केंद्रीय भूमि जल बोर्ड

जल संसाधन, नदी विकास और गंगा संरक्षण

विभाग, जल शक्ति मंत्रालय

भारत सरकार

Central Ground Water Board

Department of Water Resources, River Development and Ganga Rejuvenation,

Ministry of Jal Shakti

Government of India

AQUIFER MAPPING AND MANAGEMENT OF GROUND WATER RESOURCES

BAIKUNTHPUR BLOCK, KOREA DISTRICT, CHHATTISGARH

उत्तर मध्य छत्तीसगढ़ क्षेत्र, रायपुर

North Central Chhattisgarh Region, Raipur

REPORT ON
AQUIFER MAPPING AND MANAGEMENT PLAN
OF BAIKUNTHPUR BLOCK, KOREA DISTRICT, CHHATTISGARH

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Scientist-'B'

AQUIFER MAPPING AND MANAGEMENT PLAN FOR BAIKUNTHPUR BLOCK (KOREA DISTRICT), CHHATTISGARH

CONTENTS

BLOCK-WISE AQUIFER MAPS AND MANAGEMENT PLANS

1. Salient Information:

About the area: Baikunthpur Block is situated on the eastern part of Korea district of Chhattisgarh and is bounded on the north by Sonhat block, in the west by Manendragarh Block, in the south by Khadgawan block and in the east by Surajpur district. The block area lies between 23.14 and 23.42 N latitudes and 82.36 and 82.77 E longitudes. The geographical extension of the study area is 639.93 sq.km representing around 13 % of the district's geographical area. Administrative map of the block is shown in Fig. 1. Geomorphology mainly comprises of structural plains of Gondwana rocks. Geomorphology map is shown in Figure 2. The major drainage of the block includes Gej Nala, Gobri Nala and Nakti Nala. Gobri Nala is part of Lower Ganga which covers eastern part of the block. Drainage of Gej and nakti Nala are parts of Mahanadi Basin. Drainage map shown in Fig.3.

Population: The total population of Baikunthpur block as per 2011 Census is 198953 out of which rural population is 126446 while the urban population is 72507.The population break up i.e. male- female, rural & urban is given below -

Table- 1: Population Break Up

Block	Total population	Male	Female	Rural population	Urban population
Baikunthpur	198953	101408	97545	126446	72507

Source: CG Census, 2011

Growth rate: The decadal growth rate of the block is 10.68 as per 2011 census.

Rainfall:The study area receives rainfall mainly from south-west monsoon. The months of July and August are the heaviest rainfall months and nearly 95% of the annual rainfall is received during June to September months. Average annual rainfall in the study area is (Average of the last five years i.e. 2010 to 2015) 1590.34 mm with 50 to 60 rainy days.

Table-2: Rainfall data in Baikunthpur block in mm

Year	2010-11	2011-12	2012-13	2013-14	2014-15
Annual rainfall	1088.40	2103.30	1819.70	1570.00	1370.30

