GOVERNMENT OF INDIA
MINISTRY OF JAL SHAKTI
DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION
CENTRAL GROUND WATER BOARD

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Contents

EXECUTIVE SUMMARY

Central Ground Water Board (CGWB), Department of Water Resources, River Development and Ganga Rejuvenation, Government of India, is the National Apex Organisation entrusted with the responsibilities of providing scientific inputs for management, exploration, monitoring, assessment, augmentation and regulation of ground water resources of the country. Central Ground Water Board was established in 1970 by renaming the Exploratory Tube wells Organization (ETO) under the Ministry of Agriculture, Government of India. Later, it was merged with the Ground Water Wing of the Geological Survey of India in Year 1972. The Board carries out its activities through 18 Regional Offices, 17 Divisional offices and 10 State Unit offices located in States/UTs.

National Aquifer Mapping and Management Programme (NAQUIM)

NAQUIM is one of the important Programme of Department of Water Resources, River Development and Ganga Rejuvenation being implemented by Central Ground Water Board. Under this program, it is envisaged to cover nearly 25 lakh km^2 area of the country for which Aquifer Maps are to be prepared and management plans to be formulated for sustainable management of ground water resources in the country. Several activities such as data collection, data compilation and data generation for preparation of Aquifer Maps and Management Plans are being taken up in phased manner. The areas to be covered have been prioritised considering over-exploitation, ground water contamination and other issues. The cumulative coverage under NAQUIM, since 2012 (upto March 2021) is 16.33 lakh km^2. During the period 2020-21, aquifer maps and management plans were developed for an area of 3.30 lakh km^2. Thus, nearly 65.42% of the total mapable area identified (24.96 lakh km^2) for aquifer mapping has been covered till March 2021.

Ground Water Exploration

Ground Water Exploration is carried to study the sub-surface hydrogeological set up of the aquifer, their interlayering and to evaluate aquifer parameters of various aquifer systems. During the year 2020-21, the Board under its in-house Ground Water Exploration programme has constructed 686 wells (483 Exploratory Wells (EW), 190 Observation Wells (OW) and 13 Piezometers (Pz's) to assess the ground water potential in different hydrogeological set-up of the country. Priority was accorded to over exploited/ critical/ semi–critical/ drought prone and areas affected with groundwater pollution etc. Out of 483 exploratory wells constructed, 418 wells were constructed in hard rock, 50 wells in alluvium and 1 well in Bouldary formation including 69 exploratory wells drilled in the tribal and 19 wells in drought prone areas.

Geophysical Studies

During 2020-21, a total of 1010 Vertical Electrical Soundings (VES), 2301 Transient Electro-Magnetic (TEM) study, 62.8 line km 1D resistivity profiling/ 2D imaging and 33 borehole logging have been conducted in various parts of the country to ascertain water bearing layer at different depths as well as in finalizing the tubewell assembly.

Water Quality Analysis

During 2020-21, a total of 29456 groundwater samples had been analyzed out of which 17037 water samples were analyzed for determination of basic constituents, while 12419 water samples for Heavy Metals including As, Fe, U etc. Ground quality analysis helps in understanding variation in water quality and pin pointing areas facing issues of geogenic and anthropogenic contamination of groundwater.

Monitoring of Ground Water Observation Wells

The Board monitors the ground water level in the country four times a year (Jan/ May/ Aug/ Nov) through a network of 22835 ground water observation wells (Dug Wells: 16271, Piezometers: 6394, Hand Pump: 129, spring: 41) throughout the country. The ground water samples are collected during the pre-monsoon monitoring and analysed for the purpose of ascertaining the changes in chemical quality of ground water. Monitoring of Ground Water Observation Wells for May, August, November 2019 & January 2020 were completed and reports have been prepared describing fluctuation of water levels during each measurement compared to monitoring of previous year, decadal average and pre-monsoon period to depict detailed information regarding short term and long-term changes in the ground water regime.

Technical Documentation and Publication

Results of investigations carried out by Central Ground Water Board are suitably documented in the form of reports which are categorized as Aquifer Mapping reports, Ground Water Year Books and Basic Data Reports.

During 2020-21, 23 Ground Water Year Books were prepared and 117 Basic Data Reports sumbitted.

Water Supply Investigations

The Board carries out request based short-term water supply investigations for Government departments and defence establishments and helps in augmenting their water supply. During 2020-21, the Board conducted 103 such request based investigations in different parts of the country.

Dissemination and Sharing of Technical Know-how

The officers of CGWB participated in various seminars/ symposia/ workshop/ conference to share their experiences in the Ground Water domain and also for getting exposure to new ideas / technological developments in the Ground Water science with other experts. The officers of the Board also participated in various meetings and contributed as members of several committees on issues related to ground water development and management in specific areas.

Dynamic Ground Water Resources Estimation

As per Ground Water Resource Assessment (2020), the total annual ground water recharge has been assessed as 436 bcm. Keeping an allocation for natural discharge, the annual extractable ground water resource worked out as 398 bcm. The total annual ground water extraction has been assessed as 245 bcm. The average stage of ground water extraction for the country as a whole works out to be about 62 %.

Artificial Recharge Studies

Artificial recharge for groundwater augmentation is one of the primary supply side interventions for sustenance of groundwater which is the major source for domestic & irrigation water supply in India. During 2020-21, CGWB prepared revised Masterplan for artificial recharge to groundwater in India, 2020 along with respective State counterparts. This is a macro plan formulated to work out the feasibility of various structures for the different terrain conditions of the country and respective estimated cost, providing a broad outline of the project and expected investments. CGWB implemented aquifer rejuvenation project in three aspirational districts and constructed total 196 artificial recharge structures (77 check dams, 4 percolation tanks, 2 sub-surface barrier, 46 recharge wells and 67 recharge shafts) and 41 piezometers. CGWB is also provided technical guidance for implementation of water conservation/ artificial recharge initiatives through MGNREGS in identified 9 water stressed blocks in 8 states.

Human Resources Development

It has been the earnest endeavour of the Board to keep its technical personnel abreast of the latest developments in various aspects of ground water development and management. Besides the officers of the Board, officers from State Departments and candidates from abroad were also included in the training programmes organized by the Board. During the year 2020-21, a total of 59 numbers of Training Courses (34-Tier I, 19-Tier II and 06- Tier III) were conducted by RGNGWTRI in which a total of 3163 trainees (1152- Tier I, 1497-Tier II and 514- Tier-III) were imparted training including 1017 female participants.

National Hydrology Project (NHP)

National Hydrology Project (NHP) is a continuation of Hydrology Project HP- I and HP- II, a central sector scheme of Department of Water Resources, RD & GR, Ministry of Jal Shakti, Government of India with a total outlay of Rs. 3679.7674 Crore. It will act as a repository of Nation-wide Water Resources data for a period of 08 years extending from 2016-17 to 2023-24. CGWB has undertaken the following activities under the NHP:

- Construction of 60 piezometers in coastal aquifers of Tamil Nadu & UT of Puducherry for Real time monitoring of Water Level & Water Quality: Contract awarded on 04.11.2020 amounting Rs. 5,79,89,075/- + GST
- Organized 03 Nos Domain Specific Training for 59 Nos officers from State/ Central Implementing Agencies under NHP through RGI, Raipur.
- Revamping of Center of Excellence has been made for which different Hardware and Software has been procured.

Central Ground Water Authority

Central Ground Water Authority (CGWA) has been entrusted with the responsibility of regulating ground water development and management in the country and issuing necessary directives for the purpose. A total of 1393 new NOCs were issued and 322 NOCs renewed during the 2020-21. In addition, exemption was given in respect of 4794 new applications and 244 renewal cases. As compared to previous year, there has been a marked increase of 228 % in issuance of new NOC / exemption and that of 363% in case of renewals.

Pradhan Mantri Krishi Sinchayee Yojana

Government of India envisages providing ***'Har Khet Ko Pani (HKKP)'*** with a goal of doubling the farmer incomes. A major thrust area to boost agricultural income is to provide irrigation to all the farmlands to enhance food-grain production with the consequent benefits like employment generation etc. at village level. During FY 2020-21, provision of Rs. 400 Cr. (BE) was made towards Central Assistance (CA) for proposals of States Government under the scheme. Later on, this was reduced to Rs. 80 Cr. (RE) keeping in view of the COVID-19 pandemic. Further, on recommendation of Central Ground Water Board three projects of Rs. 356.24 Cr. were approved by DoWR, RD & GR during 2020-21. As a part of central assistance towards the State Government, Rs. 79.996 crore were released for seven projects (in the state of Assam Phase- I & II, Arunachal Pradesh Phase-I, Tamilnad, Mizoram, Manipur and Uttarakhand).

During FY 2020-21, 16395 wells have been constructed creating additional command area of 35438 Ha, benefitting 34755 small & marginal farmers.

Public Interaction Programmes (PIP)

Public Interaction Programmes, including water budgeting sessions and aquifer specific interventions, are being organized in association with Krishi Vigyan Kendra's (KVK's), Panchayats etc. in areas for which aquifer management plans have been shared with the State Agencies. These programmes are being carried out with representation from Panchayats, block and district level administrations, NGOs, farmers, health and sanitation workers and other stake holders. In the year 2020-21, a total of 254 PIPs were organized through the regional offices of the board in different states with participation of nearly 12500 persons.

Budget & Expenditure

During 2020-21, an expenditure of Rs. 13805.85 lakhs under the Plan and Rs. 23359.62 lakhs under Non Plan were incurred by the Board to carry out various activities. The Plan wise expenditure is as indicated below:

Sr. No.	Item of Work	Budget (Rs. in Lakhs)	Revised Estimate (Rs. in Lakhs)	Final Grant (Rs. in Lakhs)	Expenditure (Rs. in Lakhs)
1.	Plan (GWMR+TSP, Gross)	29000.00	14000.00	14080.52	13805.85
2.	Non-Plan	24500.00	23500.00	23515.00	23359.62
3.	RGNGWTRI	600.00	165.00	165.00	126.39
4.	NHP-II (Plan)	774.98	38.32	15.14	10.66
5.	Building for Offices	2200.00	200.00	200.00	177.36
6.	Deduct Recoveries	1500.00	1500.00	1500.00	544.07

1. ABOUT CGWB

1.1 CENTRAL GROUND WATER BOARD

Central Ground Water Board, the National apex organization dealing with Ground Water under the Department of Water Resources, River Development and Ganga Rejuvenation, Government of India, is vested with the responsibilities of providing scientific inputs for management, exploration, monitoring, assessment, augmentation and regulation of ground water resources of the country.

1.2 MANDATE AND OBJECTIVES

The mandate of Central Ground Water Board is to "Develop and disseminate technologies, monitor and implement national policies for scientific and sustainable development and management of India's ground water resources including groundwater exploration, assessment, conservation, augmentation, protection from pollution and distribution based on principles of economic and ecological efficiency and equity". Commensurate with the above mandate, the objectives laid down for the Central Ground Water Board are :

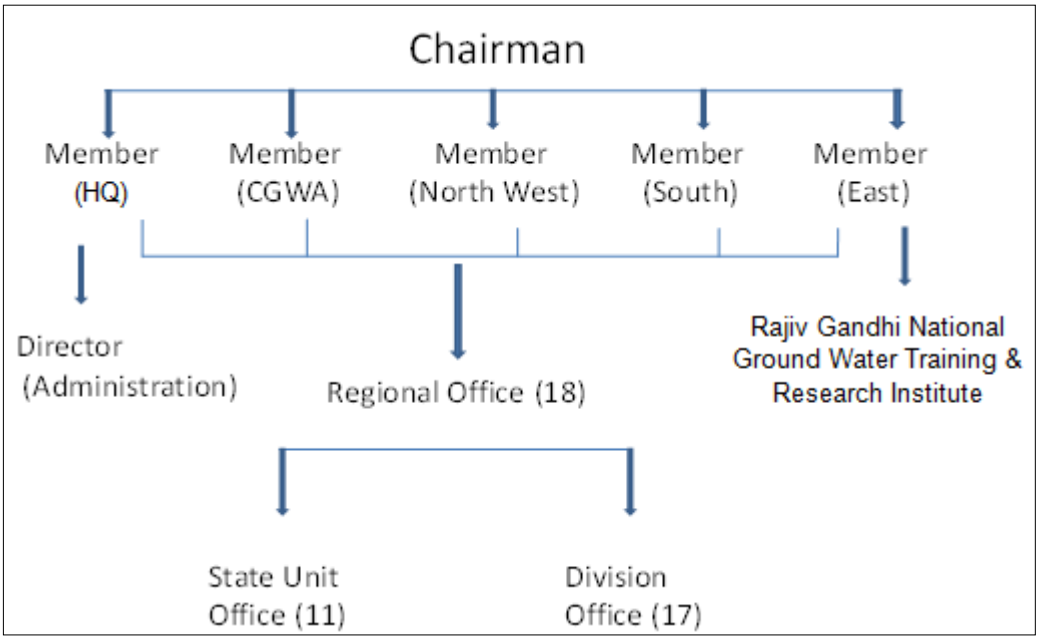
- Aquifer mapping for delineation & disposition of Aquifer Systems to prepare aquifer maps & management plans.
- Periodic longterm monitoring of ground water regime for creation of time series database through existing and enhanced ground water observation wells.
- Capacity building in ground water development and management through training, information dissemination, education and awareness.
- To enhance ground water sustainability through artificial recharge and rainwater harvesting measures for arresting the depleting trends of ground water.
- Regulation of ground water development and sustainable management of ground water resources in coordination with State Government Organizations.
- Technical assistance to Defence and Govt. organizations for providing feasible sites for ground water sources for their water supply schemes.

1.3 ORGANIZATIONAL SET UP

The Central Ground Water Board is headed by the Chairman and has five full time Members namely, Member (Head Quarter- HQ), Member (North & West), Member (South), Member (East & NGI) and Member (CGWA). The other Members of the Board are all ex-officio being the nominees of institutions in related fields of expertise. The ex-officio members are:

- The Joint Secretary (A), Ministry of Water Resources, River Development and Ganga Rejuvenation.
- The Joint Secretary (GW), Ministry of Water Resources, River Development and Ganga Rejuvenation.
- The Joint Secretary & Financial Adviser, Ministry of Water Resources, River Development and Ganga Rejuvenation.
- The Joint Secretary, Ministry of Environment & Forests.
- The Chief Engineer, IMO (WP &P), CWC.
- The General Manager, ONGC, Ministry of Petroleum & Natural Gas.

Structure of Central Ground Water Board



MEMBER (Head Quarter- HQ)

Responsible for all Policy Planning and Coordination for the following activities:

- Policy planning and coordination of various activities of CGWB.
- Coordination with other Members of the Board for monitoring of implementation of Annual Action Plan.
- The work pertaining to procurements, Material Management and Operation.
- Progress Monitoring of all schemes, documentation and publications.
- Research, Innovation with various Institutions and Bilateral Cooperation.
- Activities related to NHP, NWM.
- Monitoring of Zonal & compilation of National GW Resources Assessment.
- Application of advanced techniques including RS/GIS, Database Management, e-Governance.
- Monitoring of Zonal activities related to Water Conservation, Artificial Recharge, IES activities and training.
- Administration and Human Resources Management.
- Administrative and Technical supervision of the Activities of SUO, Delhi.

MEMBER (SOUTH)

The Member (South) looks after the following activities:

- Technical supervision of Regional Directorates and Divisional offices of CR/ SR/ SWR/ SECR/KR
- Implementation of all the activities including AAP pertaining to the Regions under jurisdiction.
- Planning and execution of all outsourcing activities pertaining to the Regions under jurisdiction.
- GW Monitoring and Resources Assessment, Documentation and Publications.

- Material Management
- Coordination with States

MEMBER (NORTH & WEST)

The Member (North & West) looks after the following activities:

- Technical supervision of Regional Directorates and Divisional offices of NWR/NWHR/ NHR/NCR
- Implementation of all the activities including AAP pertaining to the Region under Jurisdiction
- Planning and execution of all outsourcing activities pertaining to the Regions under jurisdiction.
- GW Monitoring and Resources Assessment, Documentation and Publications.
- Material management
- Coordination with States

MEMBER (EAST)

The Member (East) looks after the following activities.

- Technical supervision of Regional Directorates and Divisional offices of ER/NER/ SER/NCCR/MER
- Implementation of all the activities including AAP pertaining to the Region under jurisdiction
- Planning and execution of all outsourcing activities pertaining to the Regions under jurisdiction.
- GW Monitoring and Resources Assessment, Documentation and Publication
- Material management
- Coordination with States
- Rajiv Gandhi National Ground Water Training and Research Institutes (RGI)*

*Rajiv Gandhi National Ground Water Training and Research Institute (RGI) located at Raipur, Chhattisgarh, caters to the training requirements of Central Ground Water Board and also the State Govt. Organizations, Academic Institutes, NGOs etc. During XII Plan, RGI under “HRD and Capacity Building Scheme” of the Department of Water Resources, River Development and Ganga Rejuvenation is implementing a three-tier training programme keeping in view the requirements of the National Aquifer Management Program. These trainings enable creation of trained workforce for implementation of Program / Scheme for overall sustainable development of ground water resources.

MEMBER (CGWA)

The Member (CGWA) looks after the following activities.

- Supervision of the Regional Directorates and Divisional offices of NR/UR.
- Implementation of all the activities pertaining to the Region under Jurisdiction including Implementation of Annual Action Plan, Physical and Financial Achievements, Administrative, Technical

CGWA

- Policy Planning and implementation
- Regulation of Ground Water Development and Management
- Clearances (No Objection Certificate) for Ground Water withdrawal
- Legal matters pertaining to CGWA

Parliament Cell

- Parliamentary matters and VIP reference

SUO, Delhi

- GW Monitoring and Resources Assessment, Documentation and Publications
- Coordination with respective State Govt.
- Planning and execution of all outsourcing Activities.

Central Ground Water Board undertakes various activities through its 18 Regional Directorates (Table 1.1) supported by 17 Engineering Divisions (Table 1.2) and 10 State Unit Offices (Table 1.3).

Table 1.1- REGIONAL OFFICES OF CGWB

Sl. No.	REGIONS & REGIONAL OFFICES		STATES/ UT's
1	NWR, Chandigarh	North Western Region, Chandigarh	Punjab
			Haryana
			Chandigarh
2	NWHR, Jammu	North Western Himalayan Region, Jammu	Jammu, Kashmir & Ladakkh
3	NHR, Dharamshala	North Himalayan Region, Dharamshala	Himachal Pradesh
4	WCR, Ahmedabad	West Central Region, Ahmedabad	Gujarat
			Daman & Diu
5	NCR, Bhopal	North Central Region, Bhopal	Madhya Pradesh
6	WR, Jaipur	Western Region, Jaipur	Rajasthan
7	NR, Lucknow	Northern Region, Lucknow	Uttar Pradesh
8	UR, Dehradun	Uttaranchal Region, Dehradun	Uttarakhand
9	ER, Kolkata	Eastern Region, West Bengal	West Bengal
			Sikkim
			Andaman & Nicobar Islands
10	NER, Guwahati	North Eastern Region, Guwahati	Assam
			Arunachal Pradesh
			Manipur
			Meghalaya
			Mizoram
			Nagaland
			Tripura
11	MER, Patna	Mid Eastern Region, Patna	Bihar
			Jharkhand
12	SER, Bhubaneswar	South Eastern Region, Bhubaneswar	Odisha
13	NCCR, Raipur	North Central Chhatisgarh Region, Raipur	Chhattisgarh
14	CR, Nagpur	Central Region, Nagpur	Maharashtra
			Pune
			Dadra & Nagar Haveli
15	SWR, Bengaluru	South Western Region, Bengaluru	Karnataka
			Goa
16	SECR, Chennai	South East Central Region, Chennai	Tamil Nadu
			Puducherry
17	SR, Hyderabad	Southern Region, Hyderabad	Andhra Pradesh
			Telangana
18	KR, Thiruvananthapuram	Kerala Region, Thiruvananthapuram	Kerala

Table 1.2- ENGINEERING DIVISION OFFICES OF CGWB

DIVISION		STATE
I	Ahmedabad	Gujarat
		Daman &Div
II	Ambala	Punjab
		Haryana
		Chandigarh
		New Delhi
III	Varanasi	Uttar Pradesh
IV	Chennai	Tamil Nadu
		Puducherry (UTP)
		Kerala
V	Ranchi	Bihar
		Jharkhand
VI	Nagpur	Maharashtra
		Dadra & Nagar Haveli
VII	Guwahati	Assam
		Arunachal Pradesh
		Meghalaya
		Manipur
		Nagaland
		Tripura
VIII	Jammu	Jammu & Kashmir
IX	Hyderabad	Andhra Pradesh
		Telangana
X	Bhubneshwar	Odisha
XI	Jodhpur	Rajasthan
XII	Bhopal	Madhya Pradesh
XIII	Raipur	Chhatisgarh
XIV	Bangalore	Karnataka
		Goa
XV	Kolkata	West Bengal
		Sikkim
		Andaman & Nicobar
XVI	Bareilly	Uttar Pradesh
		Uttarakhand
XVII	Dharamshala	Himachal Pradesh

Table 1.3- STATE UNIT OFFICE's (SUO) OF CGWB

	SUO	STATE	REGIONAL OFFICE
1	Agartala	Tripura	NER, Guwahati
2	Allahabad	Uttar Pradesh	NR, Lucknow
3	Belagavi	Karnataka	SWR, Bengaluru
4	Itanagar	Arunachal Pradesh	NER, Guwahati
5	Jodhpur	Rajashtan	WR, Jaipur
6	R. K. Puram	New Delhi	
7	Pune	Maharashtra	CR, Maharashtra
8	Ranchi	Jharkhand	MER, Patna
9	Shillong	Meghalaya	NER, Guwahati
10	Vishakhapatnam	Andhra Pradesh	SR, Hyderabad

2. NATIONAL AQUIFER MAPPING AND MANAGEMENT PROGRAMME

INTRODUCTION

The National Aquifer Mapping & Management Programme (NAQUIM) has been taken up country - wide under "Ground Water Management and Regulation" Central Sector Scheme of the Departmentof Water Resources, RD & GR. The major objectives of the program are:

- Delineation and characterization of aquifers in three dimensions to understand their disposition
- Identification and quantification of groundwater issues
- Development of suitable groundwater management plans for interventions to ensure sustainability of ground water resources.

As a part of the NAQUIM studies, available information of aquifer is compiled, integrated and data gaps are filled through new data generation through exploration and then preparation of aquifer disposition in 3-D and aquifer-wise management plans suggesting various interventions to optimize ground water withdrawal, identifying aquifers of potable groundwater for drinking purpose in quality affected areas and sustainable management of groundwater resources.

METHODOLOGY & APPROACH

A multidisciplinary scientific approach using advanced tools / techniques including remote sensing, GIS, geophysical techniques, ground water modelling etc. is being followed with broad objective of preparation of aquifer maps and development of management plans. In order to study the application of advanced techniques, initially six pilot projects were taken up by the Board in 5 different States representing the hydrogeological complexity of the country during XII plan. The areas were in Maharashtra (part of Nagpur district), Rajasthan (parts of Dausa and Jaisalmer districts), Bihar (part of Patna district), Karnataka (part of Tumkur district) and Tamilnadu (part of Cuddalore district). The learning of the Pilot projects have been synthesized and adopted nation-wide for implementing Aquifer Mapping and Management programme.

The flow diagram showing steps for preparation of aquifer maps and management plans are indicated below:

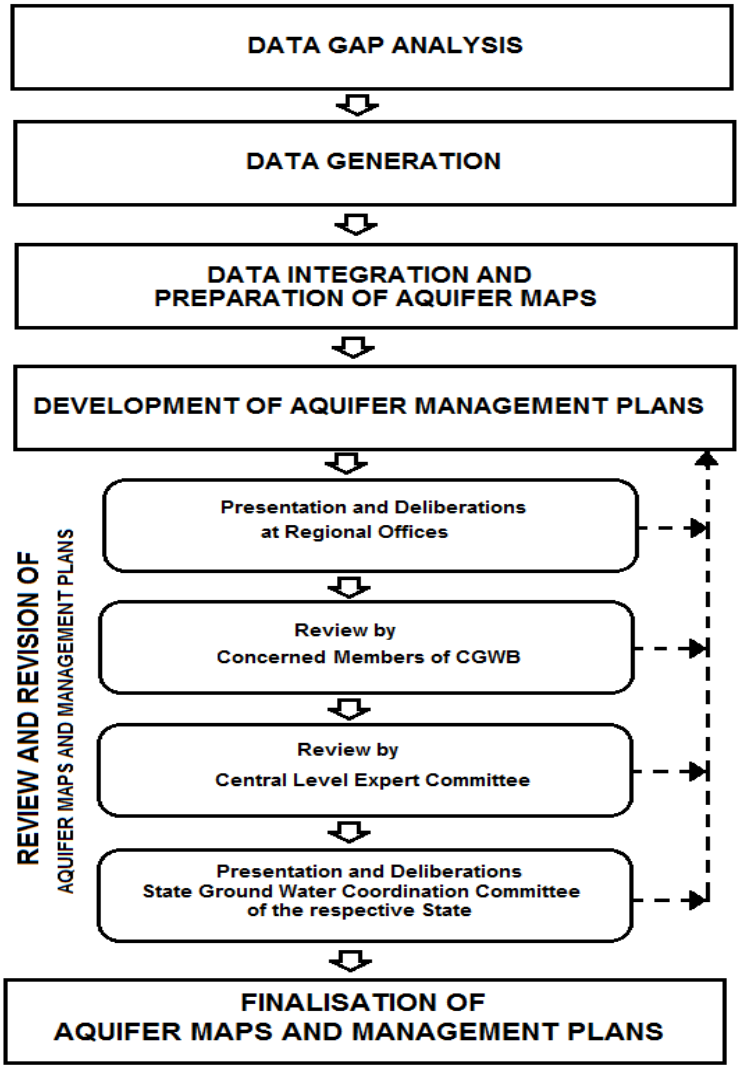


Fig.2.1 Summary of methodology and approach of the Aquifer Mapping and Management Programme

A mutli-tier evaluation process has been put in place to ensure quality of outputs. The aquifer maps and management plans prepared are first reviewed by the Regional Director of the respective regions of the Board. The revised maps and management plans are then presented before the concerned Member of the zone at the central headquarters level. Subsequently, the finalized maps and management plans are presented before the National Level Expert Committee (NLEC) having experts from JNU, Delhi; IIT, Roorkee; Ex-Chairman of CGWB; Agriculture experts etc. have also been associated in finalization of management plans. In order to coordinate on various issues related to aquifer mapping, between the State and Union Government, State Ground Water Coordination Committee (SGWCC) has been formed in each State and UT, headed by the Principal Secretary of the concerned department. The final outputs are shared and deliberated in State Ground Water Coordination Committee to have mutual agreement on the proposed aquifer-wise ground water management plans, which are shared with the respective State for suitable for its effective implementation.

MAJOR ACHIEVEMENTS

National Aquifer Mapping and Management Programme (NAQUIM) was initiated in the year 2012 and out of ~32 lakh km^2 of the entire country, an area of ~24.96 lakh km^2 has been identified to be covered under aquifer mapping in phases. During the XII plan (2012-17), major thrust was on an area of 5.26 lakh km^2 covering parts of eight priority States (Haryana, Punjab, Rajasthan, Gujarat, Andhra Pradesh, Telangana, Karnataka, Tamil Nadu) and Bundelkhand areas of Uttar Pradesh and Madhya Pradesh. These areas have been prioritized considering over-exploitation, ground water contamination and other issues. In addition to these priority areas, aquifer mapping was also taken up in other parts of the country.

During 2017-20, Aquifer maps and management plan for an area of 6.6 lakh km^2 was targeted, however aquifer maps and management plan for an area of 6.71 lakh km^2 have been prepared. During the period 2020-21, aquifer maps and management plans were developed for an area of 3.30 lakh km^2 (Table 2.1). So far, aquifer maps and management plan for an area of 16.33 lakh km^2 have been prepared (Table 2.1).

Table 2.1: State wise area covered (in Km^2) under National Aquifer Mapping and Management Programme during 2020-21

Sl. No.	Name of the State/ UT	Total Mappable area	Achvt. during 2020-21 till March 2021	Aquifer maps & management plans till Mar. 2021
1	**Andaman & Nicobar UT**	1774		800
2	**Andhra Pradesh**	141784	12100	76285
3	**Arunachal Pradesh**	4703		4048
4	**Assam**	61826	11772	25752
5	**Bihar**	90567	14968	40625
6	**Chandigarh UT**	115		115
7	**Chhattisgarh**	96000	6925.18	54424.18
8	**Dadra & Nagar Haveli**	490		490
9	**Daman & Diu UT**	112		0
10	**Delhi**	1483		1483
11	**Goa**	3702		3702
12	**Gujarat**	160978	18317.45	104819.45
13	**Haryana**	44179		44179
14	**Himachal Pradesh**	8020	360	8020
15	**Jammu & Kashmir UT**	9506		9506
16	**Jharkhand**	65797	12530	41771
17	**Karnataka**	191808	15031	118993
18	**Kerala**	28088	3266	24426
19	**Lakshdweep UT**	32		32
20	**Ladakh UT**	963	963	963
21	**Madhya Pradesh**	265234	40567.48	132163.48
22	**Maharashtra**	256529	76903	184194
23	**Manipur**	2559		2559
24	**Meghalaya**	10645		9542
25	**Mizoram**	700		700
26	**Nagaland**	910		910
27	**Odisha**	119636	15680	61778
28	**Pudducherry UT**	454		454

29	**Punjab**	50368		50368
30	**Rajasthan**	334152	42960.14	230252.14
31	**Sikkim**	1496		280
32	**Tamil Nadu**	105829	5492	105829
33	**Telangana**	104824	15900	81521
34	**Tripura**	6757		6757
35	**Uttar Pradesh**	241345	32982.776	161611.776
36	**Uttarakhand**	11430		7811
37	**West Bengal**	71947	3770	36465
	Total	**2496742**	**330488.026**	**1633629.026**

NAQUIM work completed

MEETING OF NATIONAL INTER-DEPARTMENTAL STEERING COMMITTEE (NISC)

National Interdepartmental Steering Committee (NISC) on Aquifer Mapping & Management Program (NAQUIM) has been constituted by the Departmentof Water Resources, River Development and Ganga Rejuvenation with Secretary (WR, RD & GR) as the Chairman and Additional Secretary (WR, RD & GR) as Vice Chairman. NISC draws Members from various Central Ministries/ Departments related to Water Resources such as NWM, MoDW&S, MoES, MoRD, MoUD, MoS&T, CWC, CGWB, CSIR, JS (A&GW), Planning Commission etc. Principal Secretaries of related departments from States of Uttar Pradesh, Rajasthan, Punjab, Haryana, Gujarat, Tamil Nadu, Maharashtra, Andhra Pradesh (Undivided) are also Members of NISC. Starting from the first meeting, on 21.11.2013, nine meetings of NISC have been held till March 2021.

Ninth meeting of NISC was held on 12th April, 2021. In the nineth meeting of NISC, major achievements were highlighted by Member Secretary (NISC) during the meeting. The progress of NAQUIM was reviewed during the meeting.

INTERVENTIONS FOR AQUIFER REJUVENATION

The main objective of the project is Aquifer Rejuvenation through construction of suitable area specific Artificial Recharge structures to establish successful & replicable site specific techniques for similar water stressed/ over exploited/ semi critical areas and projecting the impact in terms of sustainability of resources on a long term basis.

Innovative schemes for Aquifer Rejuvenation to develop/ update area specific methodologies based on proven/ innovative technologies in coordination with State Governments/ Institutions/ identified PSUs have been taken up.

In the study area, artificial recharge structures have been constructed in parts of following blocks of three Aspirational Districts of Maharashtra, Andhra Pradesh and Telangana state-

- Osmanabad block, Osmanabad District, Maharashtra- Semi Critical
- Pulivendulamandal, YSR Kadapa District, Andhra Pradesh- Over Exploited
- Bachennapetmandal, Warangal District, Telangana- Over Exploited

Detailed hydrogeological studies were taken up to study/assess the impact assessment on ground water regime of the proposed Bandharas (pre-project & post-project). Aquifer rejuvenation project has been carried out in Osmanabad Block (Osmanabad District, Maharashtra), Pulivendula (Dist. YSR Kadapa, A.P.), Bachennapet (Dist. Warangal, Telangana). The Impact assessment reports have been completed at all places.

