Government of West Bengal

Irrigation & Waterways Directorate

ANNUAL FLOOD REPORT FOR THE YEAR 2014

DIRECTOR

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Kolkata – 7000 091

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ANNUAL FLOOD REPORT 2014

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PREFACE

The State of West Bengal is the lower most riparian State in the Ganga Basin and most of the rivers in the State originate from outside the state boundary and are of inter-state/international category. The State is quite often ravaged by destructive flood, even without any appreciable rainfall within the geographical limits of the State. Along with flood, various allied problems like bank erosion, drainage congestion, and cyclonic disaster accentuate the flood situation. The State, being 42.30% of its geographical area flood prone, happens to be one of the prime flood prone States in the country.

The flood, water related disaster in the state of West Bengal has been an annual feature. Some parts of the state are victims of onslaughts of flood each year resulting severe loss to standing crops, cattle and human properties. The state has all possible facets of flood, drainage, bank erosion, cyclonic storm ravages and associated problems. It has been noticed that the furies due to flood have increased during the last two decades.

Embankments in various districts of the State in general and Sundarban areas in particular are used as communication link, particularly during periods of calamity for safe passage of people and carrying relief materials. Disruption of such communication links leads livelihood activities almost to a grinding halt. Moreover, embankments, constructed either decades or century ago, are functioning as lifeline to the people of Sundarban since those prevent entry of high tidal water into the countryside where average ground level is substantially lower than the normal amplitude of high tide. Due to breach as well as washout of embankments major portion of the area becomes disconnected from basic facilities of life.

Many factors such as intensity and duration of rainfall, sedimentation in river bed, natural or manmade obstruction etc. play a role in the occurrence of flood. Study of these factors and evaluation of flood hazards every year for a given basin/sub-basin are indispensable for evolution of various flood management measures. Accordingly Irrigation & Waterways Directorate, at the end of each flood season, prepare annual flood report comprising rainfall patterns, rainfall in the districts, reservoir condition and major flood events of the year.

1. INTRODUCTION

The state West Bengal crowned by the mighty snow-white Himalayas in the North and frothy sea on the South is a combination of land varying from high regions in the north and partly high in the south west to the plains in the rest areas. The state is beset with extensive network of rivers, their tributaries, rivulets, jhoras, canals, tanks beels and low lying pockets of water bodies. With the Tropic of Cancer running across it, the state is situated between 21°31' & 27°13'14" North Latitudes and 85°45'20" & 89°53' East Longitudes. The geographical area of the state is about 88,752 sq. km with a population density of 1023 per sq.km according to 2011 census.

West Bengal, a part of Bengal Delta, has a long recorded history of flood. At present 42.3% of total area of the State is susceptible to flood. Reason is the landmass of the State was formed by the Ganga-Padma system of rivers through the delta building process of which flood being the main carrier of sediments, the bulk of fluvial deposit, in huge volumes. The highest affected area as recorded in 1978 is about 30,607 sq. km and in 2000 is about 23,971 sq. km.

Furthermore, complicacy is implicated by the origination of major flood producing rivers beyond the state jurisdictional limits, viz, Teesta, Torsa, Jaldhaka, Kaljani etc. from Sikkim and Bhutan are mainly responsible for disastrous flash flood in North Bengal; also heavy rainfall in the catchment area of the river Ganga in U.P. and Bihar results in heavy onrush of water in the downstream of the Bhagirathi causing floods in its adjacent districts.

The heavy rainfall in Western plateau of Jharkhand, Orissa and Purulia results in large inflow into the reservoirs of Maithon, Panchet, Massanjore, Kangsabati etc. causing the necessary release of large volume of water from reservoirs. The heavy discharge from the DVC system, Mayurakshi system and Kangsabati system within a short span of time with onrush of water through the rivers causes inundation and water logging in vast areas depending upon the tidal conditions at the outfall drainage channels like Rupnarayan-Haldi-Damodar-Hooghly rivers system. In addition, many of the rivers flowing through the State originate from northern Bangladesh causes flood during the period of heavy rainfall. During last few years the deltaic region and the coastal belt of the southern part of the State has been suffering from flooding due to high tidal surge synchronized with squalls and cyclone.

Following table shows historical record of flood in West Bengal.

Flood affected Area (in Sq. Km)	Years during which the Flood occurred	Total No. of Years
Below 500	1985,89,92,94,97,2001,2005, 2006 & 2013	10
Between 500 - 2000	1962,63,64,65,66,72,75,96,2003,2004, 2007, 2009 & 2011	12
2000 - 5000	1960, 61, 67, 69, 70, 74, 76, 80, 81 & 82	10
5000 - 10000	1973,77,93,95,98 & 2008	6
10000 - 15000	1968, 79, 83, 90 & 99	5
15000 – 20000	1971, 86, 87 & 88	4
Above 20000	1978, 84, 91 & 2000	4

The geographical areas of West Bengal is classified as follows.

1	Total Geographical area	88, 752 sq.km
2.	Area of land	85, 291 sq.km
3.	Area of major rivers and creeks	3,461 sq.km
3.	Total flood prone area	37, 660 sq.km
4.	Area already protected	> 22, 000 sq.km

2. RIVER SYSTEMS

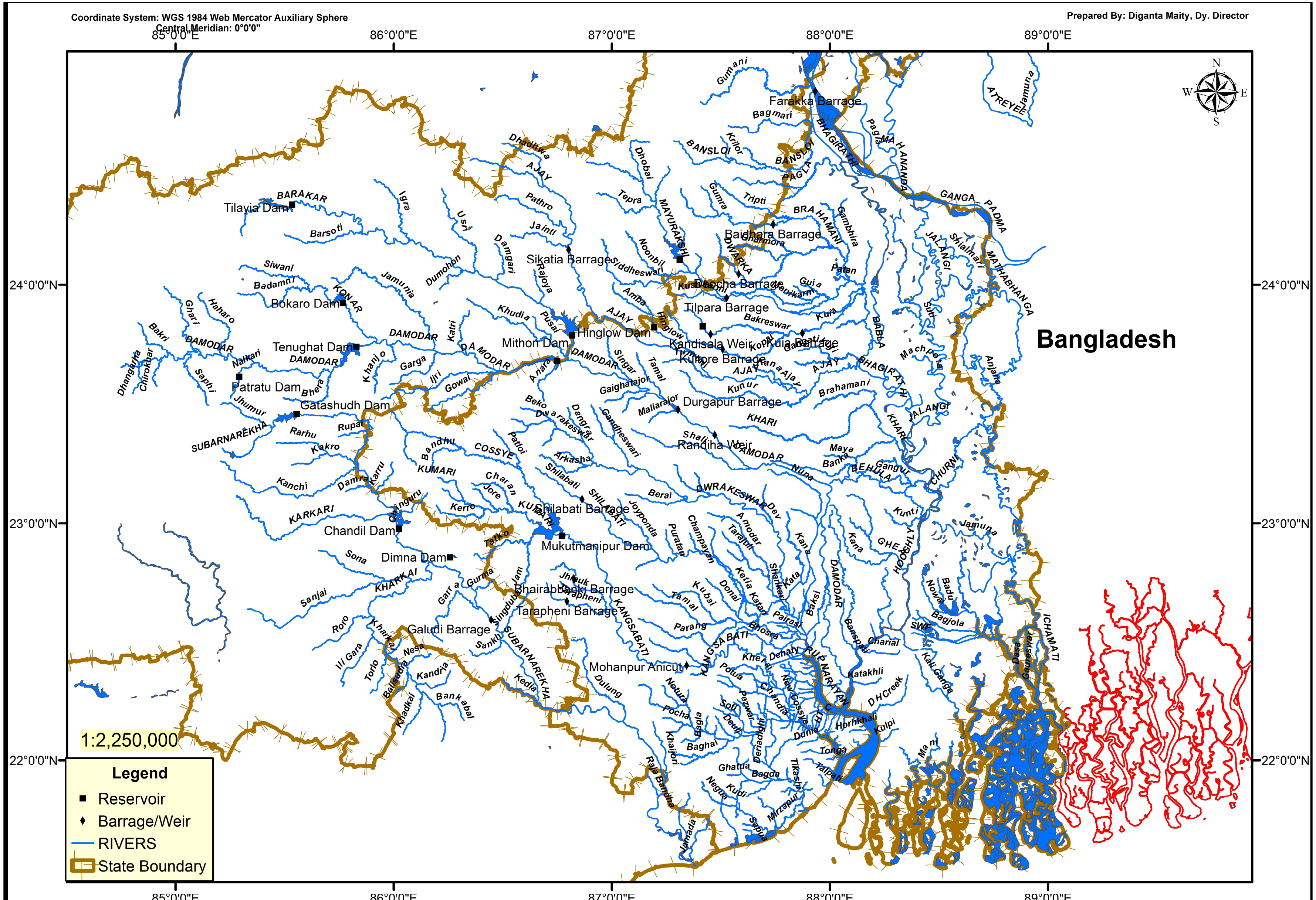
South Bengal

Ganges enters West Bengal near Rajmahal and then flows in a south-easterly direction. It divides into two near north of Dhulian in Murshidabad district. One branch enters Bangladesh as the Padma while the other flows through West Bengal as the Bhagirathi River and Hooghly River in a southern direction. The Bhagirathi is the main river in West Bengal which flows past some of the important cities like Murshidabad, Baharampur, Nabadwip, Chinsura, Chandannagar, Srirampur, Howrah, Kolkata, Diamond Harbour and Haldia. It releases its water into Bay of Bengal near Sagar Island in the South 24 Parganas.

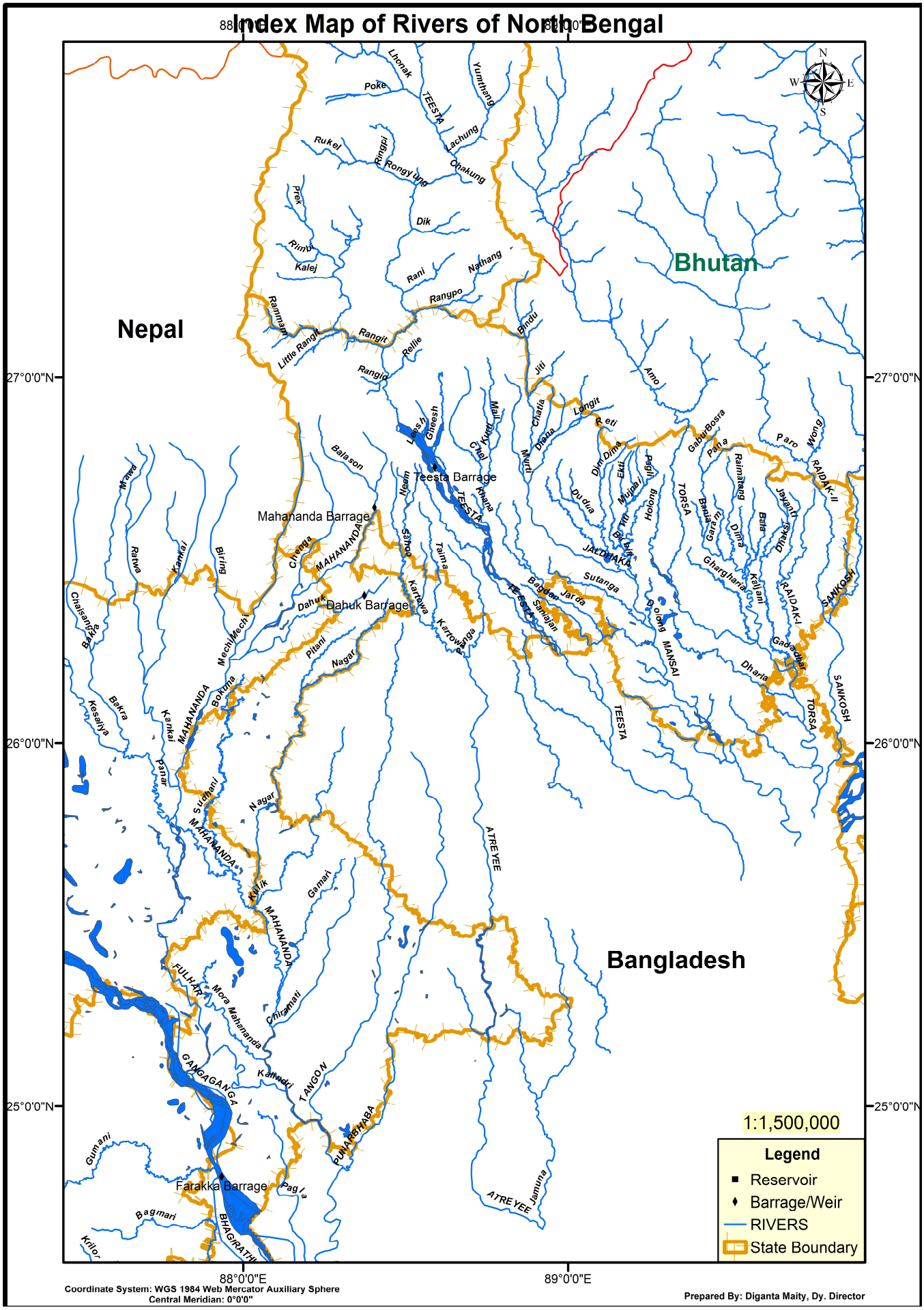
The Mayurakshi, Ajay, Damodar, Kangsabati, Rupnarayan and their tributaries which rise in the Western plateau and high lands flow eastwards through the different districts of West Bengal and joins the Bhagirathi on the right bank. The Mayurakshi, which is fed by tributaries Brahmani, Dwarka, Bakreshwar and Kopai joins the Bhagirathi near Kalna through river Babla, the Ajay, which rises in the hills of Jharkhand, being joined by the Kunur, flows down the plateau fringe, marking the boundary between Bardhaman and Birbhum districts joining it near Katwa and Damodar, with its small meandering distributaries, small streams, Khari, Banka and Behula joins the Bhagirathi near Uluberia.

The Damodar known as the sorrow of Bengal, is now controlled after formation of the Damodar Valley Project. The Dwarakeswar and Shilabati rivers join to form Rupnarayan and the Kangsabati and Keleghai rivers join to form the Haldi. The Rupnarayan and Haldi fall into the Bhagirathi in the Purba Medinipur district. The river Subarnarekha originating from Jharkhand and after flowing for a short distance in West Bengal, re-enters into Orissa. These rivers carry plenty of water thus keeping the river Bhagirathi with optimum water throughout the year. The rivers along with water carry silt and sand eroded from the western plateaus and deposits them in the Bhagirathi and the rivers themselves. This silting is causing great inconvenience for the Kolkata Port and often results flooding in the years of heavy rain.

The distributaries of the Padma River like river Bhairab, Jalangi, Mathabhanga and their tributaries enters West Bengal and joins the Bhagirathi on its left bank. The Bhairab and the Jalangi meet and their joined course known as Jalangi falls into Bhagirathi. The Mathabhanga divides into branches namely; Churni and Ichhamati. The river Churni meets the Bhagirathi while the other flow southwards and join with the Kalindi. The Sunderbans region is covered by numerous estuaries and streams, mainly distributaries of main rivers. The rivers are interconnected and are fed by tidal waters. The major rivers of the area are Hoogly, Matla, Gosaba, Saptamukhi, Haribhanga, Piyali, Thakuran/ Jamira, Raimangal, Kalindi and Ichhamati.



Index Map of Rivers of South Bengal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Chiramati
Kamadri
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Krilor
Jamuna
1:1,500,000
Legend
Reservoir
Barrage/Weir
RIVERS
State Boundary
88°0'0"E
89°0'0"E
27°0'0"N
26°0'0"N
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Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"
Prepared By: Diganta Maity, Dy. Director

North Bengal

Teesta, Torsa, Jaldhaka, Kaljani, Raidak, Sankosh and Mahananda rivers are in the northern hilly region which rise in the Himalayas and flow in a southerly direction through the districts of Darjeeling, Jalpaiguri, Cooch Behar and North and South Dinajpur and enters Bangladesh. As most of the rivers are snow fed, most of the rivers are perennial in nature and often floods during the rainy season. The entire region is made up of sand, gravel and pebbles laid down by these rivers.

The Mahananda rises from the Dow Hills forest, near the town of Darjeeling and are fed by similar small rivers like, Mahanadi, Balason, and Mechi and runs in a zig-zag way through the district of Malda and joins the Padma in Bangladesh. In the central region, the main river is the Mahananda. The Tangon, Punarbhabha, and Atrai arises in the plains, while the former two joins together and flows into Mahanadi, Atreyee flows into the Padma.

3. RIVER BASINS

The state can be demarcated into three distinct drainage basins coming under the Ganga, Brahmaputra and Subarnarekha system respectively. These three main river basins can in turn be divided into Sub-bains having individual catchment of their own. The area-wise distribution of the above main basins in the state are as under:–

Sl. No.	Name of River Basin	Catchment Area in sq. km.
1.	Brahmaputra	12, 218 sq.km.
2.	Ganga including Sundarban Delta	72, 953 sq.km.
3.	Subarnarekha	3, 581 sq.km.
	Total	**88, 752 sq.km.**

A. BRAHAMAPUTRA BASIN

The rainfall in the northern region of the state is generally high. The ground slope is steep, particularly in the Sub-Himalayan regions of the northern districts. Except Darjeeling, all the areas belong to Brahmaputra Basin. This system consists of a total area of 12, 218 sq.km nearly 14% of the geographical area of the state. This basin

area is interspersed with a large number of drainage channels which join the main drainage arteries of the regions like the rivers Teesta, Torsa, Raidak, Jaldhaka etc. All these rivers originate from the Himalayas in Bhutan/Sikkim and flow across the Terai region and reach the plains of West Bengal and then flow to Bangladesh joining ultimately the Brahmaputra in Bangladesh.

The details of major rivers feeding the river Brahmaputra are given in the following table:-

Sl. No.	River Basin/ Sub-Basin	Catchment Area in Sq. Km.						TOTAL	Tributaries
		WB	Sikkim	Assam	Tibet	Bhutan	B'desh		
A.	**Brahamaputra**							**41847**	
1.	Sankosh	163		175	75	9733		**10146**	Chiklajhore, Choto Sankosh
2.	Raidak-II	245				4606		**4851**	
3.	Torsa	3421			1581	2363		**7365**	Raidak-I, Kaljani, Ghargharia, Gadadhar, Holong
4.	Jaldhaka	3748	76			959	325	**5108**	Mujnai, Murti, Diana, Sutanga, Jarda, Dolong
5.	Teesta	3012	7023				10	**10045**	Great Rangeet, Rangpo, Mechi, Leesh, Ghish, Dharala, Karala
6.	Atreyee	1629					2703	**4332**	Jamuna, Brahamani
	Sub-Total	**12218**	**7099**	**175**	**1656**	**17661**	**3038**		

Sankosh

The river Sankosh with its origin in Bhutan is the eastern most river of Brahmaputra river basin. It serves as the boundary between the two states West Bengal and Assam. It joins with Raidak-II and finally falls into Brahmaputra in Bangladesh by name Gangadhar. The length of Sankosh in West Bengal is 24 km. The total catchment area of this river Sub-basin is 10,146 sq.km.

Raidak

It originates in Mt. Akungphu at an altitude of 6,400 m. in Bhutan. The river Raidak then bifurcates into two channels namely Raidak-I and Raidak-II at Bhutanghat, close to Indo-Bangladesh border. Raidak-I joins the united stream of Torsa and Kaljani, while Raidak-II is joined by Sankosh and finally outfalls into Brahmaputra in Bangladesh by the name Gangadhar. The length of Raidak-II is around 50 km in West Bengal. The total catchment area of Raidak-II river Sub-basin is 4,851 sq.km.

Torsa

The river Torsa originates in Chumbi Valley of southern Tibet at an altitude of 7,065 m. It flows through Tibet, Bhutan, West Bengal and Bangladesh. Below Hasimara bridge on NH-31, it bifurcates into two channels viz. Sil-Torsa and Char-Torsa. They reunite at Patla Khowa forest. The river passes by the Coochbehar town and is joined by river Kaljani and Raidak-I. The combined flow outfalls into Brahmaputra near Nageswari at Rangpur in Bangladesh. The total length of this river is 222 km out of which 74 km is situated within West Bengal. The total catchment area of this river Sub-basin is 7,365 sq.km.

Jaldhaka

The river Jaldhaka has its origin at Bitang Lake in Sikkim at an altitude of 4,400 m. It flows through Sikkim, Bhutan, West Bengal and Bangladesh. After the river is joined by a number of streams and tributaries both in mountainous and sub-mountainous regions, it finally flows into river Dharala and the combined system, by the name Dharala ultimately outfalls into Brahmaputra in Bangladesh. The total length of this river is 192 km out of which 122 km is situated within West Bengal. The total catchment area of this river Sub-basin is 5,108 sq.km.

Teesta

Teesta, the mighty river of North Bengal originates in the glaciers of North Sikkim at an altitude of 6,400 m and is formed by the union of two streams viz. Lachen and Lachung at Chungthung in Sikkim. It enters West Bengal at Rangpo and upto Mechi, it forms the boundary between West Bengal and Sikkim. Two of its tributaries, Great-Rangeet and Rammam also serve as the natural boundary between the two states. The

river finally outfalls into Brahmaputra in Rangpur district of Bangladesh. The total length of this river is 309 km out of which 103 km is situated within Sikkim and 121 km in West Bengal. The total catchment area of this river Sub-basin is 10,045 sq.km. Under 'Teesta Barrage Project' a barrage has been constructed at Gazoldoba under Jalpaiguri district.

Atreyee

Some rivers like Sahu, Neem, Talma, Chaoai, Panga originating from the high lands in districts of Jalpaiguri, meet together afterwards. This combined stream assumes the name Karatowa. It then enters into Bangladesh by the name Atreyee. The river Atreyee then bifurcates into two channels namely Dheepa and Atreyee. The Western Channel named Atreyee re-enters into West Bengal in South Dinajpur district covering a length of 40 km in the State. It again enters into Bangladesh and ultimately outfalls into river Brahmaputra. The total catchment area of this river Sub-basin is 4,332 sq.km.

River Gauges in Brahamaputra Basin

Sl. No.	Name of River	Name of Gauge Station	Name of District	DL (mGTS)	EDL (mGTS)
1.	Sankosh	L.R.P. Crossing	Jalpaiguri	48.50	49.40
2.	Raidak-II			48.40	49.30
3.	Raidak-I			47.00	47.90
4.		Tufanganj	Coochbehar	35.30	35.90
5.	Torsa	Hasimara	Jalpaiguri	116.30	117.50
6.		Coochbehar	Coochbehar	42.07	42.68
7.	Kaljani	Alipurduar	Jalpaiguri	44.10	45.70
8.	Jaldhaka	Nagrakata		160.70	161.80
9.		NH 31 Crossing		80.10	80.90
10.	Mansai	Mathabhanga	Coochbehar	47.70	48.20
11.	Teesta	Coronation Bridge	Darjeeling	150.00	153.60
12.		Domohani	Jalpaiguri	85.95	86.30
13.	Atreyee	Balurghat	South Dinajpur	23.15	23.76

Rain Gauges in Brahamaputra Basin

Sl. No.	River Basin	District	Location of Rain Gauge Station	Districtwise Normal Annual Rainfall (mm)
1.	Teesta	Sikkim	Gangtok	2739.00
2.		Darjeeling	Darjeeling	3118.50
3.		Jalpaiguri	Malbazar	3463.30
4.			Jalpaiguri	
5.	Jaldhaka		Banarhat	
6.		Coochbehar	Mathabhanga	3443.70
7.	Torsa	Jalpaiguri	Jayanti	3463.30
8.			Hasimara	
9.			Alipurduar	
10.		Coochbehar	Coochbehar	3443.70
11.	Raidak		Tufanganj	
12.	Atreyee	Dakshin Dinajpur	Balurghat	1584.90

B. GANGA-PADMA BASIN

The two holy rivers – Bhagirathi and Alakananda originating from the glaciers of the Himalayas at an altitude of 7,000 m join at Devprayag and the combined stream is known as the Ganga. It emerges into the plains at Rishikesh in Uttaranchal. After flowing exclusively through Uttaranchal and Uttar Pradesh it receives the flow of Yamuna, the largest tributary at Allahabad.

The Ganga forms the boundary between Uttar Pradesh and Bihar for a length of about 110 km and the river then enters Bihar and flows more or less through the middle of the state. After its confluence with the Kosi, the Ganga continues its eastward flows in Bihar for about 40 km and then it enters West Bengal.

As it enters West Bengal, the river swings round the Rajmahal hill range and then starts flowing almost due south. The river then bifurcates into two arms about 40 km below Farakka. The left arm called the Padma flows eastwards into Bangladesh while the right arm called Bhagirathi continues to flow south through West Bengal. The stretch of the river after Nabadwip is called Hooghly and ultimately outfalls into the Bay of Bengal near Sagar Island.

The Central, Southern and the South-Western parts of the State of West Bengal constitute the Ganga Basin. The total length of the river Ganga from its point of origin to the point where it falls into sea is about 2,575 km (measured along Bhagirathi and the Hooghly) of which 1,450 km lies in Uttaranchal and Uttar Pradesh, 110 km along Uttar Pradesh and Bihar border, 445 km in Bihar and 570 km in West Bengal.

The Ganga system comprises a total area of 72,953 sq. km within the state of West Bengal. The catchment areas of different rivers within this system in the State of West Bengal are further sub divided into two systems name Ganga-Padma and Bhagirathi-Hooghly.

Catchment areas under different Sub-basins of Ganga-Padma basin

Sl. No.	River Basin/ Sub-Basin	CATCHMENT AREA IN Sq. Km.				TOTAL	Tributaries
		WB	Bihar	Nepal	B'desh		
B.	**Ganga-Padma**					**26101**	
1.	Fulhar	351	4052	4775		**9178**	Panar
2.	Mahananda	6024	1628	1204	1319	**10175**	Balason, Dauk, Mechi, Kankai, Nagore, Gamari, Kalindri
3.	Tangon	1243			806	**2049**	
4.	Punarbhaba	1126			1809	**2935**	
5.	Ganga-Padma	1751	13			**1764**	Pagla
	Sub-Total	**10495**	**5693**	**5979**	**3934**		

Mahananda-Fulhar

The river Mahananda originates from Ghoom near Darjeeling town in the district of Darjeeling. The Mahananda river system lies between latitude 25º15' N to 26º15' N and longitude 87º45' E to 88º15' E. It is bounded on the north by the Himalayas, in the east by the ridges separating it from Teesta river system, the river Ganga on the South and the Kosi river system in the east. The river bifurcates into two channels at Barsoi in Bihar. Out of the two branches one flows through Bihar by the name Fulhar and the other flows through West Bengal as Mahananda. The river Mahananda carrying the flow of four tributaries namely, Nagar, Kalindri, Tangon and

Punarbhaba, drains into the river Ganga from the North-Western side at Godogarighat just downstream of the point where Ganga leaves the boundary of West Bengal. The combined catchment area of these two Sub-basins is 19, 353 sq.km. Under 'Teesta Barrage Project' a barrage has been constructed over Mahananda near Siliguri and another pick-up barrage has been constructed over river Dahuk near Chopra of North Dinajpur district.

Punarbhaba

The river Atreyee bifurcates into two channels namely Dheepa and Atreyee. Dheepa after taking a South – Westernly course enters into Gangarampur P.S. of South Dinajpur district assuming the name Punarbhaba. Covering a length of about 40 km. in the district it touches the eastern boundary of Maldah district and finally enters into Bangladesh. Further down, Punarbhaba meets the river Mahananda in Bangladesh. The catchment area of this Sub-basin is 2,935 sq.km.

Nagar-Kulick, Gamari-Chiramati, Tangon, Kalindri

All these rivers flow through the districts Malda and North Dinajpur. In course of their flow, somewhere they form the boundary either between West Bengal and Bihar or between West Bengal and Bangladesh. These rivers ultimately outfall into the river Mahananda.

Nagar, originating in Bangladesh flows along the boundary of West Bengal and taking a South-easternly course, receives a spill channel of Mahananda and is joined by Kullick, which has also its origin in Bangladesh.

Gamari and Chiramati are two small rivers that flow through North Dinajpur district before they are united. This combined stream finally outfalls into the river Mahananda. Tangon is a tributary of river Mahananda. It rises in Bangladesh. It flows through the district of North Dinajpur and Malda and meets Mahananda on the boundary of Malda and Bangladesh.

River Kalindri originating in North Bihar flows through the plain of Purnia district. It enters West Bengal in the Malda district and outfalls into Mahananda.

Existing river gauges and rain gauges within these basins are given in the table below.

River Gauges in Ganga-Padma Basin

Sl. No.	Name of River	Name of Gauge Station	Name of District	DL (mGTS)	EDL (mGTS)
1.	Mahananda	Hill Curt Road	Darjeeling	115.98	116.59
2.		Sonapur	North Dinajpur	75.77	76.38
3.		Englishbazar	Malda	21.00	21.75
4.	Tangon	Banshihari	South Dinajpur	25.60	26.21
5.	Punarbhaba	Gangarampur		25.82	26.42
6.	Fulhar	Teljana	Malda	26.82	27.43
7.	Ganga-Padma	Manikchakghat		24.69	25.30
8.		Akherigunj	Murshidabad	18.44	19.05

Rain Gauges in Ganga-Padma Basin

Sl. No.	River Basin	District	Location of Rain Gauge Station	Districtwise Normal Annual Rainfall (mm)
1.	Mahananda-Fulhar	Darjeeling	Siliguri	3118.50
2.			Kharibari	
3.		Uttar Dinajpur	Islampur	1727.60
4.			Raiganj	
5.		Malda	Ratua	1419.40
6.			Malda	
7.	Punarbhaba	Dakshin Dinajpur	Gangarampur	1584.90

C. BHAGIRATHI-HOOGHLY BASIN

The Ganga-Brahmaputra-Meghna river system constitutes one of the largest river systems of the world in terms of its water resources. The river Ganga originating in the Himalayas in India, drains a vast area. Near its deltaic head at Farakka it divides into two channels, the Bhagirathi-Hooghly and the Padma. The Bhagirathi-Hooghly flows through West Bengal and outfalls in Bay of Bengal and the Padma crosses over into Bangladesh and joins the Brahmaputra at Goalanda.

Catchment areas under different Sub-basins of Bhagirathi-Hooghly basin								
Sl. No.	River Basin/ Sub-Basin	CATCHMENT AREA IN Sq. Km					TOTAL	Tributaries
		WB	Bihar	JHK	Orissa	B'desh		
C.	**Bhagirathi-Hooghly**						**77840**	
1.	Pagla	338		260			**598**	Buri
2.	Bansloi	171		1769			**1940**	Bagmari
3.	Brahamani	154		985			**1139**	Tripti, Gumra
4.	Dwarka	2649		329			**2978**	Kajuli, Gharmora, Chailan, Gambhira, Manikarni, Banka
5.	Mayurakshi-Babla	2529		2949			**5478**	Dhobai, Tepra, Siddheswari, Kuia, Kushkarini
6.	Ajay	2505	385	3203			**6093**	Pathro, Jayanti, Hinglow, Kunur, Tumoni
7.	Damodar	4323		17086			**21409**	Haharo, Saphi, Jamunia, Khanjo, Ijri, Garga, Khudia, Barakar, Konar, Shali, Tamal, Singar
8.	Lower Damodar	2838					**2838**	Mundeswari, Amta Channel
9.	Khari	2268					**2268**	Banka, Brahamani
10.	Behula	554					**554**	Gangur
11.	Ghea	1165					**1165**	Kana
12.	Shilabati	4088					**4088**	Joyponda, Ketia, Donai, Kubai, Champayan
13.	Dwarakeswar	4292					**4292**	Gandheswari, Beko, Arkasha, Berai, Shankari,
14.	Kangsabati (New Cossye, Old Cossye)	6380		322			**6702**	Saharjore, Bandhu, Patloi, Kumari, Bhairabbanki, Kolaichu, Kherai-Bakshi
15.	Kaliaghai	1913					**1913**	Baghai, Deuli, Kapaleswari, Chandia
16.	Rasulpur	1625					**1625**	
17.	Pichabani	844			15		**859**	
18.	Haldi	699					**699**	Kaliaghai, New Cossye
19.	Rupnarayan	1145					**1145**	Shilabati, Dwarakeswar, Mundeswari, Durbachati
20.	Bhagirathi-Hooghly	4035		1297			**5332**	Gumani, Saraswati
21.	Jalangi	2445					**2445**	Shialmari, Suti
22.	Mathabhanga-Churni	976				1304	**2280**	Anjana
	Sub-Total	**47936**	**385**	**28200**	**15**	**1304**		

The river Bhagirathi divides the Murshidabad district into two parts. It receives right bank tributaries namely the Bagmari, Pagla, Bansloi, Babla and the Ajoy. It receives the Jalangi just upstream of Nabadwip town from the left. After its confluence with the Jalangi, the Bhagirathi is known as the Hooghly.

The other major tributary from the left is Churni. The major tributaries on the right bank of River Hooghly are Rupnarayan, Damodar (Amta Channel), Haldi and Rasulpur. Some other minor right bank rivers are Khari, Behula, Ghea and Pichabani. Moreover there are so many small drainage channels and khals which directly outfall into this river from its both banks before it finally outfalls into the Bay of Bengal near Sagar island.

The Bhagirathi-Hooghly is the main river in the State and is the main drainage artery for the southern districts draining almost the entire area. Before 12th century, the Ganga had its main course down Bhagirathi-Hooghly. Subsequently, the main flow was pushed to the east through the present course of Padma.

The flow of Bhagirathi increases downstream due to the run off and outflows receives from a number of eastern and western tributaries. It also forms the boundary between 24-Parganas and Hooghly districts.

The total catchment area of Bhagirathi-Hooghly basin is 77,840 sq. km out of which 28,600 sq. km (37%) are situated within the neighboring States of Bihar, Jharkhand and Orissa and 1,304 sq. km (2%) are situated in Bangladesh.

Jalangi-Bhairab

The river Jalangi originates from the right bank of the river Padma in Murshidabad district, 165 km. downstream of Farakka. Jalangi is dead for all purposes except during the periods of heavy rain, when it receives water from Padma. The river ends its journey by finally outfalling into the river Hooghly near Nabadwip town in Nadia district in West Bengal.

The river Bhairab starts its journey from the river Ganga in P.S. Lalbag of Murshidabad district. It is now almost a dead channel but during rainy season it receives water from Padma. Catchment area of Jalangi Sub-basin is 2,445 sq.km.

Mathabhanga-Churni

River Mathabhanga originates from the right bank of the Padma, at Munshiganj in Kushtia District of Bangladesh. It bifurcates near Majidia in Nadia District in India, creating two channels. The western course, Churni runs a few km through Nadia in a south-west direction to meet Bhagirathi and the other course Ichamati, after traversing a length of 20 km in India, enters into Bangladesh near Mubarakpur. The length of Churni is almost 56 km. Catchment area of Mathabhanga-Churni Sub-basin is 2,280 sq.km.

River Gauges in Bhagirathi-Jalangi-Churni Sub-basins

Sl. No.	Name of River	Name of Gauge Station	Name of District	DL (mGTS)	EDL (mGTS)
1.	Bhagirathi-Hoogly	Baharampur	Murshidabad	17.22	17.83
2.		Katwa	Burdwan	13.71	14.32
3.		Swarupganj	Nadia	8.44	9.05
4.	Mathabhanga	Majdia		7.82	8.43
5.	Churni	Hanskhali		7.53	8.14

Rain Gauges in Bhagirathi Sub-basin

Sl. No.	River Basin	District	Location of Rain Gauge Station	Districtwise Normal Annual Rainfall (mm)
1	Bhagirathi	Murshidabad	Berhampore	1391.10
2		Burdwan	Katwa	1315.20
3		Nadia	Swarupganj	1261.60

Pagla-Bansloi

These rivers originate from the Rajmahal hills in the Sahebganj district of Jharkhand. Flowing easternly across Birbhum district, they entered Murshidabad district as the tributaries of the river Bhagirathi. The combined catchment area of these two rivers is 2,538 sq. km.

Brahamani-Dwarka

Dwaraka originating in Santhal Parganas of Jharkhand, flows through Birbhum and Murshidabad districts where it joins with Babla which finally outfalls into the river Bhagirathi. Brahamani is the main tributary of Dwarka. It also originates in Santhal Parganas of Jharkhand and flows through Birbhum and Murshidabad districts to meet with Dwarka. There are Baidhara and Deocha barrages across the river Brahamani and Dwarka respectively under the 'Mayurakshi Reservoir Project'. The total catchment area of this Sub-basin is 4,117 sq. km.

Mayurakshi-Babla

Mayurakshi River (also called Mor River), the major river in Birbhum district, has a long history of devastating floods. It has its source on Trikut hill, about 16 km from Deoghar in Jharkhand state. Several spill channels – the Manikarnika, Kana Mor etc. take off from the Mayurakshi in its lower reaches. All these rivers flow into the lower pocket of Hijal Beel in the district of Murshidabad. From the Beel, the river Babla starts its journey finally draining into the river Bhagirathi. The drainage and flood level in the Hijal Beel is considerably influenced by the ruling level of Bhagirathi.

Massanjore dam and Tilpara barrage have been constructed across this river as a part of 'Mayurakshi Reservoir Project' which is the first major irrigation project in West Bengal. Other important structures in this basin are Kopai barrage, Bakreswar dam, Kandisala weir and Kuia mini barrage. The benefitted districts from this project are Birbhum, Murshidabad and Burdwan. The river is about 250 km long out of which nearly 100 km is situated within West Bengal. The total catchment area of this Sub-basin is 5,478 sq.km.

Ajay

River Ajay originates on a small hill about 300 m high, southwest of Munger in Bihar. It then flows through Jharkhand and enters West Bengal at Simjuri, near Chittaranjan. It forms the border between Burdwan and Birbhum districts and finally joins the Bhagirathi River near Katwa of Burdwan. Total length of the Ajay is 288 km out of which 152 km is in West Bengal. The important tributaries of the Ajay are Pathro and Jayanti in Jharkhand, and Tumuni and Kunur in Burdwan district of West Bengal.

There is a Barrage across river Ajay constructed by Govt. of Jharkhand at Sikatia. The floods of this river are flashy and of short duration. There are some pockets in the Ajay-Kunur catchment which suffer from frequent inundation. Large areas of Burdwan and Birbhum districts face inundation whenever floods of the Ajay coincide with that of the Mayurakshi, Dwarka and the Bhagirathi. A dam has been constructed over the tributary Hinglow for the purpose of irrigation in some parts of Birbhum district. The total catchment area of this Sub-basin is 6,093 sq.km.

River Gauges in Bansloi-Dwarka-Mayurakshi-Ajay Sub-basins

Sl. No.	Name of River	Name of Gauge Station	Name of District	DL (mGTS)	EDL (mGTS)
1.	Bansloi	Bansloi Rail Bridge	Birbhum	31.85	32.76
2.	Brahmani	ADB Road Crossing	Birbhum	32.00	33.40
3.	Dwarka	Sankoghat	Murshidabad	20.40	21.30
4.	Mayurakshi	Narayanpur		27.99	28.79
5.	Kuia	Tarapur		22.71	23.35
6.	Ajay	Amuliaghat	Burdwan	*Discharge	
7.		Geropara	Birbhum	39.42	40.42

Rain Gauges in Bansloi-Dwarka-Mayurakshi-Ajay Sub-basins

Sl. No.	River Basin	District	Location of Rain Gauge Station	Districtwise Normal Annual Rainfall (mm)
1.	**Pagla-Bansloi**	Birbhum	Paikar	1612.40
2.	**Brahamani-Dwarka**		Rampurhat	1392.80
3.			Deocha Barrage	
4.	**Mayurakshi-Babla**	Dumka	Khusiary	1381.50
5.			Maharo	
6.			Massanjore	
7.			Tantloi	
8.		Murshidabad	Kandi	1391.10
9.	**Ajay-Hinglow**	Deoghar	Sikatia	1162.10
10.		Jamtara	Kundahit	1476.00
11.		Birbhum	Hinglow	1612.40

Damodar

The river Damodar originating from Palamau hills in Jharkhand and flowing through a length of 592 km between several districts of Jharkhand and West Bengal, bifurcates into two channels at Beguahana of Hooghly district. The main flow passes through Mundeswari channel and discharges into Rupnarayan. The other one Amta channel carries discharge during high flood and outfalls into the river Hooghly.

The river causes floods in its lower reaches in the districts of Burdwan, Hooghly and Howrah, mainly on the right bank of the river below Beguahana. Earlier known as the 'Sorrow of Bengal' because of its ravaging floods in the plains of West Bengal, the Damodar and its tributaries have been somewhat tamed with the construction of four dams (Mithon, Panchet, Konar and Tilayia) under the control of 'Damodar Valley Corporation(DVC)'.

There is another dam at Tenughat across Damodar under the direct control of Government of Jharkhand and in the lower catchment there are one barrage (Durgapur) and one weir (Randiha) under the direct control of Irrigation & Waterways Department, Government of West Bengal.

The total catchment area of Damodar Sub-basin in Jharkhand is 17,086 sq.km and in West Bengal is 4,323 sq.km. The entire catchment area of Lower Damodar Sub-basin is situated within West Bengal having an area of 2,838 sq.km. The total length of Damodar from its origin to outfall is 541 km.

River Gauges in Damodar Sub-basin

Sl. No.	Name of River	Name of Gauge Station	Name of District	DL (mGTS)	EDL (mGTS)
1.	Damodar	Rondiha	Burdwan	52.13	52.89
2.		Edilpur		32.79	32.95
3.		Jamalpur		23.24	23.54
4.	Amta Channel	Amta	Howrah	5.64	6.24
5.		Champadanga (Discharge)	Hooghly	12.89	13.50
6.	Mundeswari	Harinkhola		12.80	13.41
7.	Hurhura	Muchighata		6.16	6.77

Rain Gauges in Damodar Sub-basin

Sl. No.	River Basin	District	Location of Rain Gauge Station	Districtwise Normal Annual Rainfall (mm)
1.	Damodar	Giridih	Giridih	1252.70
2.		Kodarma	Tilaiya	1116.20
3.		Bokaro	Tenughat	1247.50
4.		Dhanbad	Maithon	1355.20
5.			Panchet	
6.		Burdwan	Asansol	1315.20
7.			Durgapur	
8.			Burdwan	
9.		Bankura	Sonamukhi	1330.90
10.		Hooghly	Champadanga	1418.70
11.		Howrah	Domjur	1600.00
12.			Amta	

Dwarakeswar-Shilabati-Rupnarayan

Dwarakeswar River (also known as Dhalkishore) is a major river in the western part of West Bengal. It originates from Tilboni hill in Purulia district and enters Bankura district near Chhatna. Its main tributary Gandheswari rising from Bankura district meets Dwarakeswar near Bankura town. After receiving contributions from other streams like Arkasha, Berai, Shankari etc. Dwarakeswar enters into Hooghly district and joins with Shilabati near Ghatal of Paschim Medinipur district to form river Rupnarayan, which finally outfalls into the Hooghly River near Gadiara of Howrah district. There is proposal of "Dwarakeswar-Gandheswari Reservoir Project" for this basin.

River Shilabati (also known as Shilai), another major river in the western part of West Bengal, originates in the terrain of the Chhota Nagpur Plateau in the Purulia district. After traversing through the districts of Bankura and Paschim Medinipur it meets with Dwarakeswar to form Rupnarayan. River Joyponda, Ketia, Donai, Kubai are major tributaries of Shilabati. There is a small barrage constructed across the river near Khatra as a part of 'Kangsabati Reservoir Project' which is popularly known as Kadam Deuli barrage.

Rupnarayan is a combination of number of streams. The tidal reach below confluence of Dwarakeswar and Shilabati is known as Rupnarayan. It outfalls into Hooghly near Geonkhali of Purba Medinipur (Gadiara of Howrah) after receiving main flow of Damodar through Mundeswari and that of Kangsabati though Durbachaty and Polashpai rivers. Apart from those, there are various local drainage channels and khals which directly outfall into Rupnarayan from its both banks in the district of Purba Medinipur (Chandreswar, Dehaty, Soadighi, Shankrara, Pratapkhali etc.) and Howrah (Bakshi khal). The river is tidal throughout its entire course. The catchment area of this Sub-basin is 9,525 sq.km.

River Gauges in Dwarakeswar-Silabati-Rupnarayan Sub-basins

Sl. No.	Name of River	Name of Gauge Station	Name of District	DL (mGTS)	EDL (mGTS)
1.	Dwarakeswar	Arambag	Hooghly	17.22	17.83
2.		Shakepore		11.75	12.35
3.	Shilabati	Banka	Paschim Medinipur	15.08	15.69
4.		Gadghat		8.99	9.60
5.	Rupnarayan	Bandar		6.85	7.46
6.		Gopiganj		5.03	5.65

Rain Gauges in Dwarakeswar-Silabati-Rupnarayan Sub-basins

Sl. No.	River Basin	District	Location of Rain Gauge Station	Districtwise Normal Annual Rainfall (mm)
1.	Dwarakeswar	Bankura	Bankura	1330.90
2.		Hooghly	Arambag	1418.70
3.	Shilabati	Bankura	Kadamdeuli	1330.90
4.		Paschim Medinipur	Ghatal	1535.50
5.	Rupnarayan	Purba Medinipur	Tamluk	1669.60

Kangsabati-Kaliaghai-Haldi

The river Kangsabati (also variously known as the Kasai and Cossye) originating from Chhota Nagpur Plateau in the Purulia district joins with its main tributary Kumari river at Mukutmanipur of Bankura district where a reservoir popularly known as Mukutmanipur dam has been constructed under the 'Kangsabati Reservoir Project' for the purpose of both irrigation and flood control. An Anicut dam built on this river near Midnapore town in 1872 was also added to the operations of the project.

