Table A.20 Water Distribution in Sarojini Nagar Study Area under Present Condition - 1989/90 Rabi
(Sarojini Nagar Study Area)

Period	L1.Lucknow Branch 3mile Q=2,000cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	2,009	1,820	110%	34	31	110%
10/12/89	1,586			62	31	198%
10/19/89	1,906	2,000	95%	94	65	144%
10/26/89	1,579	2,000	79%	121	100	122%
11/02/89	1,654	2,000	83%	149	134	112%
11/09/89	735			162	134	121%
11/16/89	252			166	134	124%
11/23/89	1,735	2,100	83%	196	170	115%
11/30/89	1,805	1,800	100%	227	201	113%
12/07/89	1,832	2,000	92%	258	235	110%
12/14/89	1,747	2,000	87%	288	269	107%
12/21/89	472			296	269	110%
12/28/89				296	269	110%
01/04/90	1,349	2,100	64%	319	305	105%
01/11/90	1,759	2,100	84%	350	341	103%
01/18/90	1,832	1,800	102%	381	372	102%
01/25/90	1,803	1,800	100%	412	403	102%
02/01/90	471			420	403	104%
02/08/90				420	403	104%
02/15/90	1,565	1,800	87%	447	433	103%
02/22/90	1,496	2,000	75%	472	468	101%
03/01/90	654			483	468	103%
03/08/90	502			492	468	105%
03/15/90	1,016			509	468	109%
03/22/90	959			526	468	112%
Average	1,336	1,951	68%			
Maximum	2,009	2,100	96%			
CCA (ha)	209,771					
PIA (ha)	52,443					
I.Depth(Actual)	1,003 mm/season					
I.Depth(Roster)	892 mm/season					

Period	L2. Lucknow Branch 72mile Q=942cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	723	800	90%	12	14	90%
10/12/89	390			19	14	139%
10/19/89	443	800	55%	27	27	97%
10/26/89	732	700	105%	39	39	99%
11/02/89	572			49	39	124%
11/09/89	500			58	39	146%
11/16/89	261			62	39	157%
11/23/89	509	700	73%	71	51	138%
11/30/89	595			81	51	158%
12/07/89	605	700	86%	91	63	144%
12/14/89	627			102	63	161%
12/21/89	252			106	63	168%
12/28/89				106	63	168%
01/04/90	338	700	48%	112	75	149%
01/11/90	731	700	104%	125	87	143%
01/18/90	676			136	87	156%
01/25/90	640			147	87	169%
02/01/90	267			152	87	174%
02/08/90				152	87	174%
02/15/90	362	600	60%	158	98	162%
02/22/90	679			169	98	174%
03/01/90	445			177	98	182%
03/08/90	90			179	98	183%
03/15/90	236			183	98	187%
03/22/90	301			188	98	193%
Average	477	713	67%			
Maximum	732	800	91%			
CCA (ha)	97,570					
PIA (ha)	24,393					
I.Depth(Actual)	770 mm/season					
I.Depth(Roster)	400 mm/season					

Period	L3.Amausi Dy Head Q=92cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	105			2		
10/12/89	15			2		
10/19/89	51	120	43%	3	2	143%
10/26/89	77			4	2	207%
11/02/89	84	120	70%	6	4	139%
11/09/89	107			8	4	183%
11/16/89	51			8	4	205%
11/23/89	0			8	4	205%
11/30/89	41			9	4	222%
12/07/89	25			10	4	232%
12/14/89	77	120	64%	11	6	176%
12/21/89	58			12	6	192%
12/28/89				12	6	192%
01/04/90				12	6	192%
01/11/90	14	120	12%	12	8	147%
01/18/90	30			13	8	154%
01/25/90	62	120	52%	14	10	133%
02/01/90	59			15	10	143%
02/08/90				15	10	143%
02/15/90				15	10	143%
02/22/90		120	0%	15	12	119%
03/01/90	92			16	12	132%
03/08/90	6			16	12	133%
03/15/90				16	12	133%
03/22/90				16	12	133%
Average	53	120	44%			
Maximum	107	120	89%			
CCA (ha)	13,927					
PIA (ha)	3,482					
I.Depth(Actual)	470 mm/season					
I.Depth(Roster)	354 mm/season					

Table A.21 Water Distribution in Sarojini Nagar Study Area under Present Condition - 1990 Kharif
(Sarojini Nagar Study Area)

Period	L1.Lucknow Branch 3mile Q=2,000cusec						L2. Lucknow Branch 72mile Q=942cusec						L3.Amausi Dy Head Q=92cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)			Periodical Discharge (cusec)			Accumulated Discharge (MCM)			Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	1,500	1,750	86%	26	30	86%	605	750	81%	10	13	81%						
05/04/90	1,714	2,000	86%	55	64	86%	615	750	82%	21	26	81%	26	120	21%	0	2	21%
12/04/90	503			64	64	99%	326			26	26	103%	37			1	2	52%
19/04/90	647			75	64	116%	69			28	26	108%	0			1	2	52%
26/04/90	1,453	1,690	86%	100	93	107%	442	550	80%	35	35	100%	0			1	2	52%
03/05/90	1,524	1,690	90%	126	122	103%	470	500	94%	43	44	99%	0			1	2	52%
10/05/90	1,727			155	122	127%	582			53	44	122%	21			1	2	70%
17/05/90	1,851			187	122	153%	656			64	44	148%	66			3	2	125%
24/05/90	1,541	1,800	86%	213	153	140%	589	600	98%	74	54	138%	37	120	31%	3	4	78%
31/05/90	1,723	1,800	96%	243	184	132%	510	600	85%	83	64	130%	46			4	4	97%
07/06/90	1,813	1,750	104%	274	214	128%	597	600	100%	93	74	126%	34			5	4	112%
14/06/90	2,002	2,000	100%	308	248	124%	676	700	97%	105	86	121%	36	120	30%	5	6	85%
21/06/90	986	1,690	58%	325	277	117%	313	700	45%	110	98	112%	51			6	6	99%
28/06/90	1,351	1,690	80%	348	306	114%	405	700	58%	117	110	106%	36	120	30%	7	8	82%
05/07/90	1,399	2,000	70%	372	340	109%	693	600	116%	129	121	107%	53			8	8	93%
12/07/90		2,000	0%	372	374	99%	123	700	18%	131	133	99%				8	8	93%
19/07/90	1,417	1,890	75%	396	407	97%	402	700	57%	138	145	96%	11	120	10%	8	10	76%
26/07/90	1,889	1,890	100%	429	439	98%	641	700	92%	149	157	95%	76			9	10	89%
02/08/90	1,874	1,690	111%	461	468	98%	679	700	97%	161	169	95%	41			10	10	95%
09/08/90	1,863	2,150	87%	493	505	98%	729	600	122%	173	179	97%	51	120	42%	11	12	87%
16/08/90	1,898	1,690	112%	525	534	98%	726	600	121%	186	189	98%	81			12	12	98%
23/08/90	1,759	1,690	104%	555	562	99%	662	600	110%	197	199	99%	48	120	40%	13	14	90%
30/08/90	1,756	2,000	88%	585	597	98%	595	700	85%	207	211	98%	11			13	14	91%
06/09/90	1,984	2,000	99%	619	631	98%	709	700	101%	219	223	98%				13	14	91%
13/09/90	1,794	1,690	106%	650	660	98%	693	600	115%	231	234	99%	56	120	47%	14	16	85%
20/09/90	1,931	1,690	114%	683	689	99%	718	600	120%	243	244	100%	56			15	16	91%
27/09/90	1,125	2,000	56%	702	723	97%	366	700	52%	250	256	98%	45	120	38%	16	18	85%
Average	1,582	1,836	86%				540	650	83%				38	120	32%			
Maximum	2,002	2,150	93%				729	750	97%				81	120	68%			
CCA (ha)	209,771						209,771						209,771					
PIA (ha)	50,345						50,345						50,345					
I.Depth(Actual)	1,291 mm/season						459 mm/season						28 mm/season					
I.Depth(Roster)	1,311 mm/season						464 mm/season						33 mm/season					

Table A.22 Water Distribution in Sataon Study Area under Present Condition - 1989/90 Rabi (1/4)

Period	A1.Asiwan Branch Head Q=800cusec						A2. Maurawan Dy Q=233cusec						A3.Hilauli Dy Q=15cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)			Periodical Discharge (cusec)			Accumulated Discharge (MCM)			Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	435			7			76			1.3								
10/12/89	60			8			19			1.6								
10/19/89				8						1.6								
10/26/89	318	600	53%	14	10	136%	36	240	15%	2.2	4.1	55%						
11/02/89	586	600	98%	24	21	117%	119	240	50%	4.3	8.2	52%	2.6	15.0	17%	0.0	0.3	17%
11/09/89	586	600	98%	34	31	110%	134	240	56%	6.6	12.3	53%				0.0	0.3	17%
11/16/89	337			40	31	129%	87			8.1	12.3	65%				0.0	0.3	17%
11/23/89	374			46	31	150%	128			10.3	12.3	83%	5.6			0.1	0.3	55%
11/30/89	562	600	94%	56	41	136%	173	240	72%	13.2	16.4	80%				0.1	0.3	55%
12/07/89	489	600	81%	64	51	125%	165	240	69%	16.0	20.5	78%	3.6	15.0	24%	0.2	0.5	39%
12/14/89	550	600	92%	74	62	119%	134	240	56%	18.3	24.6	74%	7.7			0.3	0.5	65%
12/21/89	421			81	62	131%	104			20.1	24.6	82%	5.4			0.4	0.5	83%
12/28/89				81	62	131%				20.1	24.6	82%				0.4	0.5	83%
01/04/90	216	600	36%	84	72	118%	46	240	19%	20.9	28.8	73%				0.4	0.5	83%
01/11/90	550	600	92%	94	82	114%	99	240	41%	22.6	32.9	69%		15.0	0%	0.4	0.8	55%
01/18/90	586	600	98%	104	92	112%	103	240	43%	24.4	37.0	66%	2.1			0.5	0.8	60%
01/25/90	251			108	92	117%	89			25.9	37.0	70%				0.5	0.8	60%
02/01/90				108	92	117%				25.9	37.0	70%				0.5	0.8	60%
02/08/90				108	92	117%				25.9	37.0	70%				0.5	0.8	60%
02/15/90				108	92	117%				25.9	37.0	70%				0.5	0.8	60%
02/22/90	164			111	92	120%				25.9	37.0	70%	0.7			0.5	0.8	62%
03/01/90	416	600	69%	118	103	115%	42	240	17%	26.6	41.1	65%				0.5	0.8	62%
03/08/90				118	103	115%				26.6	41.1	65%				0.5	0.8	62%
03/15/90	257			123	103	119%				26.6	41.1	65%				0.5	0.8	62%
03/22/90	539	600	90%	132	113	117%		240	0%	26.6	45.2	59%	0.4	15.0	3%	0.5	1.0	47%
Average	405	600	68%				104		40%				3.5	15.0	23%			
Maximum	586	600	98%				173	240	72%				7.7	15.0	51%			
CCA (ha)	85,511						32,530						2,605					
PIA (ha)	21,378						8,133						651					
I.Depth(Actual)	616 mm/season						327 mm/season						74 mm/season					
I.Depth(Roster)	528 mm/season						556 mm/season						158 mm/season					

Table A.22 Water Distribution in Sataon Study Area under Present Condition - 1989/90 Rabi (2/4)

Period	A4.Narichak Dy Q=30cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89				0.0		
10/12/89				0.0		
10/19/89				0.0		
10/26/89				0.0		
11/02/89		30	0%	0.0	0.5	0%
11/09/89				0.0	0.5	0%
11/16/89				0.0	0.5	0%
11/23/89				0.0	0.5	0%
11/30/89	1			0.0	0.5	3%
12/07/89	3	30	9%	0.1	1.0	6%
12/14/89	2			0.1	1.0	9%
12/21/89				0.1	1.0	9%
12/28/89				0.1	1.0	9%
01/04/90				0.1	1.0	9%
01/11/90	2	30	6%	0.1	1.5	8%
01/18/90	3			0.2	1.5	12%
01/25/90				0.2	1.5	12%
02/01/90				0.2	1.5	12%
02/08/90				0.2	1.5	12%
02/15/90				0.2	1.5	12%
02/22/90				0.2	1.5	12%
03/01/90		30	0%	0.2	2.1	9%
03/08/90				0.2	2.1	9%
03/15/90				0.2	2.1	9%
03/22/90				0.2	2.1	9%
Average	2.1		4%			
Maximum	3.3	30.0	11%			
CCA (ha)	3,342					
PIA (ha)	836					
I.Depth(Actual)	22 mm/season					
I.Depth(Roster)	246 mm/season					

Period	A5. Lotna Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	0			0.0		
10/12/89	0			0.0		
10/19/89	0			0.0		
10/26/89	0			0.0		
11/02/89	0			0.0		
11/09/89	0	4	0%	0.0	0.07	0
11/16/89	0			0.0	0.07	0
11/23/89	0			0.0	0.07	0
11/30/89	0			0.0	0.07	0
12/07/89	0			0.0	0.07	0
12/14/89	0	4	0%	0.0	0.14	0
12/21/89	0			0.0	0.14	0
12/28/89	0			0.0	0.14	0
01/04/90	0			0.0	0.14	0
01/11/90	0			0.0	0.14	0
01/18/90	0	4	0%	0.0	0.21	0
01/25/90	0			0.0	0.21	0
02/01/90	0			0.0	0.21	0
02/08/90	0			0.0	0.21	0
02/15/90	0			0.0	0.21	0
02/22/90	0			0.0	0.21	0
03/01/90	0			0.0	0.21	0
03/08/90	0			0.0	0.21	0
03/15/90	0			0.0	0.21	0
03/22/90	0	4	0%	0.0	0.27	0
Average	0		0%			
Maximum	0	4	0%			
CCA (ha)	150					
PIA (ha)	38					
I.Depth(Actual)	0 mm/season					
I.Depth(Roster)	730 mm/season					

Period	A6.Bankat Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89						
10/12/89						
10/19/89						
10/26/89						
11/02/89	2.9			0.0		
11/09/89	1.6	4.0	40%	0.1	0.1	111%
11/16/89				0.1	0.1	111%
11/23/89	0.9			0.1	0.1	133%
11/30/89	1.7			0.1	0.1	175%
12/07/89	2.7			0.2	0.1	243%
12/14/89		4.0	0%	0.2	0.1	121%
12/21/89	0.9			0.2	0.1	132%
12/28/89				0.2	0.1	132%
01/04/90				0.2	0.1	132%
01/11/90				0.2	0.1	132%
01/18/90		4.0	0%	0.2	0.2	88%
01/25/90				0.2	0.2	88%
02/01/90				0.2	0.2	88%
02/08/90				0.2	0.2	88%
02/15/90				0.2	0.2	88%
02/22/90				0.2	0.2	88%
03/01/90				0.2	0.2	88%
03/08/90				0.2	0.2	88%
03/15/90				0.2	0.2	88%
03/22/90		4.0	0%	0.2	0.3	66%
Average	1.8		10%			
Maximum	2.9	4.0	71%			
CCA (ha)	805					
PIA (ha)	201					
I.Depth(Actual)	90 mm/season					
I.Depth(Roster)	136 mm/season					

Table A.22 Water Distribution in Sataon Study Area under Present Condition - 1989/90 Rabi (3/4)

Period	A7.Bhitargaon Mr. Q= 4 cusec						A8. Unai Mr. Q=4cusec						A9.Bardar Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)			Periodical Discharge (cusec)			Accumulated Discharge (MCM)			Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89				0.00						0.00								
10/12/89				0.00						0.00								
10/19/89				0.00						0.00								
10/26/89				0.00						0.00								
11/02/89				0.00						0.00								
11/09/89		4	0%	0.00	0.07	0%		4.0	0%	0.00	0.07	0%		4.0	0%	0.00	0.07	0%
11/16/89				0.00	0.07	0%				0.00	0.07	0%				0.00	0.07	0%
11/23/89				0.00	0.07	0%				0.00	0.07	0%				0.00	0.07	0%
11/30/89	0			0.01	0.07	10%	0.6			0.01	0.07	15%	0.6			0.01	0.07	15%
12/07/89	0			0.01	0.07	13%	2.6			0.05	0.07	80%	2.6			0.05	0.07	80%
12/14/89		4	0%	0.01	0.14	6%		4.0	0%	0.05	0.14	40%		4.0	0%	0.05	0.14	40%
12/21/89				0.01	0.14	6%				0.05	0.14	40%				0.05	0.14	40%
12/28/89				0.01	0.14	6%				0.05	0.14	40%				0.05	0.14	40%
01/04/90				0.01	0.14	6%				0.05	0.14	40%				0.05	0.14	40%
01/11/90				0.01	0.14	6%				0.05	0.14	40%				0.05	0.14	40%
01/18/90		4	0%	0.01	0.21	4%		4.0	0%	0.05	0.21	27%		4.0	0%	0.05	0.21	27%
01/25/90				0.01	0.21	4%				0.05	0.21	27%				0.05	0.21	27%
02/01/90				0.01	0.21	4%				0.05	0.21	27%				0.05	0.21	27%
02/08/90				0.01	0.21	4%				0.05	0.21	27%				0.05	0.21	27%
02/15/90				0.01	0.21	4%				0.05	0.21	27%				0.05	0.21	27%
02/22/90				0.01	0.21	4%				0.05	0.21	27%				0.05	0.21	27%
03/01/90				0.01	0.21	4%				0.05	0.21	27%				0.05	0.21	27%
03/08/90				0.01	0.21	4%				0.05	0.21	27%				0.05	0.21	27%
03/15/90				0.01	0.21	4%				0.05	0.21	27%				0.05	0.21	27%
03/22/90				0.01	0.21	4%				0.05	0.21	27%				0.05	0.21	27%
Average	0.3		0%				1.6		0%				1.6		0%			
Maximum	0.4	4.0	10%				2.6	4	0%				2.6	4.0	65%			
CCA (ha)	612						576						231					
PIA (ha)	153						144						58					
I.Depth(Actual)	6 mm/season						38 mm/season						95 mm/season					
I.Depth(Roster)	134 mm/season						143 mm/season						356 mm/season					

Table A.22 Water Distribution in Sataon Study Area under Present Condition - 1989/90 Rabi (4/4)

Period	A10.Sataon Mr. Q= 4 cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89				0.00		
10/12/89				0.00		
10/19/89				0.00		
10/26/89				0.00		
11/02/89				0.00		
11/09/89		4	0%	0.00	0.07	0%
11/16/89				0.00	0.07	0%
11/23/89				0.00	0.07	0%
11/30/89				0.00	0.07	0%
12/07/89	5			0.08	0.07	121%
12/14/89	1	4	21%	0.10	0.14	71%
12/21/89				0.10	0.14	71%
12/28/89				0.10	0.14	71%
01/04/90				0.10	0.14	71%
01/11/90				0.10	0.14	71%
01/18/90		4	0%	0.10	0.21	48%
01/25/90				0.10	0.21	48%
02/01/90				0.10	0.21	48%
02/08/90				0.10	0.21	48%
02/15/90				0.10	0.21	48%
02/22/90				0.10	0.21	48%
03/01/90				0.10	0.21	48%
03/08/90				0.10	0.21	48%
03/15/90				0.10	0.21	48%
03/22/90				0.10	0.21	48%
Average	2.9		7%			
Maximum	4.9	4.0	121%			
CCA (ha)	611					
PIA (ha)	153					
I.Depth(Actual)	64 mm/season					
I.Depth(Roster)	134 mm/season					

Period	A11. Korihar Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
		4.0	0%	0.00	0.07	0%
				0.00	0.07	0%
				0.00	0.07	0%
				0.00	0.07	0%
0.1				0.00	0.07	3%
	4.0	0%		0.00	0.14	1%
				0.00	0.14	1%
				0.00	0.14	1%
				0.00	0.14	1%
				0.00	0.14	1%
	4.0	0%		0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
0.1		0%				
0.1	4	0%				
488						
122						
1 mm/season						
168 mm/season						

Period	A12. Hafupur Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
		4.0	0%	0.00	0.07	0%
				0.00	0.07	0%
				0.00	0.07	0%
				0.00	0.07	0%
0.1				0.00	0.07	3%
	4.0	0%		0.00	0.14	1%
				0.00	0.14	1%
				0.00	0.14	1%
				0.00	0.14	1%
				0.00	0.14	1%
	4.0	0%		0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
				0.00	0.21	1%
0.1		0%				
0.1	4.0	3%				
399						
100						
2 mm/season						
206 mm/season						

Table A.23 Water Distribution in Sataon Study Area under Present Condition - 1990 Kharif (1/4)

Period	A1.Aswan Branch at Head Q=600cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	239			4		
05/04/90	62			5		
12/04/90	353			11		
19/04/90				11		
26/04/90	462	600	77%	19	10	186%
03/05/90	539	500	108%	28	19	150%
10/05/90	216			32	19	170%
17/05/90				32	19	170%
24/05/90	323	600	54%	38	29	129%
31/05/90	539	500	108%	47	38	124%
07/06/90	503	500	101%	55	46	120%
14/06/90	550	600	92%	65	56	115%
21/06/90				65	56	115%
28/06/90				65	56	115%
05/07/90	394	600	66%	72	67	107%
12/07/90	419	600	70%	79	77	102%
19/07/90	487	500	97%	87	86	102%
26/07/90	397	600	66%	94	96	98%
02/08/90	382			100	96	105%
09/08/90	173			103	96	108%
16/08/90	581	600	97%	113	106	107%
23/08/90	586	600	98%	123	116	106%
30/08/90	550	600	92%	133	127	105%
06/09/90	586	600	98%	143	137	104%
13/09/90	331			148	137	108%
20/09/90	402	600	67%	155	147	106%
27/09/90	586	600	98%	165	157	105%
Average	420		87%			
Maximum	586	600	98%			
CCA (ha)	66,064					
PIA (ha)	15,855					
I.Depth(Actual)	1,043 mm/season					
I.Depth(Roster)	993 mm/season					

Period	A2. Maurawan Dy Q=233cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	20			0		
05/04/90				0		
12/04/90				0		
19/04/90				0		
26/04/90	36	240	15%	1	4	23%
03/05/90	123	240	51%	3	8	37%
10/05/90	59			4	8	50%
17/05/90				4	8	50%
24/05/90	54	240	23%	5	12	41%
31/05/90	98	240	41%	7	16	41%
07/06/90	95	240	40%	8	21	40%
14/06/90	144	240	60%	11	25	44%
21/06/90				11	25	44%
28/06/90				11	25	44%
05/07/90	74	240	31%	12	29	42%
12/07/90	92	240	38%	14	33	41%
19/07/90	122	240	51%	16	37	42%
26/07/90	99	240	41%	17	41	42%
02/08/90	130			20	41	48%
09/08/90	37			20	41	49%
16/08/90	171	240	71%	23	45	51%
23/08/90	149	240	62%	26	49	52%
30/08/90	139	240	58%	28	53	53%
06/09/90	150	240	62%	31	58	53%
13/09/90	118			33	58	57%
20/09/90	112	240	47%	35	62	56%
27/09/90	167	240	69%	37	66	57%
Average	104		48%			
Maximum	171	240	71%			
CCA (ha)	32,530					
PIA (ha)	7,807					
I.Depth(Actual)	480 mm/season					
I.Depth(Roster)	842 mm/season					

Period	A3.Hilauli Dy. Q=15cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90						
05/04/90						
12/04/90						
19/04/90						
26/04/90	0.4					
03/05/90	0.9	15.0	6%	0.01	0.26	6%
10/05/90	1.3			0.04	0.26	14%
17/05/90				0.04	0.26	14%
24/05/90	0.4	15.0	3%	0.04	0.51	9%
31/05/90	7.4			0.17	0.51	33%
07/06/90				0.17	0.51	33%
14/06/90	1.3	15.0	9%	0.19	0.77	25%
21/06/90	2.7			0.24	0.77	31%
28/06/90				0.24	0.77	31%
05/07/90	0.4	15.0	3%	0.25	1.03	24%
12/07/90	3.7			0.31	1.03	30%
19/07/90				0.31	1.03	30%
26/07/90	1.9	15.0	12%	0.34	1.28	27%
02/08/90	4.3			0.41	1.28	32%
09/08/90				0.41	1.28	32%
16/08/90	14.1	15.0	94%	0.66	1.54	43%
23/08/90	2.8			0.70	1.54	46%
30/08/90				0.70	1.54	46%
06/09/90		15.0	0%	0.70	1.80	39%
13/09/90				0.70	1.80	39%
20/09/90	0.4	15.0	3%	0.71	2.05	35%
27/09/90	1.3			0.73	2.05	36%
Average	2.9		16%			
Maximum	14.1	15.0	94%			
CCA (ha)	2,605					
PIA (ha)	625					
I.Depth(Actual)	117 mm/season					
I.Depth(Roster)	329 mm/season					

Table A.23 Water Distribution in Sataon Study Area under Present Condition - 1990 Kharif (2/4)

Period	A4.Nanchak Dy. Q=30cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	2.6			0.0		
05/04/90				0.0		
12/04/90				0.0		
19/04/90				0.0		
26/04/90		30.0	0%	0.0	0.5	9%
03/05/90				0.0	0.5	9%
10/05/90				0.0	0.5	9%
17/05/90				0.0	0.5	9%
24/05/90				0.0	0.5	9%
31/05/90		30.0	0%	0.0	1.0	4%
07/06/90		30.0	0%	0.0	1.5	3%
14/06/90				0.0	1.5	3%
21/06/90				0.0	1.5	3%
28/06/90				0.0	1.5	3%
05/07/90				0.0	1.5	3%
12/07/90		30.0	0%	0.0	2.1	2%
19/07/90	0.4	30.0	1%	0.1	2.6	2%
26/07/90	3.9			0.1	2.6	5%
02/08/90				0.1	2.6	5%
09/08/90				0.1	2.6	5%
16/08/90				0.1	2.6	5%
23/08/90		30.0	0%	0.1	3.1	4%
30/08/90		30.0	0%	0.1	3.6	3%
06/09/90				0.1	3.6	3%
13/09/90				0.1	3.6	3%
20/09/90		30.0	0%	0.1	4.1	3%
27/09/90				0.1	4.1	3%
Average	2.3		0%			
Maximum	3.9	30	13%			
CCA (ha)	3,342					
PIA (ha)	802					
I.Depth(Actual)	15 mm/season					
I.Depth(Roster)	512 mm/season					

Period	A5. Lotna Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	0.0					
05/04/90	0.0					
12/04/90	0.0					
19/04/90	0.0					
26/04/90	0.0					
03/05/90	0.0	4.0	0%	0.00	0.07	0%
10/05/90	0.0			0.00	0.07	0%
17/05/90	0.0			0.00	0.07	0%
24/05/90	0.0	4.0	0%	0.00	0.14	0%
31/05/90	0.0			0.00	0.14	0%
07/06/90	0.0			0.00	0.14	0%
14/06/90	0.0	4.0	0%	0.00	0.21	0%
21/06/90	0.0			0.00	0.21	0%
28/06/90	0.0			0.00	0.21	0%
05/07/90	0.0	4.0	0%	0.00	0.27	0%
12/07/90	0.0			0.00	0.27	0%
19/07/90	0.0			0.00	0.27	0%
26/07/90	0.0	4.0	0%	0.00	0.34	0%
02/08/90	0.0			0.00	0.34	0%
09/08/90	0.0			0.00	0.34	0%
16/08/90	0.0	4.0	0%	0.00	0.41	0%
23/08/90	0.0			0.00	0.41	0%
30/08/90	0.0			0.00	0.41	0%
06/09/90	0.0	4.0	0%	0.00	0.48	0%
13/09/90	0.0			0.00	0.48	0%
20/09/90	0.0			0.00	0.48	0%
27/09/90	0.0	4.0	0%	0.00	0.55	0%
Average	0.0		0%			
Maximum	0.0	4.0	0%			
CCA (ha)	150					
PIA (ha)	36					
I.Depth(Actual)	0 mm/season					
I.Depth(Roster)	1,521 mm/season					

Period	A6.Bankat Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	0.0					
05/04/90	0.0					
12/04/90	0.0					
19/04/90	0.0					
26/04/90	0.0					
03/05/90	0.0	4.0	0%	0.00	0.07	0%
10/05/90	0.0			0.00	0.07	0%
17/05/90	0.0			0.00	0.07	0%
24/05/90	0.0	4.0	0%	0.00	0.14	0%
31/05/90	0.0			0.00	0.14	0%
07/06/90	0.0			0.00	0.14	0%
14/06/90	0.0	4.0	0%	0.00	0.21	0%
21/06/90	0.0			0.00	0.21	0%
28/06/90	0.0			0.00	0.21	0%
05/07/90	0.0	4.0	0%	0.00	0.27	0%
12/07/90	0.0			0.00	0.27	0%
19/07/90	0.0			0.00	0.27	0%
26/07/90	0.0	4.0	0%	0.00	0.34	0%
02/08/90	0.0			0.00	0.34	0%
09/08/90	0.0			0.00	0.34	0%
16/08/90	0.0	4.0	0%	0.00	0.41	0%
23/08/90	0.0			0.00	0.41	0%
30/08/90	0.0			0.00	0.41	0%
06/09/90	0.0	4.0	0%	0.00	0.48	0%
13/09/90	0.0			0.00	0.48	0%
20/09/90	0.0			0.00	0.48	0%
27/09/90	0.0	4.0	0%	0.00	0.55	0%
Average	0.0		0%			
Maximum	0.0	4.0	0%			
CCA (ha)	805					
PIA (ha)	193					
I.Depth(Actual)	0 mm/season					
I.Depth(Roster)	283 mm/season					

Table A.23 Water Distribution in Sataon Study Area under Present Condition - 1990 Kharif (3/4)

Period	A7. Bhitargaon Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	0.0					
05/04/90	0.0					
12/04/90	0.0					
19/04/90	0.0					
26/04/90	0.0	4.0	0%	0.0	0.07	0%
03/05/90	0.0			0.0	0.07	0%
10/05/90	0.0			0.0	0.07	0%
17/05/90	0.0			0.0	0.07	0%
24/05/90	0.0	4.0	0%	0.0	0.14	0%
31/05/90	0.0			0.0	0.14	0%
07/06/90	0.0			0.0	0.14	0%
14/06/90	0.0	4.0	0%	0.0	0.21	0%
21/06/90	0.0			0.0	0.21	0%
28/06/90	0.0			0.0	0.21	0%
05/07/90	0.0	4.0	0%	0.0	0.27	0%
12/07/90	0.0			0.0	0.27	0%
19/07/90	0.0			0.0	0.27	0%
26/07/90	0.0	4.0	0%	0.0	0.34	0%
02/08/90	0.0			0.0	0.34	0%
09/08/90	0.0			0.0	0.34	0%
16/08/90	0.0	4.0	0%	0.0	0.41	0%
23/08/90	0.0			0.0	0.41	0%
30/08/90	0.0			0.0	0.41	0%
06/09/90	0.0	4.0	0%	0.0	0.48	0%
13/09/90	0.0			0.0	0.48	0%
20/09/90	0.0			0.0	0.48	0%
27/09/90	0.0	4.0	0%	0.0	0.55	0%
Average	0.0		0%			
Maximum	0.0	4.0	0%			
CCA (ha)	612					
PIA (ha)	147					
I.Depth(Actual)	0	mm/season				
I.Depth(Roster)	373	mm/season				

Period	A8. Unai Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
	0.0					
	0.0					
	0.0					
	0.0					
	0.0	4.0	0%	0.00	0.07	0%
	0.0			0.00	0.07	0%
	0.0			0.00	0.07	0%
	0.0			0.00	0.07	0%
	0.0	4.0	0%	0.00	0.14	0%
	0.0			0.00	0.14	0%
	0.0			0.00	0.14	0%
	0.0	4.0	0%	0.00	0.21	0%
	0.0			0.00	0.21	0%
	0.0			0.00	0.21	0%
	0.0	4.0	0%	0.00	0.27	0%
	0.0			0.00	0.27	0%
	0.0			0.00	0.27	0%
	0.0	4.0	0%	0.00	0.34	0%
	0.0			0.00	0.34	0%
	0.0			0.00	0.34	0%
	0.0	4.0	0%	0.00	0.41	0%
	0.0			0.00	0.41	0%
	0.0			0.00	0.41	0%
	0.0	4.0	0%	0.00	0.48	0%
	0.0			0.00	0.48	0%
	0.0			0.00	0.48	0%
	0.0	4.0	0%	0.00	0.55	0%
	0.0		0%			
	0.0	4.0	0%			
	576					
	138					
	0	mm/season				
	396	mm/season				

Period	A9. Bardar Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
		4.0	0%	0.00	0.07	0%
				0.00	0.07	0%
				0.00	0.07	0%
				0.00	0.07	0%
		4.0	0%	0.00	0.14	0%
				0.00	0.14	0%
				0.00	0.14	0%
		4.0	0%	0.00	0.21	0%
				0.00	0.21	0%
				0.00	0.21	0%
		4.0	0%	0.00	0.27	0%
				0.00	0.27	0%
				0.00	0.27	0%
		4.0	0%	0.00	0.34	0%
	0.7			0.01	0.34	4%
				0.01	0.34	4%
		4.0	0%	0.01	0.41	3%
				0.01	0.41	3%
				0.01	0.41	3%
		4.0	0%	0.01	0.48	3%
				0.01	0.48	3%
				0.01	0.48	3%
		4.0	0%	0.01	0.55	2%
	0.7		0%			
	0.7	4.0	18%			
	231					
	55					
	22	mm/season				
	988	mm/season				

