

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
Original Application No. 515/2023**

IN THE MATTER OF:

Ganga Pollution

...Applicant

Versus

State of UP & Ors.

...Respondent(s)

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6051

FILED THROUGH

DATE:19.04.2025

PLACE: NOIDA

A handwritten signature in blue ink, appearing to read 'Bhanwar Pal Singh Jadon', with a long horizontal stroke extending to the right.

**BHANWAR PAL SINGH JADON
STANDING COUNSEL FOR STATE OF UTTAR PRADESH
NATIONAL GREEN TRIBUNAL**

BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI.

Original Application No. 515/2023



IN THE MATTER OF:

Ganga Pollution

...Applicant

S. No. 199
19-04-2025

Versus

State of UP & Ors.

...Respondent(s)

AFFIDAVIT ON BEHALF OF CHIEF ENGINEER, SONE,

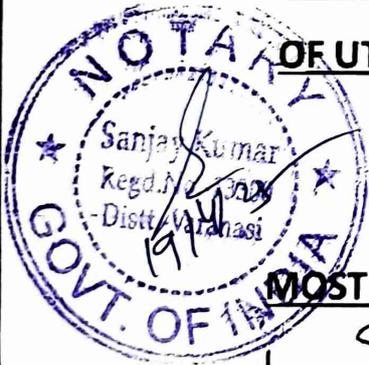
IRRIGATION AND WATER RESOURCES DEPARTMENT, STATE

OF UTTAR PRADESH IN COMPLIANCE OF THE ORDER DATED

11.02.2025.

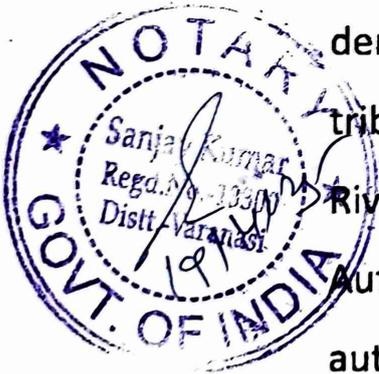
MOST RESPECTFULLY SHOWETH:

I, S. K. Singh, aged about 55 years, S/o
Late Sh. K. P. Singh, presently posted as Chief Engineer,
Sone, Irrigation and Water Resources Department, State of



Uttar Pradesh, the deponent, do hereby solemnly state and affirm as under: -

1. That I am above-mentioned answering Respondent, and I am filing the present Affidavit. That the Deponent is well conversant with the facts and circumstances of the instant case and is competent to swear this Affidavit.
2. That the Deponent has read and understood the contents of the present Affidavit. The averments made in the affidavit which are not specifically admitted hereunder must be considered to have been denied by the Deponent.
3. That this O.A. pertains to the pivotal issue of defining and demarcating the Flood Plain Zone of River Ganga and its tributaries in the State of UP especially in reference to the River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016 and the action taken by the authorities for protecting the Flood Plain Zone.



A handwritten signature in black ink, appearing to be "Sanjay Kumar".

4. That following directions for the State were passed by the Hon'ble Tribunal vide order dated 11.02.2025:

"4. Learned Counsel for the State of UP has placed reliance upon the report of the National Institute of Hydrology titled "Flood Plain Zone (FPZ) delineation of Ganga River from Unnao to Balia".

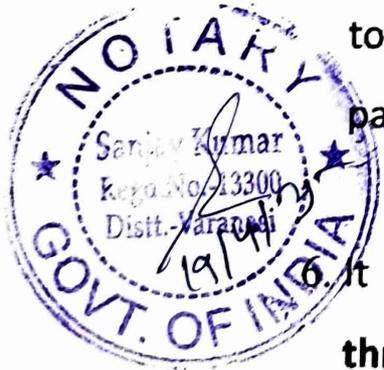
Counsel for the State of UP has sought adjournment to place on record the map with 1-meter contour interval and other details received from Survey of India for demarcation of flood plain zone with 100 years highest flood return level in terms of Clause 3(I)

of the River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016. Prayer is allowed. Let the same be filed within four weeks."



5. It is submitted that Survey of India provided Irrigation Department with a large amount of data vide letter no. 4189/39-C-ED (Court Case) dated 07.08.2024 pertaining to the Flood Plain Zone of River Ganga which was analysed and used as per the latest technology called **DIGITAL ELEVATION MODEL** (hereinafter referred to as

DEM Technology) which was handed over to NIH for exercise of delineation and demarcation of the Flood Plain Zone of River Ganga. It is respectfully submitted that the letter dated 07.08.2024 has been referred to in paragraph 5 of the Affidavit dated 13.09.2024, filed before this Hon'ble Tribunal, and is placed on the Judicial File at pagination no. 4783. The said letter is annexed to the Affidavit as Annexure R-2 at Judicial File pagination no. 4789. It is further submitted that the communication made by the Irrigation Department to the National Institute of Hydrology (NIH), regarding the handing over of data received from the Survey of India, is also annexed to the same Affidavit as Annexure R-3 at Judicial File pagination no. 4791.



6. It is respectfully submitted that, the Survey of India, through **Covering Letter No. T-1477/39-C-ED (Court Case)**, dated 09.04.2025, with reference to the letter no. 4189/39-C-ED (Court Case) dated 07.08.2024, reaffirmed the transmission of the aforementioned DEM data as per its earlier communication dated 07.08.2024. It is

germane to mention here that the covering letter mentioned above revalidates and confirms that the maps of 1-meter Contour so prepared and transmitted on 21.02.2025 have been prepared by using the same DEM Technology and transmitted by the office of Survey of India to the Irrigation Department, U.P. That the relevant and operative part of the letter no. T-1477/39-C-ED (Court Case) dated 09.04.2025 received from Survey of India has been given as under:

विषय: उत्तर प्रदेश राज्य का 1 मीटर कंटूर इंटरवल (Contour Interval) मानचित्र उपलब्ध कराने के सम्बन्ध में संदर्भ:



1. इस कार्यालय का पत्र संख्या त- 4189/39-C-ED (कोर्ट केस) दिनांक 07/08/2024
2. इस कार्यालय का ई मेल दिनांक 21/02/2025
3. आपके कार्यालय का पत्र संख्या 1814/मु0अभि0 (सू0प्र0सं0)/लखनऊ दिनांक 07/04/2025
4. आपके कार्यालय का पत्र संख्या 1829/मु0अभि0 (सू0प्र0सं0) /लखनऊ दिनांक 08/04/2025

महोदय,

उपरोक्त संदर्भित पत्र व विषय में आपको अवगत कराना है कि इस कार्यालय के संदर्भित पत्र (1) के अन्तर्गत आपको DEM data उपलब्ध कराया गया था।

जिसकी Vertical accuracy 0.5 मीटर है तथा Pixel resolution 1 मीटर है। अर्थात् 1 मीटर पोस्टिंग (Grid Spacing) है। पुनः आपके अनुरोध पर दिनांक 21 फरवरी, 2025 को ई-मेल द्वारा 1 मीटर इन्टरवल का कन्टूर मानचित्र इस कार्यालय द्वारा उपलब्ध करवाया गया। यह प्रमाणित है कि दिनांक 21/02/2025 को उपलब्ध कराया गया 1 मीटर इन्टरवल का कन्टूर मानचित्र पूर्व में दिनांक 07/08/2024 को उपलब्ध कराये गये DEM डाटा से ही तैयार किया गया है।

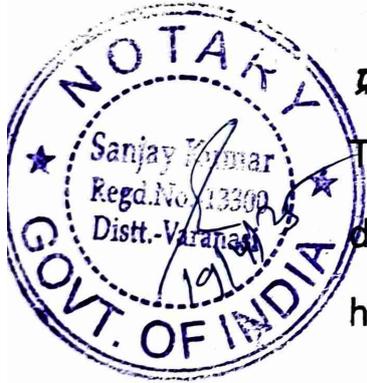
भवदीय,

२/०९.०४.२४.

अधिकारी सर्वेक्षक तकनीकी अधिकारी

(पवन कुमार द्विवेदी)

कृते निदेशक



प्रतिलिपि:- अपर महासर्वेक्षक, उत्तरी क्षेत्र दिल्ली कैंट को सूचनार्थ प्रेषित। "

True copy of the letter no. T-1477/39-C-ED (Court Case) dated 09.04.2025 along with maps has been annexed herein as **ANNEXURE R1**.

