



**DETAIL PROJECT REPORT  
OF  
INTREGATED WASTELAND MANAGEMENT PROGRAMME  
(SECOND)  
BLOCK—AURAS, HASANGANJ & MIYANGANJ  
Distt.-UNNAO (U.P.)  
WATERSHED—SAI RIVER  
PIA--- BSA, L.D.& W.R. UNNAO (U.P.)**



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BLOCK— HASANGANJ — Distt. - UNNAO (U.P.)  
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## **PROJECT AT A GLANCE:**

1- Name of Project	I W M P II <sup>nd</sup>
2- Name of Block	Auras, Hasan ganj, Miya ganj
3- Name of State	U. P.
4- Name of District	Unnao
5- Name Watershed	1- Sai River
6-Name Village Selected	(1) Shahpur Tonda (2) Korokalyan (3) Bahroni jahanpur (4) Udheranmau (5) Rasoolpur Bakiya (6) Rajapur (7) Fakruddin mau (8) Talasarai (9)Godoli (10) Samadpur Bhawa(11) Baradev (12) Garhi Fathebad (13) Narsa (14) Samadpur Hardas (15) Sultanapur(16) Dhakawa Jagdishpur (17) Chilaula (18) Darihat (19) Khapara Bhat (20) Rafi Ghari(21) Pichwara (22) PilkhanaRashid Pur (23)Haroni Samasuddinpur (24) Ghuramau(25) Fajullapur (26) Ahmadpur Wade (27) Bibipur Chiriyari (28) Chhrehara (29) Unchgao (30) Nindeymau (31) Hasanganj (32) Fattahpur (33) Dhauhar (34) Dhaura (35) Kamalpur(36) Salkhemau (37) Ranikhera Khalsa (38) Sahjanpur Khapra Muslim (39) Bhagat nazul(40) Mohan (41) Arji mohan Jagir (42) Shekhpur Teraha (43) Mohankhurd Khalsa(44) Jalalabad (45) Mohiddeenpur (46) MohanKhurd Jagir (47) Bhogla (48) Bachchra mag (49) Barakhera (50) Daudpur (51) Aadampur Barethy .
7- Micro Watershed Code Selected	(1) 2B2G4j2b Shahpur Tonda (2) 2B2G4j2a Samadpur Bhawa (3) 2B2G4j1a Rasulpur Bakiya (4) 2B2G4h2d Sultanpur (5) 2B2G4h1c Mohiddeenpur (6) 2B2G4h2a Dhauhar (7) 2B2G4h2c Fajullah pur
8- Area of the Project	4993.00 Ha.
9- Proposed Area for Treatment	4680.00 ha
10- Cost of the Project	561.60 lakh
11- Cost per Hecter	12000.00 /-
12- Project Period	2010-2014-15

## Executive Summary

**I. Brief about area:** - The watershed Project is located in AURAS, HASANGANJ, MIYANGANJ Block, Distt. Unnao of U.P. state. This watershed has been identified by the state Department under I.W.M.P. scheme for integrated development of watershed management in located in North West of Distt. UNNAO it is lies between  $80^{\circ}33'48.075''$  to  $80^{\circ}44'6.343''$  east longitude &  $26^{\circ}44'31.145''$  to  $26^{\circ}52'27.092''$  north latitude the total area of watershed is 4993 ha along with the Sai River Watershed.

The soil of Project Area is mainly Sandy loam , domat , Usar and somewhere is matyaar. Agriculture is the main occupation of the project area the main crops area Wheat , Mustard , Gram , Paddy , Maiy , Bajara & Millet . Some parts of watershed have Usar and wasteland.

Natural vegiation is very poor but Mango, Neem, emlee, Shesham, Mahua tree are found in the watershed . There is no irrigation facility in watershed area. Some where personal Boring pumps has been established by farmers, there is no grass land in watershed. Grass patches are seen only on the Bunds Rdsides and other such places the main gross is Dube , Munj and Kass.

Total area of the watershed is 4993.00 ha. Elevation ranges is 120.00 m above mean sea level. Fifty one villages namely

(1) Shahpur Tonda (2) Korokalyan (3) Bahroni jahanpur (4) Udheranmau (5) Rasoolpur Bakiya (6) Rajapur (7) Fakruddin mau (8) Talasarai (9) Godoli (10) Samadpur Bhawa (11) Baradev (12) Garhi Fathebad (13) Narsa (14) Samadpur Hardas (15) Sultanapur (16) Dhakawa Jagdishpur (17) Chilaula (18) Darihat (19) Khapara Bhat (20) Rafi Ghari (21) Pichwara (22) Pilkhana Rashid Pur (23) Haroni Samasuddinpur (24) Ghuramau (25) Fajullapur (26) Ahmadpur Wade (27) Bibipur Chiriyari (28) Chhrehara (29) Unchgao (30) Nindeymau (31) Hasanganj (32) Fattahpur (33) Dhauhar (34) Dhaura (35) Kamalpur (36) Salkhemau (37) Ranikhera Khalsa (38) Sahjanpur Khapra Muslim (39) Bhagat nazul (40) Mohan (41) Arji mohan Jagir (42) Shekhpur Teraha (43) Mohankhurd Khalsa (44) Jalalabad (45) Mohiddeenpur (46) MohanKhurd Jagir (47) Bhogla (48) Bachchra mag (49) Barakhera (50) Daudpur (51) Aadampur Barethy are the located in the watershed.

## **II. Institutional Arrangements:-**

For the implement of the project 7 no. of watershed committee, 60 no. SHGs & 70 no. of UGs has been constituted at the watershed level And a WDT has been organized at PIA level that will help to implement watershed development work in different sectors .

### III. Salient Project activities:-

Budget for the various components is given as below:

S. No.	Budget Component	Total (Lakhs)
A	1.Administrative	56.160
	2. Monitoring & Evaluation	11.232
B	Preparatory Phases	56.160
C.	WATERSHED WORKS	
(i)	Watershed work	280.80
(ii)	Livelihood Programme	56.160
(iii)	Production System and microenterprises	73.008
D.	CONSOLIDATION PHASE	
	GRAND TOTAL	561.60



## **a. PREPARATORY PHASE:-**

### **1. Entry point Activities:-**

- a. Well (jagat/maintenance)
- b. Soaking Pit
- c. Naali Nirman
- d. Kissan Gosthi Manch / Chabutra
- e. handpipe platform/cabutra

### **b. Institutional and capacity Building:-**

Training Programme of Users group, Self Help Group, Watershed committee, WDT & PIA level for their awareness & capacity building. Exposer visit & short courses also necessary for capacity building.

### **c. Watershed Works:-**

#### **Soil & Moisture conservation:-**

1. Construction of Bunds:- Field bunds , Contour Bunds , CRB.
2. Marginal Bund & Peripheral Bund

### **d. Water resource:-**

1. Construction of WHB
2. Construction of Check Dam
3. Construction of farm pond

**e. Horticulture:-**

Plantation of Fruit Tree like Mango, Gowawa, Lamon, Amla in Watershed according to land use.

**f. Water control structure (drainage line treatment) :-**

Gully plug , Shuit outlet , Drop spill way , check dam.

**g. Afforestation:-**

To meetout the shortage of fuel wood & foder in the watershed and better enviornment 10% of the total work component has been given for afforestation.

**h. Livelihood Programme Community base:-**

Income generating activities through SHG for landless & Marginal farmers has been given in the watershed development programme as below.

1. Jardogi
2. Dairy
3. Goat keeping
4. Live stock
5. Development activities

**i. Production System & micro Enterprises:-**

To achieve better crop production in the watershed by scientific method

Demonstration of Wheat , Paddy , Maize & Bajara has been given in the watershed .

## Physical Target & Financial outlays

S.No	Component	Unit	Quantity	Cost / Unit (Lakhs)	Total (Lakhs)	
<b>A.</b>	<b>MANAGEMENT COSTS</b>					
	Administrative cost- TA & DA, POL/ Hiring of vehicles/ Office and payment of electricity and phone bill, etc. computer, stationary and office consumable and contingency etc	Nos	NA	NA	<b>56.160</b>	
	Expert for monitoring and evaluation.	Nos	NA	NA	<b>11.232</b>	
	<b>Total</b>				<b>67.392</b>	
<b>B.</b>	<b>PREPARATORY PHASES</b>					
	<b>(1.) Entry point Activities</b>					
	a. Well ( Jagat / Maintenance)	nos	10	0.4613	4.613	
	b. Soaking Pit	nos	10	0.117	1.170	
	c. Naali Nirman	Mt.	596.14	0.0228/mt.	13.592	
	d. Kisaan Gosthi Manch / Chabutra	nos	03	0.765	2.295	
	e. Handpump chabutra	nos	10	0.0794	0.794	
	<b>Total</b>				<b>22.464</b>	
	<b>(2.) Institutional and Capacity Building</b>					
				NA	-	<b>28.08</b>
	<b>(3.) Detail Project Report</b>					
	<b>Total</b>				<b>5.616</b>	
	<b>Total</b>					<b>56.160</b>
<b>C.</b>	<b>WATERSHED WORKS</b>					
	<b>(1.) Watershed Development Works</b>					
	a. Construction of Bunds (Field Bund, Contour Bund, CRB Bund)	ha	2530	0.04020	101.706	
	b. Marginal Bund and Peripheral Bund	Ha	1682	0.0501	84.268	

	<b>c.WHB/POND</b>	Ha	468	0.1234	57.751
	<b>d. Horticulture work</b>	Ha	10	0.1500	1.500
	<b>e. New and Renovation of earthen Water Harvesting Structure/ Gully Plug/ Chek Dam</b>	---	---	---	13.655
	<b>f. Afforestation and Development of Silvi-Pastoral System</b>	ha	50	0.1034	5.170
	<b>g. Drainage Line Treatment (Pucca Structure / Gully Plug and Chek Dam)</b>	nos		---	16.750
	<b>Total</b>		<b>4680</b>		<b>280.800</b>
	<b>(2.) Livelihood Programme (Community Based)</b>				
	<b>Income Generating Activities through S.H.G.'s for Landless and Marginal Farmers</b>				
	<b>a. Jardogi work</b>	Nos	20	0.50	<b>10.00</b>
	<b>b. Dairy Work</b>	nos	20	1.20	<b>24.00</b>
	<b>c. Goat-keeping</b>	nos	20	0.73	<b>14.60</b>
	<b>d. Livestock Development Activities</b>				<b>07.56</b>
	<b>Total</b>				<b>56.160</b>
	<b>(3.) Production System and Micro-Enterprises</b>				
	<b>Crop Production, Diversification of Agriculture</b>				
	<b>a. Demonstration of</b>				
	wheat	Ha	485.00	0.057	<b>27.645</b>
	Paddy	ha	203.141	0.2015	<b>40.933</b>
	Maize	ha	40.00	0.060	<b>2.400</b>
	Bazra	ha	40.00	0.0320	<b>1.280</b>
	<b>b. Demonstration of Green Manuring</b>		120.00	0.00625	<b>0.750</b>
	<b>Total</b>				<b>73.008</b>
<b>D.</b>	<b>CONSOLIDATION PHASE</b>				<b>28.08</b>
	<b>GRAND TOTAL</b>				<b>561.60</b>

#### **IV. Treatment Area & Details:-**

1. Total Rainfed area 4993 ha .
2. Proposed area for treatment 4680 ha.
3. Wasteland
  - a. Cultivable 1673 ha.
  - b. Uncultivable 154 ha.

#### **V. Factsheet about benchmark indicators:- Criteria for selection of watershed**

1. Poverty index (% of poor to population)
2. % of SC/ ST population
3. Actual wages
4. % of small and marginal farmers
5. Ground water status
6. Moisture index/
7. DPAP/ IWDP Block
8. Area under rain-fed agriculture
9. Drinking water
10. Degraded land
11. Productivity potential of the land
12. Contiguity to another watershed that has already been developed/ treated
13. Cluster approach in the plains (more than one contiguous micro-watershed in the project)
14. Cluster approach (more than one contiguous micro-watershed in the project)

**VI. ACTION PLAN AT A GLANCE:-**  
**PHASING OF WORK (FINANCIAL & PHYSICAL)**

S.No.	Component	Unit	Quantity	Unit Cost (Lakhs)	1 <sup>st</sup> Year (Lakhs)	2 <sup>nd</sup> Year (Lakhs)	3 <sup>rd</sup> Year (Lakhs)	4 <sup>th</sup> Year (Lakhs)	5 <sup>th</sup> year (Lakhs)	Total (Lakhs)
<b>A. MANAGEMENT COSTS</b>										
	Administrative cost- TA & DA, POL/ Hiring of vehicles/ Office and payment of electricity and phone bill, etc. computer, stationary and office consumable and contingency etc.	---	---	---	11.232	11.232	11.232	11.232	11.232	<b>56.160</b>
	Expert for monitoring and evaluation.	Nos	---	---	2.246	2.247	2.247	2.246	2.246	<b>11.232</b>
<b>Total</b>					<b>13.478</b>	<b>13.479</b>	<b>13.479</b>	<b>13.478</b>	<b>13.478</b>	<b>67.392</b>
<b>B. PREPARATORY PHASES</b>										
<b>(1.) Entry point Activities</b>										
	a.Hand Pump Chabutra	nos	10	0.0794	0.794	-	-	-	-	<b>0.794</b>
	b.Well (Jagat/Maintenance)	nos	10	0.4613	4.613	-	-	-	-	<b>4.613</b>
	c. Soaking Pit	nos	10	0.117	1.170	-	-	-	-	<b>1.170</b>
	d. Naali Nirman	Mt.	596.14	0.0228/mt.	13.592	-	-	-	-	<b>13.592</b>
	e. Kisaan Gosthi Manch /	nos	03	0.765	2.295	-	-	-	-	<b>2.295</b>

Chabutra										
<b>(2.) Institutional and Capacity Building</b>		NA	-	5.616	11.232	4.212	4.212	2.808	<b>28.080</b>	
<b>(3.) Detail Project Report</b>				5.616	-	-	--	-	<b>5.616</b>	
<b>Total</b>				<b>33.696</b>	<b>11.232</b>	<b>4.212</b>	<b>4.212</b>	<b>2.808</b>	<b>56.160</b>	
<b>C. WATERSHED WORKS</b>										
<b>(1.) Watershed Development Works</b>										
<b>a. Construction of Bunds (Field Bund, Contour Bund, CRB Bund)</b>	<b>ha</b>	2530	0.04020	---	15.256	27.460	26.44	32.55	<b>101.706</b>	
<b>b. Marginal Bund and Peripheral Bund</b>	<b>ha</b>	1682	-	---	12.640	22.752	21.910	26-966	<b>84.268</b>	
<b>c. WHB /CD/Pond</b>	<b>ha</b>	468	0.1234	---	8-66	15-59	15.02	18-481	<b>57.751</b>	
<b>d. horticulture Work</b>	<b>ha</b>	10	0.150	---	1-00	0-50	---	---	<b>1.500</b>	
<b>e. New and Renovation of earthen water Harvesting Structure/Gully Plug/Check Dam</b>	---	---	---	---	2-05	3.686	3.550	4.369	<b>13.655</b>	
<b>f. Afforestation</b>	<b>ha</b>	50	0.1034	---	2-00	2.50	0.67	--	<b>5.170</b>	
<b>g. Drainage Line Treatment (Pucca Structure / Gully Plug and Chek Dam)</b>	<b>nos</b>	-	-	---	2-512	4.523	4.355	5-36	<b>16.750</b>	
<b>Total</b>		<b>4680</b>			<b>44.118</b>	<b>77.011</b>	<b>71.945</b>	<b>87.726</b>	<b>280.800</b>	

<b>(2.) Livelihood Programme (Community Based)</b>									
<b>Income Generating Activities through S.H.G.'s for Landless and Marginal Farmers</b>									
a. Jardogi	<b>nos</b>	20	-	-	5.00	5.00	-	-	<b>10.000</b>
b. Dairy Work	<b>nos</b>	20	-	-	12.000	12.000	-	-	<b>24.000</b>
c. Goat-keeping	<b>nos</b>	20	-	-	7.300	7.300	-	-	<b>14.600</b>
e. Livestock Development Activities	<b>nos</b>	-	-	-	3.780	3.780	-	-	<b>07.560</b>
<b>Total</b>			-	-	<b>28.08</b>	<b>28.08</b>	-	-	<b>56.160</b>
<b>(3.) Production System and Micro-Enterprises</b>									
<b>Crop Production, Diversification of Agriculture</b>									
a. Demonstration of Wheat	<b>Ha</b>	485.00	0.057	-	2.073	10.713	10.713	4.146	<b>27.645</b>
b. Paddy	<b>Ha</b>	203.141	0.2015	-	2.915	16.063	16.063	5.892	<b>40.933</b>
c. Maize	<b>Ha</b>	40.00	0.060	-	-	1.000	1.400	-	<b>2.400</b>
d. Bazra	<b>Ha</b>	40.00	0.0320	-	-	0.640	0.640	-	<b>1.280</b>
D Green Manuring	<b>Ha</b>	120.00	0.00625	-	0.080	0.260	0.260	0.150	<b>0.750</b>
<b>Total</b>					<b>5.068</b>	<b>28.676</b>	<b>29.076</b>	<b>10.188</b>	<b>73.008</b>
<b>D. CONSOLIDATION PHASE</b>								<b>28.08</b>	<b>28.08</b>
<b>GRAND TOTAL</b>				<b>47.174</b>	<b>101.977</b>	<b>151.458</b>	<b>118.711</b>	<b>142.280</b>	<b>561.60</b>



## CHAPTER – 1

### Introduction & Background:-

#### **1.Project Background:-**

The watershed Project is located in AURAS, HASANGANJ , MIYANGANJ Block , Distt. Unnao of U.P. state. This watershed has been identified by the state Department under I.W.M.P. scheme for integrated development of watershed management in located in north west of Distt. UNNAO it is lies between  $80^{\circ}33'48.075''$  to  $80^{\circ}44'6.343''$  east longitude &  $26^{\circ}44'31.145''$  to  $26^{\circ}52'27.092''$  north latitude the total area of watershed is 4993 ha.. along twith the Sai River Watershed.

The soil of Project Area is mainly Sandy loam , domat, Usar and somewhere is matyaar. Agriculture is the main occupation of the project area the main crops area Wheat , Mustard , Gram , Paddy , Maiy , Bajara & Millet . Some parts of watershed have Usar and wasteland.

Natural vegetation is very poor but Mango, Neem, emlee, Shesham, Mahua tree are found in the watershed . There is no irrigation facility in watershed area. Some where personal Boring pumps has been established by farmers, there is no grass land in watershed. Grass patches are seen only on the Bunds Rd sides and other such places the main gross is Dube , Munj and Kass.

## **II. Area & Elevation:**

Total area of the watershed is 4993.00 ha. Elevation ranges is 120.00 m above mean sea level. Fifty one villages, namely (1) Shahpur Tonda (2) Korokalyan (3) Bahroni jahanpur (4) Udheranmau (5) Rasoolpur Bakiya (6) Rajapur (7) Fakruddin mau (8) Talasarai (9) Godoli (10) Samadpur Bhawa (11) Baradev (12) Garfi Fathebad (13) Narsa (14) Samadpur Hardas (15) Sultanapur (16) Dhakawa Jagdishpur (17) Chilaula (18) Darihat (19) Khapara Bhat (20) Rafi Ghari (21) Pichwara (22) Pilkhana Rashid Pur (23) Haroni Samasuddinpur (24) Ghuramau (25) Fajullapur (26) Ahmadpur Wade (27) Bibipur Chiriyari (28) Chhrehara (29) Unchgao (30) Nindeymau (31) Hasanganj (32) Fattahpur (33) Dhauhar (34) Dhaura (35) Kamalpur (36) Salkhemau (37) Ranikhera Khalsa (38) Sahjanpur Khapra Muslim (39) Bhagat nazul (40) Mohan (41) Arji mohan Jagir (42) Shekhpur Teraha (43) Mohankhurd Khalsa (44) Jalalabad (45) Mohiddeenpur (46) MohanKhurd Jagir (47) Bhogla (48) Bachchra mag (49) Barakhera (50) Daudpur (51) Aadampur Barethy are the located in the watershed.

## **III. Need & Scope of the watershed Development:-**

Watershed Development Programme is prioritized on the basis of thirteen parameters namely Poverty index, Percentage of SC/ST, Actual wages, percentage of small and marginal farmers, Ground water status, Moisture index, Area under rain fed agriculture, Drinking water situation in the area , percentage of the degraded land , productivity potential of the land, Continuity of another watershed that has already development/treated, cluster approach for plain or for hilly terrain. Based on these thirteen parameters a composite ranking was given below to watershed project.

Since the rainfall received is erratic and irregular, the moisture index is low and the area is classified under IWDP block . Drinking water is available but in poor quality in the village . Majority of land is degraded due to soil erosion & salinity. The soil is sandy & sandy loam and production of the land can be significantly enriched with the availability of timely irrigation & proper use of fertilizers. Watershed falls continuity with other watersheds.

**IV. Problem Identification and Prioritization:-** Food sufficiency, economic growth and environmental security has identified as the major issues to be addressed in the watershed area. The area has moderate slope to soil erosion. Efficiency soil depth is unlimited and spatially useful for good crop growth.

Problems identified and prioritized the transect walk and PRA exercise in all 51 villages have pooled and list of 8(eight) problems representing the whole watershed was prepared. Problems have ranked as per their total Weightage in the 51 villages.

**Problems Identification and Prioritization for Sai River Watershed**

S.No.	Problems	Rank
1	Low production of field crops	5
2	Lack of irrigation water	2
3	Lack of good quality of drinking water	4
4	Non availability of fuel wood	6
5	Lack of inputs like quality seeds, fertilizers, pesticides etc.	4
6	Medical and health care facilities for milching animals and low productivity	6
7	Lack of fodder availability and low annual productivity	8

8	Lack of medical educational and transportation facilities	6
9	Lack of Market Facilities	7

## V. Weightage for selection of watershed:-

**Table-PPR 6: Prioritized list of projects proposed for sanction during the financial year 2010-11\***

1	2	3	4	5	6	7	8													
							Weightage under the criteria#													
							i	i	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Unnao	IWMP II <sup>nd</sup>	07	4680	OTHERS	561.6	7.5	5	5	10	0	0	10	5	10	10	0	15	0	77.5

### # Criteria and weightage for selection of watershed

S. No.	Criteria	Maximum score	Ranges & scores			
1	Poverty index (% of poor to population)	10	Above 80 % (10)	80 to 50 % (7.5)	50 to 20 % (5)	Below 20 % (2.5)
2	% of SC/ ST population	10	More than 40 % (10)	20 to 40 % (5)	Less than 20 % (3)	
3	Actual wages	5	Actual wages are significantly lower than minimum wages (5)	Actual wages are equal to or higher than minimum wages (0)		
4	% of small and marginal farmers	10	More than 80 % (10)	50 to 80 % (5)	Less than 50 % (3)	
5	Ground water status	5	Over exploited (5)	Critical (3)	Sub critical (2)	Safe (0)
6	Moisture index/ DPAP/ DDP Block	15	-66.7 & below (15) DDP Block	-33.3 to -66.6 (10) DPAP Block	0 to -33.2 (0) Non DPAP/ DDP Block	
7	Area under rain-fed agriculture	15	More than 90 % (15)	80 to 90 % (10)	70 to 80% (5)	Above 70 % (Reject)
8	Drinking water	10	No source (10)	Problematic village (7.5)	Partially covered (5)	Fully covered (0)
9	Degraded land	15	High – above 20 %	Medium – 10 to 20 % (10)	Low- less than 10 %	

			(15)		of TGA (5)	
10	Productivity potential of the land	15	Lands with low production & where productivity can be significantly enhanced with reasonable efforts (15)	Lands with moderate production & where productivity can be enhanced with reasonable efforts (10)	Lands with high production & where productivity can be marginally enhanced with reasonable efforts (5)	
11	Contiguity to another watershed that has already been developed/ treated	10	Contiguous to previously treated watershed & contiguity within the micro watersheds in the project (10)	Contiguity within the micro watersheds in the project but non contiguous to previously treated watershed (5)	Neither contiguous to previously treated watershed nor contiguity within the micro watersheds in the project (0)	
12	Cluster approach in the plains (more than one contiguous micro-watersheds in the project)	15	Above 6 micro-watersheds in cluster (15)	4 to 6 micro watersheds in cluster (10)	2 to 4 micro watersheds in cluster (5)	
13	Cluster approach in the hills (more than one contiguous micro-watersheds in the project)	15	Above 5 micro-watersheds in cluster (15)	3 to 5 micro watersheds in cluster (10)	2 to 3 micro watersheds in cluster (5)	
<b>Total</b>		<b>150</b>	<b>150</b>	<b>90</b>	<b>41</b>	<b>2.5</b>

## VI . Watershed Information:-

Name Of the Project	No. of water sheds to be treated	Watershed Code	Watershed regime/type/order
IWMP Unnao II <sup>nd</sup>	07	2B2G4j2b Shahpur Tonda	Mini Watershed
		2B2G4j2a Samadpur Bhawa	
		2B2G4j1a Rasulpur Bakiya	
		2B2G4h2d Sultanpur	
		2B2G4h1c Mohiddinpur	
		2B2G4h2a Dhauhar	
		2B2G4h2c Fajullah pur	

## VII. STRENGTH, WEAKNESS, OPPORTUNITY & THREAT (SWOT)

A SWOT analysis of Sai River watershed is presented as below:

Strength (S)	Weakness(W)
1- Cooperative work culture is traditional activities	1- Poor water management
2- Close ethnic tier	2- Resource poor farmers
3- Road at the top as well as outlet of the watershed	3- Out migration of youth
4- Hard working man power	4- Low and erratic rain fall
5- Resource pool of crop genetic diversity	5- Fragile geography
6- Awareness of farmers about watershed management program	6- Fragmented land holding.
7- Well established CPR maintaining and sharing system	7- Heavy infestation of wild animals like Neel Gaye
8- Social outlook of the community towards	8- Problem of fuel and fodder



Opportunities(O)	Threats (T)
<p>1- Wide range of annual and personal crops</p> <p>2- Scope of regular employment opportunity to check out migration</p> <p>3- Strengthening of existing irrigation system</p> <p>4- Conductive climate for rain fed crop diversification</p> <p>5- Good scope for agro forestry and dry land horticulture.</p> <p>6- Potential for collective active action and management of CPRs.</p>	<p>1- Prone to adverse climate like drought</p> <p>2- High market risk</p> <p>3- Social conflicts owing to PRI &amp; WSM policies and local policies.</p> <p>4- Weak coordination among line departments.</p> <p>5- Lack of expertise of implementing agencies in different aspect of WSM.</p>

## VIII. CROP PRODUCTIVITY OF THE AREA:-

### A. Reasons of low crop Productivity :-

- a. **low use of fertilizer per unit cropped area**: Former do not use sufficient fertilizer in abdicate manner because of non awareness for scientific method for agriculture farming.
- b. **Traditional farming methods**: Farmers do not have adequate machinery like seed drill and ploughing assets and they use traditional method of farming.
- c. **Lack of finances for farmers**: Due to small & marginal farmers there holdings are very minor. So they not like to any loaning from finance institutions.
- d. **Lack of good quality seeds and fertilizers**: Due to lack of awareness farmers do not use scientific application of seeds & fertilizers.
- e. **Lack of other facilities such as storage and marketing**: Agriculture product damaged due to scarcity of proper storage & proper market for sell. So he shelled to local prices .