Table A.23 Water Distribution in Sataon Study Area under Present Condition - 1990 Kharif (4/4)

Period	A10. Sataon Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90						
05/04/90						
12/04/90						
19/04/90						
26/04/90		4.0	0%	0.00	0.07	0%
03/05/90				0.00	0.07	0%
10/05/90				0.00	0.07	0%
17/05/90				0.00	0.07	0%
24/05/90		4.0	0%	0.00	0.14	0%
31/05/90				0.00	0.14	0%
07/06/90				0.00	0.14	0%
14/06/90		4.0	0%	0.00	0.21	0%
21/06/90				0.00	0.21	0%
28/06/90				0.00	0.21	0%
05/07/90		4.0	0%	0.00	0.27	0%
12/07/90				0.00	0.27	0%
19/07/90				0.00	0.27	0%
26/07/90		4.0	0%	0.00	0.34	0%
02/08/90	1.0			0.02	0.34	5%
09/08/90				0.02	0.34	5%
16/08/90		4.0	0%	0.02	0.41	4%
23/08/90				0.02	0.41	4%
30/08/90				0.02	0.41	4%
06/09/90		4.0	0%	0.02	0.48	4%
13/09/90				0.02	0.48	4%
20/09/90				0.02	0.48	4%
27/09/90		4.0	0%	0.02	0.55	3%
Average	1.0		0%			
Maximum	1.0	4.0	25%			
CCA (ha)	611					
PIA (ha)	147					
I.Depth(Actual)	12 mm/season					
I.Depth(Roster)	374 mm/season					

Period	A11. Konhar Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90						
05/04/90						
12/04/90						
19/04/90						
26/04/90		4.0	0%	0.00	0.07	0%
03/05/90				0.00	0.07	0%
10/05/90				0.00	0.07	0%
17/05/90				0.00	0.07	0%
24/05/90		4.0	0%	0.00	0.14	0%
31/05/90				0.00	0.14	0%
07/06/90				0.00	0.14	0%
14/06/90		4.0	0%	0.00	0.21	0%
21/06/90				0.00	0.21	0%
28/06/90				0.00	0.21	0%
05/07/90		4.0	0%	0.00	0.27	0%
12/07/90				0.00	0.27	0%
19/07/90				0.00	0.27	0%
26/07/90		4.0	0%	0.00	0.34	0%
02/08/90	0.7			0.01	0.34	4%
09/08/90				0.01	0.34	4%
16/08/90		4.0	0%	0.01	0.41	3%
23/08/90				0.01	0.41	3%
30/08/90				0.01	0.41	3%
06/09/90		4.0	0%	0.01	0.48	3%
13/09/90				0.01	0.48	3%
20/09/90				0.01	0.48	3%
27/09/90		4.0	0%	0.01	0.55	2%
Average	0.7		0%			
Maximum	0.7	4.0	18%			
CCA (ha)	488					
PIA (ha)	117					
I.Depth(Actual)	10 mm/season					
I.Depth(Roster)	468 mm/season					

Period	A12. Hajipur Mr. Q=4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90						
05/04/90						
12/04/90						
19/04/90						
26/04/90		4.0	0%	0.00	0.07	0%
03/05/90				0.00	0.07	0%
10/05/90				0.00	0.07	0%
17/05/90				0.00	0.07	0%
24/05/90		4.0	0%	0.00	0.14	0%
31/05/90				0.00	0.14	0%
07/06/90				0.00	0.14	0%
14/06/90		4.0	0%	0.00	0.21	0%
21/06/90				0.00	0.21	0%
28/06/90				0.00	0.21	0%
05/07/90		4.0	0%	0.00	0.27	0%
12/07/90				0.00	0.27	0%
19/07/90				0.00	0.27	0%
26/07/90		4.0	0%	0.00	0.34	0%
02/08/90	1.0			0.02	0.34	5%
09/08/90				0.02	0.34	5%
16/08/90		4.0	0%	0.02	0.41	4%
23/08/90				0.02	0.41	4%
30/08/90				0.02	0.41	4%
06/09/90		4.0	0%	0.02	0.48	4%
13/09/90				0.02	0.48	4%
20/09/90				0.02	0.48	4%
27/09/90		4.0	0%	0.02	0.55	3%
Average	1.0		0%			
Maximum	1.0	4.0	25%			
CCA (ha)	399					
PIA (ha)	96					
I.Depth(Actual)	18 mm/season					
I.Depth(Roster)	572 mm/season					

Table A.24 Water Distribution in Sursa Study Area under Present Condition - 1989/90 Rabi (1/2)

Period	H1.Hardoi Branch 13.4 mile Q=6,600cusec						H2. Hardoi Br. at 53 mile						H3. Hardoi Br. at 99 mile					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)			Periodical Discharge (cusec)			Accumulated Discharge (MCM)			Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	4,803	3,525	136%	82	60	136%	4,034	2,720	148%	69.0	46.6	148%	1,662	700	237%	28	12	237%
10/12/89	3,887	3,535	110%	149	121	123%	2,935	2,720	108%	119.3	93.1	128%		1,830	0%	28	43	66%
10/19/89	5,141	5,355	96%	237	212	111%	3,962	4,540	87%	187.1	170.8	110%		1,580	0%	28	70	40%
10/26/89	5,416	5,355	101%	329	304	108%	4,333	4,540	95%	261.2	248.5	105%	281	1,580	18%	33	97	34%
11/02/89	5,056	5,355	94%	416	396	105%	3,822	4,540	84%	326.7	326.2	100%	1,585	1,700	93%	60	126	48%
11/09/89	3,592	3,015	119%	477	447	107%	2,744	2,200	125%	373.6	363.9	103%	1,511	1,500	101%	86	152	57%
11/16/89	1,878			510	447	114%	1,556			400.3	363.9	110%	977			103	152	68%
11/23/89	4,998	5,115	98%	595	535	111%	3,727	4,300	87%	464.0	437.5	106%	1,519	1,580	96%	129	179	72%
11/30/89	5,478	5,315	103%	689	626	110%	4,140	4,500	92%	534.9	514.5	104%	1,766	1,820	97%	159	210	76%
12/07/89	5,158	5,015	103%	777	712	109%	4,093	4,200	97%	605.0	586.4	103%	1,651	1,430	115%	187	235	80%
12/14/89	4,954	5,415	91%	862	804	107%	3,903	4,600	85%	671.7	665.1	101%	1,503	1,740	86%	213	265	81%
12/21/89	670			873	804	109%	953			688.1	665.1	103%	648			224	265	85%
12/28/89				873	804	109%				688.1	665.1	103%				224	265	85%
01/04/90	4,115	5,115	80%	944	892	106%	2,322	4,300	54%	727.8	738.7	99%	20	1,600	1%	225	292	77%
01/11/90	5,256	5,315	99%	1,034	983	105%	1,904	4,500	42%	760.4	815.7	93%	40	1,600	3%	225	319	71%
01/18/90	5,300	5,315	100%	1,125	1,074	105%	3,739	4,500	83%	824.4	892.8	92%	20	1,820	1%	226	351	64%
01/25/90	4,527	4,905	92%	1,202	1,158	104%	2,680	4,090	66%	870.2	962.8	90%		1,500	0%	226	376	60%
02/01/90	643			1,213	1,158	105%	1,911			903.0	962.8	94%	603			236	376	63%
02/08/90	438			1,221	1,158	105%	3,263			958.8	962.8	100%				236	376	63%
02/15/90	4,367	2,815	155%	1,295	1,206	107%	4,172	2,600	160%	1030.2	1007.3	102%	1,295			258	376	69%
02/22/90	3,339	3,015	111%	1,352	1,258	108%	4,298	2,200	195%	1103.8	1044.9	106%	1,048			276	376	73%
03/01/90	1,467	3,315	44%	1,378	1,314	105%	432	1,900	23%	1111.2	1077.4	103%	482	1,820	26%	284	407	70%
03/08/90	2,210	2,715	81%	1,415	1,361	104%		1,900	0%	1111.2	1110.0	100%	295	1,450	20%	289	432	67%
03/15/90	3,087			1,468	1,361	108%	2,692			1157.2	1110.0	104%	236			293	432	68%
03/22/90	3,633	2,365	154%	1,530	1,401	109%	3,786	1,550	244%	1222.0	1136.5	108%	242	1,070	23%	298	450	66%
Average	3,725		104%				3,104		99%				869		54%			
Maximum	5,478	5,415	101%				4,333	4,600	94%				1,766	1,830	97%			
CCA (ha)	757,772						668,895						308,771					
PIA (ha)	189,443						167,224						77,193					
I.Depth(Actual)	808 mm/season						731 mm/season						385 mm/season					
I.Depth(Roster)	740 mm/season						680 mm/season						584 mm/season					

Table A.24 Water Distribution in Sursa Study Area under Present Condition - 1989/90 Rabi (2/2)

Period	H4. Bhadaicha Dy. Q=124cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	85			1		
10/12/89	83			3		
10/19/89	89	88	101%	4	2	292%
10/26/89	75			6	2	377%
11/02/89	56	88	64%	7	3	221%
11/09/89	88			8	3	271%
11/16/89	41			9	3	294%
11/23/89	34			9	3	313%
11/30/89	34			10	3	332%
12/07/89	48	88	55%	11	5	240%
12/14/89	75			12	5	268%
12/21/89	20			12	5	276%
12/28/89				12	5	276%
01/04/90	73	88	83%	14	6	227%
01/11/90	86			15	6	252%
01/18/90	57			16	6	268%
01/25/90	71	88	81%	17	8	231%
02/01/90	82			19	8	249%
02/08/90				19	8	249%
02/15/90	76			20	8	266%
02/22/90	52			21	8	278%
03/01/90	62			22	8	292%
03/08/90				22	8	292%
03/15/90	73			23	8	309%
03/22/90	67			24	8	324%
Average	65		77%			
Maximum	89	88	101%			
CCA (ha)	15,512					
PIA (ha)	3,878					
I.Depth(Actual)	630 mm/season					
I.Depth(Roster)	194 mm/season					

Period	H5. Marsa Dy Q=12.4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
	7			0.1		
	13	20	65%	0.2	0.3	65%
	13	20	65%	0.4	0.7	65%
	6			0.5	0.7	79%
	7	20	33%	0.7	1.0	63%
	6			0.8	1.0	74%
				0.8	1.0	74%
		20	0%	0.8	1.4	56%
	11			1.0	1.4	70%
	13			1.2	1.4	86%
	13	20	65%	1.4	1.7	82%
	4			1.5	1.7	85%
				1.5	1.7	85%
	6			1.6	1.7	91%
	13	20	65%	1.8	2.1	87%
	6			1.9	2.1	91%
	6	20	28%	2.0	2.4	82%
				2.0	2.4	82%
				2.0	2.4	82%
	9			2.1	2.4	89%
	7			2.3	2.4	94%
	7	20	36%	2.4	2.7	87%
				2.4	2.7	87%
				2.4	2.7	87%
	6			2.5	2.7	90%
	8		45%			
	13	20	65%			
	1,642					
	411					
	602 mm/season					
	667 mm/season					

Table A.25 Water Distribution in Sursa Study Area under Present Condition - 1990 Kharif (1/2)

Period	H1.Hardoi Br. at 13.4 mile Q=6,600cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	3,816	3,715	103%	65	64	103%
05/04/90	4,412	4,165	106%	141	135	104%
12/04/90	643			152	135	113%
19/04/90	1,844			183	135	136%
26/04/90	4,856	5,255	92%	267	225	119%
03/05/90	5,461	5,255	104%	360	315	114%
10/05/90	3,407			418	315	133%
17/05/90	4,758	3,065	155%	500	367	136%
24/05/90	5,256	5,255	100%	590	457	129%
31/05/90	5,434	5,255	103%	683	547	125%
07/06/90	5,434	5,255	103%	776	637	122%
14/06/90	5,434	5,255	103%	869	727	119%
21/06/90	4,127	5,255	79%	939	817	115%
28/06/90	4,047	5,255	77%	1,009	907	111%
05/07/90	4,901	5,255	93%	1,092	997	110%
12/07/90	824	5,255	16%	1,107	1,087	102%
19/07/90	4,331	5,255	82%	1,181	1,177	100%
26/07/90	5,434	5,255	103%	1,274	1,267	101%
02/08/90	5,434	5,255	103%	1,367	1,357	101%
09/08/90	5,267	5,255	100%	1,457	1,447	101%
16/08/90	5,354	5,255	102%	1,548	1,536	101%
23/08/90	5,305	5,255	101%	1,639	1,626	101%
30/08/90	5,311	5,255	101%	1,730	1,716	101%
06/09/90	5,262	5,255	100%	1,820	1,806	101%
13/09/90	5,262	5,255	100%	1,910	1,896	101%
20/09/90	5,262	5,255	100%	2,000	1,986	101%
27/09/90	5,262	5,255	100%	2,090	2,076	101%
Average	4,524		97%			
Maximum	5,461	5,255	104%			
CCA (ha)	757,772					
PIA (ha)	181,865					
I.Depth(Actual)	1,149 mm/season					
I.Depth(Roster)	1,142 mm/season					

Period	H2. Hardoi Br. at 53 mile					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	3,259	2,900	112%	56	50	112%
05/04/90	3,445	3,350	103%	115	107	107%
12/04/90	1,058			133	107	124%
19/04/90	880			148	107	138%
26/04/90	3,623	4,440	82%	210	183	115%
03/05/90	4,178	4,440	94%	281	259	109%
10/05/90	2,754			329	259	127%
17/05/90	3,612	2,250	161%	390	297	131%
24/05/90	4,111	4,440	93%	461	373	123%
31/05/90	4,359	4,440	98%	535	449	119%
07/06/90	4,339	4,440	98%	610	525	116%
14/06/90	4,423	4,440	100%	685	601	114%
21/06/90	3,754	4,440	85%	750	677	111%
28/06/90	3,230	4,440	73%	805	753	107%
05/07/90	3,724	4,440	84%	869	829	105%
12/07/90	1,193	4,440	27%	889	905	98%
19/07/90	3,359	4,440	76%	946	981	96%
26/07/90	4,266	4,440	96%	1,019	1,057	96%
02/08/90	4,199	4,440	95%	1,091	1,133	96%
09/08/90	4,342	4,440	98%	1,166	1,209	96%
16/08/90	4,368	4,440	98%	1,240	1,285	97%
23/08/90	4,293	4,440	97%	1,314	1,361	97%
30/08/90	4,247	4,440	96%	1,387	1,437	96%
06/09/90	4,445	4,440	100%	1,463	1,513	97%
13/09/90	4,172	4,440	94%	1,534	1,589	97%
20/09/90	3,810	4,440	86%	1,599	1,665	96%
27/09/90	4,486	4,440	101%	1,676	1,741	96%
Average	3,627		93%			
Maximum	4,486	4,440	101%			
CCA (ha)	668,895					
PIA (ha)	160,535					
I.Depth(Actual)	1,044 mm/season					
I.Depth(Roster)	1,085 mm/season					

Period	H3. Hardoi Br. at 99 mile					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	807	800	101%	14	14	101%
05/04/90	1,112	1,000	111%	14	17	81%
12/04/90	536			33	17	192%
19/04/90	946			42	17	246%
26/04/90	472	1,800	26%	58	48	121%
03/05/90	1,786	1,800	99%	66	79	84%
10/05/90	745			97	79	123%
17/05/90	1,088	1,600	68%	110	106	103%
24/05/90	1,727	1,700	102%	128	135	95%
31/05/90	1,699	1,700	100%	158	164	96%
07/06/90	1,699	1,700	100%	187	193	97%
14/06/90	1,699	1,700	100%	216	223	97%
21/06/90	1,645	1,800	91%	245	253	97%
28/06/90	1,199	1,800	67%	273	284	96%
05/07/90	1,637	1,700	96%	294	313	94%
12/07/90	826	1,700	49%	322	342	94%
19/07/90	1,315	1,600	82%	336	370	91%
26/07/90	1,310	1,600	82%	358	397	90%
02/08/90	1,621	1,800	90%	381	428	89%
09/08/90	1,738	1,600	109%	409	455	90%
16/08/90	1,784	1,800	99%	438	486	90%
23/08/90	1,636	1,800	91%	469	517	91%
30/08/90	1,681	1,700	99%	497	546	91%
06/09/90	1,806	1,700	106%	526	575	91%
13/09/90	1,811	1,800	101%	557	606	92%
20/09/90	1,827	1,800	101%	588	637	92%
27/09/90	1,034	1,500	69%	619	662	93%
Average	1,377		89%			
Maximum	1,827	1,800	101%			
CCA (ha)	308,771					
PIA (ha)	74,105					
I.Depth(Actual)	835 mm/season					
I.Depth(Roster)	894 mm/season					

Table A.25 Water Distribution in Sursa Study Area under Present Condition - 1990 Kharif (2/2)

Period	H4. Bhadaicha Dy. Q=124cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	18			0	0	
05/04/90	81			0	0	
12/04/90	75			2	0	
19/04/90				3	0	
26/04/90	41	88	47%	3	2	198%
03/05/90	63			4	2	244%
10/05/90	71			5	2	316%
17/05/90	80			6	2	396%
24/05/90	62			7	2	487%
31/05/90	57	88	65%	8	3	278%
07/06/90	64			9	3	311%
14/06/90	70	88	79%	10	5	232%
21/06/90	83	88	94%	12	6	193%
28/06/90	33			13	6	217%
05/07/90	62	88	70%	14	8	181%
12/07/90	43			15	8	195%
19/07/90	57	88	65%	15	9	171%
26/07/90	73			16	9	182%
02/08/90	84	88	95%	18	11	167%
09/08/90	81	88	93%	19	12	158%
16/08/90	49			20	12	170%
23/08/90	56	88	63%	21	14	157%
30/08/90	78			22	14	164%
06/09/90	88			24	14	174%
13/09/90	83	88	94%	25	15	167%
20/09/90	85			27	15	176%
27/09/90	69	88	78%	28	17	169%
Average	66		77%			
Maximum	88	88	100%			
CCA (ha)	15,512					
PIA (ha)	3,723					
I.Depth(Actual)	751 mm/season					
I.Depth(Roster)	445 mm/season					

Period	H5. Marsa Dy Q=12.4cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
	6			0	0	
				0	0	
				0	0	
				0	0	
	7	20	37%	0	0	37%
	13	20	65%	0	1	51%
	6			0	1	65%
	6	20	28%	1	1	53%
	13	20	65%	1	1	56%
	13	20	65%	1	2	58%
	13	20	65%	1	2	59%
	13	20	65%	1	2	60%
	13	20	65%	2	3	60%
				2	3	60%
	7	20	37%	2	3	58%
	6	20	28%	2	3	55%
	11	20	56%	2	4	55%
	13	20	65%	2	4	56%
	13	20	65%	3	4	56%
	13	20	65%	3	5	57%
	13			3	5	62%
	13	20	65%	3	5	62%
	13	20	65%	3	5	62%
	13	20	65%	4	6	62%
	13			4	6	66%
	13	20	65%	4	6	66%
	13	20	65%	4	7	66%
	11		58%			
	13	20	65%			
	1,642					
	394					
	1,089 mm/season					
	1,650 mm/season					

Table A.26 Water Distribution in Purwa Study Area under Present Condition - 1989/90 Rabi (1/2)

Period	P1. Purwa Br. at Head Q=800cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	448			8		
10/12/89	515	800	64%	16	14	120%
10/19/89	642	840	76%	27	28	98%
10/26/89	570			37	28	133%
11/02/89	450			45	28	160%
11/09/89	237			49	28	175%
11/16/89	379			55	28	198%
11/23/89	411	840	49%	63	42	147%
11/30/89	420	700	60%	70	54	128%
12/07/89	249			74	54	136%
12/14/89	219			78	54	143%
12/21/89	168			81	54	148%
12/28/89				81	54	148%
01/04/90	283			85	54	157%
01/11/90	486			94	54	172%
01/18/90	226	700	32%	98	66	147%
01/25/90	663	800	83%	109	80	136%
02/01/90	376			115	80	144%
02/08/90				115	80	144%
02/15/90	444			123	80	154%
02/22/90	461			131	80	163%
03/01/90	482	700	69%	139	92	151%
03/08/90	295	700	42%	144	104	139%
03/15/90	236			148	104	142%
03/22/90	243			152	104	146%
Average	387		59%			
Maximum	663	840	79%			
CCA (ha)	74,565					
PIA (ha)	18,641					
I.Depth(Actual)	817 mm/season					
I.Depth(Roster)	558 mm/season					

Period	P2. Purwa Dy. Q=57cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	25			0.4	0.0	
10/12/89	11	57	19%	0.6	1.0	62%
10/19/89	9	57	16%	0.8	2.0	39%
10/26/89	35			1.4	2.0	69%
11/02/89	29			1.8	2.0	95%
11/09/89				1.8	2.0	95%
11/16/89	21			2.2	2.0	113%
11/23/89	21	57	37%	2.6	2.9	88%
11/30/89	5	57	9%	2.7	3.9	68%
12/07/89				2.7	3.9	68%
12/14/89				2.7	3.9	68%
12/21/89				2.7	3.9	68%
12/28/89				2.8	3.9	73%
01/04/90	11			3.3	3.9	85%
01/11/90	28			3.5	3.9	90%
01/18/90	10	57	17%	4.1	4.9	84%
01/25/90	37	57	64%	4.5	5.9	76%
02/01/90	20			4.5	5.9	76%
02/08/90				4.7	5.9	81%
02/15/90	15			5.1	5.9	87%
02/22/90	22			5.2	5.9	89%
03/01/90	6	57	11%	5.3	6.8	77%
03/08/90	5	57	9%	5.3	7.8	68%
03/15/90	2			5.3	7.8	68%
03/22/90				5.3	7.8	68%
Average	17		23%			
Maximum	37	57	64%			
CCA (ha)	5,302					
PIA (ha)	1,326					
I.Depth(Actual)	402 mm/season					
I.Depth(Roster)	589 mm/season					

Period	P3. Tikar Dy Q=25cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	13.0			0.2	0.0	
10/12/89	9.7	25.0	39%	0.4	0.4	91%
10/19/89	19.7	25.0	79%	0.7	0.9	85%
10/26/89	20.0			1.1	0.9	125%
11/02/89	15.2			1.3	0.9	155%
11/09/89	2.9			1.4	0.9	161%
11/16/89	13.6			1.6	0.9	188%
11/23/89	8.6	25.0	34%	1.8	1.3	137%
11/30/89	8.6	25.0	34%	1.9	1.7	111%
12/07/89				1.9	1.7	111%
12/14/89	7.7			2.0	1.7	119%
12/21/89	5.0			2.1	1.7	124%
12/28/89				2.1	1.7	124%
01/04/90	5.1			2.2	1.7	129%
01/11/90	11.9			2.4	1.7	141%
01/18/90	4.6	25.0	18%	2.5	2.1	116%
01/25/90	16.9	25.0	67%	2.8	2.6	108%
02/01/90	10.3			3.0	2.6	115%
02/08/90				3.0	2.6	115%
02/15/90	2.6			3.0	2.6	117%
02/22/90	9.4			3.2	2.6	123%
03/01/90	11.0	25.0	44%	3.3	3.0	112%
03/08/90	10.7	25.0	43%	3.5	3.4	103%
03/15/90	9.7			3.7	3.4	108%
03/22/90	4.6			3.8	3.4	110%
Average	10		45%			
Maximum	20	25	80%			
CCA (ha)	4,257					
PIA (ha)	1,064					
I.Depth(Actual)	355 mm/season					
I.Depth(Roster)	322 mm/season					

Table A.26 Water Distribution in Purwa Study Area under Present Condition - 1989/90 Rabi (2/2)

Period	P4. Chamiani Mr. Q=13cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
10/05/89	7			0.1	0.0	
10/12/89	2	13	18%	0.2	0.2	70%
10/19/89	11	13	84%	0.3	0.4	77%
10/26/89	18			0.7	0.4	146%
11/02/89	16			0.9	0.4	206%
11/09/89	6			1.0	0.4	228%
11/16/89	10			1.2	0.4	267%
11/23/89	10	13	79%	1.4	0.7	204%
11/30/89	10	13	75%	1.5	0.9	172%
12/07/89	5			1.6	0.9	182%
12/14/89	4			1.7	0.9	189%
12/21/89	5			1.8	0.9	198%
12/28/89				1.8	0.9	198%
01/04/90	1			1.8	0.9	201%
01/11/90	9			1.9	0.9	217%
01/18/90	2	13	18%	2.0	1.1	178%
01/25/90	11	13	88%	2.2	1.3	163%
02/01/90	9			2.3	1.3	174%
02/08/90	0			2.3	1.3	174%
02/15/90	10			2.5	1.3	187%
02/22/90	14			2.7	1.3	205%
03/01/90	12	13	92%	2.9	1.6	189%
03/08/90	6	13	46%	3.0	1.8	171%
03/15/90	8			3.2	1.8	179%
03/22/90	5			3.3	1.8	183%
Average	8		62%			
Maximum	18	13	138%			
CCA (ha)	2,186					
PIA (ha)	547					
I.Depth(Actual)	597 mm/season					
I.Depth(Roster)	326 mm/season					

Period	P5. Pakra Mr. Q=5cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
	3			0.0	0.0	
	2	5	34%	0.1	0.1	91%
	4	5	80%	0.1	0.2	86%
	4			0.2	0.2	126%
	3			0.3	0.2	159%
	2			0.3	0.2	182%
	4			0.4	0.2	222%
	2	5	46%	0.4	0.3	163%
	4	5	80%	0.5	0.3	142%
	2			0.5	0.3	151%
	1			0.5	0.3	155%
	2			0.6	0.3	167%
				0.6	0.3	167%
	1			0.6	0.3	172%
	2			0.6	0.3	184%
	1	5	17%	0.6	0.4	150%
	3	5	57%	0.7	0.5	135%
	2			0.7	0.5	143%
	0			0.7	0.5	143%
	2			0.8	0.5	150%
	4			0.8	0.5	163%
	4	5	80%	0.9	0.6	152%
	2	5	34%	0.9	0.7	137%
	2			1.0	0.7	143%
	1			1.0	0.7	145%
	2		54%			
	4	5	80%			
	509					
	127					
	783 mm/season					
	538 mm/season					

Table A.27 Water Distribution in Purwa Study Area under Present Condition - 1990 Kharif (1/2)

Period	P1. Purwa Br. at Head Q=800cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	434			7		
05/04/90	504	700	72%	16	12	134%
12/04/90	341			22	12	183%
19/04/90				22	12	183%
26/04/90	147			24	12	204%
03/05/90	280	800	35%	29	26	114%
10/05/90	393			36	26	140%
17/05/90	357	600	60%	42	36	117%
24/05/90	440			50	36	138%
31/05/90	276	700	39%	54	48	113%
07/06/90	604	700	86%	65	60	108%
14/06/90	305			70	60	117%
21/06/90	616	800	77%	80	74	109%
28/06/90	602	800	75%	91	87	104%
05/07/90	334			96	87	110%
12/07/90	147	600	25%	99	98	101%
19/07/90	442	700	63%	107	110	97%
26/07/90	405			113	110	104%
02/08/90	428	800	53%	121	123	98%
09/08/90	650	800	81%	132	137	96%
16/08/90	667	700	95%	143	149	96%
23/08/90	392	700	56%	150	161	93%
30/08/90	576			160	161	99%
06/09/90	98			162	161	100%
13/09/90	538	800	67%	171	175	98%
20/09/90	698	700	100%	183	187	98%
27/09/90	390			189	187	102%
Average	426		66%			
Maximum	698	800	87%			
CCA (ha)	74,565					
PIA (ha)	17,896					
I.Depth(Actual)	1,058 mm/season					
I.Depth(Roster)	1,043 mm/season					

Period	P2. Purwa Dy Q=57cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
	18			0.3	0.0	
	28	57	50%	0.8	1.0	82%
	11			1.0	1.0	102%
	18			1.3	1.0	133%
				1.3	1.0	133%
	8	57	14%	1.4	2.0	73%
	4			1.5	2.0	77%
	14			1.7	2.0	89%
	10			1.9	2.0	97%
	16	57	28%	2.2	2.9	74%
	35			2.8	2.9	95%
	23			3.2	2.9	108%
	23	57	40%	3.6	3.9	91%
	22	57	39%	3.9	4.9	81%
	19			4.3	4.9	87%
				4.3	4.9	87%
	23	57	41%	4.7	5.9	79%
	19			5.0	5.9	85%
	12	57	20%	5.2	6.8	76%
	38	57	67%	5.8	7.8	75%
	38	57	67%	6.5	8.8	74%
	32			7.0	8.8	80%
	25			7.5	8.8	85%
				7.5	8.8	85%
	15	57	26%	7.7	9.8	79%
	32	57	57%	8.3	10.7	77%
				8.3	10.7	77%
	21		41%			
	38	57	67%			
	5,302					
	1,272					
	650 mm/season					
	843 mm/season					

Period	P3. Tikar Dy. Q=25cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
	12			0.2	0.0	
	15	25	58%	0.5	0.4	106%
	10			0.6	0.4	144%
				0.6	0.4	144%
				0.6	0.4	144%
	8	25	33%	0.8	0.9	89%
	15			1.0	0.9	118%
	9			1.2	0.9	136%
	12			1.4	0.9	160%
	8	25	31%	1.5	1.3	117%
	18	25	71%	1.8	1.7	106%
	8			2.0	1.7	114%
	8	25	33%	2.1	2.1	98%
	12	25	47%	2.3	2.6	89%
	11			2.5	2.6	97%
				2.5	2.6	97%
	9	25	35%	2.6	3.0	88%
	13			2.9	3.0	95%
	7	25	28%	3.0	3.4	87%
	13	25	50%	3.2	3.9	83%
	17	25	67%	3.5	4.3	81%
	7	25	29%	3.6	4.7	77%
	7			3.7	4.7	79%
	5			3.8	4.7	81%
	9	25	34%	3.9	5.1	77%
	20	25	79%	4.3	5.6	77%
				4.3	5.6	77%
	11		46%			
	20	25	79%			
	4,257					
	1,022					
	419 mm/season					
	544 mm/season					

Table A.27 Water Distribution in Purwa Study Area under Present Condition - 1990 Kharif (2/2)

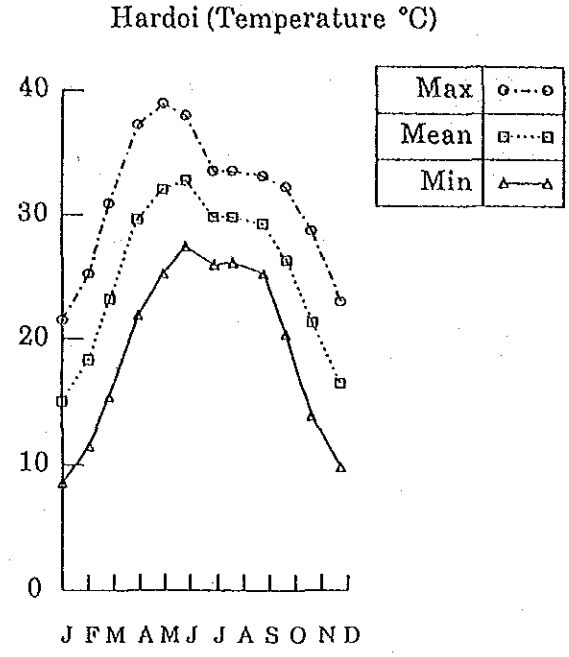
Period	P4. Chamiani Mr. Q=13cusec						P5. Pakra Mr. Q=20cusec					
	Periodical Discharge (cusec)			Accumulated Discharge (MCM)			Periodical Discharge (cusec)			Accumulated Discharge (MCM)		
	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)	Actual (1)	Roster (2)	(1)/(2)	Actual (3)	Roster (4)	(3)/(4)
29/03/90	11			0.2	0.0		3.6			0.1	0.0	
05/04/90	13	13	103%	0.4	0.2	188%	3.9	5.0	77%	0.1	0.1	149%
12/04/90	8			0.6	0.2	248%	2.6			0.2	0.1	200%
19/04/90				0.6	0.2	248%	0.0			0.2	0.1	200%
26/04/90				0.6	0.2	248%	0.0			0.2	0.1	200%
03/05/90	7	13	57%	0.7	0.4	152%	1.7	5.0	34%	0.2	0.2	117%
10/05/90	12			0.9	0.4	200%	3.4			0.3	0.2	151%
17/05/90	8			1.0	0.4	229%	1.7	5.0	34%	0.3	0.3	112%
24/05/90	11			1.2	0.4	272%	2.9			0.3	0.3	131%
31/05/90	7	13	55%	1.3	0.7	199%	2.0	5.0	40%	0.4	0.3	109%
07/06/90	16			1.6	0.7	241%	4.0	5.0	80%	0.4	0.4	103%
14/06/90	9			1.8	0.7	265%	2.3			0.5	0.4	112%
21/06/90	14	13	108%	2.0	0.9	225%	3.4	5.0	69%	0.5	0.5	105%
28/06/90	14	13	110%	2.3	1.1	202%	4.0	5.0	80%	0.6	0.6	101%
05/07/90	10			2.4	1.1	218%	2.9			0.7	0.6	109%
12/07/90				2.4	1.1	218%		5.0	0%	0.7	0.7	96%
19/07/90	9	13	72%	2.6	1.3	194%	2.6	5.0	51%	0.7	0.8	91%
26/07/90	11			2.8	1.3	208%	2.9			0.7	0.8	97%
02/08/90	6	13	49%	2.9	1.6	186%	1.7	5.0	34%	0.8	0.9	91%
09/08/90	18	13	138%	3.2	1.8	180%	4.0	5.0	80%	0.8	0.9	90%
16/08/90	17	13	132%	3.5	2.0	174%	4.0	5.0	80%	0.9	1.0	89%
23/08/90	5			3.6	2.0	179%	1.1	5.0	23%	0.9	1.1	84%
30/08/90	7			3.7	2.0	184%	2.3			1.0	1.1	87%
06/09/90	5			3.8	2.0	188%	0.9			1.0	1.1	89%
13/09/90	8	13	59%	3.9	2.2	175%	1.7	5.0	34%	1.0	1.2	85%
20/09/90	18	13	138%	4.2	2.4	172%	4.0	5.0	80%	1.1	1.3	85%
27/09/90				4.2	2.4	172%	4.0			1.2	1.3	90%
Average	11		93%				2.6		53%			
Maximum	18	13	138%				4.0	5.0	80%			
CCA (ha)	2,185						509					
PIA (ha)	524						122					
I.Depth(Actual)	803 mm/season						945 mm/season					
I.Depth(Roster)	467 mm/season						1,051 mm/season					

