

ATAL BHUJAL YOJANA (AtalJal)

State : HARYANA

**Department : IRRIGATION & WATER
RESOURCE DEPARTMENT**

BLOCK : RANIA

DISTRICT : SIRSA

YEAR : 2023-2024

*Towards partial fulfilment of requirements for Disbursement of
Incentive under DLI -1*

HYDROGEOLOGICAL REPORT

(YEAR: 2023-24)

STATE	:	HARYANA
DISTRICT	:	SIRSA
BLOCK/TALUK	:	RANIA
BLOCK/TALUK HQs	:	RANIA

A		GENERAL INFORMATION			
1.	Geographical area (Ha)	:	56211.06		
2.	No. of Gram Panchayats	:	45		
3.	No. of towns	:	1		
4.	No. of villages	:	50		
5.	Population (2011)	:	Male	Female	Total
			69165	65149	134314
6.	Rainfall (mm)(2021)	:	Monsoon	Non-monsoon	Annual
			347.18	84	431.18
7.	River basin	:	Ghaggar river basin		
8.	Major soil types	:	Loamy Sand		

B		LAND USE		
1.	Forest area (Ha)	:	1354	
2.	Cultivable area (Ha)	:	48817	
3.	Net sown area (Ha)	:	48146	
4.	Gross cropped area (Ha)	:	98760	

C		CROPPING PATTERN (As in 2022-23)				
1.	Major crops grown	:	Kharif	Rabi	Summer	Perennial
			Paddy	Wheat	Pulses	NA
			Cotton	Gram	Tomato	
			Bajra	Barley	Vegetable	
				Oil Seed		

D		IRRIGATION FACILITIES (As in 2022-23)					
1.	Net irrigated area (Ha)	:	37840				
2.	Gross irrigated area (Ha)	:	52748				
3.	Area under irrigation (Ha) (Source-wise)	:	DW	BW/TW	Tanks/Ponds	Canals	Others
			-	33535		18913	-

E		GEOLOGY & HYDROGEOLOGY		
1.	Predominant rocktype	:	Sand, Silt, Clay & Kankar	
2.	Major geological formations	:	Older Alluvium	
3.	Important water-bearing formations	:	Coarse grain sand	
4.	Status of coverage under NAQUIM	:	Covered	

F		GROUND WATER CONDITIONS		
1.	No. of wells used for Water Level	:	Open wells	BW/TW/ PZ

	(WL) monitoring.		CGWB	SGWB	Total	CGWB	SGWB	Total
			0	5	5	3	18	21
2.	Monitoring mechanism (Nos.)	:	Manual		DWLR		Telemetry	
			CGWB	SGWB	CGWB	SGWB	CGWB	SGWB
			3	23	0	0	0	0
3.	Monitoring frequency	:	Agency	No. of times monitored/year				
			CGWB	2 times Pre and Post Monsoon				
			SGWB	2 times Pre and Post Monsoon				
4.	Period of water level data availability.	:	Agency	Period of WL data availability (From - To)				
				From (year)		To (year)		
			CGWB	2015		2023		
			SGWB	2015		2023		
5.	Water level range (m.bgl)	:	Minimum/Village			Maximum/Village		
	Pre-monsoon (2023)		11.3/Peer Khera			53.60/Rania		
	Post-monsoon (2023)		12.0/ Peer Khera			52.80/Rania		
6.	Seasonal WL fluctuation range (m)	:	Minimum/ Village			Maximum/ Village		
			-17.8/ Dariyawala			6.9/ Nathor		

G GROUND WATER QUALITY								
1.	No. of wells used for Water Quality (WQ) monitoring.		Open Wells			BW/TW/ PZ		
			CGWB	SGWB	Total	CGWB	SGWB	Total
			0	5	5	2	18	20
2.	Monitoring frequency	:	Agency	No. of times monitored/year				
			CGWB	1 times per year				
			SGWB	1 times per year				
3.	Period of water quality data availability	:	Agency	Period of WQ data availability (Years)				
			CGWB	2015 to 2023				
			SGWB	2020to 2023				
4.	Parameters analysed	:	Agency	Parameters Analysed				
			CGWB	pH,EC,TH,Ca,Mg,Na,K,CO ₃ ,HCO ₃ ,SO ₄ ,Cl,F,NO ₃				
			SGWB	EC				
5.	Known ground water quality issues, if any	:	Sulphate contamination is observed in the groundwater with increasing salinity from fresh to high.					

H. GROUND WATER RESOURCES								
1.	Latest assessment year		2022					
2.	Assessment Unit		Block					
3.	Annual extractable GW resource (ha.m)		8065.43					
4.	Current annual GW extraction (ha.m)		11923.65					
5.	Net GW availability for future use (ha.m)		0					
6.	Stage of GW extraction (%)		147.8%					
7.	Category of block/taluk/(2022)		Over Exploited					
8.	Category of block/taluk/ in previous assessments		2020	2017	2013	2011	2009	2004
			Over Exploited	Over Exploited	Over Exploited	Over Exploited	Over Exploited	Over Exploited