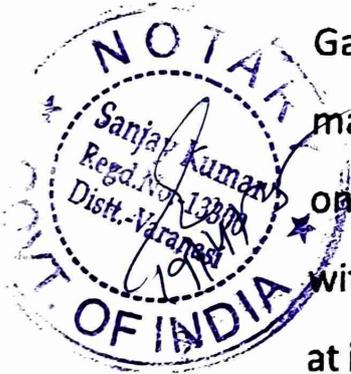
7. It is germane to mention here that NIH vide letter no. SWHD/NIH/2025-26 dated 17.04.2025 addressed to the Deponent, a brief report and additional maps have been provided to the Irrigation Department. That a reference

has been given to the letter no. SWHD/NIH.2023-2024 dated 20.12.2024, through which report of study "Flood Plain Zone (FPZ) Delineation of the Ganga River from Unnao to Balia" was submitted and provided to the Deponent.

True copy of the letter no. SWHD/NIH/2025-26 dated 17.04.2025 along with brief report and 1m Contour Maps has been annexed herein as **ANNEXURE R2**.

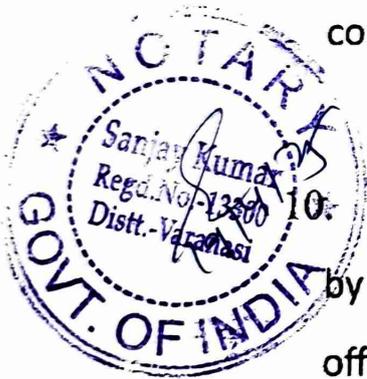
8. It is important to submit here these maps evidently show the **1m Contour marks** which have been considered for the final demarcation of the Flood Plain Zone of River Ganga. That the **1-meter Contour markings** on these maps delineate the areas susceptible to flooding based on the **100-year highest flood return level**. In accordance with this demarcation, **boundary pillars** shall be installed at **intervals of 200 meters**, ensuring clear identification of the flood-prone zone as determined by the contour data.

9. It is pertinent to mention here that in the Status Report dated 19.02.2025 submitted by Chief Engineer, Sharda



Sahayak, Irrigation and Water Resources Department, State of Uttar Pradesh in the Original Application No. 200 of 2014 i.e., M. C. Mehta vs Union of India, it has been elaboratively stated that an adequate and appropriate budgetary allocation has been made in the Financial Year 2025-26 for the demarcation of the Flood Plain Zone of River Ganga. It is also submitted in the same **Status Report dated 19.02.2025** that the physical demarcation work shall commence from **May, 2025** and will be **completed by March, 2026**. That this timeline has been already stated in the O.A. No. 200 of 2014 and will be complied with by the concerned authorities.

I state that everything stated above has been stated by me in my official capacity on and derived from the official records and I state that nothing material has been concealed therefrom.



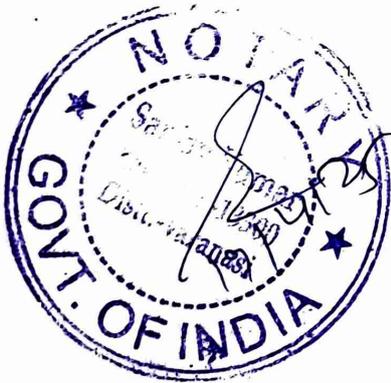
Solemnly affirmed before me today at by the deponent identified Sri. K. Singh the contents of the affidavit were read over to deponent who verified the same to be true.

Sanjay Kumar
Sanjay Kumar 19/04/2025
Advocate NOTARY
VARANASI

SP
18/4/25
DEPONENT

VERIFICATION

Verified at Varanasi on this 19th day of April, 2025, that the contents of the above affidavit from paragraphs 1 to 10 are believed to be true and correct to the best of my knowledge and belief. No part of it is false and nothing material has been concealed therefrom.



[Signature]
19/4/25
DEPONENT

Solemnly sworn before me today at by the deponent *[Signature]* Sri... *[Signature]* the contents of the affidavit were *[Signature]* over to deponent who verified matter to be true.

[Signature]
Sanjay Kumar 19/4/25
Advocate NOTARY
VARANASI

ANNEXURE R1



भारत सरकार
GOVT. OF INDIA



टेली-फैक्स/Tele-fax – 0522-2720634
दूरभाष/Telephone-0522-2720638
ई-मेल@E-mail: up.gde.soi@gov.in (Tech)
upgde-lko@up.nic.in (Admn)

निदेशक का कार्यालय/Office of Director
भारतीय सर्वेक्षण विभाग/Survey of India
मानचित्र भवन/Manchitra Bhawan
उत्तर प्रदेश भू-स्थानिक निदेशालय (उत्तरी क्षेत्र)
Uttar Pradesh G.D.(Northern Zone)
5, Vibhuti Khand, Gomti Nagar, Lucknow-226010 (UP)

पत्र संख्या:- त- 1477 /39-C-ED (Court case)

दिनांक:- 09/04/2025

सेवा में,

श्री सुप्रभात सिंह, मुख्य अभियंता
सूचना प्रणाली संगठन, सिंचाई एवं जल संसाधान विभाग उ. प्र.
परिकल्प भवन तेलीबाग , लखनऊ (उ.प्र.)।

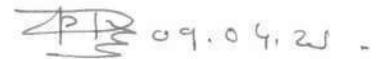
विषय: उत्तर प्रदेश राज्य का 1 मीटर कंटूर इंटरवल (Contour Interval) मानचित्र उपलब्ध कराने के सम्बन्ध में

- संदर्भ: 1. इस कार्यालय का पत्र संख्या त- 4189/39-C-ED(कोर्ट केस0 दिनांक 07/08/2024
2. इस कार्यालय का ई-मेल दिनांक 21/02/2025
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महोदय,

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भवदीय,



(पवन कुमार द्विवेदी)