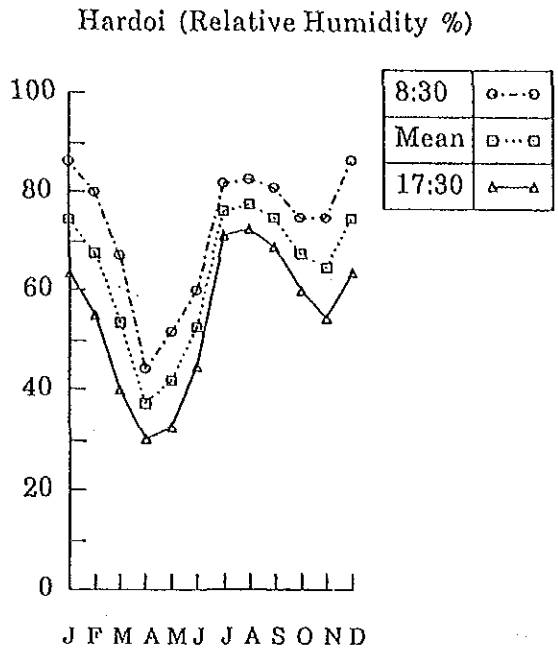
Table A.28 Ground Water Potential by Study Area

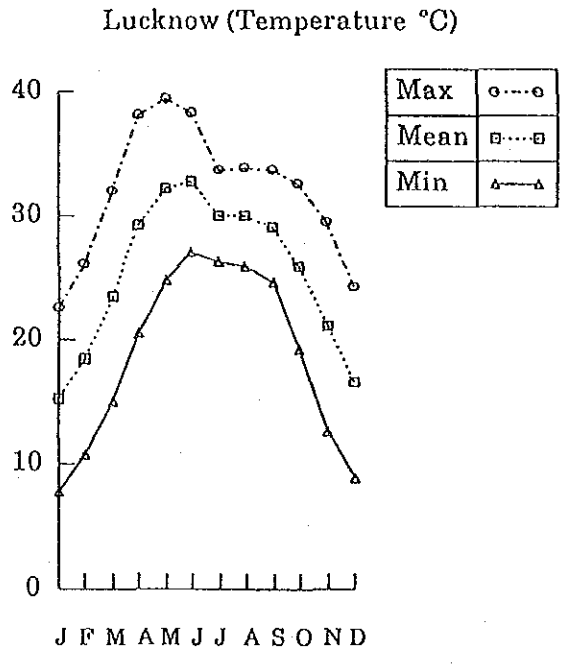
Study Area	Gross Recharge	Net Recharge	Net Draft	Stage of Development
Sarojini Nagar	10,576	8,989	2,563	28.5%
Sataon	7,355	6,251	2,238	35.8%
Sursa	14,761	12,547	2,337	18.6%
Purwa	6,868	5,838	1,463	25.1%

Source: New Concept of CAD in Major/Medium Irrigation Systems, Ground Water Department, UP

FIGURES







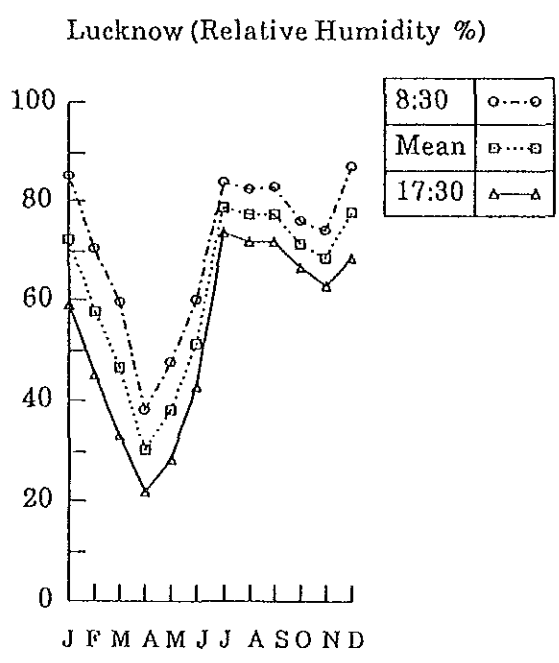
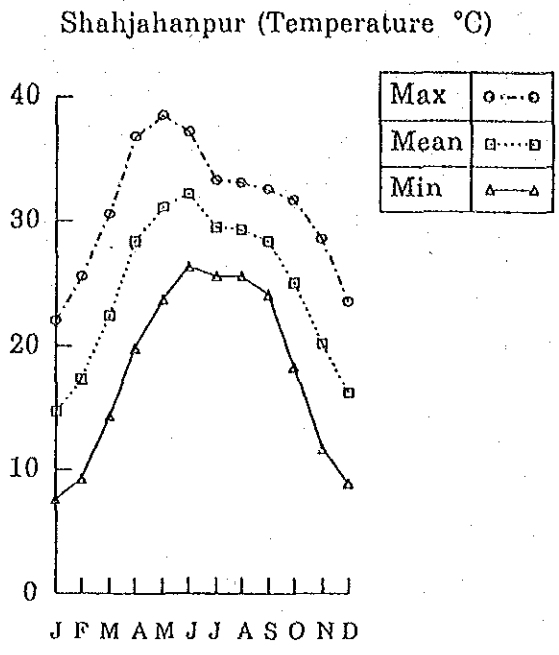
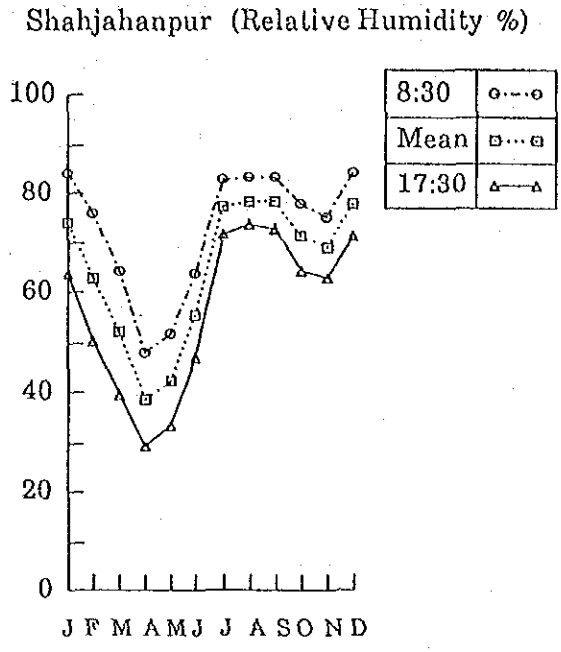
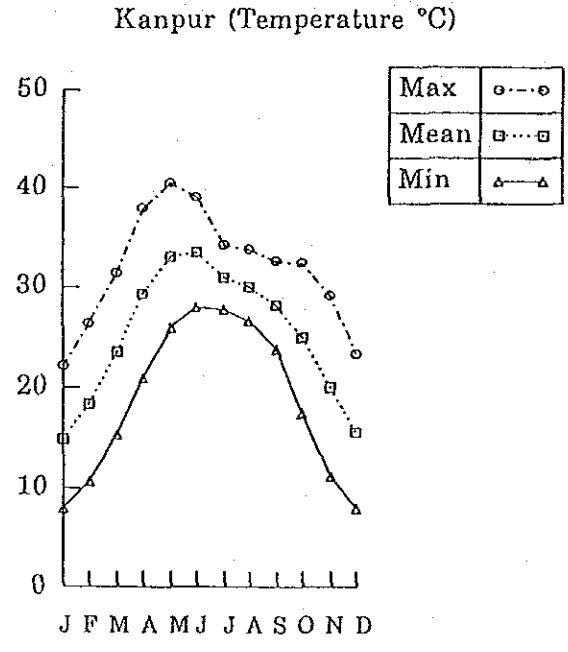


Fig. A.1 (1/2) Temperature and Relative Humidity in the Sharda Canal Command Area

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY







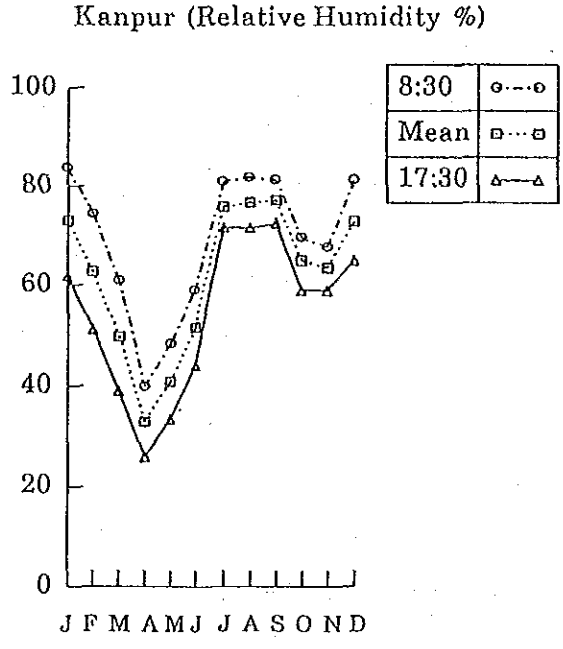


Fig. A.1 (2/2) Temperature and Relative Humidity in the Sharda Canal Command Area

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

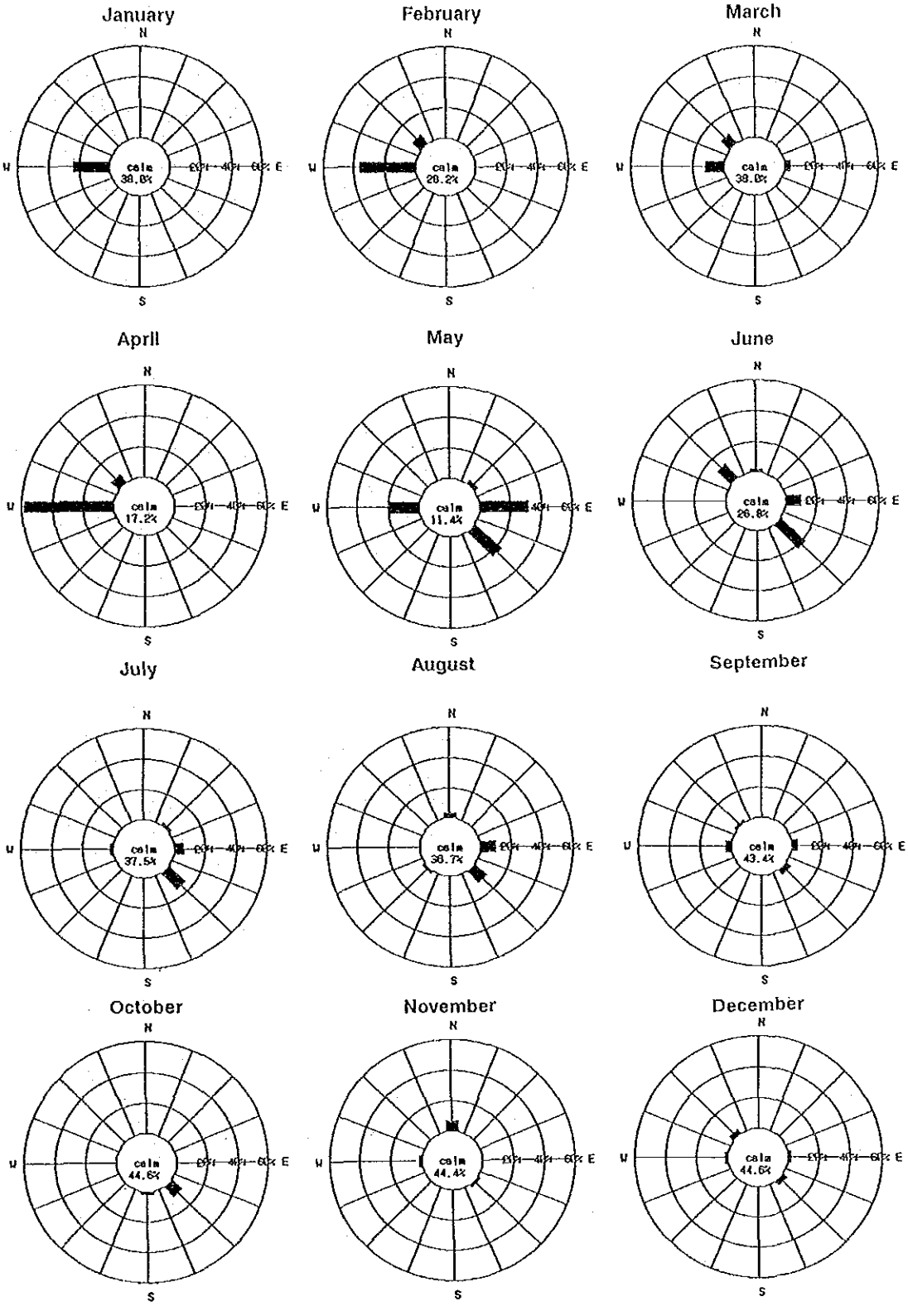


Fig. A.2 (1/4) Wind Direction in the Sharda Canal Command Area - Shahjahanpur

INDIA
FEASIBILITY STUDY ON . IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

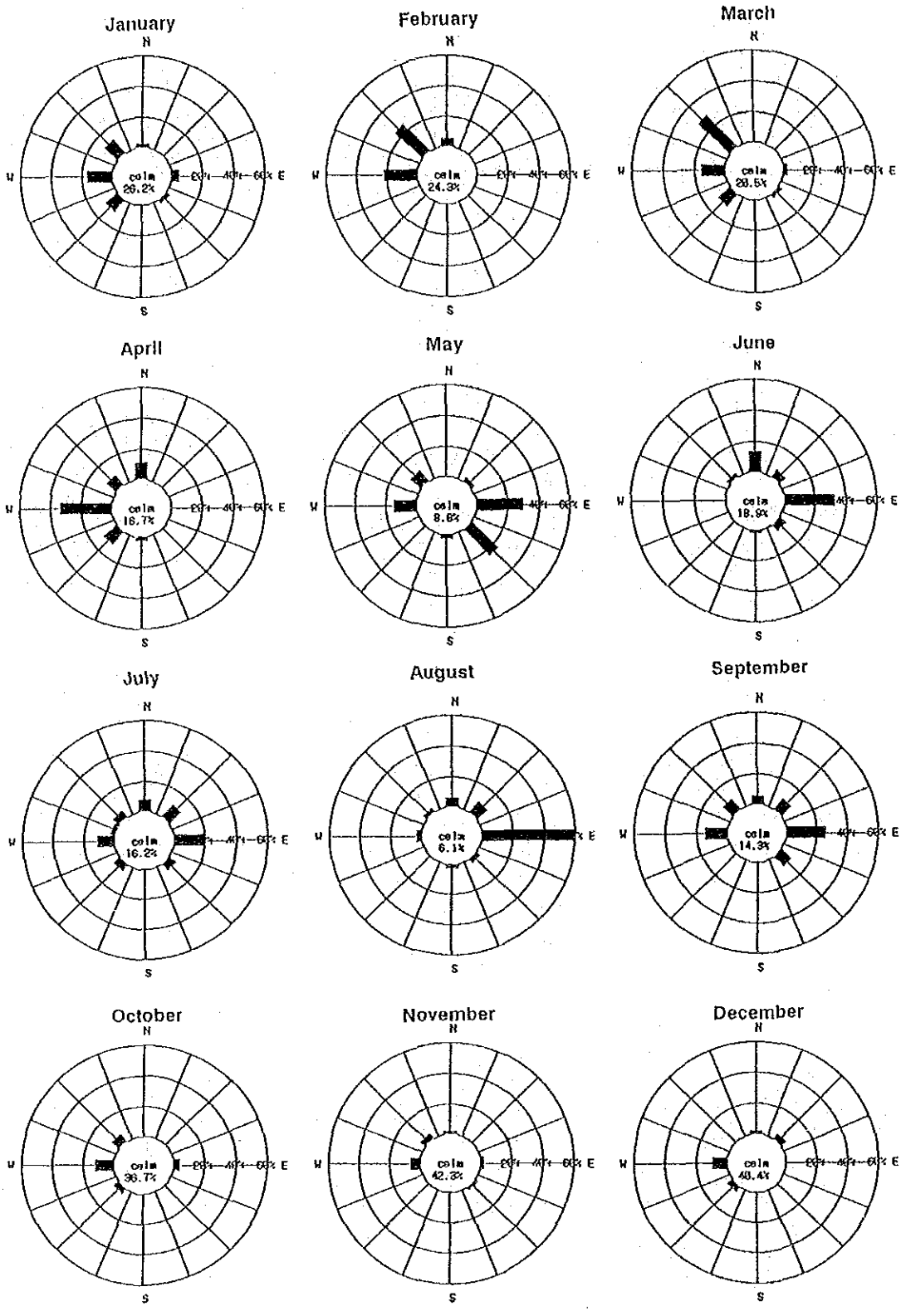


Fig. A.2 (2/4) Wind Direction in the Sharda Canal Command Area - Hardoi

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

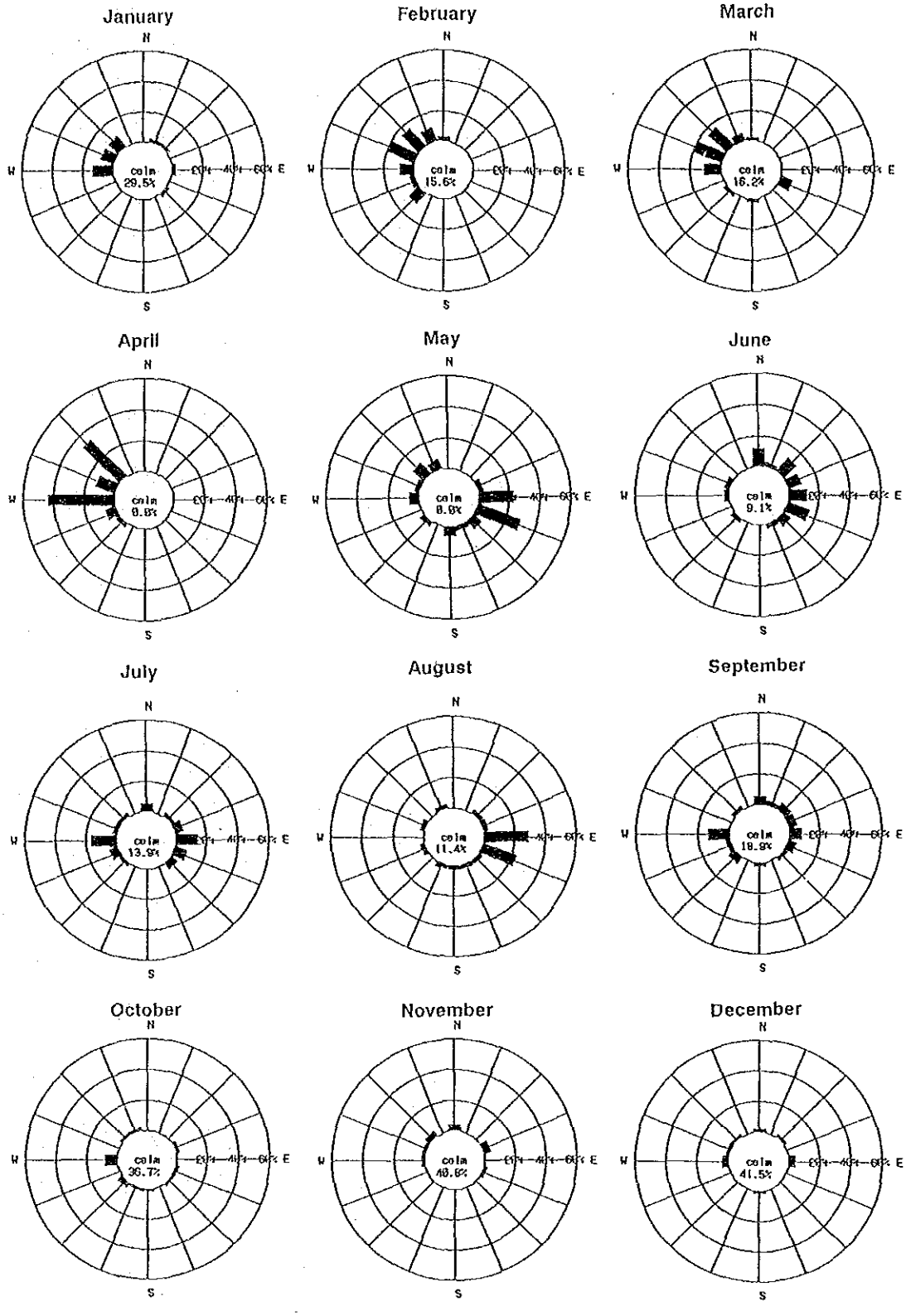


Fig. A.2 (3/4) Wind Direction in the Sharda Canal Command Area - Lucknow

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

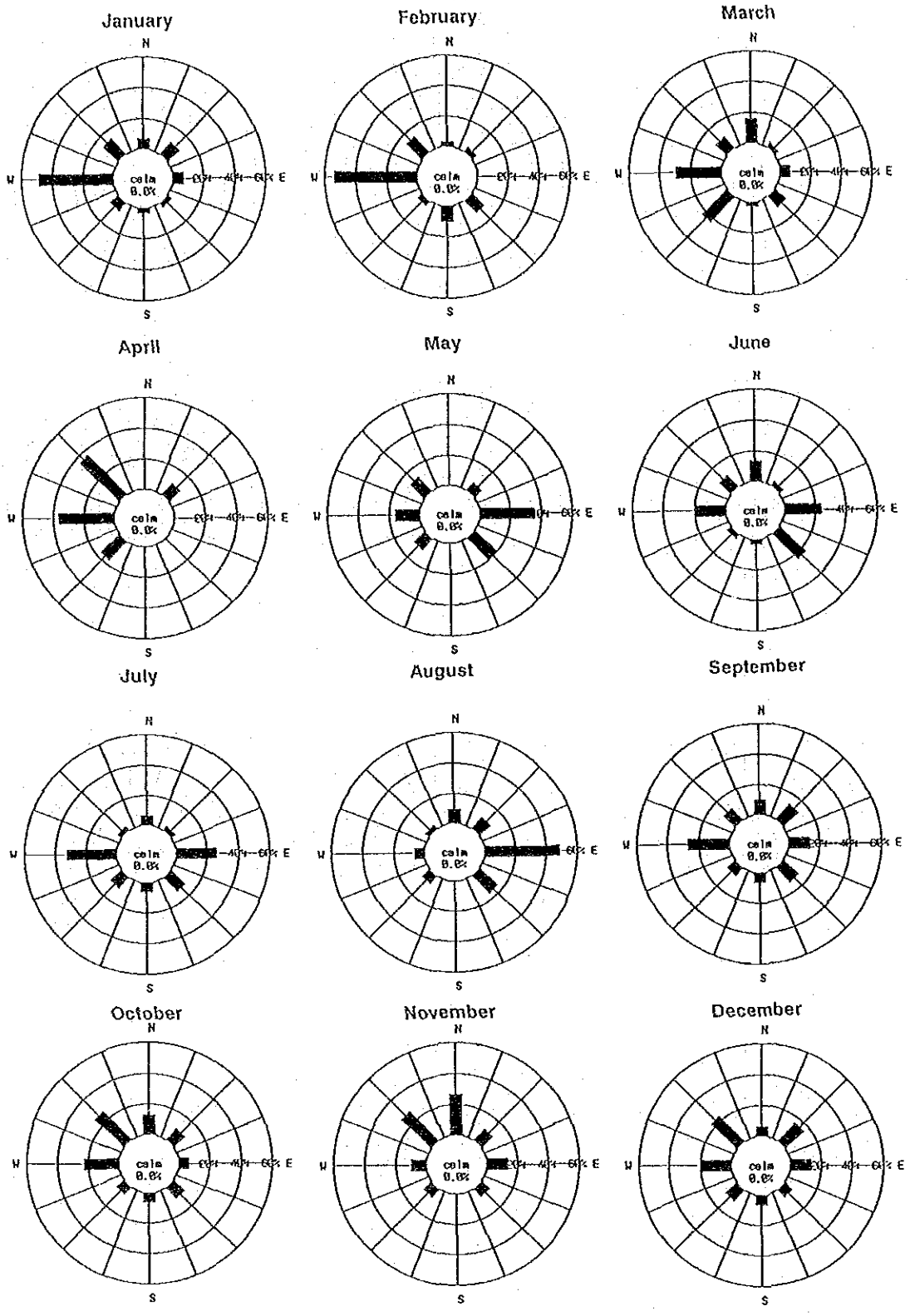


Fig. A.2 (4/4) Wind Direction in the Sharda Canal Command Area - Kanpur

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

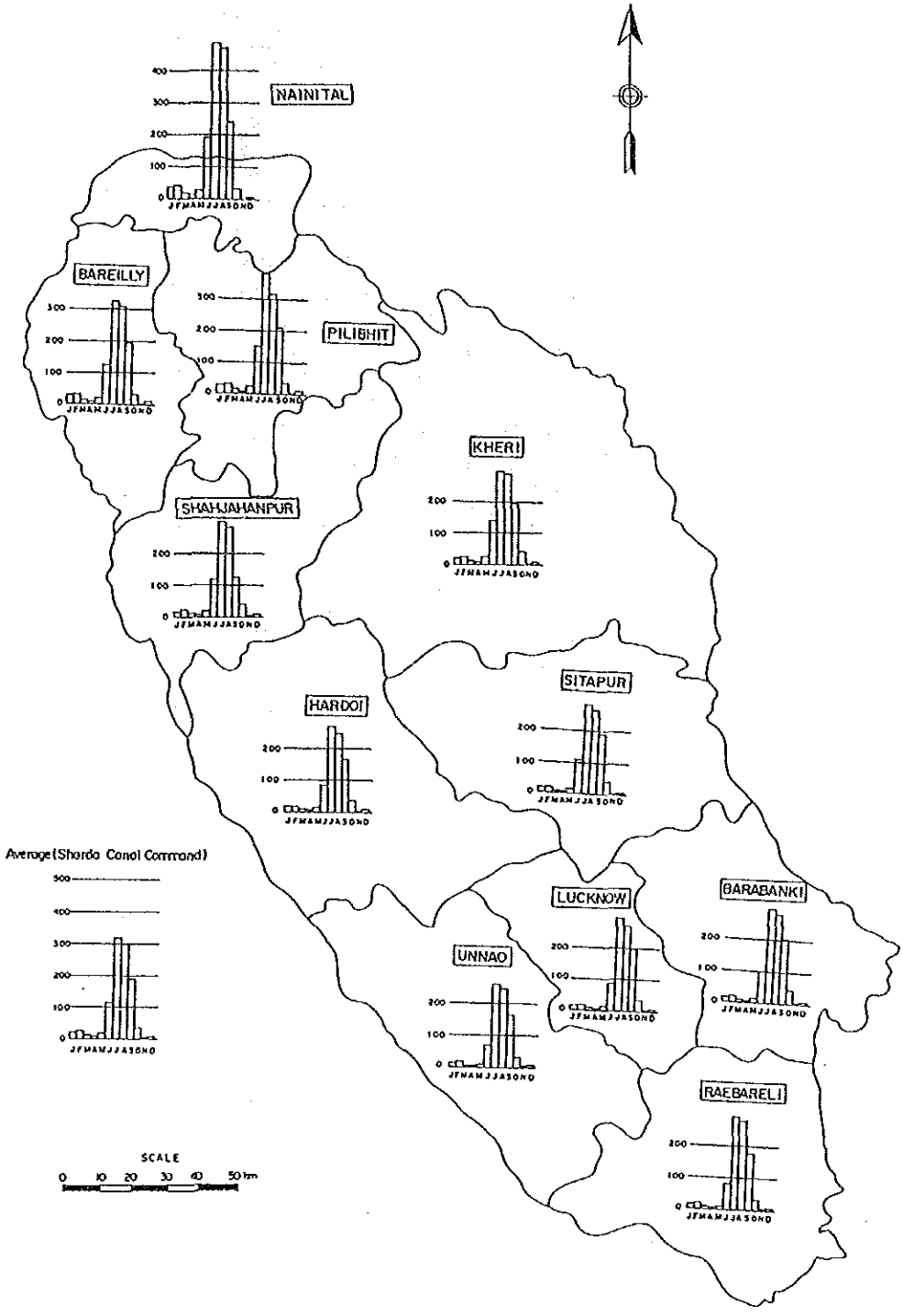


Fig. A.3 Rainfall Distribution in/around the Sharda Canal Command Area

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. A.4 Weekly Discharge of the Sharda River at Banbassa (1960 - 1990)

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

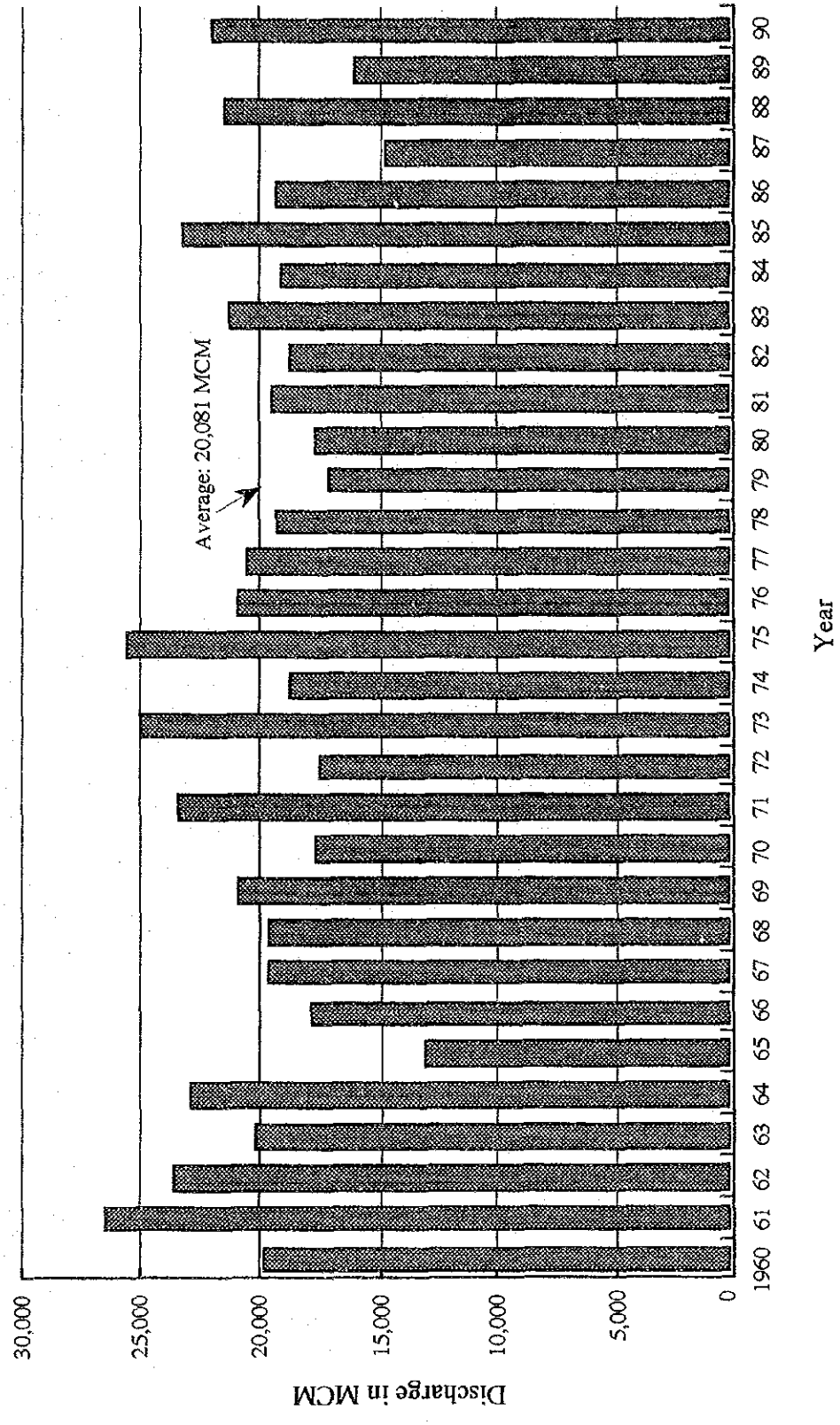


Fig. A.5 Annual Discharge of the Sharda River at Banbassa (1960 - 1990)