Source: IMD

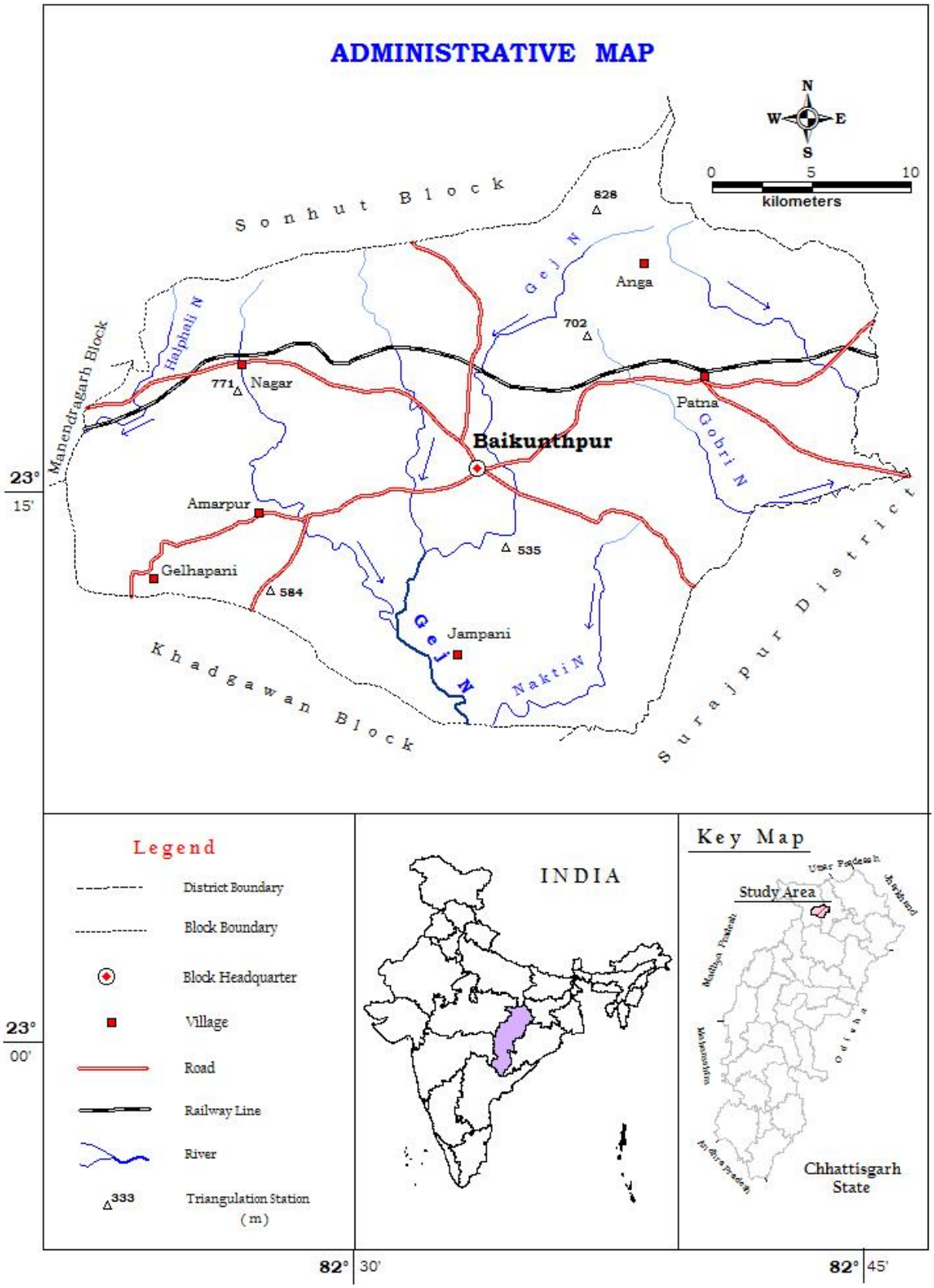

Figure 1 Administrative Map of Baikunthpur Block

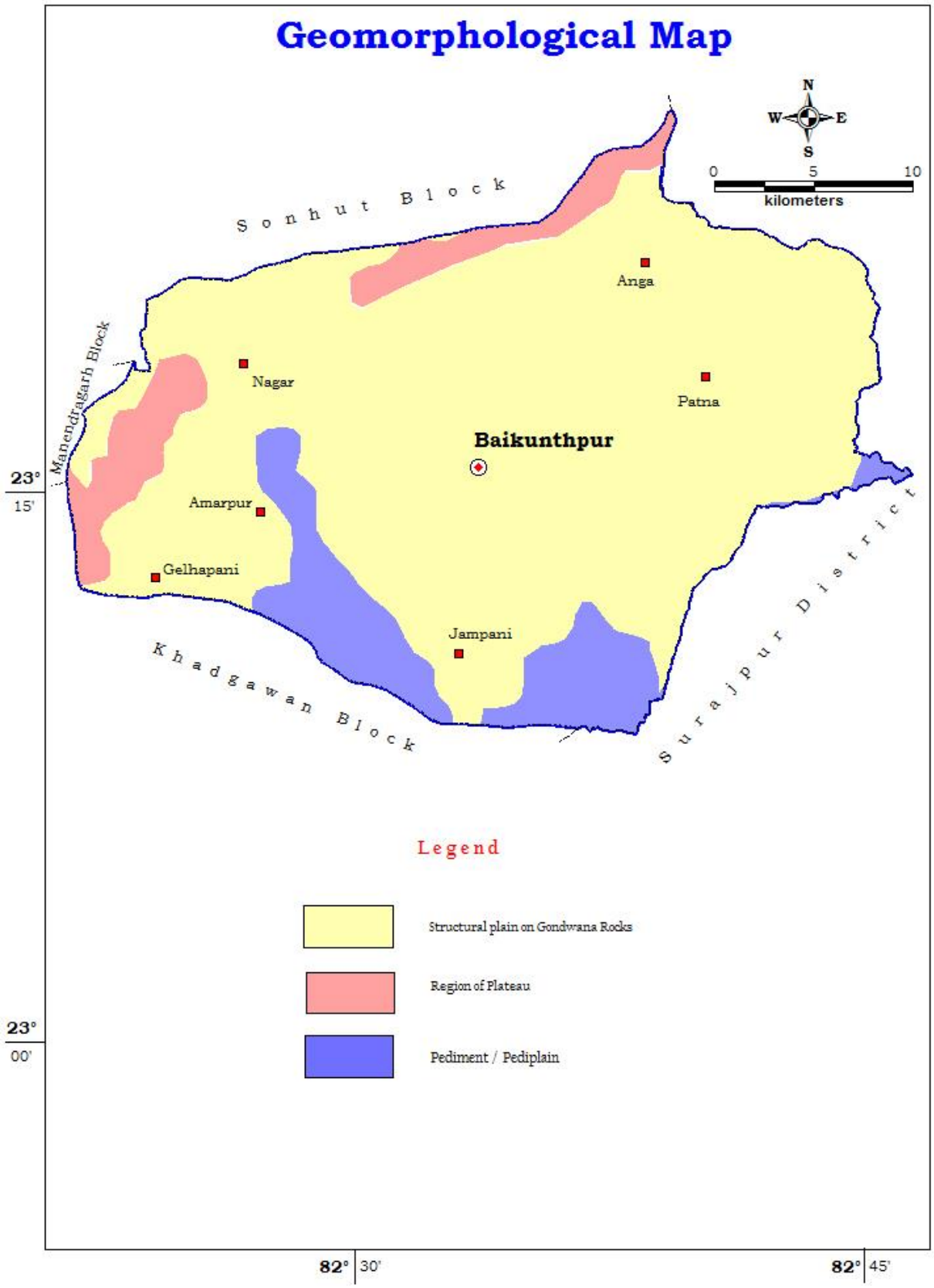

Figure 2 Geomorphology Map of Baikunthpur Block

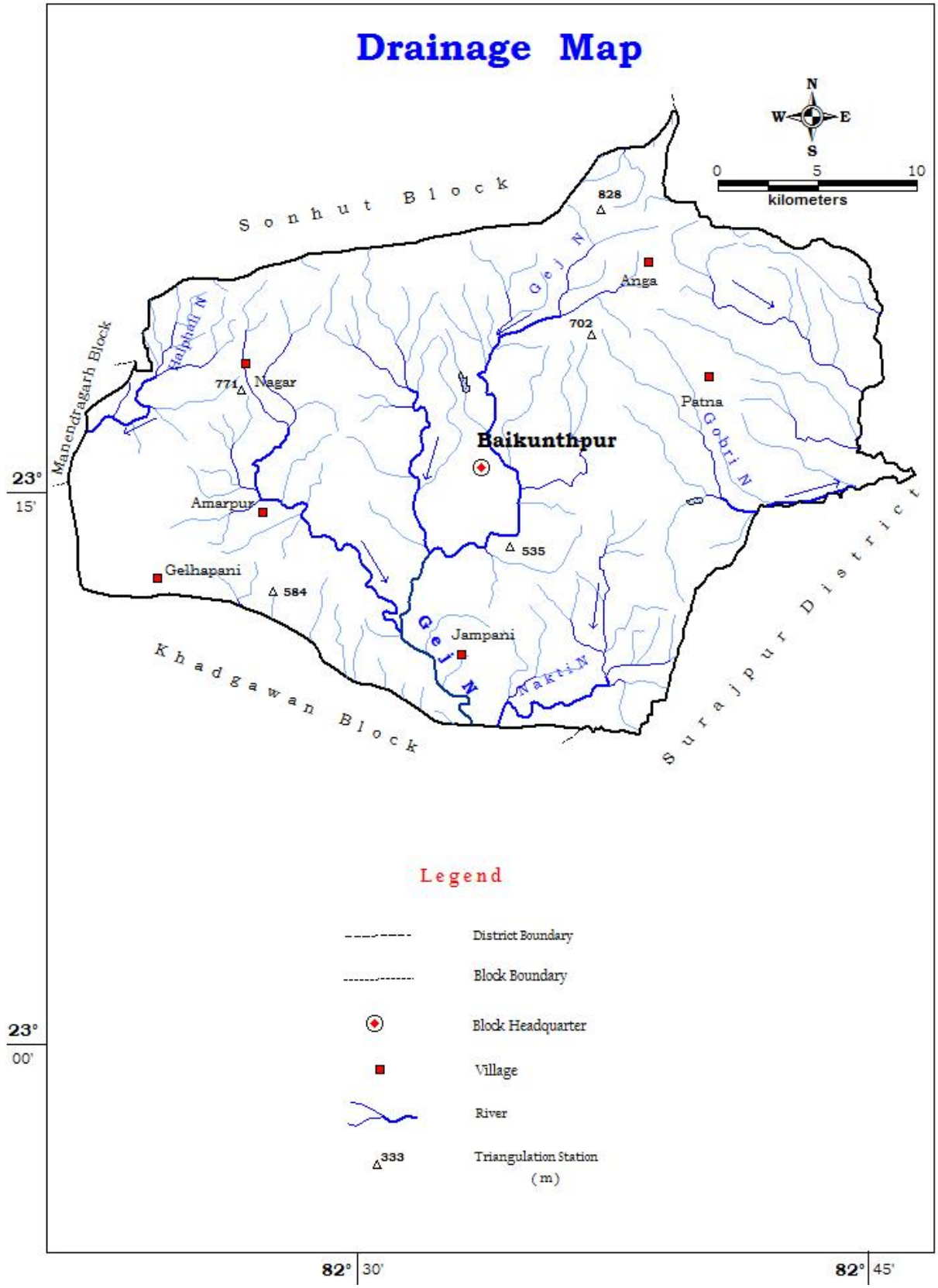

Figure 3 Drainage Map of Baikunthpur Block

Agriculture and Irrigation**:** Agriculture is practiced in the area during Kharif and Rabi season every year. During the Kharif, cultivation is done through rainfall while during the Rabi season, it is done through ground water as well as partly through surface water like canals and other sources.The groundwater abstraction structures are generally Dugwells, Borewells /tubewells. The principal crops in the block are Paddy, Wheat, Vegetables and pulses.

In some areas, double cropping is also practiced. The agricultural pattern,cropping pattern and area irrigated data of Baikunthpur block is given in Table 3 (A, B, C, D, E).

Table 3 (A): Agricultural pattern (in ha)

Block	Total geographical area	Revenue forest area	Area not available for cultivation	Net sown area	Double cropped area	Gross cropped area
Baikunthpur	78090	2856	7044	28596	4456	33052

Table 3 (B): Land use pattern (in ha)

Block	Total geographical area	Revenue forest area	Area not available for cultivation	Non agricultural & Fallow land	Agricultural Fallow land	Net sown area	Double cropped area	Gross cropped area
Baikunthpur	78090	2856	7044	6349	2205	28596	4456	33052

Table 3 (C): Cropping pattern (in ha)

Block	Kharif	Rabi	Cereal				Pulses	Tilhan	Fruits Vegetables	Reshe	Mirch Masala
			Wheat	Rice	Jowar & Maize	Others					
Baikunthpur	28375	4677	1589	22099	1660	660	3845	1927	1096	67	109

Table 3 (D):Area irrigated by various sources (in ha)

No. of canal s (private and Govt.)	Irrigated area	No.of bore wells/ Tube wells	Irrigated area	No. Of dug wells	Irrigated area	No. of Talabs	Irrigated area	Irrigated area by other sources	Net Irri-gated area	Gross irrigat ed area	% of irrigated area wrt. Net sown area
37	3411	553	705	4021	421	295	154	520	4355	5211	15 %

Table 3 (E): Statistics showing Agricultural land Irrigated

Block	Net Irrigated Area	Net Irrigated Area by ground water	Percentage of Area Irrigated by ground water
Baikunthpur	4355	1126	25.85

Groundwater Resource Availability and Extraction: Based on the resource assessment made, the resource availability in aquifer wise in Baikunthpur block is given in the table-4.

Table – 4: Ground Water Resources of Baikunthpur block in Ham

Assessment Unit / Block	**Command / Non Command**	**Recharge From Rain Fall During Monsoon Season in Ham**	**Recharge From Other Sources During Monsoon Season in Ham**	**Recharge From Rain Fall During Non Monsoon Season in Ham**	**Recharge From Other Sources During Non Monsoon Season in Ham**	**Total Annual Recharge in Ham (4+5+6+7)**	**Natural Discharge During Non Monsoon Period in Ham**	**Net Ground Water Availability in Ham (8-9)**
Baikunthpur	Command	309.93	541.16	30.57	158.96	1040.62	104.06	936.56
	Non Command	5018.45	113.1	330	614.72	6076.27	607.63	5468.64
	Block Total	**5328.38**	**654.26**	**360.57**	**773.68**	**7116.89**	**711.69**	**6405.2**

Existing and Future Water Demand (2020)*:* The existing demand for irrigation in the area is 19873 Ham while the total demand is 20111.7 Ham. At present scenario to meet the future demand for water, a total quantity of 2875.53 ham of ground water is available for future use. Although the future water demand for al the purposes is 25594.6Ham.

Water Level Behavior: (i) Pre- monsoon water level: In the pre-monsoon period, it has been observed that in Baikunthpur block, water level in dugwells (phreatic aquifer) vary between 3.1 to 12.4 mbgl with average water level of 6.59 mbgl. In deeper fractured aquifer, the maximum water level is 27.8 mbgl, the average water level is 14.28 mbgl.

Table 5A: Aquifer wise Depth to Water Level (Pre-monsoon)

Block Name	Phreatic Aquifer		
	Min	Max	Avg
Baikunthpur	3.1	12.4	6.59

Water Level (in mbgl)

Table 5B: Aquifer wise Depth to Water Level (Pre-monsoon)

Block Name	Fractured Aquifer		
	Min	Max	Avg
Baikunthpur	7.83	27.8	14.28

(ii) Post- monsoon water level**:** In the post-monsoon period, it has been observed that the water level varies from 0.8 to 6.8 mbgl with an average of 2.88 mbgl in phreatic aquifer. In fractured formation, the post monsoon water level variation range is 2.4 to 13.1 mbgl with average of 8.03 mbgl.

Table 5C: Aquifer wise Depth to Water Level (Post-monsoon)

Block Name	Phreatic Aquifer		
	Min	Max	Avg
Baikunthpur	0.8	6.8	2.88

Water Level (in mbgl)

Table 5D: Aquifer wise Depth to Water Level (Post-monsoon)

Block Name	FracturedAquifer		
	Min	Max	Avg
Baikunthpur	2.4	13.1	8.03

(iii) Seasonal water level fluctuation: The water level fluctuation data indicates that in Baikunthpur block, water level fluctuation in phreatic aquifer varies from 0.6 to 10.04 m

with an average fluctuation of 3.72 m. Water level fluctuation in fractured aquifer varies from 0.1 to 20.14 m with an average fluctuation of 6.25m.

