

Hindustan Times- 16- July-2023

Hathnikund barrage, and its regulations

The Delhi flood has brought into focus the Hathnikund barrage through which the downstream flow of the Yamuna is regulated.

THE BARRAGE — it is not a dam with a reservoir and therefore cannot hold water — is governed by a 1994 agreement and Central Water Commission guidelines. They stipulate that only if the flow is under 100,000 cusecs can a prescribed amount of water be discharged into two man-made canals in UP and Haryana, which could be damaged by high flow of water. The rest of the water is to be discharged into the main Yamuna.

A BARRAGE, AND HOW IT IS DIFFERENT FROM A DAM

In simple terms, a barrage consists of a series of water barriers constructed to divert flowing water through gates into canals or channels. Unlike a dam, a barrage can only regulate the flow of a waterbody, rather than store it in a reservoir or overflow channel.

WHAT IS THE HATHNIKUND BARRAGE?

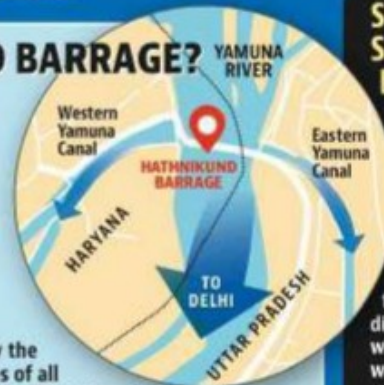
The Hathnikund Barrage, located on the border of Haryana and UP in Raiyanwala (Yamunanagar district) around 200km north of Delhi, regulates the flow and distributes water from the Yamuna. At the Hathnikund barrage, water is regulated into the main Yamuna and into the Western Yamuna Canal (WYC) in Haryana, and the Eastern Yamuna Canal (EYC) in Uttar Pradesh.

HOW IS IT REGULATED?

Water regulation through Hathnikund is governed by the Upper Yamuna River Board, which has representatives of all stakeholders — Himachal Pradesh, Haryana, Delhi, Uttar Pradesh, and Rajasthan — ensuring that every state gets their predetermined (based on the season) share of water according to a May 12, 1994, agreement to resolve a long-pending Yamuna water-sharing dispute.

As per the agreement, Haryana government manages the barrage.

This agreement is primarily to ensure minimum drinking water supply to downstream states such as Delhi and Uttar Pradesh, which varies between seasons.



SO, HOW IS WATER SUPPOSED TO BE DIVIDED?

The main purpose of the agreement was to ensure every region gets enough drinking water (and irrigation) during times of scarcity. The water-sharing formula is in force when the Yamuna's flow is below 100,000 cusecs. As per the formula, 15,000 cusecs can be discharged into WYC in Haryana, which provides water to Halderpur water treatment plant, and 2,000 cusecs into EYC for UP and the remaining must flow into the main stream. Delhi is supposed to get 0.580 billion cubic metre of water every year from Yamuna through Hathnikund, including water coming through the main stream till the Okhla barrage. In case of a violation of the water flow agreement, any of the affected states can approach the Supreme Court.

WHAT IS HAPPENING AT THE BARRAGE NOW?

Officials said that if Yamuna's flow exceeds 100,000 cusecs, water is halted in WYC and EYC (and the entire water is to be discharged into the main stream of Yamuna). This is because the two man-made canals can be damaged by a high flow of water. On July 11, when water flow peaked at 359,000 cusecs, officials say no water was released into the two canals, in accordance with the rules.

On Friday at 3pm, when the water flow at Hathnikund fell to 58,495 cusecs, 10,510 cusecs was discharged into WYC, officials said, but there was no release into UP (maximum 2,000 cusecs) as it had not demanded water due to a breach in EYC.



