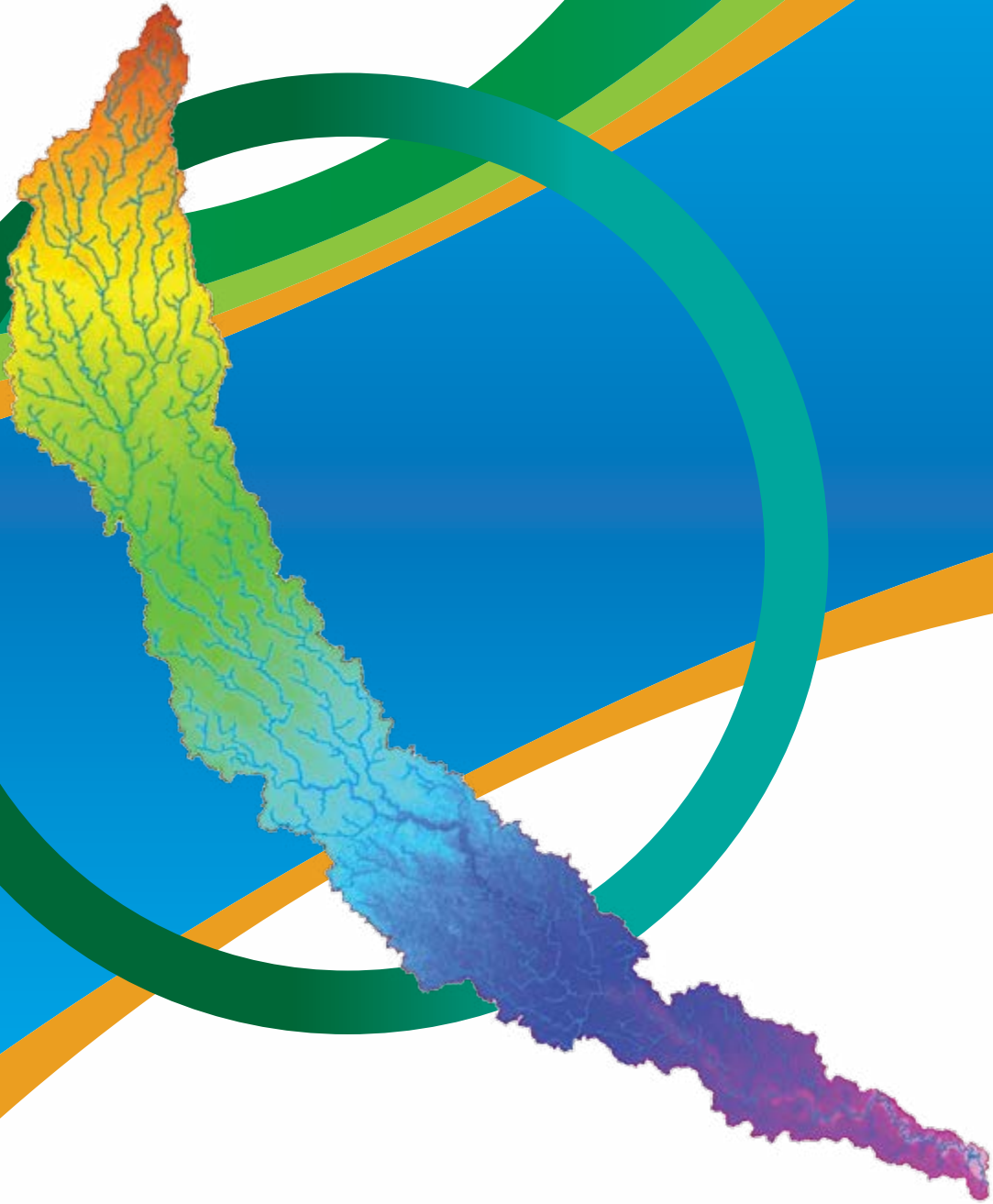




National Mission for Clean Ganga

Ministry of Jal Shakti

Department of Water Resources, River Development & Ganga Rejuvenation
Government of India



KALI EAST

RIVER BASIN ATLAS



cGanga
Centre for Ganga River Basin Management and Studies
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December 2022

Version - 1

KALI EAST

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DECEMBER 2022

Version - 1



National Mission for Clean Ganga (NMCG)

NMCG is the implementation wing of National Ganga Council which was setup in October 2016 under the River Ganga Authority order 2016. Initially NMCG was registered as a society on 12th August 2011 under the Societies Registration Act 1860. It acted as implementation arm of National Ganga River Basin Authority (NGRBA) which was constituted under the provisions of the Environment (Protection) Act (EPA) 1986. NGRBA has since been dissolved with effect from the 7th October 2016, consequent to constitution of National Council for Rejuvenation, Protection and Management of River Ganga (referred to as National Ganga Council).

www.nmcg.in

Centre for Ganga River Basin Management and Studies (cGanga)

cGanga is a think tank formed under the aegis of NMCG, and one of its stated objectives is to make India a world leader in river and water science. The Centre is headquartered at IIT Kanpur and has representation from most leading science and technological institutes of the country. cGanga's mandate is to serve as think-tank in implementation and dynamic evolution of Ganga River Basin Management Plan (GRBMP) prepared by the Consortium of 7 IITs. In addition to this, it is also responsible for introducing new technologies, innovations, and solutions into India.

www.cganga.org

Acknowledgment

This river atlas document is a collective effort of a number of experts, institutions and organisations, some who had been associated with preparing the Ganga River Basin Management Plan (GRBMP) submitted to the Government of India in 2015, and others who joined later with their own independent expertise and enthusiasm. Contributions to the photographs and images for this document by individuals are gratefully acknowledged.

Suggested Citation

Kali East River Basin Atlas by cGanga and NMCG.

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PREFACE

The Centre for Ganga River Basin Management and Studies (“cGanga”) was established in the year 2016 as a comprehensive think-tank for river restoration and to assist the National Mission for Clean Ganga (NMCG), Jal Shakti Ministry, GoI, for “continual scientific support in the implementation and dynamic evolution of the Ganga River Basin Management Plan” for conservation of National River Ganga. In keeping with this goal, cGanga has been actively developing detailed knowledge capsules, tools and procedures to enable comprehensive and early rejuvenation of the Ganga River network across the whole basin. While a river basin approach is essential for analyzing and comprehending the Ganga river’s status and needs to regain her wholesomeness, the implementation strategies of the required interventions must keep in mind the role and individuality of each State. Thus, it is necessary to focus on state-level sub-strategies of natural resource management for holistic revival of River Ganga.

The present document attempts to provide a comprehensive picture of the Kali East basin river network in the State of Uttar Pradesh. This Atlas for the selected basins was created entirely by cGanga, with original mapping of all identifiable rivers, and with selective additional information culled from different sources for completeness. Many of the rivers and maps given here are not readily available elsewhere, and we expect them to prove useful to the many Central, State, and other organizations engaged in the river, water, or natural resource management in the Kali East basin.

In preparing this document dedicated members of cGanga spent a lot of time in diligently studying, analysing, acquiring, and compiling diverse information from diverse sources. Many people and organisations outside cGanga also helped in its preparation, which aided in its comprehensiveness. We are grateful to one and all of them.

VINOD TARE

*Professor & Founding Head, cGanga
IIT Kanpur*

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ACRONYMS AND ABBREVIATIONS

BCM	: Billion Cubic Meter
cGanga	: Centre for Ganga River Basin Management and Studies
Cumec	: Cubic meter per second
CWC	: Central Water Commission
DEM	: Digital Elevation Model
GIS	: Geographic Information System
GRBMP	: Ganga River Basin Management Plan
Km	: Kilometer
LULC	: Land Use/ Land Cover
M	: Meter
MCM	: Million Cubic Meter
mm	: millimeter
Sol	: Survey of India
Sq. Km	: Square Kilometer
SWAT	: Soil & Water Assessment Tool

INTRODUCTION

Kali East River is an important tributary of the Ganges flows through twelve districts of Uttar Pradesh before its confluence with Ganga River near Kannauj. The present volume is a first attempt to map the rich river network of Kali East basin in as fine a detail as possible. Much of the information contained in this River Atlas is not available in any other document and was created in original from available earth images with appropriate data and image processing tools and software on GIS platform. Naturally, there may be shortcomings in some of the maps herein, including missing small streams, which can be expected to be duly refined and included in later versions. Also, a river atlas is often useful in conjunction with other natural resource and anthropogenic information such as the distribution of rainfall and other climatic data, other waterbodies, forest cover, elevations, soil types, other physiographic information, land use, tourist and pilgrimage centres, and infrastructure including roads and highways. Such other relevant information is also expected to be processed, assembled, and included later in a fuller version of this Atlas. In the meanwhile, it is hoped that this Atlas will provide a useful window to Kali East basin river resources

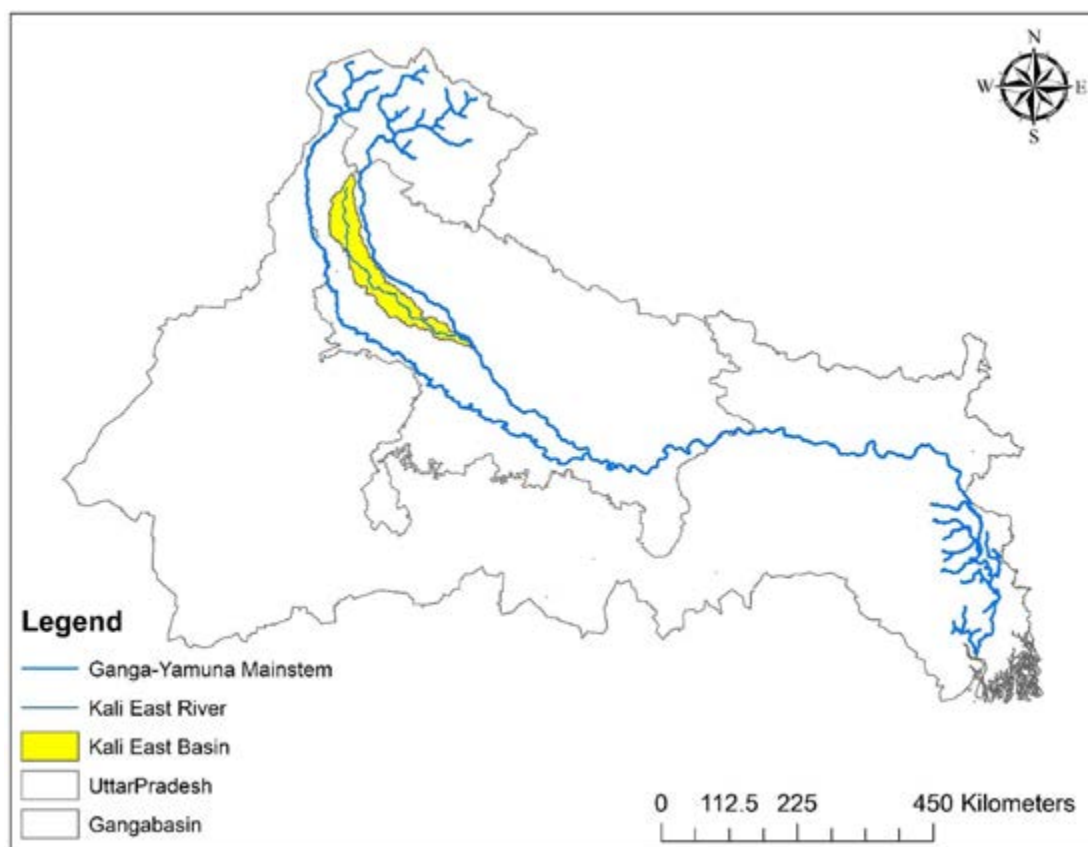


Figure: Location of Kali East Basin



KALI EAST BASIN: SALIENT FEATURES

S No	Particulars	Details
1	State Extent	Latitude: 26° 50' to 29° 30' N and Longitude: 77° 30' to 80° 00'E
2	Total Geographical Area (sq. km)	12,212.4
3	Area contributing to Ganga Basin (sq km)	12,212.4
4	Percentage of the Ganga Basin Area (%)	1.42
5	Districts (Census 2011)	12
6	Towns (Census 2011)	(Class I: 07; Class II: 09; Class III: 16; Class IV; Class V; ; Class VI:)
7	Total Population (Census 2011)	
8	Gram Panchayats	3655
9	Census Villages (Census 2011)	4467
10	Average Annual Rainfall (mm)	800 – 900
11	Average Temperature Range (oC)	5° to 45°
12	Major Rivers	Nim and Chhoiya
13	Number of Major Basins	03
14	Number of Water Resources Structures	(Dams: 00, Barrages: 01, Weir: 00, Anicuts, Lifts, Power houses: 00)
15	Number of Ground Water Observation wells	Level: 633 Quality: 45
16	Number of CWC Sites	01

KALI EAST BASIN: RIVERS TRAVERSING THROUGH VARIOUS DISTRICTS IN BASIN AREA

S.No	State	District	Area (sq km)	Population (census 2011)	Growth Rate (%)	Density	River
1	Uttar Pradesh	Hardoi	5986	4,092,845	20.44%	684	Kali
2		Meerut	2559	3,443,689	14.89%	1346	Abu ka Nala, Abu Nala2, Bali Drain, Chan-dasamand Drain, Chhoiya Nala2, Chhoiya Nala3, Dindala Drain, Gagsona Drain, Hawa Nala, Ikla Drain, Kaili Drain, Kali, kharauli Nala or Chhoiya Nala, Khatauli Nala, Kithor Drain, Mawana Drain, Meerut Nala, Raidhana Drain, Sheikhpur Drain
3		Kannauj	2093	1,656,616	19.27%	792	Janaura Supplementary cut, Kali, Udhannapur Drain
4		Farrukhabad	2181	1,885,204	20.05%	864	Janaura Supplementary cut, Kali, Kharwa Nala
5		Mainpuri	2760	1,868,529	17.02%	677	Bikrampur Drain, Ganga Jamni Nala, Janaura Supplementary cut, Junesi Escape, Kali, Khara Nala, Kinhawar Drain or Naya Nala, Malawan Nala, Naka Drain, Rajwana Drain, Shibpur Drain, Sirsa Drain
6		Etah	2431	1,774,480	13.62 %	730	Baghwala Nala, Bhaupura Drain, Junesi Es-cape, Kachaura Drain, Kansuri Drain, Kali , Ka-ron Nala, Kartala Drain, Khajura Drain, Khara Nala, Khara Nala 2, Malawan Nala, Marahra Drain, Milak Banehra Nala , Mohanpur Drain, Rajwana Drain, Targawan Drain,
7		Kansiram Nagar	1955	1,436,719	16.93 %	735	Behta Drain, Bhaupura Drain, Etbarpur Drain, Jhabar Drainage cut, Kartala Drain, Khajura Drain, Khojpur Drain, Mohanpur Drain, Namaini Drain, Nim River, Sanmothi Mohan-pur Drain, Sevka Nala, Sidhpura Nala, Sikaira Drain, Singpur Drain, Wazirpur Nala
8		Mahamaya Nagar	1840	1,564,708	17.12 %	850	Arabamada Nala, Karon Nala, Kachaura Drain, Kali
9		Aligarh	3650	3,673,889	22.78%	1007	Arabamada Nala, Bainjana Drain, Chhoiya Nala, Choyia Drain, Dadon Drain, Daheli Drain-age Cut, Dabthala Branch, Kali, Karaila Drain Cut, Palra Drainage cut, Tejpur Cut, Teori Drainage Cut
10		Bulandshahr	4512	3,499,171	20.12 %	776	Baral Nala , Bhatola Nala, Chhoiya River, Gu-laothi Nala, Nim River, Palra Drainage cut, Si-yana Drain, Teori Drainage Cut, Zainpur Drain,,,
11		Ghaziabad	1179	4,681,645	42.27%	3971	Kali , Bajhera Drain, Baral Nala, Chhajarsi Drain, Chhoiya Nala 2, Dhaulana Drain, Dindala Drain, Hawa Nala, Hiwai Drain, ikla Drain, Kali , kharauli Nala or Chhoiya Nala, Kithor Drain, Nijampur Drain, Nim River, Niwari Drain, Nurpur Drain, Raidhana Drain, Ratanpura Drain, Shamli Drain, Sheikhpur Drain, Sikri Khurd Nala, Siwia Escape, Tibara Nala
12		Muzaffarnagar	4008	4,143,512	16.94 %	1034	Abu Nala 2, Basaich Drain, Chandasamand Drain, Gagsona Drain, Jansath Nala , Khatauli Nala , Ladpur Drain, Rataur Drain,



CWC BASINS

Basin Code	Basin Name
1	Indus (Up to border)
2a	Ganga
2b	Brahmaputra
2c	Barak and others
3	Godavari
4	Krishna
5	Cauvery
6	Subernarekha
7	Brahmani and Baitarni
8	Mahanadi
9	Pennar
10	Mahi
11	Sabarmati
12	Narmada
13	Tapi
14	West flowing rivers from Tapi to Tadri
15	West flowing rivers from Tadri to Kanyakumari
16	East flowing rivers between Mahanadi and Pennar
17	East flowing rivers between Pennar and Kanyakumari
18	West flowing rivers of Kutch and Saurashtra including Luni
19	Area of inland drainage in Rajasthan
20	Minor rivers draining into Myanmar (Burma and Bangladesh)

Source: River Basin Atlas of India, Ministry of Water Resources, Gol (October 2012)