Aquifer rejuvenation project sites were selected in one block each of Andhra Pradesh and Telanagana whereas in Osmanabad only two watersheds (MR-12 & MR-13) have been covered so that the recharge structures are constructed in cluster to have good impact on ground water regime. Respective state personnel were involved from the start of the project at all the three places. Similarly, constructions of Bridge cum Bandhara (BCB) have been initiated in Maharashtra state and have been constructed successfully.

MICRO LEVEL AQUIFER MANAGEMENT PLANS

Micro Level Aquifer Management Plans have been prepared for representative Gram Panchayats in various hydrogeological typologies across the country. In 2020-21, a total of 384 Microlevel Aquifer Management plan have been prepared. Selection of the Panchayats were made on the basis of the stage of ground water development, ground water contamination profile, ground water development prospects including requests of the State Agencies to address any specific ground water related problems.

FACILITATING PUBLIC INTERACTION ON AQUIFER MAPS AND MANAGEMENT PLANS

Aquifer maps and Management plans being prepared by CGWB are shared with the State Agencies for implementation. Implementation of the management plans by the State agencies is expected to improve the groundwater situation by de-stressing the aquifers.To facilitate interaction among stake holders including communities on the Aquifer maps and management plans for greater public participation, CGWB has organized 254 Public Interaction Programmes during 2020-21 in which nearly 12,500 participants (including nearly 4450 females) having representatives from Panchayats, Block and district level administrations, farmers, health and sanitation workers, NGOs and other stakeholders participated and were sensitised on Aquifer Maps and Management Plans .

3. GROUND WATER EXPLORATION

Ground Water Exploration aided by drilling is one of the major activities of the Board. It is aimed at delineation of aquifers in different hydrogeological setups and determination of their hydraulic parameters. The exploratory drilling operations have enabled demarcation of aquifers both in lateral and vertical extensions and evaluation of various aquifer parameters, designing of suitable structures and assessment of their yield potential in various hydrogeological settings. These studies have helped in identifying areas worthy for future ground water development. Ground Water exploration contributes to a large extent in guiding the States to implement ground water development schemes.

Groundwater exploration is being carried out by the Board through its fleet of 78 drilling rigs (24 Direct Rotary, 52 Down the Hole and 02 Dual Rotary). During the year 2020-21, Central Ground Water Board under its in-house Ground Water Exploration programme constructed 686 wells (EW- 483, OW- 190, Pz- 13). The region/division/state wise deployment of rigs during AAP 2020-21 is mentioned below in table 3.1 and the division-wise details of pumping test units is mentioned in table 3.2.

Priority was accorded for exploration in Over Exploited/ Critical/ Semi-Critical/ Drought Prone and areas affected with ground water pollution etc. The statement showing State, Division & Region wise distribution of boreholes drilled/ completed during 2020-21 is presented in Table 3.3& 3.4(a) & (b). Out of 483 exploratory wells, 418 wells were constructed in hard rock, 50 wells in alluvium and 1 well in bouldary formations (Table 3.6) including 96 wells constructed in Tribal areas and 34 wells in Drought prone areas (Table 3.7) of the country.

Fig. 3.1 EW at Samarth gaon village in Satara taluka, Satara district, Maharashtra with discharge of 731 lpm

Fig. 3.2 EW drilled to a depth of 160 mbgl at Dahegaon village in Samudrapur taluka, Wardha district, Maharashtra with discharge of 465.6 lpm

Fig.3.3. High discharge of ≈ 1132 lpm from the Exploratory Well drilled (Depth: 125m; Fractures: 75-80m) in Hard Rock at Iswarguda, Sahibganj Block, Chandauli district (Aspirational), UP

Table 3.1 Region/Division/State wise Deployment of Rigs during AAP 2020-21

Region	Division	State	Number Of Rigs			
			DR	DTH	DUR	T
NWHR,Jammu	VIII,Jammu	Jammu & Kashmir		3	1	4
NWR, Chandigarh	II,Ambala	Punjab, Haryana and Chandigarh	2			2
SUO,Delhi		Delhi	1			1
WR,Jaipur	XI,Jodhpur	Rajasthan	2	3		5
WCR,Ahmedabad	I,Ahmedabad	Gujarat	4	2		6
NCR,Bhopal	XII,Bhopal	Madhya Pradesh		4		4
NCCR,Raipur	XIII,Raipur	Chhattisgarh		4		4
CR,Nagpur	VI,Nagpur	Maharashtra		5		5
NR,Lucknow	III,Varanasi	Eastern U.P	3	2		5
	XVI,Bareilly	Western U.P	3			3
MER,Patna	V,Ranchi	Bihar and Jharkhand	1	4		5
ER,Kolkatta	XV,Kolkata	West Bengal, Sikkim and Andaman & Nicobar	3	2		5
NER,Guwahati	VII,Guwahati	Arunachal Pradesh, Assam, Manipur, Megahalaya,TripuraMizoram,Nagaland	3	2		5
SER,Bhubaneswar	X,Bhubaneswar	Orissa	1	4		5
SR,Hyderabad	IX, Hyderabad	A.P, Telangana		4		4
SWR,Bangalore	XIV,Bangalore	Karnataka		5		5
SECR,Chennai	IV,Chennai	Tamil Nadu	1	4		5
KR,Trivendrum	IV,Chennai	Kerla		2		2
UR,Dehradun	XVI,Bareilly	Uttarakhand			1	1
NHR,Dharamshala	XVII,Dharamshala	Himachal Pradesh		2		2
		Total	**24**	**52**	**2**	**78**

Abbreviation used:
DR : Direct Rotary, DUR : Dual Rotary, DTH : Down The Hole

The Board, since inception, has drilled 43,934 bore holes (including 8781 bore holes through outsourcing), as on 31.03.2021, to identify worthy areas for ground water development in the country. The statement showing State-wise distribution of boreholes drilled/completed till March, 2021 in the country is presented in Table 3.5.

Table 3.2 Division wise details of Pump Unit during AAP 2020-21

DIVISION	No. of Pump Unit	Subm. Pump	VT Pump
I. Ahmedabad	2	4	1
II. Ambala	1	3	4
III. Varanasi	2	1	2
IV. Chennai	0	8	0
V. Ranchi	2	1	0
VI. Nagpur	1	3	1
VII. Guwahati	0	1	2
VIII. Jammu	1	1	2
IX. Hyderabad	1	4	0
X. Bhubneshwar	2	6	3
XI. Jodhpur	2	15	0
XII. Bhopal	1	5	0
XIII. Raipur	1	4	0
XIV. Bangalore	1	12	0
XV. Kolkata	2	0	2
XVI. Bareilly	2	1	2
XVII. Dharamshala	1	1	1
TOTAL	**22**	**70**	**20**

Table 3.3 State wise Wells constructed by CGWB during the Year 2020-21

STATE	TARGET 2020-21				CUMULATIVE ACHIEVEMENT 2020-21 (SINCE APRIL 2020)			
	EW	OW	PZ	T	EW	OW	PZ	T
Gujarat	19	16		**35**	25	10	0	**35**
Daman &Div				**0**				**0**
Punjab	5	5		**10**	3	3	0	**6**
Haryana				**0**	4	2		**6**
Chandigarh				**0**				**0**
New Delhi			10	**10**	0	0	8	**8**
Uttar Pradesh	32	22		**55**	29	23	3	**55**
Tamil Nadu	37	22		**59**	53	8	0	**61**
Puducherry (UTP)				**0**				**0**
Kerala	15	8		**23**	20	4	0	**24**
Bihar	8	2		**10**	4	1	0	**5**
Jharkhand	21	9		**30**	16	9	2	**27**

Maharashtra	44	20		**64**	42	11	0	**53**
Dadra & Nagar Haveli				**0**				**0**
Assam	11	6		**17**	11	6	0	**17**
Arunachal Pradesh				**0**				**0**
Meghalaya	5	2		**7**	1	2		**3**
Manipur				**0**				**0**
Nagaland				**0**				**0**
Tripura				**0**				**0**
Jammu & Kashmir	16	12		**28**	14	9	0	**23**
Andhra Pradesh	36	8		**44**	34	5	0	**39**
Telangana	16	8		**24**	27	8	0	**35**
Odisha	30	18		**48**	36	15		**51**
Rajasthan	32	15		**47**	33	18	0	**51**
Madhya Pradesh	28	20		**48**	33	15	0	**48**
Chhatisgarh	30	15		**45**	32	13	0	**45**
Karnataka	36	10		**46**	42	12	0	**54**
Goa				**0**				**0**
West Bengal	17	11		**28**	13	12	0	**25**
Sikkim				**0**				**0**
Andaman & Nicobar Islands				**0**				**0**
Uttarakhand	1			**1**	1	0	0	**1**
Himachal Pradesh	8	6		**14**	10	4	0	**14**
TOTAL	**447**	**235**	**10**	**692**	**483**	**190**	**13**	**686**

Table 3.4(a) Division- wise wells constructed by Central Ground Water Board during 2020-21

Division	**Target 2020-21**				**Cumulative Achievement 2020-21 (Since April 2020)**				**Achievement (%)**
	EW	**OW**	**PZ**	**T**	**EW**	**OW**	**PZ**	**T**	
I. Ahmedabad	19	16	0	35	25	10	0	35	100.00%
II. Ambala	5	5	10	20	7	5	8	20	100.00%
III. Varanasi	23	16	0	39	23	15	3	41	105.13%
IV. Chennai	44	27	0	71	64	9	0	73	102.82%
V. Ranchi	29	11	0	40	20	10	2	32	80.00%
VI. Nagpur	44	20	0	64	42	11	0	53	82.81%
VII. Guwahati	16	8	0	24	12	8	0	20	83.33%
VIII. Jammu	16	12	0	28	14	9	0	23	82.14%
IX. Hyderabad	52	16	0	68	61	13	0	74	108.82%
X. Bhubneshwar	30	18	0	48	36	15	0	51	106.25%
XI. Jodhpur	32	15	0	47	33	18	0	51	108.51%
XII. Bhopal	28	20	0	48	33	15	0	48	100.00%
XIII. Raipur	30	15	0	45	32	13	0	45	100.00%
XIV. Bangalore	44	13	0	57	51	15	0	66	115.79%
XV. Kolkata	17	11	0	28	13	12	0	25	89.29%
XVI. Bareilly	10	6	0	16	7	8	0	15	93.75%

XVII. Dharamshala	8	6	0	14	10	4	0	14	100.00%
TOTAL	**447**	**235**	**10**	**692**	**483**	**190**	**13**	**686**	**99.13%**

Table 3.4(b). Region - wise wells constructed by CGWB during 2020-21

Region	Tentative Target 2020-21				Achievement 2020-21 (01.04.20 To 31.03.2021)				Achievement (%)
	EW	OW	PZ	T	EW	OW	PZ	T	
NWHR. Jammu	16	12	0	**28**	14	9	0	**23**	82.14%
NWR. Chandigarh	5	5	10	**20**	7	5	8	**20**	100.00%
WR. Jaipur	32	15	0	**47**	33	18	0	**51**	108.51%
WCR. Ahmedabad	19	16	0	**35**	25	10	0	**35**	100.00%
NCR. Bhopal	28	20	0	**48**	33	15	0	**48**	100.00%
NCCR. Raipur	30	15	0	**45**	32	13	0	**45**	100.00%
CR. Nagpur	44	20	0	**64**	42	11	0	**53**	82.81%
NR. Lucknow	32	22	0	**54**	29	23	3	**55**	101.85%
MER. Patna	29	11	0	**40**	20	10	2	**32**	80.00%
ER. Kolkata	17	11	0	**28**	13	12	0	**25**	89.29%
NER. Guwahati	16	8	0	**24**	12	8	0	**20**	83.33%
SER. Bhubaneshwar	30	18	0	**48**	36	15	0	**51**	106.25%
SR. Hyderabad	52	16	0	**68**	61	13	0	**74**	108.82%
SWR. Bangalore	36	10	0	46	42	12	0	54	117.39%
SECR. Chennai	37	22	0	**59**	53	8	0	**61**	103.39%
KR. Trivandrum	15	8	0	**23**	20	4	0	**24**	104.35%
UR. Dehradun	1	0	0	**1**	1	0	0	**1**	100.00%
NHR. Dharamsala	8	6	0	**14**	10	4	0	**14**	100.00%
TOTAL	**447**	**235**	**10**	**692**	**483**	**190**	**13**	**686**	**99.13%**

Table 3.5: Status of Cumulative Boreholes Drilled by CGWB till 2020-21 in State's & UT's

S No.	State /UT	(i) Through Outsourcing (Contractual)				(ii) Through Departmental Rigs						TOTAL (i+ii)
		EW	OW	PZ	T	EW	OW	PZ	SH	DW	Total	
A.	**STATES**											
1	Andhra Pradesh	442	121	0	**563**	879	412	307	9	4	**1611**	**2174**
2	Arunachal Pradesh	0	0	0	**0**	46	10	0	1	1	**58**	**58**
3	Assam	16	19	0	**35**	447	211	59	16	42	**775**	**810**
4	Bihar	151	39	0	**190**	318	193	74	10	514	**1109**	**1299**
5	Chhattisgarh	312	3	105	**420**	851	275	161	0	28	**1315**	**1735**
6	Goa	13	1	0	**14**	58	18	14	0	31	**121**	**135**
7	Gujarat	375	100	0	**475**	1156	529	498	27	255	**2465**	**2940**
8	Haryana	75	55	80	**210**	410	273	229	23	170	**1105**	**1315**
9	Himachal Pradesh	0	0	0	**0**	264	47	5	1	0	**317**	**317**
10	Jammu & Kashmir	21	0	0	**21**	488	121	37	8	114	**768**	**789**
11	Jharkhand	275	28	0	**303**	474	239	48	4	71	**836**	**1139**
12	Karnataka	804	146	0	**950**	1611	727	354	7	5	**2704**	**3654**
13	Kerala	10	0	0	**10**	596	208	231	16	13	**1064**	**1074**
14	Madhya Pradesh	654	57	80	**791**	1391	740	176	8	149	**2464**	**3255**
15	Maharashtra	92	2	88	**182**	1733	558	167	2	166	**2626**	**2808**

16	Manipur	0	0	0	**0**	29	14	1	0	2	**46**	**46**
17	Meghalaya	0	0	0	**0**	117	38	2	2	8	**167**	**167**
18	Mizoram	0	0	0	**0**	3	3	0	0	0	**6**	**6**
19	Nagaland	0	0	0	**0**	15	6	1	0	3	**25**	**25**
20	Orissa	575	40	67	**682**	1713	430	151	21	191	**2506**	**3188**
21	Punjab	121	105	0	**226**	232	215	108	20	14	**589**	**815**
22	Rajasthan	809	195	0	**1004**	1451	538	573	93	591	**3246**	**4250**
23	Sikkim	0	0	0	**0**	31	9	0	0	0	**40**	**40**
24	Tamil Nadu	425	206	179	**810**	1401	449	278	13	93	**2234**	**3044**
25	Tripura	0	0	0	**0**	64	31	1	5	22	**123**	**123**
26	Telangana	373	78	0	**451**	795	534	509	5	27	**1870**	**2321**
27	Uttarakhand	28	11	0	**39**	74	6	3	1	129	**213**	**252**
28	Uttar Pradesh	694	268	0	**962**	1097	749	208	40	501	**2595**	**3557**
29	West Bengal	263	80	100	**443**	584	295	177	12	82	**1150**	**1593**
TOTAL (A)		**6528**	**1554**	**699**	**8781**	**18328**	**7878**	**4372**	**344**	**3226**	**34148**	**42929**
B.	**UNION TERRITORIES**											
1	Andaman & Nicobar	0	0	0	**0**	46	13	0	1	0	**60**	**60**
2	Chandigarh	0	0	0	**0**	9	17	14	2	15	**57**	**57**
3	Dadra &NagarHaveli	0	0	0	**0**	14	1	0	0	0	**15**	**15**
4	Delhi	0	0	0	**0**	149	64	183	13	380	**789**	**789**
5	Daman & Diu	0	0	0	**0**	0	0	7	0	0	**7**	**7**
6	Pondicherry	0	0	0	**0**	30	20	8	5	14	**77**	**77**
TOTAL (B)		**0**	**0**	**0**	**0**	**248**	**115**	**212**	**21**	**409**	**1005**	**1005**
GRAND TOTAL (A+B)		**6528**	**1554**	**699**	**8781**	**18576**	**7993**	**4584**	**365**	**3635**	**35153**	**43934**

Table 3.6 Division / State / Formation wise Achievement during 2020-21 (as on 31.03.2021)

Division	State/ Ut	Hard Rock				Alluvium				Bouldary				Total			
		EW	OW	PZ	T	EW	OW	PZ	T	EW	OW	PZ	T	EW	OW	PZ	T
I.AHMEDABAD	Gujarat	18	6		24	7	4		11				0	25	10	0	35
II.AMBALA	Haryana				0	4	2		0				0	4	2	0	6
	Punjab				0	3	3		3				0	3	3	0	6
	Delhi				0			8	8				0	0	0	8	8
III.VARANASI	Uttar Pradesh	14	9		23	9	6	3	18				0	23	15	3	41
IV.CHENNAI	Tamil Nadu	50	8		58	3			3				0	53	8	0	61
	Kerala	11	1		12				0				0	11	1	0	12
V.RANCHI	Bihar				0	2			2				0	2	0	0	2
	Jharkhand	18	10	2	30				0				0	18	10	2	30
VI.NAGPUR	Maharashtra	42	11		53				0				0	42	11	0	53
VII.GUWAHATI	Assam	1	2		0	6	4		10				0	7	6	0	13
	Arunachal Pradesh				0				0				0	0	0	0	0
	Meghalaya	5	2		7				0				0	5	2	0	7
	Tripura				0				0				0	0	0	0	0
VIII.JAMMU	Jammu & Kashmir	14	9		23				0				0	14	9	0	23
IX.HYDERABAD	Andhra Pradesh	34	5		39				0				0	34	5	0	39
	Telangana	27	8		35				0				0	27	8	0	35
X.BHUBANESWAR	Orissa	33	13		46	3	2	0	5				0	36	15	0	51
XI.JODHPUR	Rajasthan	28	12		40	5	6		11				0	33	18	0	51
XII.BHOPAL	Madhya Pradesh	33	15		48				0				0	33	15	0	48
XIII.RAIPUR	Chattisgarh	32	13		45				0				0	32	13	0	45
XIV.BANGALORE	Karnataka	42	12		54				0				0	42	12	0	54
	Kerala	9	3		0				0				0	9	3	0	12
XV.KOLKATTA	West Bengal	7	5		12	6	7		13				0	13	12	0	25
XVI.BAREILLY	Uttarkhand				0				0	1			1	1	0	0	1
	Uttar Pradesh				0	6	8		14				0	6	8	0	14
XVII.DHARAMSHALA	Himachal Pradesh	10	4		14				0				0	10	4	0	14
TOTAL		418	143	2	563	50	37	11	98	1	0	0	1	483	190	13	686

Table 3.7: Division/ State /Head wise Achievement in Normal/ Tribal/ Drought areas during 2020-21 (as on 31.03.2021)

DIVISION	STATE/ UT	NORMAL				TRIBAL				DROUGHT				TOTAL			
		EW	OW	PZ	T	EW	OW	PZ	T	EW	OW	PZ	T	EW	OW	PZ	T
I. AHMEDABAD	Gujarat	25	10		35				0				0	**25**	**10**	**0**	**35**
II. AMBALA	Haryana	4	2		6				0				0	**4**	**2**	**0**	**6**
	Punjab	3	3		6				0				0	**3**	**3**	**0**	**6**
	Delhi			8	8				0				0	**0**	**0**	**8**	**8**
III. VARANASI	Uttar Pradesh	9	6	3	18				0	14	9		23	**23**	**15**	**3**	**41**
IV. CHENNAI	Tamil Nadu	53	8		61				0				0	**53**	**8**	**0**	**61**
	Kerala	11	1		12				0				0	**11**	**1**	**0**	**12**
V. RANCHI	Bihar	2			2				0				0	**2**	**0**	**0**	**2**
	Jharkhand	18	10	2	30				0				0	**18**	**10**	**2**	**30**
VI. NAGPUR	Maharashtra	42	11		53				0				0	**42**	**11**	**0**	**53**
VII. GUWAHATI	Assam	7	6		13				0				0	**7**	**6**	**0**	**13**
	Arunachal Pradesh				0				0				0	**0**	**0**	**0**	**0**
	Meghalaya				0	5	2		7				0	**5**	**2**	**0**	**7**
	Tripura				0				0				0	**0**	**0**	**0**	**0**
VIII. JAMMU	Jammu & Kashmir	14	9		23				0				0	**14**	**9**	**0**	**23**
IX. HYDERABAD	Andhra Pradesh	34	5		39				0				0	**34**	**5**	**0**	**39**
	Telangana				0	27	8		35				0	**27**	**8**	**0**	**35**
X. BHUBANESWAR	Orissa	27	10		37	9	5		14				0	**36**	**15**	**0**	**51**
XI. JODHPUR	Rajasthan				0	28	12		40	5	6		11	**33**	**18**	**0**	**51**
XII. BHOPAL	Madhya Pradesh	33	15		48				0				0	**33**	**15**	**0**	**48**
XIII. RAIPUR	Chattisgarh	32	13		45				0				0	**32**	**13**	**0**	**45**
XIV. BANGALORE	Karnataka	42	12		54				0				0	**42**	**12**	**0**	**54**
	Kerala	9	3		0				0				0	**9**	**3**	**0**	**12**
XV. KOLKATTA	West Bengal	13	12		25				0				0	**13**	**12**	**0**	**25**
XVI. BAREILLY	Uttarkhand	1			1				0				0	**1**	**0**	**0**	**1**
	Uttar Pradesh	6	8		14				0				0	**6**	**8**	**0**	**14**
XVII. DHARAMSHALA	Himachal Pradesh	10	4		14				0				0	**10**	**4**	**0**	**14**
TOTAL		**386**	**145**	**13**	**544**	**69**	**27**	**0**	**96**	**19**	**15**	**0**	**34**	**483**	**190**	**13**	**686**

3.1 PUMPING TESTS

Once constructed, a tube-well is developed to increase its specific capacity to prevent sand rushing into the well and to obtain maximum well life. Thereafter, pumping tests are conducted for evaluating aquifer parameters i.e. Transmissivity, storage co-efficient and well parameters *viz*. specific capacity and well efficiency, with a view to evolve efficient design for tube wells, assessment of yield capabilities and spacing criteria for tube wells. Total of 103 tubewells were developed and tested during the year 2020-21 (Table 3.8).

Table 3.8 Status of Development & Pumping Test of Wells by CGWB

DIVISION	STATE	No. of Wells developed and tested during the year 2020-21	Balance No. of wells to be tested (Backlog)
I.Ahmedabad	Gujrat	2	158
II.Ambala	Haryana	0	11
	Punjab	3	18
	Delhi	0	0
III.Varanasi	Utter Pradesh	7	98
IV.Chennai	Tamilnadu	5	13
	Kerla		
V.Ranchi	Bihar	0	12
	Jahrkhand	0	55
VI.Nagpur	Maharastra	4	30
VII.Guwahati	Assam	0	45
	Meghalya	0	19
	Tripura	0	2
	Arunachal Pradesh	0	7
VIII.Jammu	Jammu & Kashmir	0	38
IX.Hyderabad	Andhra Pradesh	5	6
	Telangana	5	5
X.Bhubneshwar	Orissa	5	10
XI.Jodhpur	Rajasthan	18	34
XII.Bhopal	Madhya Pradesh	7	12
XIII.Raipur	Chattishgarh	1	27
XIV. Bangalore	Karnatka	28	22
	Kerla		
XV.Kolkata	West Bangal	4	44
XVI.Bareilly	Uttar Pradesh	9	34
	Uttranchal	0	3
XVII. Dharamshala	Himachal Pradesh	5	2
	TOTAL	**103**	**518**

3.2 TAKING OVER OF EXPLORATORY WELLS BY STATE AGENCIES

The exploratory drilling sites are selected in consultation with the State Government Departments considering that successful exploratory wells on completion of scientific studies can be converted into production wells once taken over by States for water supply.

Till March, 2021, a total of 18576 exploration wells have been drilled by the Board. Out of a total of 14768 successful wells having adequate ground water discharge, 14214 exploratory wells have been handed over to the State agencies while 557 wells are yet to be handed over after the completion of scientific studies by the Board. The status of handing over of exploratory wells drilled by Central Ground Water Board to the State Government as on 31st March, 2021 is indicated in Table3.9.

Table 3.9 Status of Handing over of Wells drilled by CGWB in 2020-21 (as on March 2021)

S.No.	States	Total Wells drilled (EW)	No. of Successful Wells (EW)	No. of Wells Handed Over to the user agencies	No. of Wells yet to be handed over
A. STATES					
1	Andhra Pradesh	879	613	606	7
2	Arunachal Pradesh	46	41	41	0
3	Assam	447	420	413	7
4	Bihar	318	278	255	23
5	Chhattisgarh	851	766	739	27
6	Goa	58	49	49	0
7	Gujrat	1156	809	794	15
8	Haryana	410	236	221	15
9	Himachal Pradesh	264	226	219	7
10	Jammu & Kashmir	488	370	341	29
11	Jharkhand	474	359	287	72
12	Karnataka	1611	1387	1330	57
13	Kerala	596	449	436	9
14	Madhya Pradesh	1391	1032	1006	26
15	Maharashtra	1733	1482	1441	41
16	Manipur	29	21	21	0
17	Meghalaya	117	114	114	0
18	Mizoram	3	3	3	0
19	Nagaland	15	9	9	0
20	Orissa	1713	1613	1602	11
21	Punjab	232	205	189	16
22	Rajasthan	1451	1084	1050	34
23	Sikkim	31	10	10	0
24	Tamil Nadu	1401	1100	1076	24
25	Tripura	64	62	62	0
26	Telangana	795	613	607	6
27	Uttrakhand	74	65	36	29
28	Uttar Pradesh	1097	892	837	62

29	West Bengal	584	287	274	13
TOTAL (A)		**18328**	**14595**	**14068**	**530**
B. UNION TERRITORIES					
1	Andaman & Nicobar	46	12	10	2
2	Chandigarh	9	9	7	2
3	Dadra &NagarHaveli	14	8	8	0
4	Delhi	149	131	108	23
	Daman & Diu	0	0	0	0
5	Pondicherry	30	13	13	0
Total (B)		**248**	**173**	**146**	**27**
Total (A+B)		**18576**	**14768**	**14214**	**557**

3.3. HIGH YIELDING WELLS

During 2020-21, CGWB under its scientific exploratory drilling programme has explored high yielding aquifers in various parts of the country based on hydrogeological studies coupled with remote sensing and geophysical techniques. 126 High yielding wells with discharge ranging from 32 to 1211 litres per minute have been explored in the different states of the country. Such studies will help in identifying similar ground water sources in other parts of the state having similar hydrogeological conditions and in guiding the State agencies to adopt the follow up action with regard to ground water development for drinking water supply and meeting other demands. The details of these High Yielding Wells explored during 2020-21 are indicated in Table 3.10 below.

Table 3.10 High Yielding Wells Explored during 2020-21

S. No.	State	District	Block/ Taluka/ Mandal	Village	Depth *(in m bgl)*	Disch. (Q) *in lpm*	EW/ OW
1	Andhra Pradesh	YSR Kadapa	Porumamilla	Korapatipalle	200	323	OW
2	Andhra Pradesh	YSR Kadapa	Vemaplle	Tallapalle	124	190	EW
3	Andhra Pradesh	Prakasam	Chimakurthy	Pallamale	100	592	EW
4	Andhra Pradesh	Kadapa	Duvvur	Pullareddypeta	104	840	OW
5	Andhra Pradesh	Kadapa	Pourmamilla	Korrapatipalle	138	491	EW
6	Chhatisgarh	Bilaspur	Kota	Bhainsajhar	200	266	EW
7	Chhattisgarh	Bilaspur	Masturi	Jairam Nagar	86	270	EW
8	Chhattisgarh	Bilaspur	Belha	Parsada	145	210	EW
9	Chhattisgarh	Bilaspur	Kota	Nawapara	200	226	EW
10	Chhattisgarh	Bemetara	Berla	Bhimbouri	120	906	EW
11	Chhattisgarh	Bemetara	Nawagarh	Makkhanpur	200	480	EW
12	Chhattisgarh	Balrampur		Shevari	180	180	EW
13	Gujarat	Panchmahal	Ghoghamba	Khadkhadi	200	240	EW
14	Gujarat	Anand	Anand	Kanbhipura	1211	750	EW
15	Jammu & Kashmir	Reasi	Paoni	Dadua	86	1344	EW
16	Jammu & Kashmir	Reasi	Paoni	Dadua	78	570	OW
17	Jammu &	Reasi	Paoni	Gajore	153	270	EW

	Kashmir						
18	Jammu & Kashmir	Reasi	Pouni	Allya	86	300	EW
19	Jammu & Kashmir	Samba	Nud	Gujwal	226	420	EW
20	Jammu & Kashmir	Rajouri	Kalakote	Panjaha	146	204	EW
21	Jammu & Kashmir	Udhampur	Ramnagar	Battal	80	180	EW
22	Jammu & Kashmir	Rajouri	Kalakote	Sial Sui	153	270	EW
23	Jharkhand	Deoghar	Deoghar	Meledih	154	180	EW
24	Jharkhand	Dhanbad	Tundi	Tundi	99	342	EW
25	Jharkhand	Garhwa	Ranka	Tamgekala	127	402	EW
26	Jharkhand	Garhwa	Garhwa	Dumaria	93	645	EW
27	Jharkhand	Garhwa	Ramna	Dudhvania	148	445	EW
28	Jharkhand	Ranchi	Lapung	Koinara	170	472	EW
29	Jharkhand	Jamtara	Kundahit	Bagdhari	165	720	EW
30	Jharkhand	Jamtara	Narayanpur	Tongodih	174	600	EW
31	Jharkhand	Deoghar	Margomunda	Margomunda	179	660	EW
32	Jharkhand	Deoghar	Sarath	Kukarha	122	840	EW
33	Jharkhand	Chatra	Simaria	Simaria	161	870	EW
34	Jharkhand	Lohardaga	Peshrar	Garhkasmar	115	750	OW
35	Jharkhand	Chatra	Tandwa	Laranga	157	645	EW
36	Jharkhand	Girdih	Sariya	Sariya	203	204	EW
37	Jharkhand	Dhanbad	Rajganj	Rajganj	117	270	EW
38	Jharkhand	Deoghar	Madhupur	Pr. School, Sabritandi	104	720	EW
39	Karnataka	Chamarajanagar	Gundlupet	Kalligoundanahalli	147	660	OW
40	Karnataka	Chamarajanagar	Gundlupet	Vaddagere	150	540	EW
41	Karnataka	Chamaraja Nagar	Kollegal	Mariyapura	80	1060	EW
42	Karnataka	Ramanagara	Channapatana	Kannmangala	200m	252	EW
43	Karnataka	Tumkur	Tiptur	Chikkahonnavalli	116	660	EW
44	Karnataka	Mysore	Mysore	Chattanehalli	200	552	OW
45	Karnataka	Mandya	K.R.Pet	Santhe Bachenahalli	135	252	OW
46	Kerala	Kozhikode	Koduvalli	Koodaranji	200	984	EW
47	Kerala	Kozhikode	Koduvalli	Koodaranji	200	984	OW
48	Kerala	Kozhikode	Mukkom Municipality	Mukkom	200	600	EW
49	Kerala	Malappuram	Kondotty	Vazhakkad	160	848	OW
50	Kerala	Kozhikode	Ramanattukara	Ramanattukara	200	240	EW
51	Kerala	Kozhikode	Balussery	Koorachundu	175	780	OW
52	Madhya Pradesh	Datia	Seondha	Pandokhar	200	630	EW
53	Madhya Pradesh	Datia	Seondha	Kashipur	200	420	EW
54	Madhya Pradesh	Khargone	Bhikangaon	Sagur	136	996	EW