अधिकारी सर्वेक्षक/तकनीकी अधिकारी

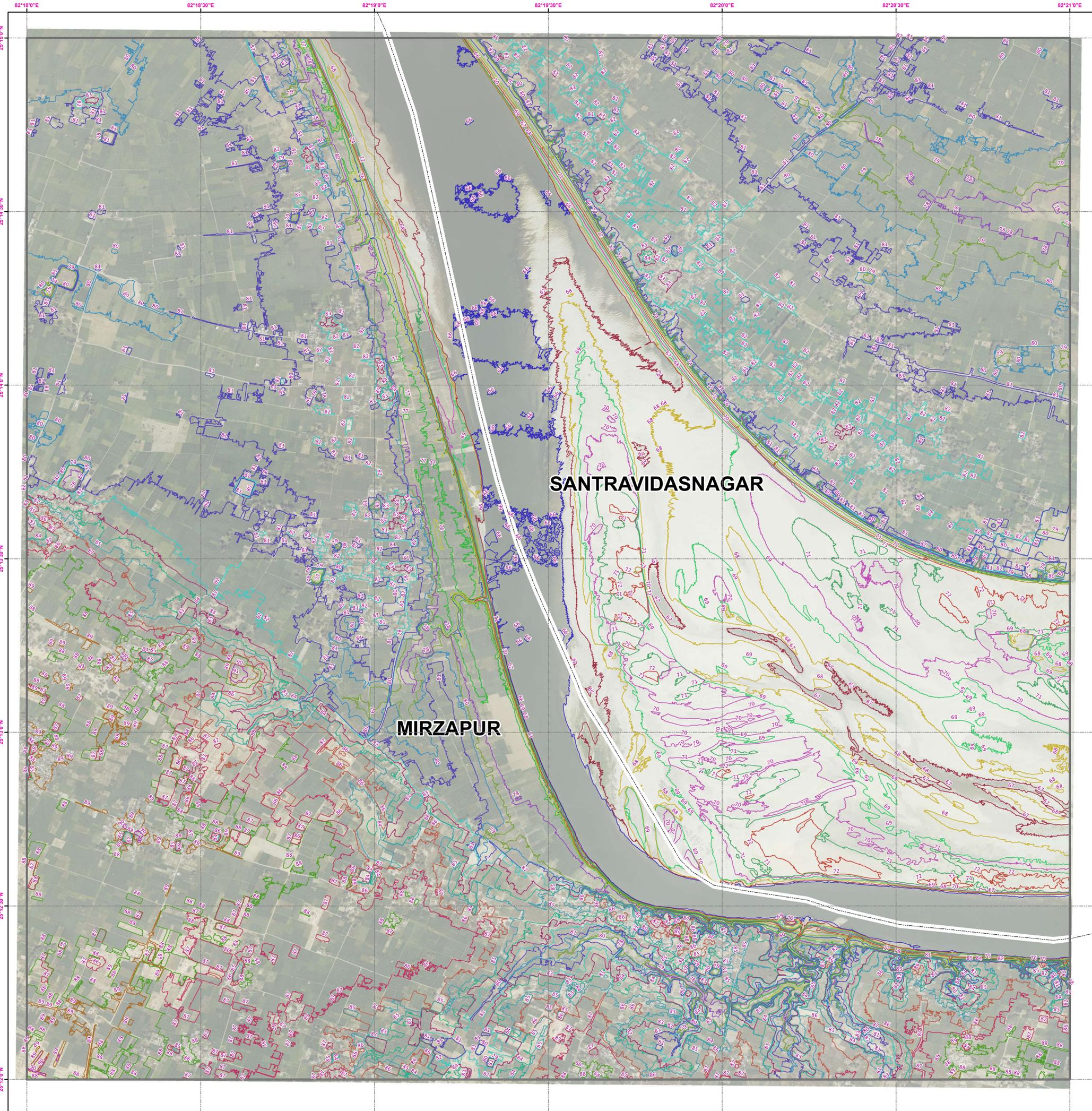
कृते निदेशक

प्रतिलिपि:- अपर महासर्वेक्षक, उत्तरी क्षेत्र दिल्ली कैंट को सूचनार्थ प्रेषित।



SURVEY OF INDIA

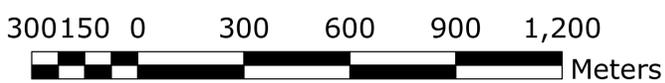
CONTOUR (1M INTERVAL) PLAN OF FLOOD PLAIN ZONING OF RIVER GANGA (FROM UNNAO TO BALLIA)



MIRZAPUR

SANTRAVIDASNAGAR

SCALE 1:10,000

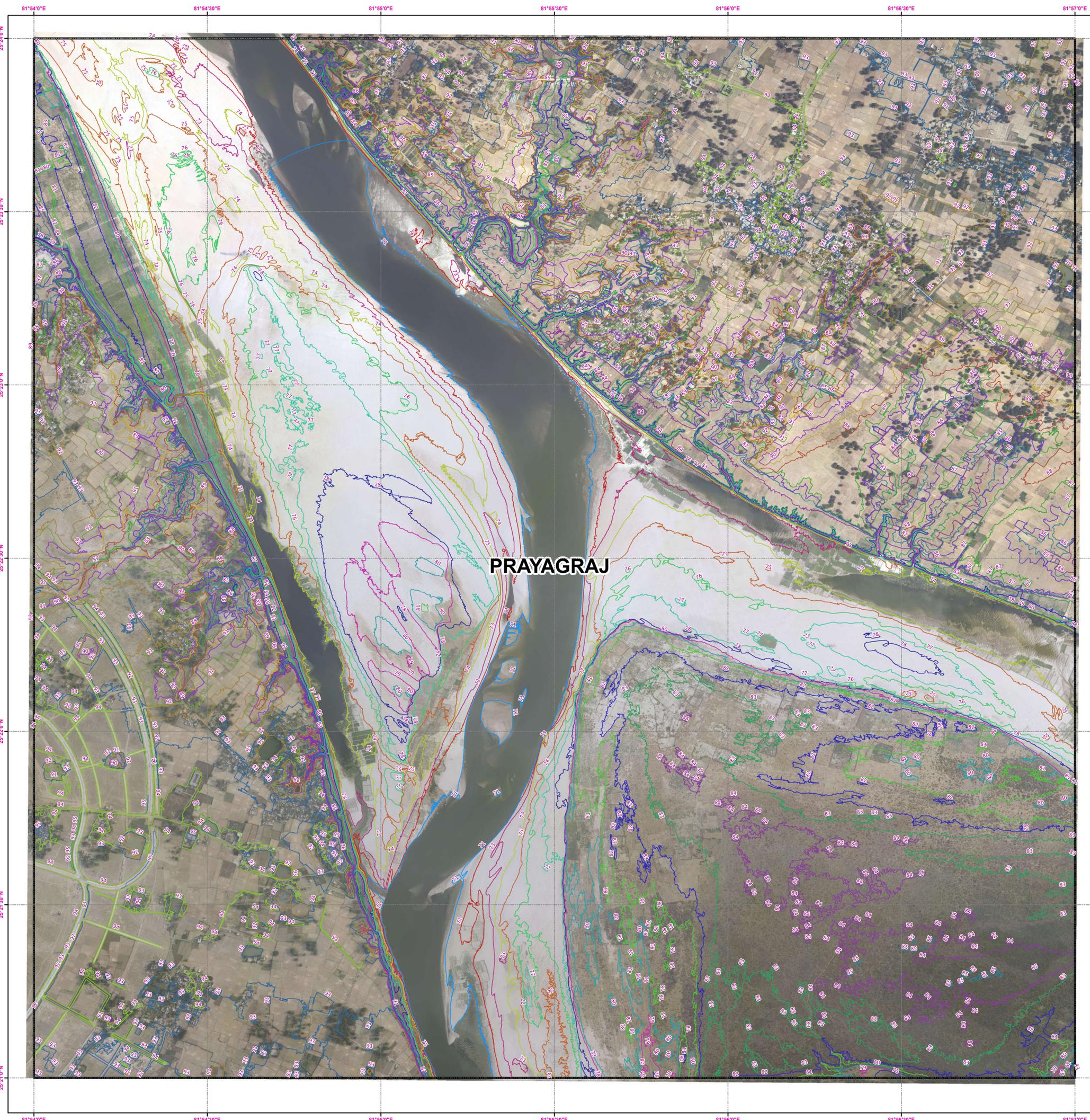


Legend	
CONTOUR INTERVAL (1m)	
66	83
67	84
68	85
69	86
70	87
71	88
72	89
73	90
	81
	82
	91



SURVEY OF INDIA

CONTOUR (1M INTERVAL) PLAN OF FLOOD PLAIN ZONING OF RIVER GANGA (FROM UNNAO TO BALLIA)



SCALE 1:10,000



CONTOUR INTERVAL (1m)			
71	76	83	90
71	77	84	91
71	78	85	92
72	79	86	93
73	80	87	94
74	81	88	95
75	82	89	96

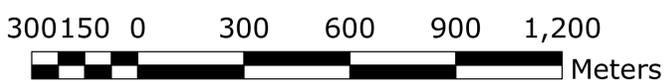


SURVEY OF INDIA

CONTOUR (1M INTERVAL) PLAN OF FLOOD PLAIN ZONING OF RIVER GANGA (FROM UNNAO TO BALLIA)



SCALE 1:10,000



CONTOUR INTERVAL (1m)		
115	121	127
116	122	128
117	123	129
118	124	130
119	125	131
120	126	132



राष्ट्रीय जलविज्ञान संस्थान
6065
(जल शक्ति मंत्रालय, जल संसाधन, नदी विकास एवं गंगा संरक्षण विभाग,
के अधीन भारत सरकार की समिति)
जलविज्ञान भवन, रुड़की-247 667 (उत्तराखण्ड) भारत
National Institute of Hydrology
(A Government of India Society under Ministry of Jal Shakti,
Department of Water Resources, R.D. & G.R.
Jalvigyan Bhawan, Roorkee - 247 667, (Uttarakhand) INDIA
(An ISO 9001 : 2015 Certified Organization)



Phone : +91-1332-272108, 272106
Web : www.nihroorkee.gov.in

ANNEXURE R2

No. SWHD/NIH/2025-26

Date: April 17, 2025

**Superintending Engineer,
Flood Management Information System Centre
Irrigation and Water Resources Department, Govt. of UP**

Sub.: Additional maps for the report “Flood Plain Zone (FPZ) Delineation of the Ganga River from Unnao to Ballia”

Ref.: Our letter No. SWHD/NIH.2023-2024 dated 20-12-2024

Sir,

The report of study “Flood Plain Zone (FPZ) Delineation of the Ganga River from Unnao to Ballia” was submitted with reference cited letter. Additional maps and brief discussion are enclosed herewith.