Table 5E: Aquifer wise Depth to Water Level Fluctuation

Block Name	Phreatic Aquifer		
	Min	Max	Avg
Baikunthpur	0.6	10.04	3.72

Water Level (in m)

Table 5F: Aquifer wise Depth to Water Level Fluctuation

Block Name	Fractured Aquifer		
	Min	Max	Avg
Baikunthpur	0.1	20.14	6.25

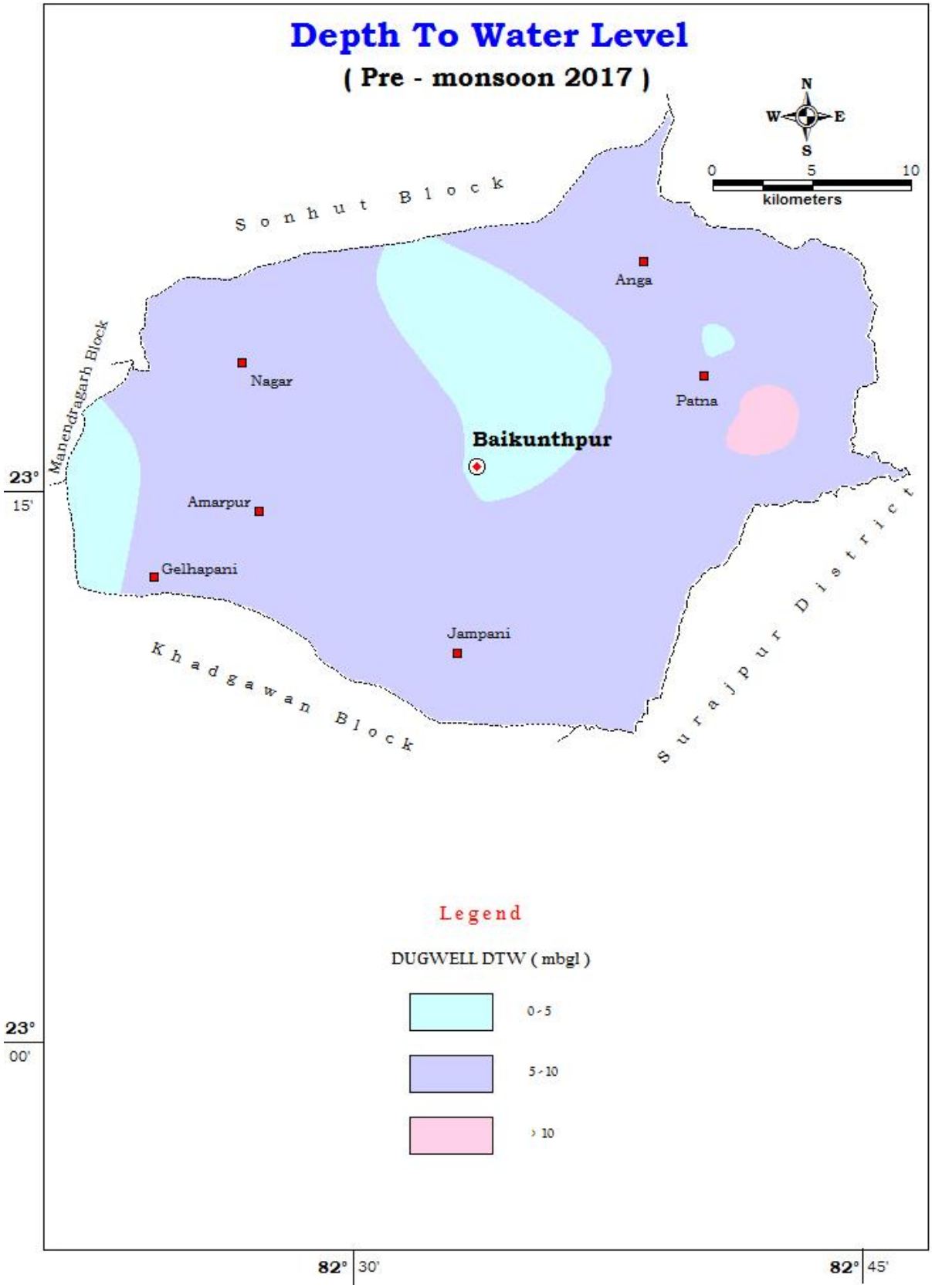

Figure 4 Depth to water level map Phreatic Aquifer (Pre-monsoon)

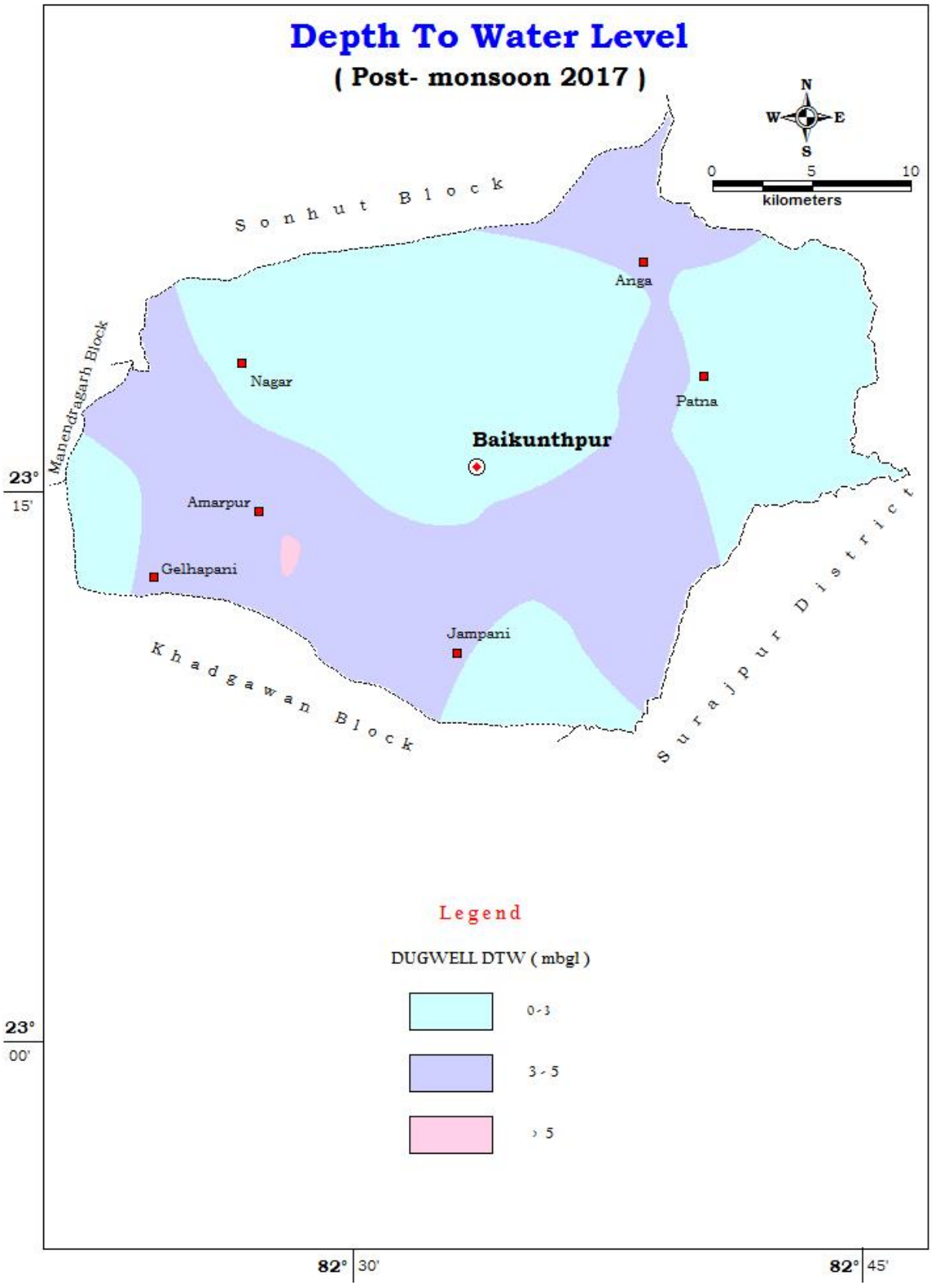

Figure 5 Depth to water level map Phreatic Aquifer (Post-monsoon)

