



# भूजल संवाद

Govt. of India  
Ministry of Jal Shakti  
Department of WR, RD & GR  
Central Ground Water Board

*The Quarterly Magazine of Central Ground Water Board (CGWB)*

*Vol.9*

## Cover Story

PMKSY-HKGP-GW: Harbinger of a new green revolution in North East India

## Lockdown Diary

» Activities of CGWB during lockdown

## Report

» Rainfall in Bhujal Bhawan Campus

## Pathshala

» Flowing Artesian Wells

## Shodh

» Research publications by CGWB

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# भूजल संवाद

The Quarterly Magazine of Central  
Ground Water Board  
Dept. of Water Resources,  
River Development and  
Ganga Rejuvenation,  
Ministry of Jal Shakti, Govt. of India

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**Cover Photo:** An irrigation well constructed at Palara  
Village, Kamalpur, Kamrup, Assam under PMKSY-  
HKGP-GW



## MESSAGE

**A**longside all the challenges of water scarcity there are also opportunities. Many regions in India still have a lot of untapped potential for development of ground water resources. Based on the findings of CGWB studies, a programme to encourage ground water based irrigation has been operationalized by Ministry of Jal Shakti, Government of India under the Pradhan Mantri Krishi Shinchayee Yojana. Our cover story in this volume highlights how interventions under the PMKSY-HKGP-GW scheme are proving to be the harbinger of a new green revolution in North Eastern India.

Lockdowns have not dampened the spirit of the Board. Many activities continued during and after the lockdown with due precautions. Our training establishment, Rajiv Gandhi National Ground Water Training and Research Institute (RGNGWTRI) has brought in a new wave of change through its online training programmes. This and other activities of the Board are chronicled in the section Lockdown diary. Regular sections like Pathshala, Report and Shodh include topics of interest for the professionals and enthusiasts.

I am also happy to inform that CGWB is going to organize a competition for re-designing its logo. Details will be released soon on our website, social media pages and MyGov portal ([mygov.in](http://mygov.in)).

We have been receiving some excellent feedback including request for inclusion in the mailing list, which are highly appreciated. Share your ideas with us through our social media pages or send email to our editorial office ([mediacell-cgwb@nic.in](mailto:mediacell-cgwb@nic.in)). We are eager to hear from you.

(G C Pati)

Chairman, CGWB

# Lockdown Diary

The Covid-19 Pandemic breakout is the worst thing to have happened to mankind in recent years. It gained momentum in India during the month of March 2020 and to deal with it, total lockdown was declared in the last week of March. During the lockdown period, Government Organizations functioned in a restricted manner, maintaining proper safety measures. Few activities taken up by CGWB during this period are summarized here:

## Online Training organized by Rajiv Gandhi National Ground Water Training and Research Institute during Lock Down

The RGNGWTRI is envisaged to function as a 'Centre of Excellence' in training ground water resources personnel. It has a national role of conducting training courses for all ground water sector personnel, in the specialised and emerging areas. Due to outbreak of Pandemic Corona, RGI has shifted to online learning for the time being to ensure continuity of learning process and benefitting and safety of participants. During Lock down following training courses were successfully conducted.

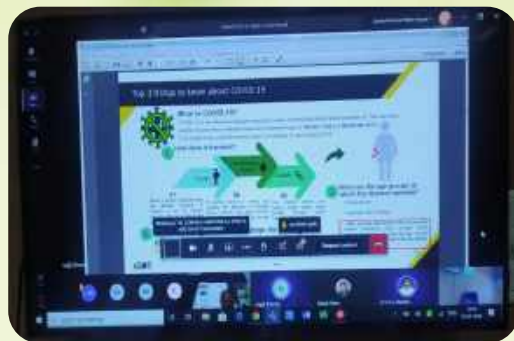
### 1. One week Online Training course on “Scientific Report and Paper Writing” organized by RGI Institute during 18.05.2020 to 22.05.2020

Online Training course of one week on “Scientific Report and Paper Writing” was organized by Rajiv Gandhi National Ground Water Training & Research Institute during 18.05.2020 to 22.05.2020. Thirty one (31) officers including 10 female officers participated in the training.



