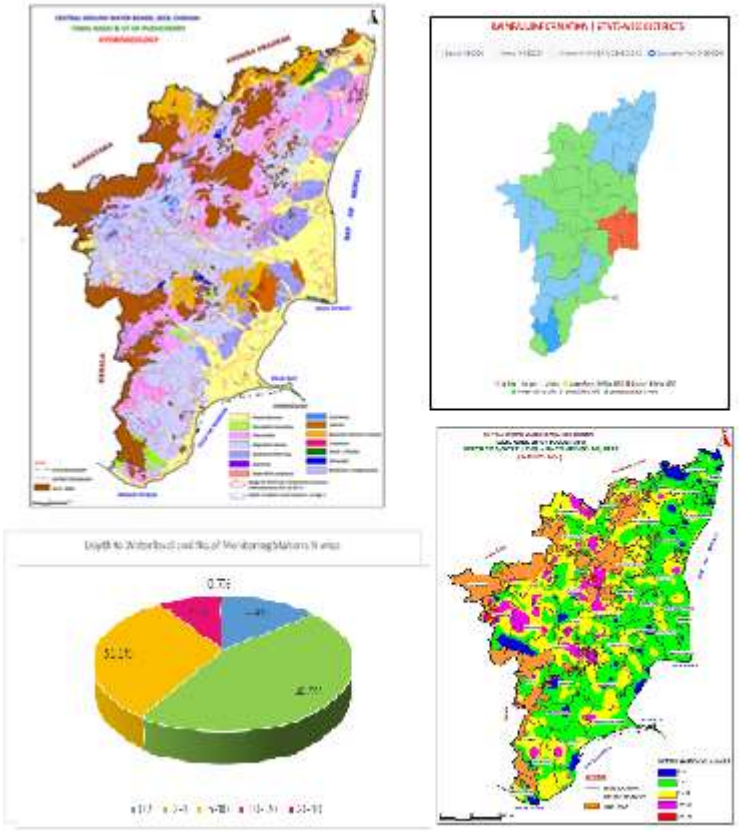

GROUND WATER LEVEL BULLETIN
AUGUST 2024
TAMILNADU & UT OF PUDUCHERRY

ABSTRACT

Ground water level Scenario during August - 2024 highlighting the findings, status of ground water level in different aquifers and its annual and decadal comparison

CGWB, SOUTH EASTERN COASTAL REGION, CHENNAI

1.0 INTRODUCTION

Groundwater bulletin is prepared by CGWB depicting changes in groundwater regime of the country through different seasons. It is an effort to obtain information on groundwater levels through representative monitoring wells. The important attributes of groundwater regime monitoring are groundwater level.

The natural conditions affecting the groundwater regime involve climatic parameters like rainfall, evapotranspiration etc., whereas anthropogenic influences include pumping from the aquifer, recharge due to irrigation systems and other practices like waste disposal etc.

Groundwater levels are being measured by Central Ground Water Board four times a year during January, May, August and November. The regime monitoring started in the year 1969 by Central Groundwater Board.

2.0 STUDY AREA

The state of Tamil Nadu has a geographical area of 1,30,058 sq. km. and is situated between N. Latitudes 08°00" and 13°30' and E. Longitudes 76°15' and 80°18'. The state is bounded by the Bay of Bengal in the east, the Indian Ocean in the south, the state of Kerala in the west and the states of Karnataka and Andhra Pradesh in the north. For administrative purposes, the state is divided into 38 districts, 317 Taluks, 1202 Firkas and 16744 Revenue Villages. A major part of the Union Territory of Puducherry comprising Puducherry and Karaikal regions occurs as small enclaves in Tamil Nadu. Figure.1 Shows the major aquifer of the State.

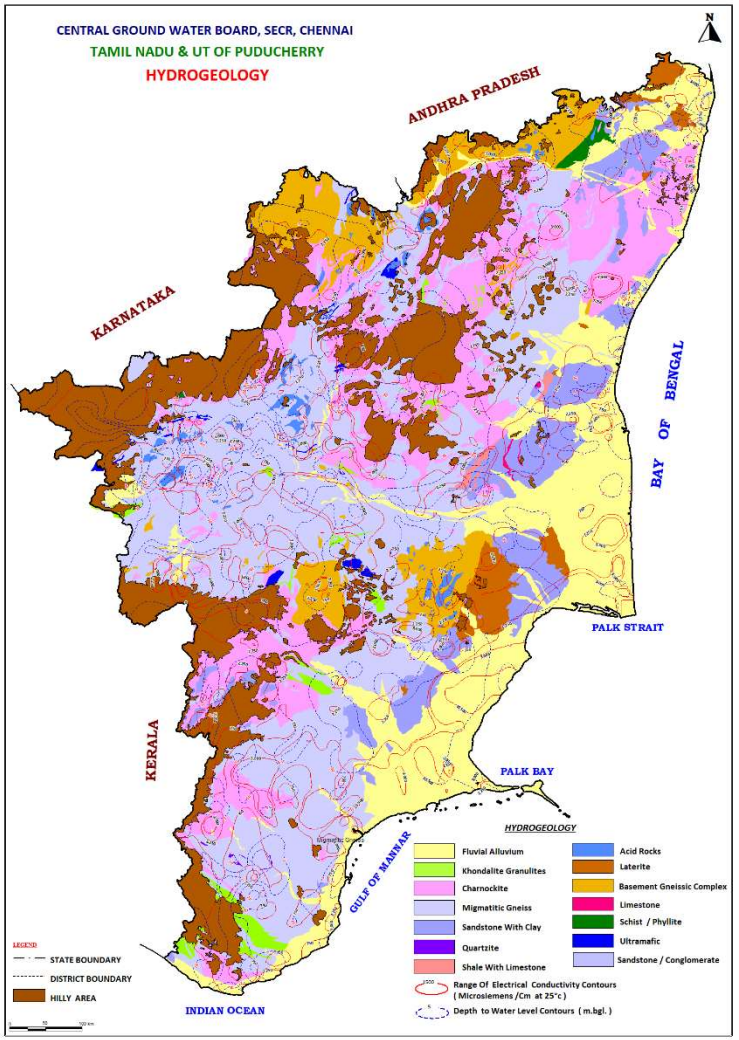

Figure-1: Map showing major aquifers of Tamilnadu

The state of Tamil Nadu is divided into four physiographic units viz. (i) Coastal Plains, (ii) Eastern Ghats, (iii) Central Plateau and (iv) Western Ghats. The coastal plains stretch over a distance of about 998 km. from Pulicat Lake to Cape Comorin, ranging in elevation between 2 and 30 m above mean sea level. The coastal plains are further sub-divided into (a) the Coromandel Coast comprising parts of the districts of Tiruvallur, Kancheepuram and Cuddalore, (b) the alluvial plain of Cauvery delta extending over Nagappattinam, Thanjavur Thiruvarur districts and (c) the dry southern plains comprising parts of Pudukkottai, Ramanathapuram, Tuticorin, Tirunelveli and Kanyakumari districts.

The chain of flat-topped hills of Javadis, the Shevroy, the Kalrayan and the Pachamalai hills, which are joining Cardamom hills in the south, form the Eastern Ghats. These hills rise steeply above plateau level to 1160 m above mean sea level in the Javadi hills and to 1645 m above mean sea level in the Shevroy hills.

Between the Eastern and Western Ghats lies the plateau area known as the "Central Plateau" comprising the districts of Erode and Coimbatore with elevations between 150 and 610 m above mean sea level thereby giving rise to an undulating topography. West of the region lies the broad Palghat gap between the Nilgiri and Anaimalai Hills. Between Cauvery River and the Palghat gap lies an extensive low plateau rising gradually from 120 to 180 m above mean sea level, along the tributaries of the Cauvery River, to 365 to 455 m above mean sea level in the west.

The plateau is fringed on the west by a group of high hills known as the Western Ghats, comprising the western part of the Nilgiri, Madurai and Kanyakumari districts. On the other side of the Palghat gap, the high mountains of the Peninsula dominate. These are the Nilgiri in the north, Anaimalai Hills, Palani and Cardamom hills in the south, with a summit level of 1830 to 2440 m above mean sea level rising sharply
from the plateau.

3.0 GROUND WATER LEVEL MONITORING

There are 1488 observations wells under groundwater monitoring regime of South Eastern Coastal Region as on August 2024. There are 749 dug wells and 739 piezometers. Figure.2 Shows the NHS Locations in the State. As the dug wells are invariably tapping and reflecting unconfined aquifer. Water levels were monitored all these wells four times in a year (May, August, November and January). The District wise breakup is given in Table-1.