Further down, after entering into the district of Paschim Medinipur it joins with combined streams of Bhairab Banki and Tarafeni rivers. Both the rivers have barrages over them under the 'Kangsabati Reservoir Project'. After flowing further east in a tortuous course it bifurcates into two rivers at Kapastikri of Paschim Medinipur. Northern branch, known as Old Cossye after flowing through certain distance, further bifurcates into two courses at Daspur of Paschim Medinipur. One course, named as Palaspai Khal flow further east to outfall into the Rupnarayan and the main course, known as Durbachaty flows south-easterly along the border of both Medinipur districts to outfall into river Rupnarayan. Old Cossye is also connected with river Shilabati through a small channel known as Kanki khal.

The southern course, known as New Cossye, flows further south-easterly direction to meet with river Kaliaghai at Dheubhanga of Purba Medinipur district, forms river Haldi which flows eastwardly into the river Hooghly at Haldia. Kherai-Bakshi khal is the main tributary of river New Cossye. The total length of Kangsabati is around 465 km.

The river Kaliaghai trickles out from Dudhkundi of Jhargram in Paschim Medinipur district and flows south-easterly through Purba Medinipur to meet the other arm of Kangsabati i.e. New Cossye to form Haldi. During the course of its journey, it is fed by the flow of its tributaries namely Kapaleswari, Baghai and Chandia. The length of this river is 121 km.

River Haldi formed by joining of New Cossye and Kaliaghai outfalls into the river Hooghly. The lower portion of the river Haldi is affected by over bank spills and drainage problem during the monsoon. This river is a tidal one throughout its length of 42 km. Catchment area of this Sub-basin is 9,314 sq.km.

River Gauges in Kangsabati-Kaliaghai-Haldi Sub-basins

Sl. No.	Name of River	Name of Gauge Station	Name of District	DL (mGTS)	EDL (mGTS)
1.	Kangsabati	Mohanpur	Paschim Medinipur	25.75	26.36
2.		Kapastikri (Discharge)		16.00	16.61
3.	Old Cossye	Kalmijole		9.29	9.90
4.	New Cossye	Panskura	Purba Medinipur	9.29	9.90
5.	Kapaleswari	Narayangar	Paschim Medinipur	5.33	5.94
6.	Chandia	Barisha		4.55	5.00
7.	Kaliaghai	Bakhrabad		8.40	8.85
8.		Dehati		6.55	7.00
9.		Amgachia	Purba Medinipur	5.79	6.40
10.		Kalimandop		5.03	5,65

Rain Gauges in Kangsabati-Kaliaghai-Haldi Sub-basins

Sl. No.	River Basin	District	Location of Rain Gauge Station	Districtwise Normal Annual Rainfall (mm)
1.	Kangsabati	Purulia	Simulia	1363.30
2.			Purihansa	
3.			Tusuma	
4.			Kharidwar	
5.			Phulberia	
6.		Bankura	Mukutmanipur	1330.90
7.		Paschim Medinipur	Midnapore	1535.50
8.		Purba Medinipur	Panskura	1669.60
9.	Kaliaghai	Paschim Medinipur	Jhargram	1535.50
10.		Paschim Medinipur	Kharagpur	
11.		Purba Medinipur	Amgachia	1669.60
12.	Haldi		Itamogra	

Rasulpur-Pichabani

The river Rasulpur is formed by three streams namely Bagda, Sarpai and Madhakhali. It is the main drainage channel in Contai Sub-Division of Purba Medinipur district. The river ultimately outfalls into the river Hooghly. The length of this river is 19 km.

River Pichabani is the main drainage channel which is used to drain out rain water from Dubda basin under Egra block of Purba Medinipur district. This river outfalls into the Bay of Bengal.

Combined catchment area of these two Sub-basins is 2,484 sq.km.

Rain Gauges in Rasulpur Sub-basin

Sl. No.	River Basin	District	Location of Rain Gauge Station	Districtwise Normal Annual Rainfall (mm)
1.	Rasulpur	Purba Medinipur	Contai	1669.60

D. SUNDARBAN BASIN

Ichamati-Bidyadhari

After bifurcation near Majdiha of Nadia district, the southern course of Mathabhanga, known as Ichamati, after traversing a length of 20 km in India, enters into Bangladesh near Mubarakpur. It flows for 35 km in Bangladesh and again re-enters into India at Duttaphulia of Nadia. It forms the international border between India and Bangladesh for 21 km and finally outfalls into river Kalindi of Sundarban area. The length of Churni is almost 56 km and that of Ichamati is 208 km.

Bidyadhari originates near Haringhata in Nadia district and then flows through Deganga, Habra and Barasat areas of North 24 Parganas before joining the Raimangal River in the Sundarbans. It has been the major drainage system of North 24 Parganas and Kolkata. Combined catchment area of these two Sub-basins is 5,406 sq.km.

Sundarban Area

Apart from the rivers described earlier within the Ganga and the Brahmaputra river systems, there is a group of rivers in Southern part of the State which falls in the deltaic zone. These tidal rivers and estuaries mostly lie in the deltaic zone to the east of the Hooghly river popularly known as Sundarbans and form an intricate network with a number of criss-cross inter connecting channels or creeks. These rivers drain off whatsoever fresh discharge comes from country sides, thus ultimately draining into Bay of Bengal. Some important rivers in Sundarban are Muriganga, Mridangabhanga, Saptamukhi, Raimangal, Matla, Bidya, Thakuran, Malancha, Kalindi, Gomar etc.

The Tolly's Nullah or the Adi Ganga, as it is sometimes called is a small but important tidal creek draining into the Hooghly from the left in the vicinity of the city of Kolkata.

Catchment areas under Kolkata-Sundarban Sub-basins

Sl. No.	River Basin	CATCHMENT AREA IN Sq. Km.		TOTAL	Tributaries
		WB	B'desh		
D.	**Sundarban**			**12125**	
1.	Ichamati	2320	1064	**3384**	Jamuna
2.	Bidyadhari	2022		**2022**	Nowai
3.	Sundarban	6719		**6719**	Matla, Raimangal, Thakuran, Gosaba, Malancha
4.	Rivers and Creeks	3,461			
	Sub-Total	**14522**	**1064**		

River Gauges in Ichamati Sub-basin

Sl. No.	Name of River	Name of Gauge Station	Name of District	DL (mGTS)	EDL (mGTS)
1.	Ichamati	RD Setu (Bongaon)	North 24 Parganas	5.08	5.28
2.	Jamuna	Gaighata		3.90	4.50

Rain Gauges in Kolkata-Sundarban Sub-basins

Sl. No.	River Basin	District	Location of Rain Gauge Station	Districtwise Normal Annual Rainfall (mm)
1.	Ichamati	North 24-Parganas	Bangaon	1559.80
2.			Basirhat	
3.	Sundarban	South 24-Parganas	Diamond Harbour	2088.00
4.			Canning	
5.			Sagar Island	
6.	Kolkata Drainage	Kolkata	Dum Dum	1709.20
7.			Alipore	

E. SUBARNAREKHA BASIN

The river Subarnarekha (also called Swarnarekha) though it has small catchment within this state, has got seperate entity as it directly falls into the Bay of Bengal. Originating in the Chhotonagpur Range at an elevation of 609 m, it traverses through three states – Jharkhand, West Bengal and Orissa. It drains a total area of 19,671 sq.km.

One major dam at Chandil and one barrage at Galudi have been constructed across Subarnarekha in Jharkhand. The important tributaries on the right bank of this river are Kanchi and Kharkai which meet Subarnarekha above Chandil dam and another right bank main tributary named as Kharkai meets this river near Jamshedpur upstream of Galudi barrage. Dulung is the main tributary which joins Subarnarekha from its left in the Paschim Medinipur district of West Bengal. The total length of this river is 395 km out of which 83 km lies in West Bengal.

Catchment area under Subarnarekha Basin

Sl. No.	River Basin	CATCHMENT AREA IN Sq. Km.			TOTAL	Tributaries
		WB	JHK	OR		
E.	**Subarnarekha Basin**	**3581**	**13014**	**3076**	**19671**	Kharkai, Rarhu, Kanchi, Damra, Karru, Chinguru, Karakari, Gurma, Garra, Singaduba, Kedia, Shankh, Dulung, Khaijori

River Gauges in Subarnarekha Basin

Sl. No.	Name of River	Name of Gauge Station	Name of District	DL (mGTS)	EDL (mGTS)
1.	Subarnarekha	Gopiballavpur	Paschim Medinipur	46.87	47.40
2.		Sonakonia		16.15	16.75

Rain Gauges in Subarnarekha Basin

Sl. No.	River Basin	District	Location of Rain Gauge Station	Districtwise Normal Annual Rainfall (mm)
1.	Subarnarekha	Ranchi	Ranchi	1403.20
2.		East Shingbhum	Jamshedpur	1292.70
3.		West Shingbhum	Chaibasa	1305.60
4.		Mayurbhanj	Tiring	1660.70
5.		Purba Medinipur	Digha	1669.60

4. RAINFALL

Due to its physical and geographical position, the State of West Bengal has climatological variations as well. The average rainfall in the state is 1750 mm, of which more than 75% occurs during the monsoon period while the hilly regions at the foot hills of Himalaya receive the heaviest rainfall ranging from 2500 mm to 4000 mm. The southern districts in the plains receive average of 1125 mm to 1875 mm.

The main rainfall season in this state is the South-West monsoon season during which the entire land (excepting the extreme north, the extreme north-east and extreme south) gets 75% of the annual rainfall. The gangetic plains of West Bengal get 78% of its annual rainfall during the monsoon period distributed normally between 1st week of June upto the end of September. But during last few years, some parts of West Bengal have experienced premature heavy rainfall in the last week of May causing flood.

However the late withdrawal of monsoon even after second week of October has also been observed during these years.

Normal Rainfall Pattern

The river Ganga divides the state into two parts, which are by and large homogeneous from the meteorological point of view. The northern half is designated as 'Sub-Himalayan West Bengal' and the southern half as 'Gangetic West Bengal'. Sub-Himalayan West Bengal is more susceptible to heavy rains both in respect of amount as well as in frequency of occurance.

Very heavy rain is more frequent in first two months (June and July) than in subsequent, in the Sub-Himalayan West Bengal. In Gangetic West Bengal the frequency is maximum in August followed by June, July and September in that order.

On the basis of rainfall distribution, the state can be divided into two broad zones –

(i) The Himalayan and Sub-Himalayan Region

(ii) The Gangetic Plains

i) Himalayan and Sub-Himalayan Region

The Himalayan and Sub-Himalayan Region comprising the districts- Darjeeling, Jalpaiguri, Coochbehar and Northern part of Islampur Sub-Division of Uttar Dinajpur district of high intensity of rainfall from 2000 mm. to over 4000 mm. about 80% of which is found to occur during monsoon season. On the average Darjeeling, Coochbehar and Jalpaiguri get 114, 112, 110 rainy days respectively in a year.

The monsoon generally follows a northernly track to ultimately break up against Eastern Himalaya causing very heavy rainfall and thereafter trough of low pressure under break monsoon conditions. It then shifts northwards to the Himalayan foothills. It has been found that a precipitation to the tune of 200 to 300 mm. in two hours is not unusual while in more than forty occasions of rainfall of 250 mm. and above have been registered during 1891-1965.

ii) Gangetic Plains

The gangetic plains which constitute the major portion of the state, can be further sub-divided into the following three sectors on the basis of average rainfall –

Sector – I: Comprising districts – Bankura, Burdwan, Hooghly, Nadia and Purulia which receive an average rainfall – between 1140 mm and 1400 mm.

Sector – II: Comprising districts – Birbhum, Midnapore, Murshidabad and North 24-Parganas having an average annual rainfall between 1400 mm and 1650 mm.

Sector – III: Comprising districts – Howrah and South 24-Parganas having an average annual rainfall – between 1650 mm and 1900 mm.

Such regional variations in the precipitation pattern causes flood conditions from time to time.

Rainfall in 2014

For the country as a whole, the rainfall for the season (June-September) was 88% of its long period average (LPA) and the same was 79% of its LPA over North-East (NE) India.

West Bengal received 11% less rainfall than its average monthly rainfall during monsoon period i.e. during the month from June to September, 2014. The departures of average monthly rainfall for the State are: -7% in June, -24% in July, -0.30% in August & -11% in September. The post monsoon rainfall was also very poor with the 65% below normal during October, 2014.

Districtwise seasonal rainfall and corresponding departures in the Sub-Himalayan and Gangetic West Bengal is given in the following table.

District wise Seasonal Rainfall in Sub-Himalayan West Bengal during the Year 2014

Sl. No.	District	Seasonal Rainfall (mm)								
		Pre-Monsoon		Dep (%)	Monsoon		Dep (%)	Post-Monsoon		Dep (%)
		Actual	Normal		Actual	Normal		Actual	Normal	
1.	Cooch Behar	399.90	541.40	-26	1873.30	2737.60	-32	27.90	164.70	-83
2.	Dajeeling	367.80	532.60	-31	2153.00	2440.30	-12	66.10	145.60	-55
3.	Jalpaiguri	519.00	525.30	-1	2804.60	2752.90	2	43.10	185.10	-77
4.	Malda	212.40	179.60	18	889.40	1117.30	-20	21.90	122.50	-82
5.	North Dinajpur	243.40	230.10	6	1225.00	1394.50	-12	2.20	103.00	-98
6.	South Dinajpur	169.00	267.90	-37	807.90	1185.90	-32	28.50	131.10	-78
	Total	1911.50	2276.90	**-16**	9753.20	11628.50	**-16**	189.70	852.00	**-78**

*Dep = Departure

*Source: IMD

District wise Seasonal Rainfall in Gangetic West Bengal during the Year 2014										
Sl. No.	District	Seasonal Rainfall (mm)								
		Pre-Monsoon		Dep (%)	Monsoon		Dep (%)	Post-Monsoon		Dep (%)
		Actual	Normal		Actual	Normal		Actual	Normal	
1.	Bankura	135.10	155.20	-13	889.30	1051.20	-15	53.80	124.50	-57
2.	Birbhum	148.80	160.30	-7	984.80	1106.00	-11	11.00	126.50	-91
3.	Burdwan	143.50	169.30	-15	970.20	1028.70	-6	24.40	117.20	-79
4.	Purba Medinipur	233.90	209.10	12	1399.00	1220.30	15	91.30	240.20	-62
5.	Hooghly	142.20	225.80	-37	939.20	1067.90	-12	34.40	125.00	-72
6.	Howrah	177.40	248.10	-28	1027.80	1211.40	-15	25.90	140.50	-82
7.	Kolkata	160.30	239.10	-33	1205.20	1281.10	-6	65.60	189.00	-65
8.	Murshidabad	174.30	168.00	4	983.80	1079.30	-9	15.60	143.80	-89
9.	Nadia	160.10	188.20	-15	880.20	955.00	-8	56.70	118.40	-52
10.	North 24-Parganas	157.80	228.60	-31	1062.10	1172.80	-9	44.60	158.40	-72
11.	Purulia	151.50	153.00	-1	816.20	1094.50	-25	58.30	115.80	-50
12.	South 24-Parganas	260.30	245.00	6	1204.50	1552.60	-22	111.10	290.40	-62
13.	Paschim Medinipur	220.80	239.70	-8	891.50	1166.10	-24	71.40	129.70	-45
	Total	2266.00	2629.40	**-14**	13253.80	14986.90	**-12**	664.10	2019.40	**-67**

*Dep = Departure *Source:IMD

Districtwise monthly rainfall in West Bengal has been given in Annexure-RF1 to RF4.

5. REPORT ON FLOOD SEASON 2014

This year no significant flood spell occurred in different river systems for the entire State except some incidents of nominal flooding and local waterlogging due to effect of high tides in the tidal zones of both 24-Parganas and Purba Medinipur districts. It has been observed from IMD rainfall data, that during Monsoon, 2014 (between June to September) North Bengal received **15% less** precipitation while South Bengal received **16% less** precipitation than the expected normal rainfalls.

Average monthly rainfall in most of the districts of West Bengal during monsoon was below normal and consequently the water levels in most of the rivers were substantially below the corresponding Danger Levels (DL). Variation of water levels in some important rivers during the flood season 2014 are given in Annexure-G1 to G18.

Discharge data have been collected during flood season for river Ajay, Damodar (Amta Channel) and Kangsabati at gauge stations namely Amuliaghat, Champadanga and Kapastikri respectively. These data are given in Annexure-GD1 to GD4.

This year Pre-monsoon and Monsoon rainfall were much less than that of the previous year. The following table shows a comparison between percentage departures of rainfall occurred during May to October'2013 and 2014.

District wise Monthly Rainfall Departures in West Bengal during the Year 2013 and 2014

Sl. No.	District	Rainfall Departure (%)											
		May		June		July		August		September		October	
		2013	2014	2013	2014	2013	2014	2013	2014	2013	2014	2013	2014
1.	Bankura	412	27	72	-60	-4	3	27	12	8	-32	278	-49
2.	Birbhum	94	3	-26	-20	-46	25	16	-4	-45	-52	212	-90
3.	Burdwan	122	-5	6	18	-51	-5	20	-9	0	-22	243	-76
4.	Purba Medinipur	85	62	-19	-27	1	34	61	44	14	0	143	-54
5.	Hooghly	-14	-28	-8	-10	-30	-24	8	10	-23	-22	177	-66
6.	Howrah	-21	-18	-2	-31	-10	-34	67	10	-18	-8	256	-76
7.	Kolkata	8	-11	43	-20	-9	4	103	-15	11	5	237	-58
8.	Murshidabad	121	60	-27	-23	-65	-38	21	-7	-24	10	62	-88
9.	Nadia	57	-3	-20	-5	-33	27	39	0	-25	2	124	-43
10.	North 24-Parganas	90	-1	29	-13	-11	-16	23	-15	-36	-20	158	-67
11.	Purulia	413	54	-10	-34	-17	8	-1	-30	-12	-29	375	-36
12.	South 24-Parganas	62	52	12	-32	-22	-38	49	-16	-13	-11	78	-50
13.	Paschim Medinipur	103	32	-19	-35	22	-10	12	-12	16	-40	268	-33
14.	Cooch Behar	-30	-1	-34	-1	-17	-43	-52	-39	-24	24	29	-85
15.	Dajeeling	68	18	1	39	-4	-52	-17	28	-31	-10	89	-52
16.	Jalpaiguri	-7	31	-5	10	17	-66	-11	36	0	0	26	-77
17.	Malda	-38	43	6	22	-52	-1	25	-14	-49	-6	116	-81
18.	North Dinajpur	-27	24	9	-17	-14	-33	18	-7	-50	-37	87	-98
19.	South Dinajpur	-50	-24	-30	13	-52	-100	12	5	-46	-1	68	-75

*Dep = Departure *Source:IMD

As a result at the time of beginning of flood season, reservoirs were empty enough to absorb most of the monsoon inflows without any substantial release from the dams and barrages. Moreover Post-Monsoon rainfall in October was much below the normal. This season there was no such incident of continuous and concentrated heavy rainfall due to the effect of Cyclone or Depression which usually occur during the period

from mid-September to mid-October in the upper catchment areas of DVC, Kangsabati or Mayurakshi reservoir systems distributed within the districts of Bankura, Purulia, Paschim Medinipur or Birbhum of West Bengal or in neighboring Jharkhand State.

The Inflow-Outflow and water level data of important Dams and Barrages are given in Annexure-D1 to D4. During this year the maximum outflow released from Durgapur barrage under DVC system was only 65,130 cusecs on 7th July and 73,463 cusecs on 16th August. Similarly maximum flash flood discharge passing through Ex-Galudi barrage over river Subarnarekha was only 1, 34,216 cusecs on 27th July and 1, 08,970 cusecs on 20th September. There was no incident of flood release either from Kangsabati or Mayurakshi reservoirs.

Nominal flooding occurred due to effect of high tidal surge resulting breach and washing out of embankments in some places of Sundarban areas. Apart from these, inundation of unprotected area due to rise in the water level of river Ganga occurred in Malda and periodical inundation of countryside occurred in some areas due to overtopping of embankment of Dakatia khal in the Hooghly district.

The catchment area of Rasulpur river system has experienced inundation due to waterlogging. Synchronisation of heavy rainfall (total 496.50 mm from 03/08/2014 to 09/08/2014) and tidal lockage at the outfall have resulted drainage congestion within different blocks of Contai Sub-division under Purba Medinipur district. A districtwise statement of flood inundation occurred during the flood season, 2014 is given in the table below. Index map showing the location of inundation is given in Annexure-IM.

Line diagram of flood warning system for some important river Sub-basins are given under Annexure-X1 to X4.

The index map of all the river Sub-basins showing catchment areas, location of rain gauges and river gauges, dams and barrages are given in the Annexure-I1 to I25.

Normal damages in the nature of rain cuts, ghoghs, slips, subsidence, erosion to the embankments, damages to the existing protection works and hydraulic structures had occurred in this season for different rivers specially in North Bengal. Such damages as listed under the jurisdiction of different Divisions of Irrigation & Waterways Department which have been given in the Annexure-FD1 to FD19.

Flood Inundation Area during 2014

Sl. No.	River	District	Block	Affected Mouza	Period of Occurrence	Inundation Area (sq.km)
1.	Muriganga	South 24-Parganas	Sagar	Sumatinagar , Muruganga	11.07.14 To 15.07.14	1.40
			Namkhana	Bagdanga, Kusumtala & Baliara		2.10
2.	Chinar Gang			Debnagar		0.25
3.	Hatania-Doania			Dwaikanagar		0.18
4.	Benti		Sandeshkhali-I	NA	12.08.14	12.00
5.	Baro Kalagachi	North 24-Parganas	Sandeshkhali-II	NA	24.08.14	6.00
6.	Raimangal		Hingalganj	NA	14.10.14	2.00
7.	Dakatia	Hooghly	Tarakeswar & Hariapl	NA	17.08.14	8.41
8.	Contai Nullah	Purba Medinipur	Contai-II	NA		
8.	Ganga	Malda	Manikchak	NA	04.08.14 to 05.09.14	9.00
9.	Gangadhar	Cooch-behar	Tufanganj-II	Bhanukumari	16.08.14	5.00
10.	Rasulpur	Purba Medinipur	Contai-I, II & III, Egra-II, Ramnagar-II & Khejuri-I	NA	03.08.14 to 09.08.14	116.00
					Total	**162.34**

6. CONCLUSION

The West Bengal is basically recipient of run-off generated outside the state. The state has typical basin characteristics. In the north the rainfall is high and the ground slope is steep mainly in the Sub-Himalayan region. The rivers in the Terai region are wide with shallow depth. Due to continuous denudation of forest cover, Dolomite mining in the hills, the silt loads are continuously deposited in the river beds, reducing the carrying capacity of the rivers causing the flood. In the South & Central Region heavy rainfall and run-off coming from the upper catchment cause drainage congestion and inundation due to very flat ground slope of the regions.

Main structural measures of flood control in West Bengal are embankments measuring 10000 km. (approx.) spread over different river systems, constructed over the years. There are major dams across the river Kangsabati, Mayurakshi and Damodar river system. But only in the Damodar system, moderation of the dams during the peak flood is possible to some extent. The other structural measures like catchment area treatment and afforestation in upper catchment require intervention at Government of India level as they are outside the state.

In North Bengal, an elaborate flood warning system maintained by the department warns the people about the trend of rise of the rivers and thus alarms them to take necessary safety measures. In Central & South Bengal the water level of different rivers together with their danger & extreme danger levels and releases from different dams and reservoirs are intimated to different authorities from time to time during rainy season.

Besides, the department also continuously maintains close liaison with the Regional Meteorological Centre (RMC), Kolkata and follows Indian Meteorological Department (IMD) web-site in order to collect information on adverse weather condition during the monsoon period and accordingly adopt suitable flood fighting measures. Central Water Commission (CWC) also extends their co-operation by providing the different river gauge as well as rain gauge data under their jurisdiction.

Besides the department has already opened its own website (***www.wbiwd.gov.in***) to make available daily rainfall data and river gauge levels with trend at different stations.

The flood management of the state is a critical problem. The problem cannot be tackled by the state government alone. It requires close liaison with different organizations. The flood awareness, particularly understanding about the complexity of the causes of flood and vulnerability of West Bengal will require help of NGO's and Panchayet Raj Institutions. The flood is a problem to be admitted by the society and the people of an area are to formulate their own action plan in close liaison with different Government organizations.

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ANNEXURE-RF1

Sl. No.	District	District wise Monthly Rainfall (mm) in 2014								
		Jan		Dep (%)	Feb		Dep (%)	Mar		Dep (%)
		Actual	Normal		Actual	Normal		Actual	Normal	
	Sub-Himalayan region									
1	Cooch Behar	0.80	12.00	**-93**	38.30	18.00	**113**	8.00	22.00	**-64**
2	Dajeeling	3.80	13.40	**-72**	35.40	16.10	**120**	28.50	21.20	**34**
3	Jalpaiguri	1.10	10.70	**-90**	35.10	22.20	**58**	32.00	19.80	**62**
4	Malda	0.00	15.90	**-100**	50.30	18.60	**170**	6.50	31.80	**-80**
5	North Dinajpur	0.00	11.90	**-100**	44.00	26.60	**65**	19.50	28.20	**-31**
6	South Dinajpur	0.10	12.20	**-99**	54.20	24.90	**118**	19.50	32.00	**-39**
	Total	5.80	76.10	**-92**	257.30	126.40	**104**	114.00	155.00	**-26**
	Gangetic Plains									
1	Bankura	1.00	14.40	**-93**	41.50	24.70	**68**	16.30	33.50	**-51**
2	Birbhum	0.30	16.80	**-98**	30.70	11.20	**174**	4.40	19.00	**-77**
3	Burdwan	0.80	12.20	**-93**	50.20	17.60	**185**	17.10	21.10	**-19**
4	Purba Medinipur	0.00	15.60	**-100**	25.30	17.80	**42**	19.90	30.30	**-34**
5	Hooghly	1.40	14.30	**-90**	34.10	20.70	**65**	25.50	24.60	**4**
6	Howrah	0.00	13.60	**-100**	49.80	26.70	**87**	20.20	37.90	**-47**
7	Kolkata	0.00	12.20	**-100**	52.50	24.10	**118**	19.60	39.00	**-50**
8	Murshidabad	0.30	8.90	**-97**	19.60	16.00	**23**	23.80	32.20	**-26**
9	Nadia	0.10	48.30	**-100**	10.30	33.80	**-70**	20.50	57.70	**-64**
10	North 24-Parganas	0.40	9.20	**-96**	27.10	17.80	**52**	13.60	39.70	**-66**
11	Purulia	0.30	13.60	**-98**	54.40	10.50	**418**	1.40	14.50	**-90**
12	South 24-Parganas	0.60	21.50	**-97**	34.10	2.00	**1605**	4.40	8.00	**-45**
13	Paschim Medinipur	0.00	8.90	**-100**	25.80	13.30	**94**	0.10	19.00	**-99**
	Total	5.20	209.50	**-98**	455.40	236.20	**93**	186.80	376.50	**-50**

*Dep = Departure

*Source: IMD

ANNEXURE-RF2

Sl. No.	District	District wise Monthly Rainfall (mm) in 2014								
		April		Dep (%)	May		Dep (%)	June		Dep (%)
		Actual	Normal		Actual	Normal		Actual	Normal	
	Sub-Himalayan region									
1	Cooch Behar	3.30	36.30	**-91**	84.70	66.90	**27**	85.70	215.00	**-60**
2	Dajeeling	0.20	30.90	**-99**	80.90	78.70	**3**	177.30	222.30	**-20**
3	Jalpaiguri	0.70	37.80	**-98**	74.60	78.80	**-5**	233.90	198.20	**18**
4	Malda	1.50	34.70	**-96**	175.60	108.10	**62**	184.50	253.50	**-27**
5	North Dinajpur	0.10	50.60	**-100**	78.60	108.50	**-28**	218.30	243.40	**-10**
6	South Dinajpur	0.00	52.60	**-100**	103.60	126.40	**-18**	161.80	233.20	**-31**
	Total	5.80	242.90	**-98**	598.00	567.40	**5**	1061.50	1365.60	**-22**
	Gangetic Plains									
1	Bankura	0.10	53.10	**-100**	101.40	113.40	**-11**	223.50	278.30	**-20**
2	Birbhum	0.00	34.00	**-100**	138.90	87.00	**60**	183.60	237.60	**-23**
3	Burdwan	0.00	42.10	**-100**	92.00	95.20	**-3**	221.40	234.10	**-5**
4	Purba Medinipur	0.00	51.50	**-100**	112.60	113.40	**-1**	237.90	271.90	**-13**
5	Hooghly	2.30	36.10	**-94**	88.20	57.30	**54**	146.10	222.10	**-34**
6	Howrah	0.00	41.70	**-100**	190.30	125.10	**52**	214.20	316.00	**-32**
7	Kolkata	6.30	56.80	**-89**	142.40	107.60	**32**	158.40	243.80	**-35**
8	Murshidabad	14.90	138.90	**-89**	341.30	345.40	**-1**	662.50	668.80	**-1**
9	Nadia	26.90	130.50	**-79**	310.00	262.30	**18**	744.10	534.70	**39**
10	North 24-Parganas	32.40	119.30	**-73**	445.50	339.30	**31**	732.90	667.30	**10**
11	Purulia	4.20	34.80	**-88**	152.10	106.20	**43**	263.30	216.60	**22**
12	South 24-Parganas	2.80	35.70	**-92**	201.50	162.90	**24**	261.70	316.00	**-17**
13	Paschim Medinipur	15.90	58.90	**-73**	127.20	167.80	**-24**	325.80	289.30	**13**
	Total	105.80	833.40	**-87**	2443.40	2082.90	**17**	4375.40	4496.50	**-3**

*Dep = Departure

*Source: IMD

ANNEXURE-RF3

Sl. No.	District	District wise Monthly Rainfall (mm) in 2014								
		July		Dep (%)	August		Dep (%)	September		Dep (%)
		Actual	Normal		Actual	Normal		Actual	Normal	
	Sub-Himalayan region									
1	Cooch Behar	313.70	303.20	**3**	325.80	290.70	**12**	164.10	242.30	**-32**
2	Dajeeling	391.60	313.90	**25**	285.70	298.80	**-4**	130.20	271.00	**-52**
3	Jalpaiguri	280.60	294.10	**-5**	260.40	285.30	**-9**	195.30	251.10	**-22**
4	Malda	381.90	284.90	**34**	489.10	338.70	**44**	343.50	343.20	**0**
5	North Dinajpur	239.90	316.10	**-24**	290.50	265.10	**10**	190.50	243.30	**-22**
6	South Dinajpur	224.90	343.20	**-34**	360.70	329.40	**10**	280.40	305.60	**-8**
	Total	1832.60	1855.40	**-1**	2012.20	1808.00	**11**	1304.00	1656.50	**-21**
	Gangetic Plains									
1	Bankura	376.00	361.00	**4**	283.60	335.20	**-15**	322.10	306.60	**5**
2	Birbhum	280.10	328.60	**-15**	237.80	256.90	**-7**	282.30	256.20	**10**
3	Burdwan	203.10	270.80	**-25**	236.90	236.00	**0**	218.80	214.10	**2**
4	Purba Medinipur	343.40	317.20	**8**	258.00	304.30	**-15**	222.80	279.40	**-20**
5	Hooghly	266.90	298.70	**-11**	214.80	307.00	**-30**	188.40	266.70	**-29**
6	Howrah	323.20	463.60	**-30**	349.20	416.20	**-16**	317.90	356.80	**-11**
7	Kolkata	288.30	329.50	**-13**	279.10	316.00	**-12**	165.70	276.80	**-40**
8	Murshidabad	296.40	864.90	**-66**	449.20	733.00	**-39**	585.40	470.90	**24**
9	Nadia	490.10	756.90	**-35**	827.60	645.90	**28**	453.40	502.80	**-10**
10	North 24-Parganas	366.40	931.40	**-61**	910.80	670.90	**36**	485.40	483.30	**0**
11	Purulia	315.10	332.90	**-5**	244.80	284.80	**-14**	267.30	283.00	**-6**
12	South 24-Parganas	330.20	367.00	**-10**	286.10	307.70	**-7**	255.80	403.80	**-37**
13	Paschim Medinipur	245.90	368.90	**-33**	259.60	248.00	**5**	275.80	279.70	**-1**
	Total	4125.10	5991.40	**-31**	4837.50	5061.90	**-4**	4041.10	4380.10	**-8**

*Dep = Departure

*Source: IMD

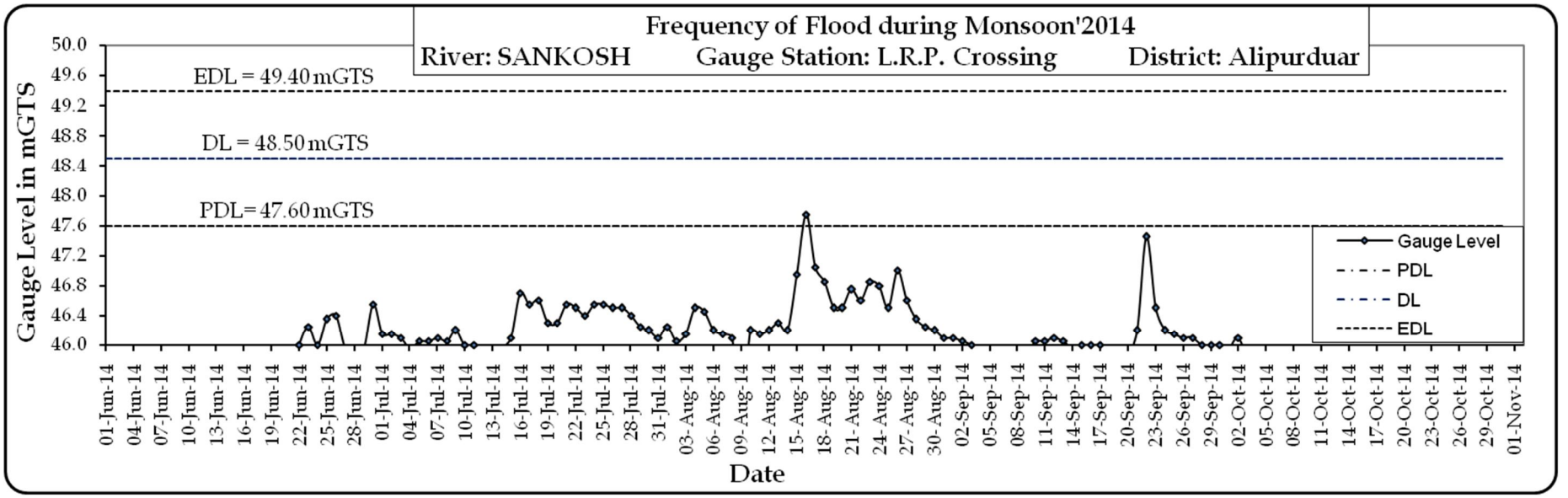
ANNEXURE-RF4

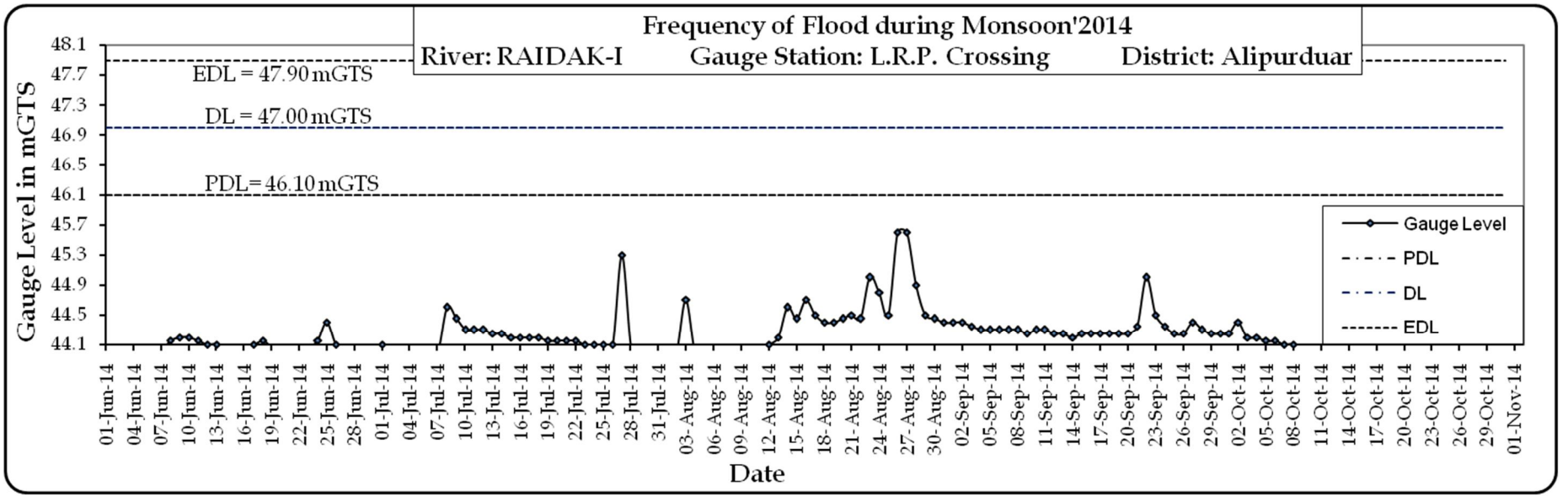
Sl. No.	District	District wise Monthly Rainfall (mm) in 2014								
		Oct		Dep (%)	Nov		Dep (%)	Dec		Dep (%)
		Actual	Normal		Actual	Normal		Actual	Normal	
	Sub-Himalayan region									
1	Cooch Behar	53.20	105.20	**-49**	0.00	9.80	**-100**	0.60	9.50	**-94**
2	Dajeeling	10.20	105.10	**-90**	0.00	15.80	**-100**	0.80	5.60	**-86**
3	Jalpaiguri	23.90	99.80	**-76**	0.00	11.40	**-100**	0.50	6.00	**-92**
4	Malda	91.20	196.90	**-54**	0.00	34.00	**-100**	0.10	9.30	**-99**
5	North Dinajpur	34.40	102.10	**-66**	0.00	16.00	**-100**	0.00	6.90	**-100**
6	South Dinajpur	24.00	99.10	**-76**	0.00	31.30	**-100**	1.90	10.10	**-81**
	Total	236.90	708.20	**-67**	0.00	118.30	**-100**	3.90	47.40	**-92**
	Gangetic Plains									
1	Bankura	65.50	155.30	**-58**	0.00	24.80	**-100**	0.10	8.90	**-99**
2	Birbhum	15.60	126.30	**-88**	0.00	11.00	**-100**	0.00	6.50	**-100**
3	Burdwan	56.70	100.20	**-43**	0.00	10.40	**-100**	0.00	7.80	**-100**
4	Purba Medinipur	42.70	130.90	**-67**	0.00	21.80	**-100**	1.90	5.70	**-67**
5	Hooghly	58.30	91.50	**-36**	0.00	16.70	**-100**	0.00	7.60	**-100**
6	Howrah	109.70	218.40	**-50**	0.50	62.30	**-99**	0.90	9.70	**-91**
7	Kolkata	71.40	106.50	**-33**	0.00	17.90	**-100**	0.00	5.30	**-100**
8	Murshidabad	21.50	141.30	**-85**	0.00	15.10	**-100**	0.10	8.30	**-99**
9	Nadia	56.80	118.90	**-52**	4.90	16.80	**-71**	1.00	9.90	**-90**
10	North 24-Parganas	36.50	159.90	**-77**	3.70	18.00	**-79**	0.20	7.20	**-97**
11	Purulia	19.10	102.50	**-81**	0.00	13.20	**-100**	0.00	6.80	**-100**
12	South 24-Parganas	2.20	90.70	**-98**	0.00	9.10	**-100**	0.00	3.20	**-100**
13	Paschim Medinipur	28.50	112.50	**-75**	0.00	13.00	**-100**	0.00	5.60	**-100**
	Total	584.50	1654.90	**-65**	9.10	250.10	**-96**	4.20	92.50	**-95**

*Dep = Departure

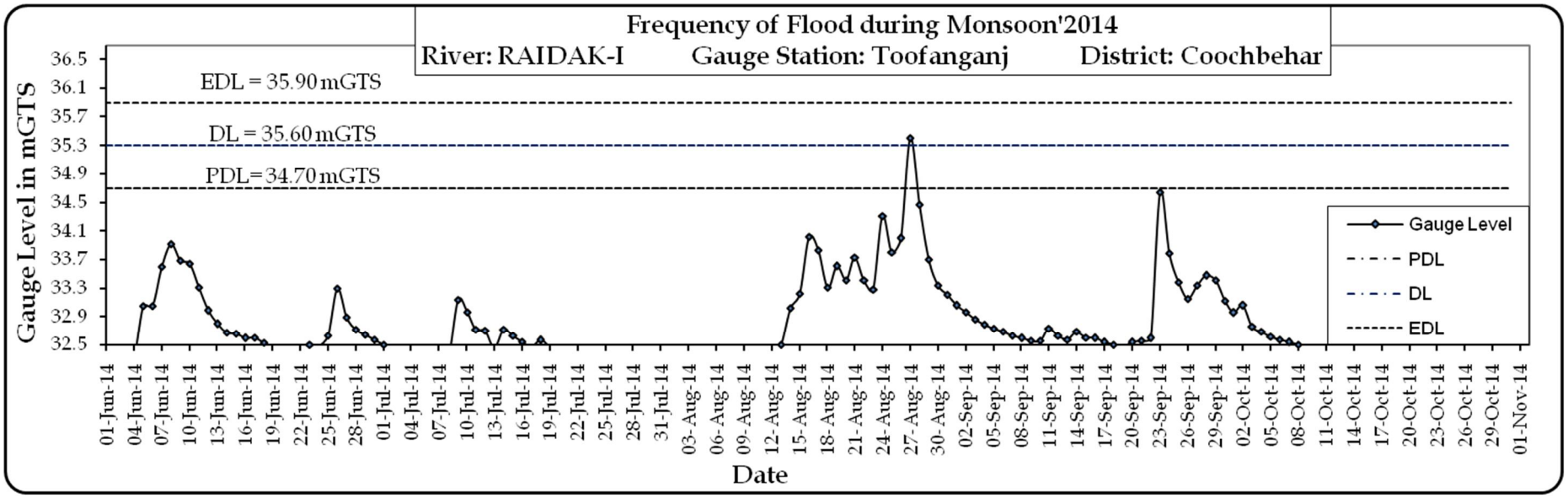
*Source: IMD

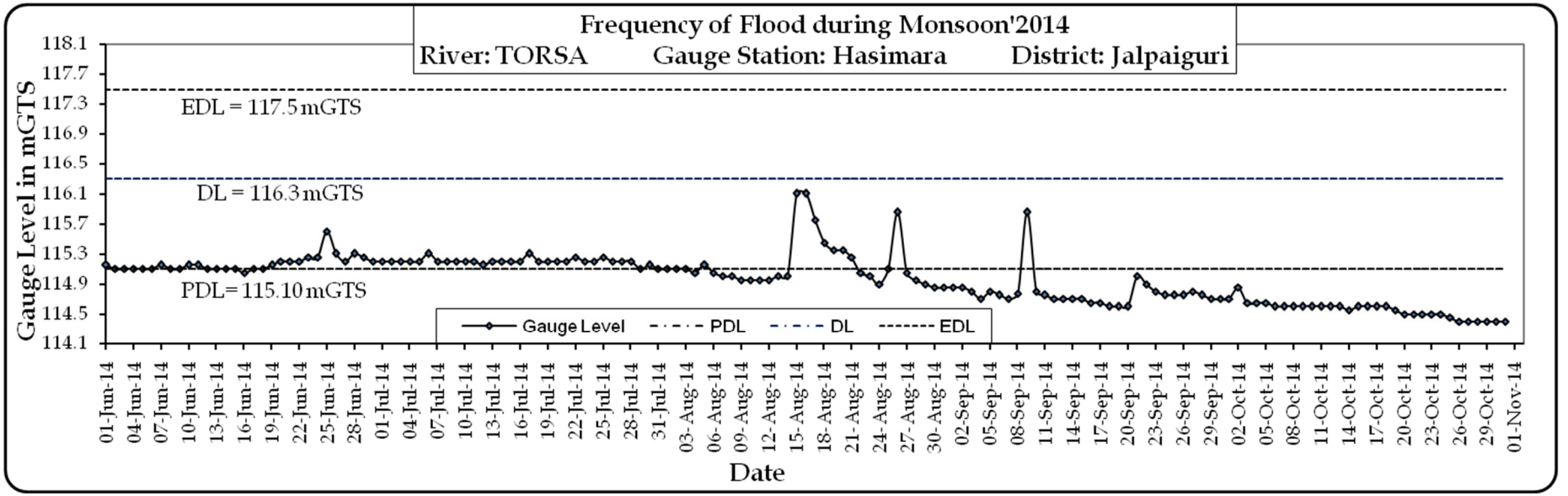
ANNEXURE-G1


Frequency of Flood during Monsoon'2014
River: SANKOSH
Gauge Station: L.R.P. Crossing
District: Alipurduar
EDL = 49.40 mGTS
DL = 48.50 mGTS
PDL= 47.60 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date