## **IX. Proposed Land Use:-**

Watershed management plan for Sai River watershed is proposed with specific objectives of food efficiency and income and employment generation with environmental security. In plan preparation due importance is given to topology, land suitability, irrigation potentiality, prevailing farming systems, micro-farming situation, farmers preferences and priorities along with economic and environmental securities, crop and tree selection and area distribution is done as per farmers priorities revealed through PRA exercise. Technological options are blended with the indigenous knowledge based on the latest available research/experimental findings for this region. Due attention is given to resource of the farmers and adjustments has made in capital intensive/high resource demanding technological outputs while making them adoptable to the resource poor farmers. Emphasis is given on maximum use of Farmyard Manure (FYM) and green manuring. The proposed land use plan of watershed is given as below.

## X. Present & Proposed land use plan of the selected watershed

S.No.	Land use	Current Status (ha)	Expected post project status(ha)
1	Agriculture		
a	Kharif		
	(i) Rice/Bajara/Jwar/Maje	2297.00	4052.00
	Rabi	1976.00	3887.00
b	Zaid	237.00	495.00
2	Wasteland	154.00	
	(a) Afforestation	-	50.00
	(b) Horticulture	-	10.00

## XI. STATUS OF PREVIOUS WATERSHED PROGRAMMES & OTHER DEVELOPMENT PROJECTS:-

There is no any watershed programme previously has been taken for development in the project area. These villages being very backward have been on top priority for a number of developmental projects. These programmes are Swarnajayanti Gram Swarojgar Yojana (SGSY) and Indira Awas Yojana (IAY) . Integrated Watershed Management Programme in other areas of the district is under operation in the department of Agriculture.

## CHAPTER 2

### **General description of project area:-**

#### **I. Location :-**

The watershed Project is located in AURAS, HASANGANJ , MIYANGANJ Block , Distt. Unnao of U.P. state . This watershed has been identified by the state Department under I.W.M.P. scheme for Integrated development of watershed management in located in north west of Distt. UNNAO it is lies between 80°33'48.075" to 80°44'6.343" east longitude & 26°44'31.145" to 26°52'27.092" north latitude . The total area of watershed is 4993.00 ha. Including 51 villages. along with the Sai River Watershed.

#### **II. Area:-**

Total area of the watershed is 4993.00 ha. Which is rainfed & 4680.00 ha. Area has been proposed for treatment and Elevation ranges is 120.00 m above mean sea level. Fifty one villages are the located in the watershed.

### III. Present Land Use and Area Under Different Categories in watershed

(Area in Hectare)

S. No.	Name Of Project	No Of Micro Watershed	No Of Villages	Geographical Area Of The Villages	Forest Area	Land under Agriculture Use	Rain fed Area	Permanent Pastures	Wasteland		Treatable Area
									Cultivable	Un cultivable	
1	2	3	4	5	6	7	8	9	10	11	12
1	I.W.M.P. II <sup>nd</sup> Unnao	07	51	6241	0	5960	4993	0	1673	154.00	4680

#### iv. Physiography:-

The watershed project is having moderate slopes and drains into river Gomti through Sai River . About 60% of the watershed area has slopes up to 2 %, 20% area has slopes range 2-3% and 20% area has slopes upto 3 %. Total 11 numbers of streams of different order are found in watershed, with total length 43.50 km. Elevation ranges is 120.00 m above mean sea level.

## V. Major Stream:-

TABLE-1: STREAM CHARACTERISTICS OF SELECTED WATERSHED

Stream Order	Stream number	Mean Stream Length(K.M.)
1 <sup>st</sup> order	5	16.600
2 <sup>nd</sup> order	8	7.750
<b>Total</b>	----	<b>24.350</b>

## VI. Order of Watershed:-

All the 7 watersheds of the project area have identical rectangular shape. The largest watershed is the 2B2G4h1c Mohiddeenpur area 1212.938 ha. and the 2B2G4h2d Sultanpur area is 699.939 ha. watershed is the smallest one in the project area as per their size. The direction of the slope in the project area is north-east to south- west.

**VII. Climate:-** The watershed lies in the semi-arid region having tropical climate. The average annual precipitation is 850 mm. Most of the annual rain fall (about 90%) is received during the rainy season (July to September) accompanied with high intensity storm. The temperature in the area rarely goes up to 46.1°C during summer and reaches 6°C in winter

## VIII. Watershed Characteristics:-

**a. Shape Index of watershed:-** All the watershed is mostly rectangular shape

**b. Length of main stream:-** The length of main stream is 17.00 km.

**c. Drainage Density:-** There is 13 nos. of drainage stream having length 24.350 km. in the total watershed project area.

**d. Average slope:-** The watershed project is having moderate slopes and drains into river Gomti through Sai River . About 60% of the watershed area has slopes up to 2 %, 20% area has slopes up to 1% and 20% area has slopes upto 3 %.

### **Watershed relief:-**

<b>S.No.</b>	<b>Name of Project</b>	<b>Elevation</b>	<b>Slope range</b>	<b>Major stream</b>
1	IWMP – II <sup>nd</sup> AURAS, HASANGANJ , MIYANGANJ	120m.	1 to 3%	Sai River



## Chapter 3

### Baseline survey

#### **I. Socio-Economic Conditions**

##### **a. Socio-Economic Profile:-**

The total population of watershed is **44,917** out of which 15,175 male & 7,835 female the sex ratio is 1 female to 1.94 male. The literacy rate is 51.22 %. Male literacy is 63.22 percent & the female literacy is 37.44 percent. There are 17,965 population of s.c. & general population 26,952 out of total population.

**b. Population:-** Total population in 51 village related to watershed is 44,917 with average family size are 6 persons .

**c. Live stock Population:-**Total live stock population is 30,516 out of them the population of buffalo, Cow & Goat is respectively 3346, 3225 & 14638. Due to desi breed of the milking element , the yield is very low it require insemination for high yielding variety animals. Home sited poultry rearing is common in among farmers.

- d. **Land holdings:-** Majority of watersheds farmers are in category of marginal less than 1 hec & small upto 2 hec. These small land holdings are scatted in different places which marks cultivation very difficult.

**II. Infrastructure Social Features:** The watershed has moderate communication facilities and all 51 villages are approachable through motorable road. Literacy rate in the watershed is low because non awareness of villagers for education. All villages are having education facilities up to Junior High School. There is one intermediate colleges in watershed at AURAS, HASANGANJ , MIYANGANJ. All the villages are electrified and have telephonic connection. There are television facilities in village of watershed. Nearest market is AURAS, HASANGANJ , MIYANGANJ of Block headquarter of district Unnao. People having small land holdings (average less than 1.0 ha) with large family size (average 6 person) and illiterate unskilled persons more than 45% of the total population of watershed is living below poverty line. This indicates poor socio-economic status of the watershed community. However a strong community spirit among the village shows a positive indication for the success of any programme implemented in a participatory mode. Traditionally, the entire village community participates in the individual's work needing labour such as sowing, harvesting, house construction works etc.

**III. Means of Communication:** The related village of watersheds can be approached from main roads & there link roads like

- 1- Unnao Sandila road through Auras.
- 2- By link road from Auras to every village related from watershed.

**IV. Natural Resource Base:**

Out of the total 4993.00 area of the watershed under agriculture use an area of 4680.00 ha is under rain fed agriculture and assured irrigation by means of Canal & private tube well. Main source of irrigation in rain fed area are private tube wells and seasonal water bodies for pre-sowing irrigation only.

**V. Depending on forest for fuel wood and fodder**

- a. **Fuel wood:** Some villagers of the selected village are using LPG to meet their cooking energy requirements. The main source of fuel is form cow dung cake, woody stem of Arhar crop and Mustard. About 70 to 80 percent of the domestic energy requirement is met from the Agro By-Product and cow dung cake. Rest is met out from outside of the village and watershed boundary.
- b. **Fodder:** There is shortage of green fodder in winter and summer due to inadequate irrigation facility.

- c. **Labour Requirement:** Labour requirement is found to be maximum during October-November, when the harvesting of Kharif and sowing of rabi crops are done simultaneously. The other crucial periods are March-April when harvesting and threshing of rabi crop is done and July-August when sowing of Kharif crops takes place. Other income generating enterprises having potential during the remaining month should be planned to reduce the migration of labours.
- V. **Crop Calendar:** The present crop calendar in the watershed comprises of Jawar Makka, Wheat-mustard gram-fallow-mungh are the most prevailing crops. Fallow-wheat ,fallow-gram, fallow-lentil, Arhar + Jawar are the most prevailing crop rotation on the agricultural lands both in rain fed and irrigated condition in the watershed. Organized vegetable cultivation, fruit plantation and traditional agro-forestry system are lacking widely in the watershed. The limited vegetable cultivation in the watershed is confined either to kitchen gardens or to be irrigated conditions in a scattered manner on extremely small area with view to meet out the domestic demand for vegetables. The cultivation of each crop other than the Wheat-Paddy Makka-jwar, also lacks in the watershed.

## VI. **Farmers Preferences**

- a. **Fruit Trees:** Farmers preferences for fruit trees are solicited in terms of attributes like production, market availability and timber wood value. Overall, Mango & Goawa Papaya is found most preferred fruit tree.
- b. **Fodder Trees:** Farmers also do not have any preferred fodder tree in the watershed in spite of fact that watershed falls in semi arid tract.

The marketing facilities, lack of follow up of modern scientific package of practices of cropping potential in the watershed, socio-economical factors etc. is found to be most important factors deciding the preferences of farmers pertaining to selection and cultivation of agricultural crops, fruits, or fodder trees in the watershed.

- c. **Agriculture:** Wheat, Paddy, Jowar + Arhar, Bajra, Makka are the most preferred agricultural crop in the watershed.

**VII. Flood and drought condition:**

S.No.	Watershed Area of sai river	Flood (incidence)	Drought (incidence)
1		Once in five years	

**VIII. Soil Erosion:**

S.No.	Type of erosion	Area affected (ha)	Run off (mm/year)	Average soil loss (Tonnes / ha / year)
1	Sheet erosion	2128	665	16 to 20 tones/ha/year
2	Rill erosion	1723		
3	Gully erosion	1142		
		4993		

**IX.Land ownership details:-**

S.No.	Total Project Area	Total owned land (in ha.)		
		Gen	SC	ST
1	4993	3496	1497	NIL

**X.Agriculture:**

S.No.	Total Project Area	Net sown area(ha)		
		One Time	Two Time	Three Times
1	4680	4230	2202	NIL

## XI. Literacy rate:-

S.No.	Total Population of watershed	Literacy					
		Total	%	Male	%	Female	%
1-	44917	23010	51.22%	15175	63.22%	7835	37.44%

## XII. Migration Pattern:-

S. No.	Total Population of Watershed	Migration			No. of Days / Year of migration	Main reason for Migration
		Total	Male	Female		
1-	44917	731	698	33	150	Unemployment ,Poverty

### XIII. Village wise Poverty index of the watershed Sai River

S.No	Name of Village	Total Household	%of BPL Household	Total landless HH	%of landless HH
1	Shahpur Tonda	524	59%	10	2%
2	Korokalyan	168	52%	5	3%
3	Bahroni jahanpur	181	53%	3	1.65%
4	Udheranmau	0	0	0	0
5	Rasoolpur Bakiya	774	68%	9	1%
6	Rajapur	96	51%	2	2%
7	Fakruddin mau	162	55%	6	3.70%
8	Talasarai	407	59%	11	2.70%
9	Gohli	94	51%	3	1.85%
10	Samadpur Bhawa	162	58%	2	1%
11	Baradev	410	59%	5	1.2%
12	Garhi Fathebad	279	56%	3	1%
13	Narsa	280	55%	2	1%
14	Samadpur Hardas	291	53%	6	2%
15	Sultanapur	95	51%	1	1%
16	Dhakawa Jagdishpur	87	53%	2	2.29%
17	Chilaula	82	54%	1	1.2%
18	Darihat	160	58%	4	2.5%
19	Khapara Bhat	103	55%	3	2.9%
20	Rafi Ghari	159	54%	2	3.38%
21	Pichwara	193	55%	4	2.07%
22	Pilkhana RashidPur	301	59%	7	2.32%
23	Haroni Samasuddinpur	175	53%	3	1.7%
24	Ghuramau	169	55%	5	2.95%



25	Fajullapur	0	0	0	0
26	Ahmadpur Wade	240	57%	3	1.25%
27	Bibipur Chiriyari	503	59%	4	0.79%
28	Chhrehara	125	53%	2	1.6%
29	Unchgao	332	56%	3	0.9%
30	Nindeymau	388	58%	4	1.03%
31	Hasanganj	660	59%	5	0.75%
32	Fattahpur	0	0	0	0
33	Dhauhar	0	0	0	0
34	Dhaura	693	59%	9	1.30%
35	Kamalpur	159	51%	2	1.25%
36	Salkhemau	101	55%	1	1%
37	Ranikhera Khalsa	183	54%	3	1.64%
38	Sahjanpur Khapra Muslim	200	58%	4	2%
39	Bhagat nazul	0	0	0	0
40	Mohan	0	0	0	0
41	Arji mohan Jagir	0	0	0	0
42	Shekhpur Teraha	127	59%	3	2.36%
43	Mohankhurd Khalsa	0	0	0	0
44	Jalalabad	201	59%	2	1%
45	Mohiddeenpur	124	55%	1	1%
46	MohanKhurd Jagir	0	0	0	0
47	Bhogla	171	58%	2	1.16%
48	Bachchra mag	0	0	0	0
49	Barakhera	146	54%	3	2%
50	Daudpur	94	57%	1	1%
51	Aadampur Barethy	275	59%	4	1.45%

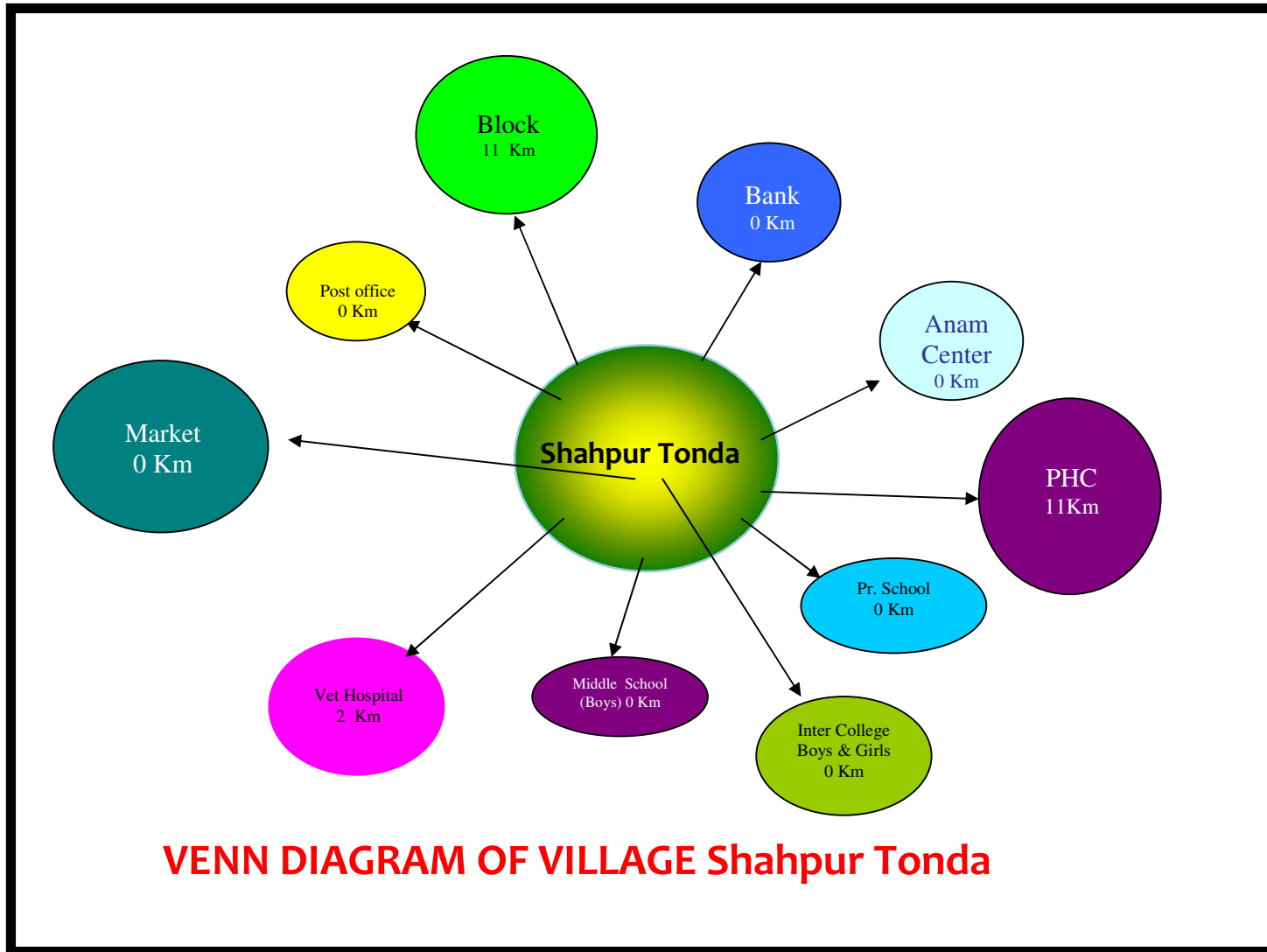
#### XIV. Infrastructure facilities:

S. No.	Name of Village	Pucca road the villeg e (Y/N)	Schools			Colleges (Nos)	Post office (Distance)	Banks (Nos)	Distance from nearest market K.M.	Milk collection centre (Number)	Milk cooperative (Number)	Other Cooperatives /CBIs(Number)	Electricity	Any other institution
			LP	UP	HS									
1	<b>Shahpur Tonda</b>	Y	Y	Y	N	N	N	N	2	---	---	----	Y	----
2	<b>Korokalyan</b>	Y	Y	Y	N	N	N	N	2	---	---	----	Y	----
3	<b>Bahroni jahanpur</b>	Y	Y	Y	N	N	N	N	2	---	---	----	Y	----
4	<b>Udheranmau</b>	Y	Y	Y	N	N	N	N	2	---	---	----	Y	----
5	<b>Rasoolpur Bakiya</b>	Y	Y	Y	N	N	Y	N	2	---	---	----	Y	----
6	<b>Rajapur</b>	Y	Y	Y	N	N	N	N	2	---	---	----	Y	----
7	<b>Fakruddin mau</b>	Y	Y	Y	N	N	N	N	2	---	---	----	Y	----
8	<b>Talasarai</b>	Y	Y	Y	N	N	N	N	2	---	---	----	Y	----
9	<b>Godoli</b>	Y	Y	Y	N	N	N	N	2	---	---	----	Y	----
10	<b>Samadpur Bhawa</b>	Y	Y	Y	N	N	N	N	3	---	---	----	Y	----
11	<b>Baradev</b>	Y	Y	Y	N	N	N	N	2	---	---	----	Y	----
12	<b>Garhi Fathebad</b>	Y	Y	Y	N	N	N	N	2	---	---	----	Y	----
13	<b>Narsa</b>	Y	Y	Y	N	N	N	N	5	---	---	----	Y	----
14	<b>Samadpur Hardas</b>	Y	Y	Y	N	N	Y	N	5	---	---	----	Y	----

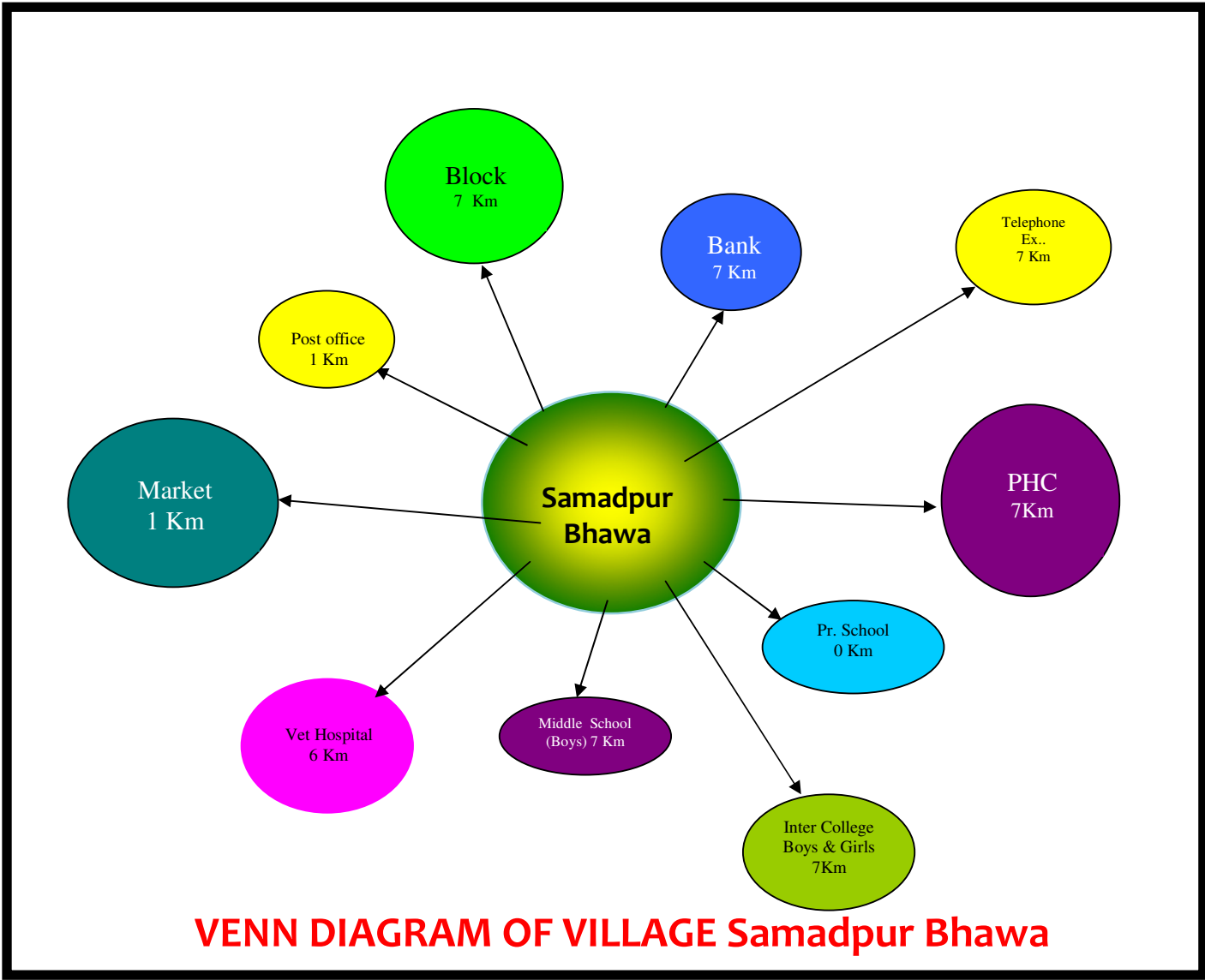
15	<b>Sultanapur</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
16	<b>Dhakawa Jagdishpur</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
17	<b>Chilaula</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
18	<b>Darihat</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
19	<b>Khapara Bhat</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
20	<b>Rafi Ghari</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
21	<b>Pichwara</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
22	<b>Pilkhana RashidPur</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
23	<b>Haroni Samasuddin pur</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
24	<b>Ghuramau</b>	Y	Y	Y	N	N	N	N	4	---	---	---	Y	---
25	<b>Fajullapur</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
26	<b>Ahmadpur Wade</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
27	<b>Bibipur Chiriyari</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
28	<b>Chhrehara</b>	Y	Y	Y	N	N	Y	N	5	---	---	---	Y	---
29	<b>Unchgao</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
30	<b>Nindey mau</b>	Y	Y	Y	N	N	N	N	4	---	---	---	Y	---
31	<b>Hasanganj</b>	Y	Y	Y	N	N	Y	Y	0.5	1	1	---	Y	---
32	<b>Fattahpur</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
33	<b>Dhauhar</b>	Y	Y	Y	N	N	N	Y	4	---	---	---	Y	---
34	<b>Dhaura</b>	Y	Y	Y	N	N	Y	N	4	---	---	---	Y	---
35	<b>Kamalpur</b>	Y	Y	Y	N	N	N	N	4	---	---	---	Y	---