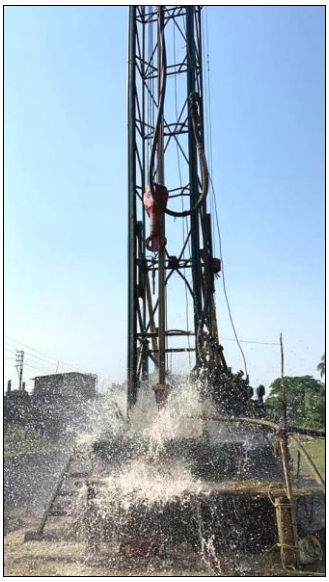
55	Madhya Pradesh	Sagar	Banda	SesaiSaji	147	1464	OW
56	Madhya Pradesh	Khargone	Gogaon	Kundiya	88	600	EW
57	Madhya Pradesh	Khargone	Kasrawad	Besarkund	94	510	EW
58	Madhya Pradesh	Bamhori Lidai	Pathariya	Damoh	200	840	OW
59	Madhya Pradesh	Nagna	Rahatgarh	Sagar	200	408	OW
60	Madhya Pradesh	Magron	Batiyagarh	Damoh	134	714	OW
61	Madhya Pradesh	Barod	Barwaha	Khargone	200	264	EW
62	Madhya Pradesh	Barod	Barwaha	Khargone	200	264	OW
63	Madhya Pradesh	Nazarpur	Maheshwar	Khargone	200	210	EW
64	Maharashtra	Gadchiroli	Dhanora	Katezari	148	408	EW
65	Maharashtra	Gadchiroli	Gadchiroli	Porla	200	180	EW
66	Maharashtra	Dhule	Sindkhed	Bhadne	200	266	EW
67	Maharashtra	Dhule	Sindkhe	Bharne	200	466	EW
68	Maharasthra	Dhule	Shirpurtaluka	Varzadi	154	768	EW
70	Meghalaya	North Garo Hills	Bajengdoba	Bajengdoba	201	192	EW
71	Odisha	Jharsuguda	Lakhan-pur	Kanaktora	102	720	EW
72	Odisha	Jharsuguda	Muktipada	Kudoloi	160	720	EW
73	Odisha	Jharsuguda	Muktipada	Kudoloi	160	360	OW
74	Odisha	Nayagarh	Khandapada	Badabhuin	200	330	EW
75	Odisha	Bargarh	Bhatli	Hatisara	200	262	EW
76	Odisha	Bolangir	Deogaon	Nuapali	191	180	EW
77	Odisha	Jharsuguda	Lakhanpur	Jogidhipa	172	504	EW
78	Odisha	Cuttack	Niali	Dahijunga	101	600	EW
79	Rajasthan	Hanumangarh	Pilibanga	Jhandawali	225	1300	EW
80	Rajasthan	Hanumangarh	Pilibanga	Suranwali	226	1200	OW
81	Rajasthan	Banswara	Garhi	Bori	191	308	EW
82	Rajasthan	Hanumangarh	Pilibanga	Bhagsar	243	1000	EW
83	Rajasthan	Hanumangarh	Sangariya	Ratanpura	230	800	EW
84	Rajasthan	Dungarpur	Dowada	Bhemela	200	441	EW
85	Tamil Nadu	Coimbatore	Kinathukadavu	Vadachittur	214	703	EW
86	Tamilnadu	Tuticorin	Ottapidaram	Pasuvanthanai	200	300	EW
87	Telangana	Khammam	Julerupadu	Bittuthanda	130	592	OW
88	Telangana	Khammam	Madhira	Nakkalagarugu	135	324	EW
89	Telangana	Bhadradri Kothagudem	Mulakalapally	V K. Ramavaram	300	1200	EW
90	Telangana	Bhadradri Kothagudem	Mulakalapally	Guttagudem	300	420	EW
91	Telangana	Bhadradri Kothagudem	Karakagudem	Anantharam	300	480	EW
92	Telangana	Bhadradri Kothagudem	Ashwaraopeta	Ashwaraopeta	300	1020	OW
93	Telangana	Khammam	Satupally	Gangaram	300	450	EW
94	Telangana	Bhadradri Kothagudem	Dammapet	Moddulagudem	300	1860	EW
95	Telangana	KB Asifabad	Kagaznagar	Areguda	205	2160	EW
96	Telangana	KB Asifabad	Kagaznagar	Areguda	205	1020	OW
97	Telangana	KB Asifabad	Kagaznagar	Nazurlnagar	205	1020	EW

98	Telangana	KB Asifabad	Rebna	Rebna	305	660	EW
99	Telangana	Vikarabad	Bomaraspet	Madanapally	32	402	OW
100	Telangana	KB Asifabad	Kagaznagar	Andavalli	180	1800	OW
101	Telangana	KB Asifabad	Kagaznagar	Durganagar	100	1620	EW
102	Telangana	KB Asifabad	Ravindernagar	Dabba	100	1440	EW
103	Telangana	Narayanpet	Kosigi	Mushrifa	160	491	EW
104	Telangana	Narayanpet	Kosigi	Mushrifa	142	599	OW
105	Telangana	Narayanpet, Mahabubnagar	Marikal	Eklaspur	32	186	EW
106	Telangana	Mulugu	Mangapet	Kamalapuram	205	600	OW
107	Telangana	Bhadradri Kothagudem	Dammapet	Ankampalem	205	570	EW
108	Telangana	Bhadradri Kothagudem	Dammapet	Ankampalem	60	480	OW
109	Telangana	Mulugu	Venkatapuram	Albaka	305	420	EW
110	Uttar Pradesh	Chitrakoot	Mau	Khandeha EW	137	≈1075	EW
111	Uttar Pradesh	Chitrakoot	Mau	Khandeha OW	137	≈1000	OW
112	Uttar Pradesh	Banda	Naraini	TurraJalsansthan	200	227	EW
113	Uttar Pradesh	Banda	Mahua	Badokhar Buzurg	200	308	EW
114	Uttar Pradesh	Banda	Naraini	Attara Jalsansthan	200	1338	EW
115	Uttar Pradesh	Banda	Mahua	Baheri	200	209	EW
116	Uttar Pradesh	Banda	Bisanda	Ballan	200	209	EW
117	Uttar Pradesh	Banda	Bisanda	Bagha	200	265	EW
118	Uttar Pradesh	Banda	Naraini	Singhauti	200	180	EW
119	Uttar Pradesh	Sonbhadra	Babhani	Babhani (Banvasi Ashram)	102	≈950	EW
120	Uttar Pradesh	Sonbhadra	Babhani	Babhani (Banvasi Ashram)	123	≈950	OW
121	Uttar Pradesh	Sonbhadra	Myorpur	Govindpur (Old Banvasi Ashram)	185	≈625	EW
122	West Bengal	Purulia	Arsha Block	Sirkabad Block Primary Health Centre	233	577	EW
123	West Bengal	Jhargram	Gopiballavpur-I	Sasra- PHC Premises	134	1620	
124	West Bengal	Jhargram	Gopiballavpur-II	Sasra	105	1560	OW
125	West Bengal	Jhargram	Gopiballavpur - II	Kushmar	122	997	EW
126	West Bengal	South 24 Parganas	Sonarpur - I	Kheyadaha	135	3449	EW

Abbreviations used: EW- Exploratory Well; OW- Observation Well; lpm- Litres Per Minute

High Yielding well at Andavalli (OW), Asifabad district, Telangana (Outsourcing – Soft Rock)

High Yielding well at Dabba (EW), Asifabad district, Telangana (Outsourcing– Soft Rock)



Kheyadaha site, Block - Sonarpur - I, South 24 Parganas district, West Bengal state with 3449 lpm discharge

EW at Moddulagudem village, Dammapet block/taluka, Bhadradri Kothagudem district in Telangana with 1860 lpm discharge.

Jhandawali village, Pilibanga block in Hanumangarh district of Rajasthan state with discharge of 1300 lpm

4. GEOPHYSICAL STUDIES

Geophysical investigations are used for exploration of groundwater and in delineating the underground structures, which control the occurrence, distribution and movement of ground water. Application of geophysical techniques for ground water investigations on regular basis commenced in CGWB during the seventies. The Board has made extensive use of both the surface and the subsurface (well logging) geophysical techniques in the search of groundwater and proper construction of water wells. The findings of the geophysical studies, as a practice, are combined with the hydrogeological and geomorphological investigations to place them on firm footing. The techniques have become an integral part of the ground water exploration programme.

The Borehole geophysics is used in groundwater to obtain information pertaining to lithology, fractures, permeability, porosity and water quality so as to delineate subsurface disposition of aquifers. Borehole geophysical logging determines the character and thickness of the different lithological/ hydrogeologic units in drilled pilot boreholes. Saline / brackish water bearing aquifers are present in different parts of India. Fresh water bearing aquifers are often intervened by the saline water aquifers. Such information is essential for proper placement of casing and screens in water-supply wells and for characterizing and remediation of problems related to ground water salinity. The proper positioning and condition of casing and screen pipes in a well can be rapidly evaluated with geophysical borehole logging.

Surface geophysical surveys specially the traditional Electrical Resistivity survey in soft and hard rock formations are commonly employed in CGWB to delineate the ground water bearing zones/structures, pin-pointing sites for construction of boreholes and providing inputs for formulating proposals for constructing artificial recharge structures. Geophysical survey has also been conducted for delineating the bedrock topography and sandy horizon of non perennial channel. In recent times, Transient Electromagnetic techniques (TEM) are also being used for identifying the sub-surface layers parameters in term of Resistivity and thickness as is done through Electrical resistivity surveys. TEM surveys, however, takes less time in comparison to the conventional Electrical resitivity survey. Imaging Resistivity 2 D survey at present is conducting by CGWB by Multi Electrodes Resistivity Meter. Various other techniques like Self Potential, Induced Polarization, Mise-a-la-masse of electrical method*,* refraction seismic, electromagnetic – the Horizontal Loop, Very Low Frequency (VLF) *and* magnetic were also conducted by CGWB in the past. The Heliborne Survey has also been incorporated through a pilot project of Aquifer mapping and identification of palaeo-channel in parts of Prayagraj and Kaushambi districts in collaboration with CSIR-NGRI. Apart from these, resistivity survey (VES) was also carried out during the year for short-term water supply investigations on request of other Government organization and Public Sector Undertakings. Regionwise details of availability of Geophysical instruments in CGWB are presented below in table 4.1

Table 4.1

Sl. No	Region	Geophysical Logger	Resistivity Meter	EM
1	ER-Kolkata	Uptron (18Y) Logger u-1	1.CRM Auto –C (7 y) 2. Res Meter (2 y)	TEM– 1 (New)
2	KR- Trivandrum	Nil	1. Terrameter (21 Y) 2. CRM-500 (15Y**)**	TEM– 1 (New)
3	NCCR- Raipur	Nil	SSR-MP-ATS (adv) (7Y)	TEM– 1 (New)
4	NCR - Bhopal	Nil	1. DDR-4 MP (20Y) 2. SSR-MP1 (18Y)	
5	WCR-Ahmadabad	Uptron (25 y) Logger	1.SSR-1 (7Y) 2.DDR-4 (25Y)	
6	NWHR- Jammu	Uptron (22 y) Logger	1.DDR-4 (18 Y) 2. Terrameter (18Y)	
7	NHR-Dharmshala	Nil	scientistgp-cgwb@gov.in	
8	UR - Dehradun	Nil	1.Terrameter SAS 300 (21Y)	
9	NER-Guwahati	Uptron (>27Y) Logger (+Gamma)	1. SSR-MP1 (13Y) 2. Terrameter (18 Y)	
10	CR- Nagpur	1.Uptron (27Y) Logger (+ Gamma), 2. Digital (25Y)Portable Logger (+ Gamma, Flow meter &Temp.) 3.Terrameter spot Logger (part of Terrameter)	1.Terrameter (19Y) 2.CRM – 20 (15Y)	
11	MER - Patna	Uptron (> 20 Y) Logger	1. CRM 500 – 40 W (Ranchi) (15Y) 2. CRM-Auto C – 40 W (5Y)	
12	SER - Bhubaneswar	Uptron (> 15 y) Logger	1. CRM 20 (5Y)	
13	NWR - Chandigarh	Uptron (27Y) Logger (+Gamma)	1. CRM – 500 (20Y)	
14	SR - Hyderabad	1.Upron (3no and 25 y) Logger (+Gamma)	1. DDR- 4 – 80 W (21Y) 2. SSR- MP1 – 80 W (7Y) 3. DDR- 3 – 80 W (7Y) 4. Terrameter with manual logger (22Y) 5. Terrameter LS (6Y) 6. ERT System Terrameter LS – 2D (6)	

15	SWR- Bangalore	Uptron (20Y) Logger(+Gamma)	1. SSR-MP-ATS - 100W – 2 no. (2Y) 2. Res Meter (5Y)	
16	SECR-Chennai	Uptron (19 Y) Logger	1. DDR – 3= (7Y) 2. CRM – 500- (15Y) 3. Adv WTS – 2 No (5Y)	
17	WR - Jaipur	Uptron (27Y) Logger (+Gamma), u-13	1. DDR- 4 – 80 W (19 Y) 2. CRM-Auto-C – 40 W (7 Y)	
18	NR - Lucknow	Uptron (21Y) Logger(+Gamma), u-14	1. Adv. Terrameter LS – 2D (6.5Y) 2. Adv Syscal R2 – 250 W (25 Y) 3. ERT system 4. Terrameter LS – 2D	
	Total Logger (17 No.), two spot logger with resistivity meter	1. Uptron - 14, (+8 gamma) (8 working) 2. OYO potable-1 (+gamma, flow & Temp). (Not working) 3. SAS log 200 – 2 (part of Terrameter), One is working	1. 33 working , 8 Repairable 2. Imaging System-2 no 3. TEM- 9 no	

GEOPHYSICAL STUDIES FOR NAQUIM PROGRAMME

Under the Aquifer mapping programme, Central Ground Water Board has delineated the aquifers up to 300 m depth in areas underlain by soft rock and upto 200 m in areas underlain by hard rock formations. Geophysical survey and investigations play a vital role during exploration in understanding the aquifer disposition and characterisitics. During recent times, TEM and Imaging system have also been introduced apart from conventional VES survey. The data so generated are used along with the other exploratory data for preparation of aquifer maps (Fig 4.1).

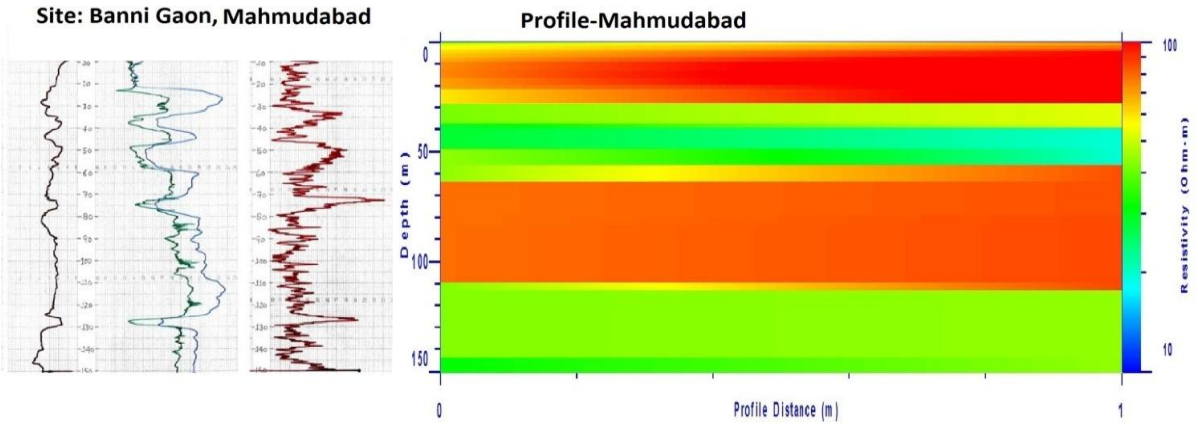


Fig. 4.1 Correlation of Resistivity profile model with Electrical and Natural Gamma Ray log of Exploratory well at Mahmudabad, Sitapur

During 2020-21, a total of 1010 Vertical Electrical Soundings (VES), 2301 Transient Electro-Magnetic (TEM) study, 62.8 line km 1D resistivity profiling/ 2D imaging and 33 borehole logging have been conducted in various parts of the country to ascertain water bearing layer at different depths as well as in finalizing the tubewell assembly. Region-wise geophysical progress is mentioned in Table 4.2.

Table 4.2 GEOPHYSICAL ACTVITY PROGRESS during 2020-21

Region	State	VES (I/h.)	VES (O/s).	TEM (I/h.)	1D Profiling/ 2D Imaging (I/h.)	Geophysical Logging (I/h.)
SUO, Delhi	Delhi NCT					7
UR, Dehradun	Uttarakhand	54	340			
NR, Lucknow	Uttar Pradesh	25	344	308	2.4	15
ER, Kolkata	West Bengal	12	40	158		5
MER, Patna	Bihar	10	276	303		
MER, Patna	Jharkhand		923			
SER, Bhubaneswar	Odisha	151	862		2	
NCCR, Chhattisgarh	Chhattisgarh	25	495	304	3.1	
NCR, Bhopal	Madhya Pradesh	20	760		32	
NHR, Dharmshala	Himachal Pradesh		137			
NWHR, Jammu	Jammu & Kashmir	78				
NWR, Chandigarh	Chandigarh	100				5
WR, Jaipur	Rajasthan	78		306	6.02	
CR, Nagpur	Maharashtra	75			2	
KR, Trivandrum	Kerala	26		303		
SECR, Chennai	Tamilnadu	75	70	305	4	1
SR, Hyderabad	Andhra Pradesh	205		60	9.6	
SR, Hyderabad	Telangana	54		102	1.68	
SWR, Bangalore	Karnataka	22		152		
		1010	**4247**	**2301**	**62.8**	**33**

I/h.- Inhouse O/s.- Outsourcing

Glimpses of Geophysical Studies being done in the field

5. GROUNDWATER QUALITY STUDIES

Central Ground Water Board has 16 Regional Chemical Laboratories to carry out Chemical Analysis of major and minor inorganic constituents in water samples. The Chemical laboratories are well equipped to carry out Basic parameters, Trace Metal and Toxic elements determinations using sophisticated instruments like Atomic Absorption Spectrophotometer (AAS), Ion Chromatograph, Flourimeter (Uranium Analyser), Digital PC based UV–VIS Spectrophotometer, Ion Meter, Flame Photometer, Conductivity meter, pH meter, and Nephelometer. The laboratories are also provided with Electronic Monopan and Top loading Balances, Ultra Pure Water System, Deionizer, Double Distillation Plant, Hot Air Oven, Water Bath, Magnetic Stirrer and Hot Plates. Four Regional Laboratories at Kolkata, Hyderabad, Lucknow and Raipur are also equipped with Gas Chromatograph (GC) to undertake the analysis of organic pollutants (Pesticides) at µg/l level. The Chemical Laboratory at Hyderabad, Lucknow and Chandigarh are additionally equipped with Inductive Coupled Plasma Spectrometer (ICPS) for sequential analysis of multiple toxic elements with high accuracy. Total Organic Carbon (TOC) analyzer is installed in the Regional Chemical Laboratory at Chandigarh, Lucknow, Chennai and Kolkata. The Chemical Laboratories at Chandigarh, Lucknow, Nagpur and Bangalore are also equipped with Liquid Scintillation Counter (LSC) to undertake the analysis of radiation. The chemical analysis data generated by these laboratories is utilized for evaluating the groundwater quality in compliance with National Standards (BIS 2012), to study the impact of anthropogenic activities on ground water quality, demarcate areas of water quality deterioration and assess the point and non-point sources of ground water pollution so as to take necessary action for management of ground water resources.

During 2020-21, a total of 29456 ground water samples had been analyzed out of which 17037 water samples were analyzed for determination of basic constituents, while 12419 water samples for heavy metals including As, Fe, U etc. The details of water samples analyzed by different chemical laboratories during 2020-21 are presented in table 5.1.

Table 5.1 Region-wise Ground Water Samples analyzed during 2020-21

S. No.	Regional Offices	Number of Analysed samples	
		Basic	Heavy Metals
1.	NWHR, Jammu	505	571
2.	NWR, Chandigarh	1299	2581
3.	WR, Jaipur	1202	1171
4.	WCR, Ahmadabad	1071	943
5.	NCR, Bhopal	1843	1482
6.	NCCR, Raipur	1257	1072
7.	CR, Nagpur	1313	109
8.	NR, Lucknow	1279	626
9.	MER, Patna	1112	0
10.	ER, Kolkata	859	1026
11.	NER, Guwahati	1190	2281

12.	SER, Bhubaneswar	716	0
13.	SR, Hyderabad	645	117
14.	SWR, Bangalore	1297	357
15.	SECR, Chennai	1083	10
16.	KR, Trivandrum	366	73
Total		**17037**	**12419**
Grand Total (Basic + Heavy)		**29456**	

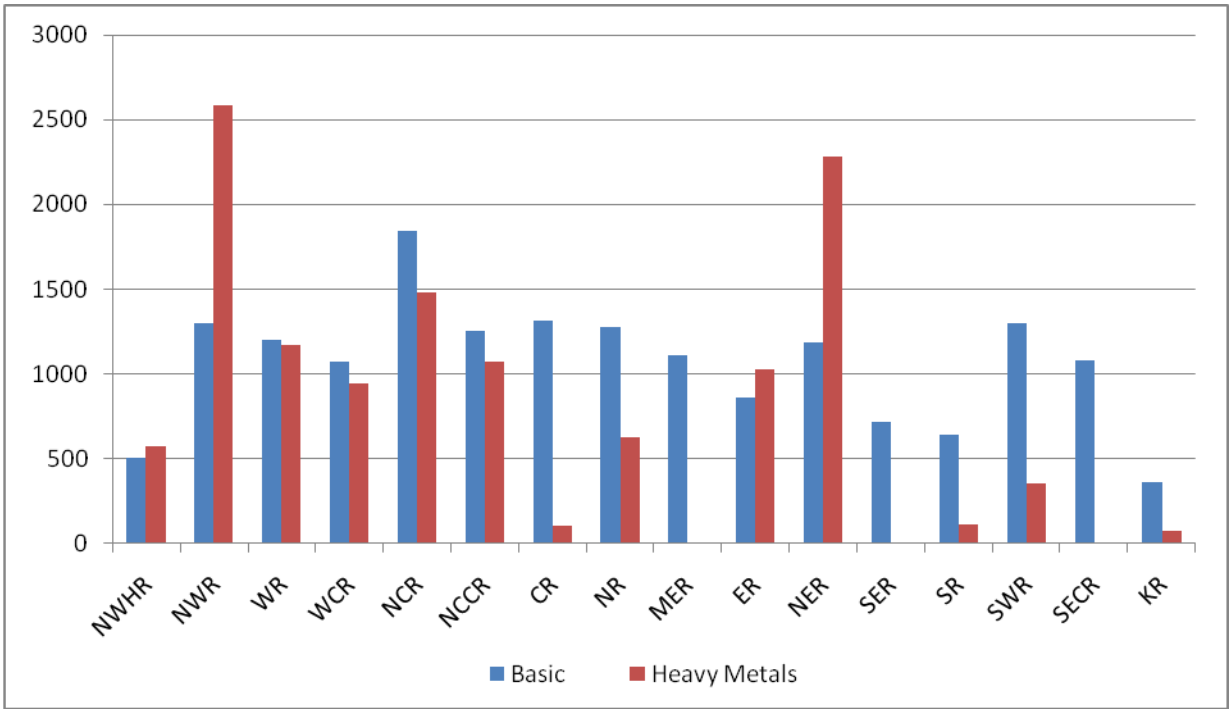
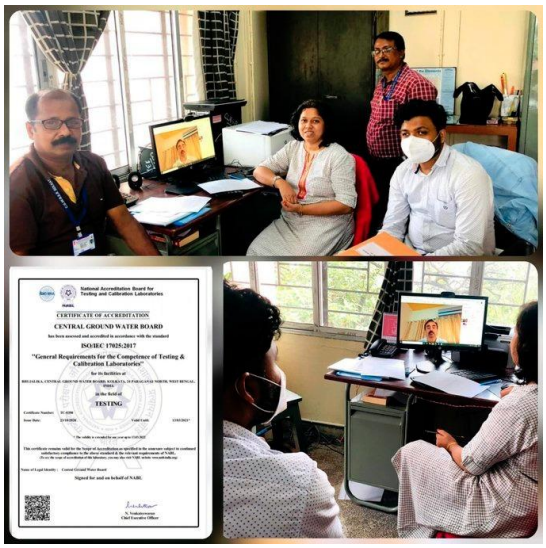


Fig. 5.1: Region Wise Water Sample Analysis during 2020-21



Regional Chemical Laboratory, CGWB, Eastern Region, Kolkata accreditated as per ISO/IEC 17025:2005 by NABL, *Accomplished the Online 'Transition Audit' by NABL successfully and received accreditation as per New Standard of ISO/IEC 17025:2017

6. SHORT TERM WATER SUPPLY INVESTIGATIONS

The Board provides technical assistance to Defence establishments and Government agencies to solve their immediate water supply problems by conducting request-based investigations for selecting suitable sites for construction of ground water abstraction structures. During the year 2020-21, a total of 103 such requests-based investigations were carried out by the Board. Region wise/ state wise status of such investigation is given in table 7.1 and fig. 7.1.

Table 6.1. REGION/ STATE WISE WATER SUPPLY INVESTIGATIONS DURING 2019-20

State	No. of Investigations done during 2020-21
Uttar Pradesh	4
Uttarakhand	3
Delhi	4
WB	2
Assam	5
Arunachal Pr.	2
Meghalaya	1
Tripura	1
Odissa	1
Maharashtra	2
Cummu. Total	2
Karnataka	8
Tamil Nadu	2
Andhra Pradesh	4
Telangana	6
Jammu & Kashmir	45
Chandigarh	4
Haryana	7
	103

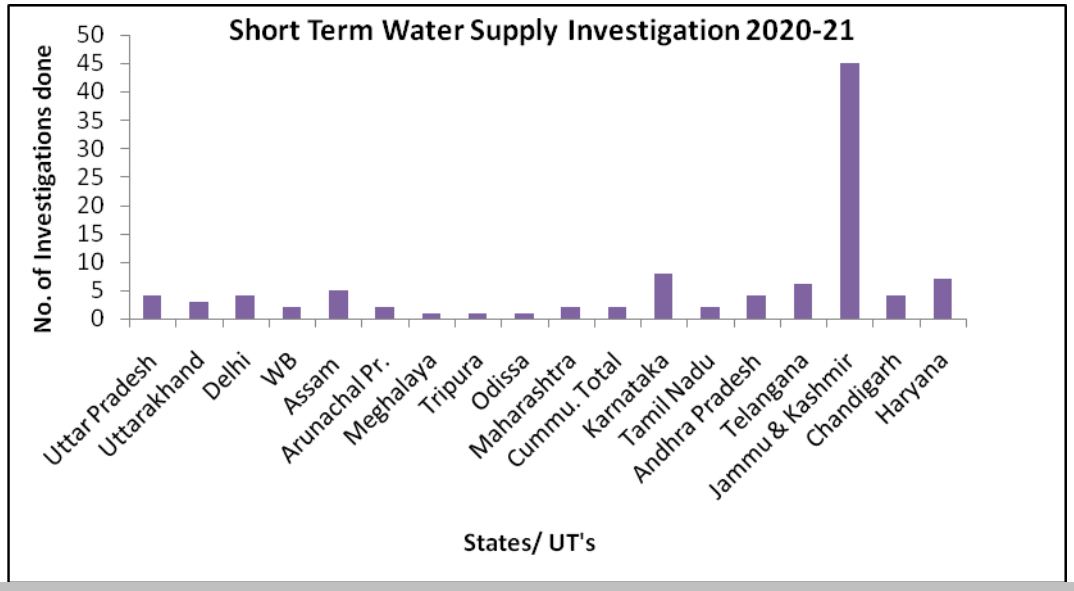


Fig 6.1: Region wise status of Short Term Water Supply Investigations during 2020-21

7. GROUND WATER REGIME MONITORING

Introduction

Ground water regime monitoring is one of the key activities of Central Ground Water Board (CGWB). Monitoring of ground water regime is an effort to obtain information on ground water level and chemical quality through representative sampling. The primary objective of ground water monitoring by, is to record the response of various natural and anthropogenic stress on the groundwater regime which impacts the recharge and discharge parameters with reference to geology, climate, physiography, land use pattern and hydrologic characteristics on a regional scale. The key applications of the groundwater data acquired during regime monitoring in the country are

- The data is used for volumetric estimation of groundwater resources.
- To assess the impact of groundwater recharge and draft on long term basis.
- To categories area into overexploited, critical, semi-critical and safe based on long term water level trend analysis.
- In deciding the depth of water well drilling as well as depth of lowering the pumps.
- Help in design, implement and monitor the effectiveness of groundwater management, protection and conservation activities.
- To identify groundwater quality affected areas for taking remedial measures.
- To plan groundwater recharge interventions and study the impact in time and space.

At present, CGWB has a network of **22835** (Dug Wells: **16271**, Piezometers: **6394,** Hand Pump: **129,** spring: **41**) ground water observation wells throughout the country**.** The state wise breakup is given below.

State wise distribution of the Ground Water Observation Wells

Sl No	Name of the State/UTs	Number of GW Monitoring Stations (March 2021)				
		DW (Dug Well)	PZ (Piezometer)	HP (Hand pump)	SP (Spring)	Total
1	**Andhra Pradesh**	674	193			**867**
2	**Arunachal Pradesh**	26	4			**30**
3	**Assam**	345	28			**373**
4	**Bihar**	745	23			**768**
5	**Chhattisgarh**	1156	268			**1424**
6	**Delhi**	21	93			**114**
7	**Goa**	88	44			**132**
8	**Gujarat**	679	264			**943**
9	**Haryana (CGWB Wells)**	209	363			**572**
	Haryana (State Wells)	327	432			**759**
10	**Himachal Pradesh**	128	0			**128**
11	**Jammu & Kashmir**	287	14			**301**

12	**Jharkhand**	442	20			**462**
13	**Karnataka**	1413	262			**1675**
14	**Kerala**	1374	217			**1591**
15	**Madhya Pradesh**	1202	309			**1511**
16	**Maharashtra**	1724	177			**1901**
17	**Manipur**	0	0			**0**
18	**Meghalaya**	53	11			**64**
19	**Nagaland**	22	8			**30**
20	**Odisha**	1518	82			**1600**
21	**Punjab (CGWB wells)**	151	315			**466**
	Punjab (State wells)	51	631			**682**
22	**Rajasthan**	708	558			**1266**
23	**Tamil Nadu**	793	593			**1386**
24	**Telangana**	293	443			**736**
25	**Tripura**	105	16			**121**
26	**Uttar Pradesh**	785	202			**987**
27	**Uttarakhand**	40	5	129	41	**215**
28	**West Bengal**	763	786			**1549**
UT s						
1	**Andaman & Nicobar**	111	2			**113**
2	**Chandigarh**	1	29			**30**
3	**Dadra & Nagar Haveli**	17	0			**17**
4	**Daman & Diu**	11	2			**13**
5	**Pondicherry**	9	0			**9**
	TOTAL	**16271**	**6394**	**129**	**41**	**22835**

The ground water levels are measured manually four times a year during the months of January, March/April/ May, August and November coinciding with crop season and onset of monsoon as well as to capture deepest and shallowest water level in the hydrological year. The ground water regime monitoring started in the year 1969 by Central Ground Water Board. Ground water samples are collected once a year during the month of March/April / May to obtain background information of ground water quality changes on regional scale.
The database thus generated forms the basis for planning the ground water development and management programme. This data is also used for assessment of ground water resources and changes in the regime consequent to various development and management activities.

Ground Water Scenario during Pre-monsoon 2020

Central Ground Water Board carries out ground water monitoring for the Premonsoon period during the months of March, April and May. But this year, due to Covid 19 Pandemic and Lockdown in the country, premonsoon monitoring could not be carried out in few States/UTs. So, Water Level data of State Government is considered in these states/UTs (Andhra Pradesh, Telangana, Kerala, Maharashtra, Karnataka, Pondicherry, Tamil Nadu).