Table-1: District-wise distribution of water level monitoring stations

S.No	District	DW	PZ	Total
1	Ariyalur	9	15	24
2	Chennai	18	6	24
3	Coimbatore	23	62	85
4	Cuddalore	30	81	111
5	Dharmapuri	22	19	41
6	Dindigul	27	15	42
7	Erode	58	53	111
8	Kancheepuram	39	48	87
9	Kanyakumari	13	9	22
10	Karaikal	4	5	9
11	Karur	12	14	26
12	Krishnagiri	17	33	50
13	Madurai	17	34	51
14	Nagapattinam	16	12	28
15	Namakkal	43	30	73
16	Nilgiris	8	2	10
17	Perambalur	16	5	21
18	Pondicherry	5	12	17
19	Pudukkottai	18	21	39
20	Ramanathapuram	24	5	29
21	Salem	42	14	56
22	Sivaganga	11	6	17
23	Thanjavur	15	4	19
24	Theni	13	35	48

S.No	District	DW	PZ	Total
25	Thiruvannamalai	19	26	45
26	Tiruchirapalli	42	21	63
27	Tirunelveli	30	46	76
28	Tiruppur	10	0	10
29	Tiruvallur	36	14	50
30	Tiruvarur	6	3	9
31	Tuticorin	24	15	39
32	Vellore	32	29	61
33	Villupuram	34	28	62
34	Virudhunagar	16	17	33
	Total	**749**	**739**	**1488**

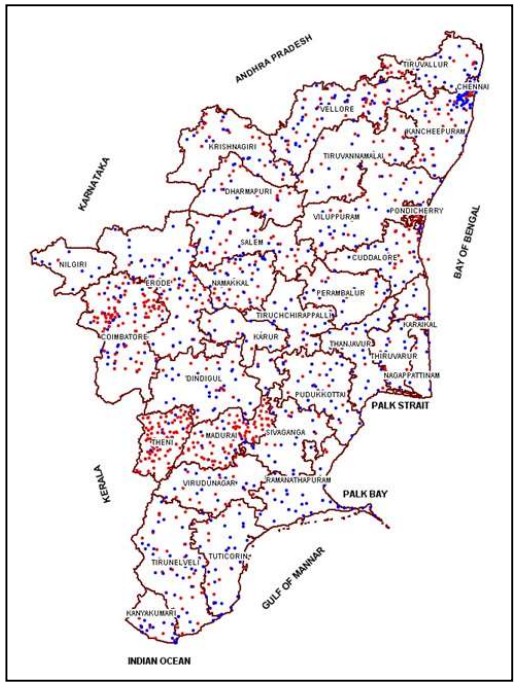

Figure- 2: Map showing locations of monitoring wells (NHNS) in Tamilnadu

4.0 RAINFALL

The rainfall data collected and compiled from weekly and monthly weather reports from India Meteorological Department were used to analyze the rainfall for the period June 2024 to September 2024. Figure.3 shows the district-wise rainfall distribution for the period 1st June 2024 to 29th September 2024. District-wise distribution of Rainfall from June 2024 to September 2024 is given in Table-2.

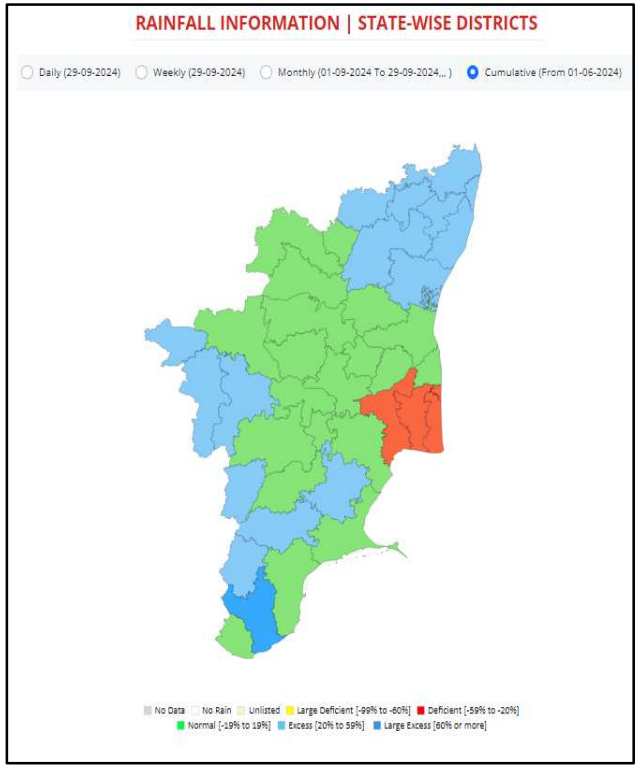

Figure-3: Rainfall distribution (June 2024 to September 2024) from normal rainfall

S.No.	MET. SUBDIVISION/ UT	PERIOD :	01-06-2024 to 29.9.2024		
	STATE/DISTRICT (NAME)	ACTUAL (mm)	NORMAL (mm)	% DEP	CAT
	TAMILNADU	**384.1**	**323.6**	**19%**	**N**
1	ARIYALUR	249.9	309.7	-19%	N
2	CHENGALPATTU	548.4	391.0	40%	E
3	CHENNAI	641.5	437.0	47%	E
4	COIMBATORE	962.2	684.9	40%	E
5	CUDDALORE	404.9	348.7	16%	N
6	DHARMAPURI	336.6	374.7	-10%	N
7	DINDIGUL	323.1	297.5	9%	N
8	ERODE	259.6	263.0	-1%	N
9	KALLAKURICHI	334.7	393.5	-15%	N
10	KANCHEEPURAM	639.0	462.3	38%	E
11	KANYAKUMARI	495.0	490.5	1%	N
12	KARUR	211.8	198.8	7%	N
13	KRISHNAGIRI	375.7	350.9	7%	N
14	MADURAI	310.0	292.4	6%	N
15	MAYILADUTHURAI	203.9	298.9	-32%	D
16	NAGAPATTINAM	122.3	243.2	-50%	D
17	NAMAKKAL	280.9	328.0	-14%	N
18	NILGIRIS	1249.9	837.1	49%	E
19	PERAMBALUR	262.4	273.0	-4%	N
20	PUDUKKOTTAI	338.0	291.9	16%	N
21	RAMANATHAPURAM	148.3	128.3	16%	N
22	RANIPET	672.0	434.5	55%	E
23	SALEM	456.5	401.2	14%	N
24	SIVAGANGA	404.5	313.1	29%	E
25	TENKASI	236.2	170.3	39%	E
26	THANJAVUR	238.9	298.7	-20%	D
27	THENI	369.0	234.3	57%	E
28	TIRUNELVELI	309.8	89.4	247%	LE
29	TIRUPATTUR	433.8	419.8	3%	N
30	TIRUPPUR	206.9	152.1	36%	E
31	TIRUVALLUR	655.6	455.2	44%	E
32	TIRUVANNAMALAI	552.2	443.5	25%	E
33	TIRUVARUR	210.5	292.8	-28%	D
34	TOOTHUKUDI	55.9	65.1	-14%	N
35	TRICHY	222.0	272.7	-19%	N
36	VELLORE	527.4	425.2	24%	E
37	VILLUPURAM	538.7	389.3	38%	E
38	VIRUDHUNAGAR	285.3	192.0	49%	E
	PUDUCHERRY (UT)	**497.0**	**412.2**	**21%**	**E**
1	KARAIKAL	169.5	294.2	-42%	D
2	MAHE	2755.4	2380.0	16%	N
3	PUDUCHERRY	553.8	382.4	45%	E
4	YANAM	1022.4	747.3	37%	E

Table-2: District-wise distribution of Rainfall from June 2024 to September 2024

5.0 GROUND WATER LEVEL SCENARIO (AUGUST 2024)

5.1 Shallow Aquifer (Unconfined)

5.1.1 Depth to Water Level

The statement showing the distribution of ground Water Monitoring wells along with depth to water levels in phreatic aquifer in different depth ranges is presented in Table-3 and Figure.4a depicts the ground water scenario in August 2024. Percentage wise Depth to water level distribution of unconfined aquifer during August 2024 represented in Figure-4b.

1. A perusal of the water level data reveals that the depth to water level ranged from 0.13 m bgl (Chennai district) to 39.78 m bgl (Namakkal District) in Tamil Nadu and UT of Puducherry.
2. Overall, 90.16 % of the wells monitored in the state and UT are in <10 m bgl range and spreader over entire Tamil nadu

3. 9.19 % of wells show depth to water level between 10 to 20 m bgl noted mainly in Coimbatore, Dharmapuri, Erode, Namakkal, Salem and Trichy districts.

4. Less than 1 % of wells show depth to water level more than 20 m bgl in Erode,Coimbatore, Kanyakumari and Namakkal districts.