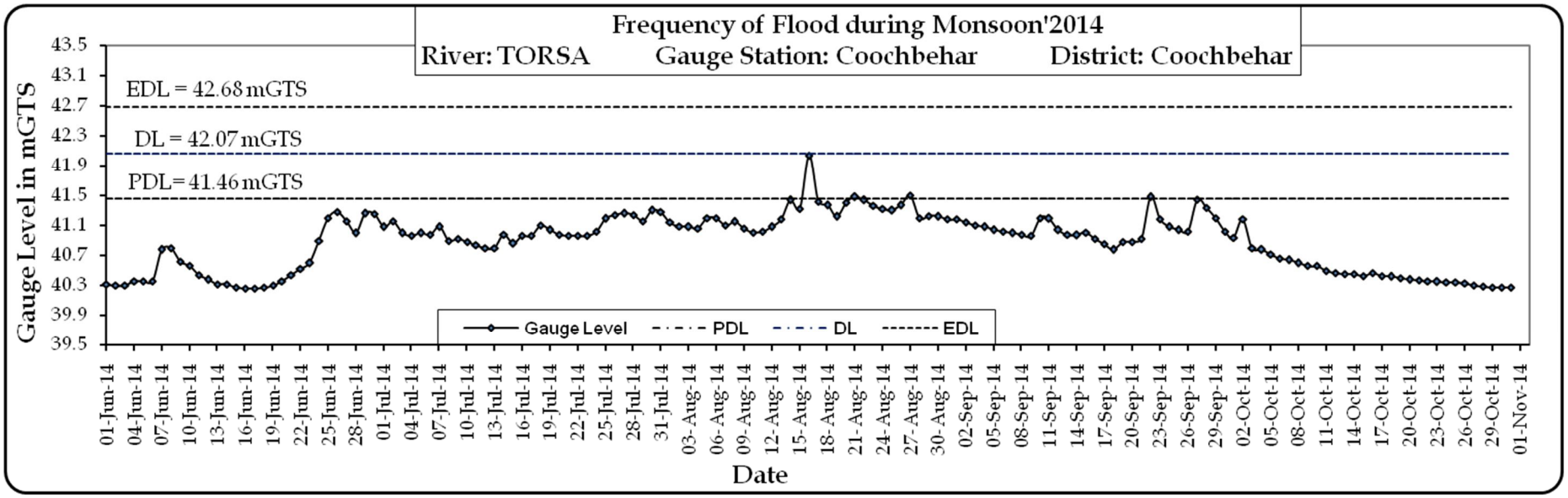

Frequency of Flood during Monsoon'2014
River: RAIDAK-I
Gauge Station: L.R.P. Crossing
District: Alipurduar
EDL = 47.90 mGTS
DL = 47.00 mGTS
PDL= 46.10 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date

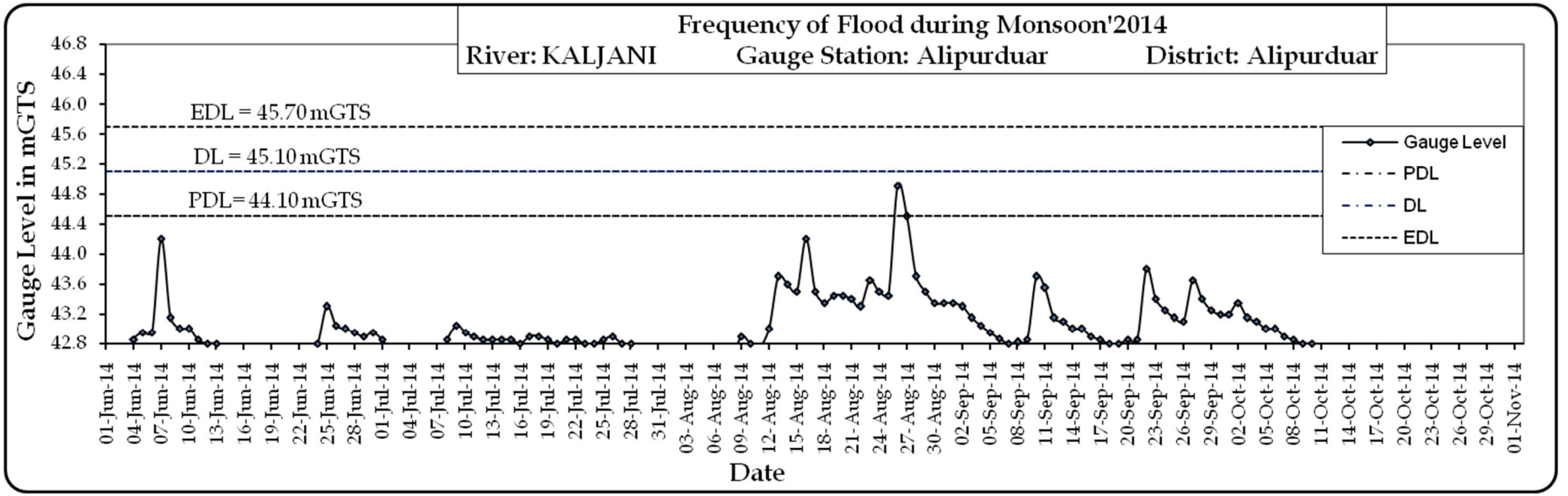
ANNEXURE-G2


Frequency of Flood during Monsoon'2014
River: RAIDAK-I
Gauge Station: Toofanganj
District: Coochbehar
EDL = 35.90 mGTS
DL = 35.60 mGTS
PDL=34.70 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date

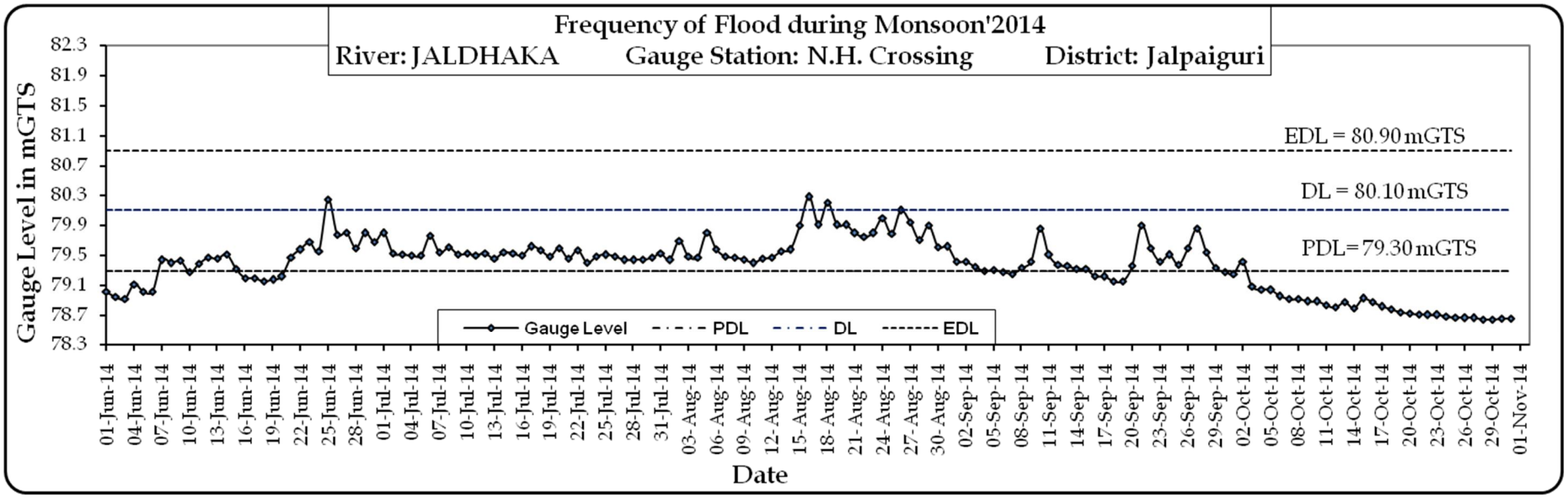

Frequency of Flood during Monsoon'2014
River: TORSA
Gauge Station: Hasimara
District: Jalpaiguri
EDL = 117.5 mGTS
DL = 116.3 mGTS
PDL=115.10 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date

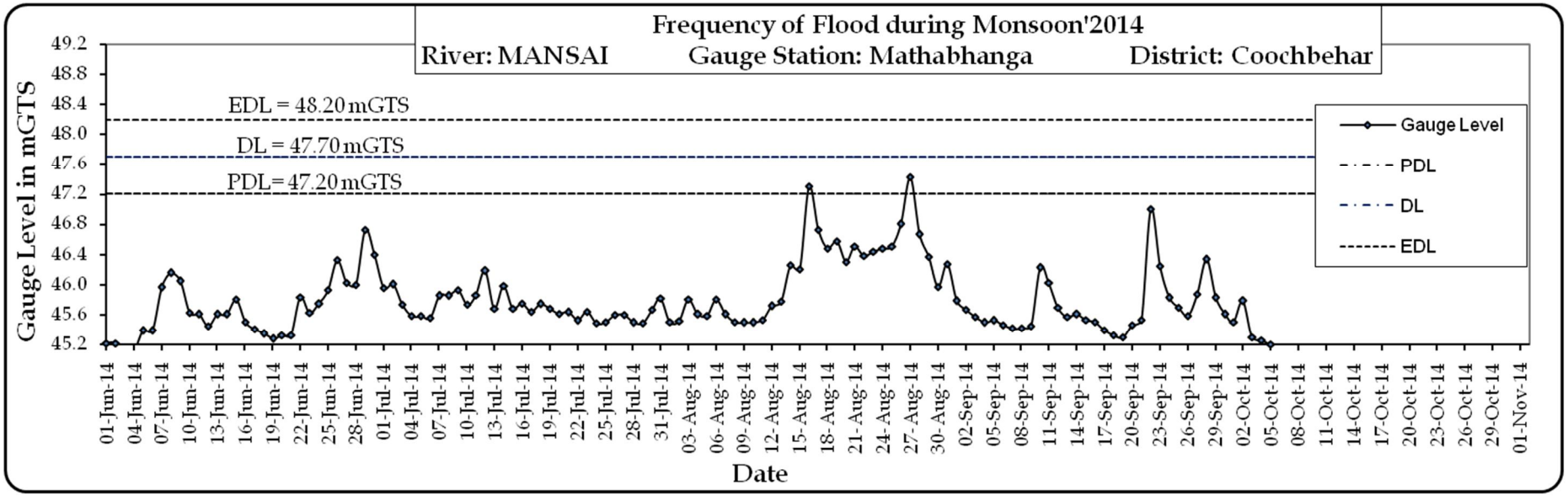
ANNEXURE-G3


Frequency of Flood during Monsoon'2014
River: TORSA
Gauge Station: Coochbehar
District: Coochbehar
EDL = 42.68 mGTS
DL = 42.07 mGTS
PDL= 41.46 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

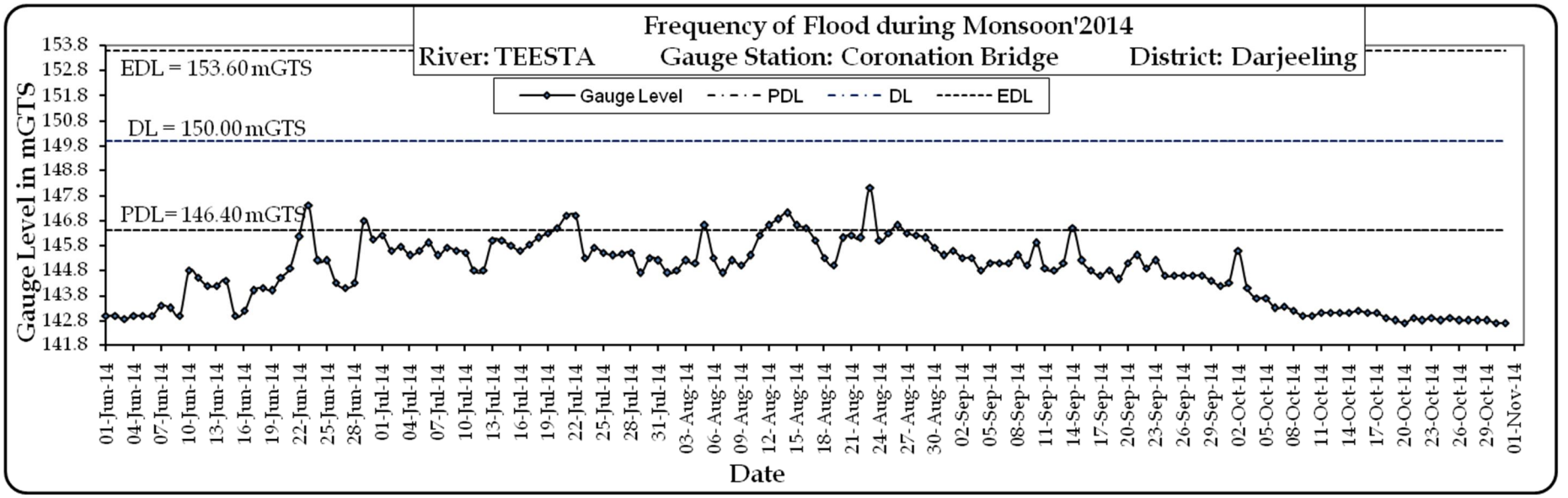

Frequency of Flood during Monsoon'2014
River: KALJANI
Gauge Station: Alipurduar
District: Alipurduar
EDL = 45.70 mGTS
DL = 45.10 mGTS
PDL= 44.10 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

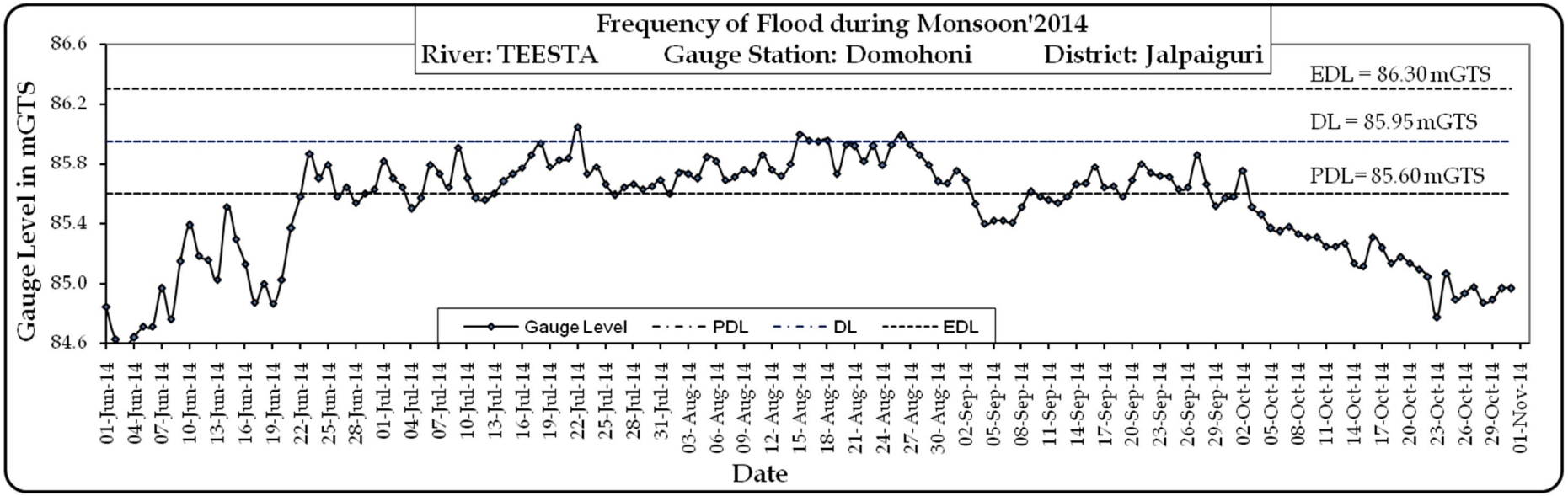
ANNEXURE-G4


Frequency of Flood during Monsoon'2014
River: JALDHAKA
Gauge Station: N.H. Crossing
District: Jalpaiguri
Gauge Level in mGTS
82.3
81.9
81.5
81.1
80.7
80.3
79.9
79.5
79.1
78.7
78.3
EDL = 80.90 mGTS
DL = 80.10 mGTS
PDL= 79.30 mGTS
Gauge Level
PDL
DL
EDL
01-Jun-14
04-Jun-14
07-Jun-14
10-Jun-14
13-Jun-14
16-Jun-14
19-Jun-14
22-Jun-14
25-Jun-14
28-Jun-14
01-Jul-14
04-Jul-14
07-Jul-14
10-Jul-14
13-Jul-14
16-Jul-14
19-Jul-14
22-Jul-14
25-Jul-14
28-Jul-14
31-Jul-14
03-Aug-14
06-Aug-14
09-Aug-14
12-Aug-14
15-Aug-14
18-Aug-14
21-Aug-14
24-Aug-14
27-Aug-14
30-Aug-14
02-Sep-14
05-Sep-14
08-Sep-14
11-Sep-14
14-Sep-14
17-Sep-14
20-Sep-14
23-Sep-14
26-Sep-14
29-Sep-14
02-Oct-14
05-Oct-14
08-Oct-14
11-Oct-14
14-Oct-14
17-Oct-14
20-Oct-14
23-Oct-14
26-Oct-14
29-Oct-14
01-Nov-14
Date

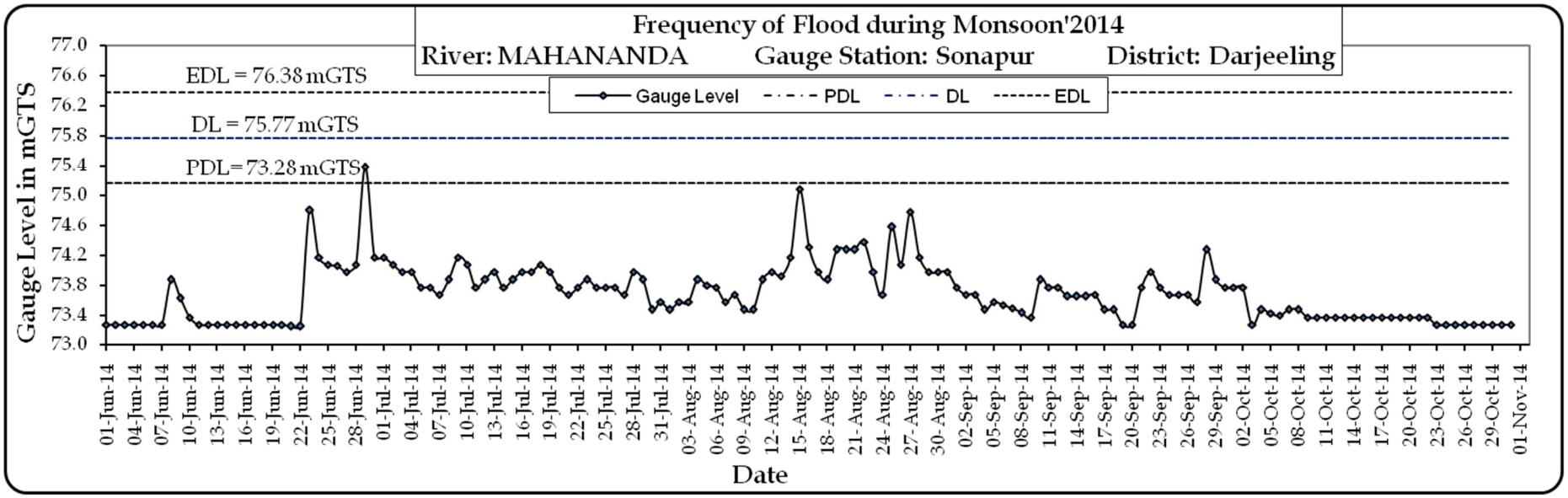

Frequency of Flood during Monsoon'2014
River: MANSAI
Gauge Station: Mathabhanga
District: Coochbehar
Gauge Level in mGTS
49.2
48.8
48.4
48.0
47.6
47.2
46.8
46.4
46.0
45.6
45.2
EDL = 48.20 mGTS
DL = 47.70 mGTS
PDL= 47.20 mGTS
Gauge Level
PDL
DL
EDL
01-Jun-14
04-Jun-14
07-Jun-14
10-Jun-14
13-Jun-14
16-Jun-14
19-Jun-14
22-Jun-14
25-Jun-14
28-Jun-14
01-Jul-14
04-Jul-14
07-Jul-14
10-Jul-14
13-Jul-14
16-Jul-14
19-Jul-14
22-Jul-14
25-Jul-14
28-Jul-14
31-Jul-14
03-Aug-14
06-Aug-14
09-Aug-14
12-Aug-14
15-Aug-14
18-Aug-14
21-Aug-14
24-Aug-14
27-Aug-14
30-Aug-14
02-Sep-14
05-Sep-14
08-Sep-14
11-Sep-14
14-Sep-14
17-Sep-14
20-Sep-14
23-Sep-14
26-Sep-14
29-Sep-14
02-Oct-14
05-Oct-14
08-Oct-14
11-Oct-14
14-Oct-14
17-Oct-14
20-Oct-14
23-Oct-14
26-Oct-14
29-Oct-14
01-Nov-14
Date

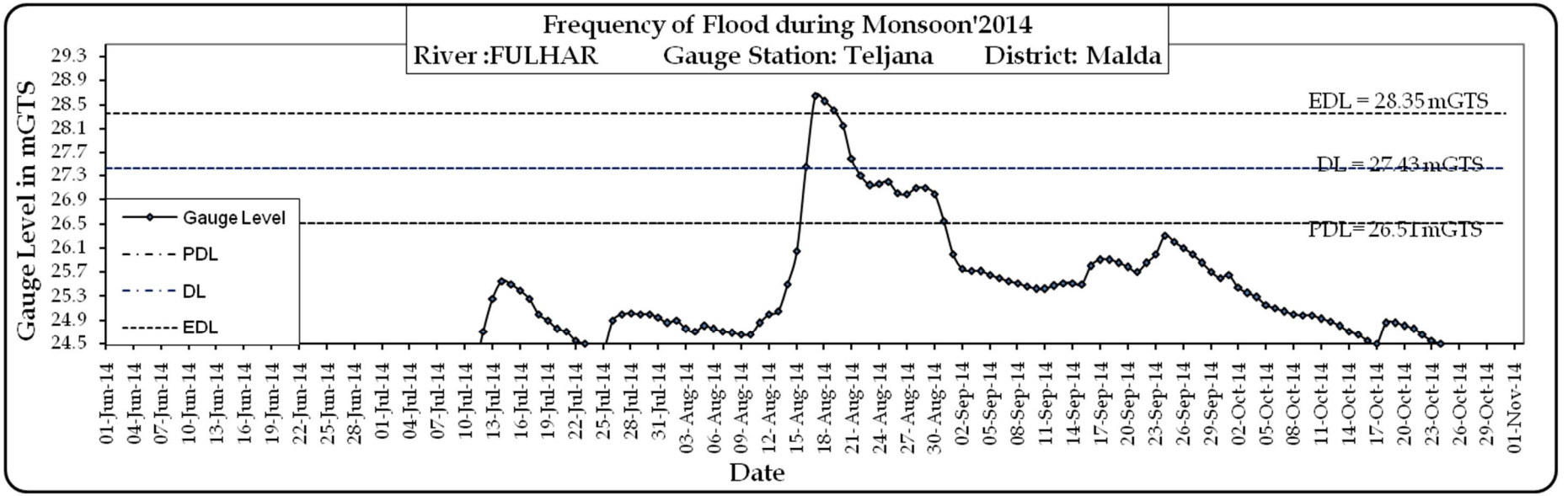
ANNEXURE-G5


Frequency of Flood during Monsoon'2014
River: TEESTA
Gauge Station: Coronation Bridge
District: Darjeeling
EDL = 153.60 mGTS
DL = 150.00 mGTS
PDL= 146.40 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
153.8
152.8
151.8
150.8
149.8
148.8
147.8
146.8
145.8
144.8
143.8
142.8
141.8
01-Jun-14
04-Jun-14
07-Jun-14
10-Jun-14
13-Jun-14
16-Jun-14
19-Jun-14
22-Jun-14
25-Jun-14
28-Jun-14
01-Jul-14
04-Jul-14
07-Jul-14
10-Jul-14
13-Jul-14
16-Jul-14
19-Jul-14
22-Jul-14
25-Jul-14
28-Jul-14
31-Jul-14
03-Aug-14
06-Aug-14
09-Aug-14
12-Aug-14
15-Aug-14
18-Aug-14
21-Aug-14
24-Aug-14
27-Aug-14
30-Aug-14
02-Sep-14
05-Sep-14
08-Sep-14
11-Sep-14
14-Sep-14
17-Sep-14
20-Sep-14
23-Sep-14
26-Sep-14
29-Sep-14
02-Oct-14
05-Oct-14
08-Oct-14
11-Oct-14
14-Oct-14
17-Oct-14
20-Oct-14
23-Oct-14
26-Oct-14
29-Oct-14
01-Nov-14
Date

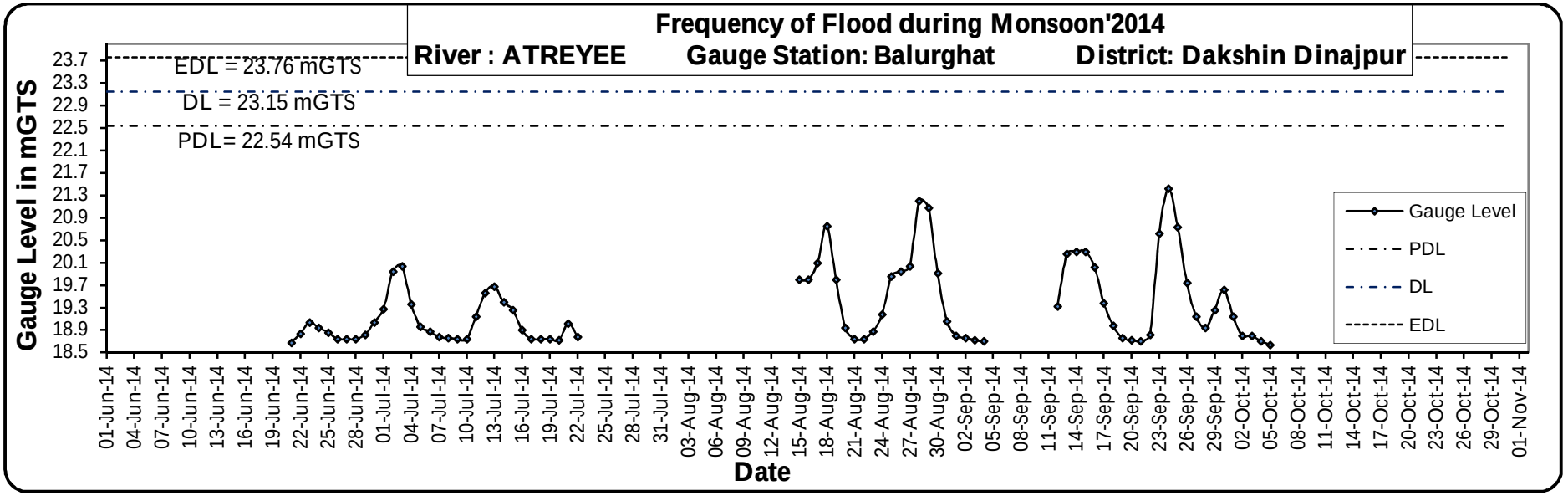

Frequency of Flood during Monsoon'2014
River: TEESTA
Gauge Station: Domohoni
District: Jalpaiguri
EDL = 86.30 mGTS
DL = 85.95 mGTS
PDL= 85.60 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
86.6
86.2
85.8
85.4
85.0
84.6
01-Jun-14
04-Jun-14
07-Jun-14
10-Jun-14
13-Jun-14
16-Jun-14
19-Jun-14
22-Jun-14
25-Jun-14
28-Jun-14
01-Jul-14
04-Jul-14
07-Jul-14
10-Jul-14
13-Jul-14
16-Jul-14
19-Jul-14
22-Jul-14
25-Jul-14
28-Jul-14
31-Jul-14
03-Aug-14
06-Aug-14
09-Aug-14
12-Aug-14
15-Aug-14
18-Aug-14
21-Aug-14
24-Aug-14
27-Aug-14
30-Aug-14
02-Sep-14
05-Sep-14
08-Sep-14
11-Sep-14
14-Sep-14
17-Sep-14
20-Sep-14
23-Sep-14
26-Sep-14
29-Sep-14
02-Oct-14
05-Oct-14
08-Oct-14
11-Oct-14
14-Oct-14
17-Oct-14
20-Oct-14
23-Oct-14
26-Oct-14
29-Oct-14
01-Nov-14
Date

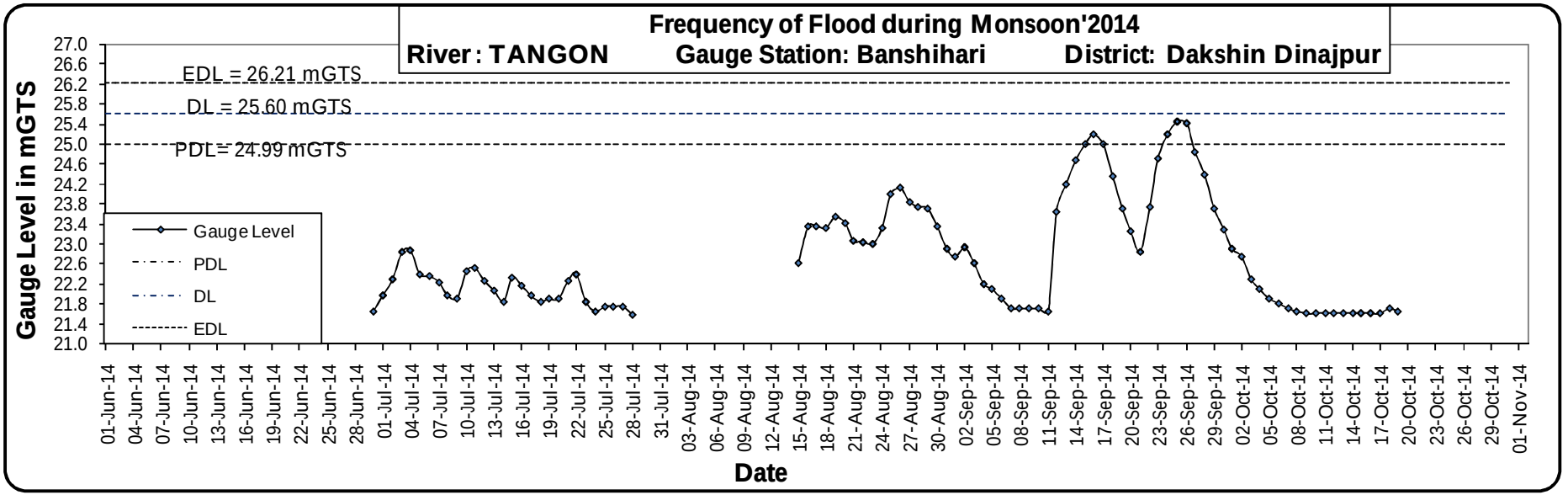
ANNEXURE-G6


Frequency of Flood during Monsoon'2014
River: MAHANANDA Gauge Station: Sonapur District: Darjeeling
EDL = 76.38 mGTS
DL = 75.77 mGTS
PDL=73.28 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
77.0
76.6
76.2
75.8
75.4
75.0
74.6
74.2
73.8
73.4
73.0
01-Jun-14
04-Jun-14
07-Jun-14
10-Jun-14
13-Jun-14
16-Jun-14
19-Jun-14
22-Jun-14
25-Jun-14
28-Jun-14
01-Jul-14
04-Jul-14
07-Jul-14
10-Jul-14
13-Jul-14
16-Jul-14
19-Jul-14
22-Jul-14
25-Jul-14
28-Jul-14
31-Jul-14
03-Aug-14
06-Aug-14
09-Aug-14
12-Aug-14
15-Aug-14
18-Aug-14
21-Aug-14
24-Aug-14
27-Aug-14
30-Aug-14
02-Sep-14
05-Sep-14
08-Sep-14
11-Sep-14
14-Sep-14
17-Sep-14
20-Sep-14
23-Sep-14
26-Sep-14
29-Sep-14
02-Oct-14
05-Oct-14
08-Oct-14
11-Oct-14
14-Oct-14
17-Oct-14
20-Oct-14
23-Oct-14
26-Oct-14
29-Oct-14
01-Nov-14
Date

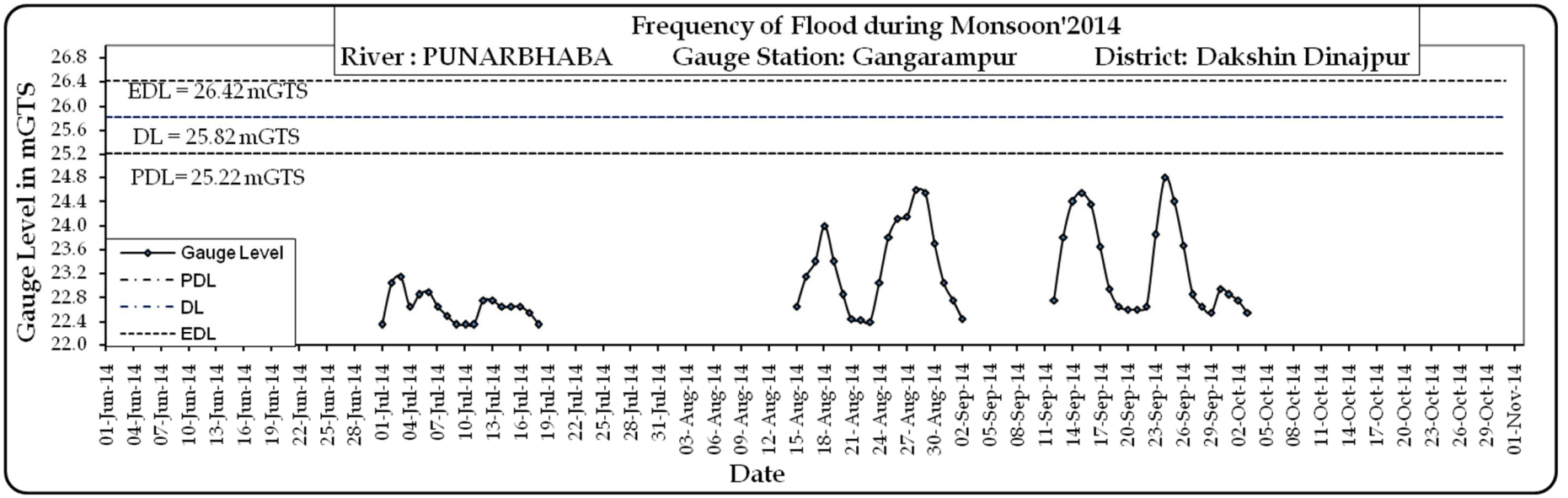

Frequency of Flood during Monsoon'2014
River :FULHAR Gauge Station: Teljana District: Malda
EDL = 28.35 mGTS
DL = 27.43 mGTS
PDL=26.51 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
29.3
28.9
28.5
28.1
27.7
27.3
26.9
26.5
26.1
25.7
25.3
24.9
24.5
01-Jun-14
04-Jun-14
07-Jun-14
10-Jun-14
13-Jun-14
16-Jun-14
19-Jun-14
22-Jun-14
25-Jun-14
28-Jun-14
01-Jul-14
04-Jul-14
07-Jul-14
10-Jul-14
13-Jul-14
16-Jul-14
19-Jul-14
22-Jul-14
25-Jul-14
28-Jul-14
31-Jul-14
03-Aug-14
06-Aug-14
09-Aug-14
12-Aug-14
15-Aug-14
18-Aug-14
21-Aug-14
24-Aug-14
27-Aug-14
30-Aug-14
02-Sep-14
05-Sep-14
08-Sep-14
11-Sep-14
14-Sep-14
17-Sep-14
20-Sep-14
23-Sep-14
26-Sep-14
29-Sep-14
02-Oct-14
05-Oct-14
08-Oct-14
11-Oct-14
14-Oct-14
17-Oct-14
20-Oct-14
23-Oct-14
26-Oct-14
29-Oct-14
01-Nov-14
Date

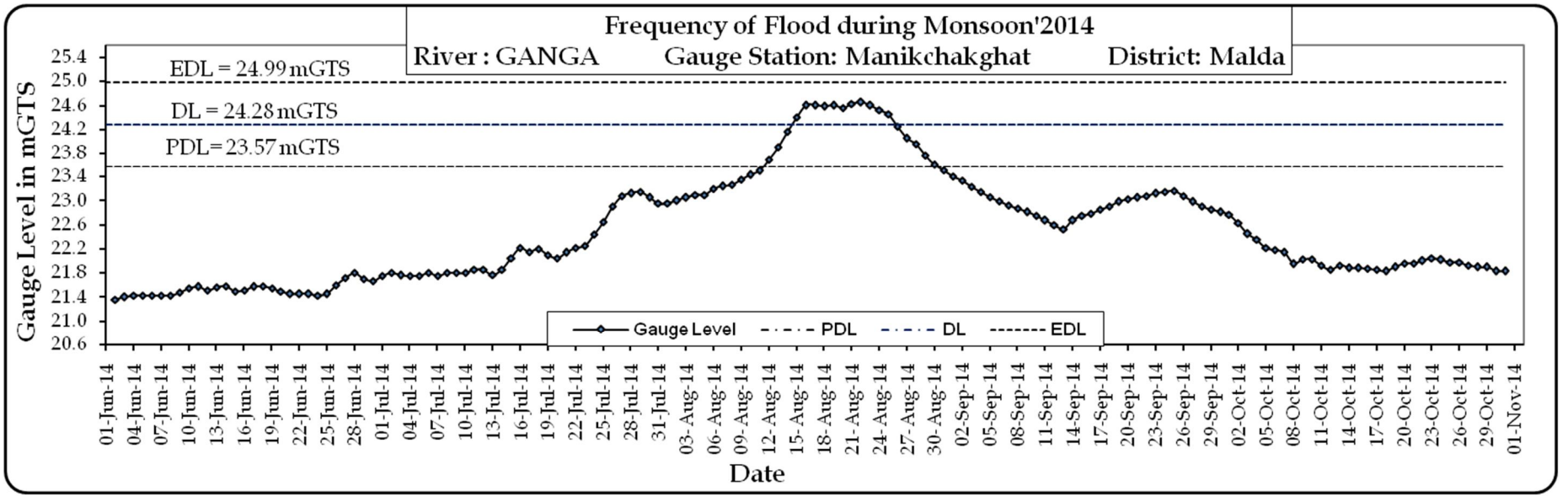
ANNEXURE-G7


Frequency of Flood during Monsoon'2014
River : ATREYEE
Gauge Station: Balurghat
District: Dakshin Dinajpur
EDL = 23.76 mGTS
DL = 23.15 mGTS
PDL= 22.54 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date

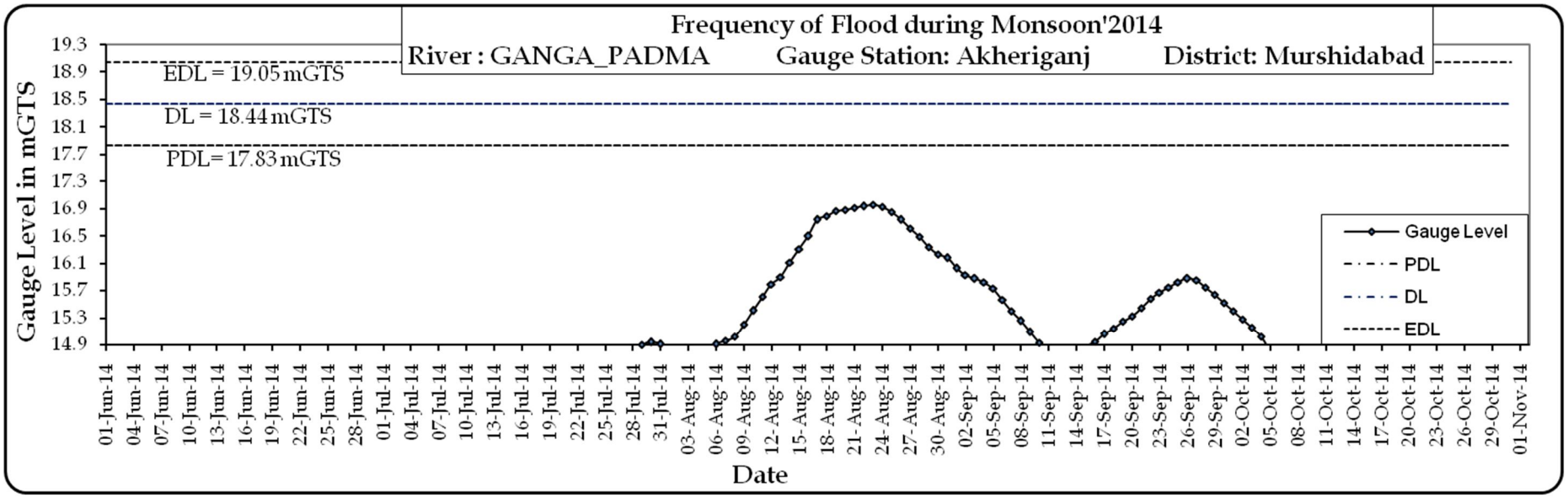

Frequency of Flood during Monsoon'2014
River : TANGON
Gauge Station: Banshihari
District: Dakshin Dinajpur
EDL = 26.21 mGTS
DL = 25.60 mGTS
PDL= 24.99 mGTS
Gauge Level in mGTS
Gauge Level
PDL
DL
EDL
Date

ANNEXURE-G8

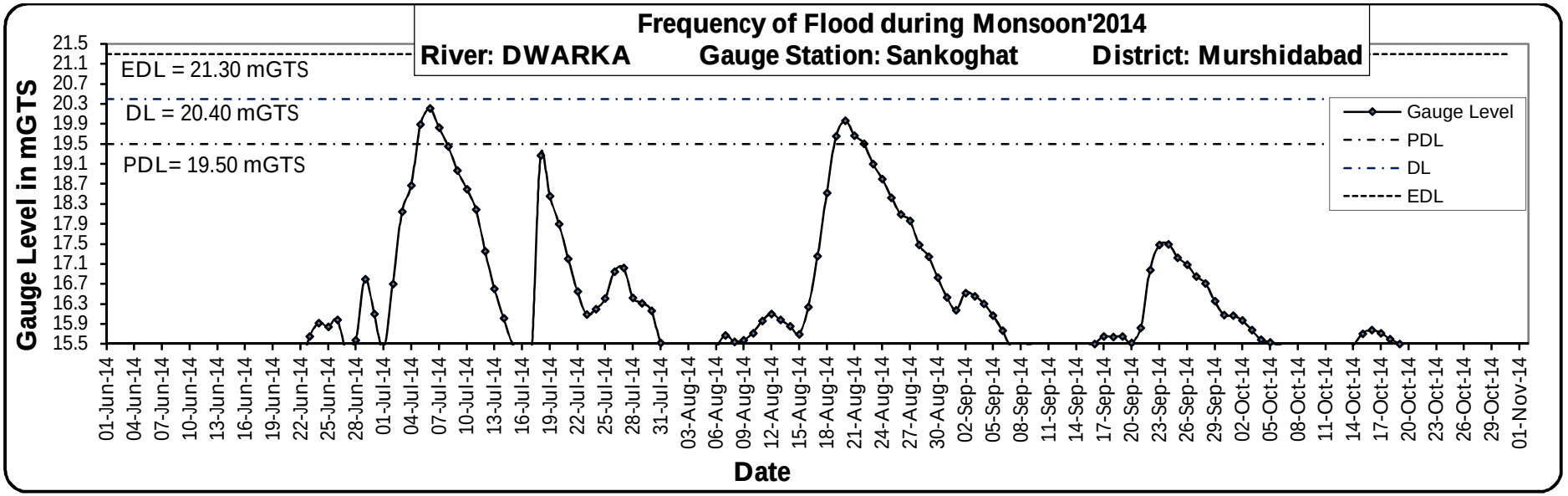

Frequency of Flood during Monsoon'2014
River : PUNARBHABA
Gauge Station: Gangarampur
District: Dakshin Dinajpur
EDL = 26.42 mGTS
DL = 25.82 mGTS
PDL= 25.22 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

