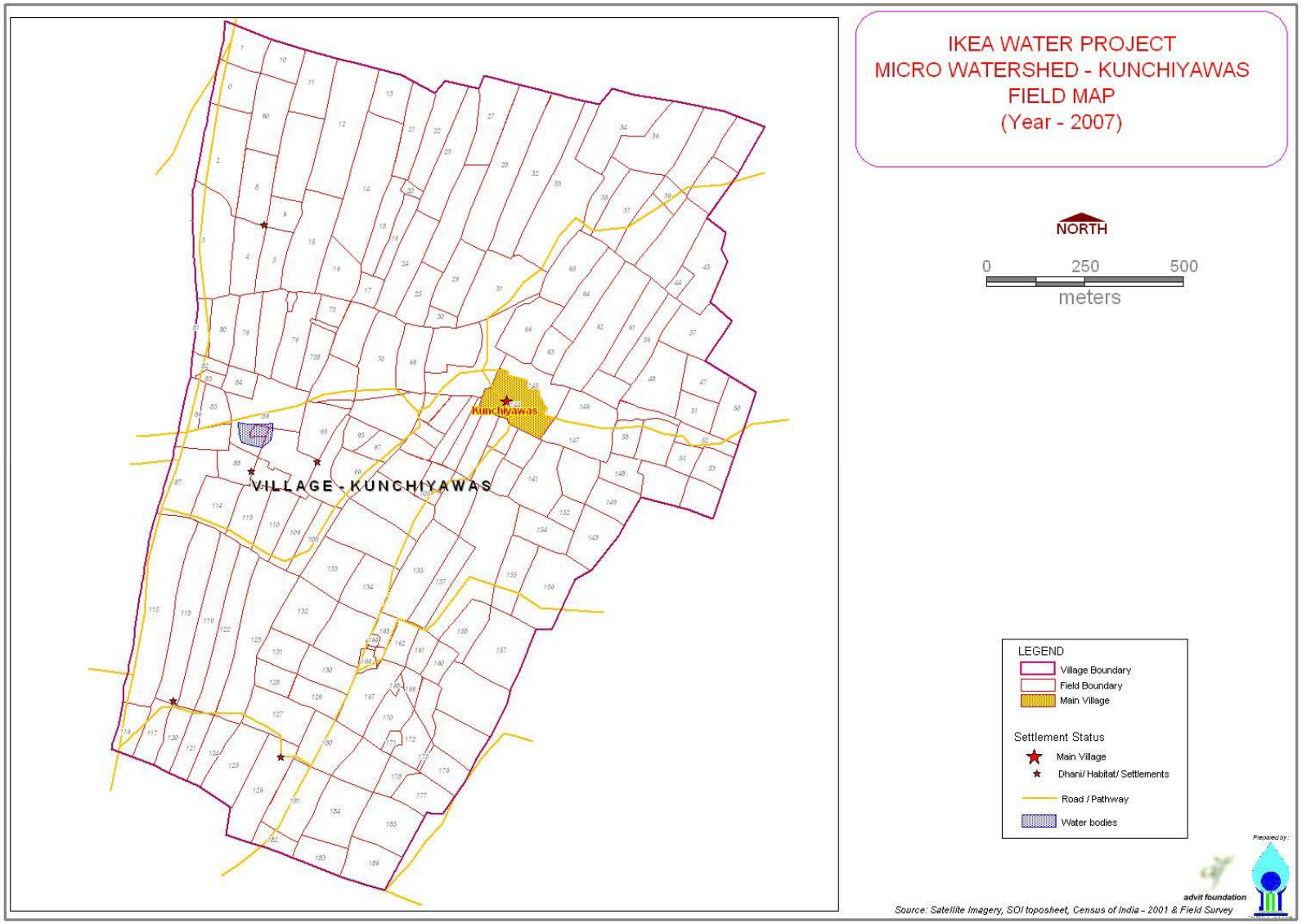
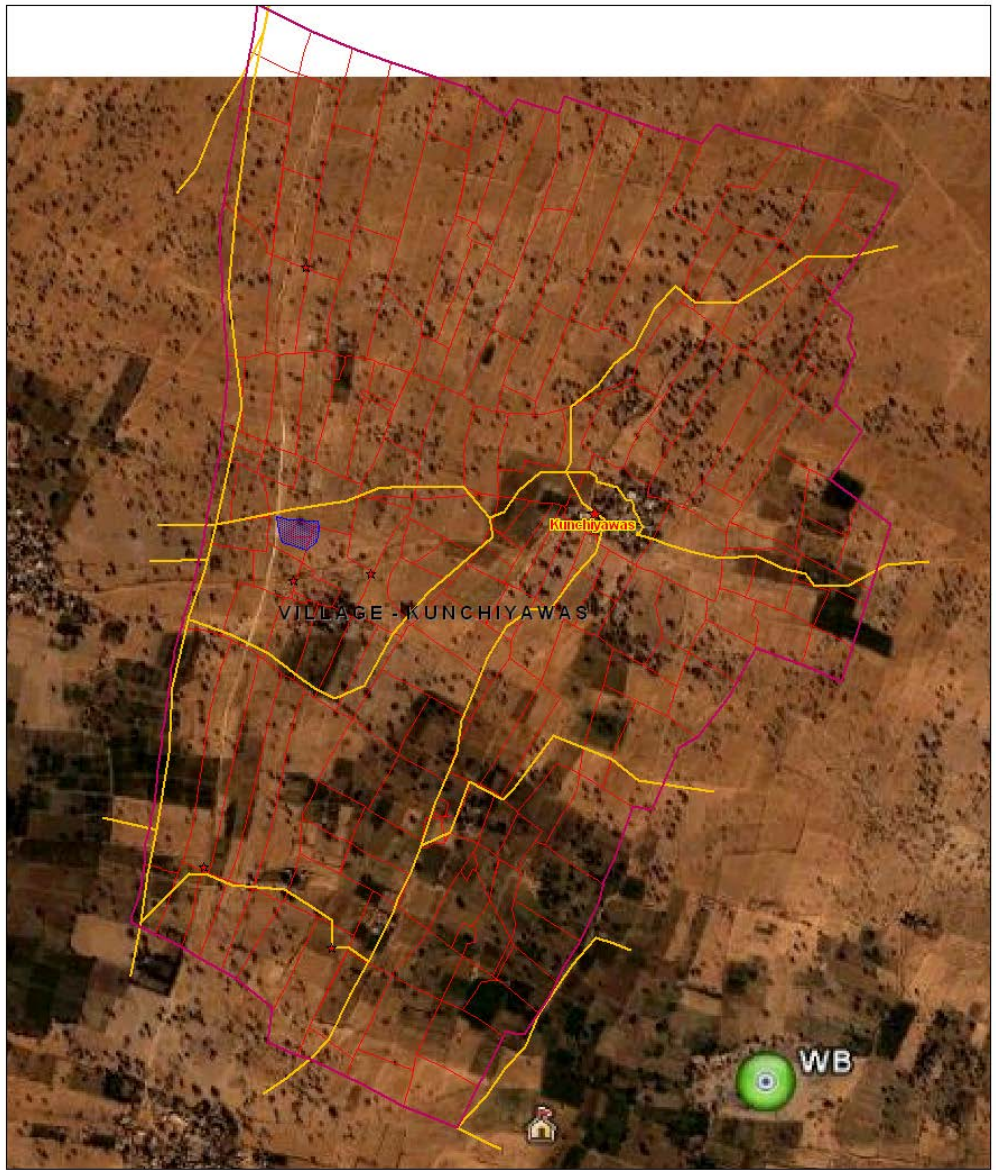

IKEA WATER PROJECT
MICRO WATERSHED - KUNCHIYAWAS
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
Kunchiyawas
VILLAGE - KUNCHIYAWAS
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

BAGRU WATER PROJECT
MICRO WATERSHED - KUNCHIYAWAS
Satellite Image MAP
(Year - 2007)



LEGEND
- Village Boundary
- Fields Boundary
- Main Village

Settlement Status
- Main Village
- Dhani
- Settlements
- Roads/ Pathway

Drainage Network
- Drains
- Bandi River
- Existing Pond/ Nadi

Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
79.	Wheat	Rabi	4.5	March	5.10	-	5.10
80.	Jo -Barley	-do-	4	March	6.87	-	6.87
81.	Sarso-Muatard	-do-	4	Feb-March	0.0	27.89	27.89
82.	Tarameera-Mustard	-do-	4	Feb-March	0.0	19.07	19.07
83.	Bajra-Pearl Millet	Kharif	4	Oct.	0.0	96.34	96.34
84.	Moong-Kidny - beam	-do-	3	Sep.	0.0	9.40	9.40
85.	Chowla-Great Millet	-do-	3	Sep.	0.0	27.84	27.84
86.	Gwar-Cluster-beam	-do-	4	Oct-Nov.	0.0	71.18	71.18
Total					**11.97**	**251.72**	**263.69**

Water Resource Profile:

Physiography: The general ground profile is flat and having gentle slope towards south east direction. The runoff water during rainfall period follows ground slope and drains in to village pond at the south-east of the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: The drainage system of the Kunchiyawas follows north to south-east direction. There are no visible natural drains in the village. The natural path of flow of water which existed in the past is obstructed by agricultural fields and at most of the places it has been completely destroyed. In present condition at most of the places drainage system follows the path way/ village katcha-roads. Figure No. 6 a gives a clear view of the drainage pattern in village Kunchiyawas.

Water Sources:

The existing water resource status can be represented by following table:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	20	-	20
Bore well	-	-	-
Hand pumps	2	-	2
Village Ponds	-	1	1

Following important points were observed during the field survey:

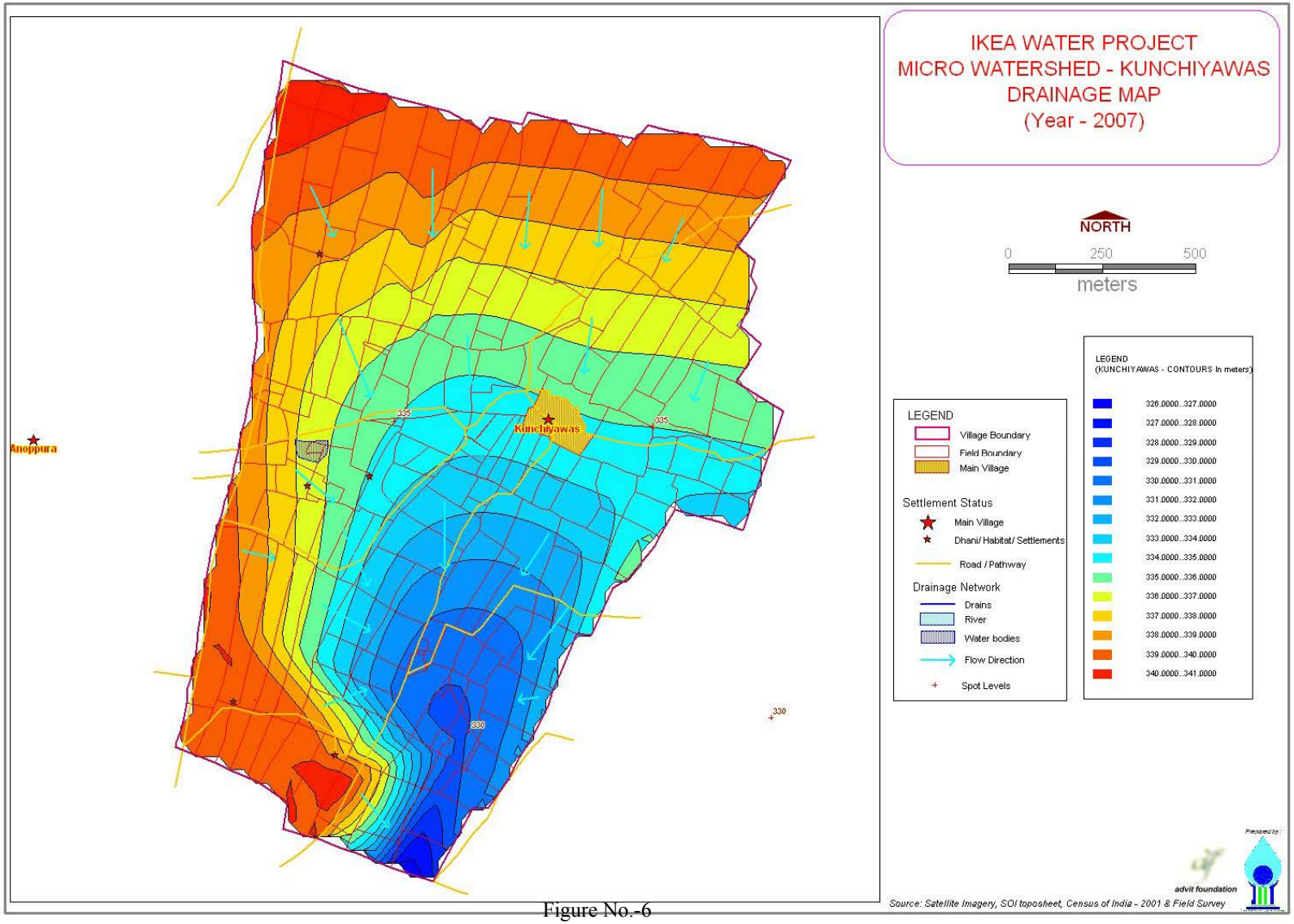
- Most of the wells dry up in the summer season. Also the yield of groundwater has reduced considerably since last decades.
- The ground water is generally saline. The salinity increases with depth.
- Depth to water table varies from 10’ to 12’ depending upon its location.

- Rock formations are visible at depth varying from 2' to 12' from the ground level at different locations.

Drinking Water Sources: No Public Health Engineering Department (PHED) water supply system (Regional Water Supply Scheme) exists in the village. The two hand pumps installed in the village are functional and yield sweet water. This water is used for drinking for both human and cattle population. Open wells near some depression and at village pond do yield sweet water and the entire population draw drinking from such sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to travel long distances to get the sufficient quantity of drinking water.

Irrigation Water Sources: Out of total wells about 20 are in functional state. The water from these well is mainly utilised for irrigation purpose but it is not sufficient to meet the crop water requirement of the fields in Kunchiyawas village. Lesser monsoon and increased agricultural demand has depleted the water table at alarming rate in the village. This has resulted in deterioration of water quality and lesser groundwater yield in village Kunchiyawas.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting drinking water sources scenario in village Kunchiyawas.


IKEA WATER PROJECT
MICRO WATERSHED - KUNCHIYAWAS
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
Anoppura
Kunchiyawas
335
335
330
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
(KUNCHIYAWAS - CONTOURS In meters)
326.0000..327.0000
327.0000..328.0000
328.0000..329.0000
329.0000..330.0000
330.0000..331.0000
331.0000..332.0000
332.0000..333.0000
333.0000..334.0000
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335.0000..336.0000
336.0000..337.0000
337.0000..338.0000
338.0000..339.0000
339.0000..340.0000
340.0000..341.0000
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

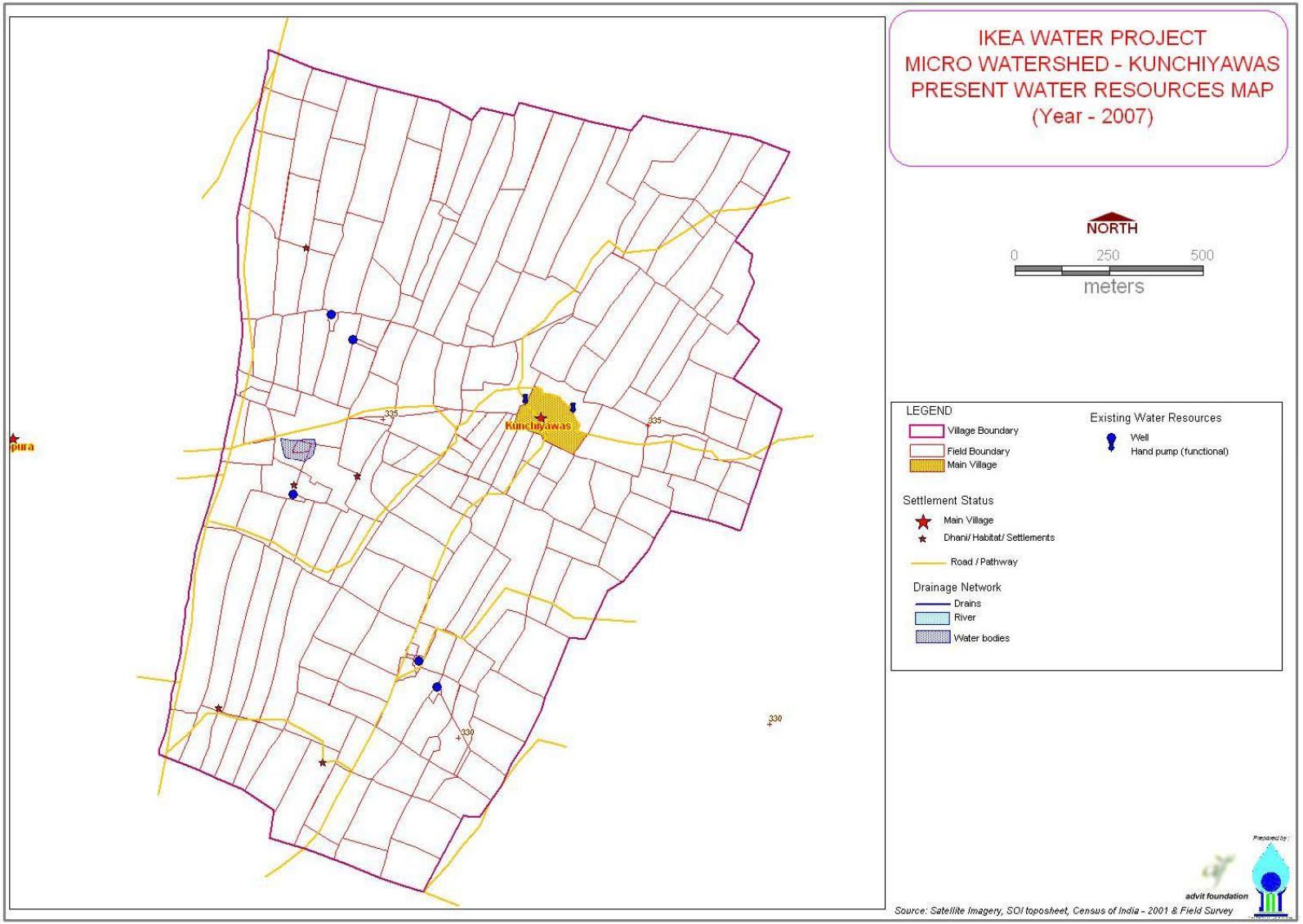

IKEA WATER PROJECT
MICRO WATERSHED - KUNCHIYAWAS
PRESENT WATER RESOURCES MAP
(Year - 2007)
NORTH
0
250
500
meters
Kunchiyawas
335
335
330
330
LEGEND
Village Boundary
Field Boundary
Main Village
Existing Water Resources
Well
Hand pump (functional)
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to three micro-watersheds draining towards south direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	125.7965
Watershed no.-2	84.5235
Watershed no.-3	19.7927
Total	**230.1127**

The fields located in southern part of the main village are more productive as compared to north region. The dark shed reflected in satellite imagery of year 2007 (refer figure no.-5) clearly indicate that intense agriculture practices in watershed no.-1 & 2.

Natural flows of runoff water from both the watersheds have been obstructed by the field boundaries hence the water flows through the pathways used for surface movement.

Proposed Activities: All possible water harvesting activities on watershed basis were discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). The agreed activities were assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities in village Kunchiyawas are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location envisaged during the project study shared and recommended by the local village community in Kunchiyawas village:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields	• Micro-watershed No.-1, 2 & 3	• **Cluster-1**: About 2000m field bunds spread over 30 Fields in south of the main village
			• Micro-watershed No.-2	• **Cluster-2:** About 500m field bunds spread over more than 10 Fields in west of the main village (Refer figure no.-9 for details)
		• Construction of small tanks/ ponds at agricultural farm.	• Micro-watershed No.-1, 2 & 3	• **Cluster-1**: Four tanks at suitable locations.
			• Micro-watershed No.-2	• **Cluster-2**: One tanks at suitable locations. (Refer figure no.-9 for details)
2	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.- 86 (About 650m west of main village)
				• Field No.- 134 (About 700m south-west of main village)

		• Construction of Roof Top Rainwater Harvesting System	• Micro-watershed No.-2	• At Community (Panchayat) Building in main village

Numbers/ quantities of proposed activities are summarized in following table:

S. No.	Activities	Numbers/ Details
1	Roof Top Rainwater Harvesting System	1 No.'s
2	Nadi construction/ renovation	2 No.'s
3	Farm Tanks/ ponds	5 No.'s
4	Farm Field Bunding	2500 Meters

The location of the proposed activities are shown in figure no.- 9

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200000.00**
2	Nadi construction/ renovation	2	No.'s	Lumpsum (Rs.200000.00)	**400000.00**
3	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50000.00	**250000.00**
4	Farm Field Bunding	2500	Meters	30.00	**75000.00**
				GRAND TOTAL	**925000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost

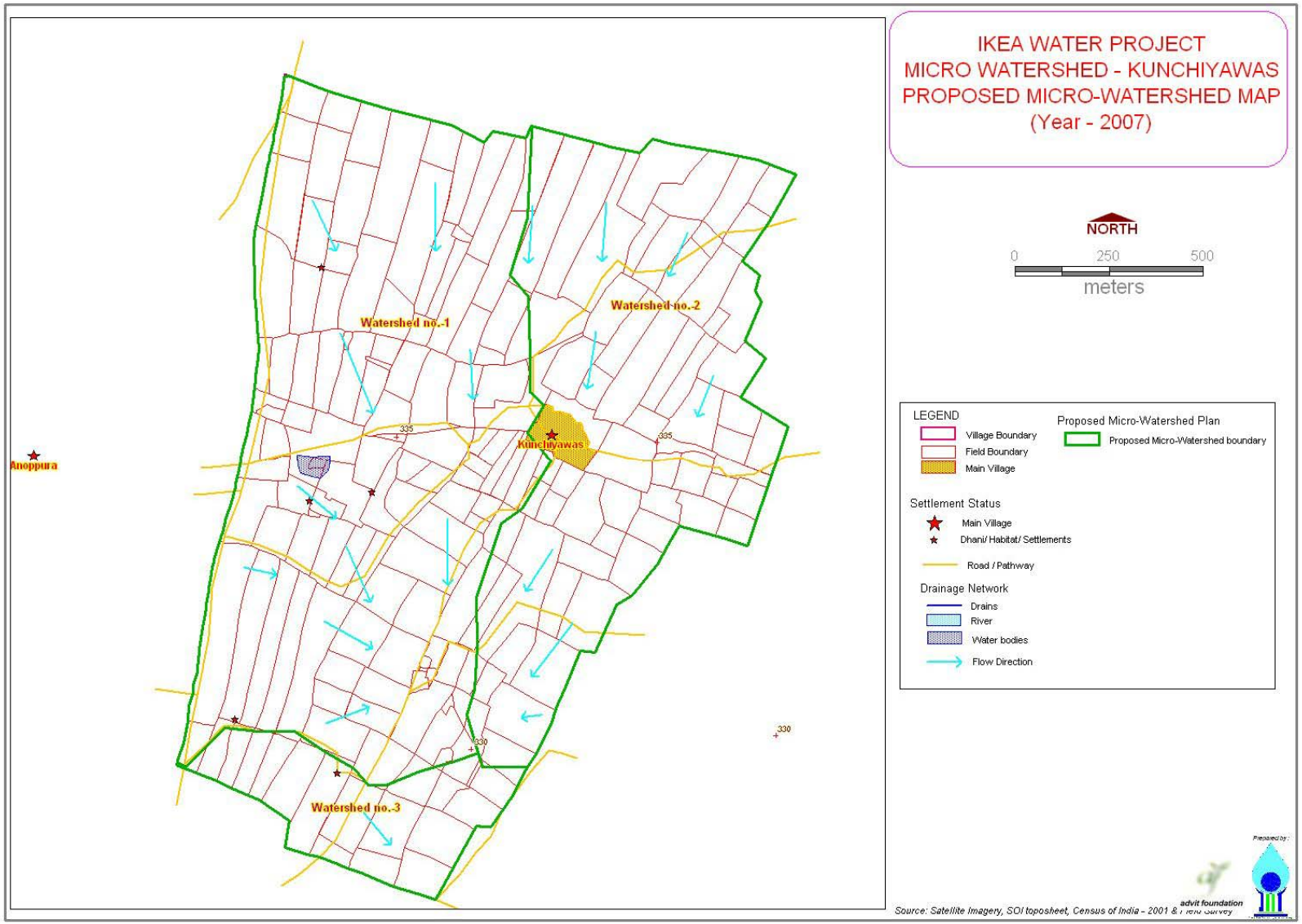

IKEA WATER PROJECT
MICRO WATERSHED - KUNCHIYAWAS
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
Watershed no.-1
Watershed no.-2
Watershed no.-3
Kunchiyawas
Anoppura
335
330
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 &

Figure No.-8

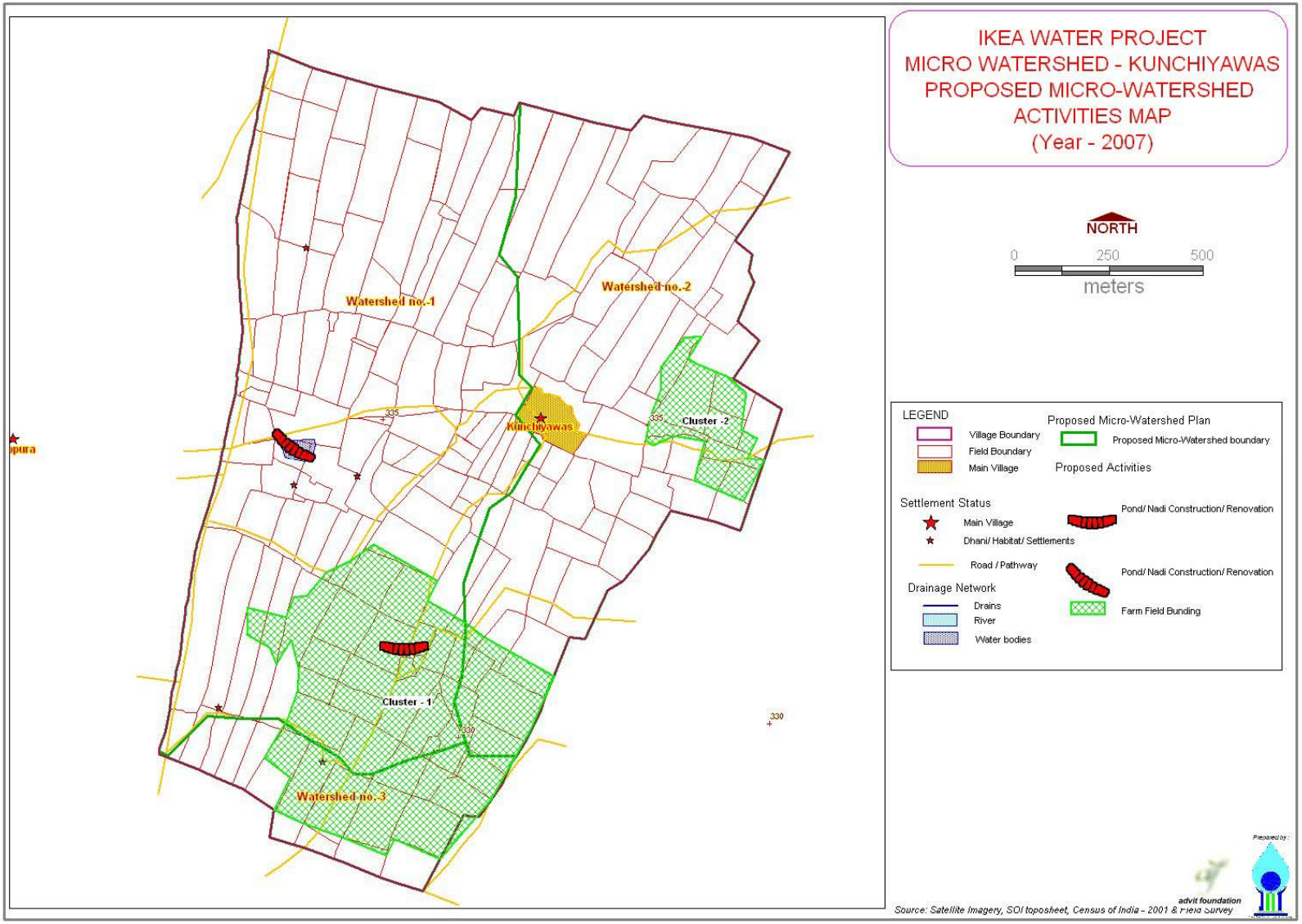

IKEA WATER PROJECT
MICRO WATERSHED - KUNCHIYAWAS
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
NORTH
0
250
500
meters
Watershed no.-1
Watershed no.-2
Watershed no.-3
Kunchiyawas
Cluster -2
Cluster - 1
335
330
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Proposed Activities
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Pond/ Nadi Construction/ Renovation
Pond/ Nadi Construction/ Renovation
Farm Field Bunding
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE - KUNJ BIHARPURA

Village Location

Kunj Biharipura village is located at 75^{0}31'33.60" east longitude and 26^{0}43'38.8"north longitude with a geographical area of 311 hectare at about 52 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Kunj Biharipura w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**14 km**
Distance from Block HQ:	=	**22 km**
Type of approach road to the village: *(Kachcha 8km and Pacca 6 km)*	=	**14 km**
Distance of village from district HQ	=	**45 km**
Nearest market & its distance from the village: *(Bagru)*	=	**14 km**
Distance to nearest Middle School	<	**5 km**
Distance to nearest College	>	**10 km**
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 79 families (as per baseline survey – 2007) residing in the village Kunj Biharipura which are spread up in main village located inside the village boundary (refer fig.- 1 and 2)

N. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	381	Total House Holds	79
Total male Population	202	SC House Holds	30
Total Female Population	189	ST House Holds	
Child Population (0-6 yr)	65		

The sex ratio in Kunj Biharipura village is 886 females per 1000 males. The child population is about 17.06% of the total population. SC community leads in population with about 38% households in the Kunj Biharipura village.

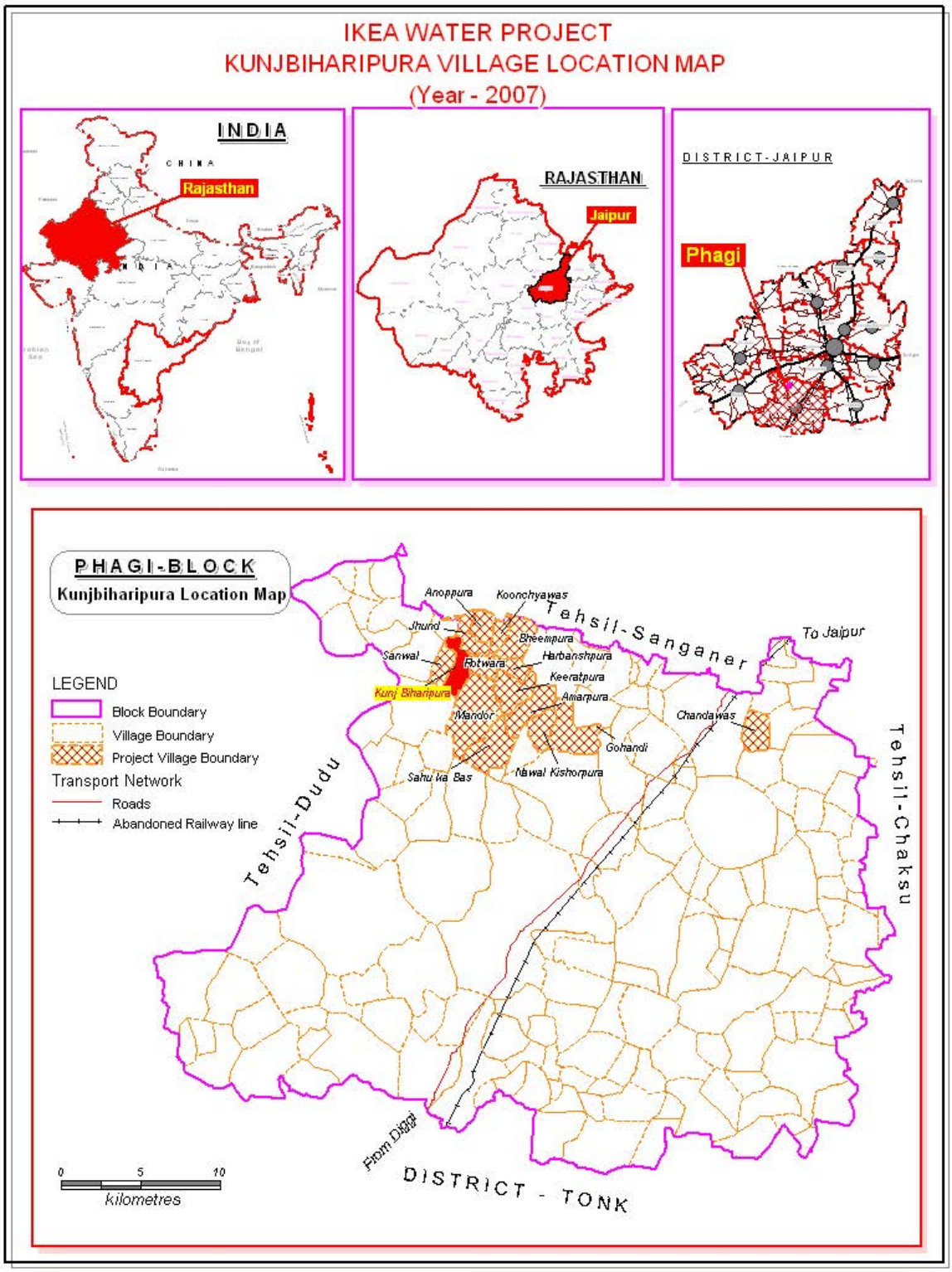

IKEA WATER PROJECT
KUNJBIHARIPURA VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Kunjbiharipura Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Sanwal
Harbanshpura
Rotwara
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Chandawas
Gohandi
Sahu ka Bas
Nawal Kishorpura
Tehsil-Sanganer
To Jaipur
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0 5 10
Kilometres

Figure No.-1

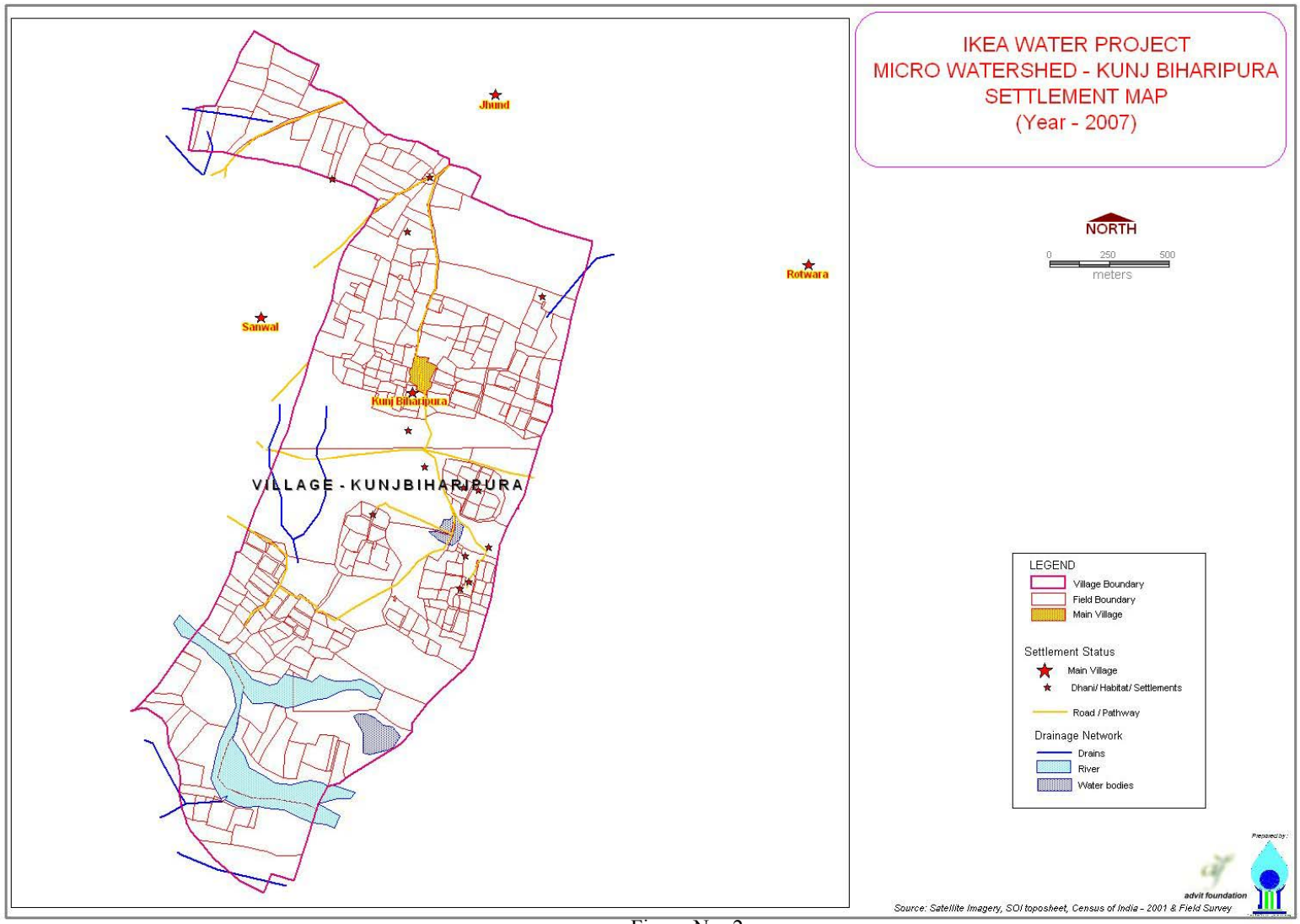

IKEA WATER PROJECT
MICRO WATERSHED - KUNJ BIHARIPURA
SETTLEMENT MAP
(Year - 2007)
NORTH
0
250
500
meters
Jhund
Rotwara
Sanwal
Kunj Biharipura
VILLAGE - KUNJBIHARIPURA
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

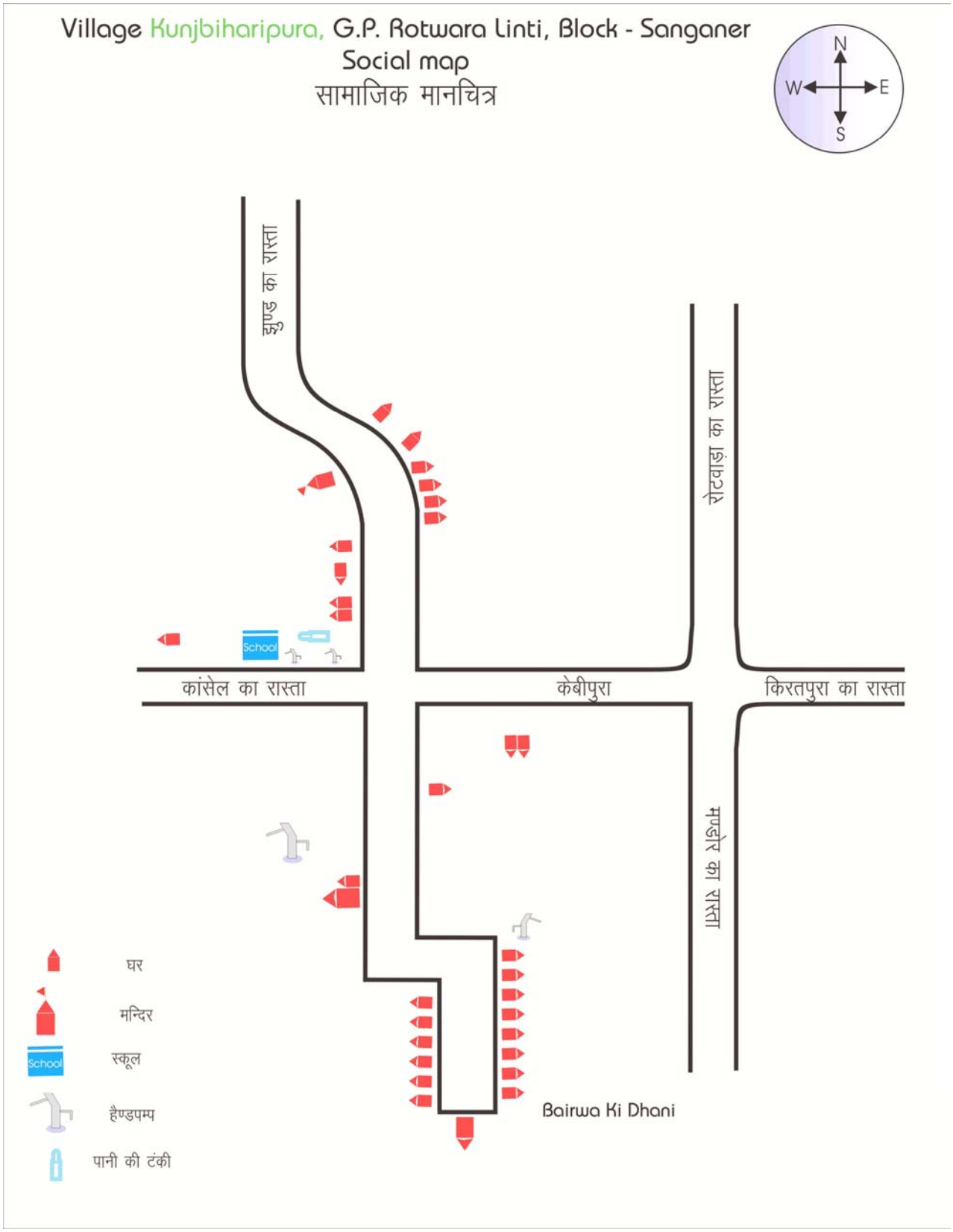

Village Kunjbiharipura, G.P. Rotwara Linti, Block - Sanganer
Social map
सामाजिक मानचित्र
N
W
E
S
झुण्ड का रास्ता
रोटवाड़ा का रास्ता
School
कांसेल का रास्ता
केबीपुरा
किरतपुरा का रास्ता
मण्डोर का रास्ता
Bairwa Ki Dhani
घर
मन्दिर
School
स्कूल
हैण्डपम्प
पानी की टंकी

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be illustrated with following important points:

- Overall Literacy rate is 57.22%. Male literacy rate is 66.83% while female literacy rate is 46.37%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- No health facility is available in the village.

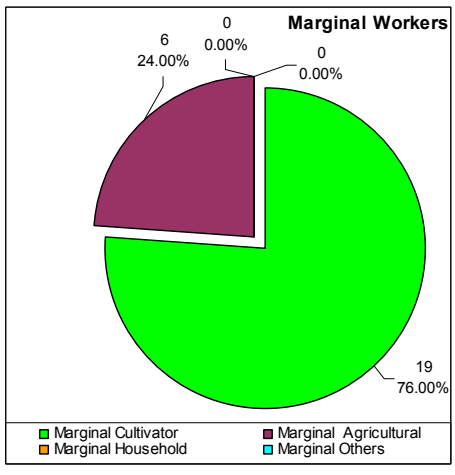
- **Work and Work force**

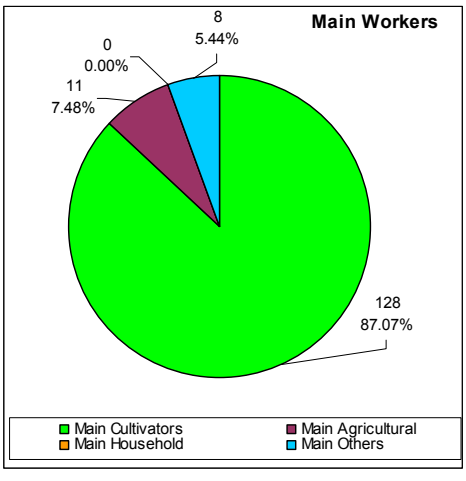
The workers population (as per census – 2001) available in the village Kunj Biharipura can be tabulated as below:

A.	**Main Worker Population**	***In Numbers***	***In % to total population***
	Male Worker	92	45.54%
	Female Worker	80	44.69%
	Total Workers	**172**	**45.14%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	3	1.49%
	Female Marginal Worker	22	12.29%
	Total Marginal Workers	**25**	**6.56%**
C	**Non Worker Population**		
	Male Non Worker	110	54.46%
	Female Non Worker	99	55.31%
	Total Non Workers	**209**	**54.86%**

Description of workers categories can be explained in the following paragraphs:
Main Workers: In Kunj Biharipura village total main workers population is about 38.58% of the total population. Females lead the male in main workers population in % to their respective total population.