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

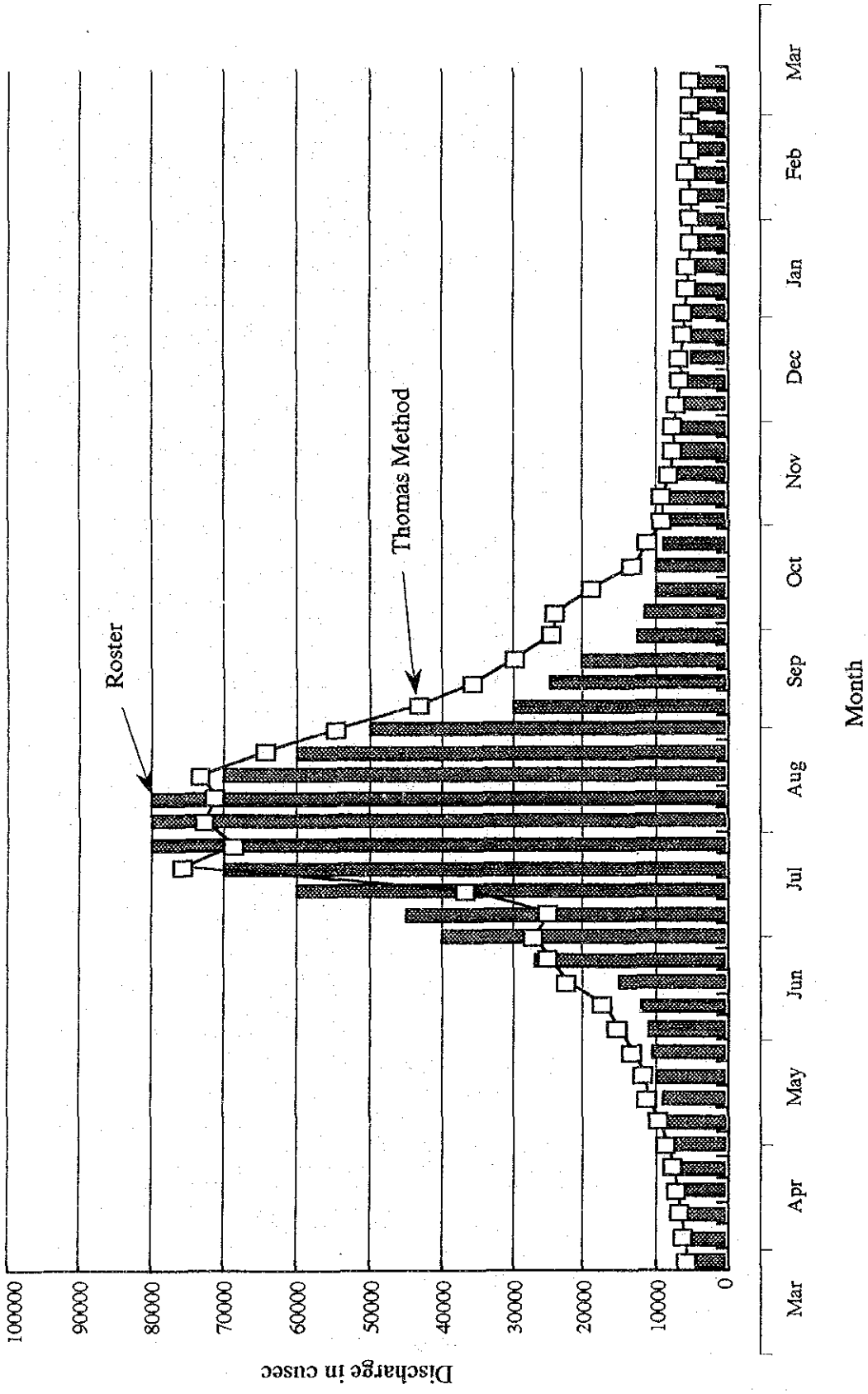


Fig. A.6 Proposed Discharge of the Sharda River at Banbassa by Roster and Thomas Method

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

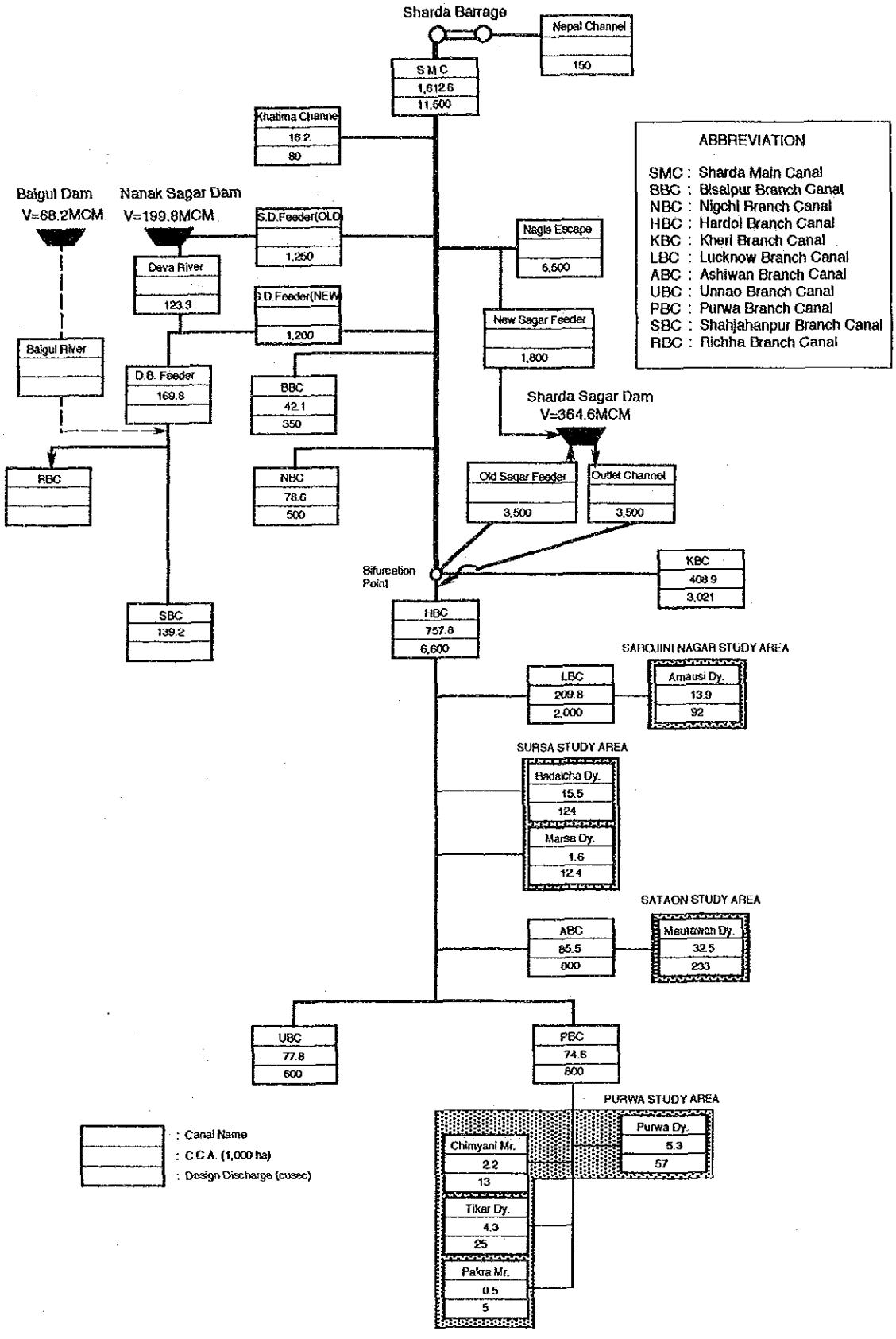
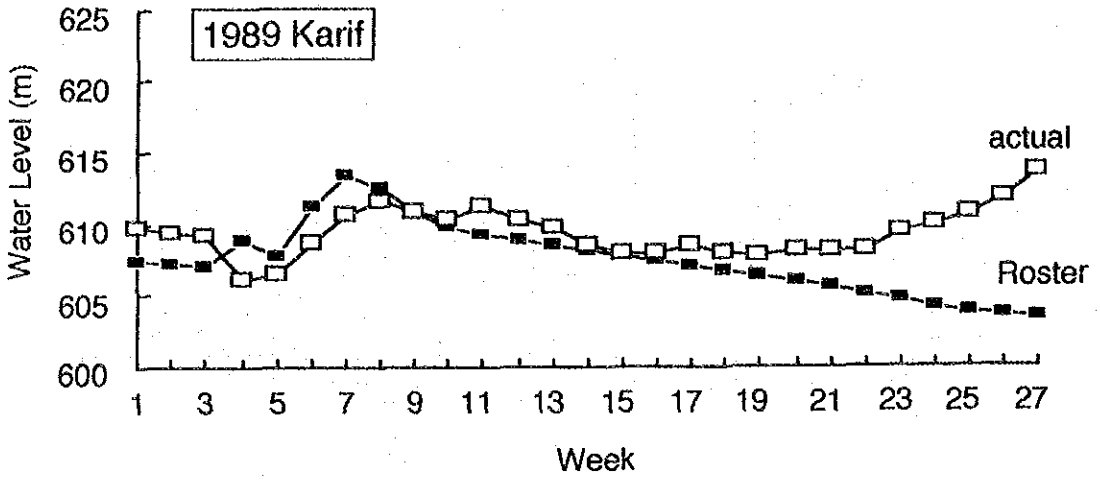
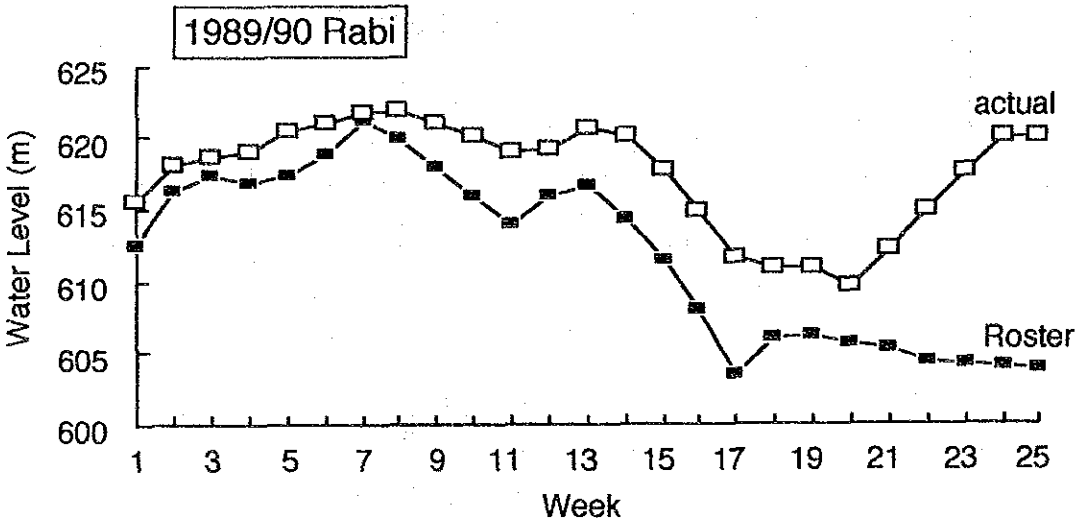
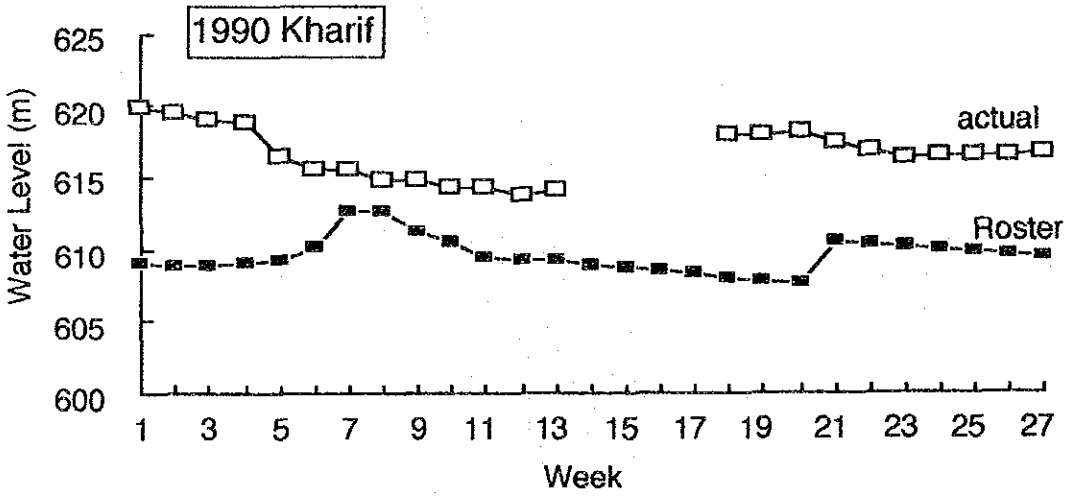


Fig. A.7 The Sharda Irrgation System

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY



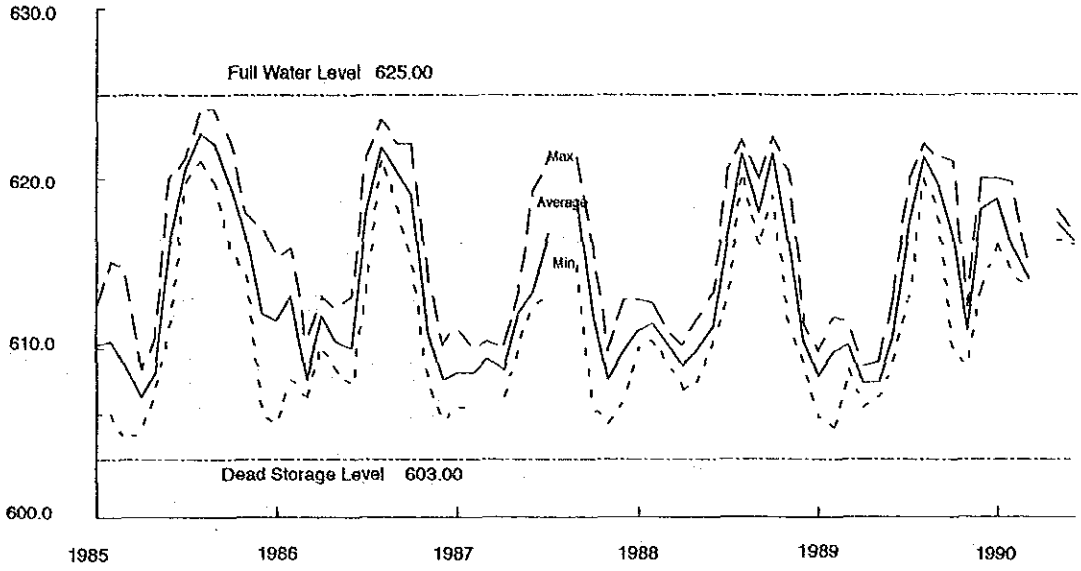




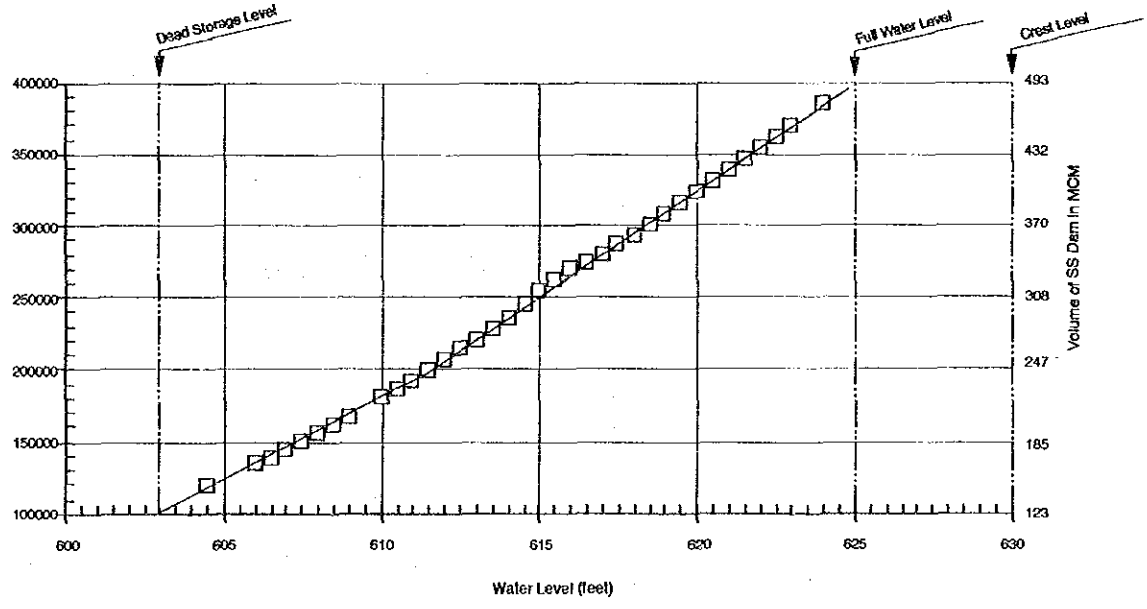
Remarks: Actual discharge data were collected from Irrigation Department of UP, Bareilly.

Fig. A.8 Comparison of Actual and Roster Water Level of Sharda Sagar Reservoir

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY



Water Level and Storage Volume of Sharda Sagar Reservoir



H-V Curve of Sharda Sagar Reservoir

Fig. A.9 Water Volume Stored in Sharda Sagar Reservoir

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

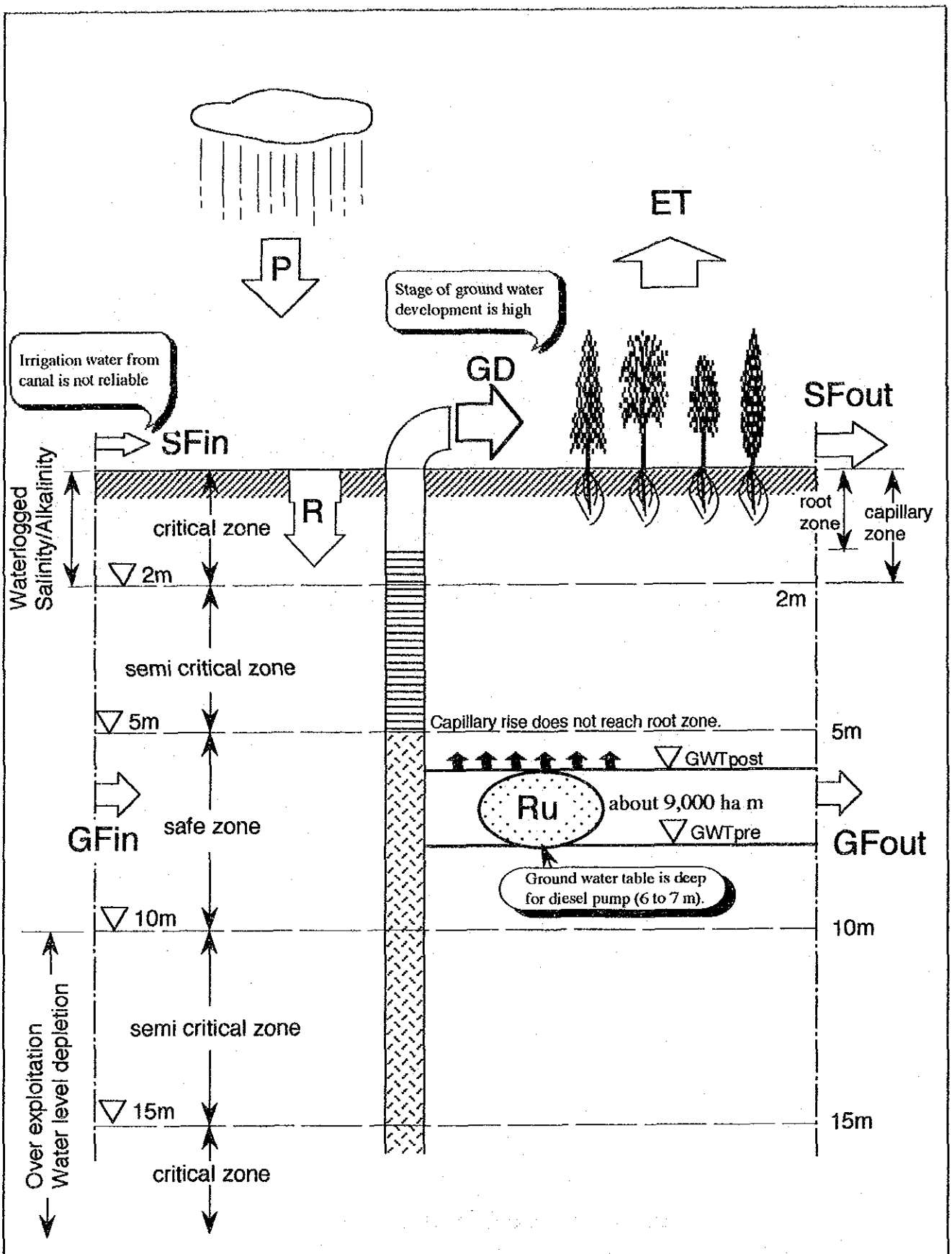


Fig. A.10 Hydrological Characteristics of Sarojini Nagar Study Area

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

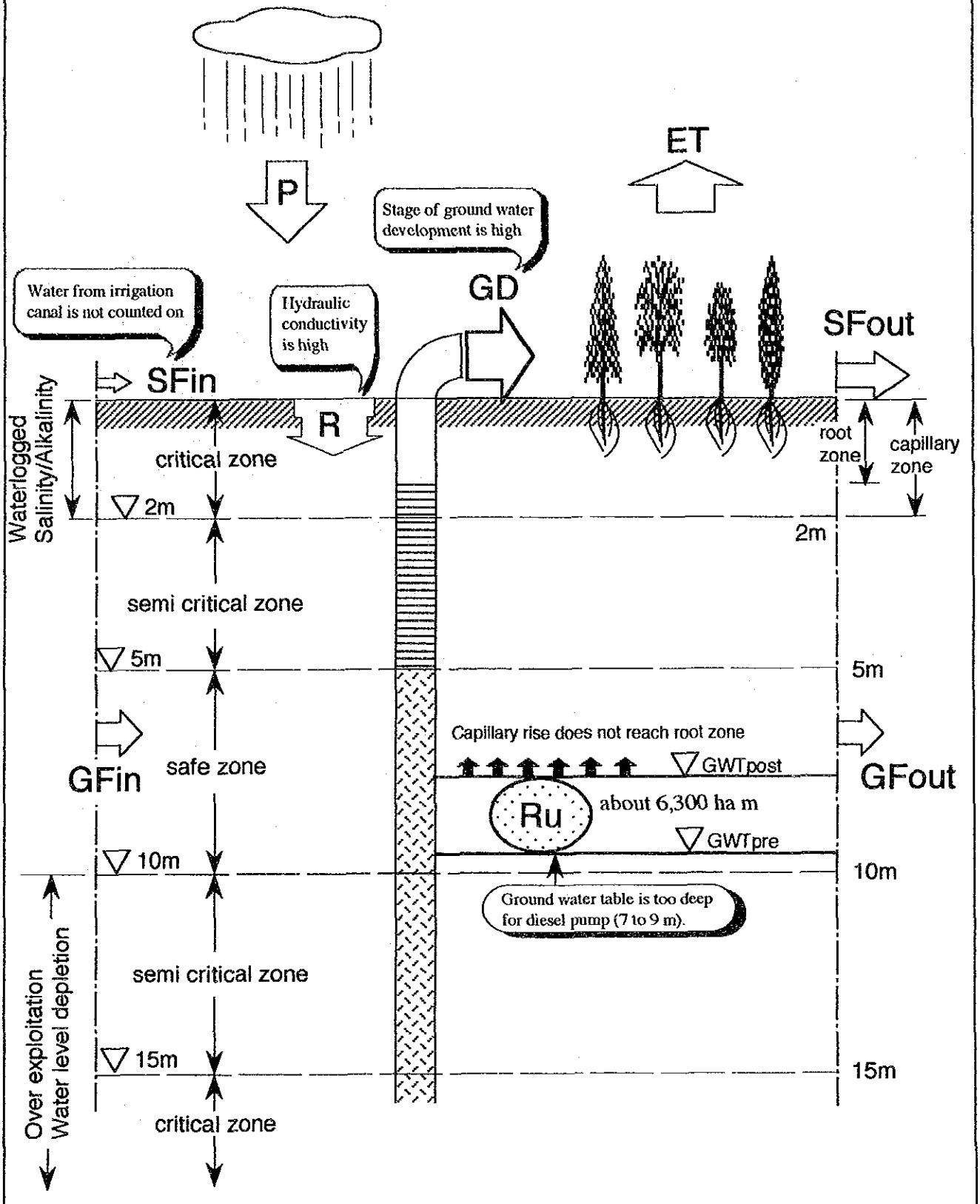


Fig. A.11 Hydrological Characteristics of Sataon Study Area

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

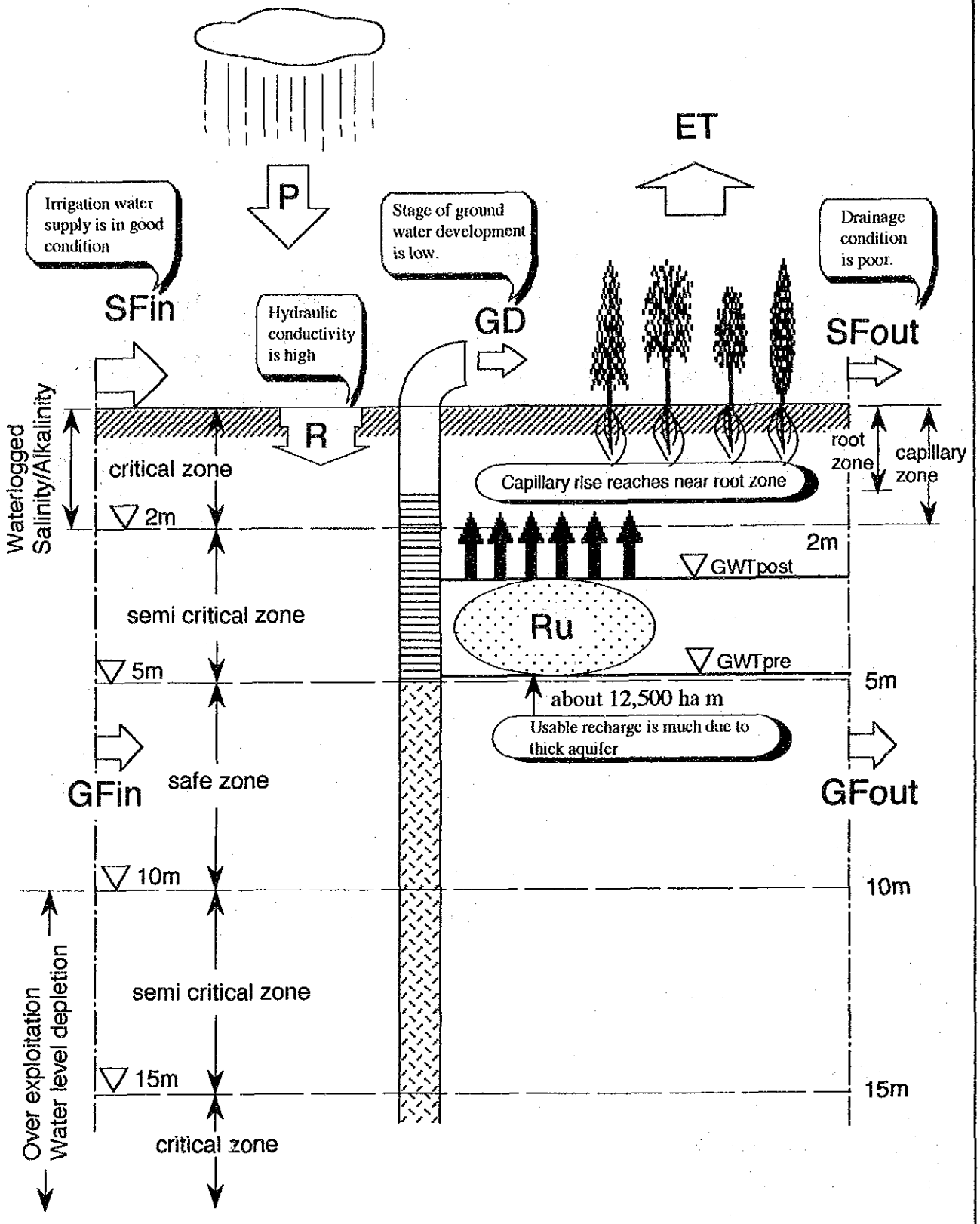


Fig. A.12 Hydrological Characteristics of SursaStudy Area

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

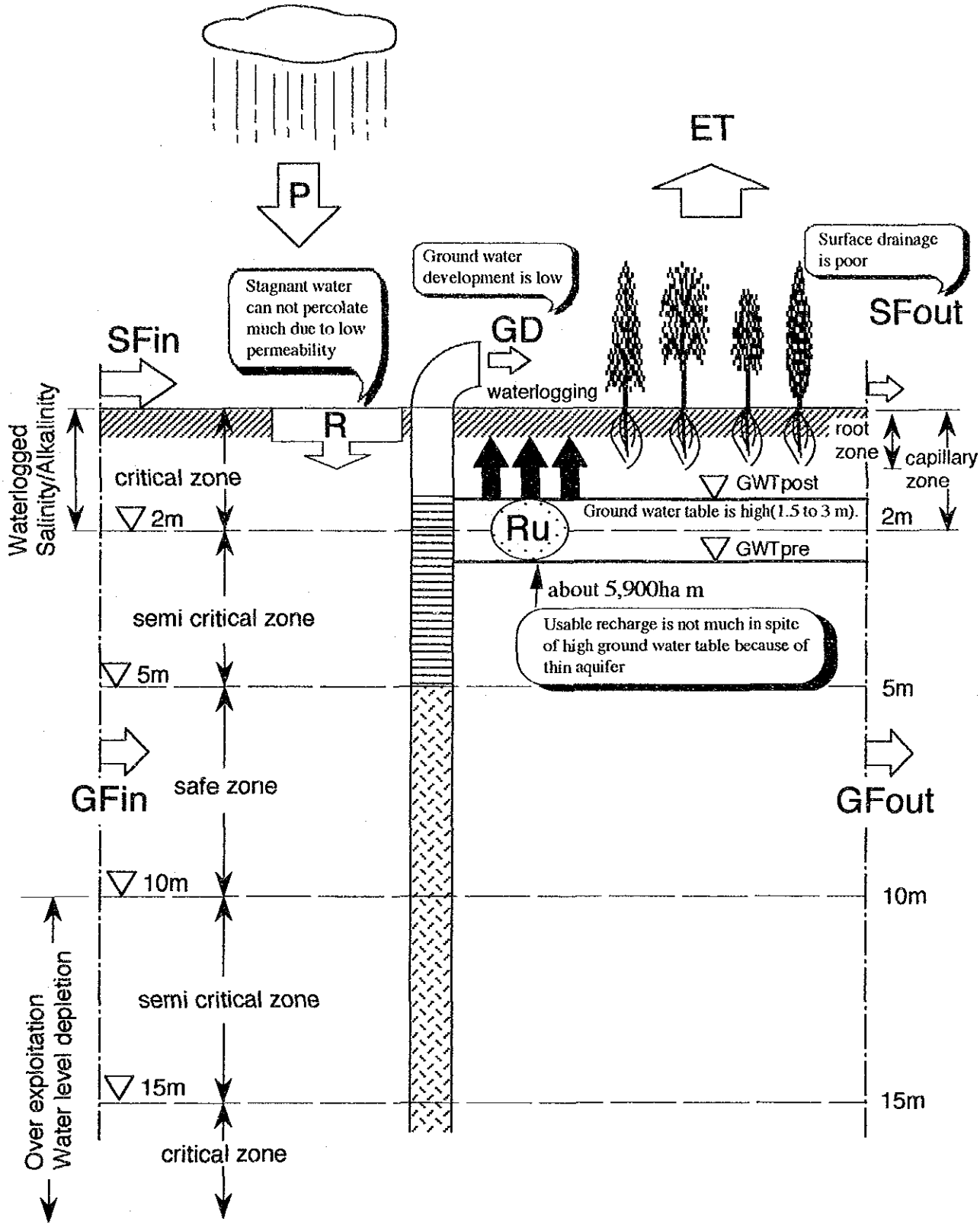


Fig. A.13 Hydrological Characteristics of Purwa Study Area

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

ANNEX-B

GEOLOGY AND GEOHYDROLOGY

FEASIBILITY STUDY ON
IRRIGATION AND DRAINAGE DEVELOPMENT OF
SHARDA CANAL CAD PROJECT

ANNEX B
GEOLOGY AND GEOHYDROLOGY

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ANNEX B GEOLOGY AND GEOHYDROLOGY

1. Geology in Sharda Canal Command Area

1.1 General Features

Sharda Canal Command Area lies on a low flatland sandwiched by the Ganga and the Ghaghara. Indo-Gangatic Basin that encompasses this low flatland was a broad settlement area created when the Indian Block collided with the Asian Block. It is said that the Himalayan Mountains emerged later, and debris denuded of Archeozoic and Palaeozoic rocks, which formed the Himalayan Mountains, was transported by the Ganga and its branches and deposited in this settlement area as shown in Fig. B.1

The deposits in this flatland are composed of unconsolidated layers from the late Tertiary period and the Quaternary period, which overlie consolidated basement rock broadly. According to data obtained from deep wells in Rae Bareli, the basement rock of granite was reached at the depth of about 470 m, while in Lucknow the basement rock was not yet reached even after a drilling of 700 m or more. A recent air-borne magnetic survey confirmed that the surface of the basement rock is highly rugged, that on the whole the depth to the top face of the basement rock is small in the southern part and it is greater in the norther part of the area. The maximum depth to the basement rock is estimated to exceed 7,000 m.