5. Depth to water level of less than 2 m bgl has been recorded in 14.44% of wells analysed and noted in all over the State except Tiruppur, Dharmapuri, Perambalur and UT of Puducherry.

6. Depth to water level in the range of 2 to 5 m bgl has been recorded in 44.62 % of wells analysed and noted in all the districts.

7. Depth to water level in the range of 5 to 10 m bgl has been recorded in 31.10 % of wells analysed and noted in all over the State except Karaikal region of UT of Puducherry and Chennai & Tiruvarur districts.

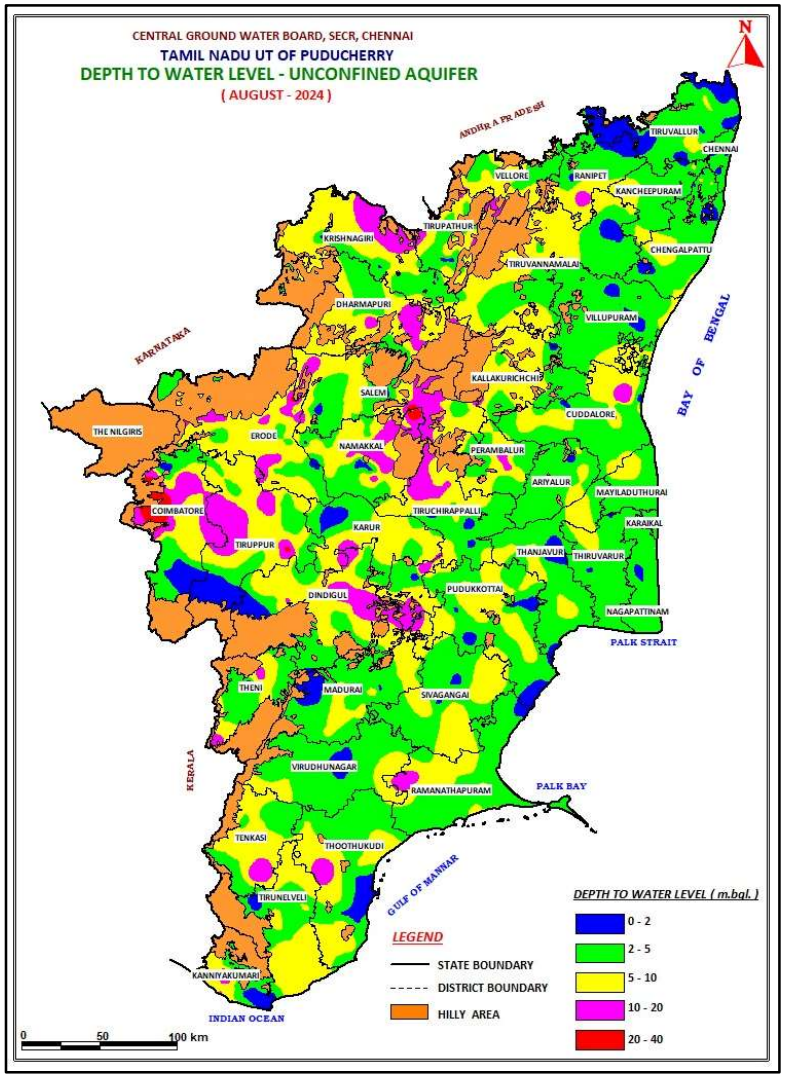

Figure-4a: Depth to water level of unconfined aquifer during August 2024.

Table 3: Depth to Water level (August 2024) & Distribution of Percentage of Observation Wells

District	No. of Wells Analysed	Depth to Water Table (mbgl)					
		No. of Wells Showing Depth to Water Table (mbgl) in the Range of					
		0-2	2-5	5-10	10-20	20-40	>40
Ariyalur	10	1	6	3			
Chennai	14	4	10				
Coimbatore	25	5	6	7	6	1	
Cuddalore	27	4	14	7	2		
Dharmapuri	21		5	10	6		
Dindigul	26	2	9	9	6		
Erode	61	1	17	29	12	2	
Kancheepuram	39	8	23	8			
Kanyakumari	13	3	4	4	1	1	
Karaikal	4		4				
Karur	13	2	5	6			
Krishnagiri	18	3	5	9	1		
Madurai	18	2	8	8			
Nagapattinam	16	1	14	1			
Namakkal	45	5	14	15	10	1	
Nilgiris	8	4	2	1	1		
Perambalur	16		8	5	3		
Pondicherry	4		2	2			
Pudukkottai	22	5	8	9			
Ramanathapuram	26	2	19	4	1		
Salem	41	7	14	13	7		
Sivaganga	11	2	4	5			
Thanjavur	16	3	7	6			
Theni	13	1	5	5	2		
Thiruvannamalai	19	4	8	7			
Tirunelveli	33	4	17	11	1		
Tiruppur	10		5	5			
Tiruvallur	41	16	20	5			
Tiruvarur	6	1	5				
Trichy	37	4	17	9	7		
Tuticorin	24	4	11	8	1		
Vellore	32	4	16	9	3		
Villupuram	37	7	16	14			
Virudhunagar	16	1	12	3			
Total	**762**	110	340	237	70	5	
%	**100.00**	**14.4**	**44.6**	**31.1**	**9.2**	**0.7**	

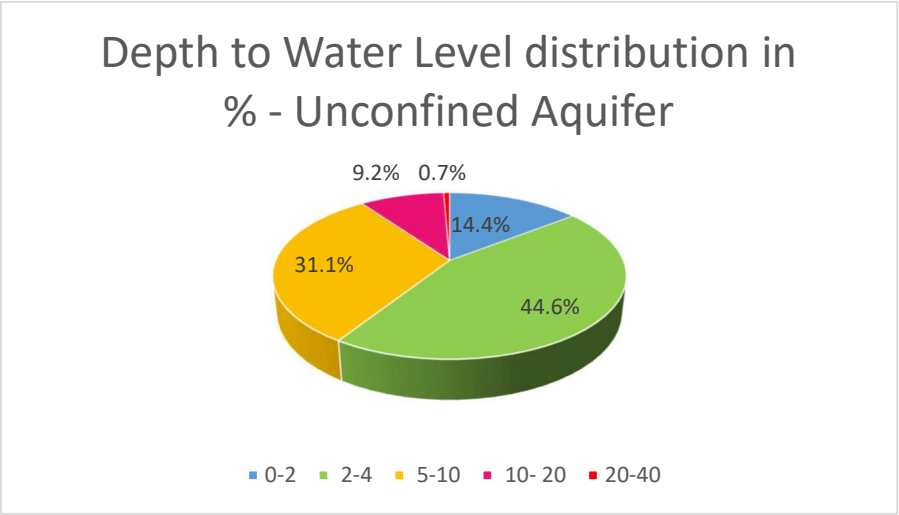

Figure-4b: Percentage wise Depth to water level distribution of unconfined aquifer during August 2024.

5.1.2 Annual Fluctuation (August 2023 – August 2024)

Annual fluctuation of water level is calculated by comparing the water level of the particular period during last year with water level of the same period of current year. This indicates the impact of ground water development and ground water recharge during one year. Positive fluctuation indicates improved recharge over and above ground water development and negative fluctuation indicates increased ground water development over and above the recharge. the Annual Fluctuation map of unconfined aquifer August 2024 – August 2023 represented in Figure-5b and Table4 and the Annual Fluctuation Rise and Fall % of Unconfined aquifer August 2024 – August 2023 represented in Figure-5a.

The water level data for August 2024 were compared with water level for the period August 2023. A comparison of water level shows a rise in 55.54 % and a fall in 44.46 % of the wells. Both the rise and fall is mainly in 0-2 m range.

1. The entire state and UT of Puducherry have recorded rise in more than 50% wells except Cuddalore, Dindigul, Erode, Nagapattinam, Thanjavur, Tiruvallur and Trichy districts.
2. Rise in the water level in the range of 0-2m has been observed in 38.63 % of wells analysed, and found all over the state and UT of Puducherry except Perambalur.
3. Rise in the water level in the range of 2-4 m has been observed in 11.81 % of wells analysed and noted all over the state except Ariyalur, Chennai, Nagapattinam, Perambalur, Pudukkottai, Thanjavur, Tiruvarur and Vellore districts and UT of Puducherry.
4. Rise in water level more than 4 m has been observed in 5.10 % of wells analysed and noted mainly in Erode, Namakkal and Salem districts.
5. The fall in water level in the range of 0-2m has been observed in 34.69 % of wells analysed and noted all over the state and UT of Puducherry except Kanyakumari district.
6. The fall in water level in the range of 2-4m has been observed in 6.85 % of wells analysed and noted all over the state except Ariyalur, Chennai, Karur, Madurai, Nilgiris, Perambalur, Pudukkottai, Ramanathapuram, Sivaganga and Theni districts & UT of Puducherry.
7. Fall in water level more than 4 m has been observed in 2.92 % of wells analysed and noted isolated patches in some districts mainly in Erode, Coimbatore, Namakkal, Salem and Cuddalore districts.

