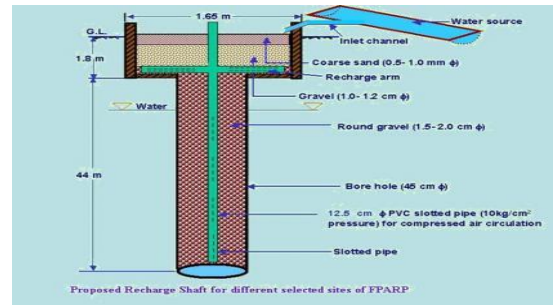




CENTRAL GROUND WATER BOARD
MINISTRY OF WATER RESOURCES,
RIVER DEVELOPMENT & GANGA REJUVENATION
GOVERNMENT OF INDIA



Excavated/dugout farm pond



**ARTIFICIAL RECHARGE TO GROUND WATER AND
WATER CONSERVATION PLAN OF BARI BLOCK,
DISTRICT DHAULPUR, RAJASTHAN**

Western Region, Jaipur
November 2016

ARTIFICIAL RECHARGE TO GROUND WATER AND WATER CONSERVATION PLAN OF BARI BLOCK, DISTRICT DHAULPUR

Plan at a Glance

1.	Area of the Bari Block	816.24 Sq. km.
2.	Area identified for Artificial Recharge	694.67 sq km
3.	Dynamic Ground Water Resources (as on 31.03.2011)	
	Net Ground Water Availability	57.67 MCM
	Annual Ground Water Draft	52.34 MCM
	Stage of Ground Water Development	90.74 %
4.	Volume of water to be harnessed	44.16 MCM
	Volume of water available for recharge through RS	2.66 MCM
	Volume of water available for recharge through PT	13.20 MCM
5.	Volume of unsaturated aquifer zone available for recharge	154.53 MCM
6.	Total number of structures to be proposed	
	Recharge structures	76 shafts in 63
	Existing village pond with recharge shaft/ well	Nos. of existing
		village ponds
	Percolation Tanks	66 nos.
	Sprinkler Irrigation	300 ha
	Expected Annual GW recharge	12.69 MCM
	Provision for supplemental irrigation, thus reducing GW withdrawal for irrigation	0.24 MCM
	Total recharge/ saving of ground water	12.93 MCM
7.	Estimated Cost	33.60 crore
	Artificial Recharge Plan	30.20 crore
	Sprinkler Irrigation	1.50 crore
	Piezometer construction	0.30 crore
	Operation and maintenance	1.60 crore

ARTIFICIAL RECHARGE TO GROUND WATER AND WATER CONSERVATION PLAN OF BARI BLOCK, DISTRICT DHAULPUR

Introduction

The **Bari Block, district Dhaulpur** is one of the critical blocks of Rajasthan and is under severe stress, as evident from the stage of ground water development, which has attained an alarming level of **90.74%**.

Location of the block

The Bari Block covers an area of 816.24 Sq. km. and falls in central to southern part of Dhaulpur district. It is located between North latitudes 26°25' & 26°47' and East longitudes 77°29' & 77°50'.

Surface Water Availability

As per the studies carried out by Water Resources Department (WRD), Government of Rajasthan there is very little surplus water available for further development at 75% dependability. Based on the data made available from GWD, the surplus runoff available at 75% dependability level has been worked out for the zones as part of watershed within the block. The nature of aquifer (Alluvium/ Hard rock) is also considered while computing the number of Artificial Recharge structures feasible.

Accordingly about 44.16 MCM has been considered for recharge plan in the block. Optimum utilization of rainwater runoff depends on availability of land, feasible conditions, etc. Volume of Aquifer available for Artificial Recharge is given in **Table.1**

Supply Side Management

Feasible Artificial Recharge and Water Conservation Structures

About 0.035 MCM/year surplus has been considered for each recharge shaft and 0.2 MCM/year for percolation tank wherever feasible. The areas with shallow water level (<5m) have not been considered for construction of Artificial Recharge Structures

The number of Recharge Shaft is decided based on the number of suitable ponds available within the zone. If still some surplus remained unallocated, than few Percolation tanks are proposed at suitable locations. However, in some of the blocks entire available surplus cannot be utilized due to non availability of ponds for Recharge shaft or suitable location for Percolation tanks. Zone wise number of Recharge Structures proposed to be constructed is given in **Table 2**.

