

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL

WESTERN ZONE BENCH, PUNE

ORIGINAL APPLICATION NO. 185 OF 2023

(Earlier PIL No. 14 of 2014)

IN THE MATTER OF:

Vanashakti & Anr.

.....Applicants

Versus

Union of India & Ors.

.....Respondents

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Advocate for the Applicant

07.02.2024

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
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ORIGINAL APPLICATION NO. 185 OF 2023

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ADDITIONAL AFFIDAVIT ON BEHALF OF THE APPLICANTS

I, Stalin Dayanand, aged 59 years, Indian inhabitant, authorized representative of Petitioner No. 1 having his office at Nandakumar Pawar House, Opp. Shri Jagannath Darshan Building, M.D. Kini Marg, Bhandup Village (East), Mumbai - 400 042 and the Petitioner No. 2 herein do hereby solemnly affirm as under:

1. I say that I am filing the present additional affidavit in light of the liberty granted by this Hon'ble Tribunal *vide* order dated 28.11.2023.
2. At the outset, I say that the present PIL (*and now an OA*) was necessitated in light of the rampant encroachment on the floodplains of rivers and tributaries, riverbeds and riparian fringes by way of acquisition, construction of walls and fences, encroachment, industrial and residential complexes in such fragile natural areas, ultimately resulting in deterioration of water holding capacity of rivers and tributaries and denial of public access to such natural commons for public and animals. I say that that the Respondents have not only failed



in promulgating a proper River Regulation Zone policy till date but have further cancelled and scrapped existing safeguards for rivers and its floodplains from industrial establishment. That due to their inaction, Respondents have allowed private encroachment and obstruction in ecologically fragile floodplains of rivers and tributaries that have continued to cause large-scale flooding and have failed in upholding their constitutional duties of environmental protection. Therefore, the apathy and negligence of Respondent authorities in upholding their duties under the Public Trust Doctrine and continuing non-compliance of the orders of this Hon'ble Tribunal is the cause of action for the present OA.

3. The instant OA has prayed for maintaining the natural form and flow of the river by protecting flood plains and river systems in Maharashtra and prayed for directions to the State Authorities to:
 - (i) formulate a river policy and prevent residential/commercial complexes, coming up 100m on either side of the river banks and 50m from all tributaries and water courses that empty into the rivers;
 - (ii) maintain such floodplains and river banks areas free from any obstruction by removal of such encroachment/obstruction;
 - (iii) ensure unrestricted access to the river for public and domestic and wild animals and enforce the Doctrine of Public Trust;
 - (iv) take remedial steps to restore the water bodies to the natural position;
 - (v) constitute a River Authority for monitoring protection of the river ecosystem and for clearing proposals for construction in these areas.



I. *Previous orders of the Hon'ble Bombay High Court in the present PIL/OA on requirement of protection of floodplains*

4. I say that during the pendency of the present proceedings, the Hon'ble Bombay High Court has passed various orders directing protection of floodplains and river systems and have noted continuing non-compliance of the Respondents on several occasions.

(i) Order dated 15.12.2014 - The Hon'ble High Court was of the opinion that having a river monitoring authority and/or such related aspects is necessary to consider in view of the issue regarding large-scale residential construction activities around the river bed and flood line raised in the petition and in furtherance of this, this Hon'ble Court appointed the learned Advocate General to assist in the matter. Annexed and marked hereto as **ANNEXURE R-1** is a copy of the order dated 15.12.2014.

(ii) Order dated 28.06.2016 – That shockingly, during the pendency of the PIL, Respondent State withdrew its policy regulating location of industries near the river banks and flood plains in the State *vide* GR dated 03.02.2015, which cancelled the River Regulation Zone Policy promulgated *vide* GR dated 15.07.2000 and amended *vide* GR dated 13.07.2009 and GR 13.06.2011. On 28.06.2016, I say that the withdrawal and cancellation of the River Regulation Policy was brought to the notice of this Hon'ble Court pursuant to which this Hon'ble Court issued rule and granted liberty to incorporate a challenge to the GR dated



03.02.2015 in the present proceedings and observed the following:

“...Thus, a policy which was made with the view to improve the quality of river water and which had put restrictions on the location of industries of river basin area has been completely scrapped as far as industries are concerned.”

Annexed and marked hereto as **ANNEXURE R-2** is a copy of the order dated 28.06.2016.

- (iii) Order dated 04.08.2016 – On the next date, the Hon’ble High Court directed the State Government to make a statement before the Court as to whether the State intends to come out with new Water Regulation Policy or River Regulation Policy, in light of the earlier policy having been scrapped by the Government *vide* GR dated 03.02.2015. I say that the State Government has failed to clarify whether a new Water Regulation Policy or River Regulation Policy would be formulated. Annexed and marked hereto as **ANNEXURE R-3** is a copy of the said order dated 04.08.2016 passed by the Hon’ble High Court in the present proceedings.

- (iv) Order dated 24.04.2018 – I say that on this day, as regards scrapping of the river regulation policy without any rationale, the Hon’ble HC had observed: *“It is not the case made out by the State Government that the need which existed in the year 2009 and 2011 to have a policy for improving the quality of river water does not subsist and that the water quality of the rivers has*



substantially improved.” Subsequently, the High Court observed at Para 8 of the order that *prima facie*, the State Government is under an obligation to ensure that there are no constructions made in the riverbeds or on the river fronts so as to obstruct the right of citizens of approaching rivers and to take benefit of the rivers and held that pollution of rivers violate Article 21 of the Constitution of India. Annexed and marked hereto as **ANNEXURE R-4** is a copy of the said order dated 24.04.2018 passed by this Hon’ble Court in the present proceedings.

- (v) Orders dated 24.08.2018, 15.01.2019 & 31.01.2019 – On 24.04.2018, the Hon’ble High Court again sought status from the Central Government on framing of river regulation policy and from the State Government on the status of compliance of the NGT order dated 27th March, 2015 concerning a time-bound demarcation of flood lines across the State. On 15.01.2019, more time was sought by both Central Government and State Government to take instructions on the aforesaid position. On 31.01.2019, the Central Government informed the Court that draft River Regulation Zone (“RRZ”) notification has been circulated to all State Governments of the country and after examining their comments, the draft RRZ policy will be finalised. The State Government submitted that in the meanwhile, the State would contemplate formulating some policy to protect the flood plains and river beds from indiscriminate construction and encroachment. Annexed and



marked hereto as ANNEXURE R-5 are orders dated 24.08.2018, 15.01.2019 & 31.01.2019.

II. Affidavits of Respondent authorities in support of protection of floodplains and riverine areas and indicating delay in formulating RRZ Policy and demarcation of floodlines

5. I say that various affidavits have been filed by the Respondents in the present proceedings that support the cause in the petition and also indicate continuing delay in framing of the RRZ policy and demarcation of flood lines in rivers/tributaries. All such aspects have been summarised below in the following manner:

- (i) Affidavit dated 19.08.2014 of Director, Environment Department, Government of Maharashtra (Respondent No. 4) – Environment Department admits and recognises at Para 11 that river conservation and protection of river, catchments, floodplains, riparian zones and stream flow against all kinds of human activities is paramount and efforts must be made to restore the river ecology and to maintain ecological services. It further admits that riparian fringes and river beds continue to remain affected from encroachments, unscientific liquid and solid waste disposal from urban and rural settlements. At Para 13, the affidavit points out that Water Resources Department and Irrigation Department are required to prepare flood line maps along the river (*divided into Blue Line, Restrictive Zone and Red Line*) for protection of people and properties from floods as per Government Circular dated 21.09.1989. It further stated that a comprehensive RRZ policy is being framed by the Union of India



but no clear demarcation of timeline was provided. I say that after having more than 10 years passed since the filing of this affidavit, RRZ policy has not been framed by the Union and to Petitioner's shock and surprise, the State has further withdrawn/cancelled the last remaining river regulation policy that was applicable to industries.

- (ii) Affidavit dated 09.07.2018 of Principal Secretary, Environment Department, Government of Maharashtra (Respondent No. 2) – By way of this affidavit, Environment Department admits that in the year 2015, 49 polluted river stretches were recognised in the State. I say that this has increased to 56 stretches in November, 2022, as per CPCB's report titled '*Polluted river stretches for restoration of water quality, November 2022*'. Annexed and marked hereto as **ANNEXURE R-6** is a copy of the extracts of the report of November, 2022 titled *Polluted river stretches for restoration of water quality, November 2022*".
- (iii) Affidavit dated 11.07.2018 of Maharashtra Pollution Control Board (Respondent No. 7) – I say that MPCB's affidavit is a replica of the Environment Department's affidavit dated 09.07.2018 with a few minor additions that do not respond to this Court's queries as to what steps are being taken for implementing the river regulation scheme for the State.
- (iv) Affidavit dated 07.10.2014 and 10.10.2018 of Ministry of Environment, Forest and Climate Change (Respondent No. 4) – I say that MoEFCC has submitted in its first affidavit dated



07.10.2014 that an Expert Group was constituted to prepare a concept paper on RRZ policy and accordingly a Committee was appointed to suggest a suitable regulatory framework for management of flood plains of rivers. Consequently, two meetings were held by the Committee on 29.04.2014 & 13.08.2014 where draft guidelines and draft notifications were discussed pursuant to which final action would be taken. In its second affidavit filed 4 years later (dated 10.10.2018), MoEFCC again stated that various meetings have been held for soliciting comments on the draft RRZ notification and many states including Maharashtra have submitted its views on the Draft RRZ Notification. However, the RRZ policy has not been notified till date and in fact, the MoEF has now claimed in its latest affidavit dated 11.04.2023 that the jurisdiction concerning rivers now vest with the Ministry of Jal Shakti. Annexed and marked hereto as **ANNEXURE R-7** is a copy of the affidavit dated 11.04.2023 of MoEFCC filed in the present proceedings.



III. Continuing delay by MoEF&CC in promulgating the River Regulation Zone (RRZ) Policy

6. I say that 19 years ago in December 2002, MoEFCC had prepared a background document for the proposed notification on River Regulation Zone (RRZ) which provided a complete code on how construction on flood plains ought to be banned and further divided river stretches into 4 categories – RRZ-I, RRZ-II, RRZ-III and RRZ-IV for the purposes of improving water quality and biodiversity in and around the flood plains of river/tributaries. This policy is annexed at Exhibit – J (at Pg. 101) to the Petition. Applicants state that for 22 years now, MoEFCC has failed to draft the RRZ policy.

7. Pursuant to filing of the present petition in 2014, I say that MoEFCC filed its first affidavit dated 07.10.2014 which stated that an Expert Group was constituted in 2014 to prepare a concept paper on RRZ policy and accordingly a Committee was appointed to suggest a suitable regulatory framework for management of flood plains of rivers. Consequently, two meetings were held by the Committee on 29.04.2014 & 13.08.2014 where draft guidelines and draft notifications were discussed pursuant to which final action would be taken. I say that no timeline was provided by MoEFCC concerning when the entire process was expected to be completed.
8. I say that in its second Affidavit dated 10.10.2018, MoEF stated that another meeting Expert Committee was held on 17.12.2015 and it was only then the decision was made to circulate the RRZ Draft Notification to the concerned State Governments, which was circulated on 08.01.2016. Once again, no proper timeline has been provided in the second affidavit and after 3 years having passed since the filing of this affidavit, finalisation of RRZ Notification appears to remain uncertain. I say that the continuing inaction of MoEFCC in framing RRZ policy demonstrates that officers are aloof of serious consequences to life and property being faced by citizens in various parts of the country, and more so in Maharashtra, on account of the recent flooding caused due to swelling of rivers Krishna and Godavari due to heavy rains.
9. I say that the present status of the promulgation of the Draft RRZ Notification is that after almost 22 years post the preparation of the concept paper by the Expert Group in 2002 and 10 years since the



pendency of the present PIL/OA, the RRZ Notification is yet to be finalised by MoEFCC. In fact, the MoEFCC ought to have expedited the process of finalisation of RRZ in the wake of withdrawal/cancellation of Maharashtra's own state level policy that regulated location of industries from rivers/tributaries. However, it appears from the latest affidavit of MoEFCC that it is the Ministry of Jalshakti who has to notify the RRZ now.

10. I say that various judgments have been pronounced by the Hon'ble Apex Court, various High Courts and this Hon'ble Tribunal on the importance of protection of floodplains and rivers and the need to keep such natural areas free from encroachment and unscientific construction and the same have been placed on record by the Petitioners/Applicant before this Hon'ble Court *vide* Compilation of judgments dated 17.07.2018. The Applicant seeks to rely upon the said judgments in the present application.

IV. Requirement for urgent action in the wake of changing climate and global warming increasing the flood risk in India



11. In a latest study released in May 2019 by a group of experts which was later relied upon in the study conducted by Intergovernmental Panel on Climate Change (IPCC), an intergovernmental body of United Nations, it is concluded by scientists that global warming is certainly going to cause extreme weather events in India including high intensity rainfalls and thereby, it will lead to even more severe flooding in the coming years. Annexed and marked hereto as **ANNEXURE R-8** is a copy of the relevant extracts of the report titled "*Increased flood risk in Indian sub-continent under the warming climate May 2019*". Therefore, I say

that it is the need of the hour for authorities to implement its constitutional obligations of protecting floodplains and to completely ban any construction or encroachment in floodplains of rivers and its tributaries. Further, all illegal encroachments and illegal constructions on floodplains ought to be demolished and such flood plains be restored so as to enable the revival of natural drainage system of rivers.

12. In fact, the Maharashtra State Water Policy, 2019 also clearly states that flood plains must be kept free from encroachment and will be actively preserved. It states the following at Para 9.4.1:

“9.4.1 Ecosystem:

Rivers, water bodies, aquifers and wet lands will be recognized as ecological systems and must be protected from over exploitation, depletion, pollution or contamination and degradation. Rivers will be protected from any form of construction on their flood plains and from excessive sand mining.”

Further, the policy reiterates at Para 16(9) that for an effective monitoring of management of water resources, mapping of flood plains is essential. Annexed and marked hereto as **ANNEXURE R-9** is a copy of the extracts of Maharashtra State Water Policy, 2019.



V. *Instances of continuing violations after flood line maps having been prepared*

13. I say that a perusal of the Water Resources Department's website reveals that Flood line Maps of various rivers of Maharashtra depicting respective Blue Lines and Red Lines have been uploaded. Annexed and marked hereto as **ANNEXURE R-10** is a copy of the extracts of website of water resources department. I say that in spite of preparation of these maps, construction on flood plains have continued unabated in

violation of the Circulars dated 02.09.2018, 21.09.1989 and 03.05.2018. Annexed and marked hereto as **ANNEXURE R-11** are circulars dated 02.09.2018, 21.09.1989 & 03.05.2018. However, the flood line maps of rivers of Mumbai; Dahisar, Poisar, Oshiwara and Mithi are not yet prepared.

- 14.I say that to substantiate the fact that despite the preparation of the flood line maps, prohibited activities are continuing to sprout on the flood plains and inside the Blue Line, the example of Ulhas river which runs at the outskirts of Mumbai and along various regions of Mumbai Metropolitan Regions is being placed by way of the instant affidavit. I say that the Applicant has prepared a document highlighting 19 locations along the Ulhas river where construction work has commenced or carried out on or after 2018, which is subsequent to the preparation of Ulhas river flood line maps. A list of 19 locations with GPS coordinates alongwith the time stamp showing construction on the flood plains in violation of the aforesaid circulars is annexed and marked hereto as **ANNEXURE R-12**.



VI. No clarity on the authority responsible for taking action against the violations of circulars dated 02.09.2018, 21.09.1989 & 03.05.2018 and the need of an RRZ Notification thereof

- 15.I say that a perusal of the circular dated 03.05.2018 reveals at Para 11 that the role and responsibly of the Water Resources Department is limited to demarcation of flood lines. That for any necessary permissions, statutory approvals of Environment Department/Other Departments/Local Bodies/other Government Departments, if necessary, will be obtained separately. I say that this clearly shows that

there is absolutely no clarity on the exact department which is responsible to enforce the circular dated 03.05.2018 and to take an effective action against the violators. I say that this responsibility is casually stated at Para 9 to be of the Chief Engineer alone, who does not have the expertise and resources to take action against each and every violation. I say that it is in this regard that the draft RRZ Notification of the Central Government will be necessary to refer to as it specifically seeks to define and delineate the duties and responsibilities of each of the expert authorities such as the State River Conservation Zone Authority and Central River Conservation Zone Authority *et al.*

16. In view of the above, I say that this Hon'ble Tribunal may be pleased to direct that:

- (i) no construction of any kind be allowed forthwith in the Blue Line (Prohibitive Zone) across all the rivers in Maharashtra and the circulars dated 02.09.2018, 21.09.2018 & 03.05.2018 be implemented *in toto*;
- (ii) the River Regulation Zone (RRZ) Notification, that is pending to be finalised since 22 years, be notified by the MoEFCC/Ministry of Jalshakti in a time bound manner;
- (iii) stopping of all impermissible construction activities inside the Blue Zone (Prohibitive Zone) forthwith;
- (iv) preparation of Flood Line Maps for 4 rivers of Mumbai; Dahisar, Poisar, Oshiwara and Mithi be undertaken by the Water Resources Department (R-4) in a time-bound manner.



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Solemnly affirmed at Mumbai)

Dated this 07th February, 2024)

07 FEB 2024

Identified by Me

Zaman Ali,

Advocate for Original Applicants

DEPONENT

BEFORE ME

SHANE CARDOZ

Advocate & Notary (Govt of India)
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Mobile: 400 050 Mob, 98205 17020
MAH / 3457 / 2002



Notary Register Serial No.	418/E/24
Date:	07 FEB 2024

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S.



IN THE HIGH COURT OF JUDICATURE AT BOMBAY

ORDINARY ORIGINAL CIVIL JURISDICTION

PUBLIC INTEREST LITIGATION NO. 14 OF 2014

Vanashakti Public Trust & Anr.

....Petitioners.

Vs.

Union of India & Ors.

....Respondents.

Ms. Gayatri J. Singh and Ms. Kranti L.C. for the Petitioners.

Ms. Sharmila U. Deshmukh for Respondent Nos. 2(i),3 and 7.

Mr. Parag Vyas with Mohamedali M. Chunawala for Respondent No.1.

**CORAM : ANOOP V. MOHTA AND
N.M. JAMDAR, JJ.**

DATE : 15 DECEMBER 2014.

P.C.:-

Considering the issue raised with regard to the residential construction activities around the river bed and the flood line, it is desirable that the learned Advocate General to assist in the matter, as in our opinion, it is necessary to consider to have a river monitoring authority and/or such related aspects.

2 Though the other Respondents are served, no one appeared for them.

3 Stand over to 22 December 2014 at 11.00 a.m.

(N.M. JAMDAR, J.)

(ANOOP V. MOHTA, J.)

True copy
[Signature]

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IN THE HIGH COURT OF JUDICATURE AT BOMBAY
 ORDINARY ORIGINAL CIVIL JURISDICTION

PUBLIC INTEREST LITIGATION NO. 14 OF 2014

WITH

NOTICE OF MOTION (ST.) 639 OF 2015

IN

PUBLIC INTEREST LITIGATION NO. 14 OF 2014

Vanashakti Public Trust & Anr.

...Petitioners

Versus

Union of India & Ors.

...Respondents

Ms. Mani Prakash, i/b Ms. Gayatri J. Singh for the Petitioners.

Mr. Parag A. Vyas, a/w Mr. Mohamedali M. Chunawala, for Respondent No. 1 U.O.I.

Mr. Milind More, Addl. G.P. for Respondent No. 2 & 3.

Mrs. Sharmila U. Deshmukh, for Respondent No. 6.

CORAM : A.S. OKA &
 A.A. SAYED, JJ.

DATE : 28th June 2016

PC. :

1. By amending the Petition, a challenge has been incorporated to the Government Circulars dated 3rd February 2015 and 16th February 2015. On 15th July 2000, the State Government

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came out with the policy for regulation of the location of industries in river basin area and improvement in the quality of river water which was amended on 13th July 2009. The Government Resolution dated 3rd February 2015 which is impugned in the amended Petition provides that the said policy will not apply to industries. The Government Circular dated 16th February 2015 records that there is a consequential Circular issued for giving effect to the decision of cancellation of Water Regulation Policy of 2009. Thus, a policy which was made with the view to improve the quality of river water and which had put restrictions on the location of industries of river basin area has been completely scrapped as far as industries are concerned. Therefore, the issue raised in this Petition will have to be decided finally. Accordingly, we issue Rule. All concerned learned Counsel representing to Respondents today waive service. The Affidavits-in-Reply to the amended Petition to be filed within one month. Place the Petition on 4th August 2016 for hearing as to interim relief.

[A.A. SAYED, J.]

[A.S. OKA, J.]

Sharayu.

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IN THE HIGH COURT OF JUDICATURE AT BOMBAY
 ORDINARY ORIGINAL CIVIL JURISDICTION

PUBLIC INTEREST LITIGATION NO. 14 OF 2014

Vanashakti Public Trust & Anr. ... Petitioners
 vs.
 Union of India, through the Secretary,
 Ministry of Environment & Forest & Ors. ... Respondents

Mr. Zamin Ali i/b. Kranti L.C. & Ms. Gayatri Singh, Advocate for the petitioners.

Mr. Parag Vyas a/w. Mr. Mohamedali Chunawala, Advocate for respondent no.1/UOI.

Mr. Milind More, Addl. G.P. for respondent nos. 2 and 3.

Ms. Sharmila Deshmukh, Advocate for respondent no. 6.

CORAM: A.S. OKA &
MRS. MRIDULA BHATKAR, JJ.
DATE : AUGUST 4, 2016.

P.C.

None of the respondents have filed a reply for dealing with the prayer of interim relief. We direct the State Government to make a statement before this Court as to whether the State intends to come out with new Water Regulation Policy or River Regulation Policy, as the earlier policy has been scrapped by the Government in the year 2015.

2. We direct learned AGP to make a statement on this aspect on the

next date, i.e., 19th August, 2016. To be listed under the category of “Fresh Matters”. In the meanwhile, we extend the time to file reply by a period of one month from today.

(MRIDULA BHATKAR, J.)

(A.S. OKA, J.)

True Copy
HJ

ORDER :

1. Heard the learned Senior Counsel appearing for the Petitioners, the learned Counsel appearing for the Respondent No. 1, the learned Additional Government Pleader for the Respondent No. 2, 4 and 6. We have also heard the learned Counsel appearing for the Respondent No. 3. The Respondent No. 7 is represented by an Advocate.

2. This Public Interest Litigation is filed for inviting attention of the Court to the fact that indiscriminate constructions and development projects are being undertaken around the rivers in the State including in the river banks, flood plains and on the rivers fronts. Considering the challenges in the Petition, Rule has been issued.

3. The attention of this Court is invited to the Government Resolution of 13 July 2009 issued by the Environment Department of the State Government under the heading "Policy for improving the quality of the river water".

2/9
April 24, 2018

There were amendments made to the said policy. Perusal of the Government Resolution dated 13 July 2009 records the purpose for which the said Government Resolution was issued. In the introductory part, it is stated thus:-

“The Policy for location regulation relating to environment of industries in the river basin area was decided by the Government by Government Resolution dated 15.07.2000. Out of that for certain existing industrial areas of Maharashtra Industrial Development Corporation improvement in the said location regulation Policy has been done by Reference NO. 2. Due to rapid industrialisation and urbanization, considering the issues of development of environment supporting manufacturing process, as well as creation of infrastructure facilities relating to environment the proposal for improvement in location regulation policy was under consideration of the Government.

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In that regard, an overall view of the objections/instructions invited through a public notice was considered.”

4. The Resolution refers to classification of 20 main rivers and tributaries in the State into four classes. The Resolution provides for several restrictions. On 13 June 2011, the said Resolution was modified. The introduction to the modified Resolution notes that under the Government Resolution dated 13 July 2009 red category projects like hotels, resorts, lodging, swimming, etc. were permitted subject to certain terms and conditions. It is recorded further that due to effluent generated due to the said projects, the possibility of river pollution arises. It is also noted that in A-1 classification river areas, there are rural areas and water from the said areas after primary processing or without doing any processing is being used for drinking purposes which increases water borne diseases. Therefore, it was clarified that the provisions made in paragraph 8 of the earlier policy permitting hotels, resorts was

modified and it was observed that paragraph 8 of the earlier resolution will apply to A-2, A-3 and A-4 areas. By a Circular dated 21 February 2015, which is impugned by the Petitioners in the present Public Interest Litigation, the Government Resolution dated 13 July 2009 styled as Water Regulations Policy 2009 as amended was cancelled. We may note here that in the order dated 4 August 2016, this Court had directed the State Government to make a statement before this Court as to whether the State intends to come out with a new Water Regulation Policy or River Regulation Policy. We find that there is no statement made for complying with the said direction. Thus, in the year 2009, a policy was made by the State Government accepting need to have location regulations for the purposes of improving quality of river water. On 13 June 2011, the policy was modified as aforesaid.

5. The learned Senior Counsel appearing for the Petitioners has placed on record the Report of February 2015 of the Central Pollution Control Board under the name "River

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stretches for restoration of water quality”. In paragraph 3.17 of the report, it is pointed out that 49 rivers in the State which are named in the said paragraph were found to be polluted. It is stated that the water quality of rivers in Maharashtra was measured at 156 locations on 49 rivers. It was found that 123 locations were non-complying to the water quality criteria with respect to Biochemical Oxygen Demand (BOD). It is not the case made out by the State Government that the need which existed in the year 2009 and 2011 to have a policy for improving the quality of river water does not subsist and that the water quality of the rivers has substantially improved.

6. It was tried to be contended that the Central Pollution Control Board is coming out with a policy.

7. If the pollution of the rivers in the state continues, the same will violate the fundamental rights guaranteed by Article 21 of the Constitution of India to the citizens to live in a pollution free environment. This is apart from the mandate of

6/9
April 24, 2018

Article 48A which lays down that the State shall endeavour to protect and improve the environment. Under Article 51A, it is a duty of every citizen to protect and improve the natural environment including rivers.

8. As stated earlier, now there is a report of the Central Pollution Control Board of February 2015 commenting upon the quality of water in 49 polluted rivers in the State. *Prima facie* we are of the view that the State Government is under obligation to take all possible steps not only to reduce the pollution in and around the rivers, but also to improve the quality of water in the rivers. The State Government under an obligation to ensure that there are no constructions made in the river beds or on river fronts so as to obstruct the right of citizens of approaching rivers and to take benefit of the rivers.