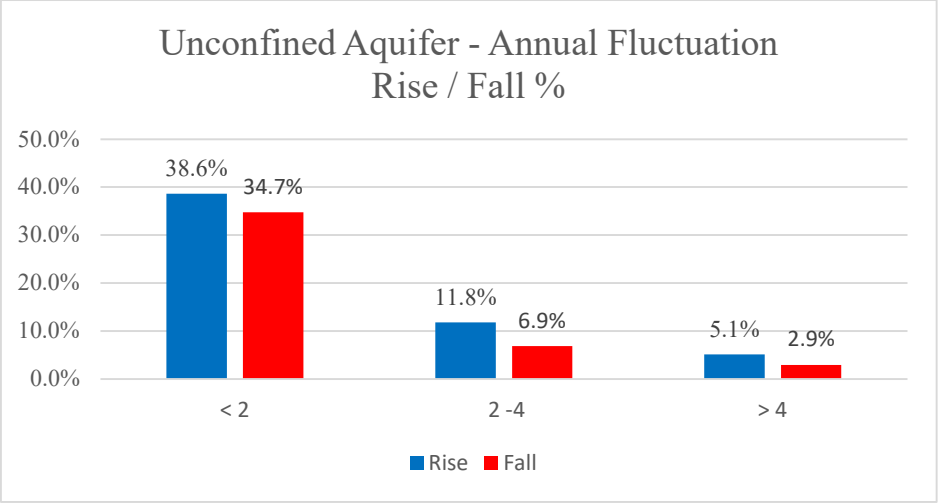

Figure-5a: Annual Fluctuation Rise and Fall % Unconfined aquifer August 2024 – August 2023

Table : 4 Annual Water level fluctuation - August 2024 with August 2023 -Unconfined

District	Water level fluctuation						No of wells recorded rise	No of wells recorded fall
	Range of rise (m)			Range of fall (m)				
	< 2	2-4	> 4	< 2	2-4	>4		
Ariyalur	7			3			7	3
Chennai	2			5			2	5
Coimbatore	8	7	3	4	2		18	6
Cuddalore	6	2		13	1	2	8	16
Dharmapuri	6	3	1	8	2	1	10	11
Dindigul	10	1		12	1	2	11	15
Erode	16	6	3	23	8	3	25	34
Kancheepuram	11	2		11	1		13	12
Kanyakumari	5	4	1			1	10	1
Karaikal	1			3			1	3
Karur	6	2		5			8	5
Krishnagiri	7	3	1	3	2	1	11	6
Madurai	8	2		4		1	10	5
Nagapattinam	4			10	1		4	11
Namakkal	16	4	4	12	3	4	24	19
Nilgiris	6	1		1			7	1
Perambalur			1	12	2	1	1	15
Pondicherry	1			2			1	2
Pudukkottai	8			10			8	10
Ramanathapuram	13	3		6			16	6
Salem	18	5	2	10	5	2	25	17
Sivaganga	6	1		3			7	3
Thanjavur	2		1	10	3		3	13
Theni	5	2	2	3			9	3
Thiruvannamalai	6	3	2	4	1		11	5
Tirunelveli	10	8	6	6			24	6
Tiruppur	5	2		1	2		7	3
Tiruvallur	11	1		14			12	14
Tiruvarur	2			4	1		2	5
Trichy	11	1	1	12	5	2	13	19
Tuticorin	14	6	1	3			21	3
Vellore	16		1	12	2		17	14
Villupuram	10	9	2	8	5		21	13
Virudhunagar	8	3	3	1			14	1
Total	**265**	**81**	**35**	**238**	**47**	**20**	**381**	**305**
%	**38.6%**	**11.8%**	**5.1%**	**34.7%**	**6.9%**	**2.9%**	**55.5%**	**44.5%**

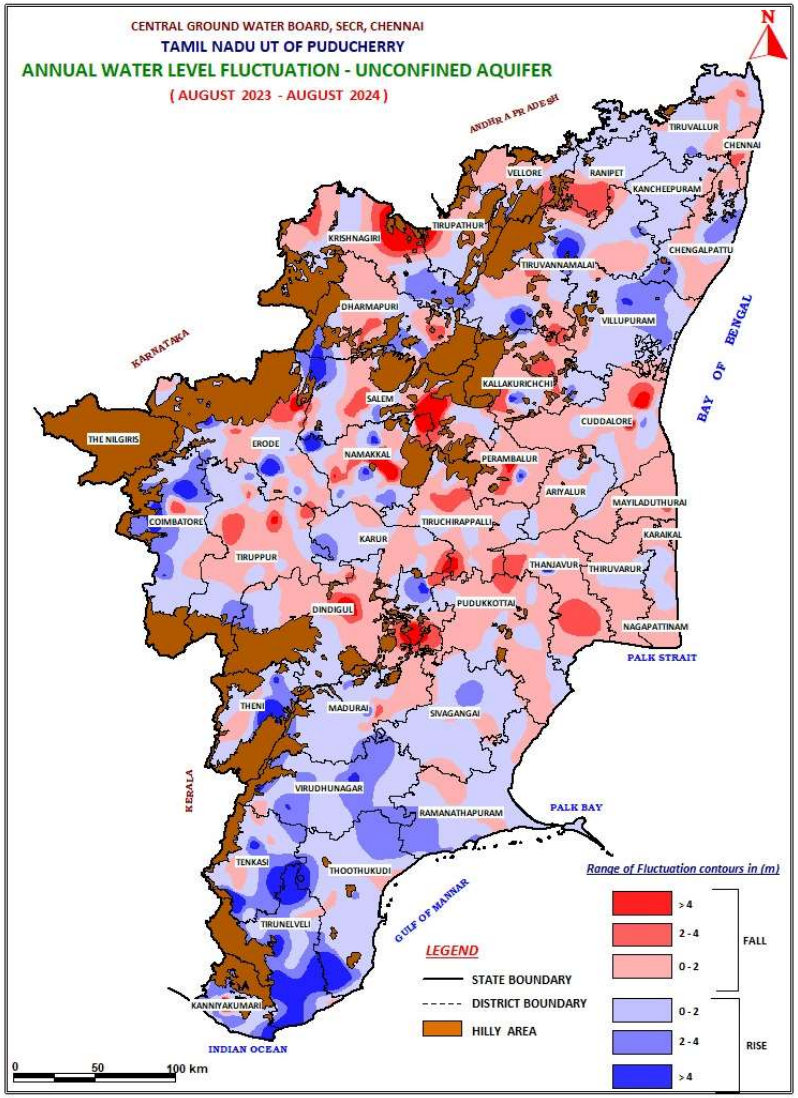

Figure-5b: Annual Fluctuation map of unconfined aquifer August 2024 – August 2023

5.1.3 Decadal Fluctuation

Decadal Fluctuation of Water Level in Unconfined Aquifer (Decadal Mean August (2014-2023) to August 2024)

The fluctuation of water level recorded during the particular period with respect to decadal mean of the same period indicate the impact of ground water development and ground water recharge during the decade. Positive fluctuation indicates improved recharge over and above ground water development and negative fluctuation indicates increased ground water development over and above the recharge. A comparison of water levels shows that a rise in the water level is recorded in 70.36 % of wells analyzed, while 29.64 % recorded fall. While rise is more in 0-2 m range and the fall is also in the same range. Decadal Fluctuation of Water Level in Unconfined Aquifer represented in Figure .6a and Table 5, Rise and Fall % is represented in Figure.6b

1. The most of the districts of Tamil Nadu and UT of Puducherry have recorded rise in more than 50% wells.
2. Rise in the water level in the range of 0-2m has been observed in 40.45 % of wells analysed, noted all over the State and UT of Puducherry.
3. Rise in the water level of 2 to 4 m has been observed in 17.52 % and of wells analysed and noted all over the state except Ariyalur, Thanjavur, Tiruvarur, Nagapattinam, Nilgiris and UT of Puducherry.
4. Rise in the water level more than 4 m has been observed in 12.38 % and of wells analysed and noted all over the state except Ariyalur, Karur, Nagapattinam, Pudukkottai, Ramanathapuram, Sivaganga, Tiruppur and Tiruvarur districts & Karaikal and Puducherry of UT of Puducherry.
5. The fall in water level in the range of 0-2m has been observed in 24.11 % of wells analysed and spread most the districts in the State except Virudhunagar.
6. The fall in water level in the range of 2-4m has been observed in 3.95 % of wells analysed and noted mainly in Erode, Dharmapuri, Salem, Vellore and Villupuram districts.
7. The fall in water level more than 4 m has been observed in 1.58 % of wells analysed and noted as isolated pockets mainly in Cuddalore, Erode, Namakkal, Perambalur and Tuticorin districts.