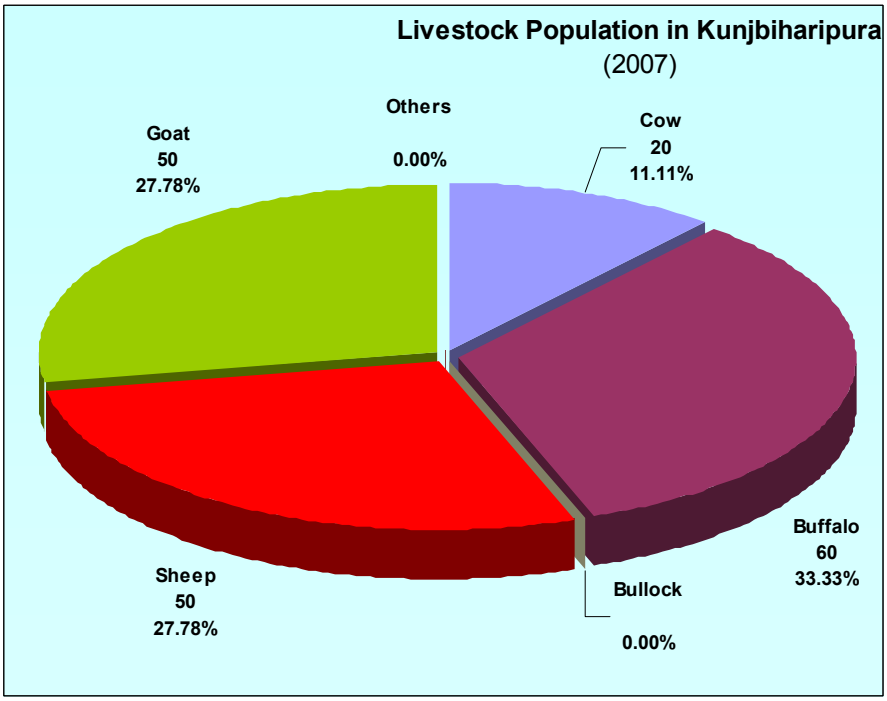
Marginal Workers: The Marginal Workers with their categories are represented in following graph.
Cultivator:
About 87.07% of main worker population is engaged in cultivator work in the village itself. Similarly in Marginal workers category about 76% marginal workers are engaged in cultivation field.
Agricultural Labourer: In Kunj Biharipura village lesser number i.e. 7.48% in main workers and 24% in marginal workers are engaged in this category of work.
Household Industry Workers: In Kunj Biharipura village almost negligible numbers of people are engaged in household works.





Other Worker: About 5.44% in main worker and none in marginal worker category are engaged in this type of work category. In this category Males population leads the female population.

Livestock



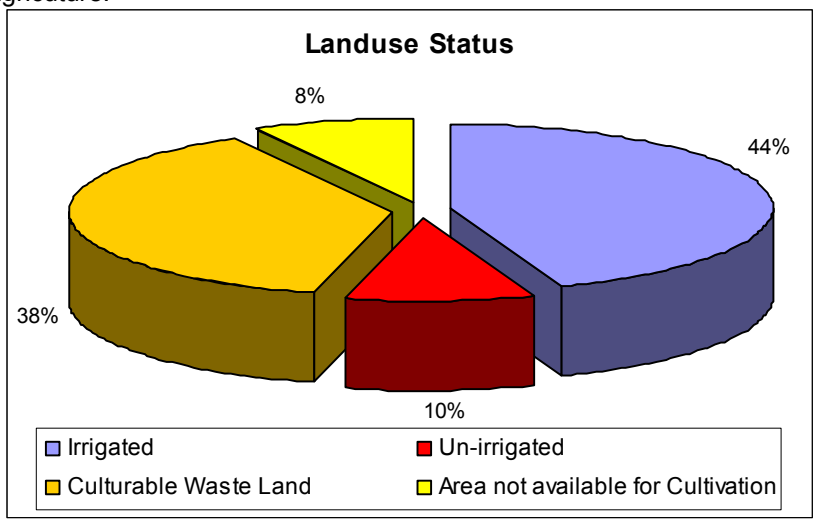
According to the baseline survey, in Kunj Biharipura village there are 180 cattle in total area variably distributed among 79 families.

Goats and sheep are the major contributor (about 27.78% each) to the livestock population. Buffaloes and cows amount to 45% of the cattle population primarily being utilised for dairy purpose (milk production).

Land-Use Pattern:

Similar to the other villages in Kunj Biharipura village the major part of economy is dependent on agricultural production. According to the broad classification, out of the total land 44% is irrigated (by tube wells) and about 10% land falls in the category of un-irrigated land. About 38% of the land is culturable waste land in the village Kunj Biharipura. Following graph gives status of land utilization in village Kunj Biharipura.

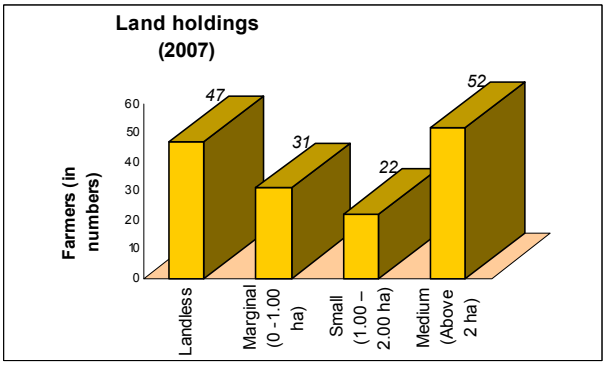
Further, about 40 hectare land is permanent pasture land and 40 hectare is government waste land. There is no panchayat and other category land available in the village. Cultivable fallow land or private waste land is about 48 hectare. Looking to the statistics there are ample oppertunities in the field of agricuture.



Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Kunj Biharipura.

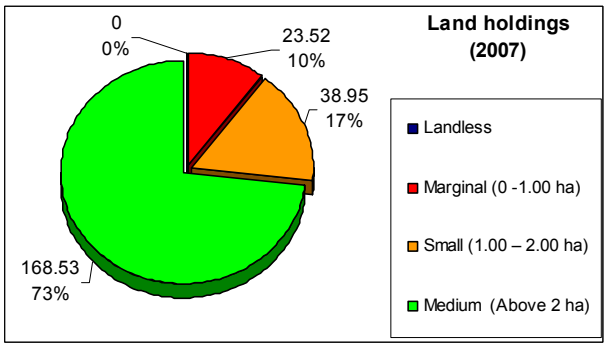
Satellite image map well represent the present land-use features in different textures as shown in figure no.- 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

Land Holdings



The base line survey revealed that

- out of 152 farmers in the village about one third (30.92%) i.e. 47 farmers are landless.
- About 34.21% farmers (52 no.'s) have more than 2 hectare land. These farmers have more than 73% of the landholdings in the village.
- Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 17% of the total geographical area of the village.
- Marginal farmers (0 to 1.00 ha.) have lands about 10% of the total area of the village Kunj Biharipura.

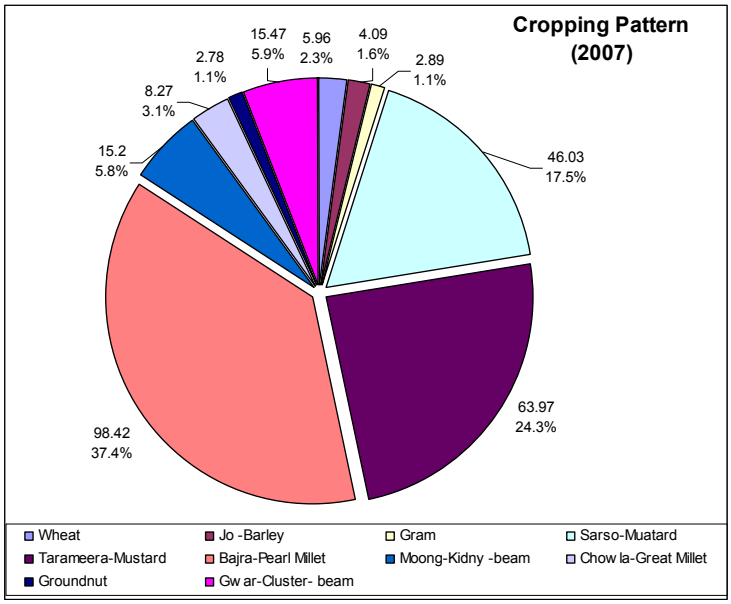


Category-wise numbers of farmers and their land holdings are presented in the following graphs.

Cropping Pattern

In Kunj Biharipura village the type of crops sown in different seasons recorded during the base line survey are well represented by the following graph and table.

According to it could be well concluded that Bajra-Pearl Millet (37.4%) are the major crop in all the three seasons in the area followed by Tarameera-Mustard (24.3%) and Sarso-Muatard (17.5%).



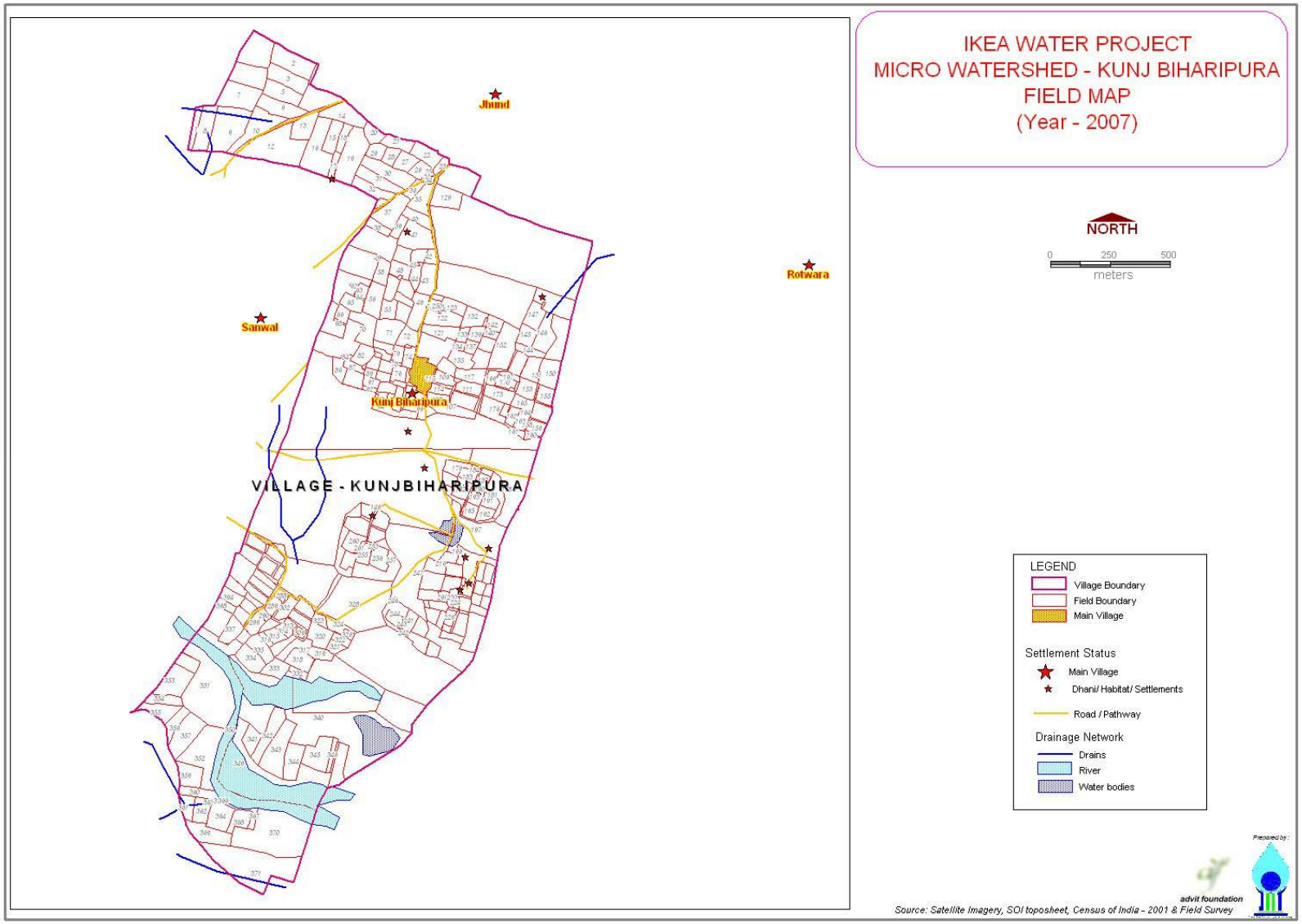
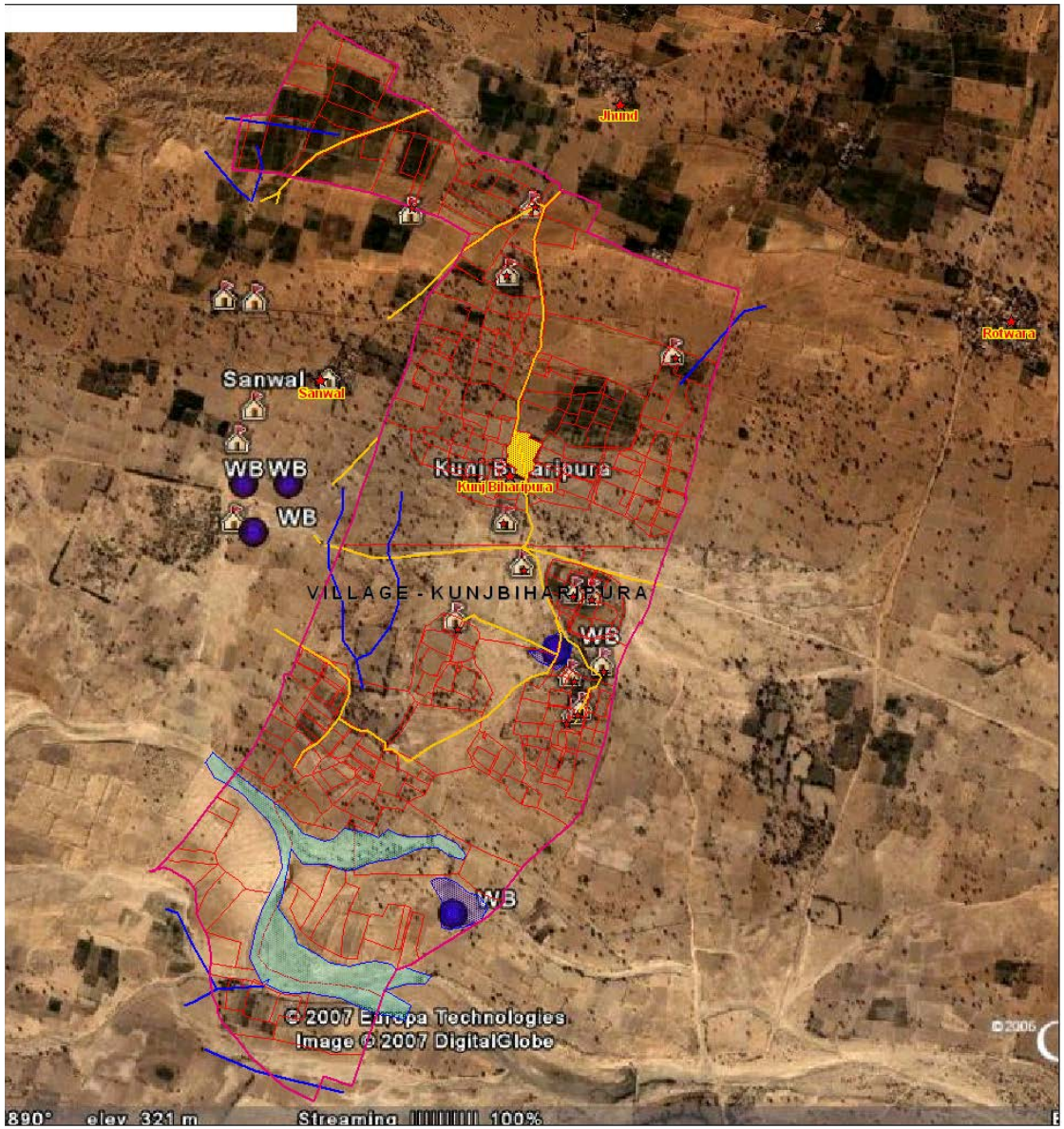

IKEA WATER PROJECT
MICRO WATERSHED - KUNJ BIHARIPURA
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
Jhund
Rotwara
Sanwal
Kunj Biharipura
VILLAGE - KUNJBIHARIPURA
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

IKEA WATER PROJECT
MICRO WATERSHED - KUNJ BIHARIPURA
Satellite Image MAP
(Year - 2007)



LEGEND

- Village Boundary
- Fields Boundary
- Main Village

Settlement Status

- Main Village
- Dhani
- Settlements
- Roads/ Pathway

Drainage Network

- Drains
- Bandi River
- Existing Pond/ Nadi

Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
87.	Wheat	Rabi	4.5	March	5.96	0.0	5.96
88.	Jo -Barley	-do-	4	March	4.09	0.0	4.09
89.	Gram	-do-	4	March	2.85	0.0	2.89
90.	Sarso-Muatard	-do-	4	Feb.-March	2.75	43.28	46.03
91.	Tarameera-Mustard	-do-	4	Feb.-March	0.0	63.97	63.97
92.	Bajra-Pearl Millet	Kharif	4	Oct.	0.0	98.42	98.42
93.	Moong-Kidny - beam	-do-	3	Sep.	0.0	15.20	15.20
94.	Chowla-Great Millet	-do-	3	Sep.	0.0	8.27	8.27
95.	Groundnut	-do-	4	Oct.	0.0	2.78	2.78
96.	Gwar-Cluster-beam	-do-	4	Oct.-Nov.	0.0	15.47	15.47
Total					**15.65**	**247.39**	**263.08**

Water Resource Profile:

Physiography: The general ground profile is flat and having gentle slope towards south direction. The runoff water during rainfall period follows ground slope and drains in to Bandi River flowing at the south of the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: The drainage system of the Kunj Biharipura follows north to south direction. There are no distinct natural drains in the village. These natural flow paths are obstructed by agricultural fields and at some of the places it has been completely destroyed. In present condition at most of the places drainage system follows the path way/ village katcha-roads.

Figure No. 6 a gives a clear view of the drainage pattern in village Kunj Biharipura.

Water Sources:

The existing water resource status can be well tabulated as below:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	31	-	31
Bore well	1	-	1
Hand pumps	-	-	-
Village Ponds	-	1	1

Following important points were observed during the field survey:

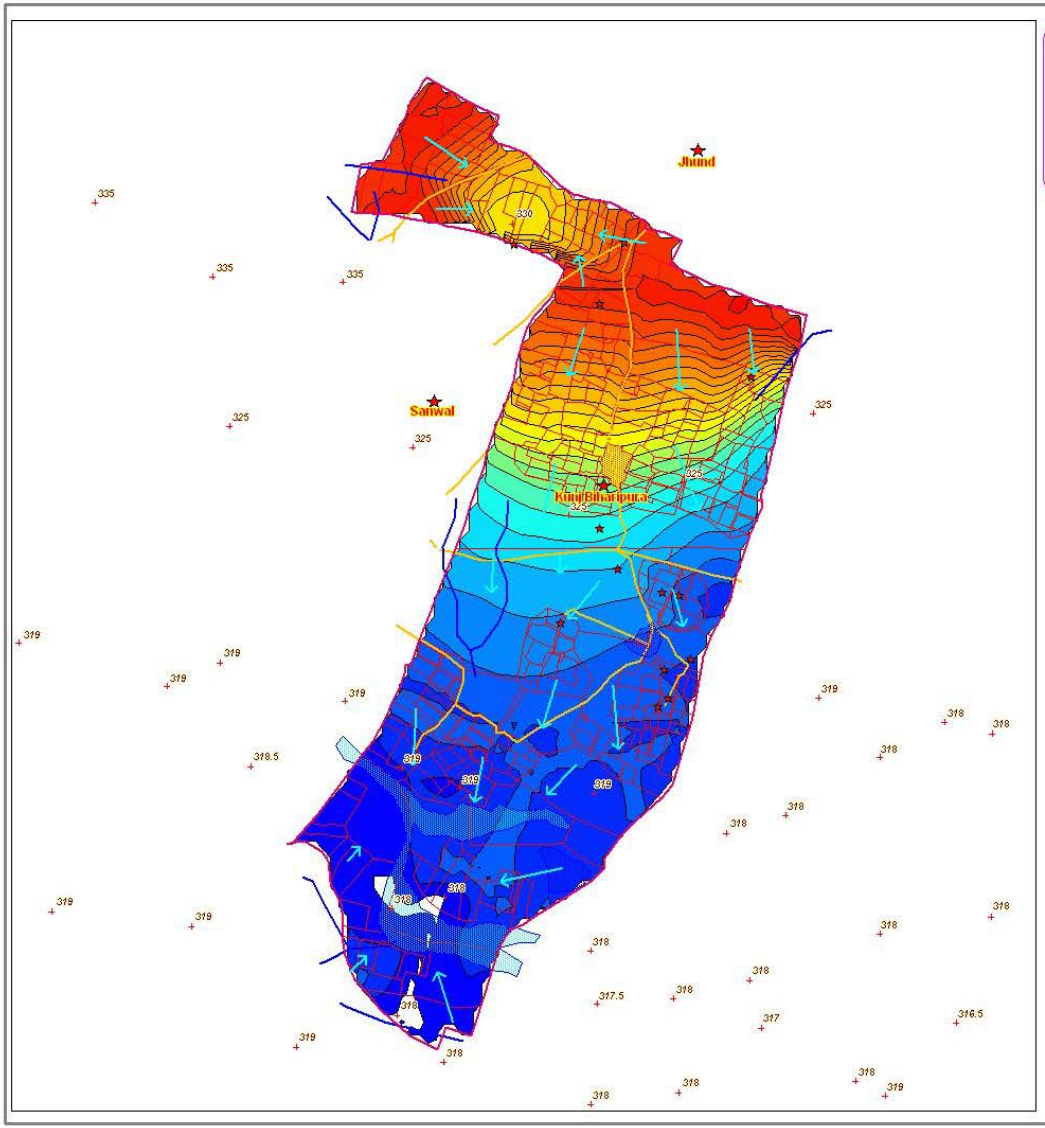
- Most of the wells dry up in the summer season. Also the yield of groundwater has reduced considerably since last decades.
- The ground water is generally saline in nature which increases with depth.
- Depth to water table varies from 26' to 65' depending upon its location.
- Rock formations are visible at depth varying from 12' to 20' from the ground level at different locations in the village.

Drinking Water Sources: No Public Health Engineering Department (PHED) is functioning in village Kunj Biharipura. The only one tube well installed in the village is functional but yield saline water. This water of the tube well (bore well) is used for secondary purposes other than drinking for both human and cattle population. Open wells near some depression and at village pond do yield sweet water and the entire population draw drinking from such sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to travel long distances to get the sufficient quantity of drinking water from the nearby villages.

Irrigation Water Sources: Out of total wells 31 are in functional state. The prime use of these well are for irrigation. The water from these wells is drawn through the diesel pump sets for irrigation. The available water from these sources is not sufficient to meet the crops requirement. Only the balances water requirement for Kharif crops is met from such sources.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting drinking water sources scenario in village Kunj Biharipura.

IKEA WATER PROJECT
MICRO WATERSHED - KUNJ BIHARIPURA
DRAINAGE MAP
(Year - 2007)



NORTH

0 250 500
meters

LEGEND
Village Boundary
Field Boundary
Main Village

Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway

Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels

LEGEND
(KUNJBIHARIPURA - CONTOURS in meters)
318.0000..319.0000
319.0000..320.0000
320.0000..321.0000
321.0000..322.0000
322.0000..323.0000
323.0000..324.0000
324.0000..325.0000
325.0000..326.0000
326.0000..327.0000
327.0000..328.0000
328.0000..329.0000
329.0000..330.0000
330.0000..331.0000
331.0000..332.0000
332.0000..333.0000
333.0000..334.0000
334.0000..335.0000
335.0000..336.0000
336.0000..337.0000
337.0000..338.0000
338.0000..339.0000
339.0000..340.0000
340.0000..341.0000
341.0000..342.0000

Prepared by :
advit foundation

Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

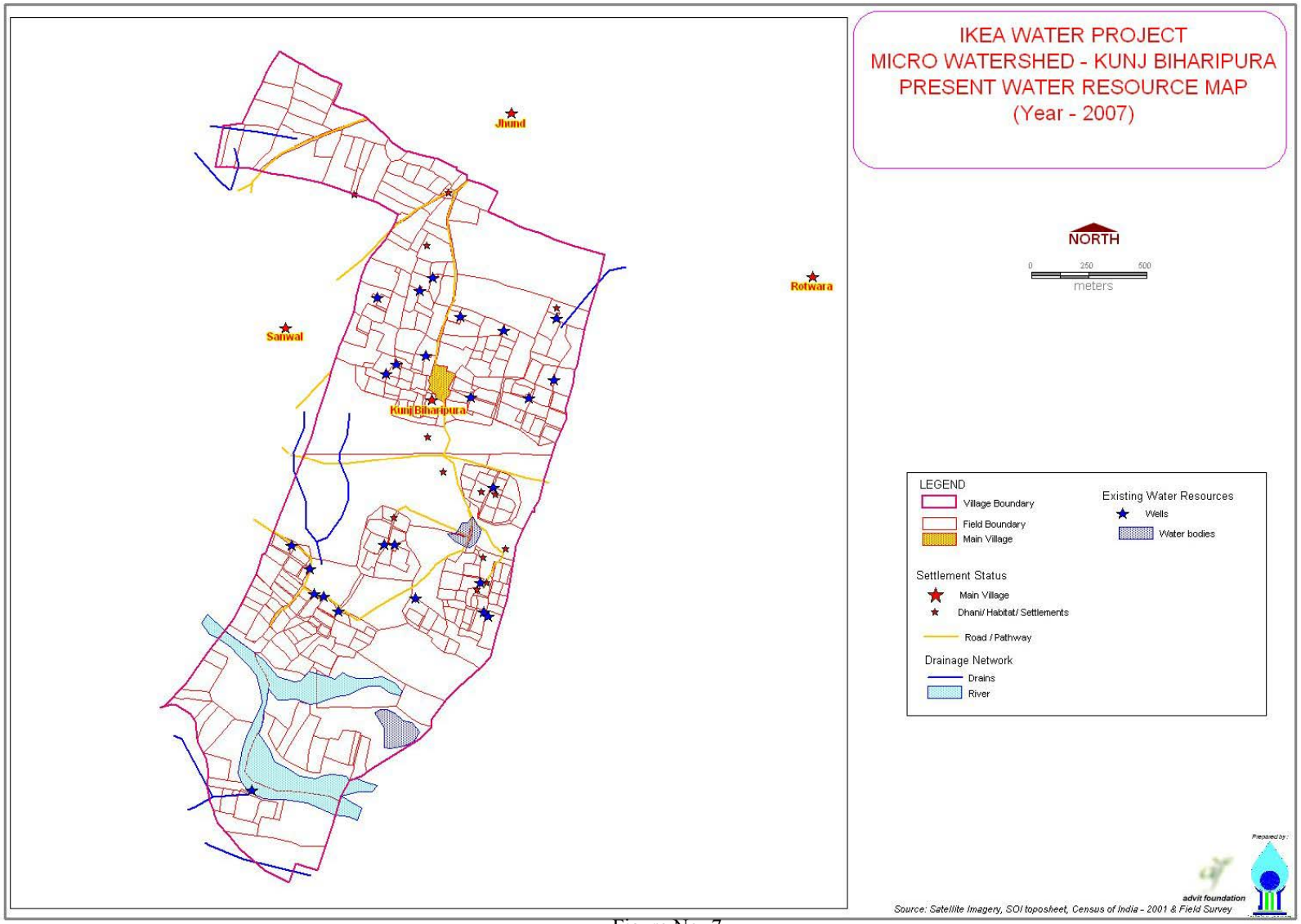

IKEA WATER PROJECT
MICRO WATERSHED - KUNJ BIHARIPURA
PRESENT WATER RESOURCE MAP
(Year - 2007)
Jhund
Rotwara
Sanwal
Kunj Biharipura
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Existing Water Resources
Wells
Water bodies
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to four micro-watersheds draining towards south direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	107.4265
Watershed no.-2	96.7569
Watershed no.-3	20.54691
Watershed no.-4	23.988
Total	**248.71831**

The watershed no.-1 and 2 drain the runoff water in south direction towards the Bandi River. The remaining two watersheds (no.-3 and 4) drains the runoff water towards local d natural depression as shown in figure no. - 6.

Although the watershed no.-1 and 2 are big in coverage area and average field size inside its boundary but northern part of them is more productive and having higher intensity of irrigation facilities. The dark shed reflected in satellite imagery of year 2007 (refer figure no-5) clearly indicate that agriculture practices are more intense in watershed no.-1 & 2.

The drainage system is such that Bandi River divides it in two parts. Natural flow of runoff water from watershed no.-1 & 2 have been obstructed by the field boundaries hence the water flows through the pathways used for surface movement. The watershed no- 3 and 4 is at the upper part of the village. Bottom part, below Bandi River is quite clumsy.

Proposed Activities: All feasible water harvesting activities were discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities for village Kunj Biharipura are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location identified during the project study shared and recommended by the local village community of Kunj Biharipura:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Moisture Conservation in the Field**	• Construction of small tanks/ ponds at agricultural farm.	• Micro-watershed No.-1, 2, 3 & 4.	• Five numbers at suitable locations entire village area.
2	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.-286 (Government common Land) • Field No.-149 • (Government common Land)
3	**Pasture Land Development & Horticulture**	• Land grading and bunding. • Plantation of suitable plant/ fruit plant. • Linking with government horticultural scheme.	• Micro-watershed No.-1 & 2	• Field (Khasra) No.-286, 264,177 & 197 (Government Pasture Land)

		•	•	•

Numbers/ quantities of proposed activities are summarized in following table:

S. No.	Activities	Numbers/ Details	
1	Roof Top Rainwater Harvesting System	1	No.'s
2	Nadi construction/ renovation	2	No.'s
3	Farm Tanks/ ponds	5	No.'s
4	Pasture Land Development	50	Hectare

The location of the proposed activities are shown in figure no.- 9

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200000.00**
2	Nadi construction/ renovation	2	No.'s	Lumpsum	**400000.00**
3	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50000.00	**250000.00**
4	Pasture Land Development	50	Hectare	10000.00	**500000.00**
				GRAND TOTAL	**1350000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

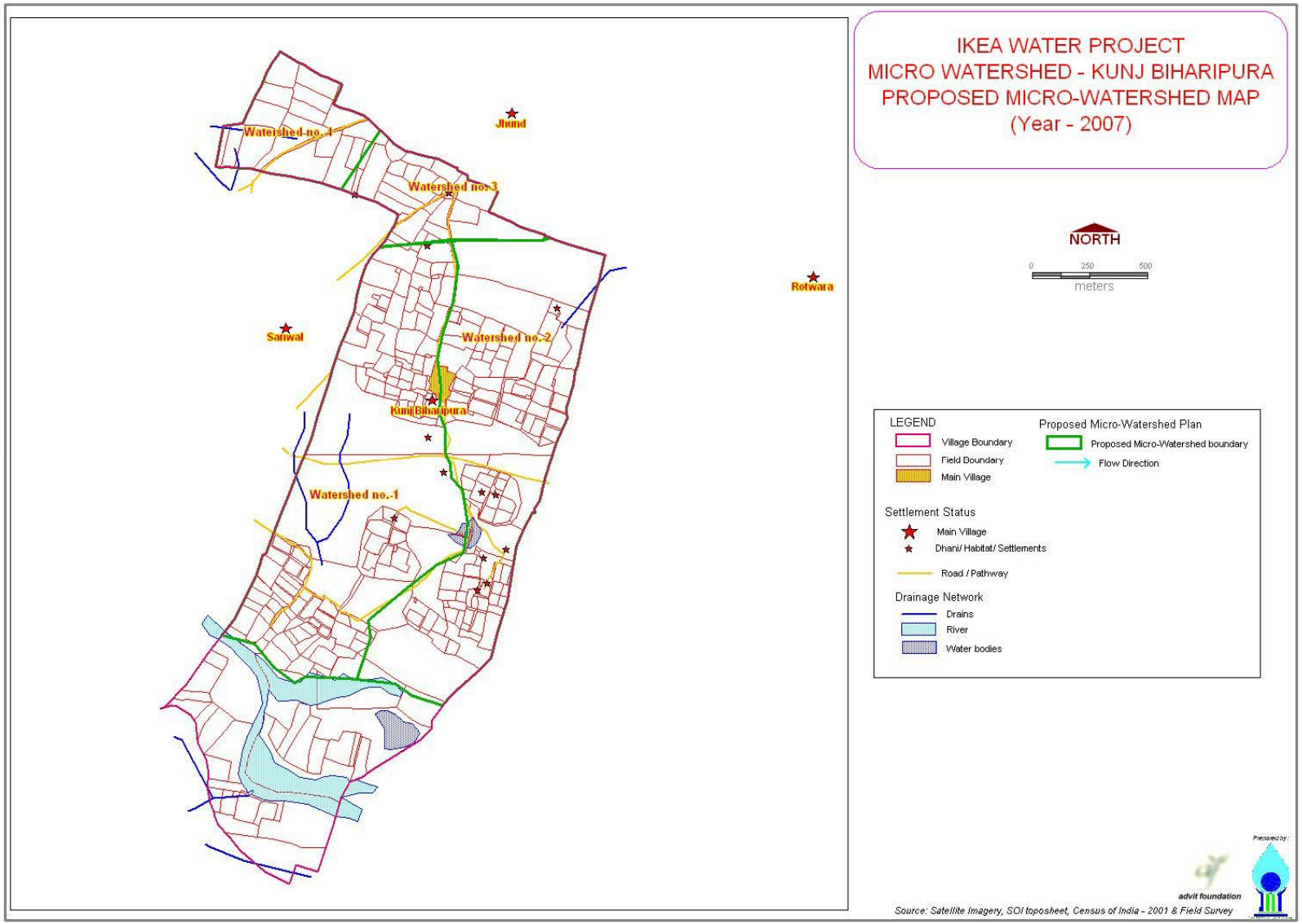

IKEA WATER PROJECT
MICRO WATERSHED - KUNJ BIHARIPURA
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
Watershed no.-4
Jhund
Watershed no.-3
Rotwara
Sanwal
Watershed no.-2
Kunj Biharipura
Watershed no.-1
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Flow Direction
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

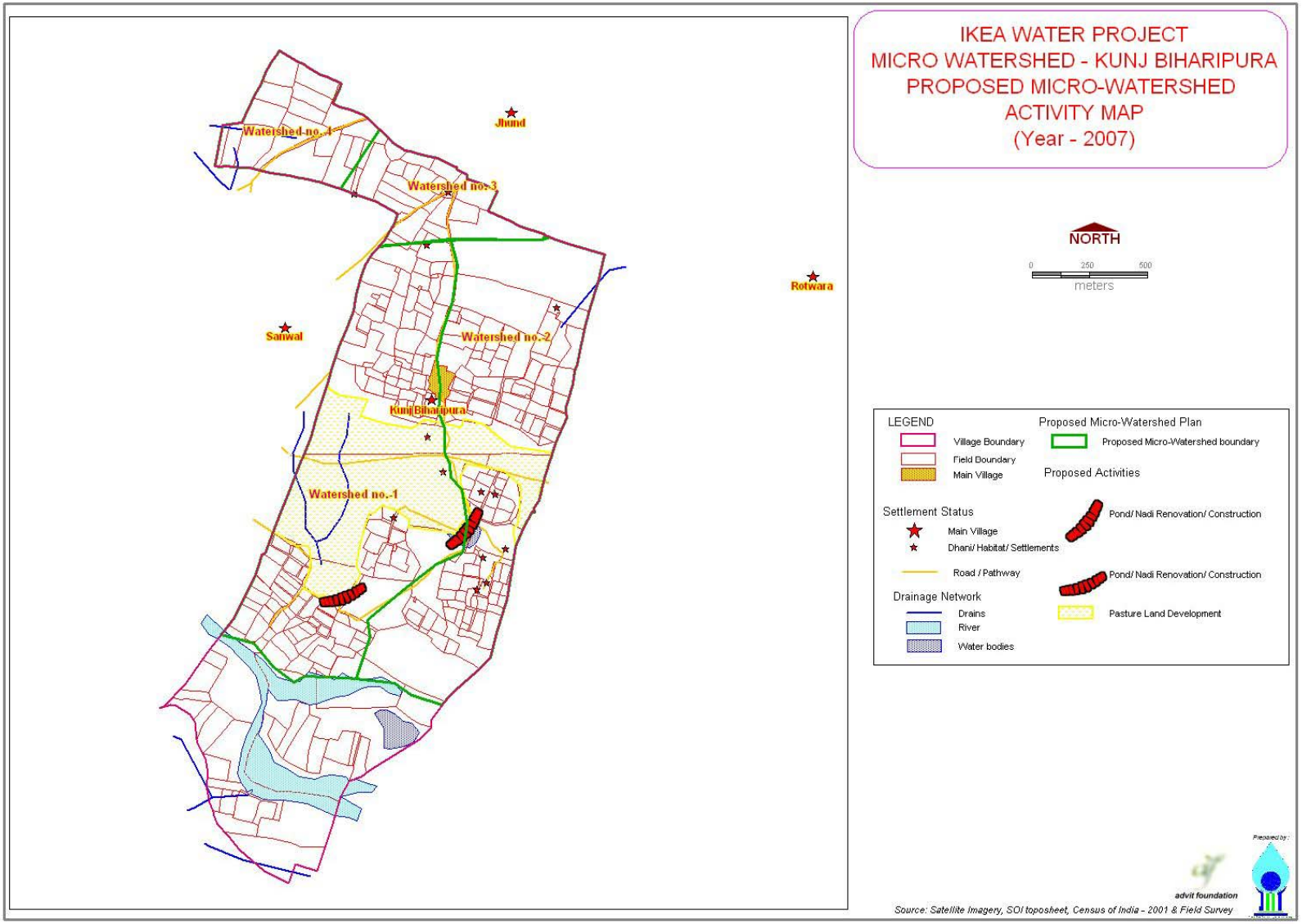

IKEA WATER PROJECT
MICRO WATERSHED - KUNJ BIHARIPURA
PROPOSED MICRO-WATERSHED
ACTIVITY MAP
(Year - 2007)
Watershed no.-4
Watershed no-3
Watershed no.-2
Watershed no.-1
Jhund
Rotwara
Sanwal
Kunj Biharipura
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Proposed Activities
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Pond/ Nadi Renovation/ Construction
Road / Pathway
Pond/ Nadi Renovation/ Construction
Drainage Network
Drains
River
Water bodies
Pasture Land Development
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE - MANDOR

Village Location

Mandor village is located at $75^0$32'3.8" east longitude and $26^0$42'19.08"north longitude with a geographical area of 1155 hectare at about 49 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Mandor w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**14 km**
Distance from Block HQ:	=	**24 km**
Type of approach road to the village: *(Kachcha 8km and Pacca 6 km)*	=	**14 km**
Distance of village from district HQ	=	**45 km**
Nearest market & its distance from the village: *(Bagru)*	=	**14 km**
Distance to nearest Middle School	<	**5 km**
Distance to nearest College	>	**10 km**
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 250 families (as per baseline survey – 2007) residing in the village Mandor which are spread up in main village located inside the village boundary (refer fig.- 1 and 2)

O. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	1191	Total House Holds	225
Total male Population	678	SC House Holds	20
Total Female Population	573	ST House Holds	5
Child Population (0-6 yr)	215		

The sex ratio in Mandor village is 92 females per 1000 males. The child population is about 18.05% of the total population.