Hindustan Times- 16- July-2023

In Himachal, a deluge of missed warnings

As swollen rivers in Himachal Pradesh receded this week, and the state began accounting for the losses suffered, a meme began circulating. *Barsaton mein pahad ghunne na aayen, kyunki pahad hi niche aa rahe hain* – Don't travel up the mountains in the monsoon because the mountains are coming down to visit you. Battered by the alarming frequency and intensity of landslides and floods that have devastated the Himalayas monsoon after monsoon, the message was also a jibe at the frenetic tourism activity that has upended the local ecosystems. For a state saddled with fiscal debts, the struggle to generate revenues and employment has propelled extractive growth led by tourism and infrastructure development. In recent years, the Himalayas have become the sites of multiple disasters that were attributed by various governments to erratic weather patterns spurred by the climate crisis. Yet, blaming excess rainfall or demonising flooding rivers cannot hide the development excesses and faulty planning that eroded the local capacity to weather climate vagaries.

In the last two decades, Himachal Pradesh has seen a nearly 3,000% rise in the number of tourists – from around 520,000 in 2001 to 15 million last year. The hub of this commercial mass tourism is Kullu-Manali, and is fast spreading to the trans Himalayan Lahaul-Spiti, which bore the

brunt of the recent floods. The spike in the built-up area along the Beas floodplains, in contravention of all safeguards or regulation, created a situation where the surging river had nowhere to go and ultimately broke through the national highway and villages, sweeping away cars and buildings that stood in its way. The construction of a four-lane highway from Kiratpur via Ner Chowk (Mandi) to Manali contributed to the unprecedented concrete sprawl along the river, originating from Rohtang. The highway between Pandoh and Manali alone has five tunnels. The muck and debris generated from the surface and underground excavation were dumped in and around the streams and river beds, adding to the sediment load of the rivers and causing more damage downstream.

Six large hydropower dams on the Beas and its tributaries in this stretch alone have blocked and tunnelled the river. A total 350 small and large dams are planned on this river alone. During downpours, the sudden release of stored and diverted water adds to the problem. These mega infrastructure projects have destabilised slopes to trigger land and mudslides, which further add to the quantum of silt in rivers. Similarly, 15,000 hectares of forests have been cleared for development activities since 1980, state forest data shows.

Connectivity is critical for access to basic health, education and markets in



The floods in the mountains have far-reaching effects downstream.

HT PHOTO

rural Himachal. But instead of applying caution, a nexus of local contractors-politicians leveraged village road building with no environmental oversight to mow down trees. Both deforestation and related disasters have dispossessed local communities with marginal land holdings of their livelihoods.

In recent years, transmission lines and roads have been categorised as linear projects and granted a slew of exemptions on the ground that these are essential infrastructure and have lower environmental impact because they are built in a straight line. The results have proven otherwise.

The frequent deluge in the mountains also has far-reaching effects downstream – as evident in Punjab and Delhi. Framing these events as climate or natural disasters without addressing the development-

led causes are mere attempts at absolving us of the questions of accountability and justice.

In an era where more extreme weather events are becoming the norm, our myopic policies are putting an unequal burden on the most vulnerable in our cities, villages and neighbourhoods to adapt to a changing world. Systemic policy and governance overhaul with circular economies and citizens at its core is a long-standing demand that the greed for profit has drowned out. Unlike models of untrammelled economic growth, nature follows a non-linear logic, which is why rivers refuse to toe the line.

Manshi Asher is an environmental justice researcher based in Himachal Pradesh. The views expressed are personal



Manshi Asher

The Times of India- 16- July-2023

Yamuna level continues to dip, but rain forecast a dampener

Orange Alert In U'khand And Himachal For Today

TIMES NEWS NETWORK

New Delhi: The Yamuna water is receding and its level constantly falling, giving the people of Delhi and its government a breather. But dark clouds are gathering elsewhere which might cast a shadow over the situation in Delhi. Maintaining its downward trend, with the volume of water from Haryana's Hathnikund barrage getting gradually reduced, Yamuna was flowing at the 206.72-metre mark at 9pm on Saturday, almost two metres less than the record high of 208.66 metres registered on July 13. The water level is measured at the old Yamuna bridge.

Several parts of Delhi saw a short but intense spell of rain on Saturday evening which didn't impact the situation much. The national capital is predicted to receive light to moderate showers on Sunday too. However, IMD has sounded an "orange" alert for Uttarakhand and Himachal Pradesh for Sunday.

