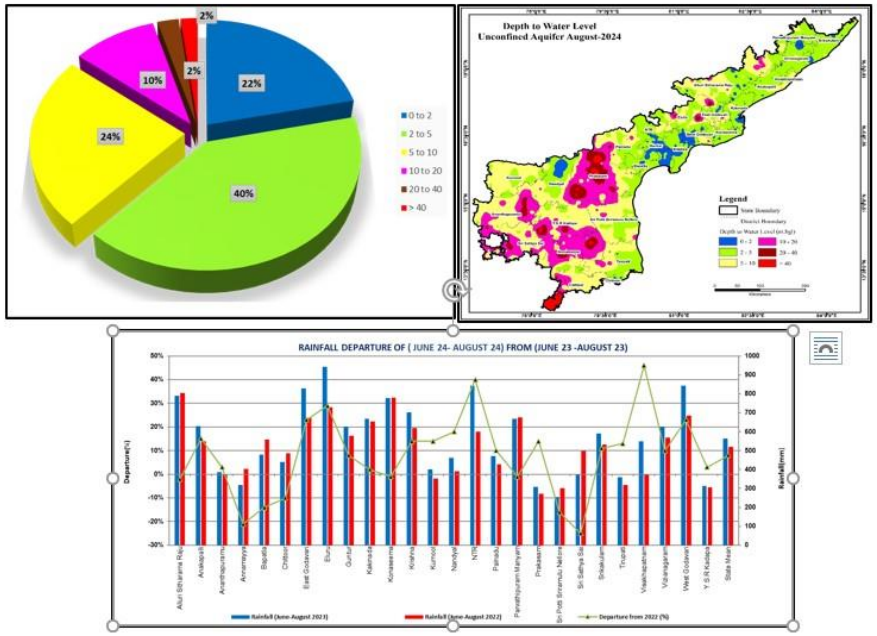

GROUND WATER LEVEL BULLETIN

AUGUST 2024

ANDHRA PRADESH

ABSTRACT

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

CGWB, SOUTHERN REGION, HYDERABAD

1.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 attribute of groundwater regime monitoring is groundwater level.

The natural conditions affecting the groundwater regime involve climatic parameters like rainfall, evapotranspiration etc., whereas anthropogenic influences include pumpage 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. Anetwork of 25437 observation wells called **National Hydrograph Network Stations (NHNS)**, as on 30.04.2023, located all over the country is being monitored.

2.0 STUDY AREA

Andhra Pradesh State is the 7th largest state in India covering geographical area of 1,63,000 Km^2. It lies between NL 12° 37’ and 19° 09’ and EL 76° 45’ and 84° 47’. The State is bordered on the east by Bay of Bengal (coastline length ~970 km), south by Tamil Nadu and Karnataka, west by Karnataka and Telangana and north by Telangana, Chattisgarh and Odisha states. Administratively, the stateis divided into 26 districts and governed by 668 revenue mandals with 28123 revenue villages. Total population of the state (2011 census) is ~8.45 crores (with male-female ratio of 993) of which 66.64% lives in rural area and 33.36% in urban area. The average density of population is 308 persons/km^2. The overall growth in total population during decade is ~9.2 % (2001 to 2011 census).

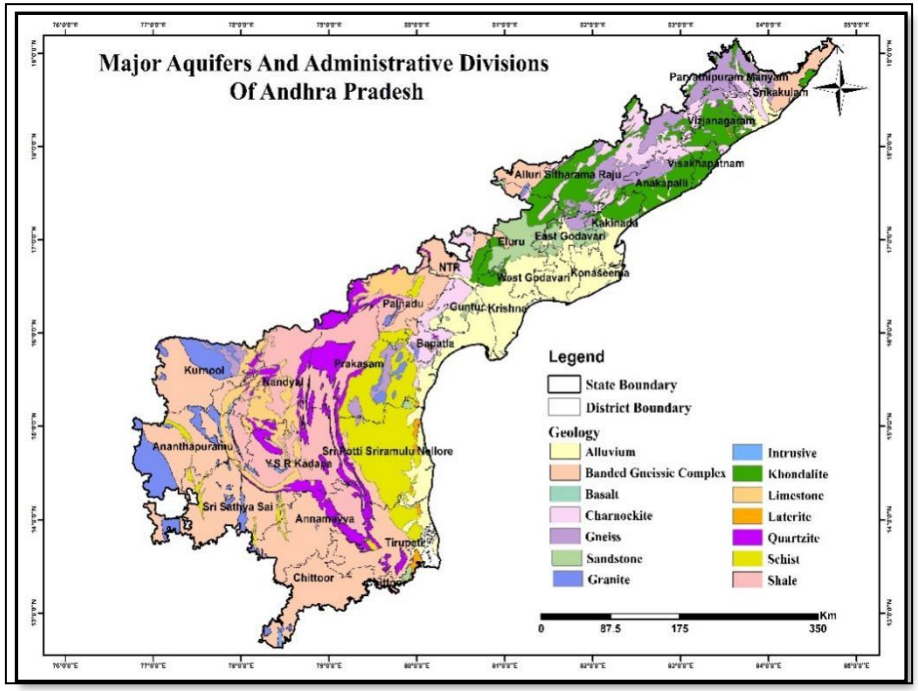

Figure-1: Map showing Major Aquifers and Administrative Divisions of Andhra Pradesh

Physiographically, Andhra Pradesh State can be divided into three distinct zones, viz., Coastal plains, Eastern Ghats and Western pediplains. The first two zones stretch from north-east to south-west in a narrow strip while 3rd zone occupy rest of the area. The elevation ranges from 0 to > 600 m above mean sea level (a.msl). Godavari and Krishna rivers and their tributaries drainthe northern and central part while Pennar river drains southern part of state before joining Bay of Bengal. There are 3 major basins and 11 medium river basins in the state.

The state is underlain by diverse rock types of different geological ages from Pre-Cambrian to Recent. 80% of the State is underlain by hard

rock formations like Archaeans, Pre-Cambrians, Cuddapahs, Kurnools and Deccan traps. The remaining 20% is underlain by soft rocks including Gondwanas, Rajahmundry sandstone and Recent Alluvium.

3.0 GROUND WATER LEVEL MONITORING

Central Ground Water Board, Southern Region, is monitoring changes in groundwater regime in Andhra Pradesh state on quarterly basis continuously. This is facilitated by a network of monitoring stations in the State located in diverse hydrogeological and geomorphic units. The number of operational wells till January 2024 was 1473 which include 676 dug wells and 797 piezometers. In August 2024, 1398 wells monitored (1380 water level recorded and 18 wells were dry), while 75 wells (25 dug wells and 50 piezometers) could not be monitored due to various reasons like inaccessibility, filled-up, installation of pump units, road damaged, gate locked, etc. The number of operational wells after completion of August 2024 monitoring stands at 1473 which include 676 dug wells and 797 Bore wells. The district-wise breakup of the water level monitoring stations is given in **Table-1**.