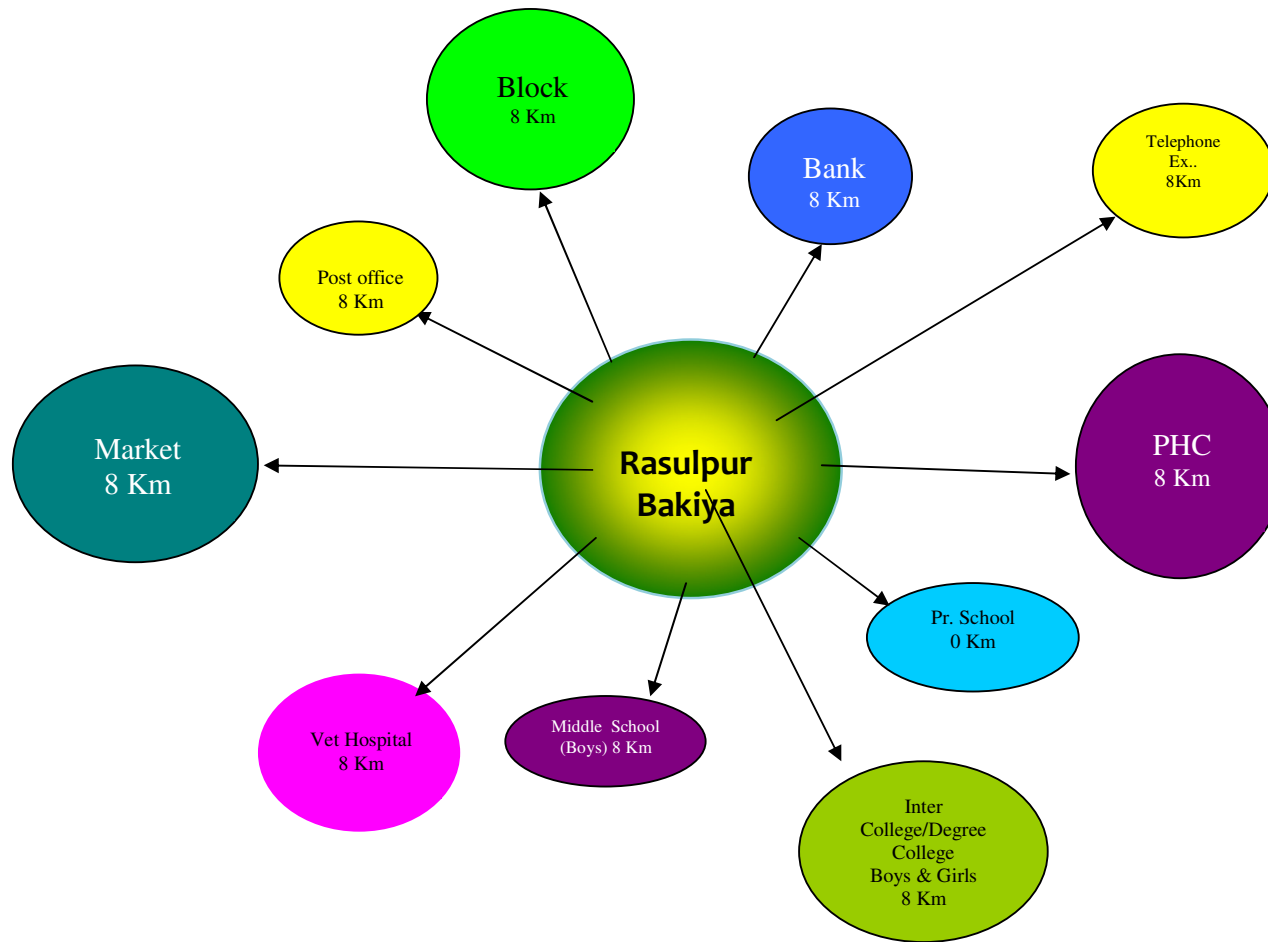
36	<b>Salkhemau</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
37	<b>Ranikhera Khalsa</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
38	<b>Sahjanpur Khapra Muslim</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
39	<b>Bhagat nazul</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---
40	<b>Mohan</b>	Y	Y	Y	N	N	N	N	0.5	1	1	---	Y	---
41	<b>Arji mohan Jagir</b>	Y	Y	Y	N	N	N	N	1	---	---	---	Y	---
42	<b>Shekhpur Teraha</b>	Y	Y	Y	N	N	N	N	6	---	---	---	Y	---
43	<b>Mohankhurd Khalsa</b>	Y	Y	Y	N	N	N	N	0.5	---	---	---	Y	---
44	<b>Jalalabad</b>	Y	Y	Y	N	N	N	N	4	---	---	---	Y	---
45	<b>Mohiddeen pur</b>	Y	Y	Y	N	N	N	N	3	---	---	---	Y	---
46	<b>MohanKhurd Jagir</b>	Y	Y	Y	N	N	N	N	1	---	---	---	Y	---
47	<b>Bhogla</b>	Y	Y	Y	N	N	N	N	2	---	---	---	Y	---
48	<b>Bachchra mag</b>	Y	Y	Y	N	N	N	N	2	---	---	---	Y	---
49	<b>Barakhera</b>	Y	Y	Y	N	N	N	N	3	---	---	---	Y	---
50	<b>Daudpur</b>	Y	Y	Y	N	N	N	N	4	---	---	---	Y	---
51	<b>Aadampur Barethy</b>	Y	Y	Y	N	N	N	N	5	---	---	---	Y	---

**XV . VENN DIAGRAM:-**

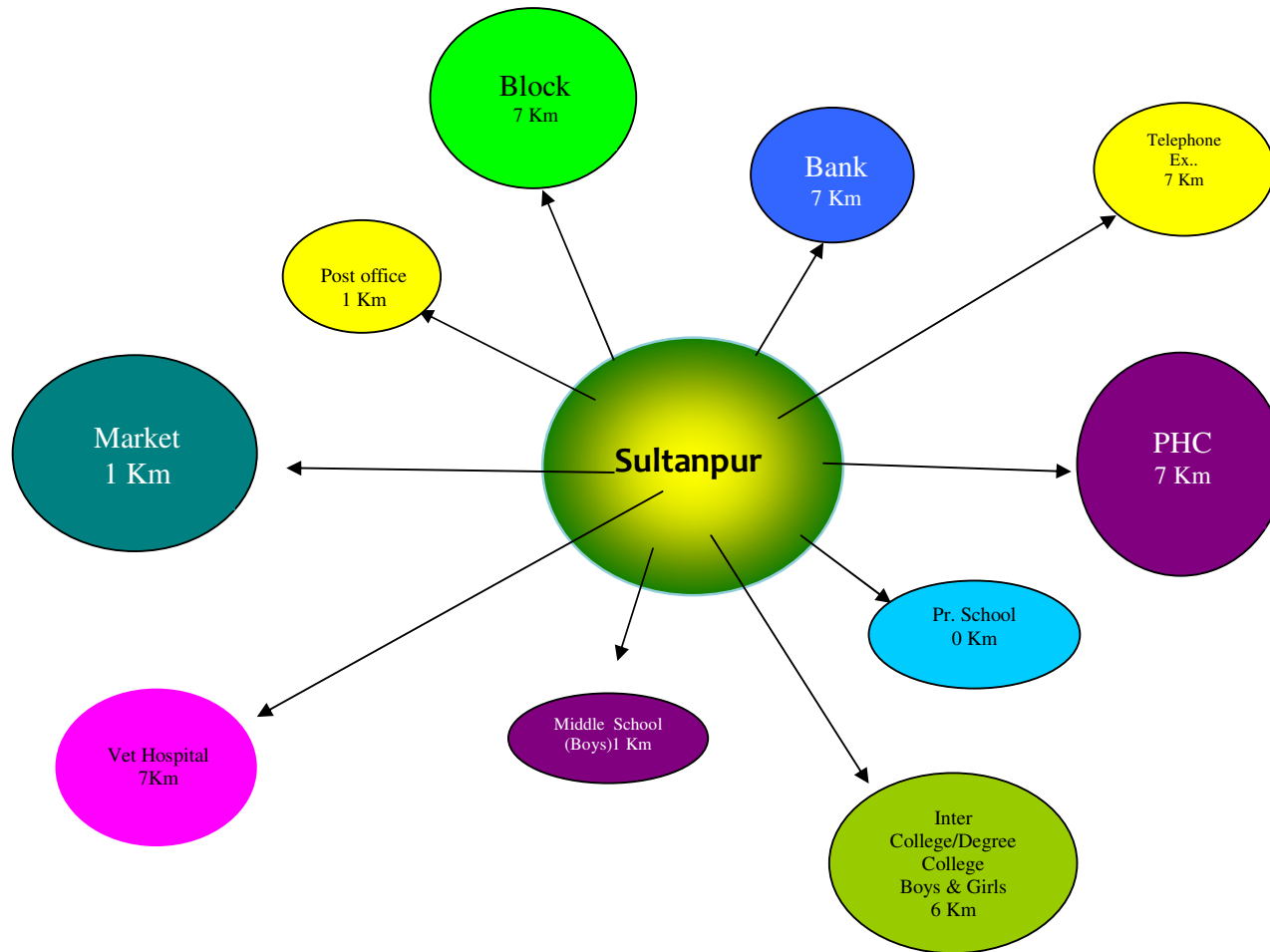


**VENN DIAGRAM OF VILLAGE Shahpur Tonda**



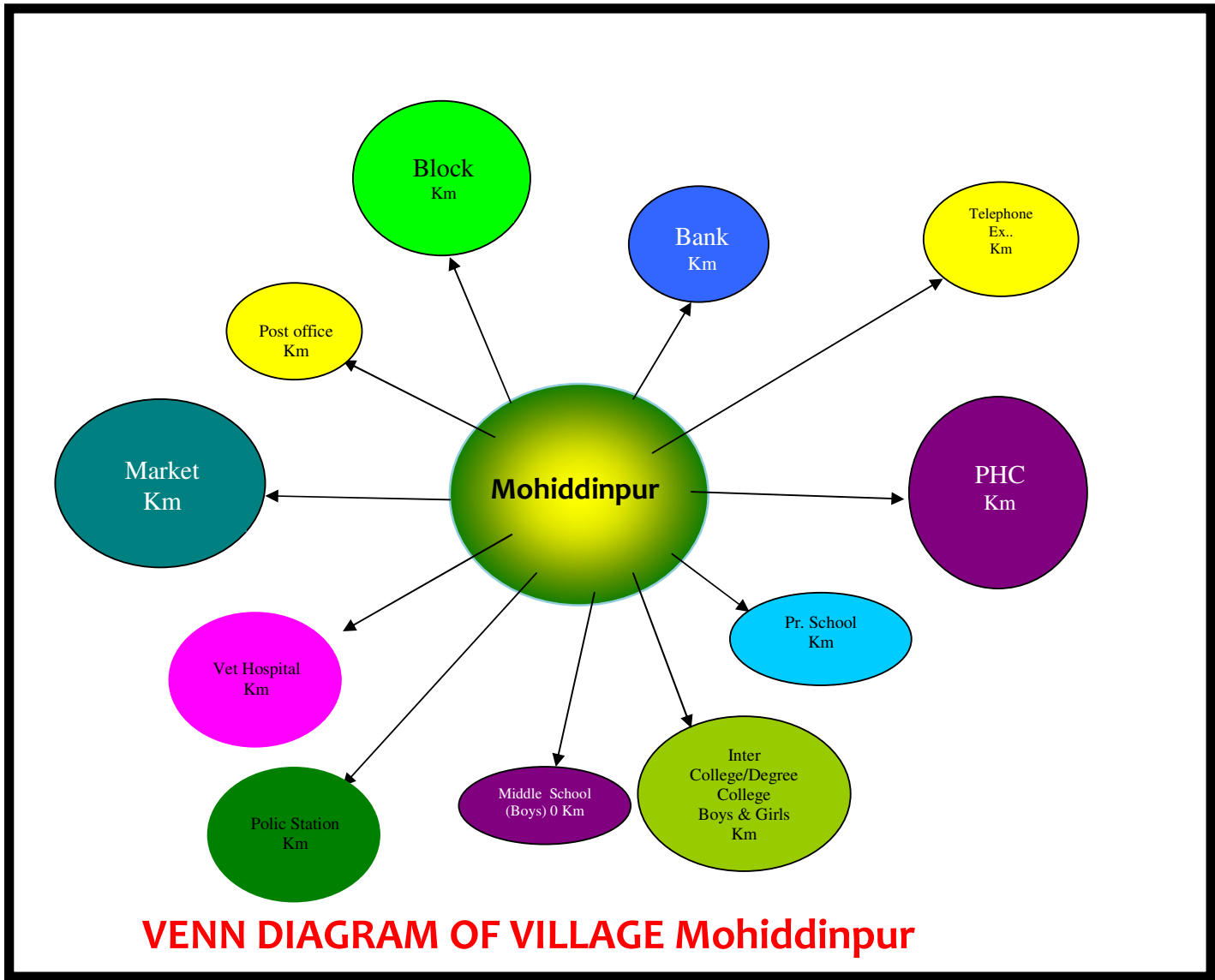


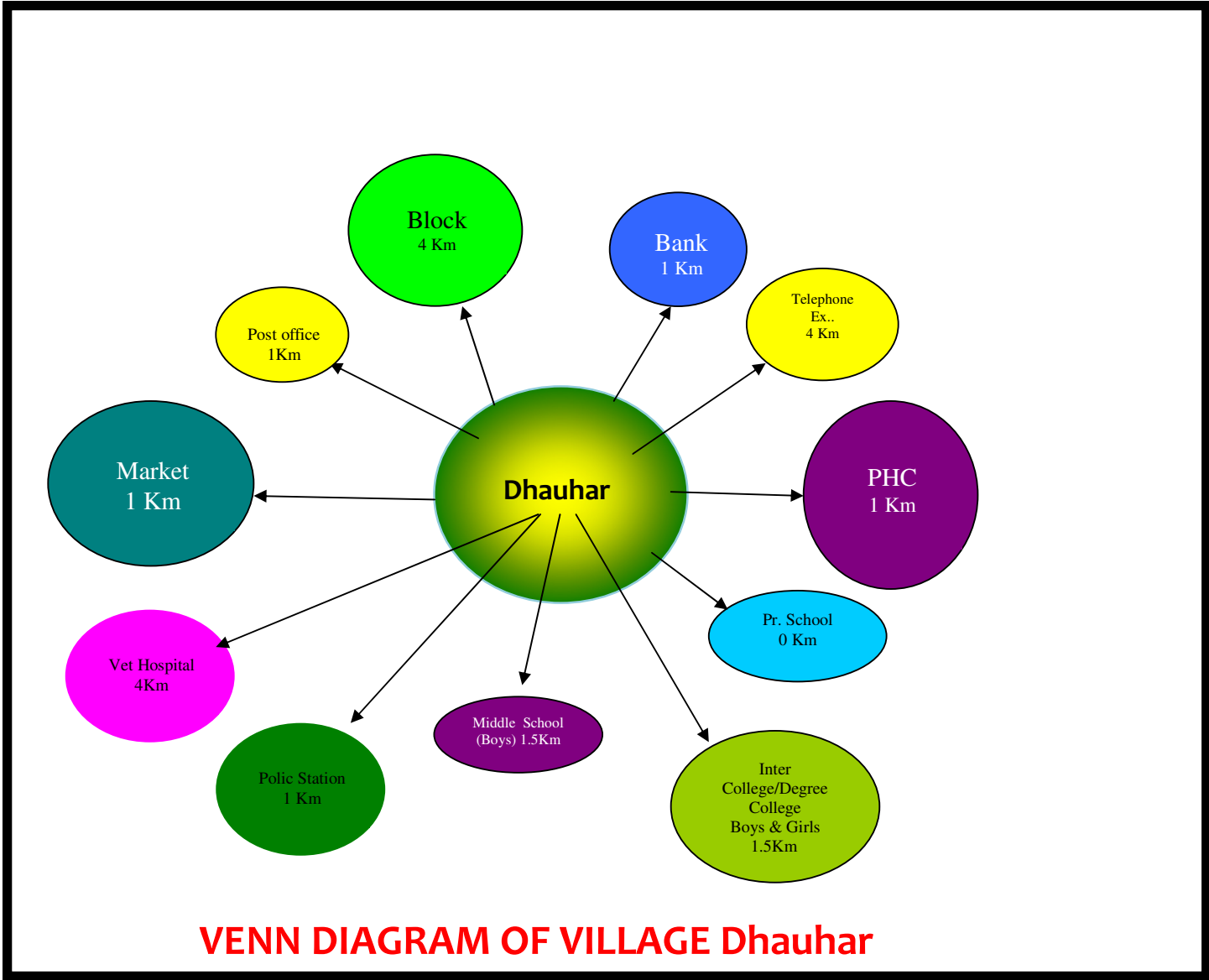
**VENN DIAGRAM OF VILLAGE KATRA Rasulpur Bakiya**

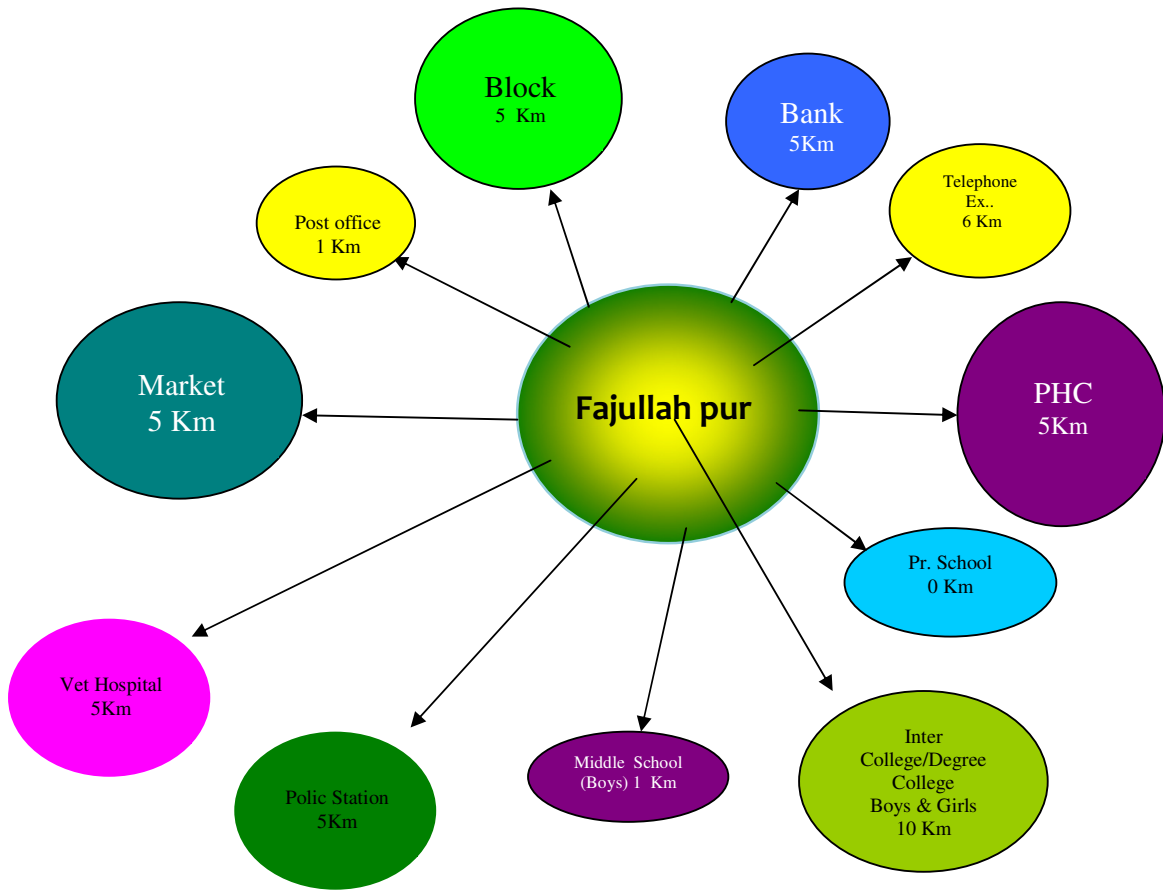


**VENN DIAGRAM OF VILLAGE Sultanpur**









**VENN DIAGRAM OF VILLAGE Fajullah pur**

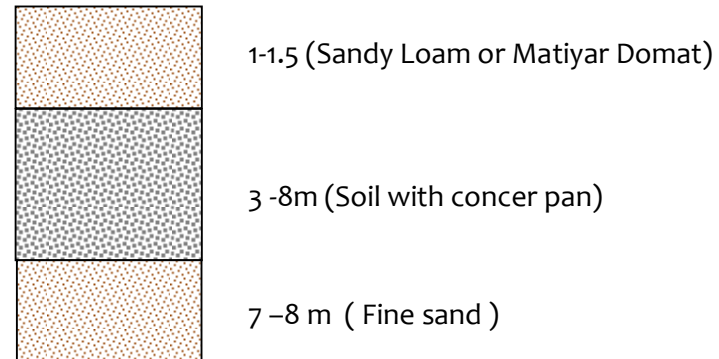
## XXVI. Soil & Land Use

### Soil & Land Capability Classification:-

a. **Soil Morphology:** The selected area is situated in the North East of District-Unnao. The entire watershed is topographically divided into three major land forms. Accordingly, the soils of watershed have been grouped in the two major categories.

- 1- Plain land
- 2- Moderate sloppy land

#### Soil Profile: A Representative Soil Profile



## **Morphology of typical solid profile of Sai River**

<b>Horizon</b>	<b>Depth(M.)</b>	<b>Morphology</b>
<b>A</b>	0-1.5	Sandy Loam , clay content > 60%, soft and easily erodible .
<b>B</b>	1.5-8.00	Soil with concer
<b>C</b>	>8.00	Fine Sand

### **b. Soil Characteristics and Fertility Status:**

Four types of soils are in the watershed area. The fertility status is about normal range. The three soil samples of each village. After receiving the analysis report effort will be made to motivate the farmers to use nutrients and micronutrients according to the any analysis report. For this demonstration of crop in Kharif and Rabi both seasons have been proposed under agriculture production activity.

### **XVII. Land Capability Classification (LCC):**

Land capability classification(LCC) is crucial for appropriate land use planting consisting of practiced like choice of vegetation /crops, tillage practices, use of scientific method of cultivation and desirous conservation practices, Detailed LCC Survey carried out in the Sai River watershed brought out the prevailing LCC classes as I,II,III,IV

a. **Area Under Various LCC Classes Sai River Watershed**

<b>LCC class</b>	<b>Area ha</b>
I	750.00
II	1300.00
III	1710.00
IV	920.00
<b>Total</b>	<b>4680.00</b>

b. **Conclusion:** The land capability classification of the Sai River watershed provides reasonable good information with regard to capability of soil, that could be used for agriculture, agri-horticulture & silvi-culture development. The majority of land form is coming under class II, which give an insight of good agriculture production potential of these watershed. The productivity of these lands could be further enhanced by adoption of simple soil & water conservation measures like contour bunding *in-situ* moisture conservation practices. In class III submergence bund, marginal and peripheral bund are planned and in class IV, gully plugging structures, earthen check dam and water harvesting bunds are proposed with permanent Pucca Drop Spill Way structures.

## XVIII. Land use Pattern

(Area in hact)

S N	No. of Micro watershed	No. of village	Geographi cal area	Land under Agricultur al use	Rain fed Area	Forest Area	Pasture Area	West Land	
								Cultivable	Non- Cultivable
1	07	51	6241	5960	4993	----	-----	1673	154

### XIX. Soil Type & Topography:-

S. No.	Names of the watershed	Area in ha.	Major soil types	Topography	Name of the Agro Climate Zone covers project Area
			Type		
1	2B2G4j2b Shahpur Tonda	951.806	Matiyar Domat	1 to 2% Slope	Semi Arid
			Fine Clay		
2	2B2G4j2a Samadpur Bhawa	929.561	Matiyar Domat	1to 3% Slope	Semi Arid
			Fine Loamy		
3	2B2G4j1a Rasulpur Bakiya	821.250	Matiyar Domat	1to 3% Slope	Semi Arid
			Coarse Loamy		
4	2B2G4h2d Sultanpur	699.939	Matiyar Domat	1 to 2% Slope	Semi Arid
			Fine Silty		
5	2B2G4h1c Mohiddeenpur	1212.938	Matiyar Domat	1 to 2% Slope	Semi Arid
			Fine Clay		
6	2B2G4h2a Dhauhar	1127.384	Matiyar Domat	1 to 2% Slope	Semi Arid
			Sandy Loam		
7	2B2G4h2c Fajullah pur	699.414	Matiyar Domat	1to 3% Slope	Semi Arid
			Fine Clay		
			Fine Loamy		
	<b>Total</b>	<b>6441.693</b>			



## XX. Agriculture including area , Productivity, Cropping intensity etc

- a. **Agriculture:** Various agriculture land uses in the watershed are extended to diversified land capabilities starting from marginal to good class II<sup>nd</sup> lands. The watershed distinctly has two types of land i.e. leveled & sloppy and degraded. The agriculture is practiced on all these soil types though the productivity considerably varies. The total area in agriculture in the watershed is about 6441.693 ha out of which 1448.693 ha is irrigated while 4993.00 ha is under rain fed agriculture. The operation of tube wells for irrigation of agricultural crops frequently leads to the drinking water problem to the farmers for watershed. Drinking water is not in form of good Quality.