Table 1: Volume of Aquifer available for artificial recharge

District	Block	Area of Block (Sq. km.)	Potential area suitable for recharge (Sq. km.)	Type of Aquifer	Area feasible for artificial recharge (Sq km)	Sp Yield	Average DTW (mbgl) NOV 2013	Thickness of unsaturated zone 3 m below ground level (m)	Volume of sub surface storage space available for artificial recharge (MCM)
Dhaulpur	BARI	816.24	694.67	SR	198.92	0.1	8.62	5.62	111.79
				HR	495.75	0.02	7.31	4.31	42.73

Table 2: Number of recharge structure

ZoneCode	Sub_Basin	Type of Aquifer	Zone-Area (sq. km.)	Total Surplus (MCM)	Water Level >5m	Feasible_RS_Prop	Feasible_PT_Prop
Chambal_Chambal Downstream_010_RJ1301_AL	Chambal Downstream	SR	157.721	7.323	Y	3	36
Chambal_Chambal Downstream_010_RJ1301_SR	Chambal Downstream	SR	16.546	0.768	Y	0	0
Chambal_Chambal Downstream_010_RJ1301_SR	Chambal Downstream	SR	36.688	1.703	Y	4	0
Parbati_Parbati_002_RJ1301_AL	Parbati	SR	95.121	6.453	Y	8	8
Parbati_Parbati_002_RJ1301_SR	Parbati	SR	40.338	2.737	Y	16	3
Parbati_Parbati_003_RJ1301_SR	Parbati	SR	47.249	0.000	Y	0	0
Parbati_Parbati_007_RJ1301_SR	Parbati	SR	85.827	0.000	Y	0	0
Parbati_Parbati_008_RJ1301_SR	Parbati	SR	0.041	0.000	N	0	0
Parbati_Parbati_010_RJ1301_SR	Parbati	SR	31.478	0.000	Y	0	0
Parbati_Parbati_012_RJ1301_AL	Parbati	SR	0.208	0.014	N	0	0
Parbati_Parbati_015_RJ1301_AL	Parbati	SR	18.911	1.652	Y	0	4
Parbati_Parbati_016_RJ1301_AL	Parbati	SR	0.049	0.001	N	0	0
Parbati_Parbati_017_RJ1301_AL	Parbati	SR	103.246	8.515	Y	2	5
Parbati_Parbati_018_RJ1301_AL	Parbati	SR	38.485	5.433	Y	14	3
Parbati_Parbati_018_RJ1301_SR	Parbati	SR	18.867	2.663	Y	8	1
Parbati_Parbati_019_RJ1301_AL	Parbati	SR	40.590	2.790	N	0	6
Parbati_Parbati_019_RJ1301_SR	Parbati	SR	43.370	2.981	Y	11	0
Parbati_Parbati_020_RJ1301_AL	Parbati	SR	34.729	1.126	Y	10	0
				44.160		76	66

Recharge Shaft

It is proposed to construct Recharge Shaft in existing ponds. The selected ponds should be atleast 3m deep and shallow ponds will be deepened accordingly. It is proposed that the inlet for the Recharge Shaft should be atleast 1m above bed of pond so that the pond retains adequate water for use by villagers.

