

GOVERNMENT OF RAJASTHAN

RURAL DEVELOPMENT & PANCHYATI RAJ DEPARTMENT

WATERSHED DEVELOPMENT & SOIL CONSERVATION DEPARTMENT

RAJASTHAN, JAIPUR

DETAILED PROJECT REPORT

NAME OF WASTRSHED :- **IWMP – 14**

MACRO :- **1**

MICRO :- **19 & 20**

PROJECT AREA :- **6265 Ha.**

TOTAL AMOUNT :- **751.80 LACS**

PANCHAYAT SAMITI :- **PHAGI**

DISTRICT :- **JAIPUR**

PROJECT IMPLEMENTING AGENCY

ASSISTANT ENGINEER

PANCHYAT SAMITI- PHAGI

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CHAPTER –I

1. INTRODUCTION :

Water is the basic requirement for every living life. The importance of water conservation in the country has been recognized since immemorial times. Over the years, watershed approach has conventionally been applied for the purpose of arresting rainwater runoff, its harvesting and in situ soil and moisture conservation in the country. The objective has essentially been achieved through development of waste and degraded lands under various Central and State Government Programmes. The Ministry of Rural Development is implementing special area development programmes for the purpose of water harvesting in drought prone, desert and rainfed areas. The Drought Prone Areas Programme and Desert Development Programme were started in 1973-74 and 1977-78 respectively. The Integrated Wastelands Development Programme was launched in 1989. On the basis of recommendations of the Hanumantha Rao Committee (1994), in the year 2003, the Ministry of Rural Development brought out the Guideline for Hariyali by suitably modifying the earlier guidelines. This brought the DDP, the DPAP and IWDP under a single umbrella. In the year 2000, the Ministry of Agriculture revised its guidelines for its programme, the National Watershed Development Project for Rainfed Areas (NWDPRA).

In order to assess the performance of various ongoing programmes of watershed development, series of evaluation studies were conducted by Indian Council of Agricultural Research, State Agriculture Universities, National Remote Sensing Agency etc. After series of evaluation studies and impact assessment studies, in coordination with the Planning Commission, in the year 2008, Common Guidelines for Watershed Development Projects was formulated in order to have a unified perspective by all Ministries. This Common Guideline is applicable to all Watershed Development Projects in all Departments/Ministry of Government of India concerned with Watershed Development Projects. These guidelines coupled with the flexibilities, would provide an enabling framework for the planning, design, management and implementation of all

watershed development projects in the country. All the watershed projects are being implemented in accordance with these Common Guidelines with effect from 1.4.2008. For interpretation of any of the provisions of these guidelines, the National Rainfed Area Authority (NRRA), which has been set up in November 2006, will be the final authority. The common Guidelines for watershed development projects are based on equity and gender sensitivity; decentralization; facilitating agencies; community participation; capacity building and technology inputs; monitoring evaluation and learning and organizational restructuring.

1.1 Sanction of IWMP project;

During the year 2010-11 under the centrally Sponsored Scheme Integrated Watershed Management Programme (IWMP) for implementation in accordance with the Common Guideline for Watershed Development Projects, 2008, the 6265 hect. Watershed Project IWMP-14 has been sanctioned in phagi Block of Jaipur District. The Administrative and Financial Sanction of the project has been issued by Rural Development & Panchayati Raj Department, Commissionerate, Watershed Development and Soil Conservation .

The phagi Block is distributed in 31 Gram Panchayat. The proposed watershed area is covered in 9 villages of 4 Gram Panchayats. The distance/vicinity of the watershed area from phagi panchayat Samiti Headquarter is 15-30 Km. The area includes the Plain area and soft rocks, in which rainwater flows in Nallas/Nadi. The water level is regularly decreasing due to increasing well/tube wells. Due to various significant problems, the area has been selected for integrated development.

As per the social survey and by interviewing the people of the area, shows that in the area water table is decreasing, land degradation due to soil erosion, increase in population, poor livestock productivity, fodder shortage and marketing opportunities. Therefore the area has been selected for integrated development with focus on integrated farming system for increasing productivity, livelihood and regular income in a regular way. As various researches conducted for rainfed areas shows that the efficient water management through soil and water conservation measures is the key sustainable development. The

integrated watershed approach i.e. conserving natural resources of water. Soil and vegetation has been accepted as major theme for development of rainfed areas.

The introduction of NREGA in the area various water harvesting structures specially Farm Ponds/Talai have been constructed. Looking to the plan of the NREGA the few new water harvesting structures has been proposed. In some places only spillways have been proposed. The main stress have been given on contour vegetative bunds with proper outlets/ waste weirs, pasture development, loose stone check dams, small earthen dunds, staggered box trenches in pasture areas and table land protection bunds. Also in watershed area diversion channels from higher areas towards farm ponds/talai have been proposed, where water is spread and stagnated in the field.

1.2 Institutional Arrangements ;

As per Common Guidelines for effective execution and management of watershed development appropriate institutional arrangements has been made at National, State and District levels for effective and professional management of watershed development projects.

The institutional arrangements at State, District and projects level are as follows:

- | | |
|---|---|
| a. State Level Nodal Agency (SLNA) | : At State level |
| b. Watershed cell cum Data centre (WCDC) : | To ensure coordination at district level, a WCDC have been constituted. Executive Engineer (Land Resources), Zila Parishad, Jaipur, (Rajasthan) |
| c. Project Implementing Agency (PIA) | : Assistant Engineer, Panchayat Samiti, Phagi , District Jaipur (Rajasthan) |

d. Watershed Development Team (WDT)

The WDT is an integral part of the PIA having at least four members, broadly with the knowledge and experience in Agriculture, Social Science, Water Management (Engineering) and Animal Husbandry/Live Stock. Following four WDT members have been selected at PIA level with open advertisement:

S.No.	Subject Specialist	Name	Qualification
1	Engineering	Sh. Sharad Sharma	B.Tech (ECE)
2	Agriculture	Sh.Govind Choudhary	M.Sc.(Agriculture)
3	Animal Husbandry	Sh. Avdesh Sharma	LSA(2 yrs Diploma)
4	Social Science	Smt. Nirmala jain	Sociology

e. User Groups:

As per guideline and directions given by SLNA, with the help of WDT members, for each gram Panchayat separate user groups have been formed for different works/activities. The homogeneous groups have been constituted, who may be most affected by each work/activity and shall include the persons having land holding within the watershed areas. Each UG's have been formed of the persons who are likely to derive direct benefits from particular watershed work or activity. The representation of each village has been considered in the formulation of groups. In each group a president has been elected. These groups have been constituted in Gram Sabha's. the programme of Gram Sabhas in different Gram Panchayats was been scheduled by Block Development officer, Panchayat Samiti, Phagi.

f. Self Help Groups :

In the Gram Panchayat the SHG groups have been constituted. The groups have been formed according to interest of their work. The homogeneous groups have been formed having common identity, which are dependent on the watershed area such as agricultural laborers, landless persons, women, scheduled caste/scheduled tribe's persons.

g. Watershed Committee:

In the Gram Sabha, after constitution of UG's and SHG's the watershed committee for each gram panchayat has been formed separately. The committee comprises of 10-13 members. In the committee all the presidents of user and self help groups, representation of SC/ST, land less persons and female representation have been considered. In the formation of committee it was also considered that the members of all the villages of Gram Panchayat are included, so that they can take care of work/need of their village After constitution of watershed committee the chairman/president and Secretary has been selected/ elected.

h. President and Secretary of Watershed Committee :

The each watershed committee has been registered under society registration act-1958. The gram Panchayat wise elected president and secretary are as follows:

S.N.	Gram Panchayat	Name Watershed Committee	President	Secretary	Account No.
1	Ladana	Ladana	Sh. Kalu Ran Choudhary	sh. Hazari lal Bairwa	31929694710
2	Jharla	Bhojpura	Smt.Geeta choudhary	sh. Rajesh kumar	31938152765
3	Madhorajpura	Madhorajpura	Smt.Anjana kumawat	Sh.Jagdish	31934594537
4	Bhakrota	Jharana	Sh.Ratan Lal Meena	Sh.Sah dev Meena	31923750126

1.3 Details of Bank Account :

For each water shed committee, the separate saving bank account has been opened with the name of Secretary and WDT member (Junior Engineer). One separate Watershed Development Fund (WDF) account has been opened for each committee. In the WDF Account no transaction will be done only the contribution received from beneficiaries will be deposited. The details of bank account are as follows :

S.No.	Name of W/S Committee	Saving A/C No.	Name of Bank
1.	Ladana	31929694710	S.B.I. PHAGI
2.	Bhojpura	31938152765	S.B.I. PHAGI
3.	Madhorajpura	31934594537	S.B.I. PHAGI
4.	Jharana	31923750126	S.B.I. PHAGI

CHAPTER –II

2.1. BASIC FEATURES :

The basic features of the sanctioned watershed project :

Name of the project	:	Jaipur –IWMP –14
Local Name of Project	:	Madhorajpura
Macro/ Micro No	:	1/19,20
Project Area	:	6265 hact.
Cost of project	:	751.80 lac.
Cost per hectares	:	Rs. 12000
Year of Sanction	:	2010-11
No. Gram Panchayat	:	4
No. of villages in Project area	:	9
Elevation	:	108 m
Major Streams	:	Badi river
Slope of project area	:	0-10%

2.1.1. Present Land use :

The village wise land use of project area with net sown area is shown in **Table 1**.
Village wise details of irrigated, unirrigated, wasteland, pasture land shown in **Table 3**.
Village wise government and private land of project area is shown in **Table 4**.

2.1.2. Livestock Status:

The status of livestock i.e. Cow, Buffalo, Sheep, Camel, Hen in the area is as follows:

S.N.	Name of Village	Cow		Buffalo	Goat	Sheep	Camel	Bull	Pig
		Indi.	Hybird						
1.	G.P. LADANA								
1.	Ladana	140	07	386	407	412	-	02	-
2	Kagya	92	3	82	356	210	-	1	-
2.	G.P. JHARLA								
1.	Bhojpura	106	25	498	490	500	04	03	30
2.	Datuli	103	10	163	180	195	-	-	-
3	Jhadla	105	3	52	140	278	-	-	-
3.	G.P. MADHORAJPURA								
1.	Madhorajpura	107	15	285	185	360	02	-	12
4.	G.P. BHAKNROTA								
1.	Jharana	95	05	498	228	476	-	-	22
2.	Jhonpuriya	103	14	259	345	454	-	01	-
3.	Jharana Khurd	169	15	348	450	660	03	01	-

2.1.3. Existing Horticulture and Fodder Availability:

In the proposed watershed area the horticulture and quantity are not available to some extent. The village wise existing area under horticulture and fodder is as follow :

S.N.	Name of Village	Existing Area under Horticulture		Existing Area under Fodder
		Vegetable	Orchard	
1.	G.P LADANA			
1.	Ladana	85	02	15
2	Kagaya	23	20	12
2.	G.P. JHARLA			

1.	Bhojpura	42	0.50	10
2.	Datuli	2.50	2.0	18
3	Jhadla	-	-	6
3.	G.P. MADHORAJPURA			
1.	Madhorajpura	40	26	12
4.	G.P. BHANKROTA			
1.	Jharana	1.5	2.5	10
2.	Jhonpuriya	1.0	1.5	15
3.	Jharana Khurd	3.50	1.50	0.50

2.1.4. Existing Fodder Availability and Requirement:

The per day dry and green fodder requirement of different animals are as follows:

S.No.	Animal	Average Fodder Requirement per day (Kg.)	
		Dry Fodder	Green Fodder
1.	Buffalo	9	8
2.	Cow (Indi.)	5	6
3.	Cow (Hybrid)	6	8
4	Goat	1	4
5.	Sheep	4	1
6.	Camel	15	8

The per year requirement of green and dry fodder for different available livestock are as follows:

S.No.	Animal	No.	Per day requirement (Kg)		Per Year requirement (Kg)	
			Dry Fodder	Green Fodder	Dry Fodder	Green Fodder
1.	Buffalo	2571	23139	20568	8445735	7507320
2.	Cow (Indi.)	1074	5370	6444	1960050	2352060
3.	Cow	97	582	736	212430	268640

	(Hybrid)					
4	Goat	2781	2781	11124	1015065	4060260
5.	Sheep	3545	14180	3545	5175700	1293925
6	Camel	9	135	72	49275	26280
Total		10077	46187	42489	16858255	15508485

In the project area about 80 percent of the required fodder is produced. The cultivator has to bring 20 % of the fodder from outside. The cultivators bring only dry fodder from other area. The green fodder gives about 30 percent of dry matter. So to calculate the net quantity of fodder requirement, 30 % of green fodder has been added to dry fodder. The total requirement, production and purchase quantity of fodder after converting green fodder into dry fodder for one year are as follows:

S.No.	Calculation of Requirement of Dry Fodder for one year after converting Green Fodder into Dry Fodder		
	Total Production of Dry Fodder (Kg)	Total Requirement (Kg)	Quantity Required to be purchased (Kg)
1.	16858255	21510800	4302160

Therefore, in the project area about 4302 Ton of dry matter has to be purchased from outside the project area.

2.1.5. Milk Production:

The average Milk Production of different animals in the project area is:

Cow	:	2 kg per Cow
Buffalo	:	3 Kg per Buffalo
Goat	:	1.5 Kg per Goat

2.1.5. Demography :

As per census record 2002, the village wise House Hold, Population and other details are presented in **Table 5**. The Total population of the project area is 12410. The Total Household in the area is 2863.

Survey conducted in the year 2002 and subsequent orders issued by Sub Divisional Officer, Phagi/ Zila Parishad, Jaipur in the project area the village wise BPL are as follows:

S. No.	Gram Panchayat/ Village	No. of BPL
1.	G.P. LADANA	
1.	Ladana	55
2	Kagaya	12
2.	G.P. JHARLA	
1.	Bhojpura	21
2.	Datuli	04
3	Jhadla	11
3.	G.P. MADHORAJPURA	
1.	Madhorajpura	120
4.	G.P. BHANKROTA	
1.	Jharana	31
2.	Jhonpuriya	02
3.	Jharana Khurd	20

2.1.6 Infrastructure Facilities Available

The Details of infrastructures in the project area are as follows:

S.No.	Parameters	Status
-------	------------	--------

1.	No. of villages connected to the main road	All the 8 villages of project area is connected to main road. The nearest railway station is Phagi, which about 40 Km.			
2.	No. of villages provided with electricity are provided with	All village are provided with electricity.			
3.	Nof educational Institutions	Primary 8	Secondary 01	Hr.Sec. 00	Voc.Inst. 03
4.	No. of villages with access to primary health Center	4[Ladana, Bhojpura, Madhorajpura, Bhakrota]			
5	No. of villages with access Veterinary Dispensary	In four villages Veterinary Dispensary is available			
6	No. of villages with access to Post office	All the villages are covered with PO. Main post office is at Phagi			
7	No. of villages with access to Market /Mandis.	All the villages are covered with market /mandis. The main is at phagi.			
8	No. of villages with access to Anganwadi Centres	8 villages have Anganwadi Centres.			
9	Nearest KVK	Durgapura, Jaipur			
10.	No. of villages with access to Agro Industry	-			
11	Total Quantity of Surplus Milk	-			
12	No. of Milk Collection Centers	-			
13	Cooperative Society	-			
14	NGO's	-			

15	Credit Institutions	Phagi : SBBJ, Gramin Bank madhorajpura : BOI
16	IT Center	In near future all the Gram Panchayat Would have IT Center (NREGA scheme)

2.1.7 NREGS Status:

In NREGS scheme various activities like Farm ponds/Talai, Anicuts and Gravel/earthen roads have been taken so far. As per demand by the card holders they are engaged on the work. In the project area, Gram panchayat wise details of number of card holder are as follows:

S. No.	Gram Panchayat	Village	No. of Card Holders
1.	MADHORAJPURA	Madhorajpura	1038
2.	JHARLA	Bhojpura	178
		Datuli	188
		Jharla	265
3.	LADANA	Ladana	258
		Kagaya	144
4.	BHANKROTA	Jharana	242
		Jhonpuriya	86
		Jharana Khurd	90

2.1.8 Land Holding Details :

The land holding details i.e. irrigated and rainfed for large, small and marginal farmers is enclosed at Table 6..

2.1.9. Other Development Schemes in the Project Area :

The Mahatma Gandhi National Rural Employment Guarantee Act is the main scheme which is being implemented in the project area.

2.2. Technical Features :

The various technical features of the area are as follows:

2.2.1. Collection of Revenue Record :

For all the villages of the project area the revenue map and details of cultivators/ revenue record/ Jamabandi have been from revenue department.

2.2.2. Maps of the Area

The Natural Resource Management component requires scientific and technical data. As per Common Guidelines -2008, the detailed project report is to be prepared with complete GIS and Remote Sensing application. Therefore, in the context the PDCORE has been directed by department to prepare the various thematic layers i.e. present land use, land cover, topographical details, slope groups, ground water status, contour drainage line, macro boundary of the project area on 1:10,000 scale. The PDCORE has submitted all the above required maps

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2.2.3. Slope Details of Area:

The proposed area includes hills. The area in various slope groups of the proposed water shed area is as follows:

S.No.	Slope Percentage	Area in hectares
1.	0 to 3 %	6127
2.	3 to 8 %	126
3.	8 to 25 %	10
4	> 25 %	2

2.2.4. Water Budgeting:

To propose the total number of water harvesting structures, it is necessary to do water budgeting of the area i.e. how much total run-off is available, out of which how much is being already stored in existing structures and how much balance is available for storage.

In the proposed area, the various water harvesting structures have been constructed. The surface runoff has been stored in the structures. In the area about 18 structures have been constructed..

For water budgeting the area is calculated and divided in following three groups:

Good Catchment : Where runoff is maximum and infiltration is minimum like hillocks, plateau etc

Average Catchment : Cultivated land, forest land with vegetation

Bad Catchment : Where runoff is minimum and infiltration is maximum e.g. sandy soil

For estimation/water budgeting the proposed water shed area has been divided as follows:

Good Catchment : 2800 ha

Average Catchment : 2200 ha

Bad Catchment : ; 1265 ha

Average Annual Rainfall for the block is 546 mm (21.49 inch)

By interpolation method the proportion of estimated runoff of 21.89 inch rainfall have been calculated from Strange's Table as follows:

Monsoon Rainfall in inches	Yield of Runoff from Catchment (MCft/sq. mile)		
	Good Catchment	Average Catchment	Bad Catchment
20 inch	7.855	5.891	3.927
21 inch	8.842	6.631	4.421

For inch	0.987	0.740	0.494
For 0.49 inch	0.88	0.66	0.44
For 21.499 inch	8.735	6.551	4.367

Note : 1 MCft/sq. mile = $1000000 * 0.0283/258.99 = 109.271$ cum /ha
(1 Cft = 0.0283 cu m, 1 sq. mile = 258.99 ha)

A. Calculation of Expected Yield

Type of Water Shed	Area of Water Shed (ha)	Factor	Expected Yield (cu m)
Good	2800	$8.735 * 109.271 = 954.482$	2672549.6
Average	2200	$6.551 * 109.271 = 715.834$	1574834.8
Bad	1265	$4.367 * 109.271 = 477.187$	603641.5
Total (A)			4851025.9

B. Present Storage By Existing Structure

S.No.	Name of Structure	No	Storage Capacity (cum)
1.	Talai	14	273000
2.	Anicut	4	78000
Total (B)			351000

$$\begin{aligned} \text{Balance Runoff (C)} &= \text{Expected Yield} - \text{Present Storage} \\ C &= 4851025.90 - 351000 = 4500025.9 \text{ cu m} \end{aligned}$$

Proposed New Structures:

S.No.	Name of Structure	No./length	Storage Capacity (cum)
1.	Water harvesting Structure	73 no.	95812.5.
Total			95812.5.

For one WHS

$$\text{Average Capacity} = \frac{1}{2} * 1.50 * 70 * 25 = 1312.50 \text{ cum}$$

$$\% \text{ storage} = 9.21\%$$

2.2.3. Soil Profile and Soil Fertility Status :

The major soil classes of the area are sandy loam and loam. The project area in the major soil classes are as follows :

S.No.	Major Soil Classes	Area in hectares
1.	Sandy Loam	4320
2.	Loam	1945

The average soil fertility status i.e. N,P,K, Micronutrients in the watershed project area are :

N	50-70 Kg/ha
P	20-30 Kg/ha
K	10-15 Kg/ha
Micro Nutrients	PPM 100-500

2.2.4. Climatic Details :

The Agro climatic Zone of proposed watershed area is III A. The average annual rainfall of the phagi block is 487 mm. The Year Wise Annual Rainfall for the last 10 yr is as follows :

Year wise annual rainfall in mm										
2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 (up to sept)
686	235.2	196.2	176.2	310.4	834.4	359	429	568	347	-

The average annual rainfall of the block is 487 mm. The average monthly rainfall of the block is as follows:

S.No.	Month	Rainfall(mm)
1.	June	65.07 mm
2.	July	110.72 mm
3.	August	97.37 mm
4.	September	51.63 mm

The maximum and minimum temperature of the block is as follows :

S.No.	Season	Maximum	Minimum
1.	Summer	47	32
2.	Winter	30	12
3.	Rainy	42	27

2.3. Problems, Demand and Scope for development :

2.3.1. Natural Resource Management :

While socially surveying the area, it was realized that various water harvesting structures mostly talai's have been constructed in the area for storing the water. But due to non availability of outlets/ waste weirs the water was released by cutting the banks. The main problem of the area is availability of stored water. For further development, it has been planned that all the structures will be provided with waste weirs, so that the water can be stored up to the design level without any fear. At the present time no new talai/ tanks have been proposed.

During the rainy season it was found that the rain water from the higher areas flows down and spread in the lower area and damaging the fields. As per need and suggestions given by the beneficiaries/ public representative, the diversion channels have been proposed to convey water to nearby tanks. This will certainly solve the problems of the area and sufficient water will also be stored for live stock will help in recharging the nearby wells.

The agriculture land of the area is affected by sheet erosion and forming the rills/ gullies. The problem can be solved by bunding the fields. Therefore to protect the land, the main thrust is given on contour bunding with proper outlets.

2.3.2. Agriculture and Horticulture Productivity :

In the watershed area the production of Agriculture and Horticulture Plants are not to that extent due to lack of improved variety and techniques. The production will be increased by introduction of new varieties of different crop. The existing horticulture area is shown above.

2.3.3. Live Stock –gap of fodder Availability :

The existing fodder area in the villages of proposed area is shown above. The availability of fodder in the proposed watershed area is less. To meet the requirement, the farmers of the area have to purchase from other places. The fodder area has to be increased to reduce the demand.

2.3.4. Livelihood and Micro enterprises :

The people of the area are dependent on Agriculture. In the proposed area the landless families are fully dependent on work. After introduction of NREGA, these families are getting job in the area. But it is not to the extent to increase the livelihood. For development of their livelihood, the various meetings were organized to know their interest and skills. According to social survey conducted in different villages of the project area, different individual and group works/ activities like Ara Tari, Masala Udhyog, Tomato Sauce Preparation, Carpentry, Mobile Repairing.

CHAPTER – III

3.1 Preparatory phase activities :

The main objective of the preparatory phase is to create appropriate mechanism for adoption of participatory approach with the help of watershed development team. To establish the credibility of WDT team and to create a rapport with the villagers the entry point activities have been executed.

3.1.1. Entry point Activities :

To find the urgent need of the local communities, the Gram Sabhas have been conducted at each Gram Panchayat. So that different works could be identified according to their need. The main theme of Entry Point Activities is to establish credibility of the Watershed Development Team and create a rapport with the village community. After identifying the different works in Gram Sabhas, the following works were executed:

S.No	Gram Panchayat	Details of works		
		Name of works		Quantity
I.	Ladana	1.	Solar light	12
		2.	Hand Pump	4
		3	Kheli	3
		4	Boundary Wall	1
II.	Madhorajpura	1	Solar light	5
		2	Hand Pump	5
		3	Pipeline	1
III.	Jharla	1	Solar light	14
		2	Hand Pump	6
		3	Kheli	1
		4	Kheli Kota	1
IV	Bhakrota	1	Solar light	3

		2	Hand pump	4
		3	Kheli Kota	3

3.1.2. Capacity Building :

Capacity building is an important aspect for the successful implementation of watershed development programmes. The relevant training programme will be organized for all the functionaries involved in water shed development. It will be ensured at every level that a majority of the members of SHGs/UGs would be given basic training involving skill up gradation and orientation on the technical on the technical and organizational aspects.. Besides training on application on Remote Sensing Technology for generating database for watershed development will be included in the training programme. It has been finalized that the training will be organized by WDT members with the help of local officials of the technical departments. SHGs&UGs would also be taken for visits to Research Stations, demonstration of successful technologies that are relevant to them.

For participatory approach, water shed committee, user groups and self help groups have been formed at each gram panchayat level. During the phase, the watershed development team (4 members) which is also constituted and engaged in the project earlier will facilitate. The capacity building of these different stakeholders on institutional and work related aspects are important part of the project.

3.1.3. PRA Exercise:

Participatory Rural Appraisal (PRA) is one of the most important exercises in Watershed Development projects before preparation pf Action Plan.. For the preparation of detailed project report Participatory Rural Appraisal exercise is very important part. The village wise PRA have been conducted with the help of WDT member For village separate maps have been prepared, showing all special features such as nallas, pasture land, roads, dhani's etc. The works have been identified according to beneficiaries need. The proposed works have been marked on these maps.

3.2. Natural Resource Management (NRM)

With the help of WDT, on the basis of the information generated from the bench mark survey of the watershed area and detailed PRA exercise, the detailed watershed development plan for each Gram Panchayat have been prepared. Watershed treatment/development plan have been prepared for all the arable and non arable land including degraded lands, government and community lands and private lands.

3.2.1. Conservation measures for arable lands :

The main problem of the area is the low and erratic rainfall. The conservation measures meant to reduce or prevent sheet erosion. The important principles to be kept in view while planning measures for proper conservation of water are increasing the time of concentration and thereby allowing more runoff water to be absorbed, intercepting the long slope into short ones and protection against damage and to excessive runoff. Bunding is the most effective and widely practiced field measures for controlling or preventing erosion. In broader way it can be defined as series of mechanical barriers to reduce the slope percentage. Different types of bunds are contour bund, side bunds, lateral bund, and graded bunds.

a. Contour Bund: Contour bunds are constructed along the contours. For the area having slope less than 6 percent and flatter lands with scanty /erratic rainfall contour bund is practiced to intercept the runoff by embankment whose ends may be closed or open to conserve moisture as well as to reduce the soil erosion. AS per past experience the contour bund can be adopted on all types of relatively permeable soils except the clayey or deep black cotton soils. The main criterion for spacing of bunds is to intercept the water before it reaches the erosive velocity. The most important factor of it is slope, cropping pattern, soil and conservation practice adopted. While planning of contour bund few things, which should be considered are: area is bifurcated according to slope, if distance between two bund is more than additional bund should be provided in between

them, lateral bunds/ hooking should be extended up to the submerged length at both ends and vertical interval may be adjusted according to field boundaries.

- Side bund: bunds constructed at extreme ends of the contour bund, which are running along the slope and up to the submerged length.
- Lateral bund : bund constructed along the slope in between two side bunds, to prevent concentration of water along one side and to break the length of contour bund.

b. Waste weirs: In order to protect the contour bund from breaching and the standing crop from damage, masonry outlet structures which can drain away excess water, are constructed. The proper outlet/ waste weirs are provided in the contour bunds alternate, to avoid gully formation and also to increase the travel path. Generally waste weirs are constructed at depressions with the crest of their body walls constructed at 0.3 m above the contour.

c. Graded bunds : Graded bunds are constructed to guide water towards nallas. These bunds are constructed along longitudinal grade. These bunds primarily act drainage channels for inducing and regulating the excess runoff water and draining with non erosive velocity.

d. Gully control structure : In arable lands, where small rills/ gullies have been formed, then the earthen bunds are constructed at regular intervals.

3.2.2. Conservation measures for non arable lands:

The area which is unsuited to cultivation for agricultural crops and limits their use largely to pasture, forest requires the conservation measures. These waste lands have a great potential for producing fodder, fuel, fiber etc. To protect these lands from further degradation suitable soil and water conservation measures supplemented with proper afforestation is required.

a. Contour trenches: Contour trenches are excavated along a uniform level across of the slope of the land. Bunds are constructed downstream along the trenches with material taken out of them. The main objective is to create more favorable moisture condition. The contour trenches break the velocity of runoff. Plants are put in the trench along the berm.

b. Staggered trenches: Staggered trenching is excavated trenching of shorter lengths in a row along the contour with interspace between them. In the alternate row, the trenches will be located directly below one another. The length of the staggered contour trenches will be 3 to 3.65 m with interspaces between them in the same row of about 2.4 to 3 m. The trapezoidal trenches of 0.3 to 0.45 m bottom width and 0.5:1 side slope have been proposed.

c. Ditch cum bund: In the watershed area, the available pasture land will be protected by ditch cum bund. From the excavate soil of the trench the bund will be prepared inside the area along the trench, so that the animals cannot step up from the trench and enter the area. From the point of view of cost and theft, the barbed wire fencing and stone fencing is avoided.

d. Pasture development : To mitigate the fodder requirement, in every gram panchayat of the project area, at least one pasture development is proposed. The encroachment is the main problem of pasture development. The pasture land will be developed by fencing the area by ditch cum bund, constructing the staggered trenches across the slope, gully control structures (loose stone check dam, earthen bunds), construction of small talai/ponds, planting of different plants and grasses in between staggered trenches. The development of grasses ultimately reflected in the runoff and soil loss. The grass development action comprises of direct dispersion, interception, energy dissipation and evaporation of falling rain drops.