### 2. Online training course on “Corona Symptoms, its Effects and Safety Measures to be followed at Workplace” organized by RGNGWTRI, Raipur on 18.05.2020

Rajiv Gandhi National Ground Water Training and Research Institute (RGNGWTRI), CGWB, Raipur organized an online training on 18.05.2020 on “Corona Symptoms, its Effects and Safety Measures to be followed at Workplace”. Dr. Manoj Soni, MD, Ramakrishna Care Hospital, Raipur, as the invited resource person, informed the participants about the symptoms of COVID-19 infection and advised about safety measures to be taken at home and work place.



### 3. Two weeks Online Training course organized by Rajiv Gandhi National Ground Water Training & Research Institute during 26.05.2020 to 06.06.2020 on “Management Aspects and Leadership Traits”



Two weeks online Training Programme on “Management Aspects and Leadership Traits” was organized by RGNGWTRI for CGWB officers from 26th May 2020 to 6th June 2020.

# Virtual Meetings - The New Normal

## 1. Meeting on implementation of Atal Bhujal Yojana in Rajasthan.

A Meeting on implementation of Atal Bhujal Yojana (Atal Jal) Scheme in Rajasthan was held at Jaipur under the chairmanship of Sh. Rajesh Yadav, Principal Secretary, Ground Water Dept. and PHED, Govt. of Rajasthan on 15-5-20. Dr. S. K. Jain, Regional Director, CGWB attended the meeting and apprised about Atal Bhujal Yojana in Rajasthan.



## 2. Virtual Meeting on Master Plan for Artificial Recharge



The Master Plan for Artificial Recharge in the country is being revised. The revision is being done in consultation with the State government departments. In this connection, an online meeting was held on 28th May 2020 between the members of the central level committee, representatives of regional offices of CGWB and concerned state government departments. Nearly 80 professionals participated in the meeting. Shri Sunil Kumar, Member (HQ), CGWB, Faridabad presided over the meeting.

## Field Activities During Lockdown

### 1. Providing technical guidance for construction of water supply well for isolation centre in Shillong

Shri T. Chakraborty, Scientist D of CGWB, SUO Shillong has attended drilling at an isolation centre for COVID-19 patients at Mawdiangdiang, Shillong on 30/04/2020 for providing technical guidance in construction of a borehole for water supply.

### 2. Borehole constructed in Jammu and Kashmir for data generation for Aquifer Mapping

A high discharge well (discharge 7 litres per second) was constructed by CGWB in Udhampur District of UT of Jammu and Kashmir. A complex drilling technique known as ODEX with DTH was used for construction of the well. In this technique, casing is driven simultaneously with drilling. This technique is used for construction of wells in collapsible formations.



Sh. T.Chakraborty, Scientist overseeing drilling in a Covid isolation centre in Shillong

## Measures taken to prevent spread of COVID-19 in the office buildings of CGWB



Worker of Municipal Corporation of Faridabad (MCF) Sanitizing CGWB (CHQ) Faridabad Building

As per the Govt. instructions, offices have adopted each and every precautionary measures to protect the health of employees. For example use of Aarogya Setu Apps, screening and hygiene, frequent sanitization of building, social distance measures between employees, prohibiting gatherings, face coverings, holding virtual meetings, protection of vulnerable persons has now become a part of routine life.



Thermal Screening of Workers and employees in Jaipur

## Unocking Field Activities of CGWB Post Lockdown

After a hiatus of almost two months, Government Organizations started functioning, in a restricted manner. CGWB has also started its regular activities to the extent possible, keeping in mind all the safety norms. Field activities of CGWB have resumed amidst the Covid crisis and it is an appreciable effort of Officers and Officials who continue to fulfill their responsibilities during this difficult time.



Ground Water Monitoring and Water Quality Sampling carried out in and around Sagar District, Madhya Pradesh



Ground Water Monitoring and Water Quality Sampling for Premonsoon Period is completed in the state of Delhi amid all the hardship of Covid-19.