9. We are conscious of the fact that under Article 226 of the Constitution of India, we cannot direct the State Government to take a particular policy decision in a particular

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manner. But writ Court can always direct the State Government to comply with its constitutional obligations so that the fundamental rights guaranteed by Article 21 of the Constitution of India are not violated. The State has not chosen to make any statement in terms of the order dated 4 August 2016 for last more than 20 months. Therefore, we proceed on the assumption that the State does not want to frame a new policy.

10. Therefore, we direct the State Government to file a comprehensive Affidavit setting out the steps that the State Government proposes to take in the matter in the light of the above discussion. The Affidavit shall be filed by a senior officer not below the level of a Secretary to the State Government.

11. We also direct the Maharashtra Pollution Control Board to file an Affidavit dealing with the said issue. The Maharashtra Pollution Control Board will also ascertain whether any further report has been submitted by the Central Pollution Control Board as regards the rivers in Maharashtra. If

8/9
April 24, 2018

there are such reports, the same shall be placed on record by the Maharashtra Pollution Control Board.

12. Place the Petition on 26 June 2018 for hearing as to interim relief.

[RIYAZ I. CHAGLA J.]

[ABHAY S. OKA, J.]

9/9
April 24, 2018

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H.S.



IN THE HIGH COURT OF JUDICATURE AT BOMBAY
ORDINARY ORIGINAL CIVIL JURISDICTION

**PUBLIC INTEREST LITIGATION NO.14 OF 2014
WITH
PUBLIC INTEREST LITIGATION NO.45 OF 2015 (A.S.)
WITH
NOTICE OF MOTION (L) NO.639 OF 2015**

Vanashakti Public Trust and Another ...Petitioners

vs.

Union of India and Others ...Respondents

Ms. Gayatri Singh, Sr. Advocate a/w. Mr. Zaman Ali, for the
Petitioners.

Mr. Milind More, AGP for Respondents-State.

Mr. Parag Vyas a/w. Mr. M.M. Chunawala, for Respondent No. 1.

Ms. Sharmila Deshmukh a/w. Ms. Jaya Bagwe, for Respdt.No. 2.

Ms. Pooja Yadav, for Respondent No. 5.

**CORAM : SHANTANU KEMKAR &
S. V. KOTWAL, JJ.**

DATE : AUGUST 24, 2018

P.C.:

. We direct the State as also the Central Government to
file additional affidavit showing the current position as to framing
of the river regulation. We also direct the State to file affidavit as to
what steps they have taken for complying the order dated 27th
March, 2015 passed by the National Green Tribunal (NGT) in
Appeal No. 25 of 2014. Three weeks time for the same is granted.

2. List on 21st September, 2018.

(S. V. KOTWAL, J.)

(SHANTANU KEMKAR, J.)

**IN THE HIGH COURT OF JUDICATURE AT BOMBAY
 ORDINARY ORIGINAL CIVIL JURISDICTION**

PUBLIC INTEREST LITIGATION NO.14 OF 2014

Vanashakti & Ors. ... Petitioners

V/s.

Union of India & ors. ... Respondents

Ms. Gayatri Singh, Sr. Advocate i/b. Zaman Ali for the petitioners.

Mr. M.M.Chunawala a/w. Parag Vyas for respondent no.1.
 Mr. Milind More, Addl.GP a/w. Himanshu Takke, AGP for State,
 respondents 2, 3 and 6.

Ms.Shakuntala S. Wadekar for respondent no.4.

Ms.Jaya Bagwe i/b.Sharmila U.Deshmukh for respondent no.6.

**ALONGWITH
 PUBLIC INTEREST LITIGATION NO.45 OF 2015
 (CIVIL APPELLATE JURISDICTION)**

Dr.Vishwambhar Hanumantrao
 Choudhari ... Petitioner

V/s.

Government of Maharashtra & ors. ... Respondents

Ms. Leena Patil for the petitioners.

Mr. A.A.Kumbhakoni, AG a/w. Mr.A.B.Vagyani, GP a/w. Ms.Nisha
 Mehra, AGP for respondent no.1.

Mr. C.M.Lokesh for respondent no.4.
Ms.Jaya Bagwe i/b.Sharmila U.Deshmukh for respondent no.2.

**CORAM :NARESH H. PATIL, C.J.
& N.M. JAMDAR, J.**

15th January, 2019.

P.C.

The learned Counsel appearing for Union of India to take further instructions in respect of finalisation of draft RRZ policy as Maharashtra State had submitted its comments.

2. The learned Advocate General is present who would also take instructions in respect of the demarcation to be done by the State in respect of the rivers flowing in the State of Maharashtra.

3. Stand over to 31st January, 2019.

N.M.JAMDAR, J

CHIEF JUSTICE

L.S. Panjwani, P.S.

Sequeira

***IN THE HIGH COURT OF JUDICATURE AT BOMBAY
 ORDINARY ORIGINAL CIVIL JURISDICTION
 PUBLIC INTEREST LITIGATION NO. 14 OF 2014***

Vanashakti Public Trust and another .. Petitioners
 Vs
 Union of India and others .. Respondents

Ms.Gayatri Singh, Senior Advocate i/b Zaman Ali, for Petitioners.
 Mr.Mohamedali M.Chunawala, for Respondent No.1, Union of India.
 Mr.Milind More, Additional Government Pleader, for Respondent Nos.2, 3 and 6.
 Ms.Sharmila U.Deshmukh, for Respondent No.6.
 Ms.Shakuntala S.Wadekar, for Respondent No.4.

*Along with
 (Civil Appellate Side)
 PUBLIC INTEREST LITIGATION NO. 45 OF 2015*

***CORAM : NARESH H. PATIL, C.J. &
 N.M.JAMDAR, J.***

Date : 31 January, 2019.

P.C. :

We have heard the learned Senior Advocate appearing on behalf of Petitioners and learned counsel appearing for Union of India. The learned AGP submits that in the intervening period, State would contemplate formulating some policy to protect the river beds or prevent any indiscriminate constructions, encroachment along side the river beds.

2. The learned counsel appearing for the Union of India submits that draft RRZ notification has been circulated to all State

governments, MoWR, Inland Waterways Authority of India, NITI Aayog and Union territories. After receiving comments they are to be examined by the Technical Expert Committee and thereafter draft RRZ notification would be finalised. The communication received by the learned counsel for Union of India is placed on record and marked 'X'. It is expected that the Ministry of Environment and Forest, and Union of India would impress upon the State to submit their comments as early as possible. In case any reminders in this regard are required to the State, the same to be done so appropriately.

3. Stand over to 21 February 2019.

N.M.JAMDAR, J.

CHIEF JUSTICE

True Copy
[Signature]

POLLUTED RIVER STRETCHES FOR RESTORATION OF WATER QUALITY



WATER QUALITY MANAGEMENT (I) DIVISION
Central Pollution Control Board (CPCB)
Ministry of Environment, Forests & Climate Change (MoEF & CC)
Parivesh Bhawan, East Arjun Nagar,
Delhi – 110032
November, 2022

PREFACE

The water quality of aquatic resources has been one of the major environmental concerns. It is important that effective actions are taken to control water pollution that adversely affects water bodies. Water bodies need to be regularly monitored to assess the quality and help formulating appropriate plan of actions. CPCB has been assessing water quality of aquatic resources in the country in association with State Pollution Control Boards & Pollution Control Committees under National Water Quality Monitoring Network (NWMP). At present, the network consists of 4484 locations spread in 28 States and 7 Union Territories across the country.

As part of a periodic assessment of water quality of rivers in the country, CPCB identifies polluted river stretches (PRS) considering Bio-Chemical Oxygen Demand (BOD) as a criteria parameter. The analysis helps in preparation and implementation of appropriate action plans for restoration of identified polluted river stretches.

This study 'Polluted River Stretches for Restoration of Water Quality – 2022' is a report based on the aforementioned periodic analysis of water quality data generated. To give a brief overview, of the 603 rivers assessed, there are 311 Polluted stretches in 279 rivers in 30 States & Union Territories. On a positive note, the number of polluted river stretches has decreased from 351 in year 2018 to 311 in year 2022. Further, marked improvement in previously identified 180 PRS has been observed, and 106 of these PRS no longer remain in the list of PRS.

Going forward, concerted efforts of Central and State Government organizations with effective public participation are required for further improvement in river water quality in India. I am optimistic that this study will be of use to all concerned stakeholders and agencies in taking remedial measures to achieve our collective goal of restoration of identified Polluted River Stretches.

Dr. Prashant Gargava
Member Secretary

November, 2022

2. STATUS OF POLLUTED RIVER STRETCHES IN INDIA

The water quality data for years 2019 and 2021 is analyzed and monitoring locations exceeding the water quality criteria are identified as polluted locations. Water quality data for the year 2020 has not been considered in the exercise as data generated in year 2020 may not reflect the actual water quality as most commercial and industrial activities were restricted due to lockdown in the country in light of COVID 19 pandemic.

Upon reviewing water quality data of 1920 locations monitored during the year 2019 and 2021, it was observed that 817 river locations were exceeding the Primary Water Quality Criteria for Outdoor Bathing for the parameter BOD i.e. more than 3 mg/L. The list of 817 river locations is given in **Annexure I**. The polluted locations in a continuous sequence were defined as polluted river stretches. Based on the assessment, 311 polluted river stretches have been identified on 279 rivers in 30 States and Union Territories. The list of 279 polluted rivers and 324 rivers on which no polluted stretches were identified are provided in **Annexure II & III** respectively. The priority wise number of river stretches are given in Table 1 below.

Table - 1: Priority wise Number of Polluted River Stretches

Priority Class	Number of polluted river Stretches
I	46
II	16
III	39
IV	65
V	145
Total	311

Based on the assessment, it is observed that, the state of Maharashtra has highest number of polluted river stretches i.e. 55, followed by Madhya Pradesh (19), Bihar (18), Kerala (18), Karnataka (17), Uttar Pradesh (17), Rajasthan (14), Gujarat (13), Manipur (13), West Bengal (13), Assam (10), Tamil Nadu (10), Himachal Pradesh (9), Jharkhand (9), Telangana (9), Uttarakhand (9), Jammu & Kashmir (8), Meghalaya (7), Odisha (7), Chhattisgarh (6), Goa (6), Punjab (5), Nagaland (4), Andhra

Pradesh (3), Haryana (3), Mizoram (3), Puducherry (3), Daman and Diu, Dadra and Nagar Haveli (1), Delhi (1) and Tripura (1). State-wise & Priority wise number of PRS are given in **Table - 2**. A pictorial illustration for number of polluted river stretches identified in state-wise manner is given at **Figure - 1**.

Table – 2: State-wise & Priority wise number of Polluted River Stretches

S No.	STATE/UNION TERRITORY	PRIORITY CLASS					TOTAL No. of PRS
		I	II	III	IV	V	
1.	ANDHRA PRADESH	1			1	1	3
2.	ASSAM	1				9	10
3.	BIHAR		1	2	7	8	18
4.	CHHATTISGARH		1		2	3	6
5.	DAMAN AND DIU, DADRA AND NAGAR HAVELI			1			1
6.	DELHI	1					1
7.	GOA				1	5	6
8.	GUJARAT	6	1	1	1	4	13
9.	HARYANA	2	1				3
10.	HIMACHAL PRADESH	4			1	4	9
11.	JAMMU & KASHMIR			2	4	2	8
12.	JHARKHAND			1	2	6	9
13.	KARNATAKA	3			3	11	17
14.	KERALA			1	2	15	18
15.	MADHYA PRADESH	2		1	5	11	19
16.	MAHARASHTRA	4	5	18	17	11	55
17.	MANIPUR				2	11	13
18.	MEGHALAYA	2			1	4	7
19.	MIZORAM				2	1	3
20.	NAGALAND			1		3	4
21.	ODISHA	1			3	3	7
22.	PUDUCHERRY		1	1	1		3
23.	PUNJAB	3				2	5
24.	RAJASTHAN	2		1	4	7	14
25.	TAMIL NADU	4	1	1	1	3	10
26.	TELANGANA	1	1	2		5	9
27.	TRIPURA					1	1
28.	UTTAR PRADESH	6		1	2	8	17
29.	UTTARAKHAND	2	2	4		1	9
30.	WEST BENGAL	1	2	1	3	6	13
GRAND TOTAL		46	16	39	65	145	311

S NO.	RIVER	POLLUTED RIVER STRETCH/ LOCATION	MAX BOD OBSERVED (mg/L)	PRIORITY CLASS
14.	MANDAKINI	ALONG CHITRAKUT	3.2	V
15.	NEWAJ	SHUJALPUR TO RAJGARH	3.5	V
16.	PARVATI	ALONG BATAODAPAR	3.7	V
17.	SONE	ALONG DEORA	6.1	IV
18.	TAPI	ALONG BURHANPUR	6.0	V
19.	WARDHA	ALONG BANGON	4.0	V

3.17 WATER QUALITY OF RIVERS IN MAHARASHTRA

Water Quality of 56 rivers (Refer **Annexure I**) was Maharashtra is monitored at 156 locations during the year 2019 and 2021, out of which, 147 locations on 55 rivers were found non-complying to the prescribed Water Quality Criteria with respect to BOD. The names of 55 polluted rivers are Amba, Amravati, Bhatsa, Bhima, Bindusara, Bori, Burai, Chandrabhaga, Darna, Ghod, Girna, Godavari, Gomai, Hiwara, Indrayani, Kalu, Kan, Kanhan, Kolar, Koyna, Krishna, Kundalika, Manjeera, Mithi, Mor, Morna, Muchkundi, Mula, Mula-Mutha, Mutha, Nira, Panzara, Patalganga, Pawana, Pedhi, Pehlar, Penganga, Purna, Rangavali, Savitri, Sina, Surya, Tansa, Tapi, Titur, Ulhas, Urmodi, Vaitarna, Vashisti, Vel, Venna, Waghur, Wainganga, Wardha, Wena. Details of polluted river stretches identified are given in table below.

Table - 18: Number of Polluted River Stretches in Maharashtra

S NO.	RIVER	POLLUTED RIVER STRETCH/ LOCATION	MAX BOD OBSERVED (mg/L)	PRIORITY CLASS
1.	AMBA	ALONG ROHA	4.9	V
2.	AMRAVATI	ALONG DHULE	3.4	V
3.	BHATSA	SHAHAPUR TO BHIWANDI	10.0	IV
4.	BHIMA	PUNE TO SOLAPUR	38.0	I
5.	BINDUSARA	ALONG BEED	4.8	V
6.	BORI	ALONG JALGAON	3.4	V
7.	BURAI	ALONG DHULE	9.2	IV
8.	CHANDRABHAGA	ALONG GURSALE	13.5	III
9.	DARNA	BHAGUR TO CHEHEDI	16.5	III
10.	GHOD	ALONG SHIRUR	11.5	III
11.	GIRNA	MALEGAON TO JALGAON	18.0	III
12.	GODAVARI	GANGAPR DAM TO MADHESWAR DAM, ALONG NANDUR, KAIGAON TO DHALEGAON, NANDED TO INTERSTATE BORDER	28.0	II
13.	GOMAI	ALONG SHAHADA	3.6	V
14.	HIWARA	ALONG PACHORA	3.8	V

S NO.	RIVER	POLLUTED RIVER STRETCH/ LOCATION	MAX BOD OBSERVED (mg/L)	PRIORITY CLASS
15.	INDRAYANI	MOSHIGAON TO ALANDIGAON	15.5	III
16.	KALU	ALONG KALYAN	8.0	IV
17.	KAN	ALONG SAKRI	6.5	IV
18.	KANHAN	PARSEONI TO KUHI	22.0	II
19.	KOLAR	ALONG WAREGAON	4.8	V
20.	KOYNA	ALONG KARAD	7.5	IV
21.	KRISHNA	ALONG MAHABALESHWAR AND ALONG SATARA	11.0	III
22.	KUNDALIKA	ALONG ROHA	17.0	III
23.	MANJEERA	ALONG LATUR	7.5	IV
24.	MITHI	ALONG MAHIM	50.0	I
25.	MOR	ALONG PADALSHE	9.8	IV
26.	MORNA	ALONG AKOLA	10.4	III
27.	MUCHKUNDI	ALONG LANJA	12.0	III
28.	MULA	AUNDHGAON TO BOPODI	28.0	II
29.	MULA-MUTHA	MUNDHAWA TO THEUR	22.0	II
30.	MUTHA	ALONG PUNE CITY	50.0	I
31.	NIRA	SAROLA TO SANGAVI	15.0	III
32.	PANZARA	ALONG PANZARA	8.5	IV
33.	PATALGANGA	KHOPOLI TO KHARPADA	11.0	III
34.	PAWANA	SANGAVIGAON TO DAPODI	26.0	II
35.	PEDHI	ALONG BHATKULI	10.0	IV
36.	PEHLAR	AT PEHLAR	7.0	IV
37.	PENGANGA	MEHKAR TO UMARKHED	7.2	IV
38.	PURNA	ASEGAON TO AKOLA	6.8	IV
39.	RANGAVALI	ALONG NAVAPUR	11.5	III
40.	SAVITRI	ALONG MAHAD	50.0	I
41.	SINA	ALONG MOHAL	8.4	IV
42.	SURYA	GARVASHET TO MASVAN	11.0	III
43.	TANSA	ALONG VILLAGE DAKEWALI	4.0	V
44.	TAPI	RAVER TO SHAHADA	18.5	III
45.	TITUR	ALONG CHALISGAON	11.5	III
46.	ULHAS	BADLAPUR TO MOHANE	4.0	V
47.	URMODI	ALONG NAGTHANE	6.8	IV
48.	VAITARNA	ALONG GANDHARE VILLAGE	4.0	V
49.	VASHISTI	ALONG CHIPLUN	4.0	V
50.	VEL	ALONG SHIKRAPUR	9.0	IV
51.	VENNA	MAHABALESHWAR TO MAHULI	7.2	IV
52.	WAGHUR	ALONG JALGAON	11.0	III

S NO.	RIVER	POLLUTED RIVER STRETCH/ LOCATION	MAX BOD OBSERVED (mg/L)	PRIORITY CLASS
53.	WAINGANGA	TUMSAR TO AMBHORA	14.0	III
54.	WARDHA	PULGAON TO RAJURA	11.4	III
55.	WENA	ALONG HINGANGHAT	7.6	IV

3.18 WATER QUALITY OF RIVERS IN MANIPUR

Water Quality of 14 rivers (Refer **Annexure I**) in Manipur was monitored at 39 locations during the year 2019 and 2021, out of which, 37 locations on 13 rivers were found non-complying to the prescribed Water Quality Criteria with respect to BOD. The names of 13 polluted rivers are Barak, Chakpi, Imphal, Iril, Khuga, Khujairok, Lokchao, Maha, Manipur, Nambul, Sekmai, Thoubal, Wangjing. Details of polluted river stretches identified are given in table below.

Table - 19: Number of Polluted River Stretches in Manipur

S NO.	RIVER	POLLUTED RIVER STRETCH/ LOCATION	MAX BOD OBSERVED (mg/L)	PRIORITY CLASS
1.	BARAK	TAMENGLONG TO SENAPATI	4.6	V
2.	CHAKPI	ALONG CHAKPIKARONG	3.3	V
3.	IMPHAL	SEKMAI TO SAMUROU	6.9	IV
4.	IRIL	KANGLA SIPHAI TO LILONG	5.3	V
5.	KHUGA	KHUGA LAKE TO CHURACHANDPUR	4.4	V
6.	KHUJAIROK	ALONG MOREH	4.2	V
7.	LOKCHAO	ALONG BISHNUPUR	4.4	V
8.	MAHA	ALONG CHANDEL	4.7	V
9.	MANIPUR	WANGJING TO HEIROK	4.1	V
10.	NAMBUL	SINGDA DAM TO BISHNUPUR	7.0	IV
11.	SEKMAI	ALONG KAKCHING	3.8	V
12.	THOUBAL	LILTAN TO PHADOM	4.9	V
13.	WANGJING	WANGJING TO HEIROK	4.4	V

3.19 WATER QUALITY OF RIVERS IN MEGHALAYA

Water Quality of 35 rivers (Refer **Annexure I**) in Meghalaya was monitored at 64 locations during the year 2019 and 2021, out of which, 12 locations on 7 rivers were found non-complying to the prescribed Water Quality Criteria with respect to BOD. The names of 7 polluted rivers are Kyrhukhla, Lukha, Myntdu, Nonbah, Umkhrah, Umshyrpi and Umtrew. Details of polluted river stretches identified are given in table below.

True Copy
[Signature]

IN THE HIGH COURT OF JUDICATURE AT BOMBAY
ORDINARY ORIGINAL CIVIL JURISDICTION

PUBLIC INTEREST LITIGATION NO. 14 OF 2014

IN THE MATTER OF:-

VANASHAKTI PUBLIC TRUST

& ANOTHER

...PETITIONERS

VERSUS

UNION OF INDIA&OTHERS

...RESPONDENTS

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Dated:

Place: Bombay

Filed by:

Counsel for MoEF&CC

(Respondent No. 1)

IN THE HIGH COURT OF JUDICATURE AT BOMBAY
 ORDINARY ORIGINAL CIVIL JURISDICTION
 PUBLIC INTEREST LITIGATION NO. 14 OF 2014

VANASHAKTI PUBLIC TRUST

AND ANOTHER

.....PETITIONERS

VERSUS

UNION OF INDIA AND OTHERS

.....RESPONDENTS

**ADDITIONAL AFFIDAVIT ON BEHALF OF
 RESPONDENT NO. 1**

I, E. Thirunavukkarasu, S/o M. Elangovan, aged 55 years,
 Occ: Govt. Service, R/o Nagpur, do hereby solemnly affirm and
 sincerely state on oath as follows:

1. I am working as Scientist 'E' in the Integrated Regional Office, Nagpur, Ministry of Environment, Forest & Climate Change hereinafter referred to as (MoEF&CC) and I am authorized to file the Additional Affidavit on behalf of Respondent No. 1 herein.

BACKGROUND:

2. I say that a committee was constituted vide order dated 26.03.2014 issued by MoEF&CC for the formulation of guideline for management of river fronts including flood plains by evolving a River Regulation Zone (hereinafter



referred to as 'RRZ') on either side of the rivers under the chairmanship of Additional Secretary & Project Director, National River Conservation Directorate (hereinafter referred to as 'NRCDD'). The MoEF&CC formulated a Draft River Regulation Zone under the provisions of Environment (Protection) Act 1986.

3. I say that a meeting on Draft RRZ Notification was held in MoEF&CC on 17.12.2015 and in the same meeting it was decided to circulate the Draft Notification to all state Government/UT Administration. In this regard, letter with Draft RRZ Notification was circulated to all state Governments/UT Administration, Niti Aayog, Ministry of Water Resources, River Development and Ganga Rejuvenation (hereinafter referred to as 'MoWR, RD and GR') on 08.01.2016 for soliciting their comments.

4. I say that the Ministry had received comments from 16 States/UTs/Organization viz. Punjab, Sikkim, Mizoram, Karnataka, Andaman & Nicobar Islands, Uttarakhand, Kerala, West Bengal, Puducherry, Maharashtra, Assam, Odisha, Gujarat, Jharkhand, Chandigarh and Inland Waterways Authority of India.



5. I say that the Ministry had constituted a Technical Committee comprising of members from NRCd, Central Water Commission (CWC)&Water and Power Consultancy Services Limited (WAPCOS) and Director, MoEF&CC as its convenor to analyse the comments received from various States/UTs. The Technical committee analysed and compiled the comments received from various States/UTs and submitted their views on Draft RRZ Notification.

Current Status on RRZ issues in MoEF&CC:

6. I say that as per amendment in business allocation rules of Government of India, vide Gazette Notification S.O. 1972 (E) dated 14.06.2019, the business relating to "Conservation, Development, Management and Abatement of Pollution of Rivers has been allocated to the Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti (hereinafter referred to as MoJS)", the work relating to formulation of guidelines for management of river fronts including flood plains by evolving a River Regulation Zone (RRZ) is now being handled by MoJS.

Accordingly, with the approval of Hon'ble Minister for Environment, Forest & Climate Change, the RRZ issue has been transferred to MoJS for taking further necessary action for finalizing the RRZ notification.

The copy of Gazette Notification S.O. 1972 (E) dated 14.06.2019 is annexed as **Exhibit 1**.

Action taken by the MoJS:

7. I say that the Hon'ble Minister of Jal Shakti vide DO letter dated 28.10.2022 has intimated that the Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti has undertaken preparation of a Draft Model Bill on Integrated Water Resource Management (IWRM) for State Governments which will also include suitable provisions of "Draft River Regulation Zone (RRZ) Bill". The said Bill is under finalization in consultation with various Govt. departments including the MoEF&CC

The copy of DO letter dated 28.10.2022 is annexed as **Exhibit2.**

8. I say that for further clarification and information with respect to (w.r.t) the issue involved in the present matter, the MoJS will be the competent authority to make submissions hereafter. Therefore, the Hon'ble Court is most humbly requested to implead the MoJS as respondent in the present matter.
9. I say that the present Additional Affidavit may kindly be taken on record and into consideration and the Hon'ble Court may pass appropriate Order(s), direction(s) as deemed fit and proper under the facts and circumstances of the

present case which the answering Respondent No. 1 shall duly comply with.

Solemnly affirmed at Nagpur

On this 11th day of April, 2023.

Identified by

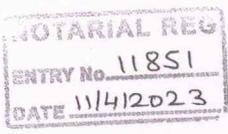
Amish

Advocate for Respondent No.1

[Signature]

Before me

(E. थिरुसुब्रकारसु)
(E. Thirusubhakarasu)
इसलिए-पंजीकृत-ए
पंजीकृत एवं सचिव, एगूरिन, मंत्रालय
Ministry of Environment, 2533 Circle Change
एगूरिन शहर, महाराष्ट्र, नागपुर-440004
Integrated Nagpur Office, Nagpur-440004



SWORN BEFORE ME ON THIS 11th DAY OF April, 2023 AT NAGPUR BY SHRI / SMT/ K. E. Thirusubhakarasu R/o NAGPUR WHO HAS BEEN IDENTIFIED BY SHRI / SMT. Anandhaji Roy, Adv. ADVOCATE, NAGPUR.

