

Union Territory of Jammu and Kashmir
Office of the Chief Engineer Jal Shakti (Irrigation & Flood
Control Department) Jammu
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The Consultant (Judicial),
 Hon'ble National Green Tribunal,
 Principal Bench, New Delhi.

No: *IFCJ/Legal/17549-52*

Dated: *04*-01-2025

Subject: OA No. 720/2024 titled News item titled
"Tawi Barrage and river front projects in
Jammu destroying river inviting disaster"
appearing in sandrp.in dated 11.05.2024

Reference: Hon'ble NGT's order dated 18-09-2024.

Sir,

In reference to the above noted subject, it is submitted that the Hon'ble National Green Tribunal vide its Order dated 18-09-2024 passed in the afore-titled case directed as under:

"In view of the facts and circumstances mentioned above, I.A. No. 448/2024 is allowed and Jammu Smart City Limited through its Chief Executive Officer, 4th Floor, North Block, Bahu Plaza, Jammu is impleaded as respondent no. 8 and Irrigation and Flood Control Department of the UT of Jammu and Kashmir through its Chief Engineer, Jal Shakti (I&FC) Department, Jammu is impleaded as respondent no. 9.

The Registry is directed to make appropriate amendments in the Memo of Parties.

Notices be issued again to respondents no. 2 and 6 and also to newly added respondent no. 9 requiring them to file their responses at least one week before the next date of hearing fixed and also to ensure their representation before this Tribunal.

List on 09.01.2025"

sd/-
Chief Engineer
Irri. & FC Deptt.
Jammu

In this regard, kindly find enclosed herewith the compliance report for and on behalf of **respondent no. 9 i.e. Chief Engineer, Jal Shakti (Irrigation and Flood Control) Department, Jammu**

in compliance to the directions of the Hon'ble National Green Tribunal's passed vide Order dated 18-09-2024 in OA No. 720/2024 titled "News item titled "Tawi Barrage and river front projects in Jammu destroying river inviting disaster" appearing in sandrp.in dated 11.05.2024".

You are requested that the report may kindly be taken on record and placed before the Hon'ble NGT for kind consideration please.

Yours faithfully,

Encl: A/A

Chief Engineer
(En. Manoj Gupta)
Chief Engineer

Jal Shakti (I&FC) Department
Jammu

Copy to:

1. Financial Commissioner (Addl. Chief Secretary), Jal Shakti Department, Civil Secretariat, Jammu
2. Mr. G.M. Kawoosa, Additional Standing Counsel for UT of J&K, Hon'ble National Green Tribunal, H-24, 2nd Floor, Lajpat Nagar-01, New Delhi.
3. Senior Law Officer, Jal Shakti Department, Civil Secretariat, Jammu.

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

O. A. No. 720/2024

IN THE MATTER OF: TRIBUNAL ON ITS OWN MOTION

(News item titled "Tawi Barrage and river front projects in Jammu destroying river inviting disaster" appearing in sandrp.in dated 11.05.2024)

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Filed by:

Dated: 03.01.2025

Place: Jammu

Chief Engineer
 Irr. & FC Deptt.
 (Er. Manoj Gupta)
 Chief Engineer
 Jal Shakti (I&FC) Department,
 Jammu

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

O. A. No. 720/2024

IN THE MATTER OF: TRIBUNAL ON ITS OWN MOTION

(News item titled "Tawi Barrage and river front projects in Jammu destroying river inviting disaster" appearing in sandrp.in dated 11.05.2024)

Compliance Report On Behalf Of Chief Engineer, Jal Shakti (Irrigation & Flood Control) Department, Jammu in compliance to the Hon'ble National Green Tribunal's directions passed Vide order dated 18-09-2024 in O.A. No. 720/2024 titled "News item titled "Tawi Barrage And River Front Projects in Jammu destroying river inviting disaster" appearing in Sandrp.in dated 11.05.2024"

MOST RESPECTFULLY SHOWETH:

1. The present Original Application has been registered suo-moto by the Hon'ble Tribunal on the basis of the news item titled "Tawi Barrage & Riverfront Projects in Jammu destroying river inviting disaster" appearing in sandrp.in dated 11.05.2024.
2. That the Hon'ble Tribunal vide order dated 18.09.2024 in the afore-titled O.A. No. 720 of 2024 has passed the following order:

"As per office report notices have been duly served on all the respondents but none has appeared on behalf of respondent no. 2-JDA and respondent no. 6-MoEF & CC.