The two states, along with Uttar Pradesh, are likely to experience "heavy" to "very hea-



The Yamuna was flowing at the 206.72-metre mark at 9pm on Saturday, almost two metres less than the record high of 208.66 metres registered on July 13

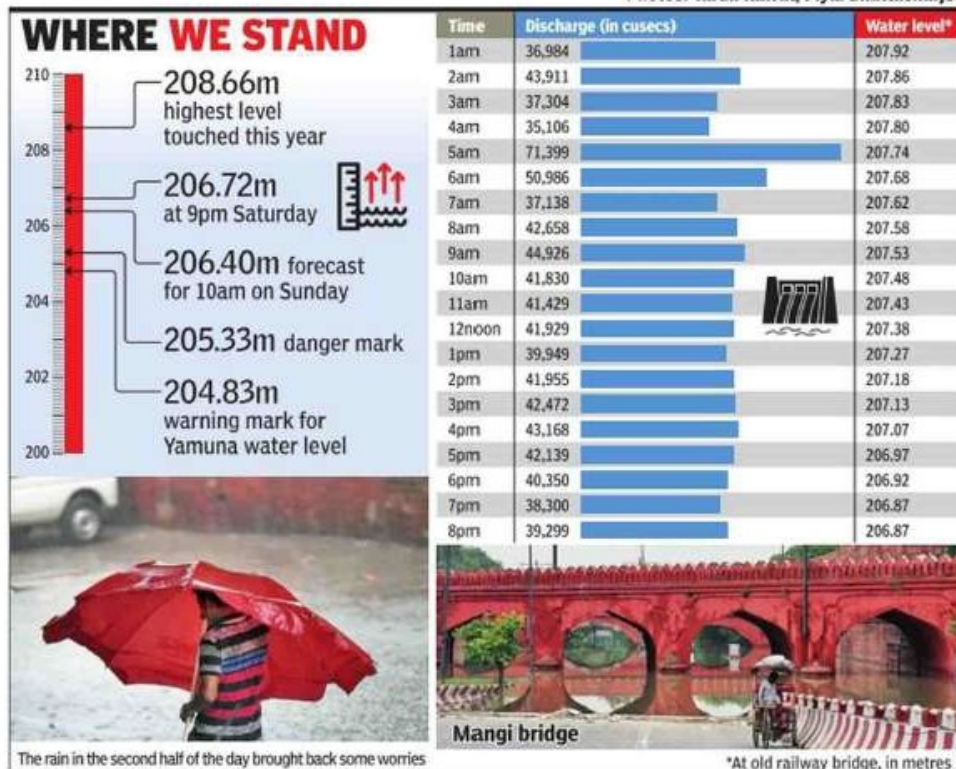
vy" rain which will continue for the next four days and decrease thereafter. This could aggravate the flood situation in the city. According to officials, the volume of water being released from the Hathnikund barrage has come down to nearly 40,000 cusecs in the absence of any significant rain in the northern states.

► City to see light rain, P 4

The Times of India- 16- July-2023

City to see light rain in next few days, says IMD

Photos: Tarun Rawat, Piyal Bhattacharjee



► Continued from P1

For now, Central Water Commission has predicted the level of the Yamuna at the old railway bridge to fall further and reach 206.4 metres by Sunday 10am. "The predictions, however, may change depending on how the monsoon behaves," said an official.

Chief minister Arvind Kejriwal tweeted that he was hopeful of the situation normalising in the capital soon. "The water level in the Yamuna river is gradually receding. If there is no heavy rain again, the situation will normalise soon," he tweeted.

Revenue minister Atishi also said the river water was receding and the people of Delhi would get relief in the next 12 hours.

Meanwhile, some parts of

the city saw light to moderate rain on Saturday evening. Between 5.30pm and 8.30pm, Safdarjung, Lodhi Road, Palam and Pusa recorded 12.8mm, 11mm, 18.2mm and 29.5 mm rainfall, respectively. Kuldeep Srivastava, scientist and head, regional weather forecasting centre, IMD, said, "The monsoon trough has shifted towards south of Delhi. Since it has come closer to Delhi, the city saw rain activity on Saturday." He added that the city was expected to receive mostly light showers for the next few days.