1.2 Geological Formation

The deposits in this area form alternated layers of sand, silt and clay which are composed of coarse and fine grains of granite, limestone, sandstone and slate. Those deposits contain impure coagulates called "Kanker" composed mainly of calcium carbonate and magnesium carbonate. Because of these geological characteristics, there are no outcrops of consolidated rocks in Sharda Canal Command Area. Consequently, there are not any mountains and hills in the command area, and macroscopically the area is quite a flat area. The geological system in this area is shown below.

Lithology	Geological System	Geological Age
Alluvium	Pleistocene, Holocene	Quaternary
Consolidated clay-silt layer	-	Tertiary
Basement rock	(unknown)	(unknown)

2. Ground Water in Four Representative Areas

2.1 Present Use of Ground Water

Shallow ground water at depths of up to about 50 m is being drawn through dug wells, private tubewells and pump set wells for drinking, domestic and irrigation purposes. Irrigation water is supplied mainly from private tubewells made with the assistance of Minor Irrigation Departments (MID), and the number of those tubewells is by far greater than that of other types of wells.

Deep ground water at depths of about 100-200 m is being developed using the government tubewells of the Irrigation Department (ID), but the number of these wells is smaller than that of private tubewells.

According to a well survey in Hardoi Branch Command, irrigation areas covered by private tubewells and government tubewells average about 5ha/well and 30ha/well, respectively (see Table B.1).

The government tubewells have 10-20 HP, submerged electric pumps and strainer type substructures. The private tubewells have 6-8 HP, ground electric or diesel pumps. Private tubewells in Sursa Area have strainer type substructures, but those in the other three areas use cavity type substructures.

Other wells for ground water use in Sharda Canal Command Area include Pucca wells and Rahat wells. Table B.2 shows the numbers of wells in the 108 blocks of Sharda Canal Command Area. Fig.B.2 shows distribution densities of those wells. The numbers of major wells for irrigation use in 11 blocks related to the four Representative Areas can be summarized as follows:

Name of Block	Government Tubewell	Private Tubewell	Pump Set Well	Total	Density*1 (well/ha)
Sarojini Nagar	29	2,110	3,005	5,144	0.134
Mohanlalganj	19	1,761	2,594	4,329	0.121
Nawabganj	14	436	2,151	2,601	0.094
Asoha	24	930	2,065	3,019	0.104
Hilauli	12	535	2,555	3,102	0.092
Sataon	23	3,002	845	3,870	0.151
Kheero	37	1,972	1,100	3,109	0.134
Sursa	28	101	2,782	2,911	0.087
Ahirori	36	155	2,667	2,858	0.076
Sumelpur	1	100	1,960	2,061	0.077
Purwa	1	155	2,586	2,742	0.117

Data : Statistic Diary (1989)
*1 : Density to Geographical Area

Distribution density is high in areas distant from the canal and in the southern part at the end of the canal. The fact that there are many private tubewells in Sarojini Nagar, Mohanlalganj, Sataon and Kheero blocks reflects the shortage of irrigation water supplied through canals. The number of shallow tubewells has been continuing to grow, indicating a tendency of excess development. As an example, growing numbers of shallow tubewells in Sursa Block are shown below.

Year	1986	1987	1988	1989	1990 (Mid)
No. of Wells	68	178	398	546	829

Central Ground Water Board (CGWB) has been conducting investigations of ground water at depths of 400-500 m. From wells developed as a result of these investigations, 40-60 ℓ/sec of ground water is obtained on average. The number of such wells averages several per district. Some of those wells, however, have been abandoned because of saline water.

2.2 Ground Water Table Fluctuation

Ground water levels vary with from season to season or from place to place. The ground water levels of the four Representative Areas in the pre-monsoon and post-monsoon are about 4-6.5 m and 2.5-5 m from the ground surface, respectively, and the annual variation is about 1.5 m. However, there is also considerable interyear variation depending on precipitation. Fig.B.3 shows the relationship between ground water level and precipitation.

The results of an inquiry survey of 841 wells in the four Representative Areas conducted in January 1991 are shown below.

(1) Sarojini Nagar Area

It is noted from the ecological point of view that ground water levels of 0-2 m below ground surface is regarded as critical zone and 2-5 m as semi-critical zone with respect to water logging, and 15 m or more as critical zone and 10-15 m as semi-critical zone with respect to excess development. Hence, it can be said that the safe zone is at depths of 5-10 m. Ground water level in Sarojini Nagar, Mohanlalganj, Nawabganj and Asoha mostly falls within the safe zone at depths of 5-10 m below ground surface. However, there are some areas along Amausi Distributary where ground water level is at depths of 5 m or less. On the contrary, there are also semi-critical zones with respect to excess development at depths of 10 m or more (see Fig. B.4).

The average water level in irrigation wells in this representative area is now 6.41m, but water level when those wells were made averaged 4.93 m. This means that ground water level lowered at the average rate of 0.13 m per year (see Table B.3). Comparison of average annual drawdown rates of wells constructed during different five-year periods in Sarojini Nagar Block for which the greatest accumulation of data is available reveals that the average annual drawdown rates of wells made more than 20 years ago, 20-15 years ago, 15-10 years ago and 10-5 years ago are 0.07 m/year, 0.10 m/year, 0.14 m/year and 0.25 m/year. The annual drawdown rate of wells constructed during the last five years is as high as 0.38 m/year. This indicates that ground water levels in recent year lower at higher rates. If this tendency continues, ground water level could reach the critical zone with respect to excess development in several years (see Table B.4).

(2) Sataon Area

Contour lines of ground water level in this area shows that 5-10 m are the most common ground water levels, but there are some areas where ground water level is at depths 10 m or more (see Fig.B.5). The lowering tendency of ground water level in Sataon is more pronounced than in Sarojini Nagar. The average water level was 5.70 m below ground surface when the wells were constructed, but it has now lowered to 7.02 m. The drawdown rate for the entire period is 0.18 m/year, but the drawdown rate for wells constructed during the last five years is as high as 0.62 m/year (see Table B.4). The degree of excess development in this area is higher than in the other areas.

(3) Sursa Area

Ground water level in this area mostly falls within the range of 2-5 m. However, there are also considerable areas where ground water level is at depths of 2 m or less, indicating a rather high risk of water logging. Those high water level areas lie along Hardoi Branch and Badaicha distributary, suggesting the possible leakage from canals (see Fig. B.6). Ground water level in Sursa does not show a pronounced lowering tendency, and the drawdown rate is as low as 0.02 m/year as shown in Table.B.4.

(4) Purwa Area

The contour lines of ground water level in this area indicate that the most common ground water level is at depths of 2-5 m. There are some areas where ground water level is at depths of 2 m or less, but the general tendency is close to the one in Sursa Area (see Fig. B.7). The drawdown rate of 0.01 m/year of this area is lowest of the four Representative Areas as shown in Table.B.4. The lowering tendencies of ground water level in four blocks in the four Representative Areas are shown below.

Name of Block	Present Ave. Water Level (m)	Ave. Annual Drawdown (m/year)	Drawdown in Last 5 Years (m/year)	Average Depth of Well (m)
Sarojini Nagar	6.81	-0.13	-0.38	19.19
Sataon	7.55	-0.18	-0.62	29.28
Sursa	2.83	-0.02	-0.04	24.74
Purwa	3.21	-0.01	-0.02	23.72

2.3 Pumping Test

2.3.1 General

In order to determine the hydraulic properties and potentials of aquifers of shallow ground water, eight wells (two each in each area) were dug in the four representative areas, and pumping tests were conducted at those wells. In Sarojini Nagar, Purwa and Sursa aquifers were determined by sampling and electric prospecting, and in Sataon they were determined by electric prospecting. Each set of two wells was the combination of one pumping well and one observation well, and their intervals were set at 10-20 m depending on the conditions of geological formation.

The depths of the observation wells, which were used for the identification of aquifers, were set at 30-36 m, and the depths of the pumping wells were set at 25-31 m. Basically the wells were dug manually, but a boring machine was used in Sataon Area where deep wells were to be dug. The diameter of the pumping wells was 14 inches, and pipes with the diameter of eight inches were inserted. The diameter of the observation wells was eight inches, and six-inch-diameter pipes were inserted. Strainers were installed in the pipes at the levels of aquifers, and the pumping wells and observation wells were protected with copper nets and nylon nets, respectively.

Water was pumped using ground pumps, and the amount of water was measured by triangular notch weirs. In Sataon Area, however, a submerged pump was used since water level had been expected to be low. Conducted tests include preliminary tests, step drawdown tests, continuous pumping tests and recovery tests, and hydraulic constants for the wells were determined based on the results of the tests. Grain size analyses were performed using soil samples, and water examinations were performed using water samples.

The outlines of the pumping wells are shown below.

Well No.	Names of Block/ Village	Obs. Well Depth/ Pumping Well Depth (m)	Interval of Wells (m)	Boring Method	Geophysical Exploration
L-1	Sarojini Nagar/ Natkur	30.00/25.00	20	Manual	Electrical prospecting
L-2	Sarojini Nagar/ Ratauli	30.00/26.00	20	Manual	Electrical prospecting
R-1	Sataon/ Korihar	34.00/31.00	20	Boring	Electrical machine logging
R-2	Sataon/ Kahowa	36.00/30.00	20	Boring	Electrical machine logging
S-1	Sursa/ Kutuwapur	30.00/28.50	20	Manual	Electrical prospecting
S-2	Sursa/ Harha	30.00/29.00	20	Manual	Electrical prospecting
U-1	Purwa/ Tusraur	36.00/20.00	10	Manual	Electrical prospecting
U-2	Purwa/ Mehuddinpur	36.00/25.00	10	Manuall	Electrical prospecting

2.3.2 Method of Evaluation

Data obtained from the pumping tests were analyzed using commonly used Theis's Formula, Jabob Method and the recovery method. Specific capacity was calculated from yield and drawdown. Hydraulic constants, such as transmissivity, permeability and the coefficient of storage, were also determined (see Table B.5).

Some of the values used were shown below.

Well No.	Well Depth (m)	Water Level (m)	Yield (ℓ/sec)	Draw-down (m)	Trans-missivity T (m^2/day)	Coefficient Coefficient (cm/sec)	Perme-ability (ℓ/sec/m)	Specific Capacity
L-1	25.00	5.33	2.85	3.48	0.281	6.19×10^{-4}	1.81×10^{-2}	0.82
L-2	26.00	2.50	1.48	3.64	0.161	2.45×10^{-4}	1.76×10^{-2}	0.41
R-1	31.00	8.43	22.38	1.51	2.408	7.52×10^{-4}	1.93×10^{-1}	14.82
R-2	30.00	7.66	4.73	1.48	0.603	1.36×10^{-4}	8.94×10^{-2}	3.20
H-1	28.50	2.20	6.31	2.63	1.722	1.02×10^{-2}	9.57×10^{-2}	2.40
H-2	29.00	1.82	10.42	2.92	0.968	1.11×10^{-1}	4.63×10^{-2}	3.57
U-1	20.00	2.53	0.25	0.90	0.010	4.57×10^{-4}	1.63×10^{-2}	0.27
U-2	25.00	2.17	3.40	2.60	0.208	2.90×10^{-4}	3.47×10^{-2}	1.31

2.3.3 Aquifer Characteristics

Aquifers in the four Representative Areas consist of alternated layers of sand and clay and include consolidated layers of Kanker and other materials. The structure of aquifers varies from area to area. There is much coarse sand in areas upstream from Sharda Canal Command Area, and lower aquifers tend to contain more clay. For example, aquifer ratios between ground surface and the depth of 100m are as follows:

Hardoi District	Sand layers/All layers (thickness)	54-73%
Lucknow District		30-36%
Unnao District		18-42%
Rae Bareli District		23-33%

Fig.B.8 shows boring logs for the eight pumping wells, Fig. B.9 shows boring logs for tubewells of 100-200 m class in the four Representative Areas, which was prepared on the base of the data of boring conducted by Irrigation Department, U.P..

(1) Sarojini Nagar Area

Aquifers in Sarojini Nagar Area vary widely, and their thicknesses and depths are not uniform (see Fig. B.10). Boring to the depth of 30 m revealed the existence of an 18m thick aquifer at point L-1 and an 8 m thick aquifer at point L-2, but the results of the pumping tests only showed very low yields of 1.4-2.8 ℓ/sec. This is probably because the aquifers are layers of fine sand which clogs the strainers in the pumping wells. Deep ground water of Irrigation Department is being taken from layers of medium grain sand at depths of about 30-90 m. Yields in Sarojini Nagar and Mohanlalganj of about 391 ℓ/sec and 351 ℓ/sec indicate the abundance of ground water. Table B.6 shows estimated ground water yields in the four Representative Areas based on various data. Table B.7 shows the results of pumping tests conducted by the Irrigation District.

(2) Sataon Area

The geology of this area shows considerable variation, and the content of Kanker is high (see Fig.B. 11). Investigation at the pumping test well confirmed the existence of an aquifer of fine and medium-grain sand at depths of about 13-17. The yield of 4.7-22.4 ℓ/sec from this aquifer is higher than those from other pumping test wells. Deep ground water at depths of about 30-70 m is being developed at government tubewell, which now yields 31 ℓ/sec. A 400m class deep well developed by CGWB yields 41 ℓ/sec.

(3) Sursa Area

This area is characterized by well developed sand layers of coarse grain sand. Strainer-type wells are suitable to this area, unlike the other areas (see Fig.B. 12). The results of pumping tests confirmed the yield of 6.3-10.4 ℓ/sec from an aquifer at depths of 15-20 m. Government tubewell yields 44 ℓ/sec of water from a deep aquifer about 30-110 m from ground surface. CGWB's 450 m class deep well yields 61 ℓ/s, which is higher than the yields from similar wells in the other areas.

(4) Purwa Area

This area is characterized by thick layers of clay (see Fig. B.13). In pumping tests, about 0.2-3.4 ℓ/sec was yielded from a fine sand layer at depths of 3-7 m. Since ID's government tubewell yields about 43 ℓ/sec of deep ground water at the average depth of 185m and CGWD's 450 m class deep well yields 42 ℓ/sec, yields in this area is not much lower than those in the other areas though aquifers are not well developed.

2.4 Ground Water Balance between Recharge and Discharge

2.4.1 Basic Concept of Ground Water Balance

Ground water can be classified either as dynamic resource in the ground water level fluctuation zone or as static resource below the ground water level fluctuation zone. Basically, ground water that can be used for irrigation purposes is a dynamic resource which is recharged seasonally by precipitation and other sources of water. The most important source of water for the recharge of aquifers is direct infiltration of precipitation, but irrigation water stemming from ground water and surface water, and leakage from canals and ponds are also sources of recharge water.

Recharge from these sources of water is calculated from detailed parameters of average annual precipitation, ground water level fluctuation, geographical area, infiltration ratio, sizes of canals, irrigation area, and number and sizes of ponds. Recharge thus calculated is defined as gross recharge.

The amount of drawn water calculated from the number of different types of wells and their unit yields is defined as gross draft. Seventy-percent equivalents of gross recharge and gross draft are defined as net recharge and net draft, respectively. Water balances are differences between these gross and net quantities. In this sense they can be considered as development potentials.

Ground water balance = Net recharge - Net yield

The ratio of net yield to net recharge is defined as ground water development ratio.

$$\text{Ground water development ratio} = \frac{\text{Net Yield}}{\text{Net Recharge}}$$

Ground water departments divide this ground water development ratio into three stages: white, gray and white. Referred to as the stages of ground water development, these stages are defined as safe, semi-critical and critical stages of ground water development.

Stage	Ground Water Development Ratio	Description
White	0-65%	Safe
Gray	65-85%	Semi-critical
Dark	> 85%	Critical

2.4.2 Estimate of Recharge and Discharge

Recharges and discharges of ground water are periodically estimated by ground water departments, but data obtained from districts include new one and old one (1984-1988). However, since the net yield of ground water is considered to have been increasing each year in keeping pace with the rapid increase of irrigation wells, the latest estimates are necessary for the planning of future ground water use.

Table B.8 shows the estimates for 1990 by National Bank. Data for the 11 blocks concerned is shown below.

Name of Block	Net Recharge (ham)	Net Yield (ham)	Development Ratio (%)	Develop-ment Stage
Sarojini Nagar	9,409	3,197	3.98	White
Mohanlalganj	10,395	3,310	31.84	Ditto
Asoha	8,154	1,763	21.62	Ditto
Nawabganj	7,217	1,757	24.35	Ditto
Hilauli	9,683	2,518	26.00	Ditto
Sataon	5,437	2,610*	48.00*	Ditto
Kheero	4,387	2,150	49.01	Ditto
Sursa	14,196	3,055	21.52	Ditto
Ahirori	13,539	2,110	15.58	Ditto
Purwa	9,441	1,762	18.66	Ditto
Sumelpur	7,148	2,155	30.15	Ditto

National Bank 1989 (*: modified by recent data)

2.4.3 Development Potential

According to the data in the preceding section, of the 108 blocks of Sharda Canal, only Muhamdi Block in Kheri District showed a development ratio (74%) exceeding 65% to become the only "gray" area. The other blocks are classed as white. No blocks in the four Representative Areas showed development ratios exceeding 50%, indicating sufficient room for further ground water development. GWD says that an area with a ground water development ratio of 35-50% where ground water level is at a depth of 5-10 m is the most desirable area for the maximum crops.

According to the results of well investigation concluded during the survey period, however, Sataon Area shows the strongest tendency of drawdown over years, as mentioned

earlier. These results for the four Representative Areas are shown in Fig.B.14. This also indicates recent sharp drawdown in Sataon Area.

Sataon Representative Area can hardly expect irrigation water from the Maurawan Distributary. Tubewells upstream and downstream from the area are shown below.

Name of Village	Location	Average of Well (year)	Water Level after (m)	Pres Water Level (m)	Draw-down (m)	Drawdown Ratio (m/year)	No. of Data
Akohri	Upper reaches	5.8	6.99	7.70	0.71	0.12	21
Gulariha	Middle reaches	6.7	5.12	6.00	0.88	0.13	15
Korihar	Lower	9.1	5.95	7.85	1.90	0.21	12

The above three villages are located along the Maurawan Distributary and about 20 km apart from one another. Wells on the lower reaches, which are older wells, are more likely to suffer from the shortage of irrigation water. Irrigation wells in lower areas have been used for longer periods, and indicate stronger tendencies of drawdown.

The net yields of ground water estimated by GWD for the period of 1984-1987 were analyzed by a similar method, using the recent data on the number of wells in the 108 blocks for the period of 1988-1989 as mentioned in Table B.2. Since the number of wells grew sharply, the development ratio was calculated as follows:

Name of Block	Net Recharge (ham)	Net Yield (ham)	Development Ratio (%)	Estimated Net Yield (ham)	Estimated Development Ratio (%)
1. Sarojini Nagar	9,409	2,908	30.9	7,110	75.6
2. Mohanlalganj	13,269	3,010	22.7	6,320	47.6
3. Sataon	5,669	835	14.7	2,037*	35.9*
4. Kheero	5,122	2,297	44.8	4,495	87.8
5. Sursa	12,980	2,434	18.8	3,609	27.8
7. Purwa	12,947	2,236	17.3	2,893	22.3
8. Asoha	10,503	2,995	28.5	3,853	36.7
9. Nawabganj	7,329	2,519	34.4	3,013	41.1
10. Sumelpur	9,372	3,120	33.3	2,128	22.7
11. Hilauli	12,258	2,911	23.7	8,650	29.8

* The unit yield in Sataon is considerably underestimated. If this is adjusted to the unit yield of other blocks, the development ratio will become much higher than this value.

As shown here, the development ratios for Sarojini Nagar and Kheero exceed 70-80%. Therefore, it was decided that ground water development for Sarojini Nagar and Sataon representative areas was not planned on the assumption that the development ratios for these two areas seemed to be on the "gray" stage.

2.5 Ground Water Quality

2.5.1 Water Quality Classification

Although the quality of ground water is usually good enough for use as drinking and irrigation water, but it rarely contains salt. Investigation of 540 wells in Hardoi Branch, eleven dug wells and tubewells, or about 2% of the wells surveyed, were found to contain salt. These eleven wells were in Hardoi, Lucknow, Unnao and Rae Bareli which are all on the downstream side. Deep ground water in a lens-like cavity sandwiched by clay layers often contains a high concentration of salinity. Such water is not suitable for use as irrigation water.

The results of the on-site measurement of ground water quality conducted in January 1991 are shown in Table B.9 and summarized below.

Quality of Ground Water from Tubewells and Pump Set Wells (Average)

Represent-ative Area	Water Temp. (°C)	Electrical Conductivity (ℓ/sec.cm)	pH	Depth of Well (m)	Water Level of Well (m)	Number of Samples
Sarojini Nagar	25.9	589	7.6	25.38	5.78	14
Sataon	26.3	616	7.6	26.70	7.29	10
Sursa	25.5	596	7.6	27.53	3.18	15
Purwa	25.3	688	7.4	25.50	2.70	4
Average	25.8	607	7.6	26.51	5.06	43

Quality of Ground Water from Dug Wells (Average)

Represent-ative Area	Water Temp. (°C)	Electrical Conductivity (ℓ/sec.cm)	pH	Depth of Well (m)	Water Level of Well (m)	Number of Samples
Sarojini Nagar	23.0	812	7.6	12.77	7.31	15
Sataon	22.3	660	7.7	11.18	7.76	6
Sursa	21.4	766	7.6	10.28	4.29	7
Purwa	21.8	896	7.8	11.90	2.34	10
Average	22.3	802	7.7	11.53	5.58	38

Ground water was sampled from eight pumping test wells, and the quality of the samples was tested (Table B.10). Major items of the results of the test are shown below.

Main Item	Range	Mean Value	Sai River
pH	6.91-8.30	7.49	7.81
Elec. conductivity (ℓ/sec.cm)	360-897	714.9	761
Evaporation residue (mg/ℓ)	200-304	226.9	336
Alkali hazard (SAR)	0.47-1.38	0.76	1.51

2.5.2 Evaluation of Water Quality for Irrigation

Criteria for irrigation water include the following:

Water Quality	Salinity Hazard		Alkali Hazard	RC
	EC ℓ/sec.cm (25°C)	Salt Conc.	SAR	(me/ℓ)
Excellent	< 50	<0.25	up to 10	<1.25
Good	250- 50	0.25-7.50	10-18	1.25-2.50
Fair	750-2250	7.50-22.50	18-26	>2.50 poor
Poor	2250-4000	22.50-40.00	>26	
Worst	>4000	>40		

Note : Referred to IS 2296-1963 in Groundwater H.M. Raghunath

As a result of the test, it was confirmed that on the whole the ground water of shallow wells and the water of the Sai River examined in the test have average or higher quality although EC is slightly high. According to these criteria, the above waters are acceptable as irrigation water.

Comparison of water from dug wells and tubewells reveals that the temperature of water of the dug wells was slightly higher than that of the tubewells probably because the test was conducted in winter. Although the dug wells show higher ECs, this might be because minerals exposed on the ground surface dissolve into the dug wells. There is little difference in pH. All waters are acceptable as irrigation water.

2.6 Recommendation of Ground Water Development

2.6.1 Well Design

It is thought that Sarojini Nagar and Sataon Areas have already ben developed excessively in view of the severe drawdown of groundwater tables. On the other hand, Sursa and Purwa show no significant drawdown over the years, rather shallow groundwater tables are observed.

If groundwater is further developed in Sarojini Nagar and Sataon Areas, groundwater table drawdown will be eventually caused. Then further groundwater development in those areas is not desirable. Groundwater development in Sursa and Purwa Areas will be promoted for supplementing canal water as well as lowering shallow groundwater tables.

To attain the above purpose, shallow tubewells are proposed to be constructed in the shallow groundwater table areas / salt affected areas. According to the pumping test results and other geo-hydrological data, the following shallow tubewell is proposed.

General Features of Shallow Tubewell

Description	Unit	Sursa	Purwa
1. Depth of Well	m	30	30
2. Type of Well	-	Strainer Type	Cavity Type
3. Casing Diameter	cm	10	10
4. Pump Type	-	Suction	Suction
5. Expected Yield	*l*/s	10	10

2.6.2 Spacing and Density of Wells

In order to consider the spacing of shallow tubewells, radius of affected areas are calculated based on the results of pumping tests. Theis's formula is used here, with supplemental calculation by Sichardt's formula..

(1) Theis's Formula

$$W(u) = \frac{Ts}{0.0796Q} \qquad R = \sqrt{4Ttu/S}$$

where, W(u) : Wenzel's well function
u : ditto
T : transmissivity (m^2/d)
s : drawdown (m)
Q : yield (m^3/d)
R : radius of affected area
t : pumping time (d)

(2) Sichardt's Formula

$$R = 3{,}000s\sqrt{k}$$

where, k : permeability (m/sec)

The pumping test result in Purwa Area, pump test well No.U-1 and U-2, showed very low pumping discharges seemingly due to application of strainer type well with screen. Sichandt's formula is used to those wells.

Radius of Influence by Theis's Formula

Description	Symbol	Unit	Sursa Area	Test Well No.
			H-1	H-2
1. Discharge	Q	m^3/sec	0.00631	0.01041
2. Transmissivity	T	m^2/day	1,488.0	836.0
3. Storage Coefficient	S	-	0.01020	0.11100
4. Drawdown	s	m	0.100	0.100
5. Well Function	W(u)	-	3.4300	1.1682
6. Argument	u	-	0.0190	0.2200
7. Radius of influence	R	m	105	81

Radius of Influence by Sichardt's Formula

Description	Symbol	Unit	Sursa Area	Test Well No.
			R-1	R-2
1. Permeability	K	m/day	14.08	29.98
2. Drawdown	s	m	0.000163	0.000347
3. Radius of influence	R	m	34	145

Based on the above calculation, the spacing of shallow tubewells are estimated as follow:

Area	Radius of	Spacing
Sursa	80 - 100	160 - 200
Purwa	40 - 150	80 - 300

2.6.3 Possible Numbers of Shallow Tubewells

As mentioned in section 2.4.3 Development Potential, groundwater source to be further developed is estimated on the base of the recent data on the number of wells and hydrological data. Possible numbers of shallow tubewell to be newly developed are estimated in Sursa and Purwa administrative blocks. The calculation is made on the following conditions:

Usable Recharge : 50% of Net Recharge
Annual Draft of Shallow Tubewell
Sursa : 18,00m^3/NOS
Purwa : 15,000m^3/NOS

Block	Net Recharge (MCM)	Development Potential (MCM)	Possible No. of Shallow tubewell (NOS)
Sursa Block	129.8	36.1	1,600
Purwa Block	129.5	35.8	2,390

3. General Description of Groundwater Use in Sharda Canal Command Area

3.1 Present Use of Groundwater

Tendency of Variation of irrigation area by sources of water in Uttar Pradesh is shown below. The share of irrigation area by groundwater is remarkably increased. The area of land irrigated by groundwater from tubewells has reached about 60%. The rate of increase is considered to be about 2%. The number of tubewells local / constructed in the related to Sharda Canal Command area is summarized below.

Number of Tubewells

Unit : Nos.

Government Tubewell	2,933
Private Tubewell	63,634
Private Pucca	41,390
Private Rahat	25,197
Private Pump Set	305,815

The groundwater development potential in the related districts to Sharda Canal Command Area is estimated as shown in Table B.8 and summarized below.

Groundwater Development Potential

Net Recharge	MCM	118.95
Net Draft	MCM	30.95
Development Rate	%	26
Development Potential	MCM	28.53

3.2 Groundwater Table Fluctuation

Groundwater level in Sharda CCA is low during the pre-monsoon and high during the post-monsoon. Table B.11 shows the mean values of groundwater level in GWD's observation wells. The average values for the related district of Sharda Canal Command in the pre-monsoon and the post monsoon are approx. 4.5 m and 3.1 m, respectively. This means there is an annual fluctuation of approx. 1.5 m. The following table shows the groundwater table fluctuation in 11 related districts of Hardoi Branch Command.

Groundwater Table Fluctuation in Hardoi Branch Command Area

Name of District	Ave. Water Level during Pre-Monsoon (m)	Ave. Water :Level during Post-Monsoon (m)	Interyear Variation (m)
Nainital	4.92	2.74	2.18
Pilibhit	3.44	1.82	1.62
Bareilly	4.27	2.96	1.31
Shahjahanpur	4.21	3.07	1.14
Kheri	4.93	3.03	1.90
Hardoi	5.09	3.45	1.64
Barabanki	4.07	1.73	2.34
Sitapur	5.12	3.37	1.75
Lucknow	5.86	4.17	1.67
Unnao	5.22	2.89	1.33
Rae Bareli	6.35	3.89	2.46
11 Districts	4.93	3.32	1.62

Examination of ground water levels in different districts reveals that water level during the pre-monsoon on the downstream side including the four representative areas is characteristically low. Water levels conditions shown in Fig. B.15 and 16 also indicate that water levels in blocks on the downstream side and those distant from the Hardoi Distributary are relatively low.

It seems that these have something to do with the large-scale pumping of ground water during the pre-monsoon. In the dry year of 1987, water level in many wells, mainly those on the downstream side, did not recover and even lowered further.

3.3 Aquifer Characteristics

Aquifers in Sharda Canal Command Area consist of alternated layers of sand and clay. In the Hardoi Distributary, too, there are often well developed sand layers on the upstream side and clay layers on the downstream side. Sand layers which serve as aquifers are relatively continuous, and ground water in those layers are good enough for use as irrigation water. However, there are some discontinuous layers. Formed near Rae Bareli, in particular, is the so-called Faizabad Ridge which is a low protrusion of basement rock on the southern side. This sometimes causes to create a stagnant environment where deep ground water in poorly continuous aquifers exists as saline water.

3.4 Ground Water Development

Methods for ground water development differ with the depths of aquifers, a nd aquifers at depths of about 50 m or less are developed mainly by private tubewells. Both the number and yield of these shallow tubewells are greater than those of any other types of wells. Although groundwater development in Sharda Canal Command is promising as a whole, there is already a tendency of excessive development especially in the downstream area of the Sharda Canal Command. Balancing distribution of water resources should be sought after in the Sharda Canal Command.

Aquifers at depths between about 50 m and 200 m are developed by ID's deep tubewells. In this case, yield from a single well is high, but the number of wells and the total yield are smaller than those of shallow tubewells.

Very deep aquifers at depths between about 200 m and 500 m are being developed by CGWB, but each district now has only several wells. Some wells have been abandoned because of saline water, which is not suitable for use as irrigation water, although development is still at the stage of investigation. Table B.12 and Table B.13 show data obtained from pumping tests conducted by CGWB and data obtained from pumping tests at shallow tubewells conducted by GWD.

Still deeper aquifers richly contain ground water. Aside from the quality of water, ground water from these aquifers can be considered as a water resource. However, if pumped on a large-scale for extended periods, this ground water must be used carefully after thorough investigation so as not to destroy the balance of ground water.