Replies have been filed by respondent no. 1-MC, Jammu and by respondent no. 3-J&KPCC vide separate emails dated 17.09.2024.

Request letter seeking time for filing of response has been filed by respondent no. 7-DC/DM, Jammu.


**Chief Engineer
Irrl. & FC Deptt.
Jammu**

In its reply respondent no. 1-MC, Jammu has submitted that Tawi River Front Development Project is being executed by the Jammu Smart City Ltd. while the Barrage Project pertains to the Irrigation and Flood 2 Control Department of the UT of Jammu and Kashmir and they may be impleaded as respondents.

I.A. No. 448/2024 has been filed by Jammu Smart City Limited for its impleadment as respondent.

In view of the facts and circumstances mentioned above, I.A. No. 448/2024 is allowed and Jammu Smart City Limited through its Chief Executive Officer, 4th Floor, North Block, Bahu Plaza, Jammu is impleaded as respondent no. 8 and Irrigation and Flood Control Department of the UT of Jammu and Kashmir through its Chief Engineer, Jal Shakti (I&FC) Department, Jammu is impleaded as respondent no. 9.

The Registry is directed to make appropriate amendments in the Memo of Parties.

Notices be issued again to respondents no. 2 and 6 and also to newly added respondent no. 9 requiring them to file their responses at least one week before the next date of hearing fixed and also to ensure their representation before this Tribunal.

List on 09.01.2025 for further consideration."

3. That in compliance with the directions issued by the Hon'ble Tribunal vide order dated 18.09.2024 and in response to the news item titled "Tawi Barrage And River Front Projects in Jammu destroying river inviting disaster" appearing in Sandrp.in dated 11.05.2024", para-wise response to the concerns raised in the article, pertaining to this Department are submitted as under:

S. No.	Extract of the Concerns raised in Newspaper Article	Reply
1	Amid confusion, cost escalation and delays, citizens in Jammu are worried over adverse impact of Tawi barrage	• The Tawi Barrage project was conceived in the year 2010, for construction of gated structure

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and RFD project on the river. They fear the scale of work has been damaging the river ecology and could increase flood threats for public infrastructure and local people in near future.

According to Bhushan Parimoo a geologist and environmentalist in Jammu, Tawi is potable water source for the city and lifeline for areas all along its 177km course, however the river has been facing decline in flows due to catchment degradation and shrinkage in glacier areas feeding the river. The river is in dire need of watershed protection and revival instead of turning a flowing river into a lake which is against the very nature of how river functions.

across two channels of River Tawi, namely "Nikki Tawi" and "Waddi Tawi" located at Belicharana about 1 Km downstream of Main Tawi Bridge at Bikram Chowk.

- After the accord of Administrative Approval to the original DPR amounting to Rs. 70.00 Cr., the work was put to tender in March 2010 and allotted to M/s GVR Infraprojects Ltd. (EPC mode) on 28-07-2010.
- The work was to be completed by 15-07-2012 as per contract agreement. However, the Contractor failed to complete the work even after lapse of 09 yrs despite issuance of various notices. The Contract was finally terminated on 13-05-2019.
- Subsequent to the termination of the M/s GVR contract, MOU was drawn on 30-12-2019 with IIT Roorkee who reviewed the design of constructed portion of the gated barrage and updated the design of balance works including gates.
- Thus over a period of such a long time, cost of the project escalated due to various reasons viz. change in the design of certain components, increase in the scope of work and market escalation while revising the DPR of Balance work of Tawi Barrage, Jammu.
- The Tawi Barrage envisages creating a pondage of 1.35 MCM capacity with pondage level of 297.8 m.
- Moreover, the under sluice gates shall remain open for safe passage of water during the pondage even during the lean discharge in the river.