3.2.3. Drainage line treatment :

The drainage line treatment is very important part of the project.

a. Gully control structures : Gully control structures consist of constructing bunds of suitable dimension across the nala or gullies to hold the runoff water. Depending upon the slope of the gully, these bunds are constructed in the series. The main thumb rule is the bottom of the structure should coincide with the top of the downstream one. The temporary storage of runoff against these bunds carries deposition of silt and water is

drained off in a controlled manner. The impounding of water facilitates the percolation of water, which otherwise will flow with intense velocity. The water released from the bunds will be free from silt and velocity to erode. Before it can acquire erosive velocity, it will meet the next bund below in the catchment.

b. Concrete and masonry check Dam: In some places where vegetative measures and simple practice alone are inadequate to handle the concentration of water, permanent masonry structures are provided. In the project area with the loose stone check dam these permanent masonry gully control structures will be provided.

c. Bank stabilization : The bank stabilization is very important part of controlling the gullies. The water from the side area/ gully from widening and protecting the side land converting into the gullies, the marginal bund will be made on each side of the nalla. The loose stone check dam and masonry structures will be constructed at proper places for safe disposal of surplus water. In some places of the side of nalla, loose stone pitching have been provided to protect the sides from scouring.

d. Water harvesting structures Anicuts/Tanks: With the introduction of NREGA, the ponds/ talai's have been constructed. Therefore small thrust has been given on construction of ponds. The village wise position of existing anicut and Talai are as follows:

S. No.	Gram Panchayat/ Village	Anicut	Talai
1.	G.P. Ladana		
1.	Ladana	1	3
2	Kagaya	1	1
2.	G.P Jharla		
1.	Bhojpura		3
2.	Datuli	1	3
3.	Jhadla		
3.	G.P. Madhorajpura		

1.	Madhorajpura	1	2
4.	G.P. Bhakrota		
1.	Jharana		1
2.	Jhonpuriya		1
3.	Jharana Khurd		

3.3. Production System and Micro Enterprises :

3.3.1. Production measures for arable :

To get the more benefit from agriculture crop, it is very important to decrease the cost of cultivation and increase the production. To decrease the cost of cultivation, it is necessary to use complete available land for cultivation, use of latest implements so that time and cost is reduced. Good agriculture management by taking more than one crop in a year can also increase the production. Optimum quantity of fertilizer, insecticides and pesticides should be used. The reduction of chemical fertilizer will also increase the production.

For increasing production of crop, water management also plays an important role. The water should be used according to its quality and also crop should be irrigated according to need/ requirement. The various activities proposed are :

- a. **Crop Demonstration:** Crop Demonstrations are very important to show the quantitative and qualitative difference between traditional and improved practices. The demonstration is also important to motivate the farmers to adopt improved agriculture practices. Crop Demonstrations are layout for adoption of full package of technology practices in rural areas. The demonstration are proposed to be organized for 0.4 hectare to farmers field which have adequate irrigation facilities and take interest to show all technology practices recommended by Agriculture Department. In Kharif season demonstration for Guar, Bajra and in Rabi season demonstration for wheat, Barley and Mustard have been proposed. The crop demonstration will be organized as per consultation with Agriculture Department.

- b. Vegetables Seeds Minikit Distribution:** Minikits of newly released varieties of vegetables will be distributed to the beneficiaries of the project area.
- c. Horticulture Activities:** As per demand of the beneficiaries, the various horticulture plants will be provided/distributed after ensuring the availability of water and suitable and recommended for the area.
- d. Organic Farming System:** The organic farming is very important to maintain the fertilizer requirement of the crops. In organic farming decomposed agriculture waste, cow dung and vermi compost is used in place of chemical fertilizer. The organic manure is cheaper, locally available and without any side effect.

Organic farming does not mean going 'back' to traditional methods. Many of the farming methods used in the past are still useful today. Organic farming takes the best of these and combines them with modern scientific knowledge.

This organic farming involves using techniques to achieve good crop yields without harming the natural environment or the people who live and work in it. The methods and materials that organic farmers use to keep and build good soil structure and fertility are recycled and composted crop wastes and animal manures; soil cultivation at the right time; crop rotation; green manures and legumes; mulching on the soil surface. To control pests, diseases and weeds organic farmer uses careful planning and crop choice; the use of resistant crops; good cultivation practice; using natural pesticides. The organic farming also involves careful use of water resources and good animal husbandary.

Organic farming provides long-term benefits to people and the environment. Organic farming aims to increase long-term soil fertility; control pests and diseases without harming the environment; ensure that water stays clean and safe; use existing resources of the farmer already has, so the farmer needs less money to buy farm inputs.

In the project area cultivators will be selected who are interested in the organic farming. Through intensive training programme, the cultivators will be trained. The demonstrations will be laid on their field.

- e. Animal Husbandry Activities:** For regular checking of the animals the two camps in a year will be organized at Gram Panchayat level with the consultation of Animal Husbandry Department. Therefore in the project area (4 Gram Panchayat) 40 camps will be organized during the project period. As per direction/office order, the cost of one camp for 5000 ha is Rs. 24000.. As per need good breed of bull will be purchased for improvement of the breed.

3.3.2. Production measures for non arable lands :

The pasture land will be developed by fencing the area by ditch cum bund (DCB) and constructing the staggered trenches. In between the trenches grasses will be grown and on down stream side of the trenches the forestry/fuel plants are grown. Along the bund of ditch the forestry plants will be grown. In the area various plants like Khejdi, Ardoo, Desi Babool, Neem, Shessam etc will be grown.

The fuel plants on the bunds of the private lands are also grown with the consultation of the owner, so that cultivators can also get the fuel for his use. Similarly on the bunds suitable forestry plants like Khejdi, Ardoo, Desi Babool, Neem, Shessam will also be grown to meet the fuel and fodder requirement of the farmer, so the beneficiaries can fulfill the fuel and fodder requirement.

3.3.3. Production Plan for Arable and Non Arable Lands:

The Guideline issued for implementation of watershed projects support to production/farming system based livelihood activities and enterprises. As per directions issued by the department 10 percent of the total cost of the project has been assigned to support the production system and microenterprises for land owning households. The main aim is to increase the production and productivity of agriculture crops.

As per directions the individual land holder can avail the benefits of production system on their private land. The small and marginal farming household, women headed farming holders, SC & ST farmers will be given priority. As per guideline the contribution of farmers will be 20 % for general categories and 10 % for SC and ST beneficiaries. Therefore the maximum farmers contribution for general categories will be Rs. 4800 and for SC & ST beneficiaries will be Rs. 2400. The cost of farming/production system activity will be to a maximum limit of an amount equal to double of the unit cost of the project. The project fund will meet the cost of farming/production system activities.

The cost of the IWMP-XIV/2010-11 having area of 6265 ha is 751.8 lacs. Therefore the production plan have been proposed for Rs. 75.18 lacs as follows:

Production plan : (10% of sanction amount)

S. No	Activity	Unit	Rate	Phy. Target	Amount (Rs.)
A.	Demonstration				
	· Kharif	No.	1554	1500	2020200
	· Rabi	No.	2590	1200	3108000
B.	Horticulture Activities				
	· Anwala	Ha.	16300	8	130400
	· Guava	Ha.	28000	4	112000
	· Ber	Ha.	28000	6	168000
	· Nimbu	Ha.	28000	4	112000
C.	Vegetable Minikit	No.	300	200	60000
D.	Organic Farming	LS			418900
E.	Agro Factory	Ha.	7300	45	328500
	Sub Total				6458000
F.	Live Stock Activities				
	· Animal Health Camps	No.	6000/camp	40	240000
	· Provision of Sand/Pada	No.	45000/No.	4	180000
	· Fodder Demonstration	No.	800/no	800	640000
	Sub Total				1060000
	GRAND TOTAL				7518000

3.3.3 Livelihood activities particularly for asset less person:

The common guideline includes focussed priority on livelihood activities for land less/asset less person. As per guideline 9 % of the total project cost has been assigned to support the livelihood activities for land less/asset less household.

In the project area according to the interest and need livelihood activities will be followed. In individual livelihood activity training of Masson, Motchi, Carpentry, Tailoring, Bike Repairing etc work will be taken up so that their lives could be improved. The training programme of computer Hardware/Software, Mobile repairing work will also be planned according to the interest and education level of the educated young generation, so that with the seasonal agriculture income of their family, they can supplement the income during non agriculture season.

In every gram panchayat of the project area, the self help groups of land less persons have also been formed. These groups will be trained according to the their interest on different activities like Ara Tari, Tomato Sauce Preparation, Honey Bee Production, Compost Pit, Pottery etc, so that their livelihood can be increased. At the time of PRA, the people of the area have been acquainted with livestock based activities like milk collection booth, dairy, poultry etc.

The livelihood action plan will be implemented through Self Help Groups and or the SHG federation. As per earmark amount of 9 %, 60 % of this livelihood fund will be used to support revolving fund for SHG's, 10 % will be used for individual enterprises and a maximum of 30 % will be used for SHG federation. The initial amount up to Rs. 25000 may be given as seed money to a SHG as the revolving fund. Similarly for major livelihood activity grant in aid will be 50 % of the cost of activity or Rs. 2.00 lacs which ever is less. The cost of the IWMP-XIV/2010-11 having area of 6265 ha is 751.80 lacs. Therefore livelihood plan will be of Rs. 67.662 lacs. Accordingly provisions for SHG, SHG individuals and SHG federation have been proposed as follows:

Livelihood Plan : (9% of Sanction Amount)

S. No	Activity	Unit	Rate	Phy. Target	Amount (Rs. In lacs)
1.	Seed Money for SHG	No.	0.25 /SHG	154	38.50
2.	Seed Money for Enterprising individuals				
	A. Mason	No.	0.25/INDIVIDUAL	10	2.50
	B. White / color Washing	No.	0.25/INDIVIDUAL	8	2.00
	C. Tailoring	No.	0.25/INDIVIDUAL	7	1.75
	D. Cyclic Report	No.	0.25/INDIVIDUAL	8	2.00
	E. Mobile Repairs	No.	0.25/INDIVIDUAL	6	1.50
	F. Pottery	No.	0.25/INDIVIDUAL	6	1.412
	G. Ari-tari	No.	0.25/INDIVIDUAL	8	2.00
	Sub total –				51.662
3.	Grant in aid for SHG Federation	No.	2.0	8	16.00
		GRAND TOTAL			67.662

3.4 Convergence Plan:

For the development of villages, various works are being done through different departments mainly Agriculture , Horticulture, MGNREGA, Animal Husbandry etc. The complete development works can not be done in the sanctioned cost/amount. The various defined works, which are necessary in water shed development can be done through these departments by their budget allocations.

After discussing with Agriculture, Horticulture, MGNREGA, Animal Husbandry departments at block level as per need of the area the works have been taken up and action plan has been prepared.

3.4.1. Convergence with Agriculture/Horticulture Department:

In the State and Centre Sector schemes, for improvement in production level of different crops and minimize cost of cultivation, various schemes are organized by Agriculture/ Horticulture Department. The various schemes are:

- a. **Free seed minikit distribution:** Seed minikits of newly released varieties are distributed to small and marginal farmers for 0.1 to 0.2 hectare area with the purpose to increase in productivity of cereals, pulses and oilseeds and to increase Seed Replacement Rate by certified seeds. Minikits are distributed in Kharif season are improved hybrid varieties of Bajra, Guar and Groundnut, whereas in Rabi Season are Wheat, Barley, Gram and Mustard.
- b. **Certified seed distribution:** Certified seed from RSSC/NSS are distributed in the area to improve SRR and ultimately increase in productivity of crops. The main aim is to increase in production level of different crops in scarce condition and to adopt dry farming practices by farmers by using high yielding varieties instead of local varieties. This is taken through KVSS/GSS and private dealers.
- c. **Subsidy on pipeline:** Presently the irrigation methods used by farmers are not so scientifically as flow system in which wastage of water are very high. The subsidies are given to the farmers on purchasing ISI-approved HDPE/PVC pipe line of 63 mm to 90 mm diameter. The subsidies are given to all categories of farmers at the rate of Rs. 18.75 per meter up to 800 meter per farmer.
- d. **Subsidy on gypsum:** To all categories of farmers, on the basis of soil testing report for reclamation of alkaline soils, the 50 % subsidy are given on total cost of Gypsum. Gypsum subsidy should also be given to the farmers growing Wheat, Pulses and Oilseed.
- e. **Establishment of farmers field school (FFS):** The farmers Field School are to be established on the compact block of 5 demonstration each of 0.4 hectare. In the FFS out of 5 demonstration farmers 25 other farmers are to be included. The total of 30 farmers group which have interest to learn full scientific package of practices of crop production. Each FFS have five training days: before sowing of demonstration crop; after sowing and germination of demonstration crops; at the time of irrigation and weed control; at grain filling stage of crop: and at maturity stage of crop. Training toiven by Agriculture Officer, Scientist and Lecturer. Farmers problem are given to

research stations and improved practices of scientific Agriculture are given to the farmers.

- f. Soil and water testing:** Before every crop season like Kharif and Rabi, soil and water testing are to be done for evaluating the actual fertility position of field and requirement of fertilizer for irrigation. So that fertilizer quantity and quality are used as per recommendations given by laboratory for taking maximum production level in particular field and crop. Soil health card are given to the farmer having all recommendation of fertilizer for a whole year as they take all crop in Kharif and Rabi season.
- g.. Subsidy on plant protection equipments:** 50 % subsidy are given to all categories of farmers on Plant Protection equipments like Knapsack Sprayer, Dusters, Foot Sprayer and Power Operated Sprayers of ISI mark and approved qualities.
- h. Subsidy on Agricultural Implements:** The subsidy are given to all categories of farmers on purchasing improved and new Agriculture Implements, 25-50 % subsidy are given according to quality of implement like hand operated hoeing implement, bullock drawn bund farmer, tractor drawn seed drill machine, chaff cutter, harrows, 2 and 3 disc plow having 25 % subsidy whereas three row bullock drawn seed drill, tractor drawn seed cum fertilizer drill, etc have 50 % subsidy.
- i. Horticulture (National Horticulture Mission):** Subsidy are given on inputs like seed, fertilizers and plant protection chemicals for growing spices and medicinal crops in the National Horticulture Mission by Horticulture Department. Such demonstrations are layed out in Methi, Chilli and Allovera crops. 50 % Subsidies are given on total cost of input used in the demonstration.
- j. Subsidy on sprinkler set:** For the effective irrigation in the sandy soils the sprinkler system were recommended to the farmers. From 0.5 to 5.0 hectares land holding, subsidy of 50 % on the cost of sprinkler set are given. Sprinkler set model vary according to land like for 1.0 hectare land there are 30 HDPE ISI approved pipe of 6 meter long and 3 meter pipe along 5 nozzle set and other accessories. Subsidy

is given on the sprinkler set is 50 % or Rs. 7150, whichever is less. For 5.0 hectare land holding farmer, can purchase 60 pipes of 6 meter and 15 nozzle set with accessories having subsidy 50 % or Rs. 15500/- whichever is less.

- k. Subsidy on drip irrigation:** The drip irrigation is most effective and water saving irrigation method. Drip irrigation system can be installed for fruit orchard and for vegetable farming from 0.5 to 5.0 hectare land area. The subsidy is given up to 70 % of the total cost up to Rs. 23000 per hectare in orchard plantations and Rs. 11400 per hectares for vegetable farming.
- l. Subsidy on fruit orchard plantation:** Subsidy are given to the farmers for establishment of a new orchard systematically and in scientific way. There are 4 fruit plant can be taken in NHM, which are Anwla, Ber, Papaya and Citrus . The grafted seedlings are provided to the farmers on 75 % subsidy after which 75 % subsidy are given for fertilizer, Plant Protection Chemicals and for digging pits for planting. This subsidy varies from Rs. 22000 to 40000 per hectares for different fruit crops. Drip set subsidy is given separate for establishment in orchard.
- m. Establishment of Nursery:** Subsidy is given for establishing a module nursery in scientifically and propagation of fruit plant and sold to the farmers. 50 % on total cost, subsidies are given, which varies from Rs. 1.5 to 9.0 lacs for 4.0 hectares land area.
- o. Training for horticulture works:** The training are given to youth farmers interesting to learn horticulture works like grafting, budding and other horticulture works. Three months to one year training programme is held, according to the farmers choice and interest. The expenditure of the training is borne by horticulture department through National Horticulture Mission. The Krishi Vighyan Kendra) of each district, organizes the training programme.
- p. Vermicompost:** Vermicompost is an organic manure (bio-fertilizer) produced as the vermicast by earth worm feeding on biological waste material; plant residues. This compost is an odorless, clean, organic material containing adequate

quantities of N, P, K and several micronutrients essential for plant growth. Vermi compost is a preferred nutrient source for organic farming. It is eco-friendly, non-toxic, consumes low energy input for composting and is a recycled biological product. In each Gram Panchayat of the project area, 10-12 farmers will be selected. They will be trained with installing the vermi compost unit in their field.

1. 3.4.2 Convergence through MGNREGA:

2. For conservation measures and livelihood the **MGNREGA** scheme is being organized by Government. Through MGNREGA scheme in the project area various water harvesting structures are being constructed in project area. Therefore works executed in the Scheme will out the cost of the project. The village wise work action plan of **MGNREGA** scheme in the project area is enclosed in the **Table no.7**.

3. 3.4.3. Convergence through Animal Husbandry Department:

4. Specially in the arid and semi-arid regions of the Rajasthan, Animal Husbandry is a major economic activity of the rural peoples. Development of livestock sector has a significant beneficial impact in generating employment and reducing poverty in rural areas. Livestock contributes a large portion of draft power for agriculture, with approximately half the cattle population and 25 percent of the buffalo population being used for cultivation.

Various livestock development programmes are aimed to increase the productivity of the animals. The main activities and programmes of the department includes: Breed improvement and Veterinary health care. For the benefit of the project area the action plan will be prepared and executed as per need of the area.

CHAPTER – IV

4. Technical Designs and Estimates for Proposed Activities:

4.1. Design of Contour Bunds:

For rolling and flatter lands, with scanty or erratic rainfall contour bund is practiced to intercept the runoff flowing down the slope, to conserve the moisture as well as to reduce soil erosion. To remove the excessive runoff, resulting from high intensity storm, surplussing arrangements have been provided wherever necessary.

Spacing of Contour Bunds:

Contour bunds can be adopted on all type of relatively permeable soils except the clayey or deep black cotton soils. For planning the bunds it is necessary to know how far these bunds should be installed. The main criterion for spacing of bunds is to intercept the water before it attains the excessive velocity. The most important factor of it is slope, soil, rainfall, cropping programme and conservation practices. The vertical interval between the bunds has been calculated by following formulae:

$$V.I. = 0.305 (XS + Y)$$

Where

V. I. = Vertical Interval (m)

X = Rainfall factor (as per following table)

Y = Infiltration and Crop Cover factor (as per following table)

S = Slope (%)

Value of X, the Rainfall Factor

Rainfall	Value of X	Annual Rainfall (cm)
Scanty	0.8	Less Than 64
Moderate	0.6	64-90
Heavy	0.4	Over 90

Source: Manual of Soil & Water Conservation Practices, Gurmel Singh, etc.

Value of Y, the Infiltration and Crop Cover Factor

Intake Rate	Crop Cover during Erosive Period of Rains	Value of Y
Below Average (e.g. black soils)	Low Coverage	1.0
Average or above	Good Coverage	2.0
One of the above factors favourable and the other unfavourable		1.5

Source: Manual of Soil & Water Conservation Practices, Gurmeh Singh, etc.

Generally the Contour Bunds are made on same elevation, i.e. on contour and therefore, the grade is zero. Due to field boundaries, it is not possible to construct the bunds exactly on contours. The bunds will be constructed by adjusting the field boundaries. The horizontal interval between the bunds has been calculated by following formulae:

$$\text{H.I.} = \frac{\text{V.I.}}{\text{Slope (\%)}} \times 100$$

The height of impounding is calculated from following formulae:

$$\text{He} = \frac{(\text{Re} \times \text{V.I.})^{1/2}}{(50)^{1/2}}$$

Where

He = Depth of impounding near the bund (m)

Re = 24 hours rainfall excess (cm)

To the depth of impounding, depth of flow over the waste weir and free board is added. Then with the help of these the cross section of bund has been calculated.

With the help of elevation data of the area, water shed area is divided into different slope groups. The slope group wise map (**Map 2**), showing the different categories of slope has been prepared by PDCORE..

From the above formulae the Horizontal and Vertical interval and length of bunds per hectare have been calculated for different slope groups.

Calculation of V.I. and H.I.:

X = 0.8, Y = 1.5 (From above Tables)

S.No.	Slope Group Range	Average Slope, S (%)	V.I. (m) 0.305 (XS + Y)	H.I. (m) V.I./S	Length per hectare (m)
1.	0 – 1	0.50	0.60	120	80
2.	1-3	2.00	0.95	50	200
3.	3-5	4.00	1.50	40	245
4.	5-10	7.50	2.3	30	332

CHAPTER -V
ABSTRACT OF COST

Area = 6265

S. N.	NAME OF ACTIVITY	Unit	Qunatity	Rate	Amount
I.	ADMINISTRATIVE COST (10%) ((Honararium of Watershed Development Team, Secretary of WC, Office Expenses, Jeep Hiring etc.)				75.18
II	MONITORING (1%)				7.52
III	EVALUATION (1 %)				7.52
SUB TOTAL (I+II+III)					90.22
	<u>W/S PREPARATORY PHASE</u>				
IV	ENTRY POINT ACTIVITY (4 %) (Solar Light, Water Tank, Khel, Plateform, Safety Wall, Rnovation of shamshan, Renovation of Panchyat etc.)				30.07
V	TRAININGS & CAPACITY BUILDING (ICB) 5 %				37.59
VI	DETAILED PROJECT REPORT (1 %)				7.52
SUB TOTAL (IV+V+VI)					75.18

S. N.	NAME OF ACTIVITY	Unit	Qunatity	Rate	Amount
	<u>WATERSHED WORK PHASE</u>				
VII	NATURAL RESOURCE MANAGEMENT (NRM) (56 %)				
1	ARABLE CONSERVATION WORK				
i.	CONSTRUCTION OF CONTOUR BUND TYPE "A"	meter	57125	82	4684250
ii.	CONSTRUCTION OF CONTOUR BUND TYPE "B"	meter	62210	116	7216360
iii.	CONSTRUCTION OF CONTOUR BUND TYPE "C"	meter	53175	187	9943725
iv.	CONSTRUCTION OF BUND WASTE WEIR	Nos	125	6000	750000
v.	CONSTRUCTION OF WASTE WEIR TYPE "A"	Nos	75	13000	975000
vi.	CONSTRUCTION OF WASTE WEIR TYPE "B"	Nos	48	25000	1200000
vii.	CONSTRUCTION OF GULLY CONTROL STRUCTURE IN ARABLE LAND "A"	Nos	28	10000	280000
viii.	CONSTRUCTION OF GULLY CONTROL STRUCTURE IN ARABLE LAND "B"	Nos	25	13300	332500
2	NON ARABLE CONSERVATION WORK				
i.	PASTURE DEVLOPMENT	hectare	40	59000	2360000
ii.	CONSTRUCTION OF D. C. B.	meter	4125	53	218625
iii.	CONSTRUCTION OF DIVERSION CHANNEL CUM BUND	meter	900	53	47700
iv.	CONSTRUCTION OF WATER HARVESTING STRUCTURE IN NON ARABLE TYPE "A"	Nos	26	67800	1762800
v.	CONSTRUCTION OF WATER HARVESTING STRUCTURE IN NON ARABLE TYPE B	Nos	25	111100	2777500

S. N.	NAME OF ACTIVITY	Unit	Qunatity	Rate	Amount
3	DRAINAGE LINE TREATMENT				
iii.	RETANING/SAFTY WALL 'A'	Nos	5	91000	455000
iv.	RETANING/SAFTY WALL 'B'	Nos	6	119000	714000
v.	RETANING/SAFTY WALL 'C'	Nos	7	205000	1435000
vi.	MASONARY WATER HARVESTING STRUCTURE 'A'	Nos	8	217000	1736000
vii.	MASONARY WATER HARVESTING STRUCTURE 'B'	Nos	6	286000	1716000
viii	MASONARY WATER HARVESTING STRUCTURE 'C'	Nos	8	437000	3496000
SUB TOTAL (Natural Resource Management)					421.00
VIII	LIVELIHOOD/MICROENTERPRISES				
a.	LIVELIHOOD ACTIVIVITIES FOR ASSET LESS PERSON 9% (Karigar, Tailoring, white Wash & Paint, Masala Udoyg, Bicycle, Mobile, Pottery, Ara Tari, Computer etc.)				67.662
b.	LIVESTOCK MANAGEMENT				
i	Animal health camps	No.	40	6000	240000
ii	Provision of Sand/ Pada	No.	4	45000	180000
iii	Fodder Demonstration	No.	800	800	640000

S. N.	NAME OF ACTIVITY	Unit	Qunatity	Rate	Amount
c.	PRODUCTION SYSTEM & MICROENTERPRISES (For Kharif, Rabi Season and for Horticulture Plantation)				
i	Demonstration				
	Kharif	No.	1500	1554	2020200
	Rabi	No.	1200	2590	3108000
ii	Horticulture				
	Anwla	ha	8	16300	130400
	Ber/ Nimbu/ Guava	ha	14	28000	392000
iii	Vegetable Minikit	No.	200	300	60000
iv	Organic Farming	LS			418900
v	Agroforestry	No.	45	7300	328500
SUB TOTAL (VIII a,b,c) 19 %					142.84
IX	CONSOLIDATED PHASE (3 %)				22.55
	GRAND TOTAL				751.80

**AEN
Block-Phagi**

**JEN
Block-Phagi**

**WDT
Agriculture**

**WDT
Engineering**

**WDT
Animal Hubandary**

**WDT
Social Science**

CHAPTER -VI
ANNUAL ACTION PLAN IWMP XIV

A. PROJECT FUND

S. N.	NAME OF ACTIVITY	Unit	Qunatity	2011-12		2012-13		2013-14		2014-15		2015-16		TOTAL	
				FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR		FIFTH YEAR			
				PHY	FIN	PHY	FIN	PHY	FIN	PHY	FIN	PHY	FIN	PHY	FIN
I.	ADMINISTRATIVE COST (10%) (Honararium of Watershed Development Team, Secretary of WC, Office Expenses, Jeep Hiring etc.)				15.036		15.036		15.036		15.036		15.036		75.180
II	MONITORING (1%)				1.504		1.504		1.504		1.504		1.502		7.518
III	EVALUATION (1 %)								2.506		2.506		2.506		7.518
SUB TOTAL (I+II+III)					16.540		16.54		19.046		19.046		19.044		90.216
	W/S PREPARATORY PHASE														
IV	ENTRY POINT ACTIVITY (4 %) (Solar Light, Water Tank, Khel, Soak Pit, Handpump, Plateform, Safety Wall, Rain Water Harvesting Structure etc.)				20.000		10.072								30.072
V	TRAININGS & CAPACITY BUILDING (ICB) 5 %				7.518		7.518		7.518		7.518		7.518		37.590
VI	DETAILED PROJECT REPORT (1 %)				6.000		1.518								7.518
SUB TOTAL (IV+V+VI)					33.518		19.108		7.518		7.518		7.518		75.180
	WATERSHED WORK PHASE														
VII	NATURAL RESOURCE MANAGEMENT (NRM) (56 %)														
1	ARABLE CONSERVATION WORK														
i.	CONSTRUCTION OF CONTOUR BUND TYPE "A"	meter				15000	12.30	14125	11.58	14000	11.48	14000	11.48	57125	46.8425
ii.	CONSTRUCTION OF CONTOUR BUND TYPE "B"	meter				16000	18.56	16000	18.56	16000	18.56	14210	16.48	62210	72.1636
iii.	CONSTRUCTION OF CONTOUR BUND TYPE "C"	meter				14000	26.18	14000	26.18	14000	26.18	11175	20.90	53175	99.43725
iv.	CONSTRUCTION OF BUND WASTE WEIR	Nos				25	1.50	45	2.70	45	2.70	10	0.60	125	7.50000
v.	CONSTRUCTION OF WASTE WEIR TYPE "A"	Nos				15	1.95	25	3.25	25	3.25	10	1.30	75	9.75000
vi.	CONSTRUCTION OF WASTE WEIR TYPE "B"	Nos				10	2.50	18	4.50	10	2.50	10	2.50	48	12.00000
vii.	CONSTRUCTION OF GULLY CONTROL STRUCTURE IN ARABLE LAND "A"	Nos				8	0.80	10	1.00	10	1.00			28	2.80000
viii.	CONSTRUCTION OF GULLY CONTROL STRUCTURE IN ARABLE LAND "B"	Nos				10	1.33	15	2.00					25	3.32500

S. N.	NAME OF ACTIVITY	Unit	Qunatity	2011-12		2012-13		2013-14		2014-15		2015-16		TOTAL	
				FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR		FIFTH YEAR			
				PHY	FIN	PHY	FIN	PHY	FIN	PHY	FIN	PHY	FIN	PHY	FIN
2	NON ARABLE CONSERVATION WORK														
i.	PASTURE DEVLOPMENT	hectare				0	0.00	40	23.60					40	23.60000
ii.	CONSTRUCTION OF D. C. B.	meter				2125	1.126	2000	1.060					4125	2.18625
iii.	CONSTRUCTION OF DIVERSION CHANNEL CUM BUND	meter				300	0.159	600	0.318					900	0.47700
iv.	CONSTRUCTION OF WATER HARVESTING STRUCTURE IN NON ARABLE TYPE "A"	Nos				6	4.068	10	6.780	5	3.390	5	3.390	26	17.62800
v.	CONSTRUCTION OF WATER HARVESTING STRUCTURE IN NON ARABLE TYPE B	Nos				5	5.555	10	11.110	5	5.555	5	5.555	25	27.77500
3	DRAINAGE LINE TREATMENT													0	0.00000
iii.	RETANING/SAFTY WALL 'A'	Nos				2	1.82	3	2.73					5	4.55000
iv.	RETANING/SAFTY WALL 'B'	Nos				2	2.38	3	3.57	1	1.19			6	7.14000
v.	RETANING/SAFTY WALL 'C'	Nos				2	4.10	3	6.15	2	4.10			7	14.35000
vi.	MASONARY WATER HARVESTING STRUCTURE 'A'	Nos				2	4.34	2	4.34	2	4.34	2	4.34	8	17.36000
vii.	MASONARY WATER HARVESTING STRUCTURE 'B'	Nos				1	2.86	2	5.72	3	8.58			6	17.16000
viii.	MASONARY WATER HARVESTING STRUCTURE 'C'	Nos				2	8.74	2	8.74	2	8.74	2	8.74	8	34.96000
SUB TOTAL (Natural Resource Management)							100.268		143.886		101.565		75.286		421.00
VIII	LIVELIHOOD/MICROENTERPRISES														
a.	LIVELIHOOD ACTIVIVITIES FOR ASSET LESS PERSON														
b.	LIVESTOCK MANAGEMENT (A.I./ CAMP/OTHER)														
c.	PRODUCTION SYSTEM & MICROENTERPRISES (For Kharif, Rabi Season and for Horticulture Plantation)														
SUB TOTAL (VIII a,b,c) 19 %							35.71		35.71		35.71		35.71		142.84
IX	CONSOLIDATED PHASE (3 %)												22.554		22.55
	TOTAL PROJECT FUND				50.058		171.627		206.160		163.840		160.112		751.80

CHAPTER VII

7.1. Project Outcome:

By the end of the project, in the project area, it is expected that the water level in the wells increases considerably and sufficient water for man and animal would be available in the wells and ponds. The cropping intensity and productivity should be increased after the completion of the project. Few parameters which are expected to be increased after the completion of the project are as follow:

S.No	Parameters	Before Execution of Project	Expected Increase after the Completion of the Project
1.	Availability of water		
a.	Average Water Table	250 -300 ft	160 – 200 ft.
b.	Available Water in the	Tube Wells	Wells/ Tube Wells / Ponds
2.	Agriculture/Horticulture		
a.	Net Sown Area (ha)	4636	6600
b.	Net area sown more than once (ha)	1807	3600
c.	Production of Major Crops: · Wheat · Barley · Mustard · Bajara · Groundnut · Guar	2845 Kg/ha 3003 Kg/ha 1237 Kg/ha 1397 Kg/ha 1284 Kg/ha 698 Kg/ha	4500 Kg/ha 4000 Kg/ha 2000 Kg/ha 2500 Kg/ha 2200 Kg/ha 1200 Kg/ha
d.	Production of Rajka	33347 quintal	50288 quintal
e.	Average Production of Horticulture Plants	50 – 100 quintal	350-500 quintal (Different types of fruits plants Mango, Guava, Citrus, Ber, Papaya, etc)
3.	Live Stock		
a.	Milk Production	3 – 7 kg/animal	7 – 12 kg/animal

S.No	Parameters	Before Execution of Project	Expected Increase after the Completion of the Project
b.	Animal Diseases	By regular camps, the various diseases will be reduced	
4.	Livelihood		
a.	Average income of family by introduction of other micro enterprises	Rs. 2500-3000 per month	Rs. 4000 – 5000 per month
b.	SHG Groups	10	135 The various homogenous groups will be constituted and the training of different activities will be given, specially for land less families.