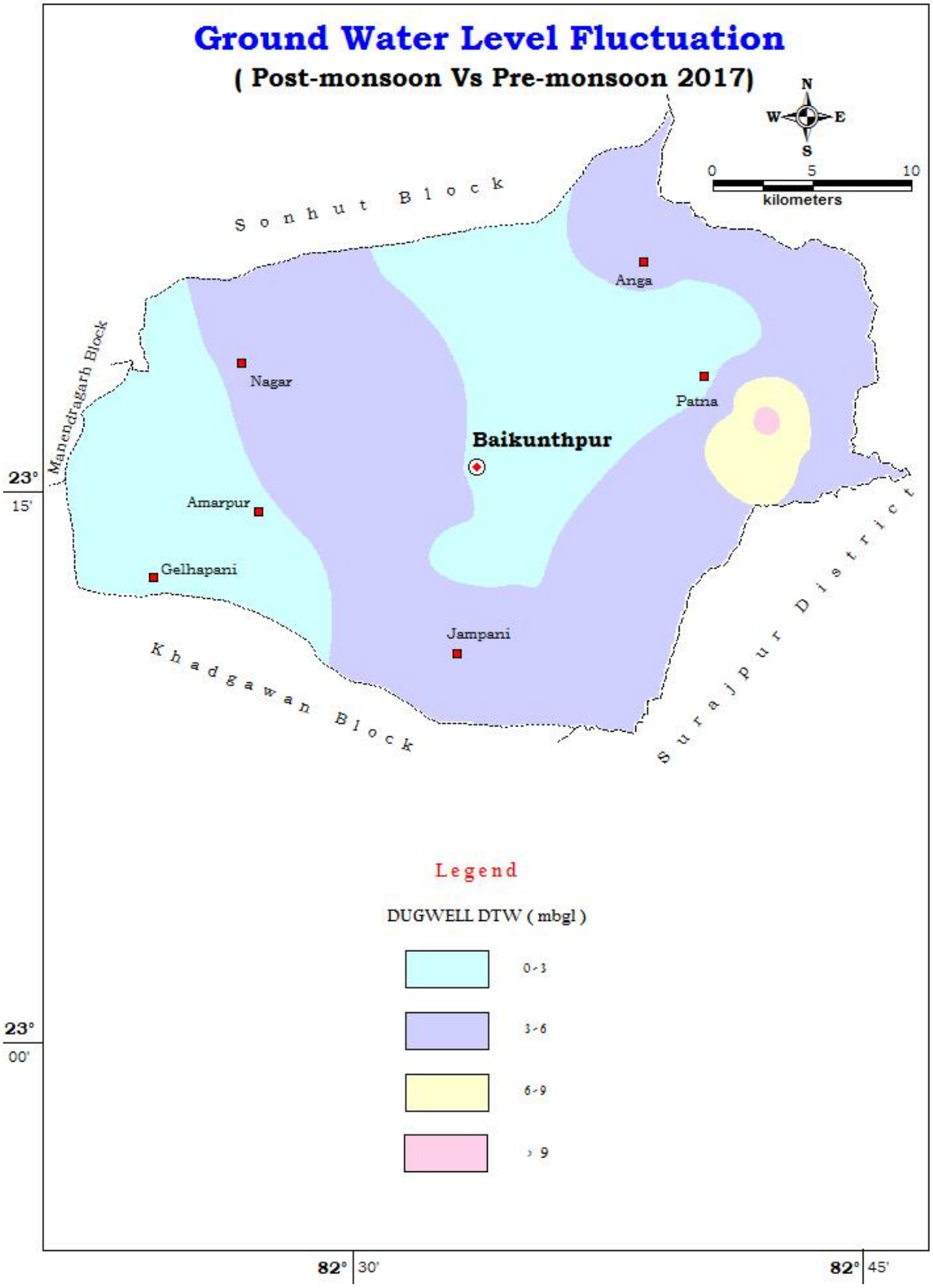

Figure 6 Depth to water level fluctuation map of Phreatic Aquifer

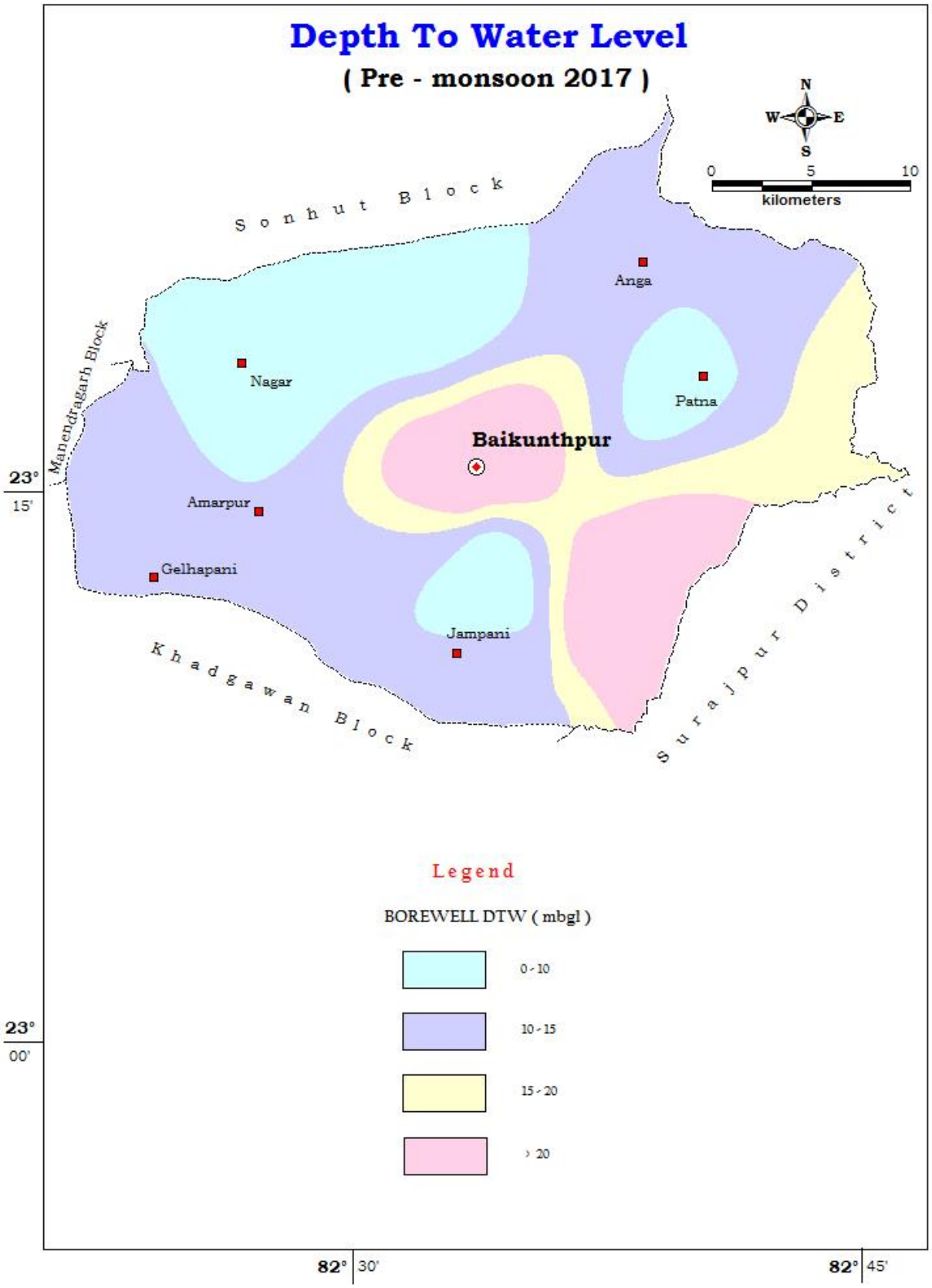

Figure 7 Depth to water level map Fractured Aquifer (Pre-monsoon)

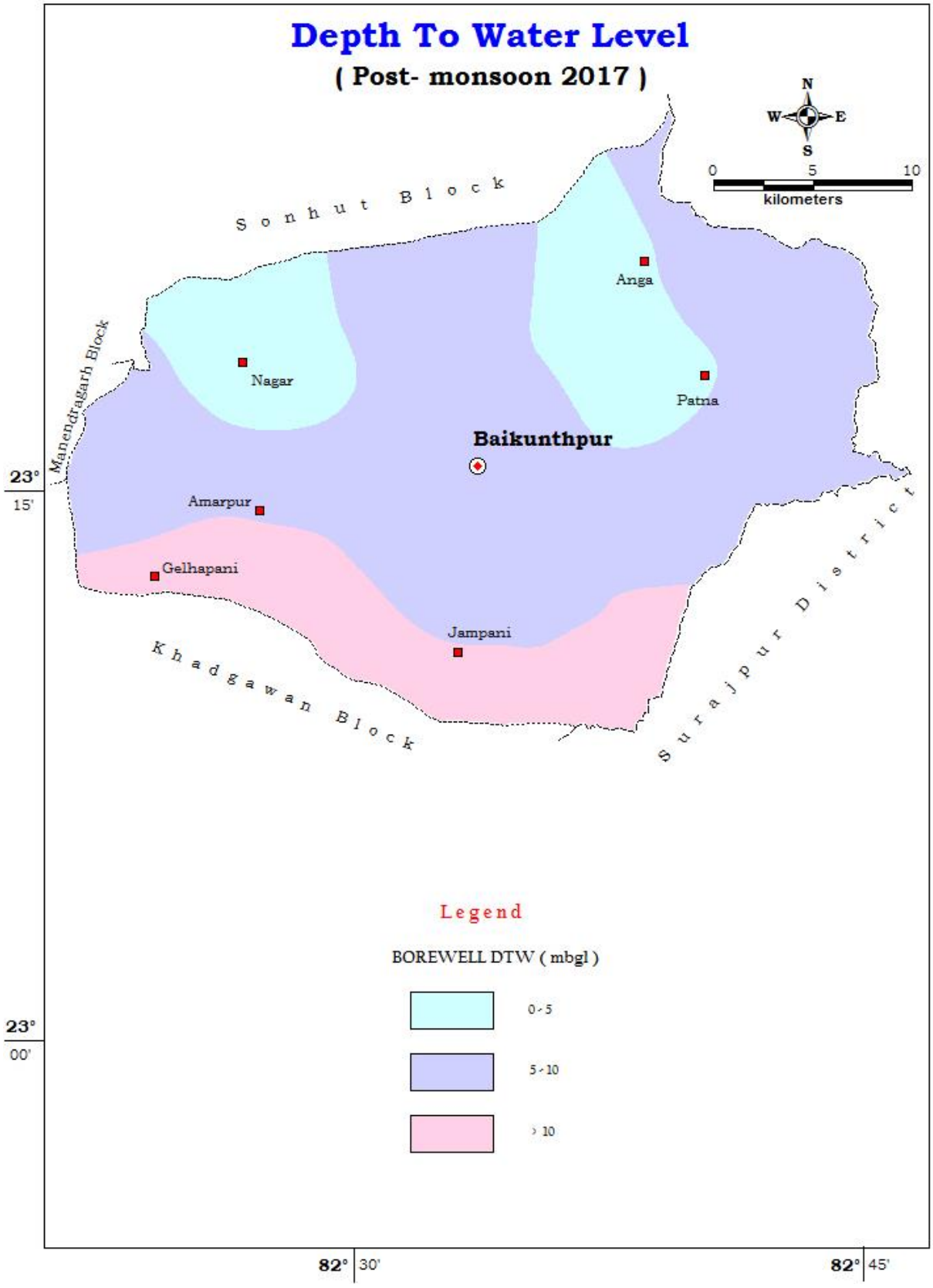

Figure 8 Depth to water level map Fractured Aquifer (Post-monsoon)