With Regards,

Head, Surface Water Hydrology Division
National Institute of Hydrology, Roorkee

Flood Plain Zone (FPZ) Delineation of the Ganga River from Unnao to Ballia

The broad scope of this report was to demarcate the flood plain of the river Ganga from Unnao to Ballia corresponding to once in hundred years return period flood.

The digital data of 798 GB of 1 m grid size (pixel resolution of 1 m and vertical accuracy of 0.5 m) Digital Elevation Model (DEM), obtained from the Survey of India (letter No. 4189/39-ED(कोर्ट केस) dated 7/8/2024) was provided to NIH, Roorkee by the Irrigation and Water Resources Dept. Govt. of UP (336/मु0अभि0(सु0प्र0सं0)/2024-25, dated 8/8/2024). This DEM is having 1 m pixel resolution (horizontal resolution/grid size) and 50 cm vertical accuracy as per SOI. 1 m contour interval map (vector data) is generated from this DEM was also provided by the survey of India. The raster data i.e. DEM is used in the hydraulic modelling software (HEC RAS) to represent topography. Surveyed river cross-section and embankment data provided by Irrigation and Water Resources Department Govt. of U.P. were also used in the HEC RAS model. The HEC RAS model is calibrated by comparing simulated and observed water levels of historical events.

Flood corresponding to once in hundred year return period at six gauging sites of Central Water Commission (CWC) were estimated from the historical annual maximum flood data using L-moments based flood frequency approach.

The estimated floods corresponding to once in hundred year return period are provided as input to the calibrated HEC RAS model. The flood inundation extent was simulated using the HEC RAS model. The simulated flood inundation extent was compared with maximum flood inundation extent from satellite data from Joint Research Centre (JRC) and Remote Sensing Applications Centre, Uttar Pradesh [RSAC,UP (NRSC)].

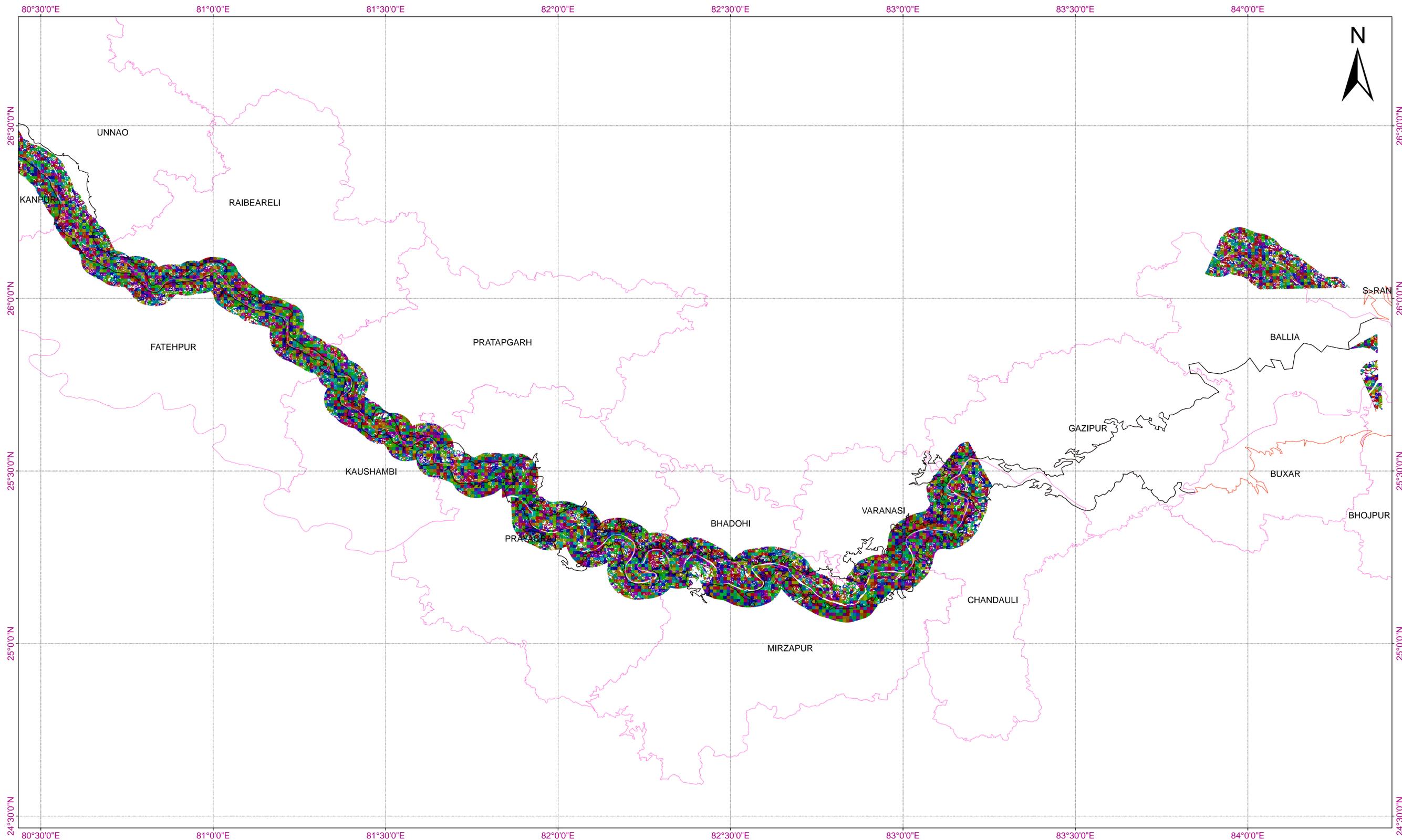
The final hydraulic model result shows small islands within the flood extent causing inundation gaps. These gaps have been filled to get final inundation boundary area. It is observed that the gap filled inundation extent from hydraulic model (HEC RAS) mostly encompass the inundation extent of satellite-based approach. The KML file and tabular value of coordinates (Longitude, Latitude) are also provided for ground truth verification and demarcation. The following sample maps have also been given here for reference:

1. Delineated flood plain overlaid on 1 m contour from SOI- Part I
2. Delineated flood plain overlaid on 1 m contour from SOI- Part II
3. Delineated flood plain from Unnao to Balia overlaid on 0.5 m DEM from SOI
4. Delineated flood plain overlaid on 1m Contour map from SOI (District Prayagraj, Sheet No. G44P15N) at 1:10000 Scale
5. Delineated flood plain overlaid on 1m Contour map from SOI (District Prayagraj, Part of Sheet No. G44P15N) at 1:4000 Scale
6. Delineated flood plain overlaid on 1m Contour map from SOI (District Mirzapur, Sheet No. G44Q08B) at 1:10000 Scale
7. Delineated flood plain overlaid on 1m Contour map from SOI (District Mirzapur, Part of Sheet No. G44Q08B) at 1:4000 Scale

8. Delineated flood plain overlaid on 1m Contour map from SOI (District Varanasi, Sheet No. G44R03N) at 1:10000 Scale
9. Delineated flood plain overlaid on 1m Contour map from SOI (District Varanasi, Part of Sheet No. G44R03N) at 1:4000 Scale

It is recommended that the flood plain zone lines should be put on web portal for easy excess to the public and various developmental activities. Irrigation and Water resources Department U.P. should keep in his custody DEM, 1 m Contour maps and Flood Plain zone boundary and other relevant maps and GIS data for future use.