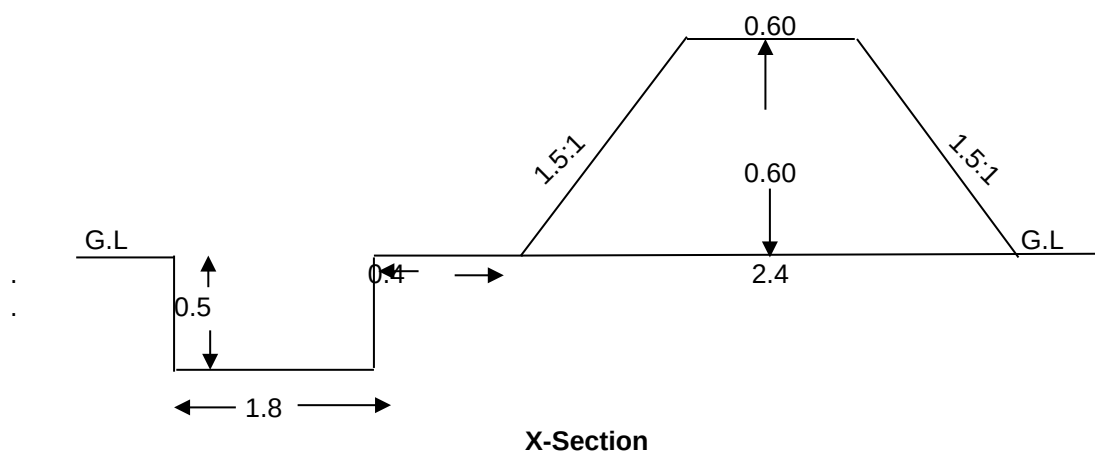
During the project period (5-7 years), the various activities will be done. The natural resource management activities will be done in between the project phase. The proposed NRM works in arable, non arable land and drainage line treatment will increase the water table, production of agriculture/horticulture crops. Similarly the livestock activities will increase the milk production.

ESTIMATE NO. 1

NAME OF WORK: CONSTRUCTION OF CONTOUR BUND TYPE "A"

B.S.R._RD_JAIPUR_2011

Cross section of bund - 0.9 sqm					
For lenth 100 M.					
S.No.	Item	Quantity	Unit	Rate	Amount
1	Dag belling work up to 5-7 cm depth	400	Rm	0.25	100.00
2	Earth work in hard soil for construction of bund including ramming compaction and dressing up to the lead of 50m and lift 1.5 m	90	Cum	85.00	7650.00
3	Sowing of seed on bunds	300	Rm	0.59	177.00
4	<u>Grass seed</u>				
	Dhaman/Stylohemata	1	LS	40.00	40.00
	Sub Total				7967.00
5	Contingency @ 3 %				239.01
	Grand Total				8206.01
			Say	8206	
Per. M. Cost				82.00	

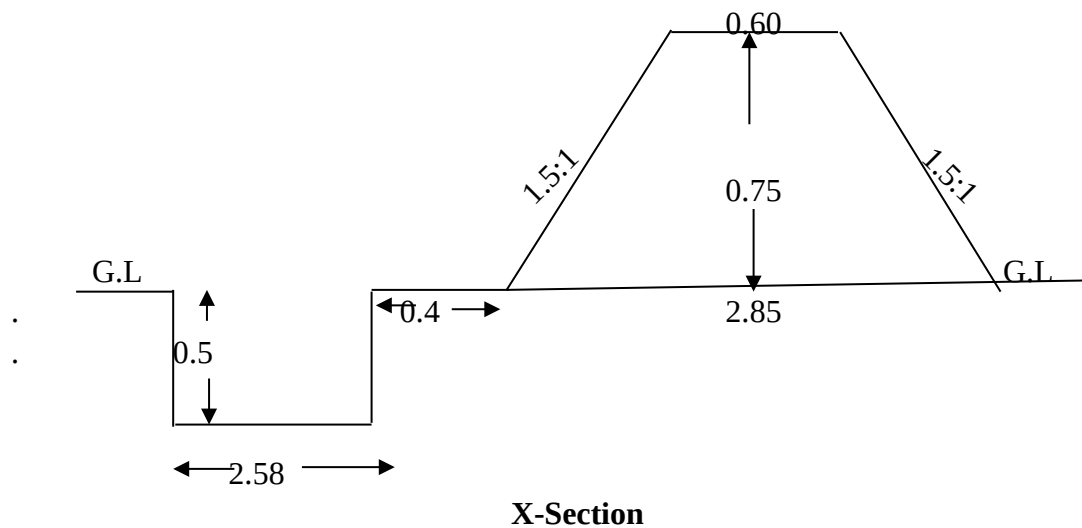


ESTIMATE NO. 2

NAME OF WORK: CONSTRUCTION OF CONTOUR BUND TYPE "B"

B.S.R. RD_JAIPUR_2011

Cross section of bund - 1.29 sqm					
For lenth 100 M.					
S.no.	Item	Quantity	Unit	Rate	Amount
1	Dag belling work up to 5-7 cm depth	400	Rm	0.25	100.00
2	Earth work in hard soil for construction of bund including ramming compaction and dressing up to the lead of 50m and lift 1.5 m	129	Cum	85.00	10965.00
3	Sowing of seed on bunds	400	Rm	0.59	236.00
4	Grass seed				
	Dhaman/Stylohemata	1	LS	40.00	40.00
		Sub Total			11241.00
5	Contingency @ 3 %				337.23
		Grand Total			11578.23
			Say	11578	
Per. M. Cost				116.00	

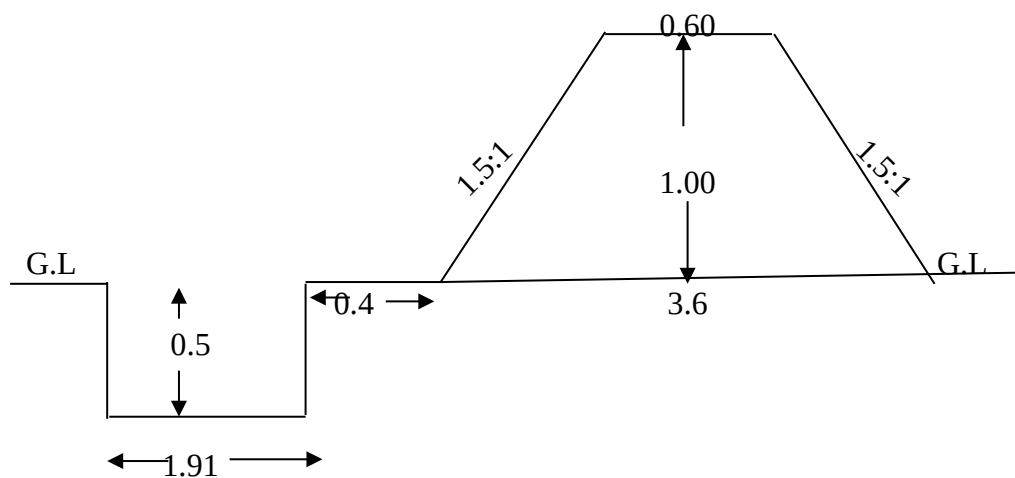


ESTIMATE NO. 3

NAME OF WORK: CONSTRUCTION OF CONTOUR BUND TYPE "C"

B.S.R. RD_JAIPUR_2011

Cross section of bund - 2.1 sqm					
For lenth 100 M.					
S.no.	Item	Quantity	Unit	Rate	Amount
1	Dag belling work up to 5-7 cm depth	400	Rm	0.25	100.00
2	Earth work in hard soil for construction of bund including ramming compaction and dressing up to the lead of 50m and lift 1.5 m	210	Cum	85.00	17850.00
3	Sowing of seed on bunds	500	Rm	0.59	295.00
4	Grass seed				
	Dhaman/Stylohemata	1	LS	40.00	40.00
		Sub Total			18185.00
5	Contingency @ 3 %				545.55
		Grand Total			18730.55
			Say	18731	
Per. M. Cost				187.00	



X-Section

ESTIMATE NO. 4

NAME OF WORK: CONSTRUCTION OF BUND WASTE WEIR

B.S.R._RD_JAIPUR_2011

S.No.	Item	Part	No.	L	W	H/D	Qty	Unit	Rate	Amount
1	Excavation in hard soil disposal of excavated material within initial lead of 30 m and lift of 1.5 m dressing etc.	HW	1	4.20	2.50	0.30	3.15			
		Total E/W						3.15	Cum	82.00
2	Dry stone masonry for~	SW	2	2.40	0.30	1.50	3.15			
		Apron/ foundatio	1	4.20	1.90	0.30	2.39			
		apron	1	4.20	1.90	0.15	1.20			
		Sub total						6.74	Cum	781.00
3	Rehandling and carriage of stone by head load or animal transport including loading and unloading for lead up to 200m	6.74						Cum	47.00	316.83
4	Contingency @ 3 %									175.20
Total										6015.04

Rates are taken from Dar Anusuchie 2011, ZP Jaipur,

Say Rs. 6000 /- only

ESTIMATE NO. 5

NAME OF WORK: CONSTRUCTION OF WASTE WEIR TYPE "A"

B.S.R. RD_JAIPUR_2011

d- l-	dk; fooj.k					bdlb	nj llexl lfgr	jlf'k
1	uho] [kib] ijuky e 1-5 xgjb rd feêh dh [knkb djuk] ry dk dVuk] ikuh Mkyuk] cxy dk lokjuk] [knh feêh dk cigj fudkyuk] uho Hkju d ckn [kkyh LFkkuk dk iul feêh l Hkju rFkk cph gb feêh dk 50 ehVj dh njh rd fulrkj.k djuka l[r] fpduh] ddj feêh e							
H.W.	1	6.00	2.50	3.00	45.000			
H.W.Ext.	2	5.00	2.50	3.00	75.000			
S.W.	2	5.00	2.00	3.00	60.000			
T.W.	1	6.00	1.50	2.00	18.000			
Apron	1	6.00	3.50	1.00	21.000			
					219.000	?ku QhV	82.00	508.57
					6.202	?ku eh-	ifr ?huel	
2	lhelV dkØhV uho ;k Q'k e 40 fe- eh- uleh; eki dh iRFkj fxÍh@bV fxÍh] lhelV & jr elky e 1 lhelV % 4 jr % 8 fxÍh vuikr e feykdj Mkyuk rFkk dVib djuk] rjkb lerA iRFkj dh fxêh d lkFk							
H.W.	1	6.00	2.50	0.50	7.500			
H.W.Ext.	2	5.00	2.50	0.50	12.500			
S.W.	2	5.00	2.00	0.50	10.000			
T.W.	1	6.00	1.50	0.50	4.500			
					34.500	?ku QhV	1743.00	1702.98
					0.977	?ku eh-	ifr ?huel	
3	uho rFkk dlh e iRFkj dh o j)<dk lhev&ctjh 1 % 3] 1 % 6 ;k 1 % 8 elky el e; cxy dh f>jh cUn djuk rFkk rjkb vkfna lhev ctjh 1%6							
H.W.	1	6.00	2.50	2.50	37.500			
H.W.Ext.	2	5.00	2.50	2.50	62.500			
S.W.	2	5.00	2.00	2.50	50.000			
T.W.	1	6.00	1.50	1.50	13.500			
					163.500	?ku QhV	1429.00	6616.73
					4.630	?ku eh-	ifr ?huel	
4	vf/kjpuk e iRFkj dh o j)<dk lhev&ctjh 1 % 3] 1 % 6 ;k 1 % 8 elky el e; cxy dh f>jh cUn djuk rFkk rjkb vkfna 							
H.W.	1	6.00	2.00	0.750	9.000			
H.W.Ext.	2	5.00	2.00	1.350	27.000			
S.W.	2	5.00	1.85	0.825	15.263			
T.W.	1	6.00	1.35	0.300	2.430			
					53.693	?ku QhV	1534.00	2332.56
					1.521	?ku eh-	ifr ?huel	

d- l-	dk; foof.k					bdb	nj llexl lfg	jlf'k
5 Apron	15 l 30 l-eh- ekV] gFkkM l rjkl g, ,dy iRFkj dh fifpx leLr mBku d lkFk] vkifÜk d lkFA							
	1	6.00	3.60	0.50	10.800	?ku QhV	583.00	178.31
					0.306	?ku eh-		
6 H.W. H.W.Ext. S.W. T.W.	50 eh- eh- ekVkb e lhev ddhV 1/2/4 feJ.k ft le 1 lhev 2 ctjh 4 iRFkj dh ;k bV dh 12 - eh- ukHkh; fxVVh d lkFk feykDj Mkyuk] dVuk] nckuk rFkk rjkb vkfn ler A							
	1	6.00	2.00		12.000			
	2	5.00	2.00		20.000			
	2	2.00	1.85		7.400			
	1	6.00	1.35		8.100			
					47.500	ox QhV	190.00	838.42
					4.413	ox eh-		
7 Apron	lhev dkØhV 1 lhev] 3 ctjh rFkk 6 fxêh iRFkj dh 20 fe-eh- ukeh; eli dh ulo e Mkyuk ,uldV d fy,A							
	1	6.00	3.60	0.100	2.16	?ku QhV	2058.00	125.89
					0.061	?ku eh-		
8 H.W. H.W.Ext. S.W. T.W.	lhev lykLVj nhokj ij 1/6 vuilr e lhev&ctjh feykDj t kMk dk djnu rFkk rjkb lerA20 eh- eh-							
	1	2 rjQ	6.00	0.75	9.000			
	2	2 rjQ	5.00	1.35	27.000			
	2	2 rjQ	2.00	0.83	6.600			
	1	2 rjQ	6.00	0.30	3.600			
					46.200	ox QhV	83.00	356.23
					4.292	ox eh-		
9						dy		12659.70
	vidfled 0;; 3 ifr'kr					:i;		379.79
						dy :i;		13039.49
						elut		13000.00

ESTIMATE NO. 6

NAME OF WORK: CONSTRUCTION OF WASTE WEIR TYPE "B"

B.S.R._RD_JAIPUR_2011

d- I-	dk; foofj.k					bdkb	nj llexh l fgr	jlf't
1	uho [kkb] ijuky e 1-5 xgjb rd feêh dh [knk djuk] ry dk dVuk ikuh Mkyuk cxy dk lokjuk [knh feêh dk ckgj fudkyuk] uho Hkju d ckn [kkyh LFkkuk dk iuh feêh l Hkjuk rFkk cph gb feêh dk 50 ehVj dh njh rd fuLrkj.k djukA l[r] fpduh ddj feêh e							
H.W.	1	10.00	3.00	3.50	105.00			
H.W.Ext.	2	5.00	3.00	3.50	105.00			
S.W.	2	8.00	2.50	3.50	140.00			
T.W.	1	10.00	2.00	2.00	40.00			
Apron	1	10.00	6.00	1.50	90.00			
					480.00	?ku QhV	82.00	1114.68
					13.59	?ku eh-	ifr ?lueh	
2	lhev dkØhV uho ;k Q'k e 40 fe- eh- ukeh; eki dh iRFkj fxÍh@bV fxÍh lhev & jr elky e 1 lhev l 4 jr l 8 fxÍh vuikr e feykdj Mkyuk rFkk dVib djuk rjkb lerA iRFkj dh fxêh d lkFk							
H.W.	1	10.00	3.00	0.50	15.00			
H.W.Ext.	2	5.00	3.00	0.50	15.00			
S.W.	2	8.00	2.50	0.50	20.00			
T.W.	1	10.00	2.00	0.50	10.00			
					60.00	?ku QhV	1743.00	2961.71
					1.70	?ku eh-	ifr ?lueh	
3	uho rFkk dlh e iRFkj dh o j)k&<kdk lhev&ctjh 1 l 3) 1 l 6 ;k 1 l 8 elky el e; cxy dh f>jh cUn djuk rFkk rjkb vkfnA lhev ctjh 1/6							
H.W.	1	10.00	3.00	3.00	90.00			
H.W.Ext.	2	5.00	3.00	3.00	90.00			
S.W.	2	8.00	2.50	3.00	120.00			
T.W.	1	10.00	2.00	1.50	30.00			
					330.00	?ku QhV	1429.00	13354.86
					9.35	?ku eh-	ifr ?lueh	
4	vf/kjpuk e iRFkj dh o j)k&<kdk lhev&ctjh 1 l 3) 1 l 6 ;k 1 l 8 elky el e; cxy dh f>jh cUn djuk rFkk rjkb vkfnA lhev ctjh 1/6							
H.W.	1	10.00	2.50	0.75	18.75			
H.W.Ext.	2	5.00	2.50	1.35	33.75			
S.W.	2	8.00	2.35	0.83	31.02			
T.W.	1	10.00	1.85	0.30	5.55			
					89.07	?ku QhV	1534.00	3869.46
					2.52	?ku eh-	ifr ?lueh	

d- l-	dk; fooj.k					bdkb	nj llexh lfgr	jlf't
5	15 l 30 l-eh- ekV] gFkkM l rjl g, ,dy iRFkj dh fifpx leLr mBku d lkFk] vkifuk d lkFA							
Apron	1	10.00	6.10	0.50	30.50	?ku QhV ?ku eh-	583.00 ifr ?ueh	503.57
					0.86			
6	50 eh- eh- ekVkb e lhev ddiV 1/2/4 feJ.k ftle 1 lhev 2 ctjh 4 iRFkj dh ;k bV dh 12 - eh- ukkh; fxVVh d lkFk feykdj Mkyuk] dVuk] nckuk rFkk rjkb vkfn ler A							
H.W.	1	10.00	2.50		25.00			
H.W.Ext.	2	5.00	2.50		25.00			
S.W.	2	2.00	2.35		9.40			
T.W.	1	10.00	1.85		18.50			
					77.90	ox QhV ox eh-	190.00 ifr ox eh-	1375.01
					7.24			
7	lhev dkØhV 1 lhev] 3 ctjh rFkk 6 fxêh iRFkj dh 20 fe-eh- ukeh; eki dh uho e Mkyuk ,uidV d fy,A							
Apron	1	10.00	6.10	0.10	6.10	?ku QhV ?ku eh-	2058.00 ifr ?ueh	355.52
					0.17			
8	lhev lykLVj nhokj ij 1/6 vuikr e lhev&ctjh feykdj tkMk dk djnu rFkk rjkb lerA 20 eh- eh-							
H.W.	1	2 rjQ	10.00	0.75	15.00			
H.W.Ext.	2	2 rjQ	5.00	1.35	27.00			
S.W.	2	2 rjQ	2.00	0.83	6.60			
T.W.	1	2 rjQ	10.00	0.30	6.00			
					54.60	ox QhV ox eh-	83.00 ifr ox eh-	421.00
					5.07			
9	vkdflEd 0;; 3 ifr'kr						dly :i;	23955.81 718.67
							dly :i;	24674.49
							eluk	25000.00

ESTIMATE NO. 7

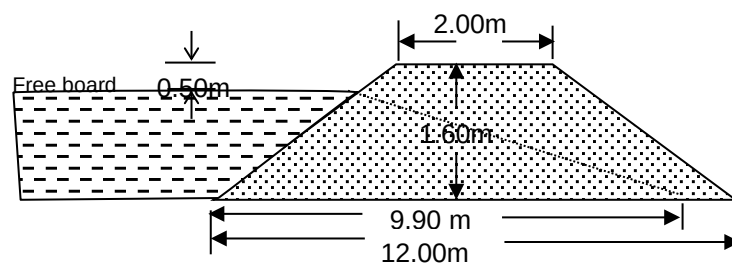
NAME OF WORK: CONSTRUCTION OF GULLY CONTROL STRUCTURE IN ARABLE LAND "A"

Considerations -

A	Seepage Line	5:1
B	Side Slope	
	U/s	3:1
	D/S	2:1
C	Length of Structure	10.00 Mtr.
D	Height of Structure	1.60 Mtr.

B.S.R. RD JAIPUR_2011

Øe l[;k	fooj.k	el=k	nj	jlf'k
1	Mkx cfyx 2.5 l 5 l eh- xgjb rd	30.00	0.25 Áfr elVj	7.50
2	feêh dk dk; cU/k e %l[kh ;k xhyh%] 15 l- eh- ijr e Mkyuk] <yk dk rkMuk] ?kk l&ikr rFkk ddj chudj vyx djuk rFkk feêh dh njlh djuk rFkk 'khi QV jkyj@gM jej l feêh nckuk] 1.5 eh mBku rFkk 50 eh- njh d fy,A			
	dBkj feVvh	10*(2.0+12.0)/2*1.60	112.00	85.00 Áfr Äu elVj
3	cht colb cuk; x; fjt iJA	50.00	0.59 Áfr elVj	29.50
4	10 l-eh- njh ij (4 l 5 Lyhl l ,d txg) okulifrd voj/k LFkfkfir djuk etk@[kl flyi Afux ,o lijfVx dk;	40.00	525.00 Áfr fdeh	21.00
5	IyKUVhx ,o Mflx dk;	40.00	1425.00 Áfr fdeh	57.00
6	bU l DVh l kBM@ iLVh l kBM l mipkj djuk	40.00	308.00 Áfr fdeh	12.32
7	frd L&k"«k l etk@[kl flyi m[kkMu dk dk;	2000	1638.50 1 yk[k flyi	32.77
		;kx		9680.09
8	vkdfled 0;; 3 ifr'lr			290.40
		dy ;kx		9970.49
			eluk	10000.00



ESTIMATE NO. 8

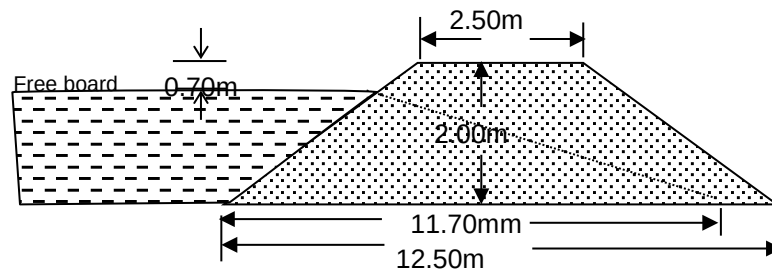
NAME OF WORK: CONSTRUCTION OF GULLY CONTROL STRUCTURE IN ARABLE LAND

Considerations -

A Seepage Line	5:1
B Side Slope	
U/s	3:1
D/S	2:1
C Length of Structure	10.00 Mtr.
D Height of Structure	2.00 Mtr.

B.S.R. RD_JAIPUR_2011

Øe l[;k	fooj.k		el=k	nj	jlf'k
1	Mkx cfyx 2.5 l 5 leh- xgjb rd	(3*yEclb)	30.00	0.25 Áfr ehVj	7.50
2	feêh dk dk; cU/k e %l[kh ;k xhyh[15 l-eh- ijr e Mkyuk] <yk dk rkMuk] ?kk l&ikr rFkk ddj chudj vyx djuk rFkk feêh dh njlh djuk rFkk 'khi QV jkyj@gM jej l feêh nckuk] 1.5 eh mBku rFkk 50 eh- njh d fy,A dBkj feVh	10*(2.5+12.50)/2*2.00	150.00	85 Áfr Äu ehVj	12750.00
3	ch t cokb cuk; x; fjt iJA	5*yEclb	50.00	0.59 Áfr ehVj	29.50
4	10 l-eh- njh ij (4 l 5 Lyhl l ,d txg) okulifrd voj/k Lfkkfir djuk etk@[kl fLy i Áfux ,o lijfVx dk;	(4*yEclb)	40.00	525 Áfr fdeh	21.00
5	IykhUVhx ,o Mflx dk;		40.00	1425 Áfr fdeh	57.00
6	bUldVhIkBM@ iLVhIkBM l mipkj djuk		40.00	308 Áfr fdeh	12.32
7	ÁkNfrd Lek"«k l etk@[kl fLy i m[kkMu dk dk;		2000	1638.50 1 yk[k fLy i	32.77
			;kx		12910.09
8	vkdfl ed 0;; 3 ifr'kr				387.30
			dy ;kx		13297.39
			eluk		13300.00



Dimensions are not to the scale

ESTIMATE NO.9

NAME OF WORK: CONSTRUCTION OF PASTURE DEVELOPMENT WORK IN W/S
B.S.R._RD_JAIPUR_2011

1

S.NO	ITME OF WORK	UNIT	DETAILS OF QUANTITY					RATE			AMOUNT	
			No.	L	W	D	T.Q.	Labour	Material	Total	Labour	Material
1	pjkxkg {k= e fMp de cUM [knkb dk; dBkj feVVh e	CUM.	0	1800	1.2	1.2	2592.00	82		82	212544	0
2	lrr dUVj Vpt dk fuek.k dBkj feVVh e	CUM.	0	6000	0.6	0.3	1080.00	82		82	88560	0
3	[kMM [knkb dk dk; & lrr dUVj Vpt e	NO.	4000	0.45 X .45 X .45			4000.00	6.8		6.8	27200	0
4	?kkl cht colb dk dk;											
	%v-% VDVj }jkj gdkb dk;	HA.					10.00	30	259	289		2890
	%c-% ?kkl cht dk rkykc feVVh d lkFk feykdy xkfy;k cukuk	KG.					90.00	10.43		10.43	938.7	0
	%l-% ?kkl cht dk Qyku dk dk;	MD					15.00	73		73	1095	0
5	cht colb cuk; xk; fjt ij rhuk ykbuk e									0.00		0
	%v-% lrr dUVj Vpt d cUM ij %/k%e.k@geV%k%	M.	0	6000	0	0	6000.00	0.59		0.59	3540	0
	%c-% Mh lhch cUM ij %dLVj]Mhch]jrutkr%	M.		2000			2000.00	0.59		0.59	1180	0
6	ik/k dk ifjogu %30 fdeh yhM l% e; ykfMx o vuykfMx lgr & iFke o"k	NO.	4000				4000.00		1.35	1.35		5400
	ik/k dk ifjogu %30 fdeh yhM l% e; ykfMx o vuykfMx lgr & f}rh; o"k	NO.	800				800.00		1.35	1.35		1080
7	ik/k%jki.k djuk& lkekU; tehu ij %iFke o"k%	NO.	4000				4000.00	3.00		3	12000	0
	ik/k%jki.k djuk& lkekU; tehu ij %f}rh; o"k% 20 ifr'kr xi fQfyx	NO.	800				800.00	3.00		3	2400	0
8	[kMMk dk fdVuk'kd@iLVh lkbM ,o QfVyb t j l mipkj djuk	NO.					0.00					0
	%v-% fdVuk'kd@iLVh lkbM	NO.	4000				4000.00	0.3		0.30	1200	0
	%c-% QfVyb t j	NO.	4000				4000.00	0.15		0.15	600	0
9	ik/k dk ikuh fiykuk %15 yh- ifr ik/k% & iFke o"k	NO.	3	4000			12000.00	1.8		1.80	21600	0
	ik/k dk ikuh fiykuk %15 yh- ifr ik/k% & f}rh; o"k	NO.	2	4000			8000.00	1.8		1.80	14400	0
	ik/k dk ikuh fiykuk %15 yh- ifr ik/k% & rrh; o"k	NO.	1	4000			4000.00	1.8		1.80	7200	0

S.NO	ITME OF WORK	UNIT	DETAILS OF QUANTITY					RATE			AMOUNT	
			No.	L	W	D	T.Q.	Labour	Material	Total	Labour	Material
10	ik/kk dk fujkb xMkb 15 leh xgjkb ,o 45 leh v)0;kl rd & iFke o"k	NO.	1	4000			4000.00	1.2		1.20	4800	0
	ik/kk dk fujkb xMkb 15 leh xgjkb ,o 45 leh v)0;kl rd & f}rh; o"k	NO.	2	4000			8000.00	1.2		1.20	9600	0
	ik/kk dk fujkb xMkb 15 leh xgjkb ,o 45 leh v)0;kl rd & rrrh; o"k	NO.	3	4000			12000.00	1.2		1.20	14400	0
11	ik/kk gr ikuh dh llykb Wdj }kjk & VDVj e; Vdj 4000 yh- {kerk e; Mkboj d & iFke o"k	TRIP.	3	15			45.00		225	225.00	0	10125
	ik/kk gr ikuh dh llykb Wdj }kjk & VDVj e; Vdj 4000 yh- {kerk e; Mkboj d & f}rh; o"k	TRIP.	2	15			30.00		225	225.00	0	6750
	ik/kk gr ikuh dh llykb Wdj }kjk & VDVj e; Vdj 4000 yh- {kerk e; Mkboj d & rrrh; o"k	TRIP.	1	15			15.00		225	225.00	0	3375
12	lkekxh dh ykxr &									0.00	0	0
	W-v-½ ik/k & iFke o"k	NO.	4000				4000.00		2.5	2.50	0	10000
	W-c-½ ik/k & f}rh; o"k	NO.	800				800.00		2.5	2.50	0	2000
	W-l-½ /kke.k?kk l cht	KG.	60				60.00		150	150.00	0	9000
	W-n-½ LVkbykeV k cht	KG.	40				40.00		50	50.00	0	2000
	W;-½ dLVj lhM	KG.	7				7.00		100	100.00	0	700
	W-y-½ jrutr cht	KG.	7				7.00		100	100.00	0	700
	W-o-½ n'kh ccy cht	KG.	7				7.00		50	50.00	0	350
	W-j½ ;fj;k@oeh dEikLV [kkn	BAG	10				10.00		300	300.00	0	3000
	W-g-½ ,yfMu nok	LTR.	10				10.00		250	250.00	0	2500
13	pjxxkg dh pkdhnkjh	MONTH	40				40.00	2600	0	2600.00	104000	0
TOTAL											527257.7	59870
								SAY COST PER HACT.			Rs /-	59000