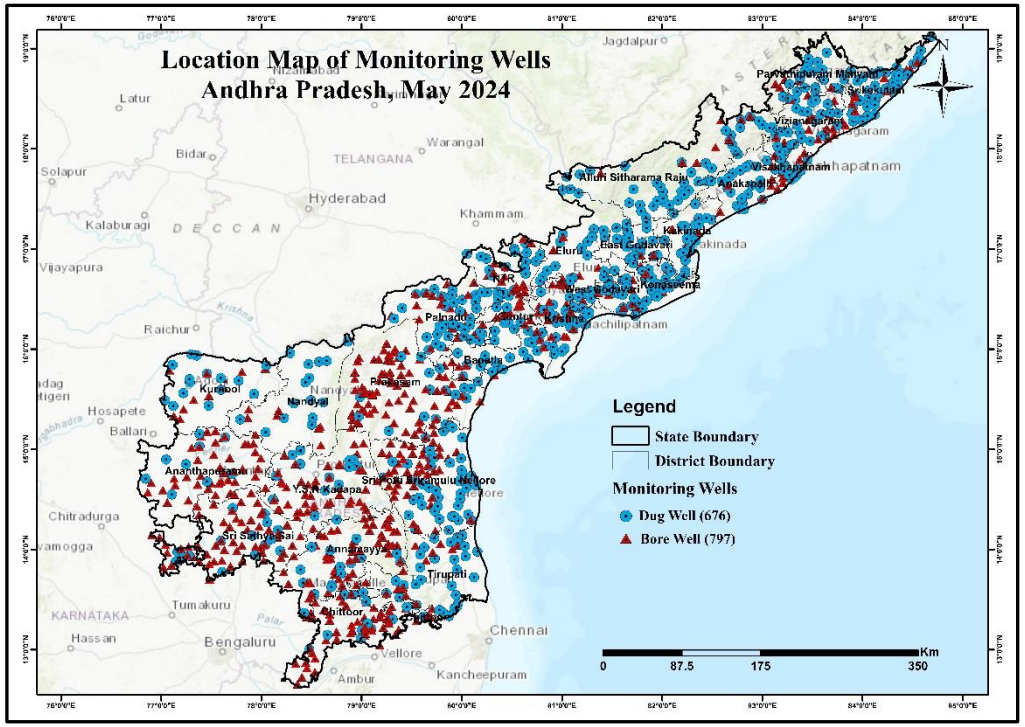

Figure- 2: Map showing locations of monitoring wells (NHNS) in Andhra Pradesh state

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

SR. No.	District	Number of Water Level Monitoring Stations				
		2022	2023	2024		
		Total	Total	DW	PZ	Total
1	Alluri Sita Rama Raju	44	56	44	13	57
2	Anakapalli	24	23	24	4	28
3	Ananthapuramu	33	67	8	58	66
4	Annamayya	45	79	19	64	83
5	Bapatla	34	35	24	12	36
6	Chittoor	40	84	15	70	85
7	East Godavari	29	26	30	12	42
8	Eluru	35	51	21	4	25
9	Guntur	24	35	34	21	55
10	Kakinada	31	29	23	18	41
11	Konaseema	31	39	23	7	30
12	Krishna	33	81	29	56	85
13	Kurnool	28	29	17	15	32
14	Nandyal	25	24	22	5	27
15	NTR	25	29	20	19	39
16	Palnadu	55	67	46	28	74
17	Parvathipuram Manyam	32	27	22	6	28
18	Prakasam	88	116	24	98	122
19	Sirkalulam	47	51	45	66	111
20	SPS Nellore	58	128	17	74	91
21	Sri Sathya Sai	45	43	51	29	80
22	Tirupati	35	48	34	16	50
23	Visakhapatnam	14	20	16	16	32
24	Vizianagaram	47	44	31	14	45
25	West Godavari	21	33	22	14	36
26	YSR Kadapa	49	70	15	58	73
	Total	**972**	**1334**	**676**	**797**	**1473**

4.0 RAIN FALL

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 2023 – August 2024. Table-2 gives the district-wiserainfall data for the period June-August 2023 & 2024, normal and the departure of June- August 2024 rainfall with other periods.

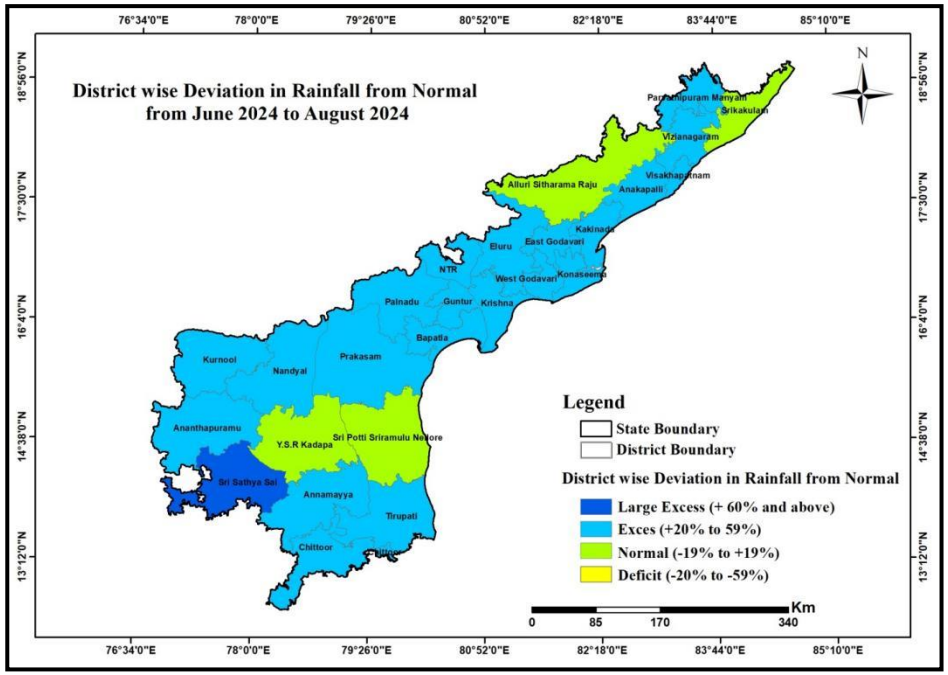

Figure-3: Rainfall deviation (June 2024 – August 2024) from normal rainfall

Table-2: District-wise variability of rainfall in Andhra Pradesh (2024)

S No	District	Rainfall (June 24-August 24)	Rainfall (June 23 to August 23)	Normal Rainfall	Departure from 2023 (%)	Departure from Normal (%)	Status
1	Alluri Sitharama Raju	788.81	805	710	-2%	11%	Normal
2	Anakapalli	629.82	548	478.61	15%	32%	Excess
3	Ananthapuramu	385.36	374	270	3%	43%	Excess
4	Annamayya	318.13	404	265.32	-21%	20%	Excess
5	Bapatla	479.09	559	346.78	-14%	38%	Excess
6	Chittoor	439.53	486	305.6	-10%	44%	Excess
7	East Godavari	828.88	672	602.64	23%	38%	Excess
8	Eluru	943.63	730	594.11	29%	59%	Excess
9	Guntur	627.6	579	426.91	8%	47%	Excess
10	Kakinada	669.26	653	490.64	2%	36%	Excess
11	Kona Seema	776.88	781	582.12	-1%	33%	Excess
12	Krishna	702.99	619	482.03	14%	46%	Excess
13	Kurnool	401.35	352	281.96	14%	42%	Excess
14	Nandyal	462.67	392	370.25	18%	25%	Excess
15	NTR	842.45	600	583.17	40%	44%	Excess
16	Palnadu	470.94	427	351.6	10%	34%	Excess
17	P.Manyam	668.43	676	558.19	-1%	20%	Excess
18	Prakasam	308.92	272	237.74	14%	30%	Excess
19	SPS Nellore	253.93	301	216.66	-16%	17%	Normal
20	Sri Sathya Sai	372.27	497	230.84	-25%	61%	L. Excess
21	Srikakulam	590.74	531	501.24	11%	18%	Normal
22	Tirupati	358.45	317	290.03	13%	24%	Excess
23	Visakhapatnam	549.28	376	430.48	46%	28%	Excess
24	Vizianagaram	626.34	569	482.27	10%	30%	Excess
25	West Godavari	842.8	686	607.07	23%	39%	Excess
26	Y.S.R	313.85	305	286.62	3%	10%	Normal
	State Mean	**563.55**	519.65	422.42	8%	33%	Excess