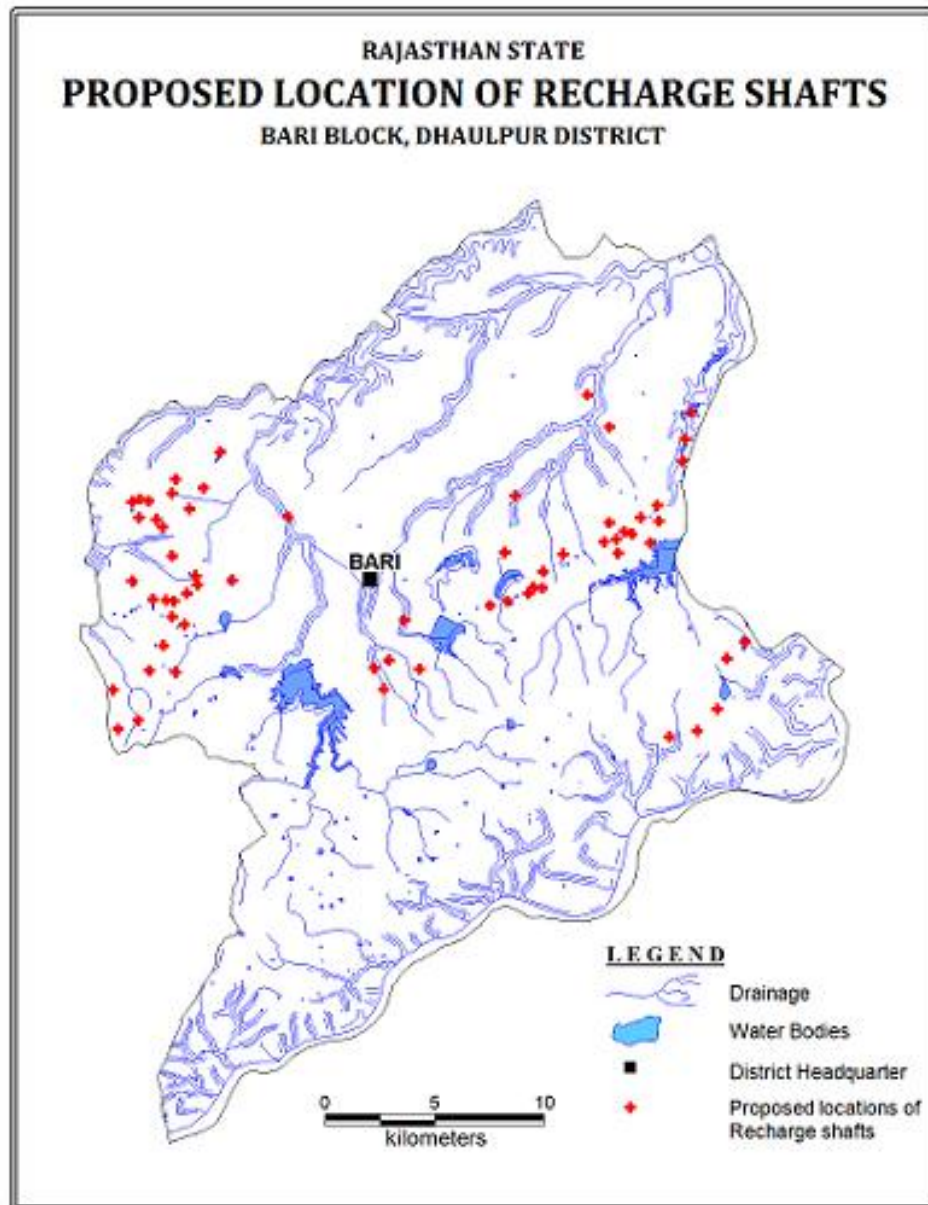
. The tentative location of villages for construction of recharge shaft/well in existing village pond and their cost estimates are shown in Fig 1 and Table 3.