[Signature]
NOTARY
GOVT. OF INDIA
Nagaur (M.S.) INDIA



J-11013/05/2011-IA1(R)Pt

331298/2020/IA_1

रजिस्ट्री सं० डी० एल०-33004/99

REGD. NO. D. L.-33004/99



भारत का राजपत्र The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)

PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

सं. 1763]

नई दिल्ली, सोमवार, जून 17, 2019/ज्येष्ठ 27, 1941

No. 1763]

NEW DELHI, MONDAY, JUNE 17, 2019/JYAISTHA 27, 1941

मंत्रिमंडल सचिवालय

अधिसूचना

नई दिल्ली, 14 जून, 2019

का.आ. 1972(अ)—राष्ट्रपति, संविधान के अनुच्छेद 77 के खण्ड (3) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, भारत सरकार (कार्य-आबंटन) नियम, 1961 का और संशोधन करने के लिए, निम्नलिखित नियम बनाते हैं, अर्थात्:-

1. (1) इन नियमों का नाम भारत सरकार (कार्य-आबंटन) तीन सौ पचासवां संशोधन नियम, 2019 है।
(2) ये तुरंत प्रवृत्त होंगे।
2. भारत सरकार (कार्य-आबंटन) नियम, 1961 में,-
(1) प्रथम अनुसूची में,-

(क) "1. कृषि एवं किसान कल्याण मंत्रालय" शीर्षक के अधीन, "(iii) पशुपालन और डेयरी विभाग" उप-शीर्षक, और "(iv) मत्स्यपालन विभाग" उप-शीर्षक का लोप किया जाएगा;

(ख) "9कक. पेय जल और स्वच्छता मंत्रालय" शीर्षक का लोप किया जाएगा;

(ग) "13. वित्त मंत्रालय" शीर्षक और उसके अधीन उप-शीर्षकों के पश्चात्, निम्नलिखित शीर्षक और उप-शीर्षक अंतःस्थापित किए जाएंगे, अर्थात्:-

"13क. मत्स्यपालन, पशुपालन और डेयरी मंत्रालय

(i) मत्स्यपालन विभाग

(ii) पशुपालन और डेयरी विभाग";

(घ) "19. सूचना और प्रसारण मंत्रालय" शीर्षक के पश्चात, निम्नलिखित शीर्षक और उप-शीर्षक अंतःस्थापित किए जाएंगे, अर्थात्:-

"19क. जल शक्ति मंत्रालय

(i) जल संसाधन, नदी विकास और गंगा संरक्षण विभाग

(ii) पेय जल और स्वच्छता विभाग";

(ङ) "41. जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय" शीर्षक का लोप किया जाएगा।

(2). द्वितीय अनुसूची में,-

(i) "कृषि एवं किसान कल्याण मंत्रालय" शीर्षक के अधीन, "ग. पशुपालन और डेयरी विभाग" उप-शीर्षक, और "घ. मत्स्यपालन विभाग" उप-शीर्षक, तथा उनके अधीन प्रविष्टियों का लोप किया जाएगा;

(ii) "पेय जल और स्वच्छता मंत्रालय" शीर्षक तथा उसके अधीन प्रविष्टियों का लोप किया जाएगा;

(iii) "पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय" के अधीन प्रविष्टि 8 तथा प्रविष्टि 8क का लोप किया जाएगा

(iv) "वित्त मंत्रालय" शीर्षक और उसके अधीन उप-शीर्षकों और प्रविष्टियों के पश्चात, निम्नलिखित शीर्षक, उप-शीर्षक और प्रविष्टियां अंतःस्थापित की जाएंगी, अर्थात्:-

"मत्स्यपालन, पशुपालन और डेयरी मंत्रालय

क. मत्स्यपालन विभाग

भाग-1

निम्नलिखित विषय जो भारत के संविधान की सातवीं अनुसूची की सूची 1 के अंतर्गत आते हैं:

- वे उद्योग, जिनके लिए संसद ने विधि द्वारा घोषणा की है कि उन पर संघ का नियंत्रण लोकहित में समीचीन है, वहां तक जहां तक उनका संबंध मछली-दाना और मत्स्य उत्पादों के विकास से है, इस परि सीमा के साथ कि उद्योगों के विकास के संबंध में, मत्स्यपालन विभाग के कृत्य, मांगों के प्रतिपादन और लक्ष्यों के नियतन से अधिक न हों।
- मछली पकड़ना और मछली पालन (अंतरदेशीय, सामुद्रिक तथा राज्यक्षेत्रीय सागर बंड के परे) और इसके अवसंरचना विकास, विपणन, निर्यात तथा संस्थागत व्यवस्था आदि सहित सहस्रक क्रियाकलापों का संवर्धन और विकास।
- मछुआरों तथा अन्य मछुआरा समूह का कल्याण तथा उनकी आजीविका को सुदृढ़ बनाना।
- मछली पालन के विकास से संबंधित मामलों में अंतर्राष्ट्रीय संगठनों से संपर्क और सहयोग।
- मछली पालन सांख्यिकी।
- प्राकृतिक आपदाओं के कारण मछलीधन को हुए नुकसान संबंधी मामले।
- मछलीधन आयात का विनियमन, करंतीन और प्रमाणीकरण।

8. भारतीय मात्स्यिकी सर्वेक्षण, मुंबई।

भाग-II

निम्नलिखित विषय, जो भारत के संविधान की सातवीं अनुसूची की सूची III के अंतर्गत आते हैं (केवल विधान की बाबत):

9. मछलियों को हानि पहुंचाने वाले संक्रामक या सांसारिक रोगों या नाशक जीवों के एक राज्य से दूसरे राज्य में फैलने का निवारण।
10. राज्य अभिकरणों/ सहकारी संघों के माध्यम से विभिन्न राज्य उपक्रमों, मछली पालन विकास स्कीमों के लिए वित्तीय सहायता का स्वरूप।

भाग-III

संघ राज्य क्षेत्रों के लिए, उपर्युक्त भाग I और भाग II में वर्णित विषय जहां तक वे इन राज्य क्षेत्रों की बाबत विद्यमान हैं, और इनके अतिरिक्त, निम्नलिखित विषय जो भारत के संविधान की सातवीं अनुसूची की सूची II के अंतर्गत आते हैं:

11. मछलीघन का परिरक्षण, संरक्षण और उन्नति तथा मछली रोगों का निवारण, पशु-चिकित्सा प्रशिक्षण और व्यवसाय।
12. मछलीघन का वीमा।

ख. पशुपालन और डेयरी विभाग

भाग-I

निम्नलिखित विषय जो भारत के संविधान की सातवीं अनुसूची की सूची I के अंतर्गत आते हैं:

1. वे उद्योग जिनके लिए संसद ने विशिष्ट द्वारा घोषणा की है कि उन पर संघ का नियंत्रण लोकहित में समीचीन है, वहां तक जहां तक उनका संबंध पशुधन और पक्षी-दाना तथा डेयरी और मुर्गीपालन उत्पादों के विकास से है, इस परिमीमा के साथ कि उद्योगों के विकास के संबंध में पशुपालन और डेयरी विभाग के कृत्य, मांगों के आकलन और तत्त्वों के नियंत्रण से अधिक न हों।
2. पशुधन, डेयरी और मुर्गीपालन और इसके अवसंरचना विकास, विपणन, निर्यात तथा संस्थागत व्यवस्था आदि सहित सहयुक्त क्रियाकलापों का संवर्धन और विकास।
3. पशुधन, डेयरी और मुर्गीपालन से संबंधित क्रियाकलापों में लगे हुए व्यक्तियों का कल्याण।
4. पशुधन और मुर्गीपालन के विकास से संबंधित मामलों में अंतर्राष्ट्रीय संगठनों से संपर्क और सहयोग।
5. पशुधन गणना।
6. पशुधन सांख्यिकी।
7. प्राकृतिक विपत्तियों के कारण पशुधन को हुए नुकसान संबंधी मामले।
8. पशुधन आयात का विनियमन, पशु करंतीन और प्रमाणीकरण।
9. गौशाला और गौसदन।

10. कंजीहीम और पशु अतिचार से संबंधित मामले ।
11. पशुओं के प्रति क्रूरता का निवारण ।
12. पशुओं के प्रति क्रूरता का निवारण अधिनियम, 1960 (1960 का 59) ।

भाग- II

निम्नलिखित विषय जो भारत के संविधान की सातवीं अनुसूची की सूची III के अंतर्गत आते हैं (केवल विधान की बाबत):

13. पशु चिकित्सा व्यवसाय वृत्ति ।
14. पशुओं और पक्षियों को हानि पहुंचाने वाले संक्रामक या सांसारिक रोगों या नाशक जीवों के एक राज्य से दूसरे राज्य में फैलने का निवारण ।
15. स्वदेशी प्रजातियों में परिवर्तन लाना; पशुधन की स्वदेशी प्रजातियों के लिए केन्द्रीय यूथ पंजी बनाना एवं उनका रखरखाव ।
16. राज्य अभिकरणों/सहाकारी संघों के माध्यम से विभिन्न राज्य उपक्रमों, डेयरी विकास स्कीमों के लिए वित्तीय सहायता का स्वरूप ।

भाग-III

मंघ राज्य क्षेत्रों के लिए उपर्युक्त भाग I और भाग II में वर्णित विषय जहां तक वे इन राज्य क्षेत्रों की बाबत विद्यमान हैं, और इनके अतिरिक्त निम्नलिखित विषय जो भारत के संविधान की सातवीं अनुसूची की सूची II के अंतर्गत आते हैं:

17. पशु नस्ल का परिरक्षण, संरक्षण और उन्नति तथा पशु और पक्षी रोगों का निवारण, पशु-चिकित्सा प्रशिक्षण और व्यवसाय ।
18. प्रतिपाल्य अधिकरण ।
19. पशुधन और पक्षियों का बीमा ।

भाग - IV

20. पशु उपयोग और वध से संबंधित मामले ।
21. चारा विकास ।"

(v) "आवासन और शहरी कार्य मंत्रालय" शीर्षक के अधीन, प्रविष्टि 21 में, "जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय" शब्दों के स्थान पर "जल शक्ति मंत्रालय" शब्द रखे जाएंगे;

(vi) "सूचना और प्रसारण मंत्रालय" शीर्षक तथा उसके अधीन प्रविष्टियों के पश्चात, निम्नलिखित शीर्षक, उप-शीर्षक तथा प्रविष्टियां अंतःस्थापित की जाएंगी, अर्थात् -

"जल शक्ति मंत्रालय"

क. जल संसाधन, नदी विकास और गंगा संरक्षण विभाग

I. साधारण

1. राष्ट्रीय संसाधन के रूप में जल का विकास, संरक्षण और प्रबंध; जल के विविध उपयोगों और नदियों को आपस में जोड़ने के संबंध में जल योजना और समन्वय का संपूर्ण राष्ट्रीय परिप्रेक्ष्य ।

2. राष्ट्रीय जल संसाधन परिषद् ।
3. साधारण नीति, तकनीकी सहायता, अनुसंधान एवं विकास प्रशिक्षण और सिंचाई से संबंधित सभी मामले, जिनके अंतर्गत बहुउद्देशीय, बड़े, मध्यम, लघु और आपातकालिक सिंचाई संकर्म भी आते हैं; नौबहन और जल विद्युत संबंधी जलीय संरचनाएं; नलकूप और भूमि जल का अन्वेषण एवं दोहन; भूमि जल संसाधनों का संरक्षण और परिरक्षण; धरातलीय और भूमि जल का संयुक्त उपयोग, कृषि प्रयोजनों के लिए सिंचाई, जल प्रबंध, कमान क्षेत्र विकास; जलाशयों और जलाशय अवसादन प्रबंध; बाढ़ (नियंत्रण) प्रबंध, जल-निकास, सूखा नियंत्रण, जन-जमाव और समुद्री कटाव समस्याएं; बांध सुरक्षा ।
4. अंतर्राज्यिक नदियों और नदी घाटियों का विनियमन और विकास । स्कीमों के माध्यम से अधिकरणों के पंचाटों का कार्यान्वयन, नदी बोर्ड ।
5. जल विधि, विधायन ।
6. जल गुणवत्ता निर्धारण ।
7. केन्द्रीय जल इंजीनियरी सेवा (समूह क) का काडर नियंत्रण और प्रबंध ।
- II. अंतर्राष्ट्रीय पहलू
8. जल संसाधन विकास और प्रबंध, जल निकास और बाढ़ नियंत्रण से संबंधित अंतर्राष्ट्रीय संगठन, आयोग और सम्मेलन ।
9. अंतर्राष्ट्रीय जल विधि ।
10. भारत और पड़ोसी देशों की साझी नदियों से संबंधित मामले; बंगलादेश के साथ संयुक्त नदी आयोग; सिंधु जल संधि, 1960; स्थायी सिंधु आयोग ।
11. जल संसाधन विकास के क्षेत्र में द्विपक्षीय और बाह्य सहायता तथा सहयोग कार्यक्रम।
- III. विभाग के अधीन संगठन और निकाय
12. केन्द्रीय जल आयोग ।
13. केन्द्रीय मृदा और सामग्री अनुसंधान केन्द्र ।
14. केन्द्रीय भूमिगत जल बोर्ड ।
15. केन्द्रीय भूमिगत जल प्राधिकरण ।
16. केन्द्रीय जल और विद्युत अनुसंधान केन्द्र ।
17. फरक्का बराज परियोजना ।
18. गंगा बाढ़ नियंत्रण आयोग ।
19. फरक्का बराज परियोजना नियंत्रण बोर्ड ।
20. सरदार सरोवर निर्माण सलाहकार समिति ।

21. ब्रह्मपुत्र बोर्ड ।
22. नर्मदा नियंत्रण प्राधिकरण ।
23. बेतवा नदी बोर्ड ।
24. राष्ट्रीय जल-विज्ञान संस्थान ।
25. राष्ट्रीय जल विकास अभिकरण ।
26. बाणसागर नियंत्रण बोर्ड ।
27. तुंगभद्रा बोर्ड ।
28. अपर यमुना नदी बोर्ड ।
29. जल और विद्युत परामर्शी सेवा (भारत) लिमिटेड (वापकोम) ।
30. राष्ट्रीय परियोजना निर्माण निगम लिमिटेड ।
31. राष्ट्रीय गंगा नदी बेसिन प्राधिकरण जिसके अंतर्गत मिशन निदेशालय, स्वच्छ गंगा के लिए राष्ट्रीय मिशन और गंगा संरक्षण से संबंधित अन्य मामले भी हैं ।
32. नदियों का संरक्षण, विकास, प्रबंधन और नदियों के प्रदूषण का उपशमन ।
33. राष्ट्रीय नदी संरक्षण निदेशालय

IV. अधिनियमों का प्रशासन

34. उत्तरी भारत नहर और जल-निकास अधिनियम, 1873 (1873 का 8) ।
35. अंतर-राज्यिक जल विवाद अधिनियम, 1956 (1956 का 33) ।
36. नदी बोर्ड अधिनियम, 1956 (1956 का 49) ।
37. बेतवा नदी बोर्ड अधिनियम, 1976 (1976 का 63) ।
38. ब्रह्मपुत्र बोर्ड अधिनियम, 1980 (1980 का 46) ।

ख. पेय जल और स्वच्छता विभाग

1. ग्रामीण क्षेत्रों से संबंधित ग्रामीण जल पूर्ति (जल संसाधन, नदी विकास और गंगा संरक्षण विभाग को सौंपि गए जल योजना और समन्वय के संपूर्ण राष्ट्रीय परिप्रेक्ष्य के अधीन रहते हुए), मल ब्ययन, जल निकास और स्वच्छता, इस क्षेत्र में अंतरराष्ट्रीय सहयोग और तकनीकी सहायता ।
2. लोक सहकारिता, जिसके अंतर्गत स्वैच्छिक अभिकरणों से संबंधित मामले भी हैं जहां तक उनका संबंध ग्रामीण क्षेत्रों में ग्रामीण जल पूर्ति, मल-ब्ययन, जल निकास और स्वच्छता से है ।
3. इस सूची की मदों से संबंधित सहकारी समितियां ।

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[भाग II-खण्ड 3(ii)]

भारत का राजपत्र : असाधारण

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4. शहरी और ग्रामीण दोनों क्षेत्रों में पेय जल पूर्ति परियोजनाओं और सुदूरों से संबंधित विषयों के संबंध में समन्वय।;

(vii) "जल संसाधन, नदी विकास और गंगा संरक्षण मंत्रालय" शीर्षक तथा उसके अधीन प्रविष्टियों का लोप किया जाएगा।

राम नाथ कोविन्द
राष्ट्रपति

[फा. सं. 1/21/7/2019-मंत्रि.]

रचना शाह, संयुक्त सचिव

**CABINET SECRETARIAT
NOTIFICATION**

New Delhi, the 14th June, 2019.

S.O. 1972(E).—In exercise of the powers conferred by clause (3) of article 77 of the Constitution, the President hereby makes the following rules further to amend the Government of India (Allocation of Business) Rules, 1961, namely:-

1. (1) These rules may be called the Government of India (Allocation of Business) Three Hundred and Fiftieth Amendment Rules, 2019.
- (2) They shall come into force at once.
2. In the Government of India (Allocation of Business) Rules, 1961,-
 - (1) in THE FIRST SCHEDULE,-
 - (a) under the heading "1. Ministry of Agriculture and Farmers Welfare (Krishi Evam Kisan Kalyan Mantralaya)", the sub-heading "(iii) Department of Animal Husbandry and Dairying (Pashupalan aur Dairy Vibhag)" and sub-heading "(iv) Department of Fisheries (Matsyapalan Vibhag)" shall be omitted;
 - (b) the heading "9AA. Ministry of Drinking Water and Sanitation (Peaya Jal aur Swachchhata Mantralaya)" shall be omitted;
 - (c) after the heading "13. Ministry of Finance (Vitta Mantralaya)" and sub-headings thereunder, the following heading and sub-headings shall be inserted, namely:-

"13A. Ministry of Fisheries, Animal Husbandry and Dairying (Matsyapalan, Pashupalan aur Dairy Mantryalaya)

 - (i) Department of Fisheries (Matsyapalan Vibhag)
 - (ii) Department of Animal Husbandry and Dairying (Pashupalan aur Dairy Vibhag);
 - (d) after the heading "19. Ministry of Information and Broadcasting (Soochana aur Prasaran Mantralaya)", the following heading and sub-headings shall be inserted, namely:-

"19A. Ministry of Jal Shakti (Jal Shakti Mantralaya)

 - (i) Department of Water Resources, River Development and Ganga Rejuvenation (Jal Sansadhan, Nadi Vikas aur Ganga Sanrakshan Vibhag)
 - (ii) Department of Drinking Water and Sanitation (Peaya Jal aur Swachchhata Vibhag);
 - (e) the heading "41. Ministry of Water Resources, River Development and Ganga Rejuvenation (Jal Sansadhan, Nadi Vikas aur Ganga Sanrakshan Mantralaya)" shall be omitted.
 - (2) in THE SECOND SCHEDULE,-
 - (i) under the heading "MINISTRY OF AGRICULTURE AND FARMERS WELFARE (KRISHI EVAM KISAN KALYAN MANTRALAYA)", the sub-heading "C. DEPARTMENT OF ANIMAL HUSBANDRY AND DAIRYING (PASHUPALAN AUR DAIRY VIBHAG)" and the sub-heading "D. DEPARTMENT OF FISHERIES (MATSYAPALAN VIBHAG)", and entries thereunder shall be omitted;
 - (ii) the heading "MINISTRY OF DRINKING WATER AND SANITATION (PEAYA JAL AUR SWACHCHHATA MANTRALAYA)" and the entries thereunder shall be omitted;

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THE GAZETTE OF INDIA : EXTRAORDINARY

[PART II—SEC. 3(ii)]

(iii) under the heading "MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE (PARYAVARAN, VAN AUR JALVAAYU PARIVARTAN MANTRALAYA)", entries 8 and 8A shall be omitted;

(iv) after the heading "MINISTRY OF FINANCE (VITTA MANTRALAYA)" and sub-headings and entries thereunder, the following heading, sub-headings and entries shall be inserted, namely:-

"MINISTRY OF FISHERIES, ANIMAL HUSBANDRY AND DAIRYING (MATSYAPALAN, PASHUPALAN AUR DAIRY MANTRYALAYA)

**A. DEPARTMENT OF FISHERIES
(MATSYAPALAN VIBHAG)**

PART I

The following subjects which fall within List I of the Seventh Schedule to the Constitution of India:

1. Industries, the control of which by the Union is declared by Parliament by law to be expedient in public interest as far as these relate to development of fish feed and fish products with the limitation that in regard to the development of industries, the functions of the Department of Fisheries do not go further than the formulation of the demand and fixation of targets.
2. Promotion and development of fishing and fisheries (inland, marine and beyond territorial waters) and its associated activities, including infrastructure development, marketing, exports, and institutional arrangements etc.
3. Welfare of fishermen and other fisher-folk and strengthening of their livelihoods.
4. Liaison and cooperation with international organizations in matters relating to fisheries development.
5. Fisheries Statistics.
6. Matters relating to loss of fish stock due to natural calamities.
7. Regulation of fish stock importation, quarantine and certification.
8. Fishery Survey of India, Mumbai.

PART II

The following subjects which fall within List III of the Seventh Schedule to the Constitution of India (as regards legislation only):

9. Prevention of the extension from one State to another of infectious or contagious diseases or pests affecting fish.
10. Pattern of financial assistance to various State Undertakings, Fisheries Development Schemes through State agencies/Co-operative Unions.

PART III

For the Union territories the subjects mentioned in parts I and II above, so far as they exist in regard to these territories and, in addition, to the following subjects which fall within List II of the Seventh Schedule to the Constitution of India:

11. Preservation, protection and improvement of fish stocks and prevention of diseases thereof, veterinary training and practice.
12. Insurance of fish stock.

**B. DEPARTMENT OF ANIMAL HUSBANDRY AND DAIRYING
(PASHUPALAN AUR DAIRY VIBHAG)**

PART I

The following subjects which fall within List I of the Seventh Schedule to the Constitution of India:

1. Industries, the control of which by the Union is declared by Parliament by law to be expedient in public interest as far as these relate to development of livestock and birds feed and dairy and poultry products with the limitation that in regard to the development of industries, the functions of the Department of Animal Husbandry and Dairying do not go further than the formulation of the demand and fixation of targets.
2. Promotion and development of livestock, dairy and poultry and its associated activities, including infrastructure development, marketing, exports and institutional arrangements etc.
3. Welfare of persons engaged in activities relating to livestock, dairy and poultry.

4. *Liaison and cooperation with international organizations in matters relating to livestock and poultry development.*
5. *Livestock Census.*
6. *Livestock Statistics.*
7. *Matters relating to loss of livestock due to natural calamities.*
8. *Regulation of livestock importation, animal quarantine and certification.*
9. *Gaushalas and Gausadans.*
10. *Matters relating to pounds and cattle trespass.*
11. *Prevention of cruelty to animals.*
12. *The Prevention of Cruelty to Animals Act, 1960 (59 of 1960).*

PART II

The following subjects which fall within List III of the Seventh Schedule to the Constitution of India (as regards legislation only):

13. *Profession of veterinary practice.*
14. *Prevention of the extension from one State to another of infectious or contagious diseases or pests affecting animals and birds.*
15. *Conversion of indigenous breeds; introduction and maintenance of Central Herd Books for indigenous breeds of livestock.*
16. *Pattern of financial assistance to various State Undertakings, Dairy Development Schemes through State agencies/Co-operative Unions.*

PART III

For the Union territories the subjects mentioned in parts I and II above, so far as they exist in regard to these territories and, in addition, to the following subjects which fall within List II of the Seventh Schedule to the Constitution of India:

17. *Preservation, protection and improvement of stocks and prevention of diseases of animals and birds, veterinary training and practice.*
18. *Courts of Wards.*
19. *Insurance of livestock and birds.*

PART IV

20. *Matters relating to cattle utilisation and slaughter.*
21. *Fodder development."*

(v) under the heading "MINISTRY OF HOUSING AND URBAN AFFAIRS (AWASAN AUR SHAHARI KARYA MANTRALAYA)", in the entry 21, for the words "Ministry of Water Resources, River Development and Ganga Rejuvenation", the words "Ministry of Jal Shakti" shall be substituted,

(vi) after the heading "MINISTRY OF INFORMATION AND BROADCASTING (SOOCHANA AUR PRASARAN MANTRALAYA)" and the entries thereunder, the following heading, sub-headings and entries shall be inserted, namely:-

"MINISTRY OF JAL SHAKTI (JAL SHAKTI MANTRALAYA)**A. DEPARTMENT OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION (JAL SANSADHAN, NADI VIKAS AUR GANGA SANRAKSHAN VIBHAG)****I. GENERAL**

1. *Development, conservation and management of water as a national resource; overall national perspective of water planning and coordination in relation to diverse uses of water and interlinking of rivers.*
2. *National Water Resources Council.*
3. *General policy, technical assistance, research and development training and all matters relating to irrigation, including multi-purpose, major, medium, minor and emergency irrigation works; hydraulic structures for navigation and hydro-power; tube wells and groundwater exploration and exploitation; protection and preservation of ground water resources; conjunctive use of surface and ground water. irrigation for agricultural purposes, water management, command area development; management of*

reservoirs and reservoir sedimentation, flood (control) management, drainage, drought proofing, water logging and sea erosion problems; dam safety.

4. Regulation and development of inter-State rivers and river valleys. Implementation of Awards of Tribunals through Schemes, River Boards.
5. Water laws, legislation.
6. Water quality assessment.
7. Cadre control and management of the Central Water Engineering Services (Group A).

II. INTERNATIONAL ASPECTS

8. International organisations, commissions and conferences relating to water resources development and management, drainage and flood control.
9. International Water Law.
10. Matters relating to rivers common to India and neighbouring countries; the Joint Rivers Commission with Bangladesh, the Indus Waters Treaty 1960; the Permanent Indus Commission.
11. Bilateral and external assistance and cooperation programmes in the field of water resources development.

III. ORGANISATIONS AND BODIES UNDER THE DEPARTMENT

12. Central Water Commission.
13. Central Soil and Materials Research Station.
14. Central Groundwater Board.
15. Central Ground Water Authority.
16. Central Water and Power Research Station.
17. Farakka Barrage Project.
18. Ganga Flood Control Commission.
19. Farakka Barrage Project Control Board.
20. Sardar Sarovar Construction Advisory Committee.
21. Brahmaputra Board.
22. Narmada Control Authority.
23. Betwa River Board.
24. National Institute of Hydrology.
25. National Water Development Agency.
26. Bansagar Control Board.
27. Tungbhadra Board.
28. Upper Yamuna River Board.
29. Water and Power Consultancy Services (India) Ltd. (WAPCOS).
30. National Projects Construction Corporation Limited.
31. National Ganga River Basin Authority including the Mission Directorate, National Mission for Clean Ganga and other related matters of Ganga Rejuvenation.
32. Conservation, development, management and abatement of pollution of rivers.
33. National River Conservation Directorate.

