GOVERNMENT OF ANDHRA PRADESH
GROUND WATER AND WATER AUDIT DEPARTMENT
WATER RESOURCES DEPARTMENT

From
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To
Hon'ble National Green Tribunal,
New Delhi

Letter No. 1267/Hg-II/2020, **Dated: 05 .09.2024**

Sir,

Sub:- Ground Water and Water Audit Department – Water Resources Department- Hon'ble NGT(Principal Bench) - Suo Moto O.A.No.694 of 2023 – The News Item titled "UN predicts groundwater level in India will reduce to low by 2025" – Information Submitted - Regarding.

Ref:- 1Govt. of Andhra Pradesh Memo No. ICD01/1039/2024/WRG-GRC, dated:30.08.2024 from Additional Secretary to Govt., Water Resources (WRG-GRC) Department, Amaravati.
2. From Hon'ble NGT-Principal Bench , New Delhi- Order dated 26-7-2024 in OA No 694/2023

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With reference to the above subject and reference 2nd cited, I am to submit my apologies for the delay in submission of reply to the Hon'ble NGT. The delay is because of the OA was first sent to the Department of Environment, Forest, Science and Technology Department, Govt. of Andhra Pradesh and they have redirected to the Water Resources Department.

The reply / response from the Andhra Pradesh Water Resources Department is here with submitted to the Hon'ble NGT for necessary action.

Yours faithfully

DIRECTOR

Encl: Reply

GOVERNMENT OF ANDHRA PRADESH
GROUND WATER AND WATER AUDIT DEPARTMENT

Status of Ground Water Resources of Andhra Pradesh State and Action Plan for Ground Water Management in the State, as per the para number 5 of Suo Moto-OA No. 694/2023 before the Hon'ble National Green Tribunal

Para -5 Applicable to the Andhra Pradesh State

Introduction:

In Andhra Pradesh, Groundwater has been occupying an important place in state agriculture and accounts for about 40 per cent of the gross irrigated area with about 19 lakh agriculture bore wells.

Andhra Pradesh, the eighth largest State of the country with a geographical area of 1,63,129 Sq Km.(4.96% of the Country area). It is bordered by Telangana in the north -west, Chhattisgarh in the north, Odisha in the north - east, Tamil Nadu in the south, Karnataka in the west and the Bay of Bengal in the east. Andhra Pradesh is having a coast line of 974 kms, 2nd longest coast line after Gujarat.

The AP Ground Water and Water Audit Department is involved in technical assessment of groundwater resources periodically, monitoring groundwater regime with a network of 1810 Piezometers covering all 14 Principal Aquifers, 670mandals/ blocks and 748 watersheds of Andhra Pradesh so as to facilitate sustainable groundwater development, management and optimal utilization of available ground water resources.

Hydrometeorology

Andhra Pradesh, in general, experiences tropical climate and topographical variations and the maritime influence causes the change in the climate. The state normal annual rainfall is 966 mm. In the drier and interior southern districtsAnantapuramu and Sri Satya Sai, it is as low as 552 mm while the north western coastal regions record normal of more than 1200 mm. The rainfall record shows that droughts are fairly recurrent in the state. The average rainfall of coastal and Rayalaseema regions is 973 mm and 726 mm respectively. The State receives about 66% of rainfall from south-west monsoon (June-September) and about 25% from north-east monsoon (October-December). The remaining 9% is received during the winter and summer months.

Geological and Hydrogeological Characteristics

Andhra Pradesh state is characterized by varied Geological formations ranging from Archaean to Recent. Nearly 80% (1.31 lakh km^2) of the state is underlain by hard rocks (consolidated formations) belonging to the Peninsular Gneissic Complex, Dharwars and Eastern Ghats of Archaean to Middle Proterozoic Age, meta sediments of Cuddapah and Kurnool Group belonging to Middle to Upper Proterozoic Age and Deccan Traps. These rocks lack primary porosity and ground water occurrence is controlled by extent of weathering and fracturing. The rest of the state 20% (32,626 km^2) is underlain by semi consolidated sediments formations encompassing Gondwanas, Tertiary group of formations and Sub-Recent to Recent unconsolidated sediments. The thickness of weathering generally varies from 5 to 20 m and occasionally up to 40 m. The yield of bore wells depends on the number of fractures encountered.

The **Principal aquifers in Andhra Pradesh are as follows.**

Principal Geological Units in Andhra Pradesh					
S. No.	**Major Geological Unit**	**% of area in total State's area**	**S. No.**	**Major Geological Unit**	**% of area in total State's area**
1	Alluvium	12.75	8	Schist	8.66
2	Laterite	0.43	9	Quartzite	5.91
3	Basalt	0.09	10	Charnockite	6.81
4	Sandstone	2.80	11	Khondalite	8.71
5	Shale	12.47	12	Banded Granite Gneiss	25.84
6	Limestone	4.74	13	Gneiss	6.11
7	Granite	4.45	14	Intrusives	0.24

Ground Water Resources Estimation:

The National Water Policy enunciates periodic assessment of groundwater resources for quantification, sustainable development and management. State wise assessment was done in the entire country including Andhra Pradesh in 2004, 2008, 2011, 2013, 2017, 2019-20, 2021-22. Now the re-estimate the resources for the entire country including Andhra Pradesh as on 2022-23 is under progress as per GEC 2015 Methodology given by MoJS, GoI.