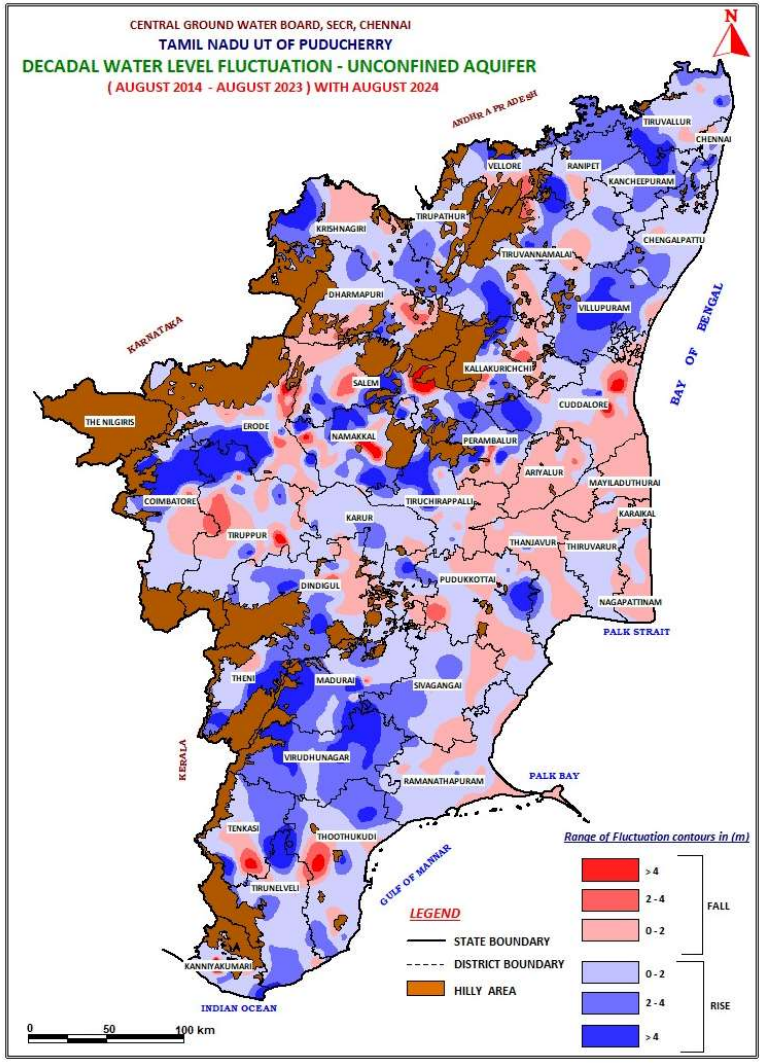

Figure-6a: Decadal Fluctuation of Water Level in Unconfined Aquifer

Table 5: Decadal Water level fluctuation - August 2024 with Decadal average of August 2014-23 - Unconfined

S.No	District	Water level fluctuation						No of wells recorded rise	No of wells recorded fall
		Range of rise (m)			Range of fall (m)				
		< 2	2-4	> 4	< 2	2-4	>4		
1	Ariyalur	3			6	1		3	7
2	Chennai	8	2	2	2			12	2
3	Coimbatore	8	4	7	4	2		19	6
4	Cuddalore	11	1	2	11		2	14	13
5	Dharmapuri	7	3	1	7	3		11	10
6	Dindigul	12	4	3	6	1		19	7
7	Erode	22	5	9	15	8	2	36	25
8	Kancheepuram	22	10	4	3			36	3
9	Kanyakumari	6	2	1	2		1	9	3
10	Karaikal				4			0	4
11	Karur	7	4		2			11	2
12	Krishnagiri	7	6	1	4			14	4
13	Madurai	7	5	3	2	1		15	3
14	Nagapattinam	4			12			4	12
15	Namakkal	11	9	12	8	2	3	32	13
16	Nilgiris	5			3			5	3
17	Perambalur	3	3	3	5	1	1	9	7
18	Pondicherry				3			0	3
19	Pudukkottai	11	2		8	1		13	9
20	Ramanathapuram	10	2		14			12	14
21	Salem	15	8	7	6	4	1	30	11
22	Sivaganga	6	2		3			8	3
23	Thanjavur	3		1	12			4	12
24	Theni	5	3	4	1			12	1
25	Thiruvannamalai	5	6	5	2	1		16	3
26	Tirunelveli	15	9	2	6		1	26	7
27	Tiruppur	6	2		1	1		8	2
28	Tiruvallur	21	9	3	7			33	7
29	Tiruvarur	4			2			4	2
30	Trichy	19	3	6	9			28	9
31	Tuticorin	12	6	2	3		1	20	4
32	Vellore	18	4	4	4	2		26	6
33	Villupuram	12	12	5	6	2		29	8
34	Virudhunagar	2	7	7				16	0
35	**Grand Total**	**307**	**133**	**94**	**183**	**30**	**12**	534	225
	%	40.4%	17.5%	12.4%	24.1%	4.0%	1.6%	70.4%	29.6%

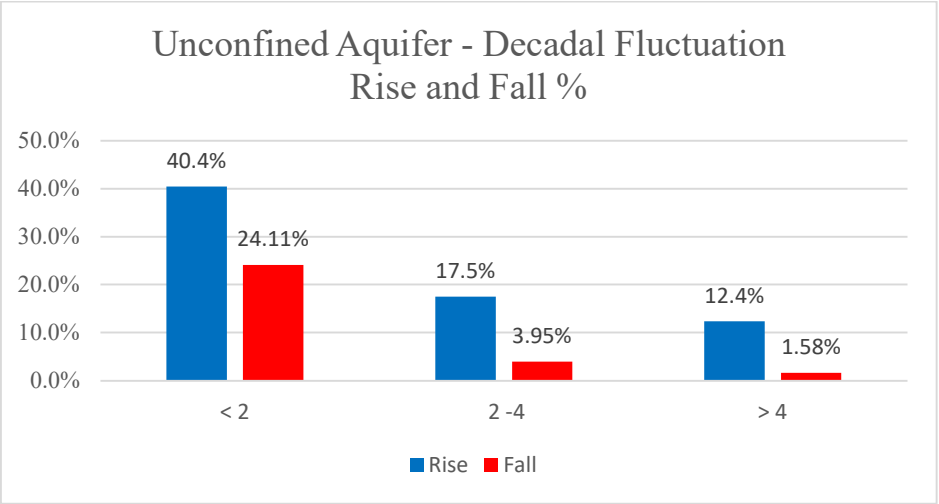

Figure-6a: Decadal Fluctuation of Water Level in Unconfined Aquifer Rise and Fall %

5.2 Deeper Aquifer (Confined)

5.2.1 Depth to water level (August 2024)

Depth to piezometric surface has been recorded from piezometers spread all over the state both in Hard rock and soft rock areas. The statement showing the depth to piezometric surface is given in Table-6. The ground water Scenario of Confined aquifer during August 2024 is depicted in Figure 7b. Salient features of the depth to piezometric surface during August 2024 are given below.

The depth to piezometric surface ranged from 0.1 m bgl (Ramanathapuram district) to 143.6 m bgl (Coimbatore District) in Tamil Nadu and UT of Puducherry. % wise Distribution of Depth to water level of confined aquifer during August 2024 represented in Fig.7a

1. 65.53 % of wells have recorded depth to piezometric surface of less than

10mbgl noted in most of the districts except in Ariyalur, Myladuthurai, Nilgiris and UT of Puducherry.

2. 16.60 % of wells show depth to piezometric surface between 10 to 20 mbgl noted in all the district except Chennai, Kancheepuram, Sivaganga, Thanjavur, Tiruvannamalai, Tiruvarur and Villupuram Districts.
3. 9.22 % have recorded piezometric surface between 20 to 40mbgl noted in all the districts except Chennai, Kanyakumari, Madurai, Nilgiris, Perambalur, Tuticorin districts.
4. Depth to piezometric surface of less than 2 m bgl has been recorded in 6.81 % of wells analysed and this has been noted in Chennai, Coimbatore, Kancheepuram, Madurai,Namakkla, Tiruvallur and Villupuram districts.
5. Depth to piezometric surface in the range of 2 to 5 m bgl has been recorded in 27.52 % of wells analysed and noted in all the districts except in the districts of Mayiladuthurai, Pudukkottai, Nilgiris,Ramanathapuram, Sivaganga and Tiruvarur districts.
6. Depth to piezometric surface in the range of 5 to 10 m bgl has been recorded in 31.21 % of wells analysed and noted in all the districts except in the districts such as Ariyalur ,Nilgiris, Chennai, Mayiladuthurai and UT of Puducherry.
7. 8.65 % have recorded more than 40 mbgl noted in Ariyalur, Cuddalore, Karur, Coimbatore, Erode and UT of Puducherry.