IV. ADMINISTRATION OF ACTS

34. *The Northern India Canal and Drainage Act, 1873 (8 of 1873).*
35. *The Inter-State River Water Disputes Act, 1956 (33 of 1956).*
36. *The River Boards Act, 1956 (49 of 1956).*
37. *The Betwa River Board Act, 1976 (63 of 1976).*
38. *The Brahmaputra Board Act, 1980 (46 of 1980).*

B. DEPARTMENT OF DRINKING WATER AND SANITATION (PEYA JAL AUR SWACHCHHATA VIBHAG)

1. Rural water supply (subject to overall national perspective of water planning and coordination assigned

to the Department of Water Resources, River Development and Ganga Rejuvenation), sewage, drainage and sanitation relating to rural areas; International cooperation and technical assistance in this field.

2. Public cooperation, including matters relating to voluntary agencies in so far as they relate to rural water supply, sewage, drainage and sanitation in rural areas.

3. Co-operatives relatable to the items in this list.

4. Coordination with respect to matters relating to drinking water supply projects and issues which cover both urban and rural areas.”;

(vii) the heading “MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUENATION (JAL SANSADHAN, NADI VIKAS AUR GANGA SANRAKSHAN MANTRALAYA)” and the entries thereunder shall be omitted.

RAM NATH KOVIND

President

[F. No. 1/21/7/2019-Cab.]

RACHNA SHAH, Jt. Secy.

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788320(1)/2022 गजेंद्र सिंह शेखावत

Gajendra Singh Shekhawat

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J-11015/01 (R)/PL



सत्यमेव जयते

जल शक्ति
अभियान
अमृत महोत्सवजल शक्ति मंत्री
भारत सरकारMinister for Jal Shakti
Government of India

28 OCT 2022

DO No. J-25011/1/2022-NRCD-II / 3648

Hon'ble Bhupendra ji,

Kindly refer to your letter dated 08.12.2021 and 05.05.2022 regarding formulation of guidelines for management of river fronts through the River Regulation Zones (RRZ) under the provisions of Environment (Protection) Act, 1986 and handling of associated matters.

I would like to inform you that Department of Water Resources, River Development & Ganga Rejuvenation, Ministry of Jal Shakti has undertaken preparation of a Draft Model Bill on Integrated Water Resource Management (IWRM) for State Governments which will also include suitably provisions of "Draft River Regulation Zone (RRZ) Bill". A group of officials from various related wings of this Ministry has been constituted for this purpose.

Once the draft Model State Bill for RRZ is prepared, it will be *inter-alia* referred to MoE, F&CC for comments and suggestions. After consultation, it would be finalized and approved by the competent authority, and sent to States to adopt for legislation and implementation. A proposal to empower a Central agency/authority under the provisions of Environment (Protection) Act, 1986 to handle and implement the provisions of RRZ for the areas falling in such States, till the time they enact their own State acts for the same is also under consideration.

With regards,

Secretary (EFC)

BY
3/10/22

वन्दे मातरम् !

Yours sincerely,

(Gajendra Singh Shekhawat)

Shri Bhupender Yadav

Hon'ble Minister for Environment, Forest and Climate Change
2nd Floor, Agni Block,
Indira Paryavaran Bhawan, Jorbagh Road
New Delhi

जल शक्ति
अभियान
शिव नर, केशव नर

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IN THE HIGH COURT OF JUDICATURE AT BOMBAY
ORDINARY ORIGINAL CIVIL JURISDICTION
PUBLIC INTEREST LITIGATION NO. 14 OF 2014.

Vanashakti Public Trust and another ...Petitioner

V/S

Union of India & others ...Respondents

ADDITIONAL AFFIDAVIT IN REPLY OF RESPONDENT NO. 1

DATED THIS DAY OF 11th April 2023

Advocate Ashutosh Misra,
Adv. for Respondent No.1
401/C, Natwar Chamber
94, Nagindas Master Road
Fort, Mumbai – 400023.
Mob No. 8286932322
Email:gargi22am@gmail.com
Advocate Code-1-14254

True G.P.Y.




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Increased flood risk in Indian sub-continent under the warming climate

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A B S T R A C T

Millions of people in Indian sub-continent are affected by floods, which have increased during the past decades and likely to increase further in response to warming climate. However, changes in the frequency of floods and associated risks under the warming climate in Indian sub-continent remain largely unrecognized. Using the observations and simulations from Noah-MP land surface hydrological model, we examine the observed and projected changes in extreme precipitation and floods events. A majority of river basins in the Indian-subcontinent experienced a rise in extreme precipitation events during 1966–2005; however, these increasing trends are mostly insignificant at 5% level. Using downscaled and bias-corrected future and historic climate projections from Coupled Model Intercomparison Project (CMIP5) and the Noah-MP model, we show that the frequency of single and multi-day extreme precipitation and flood events are projected to increase substantially in the future over the Indian sub-continental river basins. A significant increase in multi-day (1–5 day) frequency of extreme precipitation and flood events, exceeding return levels based on the historic period (1966–2005), is projected under RCP 2.6 and RCP 8.5 emission scenarios. Our results show that the projected increase in flood frequency can be reduced to half under the low (RCP 2.6) emission scenario in comparison to the high emission scenario (RCP 8.5). More than half of the precipitation extremes result in flood events of 20, 50, and 100 year return periods in the majority of river basins in the Indian sub-continent. Moreover, the multi-day flood events are projected to increase with a faster rate in the future than the single day events, which can have strong implications for agriculture and infrastructure.

1. Introduction

Extreme precipitation events pose enormous pressure on millions of people living in the Indian sub-continental region (Mukherjee et al., 2018; Shah and Mishra, 2016). Under the warming climate, the frequency of floods and associated damage has substantially increased (Gosain et al., 2006; Gupta and Nair, 2011; Milly et al., 2002). Moreover, the projected increase in air temperature and the monsoon season (June–September) precipitation extremes is likely to lead to frequent floods in the Indian subcontinent (Kumar et al., 1999; Menon et al., 2013). A significant increase in extreme precipitation events over central India has been reported, which can be attributed to warming of sea surface temperature (SST) over the equatorial Indian Ocean (Goswami et al., 2006; Rajeevan et al., 2008; Pai and Sridhar, 2015). Moreover, a few recent studies show a gradual decline in monsoon circulation and precipitation amount over India (Kulkarni, 2012; Roxy et al., 2015; Singh et al., 2014) while a considerable increase in the intensity and frequency of extreme precipitation (Guhathakurta et al., 2011; Pattanaik and Rajeevan, 2010; Roxy et al., 2017). Roxy et al. (2017) reported a threefold increase in the number of widespread extreme precipitation events over central India for 1950–2012.

Extreme precipitation events in India in the past caused flooding, affected economy, and resulted in the loss of lives (Wallemacq et al., 2015). Several extreme precipitation events occurred during the recent decades are noteworthy for their impacts on society and infrastructure.

For instance, extreme precipitation (940 mm in 18 h) event in Mumbai (July 2005) was a disaster that led to flooding affecting 20 million people and causing around 1200 deaths (Gupta and Nair, 2011). Similarly, Mumbai experienced flooding in September 2017 due to extreme precipitation (330 mm in 24 h), which largely affected road transportation. Furthermore, Chennai received 483 mm precipitation in 48 h in November 2015, which had a devastating impact with economic loss of over \$3 billion (Boyaj et al., 2017; van Oldenborgh et al., 2016).

Other than localized flooding, which is mostly caused by extreme precipitation, the river basin scale flooding can be due to extreme precipitation and other factors associated with catchment characteristics (Shah and Mishra, 2016; Mishra and Lilhare, 2016; Sharma et al., 2018). For instance, extreme precipitation resulted in a large flooding in Uttarakhand in June 2013 claiming more than 6000 lives and an estimated loss of \$3.8 billion (Kumar, 2013). More recently, extreme precipitation in August 2018 in Kerala caused a widespread flooding and death of more than 440 people (Mishra and Shah, 2018; Mishra et al., 2018a). A preliminary estimate of economic loss due to Kerala flood exceeds over \$3 billion (Gulf News, 30 August 2018). Both flooding and extreme precipitation events are likely to increase under the warmer climate in India (Mukherjee et al., 2018) posing more risk of economic loss and damage to infrastructure. Dottori et al. (2018) showed that 1.5 °C increase in global mean temperature from the pre-industrial level will lead to an increase in human losses from flooding by 70–80% with a higher risk in South Asia.

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Understanding the past and future changes in extreme precipitation and flood events is important as these affect human lives and flood control measures (Ali et al., 2014; Ali and Mishra, 2018b; Fowler and Kilsby, 2003; Mailhot et al., 2010). Moreover, precipitation extremes of more than one-day duration cause large-scale flooding (Pielke and Downton, 2000; Zhang et al., 2009). Despite the profound implications of flood and extreme precipitation, our understanding of changes in extreme precipitation and flood risk under warming climate over the Indian subcontinent remains limited. Here, we provide an assessment of flood risk over the Indian subcontinent under the projected future climate to address the following questions: 1) to what extent the frequency of flood and extreme precipitation events is projected to change in the Indian sub-continental river basins? 2) How different is the risk (estimated in terms of the frequency of flood events) of increased flood events under the low (RCP 2.6) and high (RCP 8.5) emission scenarios in the Indian sub-continent?

2. Data and methods

2.1. Datasets

We obtained gridded daily precipitation at 0.25° from India Meteorological Department (IMD), which is available for 1901–2015 (hereafter IMD; Pai et al., 2015). The gridded precipitation product is developed using inverse distance weighting interpolation scheme (Shepard, 1984) based on observations from 6995 gauge stations across India. Similarly, we obtained daily maximum and minimum air temperature from IMD, which were developed using data from 395 gauge stations across India (Srivastava et al., 2009). We further re-gridded air temperatures from 0.5 to 0.25° by applying Synergic mapping (SYMAP) algorithm and a temperature lapse rate of 6.5 °C/km rise in elevation (Maurer et al., 2002). Since the parts of the Indus, Ganga, and Brahmaputra fall outside India, we obtained daily precipitation, daily maximum and minimum air temperatures from Sheffield et al. (2006) for the part of sub-continent that is outside India. Shah and Mishra (2016) compared IMD precipitation and temperature to the data from Sheffield et al. (2006) and reported a reasonable agreement in both the datasets. The wind speed data was obtained from NCEP/NCAR global reanalysis dataset (<http://www.cdc.noaa.gov/cdc/data.ncep.reanalysis.surface.html>). Daily and monthly streamflow data were obtained from India Water Resources Information System (India-WARIS: <http://www.india-wris.nrs.gov.in>). The observed streamflow data were obtained for the stations that are not considerably affected by the presence of dams and reservoirs as described in Shah and Mishra (2016) and Mishra et al. (2018b).

To simulate the impacts of climate warming on flood events, we obtained daily precipitation and maximum and minimum temperature from five General Circulation Models (GCMs) that participated in CMIP5 (Taylor et al., 2011). The data were obtained for the historical (1966–2005), near (2020–2059), and far (2060–2099) periods for the two different representative concentration pathways (RCP) of RCP2.6 (low emission) and RCP8.5 (high emission). The selected GCMs are GFDL-CM3, GFDL-ESM2M, MIROC-ESM, MIROC-ESM-CHEM, and NorESM1-M (Table S2). Most of these selected GCMs have better skills in simulating the main features of the summer monsoon over the Indian sub-continent (Ashfaq et al., 2017). Moreover, these five GCMs capture inter-model variability (McSweeney and Jones, 2016; Warszawski et al., 2014) reasonably well; therefore, these have been used in a number of previous studies related to impact assessment on hydrology (Ali et al., 2018; Mishra et al., 2014).

The climate simulations from GCMs show systematic deviations from the observed climate, which is not suitable for regional or river basin impact assessment. These deviations are due to errors in parameterization or improper representation of atmospheric physics in GCMs (Ehret et al., 2012) and their coarser resolution (Table S2). We, therefore, downscaled precipitation and temperature data from the

selected five GCMs to 0.25° and bias-corrected it using the climatology from the observed data for the historic period (1966–2005). For bias correction, we used trend-preserving statistical bias correction method, which was used in the Inter-Sectoral Impact Model Intercomparison Project (ISI-MIP) (Hempel et al., 2013). Cannon et al. (2015) stated that preserving the relative change is helpful for maintaining physical scaling (Clausius-Clapeyron relationship, O’Gorman, 2012) relationships with changes in model-projected temperature.

2.2. Noah-MP model

We used one-dimensional Noah-Multi-Parameterization (Noah-MP onwards) Land Surface Model (LSM) model to simulate surface runoff and baseflow for the 18 Indian subcontinental river basins (Table S1). Noah-MP is the baseline Noah LSM with multi-parameterization options to advance the development as a process-based dynamic leaf model by separating the canopy and ground surface to better estimate their temperatures and related energy and water balance (Niu et al., 2011). To improve the hydrological processes, a simple TOPMODEL-based runoff scheme (Beven and Kirkby, 1979) is implemented in Noah-MP to partition the surface runoff and groundwater discharge where surface runoff is saturation excess based on the topographic index and groundwater discharge is parameterized as an exponential function of the depth to the water table. For more information on Noah-MP LSM please refer to Niu et al. (2011).

Daily precipitation, maximum temperature, minimum temperature, wind speed, surface pressure, relative humidity, long-wave radiation, and surface downward solar radiation are required as meteorological input for the Noah-MP LSM. Meteorological variables other than precipitation, temperature, and wind speed were developed using the mountain microclimate simulation model (MTCLIM) algorithm (Bohn et al., 2013) as described in Mishra et al. (2018b). Vegetation parameters for the Noah-MP were derived from the Moderate Resolution Imaging Spectroradiometer (MODIS), which were then classified based on the Modified International Geosphere-Biosphere Programme (IGBP) scheme. The MODIS-based IGBP product has 20 classes of land use and land cover data derived during the period of 2001–2005 (Friedl et al., 2010). The vegetation parameters of the Noah model consist of vegetation fraction, stomatal resistance, minimum and maximum values of Leaf Area Index (LAI), albedo, and roughness length. The major land cover classes that were used are Forest, Shrubs, Savannas, Tundra, Grasslands, Croplands, Wetlands, Built-up, Ice, and Water. We used soil textures derived from a digital soil map developed by the Food and Agriculture Organization (FAO) (Sanchez et al., 2009). The Noah-MP model was calibrated against observed daily and monthly streamflow using depth of four soil layers, Zilitinkevich coefficient, a surface runoff parameter, and a bare soil evaporation component. Surface runoff and baseflow generated from each grid were routed using a stand-alone routing model (Lohmann et al., 1996, 1998). The routing model explicitly represents routing of runoff and baseflow originated from a grid cell using a unit hydrograph, which contributes to channel network.

2.3. Analysis approach

We estimated trends in the frequency of the extreme precipitation events (precipitation ≥ 1 mm) exceeding percentiles (90, 93 and 95) of precipitation during 1966–2005 (historic period). We used the non-parametric Mann-Kendall test (Kendall, 1975; Mann, 1945) to estimate the linear trends in the frequency at 5% significance level using standardized test static (Z) and P-value. To estimate changes in the frequency for the entire period (1966–2005), we multiplied trend slope with the duration (number of years) of the selected period.

We obtained data from five GCMs to estimate two extreme indices associated with flood and precipitation (to estimate the projected changes under the future climate) in our study: 1) The frequency of extreme precipitation events (FEP-Xday; where X denotes the duration

of precipitation event (1–5day) that exceeds return level (magnitude corresponding to 20–100-year return periods) based on the historic period (1966–2005). We also estimated the change in FEP-Xday in the future periods (2020–2059) and (2060–2099) considering return level for the historic period as a threshold. 2) The frequency of extreme flood events (FEF-Xday) that exceeds the return level based on the historic period. Similarly, we estimated the change in FEF-Xday in the future periods against the historic period.

We estimated FEP individually and then calculated ensemble mean of FEP obtained using the five GCMs using downscaled and bias-corrected data. We estimated return levels (magnitude) for different return periods (20, 50 and 100-year) based on the historic period using stationary assumption. We used Annual Block Maxima (ABM) approach to estimate highest (annual maximum precipitation; AMP) precipitation event in each year. We then fitted Generalised Extreme Value (GEV) distribution to AMP series to estimate return levels corresponding to different return periods. For more information on this method please refer to [Ali and Mishra \(2017; 2018b\)](#).

We calculated the number of independent precipitation events (separation of 3 days for 1-day duration while the separation of 1 day for 3 and 5-day durations) that exceed the estimated return level in the historic period for each duration and return period. The same procedure was applied for the future period. Finally, we estimated the difference (FEP) between the numbers of independent precipitation events exceeding the return level in the future and historic period. Similarly, we estimated the change in the frequency of multi-day (1, 3, and 5-day) extreme flood events (FEF) in the future periods. The two flood events were considered as independent if they have at least 5-days separation in between. We estimated the ratio of the frequency of floods in the high (RCP 8.5) and low (RCP 2.6) emission scenarios to evaluate the impact of climate change mitigation on flood in the Indian sub-continent. The ratio of the frequency of extreme precipitation and flood events at the basin outlet was estimated to understand the flood-producing potential of extreme precipitation events (assuming the other characteristics (size, shape, and drainage density) remain constant) in the sub-continent river basins.

3. Results

3.1. Changes in the frequency of daily extreme precipitation

We estimated the changes in the frequency (F-90, F-93, F-95, and F-99) of daily extreme precipitation events exceeding 90, 93, 95 and 99th percentile of precipitation from IMD for the Indian region and from [Sheffield et al. \(2006\)](#) for outside India for the period 1966–2005. We used 1966–2005 period for the observed analysis to make it consistent with the historic period of GCMs. We find that the frequency of extreme precipitation has increased in many river basins in the sub-continent, however, the rising trend is largely insignificant (p -value > 0.05) at

5% significance level. We find a significant increasing (up to 4 events) trend in F-90 in the upper Indus basin and eastern coastal basins ([Fig. 1](#)). However, large parts of the Ganga and the Brahmaputra basins show a significant decline in the F-90. The changes in the frequency of extreme precipitation are relatively lower for higher percentiles as compared to F-90.

Previous studies reported mixed trends in extreme precipitation in India ([Dhanya and Nagesh Kumar, 2009](#); [Ghosh et al., 2009](#); [Vinnarasi and Dhanya, 2016](#)). Our results show an insignificant (p -value > 0.05) increasing trend in the frequency of extreme precipitation across major basins. [Mukherjee et al. \(2018\)](#) reported a decreasing trend in annual maximum precipitation in the Gangetic Plain, which was attributed to the significant decline in the monsoon season total precipitation caused by the increased atmospheric aerosols and warming of the Indian Ocean ([Mishra et al., 2012](#); [Roxy et al., 2015](#)).

Despite a non-significant increase in the frequency of extreme events in the sub-continent river basins, the widespread events that cause damage to agriculture and infrastructure have increased in central India ([Roxy et al., 2017](#)). [Roxy et al. \(2017\)](#) attributed the increase in extreme precipitation events to the increased variability of the low-level monsoon westerlies over the Arabian Sea, which increases moisture supply and strengthens the monsoon. However, there are several factors that can contribute to the changes in extreme precipitation events in India. For instance, the regional land-use change, anthropogenic-aerosol forcing, and increasing Indian Ocean Sea Surface Temperature (SST) have contributed in the weakening of the South-Asian Monsoon Circulation over Central India, which in turn have led to intense but localized precipitation events ([Krishnan et al., 2016](#)). [Mishra et al. \(2018a\)](#) found a consistent increase in precipitation extremes in India with an increase in vertically integrated moisture transport records over the Arabian Sea. Moreover, dynamic changes (large-scale circulations and vertical wind velocity) may further enhance precipitation extremes over India ([Ali and Mishra, 2018a](#)).

3.2. Changes in the frequency of 3-day extreme precipitation events (FEP-3day)

Next, we estimated the frequency of 3-day precipitation events (FEP-3day) that exceed 20-year return levels during the historic period (1966–2005) under stationary assumption ([Fig. S2](#)). We find that the majority of basins experience about ten FEP-3day under stationary assumption during the historic period.

We further estimated the change in FEP-3day in the future periods (2020–2059 and 2060–2099) considering 20-year return level for the historic period as a threshold ([Fig. 2](#)). We find a higher spatial variability in the change in FEP-3day in the future across the river basins in the Indian sub-continent ([Fig. 2](#)). The projected increase in FEP-3day across the basins is higher in 2060–2099 than 2020–2059. Moreover, the frequency of precipitation increase is substantially higher under the

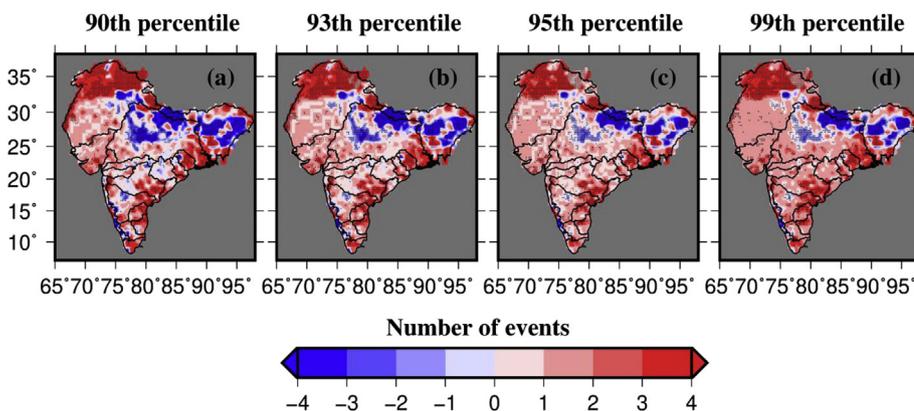


Fig. 1. Change in the frequency of extreme precipitation events exceeding (a) 90th percentile (F-90), (b) 93rd percentile (F-93), and (c) 95th percentile (F-95), and (d) 99th percentile (F-95) of precipitation for the historic period (1966–2005) using IMD data within India and [Sheffield et al. \(2006\)](#) data outside India. Red color shows increase and blue color shows decrease in the frequency of extreme precipitation events. The black dots show significant ($p < 0.05$) trend in the frequency of extreme events. We used the non-parametric Mann-Kendall test to estimate the linear trends in the frequency at 5% significance level using standardized test static (Z) and P-value. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

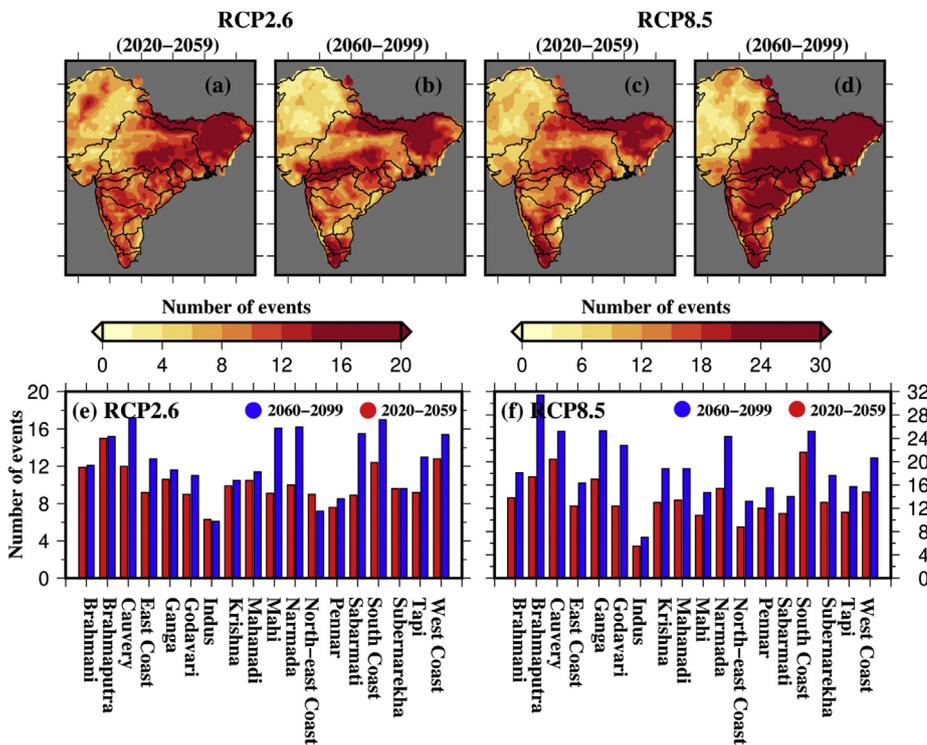


Fig. 2. Change in the frequency of 3-day duration extreme precipitation events (FEP-3day) in the near period (a) 2020–2059 and (b) far period 2060–2099, exceeding 20-year return level based on the historic period (1966–2005) using the ensemble of five GCMs for RCP2.6 scenario, (c) and (d) same as (a) and (b) respectively but for RCP8.5 scenario, (e) median FEP-3day for each basin for 2020–2059 (red) and 2060–2099 (blue) periods respectively, for RCP2.6 scenario, and (f) same as (e) but for RCP8.5 scenario. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

high emission pathway of RCP8.5 than the low emission scenario of RCP2.6. Among 18 basins, the highest increase in FEP-3day is in Brahmaputra basin (up to 20 and 34 events for RCP2.6 and RCP8.5 respectively) that has been experiencing frequent flooding (Mirza et al., 2003). On the other hand, the least projected increase in the frequency of precipitation extremes is likely in the Indus basin (up to 12 and 14 events for RCP2.6 and RCP8.5 respectively) under the stationary assumption. The Ganga Basin, which is one of the most populous and the largest basin in India, shows a median increase of 11 and 26 in FEP-3day during 2060–2099 under RCP2.6 and RCP8.5, respectively (Fig. 2e–f).