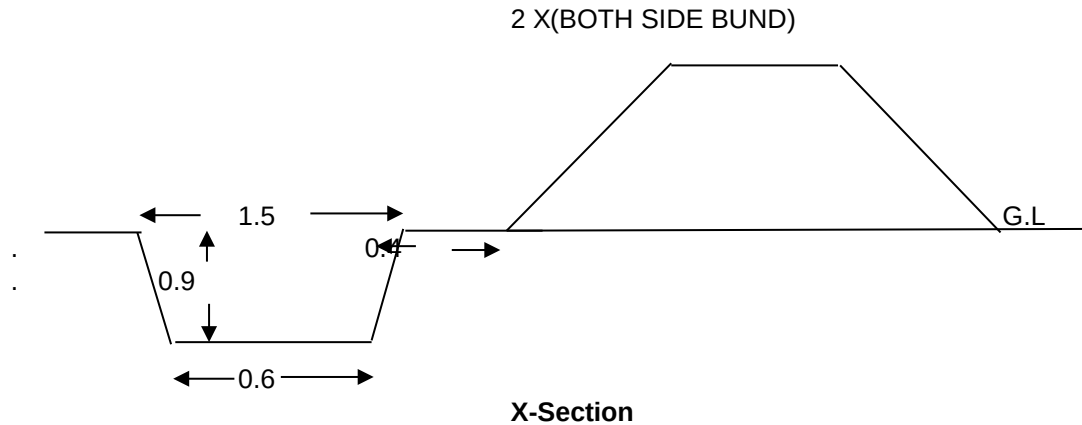
ESTIMATE NO. 10

NAME OF WORK: CONSTRUCTION OF DITCH CUM BUND FENCING

B.S.R. RD JAIPUR 2011

Cross section of Channel - 0.945 sqm					
For lenth 100 M.					
S.no.	Item	Quantity	Unit	Rate	Amount
1	Dag belling work up to 5-7 cm depth	400	Rm	0.25	100.00
2	Earth work in hard soil for construction of bund including ramming compaction and dressing up to the lead of 50m and lift 1.5 m	0.945	Cum	85.00	80.33
3	Sowing of seed on bunds	500	Rm	0.59	295.00
4	Grass seed				
	Dhaman/Stylohemata	1	LS	40.00	40.00
	Sub Total				515.33
5	Contingency @ 3 %				15.46
	Grand Total				530.78
			Say	531	

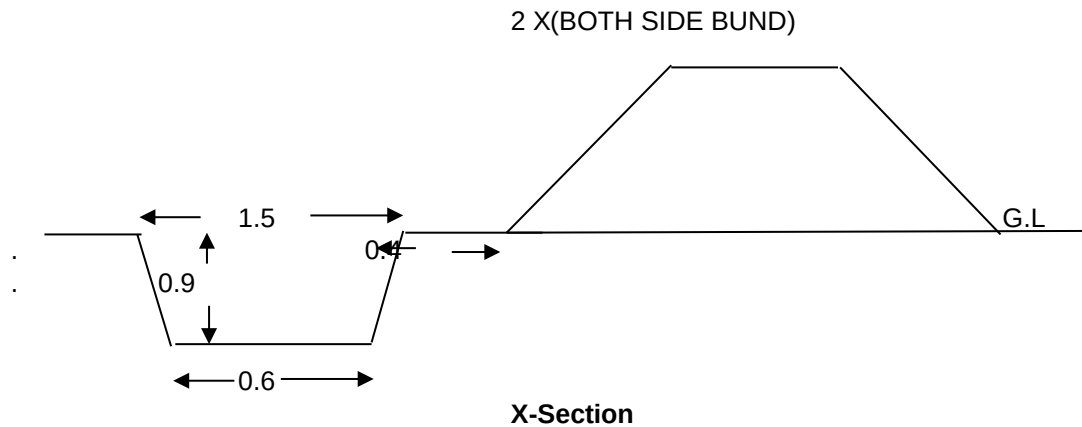
Per. M. Cost 53.00



ESTIMATE NO. 11

NAME OF WORK: CONSTRUCTION OF DIVERSION CHANNEL CUM BUND
B.S.R. RD JAIPUR 2011

Cross section of Channel - 0.945 sqm					
For lenth 100 M.					
S.no.	Item	Quantity	Unit	Rate	Amount
1	Dag belling work up to 5-7 cm depth	400	Rm	0.25	100.00
2	Earth work in hard soil for construction of bund including ramming compaction and dressing up to the lead of 50m and lift 1.5 m	0.945	Cum	85.00	80.33
3	Sowing of seed on bunds	500	Rm	0.59	295.00
4	Grass seed				
	Dhaman/Stylohemata	1	LS	40.00	40.00
	Sub Total				515.33
5	Contingency @ 3 %				15.46
	Grand Total				530.78
			Say	531	
Per. M. Cost				53.00	



ESTIMATE NO. 12

NAME OF WORK: CONSTRUCTION OF WATER HARVESTING STRUCTURE IN NON ARABLE TYPE "A"

B.S.R. RD_JAIPUR_2011

Ø-1-	fooj.k	el=k	nj	jlf'k
1	Mkx cfyx 2-5 l 5 leh xgjb			
	3 x yckb	150.00	0.25	37.50
		elVj	ifr elVj	
2	feVVh dk dk; cU/k e ¼l [kh ;k xhyh½ 15 leh - dh ijr e fcNkuk] <yk dk rkMuk] ?kk l ikr chudj vyx djuk rFkk feVh dh Mflx djuk] 1-5 eh- mBku rFkk 50 eh- njh d fy;] dBkj feVVh e			
		764.50	85.00	64982.50
		?ku elVj	ifr ?kuehVj	
3	cht colb cuk; x; fjt ij ¼3 ykbu e½			
	3xyckb	150.00	0.59	88.50
		elVj	ifr elVj	
4	10 leh njh ij ¼4 l 5 Lyhll ,d txg½ okufLird voj/k LFkkfir djuk] etk@[k l Lyhll] ifux ,o lijfVx dk;			
	4xyckb	200.00	0.525	105.00
		elVj	ifr elVj	
5	IykfVx ,o Mflx dk;	200.00	1.425	285.00
		elVj	ifr elVj	
6	bUldVh lkbM@iLVh lkbM l mipkj djuk	200.00	0.308	61.60
		elVj	ifr elVj	
7	ikdfird L=kr l etk@[k l Lyhll m[kkMu dk	0.10	1638.500	163.85
	dk;	yk[k Lyhll	ifr yk[k Lyhll	
4	cht dh ykxr	0.30	45.00	13.50
		fdxk	ifr fdxk	
				65737.45
5	vkdfLed 0;; 3 ifr'kr			1972.12
	dy ;kx			67709.57
		eluk		67800.00

ESTIMATE NO.13

NAME OF WORK: CONSTRUCTION OF WATER HARVESTING STRUCTURE IN NON ARABLE TYPE "B"

B.S.R. RD_JAIPUR_2011

Ø-l	fooj.k	ek=k	nj	jlf'k
1	Mkx cfyx 2.5 l 5 leh xgjb			
	3 x yckb	210.00	0.25	52.50
		ehVj	ifr ehVj	
2	feVVh dk dk; cU/k e ¼ l [kh ;k xhyh½ 15 leh - dh ijr e fcNkuk] <yk dk rkMuk] ?kk l ikr chudj vyx djuk rFkk feVh dh Mflx djuk] 1-5 eh- mBku rFkk 50 eh- njh d fy;) dBkj feVVh e			
		1256.49	85.00	106801.65
		?ku ehVj	ifr ?kuehVj	
3	cht colb cuk; x; fjt ij ¼3 ykbu e½			
	3xyckb	210.00	0.59	123.90
		ehVj	ifr ehVj	
4	10 leh njh ij ¼4 l 5 Lyhl l ,d txg½ okufLird voj/k LFkkfir djuk] etk@[k l Lyhl l] ifux ,o lijfVx dk;			
	4xyckb	280.00	0.525	147.00
		ehVj	ifr ehVj	
5	lykfVx ,o Mflx dk;	280.00	1.425	399.00
		ehVj	ifr ehVj	
6	bUldVh l kbM@iLVh l kbM l mipkj djuk	280.00	0.308	86.24
		ehVj	ifr ehVj	
7	ikdfrd L=kr l etk@[k l Lyhl l m[kkMu dk dk;	0.14	1638.500	229.39
		yk[k Lyhl l	ifr yk[k Lyhl l	
4	cht dh ylxr	0.50	45.00	22.50
		fdxk	ifr fdxk	
	;kx			107862.18
5	vkdfled 0;; 3 ifr'kr			3235.87
	dy ;kx			111098.05
			eluk	111100.00

ESTIMATE NO. 14

NAME OF WORK: CONSTRUCTION OF SAFTY WALL "A"

1	Name of w/s :-	IWMP XIII
		P.S . PHAGI DISTT. JAIPUR (RAJ.)
2	Name of work :-	CONTRUCTION OF SAFETY WALL
1	Available crest length	14 M
2	Hight of structure	0.90 M
3	Top Width	0.6 M
4	Bottom Width	1.35 M
5	Depth of foundation taking as	1.20 M
6	Length of Basin	1.00 M
7	Head wall ext.	2+2 M
		B.S.R._RD_

DETAILED ESTIMATE							
S.No.	PARTICULAR	No.	L	B	H/D	Qty	Rate
1	Excavation in hard soil dry or most&disposal of excavated material within intial lead of 30 m and liftof 1.5m including dressing etc complete 100%of						
	H.W.	1.00	14.00	1.35	1.20	22.68	
	H.W.EX.	2.00	2.00	0.90	1.20	4.32	
	Apron	1.00	14.00	1.00	0.60	8.40	
				Total	(cu.m)	35.40	
				Total		35.40	82.00
2	cement concrete well mixed in cement mortar(1:4:8) laid in position complete including curing Aggregate size upto 50mm. HB H.W.	1.00	14.00	1.35	0.30	5.67	
	H.W.EX.	2.00	2.00	0.90	0.30	1.08	
	Apron	1.00	14.00	1.00	0.30	4.20	
				Total		10.95	1743
3	Random rubble stone masonry in cement sand mortar(1:6) for foundation						
	H.W.	1.00	14.00	1.35	0.90	17.01	
	H.W.EX.	2.00	2.00	0.60	0.90	2.16	
	Apron	1.00	14.00	1.00	0.30	4.20	
				Total		23.37	1429
4	Random rubble stone masonry in cement sand mortar(1:6) for super structure						
	H.W.	1.00	14.00	0.98	0.90	12.29	
	H.W.EX.	2.00	2.00	0.60	1.40	3.36	
				Total		12.29	1534

5	Cement plaster including smooth finishing in cement mortar (1:4)25mm thick						
	H.W.	1.00	14.00	0.90		12.60	
		1.00	14.00	1.20		16.80	
	H.W.EX.	2.00	0.60	0.50		0.60	
	Apron	1.00	14.00	1.00		14.00	
				Total		44.00	138
6	Cement concrete coping in cement mortar1:1:5 :3 100 mm thick						
	H.W.	1.00	14.00	0.60	0.075	0.63	
	H.W.EX.	2.00	2.00	0.60	0.075	0.18	
	Apron	1.00	14.00	1.35	0.075	1.42	
				Total		2.23	3467

TOTAL

METARIAL

LABOUR

Add 3% Contingency Charges

TOTAL

TOTAL Rs.

Say

ESTIMATE NO. 15

NAME OF WORK: CONSTRUCTION OF SAFTY WALL "B"

1	Name of w/s :-	IWMP XIII
		P.S . PHAGI DISTT. JAIPUR (RAJ.)
2	Name of work :-	CONTRUCTION OF SAFETY WALL
1	Available crest length	17 M
2	Hight of structure	1.00 M
3	Top Width	0.6 M
4	Bottom Width	1.40 M
5	Depth of foundation taking as	1.30 M
6	Length of Basin	1.00 M
7	Head wall ext.	2+2 M
		B.S.R._RD_

DETAILED ESTIMATE							
S.No.	PARTICULAR	No.	L	B	H/D	Qty	Rate
1	Excavation in hard soil dry or most&disposal of excavated material within intial lead of 30 m and liftof 1.5m including dressing etc complete 100%of						
	H.W.	1.00	17.00	1.40	1.30	30.94	
	H.W.EX.	2.00	2.00	0.90	1.30	4.68	
	Apron	1.00	17.00	1.00	0.60	10.20	
				Total	(cu.m)	45.82	
				Total		45.82	82.00
2	cement concrete well mixed in cement mortar(1:4:8) laid in position complete including curing Aggregate size upto 50mm. HB H.W.	1.00	17.00	1.40	0.30	7.14	
	H.W.EX.	2.00	2.00	0.90	0.30	1.08	
	Apron	1.00	17.00	1.00	0.30	5.10	
				Total		13.32	1743
3	Random rubble stone masonry in cement sand mortar(1:6) for foundation						
	H.W.	1.00	17.00	1.40	1.00	23.80	
	H.W.EX.	2.00	2.00	0.60	1.00	2.40	
	Apron	1.00	17.00	1.00	0.30	5.10	
				Total		31.30	1429
4	Random rubble stone masonry in cement sand mortar(1:6) for super structure						
	H.W.	1.00	17.00	1.00	1.00	17.00	
	H.W.EX.	2.00	2.00	0.60	1.50	3.60	
				Total		17.00	1534

5	Cement plaster including smooth finishing in cement mortar (1:4)25mm thick						
	H.W.	1.00	17.00	1.00		17.00	
		1.00	17.00	1.30		22.10	
	H.W.EX.	2.00	0.60	0.50		0.60	
	Apron	1.00	17.00	1.00		17.00	
				Total		56.70	138
6	Cement concrete coping in cement mortar1:1:5 :3 100 mm thick						
	H.W.	1.00	17.00	0.60	0.075	0.77	
	H.W.EX.	2.00	2.00	0.60	0.075	0.18	
	Apron	1.00	17.00	1.40	0.075	1.79	
				Total		2.73	3467

TOTAL

METARIAL

LABOUR

Add 3% Contingency Charges

TOTAL

TOTAL Rs.

Say

ESTIMATE NO. 16

NAME OF WORK: CONSTRUCTION OF SAFTY WALL "C"

1	Name of w/s :-	IWMP XIII
		P.S . PHAGI DISTT. JAIPUR (RAJ.)
2	Name of work :-	CONTRUCTION OF SAFETY WALL
1	Available crest length	22 M
2	Hight of structure	1.30 M
3	Top Width	0.6 M
4	Bottom Width	1.70 M
5	Depth of foundation taking as	1.60 M
6	Length of Basin	1.00 M
7	Head wall ext.	2+2 M
		B.S.R._RD_

DETAILED ESTIMATE								
S.No.	PARTICULAR	No.	L	B	H/D	Qty	Rate	
1	Excavation in hard soil dry or most&disposal of excavated material within intial lead of 30 m and liftof 1.5m including dressing etc complete 100%of							
	H.W.	1.00	22.00	1.70	1.60	59.84		
	H.W.EX.	2.00	2.00	0.90	1.60	5.76		
	Apron	1.00	22.00	1.00	0.60	13.20		
				Total	(cu.m)	78.80		
				Total		78.80		82.00
2	cement concrete well mixed in cement mortar(1:4:8) laid in position complete including curing Aggregate size upto 50mm. HB H.W.	1.00	22.00	1.70	0.30	11.22		
	H.W.EX.	2.00	2.00	0.90	0.30	1.08		
	Apron	1.00	22.00	1.00	0.30	6.60		
				Total		18.90		1743
3	Random rubble stone masonry in cement sand mortar(1:6) for foundation							
	H.W.	1.00	22.00	1.70	1.30	48.62		
	H.W.EX.	2.00	2.00	0.60	1.30	3.12		
	Apron	1.00	22.00	1.00	0.30	6.60		
				Total		58.34		1429
4	Random rubble stone masonry in cement sand mortar(1:6) for super structure							
	H.W.	1.00	22.00	1.15	1.30	32.89		
	H.W.EX.	2.00	2.00	0.60	1.80	4.32		
				Total		32.89		1534

5	Cement plaster including smooth finishing in cement mortar (1:4)25mm thick						
	H.W.	1.00	22.00	1.30		28.60	
		1.00	22.00	1.60		35.20	
	H.W.EX.	2.00	0.60	0.50		0.60	
	Apron	1.00	22.00	1.00		22.00	
				Total		86.40	138
6	Cement concrete coping in cement mortar1:1:5 :3 100 mm thick						
	H.W.	1.00	22.00	0.60	0.075	0.99	
	H.W.EX.	2.00	2.00	0.60	0.075	0.18	
	Apron	1.00	22.00	1.70	0.075	2.81	
				Total		3.98	3467

TOTAL

METARIAL

LABOUR

Add 3% Contingency Charges

TOTAL

TOTAL Rs.

Say

ESTIMATE NO. 17

NAME OF WORK: CONSTRUCTION OF MASONRY WATER HARVESTING STRUCTURE "A"

- | | | |
|---|-----------------|--------------------------------------|
| 1 | Name of W/S | IWMP XIII |
| | | P.S.PHAGI DISTT. JAIPUR |
| 2 | Name of work :- | CONTRUCTION OF WATER HARVESTING STR. |

Design

- | | | |
|---|--|----------------------------|
| 1 | Available crest length | 6.00 M |
| 2 | Total catchment area | 100.00 Ha |
| 3 | Hight of structure | 1.30 M |
| A | Design discharge (By flood discharge method) | |
| A | <u>HYDROLIC DESIGN</u> | |
| | Peak rate of run off in cum/sec.= | |
| | $Q = \frac{C I A}{36}$ | C= 0.40 |
| | | Catchment Area 100.00 |
| | $Q = 4.89 \text{ cumsec}$ | $K = \sqrt{\frac{L^3}{H}}$ |
| | | L= 3800.00 |
| | Say 4.9 cumsec | H= 40.00 |
| | | K 37037.82 |
| | | $T_c = 0.0195 K^{0.77}$ |
| | | 64.25 |
| | | I = 4.40 |

B HYDROLIC DESIGN

- | | | |
|-----------------------|------------|----------------------------------|
| $Q = 1.71L(h)^{3/2}$ | L = | 6.00 mt length available at site |
| $h = [Q/1.71L]^{2/3}$ | | |
| h = | 0.61 Say = | 0.60 |
| Taking free board as | 0.3 M | |
| Total d = | 0.90 | |

C. STRUCTURAL DESIGN

- | | | | | |
|--|-----------------------|-------|-----------------|--------|
| (I) Top width of Head wall | $h/(p-1)^{0.5}$ | 0.53 | 0.53 say = | 0.60 M |
| (as per site condition where h = | | | 0.60 m p = 2.30 | 0.60 M |
| p Specific gravty of stone masnory in cm = 2.3 | | | | |
| (ii) Bottom width of head wall | $b = h+H/(p-1)^{0.5}$ | 1.67 | Say = | 1.70 M |
| H =height of head wall in meters = | | 1.3 m | | 1.30 M |
| (iii) Length of head wall extension | H + d + 1 | 3.20 | | 3.20 M |
| d = h+free board = | 0.90 | | | 0.90 M |
| but as per side condition L/S M | 1.5 | R/S M | 1.5 | 3.00 M |
| (iv) Heigth of Head wall extension | H + d = | | | 2.20 M |
| (v) Botton width of HW ext. side wall & wing wall | $0.5(H+h)=$ | 0.95 | | 1.10 M |
| (vi) Top width of HW ext | $0.4H=$ | 0.52 | | 0.60 M |
| (vii) Length of Basin | $L.B = 0.75(H+d)+H$ | 2.95 | | 2.95 M |
| (viii) Thickness of Basin =0.60m(incloding concreting) | | | | |
| (ix) Height of side wall | H+d = | 2.20 | | 2.20 M |
| (x) Height of side wall =1.5h at W W joints | | | | |

1.5h =	0.90	1.10 M
(xi) Length of side wall = B. W. of H. W -B.W of H W E+L.B+ width of toe wall	4.00	
(xii) Length of wing wall = 2.25 h=	1.35	1.50 M
(xiii) Height of the wing wall =	0.90	1.10 M
(xiv) Top width of Head wall ext site wall wing wall = 0.60mt		
(xv) Width of toe wall=		0.45 M
(xvi) Height of toe wall =		0.30 M
(xvii) Height of wing wall at wing end =		1.10 M
(xviii) Bottem width of the side wall &wing wall taking as per Bottom width of the head wall ext as in item no.5= m		1.10 M
(xix) Depth of foundation taking as		2.00 M

STABILITY CHECK'S

a Top width of anicut =	0.60 m
b Bottm width of anicut =	1.70 m
w ₁ + w ₂ self weight of anicut	
p ₁ Pressure due to water besswall	
p ₂ Horizontal water pressure	
p ₃ Up lift pressure	
h Food heigth =	0.60 m
H heigth of anicut =	1.30 m
L considening one metre =	1
S	2.3
C	0.6

Forces acting on a over flow gravity dam

Forces and momrnt calculation's

considering one metre length of ancute and taking

Restoring moment as positive (+ ve) and overturning moment

as negative (-ve)

moment taken at B

s. no.	Forces	v- vertical forces	H- horizontal forces	Force acting at a distance from B	moment at B 2x5	
					+ ve	-ve
1	w ₁ = a x H x L x S					
	1.79	1.79		2.20	3.95	
2	w ₂ = 1/2x(b-a)xHxLxS					
	1.64	1.64		1.13	1.86	
3	p ₁ =wh x H					
	0.78		0.78	0.90		0.70
4	p ₂ =wH ² /2 x H					
	0.85		0.85	0.60		0.51
5	p ₃ =cxwbx(H+h)/2					
	0.80	0.80		1.80		1.43
	TOTAL	2.64	1.63		5.81	2.64

Em=mr-mo

3.16

CHECKS IN OVERTURNING

Factor of satety agaist overturning

Emr/Emo =+m/-m = Restoning moment/overturning moment

2.20

it is more than 1.50 hance structure is safe against overturning

SLINDING

Factor of safety against slinding
 $E_v/E_h = 1.63$
it is more than 1.0 hance structure is safe against slinding
RUPTURE (safety against tension at the bese)
X Relne Position of resultant measured from toe
 $x = E_m/E_v = 1.20$
 $e = b/2 - X = -0.35$
 $E_v/b (1+6e/b) = 0.33$
 $E_v/b (1-6e/b) = 2.78$
P max = 0.33
P min = 2.78

ABSTRACT OF COST

B.S.R._RD_JAIPUR_2011

S.No	Particular	Qty.	Rate	Labour Rate	Unit	Amount
1	Excavation in soil dry or most&disposal of excavated material within intial lead of 30 m and liftof 1.5m including dressing etc complete	7.62	71.00	71	cum	540.74
2	Excavation in ordinary murrum or earth mixed with bajri and kankar or boulder dry or most&disposal of excavated material within intial lead of 30 m and liftof 1.5m including dressing etc complete	22.85	82.00	82	cum	1873.54
3	Excavation in disintegrated rock and or soft rock or hard bankar or compacted murrum dry or moist including dressing&disposal of exeavated matarual with intial lead of 30m and lift of 1.5m	45.70	130.00	130	cum	5940.48
4	cement concrete well mixed in cement mortar(1:4:8) laid in position complete including curing Aggregate size upto 50mm. HB	12.62	1743.00	248	cum	21987.95
5	Random rubble stone masonry in cement sand mortar(1:6) for foundation	56.47	1429.00	388	cum	80688.49
6	Random rubble stone masonry in cement sand mortar(1:6) forsuper structure	42.34	1534.00	493	cum	64951.09
7	Cement plaster including smooth finishing in cement mortar (1:4)25mm thick	42.82	138.00	62	sqm	5909.16
8	Cement concrete coping in cement mortar1:2:4.100mm thick	3.11	3467.00	583	cum	10770.24

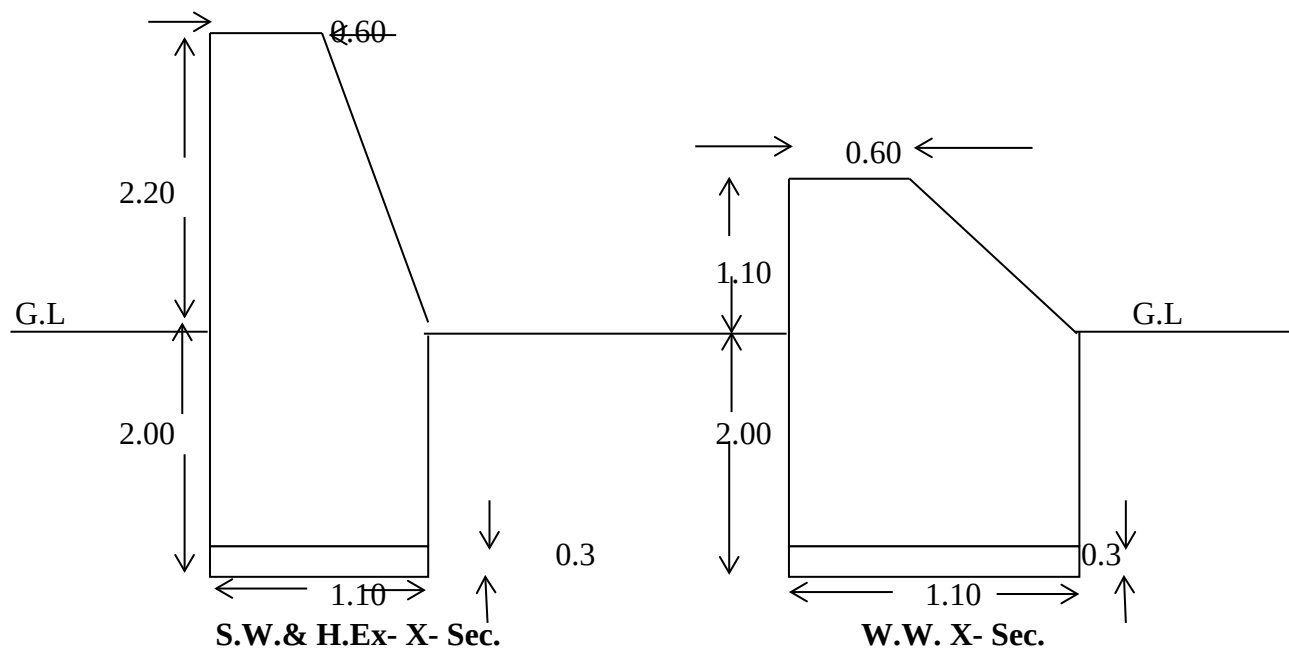
9	E/W for bind / embankment in dry or moist soil including laying on layers 1.5cm Breaking of clods sorting of grass pabbles etc and dressing in required profile when compacted manually or by plain roller with initial lead of 30mt and lift 1.5 mt (excluding)charges of watering and compaction					
	Hard soil 50%	112.50	61.00	85	cum	6862.50
	Ordinary murram 50%	112.50	96.00	130	cum	10800.00
10	Rehandling of cement beyond 100 m initial lead lead up to 200	11.67	44.00	44	mt.	513.46
			TOTAL			210837.63
	MATERIAL					127404.94
	LABOUR					83432.70
			TOTAL			210837.63
	Add 3% Contingency Charges					6325.13
			TOTAL Rs.			217162.76
			Say			2.17

DETAILED ESTIMATE

S.No.	PARTICULAR	No.	LENGTH	WIDTH	HT/DEPTH	QUANTITY
1	Total Excavation					
	H.W.	1.00	6.00	1.70	2.00	20.40
	H.W.E.	2.00	3.00	1.10	2.00	13.20
	S.W.	2.00	4.00	1.10	2.00	17.60
	wing wall	2.00	1.50	1.10	2.00	6.60
	Toe wall	1.00	6.00	0.45	0.90	2.43
	Apron	1.00	6.00	2.95	0.90	15.93
				Total	(cu.m)	76.16
2	Excavation in hard soil dry or moist&disposal of excavated material within initial lead of 30 m and lift of 1.5m including dressing etc complete 10%of TotalExcavation					
				Total		7.62
3	Excavation in ordinary murram or earth mixed with bajri and kankar or boulder dry or moist&disposal of excavated material within initial lead of 30 m and lift of 1.5m including dressing etc complete 30% of Total Excavation					
				Total		22.85

4	Excavation in disintegrated rock and or soft rock or hard bankar or compacted murrum dry or moist including dressing&disposal of exeavated matarual with intial lead of 30m and lift of 1.5m 60% of Total Excavation					
				Total		45.70
5	cement concrete well mixed in cement mortar(1:4:8) laid in position complete including curing Aggregate size upto 50mm. HB Total Excavation H.W.	1.00	6.00	1.70	0.30	3.06
	H.W.E.	2.00	3.00	1.10	0.30	1.98
	S.W.	2.00	4.00	1.10	0.30	2.64
	Wing Wall	2.00	1.50	1.10	0.30	0.99
	Toe Wall	1.00	6.00	0.45	0.15	0.41
	Apron	1.00	6.00	2.95	0.20	3.54
				Total		12.62
6	Random rubble stone masonary in cement sand mortar(1:6) for foundation					
	H.W.	1.00	6.00	1.70	1.70	17.34
	H.W.E.	2.00	3.00	1.10	1.70	11.22
	S.W.	2.00	4.00	1.10	1.70	14.96
	Wing Wall	2.00	1.50	1.10	1.70	5.61
	Toe Wall	1.00	6.00	0.45	0.75	2.03
	Apron	1.00	6.00	2.95	0.30	5.31
				Total		56.47
7	Random rubble stone masonary in cement sand mortar(1:6) forsuper structure					
	H.W.	1.00	6.00	1.15	1.30	8.97
	H.W.E	1.00	3.00	0.85	2.20	5.61
	S.W.	2.00	3.40	0.85	1.65	9.54
		2.00	0.60	0.85	2.20	2.24
		2.00	0.50	0.85	1.10	0.94
	Wing Wall	4.00	1.50	0.85	2.95	15.05
				Total		42.34
8	Cement plaster including smooth finishing in cement mortar (1:3)25mm thick					
	H.W.	1.00	6.00	1.30		7.80
		1.00	6.00	1.60		9.60
		1.00	6.00	0.30		1.80
	S.W.	2.00	0.60	0.90		1.08
		2.00	1.10	1.55		1.08
		2.00	3.40	1.65		11.22
		2.00	2.95	0.30		1.77
	Wing Wall	2.00	1.50	1.10		3.30
		2.00	0.85	1.10		1.87
	H.W.E.	1.00	3.00	0.50		1.50
	Toe Wall	1.00	6.00	0.30		1.80
				Total		42.82

