

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, PRINCIPAL
BENCH, NEW DELHI

ORIGINAL APPLICATION NO. 635/2024

IN THE MATTER OF:

News Item titled "2023 Delhi floods How govt. did not see Delhi's worst flood coming - even 24 hours before it" appearing in The Hindu dated 27.04.2024

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Respondent No.1 &2

Through



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Dt. 01/07/25

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**ADDITIONAL REPLY BY WAY OF AFFIDAVIT ON BEHALF OF
RESPONDENT NO. 1 CENTRAL WATER COMMISSION (CWC) &
RESPONDENT NO.2 (MINISTRY OF JAL SHAKTI).**

Most Respectfully Showeth:

I, Nagendra Kumar Singh ,S/o Late Shri Narayan Singh Rajput, Aged About 53 years' Working as Executive Engineer in Central Water Commission having office at New Delhi, the deponent herein do hereby solemnly affirm and state on oath as under:

1. That the Competent Authority has authorized me to file the present reply on behalf of Respondent No. 1 (CWC) and Respondent No. 2 (Ministry of Jal Shakti, Government of India).
2. That I have perused the contents of the above captioned O.A. and gone through the official records maintained by our office in the present case and competent to file the present reply.
3. That the instant Original Application No. 635 / 2024 has been registered *suo-moto* on the basis of the news item titled "2023 Delhi floods How govt.

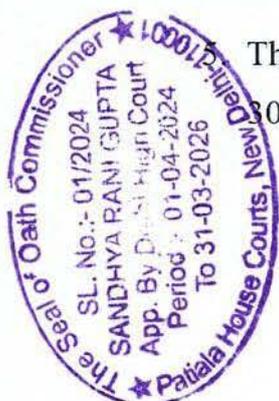


did not see Delhi's worst flood coming even 24 hours before it" appearing in The Hindu dated 27.04.2024.

4. That the Hon'ble Tribunal observed vide its order dated 30.05.2024 that:-

"That the news item highlighted through the news article about the alleged failure of Central Water Commission (CWC) and Delhi Government to correctly predict the rising water levels of Yamuna River during 2023 Delhi flood. As per the news item, in July 2023, when Delhi CM assured the citizens of Delhi that there is no possibility of Yamuna crossing the danger mark relying on CWC's predictions, he was proved wrong as Yamuna crossed the danger mark the same evening. The article states that the Central Water Commission, the agency which monitors floods in India, shows that not only did it not predict that Delhi might see the worst flood in its history, but the agency, kept saying that the water level will "remain steady", even as it continued to rise through July 12 to reach the highest ever level on July 13. The forecasts of the CWC were being used by the officials of the Delhi government to take decisions and it affected decision making. The news item states that on July 12, as the water level of Yamuna kept rising, the CWC issued a forecast, that the level of Yamuna at the Old Railway Bridge (ORB) in Delhi, is expected to reach 207.1 metres between 11 a.m. to 1 p.m. July 12 and likely to "remain steady" thereafter. (The level at ORB is considered as Delhi's official water level). But not only the river attained the level of 207.14 by 6 a.m., it kept rising after it. The news item claims that lack of accurate predictions of water level of rivers have many times led to improper management of dams / barrages, leading to floods in downstream areas, which could have been avoided."

That it is submitted that the Hon'ble Tribunal vide its order dated 30.05.2024 impleaded Respondent No. 1 as Central Ground Water Authority



and Respondent No. 2 as Ministry of Jal Shakti and issued notice and directed to file comprehensive response.