In addition to providing ensemble mean values for future period (Fig. 2), we also estimated the changes for the individual GCMs to understand intermodel variation (Fig. S3). Among the five selected GCMs, NorESM1-M shows the highest increase (around 3.5 events greater than ensemble mean (Fig. 2) in FEP-3day while MIROC-ESM-CHEM shows the least increase (around 3 events lesser than ensemble mean) in FEP-3day. Regardless of this intermodel variation, we find that all the five GCMs project an increase in extreme precipitation under the future climate, which is a robust signal. We also estimated the change in FEP for other return periods (50 and 100 years) and durations (FEP-1day and FEP-5day) (Figs. S4–S11), which primarily indicate towards an increased risk of extreme precipitation events in the Indian sub-continent.

Our results showing an increase in extreme precipitation events in India in the future are consistent with the findings reported in the previous studies (Vittal et al., 2016; Mukherjee et al., 2018). Ali et al. (2018) showed a higher sensitivity of return levels (design storm) to climate warming across the urban locations in India. Spatial variability in the FEP-3day across the basins can be attributed to the spatial variability of monsoon precipitation in the future. The increase in extreme precipitation in the future is partly due to the higher sensitivity of precipitation extremes to temperature (Ali et al., 2018; Mukherjee et al., 2018). Furthermore, regional changes in the atmospheric circulation patterns can also contribute to the future precipitation extremes (Hertig et al., 2013; Krishnan et al., 2016). Ali and Mishra (2018a) reported that precipitation extremes over India are more sensitive to the

dynamic components (large scale) of the atmosphere than the thermodynamic component.

3.3. Performance of the Noah-MP land surface model

Noah-MP model performed well in estimating evapotranspiration and runoff in various climate regimes across the contiguous United States (Cai et al., 2014) and southwest Germany (Poltoradnev et al., 2018). We evaluated the performance of Noah-MP land surface model against the observed streamflow. Simulated daily runoff and baseflow from Noah-MP were routed to gage stations using a standalone routing model (Lohmann et al., 1996, 1998). We estimated Nash-Sutcliffe efficiency (NSE; Nash and Sutcliffe, 1970) and correlation coefficient (r) between observed and simulated streamflow to evaluate the Noah-MP performance for the subcontinental river basins (Fig. S12; Table S3). Most of the basins show NSE greater than 0.6 during calibration and evaluation at daily as well as monthly scales. Moreover, the correlation coefficient was greater than 0.85 for most of the basins at daily and monthly time scales. The poor performance of the model at a few gauge stations is attributable to the input soil and vegetation parameters and the quality of observed streamflow data. As we aim to understand the relative changes (instead of relative magnitudes) in extreme flood events in the future with respect to the historic period, the calibration and evaluation performance of the Noah-MP LSM may not considerably affect our results. Moreover, we do not aim to simulate the influence of water management structures (dams and reservoirs) and irrigation on floods rather our emphasis is on understanding the impact of the projected climate on floods.

3.4. Changes in the frequency of extreme flood events

We estimated the frequency of 1-day flood events (FEF-1day) in the historic period that exceeds 20-year return levels under the stationary assumption (Fig. 3a). The frequency of flood events was estimated using daily streamflow simulated from the Noah-MP at the selected locations in each basin. We find that the majority of the basins experience a median of 9 events of FEF-1day, which is consistent with the frequency

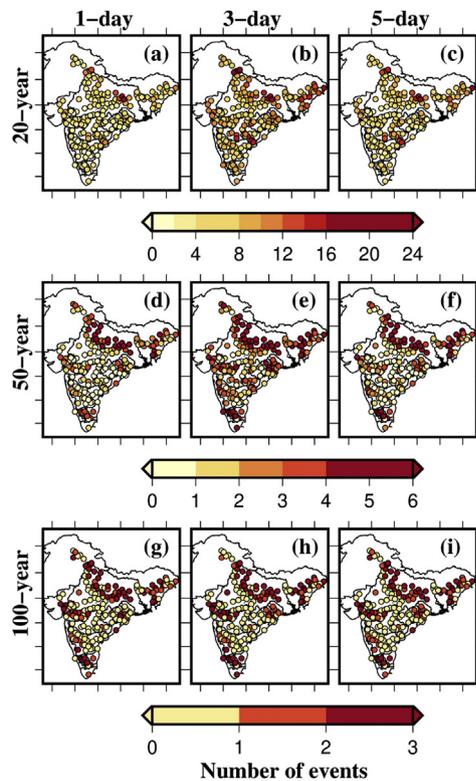


Fig. 3. (a–c) The frequency of 1–5-day duration extreme flood events (FEF-1day, FEF-3day, and FEF-5day) in the historic period exceeding 20-year return level based on the historic period (1966–2005) for stationary assumptions respectively, (d–f) same as (a–c) respectively but for 50-year return level, and (g–i) same as (a–c) respectively but for 100-year return level based on the historic period (1966–2005).

of precipitation extremes. Moreover, FEF rises with the increase in the duration (3-day and 5-day) of flood events indicating the multi-day flood events are more than the single-day events. For instance, median FEF-3day (FEF-5day) across the basins is 11 (12) for the stationary assumption (Fig. 3b–c).

We further estimate the change in FEF-1day in the projected future climate against the historic period considering 20-year return level as a threshold (Fig. 4). We notice a rise in the flood frequency across the sub-continental basins under the warming climate, which is consistent with the projections of precipitation extremes. Moreover, increase in the FEF-1day is higher under the RCP8.5 than RCP2.6. The rise in FEF-1day is higher in the late 21st century (2060–2099) than the mid (2020–2059) 21st century for the majority of the basins. The highest projected increase in FEF-1day among all the basins is likely in the Brahmaputra basin (median 22 and 33 events for 2020–2059 and 2060–2099, respectively under RCP8.5) while the least increase is projected in Indus basin (median 5 and 6 events for 2020–2059 and 2060–2099, respectively under RCP8.5) (Fig. 4f). Therefore, the projected increase in the flood frequency is consistent with the frequency of extreme precipitation as both are projected to rise in response to warming climate. Since, GCMs show uncertainty in estimating projected runoff (Melsen et al., 2018), we estimated the changes in FEF-1day for the individual GCMs (Fig. S13). Among the five GCMs, NorESM1-M shows the highest increase (around 3 events greater than ensemble mean (Fig. 4)) in FEF-3day while MIROC-ESM-CHEM shows the least increase, which is consistent with the projections of extreme precipitation events in the two GCMs. Consistent with the projections of 3-day flood events, the frequency of one-day flood events at 50 and 100 year return periods are also projected to increase under the warming climate in the Indian sub-continent posing a higher risk in the future (Figs. S14–S15).

The frequency of multi-day flood events (FEF-3day and FEF-5day) is higher than FEF-1day in the historic period (Fig. 3). Therefore, we estimated the projected change in FEF-3day in the future periods considering 20-year return level based (Fig. 5). Consistent with the projected change in FEF-1day, the rise in FEF-3day is higher for the 2060–2099 than the 2020–2059. Moreover, the projected increase in the multi-day flood events is lower under the low emission scenario of RCP2.6 for most of the basins, which indicates the benefits of climate change mitigation. We find that the projected increase in multi-day flood events under the future climate is higher than the increase in daily flood events (Figs. 4 and 5 and Figs. S16–S19). Moreover, the projected increase in FEF-5day is higher (median difference 8 events) than FEF-3day values across all the basins. The change in FEF-5day is consistently less for the higher time periods (50 and 100-year) in comparison to 20 year return period (Figs. S20–S21).

4. Discussion

Using the Noah-MP land surface model and downscaled and bias-corrected data from the five GCMs, we estimated changes in the precipitation extremes and flood under the warming climate. Our findings showing the projected increase in extreme precipitation events and floods in the highly populated Indian sub-continent differ from the previous studies (Mukherjee et al., 2018; Roxy et al., 2017) and provide important insights. For instance, a majority of the previous studies (Mukherjee et al., 2018; Roxy et al., 2017; Ghosh et al., 2009 and others) focused on the observed and projected changes in precipitation extremes. However, we comprehensively discuss the projected changes in the single and multi-day flood events along with the extreme precipitation events in the Indian sub-continental river basins using a well-calibrated land surface model. Our results show the projected changes and the associated spatial differences in the projected floods in the Indian sub-continental river basins, which have implications for the future flood and water management.

Notwithstanding intermodel variations, the projected increase in extreme precipitation and flood events in the Indian sub-continent is robust. Both multi-model ensemble mean and individual GCMs project a considerable increase of both the extremes in the future. However, other precipitation extremes, the frequency and magnitudes of flood events can be governed by initial hydrologic condition and catchment characteristics (Sharma et al., 2018; Wasko et al., 2016; Do et al., 2017; Ivancic and Shaw, 2015). In a recent study, Sharma et al. (2018) argued that precipitation extremes can increase in response of climate warming but not necessarily flood events, which is consistent with the previously reported findings of Ivancic and Shaw (2015). While we did not explore the role of all the possible factors (initial hydrologic condition, basin characteristics, and land use/land cover) that can affect flood frequency in the future climate, we estimated the ratio of the frequency of flood to extreme precipitation events exceeding 20, 50, and 100 year return level for all the 18 basins (Fig. 6, Supplemental Figs. S22–S24). Our results show that there is a considerable variability in the ratio of flood and extreme precipitation events in the Indian sub-continent. For most of the basins about half of 20 year return period, 3-day extreme precipitation events result in 20-year flood (Fig. 6a and b). More details on single-day flood events and intermodel variation for the individual GCMs are presented in supplemental information (Figs. S22–S24) The ratio (flood/precipitation extremes) varies spatially and also with the return period. For instance, we find that the river basins located in the semi-arid climate of western India (Mahi, Narmada, and Sabarmati) have a lower ratio while the basins located in the eastern part (Brahmaputra, Subarnarekha) have a higher value. We do not find any considerable difference in ratio of the frequency flood to precipitation extremes based on emission scenario (RCP 2.6 and RCP 8.5). A detailed assessment of the role of initial hydrologic conditions (soil moisture) and other basin and storm characteristics (Sharma et al., 2018; Wasko et al., 2016; Do et al., 2017; Ivancic and Shaw, 2015) prior to extreme

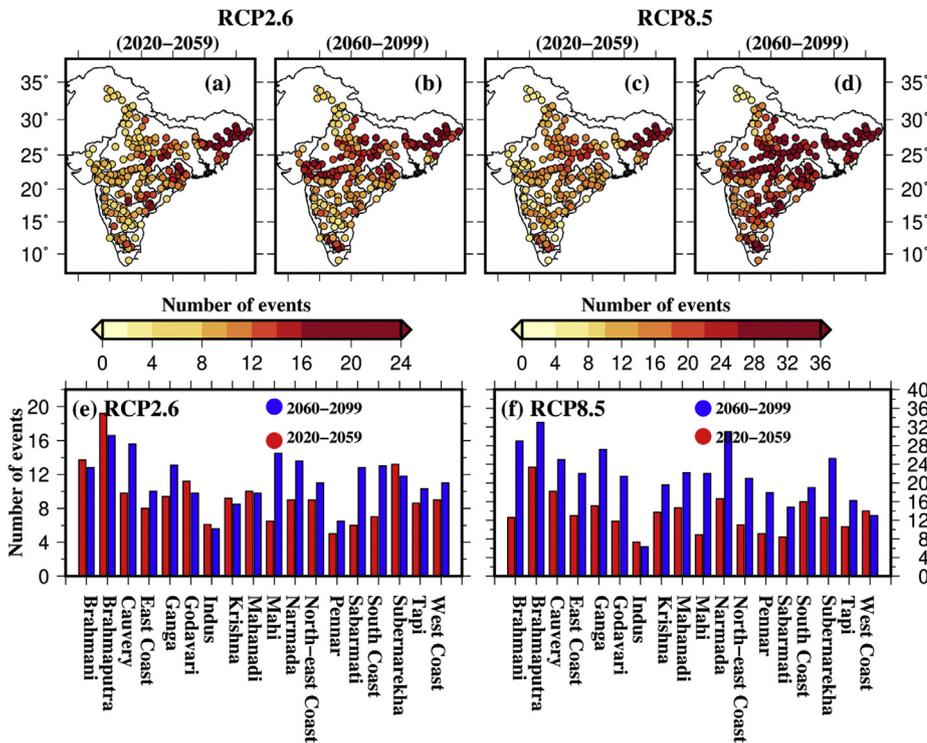


Fig. 4. Change in the frequency of 1-day duration extreme flood events (FEF-1day) in the near period (a) 2020–2059 and (b) far period 2060–2099, exceeding 20-year return level based on the historic period (1966–2005) using the ensemble of five GCMs for RCP2.6 scenario, (c) and (d) same as (a) and (b) respectively but for RCP8.5 scenario, (e) median FEF-3day for each basin for 2020–2059 (red) and 2060–2099 (blue) periods respectively, for RCP2.6 scenario, and (f) same as (e) but for RCP8.5 scenario. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

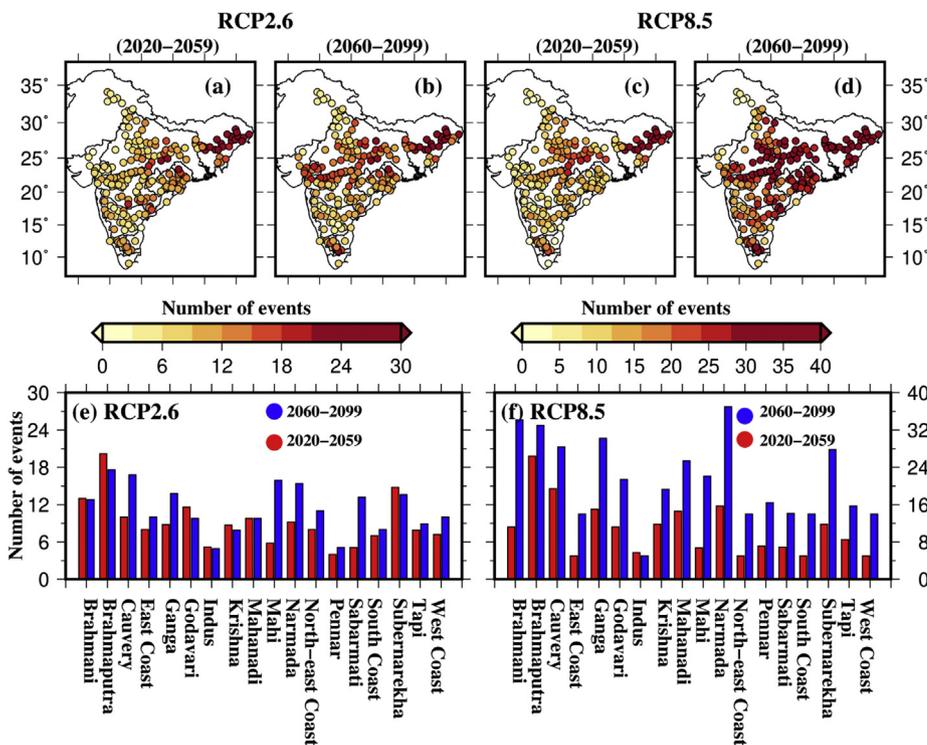


Fig. 5. Change in the frequency of 3-day duration extreme flood events (FEF-3day) in the near period (a) 2020–2059 and (b) far period 2060–2099, exceeding 20-year return level based on the historic period (1966–2005) using the ensemble of five GCMs for RCP2.6 scenario, (c) and (d) same as (a) and (b) respectively but for RCP8.5 scenario, (e) median FEF-3day for each basin for 2020–2059 (red) and 2060–2099 (blue) periods respectively, for RCP2.6 scenario, and (f) same as (e) but for RCP8.5 scenario. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

precipitation events in the future climate remains the scope of future studies.

The projected increase in multi-day FEF can be attributed to the increase in monsoon season precipitation in the future which largely dominate streamflow and water availability in India (Kumar et al., 2006; Mishra and Lilhare, 2016). Previously, Menon et al. (2013) reported a higher trend in the increase in mean monsoon precipitation in India under RCP8.5 as compared to other low emission scenarios. Similarly, Ali et al. (2018) found a substantial projected increase in mean

annual precipitation in all the selected reservoirs in their study in India at the end of the 21st century under RCP8.5 as compared to the RCP2.6 scenario. Our results show a higher increase in flood events across the basins under RCP8.5 as compared to RCP2.6 emission scenario (Fig. 7). We find that in most of the basins, the flood risk (in terms of the frequency of flood events) can be reduced by half under the low emission (RCP 2.6) scenario in comparison to the high (RCP 8.5) scenario. Reduction in the frequency of floods under the low emission scenario is higher in the late 21st century in comparison to the near (2020–2059)

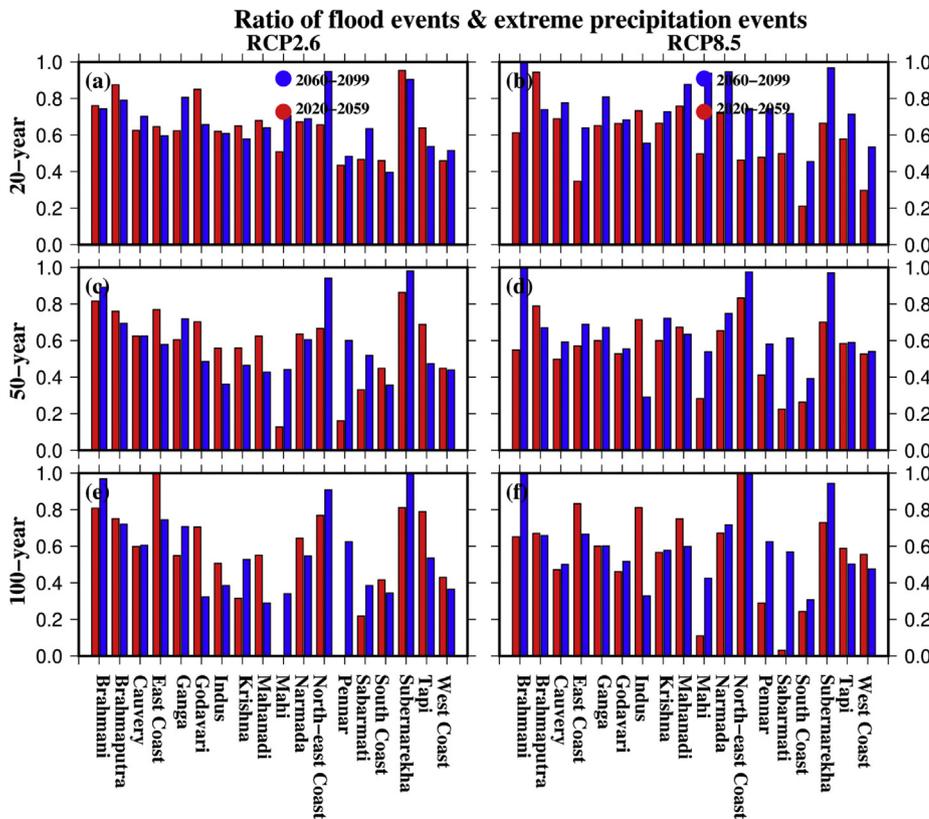


Fig. 6. Ratio of number of 3-day flood events to 3-day extreme precipitation events for 20, 50, and 100 year return periods for Near (2020–2059; red) and Far (2060–2099; blue) periods. Precipitation extremes for the selected return periods were estimated considering the entire river basin while the number of flood was estimated at the outlet of the basin. The analysis was performed for low (RCP 2.6) and high (RCP 8.5) scenarios taking ensemble mean of five GCMs. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

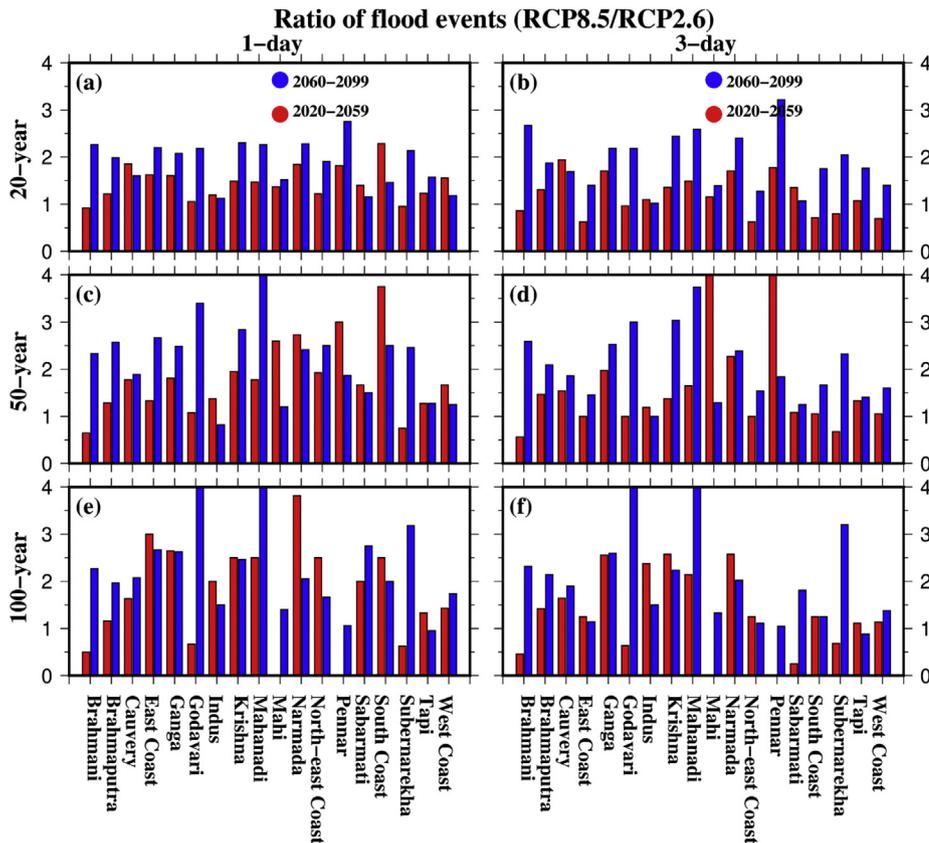


Fig. 7. The influence of climate change mitigation on the frequency of 1 and 3-day flood events for Near (2020–2059; red) and Far (2060–2099; blue) periods. The number of flood events for 20, 50, and 100 year return periods was estimated at the outlet of the selected river basins. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

period. Despite the intermodel variation (Supplemental Figs. 14–21), we find that the flood risk can be reduced under the climate change mitigation as aimed under the Paris agreement. The significant

difference in the increase in the frequency of floods under high and low emission scenarios highlights the importance of mitigating climatic change (Hallegatte et al., 2016), which will be vital for reducing the

flood risk in the future climate.

The other important aspect is related to the difference in single and multi-day extreme precipitation and flood events under the future climate. Multi-day extreme precipitation and flood events have increased in many regions in the world during the last few years (Fowler and Kilsby, 2003 (Scotland); Kunkel et al., 1999 (United States); Mailhot et al., 2010 (Canada)). Our results show that multi-day precipitation extremes and floods are projected to be more frequent than daily extremes in the future across the Indian subcontinent. The relatively faster increase in the multi-day floods might be associated with the role of initial hydrologic conditions (Sharma et al., 2018; Ivancic and Shaw, 2015). Ekström et al. (2005) and Mladjic et al. (2011) reported a higher future increase in multi-day precipitation extremes than daily extremes over UK and Canada respectively. Multi-day precipitation extremes are proxies for large-scale floods (Pal et al., 2004) and their increase in the future will largely dominate streamflow, which may have an adverse effect on agriculture and water resources. Similarly, the projected increase in multi-day flood events over the Indian subcontinent under the warmer climate has strong implications.

5. Conclusions

Based on our findings, the following conclusions can be made:

1. We find that many sub-basins in the Indian sub-continent have experienced an increase in the frequency of extreme precipitation event during the historic observed period (1966–2005). However, except for a few, the rising trends in the majority of sub-basins are not statistically significant. Multi-day precipitation events that cause river basin flooding are projected to increase across all the basins under the future climate. For instance, the changes in the frequency of 3-day precipitation events (FEP-3day) exceeding 20-year return level are projected to increase by 20 and 30 events from the historic period under the RCP2.6 and RCP8.5, respectively in the future across all the basins under stationary condition.
2. The multi-day flood events are projected to increase more rapidly than daily flood events. For instance, a majority of basins in the sub-continent are projected experience a rise of about 30–40 in the FEF-3day and FEF-5day in comparison to an increase of 20 events in the FEF-1day. The projected increase is higher for the end of 21st century 2060–2099 than the mid 21st century (2020–2059) in all the basins. Moreover, under the low emission scenario of RCP 2.6, the risk of flood events based on the frequency in the Indian sub-continent is far lesser than the high emission scenario of RCP 8.5, which indicates the need of climate change mitigation.
3. Our results highlight a significant increase in the multi-day precipitation extremes and flooding in the future in the Indian sub-continent. The increased risk of flooding in the Indian sub-continent will have profound implications for agriculture, water resources, and reservoir operations. Our findings highlight mainly the role of projected future climate on flood risk, however, other factors associated with human interventions (land use change, operations of dams and reservoirs) can affect the frequency and magnitude of flooding. Additionally, the role of initial hydrologic conditions can play a major role to reduce or aggravate the flood risk in the projected future climate. We find that the risk of flooding in the Indian sub-continent can be significantly reduced due to climate change mitigation.

Conflict of interest

Authors declare no conflict of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.wace.2019.100212>.

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सत्यमेव जयते

Government of Maharashtra

Maharashtra State Water Policy

Water Resources Department

(2019)

(Govt. Resolution No- Water policy-2019/C.R.21/17/WR(P), dated-05th September 2019)

MAHARASHTRA STATE WATER POLICY 2019

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MAHARASHTRA STATE WATER POLICY, 2019

1. PREAMBLE:

Per capita water availability is decreasing due to ever increasing population. Also, due to rising food demands, rapid industrialization and urbanization the stress on water management is increasing. As an effect water management has emerged as one of the 21st century's grand challenges.

In September 2015, the United Nations 193 member states including India, committed to the 17 Sustainable Development Goals (SDGs) to be achieved over the next 15 years. SDG-6, "ensuring clean water and sanitation for all" has placed "water" firmly on the global agenda. Without water, the other development goals - such as ensuring healthy lives, ending hunger, boosting economic growth and others- will not be achieved. Further, SDG - 12 - "**Ensure sustainable consumption and production patterns**" and SDG - 15 - "**Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt degradation and halt biodiversity loss,**" also are equally relevant. Thus, to achieve the targets set forth in the SDGs, it is of utmost importance to effectively develop and manage the water resources.

The distribution of water resources is uneven over a large part of the State. A large area is, therefore, water deficit whereas a small part is bestowed with abundance in water. Large part of the State has already become water stressed. With the threat of climate changes the situation is likely to deteriorate.