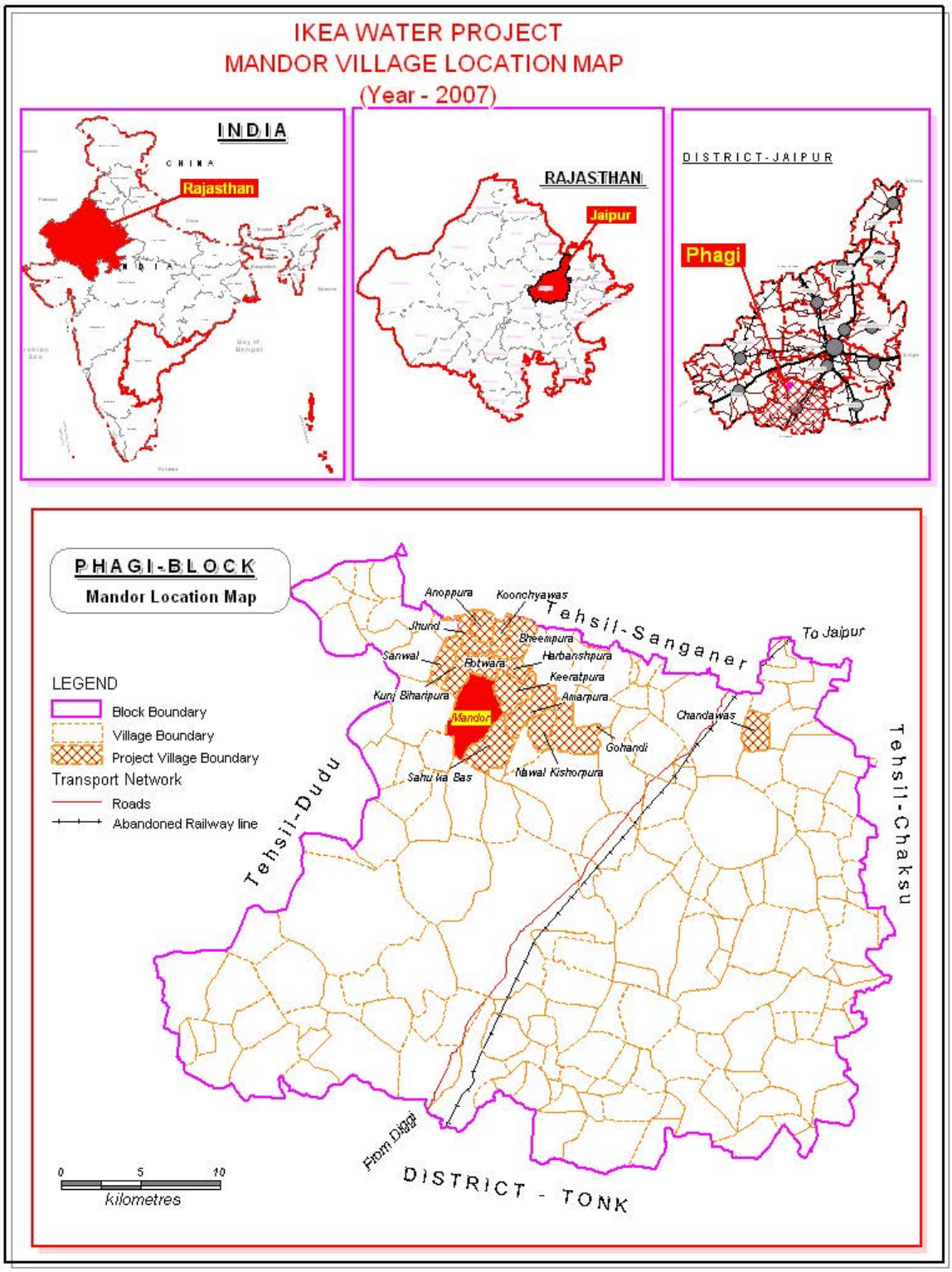

IKEA WATER PROJECT
MANDOR VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Mandor Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Harbanshpura
Sanwal
Rotwara
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Chandawas
Gohandi
Sahu ka Bas
Nawal Kishorpura
Tehsil-Sanganer
To Jaipur
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0
5
10
kilometres

Figure No.-1

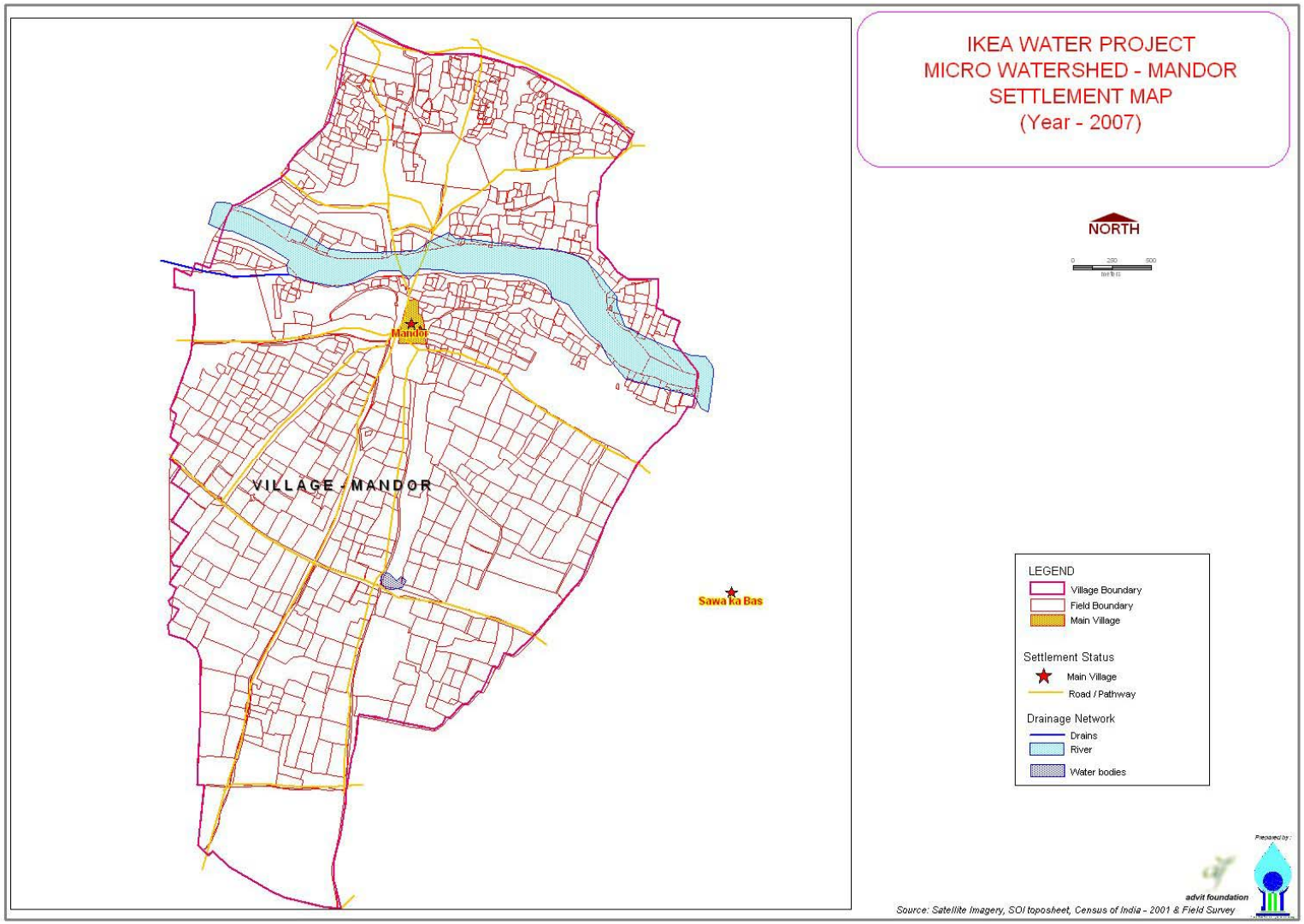

IKEA WATER PROJECT
MICRO WATERSHED - MANDOR
SETTLEMENT MAP
(Year - 2007)
NORTH
Mandor
VILLAGE - MANDOR
Sawa Ka Bas
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

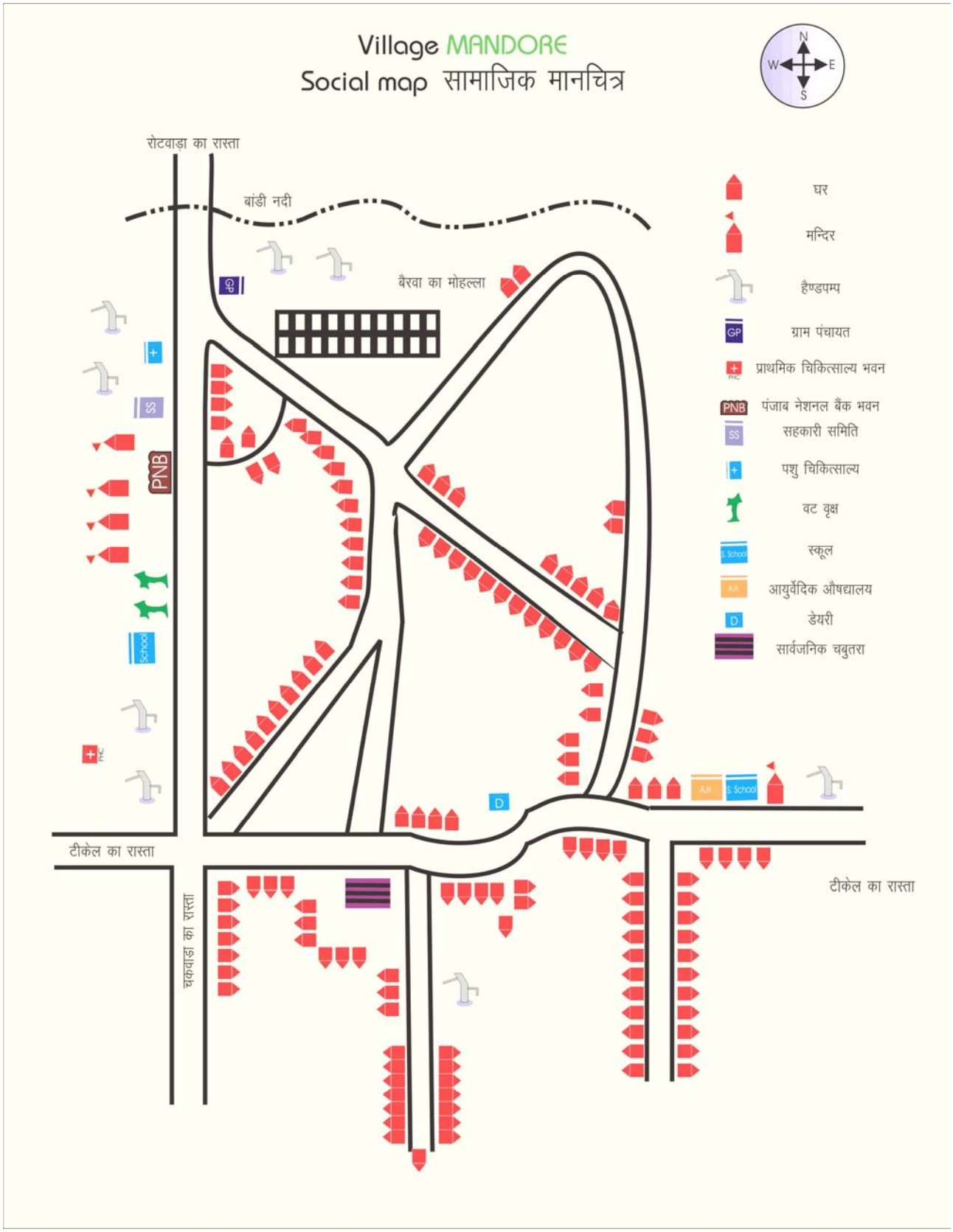

Village MANDORE
Social map सामाजिक मानचित्र
N
W
E
S
रोटवाड़ा का रास्ता
बांडी नदी
बैरवा का मोहल्ला
PNB
SS
School
D
A.H.
टीकेल का रास्ता
टीकेल का रास्ता
टीकेल का रास्ता
घर
मन्दिर
हैण्डपम्प
GP
ग्राम पंचायत
प्राथमिक चिकित्साल्य भवन
PNB
पंजाब नेशनल बैंक भवन
SS
सहकारी समिति
पशु चिकित्साल्य
वट वृक्ष
S. School
स्कूल
A.H.
आयुर्वेदिक औषद्यालय
D
डेयरी
सार्वजनिक चबुतरा

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be represented by the following important points:

- Overall Literacy rate is 50.88%. Male literacy rate is 66.18% while female literacy rate is 34.38%.
- There is government primary, middle and secondary school. Senior Secondary and College facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- A primary health center facility is available in the village.

- **Work and Work force**

The workers population (as per census -2001) available in the village Mandor can be tabulated as below

A.	**Main Worker Population**	***In Numbers***	***In % to total population***
	Male Worker	159	52.82%
	Female Worker	135	57.20%
	Total Workers	**294**	**54.75%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	2	0.66%
	Female Marginal Worker	23	9.75%
	Total Marginal Workers	**25**	**4.66%**
C	**Non Worker Population**		
	Male Non Worker	142	47.18%
	Female Non Worker	101	42.80%
	Total Non Workers	**243**	**45.25%**

Description of workers classification is explained in the following paragraphs:

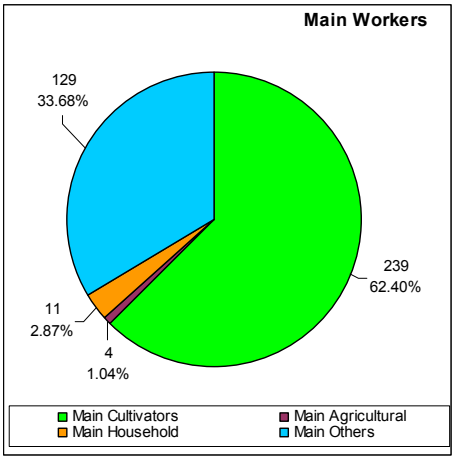
Main Workers: In Mandor village total main workers population is about 32.16% of the total population. Females lead the male in main workers population in % to their respective total population.

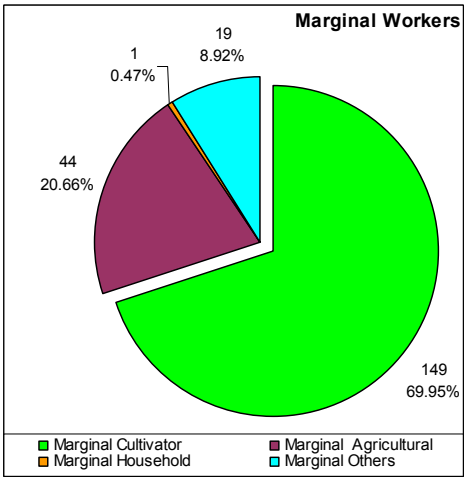
Marginal Workers: Marginal Workers population in Mandor village is shown in following graph.

Cultivator: About 62.40% of main worker population is engaged in cultivator work in the village itself. Similarly in Marginal workers category about 69.95% marginal workers are engaged in cultivation field.

Agricultural Labourer: In Mandor village very less number i.e. 1.04% in main workers and 20.66% in marginal workers are engaged in this category of work.

Household Industry Workers: In

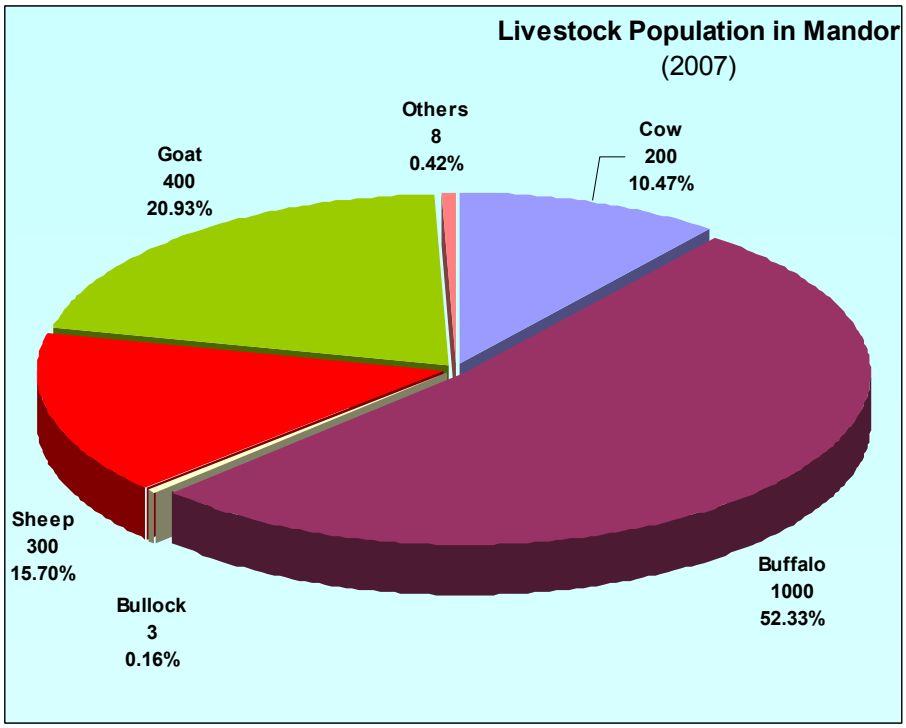




Mandor village almost negligible numbers of people are engaged in household works.
Other Worker: About 33.68% in main worker and 8.92% in marginal worker category are engaged in this type of work category. In this category Males population leads the female population.

Livestock

According to the base line survey data, in Mandor village, there are 1911 cattle variably distributed among 250 families. Some families are having more than 50 cattle whereas some have none. Buffaloes are the major contributor (about 52.33%) to the livestock population.
Buffaloes and cows amount to two third part of the cattle population primarily being utilised for dairy purpose (milk production).

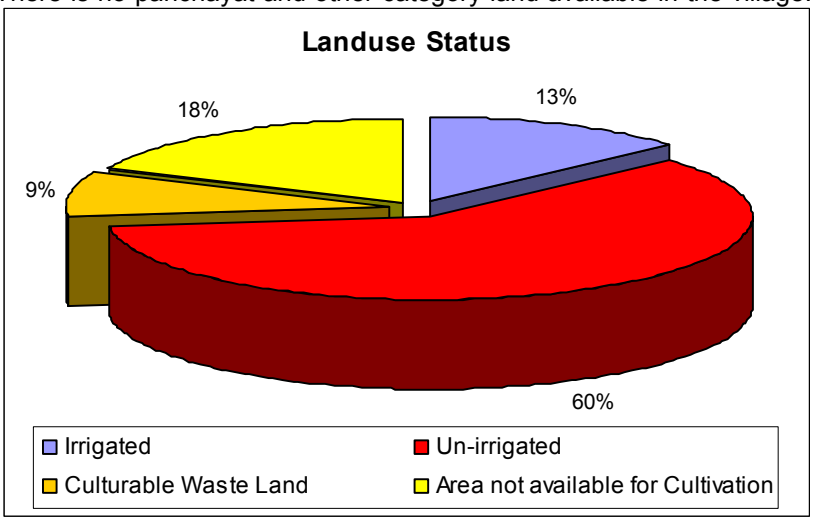


Land-Use Pattern:

The major part of the village economy is dependent on agricultural production. Hence most of the land available is being put to agricultural activities.

Following graph gives status of land utilization in village Mandor.

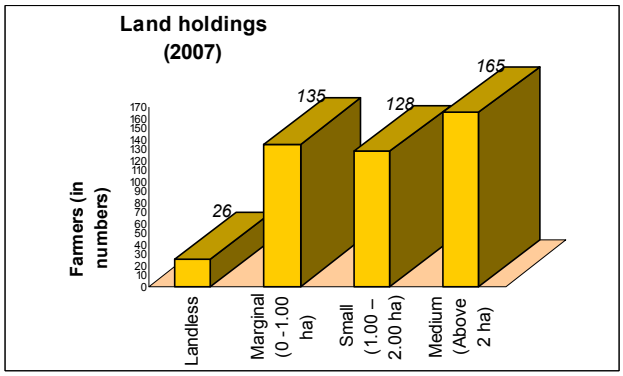
Out of the total land only 13% is irrigated (by tube wells) and about 60% land falls in the category of un-irrigated land. About 9% of the land is culturable waste land in the village Mandor.
Further, about 47 hectare land is permanent pasture land and 210 hectare is government waste land. There is no panchayat and other category land available in the village. Cultivable fallow land or private waste land is about 75 hectare. Looking to these statistics there are ample oppertunities in the field of agriculture.



Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Mandor. Satellite image map well represent the present land-use features in different textures as shown in figure no.- 5. The field boundaries and habitat

locations have been superimposed on the image map to give visual impression of the field location and its status.

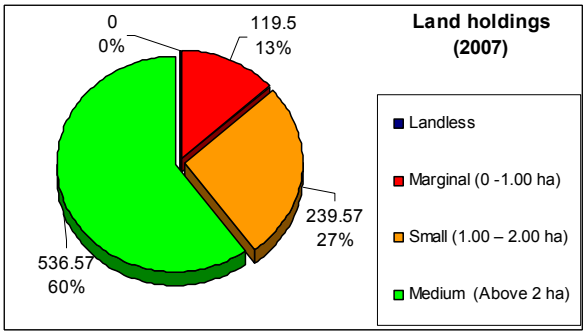
Land Holdings



Category-wise numbers of farmers and their land holdings are presented in the following graphs.

The base line survey revealed that:

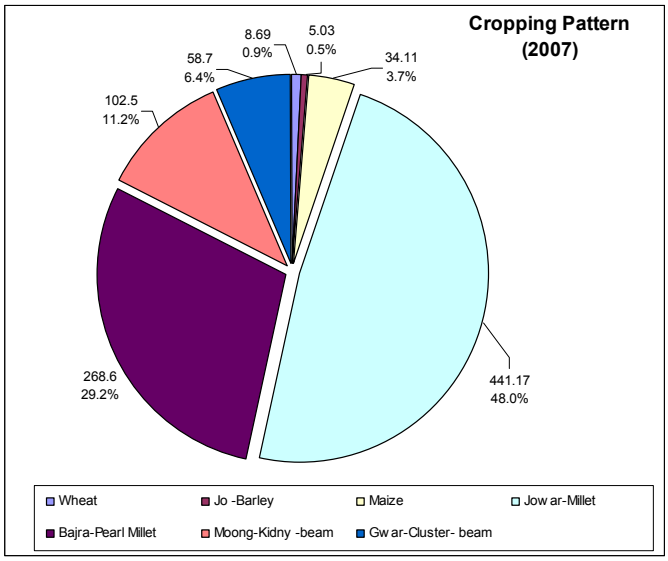
- out of 454 farmers in the village only small amount of farmers (5.73%) i.e. 26 farmers are landless.
- About 36.34% farmers (165 no.'s) have more than 2 hectare land. These farmers have more than 60% of the landholdings in the Mandor village.
- Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 27% of the total geographical area of the village.
- Marginal farmers (0 to 1.00 ha.) have lands about 13% of the total area of the village Mandor.



Cropping Pattern

In Mandor village the type of crops sown in different seasons recorded during the base line survey are tabulated and graphed below:

According the data it could be well concluded that Jowar-Millet (48%) is the major crop in all the three seasons in the area followed by Bajra-Pearl Millet (29.2%) and Moong-Kidny -beam (11.2%). Rainfall plays major role in the village economy as cropping pattern is chiefly dependent on it.



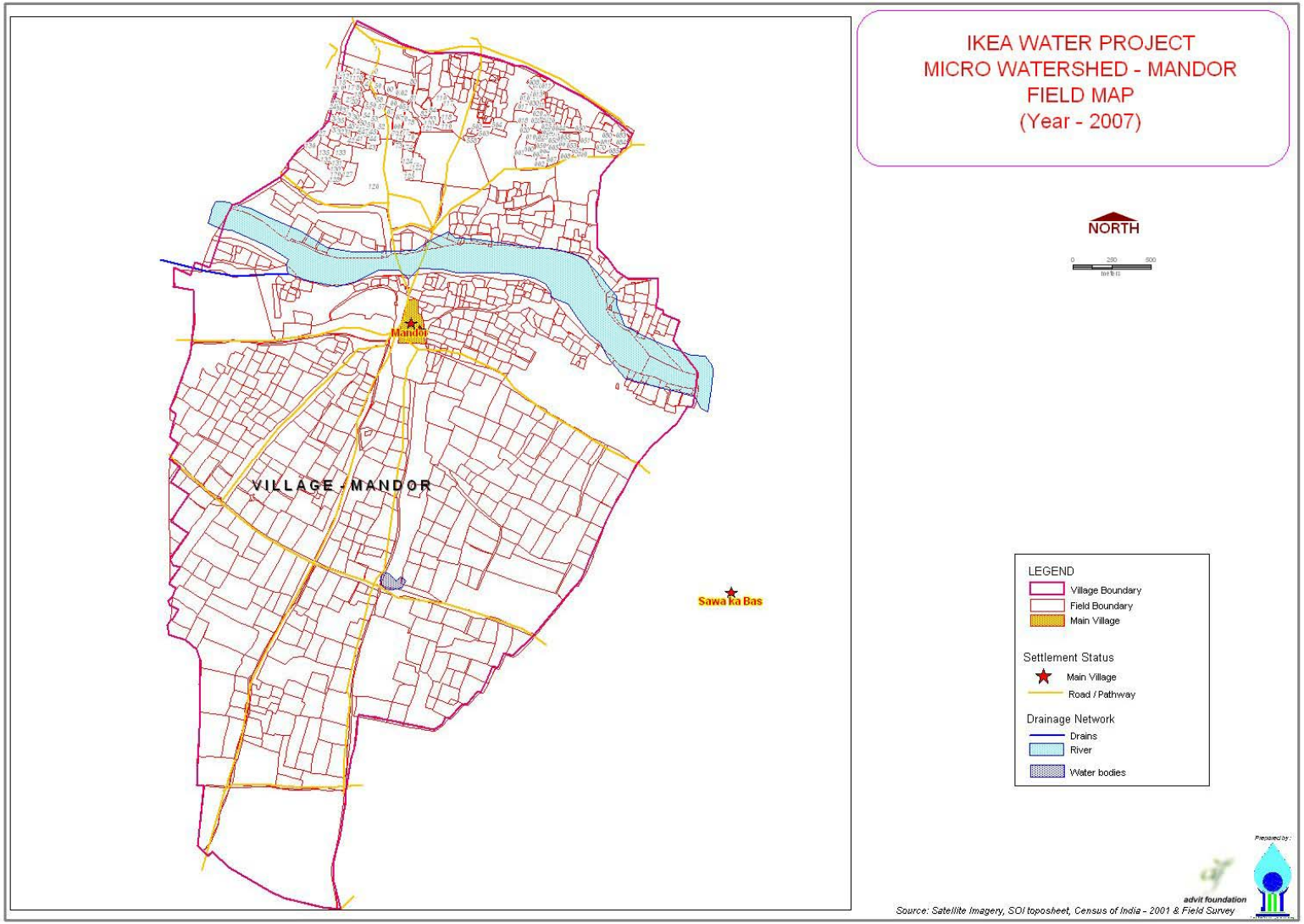
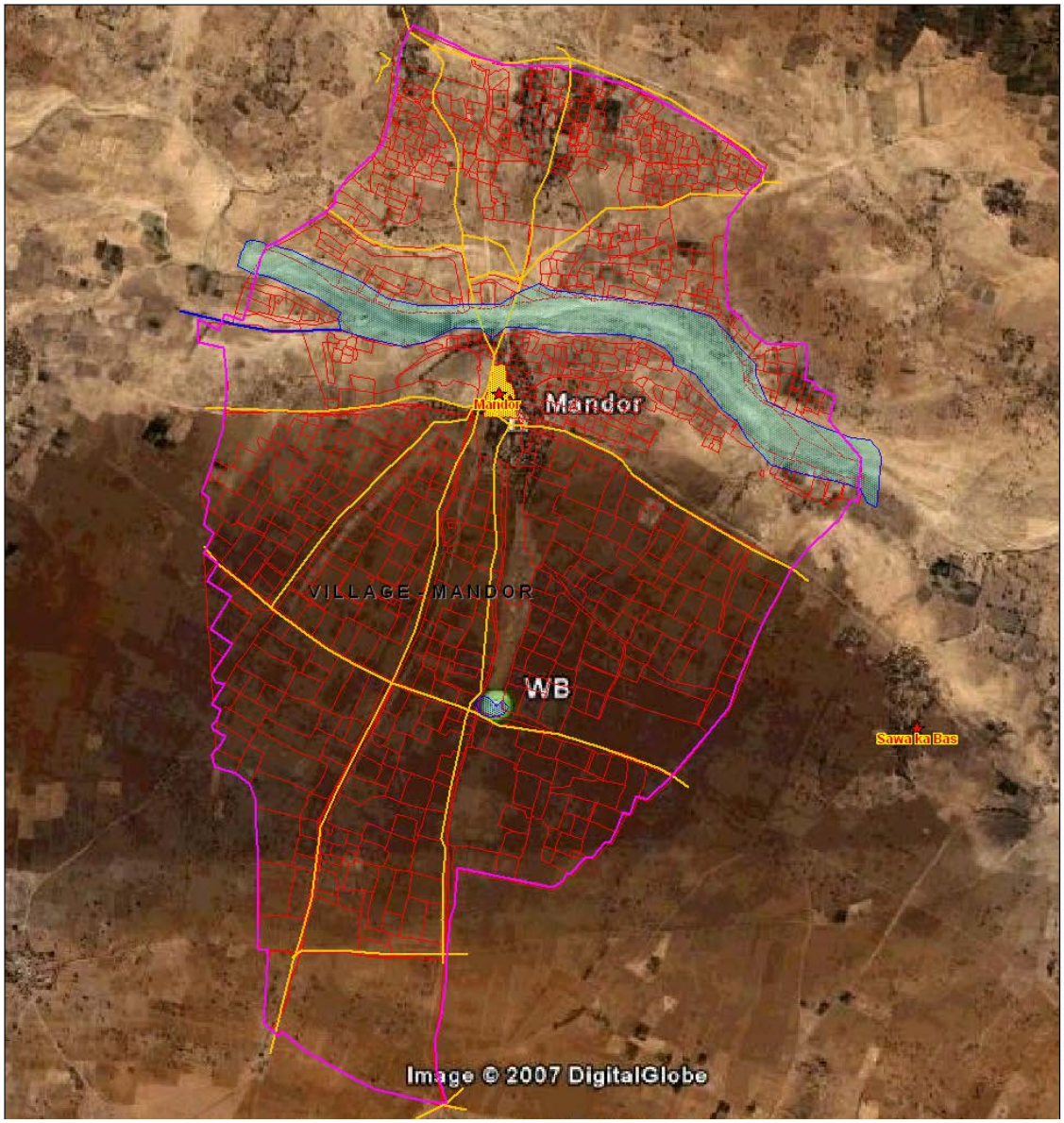

IKEA WATER PROJECT
MICRO WATERSHED - MANDOR
FIELD MAP
(Year - 2007)
NORTH
Mandor
VILLAGE - MANDOR
Sawa Ka Bas
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

IKEA WATER PROJECT
MICRO WATERSHED - MANDOR
Satellite Image MAP
(Year - 2007)



LEGEND
- Village Boundary
- Fields Boundary
- Main Village

Settlement Status
- Main Village
- Dhani
- Settlements
- Roads/ Pathway

Drainage Network
- Drains
- Bandi River
- Existing Pond/ Nadi

Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
97.	Wheat	Rabi	4.5	March	8.69	0.0	8.69
98.	Jo -Barley	-do-	4	March	5.03	0.0	5.03
99.	Maize	-do-	4	March	0.0	34.11	34.11
100	Jowar-Millet	Kharif	4	Oct.	0.0	441.17	441.17
101	Bajra-Pearl Millet	-do-	4	Oct.	0.0	268.6	268.6
102	Moong-Kidny - beam	-do-	3	Sep.	0.0	102.5	102.5
103	Gwar-Cluster-beam	-do	3	Sep.	0.0	58.7	58.7
Total					**13.72**	**905.08**	**918.8**

Water Resource Profile:

Physiography: The general ground profile is flat and having gentle slope. Bandi River bisects the village area in two parts. Northern part slopes towards south direction and southern part slopes towards northern direction. The runoff water during rainfall period follows ground slope from all the direction and drains in to Bandi River flowing at the middle of the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: The drainage system of the Mandor follows north to south direction in upper part and reverse in lower part. There are no distinct natural drains in the village. The natural flow paths which existed in the past are obstructed by agricultural fields and at some of the places it has been completely destroyed. In present condition at most of the places drainage system follows the path way/ village katcha-roads. Figure No. 6 a gives a clear view of the drainage pattern in village Mandor.

Water Sources:

The existing water resource status can be represented by following table:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	60	-	60
Bore well	-	-	-
Hand pumps	11	-	11
Village Ponds	-	1	1

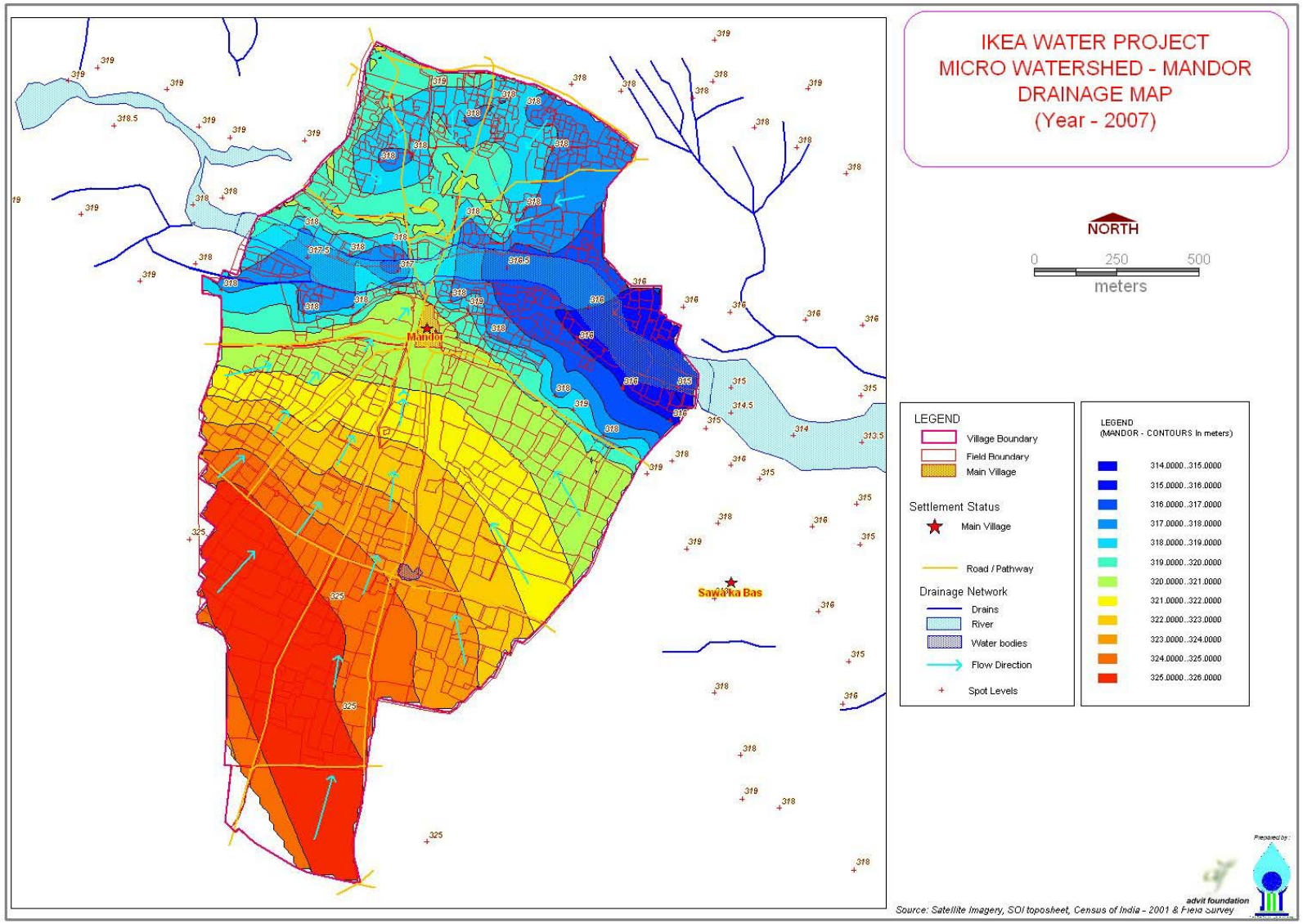

IKEA WATER PROJECT
MICRO WATERSHED - MANDOR
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
Mandor
Sayarka Bas
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
(MANDOR - CONTOURS In meters)
314.0000..315.0000
315.0000..316.0000
316.0000..317.0000
317.0000..318.0000
318.0000..319.0000
319.0000..320.0000
320.0000..321.0000
321.0000..322.0000
322.0000..323.0000
323.0000..324.0000
324.0000..325.0000
325.0000..326.0000
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

Following important points were observed during the field study:

- Most of the wells dry up in the summer season. Also the yield of groundwater has reduced considerably since last decades.
- The ground water is generally saline and it increases with depth.
- Depth to water table varies from 35' to 50' depending upon its location.
- Rock formations are visible at depth varying from exposed surface to 45' from the ground level at different locations.

Drinking Water Sources: Public Health Engineering Department (PHED) has installed Regional Water Supply Scheme with Ground Level Reservoir (GLR) with tape connection all around it in village Mandor. The scheme and its various components are in working condition but not sufficient on quality and quantity aspect. Although the scheme is functional but people do not prefer it for drinking as it contains high fluoride (> 3ppm) and taste salty. Even cattle do not drink the water. The source is not at all dependable as it functions occasionally. Most of the time it remains closed. The hand pumps installed in the village are functional but yield saline water. This water is used for secondary purposes other than drinking for both human and cattle population. Open wells near some depression and at village pond do yield sweet water and the entire population draw drinking from such sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to travel long distances to get the sufficient quantity of drinking water.

Irrigation Water Sources: Out of total wells about 60 are in functional state. The prime use of these well are for irrigation. The farmers have dug open bore in the bed of their well to draw water with help of diesel engine. The operating hours of this set depends upon the irrigation water requirement, recoup time of water. Generally the recovery time varies from 24 hours to 3 hours depending upon the location. The water from these sources are not sufficient to meet the total crop water requirement of the village.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting drinking water sources scenario in village Mandor.

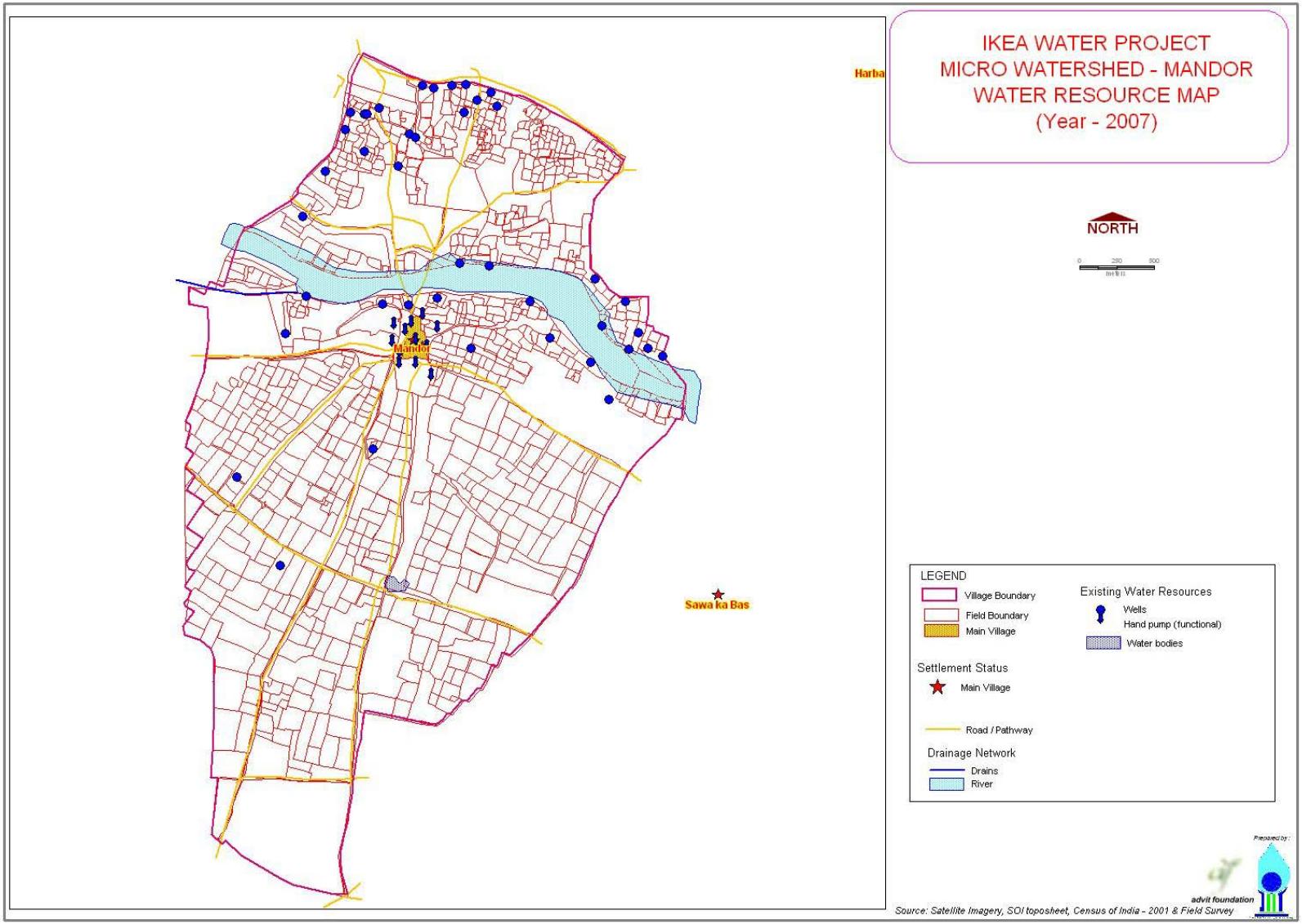

IKEA WATER PROJECT
MICRO WATERSHED - MANDOR
WATER RESOURCE MAP
(Year - 2007)
Harba
Mandor
Sawa ka Bas
NORTH
LEGEND
Village Boundary
Field Boundary
Main Village
Existing Water Resources
Wells
Hand pump (functional)
Water bodies
Settlement Status
Main Village
Road / Pathway
Drainage Network
Drains
River
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area is subdivided in to four micro-watersheds with two draining towards south direction other two in north direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	441.1868
Watershed no.-2	345.3096
Watershed no.-3	124.9024
Watershed no.-4	107.3525
Total	**1018.7513**

The watershed no.-1 and 2 are big in coverage area and average field size inside its boundary and also are more productive and having higher intensity of irrigation facilities. The dark shed reflected in satellite imagery of year 2007 (figure no.-5) clearly indicate that agriculture practices are more intense in watershed no.-1 & 2.

The drainage system is comparatively well defined in watershed no.-3 and 4 as compare to other watersheds. Natural flow of runoff water from watershed no.-1 & 2 have been obstructed by the field boundaries hence the water flows through the pathways used for surface water movement. The watershed no-3 and 4 are at the upper portion of the village.

Proposed Activities: All feasible water harvesting activities were discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities for village Mandor are shown in figure no. – 9.
Following table gives detailed description of type of activities and its geographical location identified during the project study shared and recommended by the local village community:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Rainwater Harvesting on natural drainage**	• Construction of one check dam	• Micro-watershed No.-2	• Field (Khasra*) No.- 812 (About 1100m east of main village)
		• Construction of one Anicut structure.	• Micro-watershed No.-1	• Field No.-550 on main Bandi River near field no.- 705 (About 1200m east of main village)
2	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural field	• Micro-watershed No.-2	• Cluster -1: About 3000m field bunds spread over more than 70 Fields in south east of main village.
		• Construction of small tanks/ ponds at agricultural farm.	• Micro-watershed No.-2.	• Cluster -1: Five numbers at suitable locations spread over 70 fields. (refer figure no.-9 for details)
3	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-3	• Field No.-557 (Government Pasture Land)
4	**Pasture Land Development &**	• Land grading and bunding.	• Micro-watershed No.-2	• Field (Khasra) No.-922 to 924 (Government Pasture Land)

	Horticulture	• Plantation of suitable plant/ fruit plant. • Linking with government horticultural scheme.		