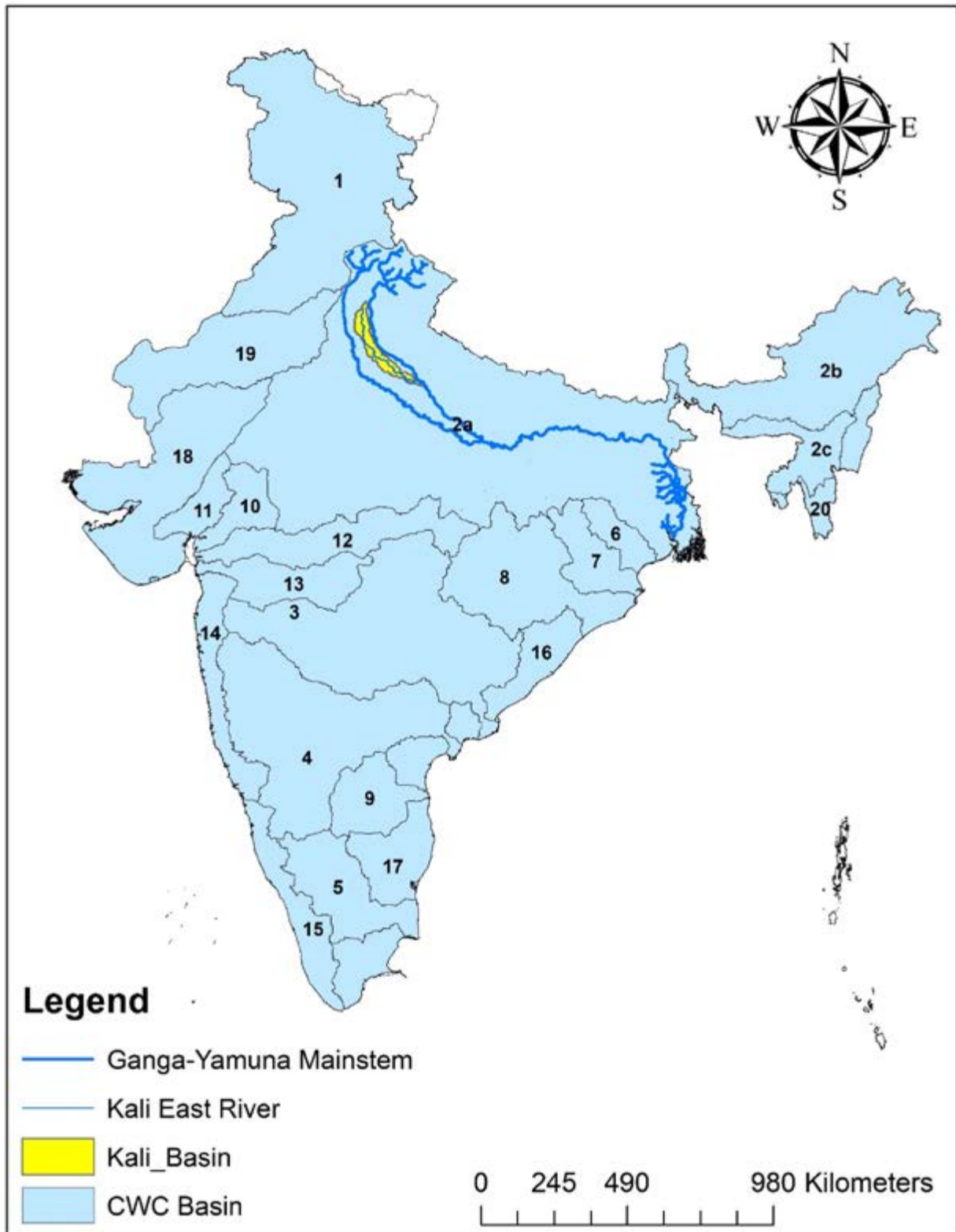


Figure: CWC Basins in India





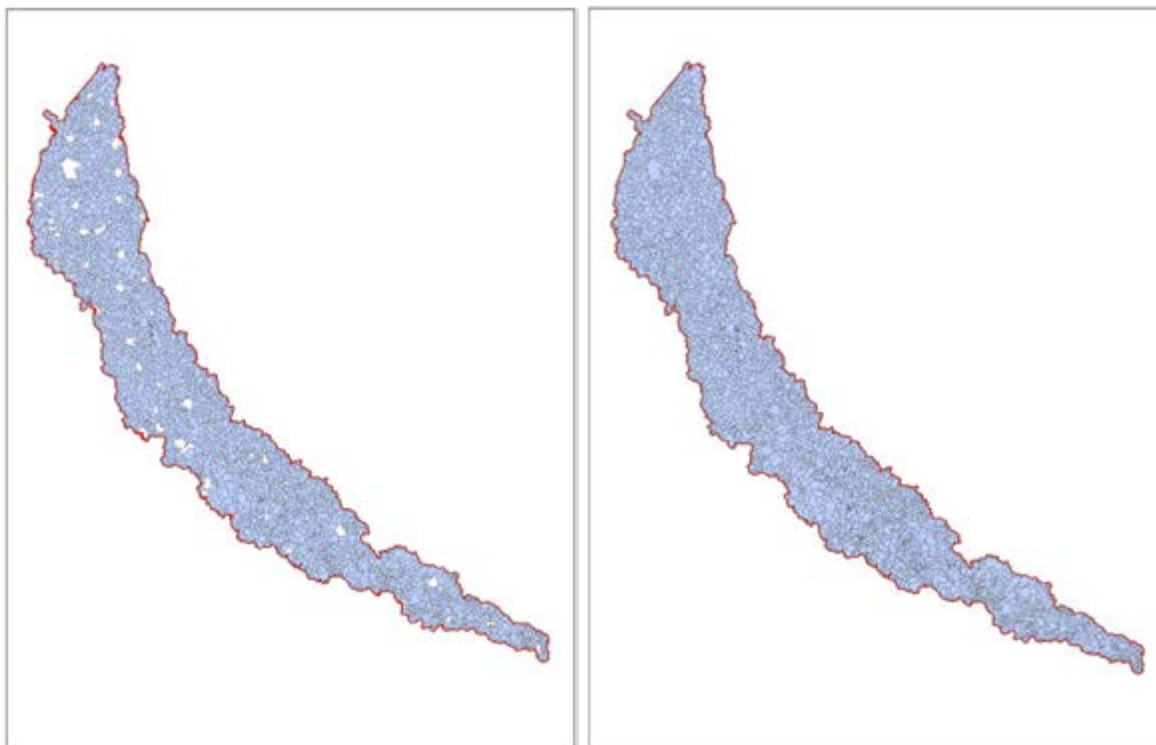
KALI EAST BASIN: ADMINISTRATIVE STRUCTURE



Districts: UP: 12

Tehsil: UP: 33

Blocks: UP: 80



Gram Panchayat: UP: 3655

Villages: UP: 4467

Figure: Administrative Structure of the Kali East River Basin

Source: SOI

KALI EAST BASIN: CANAL NETWORK

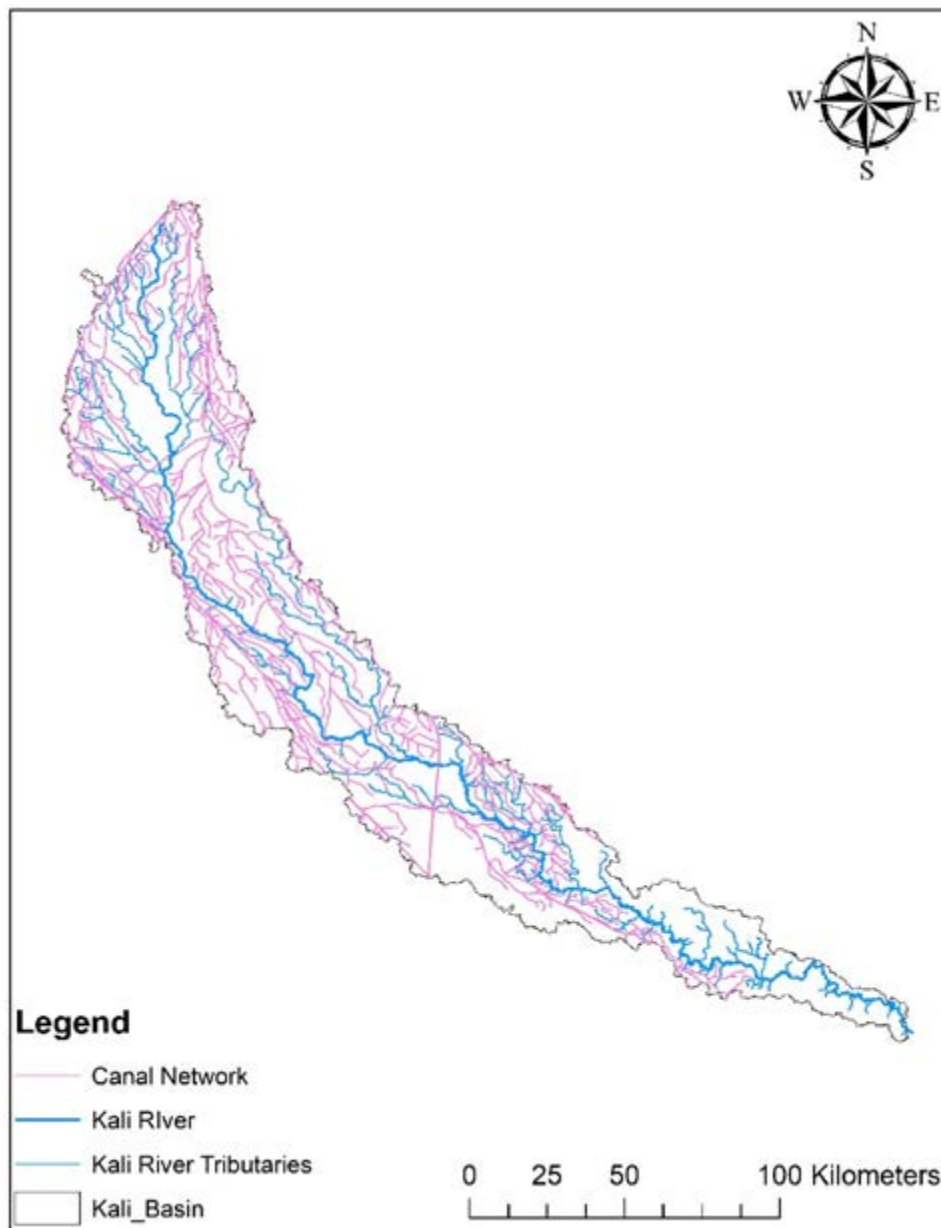


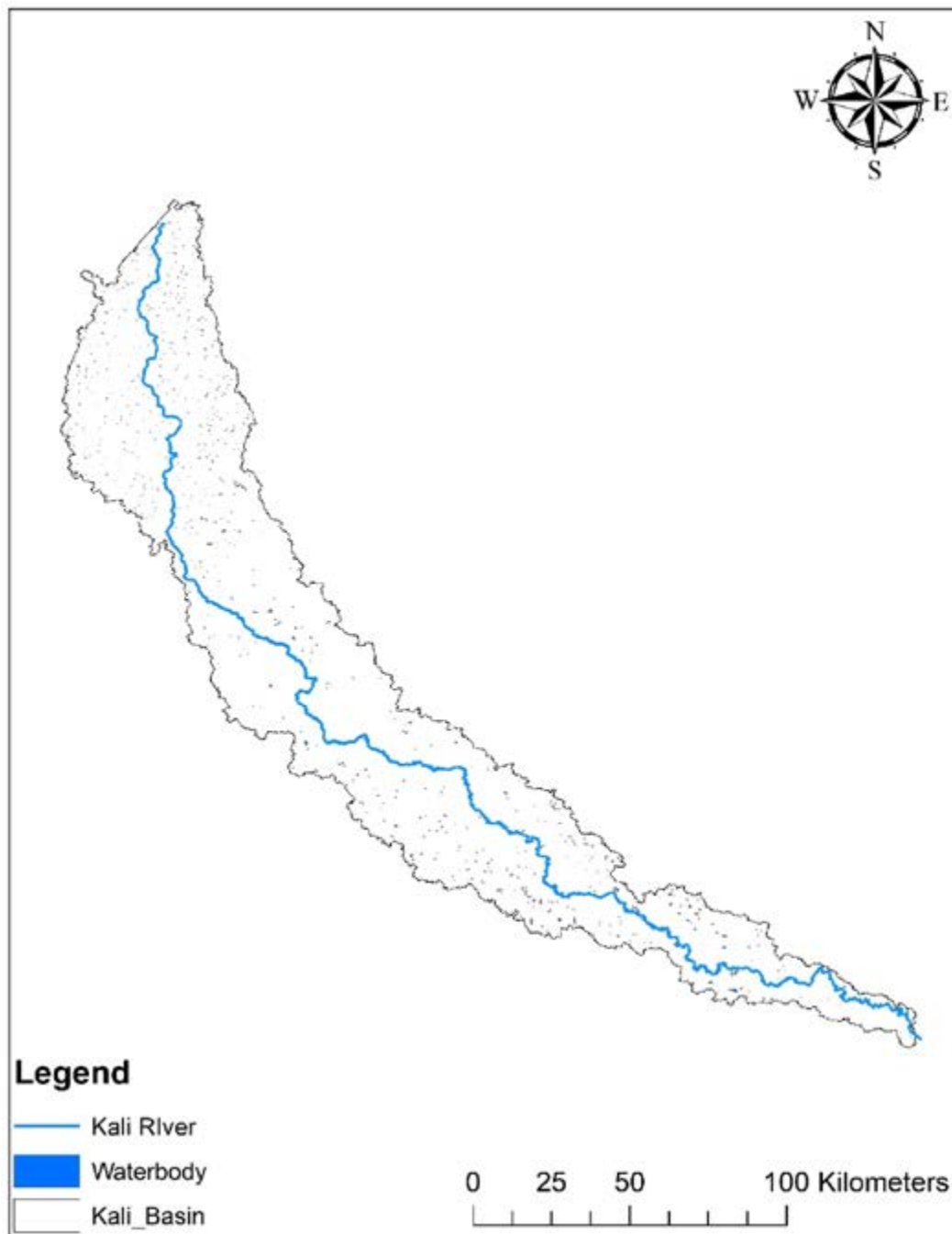
Figure: Canal Network of Kali East River Basin

Source: NWIC

Total Canal Network: 4127.10 Km
Bevar Feeder Canal Major Irrigation Project: 258.12 Km
Lower Ganga Canal Major Irrigation Project: 259.10 Km
Madhya Ganga Canal Stage - I Major Irrigation Project: 20.50 Km
Parallel Lower Ganga Canal Major Irrigation Project: 59.48 Km
Upper Ganga Canal: 74.56 Km
Upper Ganga Canal Major Irrigation Project: 2452.16 Km



KALI EAST BASIN: WATERBODIES MAP

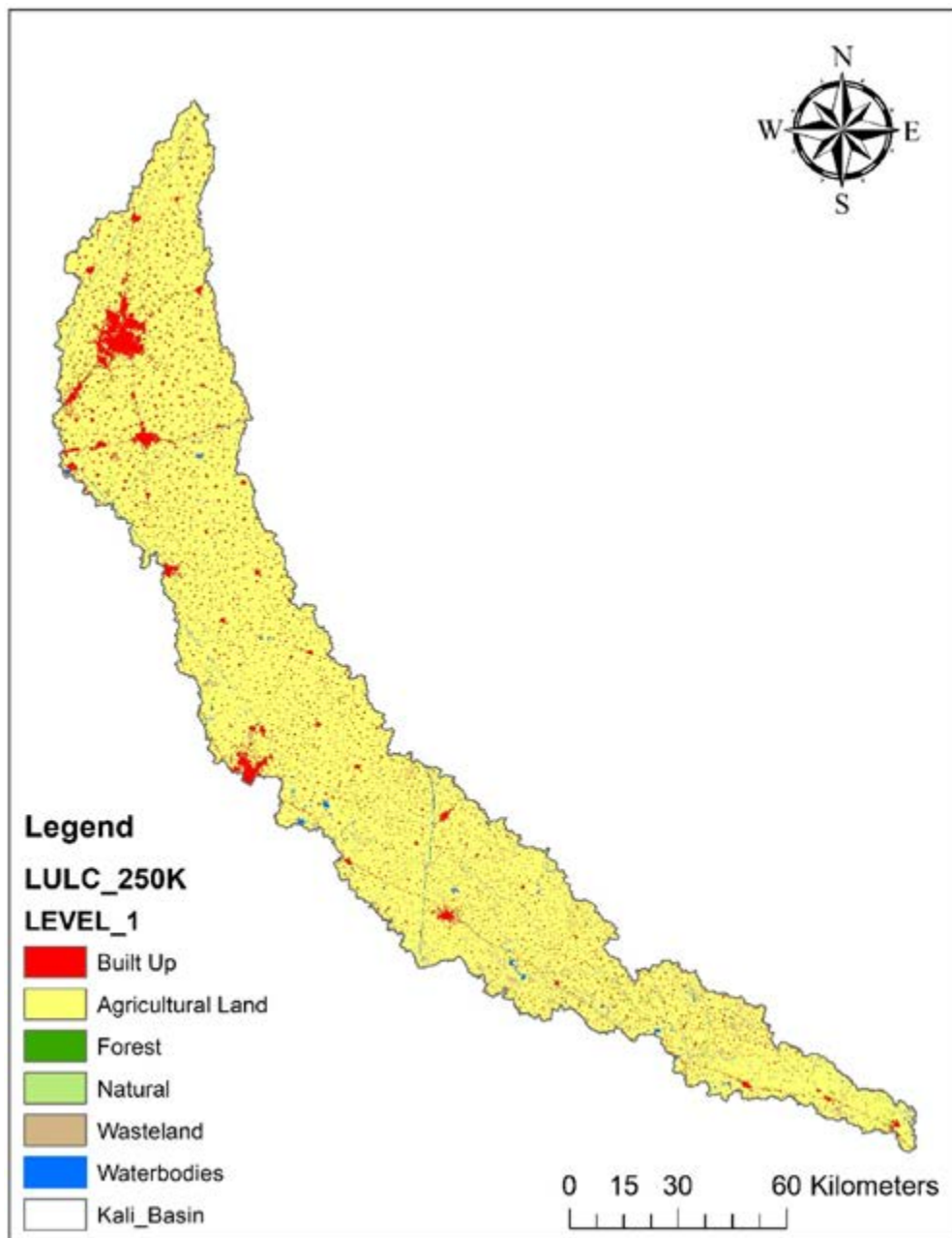


Total No. of waterbodies: 943

Figure: No. of water bodies present in the Kali East River Basin

Source: NWIC

KALI EAST BASIN: LAND USE LAND COVER [250K]