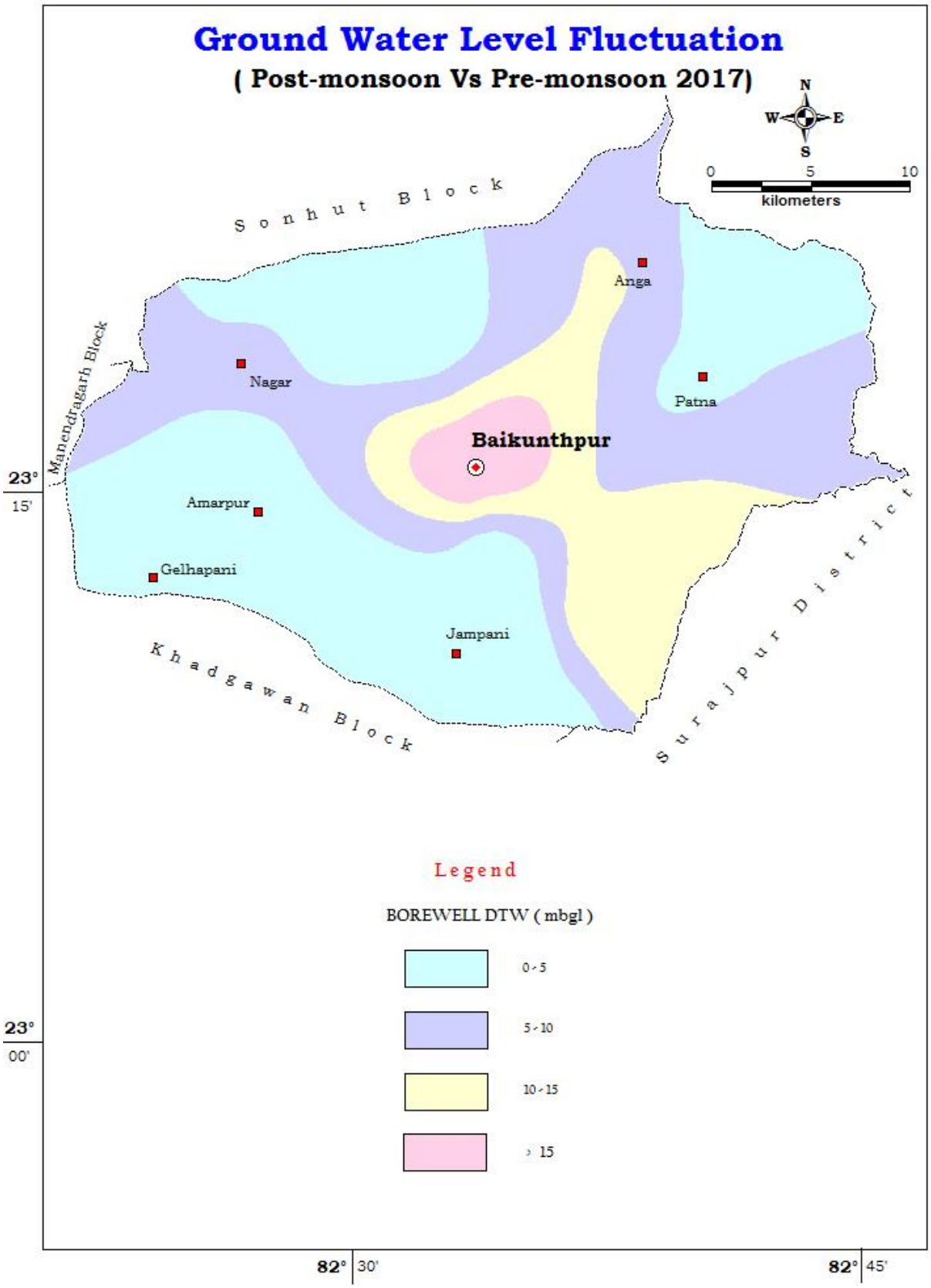

Figure 9 Depth to water level fluctuation map of Fractured Aquifer

(iv) <u>The long term water level trend</u>: There is no significant decline in water level in pre and post monsoon period in all observed NHS networks.