Numbers/ quantities of proposed activities for village Mandor are summarized in following table:

S. No.	Activities	Numbers/ Details	
1	Anicut construction	1	No.'s
2	Check dam construction	1	No.'s
3	Nadi construction/ renovation	1	No.'s
4	Farm Tanks/ ponds	5	No.'s
5	Farm Field Bunding	3000	Meters
6	Pasture Land Development	22	Hectare

The location of the proposed activities are shown in figure no.- 9

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Anicut construction About 200m wide in main drain	1	No.'s	16000.00	**3200000.00**
2	Check dam construction About 90m wide on main drain	1	No.'s	6000.00	**540000.00**
3	Nadi construction/ renovation	1	No.'s	Lumpsum	**200000.00**
4	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50000.00	**250000.00**
5	Farm Field Bunding	3000	Meters	40.00	**120000.00**
6	Pasture Land Development	22	Hectare	10000.00	**220000.00**
				GRAND TOTAL	**4530000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

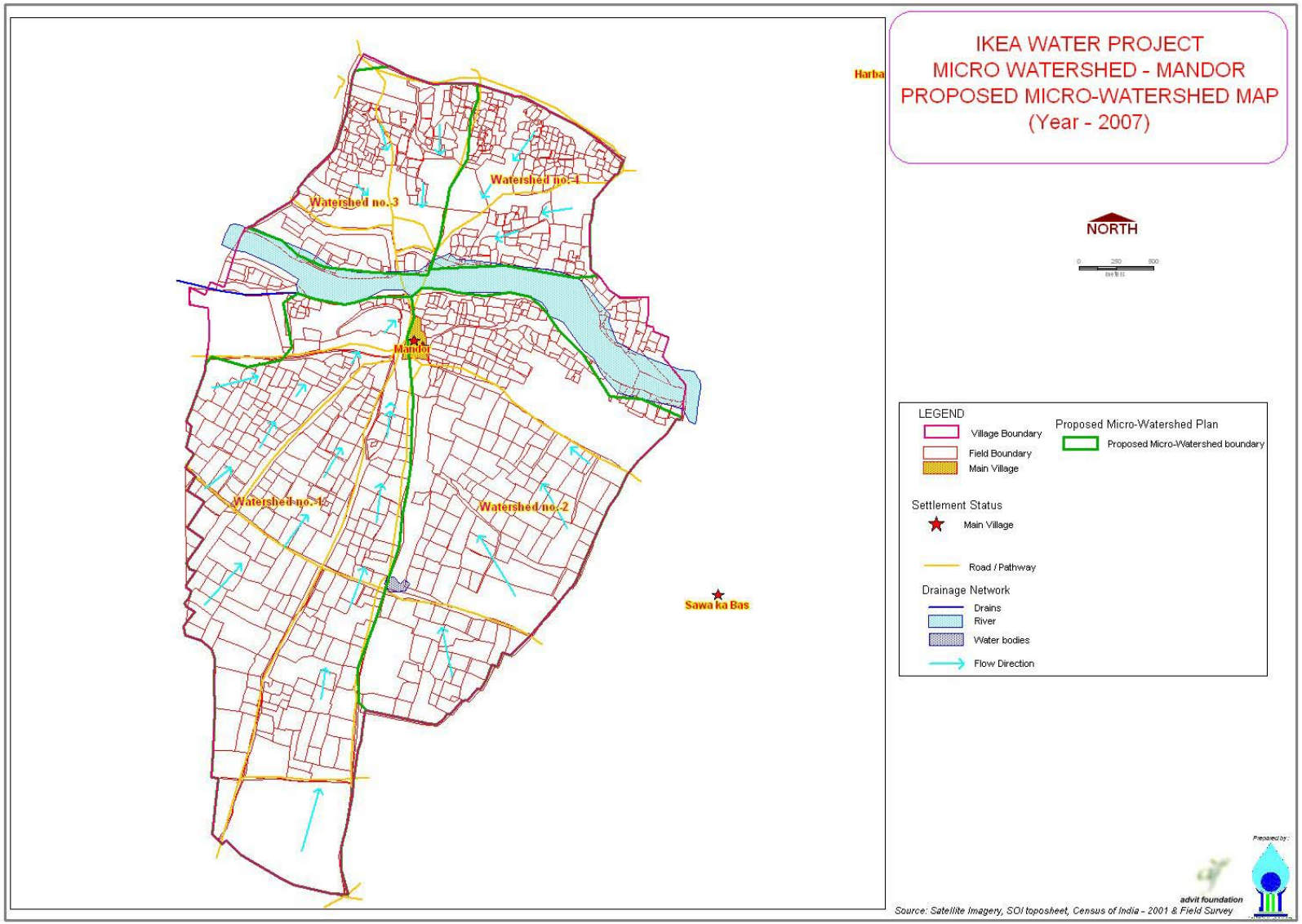

IKEA WATER PROJECT
MICRO WATERSHED - MANDOR
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
Harba
Watershed no.-4
Watershed no.-3
Mandor
Watershed no.-1
Watershed no.-2
Sawa ka Bas
NORTH
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Settlement Status
Main Village
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

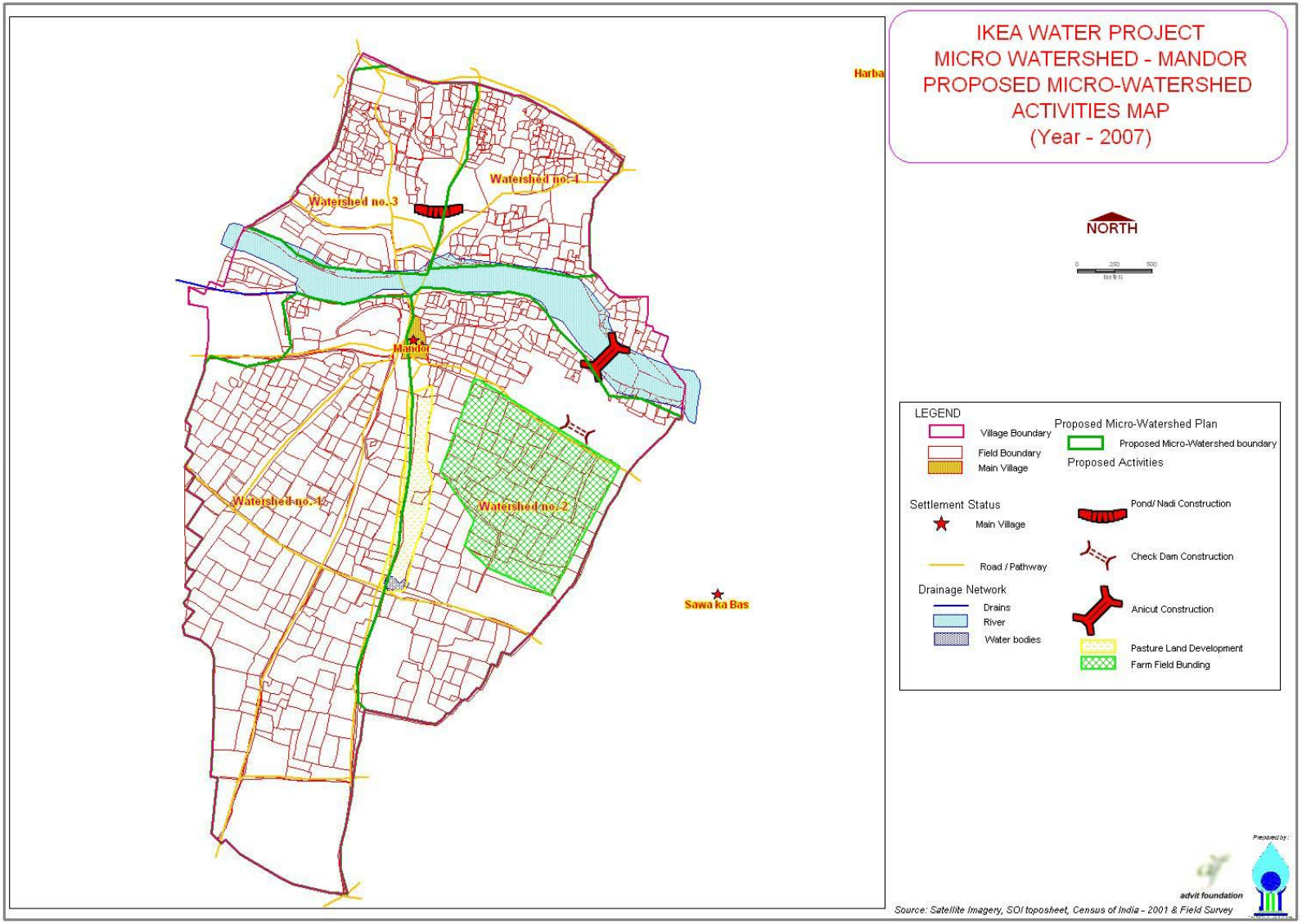

IKEA WATER PROJECT
MICRO WATERSHED - MANDOR
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
Harba
Watershed no.-1
Watershed no.-3
Watershed no.-4
Watershed no.-2
Mandor
Sawa ka Bas
NORTH
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Proposed Activities
Settlement Status
Main Village
Road / Pathway
Drainage Network
Drains
River
Water bodies
Pond/ Nadi Construction
Check Dam Construction
Anicut Construction
Pasture Land Development
Farm Field Bunding
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE - NAVAL KISHORPURA

Village Location

Naval Kishorpura village is located at 75^{0}34'37.92" east longitude and 26^{0}41'46.88"north longitude with a geographical area of 297 Hectare at about 45 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Naval Kishorpura w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**25 km**
Distance from Block HQ:	=	**24 km**
Type of approach road to the village:	=	**0 km**
Distance of village from district HQ	=	**45 km**
Nearest market & its distance from the village: *(Renwal)* **11 km**		=
Distance to nearest Middle School **5 km**		<
Distance to nearest College **10 km**		>
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 72 families (as per baseline survey – 2007) residing in the village Naval Kishorpura which are spread up in main village and two dhanies (hamlets) located inside the village boundary (refer fig.- 1 and 2)

P. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	439	Total House Holds	72
Total male Population	155	SC House Holds	=
Total Female Population	143	ST House Holds	8
Child Population (0-6 yr)	141	=	

Q. Dhani-wise breakup of the population distribution:

S. No.	Village/ Dhani	House Holds			Population			
		TOTAL	SC	ST	Male	Female	Child	Total
1	**Naval Kishor Pura**	48			103	98	80	281
2	**Sarpanch Ki Dhani**	16			38	34	43	115
3	**Kumhar Dhani**	8			14	11	18	43
	Total	**72**			**155**	**143**	**141**	**439**

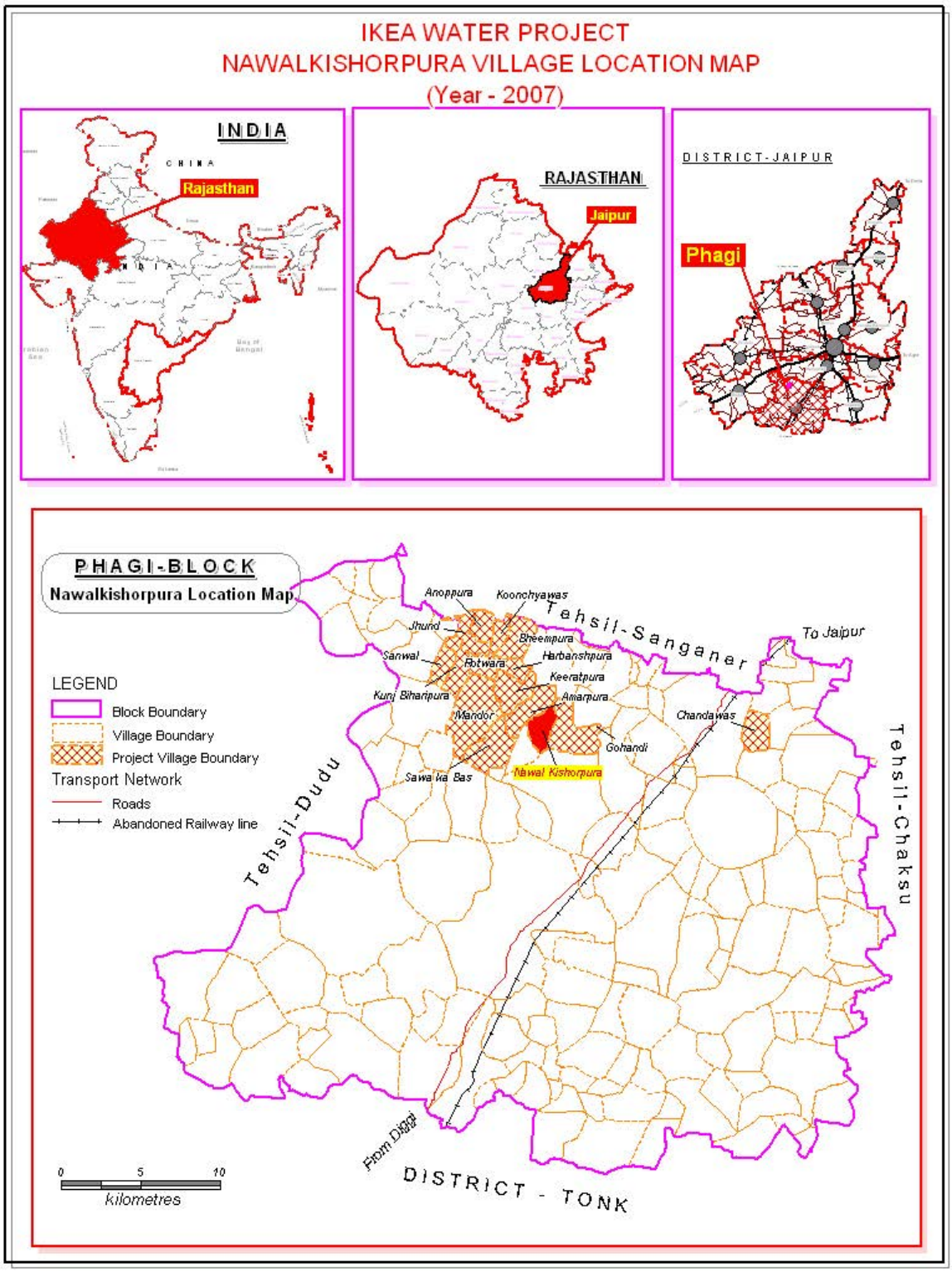

IKEA WATER PROJECT
NAWALKISHORPURA VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Nawalkishorpura Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Sanwal
Harbanshpura
Rotwara
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Gohandi
Nawal Kishorpura
Sawai ka Bas
Tehsil-Sanganer
To Jaipur
Chandawas
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0
5
10
kilometres

Figure No.-1

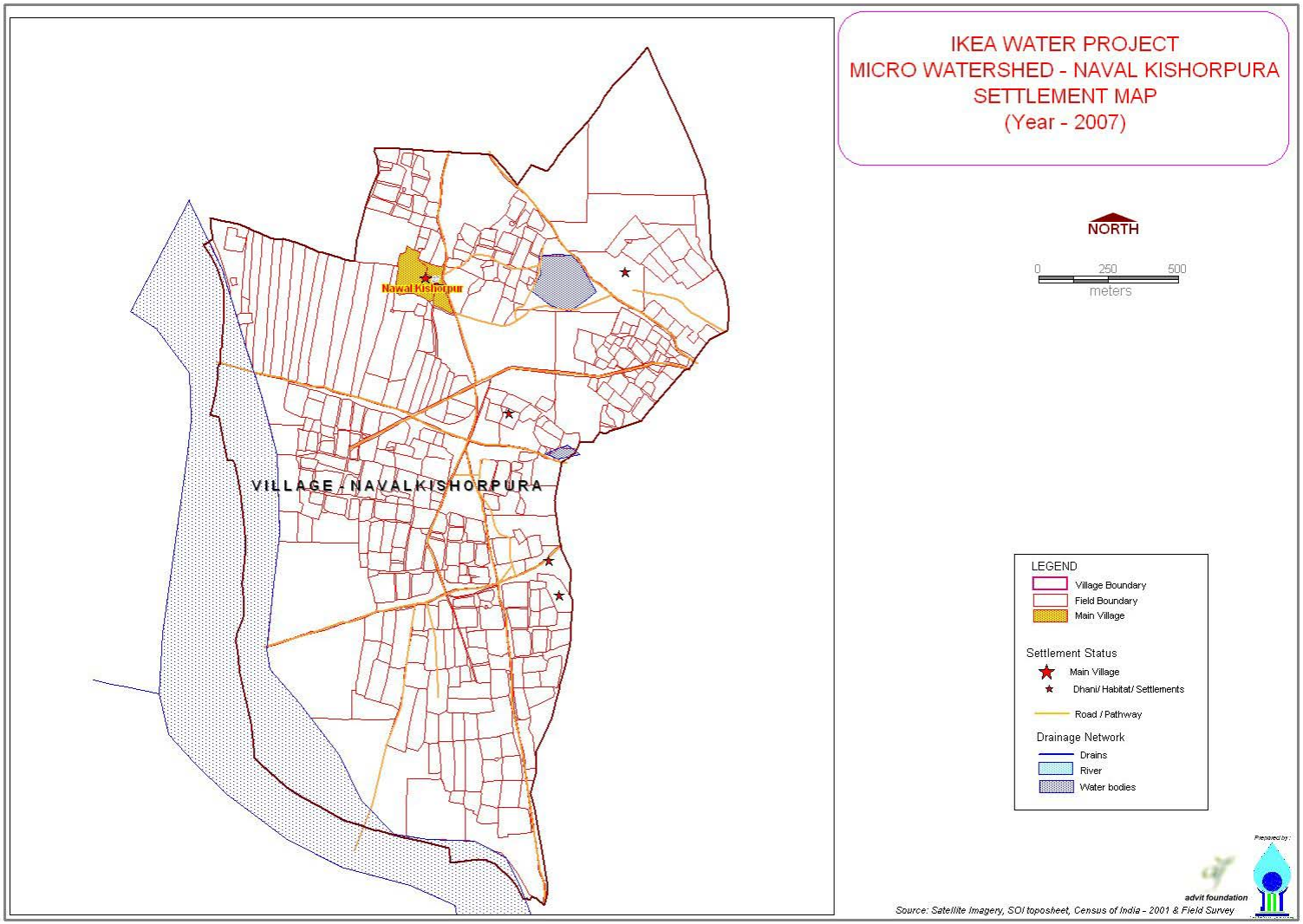

IKEA WATER PROJECT
MICRO WATERSHED - NAVAL KISHORPURA
SETTLEMENT MAP
(Year - 2007)
NORTH
0
250
500
meters
Naval Kishorpur
VILLAGE - NAVALKISHORPURA
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

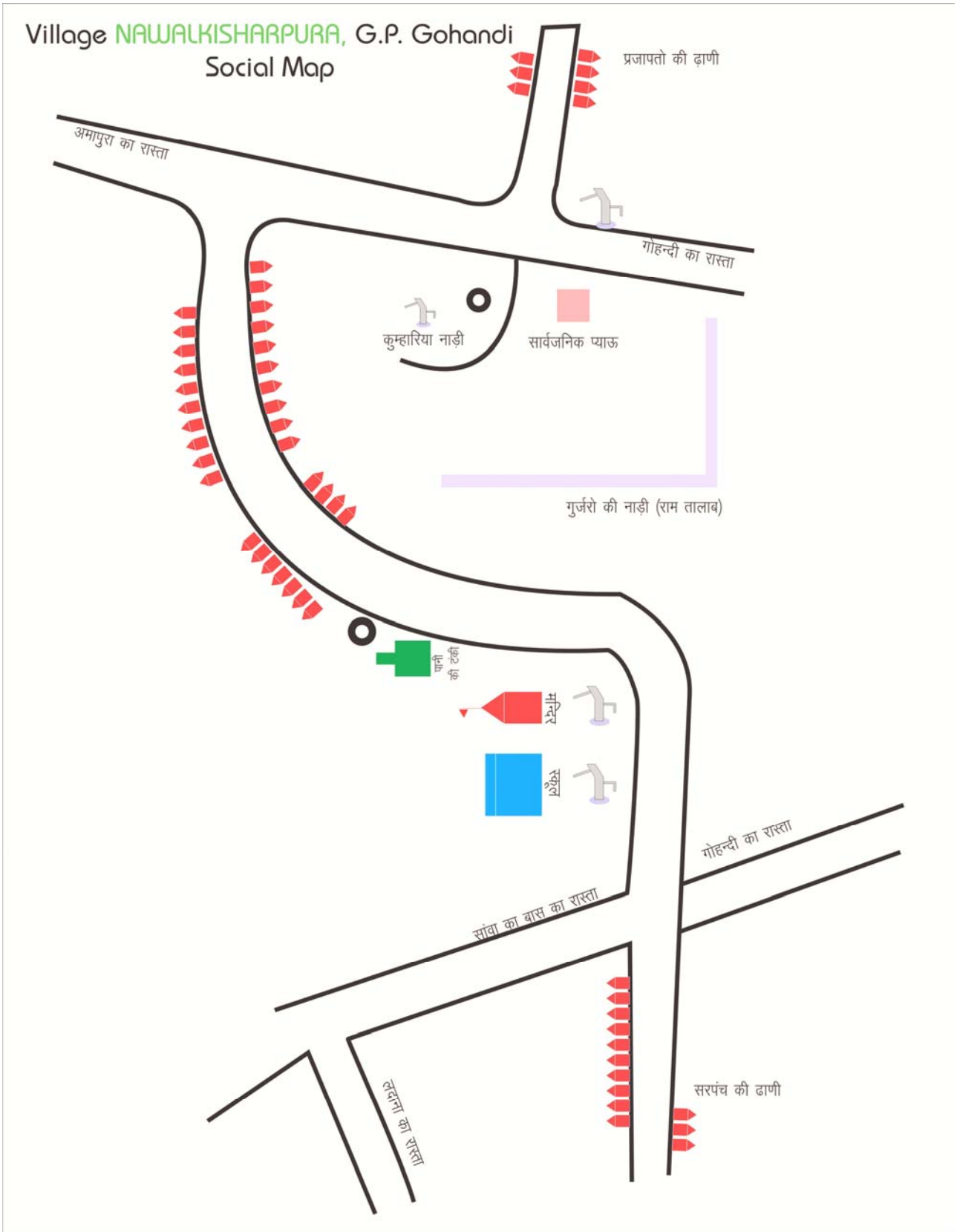

Village NAWALKISHARPURA, G.P. Gohandi
Social Map
प्रजापतो की ढ़ाणी
अमापुरा का रास्ता
गोहन्दी का रास्ता
कुम्हारिया नाड़ी
सार्वजनिक प्याऊ
गुर्जरो की नाड़ी (राम तालाब)
पानी की टंकी
स्कूल
आंगनवाड़ी
गोहन्दी का रास्ता
सांवा का बास का रास्ता
लक्ष्मण का रास्ता
सरपंच की ढाणी

Figure No.-3

The sex ratio in Naval Kishorpura village is 909 females per 1000 males. The child population is about 18% of the total population.

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

- Overall Literacy rate is 38.50%. Male literacy rate is 52.61% while female literacy rate is 22.97%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- No health facility is available in the village.

Work and Work force

Work is defined as participation in any economically productive activity with or without compensation, wages or profit. Such participation may be physical and/or mental in nature. Work involves not only actual work but also includes effective supervision and direction of work. It even includes part time help or unpaid work on farm, family enterprise or in any other economic activity. All persons engaged in 'work' as defined above are **workers**. Persons who are engaged in cultivation or milk production even solely for domestic consumption are also treated as workers.
– Reference period for determining a person as worker and non-worker is one year preceding the date of enumeration.

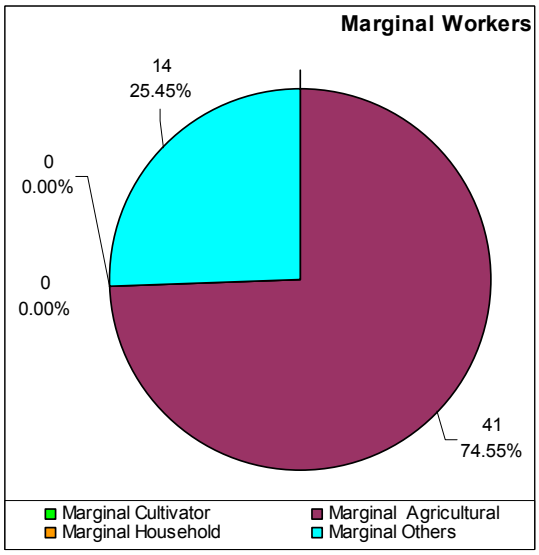
The workers population available in the village Naval Kishorpura can be tabulated as below

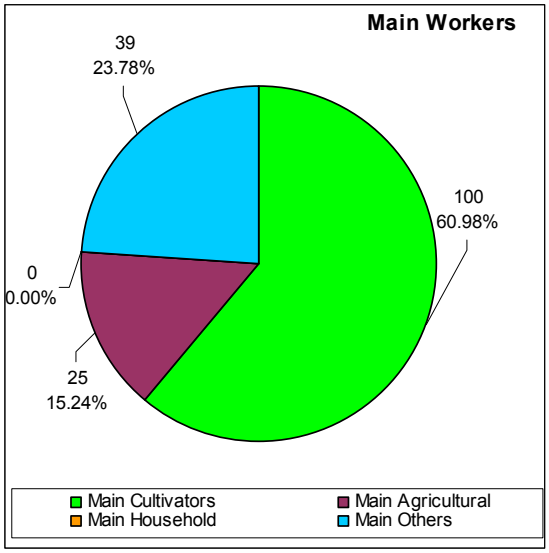
		In Numbers	*In % to total population*
A.	**Main Worker Population**		
	Male Worker	119	51.74%
	Female Worker	100	47.85%
	Total Workers	**219**	**49.89%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	15	6.52%
	Female Marginal Worker	40	19.14%
	Total Marginal Workers	**55**	**12.53%**
C	**Non Worker Population**		
	Male Non Worker	111	48.26%
	Female Non Worker	109	52.15%
	Total Non Workers	**220**	**50.11%**

Description of the terms used in the classification is explained in the following paragraphs:

Main Workers
Those workers who had worked for the major part of the reference period (i.e. 6 months or more) are termed as Main Workers. In Naval Kishorpura village total main workers population is about 37.36% of the total population. Females lead the male in main workers population in % to their respective total population.

Marginal Workers
Those workers who had not worked for the major point of the reference period (i.e. less than 6 months) are termed as Marginal Workers.





Cultivator
For purposes of the census a person is classified as cultivator if he or she is engaged in cultivation of land owned or held from Government or held from private persons or institutions for payment in money, kind or share. Cultivation includes effective supervision or direction in cultivation.

Cultivation involves ploughing, sowing, harvesting and production of cereals and millet crops such as wheat, paddy, jowar, bajra, ragi, etc., and other crops such as sugarcane, tobacco, ground-nuts, tapioca, etc., and pulses, raw jute and kindred fibre crop, cotton, cinchona and other medicinal plants, fruit growing, vegetable growing or keeping orchards or groves, etc.
About 60.98% of main worker population is engaged in cultivator work in the village itself. In Marginal workers category non marginal workers are engaged in cultivation field.

Agricultural Labourer
A person who works on another person's land for wages in money or kind or share is regarded as an agricultural labourer. (S)he has no risk in the cultivation, but merely works on another person's land for wages. An agricultural labourer has no right of lease or contract on land on which (s) he works. In Naval Kishorpura village less number i.e. 15.24% in main workers and 74.55% in marginal workers are engaged in this category of work.

Household Industry Workers
Household Industry is defined as an industry conducted by one or more members of the household at home or within the village in rural areas and only within the precincts of the house where the household lives in urban areas. The larger proportion of workers in the household industry consists of members of the household. The industry is not run on the scale of a registered factory which would qualify or has to be registered under the Indian Factories Act.

Household Industry relates to production, processing, servicing, repairing or making and selling (but not merely selling) of goods. It does not include professions such as a Pleader, Doctor, Musician, Dancer, Waterman, Astrologer, Dhobi, Barber, etc., or merely trade or business, even if such professions, trade or services are run at home by members of the household.

In Naval Kishorpura village almost negligible numbers of people are engaged in household works.

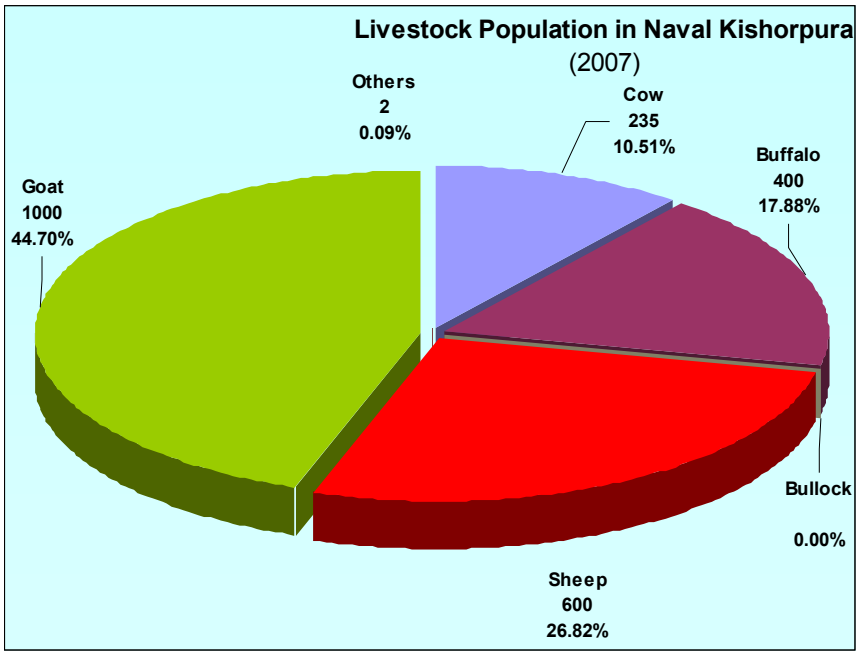
Other Worker

All workers, i.e., those who have been engaged in some economic activity during the last one year, but are not cultivators or agricultural labourers or in Household Industry, are 'Other Workers (OW)'. The type of workers that come under this category of 'OW' include all government servants, municipal employees, teachers, factory workers, plantation workers, those engaged in trade, commerce, business, transport banking, mining, construction, political or social work, priests, entertainment artists, etc. In effect, all those workers other than cultivators or agricultural labourers or household industry workers are 'Other Workers'.

Since the village is not too far from Jaipur city 'Other Works' constitute major part after cultivator category in workers population. About 23.78% in main worker and 25.48% in marginal worker category are engaged in this type of work category. In this category Males population leads the female population.

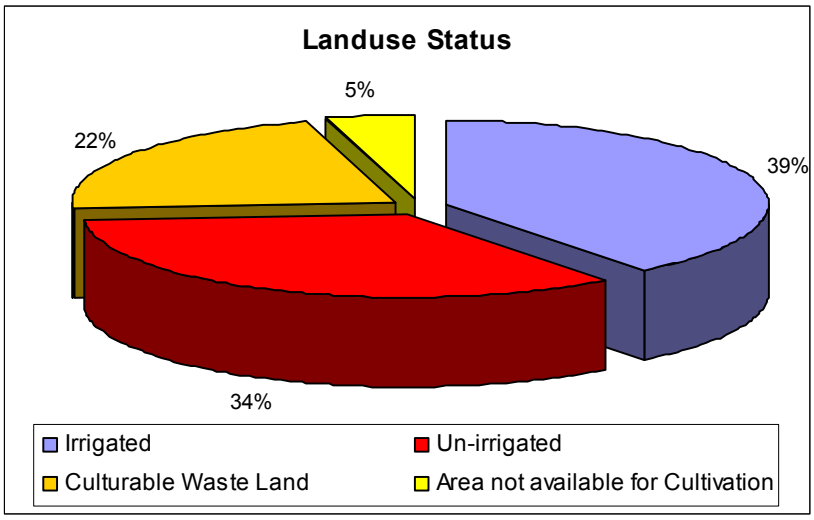
Livestock

As per the base line survey carried out in Naval Kishorpura village there are 2237 cattle variably distributed among 72 families living in the village. Some families are having more than 50 cattle whereas some have none. Goats are the major contributor (about 28%) to the livestock population. Buffaloes and cows amount to one third part of the cattle population primarily being utilised for dairy purpose (milk production).



Land-Use Pattern:

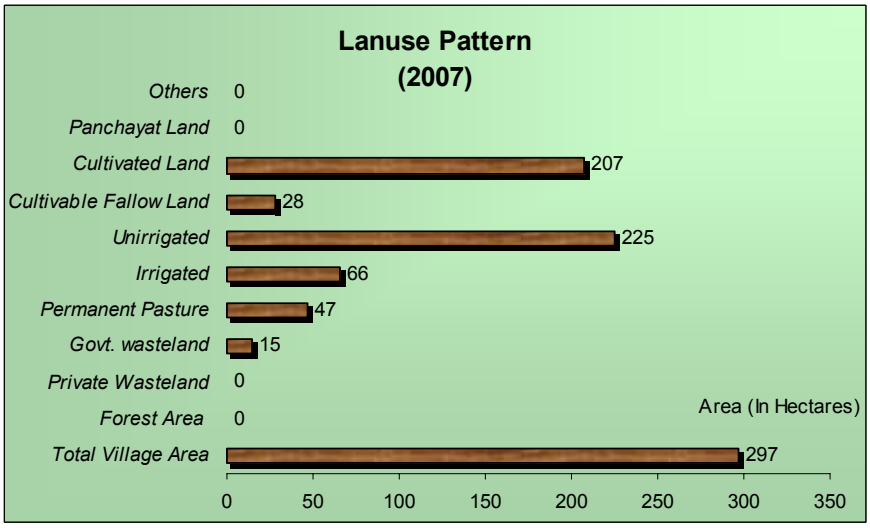
The major part of the village economy is still dependent on agricultural production. Hence most of the land available is being put to agricultural activities. Out of the total land 39% is irrigated (by tube wells) and about 34% land falls in the category of un-irrigated land. About 22% of the land is culturable waste land in the village Naval Kishorpura. Following graph gives status of land utilization in village Naval Kishorpura.



Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Naval Kishorpura.

Satellite image map well represent the present land-use features in different textures as shown in figure no.- 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

According to baseline survey carried the lanuse categories found in the village is reflected in following graph. About 47 hectare land is permanent pasture land and 15 hectare is government waste land. There is no panchayat and other category land available in the village. Cultivable fallow land or private waste land is about 28 hectare. Looking to the statistics there are ample oppertunities in the field of agricuture. Increase in irrigation facilities could result in more cropped area in the village.



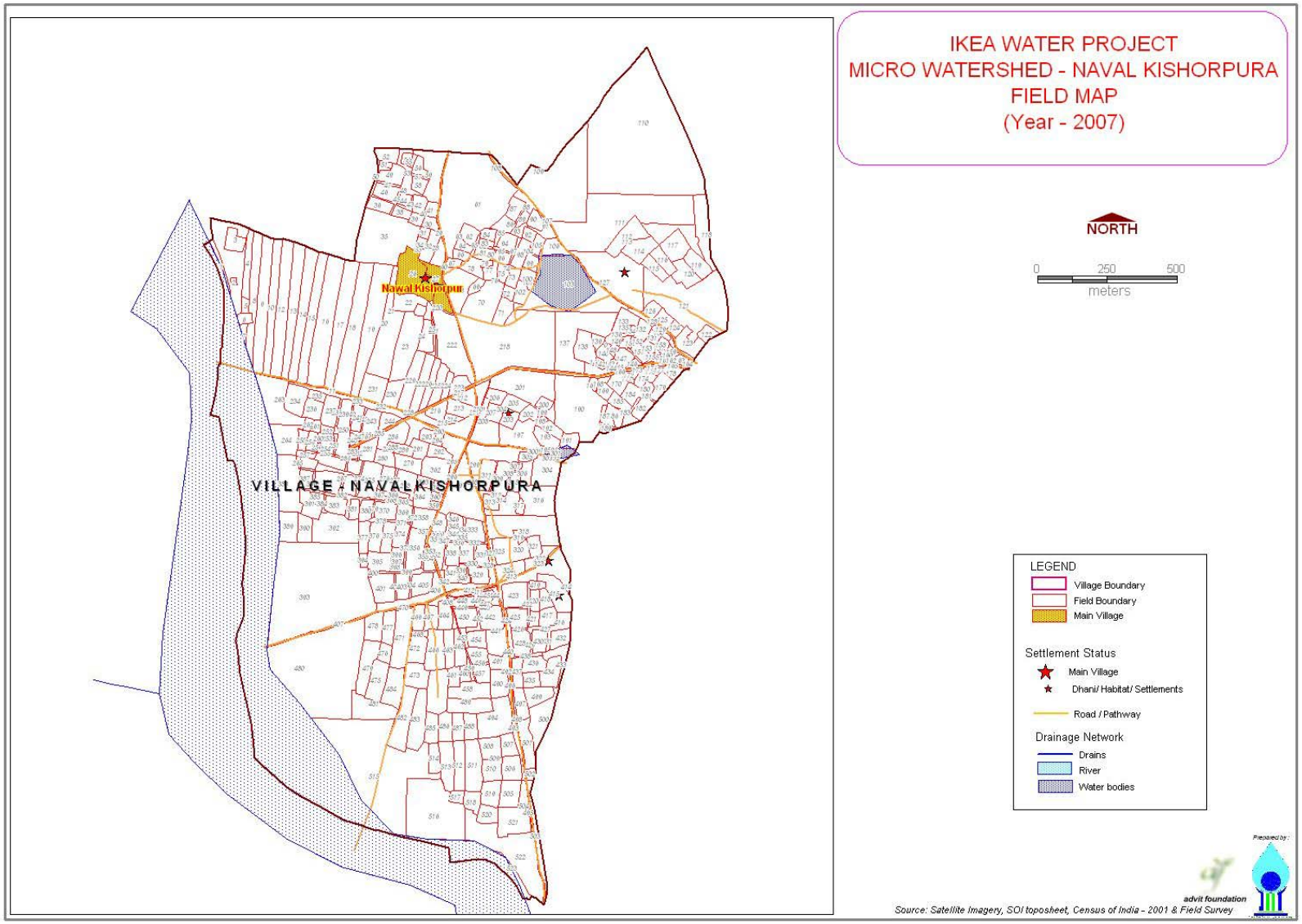
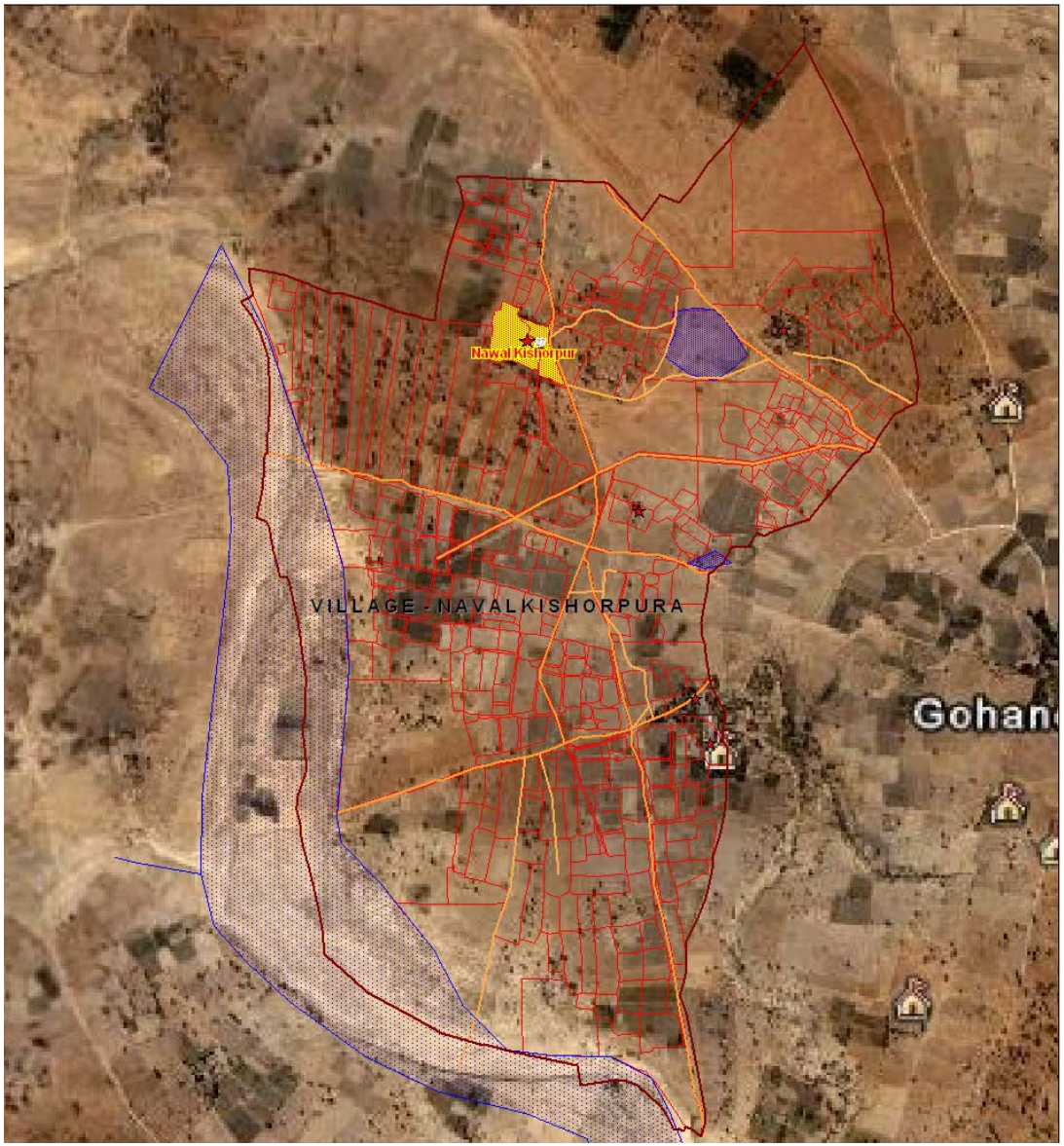

IKEA WATER PROJECT
MICRO WATERSHED - NAVAL KISHORPURA
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
Naval Kishorpur
VILLAGE - NAVALKISHORPURA
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

BAGRU WATER PROJECT
MICRO WATERSHED – NAVAL KISHORPURA
Satellite Image MAP
(Year - 2007)



LEGEND
- Village Boundary
- Fields Boundary
- Main Village

Settlement Status
- Main Village
- Dhani
- Settlements
- Roads/ Pathway

Drainage Network
- Drains
- Bandi River
- Existing Pond/ Nadi

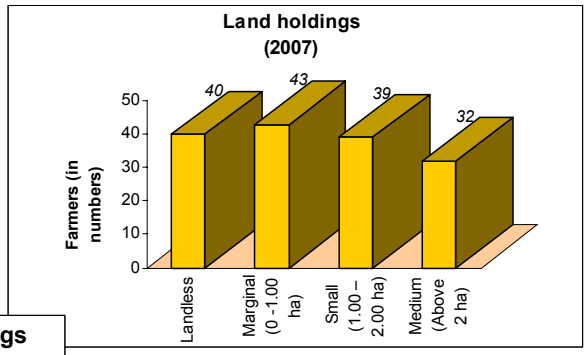
Figure No.-5

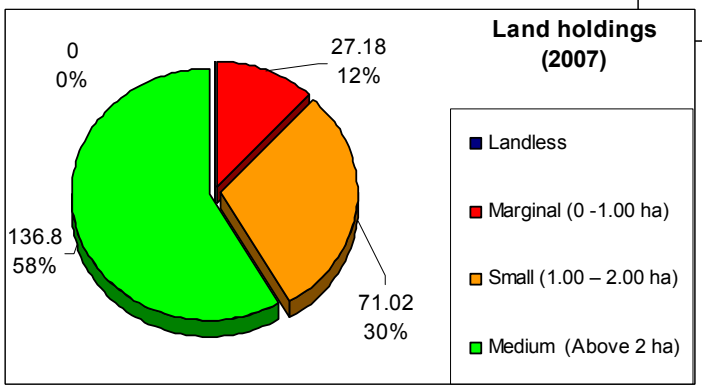
Source: Google Earth Year – 2007 and Field Survey

Land Holdings

The base line survey revealed that out of 154 farmers in the village about one third (25.97%) i.e. 40 farmers are landless. About 28.47% farmers (32 no.'s) have more than 2 hectare land.

Category-wise numbers of farmers and their land holdings are presented in the following graphs.

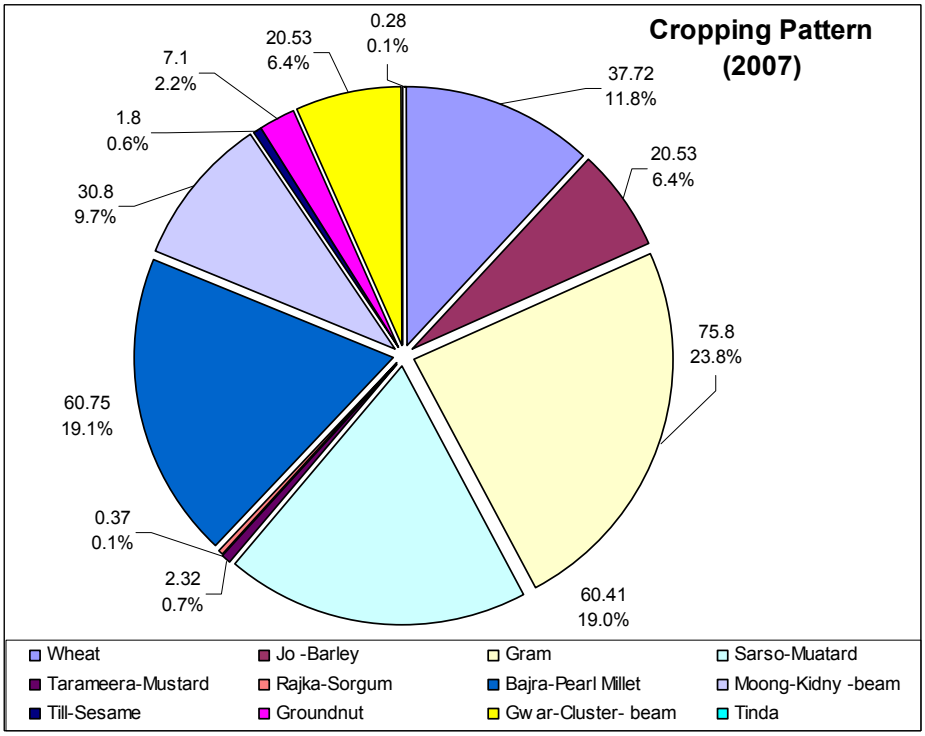




On the basis of survey data it could be concluded that about one fourth framers do not have landholdings in the village while 28.47% of the farmers have more than 58% of the landholdings in the village. Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 30% of the total geographical area of the village. Marginal farmers (0 to 1.00 ha.) have lands about 12% of the total area of the village Naval Kishorpura.

