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Chapter -1 Project Background

Table 1. 1 PROJECT AT A GLANCE

1 - Name Of Project	I.W.M.P IIIrd, Allahabad.				
2- Name Of Block	Meza & Koraon				
3 -Name Of District	Allahabad				
4 -Name Of State	U.P.				
5-Name Of Watershed	Tons				
6 -Name Village Selected	Sirhir, Patehra, Dasauti, Salaiyakhurd, Kulbhasa, Hardia, Silaundhikhurd,				
	Silaundhikala, Mojra, Obri, Suraicha, Tenduakhurd, Gat, Chapro, Suhas,				
	Pawari, Jamsot Jamua, SemriLahuri, Pathra, Jatehra, Mjhila, Gora,				
	Purechandel, Kharkadabar, Nar, Rauni, Sampurkhurd, Harghar, Bhojpurwa,				
	Dhauhan, Phachkari, Newada.				
7 -Micro Watershed Code	2A7D 2d3e, 2A7D2h1g, 2A7D2h1h, 2A7D2h1i, 2A7D2h1b, 2A7D 2h1f,				
Selected	2A7D2h1e,				
8 -Total Area Of The Project	6154.00 ha				
9 - Proposed Area For Treatment	4460.00 ha				
10-Cost Per Hectare	12000.00				
11 -Project Period	2010-11 To 2014-15				
12 - Total Cost Of Project	535.20 Lakhs				
13 -Proposed Man Days	2,20000.00 Nos				

Table 1.2. SALIENT FEATURES OF I.W.M.P.-IIIrd

Financial & Physical Outlay.

(Amount in Lacs.)

Agency	Component	Particulars	Unit	Quantity	Unit Cost	TOTAL (100%)
	Monitoring	-	-	\checkmark	-	1.0704
	Evaluation	-	-	\checkmark	-	5.352
SLNA	I & CB	-	-	\checkmark	-	1.6056
	Consolidation	-	-	\checkmark	-	0.5352
	TOTAL	-	-	\checkmark	-	5.5632
	Monitoring	-	-	\checkmark	-	2.676
MCDC	I & CB	-	-	\checkmark	-	4.8168
VVCDC	Consolidation	-	-	\checkmark	-	0.5352
	TOTAL	-	-	V	-	8.028
	Administration	-	-	V	-	26.76
	Monitoring	-	-	V	-	1.6056
		Roof top rain water harvesting for ground water recharge	Nos	9	0.11125	1.00125
		Soaking Pit	Nos	43	0.03900	1.6770
		Hand pump	Nos	9	0.62500	5.62500
	EPA	Krishak Vikas Manch	Nos	9	0.59200	5.32800
PIA		Tree planting with Brick-Guard	Nos	18	0.01570	0.31500
		Bathroom	Nos	9	0.44630	4.01670
		Repairing of well	Nos	3	1.14835	3.44507
		TOTAL	-	100		21.408
	I & CB	-	-	V		20.3376
	DPR	-	Nos	1		5.352
	Livelihood	Goat-keeping	Nos	32	0.43950	14.064
		General Merchant / Mobile shop	Nos	26	0.2500	6.500

		Nadef Compost	Nos	62	0.11260	6.9812
		Dairy Work	Nos	20	0.50000	10.0000
	Livelihood			140		
		TOTAL (1)	-		-	37.5452
		Livestock Development Activities		Detail Attached		8.7328
		Crop Production & Diversification of agriculture	Ha.	186	0.05975	11.1135
	Production System &	Demonstration of Green-Manuring	Ha.	938	0.00625	5.8625
	Micro-Enterprise	Introduction of Agro-forestry agriculture	Ha.	7.5	2.27000	17.205
		TOTAL (2)	-	\checkmark	-	42.7348
		GRAND TOTAL (1 & 2)	-	\checkmark	-	80.2800
	Consolidation	-	-	\checkmark	-	
	TOTAL	-	-	√	-	
	Administration	-	-	\checkmark	-	
		Construction of Bunds (Field, Contour, Submergence, Marginal & Peripheral)	Ha.	3745	0.04258	159.47
		Renovation of existing bunds for insitu soil moisture conservation. (S.B., M.B., P.B.)	Ha.	-	-	-
		Rainfed Horticulture with Fencing	Ha.	15	0.6080	9.1200
		Rainfed Horticulture without Fencing	Ha.	223	0.15050	33.561
		Total of Rainfed Horticulture	Ha.	238		42.681
WC	Watershed Work	New & renovation of existing Water Harvesting structures/ Gully Plugs/ Chek Dams	Ha.	445	0.12500	55.625
		Afforestation & development of Silivi- Pastoral System	Ha.	32	0.10350	3.312
		Farm Pond for 2 ha. Area	Nos	7	0.165	22.155
		Spillway /CD for 30 hect t	Nos	7	0.18000	12.60
		(Spilway 50 hastructures)	Nos	2	2.0850	4.170
		Pipe outlet	Nos	122	0.17300	21.106

	ΤΟΤΑ	L		V		321.12
Consolidation	-		-	V	-	13.9152
GRAND TOTAL	-		-	V	-	361.7952
Administration	-		-	V	-	53.52
Monitoring	-		-	V	-	5.352
Evaluation	-		-	V	-	5.352
EPA	-		-	100	-	21.408
I & CB	-		-	V	-	26.76
DPR	-		-	1	-	5.352
Watershed Work	-		-	131	-	321.12
Livelihood				V		37.5452
Production system & micro-enterprise				V		42.7348
	GR	AND TOTAL	•	V		80.28
Consolidation	-			V	-	16.0560
GRAND TOTAL	-	Nos		131	-	535.30
	-	Hect		4460	-	535.20

1.1 Project Background

IWMP-IV project is located in Meza and Koraon block of Allahabad district of Uttar Pradesh state. The project is a cluster of seven micro-watersheds with 2A7D 2d3e, 2A7D2h1g, 2A7D2h1h, 2A7D2h1i, 2A7D2h1b, 2A7D 2h1f, 2A7D2h1e, being their respective codes. The total project area of the watershed is about 6154.00 ha, of which 4460.00 ha has been undertaken to be treated under Integrated Watershed Management Programme (IWMP) starting year 2011-14-15. These micro watersheds are situated in the catchment of river Tons The watershed is situated in the South-East of Allahabad district. It lies between 25°5 ' to 25°10' latitude and 81°55' to 82°5' Longitude.

Road Map of the watershed shown bellow:



Micro watershed wise villages and their area are shown in table 3. **Table 1.3. Detail of Watershed Project - IWMP – III Allahabad**

Detail of Watershed Project - IWMP – III Allahabad					
2A7D2d3e	Dhobakhara	Dasauti	235.91	6583.77	
		Dhobakhara	327.92	7570.45	
		Hardiya	164.13	5579.75	
		Kubhasa	34.44	2656.57	
		Mojara	24.00	1960.5	
		Patehara	44.96	2961.44	
		Salaiya Khurd	113.15	5519.86	
		Silaudhi Kala	161.18	5714.99	
		Silaudhi Khurd	39.05	2612.73	
		Sirhir	289.35	8323.7	
	Total Area In He	С.	1434.09		
2A7D2h1g	Hardiha	Gat	204.94	6092.47	
		Hardiha	655.78	10615.53	
		Obari	161.83	5745.76	
		Samada	46.64	3084.84	

		Silaudhi Kala	43.52	2504.70	
		Silaudhi Khurd	116.81	4644.72	
		Suraucha	134.85	4695.96	
		Tendua Khurd	40.69	3229.61	
	Total Area In Hec.		1405.06		
2A7D2h1h	Chaprau	Chaprau	205.69	6270.51	
		Suhas	124.17	4763.63	
		Tendwa Khurd	39.58	3104.91	
Total Area In Hec.			369.44		
2A7D2h1i	Obari	Chaprau	25.55	2	304.17
		Jamsot	154.49	6	389.92
		Jamua	46.39	4	018.27
		Kancha	31.88	2	012.46
		Obar	345.74	9	479.66
		Semari Lahuri	40.39	2	483.96
		Silaudhi Kala	169.89	5	676.93
	Total Area In Hec.		804.33		
2A7D2h1b	Suhas	Bhari	102.30	4391.91	
		Chaparau	22.31	2336.18	
		Gaura	165.50	5727.57	
		Gausia	20.97	2010.34	

		Jatehara	77.97	4286.57
		Majhila	55.06	3277.77
		Pathara	157.01	5516.29
		Pure Chandel	86.93	4962.10
		Suhas	227.17	8553.32
		Tendua Khurd	11.98	1591.08
	Total Area In Hec.		927.2	
2A7D2h1f	Pathara	Hardiha	112.50	5327.84
		Khorka Dabar	26.22	2337.53
		Nar	79.48	3775.1
		Pathara	150.62	4927.36
		Rauni	54.15	3300.78
		Sampur Khurd	37.43	2781.61
		Tendua Khurd	44.96	2826.37
	Total Area In Hec.		505.36	
2A7D2h1e	Sampur Khurd	Bhojpurwa	77.51	5110.49
		Dhauhan Uchehara	106.47	5075.67
		Jathara	23.56	2802.22
		Newada	59.48	3657.72
		No Name	111.88	4414.24
		Pathara	91.32	4138.66

	Phachkari	61.49	3245.46
	Rauni	35.52	2702.60
	Sampur Khurd	137.16	4886.23
Total Area In Hec.		714.39	

Total area of the watershed is 6154.00 ha. Elevation ranges from 100.00 m to 104.00 m from above mean sea level. Twenty-seven villages, namely Sirhir, Patehra, Dasauti, Salaiyakhurd, Kulbhasa, Hardia, Silaundhikhurd, Silaundhikala, Mojra, Obri, Suraicha, Tenduakhurd, Gat, Chapro, Suhas, Pawari, Jamsot Jamua, SemriLahuri, Pathra, Jatehra, Mjhila, Gora, Purechandel, Kharkadabar, Nar, Rauni, Sampurkhurd, Harghar, Bhojpurwa, Dhauhan, Phachkari, Newada., comes under this project area.

Maximum length and width of the watershed area is 12500 meter and 6000 metre respectively with a length: width ratio is 2.09:1.

The watershed is in the Vindhya region having moderate slopes and drains into river Tons. About 50% of the watershed area has slopes up to 1%, 30% area has slopes up to 1% to 2%, 20% area has slopes from 2 to 3%. A number of streams join the main perennial stream of Tones. Total 19 numbers of streams of different order are found in watershed, with total length 35000 meters. Stream characteristics of the watershed are present in the table -1.4.

Stream Order	Stream number	Mean Stream Length(M)
1 st order	7	21.50
2 nd order	3	8.00
3 rd order	1	5.50
Total	11	35.00

TABLE-1.4: STREAM CHARACTERISTICS OF SELECTED WATERSHED

The climate of the selected project area is semi-arid with an average rainfall (preceding-five year) is 713 mm. out of which about 90% is received during the monsoon season from July to September. Temperature ranges from very high 48°C in the May-June to minimum 5°c during December –January.

The soil of project area is mainly clay, Domat. In the watershed area mainly four types of soil named. Mar, Kaber, Padawa & Rocker which are the main soil type of Vindhya region. Middle portion of the project has minor slope. Agriculture is the main occupation of the people in project area. The main crops are Gram, lentil, Arhar, Bajra. Most of the fields are kept fallow during Kharif season due to this season Green Manuring is the proposed to minimize the runoff and to maintain the soil fertility of the soil.

Natural vegetation of the watershed area is very poor. Babool, Mahua are the main tree of the area. Occasionally Mango, Neem, Sheesham, Ber tree are found in this area. There is no reserve pasture in the watershed area. Due to Ann da Pratha and lack of irrigation water the rate of mortality of planted trees is very high. P.R.A. exercises conducted in the villages of watershed area revealed that inadequate irrigation facilities, low production of field crops.

Fodder shortage, lack of inputs and market facility are some of the major constraints being experienced by the farmers. For this area Amla, Guava, Ber, Bel fruit plants are suitable. 18.00 ha Agro-Horticulture is proposed in the selected area to motivate the farmers to adopt the agro horticulture in practice because of inadequate irrigation water.

S.	Criteria	Maximum		Ranges &	scores	
i	Poverty index (% of poor to population)	10	Above 80 % (10)	80 to 50 % (7.5)	50 to 20 % (5)	Below 20 % (2.5)
ii	% of SC/ ST population	10	More than 40 % (10)	20 to 40 % (5)	Less than 20 % (3)	Safe (0)
iii	Actual wages	5	Actual wages are significantly lower than minimum wages (5)	Actual wages are equal to or higher than minimum wages (0)	Less than 50 % (3)	Above 70 % (Reject)
iv	% of small and marginal farmers	10	More than 80 % (10)	50 to 80 % (5)	Sub critical (2)	Fully covered (0)
v	Ground water status	5	Over exploited (5)	Critical (3)	0 to -33.2 (0) Non DPAP/ DDP Block	
vi	Moisture index/	15	-66.7 & below (15) DDP Block	-33.3 to -66.6 (10) DPAP Block	70 to 80% (5)	

Table 1.5 Criteria and weightage for selection of watershed

	DPAP/DDP Block					
vii	Area under rain-fed agriculture	15	More than 90 % (15)	80 to 90 % (10)	Partially covered (5)	
vii i	Drinking water	10	No source (10)	Problematic village (7.5)	Low- less than 10 % of TGA (5)	
ix	Degraded land	15	High – above 20 % (15)	Medium – 10 to 20 % (10)	Lands with high production & where productivity can be marginally enhanced with reasonable efforts (5)	
X	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)	Neither contiguous to previously treated watershed nor contiguity within the microwatersheds in the project (0)	
xi	Contiguity to another watershed that has already been developed/ treated	10	Contiguous to previously treated watershed & contiguity within the microwatersheds in the project (10)	Contiguity within the microwatersheds in the project but non contiguous to previously treated watershed (5)	50 to 20 % (5)	

Chapter 2 Basic Information of the Project Area

2.1 Land use pattern:

The net geographical area of IWMP-III watershed is about 6154 ha. out of which 4460 ha. is used for Agricultural purposes. Forest area is approximately nil. The area is devoid of any sort of vegetation. The watershed has diversified land uses, namely agriculture Waste land (open scrub), seasonal water bodies etc. Land utilized under different categories are given bellow:

TABLE 2.1THE VARIED PRESENT LAND USE AND AREA UNDER DIFFERENT CATEGORIES IN WATERSHED IS ASBELOW:

S.No.	Name Of	No Of	No Of	Geographical	Forest	Land under	Rainfed	Permanent	Wasteland		Treatable
	Project	Micro	Village	Area Of The	Area	Agriculture	Area	Pastures			Area
		Watershed	S	Villages		Use			Cultivable	Uncultivable	
1	2	3	4	5	6	7	8	9	10	11	12
1	I.W.M.P.	7	39	6154	0	4460	3970	0	958	240	4460
	IIIrd.										
	Allahabad										

(Area in Hectare)

During PRA exercise, the villagers prepared land use and hydrology maps of their villages.

2.2 GEOMORPHOLOGY AND SOILS

2.2.1 Geomorphology: Geomorphologically the area is Alluvial plain, and partly plateau of vindhyan Supergroup. The soil is mainly clay which is easily transportable after detaching causing soil erosion.

2.2.2 Soils: In the watershed area mainly four types of soil named. Mar, Kaber, Padawa & Rocker which are the main soil type of Vindhya region. The soil is mainly clays and sandy loam. The soil is brown to very dark grayish brown in surface colour. The depth of soil is moderate to deep about 25 to 150 cm. The predominant texture of soil is loamy sand and silt and clay. The soil fertility is very poor with low nitrogen, phosphorus and potash. The topography of the area is moderate ranging from 0-5% slope. Main crops are pluses who need more phosphorous. Therefore deficiency of phosphorous is common in this area.

2.2.3 Drainage: Due to highly erodiable nature of the soil, various gullies and nalas have been formed in this area which drain the water of the whole area into the Tons.

2.2.4 VEGETATION

(a) Natural Vegetation:

Natural vegetation of the watershed is very poor. The forest vegetation is predominant with vilayati Babool (prosopis Juliflora) followed by babool (Acacia nilotica). There are occasional occurance of Neem, Mango, Guava, Lemon, Amla, Mahua and Shisham. There is no reserve pasture land in the watershed. Grass patches are seen only on the bunds, road sides and other such places. The principal grasses are Doob & Munj.

(b) Horticulture: Though no organized orchards are present in the watershed, homestead planting of fruit trees of mango, papaya, amla, lemon, ber, bel etc. has been practiced by farmers.

(c) Agro-forestry: The agriculture fields of the village do not have any forest or horticultural plantation. At some places isolated trees of Mahua, Babool, Ber, can be seen, whose frequency is less than one tree per running length of 100 m.

2.2.5 Socio-Economic Profile

2.3. HUMAN AND LIVE STOCK POPULATION

(a) Human Population: The total population of Thirty Nine villages of the watershed is 32313 with average family size of 6 persons. Detail attached on Pg.no. 37-38

(b) Live Stock Population: Total live stock population of the watershed is 20842. Buffalo is preferred as milch animal compare to cow but milk yield is very low. Goats are kept mainly for the meat purpose. Homestead poultry rearing is common among marginal farmers. The breakup of live stock population is attached on Pg.no. 39-40

© Land Holdings: Majority of the watershed farmers are in category of marginal (< 1 ha) and small (1-2 ha). These small land holding are further scattered in different places which makes cultivation very difficult. Distribution of farm families according to the size of their land holdings is given as Pg.no. 35-36

(d) Infrastructure Social Features: The watershed has moderate communication facilities and all 19 villages are approachable through motorable road. Literacy rate in the watershed is very low because except some village all villages are having education facilities up to Primary, Junior High School. Only Two intermediate colleges and two Degree collage in village Pawari and Sirhir. All the villages are electrified and have telephonic connection. Out of 19 villages television is available mostly villages. Nearest small market is Khiri, Kohrar and district headquarter Allahabad. Small land holdings (average less than 1.0 ha) with large family size (average 6 person) and

more than 46% of the labour force of the total population living below poverty line indicate poor socio-economic status of the watershed community However a strong community spirit among the village show 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 labor such as sowing, harvesting, house construction works etc. social maps of the watershed villages drawn by villagers themselives, depicting villages features is attached from Pg.no. 44-45

(e) Means of Communication: The watershed can approached from two main roads

- 1- Allahabad Rewa Road through Nari Bari.
- 2- Allahabad Khiri through Karchhana-Kohdar.

(f) Natural Resource Base: _____ Total rainfed area under watershed is 6154.00 ha at present land under agriculture use total 4460 ha. Main source of irrigation are private tube wells and seasonal water bodies for pre-sowing irrigation only. The natural resource maps of the watershed villages drawn by villagers themselves are attached from Pg.no. 162-187

(g) Importance of Development Institution: In the Venn diagram, farmer's perception was recorded for importance and role of different development institutions is relation to infrastructure development in the villages. Importance has been depicted with the size of the circle and role with distance from the village circle. The Venn diagram of selected villages is attached here with from Pg.no. 162-187

(h)Livelihood: Out of the total population 25406 in the watershed, farming is the major source of livehood for more than 70% off population and 25% population are labours and Balance are service + business class.

2.3.1 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 75 percent of the domestic energy requirement is met from the Agro By-Product and cow dung cake. Rest is met out from the forest outside the village and watershed boundary. Fuel wood is obtained from the forest which is situated in the Block-koraon Outside the Watershed Boundary.

(B) Fodder: Villages do not have any significant dependency on forest based fodder as these sources are not available in the forests. There is shortage of green fodder in winter and summer due to inadequate irrigation facility. Due to lack of fodder availability here is Anna Pratha in this area which is the most important reason for more mortality rate of planted trees also.

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. Therefore other source off generating income should planned to reduce the migration of labours.