Table 3: Tentative locations of village for village pond with recharge shaft

S.No.	Village	Long	Lat	Watershed	No of Shafts	Unit cost (Rs in lac)	Total cost (Rs in lac)
1.	Baripura	77.777	26.585	Chambal_Chambal Downstream_010_RJ1301_AL	1	5.0	5.0
2.	Basai Dang	77.768	26.576	Chambal_Chambal Downstream_010_RJ1301_AL	1	5.0	5.0
3.	Basai Dang	77.755	26.573	Chambal_Chambal Downstream_010_RJ1301_AL	1	5.0	5.0
4.	Beerpur	77.790	26.612	Chambal_Chambal Downstream_010_RJ1301_SR	3	5.0	15.0
5.	Beerpur	77.782	26.605	Chambal_Chambal Downstream_010_RJ1301_SR	1	5.0	5.0
6.	Kasoti Khera	77.626	26.605	Parbati_Parbati_002_RJ1301_AL	2	5.0	10.0
7.	Kasoti Khera	77.620	26.602	Parbati_Parbati_002_RJ1301_AL	1	5.0	5.0
8.	Kasoti Khera	77.624	26.593	Parbati_Parbati_002_RJ1301_AL	1	5.0	5.0
9.	Husainpur	77.680	26.649	Parbati_Parbati_002_RJ1301_AL	1	5.0	5.0
10.	Bijauli	77.727	26.661	Parbati_Parbati_002_RJ1301_AL	2	5.0	10.0
11.	Sauhas	77.685	26.672	Parbati_Parbati_002_RJ1301_AL	1	5.0	5.0
12.	Pohap Nagar	77.634	26.621	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
13.	Gutakhur	77.641	26.601	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
14.	Khanpur Goojar	77.681	26.629	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
15.	Khanpur Goojar	77.673	26.627	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
16.	Madauna	77.690	26.632	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
17.	Madauna	77.693	26.635	Parbati_Parbati_002_RJ1301_SR	2	5.0	10.0
18.	Madauna	77.697	26.635	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
19.	Mastoora	77.697	26.641	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
20.	Mastoora	77.706	26.649	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
21.	Bijauli	77.725	26.654	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
22.	Bijauli	77.735	26.658	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
23.	Bijauli	77.738	26.657	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
24.	Bijauli	77.731	26.655	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
25.	Bijauli	77.732	26.649	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0

26.	Bijauli	77.742	26.663	Parbati_Parbati_002_RJ1301_SR	1	5.0	5.0
27.	Gujarra Kalan Khurd	77.718	26.714	Parbati_Parbati_017_RJ1301_AL	1	5.0	5.0
28.	Afzalpur	77.728	26.701	Parbati_Parbati_017_RJ1301_AL	1	5.0	5.0
29.	Todpura	77.509	26.637	Parbati_Parbati_018_RJ1301_AL	2	5.0	10.0
30.	Sanaura	77.528	26.629	Parbati_Parbati_018_RJ1301_AL	1	5.0	5.0
31.	Sanaura	77.534	26.632	Parbati_Parbati_018_RJ1301_AL	2	5.0	10.0
32.	Dhannu Ka Pura	77.509	26.670	Parbati_Parbati_018_RJ1301_AL	1	5.0	5.0
33.	Dheemiri	77.513	26.671	Parbati_Parbati_018_RJ1301_AL	1	5.0	5.0
34.	Dheemiri	77.516	26.670	Parbati_Parbati_018_RJ1301_AL	1	5.0	5.0
35.	Dhannu Ka Pura	77.512	26.663	Parbati_Parbati_018_RJ1301_AL	1	5.0	5.0
36.	Dheemiri	77.520	26.663	Parbati_Parbati_018_RJ1301_AL	1	5.0	5.0
37.	Dhannu Ka Pura	77.523	26.660	Parbati_Parbati_018_RJ1301_AL	1	5.0	5.0
38.	Sanaura	77.527	26.648	Parbati_Parbati_018_RJ1301_AL	1	5.0	5.0
39.	Dheemiri	77.527	26.673	Parbati_Parbati_018_RJ1301_AL	1	5.0	5.0
40.	Dheemiri	77.529	26.679	Parbati_Parbati_018_RJ1301_AL	1	5.0	5.0
41.	Chila Chaund	77.500	26.593	Parbati_Parbati_018_RJ1301_SR	1	5.0	5.0
42.	Chila Chaund	77.502	26.577	Parbati_Parbati_018_RJ1301_SR	1	5.0	5.0
43.	Chila Chaund	77.512	26.580	Parbati_Parbati_018_RJ1301_SR	1	5.0	5.0
44.	Sanaura	77.519	26.630	Parbati_Parbati_018_RJ1301_SR	1	5.0	5.0
45.	Sanaura	77.524	26.629	Parbati_Parbati_018_RJ1301_SR	1	5.0	5.0
46.	Gadarpura	77.527	26.623	Parbati_Parbati_018_RJ1301_SR	1	5.0	5.0
47.	Gadarpura	77.523	26.611	Parbati_Parbati_018_RJ1301_SR	1	5.0	5.0
48.	Reechhai	77.517	26.600	Parbati_Parbati_018_RJ1301_SR	1	5.0	5.0
49.	Gadarpura	77.533	26.620	Parbati_Parbati_019_RJ1301_SR	1	5.0	5.0
50.	Kankrai	77.529	26.600	Parbati_Parbati_019_RJ1301_SR	1	5.0	5.0
51.	Sanaura	77.539	26.636	Parbati_Parbati_019_RJ1301_SR	1	5.0	5.0
52.	Sanaura	77.538	26.639	Parbati_Parbati_019_RJ1301_SR	1	5.0	5.0
53.	Sanaura	77.555	26.638	Parbati_Parbati_019_RJ1301_SR	1	5.0	5.0
54.	Totpura	77.535	26.667	Parbati_Parbati_019_RJ1301_SR	1	5.0	5.0
55.	Totpura	77.542	26.676	Parbati_Parbati_019_RJ1301_SR	1	5.0	5.0
56.	Nidhara	77.580	26.664	Parbati_Parbati_019_RJ1301_SR	1	5.0	5.0
57.	Khauri Ibrahimpur	77.549	26.690	Parbati_Parbati_019_RJ1301_SR	3	5.0	15.0
58.	Janpura	77.746	26.653	Parbati_Parbati_020_RJ1301_AL	1	5.0	5.0
59.	Garhi Jakhoda	77.750	26.662	Parbati_Parbati_020_RJ1301_AL	1	5.0	5.0
60.	Garhi Jakhoda	77.750	26.669	Parbati_Parbati_020_RJ1301_AL	1	5.0	5.0
61.	Marholi	77.763	26.695	Parbati_Parbati_020_RJ1301_AL	2	5.0	10.0
62.	Aruva	77.765	26.707	Parbati_Parbati_020_RJ1301_AL	4	5.0	20.0
63.	Marholi	77.761	26.687	Parbati_Parbati_020_RJ1301_AL	1	5.0	5.0
					76		380.0

