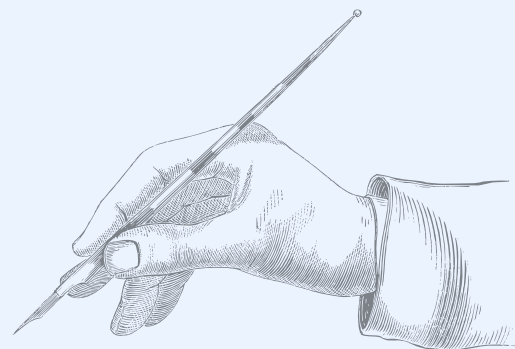


## CONTENT

- Meeting to Review activities under Dam Safety Act, 2021
- The 9th meeting of the committee for "Study on the issue of Flood and Siltation in River Ganga and its Tributaries due to Farakka Barrage in the state of Bihar"
- Publication/release of "Technical Manual on Instrumentation of Dams"
- WRD -15 Meeting on Hydroelectric Power House Structures
- Meeting of CWC and HPSEB officers regarding UHL Stage-III HEP (100 MW), H.P.
- Meeting to review issues related to DRIP Phase II and NDSA
- 118th Meeting of Technical Advisory committee of Farakka Barrage Project
- Visit/Inspection of Projects/Sites by CWC Officials
- 2nd Meeting of Working Group of Upper Siang Multipurpose Storage Project
- Weekly Report on the Status of Inspection of Dams
- National Dam Safety Authority (NDSA) meeting
- Discussion on the modalities & issues pertaining to the 25th International Congress and 74th IEC of ICID
- Meeting to review of progress made for activities undertaken by CWC reg. special projects and other issues
- Briefing meeting regarding Polavaram Irrigation Project
- Field visit to discuss PFR of 2nd Ravi-Beas Link Project
- Water Sharing Uttar Pradesh & Uttarakhand
- Meeting to discuss the India-Nepal Pancheshwar Multipurpose Project (PMP)
- 2nd meeting of Project Implementation Committee (PIC) for NHP
- Flood Situation in the country - December 2022
- Data Corner
- History- The Chambal Cascade for Irrigation & Power



Shri Kushvinder Vohra  
Chairman, CWC



### Message

On the theme of 'Restoration and Conservation of Small Rivers in a Large Basin' with emphasis on the select aspects of 'Mapping and Convergence of 5Ps' - People, Policy, Plan, Programme and Project, the 7th Edition of the India Water Impact Summit (IWIS) was inaugurated by Hon'ble Minister for Jal Shakti Shri Gajendra Singh Shekhawat on 15.12.2022. In the three-day Summit (15th to 17th December 2022) experts from the country and abroad will discuss ways in which small rivers in large river basins can be protected.

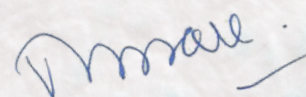
Officials of CWC have visited different projects/sites. Damanganga-Godavari Valley Link Project (DEG), Maharashtra; Proposed Panchnad Barrage site, Uttar Pradesh; Dharoi Dam, Gujarat; Sathanur Dam, Tamilnadu; and dams of UJVNL under DRIP-II were visited by CWC officials in the month of December, 2022.

Hon'ble Minister of Jal Shakti in reference to Hon'ble Supreme Court order dated 06.09.2022 regarding Polavaram Irrigation

Project(National Project) took a meeting with the officers from DoWR, RD&GR and CWC. He directed to CWC to submit the consolidated replies on technical notes submitted by the States of Chhattisgarh, Odisha and Telangana at the earliest.

A "Treaty concerning the Integrated Development of the Mahakali River, including Sarada Barrage, Tanakpur Barrage and Pancheshwar Project" was signed between India and Nepal in February, 1996. Further to 9th meeting of India-Nepal Joint Committee on Water Resources held on 23.09.2022 to take forward the matter. Secretary (DoWR, RD&GR) chaired a meeting on 23.12.2022 wherein the officers from MEA, DOWR, RD & GR, CWC, CEA, NHPC and WAPCOS participated.

I wish to everyone a happy, prosperous and healthy New Year 2023.





## Activities under D&R Wing

### Meeting to Review activities under Dam Safety Act, 2021

A meeting was held under the chairmanship of Hon'ble Minister (Jal Shakti) at Shram Shakti Bhawan on 09.12.2022 to review the activities pertaining to the Dam Safety Act, 2021 as well as externally funded Dam Rehabilitation and

Improvement Project Phase-II. The meeting was attended by Shri Chandrashekhar Iyer, Chairman, CWC, Shri Navin Kumar, Member (D&R), CWC, other officers from CWC and two expert members of NCDS along with officials from Ministry.

### The 9th meeting of the committee for "Study on the issue of Flood and Siltation in River Ganga and its Tributaries due to Farakka Barrage in the state of Bihar"

9th meeting of Committee for "Study on the issue of Flood and Siltation in River Ganga and its Tributaries due to Farakka Barrage in the state of Bihar" was held under the chairmanship of Shri J. Chandrashekhar Iyer, Chairman, CWC on 15th December 2022 to discuss & consider for acceptance of the Final Report. In the meeting, the Committee unanimously accepted the final report subject to incorporating the additional information and the summary of



the point-wise responses to comments in the final report.

### Publication/release of "Technical Manual on Instrumentation of Dams"

The "Technical Manual on Instrumentation of Dams" was published by Shri J. Chandrashekhar Iyer, Chairman, Central Water Commission on 30/12/2022 in the presence of Shri Navin Kumar, Member (D&R), CWC and other senior officers of CWC. The manual has been prepared by Instrumentation Directorate, Dam Safety Organisation, CWC. The manual is a compilation of the provisions of Dam instrumentation as contained in several available Indian Standard codes related to Dam Instrumentation and CWC Guidelines for Instrumentation of Large Dam and Technical Specifications of Hydro-meteorological, Geodetic, Geotechnical and Seismic Instruments, Central Water Commission. The Manual intends to help the dam owners and practicing



engineers in monitoring, evaluation and long-term health assessment of dams through instrumentation to ensure dam safety.