TABLES

Table.B.1 Results of Well Survey

Sl. No.	Block Name	District Name	No.of Dug Well	No.of Govt. TW	No.of Prvt. TW	Depth of Dug Well (m)	Depth of Govt. TW (m)	Depth of Prvt. TW (m)	Irrig. Area of Govt.TW (m)	Irrig. Area of Prvt.TW (m)	Power Electr. /Diesel	Power Govt. TW (HP)	Power Prvt. TW (HP)	G.W.L. of Dug Well (m)
1.	PURANPUR	PILIBHIT	3	-	6	10.80	-	33.66	-	2.58	4/2	-	6.10	8.00
	Average		3.00	-	6.00	10.80	-	33.66	-	2.58	4/2	-	6.10	8.00
2.	BANDA	SHAJAHANP	3	-	6	12.30	-	36.75	-	2.50	6/0	-	8.70	10.50
3.	PAWAYAN		3	1	5	11.50	57.00	36.00	8.00	2.50	5/1	10.00	7.40	9.50
4.	SINDHAUL		3	1	5	7.30	45.00	27.90	8.00	2.50	4/2	10.00	7.40	4.90
5.	BHAWALKHER		3	-	7	9.20	-	37.50	-	5.35	1/6	-	8.90	4.60
	Average		3.00	1.00	5.75	10.08	51.00	34.54	8.00	3.21	16/9	10.00	8.10	7.38
6.	PARAGAWAN	KHERI	3	2	4	15.00	87.00	46.13	42.50	5.37	3/3	15.00	9.00	5.80
	Average		3.00	2.00	4.00	15.00	87.00	46.13	42.50	5.37	3/3	15.00	9.00	5.80
7.	PIHANI	HARDOI	3	2	6	12.50	87.00	50.63	30.00	7.00	3/3	13.50	9.00	6.00
8.	TODAPUR		3	-	6	9.50	-	19.50	-	6.66	1/5	-	8.80	1.80
10.	HARIYAWAN		3	3	3	34.00	65.00	20.00	110.00	5.00	3/3	20.00	7.20	5.30
11.	TADIYAWAN		3	1	5	13.00	90.00	33.60	60.00	6.20	1/5	15.00	8.50	6.00
12.	BAWAN		3	1	5	15.00	75.00	33.60	80.00	10.80	1/5	10.00	9.60	4.40
13.	SANDI		3	1	5	9.10	36.00	15.48	50.00	27.40	5/1	15.00	6.50	5.90
14.	AHIRAURI		3	1	5	8.70	13.50	23.10	19.00	7.00	1/5	15.00	7.40	4.20
15.	SURSA		3	1	5	10.50	16.50	24.90	50.00	13.40	1/5	15.00	8.00	4.40
16.	BILGRAM		3	3	4	13.50	27.50	22.50	26.66	10.50	5/1	17.00	7.00	9.00
17.	KOTHAWAN		3	1	5	12.00	52.50	33.00	10.00	2.70	4/2	8.00	8.20	7.80
18.	KACHHONA		3	1	5	11.00	15.00	18.90	20.00	6.20	3/3	15.00	7.20	4.00
19.	MADHOGANJ		3	-	6	11.20	-	18.00	-	13.50	4/2	-	8.10	9.50
20.	MALAWAN		5	1	5	16.80	105.00	55.20	20.00	5.70	4/1	10.00	8.20	11.10
21.	SANDILA		3	-	6	14.00	-	28.75	-	4.50	5/1	-	8.80	8.50
22.	BEHDAR		3	1	5	15.00	-	42.90	4.00	6.80	4/2	8.00	8.20	9.50
23.	BHARAWAN		3	1	5	14.00	58.50	27.78	25.00	5.30	4/2	12.60	7.60	8.30
	Average		3.13	1.38	5.06	13.74	53.46	29.24	38.82	8.67	49/46	13.39	8.02	6.61
24.	MAL	LUCKNOW	3	-	6	9.50	-	20.75	-	3.33	3/3	-	7.20	7.20
26.	MALIHABAD		3	-	7	13.30	-	49.07	-	8.50	6/1	-	8.60	10.70
27.	KAKORI		3	-	7	15.10	-	32.48	-	6.35	6/1	-	6.60	12.50
28.	SAROJININAGAR		4	-	6	10.58	-	19.20	-	4.31	3/3	-	7.50	7.80
29.	MOHANLALGANJI		3	1	5	11.00	-	19.50	10.00	2.45	2/4	10.00	8.40	3.70
30.	GASAIGANJI		4	-	7	11.63	-	18.64	-	1.53	3/4	-	7.70	3.90
	Average		3.33	1.00	6.33	11.85	-	26.61	10.00	4.41	23/16	10.00	7.67	7.63
31.	AURAS	UNNAO	3	1	5	15.50	30.00	29.10	4.00	3.40	5/1	10.00	7.20	10.50
32.	GANJIMURADABAD		3	1	5	16.00	43.50	44.70	15.00	4.40	5/1	10.00	8.00	12.00
33.	BANGERMAU		3	-	6	19.50	-	55.75	-	7.66	5/1	-	8.50	12.00
34.	PATEHAPUR		3	1	5	18.00	120.00	60.60	25.00	6.00	5/1	10.00	8.80	12.00
35.	HASANGANJI		4	1	5	15.98	27.00	34.50	15.00	6.00	4/2	10.00	7.20	12.15
36.	MAYAGANJI		3	1	5	14.50	45.00	33.30	10.00	4.00	-	10.00	7.00	11.50
37.	SAFIPUR		3	-	6	14.50	-	57.50	-	5.66	4/2	-	7.80	6.40
38.	NAWABGANJI		3	1	4	9.50	210.00	28.88	75.00	4.75	6/0	12.00	7.50	4.60
39.	BICHHIYA		4	-	5	10.43	-	16.50	-	2.90	1/4	-	10.10	2.21
40.	SIKANDARPURSIRO		3	-	6	16.00	-	48.75	-	5.83	4/2	-	6.80	8.50
41.	SIKANDARPURKHA		3	-	6	12.20	-	20.15	-	4.66	0/6	-	9.70	5.40
42.	ASOHA		3	-	6	8.70	-	25.00	-	3.13	0/6	-	7.00	4.60
43.	PURWA		3	-	6	11.50	-	21.25	-	3.16	1/5	-	8.10	5.40
44.	HILAULI		3	-	6	9.50	-	29.50	-	3.16	0/6	-	8.70	5.00
45.	BIGHAPUR		4	-	6	18.75	-	27.50	-	3.70	2/4	-	8.70	4.80
46.	SUMERPUR		3	-	7	12.50	-	17.48	-	2.35	0/7	-	8.00	4.20
	Average		3.19	1.00	5.56	13.94	79.25	34.40	24.00	4.42	42/48	10.33	8.07	7.58
47.	KHEERO	RAEBARELI	3	-	7	10.70	-	16.67	-	6.42	5/2	-	6.20	8.80
48.	LALGANJ		3	1	5	13.50	30.00	15.00	6.00	4.00	2/4	7.50	7.80	7.10
49.	SARENI		3	-	6	15.00	-	15.65	-	5.58	2/4	-	7.40	7.00
50.	DALMAU		3	-	6	11.00	-	24.25	-	3.50	0/6	-	9.80	5.00
51.	SATAON		3	-	6	13.40	-	21.50	-	1.91	4/2	-	7.30	12.50
52.	JAGATPUR		3	1	5	9.20	34.50	28.20	13.00	4.20	3/3	15.00	7.20	5.70
	Average		3.00	1.00	5.83	12.13	32.25	20.21	9.50	4.27	16/21	11.25	7.62	7.68
	Total		3.14	1.24	5.52	13.06	59.59	30.34	29.45	5.65	-	12.14	7.93	7.24

Source :

Table.B.2 Numbers of Wells in Sharda Canal Command Area (1/2)

No	Name of Block	A Govt. TW	B Prvt. TW	C Prvt. Pucca	D Prvt. Rahat	E PS GW.SOR.	F PS Boring	G Total TW.BOR. (A+B+F)	H Geograph Area (ha)	I Density Well (G/H)
	NINITAL	83	892	106	0	725	8,867	9,842	68,522	0.144
01	SITALGANJ	22	460	0	0	481	4,140	4,622	33,210	0.139
02	KHATIMA	61	432	106	0	244	4,727	5,220	35,312	0.148
	PILIBHIT	78	6,353	1,400	854	546	31,449	37,880	309,372	0.122
01	PURANPUR	0	2,563	6	5	195	11,313	13,876	121,574	0.114
02	MARAURI	16	411	138	124	61	4,469	4,896	29,645	0.165
03	AMARIA	34	2,357	51	51	18	4,135	6,526	40,984	0.159
04	LALRURI KHERA	4	104	522	325	98	2,131	2,239	22,969	0.097
05	BARKHERA	4	165	415	222	117	2,553	2,722	31,845	0.085
06	BILSANDA	4	581	135	28	35	3,411	3,996	35,954	0.111
07	BISALPUR	16	172	133	99	22	3,437	3,625	26,401	0.137
	BAREILLY	220	1,939	8,988	7,614	1,086	25,047	27,206	260,465	0.104
01	NAWABGANJ	21	188	1,475	1,264	190	3,365	3,574	32,985	0.108
02	RICHCHHA	0	137	274	200	185	2,330	2,467	26,309	0.094
03	SHERGARH	7	125	1,173	1,055	123	2,353	2,485	27,295	0.091
04	FATEHGANJ	50	237	1,099	946	33	1,799	2,086	20,056	0.104
05	BHOJIPURA	23	123	827	531	158	2,711	2,857	19,661	0.145
06	KYARA	19	220	494	422	90	1,009	1,248	20,805	0.060
07	BITHARI	14	416	773	681	45	2,307	2,737	25,238	0.108
08	FARIDPUR	47	288	1,349	1,213	51	3,046	3,381	32,234	0.105
09	BHADPURA	6	79	747	602	163	2,964	3,049	24,198	0.126
10	BHUTTA	33	126	777	700	48	3,163	3,322	31,684	0.105
	SHAHJAHANPUR	301	6,087	7,192	6,384	1,399	44,768	51,156	396,531	0.129
01	KHUTAR	30	1,312	0	0	242	5,725	7,067	46,545	0.152
02	BANDA	27	1,691	7	0	181	6,795	8,513	46,891	0.182
03	PAWAYAN	82	1,315	0	0	156	4,714	6,111	30,601	0.200
04	SINDHAULI	48	213	21	19	61	3,313	3,574	29,160	0.123
05	NIGOHI	1	127	264	190	96	3,004	3,132	25,449	0.123
06	KATARA	14	86	421	355	72	2,676	2,776	24,955	0.111
07	BHAWALKHER	29	281	101	19	137	2,448	2,758	31,928	0.086
08	DADRAUL	5	305	308	291	69	3,139	3,449	34,790	0.099
09	KANT	24	135	979	862	37	2,892	3,051	32,745	0.093
10	TILHAR	8	376	852	708	149	3,388	3,772	24,580	0.153
11	JAITIPUR	5	69	1,547	1,440	147	2,834	2,908	29,493	0.099
12	JALALABAD	28	177	2,692	2,500	52	3,840	4,045	39,394	0.103
	KHERI	604	8,548	135	33	1,554	36,893	46,045	364,624	0.126
01	BIJUA	9	1,097	13	2	170	3,869	4,975	59,083	0.084
02	PHULBEHAR	14	986	10	2	179	3,958	4,958	40,504	0.122
03	BANKAGANJI	13	923	25	4	173	4,387	5,323	33,852	0.157
04	LAKHIMPUR	54	792	25	4	176	4,680	5,526	38,535	0.143
05	BEHJAM	117	868	15	7	171	3,775	4,760	28,999	0.164
06	MUHAMDI	164	1,155	11	5	170	4,403	5,722	42,653	0.134
07	KUMBHI	32	858	14	1	173	4,551	5,441	36,488	0.149
08	MITAULI	59	967	13	6	178	3,719	4,745	37,140	0.128
09	PARAGAWAN	142	902	9	2	164	3,551	4,595	47,370	0.097
	HARDOI	550	3,844	7,416	4,580	3,731	48,803	53,197	598,817	0.089
01	PIHANI	48	231	221	85	90	2,197	2,476	33,685	0.074
02	TODAPUR	22	124	158	91	211	2,161	2,307	30,621	0.075
03	SHAHABAD	85	260	718	652	133	2,998	3,343	34,673	0.096
04	BHARUKAHANI	62	123	638	575	170	3,092	3,277	42,427	0.077
05	HARIYAWAN	38	181	145	124	862	2,448	2,667	29,035	0.092
06	YADIYAWAN	33	114	135	52	123	2,085	2,232	31,235	0.071
07	BAWAN	36	266	108	91	311	2,700	3,002	32,827	0.091
08	SANDI	29	99	578	433	102	3,141	3,269	31,575	0.104
09	HARPARPUR	12	36	1,107	953	112	3,196	3,244	30,891	0.105
10	AHIRAURI	36	155	297	154	179	2,667	2,858	37,703	0.076
11	SURSA	28	101	363	175	192	2,782	2,911	33,628	0.087
12	BILGRAM	32	326	731	275	91	2,997	3,355	33,839	0.099
13	KOTHAWAN	29	190	288	148	210	2,423	2,642	29,485	0.090
14	KACHHONA	1	113	202	92	196	1,862	1,976	24,864	0.079
15	MADHOGANJ	28	301	459	85	202	2,921	3,250	28,916	0.112
16	BHARAWAN	8	111	186	112	71	2,423	2,542	31,069	0.082
17	SANDILA	1	357	648	375	77	2,080	2,438	31,362	0.078
18	BEHNDAR	1	200	312	72	303	2,166	2,367	27,842	0.085
19	MALAWAN	21	556	122	36	96	2,464	3,041	23,140	0.131
	BARABANKI	8	91	1,181	659	154	3,213	3,312	30,074	0.110
01	NINDURA	8	91	1,181	659	154	3,213	3,312	30,074	0.110

Table.B.2 Numbers of Wells in Sharda Canal Command Area (2/2)

No	Name of Block	A Govt. TW	B Prvt. TW	C Prvt. Pucca	D Prvt. Rahat	E Ps GW.Sor.	F Ps Boring	G Total TW.Bor. (A+B+F)	H Geograph Area (ha)	I Density Well (G/H)
	SITAPUR	544	4,737	2,520	734	2,941	46,019	51,300	567,164	0.090
01	BEHTA	18	100	46	2	127	2,092	2,210	36,742	0.060
02	HARGAON	46	589	22	3	115	2,133	2,768	27,603	0.100
03	ALIA	29	150	44	29	151	2,720	2,899	26,713	0.109
04	MAHOLI	20	97	111	31	122	2,909	3,026	23,277	0.130
05	PISAWAN	114	801	681	11	78	2,902	3,817	39,780	0.096
06	REOSA	7	49	8	0	201	2,724	2,780	43,868	0.063
07	SAKRAN	6	260	81	0	137	2,327	2,593	30,764	0.084
08	LAHARPUR	29	191	51	6	140	2,185	2,405	22,546	0.107
09	PARSENDI	37	220	59	16	93	2,303	2,560	27,907	0.092
10	KHAIRABAD	55	266	69	25	153	1,682	2,003	23,526	0.085
11	MISRIKH	37	294	19	13	163	2,593	2,924	30,430	0.096
12	RAMPUR MATHUR	7	127	231	104	278	2,608	2,742	35,116	0.078
13	MAHMUDABAD	16	109	247	78	241	3,356	3,481	23,431	0.149
14	BISWAN	20	327	83	40	141	2,623	2,970	35,421	0.084
15	MACHHAREHTA	44	389	119	35	111	2,293	2,726	26,739	0.102
16	PAHILA	9	184	198	109	217	2,820	3,013	27,532	0.109
17	KASMANDA	22	206	139	56	147	1,266	1,494	27,468	0.054
18	GONDRAMAU	15	197	69	28	186	2,794	3,006	32,718	0.092
19	SIDHAULI	13	181	243	148	140	1,689	1,883	25,583	0.074
	UNNAO	149	5,760	3,529	773	1,555	38,729	44,630	458,519	0.097
01	AURAS	5	217	212	92	85	1,712	1,934	25,701	0.075
02	GANJIMURADABAI	8	245	242	104	103	2,451	2,704	23,428	0.115
03	BANGARMAU	25	217	141	8	113	2,598	2,840	27,990	0.101
04	PATEHAPUR	10	176	54	6	68	2,651	2,837	27,996	0.101
05	HASANGANJI	7	236	697	74	102	2,565	2,808	32,177	0.087
06	MAYAGANJI	8	151	328	57	94	2,658	2,817	27,331	0.103
07	SAFIPUR	8	277	181	60	94	2,490	2,775	25,683	0.108
08	NAWABGANJI	14	436	396	40	110	2,151	2,601	27,803	0.094
09	BICHHIYA	2	237	62	36	74	2,109	2,348	33,483	0.070
10	SKDPR.SIROUSI	10	308	93	50	84	3,079	3,397	33,242	0.102
11	SKDPR.KHAN	7	620	67	10	77	2,278	2,905	34,889	0.083
12	ASOHA	24	930	284	100	131	2,065	3,019	28,893	0.104
13	PURWA	1	155	269	20	93	2,586	2,742	23,527	0.117
14	HIRAULI	12	535	309	41	140	2,555	3,102	33,881	0.092
15	BIGHAPUR	7	912	452	60	75	2,821	3,740	25,556	0.146
16	SUMERPUR	1	100	99	15	112	1,960	2,061	26,939	0.077
	LUCKNOW	237	11,880	4,266	3,498	1,437	16,550	28,667	215,841	0.133
01	BAKSHIKATALAB	56	1,097	392	915	0	3,317	4,470	37,782	0.118
02	MAL	57	1,902	217	319	254	1,848	3,807	25,383	0.150
03	MALIHABAD	24	1,215	247	380	310	2,242	3,481	21,092	0.165
04	KAKORI	34	2,413	172	203	148	1,978	4,425	22,594	0.196
05	SAROJANINAGAR	29	2,110	733	353	215	3,005	5,144	38,435	0.134
06	MOHANLALGANJI	19	1,716	1,385	579	304	2,594	4,329	35,903	0.121
07	GOSAIGANJI	18	1,427	1,120	749	206	1,566	3,011	34,652	0.087
	RAE BARELI	159	13,503	4,657	68	484	5,477	19,139	149,762	0.128
01	SATAON	23	3,002	1,250	11	64	845	3,870	25,550	0.151
02	KHEERO	37	1,972	365	43	85	1,100	3,109	23,204	0.134
03	LALGANJ	16	1,842	676	5	71	1,012	2,870	22,276	0.129
04	SARENI	59	2,789	579	5	96	542	3,390	25,511	0.133
05	DALMAU	9	1,963	125	1	85	1,048	3,020	26,476	0.114
06	JAGATPUR	15	1,935	1,662	3	83	930	2,880	26,745	0.108
	SHARDA TOTAL	2,933	63,634	41,390	25,197	15,612	305,815	372,374	3,419,691	0.109

*1989=NINITAL,PILIBHIT,KHERI,HARDOI,SITAPUR,LUCKNOW,RAEBARELI,
1988=BAREILLY,SHARJAHANPUR,BARABANKI,UNNAO,

Govt.TW=Government Tube Wells
Prvt.TW=Private/Personal Tube Wells
Pucca= Pucca Wells (Lined Wells), Rahat=Rahat Wells (Persian Wheels),
PS GW.SOR.=Pump Set at Groundwater, PS Boring=Pump Set at Boring

Table.B.3 Fluctuation of Water Table in Representative Areas

1 Si.No.	2 Study Area Name	3 Block Name	4 WL in Construct. Year (m)	5 WL in 1991 (m)	6 Period (4-3) (m)	7 Yearly Fluct. (m)	8 Depth of Well (m)	9 Nos. of Data
1	Sarojini Nagar	Sarojini Nagar	5.19	6.81	12.17	-0.13	19.19	139
		Mohanlalganji	4.58	5.89	10.26	-0.13	23.78	97
		Asoha	5.28	6.78	14.24	-0.11	23.59	26
		Nawabganji	3.90	5.08	8.42	-0.14	15.80	12
		Average	4.93	6.41	11.53	-0.13	21.08	(274)
2	Sataon	Hilauli	5.96	6.72	6.58	-0.12	16.68	65
		Sataon	5.65	7.55	10.85	-0.18	29.28	94
		Kheero	5.14	5.54	7.00	-0.06	16.64	21
		Average	5.70	7.02	8.86	-0.15	23.26	(180)
3	Sursa	Sursa	2.72	2.83	6.81	-0.02	24.74	191
		Ahirori	2.58	2.77	7.62	-0.02	25.46	34
		Average	2.70	2.82	6.93	-0.02	24.85	(225)
4	Purwa	Purwa	3.15	3.21	7.28	-0.01	23.72	154
		Smelpur	2.60	2.50	2.67	0.04	29.50	3
		Hilauli	3.06	3.18	12.80	-0.01	26.10	5
		Kheero	-	-	-	-	-	-
		Average	3.14	3.20	7.37	-0.01	23.90	(162)
	Total	Average	4.15	4.96	8.92	-0.09	23.10	841

Data Source : Groundwater Development, U.P.

Table.B.4 Fluctuation of Groundwater Level in Representative Areas

SAROJINI NAGAR AREA

Year After Construct.	Average Year	WL at Const. (m)	WL in 1991 (m)	Yearly Fluctuation (m/Y.)	Deph of Well (m)	Sample No.
0- 4	3.31	5.43	6.69	-0.38	20.36	29
5- 9	6.53	5.20	6.83	-0.25	18.48	36
10-14	11.46	5.38	7.04	-0.14	15.46	26
15-19	16.48	4.96	6.63	-0.10	23.50	21
> 20	26.52	4.93	6.84	-0.07	19.13	27
Total	12.17	5.19	6.81	-0.13	19.19	139

SATAON AREA

Year After Construct.	Average Year	WL at Const. (m)	WL in 1991 (m)	Yearly Fluctation (m/Y.)	Deph of Well (m)	Sample No.
0- 4	1.92	6.58	7.77	-0.62	22.45	26
5- 9	6.20	5.02	6.42	-0.23	65.40	15
10-14	11.78	4.96	7.24	-0.19	22.48	23
15-19	17.13	5.61	7.58	-0.11	22.91	16
> 20	23.71	5.79	8.87	-0.13	21.69	14
Total	10.85	5.65	7.55	-0.18	29.28	94

SURSA ARAE

Year After Construct.	Average Year	WL at Const. (m)	WL in 1991 (m)	Yearly Fluctation (m/Y.)	Deph of Well (m)	Sample No.
0- 4	2.70	2.76	2.85	-0.04	23.77	84
5- 9	6.68	2.65	2.91	-0.04	23.90	59
10-14	12.00	2.92	2.82	0.01	30.85	23
15-19	16.33	2.68	2.72	0.00	25.40	15
> 20	21.80	2.61	2.76	-0.01	25.35	10
Total	6.81	2.72	2.83	-0.02	24.74	191

PURWA ARAE

Year After Construct.	Average Year	WL at Const. (m)	WL in 1991 (m)	Yearly Fluctation (m/Y.)	Deph of Well (m)	Sample No.
0- 4	2.13	3.17	3.21	-0.02	23.86	71
5- 9	6.58	2.97	3.19	-0.03	24.26	33
10-14	11.78	3.30	3.27	0.00	23.09	29
15-19	17.07	3.40	3.54	-0.01	25.40	15
> 20	27.67	3.20	3.35	-0.01	25.75	6
Total	7.28	3.15	3.21	-0.01	23.72	154

Table.B.5 Summary of Pumping Test

Abstruct of The Work Done

Summarised Hydrological Data of WellsConstructed at, HARDOI, UNNAO, RAEBARELI & LACKNOW District, U.P.

Si No	SL District No.	Location & Coordinates	TOT. Depth of Drilling (m) OW/PW	Granular Zone Encounterd* (mbgl)	Granular Zone Tapped** (mgbl)	Aquifer Material	Static Waterlevel (mbgl)	Yield (lpm)	Drawdown (m)	Average Transmisivity 'T' (m2/day)	Average Strability 'S'	Field Permeability 'K'	Specific Capacity eps/mt	KC (u mhos)	pH	Quality Cl (ppm)	HCO3 (ppm)	TDS (ppm)
1	HARDOI	H-1, KUTUWAPUR (N27 21' E8060')	30.0/28.5	5-26.5	7.87-26.4	SAND	2.20	378.50	2.63	1488.00	1.02E - 02	82.66	2.40	582.00	7.60	28.00	14.55	260.00
2	HARDOI	H-1, HARHA (N27 44' E80 14')	30.0/29.0	6-26.0	3.87-21.65	SAND, KANKAR	1.82	625.00	2.92	838.00	1.11E - 01	40.00	3.57	796.00	7.00	20.00	201.00	280.00
3	LUCKNOW	L-1, NATKUR (N26 40' 51" E80 54' 23")	30.0/25.0	5-24.0	8.5-24.00	SAND, FINE GRAINED	5.33	171.00	3.48	243.00	6.19E - 04	15.67	0.92	897.00	69.91	10.50	208.50	271.00
4	LUCKNOW	L-2, BATAULI (N26 40'51" E80 54'01")	30.0/26.0	7-26.0	15.43-24.56	SANDY CLAY & FINE SAND	2.50	89.00	3.64	139.17	2.45E - 04	15.24	0.41	848.00	6.94	10.80	169.50	304.00
5	UNNAO	U-1, TUSRAUR (N26 27'91" E80 49'20")	36.0/20.0	7-13.0	7.09-13.23	FINE SAND, SAND CLAY, KANKAR	2.53	15.00	0.90	86.25	4.57E - 04	140.04	0.27	709.00	7.80	11.20	142.00	220.00
6	UNNAO	U-2, MEHUDDINPUR (N26 17' E80 50'40")	36.0/25.0	6-14.0	4.40-10.40	SAND FINE	2.17	204.00	2.60	179.80	2.90E - 04	29.96	1.30	657.00	7.92	10.60	138.00	200.00
7	RAEBARELI	R-1, KORIHAR (N26 17' E86 04')	34.0/31.0	10-25.0	12.5-25.00	SAND FINE TO MEDIUM	8.43	1343.00	1.51	2080.73	7.52E - 04	166.45	14.82	870.00	7.64	43.20	192.00	280.00
8	RAE BARELI	R-2, KAHUWA (N26 21' E80 02')	36.0/30.0	2-18.0	10.35-17.09	FINE SAND	7.66	284.00	1.48	520.65	1.36E - 04	77.27	3.19	360.00	8.30	40.30	206.00	336.00

Note : * ; by Resistivity Survey

**:Based on Litholog

Table.B.6 Estimated Yield of Groundwater in Representative Areas

District	Block	A Well Depth(m)	B Strainer Length(m)	= A/B (%)	D Yield (l/s)	(m3/D)	E Draw Down of WL(m)	F=D/E Unit (l/s)	(m3/D)	Remarks
Lucknow	Sarojini Nagr	116.50	42.14	36.17	39.60	3,421.44	5.60	7.07	610.97	TW data of I.D. data=3
		25.00	15.00	60.00	2.85	246.24	3.48	0.82	70.76	punmping test (Point L-1)
		26.00	9.00	34.62	1.48	127.87	3.64	0.41	35.13	punmping test (Point L-2)
	Mohanlalganj	122.25	42.28	34.58	35.30	3,049.92	10.05	3.51	303.47	TW data of I.D. data=6
Rae Bareli	Sataon	99.00	28.42	28.71	31.39	2,712.19	10.02	3.13	270.77	TW data of I.D. data=9
		31.00	12.52	40.39	22.38	1,933.63	1.51	14.82	1,280.55	Punmping test (Point R-1)
		30.00	6.65	22.17	4.73	408.67	1.48	3.20	276.13	Punmping test (Point R-2)
	-	428.82	68.67	16.01	41.36	3,573.50	13.02	3.18	274.46	Deep TW data of CGWB d.=6
Hardoi	Sursa	93.55	38.22	40.86	44.83	3,873.31	5.15	8.70	752.10	TW data of I.D. data=10
		28.50	18.53	65.02	6.31	545.18	2.63	2.40	207.29	Punmping test (Point H-1)
		29.00	17.79	61.34	10.42	900.29	2.92	3.57	308.32	Punmping test (Point H-2)
	-	441.63	68.50	15.51	61.50	5,313.60	11.83	5.20	449.16	Deep TW data of CGWB d.=5
Unnao	Purwa	185.50	40.43	21.80	43.38	3,748.03	8.55	5.07	438.37	TW data of I.D. data=10
		20.00	7.50	37.50	0.25	21.60	0.90	0.28	24.00	Punmping test (Point U-1)
		25.00	6.05	24.20	3.40	293.76	3.40	1.00	86.40	Punmping test (Point U-2)
	-	451.15	70.56	15.64	42.03	3,631.39	42.03	1.00	86.40	Deep TW data of CGWB d.=9

Table.B.7 Result of Pumping Test Conducted by Irrigation Department, U.P.

Si NO	1 Well No.	2 Block Name	3 Village Name	4 Depth (m)	5 Length of Strainer(m)	6 % (5/4)	7 Yield (l/s)	8 (m3/D)	9 Depression of WL (m)	10 Unit Y/m(8/9) (l/s)	11 (m3/D)
1	41	Sarojini Nagar	Sadraura	106.50	37.20	34.93	36.67	3,168.29	3.00	12.22	1,056.10
2	43		Pahalpur	151.50	24.25	16.01	34.14	2,949.70	-	-	-
3	75		Ashrafnagar	121.50	41.92	34.50	34.14	2,949.70	6.90	4.95	427.49
4	44		Khasarwara	100.50	41.75	41.54	28.70	2,479.68	-	-	-
5	118		Rupakhera	121.50	47.30	38.93	48.00	4,147.20	6.90	6.96	601.04
6	50		Khande.deo	85.50	39.30	45.96	28.70	2,479.68	-	-	-
7	52		Plateta	91.50	40.33	44.08	34.14	2,949.70	-	-	-
8	42		Kaliakhera	103.50	29.85	28.84	48.00	4,147.20	-	-	-
Average				116.50	42.14	36.17	39.60	3,421.73	5.60	7.07	611.02

Si NO	1 Well No.	2 Block Name	3 Village Name	4 Depth (m)	5 Length of Strainer(m)	6 % (5/4)	7 Yield (l/s)	8 (m3/D)	9 Depression of WL (m)	10 Unit Y/m(8/9) (l/s)	11 (m3/D)
1	11	Mohanlalganji	Raghunathkher	115.50	41.65	36.06	31.96	2,761.34	13.50	2.37	204.54
2	10		Rati	105.00	44.45	42.33	34.14	2,949.70	8.10	4.21	364.16
3	9		Rati	105.00	39.33	37.46	38.75	3,348.00	12.60	3.08	265.71
4	8		Tyetinagar	97.50	43.81	44.93	48.00	4,147.20	-	-	-
5	17		Kodaraipur	163.50	43.68	26.72	38.75	3,348.00	6.00	6.46	558.00
6	12		Raghunathkher	96.00	42.90	44.69	31.96	2,761.34	13.50	2.37	204.54
7	13		Dayalpur	187.50	44.00	23.47	38.75	3,348.00	7.50	5.17	446.40
Average				128.75	42.67	33.14	35.72	3,086.06	10.20	3.50	302.56

Si NO	1 Well No.	2 Block Name	3 Village Name	4 Depth (m)	5 Length of Strainer(m)	6 % (5/4)	7 Yield (l/s)	8 (m3/D)	9 Depression of WL (m)	10 Unit Y/m(8/9) (l/s)	11 (m3/D)
1	(17)	Satsan	Madhopur	150.00	42.68	28.45	28.70	2,479.68	12.00	2.39	206.64
2	(46)		Konsa(IV)	75.00	20.20	26.93	38.75	3,348.00	9.00	4.31	372.00
3	(47)		Konsa(V)	76.50	21.08	27.56	28.70	2,479.68	7.50	3.83	330.62
4	(48)		Konsa(VI)	78.00	28.73	36.83	27.78	2,400.19	6.90	4.03	347.85
5	(50)		Chandoli	81.00	32.90	40.62	-	-	-	-	-
6	(52)		Jori(II)	241.50	32.65	13.52	-	-	-	-	-
7	(5-)		Jori(I)	217.50	32.25	14.83	-	-	-	-	-
8	(54)		Shivpuri	169.50	34.85	20.56	-	-	-	-	-
9	(57)		Porai	79.50	19.23	24.19	34.14	2,949.70	9.90	3.45	297.95
10	(68)		Nakfulha	78.00	23.46	30.08	-	-	-	-	-
11	(72)		-	84.00	21.38	25.45	28.70	2,479.68	10.50	2.73	236.16
12	(67)		Nirasapur	84.00	16.46	19.60	28.30	2,445.12	10.35	2.73	236.24
13	(4-)		-	138.00	43.88	31.80	-	-	-	-	-
14	(26)		Kunsa(III)	153.00	43.10	28.17	28.70	2,479.68	15.00	1.91	165.31
15	(-)		Kunsa(III)	75.00	12.83	17.11	-	-	-	-	-
16	(-)		Jasalimau	111.00	42.93	38.68	38.75	3,348.00	9.00	4.31	372.00
17	(-)		Lohra	205.50	44.05	21.44	-	-	-	-	-
Average				99.00	28.42	28.71	31.39	2,712.19	10.02	3.13	270.77

Si NO	1 Well No.	2 Block Name	3 Village Name	4 Depth (m)	5 Length of Strainer(m)	6 % (5/4)	7 Yield (l/s)	8 (m3/D)	9 Depression of WL (m)	10 Unit Y/m(8/9) (l/s)	11 (m3/D)
1		Sursa	Lalpur	73.20	27.74	37.90	-	-	-	-	-
2			Bhoor purvor	95.90	41.38	43.15	48.32	4,174.85	3.45	14.01	1,210.10
3			Bhilawan	110.53	38.62	34.94	53.69	4,638.82	4.50	11.93	1,030.85
4			Banna Pruwa	115.24	39.27	34.08	47.38	4,093.63	5.18	9.15	790.28
5			Bantapur	112.17	38.80	34.59	48.00	4,147.20	2.77	17.33	1,497.18
6			Matua	93.00	42.13	45.30	-	-	-	-	-
7			Abdallapur	85.50	36.35	42.51	-	-	-	-	-
8			Bakhtawarkal	105.00	49.18	46.84	-	-	-	-	-
9			Fardapur	99.00	40.55	40.96	-	-	-	-	-
10			Khajuraha	103.88	42.46	40.87	48.32	4,174.85	4.83	10.00	864.36
11	137		Monai	62.30	39.65	63.64	34.14	2,949.70	7.01	4.87	420.78
12	132		Fatiapuri	85.40	35.79	41.91	52.50	4,536.00	4.58	11.46	990.39
13			Monai	79.26	34.24	43.20	33.49	2,893.54	6.70	5.00	431.87
14	134		Ramapur	79.30	33.68	42.47	40.99	3,541.54	4.27	9.60	829.40
15			Sursa	91.50	38.35	41.91	41.49	3,584.74	8.24	5.04	435.04
Average				93.55	38.22	40.86	44.83	3,873.48	5.15	8.70	751.70

Si NO	1 Well No.	2 Block Name	3 Village Name	4 Depth (m)	5 Length of Strainer(m)	6 % (5/4)	7 Yield (l/s)	8 (m3/D)	9 Depression of WL (m)	10 Unit Y/m(8/9) (l/s)	11 (m3/D)
1	4	Purwa	Motikhera	110.24	40.37	36.62	-	-	-	-	-
2	10		Pandeypur	189.50	44.60	23.54	43.73	3,778.27	7.50	5.83	503.77
3	18		-	181.50	36.25	19.97	43.02	3,716.93	9.60	4.48	387.18
Average				185.50	40.43	21.79	43.38	3,747.60	8.55	5.07	438.32