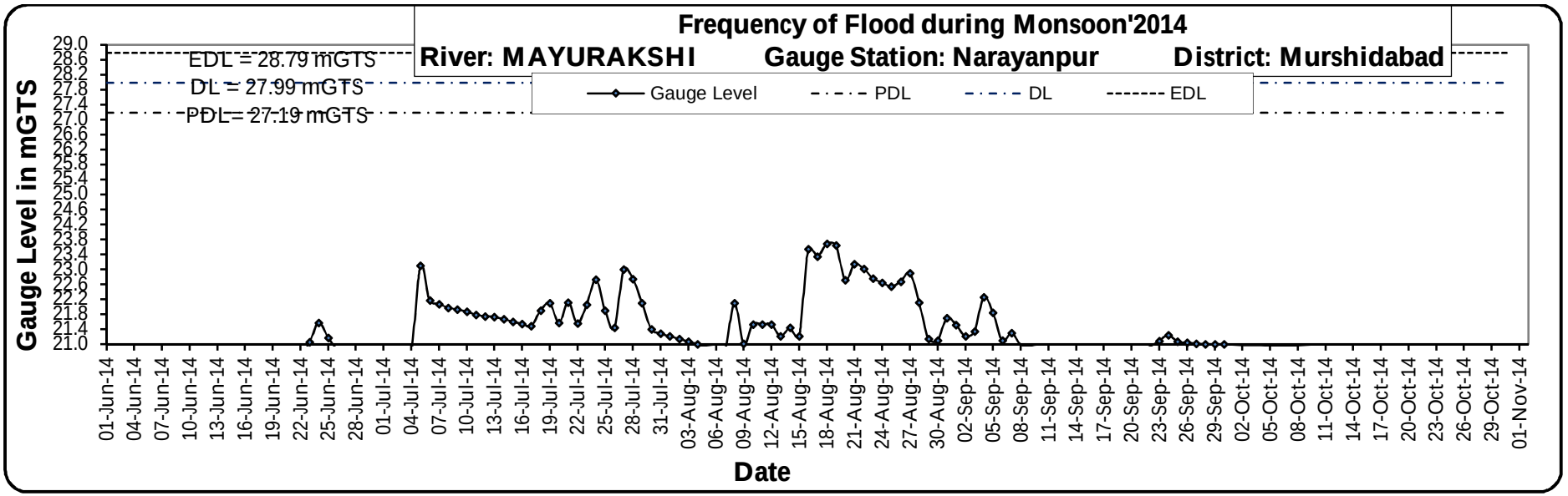

Frequency of Flood during Monsoon'2014
River : GANGA
Gauge Station: Manikchakghat
District: Malda
EDL = 24.99 mGTS
DL = 24.28 mGTS
PDL= 23.57 mGTS
Gauge Level
PDL
DL
EDL
Gauge Level in mGTS
Date

ANNEXURE-G9

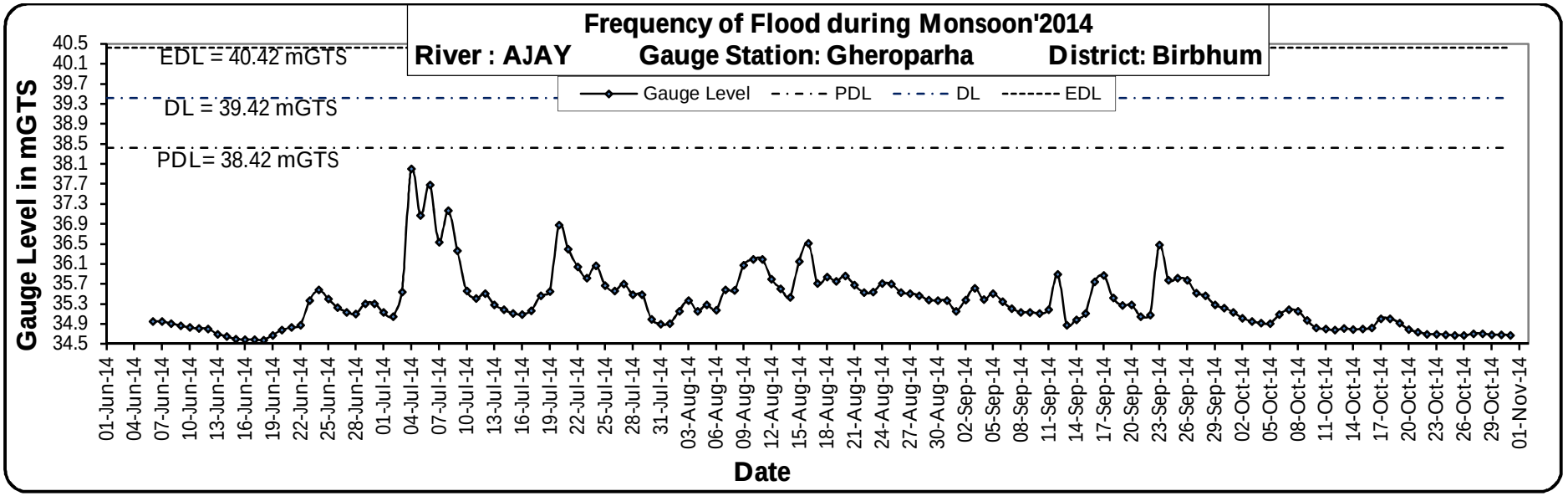

Frequency of Flood during Monsoon'2014
River : GANGA_PADMA
Gauge Station: Akheriganj
District: Murshidabad
EDL = 19.05 mGTS
DL = 18.44 mGTS
PDL= 17.83 mGTS
Gauge Level in mGTS
19.3
18.9
18.5
18.1
17.7
17.3
16.9
16.5
16.1
15.7
15.3
14.9
Gauge Level
PDL
DL
EDL
01-Jun-14
04-Jun-14
07-Jun-14
10-Jun-14
13-Jun-14
16-Jun-14
19-Jun-14
22-Jun-14
25-Jun-14
28-Jun-14
01-Jul-14
04-Jul-14
07-Jul-14
10-Jul-14
13-Jul-14
16-Jul-14
19-Jul-14
22-Jul-14
25-Jul-14
28-Jul-14
31-Jul-14
03-Aug-14
06-Aug-14
09-Aug-14
12-Aug-14
15-Aug-14
18-Aug-14
21-Aug-14
24-Aug-14
27-Aug-14
30-Aug-14
02-Sep-14
05-Sep-14
08-Sep-14
11-Sep-14
14-Sep-14
17-Sep-14
20-Sep-14
23-Sep-14
26-Sep-14
29-Sep-14
02-Oct-14
05-Oct-14
08-Oct-14
11-Oct-14
14-Oct-14
17-Oct-14
20-Oct-14
23-Oct-14
26-Oct-14
29-Oct-14
01-Nov-14
Date

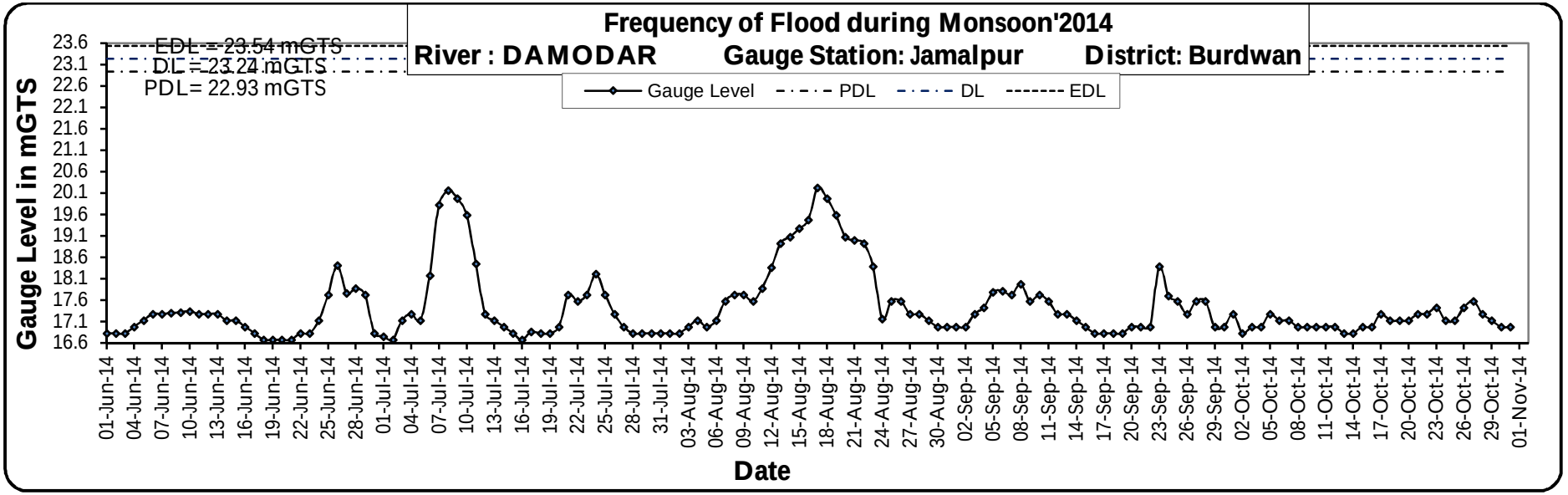
ANNEXURE-G10



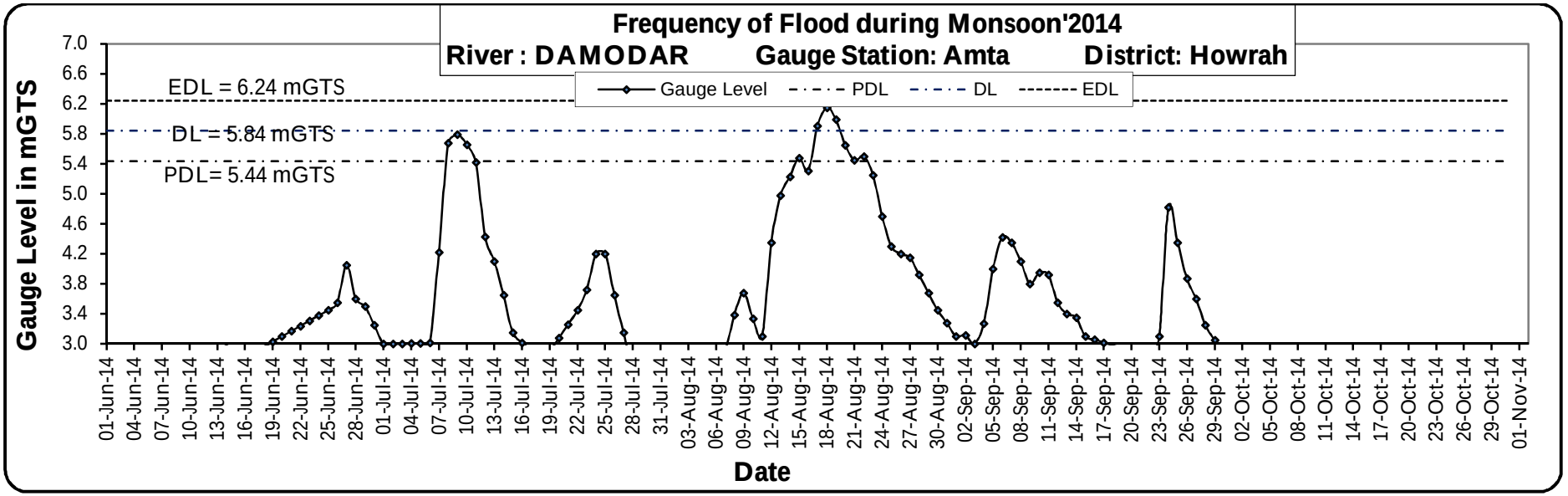


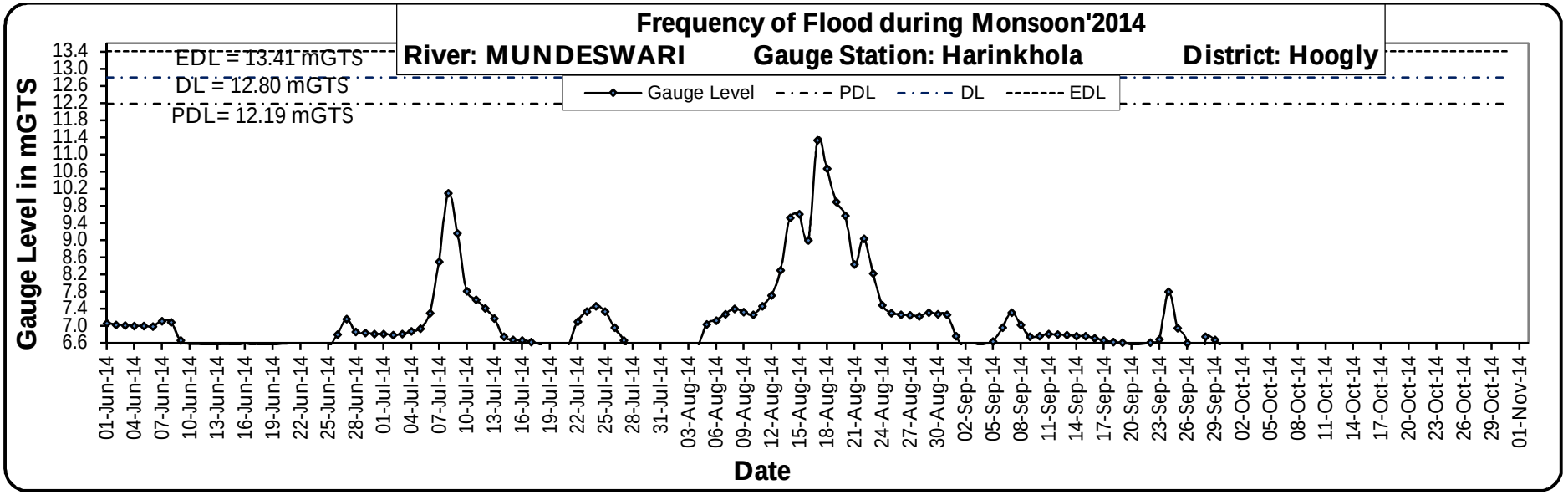
ANNEXURE-G11



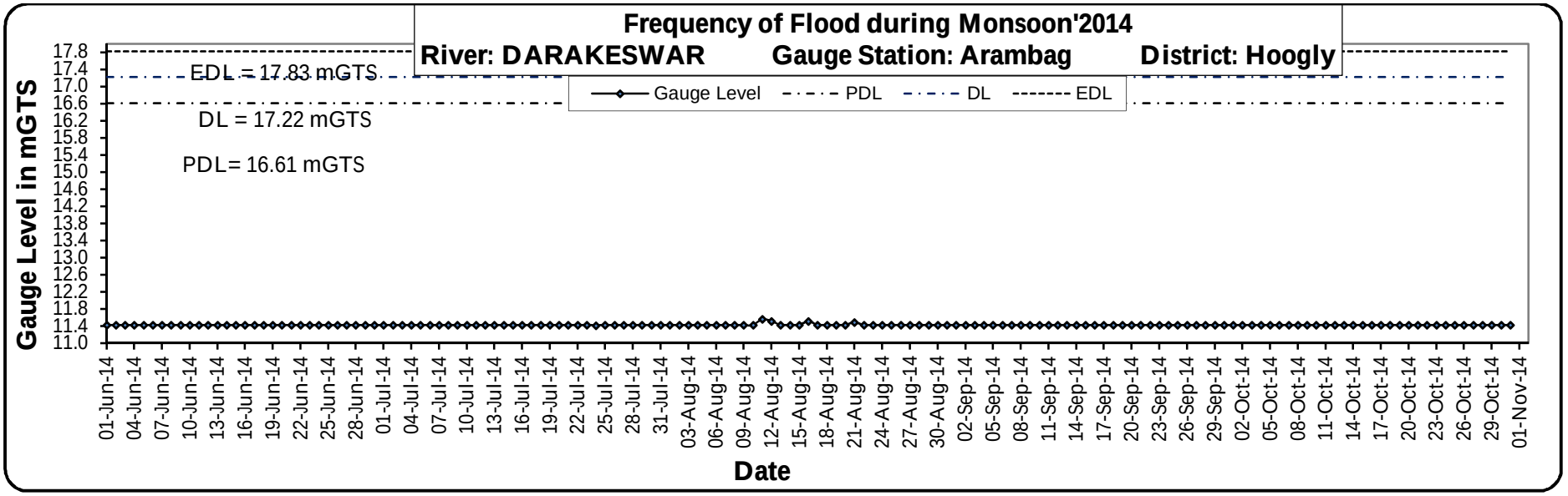


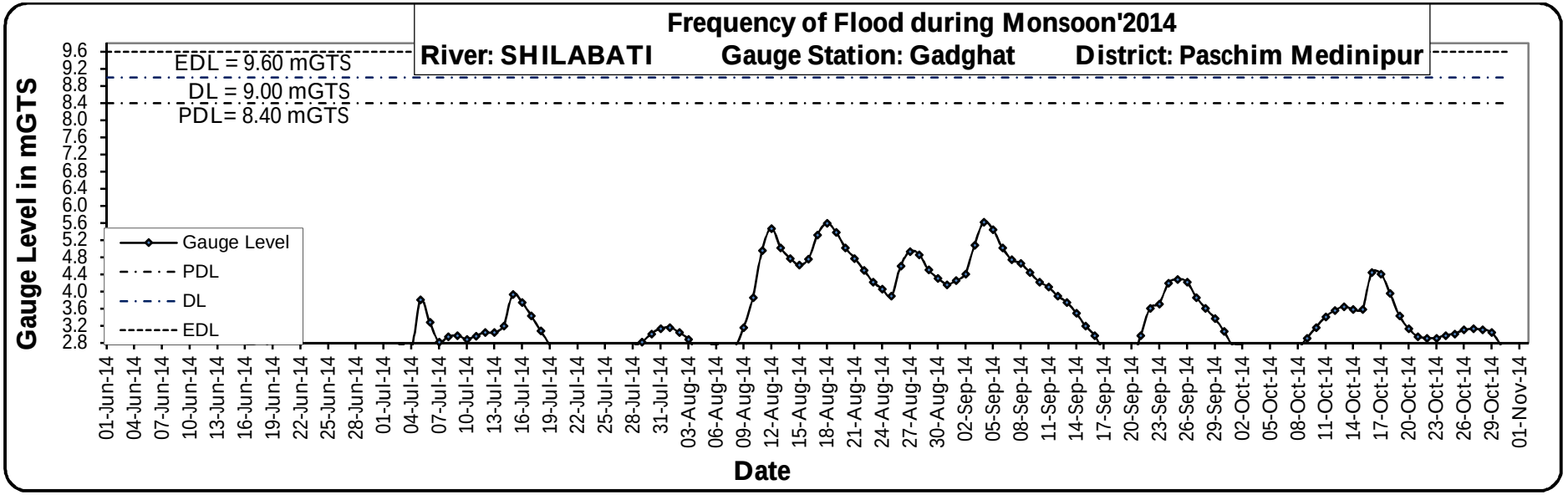
ANNEXURE-G12



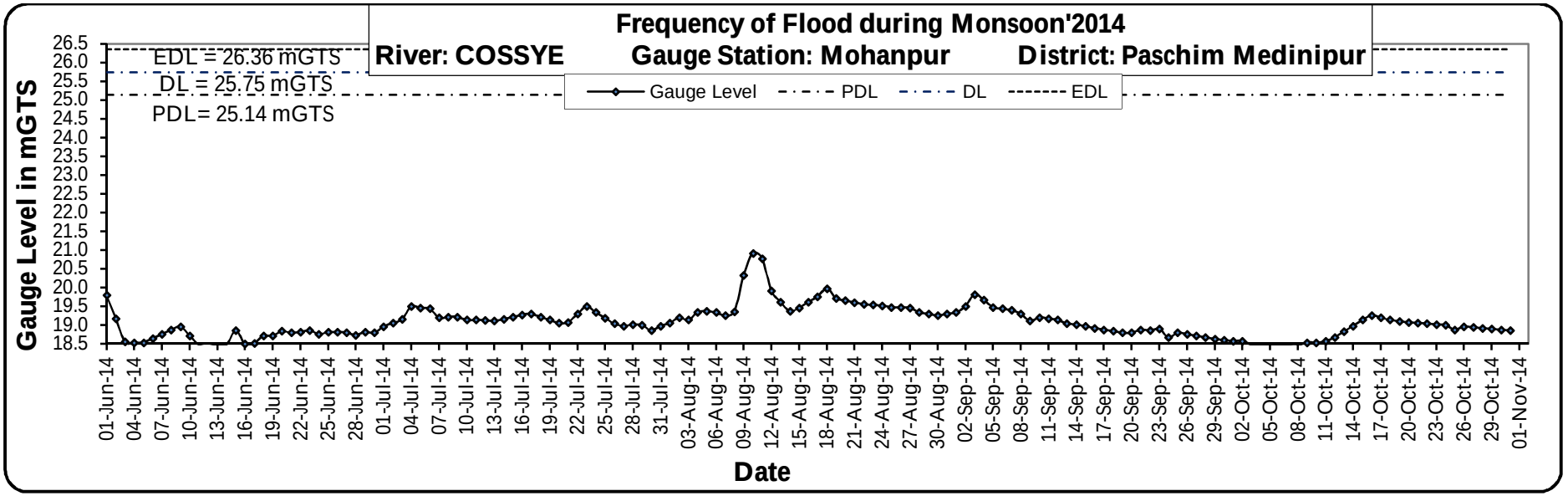


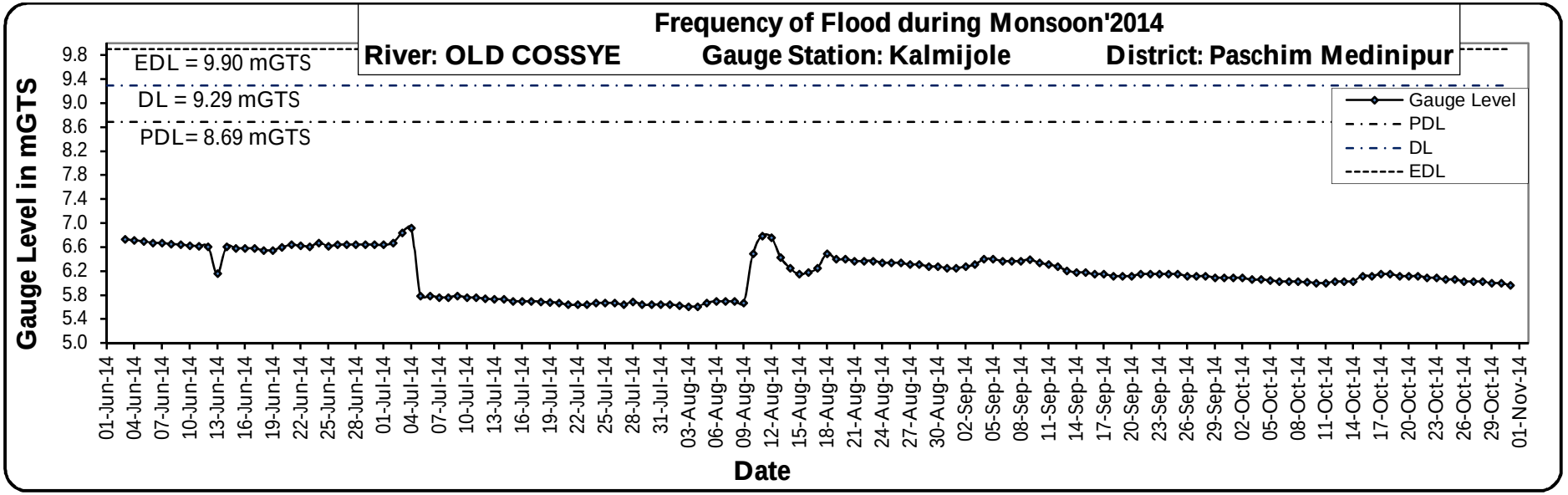
ANNEXURE-G13



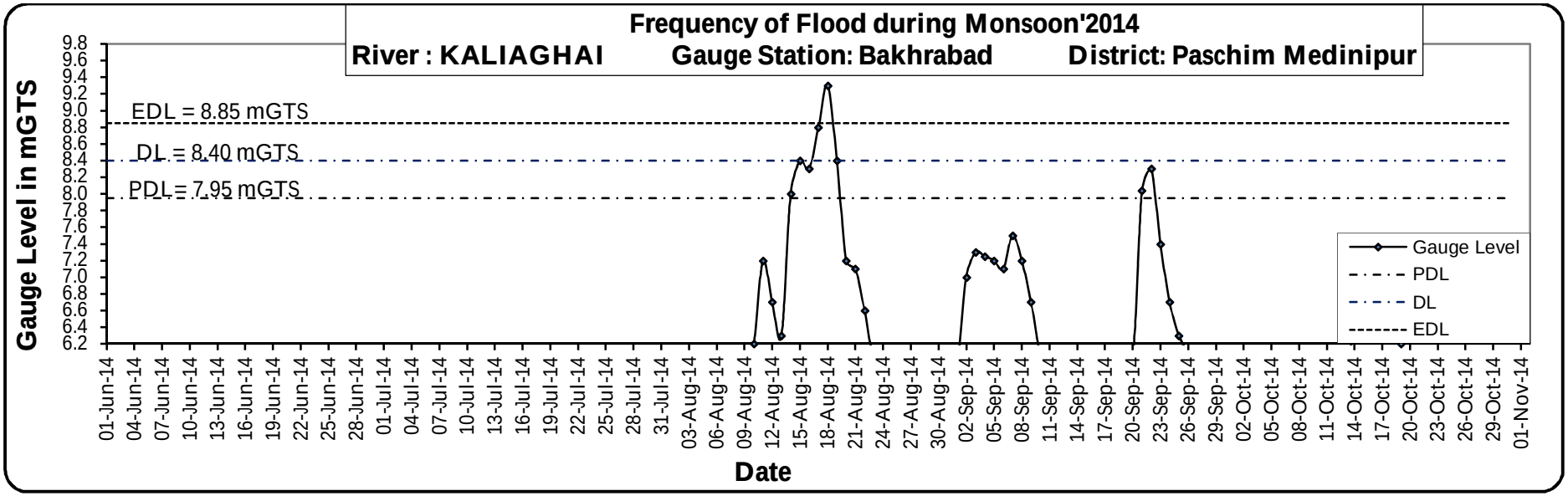


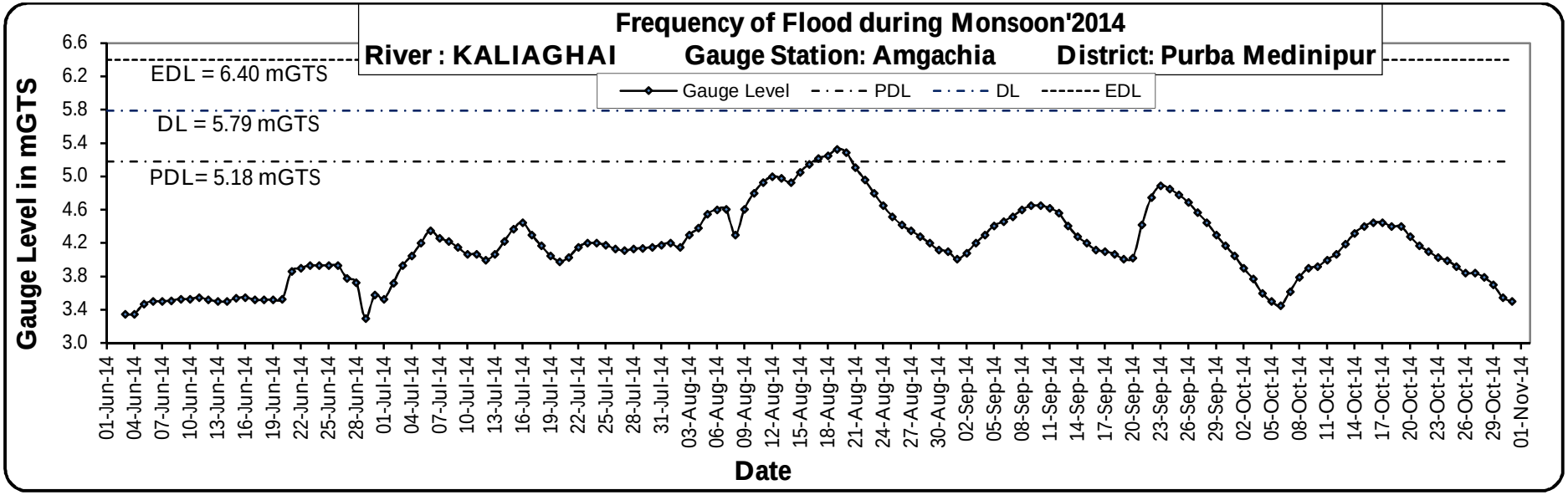
ANNEXURE-G14



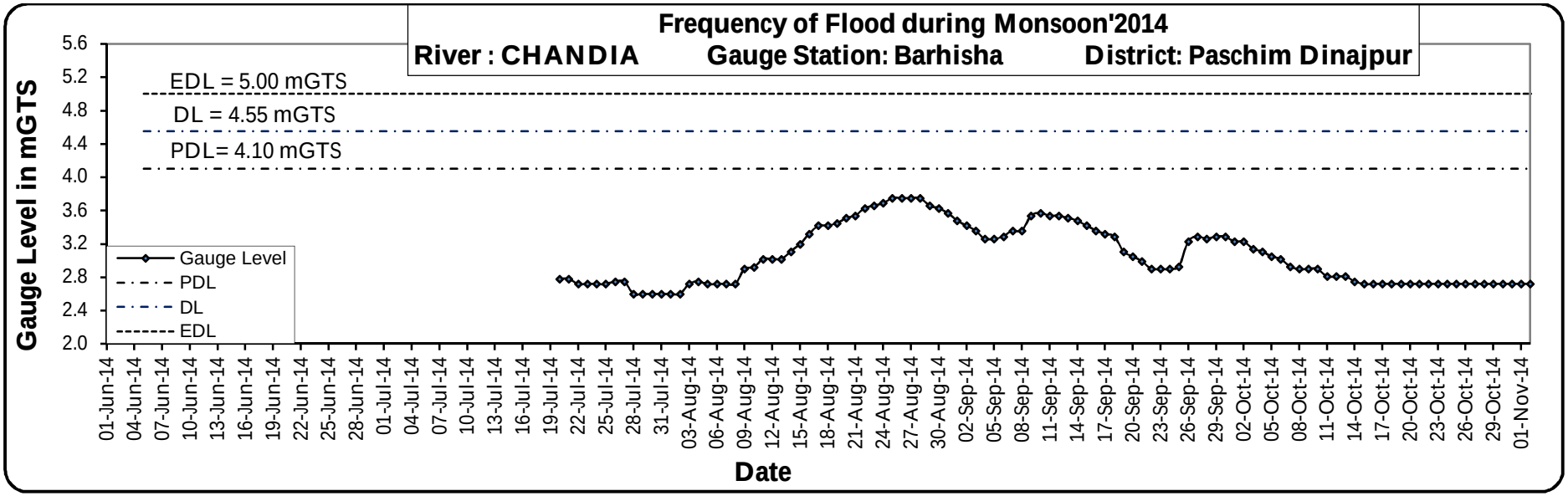


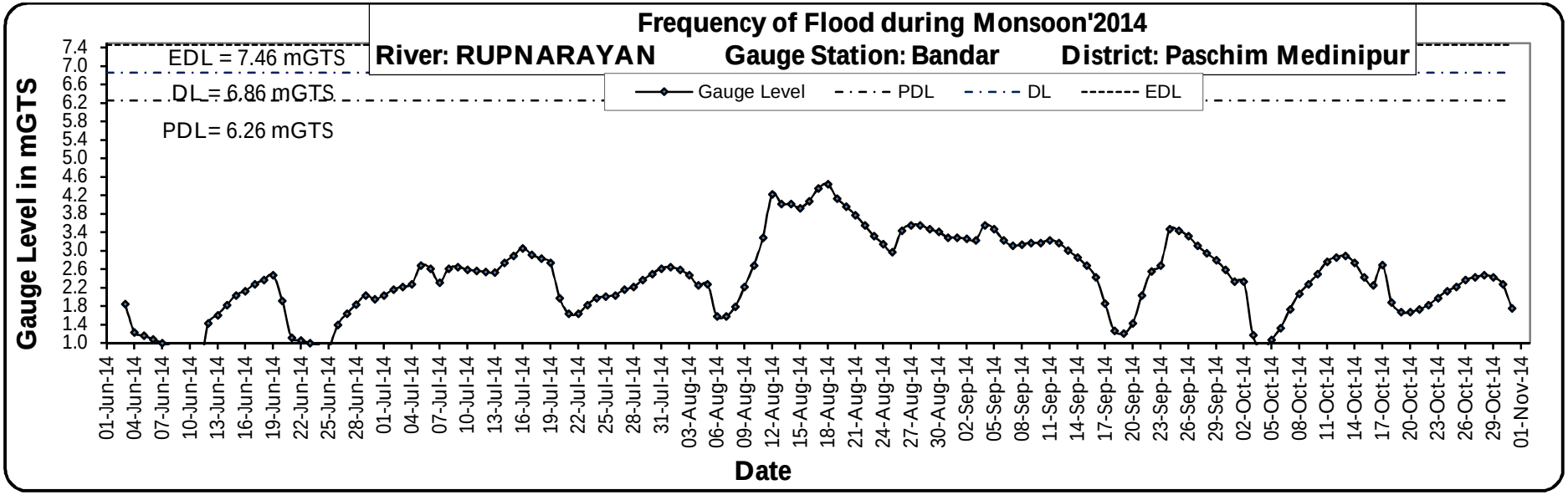
ANNEXURE-G15



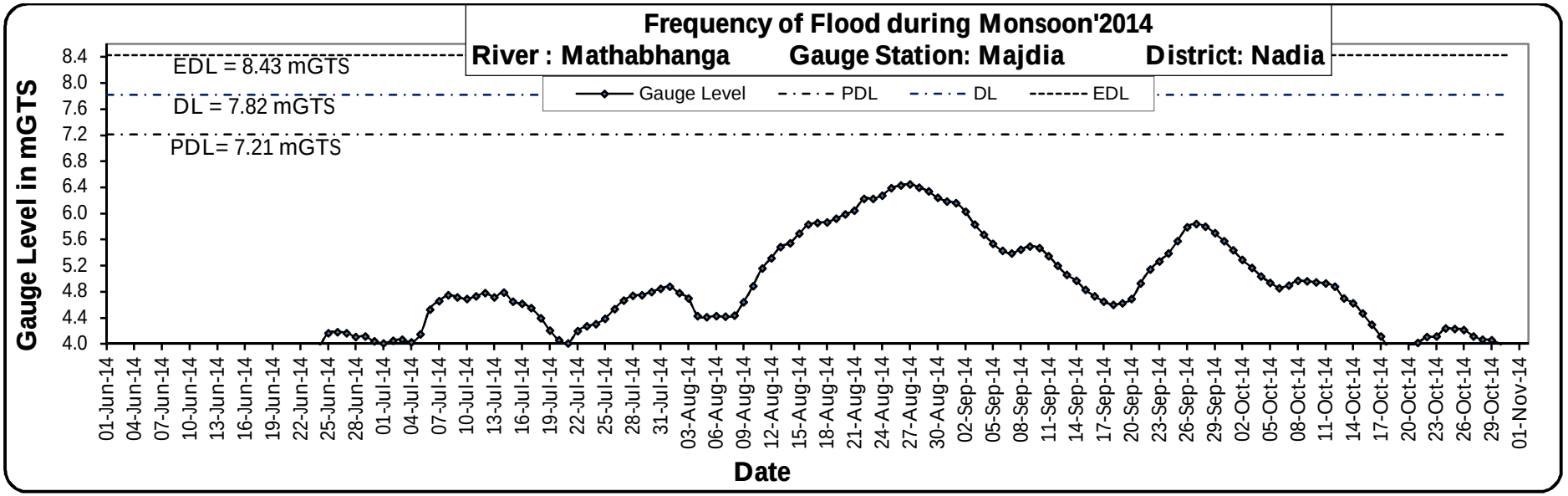


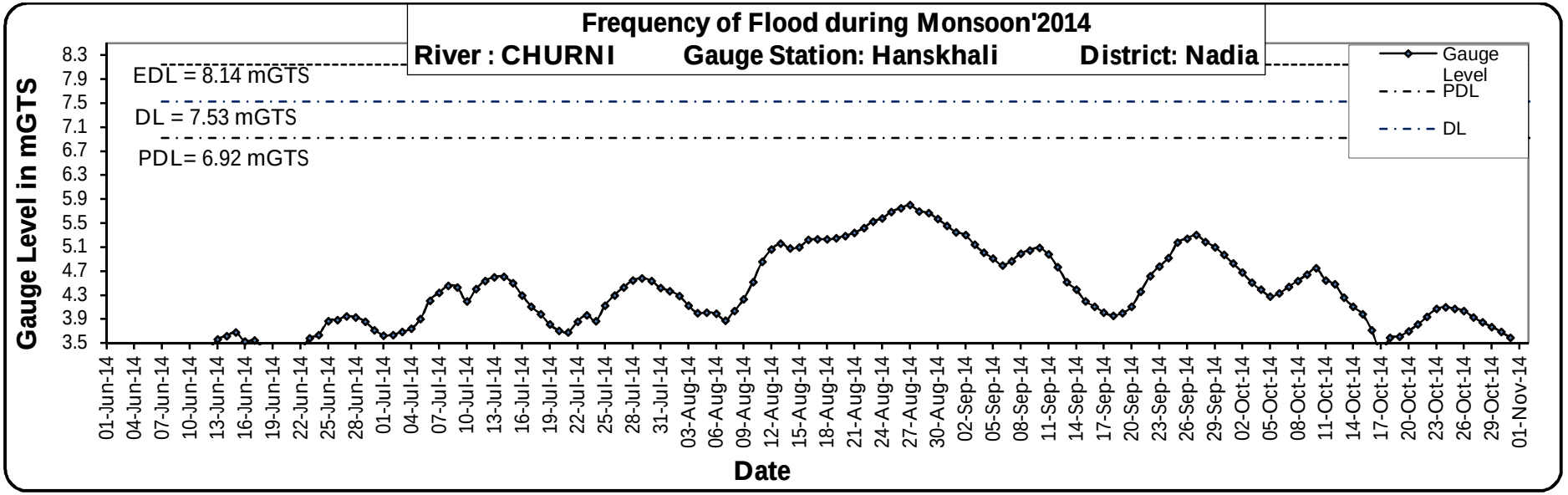
ANNEXURE-G16



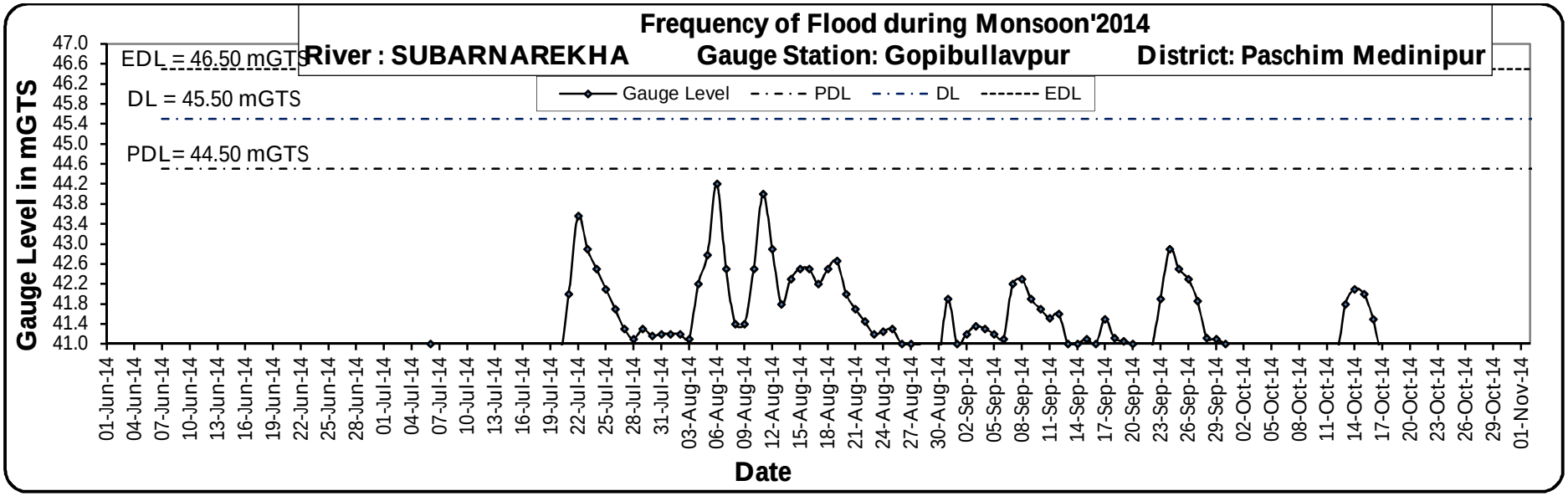


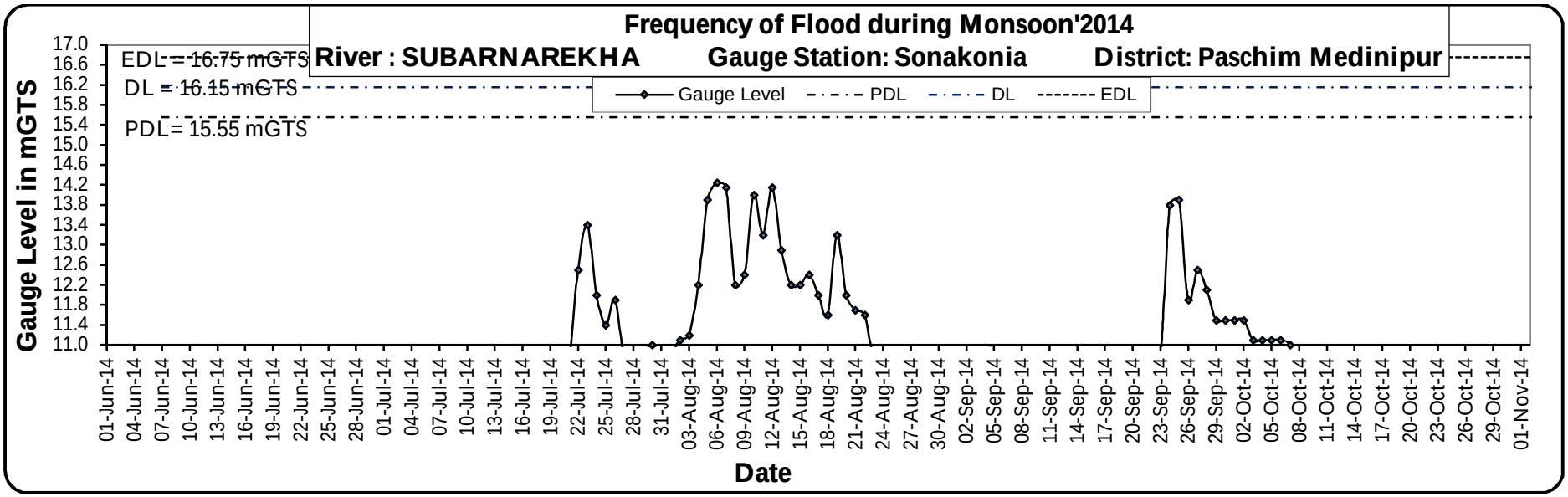
ANNEXURE-G17





ANNEXURE-G18





ANNEXURE-GD1

Sl. No.	Date	Champadanga		Kapastikri		Amuliaghat	
		Gauge Level (mGTS)	Discharge (cusecs)	Gauge Level (mGTS)	Discharge (cusecs)	Gauge Level (mGTS)	Discharge (cusecs)
1	01-Jun-14						
2	02-Jun-14			11.545			
3	03-Jun-14	8.40		11.545			
4	04-Jun-14	8.50		11.725			
5	05-Jun-14	9.50	7417.20	11.635	817.08		
6	06-Jun-14	9.50	7558.48	11.640	755.13		
7	07-Jun-14	9.50	7346.56	11.470	711.52		
8	08-Jun-14	9.80	8052.96	11.490	697.22		
9	09-Jun-14	9.60	7558.48	11.550	692.77		
10	10-Jun-14	9.650	7629.12	11.525	684.35		
11	11-Jun-14	9.250	5474.60	11.565	672.47		
12	12-Jun-14	9.550	6145.68	11.575	408.83		
13	13-Jun-14	9.450	5403.96	11.555	647.57		
14	14-Jun-14	9.600	5086.08	11.525	631.58		
15	15-Jun-14	9.15	3779.22	11.455	604.85		
16	16-Jun-14	9.050	3214.12	11.385	585.34		
17	17-Jun-14	8.950	2896.24	11.305	552.47		
18	18-Jun-14	8.950	2578.36	11.205	522.17		
19	19-Jun-14	8.950	2189.84	11.165	498.25		
20	20-Jun-14	8.800	2620.74	11.285	511.32		
21	21-Jun-14	8.750	3051.65	11.425	533.47		
22	22-Jun-14	8.750	3482.55	11.495	544.14		
23	23-Jun-14	8.750	3913.46	11.505	543.28		
24	24-Jun-14	9.200	4344.36	11.425	522.87		
25	25-Jun-14	9.900	9035.56	11.345	497.03		
26	26-Jun-14	10.775	16682.00	11.265	473.69		
27	27-Jun-14	10.300	11925.44	11.175	444.27		
28	28-Jun-14	10.200	12360.23	11.095	400.97		
29	29-Jun-14	9.550	10520.77	11.025	406.14		
30	30-Jun-14	9.700	10075.38	10.955	395.32		