Ground Water Monitoring and Water Quality Sampling for Premonsoon Period is carried out in Rakh Badali, Udhampur District, Jammu

# PMKSY-HKKP-GW: Harbinger of a new green revolution in North East India

## Introduction

North Eastern India is blessed with abundant water resources including rainfall, rivers and ground water. An estimation of ground water resources carried out by CGWB jointly with State Government during 2017 indicates that Northern Eastern States (NES) are harnessing ground water in the range of 0.287% (Arunachal Pradesh) to maximum of 11.25% (Assam) of the recharge that takes place annually. Central Ground Water Board's (CGWB's) focal activity of National Aquifer Mapping & Management Program (NAQUIM), supplemented by historical hydro-geological surveys and investigations, confirms presence of prolific aquifer systems, with sustainable yields for ground water development in Assam and Tripura. Other States like Arunachal Pradesh, Nagaland, Mizoram and Manipur have meagerly developed aquifer systems which can supplement the need of irrigation in these areas.

Considering the hydrogeological suitability of ground water development, a Centrally Sponsored Scheme of *Pradhan Mantri Krishi Sinchayee Yojna – Har Khet Ko Paani- Ground Water* (PMKSY-HKKP-GW) is launched by Hon'ble Minister of Jal Shakti, Sh. Gajendra Shingh Shekhawat on 16.07.2019 in presence of Sh. Sarbananda Sonowal, Chief Minister of Assam, Sh. Bhabesh Kalita, Irrigation Minister, Assam, Sh. Upendra Prasad Singh, Secretary, DoWR, RD & GR, GOI and Sh. Sanjay Lohia, Principal Secretary to CM Assam.



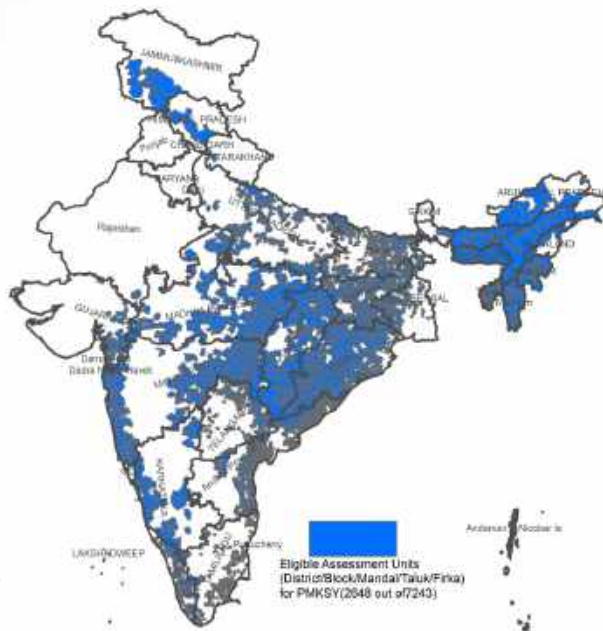
Sh. Gajendra Singh Shekhawat, Hon'ble Union Minister of Jal Shakti, Sh. Sarbananda Sonowal, Hon'ble Chief Minister of Assam, Sh. Bhabesh Kalita, Irrigation Minister, Assam, Sh. Upendra Prasad Singh, Secretary, DoWR, RD&GR, GoI, Sh. Sanjay Lohiya, Principal Secretary to CM, Assam during the meeting.

## Scheme of PMKSY-HKKP-GW

On revision of operational guidelines in November 2018 & May 2019, to support States/UTs for promoting ground water irrigation in safe assessment units and enhance small and marginal farmer's income in such areas, sufficient funds have been allocated for this purpose for FY 2019-20. The scheme has been launched for assessment units fulfilling the criteria given below:

- i.) Less than 60 percent of the annual replenishable groundwater resources have been developed;
- ii.) Average annual rainfall of 750 mm or more to have availability of enough water for recharge;
- iii.) Shallow groundwater levels within range of 15m below ground level or less during pre-Monsoon period.

More than 2500 assessment units have been identified as eligible in ~ 400 districts, across 23 States for enhancing ground water irrigation under PMKSY-HKKP-GW scheme. The identified areas largely comprises of assessment units of Eastern, North Eastern and Central States.