Cropping Pattern

The type of crop sown in an area depends on many factors such as irrigation facilities, type of soil, rainfall characteristics, distance from market places and infrastructure facilities. In Naval Kishorpura village the type of crops sown in different seasons recorded during the base line survey are tabulated below and presented in following graph:



S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
104	Wheat	Rabi	4.5	March	37.72	0.0	37.72
105	Jo -Barley	-do-	4	March	20.53	0.0	20.53
106	Gram	-do-	4	March	0.0	75.80	75.80
107	Sarso-Muatard	-do-	4	Feb.-March	8.09	52.32	60.41
108	Tarameera-Mustard	-do-	4	Feb.-March	0.0	2.32	2.32
109	Rajka-Sorgum	-do-			0.37	0.0	0.37
110	Bajra-Pearl Millet	Kharif	4	Oct.	0.0	60.75	60.75
111	Moong-Kidny - beam	-do-	3	Sep.	0	3.08	30.8
112	Till-Sesame	-do-	3.5	Oct.	0	1.80	1.80
113	Groundnut	-do-	4	Oct.	0	7.10	7.10
114	Gwar-Cluster-beam	-do-	4	Oct.-Nov.	0	20.53	20.53
115	Tinda	-do-			0.28	0.0	0.28
Total					**66.99**	**223.7**	**318.41**

According the data it could be well concluded that Gram (23.8%) is the major crop in all the three seasons in the area followed by Bajra-Pearl Millet (19.1%) and Sarso-Muatard (19.0%). Wheat require irrigation at regular interval hence it is cropped in area where irrigation facilities exists. Jo-Barley is also sown in the area where irrigation facilities exist. Other crops (68.4%) are dependent on rain fed irrigation. Hence rainfall plays major role in the village economy as production is largely dependent on it.

Water Resource Profile:

Physiography: The general ground profile is flat and having gentle slope towards west – south direction. The runoff water during rainfall period follows ground slope and drains in to Bandi River flowing at the west to south of the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: The drainage system of the Naval Kishorpura follows east to south west direction. There are no distinct natural drains visible in the village boundary. In present condition at most of the places drainage system follows the path way/ village katch-roads. Figure No. 6 a gives a clear view of the drainage pattern in village Naval Kishorpura.

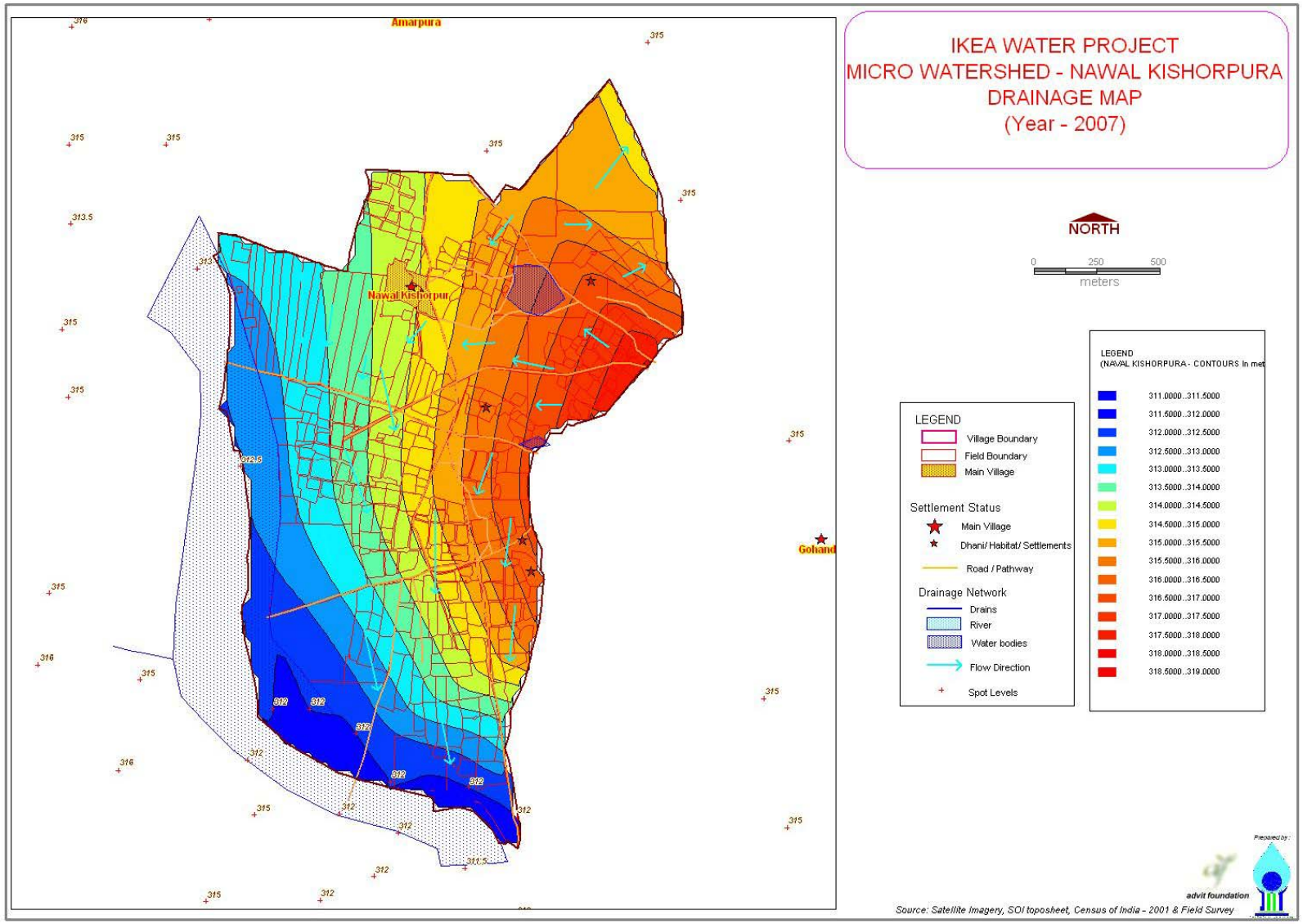
Water Sources:

The water resource scenario can be well represented by following graphs and tables:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	44	0	44
Bore well	10	-	10
Hand pumps	2	5	7
Village Ponds	-	2	2

According to the baseline study followed by field survey it was found that:

- Most of the wells dry up in the summer season. Also the yield of groundwater has reduced considerably since last decades.
- The ground water is generally saline. The salinity increases with depth.
- Depth to water table varies from 50’ to 65’ depending upon its location.
- Rock formations are visible at depth varying from 10’ to 35’ from the ground level at different locations.


IKEA WATER PROJECT
MICRO WATERSHED - NAWAL KISHORPURA
DRAINAGE MAP
(Year - 2007)
Amarpura
Nawal Kishorpur
Gohand
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
(NAVAL KISHORPURA - CONTOURS In met
311.0000..311.5000
311.5000..312.0000
312.0000..312.5000
312.5000..313.0000
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316.5000..317.0000
317.0000..317.5000
317.5000..318.0000
318.0000..318.5000
318.5000..319.0000
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

Drinking Water Sources: Public Health Engineering Department (PHED) has installed Regional Water Supply Scheme with Service Reservoir (SR) with tape connection it in village Naval Kishorpura. The scheme and its various components are in working condition but not sufficient on quality and quantity aspect. Although the scheme is functional but people do not prefer it for drinking as it contains high fluoride (> 3ppm) and taste salty. Even cattle do not drink the water. The source is not at all dependable as it functions occasionally. Most of the time it remains closed. The hand pumps installed in the village are functional but yield saline water. This water is used for secondary purposes other than drinking for both human and cattle population. Open wells near some depression and at village pond do yield sweet water and the entire population draw drinking from such sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to travel long distances to get the sufficient quantity of drinking water.

Irrigation Water Sources: Out of total wells about 44 are in functional state. The prime use of these well are for irrigation. Although the owner family and nearest community members do use this water for drinking purpose as it is less saline than water from hand pump. The farmers generally dug open bore in the bed of the open well to draw water with help of diesel engine. The operating hours of this set depends upon the irrigation water requirement, recoup time of water. Generally the recovery time varies from 24 hours to 3 hours depending upon the location.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting drinking water sources scenario in village Naval Kishorpura.

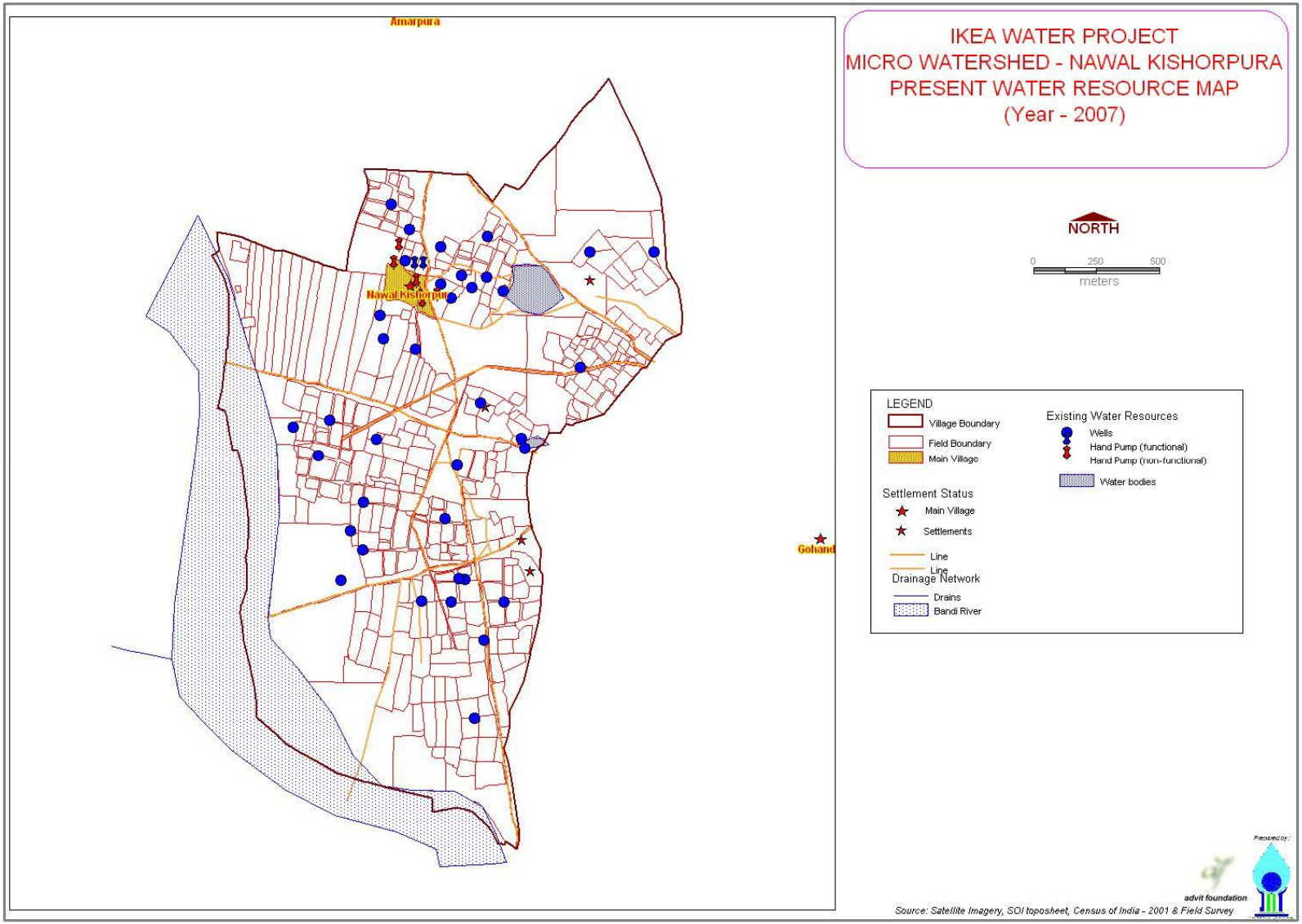

Amarpura
Nawal Kishorpur
Gohand
IKEA WATER PROJECT
MICRO WATERSHED - NAWAL KISHORPURA
PRESENT WATER RESOURCE MAP
(Year - 2007)
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Existing Water Resources
Wells
Hand Pump (functional)
Hand Pump (non-functional)
Water bodies
Settlement Status
Main Village
Settlements
Line
Line
Drainage Network
Drains
Bandi River
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to three micro-watersheds draining towards west-south direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	216.5439
Watershed no.-2	42.0820
Watershed no.-3	39.1002
Total	**297.7261**

Although the watershed no.-1 is big in coverage area and average field size inside its boundary but north and western area adjoining river are more productive and having higher intensity of irrigation facilities. The dark shed reflected in satellite imagery of year 2007 clearly indicate that agriculture practices are more intense in watershed no.-2 & 3.

The drainage system is not well defined in any of the watershed. Natural flow of runoff water from watershed no.-1, 2 & 3 have been obstructed by the field boundaries hence the water flows through the pathways used for transportation.

Proposed Activities: As identifying of water harvesting activities on watershed basis was the main objective of the project a set of activities have been discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance.

Following table gives detailed description of type of activities envisaged during the project study:

S. No.	Activity	Sub – Activities
1	**Rainwater Harvesting on natural drainage**	• Construction of one Anicut structure at suitable location on main drain.
2	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields to check the flow and retain moisture. • Construction of small tanks/ ponds at the sloping end of the agricultural farm.
3	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond) for collection of rainwater runoff in side the sloping end of the field. • Construction of Roof Top rain water harvesting recharge/ collection system for reuse of water for drinking purpose at suitable locations.
4	**Pasture Land Development & Horticulture**	• Land grading and bunding. • Plantation of suitable plant/ fruit plant which can survive in local conditions. • Linking with government horticultural scheme suitable for the project area.

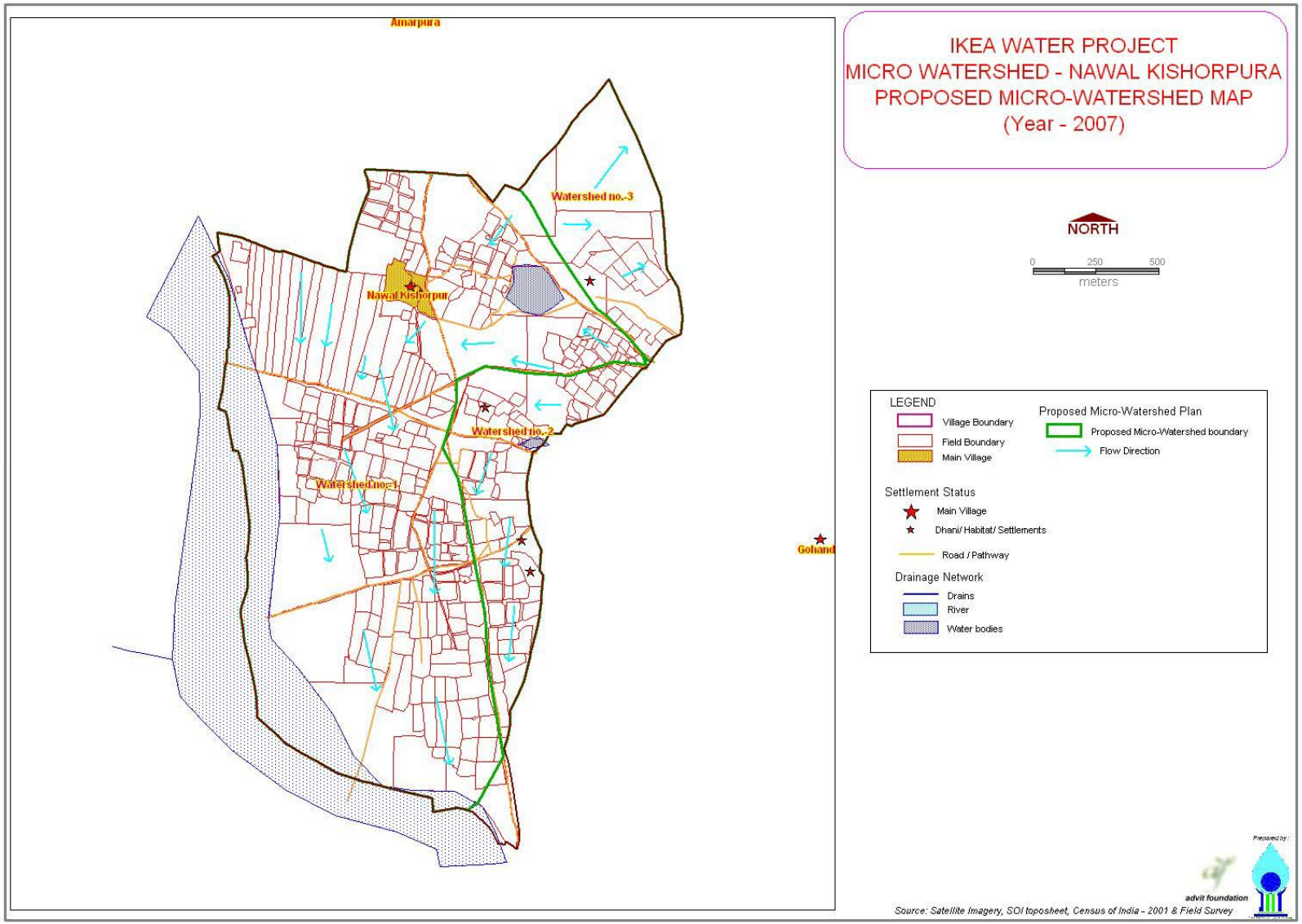

Amarpura
Watershed no.-3
Nawal Kishorpur
Watershed no.-2
Watershed no.-1
Gohand
IKEA WATER PROJECT
MICRO WATERSHED - NAWAL KISHORPURA
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Flow Direction
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

Numbers/ quantities of proposed activities are summarized in following table:

S. No.	Activities	Numbers/ Details
1	Anicut construction	1 No.'s
2	Roof Top Rainwater Harvesting System (50000 lit capacity)	1 No.'s
3	Nadi construction/ renovation	3 No.'s
4	Farm Tanks/ ponds	5 No.'s
5	Farm Field Bunding	6000 Meters
6	Pasture Land Development	46 Hectare

The location of the proposed activities are shown in figure no.- 9

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Anicut construction About 150m wide in main drain	1	No.'s	10000.00 per m	**1500000.00**
2	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200000.00**
3	Nadi construction/ renovation	3	No.'s	Lumpsum	**600000.00**
4	Farm Tanks/ ponds 20000 Lt capacity	5	No.'s	50000.00	**250000.00**
5	Farm Field Bunding	6000	Meters	30.00	**180000.00**
6	Pasture Land Development	46	Hectare	10000.00	**460000.00**
				GRAND TOTAL	**3190000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

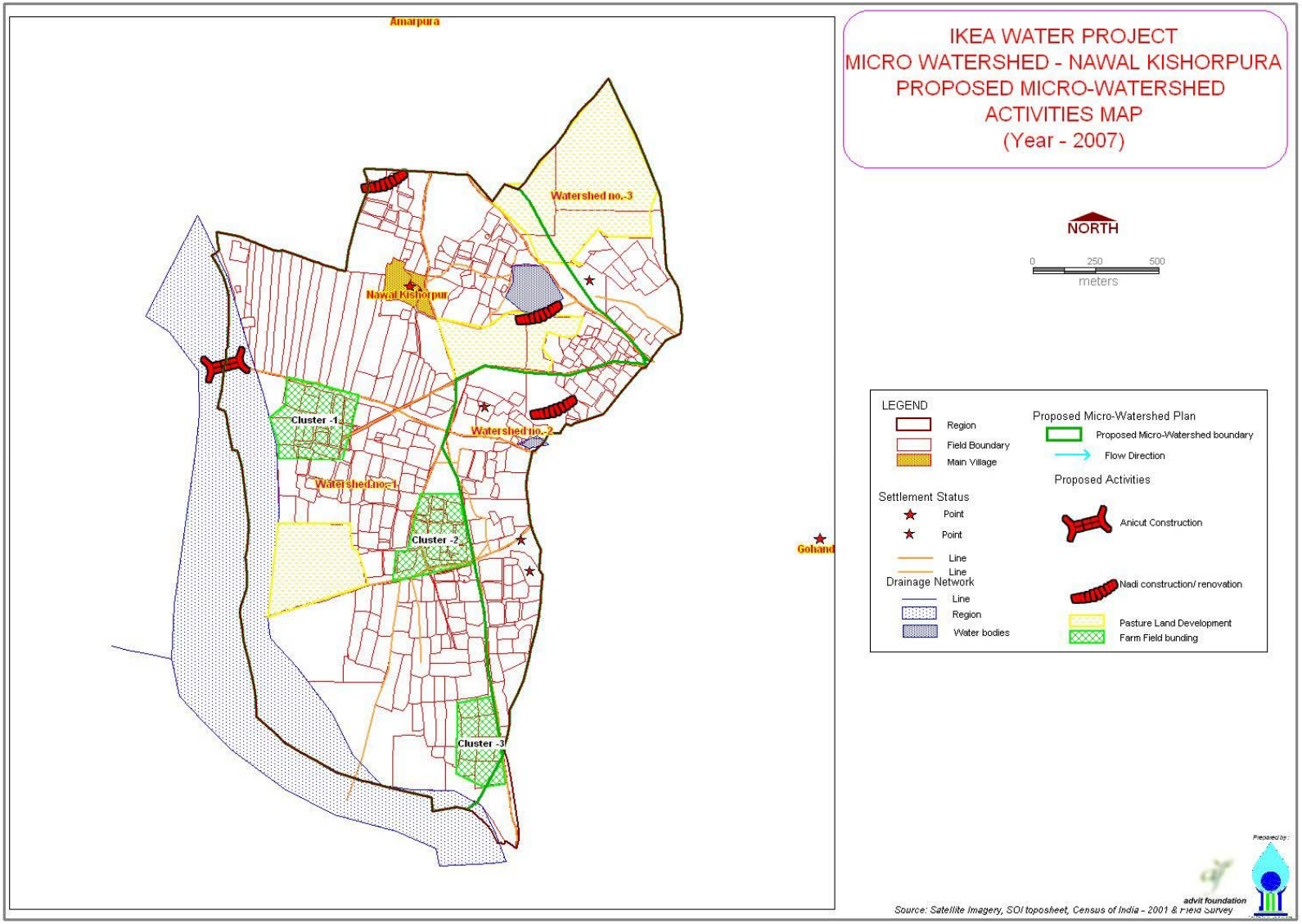

IKEA WATER PROJECT
MICRO WATERSHED - NAWAL KISHORPURA
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
Amarpura
Watershed no.-3
Nawal Kishorpur
Cluster -1
Watershed no.-2
Watershed no.-1
Cluster -2
Cluster -3
Gohand
NORTH
0
250
500
meters
LEGEND
Region
Field Boundary
Main Village
Settlement Status
Point
Point
Line
Line
Drainage Network
Line
Region
Water bodies
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Flow Direction
Proposed Activities
Anicut Construction
Nadi construction/ renovation
Pasture Land Development
Farm Field bunding
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE - ROTWARA

Village Location

Rotwara village is located at $75^0$32'34.44" east longitude and $26^0$43'53.4"north longitude with a geographical area of 254 hectare at about 50 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Rotwara w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**10 km**
Distance from Block HQ:	=	**21 km**
Type of approach road to the village: *(Kachcha 4km and Pacca 6 km)*	=	**10 km**
Distance of village from district HQ	=	**50 km**
Nearest market & its distance from the village: *(Bagru)*	=	**10 km**
Distance to nearest Middle School	<	**5 km**
Distance to nearest College	>	**10 km**
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 119 families (as per baseline survey – 2007) residing in the village Rotwara which are spread up in main village (refer fig.- 1 and 2).

R. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	599	Total House Holds	119
Total male Population	198	SC House Holds	11
Total Female Population	197	ST House Holds	1
Child Population (0-6 yr)	204		

The sex ratio in Rotwara village is 1113 females per 1000 males. The child population is about 11.18% of the total population.

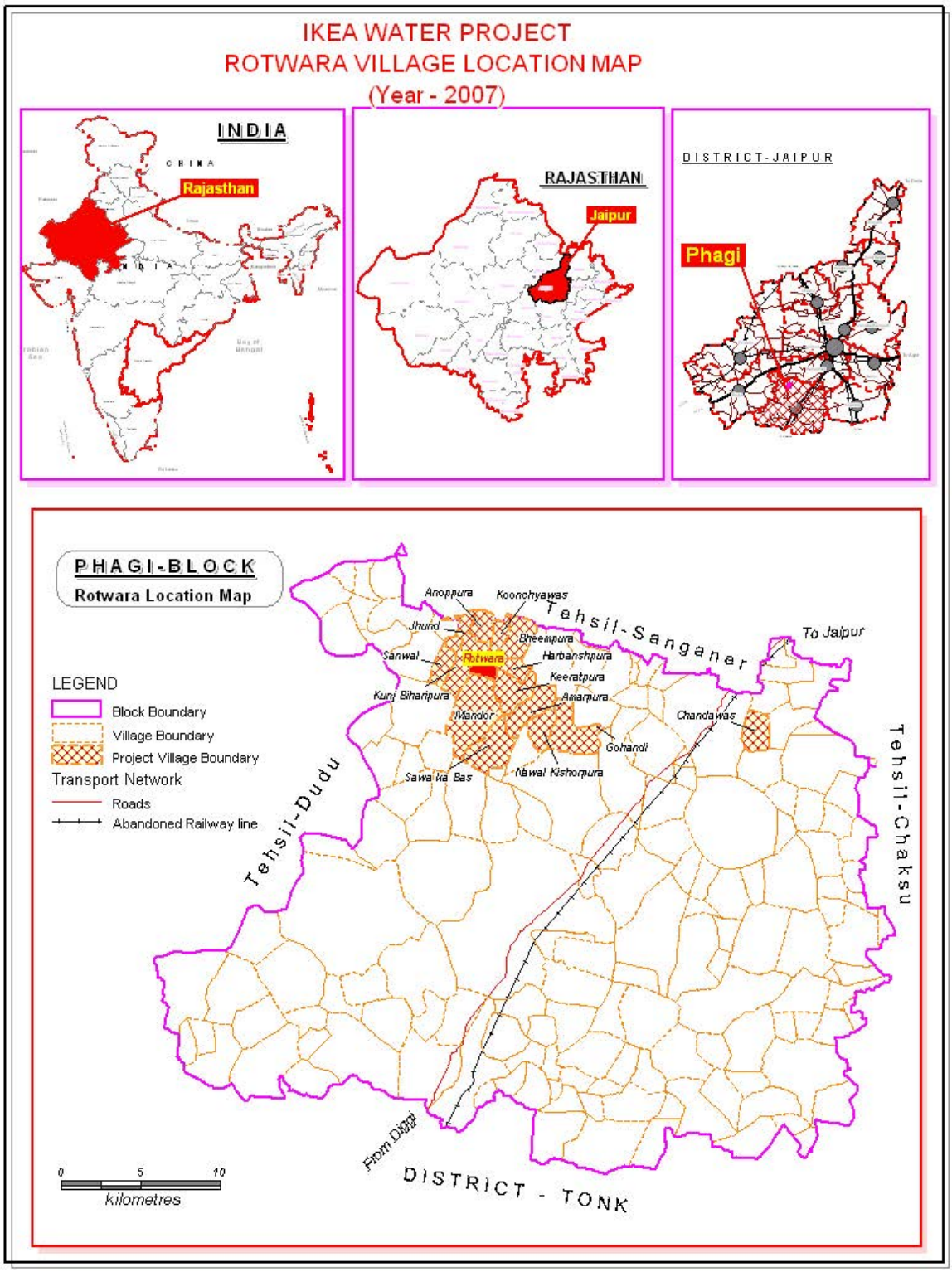

IKEA WATER PROJECT
ROTWARA VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Rotwara Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Sanwal
Rotwara
Harbanshpura
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Gohandi
Sawai ka Bas
Nawal Kishorpura
Chandawas
Tehsil-Sanganer
To Jaipur
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0
5
10
kilometres

Figure No.-1

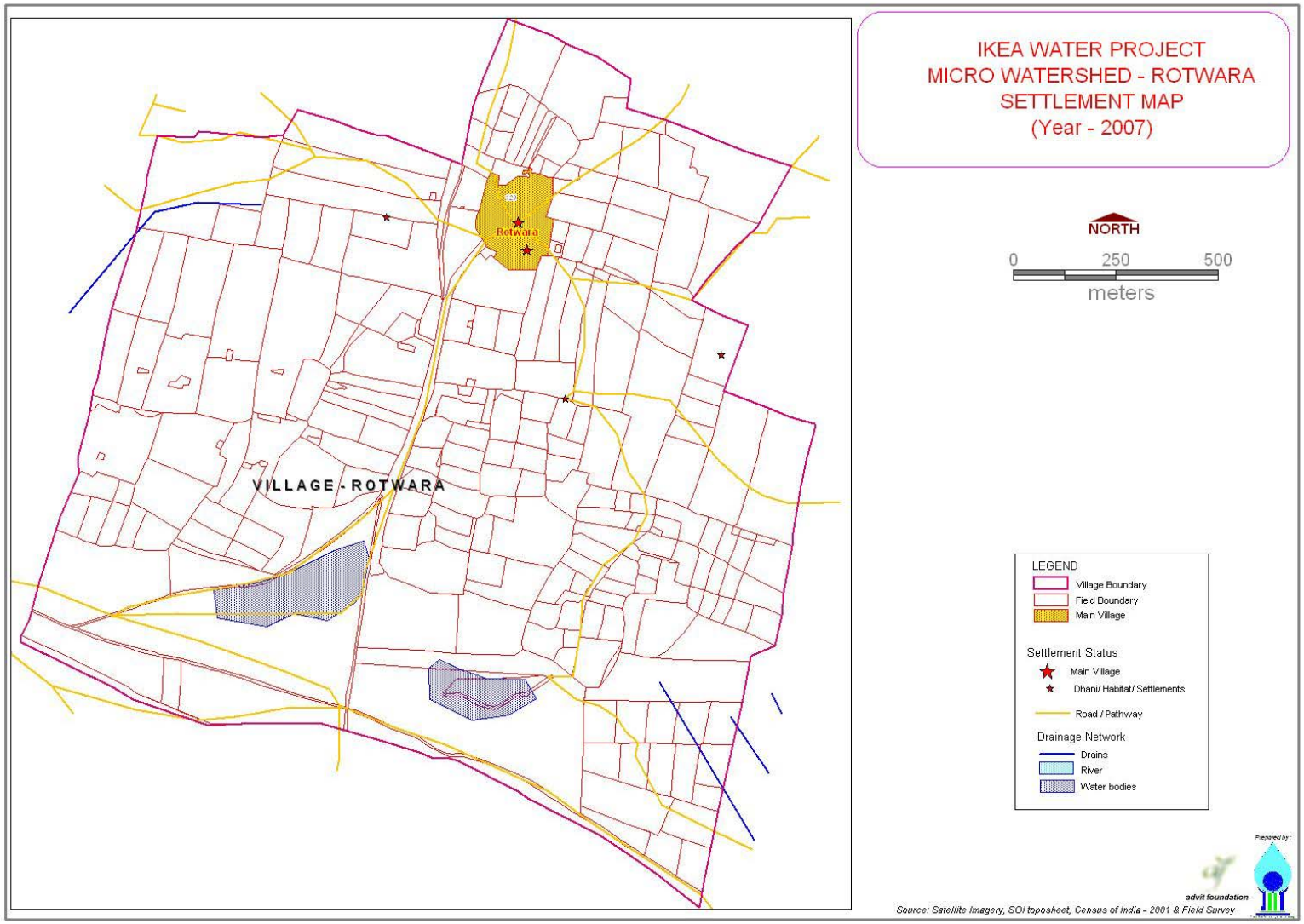

IKEA WATER PROJECT
MICRO WATERSHED - ROTWARA
SETTLEMENT MAP
(Year - 2007)
Rotwara
VILLAGE - ROTWARA
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

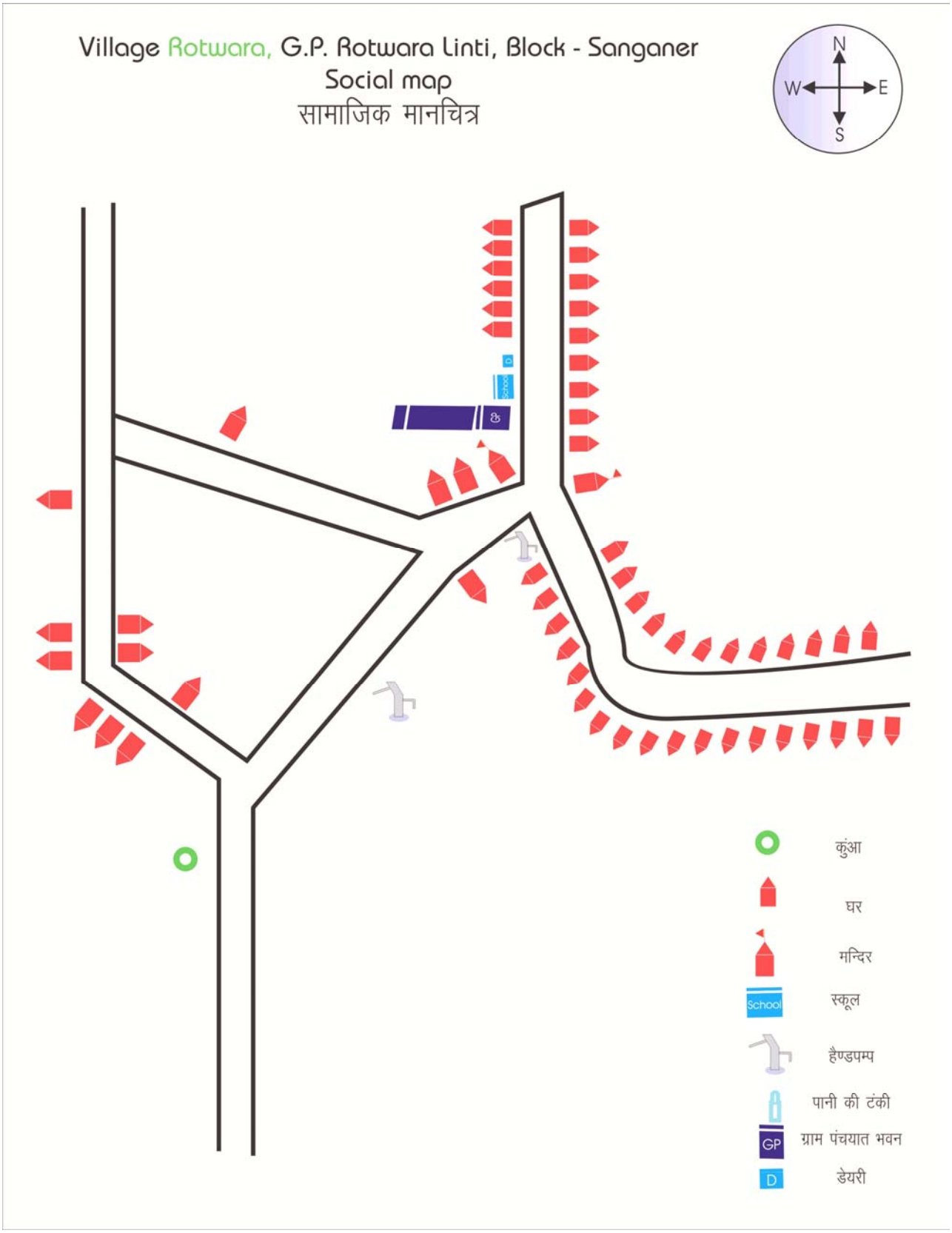

Village Rotwara, G.P. Rotwara Linti, Block - Sanganer
Social map
सामाजिक मानचित्र
N
W
E
S
कुंआ
घर
मन्दिर
School
स्कूल
हैण्डपम्प
पानी की टंकी
GP
ग्राम पंचयात भवन
D
डेयरी

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following points:

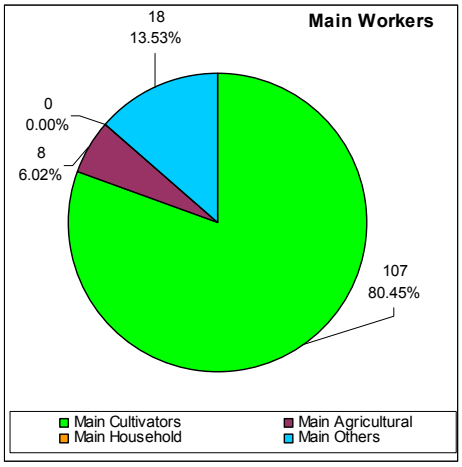
- Overall Literacy rate is 62.26%. Male literacy rate is 72.47% while female literacy rate is 53.09%.
- There is one government primary and a middle school. college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- No health facility is available in the village.

- **Work and Work force**

The workers population (as per census – 2001) available in the village Rotwara can be tabulated as below

A.	Main Worker Population	*In Numbers*	*In % to total population*
	Male Worker	115	46.56%
	Female Worker	18	6.55%
	Total Workers	**133**	**25.48%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	0	0.00%
	Female Marginal Worker	0	0.00%
	Total Marginal Workers	**0**	**0.00%**
C	**Non Worker Population**		
	Male Non Worker	132	53.44%
	Female Non Worker	257	93.45%
	Total Non Workers	**389**	**74.52%**

Description of the worker population classification is explained in the following paragraphs:
Main Workers: In Rotwara village total main workers population is about one fourth of the total population. Females lead the male in main workers population in % to their respective total population. Rest 75% of the population is non worker population



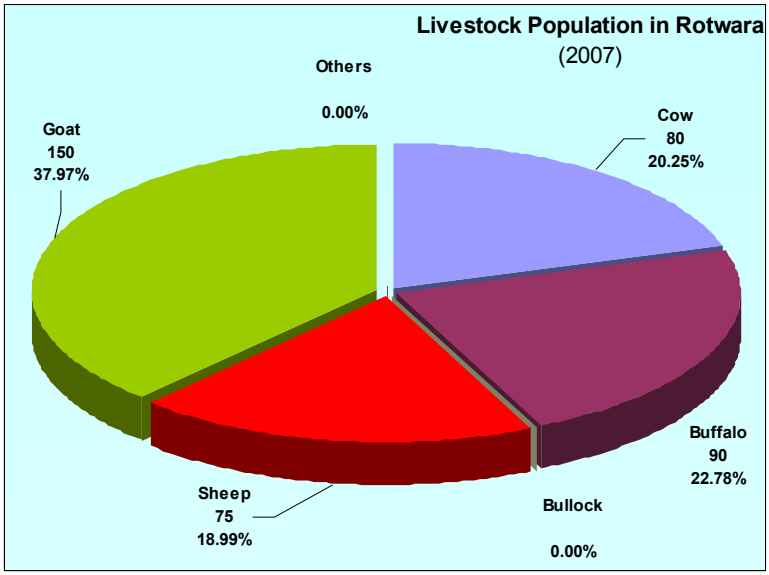
Marginal Workers: There is no marginal worker reported in census 2001 in village Rotwara.

Cultivator: About 80.45% of main worker population is engaged in cultivator work in the village itself.
Agricultural Labourer: In Rotwara village 6.02% in main workers are engaged in this category of work.
Household Industry Workers: In Rotwara village none of people are engaged in household works.
Other Worker: About 13.53% in main worker category are engaged in this type of work category. In this category Males population leads the female population.

Livestock

According to baseline survey data, in Rotwara village, there are 395 cattle variably distributed among 119 families. Some families are having more than 50 cattle whereas some have none.

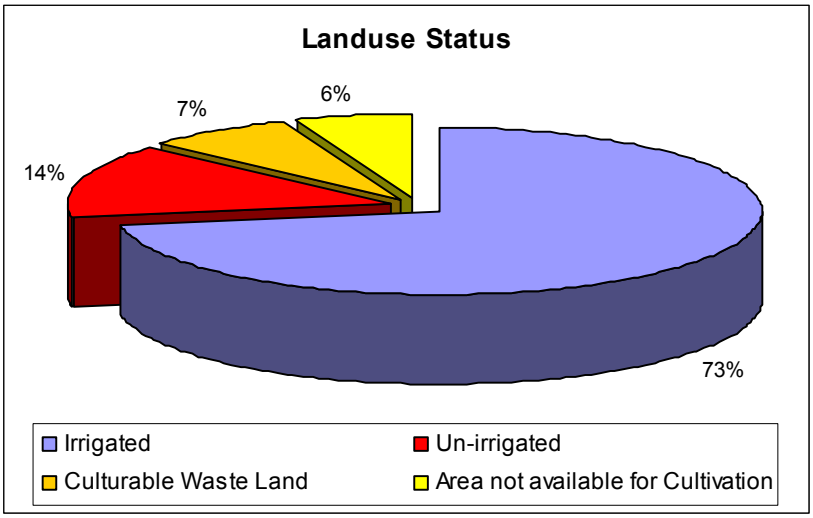
Goats are the major contributor (about 37.97%) to the livestock population. Buffaloes and cows amount to 43% of the cattle population primarily being utilised for dairy purpose (milk production).



Land-Use Pattern:

According to broad classification out of the total land 73% is irrigated (by tube wells) and about 14% land falls in the category of un-irrigated land. About 7% of the land is culturable waste land in the village Rotwara.
Further, About 22 hectare land is permanent pasture land and 17 hectare is government waste land. There is no Panchayat and other category land available in the village. Cultivable fallow land or private waste land is nil in Rotwara village. Looking to above statistics there are lots of opportunities in the field of agriculture. Increase in irrigation facilities could result in more cropped area in the village. Following graph gives status of land utilization in village Rotwara.

Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Rotwara. Satellite image map well represent the present land-use features in different textures as shown in figure no.- 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.