The ground water level data for Premonsoon 2020 indicates that out of the total **17177** wells analysed, 1383 (8%) wells are showing water level less than 2 m bgl (metres below ground level), 4274 (25%) wells are showing water level in the depth range of 2-5 m bgl, 6082 (35 %) wells are showing water level in the depth range of 5-10 m bgl, 3714 (22%) wells are showing water level in the depth range of 10-20 m bgl, 1076 (6%) wells are showing water level in the depth range of 20-40 m bgl and the remaining 648 (4%) wells are showing water level more than 40 m bgl. The general depth to water level of the country ranges from 2 to 10 m bgl. Very shallow water level of less than 2 m bgl is observed in few states, such as Assam, Odisha, Bihar, Chhattisgarh and Eastern Uttar Pradesh in small patches. Ground Water level in the range of 2-5 m bgl is seen in Assam, West Bengal, Bihar, Jharkhand, Chhattisgarh, Odisha, Eastern Uttar Pradesh, Maharashtra and Coastal parts of Tamil Nadu. Major part of the country shows water level in the range 5-10 m bgl (35%). In major parts of north-western and western states, especially in the states of Delhi, Haryana, Punjab and Rajasthan, depth to water level is generally deeper and ranges from about 20 to more than 40 m bgl. Also, deeper water level is observed in few pockets of Andhra Pradesh and Karnataka.

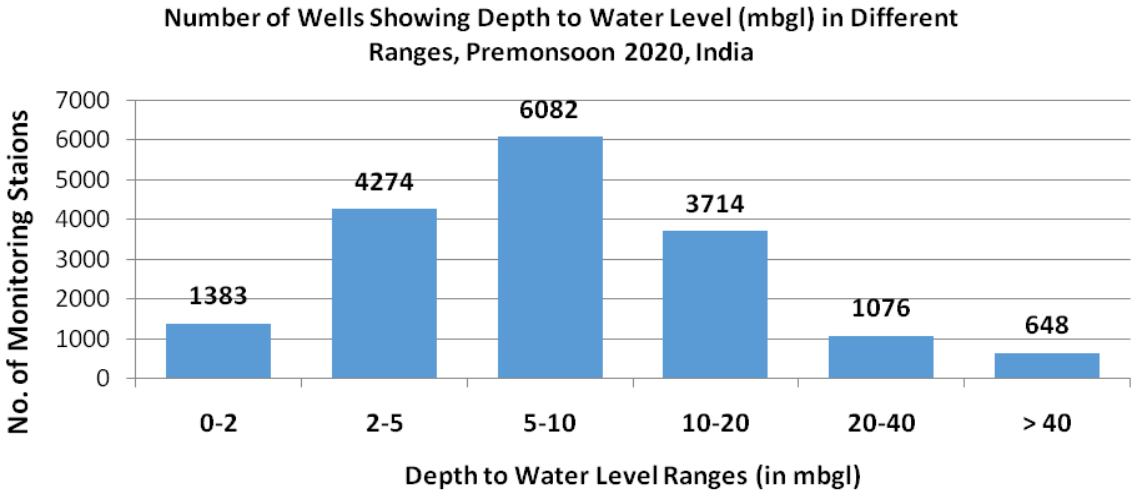


Fig 7.1: No. of wells showing Depth to Water Level (mbgl), Premonsoon 2020

Ground Water Scenario during August 2020

The ground water level data for August 2020 indicate that out of the total 10688 wells analysed, 3510 (32.8 %) wells are showing water level less than 2 m bgl (metres below ground level), 3108 (29.1%) wells are showing water level in the depth range of 2-5 m bgl, 1913 (17.9 %) wells are showing water level in the depth range of 5-10 m bgl, 1216 (11.4%) wells are showing water level in the depth range of 10-20 m bgl, 631 (5.9%) wells are showing water level in the depth range of 20-40 m bgl and the remaining 305 (2.9 %) wells are showing water level more than 40 m bgl. The maximum depth to water level of 162.00 m bgl is observed in Chandigarh whereas the minimum is less than 1 m bgl.

Ground water level data of August 2020 for the country reveals that the general depth to water level of the country ranges from 0–5 m bgl. Almost 62 % of the wells

analysed show water level in the range of 0-5 m bgl. Very shallow water level of < 2 m bgl (32.8 %) is observed in almost all the states, such as except Chandigarh and Uttar Pradesh. All the other states/UTs have more or less considerable percentage of wells showing water level of < 2 m bgl. Almost 29.1% of the wells analysed show water level in the range of 2 – 5 m bgl, especially in the states of Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh and the western coastal plains. In major parts of north-western and western states, depth to water level is generally deeper and ranges from about 10-40 m bgl. In parts of Delhi, Haryana, Chandigarh, Andhra Pradesh, Punjab and Rajasthan, water level of more than 40 m bgl is also observed. The peninsular part of country recorded a water level in the range of 2-20 m bgl.

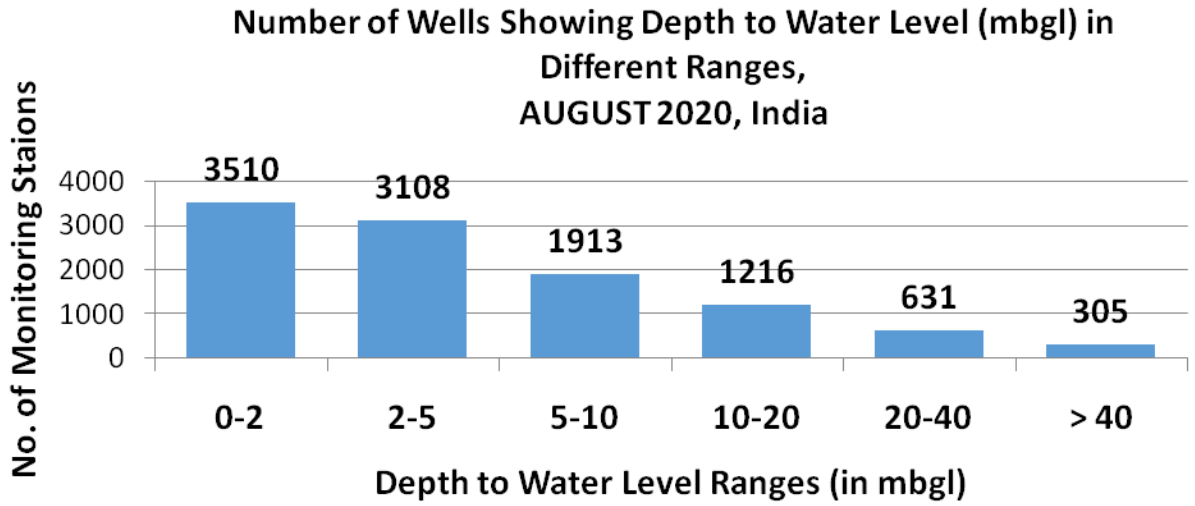


Fig 7.2: No. of wells showing Depth to Water Level (mbgl), August 2020

Ground Water Scenario during November 2020

The ground water level data for November 2020 indicates that out of the total **16569** wells analysed, 4855 (29%) wells are showing water level < 2 m bgl, 6391 (39%) wells are showing water level in the depth range of 2-5 m bgl, 3376 (20 %) wells are showing water level in the depth range of 5-10 m bgl, 1213 (7%) wells are showing water level in the depth range of 10-20 m bgl, 480 (3%) wells are showing water level in the depth range of 20-40 m bgl and the remaining 254 (2%) wells are showing water level > 40 m bgl.

The general depth to water level of the country ranges from 0 - 5 m bgl as almost 68% of the wells falls in this range. Very shallow water level of less than 2 m bgl is observed in all the states, except Chandigarh, Delhi and Nagaland. Ground water level in the range of 2-5 m bgl is seen in the entire country. Major part of the country shows water level in the range 2-5 mbgl. In parts of north-western and western states, especially in the states/UTs of Chandigarh, Delhi, Haryana, Punjab and Rajasthan, depth to water level is generally deeper and ranges from about 10 m bgl to more than 40 m bgl. Also, deeper water level is observed in small pockets of Gujarat, Himachal Pradesh, Jammu & Kashmir, Tamil Nadu, Uttar Pradesh and Uttarakhand.

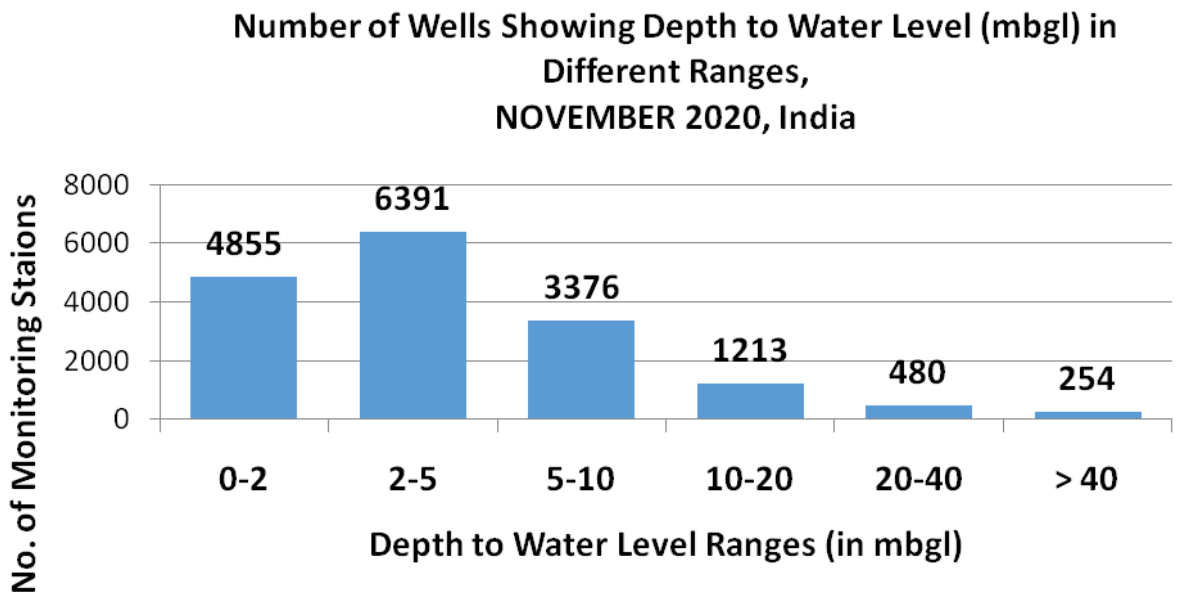


Fig 7.3: No. of wells showing Depth to Water Level (mbgl), November 2020

Ground Water Scenario during January 2021

The ground water level data for January 2021 indicates that out of the total 14856 wells analysed, 2221 (15%) wells are showing water level less than 2 m bgl, 5744 (39%) wells are showing water level in the depth range of 2-5 m bgl, 4532 (30 %) wells are showing water level in the depth range of 5-10 m bgl, 1620 (11%) wells are showing water level in the depth range of 10-20 m bgl, 505 (3%) wells are showing water level in the depth range of 20-40 m bgl and the remaining 234 (2%) wells are showing water level more than 40 m bgl.

The general depth to water level of the country ranges from 2 to 10 m bgl as almost 69% of the wells falls in this range. Very shallow water level of less than 2 m bgl is observed in all the states, except Arunachal Pradesh, Chandigarh, Dadra & Nagar Haveli & Nagaland. Ground water level in the range of 2-5 m bgl is seen in the entire country. Major part of the country shows water level in the range 2-5 m bgl and also 5 to 10 m bgl. In parts of north-western and western states, especially in the states/UTs of Chandigarh, Delhi, Haryana, Punjab and Rajasthan, depth to water level is generally deeper and ranges from about 10 m bgl to more than 40 m bgl. Also, deeper water level is observed in small pockets of Andhra Pradesh, Gujarat, Madhya Pradesh, Maharashtra, Tamil Nadu, Telangana and Uttarakhand.

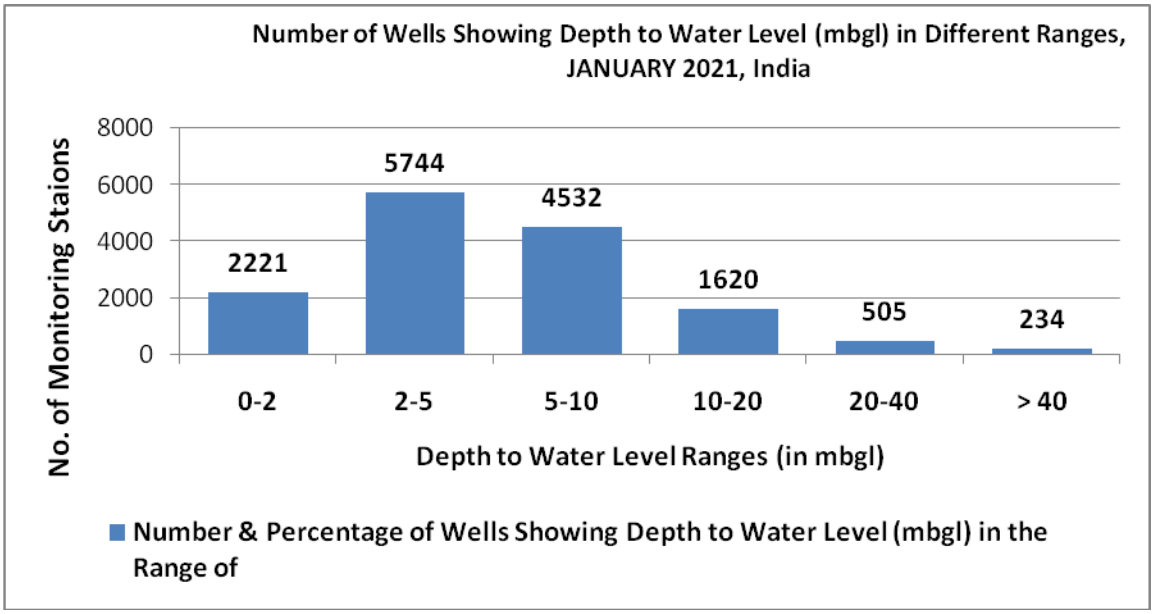
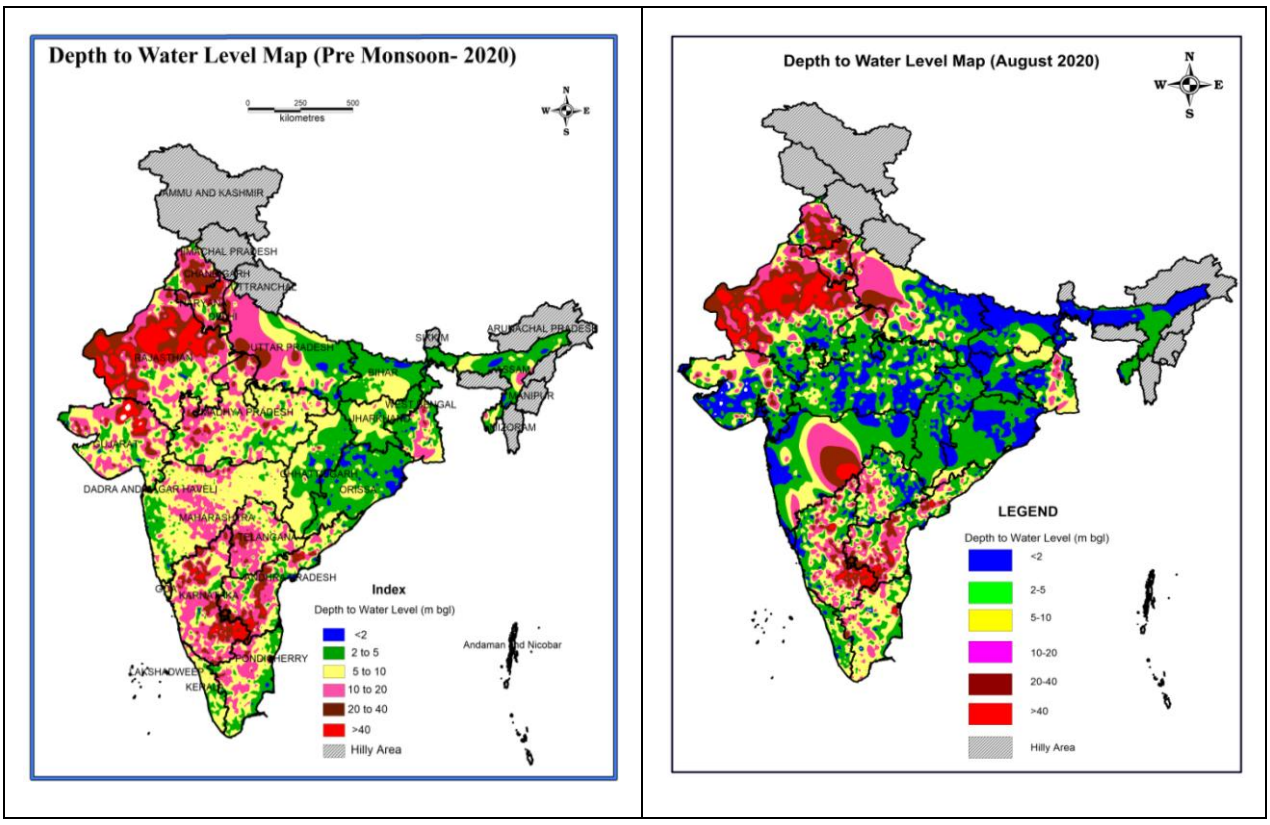
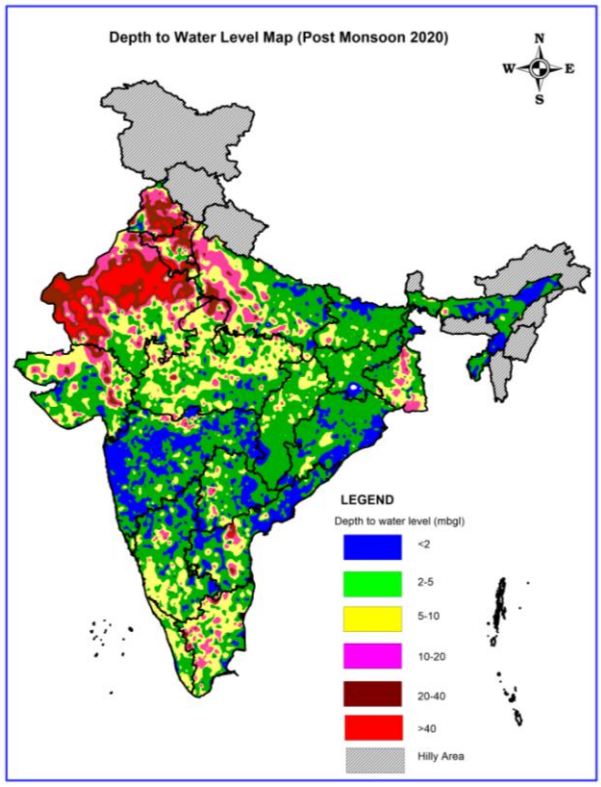
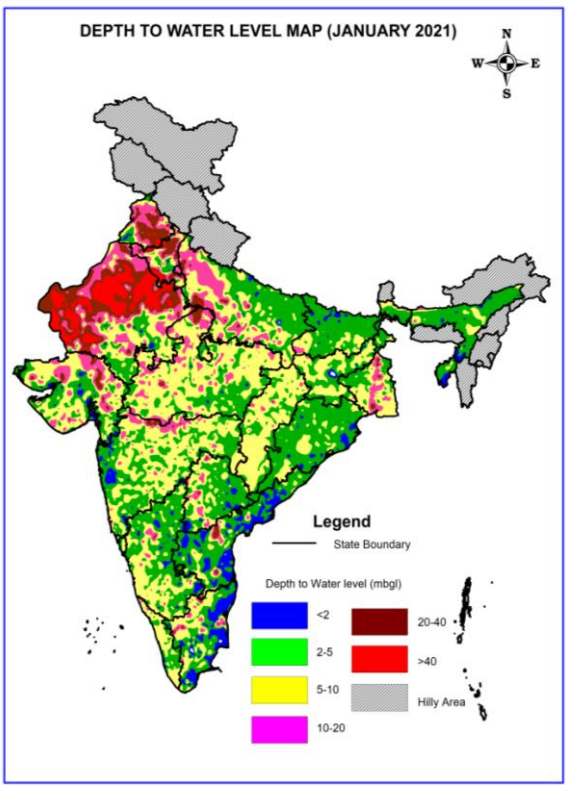


Fig 7.4: No. of wells showing Depth to Water Level (mbgl), January 2020

DEPTH TO WATER LEVEL MAPS AT A GLANCE (2020-2021)




Depth to Water Level Map (Post Monsoon 2020)
N
W
E
S
LEGEND
Depth to water level (mbgl)
<2
2-5
5-10
10-20
20-40
>40
Hilly Area


DEPTH TO WATER LEVEL MAP (JANUARY 2021)
N
W
E
S
Legend
State Boundary
Depth to Water level (mbgl)
<2
2-5
5-10
10-20
20-40
>40
Hilly Area

8. RE-ASSESSMENT OF DYNAMIC GROUND WATER RESOURCES

Assessment of 'Dynamic Ground Water Resources' of the country is being carried out periodically to assess the annual ground water recharge and utilization and its availability for future use. The assessment has been carried out for the reference years 1972, 1985, 1995, 2004, 2009, 2011, 2013, 2017 & 2020 (latest) till now. The methodology recommended by the Ground Water Estimation Committee - 1997 (GEC- 97) was used for the assessment for the reference year 2004, 2009, 2011 & 2013 whereas the assessment for 2017 and 2020 were carried out by the methodology and norms recommended by Ground Water Estimation Committee- 2015 (GEC-2015).

As part of the assessment, 'Annual Extractable Ground Water Resource' as well as 'Annual Ground Water Extraction' are assessed for each assessment unit (block/ taluka/ mandal/ tehsils/ firka etc.). The 'Stage of Ground Water Extraction' is then computed as the ratio of 'Annual Ground Water Extraction' with respect to 'Annual Extractable Ground Water Resource' and is usually expressed in percentage. Based on the stage of extraction, the assessment units are categorized as Safe (<= 70 %), Semi-Critical (>70 % and <=90 %), Critical (>90 % and <=100%) and Over-Exploited (>100 %).

A Central Level Expert Group (CLEG) was constituted by the Department of Water Resources, RD & GR, Ministry of Jal Shakti, Government of India for over-all supervision of the re-assessment of ground water resources in the entire country with reference year 2020. The ground water resources assessment at the State/UT Levels was carried out jointly by Central Ground Water Board and State Nodal / Ground Water Departments under the guidance of respective State Level Committees (SLC) with over-all supervision of CLEG. The National Compilation on Dynamic Ground Water Resources of India, 2020 has been published in June, 2021 (http://cgwb.gov.in/documents/2021-08-02-GWRA_India_2020.pdf). Ground Water Resource Assessment - 2020 (GWRA-2020) has been carried out through a software/ web-based application "INDIA - GROUNDWATER RESOURCE ESTIMATION SYSTEM (IN-GRES)" developed by CGWB through IIT-Hyderabad (http://ingres.iith.ac.in).

As per latest assessment (2020), the total annual ground water recharge has been assessed as 436 bcm. Keeping an allocation for natural discharge, the annual extractable ground water resource worked out as 398 bcm. The total annual ground water extraction has been assessed as 245 bcm. The average stage of ground water extraction for the country as a whole works out to be about 62 %. Out of the total 6965 assessment units (Blocks/ Districts/ Mandals/ Talukas/ Firkas) in the country, 1114 units in various States (16 %) have been categorized as 'Over-Exploited' indicating ground water extraction exceeding the annual extractable ground water resources (availability). A total of 270 (4 %) assessment units have been categorized as 'Critical', where the stage of ground water extraction is between 90-100

%. There are 1057 'Semi-Critical' units (15 %), where the stage of ground water extraction is between 70 % and 90 % and 4427 (64 %) assessment units have been categorized as 'Safe' where the stage of ground water extraction is less than 70 %. Apart from this, there are 97 assessment units (1 %), which have been categorized as 'Saline' as major part of the ground water in phreatic aquifers is brackish or saline. Similarly, out of 24.33 lakh sq km recharge worthy area of the country, 4.09 lakh sq km (17 %) are under 'Over-Exploited', 0.86 lakh sq km (4 %) are under 'Critical', 3.4 lakh sq km (14 %) are under 'Semi-Critical', 15.67 lakh sq km (64 %) are under 'Safe' and 0.3 lakh sq km (1 %) are under 'Saline' category assessment units. Out of 397.62 bcm of Total Annual Extractable Resources of the country, 50.54 bcm (13 %) are under 'Over-Exploited', 12.71 bcm (3 %) are under 'Critical', 54.11 bcm (14 %) are under 'Semi-Critical', 280.26 bcm (70 %) are under 'Safe' category assessment units.

In comparison to 2017 assessment, the total number of assessment units in the country has increased from 6881 to 6965 with major contribution (in increase) from the State of Karnataka, Haryana and Punjab. The total annual ground water recharge has increased from 432 to 436 bcm, where major increse is noticed in the States of Uttar Pradesh, Andhra Pradesh, Karnataka, Telangana, Gujarat and Chhattisgarh. These changes are attributed mainly to changes in recharge from 'Other Sources'. Accordingly, the annual extractable resource of GW Resource Assessment, 2020 on comparison GW Resource Assessment, 2017 also shows an increase from 393 to 398 bcm. The ground water extraction has marginally decreased from 249 to 245 bcm. The overall stage of groundwater extraction has marginally decreased from 63 % to 62 %.

The state/UT wise details of ground water resource availability& categorization of assessment units as per the Assessment of Dynamic Ground Water Resources of India, 2020 are given in Annexures I & II, respectively.

Annexure- I

STATE - WISE GROUND WATER RESOURCES OF INDIA, 2020 (in bcm)

S. No.	States / Union Territories	Ground Water Recharge					Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season		Total Annual Ground Water Recharge			Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Andhra Pradesh	8.93	8.54	0.85	5.83	24.15	1.21	22.94	6.60	0.15	0.88	7.63	1.31	15.91	33.26
2	Arunachal Pradesh	2.01	0.07	1.11	0.002	3.19	0.27	2.92	0.003	0.0002	0.01	0.01	0.01	2.90	0.36
3	Assam	17.92	0.96	7.64	0.53	27.05	5.09	21.97	1.97	0.01	0.60	2.58	0.66	19.33	11.73
4	Bihar	21.02	3.32	1.29	2.42	28.05	2.60	25.46	10.33	0.65	2.04	13.02	2.29	12.23	51.14
5	Chhattisgarh	8.33	1.38	1.11	1.84	12.65	1.11	11.55	4.53	0.10	0.71	5.35	0.84	6.25	46.34
6	Delhi	0.05	0.13	0.004	0.13	0.32	0.03	0.29	0.07	0.04	0.18	0.29	0.19	0.02	101.40
7	Goa	0.34	0.02	0.003	0.04	0.40	0.08	0.32	0.02	0.004	0.05	0.08	0.05	0.24	23.48
8	Gujarat	19.59	2.89	0.00	4.32	26.81	1.90	24.91	12.65	0.03	0.62	13.30	0.78	12.52	53.39
9	Haryana	3.24	2.81	0.58	2.90	9.53	0.90	8.63	10.47	0.53	0.62	11.61	0.57	0.97	134.56
10	Himachal Pradesh	0.66	0.13	0.13	0.14	1.07	0.10	0.97	0.20	0.05	0.10	0.36	0.10	0.62	36.83
11	Jharkhand	4.91	0.43	0.47	0.35	6.15	0.51	5.64	0.93	0.20	0.51	1.64	0.52	4.02	29.13
12	Karnataka	7.47	4.68	2.23	3.77	18.16	1.76	16.40	9.60	0.00	1.03	10.63	1.16	7.08	64.85
13	Kerala	4.20	0.13	0.46	0.86	5.65	0.53	5.12	1.16	0.01	1.47	2.65	2.25	2.13	51.68
14	Madhya Pradesh	27.75	1.60	0.12	6.69	36.16	2.78	33.38	17.33	0.03	1.61	18.97	1.84	15.25	56.82
15	Maharashtra	20.66	2.38	0.53	8.45	32.01	1.76	30.25	15.29	0.003	1.34	16.63	1.34	14.20	54.99
16	Manipur	0.40	0.001	0.11	0.002	0.51	0.05	0.46	0.003	0.0002	0.02	0.02	0.02	0.44	5.12
17	Meghalaya	1.66	0.01	0.36	0.01	2.04	0.22	1.82	0.03	0.0003	0.05	0.08	0.06	1.73	4.22

STATE - WISE GROUND WATER RESOURCES OF INDIA, 2020 (in bcm)															
S. No.	States / Union Territories	Ground Water Recharge					Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season		Total Annual Ground Water Recharge			Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
18	Mizoram	0.19	0.00	0.03	0.00	0.22	0.02	0.20	0.00	0.00	0.01	0.01	0.01	0.19	3.81
19	Nagaland	1.08	0.76	0.27	0.06	2.17	0.22	1.95	0.002	0.00003	0.02	0.02	0.02	1.93	1.04
20	Odisha	10.26	2.71	1.51	2.60	17.08	1.37	15.71	5.50	0.15	1.21	6.86	1.46	8.74	43.65
21	Punjab	5.01	10.42	0.95	6.41	22.80	2.20	20.59	32.80	0.00	1.05	33.85	1.08	1.61	164.42
22	Rajasthan	8.80	0.58	0.29	2.57	12.24	1.17	11.07	14.37	0.13	2.14	16.63	2.17	0.99	150.22
23	Sikkim	0.96	0.00	0.00	0.00	0.96	0.10	0.86	0.00	0.002	0.01	0.01	0.01	0.85	0.86
24	Tamil Nadu	6.83	9.04	1.26	2.45	19.59	1.90	17.69	13.52	0.17	0.99	14.67	1.52	5.65	82.93
25	Telangana	7.50	3.29	1.10	4.75	16.63	1.60	15.03	7.13	0.14	0.73	8.01	0.74	7.14	53.32
26	Tripura	0.85	0.06	0.34	0.22	1.47	0.22	1.24	0.02	0.0002	0.08	0.10	0.09	1.14	7.94
27	Uttar Pradesh	37.75	13.16	1.30	19.99	72.20	5.32	66.88	41.29	0.00	4.74	46.03	5.38	21.53	68.83
28	Uttarakhand	1.29	0.31	0.10	0.32	2.02	0.17	1.85	0.63	0.09	0.15	0.87	0.16	0.98	46.80
29	West Bengal*	18.71	1.51	5.26	3.85	29.33	2.77	26.56	10.84	0.27	0.73	11.84	1.53	14.19	44.60
30	Andaman and Nicobar	0.32	0.0002	0.00	0.0001	0.32	0.03	0.28	0.0001	0.001	0.01	0.01	0.01	0.28	2.60
31	Chandigarh	0.01	0.02	0.005	0.03	0.06	0.01	0.06	0.01	0.002	0.03	0.05	0.03	0.01	80.60
32	Dadra & Nagar Haveli	0.04	0.01	0.003	0.02	0.07	0.005	0.07	0.01	0.01	0.02	0.03	0.02	0.03	45.99
	Daman & Diu	0.03	0.0005	0.00	0.001	0.03	0.001	0.03	0.003	0.03	0.00	0.03	0.02	0.0002	113.38
33	Jammu and Kashmir	0.80	2.04	0.95	0.88	4.68	0.46	4.22	0.20	0.13	0.56	0.89	0.57	3.32	21.03
34	Ladakh	0.01	0.05	0.02	0.04	0.12	0.01	0.11	0.001	0.0002	0.02	0.02	0.02	0.09	17.90

STATE - WISE GROUND WATER RESOURCES OF INDIA, 2020 (in bcm)															
S. No.	States / Union Territories	Ground Water Recharge					Total Natural Discharges	Annual Extractable Ground Water Resource	Current Annual Ground Water Extraction				Annual GW Allocation for for Domestic Use as on 2025	Net Ground Water Availability for future use	Stage of Ground Water Extraction (%)
		Monsoon Season		Non-monsoon Season		Total Annual Ground Water Recharge			Irrigation	Industrial	Domestic	Total			
		Recharge from rainfall	Recharge from other sources	Recharge from rainfall	Recharge from other sources										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
35	Lakshadweep	0.011	0.00	0.002	0.00	0.01	0.01	0.005	0.00	0.00	0.003	0.003	0.005	0.002	58.47
36	Puducherry	0.06	0.10	0.01	0.05	0.22	0.02	0.20	0.10	0.01	0.05	0.15	0.05	0.05	74.27
	Grand Total	249.65	73.54	30.41	82.54	436.15	38.51	397.62	217.61	2.94	24.37	244.92	28.90	184.56	61.60
NOTE- Data on Ground Water Extraction for Industries is not available for Karnataka, Punjab & Uttar Pradesh and is available only for 2 districts of Maharashtra.															
*NOTE- The Ground Water resources assessment as on 2013 has been considered for the state of West Bengal.															