Delimited flood plain overlaid on 1m Contour from SOI



SCALE 1:4,00,000

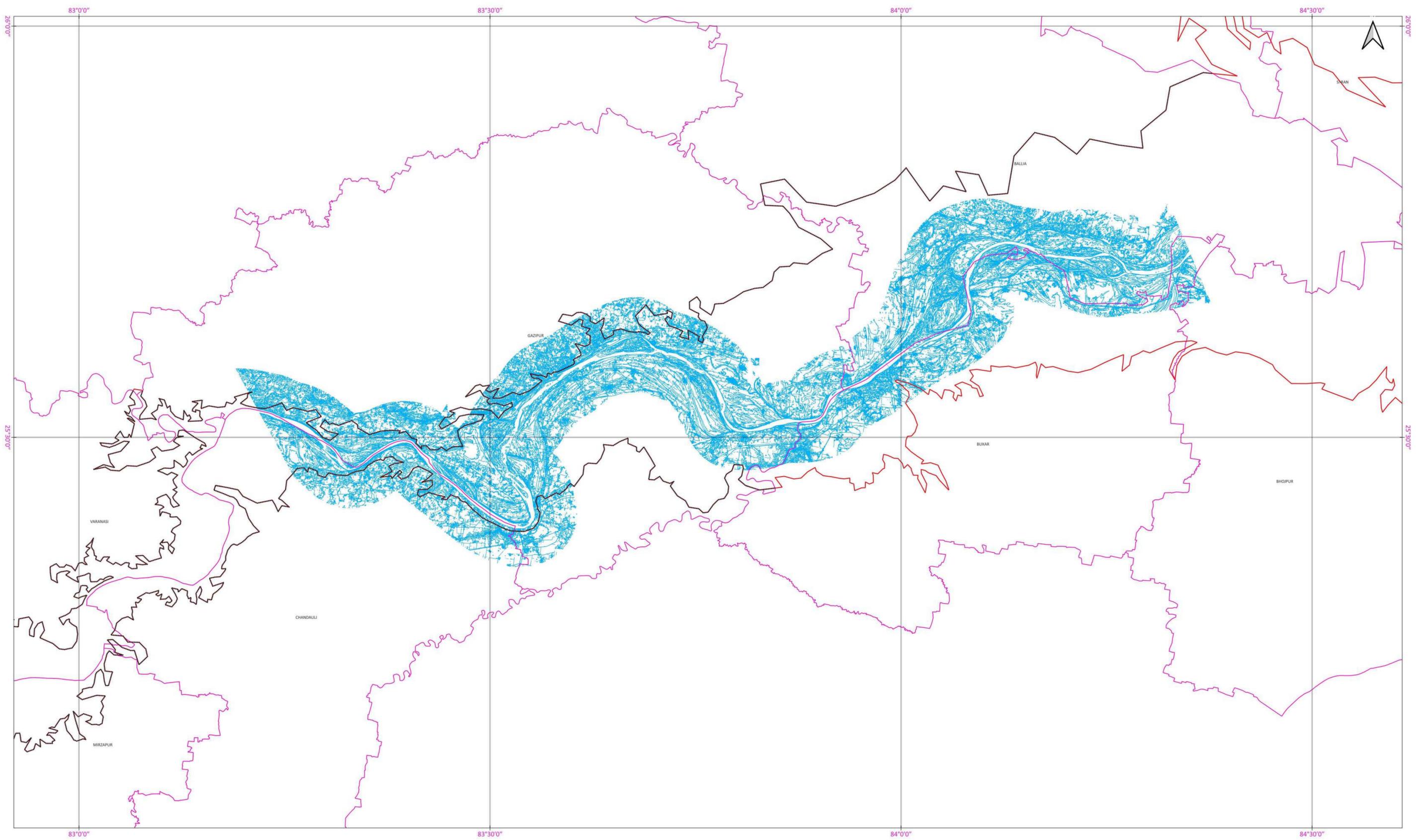


Flood Plain for once in 100 year

Without Embankment

Coordinates at 200m

Delineated flood plain overlaid on 1m Contour map from SOI



SCALE 1:1,50,000



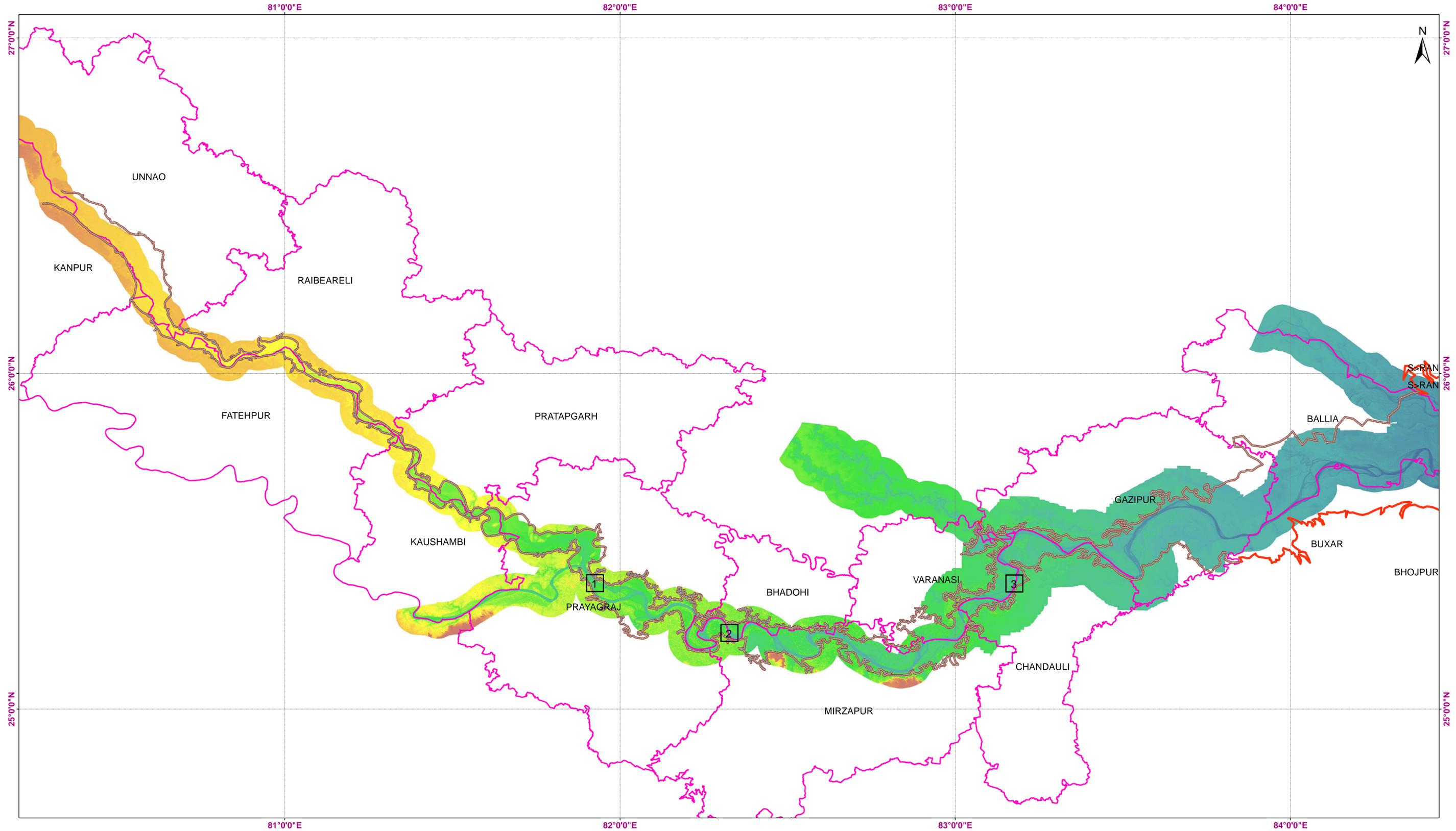
Flood Plain for once in 100 year

— Without Embankment

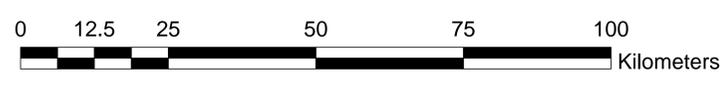
— 1m Contour from SOI

Delineated flood plain overlaid on 0.5 m DEM from SOI

6070



SCALE 1:4,00,000



Flood Plain for once in 100 year

- Without Embankment
- Coordinates at 200m

Legend

- District Boundary
- 0.5m DEM from SOI**
- Elevation (m)**
- High : 546
- Low : 50