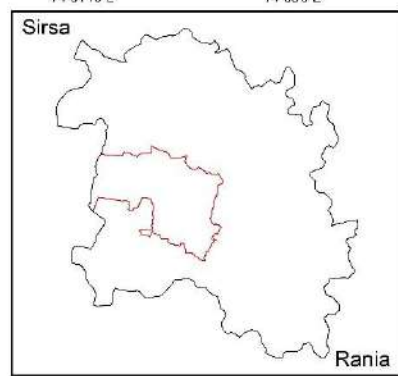
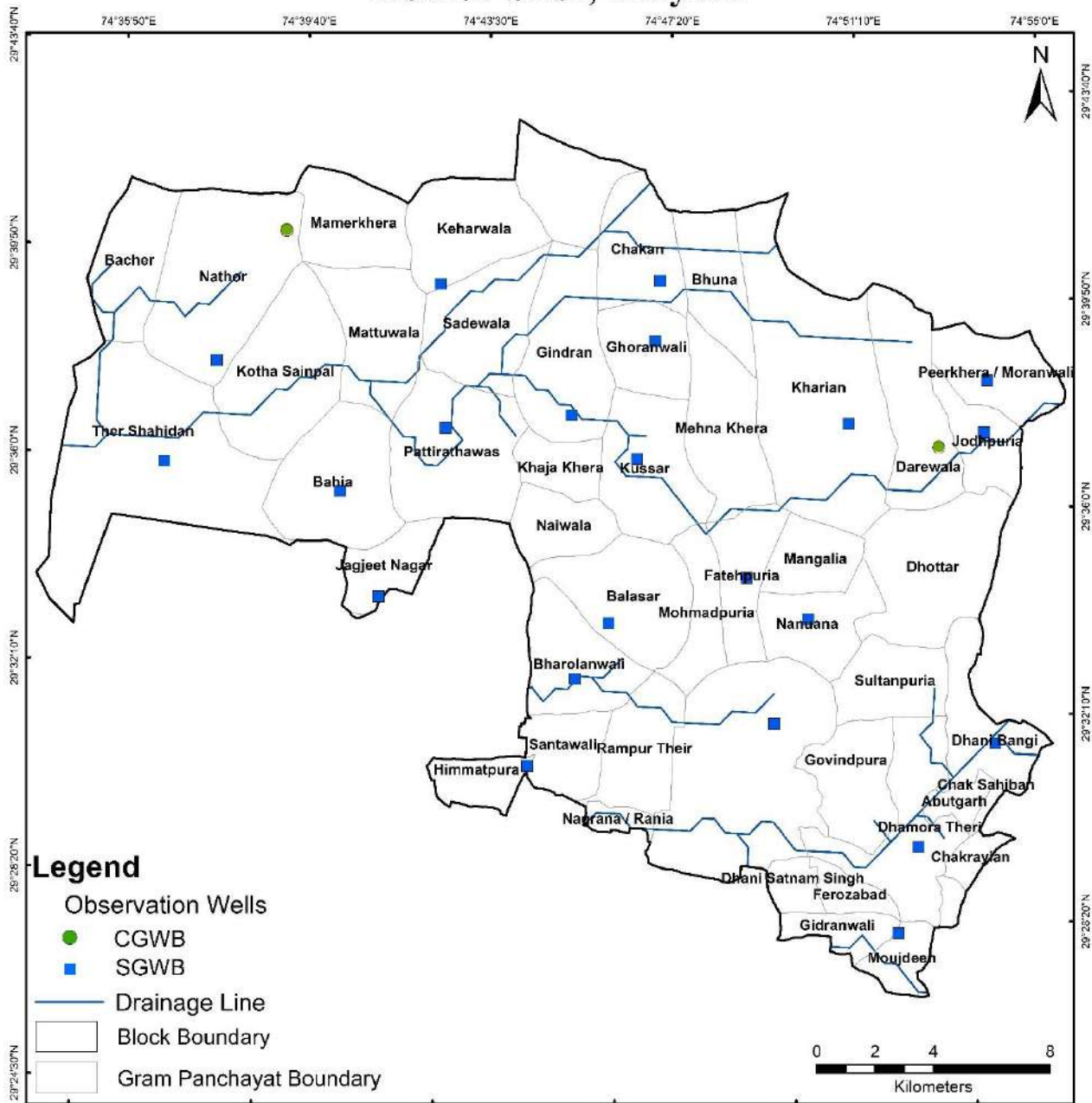
I WATER-RELATED SCHEMES							
1.	Schemes with a bearing on ground water, being implemented in the block / taluk.						
	Centrally Sponsored /Central Sector		i)	PMKSY			

	Schemes	ii)	JJM
		iii)	MNREGA
		iv)	RKVY
	State Schemes	i)	State Plan Scheme (Head 2402)
		ii)	MPMV
		iii)	
		iv)	