9	Cement concrete coping in cement mortar 1:2:4.75 mm thick					
	H.W.	1.00	6.00	0.60	0.08	0.27
	S.W.	2.00	5.10	0.60	0.08	0.46
	Wing Wall	4.00	1.50	0.60	0.08	0.27
	H.W.E.	1.00	3.00	0.60	0.08	0.14
	Toe.Wall	1.00	6.00	0.45	0.08	0.20
	Apron	1.00	6.00	2.95	0.10	1.77
				Total		3.11
10	E/W for bind / embankment in dry or moist soil including laying on layers 1.5cm Breaking of clods sorting of grass pabbles etc and dressing in required profile when compacted manually or by plain roller with initial lead of 30mt and lift 1.5 mt (excluding charges of watering and compaction) Hard soil					225
				Total		225



ESTIMATE NO. 18

NAME OF WORK: CONSTRUCTION OF MASONRY WATER HARVESTING STRUCTURE "B"

- | | | |
|---|-----------------|--------------------------------------|
| 1 | Name of W/S | IWMP XIII |
| | | P.S.PHAGI, DISTT. JAIPUR |
| 2 | Name of work :- | CONTRUCTION OF WATER HARVESTING STR. |

Design

- | | | |
|---|--|----------------------------|
| 1 | Available crest length | 10.00 M |
| 2 | Total catchment area | 150.00 Ha |
| 3 | Hight of structure | 1.50 M |
| A | Design discharge (By flood discharge method) | |
| A | <u>HYDROLIC DESIGN</u> | |
| | Peak rate of run off in cum/sec.= | |
| | $Q = \frac{C I A}{36}$ | $C = 0.40$ |
| | 36 | Catchment Area 150.00 |
| | $Q = 7.33 \text{ cumsec}$ | $K = \sqrt{\frac{L^3}{H}}$ |
| | | L = 3800.00 |
| | Say 8 cumsec | H = 40.00 |
| | | K 37037.82 |
| | | $T_c = 0.0195 K^c$ |
| | | 64.25 |
| | | I = 4.40 |

B HYDROLIC DESIGN

- | | | |
|-----------------------|----------|-----------------------------------|
| $Q = 1.71L(h)^{3/2}$ | L = | 10.00 mt length available at site |
| $h = [Q/1.71L]^{2/3}$ | | |
| h = | 0.58 Say | = 0.60 |
| Taking free board as | 0.3 M | |
| Total d = | 0.90 | |

C. STRUCTURAL DESIGN

- | | | |
|--------|---|-------------------------------------|
| (I) | Top width of Head wall | |
| | $h/(p-1)^{0.5}$ | 0.53 0.53 say = 0.80 M |
| | (as per site condition where h = | 0.60 m p = 2.30 0.60 M |
| | p Specific gravty of stone masnory in cm = 2.3 | |
| (ii) | Bottom width of head wall | |
| | $b = h+H/(p-1)^{0.5}$ | 1.84 Say = 1.70 M |
| | H =height of head wall in meters = | 1.5 m 1.50 M |
| (iii) | Length of head wall extension | |
| | H +d + 1 | 3.40 3.40 M |
| | d = h+free board = | 0.90 0.90 M |
| | but as per side condition L/S M | 1.5 R/S M 1.5 3.00 M |
| (iv) | Heigth of Head wall extension | |
| | H + d = | 2.40 M |
| (v) | Botton width of HW ext. side wall & wing wall | |
| | $0.5(H+h)=$ | 1.05 1.10 M |
| (vi) | Top width of HW ext | |
| | $0.4H=$ | 0.6 0.60 M |
| (vii) | Length of Basin | |
| | $L.B = 0.75(H+d)+H$ | 3.30 2.95 M |
| (viii) | Thickness of Basin =0.60m(incloding concreting) | |

- (ix) Height of side wall
 $H+d = 2.40$ 2.40 M
- (x) Height of side wall $= 1.5h$ at W W joints
 $1.5h = 0.90$ 1.10 M
- (xi) Length of side wall = B. W. of H. W -B.W of H W E+L.B+ width of toe wall
 4.00
- (xii) Length of wing wall $= 2.25 h = 1.35$ 1.50 M
- (xiii) Height of the wing wall $= 0.90$ 1.10 M
- (xiv) Top width of Head wall ext site wall wing wall $= 0.60\text{mt}$
- (xv) Width of toe wall $= 0.45$ M
- (xvi) Height of toe wall $= 0.30$ M
- (xvii) Height of wing wall at wing end $= 1.10$ M
- (xviii) Bottom width of the side wall & wing wall taking as per Bottom width of the head wall ext as in item no.5 $= 1.10$ M
- (xix) Depth of foundation taking as 2.00 M

STABILITY CHECK'S

- a Top width of anicut $= 0.80$ m
- b Bottom width of anicut $= 1.70$ m

$w_1 + w$ self weight of anicut

p_1 Pressure due to water on wall

p_2 Horizontal water pressure

p_3 Up lift pressure

h Food height $= 0.60$ m

H height of anicut $= 1.50$ m

L considering one metre $= 1$

S 2.3

C 0.6

Forces acting on a over flow gravity dam

Forces and moment calculation's

considering one metre length of anicut and taking

Restoring moment as positive (+ ve) and overturning moment

as negative (-ve)

moment taken at B

s. no.	Forces	v- vertical forces	H- horizontal forces	Force acting at a distance from B	moment at B $\times 5$	
					+ ve	-ve
1	$w_1 = a \times H \times L \times S$					
	2.76	2.76		2.20	6.07	
2	$w_2 = 1/2 \times (b-a) \times H \times L \times S$					
	1.55	1.55		1.13	1.75	
3	$p_1 = w \times h \times H$					
	0.90		0.90	0.90		0.81
4	$p_2 = w \times H^2 / 2 \times H$					
	1.13		1.13	0.60		0.68
5	$p_3 = c \times w \times b \times (H+h) / 2$					
	0.92	0.92		1.80		1.65
	TOTAL	3.39	2.03		7.83	3.14

$E_m = m_r - m_o$

4.69

CHECKS IN OVERTURNING

Factor of safety against overturning

$E_{mr}/E_{mo} = +m/-m = \text{Restoring moment/overturning moment}$

2.49

it is more than 1.50 hence structure is safe against overturning

SLIDING

Factor of safety against sliding

$E_v/E_h = 1.68$

it is more than 1.0 hence structure is safe against sliding

RUPTURE (safety against tension at the base)

X = Resultant Position of resultant measured from toe

$x = E_m/E_v = 1.38$

$e = b/2 - X = -0.53$

$E_v/b (1+6e/b) = 0.12$

$E_v/b (1-6e/b) = 3.87$

P max = 0.12

P min = 3.87

ABSTRACT OF COST

B.S.R._RD_JAIPUR_2011

S.No	Particular	Qty.	Rate	Labour Rate	Unit	Amount
1	Excavation in soil dry or moist&disposal of excavated material within initial lead of 30 m and lift of 1.5m including dressing etc complete	10.20	71.00	71	cum	724.20
2	Excavation in ordinary murrum or earth mixed with bajri and kankar or boulder dry or moist&disposal of excavated material within initial lead of 30 m and lift of 1.5m including dressing etc complete	30.60	82.00	82	cum	2509.20
3	Excavation in disintegrated rock and or soft rock or hard bankar or compacted murrum dry or moist including dressing&disposal of excavated material with initial lead of 30m and lift of 1.5m	61.20	130.00	130	cum	7956.00
4	cement concrete well mixed in cement mortar(1:4:8) laid in position complete including curing Aggregate size upto 50mm. HB	17.29	1743.00	248	cum	30127.76
5	Random rubble stone masonry in cement sand mortar(1:6) for foundation	72.92	1429.00	388	cum	104195.54
6	Random rubble stone masonry in cement sand mortar(1:6) for super structure	53.50	1534.00	493	cum	82065.93
7	Cement plaster including smooth finishing in cement mortar (1:4) 25mm thick	62.22	138.00	62	sqm	8586.36

8	Cement concrete coping in cement mortar 1:2:4. 100mm thick	4.75	3467.00	583	cum	16473.45
9	E/W for bind / embankment in dry or moist soil including laying on layers 1.5cm Breaking of clods sorting of grass pabbles etc and dressing in required profile when compacted manually or by plain roller with initial lead of 30mt and lift 1.5 mt (excluding) charges of watering and compaction					
	Hard soil 50%	112.50	85.00	85	cum	9562.50
	Ordinary murram 50%	112.50	130.00	130	cum	14625.00
10	Rehandling of cement beyond 100 m initial lead lead up to 200	15.41	44.00	44	mt.	678.20
			TOTAL			277504.13
	MATERIAL					175869.05
	LABOUR					101635.08
			TOTAL			277504.13
	Add 3% Contingency Charges					8325.12
			TOTAL Rs.			285829.26
			Say			2.86

Prepared by

checked by

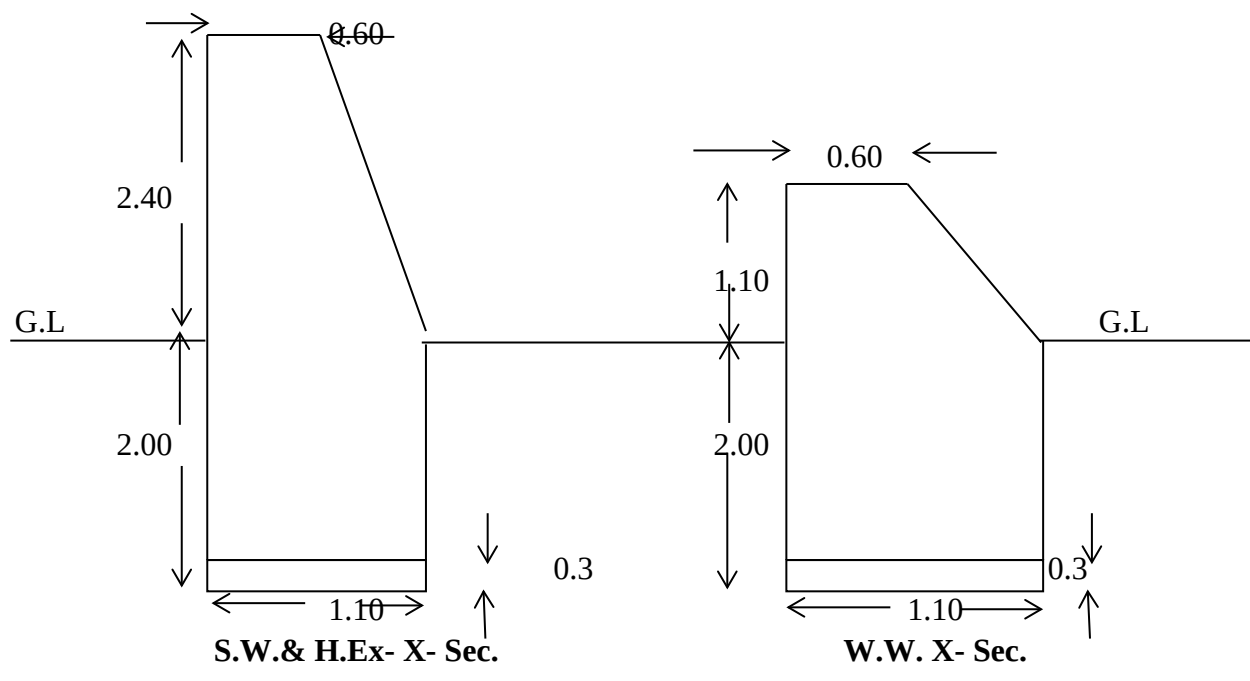
Approved by

DETAILED ESTIMATE

S.No.	PARTICULAR	No.	LENGTH	WIDTH	HT/DEPTH	QUANTITY
1	Total Excavation					
	H.W.	1.00	10.00	1.70	2.00	34.00
	H.W.E.	2.00	3.00	1.10	2.00	13.20
	S.W.	2.00	4.00	1.10	2.00	17.60
	wing wall	2.00	1.50	1.10	2.00	6.60
	Toe wall	1.00	10.00	0.45	0.90	4.05
	Apron	1.00	10.00	2.95	0.90	26.55
				Total	(cu.m)	102.00
2	Excavation in hard soil dry or moist & disposal of excavated material within initial lead of 30 m and lift of 1.5m including dressing etc complete 10% of Total Excavation					
				Total		10.20

3	Excavation in ordinary murrum or earth mixed with bajri and kankar or boulder dry or moist&disposal of excavated material within initial lead of 30 m and lift of 1.5m including dressing etc complete 30% of Total Excavation					
				Total		30.60
4	Excavation in disintegrated rock and or soft rock or hard bankar or compacted murrum dry or moist including dressing&disposal of excavated material with initial lead of 30m and lift of 1.5m 60% of Total Excavation					
				Total		61.20
5	cement concrete well mixed in cement mortar(1:4:8) laid in position complete including curing Aggregate size upto 50mm. HB Total Excavation H.W.	1.00	10.00	1.70	0.30	5.10
	H.W.E.	2.00	3.00	1.10	0.30	1.98
	S.W.	2.00	4.00	1.10	0.30	2.64
	Wing Wall	2.00	1.50	1.10	0.30	0.99
	Toe Wall	1.00	10.00	0.45	0.15	0.68
	Apron	1.00	10.00	2.95	0.20	5.90
				Total		17.29
6	Random rubble stone masonry in cement sand mortar(1:6) for foundation					
	H.W.	1.00	10.00	1.70	1.70	28.90
	H.W.E.	2.00	3.00	1.10	1.70	11.22
	S.W.	2.00	4.00	1.10	1.70	14.96
	Wing Wall	2.00	1.50	1.10	1.70	5.61
	Toe Wall	1.00	10.00	0.45	0.75	3.38
	Apron	1.00	10.00	2.95	0.30	8.85
				Total		72.92
7	Random rubble stone masonry in cement sand mortar(1:6) for super structure					
	H.W.	1.00	10.00	1.25	1.50	18.75
	H.W.E	1.00	3.00	0.85	2.40	6.12
	S.W.	2.00	3.40	0.85	1.75	10.12
		2.00	0.60	0.85	2.40	2.45
		2.00	0.50	0.85	1.20	1.02
	Wing Wall	4.00	1.50	0.85	2.95	15.05
				Total		53.50
8	Cement plaster including smooth finishing in cement mortar (1:3)25mm thick					
	H.W.	1.00	10.00	1.50		15.00
		1.00	10.00	1.80		18.00

		1.00	10.00	0.30		3.00
	S.W.	2.00	0.80	0.90		1.44
		2.00	0.90	1.65		1.44
		2.00	3.40	1.75		11.90
		2.00	2.95	0.30		1.77
	Wing Wall	2.00	1.50	1.10		3.30
		2.00	0.85	1.10		1.87
	H.W.E.	1.00	3.00	0.50		1.50
	Toe Wall	1.00	10.00	0.30		3.00
				Total		62.22
9	Cement concrete coping in cement mortar 1:2:4.75 mm thick					
	H.W.	1.00	10.00	0.80	0.08	0.60
	S.W.	2.00	5.10	0.60	0.08	0.46
	Wing Wall	4.00	1.50	0.60	0.08	0.27
	H.W.E.	1.00	3.00	0.60	0.08	0.14
	Toe.Wall	1.00	10.00	0.45	0.08	0.34
	Apron	1.00	10.00	2.95	0.10	2.95
				Total		4.75
10	E/W for bind / embankment in dry or moist soil including laying on layers 1.5cm Breaking of clods sorting of grass pabbles etc and dressing in required profile when compacted manually or by plain roller with initial lead of 30mt and lift 1.5 mt (excluding charges of watering and compaction) Hard soil					225
				Total		225



ESTIMATE NO. 19

NAME OF WORK: CONSTRUCTION OF MASONRY WATER HARVESTING STRUCTURE "B"

- | | | |
|---|-----------------|--------------------------------------|
| 1 | Name of W/S | IWMP XIII |
| | | P.S.PHAGI, DISTT. JAIPUR |
| 2 | Name of work :- | CONTRUCTION OF WATER HARVESTING STR. |

Design

- | | | |
|---|--|--------------------------------|
| 1 | Available crest length | 20.00 M |
| 2 | Total catchment area | 200.00 Ha |
| 3 | Hight of structure | 1.80 M |
| A | Design discharge (By flood discharge method) | |
| A | <u>HYDRAULIC DESIGN</u> | |
| | Peak rate of run off in cum/sec.= | |
| | $Q = \frac{C I A}{36}$ | C= 0.40 |
| | | Catchment Area 200.00 |
| | Q = | 9.78 cumsec |
| | | $K = \sqrt{\frac{L^3}{H}}$ |
| | | L= 3800.00 |
| | Say | 9.8 cumsec |
| | | H= 40.00 |
| | | K 37037.82 |
| | | $T_c = 0.0195 K^{\frac{1}{4}}$ |
| | | 64.25 |
| | | I = 4.40 |

B HYDRAULIC DESIGN

- | | | |
|-----------------------|------------|-----------------------------------|
| $Q = 1.71L(h)^{3/2}$ | L = | 20.00 mt length available at site |
| $h = [Q/1.71L]^{2/3}$ | | |
| h = | 0.56 Say = | 0.60 |
| Taking free board as | 0.3 M | |
| Total d = | 0.90 | |

UCTURAL DESIGN

- | | | |
|--------|---|-------------------------------------|
| (I) | Top width of Head wall | |
| | $h/(p-1)^{0.5}$ | 0.53 0.53 say = 0.80 M |
| | (as per site condition where h = | 0.60 m p = 2.30 0.60 M |
| | p Specific gravty of stone masnory in cm = 2.3 | |
| (ii) | Bottom width of head wall | |
| | $b = h+H/(p-1)^{0.5}$ | 2.10 Say = 1.70 M |
| | H =heigh of head wall in meters = | 1.8 m 1.80 M |
| (iii) | Length of head wall extension | |
| | H +d + 1 | 3.70 3.70 M |
| | d = h+free board = | 0.90 0.90 M |
| | but as per side condition L/S M | 1.5 R/S M 1.5 3.00 M |
| (iv) | Heigh of Head wall extension | |
| | H + d = | 2.70 M |
| (v) | Botton width of HW ext. side wall & wing wall | |
| | $0.5(H+h)=$ | 1.20 1.10 M |
| (vi) | Top width of HW ext | |
| | $0.4H=$ | 0.72 0.60 M |
| (vii) | Length of Basin | |
| | L.B =0.75(H+d)+H | 3.83 2.95 M |
| (viii) | Thickness of Basin =0.60m(incloding concreting) | |
| (ix) | Height of side wall | |

H+d =	2.70	2.70 M
(x) Height of side wall =1.5h at W W joints		
1.5h =	0.90	1.10 M
(xi) Length of side wall = B. W. of H. W -B.W of H W E+L.B+ width of toe wall		
	4.00	
(xii) Length of wing wall = 2.25 h=	1.35	1.50 M
(xiii) Height of the wing wall =	0.90	1.10 M
(xiv) Top width of Head wall ext site wall wing wall = 0.60mt		
(xv) Width of toe wall=		0.45 M
(xvi) Height of toe wall =		0.30 M
(xvii) Height of wing wall at wing end =		1.10 M
(xviii) Bottem width of the side wall &wing wall taking as per Bottom width of the head wall ext as in item no.5= m		1.10 M
(xix) Depth of foundation taking as		2.00 M

STABILITY CHECK'S

a Top width of anicut =	0.80 m
b Bottm width of anicut =	1.70 m
$w_1 + w_2$ self weight of anicut	
P ₁ Pressure due to water besswall	
P ₂ Horizontal water pressure	
P ₃ Up lift pressure	
h Food heigth =	0.60 m
H heigth of anicut =	1.80 m
L considening one metre =	1
S	2.3
C	0.6

Forces acting on a over flow gravity dam

Forces and momrnt calculation's

considering one metre length of ancut and taking

Restoring moment as positive (+ ve) and overturning moment

as negative (-ve)

moment taken at B

s. no.	Forces	v- vertical forces	H- horizontal forces	Force acting at a distance from B	moment at B 2x5	
					+ ve	-ve
1	$w_1 = a \times H \times L \times S$					
	3.31	3.31		2.20	7.29	
2	$w_2 = 1/2 \times (b-a) \times H \times L \times S$					
	1.86	1.86		1.13	2.11	
3	$p_1 = w \times h \times H$					
	1.08		1.08	0.90		0.97
4	$p_2 = w \times H^2 / 2 \times H$					
	1.62		1.62	0.60		0.97
5	$p_3 = c \times w \times b \times (H+h) / 2$					
	1.10	1.10		1.80		1.98
	TOTAL	4.07	2.70		9.39	3.93

$$E_m = m_r - m_o$$

$$5.46$$

CHECKS IN OVERTURNING

Factor of satety agaist overturning

Emr/Emo = +m/-m = Restoring moment/overturning moment

2.39

it is more than 1.50 hence structure is safe against overturning

SLINDING

Factor of safety against sliding

Ev/Eh = 1.51

it is more than 1.0 hence structure is safe against sliding

RUPTURE (safety against tension at the base)

X Resultant Position of resultant measured from toe

x = Em/Ev = 1.34

e = b/2 - X -0.49

Ev/b (1+6e/b) 0.66

Ev/b (1-6e/b) 4.13

P max = 0.66

P min = 4.13

ABSTRACT OF COST

B.S.R._RD_JAIPUR_2011

S.No	Particular	Qty.	Rate	Labour Rate	Unit	Amount
1	Excavation in soil dry or moist&disposal of excavated material within initial lead of 30 m and lift of 1.5m including dressing etc complete	16.66	71.00	71	cum	1182.86
2	Excavation in ordinary murrum or earth mixed with bajri and kankar or boulder dry or moist&disposal of excavated material within initial lead of 30 m and lift of 1.5m including dressing etc complete	49.98	82.00	82	cum	4098.36
3	Excavation in disintegrated rock and or soft rock or hard bankar or compacted murrum dry or moist including dressing&disposal of excavated material with initial lead of 30m and lift of 1.5m	99.96	130.00	130	cum	12994.80
4	cement concrete well mixed in cement mortar(1:4:8) laid in position complete including curing Aggregate size upto 50mm. HB	28.96	1743.00	248	cum	50477.28
5	Random rubble stone masonry in cement sand mortar(1:6) for foundation	114.04	1429.00	388	cum	162963.16
6	Random rubble stone masonry in cement sand mortar(1:6) for super structure	81.81	1534.00	493	cum	125501.91
7	Cement plaster including smooth finishing in cement mortar (1:4) 25mm thick	114.24	138.00	62	sqm	15765.12
8	Cement concrete coping in cement mortar 1:2:4, 100mm thick	8.64	3467.00	583	cum	29951.41

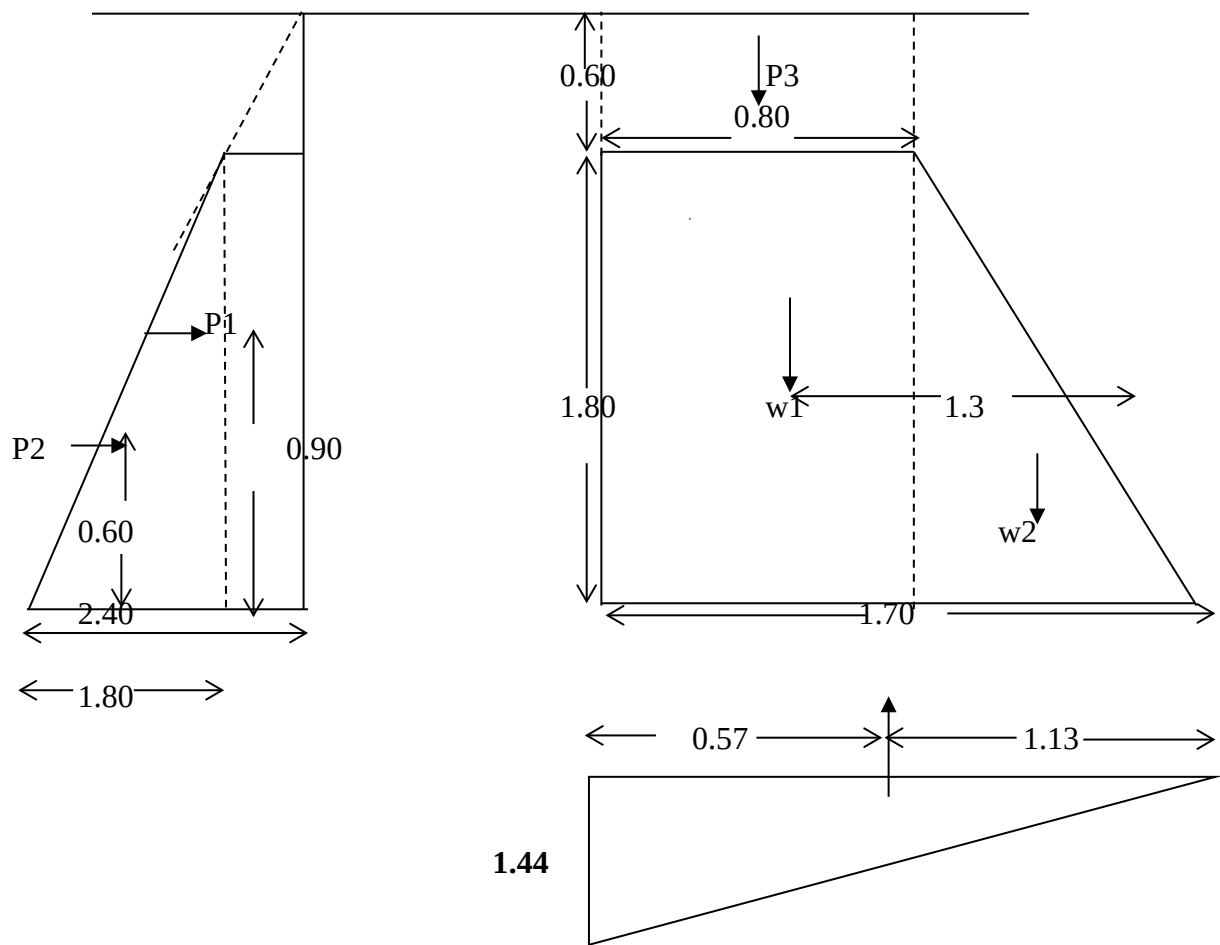
9	E/W for bind / embankment in dry or moist soil including laying on layers 1.5cm Breaking of clods sorting of grass pabbles etc and dressing in required profile when compacted manually or by plain roller with initial lead of 30mt and lift 1.5 mt (excluding) charges of watering and compaction					
	Hard soil 50%	112.50	85.00	85	cum	9562.50
	Ordinary murram 50%	112.50	96.00	96	cum	10800.00
10	Rehandling of cement beyond 100 m initial lead lead up to 200	24.76	44.00	44	mt.	1089.28
			TOTAL			424386.68
	MATERIAL					280775.81
	LABOUR					143610.87
			TOTAL			424386.68
	Add 3% Contingency Charges					12731.60
			TOTAL Rs.			437118.28
			Say			4.37

DETAILED ESTIMATE

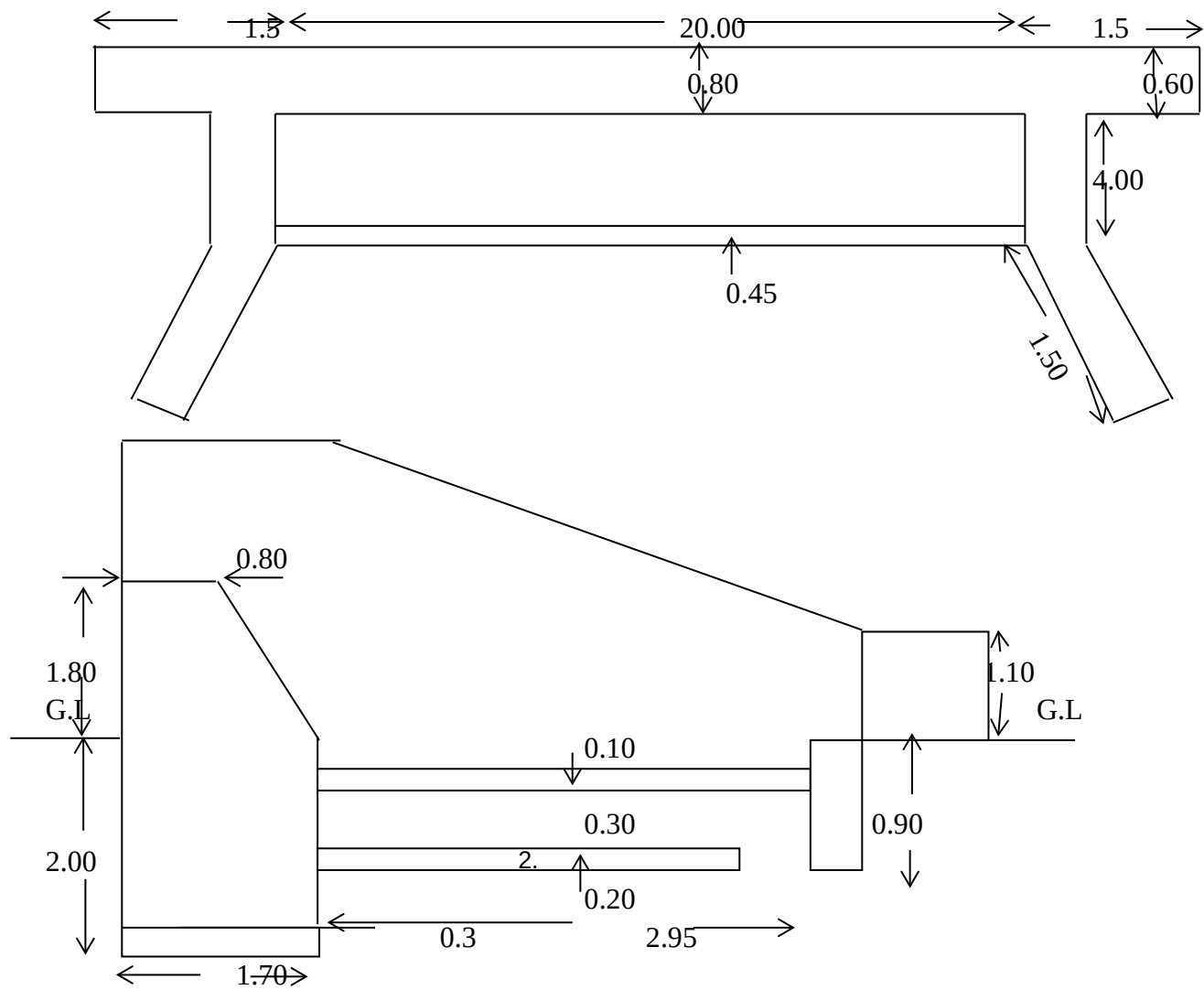
S.No.	PARTICULAR	No.	LENGTH	WIDTH	HT/DEPTH	QUANTITY
1	Total Excavation					
	H.W.	1.00	20.00	1.70	2.00	68.00
	H.W.E.	2.00	3.00	1.10	2.00	13.20
	S.W.	2.00	4.00	1.10	2.00	17.60
	wing wall	2.00	1.50	1.10	2.00	6.60
	Toe wall	1.00	20.00	0.45	0.90	8.10
	Apron	1.00	20.00	2.95	0.90	53.10
				Total	(cu.m)	166.60
2	Excavation in hard soil dry or moist & disposal of excavated material within initial lead of 30 m and lift of 1.5m including dressing etc complete 10% of					
				Total		16.66
3	Excavation in ordinary murram or earth mixed with bajri and kankar or boulder dry or moist & disposal of excavated material within initial lead of 30 m and lift of 1.5m including dressing etc complete 30% of Total Excavation					
				Total		49.98