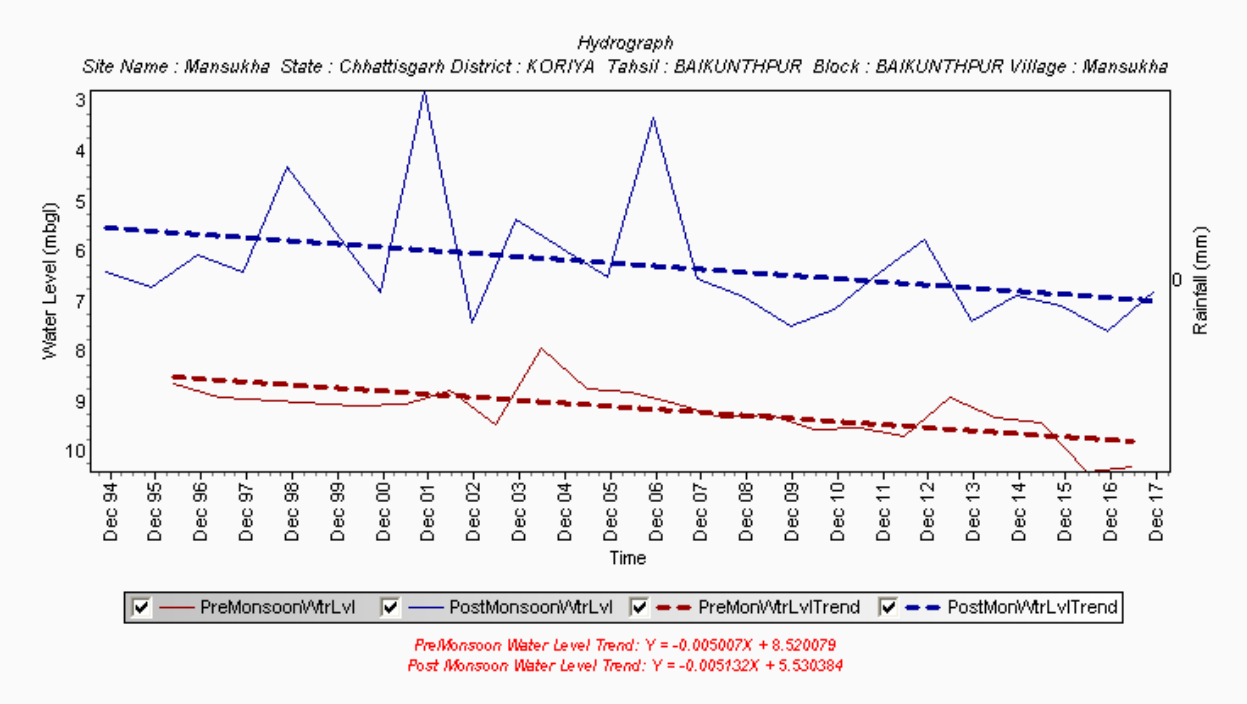

Figure 10 a: Hydrograph of Mansukha village, Baikunthpur block

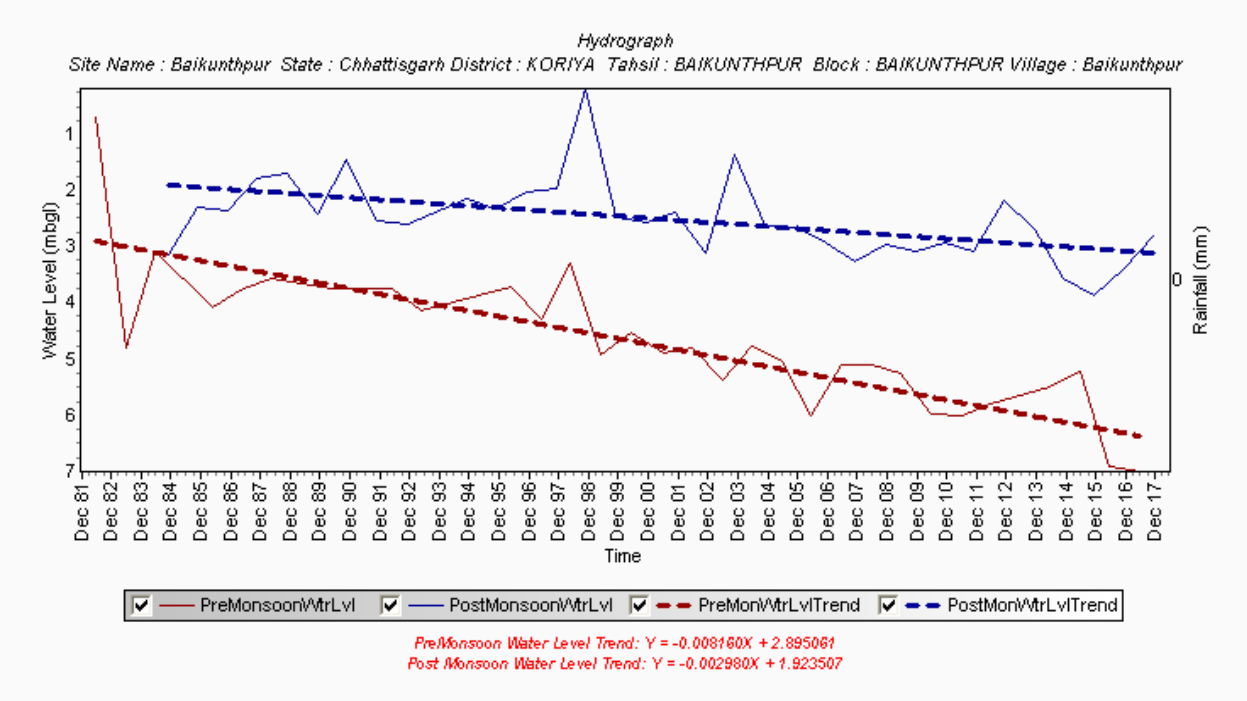

Figure 10 b: Hydrograph of Baikunthpur town, Baikunthpur block

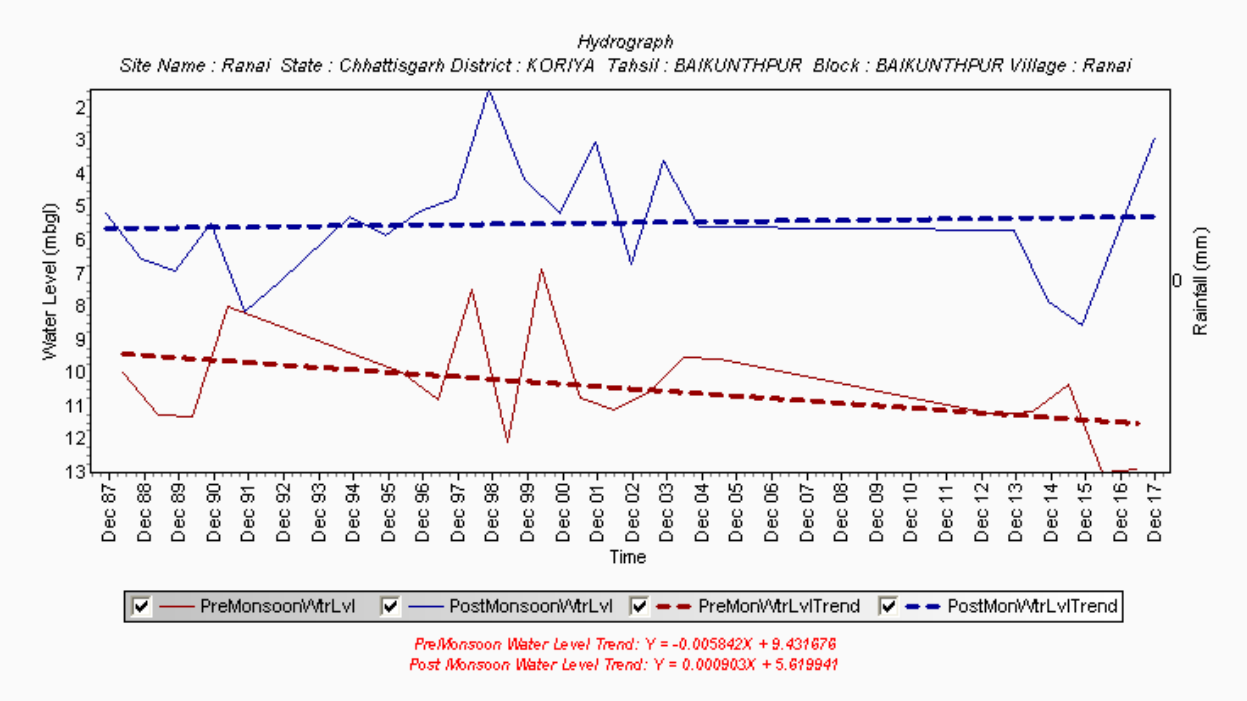

Figure 10 c : Hydrograph of Ranai village, Baikunthpur block

2. Aquifer Disposition:

Number of Aquifers: There are only one major aquifers viz. Gondwana Sandstone which in phreatic and fractured condition serve as major aquifer system in the block. Although there are few patches of Deccan basalt, unclassified metamorphic and granite.

3-d aquifer disposition and basic characteristics of each aquifer:

Geologically the block exhibits lithology of Archean to Cretaceous. More than 80 % of the Block area are covered by Gondwana Sandstone of Permian age. At few places Deccan trap of Cretaceous age has been exposed. Apart from these rocks at some place Unclassified metamorphic and Granite of Archean to Proterozoic age also occurs.

The Gondwana Super Group of formations can be divided into two groups. The first one consists of Barakar and Talchir sand stone, shales, siltstone with coal seams. The Barakar sand stone are of felspathic in composition and medium to coarse grained. When the sand stone is enriched with siliceous material it acts like a hard rock, becomes impervious and hence is not a good aquifer. The shales are fine grained and at times are carbonaceous in nature. They are not good aquifers. The ground water movement is controlled by the intergranular pore spaces, joints and fractures. The ground water occurs under water table, semi -confined to confined conditions. The shale beds act as confining layer thereby differentiating various aquifer systems existing this part of the area. The Talchir sand stones are mostly fine grained, compact and yield low discharges. Four exploratory bore wells were drilled by the department in this part of the area covering Barakar formations.

The average thickness of the weathered portion in the area is around 21 m. The occurrences of fractures at depth in the area are not common and whenever occur are less potential in ground water point of view. Fractures are mostly confined to 100m depth. In general, the discharge varies from negligible to 4.21 lps with an average yield of 1.5 lps. The development in these formations is mostly by way of dug wells. The average drawdown of the formation is around 21.7 m.