5.0 GROUND WATER LEVEL SCENARIO (AUGUST 2024)

5.1 SHALLOW AQUIFER (UNCONFINED)

5.1.1 DEPTH TO WATER LEVEL

Depth To Water Level in Unconfined Aquifer (August 2024)

Analysis of depth to water level data of 813 wells shows water levels vary between 0.5 m bgl (Guntur district) to 89.98 m bgl (Chittoor district). Water level of less than 2 mbgl is recorded in 22% of wells, between 2 to 5 mbgl in 40% of wells, between 5 to 10 mbgl in 24% of wells, between 10 to 20 mbgl in 10% of wells, between 20-40 m bgl in 2% of wells and water level more than 40 m bgl is registered in 2% of wells. (Figure-4)

Depth to water level map of May, 2024 (Figure-5) for unconfined aquifer shows that shallow water level of less than 2 m bgl as small isolated patches in parts of Bapatla, Guntur, Kakinada, Krishna, Nandyal, West Godavari, Srikakulam and Vizianagaram districts covering an area of 6% of state. Water level of 2 to 5 m bgl is observed mainly in coastal districts of Andhra Pradesh and also in Alluri Sitharam Raju, Bapatla, Guntur, Tirupati, Kurnool, Krishna, Nandyal, Palnadu, SPS Nellore, Vizianagaram, Visakhapatnam and small isolated patches over remaining districts covering an area of 35% of the state. Depth to water level of 5 to 10 m bgl is observed significantly in Rayalseema area covering Kurnool, Ananthpuramu, Sri Sathya Sai, SPS Nellore, Chittoor, Prakasam, Nandyal, Tirupati also in Alluri Sitarama Raju, Visakhapatnam, East Godavari, Eluru, Anakapalli and Palnadu districts covering 36% of the area of state. Water level of 10 to 20 m bgl is mainly observed in Rayalseema area in Sri Sathya Sai, YSR Kadapa, Annamayya, Prakasam districts covering 18% area of state. Deeper water levels of more than 20 m occur as isolated pockets covering mainly Prakasam, Sri Sathya Sai, YSR Kadapa, Annamayya, Chittoor, Ananthapuramu and small part of Nandyal districts covering only 5% area of state.

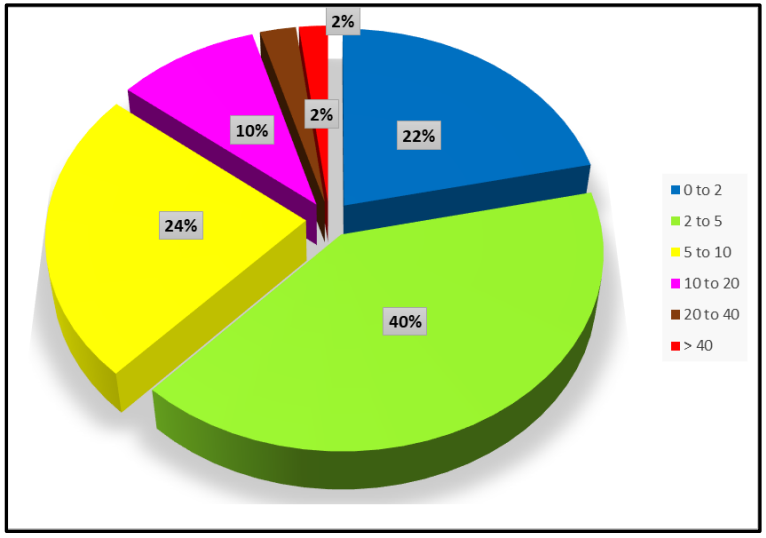

Figure-4: Percentage of wells in different water level ranges in unconfined aquifer.

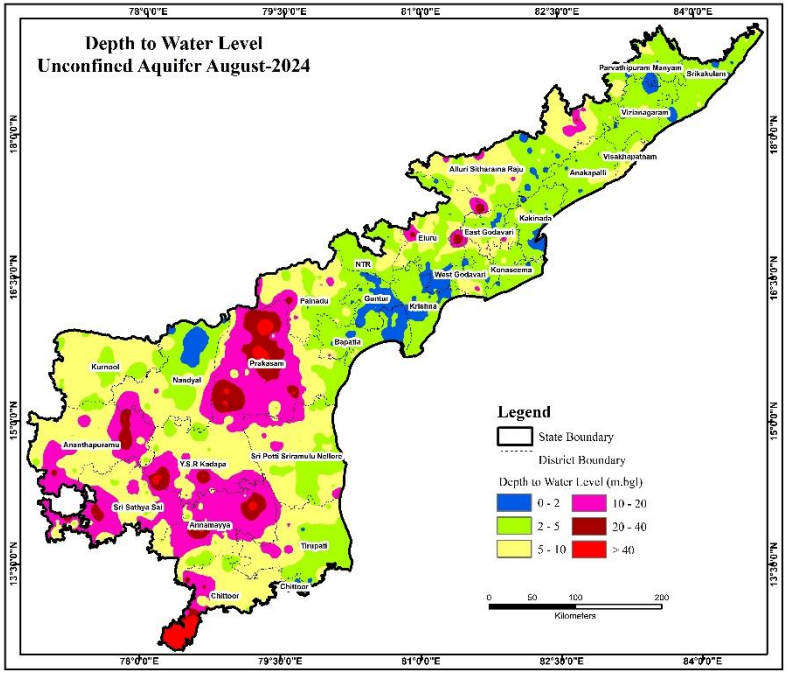

Figure-5: Depth to water level of unconfined aquifer during August 2024.

5.1.2 SEASONAL FLUCTUATION IN WATER LEVEL

Seasonal Fluctuation of Water Level in Unconfined Aquifer (May 2024 to Seasonal 2024)

Rise in Water Levels:

In the State 92% of the area (Figure-7) (598 wells) experienced rise in water levels when compared to the period May 2024. Out of 598 wells, 57% of wells have recorded rise in water level from 0 to 2 m, 26% of wells have recorded 2 to 4 m and 17 % of wells have recorded beyond 4 m. Rise in water level is observed throughout the state except in isolated patches in Prakasam, Ananthapuramu, Sri Sathya Sai, Annamayya, YSR Kadapa, SPS Nellore, East Godavari and Alluri Sitharama Raju districts (Figure-6).

Fall in Water Levels:

In the State about 8% of the area(Figure-7)(167 wells) experienced fall in water levels when compared to May 2024. Out of 167 wells that have registered fall in water levels, 65% of wells have recorded less than 2m fall, 15% of wells recorded fall of 2 to 4m, and 20% of wells recorded fall beyond 4m. The fall in water level is observed only in isolated patches of the district Prakasam, Ananthapuramu, Sri Sathya Sai, Annamayya, YSR Kadapa, SPS Nellore, East Godavari and Alluri Sitharama Raju districts (Figure-6).