*DL at KAPASTIKRI: 16.000 mGTS

*DL at CHAMPADANGA: 12.890 mGTS

ANNEXURE-GD2

Sl. No.	Date	Champadanga		Kapastikri		Amuliaghat	
		Gauge Level (mGTS)	Discharge (cusecs)	Gauge Level (mGTS)	Discharge (cusecs)	Gauge Level (mGTS)	Discharge (cusecs)
1	01-Jul-14	9.200	7864.70	11.055	411.24		
2	02-Jul-14	8.950	4408.64	11.095	419.57		
3	03-Jul-14	8.900	4985.77	11.105	420.27		
4	04-Jul-14	8.950	5224.18	11.255	1619.59		
5	05-Jul-14	9.000	5850.05	11.445	2060.93		
6	06-Jul-14	10.150	11963.00	11.335	1649.33		
7	07-Jul-14	11.800	32013.69	11.255	1461.25		
8	08-Jul-14	12.750	45048.19	11.115	1270.36		
9	09-Jul-14	12.550	40163.43	11.095	1115.23		
10	10-Jul-14	12.300	33780.00	11.175	1382.35		
11	11-Jul-14	11.500	23532.30	11.055	1107.21		
12	12-Jul-14	10.400	16102.74	11.065	1065.07		
13	13-Jul-14	9.800	11620.00	11.065	1055.32		
14	14-Jul-14	9.200	6260.82	11.105	1065.14		
15	15-Jul-14	8.900	5564.31	11.115	1107.05		
16	16-Jul-14	8.950	3115.58	11.145	1267.24		
17	17-Jul-14	8.850	3518.44	11.165	1354.00		
18	18-Jul-14	8.650	3921.30	11.265	1708.15		
19	19-Jul-14	8.650	4324.16	11.245	1622.08		
20	20-Jul-14	8.700	4727.02	11.225	1518.23		
21	21-Jul-14	9.500	5129.88	11.185	1392.01		
22	22-Jul-14	9.950	9635.65	11.205	1452.27		
23	23-Jul-14	10.200	13143.98	11.465	2251.98		
24	24-Jul-14	10.700	18770.81	11.455	2133.07		
25	25-Jul-14	10.000	12205.17	11.425	1855.11		
26	26-Jul-14	9.700	10855.95	11.415	1597.32		
27	27-Jul-14	8.800	4870.27	11.385	1367.35		
28	28-Jul-14	8.400	4933.67	11.365	1322.01		
29	29-Jul-14	8.200	4997.07	11.385	1385.47		
30	30-Jul-14	8.250	5060.47	11.365	1344.15		
31	31-Jul-14	8.250	5123.87	11.385	1365.18	101.850	2047.50

*DL at KAPASTIKRI: 16.000 mGTS

*DL at CHAMPADANGA: 12.890 mGTS

ANNEXURE-GD3

Sl. No.	Date	Champadanga		Kapastikri		Amuliaghat	
		Gauge Level (mGTS)	Discharge (cusecs)	Gauge Level (mGTS)	Discharge (cusecs)	Gauge Level (mGTS)	Discharge (cusecs)
1	01-Aug-14	8.300	5187.27	11.405	1437.09	101.700	1429.40
2	02-Aug-14	8.250	5250.67	11.425	1489.42	101.700	
3	03-Aug-14	8.250	5314.07	11.445	1787.34	101.700	
4	04-Aug-14	8.900	5377.47	11.425	1782.53	101.700	1385.25
5	05-Aug-14	8.750	2955.58	11.545	3099.84	102.000	2900.83
6	06-Aug-14	8.750	7413.14	11.545	3036.89	101.950	2461.45
7	07-Aug-14	9.600	11870.70	11.525	2973.95	101.800	1553.32
8	08-Aug-14	9.750	13837.30	11.505	2911.00	102.200	4756.19
9	09-Aug-14	9.900	14528.88	11.585	4789.81	102.300	6843.25
10	10-Aug-14	9.100	7172.43	12.405	6668.63	102.700	10799.09
11	11-Aug-14	10.000	11558.82	12.875	8547.44	102.100	3625.60
12	12-Aug-14	10.800	20429.00	12.485	6474.16	102.100	3127.00
13	13-Aug-14	11.200	23180.16	12.075	4400.87	101.900	2052.80
14	14-Aug-14	11.730	34939.25	11.945	3761.58	102.850	13768.80
15	15-Aug-14	11.700	36396.40	11.625	2846.79	102.650	11196.79
16	16-Aug-14	11.600	37853.55	11.965	4273.72	102.000	2495.36
17	17-Aug-14	12.750	39310.70	12.295	5298.00	102.200	4637.16
18	18-Aug-14	12.680	40767.85	12.305	4874.16	101.950	2313.10
19	19-Aug-14	12.350	42225.00	12.150	4309.00	102.300	6033.72
20	20-Aug-14	11.800	47000.00	11.980	3956.00	101.950	2372.44
21	21-Aug-14	11.750	25633.00	11.980	3567.32	101.950	2313.11
22	22-Aug-14	11.700	27828.98	11.850	3284.76	101.950	2091.43
23	23-Aug-14	11.700	22960.47	11.820	3214.12	102.200	4756.19
24	24-Aug-14	10.600	17572.00	12.020	4097.00	102.100	3535.00
25	25-Aug-14	10.400	17896.00	11.920	3603.00	101.950	2372.00
26	26-Aug-14	10.200	14785.00	11.920	3461.00	102.000	2557.52
27	27-Aug-14	10.000	13112.00	12.000	3885.00	101.950	2372.00
28	28-Aug-14	9.900	11996.00	11.920	3709.00	101.800	1704.00
29	29-Aug-14	9.500	9482.36	11.880	3320.00	101.950	2431.78
30	30-Aug-14	9.300	8310.44	11.850	3143.48	101.800	1578.45
31	31-Aug-14	9.300	8368.01	11.840	3072.84	101.700	1429.40

*DL at KAPASTIKRI: 16.000 mGTS

*DL at CHAMPADANGA: 12.890 mGTS

ANNEXURE-GD4

Sl. No.	Date	Champadanga		Kapastikri		Amuliaghat	
		Gauge Level (mGTS)	Discharge (cusecs)	Gauge Level (mGTS)	Discharge (cusecs)	Gauge Level (mGTS)	Discharge (cusecs)
1	01-Sep-14	9.000	6650.80	11.940	3885.20	101.900	2249.88
2	02-Sep-14	9.000	6764.13	12.050	4344.00	101.900	2165.47
3	03-Sep-14	9.000	8495.00	12.270	5086.00	101.800	1629.00
4	04-Sep-14	9.630	17200.00	12.350	5156.72	101.850	1940.83
5	05-Sep-14	10.200	16319.96	12.150	4626.92	101.850	1961.36
6	06-Sep-14	10.350	17200.84	12.050	4485.64	101.750	1458.36
7	07-Sep-14	10.150	13682.26	12.000	4203.08	101.750	1387.72
8	08-Sep-14	9.750	12469.01	11.950	3920.52	101.750	1317.44
9	09-Sep-14	9.600	10023.00	11.850	3920.52	101.750	1270.00
10	10-Sep-14	9.870	11973.00	11.840	3496.68	101.750	1458.00
11	11-Sep-14	9.600	9861.00	11.780	3284.00	101.600	984.00
12	12-Sep-14	9.200	7336.67	11.740	3214.12	101.650	1104.81
13	13-Sep-14	9.500	9210.00	11.750	3143.48	101.650	1104.80
14	14-Sep-14	9.200	7596.62	11.760	3249.44	102.000	2432.84
15	15-Sep-14	8.800	4823.00	11.750	3179.00	102.200	4578.00
16	16-Sep-14	8.810	1500.00	11.780	3285.00	102.400	7192.00
17	17-Sep-14	8.200	4029.00	11.820	3355.40	101.800	1753.99
18	18-Sep-14	8.250	6558.00	11.830	3249.00	101.700	1341.00
19	19-Sep-14	8.300	9087.00	11.840	3178.80	101.750	1411.39
20	20-Sep-14	8.150	11616.00	11.860	3355.00	101.600	946.00
21	21-Sep-14	8.800	14145.00	11.980	3638.00	101.750	1741.00
22	22-Sep-14	8.650	16674.00	11.960	3567.32	102.800	13414.00
23	23-Sep-14	10.300	16674.00	11.920	3461.00	102.000	2651.00
24	24-Sep-14	10.800	22988.00	11.940	3567.32	102.200	5172.26
25	25-Sep-14	10.010	13136.00	11.980	3426.04	102.100	3625.59
26	26-Sep-14	9.400		11.920	3355.00	102.000	2433.00
27	27-Sep-14	9.100		11.820	3214.12	101.900	2109.31
28	28-Sep-14	9.100		11.800	3072.84	101.900	2249.88
29	29-Sep-14	8.900		11.820	2967.00	101.750	1458.30
30	30-Sep-14	8.840		11.760	2861.00	101.650	1105.00

*DL at KAPASTIKRI: 16.000 mGTS

*DL at CHAMPADANGA: 12.890 mGTS

ANNEXURE-D1

Sl. No.	Date	DURGAPUR BARRAGE			KANGSABATI DAM			MASSANJORE DAM			TILPARA BARRAGE		
		RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)
1	01-Jun-14	211.50	0	0	415.1	0	0	370.3	0	0	190.5	0.0	0.0
2	02-Jun-14	211.50	0	0	415.1	0	0	370.3	0	0	190.5	0.0	0.0
3	03-Jun-14	211.50	7750	7250	415.1	0	0	370.5	350	0	190.5	0.0	0.0
4	04-Jun-14	211.50	7750	7250	415.1	0	0	370.5	0	0	190.5	0.0	0.0
5	05-Jun-14	211.50	6075	5575	415.0	0	0	370.5	0	0	190.5	0.0	0.0
6	06-Jun-14	211.50	8625	8125	415.0	0	0	370.5	0	0	190.5	0.0	0.0
7	07-Jun-14	211.50	7450	6950	415.0	0	0	370.5	0	0	190.5	0.0	0.0
8	08-Jun-14	211.50	7450	6950	414.9	0	0	370.4	0	0	190.4	0.0	0.0
9	09-Jun-14	211.50	5050	4550	414.9	0	0	370.5	0	0	190.4	0.0	0.0
10	10-Jun-14	211.50	8625	8125	415.0	0	0	370.5	0	0	190.5	0.0	0.0
11	11-Jun-14	211.50	7450	6950	414.9	0	0	370.5	0	0	190.5	0.0	0.0
12	12-Jun-14	211.50	7750	7250	414.9	0	0	370.5	0	0	190.5	0.0	0.0
13	13-Jun-14	211.50	4075	3575	414.9	0	0	370.5	0	0	190.5	0.0	0.0
14	14-Jun-14	211.50	2900	2400	414.9	0	0	370.4	0	0	190.5	0.0	0.0
15	15-Jun-14	211.50	2900	2400	414.8	0	0	370.4	0	0	190.5	0.0	0.0
16	16-Jun-14	211.50	4076	3576	414.9	0	0	370.4	0	0	190.5	0.0	0.0
17	17-Jun-14	211.50	4075	3575	414.9	0	0	370.4	0	0	190.5	0.0	0.0
18	18-Jun-14	211.50	1675	1175	414.9	0	0	370.3	0	0	190.5	0.0	0.0
19	19-Jun-14	211.50	1675	1175	414.9	0	0	370.6	0	0	190.5	0.0	0.0
20	20-Jun-14	211.50	1675	1175	414.9	0	0	371.0	1050	0	190.5	0.0	0.0
21	21-Jun-14	211.50	2034	2250	414.8	0	0	371.5	2250	0	190.5	0.0	0.0
22	22-Jun-14	211.50	4801	4801	414.8	0	0	372.1	2055	0	190.5	0.0	0.0
23	23-Jun-14	211.50	10178	9678	415.0	0	0	372.4	700	0	190.5	0.0	0.0
24	24-Jun-14	211.50	17705	17205	415.0	517	0	372.5	0	0	190.5	0.0	0.0
25	25-Jun-14	211.50	20875	21506	415.1	0	0	372.5	343	0	205.0	0.0	0.0
26	26-Jun-14	211.50	13400	12900	415.1	0	0	372.6	0	0	190.5	0.0	0.0
27	27-Jun-14	211.50	13404	12903	415.1	0	0	372.7	0	0	190.5	0.0	0.0
28	28-Jun-14	211.50	11405	9678	415.1	0	0	372.8	514	0	190.5	0.0	0.0
29	29-Jun-14	211.50	2651	2151	415.0	0	0	372.8	0	0	190.5	0.0	0.0
30	30-Jun-14	211.50	3251	1075	415.1	0	0	372.9	514	0	190.5	0.0	0.0
		TOTAL	**196729**	**182172**		**517**	**0**		**7775**	**0**		**0**	**0**

ANNEXURE-D2

Sl. No.	Date	DURGAPUR BARRAGE			KANGSABATI DAM			MASSANJORE DAM			TILPARA BARRAGE		
		RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)
1	01-Jul-14	211.50	2594	1075	415.0	0	0	373.1	195	0	190.5		
2	02-Jul-14	211.50	2480	3226	415.1	0	0	373.5	1651	0	195.5		
3	03-Jul-14	211.50	3726	3226	415.1	336	0	377.0	13334	0	196.6		
4	04-Jul-14	211.50	15804	15304	415.3	1007	0	381.3	1223	0	199.2		
5	05-Jul-14	211.50	19800	19355	415.4	663	0	384.6	15000	0	197.7		
6	06-Jul-14	211.50	31988	51452	415.6	1989	0	385.4	4881	0	193.4		
7	07-Jul-14	211.50	65630	65130	415.7	336	0	385.9	6301	0	194.5		
8	08-Jul-14	211.50	63315	62815	415.8	895	0	386.1	1613	0	201.6		
9	09-Jul-14	211.50	55328	55328	415.8	336	0	386.4	0	0	204.3		
10	10-Jul-14	211.50	28815	26875	415.9	329	0	386.6	550	0	205.1		
11	11-Jul-14	211.50	14479	13979	416.0	448	0	386.6	550	0	205.0		
12	12-Jul-14	211.50	9102	8602	416.0	0	0	386.7	0	0	204.8		
13	13-Jul-14	211.50	3000	1075	416.0	986	0	386.8	269	0	204.8		
14	14-Jul-14	211.50	2651	2651	416.2	336	0	386.9	6601	0	205.0		
15	15-Jul-14	211.50	2650	2150	416.2	448	0	386.9	538	0	205.1		
16	16-Jul-14	211.50	2650	2151	416.3	657	0	387.0	591	0	205.2		
17	17-Jul-14	211.50	3726	3726	416.5	336	0	387.3	1950	0	205.3		
18	18-Jul-14	211.50	1575	1075	416.5	332	0	387.4	0	0	204.9		
19	19-Jul-14	211.50	0	3226	416.6	0	0	387.6	0	0	204.7		
20	20-Jul-14	211.50	10748	12903	416.9	1325	0	387.3	4058	4286	204.6		
21	21-Jul-14	211.50	15554	15054	417.0	1007	0	387.1	0	2249	204.0		
22	22-Jul-14	211.50	17700	17205	417.2	995	0	386.9	1915	3905	204.6		
23	23-Jul-14	211.50	26300	25800	417.3	733	0	386.3	1817	611	205.0		
24	24-Jul-14	211.50	13404	12903	417.4	1151	0	386.3	7243	0	204.2		
25	25-Jul-14	211.50	11753	10753	417.6	671	0	386.3	7237	586	204.9		
26	26-Jul-14	211.50	4551	50	417.5	895	0	386.7	0	3888	204.9		
27	27-Jul-14	211.50	6052	50	417.7	1007	0	386.3	2842	4436	204.5		
28	28-Jul-14	211.50	6050	50	417.8	663	0	386.3	2088	1645	204.5		
29	29-Jul-14	211.50	6052	50	417.9	657	0	386.4	2183	0	205.6		
30	30-Jul-14	211.50	5551	50	418.1	2015	0	386.3	2288	2238	205.1		
31	31-Jul-14	211.50	6552	50	418.3	2015	0	386.2	2284	2234	205.7		
			459579	**437338**		**22568**	**0**		**89203**	**26079**			

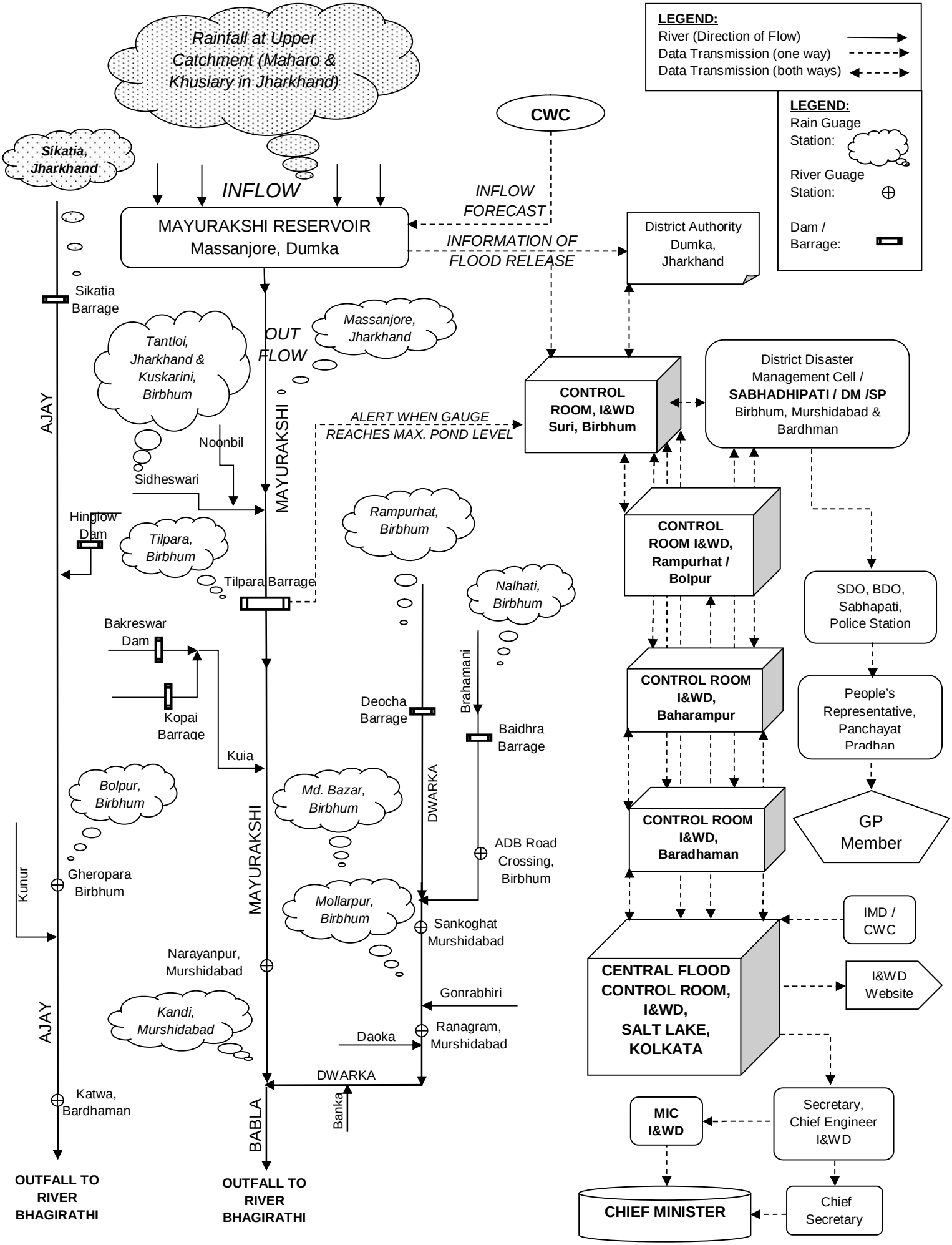
ANNEXURE-D3

Sl. No.	Date	DURGAPUR BARRAGE			KANGSABATI DAM			MASSANJORE DAM			TILPARA BARRAGE		
		RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)
1	01-Aug-14	211.50	6052	50	418.5	1172	2158	385.9	2633	0			
2	02-Aug-14	211.50	8802	4301	418.9	1235	2173	385.7	2801	2801			
3	03-Aug-14	211.50	7477	3226	419.2	863	0	385.2	3409	0			
4	04-Aug-14	211.50	7827	1075	419.5	689	3576	384.7	3801	0			
5	05-Aug-14	211.50	12544	4301	419.6	2280	767	384.4	3601	3601			
6	06-Aug-14	211.50	18750	10750	419.9	1607	0	384.2	3709	0			
7	07-Aug-14	211.50	18755	10753	420.2	6688	237	384.4	5441	3701			
8	08-Aug-14	211.50	18330	11828	420.4	3765	3615	384.8	4941	3201			
9	09-Aug-14	211.50	9650	2150	420.8	8366	1914	385.8	1471	0			
10	10-Aug-14	211.50	23706	17205	421.6	5454	0	386.5	4106	1062			
11	11-Aug-14	211.50	31308	25807	422.4	150	0	387.0	3031	3031			
12	12-Aug-14	211.50	37760	32258	422.8	0	2162	387.1	4775	3035			
13	13-Aug-14	211.50	46763	41763	422.6	1330	0	387.0	2648	488			
14	14-Aug-14	211.50	46764	41763	422.4	14544	3328	387.1	1068	0			
15	15-Aug-14	211.50	49489	46488	422.5	17277	9326	387.5	8921	4224			
16	16-Aug-14	211.50	73963	73463	422.4	4898	9112	386.6	8817	7898			
17	17-Aug-14	211.50	71494	70997	422.3	4482	9995	385.9	8686	8098			
18	18-Aug-14	211.50	55425	54925	422.3	4800	8968	385.2	8686	7860			
19	19-Aug-14	211.50	42725	42225	422.1	3822	3234	384.9	5877	3932			
20	20-Aug-14	211.50	43236	42236	421.9	3807	3807	384.8	4245	4245			
21	21-Aug-14	211.50	43236	45462	421.4	3823	3823	384.9	4109	4109			
22	22-Aug-14	211.50	33109	33109	420.9	2197	2197	384.8	1622	3062			
23	23-Aug-14	211.50	28563	19355	420.5	637	0	384.8	1606	1606			
24	24-Aug-14	211.50	22203	17202	420.1	3496	3238	385.0	2021	3084			
25	25-Aug-14	211.50	22956	17205	419.5	2951	3234	384.9	3507	2886			
26	26-Aug-14	211.50	17004	10753	418.9	0	3625	384.6	3648	3648			
27	27-Aug-14	211.50	17254	10753	418.4	342	342	384.8	1092	1092			
28	28-Aug-14	211.50	16100	8600	417.9	1995	0	385.0	1392	0			
29	29-Aug-14	211.50	13954	6452	417.4	6879	578	385.3	600	0			
30	30-Aug-14	211.50	13954	6452	416.7	596	0	385.4	1131	531			
31	31-Aug-14	211.50	7951	6451	416.1	926	0	385.4	633	262			
		TOTAL	**1786263**	**1594034**		**156205**	**81409**		**292432**	**129615**			

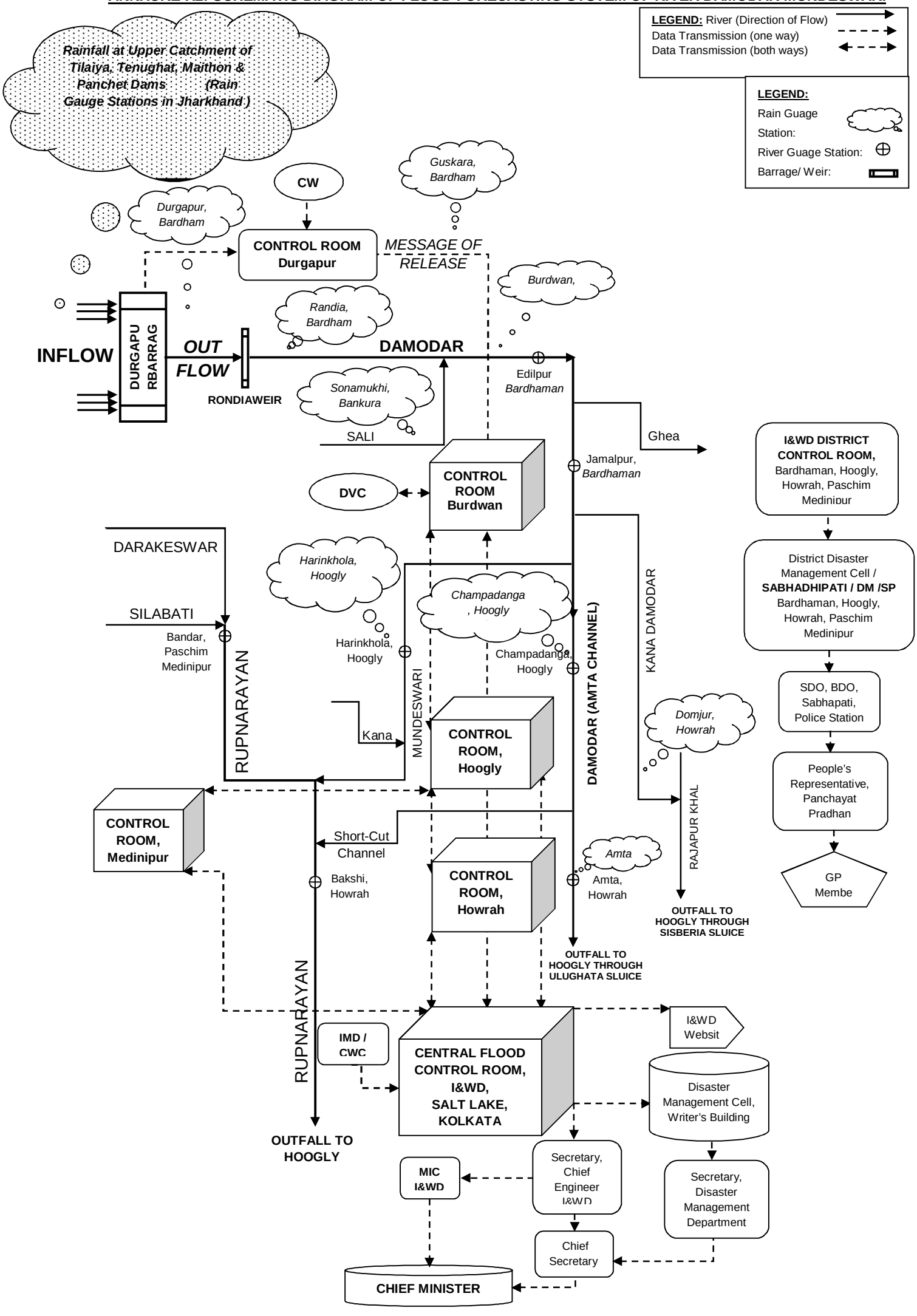
ANNEXURE-D4

Sl. No.	Date	DURGAPUR BARRAGE			KANGSABATI DAM			MASSANJORE DAM			TILPARA BARRAGE		
		RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)	RESERVOIR LEVEL (ft)	INFLOW (Cusecs)	OUTFLOW (Cusecs)
1	01-Sep-14	211.50	9653	2151									
2	02-Sep-14	211.50	14104	8602									
3	03-Sep-14	211.50	13600	8600									
4	04-Sep-14	211.50	22200	17200									
5	05-Sep-14	211.50	23281	18279									
6	06-Sep-14	211.50	17905	12903									
7	07-Sep-14	211.50	15754	10753									
8	08-Sep-14	211.50	16251	10751									
9	09-Sep-14	211.50	17330	11828									
10	10-Sep-14	211.50	15179	9678									
11	11-Sep-14	211.50	14104	8602									
12	12-Sep-14	211.50	12953	6452									
13	13-Sep-14	211.50	13954	6452									
14	14-Sep-14	211.50	5559	50									
15	15-Sep-14	211.50	8552	50									
16	16-Sep-14	211.50	8550	50									
17	17-Sep-14	211.50	8550	50									
18	18-Sep-14	211.50	9052	50									
19	19-Sep-14	211.50	14379	5376									
20	20-Sep-14	211.50	9052	50									
21	21-Sep-14	211.50	9051	50									
22	22-Sep-14	211.50	30508	26051									
23	23-Sep-14	211.50	28357	19354									
24	24-Sep-14	211.50	21580	12900									
25	25-Sep-14	211.50	13053	4301									
26	26-Sep-14	211.50	13053	4301									
27	27-Sep-14	211.50	15204	6452									
28	28-Sep-14	211.50	2801	50									
29	29-Sep-14	211.50	7552	50									
30	30-Sep-14	211.50	8552	50									
		TOTAL	**419673**	**211486**									

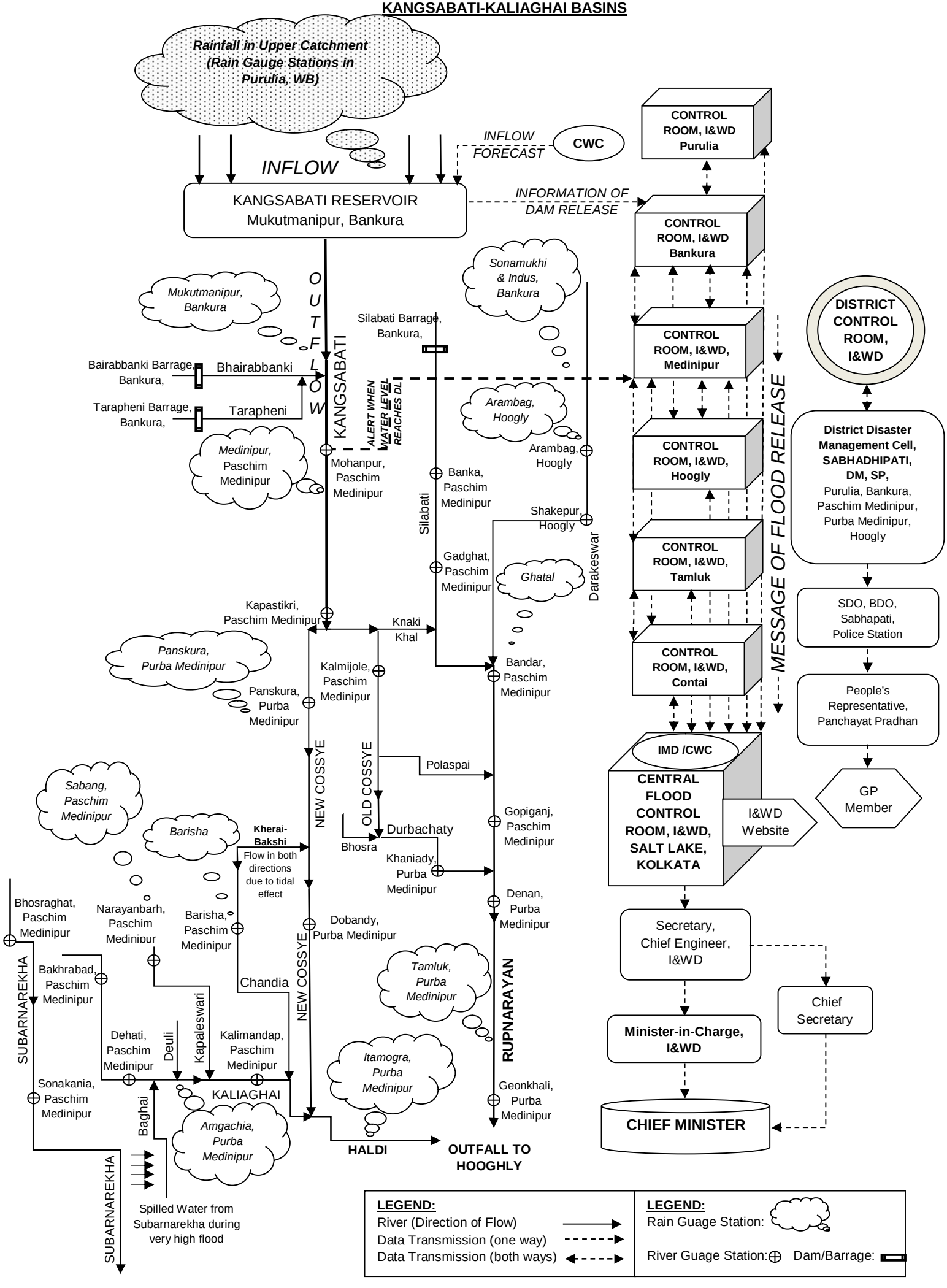
ANNEXURE-X1: SCHEMATIC DIAGRAM OF FLOOD WARNING SYSTEM OF AJAY-MAYURAKSHI-DWARKA SUB-BASINS



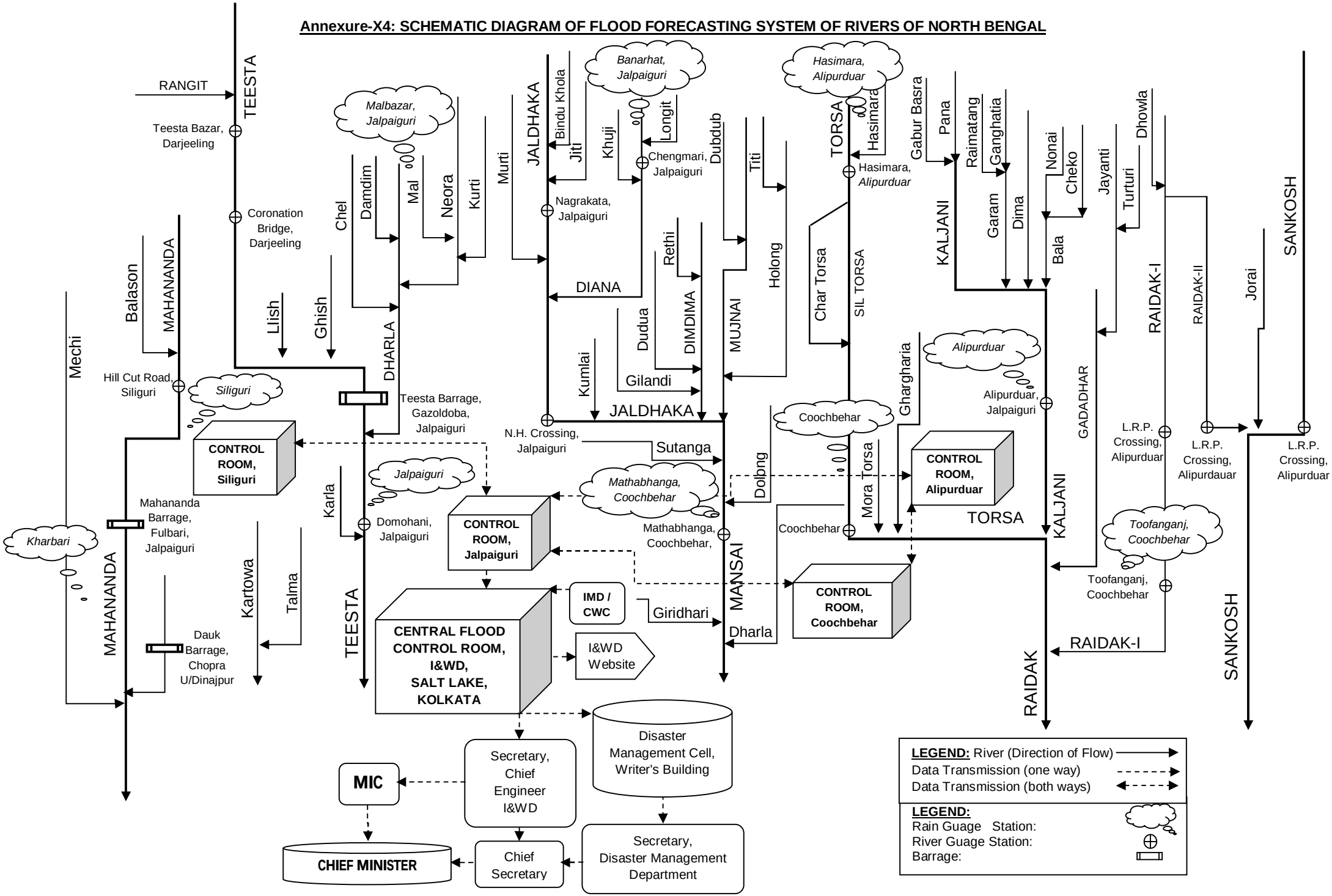
ANNXURE-X2: SCHEMATIC DIAGRAM OF FLOOD FORECASTING SYSTEM OF RIVER DAMODAR-MUNDESWARI



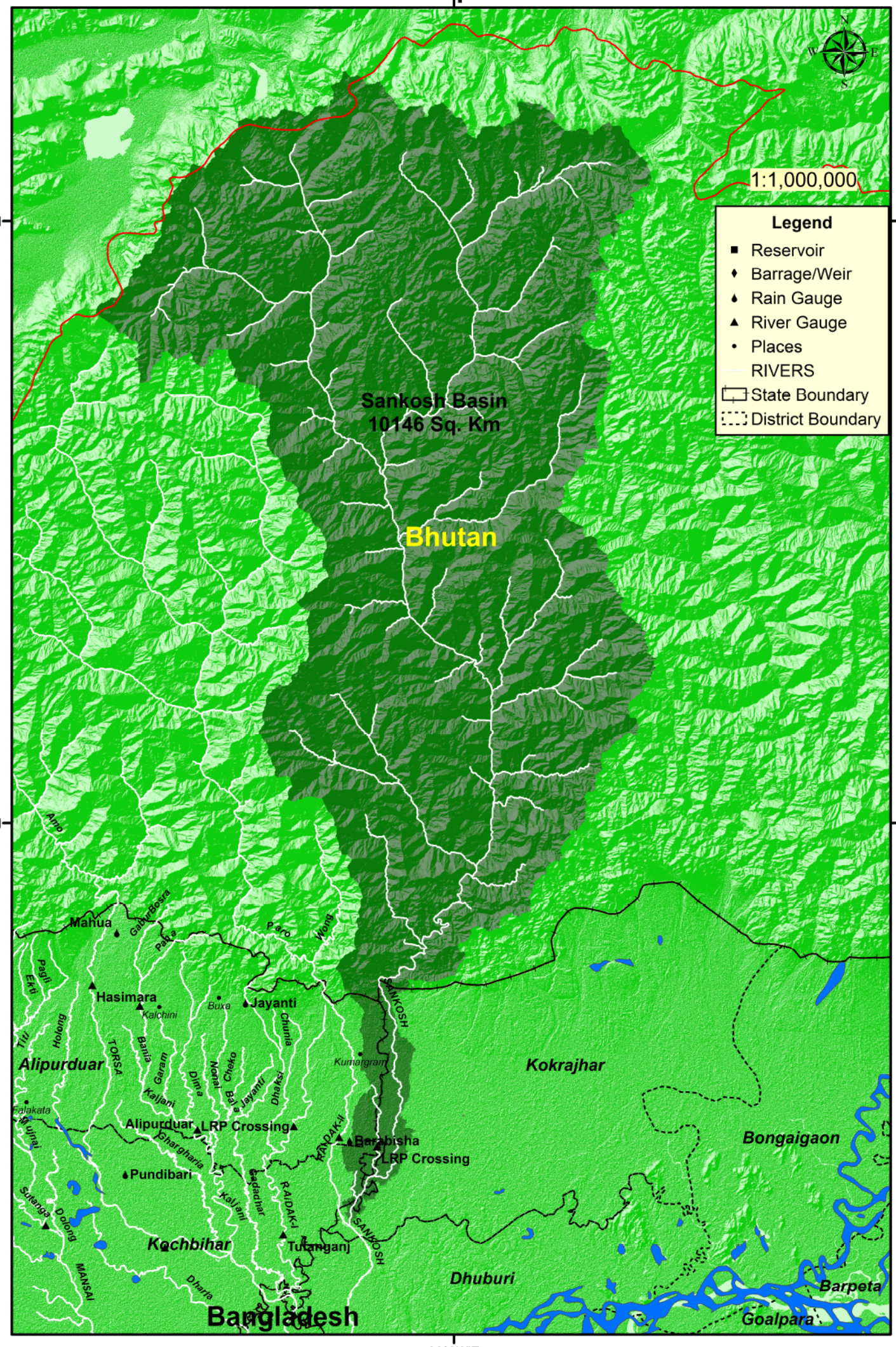
ANNEXURE-X3: SCHEMATIC DIAGRAM OF FLOOD FORECASTING SYSTEM OF SILABATI-DWARAKESWAR-KANGSABATI-KALIAGHAI BASINS



Annexure-X4: SCHEMATIC DIAGRAM OF FLOOD FORECASTING SYSTEM OF RIVERS OF NORTH BENGAL



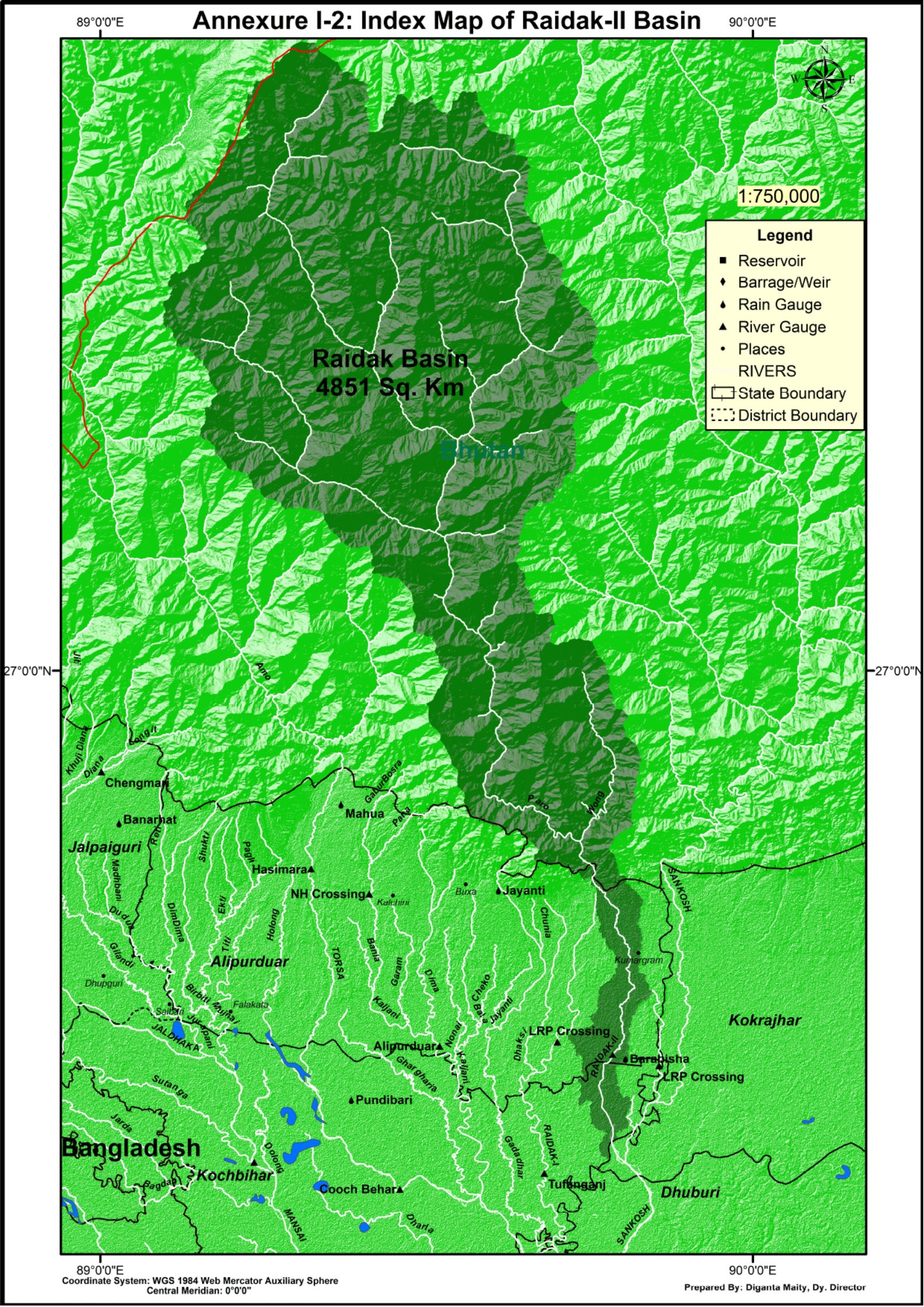
Annexure I-1: Index Map of Sankosh Basin



Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

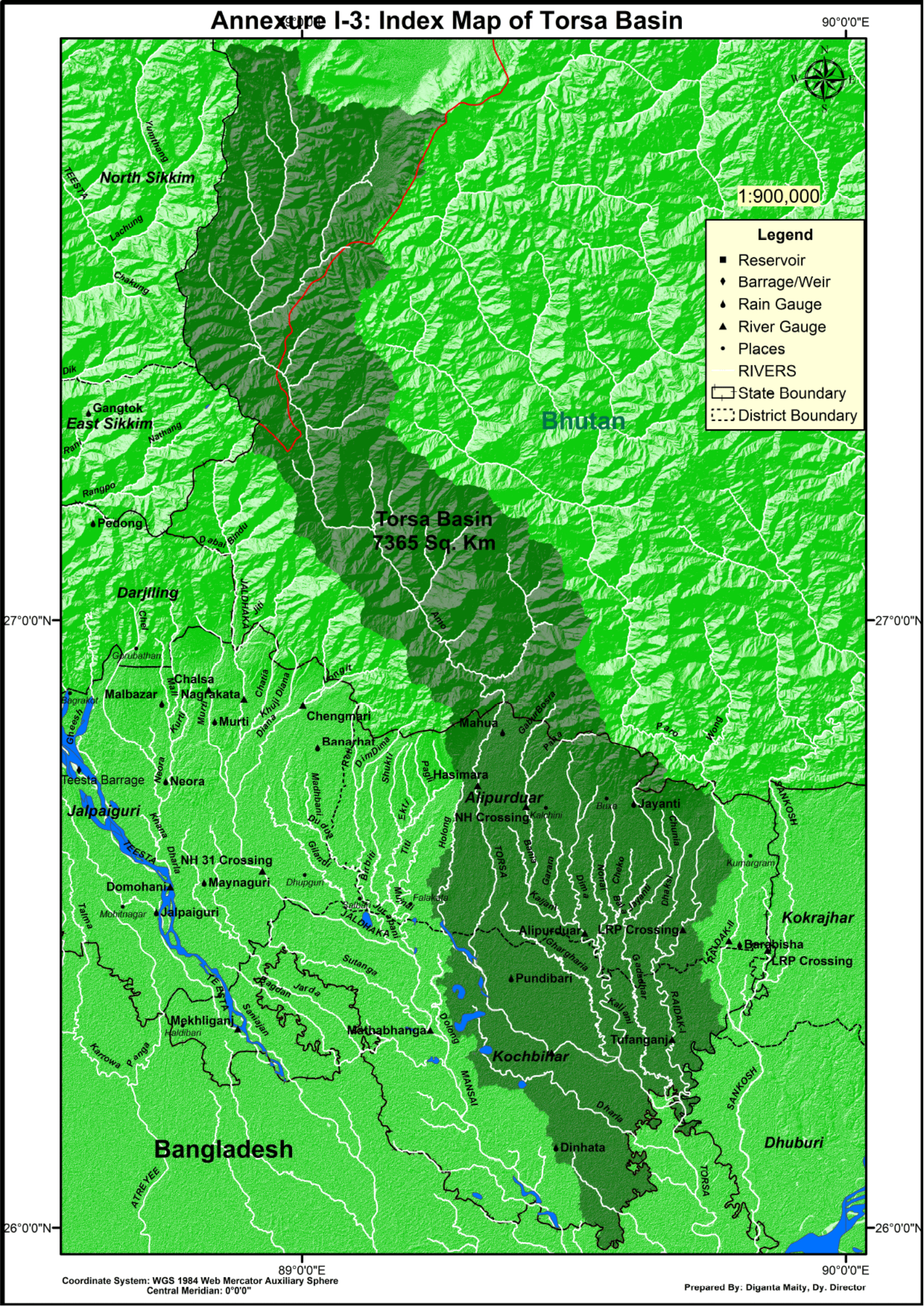
Annexure I-2: Index Map of Raidak-II Basin



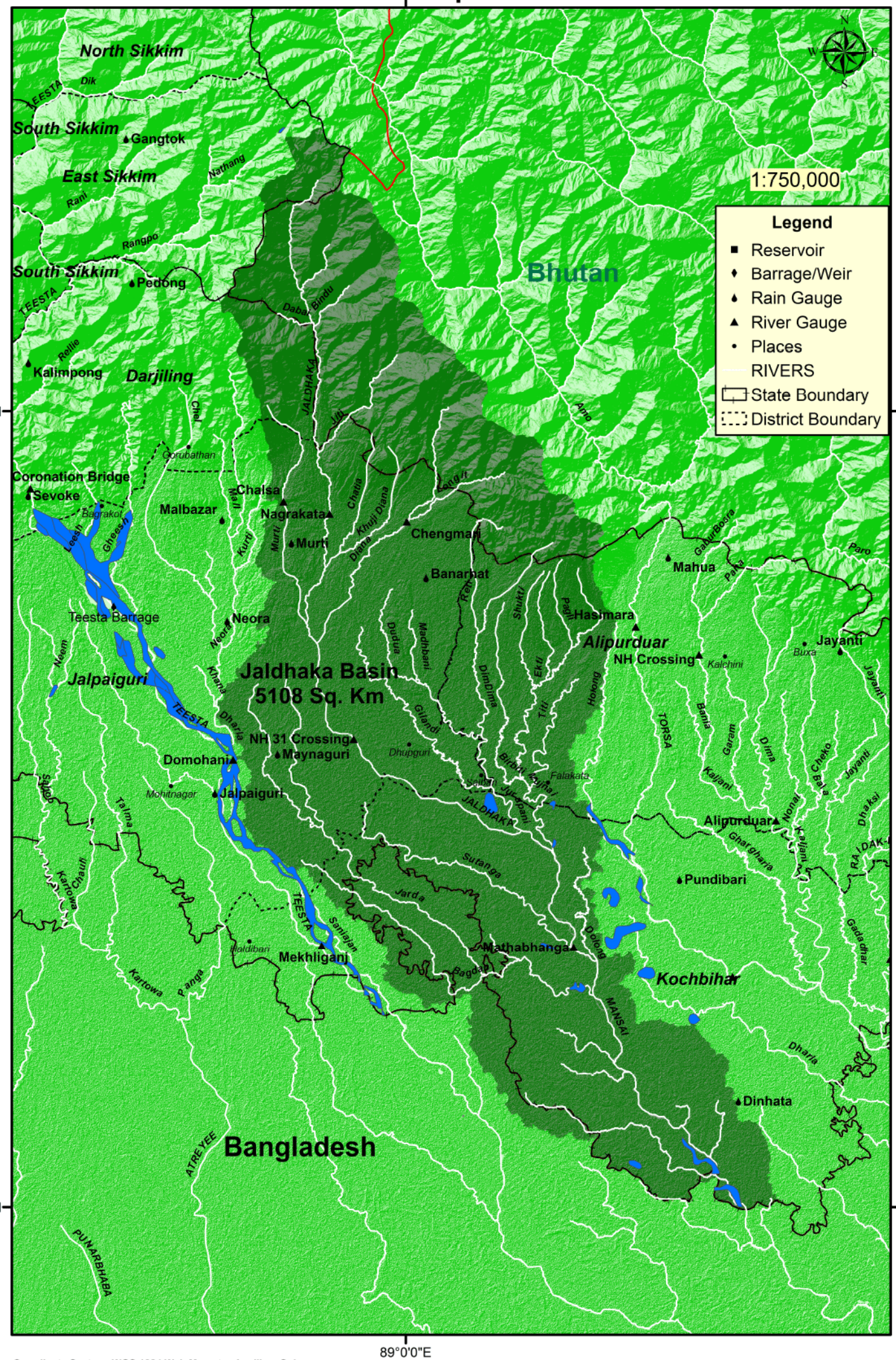
Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

Annexure I-3: Index Map of Torsa Basin



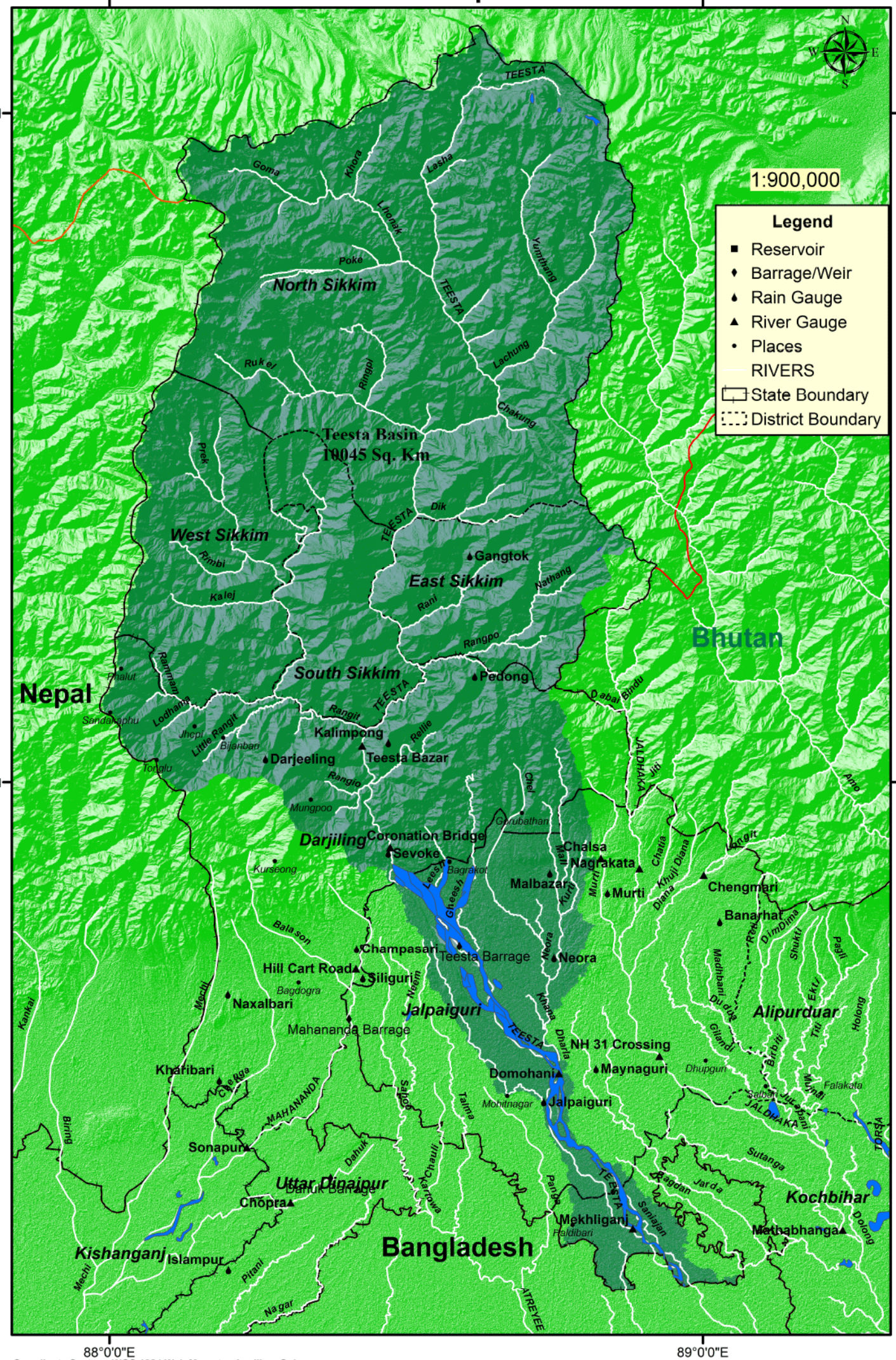
Annexure I-4: Index Map of Jaldhaka Basin



Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

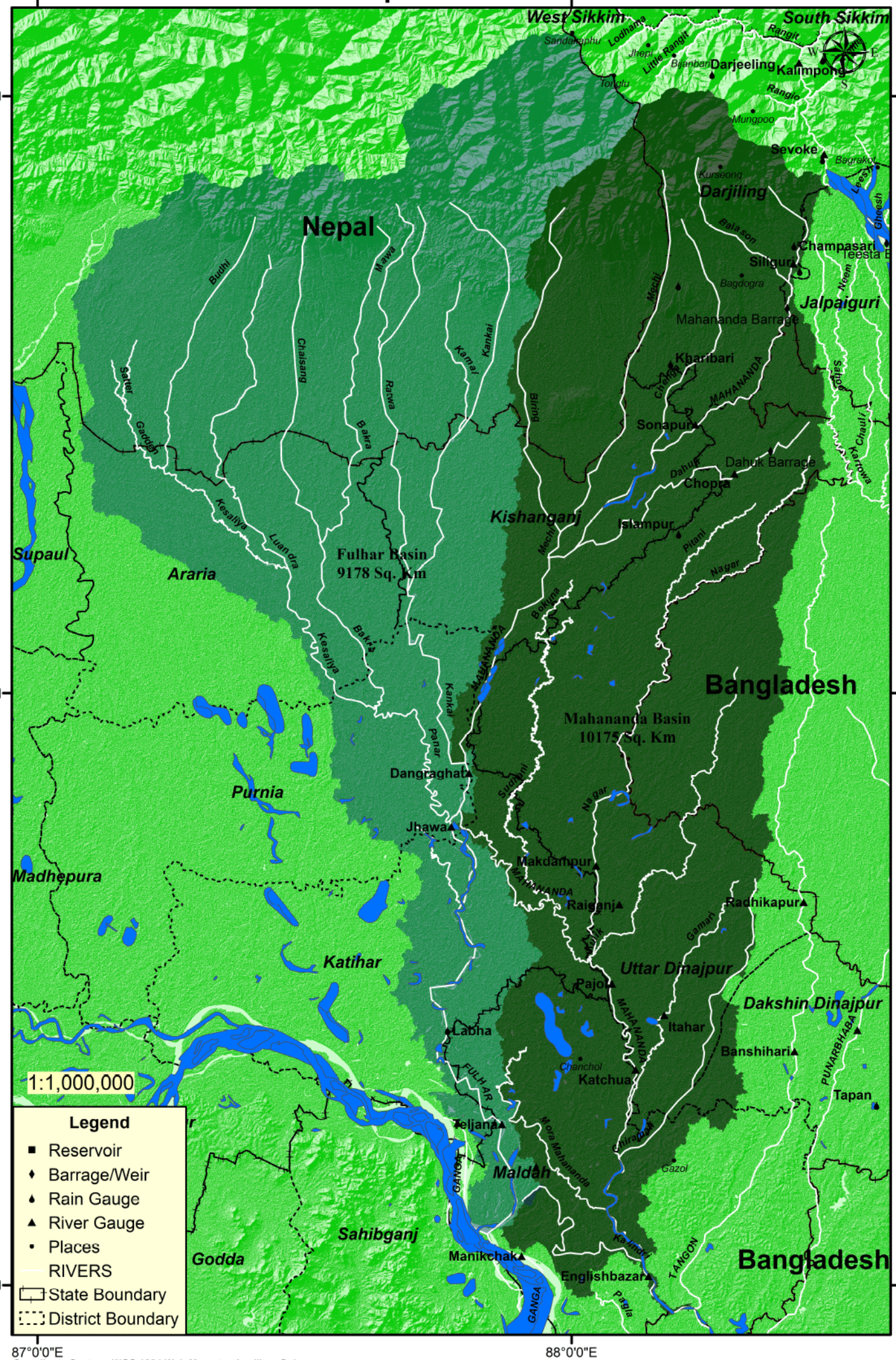
Annexure I-5: Index Map of Teesa Basin



Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

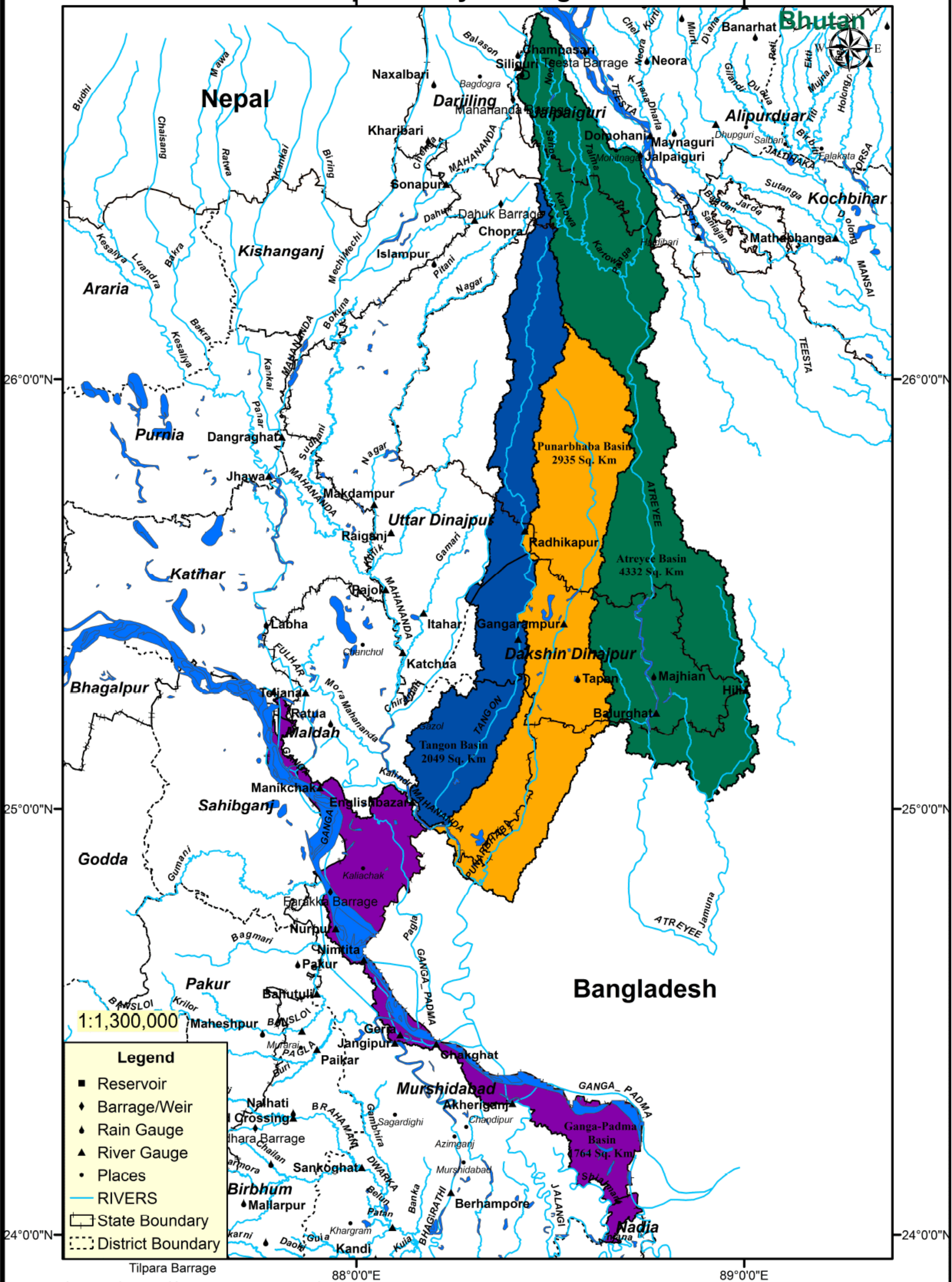
Annexure I-6: Index Map of Mahananda-Fulhar Basins



Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

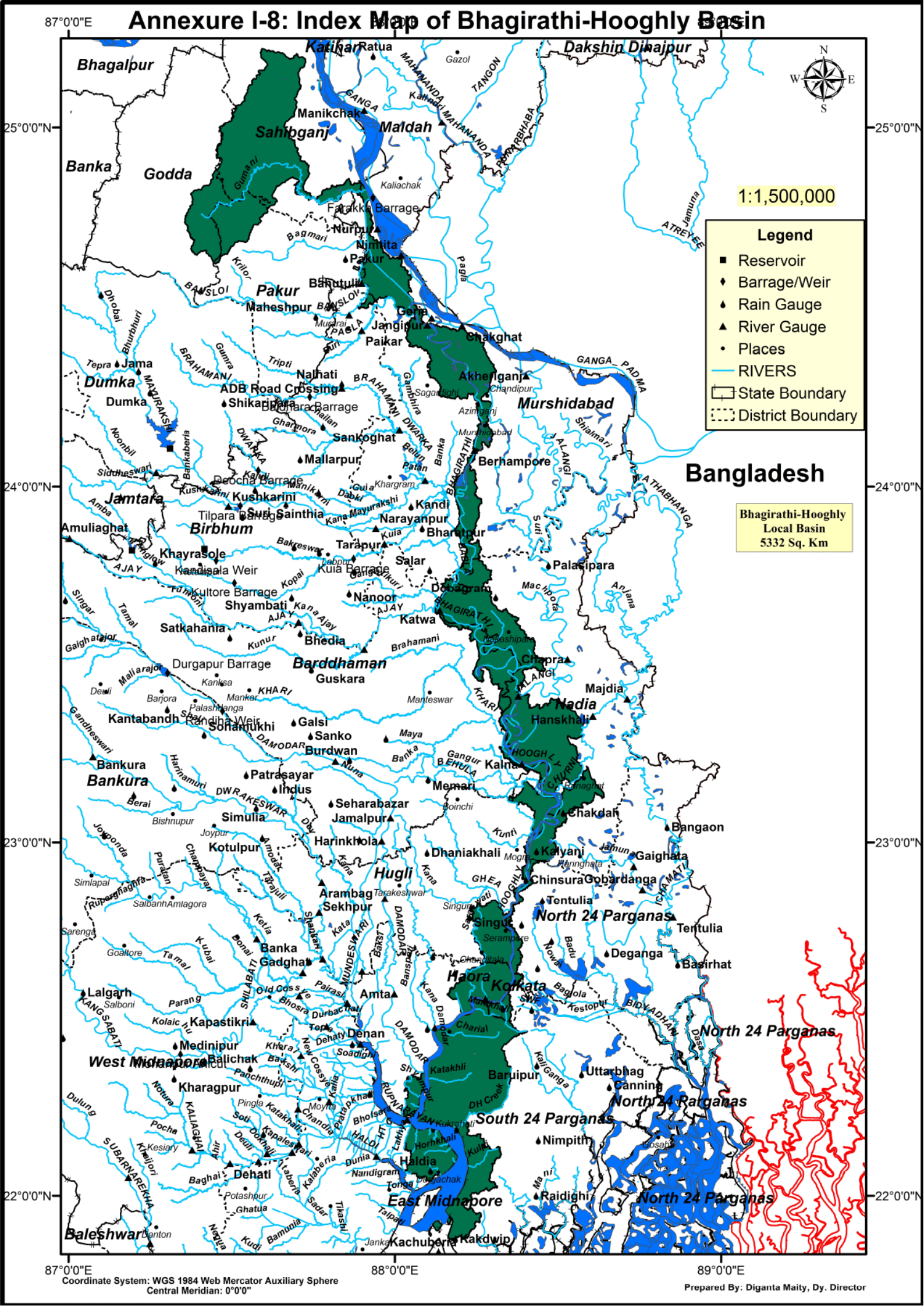
Annexure I-7: Index Map of Atreyee-Tangon-Punarbhaba Basins



Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

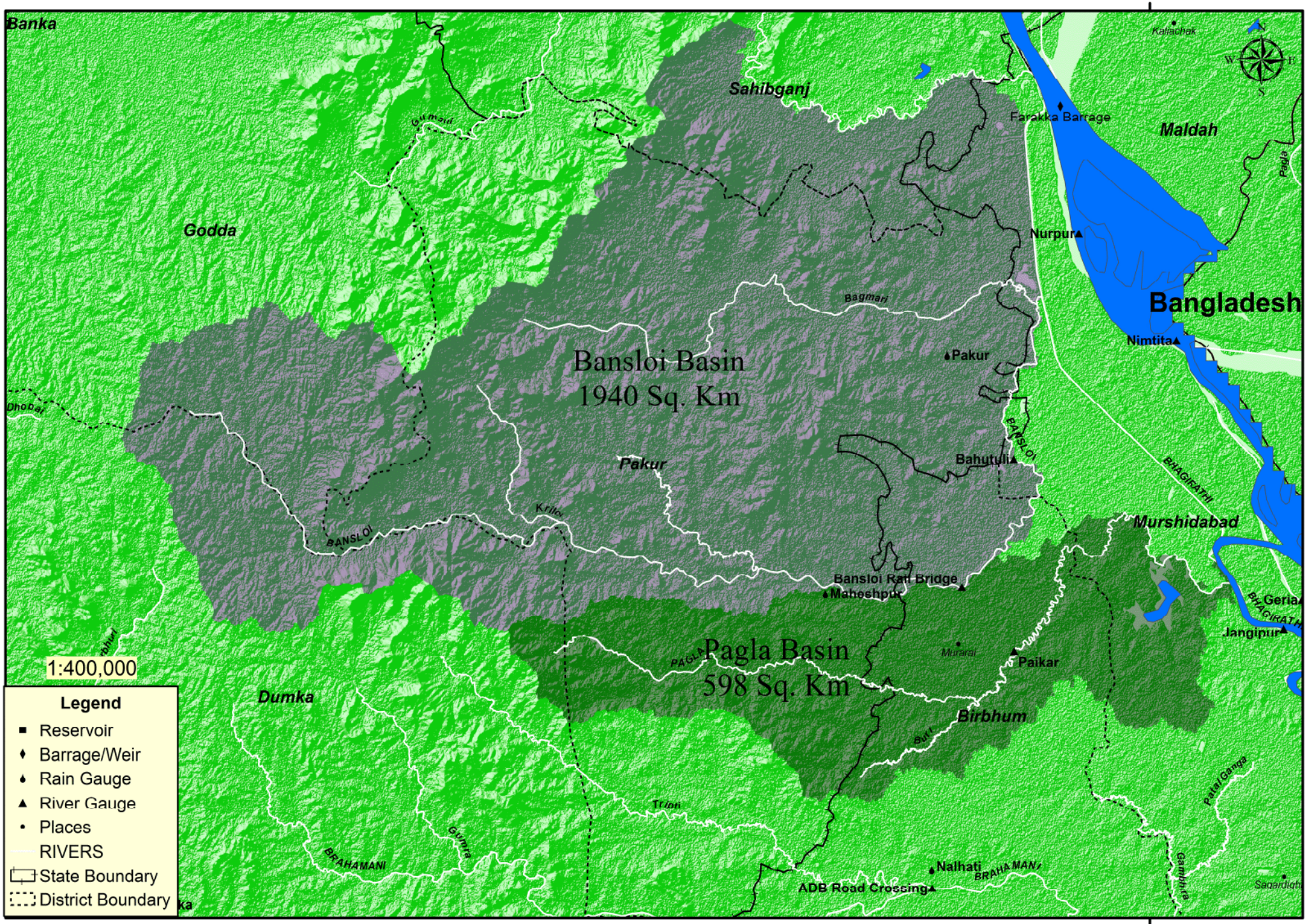
Annexure I-8: Index Map of Bhagirathi-Hooghly Basin



Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

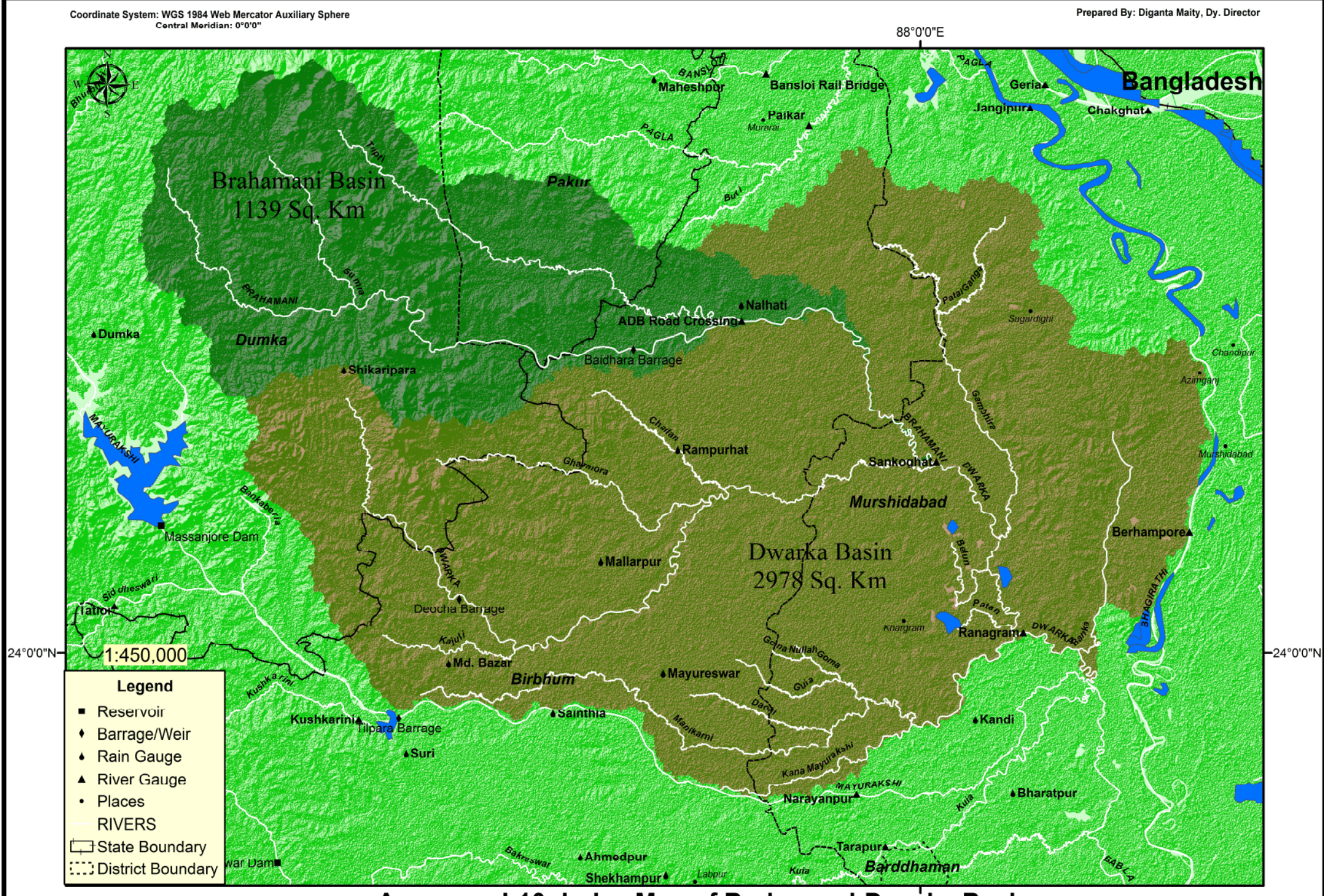
Prepared By: Diganta Maity, Dy. Director

88°0'0"E



88°0'0"E

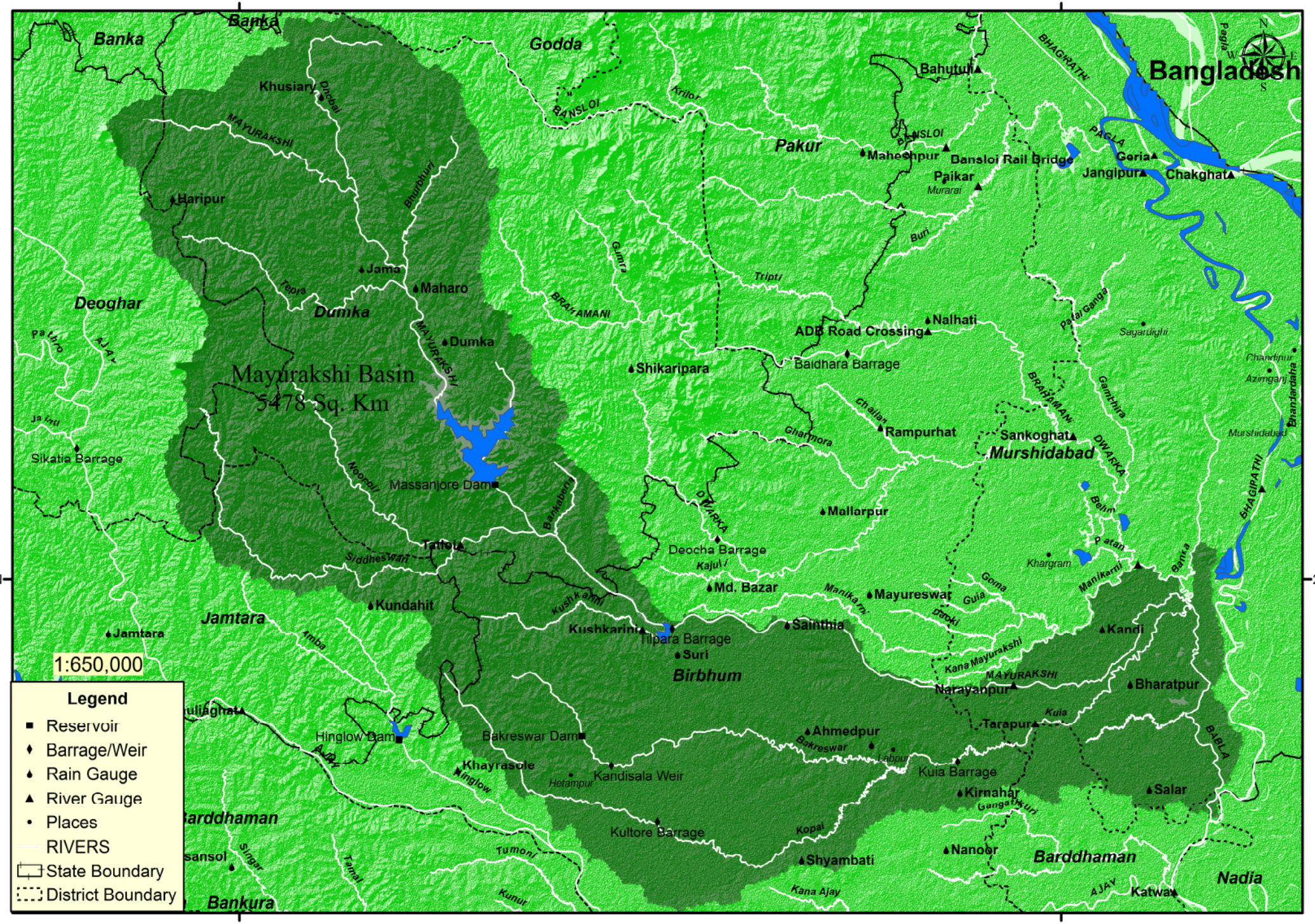
Annexure I-9: Index Map of Pagla-Bansloi Basins



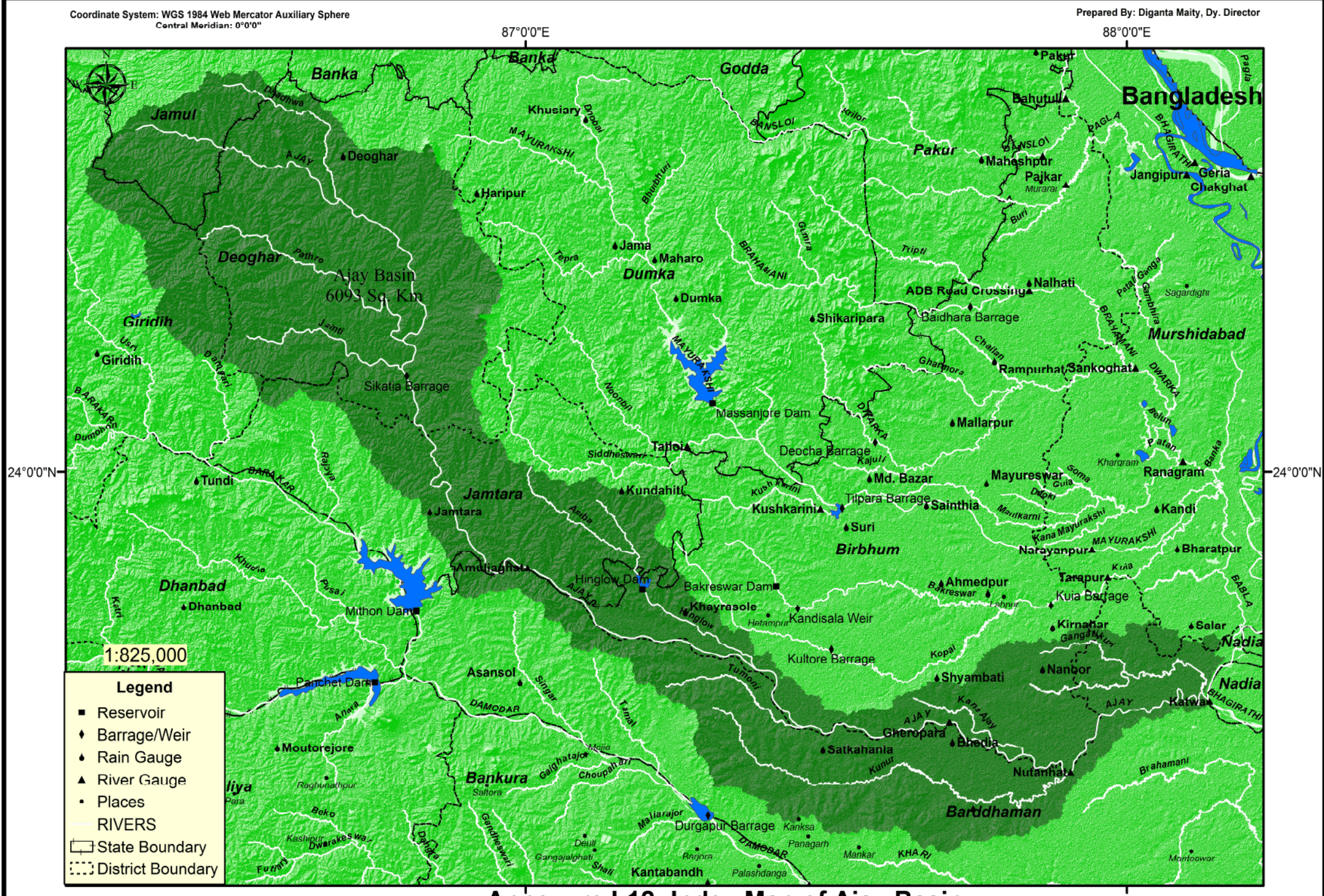
Annexure I-10: Index Map of Brahamani-Dwarka Basins

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

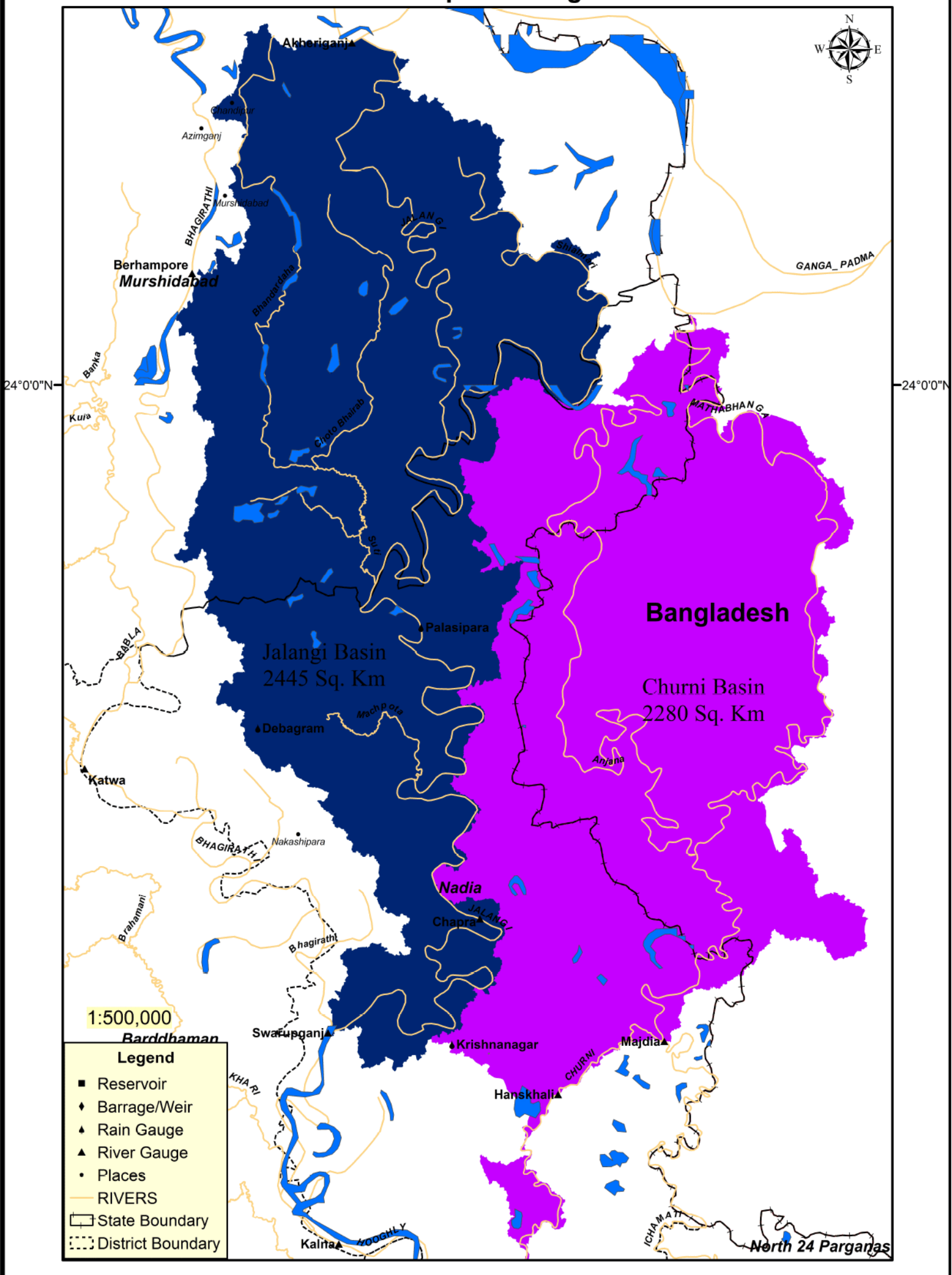


Annexure I-11: Index Map of Mayurakshi Basin



Annexure I-12: Index Map of Ajay Basin

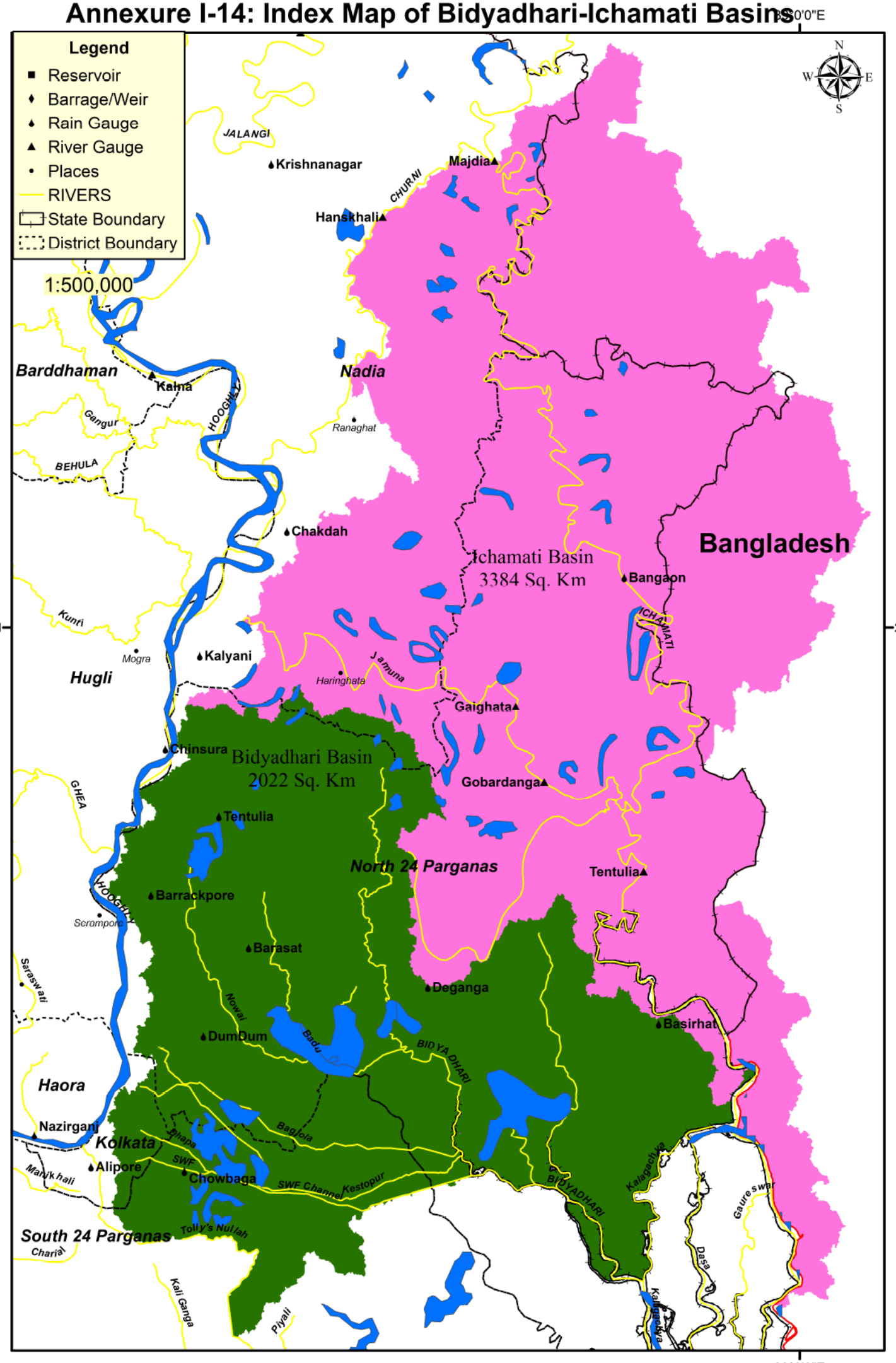
Annexure I-13: Index Map of Jalangi-Churni Basins



Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

Annexure I-14: Index Map of Bidyadhari-Ichamati Basins

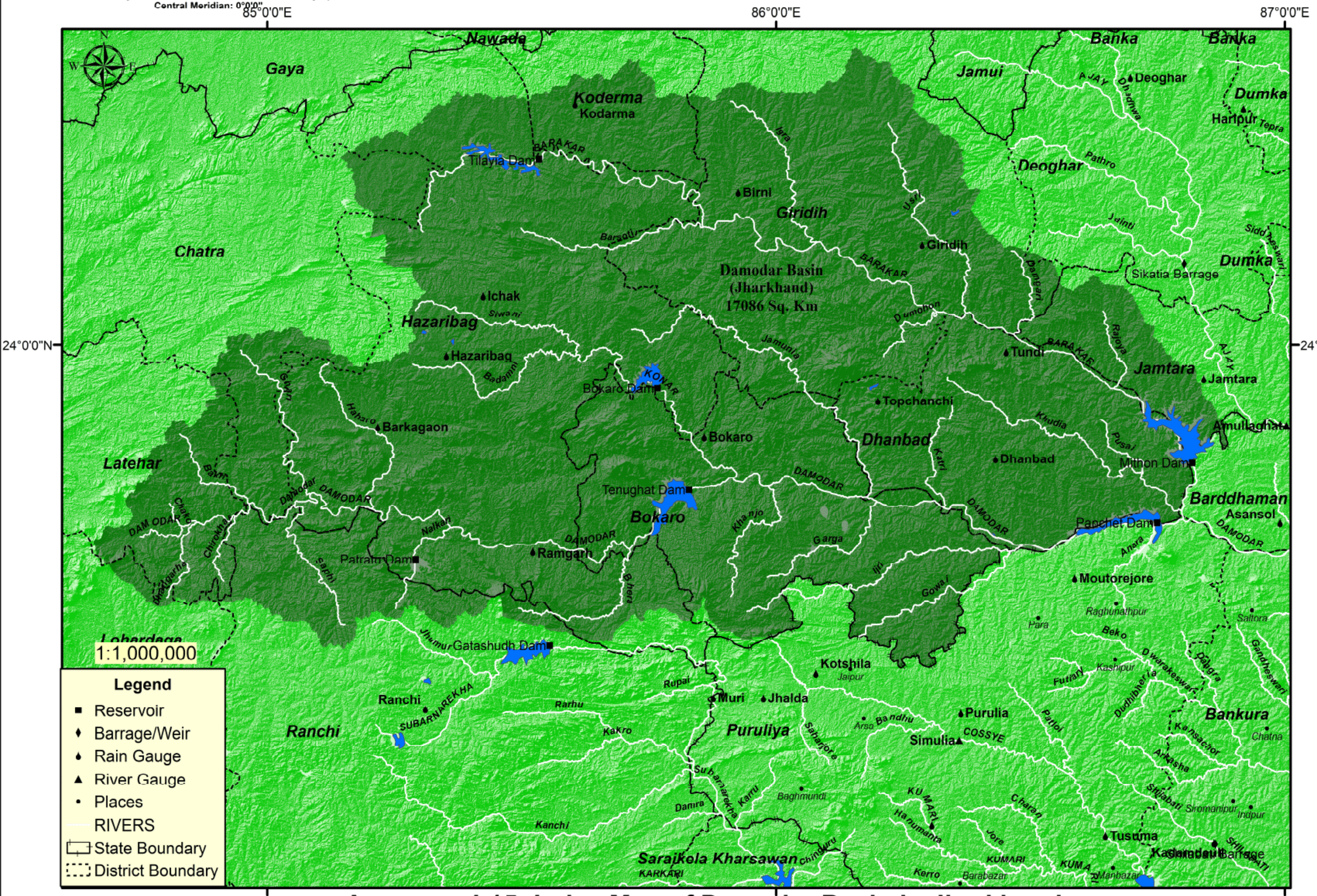


Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

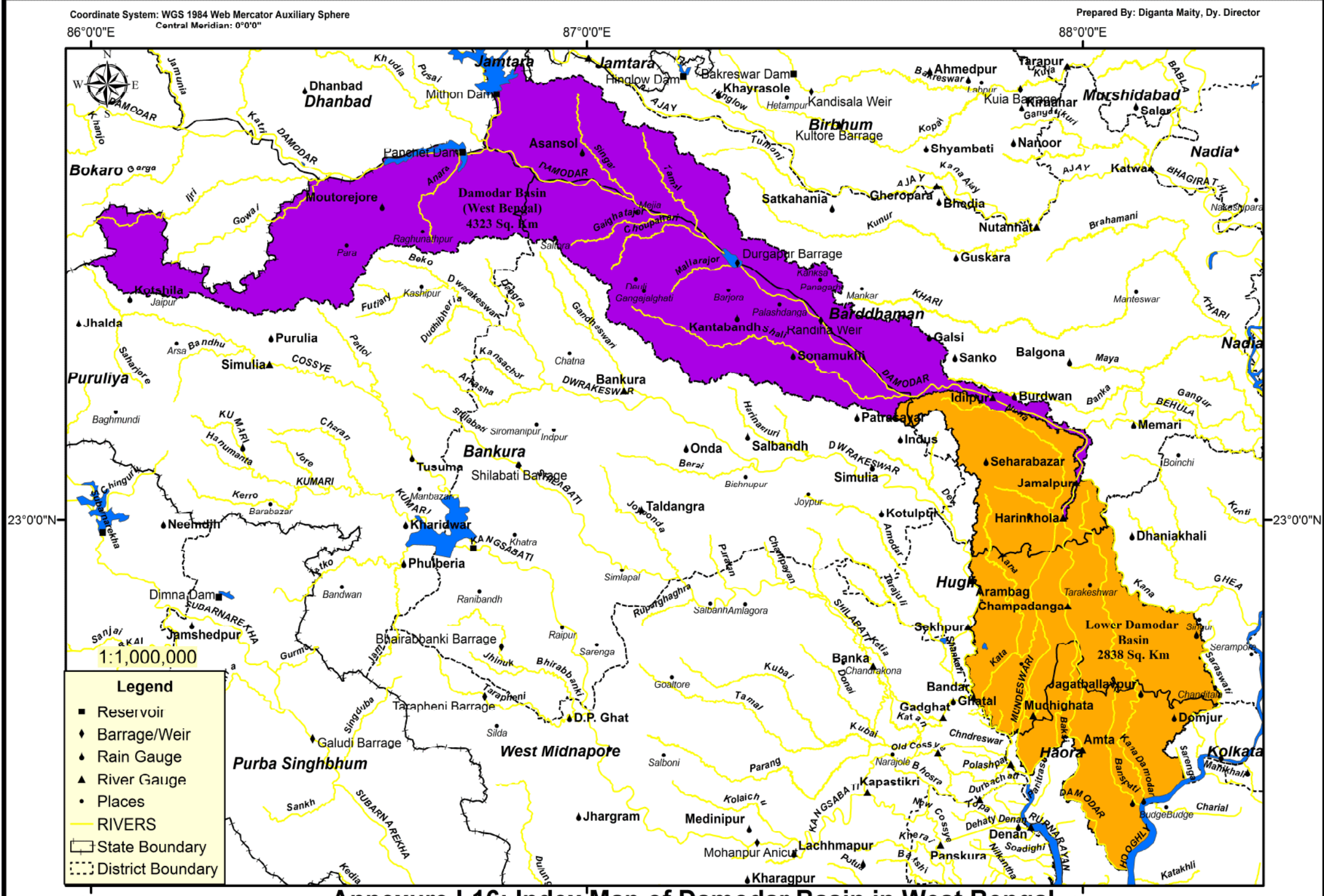
Prepared By: Diganta Maity, Dy. Director

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

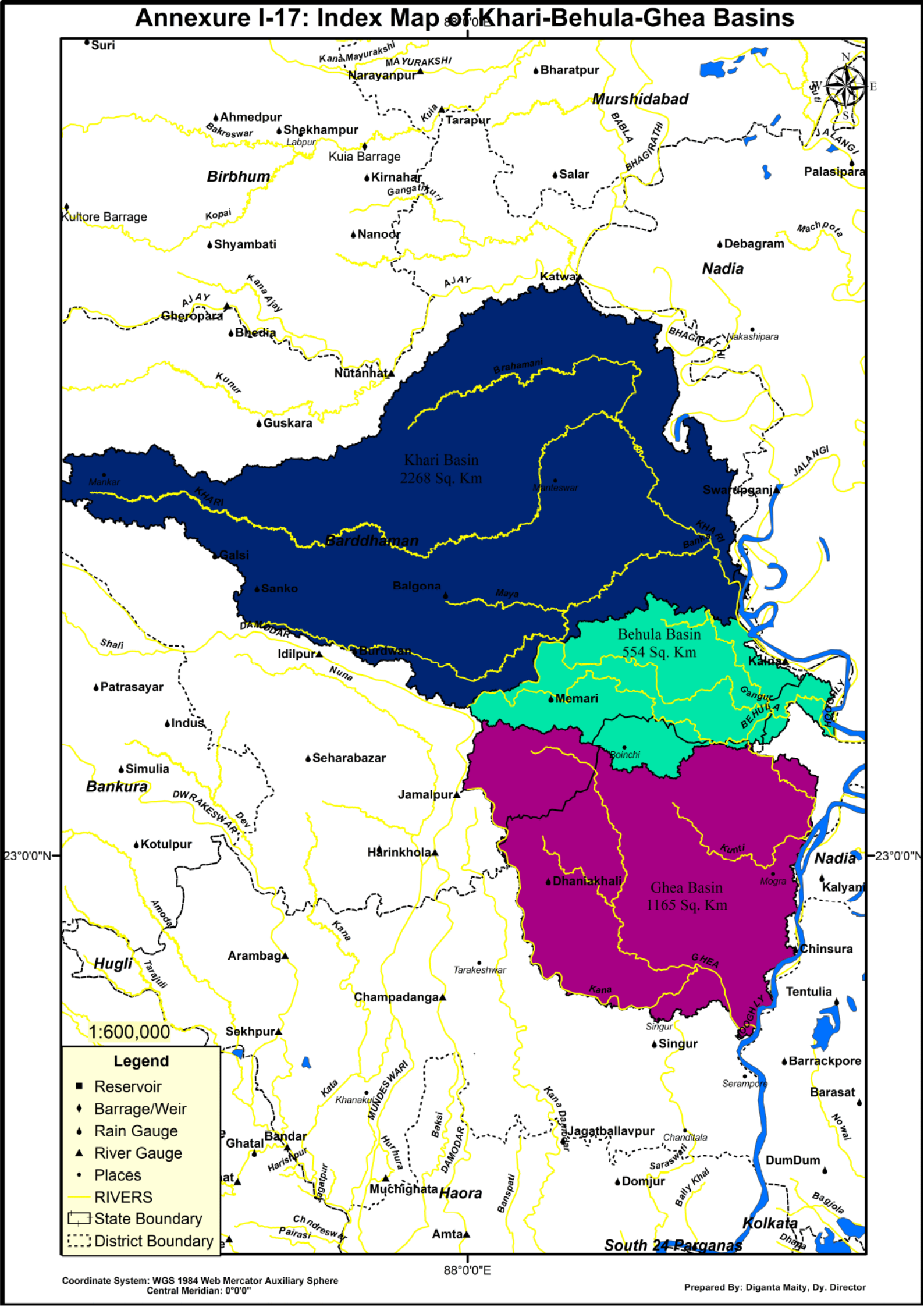


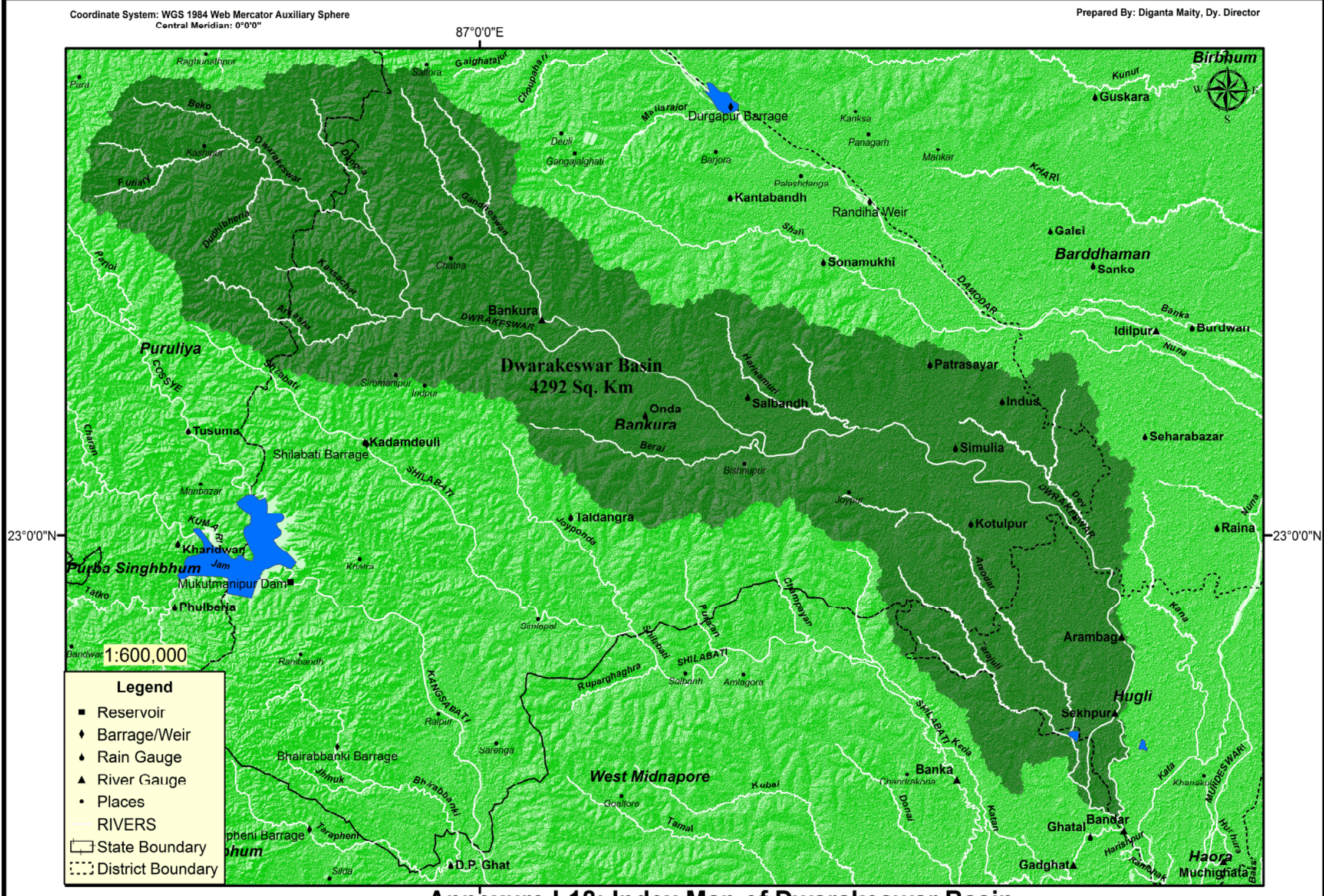
Annexure I-15: Index Map of Damodar Basin in Jharkhand



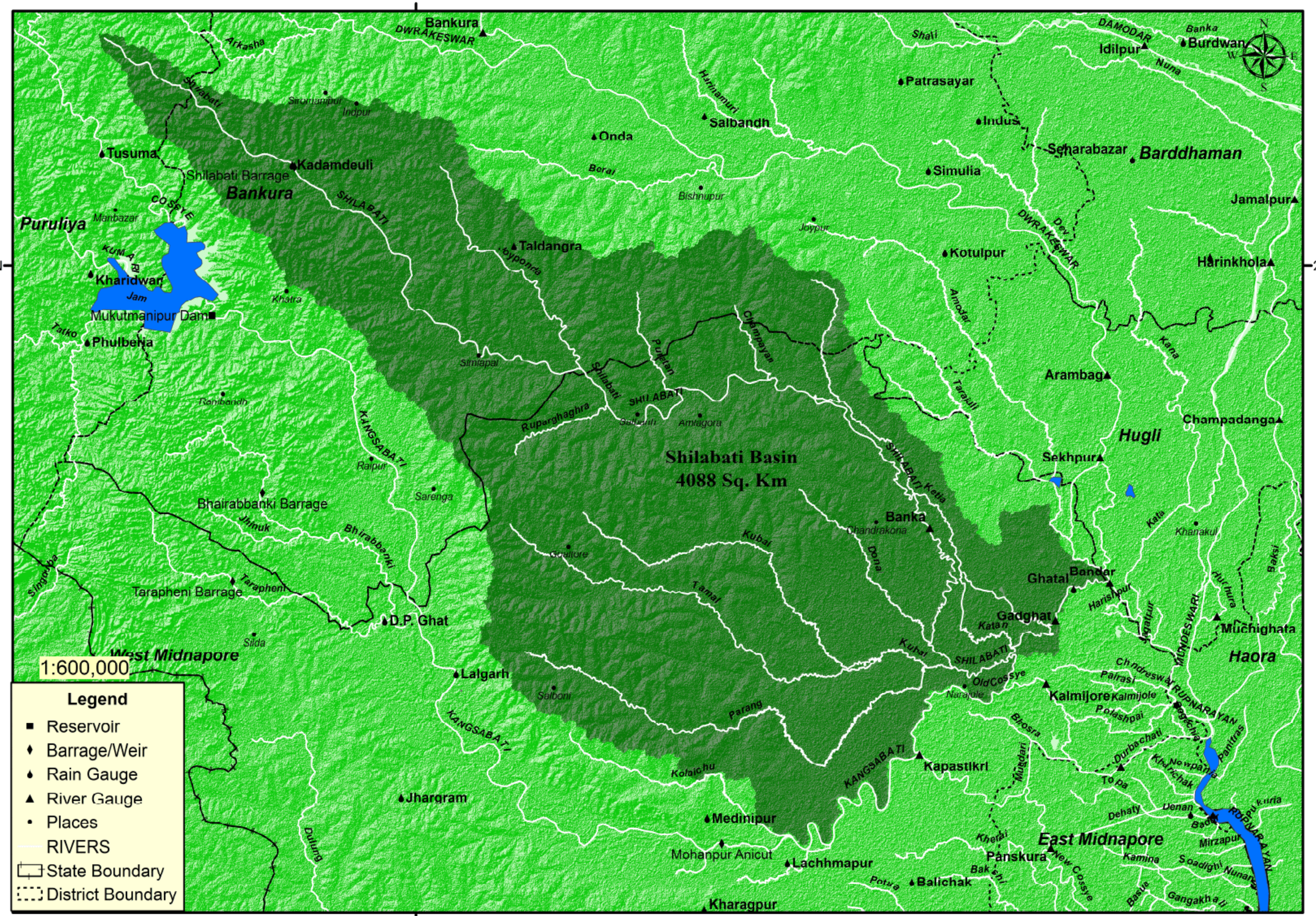
Annexure I-16: Index Map of Damodar Basin in West Bengal

Annexure I-17: Index Map of Khari-Behula-Ghea Basins



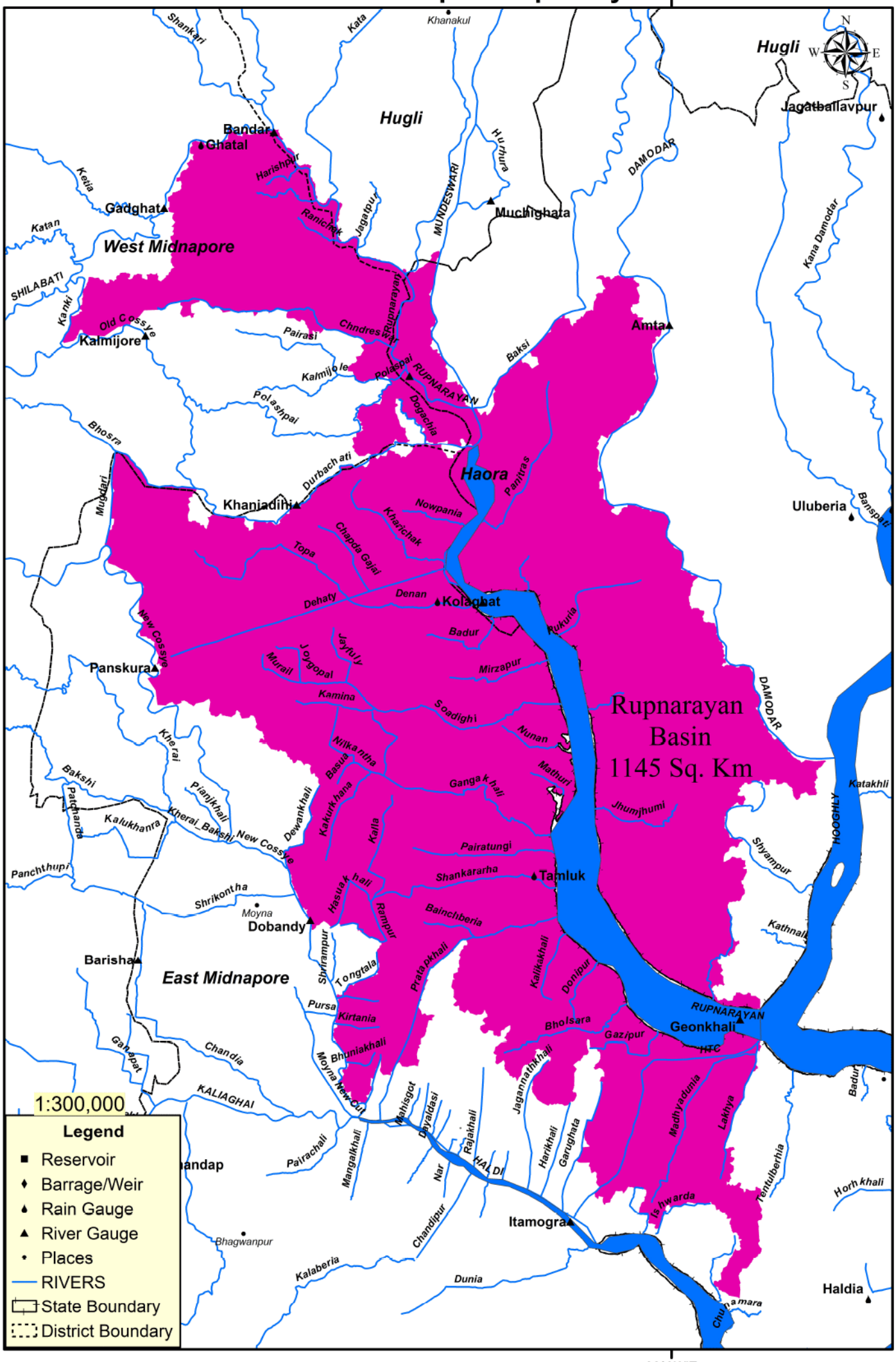


Annexure I-18: Index Map of Dwarakeswar Basin



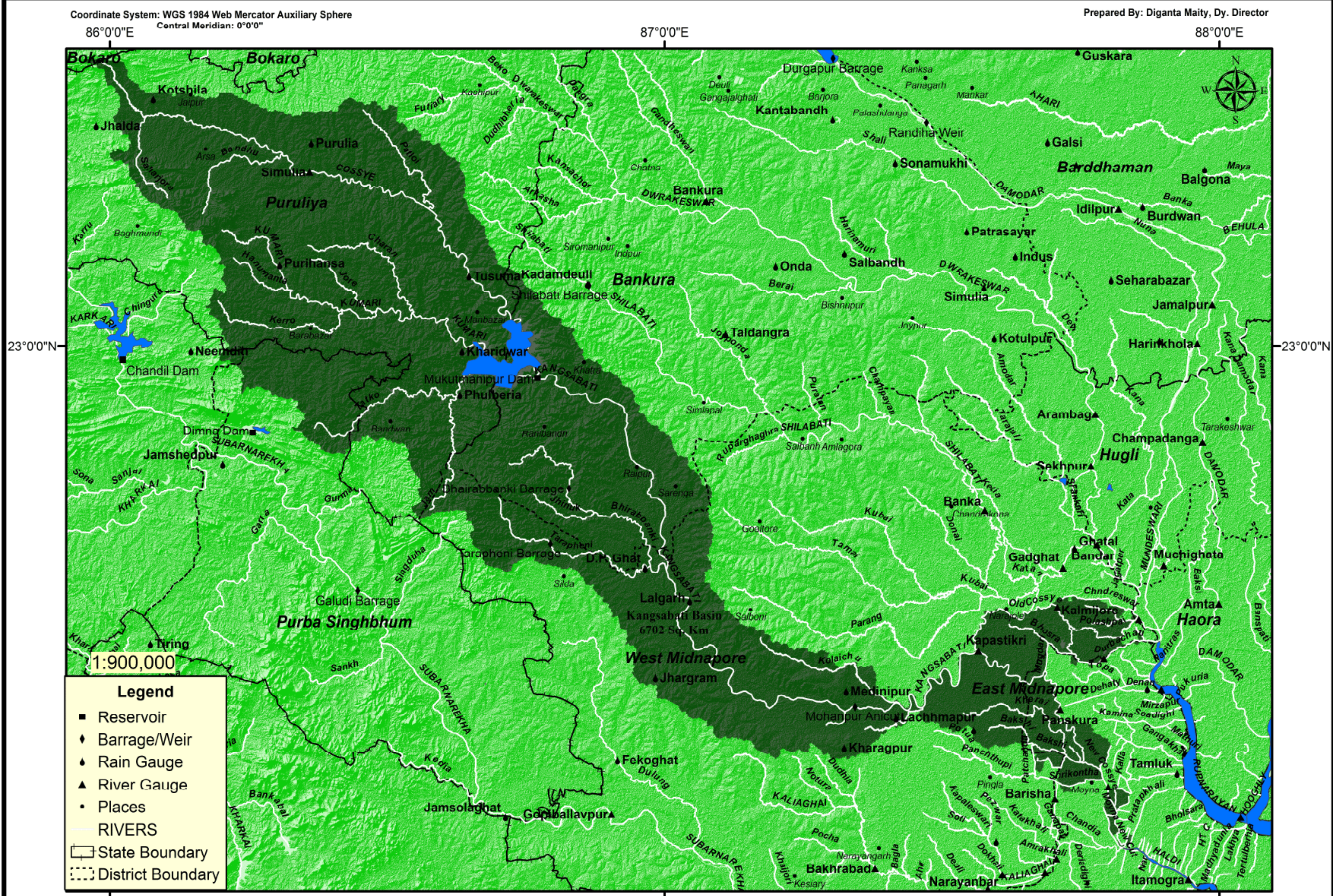
Annexure I-19: Index Map of Shilabati Basin

Annexure I-20: Index Map of Rupnarayan Basin



Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

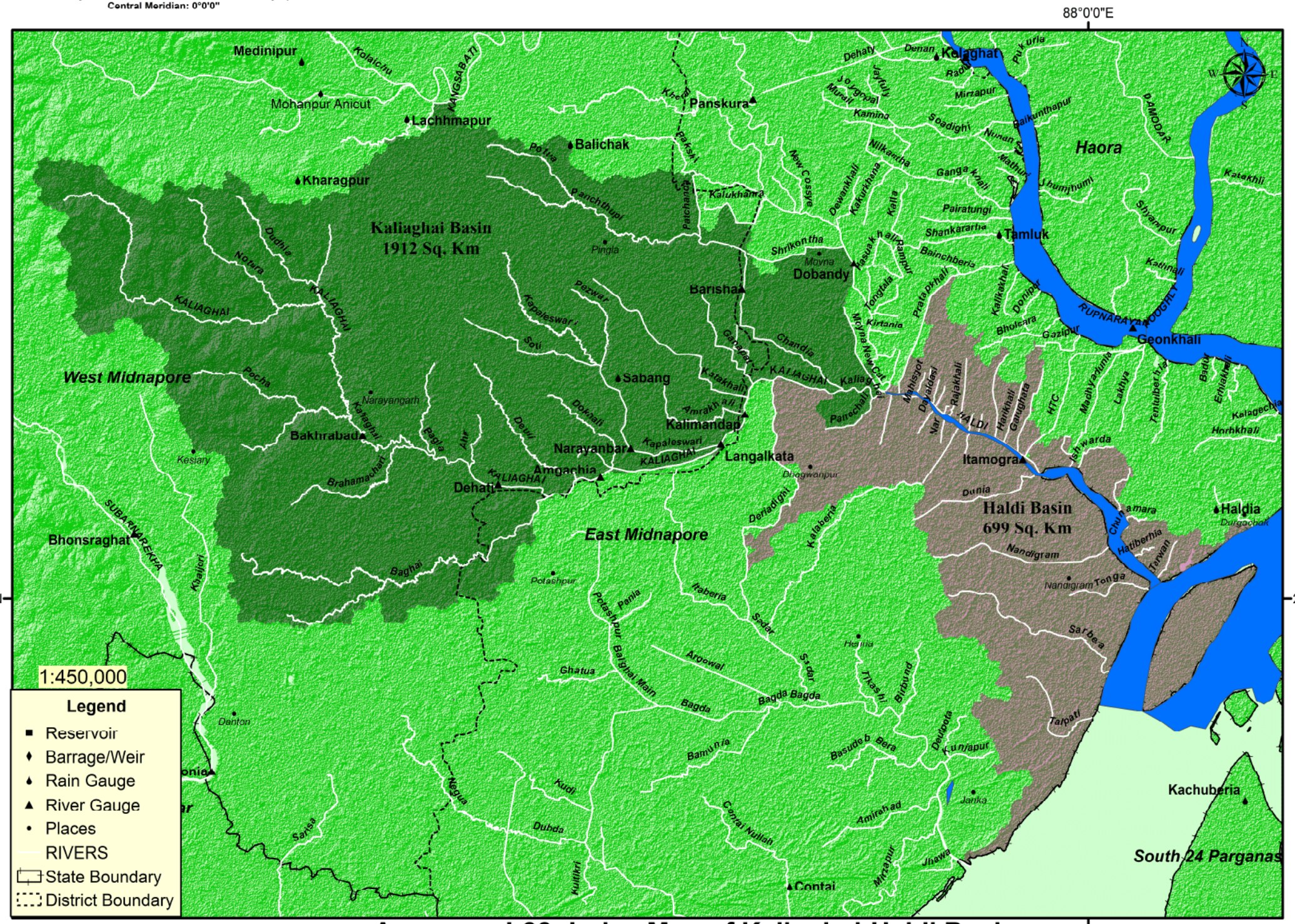
Prepared By: Diganta Maity, Dy. Director



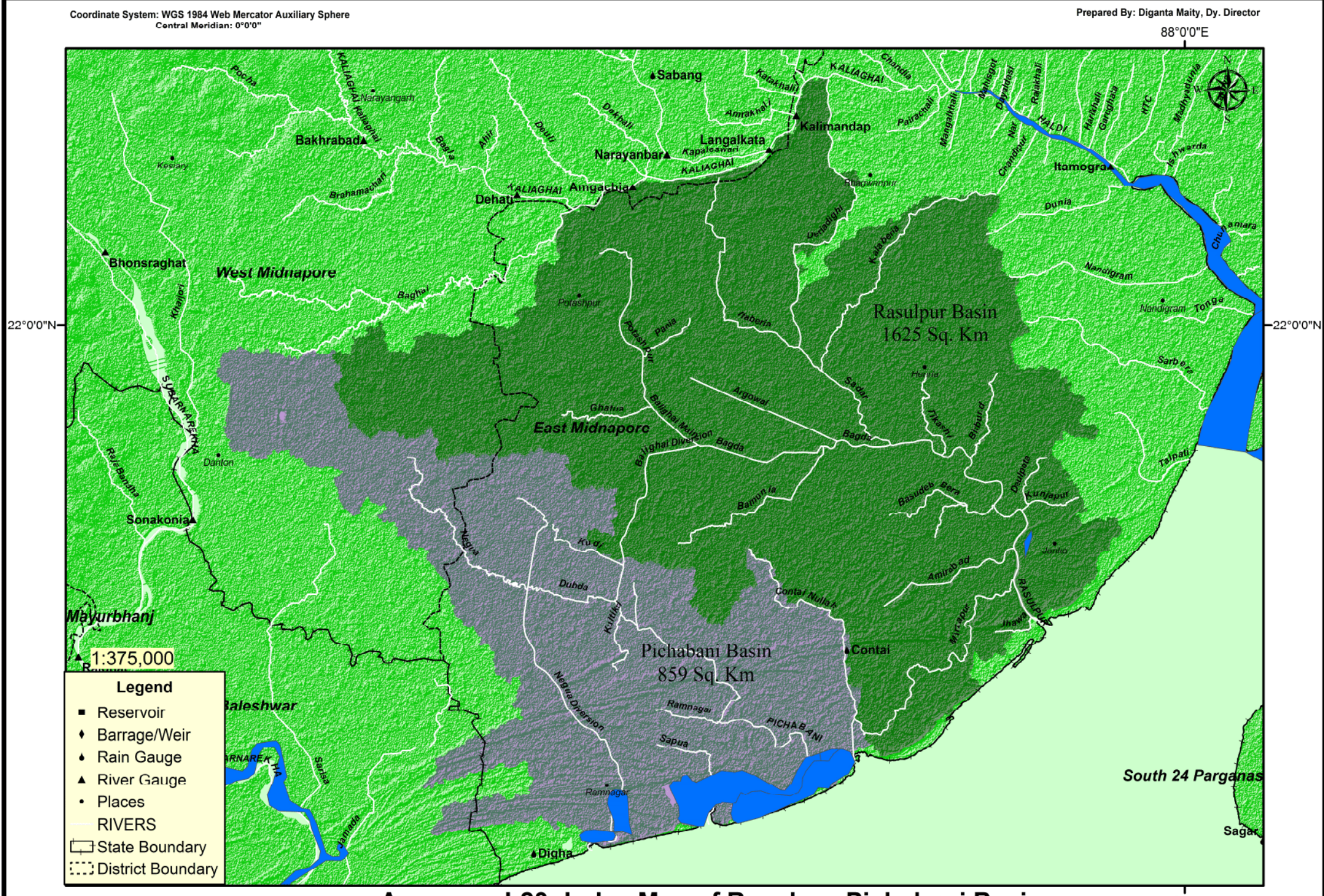
Annexure I-21: Index Map of Kangsabati Basin

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

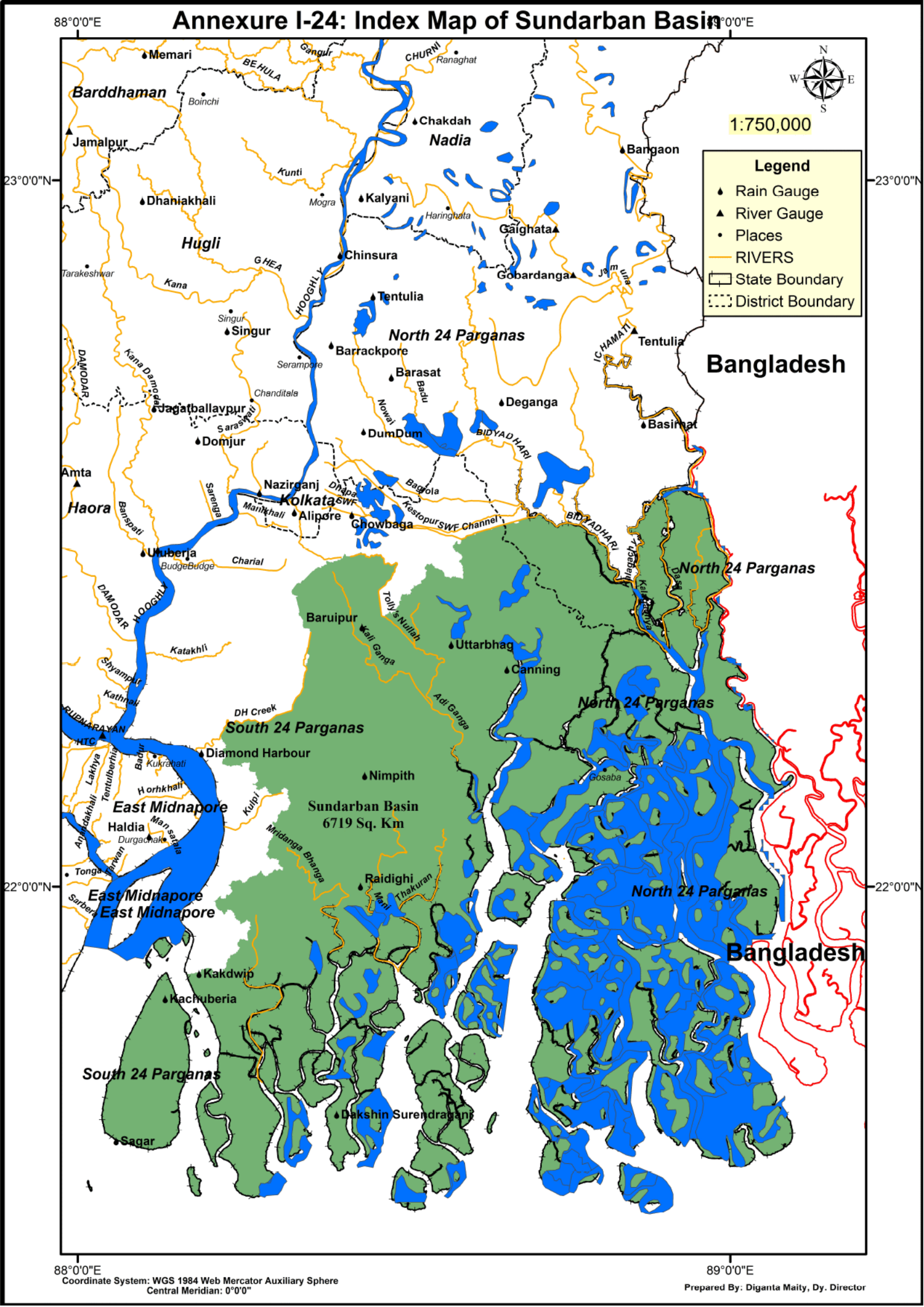


Annexure I-22: Index Map of Kaliaghai-Haldi Basins



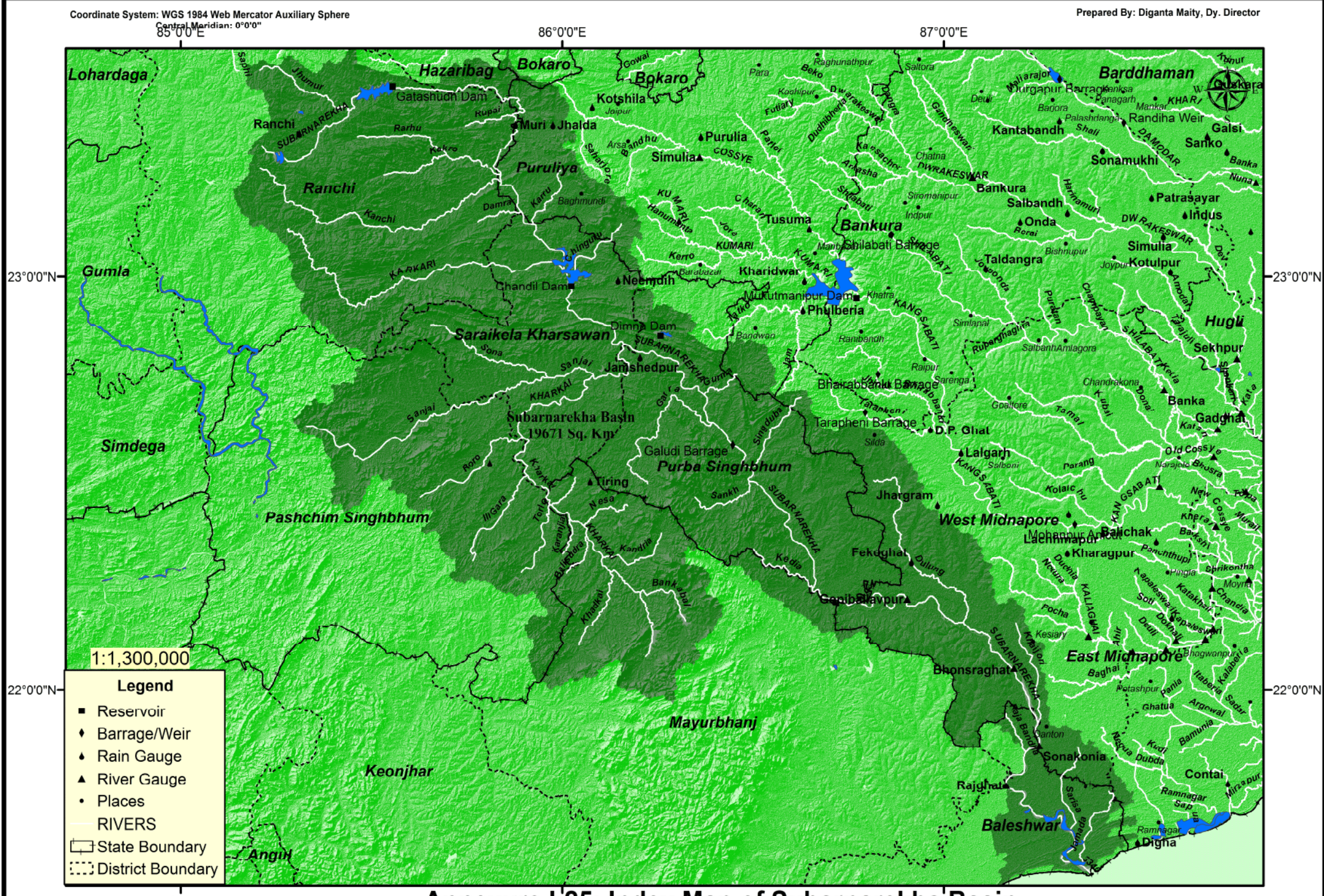
Annexure I-23: Index Map of Rasulpur-Pichabani Basins

Annexure I-24: Index Map of Sundarban Basin



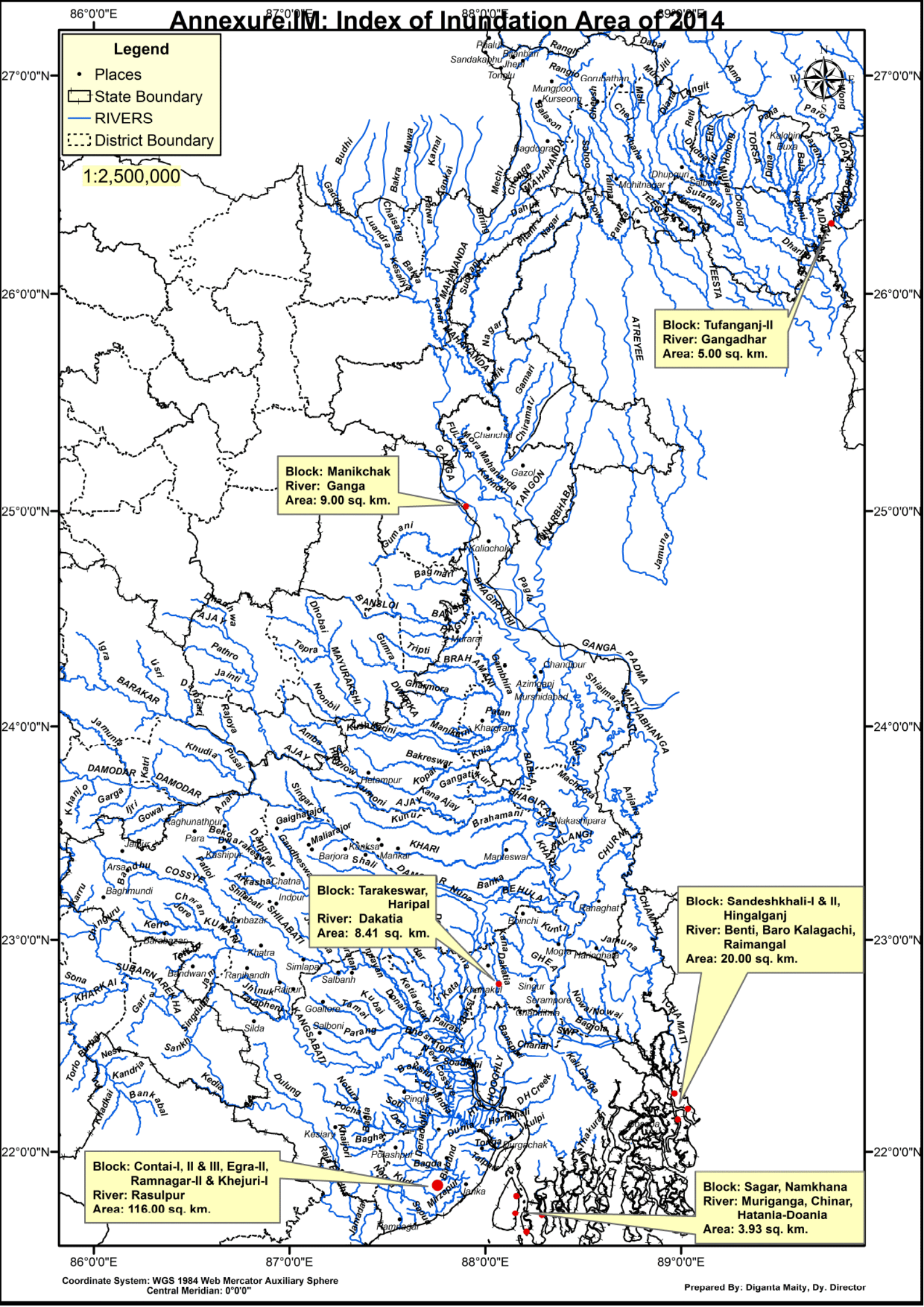
Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director



Annexure I-25: Index Map of Subarnarekha Basin

Annexure IM: Index of Inundation Area of 2014



Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Central Meridian: 0°0'0"