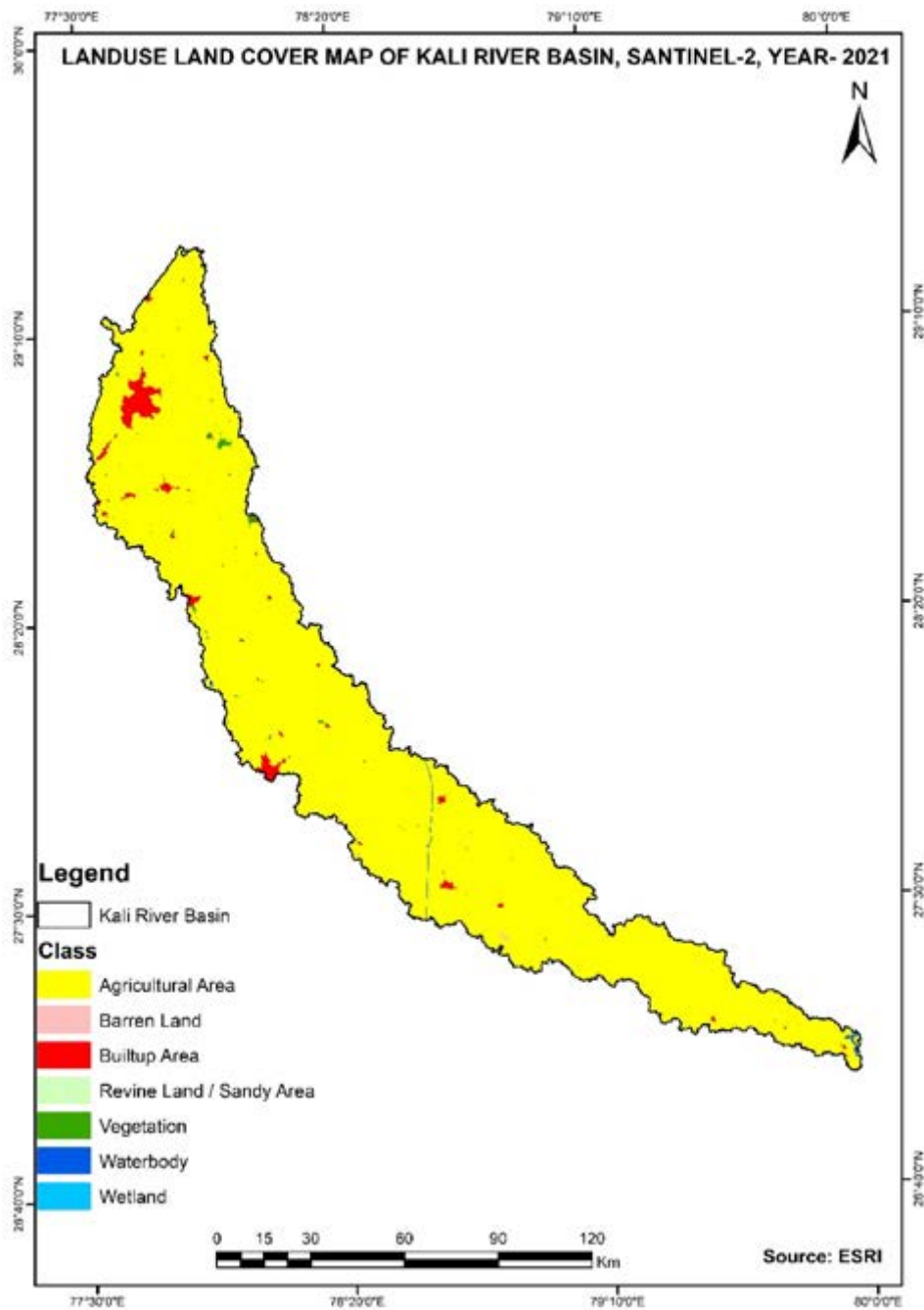


Imagery: multi-temporal satellite data of IRS AWiFS sensor
Year: 2017-18
Accuracy: 90.07 % with a range of 86 to 95 % in different states.

NRSC BHUVAN



KALI EAST BASIN: LAND USE LAND COVER



Imagery: Sentinel-2

Year: 2021

Accuracy: 85.96%

Source: ESRI

Figure: Land Use - Land Cover Pattern in Kali East River Basin

KALI EAST BASIN: GW LEVEL AND QUALITY STATION

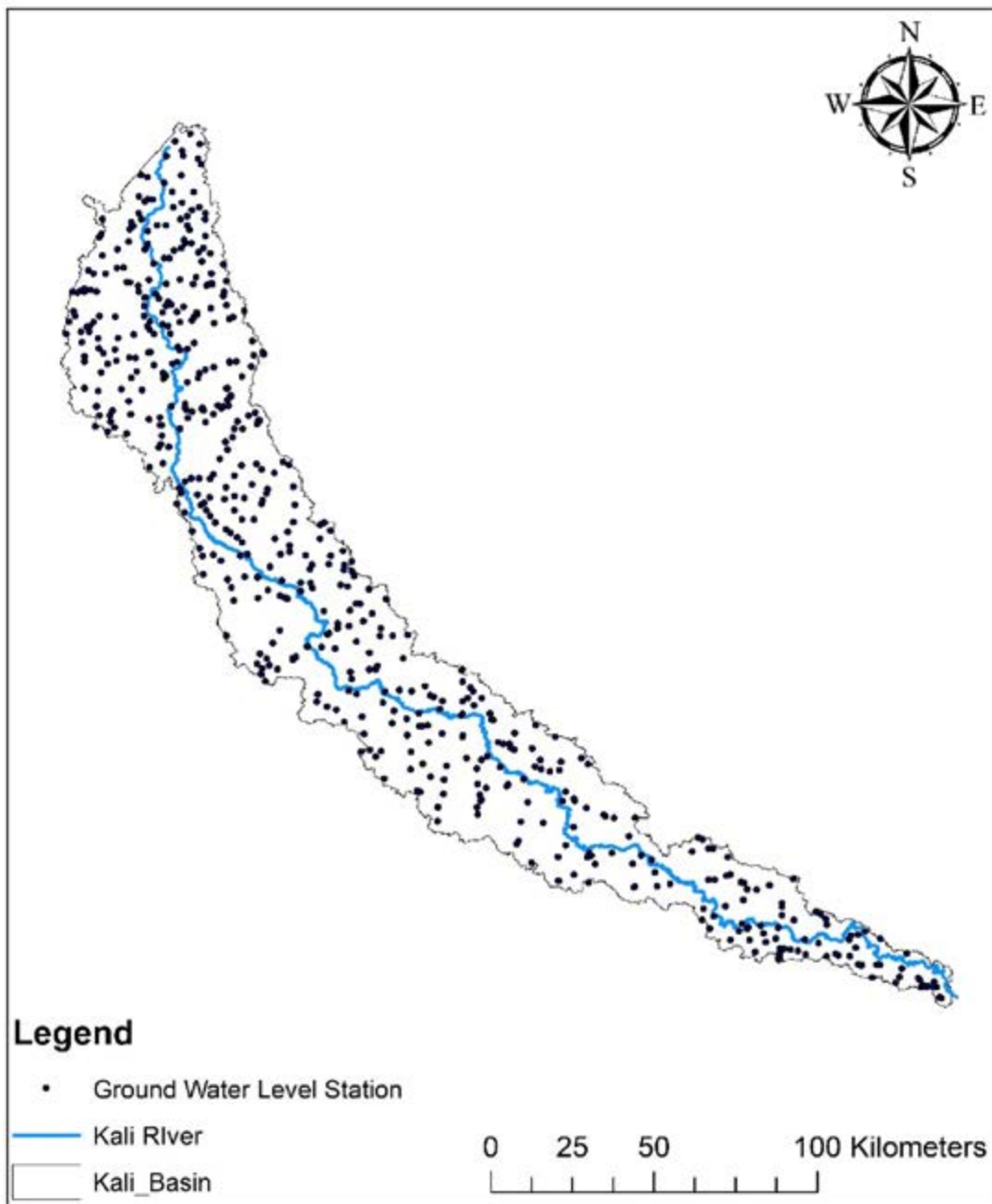


Figure: Groundwater Level stations in Kali East River Basin,

Source: CGWB

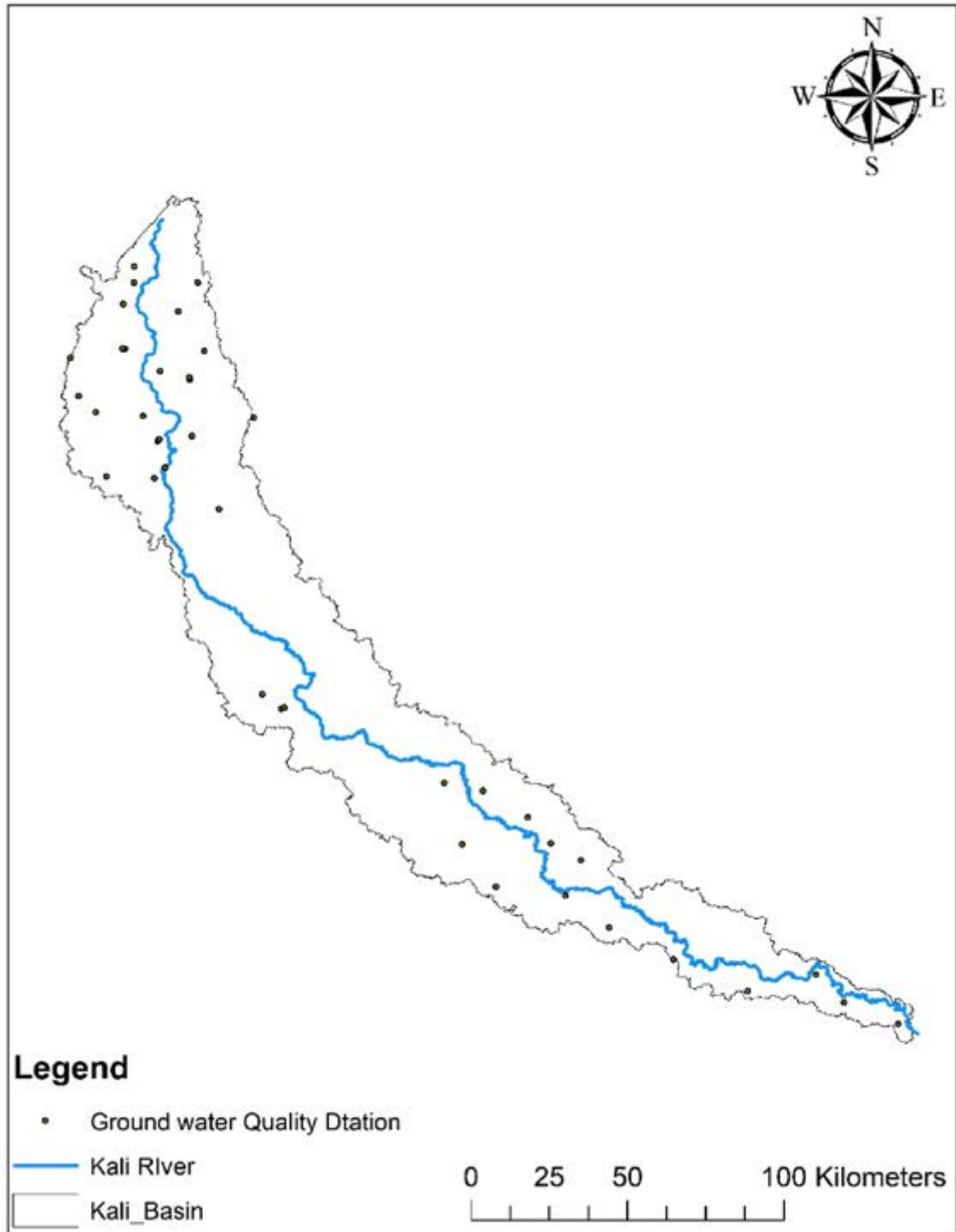
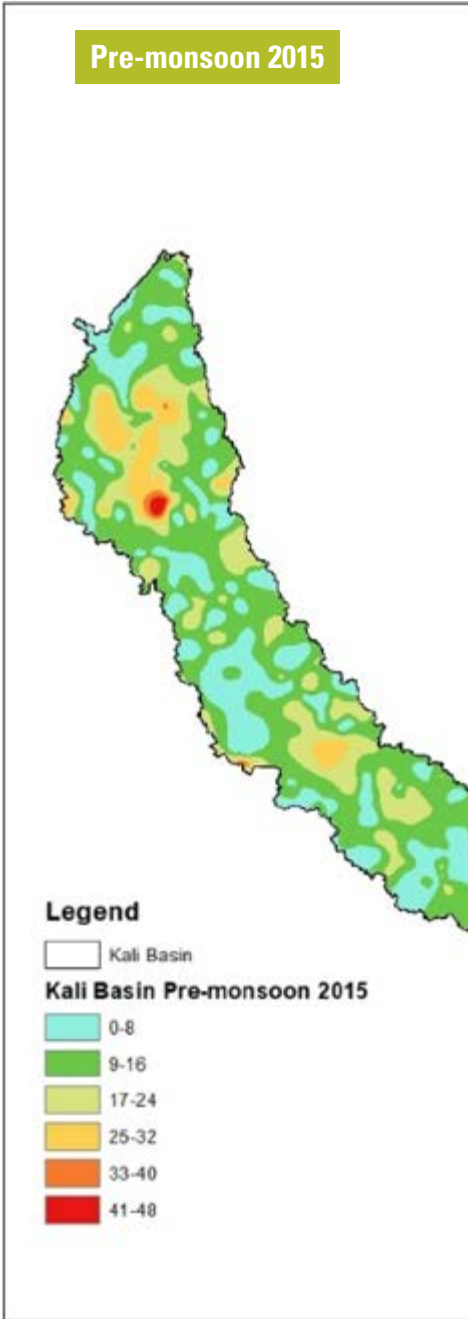
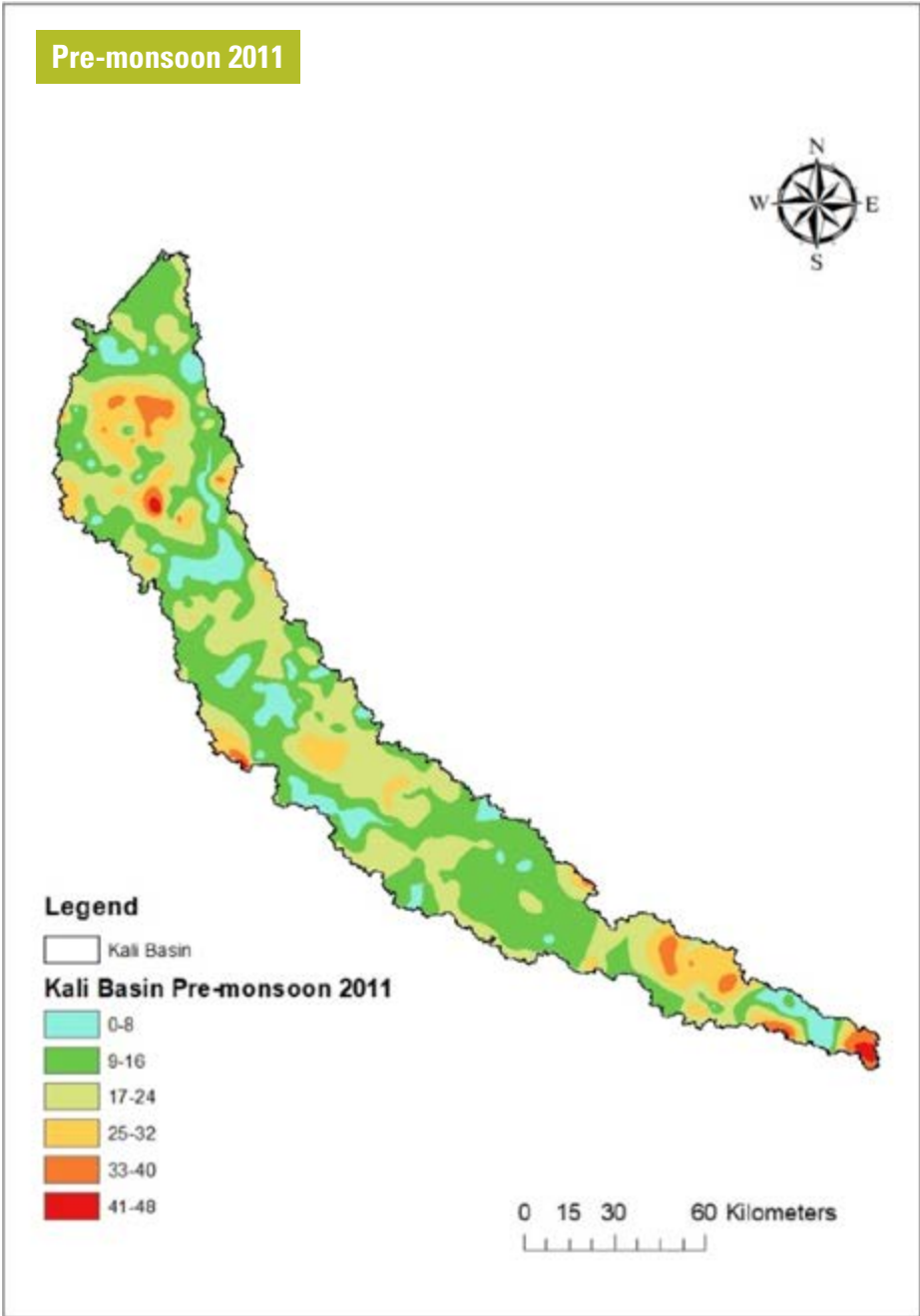
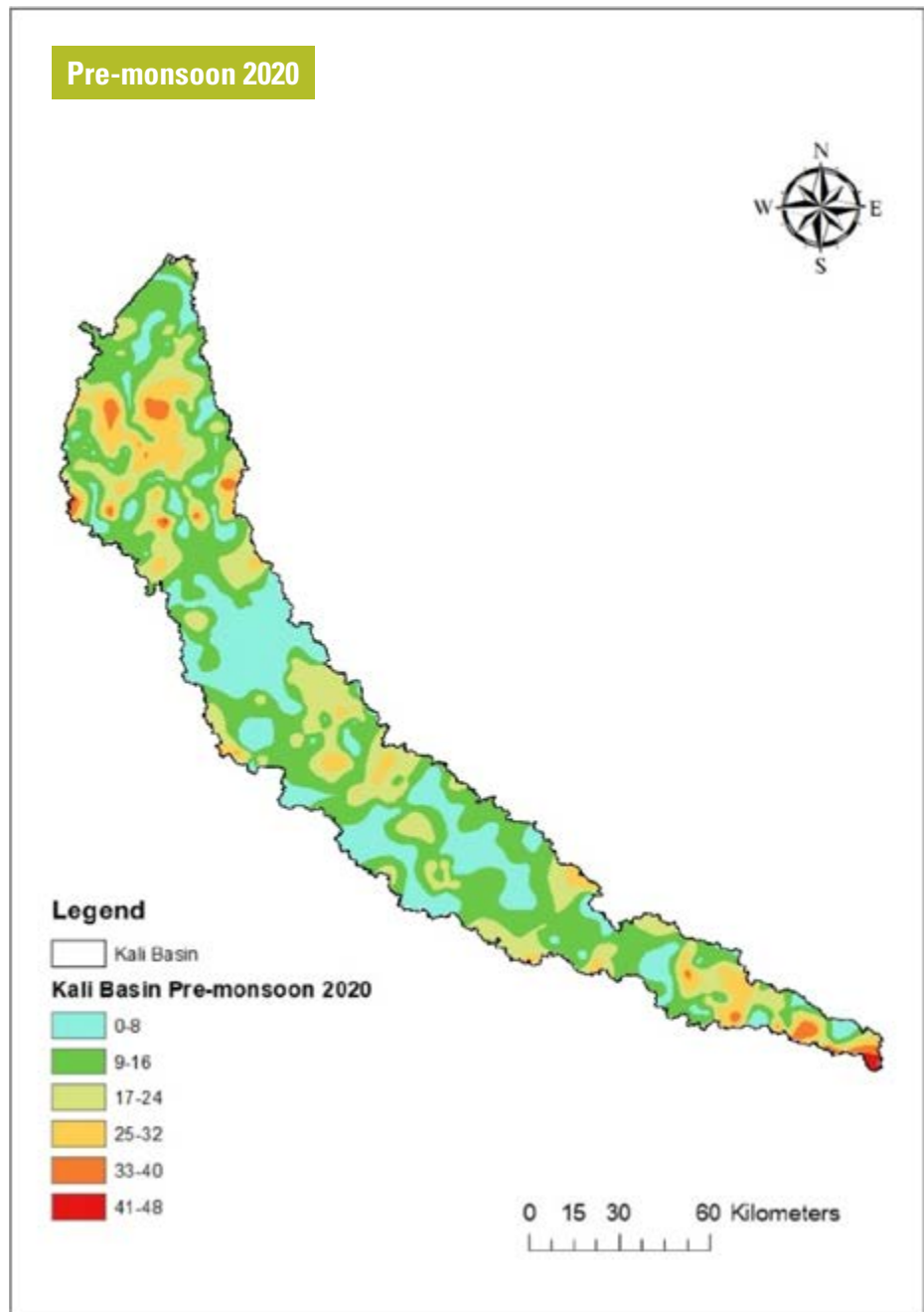