4	Excavation in disintegrated rock and or soft rock or hard bankar or compacted murrum dry or moist including dressing&disposal of exeavated matarual with intial lead of 30m and lift of 1.5m 60% of Total Excavation					
				Total		99.96
5	cement concrete well mixed in cement mortar(1:4:8) laid in position complete including curing Aggregate size upto 50mm. HB Total Excavation H.W.	1.00	20.00	1.70	0.30	10.20
	H.W.E.	2.00	3.00	1.10	0.30	1.98
	S.W.	2.00	4.00	1.10	0.30	2.64
	Wing Wall	2.00	1.50	1.10	0.30	0.99
	Toe Wall	1.00	20.00	0.45	0.15	1.35
	Apron	1.00	20.00	2.95	0.20	11.80
				Total		28.96
6	Random rubble stone masonary in cement sand mortar(1:6) for foundation					
	H.W.	1.00	20.00	1.70	1.70	57.80
	H.W.E.	2.00	3.00	1.10	1.70	11.22
	S.W.	2.00	4.00	1.10	1.70	14.96
	Wing Wall	2.00	1.50	1.10	1.70	5.61
	Toe Wall	1.00	20.00	0.45	0.75	6.75
	Apron	1.00	20.00	2.95	0.30	17.70
				Total		114.04
7	Random rubble stone masonary in cement sand mortar(1:6) forsuper structure					
	H.W.	1.00	20.00	1.25	1.80	45.00
	H.W.E	1.00	3.00	0.85	2.70	6.89
	S.W.	2.00	3.40	0.85	1.90	10.98
		2.00	0.60	0.85	2.70	2.75
		2.00	0.50	0.85	1.35	1.15
	Wing Wall	4.00	1.50	0.85	2.95	15.05
				Total		81.81
8	Cement plaster including smooth finishing in cement mortar (1:3)25mm thick					
	H.W.	1.00	20.00	1.80		36.00
		1.00	20.00	2.10		42.00
		1.00	20.00	0.30		6.00
	S.W.	2.00	0.80	0.90		1.44
		2.00	0.90	1.80		1.44
		2.00	3.40	1.90		12.92
		2.00	2.95	0.30		1.77
	Wing Wall	2.00	1.50	1.10		3.30
		2.00	0.85	1.10		1.87
	H.W.E.	1.00	3.00	0.50		1.50
	Toe Wall	1.00	20.00	0.30		6.00

9	Cement concrete coping in cement mortar 1:2:4.75 mm thick					
	H.W.	1.00	20.00	0.80	0.08	1.20
	S.W.	2.00	5.10	0.60	0.08	0.46
	Wing Wall	4.00	1.50	0.60	0.08	0.27
	H.W.E.	1.00	3.00	0.60	0.08	0.14
	Toe.Wall	1.00	20.00	0.45	0.08	0.68
	Apron	1.00	20.00	2.95	0.10	5.90
				Total		8.64
10	E/W for bind / embankment in dry or moist soil including laying on layers 1.5cm Breaking of clods sorting of grass pabbles etc and dressing in required profile when compacted manually or by plain roller with initial lead of 30mt and lift 1.5 mt (excluding charges of watering and compaction) Hard soil					225
				Total		225



PLAN



X-Section

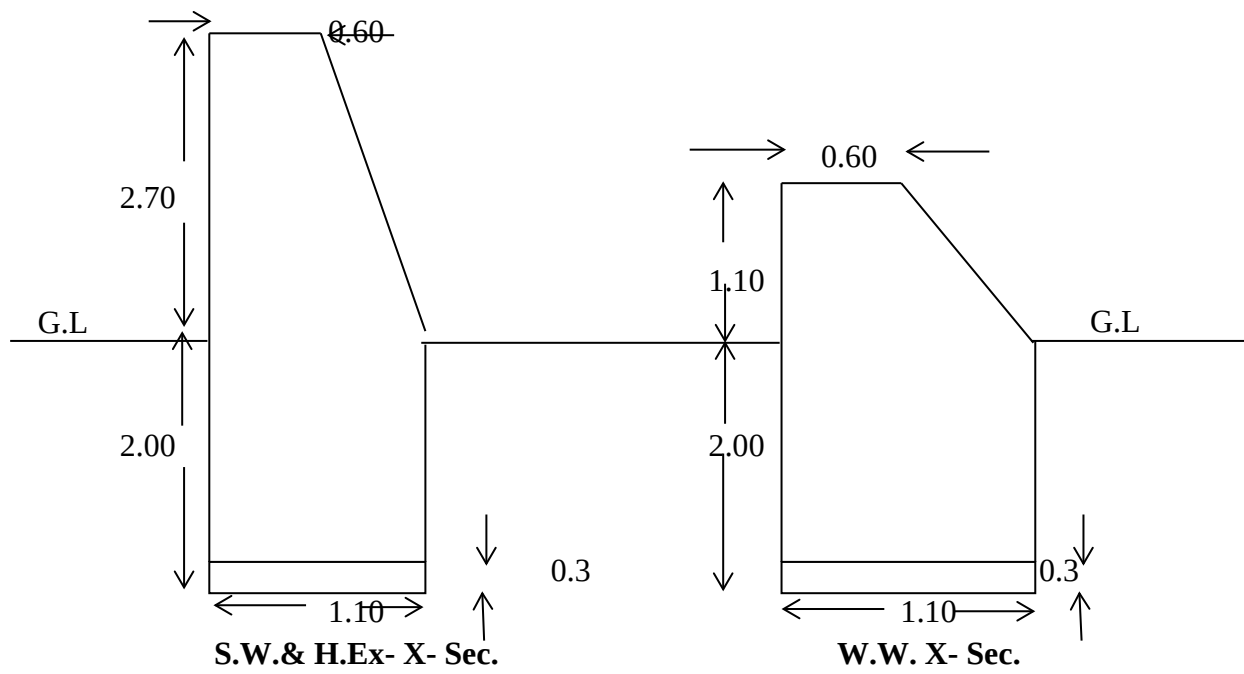


Table – 1 : Village wise land use of project area

S. No.	Name of Gram Panchayat	Geographical Area	Forest Area	Community Land	Pasture Land	cultivated Waste Land	Agriculture Land				Net Sown Area
							Temporary Fellow	Permanent Fellow	Cultivated Rainfed	Cultivate irrigated	
1	G.P. LADANA										
I	Ladana	1494		205		148	16	140	830	155	1020
II	Kagya	305		40		55			170	40	302
	Total	1799	0	245	0	203	16	140	1000	195	1322
2	G.P. JHARLA										
I	Bhojpura	919		187		225			437	70	590
II	Datuli	782		78		161			401	142	660
III	Jharla	238		30		12			110	86	306
	Total	1939	0	295	0	398	0	0	948	298	1556
3	G.P. MADHORAJPURA										
I	Madhorajpura	1387		112		210			864	201	1264
	Total	1387	0	112	0	210	0	0	864	201	1264
4	G.P. BHAKNROTA										
I	Jharana	434		55		45	5	13	230	86	512
II	Jhonpuriya	477		63		76	6	3	265	64	408
III	Jharana Khurd	229		20		52			122	35	263
	Total	1140	0	138	0	173	11	16	617	185	1183
GRAND TOTAL		6265	0	790	0	984	27	156	3429	879	5325

Table – 3 : Village wise details of irrigated, unirrigated, wasteland, pasture land

(Area in ha)

S. No.	Name of Gram Panchayat	Irrigated Land			Unirrigated land			Pasture Land	Others
		Chahi	Jaav	Total	Barani	Waste Land	Total		
1	G.P. LADANA								
I	Ladana	155		155	986	148	1134		205
II	Kagya	40		40	170	55	225		40
	Total	195	0	195	1156	203	1359	0	245
2	G.P. JHARLA								
I	Bhojpura	70		70	437	225	662		187
II	Datuli	142		142	401	161	562		78
III	Jharla	86		86	110	12	122		30
	Total	298	0	298	948	398	1346	0	295
3	G.P. MADHORAJPURA								
I	Madhorajpura	201		201	864	210	1074		112
	Total	201	0	201	864	210	1074	0	112
4	G.P. BHAKNROTA								
I	Jharana	86		86	248	45	293		55
II	Jhonpuriya	64		64	274	76	350		63
III	Jharana Khurd	35		35	122	52	174		20
	Total	185	0	185	644	173	817	0	138
GRAND TOTAL		879	0	879	3612	984	4596	0	790

Table – 4 : Village wise government and private land of project area

Area in hactare

S. No.	Name of Gram Panchayat	Geographical Area	Private Land		Govt Land			
			Irrigated	Unirrigated	Forest Area	Community Land	Pasture Land	Uncultivated Waste Land
1	G.P. LADANA							
I	Ladana	1494	155	830		205		45
II	Kagya	305	40	170		40		22
	Total	1799	195	1000		245		67
2	G.P. JHARLA							
I	Bhojpura	919	70	437		187		37
II	Datuli	782	142	401		78		18
III	Jharla	238	86	110		30		12
	Total	1939	298	948		295		67
3	G.P. MADHORAJPURA							
I	Madhorajpura	1387	201	864		112		42
	Total	1387	201	864		112		42
4	G.P. BHAKNROTA							
I	Jharana	434	86	230		55		15
II	Jhonpuriya	477	64	265		63		23
III	Jharana Khurd	229	35	122		20		8
	Total	1140	185	617		138		46
GRAND TOTAL		6265	879	3429	0	790	0	222

Table 5: Demography Information of the Project Area

S.N.	Name of Gram Panchayt/Village	Geographical Area (ha)	Total House	Total Populati	Total Male	Total Female	SC			ST		
							SC_M	SC_F	Total	ST_M	ST_F	Total
1	G.P. LADANA											
I	Ladana	1494	334	2144	1103	1041	415	193	222	97	51	46
II	Kagya	305	55	400	194	206	0	0	0	0	0	0
	Total	1799	389	2544	1297	1247	415	193	222	97	51	46
2	G.P. JHARLA											
I	Bhojpura	919	220	1451	752	699	362	180	182	0	0	0
II	Datuli	782	144	1322	666	656	308	151	157	14	7	7
III	Jharla	238	153	1085	534	551	333	161	172	46	19	27
	Total	1939	517	3858	1952	1906	1003	492	511	60	26	34
3	G.P. MADHORAJPURA											
I	Madhorajpura	1387	734	4690	2430	2260	916	485	431	163	83	80
	Total	1387	734	4690	2430	2260	916	485	431	163	83	80
4	G.P. BHAKNROTA											
I	Jharana	434	70	532	277	255	64	35	29	0	0	0
II	Jhonpuriya	477	52	408	217	191	12	7	5	0	0	0
III	Jharana Khurd	229	65	378	197	181	375	196	179	2	1	1
	Total	1140	187	1318	691	627	451	238	213	2	1	1
	GRAND TOTAL	6265	1827	12410	6370	6040	2785	1408	1377	322	161	161

Table 6; Village wise Land Holding Pattern in Project area

S.no.	Type of Farmer	Land holding (ha.) irrigation source wise			Land holding (ha.) Social group wise				
		Irrigated	Rainfed	Total	General	SC.	ST.	OBC.	BPL
1	Large Farmer	546	1846	2392	850	456	92	946	48
2	Small Farmer	201	699	900	326	114	12	376	72
3	Marginal Farmer	132	884	1016	432	168	16	368	32
	Total	879	3429	4308	1608	738	120	1690	152

TABLE 7; DETAILS OF WORK TAKEN UNDER MNREGS

Ø-l-	;fud dM		xle	dk;dkjh , tUlh
xle ipk;r l		HkdjVl		
1	59636	jk tUnilkn@xkiky yky cjok ch-ih-,y u- 7419870 eM cUnh	>jkuk [ln	xle ipk;r
2	59640	ek#@dlj jke cjok ch-ih-,y u- 7419906 eM cUnh	>jkuk [ln	xle ipk;r
3	59646	phjthyky @xkiky yky cjok ch-ih-,y u- 7419871 eM cUnh	>jkuk [ln	xle ipk;r
4	59651	pUnkjke@txUukFk cjok ch-ih-,y u- 7419883 eM cUnh	>jkuk [ln	xle ipk;r
5	59653	frjykd pUn @vkeidk'k ch-ih-,y u- 7419862 eM cUnh	>jkuk [ln	xle ipk;r
6	59654	x.k'kukjk;.k@jkeukjk;.k ch-ih-,y u- 7419864 eM cUnh	>jkuk [ln	xle ipk;r
7	59659	dkyjke@lkgyky cjok ch-ih-,y u- 7419884 eM cUnh	>jkuk [ln	xle ipk;r
8	59661	ykyjke @ek#jke cjok ch-ih-,y u- 7419886 eM cUnh	>jkuk [ln	xle ipk;r
9	59662	fd'kuyky@ek#jke cjok ch-ih-,y u- 7419887 eM cUnh	>jkuk [ln	xle ipk;r
10	59672	'kdjyky@clnjke cjok ch-ih-,y u- 7419930 eM cUnh	>jkuk [ln	xle ipk;r
11	59632	ek#@#?kkjke cudj ch-ih-,y u- 10080808 eM cUnh	>jkuk	xle ipk;r
12	271200070423/IF/59729	dUg;kyky@gueku eh.kk ch-ih-,y u- 7419828 eM cUnh	>jkuk	xle ipk;r
13	271200070423/IF/59730	jketiyy @nxkjke eh.kk ch-ih-,y u- 7419833 eM cUnh ,o vU; dk;	>jkuk	xle ipk;r
14	271200070423/IF/59731	nkelnj @nxkjke eh.kk ch-ih-,y u- 7419836 eM cUnh ,o vU; dk;	>jkuk	xle ipk;r
15	271200070423/IF/59733	jkejk;@ckyjke eh.kk ch-ih-,y u- 7419822 eM cUnh ,o vU; dk;	>jkuk	xle ipk;r
16	271200070423/IF/59734	ctjx@ek#jke eh.kk ch-ih-,y u- 7419823 eM cUnh ,o vU; dk;	>jkuk	xle ipk;r
17	59736	gueku@yknjke eh.kk ch-ih-,y u- 7419827 eM cUnh	>jkuk	xle ipk;r
18	271200070423/IF/59737	txnh'k@ihkjke eh.kk ch-ih-,y u- 7419831 eM cUnh ,o vU; dk;	>jkuk	xle ipk;r
19	59738	lyrlu@Hkkekjke eh.kk ch-ih-,y u-7419837 eM cUnh	>jkuk	xle ipk;r
20	271200070423/IF/59739	cnhyky@ihkyky eh.kk ch-ih-,y u- 7419838 eM cUnh ,o vU; dk;	>jkuk	xle ipk;r
21	59740	Hkojyky@xxkjke eh.kk ch-ih-,y u- 7419842 eM cUnh	>jkuk	xle ipk;r
22	59741	jkeyky@Hkkek jke eh.kk ch-ih-,y u- 7419847 eM cUnh	>jkuk	xle ipk;r
23	59742	Hlxokulgk;@Hkkekjke eh.kk ch-ih-,y u- 7419849 eM cUnh	>jkuk	xle ipk;r
24	59743	jkedj.k@Hkkekjke eh.kk ch-ih-,y u- 7419850 eM cUnh	>jkuk	xle ipk;r
25	59782	jk tdoj@j/kukFk flg ch-ih-,y u- 10080827 eM cUnh	>jkuk	xle ipk;r
26	59783	ukFkjke@xtkUkUn dej ch-ih-,y u- 10080814 eM cUnh	>jkuk	xle ipk;r
27	59784	ykyjke @jkedj.k njkxk ch-ih-,y u- 7419782 eM cUnh	>jkuk	xle ipk;r
28	59785	lxekflg @jruflg ch-ih-,y u- 7419799 eM cUnh	>jkuk	xle ipk;r
xle ipk;r l		>lMyt		
1	58568	txnh'k@/kkY;k ckxfj;k ch-ih-,y- u- 7422098] eM cUnh	Hkk t ijk	xle ipk;r

2	58569	vukjk noh@lUnj uV ch-ih-,y- u- 7421975] eM cUnh	Hkk t ijk	xle ipk;r
3	271200070427/WH/58517	>kMyk l nryh lhek ij uky ij uolu ukMh [knkb dk;	nryh	xle ipk;r
4	271200070427/IF/58560	igykn@cnh ckofj;k ch-ih-,y- u- 7431328] eM cUnh	nryh	xle ipk;r
5	271200070427/IF/58561	ctjx@cnh ckofj;k ch-ih-,y- u- 7431327] eM cUnh	nryh	xle ipk;r
6	271200070427/IF/58562	Hkkel@jkeno cjok ch-ih-,y- u- 7422274] eM cUnh	nryh	xle ipk;r
7	271200070427/IF/58563	gueku@nok cjok ch-ih-,y- u- 7422289] NkVk ck/k	nryh	xle ipk;r
8	271200070427/IF/58564	jkeno@: ik ckofj;k ch-ih-,y- u- 7431323] eM cUnh	nryh	xle ipk;r
9	271200070427/IF/58565	cUuk ckofj;k@: ik ckofj;k ch-ih-,y- u- 7431321] eM cUnh	nryh	xle ipk;r
10	271200070427/IF/58566	l j t d j .k ckofj;k@d l j ckofj;k ch-ih-,y- u- 7431325] eM cUnh	nryh	xle ipk;r
11	271200070427/IF/58567	exyk ckofj;k@: ik ckofj;k ch-ih-,y- u- 7431322] eM cUnh	nryh	xle ipk;r
xle ipk;r !		el/kjkt ijk		
1	271200070419/WH/59424	ukD;k ukMh [knkb dk;	ek/kkjkt ijk	xle ipk;r
2	271200070419/IF/59503	idk'k @Nhrj ey jxj Ckh- ih- ,y u- 7420885] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
3	59504	ikp jke @ eUuk jke jxj Ckh- ih- ,y u- 7420902] eM cUnh dk; @ dvk xgjk	ek/kkjkt ijk	xle ipk;r
4	59505	dkyjke @l xj ey Ckh- ih- ,y u- 7420903] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
5	59506	jkeukjk;.k @ukFkjke jxj Ckh- ih- ,y u- 7420925] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
6	271200070419/IF/59507	pru yky @Nhrj ey jxj Ckh- ih- ,y u- 7420938] eM cUnh dk; @ dvk xgjk	ek/kkjkt ijk	xle ipk;r
7	59508	jlexkiky [kph @ xlo/ku yky Ckh- ih- ,y u- 7420989] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
8	59509	/kki@ckcyky [kVhd Ckh- ih- ,y u- 7421241] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
9	59510	txnh'k @ukuxjke cjok Ckh- ih- ,y u- 7421791] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
10	59511	ukFk @jkeukjk;.k cjok Ckh- ih- ,y u- 7421793] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
11	59512	ek/k @yknjke cjok Ckh- ih- ,y u- 7421801] eM cUnh dk; @dvk xgjk	ek/kkjkt ijk	xle ipk;r
12	59513	xkfoUn @yknjke cjok Ckh- ih- ,y u- 7421803] eM cUnh dk; @dvk xgjk	ek/kkjkt ijk	xle ipk;r
13	59514	vkeidk'k @ykn cjok Ckh- ih- ,y u- 7421804] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
14	59515	jkei l n @ukFkjke cjok Ckh- ih- ,y u- 7421806] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
15	59516	dkyjke @ykyjke]Ckh- ih- ,y u- 7421808 eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
16	59517	Hk : yky @ ukjk;.k cjok Ckh- ih- ,y u- 7421813] eM cUnh dk; @Hkfe leryhdj.k	ek/kkjkt ijk	xle ipk;r
17	59518	ekxh noh @l [ino cjok Ckh- ih- ,y u- 7421817] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
18	59519	ukFkjke @NkVjke cjok Ckh- ih- ,y u- 7421819] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
19	271200070419/IF/59520	jkeyky @Hkjke cyb]Ckh- ih- ,y u- 9660904 eM cUnh dk; @Hkfe leryhdj.k	ek/kkjkt ijk	xle ipk;r
20	59521	jkeorkj @yknjke [kph Ckh- ih- ,y u- 9660917] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
21	59522	jkeLo: i @yknjke [kph Ckh- ih- ,y u- 9660918] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
22	59523	je'k @yknjke [kph Ckh- ih- ,y u- 9660921] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
23	59524	txnh'k @yknjke [kph Ckh- ih- ,y u- 9660922] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
24	59525	dtkM @Jo.k eh.kk Ckh- ih- ,y u- 51265006] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
25	271200070419/IF/59526	txnh'k @tk: eh.kk Ckh- ih- ,y u- 7421487] eM cUnh dk;	ek/kkjkt ijk	xle ipk;r
26	271200070419/IF/59527	Jo.k @tk:]Ckh- ih- ,y u- 7421486 eM cUnh dk;	ek/kkjkt ijk	xle ipk;r

27	59528	fcjnh @ykykje] eM cUnh dk;	ek/kkjktijk	xle ipk;r
28	59529	uehpUn @ykykje] eM cUnh dk;	ek/kkjktijk	xle ipk;r
29	59530	dyk'k @ljtdj.k] eM cUnh dk;	ek/kkjktijk	xle ipk;r
30	271200070419/IF/59531	vkpdh @gueku] eM cUnh dk;	ek/kkjktijk	xle ipk;r
31	59532	jkejru @ljtdj.k] eM cUnh dk;	ek/kkjktijk	xle ipk;r
32	271200070419/IF/59533	gtkjh @jletho.k] eM cUnh dk;	ek/kkjktijk	xle ipk;r
33	271200070419/IF/59534	lhrkje @jletho.k] eM cUnh dk;	ek/kkjktijk	xle ipk;r
34	59535	gfjukjk;.k @'krlu] eM cUnh dk;	ek/kkjktijk	xle ipk;r
35	59536	jle'oj @nohyky eh.kk] eM cUnh dk;	ek/kkjktijk	xle ipk;r
36	59537	Hkxkrk @ynjkeeh.kk] eM cUnh dk;	ek/kkjktijk	xle ipk;r
37	271200070419/IF/59538	ukuxjie @Hkkekje eh.kk]Ckh- ih- ,y u- 7421488 eM cUnh dk;	ek/kkjktijk	xle ipk;r
38	59539	jkeukjk;.k @Hkkekje eh.kk Ckh- ih- ,y u- 7421492] eM cUnh dk;	ek/kkjktijk	xle ipk;r
39	271200070419/IF/59540	jkefd'kkj @ekg: eh.kk] eM cUnh dk;	ek/kkjktijk	xle ipk;r
40	271200070419/IF/59541	jle'oj @ekg: eh.kk] eM cUnh dk;	ek/kkjktijk	xle ipk;r
41	271200070419/IF/59542	prHkt @ekg: eh.kk] eM cUnh dk;@ dvk xgjk	ek/kkjktijk	xle ipk;r
42	271200070419/IF/59543	igykn @ekg: eh.kk] eM cUnh dk;@ dvk xgjk	ek/kkjktijk	xle ipk;r
43	271200070419/IF/59544	Hk :@ekg: eh.kk] eM cUnh dk;@ dvk xgjk	ek/kkjktijk	xle ipk;r
44	271200070419/IF/59545	j?lukFk @ekg: eh.kk] eM cUnh dk;@ dvk xgjk	ek/kkjktijk	xle ipk;r
45	59546	jkeukjk;.k @nokjie /kkudk]eM cUnh dk;	ek/kkjktijk	xle ipk;r
46	271200070419/IF/59547	Hkoj @jkepUn eh.kk] eM cUnh dk;@ dvk xgjk	ek/kkjktijk	xle ipk;r
47	59548	gfjfd'ku @dkukje [kkjy Ckh- ih- ,y u- 7421687] eM cUnh dk;	ek/kkjktijk	xle ipk;r
48	271200070419/IF/59549	lhrkje @Hkoj tkV Ckh- ih- ,y u- 7421853] eM cUnh dk;	ek/kkjktijk	xle ipk;r
49	59550	xkih @ukjk;.k [kkjy]Ckh- ih- ,y u- 51265003 eM cUnh dk;	ek/kkjktijk	xle ipk;r
50	59551	gjQyh @cU'kh tkV Ckh- ih- ,y u- 7421191] eM cUnh dk;	ek/kkjktijk	xle ipk;r
51	59552	je'k @lhrkje [kkjy Ckh- ih- ,y u- 7421677] eM cUnh dk;	ek/kkjktijk	xle ipk;r
52	271200070419/IF/59553	jkeflg @xkily tkV Ckh- ih- ,y u- 7421193] eM cUnh dk;	ek/kkjktijk	xle ipk;r
53	59554	igykn @gtkjh tkxh]Ckh- ih- ,y u- 7421054 eM cUnh dk;	ek/kkjktijk	xle ipk;r
54	59555	iHkukFk @gtkjh tkxh Ckh- ih- ,y u- 7421055] eM cUnh dk;	ek/kkjktijk	xle ipk;r
55	59556	dyk'k @gtkjh tkxh Ckh- ih- ,y u- 7421056] eM cUnh dk;	ek/kkjktijk	xle ipk;r
56	59557	cQlrh @tek [kk]Ckh- ih- ,y u- 7421022 eM cUnh dk;	ek/kkjktijk	xle ipk;r

Details of Watershed Committees (ws) Ladana

S.N.	Name of WCs	Date of Registration as a Society (dd/mm/yyyy)	Designation	Name	M/F	Category
1	Ladana	18/07/2011	Presidant	Sh. Kalu Ram choudhray	M	OBC
			Secratary	sh. Hazari lal Bairwa	M	SC
			Member	sh.Rajesh swami	M	GN
			Member	Sh. Ismile Deswali	M	OBC
			Member	Sh. Ghasi yadav	M	OBC
			Member	Sh.Pooran	M	
			Member	Sh.Prahlad meena	M	ST
			Member	Sh.Rajender Prasad Prasar	M	GN
			Member	Sh.Kailash chand Jat	M	OBC
			Member	Smt.Kamala Devi	F	

Details of Watershed Committees (ws) Bhojpura

S.N.	Name of WCs	Date of Registration as a Society (dd/mm/yyyy)	Designation	Name	M/F	Category
1	Bhojpura	18/07/2011	Presidant	Smt.Geeta choudhary	F	OBC
			Secratary	sh. Rajesh kumar	M	SC
			Member	Smt.sayar devi	F	OBC
			Member	Smt.Rukama Devi	F	SC
			Member	Sh. Satayanayaran	M	ST
			Member	Sh.Pokar Gujar	M	OBC
			Member	Sh.Ramu	M	GN
			Member	Sh.Huseen kha	M	
			Member	Sh.Srinayaran	M	OBC
			Member	Sh.Sarwan lal	M	OBC

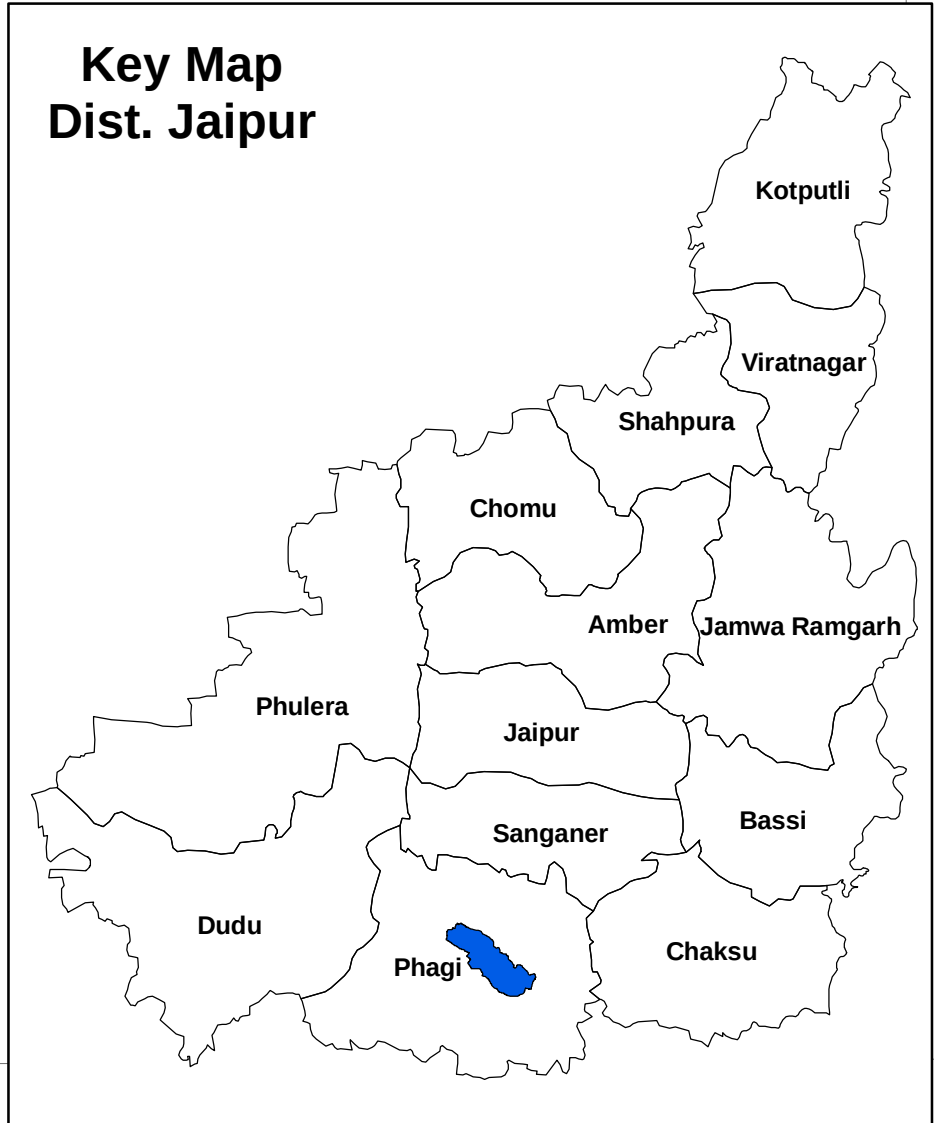
Details of Watershed Committees (ws) Madhorajpura