Table-6: Frequency distribution of depth to Piezometric surface (August 2024) & Distribution of Percentage of Observation Wells

District	No. of Wells Analyzed	Depth to Piezometric surface in the range of (mbgl)					
		0-2	2-5	5-10	10-20	20-40	>40
Ariyalur	9				1	1	7
Chennai	5	2	3				
Coimbatore	65	2	13	19	18	7	6
Cuddalore	57		2	2	4	12	37
Dharmapuri	16		2	5	4	3	2
Dindigul	12		3	2	3	4	
Erode	55	1	14	30	9		1
Kancheepuram	53	12	31	9		1	
Kanyakumari	9		3	4	2		
Karaikal	5		1	1	3		
Karur	14		6	3	1	1	3
Krishnagiri	32	1	5	11	10	5	
Madurai	33	6	11	15	1		
Mayiladuthurai	1				1		
Nagapattinam	11		1	1	6	3	
Namakkal	31	3	7	12	7	2	
Nilgiris	2				2		
Perambalur	5		2	2	1		
Pondicherry	9		1		2	5	1
Pudukkottai	22	2		13	4	1	2
Ramanathapuram	4	1		1	1	1	
Salem	14	2	3	5	3	1	
Sivaganga	6			4		2	
Thanjavur	3		1	1		1	
Theni	34	1	9	8	9	7	
Thiruvannamalai	23	1	11	11			
Tirunelveli	49		21	18	8	2	
Tiruvallur	23	4	7	5	6	1	
Tiruvarur	1			1			
Trichy	18	1	5	5	6	1	
Tuticorin	16		7	8	1		
Vellore	27	1	6	15	3	1	1
Villupuram	24	6	9	5		3	1
Virudhunagar	17	2	10	4	1		
Total	705	48	194	220	117	65	61
%	**100**	6.81%	27.52%	31.21%	16.60%	9.22%	8.65%

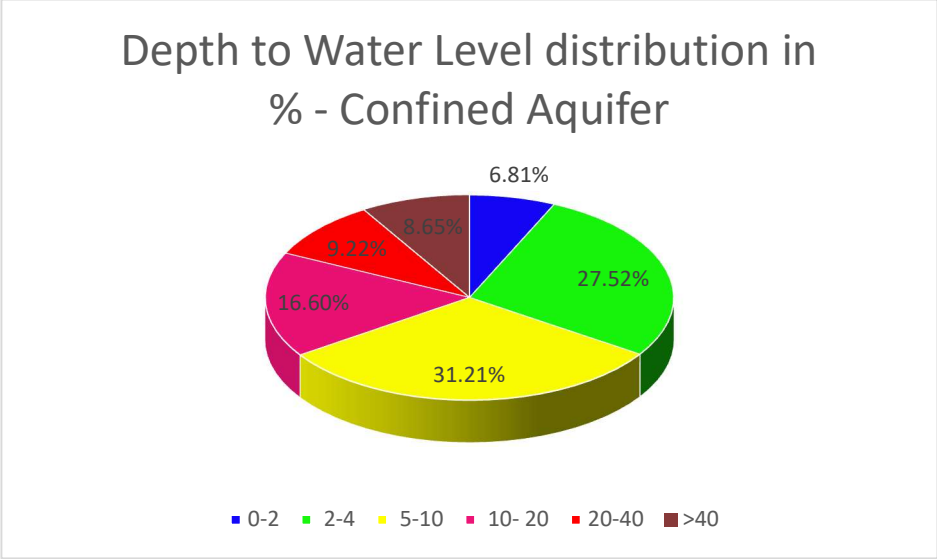

Figure-7a : % wise Distribution of Depth to water level of confined aquifer during August 2024

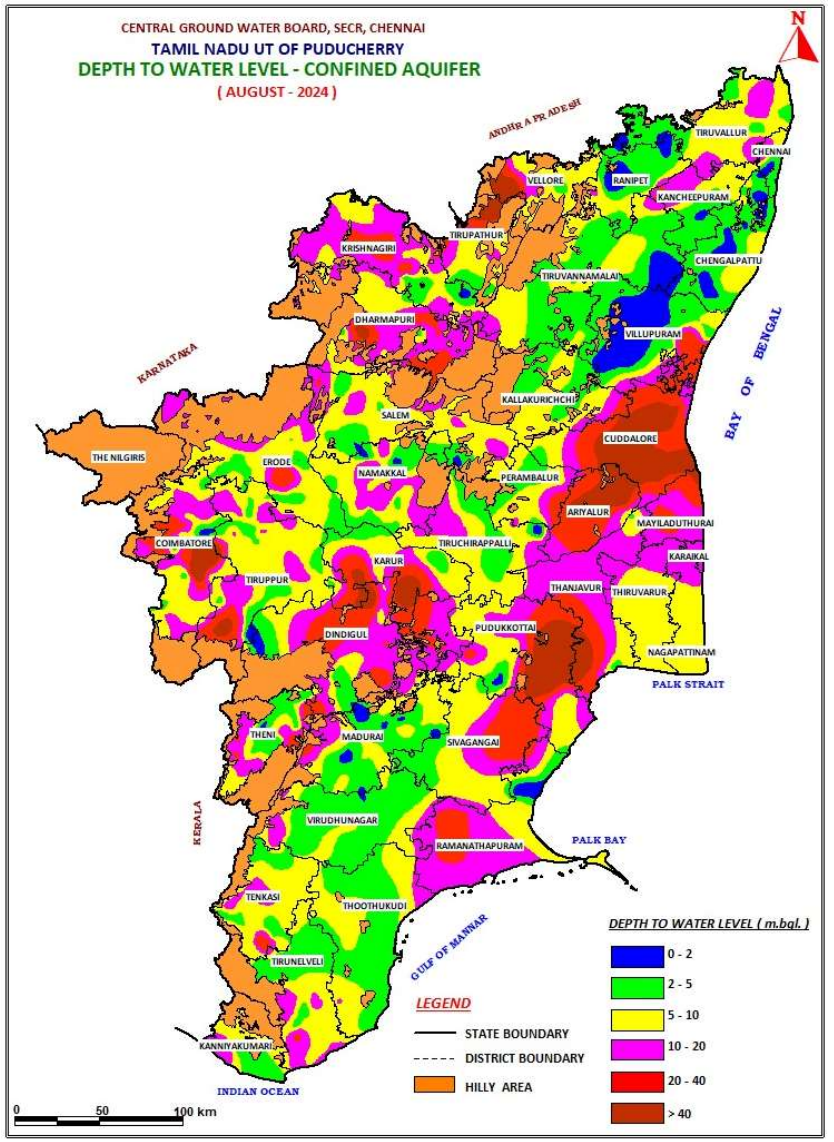

Figure-7b: Depth to water level of confined aquifer during August 2024

5.2.2 Annual Fluctuation (August 2023 – August 2024)

The Piezometric surface data of August 2024 were compared with that of, August 2023. A comparison of water level shows a rise in 58.57 % and a fall in 41.43 % of the wells. Both the rise and fall is mainly in 0-2 m range. Annual Water level fluctuation - August 2024 with August 2023 – Confined Aquifer represented in Table 7 and Fig.8a and % Wise Rise & Fall distribution of Annual Water Level Fluctuation represented in Fig.8b.