### WRD - 15 Meeting on Hydroelectric Power House Structures

Shri S.K. Sibal, Chief Engineer, Designs (N&W) Unit has chaired 18th meeting of WRD15 "Hydroelectric Power House Structures" as chairperson of WRD-15 on 07.12.2022 at Manak Bhawan, BIS HQ, New Delhi.

Following major decisions have been taken:

- IS 12837:1989 and IS 5496:1993 were finalized.
- The committee decided to reaffirm and revise all the standards due for reaffirmation in March 2023 and review of 14 Indian Standards.

### Meeting of CWC and HPSEB officers regarding UHL Stage-III HEP (100 MW), H.P.

The penstock of the Uhl-III HEP, (100 MW), Himachal Pradesh got ruptured during the testing of 1st unit running at 50% capacity on May 17th 2020. Advice of CWC with regard to the restoration and rectification of penstock of Uhl III HEP was requested by HPSEBL. CWC has examined the issue and undertaken FEM Studies. The report on studies along with advice on restoration of penstock has already been conveyed by CWC in September 2022. Now, HPSEB Ltd

c. CWC gave inputs on the draft of "Guidelines for Planning, Layout and Design of Cavities in Underground Hydro-electric Power Stations [First Revision of IS 9120: 1979], Doc. No. WRD 15(WD 2)". The CWC's inputs on above mention draft have been deliberated by the committee. SJVNL and Voith Hydro Limited gave their inputs on First Revision of IS 12800 (Part 1):1993 and IS 7418:1991 [First Revision]. The committee requested the panel to consider the inputs of SJVNL and Voith Hydro Limited.

sought further advice of CWC regarding the retrofitting/strengthening measures of the existing reaches for various combinations of design/operational parameters. In this regard, Director, HPSEB Ltd. requested CWC to convene a meeting. Accordingly, a meeting of CWC and HPSEB Ltd. Officials was held in CWC on 23.12.2023. The concerns of HPSEB Ltd regarding penstock reaches, which are not proposed to be replaced, have been discussed in detail during the meeting.



## Meeting to review issues related to DRIP Phase II and NDSA

A meeting was held on 19.12.2022 at Shram Shakti Bhawan, New Delhi under the chairmanship of Secretary, DoWR, RD & GR to review the decisions taken in the meeting of November 18, 2022 wherein various issues related to DRIP-

II scheme and NDSA were discussed. Sh. Navin Kumar, Member (D&R), CWC, Other officers from CWC along with the officials from Ministry and World Bank participated in the meeting.

## 118th Meeting of Technical Advisory committee of Farakka Barrage Project

118th meeting of Technical Advisory Committee of Farakka Barrage Project (FBP) held on 21.12.2022 under the chairmanship of Shri Navin Kumar, Member (D&R), Central Water Commission and Chairman (TAC-FBP). Officers from CWC, Ganga flood Control Commission (GFCC) Patna, Central water & Power Research Station (CWPRS) Pune, Syama Prasad Mookarjee Port Kolkata Hydraulics Department, Water Resource Department Govt. Of Bihar, Irrigation and Waterways Directorate Govt. of West Bengal and special invitees Commissioner (FM), DoWR, RD&GR, Ministry of Jal Shakti, Chief Engineer, Design (E&NE) CWC, Chief Engineer, Design(N&W) CWC, Director Central Soil and Materials Research Station (CSMRS) attended the meeting physically.

Drawing issued by CWC.

2. It was recommended that FBP may ASK CWPRS to conduct model studies to assess the effect of modification of banks lines on river bank erosion pattern near vicinity of upstream shoals in Farakka Barrage pond.

Anti-erosion works are required to be carried out in the downstream of Farakka Barrage for the Ch. 1350.00m to 1450.00m and Ch. 4500.00m to 4700.00m & Ch. 4800.00 to 4960.00m

In the meeting, issues related to bank protection and Anti Erosion Measure works for safety of Farakka Barrage discussed in detail. Following were the Recommendation of TAC-FBP meeting:-

1. It was recommended that FBP may execute the Anti-erosion measures for chainage 1140m to 3200m. As per



## Visit/Inspection of Projects/Sites by CWC Officials

### Damanganga (Ekdare)-Godavari Valley Link Project (DEG)

Under Design (NW&S) Unit CMDD (NW&S) is entrusted with the work of preparation of DPR for Daman Ganga (Val /Vagh)-Vaitarna-Godavari (Kadva-Dev) link (DVG) & Daman Ganga (Ekdare)- Godavari Link projects, Maharashtra. These projects consist of preparation of complete design & drawing of RCC dam and its appurtenant structures and writing of design chapters. The DVG link project is to transfer the surplus waters of Damanganga and Vaitarna river basins to cater the domestic & industrial water supply needs for Delhi-Mumbai industrial corridor in Sinnar Taluka and irrigation in drought prone Sinnar Taluka of Nasik district. In DVG link, there are four proposed R.C.C dams namely: 1) Nilmati on Val River 2) Met on Vagh River, a tributary of Damanganga 3) Koshimshet on Pinjal River and 4) Udhale on Gargai River in Vaitarna basin.

Out of the four dams, preparation of design Chapter and its relevant drawings of Met R.C.C dam is completed & issued to NWDA on dated 16.08.2022. The remaining three dams are under advance stage.

The proposed Damanganga (Ekdare)-Godavari Valley Link Project (DEG) envisages diversion of surplus water from Damanganga basin up to proposed Ekdare dam site to existing Gangapur reservoir in Godavari valley by lift in two



stages and then through a tunnel by gravity flow. The project is located near village Ekdare in Nasik district of Maharashtra.

Preparation of design Chapter and its relevant drawings of Ekdare R.C.C dam is completed & issued to NWDA on dated 28.11.2022.

Sh. Darpan Talwar, Director, HCD (NW&S) Dte, CWC and Sh. Kayum Mohammad, Director, CMDD(NW&S) Dte, CWC along with GSI officials visited the project site from 20th-23rd December, 2022. The team visited the important locations of dam i.e. dam axis, EDA and other important structures. The team observed that the selected site is suitable for seating the RCC dams and all the sites are free from shear zones, weak zones and faults.