S.N.	Name of WCs	Date of Registration as a Society	Designation	Name	M/F	Category
1	Madhorajpura		Presidant	Smt.Anjana Kumawat	F	OBC
			Secratary	Sh.Jagdish	M	SC
			Member	Sh.Madan lal	M	OBC
			Member	Sh.Mohan lal mali	M	OBC
			Member	Sh.Noratan Sahu	M	OBC
			Member	Sh. Gorishankar Ragar	M	SC
			Member	Sh.Nayaran	M	OBC
			Member	Smt.Santosh Khatik	F	SC
			Member	Sh.Manohar Gujar	M	OBC
			Member	Smt.Anju	M	OBC

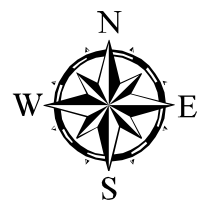
Details of Watershed Committees (ws) Jharana

S.N.	Name of WCs	Date of Registration as a Society	Designation	Name	M/F	Category
1	Jharana		Presidant	Sh.Ratan lal meena	M	ST
			Secratary	Sh.Sah Dev Meena	M	ST
			Member	Smt.Meera Devi	F	ST
			Member	Sh. Kailash meena	M	ST
			Member	sh.Ratan daroga	M	SC
			Member	Smt.Chanda Devi	F	GN
			Member	sh.Gayan chand Doli	M	OBC
			Member	Sh.Raghuveer Bairwa	M	SC
			Member	Smt.Norti devi meena	F	ST
			Member	Sh. Sayarmal Bairwa	M	SC
			Member	Sh. Shankar lal Meena	M	ST

BASE MAP



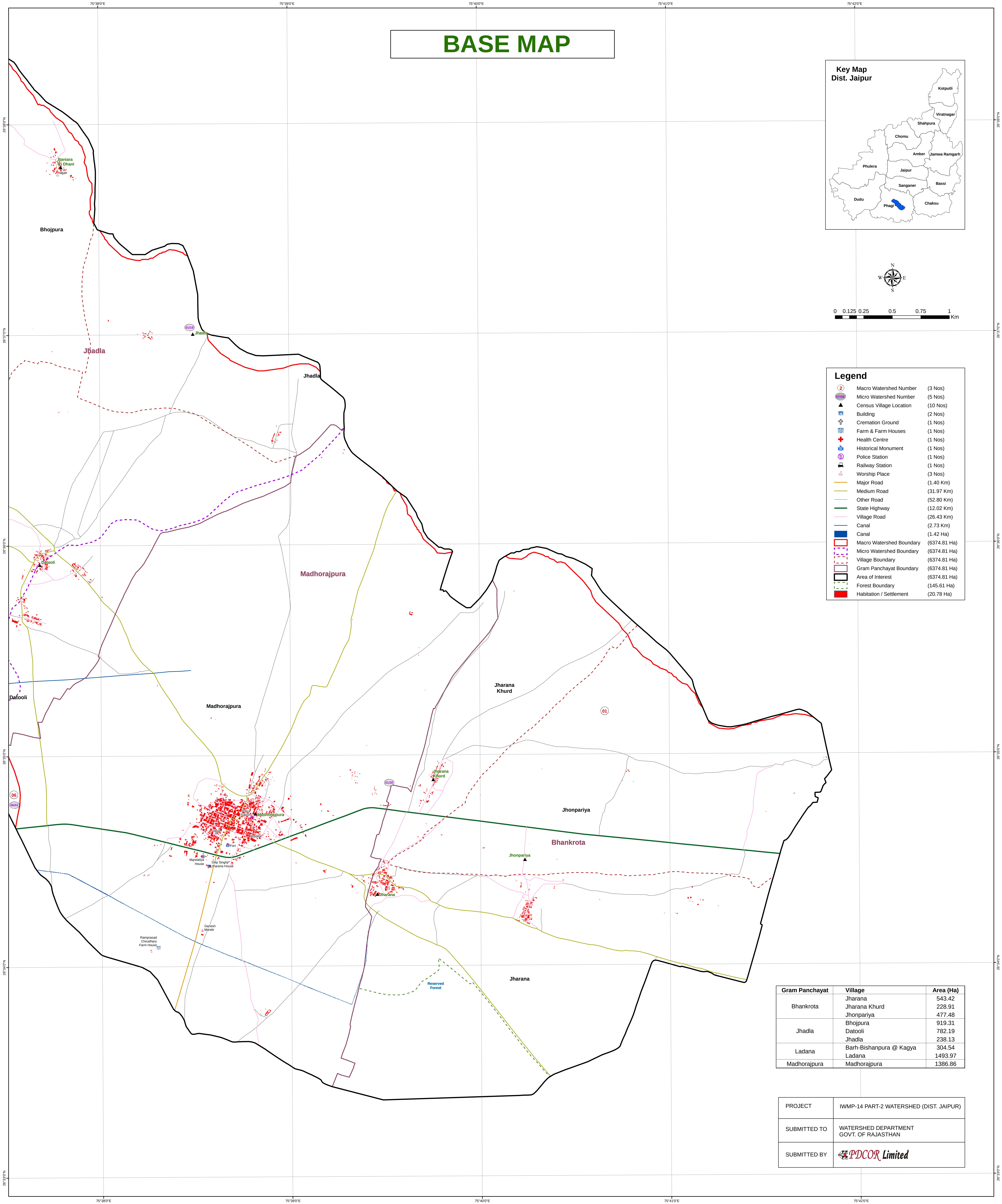
- Legend**
- Macro Watershed Number (3 Nos)
 - Micro Watershed Number (5 Nos)
 - Census Village Location (10 Nos)
 - Building (2 Nos)
 - Cremation Ground (1 Nos)
 - Farm & Farm Houses (1 Nos)
 - Health Centre (1 Nos)
 - Historical Monument (1 Nos)
 - Police Station (1 Nos)
 - Railway Station (1 Nos)
 - Worship Place (3 Nos)
 - Major Road (1.40 Km)
 - Medium Road (31.97 Km)
 - Other Road (52.80 Km)
 - State Highway (12.02 Km)
 - Village Road (26.43 Km)
 - Canal (2.73 Km)
 - Canal (1.42 Ha)
 - Macro Watershed Boundary (6374.81 Ha)
 - Micro Watershed Boundary (6374.81 Ha)
 - Village Boundary (6374.81 Ha)
 - Gram Panchayat Boundary (6374.81 Ha)
 - Area of Interest (6374.81 Ha)
 - Forest Boundary (145.61 Ha)
 - Habitation / Settlement (20.78 Ha)



0 0.125 0.25 0.5 0.75 1 Km

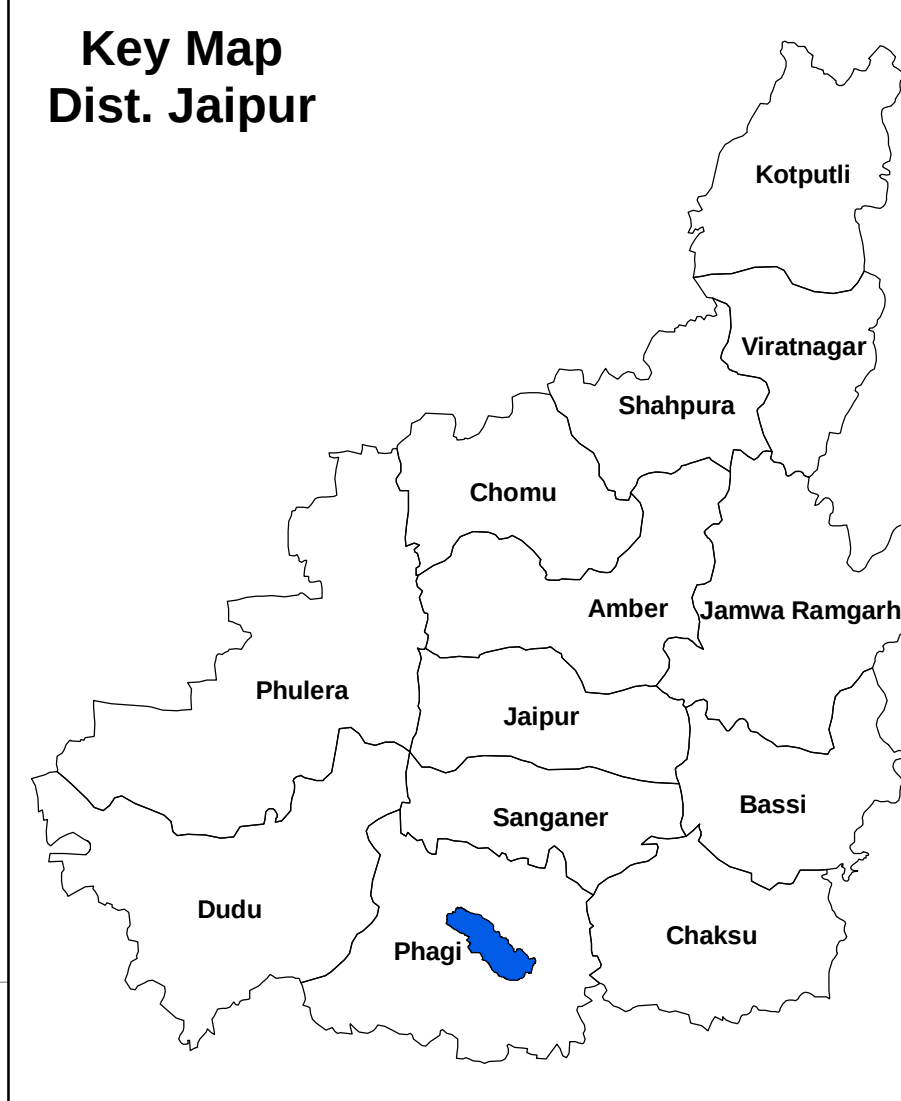
PROJECT	IWMP-14 PART-1 WATERSHED (DIST. JAIPUR)
SUBMITTED TO	WATERSHED DEPARTMENT GOVT. OF RAJASTHAN
SUBMITTED BY	PDCOR Limited

Gram Panchayat	Village	Area (Ha)
Bhankrota	Jharana	543.42
	Jharana Khurd	228.91
	Jhonpariya	477.48
Jhadla	Bhojpura	919.31
	Datooli	782.19
	Jhadla	238.13
Ladana	Barh-Bishanpura @ Kagya	304.54
	Ladana	1493.97
Madhorajpura	Madhorajpura	1386.86

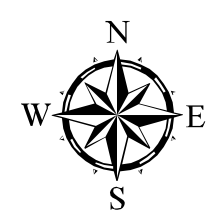


Contour Map

Key Map Dist. Jaipur



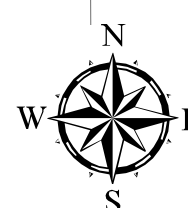
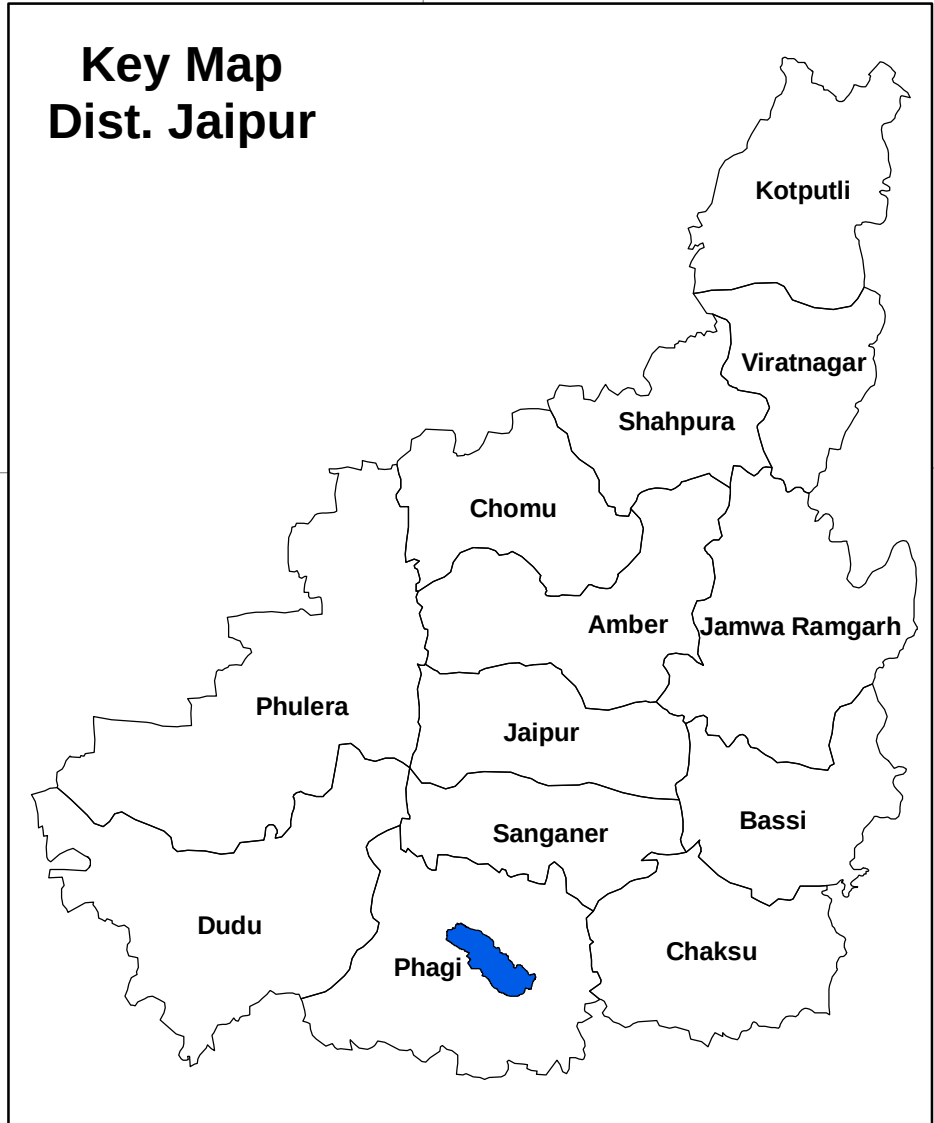
Legend		
	Macro Watershed Number	(3 Nos)
	Micro Watershed Number	(5 Nos)
	Census Village Location	(10 Nos)
	Tank for Cattle Drinking	(42.11 Ha)
	Anicut	(0.007 Km)
	Major Contour - 5m interval	(HL-326), (LL-298)
	Minor Contour - 1m interval	(HL-326), (LL-298)
	First Order Drainage	(20062.1 Mtr)
	Second Order Drainage	(5087.09 Mtr)
	Third Order Drainage	(5354.12 Mtr)
	Fourth Order Drainage	(1648.14 Mtr)
	First Order Drainage	(0.87 Ha)
	Second Order Drainage	(0.42 Ha)
	Third Order Drainage	(2.29 Ha)
	Fourth Order Drainage	(1.48 Ha)
	Macro Watershed Boundary	(6374.81 Ha)
	Micro Watershed Boundary	(6374.81 Ha)
	Village Boundary	(6374.81 Ha)
	Khasra Boundary	(6374.81 Ha)
	Area of Interest	(6374.81 Ha)
	River	(55.65 Ha)
	Water Body	(93.87 Ha)



0 0.125 0.25 0.5 0.75 1 Km

PROJECT	IWMP-14 PART-1 WATERSHED (DIST. JAIPUR)
SUBMITTED TO	WATERSHED DEPARTMENT GOVT. OF RAJASTHAN
SUBMITTED BY	PDCOR Limited

Contour Map



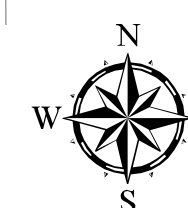
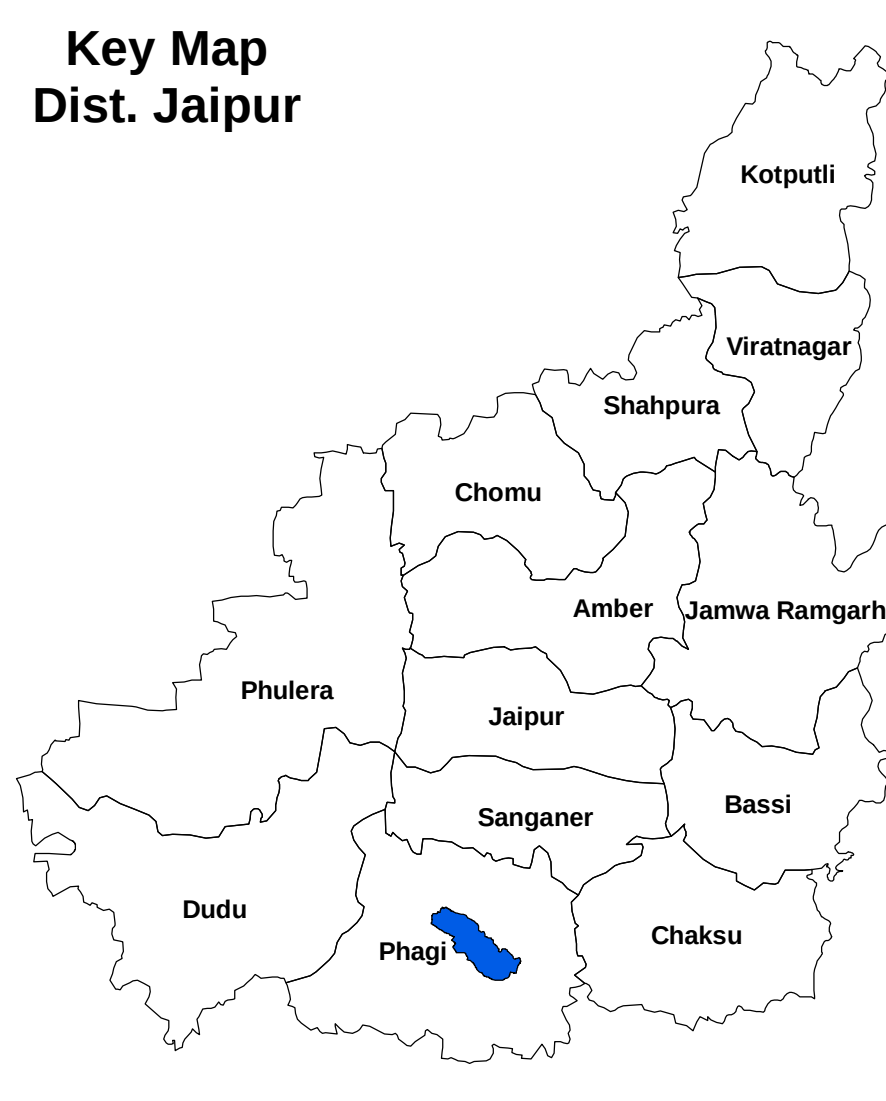
0 0.125 0.25 0.5 0.75 1 Km

Legend		
	Macro Watershed Number	(3 Nos)
	Micro Watershed Number	(5 Nos)
	Census Village Location	(10 Nos)
	Tank for Cattle Drinking	(42.11 Ha)
	Anicut	(0.007 Km)
	Major Contour - 5m interval	(HL-326), (LL-298)
	Minor Contour - 1m interval	(HL-326), (LL-298)
	First Order Drainage	(20062.1 Mtr)
	Second Order Drainage	(5087.09 Mtr)
	Third Order Drainage	(5354.12 Mtr)
	Fourth Order Drainage	(1648.14 Mtr)
	First Order Drainage	(0.87 Ha)
	Second Order Drainage	(0.42 Ha)
	Third Order Drainage	(2.29 Ha)
	Fourth Order Drainage	(1.48 Ha)
	Macro Watershed Boundary	(6374.81 Ha)
	Micro Watershed Boundary	(6374.81 Ha)
	Village Boundary	(6374.81 Ha)
	Khasra Boundary	(6374.81 Ha)
	Area of Interest	(6374.81 Ha)
	River	(55.65 Ha)
	Water Body	(93.87 Ha)

PROJECT	IWMP-14 PART-2 WATERSHED (DIST. JAIPUR)
SUBMITTED TO	WATERSHED DEPARTMENT GOVT. OF RAJASTHAN
SUBMITTED BY	PDCOR Limited

Drainage & Surface Water Bodies

Key Map Dist. Jaipur



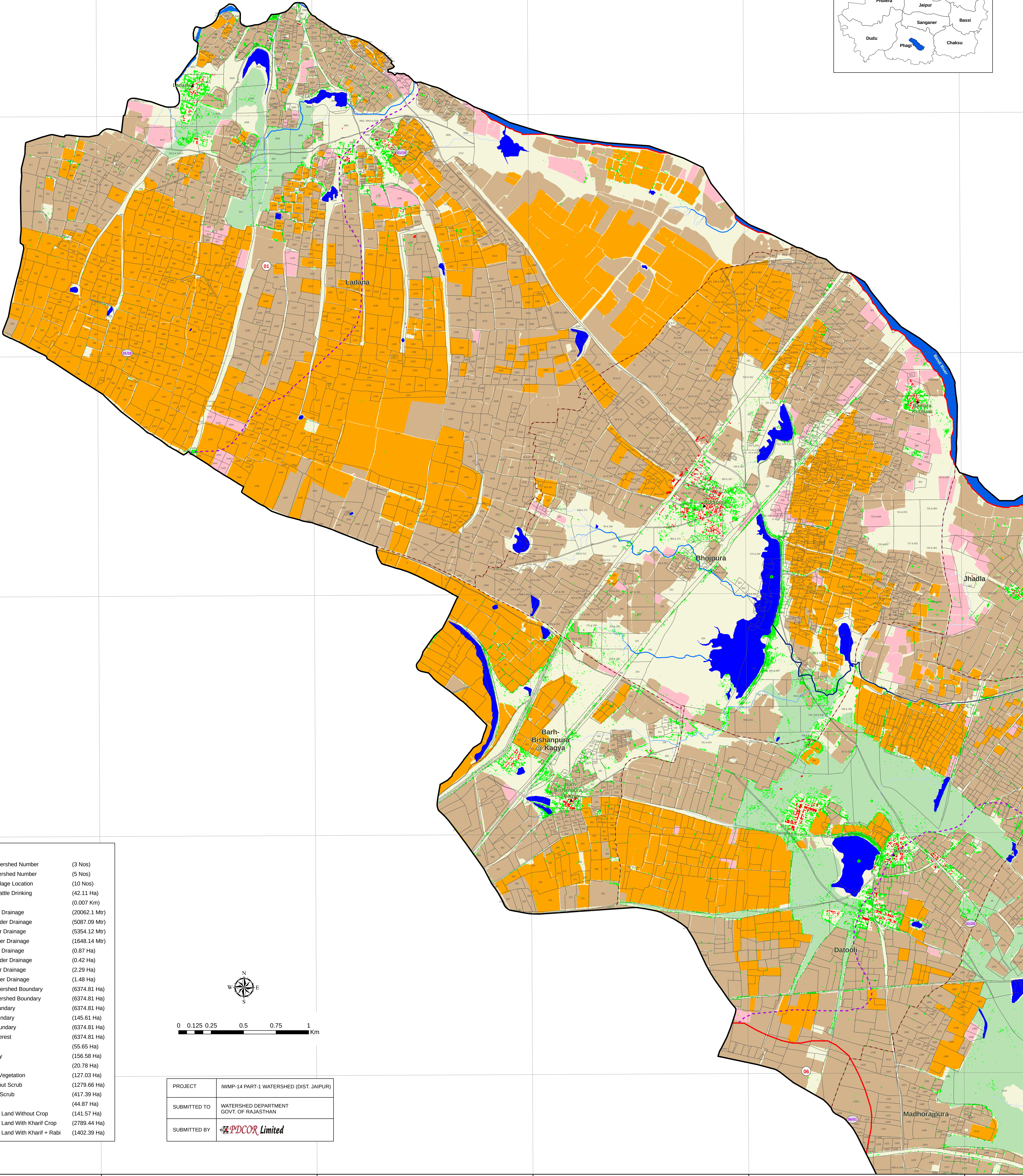
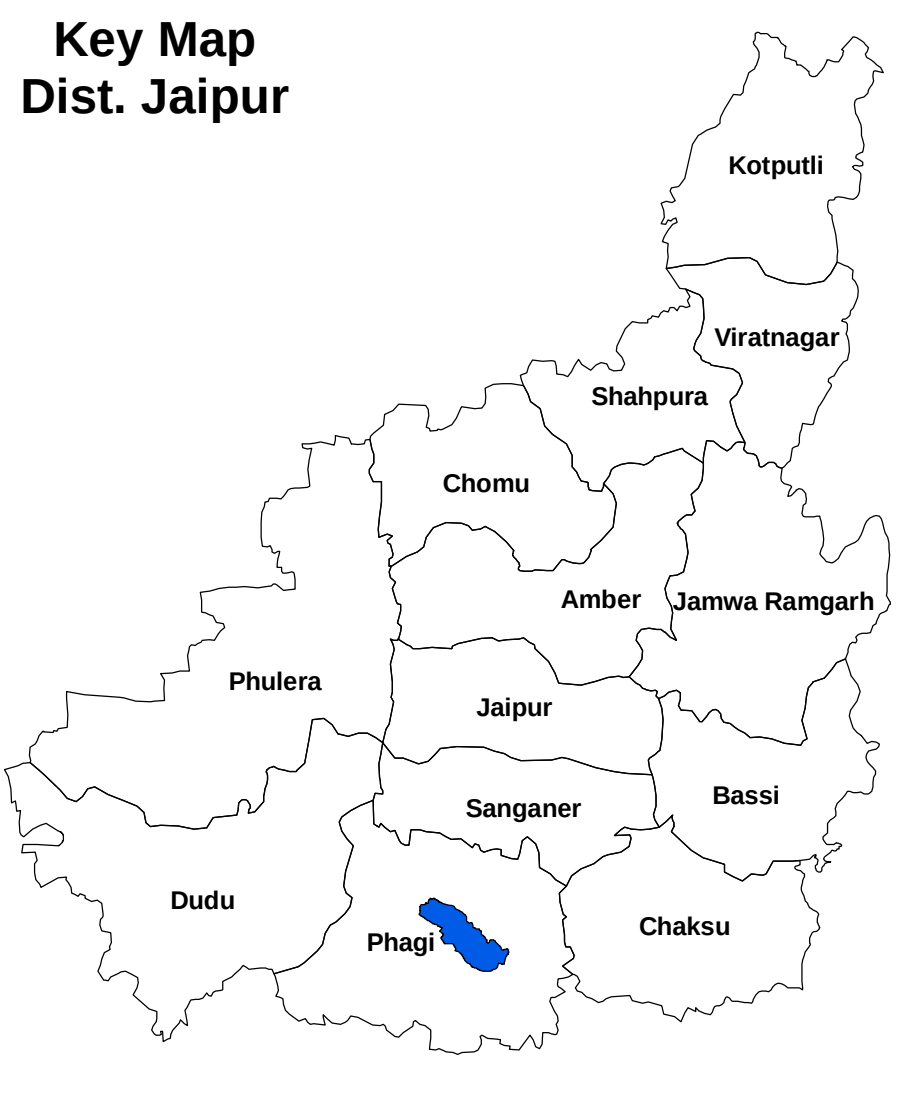
0 0.125 0.25 0.5 0.75 1 Km

Legend		
	Macro Watershed Number	(3 Nos)
	Micro Watershed Number	(5 Nos)
	Drainage Number	(119 Nos)
	First Order Drainage	(20062.1 Mtr)
	Second Order Drainage	(5087.09 Mtr)
	Third Order Drainage	(5354.12 Mtr)
	Fourth Order Drainage	(1648.14 Mtr)
	Canal	(2.73 Km)
	First Order Drainage	(0.87 Ha)
	Second Order Drainage	(0.42 Ha)
	Third Order Drainage	(2.29 Ha)
	Fourth Order Drainage	(1.48 Ha)
	Canal	(1.42 Ha)
	River	(55.65 Ha)
	Water Body	(93.87 Ha)
	Macro Watershed Boundary	(6374.81 Ha)
	Micro Watershed Boundary	(6374.81 Ha)
	Area of Interest	(6374.81 Ha)

PROJECT	IWMP-14 PART-2 WATERSHED (DIST. JAIPUR)
SUBMITTED TO	WATERSHED DEPARTMENT GOVT. OF RAJASTHAN
SUBMITTED BY	PDCOR Limited