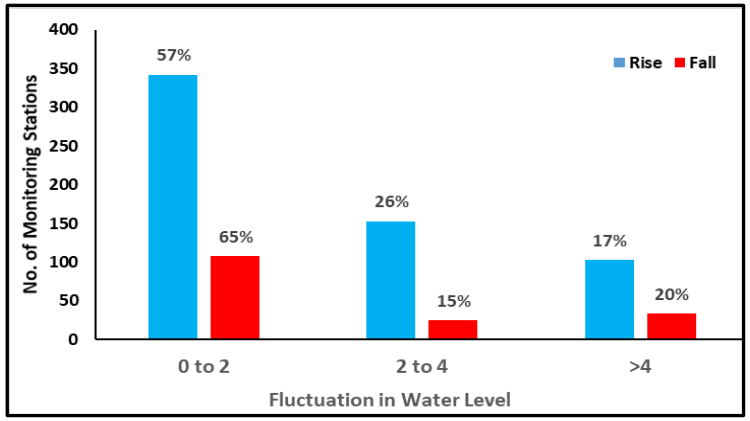

Figure-6: Percentage of wells showing seasonal rise and fall in WL in unconfined aquifer(May 2024 to August 2024)

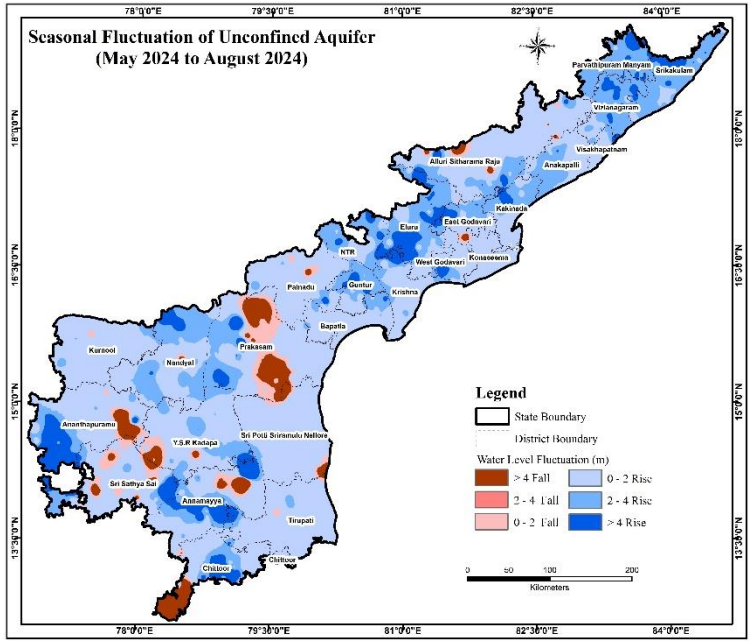

Figure-7: Seasonal water level fluctuation in unconfined Aquifer(May 2024 to August 2024)

5.1.3 ANNUAL FLUCTUATION IN WATER LEVEL

Annual Fluctuation of Water Level in Unconfined Aquifer (August 2023 to August 2024)

Rise in Water Levels:

In the State only, 26% of the area (Figure-9) (263 wells) experienced rise in water levels when compared to August 2023. Out of 263 wells, 11% of wells have recorded rise in water level from 2 to 4 m and is observed as patches over Prakasam, Nandyal, Palnadu, Eluru, West Godavari, Krishna and Parvathipuram Manyam districts covering insignificant areas (2%). Water level rise of less than 2m is observed in 80% wells covering 23% of the area and is mainly observed over Nandyal, Kakinada, Anakapalli, Vizianagaram, Prakasam, Palnadu and small isolated patches over remaining districts. Water level rise of more than 4m is observed in only 9% of wells covering an area of 1% and is mainly observed in YSR Kadapa, Sri Sathya Sai and Annamayya districts (Figure-8).

Fall in Water Levels:

Out of the 494 wells that have registered fall in water levels (Figure-9), 69% have recorded less than 2 m while 14% in the range of 2 to 4 m and remaining 17% wells registered water level fall of more than 4 m. Fall of less than 2 m is observed in all districts mainly in parts of Rayalseema districts of SPS Nellore, Kurnool, Ananthpuramu, YSR Kadapa, Sri Sathya Sai, Annamayya, Tirupati, Chittoor and also in parts of Palnadu, Eluru, Alluri Sitharam Raju, West Godavari, Srikakulam, East Godavari, Krishna and Guntur districts. Fall of 2 to 4 m, recorded in Anakapalli, Srikakulam, Eluru, Parvathipuram Maniyam, Palnadu, Visakhapatnam, Kakinada and in all Rayalseema districts. Fall beyond 4 m is recorded mainly in Ananthapuramu along with other Rayalseema districts as wells as Srikakulam, Anakapalli, Prakasam, West Godavari and Kakinada districts(Figure-8).

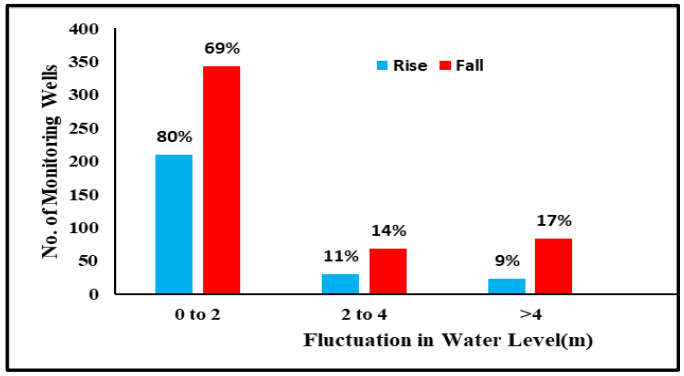

Figure-8: Percentage of wells showing annual rise and fall in WL in unconfined aquifer(August 2023 to August 2024)

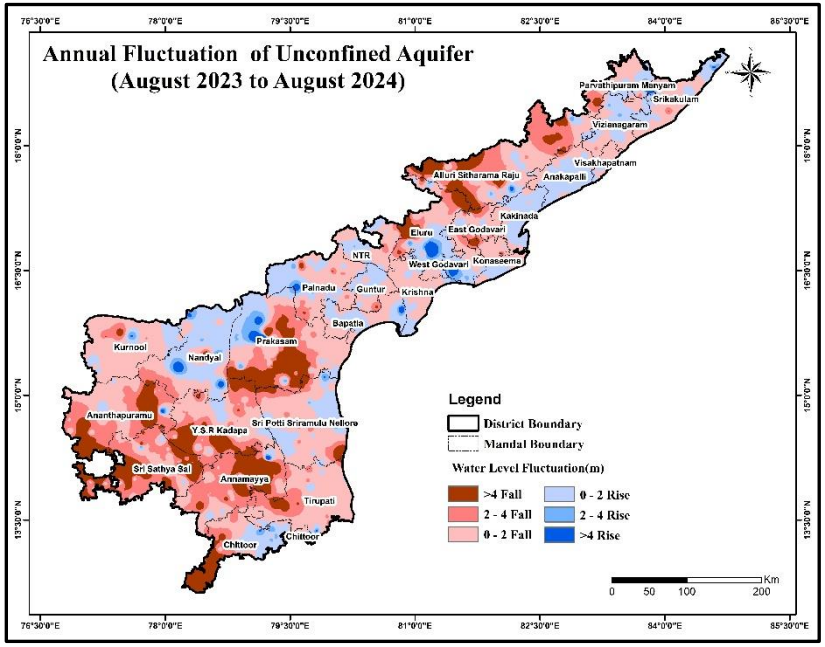

Figure-9: Annual water level fluctuation in unconfined Aquifer(August 2023 to August 2024)

5.1.4 DECADAL FLUCTUATION IN WATER LEVEL

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

Rise in Water Levels:

In the State only, 39% of the area(Figure-11) (352 wells) experienced rise in water levels when compared to the August decadal mean (2014-2023). Out of 352 wells, 11% of wells have recorded rise in water level from 2 to 4 m and is observed as patches over Prakasham, Nandyal, Palnadu, YSR Kadapa, Sri Sathya Sai, Chittoor, Ananthapuramu and Annamayya districts covering insignificant areas (9%). Water level rise of less than 2m is observed in 78% wells covering 33% of the area with majorly observed over the Kurnool, Sri Sathya Sai, SPS Nellore, Tirupati, Prakasam, Palnadu, Anakapalli and small isolated patches over remaining districts. Water level rise of more than 4m is observed in only 11% of wells covering an area of 3% mainly observed in YSR Kadapa, Sri Sathya Sai and Annamayya districts majorly (Figure-10).