Delimited flood plain overlaid on 1m Contour map from SOI

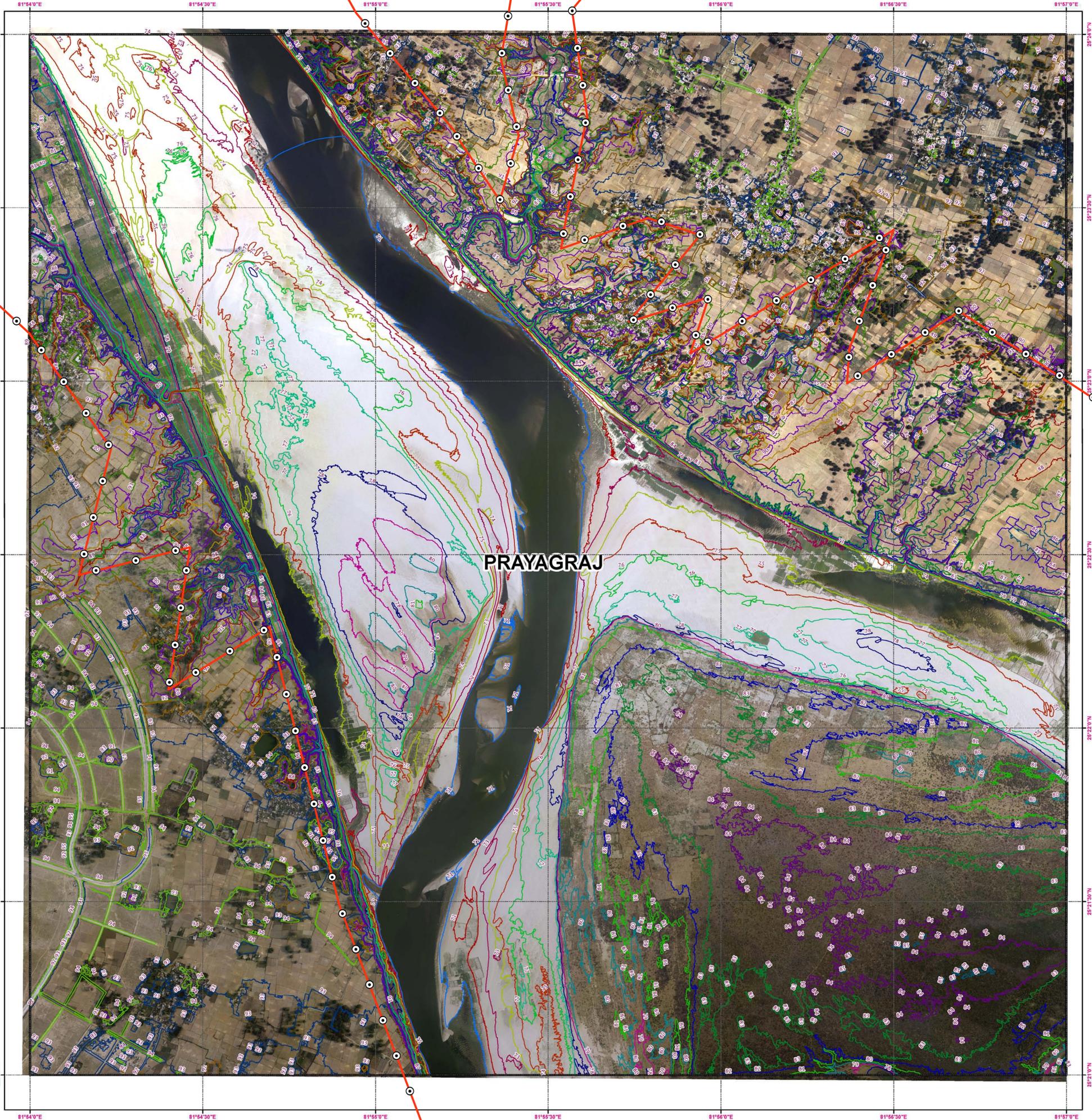
DIST : PRAYAGRAJ

SHEET NO: G44P15N



SURVEY OF INDIA

CONTOUR (1M INTERVAL) PLAN OF FLOOD PLAIN ZONING OF RIVER GANGA (FROM UNNAO TO BALLIA)