### 3rd party Quality Control Inspection visits to Sathanur Dam, Tamil Nadu WRD

Shri Samir Kumar Shukla, Director, FE&SA Directorate participated on behalf of CPMU-DRIP in 3rd party Quality Control Inspection visits to Sathanur Dam, Tamil Nadu WRD under externally funded DRIP Phase-II scheme by CSMRS and CWC officials during 05th-07th December, 2022.



### Monitoring & QC Visit to the dams of UJVNL under DRIP Phase II

Joint team of CWC and CSMRS officials undertook Monitoring and Quality Control visit to Joshiyara and Maneri of UJVNL during December 15-17, 2022. The officials inspected various ongoing rehabilitation works at these dams and reviewed the progress.



Inspection of ongoing construction of cut-off drain and grouting work at Joshiyara barrage

### Visit of the Proposed Panchnad Barrage Site in Uttar Pradesh

Shri N.N. Rai, Director, Hyd(S) Dte and Sh Akshat Jain, Deputy Director, Hyd (DSR) Dte visited the proposed Panchnad Barrage Site in Uttar Pradesh from 19th Dec 2022 to 21st Dec 2022 with respect to the consultancy work for the preparation of Hydrology chapter of Detailed Project Report of proposed Panchnad Barrage project. The Panchnad barrage is proposed across River Yamuna in Auraiya district

#### The Dharoi Dam, Gujarat

Shri S.S. Bakshi, Director, DSM, CWC along with CSMRS team and Director (Mon), CWC, Gandhinagar visited the Dharoi

of Uttar Pradesh. It is downstream of confluence of five rivers viz. Yamuna, Chambal, Sindh, Pahuj and Kwari. The main objective of the project is to create an irrigation potential of about 40550 hectares in the Jalaun district of Uttar Pradesh located on the right Bank of River Yamuna. In addition to create irrigation project the barrage is going to provide water for drinking and other purposes.

Dam, Gujarat from Dec 15-17, 2022 for quality inspection & monitoring of ongoing works under DRIP – II.

### 2nd Meeting of Working Group of Upper Siang Multipurpose Storage Project

2nd meeting of working group of Upper Siang Multipurpose Storage Project (USMSP) was held on 14.12.2022 under the chairmanship of Shri Vivek Tripathi, Chief Engineer, Designs (E&NE), Central Water Commission (CWC). Officers from CWC, Central Electricity Authority (CEA), Central Soil and Materials Research Station (CSMRS) and National Hydroelectric Power Corporation (NHPC) attended the meeting physically while Officers from Geological Survey of India (GSI) participated in the meeting through virtual mode.

In the meeting, Progress of the preparation of Pre-Feasibility Report (PFR) of USMSP was discussed in detail. A site visit of CWC officers along with officials of GSI and NHPC was suggested to discuss the technical issues and monitor the progress of ongoing Geo-Physical Investigation. Proposed Drilling works are to be carried out at site by NHPC. In this regard, NHPC was requested to take up the pre-drilling works. Further Pros and Cons of all the dam site/axis proposed by NHPC were discussed.

### Weekly Report on the Status of Inspection of Dams

The weekly report on status of dam inspection carried out state wise and constitution/establishment of State Committee on Dam Safety & State Dam Safety Organisation is being submitted to DoWR, RD & GR, MoJS. As on 19.01.2023, it has been reported by the States that pre-monsoon inspections for about 3919 dams have been

carried out in the year 2022 and post-monsoon inspection for about 3592 dams have been carried out till date. As per the provisions of the Dam Safety Act (DSA), 2021, all the 31 States/UTs have constituted State Committee on Dam Safety (SCDS) and established State Dam Safety Organisation (SDSO).

### National Dam Safety Authority (NDSA) meeting

A meeting of National Dam Safety Authority (NDSA) was held under the chairmanship of Shri Navin Kumar, Chairman, NDSA and Member (D&R), CWC with SDSOs of seven states (Maharashtra, Madhya Pradesh, Odisha, Rajasthan, Gujarat, Chhattisgarh and Karnataka) having maximum number of specified dams (more than 200 in each state) and Regional

Directors of NDSA through virtual platform on 27.12.2022. Member (Technical), Member (Policy & Research), Member (Regulations) and representative of Member (Disaster and Resilience) also attended the meeting. The meeting was held to address the various issues under Dam Safety Act (DSA), 2021.



The following agenda which were discussed by the members:

1. Updating the List of Specified Dams

2. Engagement of Experts for NDSA

3. Status of Post Monsoon Inspections

Maintaining a record of major dam incidents and failures

## Activities under WP&P Wing

### Discussion on the modalities & issues pertaining to the 25th International Congress and 74th IEC of ICID

On 13.12.2022, Shri Kushvinder Vohra, Member (WP&P), CWC & Ex-officio Additional Secretary to Government of India chaired a discussion on various issues on organizing 25th congress such as Financial Modalities- Preliminary estimate of the event, Bank Account for the event, Committees for the smooth organization of the Event, Booking of the venue & Cultural/Technical Tours, Robust Transport Mechanism, Event Management etc.

India hosted the first and the sixth international congress of ICID in the year 1951 and 1966 respectively and Indian National Committee of Irrigation and Drainage (INCID), India housed at CWC is hosting the upcoming 25th congress marks the return of the prestigious ICID congress to India after a long gap of 57 years, which makes it a proud moment of India. The 25th ICID congress is scheduled to be held at Vishakhapatnam, AP from 1st – 8th Nov, 2023. The congress and other events in Vizag are expected to have around 1000+ participants from all around the globe. The scale and stature of the event requires robust planning keeping in mind the finest of the details. An organizing

committee, headed by Shri Kushvinder Vohra, Member (WP&P), CWC was constituted in April, 2022 for the overall coordination of the ICID events in India. The organizing committee has members from CWC, state govt. of Andhra Pradesh, ICID and Acharya N. G Ranga Agriculture University, Guntur (AP). Since the state Govt. of Andhra Pradesh is the co-organizer and sponsor for the event, Shri Shashi Bhushan Kumar, Principle Secretary (WRD), Govt. of Andhra Pradesh is leading the AP team in the organizing committee.