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		<ul style="list-style-type: none"> • There shall be no stoppage of water downstream of barrage at any point of time and therefore, there shall be no effect on the ecology of the river. • Moreover, there will be no pondage of water during flood season when all gates shall be fully raised to allow flood water flow without any obstruction. Therefore, the barrage will have no impact during flood conditions.
2	<p>"Tawi is common name for rivers in the region. We have many Tawis here and the Tawi flowing through Jammu is Jammu Tawi. It is considered holy and revered as Surya Putri (daughter of Sun God)", says Parimoo who heads Environment Awareness Group (EAG) and initiated Save Tawi campaign years back to raise the issues of solid and liquid waste polluting the river.</p> <p>Parimoo fondly remembers the lost glory of Jammu Tawi describing it a clean flowing river rich in aquatic diversity and supporting fishing and boating activities during monsoon. "The RFD work has even removed boulders from riverbed which worked as natural flood defence mechanism, sewage drains are still polluting the river, green banks are being concretized for commercial, real-estate activities. If there is flood destruction, it's not fault of the river but of the humans", laments Parimoo.</p>	Does not pertain to this office
3	<p>Navjeev Digra, a founding member of Climate Front Foundation (CFF) Jammu, further expresses his concerns over potential flood risks from the under construction Tawi</p>	<ul style="list-style-type: none"> • In this regard, it is submitted that the existing width of waterway at Bikram Chowk Bridge is 300 m which could safely pass the discharge during the 2014 floods.

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	<p>barrage and RFD projects stating that the Tawi RFD work has been squeezing the riverbanks from both sides by raising 2 km long concrete-block walls inside the river flood zone.</p>	<ul style="list-style-type: none"> • The total waterway provided at the Barrage has been designed based on the 1 in 500 year flood return period which is much more than flood discharge during the 2014 floods. • The safe passage of the discharge during floods has been validated by the Physical Model studies for Tawi Barrage conducted on 2-D Sectional model and 3-D Comprehensive model by IIT Roorkee (enclosed as Annexure – I) • As such there is no risk of potential flood due to construction of Tawi Barrage.
4	<p>"We are in climate change era. There are frequent extreme rainfall, cloudburst episodes causing sudden devastating deluge spells in Himalayan region. Under such situation, the Tawi barrage and RFD would prove a huge obstruction during heavy floods and turn into imminent flood danger for river-based infrastructures both up and downstream of project area including the barrage, riverbanks and bridges", says Digra.</p>	<ul style="list-style-type: none"> • IIT Roorkee has provided a detailed methodology for operation of gates for various discharge conditions and a comprehensive plan for operation of gates has been suggested to maintain pond level in upstream of Barrage(s) and for managing the sediments. • This comprehensive SOP for operation of gates during various discharge conditions shall be incorporated in SCADA (Supervisory Control and Data Acquisition) system for operation of Automatic gates. • As such, due to automatic operation of barrage gates corresponding to various discharge conditions, an early warning in this regard shall be transmitted by Early Warning System (EWS) installed at Manwal Tawi Bridge to the SCADA system, there shall be no obstruction to flow during heavy floods.
	<p>He also suspects that construction work on the central portion of RFD covering the river island called Mandal could damage the ancient Ranbir canal structure running underneath across the river. Named after a ruler Maharaja Ranbir</p>	<ul style="list-style-type: none"> • In this regard, it is submitted that the ancient Ranbir canal structure running underneath across the river had outlived its life and stands abandoned since long. • This structure has been replaced by a new RCC structure constructed in