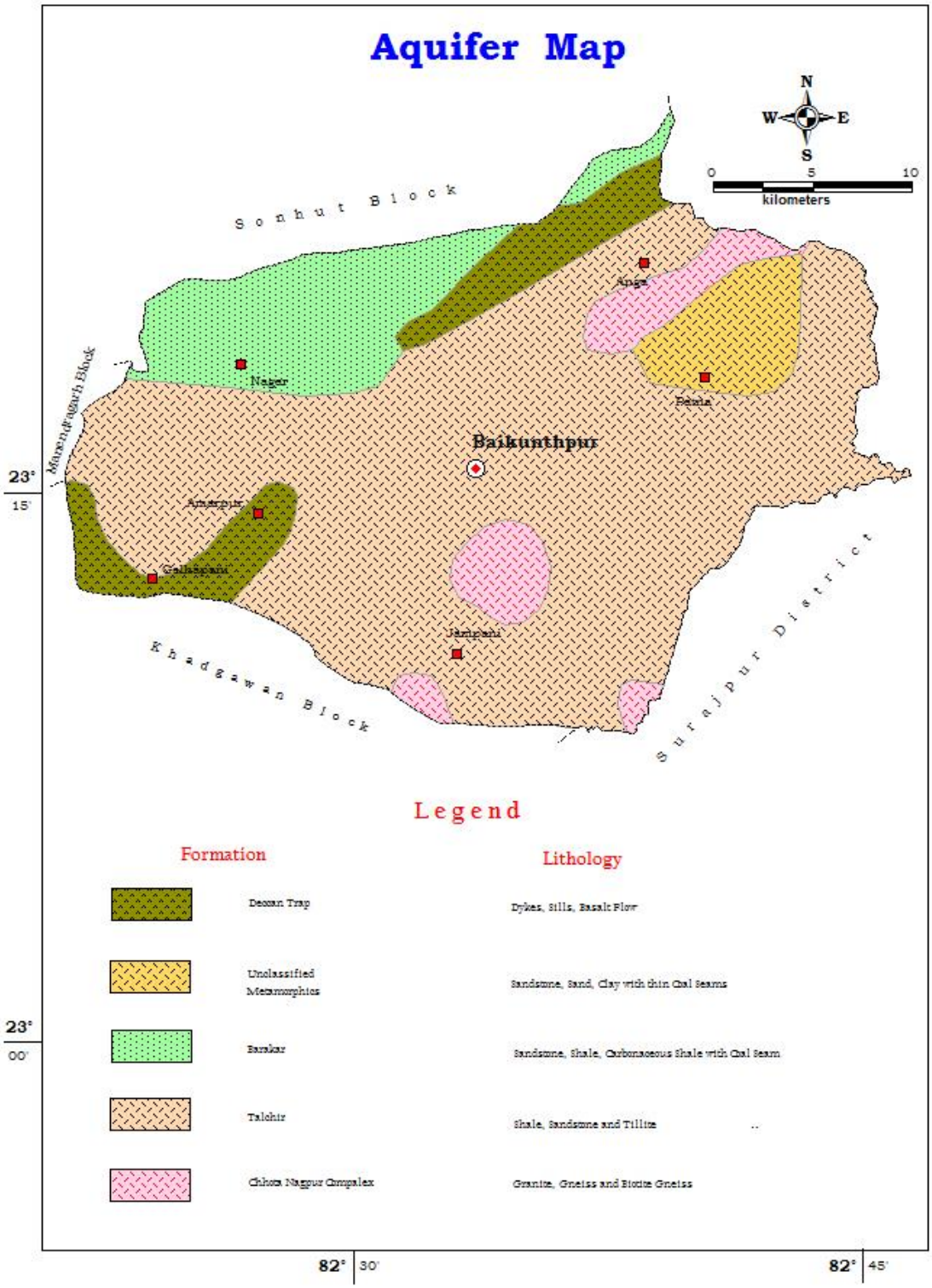

Figure 11: Aquifer map of Baikunthpur block

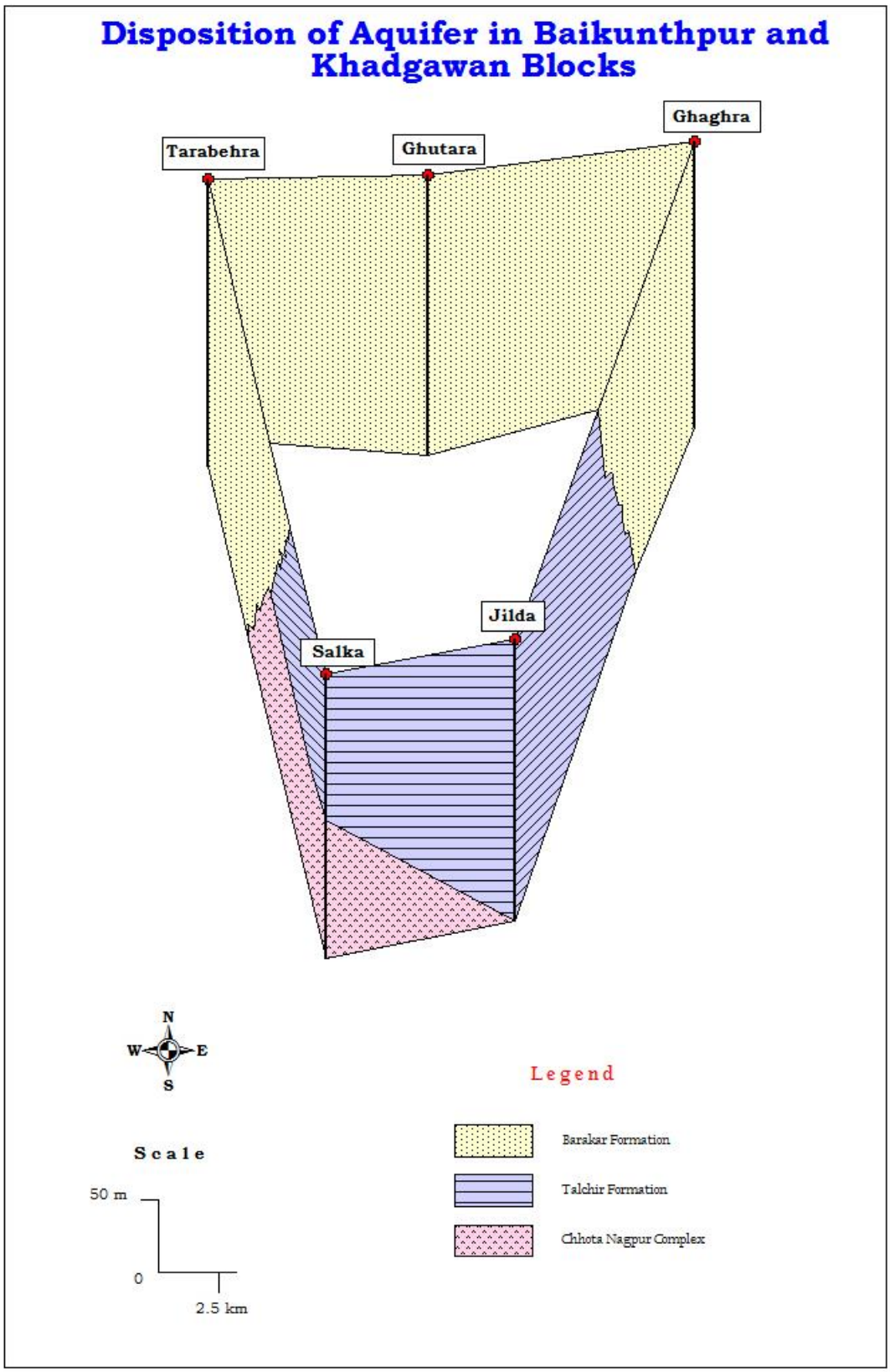

Figure-12, Disposition of Aquifer, Baikunthpur Block

3. Ground water Resource, extraction, contamination and other issues:

Aquifer wise resource availability is given in the table -4 where the total resource available in Baikunthpur block is 6405.2 ham. The extraction details and the future scenario (2025) along with the categorisation is depicted in the table-6 & 7.

Table-6: Ground water Resources of Baikunthpur block

District	Assessment Unit / Block	Net Ground Water Availability in Ham	Existing Gross Ground Water Draft for Irrigation in Ham	Existing Gross Ground Water Draft for Domestic & Industrial Water Supply in Ham	Existing Gross Ground Water Draft for All Uses in Ham	Allocation For Domestic & Industrial Water Supply in Ham (2025)	Net Ground Water Availability for Future Irrigation Development in Ham (2025)
Baikunthpur	Baikunthpur	6405.2	3529.67	515.07	4044.74	1299.02	1576.51

Table 7 Categorization of Assessment Unit

District	Block	Stage of Ground water development (%)	Categorisation
Baikunthpur	Baikunthpur	63.15	Safe

Categorisation: Baikunthpur block falls in safe category. The stage of Ground water development is 63.15 %. The Net Ground water availability is 6405.2 ham. The Ground water draft for all uses is 4044.74 Ham. The Ground water resources for future uses for Baikunthpur Block is 2875.53 Ham.

Chemical Quality of Ground water and Contamination**:** Throughout the study area, the water samples from both dugwell and handpumps were collected and chemical analysis has been completed (Annexure I). In most of the locations especially wherever the sample source is shallow tube well there is higher concentration of Fe content. At few locations such as Kadamnara and Baikunthpur Road village, there is higher concentration of Fluoride. Apart from these two elements other parameters are within permissible. In conclusion it may be said that the groundwater in the block is suitable for drinking as well as for irrigation purposes.

Ground Water Resource enhancement:

Aquifer wise space available for recharge and proposed interventions:

Table -8: Summarised detail of Volume of porous space available for recharge (Aquifer wise)

Formation	Area Identified for Artificial Recharge (Sq Km)	Available thickness of unsaturated zone (m)	Sp. Yield for the formation	Volume of unsaturated space available for recharge (MCM)
Gondwana sandstone	410.20	1.5	0.015	9.23

4. Issues and Management plan

Issues:

(i) During summer, dugwells in villages are dry except a few locations. Several handpumps also stop yielding water. The aquifer itself is a low yielding one.

(ii) High value of Fluoride and Iron has been reported from several locations (annexure II).

Management Plan

Supply side interventions:

(i) It has been observed during fieldwork in pre-monsoon period, there is colossal wastage of groundwater through public water supply system. In this state, the Government has undertaken "Nal Jal Yojana" to provide water to villages. Under this scheme, the government has dug borewells of about 150-200feet depth, lowered a pump in the well to draw out water and constructed a small tank to hold water. Unfortunately, people do not switch off the pump once the tank is full. Also the pipes are not fitted with taps to control the flow of water.
So Information, education and Communication (IEC) activities to be organized to sensitize people on the issues of depleting groundwater resource. Massive awareness campaigns are essential to aware people about the importance community participation in saving water.

(ii) Desiltation of existing Tanks and Talabs to be carried out for efficient storage of rainwater. Also Rain water harvesting structures may be constructed in villages to reduce stress on groundwater (Annexure I).

(iii) It has been observed that the demand of ground water is increasing for irrigation, industrial and domestic uses. At location near urban areas water level is declining, so we have to go for artificial recharge on a long term sustainability basis. Artificial

Recharge structures may be constructed at suitable locations especially in the areas where the water level remains more than 3m in the post-monsoon period in this block to arrest the huge non-committed run-off and augment the ground water storage in the area. The different types of artificial structures feasible in the block are described in table-9.

Table-9: Types of Artificial Recharge structures feasible

Name of Block	**Area Feasible for recharge (sq.km)**	**Volume of Sub Surface Potential for Artificial recharge (MCM)**	**Types of Structures Feasible and their Numbers**			
			P	**NB & CD**	**RS**	**G**
Baikunthpur	410.2	9.23	30	307	123	369
	Recharge Capacity (MCM)		**6**	**3.07**	**1.23**	**1.85**
	Estimated cost (Appx.)		**Rs. 12.5 crore**			

(iv) Govt. may set up network of grids to purchase electricity generated from solar panels. This will encourage the farmers not to waste electricity by extracting groundwater unnecessarily and also provide alternative income.

(v) Fluoride and Iron filter plant may be installed in the villages having higher value of contaminants.

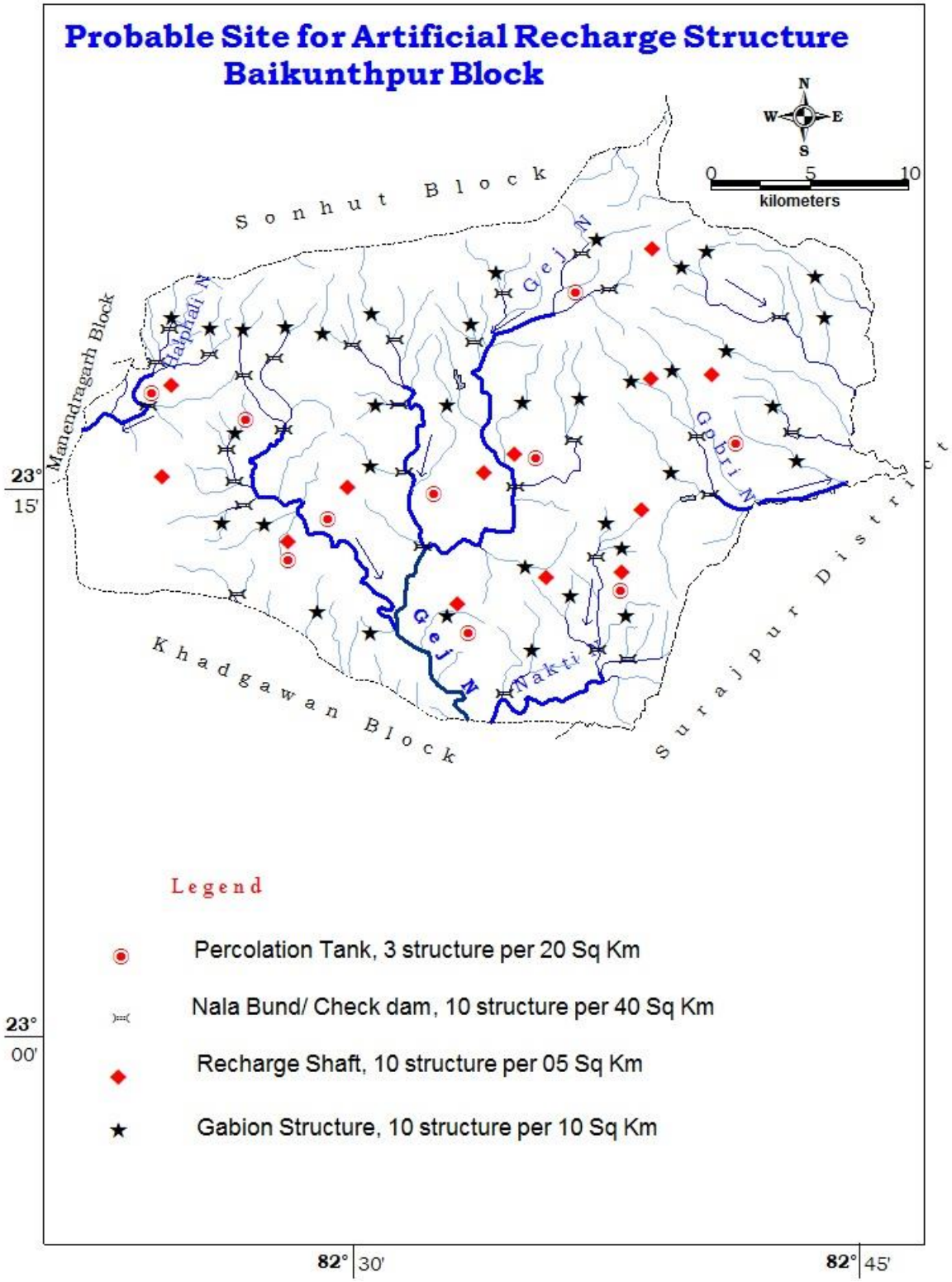

Figure 13: Map of proposed sites for artificial recharge of groundwater in Baikunthpur block

Demand Side Interventions

Since the stage of development in the block is 63.15 %. There is scope of utilizing more ground water for future irrigation purpose. For effective utilization of Ground water existing draft for irrigation may be coupled with micro irrigation system. Change in irrigation pattern, optimum use of available resource, use of ground water potential created after artificial recharge can lead to groundwater savings and increase in gross cropped area of the block (Table: 10).