Eligible assessment units for PMKSY-GW

- A large part of identified area, particularly in North Eastern & Eastern States, Jharkhand, Odisha, Chhattisgarh etc. is occupied by tribal population and ground water irrigation facility shall provide them an opportunity to boost socio-economic condition of small and marginal farmers. The salient features of the scheme includes following considerations:
- Scheme envisages providing full financial support for digging wells, shallow/deep tube wells/ dug-cum-bore wells wherever appropriate Groundwater resource is available.
  - Provision of solar and electric pumps for water lifting with preference to Solar pumps in tribal and remote areas where farm power grids are not available in vicinity.
  - Provision of electric connections to electric pumps.
  - Providing 200 m flexible water distribution pipes in order to reduce water losses, avoiding wastage of precious irrigation water improving water use efficiency.
  - The scheme focuses towards small and marginal farmers with priority to SC/ST and Women farmers.
  - The scheme also envisages providing funds for site specific hydrogeological surveys.

## PMKSY-HKGP-GW in Assam

Assam is a typical example of lack of irrigation facilities, further distressing socio-economic status of small and marginal farmers with no source of irrigation. On perusal of data of agriculture census it has been observed that out of the total area cultivated only 12% is irrigated.



### District-wise distribution of schemes and beneficiaries in Assam

| Sl. | District     | Cluster     | No. of Farmers |
|-----|--------------|-------------|----------------|
| 1   | Barpeta      | 380         | 2310           |
| 2   | Bongaigaon   | 250         | 1136           |
| 3   | Darrang      | 213         | 1008           |
| 4   | Dhubri       | 200         | 593            |
| 5   | Dibrugarh    | 293         | 1122           |
| 6   | Goalpara     | 75          | 343            |
| 7   | Golaghat     | 150         | 540            |
| 8   | Jorhat       | 491         | 1964           |
| 9   | Kamrup (M)   | 224         | 689            |
| 10  | Kamrup       | 450         | 1788           |
| 11  | Kokrajhar    | 296         | 296            |
| 12  | Nagaon       | 490         | 2429           |
| 13  | Sonitpur     | 792         | 3062           |
| 14  | Sivsagar     | 475         | 2363           |
|     | <b>Total</b> | <b>4779</b> | <b>19643</b>   |

Most deprived are small and marginal farmers who are cultivating around 39% of area but having only 3% of assured irrigation. Considering the prevailing criteria for PMKSY-HKGP-GW for identification of areas suitable for implementation of the scheme, an exercise has been attempted and found that around 5.67 lakh ha additional area is to be brought under irrigation for which about 1.42 lakh shallow wells can be constructed without escalating stage of ground water development to 70%. For this more than 1 lakh electric pumps and more than 35 thousand solar pumps can be installed. In such situation, under PMKSY-HKGP-GW, Assam Government can utilize central funding aid, provide assured irrigation to small & marginal farmers and uplift their socio-economic status.

## Scheme Design in Assam

PMKSY-HKGP-GW is being implemented in Assam by Dept. of Water Resources (DoWR), Ministry of Jal Shakti, and Irrigation Department, Govt. of Assam is Implementing Agency (IA) on ground level. The total estimated cost of Phase-I project is **Rs. 246.0696 Cr.**, wherein Central Assistance (CA) is **Rs. 221.463 Cr.**, i.e. 90% of the total project cost and 10% share (**Rs. 24.60 Cr.**) will be of Assam Government. It is envisaged to construct **4779** irrigation tube wells with pumps and distribution pipes, out of which, **2435** are electrically operated and **2344** are solar. The Govt. of India has already released **Rs.132.87 Cr** as first Installment and It is expected that all schemes will be completed by December 2020. After implementation of the project, 19116 hectares of irrigation potential will be created, benefitting 19643 Nos of small and marginal farmers of 14 districts of Assam.

Tube wells of 43.50 meter depth, 150 mm diameter PVC housing up to 18 m, are being constructed by installing 3 HP pump set with a minimum discharge of 400 liters per minute. Canvas pipe of 200 m length are being provide, to minimize water losses and create irrigation potential of 4 hectares per scheme for agriculture.



Inspection by CGWB officers at Bhumulahati Solar Site, Kamrup (R), Assam



## Cropping Pattern And Irrigation

Main source of livelihood of the people of the state is cultivation. In absence of Irrigation facilities, farmers usually cultivate their land in the conventional system, resulting poor output. The cultivators are mainly dependent on rainfall. Vagaries of rainfall impacts small and marginal farmers, restricting them to produce low yield varieties/crops with single cropping pattern. Assured ground water irrigation will facilitate farmers for cropping cereals, vegetables, horticulture, Boro-paddy etc. during the entire year and gain double benefits.