As per the GEC 2021-22, the Annual Extractable GW Resource, GW Extraction for all uses andStage of Ground Water Extraction (%)are 26,423 MCM, 7,478 MCM and 28 % respectively (it is 20.5% in command area and 37.5% in Non command area. The data from 2016-17 to 2022-23 shows the stage of development decreased from 44 to 28%, Category of Over Exploitedmandals decreased from 45 to 10 and Safe mandals increased from 541 to 639.

GROUND WATER RESOURCES IN ANDHRA PRADESH				
	2016-17	**2019-20**	**2021-22**	**2022-23**
Annual Extractable GW Resource MCM	20153	22944	25940	26423
GW Extraction for all uses MCM	8897	7630	7451	7478
Stage of Ground Water Extraction (%)	44	32	29	28

Category of Villages &Mandals during different assessment years								
Sno	**Cate-gory**	**2016-17**		**2019-20**		**2021-22**		**2022-23**	
		Villages	**Mandals**	**Villages**	**Mandals**	**Villages**	**Mandals**	**Villages**	**Mandals**
1	Over Exploited	2515	45	1735	23	517	6	**707**	**10**
2	Critical	539	24	514	15	476	5	**443**	**3**
3	Semi-Critical	1362	60	1338	40	1181	19	**1112**	**18**
4	Safe	13051	541	13880	592	15293	640	**15205**	**639**
	Total	17467	670	17467	670	17467	670	**17467**	**670**

As per AP WALTA, notified 188 villages as Over Exploited and in these villages banned the drilling of new bore wells for any purpose other than drinking purpose. The district administration has takenup these OE villages as Jalshakthi villages for WC activity.

Ground Water Levels Monitoring and Ground Water Levels Status:

The department is monitoring groundwater levels from 1810 piezometers. This network is covered in all the 670mandals, 748 groundwater micro basins (watersheds) and 14 principal aquifers in all the 26 districts of the State. The Department monitor groundwater levels monthly once manually from all piezometers and also monitor on real time basis (4 times a day) from the DWLRs installed to the Piezometers and analyse the data, prepare groundwater levels status reports monthly/ need based reports. Based on the data, demarcate the areas with different water level zones and communicate to the concerned departments who are executing the water conservation activities and also to the district and state administration.

Water Conservation Activity:

Andhra Pradesh Government have constructed 13,99,238Water Conservation Structureswith the storage capacity of 39,071mcft under different programmes to recharge the Groundwater and to improve the water levels which is reflected in decrease ofStage of Ground Water Extraction and increase in safe mandals.

The Details of WC Structures in the State:

WC Structures in Andhra Pradesh		
Farm Ponds	Count(nos)	6,20,863
	Capacity(mcft)	4408
Check Dams (E)	Count(nos)	45,842
	Capacity(mcft)	14702
Percolation Tanks	Count(nos)	11,003
	Capacity(mcft)	3,884
Others	Count(nos)	7,21,530
	Capacity(mcft)	16,077
Total	Count(nos)	13,99,238
	Capacity(mcft)	39,071

JalSakthiAbhiyan- Catch the Rain (JSA-CTR)

In Andrha Pradesh, implementing JSA-CTR as per the GoI guidelines with the following objectives:

- *A mission approach to improve the ground water table in convergence mode, with the objective of finding a solution to water crisis that the nation is going to face in future.*
- To conserve water and augment water resources to revive India back to a sustained system of water conservation and efficient irrigation
- To organize awareness campaigns on Water Conservation and Water Utilization

Interventions in the JSA-CTR 2023 campaign across all 26 Districts:

1) Water conservation & rain water harvesting
2) Setting of Jal Shakti Kendras
3) Geo-tagging & making inventory of all water bodies
4) Intensive Afforestation
5) Awareness generation

With this activity, observed the improvement/sustainability in groundwater levels in the areas of implementation.

National Aquifer Mapping and Management Programme (NAQUIM)

In Andhra Pradesh, implementing NAQUIM with the CGWB with the following Objectives:

- Know Your Aquifer and Manage your Aquifer
- The NAQUIM outputs include information about the lateral and vertical disposition of Aquifers.
- Ground Water Levels, Ground Water Quality, Status of Ground Water Resources etc along with management plans which include Supply and Demand side interventions.

National Aquifer Mapping and Management Programme (NAQUIM) was initiated in 2012 as a part of the ground water management and regulation plan scheme.

- Aquifer maps have been prepared and management plans have been developed for the entire mappable area of about 1.42 lakh km^2 by March 2023.

Ground Water Regulation in Andhra Pradesh State:

The State of Andhra Pradesh has enacted "Andhra Pradesh Water, Land, Trees Act (APWALTA) - 2002" to promote water conservation and tree cover and regulate the exploitation & use of groundwater and surface water for protection and conservation of water sources, land and environment and matters connected therewith or incidental thereto.