PRAYAGRAJ

SCALE 1:10,000



Flood Plain for once in 100 year

- Without Embankment
- Coordinates at 200m

CONTOUR INTERVAL (1m)			
71	76	83	90
71	77	84	91
71	78	85	92
72	79	86	93
73	80	87	94
74	81	88	95
75	82	89	96

Delimited flood plain overlaid on 1m Contour map from SOI



81°54'0"E

81°54'30"E

81°55'0"E

25°22'30"N

25°22'30"N

25°22'0"N

25°22'0"N

25°21'30"N

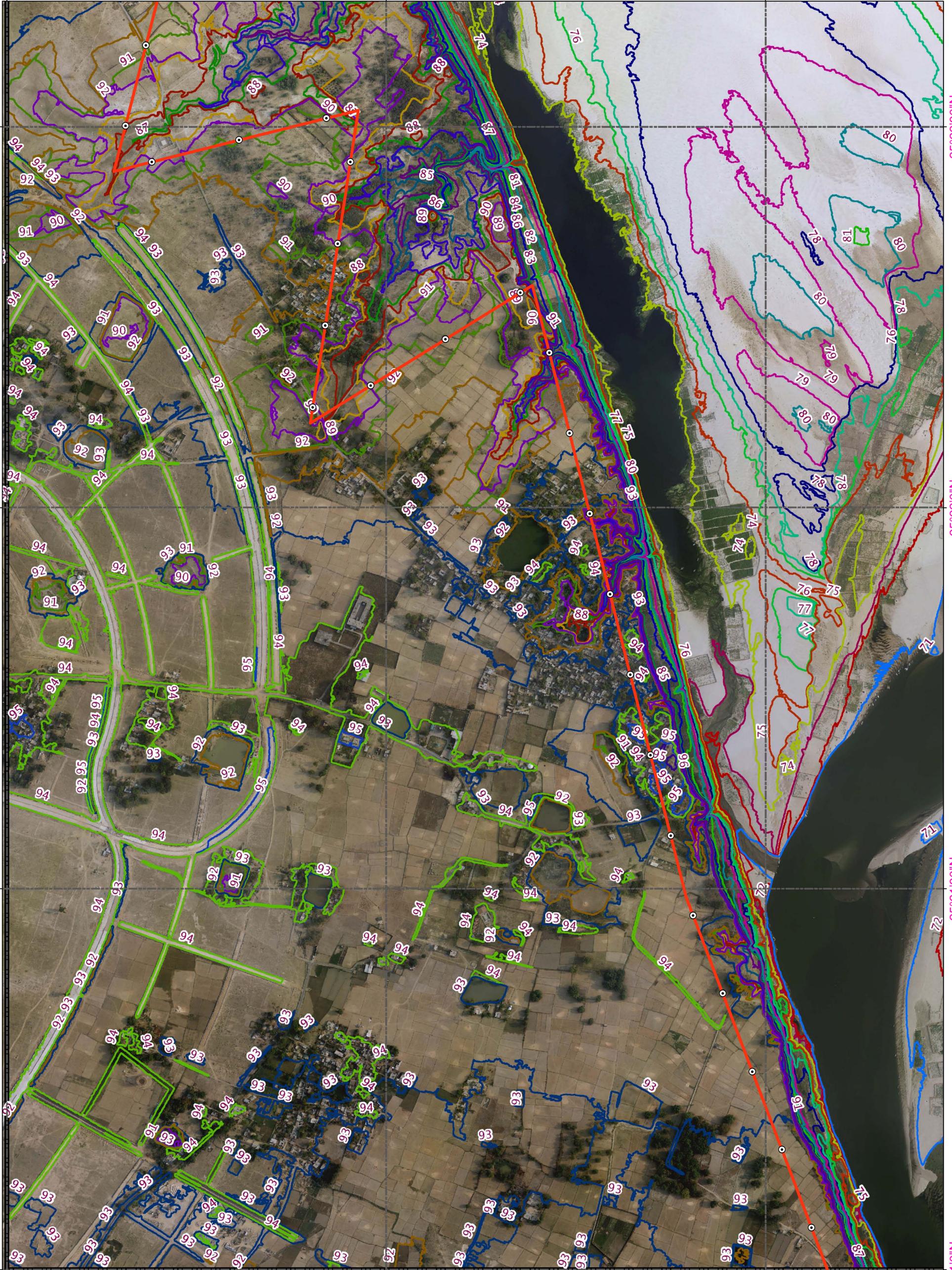
25°21'30"N

81°54'0"E

81°54'30"E

81°55'0"E

25°21'0"N



Flood Plain for once in 100 year

DISTRICT: PRAYAGRAJ

SCALE 1:4,000

-  Without Embankment
-  Coordinates at 200m



Delineated flood plain overlaid on 1m Contour map from SOI

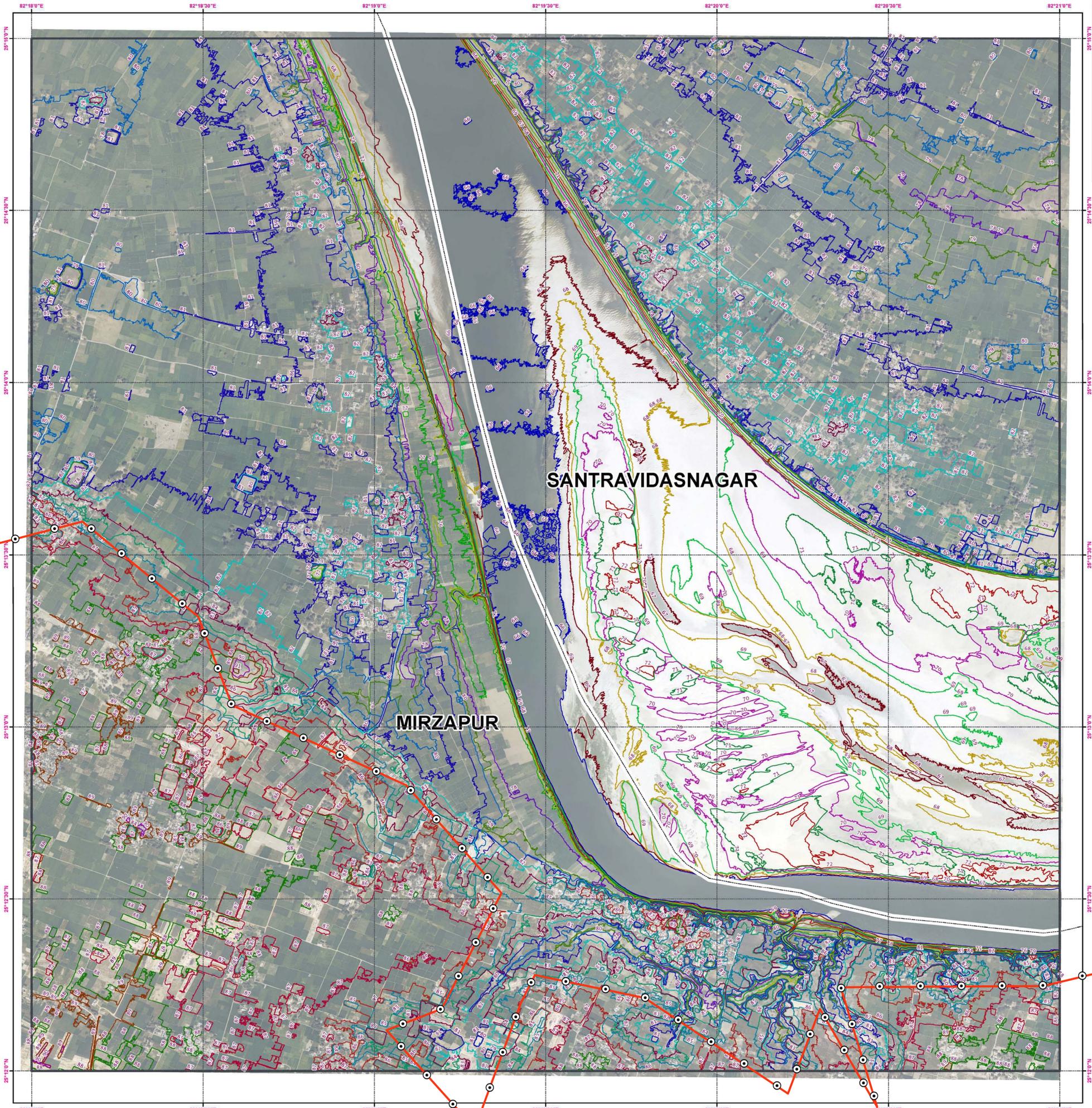
DIST : MIRZAPUR

SHEET NO: G44Q08B



SURVEY OF INDIA

CONTOUR (1M INTERVAL) PLAN OF FLOOD PLAIN ZONING OF RIVER GANGA (FROM UNNAO TO BALLIA)



SCALE 1:10,000

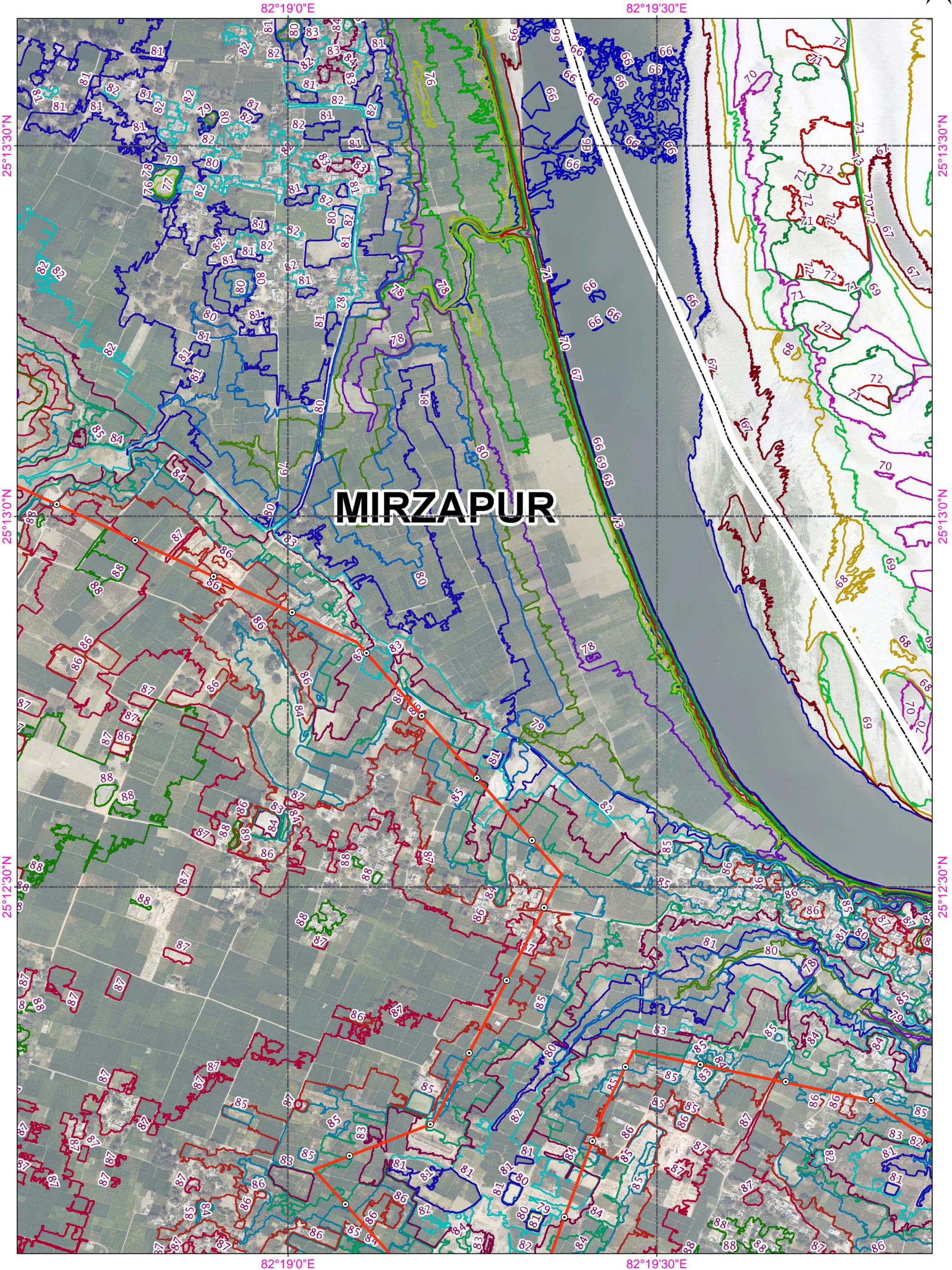


Flood Plain for once in 100 year

- Without Embankment
- Coordinates at 200m

Legend	
CONTOUR INTERVAL (1m)	
66	74
67	75
68	76
69	77
70	78
71	79
72	80
73	81
83	82
84	83
85	84
86	85
87	86
88	87
89	88
90	89
91	90