Prepared By: Diganta Maity, Dy. Director

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
02.07.2014	Torsa(L/B)	CoochBehar / CoochBehar II	Apron damaged & 10 nos round sausage dragged down	Hanskhowa embankment(U/S) at Kachubon area, Mouza - Hanskhowa within Madhupur G. P.	Length - 90.00 mtr.		
02.07.2014	Torsa(L/B)	CoochBehar / CoochBehar I	6 nos rectangular sausage mattress & 6 nos round sausage dragged down	Purba Gurjahati - Lankabor embankment, Mouza & village Gurjahati under Gurjahati -I G.P.	Length - 30.00 mtr.		
08.07.2014	Torsa(L/B)	CoochBehar / CoochBehar I	Apron washed away & round sausage dragged down	CoochBehar T.P embankment ch. 0.5 to 1.5 km) Mouza - Harinchowra & Gudammoharanigang G.P.-Gurihati-II	Length - 150.00 mtr.		
08.07.2014	Torsa(L/B)	CoochBehar / CoochBehar II	Slips	Takagach embankment Mouza - Takagach G.P.-Takagach Rajarhat	in front of Takagachi embankment (Un-armoured) at karisalnear Majarsharif Length - 370.00 mtr.		
08.07.2014	Torsa(L/B)	CoochBehar / CoochBehar II	Apronlaunched & 7 nos. round sausage dragged down	Takagach embankment Mouza - Takagach G.P.-Takagach Rajarhat	Length - 50.00 mtr.		
16.08.2014	Torsa(L/B)	CoochBehar / CoochBehar I	Partly apron& pitching damaged & round sausage dragged down	Guriahati-Lankabor B.P. work Mouza & G.P. Guriahati	Length - 40.00 mtr.		
16.08.2014	Torsa(L/B)	CoochBehar / CoochBehar I	Slips	U/S portion of Guriahati-Lankabor B.P. work Mouza Guriahati & G.P. Guriahati-I	Length -350.00 mtr.		
16.08.2014	Torsa(L/B)	CoochBehar / CoochBehar I	Partly apron & round sausage damaged	CoochBehar T.P embankment Mouza - Harinchowra G.P.-Guriahati-II	Length -100.00 mtr.		
17.08.2014	Torsa(L/B)	CoochBehar / CoochBehar I	Partly apron & slope pitching damaged and round sausage dragged down	Jhinaidanga embankment Mouza - Jhinaidanga G.P.-Dawaguri	Length -60.00 mtr.		
17.08.2014	Torsa(L/B)	CoochBehar / CoochBehar II	Partly apron, pitching & sausage damaged	Spur no. 1 of Hanskhowa embankment Mouza - Madhupur G.P.- Madhupur	Length -65.00 mtr.		
17.08.2014	Torsa(R/B)	CoochBehar / Tufanganj I	Slips	East Panishala at Solardanga village Mouza - Balarampur; G.P. -Balarampur I	Length 350.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
17.08.2014	Torsa(R/B)	CoochBehar / CoochBehar II	Apron launched & round sausage dragged down	Ichamari Champaguri spur no. 3 & 4 and B.P. work Mouza - Champaguri G.P. Madhupur	Length -180.00 mtr.		
17.08.2014	Torsa(L/B)	CoochBehar / CoochBehar II	Slips	D/S of Treetiya Khanda salmara B.P. work Mouza - Petebhata chandan Chowra & Dewabari G.P. Madhupur	Length -800.00 mtr.		
17.08.2014	Torsa(L/B)	CoochBehar / CoochBehar II	Partly apron & sausage damaged	Hanskhowa embankment Kachubon Mouza -Kachubon G.P.- Madhupur	Length 150.00 mtr.		
28.08.2014	Torsa(L/B)	CoochBehar / CoochBehar II	Partially apron pitching & round sausage damaged	Spur no. 4, 5, 7 of Hanskhowa embankment,Mouza - Madhupur G. P. Madhupur P.S. Kotwali	Length - 115.00 mtr.		
28.08.2014	Torsa(L/B)	CoochBehar / Tufanganj I	Slips	Purba Solardanga area Mouza Solardanga-II G.P.-Maruganj P.S.-Tufangunj	Length - 300.00 mtr.		
28.08.2014	Torsa(L/B)	CoochBehar / CoochBehar II	Partially apron pitching & round sausage damaged	U/S & D/S of seven vented sluice gate Mouza- Kamrangaguri, G.P.- Madhupur P.S. Kotwali	Length - 225.00 mtr.		
22.08.2014	Torsa(L/B)	CoochBehar / CoochBehar Municipal area	Partially apron pitching & round sausage dragged down	CoochBehar town protective embankment ; Mouza - Shahar CoochBehar within Ward No. - XV	Length - 110.00 mtr.		
02.07.2014	Mansai (L/B)	CoochBehar / CoochBehar I	Apron pitching & round sausage damaged	Chhederjhar Sibpur B. P. work Mouza - Chhederjhar Sibpur within Chandamari G.P.	Length - 40.00 mtr.		
03.07.2014	Mansai (L/B)	CoochBehar / Dinhata I	Slips	U/S of Khalisha Gosaimari B.P. work Mouza -Khalisha Gosaimari ; G.P. - Gosaimari	Length - 300.00 mtr.		
03.07.2014	Mansai (L/B)	CoochBehar / Mathabhanga II	Slips	U/S of Sonatali B.P. work Mouza - Bhajanerchara ; G.P. -Nishiganj	Length - 250.00 mtr.		
03.07.2014	Mansai (L/B)	CoochBehar / Dinhata I	Slips	Dangatari (Bhorampoisty Ghosh Para) Mouza - Bhorampoisty ; G.P. - Gitaldaha II	Length - 300.00 mtr.		
03.07.2014	Mansai (R/B)	CoochBehar / Sitai	Slips	D/S of Adabari spur (Baroadabari area) Mouza - Baroadabari ; G.P. - Adabari	Length 150.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
16.08.2014	Mansai (R/B)	CoochBehar / Mathabhanga II	Apron slope pitching damaged	Kodaldhowa B.P. work; Mouza - Kodaldhowa; G.P. - Nishiganj - I	Length - 200.00 mtr.		
16.08.2014	Mansai (R/B)	CoochBehar / Mathabhanga I	Nose portion apron & sauage damaged down	Spur no. 2 of Bhangamore Chatkhaterhari embnkt. Mouza - Bhangamore ; G.P. - Hazrahai II	Length - 300.00 mtr.		
16.08.2014	Mansai (R/B)	CoochBehar / Sitai	Slips	Barodoabari area) Mouza - Baroadabari ; G.P. - Adabari	Length 150.00 mtr.		
17.08.2014	Mansai (R/B)	CoochBehar / Mathabhanga I	Apron & sausage damaged	Tikonia embnkt.; Mouza - Tikonia	Length - 200.00 mtr.		
17.08.2014	Mansai (L/B)	CoochBehar / Mathabhanga II	Slips	Bhajanerchara area within Sonatali village Mouza -Bhajanerchara ; G.P. - Angrakatu Parudubi	Length - 350.00 mtr.		
17.08.2014	Mansai (L/B)	CoochBehar / CoochBehar I	Apron washed out & partly pitching damaged	Solmari area Mouza - Amar Bhawanbaga ; G.P. - Chandaguri	Length - 250.00 mtr.		
17.08.2014	Mansai (L/B)	CoochBehar / Mathabhanga II	Slips	Baraibari B.P. work Mouza -Baraibari; G.P.-Angrakatu Parudubi	Length - 70.00 mtr.		
17.08.2014	Mansai (L/B)	CoochBehar / Mathabhanga II	Partly apron & sausage damaged	Purbamukuldanga B.P. work Mouza - Mukuldanga; G.P. - Baro Solmari	Length 150.00 mtr.		
17.08.2014	Mansai (L/B)	CoochBehar / CoochBehar I	Slips	Salbari area ; Mouza - Salbari; G.P. - Putimari Fuleswari	Length - 600.00 mtr.		
17.08.2014	Mansai (R/B)	CoochBehar / Mathabhanga I	Slips	Sibpur area ; Mouza - Sibpur; G.P. - Solmari	Length 150.00 mtr.		
17.08.2014	Mansai (R/B)	CoochBehar / Mathabhanga I	Slips	Choto Salbari area ; Mouza -Choto Salbari; G.P. - Choto Salbari	Length 300.00 mtr.		
17.08.2014	Mansai (R/B)	CoochBehar / Sitai	Partly apron & slope pitching damaged	Morebhanga Kismat Adabari B.P. work Mouza -Morebhanga ; G.P. - Adabari	Length 100.00 mtr.		
27.08.2014	Mansai (R/B)	CoochBehar / Mathabhanga I	Apron & slope pitching damaged & round sauage damaged down	Spur no. 5 of Bhangamore Chatkhaterhari embnkt. Mouza - Bhangamore ; G.P. - Hazrahat II ;P.S. - Mathabhanga	Length - 75.00 mtr.		
27.08.2014	Mansai (R/B)	CoochBehar / Sitai	Apron & slope pitching damaged & round sauage damaged down	Biswashpara-Barman para B.P.; Mouza - B.R. Chatra ; G.P. - B.R. Chatra; P.S. -Sitai	Length - 75.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
27.08.2014	Mansai (L/B)	CoochBehar / Mathabhanga II	Partially apron pitching & round sausage dragged down	Paradubi spur Mouza - Angrakata Paradubi; G.P. -Angrakata; P.S. - Mathabhanga	Length 30.00 mtr.		
24.09.2014	Mansai (L/B)	CoochBehar /CoochBehar I	Slips	Bairati Jagatjully area Mouza - Bairati; G.P. - Chandamari ; P.S. - Kotwali	Length 300.00 mtr.		
02.07.2014	Kaljani (R/B)	CoochBehar /CoochBehar II	Apron washed away and pitching damaged & round sausage dragged down	Dakshin Ambari embnkt. (U/S nose); Ambari Mouza Ambari G.P.	Length 50.00 mtr.		
03.07.2014	Kaljani (R/B)	CoochBehar / Tufanganj I	Slips	U/S of Souldhukri embnkt. Mouza - Balarampur; G.P. -Balarampur II	Length - 75.00 mtr.		
08.07.2014	Kaljani (L/B)	CoochBehar / Tufanganj I	Apron dragged down& slope pitching damaged	Bhelapeta B.P. work Mouza - Mahishkuchi; G.P. -Mahishkuchi I	Length 150.00 mtr.		
16.08.2014	Kaljani (L/B)	CoochBehar / Tufanganj I	Apron slope pitching damaged	Boxirkuthi spur - 4(nose & D/S portion) Mouza - Bhuchungmari; G.P. - Natabari	Length 180.00 mtr.		
16.08.2014	Kaljani (R/B)	CoochBehar / Tufanganj I	Slips	Souldhukri Daspara area Mouza - Balarampur II	Length 100.00 mtr.		
16.08.2014	Kaljani (R/B)	CoochBehar / Tufanganj I	Partially apron pitching & round sausage dragged down	Arampur embnkt. & spur no. 2, 3, & 4; Mouza - Balarampur; G.P. - Balarampur I	Length 105.00 mtr.		
16.08.2014	Kaljani (R/B)	CoochBehar /CoochBehar II	Partially apron pitching & round sausage dragged down	Ambari B.P. work; Mouza + G.P. - Ambari	Length 150.00 mtr.		
16.08.2014	Kaljani (R/B)	CoochBehar /CoochBehar I	Apron pitching damaged	Chhattowa amalguri B.P. work; Mouza - Amalguri; G.P. - Manganj	Length 90.00 mtr.		
17.08.2014	Kaljani (R/B)	CoochBehar / Tufanganj I	Partly Apron and slope pitching damaged & round sausage dragged down	DakshinAmbari B.P. work; Mouza + G.P. - Ambari	Length 30.00 mtr.		
17.08.2014	Kaljani (R/B)	CoochBehar / Tufanganj I	Partly Apron and slope pitching damaged & round sausage dragged down	Souldhukri embnkt. Mouza - Balarampur; G.P. - Balarampur II	Length 40.00 mtr.		
17.08.2014	Kaljani (R/B)	CoochBehar /CoochBehar II	Partly Apron and slope pitching damaged & round sausage dragged down	Kaljani embnkt.; Mouza - Kaljani ; G.P. - Khapaidanga	Length 100.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
17.08.2014	Kaljani (L/B)	CoochBehar / Tufanganj I	Apron & slope pitching damaged	Bhelapata B.P. work Mouza -Bhelapata ; G.P. - Natabari I	Length 50.00 mtr.		
17.08.2014	Kaljani (L/B)	CoochBehar / Tufanganj I	Apron & slope pitching damaged	Bhuchungmari embnkt. Mouza - Bhuchungmari ; G.P. - Natabari I	Length 80.00 mtr.		
27.08.2014	Kaljani (R/B)	CoochBehar /CoochBehar II	Apron and slope pitching damaged & round sausage dragged down	Soultukuni embnkt. Mouza -Soultukuni ; G.P. - Khapaldanga; P.S. - Kotwali	Length 100.00 mtr.		
27.08.2014	Kaljani (R/B)	CoochBehar / Tufanganj I	Apron and slope pitching damaged & round sausage dragged down	Chaokhushai B.P. work Mouza - Balarampur; G.P. - Deocharai ; P.S. - Tufanganj	Length 30.00 mtr.		
27.08.2014	Kaljani (L/B)	CoochBehar / Tufanganj I	Apron and slope pitching damaged & round sausage dragged down	Balabhut embnkt. Mouza -Balabhut; G.P. -Balabhut ; P.S. - Tufanganj	Length - 175.00 mtr.		
27.08.2014	Kaljani (L/B)	CoochBehar / Tufanganj I	Apron and slope pitching damaged & round sausage dragged down	Chilakhana B.P. work Mouza - Jaigir Chilakhana ; G.P. - Chilakhana ; P.S. - Tufanganj	Length 100.00 mtr.		
27.08.2014	Kaljani (R/B)	CoochBehar / Tufanganj II	Apron and slope pitching damaged & round sausage dragged down	Purba Kholta embnkt. Mouza - Kholta; G.P. - Marichbari Kholta; P.S. Kotwali	Length 100.00 mtr.		
28.08.2014	Kaljani (R/B)	CoochBehar / Tufanganj I	Partially apron & pitching damaged	Bhuchungmari B.P. Mouza - Bhuchungmari ; G.P. - Natabari I ; P.S. - Tufanganj	Length - 60.00 mtr.		
28.08.2014	Kaljani (R/B)	CoochBehar /CoochBehar II	Apron and slope pitching damaged & round sausage dragged down	Kholta split checking embnkt. Mouza - Kholta; G.P. - Marichbari Kholta; P.S. Kotwali	Length - 90.00 mtr.		
02.07.2014	Raidak - II (R/B)	CoochBehar / Tufanganj II	Apron and slope pitching damaged & round sausage dragged down	Gadarchar Ghoksho Ghonapara B.P. work Mahishkuchi Mouza ;G.P. - Mahishkuchi I	Length 100.00 mtr.		
08.07.2014	Raidak - II (R/B)	CoochBehar / Tufanganj II	Apron and slope pitching damaged & round sausage dragged down	B.P. work at uttar Ghoksho Ghonapara Mouza Mahishkuchi ;G.P. -Mahishkuchi I	Length 150.00 mtr.		
16.08.2014	Raidak - II (R/B)	CoochBehar / Tufanganj II	Apron and slope pitching damaged	Gadarchar Ghoksho Ghonapara B.P. work Mahishkuchi Mouza ;G.P. - Mahishkuchi I	Length 120.00 mtr.		

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16.08.2014	Raidak - II (R/B)	CoochBehar / Tufanganj II	Apron and slope pitching damaged	B.P. work at uttar Ghoksho Ghonapara Mouza Mahishkuchi ;G.P. -Mahishkuchi I	Length 210.00 mtr.		
27.08.2014	Raidak - II (R/B)	CoochBehar / Tufanganj II	Apron and slope pitching damaged & round sausage dragged down	Saldanga B.P. Mouza - Mahishkuchi ;G.P. -Mahishkuchi I ; P.S. - Baxirhat	Length 150.00 mtr.		
17.08.2014	Sankosh (R/B)	CoochBehar / Tufanganj II	Slips	D/S Falimari embnkt. Mouza -Falimari ; G.P.-Falimari	Length 300.00 mtr.		
17.08.2014	Sankosh (L/B)	CoochBehar / Tufanganj II	Slips	Chhit Barolawkuthi area Mouza - Bhanukumari ; G.P.-Bhanukumari - I	Length 350.00 mtr.		
17.08.2014	Sankosh (R/B)	CoochBehar / Tufanganj II	Apron and pitching & round sausage washed out	D/S Falimari embnkt. Mouza -Falimari ; G.P.-Falimari	Length 150.00 mtr.		
17.08.2014	Raidak - I (L/B)	CoochBehar / Tufanganj II	Slips	D/S Fersabari B.P. work Mouza - Mahishkuchi ;G.P. -Mahishkuchi I	Length 300.00 mtr.		
16.08.2014	Raidak - I (R/B)	CoochBehar / Tufanganj I	Apron and slope pitching damaged	Guriarper B.P. work Mouza - Guriarper ; G.P. - Dhalpal - I	Length 250.00 mtr.		
28.08.2014	Raidak - I (R/B)	CoochBehar / Tufanganj I	Bedbar damaged & round sausage dragged down	Rajarkuthi B.P. Mouza - Rajarkuthi G.P. - Balabhut; P.S. - Tufanganj	Length 150.00 mtr.		
28.08.2014	Raidak - I (R/B)	CoochBehar / Tufanganj I	Slips	Sarakerper area Mouza - Balabhut; G.P. Balabhut; P.S. - Tufanganj	Length 400.00 mtr.		
27.08.2014	Raidak - I (R/B)	CoochBehar / Tufanganj I	Apron and slope pitching damaged	Dhalpal B.P. Mouza - Dhalpal; G.P. - Dhalpal ; P.S. - Tufanganj	Length 70.00 mtr.		
27.08.2014	Raidak - I (L/B)	CoochBehar / Tufanganj I	Apron and pitching washed out	Bhuchungmari B.P. Mouza - Bhuchungmari ; G.P. - Natabari I ; P.S. - Tufanganj	Length 100.00 mtr.		
28.08.2014	Raidak - I (L/B)	CoochBehar / Tufanganj II	Slips	Kuchibari area Mouza - Banshraja dwitia khanda G.P. - Salbari-I P.S. - Baxirhat	Length 300.00 mtr.		
02.07.2014	Gadhadhar (L/B)	CoochBehar / Tufanganj I	Apron dragged down and slope pitching damaged	Santoshpur embnkt. Santoshpur mouza & Deocharai G.P.	Length 80.00 mtr.		
16.08.2014	Gadhadhar (L/B)	CoochBehar / Tufanganj I	Apron and slope pitching damaged	Santoshpur embnkt. Santoshpur mouza & Deocharai G.P.	Length 120.00 mtr.		
16.08.2014	Gadhadhar (R/B)	CoochBehar / Tufanganj II	Damages & over toping of protection work	Chhatoawkhuli vill. area Mouza - Bhanukumari ; G.P.-Bhanukumari - I	Length 500.00 mtr.		

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03.07.2014	Ghargharia (L/B)	CoochBehar / Tufanganj I	Slips	U/S of Paniarchara protection work Mouza - Solardanga Maruganj G.P.	Length 150.00 mtr.		
03.07.2014	Ghargharia (R/B)	CoochBehar /CoochBehar I	Slips	adjacent of Daluadasgir RLI pump Mouza - Talliguri; G.P. - Dawaguri	Length 250.00 mtr.		
17.08.2014	Ghargharia (R/B)	CoochBehar / Tufanganj I	Apron and slope pitching damaged & round sausage dragged down	U/S of Paniarchara protection work Mouza - Solardanga G.P. - Maruganj	Length 70.00 mtr.		
17.08.2014	Ghargharia (R/B)	CoochBehar /CoochBehar I	Slips	Falimari Mouza -Falimari Solardanga area ; G.P.-Dawaguri	Length 450.00 mtr.		
27.08.2014	Ghargharia (R/B)	CoochBehar / Tufanganj I	Apron and slope pitching damaged	Krishnapur balabari madrasa B.P. Mouza -Krishnapur; G.P. - Deocharai; P.S. - Tufanganj	Length 100.00 mtr.		
27.08.2014	Ghargharia (L/B)	CoochBehar / Tufanganj I	Slope sliding	Gadhadhar embnkt. Mouza - Andharaifulbari; G.P. -Andharaifulbari; P.S. - Tufanganj	Length 180.00 mtr.		
16.08.2014	Jaldhaka (L/B)	CoochBehar / Mathabhanga II	Partly apron & sausage damaged	Spur no. 1 ofDaraibosh Fhulbari embankment Mouza -Bamibari G.P.- Bare Sulemari	Length 150.00 mtr.		
28.08.2014	Jaldhaka (R/B)	CoochBehar / Mathabhanga I	Partially apron pitching & round sausage dragged down	Uttar Daibhangi B.P. Mouza - Daibhangi ; G.P. - Hazrahat ; P.S. - Mathabhanga	Length 150.00 mtr.		
28.08.2014	Jaldhaka (R/B)	CoochBehar / Mathabhanga I	Partially apron pitching & round sausage dragged down	Uttar Daibhangi B.P. Mouza - Daibhangi ; G.P. - Hazrahat ; P.S. - Mathabhanga	Length 80.00 mtr.		
16.08.2014	Dharala (L/B)	CoochBehar / Dinhata I	Slips	Panchodhoji area Mouza -Panchodhoj ; G.P. - Okrabari	Length 550.00 mtr.		
17.08.2014	Dharala (L/B)	CoochBehar / Dinhata I	Slips	Bharampaisty(uttar) Mouza - Bharampaisty; G.P. - Gitaldaha - II	Length 500.00 mtr.		
16.08.2014	Dharala (R/B)	CoochBehar / Sitalkhuchi	slope pitching damaged	Jatamari B.P. work ; Mouza - Jatamari; G.P. - Kailashmari	Length 250.00 mtr.		
16.08.2014	Singimari (L/B)	CoochBehar / Dinhata I	Partly apron & pitchingdamaged	Chhat Barobanga; G.P. - Barosoulmari	Length 150.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
01.08.2014 - 05.08.2014	Sankosh (R/B)	Alipurduar , Kumargram	1) Boulder sausage apron eroded for 60.00 mtr.; round sausage engalfed into river bed for 144.00 mtr. 2) D/S Dhandrapara B.P. work dragged down & engulfed into river bed for 204.00 mtr. 3) Kathaltala B.P. work dragged down & engulfed into river bed for 108.00 mtr. 4) at Kathaltala continious bank erosion near by low land depression	D/S Nose : D/S extension of Dhandrapara embankt. G. P. Barobhisa - II			
26.08.2014	Sankosh	Alipurduar , Alipurduar - I	Bank erosion occurred	at Dhandrapara area Nimaipara area & Returnpara area in P. S. Kumargram			
15.09.2014	Sankosh (R/B)	Alipurduar , Kumargram	Bank erosion occurred	Mouza - Volka zaraguri, G. P. - Volka Barobisna II (unprotected)			
15.09.2014	Sankosh (R/B)	Alipurduar , Kumargram	Boulder sausage apron & round sausage dragged down	Mouza - Purba Salbari, G. P. - Volka Barobisna II (protected)			
15.08.2014	Torsa	Alipurduar	Round sausage & slope pitching dragged down	P. S. - Kalchini, G. P. - Malangi	Ch. 312 to Ch. 2423 Shubhasini embankment		
15.08.2014	Torsa	Alipurduar	Round sausage & slope pitching dragged down	P. S. - Kalchini, G. P. - Malangi	Ch. 223 to Ch. 632 Dalsingpara embankment		
24.06.2014	Torsa	Alipurduar , Kaljani	Round sausage dragged down		Ch. 2014 to Ch. 1420 at Shubhasini embankment		
24.06.2014	Kaljani	Alipurduar	Rain cuts		Ch. 850 to Ch. 7500 at Alipurduar protection embankment		
25.06.2014	Jaldhaka (L/B)	Alipurduar	Bank erosion occurred	Baetgara block - Maynaguri/Dhuguri , P. S. - Maynaguri/Dhuguri Mouza / G. P. - Amguri			

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
25.06.2014	Jaldhaka (L/B)	Alipurduar	Toe of armoured portion of embankment eroded & boulder sausage engulfed by river	Bamondanga Block - Nagrakata P. S. - Nagrakata , Mouza / G.P. - Sulkapara			
24.08.2014 - 25.08.2014	Jaldhaka (L/B)	Jalpaiguri , Dhupguri	Heavy Bank erosion	Barughariya/ Baroghariya (immediate D/S of spur no. 1			
24.08.2014 - 25.08.2014	Kuchi Diana (R/B)	Jalpaiguri ,Nagrakata	Heavy Bank erosion	Ghasmari / Lookshan			
25.06.2014	Kuchi Diana (R/B)	Alipurduar , Jalpaiguri	Boulder sausage deflector collapsed	Kherkata village area Block - Nagrakata Mouza -Kherkata G. P. - Sulkapara			
25.06.2014	Kuchi Diana (R/B)	Alipurduar , Jalpaiguri	Bank erosion sausage toe wall and deflector	Ghasmari area Block - Nagrakata Mouza -Ghasmari, Sishubari G. P. - Sulkapara			
25.06.2014	Pagli (L/B)	Alipurduar , Jalpaiguri	Apron launched, pitching partially damaged	Pagli Bhutan, Lanskarpara, Tulsipara Block- Madarihat, Birpara , P.S. - Birpara , Mouza / G.P. - Lanskarpara			
24.08.2014 - 25.08.2014	Pagli (L/B)	Alipurduar , Birpara, Madarihat	Apron launched,grouted pitching eroded	Tulshipara / Lankapara (Ch. 600 to Ch. 800)			
24.08.2014	Raidak II	Alipurduar , Alipurduar II	Apron , round sausage damaged	P. S. & Block - Kumargram, G. P. - Khoardanga - II	Length - 50.00 mtr.		
24.08.2014	Dharshi (L/B)	Alipurduar , Alipurduar II	Bank erosion	P. S. - Samuktala Block -Alipurduar G. P. - Makhalguri	Length - 300.00 mtr.		
24.08.2014	Raidak II	Alipurduar , Alipurduar II	Bank erosion	D/S of Dakshin Mahakalguri NRGA scheme work in P.S. - Sauktala	Length - 280.00 mtr.		
27.08.2014	Raidak II (R/B)	Alipurduar	Severe bank erosion	Chonshaspara area along the R/B of Raidak-II in Mouza - Paschim Chengmari; P.S. & Block - Kumargram; G.P. - Khoardanga-I	Length -250.00 mtr.		
27.08.2014	Raidak II (R/B)	Alipurduar	Severe bank erosion	Chotadaldali area in Mouza - Chotadaldali; P.S. & Block - Kumargram; G.P. - Khoardanga-II	Length -350.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
27.08.2014	Mahananda	Darjeeling	Bed bar & pritection work damaged	Block - Matigara, G.P. - Champasari, Nagradoba	Length - 200.00 mtr.		
27.08.2014	Mahananda	Darjeeling	Embnkt. damaged	Block -Phansidewa, G.P. - Bidhannagar - 1,	Length - 200.00 mtr.		
27.08.2014	Mahananda	Darjeeling	Embnkt. damaged	Block -Phansidewa, G.P. -Phansidewa	Length - 200.00 mtr.		
27.08.2014	Mahananda	Darjeeling	Embnkt. damaged	Block -Phansidewa, G.P. -Chathat, Dhumdangi	Length - 100.00 mtr.		
27.08.2014	Mahananda	Jalpaiguri	Protection work damaged	Block -Rajganj, G.P. -42 no. Ward SMC, Salugara	Length - 200.00 mtr.		
27.08.2014	Mahananda	Jalpaiguri	Protection work damaged	Block -Rajganj, G.P. -42 no. Ward SMC, Vivekananda Nagar	Length - 200.00 mtr.		
27.08.2014	Mahananda	Jalpaiguri	Protection work damaged	Block -Rajganj, G.P. -Dabgram - 1, Dimdima	Length - 300.00 mtr.		
27.08.2014	Mahananda	Jalpaiguri	Bank subsided	Block -Rajganj, G.P. -Dabgram - 1, Betgara	Length - 150.00 mtr.		
27.08.2014	Panchnoi	Darjeeling	Bank subsided	Block - Matigara, G.P. - Champasari, Dagapur Tea Estate	Length - 200.00 mtr.		
27.08.2014	Panchnoi	Darjeeling	Bank subsided	Block - Matigara, G.P. - SMC ward no. 47, Police Commissionarate	Length - 100.00 mtr.		
27.08.2014	Balason	Darjeeling	Protection work damaged	Block - Matigara, G.P. - Patharghata, Nemaijote	Length - 300.00 mtr.		
27.08.2014	Buri Balason	Darjeeling	Protection work damaged	Block -Phansidewa, G.P. -Chathat, Kasigachh	Length - 150.00 mtr.		
27.08.2014	Buri Balason	Darjeeling	Protection work damaged	Block -Phansidewa, G.P. -Chathat, Mundabasti	Length - 100.00 mtr.		
27.08.2014	Manjha	Darjeeling	Protection work damaged	Block -Naxalbari, G.P. -Manigram, Belgachi	Length - 400.00 mtr.		
27.08.2014	Manjha	Darjeeling	Protection work damaged	Block -Naxalbari, G.P. -Hatighisa, Mangalsingjote	Length - 300.00 mtr.		
27.08.2014	Mechi	Darjeeling	Protection work damaged	Block -Naxalbari, G.P. -Manram, Upper Mechi(2.00 km. to 3.00 km.)	Length - 1000.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
27.08.2014	Mechi	Darjeeling	Protection work damaged	Block -Kharibari, G.P. -Ranigunj, Panitanki	Length - 450.00 mtr.		
27.08.2014	Chenga	Darjeeling	Protection work damaged	Block -Naxalbari, G.P. -Hatighisa, Ketogaburjote	Length - 200.00 mtr.		
27.08.2014	Pitchla	Darjeeling	Protection work damaged	Block -Phansidewa, G.P. - Phansidewa, Helagachh primary school	Length - 200.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
07.07.2014	Hooghly	Howrah , Shyampur - II	Scour & slips	At confluence of river Hooghly & Damodar			
07.07.2014	Rupnarayan	Howrah ,Bagnan - I	Slips	Nasibpur			
07.07.2014	Nakole Khal	Howrah , Shyampur - II	Slips	At confluence of river Rupnarayan with Nakole Khal			
Till 18.08.2014	Damodar	Howrah, Udaynarayanpur	Over topping	Kurchi Mondalpara to Hodol			
	Damodar	Howrah, Udaynarayanpur	Over topping	Ghola Masjidtala to Ghola football ground			
	Damodar	Howrah, Udaynarayanpur	Over topping	Jangalpara			
	Damodar	Howrah, Udaynarayanpur	Ghoges	Joynagar Samantapara			
	Damodar	Howrah, Udaynarayanpur	Erosion	Simchak			
	Damodar	Howrah , Amta - II	Erosion	Binola & Hanidhara			
	Maja Damodar	Howrah, Udaynarayanpur	Leakage through Hume pipe	Dihibhurshut			
	Mahishamuri	Howrah , Amta - II	Slips	Mahishamuri Bansbagan			
18.08.2014	Ganga	Murshidabad	Additional erosion occurred at spur N2(D/S)	At Laxminagar mouza - Anupnagar under Dhulian Municipality P.S. Samserganj Murshidabad	Length - 60.00 mtr.		
19.08.2014	Ganga	Murshidabad	Vertical slip of existing protection work at downstream of bedbar no. N1	Vill. & Mouza - Durgapur, Block - Samserganj, P. S. - Samserganj	Length - 65.00 mtr.		
19.08.2014	Ganga	Murshidabad	Vertical slip of existing protection work	Vill. & Mouza - Dhusripara, Block - Samserganj, P. S. - Samserganj	Length - 250.00 mtr.		
01.09.2014	Ganga	Murshidabad	Severe bank erosion & slip	Khodabandapur , Block & P. S. - Farakka	Length - 85.00 mtr.		
20.08.2014	Ganga - Padma	Murshidabad , Rani Nagar II	Subsidence of pitching work	Vill. - Char Rajanagar, G.P.- Rajapur	Length - 80.00 mtr.		
21.08.2014	Ganga - Padma	Murshidabad , Rani Nagar II	Subsidence of pitching work	Vill. - Char Rajanagar, G.P.- Rajapur	Length - 170.00 mtr.		
23.08.2014	Ganga - Padma	Murshidabad , Rani Nagar II	Subsidence of pitching work	Vill. - Char Rajanagar, G.P.- Rajapur	Length - 20.00 mtr.		
01.09.2014	Ganga - Padma	Murshidabad , Rani Nagar II	Subsidence of pitching work	Vill. - Char Rajanagar, G.P.- Rajapur	Length - 35.00 mtr.		
07.09.2014	Ganga - Padma	Murshidabad	Existing apron alongwith partial portion of pitching work subsided on R/B	Khodabandapur , Block & P. S. - Farakka	Length - 40.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
07.09.2014	Ganga - Padma	Murshidabad	Existing apron alongwith partial portion of pitching work subsided on R/B	D/S of Khodabandapur Masterpara Anganwarire, Mouza - Paranpara , Block & P. S. - Farakka	Length - 25.00 mtr.		
07.09.2014	Ganga - Padma	Murshidabad	Existing apron alongwith partial portion of pitching work subsided on R/B	U/S of Khodabandapur G. B. S. Sikhaniketan , Block & P. S. - Farakka	Length - 40.00 mtr.		
07.09.2014	Ganga - Padma	Murshidabad	Severe damage occurred at R/B of river Bhagirathi	At Vill.- Goisabad, Mouza- Gandheswari, G.P. - Gobardanga , Block - Sagardighi	Length - 120.00 mtr.		
10.09.2014	Ganga - Padma	Murshidabad	Severe erosion at Four (04) nos. of spot	Village - Kulidiar, G.P. - Nayansukh & Arjunpur, Block - Farakka			
12.09.2014	Bhagirathi	Murshidabad , Raghunathganj - I	Severe damage of river bank (right)	in front of 18 no. Dhulipara Primary School, Vill. - Dafarpur, Mouza - Dafarpur, G.P. - Dafarpur, Block - Raghunathganj - I	Length - 100.00 mtr.		
02.09.2014	Bhagirathi	Murshidabad , Raghunathganj - II	Severe damage occurred at 02 nos. at R/B	Vill. - Mathpara, Mouza - Enayatnagar, Block - Raghunathganj - II, P.S. - Raghunathganj	Length - 140.00 mtr.		
02.09.2014	Bhagirathi	Murshidabad , Raghunathganj - I	Severe damage occurred at R/B from house of Mr. B. Chatterjee to house of Mr. S. Das	Vill. - Daforpur, Mouza -Daforpur,P.S. - Raghunathganj	Length - 130.00 mtr.		
02.09.2014	Bhagirathi	Murshidabad , Raghunathganj	Severe damage occurred at R/B	Mouza -Mathunganj,G.P. - Raminagar,P.S. - Raghunathganj	Length - 60.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
11.08.2014 & onwards	Bhagirathi	Burdwan	Slips & erosion occurred at bank line	Agradwip, G.P. -Agradwip, Block - Katwa- II, P.S. - Katwa	Length - 900.00 mtr.		
11.08.2014 & onwards	Bhagirathi	Burdwan	Slips & erosion occurred at bank line	Joggeswarpur, G.P. -Nimdah, Block - Purbasthali- II, P.S. - Purbasthali	Length - 340.00 mtr.		
22.07.2014 & onwards	R/B of Bhagirathi	Burdwan	Slips & bank erosion	Bholadanga, G.P. -Majdia, Block - Purbasthali- II, P.S. - Purbasthali	Length - 1000.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
11.07.2014 - 14.07.2014	Sea Coast	Purba Medinipur/Ramnagar - I	Bullah-boulder structure damaged	Chandpur, Talgachari			
11.07.2014 - 14.07.2014	Sea Coast	Purba Medinipur/Contai - I	Slope apron damaged	Gopalpur Bhogpur & Junput, G.P. - Dariapur			
11.07.2014 - 14.07.2014	Sea Coast	Purba Medinipur/Khejuri - I	Damage of shutter	Kalinagar, G.P. - Khejuri			
23.07.2014	Subarnarekha	PaschimMedinipur / Keshiery	Severe erossion	Uttardumurkhola village			

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
12.07.2014 - 14.07.2014	Chotakalagachi, Rampur, Bidyadhari, Tushkhali & Rampur, Baniboalia, Dansa, Barakalagachi, Raimongal, Hatakhali.	North 24 Parganas/Sandeshkhali II	Severely damaged	Bermajur, Jhupkhali, Bhangatuskhali, Jeliakhali east, Jeliakhali west, Barotushkhali, 8 no. darirjangal, Tushkhali, Atapur, Monipur, Jotishpur, Daudpur, 5 no. Dwarirjungle.	Length - 1630.00 mtr.		
12.07.2014 - 14.07.2014	Bidyadhari, Bentigharithara, Benti, Gharithari, Dansa.	North 24 Parganas/Sandeshkhali I	Severely damaged	Sakda, Bantala, Sikarigheri, Kalinagar, Akhrata, Nityaberia, Radhanagar,Gharithara, Nazat - II, Sehara, Ghoshpur, Putimari.	Length - 900.00 mtr.		
12.07.2014 - 14.07.2014	Metia khal, Bidyadhari, Buri	North 24 Parganas/Minakha	Partly damaged	Amadpur, Chapali, Kakuria, Boldani, Kakalpur, Paidmari.	Length - 1320.00 mtr.		
12.07.2014 - 14.07.2014	Haroagang - Kultigang	North 24 Parganas/Haroa	Partly damaged	Tetulhati, Ghaskhali	Length - 350.00 mtr.		
12.07.2014 - 14.07.2014	Kalindi, Ichamati, Dansa, Sakunkhali, Goureswar, Sahebkhali, Gomati, Raimongal.	North 24 Parganas/Hingalganj	Severely damaged & overtopping	Kunikhali, Tampakhali, North Rupamari, Moukhali	Length - 3005.00 mtr.		
12.07.2014 - 14.07.2014	Sahebkhali	North 24 Parganas/SDK - II	Partly damaged & overtopping	Mistrypara, Lanchghat, Hatigachi Ferrighat.	Length - 230.00 mtr.		
12.07.2014 - 14.07.2014	Katakhali, Dansa, Ichamati	North 24 Parganas/Hasnabad	Severely damaged	Sutirhati, Burnningghat, Pansighata, Sukuniabad, Bhurkunda, Patharchapa, Bhawanipur.	Length - 600.00 mtr.		
12.07.2014 - 14.07.2014	Ichamati	North 24 Parganas/Basirhat - I	Severely damaged	Dakshin Bagundi, Panitor, Chowro	Length - 570.00 mtr.		
12.07.2014 - 14.07.2014	Bidyadhari	North 24 Parganas/Basirhat - II	Partly damaged	Rajendrapur	Length - 75.00 mtr.		
12.07.2014 - 14.07.2014	Ichamati	North 24 Parganas/Basirhat Municipality	Partly damaged	Nalhati	Length - 150.00 mtr.		
12.07.2014 - 14.07.2014	Ichamati	North 24 Parganas/Baduria	Severely damaged	Deepmedia, Fatullapur, Sawforrajpur, Bajitpur	Length - 350.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
12.07.2014 - 14.07.2014	Ichamati	North 24 Parganas/Baduria Municipality	Severely damaged	Faridkati Jelepara	Length - 280.00 mtr.		
12.07.2014 - 14.07.2014	Ichamati	North 24 Parganas/Taki Municipality	Severely damaged	Jalalpur, Dargatala	Length - 400.00 mtr.		
11.07.2014 - 14.07.2014	Sealdahgong Main Channel	North 24 Parganas/Basirhat - II	Slope failure with high scour & subsidence, Toe errosion, Inlet damaged	Ghoraras Kulin gram, Chaita	Length - 285.00 mtr.		
11.07.2014 - 14.07.2014	Sealdahgong Main Channel	North 24 Parganas/Basirhat - II	Slope failure with high scour & subsidence	Mouza - Zafarpur, G.P. - Ghoraras Kulin gram			
11.07.2014 - 14.07.2014	Sealdahgong Main Channel	North 24 Parganas/Basirhat - I	Slope failure with high scour & subsidence, Toe errosion, Inlet damaged	Mouza - Ghona, G.P. -Chaita			
11.07.2014 - 14.07.2014	Sealdahgong Main Channel	North 24 Parganas/Basirhat - II	Slope failure with high scour & subsidence, Toe errosion, Inlet damaged	Mouza - Zafarpur, G.P. - Ghoraras Kulin gram			

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
Date / Period	**River / Channel**	**District / Block**	**Nature of Damage**	**Location of Damage (Mouza / GP)**	**Extent of Damage**	**Area of Innundation (sq. km.)**	**Affected Blocks due to Innundation**
11.07.2014 - 13.07.2014	Bay of Bengal, Chenargang, Muriganga, Hatania Doania	South 24 Parganas/Namkhana	Severly damaged		Severly damaged at Kusumtala, Bagdanga, Baliara, Mousuni, Dwariknagar, Debnagar, Patibonia, Narayanpur, Iswarpur.		
11.07.2014 - 13.07.2014	Bay of Bengal, Hooghly, Muriganga	South 24 Parganas/Sagar	Washed out & severly damaged		Washed out ay Sumatinagar, Beguakhali & severly damaged at Dhoblat, Chemaguri, Bankimnagar, Ghoramara, Bamankhali.		
11.07.2014 - 13.07.2014	Bay of Bengal, Jagaddal, Curzon Creek, Walls Creek, Saptamukhi	South 24 Parganas/Pathar Pratima	Severly damaged		Damged at Buraburir hat, Banshyamnagar, Sitarampur, Brojoballavpur, Gobindopur, Abad.		
11.07.2014 - 13.07.2014	Kalnagini, Hooghly, Muriganga, Hatania Doania	South 24 Parganas/Kakdwip	Severly damaged		Severly damaged at Laxmipur, Uttar Chandranagar, Rajnagar.		
11.07.2014 - 14.07.2014	N/A	South 24 Parganas/Sagar	Severly damaged	Sumatinagar, Muriganga, Bamankhali, Ghoramara,Bankimnagar, Bagukhali, Shibpur, Dholbat, Chemaguri	Length - 6760.00 mtr.		
11.07.2014 - 14.07.2014	N/A	South 24 Parganas/Kakdwip	Severly damaged	Uttar chandannagar, Laxmipur, Barmannagar, Manmathapur, Shibkalinagar	Length - 1200.00 mtr.		
11.07.2014 - 14.07.2014	N/A	South 24 Parganas/Namkhana	Severly damaged & partly washed out	Narayanpur, Iswaripur, Debnagar, Dwariknagar, Bagdanga, Baliara, Kusumtala, Madangang, Patibona, Haripur, Laxmipur Abad, Mousuni.	Length - 9700.00 mtr.		
11.07.2014 - 14.07.2014	N/A	South 24 Parganas/Pathar Pratima	Severly damaged & partly washed out	Gobardhanpur, Sitarampur, Buraburirhat, Indrapur.	Length - 2150.00 mtr.		

DISTRICTWISE DAMAGE REPORTS DURING FLOOD SEASON 2014							
10.08.2014 - 13.08.2014	Bay of Bengal, Chenargang, Muriganga, Hatania Doania	South 24 Parganas	Slips	Namkhana block	12 nos. spots		
10.08.2014 - 13.08.2014	Bay of Bengal, Hooghly, Muriganga	South 24 Parganas	Slips & rain cuts	Sagar block	12 nos. spots & 03 nos. Sluice damaged		
10.08.2014 - 13.08.2014	Bay of Bengal, Jagaddal, Curzon Creek, Walls Creek, Saptamukhi	South 24 Parganas	Slips & rain cuts	Pathar Pratima block	19 nos. spots		
10.08.2014 - 13.08.2014	Kalnagini, Hooghly, Muriganga, Hatania Doania	South 24 Parganas	Slips & rain cuts	Kakdwip block	15 nos. spots & 02 nos. Sluice damaged		
12.07.2014 - 14.07.2014	Hooghly	South 24 Parganas/Diamondharbour - II	Breach and severly damaged & partly damaged	Srifalbaria, Noorpur, Bhawanipur, Roychak, Uttar Hajipur, Nainan, Taragunj.	Breach - Length - 20.00 mtr./ Damage - Length - 1450.00 mtr.		
12.07.2014 - 14.07.2014	Hooghly	South 24 Parganas/Falta	severly damaged & partly damaged	Falta, Rajarampur, Shyamsundarpur	Length - 300.00 mtr.		
12.07.2014 - 14.07.2014	Hooghly	South 24 Parganas/Budge Budge II	severly damaged & partly damaged	Burul, Raypur, Godkhali	Length - 350.00 mtr.		
12.07.2014 - 14.07.2014	Hooghly	South 24 Parganas/Kulpi	severly damaged & partly damaged	Basmankhali, Tangrachar	Length - 200.00 mtr.		
12.07.2014 - 14.07.2014	Hooghly	South 24 Parganas/Budge Budge I	severly damaged & partly damaged	Mayapur, Achipur, Chorial,	Length - 320.00 mtr.		
12.07.2014 - 14.07.2014	Kholakhali khal, Creek khal	South 24 Parganas/Diamondharbour - I	severly damaged & partly damaged	Kalicharanpur, Bhagabanpur, Kalinagar	Length - 700.00 mtr.		