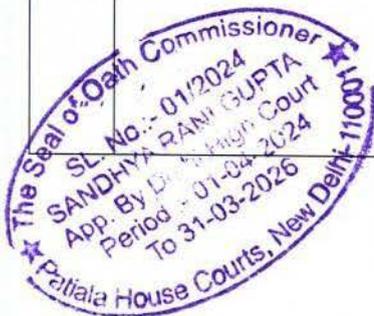
6. That subsequently, the Hon'ble Tribunal vide its order dated 17.09.2024 amended the memo of party and substituted answering respondent as Respondent No. 1 i.e. Central Water Commission.
7. That the answering respondent has filed its reply by way of affidavit dated 04.01.2025 before this Hon'ble Tribunal annexing therewith a copy of report on 'Joint Flood Management Study of River Yamuna for its reach between Hathnikund and Okhla Barrage' submitted to Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation by Central Water Commission. However, Hon'ble this Tribunal observed that the reply filed by the answering respondent does not show as to how Respondent 1 and 2 proposed to manage the causes and situation of excessive flooding in the area and also with regard to recommendations made in the report and directed to file additional reply furnishing details of the steps to be taken, timeline and the agency who will execute the work.
8. That it is submitted that the Joint Flood Management Committee (JFMC) committed for study of the reach of river Yamuna between Hathnikund and Okhla Barrage, based on the studies, deliberations in the meetings of committee, site inspections of barrages, model studies, collection & analysis of data led to some conclusions and recommendations for effective flood management.
9. That in this regard, the recommendation wise, reply / response / action taken report received from Irrigation & Flood Control Department (I&FCD), Govt. of NCT of Delhi vide email dated 24-02-2025 and Govt. of Uttar Pradesh email dated 22-04-2025 is as under:



S. No.	Recommendations of Joint Flood Management Committee (JFMC)	Concerned Agency	Reply/Response / Action Taken report of I&FC Department	Time Lines
9.1	<p>Catchment Rainfall Analysis.</p> <p>The analysis of catchment representative 5-day cumulative rainfall, shows that the catchment representative rainfall at Old Delhi Railway Bridge in 2023 is 23.8% more in comparison to rainfall of year 1978.</p> <p>From the Stage Hydrograph analysis at various Hydrological Observations (HO) sites on river Yamuna as well as from rainfall analysis in Yamuna catchment, it can be concluded that rainfall during 9th July, to 13th July, 2023 period was One of the major causative factor for extreme flooding in Delhi and other locations along the reach of river Yamuna.</p>	-----	It is part of analysis, to find the cause of 2023 flood.	N/A
9.2	<p>Flood Frequency Analysis.</p> <p>Flood frequency analysis of various return period at Hathnikund Barrage, Old Delhi Railway Bridges and Okhla Barrage has been carried out.</p>	-----	It is part of model study and Data of ORB has been used in	N/A



<p>It is concluded that, as Hathnikund discharge values have already been reconciled and discharge at Old Delhi Railway Bridge are observed, hence both are considered consistent. Further, discharge values at Okhla are to be reconciled by project authority. However, as far as the analysis of flood in Yamuna in Delhi is concerned, the discharge values at Old Delhi Railway Bridge are most important which are consistent.</p>	<p>UP Irrigation Deptt. for reconciliation of discharge values at Okhla Barrage.</p>	<p>model study. Executive Engineer, Head Works Division, Agra Canal, Okhla vide letter dated 22-04-2025 has provided following inputs in respect of Okhla Barrage: The gate discharge table at Okhla Barrage under the control of Irrigation and Water Resources Department, Uttar Pradesh has been made in accordance with the Indian Standard Code prevailing by the Indian Institute of Technology, New Delhi.</p>	
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9.3	<p>Discharge carrying capacity of River Yamuna up to Delhi Border.</p> <p>With an objective to find out discharge carrying capacity of river Yamuna, 1D water profile simulation studies were carried out in HEC-RAS, based on the water profile simulations using surveyed cross sections of river Yamuna from Hathnikund barrage up to Delhi-Haryana border for a reach of about 202km has been carried out by CWC.</p> <p>This study is based on cross-sectional data provided by the Irrigation & Water Resource Department, Government of Haryana. As limited data of cross-section has been provided, the result looks like erratic. Therefore, HEC RAS Model used for the study has been shared with the Irrigation and Water Resources Department, Government of Haryana, for refinement as per proper cross-sections and validation to arrive at realistic carrying capacity in various reaches.</p>	Haryana I&WR Department	Action to be taken by Haryana I&WR Department.	Timelines to be given by Haryana I&WR Department.
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	<p>The carrying capacity of river Yamuna in various divisions spread across 202 Km varies from 1000 cumecs (in Karnal Division between RD 6976m to 15979m) to 30000 cumec (Delhi Division between RD 500m to 3500m) reach between RD0 to RD 3500m of Delhi division. However, at some places embankments has been provided to protect certain areas. Further, spilling beyond banks also happen during heavy flood and managed by Govt. of Haryana as per their procedures.</p>			
9.4	<p>Monsoon Peak Discharge and Submergence Area in Delhi.</p> <p>The total and net submergence areas has been calculated for various return periods floods.</p>	-----	<p>It is part of analysis. No specific actions recommended in this para.</p>	N/A
9.5	<p>Embankment Overtopping.</p> <p>The 2D Model studies was simulated with different return period floods, which shows that during floods of 2023 (with discharge 6999 cumec) overtopping at Nili Chhatri area is observed and the same was verified</p>	<p>I&FCD Delhi (for L/B Chauhan Patti to Chilla</p>	<p>Short-Term measures as listed at page-96 to 119 has already been taken.</p>	<p>Already implemented. ➤ Timelines of receiving</p>