Source :

Table.B.8 Progress of Groundwater Development (1/2)

District Name	Block Name	Net Recharge (ha m) A	Net Draft (ha m) B	Stage of Develop. (%) B/A	Develop. 50% (ha m) A/2-B	Geograph. Area (ha) C	Net Rec. Unit (m) A/C	Net Draft Unit (m) B/C	Pre-Mons. W.Table Average (m)	Post-Mons. W.Table Average (m)	WT Pre-Post (m)
NAINITAL	(Sub-total)	33,038	6,814	20.62	9,705	68,522	0.48	0.10	4.92	2.74	2.18
	SITALGANJI	14,120	2,302	16.30	4,758	33,210	0.43	0.07	3.08	1.55	1.53
	KHATIMA	18,918	4,512	23.85	4,947	35,312	0.54	0.13	6.75	3.92	2.83
PILIBHIT	(Sub-total)	141,459	39,685	28.05	31,045	309,372	0.46	0.13	3.44	1.82	1.62
	PURANPUR	52,506	16,083	30.63	10,170	121,574	0.43	0.13	3.08	1.82	1.26
	MARAURI	20,334	5,617	27.62	4,550	29,645	0.69	0.19	3.68	2.02	1.66
	AMRIA	15,326	5,310	34.65	2,353	40,984	0.37	0.13	3.66	1.76	1.90
	LALRURIKHERA	13,917	2,948	21.18	4,011	22,969	0.61	0.13	3.51	1.87	1.64
	BARKHERA	14,441	2,495	17.28	4,726	31,845	0.45	0.08	3.00	1.46	1.54
	BILSANDA	16,246	3,807	23.43	4,316	35,954	0.45	0.11	2.25	0.76	1.49
	BISAPUR	8,689	3,425	39.42	920	26,401	0.33	0.13	4.91	3.04	1.87
BAREILLY	(Sub-total)	100,361	25,867	25.77	24,314	260,465	0.39	0.10	4.27	2.96	1.31
	NAWABGANJI	15,048	3,949	26.24	3,575	32,985	0.46	0.12	3.37	1.97	1.40
	RICHCHHA	12,332	1,666	13.51	4,500	26,309	0.47	0.06	3.45	1.99	1.46
	SHERGARH	8,471	2,936	34.66	1,300	27,295	0.31	0.11	4.78	3.64	1.14
	FATEHGANJ	6,945	2,302	33.15	1,171	20,056	0.35	0.11	4.54	3.42	1.12
	BHOJIPURA	7,451	1,903	25.54	1,823	19,661	0.38	0.10	4.06	2.75	1.31
	KYARA	6,921	1,342	19.39	2,119	20,805	0.33	0.06	3.28	2.35	0.93
	BITHARI	10,372	2,620	25.26	2,566	25,238	0.41	0.10	7.20	5.78	1.42
	FARIDPUR	8,052	3,175	39.43	851	32,234	0.25	0.10	3.77	2.55	1.22
	BHADPURA	13,406	2,382	17.77	4,321	24,198	0.55	0.10	3.28	1.71	1.57
	BHUTTA	11,363	3,592	31.61	2,090	31,684	0.36	0.11	4.98	3.46	1.52
SHAHJAHAN	(Sub-total)	148,827	57,378	38.55	17,035	396,531	0.38	0.14	4.21	3.07	1.14
	KHUTAR	18,153	6,547	36.07	2,530	46,545	0.39	0.14	3.90	2.83	1.07
	BANDA	18,908	8,318	43.99	1,136	46,891	0.40	0.18	3.63	2.26	1.37
	PAWAYAN	10,073	5,733	56.91	(697)	30,601	0.33	0.19	4.97	4.13	0.84
	SINDHAUL	8,798	4,496	51.10	(97)	29,160	0.30	0.15	5.79	5.34	0.45
	NIGOHI	11,042	3,637	32.94	1,884	25,449	0.43	0.14	3.08	2.27	0.81
	KATARA	10,272	3,649	35.52	1,487	24,955	0.41	0.15	5.70	3.88	1.82
	BHAWALKHER	10,527	4,084	38.80	1,180	31,928	0.33	0.13	4.21	2.98	1.23
	DADRAUL	12,717	4,181	32.88	2,178	34,790	0.37	0.12	3.18	2.06	1.12
	KANT	15,358	3,380	22.01	4,299	32,745	0.47	0.10	2.73	1.42	1.31
	TIRHAR	11,075	4,725	42.66	813	24,580	0.45	0.19	3.67	2.16	1.51
	JAITPUR	7,126	3,738	52.46	(175)	29,493	0.24	0.13	5.81	4.72	1.09
	JALALABAD	14,778	4,890	33.09	2,499	39,394	0.38	0.12	3.83	2.75	1.08
KHERI	(Sub-total)	118,437	39,045	32.97	20,174	364,624	0.32	0.11	4.93	3.03	1.90
	BIJUA	22,565	3,190	14.14	8,093	59,083	0.38	0.05	3.72	2.09	1.63
	PHULBEHAR	17,955	3,914	21.80	5,064	40,504	0.44	0.10	4.57	2.42	2.15
	BANKAGANJ	13,494	3,659	27.12	3,088	33,852	0.40	0.11	4.04	1.87	2.17
	LAKHIMPUR	13,043	5,165	39.60	1,357	38,535	0.34	0.13	6.02	4.01	2.01
	BEHJAM	7,190	3,772	52.46	(177)	28,999	0.25	0.13	4.61	2.44	2.17
	MUHAMUDI	7,619	5,643	74.06	(1,834)	42,653	0.18	0.13	6.00	4.49	1.51
	KUMBHA	12,729	4,875	38.30	1,490	36,488	0.35	0.13	5.37	3.17	2.20
	MITAULI	10,156	3,708	36.51	1,370	37,140	0.27	0.10	4.74	2.66	2.08
	PARAGAWAN	13,686	5,119	37.40	1,724	47,370	0.29	0.11	5.30	4.12	1.18
HARDOI	(Sub-total)	201,047	42,694	21.24	57,830	598,817	0.34	0.07	5.09	3.45	1.64
	PIHANI	11,264	2,145	19.04	3,487	33,685	0.33	0.06	4.80	2.91	1.89
	TODAPUR	13,362	2,214	16.57	4,467	30,621	0.44	0.07	2.78	1.33	1.45
	SHAHABAD	7,481	2,081	27.82	1,660	34,673	0.22	0.06	5.85	4.88	0.97
	BHARKAHANI	13,896	3,181	22.89	3,767	42,427	0.33	0.07	3.83	2.49	1.34
	HARIYAWAN	8,532	1,551	18.18	2,715	29,035	0.29	0.05	4.37	2.76	1.61
	TADIYAWAN	11,380	2,535	22.28	3,155	31,235	0.36	0.08	3.90	2.26	1.64
	BAWAN	11,996	2,586	21.56	3,412	32,827	0.37	0.08	4.53	2.45	2.08
	SANDI	9,643	2,675	27.74	2,147	31,575	0.31	0.08	3.56	2.49	1.07
	HARPARPUR	6,364	2,449	38.48	733	30,891	0.21	0.08	4.60	2.96	1.64
	AHIRAURI	13,539	2,110	15.58	4,660	37,703	0.36	0.06	5.16	3.72	1.44
	SURSA	14,196	3,055	21.52	4,043	33,628	0.42	0.09	3.95	2.58	1.37
	BILGRAM	10,564	3,382	32.01	1,900	33,839	0.31	0.10	7.16	5.54	1.62
	KOTHAWAN	12,469	1,829	14.67	4,406	29,485	0.42	0.06	3.95	1.96	1.99
	KACHHONA	8,520	1,236	14.51	3,024	24,864	0.34	0.05	4.74	3.02	1.72
	MADHOGANJ	12,125	2,564	21.15	3,499	28,916	0.42	0.09	5.20	4.10	1.10
	BHARAWAN	9,001	1,575	17.50	2,926	31,069	0.29	0.05	9.05	6.82	2.23
	SANDILA	9,807	1,876	19.13	3,028	31,362	0.31	0.06	5.51	3.33	2.18
	BEHDAR	10,286	1,738	16.90	3,405	27,842	0.37	0.06	4.02	2.71	1.31
	MALAWAN	6,622	1,912	28.87	1,399	23,140	0.29	0.08	9.77	7.20	2.57

Table.B.8 Progress of Groundwater Development (2/2)

District Name	Block Name	Net Recharge (ha m) A	Net Draft (ha m) B	Stage of Develop. (%) B/A	Develop. 50% (ha m) A/2-B	Geograph. Area (ha) C	Net Rec. Unit (m) A/C	Net Draft Unit (m) B/C	Pre-Mons. W.Table Average (m)	Post-Mons. W.Table Average (m)	WT Pre-Post (m)
BARABAK	(Sub-total)	12,757	2,318	18.17	4,061	30,074	0.42	0.08	4.07	1.73	2.34
	NINDURA	12,757	2,318	18.17	4,061	30,074	0.42	0.08	4.07	1.73	2.34
SITAPUR	(Sub-total)	191,520	37,922	19.80	57,838	567,164	0.34	0.07	5.12	3.37	1.75
	BEHTA	12,709	661	5.20	5,694	36,742	0.35	0.02	4.07	2.72	1.35
	HARGAON	11,099	2,089	18.82	3,461	27,603	0.40	0.08	4.15	2.61	1.54
	ALIA	7,327	2,784	38.00	880	26,713	0.27	0.10	4.91	3.21	1.70
	MAHOLI	8,645	2,527	29.23	1,796	23,277	0.37	0.11	5.97	4.18	1.79
	PISAWAN	8,441	3,016	35.73	1,205	39,780	0.21	0.08	5.98	4.28	1.70
	REOSA	16,547	2,353	14.22	5,921	43,868	0.38	0.05	3.80	1.91	1.89
	SAKRAN	7,840	1,327	16.93	2,593	30,764	0.25	0.04	5.11	3.12	1.99
	LAHARPUR	16,137	1,127	6.98	6,942	22,546	0.72	0.05	3.45	2.21	1.24
	PARSENDI	8,570	1,653	19.29	2,632	27,907	0.31	0.06	4.87	3.21	1.66
	KHAIRABAD	5,199	1,897	36.49	703	23,526	0.22	0.08	7.35	5.42	1.93
	MISRIKH	7,493	2,511	33.51	1,236	30,430	0.25	0.08	5.87	4.43	1.44
	RAMPURMATH	10,084	2,492	24.71	2,550	35,116	0.29	0.07	3.60	2.01	1.59
	MAHMUDABAD	11,670	2,100	17.99	3,735	23,431	0.50	0.09	4.11	2.66	1.45
	BISAWAN	15,612	2,339	14.98	5,467	35,421	0.44	0.07	3.76	2.56	1.20
	MACHHAREHTA	7,215	1,934	26.81	1,674	26,739	0.27	0.07	5.73	3.74	1.99
	PAHLA	14,096	1,826	12.95	5,222	27,532	0.51	0.07	5.28	3.37	1.91
	KASMANDA	6,731	1,585	23.55	1,781	27,468	0.25	0.06	6.49	3.56	2.93
	GONDLAMAU	7,052	1,561	22.14	1,965	32,718	0.22	0.05	7.00	4.46	2.54
	SIDAULI	9,053	2,140	23.64	2,387	25,583	0.35	0.08	5.85	4.38	1.47
LUCKNOW	(Sub-total)	61,708	19,015	30.81	11,839	215,841	0.29	0.09	5.85	4.17	1.67
	BAKSHIKA	15,561	4,422	28.42	3,359	37,782	0.41	0.12	6.77	4.69	2.08
	MAL	6,422	2,258	35.16	953	25,383	0.25	0.09	5.46	3.19	2.27
	MALIHABAD	6,476	2,084	32.18	1,154	21,092	0.31	0.10	5.54	3.27	2.27
	KAKORI	6,415	1,629	25.39	1,579	22,594	0.28	0.07	7.53	6.84	0.69
	SAROJININAGA	9,409	3,197	33.98	1,508	38,435	0.24	0.08	6.73	5.26	1.47
	MOHANLALGA	10,395	3,310	31.84	1,888	35,903	0.29	0.09	5.41	3.84	1.57
	GASAIGANJI	7,030	2,115	30.09	1,400	34,652	0.20	0.06	3.48	2.12	1.36
UNNAO	(Sub-total)	141,707	26,432	18.65	44,422	458,519	0.31	0.06	5.22	3.89	1.33
	AURAS	7,541	623	8.26	3,148	25,701	0.29	0.02	5.22	3.89	1.33
	GANJIMURADA	6,667	1,556	23.34	1,778	23,428	0.28	0.07	5.69	4.56	1.13
	BANGERMAU	7,098	1,434	20.20	2,115	27,990	0.25	0.05	5.37	4.50	0.87
	PATEHAPUR	8,458	1,718	20.31	2,511	27,996	0.30	0.06	3.70	2.40	1.30
	HASANGANJI	10,061	1,469	14.60	3,562	32,177	0.31	0.05	4.07	3.02	1.05
	MAYAGANJI	10,731	1,396	13.01	3,970	27,331	0.39	0.05	3.07	1.96	1.11
	SAFIPUR	10,164	1,358	13.36	3,724	25,683	0.40	0.05	3.77	2.55	1.22
	NAWABGANJI	7,217	1,757	24.35	1,852	27,803	0.26	0.06	4.59	3.40	1.19
	BICHHIYA	12,487	1,251	10.02	4,993	33,483	0.37	0.04	4.20	2.75	1.45
	SIKANDARPUR	8,164	1,950	23.89	2,132	33,242	0.25	0.06	7.86	6.92	0.94
	SIKANDARPUR	9,368	1,992	21.26	2,692	34,889	0.27	0.06	10.01	8.67	1.34
	ASOHA	8,154	1,763	21.62	2,314	28,893	0.28	0.06	5.67	4.03	1.64
	PURWA	9,441	1,762	18.66	2,959	23,527	0.40	0.07	4.55	2.99	1.56
	HILAULI	9,683	2,518	26.00	2,324	33,881	0.29	0.07	4.15	2.82	1.33
	BIGHAPUR	9,325	1,730	18.55	2,933	25,556	0.36	0.07	5.62	3.72	1.90
	SUMERPUR	7,148	2,155	30.15	1,419	26,939	0.27	0.08	5.91	4.02	1.89
RAEBARELI	(Sub-total)	38,721	12,305	31.78	7,056	149,762	0.26	0.08	6.35	3.89	2.46
	SATAON*	5,437	2,610	48.00	109	25,550	0.21	0.10	6.40	4.62	1.78
	KHEERO	4,387	2,150	49.01	44	23,204	0.19	0.09	4.72	3.39	1.33
	LALGANJ	5,460	1,818	33.30	912	22,276	0.25	0.08	6.22	4.11	2.11
	SARENI	6,024	2,344	38.91	668	25,511	0.24	0.09	7.60	6.01	1.59
	DALMAU	9,240	1,836	19.87	2,784	26,476	0.35	0.07	4.81	3.36	1.45
	JAGATPUR	8,173	1,547	18.93	2,540	26,745	0.31	0.06	8.33	1.85	6.48
	Total	1,189,582	309,475	26.02	285,316	3,419,691	0.35	0.09	4.57	3.07	1.63

Source :
Groundwter Development : Natinal Bank, 1990
Water Table Fluctuatation : G.W.D., 1984-1989
Station : Changed by Recent Data

Table.B.9 Water Quality of Existing Well (1/2)

Si No	Study Area Name	Block Name	Village Name	Tempe-rature (c)	EC (us.cm)	pH	Depth of Well (m)	Water Level (m)	Well Type
A.Tubewell and Pumpset Well									
1	Sarojini Nagar	Sarojini Nagar	Makhakhera	25.0	680	7.3	12.00	7.50	TW
2			Darogakhera	26.0	600	7.5	12.00	7.50	TW
3			Hanurpur	26.0	620	7.6	30.00	9.00	TW
4			Aurawan	27.0	680	7.5	36.00	3.60	TW
5			Andpur	27.0	800	7.5	27.00	7.50	TW
6			Shivpura	26.0	480	7.7	19.50	3.30	TW
7			Chandrawal	25.0	580	7.6	24.00	5.10	TW
8			Karimkhera	27.0	600	7.6	21.60	7.50	TW
9			Purauni	26.0	640	7.6	24.00	6.00	TW
10		Mohanlalganj	Ajudhyanath	25.0	430	7.7	31.50	-	P.S.
11			Bhadeswa	26.0	570	7.7	28.50	-	P.S.
12			Ranikhera	26.0	590	7.5	30.90	-	P.S.
13		Asoha	Lachchipur	26.0	550	8.2	-	-	Govt.TW
14			Lalakhera	25.0	430	7.7	33.00	6.60	P.S.
		Sub-total		25.9	589	7.6	25.38	6.36	
1	Sataon	Sataon	Ramdinpurwa	25.0	610	7.4	28.50	6.00	P.S.
2			Korihar	27.0	650	7.5	34.50	9.30	P.S.
3			Sataon	26.0	490	7.9	34.50	9.60	P.S.
4			Unai	26.5	840	7.5	19.50	5.40	TW
5			Unai	26.0	760	7.5	19.50	5.40	TW
6			Unai	26.5	700	7.5	19.50	5.40	TW
7			Musirkher	26.0	470	7.8	19.50	5.40	TW
8			Domapur	26.0	480	7.8	27.00	7.50	TW
9		Hilauli	Kakrari	27.0	580	7.6	27.00	9.00	TW
10			Kakrani	27.0	580	7.6	37.50	9.90	TW
		Sub-total		26.3	616	7.6	26.70	7.29	
1	Hardoi	Sursa	Udaipurwa	26.0	570	7.5	24.00	3.00	P.S.
2			Arangapur	25.0	580	7.5	24.00	-	P.S.
3			Tilapurwa	25.0	500	7.6	28.00	-	P.S.
4			Bhirahimpur	26.0	540	7.5	24.00	4.00	P.S.
5			Dhuria	26.0	590	7.5	25.00	3.00	P.S.
6			Bhandhiya	26.0	760	7.6	19.50	3.00	P.S.
7			Khudaina	25.0	910	7.3	21.00	3.00	P.S.
8			Nimbhara	26.0	860	7.5	24.00	3.60	P.S.
9			Baruha	26.0	550	7.5	24.00	4.50	P.S.
10			Qutubapur	25.0	470	7.6	27.00	3.60	P.S.
11			Madiha	23.0	500	7.8	24.00	1.50	P.S.
12			Khutiana	26.0	650	7.6	24.00	3.00	P.S.
13			Panchkohra	24.0	450	7.8	27.00	3.00	P.S.
14			Ghosar	28.0	470	7.5	75.00	-	Govt.TW
15			Dhulia	26.0	540	7.6	24.00	3.00	P.S.
		Sub-total		25.5	596	7.6	27.63	3.18	
1	Purwa	Purwa	Kodra	25.0	340	6.9	31.50	-	P.S.
2			Chakjamalpur	26.0	930	7.6	21.00	3.60	P.S.
3			Dhirjikhera	25.0	680	7.5	22.50	2.10	P.S.
4			Dhirjikhera	25.0	800	7.5	27.00	2.40	P.S.
		Sub-total		25.3	688	7.4	25.50	2.70	
			Total	25.8	607	7.6	26.51	5.22	

Table.B.9 Water Quality of Existing Well (2/2)

Si No	Study Area Name	Block Name	Village Name	Temp-rature (c)	EC (us.cm)	pH	Depth of Well (m)	Water Level (m)	Well Type
B.Dug Well									
1	Sarojini Nagar	Sarojini Nagar	Gahru	21.0	860	7.7	14.00	8.50	D.W.
2			Gahru	23.0	710	7.8	16.00	8.50	D.W.
3			Aurawan	20.0	790	7.2	12.00	7.20	D.W.
4			Banthra	21.0	1,160	7.7	-	7.30	D.W.
5			Band	21.0	540	7.8	15.60	7.50	D.W.
6			Natkur	24.0	680	7.5	9.00	7.20	D.W.
7			Banthra	23.0	960	7.6	10.00	8.30	D.W.
8			Narayankhera	24.0	920	7.8	-	6.40	D.W.
9		Mohanlalganj	Rhamadikher.	21.0	690	7.8	-	4.70	D.W.
10			Mirampur	23.0	590	7.2	-	7.70	D.W.
11		Asoha	Lachchpur	23.0	1,060	8.0	-	7.50	D.W.
12			Gomapur	27.0	670	7.5	-	8.20	D.W.
13			Bilaurah	26.0	830	7.8	-	6.80	D.W.
14			Chaupai	23.0	900	7.3	-	6.00	D.W.
15		Nawabganji	Shekhapur	25.0	820	7.6	-	7.80	D.W.
		Sub-total		23.0	812	7.6	12.77	7.31	
1	Sataon	Sataon	Malikmau	25.0	650	7.5	10.70	-	Hand P.
2			Korihar	22.0	790	7.6	11.00	9.10	D.W.
3			Unai	20.0	400	7.8	-	7.20	D.W.
4			Paharpur	23.0	960	7.7	12.00	10.00	D.W.
5		Kheero	Bhitargaon	22.0	810	7.8	11.00	7.00	D.W.
6		Hilauli	Gulariha	22.0	350	7.9	-	5.50	D.W.
		Sub-total		22.3	660	7.7	11.18	7.76	
1	Sursa	Sursa	Hankhdha	20.0	780	7.6	-	2.76	D.W.
2			Arangapur	20.0	710	7.6	28.00	-	D.W.
3			Bandhiya	22.0	970	7.5	4.80	3.00	D.W.
4			Nhimbhara	23.0	590	7.6	4.20	3.00	D.W.
5			Baruha	23.0	860	7.6	6.00	3.60	D.W.
6			Panchkohra	20.0	860	7.7	7.20	4.50	D.W.
7			Ichchhapur	22.0	590	7.8	11.50	8.90	D.W.
		Sub-total		21.4	766	7.6	10.28	4.29	
1	Purwa	Purwa	Purwa	21.0	1,480	8.1	-	-	D.W.
2			Purwa	23.0	970	8.0	9.00	3.60	D.W.
3			Godarwa	20.0	680	7.7	7.80	2.40	D.W.
4			Dhirjikhera	23.0	830	7.7	-	2.00	D.W.
5			Chamiani	21.0	830	7.8	-	2.00	D.W.
6			Garhakola	23.0	970	8.0	-	2.00	D.W.
7			Salethu	23.0	920	7.4	-	2.00	D.W.
8			Bhatmau	21.0	980	7.8	-	2.10	D.W.
9			Mokhamganj	21.0	570	7.7	26.90	3.00	D.W.
10			Manjhgawan	22.0	730	8.1	3.90	2.00	D.W.
		Sub-total		21.8	896	7.8	11.90	2.34	
		Total		22.3	802	7.7	11.53	5.58	

Note : TW ; Tubewell
DW ; Dugwell
PS ; Pumup Set Well

Source :

Table.B.10 Result of Water Quality Test

Test Conducted	Unit	Saroj. L-1	Saroj. L-2	Sataon R-1	Sataon R-2	Sursa H-1	Sursa H-2	Purwa U-1	Purwa U-2	Average	Sai River
Acidity/Basicity	pH	6.91	6.94	7.46	8.30	7.60	7.00	7.80	7.92	7.49	7.81
Electrical Conductivity	us/cm	897.00	848.00	870.00	360.00	582.00	796.00	709.00	657.00	714.88	761.00
Total Dissolved Solids	mg/l	271.00	304.00	280.00	N.D	260.00	280.00	220.00	200.00	259.29	336.00
Calcium(Ca2+)	ppm	50.40	47.20	54.00	56.00	32.80	48.40	48.20	47.60	48.08	62.00
Magnesium(Mg2+)	ppm	39.10	24.40	32.30	34.30	39.30	34.20	27.80	23.30	31.84	36.10
Sodium(Na+)	ppm	33.00	47.00	34.00	50.00	17.00	20.00	19.00	17.00	29.63	61.00
Potassium(K+)	ppm	60.00	64.00	37.00	62.00	36.00	62.00	44.00	45.00	51.25	19.00
Sodium Absorption Ratio	me/l	0.49	1.38	0.90	1.29	0.47	0.53	0.54	0.50	0.76	1.51
Carbonate(CO3 2-)	ppm	39.00	24.00	45.00	49.00	9.00	18.00	26.00	21.00	28.88	56.00
Bicarbonate(HCO3-)	ppm	208.50	169.50	192.00	206.00	145.50	201.00	142.00	138.00	175.31	230.00
Chloride(Cl-)	ppm	10.50	10.80	43.20	40.30	28.00	20.00	11.20	10.80	21.85	28.30
Sulphate(SO4 2-)	ppm	1.60	4.00	3.80	3.20	2.80	3.20	0.30	0.20	2.39	4.60
Nitrate-Nitrogen(NO3-N)	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ammonical-Phosphate(NH4-N)	ppm	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Phosphate-Phosphorus(PO4-P)	ppm	0.29	0.13	0.05	0.00	0.15	0.30	0.00	0.10	0.13	N.D
Cadmium(Cd)	ppm	50.400	0.003	0.000	0.000	0.000	0.015	0.000	0.000	6.302	N.D
Iron(Fe)	ppm	0.016	0.296	0.000	0.000	0.040	0.043	0.052	0.069	0.065	N.D
Manganese(Mn)	ppm	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	N.D
Nickel(Ni)	ppm	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	N.D
Selenium(Se)	ppm	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
Zinc(Zn)	ppm	0.114	0.085	0.074	0.860	0.040	0.073	0.031	0.037	0.164	N.D
Lead(Pb)	ppm	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	N.D
Copper(Cu)	ppm	0.000	0.000	0.012	0.011	0.005	0.006	0.000	0.000	0.004	N.D
Boron(B)	ppm	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
Bachterial Populations	Ma.no./ml	425	506	365	280	480	660	480	510	463.25	780

Source :

Table.B.11 Fluctuation of Water Level (1/2)

Unit : meter

District Name	Block Name	84		85		86		87		88		89		Average		Pre-Post
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
NAINITAL																
	SITALGANJI	3.06	1.54	3.23	1.66	3.32	1.36	3.00	2.06	2.78	1.15	-	-	3.08	1.55	1.52
	KHATIMA	6.64	3.66	6.94	2.88	6.23	3.87	6.79	5.37	7.14	3.80	-	-	6.75	3.92	2.83
PILIBHIT																
	PURANPUR	2.88	1.83	3.32	1.16	2.99	1.75	2.96	2.28	3.25	2.06	-	-	3.08	1.82	1.26
	MARAURI	3.38	1.64	3.85	1.46	3.56	1.71	3.62	3.09	3.98	2.18	-	-	3.68	2.02	1.66
	AMRIA	3.50	2.14	3.57	0.53	3.08	2.14	4.17	1.84	3.99	2.14	-	-	3.66	1.76	1.90
	LALRURIKHERA	3.26	1.80	3.70	1.19	3.16	1.36	3.77	2.86	3.66	2.13	-	-	3.51	1.87	1.64
	BARKHERA	3.04	1.63	3.40	0.69	2.69	1.43	2.85	1.89	3.04	1.68	-	-	3.00	1.46	1.54
	BILSANDA	1.94	0.63	2.16	0.35	2.13	0.61	2.57	1.21	2.45	1.02	-	-	2.25	0.76	1.49
	BISAPUR	4.78	3.60	5.27	1.32	3.70	2.90	5.31	4.57	5.50	2.82	-	-	4.91	3.04	1.87
BAREILLY																
	NAWABGANJI	2.62	1.72	3.61	1.37	2.92	1.65	3.96	2.05	3.75	3.06	-	-	3.37	1.97	1.40
	RICHCHHA	3.35	1.33	3.58	1.68	2.96	1.69	4.16	2.81	3.19	2.42	-	-	3.45	1.99	1.46
	SHERGARH	4.65	2.94	4.94	3.84	4.08	2.90	5.32	4.85	4.92	3.69	-	-	4.78	3.64	1.14
	FATEHGANJ	4.78	3.74	4.39	3.15	3.94	2.64	4.80	4.31	4.79	3.24	-	-	4.54	3.42	1.12
	BHOJIPURA	3.74	2.05	4.10	2.80	3.75	2.25	4.35	3.58	4.38	3.06	-	-	4.06	2.75	1.32
	KYARA	3.36	2.29	3.48	1.40	3.14	2.13	3.54	3.12	2.88	2.79	-	-	3.28	2.35	0.93
	BITHARI	7.60	6.59	7.15	5.59	6.97	6.29	7.13	7.20	7.15	3.22	-	-	7.20	5.78	1.42
	FARIDPUR	3.85	2.05	3.44	1.86	3.21	2.27	3.65	3.91	4.72	2.68	-	-	3.77	2.55	1.22
	BHADPURA	3.26	1.72	3.37	0.65	2.95	1.54	3.34	2.39	3.48	2.24	-	-	3.28	1.71	1.57
	BHUTTA	4.83	3.39	4.72	1.78	4.65	3.54	5.03	5.12	5.67	-	-	-	4.98	3.46	1.52
SHAHJAHANI																
	KHUTAR	3.13	2.23	4.78	2.53	3.43	2.43	2.83	4.28	5.33	2.68	-	-	3.90	2.83	1.07
	BANDA	2.88	2.06	3.70	1.65	3.12	1.91	3.31	2.95	5.13	2.73	-	-	3.63	2.26	1.37
	PAWAYAN	4.27	3.22	5.52	3.81	4.82	4.02	4.57	5.47	5.65	4.12	-	-	4.97	4.13	0.84
	SINDHAUL	5.06	5.38	6.03	3.65	5.08	5.18	5.93	6.46	6.84	6.03	-	-	5.79	5.34	0.45
	NIGOHI	2.08	1.40	3.62	0.49	2.68	2.15	2.70	4.10	4.32	3.20	-	-	3.08	2.27	0.81
	KATARA	7.66	5.98	5.68	2.82	4.68	3.53	5.10	3.57	5.39	3.52	-	-	5.70	3.88	1.82
	BHAWALKHER	3.32	2.86	5.02	2.10	3.81	2.62	4.56	4.35	4.36	2.98	-	-	4.21	2.98	1.23
	DADRAUL	3.92	2.38	3.27	1.08	3.04	2.18	3.06	3.11	2.59	1.54	-	-	3.18	2.06	1.12
	KANT	3.33	1.78	2.47	0.78	2.34	0.86	2.49	2.47	3.02	1.19	-	-	2.73	1.42	1.31
	TIRHAR	4.49	2.45	3.18	0.98	2.92	1.49	3.15	3.84	4.63	2.04	-	-	3.67	2.16	1.51
	JAITPUR	5.96	4.58	5.58	3.38	5.30	4.62	6.04	5.62	6.15	5.40	-	-	5.81	4.72	1.09
	JALALABAD	4.25	3.24	3.63	1.05	3.05	2.31	3.69	4.05	4.54	3.11	-	-	3.83	2.75	1.08
LAKHIMPUR																
	BIJUA	3.45	1.95	3.42	0.77	3.47	2.40	4.92	3.67	3.32	1.68	-	-	3.72	2.09	1.62
	PHULBEHAR	3.99	2.61	4.27	0.96	4.07	3.04	5.67	3.44	4.86	2.06	-	-	4.57	2.42	2.15
	BANKAGANJ	3.93	2.31	3.46	0.96	3.29	2.03	5.50	2.66	4.00	1.38	-	-	4.04	1.87	2.17
	LAKHIMPUR	5.08	3.85	5.64	2.86	5.38	4.06	7.67	5.57	6.33	3.72	-	-	6.02	4.01	2.01
	BEHJAM	4.06	1.91	4.76	2.08	3.95	2.77	4.82	3.95	5.45	1.51	-	-	4.61	2.44	2.16
	MUHAMUDI	4.23	2.78	4.90	1.73	5.58	5.18	7.30	7.15	8.00	5.60	-	-	6.00	4.49	1.51
	KUMBHA	4.44	3.02	4.81	1.34	4.49	3.12	6.79	5.39	6.32	2.99	-	-	5.37	3.17	2.20
	MITAULI	4.45	2.36	4.72	2.77	4.31	2.25	4.56	3.27	5.65	2.63	-	-	4.74	2.66	2.08
	PARAGAWAN	5.43	4.09	5.45	2.95	4.75	3.82	4.30	5.31	6.59	4.42	-	-	5.30	4.12	1.19
HARDOI																
	PIHANI	4.44	2.81	4.99	1.91	4.39	2.89	5.01	4.13	5.19	2.82	-	-	4.80	2.91	1.89
	TODAPUR	-	-	2.93	1.25	3.03	1.28	2.33	1.22	2.80	1.55	-	-	2.78	1.33	1.45
	SHAHABAD	5.52	4.28	5.72	2.92	5.52	4.27	4.92	6.23	7.55	6.70	-	-	5.85	4.88	0.97
	BHARKAHANI	-	-	4.17	1.59	3.14	2.13	3.44	3.89	4.55	2.35	-	-	3.83	2.49	1.34
	HARIYAWAN	3.78	1.95	5.05	1.29	4.16	2.85	4.71	5.30	4.15	2.43	-	-	4.37	2.76	1.61
	TADIYAWAN	3.67	2.52	4.33	1.90	3.67	2.09	3.62	2.96	4.23	1.81	-	-	3.90	2.26	1.65
	BAWAN	3.73	1.56	5.06	1.34	4.22	2.50	4.54	4.35	5.11	2.52	-	-	4.53	2.45	2.08
	SANDI	3.01	1.73	3.47	1.13	3.17	2.45	3.91	3.79	4.25	3.37	-	-	3.56	2.49	1.07
	HARPARPUR	4.13	2.70	4.77	1.76	4.00	2.62	4.50	4.71	5.59	3.01	-	-	4.60	2.96	1.64
	AHIRAURI	5.00	4.41	5.54	3.04	4.68	3.33	5.01	4.42	5.57	3.39	-	-	5.16	3.72	1.44
	SURSA	3.61	2.12	4.38	2.23	3.63	2.48	3.77	4.08	4.38	2.01	-	-	3.95	2.58	1.37
	BILGRAM	6.38	5.03	7.66	4.63	6.46	5.26	6.81	6.56	8.51	6.21	-	-	7.16	5.54	1.63
	KOTHAWAN	4.15	3.27	4.82	1.92	3.10	1.10	3.60	2.58	4.06	0.94	-	-	3.95	1.96	1.98
	KACHHONA	5.25	4.20	4.47	0.92	4.12	1.72	4.72	4.82	5.12	3.42	-	-	4.74	3.02	1.72
	MADHOGANJ	5.15	4.50	5.33	3.62	4.73	3.46	4.92	4.82	5.85	4.12	-	-	5.20	4.10	1.09
	BHARAWAN	8.36	7.81	9.44	5.16	8.31	5.16	8.96	9.10	10.17	6.85	-	-	9.05	6.82	2.23
	SANDILA	5.00	3.87	6.12	2.30	4.66	2.46	5.34	5.58	6.42	2.45	-	-	5.51	3.33	2.18
	BEHDAR	4.07	3.63	4.08	1.78	3.75	1.90	4.03	4.01	4.18	2.23	-	-	4.02	2.71	1.31
	MALAWAN	9.45	8.00	10.02	5.10	8.75	5.80	9.50	9.00	11.13	8.10	-	-	9.77	7.20	2.57