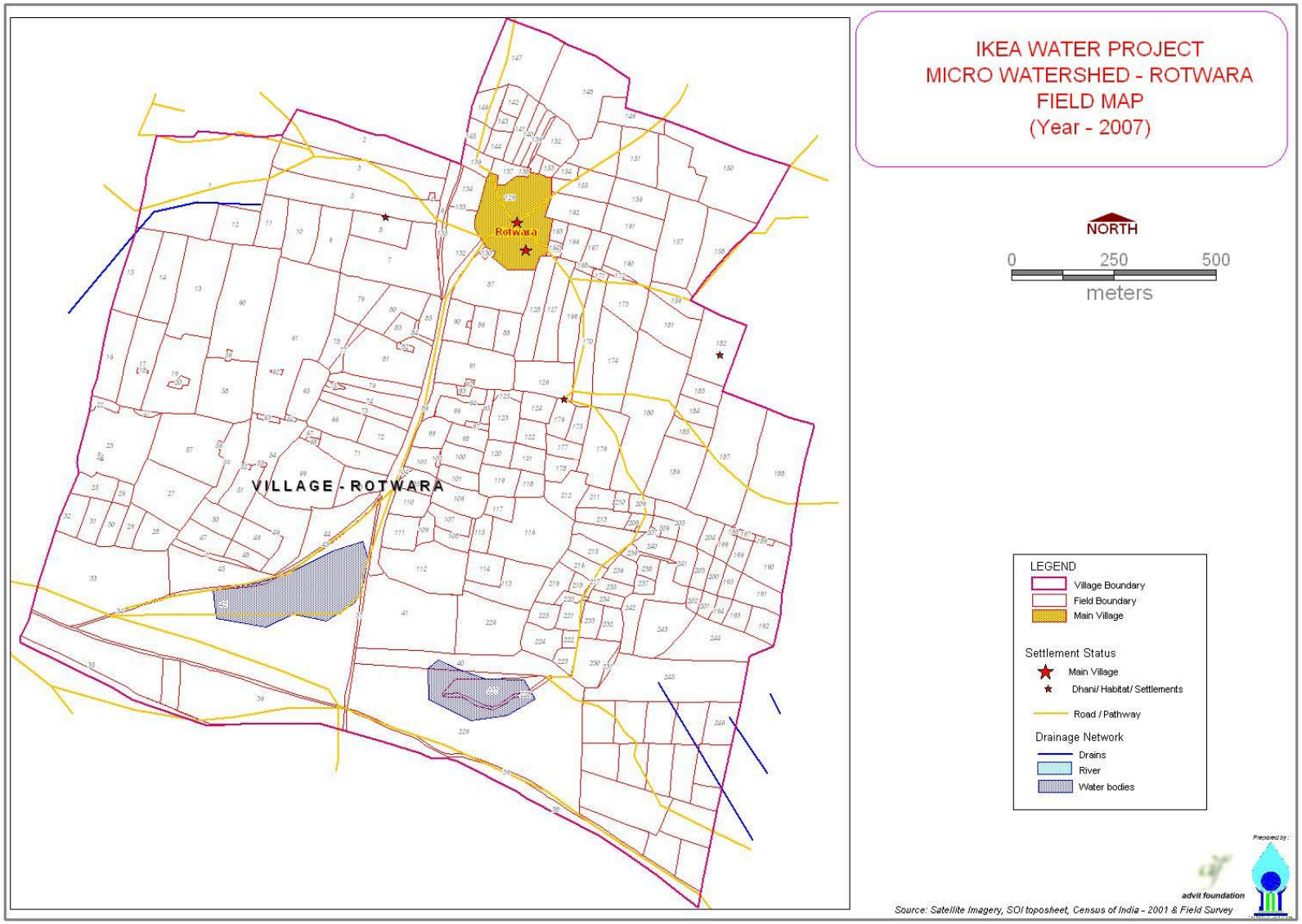
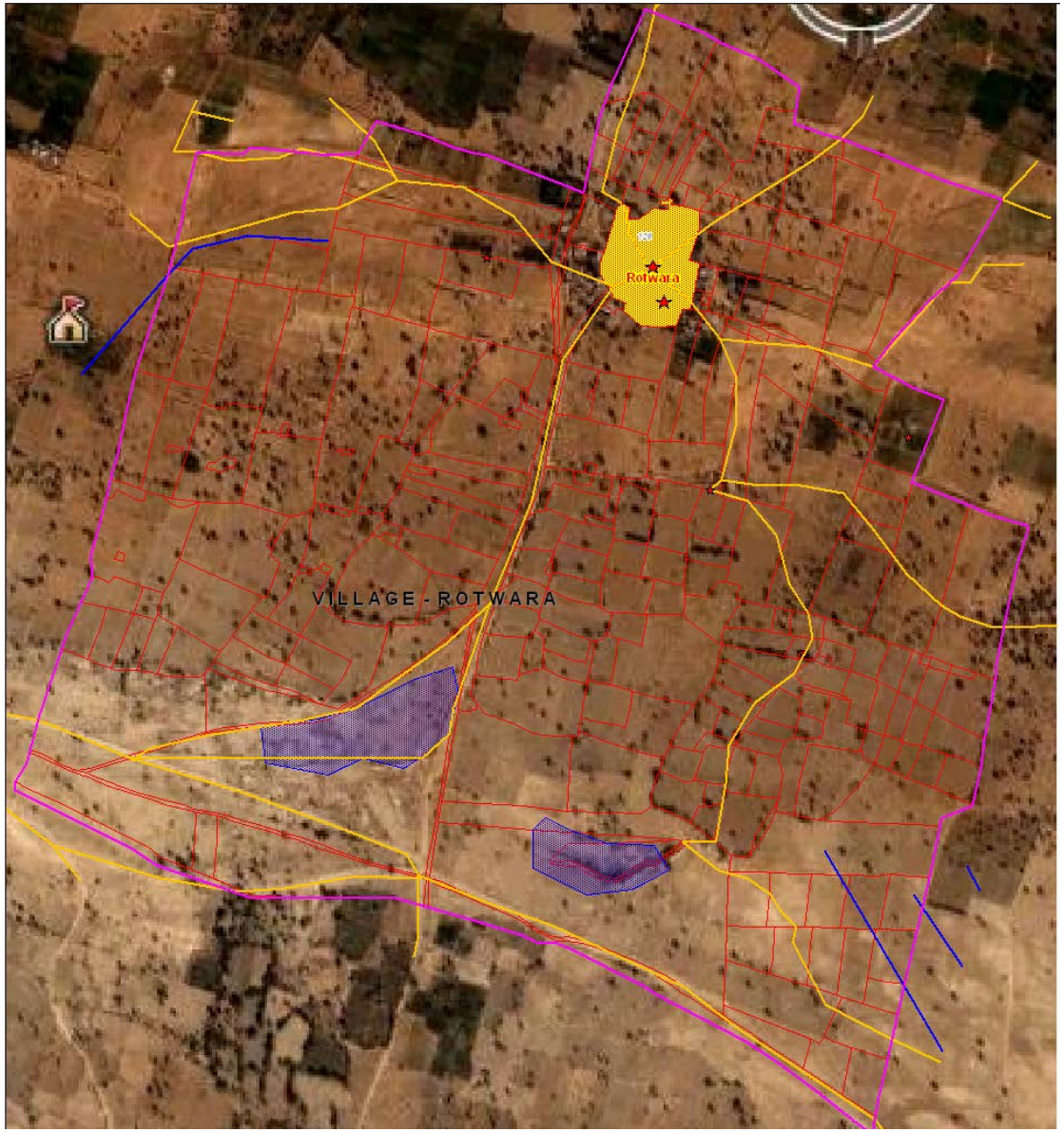

IKEA WATER PROJECT
MICRO WATERSHED - ROTWARA
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
Rotwara
VILLAGE - ROTWARA
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

IKEA WATER PROJECT
MICRO WATERSHED - ROTWARA
Satellite Image MAP
(Year - 2007)



LEGEND
- Village Boundary
- Fields Boundary
- Main Village

Settlement Status
- Main Village
- Dhani
- Settlements
- Roads/ Pathway

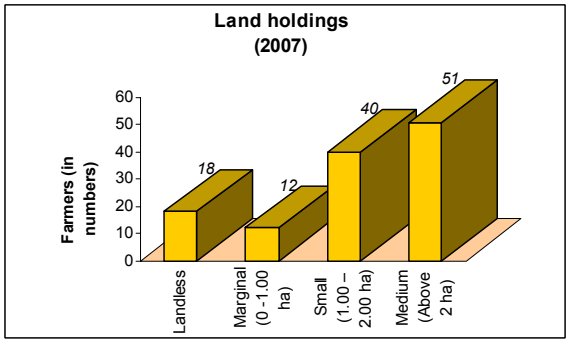
Drainage Network
- Drains
- Bandi River
- Existing Pond/ Nadi

Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

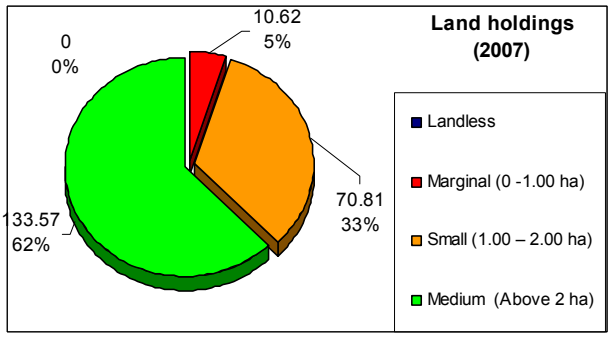
Land Holdings

Category-wise numbers of farmers and their land holdings are presented in the following graphs.



The base line survey revealed that

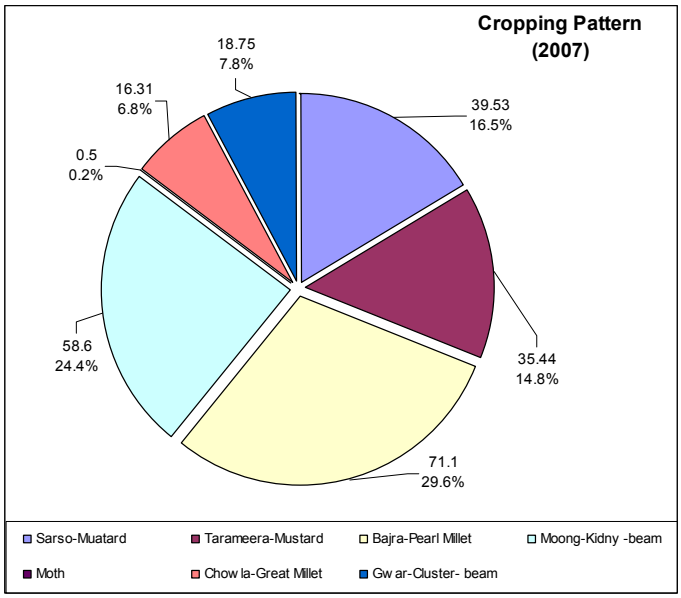
- out of 121 farmers in the village about 14.88% i.e. 18 farmers are landless.
- About 42.15% farmers (51 no.'s) have more than 2 hectare land. These farmers have more than 62% of the landholdings in the village.
- Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 33% of the total geographical area of the village.
- Marginal farmers (0 to 1.00 ha.) have lands about 5% of the total area of the village Rotwara.



Cropping Pattern

In Rotwara village the type of crops sown in different seasons recorded during the base line survey are tabulated and graphed as below:

According the data it could be well concluded that Bajra-Pearl Millet (29.6%) is the major crop in all the three seasons in the area followed by Moong- Kidny-beam (24.4%) and Sarso-Muatard (16.5%). As wheat require irrigation at regular interval hence it is cropped in location where irrigation facilities exists in village Rotwara. Jo-Barley is also sown in the village where irrigation facilities exist. Other crops are dependent on rain fed irrigation. Hence rainfall plays major role in the Rotwara village economy as production is largely dependent on it.



S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
116	Sarso-Muatard	Rabi	4	Feb.-March	.55	38.98	39.53
117	Tarameera-Mustard	-do-	4	Feb.-March	0.0	35.44	35.44
118	Bajra-Pearl Millet	Kharif	4	Oct.	0.0	71.10	71.10
119	Moong-Kidny - beam	-do-	3	Sept.	0.0	58.60	58.60
120	Moth	-do-	3	Sept.	0.0	0.50	0.50
121	Chowla-Great Millet	-do-	3	Sep.	0.0	16.31	16.31
122	Gwar-Cluster-beam	-do-	5	Oct.-Nov.	0.0	18.75	18.75
Total					**0.55**	**239.68**	**240.23**

Water Resource Profile:

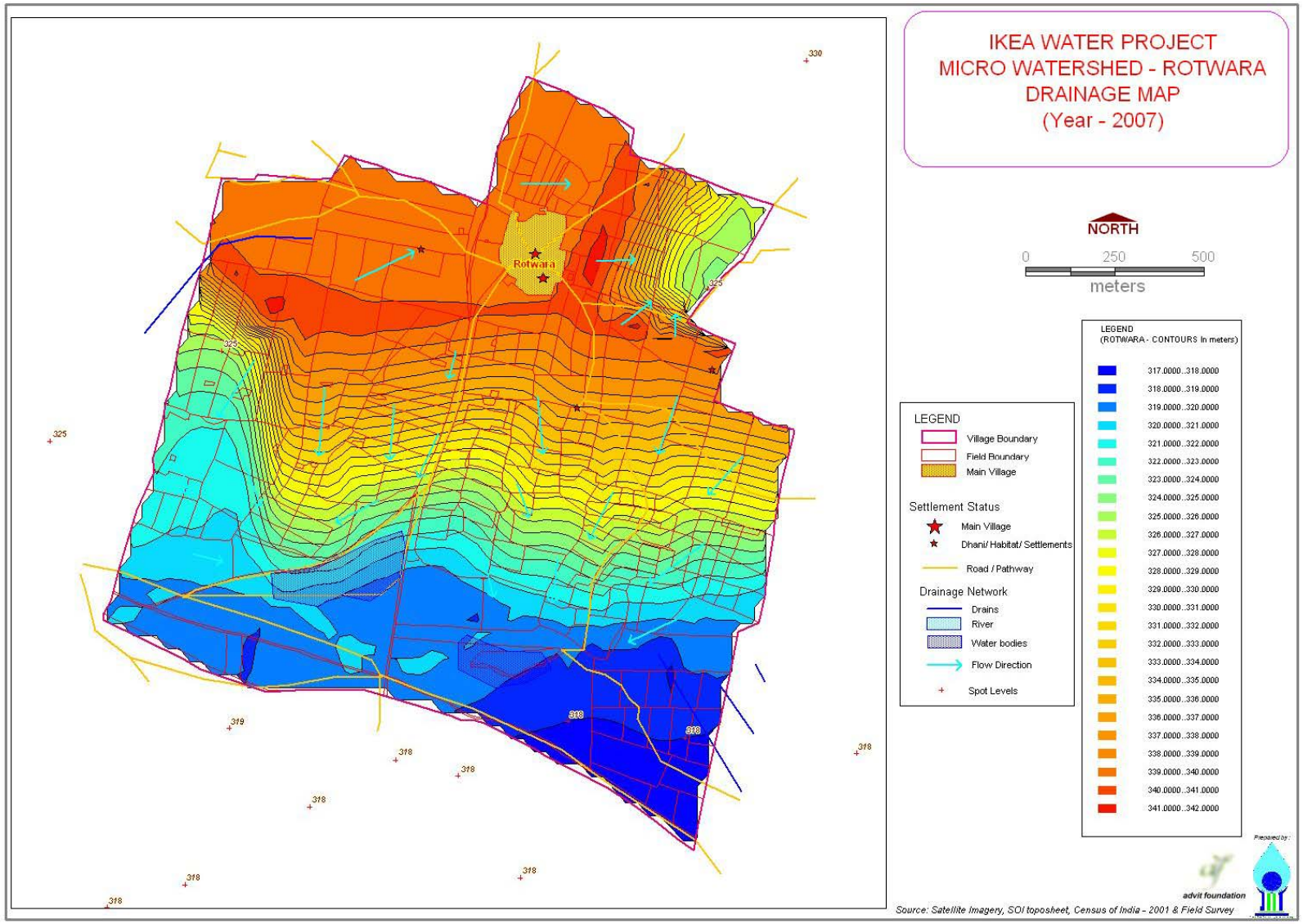
Physiography: The general ground profile is flat and having gentle slope towards southern direction. The runoff water during rainfall period follows ground slope and drains in to Bandi River flowing at the south of the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: The drainage system of the Rotwara follows north to south direction. There are no distinct natural drains in the village. These natural paths of flow which exist in the past are obstructed by agricultural fields and at most of the places it has been completely destroyed. In present condition at most of the places drainage system follows the path way/ village katcha-roads. Figure No. 6 a gives a clear view of the drainage pattern in village Rotwara.

Water Sources:

The existing water resource status can be represented by the following table:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	11	4	15
Bore well	-	-	-
Hand pumps	4	-	4
Village Ponds	-	2	2


IKEA WATER PROJECT
MICRO WATERSHED - ROTWARA
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
Rotwara
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
(ROTWARA - CONTOURS In meters)
317.0000..318.0000
318.0000..319.0000
319.0000..320.0000
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advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

During field surveys following important points were observed:

- Most of the wells dry up in the summer season. Also the yield of groundwater has reduced considerably since last decades.
- The ground water is generally saline. The salinity increases with depth.
- Depth to water table varies from 65' to 130' depending upon its location.
- Rock formations are visible at depth varying from 20' to 45' from the ground level at different locations.

Drinking Water Sources: Public Health Engineering Department (PHED) has installed Regional Water Supply Scheme with Ground Level Reservoir (GLR) with tape connection in village Rotwara. The scheme and its various components are in working condition but not sufficient on quality and quantity aspect. The source is not at all dependable as it functions occasionally. Most of the time it remains closed. The hand pumps installed in the village are functional but yield saline water. This water is used for secondary purposes other than drinking for both human and cattle population. Open wells near some depression and at village pond do yield sweet water and the entire population draw drinking from such sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to travel long distances to get the sufficient quantity of drinking water.

Irrigation Water Sources: Out of total 15 wells about 11 are in functional state. The prime use of these well are for irrigation. The farmers have dug open bore in the bed of the open well to draw water with help of diesel engine. The available water from these sources are not sufficient to meet the crop water requirement in village Rotwara.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting drinking water sources scenario in village Rotwara.

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to three micro-watersheds draining towards south direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	84.1691
Watershed no.-2	113.2170
Watershed no.-3	56.1000
Total	**253.4861**

The drainage system is flat and not well defined in all the micro-watersheds. Natural flows of runoff water from watersheds have been obstructed by the field boundaries hence the water flows through the pathways used for it surface movement. The watershed no-1 is at the top of the village drains in north-eastern direction is having better quality of soil and groundwater aquifer as compared to other two.

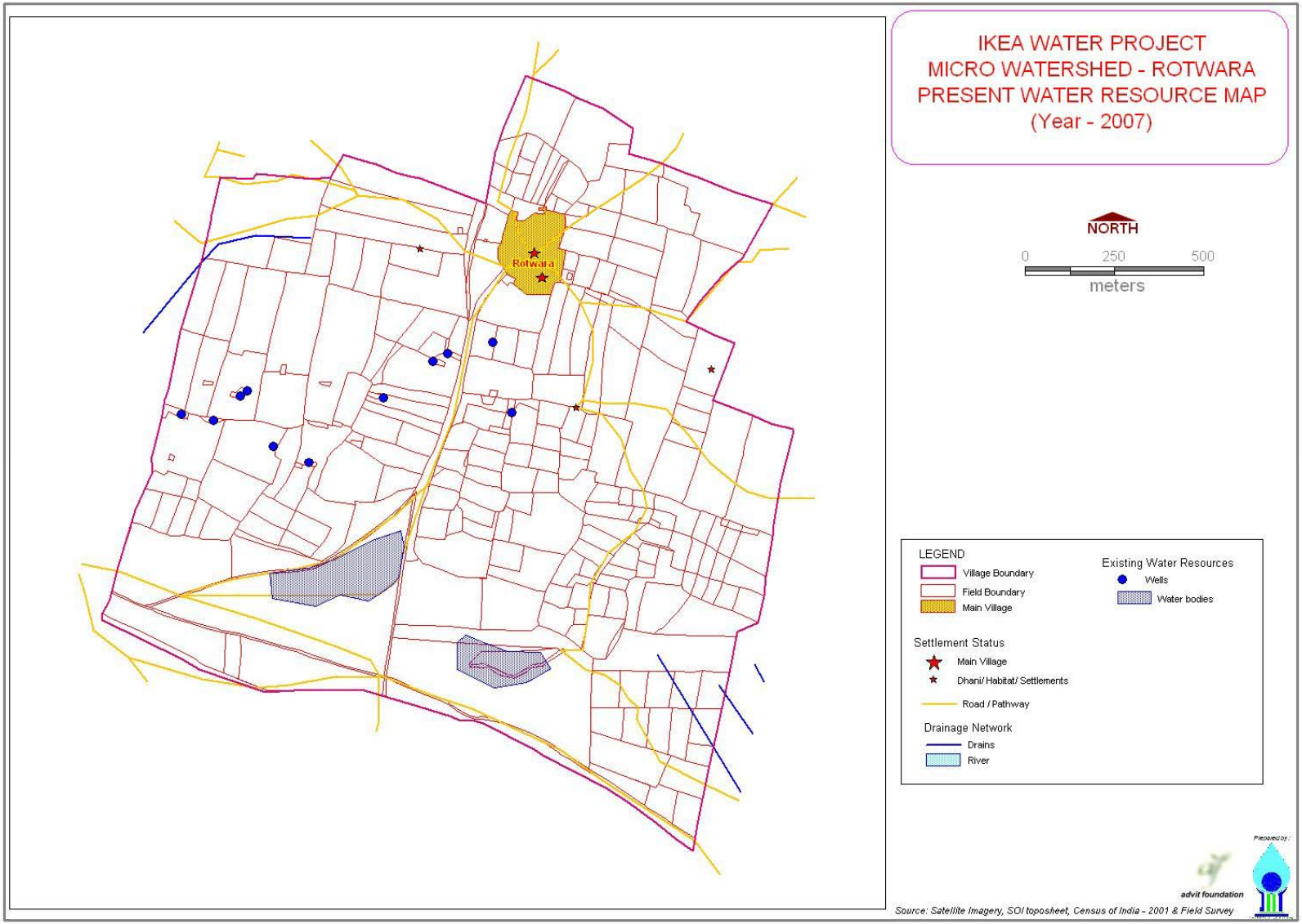

IKEA WATER PROJECT
MICRO WATERSHED - ROTWARA
PRESENT WATER RESOURCE MAP
(Year - 2007)
Rotwara
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Existing Water Resources
Wells
Water bodies
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Proposed Activities: Possible water harvesting activities on watershed basis were discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities in village Rotwara are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location envisaged during the project study shared and recommended by the local village community of village Rotwara:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.- 36 (About 1000m south-west of main village)
			• Micro-watershed No.-2	• Field No.- 227 (About 1100m south of main village)
		• Construction of Roof Top Rainwater Harvesting System	• Micro-watershed No.-3	• At Community (Panchayat) Building in main village
2	**Pasture Land Development & Horticulture**	• Land grading and bunding. • Plantation of suitable plant/ fruit plant. • Linking with government horticultural scheme.	• Micro-watershed No.- 1	• Field (Khasra) No.-33,34,35,44 and 45 At the south-west of the village (Refer figure no.-9 for details)

Numbers/ quantities of proposed activities for village Rotwara are summarized in following table:

S. No.	Activities	Numbers/ Details	
1	Nadi construction/ renovation	2	No.'s
2	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s
3	Pasture Land Development	16	Hectare

The location of the proposed activities are shown in figure no.- 9

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Nadi construction/ renovation	2	No.'s	Lumpsum	**400000.00**
2	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200000.00**
3	Pasture Land Development	16	Hectare	10000.00	**160000.00**
				GRAND TOTAL	**760000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost

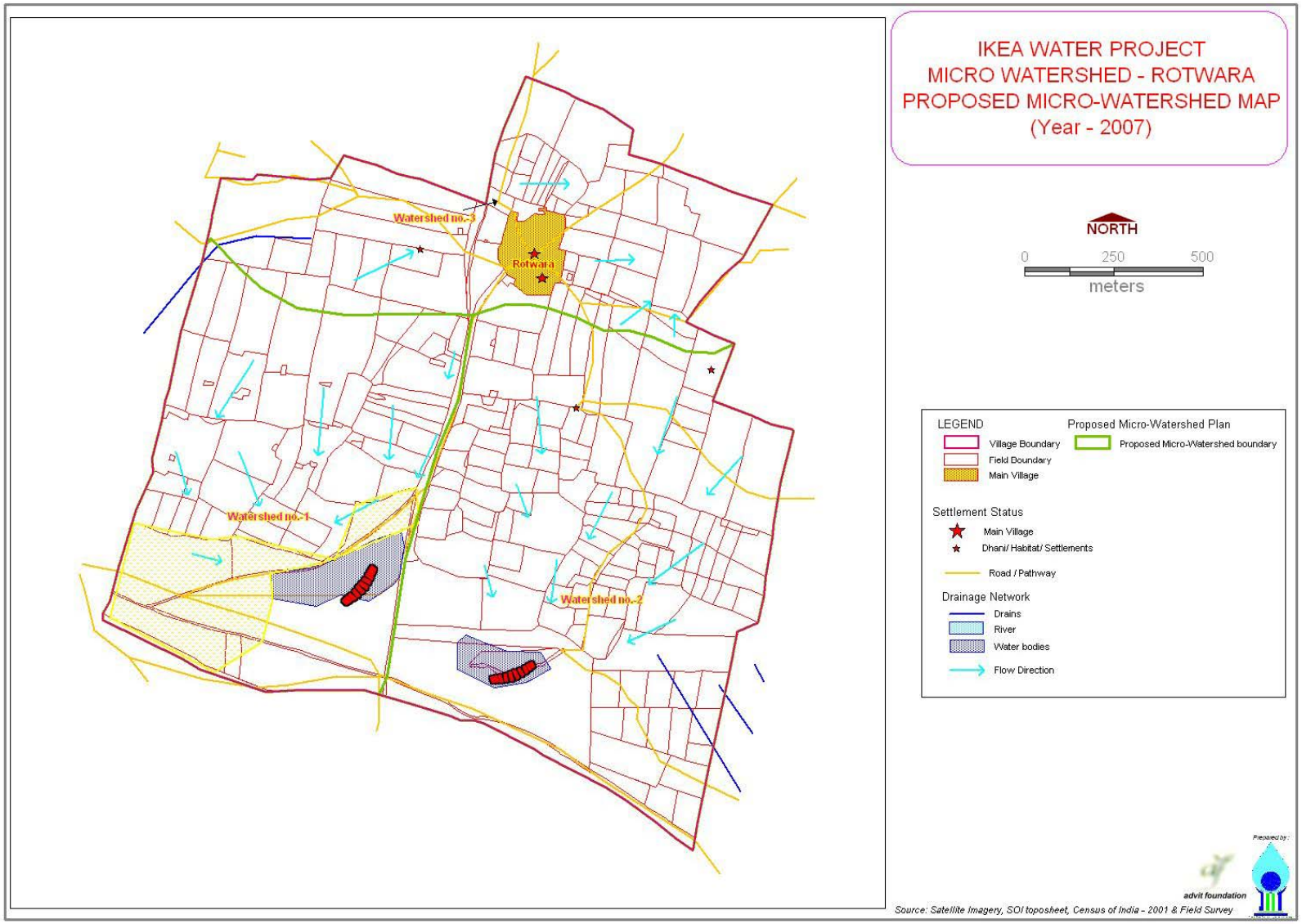

IKEA WATER PROJECT
MICRO WATERSHED - ROTWARA
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
Watershed no.-3
Rotwara
Watershed no.-1
Watershed no.-2
LEGEND
Proposed Micro-Watershed Plan
Village Boundary
Proposed Micro-Watershed boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

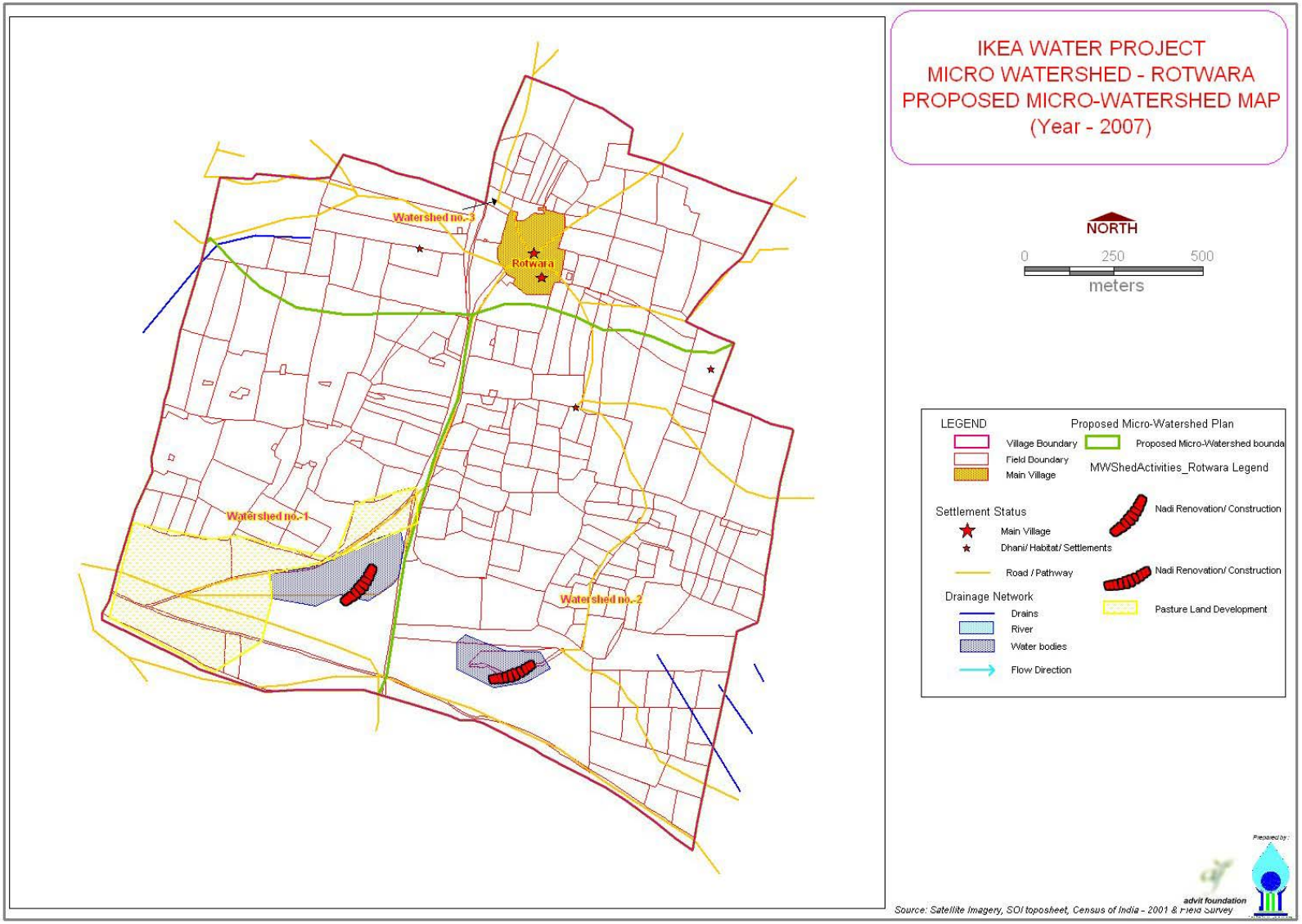

IKEA WATER PROJECT
MICRO WATERSHED - ROTWARA
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
Watershed no.-3
Rotwara
Watershed no.-1
Watershed no.-2
NORTH
0
250
500
meters
LEGEND
Proposed Micro-Watershed Plan
Village Boundary
Proposed Micro-Watershed bounda
Field Boundary
Main Village
MWShedActivities_Rotwara Legend
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Nadi Renovation/ Construction
Nadi Renovation/ Construction
Pasture Land Development
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE - SANWAL

Village Location

Sanwal village is located at $75^0$31'9.8" east longitude and $26^0$43'48.3"north longitude with a geographical area of 196 hectare at about 53 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Sanwal w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**14 km**
Distance from Block HQ:	=	**24 km**
Type of approach road to the village: *(Kachcha 8km and Pacca 6 km)*	=	**14 km**
Distance of village from district HQ	=	**45 km**
Nearest market & its distance from the village: *(Bagru)*	=	**14 km**
Distance to nearest Middle School	<	**5 km**
Distance to nearest College	>	**10 km**
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 103 families (as per baseline survey – 2007) residing in the village Sanwal which are spread up in main village and one dhani (hamlets) located inside the village boundary (refer fig.- 1 and 2)

S. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	497	Total House Holds	103
Total male Population	164	SC House Holds	57
Total Female Population	161	ST House Holds	-
Child Population (0-6 yr)	172		

T. Dhani-wise breakup of the population distribution:

S. No.	Village/ Dhani	House Holds			Population			
		TOTAL	SC	ST	Male	Female	Child	Total
1	**Sanwal**	76	30		121	118	126	365
2	**Nahar ki Dhani**	27	27		43	43	46	132
	Total	**103**	57		164	161	172	497

The sex ratio in Sanwal village is 926 females per 1000 males. The child population is about 20.32% of the total population. SC community leads in the village as it has more than 50% of total families in the village.

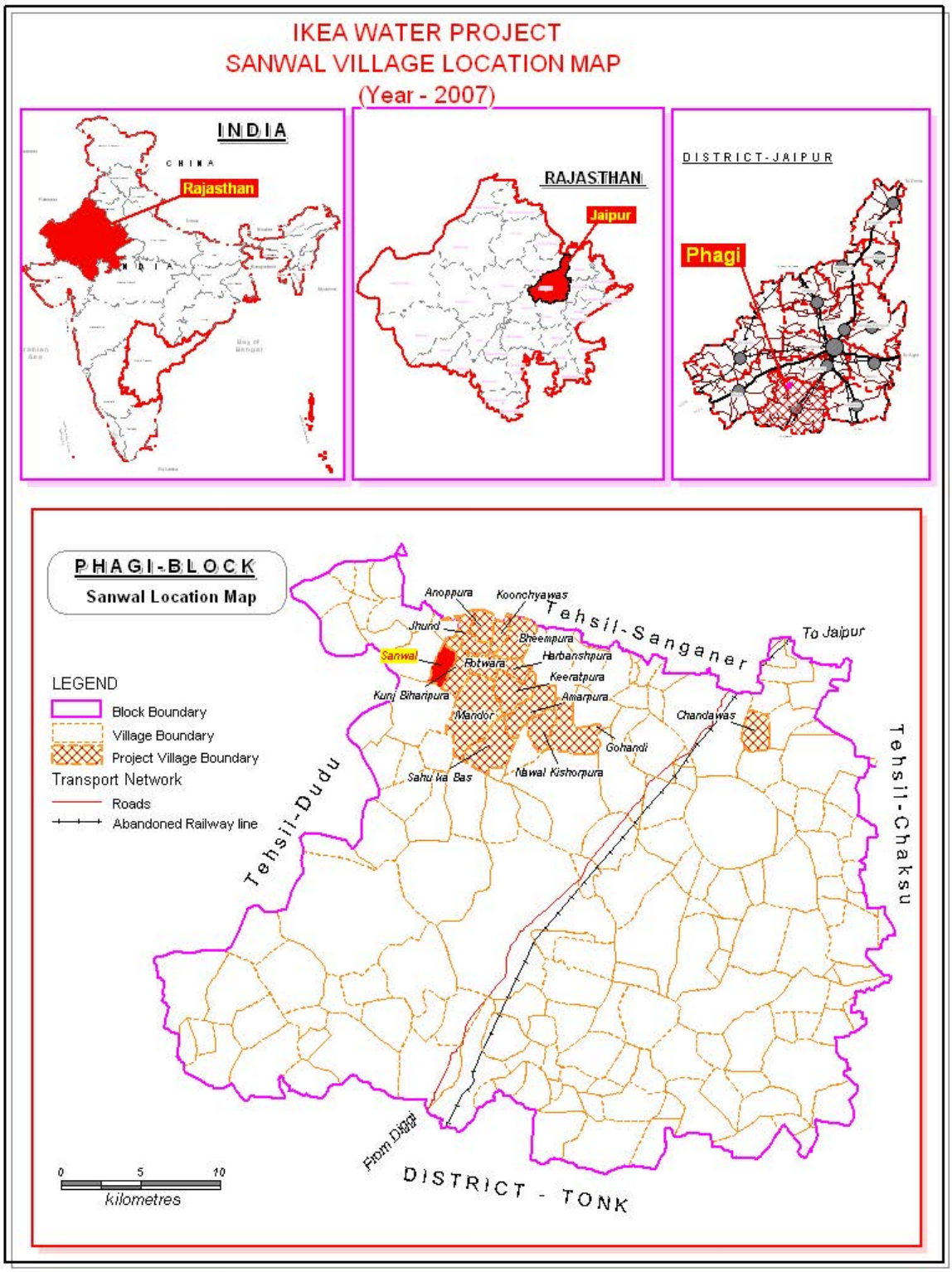

IKEA WATER PROJECT
SANWAL VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Sanwal Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Sanwal
Harbanshpura
Rotwara
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Chandawas
Gohandi
Sahu ka Bas
Nawal Kishorpura
Tehsil-Sanganer
To Jaipur
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0
5
10
kilometres

Figure No.-1

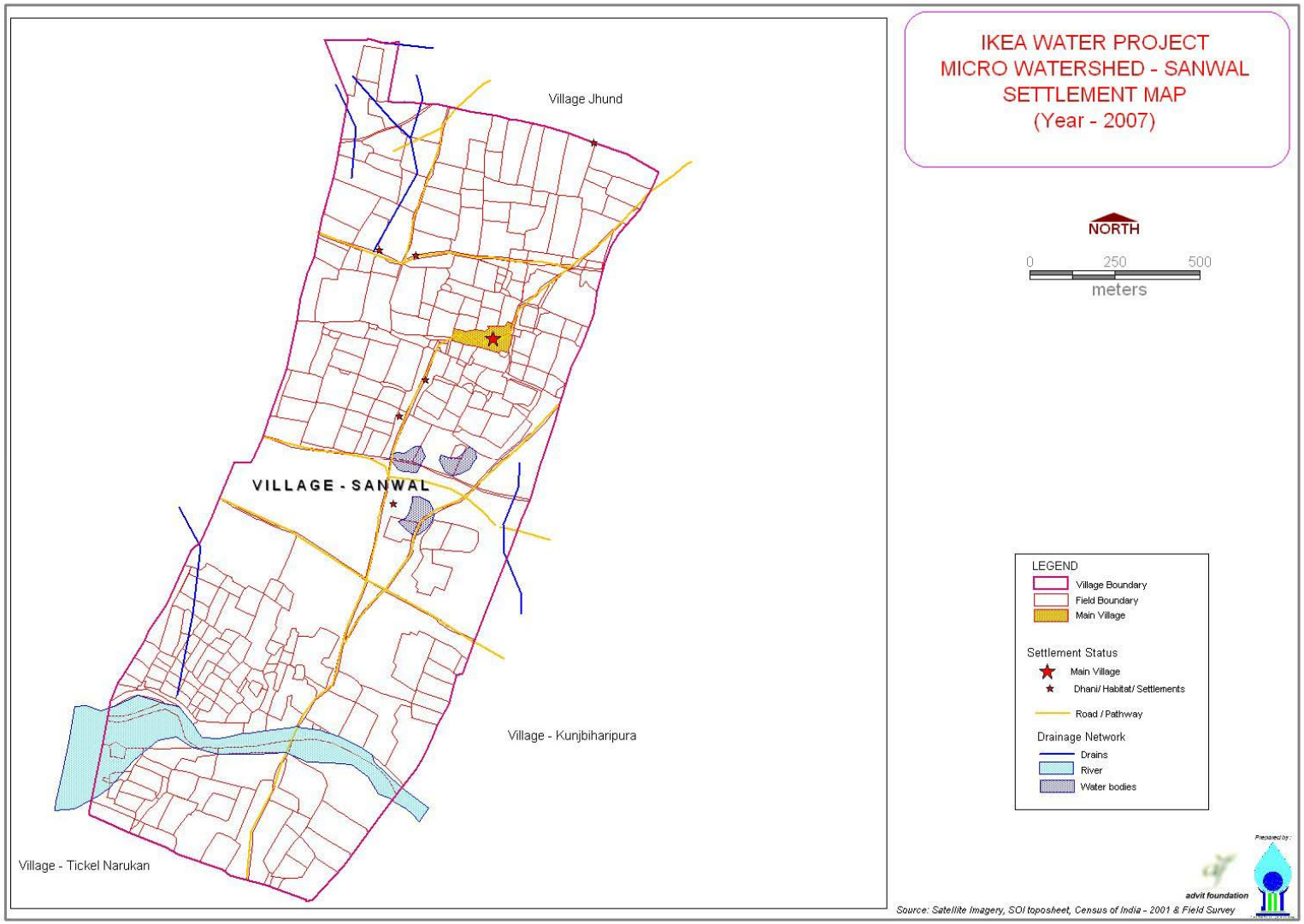

IKEA WATER PROJECT
MICRO WATERSHED - SANWAL
SETTLEMENT MAP
(Year - 2007)
Village Jhund
VILLAGE - SANWAL
Village - Kunjbiharipura
Village - Tickel Narukan
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-2

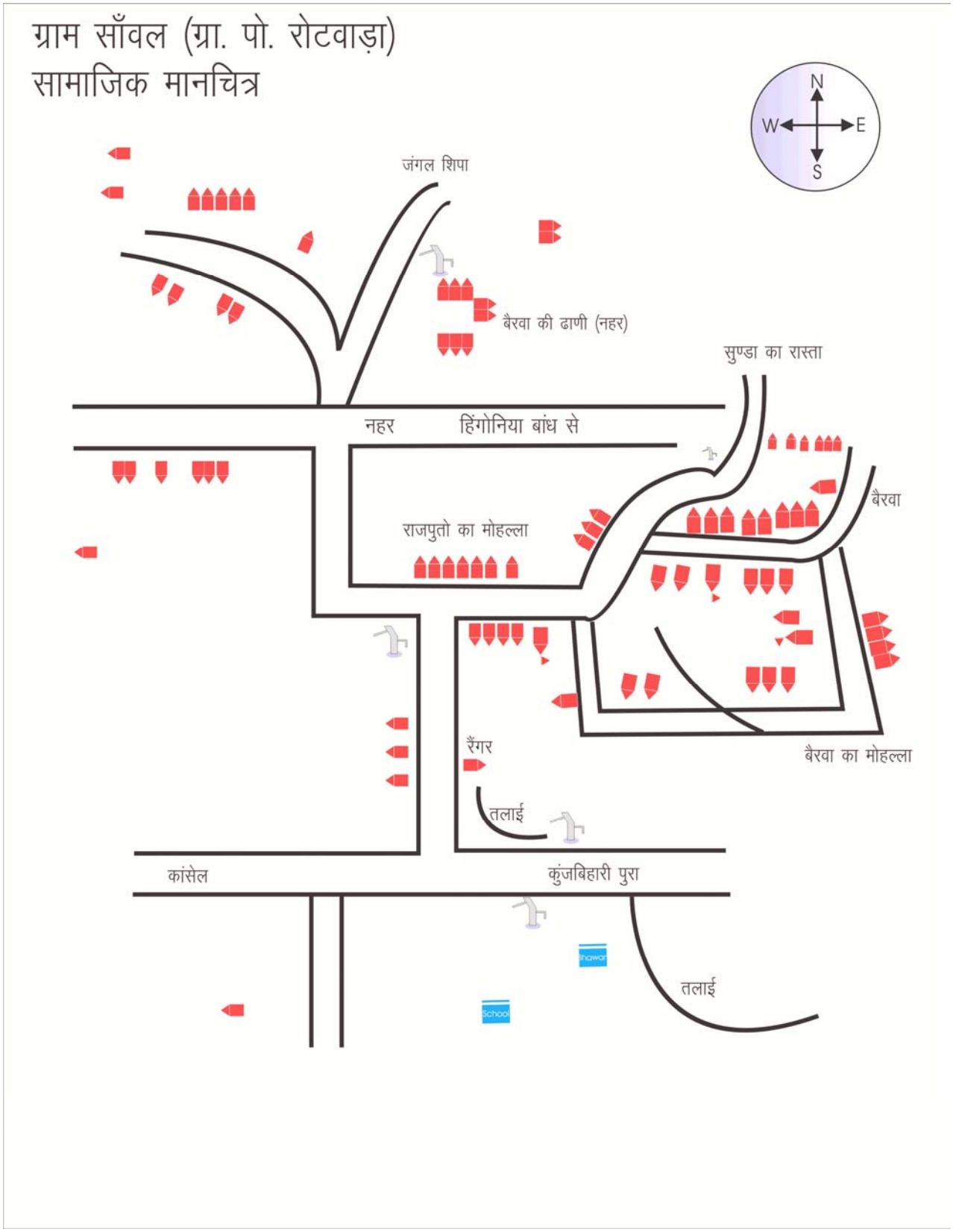

ग्राम साँवल (ग्रा. पो. रोटवाड़ा)
सामाजिक मानचित्र
N
W
E
S
जंगल शिपा
बैरवा की ढाणी (नहर)
सुण्डा का रास्ता
नहर
हिंगोनिया बांध से
बैरवा
राजपुतो का मोहल्ला
रैंगर
बैरवा का मोहल्ला
तलाई
कांसेल
कुंजबिहारी पुरा
तलाई
School

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

- Overall Literacy rate is 42.66%. Male literacy rate is 63.57% while female literacy rate is 20.08%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- No health facility is available in the village.