Figure: Groundwater Quality Stations in Kali East River Basin

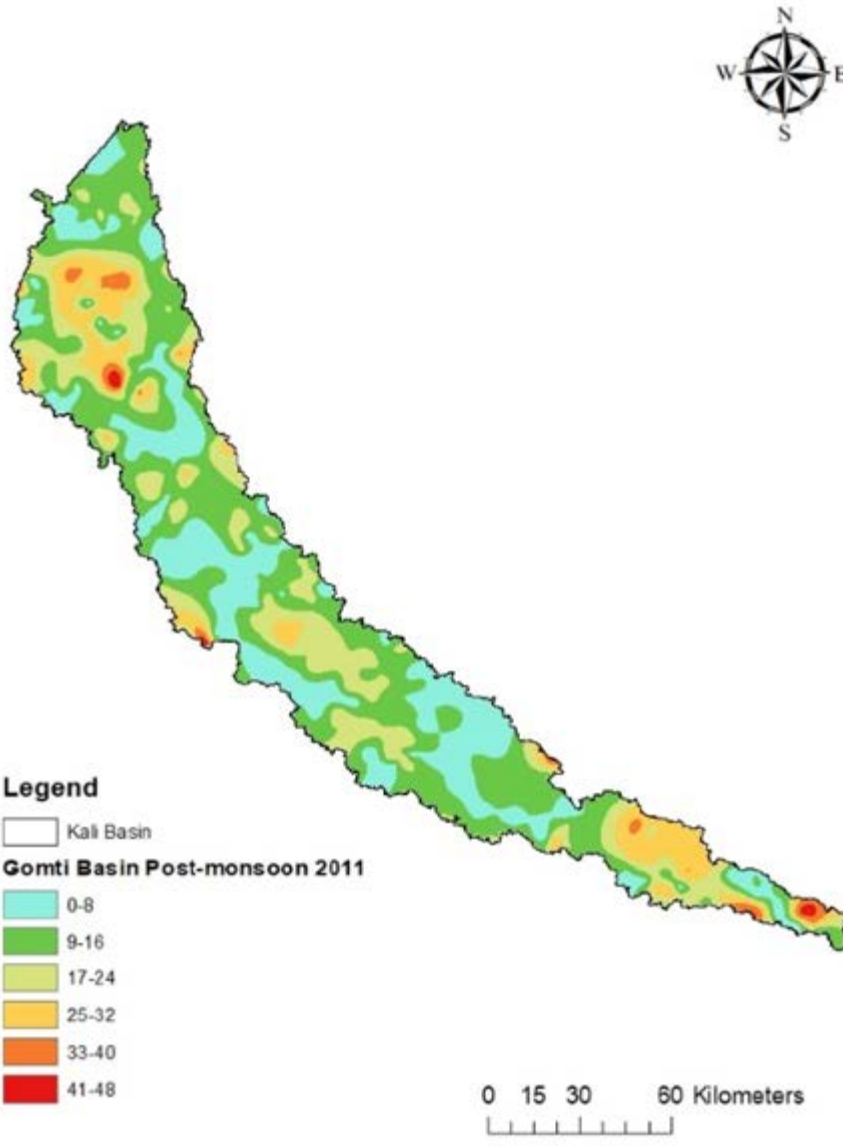
Source: CGWB

KALI EAST BASIN: GROUNDWATER ELEVATION CONTOUR

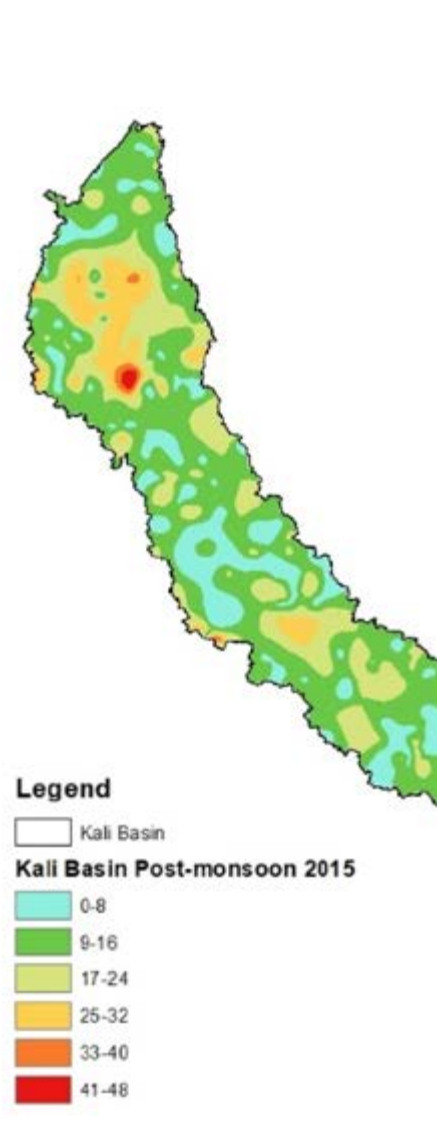




Pre-monsoon 2011



Pre-monsoon 2015



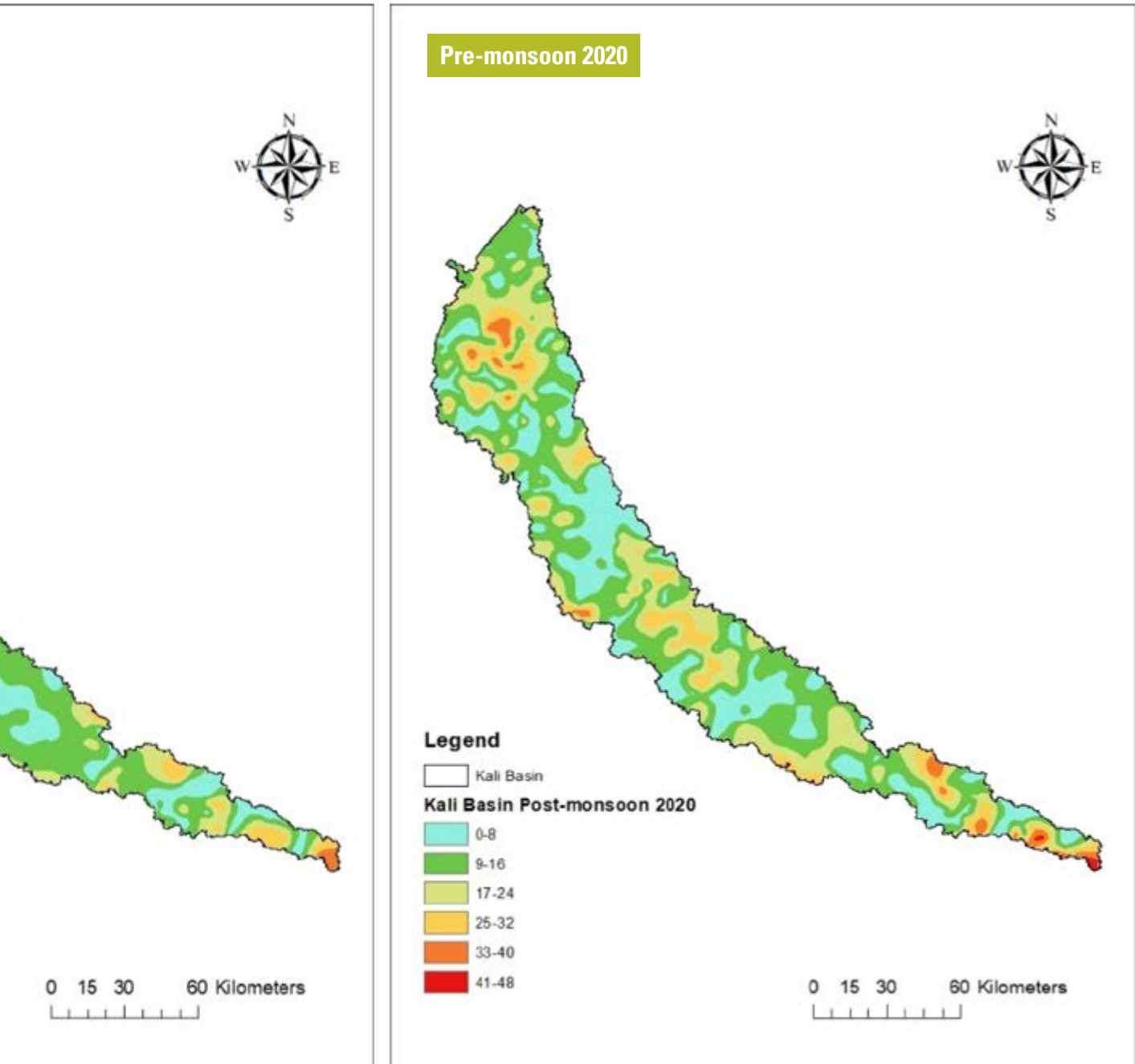
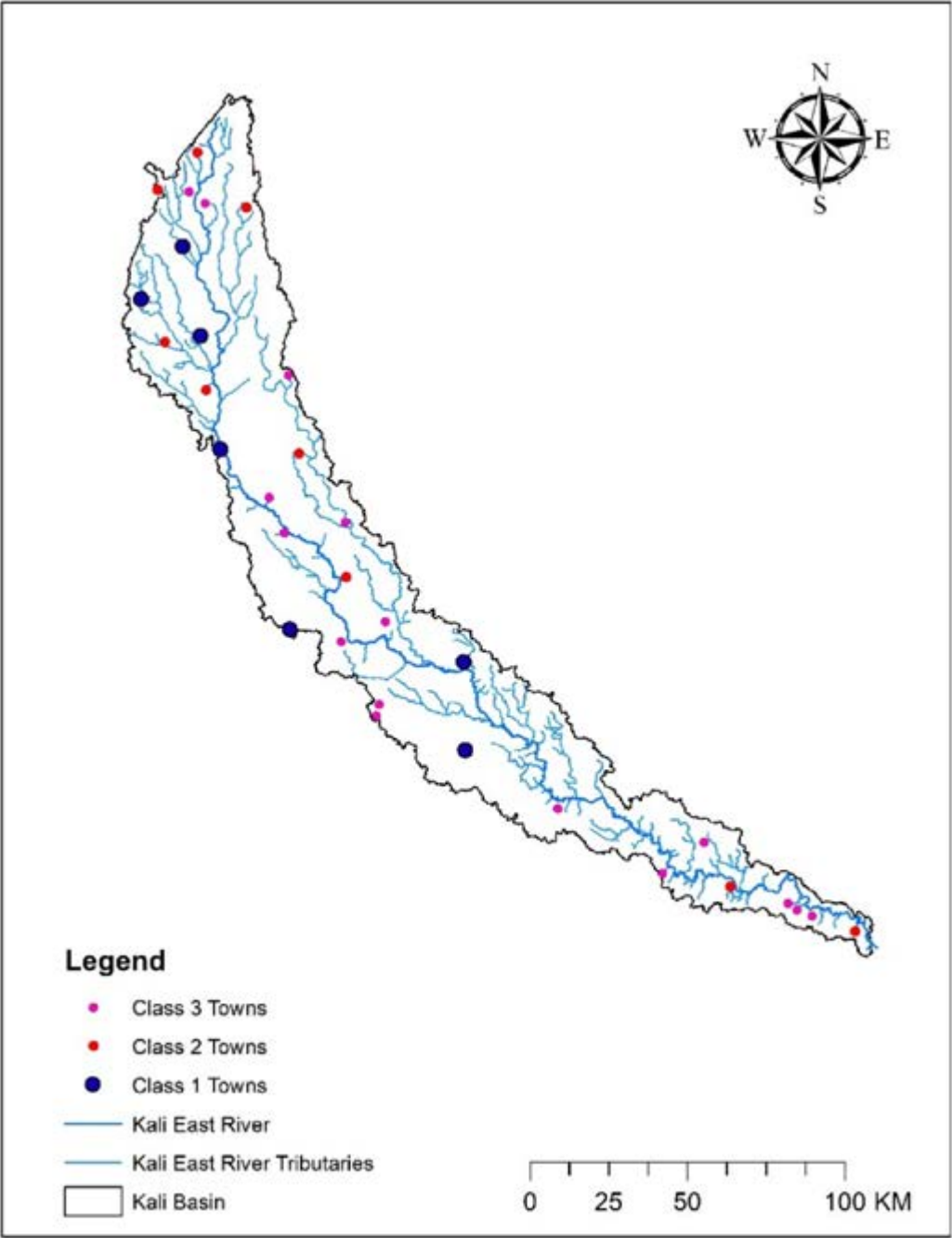


Figure: Groundwater Level (in mbgl) elevation pattern variation in Pre and Post Monsoon Period in the years 2011, 2015 and 2020