The agricultural soils in the watershed have diversified texture i.e. Sandy, Sandy Domat Domat & Matiyar somewhere saline soil also founded in the watershed. Which are located in patches in some places of the watershed. Four types of soil Sandy, Sandy Domat Domat & Matiyar are the main soil of selected micro watershed of district-Unnao. The irrigation water is conveyed in earthen channels and surface irrigation methods following mainly border method of free flooding method of irrigation by farmers in the watershed. The factors substantially reduce the water use efficiency of limited available and valuable irrigation water in the watershed.

Rehabilitation of waste lands with suitable multipurpose tree, promoting agro foresting on agricultural lands with appropriate fruit and forest species, suitable vegetative barriers on sloping lands can of high future value in meeting out not only fire wood and fodder demands in the watershed but also for soil and water conservation, Rehabilitation of wasteland and substantial income generation for socio-economic uplift of farmers in the watershed.

**b. One Year Crop Rotation Rain fed Agriculture :-**

**Single Cropping:** Fallow-Jwar/Bajara, Fallow-wheat, arhar .

**Double Cropping:** Bajra - Lentil, Arhar + Jowar, Paddy-Wheat, Paddy-Gram, Maize-Potato.

**c. Irrigated Agriculture:-**

**One Year Crop Rotation:** Paddy-wheat, Urad/Moong-Potato, Urad/Moong-Vegetables, Paddy-Gram, Paddy-Lentil, Maize-Potato, Sugar Cane.

**Crop Productivity:** food crop production is a major land based activity in the watershed. Traditional cultivation practices, coupled with poor quality seeds and long duration crops varieties result in low crop yields. Crops are taken under rainfed as well as irrigated conditions. The yield levels of rain fed crops are particularly very poor. Large variation has been noticed in productivity of wheat (28-29 Ql/ha) and rice (14-16 Ql/ha) under rain fed and irrigation, condition respectively. At present level of rainfed farming. The total produce from Rabi and Kharif crops obtained by a medium size of holding owning family can meet food requirements for upto 9-10 months only.

The farmers also do not have suitable cropping systems to deal aberrant weather. Weeds impose considerable constraint in producing of both Kharif and rabi crops under irrigation as well as rain-fed production system. Use of weedicide is rare in the watershed. The mixed cropping is in practice in limited area with Kharif crops like bajra and jowar+Arhar . Subsequent rabi crops in general are raised on residual soil moisture under rain-fed production system during past monsoon season. Imbalanced use of fertilizers is common in not only Rabi and Kharif crops but also in rain fed and irrigated production system the recommended deep ploughing for enhanced in situ residual soil

moisture conservation and higher production is also not followed in the watershed. The shallow ploughing tractors drawn tillage implements are available with the farmers in the watershed but deep ploughing implements yet need to be introduced.

The soil fertility/health restoration practices like green manuring, crop rotations and intercropping specially with legumes, use of FYM/compost, vermi-compost ,bio fertilizers ,soil and water conservation measures, use of brought up or in situ mulches are widely lacking in the watershed. The soil and water conservation measures are limited to mechanical/earthen measures created by the state Govt. agencies. Conservation agronomical measures like seeding and ploughing across the slope, wed mulching, agro-forestry, vegetative barriers etc also completely lack in the watershed.

- d. Indigenous Technological Knowledge (I.T.K.):**-Agriculture is an old age occupation which farmers have practiced and improved in their own manner to earn livelihood under the condition of area. The indigenous farming technology in the watershed is observed to cover a vast spectrum of activities involving tillage, implement crop selection, storage of produce and value condition in Dist. Unnao line showing is in the traditional practice due to the soil condition. Seed drill, seed comfort drill are used with tractor and Nai/chonga with indigenous plough. These ITKs are eco-friendly, cost effective and involve use of local materials with farmers own wisdom. These techniques equip farmers with skills and strength to adopt to the prevailing adverse conditions.

## **XXI. Horticulture**

The watershed does not have organized orchards, however, farmers have fruit plants (mango, ber, bel, guava, etc.) near the homesteads and kitchen gardens. The climate and

soil of the area is favorable for fruit growing for sub tropical fruits in the lower reaches. Organized orchards, commercial vegetable cultivation, agro horticulture, and other system of agro forestry etc. are lacking but have good potential in the watershed.

### **Horticulture Development for watershed Management:-**

Fruit trees and fruit based systems are the viable alternatives for economic utilization of such lands. The basic philosophy behind the conservation horticulture is the use of available resources and skillful choice of fruits. The use of available soil moisture , collection of the runoff water from the catchment area to make up the deficit requirements as well as in situ water harvesting techniques are some of the measures . The in situ water harvesting techniques should be used for growing trees in such a way that each tree has its own micro catchment area. The success of the conservation of horticulture entirely depends on the selection of economically viable hardy varieties of fruit crops resistant to moisture stress or drought and other adverse climate conditions. The fruit crops selected for degraded lands must be such that their maximum growth take place during the period of maximum water availability in the soil and should have low demand.

The main constraints which restrict development of the horticulture land use in degraded lands are enumerated below:

#### **(a)Basic constraints**

- 1- Lack of suitable agro-techniques for degraded lands
- 2- Lack of trained resource persons
- 3- Inadequate dissemination of the technologies
- 4- Lack of community approach
- 5- High biotic interference

6- Lack of infrastructure including marketing.

**(b) Soil constraints**

- 1- Poor nutrient status of the soil
- 2- Physical impediment
- 3- Moisture stress / water logging / inadequate drainage.

**(c) Plant related constraints**

- 1- Problem of plant establishment
- 2- Physiological disorders
- 3- Fruit drop and poor productivity
- 4- Incidence of insects-pests.

However , apart from the above mentioned constraints, the measure bottleneck in horticulture development are poor technological advancements, high initial establishment cost, high input demand , timely operation and seasonal shortage of labours, etc.

#### **d.CONCEPTS AND ADVANTAGES OF CONSERVATION HORTICULTURE**

Conservation horticulture or horticulture land use based on soil and water conservation principle is a suitable alternative for utilization and management of land under rain fed conditions. Thus horticulture development in watershed management appears to be the most appropriate technique for sustained productivity as well as for restoration of degraded lands. In fact, horticulture system meet all the basic needs-food, fruits, fodder, fuel and timber besides, providing employment and sustaining a number of products for industries.

The fruit trees grown with crops can provide fuel from pruned shoots and dried branches, leaf fodder for animals and leaf litter that can be utilized as mulch material and organic matter the leaf litter of deciduous fruit trees not only protects the top soil from the impact of raindrops but also improve soil structure, reduces evapotranspiration, increases infiltration and add to the nutrient status of soil. Therefore conservation based horticulture land use system assumes great significance as fruit trees on degraded lands provide higher returns and offer alternative opportunity in non-arable areas where cropping may not be possible.

**XXII. ESTIMATE OF HORTICULTURE DEVELOPMENT PROGRAMME:-**

S.N.	Particulars	Quantity	Rate	Amount	Remark
1	Soil working 1mx1m size pits (2000)including cost of refilling	2000.00	32.57/cum	65140.00	Since the project is to be operated in a participatory mode, contribution in the form of labour input for pit digging, FYM & its applications weeding & hoeing are to be provided by the participating farmers hence the costs are not included in the estimates.
2	Application of farmyard Manure including cost		L.S.	3350.00	
3	Cost of NKP mixture , neemicide @250gm/plant		L.S.	2950.00	
4	Cost of plants (including 15% etc. for mortality) including transportation and planting	2300 nos.	15.00/Plant	34500.00	
5	Casualty replacement @ 10% of item No. 4&5			3450.00	
6	Cost of 2 weedings & hoeing		1.00/Plant	4000.00	
7	Contingency & unforeseen (3%)			3400.00	
	Total			116790.00	
	Say			116800.00	
	Maintenance cosy 2 <sup>nd</sup> year onwards 15% Less than 1st year cost			17520.00	
	For next 3 years i.e. Rs. 900x5			52560.00	
	Total Cost			186880.00	
	Say			187000.00	

### COST OF AFFORESTATION( Per Plant)

S.No.	Particular	No.	L	B	D/H	Quantity	Rate	Amount
1	Earth work in digging	1	0.45	0.45	0.45	0.09	32.57	2.96
2	Cost of FYM, in Kg/pit	1	-	-	-	1.5Kg	7.75	11.62
3	Cost of plants	1	-	-	-	1	15.00	15.00
<b>Total</b>								<b>29.58</b>
<b>Say</b>								<b>Rs. 29.50</b>



## XXIII. Livestock & Fisheries

### Watershed wise Animal Population

S.No.	Watershed	Buffaloes	Cows	Bullocks	Goat	Pig
1	2B2G4j2b Shahpur Tonda	465	477	905	2163	498
2	2B2G4j2a Samadpur Bhawa	452	465	707	2112	486
3	2B2G4j1a Rasulpur Bakiya	399	411	749	1866	429
4	2B2G4h2d Sultanpur	340	350	614	1591	366
5	2B2G4h1c Mohiddinpur	810	608	1150	2756	635
6	2B2G4h2a Dhauhar	548	564	1120	2561	589
7	2B2G4h2c Fajullah pur	332	350	693	1589	366
	<b>Total</b>	<b>3346</b>	<b>3225</b>	<b>5938</b>	<b>14638</b>	<b>3369</b>

## XXIV. Forest & Grass-land

### COST OF AFFORESTATION( Per Plant)

S.No.	Particular	No.	L	B	D/H	Quantity	Rate	Amount
1	Earth work in digging	1	0.45	0.45	0.45	0.09	32.57	2.96
2	Cost of FYM, in Kg/pit	1	-	-	-	1.5Kg	7.75	11.62
3	Cost of plants	1	-	-	-	1	15.00	15.00
<b>Total</b>								<b>29.58</b>
<b>Say</b>								<b>Rs. 29.50</b>

## **XXV. Livelihood status**

**Livelihood:** Out of the total population 86,642 in the watershed, a majority i.e. more than 70% has farming as their major source of livelihood followed by 25% laborer and 5% service+ business class.

In income generating activities through Self Help Group, landless and marginal farmers are advised to use three or four cows of SANKER breed or three or Four buffalos of MURRA breed, for their good life. For the livelihood programme 20 groups of SHG has been given in the project including cost 1.2 lakh / unit that have four buffalo in each group . Goat population is appreciable in the Project Area and in fact, it is the major source of livelihood for poor people of the district. In the state, on an average, 16 kg of meat is obtained from a goat, if they are dewormmed twice, there shall be increment of 4 kg in meat on an average, benefiting the farmers of the state. Deworming and vitamins, mineral- supplement to the goats shall enhance their productivity and also improve anti-body response and protection level through vaccination, i.e., importance in efficiency of vaccination. More productivity and assured health and low mortality shall result into adoption of more farmers to goat farming with the formation of more S.H.G.'s and in turn availability of goats for processing units. Goat excreta shall be of immense help in enrichment of soil fertility. \_\_20 Goat Units are proposed in I.W.M.P. II<sup>nd</sup> Project for S.H.G. One unit constituting 20 goats and 2 buck will be distributed to one S.H.G.A register of S.H.G. will be maintained by Secretary of S.H.G. in the supervision of W.D.T. member. The details of beneficiaries of S.H.G. including the breed of goat reared, breeding and feeding status, deworming status, deaths, post mortem conducted claim settlement and working status of unit will be maintained in the register. Preferences shall be given in consecutive years in purchasing the goats and bucks for new units, from old units for which database maintained shall be of use and it should be assured by buy back arrangement. The Water

Shade Project Area is Near by Lucknow District so there is a major scope of chicken work jardogi .women's are interested in this work and they can earn thier livelihood through self help Gourp .20 numbers of group has been given in this programme total unit cost is rs 50000 / unit .

**XXVI. Hydrology & water resources:-** Farm ponds , water harvesting bund, Injection well , check dam & Gully Plug will be most important part for water resource development .

**XXVII. Soil & Moisture Conservation and Efficient use of water:-** Soil & Moisture Conservation measures like contour bund, Marginal bunds, Peripheral bund , Chb, will be more efficient for soil & moisture conservation & efficient use of water.

### **XXVIII. Problems and Needs**

**Problem Identification and Prioritization:-** Food sufficiency, economic growth and environmental security has identified as the major issues to be addressed in the watershed area. The area has moderate slope to soil erosion. Efficiency soil depth is unlimited and spatially useful for good crop growth.

Problems identified and prioritized the transect walk and PRA exercise in all 51 villages have pooled and list of 8(eight) problems representing the whole watershed was prepared. Problems have ranked as per their total Weightage in the 51 villages.

### **Problems Identification and Prioritization for Sai River Watershed**

<b>S.No.</b>	<b>Problems</b>
1	Low production of field crops
2	Lack of irrigation water
3	Lack of good quality of drinking water
4	Non availability of fuel wood
5	Lack of inputs like quality seeds, fertilizers, pesticides etc.
6	Medical and health care facilities for milching animals and low productivity
7	Lack of fodder availability and low annual productivity
8	Lack of medical educational and transportation facilities

## Chapter 4

### **I. PRA**

#### **Participatory Rural Appraisal (PRA)**

The past experience of watershed has given tremendous input to focus on creating accountability of the stakeholders towards the program. This has created an emphasis to include all the stakeholder communities and their local and Indigenous Technological Knowledge (ITK) while planning for any activity. Participatory approach provides a new path for planning, implementing, and monitoring and post- withdrawal activities with a complete accountability of the stakeholders. Various PRA techniques like resource mapping, social mapping, and season calendars were used to understand the physical and social orientation of the village in general and watershed in specific. These tools put the villagers in ease than the complicated questionnaires.

### **II. Use of GIS and Remote Sensing for planning**

Use of various GIS and Remote Sensing Technologies has been promoted at various stages of watershed development.

### **a) Prioritization**

Geographical Information System (GIS) has been used for prioritization process. Various maps were created using spatial and non spatial data like Geo-morphological maps, Soil data, Crop productivity data, Meteorological data, BPL Population, SC/ST population, Ground water Status, Drinking water situation, Slope percent. These were all given proper weightage according to the DoLR specification. This helped in prioritization of various watershed areas.

### **b) Planning**

An action plan matrix was formulated by State Level Nodal Agency (SLNA) taking into account various features like the slope percent, Soil Depth, Soil Texture, Soil erosion in the area for wasteland, forest land and agricultural land. Global positioning System (GPS) was used to identify each and every water conservation structures available in the project area. This was used to create a map. Contour Map of vertical interval of 0.5 meter at a scale of 1:4000 was used for identifying various locations for soil and water conservation structures. GIS study is used to identify the area require the degree of concentration for the implementation of Watershed Plan.

### **a) Hydrological modeling**

Hydrology modeling technique was used for locating drainage, stream length, flow direction, sink and flow accumulation. This model overlaid over cadastral map to calculate the catchment area of each structures like the check dam etc. This has helped to remove the human error which generally occurs while calculating the catchment area of a check dam.

### **III. Watershed Activities**

Watershed management as a strategy has been adopted by Government of India especially in the rain-fed regions of semi-arid tropics. These regions are characterized by low and undependable rain, low soil fertility, poor infrastructure development, low literacy and high incidence of migration. Several studies have identified that there is a dire need of a systematic and scientific approach to deal with watershed development. The common guidelines generate a fresh and flexible framework for the next generation watershed development.

### **IV. Scientific Planning:-**

#### **1.Cluster Approach :-**

This envisages integrated development of Geo-hydrological unit ie. Treatment of cluster of micro –watershed. The IWMP Unnao II<sup>nd</sup> Auras, Hasanganj, Miya ganj Project consist of 07 micro watersheds (1) 2B2G4j2b Shahpur Tonda (2) 2B2G4j2a Samadpur Bhawa (3) 2B2G4j1a Rasulpur Bakiya (4) 2B2G4h2d Sultanpur (5) 2B2G4h1c Mohiddeenpur (6) 2B2G4h2a Dhauhar (7) 2B2G4h2c Fajullah pur.



## 2. Base line Survey

To assess the impact of any watershed development programme a detailed baseline survey has to be conducted. This acts as a benchmark for any intervention during and post implementation of any development programme. A detailed baseline survey was undertaken which involved household census survey, Bio-physical survey and Village level data collection from *Talati – cum mantri*. Household census survey includes a detailed questionnaire which has been filled by visiting each and every household in the village. This gave in the details of the demographic profile of the village, the literacy percentage, SC/ST population, number of BPL household, cattle population and net consumption rate in the village, average milk production of the cattle and various schemes running and their benefits

Bio-physical survey was undertaken to identify various natural resources available in the village. It included the soil typology, wells in the area, crop taken in the field, Cropping pattern, fertilizer used and various sources of irrigation in the field.

### Details of Scientific Planning and Inputs in IWMP projects

Scientific criteria / input used	Whether scientific criteria was used
<b>(A) Planning</b>	
Cluster approach	Yes
Whether technical back-stopping for the project has been arranged? If yes, mention the name of the Institute	Krishi Prasar Prashikshan avam Gram Vikas Samiti, Alambagh LKO Advanced Geo-Tech Solution 7, Vrindavan Vihar, Bahadurpur Kursi Road Lko.
Baseline survey	Yes
Hydro-geological survey	Yes
Contour mapping	Yes
Participatory Net Planning (PNP)	Yes
Remote sensing data-especially soil/ crop/ run-off cover	Yes
Ridge to Valley treatment	Yes
Online IT connectivity between	-
(1) Project and DRDA cell/ZP	Yes
(2) DRDA and SLNA	Yes
(3) SLNA and DoLR	Yes
Availability of GIS layers	Yes
Cadastral map	Yes

Village boundaries	Yes
Drainage	Yes
Soil (Soil nutrient status)	Yes
Land use	Yes
Ground water status	Yes
Watershed boundaries	Yes
Activity	Yes
Crop simulation models	No
Integrated coupled analyzer/ near infrared visible spectroscopy/ medium spectroscopy for high speed soil nutrient analysis	No
Normalized difference vegetation index (NDVI)#	No
Weather Station	-
<b>(B) Inputs</b>	NO
Bio-pesticides	No
Organic manures	No
Vermi compost	Yes
Bio-fertilizer	Yes
Water saving devices	Yes
Mechanized tools/ implements	Yes
Bio-fencing	Yes
Nutrient budgeting	Yes
Automatic water level recorders & sediment samplers	NO
Any other (please specify)	NO

## **V. Social Mobilization & Community organization**

The WDT is an integral part of the PIA and will be set up by the PIA. Each WDT should have at least four members, broadly with knowledge and experience in agriculture, soil science, water management, social mobilization and institutional building. At least one of the WDT members should be a woman. The WDT members should preferably have a professional degree. However, the qualification can be relaxed by the DWDU with the approval of SLNA in deserving cases keeping in view the practical field experience of the candidate. The WDT should be located as close as possible to the watershed project. At the same time, it must be ensured that the WDT should function in close collaboration with the team of experts at the district and state level. The expenses towards the salaries of the WDT members shall be charged from the administrative support to the PIA. DWDU will facilitate the training of the WDT members.

## **VI. Watershed Development Team**

As per new common guideline direction/instruction given in Para 5.3 point 40 P. I. A. has been constituted Watershed Development Team as given below:

### Detail of W.D.T.

S.No.	Name of the member	Qualification	Experience year	Subject
1	Shri BachcheLal team leader	Diploma Ag.Engg	30	Water management
2	Sri S.K.Mishra	Diploma in Civil Engg	30	“ “
3	Sri Jay Prakash Srivastav	Diploma Ag.Engg	30	“ “
4	Sri Ram Bachan Singh	B.Sc.(Ag.)	30	Soil Science
5	Sri Vireshwar Singh Sengar	Dip. (Ag.)	30	Agriculture
6	Miss Garima Srivastava	M.S.W./M.A. Sociology	---	Social Science/Capacity building

## VII. Detail Of Watershed Committee

S. No	Name Of Watershed/ Gram panchyat	Date Of Constitution	Name Of Precedent	Name Of Secretary	Member Of User Group	Member Of Shg	Female Member	Sc Member	Land Less Member	Others	Nominated member By Wdt
1	2B2G4j2b Shahpur Tonda	04-01-2011	Smt . Maheshwari W/o Prakash Kanaujiya	Surendra S/o Raj kumar	Bhagwan Deen S/o Mattar	Ramdas S/o Tikayee	Shiv Kali W/o Bambalal	Hori lal S/o Mohan	Jamalludin S/o Kasattu	Shankar S/o Ayodhya , Akbaal S/o mo. Baksha, Molehey S/o Anngnu	Sri P.D. Yaday
2	2B2G4j2a Samadpur Bhawa	05.01.2011	Madhuri Rawat W/o Ram khelawan	Jamuna S/o Mewalal	Rajjan S/o Ratnu	Manoj Kumar S/o Bodhpal	Smt. Sushil W/o Prabhu	Chotey Lal S/o Payaam	Mewalal S/o Taroo	Bauaa s/o Lokai , Virendra s/o Ramkhelawan , Ranjeet S/o Srinarain	Sri Vinood Kumar
3	2B2G4j1a Rasulpur Bakiya	07-01-2011	Dileep Kumar S/o Bakey Lal	Manish Kumar S/o Vikram	Ganga Baksh S/o Shyam Lal	Vimla W/o Babu Lal	Lakshmi W/o Suneet	Jaggan S/o Lala	Munna S/o Mangli	Jeet Narain S/o Amrit lal, Indra Pal S/o Shyam lal, Nokhey lal S/o Balak Singh	Sri Jethu Ram Yadav
4	2B2G4h2d Sultanpur	05.01.2011	smt.madhuri rawat W/o Ram khelawan	harinam S/o Pyarey	madan S/o Shivram	sukhbir S/o Mewalal	smt.sunita W/o w/o Hari naam	ganga Prasad s/o Bhikari	smt. sunita w/o Hari naam	hardev S/o Shyam lal, jagatnarayan s/o RamBhajan, udhavshankar S/o	Sri ramendra singh

										Chakrapal	
5	2B2G4h1c Mohiddeepur	15-01-2011	Shail Kumari Singh Gram Pradhan	Dinesh Singh s/o Late Shiv Singh	Sanjay Singh s/o Sri Nattha Singh	Dinesh S/o Sri Ram khelawan	Shail Kumari Singh w/o Raj Kishore	Virendra s/o sri Chhabeley	Dinesh S/o Sri Ram khelawan	Rajkishore singh, Sandeep Singh, Jai singh	Sri Vireshwar singh Senger
6	2B2G4h2a Dhawahar	04-01-2011	Smt, Santosk Kumri Yadav Gram Pradhan	Chaturi s/o Shankar	Vishmbar s/o Gendhyal	Thaku Prasad S/o Shivlal	Smt. Kamala W/o Ratnu	Raj Kumar S/o Chedy Lal	Smt. Sumitra W/o Bhadra	Dheer Singh S/o Rambharosey, Bhikeylal S/o Bhawani, Shiv Raj S/o Jangli	Sri Amar Kant Awasthi
7	2B2G4h2c Fajullahpur	05-01-2011	Anupam Singh Gram Pradhan	Nanhu S/o Ram khelawan	Hosraj singh s/o Shiv nandan singh	Surendra kumar s/o Ramkhelwan	Smt. Suneeta w/o Uma Shankar	Ekkan s/o Raggha	smt.sunita w/o umashankar	Smt. Rani w/o Raja, Lalji singh S/o Sajeewan singh, Chotelal singh s/o Baldev singh, Rajesh singh s/o Bansi singh	Sri Shailendra Kumar

## VIII. Self Help Group

### Formation of Self Help Group

S.No	Name Of Micro Watershed	No. of SHG	No. of President	No. of Secretary	Work
1	2B2G4j2b Shahpur Tonda	9	9	9	Dairy, goat keeping, Jardogi
2	2B2G4j2a Samadpur Bhawa	9	9	9	Dairy, goat keeping, Jardogi
3	2B2G4j1a Rasulpur Bakiya	9	9	9	Dairy, goat keeping
4	2B2G4h2d Sultanpur	5	5	5	Dairy, goat keeping, Jardogi
5	2B2G4h1c Mohiddinpur	10	10	10	Dairy, goat keeping, Jardogi,
6	2B2G4h2a Dhauhar	9	9	9	Dairy, goat keeping, Jardogi
7	2B2G4h2c Fajullah pur	9	9	9	goat keeping, Jardogi
<b>Total</b>		60	60	60	



## IX. Users Group

### Detail of User Groups

User Groups (U.G) have constituted of homogeneous groups of persons which are more affected by each work/ related activity and has include those having land holdings within the watershed area.

S.No.	Name Of Micro Watershed	Area Of Micro Watershed Ha	Selected Area For Treatment	No. Of User Group Constituted
1	2B2G4j2b Shahpur Tonda	761.44	713.69	10
2	2B2G4j2a Samadpur Bhawa	743.64	697.10	10
3	2B2G4j1a Rasulpur Bakiya	657.00	615.80	10
4	2B2G4h2d Sultanpur	559.94	524.83	09
5	2B2G4h1c Mohiddinpur	1212.94	758.80	10
6	2B2G4h2a Dhauhar	901.90	845.35	12
7	2B2G4h2c Fajullah pur	559.52	524.43	09
<b>Total</b>		<b>4993.00</b>	<b>4680.00</b>	<b>70</b>

## **X. Focused Group Discussion:-**

Self Help Groups are motivated, small homogenous groups organized together through credit and thrift activities. Self help group initiative especially for women help uplift their livelihood. Generally self help groups include landless and poor women. Before formation of the SHGs, during PRA activities, Focussed Group Discussions (FGDs) were held with the women, which came up with the following observations: Lack of proper credit facilities due to low intervention of formal financial credit institution; Excessive exploitation of weaker section by money lenders; Lack of attitude for saving among poor people; Lack of knowledge on credit and thrift activity and banking. With a detailed discussion with some of the local NGOs working in the area, it was planned to have some capacity building training regarding SHG activities. It was also proposed to have some livelihood activities which will promote women empowerment.