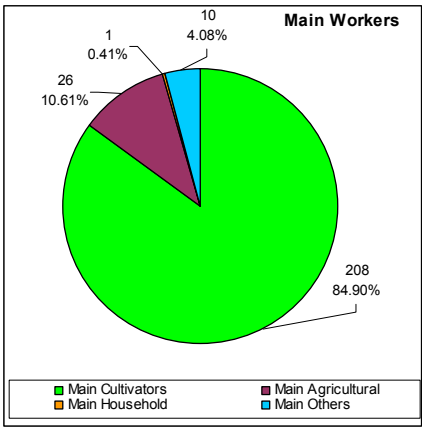
Work and Work force

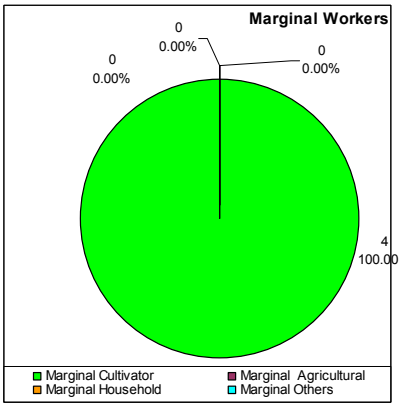
The workers population (as per census 2001) available in the village Sanwal can be tabulated as below:

		In Numbers	*In % to total population*
A.	**Main Worker Population**		
	Male Worker	129	50.00%
	Female Worker	120	50.21%
	Total Workers	**249**	**50.10%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	1	0.39%
	Female Marginal Worker	3	1.26%
	Total Marginal Workers	**4**	**0.80%**
C	**Non Worker Population**		
	Male Non Worker	129	50.00%
	Female Non Worker	119	49.79%
	Total Non Workers	**248**	**49.90%**

Description of workers population classification is explained in the following paragraphs:

Main Workers: In Sanwal village total main workers population is about 49.30% of the total population. Females leads the male in main workers population in % to their respective total population.





Marginal Workers: There is only 4 marginal worker reported in census 2001 in village Rotwara.

Cultivator: About 84.90% of main worker population is engaged in cultivator work in the village itself. Similarly entire Marginal workers category is engaged in cultivation field.

Agricultural Labourer: In Sanwal village very less number i.e.10.61% in main workers and nil in marginal workers are engaged in this category of work.

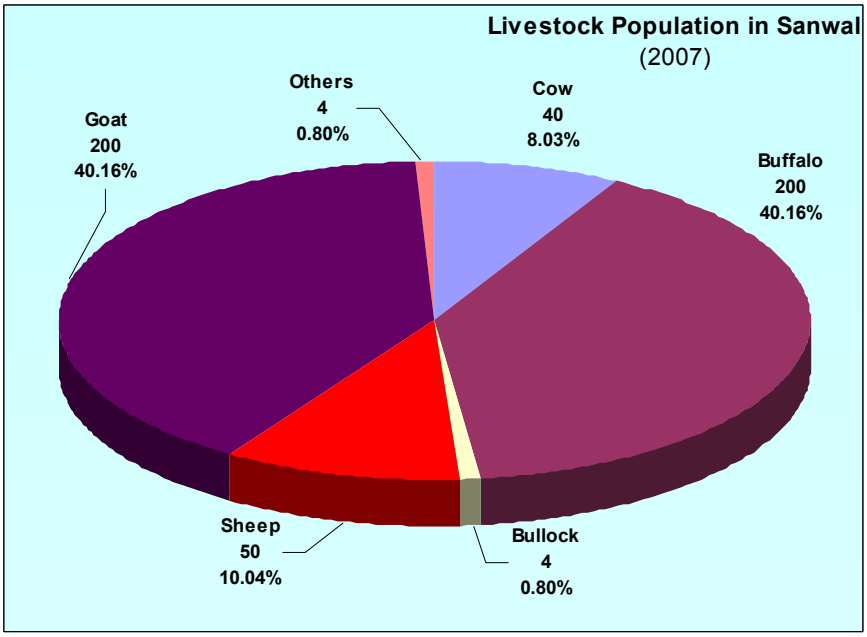
Household Industry Workers: In Sanwal village almost negligible number of people are engaged in household works.

Other Worker: About 4.08% in main worker are engaged in this type of work category. In this category Males population leads the female population.

Livestock

According to the base line survey carried out in Sanwal village there are 498 cattle variably distributed among 113 families living in the village.

Goats and buffalo are the major contributor (about 40% each) to the livestock population. Buffaloes and cows amount to half of the cattle population primarily being utilised for dairy purpose (milk production).



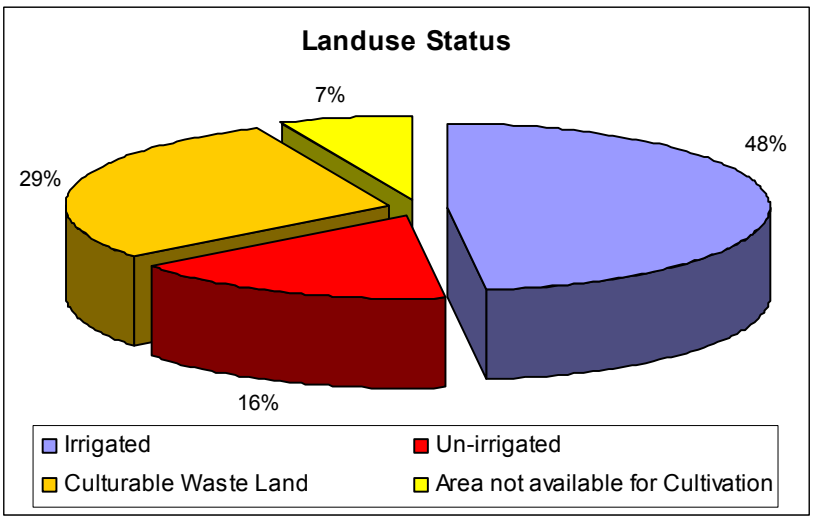
Land-Use Pattern:

The major part of the village Sanwal's economy is still dependent on agricultural production. Hence most of the land available is being put to agricultural activities.

Following graph gives status of land utilization in village Sanwal.

According to broad classification out of the total land 48% is irrigated (by tube wells) and about 16% land falls in the category of un-irrigated land. About 29% of the land is culturable waste land in the village Sanwal.

Further, about 22 hectare land is permanent pasture land and 14 hectare is government waste land. There is no Panchayat and other category land available in the village. Cultivable fallow land or private waste land is about 97 hectare. Looking to the statistics there are ample opportunities in the field of agriculture. Increase in irrigation facilities could result in more cropped area in the village.



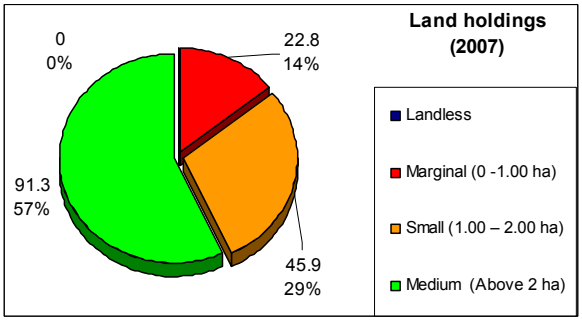
Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Sanwal.

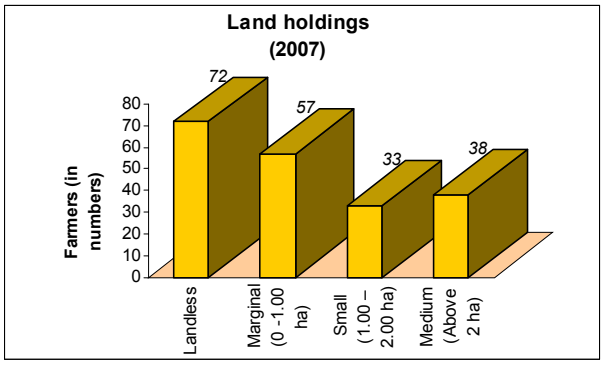
Satellite image map well represent the present land-use features in different textures as shown in figure no.- 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.

Land Holdings

Category-wise numbers of farmers and their land holdings are presented in the following graphs.
The base line survey revealed that

- Out of 200 farmers in the village about one third (36%) i.e. 72 farmers are landless.
- About 19% farmers (38 no.'s) have more than 2 hectare land. These farmers have more than 57% of the landholdings in the village.
- Small farmers with landholding (1.00 ha – 2.00 ha) are having land about 29% of the total geographical area of the village.
- Marginal farmers (0 to 1.00 ha.) have lands about 14% of the total area of the village Sanwal.

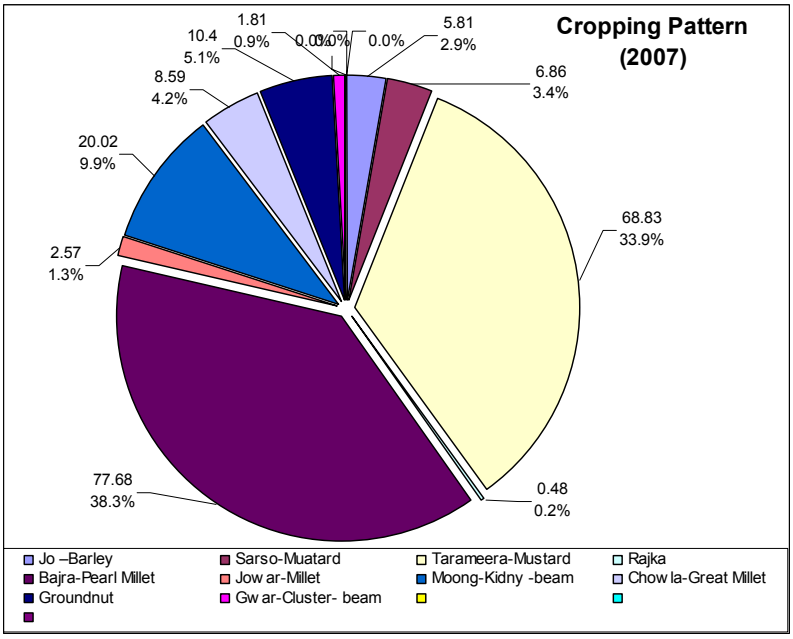




Cropping Pattern

The type of crop sown in Sanwal village depends on many factors such as monsoon rainfall, irrigation facilities and type of soil. In Sanwal village the type of crops sown in different seasons recorded during the base line survey are presented in following graphed and table:

According to the data it could be well concluded that Bajra – Pearl Millet (38.3%) is the major crop in all the three seasons in the area followed by Taramera - Mustard (33.9%) and Moong-Kidny -beam (9.09%).



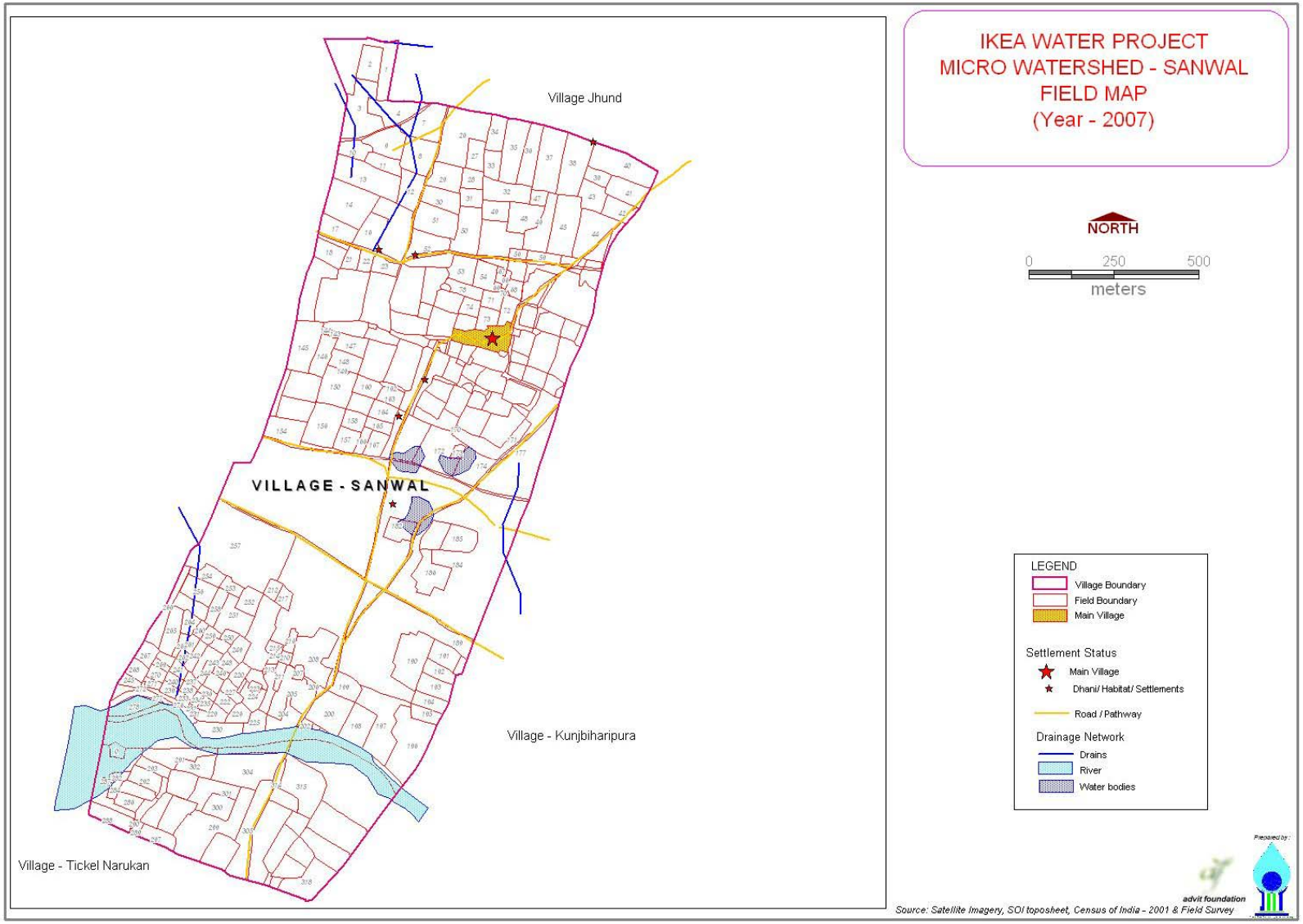
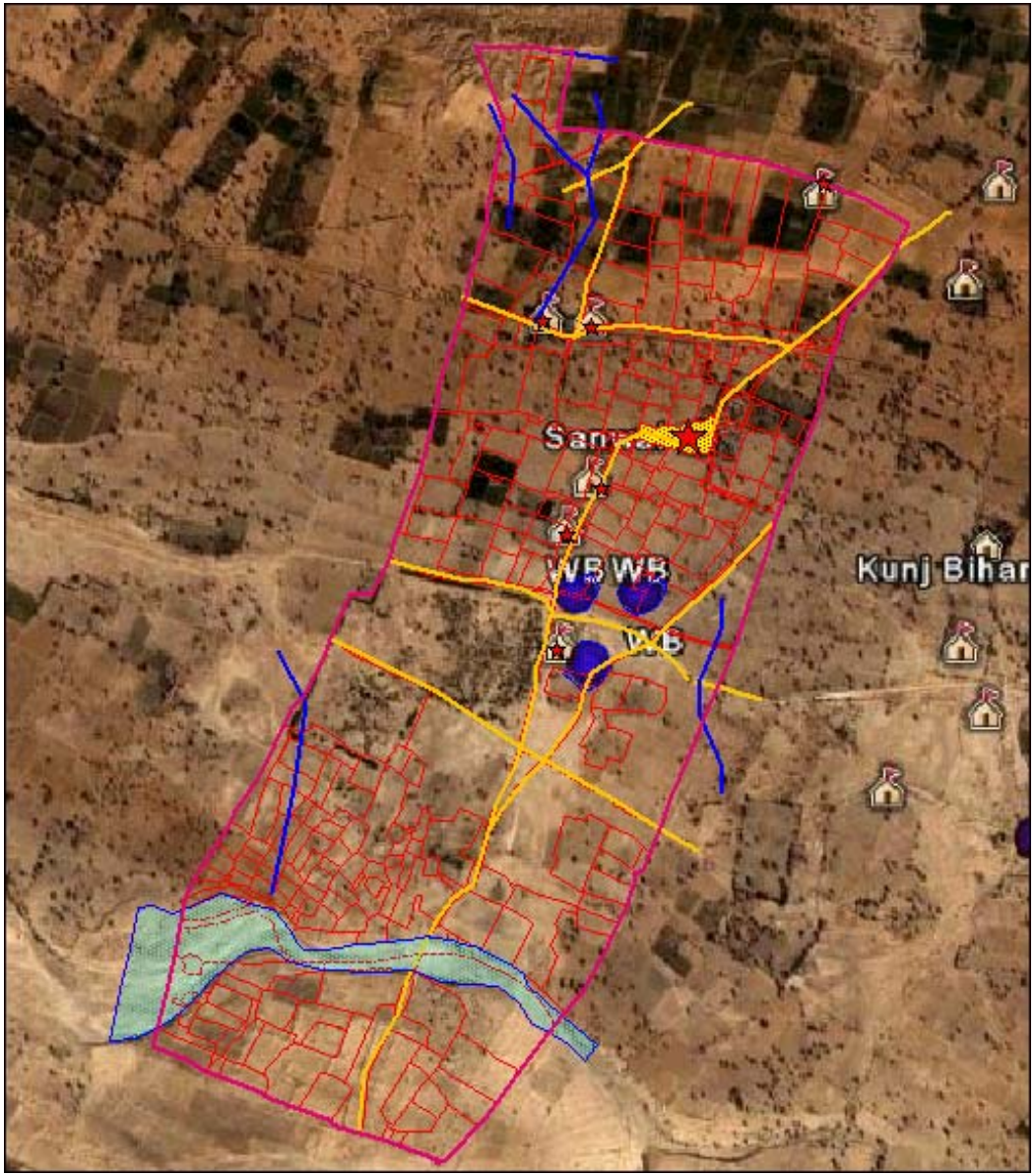

IKEA WATER PROJECT
MICRO WATERSHED - SANWAL
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
Village Jhund
VILLAGE - SANWAL
Village - Kunjbiharipura
Village - Tickel Narukan
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

IKEA WATER PROJECT
MICRO WATERSHED - SANWAL
Satellite Image MAP
(Year - 2007)



LEGEND
- Village Boundary
- Fields Boundary
- Main Village

Settlement Status
- Main Village
- Dhani
- Settlements
- Roads/ Pathway

Drainage Network
- Drains
- Bandi River
- Existing Pond/ Nadi

Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

S. No.	Name of Crop	Season Rabi/Kharif/ Zaid*	Crop Duration (Months)	Month of Harvest	Area Covered Ha.		Gross Cropped Area (Rabi+Kharif +Zaid)
					Irrigated	Un - irrigated	
123	Jo –Barley	Rabi	4	March	5.81	0.0	5.81
124	Sarso-Muatard	-do-	4	Feb.-March	6.86	0.0	6.86
125	Tarameera-Mustard	-do-	4	Feb.-March	-	68.83	68.83
126	Rajka	-do-			0.48	-	0.48
127	Bajra-Pearl Millet	Kharif	4	Oct.	0.0	77.68	77.68
128	Jowar-Millet	-do-	4	Sep.	0.0	2.57	2.57
129	Moong-Kidny - beam	-do-	3	Sep.	0.0	20.02	20.02
130	Chowla-Great Millet	-do-	3	Sep.	0.0	8.59	8.59
131	Groundnut	-do-	4	Oct.	0.0	10.40	10.40
132	Gwar-Cluster-beam	-do-	4	Oct.-Nov.	0.0	1.81	1.81
Total					**0.48**	**121.07**	**203.05**

Water Resource Profile:

Physiography: The general ground profile is flat and having gentle slope towards south direction. The runoff water during rainfall period follows ground slope and drains in to Bandi River flowing at the south of the village. Figure No. 6 gives pictorial view of the ground profile by contours having one meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: The drainage system of the Sanwal follows south west direction. There are two distinct natural drains with gentle slope and wider bed width. These natural drains are obstructed by agricultural fields and at most of the places it has been completely destroyed. In present condition at most of the places drainage system follows the path way/ village katcha-roads. Figure No. 6 a gives a clear view of the drainage pattern in village Sanwal.

Water Sources:

The water resource scenario can be well represented by following table:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	30	-	30
Bore well	-	-	-
Hand pumps	1	5	6
Village Ponds	-	1	1

During field survey it was observed that:

- Most of the wells dry up in the summer season. Also the yield of groundwater has reduced considerably since last decades.

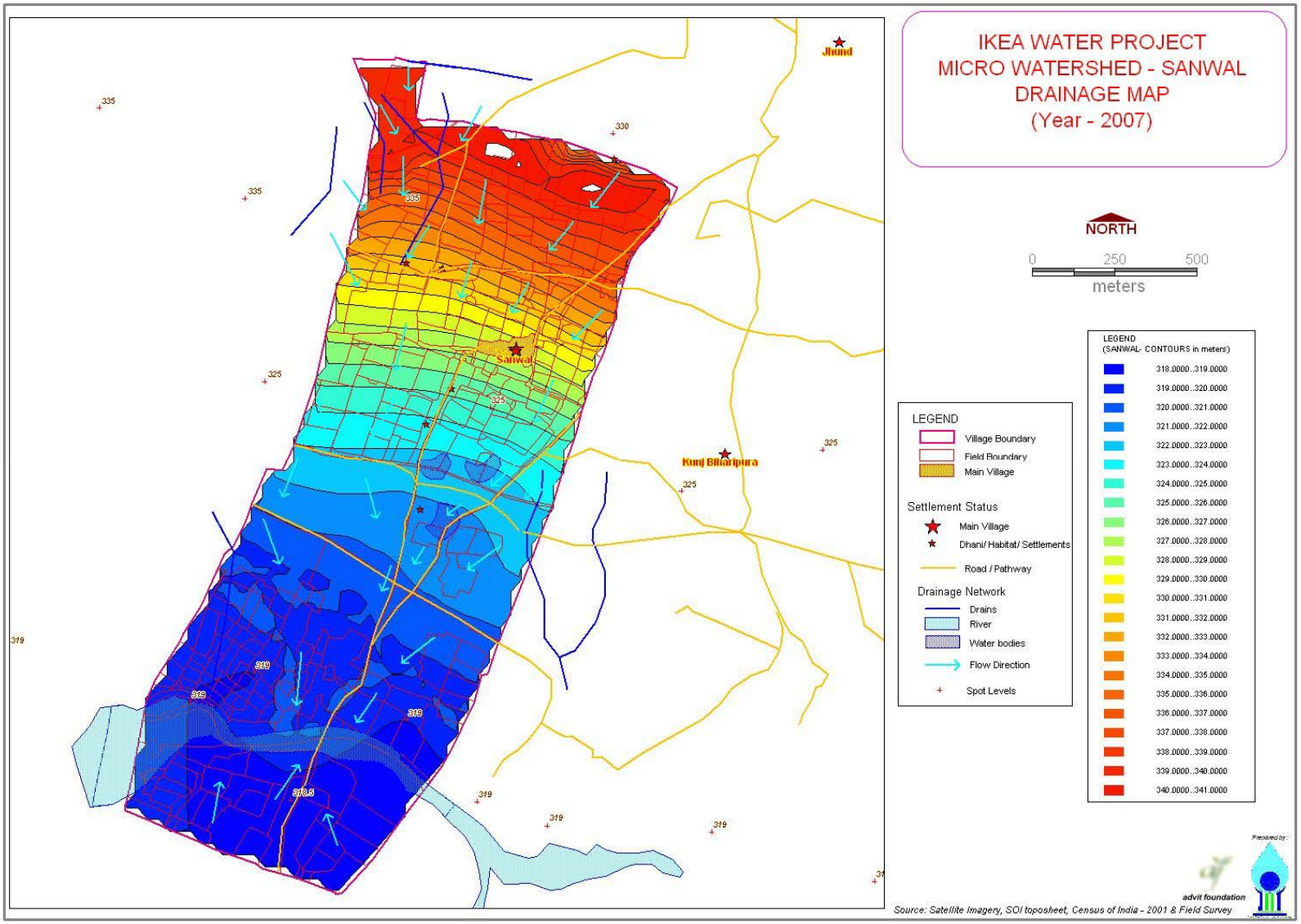
- The ground water is generally saline. The salinity increases with depth.
- Depth to water table varies from 20' to 65' depending upon its location.
- Rock formations are visible at depth varying from 15' to 45' from the ground level at different locations.

Drinking Water Sources: Out of the six hand pumps installed in the village only one is functional but that too yield saline water. This water is used for secondary purposes other than drinking for both human and cattle population. Open wells near some depression and at village pond do yield sweet water and the entire population draw drinking from such sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to travel long distances to get the sufficient quantity of drinking water from nearby villages.

Irrigation Water Sources: Total 30 wells are in functional state. The water from these well is mainly utilised for irrigation purpose but is not sufficient to meet the crop water requirement of the fields in Sanwal village. Lesser monsoon and increased agricultural demand has depleted the water table at alarming rate in the village. This has resulted in deterioration of water quality and lesser groundwater yield.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting water sources status in village Sanwal.

Figure No.-6


IKEA WATER PROJECT
MICRO WATERSHED - SANWAL
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
Jhund
Sanwal
Kunj Biharipura
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
(SANWAL- CONTOURS in meters)
318.0000..319.0000
319.0000..320.0000
320.0000..321.0000
321.0000..322.0000
322.0000..323.0000
323.0000..324.0000
324.0000..325.0000
325.0000..326.0000
326.0000..327.0000
327.0000..328.0000
328.0000..329.0000
329.0000..330.0000
330.0000..331.0000
331.0000..332.0000
332.0000..333.0000
333.0000..334.0000
334.0000..335.0000
335.0000..336.0000
336.0000..337.0000
337.0000..338.0000
338.0000..339.0000
339.0000..340.0000
340.0000..341.0000
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

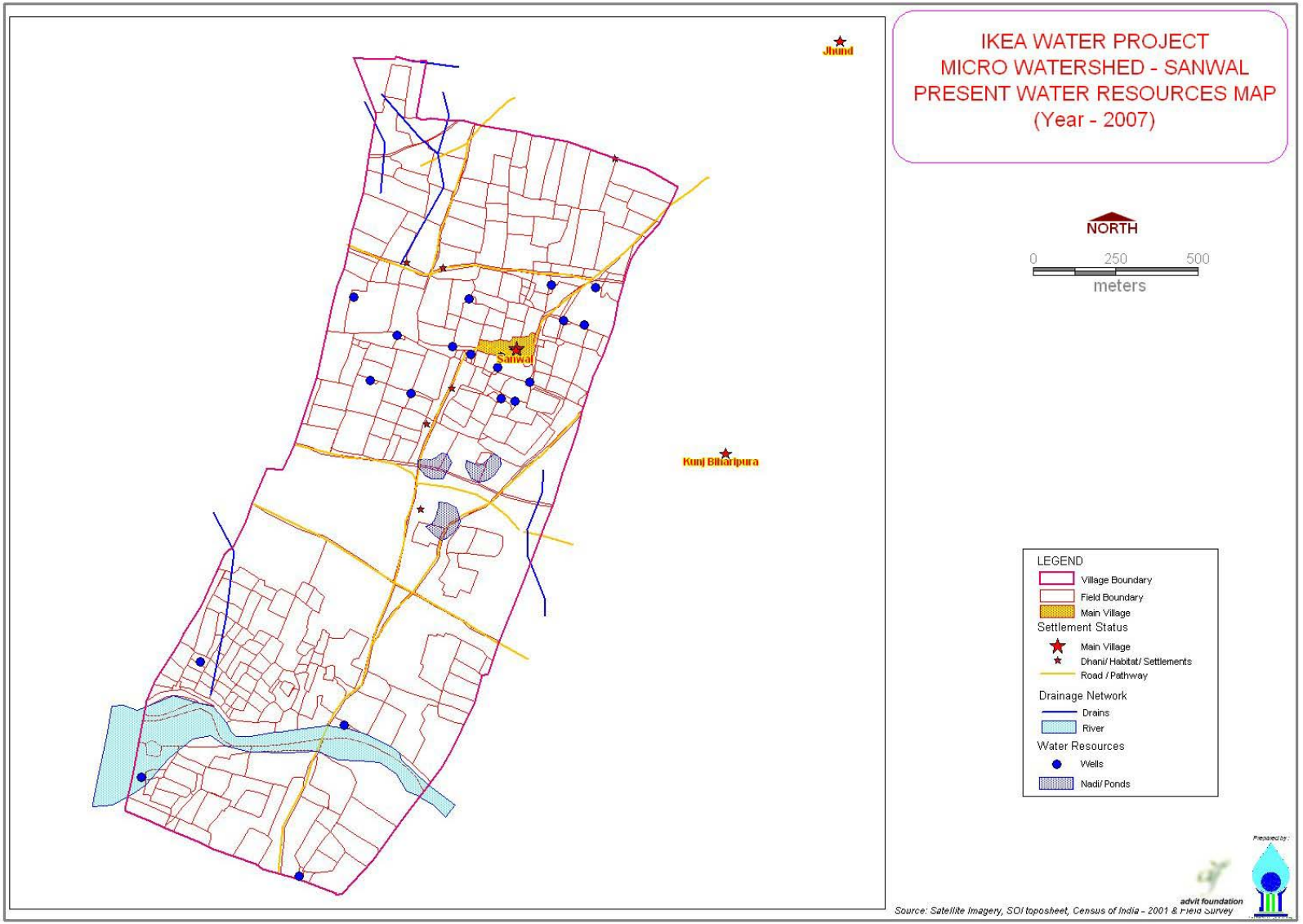

IKEA WATER PROJECT
MICRO WATERSHED - SANWAL
PRESENT WATER RESOURCES MAP
(Year - 2007)
Jhund
Sanwal
Kunj Bihari pura
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water Resources
Wells
Nadi/ Ponds
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to five micro-watersheds, four draining towards south and one towards north direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	51.2835
Watershed no.-2	71.9301
Watershed no.-3	13.2388
Watershed no.-4	25.5175
Watershed no.-5	25.2411
Total	**187.211**

Although the watershed no.-1 and 2 are big in coverage area and average field size inside with northern area more productive and having higher intensity of irrigation facilities. The dark shed reflected in satellite imagery of year 2007 (Refer fig. no.-5) clearly indicate that agriculture practices are more intense in watershed no.-1 & 2.

The drainage system is not well defined in all the watersheds. Natural flow of runoff water from watershed no.-1 & 2 have been obstructed by the field boundaries hence the water flows through the pathways used for transportation. The area surrounding the Bandi river is having higher salinity in ground and groundwater as compared to farther regions. The watershed no-5 is at the bottom of the village having slope in upward direction.

Proposed Activities: All possible and feasible water harvesting activities on watershed basis were discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities in village Sanwal are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location envisaged during the project study shared and recommended by the local village community of village Sanwal:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Rainwater Harvesting on natural drainage**	• Construction of one Anicut structure.	• In between Micro-watershed No.- 3 and 5.	• Field (Khasra*) No.-279 (Bandi River) At the bottom of field no.-230
2	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields	• Micro-watershed No.-1 & 2	• **Cluster-1**: About 5000m field bunds spread over 50 Fields at south-west of the main village
3	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.- 179 (About 1800m south of main village)
		• Construction of Rainwater Harvesting System	• Micro-watershed No.-2	• At Community (Panchayat) Building in main village

Numbers/ quantities of proposed activities are summarized in following table:

S. No.	Activities	Numbers/ Details	
1	Anicut construction	1	No.'s
2	Nadi construction/ renovation	1	No.'s
3	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s
4	Farm Field Bunding	4000	Meters

The location of the proposed activities are shown in figure no.- 9

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Anicut construction (100 in length)	1	No.'s	16000.00 per meter	**1600000.00**
2	Nadi construction/ renovation (100m in length)	1	No.'s	4000.00 per meter	**400000.00**
3	Roof Top Rainwater Harvesting System (50000 lit capacity)	1	No.'s	Rs.4.00 per liter	**200000.00**
4	Farm Field Bunding	4000	Meters	30.00	**120000.00**
				GRAND TOTAL	**2320000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

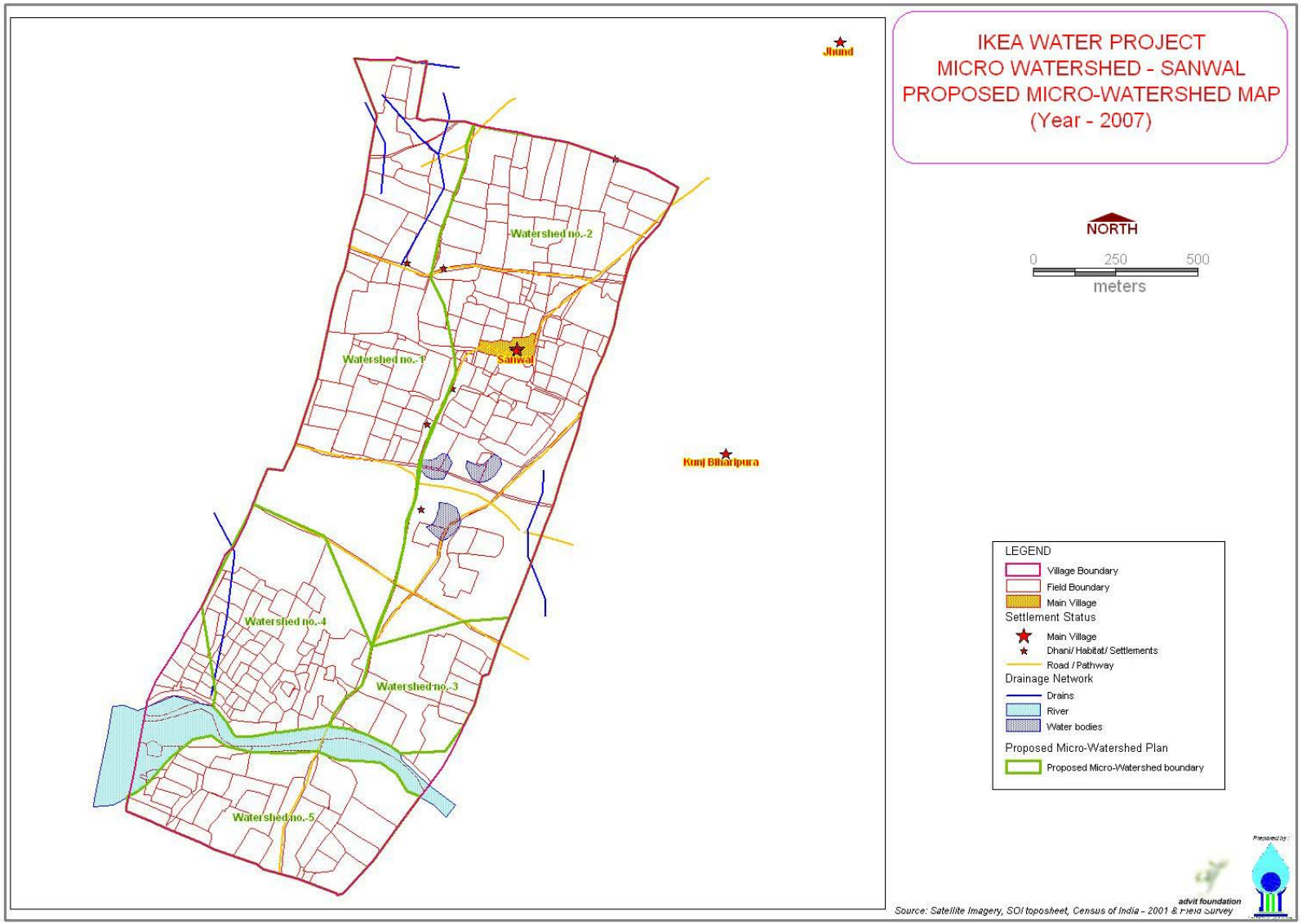

IKEA WATER PROJECT
MICRO WATERSHED - SANWAL
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
Jhund
Watershed no.-2
Watershed no.-1
Sanwal
Kunj Bihariipura
Watershed no.-4
Watershed no.-3
Watershed no.-5
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

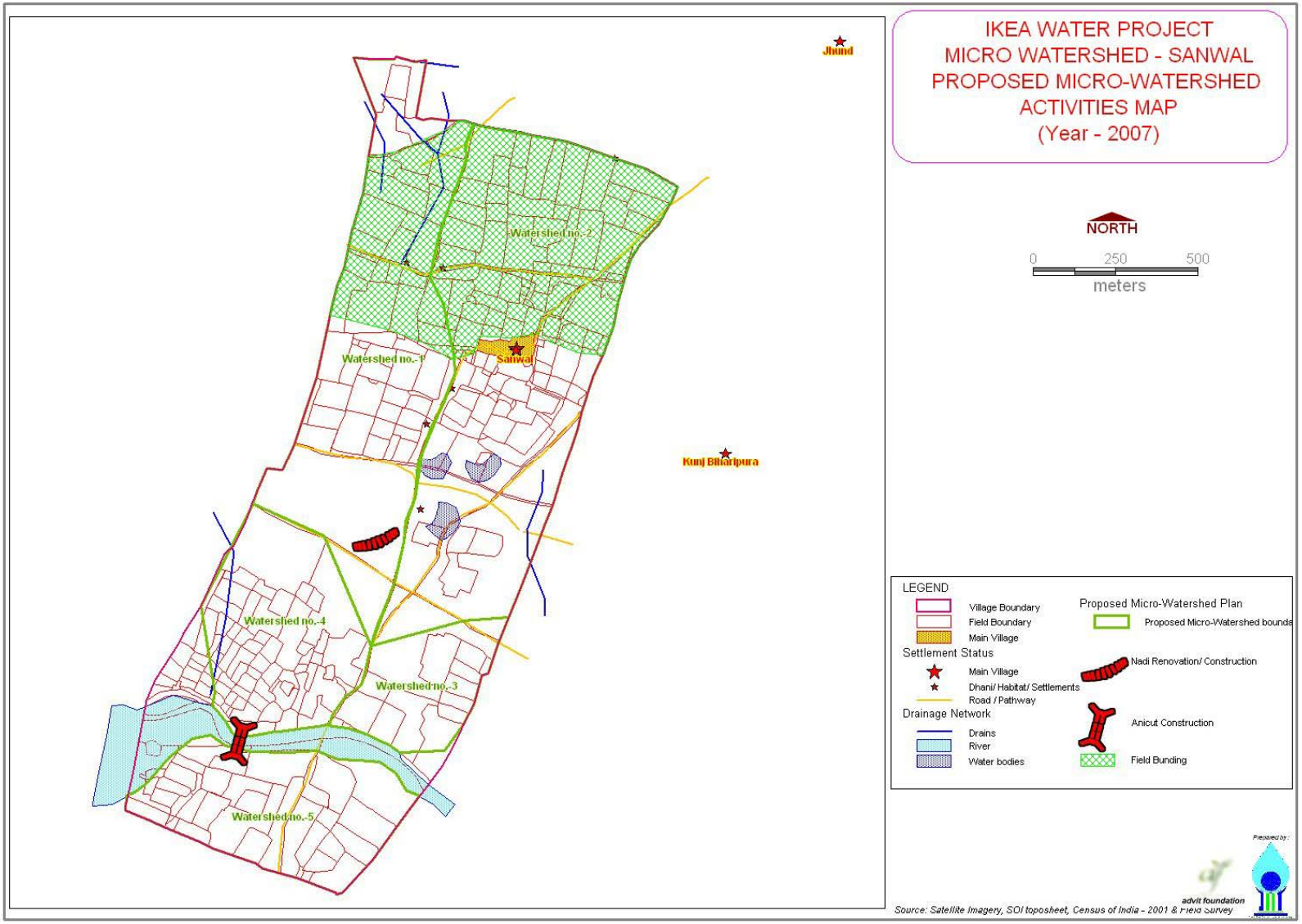

IKEA WATER PROJECT
MICRO WATERSHED - SANWAL
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
Jhund
Watershed no.-2
Watershed no.-1
Sanwal
Kunj Bihariipura
Watershed no.-4
Watershed no.-3
Watershed no.-5
NORTH
0
250
500
meters
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Proposed Micro-Watershed Plan
Proposed Micro-Watershed bounda
Nadi Renovation/ Construction
Anicut Construction
Field Bunding
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9

MICRO-WATERSHED PLANNING OF VILLAGE – SAHU KA BAS

Village Location

Sawa Ka Bas village is located at $75^0$33'15.48" east longitude and $26^0$41'25.8"north longitude with a geographical area of 381 hectare at about 48 km south-west of Jaipur city in Phagi block of Jaipur district. Figure no.-1 gives location of Sawa Ka Bas w.r.t Jaipur, Rajasthan and India.

Nearest facilities from the main villages are tabulated as below:

Distance of village from Factory:	=	**14 km**
Distance from Block HQ:	=	**20 km**
Type of approach road to the village: Paaca	=	**0 km**
Distance of village from district HQ	=	**45 km**
Nearest market & its distance from the village: *(Bagru)* **14 km**	=	
Distance to nearest Middle School **5 km**	<	
Distance to nearest College **10 km**	>	
Nearest Allopathic Hospital	>	**10 km**
Nearest Maternity and Child Welfare Center	>	**10 km**
Nearest Primary Health Center	>	**10 km**

Demographic Profile

There are 71 families (as per baseline survey – 2007) residing in the village Sawa Ka Bas which are spread up in main village (refer fig.- 1 and 2)

U. Population distribution

DEMOGRAPHIC PROFILE

POPULATION STATUS	*In Numbers*		*In Numbers*
Total Population	288	Total House Holds	71
Total male Population	96	SC House Holds	25
Total Female Population	93	ST House Holds	
Child Population (0-6 yr)	99		

The sex ratio in Sawa Ka Bas village is 1127 females per 1000 males. The child population is about 16.59% of the total population.