Table 10: Detail of groundwater saved through change in cropping pattern

Block	Existing Gross Ground Water Draft for Irrigation in Ham	Additional Saving of GW after using Micro Irrigation methods in Ham	Net Ground Water Availability for Future Irrigation Development in Ham	GW Potential created after Artificial recharge structure in Ham	Total GW Potential created in Ham	Additional Irrigation potential creation for Maize/ wheat in winter season in Ha (Assuming 500 mm water requirement)	Percent increase in Crop area compare to Gross cropped area
Baikunthpur	3529.67	1058.901	1576.51	923	3558.411	7116.822	21.53%

Annexure I Proposed sites for artificial recharge of groundwater in Baikunthpur block

Sl No	Village_name	Longitude	Latitude	Feasible structure
1	Murma	82.6274	23.3408	Check Dam/ Nala Bund
2	Cherwapara	82.5607	23.3169	Check Dam/ Nala Bund
3	Rakya	82.5748	23.3394	Check Dam/ Nala Bund
4	Murma	82.6138	23.3572	Check Dam/ Nala Bund
5	Kasara	82.6095	23.2718	Check Dam/ Nala Bund
6	Kadamnara	82.6203	23.2183	Check Dam/ Nala Bund
7	Karahiya Khand	82.7119	23.3277	Check Dam/ Nala Bund
8	Chhindiya	82.6771	23.2469	Check Dam/ Nala Bund
9	Ajokalan	82.7175	23.2751	Check Dam/ Nala Bund
10	Chhindiya	82.6706	23.2732	Check Dam/ Nala Bund
11	Jaipur	82.6363	23.1723	Check Dam/ Nala Bund
12	Holhaghat	82.6208	23.1765	Check Dam/ Nala Bund
13	Telaidhar	82.5753	23.1559	Check Dam/ Nala Bund
14	Kanchanpur	82.5804	23.2507	Check Dam/ Nala Bund
15	Nagar	82.4293	23.3112	Check Dam/ Nala Bund
16	Sonbarsa para	82.4096	23.323	Check Dam/ Nala Bund
17	Sonbarsa para	82.4035	23.3075	Check Dam/ Nala Bund
18	Tilwandand	82.4612	23.3094	Check Dam/ Nala Bund
19	Durgapur F2.	82.4462	23.3014	Check Dam/ Nala Bund
20	Bhandarpara	82.4659	23.277	Check Dam/ Nala Bund
21	Sara	82.4382	23.2676	Check Dam/ Nala Bund
22	Jaliyadand	82.442	23.253	Check Dam/ Nala Bund
23	Sheopur	82.5002	23.3155	Check Dam/ Nala Bund
24	Sardi	82.5213	23.3178	Check Dam/ Nala Bund
25	Odgi	82.5227	23.2887	Check Dam/ Nala Bund
26	Amarpur	82.4467	23.2422	Check Dam/ Nala Bund
27	Banjaridand	82.4434	23.2019	Check Dam/ Nala Bund
28	Jagatpur	82.3993	23.2878	Check Dam/ Nala Bund
29	Cher	82.5255	23.2577	Check Dam/ Nala Bund
30	Deori	82.5344	23.2235	Check Dam/ Nala Bund
31	Murma	82.5715	23.3488	Gully Plug/ Gabion Structure
32	Jamdi	82.7081	23.2873	Gully Plug/ Gabion Structure
33	Tengni	82.7339	23.3277	Gully Plug/ Gabion Structure
34	Khond	82.7297	23.3469	Gully Plug/ Gabion Structure
35	Katkona	82.6762	23.3582	Gully Plug/ Gabion Structure
36	Katkona	82.6631	23.3507	Gully Plug/ Gabion Structure
37	Anga	82.6217	23.3638	Gully Plug/ Gabion Structure
38	Chharchha	82.5593	23.3249	Gully Plug/ Gabion Structure
39	Talwapara	82.5471	23.2887	Gully Plug/ Gabion Structure

Sl No	Village_name	Longitude	Latitude	Feasible structure
40	Dakaipara	82.6588	23.3037	Gully Plug/ Gabion Structure
41	Katora	82.6851	23.3131	Gully Plug/ Gabion Structure
42	Dabripara	82.6128	23.2911	Gully Plug/ Gabion Structure
43	Khanda	82.5847	23.2896	Gully Plug/ Gabion Structure
44	Tenduwa	82.7198	23.2624	Gully Plug/ Gabion Structure
45	Shivpur	82.6579	23.2573	Gully Plug/ Gabion Structure
46	Manpur	82.6382	23.299	Gully Plug/ Gabion Structure
47	Jampani	82.5471	23.192	Gully Plug/ Gabion Structure
48	Sanbothapara	82.5889	23.1761	Gully Plug/ Gabion Structure
49	Jharnapara	82.6081	23.2009	Gully Plug/ Gabion Structure
50	Raghubirpur	82.6354	23.192	Gully Plug/ Gabion Structure
51	Bodar	82.6335	23.2225	Gully Plug/ Gabion Structure
52	Bodar	82.6255	23.2343	Gully Plug/ Gabion Structure
53	Charpara	82.5861	23.2141	Gully Plug/ Gabion Structure
54	Nagar	82.4302	23.3234	Gully Plug/ Gabion Structure
55	Tarra	82.411	23.3286	Gully Plug/ Gabion Structure
56	Nagar	82.4462	23.323	Gully Plug/ Gabion Structure
57	Umjhar	82.4678	23.3239	Gully Plug/ Gabion Structure
58	Vishunpur	82.4861	23.3211	Gully Plug/ Gabion Structure
59	Sardi	82.51	23.33	Gully Plug/ Gabion Structure
60	Sara	82.4429	23.2756	Gully Plug/ Gabion Structure
61	Amarpur	82.4359	23.2347	Gully Plug/ Gabion Structure
62	Mansukh	82.4565	23.2338	Gully Plug/ Gabion Structure
63	Chilka	82.4828	23.1939	Gully Plug/ Gabion Structure
64	Piparhiya	82.5096	23.1845	Gully Plug/ Gabion Structure
65	Phulpur	82.5119	23.2882	Gully Plug/ Gabion Structure
66	Salka	82.5091	23.2605	Gully Plug/ Gabion Structure
67	Robo	82.488	23.2361	Percolation Tank
68	Dharampur	82.4687	23.2178	Percolation Tank
69	Mandalpara	82.5405	23.2474	Percolation Tank
70	Bhandi	82.5908	23.2638	Percolation Tank
71	Dobhapani	82.5574	23.1845	Percolation Tank
72	Kadamnara	82.6325	23.2033	Percolation Tank
73	Chirguda	82.6903	23.2704	Percolation Tank
74	Ratga	82.4476	23.2817	Percolation Tank
75	Murma	82.6105	23.3394	Percolation Tank
76	Jagatpur	82.4011	23.2939	Percolation Tank
77	Jampara	82.5658	23.2576	Recharge Shaft
78	Karji	82.6785	23.3019	Recharge Shaft
79	Puta	82.649	23.3591	Recharge Shaft

Sl No	Village_name	Longitude	Latitude	Feasible structure
80	Lotanpara	82.4115	23.2976	Recharge Shaft
81	Baikunthpur	82.4063	23.2559	Recharge Shaft
82	Mansukh	82.4683	23.2263	Recharge Shaft
83	Meko	82.4983	23.2512	Recharge Shaft
84	Manpur	82.648	23.3004	Recharge Shaft
85	Kadamnara	82.6335	23.2122	Recharge Shaft
86	Modipara	82.5528	23.1976	Recharge Shaft
87	Charpara	82.5964	23.2094	Recharge Shaft
88	Bodar	82.6433	23.2404	Recharge Shaft
89	Bhandi	82.5809	23.2657	Recharge Shaft

Annexure II Chemical analysis Baikunthpur Block

Location	Source	pH	TDS	EC	CO3	HCO3	Cl	F	SO4	Ca	Mg	Na	K	TH	PO4	Sio2	Fe
Puta	HP	7.73		346	0	134	21	0.45	10	40	4.8	17	6.3	120	0	16	0.723
Tummibari	DW	7.78		128	0	61	7	0.32	15	8	7.2	6.8	1.1	50	0	12	0.096
Katkona	HP	7.6		428	0	207	21	0.45	12	40	17	26	0.8	170	0	14	0.034
Bardiya	DW	7.61		315	0	122	35	0	5	20	14	24	3.4	110	0	11	0.284
Dumariya	DW	7.62		430	0	207	21	0.61	7.5	36	4.8	48	1.9	110	0	13	0.128
Dumariya	HP	7.62		376	0	207	14	0.35	0	40	14	16	0.4	160	0	11	1.067
Kadamnara	HP	7.65		427	0	220	31	**2.5**	13	16	2.4	82	0.4	50	0	8	0.034
Satipara	DW	7.51		435	0	195	14	0.31	15	44	12	22	6.2	160	0	9	0.096
Patrapali	DW	7.42		783	0	293	64	0.22	32	84	26	37	13	320	0	14	0.034
Patrapali	HP	7.55		366	0	183	7	0.38	22	44	7.2	25	0.4	140	0	22	3.133
Jatasemar	HP	7.51		319	0	183	14	0.32	5	40	12	12	0.4	150	0	19	0.19
Baikunthpur	HP	7.62		904	0	244	113	0.21	55	68	29	76	0.9	290	0	13	0.065
Baikunthpur Road	HP	7.77		566	0	207	28	**6.5**	33	16	14	87	0.4	100	0	9	1.693
Banjaridand	DW	7.35		405	0	207	14	0.13	16	48	9.6	23	1.8	160	0	10	0.159
Charcha Basti	DW	7.52		229	0	98	14	0.54	4	36	4.8	6	0.7	110	0	14	0.159
Jamgahna	DW	7.4		251	0	122	14	0.6	0	28	7.2	11	0.9	100	0	23	2.382
Mansukh	HP	7.21		733	0	244	50	0.11	25	80	7.2	61	0.9	230	0	16	0.065
Patna	HP	7.68		393	0	171	14	0.42	12	44	9.6	12	0.9	150	0	20	0.096
Podidih	DW	7.59		496	0	207	28	0.28	14	56	9.6	30	2.9	180	0	11	0.253
Sarbokha	HP	7.51		469	0	244	7	0.46	8	28	12	56	2.7	120	0	12	0.66