Source: CGWB

KALI EAST BASIN: CLASS I, II AND III CITIES



07 Class I cities,
09 Class II and 16 Class III towns
Source: Census 2011





KALI EAST BASIN: CWC SITE LOCATION

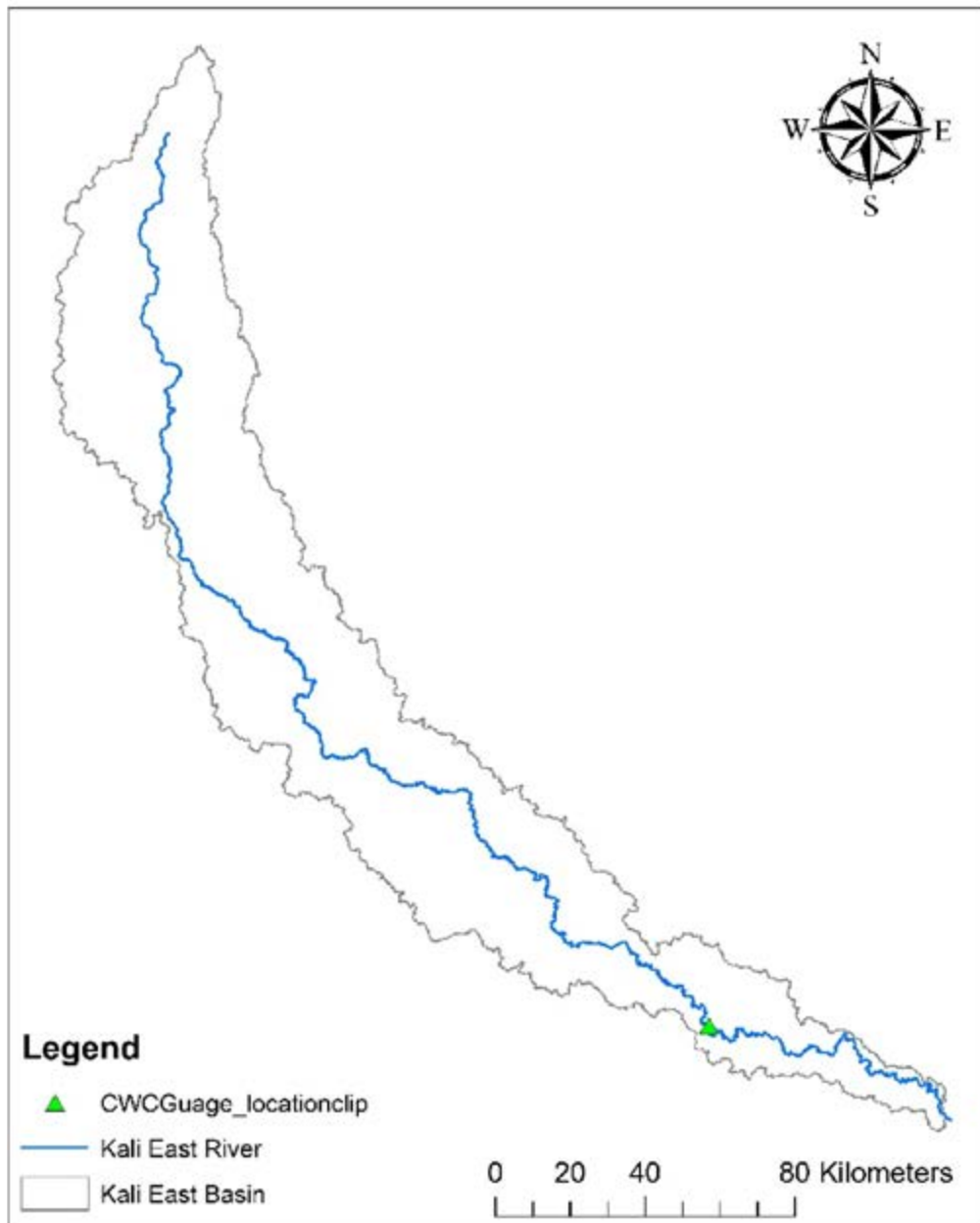


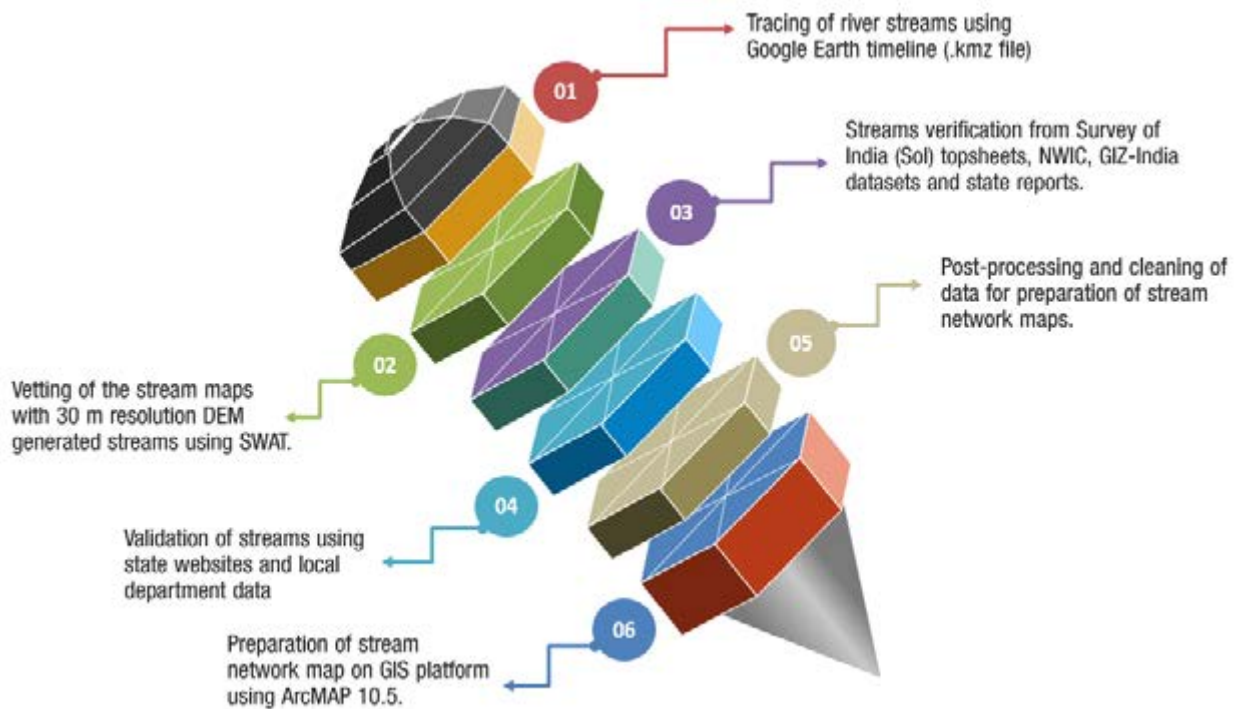
Figure: CWC site locations in Kali East River Basin

Source: CWC

S No.	Station Name	River	District	Measurement Type	Data Available
1	Bewar	Kali East	Manipur	G	7/15/1970 Onwards

RIVER NETWORK PREPARATION METHODOLOGY

The method adopted, in brief, to obtain the river network are stepwise as follows:



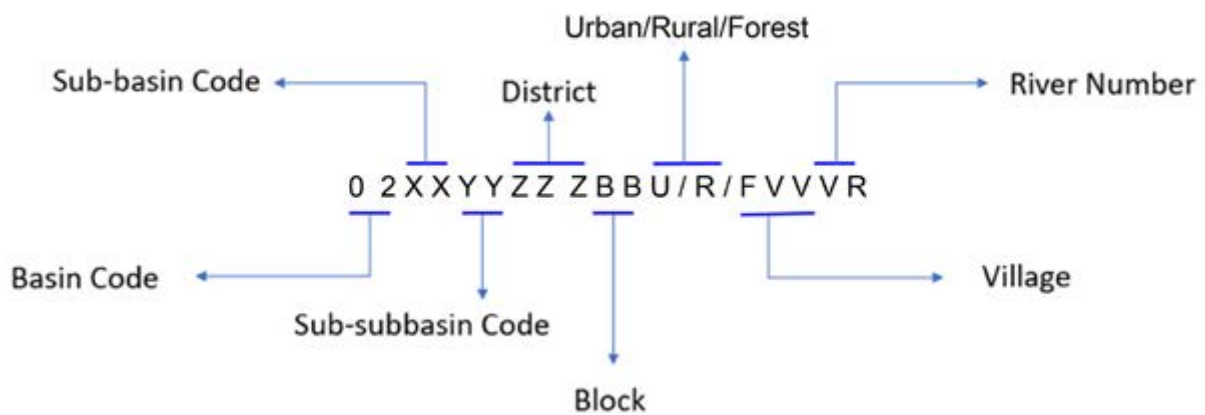
- Streams less than 2.5 km and coming from local agriculture land is not covered.
- All streams covered which are coming from populated area (Urban or Rural) even if they are less than 1 km. (if it is visible).

Disclaimer: The accuracies of the maps generated by the above method are subject to the limitations of the data processing tools and software used for the particular geographical regions as represented in Google Earth images, and are subject to future refinement.



RIVER CODIFICATION SYSTEM

In the present Atlas alphanumeric characters are used for coding the river systems. A combination of natural and administrative boundaries is used to assign a code to each river. Each sub-step in the codification system is assigned a digit that indicates the length of the code up to that point, and the total length of the code is 16 digits.



The first two digits represent the code for the major basin, according to the code system proposed by the Central Water Commission (CWC), Government of India. The following four digits indicate the sub-basins and sub-subbasins, in the order of the rivers. The district code is represented by the next three digits and is based on the 2011 census data. The administrative boundaries will be determined based on the source of the river. The next two digits represent the block code, which is taken from the district website and uses the same serial numbering system. The next character, 'U', 'R' or 'F', indicates whether the river is located in an urban, rural or forest area. The next three digits represent the code for the village, based on census data from 2011, and uses the same serial numbering system as provided on the census data but the number will be given based on block. The final digit indicates the number of the river that originates from the specific administrative boundary.

KALI EAST BASIN AND ITS RIVER NETWORK

Kali East River UID Code: 02040013308R0321
Basin Area: 11699 Sq. Km.
Major Rivers: Nim, Chhoeya, Qadirabad Drain
Number of rivers- 142
River network- 2280.57 Km

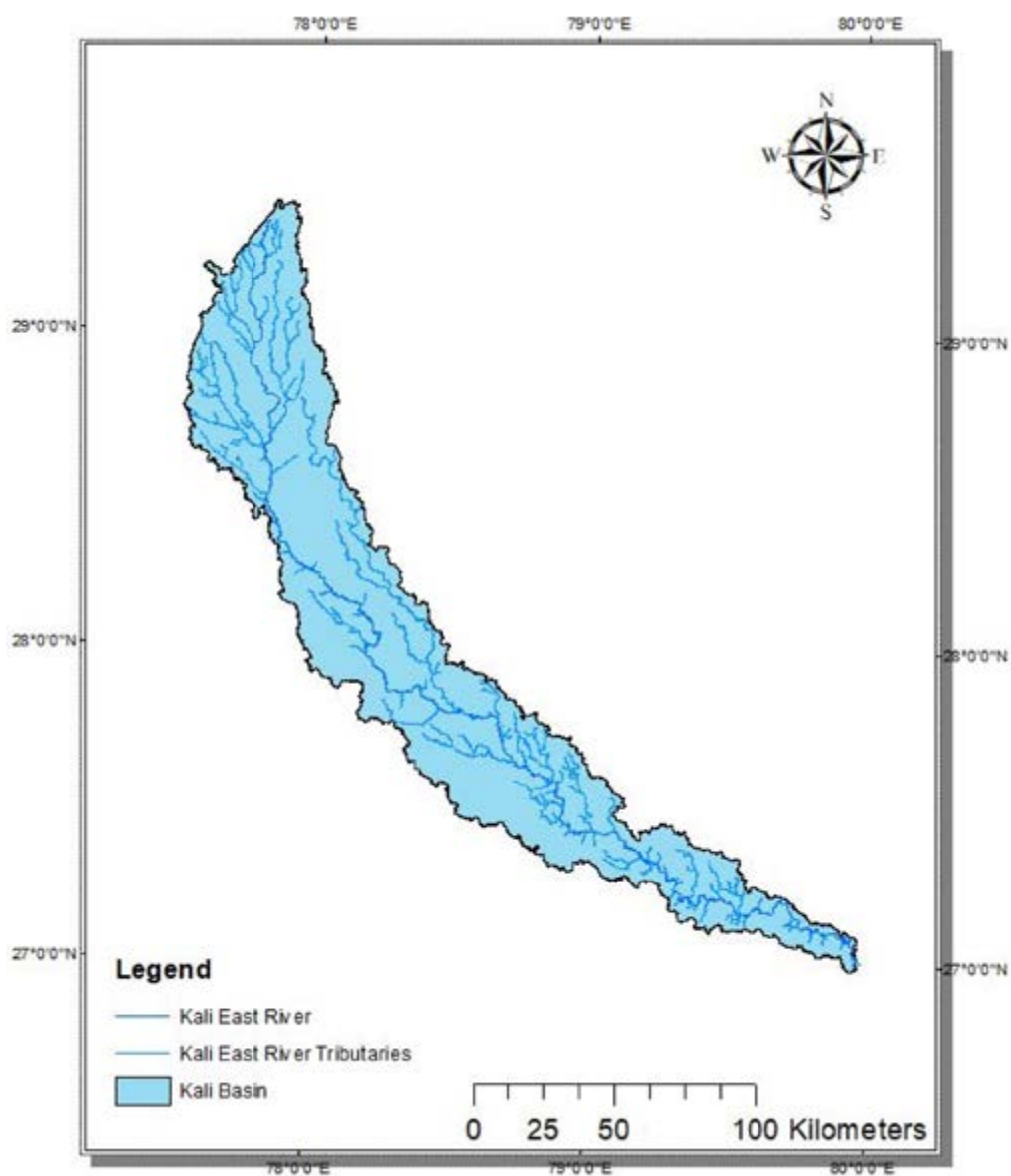


Figure: Kali East basin river network.



KALI EAST RIVER MAINSTEM FLOW DIAGRAM

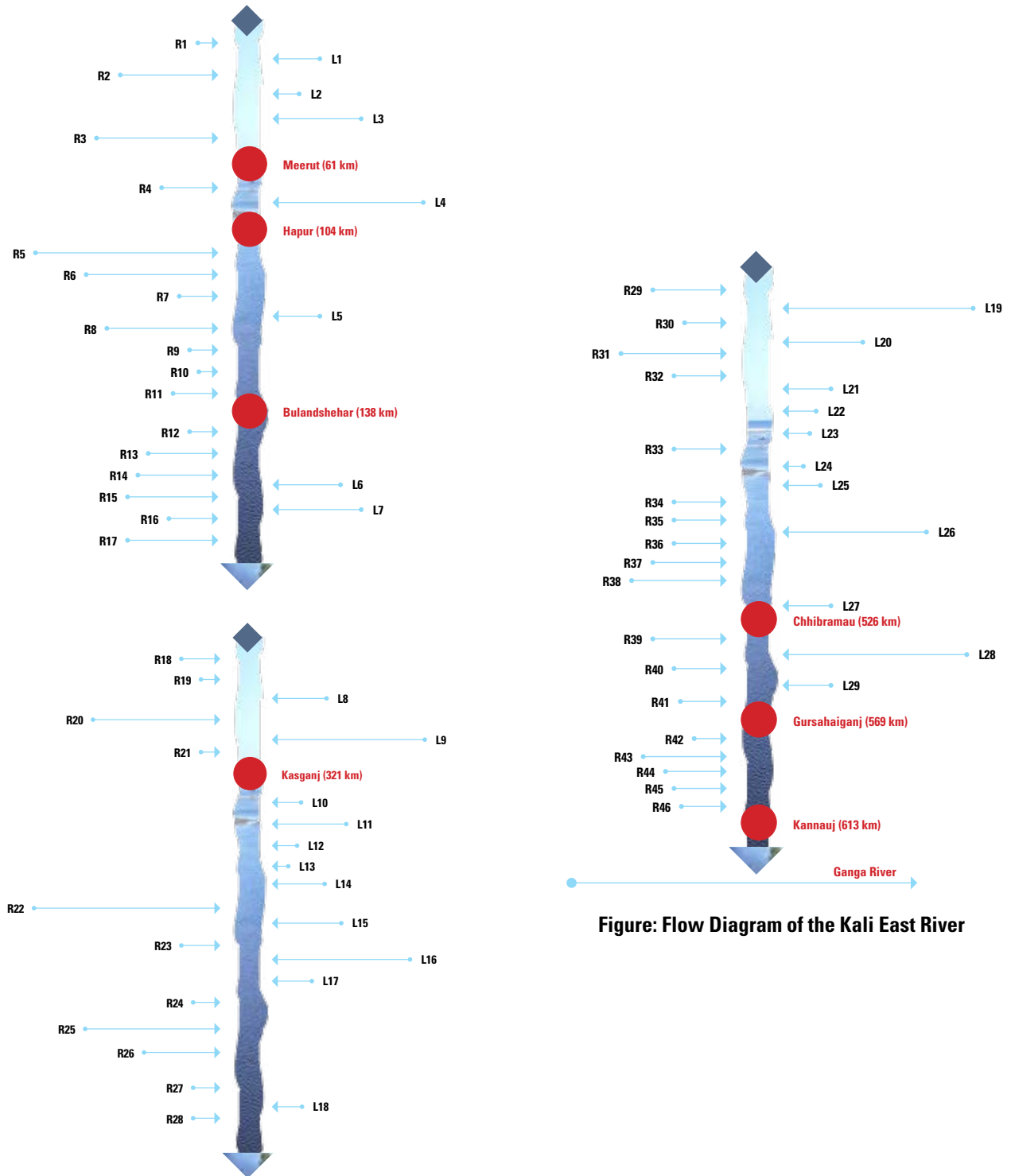


Figure: Flow Diagram of the Kali East River

KALI EAST RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Ladpur Drain	R1	3.92	29.28	77.79	11
2	Jansath Nala	L1	14.9	29.25	77.8	16
3	Khatauli Nala	R2	16	29.16	77.75	29
4	Chhoiya Nala	L2	11.6	29.04	77.78	45
5	Abu Nala	L3	38.5	28.96	77.77	56
6	Abu Ka Nala	R3	31.3	28.93	77.76	60
7	Meerut Nala	R4	8.38	28.93	77.76	61
8	Chhoiya Nala	L4	73	28.7	77.85	98
9	Kharauli Nala Chhoiya Nala	R5	59.6	28.64	77.81	108
10	Hawa Nala Qadirabad Nala Badirabad Nala	R6	55.5	28.63	77.81	109
11	Gulaothi Nala	R7	2.38	28.6	77.82	113
12	Steam 35	L5	11.9	28.55	77.84	117
13	Barai Nala	R8	36.7	28.48	77.83	129
14	Zainpur Nala	R9	6.88	28.47	77.82	131
15	Stream 34	R10	0.95	28.46	77.82	131
16	Stream 33	R11	2.32	28.43	77.84	135
17	Stream 32	R12	1.77	28.39	77.86	141
18	Bhatola Nala	R13	4.1	28.3	77.91	156
19	Deorala Nala	R14	5	28.26	77.97	170
20	Stream 31	L6	4.45	28.25	77.99	173
21	Stream 30	R15	4.92	28.18	78.07	188
22	Stream 29	L7	5.22	28.14	78.17	206
23	Stream 28	R16	3.51	28.11	78.18	212
24	Palra Drainage	R17	20.7	28.01	78.2	240
25	Stream 27	R18	7.18	27.99	78.2	243