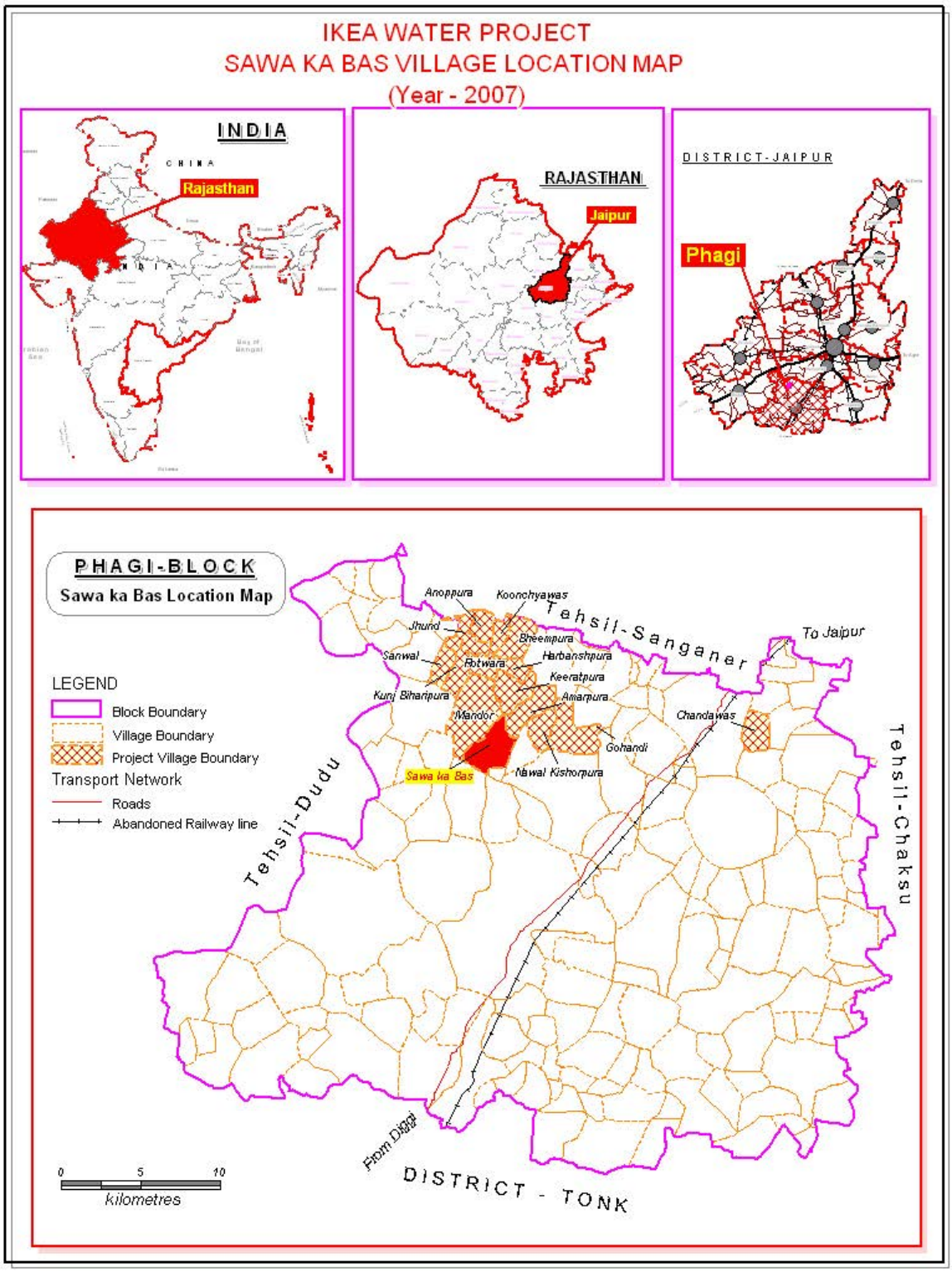

IKEA WATER PROJECT
SAWA KA BAS VILLAGE LOCATION MAP
(Year - 2007)
INDIA
CHINA
Rajasthan
RAJASTHAN
Jaipur
DISTRICT-JAIPUR
Phagi
PHAGI-BLOCK
Sawa ka Bas Location Map
LEGEND
Block Boundary
Village Boundary
Project Village Boundary
Transport Network
Roads
Abandoned Railway line
Anoppura
Koonchyawas
Jhund
Bheempura
Harbanshpura
Sanwal
Rotwara
Keeratpura
Kunj Biharipura
Amarpura
Mandor
Chandawas
Gohandi
Sawa ka Bas
Nawal Kishorpura
Tehsil-Sanganer
To Jaipur
Tehsil-Dudu
Tehsil-Chaksu
Firm Diggi
DISTRICT - TONK
0
5
10
kilometres

Figure No.-1

Figure No.-2

IKEA WATER PROJECT
MICRO WATERSHED - SAWA KA BAS
SETTLEMENT MAP
(Year - 2007)

NORTH

0 250 500
meters

LEGEND

- Village Boundary
- Field Boundary
- Main Village

Settlement Status

- Main Village
- Dhani/ Habitat/ Settlements
- Road / Pathway

Drainage Network

- Drains
- River
- Water bodies

Prepared by :

advit foundation

Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

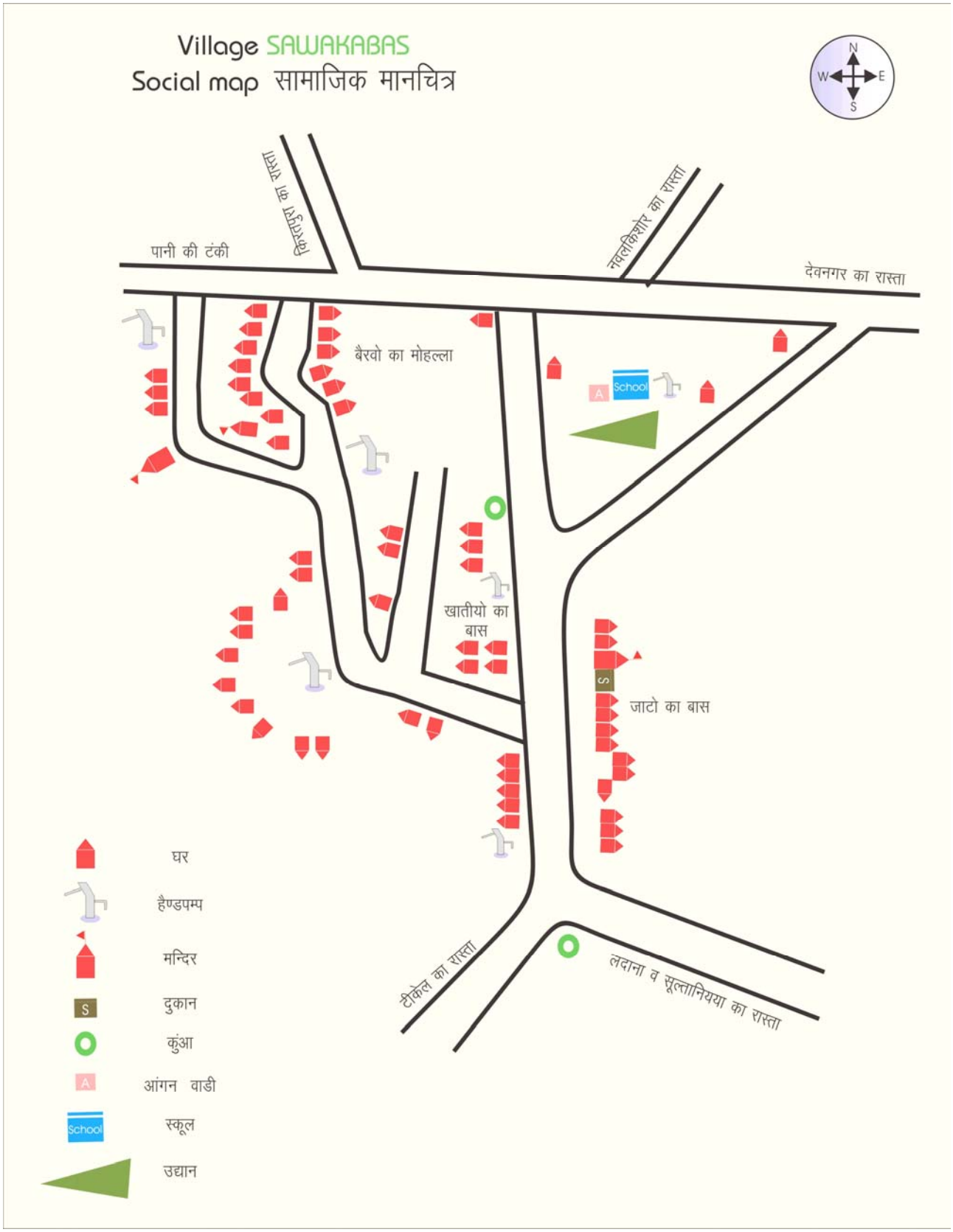

Village SAWAKABAS
Social map सामाजिक मानचित्र
N
W
E
S
पानी की टंकी
देवनगर का रास्ता
बैरवो का मोहल्ला
School
A
खातीयो का बास
जाटो का बास
S
घर
हैण्डपम्प
मन्दिर
दुकान
कुंआ
आंगन वाडी
स्कूल
उद्यान

Figure No.-3

Socio-Economic Profile

The socio-economic profile of the village can be best illustrated with following important points:

- Overall Literacy rate is 39.63%. Male literacy rate is 53.92% while female literacy rate is 26.96%.
- There is only one government primary school. Middle school and college facilities don't exist in the village.
- There is no post office in the village. Nearest post office is about more than 5km distance from the village.
- No health facility is available in the village.

- **Work and Work force**

The workers population (as per census- 2001) available in the village Sawa Ka Bas can be tabulated as below:

A.	**Main Worker Population**	***In Numbers***	***In % to total population***
	Male Worker	52	50.98%
	Female Worker	61	53.04%
	Total Workers	**113**	**52.07%**
B.	**Marginal Worker Population**		
	Male Marginal Worker	5	4.90%
	Female Marginal Worker	11	9.57%
	Total Marginal Workers	**16**	**7.37%**
C	**Non Worker Population**		
	Male Non Worker	50	49.02%
	Female Non Worker	54	46.96%
	Total Non Workers	**104**	**47.93%**

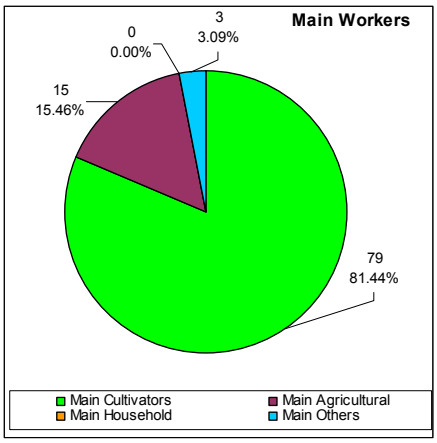
Description of the worker population classification is explained in the following paragraphs:

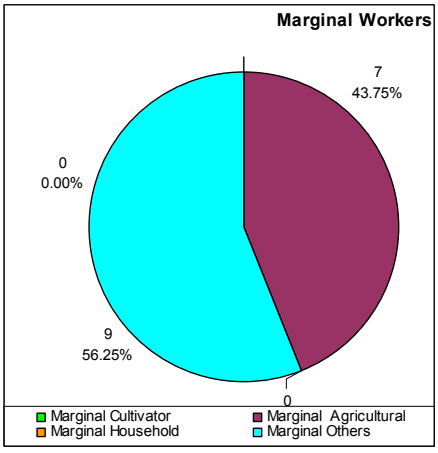
Main Workers: In Sawa Ka Bas village total main workers population is about 44.70% of the total population. Females lead the male in main workers population in % to their respective total population.

Marginal Workers: Marginal workers and its categorization are represented in following graph.

Cultivator: About 81.44% of main worker population is engaged in cultivator work in the village itself. In Marginal workers category nil workers are engaged in cultivation field.

Agricultural Labourer: In Sawa Ka Bas village very less number i.e. 15.46% in main workers and about 43.75% in marginal workers are engaged in this category of work.



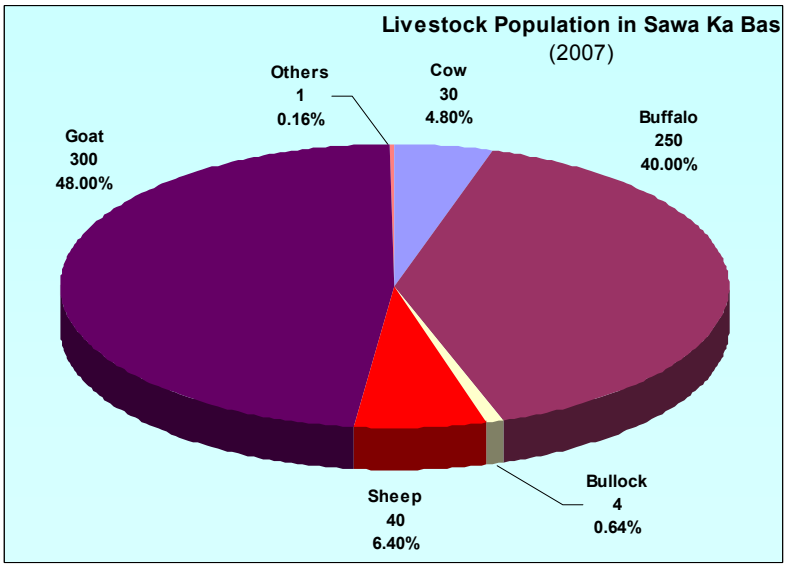


Household Industry Workers: In Sawa Ka Bas village negligible numbers of people are engaged in household works.

Other Worker: About 3.09% in main worker and 56.25% in marginal worker category are

engaged in this type of work category. In this category Males population leads the female population.

Livestock

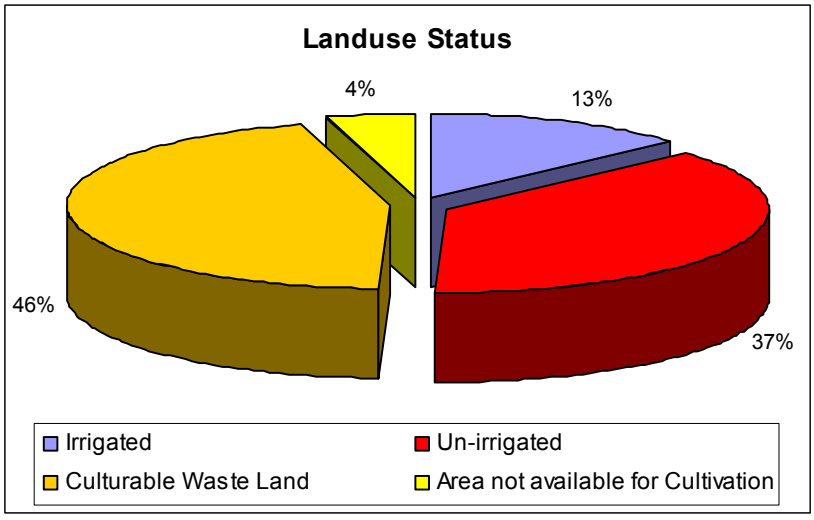


According to baseline data, in Sawa Ka Bas village, there are 625 cattle variably distributed among 71 families living in the village. Some families are having more than 50 cattle whereas some have none. Goats and sheep are the major contributor (about 48%) to the livestock population. Buffaloes and cows amount to 45% of the cattle population primarily being utilised for dairy purpose (milk production).

Land-Use Pattern:

As other villages major part of village Sawa Ka Bas' s economy is dependent on agricultural production. Most of the land available is being put to agricultural activities. According to broad classification out of the total land only 13% is irrigated (by tube wells) and about 37% land still falls in the category of un-irrigated land. About 46% of the land is culturable waste land in the village Sawa Ka Bas.

Following graph shows status of land utilization in village Sawa Ka Bas.
Location of fields with its khasra number has been shown in **figure no.-4** giving overall scenario of the land utilization and settlement in village Sawa Ka Bas.Satellite image map well represent the present land-use features in different textures is shown in figure no.- 5. The field boundaries and habitat locations have been superimposed on the image map to give visual impression of the field location and its status.



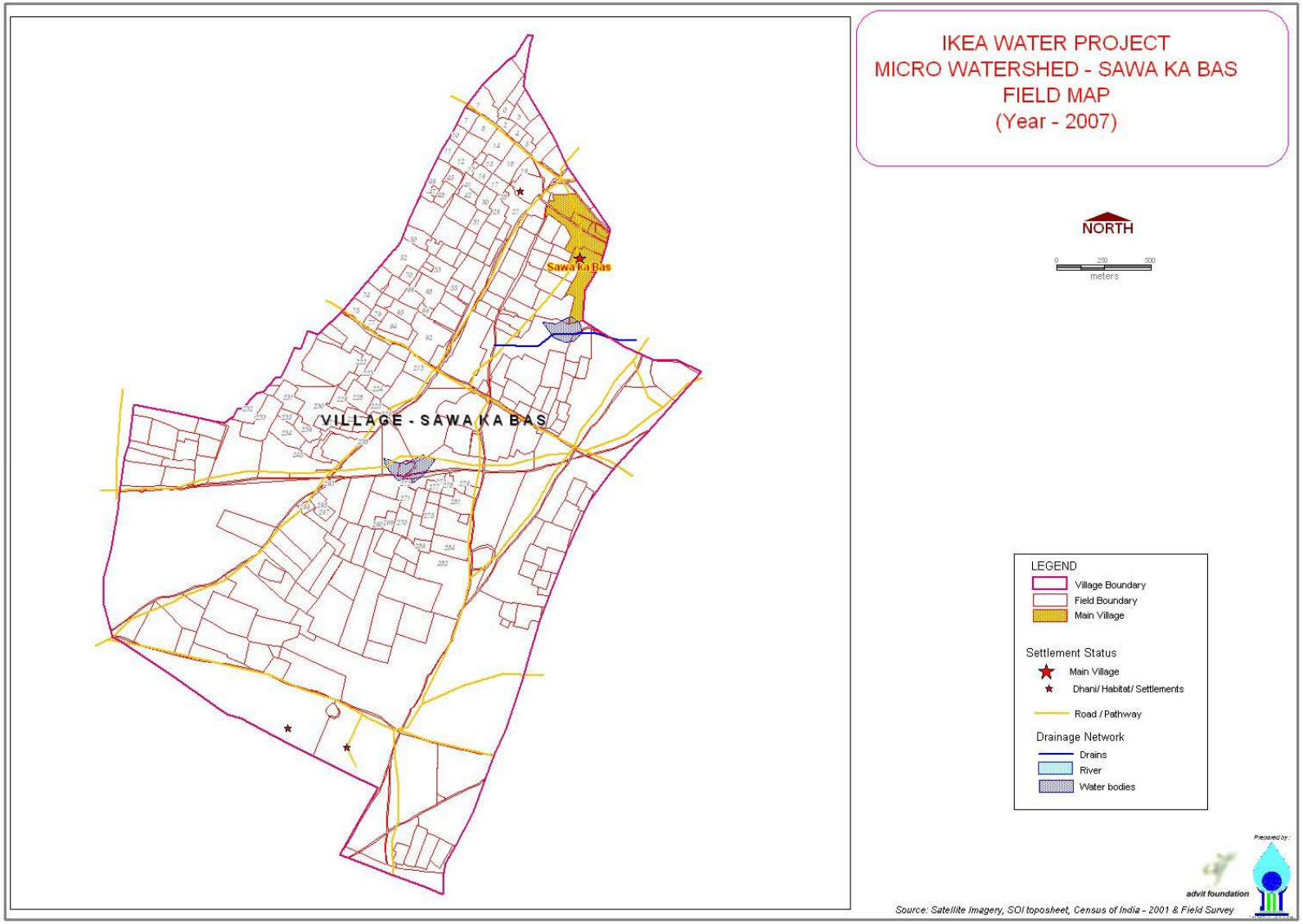
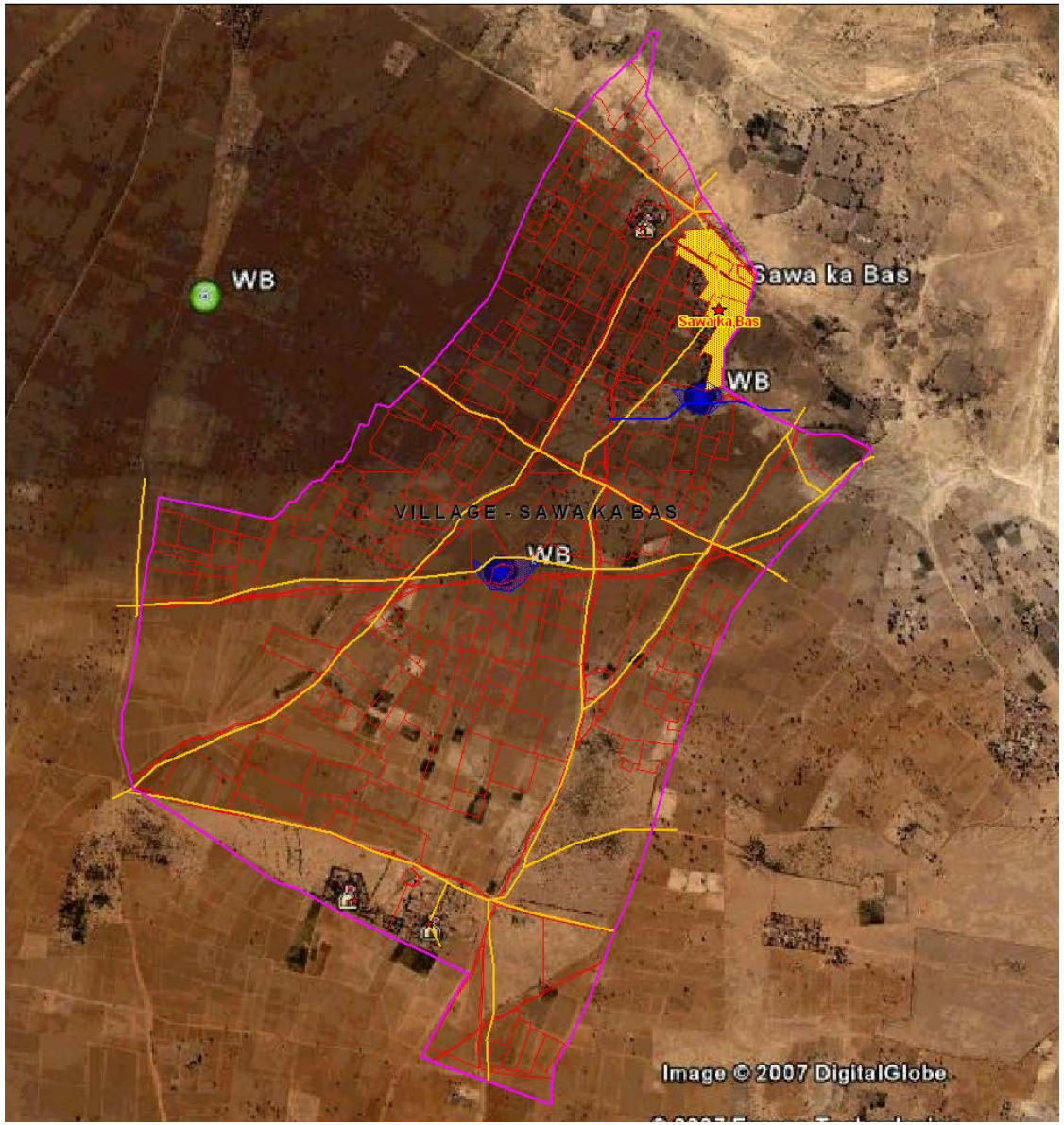

IKEA WATER PROJECT
MICRO WATERSHED - SAWA KA BAS
FIELD MAP
(Year - 2007)
NORTH
0
250
500
meters
Sawa Ka Bas
VILLAGE - SAWA KA BAS
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-4

IKEA WATER PROJECT
MICRO WATERSHED - SAWA KA BAS
Satellite Image MAP
(Year - 2007)



LEGEND
- Village Boundary
- Fields Boundary
- Main Village

Settlement Status
- Main Village
- Dhani
- Settlements
- Roads/ Pathway

Drainage Network
- Drains
- Bandi River
- Existing Pond/ Nadi

Figure No.-5

Source: Google Earth Year – 2007 and Field Survey

Water Resource Profile:

Physiography: The general ground profile is flat and having gentle slope towards north-east direction. The runoff water during rainfall period follows ground slope and drains in to Bandi River flowing at the north of the village. Figure No. 6 gives pictorial view of the ground profile by contours having half of the meter intervals through interpolation of spot level obtained from GT sheets generated by GIS based modeling software.

Drainage pattern: The drainage system of the Sawa Ka Bas follows south-west to north-eastern direction. There is no distinct natural drain visible in the area. The natural drainage system which existed in the past has been obstructed by agricultural fields and at most of the places it has been completely destroyed. In present condition at most of the places drainage system follows the path way/ village katcha-roads. Figure No. 6 a gives a clear view of the drainage pattern in village Sawa Ka Bas.

Water Sources:

The existing water resource status can be well represented by following table:

Water source	Status *(In numbers)*		
	Functional	Defunct	Total
Wells (Open Well)	30	4	34
Bore well	-	-	-
Hand pumps	5	1	6
Village Ponds	-	2	2

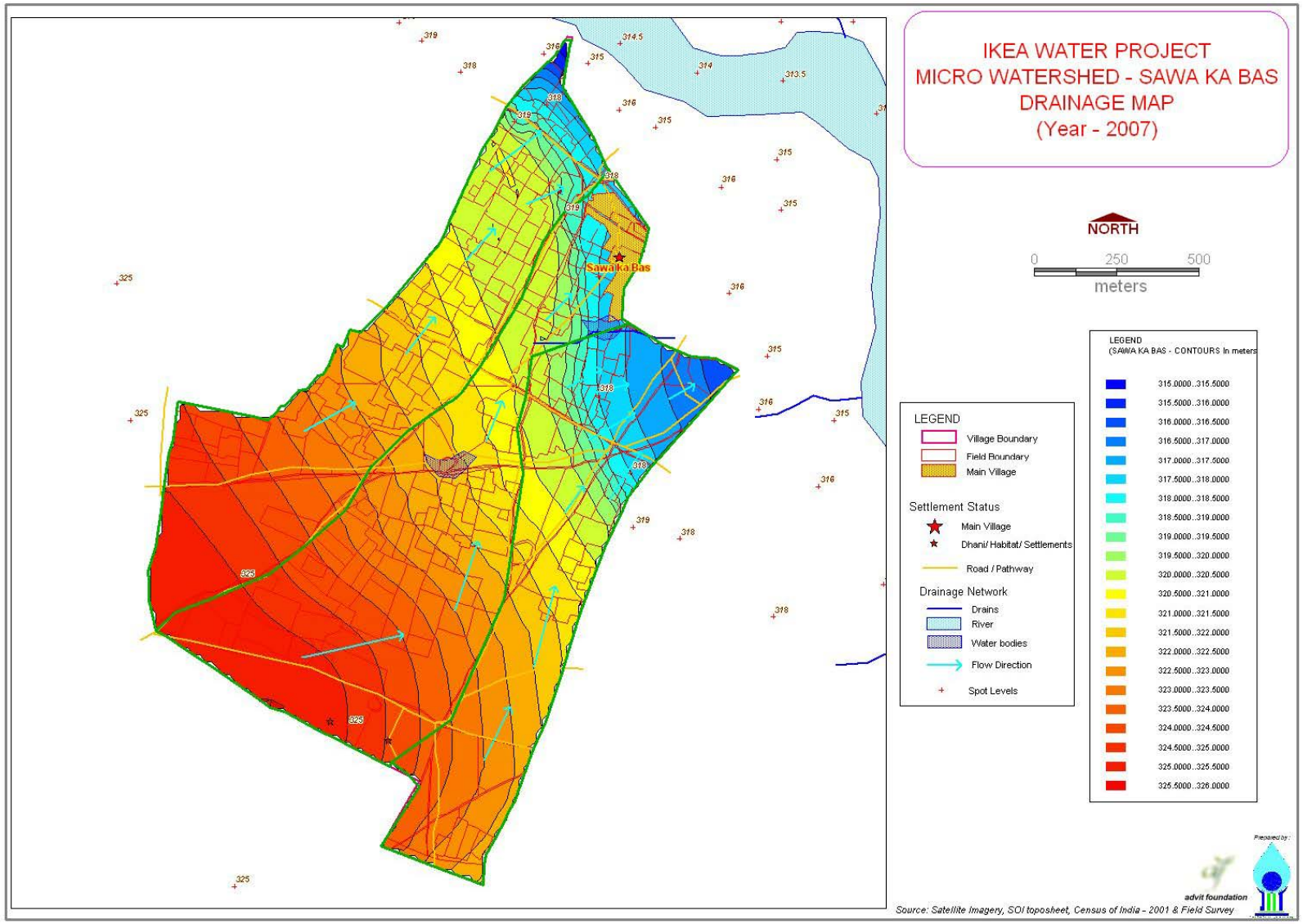
During the field survey following important points was observed:

- Most of the wells dry up in the summer season. Also the yield of groundwater has reduced considerably since last decades.
- The ground water is generally saline. The salinity increases with depth.
- Depth to water table varies from 20' to 50' depending upon its location.
- Rock formations are visible at depth varying from 5' to 505' from the ground level at different locations.

Drinking Water Sources: There is no dependable/ sustainable drinking water source installed by Public Health Engineering Department (PHED) in the village. The hand pumps installed in the village are functional but yield saline water. This water is used for secondary purposes other than drinking for both human and cattle population. Open wells near some depression and at village pond yield sweet water and the entire population draw drinking water from those sources. The numbers of such sources are limited and are not sufficient to cater entire drinking water need of the village population. In extreme summer period people have to bring drinking water from the alternate sources located at long distances.

Irrigation Water Sources: Out of total 34 wells about 30 are in functional state. The prime use of these well are for irrigation. These well yields lesser quantity as compared to past few years and that too is decreasing at faster rate. The total available quantity of water from these sources is not sufficient to meet the crop water requirement.

Geographical location of wells and hand pumps are represented in Figure No. 7 reflecting water sources status in village Sawa Ka Bas.


IKEA WATER PROJECT
MICRO WATERSHED - SAWA KA BAS
DRAINAGE MAP
(Year - 2007)
NORTH
0
250
500
meters
Sawa Ka Bas
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Flow Direction
Spot Levels
LEGEND
(SAWA KA BAS - CONTOURS In meters
315.0000..315.5000
315.5000..316.0000
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325.5000..326.0000
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-6

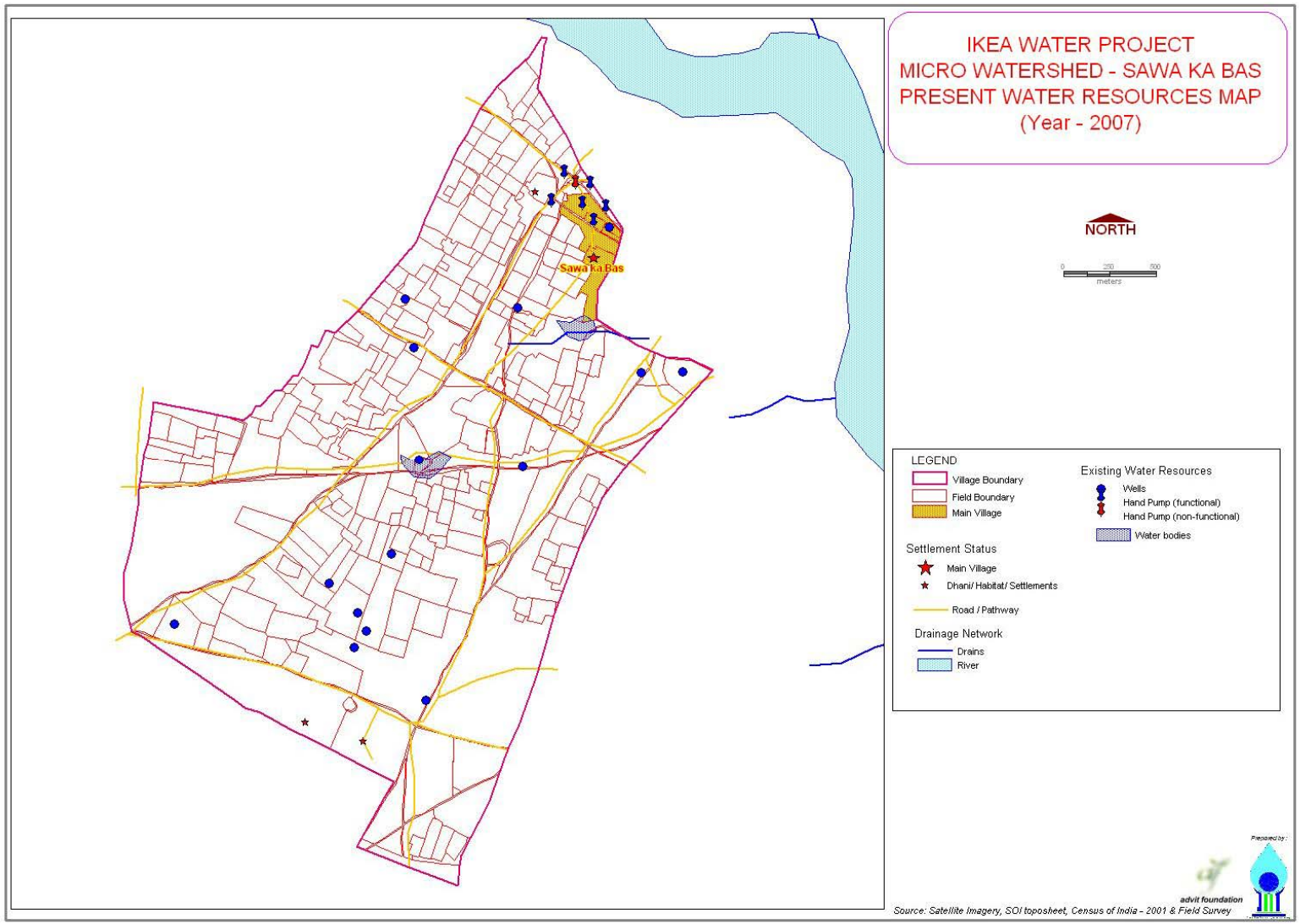
IKEA WATER PROJECT
MICRO WATERSHED - SAWA KA BAS
PRESENT WATER RESOURCES MAP
(Year - 2007)
NORTH
0 250 500
meters
Sawa Ka Bas
LEGEND
Village Boundary
Field Boundary
Main Village
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Existing Water Resources
Wells
Hand Pump (functional)
Hand Pump (non-functional)
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-7

Micro-Watershed Plan:

Micro Watershed: Based on the remote sensing data, GIS based analysis and field survey and measurements (Level survey) the boundaries of micro-watershed have been identified and demarcated and shown in figure no. 8.

As shown in the map the entire village area can be subdivided in to three micro-watersheds draining towards north direction. Watershed numbers and the geographical area in each watershed are given in following table:

Watershed	Geographical Area (In Hectares)
Watershed no.-1	154.3463
Watershed no.-2	202.3617
Watershed no.-3	24.292
Total	**381.00**

The watershed no.-1 and2 are big in coverage area and average field size inside its boundary having northern part more productive and higher intensity of irrigation facilities. The dark shed reflected in satellite imagery of year 2007 (figure no.-5) clearly indicate that agriculture practices are more intense in those patches.

Natural flows of runoff water from watershed have been obstructed by the field boundaries hence the water flows through the pathways used for its surface movement.

Proposed Activities: As identifying of water harvesting activities on watershed basis was the main objective of the project a set of activities have been discussed, verified and finalized in the presence of village community members in the form of RRA (Rapid Rural Appraisal). Also, these agreed activities are assured by the village community by giving full support in implementation and further maintenance. The location of the proposed activities in village Sawa Ka Bas are shown in figure no. – 9.

Following table gives detailed description of type of activities and its geographical location envisaged during the project study shared and recommended by the local village community of village Sawa Ka Bas:

S. No.	Activity	Sub – Activities	Micro Watershed	Suitable Field Location
1	**Moisture Conservation in the Field**	• Construction of cut and fill furrow bunds in the agricultural fields	• Micro-watershed No.-1	• **Cluster-1**: About 5000m field bunds spread over 50 Fields at south-west of the main village
			• Micro-watershed No.- 2	• **Cluster-2:** About 2500m field bunds spread over 50 Fields in south of the main village (Refer figure no.-9 for details)
2	**Drinking/ Irrigation water source**	• Construction of Nadi (village pond)	• Micro-watershed No.-1	• Field No.- 187 (About 1800m south of main village)
		• Construction of Rainwater Harvesting System	• Micro-watershed No.-2	• At Community (Panchayat) Building in main village
3	**Pasture Land Development & Horticulture**	• Land grading and bunding. • Plantation of suitable	• Micro-watershed No.- 2	• Field (Khasra) No.-298 – 301 At southern end of the village

		plant/ fruit plant. • Linking with government horticultural scheme.	• Micro-watershed No.- 3	• Field (Khasra) No.-183, 302-305 and 309 At southern end of the village (Government common Land)

Numbers/ quantities of proposed activities for village Bheempura are summarized in following table:

S. No.	Activities	Numbers/ Details
1	Roof Top Rainwater Harvesting System	1 No.'s
2	Nadi construction/ renovation	1 No.'s
3	Farm Field Bunding	7500 Meters
4	Pasture Land Development	35 Hectare

The location of the proposed activities are shown in figure no.- 9

Estimated Budget:

The cost of the activities proposed for micro watershed development are estimated and given on following table on unit cost basis.

S. No.	Activities	Numbers/ Details		Unit Cost (Rs.)	Amount (Rs)
1	Nadi construction/ renovation	1	No.'s	Lumpsum	**200000.00**
2	Rainwater Harvesting System (50000 lit capacity)	1	No.'s	4.00 Per liter	**200000.00**
3	Farm Field Bunding	7500	Meters	30.00 Per meter	**225000.00**
4	Pasture Land Development	35	Hectare	10000.00	**350000.00**
				GRAND TOTAL	**975000.00**

NOTE: The cost estimates have been prepared based on field measurements at proposed sites. Change in the site/ area would result in increase/ decrease in the estimated cost.

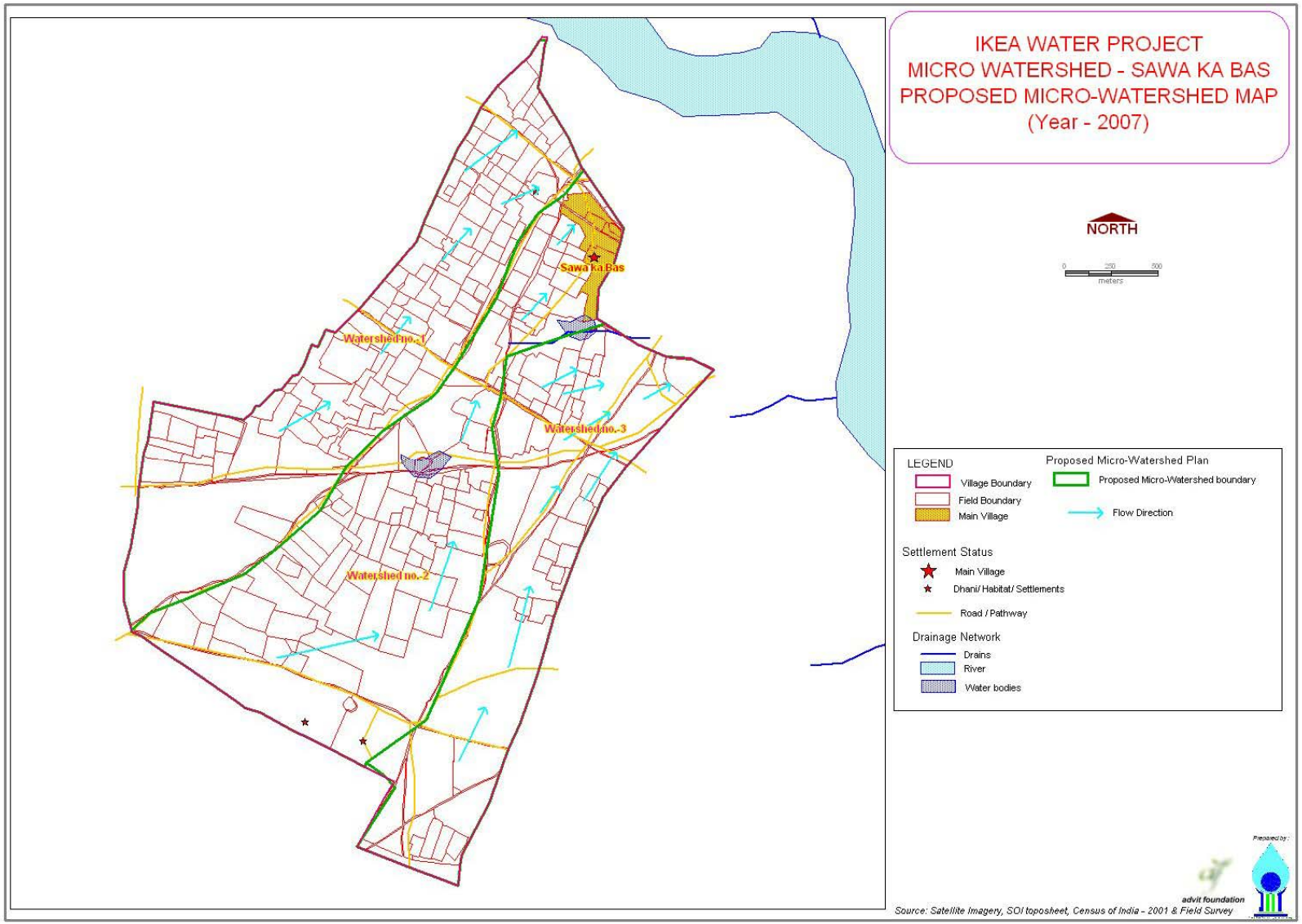
IKEA WATER PROJECT
MICRO WATERSHED - SAWA KA BAS
PROPOSED MICRO-WATERSHED MAP
(Year - 2007)
NORTH
0
250
500
meters
Sawa Ka Bas
Watershed no.-1
Watershed no.-2
Watershed no.-3
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Flow Direction
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Road / Pathway
Drainage Network
Drains
River
Water bodies
Prepared by :
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-8

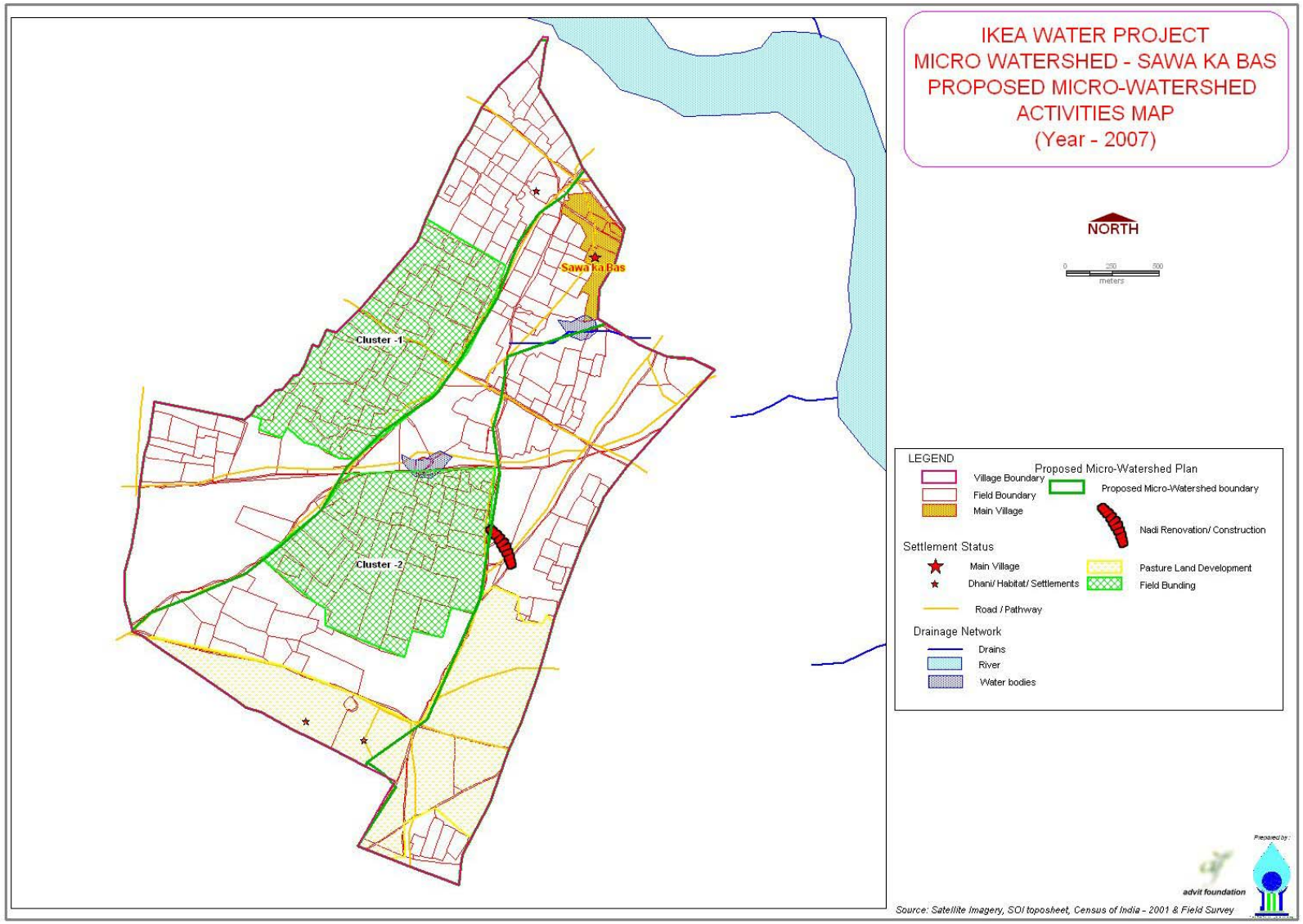
IKEA WATER PROJECT
MICRO WATERSHED - SAWA KA BAS
PROPOSED MICRO-WATERSHED
ACTIVITIES MAP
(Year - 2007)
NORTH
meters
Sawa ka Bas
Cluster -1
Cluster -2
LEGEND
Village Boundary
Field Boundary
Main Village
Proposed Micro-Watershed Plan
Proposed Micro-Watershed boundary
Nadi Renovation/ Construction
Settlement Status
Main Village
Dhani/ Habitat/ Settlements
Pasture Land Development
Field Bunding
Road / Pathway
Drainage Network
Drains
River
Water bodies
advit foundation
Source: Satellite Imagery, SOI toposheet, Census of India - 2001 & Field Survey

Figure No.-9