As per the Act, the following GroundWater Protection Measures are implementing in Andhra Pradesh

Every owner of the well shall register the well giving details in in a prescribed format at Authorities concerned.

Regulating Groundwater extraction in the state trough APWALTA.The persons / Agencies desiring to drill any type of new well wells for agriculture / industrial purposes should obtainpermissionfrom the Authorities concerned.

No person shall sink any well in the vicinity of a public drinking watersource within a distance of 250 metres.

Registering all drilling rigs at district level and they need to be renewed biannually.

Notifying Over Exploited villages under APWALTA and Imposing ban on drilling of new wells other than for drinking water purpose in notified over exploited villages.

There is a separate Single Desk Portal for industrial promotion and industries are permitted to withdraw groundwater duly imposing certain terms and conditions like installation tampered proof digital flow meters for accounting daily groundwater withdrawal, monitoring of groundwater levels / changes in groundwater quality through piezometers, construction of ARWHS etc.

In addition to this, GoAP have proposed groundwater extraction charges for all categories of industries in line with the CGWA guidelines as a stringent action to regulate and control groundwater extraction in the state, which is under finalization.

As per the WALTA Act, there are certain restrictions on depth of drilling wells and spacing norms between the wells from the existing well and depth in each Agro-Climatic and Ground Water Zone to control indiscriminate extraction of groundwaterfromdeeperaquifers.

Certain penalties are being imposed as per the ACT for whoever violates any of the provisions of this Act shall be punishable witha fine.

Conclusion:

Ground Water Department:

- Ground Water & Water Audit (GW & WA) Department, Govt. of Andhra Pradesh is functioning under the Water Resources department, Govt. of Andhra Pradesh since 1971 led by the Director with 26 District Ground Water Officers (DGWO) in all 26 districts.
- The functions of GW & WAD are ground water monitoring, assessment, water auditing & involved in regulation in AP state by providing technical inputs to the regulating authority

Ground Water Regulation:

- In Andhra Pradesh, the ground water for industrial, infrastructure and mining are being regulated through Andhra Pradesh Water, Land & Tree Act (AP WALTA) – 2002 administrated by the Commissioner, Panchayat Raj & Rural Development (PR & RD), Govt. of AP.
- Since January 2015 to till date, 1365 NOCs have been issued (EoDB) for borewell construction and groundwater extraction.
- The adoption of CGWA guidelines and pricing of commercial usage of water is under active consideration with the GoAP.
- The GW & WA Department is providing necessary technical inputs on groundwater issues to the authority for effective implementation of the Act

Dissemination of Information:

- The information on GW regime is being disseminated in the form reports, advisories at diff time intervals in addition to the real time dissemination through APWRIMS. It is helping District admin & other line depts. in prioritizing the water conservation and management interventions

National Aquifer Mapping and Management Programme (NAQUIM)

- Total area mapped in Andhra Pradesh as on March-2023: 1,41,748 SqKms
- Aquifer maps finalized for entire mappable area of 1,41,748 sqkms
- State Ground Water Coordination Committee (SGWCC) approves the NAQUIM reports/outcomes
- Approved reports are shared to the district level committees chaired by the District Collector and line departments for implementation by Convergence

Change in Ground Water scenario – Andhra Pradesh (from 2017 to 2022 assessment):

- Total Annual Groundwater Recharge increased from 21 BCM to 28 BCM
- Annual Extractable Groundwater Resources increased from20.15 BCM to 26.42 BCM
- Percentage of safe assessment units increased from 75% to 89% (499 to 597)
- Percentage of over-exploited assessment units decreased from 6% to 1.4% (45 to 10)
- Over-all stage of groundwater extraction of the decreased from44% to 28%
- Percentage of overexploited, critical and semi-critical (OCS) mandalsreduced to 76% (129 to 31 mandals).
- Percentage of overexploited, critical and semi-critical (OCS) villages reduced to 37% (3587 to 2262 villages).

Ground Water Levels trend:

- During Pre-Monsoon (May-2024), slight fall of 0.10m is observed in AP over the decadal Pre monsoon mean water level (11.71 m to11.81 m). despite the less rainfall and more utilization.

Best Practices:

- Increase in density of monitoring network stations (under NHP) from 107 to 70 km2/well) (National average (CGWB):145 km2/well). .
- 1.5 million borewells geo-tagged.
- Bringing IoT (internet of Things) in Real Time Data Acquisition (RTDAS). Developed a integrated State of Art, Water Resources Information and Management System (APWRIMS) for near real time visualisation of water resources in the state.
- Ground Water Resource estimation is being conducted at Village level and categorizing the villages, mandals/ block, watersheds into Safe, Semi-Critical, Critical and Over Exploited
- Imposing ban on the new wells construction in notified OE villages under AP WALTA
- Demarcating different Water Level zones and implementing WC activities in deep water level zones on priority basis

The Government of Andhra Pradesh is monitoring the groundwater status very closely and implementing suitable measures to safeguard the precious groundwater resource in the state and to sustain the ground water at desired levels by adopting suitable management plans at both the supply and demand sides.

DIRECTOR