Water being a State subject, State of Maharashtra had framed its Water Policy in 2003 which was subsequently revised in May 2011. Since adaptation of this policy, significant positive changes have occurred in the water scenario of the State. However, some of the issues and challenges faced in the state water sector still continue and require policy reforms.

Government of India (GoI) has also revised its earlier policy and released the National Water Policy in 2012. GoI vide provisions of clause 16.2 of the National Water Policy, expresses the intent that the states may revise and align their respective state Water Policy in accordance with the National Water Policy, keeping in mind the basic concerns, principles and also a unified national perspective.

With this background, the State has again revised its Water Policy in accordance with the National Water Policy for addressing certain State-specific concerns and challenges.

2. SCOPE OF THE POLICY :

This Policy applies to all the line departments, semi-government agencies of the State Government related to water, local bodies, bulk water users (domestic, industrial/commercial and others) and the citizens of the State.

3. OVERVIEW OF THE STATE:

Maharashtra occupies the Western and Central parts of India and has a long coastline of about 720 km along the Arabian Sea. With population of 112.4 million, as per population Census 2011 and geographical area of 0.308 million sq. km, Maharashtra is ranked 2nd by population and 3rd in terms of area. Maharashtra is highly urbanized with 45.2 % population residing in urban area.

The State enjoys tropical monsoon climate and is semi-arid. There exists an extreme spatial and temporal variation in the rainfall pattern in the State. The average annual rainfall in the State ranges from 400 to 6000 mm. The State witness frequent drought conditions. Almost, 42.5 % area of the State is drought prone. Gross cropped area in the State is 22.9 million ha (2015-16), net sown area is 17.19 million ha and area sown more than once is 5.929 million ha. Half of the State's population is dependent upon agriculture for their livelihood.

4. WATER RESOURCES OF THE STATE:

The area of the State is covered under five major river basins namely Godavari, Krishna, Tapi, Narmada and West flowing river basins. Also, a very small area of North-Eastern part of the State comes under the Mahanadi basin. The estimated average annual availability of water resources of the State is 198 Billion cubic metres (BCM) which consists of 164 BCM of surface water and 34 BCM of groundwater. The storage capacity created through State Sector water resources projects is 42.85 BCM as of June 2017.

Except the West flowing rivers, Maharashtra shares remaining four river basins with the neighbouring states. Various inter-state river water disputes, tribunal awards /agreements and decisions on water sharing have limited the use of surface water resources of the State to about 126 BCM, of which 69 BCM (55%) contribution is alone of west flowing river basins. The Cultivable area of this region is very limited (10.6 %), comprising narrow strip of 50 km between Sahyadri ranges and Arabian Sea. Hence, there is a limitation on local use of entire available water. The entire water available in basins of West flowing rivers can neither be used locally nor can be transferred economically to other basins as the rest of the basins are separated by high altitude ridge (+610 m). On the other hand, remaining four river basins having 89.4% of the cultivable area has only 45% of the water resources. Due to these constraints, about 42.50% area of the State lies in deficit or highly deficit sub-basins. The State is experiencing water shortage and recurrent droughts.

The State is divided into 1531 elementary watersheds considering river basin and sub-basin boundaries as the base. Watershed wise groundwater assessment was done in 2013-14 and it revealed that net groundwater availability is 31.48 BCM and annual draft is about 17.07 BCM.

6.2 Uncertainty in availability of water :

There is a wide temporal and spatial variation in the availability of water resources within the State which may increase substantially in future due to the impending Climate Change, causing deepening of water crisis and instances of water related disasters; i.e. floods, increased erosion and increased frequency of droughts etc.

6.3 Limitation to access to available water :

There are limitations for utilizing available water in Eastern Vidarbha due to difficulties in diversion of forest land, and in Konkan region due to topographical constraints.

6.4 Lack of assured access to allocated quota of water:

There is no assured access to the farmers for their allocated quota due to deferred maintenance of the water resources projects.

The delineation and handing over command areas to WUAs is very slow due to lack of funds for carrying out restoration & rehabilitation of the distribution system to design parameters.

6.5 Low operational efficiency:

Lack of proper maintenance of the created irrigation infrastructure results in low water use efficiency. To strike a balance in the investment on completion of the ongoing water resources projects and that on maintenance of the existing infrastructure through limited available resources is a challenge.

6.6 Significant gap between IPC & IPU:

Bridging the gap between Irrigation Potential Created (IPC) and Irrigation Potential Utilized (IPU).

6.7 Depleting groundwater resources:

Groundwater, though part of the hydrological cycle and a community resource, is still perceived as an individual property and is being exploited inequitably without any recharge obligations leading to its over-exploitation in several areas. Presently, seventy six watersheds have become over-exploited and four are rendered critical.

6.8 Losses in Urban Distribution Network:

Reducing the Non-Revenue Water (NRW) and Restricting domestic water use within the prescribed norms particularly in urban areas is a key issue which needs to be addressed on priority.

6.9 Deteriorating Water Quality:

Release of untreated effluent by the industries and urban local bodies is deteriorating water quality of both the surface water as well as the ground

activities and validating the same before role out.

- (vii) Key persons will be provided with sponsorships for higher studies / specialization and exposure through international cooperation activities.
- (viii) Collaboration with State educational institutes will be done to meet the changing need of the skilled manpower in the water sector.

16. MONITORING AND INFORMATION SYSTEM:

- (1) Reliable and appropriate data and information essential for effective management of water resources. A modern integrated monitoring networks for hydro-meteorological, water resources and water use data with information management system, shall be established on real time basis. This will sustain and support planning, project formulation and implementation, operations and decision making by the River Basin Agencies, all water users, water service providers and other agencies.
- (2) All State agencies, departments and all entities - public or private, that collect, maintain, collate or archive hydro-meteorological, related water resources and water use data shall contribute data to information system after ensuring its validity and accuracy. All such data shall be in public domain.
- (3) The State shall monitor and take appropriate measures through community involvement to address problems like unacceptable depletion or raising the groundwater level, salinity or similar problems arising out of prevailing water uses.
- (4) In view of change in water availability, change in cropping pattern and diversion of more water for non-irrigation purposes, the irrigation potential of the water resources projects completed before ten years shall be reviewed realistically.
- (5) All water user entities shall publish annual water accounts and water audit reports. Such reports shall contain all data relating to water quota, actual water use, pollution levels, losses, leakages, unauthorized withdrawals, recycle and reuse of water, including return flows, treated effluent water quantity, and per unit consumption etc. All such reports shall be in public domain.
- (6) The Water Resources Department shall undertake the benchmarking exercise in all the projects in the State, in a phased manner, in such a way that all projects will be covered. The State shall publish annual

benchmarking report of water resources projects along with analysis and recommendations for improvement, every year by 22nd March i.e. World Water Day.

- (7) Water auditing shall be made mandatory for all Water Resources Projects. The service providers shall be accountable for providing measuring devices for volumetric supply and for giving the account of water use in various sectors. The cost of such meters shall be

recovered from the users in phased manner. The Water Resources Department shall publish annual water audit report of all water resources projects, along with analysis and recommendations for improvement, every year by 22nd March i.e. World Water Day.

- (8) The Water Resources Department shall collect and compile data for water storages, water use for various categories of use- irrigation potential developed and utilised, water charges levied and collected and all other such relevant data. The State shall publish annual irrigation status report every year by 15th September; i.e. Engineers' Day.
- (9) Remote sensing coupled with Geographic Information System (GIS) shall be used for sustainable management of Water Resources, covering all extensively spread water harvesting structures including irrigation projects. This will include information on runoff, flood management- mapping of flood plains, watershed management, management of irrigation in command area- for estimation of acreage of crop and production, silt accumulation in dam etc. This will facilitate availability of real time data in public domain leading to transparency.

17. WATER CHARGES:

Water pricing plays an important role in regulating the water use and ensuring the efficiency of water use. The State has already entrusted the responsibility of tariff determination to MWRRA. The Authority is further guided by following Principles in finalising tariff structure;

- a) The Authority shall function in a transparent and participatory manner, conducting public consultations & hearing before deciding upon the tariffs.
- b) Authority shall ensure the realisation of at least norm based recurring expenses on the water infrastructure initially, as well as cost reflective water pricing subsequently in a phased manner.
- c) The recurring expenses shall include operation and maintenance charges including electricity charges, spares, consumables, establishment and administrative charges, overheads and also the cost of special repairs (restoration and retrofitting of structures) including replacement cost of any component of the infrastructure (viz. control gates etc.), required to ensure sustainability of the system, water use efficiency, user access to avail water rights and equitable water distribution.
- d) In order to meet equity, efficiency and economic principles, the water charges, as a rule, shall be determined on volumetric basis.
- e) The pricing of water shall encourage its efficient use and reward conservation.
- f) Recycle and reuse of water after treatment of sewage water to specified standards be incentivised through a properly planned tariff system.

ANNEXURE R-10



Water
Resources
Department
Government of
Maharashtra,
India

FLOOD LINE MAPS

Red and Blue Line Maps

tr>

Sr.No	Subject	View/Download
1	Amba CH 3000 to 5800 (part 3)	
2	Amba CH 0 to 1100 (part 1)	
3	Amba CH 1100 to 2900 (part 2)	
4	Amba CH 6100 to 8500 (part 4)	
5	Amba CH 8500 to 9100 (part 5)	
6	Bicchan CH 0 to 2000 (part 1)	
7	Bicchan CH 2000 to 4600 (part 2)	
8	Bicchan CH 4600 to 7000 (part 3)	
9	NGT Devna and Jivna	
10	NGT Sapan	
11	MAP 19-converted (Shahanoor dam)	
12	Mar 2019-327 converted (Chadrabhaga dam)	

13	Mar 2019-328 converted (Chadrabhaga dam)	
14	Mar 2019-329 converted (Chadrabhaga dam)	
15	Chakravati River	
16	WAN Major Project	
17	MUN River Project RD 0Km to 22KM	
18	Torna Project	
19	Utawali Project	
20	Khadakpurna River Project	
21	Khadakpurna River Project RD 0KM to 8KM	
22	Khadakpurna River Project RD 8KM to 20KM	
23	Khadakpurna River Project RD 20KM to 28KM	
24	Khadakpurna River Project RD 28KM to 38KM	
25	Khadakpurna River Project RD 38KM to 51KM	
26	Khadakpurna River Project RD 51KM to 67.2KM	
27	Pentakli Project RD 0KM to 56KM	
27	Painganga River Project RD 0KM to 36KM	
28	PRANHITA RIVER Dist GADCHIROLI	
29	Jam River (Taluka Katol, District Nagpur)	
30	Bemla River	
31	Adan River(Part-1)	
32	Adan River(Part-2)	
33	Arunavati river(Part-1)	

34	Arunavati river(Part-2)	
35	Arunavati river(Part-3)	
36	Sati river	
37	Nirguda river	
38	Purna river 0 to 49	
39	Purna river 49 to 111	
40	Jambhali River	
41	Kadavi River	
42	Kasari River	
43	Warna River-1	
44	Warna River-2	
45	Warna River-3	
46	Nal & Damyanti River o to 2000 m Ta Morashi Dist Amaravati	
47	KAR River o to 1538 m Dist Wardha	
48	Wardha River CH 0 to 20000 Ta Morashi Dist Amaravati	
49	Krushna River Ch.0 to 35	
50	Krushna River Ch.35 to 45	
51	Krushna River Ch.45 to 60	
52	Rena River KM 0-31 (Ta.Renapur) Dist. Latur	
53	Kanhan River Ta.Saonar Dist.Nagpur	
54	Irai River Ch.0 to 35000 m,Tq.Bhadravati,Chandrapur,Balharapur,Dist.Chandrapur	
55	Chulband River Tq.Sakoli Dist.Bhandara	

56	Mula Mutha River,Loni Kalbhor to Pargaon,Dist. Pune	
57	Bhima River- Narsingpur	
58	Bhima Rlver Part-1/7	
59	Bhima Rlver Part-2/7	
60	Bhima Rlver Part-3/7	
61	Bhima Rlver Part-4/7	
62	Bhima Rlver Part-5/7	
63	Bhima Rlver Part-6/7	
64	Bhima Rlver Part-7/7	
65	Korada River Part-1/2	
66	Korada River Part-2/2	
67	Man River Part-1/2	
68	Man River Part-2/2	
69	Ghod River Part-1/3	
70	Ghod River Part-2/3	
71	Ghod River Part-3/3	
72	Kukadi River	
73	Mandavi River	
74	Meena River	
75	Pushpawati River	
76	Khar River	
77	Vincharna River	

78	Sina River and Bhingar Nallah	
79	Wainganga River (Dist. Bhandara	
80	Panchganga River Part I- Kolhapur City	
81	Panchganga River Part II- Kolhapur City	
82	Krushna River Part I- Sangali City	
83	Krushna River Part II- Sangali City	
84	Krushna River Walwa To Ankalkhop	
85	Vedganga River	
86	Hiranyakeshi River	
87	Tamraprani River	
88	Ghatprabha River	
89	Sur River Dist.Bhandara	
90	Koyna River 0 to 40	
91	Koyna River ch.40 to 68	
92	Gadhi River	
93	Gandhari River	
94	Nirabai River	
95	Kal River (Mahad) Part-I	
96	Kal River (Mahad) Part-II	
97	Nageshwari River Part-I	
98	Nageshwari River Part-II	
99	Amba River Part-I	

99	Amba River Part-II	
100	Amba River Part-III	
101	Amba River Part-IV	
102	Kal River (Mangaon) Part-I	
103	Kal River (Mangaon)Part-II	
104	Kal River (Mangaon) Part-III	
105	Kal River (Mangaon) Part-IV	
106	Kundalika River Part-I	
107	Kundalika River Part-II	
108	Kundalika River Part-III	
109	Patalganga River Part-I	
110	Patalganga River Part-II	
111	Patalganga River Part-III	
112	Savitri River Part-I	
113	Savitri River Part-II	
114	Savitri River Part-III	
115	Vel River Part-I	
116	Vel River Part-II	
117	Vel River Part-III	
118	Vel River Part-IV	
119	Ram River Ta. Haveli Dist. Pune	
120	Urwade River	

121	Mula River Part-I & II	
122	Mula River Part-III & IV (a)	
123	Mula River Part-IV (b)& V	
124	Mula River Part-VI	
125	Indrayani River	
126	Kasarsai River	
127	Tanasa River(Index)	
128	Tanasa River Part-1	
129	Tanasa River Part-2	
130	Tanasa River Part-3	
131	Vaitarna River(Index)	
132	Vaitarna River Part-I	
133	Vaitarna River Part-II	
134	Vaitarna River Part-III	
135	Vaitarna River Part-IV	
136	Vaitarna River Part-V	
137	Vaitarna River Part-VI	
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139	Mutha River-- Temghar Dam to Khadakwasla-Part II	
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146	KHUNI RIVER 3	
147	KHUNI RIVER 4	
148	GOKI RIVER 1	
149	GOKI RIVER 2	
150	GOKI RIVER 3	
151	GOKI RIVER 4	
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162	Manjara River Part I(0 To 52.5 Km)	
163	Manjara River Part II (52.5 To 106.5 Km)	

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167	Nand River (Village Pauni 0 to 1.5 Km & Kalamana 3 to 6 KM)	
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171	Hingana 0 to 1.4 & Raipur o to 1.5 Km on Vena River,Nagpur	
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191	Kapshi part-2 Tq. Sangmeshwar Dist. Ratnagiri	
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193	Bav River Part -2 Tq. Sangmeshwar Dist. Ratnagiria	
194	Gad River Tq. Sangmeshwar Dist. Ratnagiri	
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196	Sonvi River Tq. Sangmeshwar Dist. Ratnagiri	
197	Kajavi River Part-1 Tq. Sangameshwar & Lanja Dist. Ratnagiri	
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211	Vashishati River part-4 Tq. Guhaghar Dist. Ratnagiri	
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216	Vaitarni Tributary-Block Contour Survey Tq. Chiplun Dist. Ratnagiri	
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266	Kadwa River from Palkhed Dam to Godawaririver-Part1,Tah.Niphad Dist. Nashik	
267	Kadwa River from Palkhed Dam to Godawaririver-Part2,Tah.Niphad Dist. Nashik	
268	Kadwa River from Palkhed Dam to Godawaririver-Part3,Tah.Niphad Dist. Nashik	
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423	Krishna River nala -red-blue map ch.8 to 10km	
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425	Kundali River -red-blue map ch.0 to 20km	
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428	Veena River -red-blue map ch.30 to48.5km	
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430	Vasana River -red-blue map Ch45 To 51.2 Km & Tributaries(DeurTilganga River)	
431	Vasana River Tributary (Wanganga River) -red and blue map	
432	Urmodi River-o to 35 KM -red and blue map	
433	Urmodi River-35 toN53.8 KM -red and blue map	
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436	Tarali River-Ch.40 to 44.7 KM and tributaries-red and blue map	
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441	Revised Map-Vidrupa River ,Akola District -red and blue map	
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445	Red Line and Blue Line map - Panzara River Dist Dhule	
446	Red Line and Blue Line map - Bori River	
447	Red Line and Blue Line map - Girna River	

448	Red Line and Blue Line map - Sindphana River	
449	Red Line and Blue Line map - Rangavali River	
450	Red Line and Blue Line map - Arunawati River	
451	Red Line and Blue Line map - Bori River	
452	Red Line and Blue Line map - Kan River	
453	Red Line and Blue Line map - Amravati River	

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पुराचा संभाव्य धोका टाळण्यासाठी पुररक्षेच्या
आंत कोणतेही बांधकाम न देण्याच्या दृष्टीने
पुररक्षेची आधी देण्याबाबत -

महाराष्ट्र शासन,
पाटवंधारे विभाग,

शासन परिपत्रक क्र. एफडीडब्ल्यू १०८९/२४३/८९/सि. व्य. [कामे],

मंत्रालय, मुंबई-४०० ०३२.

दिनांक :- २.९.८९.

परिपत्रक :-

ह्या वर्षाच्या पावसाबाबत झालेल्या अतिवृष्टी व पुर धोक्यात महाराष्ट्रातील
व-याच्या शहरांमध्ये/गावांमध्ये, नदी किना-यावरील धरांची मोठ्या प्रमाणावर
पडड झालेली आहे. अशा पडड झालेल्या धरांची पुनर्बांधणी करण्याचे काम
तांतडीने महत्त्व व क्षम. विभागातर्फे हाती घेण्यात येत आहे. तथापि, काम
त्वस्थाची व्यवस्था म्हणून अशा संभाव्य पुराचा धोका असणा-या शहरांमध्ये/गावां-
मध्ये पुराचा धोका टाळण्यासाठी पुररक्षेच्या आंत कोणत्याही प्रकारचे बांधकामाला
परवानगी न देण्याचे शासनाचे धोरण आहे. तेव्हा अशा पडड झालेल्या धरांची
पुनर्बांधणी करतानासुद्धा याचा विचार केला जावा.

सबब या परिपत्रकान्वये पाटवंधारे विभागातील सर्व संबंधित अधिका-यांना
असे कळविण्यात येते की, पडड झालेल्या धरांच्या पुनर्बांधणी कार्यक्रम हाती घेतांना
संबंधित शहरात/गावात पुररक्षा आखून देण्याबाबत संबंधित जिल्हा अधिका-यांकडून
मागणी आल्यास पाटवंधारे विभागाच्या अधिका-यांनी संबंधित शहरासाठी गावात
पुररक्षा आखून देण्याबाबत त्वरेने कार्यवाही करावी. संबंधित शहरात/गावात
अशा पुररक्षा आखून देतांना त्या ठिकाणचे उपलब्ध सर्व्हेर प्लॅन्यमानाची आकडेवारी
व त्या ठिकाणचे प्लॅनद्वारे क्षेत्र तसेच पूर्वी येऊ गेलेल्या भोवसा पुराच्या सामाजिक
धुणा या बाबींचा विचार करून तसेच धरणा सुरक्षितता मंत्र्यालयमधील मागणी
तत्वांच्या आधारे प्रपत्रक रेषा [Prohibitive Zone i.e. Blue Zone] व
तसेच सावधानतेचा इशारा देण्याच्या दृष्टीने पुररक्षा [Regulative Zone
i.e. Red Zone] आखून देण्याबाबत कार्यवाही करावी.

सर्व
शासनाचे सहाय्यक सचिव

प्रत - सर्व प्रशासकीय विभाग, मंत्रालय,
पाटवंधारे विभागातील सर्व प्रादेशिक मुखय अभियंते,
सर्व अधीक्षक अभियंते,
सर्व कार्यकारी अभियंते.

2098 9296 9320 39 4926

पुराचा संभाव्य धोका टाळण्यासाठी 'पूररेषेच्या आंत
कोणतेही बांधकाम न होण्याच्या दृष्टीने पूररेषेची

आखणी करण्याबाबत

महाराष्ट्र शासन,
पाटबंधारे विभाग,

शासन परिपत्रक क्र. एफडीडब्ल्यू १०८९/२४३/८९/सि. व्य. [कामे],

मंत्रालय, मुंबई - ४०० ७३२.

दिनांक :- २१. ९. १९८९.

वाचावे :- शासन परिपत्रक क्र. एफडीडब्ल्यू १०८९/२४३/८९/सि. व्य. [कामे],
दिनांक ३१. ९. १९८९.

परिपत्रक :-

पावसाळ्यात झालेल्या अतिवृष्टी व पूर यांमुळे काही वेळा शहरांमध्ये/गावांमध्ये नदी किना-यावरील घरांची मोठ्या प्रमाणावर पडझड होते. पडझड झालेल्या घरांचा पुनर्बांधणी कार्यक्रम महत्त्व व वव विभागातर्फे हाती घेताना संबंधित जिल्हाधिका-यांकडून पाटबंधारे विभागाच्या अधिका-यांकडे संबंधित शहरात/गावात पूररेषा आखून देण्याबाबत मागणी आल्यास संबंधित शहरात/गावात पूररेषा आखून देण्याबाबत पाटबंधारे विभागाच्या अधिका-यांनी कशा प्रकारे कार्यवाही करावी याबाबतच्या सूचना संदर्भाधीन परिपत्रकांन्वये देण्यात आलेल्या आहेत. आता पूरक्षेत्र [Flood Zones] व संबंधित पूररेषा यांच्या आखणीविषयी तसेच पूरक्षेत्रातील जमिनीच्या वसावाबाबत धरण सुरक्षितता संहिता प्रकरण ६८, १९८४ मध्ये दिलेल्या मार्गदर्शक सूचनांच्या आधारे खालीलप्रमाणे अधिक सविस्तर खुलासा या परिपत्रकाद्वारे करण्यात येत आहे. त्यामध्ये वापरण्यात आलेले शब्दप्रयोग, जसे की, निषिद्ध क्षेत्र, निषेधक पूररेषा इ. यामुळे मराठीत वापरणाऱ्यांना आणजेवत.

महत्त्वाच्या पूररेषा ह्या सुव्यवस्थित दोन प्रकारच्या आहेत. निषेधक पूररेषा की ज्या कोणत्याही वर्षी पूर येण्याच्या शक्यतेमुळे बांधकामाचे दृष्टिकोनातून ते क्षेत्र निषिद्ध ठरवितात. नियंत्रक पूररेषा ह्या पर्जन्यमानाचे दृष्टीने कोणत्याही वर्षी [परंतु साधारण १०० वर्षांत एकदा] ज्या ठिकाणापर्यंत पूर येऊ शकतो, तो तिला दर्शवितात. म्हणून बांधकामे केली तरी पूर येणारच नाही असे गृहित न घेता नियंत्रित प्रकारचे बांधकाम या रेषेखाली परंतु निषिद्ध क्षेत्र वगळून करता येईल. ही क्षेत्रे व पूररेषा खालीलप्रमाणे असतात.

अ) निषिद्ध क्षेत्र [Prohibited Zone] :-

धरणाचे जलोशिवानुन नियंत्रित पध्दतीने नदीत सोडण्यांत येणारा विसर्ग व तसेच धरणाखालील भूभेद पाणलोट क्षेत्रांमध्ये येणारा पावसाळ्यातील विसर्ग वाहून नेण्यात जे नदीचे सुदृढ पत्रे व त्याचे लगतचे क्षेत्र आवश्यक असते त्याला " निषिद्ध क्षेत्र " म्हणावे. हे प्रत्यक्षात ठरवितांना सरासरीने ३५ वर्षांतून एकदा या वारंवारितेने [Returnoy] येणारा पूरविसर्ग किंवा प्रस्थापित नदी-पात्राच्या विसर्गक्षमतेच्या दीडपट विसर्ग यांतील जास्तीचा विसर्ग वाहून नेण्यासाठी ते क्षेत्र " निषिद्ध क्षेत्र " म्हणून

-३-

अशा क्षेत्राचा उपयोग फक्त मोकड्या जमिनीच्या स्वभावात उदा. उघाने, खेळाची मैदाने किंवा हलकी पिके क्षेत्रे [उघाने ठिकाणी] पिके घेण्याचा हक्क पारंपारिक वापरासुद्धे प्रस्थापित झालेला आहे अशा ठिकाणी] अशा संदर्भात कारणांसाठीच केला जावा.

ब) निषेधक पुररेषा [Blue Line] :-

नदीचे दोन्ही तीरांवरील निषिद्ध क्षेत्राची हद्द ठरविणा-या गावाजवळील अशा पुराच्या दिशांबोने जी पाण्याची पातळी येईल तिच्या समतल रेषांना त्या गावातील " निषेधक पुररेषा " असे संबोधण्यांत यावे.

क) नियंत्रित क्षेत्र [Restrictive Zone] :-

संकल्पित महत्तम पूर वाहून नेण्यासाठी वरीलपेक्षा जास्त घटन-क्षेत्राची आवश्यकता लागेल. संकल्पित महत्तम पूर प्रवाह हा प्रकल्पाचे संकल्पनातील तांडव्यांवरून होणारा संकल्पित महत्तम पूर विसर्ग व धरणाखालील स्वतंत्र पायलोट क्षेत्रातून तसेच अपेक्षित पूरविसर्ग यांचेमुळे येणारा एकत्रित पूरविसर्ग धरण्यांत यावा. ज्या भागांत धरण नेसले त्या भागांत १०० वर्षांतून एकदा या वास्तविकतेचा पूरविसर्ग विचारांत घेण्यांत यावा.