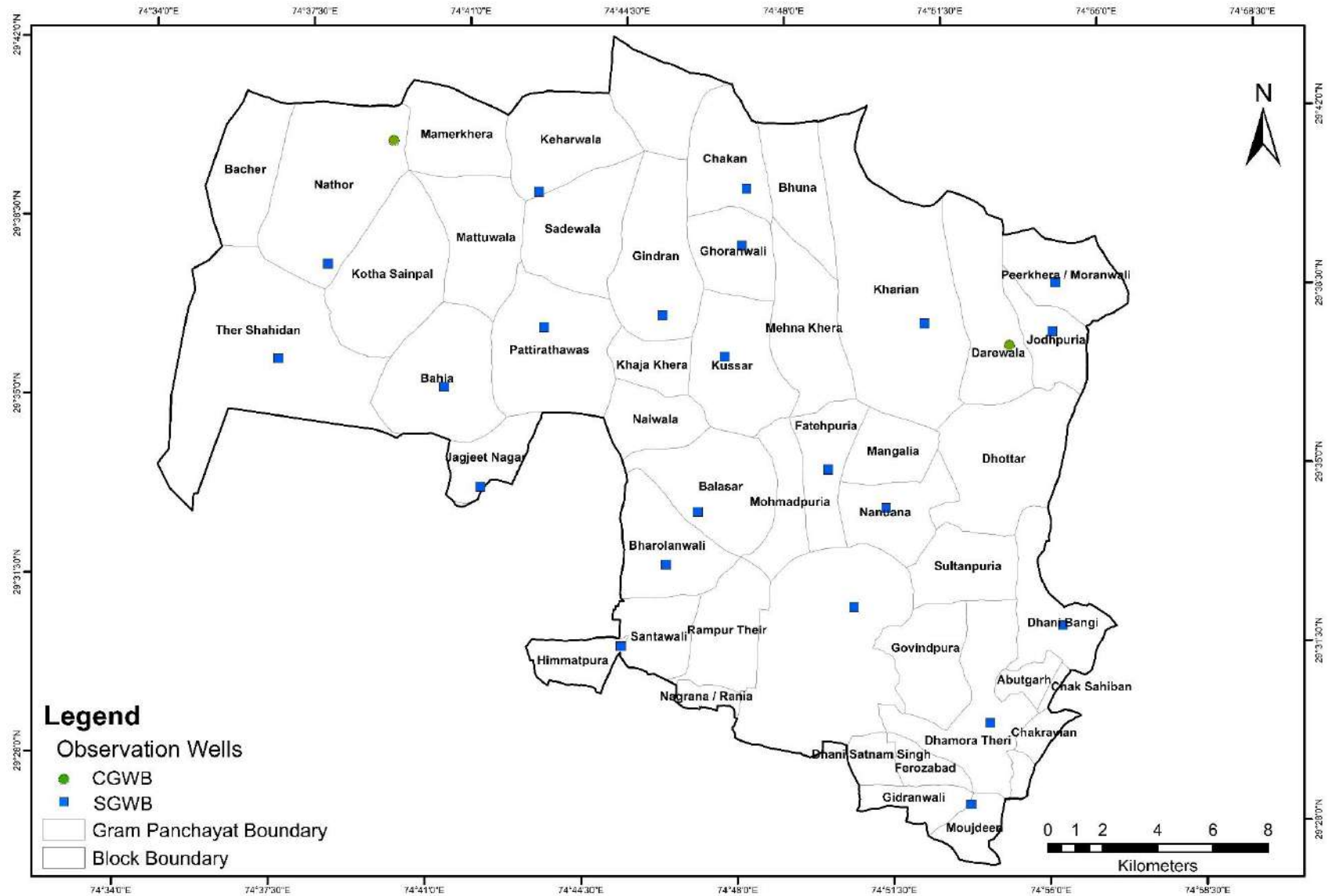
J	GROUND WATER RELATED ISSUES		
I.	Ground water related issues of the block		
	i) Issues related to GW availability	:	Due over exploitation of Groundwater ,subsequently the present stage of ground water extraction is 148%
	ii) Issues related to GW quality	:	Sulphate contamination is observed in the groundwater with increasing salinity from fresh to high.
	iii) Other issues if any.	:	No

K	ANNEXURES
I	Basic data of observation wells – Attached
II.	Historical water level data – Attached
III.	Historical water quality data – Attached

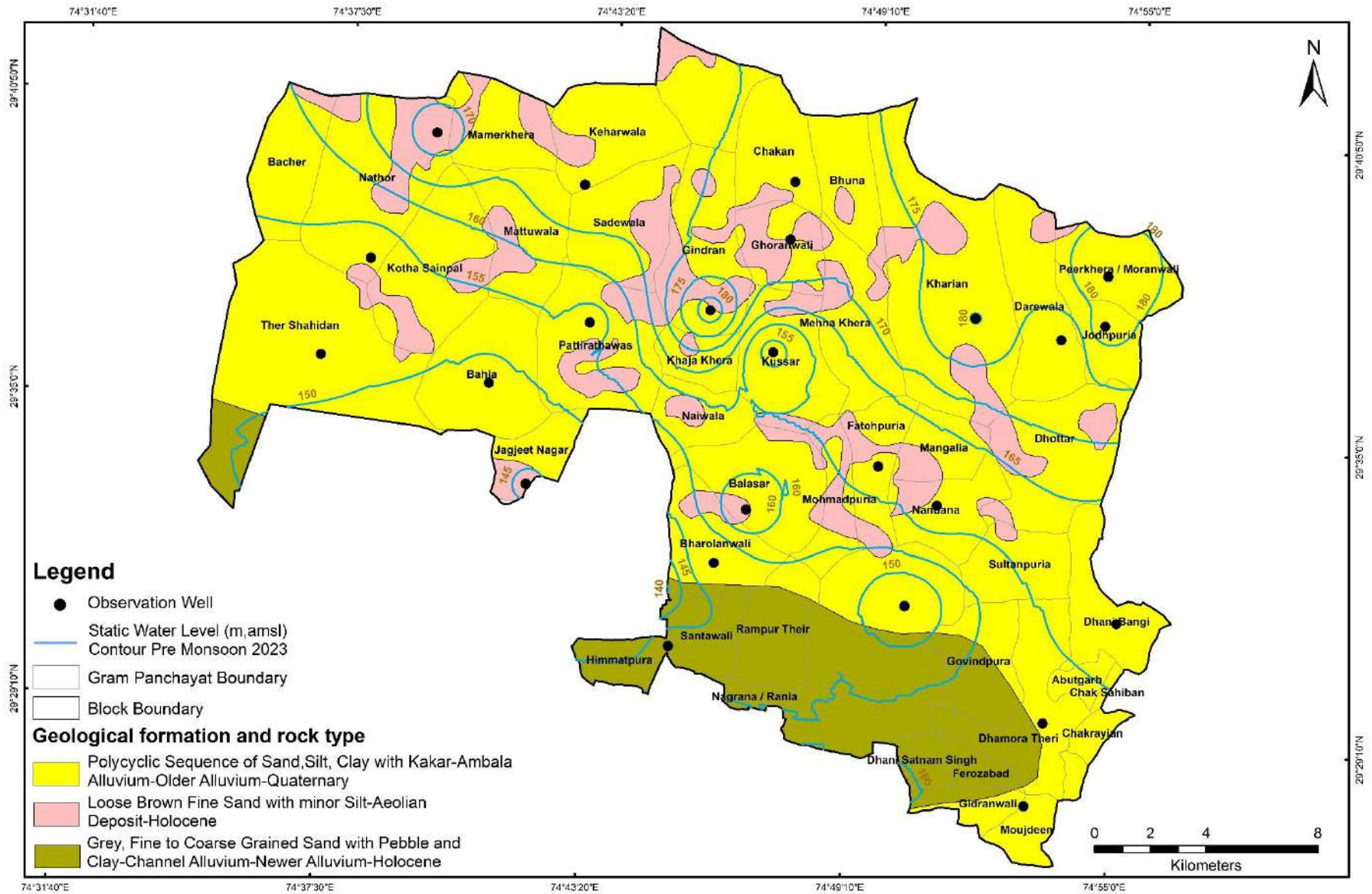
Location Map of Block- Rania, District- Sirsa, Haryana