CATEGORIZATION OF BLOCKS/ MANDALS/ TALUKAS IN INDIA (2020)												
S.No.	**State/Union Territories**	**Total No. of Assessed Units**	**Safe**		**Semi-Critical**		**Critical**		**Over-Exploited**		**Saline**	
	States		**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**	**Nos.**	**%**
1	Andhra Pradesh	667	551	82.61	40	6.00	15	2.25	23	3.45	38	5.70
2	Arunachal Pradesh	11	11	100.00								
3	Assam	28	28	100.00								
4	Bihar	534	471	88.20	51	9.55	5	0.94	7	1.31		
5	Chhattisgarh	146	110	75.34	27	18.49	9	6.16				
6	Delhi	34	3	8.82	7	20.59	7	20.59	17	50.00		
7	Goa	12	12	100.00								
8	Gujarat	248	182	73.39	24	9.68	4	1.61	25	10.08	13	5.24
9	Haryana	141	30	21.28	14	9.93	12	8.51	85	60.28		
10	Himachal Pradesh	10	10	100.00								
11	Jharkhand	259	244	94.21	10	3.86	2	0.77	3	1.16		
12	Karnataka	227	130	57.27	35	15.42	10	4.41	52	22.91		
13	Kerala	152	120	78.95	29	19.08	3	1.97				
14	Madhya Pradesh	317	233	73.50	50	15.77	8	2.52	26	8.21		
15	Maharashtra	353	271	76.77	63	17.85	8	2.27	10	2.83	1	0.28
16	Manipur	9	9	100.00								
17	Meghalaya	12	12	100.00								
18	Mizoram	26	26	100.00								
19	Nagaland	11	11	100.00								
20	Odisha	314	302	96.18	6	1.91					6	1.91
21	Punjab	150	17	11.33	10	6.67	6	4.00	117	78.00		
22	Rajasthan	295	37	12.54	29	9.83	23	7.80	203	68.81	3	1.02
23	Sikkim	4	4	100.00								
24	Tamil Nadu	1166	409	35.08	225	19.30	63	5.40	435	37.31	34	2.92
25	Telangana	589	321	54.50	180	30.56	44	7.47	44	7.47		
26	Tripura	59	59	100.00								
27	Uttar Pradesh	830	541	65.18	174	20.96	49	5.90	66	7.95		
28	Uttarakhand	18	14	77.78	4	22.22						
29	West Bengal*	268	191	71.27	76	28.36	1	0.37				
30	Andaman and Nicobar	36	35	97.22							1	2.78
31	Chandigarh	1			1	100.00						
32	Dadra & Nagar Haveli	1	1	100.00								
	Daman & Diu	2	1	50.00					1	50.00		
33	Jammu and Kashmir	20	20	100.00								
34	Ladakh	2	2	100.00								
35	Lakshadweep	9	7	77.78	2	22.22						
36	Puducherry	4	2	50.00			1	25.00			1	25.00
	Grand Total	**6965**	**4427**	**63.56**	**1057**	**15.18**	**270**	**3.88**	**1114**	**15.99**	**97**	**1.39**

Note:

Blocks- Bihar, Chhatisgarh, Haryana, Jharkhand, Kerala, Madhya Pradesh, Manipur, Mizoram, Odisha, Punjab, Rajasthan, Tripura, Uttar Pradesh, Uttarakhand, West Bengal

Talukas- Goa, Gujarat, Karnataka, Maharashtra
Mandals- Andhra Pradesh, Telangana
District- Arunachal Pradesh, Assam, Meghalaya, Nagaland, Sikkim, Dadra & Nagar Haveli, Daman & Diu, Jammu & Kashmir, Ladakh
Valley- Himachal Pradesh
Islands- Andaman & Nicobar, Lakshadweep
Firka- Tamil Nadu
Region- Puducherry
UT- Chandigarh
Tehsil- Delhi

*West Bengal- The Ground Water Resource Assessment as on 2013 has been considered for state of West Bengal.

9. AQUIFER REJUVENATION

9.1 Master Planfor Artificial Recharge to Ground water

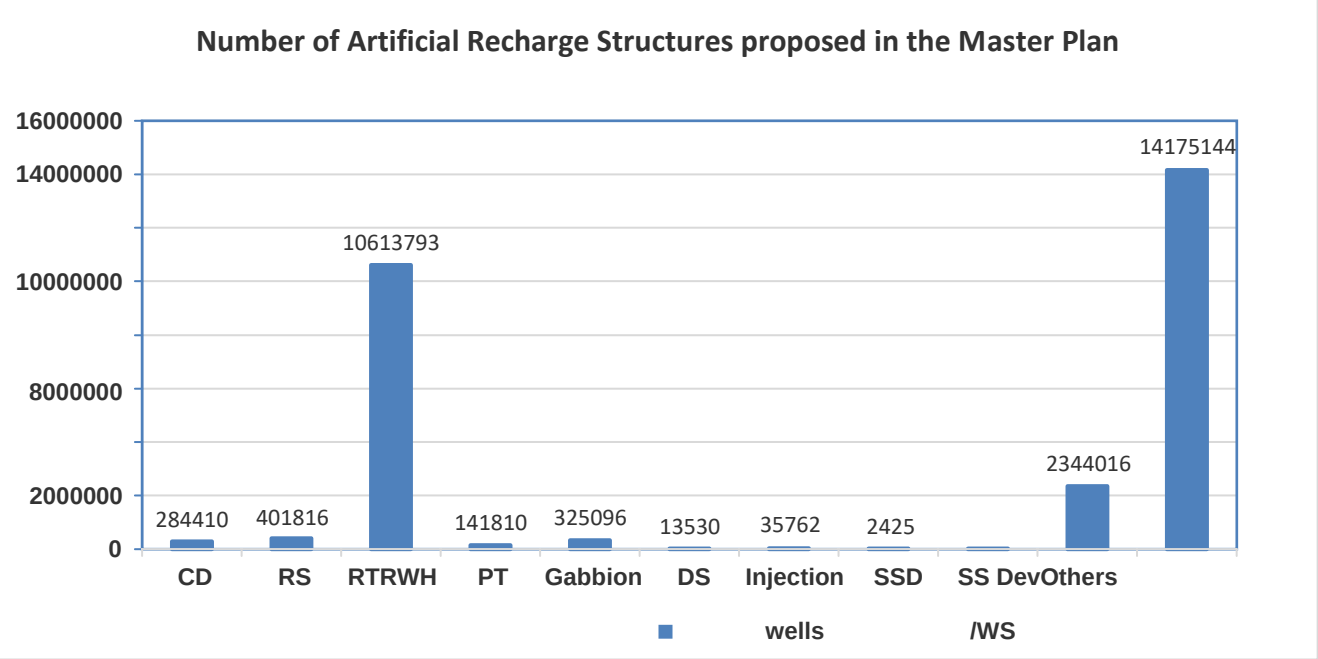
The master plan for artificial recharge to groundwater is jointly prepared by CGWB along with the respective State counterparts under the guidance of interministrial committee constituted by DoWR, RD & GR. The revised master plan is a macro plan, formulated to work out the feasibility of various structures for the different terrain conditions of the country and respective estimated cost, providing a broad outline of the project and expected investments.

The area feasible for artificial recharge is identified broadly on the basis of the long term post monsoon trend and post monsoon water level. The type of structures is recommended based on the terrain condition, drainage pattern and the numbers are calculated considering the available surplus run-off and hydrogeological properties of the aquifer. The master plan includes artificial recharge in both rural and urban areas at an estimated cost of Rs 1.34 lakh Cr.

The salient features of the master plan & state wise suggested artificial recharge structures with cost estimates are given below:

Table 9.1 Scope for artificial recharge

Volume of Space Available	537.35 BCM
Water Required	716.92 BCM
Surplus Source Water Availability	185.092 BCM
Number of Structures	1.42 Cr



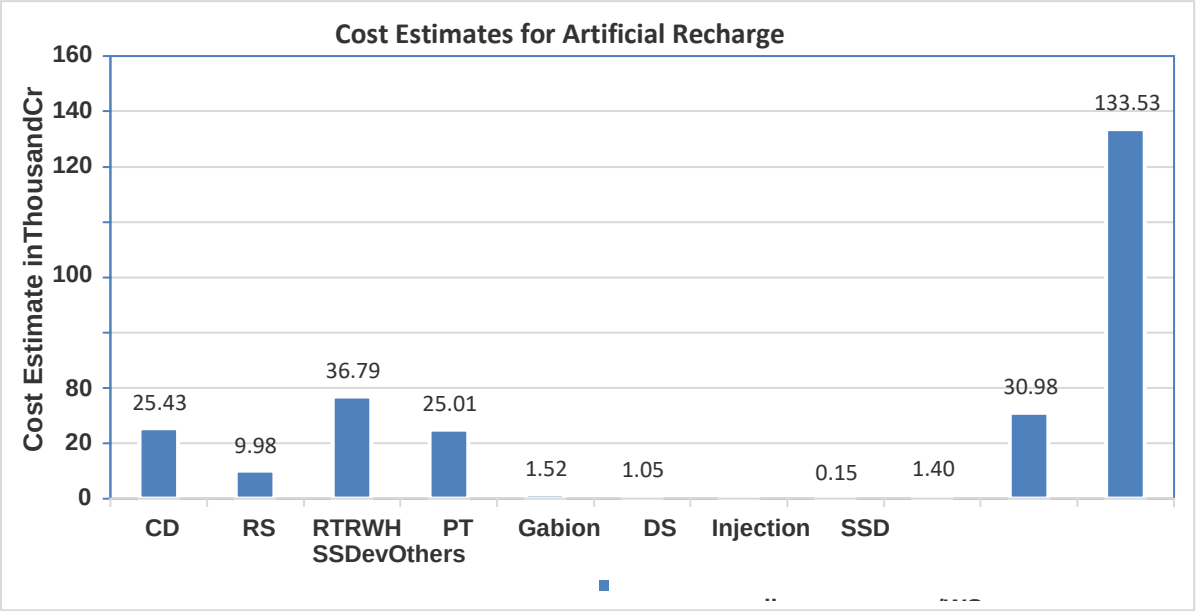

Cost Estimates for Artificial Recharge
Cost Estimate inThousandCr
160
140
120
100
80
20
0
25.43
9.98
36.79
25.01
1.52
1.05
0.15
1.40
30.98
133.53
CD
RS
RTRWH
SSDevOthers
PT
Gabion
DS
Injection
SSD

Table 9.2 State wise recommended number of artificial recharges structure

S.No	State	CD	RS	RTRWH	PT	Gabbion	DS	Injection wells	SSD	SSDev/ WSDev	Others	Total
1	AndhraPradesh	13143	26209	263694	13085	0	0	0	0	0	0	316131
2	Bihar	122	5682	50000	428	0	12679	13811	0	0	8415	91137
3	Chhattisgarh	0	25687	118339	3426	0	0	0	0	0	30989	178441
4	Delhi	12	22706	304500	0	0	0	0	0	0	0	327218
5	Goa	0	0	0	0	0	0	0	0	0	931	931
6	Gujarat	3985	8607	1320947	701	0	0	0	0	0	2072	1336312
7	Haryana	335	44392	304377	0	0	0	0	0	0	393811	742915
8	Himachal Pradesh	2290	556	1050	0	108118	851	133	460	0	784	114242
9	Jharkhand	36062	1268	521692	5173	0	0	0	0	0	27455	591650
10	Karnataka	50527	436	0	9918	0	0	0	0	0	344	61225
11	Kerala	1260	0	482788	1395	196116	0	5	121	0	67943	749628
12	MadhyaPradesh	76002	76002	408938	12309	0	0	0	0	0	152085	725336
13	Maharashtra	19243	838	5646772	7188	0	0	0	0	0	8995	5683036
14	NEStates	18821	0	15700	0	18835	0	0	0	11531	473149	538036
15	Odisha	1292	550	15700	1111	0	0	0	1051	0	2782	22486
16	Punjab	85	79839	551308	0	0	0	13410	0	0	455920	1100562
17	Rajasthan	32744	231	0	63158	0	0	0	0	0	674067	770200
18	Sikkim	380	0	1500	0	450	0	0	125	540	340	3335
19	Tamilnadu	7180	70460	0	2397	0	0	0	0	0	7685	87722
20	Telangana	11552	22188	555093	10636	0	0	0	0	0	0	599469
21	Uttar Pradesh	5582	5582	0	493	0	0	0	0	0	12011	23668
22	Uttarakhand	2870	0	5543	810	0	0	0	0	0	6300	15523
23	WestBengal	453	0	6740	8551	1136	0	8403	568	0	16914	42765
24	UT- Lakshadweep	0	0	9597	0	0	0	0	0	0	0	9597
25	UT- Puducherry	71	283	0	14	0	0	0	0	0	203	571
26	UT- DNH	49	0	12109	17	0	0	0	0	0	30	12205
27	UT- Chandigarh	0	10300	0	0	0	0	0	0	0	0	10300

28	UT- Jammu & Kashmir	0	0	1150	0	245	0	0	0	230	560	2185
29	UT- Ladakh	0	0	0	0	46	0	0	0	15	231	292
30	UT- Andaman & Nicobar Islands	350	0	2250	1000	150	0	0	100	170	0	4020
31	UT- DIU & Daman	0	0	14006	0	0	0	0	0	0	0	14006
	Total	**284410**	**401816**	**10613793**	**141810**	**325096**	**13530**	**35762**	**2425**	**12486**	**2344016**	**14175144**

Note:
CD- Checkdam, RS- Recharge Shaft, RTRWH- Roof Top Rain Water Harvesting, PT- Percolation Tank, DS- Desilting
SSD- Sub Surafce Dyke, SS Dev/ WS Dev- Spring shed Development/ Wateshed Development activities, Others- Other Structures

The cost of RTRWH has been estimated on the basis of cost per unit area of roof top in UP, Goa & Karnataka and has not been included in no of structures but included in cost. Similarly, in case of Rajasthan, CAT is given as cost per unit area and hence not included in number but included in cost.

Table 9.3 Cost Estimate for Artificial Recharge in Urban & Rural Areas (Rs in Cr)

S.No	State	Rural	Urban	Total	%
1	Andhra Pradesh	3276.67	527.39	3804.06	3
2	Bihar	2106.44	500	2606.44	2
3	Chhattisgarh	3095.12	591.7	3686.82	3
4	Delhi	683.58	1522.5	2206.08	2
5	Goa	279.3	146.54	425.84	0
6	Gujarat	820.84	2641.89	3462.73	3
7	Haryana	3457.32	913.13	4370.45	3
8	Himachal Pradesh	1018.65	36.75	1055.4	1
9	Jharkhand	4053.57	1304.23	5357.8	4
10	Karnataka	7111.64	2870.02	9981.66	7
11	Kerala	2535.64	724.18	3259.82	2
12	Madhya Pradesh	9708.66	817.88	10526.54	8
13	Maharashtra	13893.74	16940.31	30834.06	23
14	NE States	6206.28	1683.49	7889.77	6
15	Odisha	597.55	204.1	801.65	1
16	Punjab	5119.63	1653.92	6773.55	5
17	Rajasthan	19318.1	0	19318.1	14
18	Sikkim	123.87	75	198.87	0
19	TamilNadu	2463.14	0	2463.14	2
20	Telangana	2750.6	1110.2	3860.8	3
21	UT- Andaman & NicobarIslands	184.75	149.99	334.73	0
22	UT- Chandigarh	875.5	0	875.5	1
23	UT- DNH	34.78	36.33	71.11	0
24	UT- Jammu & Kashmir	186.38	120.75	307.13	0
25	UT- Ladakh	69.59	0	69.59	0
26	UT- Lakshadweep	0	57.58	57.58	0
27	UT- Puducherry	20.89	0	20.89	0
28	Uttar Pradesh	5099.23	2057.22	7156.45	5
29	Uttarakhand	12.86	27.72	40.57	0
30	West Bengal	1631.15	67.02	1698.17	1
31	UT- DIU & Daman	0	14.41	14.41	0
	Total	**96735.45**	**36794.23**	**133529.69**	
		72%	**28%**		

The master plan gives a broad outline of the artificial recharge plan at state level and no separate funding is required for executing the revised master plan. The inputs can be taken from master plan for formulating the water conservation/ water augmentation activities in the districts through various schemes.

9.2 Artificial Recharge work in Aspirational Districts

Aquifer Rejuvenation project through Artificial Recharge (AR) has been implemented by Central Ground Water Board (CGWB), Department of Water Resources, RD & GR in selected

aspirational districts of Telangana, Andhra Pradesh & Maharashtra States. Suitable structures were constructed to harvest runoff water in stream to store at suitable locations for augmenting recharge to the ground water as given below.

State	District	Watershed / Mandal	Region
Maharashtra	Osmanabad	Water Shed 12 & 13 (MR – 12 & MR -13) in Manjra (MR) sub-basin, Godavari basin in Osmanabad Taluka.	CR, Nagpur
Andhra Pradesh	YSR Kadapa	Pulivendula mandal	SR, Hyderabad
Telangana	Erstwhile Warangal district	Bachannapeta mandal	SR, Hyderabad

The location wise details of area under taken are as below:

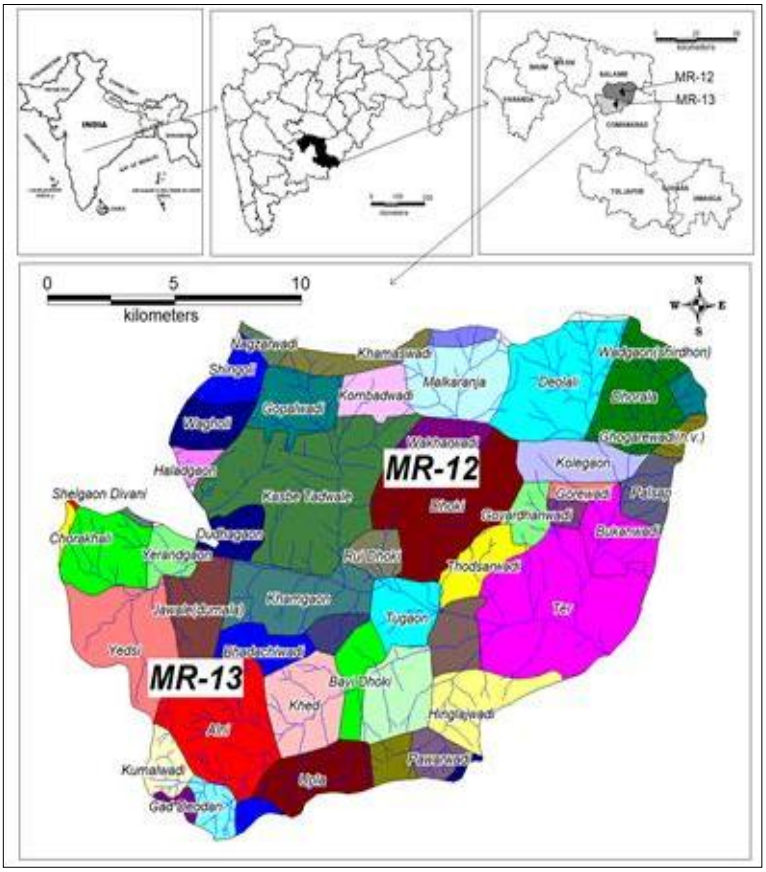


Fig.9.1 MR-12 & MR-13 Over Exploited water shed of Osmanabad Taluka, Osmanabad District, Maharashtra state

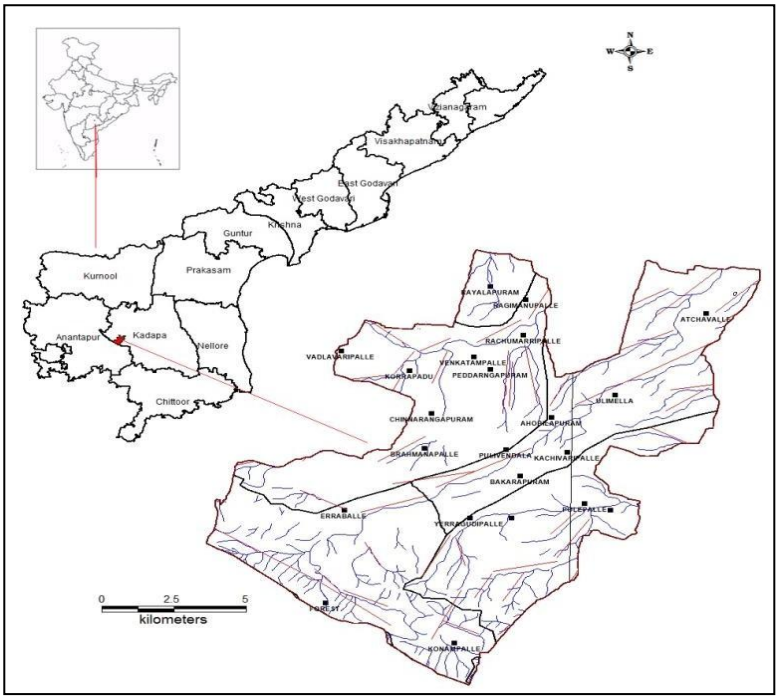


Fig.9.2 Pulivendula mandal (Over Exploited), YSR Kadapa District, Andhra Pradesh

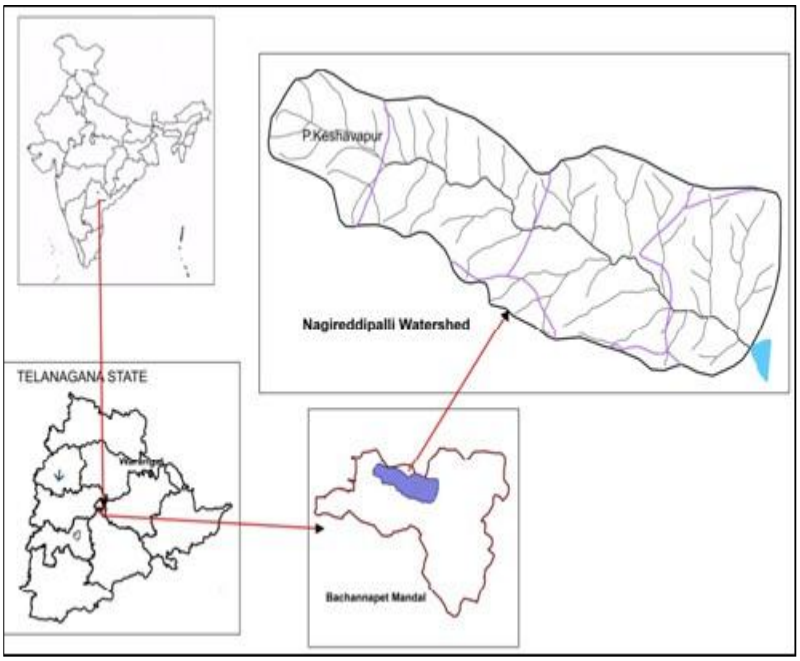


Fig.9.3 Bachannapeta mandal, erstwhile Warangal district, Telangana State

The work commenced in August, 2018 and the structures have been completed successfully in all districts. The status of the project till March, 2021 is given in table 9.4.

Table 9.4 Progress of artificial recharge structures till March, 2021		
S. No	**State/ District/ Block**	**Progress**
1	Maharashtra / Osmanabad / Osmanabad	• Construction completed for 55 Check Dams, 20 Piezometers & 46 Recharge wells. • Final inspection is underway
2	Andhra Pradesh / YSR Kadapa / Pulivendula	• Construction completed for 16 Check dams, 4 Percolation tank, 1 Sub surface barrier and 36 Recharge shaft & 12 Piezometers.
3	Telangana / Warangal / Bachennapet	• Construction completed for 6 Check dams, 1 Sub surface barrier and 31 Recharge shaft & 9 Piezometers. • 8 numbers of automatic water level recorders installed • Structures handed over to DRDA, Jangaon dist., Telangana state on 10.03.21.

Fig.9.5 Various stages of CD construction at Bachennapet, Jangaon dist. Telangana

Name of Work:-Construction & Installation of Artificial Recharge Structures in Pulivendula Mandal of YSR District.
Sub Head:-Construction of Sub Surface Barrier near Atchavelli(v) in Pulivendula(M) of YSR Distirct

PHOTOS-SSB

BEFORE COMPLETION

DURING COMPLETION

AFTER COMPLETION

Impact Assessment (first year)

- AP– Resultant ground water recharge – 02 times than natural recharge i.e. 25 MCM
- Telangana - Resultant ground water recharge – 04 times than at natural recharge i.e. 04 MCM & increase in cropped area of 134 Ha in Kharif (19-20) in comparison to 2018-19.
- Maharashtra – Resultant ground water recharge – 02 times the natural recharge i.e., 38 MCM

9.3 Pilot studies – AR Work convergence with MGNREGS

The Government is taking many initiatives through different schemes for water conservation and augmentation and MGNREGS is one of such schemes. Under MGNREGS, the Ministry of Rural Development is rendering significant emphasis on water conservation measures and is utilizing minimum 65% of funds in ground water over-exploited blocks on water conservation and water harvesting structures. A Joint Action Plan was signed between MoWR & MoRD, providing modalities of implementation of water conservation/Artificial Recharge initiatives in identified 9 water stressed blocks (as per the Dynamic ground water resources assessment at that time (GWRA -2013) in 8 states in coordination with CGWB, MoWR, RD & GR.

The salient features of the Joint Action Plan are given below.

- CGWB to provide technical guidance in selection of sites and type of rain water harvesting structures. The sites shall be finalized after a joint visit by MoRD & CGWB in consultation with local stake holders.
- Finalization of implementation plan & Nomination of Nodal officers in MoRD & CGWB for better coordination.
- RWH Structures to be constructed under NRM component of MGNRES and work shall be executed by the identified agencies in coordination with respective GPs following codal formalities
- Monitoring to commence in the planning stage and continue for at least 2 years after the construction of these structures.
- Implementation activities to be documented through photographs, structures to be geo tagged and mapped on GIS platform.
- A Committee under the Chairmanship of District Collector, with representatives of CGWB & MoRD, PRI and other relevant department to monitor the progress & BDO under whose jurisdiction, the work is being executed will act as Member Secretary.
- PRI functionaries of neighbouring GPs to be encouraged to visit for replication in their areas.
- Impact assessment shall be carried out, one year after the implementation of work jointly by CGWB & MoRD

The impact assessment report was submitted in December 2019 and the progresses of the work till March, 2021 in these 9 blocks are given below:

Progress of work carried out under MGNREGS during March - 2021									
State	**Andhra Pradesh**	**Telangana**	**Karnataka**	**Tamil Nadu**	**Rajasthan**	**Rajasthan**	**Haryana**	**Madhya Pradesh**	**Maharashtra**
District	Prakasam	Nallagonda	Chickballalpur	Krishnagiri	Bhilwara	Sirohi	Kurukshetra	Ujjain	Amravati
Block	Peddaravedu	Munugode	Gowribidanur	Mathur	Madalgarh	Reodhar	Babain	Badnagar	Warud
Sharing of Hydrogeological Information with State Agencies for Implementation	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed
Details of Training conducted (No & Dates on which training conducted)	5	3	3	3	nil	1	1	1	1
No of Awareness Program conducted	2	2	2	2	nil	nil	nil	nil	1
Commencement of Execution of Work	Apr-18	Apr-2018	Jun-19	Jul-18	Apr-20	Dec-20	Sep-18	Mar-20	Dec-20
No. of Structure Envisaged	1253	2174	103	20	56	126	16	438	1798
No. of Structure Completed	1253	1713	20	20	45	87	12	235	94

No. of Structure In Progress	Nil	Nil	83	nil	3	4	4	192	29
Geo-tagging (Completed/ in progress)	Completed	Completed	completed	Completed	Completed	Completed	In progress	Completed	In progress
Initiation of Impact Assessment Study (Yes/No)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Status of the Project	Completed	Completed	3 structures Work under progress (Due to Panchayat Elections slow progress reported)	Completed	All 56 sites released	All sites released & Financial approval for 50 sites awaited From state	Work under progress	Work under progress	State Govt. is advised to expedite the work

10. NATIONAL HYDROLOGY PROJECT

National Hydrology Project (NHP) is a continuation of Hydrology Project (HP)- I and HP- II, a central sector scheme of Department of Water Resources, RD & GR, Ministry of Jal Shakti, Government of India with a total outlay of Rs. 3679.7674 Crore (Rs. 3640 Crore for NHP and Rs. 39.7674 Crore for establishment of National Water Informatics Centre (NWIC)). It will act as a repository of Nation-wide Water Resources data for a period of 08 years extending from 2016-17 to 2023-24. Out of the total outlay, 50% of the amount has to be repaid by Central Government to the Word Bank (WB) and the remaining 50% would be Central Assistance. The project will be implemented by 49 agencies involving 10 Central and 39 States agencies. Since CGWB is one of the implementing agencies of the NHP project, a budget of Rs 67 Crore has been allocated for the purpose.

Objective of NHP

To improve the extent, quality, and accessibility of water resources information, decision support system for floods and basin level resource assessment / planning and to strengthen the capacity of targeted water resources professionals and management institutions in India.

The components of NHP are:

- **Component A:** Water Resources Monitoring systems
- **Component B:** Water Resources information systems
- **Component C:** Water Resources Operation and Planning systems
- **Component D:** Institutional Capacity Enhancement

NHP will improve and expand hydrological data and information systems, strengthen water resources operation and planning systems, and enhance institutional capacity for water resources management. The project will strengthen the information base and institutional capacity for effective decision making in water resources planning and operational management at the basin level across the country using the latest available technology and tools. NHP will also help in contributing to the Digital India initiative by integrating water resources information across state and central agencies.

Role of CGWB in NHP

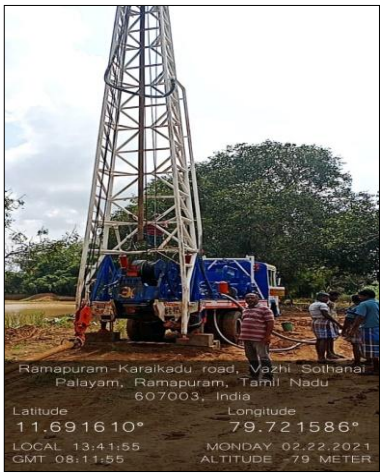
CGWB being the Nodal Agency for Ground Water, NHP cell in all the CGWB, Regional Offices have been created for providing Technical Guidance & Support to respective States in the implementation of NHP.

The proposed major activities of CGWB under NHP

- **Real time monitoring of Water Level & Water Quality in coastal aquifers of Tamil Nadu & UT of Puducherry** through construction of 60 piezometers & installation of 60 DWLRs.
- **Establishment of Center of Excellence for groundwater modeling** for providing technical support to the Central/ State Agencies in Ground Water Flow Model Studies.
- **Real time monitoring of Water Level through Installation of 3400 additional DWLRs– Phase-1, in the existing Piezometers located** in the Over-exploited, Critical and Semi-Critical blocks of the country.
- **Real time monitoring of Water Level through Installation of 1800 additional DWLRs– Phase 2, in the existing Piezometers** located in the Over-exploited, Critical and Semi-Critical blocks of the country.
- **Capacity Building** of the officers from Central and State agencies through National and International level trainings every year.
- **Awareness Campaigns** are being conducted at six places every year on state specific groundwater issues.
- Organizing **National Level Workshops** on need-based topics/issues.