	<p>Singh the 60 km long canal was built in 1905 to bring Chenab water for irrigation purposes in R S Pura and Samba tehsils in Jammu.</p>	<p>the year 1990.</p> <ul style="list-style-type: none"> • The construction work on the central portion shall have no effect on this new structure which is constructed well below the river bed level and is running to its full capacity without any obstruction even after construction of RFD works
6	<p>"The 'U' shaped concrete protection wall would also be pushing flood currents towards the banks. The greater the flood volume the bigger would be the force of strong eddy currents towards either riverbank exposing the base of barrage and bridge pillars to erosion and collapse", adds Digra stating that the couple of barrage piers on Nikki Tawi side were damaged by 2014 floods when the gates were even not installed. "Imagine the situation after installation of all 31 gates.</p>	<ul style="list-style-type: none"> • In this context, it is submitted that river island formed between Waddi Tawi and Nikki Tawi is a natural structure which has witnessed various floods throughout its history and no such damage to river banks has been reported due to generation of eddy currents. • The concrete wall has been provided to protect the nose of the central island and eddy currents generated from the central island would damage the river bank is just a hypothetical assumption. • Further, only one pier, i.e. pier no. 17 of Nikki Tawi Barrage, was tilted during 2014 floods. The same was restored to its original position by retrofitting through an expert agency.
7	<p>As per Digra, he has helped Tourism Department develop a biodiversity park on Tawi banks which was inaugurated by the CM Mufti Mohammad Syed in Dec 2015. "But now the officials of JSCL have been pressurizing the Tourism Department to hand over the park land to the JSCL. The RFD work is going on in a chaotic manner and damaging the green spaces, trees flourishing along the river Tawi in Jammu", claims Digra.</p> <p>Termining the RFD work as land reclamation and real estate project just to promote tourism at the cost of river eco-system, Digra feels</p>	<p>Does not pertain to this office</p>

	<p>astonished that the project is being built under Smart City Mission. "Climate change is bound to bring heavier floods and if we cannot increase, we should at least maintain the existing flood carrying capacity of the river. The RFD work is doing exactly opposite by reclaiming more than 50 acres of land belonging to the river for commercial and real estate activities", shares Digra questioning "From which angle the RFD project is smart?"</p>	
8	<p>Similarly, the people of Mandal a huge island formed by the Tawi just downstream the barrage are afraid of the projects for creating September 2014 flood disaster. Pankaj a youth from Mandal who goes by his first name only was about nine-year-old at that time but is still horrified by the intensity of deluge.</p> <p>"Our homes went under four to five feet of flood waters in 2014 destroying all essential commodities and home appliances. The island remained disconnected from electricity, water supply for about three months. All the roads on the island were damaged. The bridge links to Jammu were washed away. Food and water packets were air dropped by army. Power and water supplies took half a year to be restored and our lives remained miserable for about a year" says Pankaj while recalling the 2014 flood disaster.</p> <p>He says that the administration has done no consultation process with the people of about 40 villages inhabiting the river island regarding</p>	<ul style="list-style-type: none"> • The September 2014 flood was natural disaster which was seen by the erstwhile State of Jammu and Kashmir. • The barrage has been designed for flood intensity of 500 year return period which is much more than the flood intensity observed during September 2014 floods. • Further, keeping in view the September 2014 floods and in order to avoid such incidents in future, morphological studies of river Tawi has been carried out by the ERA (Economic Reconstruction Agency) under World Bank funding. • A DPR for Flood Mitigation and comprehensive River Management Measures for Tawi Basin by JTFRP is under preparation by ERA through consultant Aqualogous-Oiltech JV. • Protection of structures to the downstream of Tawi barrage has been considered in the DPR and the protection works shall be provided in accordance with provisions of the DPR.

	the flood impacts of the barrage and RFD projects. "Our group Friends of River Tawi (FORT) reached out to the concerned govt departments but they simply have refused to share any information about the project," says Pankaj.	
9	<p>In addition to these serious issues; citizens in Jammu are equally concerned about rising pollution load in Tawi river. Presently the total sewage generation in the city is estimated to be around 170 million liters per day (MLD). In its Aug 2022 compliance report to National Green Tribunal (NGT), the Jammu & Kashmir Pollution Control Board (JKPCB) has mentioned about a network of 26 drains including 20 from north and 6 from south polluting Tawi river in the city.</p> <p>There are 4 STPs in the city with total installed capacity of 71 MLD while the actual utilization is just 27 MLD as the sewerage network scheme ongoing since 1996 is still incomplete. Similarly, a huge part of 501 tons per day (TPD) waste generated in the city including plastic, bio-medical and construction debris is dumped in and along Tawi river. Recently, work on sewage interception and diversion plan costing around Rs. 45 crore to divert drains from Tawi RFD stretch has been taken up.</p> <p>"Tawi supplies about 60 percent of potable water to Jammu city. Despite this, constant increase in solid and liquid waste contaminating the scared river" says AnomalOhari a member of FORT the group behind regular river cleaning drive in the city. According to Ohri the exiting STPs in the city are running defunct</p>	Does not pertain to this office