Fall in Water Levels:

Out of the 486 wells that have registered fall in water levels (Figure-11), 76% have recorded less than 2 m while 11% in the range of 2 to 4 m and remaining 12% wells registered water level fall of more than 4 m. Fall of less than 2 m is observed in all districts mainly in parts of Kurnool, Anathpuramu, Sri Sathya Sai, Annamaya, Palnadu, Eluru, Alluri Sitharam Raju, Konaseema, SPS Nellore, Srikakulam, Anakapalli, Vishakhapatnam, East Godavari, Krishna and Guntur districts. Fall of 2 to 4 m, recorded in Alluri Sitharam Raju, Eluru, Prakasham, Nandyal, Palnadu, Chittoor, YSR Kadapa, Annamayya and East Godavari districts. Fall beyond 4 m is recorded mainly in Ananthaparamu, Prakasham, Nandyal, SPS Nellore, Palnadu, Alluri Sitharam Raju, East Godavari and Eluru districts (Figure-10).

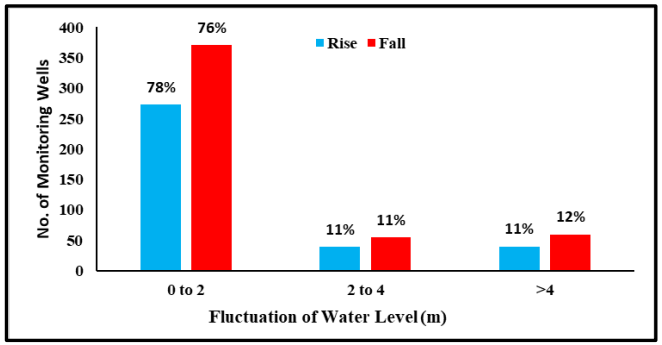

Figure-10: Percentage of wells showing decadal rise and fall in WL in unconfined Aquifer(Decadal Mean August (2014-2023) to August 2024)

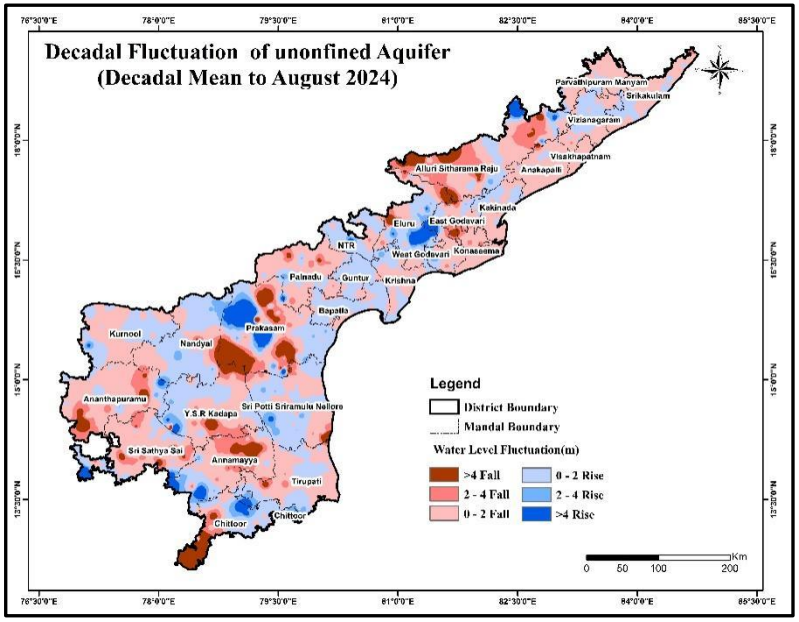

Figure-11: Annual water level fluctuation in unconfined Aquifer (Decadal Mean August (2014-2023) to August 2024)

5.2 DEEPER AQUIFER (CONFINED/ SEMI-CONFINED)

5.2.1 DEPTH TO PIEZOMETRIC LEVEL

Depth To Piezometric Level in Confined/Semi-Confined Aquifer (August 2024)

Analysis of piezometric head data of 565 wells shows water levels vary between 0.4 m.bgl (Alluri Sitharama Raju) to 92.09 bgl (Chittoor). Water level of less than 2 m bgl is recorded in 4% of wells, between 2 to 5 m bgl in 16% of wells, between 5 to 10 m bgl in 30% of wells, between 10 to 20 m bgl in 30 % of wells, between 20-40 m bgl in 13% of wells and water level more than 40 m bgl is registered in 7 % of wells (Figure-12).

Piezometric head map of August 2024 (Figure-13) shows that shallow water level of less than 2 m bgl is noticed in isolated patches in Nandyal, Guntur, Krishna, Bapatla, West Godavari, East Godavari, Vizianagaram, Alluri Sitharama Raju, Kakinada and Srikakulam districts covering an area of 0.5 % of the State. Water level of 2 to 5 m bgl mainly observed in coastal parts of the state in Srikakulam, Parvathipuram Manyyam, Vizianagaram, Vishakhapatnam, Anakapalli, Kakinada, Konaseema, East and West Godavari, Krishna, Bapatla, SPS Nellore Nandyal, Kurnool and Tirupati districts covering an area of 8.5% of the State. 41 % area of the State is covered by depth to water level of 5 to 10 m bgl with significant area in Sri Sathya Sai, Kurnool, Ananthpuramu, Chittoor, SPS Nellore, YSR Kadapa, Alluri Sitharama Raju, Palnadu, Eluru and East Godavari districts. Water level of 10 to 20 m bgl is covered in 41.5% of the State area and is mainly observed in Prakasam, Chittoor, Sri Sathya Sai, YSR Kadapa Ananthaparamu, East Godavari, Eluru, Alluri Sitharam Raju, Srikakulam, Annamayya districts. Deeper water levels of more than 20 m covers 16% area of the State and mainly observed in Prakasam, Annamaya, Chittoor, Sri Sathya Sai Nandyal, YSR Kadapa, Ananthapuram, Eluru and East Godavari districts.