<p>on ground by the I&FCD during July, 2023 floods. Max water level of 208.66m was reached at Delhi Railway Bridge which is above the existing bund level (at that time) in that area. No overtopping at any other location shown by the model which has also been confirmed by Government of Uttar Pradesh and I&FCD, Delhi. However, for floods of magnitude 1 in 50 years and above, the Nili Chhatri Area gets flooded therefore, it is recommended to adopt appropriate structural measures to avoid flooding in this area.</p>	<p>regulator , for R/B from Palla to Jaitpur).</p>	<p>Work of, “Scientific assessment of River Yamuna by application of hybrid model”, has been assigned to CWPRS Pune. Long terms measures shall be taken after receipt of CWPRS report.</p>	<p>of CWPRS study report- August 2025. Circulation to stakeholder for comments/ suggestion - September 2025. Approval by the Oversight Committee – October 2025. Implementati on timelines shall depend on the nature and quantum of the work recommende d in CWPRS</p>
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				report.
		<p>UP Irrigation Deptt. (U/S of Chauhan Patti L/B)</p>	<p>Executive Engineer, Head Works Division, Agra Canal, Okhla vide letter dated 22-04-2025 has provided following inputs in respect of Okhla Barrage: According to Table No. 5.6 of the report of Central Water Commission, regarding the difference in the elevation of embankment and Center Line WL, it is to be informed that Alipur Embankment from Chainage</p>	



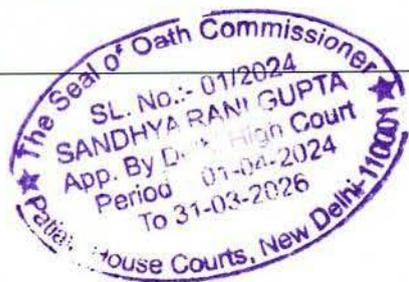
		<p>Km 5.500 to Km 15.300 of Table No. 5.6, 2 Km upstream of Wazirabad falls within the scope of this section. In between, no overtopping is visible. In view of the possible flood, a parapet wall has been constructed on the river side from Km 8.400 to Km 15.500 of Alipur embankment and a 4 m wide counter berm has been constructed on the country side, which has provided more strength to the embankment.</p>	
9.6	Implications with floods of various		



<p>return period in River Yamuna in Delhi</p> <p>i) Flood upto 1-in-25-year flood (6587cumec):- No overtopping of embankments is shown in the 2D model along the entire Delhi reach.</p> <p>ii) Flood corresponding to discharge of 6700 cumecs:- The discharge of 6700 cumec and above at Delhi Rail Bridge may cause overtopping of embankment at Nili Chatri area on the right bank of river Yamuna.</p> <p>iii) Flood of year 2023 (6999 cumecs): Simulated water level for 2023 flood at DRB is found to be 208.6m against the observed 208.66m.</p> <p>iv) Flood of 1-in-50 years (7648 cumec):- The water may rise up to 208.75m at DRB.</p> <p>v) Flood of 1-in-100-year flood (8701 cumec):- This magnitude of flood, may cause embankment overtopping at Metcalf house to Nili Chhatri/ Yamuna Bazar</p>	<p>I&FCD Delhi (for L/B Chauhan Patti to Chilla regulator , for R/B from Palla to Jaitpur).</p> <p>UP Irrigation Deptt. (U/S of Chauhan Patti L/B)</p>	<p>As above, as per recommendation at S. No. 9.5</p> <p>As above, as per recommendation at S. No. 9.5.</p>	<p>As above, as per recommendation at S. No. 9.5.</p> <p>As above, as per recommendation at S. No. 9.5.</p>
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	Ring Road area on right bank of river Yamuna with max water level reaching up to 209.55m at Delhi Railway Bridge.			
9.7	<p>Identification of Drainage congestion: -</p> <p>The committee observed that the drainage network within the Delhi NCR region is being maintained by different agencies and there is no coordination among various agencies for operation of these drains. A SoP for operation of these drains in Delhi NCR region may be prepared with clear guidelines defining the procedures to be followed for operating these drains depending upon the water level in river Yamuna. The overall coordinating agency should be made responsible for enforcing uniform SoP of drains in Delhi NCR region. Further, the capacity for pumping the water of each drain and passing it over embankment during flood may be reviewed and appropriately enhanced, if required.</p>	I&FCD PWD MCD	<p>All Outfall drains taken over by I&FCD for de-silting and maintenance.</p> <p>As far as SoP for operation of regulators on drains depending on water level in river is concerned out of 18 out falling drains, 14 drains have regulators and operation levels are clearly defined in Flood Control orders, being issued annually before the monsoon season.</p>	De-silting will be completed by 15.06.2025.