Delimited flood plain overlaid on 1m Contour map from SOI



MIRZAPUR

Flood Plain for once in 100 year

DISTRICT: MIRZAPUR

SCALE 1:4,000

-  Without Embankment
-  Coordinates at 200m



Delimited flood plain overlaid on 1m Contour map from SOI

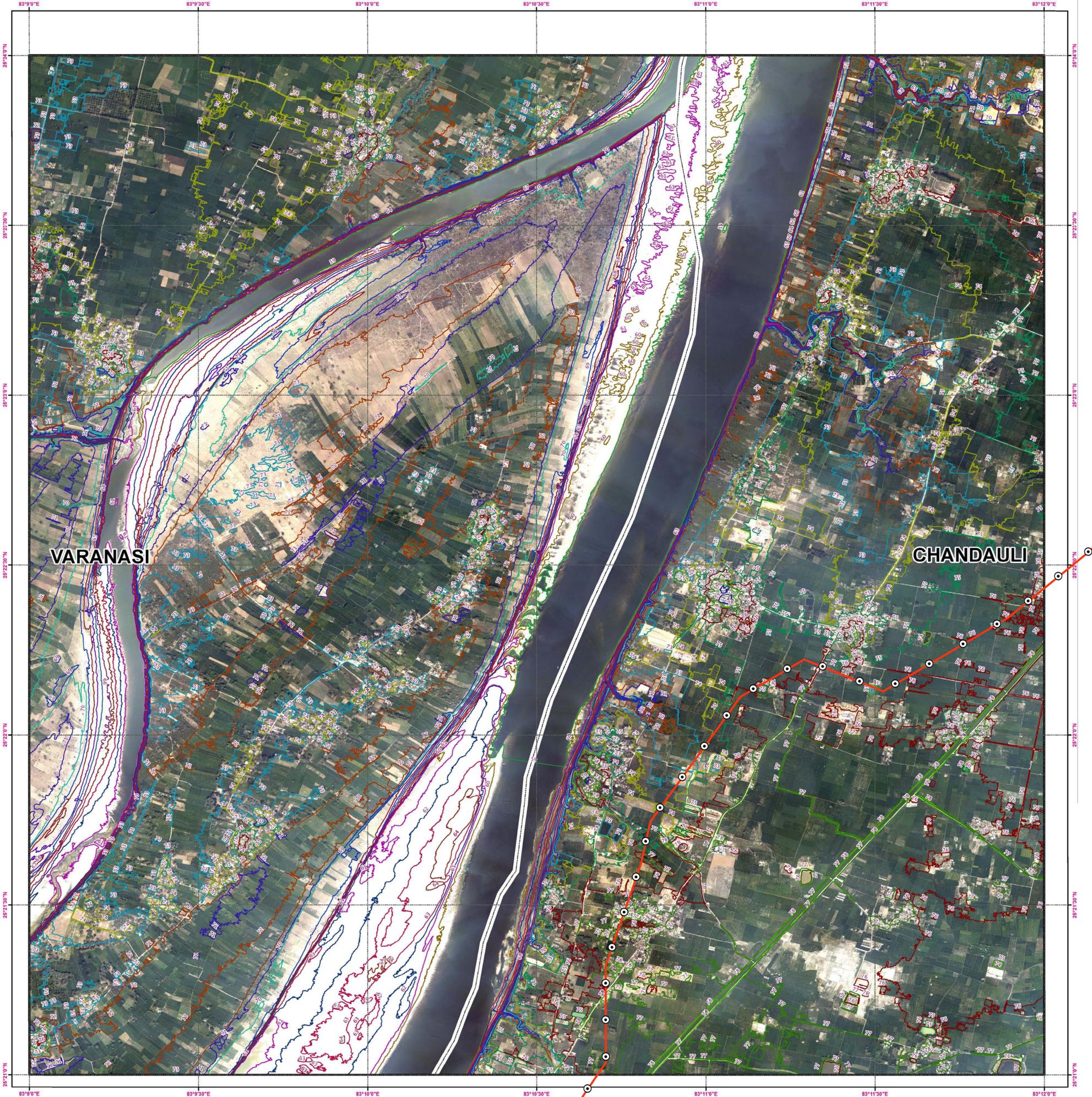
DIST : VARANASI

SHEET NO: G44R03N

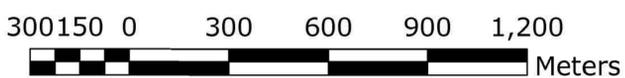


SURVEY OF INDIA

CONTOUR (1M INTERVAL) PLAN OF FLOOD PLAIN ZONING OF RIVER GANGA (FROM UNNAO TO BALLIA)



SCALE 1:10,000

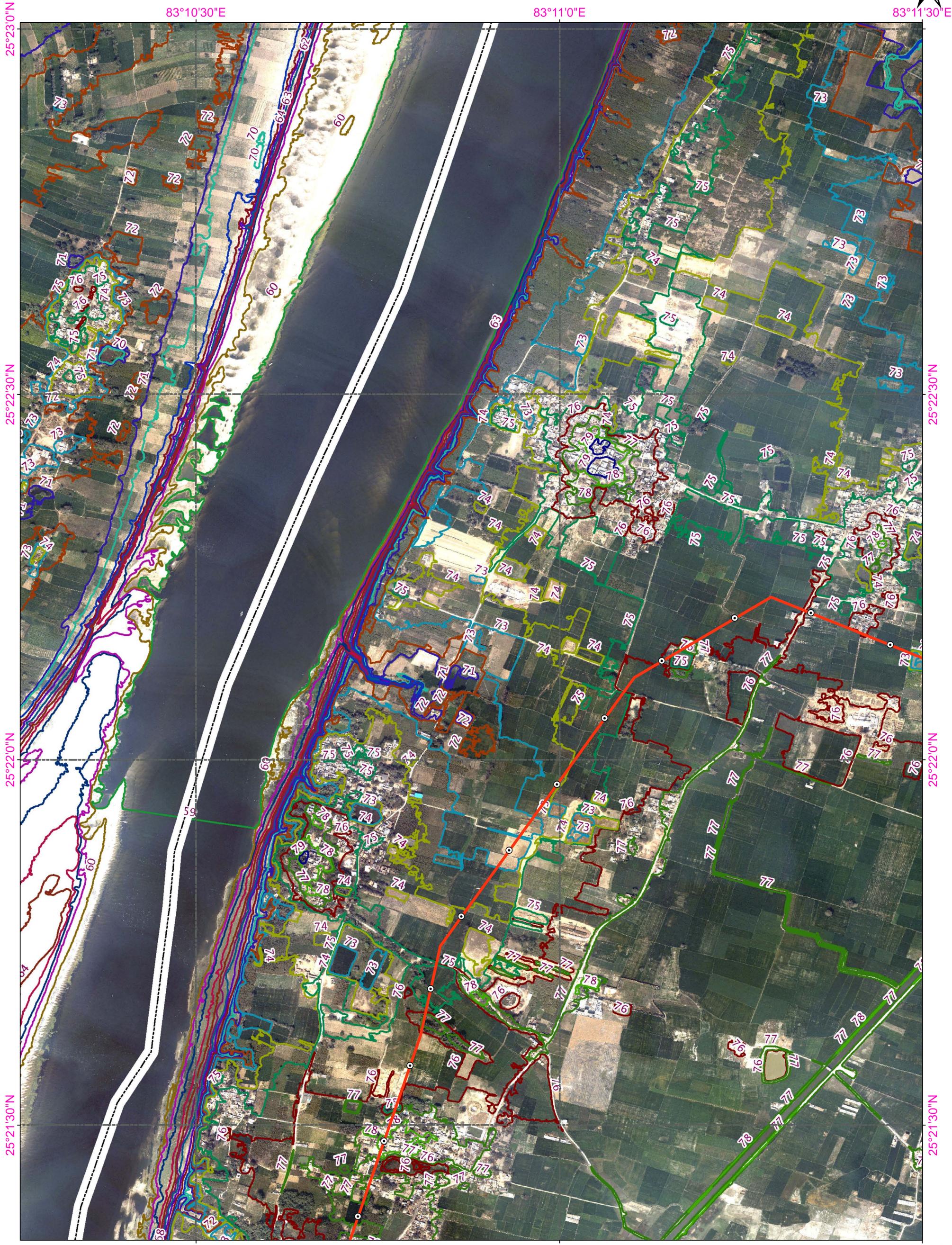


Flood Plain for once in 100 year

- Without Embankment
- Coordinates at 200m

CONTOUR INTERVAL (1m)		
59	67	75
60	68	76
61	69	77
62	70	78
63	71	79
64	72	80
65	73	
66	74	

6076 Delineated flood plain overlaid on 1m Contour map from SOI



Flood Plain for once in 100 year

DISTRICT: VARANASI

SCALE 1:4,000

-  Without Embankment
-  Coordinates at 200m