KALI EAST RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
26	Kareaila Drain	R19	7.1	27.86	78.33	271
27	Chhoiya Nala	L8	6.18	27.87	78.4	282
28	Arabamada Nala	R20	30.3	27.81	78.46	294
29	Nim River	L9	195	27.81	78.54	304
30	Stream 26	R21	1.1	27.79	78.63	318
31	Stream 25	L10	1.78	27.79	78.65	321
32	Jhabar Drainage Cut	L11	18.6	27.78	78.68	324
33	Wazirpur Nala	L12	2.35	27.76	78.68	329
34	Stream 24	L13	0.49	27.74	78.69	331
35	Stream 23	L14	4.5	27.72	78.69	334
36	Karon Nala	R22	46.1	27.65	78.73	347
37	Sevka Nala	L15	13.2	27.63	78.78	356
38	Kartala Drain	R23	5.98	27.58	78.86	371
39	Sidhpura Nala	L16	31	27.59	78.87	374
40	Bhaupura Drain	L17	7.45	27.58	78.89	376
41	Milak Banehra Nala	R24	3.85	27.56	78.88	380
42	Baghwala Nala	R25	31.4	27.51	78.91	390
43	Malawan Nala	R26	10.8	27.47	78.9	396
44	Stream 22	R27	1.95	27.45	78.92	398
45	Stream 21	L18	1.1	27.45	78.94	401
46	Ganga Jamni Nala	R28	3.76	27.43	78.94	405
47	Sirsa Drain	R29	5.65	27.43	79	414
48	Mohanpur Drain	L19	42.7	27.43	79.02	416
49	Junesi Escape	R30	6.86	27.43	79.04	418
50	Stream 20	L20	16.7	27.43	79.1	425

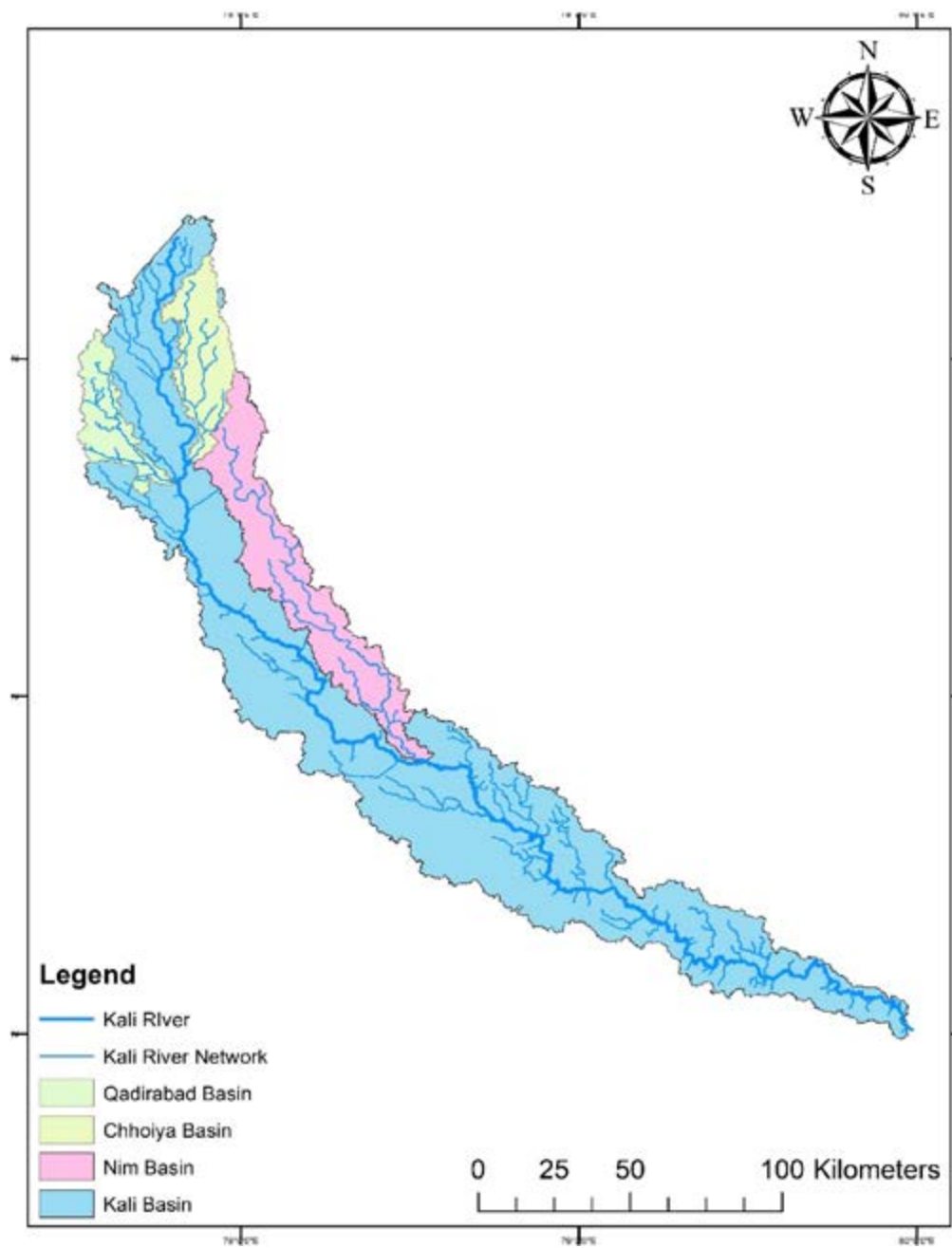
KALI EAST RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
51	Khara Or Naka Drain 2	R31	11.2	27.35	79.2	449
52	Rajwana Drain	R32	5.75	27.33	79.24	456
53	Khara Nala	L21	9.37	27.33	79.25	458
54	Stream 19	L22	5.14	27.33	79.26	459
55	Stream 18	L23	3.1	27.3	79.28	466
56	Stream 17	R33	2.11	27.27	79.31	472
57	Stream 16	L24	2.48	27.28	79.32	475
58	Stream 15	L25	3.2	27.27	79.32	476
59	Stream 14	R34	3.69	27.24	79.32	481
60	Stream 13	R35	3.58	27.21	79.34	485
60	Kharwa Nala	L26	32	27.22	79.37	491
62	Stream 12	R36	3.1	27.2	79.39	496
63	Janaura Supplementry Cut	R37	4.49	27.21	79.41	499
64	Udhannapur Drain	R38	10	27.21	79.44	508
65	Stream 11	L27	8.39	27.22	79.48	515
66	Stream 10	R39	12	27.17	79.55	526
67	Stream 9	L28	35.9	27.17	79.55	526.8
68	Stream 8	R40	6.54	27.16	79.58	529.8
69	Stream 7	L29	6.24	27.19	79.62	537.5
70	Stream 6	R41	5.47	27.15	79.74	563.4
71	Stream 5	R42	4.96	27.13	79.76	569.6
72	Stream 4	R43	7.78	27.12	79.81	577.1
73	Stream 3	R44	5.77	27.1	79.86	588.2
74	Stream 2	R45	4	27.08	79.93	600.9
75	Stream 1	R46	3.38	27.02	79.97	613.79



KALI EAST: MAJOR SUB-BASINS

Major sub-basins of Kali East River are as follows:

- Nim Basin
- Chhoiya Basin
- Qadirabad Drain



NIM BASIN

Nim River UID Code: 020429BBB03R0351
Basin Area: 1776 Sq. Km.
Number of rivers- 09
River network- 294.15 Km

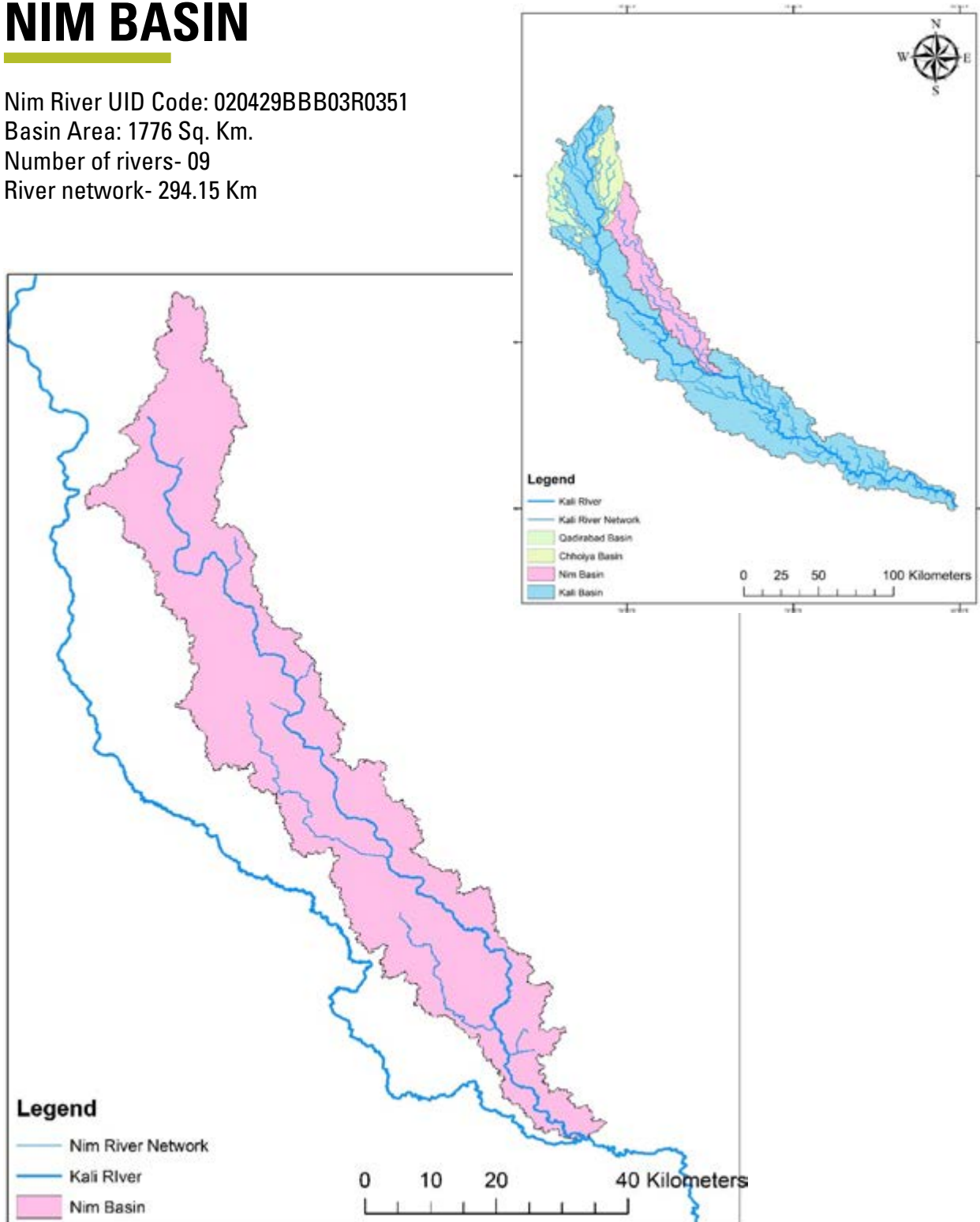


Figure: Nim River Network





NIM RIVER MAINSTEM FLOW DIAGRAM

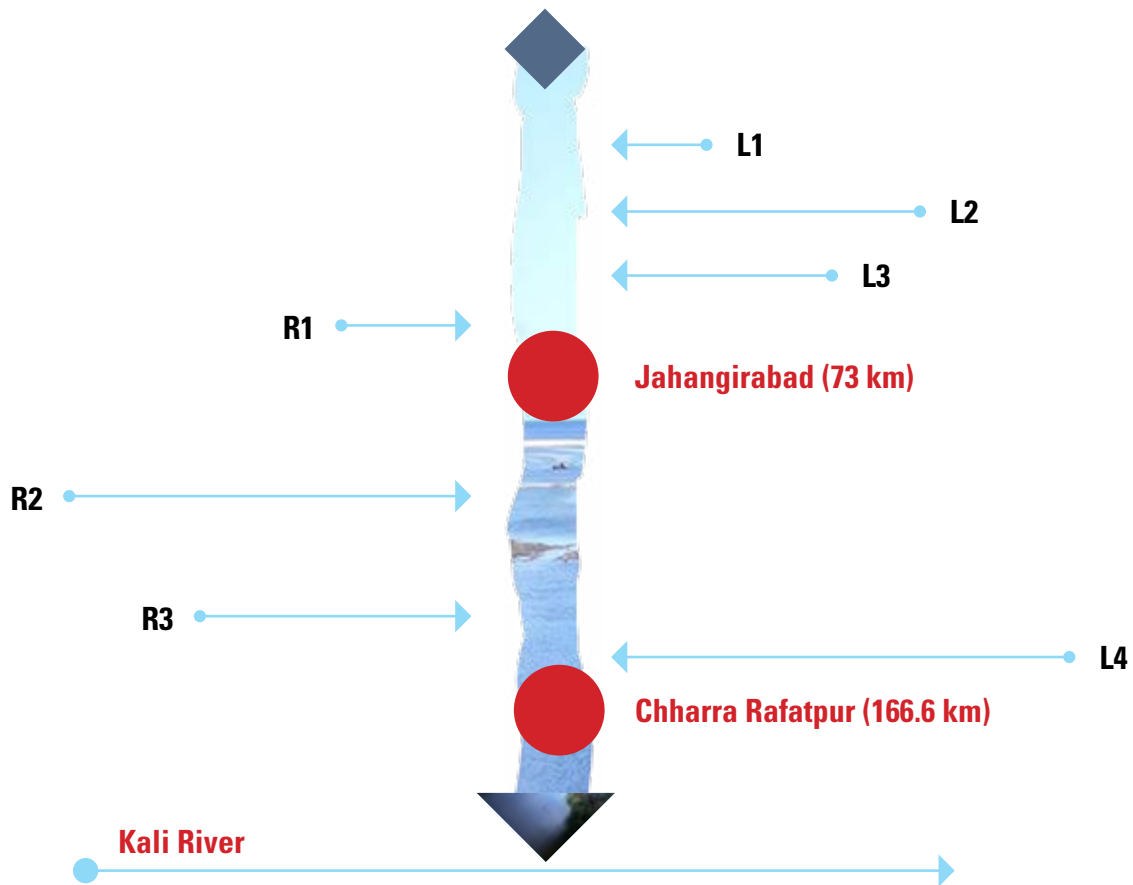


Figure: Flow Diagram of Nim River

NIM RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Ratanpura Drain	L1	1.78	28.73	77.98	10
2	Siyana Drain	L2	6.58	28.59	78.05	41
3	Stream 2	L3	5.23	28.42	78.15	67
4	Stream 1	R1	3.58	28.39	78.14	73
5	Chhoiya River	R2	41.5	28.19	78.27	105
6	Chhoiya	R3	32.1	27.96	78.42	160.5
7	Dadon Drain	L4	6	27.92	78.44	166.6
8	Khichripur Drain	R5	1.21	28.60	77.31	17.62

CHHOIYA BASIN

Chhoiya Drain UID Code: 02040413810R0441

Basin area: 761 Sq. Km.