			<p>In respect of balance major drains regulators are placed on incoming drains with well-defined operation levels.</p> <p>Desilting of all other drains falling under the jurisdiction of MCD and PWD shall be carried out by them.</p> <p>Further, consultancy of Master Plan Drainage of Delhi, work assigned by PWD, is in progress and action shall be taken based on outcome report.</p>	<p>Timelines for desilting shall be given by MCD and PWD.</p> <p>Basin wise timelines to be given by PWD.</p> <p>Communication to provide Action Taken Report in this regard has been sent to MCD / PWD. Response from them is still awaited.</p>
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9.8	Afflux in River Yamuna and Review of Warning and Danger Level at Delhi Railway Bridge.	I&FCD	Covered in the Scope of Study assigned to CWPRS, Pune.	<p>Timelines :</p> <ul style="list-style-type: none"> ➤ Receipt of CWPRS study report – August 2025. ➤ Circulation to stakeholder for comments/suggestion - September 2025. ➤ Approval by the Oversight Committee – October 2025. ➤ Expected timeline for decision-December, 2025
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<p>9.9</p>	<p>Barrages on river Yamuna:</p> <p>The committee observed that there are various agencies of State Government which are involved in operation of barrages on river Yamuna and there is a lack of coordination among various agencies. The effective communication system between all stake holders may be established for operation of all barrages in a coordinated and integrated manner. I& FCD, Govt. of NCT Delhi, may act as nodal agency, which should be responsible of operation of various barrages on river Yamuna during flood time. There should be well established mechanism of measuring discharge through modern automatic equipment like SCADA etc.</p>	<p>I& FCD, Govt. of NCT Delhi</p>	<p>➤ As per existing practice IFCD is assigned with responsibility of Coordination with barrage owning agencies during flood.</p> <p>➤ Further, since barrages are owned, maintained, and operated by 3 states, so it is suggested that coordination committing headed by Member Secretary (UYRB) with officers of I&FCD and</p>	<p>The issue discussed in over sight committee, meeting held on 27/01/2025, headed by Member (RM) CWC and all other stakeholder departments/agencies as its members. As decided in meeting comments has been sought from all barrage owning agencies.</p>
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<p>It may be ensured that rainfall & discharge measuring equipment (rain gauges, gauges, current meters, stop watches, boats, O. B. Engines, bridge outfits, cable tower & trolleys etc) are working properly. All gauge posts/markings are properly painted, marked and connected with GTS Bench mark any uprooted/damaged gauge posts may be re-erected/ replaced as the case may be, properly. Communication systems such as wireless networks, internet facilities, video conferencing, phones, mobile phones, telemetry systems, are to be in readiness for the transmission of various data in real time.</p>	<p>DJB, Haryana I&WRD, UP Irrigation Deptt.</p> <p>I&FCD GNCTD,</p>	<p>barrage owning agency as members be formed.</p> <p>➤ Action for measuring discharge through modern automatic equipment like SCADA, and to ensure that all rainfall and discharge measuring equipment at Barrages are working properly.</p> <p>➤ Painting and marking of gauges with GTS Benchmark on</p>	<p>Timelines to be provided by DJB & Haryana being barrage owning agencies.</p> <p>15.06.2025</p>
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			structures of I&FC department along river and drains. Also discharge measuring systems on I&FCD drains.	
		Govt. of UP : Okhla Barrage	The gate discharge table at Okhla Barrage under the control of Irrigation and Water Resources Department, Uttar Pradesh has been made in accordance with the Indian Standard Code prevailing by the Indian Institute of Technology, New Delhi. The	Input provided by Executive Engineer, Head Works Division, Agra Canal, Okhla vide letter dated 22-04-2025