A brief of various activities taken by CGWB under NHP during 2020-21 are given below:

- Construction of 60 piezometers in coastal aquifers of Tamil Nadu & UT of Puducherry for Real time monitoring of Water Level & Water Quality: Contract awarded on 04.11.2020 amounting Rs. 5,79,89,075/- + GST



- Organized 03 Nos Domain Specific Training for 59 Nos officers from State/ Central Implementing Agencies under NHP through RGI, Raipur.
- Revamping of Center of Excellence has been made for which different Hardware and Software has been procured.

11. CENTRAL GROUND WATER AUTHORITY (CGWA)

Central Ground Water Authority, constituted under Section 3 (3) of the Environment (Protection) Act, 1986 has been regulating ground water development in the country. The Authority regulates in 20 States/ UTs (14 States/ UTs. have their own Acts and 2 States are regulating under some GO). The Authority issues No Objection Certificate for ground water abstraction.

- Exercise of powers under section 5 of the Environment (Protection) Act, 1986 for issuing directions and taking such measures in respect of all the matters referred to in sub-section (2) of section 3 of the said Act.
- To resort to penal provisions contained in sections 15 to 21 of the said Act.
- To regulate and control, management and development of ground water in the country and to issue necessary regulatory directions for the purpose.
- Exercise of powers under section 4 of the Environment (Protection) Act, 1986 for the appointment of officers.

Important activities of CGWA during the period mentioned are given below:

11.1 REVISION OF GUIDELINES FOR GROUND WATER REGULATION

As directed by the Hon'ble NGT vide its order dated 3/1/2019 in OA No. 176/2015, the revised guidelines notified on 12.12.2018 were not given effect to. The Hon'ble NGT had constituted an Expert Committee headed by JS, MoEF & CC to examine the issue of appropriate policy for conservation of ground water with a robust institutional mechanism for surveillance and monitoring with a view to enhance access to ground water for drinking purposes in OCS areas by way of appropriate replenishment practices, which can be properly accounted and measured for as well as to sustain the floodplains of rivers in terms of e-flows and other water bodies.

The report submitted to NGT by the committee under JS (NRWCD), MoEF & CC on 23.08.2019 was not found satisfactory by the NGT and vide its order dated 11.9.2019, subsequently, another committee headed by JS, DoWR, RD & GR, MoJS was constituted to look into the issues. The Committee headed by JS, DoWR, RD & GR, MoJS had submitted its report along with revised guidelines to NGT on 16.3.2019.

Ministry of Jal Shakti notified the revised guidelines on 24.09.2020 for regulation and control of ground water development in the country. These guidelines have Pan India applicability. The salient features of guidelines are as follows:

- Individual domestic consumers (in both rural and urban areas) drawing ground water for drinking/ domestic use, Rural drinking water supply schemes, Armed Forces and

Central Armed Police Forces Establishments, Agricultural users and Micro and Small Enterprises drawing <10 KLD of groundwater are exempted from seeking NOC.

- No new industries except those MSME based on ground water are permitted in Over-exploited assessment units.
- Expansion of existing industries except MSME located in Over-exploited assessment units involving increase in quantum of ground water abstraction is not permitted.
- Industries drawing >100 KLD of ground water in OE, Critical and Semi-critical assessment units are required to submit impact assessment reports along with the application.
- Industries drawing >100 KLD of ground water in OE, Critical and Semi-critical assessment units are required to get annual water audit done and reduce fresh groundwater consumption by 20% over the next three years.
- No NOC id granted for groundwater extraction for water parks, theme parks, amusement parks in OE assessment units
- No ban on ground water extraction in Over-exploited units by infrastructure and mining projects, as these are location specific.
- All ground water users seeking NOC are required to pay ground water abstraction charges in Critical, Semi-critical and Safe assessment units and ground water restoration charges in OE assessment units. The charges so collected are to be utilized by States/ UTs on specific water conservation measures, specific supply/ demand side interventions.
- No charges are to be paid by users drawing saline ground water.
- Users drawing groundwater illegally are liable to pay Environmental Compensation.
- Penal provision has been kept for ensuring compliance of various conditions of NOC.
- Bulk water suppliers have also been brought in the ambit of NOC.
- Installation of Sewage Treatment Plants (STP) is mandatory for all new residential apartments/ Group Housing Societies where ground water requirement is more than 20 m3 /day. STP treated water is to be used by such users for flushing, green belt etc.
- All users seeking NOC are required to install tamper proof flow meters along with telemetry on all the ground water abstraction structures.
- In over-exploited assessment units, use of ground water for construction activity is permitted only if no treated sewage water is available within 10 km radius of the site.

11.2 Processing of Applications for Grant / Renewal of No Objection Certificate (NOC) for Ground Water Withdrawal

CGWA continued to evaluate applications from Industries/ Infrastructure Units / Mining Projects for grant of NOC for ground water withdrawal as per provisions of the Notified guidelines dated 24.09.2020. A total of 1393 nos. of new NOCs were issued and 322 nos. of

NOCs renewed during the 2020-21. In addition, exemption was given in respect of 4794 Nos. new applications and 244 Nos renewal cases. As compared to previous year, there has been a marked increase of 228% in issuance of new NOC/ exemption and that of 363% in case of renewals. Presently, NOCs are also being issued in Over-exploited, Critical and Semi-critical areas as per revised guidelines dated 24.09.2020, which were earlier held up owing to observation made by Hon'ble NGT in its various orders.

Also, as per Public Notice dated 15.10.2019 all existing ground water user including industrial, infrastructure and mining projects were given an extension till 31.3.2022 to submit their application and were asked to obtain a valid NOC from CGWA by submitting their application for NOC online through NOCAP portal of CGWA on or before then said date.

11.3 Monitoring of Compliance of Conditions Stipulated in the NOC

- CGWA has developed online self-compliance format for the project proponent to upload the compliance conditions as stipulated in the NOC and the same is being monitored by the Regional Offices for ensuring the compliance conditions by the project proponent.
- Show-cause Notices are also being issued to units, which have been found not to have fully complied with the NOC conditions. Orders for sealing of bore/tube wells and/ or disconnection of electricity supply through the concerned DCs/ DMs were also issued in respect of units, which did not give satisfactory replies to the show-cause notice.
- While processing applications for renewal of NOC, compliance of NOC conditions by the proponents was ensured. Penalty of Rs. 1 lakh under Section 15 of Environment (Protection) Act of 1986 was imposed on the violators. NOC was issued after the compliance was completed and penalty was deposited by such offenders to the concerned Regional Office of CGWB.

11.4 44th and 45th Meeting of Central Ground Water Authority

44th meeting of Central Ground Water Authority was held on **20.10.2020** under the Chairmanship of Shri G C Pati, Chairman, CGWA through Video Conferencing. The meeting was held shortly after the issuance of revised guidelines and focused on smooth implementation of same.

The members were apprised of the revised guidelines notified on 24.09.2020 and the salient features thereof. Agenda Points were deliberated and following major decisions were taken.

- It may be impressed upon State Authorities that they can adopt stricter provisions for regulation for users that are in the ambit of NOC. Regulatory provisions should not be applicable to exempted users.
- Norms for salinity level need be specified in the guidelines as the saline ground water withdrawal is exempted from charges in the new Guidelines.

- If documents are not provided by applicant, an affidavit may be obtained from the applicant and application may be processed.
- All those existing users, which had applied between 30.06.2020 (deadline declared for submission) and 24.09.2020 shall be liable to pay penalty of Rs. 1 lakh as per Section 15 of EPA 1986 Act. Existing industries applying after 24.09.2020 shall be liable to pay Rs. 1 lakh towards penalty and Environmental Compensation (EC) w.e.f 24.09.2020. EC should not be imposed with retrospective effect. The above shall also be applicable to the existing industries located in Segment B, Phase 1 of Ganga Basin.
- NOC may be issued in respect of applications having >100 KLD requirement and submitted prior to 24.09.2020, subject to condition that IAR from Accredited Consultants in respect of Critical/ Semi-critical areas and Water Audit reports from certified Auditors in respect of Critical/ Semi-critical/ Safe areas will be submitted by 31.03.2020. Failure to submit by 31.03.2020 will lead to cancellation of NOC. No such relaxation will be given in OE areas and applications shall be processed as per new guideline.
- The proposal for decentralization of approving power for issuance of NOC as per quantum of ground water abstraction was agreed to as following:
  - up to 100 KLD by Regional Director (RD)/ Officiating RD;
  - >100-500 KLD by RD, CGWA/ Officiating RD, CGWA;
  - >500-1000 KLD by Member, CGWA; and
  - >1000 KLD by Chairman.
- It was agreed to increase application processing fee for fresh NOC from Rs. 1000 to Rs. 10,000 and for renewal of NOC from Rs. 500 to Rs. 5000 was approved.
- Enhanced application fees of Rs. 10,000 and Rs. 5000 for fresh NOC and renewal of NOC respectively and other service requests shall be effective for applications/ requests received after 24.09.2020
- It was agreed that users drawing <10 KLD of ground water be exempted from submission of water quality report.

45th meeting of Central Ground Water Authority was held on **21.01.2021** under the Chairmanship of Shri G C Pati, Chairman, CGWA through Video Conferencing. The meeting focused on resolving various issues that had emerged while implementing revised guidelines. Following major decisions were taken.

- ✓ It was agreed that CGWA should prescribe the qualifications for water auditors in consultation with NPC and other authorized agencies.
- ✓ Members ratified the changes made in criteria for submission of impact assessment reports in case of industries and infrastructure projects and hydrogeological report in case of mining projects.
- ✓ It was decided to extend the deadline for submission of Impact Assessment Report (IAR) till 30.06.2021 for those industries that had applied prior to 24.09.2020 along

with imposition of Environmental Compensation (EC) wef 1.1.2021 on industries falling in OE, Critical and Semi-critical areas (No EC to be imposed in Safe Areas).

- ✓ It was decided that the applicants, which are required to conduct modeling studies shall keep the model for at least 3 years. CGWA shall maintain archive of models.
- ✓ The Board ratified the Public Notice regarding mandatory installation of tamper-proof Digital Flow Meter in case of ground water abstraction less than 10 KLD and tamper-proof Digital Flow Meter with Telemetry for ground water withdrawal of 10 KLD or more.
- ✓ Members approved the draft guidelines for saline ground water abstraction with a few minor modifications such as provision of online/real-time monitoring of Electrical Conductivity of ground water being extracted by the applicant and dropping the requirement of submission of data on land subsidence.
- ✓ Members approved the draft guidelines for bulk water supply with the following suggestions:
  - It should be only for drinking and domestic purposes;
  - Agency responsible for monitoring of water quality being supplied by bulk water suppliers through private tankers may be specified; and
  - Condition of GPS tracking should be removed.
- ✓ It was decided that similar to the decisions taken by MoEF, extending date of validity of Environment Clearance in the wake of prevailing Covid situation, CGWA shall also issue Public Notice, extending date of validity of NOCs till 31.03.2021.

11.5 On Site Inspection by CGWB

On-site inspections were carried out by the Regional Offices of CGWB to check the compliance of NOCs accorded by the CGWA before recommending the renewal applications to CGWA, New Delhi. Necessary show- cause notices were issued to the project proponents who have not complied with the conditions of the NOC issued by CGWA.

11.6 Updation of NOCAP Website Portal of CGWA

After notification of revised guidelines, necessary modifications were made in NOCAP to bring it into conformity with new guidelines. Same was also regularly updated as per feedback received from users (both Project Proponents/ Processing Officers).

12. PRADHAN MANTRI KRISHI SINCHAYI YOJNA – HAR KHET KO PAANI-GROUND WATER

(PMKSY - HKKP - GW)

Government of India envisages providing 'Har Khet Ko Pani (HKKP)' with an objective to support goal of Hon'ble Prime Minister of India, for doubling the farmer incomes. A major thrust area to boost agricultural income is to provide irrigation to all the farmlands to enhance food-grain production with consequent benefits like employment generation etc. at village level. Government of India approved Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), a Centrally Sponsored Scheme during 2015-20, had inter-alia, a component of Ground Water and creating additional irrigation potential.

Ground water component aims at utilizing ground water for irrigation purpose in areas where ground water is sufficiently available. Further, to enhance small and marginal farmer's income in such areas by providing assured irrigation facility under the scheme. Operational guidelines for ground water component were issued by the Department of Water Resources, RD & GR, Ministry of Jal Shakti, in July 2016. However, keeping in view of various requirements to implement the scheme, guidelines were revised in November' 2018 and May' 2019. Pradhan Mantri Krishi Sinchayi Yojna–Har Khet Ko Paani- Ground Water (PMKSY-HKKP-GW) was launched by Hon'ble Minister of Jal Shakti, Shri Gajendra Singh Shekhawat on 16.07.2019.

The scheme provides financial assistance to States for assured ground water irrigation to small and marginal farmers with priority to SC/ST and women farmers. The funding pattern is in the ratio of 90:10 (C:S) in case of NE/Hilly areas and 60:40 (C:S) in case of other areas. The scheme is applicable only in areas having stage of ground water development less than 60%, average rainfall more than 750 mm rainfall and having shallow ground water levels (less than 15 m below ground level).

Since 2019, 15 projects amounting Rs 1718.49 crore have been approved as on March'21 for 12 States namely Assam, Arunachal Pradesh, Gujarat, Nagaland, Manipur, Mizoram, Tripura, Telangana, Tamil Nadu, Uttar Pradesh, Uttrakhand and West Bengal. Projects of Telangana and West Bengal could not be initiated in absence of budget provision by State Governments towards State share and non-signing of MOA by State Governments. As on March' 21, in twelve on-going projects, 20652 wells were constructed, 35438 ha command area has been created benefiting 34755 small and marginal farmers against the target of 29177 wells, 86221 ha command area and 67133 beneficiaries.

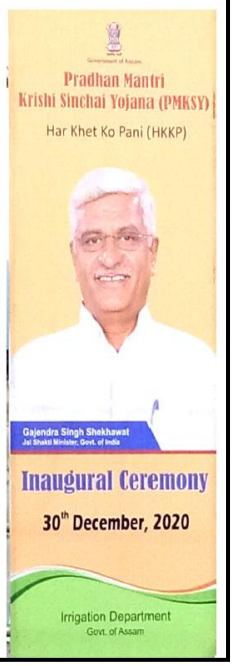
During FY: 2020-21, provision of Rs. 400 Cr. (BE) was made towards Central Assistance (CA) for proposals of States Government under the scheme. Later on, this was reduced to Rs. 80 Cr. (RE) keeping in view of the COVID-19 pandemic. Further, on recommendation of Central Ground Water Board DoWR, RD & GR, MoJS has approved three projects during 2020-21 of Rs. 356.24 crore- Assam Phase-II (Rs.292.013 croe), Uttarakhand

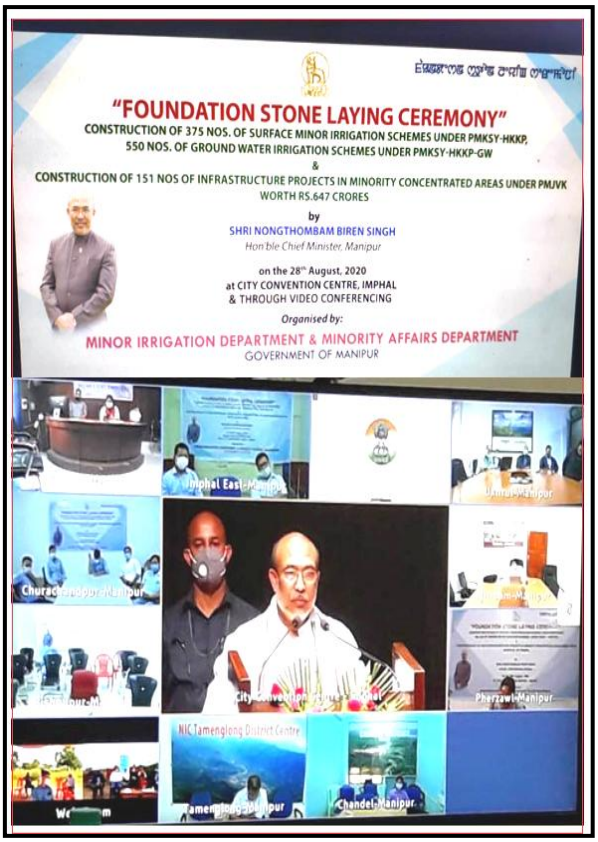
(Rs.15.89 crore) and Tripura Phase-II (Rs.48.34 crore) and released Rs 79.996 crore to State Government towards central assistance for seven projects-Assam Phase-I (Rs.13 crore), Assam Phase-II (Rs.10 crore), Arunachal Pradesh Phase-I (Rs.10 crore), Tamilnadu (Rs.3.67 crore), Mizoram (Rs.8.66 crore), Manipur (Rs.33.306 crore) and Uttarakhand (Rs.1.36 crore). During FY 2020-21, 16395 wells have been constructed creating additional command area of 35438 Ha, benefitting 34755 small & marginal farmers.

Financial details of the Projects under PMKSY-HKKP-GW scheme as on March'21

S.No	Projects	Cost of Proposal (Rs. Crore)	Central Assistance (Rs. Crore)	Central Assistance released (Rs. Crore)
1	Assam-Phase-I	246.07	221.46	145.87
2	Arunachal Pradesh-Phase-I	45.30	40.77	34.46
3	Arunachal Pradesh Phase –II	44.95	40.25	24.15
4	Nagaland	18.15	16.25	9.75
5	Tripura Phase-I	13.31	11.91	7.15
6	Gujarat	163.29	97.48	6.00
7	Uttar Pradesh	46.60	27.82	16.69
8	Tamil Nadu	9.13	5.48	3.67
9	Manipur	61.68	55.51	33.31
10	Mizoram	16.04	14.44	8.66
11	Assam Phase-II	292.01	262.81	10.0
12	Uttrakhand	15.89	14.30	1.36
13	Tripura Phase-II	48.34	43.51	Yet to be released
14	Telangana	379.49	227.69	Yet to be released
15	West Bengal	318.24	189.99	Yet to be released
	Total	**1718.49**	**1269.67**	**301.07**

INAUGURAL CEREMONY OF PMKSY(HKKP) ACCESS TO GROUND WATER IN ASSAM BY SRI SARBANADA SONOWAL, HO'BLE CHIEF MINISTER OF ASSAM TODAY ON 30.12.2020 AT AMINGAON, GUWAHATI





INTERACTION WITH BENEFICIARY FARMERS BY CGWB AND STATE IMPLEMENTING DEPARTMENTS DURING FIELD INSPECTION IN **SONITPUR DISTRICT** , ASSAM ON 12.09.2020

INTERACTION WITH BENEFICIARY FARMERS BY CGWB AND STATE IMPLEMENTING DEPARTMENTS DURING FIELD INSPECTION AT DUDHNAI LAC, GOLAPARA DISTRICT , ASSAM ON 30.01.2021

13. RAJIV GANDHI NATIONAL GROUND WATER TRAINING & RESEARCH INSTITUTE

Rajiv Gandhi National Ground Water Training and Research Institute (RGNGWTRI) located at Raipur, Chhattisgarh caters to the training requirements of Central Ground Water Board (CGWB) and also many State Govt. Organizations, Public Sector Undertakings (PSUs), Academic Institutions, NGOs etc. in the field of ground water. Since the XII Plan, RGNGWTRI under HRD and Capacity Building Scheme of Ministry of Water Resources, River Development and Ganga Rejuvenation has been implementing a three-tier training programme keeping in view of the requirements of the National Aquifer Mapping Project (NAQUIM). These training courses enable creation of a trained workforce for effective implementation of NAQUIM and overall sustainable development of the ground water resources of the country.

Human Resource Development

It has been the earnest endeavor of CGWB to keep its technical personnel abreast of the latest developments in all aspects related to ground water development and management across the globe. Besides Officers of the Board, trainees from State Departments, PSUs, NGOs and candidates from abroad also participated in the training courses being organized by CGWB/ RGNGWTRI. During the year 2020-21, a total of 59 numbers of Training Courses (34 Tier-I, 19 Tier-II and 06 Tier-III) were conducted by RGNGWTRI in which a total of 3163 trainees (1152- Tier I, 1497-Tier II and 514- Tier-III) were imparted training including 1017 female participants. The target of Tier-I training programme has been reduced from 60 to 35 trainings due to restrictions on gathering to avoid spread of COVID-19. Likewise, the target of Tier-III training programmes also has been terminated. All the trainings were conducted through online mode using MS TEAMS Platform.

National Level Training Courses (Tier-I) were conducted through online mode at RGNGWTRI, Raipur. The State and Block Level training programmes (Tier-II and Tier-III) were also organized online by the respective Regional Offices of CGWB. The actual expenditure incurred under HRD & CB Scheme-RGI componentfor FY 2020-21 is Rs. 1.22 Cr.

Summarised details of the training programmes are given below in Table 13.1.

Table 13.1 Targets & Achievements of training courses in AAP 2020-2021

Training Courses	Targets (Nos.)	Revised Target#	Achievements (Nos.)	No. of Participants	Male	Female
TIER – I (National Level)	60	**35**	34	1152	873	279
TIER – II (State Level)*	20	**20**	19	1497	1029	468
TIER – III (Block Level)*	50	**00**	06	514	244	270
	130	**55**	**59**	**3163**	**2146**	**1017**

the targets were revised due to restrictions on gathering to avoid spread of COVID-19.
*Tier – II and Tier – III training courses are conducted through CGWB's Regional Offices.

Tier-III Training Programme at Government Girls College, Bikaner held on 28-01-2021

Accreditation of Ground Water Professionals

As per the new Notified Guidelines of Central Ground Water Authority, all projects extracting/proposing to extract ground water in excess of 100 m^3/day in Over-exploited, Critical and Semi-critical areas and mining projects shall have to submit mandatorily the impact assessment report of existing/proposed ground water withdrawal on the ground water regime and also the report on the socio-economic impacts prepared by accredited consultants. Accreditation is a process of instilling an assurance and confidence amongst all the stakeholders in acceptable standards of the reports/conclusions submitted by them for various purposes. Accreditation is a tool to assess and evaluate the standards and quality of the work done or to be done by an individual or an organization. The Applicants who seek permission for water extraction are confident in hiring the services of the accredited individuals or institutions for conducting a hydrogeological survey and prepare a report on the ground water scenario and the impact of the proposed extraction on the ground water reservoir, which is mandatory for issuance of No Objection Certificate (NOC) from Central Ground Water Authority.

RGNGWTRI was entrusted for screening and scrutiny of applications received from various individuals and Institutes for accreditation. During the year 2020-21, 38 Individuals and 13 Institutes were finalized and awarded the certificate to work as 'Accreditated individuals / Institutes' as below.

Result of the Interaction held between the Accreditation Board and Individuals / Institutions (Accreditation Validity Period 15/2/2021 to 14/2/2026)				
Accredited Individual				
S.No	**Name**	**Qualified for Impact Assessment Report**	**Qualified for Modelling Studies**	**Qualified for Hydrogeological Report for mining projects**
1	Dr. Narendra Kumar Rana	Yes	No	NO
2	Dr. Arijit Dey	Yes	No	No
3	Upendra Shrivastava	Yes	Yes	No
4	Y.B.Kaushik	Yes	No	No
5	Sunil Kumar Saigal	Yes	No	No
6	T.Rajendiran	Yes	No	No
7	Dr. Nallathambi Varadaraj	Yes	Yes	Yes
8	Awani Kumar Budhaulia	Yes	No	No
9	Diwaspati Jamloki	Yes	No	No
10	Mohammed Khaja Rafiuddin	Yes	No	No
11	ShreeramParanjpe	Yes	No	No
12	V. Pugazhendi	Yes	No	No
13	Ganji Sudarshan	Yes	No	Yes
14	Durga Pada Pati	Yes	No	No
15	Tapan talukdar	Yes	Yes	No
16	Gulab Prasad	Yes	No	No
17	Nawal Kishore Prasad	Yes	No	Yes
18	Asis Kumar Chattopadhyay	Yes	No	No
19	Baddela Jaya Kumar	Yes	Yes	Yes
20	K.Balakrishnan	Yes	No	No
21	Vinod Sharma	Yes	No	No
22	Shailendra Nath Sinha	Yes	No	No
23	Gurinder Paul Singh	Yes	No	No
24	Dr.Dilip Singh Chundawat	Yes	No	No
25	Dr. Muhammad Ali Farooqi	Yes	No	No
26	Dr. Muhammad Najeeb.K	Yes	No	No
27	Prakash Ramchandra Gupte	Yes	No	No
28	M.C.Reddy	Yes	Yes	Yes
29	C.P.Srivastava	Yes	No	No
30	R. Chakrapani	Yes	No	No
31	Alaparthi Sreenivas	Yes	No	No

Result of the Interaction held between the Accreditation Board and Individuals / Institutions (Accreditation Validity Period 15/2/2021 to 14/2/2026)				
Accredited Individual				
S.No	**Name**	**Qualified for Impact Assessment Report**	**Qualified for Modelling Studies**	**Qualified for Hydrogeological Report for mining projects**
32	Dr. Raj Pal Singh	Yes	Yes	No
33	K.Kumaresan	Yes	No	No
34	Gyanchand Bohra	Yes	No	No
35	Vijay Rajkumar Yadav	Yes	No	No
37	Dr. M. Sriiman Narayana	Yes	No	No
38	Mukesh Suroliya	Yes	No	No

Accredited Institution				
S.No	**Name**	**Qualified for Impact Assessment Report**	**Qualified for Modelling Studies**	**Qualified for Hydrogeological Report for mining projects**
1	Environ Techno Consultants	Yes	Yes	Yes
2	NEER	Yes	No	Yes
3	Vardan Environet	Yes	No	Yes
4	Vimta Labs Limited	Yes	No	Yes
5	Geoclimate Risk solutions	Yes	Yes	Yes
6	S R K Mining Services (India)	Yes	No	Yes
7	Ground Water & Mineral Investigation Consultancy centre	Yes	No	No
8	Thrust geoconsultants Private Limited	Yes	No	No
9	Hydrominviron Consultancy Pvt. Ltd.	Yes	NO	YES
10	Associate Engineers & Consultants	Yes	Yes	Yes
11	Water Solutions	Yes	No	Yes
12	Royal Environment Auditing & Consultancy Services	No	No	Yes
13	Central Mine Planning and Design Institute Limited (CMPDIL)	No	No	Yes

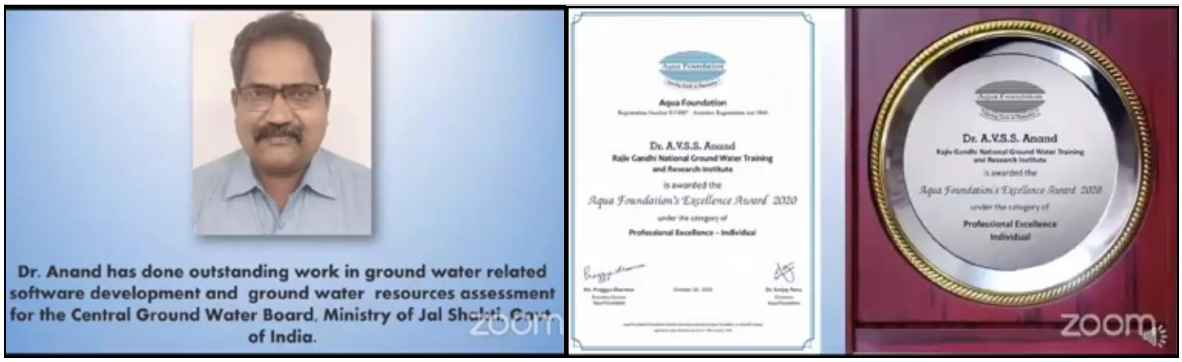
Following have been accredited for 5 years as mentioned above. However, they will be able to use the accreditation for CGWA purposes after they quit/ completion of the present assignment.

S.No	Name
1	Sh. A.K.Bhatia
2	Dr. Anil Kumar Jain
3	Dr. Ratan Chand Jain
4	Dr. K.R.Sooryanarayana
5	Dr.Pradeep Kumar Parchure
6	Dr. P.N.Rao
7	Sh.Nirad Chandra Nayak

Awards and Recognition

i. Dr. AVSS Anand, Scientist-D received Aqua Foundation Excellence Award 2020 under the category of Professional Excellence – Individual on 29.10.2020.

A proud moment for RGNGWTRI, CGWB as Dr. AVSS Anand, Scientist, RGNGWTRI, Central Ground Water Board has received the "Professional Excellence Award, 2020" from Aqua Foundation, New Delhi for his outstanding contribution in Ground Water related software development and Ground Water Resources Assessment for the Central Ground Water Board, Ministry of Jal Shakti, Govt. on India.



The “Aqua Excellence Awards” are the highest awards given by the Aqua Foundation to its members, stakeholders and contributors in recognition of their outstanding achievements in the field of water, environment, energy, earth sciences, atmospheric sciences, planetary sciences, pollution control and sustainability solutions. Aqua Foundation honors, in each WAC, individual/nominees of corporate members who have made a mark in their respective fields of expertise or have made a significant contribution towards Humanity. The award includes a plaque with an image of the Aqua Foundation logo and as a certificate of recognition. The award was given online on 9th Oct 2020 by Aqua Foundation, New Delhi using the Zoom platform.

ii. Dr. AVSS Anand, Scientist-D received the Top Performance Rank in Google Script Writing

Dr. A. V. S. S. Anand, Scientist D & faculty have received top performance rank during the '*Google Earth Engine Script Writing*' during the online training course on 'Water Budgeting in Google Earth Engine' from 24.06.2020 to 01.07.2020 organized under NHP.

Google Earth Engine is a platform for scientific analysis and visualization of geospatial datasets, for academic, non-profit, business and government users. Earth Engine hosts satellite imagery and stores it in a public data archive that includes historical earth images going back more than forty years. The Google Earth Engine uses JavaScript as the programming language.

Bhujal News

Bhujal News is a quarterly Journal of CGWB. From the year 2020, the publication of Bhujal News has now been started from Rajiv Gandhi National Ground Water Training and Research Institute (RGNGWTRI), Naya Raipur.