Number of rivers- 07

River network- 168.7 Km

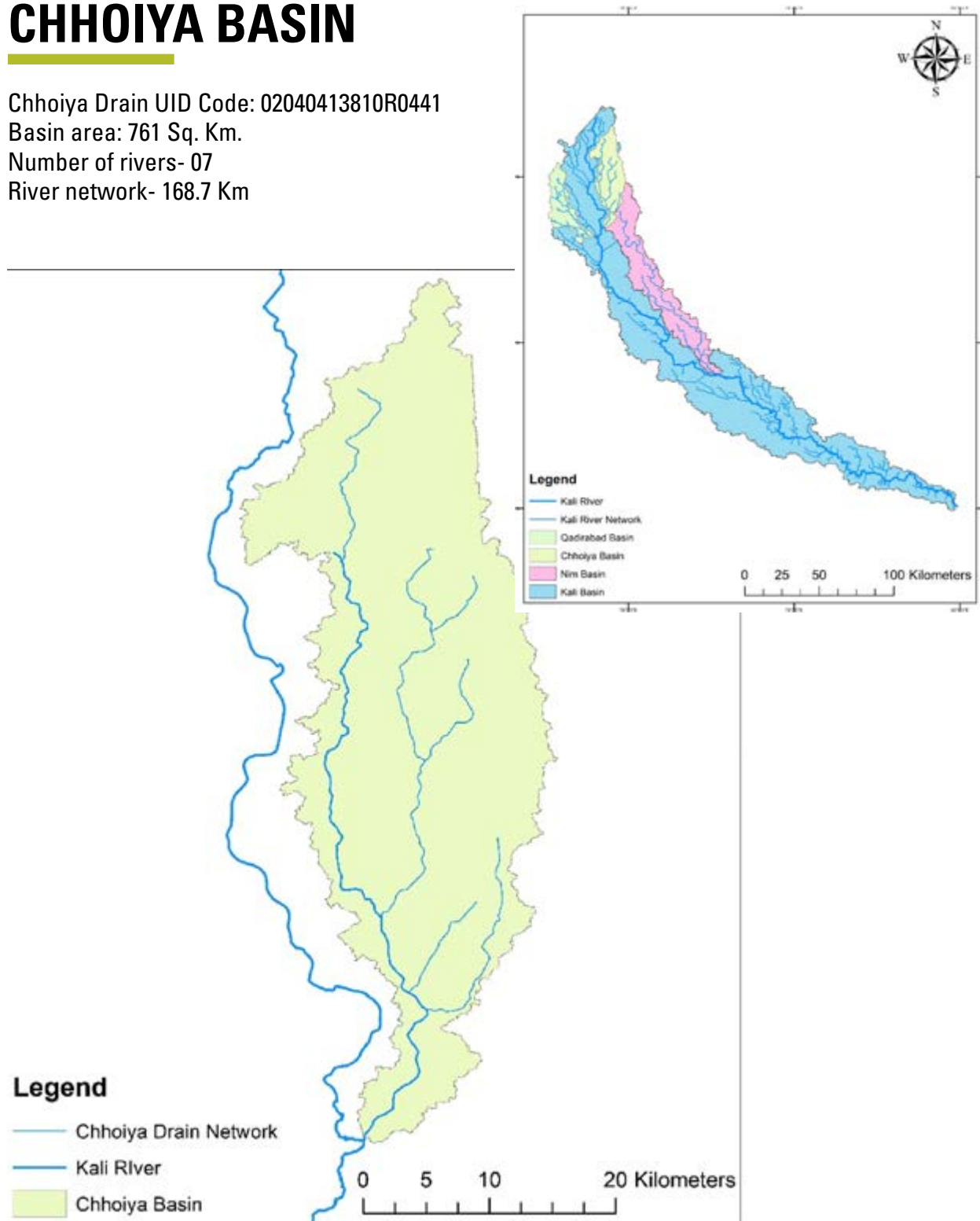


Figure: Chhoiya River Network



CHHOIYA MAINSTEM FLOW DIAGRAM

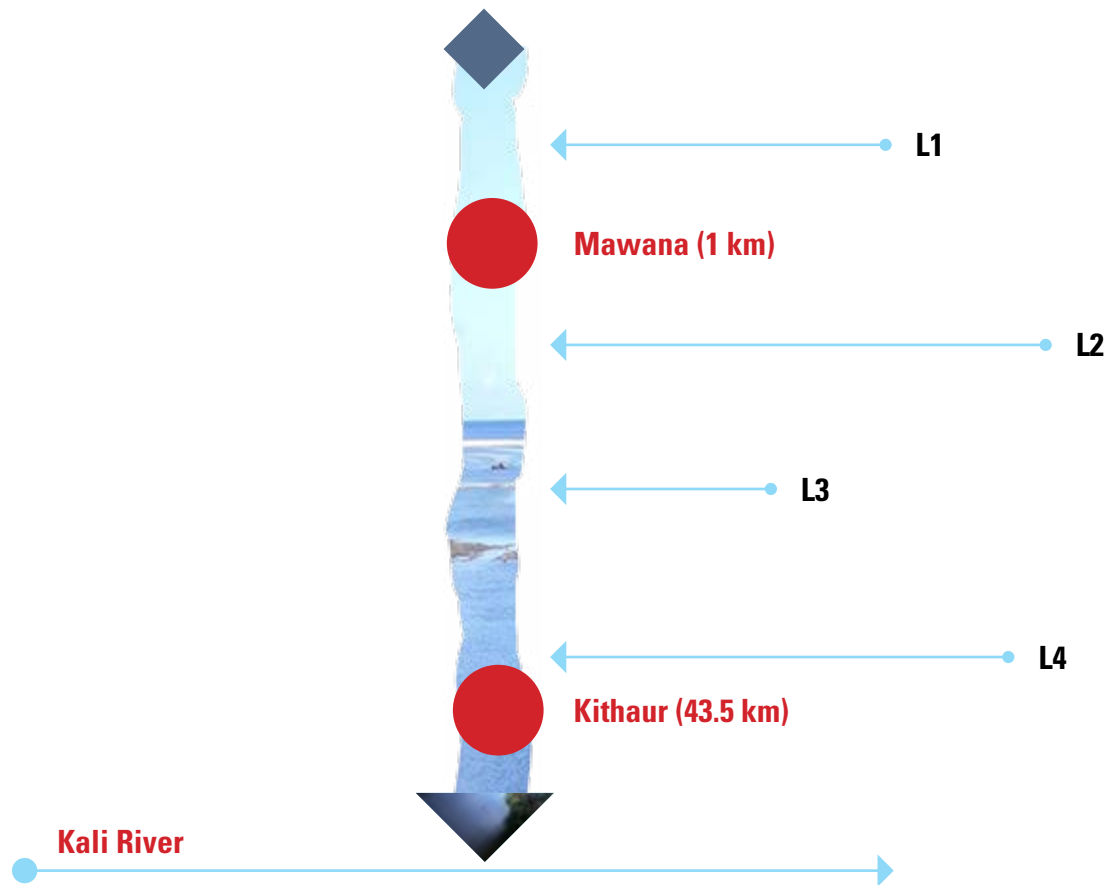


Figure: Flow Diagram of Chhoiya River

CHHOEYA DRAIN MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Gagsona Drain	L1	17.4	29.11	77.83	1
2	Ikla, Kheri maniya Drain	L2	35.5	28.85	77.86	35
3	Kithor Drain	L3	8.83	28.80	77.88	41.6
4	Raidhana Drain	L4	17.7	28.79	77.90	43.5

HAWA/QADIRABAD DRAIN BASIN

Qadirabad River UID Code: 02041013801R0211
Basin Area: 539 Sq. Km.
Number of rivers - 11
River network- 135.54 Km

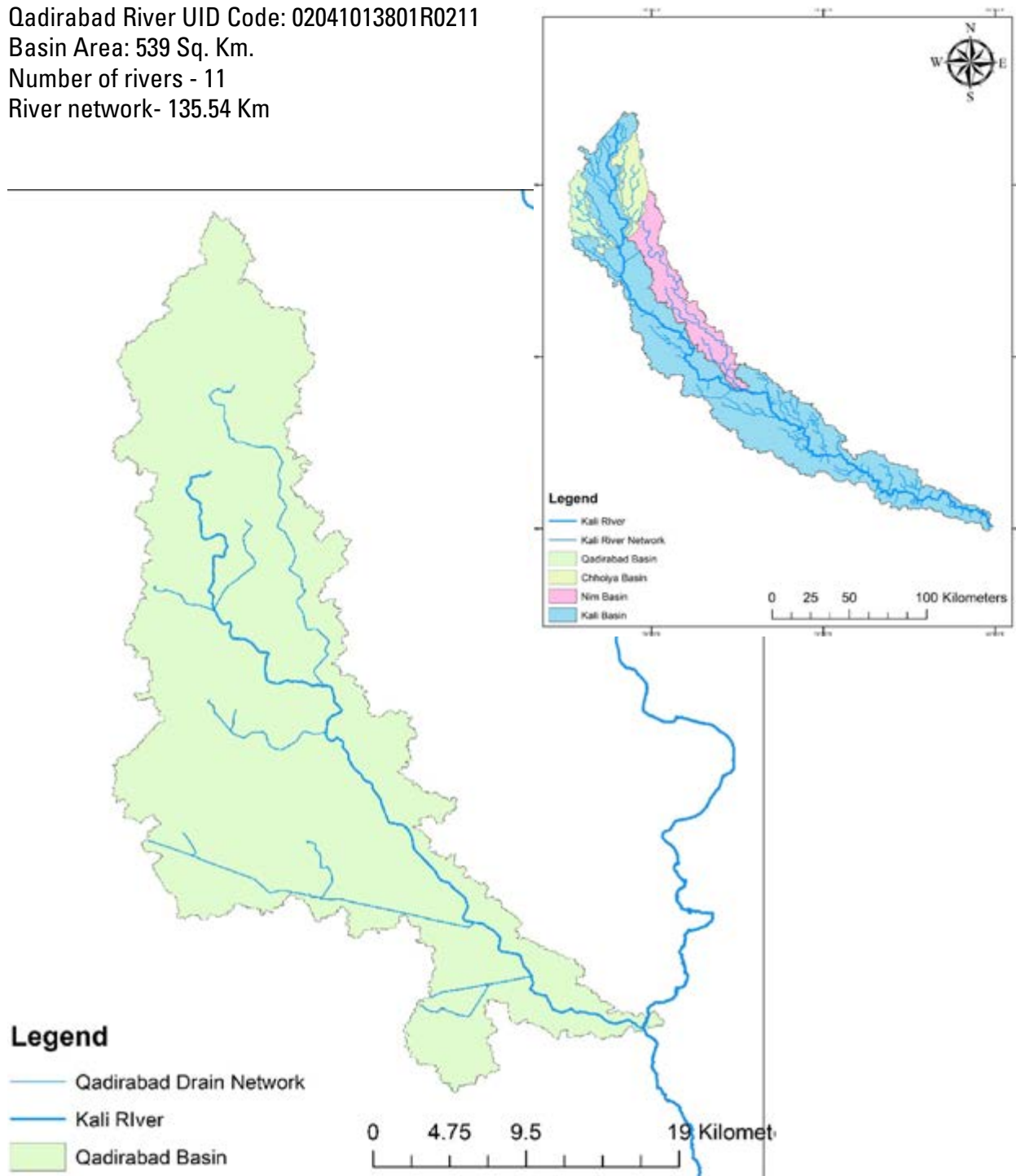


Figure: Qadirabad Drain Network



QADIRABAD MAINSTEM FLOW DIAGRAM

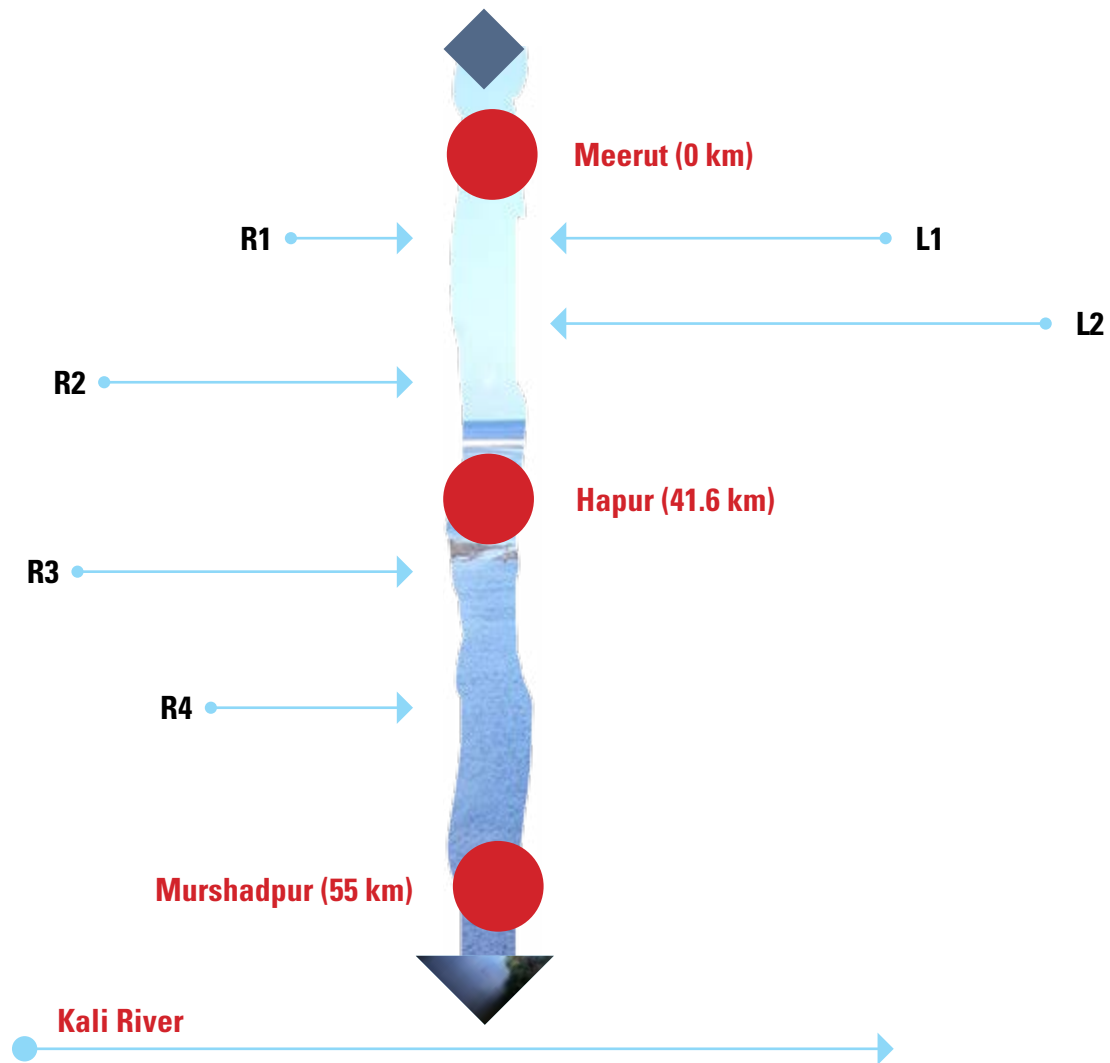


Figure: Flow Diagram of Qadirabad Drain

QADIRABAD DRAIN/ HAWA DRAIN MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Niwari Drain	R	28.86	77.57	4.1	12.2
2	Dhindala Drain	L	28.86	77.57	7	12.2
3	Sheikhpur Drain	L	28.82	77.63	25.2	21.9
4	Sikri Khurd Drain	R	28.80	77.63	8.96	25.7
5	Chhajarsi Drain	R	28.69	77.72	16.31	41.6
6	Siwia Escape	R	28.66	77.75	5.62	46.83





APPENDIX I
RIVER UNIQUE
IDENTITY CODES

RIVER UNIQUE IDENTITY CODES

S. No	River	River Code	Origin		Destination		Confluence with	Length (km)	Sub-sub Basin	Sub Basin	Basin
			Lat	Long	Lat	Long					
1	Abu Drain	02040513811R0291	29.23	77.7	28.96	77.77	Kali River	38.5	Abu Drain	Kali East	Ganga
2	Abu Ka Drain	02040613811R0151	29.16	77.64	28.93	77.76	Kali River	31.3	Abu Ka Drain	Kali East	Ganga
3	Arabamada Drain	02042814312U0001	27.84	78.27	27.81	78.46	Kali River	30.3	Arabamada Drain	Kali East	Ganga
4	Baghwala Drain	02044220101R0751	27.58	78.74	27.51	78.91	Kali River	31.4	Baghwala Drain	Kali East	Ganga
5	Bainjana Drain	02042914311R0651	27.93	78.47	27.93	78.45	Dadon Drain	2.38	Nim River	Kali East	Ganga
6	Bajhera Drain	020413BBB02R0561	28.6	77.72	28.56	77.73	Baral Drain	5.97	Baral Drain	Kali East	Ganga
7	Bali Drain	02040813809R0121	29.04	77.92	28.97	77.90	Ikla Drain	10.3	Chhoiya Drain 2	Kali East	Ganga
8	Baral Drain	020413BBB02R0021	28.68	77.59	28.48	77.83	Kali River	36.7	Baral Drain	Kali East	Ganga
9	Basaich Drain	02040213308R0281	29.36	77.83	29.27	77.84	Jansath River	11.4	Jansath Drain	Kali East	Ganga
10	Behata Drain	02043920202R1411	27.81	78.74	27.77	78.74	Kali River	5.55	Sidhpura Drain	Kali East	Ganga
11	Bhatola Drain	02041814206R0481	28.3	77.88	28.3	77.91	Kali River	4.1	Bhatola Drain	Kali East	Ganga
12	Bhaupura Drain	02044020205R0481	27.62	78.9	27.58	78.89	Kali River	7.45	Bhaupura Drain	Kali East	Ganga
13	Bikrampur Drain	02045214809R0691	27.3	79.2	27.29	79.21	Rajwana Drain	1.32	Rajwana Drain	Kali East	Ganga
14	Chandasa-mand Drain	02040313309R0611	29.27	77.74	29.2	77.75	Khatauli Drain	10.2	Khatauli drain	Kali East	Ganga
15	Chhajarsi Drain	02041014003R0611	28.74	77.54	28.69	77.72	Hawa Drain Qadira-bad Drain Badirabad Drain	16.31	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga
16	Chhoiya Drain	02040413810R0441	29.11	77.8	29.04	77.78	Kali River	11.6	Chhoiya Drain	Kali East	Ganga
17	Chhoiya Drain	02042714311R0781	27.9	78.41	27.87	78.4	Kali River	6.18	Chhoiya Drain	Kali East	Ganga



S. No	River	River Code	Origin		Destination		Confluence with	Length (km)	Sub-sub Basin	Sub Basin	Basin
			Lat	Long	Lat	Long					
18	Chhoiya Drain	02042914309R0221	28.12	78.29	27.96	78.42	Nim River	32.1	Nim River	Kali East	Ganga
19	Chhoiya Drain 2	02040813808R0371	29.11	77.83	28.70	77.85	Kali River	73	Chhoiya Drain 2	Kali East	Ganga
20	Chhoiya river	02042914209R0641	28.41	78.08	28.19	78.27	Nim River	41.5	Nim River	Kali East	Ganga
21	Dabthala Branch	02042414304R0261	28.07	78.1	28.08	78.1	Daheli Drainage Cut	1.2	Palra Drainage Cut	Kali East	Ganga
22	Dadon Drain	02042914310R0891	27.95	78.47	27.92	78.44	Nim River	6	Nim River	Kali East	Ganga
23	Daheli Drainage Cut	02042414304R0141	28.1	78.08	28.08	78.12	Palra Drainage Cut	5.87	Palra Drainage Cut	Kali East	Ganga
24	Deorala Drain	02041914207R0151	28.23	77.94	28.26	77.97	Kali River	5	Deorala Drain	Kali East	Ganga
25	Dhaulana Drain	020413BBB02R0401	28.64	77.65	28.6	77.67	Baral Drain	5.97	Baral Drain	Kali East	Ganga
26	Dindala Drain	02041013801R0541	28.92	77.59	28.87	77.57	Hawa Drain Qadira-bad Drain Badirabad Drain	7	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga
27	Etbarpur Drain	02043920206R0621	27.76	78.82	27.73	78.81	Mindol Drain	3.7	Sidhpura Drain	Kali East	Ganga
28	Gagsona Drain	02040813309R1041	29.23	77.85	29.11	77.83	Chhoiya Drain 2	17.4	Chhoiya Drain 2	Kali East	Ganga
29	Ganga jamni Nala	02044614807R0131	27.41	78.92	27.43	78.94	Kali River	3.76	Ganga jamni Nala	Kali East	Ganga
30	Gulaothi Drain	02041114203U0001	28.59	77.80	28.60	77.82	Kali River	2.38	Gulaothi Drain	Kali East	Ganga
31	Hawa Drain, Qadira-bad Drain, Badirabad Drain	02041013801R0211	28.94	77.57	28.63	77.81	Kali River	55.5	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga

S. No	River	River Code	Origin		Destination		Confluence with	Length (km)	Sub-sub Basin	Sub Basin	Basin
			Lat	Long	Lat	Long					
32	Hiwai Drain	020410BBB02R0171	28.64	77.69	28.66	77.73	Siwia Escape	5.23	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga
33	Janaura supplementary cut	02046314802R1361	27.18	79.39	27.21	79.41	Kali River	4.49	Janaura supplementary cut	Kali East	Ganga
34	Jansath Drain	02040213308R0391	29.33	77.85	29.25	77.8	Kali River	14.9	Jansath Drain	Kali East	Ganga
35	Jhabar drainage cut	02043220201R0281	27.88	78.61	27.78	78.68	Kali River	18.6	Jhabar drainage cut	Kali East	Ganga
36	Junesi Escape	02044914807R0651	27.43	79.04	27.38	79.02	Kali River	6.86	Junesi Escape	Kali East	Ganga
37	Kachaura Drain	02043614404R0551	27.73	78.41	27.69	78.52	Karon Nala	14.4	Karon Drain	Kali East	Ganga
38	Kaili Drain	02040513309R0811	29.23	77.7	29.13	77.69	Abu Drain	13.9	Abu Drain	Kali East	Ganga
39	Kali East	02040013308R0321	29.35	77.81	27.01	79.98	Ganga	616	Ganga	Kali East	Ganga
40	Kansuri Drain	02044220101R0511	27.55	78.83	27.52	78.85	Baghwala Nala	3.96	Baghwala Drain	Kali East	Ganga
41	Karaila Drain Cut	02042614312R0221	27.81	78.33	27.86	78.33	Kali River	7.1	Karaila Drain Cut	Kali East	Ganga
42	Karon Drain	02043614404R0191	27.76	78.43	27.65	78.73	Kali River	46.1	Karon Drain	Kali East	Ganga
43	Kartala Drain	02043820101R0481	27.56	78.82	78.82	78.86	Kali River	5.98	Kartala Drain	Kali East	Ganga
44	Khajura Drain	02044820205R0941	27.57	78.94	27.56	78.97	Mohanpur Drain	4.48	Mohanpur Drain	Kali East	Ganga
45	Khara Drain	02045114809R0511	27.38	79.23	27.33	79.25	Kali River		Khara Drain	Kali East	Ganga
46	Khara Nala 2	02045320108R1261	27.34	79.07	27.35	79.2	Kali River	9.37	Khara Nala 2	Kali East	Ganga
47	Kharauli Drain Chhoiya Drain	02040913801R0231	28.96	77.62	28.64	77.81	Kali River	59.6	Kharauli Drain Chhoiya Drain	Kali East	Ganga
48	Kharwa Drain	02046115905R0661	27.37	79.32	27.22	79.37	Kali River	32	Kharwa Drain	Kali East	Ganga



S. No	River	River Code	Origin		Destination		Confluence with	Length (km)	Sub-sub Basin	Sub Basin	Basin
			Lat	Long	Lat	Long					
49	Khatauli Drain	02040313309U0001	29.27	77.73	29.16	77.75	Kali River	16	Khatauli drain	Kali East	Ganga
50	Khojpur drain	02043920206R0631	27.75	78.84	27.68	78.83	Mindol Drain	2.89	Sidhpura Drain	Kali East	Ganga
51	Kinhawar Drain or Naya Nala	02045114809R0231	27.37	79.06	27.32	79.15	Khara Drain	7.37	Khara Drain	Kali East	Ganga
52	Kithor Drain	02040813807U0001	28.87	77.93	28.80	77.88	Chhoiya Drain 2	8.83	Chhoiya Drain 2	Kali East	Ganga
53	Ladpur Drain	02040113309R0611	29.28	77.75	29.28	77.79	Kali River	3.92	Ladpur Drain	Kali East	Ganga
54	Ikla,Kheri Maniyar Drain	02040813808R0451	29.12	77.90	28.85	77.86	Chhoiya Drain 2	35.5	Chhoiya Drain 2	Kali East	Ganga
55	Malawan Drain	02044320102R0952	27.47	78.84	27.47	78.9	Kali River	10.8	Malawan Drain	Kali East	Ganga
56	Marahra Drain	02043620103R0121	27.66	78.6	27.68	78.65	Karon Nala	9.81	Karon Drain	Kali East	Ganga
57	Mawana Drain	02040813808R0481	29.10	77.93	29.06	77.90	Ikla Drain	5.97	Chhoiya Drain 2	Kali East	Ganga
58	Meerut Drain	02040713803U0001	28.98	77.69	28.93	77.76	Kali River	8.38	Meerut Drain	Kali East	Ganga
59	Milak banehra Drain	02044120101R0531	27.55	78.85	27.56	78.88	Kali River	3.85	Milak banehra Drain	Kali East	Ganga
60	Mindol Drain	02043920207R0321	27.74	78.77	27.63	78.86	Sidhpura Drain	19.7	Sidhpura Drain	Kali East	Ganga
61	Mohanpur Drain	02044820204R0031	27.68	78.93	27.43	79.02	Kali River	42.7	Mohanpur Drain	Kali East	Ganga
62	Naka Drain	02045114809R0251	27.34	79.06	27.31	79.14	Khara Drain	9.15	Khara Drain	Kali East	Ganga
63	Namaini Drain	02043220202R0841	27.91	78.62	27.87	78.68	Jhabar drainage cut	9.42	Jhabar drainage cut	Kali East	Ganga
64	Nijampur Drain	020409BBB04R0101	28.72	77.72	28.71	77.77	Kharauli Drain Chhoiya Drain	6.74	Kharauli Drain Chhoiya Drain	Kali East	Ganga

S. No	River	River Code	Origin		Destination		Confluence with	Length (km)	Sub-sub Basin	Sub Basin	Basin
			Lat	Long	Lat	Long					
65	Nim River	020429BBB03R0351	28.8	77.95	27.81	78.54	Kali river	195	Nim River	Kali East	Ganga
66	Niwari Drain	02041014003U0001	28.88	77.54	28.86	77.57	Hawa Drain Qadira- bad Drain Badirabad Drain	4.1	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga
67	Nurpur Drain	02041014001R0221	28.74	77.55	28.73	77.56	Chhajarsi Drain	1.7	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga
68	Palra Drainage Cut	02042414207R0241	28.13	78.1	28.01	78.2	Kali River	20.7	Palra Drainage Cut	Kali East	Ganga
69	Raidhana Drain	02040813807R0391	28.91	77.95	28.79	77.90	Chhoiya Drain 2	17.7	Chhoiya Drain 2	Kali East	Ganga
70	Rajwana Drain	02045214809R0681	27.29	79.2	27.33	79.24	Kali River	5.75	Rajwana Drain	Kali East	Ganga
71	Ratanpura Drain	020429BBB03R0461	28.74	77.99	28.73	77.98	Nim River	1.78	Nim River	Kali East	Ganga
72	Rataur Drain	02040213308R0321	29.35	77.82	29.32	77.83	Basaich Drain	4.44	Jansath Drain	Kali East	Ganga
73	Samothi Mohanpur Drain	02044820205R0361	27.64	78.91	27.6	78.96	Mohanpur Drain	9.63	Mohanpur Drain	Kali East	Ganga
74	Sanaura Drain	02041314206R0001	28.52	77.74	28.53	77.76	Baral Drain	2.58	Baral Drain	Kali East	Ganga
75	Sevka Nala	02043720207R0421	27.73	78.75	27.63	78.78	Kali River	13.2	Sevka Nala	Kali East	Ganga
76	Shamli Drain	02041014002R0461	28.74	77.62	28.70	77.63	Chhajarsi Drain	4.6	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga



S. No	River	River Code	Origin		Destination		Confluence with	Length (km)	Sub-sub Basin	Sub Basin	Basin
			Lat	Long	Lat	Long					
77	Sheikhpur Drain	02041013801R0161	28.99	77.58	28.82	77.63	Hawa Drain Qadira- bad Drain Badirabad Drain	25.2	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga
78	Shibpur Drain	02045214809R0682	27.29	79.21	27.29	79.21	Rajwana Drain	1.12	Rajwana Drain	Kali East	Ganga
79	Sidhpura Drain	02043920207R0001	27.77	78.74	27.59	78.87	Kali River	31	Sidhpura Drain	Kali East	Ganga
80	Sikaira Drain	02044820205R0331	27.66	78.92	27.63	78.95	Mohanpur Drain	6.35	Mohanpur Drain	Kali East	Ganga
81	Sikri Khurd Drain	02041014002R0191	28.81	77.57	28.80	77.63	Hawa Drain Qadira- bad Drain Badirabad Drain	8.96	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga
82	Singpur Drain	02043920205R0561	27.68	78.86	27.67	78.86	Mindol Drain	1.27	Sidhpura Drain	Kali East	Ganga
83	Sirsa Drain	02044714807R0631	27.39	78.99	27.43	79	Kali River	5.65	Sirsa Drain	Kali East	Ganga
84	Siwia Escape	020410BBB02R0141	28.65	77.69	28.66	77.75	Hawa Drain Qadira- bad Drain Badirabad Drain	5.62	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga
85	Siyana Drain	02042914212R0141	28.63	78.06	28.59	78.05	Nim River	6.58	Nim River	Kali East	Ganga
86	Stream 1	02040613812R0331	29.09	77.63	29.05	77.67	Abu Ka Drain	7.27	Abu Ka Drain	Kali East	Ganga
87	Stream 1	02042914209U0001	28.4	78.11	28.39	78.14	Nim River	3.58	Nim River	Kali East	Ganga
88	Stream 1	02043520207R0401	27.73	78.73	27.73	78.69	Stream 23	4.91	Stream 23	Kali East	Ganga
89	Stream 1	02043620104R0221	27.73	78.54	27.68	78.6	Marahra Drain	9.82	Karon Drain	Kali East	Ganga
90	Stream 1	02044220102R0951	27.49	78.84	27.52	78.86	Baghwala Nala	5.15	Baghwala Drain	Kali East	Ganga
91	Stream 1	02044320102R0901	27.48	78.88	27.47	78.9	Malawan Nala	4.19	Malawan Drain	Kali East	Ganga

S. No	River	River Code	Origin		Destination		Confluence with	Length (km)	Sub-sub Basin	Sub Basin	Basin
			Lat	Long	Lat	Long					
92	Stream 1	02046115903R0911	27.31	79.36	27.3	79.39	Kharwa Drain	4.44	Kharwa Drain	Kali East	Ganga
93	Stream 1	02046515903R0121	27.24	79.47	27.24	79.47	Stream 1	1.22	Stream 1	Kali East	Ganga
94	Stream 1	02046616001R0421	27.14	79.54	27.16	79.55	Stream 10	3.38	Stream 1	Kali East	Ganga
95	Stream 1	02046715903R0941	27.24	79.57	27.23	79.56	Stream 9	2.73	Stream 1	Kali East	Ganga
96	Stream 1	02047516003R1251	27	79.96	27.02	79.97	Kali River	3.88	Stream 1	Kali East	Ganga
97	Stream 10	02046616001U0001	27.15	79.51	27.17	79.55	Kali River	12	Stream 10	Kali East	Ganga
98	Stream 11	02046515903R0011	27.26	79.45	27.22	79.48	Kali River	8.39	Stream 11	Kali East	Ganga
99	Stream 12	02046214802R1331	27.18	79.37	27.2	79.39	Kali River	3.1	Stream 12	Kali East	Ganga
100	Stream 13	02046014802R1251	27.19	79.32	27.21	79.34	Kali River	3.58	Stream 13	Kali East	Ganga
101	Stream 14	02045914802U0001	27.23	79.3	27.24	79.32	Kali River	3.69	Stream 14	Kali East	Ganga
102	Stream 15	02045815904R1041	27.27	79.35	27.27	79.32	Kali River	3.2	Stream 15	Kali East	Ganga
103	Stream 16	02045715904R0941	27.28	79.34	27.28	79.32	Kali River	2.48	Stream 16	Kali East	Ganga
104	Stream 17	02045614802R0481	27.27	79.29	27.27	79.31	Kali River	2.11	Stream 17	Kali East	Ganga
105	Stream 18	02045515904R0151	27.32	79.29	27.3	79.28	Kali River	3.1	Stream 18	Kali East	Ganga
106	Stream 19	02045420108R1341	27.36	79.26	27.33	79.26	Kali River	5.14	Stream 19	Kali East	Ganga
107	Stream 2	02042914213R0471	28.46	78.17	28.42	78.15	Nim River	5.23	Nim River	Kali East	Ganga
108	Stream 2	02044320102R0953	27.49	78.84	27.48	78.84	Malawan Nala	1.71	Malawan Drain	Kali East	Ganga
109	Stream 2	02046616001R0961	27.14	79.52	27.15	79.53	Stream 10	2.43	Stream 2	Kali East	Ganga
110	Stream 2	02046715903R0361	27.29	79.54	27.23	79.54	Stream 9	11.3	Stream 2	Kali East	Ganga
111	Stream 2	02047416003R0781	27.05	79.92	27.08	79.93	Kali River	4	Stream 2	Kali East	Ganga
112	Stream 20	02045020108R0021	27.54	79.08	27.43	79.1	Kali River	16.7	Stream 20	Kali East	Ganga
113	Stream 21	02044520107R0631	27.46	78.94	27.45	78.94	Kali River	1.1	Stream 21	Kali East	Ganga
114	Stream 22	02044414807R0021	27.44	78.91	27.45	78.92	Kali River	1.95	Stream 22	Kali East	Ganga
115	Stream 23	02043520207R0161	27.75	78.72	27.72	78.69	Kali River	4.5	Stream 23	Kali East	Ganga
116	Stream 24	02043420207R0351	27.75	78.69	27.74	78.69	Kali River	0.49	Stream 24	Kali East	Ganga
117	Stream 25	02043120201U0001	27.81	78.65	27.79	78.65	Kali River	1.78	Stream 25	Kali East	Ganga
118	Stream 26	02043020201R0931	27.78	78.62	27.79	78.63	Kali River	1.1	Stream 26	Kali East	Ganga
119	Stream 27	02042514304R0001	28.01	78.14	27.98	78.2	Kali River	7.18	Stream 27	Kali East	Ganga
120	Stream 28	02042314211R0831	28.11	78.15	28.11	78.18	Kali River	3.51	Stream 28	Kali East	Ganga



S. No	River	River Code	Origin		Destination		Confluence with	Length (km)	Sub-sub Basin	Sub Basin	Basin
			Lat	Long	Lat	Long					
121	Stream 29	02042214216R0331	28.17	78.19	28.14	78.17	Kali River	5.22	Stream 29	Kali East	Ganga
122	Stream 3	02046715903R0211	27.27	79.51	27.24	79.52	Stream 9	5.95	Stream 3	Kali East	Ganga
123	Stream 3	02047316006R0341	27.07	79.85	27.1	79.86	Kali River	5.77	Stream 3	Kali East	Ganga
124	Stream 30	02042114211R0541	28.17	78.03	28.18	78.07	Kali River	4.92	Stream 30	Kali East	Ganga
125	Stream 31	02042014210R0691	28.28	78.01	28.25	77.99	Kali River	4.25	Stream 31	Kali East	Ganga
126	Stream 32	02041714201U0001	28.4	77.85	28.39	77.86	Kali River	1.77	Stream 32	Kali East	Ganga
127	Stream 33	02041614201R0191	28.42	77.82	28.43	77.84	Kali River	2.32	Stream 33	Kali East	Ganga
128	Stream 34	02041514203R0481	28.46	77.82	28.46	77.82	Kali River	0.95	Stream 34	Kali East	Ganga
129	Stream 35	02041214214R0201	28.61	77.93	28.55	77.84	Kali River	11.9	Stream 35	Kali East	Ganga
130	Stream 4	02047216006R0121	27.08	79.8	27.12	79.81	Kali River	7.58	Stream 4	Kali East	Ganga
131	Stream 5	02047116004R0471	27.12	79.73	27.13	79.76	Kali River	4.96	Stream 5	Kali East	Ganga
132	Stream 6	02047016004R0481	27.13	79.71	27.15	79.74	Kali River	5.47	Stream 6	Kali East	Ganga
133	Stream 7	02046915903R1551	27.22	79.64	27.19	79.62	Kali River	6.24	Stream 7	Kali East	Ganga
134	Stream 8	02046816001R0471	27.13	79.57	27.16	79.58	Kali River	6.54	Stream 8	Kali East	Ganga
135	Stream 9	02046715904R0631	27.34	79.44	27.17	79.55	Kali River	35.9	Stream 9	Kali East	Ganga
136	Targawan Drain	02044820107R0761	27.48	78.98	27.47	78.99	Mohanpur Drain	2.43	Mohanpur Drain	Kali East	Ganga
137	Tejpur Cut	02042414304R0291	28.05	78.13	28.05	78.17	Palra Drainage Cut	4.03	Palra Drainage Cut	Kali East	Ganga
138	Teori Drainage Cut	02042414211R0681	28.13	78.07	28.1	78.1	Palra Drainage Cut	4.68	Palra Drainage Cut	Kali East	Ganga
139	Tibara Nala	02041014002R0201	28.81	77.58	28.80	77.58	Sikri Khurd Drain	1.32	Hawa Drain, Qadirabad Drain, Badirabad Drain	Kali East	Ganga
140	Udhannapur Drain	02046416001R0101	27.14	79.41	27.21	79.44	Kali River	10	Udhannapur Drain	Kali East	Ganga
141	Wazirpur Drain	02043320207R0141	27.77	78.7	27.76	78.68	Kali River	2.35	Wazirpur Drain	Kali East	Ganga
142	Zainpur Drain	0204YY14206R0001	28.49	77.77	28.47	77.82	Kali River	6.88	Zainpur Drain	Kali East	Ganga





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