Table.B.11 Fluctuation of Water Level (2/2)

Unit : meter

District Name	Block Name	84		85		86		87		88		89		Average		Pre-Post
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
BARABANKI																
	NINDURA	3.83	1.87	3.96	1.38	3.47	2.17	4.80	1.79	4.29	1.44	-	-	4.07	1.73	2.34
SITAPUR																
	BEHTA	4.00	2.42	3.95	2.65	3.35	2.50	3.60	3.17	5.44	2.88	-	-	4.07	2.72	1.34
	HARGAON	3.54	2.86	4.31	2.01	3.53	2.78	4.43	3.40	4.93	2.01	-	-	4.15	2.61	1.54
	ALIA	4.75	3.81	4.76	3.76	5.29	2.35	4.40	3.20	5.33	2.92	-	-	4.91	3.21	1.70
	MAHOLI	6.20	5.79	6.32	5.98	7.04	2.95	5.59	3.29	4.68	2.91	-	-	5.97	4.18	1.78
	PISAWAN	6.18	6.01	6.45	6.07	6.93	3.81	4.68	2.80	5.65	2.71	-	-	5.98	4.28	1.70
	REOSA	2.61	1.58	3.02	0.77	3.04	1.86	4.97	3.18	5.35	2.14	-	-	3.80	1.91	1.89
	SAKRAN	2.85	2.70	3.40	4.17	6.96	2.70	6.23	3.30	6.10	2.73	-	-	5.11	3.12	1.99
	LAHARPUR	3.25	2.10	3.10	2.25	3.62	2.56	3.86	2.85	3.44	1.30	-	-	3.45	2.21	1.24
	PARSENDI	4.44	3.20	5.18	2.11	4.06	3.40	5.01	4.68	5.65	2.65	-	-	4.87	3.21	1.66
	KHAIRABAD	6.55	6.03	7.16	6.01	6.96	6.01	7.58	4.36	8.48	4.70	-	-	7.35	5.42	1.92
	MISRIKH	6.44	5.29	5.67	5.11	6.53	3.89	5.96	3.95	4.77	3.93	-	-	5.87	4.43	1.44
	RAMPURMATHURA	3.40	1.86	3.44	0.72	3.16	2.02	3.75	3.50	4.25	1.96	-	-	3.60	2.01	1.59
	MAHMUDABAD	3.29	2.13	3.99	1.66	4.17	2.80	4.35	4.19	4.74	2.50	-	-	4.11	2.66	1.45
	BISAWAN	3.72	2.77	3.74	1.91	3.58	2.65	3.38	3.49	4.37	1.97	-	-	3.76	2.56	1.20
	MACHHAREHTA	5.35	4.82	6.12	5.08	6.52	3.05	5.50	2.90	5.15	2.85	-	-	5.73	3.74	1.99
	PAHLA	4.68	2.66	4.79	2.51	4.97	4.10	5.86	4.38	6.12	3.18	-	-	5.28	3.37	1.92
	KASMANDA	5.90	5.01	6.37	1.33	5.32	2.45	7.57	4.55	7.30	4.47	-	-	6.49	3.56	2.93
	GONDLAMAU	6.65	4.00	4.95	3.95	5.85	4.95	11.45	5.15	6.10	4.27	-	-	7.00	4.46	2.54
	SIDAULI	6.02	5.08	6.02	5.16	6.36	3.88	4.65	3.90	6.20	3.87	-	-	5.85	4.38	1.47
LUCKNOW																
	BAKSHIKA	5.86	5.45	6.97	3.01	6.55	3.57	6.42	6.51	8.07	4.92	-	-	6.77	4.69	2.08
	MAL	4.36	3.13	5.64	1.30	4.97	2.92	5.47	5.17	6.84	3.41	-	-	5.46	3.19	2.27
	MALIHABAD	4.39	3.24	5.69	1.15	5.18	3.02	5.53	5.23	6.90	3.69	-	-	5.54	3.27	2.27
	KAKORI	6.19	5.45	8.27	5.09	6.89	6.39	8.79	8.69	7.49	8.59	-	-	7.53	6.84	0.68
	SAROJININAGAR	6.05	4.81	6.97	4.21	5.43	5.21	7.41	7.33	7.77	4.75	-	-	6.73	5.26	1.46
	MOHANLALGANJI	5.10	2.83	5.08	2.15	4.91	3.02	5.84	5.88	6.11	5.30	-	-	5.41	3.84	1.57
	GASAIGANJI	2.52	1.25	2.16	0.87	2.62	1.01	5.89	4.08	4.22	3.40	-	-	3.48	2.12	1.36
UNNAO																
	AURAS			8.20	7.20	7.10		7.25	6.65	8.05	1.60	8.03	8.00	7.73	5.86	1.87
	GANJIMURADABAD	-	-	5.50	3.39	4.98	4.18	5.59	5.55	6.49	5.10	5.87		5.69	4.56	1.13
	BANGERMAU	-	-	4.96	3.29	4.69	3.95	5.26	5.37	6.15	4.63	5.80	5.25	5.37	4.50	0.87
	PATEHAPUR	-	-	4.27	2.10	2.86	3.02	4.02	2.35	4.00	1.65	3.35	2.86	3.70	2.40	1.30
	HASANGANJI	-	-	4.32	2.22	3.65	2.73	3.93	3.60	4.43	3.09	4.02	3.46	4.07	3.02	1.05
	MAYAGANJI	-	-	3.50	1.62	2.83	1.36	2.84	2.21	3.24	1.85	2.92	2.74	3.07	1.96	1.11
	SAFIPUR	-	-	4.17	2.10	3.58	2.46	3.70	2.92	3.95	2.45	3.46	2.83	3.77	2.55	1.22
	NAWABGANJI	-	-	4.70	2.14	4.21	3.82	4.56	4.24	5.62	3.30	3.86	3.48	4.59	3.40	1.19
	BICHHIYA	-	-	4.14	1.73	3.85	2.48	4.02	4.19	5.47	3.20	3.52	2.13	4.20	2.75	1.45
	SIKANDARPUR S.	-	-	7.55	5.30	7.31	6.24	7.51	7.58	9.05	7.30	7.86	8.16	7.86	6.92	0.94
	SIKANDARPUR K.	-	-	9.71	6.99	9.05	7.71	9.13	9.68	11.42	9.19	10.76	9.78	10.01	8.67	1.34
	ASOHA	-	-	5.51	3.00	5.56	3.59	4.61	4.94	6.96	4.25	5.71	4.37	5.67	4.03	1.64
	PURWA	-	-	4.42	1.72	3.78	2.42	3.75	4.38	6.08	2.89	4.70	3.55	4.55	2.99	1.55
	HILAULI	-	-	3.95	1.65	3.58	2.04	3.51	3.98	5.49	3.15	4.24	3.29	4.15	2.82	1.33
	BIGHAPUR	-	-	5.74	2.32	4.96	5.23	4.66	4.10	7.05	2.95	5.68	4.00	5.62	3.72	1.90
	SUMERPUR	-	-	6.19	3.55	5.63	3.08	4.93	4.71	7.36	4.35	5.46	4.40	5.91	4.02	1.90
RAEBARELI																
	SATAON	6.15	4.65	6.58	3.81	5.75	4.50	6.24	5.50	7.27	-	-	-	6.40	4.62	1.78
	KHEERO	3.40	2.35	3.85	1.40	4.00	1.75	5.21	8.05	7.15	-	-	-	4.72	3.39	1.33
	LALGANJ	5.86	4.24	6.28	3.65	5.46	3.50	5.84	5.03	7.66	-	-	-	6.22	4.11	2.12
	SARENI	7.59	6.30	8.62	5.73	7.03	5.37	6.03	6.63	8.75	-	-	-	7.60	6.01	1.60
	DALMAU	5.22	3.00	5.45	3.16	4.98	2.58	5.38	3.49	3.04	-	-	-	4.81	3.06	1.76
	JAGATPUR	8.45	1.60	8.70	1.50	7.86	1.40	8.11	2.89	8.55	-	-	-	8.33	1.85	6.49
	Average	5.47	3.26	4.98	2.54	4.54	3.02	5.02	4.35	5.53	3.25	10.25	4.55	4.95	3.33	1.62

Source : G.W.D.,1984-1989

Table.B.12 Pumping Test Data of Deep Tubewell

No	District Name	Depth of Well(m) (A)	Thick.of Aquifer(B) (B)	Discharge (l/s) (C)	Draw Down (m) (D)	Specific Yield (E=L/D)	T (m2/day)	
43	Nainital	74.98	28.00	44.70	9.68	4.62	7,488	
44		88.40	31.00	51.67	3.94	13.11	14,140	
45		91.44	28.00	62.88	2.04	30.82	12,270	
46		84.42	50.00	56.45			12,274	
47		84.43	47.00	56.50	4.19	13.48	1,179	
48		130.98	108.00	29.77	5.39	5.52	2,272	
49		152.40	43.00	60.30	2.68	22.50	15,810	
50		82.30	29.00	50.52	3.43	14.73	23,860	
51		304.80	92.00	25.07	7.54	3.32	250	
52		244.00	21.00	25.00	9.10	2.75	861	
53		201.77	15.00	22.83	10.60	2.15	325	
54		268.33	48.00	41.67	10.69	3.90	825	
	Average	150.69	45.00	43.95	6.30	6.98	7,630	
2	Bareilly	752.73	102.00	68.31	21.68	3.15	1,555	1.25x10-4
55	Lakhimpur	299.61	52.00	58.00	4.78	12.13	3,050	2.50x10-3
9	Hardoi	453.47	83.00	71.28	7.84	9.09	1,520	1.16x10-3
10		453.76	45.00	71.92	7.52	9.56	2,398	3.72x10-3
11		450.77	78.00	65.23	6.46	10.10	4,300	2.30x10-5
12		450.00	58.00	60.25	21.25	2.84	956	1.86x10-4
13		400.15	78.00	38.85	16.20	2.40		
	Average	441.63	68.40	61.51	11.85	5.19	2,294	
26	Unnao	455.01	70.00	58.33	8.88	6.57	2,307	8.11x10-3
27		437.00	80.00	58.33	7.60	7.68	2,644	4.02x10-4
28		454.00	73.00	33.82	17.73	1.91	907	1.40x10-4
29		452.00	72.00	27.83	7.98	3.49	2,102	5.13x10-3
30		462.43	54.00	54.08	26.62	2.03	2,376	3.31x10-5
31		447.00	61.00	36.08	27.55	1.31	785	2.26x10-4
32		448.96	87.00	42.13	4.78	8.81	2,908	5.26x10-4
33		451.42	69.00	36.65	11.46	3.20	3,285	
34		452.50	69.00	31.00	13.28	2.33	293	4.25x10-4
	Average	451.15	70.56	42.03	13.99	3.00	1,956	
18	Rae Bareli	308.06	100.00	36.37	26.21	1.39	166	
19		504.25	55.00	38.33	19.33	1.98	2,560	
20		475.00	45.00	39.17	3.83	10.23	2,820	
22		450.00	84.00	42.17	6.32	6.67	1,892	1.24x10-4
23		412.33	63.00	42.13	4.87	8.65	3,545	3.70x10-6
24		423.25	65.00	50.00	17.52	2.85	1,357	5.90x10-4
	Average	428.82	68.67	41.36	13.01	3.18	2,057	
	Average	344.18	61.26	46.69	10.88	4.97	4,099	

Remarks : T ; Transmissivity
S ; Storage Coefficient
Source : Central Ground Water Board

Table.B.13 Pumping Test Data of Shallow Tubewell

Si No	Village Name	Depth of Well(A) (m)	Thick.of Aquifer(B) (m)	Discharge (c) (l/s)	Draw Down (D) (m)	Specific Yeild (E=L/D)	T (m2/day)	
1	Reevaseeva	65.00	35.00	12.63				
3	V.Fathepur	30.00	14.00	9.46				
4	V.Fathepur	70.00	34.00	18.94				
5	Narauli	45.00	20.00	7.57			714	0.026
6	Sademan	30.00	19.50	9.46			740	3.26x10-2
7	Haidergarh	25.00	20.00	10.12			630	
8	Haidergarh	80.00	35.00	19.10			2,298	
9	Sarai	61.00	25.00	18.50			3,528	2.13x10-3
10	Sahabpur	70.00	30.00	20.15			6,027	1.74x10-3
11	Fathepur	30.00					1,525	2.60x10-3
12	Mitai	41.50	16.50				694	
	(Average)	49.77	24.90	13.99			2,019	

Remarks : T ; Transmissivity
S ; Storage Coefficient

Source : Pilot Project Study Report on Shallow Tubewells in District Barabanki, U.P., 1988, Groundwater Department

FIGURES

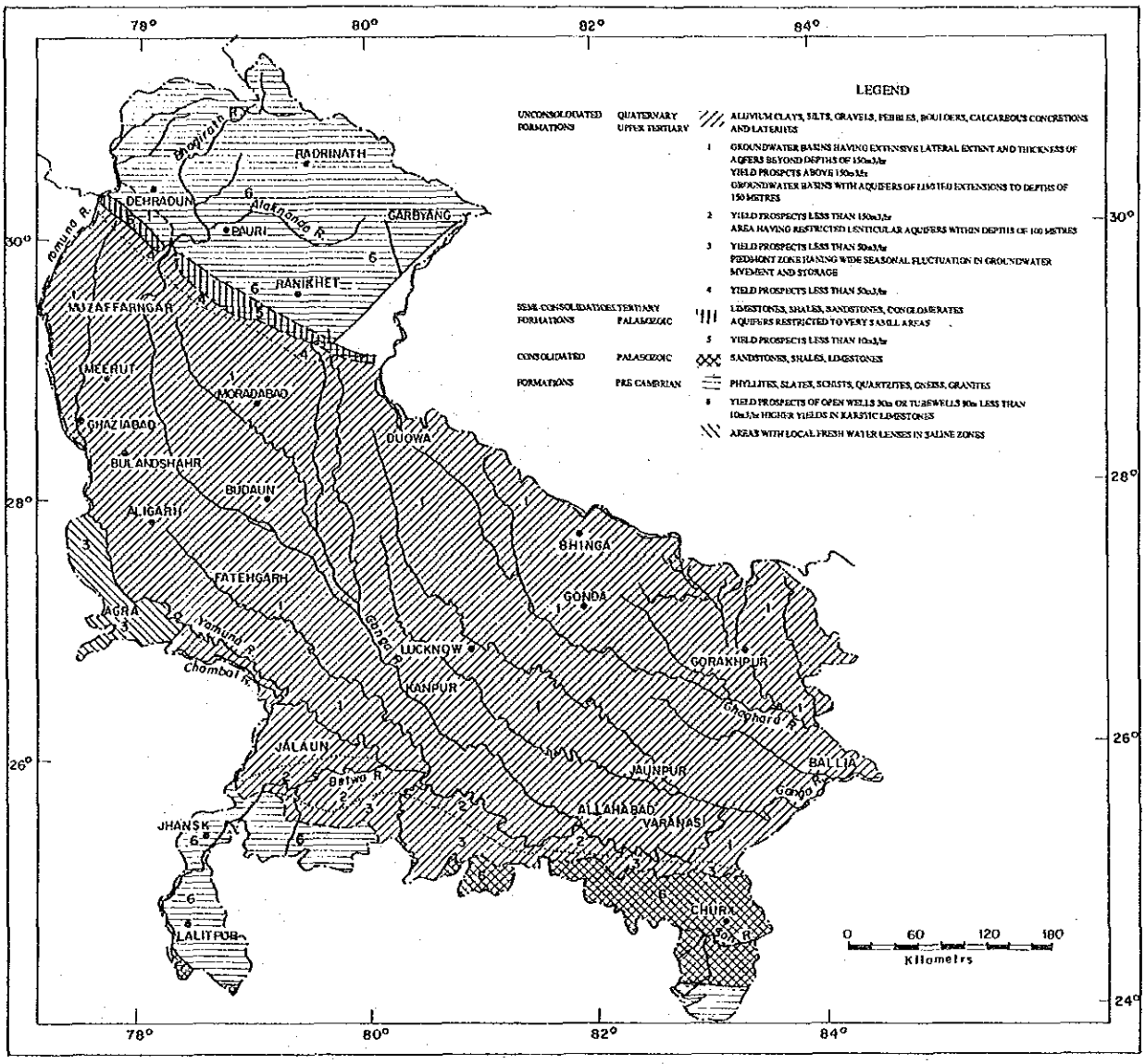


Fig.B.1 Hydrogeological Map of Uttar Pradesh

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

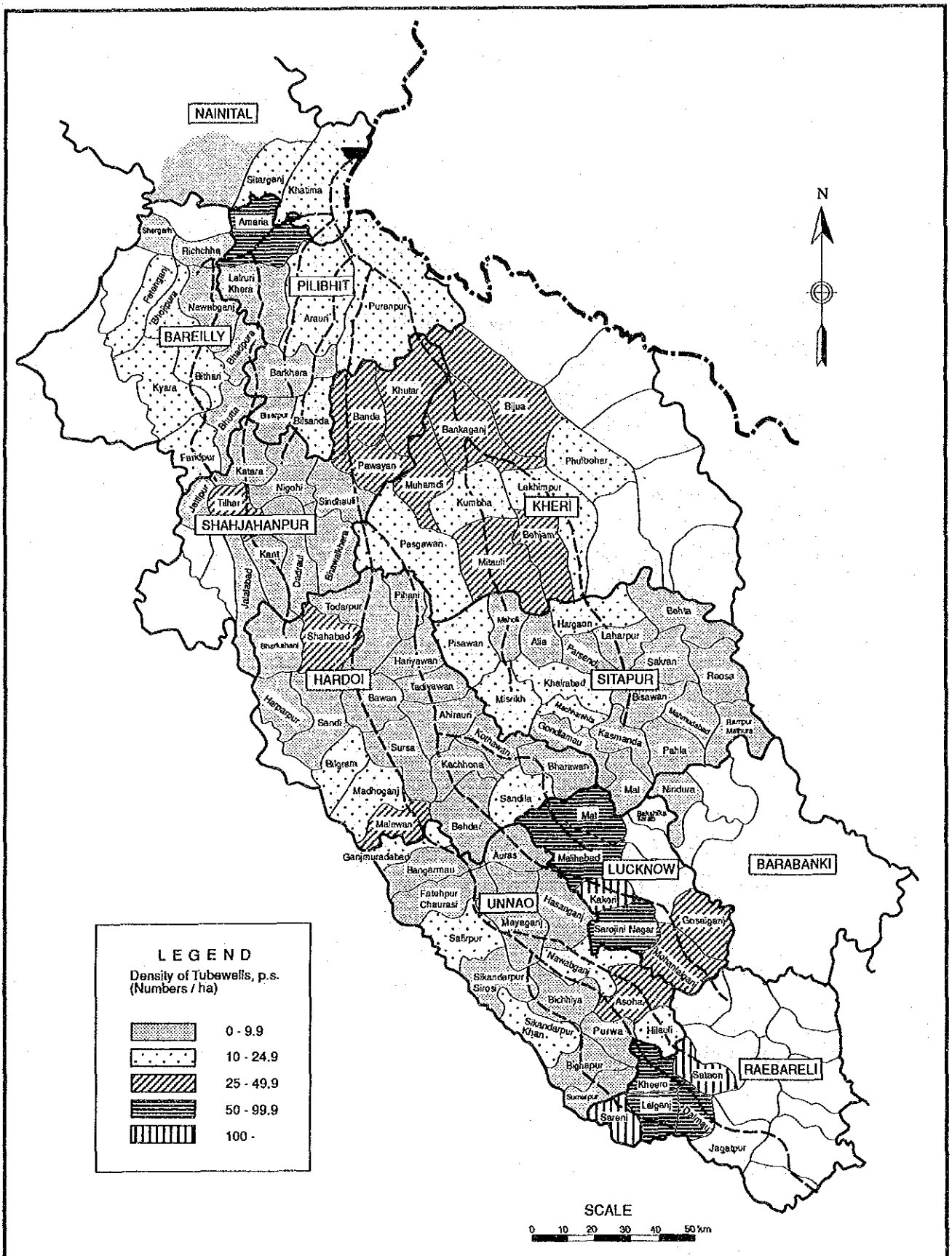


Fig.B.2 Density of Tubewell in Sharda Command

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

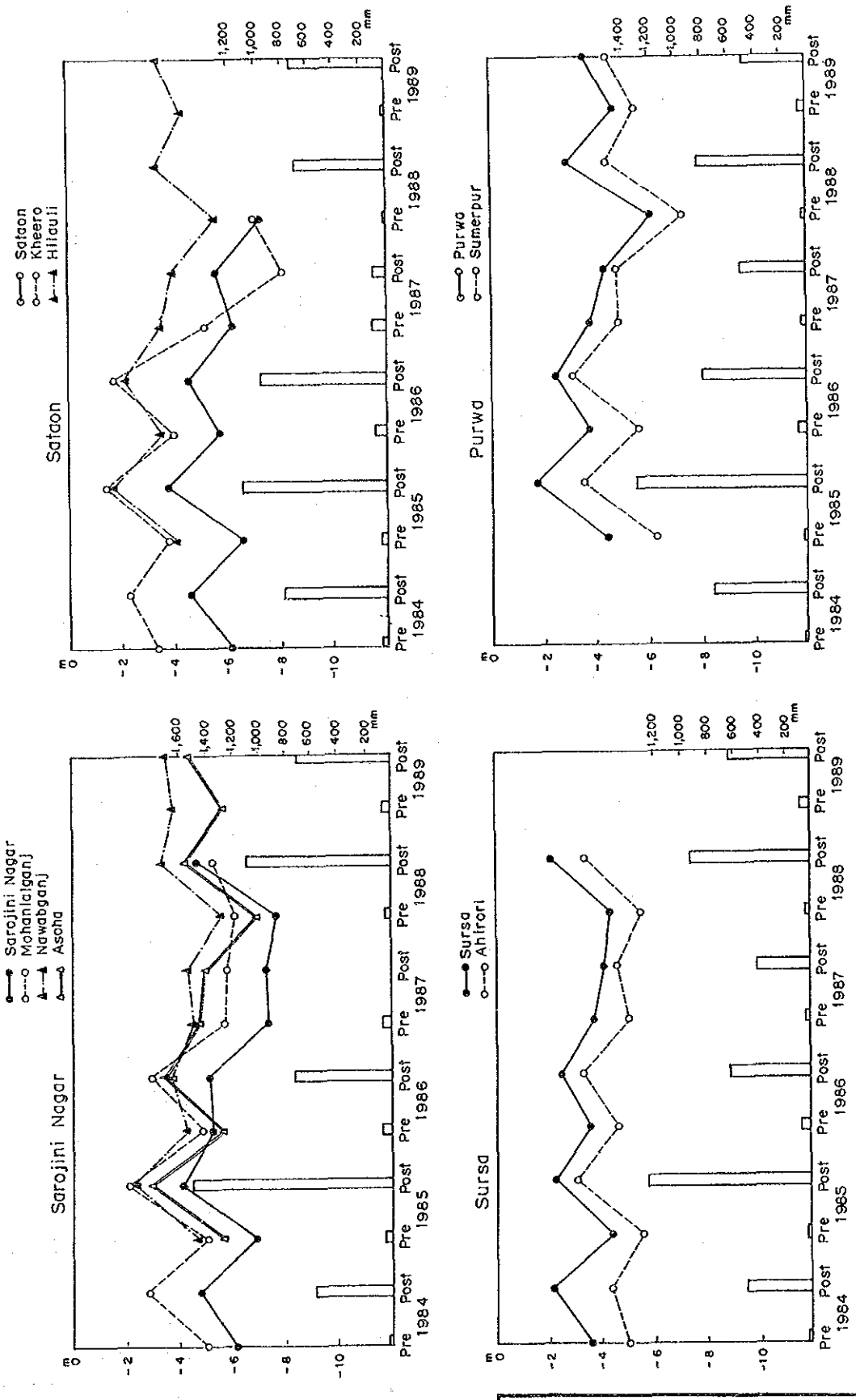
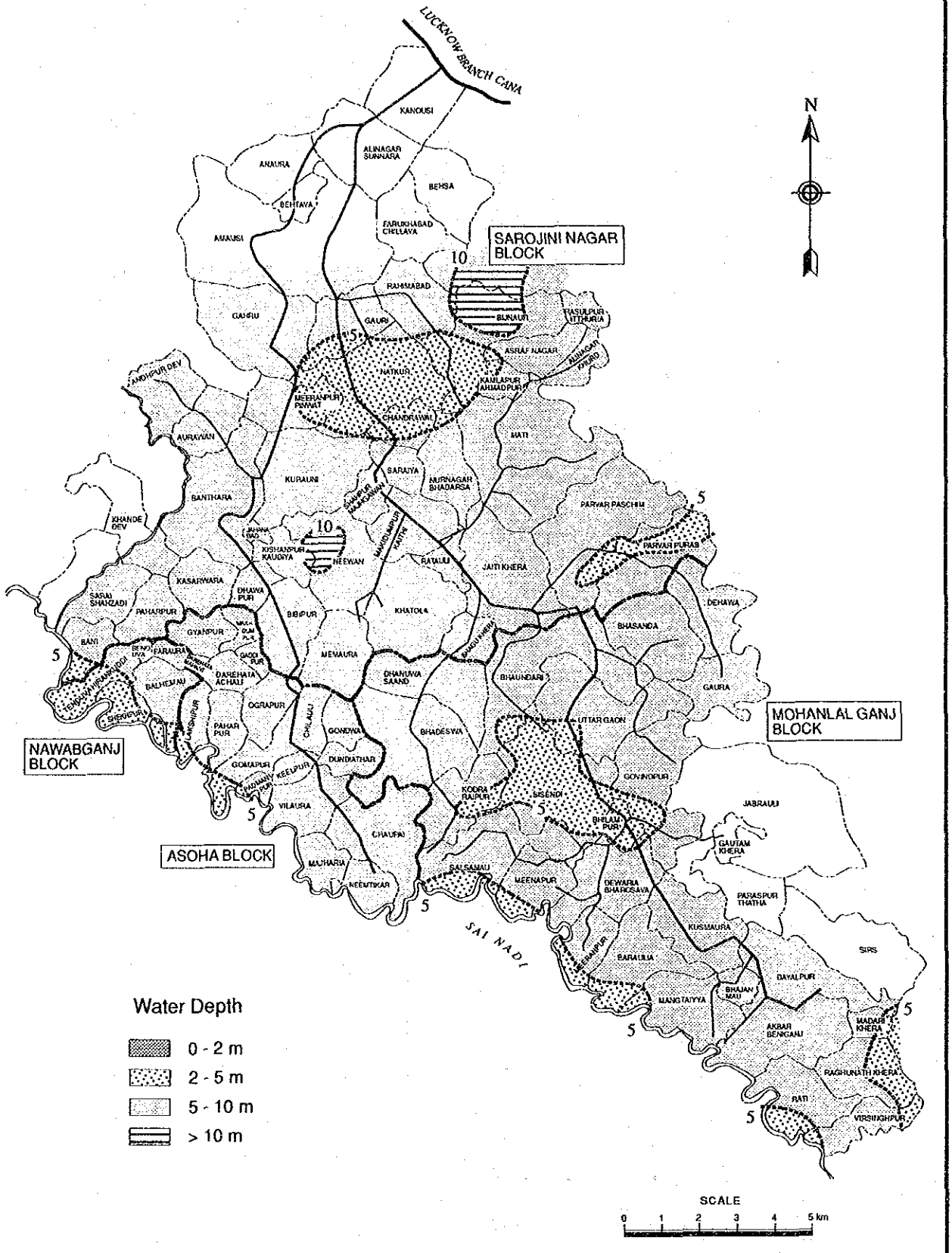


Fig.B.3 Groundwater Table Fluctuation

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY



INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY

Fig.B.4 Groundwater Table Contour in Sarojini Nagar Area

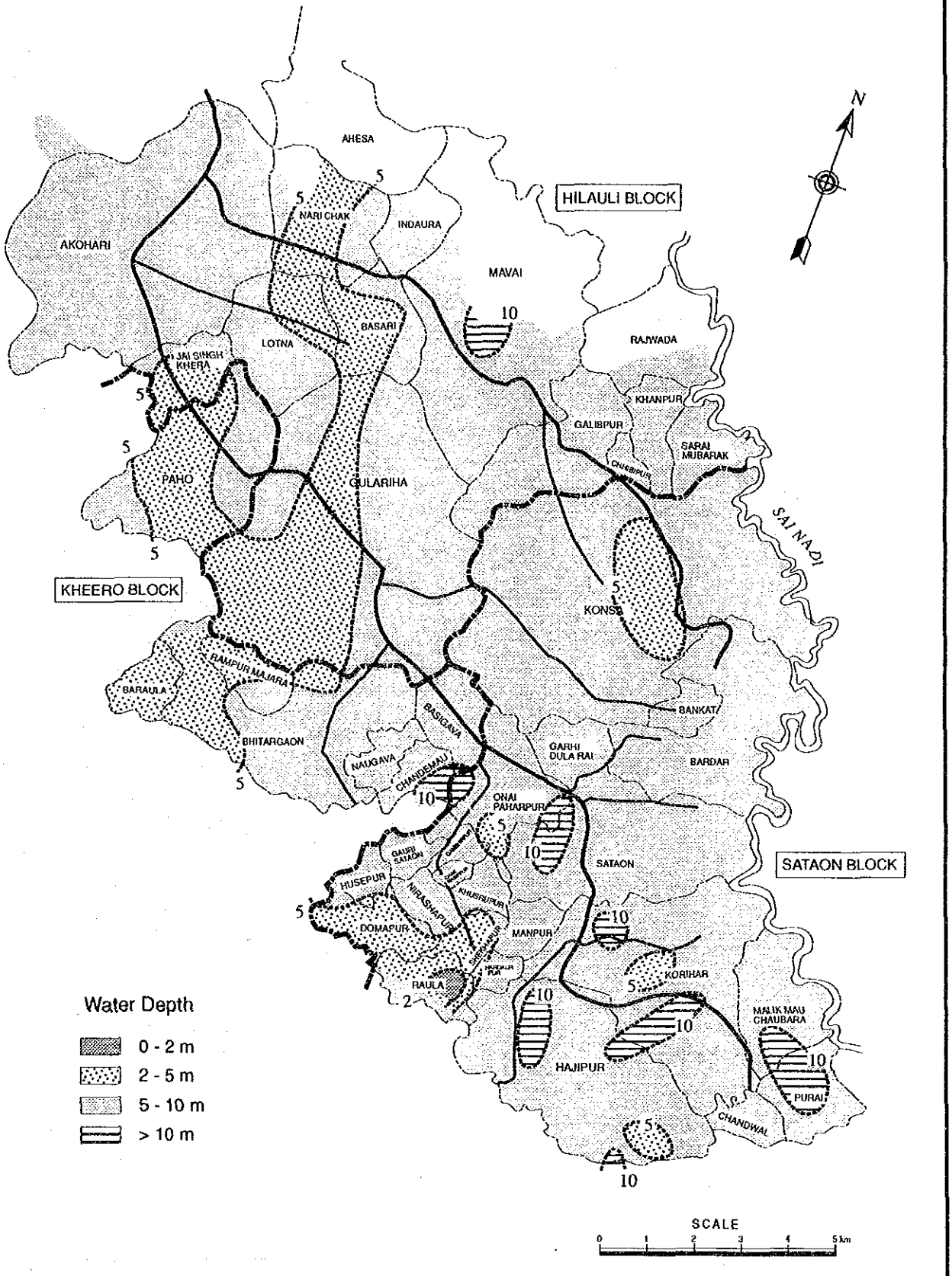


Fig.B.5 Groundwater Table Contours in Sataon Area

INDIA
FEASIBILITY STUDY ON IRRIGATION AND DRAINAGE DEVELOPMENT OF SHARDA CANAL CAD PROJECT
JAPAN INTERNATIONAL COOPERATION AGENCY