1. The Most of the Districts of the state have recorded fall in more than 50% wells except Cuddalore, Karur, Namakkal and Pudukkottai districts.
2. Rise in the water level in the range of 0-2m has been observed in 33.88 % of wells analysed, spread all over the State except Perambalur, Ramanathapuram and Sivaganga districts.
3. Rise in the water level in the range of 2-4 m has been observed in 15.71 % of wells analysed and noted mainly in Coimbatore, Madurai, Theni, Tirunelveli, Tuticorin and Virudhunagar districts.
4. Rise in water level more than 4 m has been observed in 8.98 % of wells analysed and noted in Coimbatore, Cuddalore,Kanyakumari, Madurai, Theni and Tirunelveli districts.
5. The fall in water level in the range of 0-2m has been observed in 23.06 % of wells analysed and noted all over the state except Kanyakumari, Nilgiris, Trichy and UT of Puducherry.
6. The fall in water level in the range of 2-4m has been observed in 9.39 % of wells analysed and noted mainly in all over the state except Chennai, Kanyakumari, Ramanathapuram, Nilgiris and Tirunelveli districts.
7. Fall in water level more than 4 m has been observed in 8.98 % of wells analysed and noted all over the state except Chennai, Kancheepuram, Kanyakumari,Madurai, Nilgiri, Perambalur,Theni, Tiruvannamalai, Tirunelveli,Tuticorin and Virudhunagar districts

Table 7: Annual Water level fluctuation - August 2024 with August 2023 –Confined

District	Water level fluctuation						No of wells recorded rise	No of wells recorded fall
	Range of rise (m)			Range of fall (m)				
	< 2	2 - 4	> 4	< 2	2 - 4	>4		
Ariyalur				2	3	3	0	8
Chennai	1			2			1	2
Coimbatore	20	16	12	8	1	3	48	12
Cuddalore	8	2	3	13	5	10	13	28
Dharmapuri	1			2	2	5	1	9
Dindigul	2			2	2	2	2	6
Erode	22	3	2	11	5	1	27	17
Kancheepuram	3	2		5	1		5	6
Kanyakumari	1	3	2				6	0
Karur	1	3		4	2	3	4	9
Krishnagiri	2	3	1	3	4	4	6	11
Madurai	13	8	2	8	1		23	9
Nagapattinam	1		1	4	3	1	2	8
Namakkal	7	2	1	10	4	2	10	16
Nilgiris	2						2	0
Perambalur				3	1		0	4
Pondicherry	3		2			2	5	2
Pudukkottai	4			9	4	3	4	16
Ramanathapuram			2	1			2	1
Salem	8	1	1	2	1	1	10	4
Sivaganga		1		3	1	1	1	5
Theni	11	8	8	1			27	1
Thiruvannamalai	9	1	1	7	1		11	8
Tirunelveli	9	8	4	4			21	4
Tiruvallur	6	3		1	1		9	2
Trichy	6	1			1	1	7	2
Tuticorin	5	4		2			9	2
Vellore	6	1	1	1	1	1	8	3
Villupuram	5	2		4	2	1	7	7
Virudhunagar	10	5	1	1			16	1
Total	166	77	44	113	46	44	287	203
%	33.88%	15.71%	8.98%	23.06%	9.39%	8.98%	58.57%	41.43%

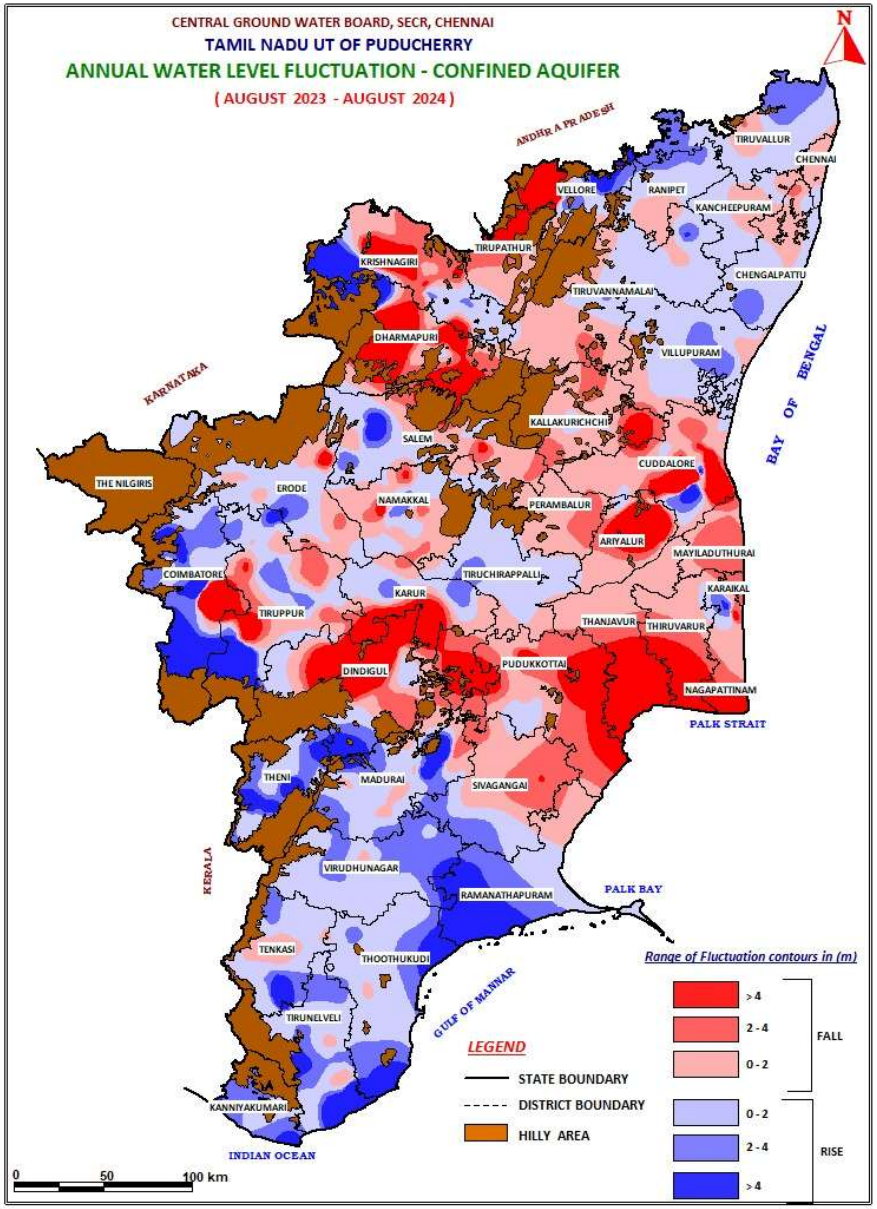

Figure-8a: Annual Water Level Fluctuation of Confined Aquifer

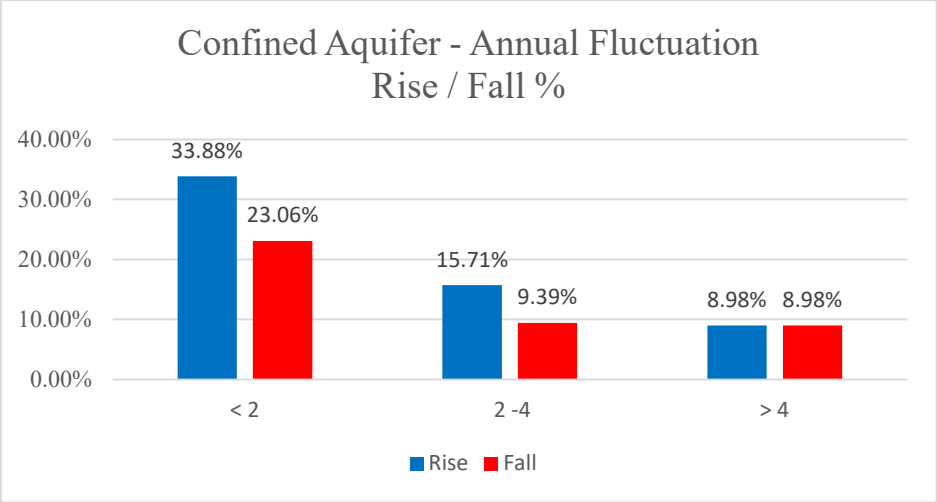

Figure-8b: % Wise Rise & Fall distribution of Annual Water Level Fluctuation in Confined Aquifer

5.2.3 Decadal Fluctuation

The Piezometric surface data of August2024 were compared with mean water level for the period August 2014-2023. A comparison of water level shows a rise in 73.74 % and a fall in 26.25 % of the wells. Rise is more in 0-2 m ranges the fall is mainly in 0-2 m range. Decadal Water level fluctuation - August 2024 with Decadal average of August 2014-23 – Confined Aquifer represented in Fig.9b and Table.8 and % wise Distribution of Decadal Water Level Fluctuation represented in Fig.9a

1. The entire state and Puducherry region of UT of Puducherry have recorded rise in more than 50% wells, except Ariyalur and Cuddalore districts.
2. Rise in the water level in the range of 0-2m has been observed in 28.95 % of wells analysed, spread all over the State except in Perambalur and Ramanathapuram districts.
3. Rise in the water level in the range of 2-4 m has been observed in 18.52 % of wells analysed and noted all over the State except Ariyalur, Chennai and

Nagapattinam districts and UT of Puducherry

4. Rise in water level more than 4 m has been observed in 26.25 % of wells analysed and noted major part of the state except in Chennai, Nilgiris, Perambalur and Pudukkottai districts

5. The fall in water level in the range of 0-2m has been observed in 15.47 % of wells analysed and noted all over the State except Chennai, Dindigul, Kanyakumari, Nagapattinam, Nilgiris and Sivaganga districts.