<p>at most of the times. "The city is lacking efficient sewerage infrastructure but like in Sabarmati model, the RFD proposes to divert all the sewage pollution downstream project area. Is it right way to deal with the river pollution", asks Ohri.</p> <p>Ohri finds Tawi RFD project contrary to NMCG guidelines calling it environmentally insensitive, climate mal-adaptive and socially exclusive. Though disappointed, Ohri urge administration to focus on actual problems deteriorating the river health instead of pushing the cosmetic beautification project. "What Tawi needs is holistic revival plan and the Sabarmati RFD is a delusion. Government has no mandate to commercialize and corporatize our rivers", says Ohri terming the Tawi RFD a self-induced climate disaster in the making which Jammu citizens want government to comprehend before it becomes a reality.</p>	
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4. That it is submitted that the Construction of Barrage at River Tawi is fully compliant with all Government orders, guidelines, Rules and regulations and the delegation made in the "News Items" are completely devoid of merits. It is pertinent to mention herein that the Hydraulic study, design and drawings of Barrage at River Tawi are vetted by IIT Roorkee taking into consideration safeguard and structural stability.

5. That in light of aforementioned reply the answering respondent crave leave of this tribunal to make such other and further submission as an when the context may so arise and this Hon'ble Tribunal may so direct by amending the present reply or by filing

Chief Engineer
Irri. & FC Deptt.
Jammu

additional / supplementary affidavit or as this Hon'ble Tribunal may direct/permit.

An affidavit in support of the compliance report is annexed herewith.

PRAYER:

In the premises, it is therefore respectfully prayed that the report may kindly be taken on record before the Hon'ble National Green Tribunal for consideration.


(Er. Manoj Gupta)
Chief Engineer
Jal Shakti (I&FC) Department,
Jammu

Department of Irrigation and Flood Control Division Jammu, J&K

PHYSICAL MODEL STUDY FOR NIKKI AND WADDI BARRAGES ON TAWI RIVER, JAMMU (J&K)

02nd January 2024

Prof. Z. Ahmad
Prof. P. K. Sharma
Mr. A. C. Pandey

Department of Civil Engineering
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
ROORKEE – 247 667, UTTARAKHAND, INDIA



EXECUTIVE SUMMARY

River Tawi originates from glacier at an elevation of 4250 m (South West of Bhadarwah) in District Doda of J&K where it is called Kirchi and after travelling a distance of about 25 km, it is called Tawi. The Tawi River flows about 141 km long course before its confluence with river Chenab in Pakistan.

The Department of Irrigation and Flood Control Division Jammu is developing an artificial lake namely Tawi Artificial Lake at Jammu by the way of constructing two auto-mechanical operated barrages on the bifurcated channels of river Tawi. The barrage is under construction at about one km downstream of main Tawi Bridge No. 2 (Bikram Chowk Bridge) and just upstream of Tawi Bridge No. 4 near Bhagwati Nagar. Nikki barrage is on the left bifurcated channel while Waddi barrage is on right bifurcated channel. Both barrages are separated by an island existing in the river. The length of barrage on the Nikki Tawi is about 240 m. There are twenty gates with dimensions of 10 m width and 4 m height, while Waddi barrage on the right side has 11 gates of the 10 m wide 4.0 m height. The barrages shall help in creating an artificial lake of about 1000 m length and about 600 m width to impound Tawi water right from downstream of Bridge No. 2 to the upstream of Bridge No. 4. In case of flood, all the gates of the barrage will be opened and shall be lowered again to create pond up to 4 m height. On both the banks from bridge No.2 up to the barrages, river is channelized by construction walk ways (Promenades) at different elevations.

The Department of Irrigation and Flood Control who is monitoring execution of work of barrages signed a Memorandum of Understanding with Indian Institute of Technology Roorkee on 28th December 2022 vide which Indian Institute of Technology Roorkee was engaged for "Consultancy services for hydraulic model study (comprehensive model and sectional model) of Tawi barrage (Nikki Tawi and Waddi Tawi) at Jammu, J&K.