हा संकल्पित महत्तम पूर वाहून नेण्यासाठी लागणा-या क्षेत्रातून "निषिद्ध क्षेत्र" वेगळता उरणा-या नदीचे दोन्ही तीरांवरील क्षेत्रास "नियंत्रित क्षेत्र" असे संबोधण्यांत यावे. नियंत्रित क्षेत्रातील बांधकामांच्या तळमजल्याच्या जोत्यांची पातळी सुरक्षित उंचीपर्यंत असावी, की ज्यामुळे पूरपातळी नियंत्रित क्षेत्रात जास्त प्रमाणात घटावयाचे आत अशा इमारतींमधील भागले इमारत सोडून सुरक्षित ठिकाणी सहजतेने जाऊ शकतील. ही उंची हयाशी संबंधित स्थानिक अधिका-यांनी जमिनीचा चढउतार व उपलब्ध रस्त्याचे तलांक ह. याची विचारांत घेऊन ठरविणे अपेक्षित आहे. तसेच इमारतींचे बांधकाम अशा प्रकारचे असावे की, जे स्वयंचालित येऊ शकणा-या पुरामुळे कोसळणार नाही.

अशा क्षेत्रातील इमारतींच्या बाबतची संपूर्ण देखील सुस्पष्टपणे विहित असेणे आवश्यक आहे. हे करतांना या क्षेत्रामध्ये येणारा संभाव्य पूर व तसेच पुरामुळे होणारी जीवितोपायी हानी व मालमत्तेचे नुकसान टाळण्यासाठी ह्या क्षेत्रातील लोकांना, जमावरांना व वस्तूंना अल्पावधीची परतून मिळताच हे क्षेत्र तांतडीने सोडून सुरक्षित स्थळी जाणे / मेणे आवश्यक राहिल, याचा विचार घ्यावा.

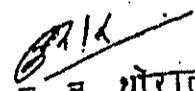
ड) " नियंत्रक पुररेषा " [Red Line] :-

नदीचे दोन्ही तीरांवरील नियंत्रित क्षेत्राची हद्द ठरविणा-या समतल रेषांना "नियंत्रक पुररेषा" म्हणून संबोधण्यांत यावे.

वरील बाबींचा विचार करून पुराचा संभाव्य धोका असणा-या

शहरांमध्ये/गांवांमध्ये वरील प्रकारच्या पुररेषा आणि देण्याबाबत पाटबंधारे विभागाच्या अधिका-यांनी कार्यवाही करावी. त्याचप्रमाणे वरील पुररेषा-साठी नकाशे तयार करतांनाही धरण सुरक्षितता संहितेच्या प्रकरण ८ मधील सूचनांचे अनुषंगाने कार्यवाही करावी.

महाराष्ट्राचे राज्यपाल यांचे आदेशानुसार व नांवाने,


[द. ल. थोरात]
शासनाचे सहाय्यक सचिव.

प्रत -

सर्व प्रशासकीय विभाग, मंत्रालय,
सर्व प्रादेशिक मुख्य अभियंते, पाटबंधारे विभाग,
सर्व अधीक्षक अभियंते, पाटबंधारे विभाग,
सर्व कार्यकारी अभियंते,
सर्व तांत्रिक कार्यालये / तांत्रिक अधिकारी, मंत्रालय, मुंबई.

Regarding marking of flood line to restrict any type of construction inside.

**STATE GOV. OF MAHARASHTRA,
IRRIGATION DEPARTMENT,**

Government Circular No.: FDW-1089/243/89/Sin Vya (Work) Mantralaya,
Mumbai-32

Dat. 21/9/1989.

Ref.: Government Circular No.: FDW-1089/243/89/Sin Vya (Work) Dat.
2/9/1989.

CIRCULAR

Due to heavy rains and floods in rainy seasons, sometimes houses on the riverbanks get seriously damaged in towns and cities. While reconstruction of the damaged houses is undertaken by Revenue and Forest Departments, and when concerned Dist. Collectors demand demarcation of flood lines to Irrigation officers in the affected towns/cities, instructions are given to the Irrigation officers in the referred Circular regarding how to implement the demarcation of flood lines. Now; demarcation of Flood Zones, Flood Lines and land use in the Flood Zones is explained in more details in this Circular as per the guide lines given in the Dam Safety Manual Chapter 8-1984. The phrases used in this circular, like Prohibited Zone (Nishiddha Kshetra), Prohibitive Flood Line (Nishedhak Poor Resha) etc. shall be henceforth used in Marathi.

Mainly flood lines are of two types. Prohibitive Flood Lines, which earmark the area prohibited for any construction due to probability of floods any year. And Restrictive Flood Lines, which earmark the levels of floods which may come any year (but generally once in 100 years). Therefore buildings can be constructed below this line but excluding Prohibited Zone, with certain restrictions without assuming that floods will not come though buildings are constructed. These Zones and the Flood Lines should be as mentioned below:

A) Prohibited Zone:

Main riverbed and the area on both banks required to carry the controlled discharge from dam and the flow from free catchment area below the dam should be called as "Prohibitive Zone". While identifying this, flood discharge frequency in average 25 years or one and half times the discharge of the established riverbed carrying capacity, whichever is more and the area

on its both banks should be considered as Prohibited Zone. This zone should be left open and can be used for gardens, play grounds or light crops (only where the easement right to take such crops is established).

B) Prohibitive Flood Line (Blue Line):

The level of water on both banks of the river during such floods shall be considered as Prohibitive Flood Line of that particular town identifying the "Prohibitive Zone".

C) Restricted Zone:

More carrying area shall be required to carry maximum possible flood. Maximum flood shall be considered as the maximum discharge from the dam and the free flow on the downstream side of the dam. (Where there is no dam, flood at the frequency of once in 100 years shall be considered.)

The balance area after deducting the Prohibited Zone from this area required to carry the maximum flood shall be considered as Restrictive Zone. Plinth level of the buildings in Restricted Zone shall be sufficiently high so that, occupants shall be able to shift easily to safer places. Concerned local officers are expected to finalise this level after considering the topography of the ground and levels of the roads. The construction of the buildings should be such that it shall not collapse in the rare floods.

The restrictions on the use of buildings in this zone also should be clear. While doing this, possible flood in this zone and need of fast shifting of the occupants residing in this area at a short notice to avoid loss of life and property should be considered.

D) Restrictive Flood Line (Red Line):

The lines earmarking Restricted on both banks of river shall be called as Restrictive Flood Lines.

After considering the above mentioned points, Irrigation Department officers should mark flood lines in the towns/cities where there is a risk of floods. Also instructions in Chapter 8 of Dam Safety Manual should also be implemented while preparing the maps of flood lines.

At the order and in the name of the Govenner, Maharashtra State.

(D. L. Thorat)

Dy. Secretary to Gov.

पुराचा संभाव्य धोका टाळण्यासाठी पूररेषेच्या आत कोणतेही बांधकाम न होण्याच्या दृष्टीने पूररेषेची आखणी करणे व निषिद्ध व नियंत्रित क्षेत्राचा उपयोग करण्याबाबत मार्गदर्शक सूचना

महाराष्ट्र शासन
जलसंपदा विभाग,

शासन परिपत्रक क्र पूरनि-२०१८/(१८२/२०१८) सि.व्य.(महसूल)

मंत्रालय, मुंबई ४०००३२,

दिनांक:-३ मे, २०१८

वाचावे :- शासन परिपत्रक क्र.एफडीडब्लू -१०८९/२४३/८९/ सि.व्य.(कामे), दि. २.०९.१९८९,
दि.२१.९.१९८९

प्रस्तावना :-

पाटबंधारे विभाग शासन परिपत्रक क्र एफडीडब्लू १०८९/२४३/८९/ सि.व्य (कामे) दि.२.९.१९८९ व दि.२१.९.१९८९ अन्वये पुराचा संभाव्य धोका टाळण्यासाठी पूररेषेच्या आत कोणतेही बांधकाम न होण्याच्या दृष्टीने पूररेषेची आखणी करण्याबाबत सूचना निर्गमित करण्यात आल्या आहेत.

नदीच्या निळ्या पूररेषेच्या आत निषिद्ध क्षेत्रात व लाल पूररेषा व निळी पूर रेखा यांच्यामधील नियंत्रित क्षेत्रात शहरांच्या, गावांच्या, तिर्थक्षेत्र विकासाच्या दृष्टीने नदीवर पूल बांधणे, पूलाचे दोन्ही बाजूने पोहोच रस्ते तयार करणे, शहराच्या विकास आराखडयानुसार नदीच्या बाजूने जाणारे रस्ते, उद्याने व जॉर्गींग ट्रॅक तयार करणे तसेच पूरसंरक्षक कामांतर्गत नदीच्या तीरालगत पूर संरक्षक भित बांधणे, घाट बांधणे या शिवाय गॅस पाईपलाईन क्रॉसिंग करणे, विद्युत वाहिनी क्रॉसिंग करणे, नदीच्या कडेने ड्रेनेज पाईप लाईन टाकणे, मलनिसारण प्रकल्पाचे काम करणे, इ. प्रकारच्या सार्वजनिक स्वरूपाच्या अपरिहार्य कामांसाठी संबंधित शासकीय / निमशासकीय संस्था, स्थानिक स्वराज्य संस्था कडून ना-हरकत प्रमाणपत्रांची वाढती मागणी, जलसंपदा विभागामार्फत राज्यातील विविध नदीनाल्यांवर पूर्ण झालेल्या प्रकल्पांची संख्या व बांधकामाधीन प्रकल्पांची संख्या, काळानुरूप बदलेले पर्जन्यमानाचे स्वरूप, पूरनियंत्रण व पुराचे अंदाज वर्तवण्याबाबत उपलब्ध अत्याधुनिक यंत्रणा इत्यादी गोष्टींचा एकत्रित पणे विचार करण्याची आवश्यकता निर्माण झाली आहे.

शासन परिपत्रक क्र न्यायप्र -२०१४ प्र.क्र.४२४/२०१४ सि.व्य (म), दि.२.३.२०१५, अन्वये जलसंपदा विभागामार्फत पूरक्षेत्र व पूररेषा नकाशे व आराखडयांना मान्यता देण्यात येते. तथापि पाटबंधारे विभाग शासन परिपत्रक क्र एफडीडब्लू १०८९/२४३/८९/ सि.व्य (कामे), दि.२.९.१९८९ व दि.२१.९.१९८९ अन्वये नदीच्या निळ्या पूररेषेच्या (Blue Line) आत निषिद्ध क्षेत्रात (Prohibitive Zone) आणि लाल पूररेषा(Red Line) व निळी पूर रेखा(Blue Line) यांच्यामधील नियंत्रित क्षेत्रात(Restrictive Zone) सार्वजनिक सुविधांच्या दृष्टीने आवश्यक नेमकी कोणती अपरिहार्य कामे घ्यावीत याबाबत अधिक स्पष्टता आणण्याच्या दृष्टीने सुधारणा करण्याची बाब शासनाच्या विचाराधीन होती. यादृष्टीने एकत्रित सुधारित / अद्ययावत सूचनांचा समावेश करून आता खालील प्रमाणे परिपत्रक निर्गमित करण्यात येत आहे.

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परिपत्रक -

१. पाटबंधारे विभाग शासन परिपत्रक क्र एफडीडब्ल्यू १०८९/२४३/८९/ सिव्य (कामे) दि.२.९.१९८९ व दि.२१.९.१९८९ अद्ययावत करण्यात येत आहे.

२. पूरक्षेत्रातील जमिनीच्या वापराबाबत धरण सुरक्षितता संहिता (Dam safety Manual) प्रकरण ८/ १९८४ मध्ये दिलेल्या मार्गदर्शक सूचनांच्या आधारे महत्वाच्या पूररेषा ह्या मुख्यत्वेकरून दोन प्रकाराच्या आहेत. निषेधक पूररेषा (Blue Line) व नियंत्रक पूररेषा (Red Line) .

३. निळी पूररेषा (Blue Line) :-

निळी पूररेषा (Blue Line) ही खालीलपैकी येणाऱ्या जास्तीत जास्त विसर्गाच्या पाणी पातळीला आखलेल्या रेषेला संबोधण्यात यावी.

अ) सरासरीने २५ वर्षातून एकदा (१ in २५ year) या वारंवारितेने (Frequency) येणारा पूर विसर्ग किंवा

ब) प्रस्थापित नदीपात्राच्या विसर्गक्षमतेच्या दिडपट विसर्ग.

४. लाल पूररेषा (Red Line) :-

लाल पूररेषा (Red Line) ही खालीलपैकी येणाऱ्या विसर्गाच्या पाणी पातळीला आखलेल्या रेषेला संबोधण्यात यावी.

अ) ज्या भागात धरण नसेल तेथे :- सरासरीने १०० वर्षातून एकदा (१ in १०० year) या वारंवारितेने (Frequency) येणारा पूर विसर्ग.

ब) ज्या भागात धरण असेल तेथे :- प्रकल्पाच्या संकल्पनातील सांडव्यावरून वाहणारा संकल्पित महत्तम पूर विसर्ग अधिक धरणाखालील पाणलोट क्षेत्रातून येणारा अपेक्षित १०० वर्षातून येणारा (१ in १०० year) या वारंवारितेने (Frequency) येणारा पूर विसर्ग.

५. निषिद्ध क्षेत्र (Prohibitive Zone) :-

नदीच्या उजव्या तीरावरील निळी पूर रेषा (Blue Line) ते नदीपात्र ते डाव्या तीरावरील निळी रेषा (Blue Line) या मधील क्षेत्राला निषिद्ध क्षेत्र (Prohibitive Zone) म्हणून संबोधण्यात यावे.

६. नियंत्रित क्षेत्र (Restrictive Zone) :-

नदीची निळी पूररेषा (Blue Line) ते त्याच तीरावरील लाल पूररेषा (Red Line) यामधील क्षेत्राला नियंत्रित क्षेत्र (Restrictive Zone) संबोधण्यात यावे.

७. निषिद्ध क्षेत्राचा (Prohibitive Zone) उपयोग फक्त मोकळ्या जमिनीच्या स्वरूपात उदा. उदयाने, खेळाची मैदाने किंवा हलकी पिके घेणे, ज्याठिकाणी पिके घेण्याचा हक्क पारंपारिक वापरामुळे प्रस्थापित झाला आहे अशा ठिकाणी (उदा. नदीपात्राजवळ करण्यात येणारी कलींगड / टरबूज / खरबूज इ.ची लागवड सार्वजनिक शौचकूप व मल:निस्सारण सुविधा) अशा सारख्या कारणांसाठीच केला जावा की जेणे करून नदी प्रवाहात कोणताही अडथळा येणार नाही, नदीची वहनक्षमता कमी होणार नाही व नदीच्या काटछेदात कोणताही बदल होणार नाही.

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८. नियंत्रक क्षेत्राचा (Restrictive Zone) उपयोग खालील कारणांसाठीच केला जावा .

i) सार्वजनिक हिताच्या दृष्टीने आवश्यक व अपरिहार्य मलःस्सारण योजना .

ii) सार्वजनिक हिताच्या दृष्टीने आवश्यक व अपरिहार्य सार्वजनिक रस्ते की जेणेकरून सदर रस्त्याची माथा पातळी निळ्या पूररेषा पातळीच्या वर असेल. सदर पातळी किती वर असावी याची निश्चिती संबंधित Indian Road Congress Code मधील तरतुदीनुसार करावी.

iii) सार्वजनिक हिताच्या दृष्टीने आवश्यक व अपरिहार्य पाणीपुरवठा पाईपलाईन, गॅस पाईप लाईन , ड्रेनेज पाईपलाईन की जेणेकरून सदर पाईप लाईन भूमिगत असावी व त्यामुळे नियंत्रित क्षेत्रातील नदीच्या काटछेदात कोणताही अडथळा येऊन त्यात बदल होणार नाही.

iv) नियंत्रित क्षेत्रातील बांधकामांच्या तळमजल्याच्या जोत्याची पातळी लाल पूररेषा पातळीच्या वर सुरक्षित उंचीपर्यंत असावी की ज्यामुळे पूरपातळी नियंत्रक क्षेत्रात जास्त वाढण्यापूर्वी तेथील नागरिकांना सुरक्षितस्थळी सहजपणे जाता येईल. तसेच या क्षेत्रामध्ये येणारा संभाव्य पूर व तसेच पुरामुळे होणारी जिवित हानी व मालमत्तेचे नुकसान टाळण्यासाठी ह्या क्षेत्रातील लोकांना, जनावरांना व वस्तुंना अल्पावधीची पूरसूचना मिळताच हे क्षेत्र तातडीने सोडून सुरक्षित स्थळी जाणे शक्य होईल.

९. उपरोक्त मुद्दा क्र. ८ मध्ये नमूद उपयोगांमुळे नदी प्रवाहात कोणताही अडथळा येणार नाही , नदीची वहनक्षमता कमी होणार नाही व नदीच्या काटछेद क्षेत्रात कोणताही बदल होणार नाही , याची दक्षता घेण्यात यावी . प्रवाहाला अडथळा आणणारे बांधकामाविरुद्ध मुख्य अभियंता कारवाई करण्यास सक्षम असतील. निषिद्ध (Prohibitive Zone) व नियंत्रित क्षेत्रात (Restrictive Zone) करावयाच्या सदर सार्वजनिक कामांच्या सुरक्षिततेची संपूर्ण जबाबदारी संबंधित विभागाची / स्थानिक स्वराज्य संस्थेची असेल व संभाव्य पुरामुळे होणाऱ्या जिवित व वित्त हानीस संबंधित विभाग/ स्थानिक स्वराज्य संस्था जबाबदार राहिल व त्याअनुषंगाने उद्भवणाऱ्या न्यायालयीन प्रकरणास संबंधित विभाग / स्थानिक स्वराज्य संस्था जबाबदार असेल.

१०. वरील बाबींचा विचार करून पुराचा संभाव्य धोका टाळण्यासाठी व निषिद्ध व नियंत्रित क्षेत्राची निश्चिती करण्याच्या दृष्टीने आवश्यक पूररेषा आखून देण्याबाबत जलसंपदा विभागाकडे जिल्हाधिकारी , स्थानिक स्वराज्य संस्था अथवा अन्य विभागाकडून मागणी प्राप्त झाल्यास जलसंपदा विभागाच्या संबंधित क्षेत्रिय मुख्य अभियंता यांनी शासन परिपत्रक क्र न्यायप्र -२०१४ प्र.क्र.४२४/२०१४ सिंव्य (म), दि.२.३.२०१५ अन्वये कार्यवाही करावी.

११. जलसंपदा विभागाचे कार्यक्षेत्र नदी किनारी पूररेषेची आखणी करण्याइतपतच मर्यादित असल्याने निषिद्ध क्षेत्रातील व नियंत्रित क्षेत्रातील उपरोक्त परिच्छेदात नमूद केलेली सार्वजनिक हिताच्या दृष्टीने अपरिहार्य व आवश्यक कामांना जलसंपदा विभागाच्या ना-हरकत प्रमाणपत्राची आवश्यकता राहणार नाही .

शासन परिपत्रक क्रमांक: पूरनि-२०१८/(१८२/२०१८) सि.व्य.(महसूल)

तथापि, पर्यावरण विभाग/ इतर विभाग/ स्थानिक संस्था/ इतर शासकीय विभाग यांची वैधानिक मान्यता आवश्यक असेल तर ती स्वतंत्रपणे घेण्यात यावी.

१२. सदर शासन परिपत्रक विधी व न्याय विभागाचा अनौपचारिक संदर्भ क्र. ३८८-२०१८/E दि.१३.४.२०१८ व नगरविकास विभागाच्या अनौपचारिक संदर्भ क्र. टिपीएस -१०१८/अनौस.५/२०१८/ नवि -९ दि.१९.४.२०१८ नुसार निर्गमित करण्यात येत आहे .

१३. सदर शासन निर्णय महाराष्ट्र शासनाच्या www.maharashtra.gov.in या संकेतस्थळावर उपलब्ध करण्यात आला असून त्याचा संकेतांक २०१८०५०३१८०१५५७२७ असा आहे. हा आदेश डिजीटल स्वाक्षरीने साक्षांकित करून काढण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांचे आदेशानुसार व नावाने,

C. A. Birajdar

Digitally signed by C. A. Birajdar
DN: cn=C.A. Birajdar, o=Government Of Maharashtra, ou=Water
Resources Department, postalCode=400032,
c=Maharashtra,
2.5.4.20=f81b26fa81d09e25c936b37b64d8e843d120d27
2ef12b94b7ee717c5fa, cn=C. A. Birajdar
Date: 2018.05.03 18:06:32 +05'30'

(च.आ.बिराजदार)

सचिव (लाक्षेवि)

प्रत :- मा. राज्यपाल यांचे सचिव,

१. मा.मुख्यमंत्री यांचे कार्यालय,
२. मा.अध्यक्ष / उपाध्यक्ष, विधानसभा, विधानभवन, मुंबई,
३. मा.सभापती / उपसभापती, विधानपरिषद, विधानभवन, मुंबई,
४. मा.विरोधी पक्षनेते, विधानसभा, मुंबई, यांचे कार्यालय, विधानभवन, मुंबई,
५. मा.विरोधी पक्षनेते, विधानपरिषद, मुंबई, यांचे कार्यालय, विधानभवन, मुंबई,
६. मा. मंत्री, जलसंपदा यांचे खाजगी सचिव, मंत्रालय, मुंबई,
७. मा. राज्यमंत्री (जलसंपदा) यांचे खाजगी सचिव, मंत्रालय, मुंबई,
८. महालेखापाल १ / २ (लेखा व अनुज्ञेयता) महाराष्ट्र राज्य, मुंबई/नागपूर
९. महालेखापाल १ / २ (लेखा परीक्षा) महाराष्ट्र राज्य, मुंबई/नागपूर,
१०. अ.मु.स (गृह) यांचे स्वीय सहायक, गृह विभाग, मंत्रालय, मुंबई,
११. अ.मु.स (महसूल) यांचे स्वीय सहायक, महसूल व वन विभाग, मंत्रालय, मुंबई
१२. अ.मु.स. (पर्यावरण) यांचे स्वीय सहायक, पर्यावरण विभाग, मंत्रालय, मुंबई,
१३. प्रधान सचिव (जलसंपदा) यांचे स्वीय सहायक, जलसंपदा विभाग, मंत्रालय, मुंबई,
१४. प्रधान सचिव (नगरविकास) यांचे स्वीय सहायक, नगरविकास विभाग, मंत्रालय, मुंबई,
१५. सचिव (जसंव्य व लाक्षेवि) यांचे स्वीय सहायक, जलसंपदा विभाग, मंत्रालय, मुंबई,
१६. सचिव (प्रकल्प समन्वय) यांचे स्वीय सहायक, जलसंपदा विभाग, मंत्रालय, मुंबई,
१७. सर्व मंत्रालयीन विभाग, मंत्रालय, मुंबई,
१८. माहिती व जनसंपर्क महासंचालनालय, मंत्रालय, मुंबई,
१९. सर्व महासंचालक, जलसंपदा विभाग,

पृष्ठ ५ पैकी ४

शासन परिपत्रक क्रमांक: पूरनि-२०१८/(१८२/२०१८) सि.व्य.(महसूल)

२०. सर्व विभागीय आयुक्त, महसूल विभाग, महाराष्ट्र राज्य,
२१. सर्व जिल्हाधिकारी, महाराष्ट्र राज्य,
२२. सर्व कार्यकारी संचालक, जलसंपदा विभाग,
२३. संचालक, नगररचनाकार, पुणे,
२४. सर्व मुख्य अभियंता/मुख्य अभियंता व मुख्य प्रशासक, जलसंपदा विभाग,
२५. जलसंपदा विभागातील सर्व सहसचिव व उपसचिव, मंत्रालय, मुंबई,
२६. सर्व अधीक्षक अभियंता/अधीक्षक अभियंता व प्रशासक, जलसंपदा विभाग,
२७. ग्रंथालय, विधानमंडळ सचिवालय, विधानभवन, मुंबई,
२८. सि.व्य. (महसूल) कार्यासन, संग्रहार्थ,

Guideline instructions for marking flood line and about using the prohibitive and restrictive area with a view not to allow any construction inside the flood line in order to avoid probable danger of flood.

GOVERNMENT OF MAHARASHTRA

WATER RESOURCES DEPARTMENT,

Government Circular No.Pu Ra Ni-2018/(182) Si.Vya.(Mahasul)

Mantralaya, Mumbai 400032

Date: 3rd May, 2018

Read: Government circular No .FDW-1089/243/89/Si Vya. (Kame)
dt. 02.09.1989 dt. 21.9.1989.

INTRODUCTORY:

Instructions about marking the flood line to disallow any construction inside the flood line for avoiding the danger of flood, have been issued vide Irrigation Department Government Circular No. FDW 1089/243/89/ Si Vya (Kame) dt. 2.9.1989 and 21.9.1989.

In view of the increasing demand for getting no-objection certificates from the Government / Semi-Government, local self government bodies for construction of bridges in prohibitive area inside the Blue Line of the river and in restrictive area between Red Flood Line and Blue Flood Line, for development of the cities, villages, religious places, construction of access roads on both the ends of the bridges, construction of roads by the side of river as per development plan of the cities, construction of gardens and jogging tracks, construction of flood protective wall adjacent to the river bank for protection from floods, construction of protective wall (ghaat), gas crossing pipeline, electricity cable crossing, laying of drainage pipeline by the side of river, to carry out drainage project work and such other necessary work of public utility, also considering the number of projects completed in various rivers and canals in the State by the Water Resources Department,

nature of rainfall that has undergone change over the period, ultra-modern machinery available for flood control and forecasting floods; it has become necessary to consider all these aspects collectively.

Approval for flood area and flood line maps and layouts is given by Water Resources Department, as per Government Circular No. Nyaya Pra-2014 Si Vya (M) dt. 2.3.2015. However, the matter of making modifications for bringing more clarity as exactly which essential works can be taken up for public utility in prohibitive zone inside the Blue Line of the river and in the restrictive zone between Red Line and Blue Line, vide Irrigation Department, Government Circular No. FDW 1089/43/89/ Si Vya (Kame) dt. 2.9.1989, was under consideration of the Government. Therefore, the consolidated revised / updated instructions have been included and the following circular is being issued.