## **XI. About PIA**

### **PROJECT IMPLEMENTING AGENCY (PIA)**

U.P. Government, Land Development And Water Resources Department section -1 Lucknow has nominated as PIA to Bhoomi Sanrakshan Unit, Land development and water resources Department Unnao for IWMP-II<sup>nd</sup> vide letter no-666(10)/54-1-10-1(9)02008 Dated 25-5-2010.

### Detail Pattern of PIA Staff:

S.No.	Name	Designation	Qualification	Experience (Year)
1	Sri Bachche Lal	BSA	Diploma in Ag. Engg.	30
2	Sri J.P. Srivastava	Jr. Engn	Diploma in Ag. Engg.	30
3	Sri Shivakant Mishra	Jr. Engn	Diploma in Civil Engg	30
4	Sri Anil dubey	Accountant	B.Com.	28
5	Sri Harnam Babu	Sr. clerk	Intermediate	28
6	Sri Hafiz	Jr. clerk	Intermediate	27
7	Smt Madhu Vaishy	Jr. clerk	Intermediate	24
8	Sri Veer Vikram	Drafft Man	Diploma in Draft man	28
9	Sri Bechu lal Gupta	Tracer	Intermediate	28
10	Sri S.N.Srivastava	Tracer	Graduate	28
11	Sri Ramendra	Tracer	Post Graduate	5
12	Sri Habibulla khan	ASCI	M . sc (Ag.)	30
13	Sri Vireshver sengar	ASCI	Diploma, agriculture	30
14	Sri Vinod kumar	Work Incharge	Graduate	5
15	Sri P.D. yadav	Work Incharge	Graduate	30
16	Sri Amarkant awasthi	Work Incharge	Intermediate	27
17	Sri Munni lal yadav	Work Incharge	Intermediate	28
18	Sri Sailendra kumar	Work Incharge	Post Graduate	2
19	Sri Jethooram	Work Incharge	Intermediate	25
20	Sri H. C. Gupta	Work Incharge	Intermediate	24

21	Sri Mohmadsaid	Iv Class	Graduate	----
22	Sri Munnial	Iv Class	Intermediate	----
23	Sri Amit kumar	Iv Class	High School	----
24	Sri Kanhaya	Iv Class	High School	----

## **Role & Responsibilities of the PIA**

The project Implementing Agency(PIA) will provide necessary technical guidance to the Gram Panchayat for preparation of development plans for the watershed through Participatory Rural Appraisal(PRA) exercise, undertake community organization and training for the village communities, supervise watershed development activities, inspect and authenticate project accounts, encourage adoption of low cost technologies and build upon indigenous technical knowledge, monitor and review the overall project implementation and set up institutional arrangements for post-project operation and maintenance and further development of the assets created during the project period.

The PIA, after careful scrutiny, shall submit the action plan for watershed development project for approval of the DWDU/DRDA and other arrangements. The PIA shall submit the periodical progress report to DWDU. The PIA shall also arrange physical, financial and social audit of the work undertaken. It will facilitate the mobilization of additional financial resource from other government programmes, such as NREGA, BRGF, SGRY, National Horticulture Mission, Tribal, Welfare Schemes, Artificial Ground Water Recharging, Greening India, etc.

## **XII. Project Implementation Strategy**

Project has been divided into five phases & it will be completed in 2014-15 and work phasing already given in the project report.

## **XIII. Convergence of Watershed Programmes**

Watershed development programme will be implemented with convergence of NAREGA & BRGF scheme in the work component like soil & moisture Conservation .

## Chapter 5

### Management / Action Plan

#### I. Preparatory Phase :-

**a. Entry Point Activities :-** 5 Activities has been taken in this programme i.e. maintenance of existing well , construction of soak pit/Platform at the place where India Mark-2 Hand Pump is already existing because waste water of Hand Pump creates dampness & water logging causes many deases at the time of PRA EXERCISE it is observed that there is no drainage channel for the safe disposal of waste water & rain water in some villages & some drainage channel has been abolished so construction of drainage channel has been taken in the entry point activities . In front of Panchyat Bhawan Kissan Goshty Manch/Chabutra has been proposed for extra activities , Gosthy , other uses & Tree Planting with tree guard also given in front of panchyat bhawan. Quantity & Amount is given below:-

<b>PREPARATORY PHASES</b>				
<b>(1.) Entry point Activities</b>				
a. Well ( Jagat / Maintenance)	nos	10	0.4613	4.613
b. Soaking Pit	nos	10	0.117	1.170
c. Naali Nirman	Mt.	596.14	0.0228/mt.	13.592
d. Kisaan Gosthi Manch / Chabutra	nos	03	0.765	2.295
e. Handpump chabutra	nos	10	0.0794	0.794
<b>Total</b>				<b>22.464</b>
<b>(2.) Institutional and Capacity Building</b>				
		NA	-	<b>28.08</b>
<b>(3.) Detail Project Report</b>				
<b>Total</b>				<b>56.160</b>

## **b.Detail Estimate & Drawing of Prepratory Phase**

### (1) **ESTIMATE OF JAGAT OF WELL**

<b>S.No.</b>	<b>Description of Work</b>	<b>No.</b>	<b>L</b>	<b>B</b>	<b>D/H</b>	<b>Quantity</b>
1.	Earth work in foundation	1	3.14 x 2.50	0.90	0.70	7.06
2.	C.C.W. 1:4:8	1	3.14 x 2.50	0.70	0.15	0.824
3.	Brick Work 1:4	2	3.14 x 2.50	0.60	0.15	1.41
		2	3.14 x 2.50	0.45	0.30	2.11
		2	3.14 x 2.50	0.35	0.85	4.67
		2	3.14 x 1.25	0.30	0.25	2.58
Total						8.77
4.	Filling of earth work	1	3.14 x 2.50 x 2.50 x 0.60 (-) 3.14 x 1.25 x 1.25 x 0.60			8.83
5.	C.C.W. 1:4:8	1	3.14 x 2.50 x 2.50 x 0.15 (-) 3.14 x 1.25 x 1.25 x 0.15			2.11
6.	C.C.W. 1:2:4	1	3.14 x 2.50 x 2.50 x 0.05 (-) 3.14 x 1.25 x 1.25 x 0.05			0.74
7.	Raised pointing	1	2 x 3.14 x 2.5 x 0.70			11.00

## CONSUMPTION OF MATERIALS

S.No.	Description of Work	Quantity	Cement Bags	Coarse Sand (cum)	Bricks	Grit 10-20 mm (cum)
1.	C.C.W. 1:4:1:8(Brick Ballast)	0.824	2.84	0.379	280	-
2.	Brick Work 1:4	8.77	15.78	2.41	4385	-
3.	C.C.W. 1,2,4	0.74	0.4	0.2	-	0.05
4.	Raised Pointing	11.00	0.66	0.4	-	-
<b>Total</b>			<b>19.68</b>	<b>3.389</b>	<b>4665</b>	<b>0.05</b>
<b>Say</b>			<b>20.00</b>	<b>3.40</b>	<b>4665</b>	<b>0.05</b>

## COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Cement	20Bags	300/bag	6000.00
2.	Coarse Sand	3.40 cum	2200/cum	7480.00
3.	Bricks	4665	5000/cum	23325.00
4.	Granite Stone Grit 10-20 mm	0.05 cum	1250.00/cum	62.00
<b>Total</b>				<b>Rs. 36867.00</b>
<b>Say</b>				<b>Rs 36860.00</b>

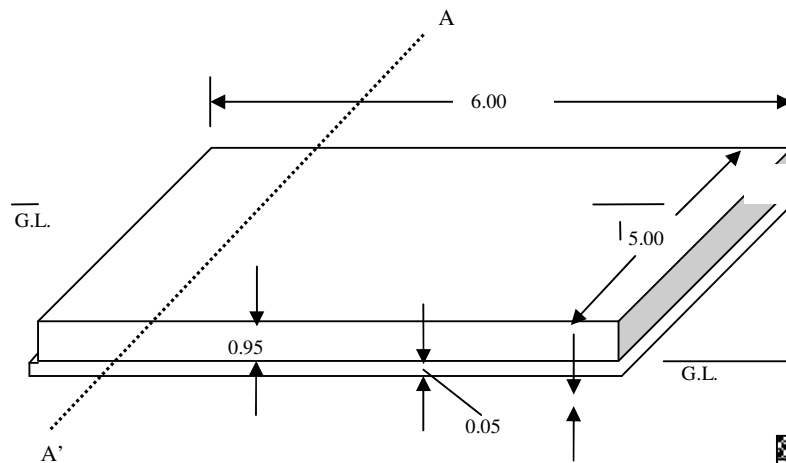


## LABOUR CHARGES

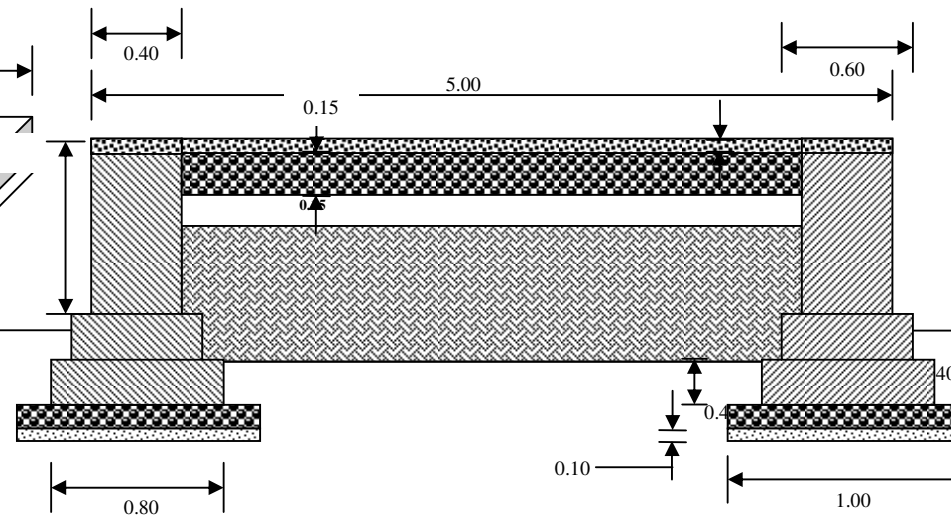
S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	15.89 cum	32.57/cum	517.00
2.	C.C.W. 1:4:8, Brick Baillast	0.824	492.00	405.40
3.	C.C.W. 1:2:4	0.7400	492.00	364.00
4.	Brick Work 1:4	8.77	385.00	3376.00
5.	Raised Pointing	11.00	51.61/m <sup>2</sup>	567.00
7.	Curring	8.77 cum	25.00/cum	219.000
<b>Total</b>				<b>Rs. 5448.40</b>
<b>SAY</b>				<b>Rs.5450.00</b>

<b>TOTAL EXPENDITURE</b>	
1. Cost of materials	38860.00
2. Labour charges	5450.00
<b>Headload &amp; transportation</b>	<b>Rs1820.00</b>
<b>Total</b>	<b>46130.00</b>

## (2) DRAWING OF KISSAN MANCH



ISOMETRIC VIEW OF PLATFORM (CHABUTRA)



SECTION AT A-A'

1. C.C.W. - 1:4:8.
2. Brick masonry- 1:4
3. Plastering- 1:4
4. Raised Pointing- 1:3.

## DETAIL ESTIMATE OF KISSAN MANCH

S.No.	Description of Work	No	L.	B.	D/H	Quantity
1.	Earth work in foundation					
	Long Wall	2	8.00	1.20	0.65	12.48
	Short Wall	2	4.00	1.20	0.65	6.24
<b>Total</b>						<b>18.72 cum</b>
2.	C.C.W. 1:4:8					
	Long Wall	2	6.60	1.00	0.15	1.98
	Short Wall	2	3.60	1.00	0.15	1.08
<b>Total</b>						<b>3.06 cum</b>
3.	Brick Work 1:4					
	<b>1st Footing.</b>					
	Long Wall	2	6.40	0.60	0.15	1.15
	Short Wall	2	3.80	0.60	0.15	0.68
	<b>2<sup>nd</sup> Footing</b>					
	Long Wall	2	6.20	0.45	0.35	1.95
	Short Wall	2	4.00	0.45	0.35	1.26
	<b>Super Structure</b>					
	Long Wall	2	6.00	0.35	0.90	3.78
Short Wall	2	4.20	0.35	0.90	2.64	
<b>Total</b>						<b>11.46 cum</b>
4.	Earth work in filling	1	5.20	4.20	0.75	16.38 cum
5.	C.C.W. 1:4:8	1	5.20	4.20	0.15	3.276 cum
6.	C.C.W. 1:2:4	1	6.00	5.00	0.05	1.500 cum
7.	Raised Pointing 1:3					
	Long Wall	2	6.00	-	0.90	10.80
	Short Wall	2	5.00	-	0.90	9.00
<b>Total</b>						<b>19.80 m<sup>2</sup></b>

## ABSTRACT OF WORK

1.	Earth Work	18.72 + 16.38	35.1 cum
2.	C.C.W. 1:4:8	3.060	3.060 cum
3.	Brick Work		11.46
4.	C.C.W. 1:2:4		1.500 cum
5.	Raised Pointing 1:3		19.80 m <sup>2</sup>
6.	Brick ballast work 1:4:8		3.276

## CONSUMPTION OF MATERIALS

S.No.	Particulars	Quantity	Cement (cum)	Coarse Sand (cum)	Bricks	Stone Grit 10-20 mm (cum)
1.	Brick ballast work 1:4:8	3.276	11.30	1.5	1113	
2.	C.C.W 1:4:8	3.06 cum	10.37	1.237	-	-
3.	Brick Work	11.46 cum	20.62	3.15	5730	-
4.	C.C.W. 1:2:4	1,500 cum	9.15	0.630	-	1.275
5.	Raised Pointing	19.800 m <sup>2</sup>	0.91	0.093	-	-
<b>Total</b>			<b>52.35</b>	<b>6.74</b>	<b>6843</b>	<b>1.275</b>
<b>Say</b>			<b>53 Bags</b>	<b>6.75</b>	<b>6900</b>	<b>1.280</b>

## COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Cement	53 Bags	300/Bag	15900.00
2.	Coarse Sand	675 cum	2200/cum	14850.00
3.	Bricks	6900 cum	5000/cum	34500.00
4.	G.S. Grit 10-20 mm	1.280 cum	1250.00/cum	1600.00
<b>Total</b>				<b>Rs. 66850.00</b>

## LABOUR CHARGES

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	48.06 cum	32.57/cum	1565.00
2.	C.C.W. 1:4:8	3.06 cum	494/cum	1511.00
3.	C.C.W. 1:2:4	1.500 cum	494.00/cum	741.00
4.	Brick Work 1:4	11.46 cum	385/cum	4412.00
5.	Raised Pointing 1:3	19.800 m <sup>2</sup>	41.87/cum	829.00
6.	Chowkidar	6 Man Days	100.00/Man Day	600.00
<b>Total</b>				<b>Rs. 9658.00</b>
<b>SAY</b>				<b>9660.00</b>

<b>Total Expenditure</b>	
1. Cost of Materials	66850.00
2. Labour Charges	9660.00
<b>Total</b>	<b>Rs. 76510.00</b>
<b>Say</b>	<b>Rs. 76500.00 only</b>

### (3) DETAIL ESTIMATE OF HANDPUMP CHABUTRA

S.No.	Description of Work	No	L.	B.	D/H	Quantity
1.	Earth Work Excavion Foundation	2x3.14x1			0.45	2.286 m <sup>3</sup>
<b>Total</b>						2.286 m <sup>3</sup>
2.	CC Work 1:4:8 Brick ballast	2x3.14x1			0.15	0.942 m <sup>3</sup>
<b>Total</b>						0.942 m <sup>3</sup>
3.	Brick Work 1:4	2x3.14x1x0.23			0.30	0.433 m <sup>3</sup>
		2x3.14x1x0.11			0.25	0.173 m <sup>3</sup>
<b>Total</b>						0.606 m <sup>3</sup>
4.	CC Work with Brick Ballast in the platform 1:4:8	3.14x1x1			0.10	0.314 m <sup>3</sup>
5.	CC Work Stone Grit 1:2:4	3.14x1x1			0.05	0.157 m <sup>3</sup>

### CONSUMPTION OF MATERIALS

S.No.	Description of work	Quantity	Brick Nos.	Cement Bags	Brick Ballast	Stone Grit	Coarse Sand
1.	CC Work 1:4:8 Brick ballast	1.256	426	4.20	1.130	---	0.577
2.	Brick Work 1:4	0.606 m <sup>3</sup>	279	1.10	---	---	0.151
3.	CC Work Stone Grit 1:2:4	0.157 m <sup>3</sup>	---	0.957	---	0.141	0.072
<b>Total</b>		---	<b>705</b>	<b>6.257</b>	<b>1.130</b>	<b>0.141</b>	<b>0.800</b>

## COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	First Class Brick	705	@ rs. 4600/1000	3243
2.	Cement	6.257	@ rs. 300/ bag	1877
3.	Corse Sand	0.800	@ rs 1800/m <sup>3</sup>	1440
4.	Stone Grit	0.141	@ rs 2700/ m <sup>3</sup>	380
<b>Total</b>				<b>6940</b>

## LABOUR CHARGES

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work excavation	2.286 m <sup>3</sup>	32.57	74.45
2.	Brick Work	0.606 m <sup>3</sup>	385	233.31
3.	CC Work	1.413 m <sup>3</sup>	494	698.02
<b>Total</b>				<b>Rs. 1005.78</b>

<b>Total Expenditure</b>		
1.	Cost of material	6940.00
2.	Labour Charge	1005.78
<b>Total</b>		<b>Rs. 7945.00</b>
<b>Say Rs. 7945.00 only.</b>		

#### **(4)DETAIL ESTIMATE OF BRICK GUARD**

1.	Earthwork for tree	1	0.60	0.60	0.60	0.216	
	In foundation	1	3.14x1.09	0.20	0.30	0.205	
<b>Total</b>						<b>0.421</b>	
2.	Brick work 1:4					Solid	Glazed
	In foundation	1	3.14x1.09	0.11	0.40	0.151	-
	In super structure with glazed	1	3.14x1.09	0.11	0.48	-	0.181
	Solid	1	3.14x1.09	0.11	0.08	-	0.030
	Glazed	1	3.14x1.09	0.11	0.40	-	0.151
	Solid	1	3.14x1.09	0.11	0.16	0.060	-
<b>Total</b>						<b>0.211</b>	<b>0.362</b>
3.	Plastering 1:4	1	3.14x1.20	-	0.07	0.264	
		1	3.14x1.20	-	0.15	0.565	
		1	3.14x1.09	-	0.07	0.239	
<b>Total</b>						<b>1.068 m<sup>2</sup></b>	



## CONSUMPTION OF MATERIALS

S.No.	Description of work	Quantity	Brick Nos.	Cement Bags	Coarse Sand
1.	Brick work 11 cm thick 1:4	0.211 cum	100	0.29	0.050
	Brick work glazed	0.362 cum	86	0.25	0.043
2.	Plastering 1:4	1.068 m <sup>2</sup>	-	0.11	0.016
<b>Total</b>			<b>186</b>	<b>0.65</b>	<b>0.109</b>
<b>Say</b>			<b>190</b>	<b>0.65</b>	<b>0.110 cum</b>

## COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Brick II <sup>nd</sup> class	190 nos.	3650.00	693.50
2.	Cement	0.65 Bags	255.00	165.75
3.	Coarse sand	0.110 cum	910.00	100.10
<b>Total</b>				<b>Rs. 959.35</b>

## **LABOUR CHARGES**

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth work	0.421 cum	39.16/cum	16.48
2.	Brick work	0.391 cum	370.00/cum	144.67
3.	Plastering	1.068 m <sup>2</sup>	40.00/m <sup>2</sup>	42.72
<b>Total</b>				<b>Rs. 203.87</b>

Head load and transportation 20% of material cost      -      Rs. 191.87

<b>Total Expenditure</b>		
1.	Material	959.35
2.	Labour	203.87
3.	Head load and transportation	191.87
<b>Total</b>		<b>Rs. 1355.09</b>
<b>Say Rs. 1355.00 only.</b>		

### (5) DETAIL ESTIMATE OF SOAK PIT

S.No	Description of Work	No.	L.	B.	D./H.	Quantity	Rate	Expenditure on labour cost
1.	Earth work in excavation							
	Soaking Pit	1	1.45	1.45	1.65	<b>3.47</b>	@ 32.57	<b>113.01</b>
2.	Brick by last in foundation Dry	1	1.20	1.20	0.15	<b>0.22</b>		<b>405.00</b>
3.	Brick Masonry 1:4							
	<u>Long Wall</u>		2X1.20	0.23	1.50	0.828		
	<u>Short Wall</u>		2X0.95	0.23	1.5	<b>0.655</b>		
	<b>Total</b>					1.483 cum		
	<b>Less 10% Honeycomb</b>					-0.148		
						<b>1.335</b>	@ 385	<b>513.90</b>
4.	Plaster WORK (1:4)							
	Inner side		4X1.2	1.50	---	7.20		
	Top		2X1.20	0.23	---	<b>0.55</b>		
			2X0.95	0.23	---	<b>0.47</b>		
	<b>Total</b>					<b>8.22</b>		
	<b>Less 10% Honeycomb</b>					<b>-0.82</b>		
						<b>7.40</b>	@ 47.50	<b>351.50</b>
5	Filling of local sand		1.20	1.20	0.45	0.65		715.00
	Filling of B.Bylast (45 m.m.)		1.20	1.20	0.70	<b>1.00</b>		<b>1350.00</b>
	RCC Slap 1:2:4		1.20	1.20	0.05	<b>0.072</b>		<b>120.00</b>
	PVC Pipes (110 m.m. 6kgf)		3.00	--	--	---		<b>495.00</b>
6	<b>Cost of material---</b>							
	Bricks					1100	@5000	5500.00
	Cement					4 bag	@300	1200.00

	6 m.m. Steel bars					5 kg	@40	200.00	
	Core sand					0.65	@1100	715.00	
	<b>Total</b>								<b>11678.41</b>
			<b>SAY</b>						11700.00

## **CONSUMPTION OF MATERIALS**

S.No.	Particulars	Quantity	Cement (bags)	Brick 2 <sup>nd</sup> class (no.)	M.S. Bar 100 mm	G.S.Grit 10-20mm (cum)	Coarse Sand(cum)
1.	1 <sup>st</sup> Brick Masonry 1:4	1.33 cum	2.39	665	---	---	0.36
2.	Brick ballast DRY	1.00 cum	--	340	---	---	---
3.	Brick bal last	0.22 cum	0.1	75	---	---	0.16
4.	Plastering 12 mm thick 1:2	7.40 m <sup>2</sup>	0.81	--	---	---	0.11
5.	RCC Work. 1:2:4	0.072 cum	0.5	--	5 kg.	0.015	0.05
6.	Local Sand	0.65 cum	---	---	---	---	---
7.	PVC PIPES	4 "size 3 mt.	---	---	---	---	---
	<b>Total</b>		<b>3.8</b>	<b>1080</b>	<b>5 kg</b>	<b>0.015</b>	<b>0.68</b>

**(6)DETAIL ESTIMATE OF DRAINAGE CHANNEL**

S.N.	Particulars	L (M.)	B(M.)	H/D(M.)	Quantity (Cu.m.)	Rate	Expenditure on Labour charges
1	Earth work Excavation in bed	100.00	1.50	0.80	<b>120.00</b>	@32.57	3908.00
2	C.C Work(1:4:8)	100.00	1.00	0.10	<b>10.00</b>	@41.87	418.70
3	B.W.(1:4) bed	100.00	0.90	0.11	9.90		
	Walls	2x100.00	0.23	0.60	27.6		
			<b>Total</b>		<b>37.50</b>	@385	14437.00
4	Plaster Work (1:4)						
	BED	100.00	0.50	---	50.00		
	WALL	2x100.00	0.60	---	120.00		
	TOP	2x100.00	0.23	---	46.00		
			<b>Total</b>		<b>216.00</b>	@4750	10260.00
			<b>Total</b>				29373.00
			<b>SAY</b>				29400.00
5	Cost of Material						
	1- Bricks				22500	@5000	112500.00
	2- Cement				125	@300	37500.00
	3-Co.Sand				22.00	@2200	48400.00
	Total Cost of 100 M. Drainage channel						227800.00

## **II. Institutional and Capacity Building :- .**

As per guide line Training Programme for the Users Group , Self help Group , Watershed Committee & W.D.T. will be given to the farmers & villegers for thier awareness & capacity building so that he will able to continue the programme after post project activities . An amount of Rs. 28.08 lakh has been given as above in the table .