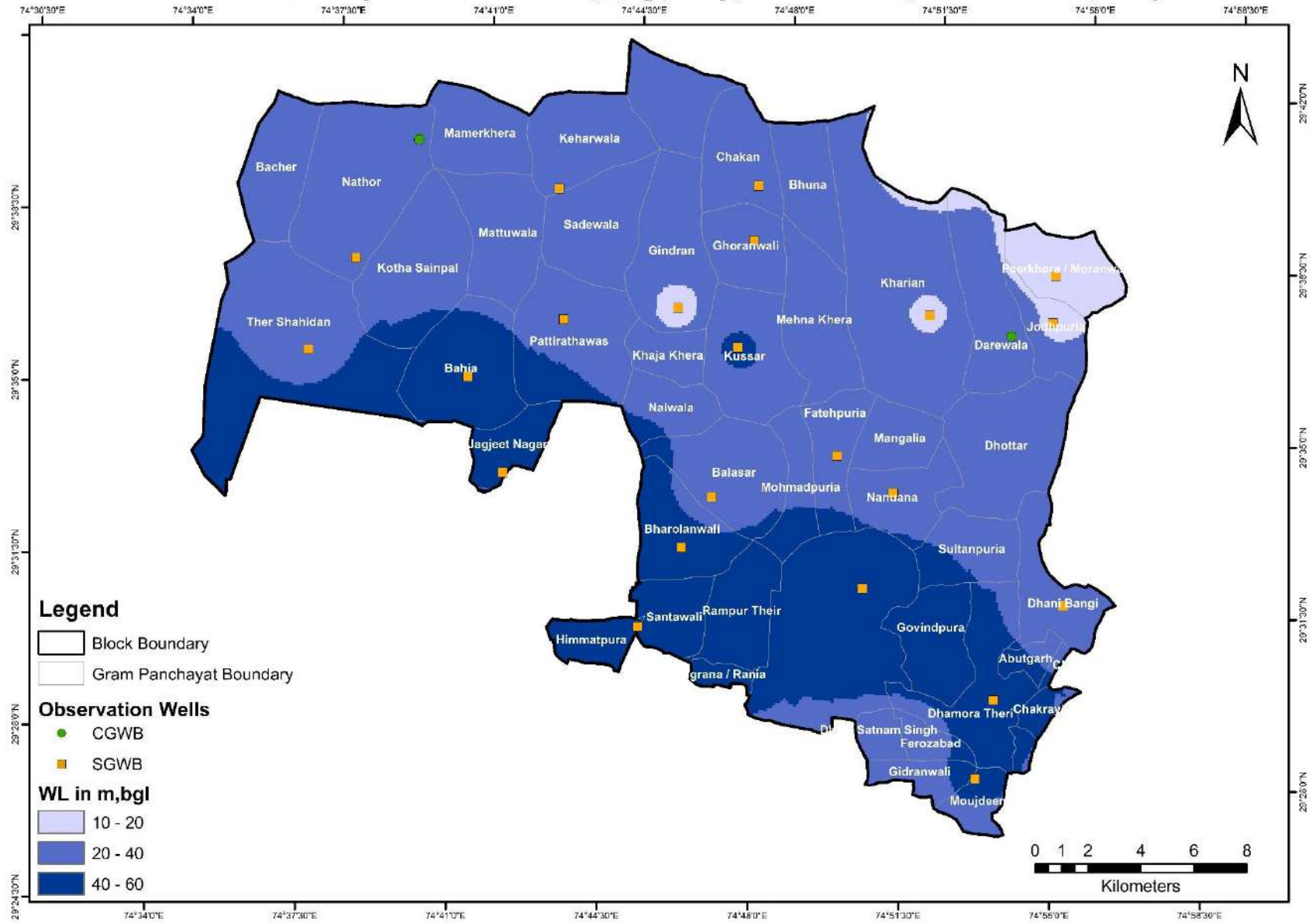
Location of Observation Wells for Monitoring Water Levels and Water Quality, Block-Rania, District- Sirsa, Haryana