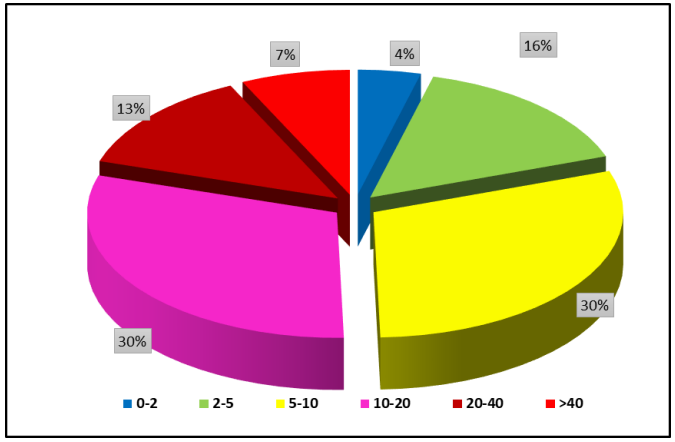

Figure-12: Percentage of wells in different piezometric levels (August 2024)

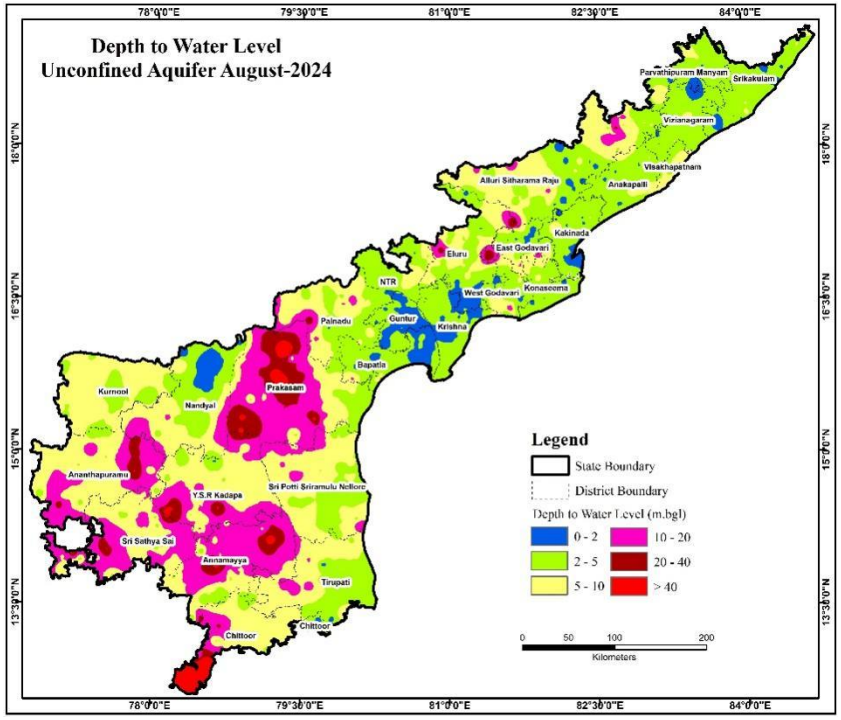

Figure-13: Depth to piezometric Level in deeper aquifer in August 2024.

5.2.2 SEASONAL FLUCTUATION IN PIEZOMETRIC LEVEL

Seasonal Fluctuation of Piezometric Level in Confined /Semi-confined Aquifer (May 2024 to August 2024)

Rise in piezometric levels:

Out of 358 wells, piezometric level rise of less than 2m is recorded in 42% wells (Figure-14) covering an area of 24%, 2 to 4m in 24% wells and more than 4 m in 34% of the wells spread over area of the State each at 30%, respectively. Piezometric level rise of less than 2m is seen in major parts of State mainly in Vizianagaram, Palnadu, Bapatla, Ananthapuramu, Kurnool, NTR, Sri Sathya Sai, Tirupati, YSR Kadapa and Chittoor districts. Piezometric level rise of 2 to 4 m is observed mainly in Parvathipuram maniyam, Srikakulam, Vizianagaram, Alluri Sitharama Raju, NTR, Palnadu, Kurnool, Ananthapuramu, Prakasam, Anakapalli, visakhaapaatnam and Guntur districts. Rise of more than 4m is significantly observed Alluri Sitharama Raju, Srikakulam, Nandyal, YSR Kadapa, Annamayya, SPS Nellore, Chittoor, Ananthapuramu, Praksam, Eluru, East Godavari, West Godavari, Konaseema, and Anakapalli districts (Figure-15).

Fall in Piezometric Levels:

Out of 189 wells that have registered fall in piezometric levels, 63% have recorded less than 2 m (Figure-14) covering an area of 12% while 13% in the range of 2 to 4 m and remaining 24% wells registered piezometric level fall of more than 4 m covering area 2% and 3%, respectively. Fall of less than 2 m is mainly observed majorly in the Prakasam, YSR Kadapa, SPS Nellore, Sri Sathya Sai, Annamayya and Chittoor districts. Fall of 2 to 4 m is observed majorly in SPS Nellore, Annamayya, Chittoor, Sri Sathya Sai, Ananthapuramu, YSR Kadapa and Prakasam. Fall of beyond 4 m is observed as asisolated patches in Bapatla, SPS Nellore, YSR Kadapa, Annamayya and Chittoor districts (Figure-15).

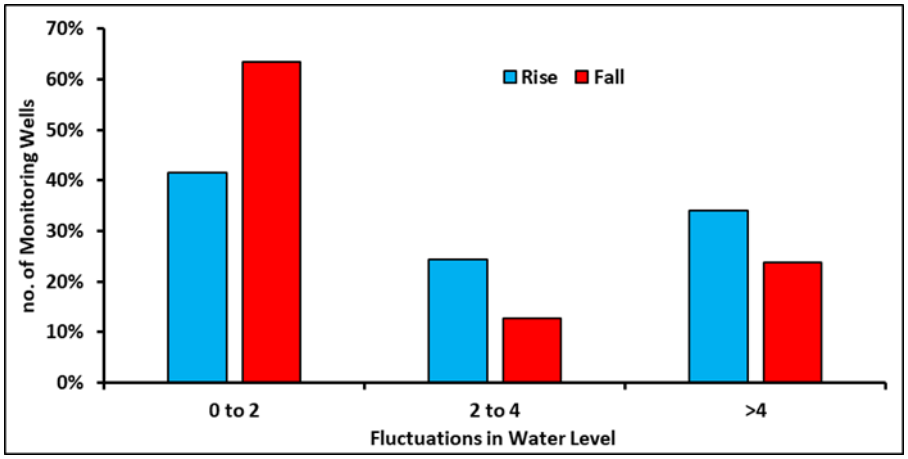

Figure-14: Percentage of wells showing seasonal rise and fall in WL in confined/semi-confined aquifer(May 2024 to August 2024)

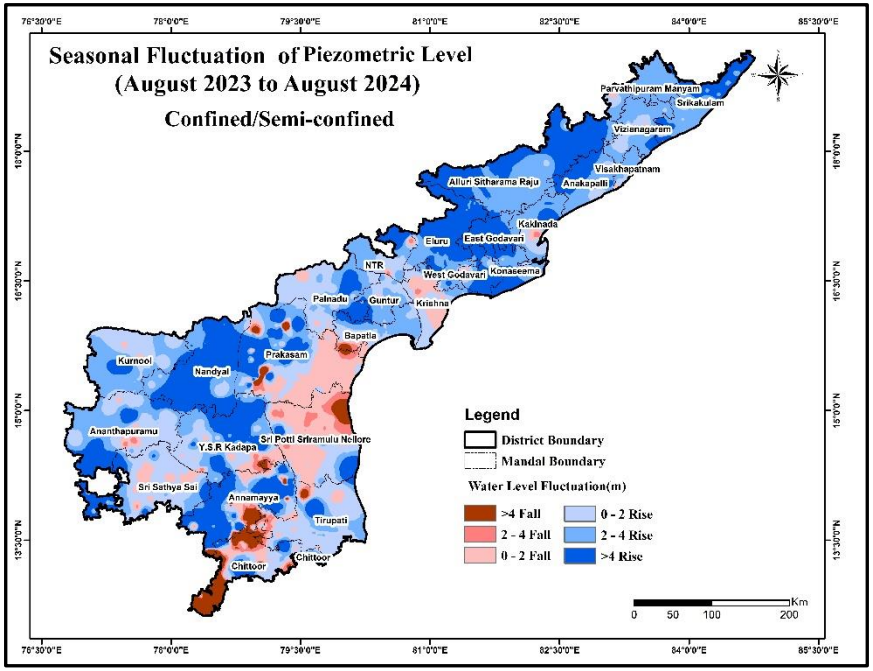

Figure-15: Seasonal water level fluctuation in confined/semi-confined Aquifer May 2024 to August 2024)