A dedicated website for the 25th ICID congress was launched in June 2022 and the thematic questions for the congress have also been finalized by ICID. The call of papers for the ICID congress was also announced.

Further, Member (WP&P) remarked that all concerned need to put in requisite efforts so that the event should be remembered as a great technical event with good hospitality and facilities. It would bring laurels to both INCID & GoI as well as GoAP.

### Meeting to review of progress made for activities undertaken by CWC reg. special projects and other issues

A meeting to review progress of special projects, along with associated issues, was held on 12.12.2022 under the Chairmanship of Special Secretary, DoWR, RD&GR, MoJS. The meeting was attended by officials from DoWR, RD & GR and CWC. During the meeting 2 projects viz. Shahpurkandi Dam Project and Renukaji Dam Projects were discussed. With regard to Shahpurkandi Dam Project, Special Secretary asked CWC to finalize the RCE of Shahpurkandi Dam Project by 15.01.2023, in all respect, to enable further action for its

approval at DoWR, RD & GR level. Further, for Renukaji Dam Project, Special Secretary, DoWR, RD& GR directed that a standing group of experts having technical competence in different aspects involved in the project including geology, may be formed to guide the design process. Further, CWC was assigned to take urgent steps to ensure that the group is formed by HPPCL without any delay, preferably in 7 days. Thereafter, the expert group may firm up its views on the design changes proposed by CWC by January, 2023.

### Briefing meeting regarding Polavaram Irrigation Project

Polavaram Irrigation Project (National Project) is being executed on River Godavari near Ramayyapeta village of Polavaram Mandal, West Godavari District, Andhra Pradesh. This multipurpose major project envisages construction of an earth cum rockfill (ECRF) dam along with saddle earth dams, a spillway, irrigation tunnels, navigation tunnel and channel and two main canals on both flanks to create ultimate irrigation potential of 4.36 Lakh Ha. The project also envisages generation of 960 MW of hydropower, drinking water supply to 540 villages and diversion of 84.7 thousand million cubic feet (TMC) of water (including losses) to Krishna basin.

A briefing meeting for Hon'ble Minister (Jal Shakti) in reference to Hon'ble Supreme Court order dated 06.09.2022 regarding Polavaram Irrigation Project was held on 09.12.2022. The meeting was attended by officers from DoWR, RD& GR and CWC. During the meeting, Hon'ble Minister (Jal Shakti) directed that CWC shall submit consolidated replies on technical notes submitted by the States of Chhattisgarh, Odisha and Telangana, at the earliest. Further, within 10 days of issue of consolidated replies to these States, CWC may convene a meeting for further discussions to seek convergence of views between the States.



## Field visit to discuss PFR of 2nd Ravi-Beas Link Project

Government of India approved a scheme of National Projects for implementation during XI Plan with a view to expedite completion of identified National Projects for the benefit of the people. National projects are provided financial assistance for cost of irrigation & drinking water component in the form of central grant.

2nd Ravi Beas Link Project is at Pre-Feasibility Report (PFR) stage. Feasibility is being explored to harness water flowing across border through link between Ravi and Beas/Sutlej.

A field visit to discuss PFR of 2nd Ravi Beas Link Project was done under the Chairmanship of Member (WP&P), CWC along with the officials from CWC (HQ), CWC (Chandigarh), WRD (Punjab) and Concerned Organizations from 20.12.2022 to 22.12.2022.

During the field visit, Member (WP&P), CWC visited various sites of proposed Second Ravi Beas Link Project (National Project) and held briefing meetings with the officials from WRD Punjab and concerned organizations.

Member (WP&P), CWC directed that WRD, Punjab may submit a report on the proposed alignment for 2nd Ravi-Beas Link project as per WRD, GoAP requirement and as per requirement of other concerned organization may be

## Water Sharing Uttar Pradesh & Uttarakhand

A meeting was held on 06.12.2022 at CWC, New Delhi under the Chairmanship of Shri Kushvinder Vohra, Member (WP&P), CWC & Ex-officio Additional Secretary to Govt. and Chairman, Upper Yamuna River Board with the officers of the Irrigation & Water Resources Department, Uttar Pradesh; Irrigation Department, Uttarakhand, NMCG, CWC and THDC India Limited regarding maintaining e-flow in river Yamuna downstream of Okhla up to Agra.

Officials from State of Uttar Pradesh, Uttarakhand and THDC attended the meeting through VC. Member (WP&P) and Chairman, UYRB enquired about the status of data to be



submitted to CWC in 15 days duly highlighting the land available and likely issues like land acquisition, etc based on the revised water-availability post construction of Ujh MPP.

received/submitted by Uttar Pradesh and THDC as decided in the meeting held on 09.11.2022.

After detailed discussions on the issue, the following action points emerged:

- (i) Irrigation & Water Resources Department, Govt. of U.P. will furnish UYRB office the data as regards actual diverted flows in the Upper Ganga canal as well as released in river on Ten daily basis in MCM for the last 10 years for the period from 1st November to 31st May.
- ii) Central Water Commission to provide the sites data of River Ganga d/s of Bhimgoda barrage to UYRB office for the aforementioned duration.

## Activities under RM Wing

### Meeting to discuss the India-Nepal Pancheshwar Multipurpose Project (PMP)

A "Treaty concerning the Integrated Development of the Mahakali River, including Sarada Barrage, Tanakpur Barrage and Pancheshwar Project" was signed between India and Nepal in February 1996. Under this Treaty, both countries have agreed to implement the Pancheshwar Multi-purpose Project (PMP) as an integrated project. The project is discussed regularly in the bilateral mechanisms existing between the two countries. Last year, the matter related to early finalization of the DPR for the Project was discussed in the 9th Meeting of India-Nepal Joint Committee on Water Resources (JCWR) held on 23.09.2022 in Kathmandu, Nepal.

Further to above, to take forward the matter, a meeting was held on 23.12.2022 under the chairmanship of Secretary (DoWR, RD&GR) wherein the officers from MEA, DOWR, RD & GR, CWC, CEA, NHPC and WAPCOS participated.