Three sectional (2D) geometrically similar models at a scale of 1/35 each for Nikki under sluice, Nikki main and Waddi main barrage, and one 3-D comprehensive model to a scale of 1:200 (horizontal scale) and 1:50 (vertical scale) were constructed in the Hydraulics laboratory of Dept. of Civil Eng., IIT Roorkee. In each sectional model, two bays of the barrage / under sluice are modelled. Each sectional model represents one full bay in the centre and two half bays on sides of the model including two piers separating each bay.

Physical model study for Nikki and Waddi barrages on Tawi river, Jammu (J&K)

The 3-D model of River Tawi represented a reach of the river from 1100 m upstream and about 300 m downstream of the barrages covering river reach from bridge no.2 to 200 m downstream of bridge no.4. The river contours in the model were dressed as per survey/cross sections provided by the sponsor.

The Physical Model studies for Tawi Barrage conducted on 2-D sectional model and 3-D Comprehensive model have shown that:

1. The waterways provided in Nikki Tawi and Waddi Tawi barrages are adequate to pass 1 in 50-year flood i.e., 12176 m³/s and 1 in 500-year flood i.e., 16653 m³/s at upstream water level of 302.45 m and 304.45 m, respectively. These values are lower than the design upstream HFL of 303.219 m and 305.024 m for 1 in 50- and 500-year discharges, respectively.
2. The afflux due to construction of the barrages 0.15 m for 12176 m³/s and 0.83 m for 16653 m³/s and with river front interventions affluxes are 0.30 m for 12176 m³/s and 0.88 m for 16653 m³/s.
3. With the construction of the promenades on both sides of the river, the river shall channelize from downstream of bridge no. 2 to barrages. At all discharges, higher flow was passing through Nikki barrage compared to Waddi barrage. Flow was hitting to the upstream sides of the island between the barrages. In the downstream, wavy flow was seen in Nikki channel while flow in Waddi channel was quite calm.
4. Discharge distribution in Nikki and Waddi barrages for different inflow in the river and without and with river front development has been studied and found that with the river front development, discharge passing through Waddi barrage shall increase due to channelization of the river.
5. Velocities were measured at different discharges in each bay of both the barrages and also at different chainages up to bridge no.2. It is found that except for first bay of Nikki under sluice, the velocities were quite uniform although higher velocities were observed in right bays of Nikki barrage and left bays of Waddi barrage.
6. Approach velocities were observed in Nikki and Waddi Barrages. It was found that maximum approach velocity on the right side of Nikki Barrage is of the order of 6.0 m/s at 16653 m³/s while in Waddi Barrage the maximum approach velocity on the left side is of the order of 5.85 m/s at 16653 m³/s.
7. Post flood survey of the model bed was taken after running discharge of 1 in 500 years in the model under free flow condition. The survey indicates scouring of bed on the left side in the downstream of bridge no.2 while

deposition was seen on the right side. The same pattern of scouring / deposition was seen up to 500 m downstream of the bridge (600 m upstream of the barrages). Deposition all along the width of the river was observed from 200 m to 400 m upstream of the barrage. At a section 100 m upstream of barrage, scouring was seen towards Waddi side and along the sides of the island. In the downstream of the barrages, bed material was found deposited on the pucca floor of both the barrages. The post flood residual bed at different sections are shown in Figures 39 to 45. Pictorial views of residual bed are shown in Plates 24 to 26 in Annexure-2.