## Other States

Under the scheme of PMKSY-HKGP-GW, proposals of more than Rs.738 Cr. from Assam-Phase-II, Arunachal Phase-I & II, Nagaland, Tripura, Manipur and Mizoram are already been administratively approved and funds of Rs 231.68 Cr have been released to these States.



PMKSY meeting on 26.02.2019, Dispur: Joint Secy (IC & GW), DoWR, RD & GR with Principal Secy, Irrigation, Assam



STAC meeting of PMKSY –HKGP GW of Mizoram on 24.10.2019 in the chamber of Secretary I & WRD, Mizoram



STAC Assam on 08.01.2020: CE Irrigation Chamber (PMKSY Phase II of Assam)



STAC meeting of PMKSY-HKGP- GW –Manipur on 06.01.2020 in the chamber of Secretary, WR & MI, Manipur

## Conclusion

Providing assured irrigation to small and marginal farmers is priority for doubling farmers' income. Ground water has been constant sources of assured irrigation. However, skewed availability and development of ground water is reflected on assured irrigation infrastructure availability in the Country. Small & marginal farmers are most affected class attributing to their poor socio-economic conditions. Government schemes, providing assured irrigation facilities to small and marginal farmers can change the face of agrarian economy and lead to a new Green revolution specially in Northeastern States. PMKSY-HKGP-GW is an effort in this direction. CGWB is making all out efforts to take up schemes on scientific basis for their sustainability and prevention from ecological imbalance such as over exploitation of ground water resources. Assam and similar states, with large gap between area cultivated and area irrigated and having huge potential for further development of ground water, are coming forward to utilize assistance from Central Government. Under PMKSY-HKGP-GW creation of assured irrigation facilities for small/ marginal farmers is being funded for uplifting of socio-economic status of farmers and aims for bringing a new green revolution in Northeastern Indian.

**Sh. S.K.Swaroop, Scientist, CGWB(CHQ) Faridabad; Dr. S.Somarendro Singh, Scientist, CGWB NER, Guwahati**

# Report

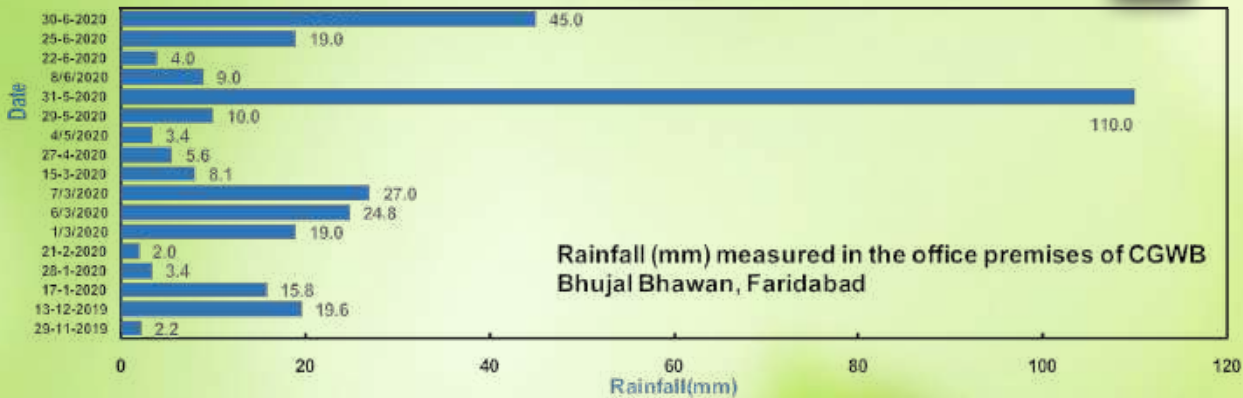
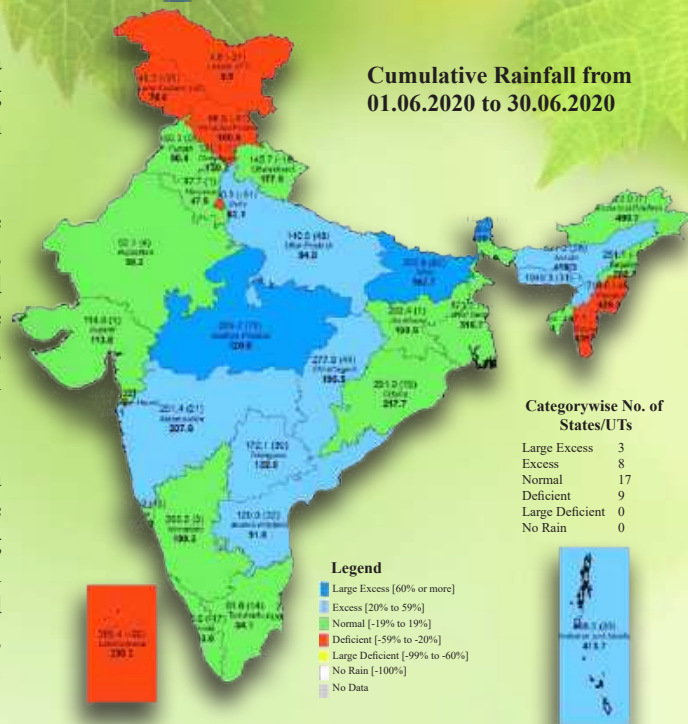
## Rainfall Measurement in Bhujal Bhawan

Rainfall is highly variable in time and space. India receives around 75 percent of its annual rainfall during the monsoon season (June to September), which replenishes reservoirs and groundwater.

The cumulative rainfall map (June 2020) of the country depicts that the large part of the country, covering almost all the major states/UTs have received Normal to Excess Rainfall during this period. The states/ UTs of Himachal Pradesh, Mizoram, Manipur, Lakshadweep, Jammu & Kashmir, Ladakh and Delhi received deficient rainfall.

Daily rainfall at Bhujal Bhawan, Faridabad has been recorded using Non recording type Rain Gauge. Since 1st January 2020, 306.1 mm of rainfall, out of Long Term Average of 542 mm has been recorded at Bhujal Bhawan, Faridabad. 68 mm (15%) rainfall is recorded during the current monsoon period (upto 30th June), out of 460 mm Normal Monsoon Rainfall of Faridabad.

Cumulative Rainfall from 01.06.2020 to 30.06.2020

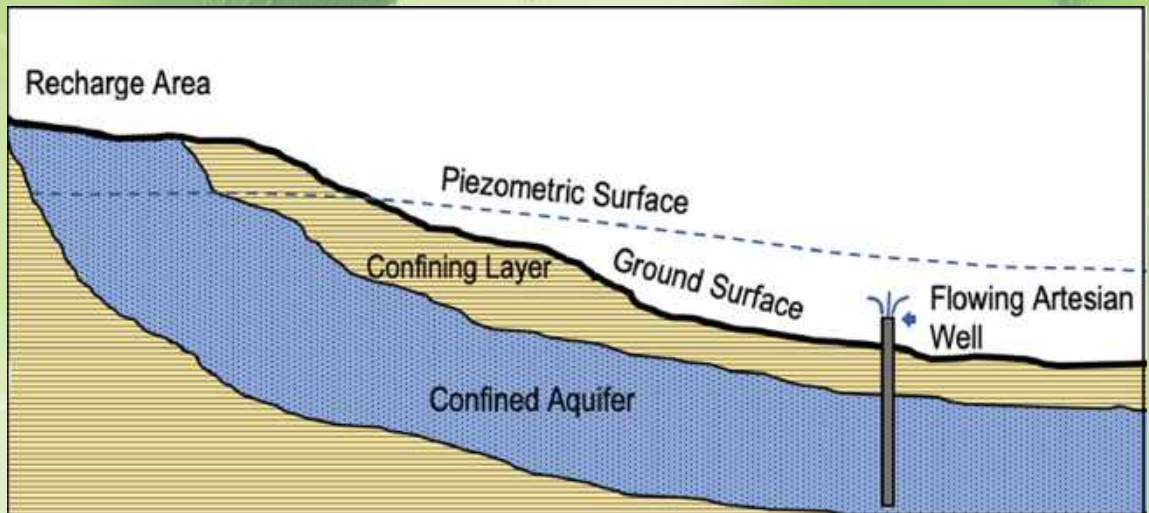


# Pathshala

## Flowing Artesian Wells

**Flowing Artesian Wells** also sometimes called **autoflow wells** or **flowing wells** are one amongst the most interesting structures in the field of groundwater. These are the wells out of which water come out by itself without a pump or any other lifting device.