			<p>automation system is functional at Okhla Barrage. The gates and other mechanical structures are repaired on time. Information regarding the operation of the gates at Okhla Barrage is regularly recorded in the log book. Power back-up is available through D.G. set at Okhla Barrage. Desiltation work is carried out periodically on the upstream floor of the barrage. The barrage is operated as per</p>
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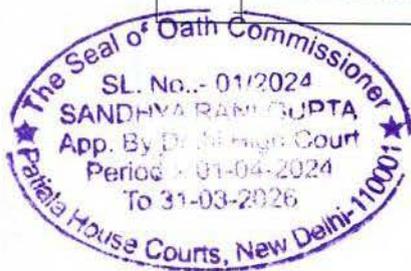
		<p>the Barrage Operation Manual. Tail water rating curve has been prepared by Indian Institute of Technology. During floods, all officers/employees related to barrage operation are put on shift wise duty and their complete details including mobile numbers are available in the flood control room. The information regarding gauge and discharge is regularly sent by the flood control room to the senior</p>	
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			<p>departmental officials, local administration and the concerned state and central institutions. The gauge painting work has been done. The rain gauge is in working condition.</p>	
<p>9.10 ITO Barrage:-</p>	<p>It is recommended to operate ITO barrage with all gates open during floods in coordination with operation of Wazirabad barrage and Okhla barrage. It is also recommended that regular maintenance of all hydro mechanical equipment of barrage be conducted as per the operation and maintenance manual of the barrage/codal provisions.</p>	<p>Haryana I&WRD</p>	<ul style="list-style-type: none"> ➤ All gates open. ➤ Issue of regular maintenance of all hydro mechanical equipment of barrage be conducted as per the operation and maintenance manual of the 	<p>Timelines to be provided by Haryana Irrigation.</p>



	<p>The matter of handing over of the ITO barrage to Government of Delhi can be taken up separately by appropriate authority.</p>		<p>barrage/codal provisions pertains to Haryana I&WRD. ➤ Haryana Irrigation department vide letter dated 16.05.2024, conveyed that ITO barrage needs to be retained by Haryana for discharge measurement amongst UP, Haryana and Rajasthan and Okhla.</p>	
<p>9.11</p>	<p>Encroachments in the river Yamuna: The committee recommends that an integrated approach by a Nodal Agency by involving all agencies like Delhi Metro, DDA, Delhi PWD,</p>	<p>DDA, Concerned Bridge/Infrastruc</p>	<p>Being Coordinated by DDA in compliance of Hon'ble High</p>	<p>Timelines to be given by DDA and concerned Bridge /</p>



	<p>IFCD, Delhi Jal Board and other Government agencies carrying out construction activities in river Yamuna should be adopted to make river Yamuna free from such encroachments.</p>	<p>ture providin g agencies (i.e. DMRC, DTIIDC, Railway, PWD, NHAI)</p>	<p>Court directions in this regard.</p>	<p>Infrastructure providing agencies. Communicati on to provide Action Taken Report in this regard has been sent to DDA / PWD. Response from them is still awaited.</p>
<p>9.12</p>	<p>Storage of flood water: Keeping in view the above concerns separate studies may be undertaken by Govt. of Delhi for underground reservoirs created for flood moderation purpose like in Japan or other countries for flood water diversion facility may be technically feasible. However, considering the issues in context to Indian rivers like high magnitude of flooding, excessive silt load of rivers and huge financial investments, prima facie the same may not be techno-</p>	<p>Govt. of Himacha l Pradesh, Uttarakh and and Haryana</p>	<p>Due to non-availability of the sufficient land, and due to excessive silt load of rivers and huge financial investments this may not be feasible in Delhi area. However, there are proposal for</p>	<p>N/A The details to be provided by the Upper Yamuna</p>



economically viable in mitigation of high quantum of floods.		construction of dams in upstream areas like Renukaji, Kishau, Lakhwar-Vyasi, and Hathnikund.	River Board (UYRB), Government of Himachal Pradesh, Uttarakhand, Haryana
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10. Further, Central Water Commission has done following works in the field of :

- a) **Flood Plain Zoning:** Floodplain zoning is a land use regulation procedure that identifies areas at different risk of flooding and establishes rules for development, construction, and land use in each zone. The goal of floodplain zoning is to minimize the damage caused by floods, protect communities and infrastructure, and maintain the natural functions of floodplains.