5.2.3 ANNUAL FLUCTUATION IN PIEZOMETRIC LEVEL

Annual Fluctuation of Piezometric Level in Confined /Semi-confined Aquifer (August 2023 to August 2024)

Rise in piezometric levels:

Out of 143 wells, piezometric level rise of less than 2 m is recorded in 54% wells (Figure-16) covering 11% of the area, 2 to 4m in 20% wells and more than 4m in 27% of the wells covering 5% of the area, respectively. Piezometric level rise of less than 2m is seen in parts of Alluri Sitharama Raju, Srikakulam, Eluru, East Godavari, West Godavari, Palnadu, SPS Nellore, Chittoor and Annamayya districts. Piezometric level rise of 2 to 4m is observed mainly in Alluri Sitharama Raju, Eluru, Konaseema, East Godavari, West Godavari, Kakinada, Palnadu, Annamayya, SPS Nellore and Prakasam districts. Rise of more than 4m is significantly observed in Eluru, East Godavari, West Godavari, Komaseema, Palnadu, Nandyal, Annamayya, SPS Nellore, Alluri Sitharama Raju and Sri Sathya Sai districts (Figure-17).

Fall in Piezometric Levels:

Out of 431 wells that have registered fall in piezometric levels, 37% have recorded less than 2m covering(Figure-16) 29% of the area. 24% in the range of 2 to 4 m and remaining 39% wells registered piezometric level fall of more than 4 m spread over an area of 19% and 31%, respectively. Fall of less than 2m is mainly observed majorly in the Srikakulam, Parvathipuram Manyam, Vizianagaram, Bapatla, Guntur, NTR, Ananthapuramu, Sri Sathya Sai, Tirupati, Palnadu, Alluri Sitharama Raju, Prakasam and NTR. Fall of 2 to 4 m is observed mainly in Parvathipuram Manyam, Srikakulam, Anakapalli, Visakhapatnam, Prakasam, Ananthapuramu, Sri Sathya Sai, NTR, Tirupati, YSR Kadapa, and Kurnool. Fall of beyond 4 m is observed over the Kurnool, Nandyal, Anathapuramu, Sri Sathya Sai, Chittoor, Tirupati, YSR Kadapa, Prakasam, NTR, Eluru and Kakinada districts (Figure-17).

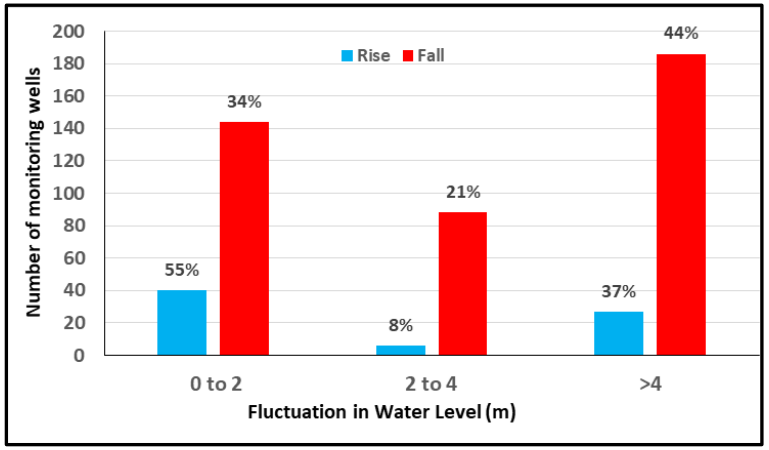

Figure-16: Percentage of wells showing seasonal rise and fall in WL in confined/semi-confined aquifer(August 2023 to August 2024)

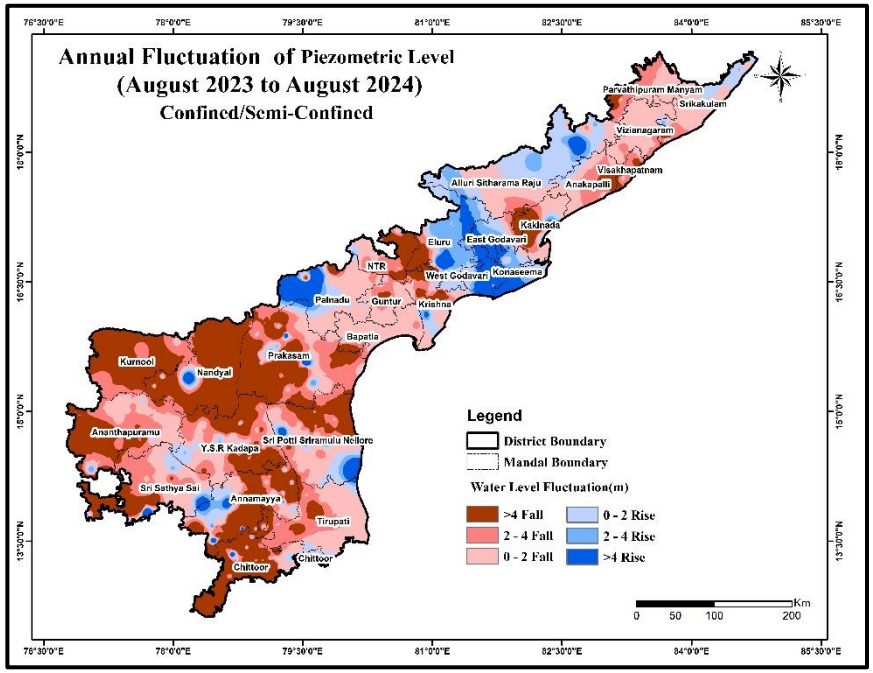

Figure-17: Annual water level fluctuation in confined/semi-confined Aquifer (August 2023 to August 2024)

5.2.4 DECADAL FLUCTUATION IN PIEZOMETRIC LEVEL

Decadal Fluctuation of Piezometric Level in Confined / Semi- confined Aquifer (Decadal Mean August (2013-2024) to August 2024)

Rise in piezometric levels:

Out of 200 wells, piezometric level rise of less than 2 m is recorded in 63% wells covering an area of 27%, 2 to 4m in 15% wells and more than 4 m in 23% of the wells are spread over 8% and 4% of the area, respectively (Fig. 18). Piezometric level rise of less than 2m is seen in major parts of State mainly in Srikakulam, Alluri Sitharama Raju, East Godavari, Eluru, Palnadu, Kurnool, Nandyal, YSR Kadapa, Anathapuramu, Sri Sathya Sai, SPS Nellore, Tirupati, Anakapalli, Konaseema and Chittoor districts (Fig. 19). Piezometric level rise of 2 to 4 m is observed mainly in Alluri Sitharama Raju, Palnadu, Eluru, East and West Godavari, YSR Kadapa, Ananthapuramu and Sri Sathya Sai districts. Rise of more than 4m is significantly observed in Alluri Sitharama Raju, Palnadu, Prakasam, YSR Kadapa, Sri Sathya Sai, Ananthapuramu, SPS Nellore, Eluru and Kurnool districts.