The work assignments in CGWB are mostly field-based and the output is measured by the submission of reports based on the field studies. But, because the reports have limited circulation, the results of these field studies and ideas developed thereof do not reach to the scientific community. Even CGWB's Officers are deprived of this information. Bhujal News fulfills this gap and serves as a conduit between CGWB and the outside world by highlighting CGWB's contributions in the field of ground water to the general public. RGNGWTRI, Naya Raipur has published volume 30.No.1-4,(Jan-Dec), 2020 Bhujal News in March 2021. The same is uploaded and available for reference under the link http://cgwb.gov.in/documents/Bhujal%20News_website%20Upload.pdf

It includes eight papers that cover Geophysical, Hydrogeological and Chemical aspects of ground water. These papers are

Sl. No.	Title of Paper	Author(s)
1.	Delineation of Hydraulic conductivity and Transmissivity from Slug tests in Shillong Proterozoic Basin, Meghalaya, India	Tapan Chakraborty & S. Kent

Sl. No.	Title of Paper	Author(s)
2.	Delineation of Saturated Fractures Using Gradient Profiling and Vertical Electrical Sounding in Hard Rock of Mirzapur District, Uttar Pradesh, India.	Sashikant Singh & Anirudh Singh
3.	Integration of the advanced Geophysical Methods For Aquifer Mapping-A Case Study From Chandrabhaga Watershed, Maharashtra, India	P. Narendra, P.K.Jain, V.Arul Prakasam, S.D. Waghmare, Bhushan R Lamsoge
4.	Uranium, heavy metals and fluoride co-occurrence in Ground Water of Kamrup Metropolitan District of Assam, India.	Snigdha Dutta, Rinkumoni Barman, Dakshina Rabha, Rishi Raj & Keisham Radhapyari
5.	Assessment of Uranium and Heavy Methods Contamination in Ground Water of Nagaon District, Assam, India	Rinkumoni Barman, Snigdha Dutta, Biplab Ray, Kiran Lale, Sudhir Kumar Srivastava and Keisham Radhapyari
6.	An Integrated Approach to Delineate Ground Water Potential Zones in parts of Chambal Basin of Sawai Madhupur District, Rajasthan India.	Sayelli Tembhune, Priya Kanwar, S.K. Pareek & K.P. Singh
7.	Study on Ground Water Quality due to Release of Waste Product from Chadha Sugar and Industries Pvt. Ltd., Village- KirniAfgana, District Gurdaspur, Punjab, India	Tarun Mishra & Kiran Lale

Research papers published by the faculties

- Pradeep Naik (2020), “Evaluation of heavy metal contamination with pollution index calculation for Ganga River”, in Taiwan Water Conservancy, 68(3), 2020.
- Suresh Kumar, Sunil Toppo, Aneesh Kumar, Geeta Tiwari, Atul Beck, Vijeta Bachan & TBN Singh (2020), “Assessment of heavy metal pollution in groundwater of an industrial area: a case study from Ramgarh, Jharkhand, India”, in International Journal of Environmental Analytical Chemistry, published online: 06th October 2020.
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- Bhushan R. Lamsoge and JiveshTambe (2020), “Analysis of Groundwater Quality parameters in Barshi Urban Area, Solapur District, Maharashtra” in Journal of Applied Geochemistry, Vol.22, No.2, (2020), pp 112-125. Print ISSN: 0972-1967. Online ISSN: 2319-4316.
- Khare Y.D., Varade A.M., and Lamsoge B. R. and S, Deshmukh. (2020): “Challenges in Sustainable Development of Ground water Resources in Maharashtra: An Integrated Approach” Journal of Geosciences Research, Volume 5. No. 1, 2020, pp. 17-25.
- Abhay M. Varade, Y. D. Khare, Mukesh Sakhare, Sandipan Das, Atul Doad, Uday Chatterjee, Bhushan R. Lamsoge (2021). “Investigation of Lineaments for Identification of Deeper Aquifer Zones in Hard Rock Terrain : A Case Study of WRWB-2 Watershed from Nagpur District, Central India” Authors, A book Chapter online on 27 Feb 2021 as a Part of the Springer Hydrogeology book series (SPRINGER HYDRO) Geostatistics and Geospatial Technologies for Groundwater Resources in India pp 283-298
- K C Mondal, K G Rathod, H M Joshi, H S Mandal, Rubia Khan, Kushagra Rajendra, Y K Mawale, K Priya and D C Jhariya (2020) “Impact of Land-use and Land-cover Change on Groundwater Quality and Quantity in the Raipur, Chhattisgarh, India: A Remote Sensing and GIS approach” in IOP Conference Series: Earth and Environmental Science Volume 597, National Conference on Challenges in Groundwater Development and Management 6-7 March 2020, NIT Raipur, India.
- Sivakumar (2021), "Climatic Change Studies using SWAT modeling- A Review’, online review article in the International Conference on Innovative Development and Engineering Applications 2021’ in India held online during 8-10 February 2021.

Photographs of online training courses conducted by RGNGWTRI during 20-2021

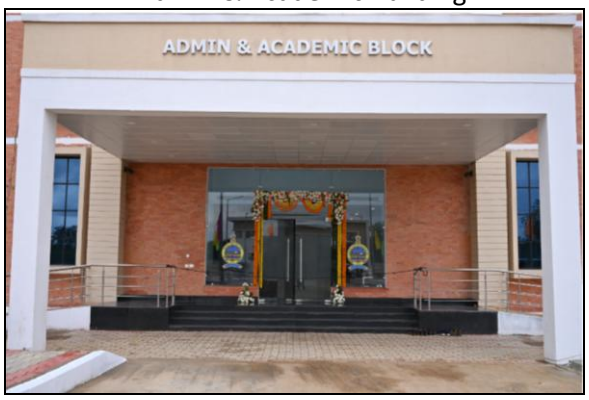
Photographs of the new building of RGNGWTRI, Naya Raipur

Main entrance gate

Inauguration stone

Admin & Academic Building

Hostel & Guest House Building



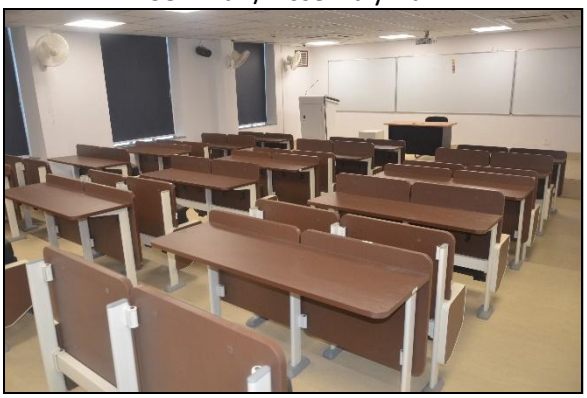
Admin & Academic entrance

Hostel & Guest House entrance

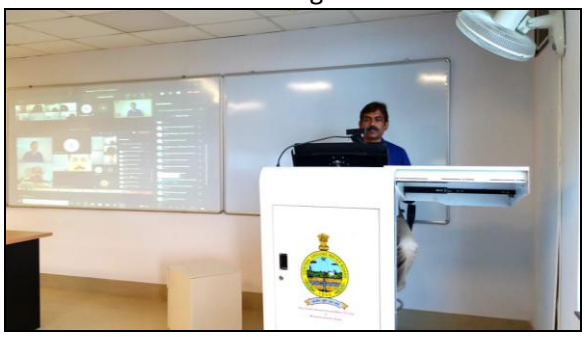
VC/ Conference Hall with an interactive panel

Seminar / Assembly Hall

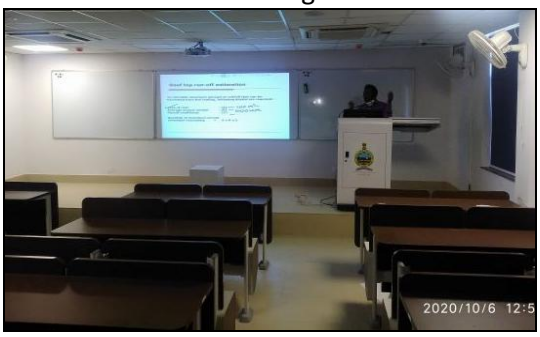
Training Hall



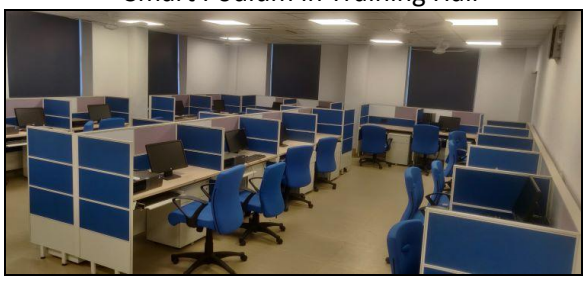
Training Hall



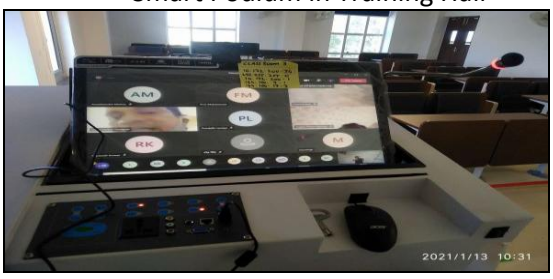
Smart Podium in Training Hall



Smart Podium in Training Hall



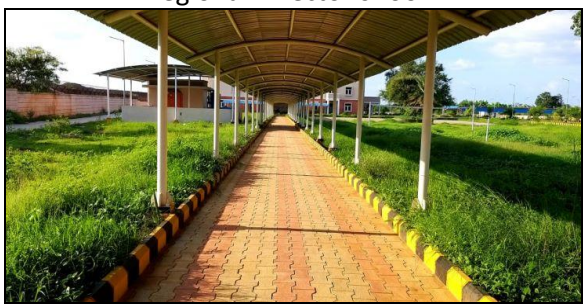
GIS & Computer Lab with Smart Podium



Smart Podium in Training Hall

Regional Director’s room

Faculty’s room



A corridor between Admin & Hostel building

A corridor between Admin & Hostel building

Mess / Canteen facility at Hostel

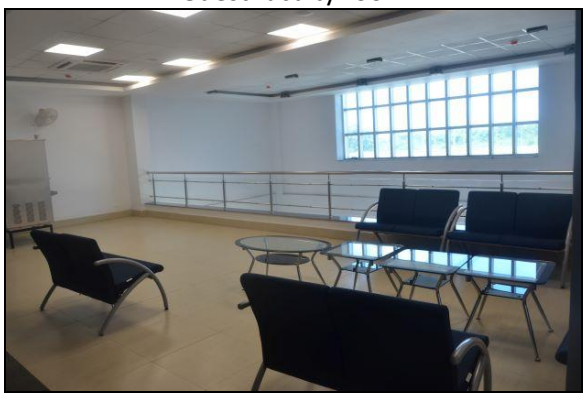
Mess / Canteen facility at Hostel

Drinking-Water Facility

Visiters’ waiting lobby in front of RD room

Guest faculty room

Hostel rooms for trainees



Lobby at Hostel

Lobby at Admin building

14. PUBLIC INTERACTION PROGRAMME (PIP)

Facilitating Public Interaction on Aquifer Maps and Management Plans

Aquifer Maps and Management Plans being prepared by CGWB are shared with the respective State Agencies for its effective implementation. Implementation of the management plans by the State agencies is expected to improve the groundwater situation by de-stressing the aquifers. However, there is need to facilitate interaction among stake holders including communities on the Aquifer maps and management plans for greater public participation. Public Interaction Programmes, including water budgeting sessions and aquifer specific interventions, are to be organized in association with Krishi Vigyan Kendra's (KVK's), Panchayats etc. in areas for which aquifer management plans have been shared with the State Agencies. The programmes are proposed to be carried out during 2017-20 with representation from Panchayats, block and district level administrations, NGOs, farmers, health and sanitation workers and other stake holders. One national level interaction programme is also proposed for various stakeholders.

In the year 2020-21, a total of 254 PIPs were organized through Regional offices of the Board in different states. A total of 12519, including 4475 females, participated in the program. State wise break up of the PIP's organized during AAP 2020-21 is mentioned below in table 14.1.

Table 14.1: Status of Public Interaction Programme's(PIP) in AAP 2019-20

Sl. No.	State	Total number of PIPs conducted till Mar. 2021	Total number of participants (since April 2020)	No. of Female Participants (since April 2020)
1	**Andhra Pradesh**	6	282	66
2	**Assam**	9	196	81
3	**Bihar**	6	235	99
4	**Chandigarh**	2	82	27
5	**Chattisgarh**	11	334	145
6	**Gujarat**	12	352	25
7	**Haryana**	5	438	109
8	**Himachal Pradesh**	13	719	324
9	**Jammu & Kashmir**	3	208	33
10	**Jharkhand**	6	550	194
11	**Karnataka**	39	1801	941
12	**Kerala**	23	894	590
13	**Madhya Pradesh**	10	858	182
14	**Maharashtra**	14	936	258
15	**Meghalaya**	1	71	47
16	**Nagaland**	1	11	0
17	**Odisha**	24	253	94
18	**Punjab**	5	306	128
19	**Rajasthan**	13	1120	196

20	**SUO- Delhi**	4	160	30
21	**Tamil Nadu**	7	433	259
22	**Telangana**	8	502	87
23	**Tripura**	1	59	20
24	**Uttar Pradesh**	12	573	332
25	**Uttarakhand**	7	429	79
26	**West Bengal**	12	717	129
	Total	**254**	**12519**	**4475**

Glimpses of Public Interaction Program (PIP) organized by CGWB during 2020-21

PIP organized on 28th Jan. 2021 by CGWB, SUO, Pune in association with ACWADAM and GSDA at Khalad Village, Purandhar Taluka, Pune District, Maharashtra on Ground Water Management.

PIP at Sitapur and Ambedkar Nagar District of Uttar Pradesh

PIP at Guntur, Andhra Pradesh

PIP in West Bengal

15. COLLABORATIVE STUDIES

For value addition to the Aquifer Mapping Programme, Central Ground Water Board has embarked upon collaborative studies with some of the leading research/academic institutions of National importance and other related Central departments.

- An MoU has been signed between Central Ground Water Board (CGWB), Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti, Government of India and MARVI partners (Western Sydney University, Australia ; CSIRO Land and Water, Australia; Arid Communities and Technologies, Bhuj, Gujarat; Development Support Centre, Ahmedabad; Maharana Pratap University of Agriculture and Tecchnology, Udaipur; Vidya Bhawan Krishi Vigyan Kendra, Udaipur, Rajasthan) on 22.11.2019.
- **Salient features of MoU**
  - Cooperation in training, education and research to achieve water security for agriculture, urban, industrial and environmental purposes.
  - Development of grassroots and village level capacity building and support for ground water monitoring, management to improve livelihood of village communities in India.

- A tripartite agreement has been signed between CGWB, NMCG and CSIR-NGRI on 14th February 2020 for data generation through heliborne geophysical studies and other scientific investigations for Aquifer Mapping in ~ 8500 km^2 area falling in Ganga Yamuna Doab region in Kanpur and Kaushambi districts of Uttar Pradesh.

  The objectives of the study are
  (i) Tracing the extension of the paleochannel inferred in an earlier study in Ganga Yamuna doab region carried out in parts of Prayagraj and Kausambi districts
  (ii) 3D Mapping of the Principal Aquifer System
  (iii) Establishing linkages between aquifer system including paleochannels with the river system
  (iv) Locating suitable sites for development of a plan for Managed Aquifer Recharge

- An MoU has been signed between CGWB and the National Centre for Earth Science Studies (NCESS) Thiruvananthapuram, Minsitry of Earth Sciences, Govt of India on 24/4/2019 with a tenure of two years to study the Submarine Ground Water Discharge (SGD) zones along the Indian subcontinent and its islands. The study aims at

(i) identification of submarine groundwater discharge and salt water intrusion along the east and west coast of India upto 50 m depth and computation of SGD flux for carbon and nutrient load and
(ii) Assessment of site-specific societal and environmental implications of SGD.

- **CGWB** has undertaken collaborative study with **National Remote Sensing Centre, Hyderabad on "Joint use of Geospatial Technology in Aquifer Mapping and Management"** to includes Satellite data interpretation and capacity building of officers from CGWB and MDWS on application of space technology in groundwater management, use of geospatial and other data. Under the collaborative project, NRSC has provided the GIS layers for Lithgeom, geology & structure to CGWB for the priority States which are being used for Aquifer Mapping. Besides, one training Programme has also been conducted by NRSC for capacity building of officers from CGWB. A pilot area in Madhugiri Taluk of Karnataka Districts has been taken up for detailed study as a part of this collaboration.

- **CGWB** has collaborative study with **Geological Survey of India, Ministry of Mines, Government of India on Sharing of 1:50,000 Scale Geological Map Data, Hydrogeological Maps for National Project on Aquifer Management."** The objective of the collaboration includes sharing of available 1:50,000 Scale map data (comprising of Lithological and structure layers), Ground water quality and aquifer mapping data generated out of NAQUIM with GSI.

16. SEMINARS AND WORKSHOPS

Seminar / Workshop Organized

- One day awareness campaign was organized by CGWB, Raipur, Chhattisgarh Sate regarding new guidelines notified "To regulate and control ground water extraction in India" was organized online on 24/10/2020. Total 40 delegates have attended the meeting. Representatives from Urla Industrial Association, Siltara Industrial Association of Raipur, Mining and Infrastructure including representatives from MSME industries along with consultant have joined the meeting. Sh A K Biswal, Sc-D & HOO, CGWB, NCCR, Raipur delivered lecture and held discussion about the new guidelines.

- A virtual interaction program was organized by CGWB, Raipur on 25th March 2021 at Raipur to mark the 75th year of India's independence on "Groundwater and its Management in Raipur district Chhattisgarh State". The program was attended by 54 participants from State Water resources department, Public Health and Engineering Department, Indira Gandhi Krisi Vishwavidhyalya, NGOs, Industries, Rajiv Gandhi Training and Research institute Raipur and other stakeholders.

17. TECHNICAL DOCUMENTATION AND PUBLICATION

GROUND WATER YEAR BOOK

The Central Ground Water Board compiles Ground Water Year Books to elucidate the changes in ground water levels and water quality. The accurate monitoring of the ground water levels and its quality both in space and time are the main requisite for assessment, scientific development and planning of this vital resources. During 2020-21, 23 year books were prepared and the same has been uploaded on the website of CGWB. Region wise status of preparation of ground water year book is indicated in table 20.1.

Table 17.1 Status of Ground Water Year Books completed during 2019-20

Sl. No	Region	State's/ UT's	No.of Year Books prepared
1.	North West Himalayan Region	Jammu & Kashmir	1
2.	North Himalayan Region	Himachal Pradesh	1
3.	North Western Region	Punjab & Haryana	2
4.	Western Region	Rajasthan	1
5.	State Unit Office	Delhi	1
6.	West Central Region	Gujarat	1
7.	North Central Region	Madhya Pradesh	1
8.	Central Region	Maharashtra	1
9.	Mid Eastern Region	Bihar & Jharkhand	3
10.	Eastern Region	West Bengal	1
11.	North Eastern Region	North Eastern States	1
12.	South Eastern Region	Odisha	1
13.	Southern Region	Andhra Pradesh & Telengana	2
14.	South Western Region	Karnataka	2
15.	South Eastern Coastal Region	Tamilnadu	1
16.	Kerala Region	Kerala	1
17.	Northern Region	Uttar Pradesh	1
18.	Uttaranchal Region	Uttarakhand	1
		Total	**23**

PUBLICATIONS

- Dr Ram Prakash, Shri K G Bhartariya, Dr Supriya Singh, Shri Karam Singh, Dr Madhavi Rajak and Shri Y B Kaushik, "Uranium and its Correlation with other Geogenic Contaminants in Ground Water of Ganga Yamuna Doab, Fatehpur district, Uttar Pradesh, India" was published in April issue (Volume 95) of Journal Geological Society of India (pp. 359-365).
- Pradeep Naik (2020), "Evaluation of heavy metal contamination with pollution index calculation for Ganga River", in Taiwan Water Conservancy, 68(3), 2020.
- Suresh Kumar, Sunil Toppo, Aneesh Kumar, Geeta Tiwari, Atul Beck, Vijeta Bachan & TBN Singh (2020), "Assessment of heavy metal pollution in groundwater of an industrial area: a case study from Ramgarh, Jharkhand, India", in International Journal of Environmental Analytical Chemistry, published online: 06th October 2020.
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- K C Mondal, K G Rathod, H M Joshi, H S Mandal, Rubia Khan, Kushagra Rajendra, Y K Mawale, K Priya and D C Jhariya (2020) "Impact of Land-use and Land-cover Change on Groundwater Quality and Quantity in the Raipur, Chhattisgarh, India: A Remote Sensing and GIS approach" in IOP Conference Series: Earth and

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- Sivakumar (2021), "Climatic Change Studies using SWAT modeling- A Review', online review article in the International Conference on Innovative Development and Engineering Applications 2021' in India held online during 8-10 February 2021.

18. INFRASTRUCTURE DEVELOPMENT

1. Infrastructure Development Scheme (IDS) viz. Land & Building (CGWB) has been approved with an outlay of Rs. 22.00 Cr. for the period of FY 2020-21. The objective of the scheme is to provide better working environment in the offices, creation of assets and savings on payment of monthly rent.

2. To achieve this objective, construction work of offices, workshops and stores of various CGWB offices (7 nos.) has been undertaken. The details of these works are as indicated below.

- Construction of Regional and Divisional office, Workshop and Store at Guwahati.
- Construction of boundary wall and building for RGI training institute at Raipur.
- Construction of boundary wall, guard room for Divisional Workshop & Store at Chennai.
- Construction of Regional and Divisional office building at Ahmedabad.
- Construction of Building for Divisional, Workshop & Store Division-II at Ambala.
- Construction of boundary wall, guard room for Divisional, Workshop & Store at Jodhpur.

3. During the financial year 2020-21, an amount BE of Rs.200.00 Lakhs was allocated / sanctioned under lD Scheme. The financial progress up to 31.03.2021 (FY 2020-21) is as under:

S. No.	Name of the office	Nature of Work	Funds released (Rs. In Lakh)	Spent (Rs. In Lakh)
1	NER, Guwahati	Construction of Regional and Divisional office building at Guwahati. (Civil / Electrical)	29.93	22.64
2	RGI, Raipur	Construction of training Institute at RGI, Raipur	00.00	00.00
3	Div-IV, Chennai	Construction of boundary wall, guard room at Chennai	11.89	11.89
4	WCR, Ahmedabad	Construction of Regional and Divisional office building at Ahmedabad	00.00	00.00
5	Div-II, Ambala	Construction of Divisional office building at Ambala	165.46	165.46
6	Div-XI, Jodhpur	Construction of boundary wall, guard room at Jodhpur	00.00	00.00
		TOTAL	**207.28**	**199.99**

4. Status of construction work undertaken

- The construction of Guwahati office building is likely to be completed in the FY 2021-22.

- The Construction of RGI training institute building is completed in the FY 2020-21 and taken over by the CGWB. Final payment will be released after the approval of Competent Authority for which bill is received at CHQ, Faridabad.
- The construction of boundary wall, guard room for Divisional workshop & store at Chennai has been completed. Final payment has been released to NPCC Ltd. on 29.03.2021.
- The Construction of Regional & Divisional office at Ahmedabad is under progress. The construction is likely to be completed during FY 2022-23.
- The Construction of Divisional office at Ambala is under progress. The construction is likely to be completed during FY 2021-22.
- The construction of boundary wall, guard room for Divisional workshop & store at Jodhpur is under progress and likely to be completed in the financial year 2021-22.
- The Construction of Divisional office, Workshop & Store building at Jammu is under progress. The construction is likely to be completed during FY 2022-23.

19. राजभाषा हिन्दी का प्रसार और प्रगामी उपयोग

केंद्रीय भूमिजल बोर्ड और इसके अधीनस्थ सभी क्षेत्रीय , प्रभागीय और राज्य एकक कार्यालयों में वर्ष 2020-21 के दौरान राजभाषा हिन्दी के कार्यान्वयन और प्रचार–प्रसार के सक्रिय प्रयास जारी रखे गए। केंद्रीय भूमिजल बोर्ड राजभाषा हिंदी के प्रगामी प्रयोग व कार्यान्वयन के लिए प्रतिबद्ध है । राजभाषा विभाग द्वारा जारी वार्षिक कार्यक्रम के अनुसार निर्धारित लक्ष्य को प्राप्त करने के लिए बोर्ड सतत प्रयत्नशील है । राजभाषा विभाग, गृह मंत्रालय, जल शक्ति मंत्रालय और नगर राजभाषा कार्यान्वयन समिति से समय –समय पर प्राप्त अनुदेशों और दिशानिर्देशों के पूर्ण अनुपालन सुनिश्चित करने तथा संघ की राजभाषा नीति के प्रावधानों के कार्यान्वयन और वार्षिक कार्यक्रम में निर्धारित लक्ष्यों को प्राप्त करने के उद्देश्य से सभी अधीनस्थ कार्यालयों और मुख्यालय के सभी अनुभागों को इससे अवगत कराया गया।

सरकारी काम काज में हिंदी के प्रयोग को बढ़ाने के लिए नियमित रूप से विभिन्न परिपत्र, आदेश और अपील जारी किए गए । कार्यालय में हिन्दी में टिप्पण और आलेखन को बढ़ावा देने के उद्देश्य से राजभाषा विभाग द्वारा जारी वार्षिक कार्यक्रम 2020-21 की प्रति, द्विभाषी मानक मसौदे, प्रशासनिक शब्दावली आदि सभी अधिकारियों और कर्मचारियों को उपलब्ध कराये गए। सभी कम्प्यूटरों पर हिन्दी में काम करने की सुविधा प्रदान करने हेतु यूनिकोड सुविधा उपलब्ध कराई गयी।

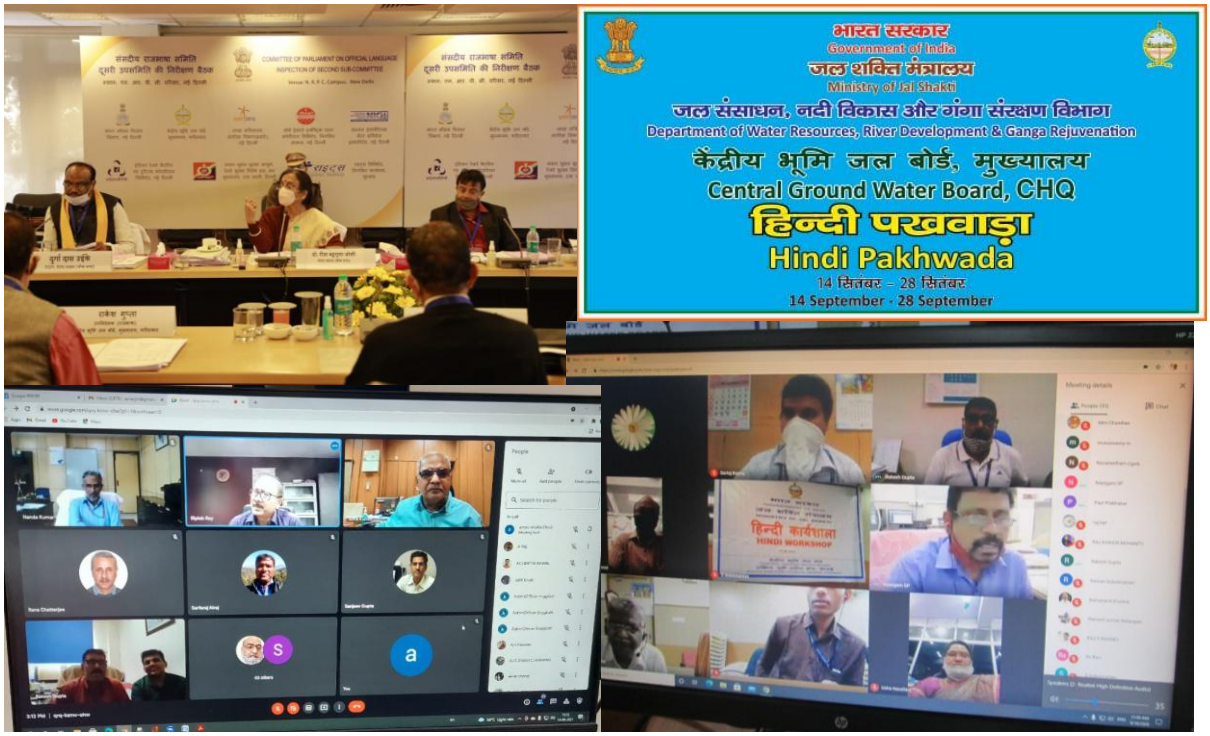
राजभाषा हिन्दी के प्रभावी प्रचार-प्रसार और कुशल कार्यान्वयन के लिए राजभाषा विभाग, गृह मंत्रालय द्वारा जारी समस्त प्रोत्साहन योजनाओं यथा मूल रूप से हिन्दी में टिप्पण - आलेखन, श्रुतिलेखन, हिन्दी में टंकण आदि योजनाओं को कार्यालय में लागू किया गया है तथा अधिक से अधिक अधिकारी और कर्मचारी उत्साहपूर्वक इन योजनाओं में भाग ले रहे हैं।

केंद्रीय भूमिजल बोर्ड की वेबसाइट को द्विभाषी रूप में तैयार किया गया है। राजभाषा से संबन्धित विभिन्न गतिविधियों और महत्वपूर्ण उपलब्धियों को इसमे विशेष स्थान दिया जाता है।

राजभाषा हिन्दी के प्रभावी कार्यान्वयन और इसकी प्रगति की मॉनिटरिंग के लिए बोर्ड और इसके समस्त अधीनस्थ कार्यालयों में राजभाषा कार्यान्वयन समिति का गठन किया गया है। इस समिति की बैठकें नियमित रूप से प्रत्येक तिमाही में आयोजित की जाती हैं। इन बैठकों में राजभाषा विभाग, गृह मंत्रालय द्वारा जारी वार्षिक कार्यक्रम में निर्धारित लक्ष्यों की प्राप्ति हेतु विभिन्न मुद्दों पर

विचार-विमर्श द्वारा कार्यनीति तैयार की जाती है। इन बैठकों में लिए गए निर्णयों पर प्राथमिकता के आधार पर अनुवर्ती कार्रवाई की जाती है।

गृह मंत्रालय द्वारा जारी दिशा निर्देश के अनुसार सितंबर माह में बोर्ड और इसके समस्त अधीनस्थ कार्यालयों मे वर्चुअल मोड में हिन्दी दिवस, हिन्दी सप्ताह, हिन्दी पखवाड़ा, हिन्दी माह का आयोजन किया गया। इस दौरान अधिकारियों और कर्मचारियों के लिए कई प्रतियोगिताओं जैसे हिन्दी निबंध प्रतियोगिता, टिप्पण-आलेखन, टंकण, वाद-विवाद , प्रश्न मंच आदि का आयोजन किया गया। सभी अधिकारियों और कर्मचारियों ने इन प्रतियोगिताओं में बढ़-चढ़कर भाग लिया।



संसदीय राजभाषा समिति द्वारा गत वर्ष केंद्रीय भूमि जल बोर्ड के कुछ कार्यालयों का निरीक्षण किया गया तथा बोर्ड द्वारा किए गए राजभाषा हिंदी के कार्यान्वयन एवं प्रचार प्रसार के कार्यों की प्रशंसा की गई।

20. VIGILANCE

Information for Annual Report 2020-21, for the period from 1.4.2020 to 31.3.2021, pertaining to Vigilance Section is given as under:

16 Complaints were brought forward w.e.f. 1.4.2020 and 7 new complaint cases were received during the period. Out of these (16+7) 23 complaints, 8 were disposed off and 2 complaints were taken up to initiate disciplinary proceedings. Thus, remaining 13 complaint cases carried forward to next year.

4 cases of disciplinary proceedings were brought forward w.e.f. 1.4.2020 and 2 new case of disciplinary proceeding was received during the year. Out of these (4+2) 6 cases, 2 cases were disposed off. Thus, the total 4 cases of disciplinary proceedings carried forward to next year.

21. RTI

The opening balance of RTI applications as on 01.04.2020 was 185 requests and 11 appeals. During the year 2020-21, 418 RTI requests and 58 appeals were received. Number of cases which were transferred to other public authorities is 11. Total RTI requests and RTI appeals disposed off were 438 and 54, respectively. An amount of Rs. 5966/- was received towards application fee. Details are given in table 23.1.

Table 21.1 STATUS OF RTI APPLICATIONS FOR THE YEAR 2020-21

Opening balance as on 01.04.2020	Received during the year (including cases transferred form other public authorities)	No. of cases transferred to other public authorities	Decisions where requests/ appeals rejected	Decisions where requests /appeals accepted	Amount of charges collected in Rs.
Requests 185	Requests 418	Requests 11	Requests 15	Requests 438	5966/-
Appeals 11	Appeals 58	Appeals 0	Appeals 0	Appeals 54	

22. HUMAN RESOURCE

The Board has been taking necessary action for implementation of Government polices in regard to reservation in services and other benefits to Scheduled Castes, Scheduled Tribes, other Backward Classes, Ex- Servicemen and Handicapped persons. Efforts have been taken to address the gender related issues as well. Besides constituting Internal Complaints Committees in each office to look into the complaints of women employees, opportunities have also been given to them to directly meet the Chairman, CGWB and Director (Admn.) and other senior officers for presenting any sort of complains either related to service matters or of other nature of complaints. Internal Complaints Committees also visited several offices to hear the complaints of women employees and appropriate actions have been taken based on their reports.

The Sanctioned strength, filled up and vacancy position (category wise) of personnel deployed in the Board are presented in table 22.1.