## **III. Work Phase :-**

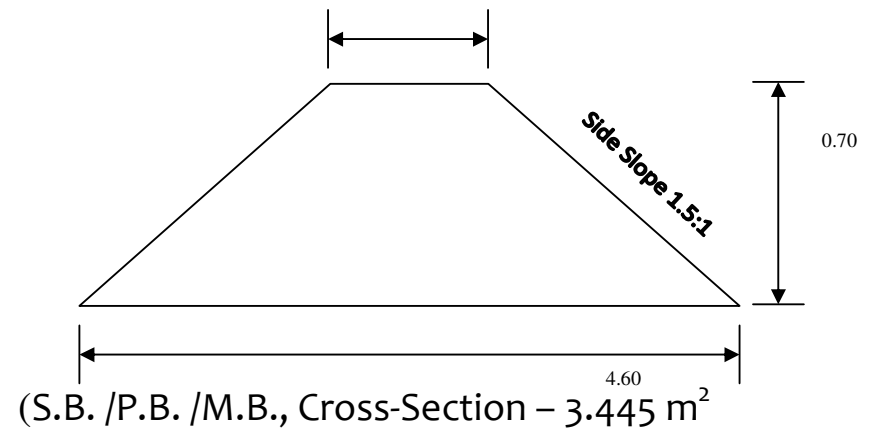
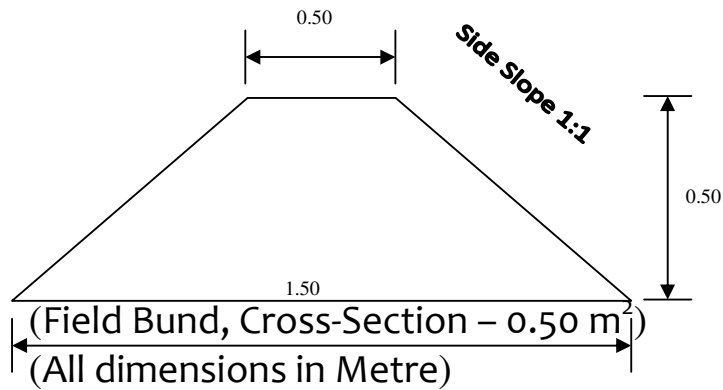
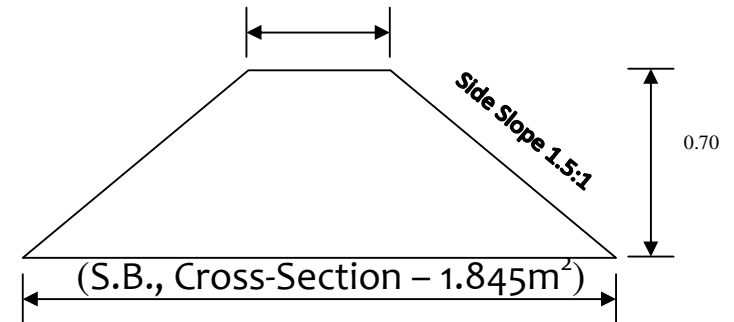
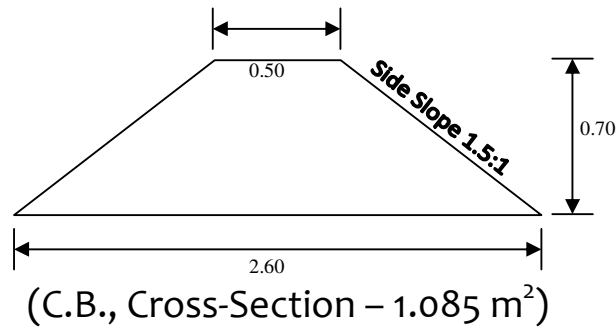
Soil & moisture conservation , Development of water resources , drainage line treatment structure , Horticulture development , Afforestation , Livelihood Programme/Income generating Programme i.e. Jardogi, Dairy Work, Goat keeping & Live stock Development and crop production programme i.e. demonstration of crop & green manuring are the main activities which has given below in the table :-

<b>WATERSHED WORKS</b>				
<b>(1.) Watershed Development Works</b>				
a. Construction of Bunds (Field Bund, Contour Bund, CRB Bund)	ha	2530	0.04020	101.706
b. Marginal Bund and Peripheral Bund	Ha	1682	0.0501	84.268
c.WHB/POND	Ha	468	0.1234	57.751
d. Horticulture work	Ha	10	0.1500	1.500
e. New and Renovation of earthen Water Harvesting Structure/ Gully Plug/ Chek Dam	---	----	----	13.655
f. Afforestation and Development of Silvi-Pastoral System	ha	50	0.1034	5.170
g. Drainage Line Treatment (Pucca Structure / Gully Plug and Chek Dam)	nos		----	16.750
<b>Total</b>		<b>4680</b>		<b>280.800</b>
<b>(2.) Livelihood Programme (Community Based)</b>				
Income Generating Activities through S.H.G.'s for Landless and Marginal Farmers				
a. Jardogi work	Nos	20	0.50	10.00
b. Dairy Work	nos	20	1.20	24.00
c. Goat-keeping	nos	20	0.73	14.60
d. Livestock Development Activities				07.56
<b>Total</b>				<b>56.160</b>
<b>(3.) Production System and Micro-Enterprises</b>				
Crop Production, Diversification of Agriculture				
a. Demonstration of wheat	Ha	485.00	0.057	27.645
Paddy	ha	518.00	0.075	38.871
Maize	ha	38.06	0.060	2.284
Bazra	ha	15.81	0.320	5.059
b. Demonstration of Green Manuring		450.00	0.0625	2.812
<b>Total</b>				<b>73.008</b>

# Detail Estimate and Drawing of watershed Development Work

## DRAWING OF C.B., S.B., P.B., AND M.B.

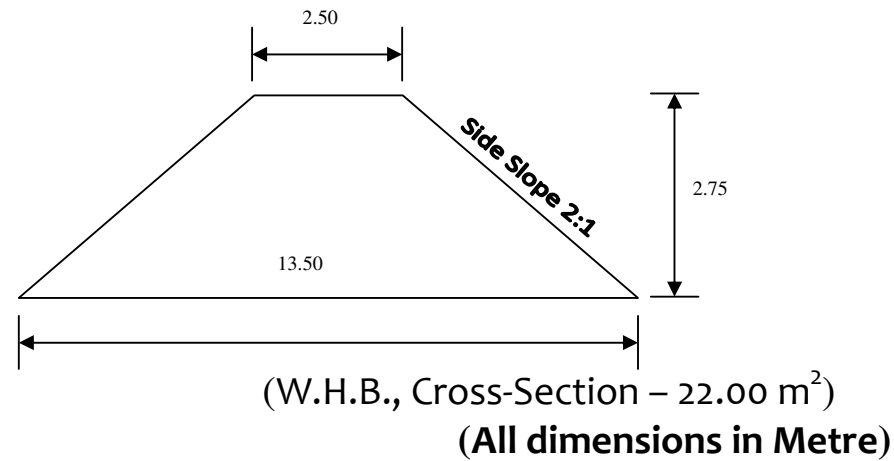
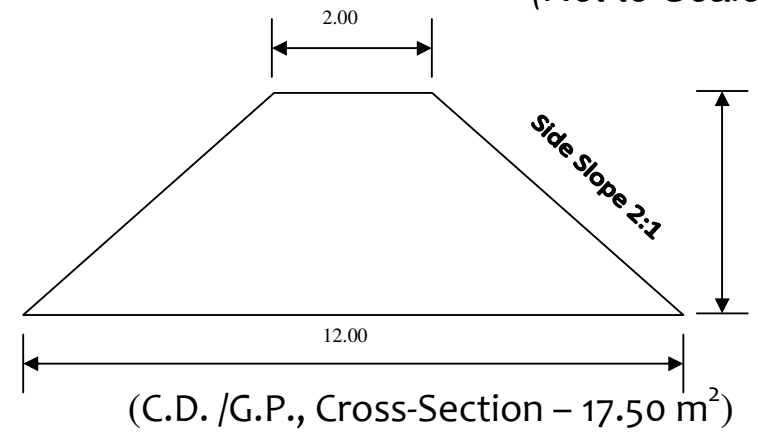
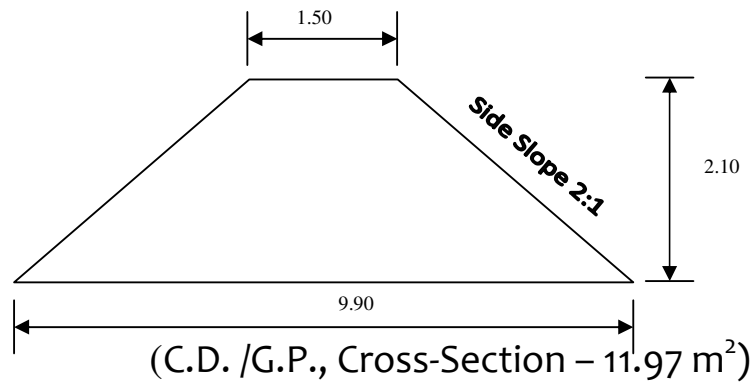
*(Not to Scale)*





## DRAWING OF EARTHEN CHEKDAM / GULLY PLUG

*(Not to Scale)*



### **TYPICAL SECTION OF FIELD BUND**

Top width	= 0.50 m
Side slope	= 1:1
Height of bound	= 0.50 m
Bottom Width	= 1.50 m
Cross section	= $(0.50+1.50) \times 0.50 / 2 = 0.50 \text{ m}^2$
Length per hectare	= 200 m
Earthwork	= $200 \times 0.50 = 100 \text{ cum}$
Cost 39.16/cum	= Rs. 3916.00
Cost per hectare	= Rs. 3916.00

### **TYPICAL SECTION OF P.B., M.B.**

Top width	= 0.70 m
Side slope	= 1.5:1
Height	= 1.30 m
Bottom	= 4.60 m
Cross section	= $(0.70+4.60) \times 1.30 / 2$ = $3.445 \text{ m}^2$
Cost/ meter	= Rs. 142.00

### **TYPICAL SECTION OF EARTHEN CHECK DAM / GULLY PLUG**

Top width	= 1.50 m
Side slope	= 2:1
Height	= 2.10m
Bottom Width	= 9.90 m
Cross section	= $(1.50 + 9.90) \times 2.10 / 2$ = $11.97 \text{ m}^2$
Cost per meter	= Rs. 551.45

### **TYPICAL SECTION OF CHECK DAM / GULLY PLUG**

Top width	= 2.00m
Side slope	= 2:1
Height	= 2.50 m
Bottom Width	= 12.00 m
Cross Section	= $(2.00 + 12.00) \times 2.50 / 2$
	= 17.50 m <sup>2</sup>
Cost /meter	= Rs. 839.12

### **TYPICAL SECTION OF W.H.B**

Top width	= 2.50 m
Side slope	= 2:1
Height	= 2.75 m
Bottom Width	= 13.50 m
Cross section	= $(2.50 + 13.50) \times 2.75 / 2$
	= 22.00 m <sup>2</sup>
Per meter cost	= Rs. 1085.92

## **IV. Horticulture Development For Watershed Management**

Fruit trees and fruit based systems are the viable alternatives for economic utilization of such lands. The basic philosophy behind the conservation horticulture is the use of available resources and skillful choice of fruits. The use of available soil moisture , collection of the runoff water from the catchment area to make up the deficit requirements as well as in situ water harvesting techniques are some of the measures . The in situ water harvesting techniques should be used for growing trees in such a way that each tree has its own micro catchment area. The success of the conservation of horticulture entirely depends on the selection of economically viable hardy varieties of fruit crops resistant to moisture stress or drought and other adverse climate conditions. The fruit crops selected for degraded lands must be such that their maximum growth take place during the period of maximum water availability in the soil and should have low demand.

The main constraints which restrict development of the horticulture land use in degraded lands are enumerated below:

### **(A) Basic constraints**

- 1- Lack of suitable agro-techniques for degraded lands
- 2- Lack of trained resource persons
- 3- Inadequate dissemination of the technologies
- 4- Lack of community approach
- 5- High biotic interference
- 6- Lack of infrastructure including marketing.

### **(B) Soil constraints**

- 1- Poor nutrient status of the soil
- 2- Physical impediment
- 3- Moisture stress / water logging / inadequate drainage.

### **(C) Plant related constraints**

- 1- Problem of plant establishment
- 2- Physiological disorders
- 3- Fruit drop and poor productivity
- 4- Incidence of insects-pests.

However , apart from the above mentioned constraints, the measure bottleneck in horticulture development are poor technological advancements, high initial establishment cost, high input demand , timely operation and seasonal shortage of labours, etc.

## **CONCEPTS AND ADVANTAGES OF CONSERVATION HORTICULTURE**

Conservation horticulture or horticulture land use based on soil and water conservation principle is a suitable alternative for utilization and management of land under rainfed conditions. Thus horticulture development in watershed management appears to be the most appropriate technique for sustained productivity as well as for restoration of degraded lands. In fact, horticulture system meet all the basic needs-food, fruits,

fodder, fuel and timber besides, providing employment and sustaining a number of products for industries.

The fruit trees grown with crops can provide fuel from pruned shoots and dried branches, leaf fodder for animals and leaf litter that can be utilized as mulch material and organic matter the leaf litter of deciduous fruit trees not only protects the top soil from the impact of raindrops but also improve soil structure, reduces evapotranspiration, increases infiltration and add to the nutrient status of soil. Therefore conservation based horticulture land use system assumes great significance as fruit trees on degraded lands provide higher returns and offer alternative opportunity in non-arable areas where cropping may not be possible.

**d. ESTIMATE OF HORTICULTURE DEVELOPMENT PROGRAMME:-**

S.N.	Particulars	Quantity	Rate	Amount	Remark
1	Soil working 1mx1m size pits (2000)including cost of refilling	2000.00	32.57/cum	65140.00	Since the project is to be operated in a participatory mode, contribution in the form of labour input for pit digging, FYM & its applications weeding & hoeing are to be provided by the participating farmers hence the costs are not included in the estimates.
2	Application of farmyard Manure including cost		L.S.	3350.00	
3	Cost of NKP mixture , neemicide @250gm/plant		L.S.	2950.00	
4	Cost of plants (including 15% etc. for mortality) including transportation and planting	2300 nos.	15.00/Plant	34500.00	
5	Casualty replacement @ 10% of item No. 4&5			3450.00	
6	Cost of 2 weedings & hoeing		1.00/Plant	4000.00	
7	Contingency & unforeseen (3%)			3400.00	
	Total			116790.00	
	Say			116800.00	
	Maintenance cosy 2 <sup>nd</sup> year onwards 15% Less than 1st year cost			17520.00	
	For next 3 years i.e. Rs. 900x5			52560.00	
	Total Cost			186880.00	
	Say			<b>187000.00</b>	

**COST OF AFFORESTATION( Per Plant)**

S.No.	Particular	No.	L	B	D/H	Quantity	Rate	Amount
1	Earth work in digging	1	0.45	0.45	0.45	0.09	32.57	2.96
2	Cost of FYM, in Kg/pit	1	-	-	-	1.5Kg	7.75	11.62
3	Cost of plants	1	-	-	-	1	15.00	15.00
<b>Total</b>								<b>29.58</b>
<b>Say</b>								<b>Rs.</b>
								<b>29.50</b>



## V. a.Design of Drop Spillway for 1.00 ha Catchment Area

Design of Drop Spillway to be constructed at a place in a gully having width of 1.0 m and catchment area 1.00 ha and net drop 0.50 m Taking rainfall intensity for duration equal to time of concentration of watershed and design return period of 25 years , as 120mm/hr. The coefficient of runoff for the watershed is 0.3.

**1. Hydrologic design-** The design peak runoff rate ( $m^3/s$ ) for the watershed from Rational formula is

given as:

$$Q = \frac{C.I.A.}{360} = \frac{0.3 \times 120 \times 1.00}{360} = 36/360 = 0.10 \text{ cum/second}$$

**2. Hydraulic design-** The maximum discharge capacity of the rectangular weir given by

$$Q = \frac{1.711 L H^{3/2}}{(1.1+0.01 F)}$$

To find suitable value of L & H

Let us assume L = 0.50 m (since width of gully is 1.00 m)

$$0.10 = \frac{1.711 L H^{3/2}}{(1.10+0.01 \times 0.5)} = \frac{1.711 L H^{3/2}}{(1.105)}$$

$$L H^{3/2} = \frac{1.105 \times 0.10}{1.711} = \frac{0.1105}{1.711} = 0.064$$

$$H^{3/2} = \frac{0.064}{0.50} = 0.128$$

$$H = (0.128)^{2/3} = 0.25 \text{ m}$$

$$\text{Test: } L/h = \frac{0.50}{0.25} = 2.0 \geq 2.0 \text{ hence O.K.}$$

$$h/f = \frac{0.25}{0.50} = 0.50 \leq 0.5 \text{ hence O.K.}$$

### 3. Structural design –

1- Minimum headwall extension,  $E = (3h + 0.6)$  or  $1.5 f$  whichever is greater

$$E = 3 \times 0.5 + 0.6 \quad \text{or} \quad 1.5 \times 0.50$$

$$E = 2.10 \text{ m} \quad \text{or} \quad 0.75 \text{ m}$$

Adopted 2.10 m

$$2- \text{ Length of apron basin } L_B = f (2.28 h/f + 0.54) = 0.50 (2.20 \times \frac{0.5}{0.5} + 0.54)$$

$$= 0.50 \times 2.74 = 1.37 \text{ m says } 1.40 \text{ m}$$

$$3- \text{ Height of end sill, } S = \frac{h}{3} = \frac{0.50}{3} = 0.16 \text{ m says } 0.20 \text{ m}$$

4- Height of wing wall and side wall at Junction :

$$J = 2h \text{ or } [f + h + S - (L_B + 0.10)/2] \text{ whichever is greater}$$

$$= 2 \times 0.50 \text{ or } [0.50 + 0.50 + 0.16 - (1.37 + 0.10)/2]$$

$$= 1.0 \text{ or } [1.16 - 0.735]$$

$$= 1.0 \text{ or } 0.425$$

adopt  $J = 1.00 \text{ m}$

$$5- M = 2 (f + 1.33 h - J) = 2 (0.50 + 1.33 \times 0.25 - 1.00)$$

$$= 2 \times (-0.167) = -0.335 \text{ m}$$

$$6- K = (L_B + 0.1) - M = (1.37 + 0.1) - 0.335$$

$$= 1.47 - 0.335$$

$$= 1.135 \text{ m}$$

### Toe and cut off walls

$$\begin{aligned}
 \text{Normal scour depth (N S D)} &= 0.473 \times (Q/f)^{1/3} \\
 &= 0.473 \times (0.1/1)^{1/3} \\
 &= 0.473 \times 0.464 \\
 &= 0.219
 \end{aligned}$$

$$\begin{aligned}
 \text{Maximum Scour depth (M S D)} &= 1.5 \times \text{N S D} \\
 &= 1.5 \times 0.219 \\
 &= 0.328 \text{ m} \\
 &\text{says } 0.35 \text{ m}
 \end{aligned}$$

$$\text{Depth of cutoff /Toe wall} = 0.35 \text{ m}$$

**Apron thickness** : For an over fall of 0.5 m. The Apron thickness in concrete construction is 0.20 m since the structure is constructed in masonry, the Apron thickness will be  $0.20 \times 1.50 = 0.30 \text{ m}$

**Wall thickness:** The thickness of different wall of the structure (masonry construction) is given below:

Description	Thickness of wall	
	Top width	Bottom width
Head wall	0.40	1.00
Side wall	0.30	0.80
Wing wall and head wall extension	0.30	0.60

## DETAIL ESTIMATE OF DROP SPILLWAY OF CREST LENGTH 0.5 METRE

### 1. Earth work in cutting in foundation

S.No.	Description of work	No.	L	B	D/H	Quantity
1	Side wall	2	1.50	1.00	1.15	3.45
2	Head wall	1	0.50	1.20	1.15	0.69
3	Head wall extension	2	2.20	0.80	1.15	4.04
4	Wing wall	2	1.15	0.80	1.15	2.11
5	Toe wall	1	0.50	0.80	0.60	0.24
6	Cut off wall	1	4.70	0.80	0.60	2.25
7	Apron	1	0.50	1.50	0.60	0.45
Total						13.23 cum

### 2. C.C.W. 1: 3: 6 in foundation

S.No.	Description of work	No.	L	B	D/H	Quantity
1	Cut off wall	1	4.7	0.60	0.15	0.423
2	Head wall	1	0.50	0.35	0.15	0.0263
3	Side wall	2	1.50	0.80	0.15	0.180
4	Wing wall	2	1.15	0.80	0.15	0.276
5	Toe wall	1	0.50	0.80	0.15	0.060
6	Apron	1	0.50	1.50	0.15	0.112
Total						1.0773cum

### 3. Brick Work 1:4

S.No.	Description of work	No.	L	B	D/H	Quantity
1	Cut off wall	1	4.70	0.60	0.30	0.846
		1	4.70	0.45	0.60	0.269
2	Head wall	1	0.50	0.75	0.30	0.112
		1	0.50	0.60	0.60	0.180
		1	0.50	$(0.45 + 0.60) / 2$	0.60	0.150
3	Head wall extension	2	2.10	0.60	0.30	0.378
		2	2.10	0.45	0.60	0.567
		2	2.10	0.35	0.60	0.441
		2	2.10	0.23	0.70	0.338
4	Side wall	2	1.50	0.75	0.30	0.337
		2	1.50	0.60	0.60	0.540
		2	1.50	0.45	0.60	0.450
		2	1.50	0.35	0.40	0.210
		2	$(0.35 + 1.50) / 2$	0.23	0.30	0.064
5	Wing wall	2	1.15	0.60	0.30	0.207
		2	1.15	0.45	0.60	0.310
		2	1.15	0.35	$(1.00 + 0) / 2$	0.200
6	Toe wall	1	0.50	0.60	0.30	0.090
		1	0.50	0.45	0.60	0.135
		1	0.50	0.35	0.15	0.026
7	Apron	1	0.50	1.50	0.35	0.262
Total						5.805cum

#### 4. C.C.W. 1:2:4 on the wall

S.No.	Description of work	No.	L	B	D/H	Quantity
1	Head wall	1	0.50	0.40	0.025	0.005
2	Side wall	2	0.35	0.40	0.025	0.007
		2	1.18	0.40	0.025	0.023
3	Head wall extension	2	2.10	0.40	0.025	0.042
4	Wing wall	2	1.52	0.40	0.025	0.030
5	Toe Wall	1	0.50	0.40	0.025	0.005
6	Apron	1	0.50	1.50	0.025	0.018
Total						0.130 cum

#### 5. Raised Pointing 1:3

S.No.	Description of work	No.	L	B	D/H	Quantity
1	Head wall	1	0.50	-	0.60	0.30
		1	0.50	-	0.84	0.42
2	Side wall	2	1.50	-	1.00	3.00
		2	$(0.35 + 1.50) / 2$	-	0.30	0.55
3	Head wall extension	2	2.10	-	1.00	4.20
4	Wing wall	2	1.15	-	$(1.00 + 0) / 2$	1.15
Total						9.62 m <sup>2</sup>

### CONSUMPTION OF MATERIALS

S.No.	Particulars	Quantity	Cement (Bags)	Coarse Sand (cum)	Bricks (cum)	G.S.B 25-40 mm (cum)	G.S. Grit 10-20 mm (cum)
1.	C.C.W. 1:4:8	1.0773 cum	3.71	0.49	366	--	--
2.	Brick Work	5.805 cum	10.45	1.60	2902	--	--
3.	C.C.W. 1:2:4	0.130 cum	0.45	0.05	--	--	0.110
4.	Raised Pointing 1:2	9.62 m <sup>2</sup>	0.57	0.35	--	--	--
<b>Total</b>			<b>15.18</b>	<b>2.50</b>	<b>3268</b>	<b>---</b>	<b>0.110</b>
<b>Say</b>			<b>15 Bags</b>				

### COST OF MATERIALS

S.No	Name of materials	Quantity	Rate	Amount
1.	Cement	15x3 Bags	300.00/bag	4500.00
2.	Coarse sand	2.5x2200 cum	2200.00/cum	5500.00
3.	Bricks	3300 cum	5000.00/cum	16500.00
4.	Grit 10-20 mm	0.110 cum	1250.00/cum	137.50
<b>Total</b>				<b>Rs. 26637. 00</b>

### **LABOUR CHARGE**

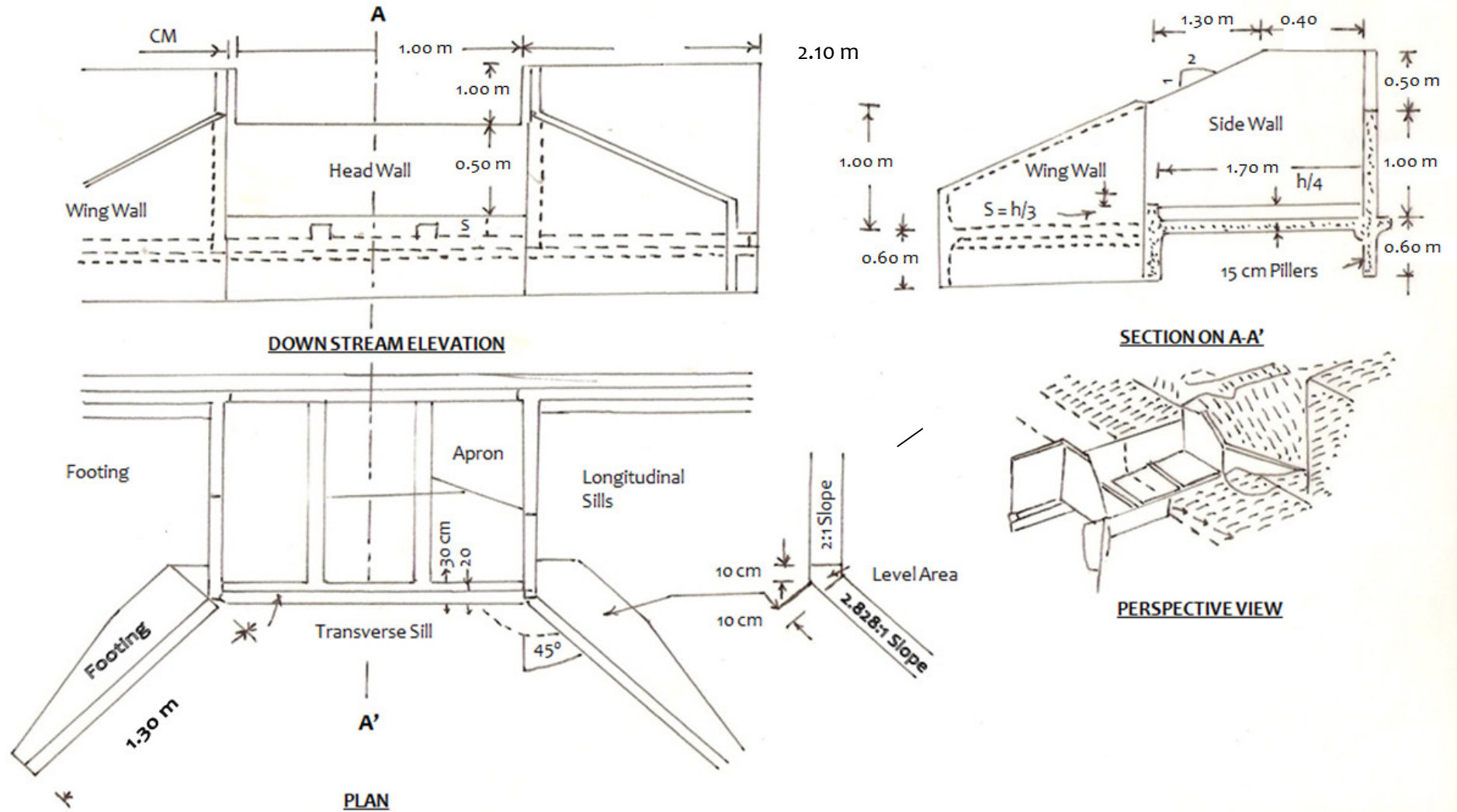
<b>S.No.</b>	<b>Particulars</b>	<b>Quantity</b>	<b>Rate</b>	<b>Amount</b>
1.	Earth Work	13.23 cum	32.57/cum	430.00
2.	C.C.W. 1:4:8	1.0773Cum	494/cum	532.00
3.	Brick Work	5.805 cum	385/cum	2234.00
4.	C.C.W. 1:2:4	0.130 cum	494/cum	64.22
5.	Raised Pointing	9.62 m <sup>2</sup>	51.61/m <sup>2</sup>	496.48
6.	Curing	5.805 cum	25.00/cum	145.00
7.	Chowkidar	6 Man Days	100.00/Man Day	600.00
8.	Head load & local transportation cost 10% cost of material	-	-	2663.00
<b>Total</b>				<b>Rs. 7164.70</b>

<b>Total Expenditure</b>	
1. Cost of materials	26637.00
2. Labour Charges	7164.00
<b>Total</b>	<b>Rs. 33801.00</b>
<b>Say Rs. 33800.00 only</b>	



# DRAWING OF SPILLWAY OF CREST LENGTH 1.0 m

Not to Scale



All Dimensions in Metre

## **b. DESIGN OF DROP SPILLWAY FOR 5.00 HA CATCHMENT AREA**

Design of Spillway to be constructed at a place in a gully having width of 2.0 m and catchment area 5.0 ha net drop 1.0m. Taking rainfall intensity for duration equal to time of concentration of watershed and design return period of 25 years, as 120mm/hr. The coefficient of runoff for the watershed is 0.3.

**1. Hydrologic design-** The design peak runoff rate ( $\text{m}^3/\text{s}$ ) for the watershed from Rational formula is

given as:

$$Q = \frac{C.I.A.}{360} = \frac{0.3 \times 120 \times 5.0}{360} = 0.50 \text{ m}^3/\text{s}$$

**2. Hydraulic design-** The maximum discharge capacity of the rectangular weir given by

$$Q = \frac{1.711 L H^{3/2}}{(1.1 + 0.01 F)}$$

To find suitable value of L & H

Let us assume  $L = 1.0 \text{ m}$  (since width of gully is 2.00 m)

$$0.50 = \frac{1.711 L H^{3/2}}{(1.1 + 0.01 \times 0.5)} = \frac{1.711 L H^{3/2}}{(1.2)}$$

$$L H^{3/2} = \frac{1.20 \times 0.5}{1.711} = 0.350$$

$$H^{3/2} = \frac{0.375}{1.711} = 0.35$$

$$H = \frac{1.711 \times 4}{(0.350)^{2/3}} = 0.49 \text{ m says } 0.50 \text{ m}$$

$$\text{Test: } L/h = \frac{1.00}{0.50} = 2.00 \geq 2.0 \text{ hence O.K.}$$

$$h/f = \frac{0.50}{1.00} = 0.5 \leq 5 \text{ hence O.K.}$$

Hence the designed hydraulic dimensions of the Spillway are:

$$\text{Crest Length (L)} = 1.00 \text{ m}$$

$$\text{Weir depth (h)} = 0.50 \text{ m}$$

### 3. Structural design –

1- Minimum headwall extension,  $E = (3h + 0.6)$  or  $1.5 f$  whichever is greater

$$E = 3 \times 0.50 + 0.6 \text{ or } 1.5 \times 1$$

$$E = (1.5 + 0.60) \text{ or } 21.50 \text{ m}$$

$$= 2.10 \text{ or } 1.50$$

$$\text{Adopted} = 2.10 \text{ m}$$

2- Length of apron basin  $L_B = f(2.28 h/f + 0.54) = 1(2.28 \times \frac{0.50}{1.0} + 0.54)$

$$= 1.14 + 0.54 = 1.68 \text{ m}$$

3- Height of end sill,  $S = \frac{h}{3} = \frac{0.50}{3} = 0.16 \text{ m}$

4- Height of wing wall and side wall at Junction :

$$J = 2h \text{ or } [f + h + S - (L_B + 0.10)/2] \text{ whichever is greater}$$

$$= 2 \times 0.50 \text{ or } [1.0 + 0.50 + 0.16 - (1.68 + 0.10)/2]$$

$$= 1.0 \text{ or } [1.66 - 0.89]$$

$$= 1.00 \text{ or } 0.77$$

adopt  $J = 1.00 \text{ m}$

$$5- \quad M = 2(f + 1.33h - J) = 2(1.0 + 1.33 \times 0.50 - 1.00) = 2(1.665 - 1.00) \\ = 1.33 \text{ m}$$

$$6- \quad K = (L_B + 0.1) - M = (1.68 + 0.1) - 1.33 \\ = 0.45 \text{ m}$$

Toe and cut off walls

$$\text{Normal scour depth (N S D)} = 0.473 \times (Q/f)^{1/3} \\ = 0.473 \times (0.5/1.0)^{1/3} \quad \text{taking } f = 1 \\ = 0.473 \times (0.5)^{1/3} = 0.473 \times 0.793 = 0.375 \text{ m}$$

$$\text{Maximum Scour depth (M S D)} = 1.5 \times \text{N S D} \\ = 1.5 \times 0.375 \\ = 0.56 \text{ m}$$

Depth of cutoff /Toe wall = 0.56 m **Say 0.60 M**

**Apron thickness:** For an over fall of 1.0 m. The Apron thickness in concrete construction is 0.30 m since the structure is constructed in masonry, the Apron thickness will be  $0.30 \times 1.50 = 0.45 \text{ m}$

**Wall thickness:** The thickness of different wall of the structure (masonry construction) is given below:

Description	Thickness of wall	
	Top width	Bottom width
Head wall	0.45	1.00
Side wall	0.30	0.80
Wing wall and head wall extension	0.30	0.60

## C. DESIGN OF DROP SPILLWAY FOR 20.00 HA CATCHMENT AREA

Design of Drop Spillway to be constructed at a place in a gully having width of 3.0 m and catchment area 20.00 ha net drop 1.5 m Taking rainfall intensity for duration equal to time of concentration of watershed and design return period of 25 years , as 120mm/hr. The coefficient of runoff for the watershed is 0.3.

**1. Hydrologic design** - The design peak runoff rate ( $\text{m}^3/\text{s}$ ) for the watershed from Rational formula is

given as:

$$Q = \frac{C.I.A.}{360} = \frac{0.3 \times 120 \times 20.0}{360} = 2.0 \text{ m}^3/\text{second}$$

**2. Hydraulic design**- The maximum discharge capacity of the rectangular weir given by

$$Q = \frac{1.711 L H^{3/2}}{(1.1 + 0.01 F)}$$

To find suitable value of L & H

Let us assume L = 2.0 m (since width of gully is 3.00 m)

$$2.00 = \frac{1.711 L H^{3/2}}{(1.1 + 0.1 \times 0.5)} = \frac{1.711 L H^{3/2}}{(1.10 + 1.15)}$$

$$L H^{3/2} = \frac{2.0 \times 1.115}{1.711}$$

$$H^{3/2} = \frac{2.23}{1.711 \times 2.0} = 0.65$$

$$H = (0.65)^{2/3} = 0.75 \text{ m}$$

Test:  $L/h = \frac{2.00}{0.75} = 2.666 \geq 2.0$  hence O.K.

$$h/f = \frac{0.75}{1.50} = 0.50 \leq 0.50 \text{ hence O.K.}$$

Hence the designed hydraulic dimensions of the Spillway are:

$$\text{Crest Length (L)} = 2.00 \text{ m}$$

$$\text{Weir depth (h)} = 0.81 \text{ m}$$

### 3. Structural design –

1- Minimum headwall extension,  $E = (3h + 0.6)$  or  $1.5 f$  whichever is greater

$$E = 3 \times 0.81 + 0.6 \quad \text{or} \quad 1.5 \times 1.50$$

$$E = 3.03 \text{ m} \quad \text{or} \quad 2.25 \text{ m}$$

Adopted 3.03 m

$$2- \text{ Length of apron basin } L_B = f (2.28 h/f + 0.54) = 1.5 (2.28 \times \frac{0.8}{1.5} + 0.54)$$

$$= 1.50 (1.20 + 0.54) = 2.61 \text{ m}$$

$$3- \text{ Height of end sill, } S = \frac{h}{3} = \frac{0.81}{3} = 0.27 \text{ m}$$

4- Height of wing wall and side wall at Junction :

$$J = 2h \text{ or } [f + h + S - (L_B + 0.10)/2] \text{ whichever is greater}$$

$$= 2 \times 0.81 \text{ or } [1.50 + 0.81 + 0.27 - (2.61 + 0.10)/2]$$

$$= 1.62 \text{ or } [2.58 - 1.35]$$

$$= 1.62 \text{ or } 0.123$$

adopt  $J = 1.62 \text{ m}$

$$5- M = 2 (f + 1.33 h - J) = 2 (1.50 + 1.33 \times 0.81 - 1.62)$$

$$= 1.90 \text{ m}$$

$$6- \quad K = (L_B + 0.1) - M = (2.61 + 0.1) - 1.90$$

$$= 0.81 \text{ m}$$

Toe and cut off walls

$$\text{Normal scour depth (N S D)} = 0.473 \times (Q/f)^{1/3}$$

$$= 0.473 \times (2/1)^{1/3}$$

$$= 0.473 \times 1.259$$

$$= 0.595 \text{ m}$$

$$\text{Maximum Scour depth (M S D)} = 1.5 \times \text{N S D}$$

$$= 1.5 \times 0.595$$

$$= 0.89 \text{ m}$$

$$\text{Depth of cutoff /Toe wall} = 0.89 \text{ m}$$

**Apron thickness:** For as over fall of 1.50 m is concrete construction is 0.30 m since the structure is constructed in masonry, the Apron thickness will be  $0.30 \times 1.50 = 0.45 \text{ m}$

**Wall thickness:** The thickness of different wall of the structure (masonry construction) is given below:

Description	Thickness of wall	
	Top width	Bottom width
Head wall	0.45	1.33
Side wall	0.30	1.10
Wing wall and head wall extension	0.30	0.80

## **VI. Detail Estimate of Livelihood Programme**

### **a. Dairy Work**

In income generating activities through Self Help Group, landless and marginal farmers are advised to use three or four cows of *SANKER* breed or three or Four buffalos of *MURRA* breed, for their good life. For the livelihood programme 65 groups of SHG has been given in the project including cost 1.2 lakh / unit that have four buffalo in each group .

### **b. Establishment of Goat Units for S.H.Gs**

Goat population is appreciable in the Project Area and in fact, it is the major source of livelihood for poor people of the district. In the state, on an average, 16 kg of meat is obtained from a goat, if they are dewormed twice, there shall be increment of 4 kg in meat on an average, benefiting the farmers of the state.

Deworming and vitamins, mineral- supplement to the goats shall enhance their productivity and also improve anti-body response and protection level through vaccination, i.e., importance in efficiency of vaccination. More productivity and assured health and low mortality shall result into adoption of more farmers to goat farming with the formation of more S.H.G.'s and in turn availability of goats for processing units.

Goat excreta shall be of immense help in enrichment of soil fertility.



20 Goat Units are proposed in I.W.M.P. II<sup>nd</sup> Project for S.H.G. One unit constituting 20 goats and 2 buck will be distributed to one S.H.G. A register of S.H.G. will be maintained by Secretary of S.H.G. in the supervision of W.D.T. member. The details of beneficiaries of S.H.G. including the breed of goat reared, breeding and feeding status, deworming status, deaths, post mortem conducted claim settlement and working status of unit will be maintained in the register.

Preferences shall be given in consecutive years in purchasing the goats and bucks for new units, from old units for which database maintained shall be of use and it should be assured by buy back arrangement.

### Financial Component

S.No.	Component	Amount
1.	Cost of 20 goats of improved breed (not less than 6 months of age) @ Rs. 3000.00 each	60000.00
2.	Cost of 2 buck of improved breed @ Rs. 5000.00	10000.00
3.	Cost of insurance @ 11.63 / unit	255.00
4.	Feed cost for 3 months @ 250 gm/ day for goats @ Rs. 11.84/ 250 gm	260.00
5.	Provision of deworming, mineral and vitamin supplement, treatment, vaccination @ Rs.160/ animal	2354.00
6.	The expense including monitoring expenses, register and records @ Rs. 170.00/ unit	170.00
	<b>Total</b>	<b>Rs. 73039.00</b>
		<b>Say Rs. 73000.00</b>

### **c. Estimate of Livestock Development Activities**

Total number of female animals:	Buffalo	-	21923
	Cow	-	13700
	<b>Total</b>	-	<b>35623</b>
<b>1. Artificial Insemination (A.I.):</b>	33% of total animals per year, i.e., 12083		
	Amount required for A.I. by BAIF @ 100.00/ animal.		
	<b>Total Amount</b>	-	<b>Rs. 12,08,300.00</b>
<b>2. Vaccination:</b>	Total number of animals in I.W.M.P. I <sup>st</sup>	-	35623 nos.
	1. H.S. + B.Q.	@ 5.50	195926.00
	2. F.M.D.	@10.50	374041.00
		(Twice in a year)	
	<b>Total Amount</b>	-	<b>Rs. 569967.00</b>
<b>3. Deworming:</b>	Adult animals	-	8715
	Child animals	-	1100
	Albendazole for 8715 animals	@ 40.56	353480.00
	1100 child animals	@20.28	12308.00
	<b>Total Amount</b>	-	<b>Rs. 365788.00</b>
	<b>GRAND TOTAL</b>	-	<b>Rs. 21,44,055.00</b>
			<b>Say 21,44,000.00</b>

### **d. Jardogi Work**

The Water Shade Project Area is Near by Lucknow District so there is a major scope of chicken work jardogi . women's are interested in this work and they can earn thier livelihood through self help Gourp . 10 numbers of group has been given in this programme total unit cost is rs 50000 / unit .

## VII. Detail Estimate of Crop Production System & microw enterprises

### a. Demonstration of Wheat

Variety recommended for District-UNNAO

Crop Variety PBW - 373, 502, 435 , NDW – 1012 , 1014 , Narendra - 1076

Seed rate -100 -125 Kg/hectare

Requirement of fertilizers/ha N-125 Kg, P-70-75 Kg, K-70-75 Kg

#### **ESTIMATE OF DEMONSTRATION OF WHEAT IN WATERSHED (PER ha)**

S.No.	Particulars	Quantity	Rate	Amount	Remark
1	Tillage operation or preparation of field for sowing	1.0ha	1000.00/ha	1000.00	Since the project is to be operated in a participatory Mode, contribution in form of the tillage, sowing, irrigation and harvesting done by farmer is not included in the estimates
2	Cost of seed	100.00kg	18.00/kg	1800.00	
3	Sowing by seed drill	1.0ha	1000.00/ha	1000.00	
4	D.A.P. 18:46	160kg	573.00/ 50 kg	1833.60	
5	Urea	210kg	270.00/ 50 kg	1134.00	
6	Potash(M.O.P.)	150kg	300.00/50kg	900.00	
7	Irrigation(three irrigation)	1.00ha	650.00/ha	650.00	
8	Harvesting	1.00ha	2000.00/ha	2000.00	
<b>Total</b>				<b>5667.60</b>	
<b>Say</b>				<b>5700.00</b>	

## **b.Demonstration of Paddy**

### **Variety recommended for District-UNNAO**

Crop Variety Sarju 12 ,

NDW – 1012 , 1014 ,

Narendra – 359 ,

Mahasoori – NDR 97 ,

Prabhat -78 ,

GS2 Seed rate -16 Kg/hectare Requirement of fertilizers/ha

D.A.P.-200kg ,Urea-300kg ,

Potash-100kg ,Zink-20kg

### ESTIMATE OF DEMONSTRATION OF PADDY IN WATERSHED (PER ha)

S.No.	Particulars	Quantity	Rate	Amount	Remark
1	Tillage operation or preparation of field for plantation	1.0ha	1000.00/ha	2000.00	Since the project is to be operated in a participatory Mode, contribution in form of the tillage, sowing, irrigation and harvesting done by farmer is not included in the estimates
2	Cost of seed	16.00kg	260.00/kg	4160.00	
3	Plantation	1.0ha	1000.00/ha	1000.00	
4	D.A.P. 18:46	200kg	502.00/ 50 kg	2008.00	
5	Urea	300kg	278.00/ 50 kg	1668.00	
6	Potash(M.O.P.)	100kg	225.00/50kg	450.00	
7	Zink	20kg	100.00/kg	2000.00	
8	Irrigation(four irrigation)	1.00ha	860.00/ha	860.00	
9	Insect & Pest Management	1.0ha	Lumsum	4000.00	
10	Harvesting	1.00ha	2000.00/ha	2000.00	
<b>Total</b>				<b>20146.00</b>	
<b>Say</b>				<b>20150.00</b>	

### c.Demonstration of Maize(Per ha.)

Require Fertilizer Urea 100kg/ha.DAP 100kg/ha. Crop Variety Maje Hybrid -17 , PAC- 738 , Pragati D-994 DHM-115 SUPER KOHINOOR – DK984

S. N.	Particulars	Quantity	Rate	Amount	Remark
1	Tillage operation in preparation of field and seed sowing	1.0ha	1000.00/ha	2000.00	Since the project is to be operated in participatory Mode, contribution by the farmer in the form of tillage, operation, sowing and harvesting provided by participating farmers, hence this cost is not included in the estimates.
2	Cost of seed	20.0kg	88.00/kg	1760.00	
3	D A P	100.0kg	502.00/50kg	1004.00	
4	Urea	100.0 kg	278.0/50 kg	556.00	
5	Harvesting	1.00 ha	650.00	650.00	
<b>Total</b>				<b>5970.00</b>	
<b>Say</b>				<b>Rs. 6000.00</b>	

Hence per hectare of demonstration –Rs. 6000.00

#### **d.DEMONSTRATION OF HYBRID BAJRA IN WATERSHES (per ha)**

Requirement of Seed / ha -10kg

Crop Variety- Hybrid Bajara , GHB- 577

Requirement of fertilizers/ ha N- 60.00 kg, P- 40.00 kg, K-40.00 kg

#### **ESTIMATE FOR DEMONSTRATION OF BAJRA (per ha) RAINFED**

<b>S.No.</b>	<b>Particulars</b>	<b>Quantity</b>	<b>Rate</b>	<b>Amount</b>	<b>Remark</b>
1	Tillage operation in preparation of field and for sowing	1.0ha	1000.00/ha	2000.00	Since the project is to be operated in participatory Mode, contribution of tillage operation, and harvesting cost
2	Cost of seed	10.0kg	130.00/kg	1300.00	
3	Nitrogen N.P.K 16:32:16	125.0kg	470.00/50kg	1175.00	
4	Urea	90kg	270.00/50 kg	486.00	
5	M.O.P.	40kg	300.00/50kg	240.00	
6	Harvesting	1.00Ha	650.00/ha	600.00	
<b>Total</b>				<b>3201.00</b>	
<b>Say</b>				<b>Rs. 3200.00</b>	

**Hence per hectare of demonstration of Bajra is Rs. 3200.00/ha**

## **e. Demonstration of Green Manuring**

Green Manuring is very useful but due to sowing of Kharif season crop, lack of suitable type of seeds, and limitation of moisture, it is not widely practiced. Green Manuring brings immediate advantage because of its quick decomposition where as FYM and compost improves the soil physical condition in the long-run. Benefits of Green Manuring accrue from substitution of chemical fertilizers, enhance soil biological activities and erosion control due to vegetative cover.

*Sesbania* Species (Dhaincha) and *Crotolaria Juncea* (Sunhemper Sanai) are most common green manure crops. They accumulate about 100 kg N/ha in their biomass and 64-88% of this is derived from atmosphere. Apart from direct benefit of green Manuring as a source of nutrients and organic matter, it has the capacity to mobilize soil phosphorus and other nutrients. It also helps in reclamation of problem of soil, e.g., *Sesbania* helps in removing exchangeable sodium and reclamation of salt affected soils.



**A typical estimate is made for Green Manuring is given below:  
ESTIMATE FOR GREEN MANURING IN THE WATERSHED (PER ha)**

<b>S.No.</b>	<b>Particulars</b>	<b>Rate</b>	<b>Cost</b>	<b>Remark</b>
1	Seed of Sesbania (Dhaincha)25Kg/ha	25.00/Kg	625	Since the project is to be operated in a participatory mode, contribution in the form of tillage will be done by farmers is not included in the estimate.
2	Tillage operation before sowing and to plough the plants of Dhaincha after 40-45 days of sowing for Green Manuring.	1000/ha Before and after saring	2000.00	
<b>Total</b>			<b>Rs. 625.00</b>	

**Therefore cost per hectare of Green Manuring is Rs. 625.00/ha**

## Chapter 6

### Capacity Building Plan

#### **I. Capacity Building:**

Capacity Building is the process of assisting the group or individuals to identify and address issues and gain the insights, knowledge and experience needed to solve problems and implement change.

There is a realization in the development sector that there is a need to appraise the success of development interventions by going beyond the conventional development targets and measures of success (e.g. in the form of commodities, goods and services) to take into account improvements to human potential. Capacity building of stakeholders is also increasingly viewed as an important factor in developmental projects that involve participation of stakeholders at all levels for effective implementation of projects.

**II. Action Plan for Capacity Building:** - Skill development & awareness of farmers / Users Group / Self Help Group / Watershed Committee & W.D.T. .has been given in three different parts i.e. exposer visit , Short courses & skill development . Details is given below:-

**a. Exposure Visit :-** Watershed committee , self help group & W.D.T. Play most impotent Role for development of watershed so there exposure visit is very necessary . 20% of the Total fund available in this sector has been given for exposure visit.

**b. Short Courses :-** For the development of knowledge of agriculture Practices / Micro enterprises , Short courses of different subjects from training institute & agriculture

universities is most important . 20% of the fund available in this sector has been given for short courses .

**c. Skill Development :-** Field level Training & Awareness programme for users group , S.H.G's , W.C. , is a major part of capacity building so 60% of the fund available in this sector has been given for skill development.

**III.Action Plan of Capacity Building with annual phasing :-** Year wise action plan is given below :-

S.No.	Perticular of Capacity Building	Unit	Quantity	Unit Cost Lakhs	I <sup>st</sup> Year Lakhs	II <sup>nd</sup> Year Lakhs	III <sup>rd</sup> Year Lakhs	IV <sup>th</sup> Year Lakhs	V <sup>th</sup> Year Lakhs	Total Year
1	Exposer Visit	02	40 person/visit	0.40	--	0.40	0.40	--	--	<b>0.80</b>
2	Short Cources	02	40person	0.80	--	0.80	0.80	--	--	<b>1.60</b>
3	Skill Development	69	345 person's 3 days training	0.5616/pers on	5.616	9.547	2.808	4.212	2.808	<b>24.991</b>
4	Other expenditure					0.485	0.204			<b>0.689</b>
<b>TOTAL</b>					<b>5.616</b>	<b>11.232</b>	<b>4.212</b>	<b>4.212</b>	<b>2.808</b>	<b>28.08</b>

#### **IV. Scope of capacity building at Project Area**

- Alternative Land Use Plan
- Scientific technique of Soil and Moisture conservation
- Improved and Scientific agriculture practices
- Fodder development and Management
- Forestation
- Meteorological Information
- Dairy Development and Management
- Rural Craft
- Income Generation Activities
- Stitching
- Food Processing
- Post Harvest management practices

### V. Capacity Building Institution:

S. No.	Name of the Training Institute	Full Address with contact no., website & e-mail	Type of Institute#	Area(s) of specialization\$	Accreditation details	Trainings		
						Reference Year	No. of Trainings Assigned	No. of Trainees to be Trained
1	Deen Dayal Gram Vikas Sansthan	Bakshi Ka Talab, Lucknow	Research Institutes	Agriculture/ Horticulture / Animal Husbandry	Govt. of U. P.	2012-2014	2	40
2	Walmi	Lucknow	Training Institutes	Water management/ Watershed development	Central Govt.	2012-2014	2	40
3	Krishi Vigyan Kendra Dhaura Unnao	Block Hasanganj Vill. Dhaura Distt. Unnao	Training Institutes	Agriculture/ Horticulture / Animal Husbandry	Central Govt.	2011-2015	69	345

## **VI. Field level hand holding support details:-**

Gps , Thiodolite,camara, Mobile Phone, Hand level etc are the field level hnd holding support.