Fall in piezometric level:

Out of 361 wells that have registered fall in piezometric levels, 63% have recorded less than 2 m covering over an area of 46% while 16% in the range of 2 to 4 m and remaining 21% wells registered piezometric level fall of more than 4 m with spread over an area of 8% and 7%, respectively. Fall of less than 2 m is mainly observed majorly in the Srikakulam, Parvathipuram Manyam, NTR, YSR Kadapa, Guntur, Bapatla, Praksama, Nandyal, Ananthapuramu, Sri Sathya Sai, Kurnool, SPS Nellore, Tirupathi, Palnadu, Anakapallio, Vizianagaram and Kakinada districts. Fall of 2 to 4 m is observed majorly in Prakasam, Nandyal, YSR Kadapa, SPS Nellore, Chittoor, Annamayya and Sri Sathya Sai. Fall of beyond 4 m is observed majorly over YSR Kadapa, Prakasam, Chittor, Annamayya, Nandyal and isolated patches in Sri Sathya Sai districts.

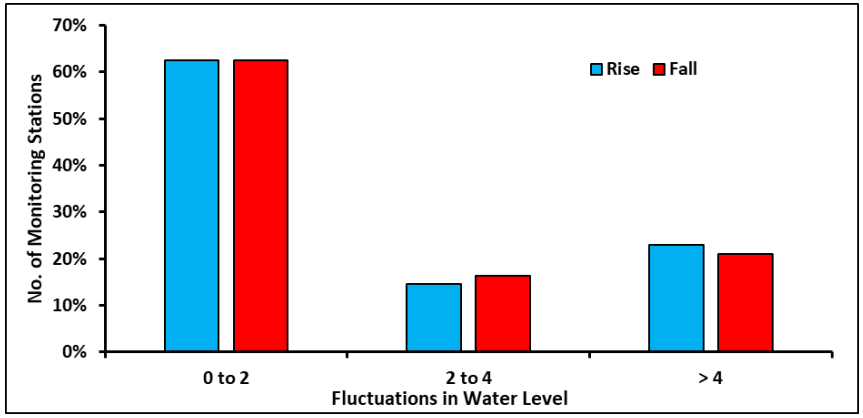

Figure-18: Percentage of wells showing decadall rise and fall in piezometric level in confined/semi-confined Aquifer (Decadal Mean August (2013-2024) to August 2024)

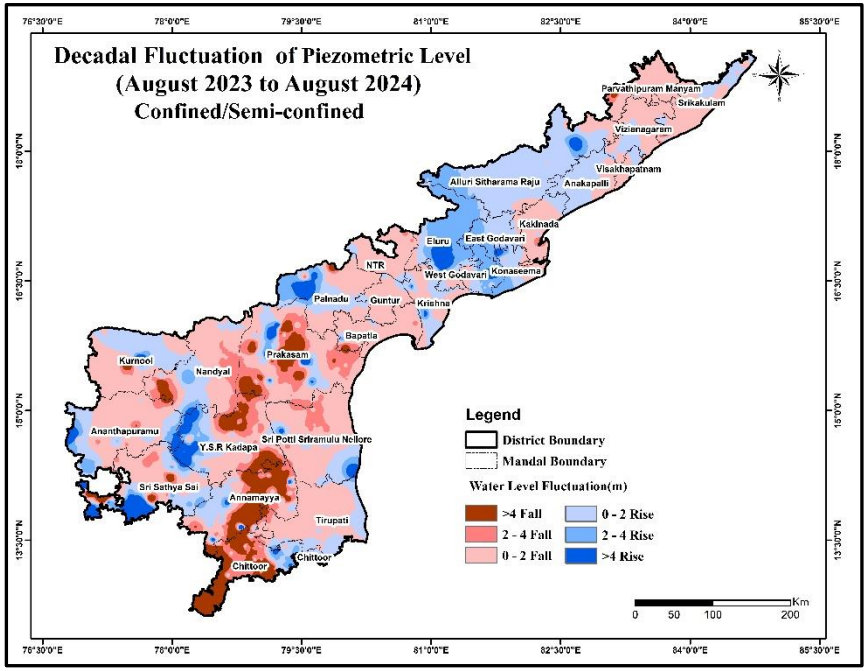

Figure-19: Percentage of wells showing annual rise and fall in piezometric level in confined/semi-confined Aquifer (Decadal Mean August (2013-2024) to August 2024

6.0 SUMMARY

As a component of the National Ground Water Monitoring Programme, the CGWB, SR, Hyderabad conducts monitoring of the ground water conditions on a quarterly basis: in January, pre-monsoon May, post- monsoon August, and November. Additionally, a yearly assessment of ground water quality is performed in May. As of August 31, 2024, the Andhra Pradesh State Unit Office of the Central Ground Water Board monitors 676 dug wells and 797 piezometers. This comprehensive effort aims to portray the variations in the state's groundwater conditions across different aquifers.

In August 2024, in unconfined aquifer around 77% of the state's area and in confined aquifer around 50% exhibited a depth to water level within 10 meters below ground level. Deeper water levels of more than 20 m covers 23% area of the State in unconfined aquifers and 20% area in confined aquifer mainly covering mainly Prakasam, YSR Kadapa, Annamayya, Chittoor, Ananthapuramu and Nandyal districts.

The groundwater level in Andhra Pradesh during August 2024 has been significantly influenced by a notable normal rainfall from June 2024 to August 2024. This period witnessed a departure of 33% from the normal and 8% normal when compared to May 2024 to August 2024, classifying the region as experiencing normal rainfall in comparison to May 2023 to August 2023. This significant has led to the further depletion of ground water during – August 2024.

Seasonal water level fluctuation, May-2024 to August-2024 in unconfined aquifer shows that about 78% of wells (568) has shown rise in water level and 22% of wells (167) showed fall in water level. For confined/semi-confined aquifer system about 65% of wells (358) shows rise in water level and 34% of wells (189) showed fall in water level. The significant rise in water levels 92% of wells in unconfined and 84% of wells in confined aquifer is influenced by the rainfall condition during May 2024 to August

Annual water level fluctuation, August-2023 to August-2024 in unconfined aquifer shows that about 35% of wells (263) has shown rise in water level and 65% of wells (494) showed fall in water level. For confined/semi-confined aquifer system about 25% of wells (143) shows rise in water level and 75% of wells (431) showed fall in water level. The significant fall in water levels 65% of wells in unconfined and 75% of wells in confined aquifer might be influenced by the normal (8%) rainfall condition during May 2024 to August 2024 compared to May 2023 to August 2024.

The Decadal fluctuation (August 2014-2023 to August 2024) of ground Water Level in unconfined aquifer shows 39% of the area experienced rise in water levels when compared to the decadal pre-monsoon mean. Out of 352 wells, 11% of wells have recorded rise in water level from 2 to 4 m. Water level rise less than 2m is observed in 78%. Water level rise of more than 4m is observed in only 11% of wells.

The decadal fluctuation (August 2014-2023 to August 2024) in confined/semi-confined it is observed that level rise of less than 2 m is recorded in 63% wells, 2 to 4m in 15% wells and more than 4 m in 23% of the wells.