The classic explanation of flowing wells, first presented by Chamberlain (1885) and popularized by Meinzer (1923) is an outcrop-related geologic control (Fig.1). When a confined aquifer is exposed to the surface at a higher elevation and gets recharged from high elevation, the hydraulic head in the aquifer downdip from the recharge area is higher than the surface elevation. In simple terms, at the valley portion the aquifer is under such confined pressure that if a borehole is constructed tapping the confined aquifer, water automatically starts flowing.



Flowing artesian wells are not uncommon in India. They have been reported from many parts of the country including Jammu & Kashmir, Uttarakhand, Uttar Pradesh, Bihar, Odisha, West Bengal, Rajasthan, Chhattisgarh, Kerala, Telangana, Tamil Nadu, Tripura etc. But the most prominent and continuous belt of flowing artesian wells are found in the Terai belt in the foothills of the Himalayas. Flowing wells in this terrain are encountered in the States of Uttarakhand, Jammu and Kashmir, Himachal Pradesh, Punjab etc.

Unfortunately, increasing withdrawal of ground water has also taken its toll on the autoflow zones in many parts of the country. National Aquifer Mapping Studies in Udham Singh Nagar of Uttarakhand District has brought out that in the last three decades the extent of autoflow zones and the discharge from the flowing wells have dwindled significantly. Controlling pumping in the terai belt and increasing recharge in the Bhabar region (recharge area for the autoflow zone) are necessary to protect and conserve the autoflow areas.



Autoflow well at East Jarulbachai Village, Dukli Block, West Tripura District.



Autoflow well at Chandra Sadupara village, Jirania Block, West Tripura District.

## Research Publications by CGWB Officers

### Uranium and Its Correlation with other Geogenic Contaminants in Ground Water of Ganga Yamuna Doab, Fatehpur District, Uttar Pradesh, India

*Journal Geological Society of India. Vol 95. April 2020 pp. 359-365*

**Ram Prakash, K G Bhartariya, Supriya Singh, Karam Singh, Madhavi Rajak and Y B Kaushik**

Uranium is a naturally occurring radioactive element. Exposure to the elements may rise in the cases wherever potable water is obtained directly from geogenically affected ground water sources. The health hazards associated with uranium primarily from its chemical activities, rather than from long-run tomographical toxic effects, which may lead to urinary organ damages.

Elevated Uranium was found in 17% of the ground water samples along with other toxic metals (Pb, Cr, Mn, Fe, As, Zn) in the study area (Ganga-Yamuna Doab, Fatehpur district, Uttar Pradesh). The affirmative values of uranium on liquid scintillation counter was observed to have positive correlation with chromium and lead whereas Uranium concentration was found to be poorly correlated with zinc, arsenic and iron.

### Recent Scientific Perspectives on the Indian Hydrogeology

*Proc Indian Natn Sci Acad 86 No. 1 March 2020 pp. 459-478. DOI: 10.16943/ptinsa/2020/49790*

**Dipankar Saha, Shashank Shekhar, Shakir Ali, L Elango And S S Vittala**

The hydrogeology of India represents one of the diverse systems in the world. The hydrologically distinct Himalayan highlands and its foreland basins with deposits of Indo-Ganga Brahmaputra system gradually merges with the cratonic provinces of central and south India, fluvioaeolian deposits of west and the basaltic province of the Deccan plateau. The tremendous socio economic significance of groundwater in India can be appreciated by the fact that about 62 % of water used in irrigation, about 85 percent of rural water supply and more than 50 % of urban water consumption is extracted from aquifers.