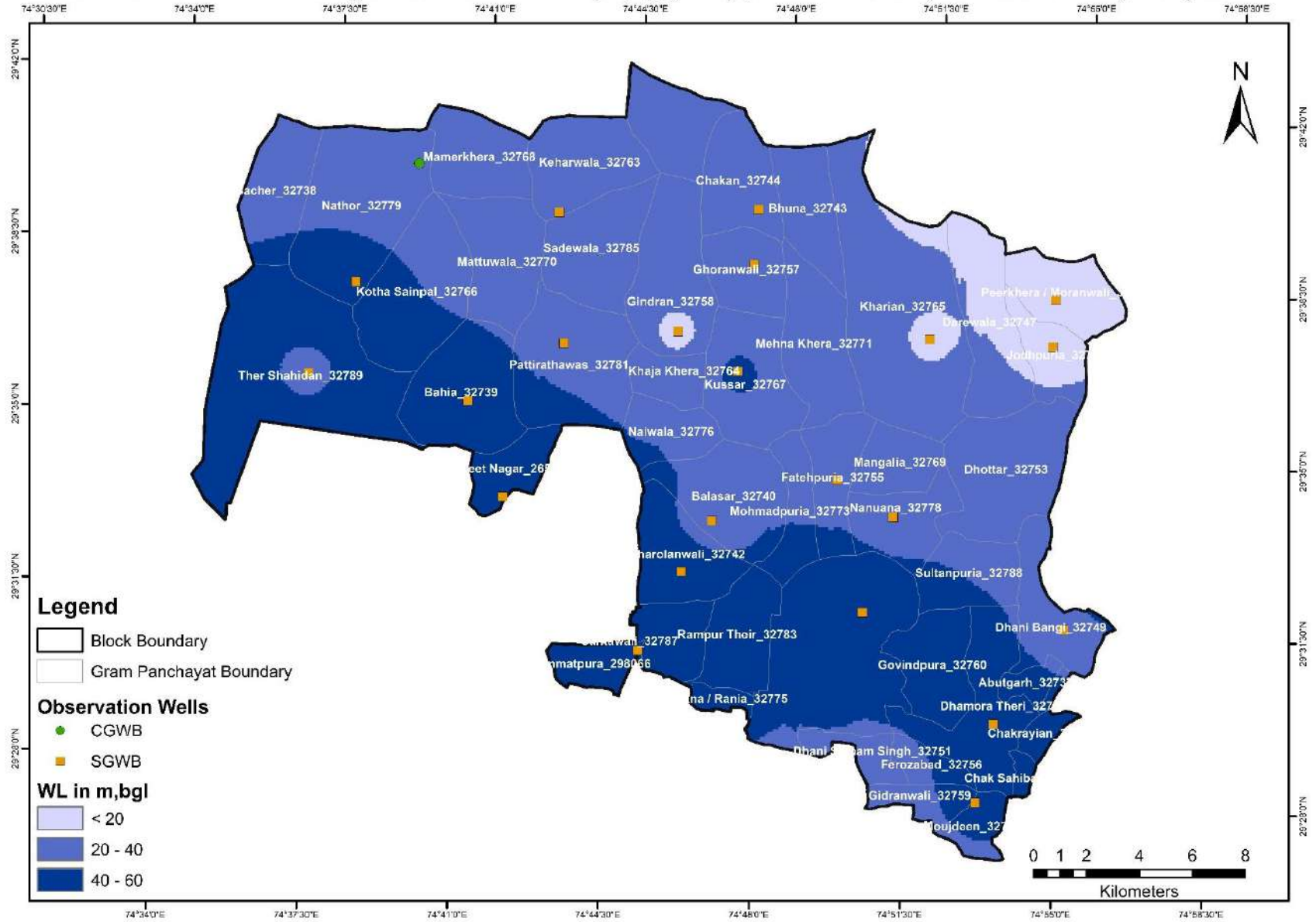
Hydrogeological Map, Block- Rania, District- Sirsa, Haryana



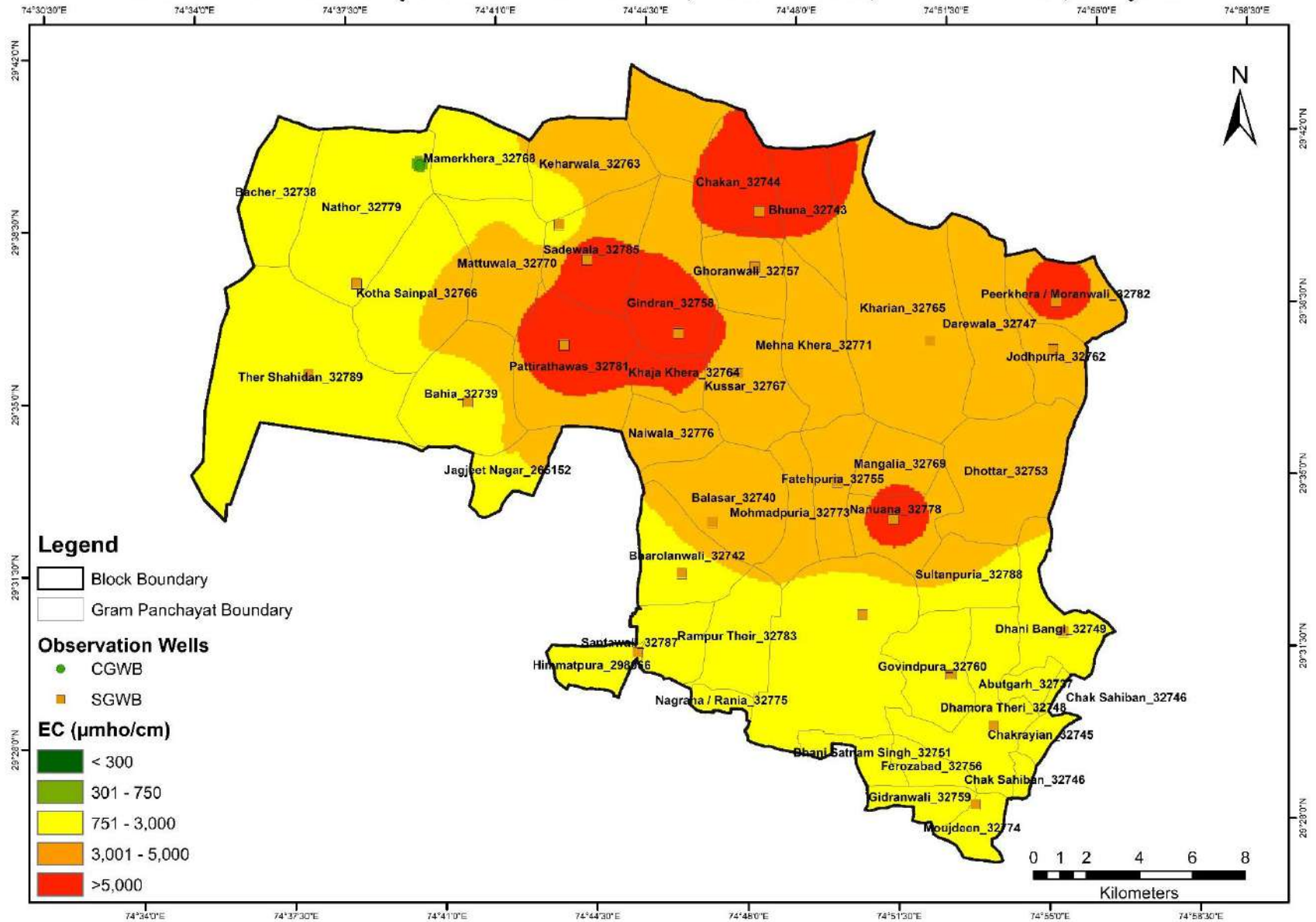
Pre Monsoon 2023 Depth to Water Level (m,bgl) Map, Block - Rania, District - Sirsa, Haryana