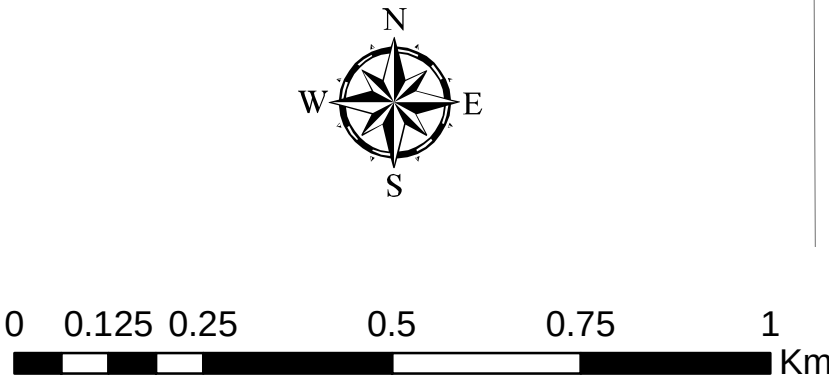
LANDUSE / LANDCOVER MAP

Key Map Dist. Jaipur



Legend

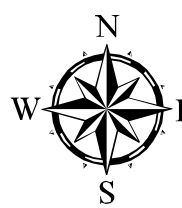
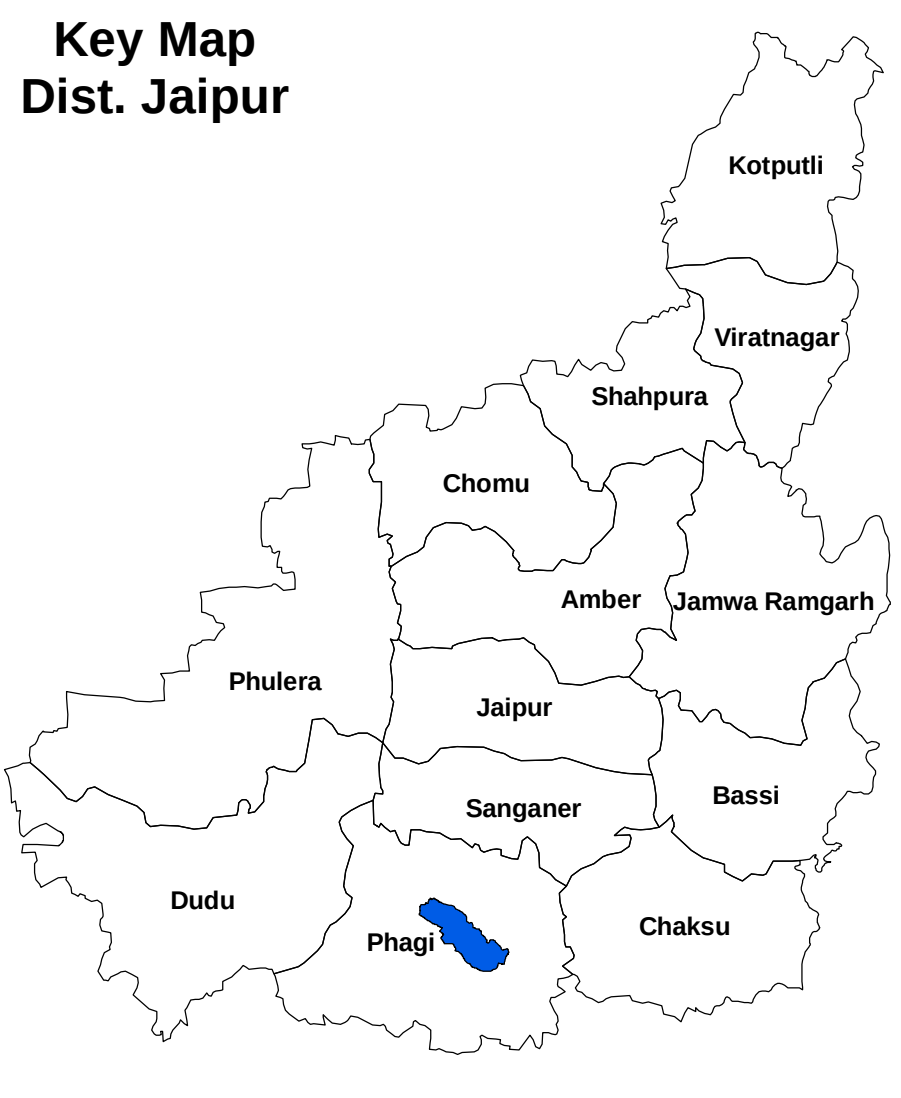
- | | |
|-------------------------------------|---------------|
| Macro Watershed Number | (3 Nos) |
| Micro Watershed Number | (5 Nos) |
| Census Village Location | (10 Nos) |
| Tank for Cattle Drinking | (42.11 Ha) |
| Anicut | (0.007 Km) |
| First Order Drainage | (20062.1 Mtr) |
| Second Order Drainage | (5087.09 Mtr) |
| Third Order Drainage | (5354.12 Mtr) |
| Fourth Order Drainage | (1648.14 Mtr) |
| First Order Drainage | (0.87 Ha) |
| Second Order Drainage | (0.42 Ha) |
| Third Order Drainage | (2.29 Ha) |
| Fourth Order Drainage | (1.48 Ha) |
| Macro Watershed Boundary | (6374.81 Ha) |
| Micro Watershed Boundary | (6374.81 Ha) |
| Village Boundary | (6374.81 Ha) |
| Forest Boundary | (145.61 Ha) |
| Khasra Boundary | (6374.81 Ha) |
| Area of Interest | (6374.81 Ha) |
| River | (55.65 Ha) |
| Water Body | (156.58 Ha) |
| Settlement | (20.78 Ha) |
| Scattered Vegetation | (127.03 Ha) |
| Land Without Scrub | (1279.66 Ha) |
| Land With Scrub | (417.39 Ha) |
| Forest | (44.87 Ha) |
| Agriculture Land Without Crop | (141.57 Ha) |
| Agriculture Land With Kharif Crop | (2789.44 Ha) |
| Agriculture Land With Kharif + Rabi | (1402.39 Ha) |



PROJECT	IWMP-14 PART-1 WATERSHED (DIST. JAIPUR)
SUBMITTED TO	WATERSHED DEPARTMENT GOVT. OF RAJASTHAN
SUBMITTED BY	<i>PD COR Limited</i>

LANDUSE / LANDCOVER MAP

Key Map Dist. Jaipur



0 0.125 0.25 0.5 0.75 1 Km

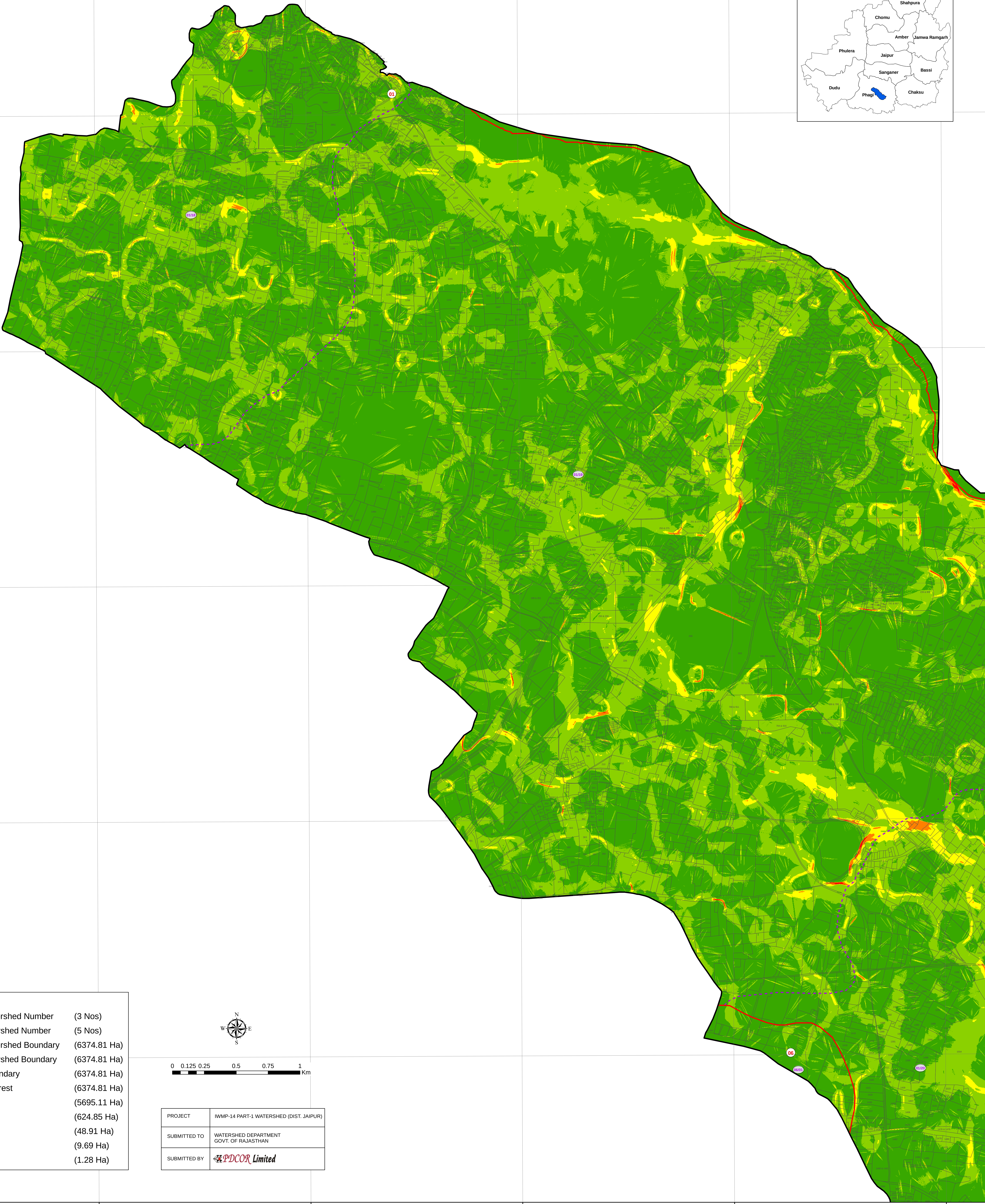
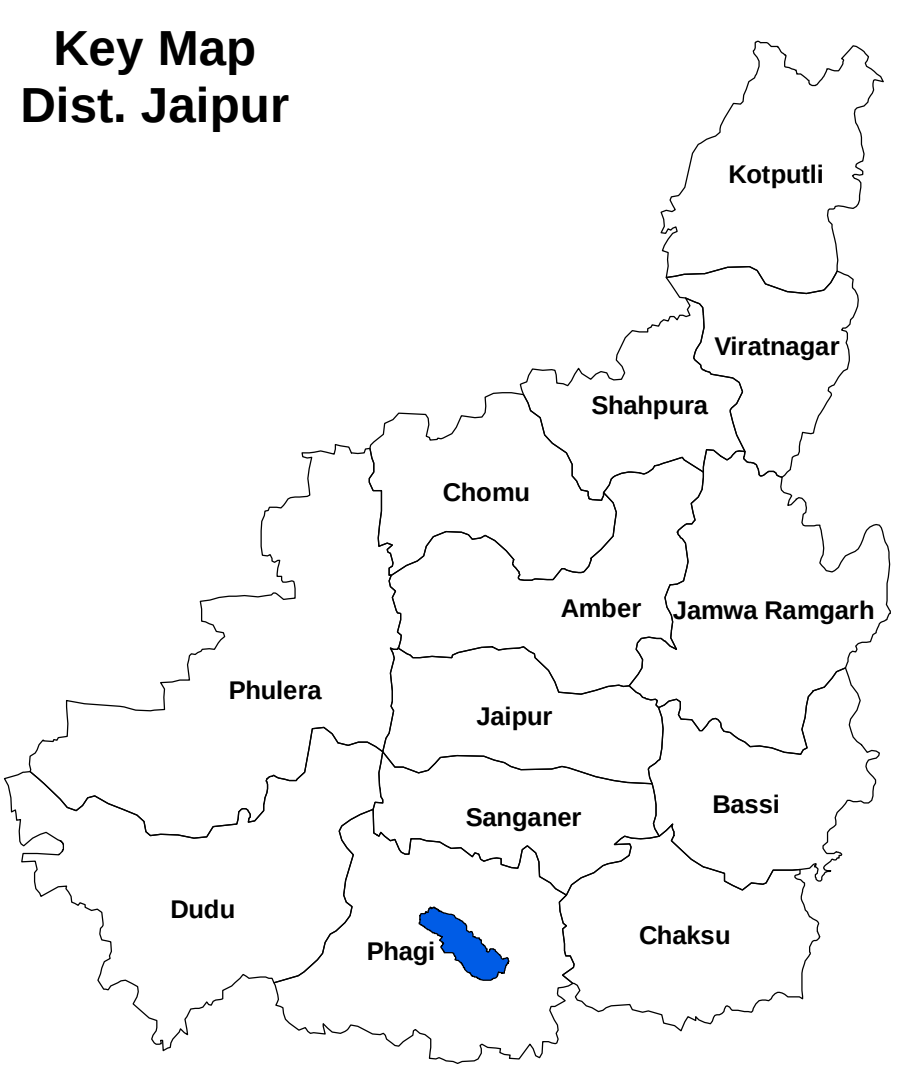
Legend

	Macro Watershed Number	(3 Nos)
	Micro Watershed Number	(5 Nos)
	Census Village Location	(10 Nos)
	Tank for Cattle Drinking	(42.11 Ha)
	Anicut	(0.007 Km)
	First Order Drainage	(20062.1 Mtr)
	Second Order Drainage	(5087.09 Mtr)
	Third Order Drainage	(5354.12 Mtr)
	Fourth Order Drainage	(1648.14 Mtr)
	First Order Drainage	(0.87 Ha)
	Second Order Drainage	(0.42 Ha)
	Third Order Drainage	(2.29 Ha)
	Fourth Order Drainage	(1.48 Ha)
	Macro Watershed Boundary	(6374.81 Ha)
	Micro Watershed Boundary	(6374.81 Ha)
	Village Boundary	(6374.81 Ha)
	Forest Boundary	(145.61 Ha)
	Khasra Boundary	(6374.81 Ha)
	Area of Interest	(6374.81 Ha)
	River	(55.65 Ha)
	Water Body	(156.58 Ha)
	Settlement	(20.78 Ha)
	Scattered Vegetation	(127.03 Ha)
	Land Without Scrub	(1279.66 Ha)
	Land With Scrub	(417.39 Ha)
	Forest	(44.87 Ha)
	Agriculture Land Without Crop	(141.57 Ha)
	Agriculture Land With Kharif Crop	(2789.44 Ha)
	Agriculture Land With Kharif + Rabi	(1402.39 Ha)

PROJECT	IWMP-14 PART-2 WATERSHED (DIST. JAIPUR)
SUBMITTED TO	WATERSHED DEPARTMENT GOVT. OF RAJASTHAN
SUBMITTED BY	PDCOR Limited

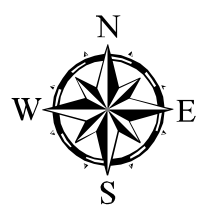
SLOPE MAP

Key Map Dist. Jaipur



Legend

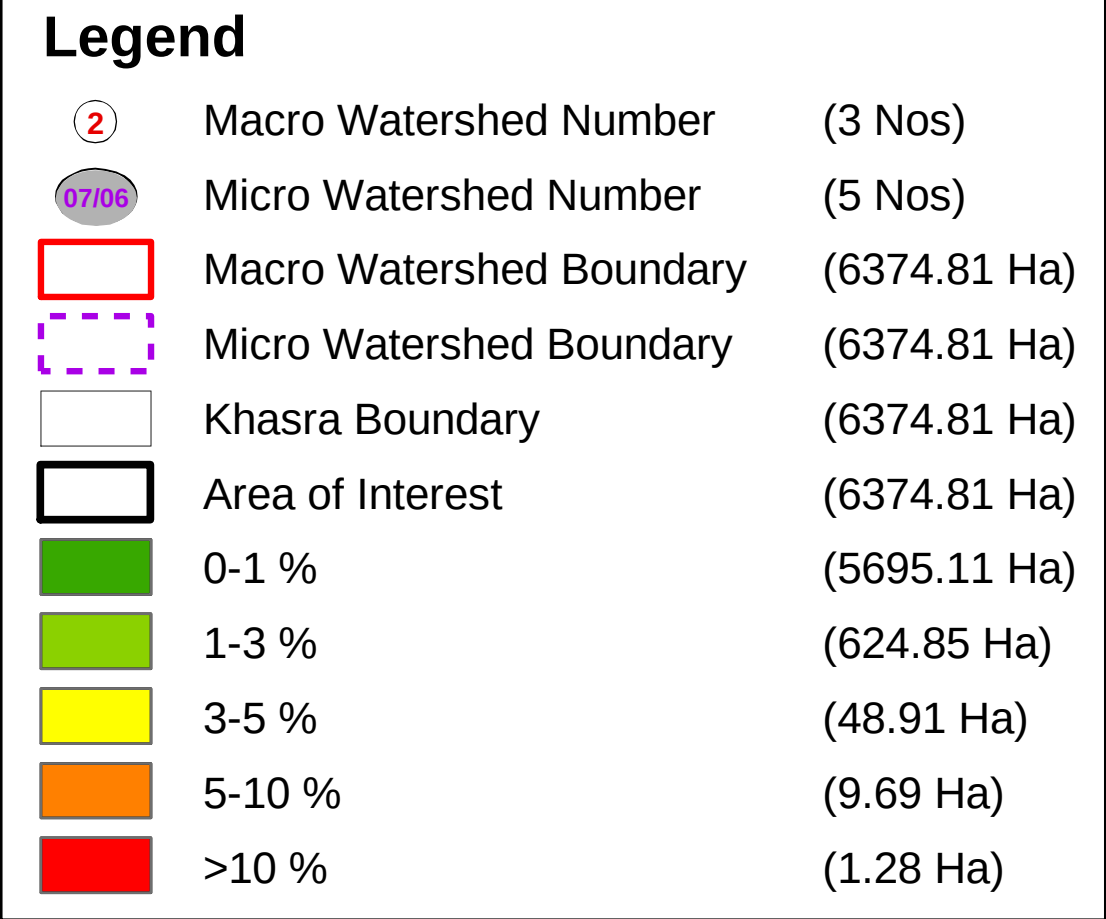
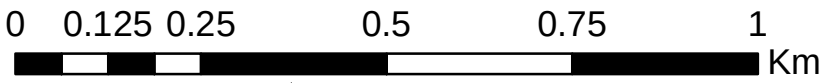
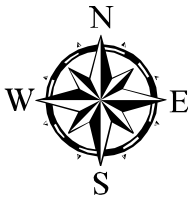
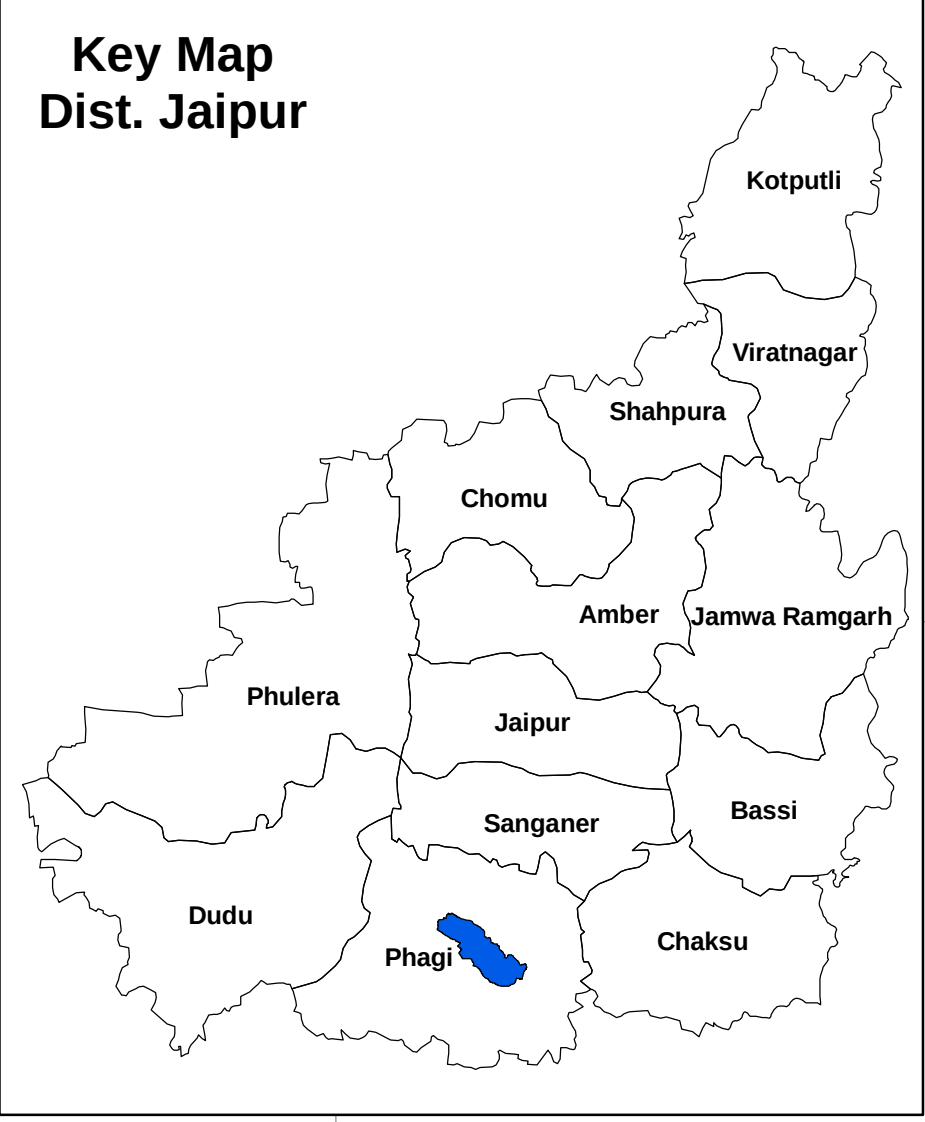
- Macro Watershed Number (3 Nos)
- Micro Watershed Number (5 Nos)
- Macro Watershed Boundary (6374.81 Ha)
- Micro Watershed Boundary (6374.81 Ha)
- Khasra Boundary (6374.81 Ha)
- Area of Interest (6374.81 Ha)
- 0-1 % (5695.11 Ha)
- 1-3 % (624.85 Ha)
- 3-5 % (48.91 Ha)
- 5-10 % (9.69 Ha)
- >10 % (1.28 Ha)



0 0.125 0.25 0.5 0.75 1 Km

PROJECT	IWMP-14 PART-1 WATERSHED (DIST. JAIPUR)
SUBMITTED TO	WATERSHED DEPARTMENT GOVT. OF RAJASTHAN
SUBMITTED BY	PDCOR Limited

SLOPE MAP



PROJECT	IWMP-14 PART-2 WATERSHED (DIST. JAIPUR)
SUBMITTED TO	WATERSHED DEPARTMENT GOVT. OF RAJASTHAN
SUBMITTED BY	 PDCOR Limited

पराबल
सामान्य

ब्रह्म

Hand and forearm
long 1 of 4

for
14/12/08

4

सामान

विद्यार्णव

At 11

AgriCultural
Land

श्री श्री

→ GURUPURA ROAD

नाम

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गंगादीप

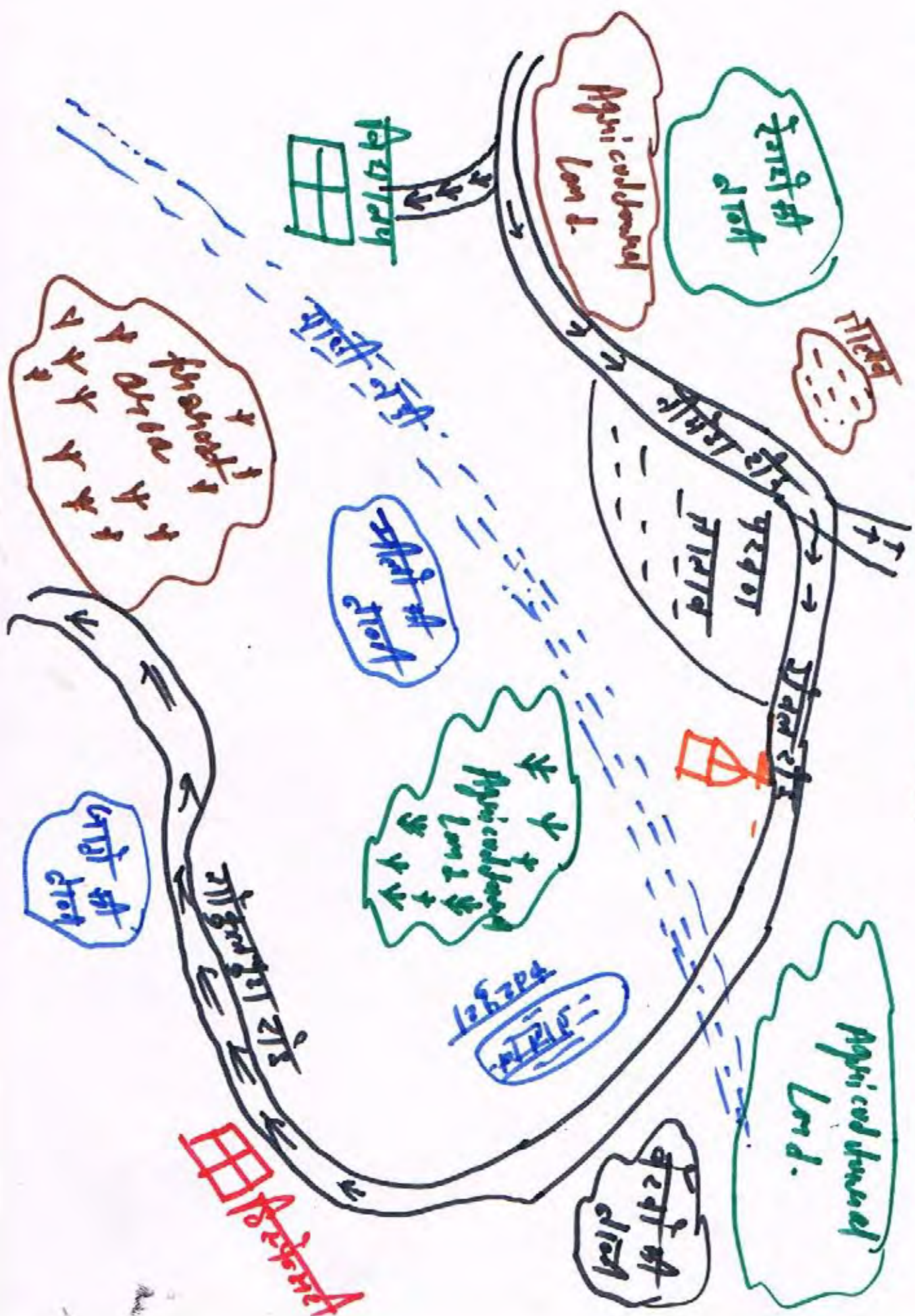
१०/१२/२०१५

बन्धा

सामान्य चक्र - परवर्त

P.R.A EXERCISE

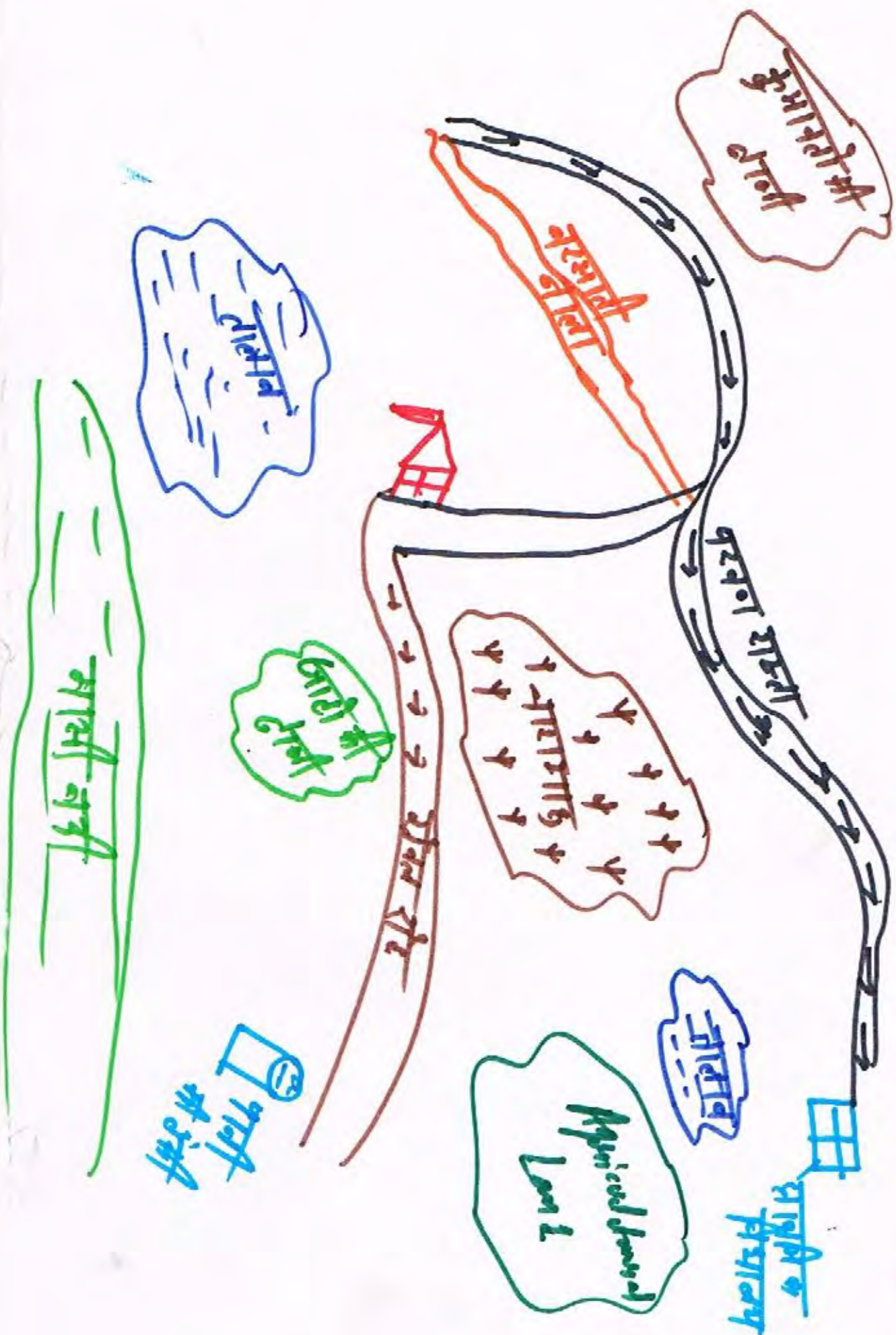
सामान्य - कवरचक्र



पंचाणन - परवरा

P.R.A Exercise

ग्राम - मदनपुरा



ग्राम - काशी

सीता मंडिरा विनोद व डंग

कस मंडिर

काला

काशी



PRA EXERCISE



Agricultural Land

ग्राम वंचापुर काशी

कैला मंडिरा

कैला मंडिरा

LNT ROAD

माधोरा मंडिरा

Agricultural Land

कंचापुरी
कंचापुरी फाडी

SE-SEC
844004

कंचापुरी ग्राम PRA GAT



विद्युत व मालगुस्त रोड

PETROL
Pump

Agricultural Land

कंचापुरी
कंचापुरी

P.H.E.D LNT ROAD ← JAIPUR

A hand-drawn map of India is shown. The map is outlined in green. Inside the map, there are several small black dots representing cities or towns. The text 'L.N.T. Road' is written across the top of the map. The word 'Mach' is written in three different locations: once at the top left, once at the top right, and once at the bottom right. The word 'Mach' is also written vertically on the left side of the map.