However, intense rain activity is predicted to continue in the Himalayan region. "Fairly widespread to widespread rain with isolated heavy to very heavy rain and thunderstorm and lightning is very likely to continue over Uttarakhand and Himachal Pra-

desh during the next four days. It is likely to decrease thereafter," said IMD in a bulletin issued on Saturday. "Easterly winds are blowing in the western Himalayan region, especially in Himachal Pradesh and Uttarakhand, due to the monsoon trough. As the easterly winds are adding moisture content, rain activity is likely to continue for the next few days. Some stations in Uttarakhand may also witness 'extremely heavy' rain on July 17," said Srivastava.

The maximum temperature was 34.6°C, one degree below normal, at Safdarjung, the city's base station. The minimum temperature was 27.1°C. The relative humidity oscillated between 64% and 92%.

The air quality index continued to remain in the "satisfactory" category at 73.

The Indian Express- 16- July-2023

HARDLOOK

Shrinking floodplains, more bunds: Anatomy of a flood

Unprecedented flooding in Delhi left officials scrambling to deal with the havoc it left in its wake. *The Indian Express* pieces together the chain of events that led to it

ABHINAYA HARIGOVIND
& MALLICA JOSHI
NEW DELHI, JULY 15

ADOT that marks the Old Railway Bridge (ORB) near the Red Fort in Delhi, on a map on the Central Water Commission's (CWC) website, went from yellow to orange to red in three days last week — indicating progressively rising water levels in the Yamuna over which the bridge is built.

The river breached the 'danger' level of 205.33 m on Monday evening, prompting the CWC to change the dot from yellow to orange. On Tuesday, the peak discharge from the Hathnikund Barrage upstream, in Haryana, stood at 3.59 lakh cusecs, against a normal discharge of around 352 cusecs.

On Wednesday, the dot went from orange to red, when the rising water crossed the Highest Flood Level (HFL), or the highest-ever level that the river has recorded at the bridge — 207.49 m. It remained red till Saturday morning, when the water had receded, after Delhi had seen its worst-ever recorded flood in 45 years.

The red dot marking the Old Railway Bridge stood out amidst a cluster of similar dots marking CWC monitoring stations upstream of the bridge along the Yamuna from the Hathnikund Barrage to Delhi — none had turned red. They remained green, yellow, or orange, indicating that the stations that lie between the barrage and the bridge had not breached the highest levels they had recorded

in previous years. These were the stations of Kalanaur and Karnal in Haryana, Mawi and Baghpat in Uttar Pradesh, and Palla which is near the point where the river enters Delhi.

Why did Delhi flood?

When asked if any other monitoring stations of the CWC between Hathnikund Barrage and the Old Railway Bridge had breached the HFL this past week, a senior official of the CWC, who asked not to be identified, said that they had not.

"It depends on the site. After Hathnikund, we have a station at Karnal for instance. Here, the site is very wide, and the Yamuna spreads out. Since there is very little habitation there, even the warning and danger levels are high, as the possibility of damage is low. In Delhi, the Yamuna is constricted," the official said.

The 'warning' and 'danger' levels are determined based on threat perception, in consultation with the state government, the official explained. "The 'warning' and 'danger' levels should ideally be reviewed and updated periodically," the official added.

Bhim Singh Rawat, associate coordinator of the South Asia Network on Dams, Rivers and People, said, "The rise in water level at these other stations had not crossed their HFLs. At the Old Railway Bridge, the HFL was breached by over one metre. There could be many reasons — floodplain encroachments, multiple structures, concretisation. The gates of the ITO Barrage being closed would have also

blocked the free-flowing water, and how much that has contributed to raising the water level would have to be assessed."

As the situation starts to improve in the city, officials said, answers will be found only after a multi-department assessment.

"Flooding at this scale is unusual in Delhi. Usually, it will first hit areas that lie upstream in Haryana. This time, however, the water level rose quickly and the breach in the regulator near ITO made matters worse. Simply put, no one was ready for this. The Irrigation and Flood Control Department of the Delhi government is small and not the most well-prepared since such a situation is rare," said a senior Delhi government official who did not want to be named.

Some answers

One of the answers may lie in the way the Yamuna flows through the region. In upstream Haryana, the floodplains are mostly unencumbered. Even when it enters Delhi near Palla, a wide floodplain is available for the Yamuna to spread across. It is near Wazirabad that the river becomes jacketed between embankments and can only rise vertically.