Post Monsoon 2023 Depth to Water Level (m,bgl) Map, Block - Rania, District - Sirsa, Haryana



Electrical Conductivity of Groundwater-2023, Block - Rania, District - Sirsa, Haryana



ANNEXURE: 1
BASIC DATA OF MONITORING WELLS

State	Haryana	District	Sirsa	Block	Rania
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S.No	Well ID	GP Name	Name of the village	Site Name	Latitude	Longitude	Type of Well (DW/Pz)	Reduced Level (m,asl)	Aquifer Type/Lithology	Height of Measuring (m,agl)	Depth (m,bgl)	Diameter (m)	Purpose of Monitoring (WL/WQ)	Monitoring Mechanism	Agency
1	Ch_29.6626_74.7896	Chakan_32744	Chakkan	Chakkan Public Health tube-well	29.66263	74.78957	TW	195.5	Unconfined to Semi Confined	0.7	70	0.254	Both	Manual	SGWB
2	Dh_29.5258_74.9163	Dhani Bangi_32749	Dhanoor	Dhanoor Public Health tube-well	29.52582	74.91626	TW	202.25	Unconfined to Semi Confined	0.7	80	0.254	Both	Manual	SGWB
3	Du_29.6138_74.7169	Pattirathawas_32781	Dudhian wali	PT Govt High school Dudhian wali	29.61385	74.71685	TW	193	Unconfined to Semi Confined	0.7	75.0	0.254	Both	Manual	SGWB
4	Fa_29.5725_74.8256	Fatehpuria_32755	Fatehpuria	Tube well on road Fatehpuria to Mehna Khera	29.57251	74.82565	TW	200	Unconfined to Semi Confined	0.7	80	0.254	Both	Manual	SGWB
5	Gh_29.644_74.7889	Ghoranwali_32757	Ghoranwali	Ghoranwali Public Health tube-well	29.64396	74.78894	TW	197.25	Unconfined to Semi Confined	0.7	70	0.254	Both	Manual	SGWB
6	Gi_29.6198_74.7609	Gindran_32758	Gindra	Tube-well Gindra to Ghoranwali road	29.61983	74.76086	DW	197.34	Unconfined to Semi Confined	1.25	25	2	Both	Manual	SGWB
7	Jo_29.6214_74.9065	Jodhpuria_32762	Jodhpuria	Jodhpuria Public Health tube well	29.62137	74.9065	DW	198.43	Unconfined to Semi Confined	1.25	26	2	Both	Manual	SGWB

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8	Ke_29.6545_74.7124	Keharwala_32763	Keharwala	Tube Well On main road to Keharwala	29.6545	74.7124	TW	199.75	Unconfined to Semi Confined	0.7	80	0.254	Both	Manual	SGW B
9	Kh_29.6218_74.8586	Kharian_32765	Kharian	Tubewell on Nehar Kharian	29.62175	74.85864	DW	197.86	Unconfined to Semi Confined	1.25	24	2	Both	Manual	SGW B
10	Ba_29.5927_74.6809	Bahia_32739	Bahia	Bani to Bahia road	29.59271	74.68089	TW	195.5	Unconfined to Semi Confined	0.7	100	0.254	Both	Manual	SGW B
11	Ku_29.6074_74.7848	Kussar_32767	Kusar	Tube Well Gindra Kusar Road	29.60744	74.7848	TW	196	Unconfined to Semi Confined	0.7	100	0.254	Both	Manual	SGW B
12	Mo_29.4657_74.8857	Moujdeen_32774	Moujdeen	Tubewell Ottu Moujdeen Road	29.46573	74.88565	TW	198.25	Unconfined to Semi Confined	0.7	80	0.254	Both	Manual	SGW B
13	Ba_29.5564_74.7779	Balasar_32740	Balasar	Outside Balasar link road	29.5564	74.7779	TW	196.5	Unconfined to Semi Confined	0.7	80	0.254	Both	Manual	SGW B
14	Na_29.5112_74.752	Himmatpura_298066	Nakaura	Tubewell Santawali Nakaura Road	29.5112	74.75197	TW	199.25	Unconfined to Semi Confined	0.7	110	0.254	Both	Manual	SGW B
15	Na_29.5609_74.848	Nanuana_32778	Nanuana	Tubewell Outside Village on link Road Nanuana	29.56089	74.84804	TW	197.75	Unconfined to Semi Confined	0.7	100	0.254	Both	Manual	SGW B
16	Na_29.6308_74.635	Nathor_32779	Nathor	Tubewell Outside Village Nathor-Bacher Road	29.6308	74.635	TW	198.35	Unconfined to Semi Confined	0.7	80	0.254	Both	Manual	SGW B