In the meeting, Secretary (DoWR, RD&GR) emphasized that the impasse in the process of implementation of the project should be broken and effort in the direction of finalization of DPR by resolving the pending issues may be carried out. It was directed to carry out the water availability studies at Pancheshwar Dam and in the intermediate catchment by considering latest available data. The directions were also



given for revision of estimated cost and power potential studies for the project. Along with other discussions, the matter related to exploring the option of building up additional projects (storage/run-off) on the tributaries of Mahakali/Sharda in the Indian catchment including their implication on envisaged PMP was also discussed. A group of experts comprising of Chief Engineer, YBO, CWC; Chief Engineer, CEA and Executive Director, WAPCOS was

## 2nd meeting of Project Implementation Committee (PIC) for NHP

2nd meeting of Project Implementation Committee (PIC) was held on 06.12.2022 under the Chairmanship of Member (RM), CWC and Project Coordinator (NHP) to review the NHP activities undertaken by CWC as well as to review the execution of the action plan as committed by each concerned organization of CWC in the previous meeting of PIC as well as during the meeting under Chief Engineer, P&DO & Nodal Officer, NHP-CWC and to expedite the action. During the meeting, the detailed discussions were held on the many activities under NHP viz. Basin wise EHP model for

entrusted to prepare a report in this regard.

From CWC, the above meeting dated 23.12.2022 was attended by Shri J. Chandrashekhar Iyer, Chairman, CWC, Shri P. M. Scott, Member(RM), CWC, Shri S. K. Sibal, Chief Engineer, Designs(N&W), CWC, Shri G.K. Agarwal, Chief Engineer, Yamuna Basin Organization, CWC and other officers.

medium & long term forecast covering the Yamuna, Narmada, and Cauvery, Physical Based Mathematical Modelling for Estimation of Sediment Rate and Sediment Transport in Seven River Basin, Early Flood Warning System including inundation forecast in Ganga Basin, Integrated Reservoir Operations in Ganga Basin, Study the issue of floods and siltation in river Ganga due to Farakka Barrage in the State of Bihar, Reservoir Sedimentation and bathymetric Survey, RTDAS in Arunachal Pradesh, RTDAS in Narmada Control Authority, Non-Contact Flow Measurement System (Velocity Radar System).

## Flood Situation in the country -December 2022

Regular Flood Forecasting Activity commenced on 01.05.2022 in Brahmaputra and Barak and Jhelum basins. During the period from 1st May to 31st December 2022, 11558 flood forecasts (6779 Level and 4779 Inflow) were issued, out of which 10845 (6476 Level and 4369 Inflow) forecasts were within limit of accuracy with a percentage accuracy of 93.83%. One Red Bulletin (for Extreme flood situation) was issued and 3 nos. of Orange Bulletin (for severe flood situation) were issued in the month of December 2022 from Central Flood Control Room.

### Summary of Flood Situation during 01.05.2022 to 31.12.2022.

#### Extreme Flood Situation in FF Stations:

Eleven FF station observed Extreme Flood Situation.

Sl. No.	State	District	River	Station	Period	
					From	To
1.	Assam	Nagaon	Kopili	Kampur	15/05/2022	21/05/2022
					16/06/2022	22/06/2022
2.	Bihar	Kishanganj	Mahananda	Taibpur	29/06/2022	29/06/2022
3.		Supaul	Kosi	Basua	02/08/2022	02/08/2022
4.		Siwan	Ghagra	Darauli	14/10/2022	16/10/2022
5.	Telangana	Bhupalpally	Godavari	Kaleswaram	14/07/2022	15/07/2022
6.		Kumarambheem	Wardha	Sirpur(T)	14/07/2022	17/07/2022
7.	Andhra Pradesh	Alluri Sitharama raju	Sabri	Chinturu	15/07/2022	19/07/2022
8.	Rajasthan	Karauli	Chambal	Manderial	25/08/2022	25/08/2022
9.		Dholpur	Chambal	Dholpur	25/08/2022	26/08/2022
10.	Uttar Pradesh	Balrampur	Rapti	Balrampur	08/10/2022	13/10/2022
11.		Siddharthnagar	Rapti	Bansi	14/10/2022	19/10/2022

81 flood monitoring station observed Extreme flood situation.

#### Severe Flood Situation for FF Stations

95 FF Stations observed Severe Flood Situation in the States of Assam, Bihar, Jammu & Kashmir, West Bengal, Tamilnadu, Andhra Pradesh, Telangana, Chhattisgarh,

Odisha, Uttar Pradesh, Maharashtra, Jharkhand, Madhya Pradesh, Uttarakhand, Rajasthan, NCT Delhi and Gujarat.

#### Above Normal Flood Situation

46 FF Stations in Assam, Bihar, Uttar Pradesh, Tripura, West Bengal, Uttarakhand, Maharashtra, Andhra Pradesh, Tamilnadu, Kerala, Odisha, Telangana, Rajasthan and Karnataka observed Above Normal Flood Situation.

#### Reservoirs having Inflow above threshold limit

89 reservoir received inflows above their threshold limit in Andhra Pradesh, Chhattisgarh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamilnadu, Telangana, Jharkhand, Kerala, West Bengal, Uttarakhand and Uttar Pradesh.





## Financial Progress of Schemes as on 31.12.2022

(Amount rounded-off in ₹ Crore & Specific to CWC's component)

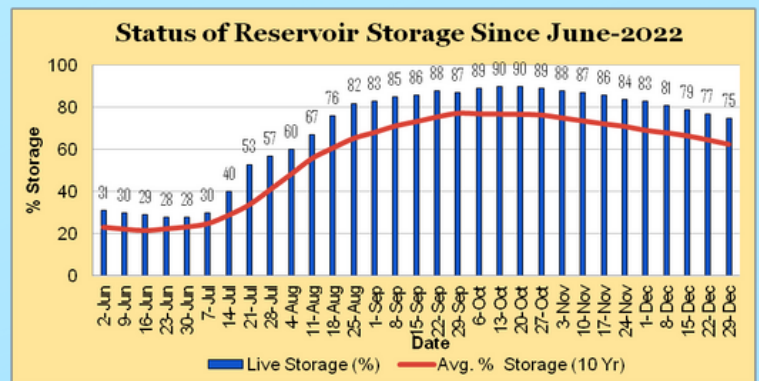
Sl. No.	Scheme/Component Name	BE 2022-23	Expenditure	Expenditure (in %)
1.	Development of Water Resources information System (DWRIS)	185.00	119.246	64.46%
2.	Investigation of Water Resources Development Schemes (IWRD)	08.000	6.9544	86.93%
3.	Flood Management & Border Areas Programme (FMBAP)	23.203	6.9972	30.16%
4.	Direction & Administration(D&A)-Major Works and OE(SAP)	11.15	4.7532	42.63%
5.	National Hydrology Project	44.37 (RE)	11.994	27.17%
6.	Dam Rehabilitation and Improvement Project (DRIP) Phase-II	100.00	3.64	3.64%

## Other Activities of CWC

### Reservoir Monitoring

CWC is monitoring live storage status of 143 reservoirs of the country on weekly basis and is issuing weekly bulletin on every Thursday. Out of these reservoirs, 46 reservoirs have hydropower benefit with installed capacity of more than 60 MW. The total live storage capacity of these 143 reservoirs is 177.464 BCM which is about 68.83% of the live storage capacity of 257.812 BCM which is estimated to have been created in the country.

As per reservoir storage bulletin dated 29.12.2022, the total live storage available in these reservoirs is 132.232 BCM which is 75% of total live storage capacity of these reservoirs. However, last year the total live storage available in these reservoirs for the corresponding period was 129.725 BCM and the average of last 10 years live storage



was 110.841 BCM. Thus, the live storage available in 143 reservoirs as per the bulletin dated 29.12.2022 is 102% of the live storage of corresponding period of last year and 119% of storage of average of last ten years.

### Data Corner- Average Decadal Flow in Major Rivers in the country for the period from 2001 to 2021 (in billion cubic meter)

S. No.	Name of River	Name of Last Discharge Observation Station	Name of State	Average Decadal Flow 2001 to 2011	Average Decadal Flow 2011 to 2021
1	Ganga	Farakka	West Bengal	315.423	310.062
2	Brahmaputra	Panchratna	Assam	483.541	470.454
3	Teesta	Domohani	West Bengal	21.318	24.094
4	Krishna	Wadenpally	Andhra Pradesh	18.764	12.993
5	Godavari	Polavaram	Andhra Pradesh	80.827	86.219
6	Mahanadi	Tikrapara	Odisha	50.489	51.404
7	Cauvery	Musiri	Tamil Nadu	6.969	4.352
8	Brahmani	Jenapur	Odisha	16.304	16.493
9	Subernrekha	Ghatshila	Jharkhand	6.686	7.348
10	Narmada	Garudeshwar	Gujarat	18.953	23.337
11	Baitarni	Anandpur	Odisha	4.352	10.470
12	Mahi	Khanpur	Gujarat	4.541	5.456
13	Sabarmati	Voutha	Gujarat	2.649	2.144

Note: Year has been taken as water year, being from June

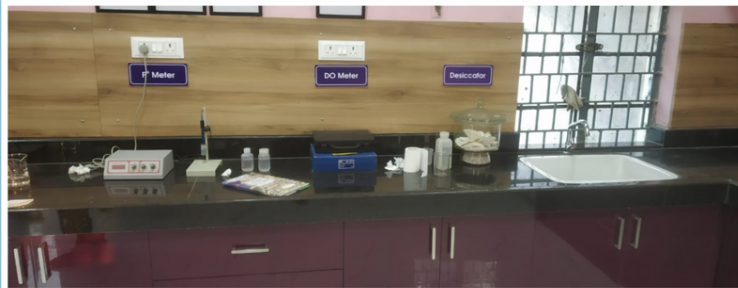


## Water Sector-News

- Rs. 200-cr project to resolve Faridabad's water woes (The Tribune, 03.12.2022)
- Historic 1st, AP & T settle on Srisaillam (The Times of India, 05.12.2022)
- 30 river linking component identified 16 under peninsular, 14 under Himalayan (Millennium Post, 09.12.2022)
- Pennaiyar water dispute: Centre unlikely to form tribunal (Deccan Herald, 12.12.2022)
- SC gives Centre three months to form T.N.-Karnataka water disputes tribunal (The Hindu, 15.12.2022)

- UN recognizes Ganges project as initiative to restore natural world (Deccan Herald, 15.12.2022)
- Godavari-Krishna-Cauvery link: change terminal point of project, asserts T.N. (The Hindu, 18.12.2022)
- Clean Ganga Mission approves projects worth Rs. 2,700 crore for 4 states (The Times of India, 27.12.2022)
- NBT-India and NMCG's Ganga Pustak Parikrama completes its 81-day-long journey (The Hindu, 29.12.2022)
- Govt spent Rs. 13,000 cr on cleaning Ganga since '14, UP got highest outlay among states (The Indian Express, 31.12.2022)

## Gallery



A Renovated Water Quality Lab (Level-I) of CWC at Water Quality Monitoring Station Bamni (GDSQ) on river Wardha under Wainganga Division, MCO, CWC, Nagpur, carrying out 6 tests on river water quality: Temperature, Colour, Odour, pH, Electrical Conductivity and Dissolved Oxygen.



मुख्य अभियंता, न.बे.स., अधीक्षण अभियंता (सम.), अधिशासी अभियंता (नर्मदा मंडल), के.ज.आ., भोपाल द्वारा मध्य नर्मदा उपमंडल-I, नर्मदापुरम के अधीनस्थ स्थल नर्मदापुरम, स्थल सांडिया, स्थल बरमान, स्थल बेल्खेडी एवं स्थल गाडरवारा पर डिस्चार्ज लिया गया एवं निरीक्षण किया गया



माही एवं तापी बेसिन संगठन, केन्द्रीय जल आयोग गांधीनगर में दिनांक 23-12-2022 को हिन्दी कार्यशाला का आयोजन श्री द. सो. चासकर, मुख्य अभियंता की अध्यक्षता में किया गया। कार्यशाला में, "व्यक्तिगत वित्तीय प्रबंधन (वेतन पर आयकर, आयकर में बचत, भविष्य की वित्तीय योजना आदि)" एवं "संसदीय राजभाषा समिति के निरीक्षण के अनुभव" इन विषयों पर प्रस्तुतिकरण तथा विस्तृत चर्चा हुई।



Sh. Gajendra Singh Shekhawat, Hon'ble Minister of Jal Shakti, Govt. of India visited CWC (HQ.), at Sewa Bhawan, R. K. Puram, New Delhi and interacted with Chairman, Member(WP&P), Member(D&R), Member(RM), Chief Engineer(HRM) and other officers on 19.12.2022.





Shri Harish Umbarje, Director and Shri Karan Raghuvanshi, Deputy Director Monitoring Dte., MCO, CWC Nagpur visited various components of Gosikhurd (National-Major) Irrigation Project viz Right Bank Canal, Left Bank Canal, Ghodazari Branch Canal, Mokhabardi LIS, Akot LIS, Nerla LIS and their command for monitoring the physical and financial progress of the project components included under PMKSY-AIBP (National Projects) & CADWM on 15-12-22 to 16-12-22.



On 15.12.2022, Executive Engineer, Upper Krishna Division arranged a demonstration of RTK GPS to Junior Engineers who are in ITP @NWA Pune. Er Sathya, SDE, UBSD & Junior Engineer explained the working procedure.



## History- The Chambal Cascade for Irrigation & Power

The Chambal Valley Development projects, planned for execution in three stages for the prosperity of Rajasthan and Madhya Pradesh States, which are fulfilling the hopes and aspirations of millions of people by enabling them to bring under irrigation 0.57 million ha (1.4 million acre) of land to step up agricultural production and to utilize the 230 MW of cheap hydel power developing new, heavy, medium and small scale industries and thus raise the standard of living of the people of the valley.

The idea of utilizing the vast potential of the river Chambal both for irrigation and power purposes was first mooted in 1943, but the actual work on the first stage of the Chambal Valley Development was started only from the year 1953-54.

The Chambal Valley development was a joint venture of the two States of Rajasthan and Madhya Pradesh (originally Madhya Bharat). These States can rightly be proud of the achievements under the Chambal Valley Development schemes in the short span of a decade and a half. This had only become possible because of the exemplary inter-State cooperation in arriving at speedy agreements from the very outset to share equally the benefits and costs of these projects.

### The Chambal River

The Chambal is one of the few rivers flowing from south to north and it drains large parts of south-eastern Rajasthan and north-western Madhya Pradesh into the river Yamuna at Etawah. It takes its origin on the northern slopes of the Vindhya ranges near Mhow in Madhya Pradesh and runs for 362.25 km (225 mile) in Madhya Pradesh before entering Rajasthan at Chaurasigarh about 96.6 km (60 mile) upstream of Kotah city. While flowing in Madhya Pradesh it is joined by a number of tributaries like the Retam, Sivani, Chhotikali Sindh, Shipra and Gambir. The river first flows through the fertile Malwa plateau and then enter a deep gorge at Chaurasigarh. This gorge extends for about 96.6 km (60 mile) right up to Kotah city. The river then flows for 305.9 km (190 mile) in Rajasthan where it is joined by a few more tributaries such as Kalisindh, Parvati, Mej and Banas. Thereafter the river flows through plains and ravines and enters Uttar Pradesh near Dholpur. The total length of the Chambal is 965 km (600 mile).

The river bed drops by 624.84 m (2050 ft) between its source and Kotah city where it enters the plains. Of this drop, 121.92 m (400 ft) occurs in the gorge portion only, i.e. between Chaurasigarh and Kotah city over a distance of about 96.6 km (60 mile). This gorge was the only reach where masonry and concrete dams could be located. The dams had to be so located that the maximum benefit of the 121.92 m (400 ft) drop could be reaped for generation of

CHAMBAL VALLEY PROJECTS (Features at a Glance)				
	Gandhisagar Dam	Ranapratap Sagar Dam	Jawahar Sagar Dam	Kotah Barrage
	I STAGE	II STAGE	III STAGE	I STAGE
LOCATION :	A dam across the Chambal river about 8 km (5 mile) downstream of Chaurasigarh fort in Mandsaur district in Madhya Pradesh	A dam across the Chambal river about 51.5 km (32 mile) upstream of Kotah Barrage ad 56.33 km (35 mile) downstream of Gandhi Sagar Dam	A dam across the Chambal river 29 km (18 mile) upstream of Kotah city in Bundi district in Rajasthan	A barrage across the Chambal river 0.8 km (0.5 mile) upstream of Kotah city in Rajasthan
TYPE	Masonry Gravity Dam	Masonry Gravity Dam	Concrete Gravity Dam	Earthen Bund in river portion and masonry spillway on the left flank
LENGTH	514 m (1 685 ft)	1143 m (3 750 ft)	335.98 m (1 102 ft)	551.83 m (1 810 ft)
HEIGHT	63.7 m (209 ft)	53.96 m (177 ft)	44.81 m (147 ft)	39.02 m (128 ft)
STORAGE CAPACITY				
Gross Storage	7746 million cum	2900 million cum	67.8 million cum	98.7 million cum
Live Storage	6920 million cum	1567 million cum	116.04 million cum	--
INSTALLED CAPACITY	4 unit of 23 MW and one unit of 27 MW	4 units of 43 MW	3 units of 33 MW	--
CANAL				
Right Main Canal		--	--	376.6 km (234 mile)
Left Main Canal & Main Branches		--	--	169.05 km (1'05 mile)
TOTAL COST (Rs. In lakh)	2355	2784	1842	444
BENEFITS				
Irrigation	4.45 lakh ha (11 lakh acre)	1.21 lakh ha (3 lakh acre)	--	Right and Left main Canals take off to supply water for 5.67 lakh ha (14 lakh acre)
Power	80 MW At 60 percent load factor	90 MW At 60 percent load factor	60 000 KW At 60 percent load factor	

power. After a few years of investigation the development of the river was planned as a joint venture between Madhya Pradesh and Rajasthan on the basis of equal sharing of costs and benefits.