"Unless there is a very big quantity of water, the high embankments will not be easily breached and the river will rise vertically. We have seen that the water released by Haryana in 2013 and 2019 was far more than what it was this year. It is perplexing that the levels in Delhi rose to an all-time high despite this. It points towards some sort of an obstruction. The government has



Deep Reddy

Tracking the river's flow



said that five of the 32 gates at the ITO Barrage were not open. It needs to be studied whether these five gates will have such a high impact. For this, one also has to see which areas were flooded. If there is no flooding upstream, there might be an obstruction in the river in Delhi which is allowing the water to accumulate," said Manu Bhattacharya, Principal Director of INTACH's Natural Heritage Division.

On Saturday, the water level at the ORB had receded to 206.54 m at 11 pm and discharge from Hathnikund had fallen to around 39,000 cusecs at 1 pm.

An official of the Irrigation and Flood Control Department, said that when the discharge from the barrage was higher earlier, like the roughly 8 lakh cusecs released in 2019, the river upstream may have possibly breached its embankments significantly, which could have reduced the flow downstream.

"There might be many factors contributing to an increase in the water level in the Delhi stretch. The flood-carrying capacity of the floodplain is drastically reduced. The floodplain is as narrow as 300 m in a few stretches," said ecologist CR Babu, who is a member of the Principal Committee constituted on the orders of the National Green Tribunal (NGT) to monitor the rejuvenation of the Yamuna. The committee's approval is required before any work is taken up on the floodplains.

"The width of the floodplain at Palla is wide. I've seen it. The floodplain there is mostly under agriculture, except for a village a few kilometres away from the river, which has a bund. From Wazirabad downstream, the floodplain is compromised... Even dumping of waste on the floodplain can provide resistance to flood water. Each bridge, each

pillar, will contribute to the extent of rise in water levels during a flood. Separate bunds were created to protect the Commonwealth Games Village and Ashardham, and each bund will create resistance. If the floodplain used to be 5 km and has been reduced to 300 m, where will the water go? It's not just the river water, if the major drains are blocked or encroached, there will be backflow of sewage as well," Babu said.

Babu added: "Why has this not happened earlier? Our floodplain has shrunk drastically, and we didn't have so many bunds. The floodplains used to have many catchment wetlands, which have been filled up. So, even if we have a smaller discharge (from Hathnikund), there is a rise in water level."

Several experts have advocated for dredging and desilting the river, which officials say is only a few feet deep at many places. But the response has been lukewarm. The landmark NGT order about cleaning the Yamuna, in 2015, said the idea could be explored but cautioned against over exploitation for sand mining.

According to Babu, however, rivers are a self-regulating system. "Even at a medium flood level, which occurs in the monsoon, the sediment is flushed out. These are ecological processes that sustain the river," he said.

While the HFL was recorded in 1978 in Delhi, the flood in 1997 caused more damage, data from the CWC indicates. A total of 18 lives were lost in the 1978 floods, while 52 lives were lost in 1997, according to the CWC's report on flood damage statistics from 1953 to 2020. In 1997, 66,739 houses were damaged, against 10,670 in 1978. The cattle lost was 339 in 1978, and 660 in 1997.

Amar Ujala- 16- July-2023

बाढ़ का पानी घटा, खतरा बरकरार चार दिन भारी बारिश की चेतावनी

दिल्ली में बारिश से बढ़ी चिंता, हिमाचल समेत पहाड़ी राज्यों में बिगड़ सकते हैं हालात

अमर उजाला ब्यूरो

नई दिल्ली। राष्ट्रीय राजधानी में बाढ़ का पानी घटने लगा है, लेकिन खतरा अभी टला नहीं है। दिल्ली के कई इलाके अब भी जलमग्न हैं। यमुना का जलस्तर खतरों के निशान से ऊपर बना हुआ है। मौसम विभाग ने अगले चार दिन दिल्ली, हिमाचल प्रदेश, उत्तराखंड और उत्तर प्रदेश में भारी से अत्यधिक भारी बारिश की संभावना जताई है। शनिवार शाम दिल्ली के कुछ इलाकों में भारी बारिश भी हुई। अगर ऐसी स्थिति जारी रहती है, तो हालात फिर से बिगड़ सकते हैं। हालांकि, पानी कम होने के बाद दिल्ली में रिंग रोड, आईटीओ और कश्मीरी गेट इलाके में कुछ प्रमुख सड़कों को यातायात के लिए खोल दिया गया है।