<u>Crop Calendar:</u> The present crop calendar in the watershed comprises of fallow-gram, fallow-lentil, fallow-wheat, Arhar-Jawar mixed cropping, paddy-wheat, Til-wheat, fallow-Potato, Bajra-lentil etc. Fallow-wheat ,fallow-gram, fallow-lentil, Arhar + Jawar are the most prevailing crop rotation on the agricultural lands both in rainfed 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. There is lack of cultivation of crop other than gram lentil and muster in the watershed.

2.3.2 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, Amla, Guava, Ber, Lemon, 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: Arhar, Gram, Lentil, Jowar + Arhar, Bajra, are the most preferred agricultural crop in the watershed followed by wheat and paddy.

(d) Historical Time Line: The Historical Timeline is the chronological record of important events in the history of a village which is useful in understanding its background in the context of watershed development. Historical time line depicting important events in respect of different villages of the watershed has prepared through PRA "Historical timeline" of the selected village are attached from Pg.no. 33 - 38

(e) <u>Agriculture:</u> Various agriculture land uses in the watershed are extended to diversified land capabilities starting from marginal to good class IInd lands. The watershed distinctly has three types of land i.e. leveled, sloping and degraded and undulating. The agriculture is practiced on all these soil types though the productivity considerably varies. The total area in agriculture in the watershed is about 5914.00 ha. The water (both for irrigation and drinking) is most scarce natural resource in the watershed. The operation of tube wells for irrigation of agricultural crops frequently leads to the drinking water problem to the farmers for watershed.

The agricultural soils in the watershed have diversified texture i.e. clay, silty clay, sand mixed with gravel and loam which are located in patches throughout the watershed. Four types of soil *Mar*, *Kaber, Padwa and Rocker* are the main soil of district-Allahabad. The heavy soils are almost kept fallow during rainy season. 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. To test the quality of irrigation water samples of water of each selected village has sent to laboratory for testing.

Rehabitation of waste lands with appropriate drought hardy species live introduction of 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, Rehabitation of wasteland and substantial income generation for socio-economic uplift of farmers in the watershed.

One Year Crop Rotation:

Single Cropping: Fallow-Lentil, Fallow-gram, Fallow-wheat, arhar, Fallow-peanut.

Double Cropping: Bajra - Lentil, Arhar + Jowar, Mazie-Potato.

Irrigated Agriculture:

<u>One Year Crop Rotation:</u> Urad/Moong-wheat, Urad/Moong-Potato, Urad/Moong-Vegetables, Paddy-Gram, Paddy-Lentil, Maize-Potato.

(f) <u>**Crop Productivity:**</u> 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 rainfed crops are particularly very poor. Large variation has been noticed in productivity of wheat (13 Kuintal.) and rice (21.31 Kuintal/ ha.) under rainfed 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 6 to 7 months only.

The farmers also do not have suitable cropping systems to deal aberrant weather. Weeds impose considerable constrant 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 but it is not only irrational but also unscientific and beset with low productivity. 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 ,biofertilizers ,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.

(g) 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 villagers have their traditional village ponds, practice of field bunding, production of Arhar crop on the bunds in paddy area which typically constitute agriculture related ITKs in the watershed. 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 Vindhyachal region 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.

(h) Forest And Other Vegetation

Forests: The selected watershed has no resource forest area.

Horticulture / Agro-forestry:

(I)Agro-Forestry:

The agro 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 the other agro-forestry systems like bund and boundary plantations also have good potential to cater the firewood and fodder demands of the rural community it 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 ber, bel, amla, guava, teak etc may be applied for benefit of farmers under rainfed to irrigated production systems on leveled to slopy 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.

(j) **Horticulture:** The watershed does not have organized orchards; however, farmers have fruit plants (mango, ber, bel, guava, mahua, amla 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. The watershed is located near the national marg and has scope to transport the produce to the nearest market Allahabad.

2.4 Soil and land Capability Classification:

(a) Soil and land Capability Classification:

<u>Soil Morphology:</u> The selected area is situated in the south of District-Allahabad. The entire watershed is topographically divided into three major land forms. Accordingly, the soils of watershed have been grouped in the three major categories.

- 1- Plain land
- 2- Moderate slopy land
- 3- Ravinous land.

Soil Profile: A Representative Soil Profile



1-1.65 (Heavy texture clay-soil Blackish Brown in color)

7 –8 m [Bed rock (red sand stone)]

Morphology Of Typical Solid Profile Of Tones Watershed

Horizon	Depth(Cm)	Morphology
Α	0-150	Blackish brown in colour, clay content > 80% , soft and easily erodible when
		moist, hard when dry, high elasticity, Cracks occur when dried.
B	150-800	whitish brown in colour, very hard when dry, clay content $> 60\%$
С	>800	Bedrock(Red and White sand stone)

(b) Soil Characteristics and Fertility Status:

Four types of soils are in the watershed area. The fertility status is about normal range due to production of major pulses crops. There is scarcity of phosphorus due to continuous growing of pulses. The two soil samples of each village have been send to laboratory. 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. Receipts of sending samples are enclosed on Pg.no. 58

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 Tones watershed brought out the prevailing LCC classes as I,II,III,IV.

LCC class	Area ha
Ι	260.0
II	2710.00
III	870.00
IV	620.00
Total	4460.00

Area Under Various LCC Classes Tones Watershed

LCC maps prepared by PRA method is enclosed from page no.161-219

The land capability classification of the Tones watershed provides reasonable good information with regard to capability of soil, that could be used for agriculture, agri-horticulture, and pasture development. The majority of land form is coming under class II, which give an insight of good agriculture production potential of this watershed. The productivity of these lands could be further enhanced by adoption of simple soil & water conservation measures like contour bunding for 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.

						IN	IFRAS	STRU	JCTURE	DETA	AILS				
S. No	NAME OF VILLAGE	ANG ANW ADI	PRI MA- -RY SCH OOL	SECO NDA- -RY SCH OOL	GOVT COLL A-GE	BAN K	POS T OFF I-CE	Р. Н. С.	VETERI NA-RI	MA RK- ET	COL L MILL OF CEN TR-E	CONNEC TIVI-TY FROM MAIN ROAD	ELECTR ICI-TY	AGRO INDUS TRY CENT RE	OTH ERE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Sirhir	_	हैं।	_	_	_	_	_	_	_	_	_	हैं।	_	_
2	Patehra	_	-	_	_	-	_	_	_	_	_	_	हैं।	_	_
3	Slaiyakhurd	-	है।	-	-	-	_	-	-	-	_	-	हैं।	-	-
4	Kulbhasa		_	_	_	-	-	-	_	-	_	_	हैं।	_	-
5	Hardia	हैं।	हैं।	_	_	_	_	-	_	_	_	_	हैं।	_	_
6	Silaundhikhu rd	_	_	_	_	_	_	_	_	_	_	_	हैं।	_	_
7	Silaundhikala	-				गैर	र आबा	द	_	-		_			-
8	Dasauti	_	_	_	_	-	_	_	_	_	-	_	हैं।	_	_

Table 2.2 DETAIL OF INFRASTRUCTURE VILLAGE WISE

9	Mojra		• हैं।	-	-	-	-	-	-	-	-	-	हैं।	-	-
10	Obri	耆	। हैं।	-	-	-	-	-	_	-	_	-	हैं।	_	-
11	Suraicha	_	• हैं।	-	-	-	-	_	-	_	-	_	हैं।	-	-
12	Tenduakhurd	_		-	-		गैर	आबा	द	_	-	_		-	-
13	Gat	_	• हैं।	हैं।	-	-	-	-	_	_	-	_	हैं।	-	-
14	Chapro	_	• हैं।		-	-	-	_	_	_	-	_	हैं।	-	-
15	Suhas	耆	। हैं।	_	_	हैं।	हैं।	हैं।	हैं।	हैं।	_	हैं।	हैं ।	-	-
16	Pawari	_	• हैं।										हैं ।	-	-
17	Jamsot	_	• हैं।	हैं।									हैं ।	-	-
18	Jamua	耆	I –										हैं ।	-	-
19	Semri lahuri	ŤE	। हैं।	हैं।	_	-	_	-	_	-	_	र्थ ह	र्छ	_	_
20	Newada	_	_	_	_			xS	j vkckn		_	-	_	_	-
21	Pathra	_	हैं।	_	-	-	-	-	-	-	-	_	हैं ।	-	-
22	Jatehra	_	हैं।	-	-	-	-	_	-	-	-	-	हैं।	-	-
23	Majhila	_	_	-	_			गै	र आबाद			_	_	_	_
24	Gaura	-	है।	हैं।	_	-	हैं ।	हैं।	_	-	_	_	र्म	-	-
25	Purechandel	-	है।	-	-	-	_	_	_		-	_	हैं।	_	-

27	Nar	-	हैं।	_	_	_	_	—	_	_	-	-	हैं।	-	_
28	Rauni	_	है।	1 15	_	_	当 ら	ן אנט	_	_	_		हैं।	_	_
29	Sahpurkhurdj	-	है।	_	_	_	_	_	_	_	_	_	है।	_	_
30	Harghar	-	ŧ,	_	_	_	_		-	-	_	1	है।	_	
31	Bhojpurwa	-	है।	_	_	_	_		_	_	_	-	हैं।	_	_
32	Dhauhan	_	ŝ.	हैं।	_	_	हैं	สื่อ	_	_	_	-	हैं।	_	_
33	Phachkari	-	हैं।	_	_	_	_	_	_	_	_	_	हैं।	_	_

Table 2.3 DETAIL OF AGRICULTURE IMPLIMENTS

		TYPE OF INFRASTRUCTURE								
SL.NO.	NAME OF VILLAGE	TRACTOR (NOS)	SPRAYERS MANNUAL/POWER (NOS.)	CULTVATOR/HARROW (NOS.)	SEED DRILL (NOS.)					
1	2	3	4	5	6					
1	Sirhir	7	_	7	-					

2	Patehra	2	_	2	_
3	Slaiyakhurd	9	_	9	_
4	Kulbhasa	10	_	8	_
5	Hardia	6	_	6	_
6	Silaundhikhurd	3	_	3	_
7	Silaundhikala	4	_	4	_
8	Dasauti	_	_	_	_
9	Mojra	8	_	8	3
10	Obri	10	_	10	4
11	Suraicha	7	1	11	_
12	Tenduakhurd	गैरआबादी	_	_	_
13	Gat	7	_	7	_
14	Chapro	9	_	9	_
15	Suhas	18	_	18	_
16	Pawari	2	_	_	_
17	Jamsot	3	_	3	_
18	Jamua	7	1	7	_
19	Semri lahuri	7	_	7	_
20	Newada	गैर आबादी	_	_	_
21	Pathra	8	_	8	_

22	Jatehra	5	_	5	_
23	Majhila	गैर आबादी	_	_	_
24	Gaura	11	_	11	_
25	Purechandel	5	_	5	-
26	Kharkadabar	7	_	7	_
27	Nar	8	_	8	_
28	Rauni	10	_	8	_
29	Sahpurkhurdj	3	_	10	_
30	Harghar	5	—	12	—
31	Bhojpurwa	8	_	9	_
32	Dhauhan	11	_	11	_
33	Phachkari	5	_	5	_

SL.NO.	NAME OF VILLAGE	VILLAGE PONDS	COMMUNITY	DETAIL OF COMMUNITY PROPERTY RESOURCES								
		/TANK	BUILDING	PERMANENT MARKET	TEMPLES/PLACES OF WORSHIP	FOREST Land	WOOD LOT	PASTURE	ORCHED			
1	2	3	4	5	6	7	8	9	10	11		
1	Sirhir	1	1	_	_	_	_	_	_	-		
2	Patehra	1	1	—	1	-	—	_	_	_		
3	Slaiyakhurd	1		—	1	—	—	—		_		
4	Kulbhasa	_	हॉ	_	1	—	—	_	Ι	-		
5	Hardia	3	_	_	_	_	—	_	—	-		
6	Silaundhikhurd	_	1	_	1	-	—	_	_	-		
7	Silaundhikala	_	_	-	1	_	_	_	_	-		
8	Dasauti	_	_	-	_	_	_	_	_	-		
9	Mojra	1	1	_	1	_	_	_	_	_		

Table 2.4 DETAIL OF COMMUNITY PROPERTY RESOURCES

10	Obri	-	1	_	_	-	—	-	_	-
11	Suraicha	1	_	_	2	_	_	_	_	_
12	Tenduakhurd	-	_	_	_	_	_	_	_	-
13	Gat	1	_	_	1	_	_	_	_	-
14	Chapro	1	1	_	1	_	_	_	_	-
15	Suhas	2	1	हॉ	3	है	_	_	_	-
16	Pawari	-	1	_	1	_	_	_	_	-
17	Jamsot	-	_	_	_	_	_	_	_	-
18	Jamua	2	_	_	1	_	_	_	_	-
19	Semri lahuri	2	_	_	1	_	_	_	_	_
20	Newada	-	_	गैर आबाद		_	_	_	_	_
21	Pathra	1	_	_	1	_	_	_	_	-
22	Jatehra	-	_	_	1	_	_	_	_	-
23	Majhila	-	_	गैर आबाद		_	_	_	_	-
24	Gaura	2	1	_	1	_	_	_	_	-
25	Purechandel	-	—	—	_	-	_	-	_	-
26	Kharkadabar	-	_	_	_	-	—	-	—	-
27	Nar	1	1		1	-	_	_	_	-

28	Rauni	1	1	_	1	_	_	_	_	_
29	Sahpurkhurdj	1	Ι	_	1	_		Ι	Ι	
30	Harghar	_	हॉ	_	1	_	_	_	_	-
31	Bhojpurwa	3	_	_	_	_	_	_	_	_
32	Dhauhan	_	1	_	1	_				_
33	Phachkari	_	_	_	1	_	_	_	_	_

Table 2.5 LAND HOLDING VILLAGE-WISE

S.No.	Name of village	Marginal	Small	Medium	Total
1	Sirhir	250	305	50	605
2	Patehra	65	35	7	107
3	Slaiyakhurd	300	160	40	500
4	Kulbhasa	200	100	20	330
5	Hardia	255	280	35	570
6	Silaundhikhurd	-	-	-	-
7	Silaundhikala	310	398	88	796
8	Dasauti	32	20	8	60
9	Mojra	150	80	20	250
10	Obri	10	05	03	18
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11	Suraicha	103	55	14	172
12	Tenduakhurd	53	28	07	88
13	Gat	266	142	35	443
14	Chapro	31	17	04	52
15	Suhas	103	56	14	173
16	Pawari	286	152	38	476
17	Jamsot	05	03	01	09
18	Jamua	51	27	07	85
19	Semri lahuri	151	81	20	252
20	Newada	03	01	01	05
21	Pathra	61	33	08	102
22	Jatehra	19	10	03	32
23	Majhila	38	20	05	63
24	Gaura	15	2	3	20
25	Purechandel	10	1	3	14
26	Kharkadabar	25	05	7	37
27	Nar	20	3	4	27
28	Rauni	15	6	4	25
29	Sahpurkhurdj	25	8	7	40
30	Harghar	55	18	9	82

Table 2.6	VILLAGE	WISE H	IUMAN F	POPULA	ΓΙΟΝ

S.No.	Name of village	Total	Male	Female	Children
		population			
1	Sirhir	810	425	385	204
2	Patehra	1686	887	799	388
3	Slaiyakhurd	973	513	460	186
4	Kulbhasa	1544	807	737	376
5	Hardia	1028	551	477	256
6	Silaundhikhurd	2108	1106	1002	478
7	Silaundhikala	-	-	-	-
8	Dasauti	2918	1550	1368	671
9	Mojra	1059	561	498	233
10	Obri	664	371	293	145
11	Suraicha	122	70	52	32
12	Tenduakhurd	639	350	299	104
13	Gat	437	228	209	81
14	Chapro	819	434	385	180
15	Suhas	226	124	102	39

16	Pawari	667	344	323	102
17	Jamsot	201	109	92	78
18	Jamua	1297	708	589	290
19	Semri lahuri	3059	1625	1434	535
20	Newada	349	185	164	72
21	Pathra	483	277	206	87
22	Jatehra	22	12	10	12
23	Majhila	925	473	492	205
24	Gaura	204	112	92	67
25	Purechandel	1403	740	663	329
26	Kharkadabar	487	261	626	112
27	Nar	104	56	48	23
28	Rauni	560	302	258	95
39	Sahpurkhurdj	193	104	89	63
30	Harghar	118	65	53	28
31	Bhojpurwa	693	371	322	161
32	Dhauhan	429	216	213	102
33	Phachkari	285	147	142	67
	Total	26512	14084	12882	5801

Table 2.8 VILLAGE WISE ANIMAL POPULATION

S.No.	Village	Buffalo	Cow	Ox	Calf	Buffalo child(M)	Buffalo child(F)	Goat	Hen
1	Dhobkhara	-	-	-	-	-	-	-	-
2	Sirhir	180	160	30	120	40	80	250	150
3	Patehra	160	150	70	90	72	87	200	70
4	Slaiyakhurd	260	320	45	80	87	95	240	30
5	Kulbhasa	140	360	50	65	55	64	160	20
6	Hardia	180	150	36	70	24	55	170	50
7	Silaundhikhurd	-	-	-	-	-	-	-	-
8	Silaundhikala	310	250	20	110	50	110	310	200
9	Dasauti	100	150	-	72	44	63	25	06
10	Mojra	100	75	15	50	25	10	23	35
11	Samoda	-	-	-	-	-	-	-	-
12	Obri	05	16	02	10	04	06	08	-
13	Suraicha	85	120	30	65	38	57	40	08
14	Tenduakhurd	150	260	75	160	45	80	70	-
15	Gat	250	300	50	115	97	145	2000	250

16	Chapro	100	400	-	150	60	75	50	100
17	Samda	-	-	-	-	-	-	-	-
18	Suhas	120	200	-	60	30	40	25	10
19	Pawari	370	280	60	130	95	158	130	50
20	Jamsot	97	150	40	80	46	67	50	10
21	Jamua	30	90	10	40	15	24	18	-
22	Semri lahuri	06	05	02	1	2	03	04	6
23	Newada	30	90	10	40	15	24	18	-
24	Kauncha	-	-	-	-	-	-	-	-
25	Pathra	70	100	30	50	20	40	60	40
26	Jatehra	105	150	50	80	40	70	50	35
27	Majhila	20	25	8	10	6	8	50	40
28	Gaura	180	82	22	42	20	32	110	70
29	Purechandel	25	20	-	22	8	30	88	40
30	Gausia	-	-	-	-	-	-	-	-
31	Kharkadabar	205	180	30	75	35	40	130	70
32	Nar	85	75	16	28	27	32	95	45
33	Rauni	45	25	9	12	8	15	50	40
34	Sampurkhurd	90	80	50	30	28	12	100	45

	Total	3893	4732	817	2032	1101	1666	4929	1672
39	Phachkari	20	22	5	15	20	12	5	2
38	Uchehra	-	-	-	-	-	-	-	-
37	Dhauhan	15	12	-	8	8	10	-	-
36	Bhojpurwa	150	200	16	50	12	40	150	100
35	Harghar	210	235	36	102	25	82	250	150

CHAPTER – 3 WATERSHED ACTIVITIES

3. 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 medium and high 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. 3.1. Scientific Planning:

i) Cluster Approach

This envisages a broader vision of Geo-hydrological unit which involves treating a cluster of micro-watershed. The IWMP -III Project consists of seven micro- watersheds namely 2A7D 2d3e, 2A7D2h1g, 2A7D2h1h, 2A7D2h1i, 2A7D2h1b, 2A7D 2h1f, 2A7D2h1e, as their respective codes.

ii) Base line Survey

To access the impact of any watershed development programme a detailed baseline survey has to be conducted. This acts 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 *Gram Pradhan and Secretary* ncludes a detailed questionnaire which was 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, 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, well in the area, crop taken in the field, Cropping pattern, fertilizer used and various sources of irrigation in the field.

iii) Participatory Rural Appraisal (PRA)

Participatory approach provides a new path for planning, implementing, 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. Various tools like Matrix ranking, Venn Diagram were used to identify various local vegetations (apt for afforestation), Fodders crops, various institution and their significance in the life of the farmers **iv) Use of GIS and Remote sensing for planning**

Remote Sensing and GIS tools have been used for eating the watershed boundary and the villages comes under this watershed area. **a) Prioritization**

Geographical Information System(GIS) has been used for prioritization process. Various layer maps were created like Geo-morphological, Soil, 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

A 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 1 meter at a scale of 1:4000 was used for identifying various locations for soil and water conservation structures.

c) Hydrological modelling

Hydrology modelling technique was used for locating drainage, stream length, flow direction, sink, 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.