6. The fall in water level in the range of 2-4m has been observed in 3.42 % of wells analysed and noted mainly in Cuddalore, Nagapattinam and Namakkal districts

7. Fall in water level more than 4 m has been observed in 7.37 % of wells analysed and noted mostly in Ariyalur,Cuddalore, Dharmapuri, Dindigul and Pudukkottai districts

Table 8: Decadal Water level fluctuation - August 2024 with Decadal average of August 2014-23 – Confined

District	Water level fluctuation						No of wells recorded rise	No of wells recorded fall
	Range of rise (m)			Range of fall (m)				
	< 2	2-4	> 4	< 2	2-4	>4		
Ariyalur	1		1	2	1	4	2	7
Chennai	5						5	0
Coimbatore	16	12	24	10	1	1	52	12
Cuddalore	6	6	8	8	3	12	20	23
Dharmapuri	2	1	1	2	1	3	4	6
Dindigul	3	1	5			3	9	3
Erode	13	7	15	15	1	1	35	17
Kancheepuram	11	5	1	6			17	6
Kanyakumari	3	2	2				7	0
Karur	3	3	4	1	1	1	10	3
Krishnagiri	4	3	8	2		1	15	3
Madurai	9	7	14	3			30	3
Nagapattinam	4		1		4	1	5	5
Namakkal	4	5	5	9	3	1	14	13
Nilgiris	1					1	1	1
Perambalur		2		1	1	1	2	3
Pondicherry	4		1	1		1	5	2
Pudukkottai	7	3		4	1	6	10	11
Ramanathapuram		1	1	1			2	1
Salem	6	1	3	4			10	4
Sivaganga	2	1	2			1	5	1
Theni	4	7	21	1			32	1
Thiruvannamalai	12	3	4	3			19	3
Tirunelveli	13	8	4	4		1	25	5
Tiruvallur	7	8	5	2			20	2
Trichy	7	1	2	1		1	10	2
Tuticorin	7	1	2	1			10	1
Vellore	1	2	3	2	2	1	6	5
Villupuram	4	4	4	2			12	2
Virudhunagar	2	9	5	1			16	1
Grand Total	**161**	**103**	**146**	**86**	**19**	**41**	410	146
%	**28.96**	**18.53**	**26.26**	**15.47**	**3.42**	**7.37**	**73.74**	**26.26**

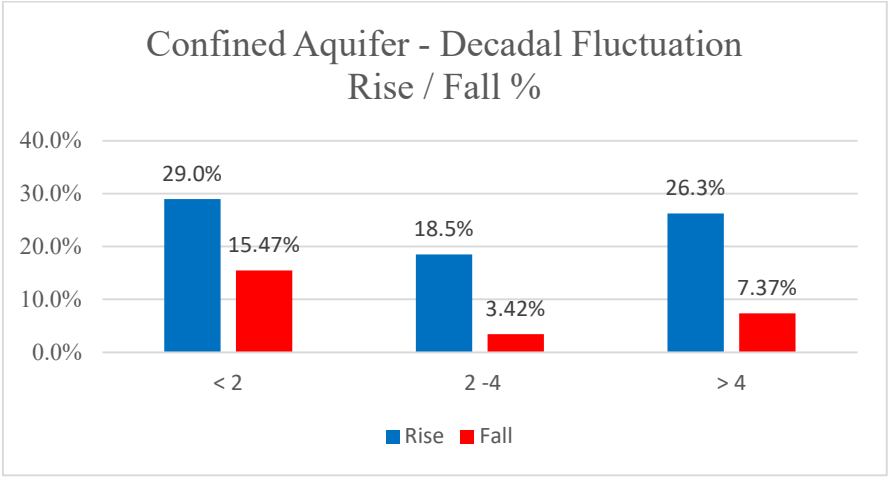

Figure-9a: % wise Distribution of Decadal Water Level Fluctuation in Confined Aquifer

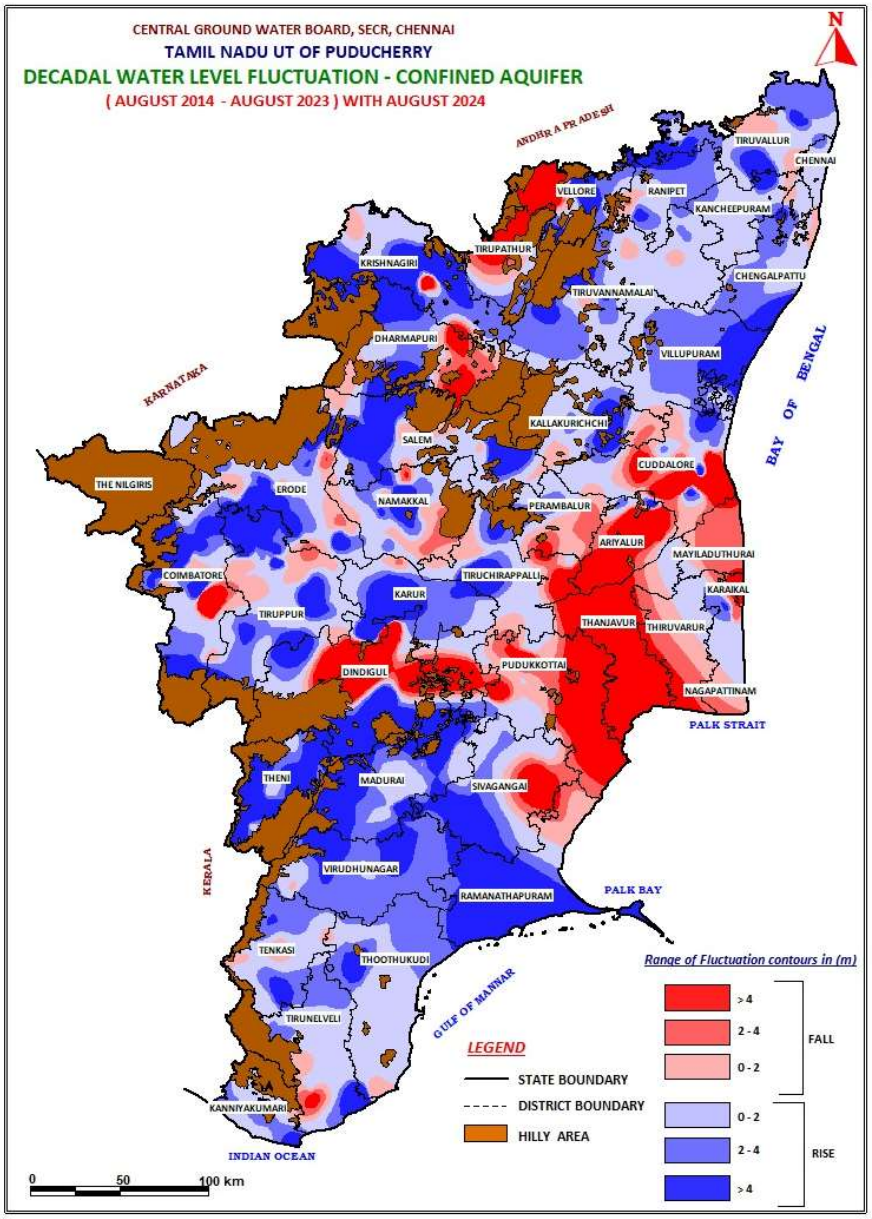

Figure-9b: Decadal Water Level Fluctuation of Confined Aquifer

6.0 SUMMARY

As a component of the National Ground Water Monitoring Program, the CGWB, SECR, Chennai conducts monitoring of the ground water conditions on a quarterly basis: in January, pre-monsoon May, August, and post- monsoon November. Additionally, a yearly assessment of ground water quality is performed in May. As on August 2024, the South Eastern Coastal Region of Central Ground Water Board supervises 749 dug wells and 739 piezometers. This comprehensive effort aims to portray the variations in the state's ground water conditions across different aquifers.

August2024 depth to water level were compared with mean water level for the period August 2014-2023 in unconfined aquifer shows that a rise in the water level is recorded in 70.36 % of wells analyzed, while 29.64 % recorded fall. While rise is more in 0-2 m range and the fall is also in the same range. The Piezometric surface data of August2024 were compared with mean water level for the period August 2014-2023. A comparison of water level shows a rise in 73.74 % and a fall in 26.25 % of the wells. Rise is more in 0-2 m ranges the fall is mainly in 0-2 m range.

The water level data for August 2024 were compared with water level for the period August 2023. A comparison of water level shows a rise in 55.54 % and a fall in 44.46 % of the wells. Both the rise and fall is mainly in 0-2 m range. The Piezometric surface data of August 2024 were compared with that of, August 2023. A comparison of water level shows a rise in 58.57 % and a fall in 41.43 % of the wells. Both the rise and fall is mainly in 0-2 m range.

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