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17	Ot_29.4927_74.8911	Dhamora Theri_32748	Ottu	Public Health tube well Ottu	29.49265	74.8911	TW	197.73	Unconfined to Semi Confined	0.7	120.0	0.254	Both	Manual	SGW B
18	Pe_29.6374_74.9066	Peerkhara / Moranwali_32782	Peer Khara	Tube Well Jodhpuria Peer Khara Road	29.63741	74.90663	DW	195.11	Unconfined to Semi Confined	1.25	20	2	Both	Manual	SGW B
19	Ra_29.5281_74.8381	Rania	Rania	PT GSSS Rania	29.52807	74.83807	TW	196.22	Unconfined to Semi Confined	0.7	100.0	0.254	Both	Manual	SGW B
20	Ba_29.599_74.6185	Ther Shahidan_32789	Bani	PT GGPS Bani Girls School	29.59896	74.61852	TW	189.5	Unconfined to Semi Confined	0.7	96.0	0.254	Both	Manual	SGW B
21	W294020074392501	Mamerkhara_32768	Mammer Khara	Mammer Khara-Pz			PZ	193	Unconfined to Semi Confined	0.6	105.0	152mm	WL	Manual	CG WB
22	Bh_29.5387_74.7671	Bharolanwali_32742	Bharolain Wali	Bharolain Wali Public Health tube well	29.53868	74.76713	TW	196.75	Unconfined to Semi Confined	0.7	110	0.254	Both	Manual	SGW B
23	W293658074532501	Dariyawala/ Bukhara Khara_32747	Dariyawala-S	Dariyawala-S-Pz	29.6162	74.8906	PZ	NA	Unconfined to Semi Confined	0.6	77	0.1	WL	Manual	CG WB
24	W294730074423001	Goriwala	Goriwala	Goriwala	29.79167	74.70833	Tube Well	NA	Alluvium	NA	NA	NA	WQ	Manual	CG WB
25	W294020074392501	Nathor_32779	Mammer khara	Mammer khara	29.67222	74.65694	Tube Well	NA	Alluvium	NA	NA	NA	Both	Manual	CG WB

ANNEXURE: 2
WATER LEVEL (WL) DATA OF MONITORING WELLS

State	Haryana	District	Sirsa	Block	Rania
Month of Pre-monsoon Water Level Measurement					June
Month of Post-monsoon water Level measurement					October

S.No.	Observation Point	Source	Well Type	Co-ordinate		Water Level (m)																	
						2015		2016		2017		2018		2019		2020		2021		2022		2023	
				Latitude	Longitude	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	Chakan_32744	SGWB	TW	29.66263	74.789568	16.5	16.7	17	16.6	16.7	17.4	18.8	18.9	23.5	22.8	23.9	23.9	24	24.2	24.5	25.0	24.5	25.1
2	Dhani Bangi_32749	SGWB	TW	29.52582	74.916257	33.5	33.5	33.5	34.8	34.8	34.8	35	35	39.6	42	39.7	39.7	40	40	39.0	39.5	38.6	39.3
3	Pattirathawas_32781	SGWB	TW	29.61385	74.716851	15.2	15.2	15.2	16.5	16.5	16.3	33	34	34.1	35	35.8	35.9	37	37	38.0	38.2	39.1	38.3
4	Fatehpuria_32755	SGWB	TW	29.57251	74.825647	35.1	NA	38.1	38.4	38.4	38.7	38.7	38.7	39	39.9	39	39.1	39	39.6	38.5	38.6	38.1	38.4
5	Ghoranwali_32757	SGWB	TW	29.64396	74.788936	15.3	15.2	15.3	16.7	16.7	16.7	17	17	25.1	26	25.6	25.7	26	25.8	26.0	26.2	25.8	26.0
6	Gindran_32758	SGWB	DW	29.61983	74.760859	15	14.4	14	15	14.4	14.4	16	16	15.4	15.9	NA	NA	16	15.8	16.0	17.0	15.8	17.0
7	Jagjeet Nagar_265152	SGWB	TW	29.56084	74.69641	39.6	44.2	44.2	46.9	46.9	48.1	47.1	46.9	50.1	51.3	50.3	51.2	NA	NA	49.5	50.0	49.4	50.0
8	Jodhpuria_32762	SGWB	DW	29.62137	74.906502	11.3	11.5	11.9	12.1	12.3	12.4	12.5	15.4	16.8	17.6	18	18.5	18	18.2	18.1	18.4	18.0	18.1
9	Keharwala_32763	SGWB	TW	29.65802	74.712305	18.3	18.3	18.3	19.8	19.8	19.8	20	20	25.2	26.1	25.3	25.4	25	25.7	24.5	24.3	24.0	24.2
10	Kharian_32765	SGWB	DW	29.62175	74.85864	11.9	12.1	12.4	12.5	13.1	13.1	13.2	15	19.8	20.6	19.8	19.9	20	19.8	20.0	19.0	18.9	19.0
11	Bahia_32739	SGWB	TW	29.59271	74.680886	38.1	39.6	40.2	38.9	38.9	38.9	39.3	39.3	42.7	43.1	43	44	45	45.2	45.0	44.9	44.1	44.8
12	Kussar_32767	SGWB	TW	29.60744	74.7848	38.1	39.6	39.6	38.9	38.9	38.9	39	39	42.7	43.8	42.7	42.7	43	42.4	42.5	42.9	42.3	42.1
13	Moujdeen_32774	SGWB	TW	29.46573	74.885651	36.6	36.6	36.6	35.7	35.7	35.7	36.5	36.8	41.1	42.2	42.2	42.2	42	42.4	42	41.9	41.0	41.9