The Chambal Valley Development scheme was phased for execution in three stages in the Second, Third and Fourth Five Year Plans due to restricted financial resources available.

### Stage I

This stage consists of a masonry gravity dam, called the Gandhi Sagar Dam, at the border of Madhya Pradesh and Rajasthan, and a Barrage near Kotah city along with the Right and Left Bank Main Canals for irrigating large areas in Rajasthan and Madhya Pradesh States.

Gandhi Sagar is 63.70 m (209 ft) high masonry gravity dam with a gross storage capacity of 7745.94 million cu m (6.28 million acre ft). At this dam a head of 47.24 m (155 ft) is made available for power generation. Five generators, four of 23 000 KW and one of 27 000 KW capacity are installed in the Gandhi Sagar Power Station.



The Kotah Barrage located near Kotah city is the last structure in this cascade development pattern of the Chambal Valley. Its main function is to raise the water level for feeding the Canals constructed on the right and left banks of the river to irrigate 5.67 lakh ha (14 lakh acre) of land in both Rajasthan and Madhya Pradesh.

The Right Main Canal is 363.86 km (226 mile) long and feeds areas both in Rajasthan and Madhya Pradesh. It has a designed capacity of 188.46 cu m (6 656 cu ft)/sec at its head.

The Left Main Canal feeds areas exclusively in Rajasthan. After running for about 3.22 km (two mile), it splits into two branches with a total length of about 169.05 km (105 mile). The Canal is designed for 42.47 cu m (1 500 cu ft)/sec at its head.

In Rajasthan 1.61 lakh ha (4 lakh acre) of land have already been brought under wet cultivation while 1.01 lakh ha (2.5 lakh acre) have been under irrigation in Madhya Pradesh.

### Stage II

This consists of a 53.95 m (177 ft) high masonry dam at Rawatbhata in Chittor district, located about 48.3 km (30 mile) downstream of Gandhi Sagar and 48.3 km (30 mile) upstream of Kotah Barrage. This dam has been named after Maharana Pratap as a tribute to the valour of this Rajput king who ruled over Mewar State.

The useable storage capacity of this reservoir is 1 566.46 million cu m (1.27 million acre ft), while the gross storage is 2 898.56 million cu m (2.35 million acre ft). This storage provides additional potential for 1.21 lakh ha (3 lakh acre) under the canal system constructed under Stage I, raising the total irrigation potential from 4.45 lakh ha (11 lakh acre) to 5.67 lakh ha (14 lakh acre) between Rajasthan and Madhya Pradesh.

The Rana Pratap Sagar power station is located on the left bank just at the toe of the dam. Four generating units of 43 000 KW each are installed here.

Most of the civil engineering works including the dam, tunnel and power house were completed in June 1967 and some water was impounded in the reservoir in the 1967 monsoon. The seventeen crest gates, 18.29 m x 8.53 m (60 ft x 28 ft), of the dam have also been installed and the reservoir can be filled up to its full designed capacity.

The first out of the four 43 000 KW generating units was installed in February 1968 and the second unit in July 1968. The third in December 1968 and fourth unit was installed in May 1969.

### Stage III

In the last stage of development a 44.8 m (147 ft) high concrete dam, the Jawahar Sagar Dam, is being constructed about 25.76 km (16 mile) upstream of Kotah Barrage to create a head for power generation only. There is no significant storage capacity in this reservoir. Three generating units of 33 000 KW each will be installed at this Station.

Work on the Jawahar Sagar Dam, Power House and the Tail Race Tunnel of the project is now in progress.

All the electrical and hydraulic equipment to be installed at the station have already been received from Canada. The first unit is likely to be commissioned in 1971 and the project works are scheduled to be completed in 1971-72.

The three Stages of the Chambal Valley Development have been so planned that benefits start accruing immediately after completion of each Stage.

### Inter-State Shares

The apportionment of cost between irrigation and power components of this multipurpose project as also the shares of the two participating States.

### Benefits

#### Irrigation

On full development of the area envisaged under the Project, irrigation would be available for about 2.84 lakh ha (7 lakh acre) in each of the participating States of Rajasthan and Madhya Pradesh. With the total expenditure of Rs. 1 927.75 lakh under Rajasthan irrigation, the cost of irrigation per acre of the Culturable Command Area works out to about Rs. 275. This cost is likely to increase slightly because of some capital expenditure to be incurred for development of lift irrigation in an area of about 0.40 lakh ha (one lakh acre).

#### Power

Total investment of Rajasthan for Power generation under Stages I, II and III is Rs. 2 689.75 lakh.

The installed capacity in the three power stations is 390 000 KW in which Rajasthan is a partner to the extent of 50 percent. The cost of power on the basis of installed capacity therefore works out to Rs. 1 378 per KW.

It has been assessed that the annual generation from these three stations would be about 1 209 million KWh corresponding to 138 000 KW firm at 100 percent load factor or 230 000 KW at 60 percent load factor.

The projects under Chambal Valley Development are thus providing both irrigation and power benefits to the participating States at reasonably low cost.

(Source: Bhagirath October 1970)



## Central Water Commission

An attached office of Dept. of Water Resources,  
River Development and Ganga Rejuvenation,  
Ministry of Jal Shakti, Govt. of India

### Editorial Board

- Dr. B.R.K. Pillai, CE(HRM)- Editor-in-Chief
- Shri Yogesh Paithankar, CE(PAO)- Member
- Shri Abhay Kumar, Director(RM-C)- Member
- Shri Bhupinder Singh, Director(TC)- Member

### Designed & Published by

Water Systems Engineering Directorate  
Central Water Commission

- Shri Sunil Kumar-II, Director(WP&P-C)- Member
- Shri Anant Kumar Gupta, Director(WSE)- Member
- Shri A. K. Madhok, DD(WSE)- Member
- Shri R. K. Sharma, DD(D&R-Coordination)- Member
- Shri Kailash K. Lakhe, DD(WSE)- Member-Secretary

2nd Floor(South), Sewa Bhawan, R K Puram, New Delhi-110 066  
E-mail: media-cwc@gov.in