Table no. 3.1: Details of Scientific Planning and Inputs in IWMP projects S. No.

Scientific criteria/ inputs used	Whether scientific criteria was used
(A) Planning	
Cluster approach	Yes
Whether technical back-stopping for the project has been arranged? If yes, mention the name of the Institute	Yes

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	Yes
(1) Project and DRDA cell/ZP	Yes
(2) DRDA and SLNA	Yes
(3) SLNA and DoLR	Yes
Availability of GIS layers	Yes
1. Cadastral map	Yes
2. Village boundaries	Yes
3. Drainage	Yes
4. Soil (Soil nutrient status)	Yes
5. Land use	Yes

3.2. Institution buildingi) Watershed Committee (WC)

It is a committee that is constituted by Gram Sabha to implement the watershed project with technical support of WDT in the village. The Gram Sabha of the village selects the chairman of the watershed committee with the secretary who will be a paid functionary. The watershed committee has a pivotal role to play during and after the project implementation period.

3.3 Problems And Need Of Area:

<u>Problem Identification and Prioritization</u>: Food sufficiency, economic growth and environmental security has identified as the major issues to be addressed in the watershed area. The area has moderate to steep slope hence highly prone 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 39 villages listed off problems representing the whole watershed was prepared. Problems have ranked as per their total Weightage in the 39 villages. Lack of irrigation water is the greatest problem experienced by the people followed by low function of field crops, lack of fodder availability and low animal productivity

3.4 Problems Identification and Prioritization for Tones Watershed

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

3.5 STRENGTH, WEAKNESS, OPPORTUNITY AND THREAT (SWOT) ANALYSIS IS A USEFUL DECISION SUPPORT TOOL.

A SWOT analysis of Tones 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 erotic rain fall
5- Resource pool of crop genetic diversity	5- Fragile geography
6- Awareness of farmers about watershed management	6- Fragmented land holding.
program	7- Heavy infestation of wild animals
7- Well established CPR maintaining and sharing system	8- Problem of fuel and fodder
8- Well maintained seasonal water bodies.	
9- Social outlook of the community towards	
Opportunities(O)	Threats (T)
1- Wide range of annual and personal crops	1- Prone to adverse climate like drought
2- Scope of regular employment opportunity to check out	2- High market risk
migration	3- Social conflicts owing to PRI & WSM policies and
3- Strengthening of existing irrigation system	local policies.
4- Conductive climate for rainfed crop diversification	4- Weak coordination among line departments.
5- Good scope for agro forestry and dry land horticulture.	5- Lack of expertise of implementing agencies in different
6- Potential for collective active action and management	aspect of WSM.
of CPRs.	

3.6 PROPOSED LAND USE

Watershed management plan for Tones 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 forming 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:

S.No.	Land use	Present (ha)	Proposed(ha)
1	Agriculture	5219	5219.00
a	Rainfed	4956	4581.00
	(i) Crop	4956	4343.00
	(ii) Agro-forestry	-	238.00
b	Irrigated	263	375.00
	(i)Assured	-	45.00
	(ii)Partial	263	330.00
2	Wasteland	280	280.00
	(a) Afforestation	-	32.00
	(b) Pasture	-	-
	(c) Untreatable	240	240.00
3	Village land	655	655.00
	Total	6154	6154

Present and Proposed land use plan of the selected watershed:

3.7 WATER RESOURCE DEVELOPMENT AND SOIL CONSERVATION MEASURES

Status Of Present Water Resources Utilization: There is no natural water body in the selected area which may used for irrigation. Present assured/Partial irrigation is done by private tub wells.

Proposed Plan For Irrigation Of Water Resources: Sprinkler sets for irrigation from private tube well are distributed by Agriculture Department to Tube well holders on the basis of & Irrigation group. Effort will made to help the tube well holders of selected area to form group and to get sprinkler sets. Therefore, more area will be irrigated by the available irrigation water.

<u>New Water Harvesting Structures:</u> In the 280.00 ha area new and renovation of existing watershed harvesting structure / Gully Plug / Earthen C.D. will be constructed for water harvesting.

<u>**Crop Production:**</u> In the light of the land capability classification of the watershed and need of the farmers, the reallocation of watershed area rainfed and irrigated lands has been done for improving productivity, income generation and maintaining ecological balance. The production crop management plan has the following salient features:

Organic Farming System: Organic Farming System will be achieved in the following manner:

- 1- Maximum use of crop residues in the Integrate plant Nutrients System(IPNS)
- 2- Prevision of legumes composed in the cropping system.
- 3- Green manuring with appropriate legumes.
- 4- Rapid compost using crop residue, domestic and farm waste animal dung.
- 5- <u>Milching and Crop Residue Management:</u> Sources of milch material includes weeds, pruning from agro-foresting trees and *in situ* grown legumes and green manure crops. The concept of live milching is based on the principle of mixed cropping whereby a fast growing

legumes is established before or simultaneously along with a widely spaced seasonal grain crops such maize, and is incorporated into the soil at an appropriate stage to act on as a milch. Application of organic milch material 4-5 t / ha is recommended.

- 6- <u>**Green Manuring:**</u> To improve the organic matter and physical condition of the soils, green manuring crops like Dhaincha and sun hemp which supply 20-30 t / ha of green mutter and 85-125 kg/ha of Nitrogen shall be raised and incorporated in to the soil. In 918, ha area green manuring is planned.
- 7- <u>Seed Treatment With Rhyzobium Culture:</u> The seed of leguminous crop like black gram, soybean, pea, etc. should be treated with Rhyzobium culture before sowing.
- 8- <u>**Tillage operation:**</u> It is advisable to carry out tillage operation like ploughing followed by planking just after the harvest of Kharif crops. This will be helpful in conserving moisture for sowing and germination of Rabi crop in addition, coverage of soil surface with milch material is also recommended to ensure the soil moisture.
- 9- Introduction Of Improved Seeds/Varieties: Short duration and high yielding varieties suitable for this region have been proposed in long duration varities. Demonstrations of High Yielding Varieties (HYVs) of different crops in 172.00 ha is planned in the watershed however for self sufficiency in seed requirement farmers of the watershed will be involved to produce required quantity of seed of the recommended crop varieties.
- 10- **Sowing Methods:** Agronomical practices like contour cultivation, strip or inter-cropping, optimum time of sowing , optimum plant population by keeping proper distance through line sowing and placement of fertilizer below the seed will help in enhancing the crop yields without involving monetary inputs.
- 11- <u>Control Of Insects Pest And Diseases:</u> Pod borer in gram is the major insect in the watershed area leading to loss in crop productivity. Similarly white blister is also a common

disease in the mustard crop the management strategies of these insects, pests and diseases will also be demonstrated in the watershed for benefit of the growers.

12- **Dry Land Horticulture:** In the selected area 225.0 ha land is planned for horticulture and agro horticulture. Species like amla, guava, ber, bel, lemon will be planted at suitable spacing in the watershed.

SOCIO ECONOMIC ANALYSIS OF THE PROJECT

Sustainability and Environmental Security:

In the proposed watershed management plan of Tones, proper blending of bio engineering measures will be applied. The proposed land use plan will improve the land utilization index and crop diversification index significantly as compared to existing one. It will help in maintaining ecosystem integrity on sustained basis.

Economic Analysis:

Economic analysis of the project is carried out by taking direct benefits and costs, considering 30 year project life at 10% discount rate. For the purpose of economic analysis, whole watershed development plan is divided into four sectors namely agriculture (rainfed and irrigated), pure horticulture, agro-horticulture. Net present value (NPV), Benefit Cost Ratio (BCR), Payback Period (PBR) and internal rate of return (IRR) criteria is employed to judge the economic efficiency of each enterprise, sector and project as a whole.

ECONOMICS OF AGRICULTURAL SECTOR OF TONS WATERSHED

S.No.	Sector	Area in ha	NPV (Rs.)	BCR	PBP (yrs.)	IRR %
1.	Irrigated Agriculture	530.00	1637700.00	1.70:1	3	15.60
2.	Rainfed Agriculture	3980.00	8974900.00	1.45 : 1	1	-
	Total Agriculture	4510.00	10612600.00	1.57:1	1	-
	5					

Year	Construction cost	Operation and maintenance cost	Benefit
	(00,000 Rs.)	(00,000 Rs.)	(00,000 Rs.)
1	107.0400	4.28	12.84
2	151.1114	10.32	43.88
3	116.4886	14.98	88.04
4	73.5900	17.92	143.43
5	86.9700	21.40	214.08
6	-	21.40	214.08
7	-	21.40	214.08
8	-	21.40	214.08
9	-	21.40	214.08
10	-	21.40	214.08

Table 3.2 BENEFIT COST RATIO OF I.W.M.P.- IIIrd ALLAHABAD

Table 3.3 BY BENEFIT, COST RATIO METHOD

S.No	Item	1	2	3	4	5	6	7	8	9	10
1	Discount factor 10%	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386
2	Total cost(00,000 Rs.)	111.32	161.43	131.46	91.51	108.37	21.40	21.40	21.40	21.40	21.40
3	Benefit(00,000 Rs.)	12.84	43.88	88.04	143.43	214.08	214.08	214.08	214.08	214.08	214.08

4	\sum Cost	101.18	133.34	98.72	62.50	67.29	12.06	10.97	9.99	9.07	8.26	513.38
5	\sum Benefit	11.67	36.24	66.11	97.96	132.94	120.74	109.82	99.97	90.76	82.63	848.84

Benefit cost ratio =
$$\frac{\sum Benefit}{\sum Cost}$$

=
$$\frac{848.84}{513.38}$$

=1.65:1
Hence OK

Table 3.4 STATUS OF FOOD REQUIREMENT AND AVAILABILITY PER ANNUM IN PAISUNI & OHAN WATERSHED

S.No.	Item	Requirement	Befo	ore Project	Proposed		
		Q / yr.	Availability	Deficit or Surplus	Availability	Deficit or Surplus	
			Q / yr.	Q / yr.	Q / yr.	Q / yr.	
1.	Cereals	24587.00	19680.00	+ 4907.00	25250.00	+ 663.00	
2.	Pulses	6635.00	8719.00	+2084.00	9645.00	+3010	
3.	Oil Seeds	574.00	4385	-689.00	5581.00	+507.00	
4.	Vegetables	16945.00	11575.00	-5370.00	17619.00	+675.00	

Table 3.5 HISTORICAL TIMELINE VILLAGE-WISE OF I.W.M.P. III

HISTORICAL TIMELINE VILLAGE-WISE OF I.W.M.P. IIIrd

Village Sirhir			Village Gat		
Year	Activity	Year	Activity		
1763	Village was established. At a distance 40 Km. from Allahabad	1861	Village was established At a distance 39 Km. from Allahabad		
	Koraon Road		Koraon Road		
1985	First Television was purchased in this village by				
	Sri Premnath Mishra	2001	First Television was purchased by Sri Nandeshwar Singh		
1991	First Motorbike was purchased in this village by				
	Sri . Prem Nath Mishra	1984	First Motorbike was purchased by Sri Shiv Barat Singh.		
1965	First Tractor was purchased in this village by				
	Sri Prem nath Mishra.	1961	First Tractor was purchased by Sri Pradunath Singh.		
2005	Village was Electrified.				
		2005	Village was Electrified.		

Village Hardia			Village Tenduakhurd
Year	Activity	Year	Activity
1974	Village was established, At a distance 37 Km. from Allahabad Koraon Road.	1711	Village was established. At a distance 44 Km. from Allahabad Koraon Road.
1980	First Television was purchased in the village Sri Taulan Ram	1990	FirstTelevision was purchased by Sri Lal Babu.
1988	First Motorbike was purchased in this village by Sri Vijai Bahadur	1990	First Motorbike was purchased by Sri Lal Babu.
1961	First Tractor was purchased in this village by	1980	First Tractor was purchased by Sri Lal Babu.
	Sri Raj Narayan	1984	Village was Electrified.
1997	Village was Electrified.		

Village Chaprao			Village Patehra
Year	Activity	Year	Activity
1711	Village was established, At a distance 45 Km. from Allahabad Koraon Road	1710	Village was established, At a distance 46 Km. from Allahabad Koraon Road
1980	First Motorbike was purchased in this village by Sri Tej narayan	1992	First Motorbike was purchased by Sri Sheetala Prasad
1985	First Telivision was purchased in this village by Sri Tej Narayan	1994	First Telivision was purchased in this village by Sri Sheetala Prasad
1985	First Tractor was purchased in this village by Sri Tej Narayan.	1985	First Tractor was purchased by Sri Vishwanath.
		1984	Village was Electrified.
1995	Village was Electrified.		
	Village Suhas		Village Majhila
Year	Activity	Year	Activity
1780	Village was established, At a distance 42 Km. from Allahabad Koraon Road.	1764	Village was established, At a distance 43 Km. from Allahabad Koraon Road.
1988	First Telivision was purchased in this village by Sri Rambahadur Pandey	1988	First Telivision was purchased in this village by Sri Tej narayan Shukla
1975	First Radio was purchased in this village by Sri Rambahadur Pandey	1978	First Radio was purchased in this village by Sri Mangru Pal
1990	First Motorbike was purchased in this village by Sri Ram bahadur pandey	2001	First Motorbike was purchased in this village by Sri Tei Narayan
1982	First Tractor was purchased in this village by	1988	First Tractor was purchased in this village by
	Sri Ram Sagar		Sri Tej Narayan
1984	Village was Electrified.	2005	Village was Electrified.

Village Phachkari			Village Newada		
Year	Activity	Year	Activity		
1960	Village was established, At a distance 40 Km. from Allahabad	1751	Village was established, At a distance 39 Km. from Allahabad		
	Koraon Road.		Koraon Road.		
2007	First Television was purchased in the village	2000	First Television was purchased		
		1990	First Motorbike was purchased.		
1975	First Tractor was purchased	1972	First Tractor was purchased		
1990	First Motorbike was purchased in this village	1990	Village was Electrified.		

2007	Village was Electrified.		
	Village Dasauti		Village Kharka Dabar
Year	Activity	Year	Activity
1690	Village was established, At a distance 41 Km. from Allahabad	1690	Village was established, At a distance 40 Km. from Allahabad
	Koraon Road.		Koraon Road.
1991	First Television was purchased in this village	1972	First Radio was purchased.
		1990	First Television was purchased
1991	First Motorbike was purchased in this village	1990	First Motorbike was purchased
			First Tractor was purchased.
1961	First Tractor was purchased in this village.	1988	
1965	Village was Electrified.		Village was Electrified.
		1996	
	Village Nar		Village Rauni
Year	Activity	Year	Activity
1528	Village was established. At a distance 70 Km. from Allahabad	1428	Village was established, At a distance 56 Km. from Allahabad
	Nari Bari Koraon Road		Nari Bari Koraon Road
2005	Construction of First Road.		
1973	First Radio was purchased in the village by Vishwanath.	1980	First Radio was purchased by Ramu.
1980	First Television was purchased in this village by Sri Mukutdhari.	1993	First Television was purchased by Harishankar.
1987	First Motorbike was purchased in this village by Sri	1993	First Tractor was purchased by Banni Pathak.
	Lovkesh Patel.	1992	Village was Electrified.
1975	First Tractor was purchased in this village by Sri		
	Heera Lal.	1994	First road was constructed.
2004	Village was Electrified.		
	Village Shahpur khurd		Village Harghar
Year	Activity	Year	Activity
1960	Village was established, At a distance 40 Km. from Allahabad	1751	Village was established, At a distance 39 Km. from Allahabad
	Koraon Road.		Koraon Road.
2007	First Television was purchased in the village	2000	First Television was purchased
		1990	First Motorbike was purchased.
1975	First Tractor was purchased	1972	First Tractor was purchased
1990	First Motorbike was purchased in this village	1990	Village was Electrified.
2007	Village was Electrified.		
	Village Bhoipurwa		Village Semrilauhri
Year	Activity	Year	Activity
1690	Village was established, At a distance 41 Km. from Allahabad	1690	Village was established, At a distance 40 Km. from Allahabad

	Koraon Road.			Koraon Road.
1991	First Television was purchased in this village		1972	First Radio was purchased.
			1990	First Television was purchased
1991	First Motorbike was purchased in this village		1990	First Motorbike was purchased
				First Tractor was purchased.
1961	First Tractor was purchased in this village.		1988	
1965	Village was Electrified.			Village was Electrified.
			1996	
	Village Jamsot			Village Obri
Year	Activity		Year	Activity
1528	Village was established. At a distance 70 Km. from Allah	nabad	1428	Village was established, At a distance 56 Km. from Allahabad
	Nari Bari Koraon Road			Nari Bari Koraon Road
2005	Construction of First Road.			
1973	First Radio was purchased in the village by Vishwanath.		1980	First Radio was purchased by Ramu.
1980	First Television was purchased in this village by	Sri	1993	First Television was purchased by Harishankar.
	Mukutdhari.			
1987	First Motorbike was purchased in this village by	Sri	1993	First Tractor was purchased by Banni Pathak.
1987	First Motorbike was purchased in this village by Lovkesh Patel.	Sri	1993 1992	First Tractor was purchased by Banni Pathak. Village was Electrified.
1987 1975	First Motorbike was purchased in this village by Lovkesh Patel. First Tractor was purchased in this village by	Sri Sri	1993 1992	First Tractor was purchased by Banni Pathak. Village was Electrified.
1987 1975	First Motorbike was purchased in this village by Lovkesh Patel. First Tractor was purchased in this village by Heera Lal.	Sri Sri	1993 1992 1994	First Tractor was purchased by Banni Pathak. Village was Electrified. First road was constructed.
1987 1975 2004	First Motorbike was purchased in this village by Lovkesh Patel. First Tractor was purchased in this village by Heera Lal. Village was Electrified.	Sri Sri	1993 1992 1994	First Tractor was purchased by Banni Pathak. Village was Electrified. First road was constructed.

	Village Silaundhikala		Village Pawari
Year	Activity	Year	Activity
1961	Village was established, At a distance 40 Km. from Allahabad	1751	Village was established, At a distance 39 Km. from Allahabad
	Koraon Road.		Koraon Road.
2006	First Television was purchased in the village	2004	First Television was purchased
		1995	First Motorbike was purchased.
1972	First Tractor was purchased	1972	First Tractor was purchased
1995	First Motorbike was purchased in this village	1996	Village was Electrified.
2004	Village was Electrified.		
Village	Purechandel		Village Suraicha
Year	Activity	Year	Activity
1692	Village was established, At a distance 41 Km. from Allahabad	1692	Village was established, At a distance 40 Km. from Allahabad
	Koraon Road.		Koraon Road.
1958	First Television was purchased in this village	1975	First Radio was purchased.
		1990	First Television was purchased

1916	First Motorbike was purchased in this village		1992	First Motorbike was purchased
				First Tractor was purchased.
1966	First Tractor was purchased in this village.		1981	
1962	Village was Electrified.			Village was Electrified.
			1992	
	Village Kulbhasa			Village Jamua
Year	Activity		Year	Activity
1522	Village was established. At a distance 70 Km. from Allahaba	ad	1412	Village was established, At a distance 56 Km. from Allahabad
	Nari Bari Koraon Road			Nari Bari Koraon Road
2004	Construction of First Road.			
1972	First Radio was purchased in the village by Vishwanath.		1981	First Radio was purchased by Ramu.
1981	First Television was purchased in this village by S	Sri	1983	First Television was purchased by Harishankar.
	Mukutdhari.			
1999	First Motorbike was purchased in this village by S	Sri	1999	First Tractor was purchased by Banni Pathak.
	Lovkesh Patel.		1993	Village was Electrified.
1980	First Tractor was purchased in this village by S	sri		C
	Heera Lal.		1991	First road was constructed.
2002	Village was Electrified.		-	

	Village Gedeora		Village Chandas
Year	Activity	Year	Activity
1710	Village was established, At a distance 40 Km. from Allahabad	1703	Village was established, At a distance 39 Km. from Allahabad
	Koraon Road.		Koraon Road.
2007	First Television was purchased in the village	1994	First Television was purchased by sheetla prasad
		1992	First Motorbike was purchased. By sheetla prasad
1982	First Tractor was purchased by Rajnarayan Yadav	1985	First Tractor was purchased by Sheetala prasad
1984	First Motorbike was purchased in this village	1984	Village was Electrified.
	by Prayag ji Shukla		
2002	Village was Electrified.		