CIRCULAR:

1. Irrigation Department Government Circular No. FDW 1089/243/89/ Si Vya. (kame) dt. 2.9.1989 and 21.9.1989 is being updated.
2. As per the guideline instructions given in 'Dam Safety Manual' Chapter 8/1984 regarding usage of the land in flood area, the important flood lines are mainly of two types. Prohibitive Flood Line (Blue Line) and Control Flood Line (Red Line).
3. Blue Flood Line (Blue Line) :-

Maximum level of upsurge water as given below will be called Blue Line.

a) Flood upsurge coming at a frequency of once in 25 years.

or

b) Upsurge level at one and half times of the upsurge capacity of established riverbank.

4. Red Flood Line (Red Line):
Line drawn at the level of upsurge water coming at following frequencies:
 - a) Where there is no dam: Flood upsurge coming at a feurence of once in 100 years.
or
 - b) Where there is a dam: Envisaged maximum flood upsurge flowing from the overflow-wall of project concept plus the flood upsurge coming at a frequency of once in 100 years from the catchment area of the dam.
5. Prohibitive Zone:
Area between the Blue Line on the right hand side riverbank and the Blue Line on the left hand side riverbank will be called as Prohibitive Zone.
6. Restrictive Zone:
The area between the Blue Line of the river and the Red Line on the same riverbank will be called as Restrictive Zone.
7. Prohibitive Zone: shall be used only in the nature of open land e.g. gardens, playgrounds or light crops where the right of cultivation has been established due to traditional use (e.g. cultivation of watermelon and similar fruits, public toilets and sewage facilities), i.e. such facilities will not cause any obstruction in the river flow, will not reduce the flowing capacity of the river and will not change the riverbed.

8. Restrictive Zone will be used only for the following purposes:
- i) Sewage schemes necessary and essential in the public interest.
 - ii) Public roads which are necessary and essential in public interest, however the surface of the road will be above the level of Blue Flood Line. Height of such level shall be decided as per the provisions in Indian Road Congress code.
 - iii) Water supply pipeline, gas pipeline, drainage pipeline which may be necessary and essential in the public interest, however such pipeline shall be underground and will not obstruct or change the riverbed in the restrictive zone.
 - iv) Level of plinth of the ground floor of the structures in restrictive zone shall be at such a safe height that the residents there can easily shift to safe place before the flood level increases and the residents, animals and assets can be shifted immediately from the area and reach safe place at a short notice of flood to avoid loss of life and assets.
9. It should be ensured that the usages mentioned in above Point No.8 will not cause any obstruction in the river flow, flowing capacity of the river will not reduce and there will not be any change in riverbed. The Chief Engineer will be the competent authority to take action against the constructions obstructing the water flow. all the responsibility regarding the safety of the public works to be carried out in Prohibitive Zone and Restrictive Zone will be of the concerned departments / local self government bodies and the concerned department / local self government bodies will be responsible for loss of life and assets that may cause due to the probable flood and the concerned department / local self government bodies will also be

responsible for the litigations that may arise pursuant to such eventualities.

10. When a demand for marking necessary flood lines of prohibitive zone and restrictive zone for avoiding the probable danger of the flood, is made by the District Collector, local self government bodies or other departments to the Water Resources Department, the concerned Chief Regional engineer of the Water Resources Department will process it as per Government Circular No. Nyaya Pra-2014 Pra. Kra.424/2014 Si Vya (M.) dt. 2.3.2015.
11. As the jurisdiction of the Water Resources Department is restricted only to the demarcation of flood lines on the riverbanks, no-objection certificates from the Water Resources Department will not be required for the necessary and essential works of public interest in prohibitive and restrictive zones mentioned in the above paragraph. However, the statutory approval of the Environment Department / Other Departments / Local bodies / other Government departments if necessary, will be obtained separately.
12. This Government Decision is made available on Government of Maharashtra website www.maharashtra.gov.in AND ITS Code Number is 201805031801595727. This order has been issued with digital signature.

By the order and in the name of Governor of Maharashtra.

Sd/-
C.A. Birajdar
Secretary

The copy
Ld.

Google earth Images
showing
construction on the
banks of Ulhas
River and its
tributaries

Location -1 : Ambivali Kalyan - Slum Encroachment

607
Latitude- 19°16'22.74"N Longitude- 72°19'9.47"E
828

Tentative Survey No: 203,234,206,227 of Titwala



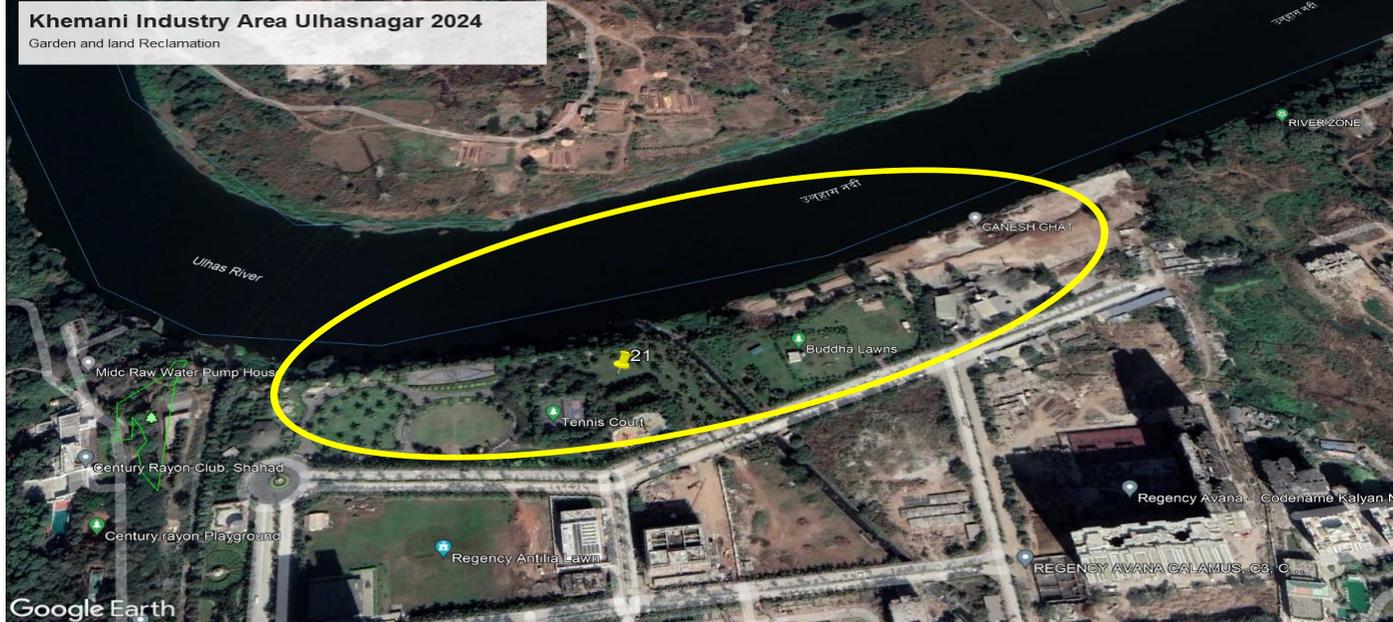
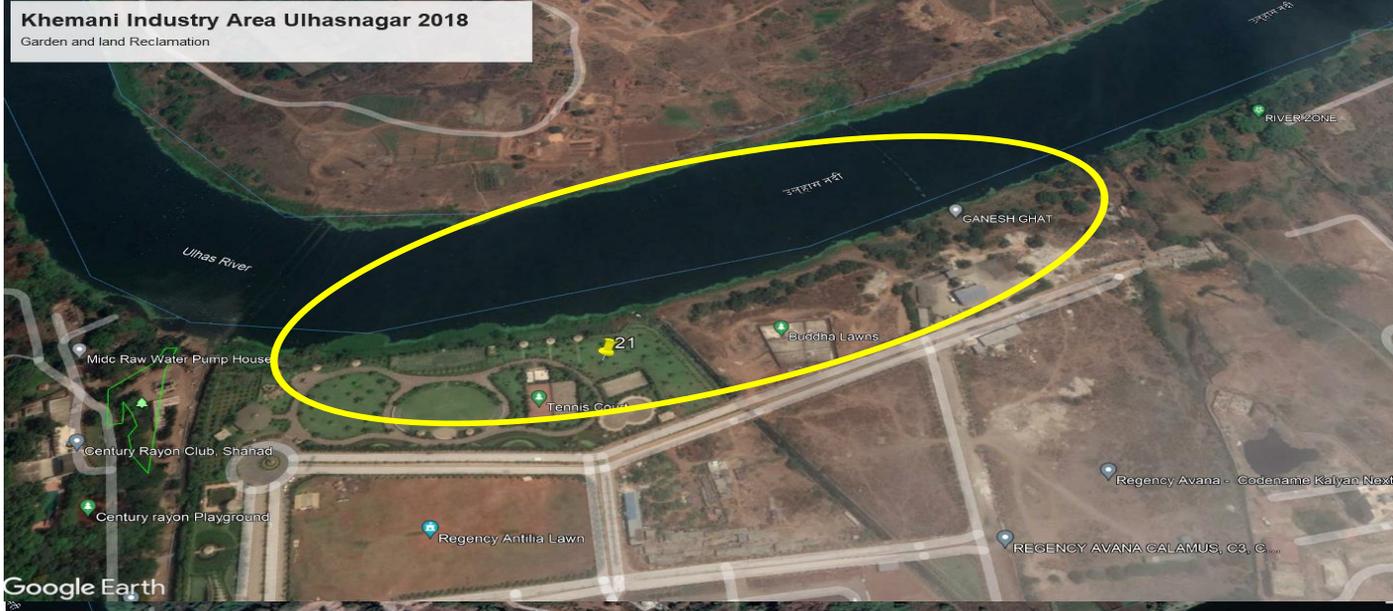
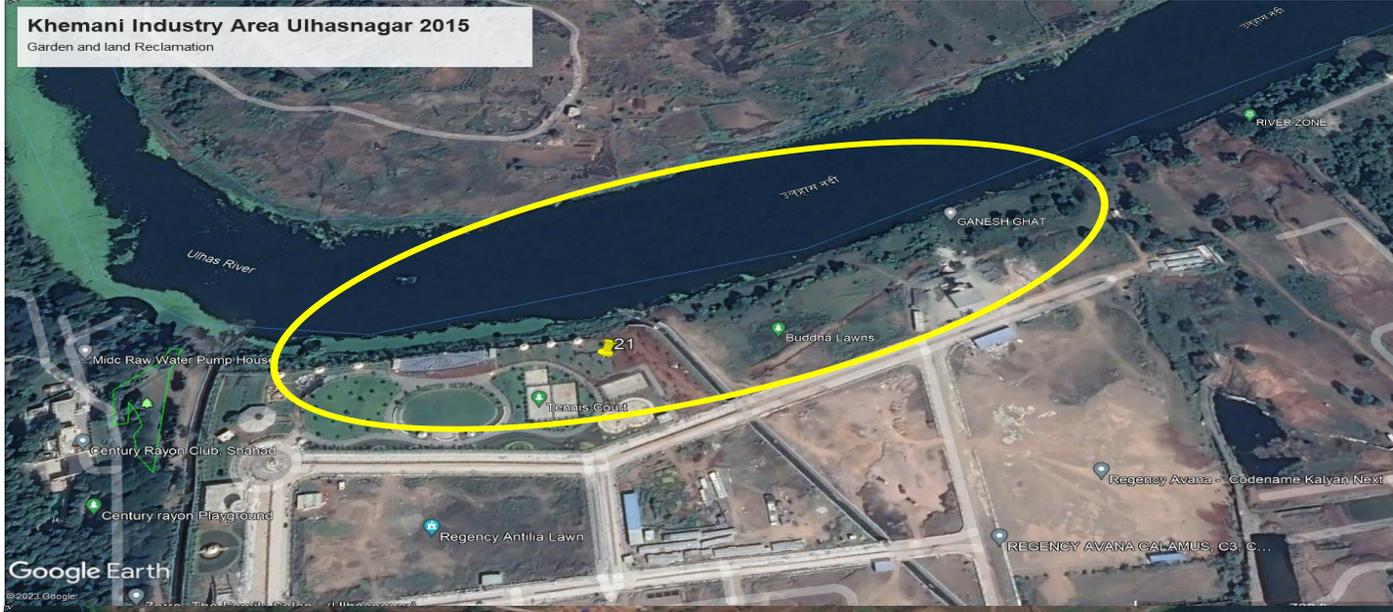
Location -2 : Khemani Industry Area Ulhasnagar- Garden and Wall construction

829

608

Latitude- 19°15'0.44"N , Longitude- 73°10'17.36"E

Tentative Survey No: 10,49,51,50 of Varap



Location -3 : Mohan water edge Barvi Dam Rd Badlapur-Buildings and Garden have been Constructed

609 830

Lat: 19°10'53.03"N long: 73°14'46.99"E

Tentative Survey No: 115,86,87,82,81 of Yerjad



Location - 4: Yadav Nagar Badlapur - Buildings have been constructed. **831** **610**

Lat: 19° 9'56.93"N Long: 73°15'18.96"E

Tentative Survey No: 60/1,65/5,65/4 of Sonivali



611 Location-5 Matoshree Resort and River Park Badlapur construction carried out on the banks. 832

Lat: 19° 9'48.82"N Long: 73°15'19.83"E

Tentative Survey No: 190,192 of Badlapur



Location-6 Kudsavre Village, Karjat Road – construction carried out on the bank. **833** **612**

Lat: 19° 6'54.05"N Long: 73°17'58.07"E

Tentative Survey No: 30,31 of Kudsavre



613 Location-7 Babaji Math Ambeshiv Kh, Poi – Construction carried out on the bank.

834

Lat: 19°12'35.97"N Long: 73°16'18.65"E



Location-8 Sagaon – Construction of the wall along the river

Lat: 19°12'0.41"N Long: 73°18'48.52"E



615

836

Location-9 Sainath Shete Resort Pardirada Karand – Constructed a Resort.

Lat: 19°11'46.16"N Long: 73°18'50.51"E

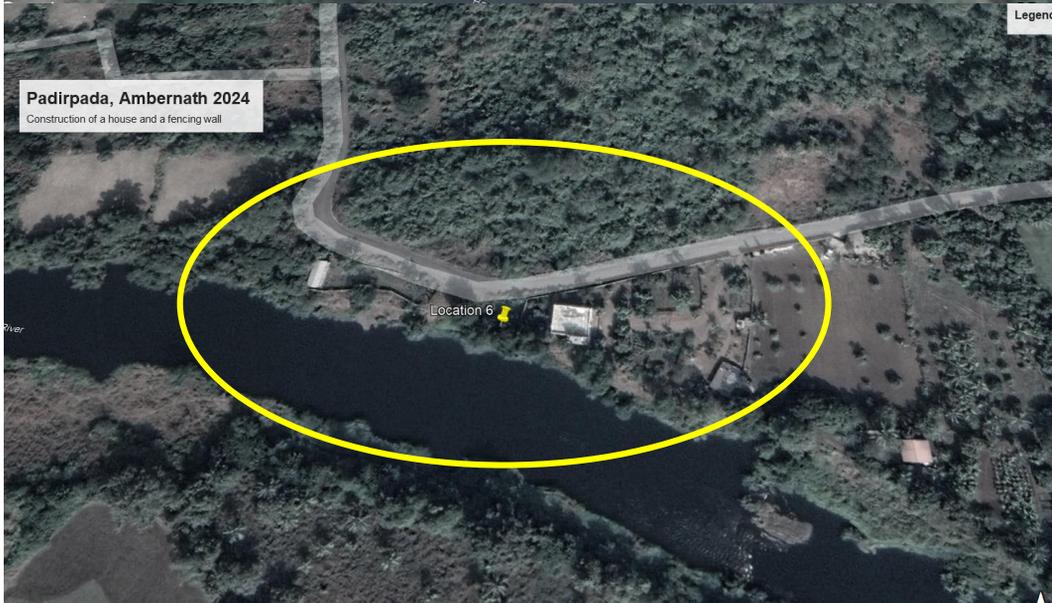


Location-10 Padripada , Ambernath – construction of a house and a fencing wall.

837

616

Lat: 19°11'19.37"N Long: 73°19'3.99"E



617 Location-11 River Deck DELTA Pimpoili Construction of a house and a fencing wall. 838

Lat: 19°10'50.79"N Long: 73°19'49.29"E



Location-12 Holywrit highschool, Pimploli-Construction on the bank.

Lat: 19°10'51.14"N Long: 73°20'2.64"E

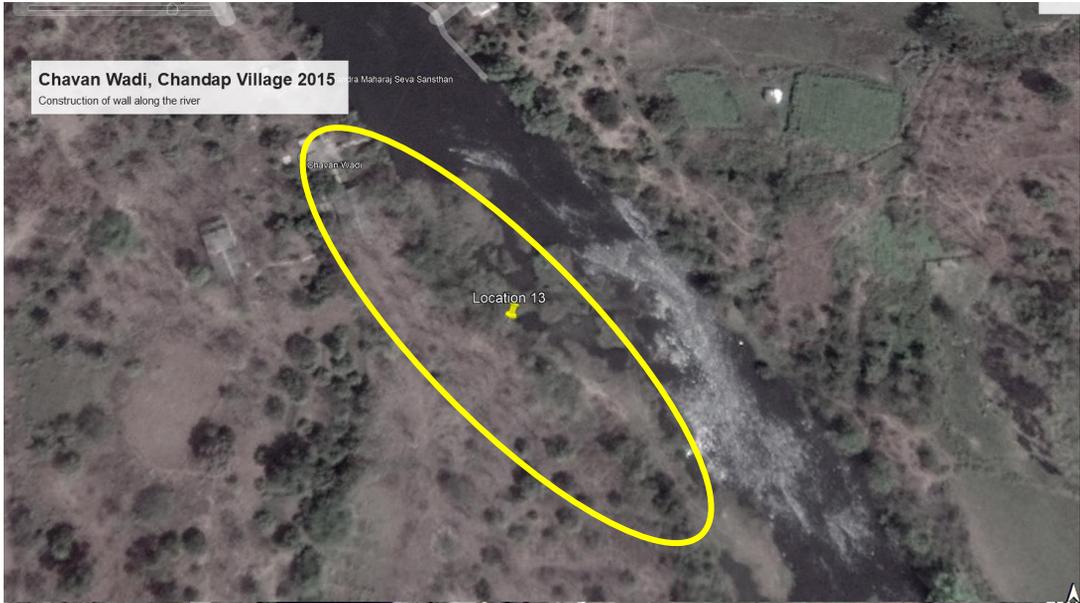


619

Location-13 Chavan Wadi, Chandap Village- Construction of wall along the river.

840

Lat: 19°10'59.11"N Long: 73°20'0.72"E



Location-14 Ganesh Mandir Titwala – Encroachment by Slums

620

Lat: 19°18'14.01"N Long: 73°13'14.53"E

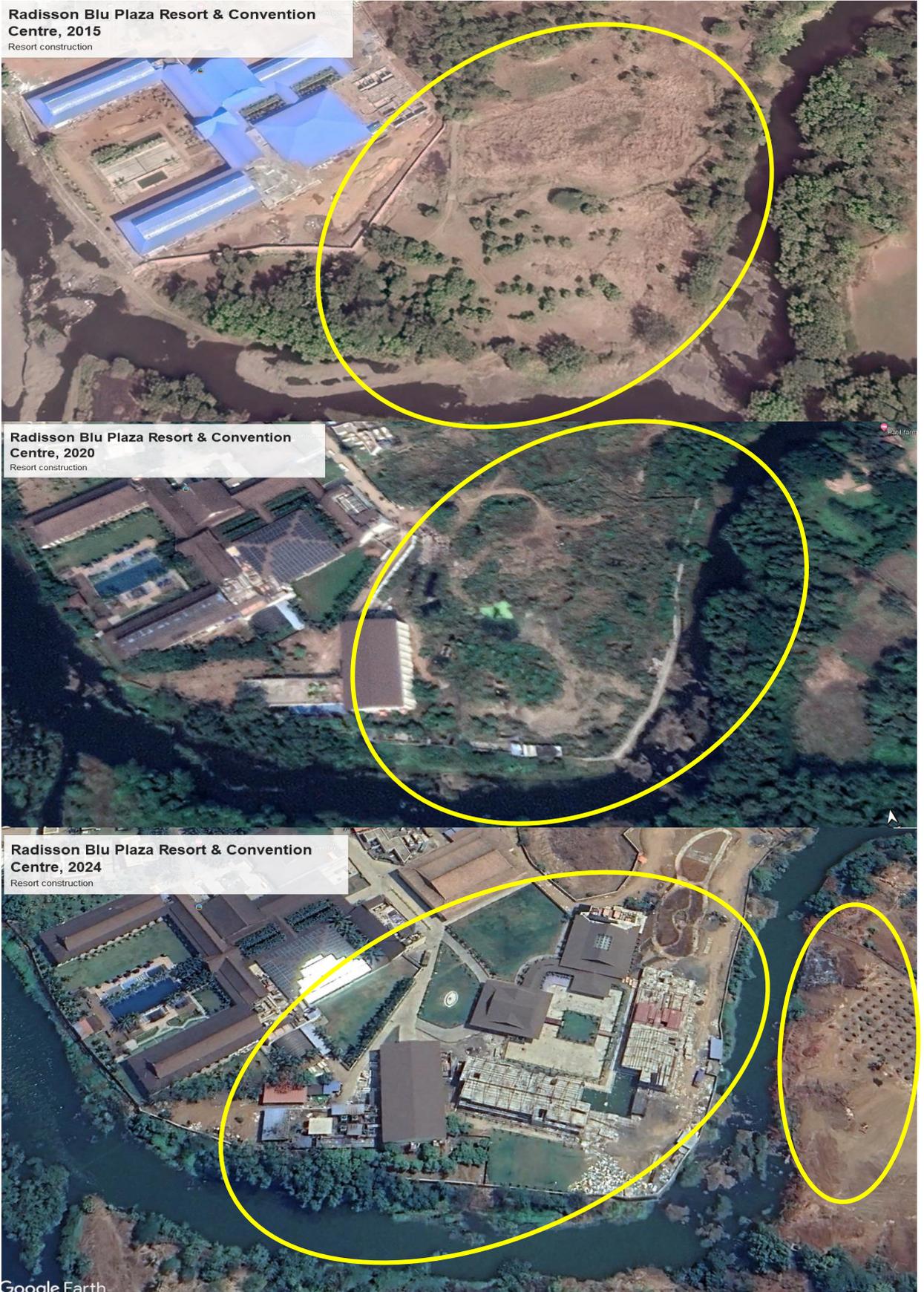


621 Location-15 Radisson Blu Plaza Resort & Convention Centre, Karjat – Construction of resort

842

Lat: 18°52'21.76"N Long: 73°21'50.97"E

Tentative Survey No: 10,6 of Khandap



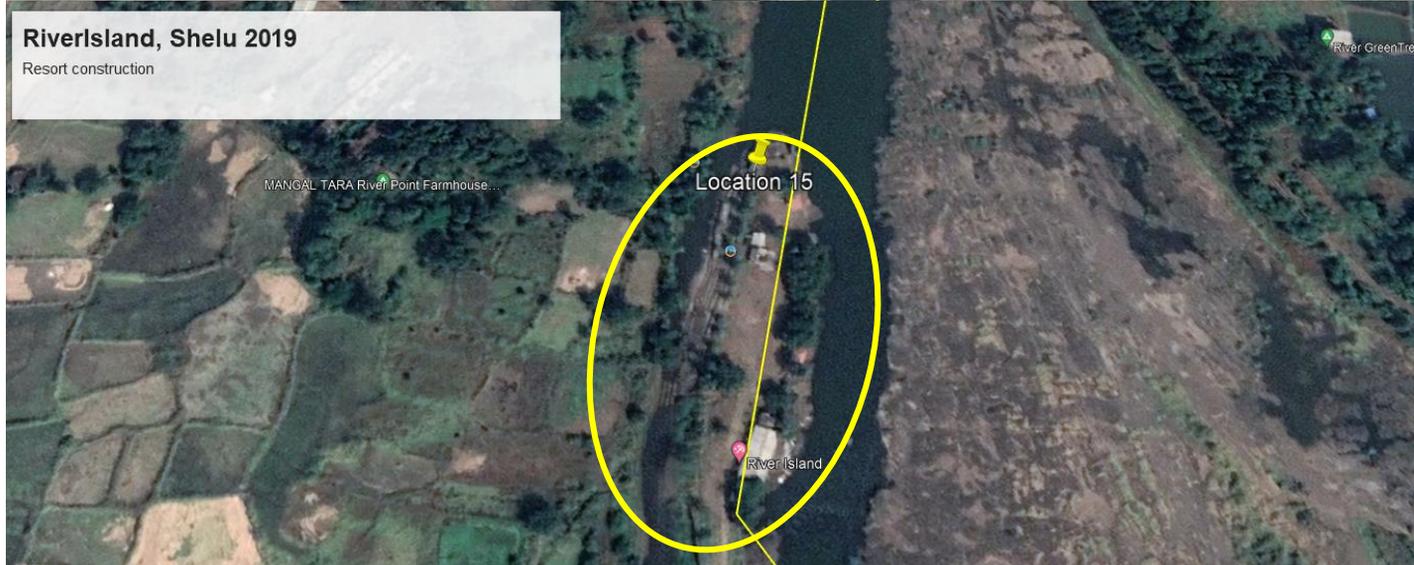
Lat: 18°52'21.76"N Long: 73°21'50.97"E

Tentative Survey No: 42,43 of Tamnath



623 Location-17 River Island Shelu, 844 Construction of resort

Lat: 19° 4'10.26"N Long: 73°19'33.34"E



Lat: 19° 3'13.31"N Long: 73°19'49.34"E

Tentative Survey No: 58,59,62 of Malegoan



625

846

Location-19 Pooja Farm and Resort, Walkas– Construction of resort

Lat: 19° 0'56.30"N Long: 73°20'28.04"E

Tentative Survey No: 51,52,53 of Walkas



True Copy
[Signature]

**BEFORE THE NATIONAL GREEN
TRIBUNAL, WESTERN BENCH
SITTING AT PUNE
ORIGINAL APPLICATION
NO. 185 OF 2023**

BETWEEN:

Vanashakti & Anr. ...APPLICANTS

Versus

Union of India & Ors. ...RESPONDENTS

**ADDITIONAL AFFDAVIT ON
BEHALF OF THE APPLICANTS**

Dated this day of February, 2024

ZAMAN ALI

Advocate for the Applicant

17, 1st Floor, Rohit Chambers,

Janmabhoomi Marg, Fort,

Mumbai – 400 001

+91-9167628833

zamanali1602@gmail.com