Central Water Commission prepared a Model Bill on Flood Plain Zoning and circulated it to all the states in the year 1975 for guidance of states for enactment of legislation in this regard. The Model Bill provides model clauses about flood zoning authorities, surveys and delineation of flood plain area, notification of limits of flood plains, prohibition or restriction of the use of the flood plains, compensation, power to remove obstruction after prohibition. The guidelines on flood plain regulations have been appended in the Model Bill.

To enable States to undertake scientific assessment of flood plains and its zoning, a technical guideline on Flood Plain Zoning has been prepared by Ministry and circulated to the States/UTs in 2024. The guidelines



comprehensively envisage the importance of floodplains and narrates need for flood plain zoning. So far, Manipur, Rajasthan, Uttarakhand and erstwhile State of Jammu & Kashmir have enacted the bill.

Central Water Commission has been providing necessary technical assistance to states in carrying out Flood Plain Zoning. Upon the request received from the state of UP, CWC has carried out the delineation and demarcation of floodplain zones on river Yamuna from Asgarpur to Prayagraj for 5-, 25- and 100-year return period floods. The final report in this regard was submitted to Hon'ble NGT on November 29, 2024.

- b) **Delhi Drainage Development Master Plan-2021:** A Technical Expert Committee (TEC) under the chairmanship of Member (RM), CWC was constituted by Govt of NCT of Delhi for "Delhi Drainage Development Master Plan-2021" on 19-02. 2011. The final report by IIT Delhi on Delhi Drainage Development master plan-2021 was submitted to Govt of NCT Delhi on 13-07- 2018. First TEC meeting was held on 21-05-2019 & 4th TEC meeting held on 05.08.2021. The Chairperson invited all stakeholders / members of TEC for their views on the Final report of Delhi Drainage Master Plan submitted by IIT Delhi. Considering the views of all stakeholders, Chairman, TEC concluded that TEC feels that the final report submitted by the consultant is not worth considerable for recommendation and the mentioned report may not be accepted.

The Delhi State Government or Nodal Department may take a call in this matter accordingly.

1. That as per constitutional provisions, the water is State subject and execution of flood management works including erosion control falls within the



purview of the States. The flood management & anti-erosion schemes are therefore investigated, planned and implemented by the State Governments with own resources as per priority within the State. The Union Government renders assistance to States which is technical, advisory, promotional and financial in nature. Hence the executing department may decide the steps to be taken, its timeline and the agency for its execution. So, keeping in view the above statement, it is humbly submitted that Irrigation & Flood Control Department, Govt. of National Capital Territory of Delhi may kindly be impleaded as a Respondent in this matter for providing inputs on behalf of Govt of NCT of Delhi regarding details of the steps to be taken, timeline and the agency who will execute the work.

12. Further, for S No. 9.12 the details are to be provided by UYRB, Govt. of Himachal Pradesh, Uttarakhand & Haryana, so, as Upper Yamuna River Board (UYRB) is a single point agency for Yamuna River, hence, it is humbly requested that UYRB may also be impleaded as a Respondent in this matter.
13. That the present additional reply by way of affidavit may kindly be taken on record and into consideration and the Hon'ble Tribunal may pass appropriate order(s), direction(s) as deemed fit and proper under the facts and circumstances of the present case.
14. That the Answering Respondent seeks leave to make additional submissions, if required, during the course of the proceedings



01/01/25
12/06/25

DEPONENT

नागेन्द्र कुमार सिंह / Nagendra Kumar Singh
 उच्चकारी अभियंता / Executive Engineer
 उपरी यमुना मण्डल / Upper Yamuna Division
 केंद्रीय जल आयोग / Central Water Commission
 नई दिल्ली-110016 / New Delhi-110016