Table 22.1 Personnel Deployment in CGWB during 2020-21 (1st April, 2020 to 31st March, 2021)

GROUP"A"							
Section	**Sanctioned**	**Filled**	**Vacant**	**OBC**	**Handicapped**	**SC**	**ST**
Scientific	804	308	100	60	05	53	21
Ministerial	08	05	03	01	00	00	00
Engineering	56	35	21	02	00	04	01
Total	**868**	**348**	**124**	**63**	**5**	**57**	**22**
GROUP "B"(Gazetted)							
Section	**Sanctioned**	**Filled**	**Vacant**	**OBC**	**Handicapped**	**SC**	**ST**
Scientific	218	97	121	20	03	15	08
Ministerial	44	33	11	00	01	04	04
Engineering	89	71	18	00	00	00	01
Total	**351**	**201**	**150**	**20**	**4**	**19**	**13**
GROUP "B"(Non-Gazetted)							
Section	**Sanctioned**	**Filled**	**Vacant**	**OBC**	**Handicapped**	**SC**	**ST**
Scientific	179	75	104	10	00	13	05
Ministerial	190	159	31	19	04	26	12
Engineering	265	167	98	24	02	18	13
Total	**634**	**401**	**233**	**53**	**6**	**57**	**30**
GROUP "C"							
Section	**Sanctioned**	**Filled**	**Vacant**	**OBC**	**Handicapped**	**SC**	**ST**
Scientific	77	32	45	05	00	08	03
Ministerial	1025	638	387	172	11	132	56
Engineering	1458	1061	397	56	00	51	25
Total	**2560**	**1731**	**829**	**233**	**11**	**191**	**84**
GRAND TOTAL							
GROUP	**Sanctioned**	**Filled**	**Vacant**	**OBC**	**Handicapped**	**SC**	**ST**
GROUP"A"	868	348	124	63	5	57	22
GROUP "B" (Gazetted)	351	201	150	20	4	19	13
GROUP "B" (Non-Gazetted)	634	401	233	53	6	57	30
GROUP "C"	2560	1731	829	233	11	191	84
Total	**4413**	**2681**	**1336**	**369**	**26**	**324**	**149**

23. BUDGET AND EXPENDITURE

Statement showing Budget Estimates & actual expenditure incurred by the CGWB during F.Y. 2020-21 under Ground Water Management & Regulation, Establishment Expenditure, TSP, RGI, Recovery & Infrastructure Development Schemes are shown in table 23.1.

Demand No. 61						**PLAN (GWM & R)**	
						2702 (REVENUE)	
Major Head: 2702- MINOR IRRI-02-005- GROUND WATER INVESTIGATION							
Sub Head: 16-GROUND WATER MANAGEMENT & REGULATION – 01 (Ext.) 02 (Dom.)							
Supplementary Expenditure Report for the Financial Year 2020-21.						**(Fig.in lacs)**	
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
1	2	3	4	5	6	7	8
16.02 Dom.Supp.(GWM&R) PLAN							
समयोपरि भत्ता 16.02.03 OTA	1.00	0.30	0.30	0.20	0.00	0.20	0.10
चिकित्सा 16.02.06 M/Treat.	350.00	170.00	170.00	160.84	-0.21	160.63	9.37
यात्रा व्यय 16.02.11 D.T.E.	1940.00	1294.42	1349.42	1346.46	-0.89	1345.57	3.85
विदेश यात्रा व्यय 16.02.12 F.T.E.	100.00	3.82	4.34	3.82	0.00	3.82	0.52
कार्यालय व्यय 16.02.13 O.E.	1587.00	1161.80	1161.80	1121.77	-2.15	1119.62	42.18
किराया, दर एवं कर 16.02.14 R.R.T.	450.00	350.00	360.00	356.68	0.00	356.68	3.32
प्रकाशन 16.02.16 Pub.	100.00	12.00	12.00	11.90	-10.00	1.90	10.10
16.02.20 O.A.E.	200.00	5.00	5.00	1.00	0.00	1.00	4.00
16.02.24 P.O.L.	1545.00	1240.00	1240.00	1222.43	-2.58	1219.85	20.15
16.02.27 Min/Works	300.00	232.65	232.65	146.17	1.70	147.87	84.78
वृत्तिक सेवाएँ 16.02.28 P.S.	200.00	200.00	215.00	213.34	0.00	213.34	1.66
16.02.30 Other Contractual Services	0.00	0.01	0.00	0.00	0.00	0.00	0.00
16.02.33 Subsidies	1.00	0.00	0.00	0.00	0.00	0.00	0.00
उचंत स्टाक 16.02.43 S/Stock	1300.00	960.00	960.00	953.48	-0.35	953.13	6.87
अन्य प्रभार 16.02.50 O. C.	50.00	0.00	0.01	0.00	0.00	0.00	0.01
16.02.64 W.O.L.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Dom Support (PLAN)GWM&R	**8124.00**	**5630.00**	**5710.52**	**5538.09**	**-14.48**	**5523.61**	**186.91**
						PLAN (GWM & R)	
Demand No. 61						**4702 (CAPITAL)**	

Major Head: 4702- MINOR IRRI-02-005- Capital Nature Expenditure (GWM & R)							
Sub Head: 06.01-GROUND WATER MANAGEMENT & REGULATION							
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
4702.00.800.06 (Capital Nature Expenditure) GWM & R Dom. Supp. PLAN							
1	2	3	4	5	6	7	8
06.01.51 M.V.	500.00	475.00	475.00	467.80	0.25	468.05	6.95
06.01.52 M & E मशीनरी एवं उपस्कर	2900.00	899.00	799.00	772.34	-0.75	771.59	27.41
06.01.53 M/Works मुख्य कार्य	16276.00	6150.00	6250.00	6228.35	-18.58	6209.77	40.23
Total Capital Nature Expenditure	**19676.00**	**7524.00**	**7524.00**	**7468.49**	**-19.08**	**7449.41**	**74.59**
Grant Total (Revenue + Capital)	**27800.00**	**13154.00**	**13234.52**	**13006.58**	**-33.56**	**12973.02**	**261.50**
Note : GWMR Plan (Revenue), Sub Head: Minor Works the total progressive figar is Rs. 146.17 (LOA) + Rs. 01.70 (CDDO Booking) Total Rs. 147.87							

							Tribal Sub Plan
Demand No. 61							**01.796 (REVENUE)**
Major Head: 01.796 Tribal Sub Plan (Rewvnue)MINOR IRRI-00-445-GROUND WATER INVESTIGATION							
Sub Head: 16-GROUND WATER MANAGEMENT & REGULATION –02.01 (Ext.)02(Dom.)							
Supplementary Expenditure Report for the Financial Year 2020-21.							**(Fig.in lacs)**
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
1	2	3	4	5	6	7	8
02.01 Dom.Supp.(GWM&R) PLAN							
चिकित्सा 16.02.06 M/Treat.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
यात्रा व्यय 16.02.11 D.T.E.	230.00	120.00	120.00	118.17	-0.03	118.14	1.86
विदेश यात्रा व्यय 02.01.12 F.T.E.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
कार्यालय व्यय 16.02.13 O.E.	123.00	40.00	40.00	38.00	0.81	38.81	1.19
किराया, दर एवं कर 16.02.14 R.R.T.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
प्रकाशन 16.02.16 Pub.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.02.20 O.A.E.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.02.24 P.O.L.	100.00	60.00	60.00	58.20	0.07	58.27	1.73
16.02.27 Min/Works	0.00	0.00	0.00	0.00	0.00	0.00	0.00
वृत्तिक सेवाएँ 16.02.28 P.S.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.02.30 Other Contractual	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Services							
उचंत स्टाक 16.02.43 S/Stock	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (Revenue) Dom Support (PLAN)	**453.00**	**220.00**	**220.00**	**214.37**	**0.85**	**215.22**	**4.78**
Total Revenue (GWMR + TSP)	**8577.00**	**5850.00**	**5930.52**	**5752.46**	**-13.63**	**5738.83**	**191.69**
							00.796- CAPITAL
Supplementary Expenditure Report for the Financial Year 2020-21.							
Demand No. 61							**Tribal Sub Plan**
Major Head:00.796-Tribal Sub Plan CAPITAL OUTLAY-00.112 GROUND WATER (M.I.)							
Sub Head: 01.01-Tribal Sub Plan (Capital)							
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
00.796- CAPITAL							
1	2	3	4	5	6	7	8
01.01.51 मोटर वाहन Motor Vehicle	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01.01.52 M & E मशीनरी एवं उपस्कर	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01.01.53 M/Works मुख्य कार्य	747.00	626.00	626.00	617.62	-0.01	617.61	8.39
Total: 00.796- CAPITAL	**747.00**	**626.00**	**626.00**	**617.62**	**-0.01**	**617.61**	**8.39**
Total CAPITAL (GWMR + TSP)	**20423.00**	**8150.00**	**8150.00**	**8086.11**	**-19.09**	**8067.02**	**82.98**
Grant Total TSP (Revnue+Capital)	**1200.00**	**846.00**	**846.00**	**831.99**	**0.84**	**832.83**	**13.17**
Grant Total TSP +GWMR	**29000.00**	**14000.00**	**14080.52**	**13838.57**	**-32.72**	**13805.85**	**274.67**
Demand No. 61		**4702 Capital**		**DEDUCTED RECOVERY**			
केन्द्रीय भूमि जल बोर्ड (जल संसाधन मंत्रालय)				**ISSUE TO WORK & OTHER CREDITS**			
Supplementary Expenditure Report for the Financial Year 2020-21.							
Major Head: 4702-MINOR IRRI-00-800-Capital Nature Expenditure (GWM & R) (PLAN)							
Sub Head: 06 ISSUE TO WORK & OTHER CREDITS							
							(Fig. in lacs)
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
1	2	3	4	5	6	7	8
06.01.70 Issue to Work	1500.00	1500.00	1500.00	858.15	-314.08	544.07	955.93
06.02.70 Other Suspense Charges	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Recoveries	**1500.00**	**1500.00**	**1500.00**	**858.15**	**-314.08**	**544.07**	**955.93**
NET CGWB (GWM&R)	**26300.00**	**11654.00**	**11734.52**	**12148.43**	**280.52**	**12428.95**	**-694.43**
NET CGWB (GWM&R + TSP)	**27500.00**	**12500.00**	**12580.52**	**12980.42**	**281.36**	**13261.78**	**-681.26**

							NON PLAN
Demand No. 61				**Establishment Expenditure 2702 (Revenue)**			
Major Head: Establishment Expenditure 2702-MINOR IRRI-02-005-GROUND WATER INVESTIGATION							
Sub Head: 01-CGWB-01.01-H/QRS.							
Supplementary Expenditure Report for the Financial Year 2020-21.							**(Fig.in lacs)**
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
1	2	3	4	5	6	7	8
16.02 Domestic Support N.PLAN							
वेतन 01.01.01 Salary	23667.30	22800.00	22800.00	22710.89	-7.16	22703.73	96.27
मजदूरी 01.01.02 Wages	250.00	220.00	220.00	211.57	-0.92	210.65	9.35
समयोपरि भत्ता 01.01.03 OTA	0.50	0.00	0.00	0.00	0.00	0.00	0.00
चिकित्सा 01.01.06 M/Treat.	140.50	150.00	150.00	129.43	-0.07	129.36	20.64
यात्रा व्यय 01.01.11 D.T.E.	300.00	244.85	244.85	234.38	0.34	234.72	10.13
विदेश यात्रा व्यय 01.01.12 F.T.E.	3.00	0.01	0.01	0.00	0.00	0.00	0.01
कार्यालय व्यय 01.01.13 O.E.	95.50	60.00	60.00	55.23	-0.09	55.14	4.86
किराया, दर एवं कर 01.01.14 R.R.T.	0.10	0.01	0.01	0.00	0.00	0.00	0.01
प्रकाशन 01.01.16 Pub.	0.10	0.01	0.00	0.00	0.00	0.00	0.00
01.01.20 O.A.E.	1.00	0.01	0.01	0.00	0.00	0.00	0.01
01.01.24 P.O.L.	0.10	0.10	0.10	0.10	0.00	0.10	0.00
01.01.26 Adv. & Publicity	1.00	0.00	0.01	0.00	0.00	0.00	0.01
वृत्तिक सेवाएँ 01.01.28 P.S.	5.80	10.00	25.00	23.66	0.00	23.66	1.34
01.01.30 Other Contractual Services	0.10	0.01	0.01	0.00	0.00	0.00	0.01
अन्य प्रभार 01.01.50 O. C.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Dom Support (N.PLAN)	**24465.00**	**23485.00**	**23500.00**	**23365.26**	**-7.90**	**23357.36**	**142.64**
Demand No. 61							**4702 (CAPITAL)**
Major Head: 4702-MINOR IRRI-02-005-GROUND WATER INVESTIGATION (Establishment Expenditure)							
Sub Head: 05. 01-CGWB-01.01-H/QRS.							
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
4702.00.800.05 (Capital Nature Expenditure) CGWB Head Quarter (NON PLAN)							
1	2	3	4	5	6	7	8
05.01.51 M.V.	5.00	0.00	0.00	0.00	0.00	0.00	0.00
05.01.52 M & E मशीनरी एवं उपस्कर	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05.01.53 M/ Works मुख्य कार्य	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total Capital Nature Expenditure	**5.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Grant Total (N.PlAN)	**24470.00**	**23485.00**	**23500.00**	**23365.26**	**-7.90**	**23357.36**	**142.64**
					Swachhta Action Plan		**NON PLAN**
Demand No. 61						**Establishment Expenditure 2702 (Revenue)**	
Major Head: Establishment Expenditure 2702-MINOR IRRI-02-005-GROUND WATER INVESTIGATION							
Sub Head: 01-CGWB-01.01-H/QRS.							
Supplementary Expenditure Report for the Financial Year 2020-21.							
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
01.96 Swachhta Action Plan							
कार्यालय व्यय 01.96.13 O.E.	10.00	5.00	5.00	2.06	0.20	2.26	2.74
Total	**10.00**	**5.00**	**5.00**	**2.06**	**0.20**	**2.26**	**2.74**
Total (Estt. Exp. + SAP)	**24480.00**	**23490.00**	**23505.00**	**23367.32**	**-7.70**	**23359.62**	**145.38**
					Information Technology		**NON PLAN**
Demand No. 61						**Establishment Expenditure 2702 (Revenue)**	
Major Head: Establishment Expenditure 2702-MINOR IRRI-02-005-GROUND WATER INVESTIGATION							
Sub Head: 01-CGWB-01.01-H/QRS.							
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
01.99 Information Technology							
कार्यालय व्यय 01.99.13 O.E.	20.00	10.00	10.00	0.00	0.00	0.00	10.00
Total (Information Technology)	**20.00**	**10.00**	**10.00**	**0.00**	**0.00**	**0.00**	**10.00**
Total (Estt. Exp. + SAP +IT)	**24500.00**	**23500.00**	**23515.00**	**23367.32**	**-7.70**	**23359.62**	**155.38**

							R.G.N.G.W.T.R.I
Demand No. 61							**2702 (REVENUE)**
Major Head: 2702-02-005-18-HRD/Capacity Building (PLAN)							
Sub Head: 18.01-RGN. G/W TRG AND RESURCH INSTITUTE.							
Supplementary Expenditure Report for the Financial Year 2020-21.							**(Fig. in lacs)**
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
1	2	3	4	5	6	7	8
18.01 Domestic Support (RGI)							
चिकित्सा 18.01.06 M/Treat.	4.00	2.00	2.00	1.94	0.00	1.94	0.06
यात्रा व्यय 18.01.11 D.T.E.	25.00	3.50	3.50	3.24	0.00	3.24	0.26
विदेश यात्रा व्यय 18.01.12	50.00	0.00	0.00	0.00	0.00	0.00	0.00

F.T.E.							
कार्यालय व्यय 18.01.13 O.E.	110.00	108.50	108.50	99.33	0.01	99.34	9.16
किराया, दर एवं कर 18.01.14 R.R.T.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
प्रकाशन 18.01.16 Pub.	5.00	1.00	1.00	0.99	0.01	1.00	0.00
18.01.24 P.O.L.	10.00	4.00	4.00	3.74	-0.01	3.73	0.27
18.01.30 Other Contractual Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00
वृत्तिक सेवाएँ 18.01.28 P.S.	246.00	30.00	30.00	17.01	-0.01	17.00	13.00
Total Dom Support (RGI)	**450.00**	**149.00**	**149.00**	**126.25**	**0.00**	**126.25**	**22.75**
							R.G.N.G.W.T.R.I
Demand No. 61							**4702 (CAPITAL)**
Major Head: 4702-06.01 HRD/Capacity Building (PLAN)							
Sub Head: 07.01-RGN. G/W TRG AND RESURCH INSTITUTE							
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
4702 Capital Nature Expenditure RGNT &RI (PLAN)							
1	2	3	4	5	6	7	8
07.01.51 Motor Vehicle.	40.00	1.00	1.00	0.14	0.00	0.14	0.86
07.01.52 M & E मशीनरी एवं उपस्कर	110.00	15.00	15.00	0.00	0.00	0.00	15.00
07.01.53 M/Works मुख्य कार्य	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Capital Nature Expenditure	**150.00**	**16.00**	**16.00**	**0.14**	**0.00**	**0.14**	**15.86**
Grant Total (RGI) PLAN	**600.00**	**165.00**	**165.00**	**126.39**	**0.00**	**126.39**	**38.61**

Revised Supplementary under NHP Scheme for the Financial Year 2020-21.

							National Hydrology Project-Phase-III
Demand No. 61				**2701**		REVENUE	
Major Head: 2701-.80.004.08.01(Ext.Supp.) & 08.02 (Dom. Supp) National Hydrology Project-Phase-III (PLAN)							
							(Figures in lacs)
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
08.01 Ext. Support NHP-III 1	2	3	4	5	6	7	8
08.01.11 D.T.E.	5.00	0.25	0.21	0.21	0.00	0.21	0.00
विदेश यात्रा व्यय 08.02.12 F.T.E.	35.00	0.00	0.00	0.00	0.00	0.00	0.00
कार्यालय व्यय 08.01.13 O.E.	2.49	1.86	1.87	1.86	0.00	1.86	0.01
08.01.20 Other Adminstative Expe.	30.00	0.10	0.01	0.00	0.00	0.00	0.01
08.01.27 Minor/Works	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08.01.28 Professional Services	12.50	1.32	0.00	0.00	0.00	0.00	0.00

08.01.30 Other Contratual Services	2.50	0.63	1.10	1.10	0.00	1.10	0.00
TOTAL (NHP) Ext. Support	**87.49**	**4.16**	**3.19**	**3.17**	**0.00**	**3.17**	**0.02**
08.02 Dom. Support (NHP)-III							
08.02.11 D.T.E.	5.00	0.25	0.22	0.21	0.00	0.21	0.01
विदेश यात्रा व्यय 08.02.12 F.T.E.	35.00	0.00	0.00	0.00	0.00	0.00	0.00
कार्यालय व्यय 08.02.13 O.E.	2.49	1.86	1.87	1.86	0.00	1.86	0.01
08.02.20 Other Adminstative Expe.	30.00	0.10	0.00	0.00	0.00	0.00	0.00
08.02.27 Minor/Works	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08.02.28 Professional Services	12.50	1.33	0.00	0.00	0.00	0.00	0.00
08.02.30 Other Contratual Services	2.50	0.62	1.10	1.10	0.00	1.10	0.00
TOTAL (NHP)Dom.Support	**87.49**	**4.16**	**3.19**	**3.17**	**0.00**	**3.17**	**0.02**
TOTAL (NHP) Ext & Dom.Support	**174.98**	**8.32**	**6.38**	**6.34**	**0.00**	**6.34**	**0.04**

Demand No. 61	**4701**	**CAPITAL**			**National Hydrology Project-Phase-III**		
Major Head: 4701-.80.004.08.01 (Ext. Supp) & 08.02 (Dom. Supp) Hydrology Project-Phase-III (PLAN)							
Sub Head: 06-GROUND WATER MANAGEMENT & REGULATION –01 (Ext.)02(Dom.)							
4701. 80.004.04.02 (Capital Nature Expenditure) National Hydrology Project (PLAN)						**(Figures in lacs)**	
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
4701. 08.01 Ext. Supp. NHP (Capital)							
08.01.51. M V	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08.01.52 M & E	250.00	15.00	**0.00**	0.00	0.00	0.00	0.00
Major/Works 08.01.53	50.00	0.00	0.00	0.00	0.00	0.00	0.00
08.01.60 Other Capital Expenditure	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Capital Nature Exp. Ext. Supp.	**300.00**	**15.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
4701. 08.02 Dom. Supp. NHP (Capital)							
08.02.51. M V	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08.02.52 M & E	250.00	15.00	**8.76**	4.32	0.00	4.32	4.44
Major/Works 08.02.53	50.00	0.00	0.00	0.00	0.00	0.00	0.00
08.02.60 Other Capital Expenditure	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Capital Nature Exp. Dom.Supp.	**300.00**	**15.00**	**8.76**	**4.32**	**0.00**	**4.32**	**4.44**
Total Ext.Sup.& Dom.Sup.(Capital)	**600.00**	**30.00**	**8.76**	**4.32**	**0.00**	**4.32**	**4.44**
G.Total Revenue + Capital (NHP-III)	**774.98**	**38.32**	**15.14**	**10.66**	**0.00**	**10.66**	**4.48**

							4702-CAPITAL OUTLAY
Supplementary Expenditure Report for the Financial Year 2020-21.							
							INFRASTRUCTURE DEVELOPMENT
Demand No. 61							**4702 (CAPITAL)**
Major Head:4702-CAPITAL OUTLAY-00.102 GROUND WATER (M.I.)							
Sub Head: 06-INFRASTRUCTURE DEVELOPMENT							
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
4702 Capital Nature Expenditure Infrastructure Development (ID) PLAN							
Dom. Supp. 4702 (ID) Capital 1	2	3	4	5	6	7	8
03.00.51 मोटर वाहन Motor Vehicle	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03.00.52 M & E मशीनरी एवं उपस्कर	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03.00.53 M/Works मुख्य कार्य	2200.00	200.00	200.00	177.36	0.00	177.36	22.64
Total 4702 (ID) Capital N. Expdt.	**2200.00**	**200.00**	**200.00**	**177.36**	**0.00**	**177.36**	**22.64**
GrantTotal 4702 (ID) Capital	**2200.00**	**200.00**	**200.00**	**177.36**	**0.00**	**177.36**	**22.64**

Demand No. 61			**IEC (SCHEME)**				
केन्द्रीय भूमि जल बोर्ड (जल संसाधन मंत्रालय)						**(IEC) ACTIVITIES (PLAN)**	
Supplementary Expenditure Report for the Financial Year 2020-21.							
Major Head: 2701-MINOR IRRI-02-005-GROUND WATER INVESTIGATION (PLAN)							
Sub Head: 20 MASS AWARENESS ACTIVITIES (IEC) (PLAN)							
							(Fig. in lacs)
इकाई का कोड/नाम Unit of Appropriation	**Budget Estimate 2020-21**	**Revised Estimate 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Prog. Exp. upto the Prev. Month of 03/2021**	**Expend. during the Month of 03/2021 after Recon. In PAO.**	**Supplementary Prog. Exp. After Recon. In PAO F.Y. 2020-21.**	**Variation (+) Excess (-) Saving**
1	2	3	4	5	6	7	8
20.01.13 Office Expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.01.20 Other Administ. Expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.01.26 Advertising & Publicity	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.01.28 Professional Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.01.31 Grant-in-aid-General	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total (IEC) PLAN	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Central Ground Water Board						
Summary of March Supplementary for the Financial Year 2020-21						
Demand No 61						(*Figures in Lakhs*)
Sl. No.	**Name of Activity**	**Budget Estimates 2020-21**	**Revised Estimates 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**March Supplementary Exp. Duri. the F.Y. 2020-21**	**Cumulative Expe. Up to 31.03.2021**
1	**Establishment Expenditure (REVENUE + CAPITAL)**					
(I)	Investigation (Major Head) HQ, CGWB (Reveune)	24465.00	23485.00	23500.00	-7.90	23357.36
	Investigation (Major Head) HQ, CGWB (Capital)	5.00	0.00	0.00	0.00	0.00
	01.96 Swachhta Action Plan	10.00	5.00	5.00	0.20	2.26
	01.99 Information Technology	20.00	10.00	10.00	0.00	0.00
	TOTAL Establishment Expenditure (Revenue + Capital)	**24500.00**	**23500.00**	**23515.00**	**-7.70**	**23359.62**
2	**2702-16- PLAN GWM&R (Revenue+Capital)**					
	16 - Ground Water Management & Regulation (Revenue)	8124.00	5630.00	5710.52	-14.48	5523.61
	16 - Ground Water Management & Regulation (Capital)	19676.00	7524.00	7524.00	-19.08	7449.41
	Total GWM & R (Revenue + Capital)	**27800.00**	**13154.00**	**13234.52**	**-33.56**	**12973.02**
	TOTAL Deduct Recoveries	1500.00	1500.00	1500.00	-314.08	544.07
	NET GWM&R (PLAN)	**26300.00**	**11654.00**	**11734.52**	**280.52**	**12428.95**
	01.796 Tribal Sub Plan (Revenue)	453.00	220.00	220.00	0.85	215.22
(II)	00.796 Tribal Sub Plan (Capital)	747.00	626.00	626.00	-0.01	617.61
	Total Tribal Sub Plan (Revenue + Capital)	**1200.00**	**846.00**	**846.00**	**0.84**	**832.83**
	Total GWM&R & TSP (Rev + Capital) Net	**27500.00**	**12500.00**	**12580.52**	**281.36**	**13261.78**
(III)	06- Rajiv Gandhi National GWT & R I (Revenue)	450.00	149.00	149.00	0.00	126.25
	06- Rajiv Gandhi National GWT & R I (Capital)	150.00	16.00	16.00	0.00	0.14
	Total Rajiv Gandhi National GWT&RI (Revenue + Capital)	**600.00**	**165.00**	**165.00**	**0.00**	**126.39**
(IV)	4702- Capital Outlay (I D) (Capital)	2200.00	200.00	200.00	0.00	177.36
(V)	4552-Capital Outlay I D(Capital) N E A	0.00	0.00	0.00	0.00	0.00
	Total Capital Outlay (ID + ID NEA)	**2200.00**	**200.00**	**200.00**	**0.00**	**177.36**
	TOTAL PLAN (NET)	**30300.00**	**12865.00**	**12945.52**	**281.36**	**13565.53**
(VI)	**2701 NHP (Revenue) & 4701 NHP (Capital)**					

	2701 NHP-(REVENUE) Ext. Supp.	87.49	4.16	3.19	0.00	3.17
	2701 NHP-(REVENUE) Dom. Supp.	87.49	4.16	3.19	0.00	3.17
	Total 2701 NHP (Revenue)	**174.98**	**8.32**	**6.38**	**0.00**	**6.34**
	4701 NHP-(Capital) Ext. Supp.	300.00	15.00	0.00	0.00	0.00
	4701 NHP-(Capital) Dom. Supp.	300.00	15.00	**8.76**	0.00	4.32
	Total 4701 NHP (Capital)	**600.00**	**30.00**	**8.76**	**0.00**	**4.32**
	Total NHP-(Rev.+Capital)	**774.98**	**38.32**	**15.14**	**0.00**	**10.66**

Central Ground Water Board					
Summary of March Supplementary Intimation of all Scheme for the Financial Year 2020-21					
Intimation Plan					
Demand No. 61					**(Figures in Lakhs)**
SL.No.	**Name of Activity**	**Budget Estimates 2020-21**	**Revised Estimates 2020-21**	**Mod. Final Budget after Re-appropri. F.Y. 2020-21**	**Cumulative Expe. Up to 31.03.2021**
1	16 - Ground Water Management & regulation (Revenue + 06 Capital)				
	TOTAL GWM&R (PLAN) GROSS	27800.00	13154.00	13234.52	12973.02
	01.796 Tribal Sub Plan (Reve+ Capital)	1200.00	846.00	846.00	832.83
2	06- Rajiv Gandhi National T & R I (Revenue + 07 Capital)	600.00	165.00	165.00	126.39
5	4702- Capital Outlay Infrastructure Development (Capital) + NER	2200.00	270.00	200.00	177.36
	TOTAL PLAN GROSS	**31800.00**	**14435.00**	**14445.52**	**14109.60**
6	2701 NHP (REVENUE) Ext. Supp.	86.00	4.16	3.19	3.17
	2701 NHP-(REVENUE) Dom. Supp.	86.00	4.16	3.19	3.17
7	4701 NHP (Capital) Ext. Supp.	300.00	15.00	0.00	0.00
	4701 NHP-(Capital) Dom. Supp.	300.00	15.00	8.76	4.32
	Total NHP-(Rev+Capital)Ext.Dom.Supp.	**772.00**	**38.32**	**15.14**	**10.66**
	Establishment Expenditure (REVENUE + CAPITAL)				
1	2702 Establishment Expenditure	24470.00	23485.00	23500.00	23357.36
	01.96 Swachhta Action Plan	10.00	5.00	5.00	2.26
	01.99 Information Technology	20.00	10.00	10.00	0.00
	Total Estblishment Expenditure	**24500.00**	**23500.00**	**23515.00**	**23359.62**

24. PARLIAMENT CELL

1. Parliament Standing Committee on Water Resources examining various subjects

- CGWB has submitted updated status in respect of CGWB on matters related to ATR on the First Report of Standing Committee on Demand for Grants (2019-20) - Statement to be laid in the monsoon session- DEMAND FOR GRANTS
- CGWB has submitted reply of the points pertaining to CGWB Fifth Report on Action Taken by the Government on the observations/recommendations contained in Twenty Third Report (16th Lok Sabha) on the Subject "Socio-economic impact of commercial exploitation of water by Industries".
- CGWB has submitted reply of the points pertaining to CGWB regarding Eighth Report regarding Action taken by the Government on the observations/ recommendations contained in the Third Report (Seventeenth Lok Sabha) on the Standing Committee on Water Resources Demand for Grant 2020-21.
- CGWB has submitted reply of the points pertaining to CGWB regarding Sixth Report on Action Taken by the Government on the Observations / Recommendations contained in the First Report on 'Demands for Grants (2019-20) of the Ministry of Jal Shakti, Department of Water Resource, River Development and Ganga Rejuvenation.
- CGWB has submitted reply of the recommendations of Standing Committee on Water Resources on Demand for Grants (2021-22)- Action taken Reply (ATR) on the Tenth Report of the Committee.
- CGWB has submitted answer to the post evidence list of points raised by the Parliamentary Standing Committee on Water Resources regarding Examination of the subject "Groundwater: A valuable but diminishing Resource" post evidence list of point.
- CGWB has submitted reply of the recommendations of proceedings of the sitting of the Parliamentary Standing Committee on Water Resources held on 23.02.2021- Queries raised by the Members.
- CGWB has submitted reply to NWM in respect of 18th Report of standing Committee on Water Resources (2016-17) (16th Lok Sabha) on Action Taken by the Government or the observations/ recommendations contained in the 13th Report on the subject "Indigenous and Modern Forms of Water Conservation- Techniques and Practices"– Standing Committee on Water Resources (16^{th} Lok Sabha)
- CGWB has submitted updated Action Taken Report pertaining to CGWB to the Fifth Report on Action Taken by the Government on the observations/recommendations contained in Twenty Third Report (16th Lok Sabha) on the Subject "Socio-economic Impact of Commercial Exploitation of Water by Industries"

- CGWB has submitted Background Material for the Subjects Selected during the year 2020-21 by the Standing Committee on Water Resources (2020-21)– Background Note.
- CGWB has submitted reply of the points pertaining to CGWB in respect of 30th Report of the Committee of Estimates on the Performance "Performance of the National Action Plan on Climate Change (NAPCC)" - Regarding
- CGWB has submitted reply regarding Request for furnishing Action Taken Statement on 19th Action Taken Report of the Committee on Estimates on the subject "Occurrence of High Arsenic Content in Groundwater".

2. Matter related to Lok Sabha Assurance

CGWB has furnished suitable replies / material for framing the replies to Assurance on the Parliament Questions of Ministry of Jal Shakti within stipulated time period.

3. Matter related to Rule 377

CGWB has furnished suitable replies/material for framing the replies to the matter raised under Rule 377 in Lok Sabha of Ministry of Jal Shakti within stipulated time period.

4. Replies to Parliament Questions

CGWB has furnished suitable replies for framing replies to the Parliament Questions of Ministry of Jal Shakti, Ministry of Environment, Forests & Climate Change, Ministry of Health & Family Welfare, Ministry of Agriculture and Farmers Welfare, Ministry of Rural Development and Ministry of Urban Development and Ministry of Drinking Water Supply & Sanitation and number of other ministries and State Legislative Assemblies of various states within stipulated time period.

5. VIP references/ PMO references

CGWB has satisfactorily furnished replies to about 23 References received from PMO and 51 VIP references received through Ministry of Jal Shakti within stipulated time period.

6. Zero Hour

CGWB has satisfactorily furnished replies about 10 matters raised during Zero Hour within stipulated time period.