ANNEXURE: 3
HISTORICAL WATER QUALITY (WQ) DATA OF MONITORING WELLS BY SGWB

State	Haryana		District	Sirsa		Block	Rania													
Month of Collection of sample for WQ monitoring*														June						
Village	Source	Type of well	Latitude	Longitude	Year	pH	EC	TDS	TH	Ca	Mg	Na	K	CO ₃	HCO ₃	SO ₄	Cl	F	NO ₃	
Goriwala	CGWB	Tw	29.79166667	74.70833333	2015	8.01	1509	ND	282.0	28.0	51.5	263.0	13.0	0.0	214.0	400.0	179.0	2.07	63.00	
Goriwala	CGWB	Tw	29.79166667	74.70833333	2016	8.45	1870	ND	281.0	37.0	46.0	286.0	15.0	24.0	195.0	410.0	203.0	0.39	48.00	
Goriwala	CGWB	Tw	29.79166667	74.70833333	2017	Sample not collected from this location														
Goriwala	CGWB	Tw	29.79166667	74.70833333	2018	8.67	3360	ND	370.0	40.0	65.0	600.0	15.0	60.0	146.0	756.0	446.0	2.00	73.50	
Goriwala	CGWB	Tw	29.79166667	74.70833333	2019	Sample not collected from this location														
Goriwala	CGWB	Tw	29.79166667	74.70833333	2020	8.55	2984	ND	285.8	24.5	54.6	573.0	12.0	48.0	146.4	84.0	822.4	1.41	89.00	
Goriwala	CGWB	Tw	29.79166667	74.70833333	2021	8.26	850	ND	146.0	20.0	17.0	130.0	4.2	0.0	256.0	0.0	107.0	0.90	90.00	
Goriwala	CGWB	Tw	29.79166667	74.70833333	2022	8.26	350	ND	170.0	36.0	19.5	7.3	3.4	0.0	122.0	57.6	14.2	0.97	2.40	
Goriwala	CGWB	Tw	29.79166667	74.70833333	2023	7.85	5480	ND	860.0	40.0	184.0	810.0	42.0	0.0	500.0	720.0	992.0	1.10	120.00	
Mammerkhera	CGWB	Tw	29.67222222	74.65694444	2015	Sample not collected from this location														
Mammerkhera	CGWB	Tw	29.67222222	74.65694444	2016	8.3	361	ND	146.0	37.0	13.0	18.0	3.3	0.0	122.0	52.0	28.0	0.24	3.20	
Mammerkhera	CGWB	Tw	29.67222222	74.65694444	2017	7.89	8296	ND	1451.0	232.0	211.0	1231.0	28.0	0.0	620.0	1768.0	1248.0	4.41	47.00	
Mammerkhera	CGWB	Tw	29.67222222	74.65694444	2018	8.5	872	ND	200.0	32.0	29.0	111.0	7.0	36.0	98.0	193.0	78.0	1.12	2.77	
Mammerkhera	CGWB	Tw	29.67222222	74.65694444	2019	8.45	2982	ND	371.0	55.0	57.0	524.0	20.0	44.0	134.0	778.0	369.0	0.76	21.00	
Mammerkhera	CGWB	Tw	29.67222222	74.65694444	2020	8.47	1340	ND	214.4	36.8	29.8	216.0	6.0	24.0	134.2	321.0	134.7	0.87	0.89	
Mammerkhera	CGWB	Tw	29.67222222	74.65694444	2021	8.41	2457	ND	350.7	57.1	50.6	451.0	7.0	55.0	321.0	1079.0	613.0	0.57	15.00	

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Mamme rkhera	CGW B	Tw	29.6722222 2	74.6569444 4	2022	8.14	2880	ND	530.0	72.0	85.1	510.0	16.0	0.0	366.0	816.0	326.6	0.76	11.00
Mamme rkhera	CGW B	Tw	29.6722222 2	74.6569444 4	2023	8.1	706	ND	150.0	32.0	17.0	90.0	5.0	0.0	134.0	120.0	71.0	0.18	17.00

Name of District	Name of Block	Source	Name of village/ OW data	Latitude	Longitude	Value of EC June 2020	Value of EC June-2021	Value of EC June-2022	Value of EC June-2023
Sirsa_74	Rania_551	SGWB	Abholi	29.50929	74.8734601	1600	1700	1700	1600
Sirsa_74	Rania_551	SGWB	Balasar	29.5564	74.7779	4000	2200	3900	4000
Sirsa_74	Rania_551	SGWB	Bani	29.5990	74.6185	4400	4600	2500	3000
Sirsa_74	Rania_551	SGWB	Bahia	29.5927	74.6809	2100	2300	2700	2200
Sirsa_74	Rania_551	SGWB	Chakkan	29.6626	74.7896	4100	4200	6300	6500
Sirsa_74	Rania_551	SGWB	Dudhianwali	29.6138	74.7169	8000	8200	6600	7000
Sirsa_74	Rania_551	SGWB	Fatehpuria	29.5725	74.8256	3000	3500	3500	4000
Sirsa_74	Rania_551	SGWB	Ghoranwali	29.6440	74.7889	4500	4200	2900	3200
Sirsa_74	Rania_551	SGWB	Gindra	29.6198	74.7609	4400	4500	6300	6400
Sirsa_74	Rania_551	SGWB	Jodhpuria	29.6214	74.9065	3500	3600	3300	3800
Sirsa_74	Rania_551	SGWB	Kharian	29.6218	74.8586	4000	4300	4000	3500
Sirsa_74	Rania_551	SGWB	Keharwala	29.6545	74.7124	8600	8000	1700	1500
Sirsa_74	Rania_551	SGWB	Kussar	29.6074	74.7848	6800	6700	6200	4500
Sirsa_74	Rania_551	SGWB	MehnaKhera	NA	NA	6100	4500	4300	4700
Sirsa_74	Rania_551	SGWB	Moujdeen	29.4657	74.8857	1800	1900	2100	2500
Sirsa_74	Rania_551	SGWB	Nanuana	29.5609	74.8480	3500	3800	6400	6000
Sirsa_74	Rania_551	SGWB	Nakaura	29.5112	74.7520	2000	2200	2100	2500
Sirsa_74	Rania_551	SGWB	Nathor	29.6308	74.6350	3800	3900	2500	2500

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Sirsa_74	Rania_551	SGWB	Rania	29.5281	74.8381	3500	3700	1300	1800
Sirsa_74	Rania_551	SGWB	Sadewala	29.64312	74.7239379	4900	1400	6400	6300
Sirsa_74	Rania_551	SGWB	Sainpal			4700	5000	2400	2900
Sirsa_74	Rania_551	SGWB	Ottu	29.4927	74.8911	2000	2200	1800	1200
Sirsa_74	Rania_551	SGWB	Peer Khera	29.6374	74.9066	2900	2500	6000	5500
Sirsa_74	Rania_551	SGWB	Bharolainwali	29.5387	74.7671	2200	1800	2100	2500
Sirsa_74	Rania_551	SGWB	Dhanoor	29.5258	74.9163	2700	1000	2000	1800
Sirsa_74	Rania_551	SGWB	Bhuna	NA	NA	4100	4000	NA	NA
Sirsa_74	Rania_551	SGWB	Darewala	NA	NA	7400	6500	NA	NA

Note: Only EC data of SGWB is available.