	Village Mamauli Majhahli	
Year	Activity	
1612	Village was established. At a distance 50 Km. from Allahabad	
	Koraon Road	
1973	First Radio was purchased in the village by Gopi chandra	
1985	First Television was purchased in this village by	
	Sri Gopi chandra	
1985	First Motorbike was purchased in this village by Gopi	
	chandra	
1998	First Tractor was purchased in this village by	
	Sri Gopi chandra	
1997	Village was Electrified.	
	-	

3.7.6 Employment Generation

Labour migration in search of gainful employment is one of the major problems in the remote watershed in particular. Casual employment opportunities to the tune of more than 1.41 lakhs will be generated during the implementation of the project activities. However, changes in the land use pattern and adoption of other subsidiary enterprises will generate employment opportunities for persons of 8500.00 No. in the watershed.

3.8. SEASONAL ANALYSIS

Seasonal analysis has done with the help of farmers about rainfall patterns, cultivated crops, employment, income, availability of fuel, fodder, migration, transport and health hazards, etc. with respect to seasonal variation in a year which is shown as below:

Month Item	January	February	March	April	May	June	July	August	September	October	November	December
Festivals			Holi	Baisakhi			Raksha	bandhan		Dashara	Diwali	Guru Parv
Sowing crops/			Mu	stard		Maize, Aı	Paddy, har			W	heat	
harvesting				Wheat, A	Arhar				Maize, Paddy			
Disease	Cough	a & Cold				Ga Intes Loose-	stro stinal/ motion.		Fever			
Purchase/ Expending					00	0000					00000	000000
Rains							(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,		
Fodder Scarcity												
Fuel/ wood scarcity												
Loaning period (required)												
Marriage Period						S						
Drinking Water Scarcity												
Irrigation Water Scarcity											-	

Table 3.6 Capacity Building Activities

1	2	3	4	5	6	7		8		9
S.No.	District	Project Stakeholders	Total No. of Persons	No. Of Persons Trained so far	No. of Persons be trained during	No. of Persons trained during	Sources of funding Funds util for training		tilised	
					Current financial Year	current financial year	(a) DoLR	(b) anyOther(Pl.Specify)	(a) DoLR	(b) any Other (Pl. Specify)
	Allahabad	PIAs	18	4	14	4	DoLR	_	_	-
2.		WDTs	11	4	7	4	DoLR	-	-	-
3.		UGs	539	_	539	-	DoLR	_	-	_
4.		SHGs	300	-	300	-	-	_	_	_
5		WCs	70	_	70	_	_	_	_	_
6.		Other	_	_	_	_	-	_	_	_

Table 3.7 Expected/Estimated out comes of IWMP III (2011-15) Allahabad.

S.No.	Item	Unit	Pre Project	Post Project Status
1	2	3	4	5
1	Status of the water table	Mtr.	16 to 17	15 to 16
2.	Ground water Structure repaired/ rejuvenated	Nos.	-	122
3.	Quality of Drinking water	Quality	Normal	Good Quality
4.	Availability of drinking water	No of Days	280	365
5.	Increased in irrigated area	Ha.	263	330
6.	Changing in Cropping / Land use pattern	-	-	-
	A-Area under agriculture crop	Ha.	5219	5219
	i- Area under Single crop	Ha.	4520	4980
	ii- Area under double crop	Ha.	1510	3180
	iii- Area under Multiple crop	Ha.	-	210
	iv- Croping intensity	%	115	160
7.	Increased in area under vegetation cover	Ha.	25	270
8.	Increased in area under horticulture	Ha.	-	238
9.	Area under fule & fodder	Ha.	30	225
10.	Increased in milk production	per capita per day per	1.50 to 2.00	2.00 to 3.00

		Ltr.		
11.	No. of SHG	Nos	0	30
12.	Increased in livily hood	Rs./capita/- Anum	Approximate <9000	Approximate 17000
13.	Migration	Nos.	280	112
14.	SHG Federation Formed	Nos.	-	2
15.	Credit linkage with bank	Nos.	-	30

CHAPTER – 4 BUDGETING

4.1 Budgeting

The first step in budgeting is dividing the cost of the project into various component s as detailed in the common guidelines. It helps us in further identifying activities under different components and allocate appropriate funds.

Table 4.1 PHASING OF WORK (FINANCIAL & PHYSICAL) IWMP IVth

Financial Outlay.

(Amount in Lacs.)

							Iı	nstallment			
Agency	Component	Particulars	Unit	Quantity		20% Preparatory Phase	50 Work	% Phase	30 Consol Pha	% idation ase	TOTAL (100%)
						1 st Year	2 nd Year	3 rd Year	4th year	5th year	
	Monitoring	-	-	-	-	0.26760	0.20070	0.20070	0.20070	0.20070	1.0704
ST NIA	Evaluation	-	-	-	-	1.6056	0.93660	0.93660	0.93660	0.93660	5.352
SLNA	I & CB	-	-	-	-	1.0704	0.2676	0.2676	-	-	1.6056
	Consolidation	-	-	-	-	-	-	-	-	0.5352	0.5352
	TOTAL	-	-	-	-	2.9436	1.4049	1.4049	1.1373	1.6725	8.5632
	Monitoring	-	-	-	-	0.53520	0.53520	0.53520	0.53520	0.53520	2.676
WCDC	I & CB	-	-	-	-	2.676	0.669	0.669	0.8028	-	4.8168
webe	Consolidation	-	-	-	-	-	-	-	-	0.5352	0.5352
	TOTAL	-	-	-	-	3.2112	1.2042	1.2043	1.338	1.0704	8.028
	Administration	-	-	-	-	5.352	7.2252	7.2252	3.4788	3.4788	26.76
	Monitoring	-	-	-	-	0.26760	0.33450	0.33450	0.33450	0.33450	1.6056
		Roof top rain water harvesting for ground water recharge	Nos	9	0.11125	1.00125	-	-	-	-	1.00125
		Soaking Pit	Nos	43	0.03900	1.6770	-	-	-	-	1.6770
		Hand pump	Nos	9	0.62500	5.62500	-	-	-	-	5.62500
	EPA	Krishak Vikas Manch	Nos	9	0.59200	5.32800	-	-	-	-	5.32800
		Tree planting with Brick-Guard	Nos	18	0.1750	0.31500	-	-	-	-	0.31500
		Bathroom	Nos	9	0.44630	4.01670	-	-	-	-	4.01670
		Repairing of well	Nos	3	1.14835	3.44507	-	-	-	-	3.44507
PIA		TOTAL	-			21.408					21.408
	I & CB	-	-			12.3096	3.0774	3.0774	1.8732	-	20.3376
	DPR	-	Nos			5.352					5.352
		Goat-keeping	Nos	32	0.43950	1.7588	4.8345	5.27400	0.87900	1.31850	14.064
	Livelihood	General Merchant shop	Nos	26	0.25000	1.0000	2.0000	2.0000	0.7500	0.7500	6.500
		Nadef Compost	Nos	62	0.11260	1.01340	2.5898	2.1394	0.675600	0.56300	6.9812
		Dairy Work	Nos	20	0.50000	1.50000	3.00000	3.00000	1.50000	1.00000	10.00000
		TOTAL (1)	-			5.2714	12.4243	12.4134	3.8046	3.6315	37.5452
	Production System	Livestock Development Activities		Detail Attache	d	0.8526	3.0217	3.0326	0.8296	1.0000	8.7328
	& Micro-Enterprise	Crop Production &	Ha.	186	0.05975	1.434	3.64475	3.64475	1.195	1.195	11.1135

		Diversification of agriculture									
		Demonstration of Green- Manuring	Ha.	938	0.00625	0.7625	1.9375	1.9375	0.6125	0.6125	5.8625
		Introduction of Agro-forestry agriculture	Ha.	7.5	2.2700	2.3835	5.73179	5.73179	1.589	1.589	17.205
		TOTAL (2)	-			5.4326	14.3357	14.3466	4.2234	4.3965	42.7348
		GRAND TOTAL (1& 2)	-			10.7040	26.7600	26.7600	8.0280	8.0280	80.2800
	Consolidation	-	-	-	-	-	-	-	-	1.0704	1.0704
	TOTAL	-	-		64	55.3932	37.3971	37.3971	13.7145	12.9117	156.8136
	Administration	-	-		04	5.352	7.2252	7.2252	3.4788	3.4788	26.7600
		Construction of Bunds (Field, Contour, Submergence, Marginal & Peripheral)	Ha.	3745.00	0.04258	25.353	45.724	32.2302	28.0814	28.0814	159.47
		Rainfed Horticulture with Fencing	Ha.	15	0.6080	1.1400	2.9500	1.9600	1.5320	1.5320	9.1200
		Rainfed Horticulture without Fencing	Ha.	223	0.15050	4.195	10.856	7.235	5.6375	5.6375	33.561
		Total of Rainfed Horticulture	Ha.	238		5.335	13.806	9.201	7.1695	7.1695	42.681
WC	Watershed Work	New & renovation of existing Water Harvesting structures/ Gully Plugs/ Chek Dams	Ha.	445	0.12500	6.953	17.994	11.992	9.343	9.343	55.625
		Afforestation & development of Silivi-Pastoral System	Ha.	32	0.10350	0.414	1.071	0.714	0.5565	0.5565	3.312
		Farm Pond for 2 ha. Area	Nos	7	3.1650	-	4.495	6.330	3.165	3.165	22.155
		Drop Spillway for 30.00 hect	Nos	7	1.8000	-	5.4000	3.600	1.800	1.800	12.60
		Drop Spillway for 50.00 hect Pipe Outlets	Nos	2	2.0850	2.0850	2.08500 8.304/48	- 5.190/30	- 3.806/22	3.806 3.806/22	4.170
		TOTAL				40.1400	103.88	69.2572	53.9214	53.9214	321.12
	Consolidation	-	-			-	-	-	-	13.9152	13.9152
	GRAND TOTAL	-	-			45.492	111.1052	76.4824	57.4002	71.3154	361.7952
	Administration	-	-			10.704	14.4504	14.4504	6.9576	6.9576	53.52
	Monitoring	-	-			1.0704	1.0704	1.0704	1.0704	1.0704	5.352
	Evaluation	-	-			1.6056	0.9366	0.9366	0.9366	0.9366	5.352
	EPA	-	-			21.408	-	-	-	-	21.408
	I & CB	-	-			16.056	4.014	4.014	2.676	-	26.76
	DPR	-	-			5.352	-	-	-	-	5.352
	Watershed Work	-	-			40.14	103.88	69.2572	53.9214	53.9214	321.12
Total	Livelihood		-			5.2414	12.4243	12.4134	3.8046	3.6315	37.5452
	Production system & micro- enterprise		-			5.2714	12.3357	14.3466	4.2234	4.3965	42.7348
		GF	RAND TOT	AL		-	-	-	-	16.0560	16.0560
	Consolidation	-	-								
	GRAND TOTAL	-	-			107.04	151.1114	116.4886	73.590	86.97	535.20

Table 4.2 Physical Outlay.

(Area in Ha.)

							Insta	llment			
Agency	Component	Particulars	Unit	Quantity	Unit	20% Preparatory Phase	50 Work	% Phase	30 Conso Ph)% lidation nase	TOTAL (100%)
						1 st Year	2 nd Year	3 rd Year	4th vear	5th vear	
	Monitoring					-	-	-	-	√ √	\checkmark
SLNA	Evaluation					-	V	V	V	V	V
	I & CB							\checkmark		-	
	Consolidation					-	-	-	-		
	Monitoring						\checkmark	√		\checkmark	
WCDC	I & CB									-	
	Consolidation					-	-	-	-	V	
	Administration					N	N	Ň	N	N	V
	Monitoring				-	N	N	N	N	N	N
		for ground water recharge	Nos	9	No	9	-	-	-	-	9
		Soaking Pit	Nos	43	No.	43	-	-	-	-	43
	EPA	Hand pump	Nos	9	No.	9	-	-	-	-	9
		Krishak Vikas Manch	Nos	9	No.	9	-	-	-	-	9
		Tree planting with Brick-Guard	Nos	18	No.	18	-	-	-	-	18
		Bathroom	Nos	9	No.	9	-	-	-	-	9
		Repairing of well	Nos	3	No.	3	-	-	-	-	3
		TOTAL	-	100		100	-	-	-	-	100
PIA	I & CB	-	-			V		V	V	-	\checkmark
	DPR	-	Nos	1	No.	\checkmark	-	-	-	-	1
		Goat-keeping	Nos	32		4	11	12	2	3	32
	Livelihood	Mobile Repairing/ G.M.	Nos	26		4	8	8	3	3	26
		Nadef Compost	Nos	62		9	23	19	6	5	62
		Dairy Work	Nos	20	-	3	6	6	3	2	20
		TOTAL	-		-	20	48	45	14	13	140
		Livestock Development Activities		Detail Attache	d	\checkmark	\checkmark	\checkmark	V		\checkmark
	Production System	Crop Production & Diversification of agriculture	Ha.			24.00	61.00	61.00	20.00	20.00	186.00
	& Micro-Enterprise	Demonstration of Green- Manuring	Ha.			180.00	310.00	310.00	98.00	98.00	938.00
		Introduction of Agro-forestry agriculture	Ha.			1.05	2.525	2.525	0.70	0.70	7.50

		TOTAL	-	-	-	147.05	973.525	373.525	118.70	118.70	1131.50
	Consolidation	-	-	-	-	-	-	-	-		
	Administration	-	-	-	-	V	V	V	V	V	V
		Construction of Bunds (Field, Contour, Submergence, Marginal & Peripheral)	Ha.			596.00	1074.00	757.00	659.00	559.00	3745.00
		Rainfed Horticulture with Fencing	Ha.			1.90	4.80	3.30	2.50	2.50	15.00
		Rainfed Horticulture without Fencing	Ha.			28.00	72.00	48.00	37.50	37.50	223.00
WC	Watershed Work										
	Watershed Work	New & renovation of existing Water Harvesting structures/ Gully Plugs/ Chek Dams	Ha.			55.00	144.00	96.00	75.00	75.00	445.00
		Afforestation & development of Silivi-Pastoral System	Ha.			4.00	11.00	7.00	5.00	5.00	32.00
		Farm Pond for 2 ha. Area	Nos			-	3	2	1	1	7
		Drop Spillway for 30.00 hect	Nos			-	3	2	1	1	7
		Drop Spillway for 50.00 hect	Nos			1	1	-	-	-	2
		Pipe Outlets	Nos			-	48	30	22	22	122
	Consolidation	-	-	-	-	-	-	-	-	V	V
	Administration	-	-	-	-	N	N	N	V	N	N
	Monitoring	-	-	-	-		\checkmark	\checkmark	\checkmark		\checkmark
	Evaluation	-	-	-	-		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
	EPA	-	-	-	-	100	-	-	-	-	100
	I & CB	-	-	-	-		\checkmark		\checkmark	-	\checkmark
	DPR	-	-	-	-	1	-	-	-	-	1
			Nos	-	-	1	55	34	24	24	138
Total	Watershed Work	-	Ha.	-	-	484.90	1305.80	911.30	779.00	799	4460.00
	Livelihood				I	√ √	V	√ √	√	V	√
	Production system & micro- enterprise		-			147.50	373.525	373.525	118.70	118.70	1131.50
	Consolidation	-	-	-	-	-	-	-	-		\checkmark
	CRAND TOTAL	_	Nos	-	-	1	55	34	24	24	138
	GRAND IOTAL	-	Ha.	-	-	684.90	1305.80	911.30	779.00	779.00	4460.00

Chapter 5

DRUNGIND DEFUL STIME





DRAWING OF BATHROOM (Cloth Changing Room)


S.N.	Description of work	No.	Length	Width	Height/Depth	Quantity
			(M)	(M)	(M)	
1	Earth work in digging	2	3.30	0.60	0.80	3.168
		2	1.33	0.60	0.80	1.276
		1	1.33	0.30	0.80	0.319
			1		Total	4.763 cum
2	Laying of sand in foundation	2	3.11	0.37	0.10	0.230
		2	1.36	0.37	0.10	0.100
		1	1.36	0.15	0.10	0.020
			1		Total	0.350 cum
3	C.C.W. 1:4:8 in foundation	2	3.11	0.37	0.10	0.230
		2	1.36	0.37	0.10	0.100
		1	1.36	0.15	0.10	0.020
			1		Total	0.350 cum
4	Brick work 1:6 in foundation up to plingth	2	3.11	0.37	0.15	0.345
		2	1.36	0.37	0.15	0.150

Table 5.1 Detail Estimate of praposed Public Toilet Room (Bathroom)

		1	1.36	0.11	0.15	0.022
		2	2.97	0.23	0.75	1.024
		2	1.50	0.23	0.75	0.517
		1	1.50	0.11	0.75	0.123
	Super Structure	2	2.97	0.23	2.70	3.688
		2	1.50	0.23	2.70	1.863
		1	1.50	0.11	2.70	0.445
		I			Total	8.177 cum
5	D.P.C. 1:2:4	2	2.97	0.23	0.025	0.034
		2	1.50	0.23	0.025	0.017
		1	1.50	0.11	0.025	0.004
		I			Total	0.055 cum
6	Lintel 1:2:4 for door	2	1.00	0.23	0.10	0.046
	R.C.C. for window	2	0.75	0.23	0.10	0.034
					Total	0.080 cum
7	Deduction from Brick work					
	door	2	0.80	0.23	1.80	0.662
	window	2	0.80	0.23	0.60	0.220
					Total	0.882 cum
	Net brick masonary work	8.177 -	0.882			7.295 cum
8	Plastering 1:4	2	3.11	-	3.00	18.66
		2	1.96	-	3.00	11.76
		4	1.20	-	2.70	12.96

		4	1.50	-	2.70	16.20
		2	1.20	1.50	-	3.60
		Total	l	I I		63.18
	Deduction for doors	2	0.80	-	1.80	2.88 sq.m
	Net plastering work			63.18 – 2.88		60.30 sq.m
9	Flooring C.C.W. 1:4:8	2	1.50	1.20	0.075	0.270 cum
	C.C.W. 1:2:4	2	1.50	1.20	0.025	0.090 cum
10	white washing	2	3.11	-	3.00	18.66
		2	1.96	-	3.00	11.76
		4	1.20	-	2.70	12.96
		4	1.50	-	2.70	16.20
		2	1.20	1.50	-	3.60
		Tota	1			63.18 sq.m
	Deduction for doors	2	0.80	-	1.80	2.88 sq.m
	Net white washing		1	63.18 - 2.88		60.30 sq.m
11	Roof R.C.C. 1:2:4	1	3.57	1.96	0.10	0.699 cum

Table 5.2 CONSUMPTION OF MATERIALS

S.	Particulars	Quantity	Cement	Coarse	Brick	G.S.B	M.S. Bar 8 mm	10-20	Door No.	Lime
N .T			(Bags)	sand (cum)	(Nos)	(m^3)		m.m.		(kg.)
N.								A 1		
								Grit		
1	sand laying	0.350 cum	-	0.350	-	-	-	-	-	-
2	C.C.W. 1:4:8	0.620 cum	2.10	0.279	-	0.576	-	-	-	-
3	C.C.W. 1:2:4	0.095 cum	0.57	0.039	-	-	-	0.080	-	-
4	R.C.C. 1:2:4	0.779 cum	4.75	0.327	-	-	0.0079/61.15 kg	0.662	-	-
5	Brick work 1:4	7.295 cum	13.13	1.969	3356	-	-	-	-	-
6	Plastering 1:4	60.300 m^2	6.63	0.904	-	-	-	-	-	-
7	White washing	60.300 m^2	-	-	-	-	-	-	-	6.00
8	Doors	2 Nos	-	-	-	-	-	0.742	2	-
	Total		27.18	3.868	3356	0.576	0.0079/61.15 kg	0.742	2 Nos.	6.00
	Say		27	3.870	3360	0.576	0.0079/61.15 kg	0.742	2 Nos.	6.00

Table 5.3 LABOUR CHARGES

1.	Earth Work	4.76 cum	33.33/cum	158.65
2.	Sand laying	0.350 cum	33.33/cum	11.66
3.	C.C.W. 1:4:8	0.620 cum	492.00/cum	305.04
4.	C.C.W. 1:2:4	0.095 cum	492.00/cum	46.74
5.	R.C.C.1:2:4	0.779 cum	560.00/cum	436.24
6.	Brick work	7.295 cum	370.00/cum	2699.15
7.	Plastering	60.300 m ²	40.00/m ²	2412.00
8.	White washing	60.300 m ²	2.70/m ²	162.81
9.	Curing	7.295 cum	25.00/cum	182.37
10.	Chowkidar	6 Man days	100.00/Man day	600.00
	Rs. 7,014.66			

Cost Of Meterial

S.No.	Particulars	Quantity	Rate	Amount
1.	Cement	27 bags	285.00/bag	7695.00
2.	Coarse sand	3.87 cum	910.00/cum	3521.70
3.	Bricks	3360 Nos.	4500.00/thousand	15120.00
4.	M.S. Bar 8 mm Ø	61.15 Kg.	345.00/qtl	2109.67
5.	G.S.B 25-40 m	0.576 cum	855/cum	492.48
6.	G.S. Grit 10-20 mm	0.742 cum	1250/cum	927.50
7.	Doors with frame	2 Nos.	3850.00 each	7700.00
8.	White lime	6 Kg.	8.00/kg	48.00
	·	Total		Rs. 37,614.35

LABOUR CHARGES

Total Expenditure					
1. Cost of Materials	44636.00				
2. Labour Charges	14,494.92				
Total	Rs. 59130.92				
Say	Rs. 59130.00 only				

DRAWING OF SOAKING PITS WITH SILTING TANK

All Dimensions

Are in Metre



Table 5.3 DETAIL ESTIMATE OF SOAKING PIT & CHANNEL OF LENGTH 1.50 M

S.No.	Description of Work	No.	L.	B.	D./H.	Quantity	
1.	Earth work in cutting	1	3.14 x 0.75 x 0.75	-	1.50	2.64 cum	
2.	Laying of Khanda	1	3.14 x 0.75 x 0.75	-	0.60	1.059 cum	
3.	Laying G.S.B. 25-50 mm	1	3.14 x 0.75 x 0.75	-	0.45	0.794 cum	
4.	Laying of G.S.Grit 10-20 mm	1	3.14 x 0.75 x 0.75	-	0.15	0.264 cum	
5.	Laying of Coarse sand	1	3.14 x 0.75 x 0.75	-	0.15	0.264 cum	
6.	Laying of G.S.B. 25-50 mm	1	3.14 x 0.75 x 0.75	-	0.15	0.264 cum	
7.	Earth work	1	1.50	0.50	0.40	0.30 cum	
8.	Laying of sand	1	1.50	0.47	0.10	0.070 cum	
9.	Brick work 1:4	1	1.50	0.47	0.11	0.077 cum	
10.	Brick work 1:4	1 x 2	1.50	0.11	0.15	0.049 cum	
	Total of (9.) + (10.) Brick work 1:4.						
11.	Plastering 1:4	1 x 2	1.50	0.56	-	1.680 m^2	

Table 5.4 ABSTRACT OF MEASUREMENT

1.	Earth work	2.64 + 0.30	2.94 cum
2.	Laying of Khanda		1.059 cum
3.	Laying of G.S.B. 25-50 mm	0.794 + 0.264	1.058 cum
4.	Laying of G.S.Grit 10-20 mm		0.264 cum
5.	Laying of coarse sand	0.264 + 0.070	0.334 cum
6.	Brick work 11cm 1:4		0.126 cum
7.	Plastering 1:4		1.680 m^2

Table 5.5 CONSUMPTION OF MATERIAL

S.No.	Description of work	Quantity	Cement (bag)	Brick (nos)	Khanda (cum)	G.S.B. 25-50 mm (cum)	G.S.Grit 10- 20 mm (cum)	Coarse Sand
1.	Laying of khanda	1.059 cum	-	-	1.059	-	-	-
2.	Laying of G.S.B.	1.058 cum	-	-	-	1.058	-	-
3.	Laying of G.S.Grit	0.264 cum	-	-	-	-	0.264	-
4.	Laying of coarse sand	0.334 cum	-	-	-	-	-	0.334
5.	Brick work 1:4	0.126 cum	0.17	60	-	-	-	0.030
6.	Plastering 1:4	1.680 m^2	0.18	-	-	-	-	0.025
	Total		0.35	60	1.059	1.058	0.264	0.389

Table 5.6 COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Khanda	1.059 cum	1025.00/cum	1085.47
2.	Cement	0.35 Bags	285.00/Bag	99.75
3.	Brick	60 nos	4500.00/Thousand	270.00
4.	Coarse Sand	0.389 cum	910.00/cum	353.99
5.	G.S.B. 25-50 mm	1.058 cum	855.00/cum	904.59
6.	G.S.Grit	0.264 cum	1250.00/cum	330.00
		Total		Rs. 3043.80

Table 5.6 LABOUR CHARGES

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth work	2.94 cum	36.66/cum	107.78
2.	Khanda laying	1.059 cum	33.33/cum	35.29
3.	G.S.B. laying	1.058 cum	33.33/cum	35.26
4.	G.S.Grit laying	0.264 cum	33.33/cum	8.79
5.	Laying of sand	0.334 cum	33.33/cum	11.13
6.	Brick work 1:4	0.126 cum	370.00/cum	46.62
7.	Plastering 1:4	1.680 m^2	$40.00/m^2$	67.20
8.	Curing	0.126 cum	25.00/cum	3.15
	То	tal		Rs. 315.22

Total Expenditure						
1. Cost of materials	3043.80					
2. Labour Charges	315.22					
Total	Rs. 3,359.02					
Say	Rs. 3,360.00 only					

Table 5.7 DETAIL ESTIMATE OF SILTING TANK

S.No.	Description of Work	No.	L.	В.	D./H.	Quantity
1.	Earth Work	1	0.70	0.70	0.50	0.24 cum
2.	Sand Laying	1	0.52	0.52	0.10	0.027 cum
3.	Brick Work	1	0.52	0.52	0.11	0.029
		2	0.52	0.11	0.30	0.034
		2	0.30	0.11	0.30	0.019
		Total				0.082 cum
4.	Plastering	4	0.30	-	0.30	0.360
		2	0.52	-	0.11	0.114
		2	0.30	-	0.11	0.066
		1	0.30	0.30	-	0.090
		0.630 m^2				
5.	Steel Filter 4" Ø	1				1 nos.
6.	P.V.C. Pipe 110 mm Ø	1	1.00	-	_	1.00 m

Table 5.8 CONSUMPTION OF MATERIALS

S.No.	Description of Work	Quantity	Cement	Coarse	Brick	P.V.C. Pipe	Steel Filter
			(bags)	Sand (cum)	(nos.)	110 mm Ø	
1.	Sand Laying	0.027 cum	-	0.027	-	-	-
2.	Brick Work 1:4	0.082 cum	0.11	0.019	39	-	-
3.	Steel Filter 4"	1 nos.	-	-	-	-	1 nos.
4.	P.V.C. Pipe 110 mm Ø	1.0 m	-	-	-	1.00 m	-
5.	Plastering	0.63 m^2	0.06	0.009	-	-	-
	Total		0.17	0.055	39	1.00 m	1 nos.

COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Coarse Sand	0.055 cum	910.00/cum	50.05
2.	Cement	0.17 bags	285.00/Bag	48.45
3.	Brick	39 nos.	4500.00/Thousand	175.50
4.	Steel Filter 4" Ø	1 nos.	25.00 each	25.00
5.	P.V.C. Pipe 110 mm Ø	1.00 m	150.00/m	150.00
	Rs. 449.00			

LABOUR CHARGE

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	0.24 cum	36.66/cum	8.79
2.	Sand Laying	0.027 cum	33.33/cum	0.89
3.	Brick Work	0.082 cum	370.00/cum	30.34
4.	Plastering	0.63 m^2	$40.00/m^2$	25.20
5.	Fixing of pipe & filter	-	-	25.00
	Total	Rs. 90.22		

Total Expenditure						
1. Cost of materials	449.00					
2. Labour Charge	90.22					
Total	Rs. 539.22					
	Say Rs. 540.00 only					
TOTAL EXPENDITURE OF SC	AKING PIT & SILTING TANK					
1. Soaking Pits	3360.00					
2. Silting Tank	540.00					
	Rs. 3900.00					

Table 5.9 DETAIL ESTIMATE OF INDIA MARK-II HAND PUMP

DISTRICT - ALLAHABAD U.P.

S.No.	Description of work	Unit	Quantity	Rate	Amount
1	Transportation of rig machine, hand Pump material, P.V.C. Pipe, strainer and cement from store to work site.	work	1	3000.00	3000.00
2	Supply of material to install Hand Pump i- Lowering and installation of India mark-II Hand Pump with G.I. Pipe & connecting rods. ii- 140 mm P.V.C. Pipe 8kg/cm2. iii- medium G.I.Pipe of the 32 mm Ø.	No.	1	5380.00	5380.00
		metre metre	20 30	240.00 202.90	4800.00 6087.00
3	Boring work by D.T.H. Rig machine and lowering of P.V.C. assembling		50	396.00	19800.00
4	Development of Hand Pump after installation	work	1	100.00	100.00
5	work after development with material	work	1	50.00	50.00
6	construction of Platform of 1.86 m $Ø$ with all material and cement	work	1	2525.00	2525.00
7	construction of channel with all material and labour		3	125.00	375.00
8	Embossing work		1	50.00	50.00
9	Water testing work	work	1	400.00	400.00
		I I		Total	Rs. 42,567.00
				Says	Rs. 42,600.00

DRAWING OF KRISHAK VIKAS MANCH



- **DESCRIPTION**
 - 1. C.C.W. 1:4:8.
 - 2. R.R. Stone masonry- 1:4
 - 3. Plastering- 1:4
 - 4. Raised Pointing- 1:3.

Table 5.10 DETAIL ESTIMATE OF PANCHAYATI CHABUTARA

S.No.	Description of Work	No.	L.	В.	D/H	Quantity
1.	Earth work in foundation					
	Long Wall	2	6.40	0.60	0.85	6.52
	Short Wall	2	4.30	0.60	0.95	4.38
					0.85	
	Total					10.90 cum
2.	Laying of Sand					
	Long Wall	2	6.20	0.60	0.10	0.744
	Short Wall	2	4.30	0.60	0.10	0.516
	Total					1.26 cum
3.	C.C.W. 1:4:8					
	Long Wall	2	6.20	0.60	0.15	1.116
	Short Wall	2	4.30	0.60	0.15	0.774
	Total					1.89 cum
4.	Brick work 1:4 in foundation & super structure					
	Foundation.					
	Long Wall	2	6.20	0.48	0.60	3.571
	Short Wall	2	4.52	0.48	0.60	2.2
	Super Structure					
	Long Wall	2	6.00	0.35	1.00	4.200
	Short Wall	2	4.30	0.35	1.00	1.505
	Total	1	<u> </u>	<u> </u>	<u> </u>	11. 878cum

5.	Earth work in filling	1	5.30	4.30	0.75	17.09 cum
6.	C.C.W. 1:4:8	1	5.30	4.30	0.15	3.418 cum
7.	C.C.W. 1:2:4	1	5.30	4.30	0.05	1.139 cum
8.	Raised plastering 1:4					
	Long Wall	2	6.00	-	1.00	12.00
	Short Wall	2	5.00	-	1.00	10.00
	Тор	1	5.30	4.30	-	22.79
Total						44.79 m ²

ABSTRACT OF WORK

1.	Earth Work	27.99 cum
2.	Sand Laying	1.260 cum
3.	C.C.W. 1:4:8	1.890 cum
4.	Brick work 1:4	11.878 cum
5.	C.C.W. 1:2:4	1.139 cum
6.	Plastering 1:4	44.79 m^2

CONSUMPTION OF MATERIALS

S.No.	Particulars	Quantity	Cement (cum)	Coarse Sand (cum)	Brick (No)	G.S.B. 25- 40 mm (cum)	Stone Grit 10-20 mm (cum)
1.	Sand Laying	1.260 cum	-	1.260	-	-	-
2.	C.C.W 1:4:8	1.890 cum	6.42	0.85	-	1.757	-
3.	Brick work	11.878 cum	21.38	3.207	5464	-	-
4.	C.C.W. 1:2:4	1.139 cum	6.94	0.478	-	-	0.968
5.	Plastering	44.79 m ²	4.92	0.671	-	-	-
	Total	1	39.66	6.466	5464	1.757	0.968
	Say		40 Bags	6.50	6470	1.75	0.968

COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Cement	40 Bags	285/Bag	11400.00
2.	Coarse Sand	6.50 cum	910.00/cum	6915.00
3.	Brick	5470 cum	4500.00/Hundred	24615.00
4.	G.S.B. 25-40 mm	1.75 cum	855.00/cum	1496.00
5.	G.S. Grit 10-20 mm	0.968 cum	1250.00/cum	1210.00
	Total	·		Rs. 44636.00

LABOUR CHARGES

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	27.99 cum	36.66/cum	1026.11
2.	Sand Laying	1.26 cum	33.33/cum	41.99
3.	C.C.W. 1:4:8	1.89 cum	494.00/cum	933.66
4.	C.C.W. 1:2:4	1.139 cum	494.00/cum	2210.72
5.	Brick work	11.878 cum	1.878 cum 370.00/cum	
6.	Plastering 1:4	44.79 m ² 40Sq/mt		1791.60
7.	Curing Charges	11.878 cum	40.00/cum	471.48

8.	Chowkidar	6 Man Days	100.00/Man Day	600.00
9.	10% Transpotation charge			
	Material cost			4463.60
	Rs. 14285.96			

Total Expenditure				
1. Cost of Materials	44636.00			
2. Labour Charges	14,494.92			
Total	Rs. 58921.96			
Say	Rs. 58922.00 only			



(All dimensions in Metre)

DRAWING OF EARTHEN CHEKDAM / GULLY PLUG



DESIGN OF CONTOUR BUND

Type of Soil	-Clay		
Rain fall	-24 hr in cm -25 cm		
Field Stop -1%			
Vertical Interval (VI)	$= [s/3+2] \times 0.3$		
	$= [1/3+2] \times 0.3$		
	= 0.70 m		
Horizontal Interval (HI)	= 100 x V.I/s		
	$= 100 \ge 0.7/1$		
Height of bund h	$=\sqrt{(\text{Rex VI})/50}$	Re=maximum rainfall in cm	
	$=\sqrt{(25 \times 0.7)/50}$		
	$=\sqrt{0.35}$		
	= 0.59		
	Say 0.60 m		
Free board	=15% of height minimum -10 cm		
Height	= 0.60 + 0.10		
	= 0.70 m		
Taking top width of bund 0.50 m a	nd side slope 1.5.1		
Then base of Bund	$= 0.50 + (1.50 \text{ d}) \times 2$		
Then buse of Dund	= 2.60 m		
Cross-Section of bund	$= (0.50 + 2.60) \times 0.7$	0/2	
	$= 1.085 \text{ m}^2$		
Length of bund	= 100 s / V.I.		
C C C C C C C C C C C C C C C C C C C	$= 100 \times 1 / 0.$	70	
	=142.85 m/ha		
	Say 150 m/ha		
Earth work/ha	$= 150 \times 1.085$		
	= 162.75 cum	1	
Cost Rs. / ha	= 162.75 x 39.16 = 6	373.29	
	Say 6375.00		
	-		

DESIGN OF SUBMERGENCE BUND

Types of soil –Clay	Rainfall intensity for 24 hrs – 25cm		
Field slope 3%	V.I.=[s/3+2]x0.30		
	=0.90 m		
Horizontal Interval = (100xV.I.)/s	$=(100 \times 0.90)/3$		
	=30 m		
Height of bund $h=\sqrt{(\text{Re x V.I.})/50}$	$=\sqrt{(25 \times 0.90)/50} = \sqrt{0.45} = 0.67 \text{ m. Say 0.70m}$		
Free board 20% of height minimum 20cm Total Height Taking top width of bund 0.70m and side slop	=0.90m e 1.5:1		
Bottom of bund	$= 0.70+2 \times 1.5d$ = 0.70+2.70 = 3.40		
Cross Section of Submergence Bund	$= (0.70+3.40) \times 0.90 / 2$ = 1.845 m ²		
Length of bund	= 100 s / V.I. = (100 x 3) /0 90		
	= 333 m		
Feasible length	100 + 25 + 25		
-	= 150 m		
Earth work/ha	=150 x 1.845		
	=276.75		
Cost per ha	=276.75 x 39.16		
	=10,837.53		
	Say 10,850=00		

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., S.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	$= (2.00 + 12.00) \times 2.50 / 2$
	$= 17.50 \text{ m}^2$
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) x 2.75 / 2
	$= 22.00 \text{ m}^2$
Per meter cost	= Rs. 1085.92

5.2 HORTICULTURE DEVELOPMENT FOR WATERSHED MANAGEMENT

Horticulture is an important component of land use management. Now India is the second largest producer of fruits in the world after Brazil.

However, 53% of the total geographical area of the country is degraded due to various reasons. 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.

5.2.1 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.

5.1.2 CONSERVATION HORTICULTURE PRACTICES

Some of the important practices are given below

<u>1- Selection of Suitable Fruits Types:</u> For the success of conservation horticulture, selection of hardy varieties resistant to diseases and pests and use of local or other hardy root stocks for raising fruit-trees is of great importance. The major part of the reproductive cycle ie. Period from flowering to fruiting must also fall during maximum water availability period and the root ripening must be completed before the onset of dry summer (April-May).

Ber, Guava, Karonda, Bel, Amla, Lemon, and Phalsa etc. are the plants which fulfill this requirement and all these fruit plants are most suitable for Vindhya region.

<u>2-Planting Techniques:</u> For degraded lands, pits should be dug of 1 m x 1 m size, the excavated soil is mixed with Farmyard Manure (FYM) @ 5-10kg/pit with doses of potash and phosphorous and some insecticide / pesticide (numicide / aldrex) for prevention of white ant. Planting of the fruits plants should be done with the onset of monsoon.

Use of Root Stokes: Budding and grafting on the wild root stock gives benefit of the establishment root and in turn provides better quality fruits with high field potential. For example, Ziziphun mauritiana, a wild ber can be successful budded with scion of improved cultivars, This practice is only successful where sizable patch of wild root stock is available. The budded/grafted stock needs intensive management as it is required to be protected from the wild animals, birds, insects, pests etc. The wild root stock develops efficient top root to provide moisture and nutrients to the scion. Amla. Bel is other examples of raising the improved cultivation the wild root stock.

In Site Water Harvesting: Since on slopy lands, runoff water is considerably higher, therefore, it should be harvested and used. The run off can be utilized for growing fruit plants in such a way that each tree in the established plants is at the time of fruit setting and fruiting. Moisture available at this critical period improves the fruit yield.

Runoff water will be harvested and stored in tanks during the rains. The stored water will be utilized at the time when the fruit trees show moisture stress during dry months. Counter trenches will dug between the rows of fruit trees because this is effective in conserving moisture and providing soil erosion.

Mulching: Mulching is practiced to conserve moisture. It prevents the loss of moisture by evaporation and improve water intake by the soils. Various organic (Straw, hay, manure, tree leaves, dry wads) Mulches are used for mulching. Use of plastic mulch has been taken in rainfed and dryfarrming conditions to increase the productivity by minimizing evapotranspiration losses.

Drip Irrigation: Drip irrigation saves water by 40 to 70 percent and two to three times mare area can be irrigated with the same amount of available water. It has the advantages that it ensures uniform distribution of water, provides perfect control over water application and minimizing the losses during convergence and seepage.

Estimate of Orchard Development in the Watersheds Per Hectare (With Fencing)

S.No.	Particulars	Quantity	Rate	Amount	Remarks
A. Horti	culture				
1.	Soil working 1m x 1m x 1m size pits (270nos.) including cost of refilling	270.00 cum	36.66/cum	9898.20	Since, the project is to be
2.	Application of Farmyard Manure, including cost		L.S.	450.00	mode, contribution in the form of labour input for pit
3.	Cost of NPK mixture, neemicide @ 250 gm/plant		L.S.	400.00	digging, FYM and its applications, weeding and hoeing are to be provided by the participating farmers, hence the costs are not included in the estimates.
4.	Cost of plants (including 15% etc. for mortality) including transportation and planting	310 nos.	15.00/Plant	4650.00	
5.	Casualty replacement @ 10% of item No. 4 & 5			465.00	
6.	Cost of 2 weedings and hoeing	ñ.	1.00/Plant	540	-
7.	Contingency and unforeseen (3%)	1		492.00	
	Total			Rs. 6,007.00	
	Say			Rs. 6,000.00	
	Maintenance cost 2 nd year onwards - 15 % of 1 st year cost			900.00	
	For next 5 years i.e., Rs. 900 x 5			4500.00	
	Total Cost			Rs. 10,500.00	
	Say			Rs. 10,500.00	
B. Agro-	Horticulture (cost per ha)				
1.	Cost of raising 270 plants up to 5 years @ Rs. 10,000.00			10500.00	The remarks mentioned under Horticulture are also
2.	Cost of raising agricultural crops @ Rs. 5,000 per hectare per year			5000.00	applicable for Agro- Horticulture.
3.	Fencing			45300.00	
	Total			Rs. 60.800.00	

5.2.4 DESIGN OF DROP SPILLWAY FOR 50.00 HA CATCHMENT AREA

Design of Drop Spillway to be constructed at a place in a gully having width of 5.0 m and catchment area 50.00 ha and net drop 2.0m 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 (m³/s) for the watershed from Rational formula is

given as:

 $Q = C.I.A. = 0.3x120x50 = 5.00m^3/second$ 360 360

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

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

To find suitable value of land L and H

Let us assume L = 4.0 m (since width of gulley is 5.0 m)

$$5 = \frac{1.711 \times 4.0 \times h^{3/2}}{(1.10 + 0.01 \times 2)}$$
$$h^{3/2} = \frac{5.0 \times 1.12}{6.844} = \frac{5.60}{6.844} = 0.818$$

 $h = (0.818)^{2/3}$

= 0.874 m says 0.90 m.

Test: $L / h = 4/0.9 = 4.44 \ge 2.0$ hence, O.K.

h / f = $0.9/2.0 = 0.45 \le 0.5$ hence, O.K

Hence the designed hydraulic dimensions of the Spillway are:

Crest Length (L) = 4.0 mWeir depth (h) = 0.90 m

3. Structural design –

1- Minimum headwall extension, E = (3h + 0.6) or 1.5 f which ever is greater E = 3x0.9+0.6 = 3.3 or 1.5x2 = 3.00 m

E = 3.30 m

2- Length of apron basin $L_B = f (2.28 \text{ h/f} + 0.54) = 2(2.20 \text{ x} 0.9/2.0 + 0.54)$

 $= 2 (0.99+0.54) = 2 \times 1.53 = 3.06 \text{ m Says } 3.10$

3- Height of end sill, S = h = 0.9/3 = 0.3 m

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

 $J = 2h \text{ or } [f + h + s - (L_{B} + 0.10)/2] \text{ whichever is greater}$ $= 2 \times 0.9 \text{ or } [2+0.9+0.30 - (3.06+0.10)/2]$ = 1.8 or [3.20 - 1.58] = 1.8 or 1.62 hence adopt J = 1.8 m5- M = 2 (f + 1.33 h - J) = 2 (2 + 1.33 x 0.9 - 1.8) = 2 x 1.397 = 2.794 Says 2.80 m 6- K = (L_{B} + 0.1) - M = (3.06 + 0.1) - 2.80 = 0.36 m Toe and cut off walls

Normal scour depth (N S D) = 0.473 x $(Q/f)^{1/3}$ = 0.473 x $(5/1)^{1/3}$

 $= 0.473 \times 1.7099$ = 0.808 Maximum Scour depth (M S D) = 1.5x N S D = 1.5 x 808 = 1.212 says 1.21 m **Apron Thickness** : For an over fall of 2.0 m in concrete construction is 0.3 m, since the structure is constructed in masonry, the Apron thickness will be $1.5 \times 0.30 = 0.45$ 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	

DETAIL ESTIMATE OF DROP SPILLWAY OF CREST LENGTH 4.00 METRE

1. Earth work in cutting in foundation

S.No.	Description of work	No.	L	В	D/H	Quantity
1	Side wall	2	3.20	1.20	1.15	8.32
2	Head wall	1	4.00	1.60	1.15	7.36
3	Head wall extension	2	3.30	1.00	1.15	7.59
4	Wing wall	2	2.20	1.00	1.15	5.06
5	Toe wall	1	4.00	1.00	1.15	4.60
6	Cut off wall	1	10.60	1.00	1.15	12.19
7	Apron	1	4.00	3.20	0.70	8.96
	54.08 cum					

2. Laying of sand in the bed of foundation

S.No.	Description of work	No.	L	В	D/H	Quantity
1.	Side wall	2	3.20	1.20	0.10	0.768
2.	Cut off wall	1	10.60	0.90	0.10	0.954
3.	Head wall	1	4.00	0.60	0.10	0.240
4.	Head Wall Extension	2	3.30	0.40	0.10	0.264
5.	Wing wall	2	2.20	0.90	0.10	0.396
----	-----------	---	-------	------	------	-----------
6.	Toe wall	1	4.00	0.90	0.10	0.360
7.	Apron	1	4.00	3.20	0.10	1.280
			Total			4.262 cum

3. C.C.W. 1:3:6 in bed and foundation

S.No.	Description of work	No.	L	В	D/H	Quantity
1.	Side Wall	2	3.20	1.20	0.15	1.152
2.	Cut-off Wall	1	10.60	0.90	0.15	1.431
3.	Head Wall	1	4.00	0.60	0.15	0.360
4.	Head Wall Extension	2	3.30	0.40	0.15	0.396
5.	Wing Wall	2	2.20	0.90	0.15	0.594
6.	Toe Wall	1	4.00	0.90	0.15	0.540
7.	Apron	1	4.00	3.20	0.15	1.920
Total						6.393 cum

4. R/R Stone masonry 1:4

S.No.	Description of work	No.	L	В	D/H	Quantity
1.	Cut off wall	1	10.60	0.90	0.90	8.586
2.	Head wall	1	4.00	1.40	0.90	5.040

		1	4.00	(0.50 + 1.40) /2	1.00	3.800
3.	Head wall extension	2	3.30	0.90	0.45	2.673
		2	3.30	0.80	0.45	2.376
		2	3.30	0.60	0.60	2.376
		2	3.30	0.50	0.60	1.980
		2	3.30	0.40	1.20	3.168
4.	Side wall	2	3.20	1.20	0.45	3.456
		2	3.20	1.00	0.45	2.790
		2	3.20	0.80	0.60	3.072
		2	3.20	0.60	0.60	2.304
		2	3.20	0.50	0.60	1.920
		2	(0.40 + 3.20) /2	0.40	0.60	0.768
5.	Wing wall	2	2.20	0.80	0.45	1.584
		2	2.20	0.60	0.45	1.188
		2	2.20	0.50	(1.80 + 0)/2	1.980
6.	Toe wall	1	4.00	0.80	0.60	1.920
		1	4.00	0.60	0.60	1.440
		1	4.00	0.40	0.30	0.480

7.	Longitudinal sill	2	3.20	0.20	0.30	0.384
8.	Apron	1	4.00	3.20	0.45	5.760
		59.045 cum				

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

S.No.	Description of work	No.	L	В	D/H	Quantity
1.	Head wall	1	4.00	0.50	0.025	0.050
2.	Side wall	2	0.40	0.40	0.025	0.008
		2	2.86	0.40	0.025	0.057
3.	Head wall extension	2	3.30	0.40	0.025	0.066
4.	Wing wall	2	2.84	0.50	0.025	0.071
5.	Longitudinal sill	2	3.20	0.20	0.025	0.032
6.	Apron	3	3.20	1.20	0.025	0.192
7.	Toe Wall	1	4.00	0.40	0.025	0.040
Total						0.445 cum

6. Raised Pointing 1:3

S.No.	Description of work	No.	L	В	D/H	Quantity
1.	Head wall	1	4.00	-	1.00	4.00

		1	4.00	-	1.72	6.88
2.	Side wall	2	3.20	-	1.80	11.52
		2	(0.40 + 3.20) /2	-	0.60	2.16
3.	Head wall extension	2	3.30	-	1.00	6.60
4.	Wing wall	2	2.20	-	(1.80 + 0)/2	3.96
	Total					

CONSUMPTION OF MATERIALS

S.No.	Particulars	Quantity	Cement (Bags)	Coarse Sand (cum)	Khanda (cum)	G.S.B 25-40 mm (cum)	G.S. Grit 10-20 mm (cum)
1.	Sand laying	4.262 cum	-	4.262	-	-	-
2.	C.C.W. 1:3:6	6.393 cum	27.48	2.876	-	5.75	-
3.	C.C.W. 1:2:4	0.445 cum	2.71	0.186	-	-	0.378
4.	R/R Stone Masonry 1:4	59.045 cum	141.70	20.075	59.045	-	-
5.	Raised Pointing 1:3	35.120 m ²	1.61	0.165	-	-	-
	Total		193.50	27.5640	59.045	5.75	0.378
	Say		194 Bags	27.5640 cum	59.04 cum	5.75 cum	0.38 cum

COST OF MATERIALS

S.N0	Name of materials	Quantity	Rate	Amount
1.	Cement	194 Bags	285.00/bag	55290.00
2.	Coarse sand	27.564 cum	910.00/cum	25083.24
3.	Khanda	59.04 cum	1300.00/cum	76752.00
4.	G.S.B. 25-40 mm	5.75 cum	855.00/cum	4916.25
5.	G.S.Grit 10-20 mm	0.38 cum	1250.00/cum	475.00
	Tota	l		Rs. 1,62,516.49

LABOUR CHARGE

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	54.08 cum	36.66/cum	1982.57
2.	Sand Laying	4.262 cum	33.33/cum	142.05
3.	C.C.W. 1:3:6	6.393 cum	494/cum	3158.14
4.	C.C.W. 1:2:4	0.445 cum	494/cum	219.83
5.	Stone masonry	59.045 cum	370/cum	21846.65
6.	Raised Pointing	35.12 m ²	51.61/m ²	1812.54
7.	Curing	59.045 cum	25.00/cum	1476.12
8.	Chowkidar	13 Man Days	100.00/Man Day	1300.00
9.	Head load & local transportation cost 10% cost of material	-	-	14046.60
	Total			Rs. 45,984.50

Total F	Expenditure
1. Cost of materials	162516.49
2. Labour Charges	45984.50
Total	Rs. 208500.99
	Say Rs. 208500.00 only

DRAWING OF SPILLWAY OF CREST LENGTH 3.0 m



Not to Scale

5.4 DESIGN OF DROP SPILLWAY FOR 30.00 HA CATCHMENT AREA

Design of Drop Spillway to be constructed at a place in a gully having width of 4.0 m and catchment area 30 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 (m³/s) for the watershed from Rational formula is

given as:

$$Q = C.I.A. = 0.3x120x30.0 = 3.0 \text{ m}^3/\text{s}$$

360 360

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

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

To find suitable value of L & H

Let us assume L = 3.0 m (since width of gulley is 4.00 m) $3.0 = \underline{1.711 \ L \ H^{3/2}} = \underline{1.711 \ L \ H^{3/2}}$ (1.1+0.01 x 1.5) (1.1+0.15) $L \ H^{3/2} = \underline{3.00 \ x \ 1.25}$ 1.711 $H^{3/2} = \underline{3.75} = 0.73$ 1.711 x 3

` $H = (0.73)^{2/3} = 0.80 \text{ m}$

Test: $L/h = 3.00/0.80 = 3.75 \ge 2.0$ hence O.K.

h / f = $0.80 = 0.53 \le$ which is approximately 0.50. Hence, O.K. 1.50

Hence the designed hydraulic dimensions of the Spillway are:

Crest Length (L) = 3.00 mWeir depth (h) = 0.80 m

3. Structural design –

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

E = 3x0.80+0.6 or 1.5x1.50

E = 3.0 m or 2.25 m

Head wall extension = 3.0 m

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

1.5

$$= 1.50 (1.216 + 0.54) = 1.5 \times 1.756$$

3- Height of end sill, $S = \underline{h} = \underline{0.80} = 0.26 \text{ m}$

3 3

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 x 0.80 or [1.50+0.80+0.26 - (2.63+0.10)/2]
= 1.6 or [2.56 - 1.365]
= 1.6 or 1.195

adopt J = 1.60 m

5- M = 2 (f + 1.33 h - J) = 2 (1.50 + 1.33 x
$$0.80 - 1.60$$
) = 2 (2.564 - 1.60)
= 1.928 m

6- K =
$$(L_B + 0.1)$$
 - M = $(2.63 + 0.1) - 1.93$

= 0.80 m

Toe and cut off walls

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

 $= 0.473 \times (3/1)^{1/3}$ $= 0.473 \times 1.442$

= 0.68 mMaximum Scour depth (M S D) = 1.5 x N S D= 1.5 x 0.68= 1.02 mDepth of cutoff /Toe wall = 1.02 m

Apron thickness: For an over fall of 1.50 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	1.33	
Side wall	0.30	1.10	
Wing wall and head wall extension	0.30	0.80	

DETAIL ESTIMATE OF DROP SPILLWAY OF CREST LENGTH 3.00 METRE

1. Earth work in cutting in foundation

S.No.	Description of work	No.	L	В	D/H	Quantity
1	Side wall	2	3.40	1.20	1.15	9.38
2	Head wall	1	3.00	1.60	1.15	5.52
3	Head wall extension	2	3.00	1.00	1.15	6.90
4	Wing wall	2	1.80	1.20	1.15	4.96
5	Toe wall	1	3.00	1.00	1.15	3.45
6	Cut off wall	1	9.00	1.00	1.15	10.35
7	Apron	1	3.00	2.65	0.70	5.56
	46.12 cum					

2. Laying of sand in the bed of foundation

S.No.	Description of work	No.	L	В	D/H	Quantity
1	Side wall	2	3.40	1.00	0.10	0.680
2	Head wall	1	3.00	0.60	0.10	0.180
3	Wing wall	2	1.80	1.00	0.10	0.360
4	Toe wall	1	3.00	0.80	0.10	0.240
Т		1	5.00	0.00	0.10	0.240

5	Cut off wall	1	9.00	1.00	0.10	0.900
6	Apron	1	3.00	2.65	0.10	0.795
	3.155 cum					

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

S.No.	Description of work	No.	L	В	D/H	Quantity
1	Cut off wall	1	9.00	1.00	0.15	1.35
2	Head wall	1	3.00	0.60	0.15	0.27
3	Side wall	2	3.40	1.00	0.15	1.02
4	Wing wall	2	1.80	1.00	0.15	0.54
5	Toe wall	1	3.00	0.80	0.15	0.36
6	Apron	1	3.00	2.65	0.15	1.192
	4.732 cum					

4. R/R Stone masonry 1:4

S.No.	Description of work	No.	L	В	D/H	Quantity
1	Cut off wall	1	9.00	1.00	0.90	8.100
2	Head wall	1	3.00	1.50	0.90	4.050
		1	3.00	(1.50+0.50)/2	1.50	4.500
3	Head wall extension	2	3.00	0.80	0.45	2.160
		2	3.00	0.60	0.45	1.620
		2	3.00	0.60	0.60	2.160
		2	3.00	0.50	0.60	1.800
		2	3.00	0.40	1.30	3.120
4	Side wall	2	3.40	1.00	0.45	3.060
		2	3.60	0.80	0.45	2.592
		2	3.80	0.60	0.60	2.736
		2	3.90	0.50	1.00	3.900
		2	(4.00+1.40)	0.40	1.50	3.240
			12			
5	Wing wall	2	1.80	1.00	0.45	1.620
		2	1.80	0.80	0.45	1.296

		2	1.80	0.50	(1.60+0)/2	1.440
6	Toe wall	1	3.00	0.80	0.45	1.080
		1	3.00	0.60	0.45	0.810
		1	3.00	0.40	0.30	0.360
7	Apron	1	3.00	2.65	0.45	3.577
8	Longitudinal sill	2	2.60	0.20	0.45	0.468
				Total		53.689 cum

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

S.No.	Description of work	No.	L	В	D/H	Quantity
1	Head wall	1	3.00	0.50	0.025	0.037
2	Side wall	2	1.40	0.40	0.025	0.028
		2	3.00	0.40	0.025	0.060
3	Head wall extension	2	3.00	0.40	0.025	0.060
4	Wing wall	2	2.40	0.50	0.025	0.060
5	Longitudinal sill	2	2.65	0.20	0.025	0.026
6	Apron	3	2.65	0.86	0.025	0.170
	0.441 cum					

6. Raised Pointing 1:3

S.No.	Description of work	No.	L	В	D/H	Quantity
1	Head wall	1	3.00	-	1.00	4.56
		1	3.00	-	1.18	5.40
2	Side wall	2	3.40	-	1.60	10.88
		2	(1.40+3.40)/2	-	1.50	7.20
3	Head wall extension	2	3.00	-	1.50	9.00
4	Wing wall	2	1.80	-	(1.60+0)/2	2.88
	39.86 m ²					

CONSUMPTION OF MATERIALS

S.No.	Particulars	Quantity	Cement (Bags)	Sand (cum)	Khanda (cum)	G.S.B 25-40 mm (cum)	G.S. Grit 10-20 mm (cum)
1	Sand laying	3.155 cum	-	3.155	-	-	-
2	C.C.W. 1:3:6	4.732 cum	20.34	2.129	-	4.258	-

3	C.C.W. 1:2:4	0.441 cum	2.69	0.185	-	-	0.374
4	S/M 1:4	53.689 cum	128.85	18.254	53.689	_	-
5	Raised Pointing 1:3	39.86 m ²	1.83	0.187	-	-	-
Total		153.71	23.910	53.689	4.258	0.374	
	Say		154	23.910	53.68	4.26	0.374

COST OF MATERIALS

S.N0	Name of materials	Quantity	Rate	Amount
1	Cement	154 Bags	285.00	43890.00
2	Coarse sand	23.91	910.00	21758.10
3	Khanda	53.68	1300.00	69784.00
4	G.S.B. 25-40 mm	4.26	855.00	3633.75
5	Grit 10-20 mm	0.374	1250.00	467.50
	T	139533.35		

LABOUR CHARGE

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	46.12 cum	36.66/cum	1690.75
2.	Sand Laying	3.155 cum	33.33/cum	105.15
3.	C.C.W. 1:3:6	4.732 cum	494/cum	2337.60
4.	C.C.W. 1:2:4	1.441 cum	494/cum	217.85
5.	S/M 1:4	53.689 cum	370/cum	19864.93
6.	Raised Pointing	39.86 m ²	51.61/m ²	2057.17
7.	Curing	53.689 cum	25.00/cum	1342.22
8.	Chowkidar	13 Man Days	100.00/Man Day	1300.00
9.	Head load & local transportation cost 10% cost of material	-	-	12074.53
	Total			Rs. 40504.22

Total Expenditure					
1. Cost of materials	139533.35				
2. Labour Charges	40504.22				
Total	Rs. 180037.57				
	Say Rs. 180000.00 only				

Estimate of Pipe Outlet

S.No.	Item	Unit	Length	W	Н	Qty (Cmt)
1	E.W. in foundation	1				
(i)	Upper side wall	1	2.00	1.00	1.10	2.20
(ii)	Collor support	1	1.00	1.00	1.05	1.05
(iii)	Down side wall	1	2.00	1.00	1.10	2.20
(iv)	Apron	1	1.00	1.00	0.25	0.25
(v)	Under Hume Pipe	1	5.00	0.80	0.80	3.20
(vi)	E.W. in filling	1	4.50	0.80	0.50	1.80
	Total					10.70 m ³
2	C.C. work in foundation					
(i)	Upper side wall	1	2.00	0.70	0.15	0.21
(ii)	Collor support	1	1.00	0.70	0.15	0.105
(iii)	Down side wall	1	2.00	0.70	0.15	0.210
(iv)	Apron	1	1.00	1.00	0.15	0.150
	Total					0.675 m^3
3	Khanda Work					
(i)	Upper side wall	1	2.00	0.68	0.90	1.224
		1	2.00	0.45	0.68	0.612
(ii)	Collor support	1	1.00	0.68	0.45	0.306
		1	1.00	0.45	0.45	0.202

(iii)	Down side wall	1	2.00	0.68	0.90	1.224
S.No.	Item	Unit	Length	W	Н	Qty (Cmt)
		1	2.00	0.45	0.68	0.612
(iv)	Apron	1	1.00	1.00	0.22	0.220
	Total					4.400
	Deduction opening pipe	1x	2x3.14 x	$(.175)^2 x 45$		= 086
			Ν	Vet Khanda Work		4.314 m ³
4	Pointing Side Wall					
	Side	2x2	&	0.45	0.68	1.22
		2x2	&	0.68	0.45	1.22
	Front	2x2	2.00	&	1.13	9.04
	Back	2x2	2.00	&	1.13	9.04
	Deduction opening pipe	2x2	x3.14(.175) ² x.38		20.52	
			Net Pointing			20.14 m ²
5	Plastering					
	Тор	2	2.00	0.45	&	1.80 m ²

Consumption of Material

S.No.	Item	Unit	Qty	Cement	Morum	Khanda	Stone Ballast	Pipe + collor
1	C.C. Work 1:4:8	m3	0.675	2.29	0.310	&	0.63	&
2	Khanda Work	m3	4.314	10.35	1.51	4.314	&	&
3	Pointing	m2	20.14	0.70	0.07	&	&	&
4	Plastering	m2	1.80	0.19	0.027	&	&	&
				13.53	1.917	4.314	0.63	2 Pipe + 1 collor
			Say	13.5	1.92	4.32	0.63	

Cost Of Material

S.N.	Item	Unit	Qty	Rate	Amount	Remark
1	Stone Khanda	Cmt	4.32	850/	3672.00	
2	Morum	Cmt	1.92	800/	1536.00	
3	Cement	No.	13.5	285/	3847.50	
4	Pipe + Coloor	M/no	5m/1	357/RM 79/RM	1864.00	
5	Stone Ballast	Cmt	0.63	1250/	787.50	
	Total				11707.00	

Labour Charges

S.n.	Item	Unit	Qty	Rate	Amount	Remark
1	E/W in exvation	Cmt	10.70	44.05/ Cmt	471.33	
2	C.C.Work 1:4:8	Cmt	0.675	494/ Cmt	333.45	
3	B/WZ 1:4	Cmt	4.314	370/ Cmt	1596.18	
4	Layu Pipe lane	М	5	175/pipe	350.00	
5	Pointing work 1:4	М	20.14 mtr	50/m ²	1007.00	
6	Plastring	М	1.80	40/m ²	72.00	
7	Chaukidari	&	4 days	100/	400.00	
8	Quring	Cmt	4.314	25/	107.85	
9	Water Cost	Cmt	4.314	9/	38.82	
10	Head Load	&	&	&	1170.70	
	Total				5547.33	

	<u>Total Expenditure in Pipe</u> <u>outlet</u>		
S.n.	Item	Amount	Remark
1	Cost of material	11707.00	
2	Labour cost	5547.00	
	Total	17254.00	
	Say	17300.00	

1.4 D. 1 1

DRAWING AND DETAIL **ESTIMATE** OF LIVELIHOOD PROGRAMME IN WATERSHED WORK PHASE

DRAWING OF NADEF COMPOST STRUCTURE



135

4. Total height of Structure = 1.20 + 0.30 = 1.50 m.

(Not to Scale)

PREPARATION OF COMPOST BY NADEF METHOD

Nadef is the name of inventor of this method. In this method glazed pit of brick masonry above Ground level is made as shown in the drying. In this method by using a little quantity of cow during, and crop residue, leaf of trees, straw and other organic materials. The method of filling up the pit is below.

First of all best soil of pond or field is spread in the bottom of pit as least 3" thickness and then one layer of 6" thickness and other agriculture waste is made then best soil is spread on it and on this layer the liquid made of cow dung is spread to wet the crop residue, straw etc. this method is repeated until the pit is net completely filled up. On the top layer of this material a bulk is made and then the pit is closed by earthen gara. Water is spread on the top of bulk and from glazed side weekly. This process is repeated to moist the filling material always. The decomposition in filling material started and within six month filled material becomes compost khad.

S.No.	Description of Work	No.	L.	В.	D./H.	Quantity
1.	Earth Work					
	Long Wall	2	3.60	0.30	0.30	0.648
	Short Wall	2	2.33	0.30	0.30	0.419
		Total				1.067 cum
2.	Brick Work 1:4					
	Long Wall Solid	2	3.46	0.23	0.90	1.432
	Short Wall Solid	2	2.40	0.23	0.90	0.993
		Total				2.425 cum
	Long Wall Glazed	2	3.46	0.23	0.60	0.954
	Short Wall Glazed	2	2.40	0.23	0.60	0.662
		Total				1.616 cum
3.	Plastering Work					
	Long Wall	2	3.46	-	0.60	4.152
	Short Wall	2	2.40	-	0.60	2.880
	Top of Long Wall	2	3.46	0.23	-	1.591
	Top of Short Wall	2	2.40	0.23	-	1.104
		Total				9.727 m^2

ESTIMATE OF COMPOST BY NADEF METHOD

ABSTRACT OF WORK

S.No.	Particulars	Quantity
1.	Earth Work	1.06 cum
2.	Brick Work 1:4 2.425 + 1.616/ 2	3.233 cum
3.	Plastering 1:4	9.727 m^2

CONSUMPTION OF MATERIALS

S.No.	Particulars	Quantity	Cement (Bags)	Coarse Sand (cum)	Bricks (nos.)
1.	Brick work 1:4	3.233 cum	5.82	0.873	1487
2.	Plastering 1:4	9.727 m^2	1.07	0.146	-
	Total		6.89	1.019	1487
	Say		7 Bags	1.02 cum	1500 nos.

COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Cement	7 Bags	285.00/ Bag	1995.00
2.	Coarse Sand	1.02 cum	910.00/ cum	928.20
3.	1 st class Brick Work 1:4	1500 nos.	4500.00/	6750.00
			Thousand	
	Tot	Rs. 9,643.20		

LABOUR CHARGES

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth Work	1.06 cum	36.66/ cum	30.85
2.	Brick Work	3.233 cum	370.00/ cum	1196.21
3.	Plastering	9.727 m^2	$40.00/\mathrm{m}^2$	389.08
	Tot	Rs. 1616.14		

Total Expenditure				
1. Cost of Materials	9643.20			
2. Labour Charges	1616.14			
Total	Rs. 11,259.34			
Say Rs. 11,260.00 only				

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 two or three buffalos of *MURRA* breed, for their good life.

1.) Cow Unit.

S.No.	Particulars	Rate	Amount
1.	3 Cows	12500.00/Cow	37,500.00
2.	Insurance.	11.63%	4,360.00
3.	Food cost for three months @ 3kg per day per cow	23.00/kg	6,210.00
4.	Provision for deworming, mineral and vitamin supplement,	500.00/Animal	1,500.00
	treatment, vaccination.		
5.	Miscellaneous		430.00
	Rs. 50,000.00		

2.) Buffalo Unit.

S.No.	Particulars	Rate	Amount
1.	2 Buffaloes.	18000.00/Buffalo	36,000.00
2.	Insurance.	11.63%	4,185.00
3.	Food cost for three months @ 4kg per day per Buffalo.	23.00/kg	8,280.00
4.	Provision for deworming, mineral and vitamin supplement,	500.00/Animal	1000.00
	treatment, vaccination.		
5.	Miscellaneous		535.00
	Rs. 50,000.00		

Establishment of Goat Units for S.H.G.'s formed in I.W.M.P. III

Project

District Allahabad is situated in Vindhya region where the number of sheep is very less and they are small in nature. Goat population is appreciable 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.

Establishment of Goat Units for S.H.G.'s

Vindhya region, due to the geo-climate conditions and land pattern is favorable for goat husbandry. Goats thrive well in dry and semi-dry climate with bushes and thorny vegetation. Presently in this area, farmers rear goats for their livelihood. If goat husbandry would be transformed to intensive husbandry, there shall be more economic stability of farmers, more profit sharing and availability of running capital for future expansion. Keeping in view the above facts, goat units shall be formed in the area in intensive way.

16 Goat Units are proposed in ^{I.W.M.P. IIIrd}Project for S.H.G. One unit constituting 10 goats and 1 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 10 goats of improved breed (not less than 6 months of age) @ Rs. 3000.00	30000.00
	each	
2.	Cost of 1 buck of improved breed @ Rs. 5000.00	5000.00
3.	Cost of insurance @ 11.63 / unit	4070.00
4.	Feed cost for 3 months @ 250 gm/ day for goats @ Rs. 11.84/ 250 gm	2930.40
5.	Provision of deworming, mineral and vitamin supplement, treatment, vaccination	1760.00
	@ Rs.160/ animal	
6.	The expense including monitoring expenses, register and records @ Rs. 170.00/	170.00
	unit	
	Total	Rs. 43,930.40
	Say	y Rs. 43,950.00

Estimate of Livestock Development Activities

Total number of female	e animals:	Buffalo	- 89	8
		Cow	- 98	39
		Total	- 18	87
1. Artificial Insemination (A.I	I.): 33%	of total animals p	er year, i.e., 62	24
Amount require	ed for A.I. by BAIF @	100.00/ animal.		
	Total Amour	nt	- Rs.62400.0	00
2. Vaccination: Total number of	of animals in I.W.M.P.V	VIth ^t -	2232 nos.	
	1. H.S. + B.Q.	@ 5.50	12276.00	
	2. F.M.D.	@10.50	23436.00	
		(Twice in a ye	ar)	
	Total Amour	nt	- Rs	. 98012.00
3. Deworming: Adult animals	- 2009			
Child a	animals - 223			
Albeno	lazole for 2009 animals	g @ 40.	56	81485.04
	223 c	hild animals	@20.28	45022.44
	Total Amour	nt		- Rs 86007.48
4. Mineral Mixture: Agrim	ine Forte Chelated for	r 1713 animals	@ 115.00	Rs .196995.00

DRAWING AND DETAIL ESTIMATE OF PRODUCTION SYSTEM AND **MICRO-ENTERPRISES IN** WATERSHED WORK PHASE

DEMONSTRATION OF WHEAT

1. Variety recommended for District-Allahabad

Irrigated-W.H-542 Unirrigated –K-8027, k-5351(Mandakini) Kathia-Raj 1555

1-

2-

Kg, P-70-75 Kg, K-70-75 Kg

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

ESTIMATE OF DEMONSTRATION OF WHEAT IN WATERSHED (PER ha)

Seed rate -100 -125 Kg/hectare

Requirement of fertilizers/ha

Hence demonstration cost of wheat /ha is Rs. 5700.00

N-125
DEMONSTRATION OF GRAM IN WATERSHED AREA (per ha)

1- Variety - irrigated – vdai,KWR-108,

Rainfed – J.G-315, Avrodhi

2-

3- Fertilizer requirement/ha N-25.0 kg, P-80 kg, K-30 kg

ESTIMATE FOR DEMONSTRATION OF GRAM(PER ha)

Seed rate/ha

-50-55kg

S.No.	Particulars	Quantity	Rate	Amount	Remark
1	Tillage operation in	1.0ha	1000.00/ha	2000.00	Since the project is
	preparation of field and seed	(twice)			to be operated in
	sowing				participatory
2	Cost of seed	55kg	90/kg	4950.00	Mode, contribution
					by the farmer in the
2		1751	572.00/ 50.1	2005 50	form of tillage,
3	D.A.P	175kg	573.00/ 50 kg	2005.50	sowing operation,
					sowing and
					harvesting is not
4	M.O.P.	65kg	300.00/50kg	390.00	included in the
					estimates.
5	Medicine	1.00ha	Lump sum	1250.00	
			1		
(1.001	700.00//	700	_
0	Harvesting	1.00na	/00.00/na	/00	
	То		8595.50		
	Sa	Ŋ		Rs. 8600.00	

Hence per hectare of demonstration -Rs. 8600.00

DEMONSTRATION OF ARHAR IN WATERSHED AREA(PER ha)

Variety

- Malviya-13, narendra-1,

Amar

2-

1-

Seed rate/ha -30 kg

3- Requirement of fertilizers/ha N-20.0 kg, P-50 kg, K-40 kg

ESTIMATE FOR DEMONSTRATION OF ARHAR (PER ha)

S.No.	Particulars	Quantity	Rate	Amount	Remark
1	Tillage operation in	1.0ha	1000.00/ha	2000.00	Since the project is
	preparation of field and seed				to be operated in
	sowing				participatory
2	Cost of seed	30.0kg	120.00/kg	3600.00	M0de, contribution
					by the farmer in the
2	Nitus e en NLD K	100.01	470.00/501	179(00	form of tillage,
3	Nitrogen N.P.K	190.0kg	470.00/50kg	1/80.00	operation, sowing
	10:32:10				and harvesting
4	I Luc -				provided by
4	Urea	-	-	-	participating
					farmers, hence this
5	M.O.P.	-	-	-	cost is not included
					in the estimates.
6	Harvesting	1 00 ha	650.00	650.00	_
Ū	Thu vosting	1.00 Ilu	050.00	050.00	
7	Medicine	1.00 ha	Lump sum	1000.00	
			I ···		
	Το	tal		6386.00	
	S	ay		Rs. 6400.00	

Hence per hectare of demonstration –Rs. 6400.00

DEMONSTRATION OF HYBRID BAJRA IN WATERSHES (per ha)

1-

Requirement of Seed / ha -10kg

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

ESTIMATE FOR DEMONSTRATION OF BAJRA (per ha) RAINFED

S.No.	Particulars	Quantity	Rate	Amount	Remark
1	Tillage operation in	1.0ha	1000.00/ha	2000.00	Since the project
	preparation of field and				is to be operated
	for sowing				in participatory
2	Cost of seed	10.0kg	130.00/kg	1300.00	M0de,
					contribution of
					tillage operation,
3	Nitrogen N.P.K	125.0kg	470.00/50kg	1175.00	and harvesting
	16:32:16				cost
1	Liroo	001/0	270.00/50 kg	186.00	-
4	Orea	JOKg	270.00/30 Kg	400.00	
5	M.O.P.	40kg	300.00/50kg	240.00	
(II (1 0011	(50.00/1	(00.00	-
6	Harvesting	1.00Ha	650.00/ha	600.00	
	То	tal		3201.00	
	Sa	ay		Rs. 3200.00	

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

DEMONSTRATION OF AGRO-FORESTRY / HORTICULTURE



DEMONSTRATION OF AGRO-HORTICULTURE USING PLASTIC DRUM OF 200 LITRES CAPACITY

District Allahabad is situated in Vindhya region where there is scarcity of water and in summer temperature rises up to 48[°]c causing upper layer of fields dry and therefore mortality rate of plants is very high. Farmers usually like to grow grain crops only. They are not interested in horticulture because of Anna Pratha and less holding. The production of crops decreases below the tree.

Therefore to promote horticulture with crops a demonstration model using plastic drums for horticulture is made. Mainly crops roots goes in to the soil up to "4-5" in cereal crops and "6-9" in pulses. Using plastic drums the plants will be planted 50-60 cm below the ground level which is below the root zone of crops. Therefore trees will not able to take nutrients from upper layer of fields and there will no effect of plants on crops.

In summer season up to 1 to 1.50m depth of soil becomes dry causes more mortality rate of plants, using drums plants are planted below 50-60 from Ground level and in rainy and winter season up to February roots of plants goes below 2.10m below where moisture will be available and plants will be safe in summer also. Using barbed wire fencing the plants will be protected by Anna Pratha.

Therefore, it is hoped that farmers will adapt this procedure for Agro-forestry and will become prosperous.

DETAIL ESTIMATE OF DEMONSTRATION OF HORTICULTURE AND MIXED <u>CROPPING</u>

For 1.00 Hectare

S.No.	Description of Work	No.	L.	В.	D./H.	Quantity
1.	Earth work in cutting	156	3.14 x 1.20	-	1.35	793.54
	Trench	156	1.50	0.75	0.75	131.62
	Fencing Poll	133	0.20	0.20	0.20	1.064
		Total				926.22 cum
2.	Farm yard manure	156x10				1560 kg
3.	Filling of earth work with farm yard manure	156	3.14 x 1.00	-	1.20	587.80 cum

4.	C.C.W. 1:2:4 for fencing poll	133	0.20	0.20	0.20	1.064 cum
5.	Angle iron for poll	133	1.80	-	-	239.40 m
6.	Barbed wire	3	400	-	-	1200.00 m
7.	Plants	156	-	-	-	156 nos.
8.	Plastic drums (200 litre)	156	-	-	-	156 nos.

CONSUMPTION OF MATERIALS

S.No.	Description of Work	Quantity	Farmyard	Cement	Coarse	G.S.Grit	Angle	Barbed	Planting
			Manure	Bags	Sand	10-20	Iron (m)	Wire	Drum
			(kg)	(nos)	(cum)	mm		(kg)	(nos)
1.	C.C.W. 1:2:4	1.064 cum	-	6.49	0.446	0.883	-	-	-
2.	Angle iron	239.4 m	-	-	-	-	239.40	-	-
3.	Barbed wire	1200.0 m	-	-	-	-	-	1200.0	-
4.	Farmyard manure	1560.0 kg	1560 kg	-	-	-	-	-	-
5.	Plastic drum	156 nos.	-	-	-	-	-	-	156
	Total		1560.0 kg	6.49	0.446	0.883	239.40	1200.0	156
	Say		1560.0 kg	6.50 bags	0.450 cum	0.900	239.40	1200.0	156
						cum		m	

COST OF MATERIALS

S.No.	Particulars	Quantity	Rate	Amount
1.	Farm yard manure	1560.0 kg	10.00/kg	15600.00
2.	Barbed wire	1200.0 m/120.0 kg	60.50/kg	7260.00
3.	Angle iron	239.40 m/785 kg	40.50/kg	31792.50
4.	Plastic drum	156 nos	690.00 each	107640.00
5.	Cement	6.50 bags	285.00/bag	1852.50
6.	Coarse sand	0.450 cum	910.00/cum	409.50
7.	G.S.Grit 10-20 mm	0.900 cum	1250.00/cum	1125.00
8.	Plants	156 nos	18.00 each	2808.00
	Total			Rs. 1,68,487.50

LABOUR CHARGES

S.No.	Particulars	Quantity	Rate	Amount
1.	Earth work	1514.02 cum	36.66/cum	55503.97
2.	C.C.W. 1:2:4	1.064 cum	492.00/cum	523.88
3.	Fixing of angle iron	10 Man Days	100/Man Day	1000.00
4.	Fixing of barbed wire	15 Man Days	100/Man Day	1500.00
Total				Rs. 58,527.85

Total Expenditure				
1. Cost of materials	1,68,487.50			
2. Labour Charges	58,527.85			
Total	Rs. 2,27,015.35			
Say	Rs. 2,27,000.00 only			

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 Juneea* (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.

In District Allahabad more fields are kept fallow and only single crop in Rabi is grown. Therefore, this area is suitable for Green Manuring. Therefore, in I.W.M.P. IIIrd Project, efforts will be made to oblise the farmers for Green Manuring.

A typical estimate is made for Green Manuring is given below:

ESTIMATE FOR GREEN MANURING IN THE WATERSHED (PER ha)

S.No.	Particulurs	Rate	Cost	Remark
1	Seed of Sesbania (Dhaincha)25Kg/ha	25.00/Kg	625	Since the project is
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	to be operated in a participatory mode, contribution in the form of tillage will be done by farmers is not included in the estimate.
	Total		Rs. 625.00	

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

PASTURE MANAGEMENT

Introduction: The sound animal industry in any country centers around good quality feed and fodders. The livestock population in India is nearly 15% of the total livestock population of the world, tough we have only 2% of the world's geographical area. The project on for green and dry fodder requirement in India has been estimated at 1061 and 590 million tons by 2010 A-D, while the present feed and fodder resources in the country can meet only 4% of the requirement. The grazing intensity is very high i.e., 26 adult cattle unit (ACU)/ha as against 0.8 ACU in the developing countries.

The importance of grasses for protection and production, the two aspects of soil and water conservation is well known. Grass is unique in that it is the only resource utilized in situ by grazing. A "grassland" or more appropriately, a "range" is defined as "the areas which are predominantly covered with grasses or grass like plants and are primarily utilized as for age for grazing animals or used as hay." The grasslands are the major sources of food to the animals.

Pasture Management: All grazing areas are referred to as pastures, but ore specifically the term is applied to cultivated grassland used for grazing. Thus pastures are artificial grasslands with or without non-grass vegetation (such as legumes) that are created with selected high forage-yielding grass and legume species and with inputs like fertilizers and irrigation and carefully managed to exclude all other vegetation. Pastures are usually fenced and used either for grazing, for gay and silage making or for both.

<u>Intensive Fodder Production</u>: In areas where the major enterprise of the farmers centers around the milk production. Continuous supply of green fodder round the year is the basis for success of such as industry. Under the aegis of ICAR's all India coordinated Research Project on Forage Crops, several highly productive fodder cropping system have been tested and recommendations made for their general use. For central region important intensive crop rotations are presented as given below

Zone wise crop rotations	Green
fodder yield(t / ha)	
Central region	
1- Hybrid napier +Cowpea-Berseem+Japanrape	
286.3	
2- Maize+Cowper-Jowar-Berseem+Japanrape	
197.2	
3- Jawar+Cowper-Berseem+Japanrape-Jawer+Cowpea	
168.6	

Conservation on of Forages: In order to sustain animal production, it is essential that the optimum feeding should be maintained round the year. In India, we have two seasons, rainy season and winter season, when surplus quantities of green fodder is available-country to this there are 2 to 3 months of lean periods(October-November and April to July) when the fodder availability to animals is at its low. In the summer months, it is difficult even to meet the maintenance requirements of the animals. Stage of maturity to feed the animals adequately during the lean period. The conservation of forages could be done in the form of silage from cultivated fodders (legumes and cereals) and also pasture grasses. Forages could also be conserved in the form of hay when dried to its nutrients. This feed stuff is quantitatively important from both maintenance and nutritional point of view.

Agro-forestry system for fodder production: A number of fodder trees play an important role in human food security through their function as animal food sources, especially as drought services. Agro-forestry systems consisting of such tress and animals and/or pasture are called Silvo-Pastoral system.

Silvi-Pasture (or Silvo-Pastoral system) is the most promising alternate land use system which integrates multipurpose trees, shrubs, legumes and grasses mostly on non-arable, degraded and marginal lands for optimizing land productivity. It helps in conservation of vegetation, soil and nutrients and provides forage, timber and fuel wood on a sustainable basis.

Potentials of Semi-arid region for different forage production systems.

Region	Forge Production Systems
Semi arid	Integration of Agro-Silvi-Pasture, dry land agriculture on cultivated
	lands. Forage-cum-
	Copping forming on the marginal and sub marginal lands with intercropping dry lands
	cereals and legumes

ROLE OF GRASSLAND IN SOIL CONSERVATION

The grass plant itself protects the soil from the forces of water erosion including the impact of rain drops and surface flow. Grass acts a spring cushion intercepting and broking up the falling rain drops in their way down. Conducting the water down the blades and stems of the plants and finally allowing it to reach the ground as fine sprays without disturbing the surface. Clamps of grass plants, in a mechanical way, obstruct-flowing water and reduce its rate of flow.

In fact to control soil erosion whatever technique is adopted, there are four approaches to deal with the problem:

- 1- To condition the soil to make it resistant to determent and transportation and create more absorptive surface layer.
- 2- To cover the soil so that it is protected from the impact of wind and rain drops.
- 3- To decrease the velocity of wind or runoff water.
- 4- To provide safe disposal outlet for surplus run off.

Grass in the nature highly efficient device to protect the soil from destructive forces like rain, wind etc. Grass and legumes increase the aggregation of soil particles; improve soil structure and water holding capacity of the soil. Grasses gives quicker protection to eroded lands. To establish gully sides, water ways, gully head and check dams. Grass is perhaps the most effective and economical tool. It can put to various uses in soil conservation:

- 1- Strip cropping, rotational cropping or lay farming.
- 2- Stabilization of bunds and terraces.
- 3- Stabilization of gullies, diversion or drainage channels.
- 4- Stabilization of sand dunes.
- 5- Meadows and pasture on steep slopes.
- 6- Fertility builder for eroded soil.

CONSTITUTION



PIA, WDT, USER GROUPS, SHG's AND WC

U.P. Government, Land Development And Water Resources Department section -1 Lucknow has nominates as PIA to Bhoomi Sanrakshan Unit, Land development and water resources Department Allahabad-for IWMP-IIIrd vide letter no-

S.No.	Name	Designation	Qualification	Experience
				(Year)
1	Sri Rajendra Singh	BSA	Intermediate Diploma	31
			in Ag. Engg.	
2	Sri Manoj Kumar Singh	Jr. Engg.	High School, Diploma	29
			Ag. Engg	
3	Sri Vinay Kumar Maurya	Jr. Engg.	Intermediate, Diploma	27
			Ag. Engg	
4	Sri Kuldeep Narain Srivastava	Jr. Engg.	Intermediate, Diploma	25
	-		Ag. Engg	
5	Sri Dinesh Kumar Vajpai	Accountant	M.Com., B.Ed	24
6	Sri Narendra Kumar Yadav	Accountant	M.Com., C.S.,	26
			C.A.(inter)	
7	Sri Haridas	Sr. clerk	B.A.	29
8	Sri Suryabhan Singh Tomar	Draftt Man	Intermediate, Diploma	30
			in Draft man	
9	Sri C.B. Singh	Draftt Man	B.Com	30
10	Sri Rameshwar Singh	Tracer	B.A.	32
11	Sri R. B. Yadav	Jr.Clerk	Intermediate	20
12	Smt. Pushaplata Singh	Jr.Clerk	Intermediate	24
13	Smt. Anita	Munsi	B.A.	20
14	Sri Shitala Prasad Pandey	Munsi	Intermediate	32
15	Sri Radheshyam Verma	A.S.C.I.	Intermediate	32
16	Sri Santosh Kumar	A.S.C.I.	M.Sc.(Ag) Agronomy	07

Detail Staffing Pattern of PIA:

17	Sri Shushil Kumar	A.S.C.I.	M.Sc. Ag Soil	07
			Conservation	
18	Sri Ashok Kumar Singh	Work Incharge	B.com	21
19	Sri Dilip Kumar Sharma	Work Incharge	Intermediate	20
20	Sri Ram Kumar Dixit	Work Incharge	Intermediate	24
21	Sri Harishankar Singh	Work Incharge	Intermediate	24
22	Sri Yogendra Kumar Tiwari	Work Incharge	Intermediate	25
23	Sri Shivbaran Yadav	Jiledar	Intermediate	29
24	Sri AnilKumar Singh	Seench Pal	Intermediate	21
25	Sri Bhupendra Tripathi	Seench Pal	Intermediate	25
26	Sri Mukul Srivastava	Seench Pal	B.Com.	20
27	Sri Dayashankar Mishra	Seench Pal	Intermediate	25
28	Mohd. Ahamad	Seench Pal	Intermediate	21
29	Sri Ramakant Yadav	IV Class	High School	26
30	Sri Baratilal Upadhyay	IV Class	Jr.High School	29
31	Sri Purshottam	IV Class	Educated	29
32	Sri Bharat Prasad Gupta	IV Class	Educated	31
33	Smt. Leelawati	IV Class	Intermediate	30
34	Smt. Kalawati	IV Class	Educated	30

Institutional Arrangement at Project level:

Project management Agency (PIA)

The SLNA would evolve appropriate mechanisms for selecting and approving the PIAs, who would be responsible for implementation of watershed projects in different districts. These PIAs may include relevant line departments. Autonomous organizations under State/Central Governments, Government Institutes/Research bodies, Intermediate Panchayats, Voluntary Organizations (VOS).

However, the following criteria may be observed in the selection of these PIAs:

- 1- They should preferably have prior experience in watershed related aspects or management of watershed development projects.
- 2- They should be prepared to constitute dedicated Watershed Development Teams.

Selected PIAs will sign a contract/MOU with the concerned DWSUs/District Level Committee as referred in para29 that will spell out well –defined annual outcomes, against whicg the performance of each PIA will be monitored each year and evaluated on a regular basis by institutional evaluators from a panel approved by the SLNA/Departmental Nodal Agency at the central level.

Each PIA must put in position a dedicated watershed development team (WDT) with the approval of DWDU. The WDT will be hired on contract/deputation. Transfer etc for a term not exceeding the project period. The composition of the WDT will be indicated in the contract/MOU. No programme funds for DPR and watershed works under any circumstances should be released to either the PIA or Watershed Committee (WC) unless the composition of the WDT has been clearly indicated in the MOU/contract and the team members are fully in place.

Roles and 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.

CONSTITUTION OF W.D.T. BY P.I.A.

W.D.T. have constituted. The Detail of W.D.T. is as below: W.D.T

S.No.	Name of the member	Subject	Qualification	Gov./Contact
			/Experience	
1.	Sri Rajendra Singh	Water Management	Diploma in Ag. Engg	Gov.
2.	Sri Vinay Kumar Maurya	Water Management	Diploma in Ag. Engg	Gov.
3.	Sri M.K. Singh	Soil and Water	Diploma in Ag. Engg	Gov.
		Management		
4.	Smt Nitu Shukla	Social Ogranization	M.A. (Sociology)	Contact
5.	Sri K.N. Srivastava	Soil and Water	Diploma in Ag. Engg	Gov.
		Management		
6.	Sri Sushil Kumar Gautam	Soil Science	M.Sc. (Soil Science)	Gov.
7.	Sri Ram Briksh Seth	Soil conservation	Retired Technical Assisstant	Contact
			Soil Conversation	
8.	Sri M.S. Singh	Social Organisation	M.Sc. (Village Sociology and	Gov.
			Agriculture Economics)	
9.	Sri Ashok Kumar Singh	Instituatioanal Building	B.Com	Gov.
10.	Sri Santosh Kumar	Agriculture	M.Sc. (Agronomy Science)	Gov.
11.	Sri Yogesh Chandra	Agriculture	D. Phil. (Agriculture Extension	Gov.
	Srivastava)	

WATERSHED DEVELOPMENT TEAM:

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 SNLA 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.

Roles and Responsibilities of WDT:

The WDT will guide the watershed committee (WC) in the formulation of the watershed action plan. An indicative list of the roles and responsibilities of the WDT would include among other s, the following.

- a. Assist Gram Panchayat /Gram Sabha in constitution of the watershed committee and their functioning.
- b. Organizing and nurturing User Groups and Self-Help Groups.
- c. Mobilizing women to ensure that the perspectives and interests of women are adequately related in the watershed action plan.
- d. Conducting the participatory base –line surveys, training and capacity building.

- e. Preparing detailed resource development plans including water and soil conservation or redamation etc. to promote sustainable livelihood at household level.
- f. Common property resource management and equitable sharing.
- g. Preparing Detailed Project Report (DPR) for the consideration of Gram Sabha.
- h. Undertake engineering surveys, prepare engineering drawing and cost estimates for any structure to be built.
- i. Monitoring, checking, accessing, and undertaking physical verification and measurement of work done.
- j. Facilitating the development of livelihood opportunities for the landless.
- k. Maintaining project accounts.
- 1. Arranging physical, financial and social audit of the work undertaken.
- m.Setting up suitable arrangements for post-project operation, maintenance and future development of the assets created during the project period.

DETAIL OF WATERSHED COMMITTEE & SUB WATERSHED COMMITTEE

S. No	Name Of Gram Panchyat/	Committee/S ubcommittee	Date Of Constituti on	Name Of President	Name Of Secretary	Member Of User Group	Member Of Shg	Female Member	Sc Member	Land Less Member	Work In Charge	Wdt Member
	Village											
1	Harghar	Committee	01.02.2011	Roshan lal	Vijay pal singh	Suresh	Ramesh	Durgawati	Ramdeen	Mukesh	Sushil kumar	
2	Gareora	Committee	02.02.2011	Smt Rajul Jain	Anjani kumar	Shivshankar	Teeja devi	Mamta devi	Ram Dhani	Sidhnath	Ashok Singh	
3	Bhaiya	Committee	03.02.2011	Kausilesh kumar	Urmila Devi	Durga prashad	Mishri lal	Jokhana	Devideen	Sivjangi	Santosh	
4	Chandas	Committee	04.02.2011	Kausilesh kumar Singh	Kausiliesh kumar	Santosh kumar	Dudhu ram	Photodevi	Anand	Ramesh kumar	Harishan kar Singh	
5	Mamauli	Committee	05.02.2011	Purvanti devi	Ramesh Chandra	Ajuk narayan	Virendra kumar	Banswati	Ramjiyan	Amarnath	Radhe shyam Verma	
6	Kharaka dabar	Committee	06.02.2011	Sher bahadur singh	Narendra Singh	Harishankar Singh	Lal Ji	Ushawati	Hinch lal	Sobhnath	Dilip kumar Sharma	
7	Sonbarsi	Committee	07.02.2011	Aushotosh Shukla	Indresh	Raghuver Dayal	Rajeshwari prashad	Kamlawati	Munni lal	Ramesh Chandra	Yogendra Tiwari	

FORMATION OF SELF HELP GROUP

S.No	Name Of	Name of	President	Secretary	Work
	Village	SHG			
1	Harghar	Sharda SHG	Ramesh	Mukesh	Dairy Work
		Jai ma Durga	Vandana	Rekha	Goat Keepingc
2	Gareora	Bhole SHG	Anjani Kumar	Devishankar	Goat Keeping
		Parvati SHG	Teeja Devi	Sunita Devi	Dairy Work
3	Bhaiya	Manwar	Vinod kumar	Shivangi	Goat Keeping
		Kashiram SHG			
		Ma Mahamaya	Sury kali	Kalui	Goat Keeping
		SHG			
4	Chandas	Paramhans SHG	Budhuram	Ramesh	General Merchant
		Laxmi SHG	Sukuariya	Sonkali	General Merchant
5	Mamauli	Sri Krishna SHG	Akhilesh kumar	Ravi Shankar	Goat Keeping
		Sri Radha SHG	Sariya	Mamta	Goat Keeping
6	Kharakadabar	Bajrang SHG	Ranveer	Narendra	Dairy work
		Ganga SHG	Mithilesh	Shandhya	Goat Keeping
7	Sonbarsi	Ganga SHG	Rajeswari prashad	Ramesh Chandra	Goat Keeping
		Ma Sharda SHG	Kallan Devi	Kamala devi	Goat Keeping

DETAILS 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	2A7D2b1e	567.765	412	7
2	2A7D2b1d	524.084	381	6
3	2A7D2b1c	705.084	512	7
4	2A7D2d1f	510.592	371	6
5	2A7D2b2e	862.555	627	9
6	2A7D2b2d	537.767	390	5
7	2A7D2b2d	640.245	467	6
8	TOTAL	4348.06	3160	46

PHOTOGRAPHS OF **RESOURCES MAP, SOCIAL MAP,** TRANSECT WALK, VENN DIAGRAM, L.C.C. MAP, LAND USE MAP OF VILLAGES IN I.W.M.P. - |Vth AND **SELF HELP GROUPS (SHGs)** IN PARTICIPATORY RURAL APPRAISAL

DESCRIPTION OF SYMBOL USED LLC MAP

(Textural Class)

Textural Class	Symbol	LC Category
Sand	S	IV
Loamy Sand	Is	Ш
Sandy Loam	sI	I
Loam	Ι	Ι
Clay loam	cI	Ι
Sandy Clay loam	scI	Ι
Silt	si	Ι
Silty loam	sil	Ι
Silty clay	sic	II
Silty clay loam	sicl	Ι
Silty clay	sc	П
Clay	c	Ш,ІШ

(Depth Classes)

Depth Class	Symbol	Particulars	I.C
90Cm	d5	Highly Depth	I
45-90 Cm	d4	Depth	Ш
22.5-40 Cm	d3	Light Depth	Ш
7.5-22.4 Cm	d2	Shallow	IV
7.5 Cm	d1	Highly Shallow	VI,VII

Slope percentage according to Different Categories LC

A	0-1	Ι
В	1-3	Π
С	3-5	III
D	5-10	IV
E	10-15	IV
F	15-25	VI
G	25-33	VI
Н	33-50	VII
Ι	50 HIGH	VIII

Erosion

Erosion Category & Symbol	Particulars	Proposal LC
e ₁ Slight Erosion	Sheet are Ril erosion wher 25% Loss of "A" Horison	I,II
e ₂ Moderate erosion	Gully erosion 50%-75% Loss of "A" Horison	III
e ₃ Severe erosion	Total Loss of "A" Horizan and in isial Stage of "B" Horizan	IV
e ₄ Very Severe erosion	25%-75% Loss of "B" Horizan Development of very deep gullies	VI,VII

CHAPTER – 6 EXPECTED OUTCOMES

6.1 Expected Outcomes 6.1.1 Employment

Employment has always been a problem in the villages. The principal occupations of the people are agriculture, animal husbandry and casual labour work. However, rain fall being very limited and erratic, agriculture suffers, i.e. at best they can take only a single crop, which keeps them partially engaged for about 4 months. Lack of fodder 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 itself or outside it. The project plans for creation of both wage employment and self employment opportunities. Wage employment would be created by engaging people in watershed physical works like construction of earthen bunds, farm bunds, 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.

6.1.2.Migration

Low rainfall results in very little fodder availability in the locality. 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.

6.1.3 Ground water table

Rainfall has been scanty but demand for ground water has been increasing all the time. The ground water table thus has depleted over the years. Presently it stands at 18 m. Proper water harvesting structures and percolation tanks would go a long way in increasing water table depth from 28 m in the pre-project level to 25 m in the post project period.

6.1.4 Drinking water

As a result of the watershed activities, it is expected that the quantity and quality of drinking water would improve.

6.1.5 Crops

Agriculture primarily depends upon water; but this is what is lacking in this watershed area. The surface water is very limited which could not fulfil the need of crop production. All this can change with the integrated land and water management during the watershed project. The planned earthen bunds would help in percolate water underground, and preserve some moisture in the soil. 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.

It is expected that the implementation of different watershed management activities will bring down the run off and soil loss by 70% and 80% of their present level respectively. It is envisaged to increase the water and land utilization index though adoption of bio-engineering measures and improve the eco-development index. The proposed plan will improve the crop diversification index, productivity of existing crops and thereby will lead to self-suffering in food with nutritional security. The different enterprises of various sectors and the project as a whole have been found to be economically viable with sound rate of internal return and less payback period.