## **VII. Follow up & monitoring of capacity building**

Web-based GIS System is being developed for monitoring and evaluating the project in its planning & implementation phases. The system would be available on a public domain and can be accessed by all the stakeholders of the project. The system shows the entire state of Utter Pradesh. Filtering allows the user to zoom onto one particular project. Details related to soil type, Land-use classification, inhabitation etc., can be obtained village-wise. Furthermore, survey-number wise details related to ownership, irrigation source, yield etc., can also be accessed by the users of the system. This system is being used for pooling up the details obtained from the DPR. In other words, the DPR is made available online in the form of a database which will help the stakeholders know areas of importance viz., already treated areas/historical works in the area, proposed areas for treatment etc., for further treatment and planning. The system would also show the satellite imageries of various years from the project inception stage to the project closing stages. This allows the user to evaluate the effectiveness of the treatment and thereby plan corrective measures for the project area. The system would serve as an aiding tool to the planners and evaluators for judging the efficacy of the Project Yet another component of the Web-based GIS

system is the Mobile based Monitoring & Evaluation System, which will help the ground staff alias project can obtain information regarding the project area on their mobile phone by means of an SMS. The system works in the following manner. The WDTs (Watershed Development Team) to transmit information from the ground level to the central server. Also, any higher -up official in charge of the WDT equipped with a GPS instrument marks the latitude-longitude information of various treatment areas during the DPR. The probable sites are then transferred onto the central server. During the works phase, any progress in the treatment areas is reported to the server by means of an SMS by the WDT. Similarly, any nodal officer or higher -up official can view the progress in a project by means of summarized reports generated over frequent periods of time

## Chapter 7

### Phasing of programme & budgeting

#### I. Financial Outlays.

S.No.	Component	Unit	Quantity	Unit Cost (Lakhs)	1 <sup>st</sup> Year (Lakhs)	2 <sup>nd</sup> Year (Lakhs)	3 <sup>rd</sup> Year (Lakhs)	4 <sup>th</sup> Year (Lakhs)	5 <sup>th</sup> year (lakhs)	Total (Lakhs)
<b>A. MANAGEMENT COSTS</b>										
	Administrative cost- TA & DA, POL/ Hiring of vehicles/ Office and payment of electricity and phone bill, etc. computer, stationary and office consumable and contingency etc.	---	---	---	11.232	11.232	11.232	11.232	11.232	<b>56.160</b>
	Expert for monitoring and evaluation.	Nos	---	---	2.246	2.247	2.247	2.246	2.246	<b>11.232</b>
	<b>Total</b>				<b>13.478</b>	<b>13.479</b>	<b>13.479</b>	<b>13.478</b>	<b>13.478</b>	<b>67.392</b>
<b>B. PREPARATORY PHASES</b>										
<b>(1.) Entry point Activities</b>										
	a.Hand Pump Chabutra	nos	10	0.0794	0.794	-	-	-	-	0.794
	b.Well (Jagat/Maintenance)	nos	10	0.4613	4.613	-	-	-	-	<b>4.613</b>
	c. Soaking Pit	nos	10	0.117	1.170	-	-	-	-	<b>1.170</b>



d. Naali Nirman	Mt.	596 .14	0.0228/ mt.	13.592	-	-	-		<b>13.592</b>
e. Kisaan Gosthi Manch / Chabutra	nos	03	0.765	2.295	-	-	-		<b>2.295</b>
<b>Total</b>				<b>22.464</b>	-	-	-	-	<b>22.464</b>
<b>(2.) Institutional and Capacity Building</b>		NA	-	5.616	11.232	4.212	4.212	2.808	<b>28.080</b>
<b>(3.) Detail Project Report</b>				5.616	-	-	--	-	<b>5.616</b>
<b>Total</b>				<b>37.440</b>	9.36	9.36		-	<b>56.160</b>
<b>C. WATERSHED WORKS</b>									
<b>(1.) Watershed Development Works</b>									
a. Construction of Bunds (Field Bund, Contour Bund, CRB Bund)	ha	2530	0.04020	---	15.256	27.460	26.44	32.55	101.706
b. Marginal Bund and Peripheral Bund	ha	1682	0.050	---	12.640	22.752	21.910	26-966	84.268
c. WHB /CD/Pond	ha	468	0.1234	----	8-66	15-59	15.02	18-481	57.751
d. horticulture Work	ha	10	0.150	---	1-00	0-50	---	---	1.500
e. New and Renovation of earthen water Harvesting Structure/Gully Plug/Check Dam	---	---	----	----	2-05	3.686	3.550	4.369	13.655
f. Afforestation	ha	50	0.1034	---	2-00	2.50	0.67	--	5.170
g. Drainage Line Treatment (Pucca Structure / Gully Plug	nos	-	-	---	2-512	4.523	4.355	5-36	16.750

and Chek Dam)									
Total		4680		----	44.118	77.011	71.945	87.726	280.800
<b>(2.) Livelihood Programme (Community Based)</b>									
<b>Income Generating Activities through S.H.G.'s for Landless and Marginal Farmers</b>									
a. Jardogi	nos	20	-	-	5.00	5.00		-	10.000
b. Dairy Work	nos	20	-	-	12.000	12.000		-	24.000
c. Goat-keeping	nos	20	-	-	7.300	7.300		-	14.600
d. Livestock Development Activities	nos	-	-	-	3.780	3.780		-	07.560
<b>Total</b>									56.160
<b>(3.) Production System and Micro-Enterprises</b>									
<b>Crop Production, Diversification of Agriculture</b>									
a. Demonstration of Wheat	Ha	702.85	0.057	5.700	11.400	11.400	11.562	--	40.062
b. Paddy	Ha	690.00	0.0750	-	5.2500	22.500	24.000	--	51.750
c. Maize	Ha	60.00	0.040	-	-	1.00	1.400	--	2.400
d. Bazra	Ha	40.00	0.032	-	-	0.64	0.64	--	1.28
D Green Manuring	Ha	1744.00	0.00625	-	3.625	3.625	3.650	--	10.900
<b>Total</b>								--	106.392
<b>D. CONSOLIDATION PHASE</b>							40.920		40.920
<b>GRAND TOTAL</b>									561.60

## II. Physical Outlays.

Activities Related To	1 <sup>st</sup> Year (quantity)	2 <sup>nd</sup> Year (quantity)	3 <sup>rd</sup> Year (quantity)	4 <sup>th</sup> Year (quantity)	5 <sup>th</sup> Year (quantity)	Total (quantity)
<b>ADMINISTRATIVE COSTS</b>						
TD & DA, POL/ Hiring of vehicles/ Office and payment of electricity and phone bill etc. computer, stationary and office consumable and contingency.	√	√	√	√	√	√
Expert for monitoring and evaluation.	√	√	√	√	√	√
<b>PREPARATORY PHASES</b>						
Entry Point Activities improvement in Drinking Water System, School, etc.	√	-	-	-	-	√
Institutional and capacity building	√	√	√	√	√	√
<b>WATERSHED WORKS</b>						
<b>Watershed Development Works</b>						
a. Construction of Bunds (Field Bund, Contour Bund, CRB Bund)	---	379.50	683.08	657.72	809.70	2530.00
b. Marginal Bund and Peripheral Bund	---	251.75	453.95	437.10	539.20	1682.00
c. WHB /CD/Pond	----	70.18	126.34	121.72	149.76	468.00
d. horticulture Work	---	6.67	3.33	---	---	10.00
e. New and Renovation of earthen water Harvesting Structure/Gully Plug/Check Dam	---	√	√	√	√	√
f. Afforestation	---	19.34	24.18	6.48	--	50.00
g. Drainage Line Treatment (Pucca Structure / Gully Plug and Chek Dam)	---	√	√	√	√	√
<b>Total</b>						<b>4680</b>

<b>LIVELIHOOD PROGRAMME (community based)</b>							
<b>Income generating activities through SHG are for landless and marginal farmers.</b>							
a. Jardogi	√	√	√	√	√	√	√
b. Dairy Work	√	√	√	√	√	√	√
c. Goat Keeping	√	√	√	√	√	√	√
d. Livestock development activities	√	√	√	√	√	√	√
<b>PRODUCTION SYSTEM AND MICRO ENTERPRISES</b>							
<b>Crop production , Diversification of Agriculture</b>							
a. Demonstration of	Wheat (ha.)	100.00	200.00	200.00	202.85	---	702.85
b. -do-	Paddy (ha.)	---	70.00	300.00	320.00	---	690.00
c. -do-	Maize (ha.)	---	---	25.00	35.00	---	60.00
d. -do-	Bazra (ha.)	---	---	20.00	20.00	---	40.00
D -do-	Green Manuring (ha.)	---	580.00	580.00	584.00	---	1744.00
<b>CONSOLIDATION PHASE</b>		-	-	-	√		√

## Chapter 8

### I. Consolidation/exit strategy

The Project management of any watershed programme is very important. It mainly depends upon the community organization and the village level institutes. In the watershed committee and various user group have been formulated for post project operation and maintenance of assets created during project period. Major emphasis will be on equity and sustainable benefit of the project even after implementation stage. A proper link-up will be built during project period with various institutes and capacity building organization. They will act as a major kingpin during post implementation for scaling up the successful experience during project.

### II. Watershed Development Fund:

The major source of financial assistance after post implementation period is Watershed Development Fund. The contribution of it will comes mainly fund the following.

#### **User Charges:**

Various user groups will be formed in village. These user groups will collect user according to the designated rules formed during the formation of user group. These funds will be transferred to the WDF funds as per these formulated rules. The secretary of watershed committee (WC) shall maintain the records.

## Chapter 9

### Expected outcome

#### **I. Employment :-**

Employment has always been a problem in the village the principle occupation of the people is agriculture, animal husbandry & casual labour work however the area is being rainfed then agriculture suffers at best they can take only a single crop which keeps them partially engaged for about four months. Lack of fodders makes animal husbandry very difficult too. So animal husbandry does not keep them engaged full time thus the people mainly depend upon casual labour , Either in the village it self or outside it.

The project plans for creation of both wage employment & self employment opportunities wage employment would be created by engaging people in watershed physical work like construction of earthen bunds , farm ponds village pond, plantation, etc. Self employment would be created by providing the people with cash support in the form of direct livelihood activities like agriculture, animal husbandry and enterprise development

### Employment in Project area:-

S.No	Name of the Project	Wage employment			Self Employment			
		No. of man days			No. of beneficiaries			
		SC	Others	Total	SC	Others	Women	Total
1	IWMP – II <sup>nd</sup> AURAS, Hasanganj , Miyanganj	259290	28810	288100	200	200	200	600

**II. Migration:-** On account of agriculture and animal husbandry providing only part time employment for some part of the year, the people migrate for a better half of the year for wage labour .

Employment opportunities in the local area as mentioned above will ensure lessening seasonal migration from the area.

### Details of seasonal migration from Project area:-

S.No.	Name of the project	No. of persons migration		No. of days per year of migration	Expected post project
		Pre project	Expected post project		
1	IWMP – II <sup>nd</sup> AURAS, Hasanganj , Miyanganj	550	330	145	100

**III-Ground water Table:-** Rainfall has been scanty normal but demand for ground water has been increasing all the time. The ground water table thus has depleted over the year Presently it stands at 6 m.

Proper water harvesting structures and percolation tanks would go a long way in increasing water table depth from 6m in the pre-project level to 4.50 m in the post project period.



### Details of average ground water table depth in the project areas (in meters)

S.No.	Name of the project	Sources	Pre Project level	Expected increase/decrease Post Project
1	IWMP – II <sup>nd</sup> AURAS, Hasanganj , Miyanganj	Open wells	6.00 m	4.50 m
2		Bore well	-	-
3		Other specify	-	-

**IV. Drinking water:-** The watershed has sufficient drinking water but in poor quality after post project it is expected that drinking water became probable good quantity. As a result of the watershed activities, it is expected that the quantity and quality of drinking water would improve

### Status of Drinking water

S.No.	Name of the project	Availability of drinking water		Quality of drinking water	
		Pre Project	Expected Post Project	Pre Project	Expected Post Project
1-	IWMP – II <sup>nd</sup> AURAS, Hasanganj , Miyanganj	Available	Available	Poor Quality	Good Quality

**V. Crops:-** There is no irrigation facilities due to soil & water conservation . Agriculture primarily depends upon rainwater; but this is what is lacking in IWMP-II<sup>nd</sup>. The surface water does not stay in the field due to slopy land and ground water is slyghtly saline, which is cause of low crop production.All this can change with the integrated land and water management during the watershed project. . This will help in additional area coming under cultivation and increasing productivity too. The farmers can take more than one season of crops. Different varieties of crops can be taken.

**Details of crop area and yield in the project area**

Name of the Project	Name of Crops	Pre Project		Expected Post Project	
		Area in Ha.	Average Yeald (Qtl)/ha	Area in Ha.	Average Yeald (Qtl)/ha
IWMP – II <sup>nd</sup> AURAS, Hasanganj , Miyanganj	<b>Kharif</b>				
	Maje	750	9.7	1232.00	12.00
	Paddy	900	18.50	1682.00	24.50
	Bajara	647	7.40	1138.00	11.00
	<b>Rabi</b>				
	Wheat	1606	25.50	4000	37.50
	Gram	70	11.50	1400	15.50
	Musturd	300	9.60	500	12.00
	<b>Zaid</b>	237	4.50	750	6.50
	Fodder	----	----	50.00	----

## VI. Horticulture:-

The watershed does not have organized orchards, however, farmers have fruit plants (mango, ber, bel, guava, etc.) near the homesteads and kitchen gardens. The climate and soil of the area is favorable for fruit growing for sub tropical fruits in the lower reaches. Organized orchards, commercial vegetable cultivation, agro horticulture, and other system of agro forestry etc. are lacking but have good potential in the watershed.

### Area under horticulture

S.No.	Name of the Project	Existing area under horticulture (ha.)	Area under Horticulture proposed to be covered IWMP
1-	IWMP – II <sup>nd</sup> AURAS, Hasanganj , Miyanganj	----	10

## VII. Vegetative cover:-

The forestry practices are highly lacking in the watershed though it has good potential under existing dispositions and may play a vital role particularly with respect to minimization of cropping risk, built up soil fertility and productivity soil conservation, partly meeting out the fire wood demand of rural community and moreover, optimizing the watershed in the watershed. The existing area under agro Forestry is almost negligible. *Prosopis juliflora* may be planted as block or sole plantation especially on marginal and degraded lands in the watershed. The

agro-forestry interventions comprising of Mango , Guava, Lemon , Bel etc may be applied for benefit of farmers under rain fed to irrigated production systems on leveled to sloppy Graded and marginal agricultural using proper planting techniques and termite control measures. The multipurpose trees may also help in supplementing fire wood and fodder demands of the rural community in the watershed and may be planted as hedge rows on rain-fed, marginal and degraded lands.

It is planned that 50 ha land to be covered under afforestation

### **Forest/vegetative cover**

<b>S.No.</b>	<b>Name of the Project</b>	<b>Existing area under forestation (ha.)</b>	<b>Area under afforestation proposed</b>
1-	IWMP – II <sup>nd</sup> AURAS, Hasanganj , Miyanganj	NIL	50

### **VIII. Live stock :-**

The watershed has quite a good of livestock population. These include cows, bullocks, buffaloes, goats, sheep. The interventions like provision of good quality cows and buffaloes, the establishment of a fodder bank and other such related activities would spur up the dairy development in the watershed. It is expected that the post project period would see a substantial increase in livestock population and yield from them

**Details of livestock in the project areas (for fluids please mention in liters, for solids please mention in kgs. and income in Rs.)**

S.No.	Name of the Project	Type of Animal	Pre Project			Expected post project			Remarks
			No.	Yield	Income	No.	Yield	Income	
1	IWMP – II <sup>nd</sup> AURAS, Hasanganj , Miyanganj	Milch-animals							
2		Cow(per animal/day)	13700	2	25	15700	3	25	
3		Buffalo(per animal/day)	21923	4	28	25000	5	28	
4		Draught Purpose animals							
5		Goat (Meat: per/Kg)	20650		200	22000		200	

### **IX. Linkage:-**

The direct livelihood activities need good forward and backward support. Without such support system the activities may fail to deliver the desired results. These linkages would involve credit, machinery, input supply, marketing, etc

## Backward-Forward linkages

S. No	Project	Type of Marketing Facility	Pre-project (no.)	During the project (no.)	Post-project (no.)
1	IWMP – II <sup>nd</sup> AURAS, Hasanganj , Miyanganj	<b>Backward linkages</b>			
2		Seed certification	NIL	NIL	NIL
3		Seed supply system	4	1	5
4		Fertilizer supply system	4	1	5
5		Pesticide supply system	1	-	1
6		Credit institutions	3	1	4
7		Water supply	1	-	1
8		Extension services	1	-	1
9		Nurserie	-	1	1
10		Tools/machinery suppliers	1	-	1
11		Price Support system	1	-	1
12		Labour			
13		Any other (please specify)			
14		<b>Forward linkages</b>			
15		Harvesting/threshing machinery	Available		

16	IWMP – II <sup>nd</sup>  AURAS,  Hasanganj ,  Miyanganj	Storage (including cold storage)			
17		Road network	Available		
18		Transport facilities	Available		
19		Markets / Mandis	Available		
20		Agro and other Industries Cumin			
21		Milk and other collection centres Milk collection centre	4	3	7
22		Labour			
23		Any other (please specify)	-	Bermi compost, fodder bank	1

## X. Logical Framework Analysis

Components	Activities	Outputs	Effect	Impact
<b>Village Institution Formation</b>	<ul style="list-style-type: none"> <li>§ Formation of Watershed Committee</li> <li>§ User Group</li> </ul>	<ul style="list-style-type: none"> <li>§ One Watershed Committee each village</li> <li>§ Number of User group depending on the coverage of particular intervention</li> </ul>	<ul style="list-style-type: none"> <li>§ Project can be implemented and managed in a democratic and participatory way ensuring equity</li> </ul>	<ul style="list-style-type: none"> <li>§ Unity and prosperity in the village management</li> <li>§ People's Participation and positive perception towards the programme</li> </ul>
<b>Strengthening Village Institutions</b>	<ul style="list-style-type: none"> <li>§ Organize training and awareness programme for Village institutions</li> <li>§ Capacity building workshops and exposure visits User Group and Watershed Committee</li> <li>§ Facilitating and</li> </ul>	<ul style="list-style-type: none"> <li>§ awareness camps to be organized.</li> <li>§ trainings and exposure visits UGs and WCs to be held</li> <li>§ Capacity building</li> </ul>	<ul style="list-style-type: none"> <li>§ Quality of management of common resources improved</li> <li>§ Quality of distribution of benefits between people</li> </ul>	



	<p>monitoring the functioning of UGs and WCs</p> <p>§ Strengthen linkages between UGs and WCs and Panchayat Institutions</p> <p>§ Gender sensitization of UGs and WCs to increase inclusiveness of samuh decision making.</p> <p>§ Sensitize village communities to involve children and youth in development</p>	<p>workshops to be organized</p> <p>§ 1 Federations of UGs and WC to be formed</p> <p>§ Involvement of</p>	<p>improved</p> <p>§ Increased awareness amongst women about village resources</p> <p>§ Women participation enhanced in decision-making of GVCs youth and children in village development increased</p>	
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<p><b>Fund Management</b></p>	<p>§ Improve management and utilization of UGs and WCs          § Prepare communities to explore other sources of income for UGs and WCs</p>	<p>§ UGs and WCs operating bank account and managing resources on their own</p>	<p>§ Purpose, frequency and volume of use of the fund enhanced</p>	
<p><b>Ecological Restoration</b></p>	<p>§ Protection, treatment and regeneration of common and private lands          § Protection, treatment and regeneration of forest lands          § Plantation of fruits and forest species          § Impart trainings, conduct meetings and organise exposure visits for</p>	<p>§ Common and private lands to be brought under new plantations and agro-horti forestry like Neem, Adusa prosopis, Banyan and Peepal          § Forest lands to be brought under new plantations and protection</p>	<p>§ Fodder availability from common and private lands increased          § Accessibility to common and forest lands increased with removal of encroachme</p>	<p>§ Better Ecological order in the area          § Increase in the proportion of households having more security of fodder          § Reduction in drudgery of fodder and fuel collection</p>

	<p>communities, village volunteers and staff to effectively plan, execute and monitor activities</p> <p>§ Identification and promotion of non-timber forest produce based income generation activities</p>	<p>§ Trainings, exposure visits and meetings to be organized for communities village volunteers and staff</p> <p>§ Income generation intervention promoted</p>	<p>nts and resolution of conflicts</p>	<p>especially women</p>
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<p><b>Rainfed Area Development</b></p>	<p>§ Treatment of land through improved watershed basis</p> <p>§ Promotion of good agricultural practices- horticulture, improved crop and vegetable</p> <p>§ Promotion of organic farming practices</p> <p>§ Formation of Fodder banks to increase fodder security and promote dairy development among</p>	<p>§ Land to be brought under improved soil moisture conservation practices</p> <p>§ Good agricultural practices to be promoted</p> <p>§ Organic farming to be promoted</p> <p>§ Fodder banks to be established</p> <p>§ Agriculture based livelihood income generation activities to be promoted</p> <p>§ Water</p>	<p>§ Improved productivity of treated land</p> <p>§ Increased availability of water in wells</p> <p>§ Increase in annual agriculture production</p> <p>§ Farmers adopt organic farming practices</p> <p>§ Fodder security of farmers enhanced</p> <p>§ Increase availability of water for 9 to12</p>	<p>§ Increase in proportion of households having more security of food</p> <p>§ Increase in contribution of agricultural income to the household income</p>
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	<p>communities</p> <p>§ Identification and promotion of agri-produce based income generation activities like grading, processing and packaging</p> <p>§ Promotion of better Irrigation practices like drip irrigation</p> <p>§ Impart trainings, conduct meetings and organize exposure visits of communities, village</p>	<p>harvesting structures to be constructed</p> <p>§ Drip Irrigation facilities to be distributed among farmers</p> <p>§ Approx 420000 person days of employment to be generated</p> <p>§ Trainings, exposure visits and meetings to be organized for communities village volunteers and</p>	<p>months</p> <p>§ Increased availability of water for livestock</p> <p>§ Availability of irrigation water established</p> <p>§ Farmers take two crops in a year</p> <p>§ Increase in agricultural productivity of land</p> <p>§ Availability of drinking water enhanced</p>	
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	volunteers and staff to effectively plan, execute and monitor activities	staff		
<b>Women's Socio-political and economic empowerment</b>	<ul style="list-style-type: none"> <li>§ Formation &amp; Strengthening of women's SHG groups</li> <li>§ Capacity building of womenfolk</li> <li>§ Capacity building of SHG leaders and accountants</li> <li>§ Linking SHGs with external financial institutions</li> </ul>	<ul style="list-style-type: none"> <li>§ Women's SHG groups to be formed</li> <li>§ Federation of Women's SHGs to be formed</li> <li>§ Trainings to be conducted for jardogi work products from goats</li> <li>§ Increased household</li> </ul>	<ul style="list-style-type: none"> <li>§ Enhanced capacities of leaders of women's group in taking initiatives to solve problems at different levels</li> <li>§ Performance</li> <li>§ Improved access to credit for livelihood purposes. income.</li> </ul>	<ul style="list-style-type: none"> <li>§ Position of women in household community, society (politically, socially and economically) as perceived by women and community at large</li> <li>§ enhancement of SHGs in terms of participation decision-making leadership and</li> </ul>

				fund management § Equality & Equity in gender relations at home decision making, expenditure, children's education health)
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## XI. BENEFIT COST RATIO

### BENEFIT COST RATIO OF I.W.M.P.- II<sup>nd</sup> UNNAO

Year	Construction cost (00,000 Rs.)	Operation and maintenance cost (00,000 Rs.)	Benefit (00,000 Rs.)
1	47.174	1.887	4.717
2	101.977	5.971	26.124
3	151.458	12.023	72.137
4	118.711	16.764	136.211
5	142.280	22.464	224.640
6	-	22.464	224.640
7	-	22.464	224.640
8	-	22.464	224.640
9	-	22.464	224.640
10	-	22.464	224.640



### BY BENEFIT, COST RATIO METHOD

SN	Item	1	2	3	4	5	6	7	8	9	10	
1	Deduction factor 10%	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386	
2	Totalcost (oo,ooo Rs.)	49.071	1.8079	163.311	135.305	164.953	22.464	22.464	22.464	22.464	22.464	
3	Benefit (oo,ooo Rs.)	4.717	26.124	72.137	136.211	224.640	224.640	224.640	224.640	224.640	224.640	
4	$\sum$ Cost	44.605	89.273	122.646	92.413	102.435	12.669	11.524	10.4990	9.525	8.671	<b>504.2</b>
5	$\sum$ Benefit	4.287	21.578	54.174	93.032	139.501	126.696	115.240	104.906	95.247	86.711	<b>841.37</b>

$$\text{Benefit cost ratio} = \frac{\Sigma \text{Benefit}}{\Sigma \text{Cost}}$$

$$= 841.372 / 504.251$$

$$= 1.66:1$$

Hence OK

## Certificate

1	The area of the proposed project are not covered under assured irrigation
2	The area of the proposed project is not covered or overlapping with any other watershed projects sanctioned by the central govt./Satae govt./autonomous bodies & others.
3	The timeframe and milestones of the projects will be followed
4	The budget requested for will be follow the critrria laid down in the Common Guideline, 2008
5	Saving , if any, in each components of the project cost be utilized only for activities in the watershed works.

6	The state & DRDA cell will furnish monitoring reports and periodical as desired by DoLR
7	The DRDA shall release the funds to the PIAs & the watershed Committees within 15 days of receipt of the funds
8	The PIA will start project work within three months of the receipt of first installment .

**Date:-**

**BSA  
IWDP  
UNNAO**

**Dy. Director  
LDWR  
LUCKNOW**

**Chief Development Officer  
Distt. UNNAO**