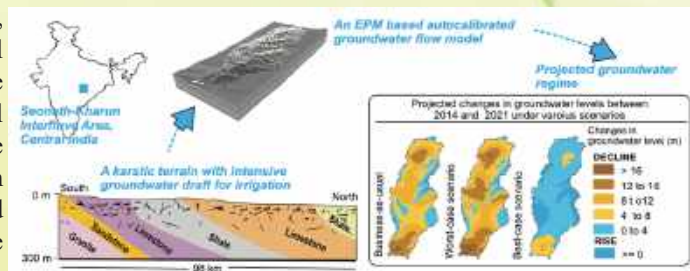
The acute over-exploitation of groundwater resources in some parts of India, deterioration in groundwater quality both from geogenic and anthropogenic sources, declining well yield, the quest for sustainable use of groundwater resource and the need to map and understand the aquifer system have acted as stimulus for researchers throughout India. The paper deals with a brief introduction of Indian hydrogeology and reviewed the huge volume of researches carried out in the recent past under nine sub themes representing the rainbow of groundwater research in India.

### Modeling the impact of rainfall variations and management interventions on the groundwater regime of a hard-rock terrain in central India

*Hydrogeology Journal (Springer-Verlag GmbH Germany, part of Springer Nature 2020) DOI 10.1007/s10040-020-02132-y*

**Ranjan K. Ray, Tajdarul H. Syed, Dipankar Saha, Bhabesh C. Sarkar**

Realistic assessment and prediction of groundwater resources, at appropriate scales, are crucial for proper management and systematic development of groundwater in India. An equivalent porous medium (EPM)-based groundwater flow model is implemented for a typical hard-rock aquifer in central India, to provide quantification, analysis and prediction of groundwater balance components. This research also provides refined estimates of aquifer parameters, recharge factors and newer insights into groundwater dynamics. It is observed that evaporative losses and effluent seepage of groundwater to rivers jointly account for ~20% of the annual recharge, which is significantly higher than most prior regional assessments. Evaluation of groundwater resource use under a business-as-usual scenario shows annual groundwater draft to exceed recharge by 13% in the year 2020–2021, and under a worst-case scenario (with prevailing drought conditions) this deficit is predicted to increase to 30%. However, with suitable recharge augmentation and demand control measures, in the best-case scenario, groundwater draft can be contained to ~90% of annual recharge, thereby ensuring long-term sustainability of groundwater resources. Importantly, this study reveals that demand control measures can be more effective than recharge augmentation measures.



# Collectables



1 1st meeting of the State Level Scheme Sanctioning Committee, 2020-21 on "Jal Jeevan Mission (JJM) Assam" was held in Guwahati.

2 Visit of Sh. Subodh Yadav, Joint Secretary (IC & GW), DoWR, RD & GR, MoJS to CGWB(CHO), Faridabad.

3 Inaugural issue of the online journal- Journal of Geohydrology of IAH was released by Sh. G. C. Pati, Chairman, CGWB at Bhujal Bhawan, Faridabad.

4 Website of INC of International Association of Hydrogeologists (IAH) was launched by Sh. G. C. Pati, Chairman, CGWB at Bhujal Bhawan, Faridabad.



1 Pumping test at Kodapada, Keonjhar District, Odisha.

2 Impact Assessment Report of AR structures constructed by State WDD dept. under PMKSY has been submitted by CGWB, SWR to WDD commissioner & Secretary to Govt. of Karnataka.

3 'Yoga at Home and Yoga with Family' CGWB officers and Officials celebrating International Day of Yoga on 21st of June, 2020.

4 Interaction of CGWB Officers of SUD, Delhi with Hon'ble Health Minister and Chairman Delhi Jal Board, Govt. of NCT Delhi.



1 Installation of Solar Pump at Rupahi, Nagaon district, Assam under PMKSY- HKKP-GW.

2 Ground Water monitoring and Water Quality Sampling for Premonsoon Period is carried out in Dharamshala, Himachal Pradesh.

3 CGWB Scientist conducting PYT at Pandarbhatta, Dharsiwa Block, Raipur District, Chhattisgarh.

4 Exploratory well constructed at Sirkabad, Arsh Block, Purulia, West Bengal with a discharge of 10 lps.



1 GW Exploration Activity at Chamrajnagar District, Karnataka. A high discharge well in an otherwise low potential area is always a boon.

2 GW Exploration at Bylore, Kollegal Taluk, Chamrajnagar, Karnataka.

3 Installation of Electric Pump at Rupahi, Nagaon district, Assam under PMKSY HKKP- GW.

4 Exploratory drilling at Battal, Ramnagar, Udhampur district, J & K.