केंद्रीय जल आयोग ने बताया कि दिल्ली में यमुना का जलस्तर शनिवार को 206.87 मीटर पर आ गया। रविवार तक जलस्तर के 206 मीटर तक आ जाने की उम्मीद है। दिल्ली के संभागीय आयुक्त अश्विनी कुमार ने कहा कि यमुना का पानी कम होने से प्रभावित इलाकों में स्थिति सुधर रही है। लेकिन बारिश सारी उम्मीदों पर पानी फेर सकती है। वहीं, भारत मौसम विज्ञान विभाग (आईएमडी) की वैज्ञानिक सोमा सेन रॉय ने कहा, दिल्ली, हरियाणा और आसपास के इलाकों में अगले पांच दिन तेज हवा और



गौतम बुद्ध नगर में फंसे लोगों को बचावकर्मियों ने सुरक्षित निकाला।

नोएडा में फॉर्महाउसों में काम करने वाले बचाए गए

यमुना में बाढ़ से नोएडा में नदी किनारे अवैध रूप से बने फॉर्म हाउसों में फंसे 500 से अधिक कामगारों को सुरक्षित निकाला गया है। आगरा, मथुरा में भी यमुना का पानी बढ़ रहा है और कई इलाकों को खाली करा लिया गया है।

■ गाजियाबाद के लोनी इलाके में बाढ़ की स्थिति बनी हुई है। एनडीआरएफ की टीम ने ट्रानिका सिटी, राम पार्क समेत अन्य इलाकों में फंसे 200 से अधिक लोगों को सकुशल बाहर निकाला है। वाराणसी में गंगा का जलस्तर बढ़ने से नदी किनारे रहने वाले लोग दहशत में हैं।

गरज के साथ हल्की से मध्यम स्तर की बारिश हो सकती है। 17 व 18 जुलाई को तेज बारिश की संभावना है। उत्तराखंड व हिमाचल में भारी बारिश के साथ

बिजली गिरने की संभावना है। दोनों राज्यों के साथ ही यूपी व पूर्वी राजस्थान में भी कई जगह भारी बारिश हो सकती है।

देश लौटते ही पीएम मोदी ने लिया हालात का जायजा

प्रधानमंत्री नरेंद्र मोदी ने फ्रांस और यूएई की यात्रा से शनिवार शाम को लौटते ही दिल्ली में बाढ़ के हालात का जायजा लिया। पीएम मोदी ने दिल्ली के उपराज्यपाल वीके सक्सेना को फोन किया और बाढ़ की स्थिति, उससे निपटने के लिए उठाए कदमों के बारे में पूछा। पीएम मोदी ने दिल्ली में यमुना का पानी घुसने पर पेरिस से भी फोन कर हालात की जानकारी ली थी।

केजरीवाल बोले-पानी का बहाव तेज, न लें सेल्फी

सीएम अरविंद केजरीवाल ने कहा कि अभी बाढ़ का खतरा कम नहीं हुआ है। बाढ़ के पानी में वीडियो और सेल्फी लेने से बचें। पानी का बहाव तेज है। ऐसा करना खतरनाक हो सकता है। >> छह मंत्रियों को सौंपी बाढ़ग्रस्त जिलों की जिम्मेदारी : पेज 4

कश्मीरी गेट क्षेत्र से 12 लोगों को सुरक्षित निकाला

बारिश की वजह से कश्मीरी गेट इलाके में छात्रावास में फंसे 12 लोगों को पुलिस व एनडीआरएफ की टीम ने सुरक्षित निकाला।

यमुनोत्री हाईवे बंद

उत्तराखंड के उत्तरकाशी जिले में मलबा गिरने से यमुनोत्री हाईवे बंद है। मौसम विभाग ने रविवार को देहरादून, हरिद्वार जिले के लिए भारी बारिश का रेड अलर्ट जारी किया है।