Figure 1: Showing Tentative location of the Recharge Shaft



Percolation Tank

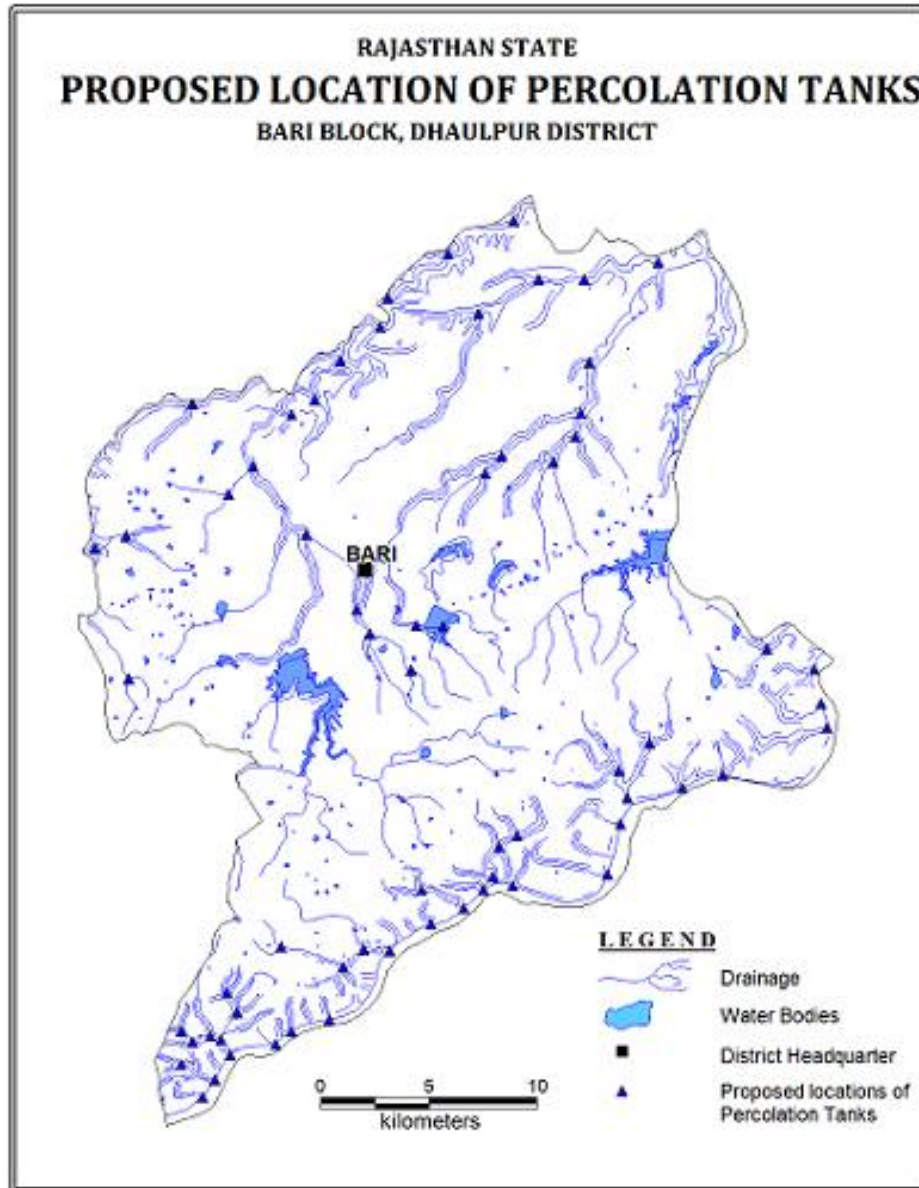
The tentative location of villages for construction of percolation tank and their cost estimates are shown in Fig 2 and Table 4

Table 4: Tentative locations of village for Percolation Tanks

S. No.	Village	Longitude	Latitude	Micro Watershed	Unit Cost (Rs. In lacs)
1	Pali	77.543	26.419	Chambal_Chambal Downstream_010_RJ1301_AL	40
2	Pali	77.548	26.426	Chambal_Chambal Downstream_010_RJ1301_AL	40
3	Pali	77.556	26.436	Chambal_Chambal Downstream_010_RJ1301_AL	40
4	Sewarpali	77.577	26.441	Chambal_Chambal Downstream_010_RJ1301_AL	40
5	Sewarpali	77.584	26.446	Chambal_Chambal Downstream_010_RJ1301_AL	40
6	Sewarpali	77.601	26.451	Chambal_Chambal Downstream_010_RJ1301_AL	40
7	Kudinna	77.629	26.480	Chambal_Chambal Downstream_010_RJ1301_AL	40
8	Karua	77.649	26.491	Chambal_Chambal Downstream_010_RJ1301_AL	40
9	Karua	77.664	26.497	Chambal_Chambal Downstream_010_RJ1301_AL	40
10	Karua	77.673	26.505	Chambal_Chambal Downstream_010_RJ1301_AL	40
11	Gurha Mutawali	77.677	26.510	Chambal_Chambal Downstream_010_RJ1301_AL	40
12	Barpura	77.687	26.507	Chambal_Chambal Downstream_010_RJ1301_AL	40
13	Gangoli	77.730	26.511	Chambal_Chambal Downstream_010_RJ1301_AL	40
14	Niyayati	77.736	26.532	Chambal_Chambal Downstream_010_RJ1301_AL	40
15	Basai Dang	77.765	26.547	Chambal_Chambal Downstream_010_RJ1301_AL	40
16	Jogiyapura	77.784	26.553	Chambal_Chambal Downstream_010_RJ1301_AL	40
17	Rajai Khurd	77.829	26.582	Chambal_Chambal Downstream_010_RJ1301_AL	40
18	Kasba Nagar	77.832	26.572	Chambal_Chambal Downstream_010_RJ1301_AL	40
19	Basai Dang	77.750	26.566	Chambal_Chambal Downstream_010_RJ1301_AL	40
20	Basai Dang	77.736	26.555	Chambal_Chambal Downstream_010_RJ1301_AL	40
21	Chandelpura	77.740	26.543	Chambal_Chambal Downstream_010_RJ1301_AL	40
22	Gurha Mutawali	77.680	26.523	Chambal_Chambal Downstream_010_RJ1301_AL	40
23	Karua	77.644	26.505	Chambal_Chambal Downstream_010_RJ1301_AL	40
24	Sewarpali	77.579	26.481	Chambal_Chambal Downstream_010_RJ1301_AL	40
25	Sewarpali	77.559	26.454	Chambal_Chambal Downstream_010_RJ1301_AL	40
26	Sewarpali	77.554	26.463	Chambal_Chambal Downstream_010_RJ1301_AL	40
27	Pali	77.538	26.442	Chambal_Chambal Downstream_010_RJ1301_AL	40
28	Pali	77.551	26.443	Chambal_Chambal Downstream_010_RJ1301_AL	40
29	Pali	77.533	26.432	Chambal_Chambal Downstream_010_RJ1301_AL	40
30	Pali	77.547	26.444	Chambal_Chambal Downstream_010_RJ1301_AL	40
31	Shahpur	77.608	26.473	Chambal_Chambal Downstream_010_RJ1301_AL	40
32	Shahpur	77.617	26.480	Chambal_Chambal Downstream_010_RJ1301_AL	40
33	Gurha Mutawali	77.688	26.528	Chambal_Chambal Downstream_010_RJ1301_AL	40
34	Rajai Kalan	77.804	26.605	Chambal_Chambal Downstream_010_RJ1301_AL	40
35	Rajai Kalan	77.826	26.597	Chambal_Chambal Downstream_010_RJ1301_AL	40
36	Pali	77.533	26.446	Chambal_Chambal Downstream_010_RJ1301_AL	40
37	Khaurpura	77.620	26.611	Parbati_Parbati_002_RJ1301_AL	40

S. No.	Village	Longitude	Latitude	Micro Watershed	Unit Cost (Rs. In lacs)
38	Adampur	77.614	26.622	Parbati_Parbati_002_RJ1301_AL	40
39	Bari (M)	77.625	26.643	Parbati_Parbati_002_RJ1301_AL	40
40	Hansai	77.674	26.678	Parbati_Parbati_002_RJ1301_AL	40
41	Hansai	77.682	26.685	Parbati_Parbati_002_RJ1301_AL	40
42	Pura Bakhtoo	77.705	26.683	Parbati_Parbati_002_RJ1301_AL	40
43	Bainpura Mafi	77.716	26.694	Parbati_Parbati_002_RJ1301_AL	40
44	Afzalpur	77.718	26.703	Parbati_Parbati_002_RJ1301_AL	40
45	Pohap Nagar	77.642	26.615	Parbati_Parbati_002_RJ1301_SR	40
46	Talab Shahi No. 1,2	77.654	26.614	Parbati_Parbati_002_RJ1301_SR	40
47	Gutakhur	77.639	26.596	Parbati_Parbati_002_RJ1301_SR	40
48	Dhurwas	77.687	26.783	Parbati_Parbati_015_RJ1301_AL	40
49	Kherli	77.657	26.769	Parbati_Parbati_015_RJ1301_AL	40
50	Marha Goojar	77.628	26.751	Parbati_Parbati_015_RJ1301_AL	40
51	Bainpura Khalsa	77.625	26.739	Parbati_Parbati_015_RJ1301_AL	40
52	Badraitha	77.671	26.745	Parbati_Parbati_017_RJ1301_AL	40
53	Badhau Ka Nagla	77.698	26.759	Parbati_Parbati_017_RJ1301_AL	40
54	Khera	77.720	26.759	Parbati_Parbati_017_RJ1301_AL	40
55	Neem Khera	77.754	26.766	Parbati_Parbati_017_RJ1301_AL	40
56	Lahakpur	77.722	26.724	Parbati_Parbati_017_RJ1301_AL	40
57	Sikarra	77.493	26.647	Parbati_Parbati_018_RJ1301_AL	40
58	Todpura	77.507	26.652	Parbati_Parbati_018_RJ1301_AL	40
59	Tamoti	77.538	26.707	Parbati_Parbati_018_RJ1301_AL	40
60	Chila Chaund	77.509	26.593	Parbati_Parbati_018_RJ1301_SR	40
61	Maharajpur	77.591	26.653	Parbati_Parbati_019_RJ1301_AL	40
62	Rewai	77.566	26.681	Parbati_Parbati_019_RJ1301_AL	40
63	Totpura	77.555	26.670	Parbati_Parbati_019_RJ1301_AL	40
64	Sigorai	77.595	26.709	Parbati_Parbati_019_RJ1301_AL	40
65	Tontri	77.607	26.725	Parbati_Parbati_019_RJ1301_AL	40
66	Sigorai	77.584	26.703	Parbati_Parbati_019_RJ1301_AL	40
				Total	2640

Figure 2: Showing Tentative location of the Percolation Tank



Demand Side Management

Efficient Irrigation:

In Flood/ furrow irrigation method more than 50% of applied water is wasted through seepage to deeper levels, local inundation causes loss through evaporation and it leaches out the nutrients from the plants. While through drip and sprinkler irrigation method, wastage through irrigation losses could be minimized. Ground water usage can be minimized drastically by using HDPE pipes. Initially the scheme can be proposed to be started in 300 ha area, which is worst affected showing deepest water level and declining trends. The area is to be finalized based on land holdings, willingness of farmers and No Objection certificate from the land owner.

Impact Assessment and Monitoring

Assessment of impact of the artificial recharge schemes implemented is essential to assess the efficacy of structures constructed. It helps in identification of cost-effective recharge mechanisms for optimal recharge into the ground water system. It also helps to make necessary modifications in site selection, design and construction of structures in future.

It is proposed to construct 50 piezometers, at suitable locations for monitoring of water levels, in the vicinity of proposed recharge structure.

Revival, Repair of Water Bodies

The existing ponds and tanks with time loose their storage capacity as well as the natural ground water recharge through these water bodies has also become negligible due to siltation and encroachment by farmers for agriculture purposes. There are several such villages where ponds/ tanks are in dilapidated condition. These existing village tanks, which are normally silted and damaged, can be modified to serve as recharge structure in case these are suitably located to serve as percolation tanks. Through desilting, coupled with providing proper waste weir, the village tanks can be converted into recharge structure.

Financial Outlay of the Plan

The total estimated cost of the Plan is Rs. 33.60 cr. The tentative cost estimates of the various activities of the Plan are shown in Table 5 & 6. The unit rates are as followed by the Govt. of Rajasthan (BSR).

Table 5: Cost of the recharge structures

Cost Recharge Shaft Rs in crs (Unit cost Rs 0.05 cr for alluvium and Rs 0.026 cr for hard rock)	Cost of Percolation Tank in Rs in crs (Unit cost Rs 0.4 cr)	Cost of Sprinkler irrigation in Rs (Unit cost 0.005 cr/ha)
Soft rock – 3.80	26.40	1.50

Table 6: Tentative cost of different activities

Feasible Artificial Recharge & Water Conservation structures/ activities	Tentative Design	Quantity (in nos. or area in ha)	Rainwater harvested (MCM) or No. of sprinklers (/ha)	Tentative unit cost (in Rs lakh)	Total tentative cost (in Rs lakh)	Expected Annual GW recharge/ conservation (MCM) @ 0.8 MCM/structure
Recharge Structures/ Activities						
Recharge shaft within the pond /tanks	Alluvium – Depth 80m, Dia: 10-12” with filter pit	76	2.66	5	380	2.13
	Hard rock: Depth –60m, Dia 10-12”with filter pit	-	-	-	-	-
Percolation tanks (3 fillings)	200m*200m*1.5 m	66	13.2	40	2640	10.56
Water Conservation Measures	Sprinkler Irrigation	300 ha	25	0.5/ha	150	0.24
		Total			3170	12.93
Impact assessment & Monitoring						
Piezometer	50 – 80 m	50		0.6	30	
<i>Impact assessment will be carried out by implementing agency</i>						
O & M - 5% of total cost of the scheme					160	
TOTAL					3360	12.93

Note: Type, number and cost of structure may vary according to site after ground verification