8. On running discharge of 1 in 500 years in the model under free flow condition, scouring of bed on the left side in the downstream of bridge no.2 while deposition was seen on the right side. The same pattern of scouring / deposition was seen up to 500 m downstream of the bridge (600 m upstream of the barrages). Deposition all along the width of the river was observed from 200 m to 400 m upstream of the barrage. At a section 100 m upstream of barrage, scouring was seen towards Waddi side and along the sides of the island. In the downstream of the barrages, bed material was found deposited on the pucca floor of both the barrages.
9. A discharge of about $3500 \text{ m}^3/\text{s}$ passed at a water level of 297.8 m when all gates are fully open. The pond level of 297.8 m is achieved up to Bridge No. 2 up to a discharge of $700 \text{ m}^3/\text{s}$. At higher discharges, the pond level is maintained only up to 400 m upstream of the barrage beyond which the water levels are higher than the pond level.
10. It is indicated that at discharges lower than $700 \text{ m}^3/\text{s}$ under pond conditions, the velocity is too low to carry the sediment in the pond i.e., downstream of bridge no.2. At discharges higher than $1000 \text{ m}^3/\text{s}$, whatever sediment is deposited is washed away when pond level is depleted and discharge is allowed to pass freely through barrages.
11. At lower discharges the pond level should be maintained by operating under sluice bays of Nikki barrage and 2 right bays of Waddi barrage. It is suggested that up to a discharge of $1200 \text{ m}^3/\text{s}$, barrages may be operated under wedge type operation but at discharges higher than $1400 \text{ m}^3/\text{s}$, all gates should be opened equally.
12. Filling time of the lake has been computed with an annual minimum discharge of about $70 \text{ m}^3/\text{s}$. It is found that with no leakage through barrages, the lake shall be filled up to the pond level in 3 to 3.5 hr.

Physical model study for Nikki and Waddi barrages on Tawi river, Jammu (J&K)

13. 2-D model tests conducted separately for Nikki under sluice, Nikki main Barrage and Waddi Barrage showed that a weak jump forms on the glacis at discharges of 1 in 50 year and 1 in 500 year. However, no remarkable scour was observed in the downstream of end sill.
14. When Nikki under sluice are operated in isolation to pass the flood, it is seen that at discharges up to $1000 \text{ m}^3/\text{s}$ unstable jump forms, however, at discharges more than $1500 \text{ m}^3/\text{s}$, sweeping of jump was seen with standing waves in the basin. Therefore, it is suggested that Nikki Under sluice should be operated in isolation only up to $1000 \text{ m}^3/\text{s}$ beyond which the under sluices should be operated simultaneously with main barrage bays.
15. Hydrostatic pressures measured under different operating conditions were all positive except at a point near the glacis of under sluice where negative pressure of low magnitude was found under gated conditions of operation. The magnitude of negative pressure (-0.35m) is low and does not require any alteration in the design or any other remedial measure.
16. With the help of rating of gates conducted on 2-D sectional model(s), the operation of gates is suggested in Table 51a and 51b for Nikki Barrage and Waddi Barrage to maintain pond level in upstream of Barrage(s) and for managing the sediment

Place: Roorkee

(Z. Ahmad)

Date: 2nd January 2024

Professor of Civil Eng.

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

O. A. No. 720/2024

IN THE MATTER OF: TRIBUNAL ON ITS OWN MOTION

(News item titled "Tawi Barrage and river front projects in Jammu destroying river inviting disaster" appearing in sandrp.in dated 11.05.2024)



IN THE MATTER OF: Affidavit in support of the Compliance report.

I, Manoj Gupta, age 58 years, presently posted as Chief Engineer, Jal Shakti (Irrigation and Flood Control) Department, Jammu do hereby state an oath/ solemn affirmation that I have read the contents of compliance report. The contents of Compliance Report has been read over and explained to me and that the contents the para 1 to are true upon information received from the records as well as true upon the legal advice received by me, which I believe to be true.

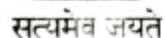
I solemnly swear/ affirm that this affidavit is true and no part of this is false and nothing has been concealed therein.

Date : 03.01.2025
Place : Jammu

Signature
DEPONENT
Chief Engineer
Irrl. & FC Deptt.
Jammu

Signature
9dby
Rajinder Kumar
c/o irrigation
D.P.T

Manoj Gupta
Rajinder Kumar
do
Certified that Smt./Sh. who is identified by and witnessed by presented this affidavit before me today the 3-JAN-2025 & I administered Oath to him/her who Swore/Solemnly affirmed in the contents of this affidavit, hence attested.
Oath Commissioner



Government of Jammu and Kashmir

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Statutory Alert:

1. The authenticity of this Stamp certificate should be verified at www.shoilestamp.com or using e-Stamp Mobile App of Stock Holding Corporation of India Limited.
Any discrepancy in the details on this Certificate and as available on the website / Mobile App renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority