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**GOVERNMENT OF THE PEOPLE'S REPUBLIC
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BANGLADESH**

**MINISTRY OF LOCAL GOVERNMENT
RURAL DEVELOPMENT AND CO-OPERATIVES**

**RURAL ROADS STUDY
(US AID GRANT 388-0031)**

VOLUME IV

**PHASE I REPORT
DISTRICT PROFILE : RANGPUR
JULY 1978
DRAFT**

**LOUIS BERGER INTERNATIONAL INC.
EAST ORANGE, NEW JERSEY**

**RAHMAN & ASSOCIATES LTD.
DACCA**

GOVERNMENT
OF
THE PEOPLE'S REPUBLIC OF BANGLADESH

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VOLUME IV ; RANGPUR

JULY 1978

D R A F T

Rahman and Associates Ltd.
Dacca Bangladesh

Louis Berger International Inc.
East Orange New Jersey

PREFACE

In accordance with the terms of the contract under which this study is being conducted, this volume presents the district profile and our recommended rural road network for Rangpur District. Its organization and contents reflect the view of the consultant that the planning of rural roads must be considered as an integral part of a comprehensive rural development program.

Thus the volume starts with an examination of Rangpur's existing transportation network and deficiencies and proceeds to present a detailed profile of the physical, environmental, economic and social aspects of the district.

The concluding sections of the volume describe the consultant's approach in developing a rural road network including the initial road screening and the priority ranking of the roads. The volume ends with the presentation of the recommended rural road network for Rangpur under this project.

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I. TRANSPORTATION NETWORK

A. External Communication

As shown on the map in Figure 1, Rangpur District is reasonably well-connected with neighbouring districts and Dacca by road, rail and water transport.

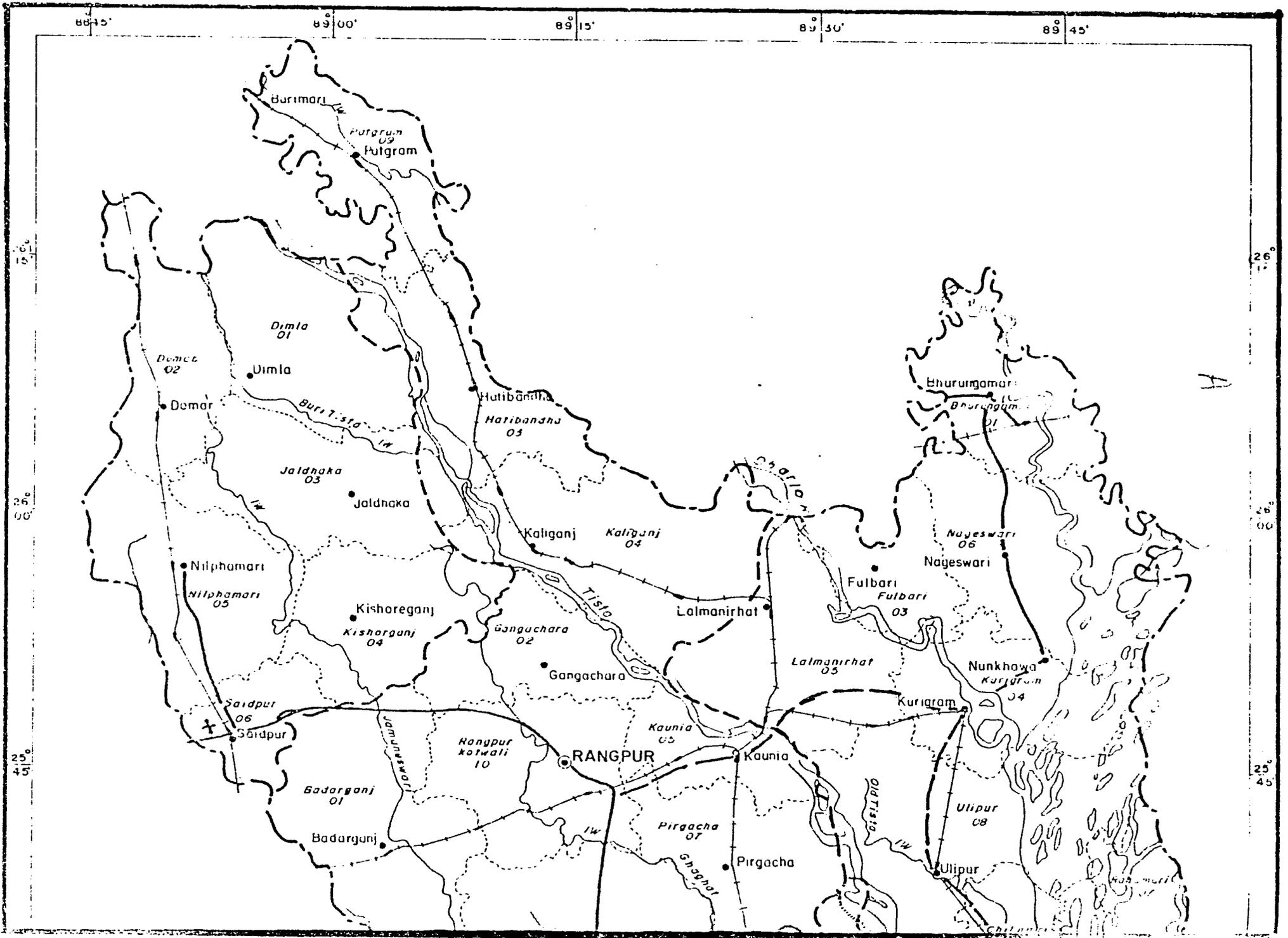
The western district of Dinajpur is connected to Rangpur by the railway line through Parbatipur Junction and the main R&H arterial road passing through Saidpur.

The southern districts of Bogra and Pabna and the southwestern district of Rajshahi are connected by railway services through Gaibandha, Bogra, Santahar and Bagatipara. The R&H road south from Rangpur also passes through Bogra and from there connects to Pabna and the southern districts.

Direct connection to Mymensingh District is made by the railway ferry from Fulcharighat to Bahadurabadghat and by steamer services from Chilmari to Bahadurabadghat. Dacca is reached via the R&H road and the Bangladesh Inland Waterway Transport Authority (BIWTA) ferry linking Nagarbari to Aricha, or by railway through Mymensingh District.

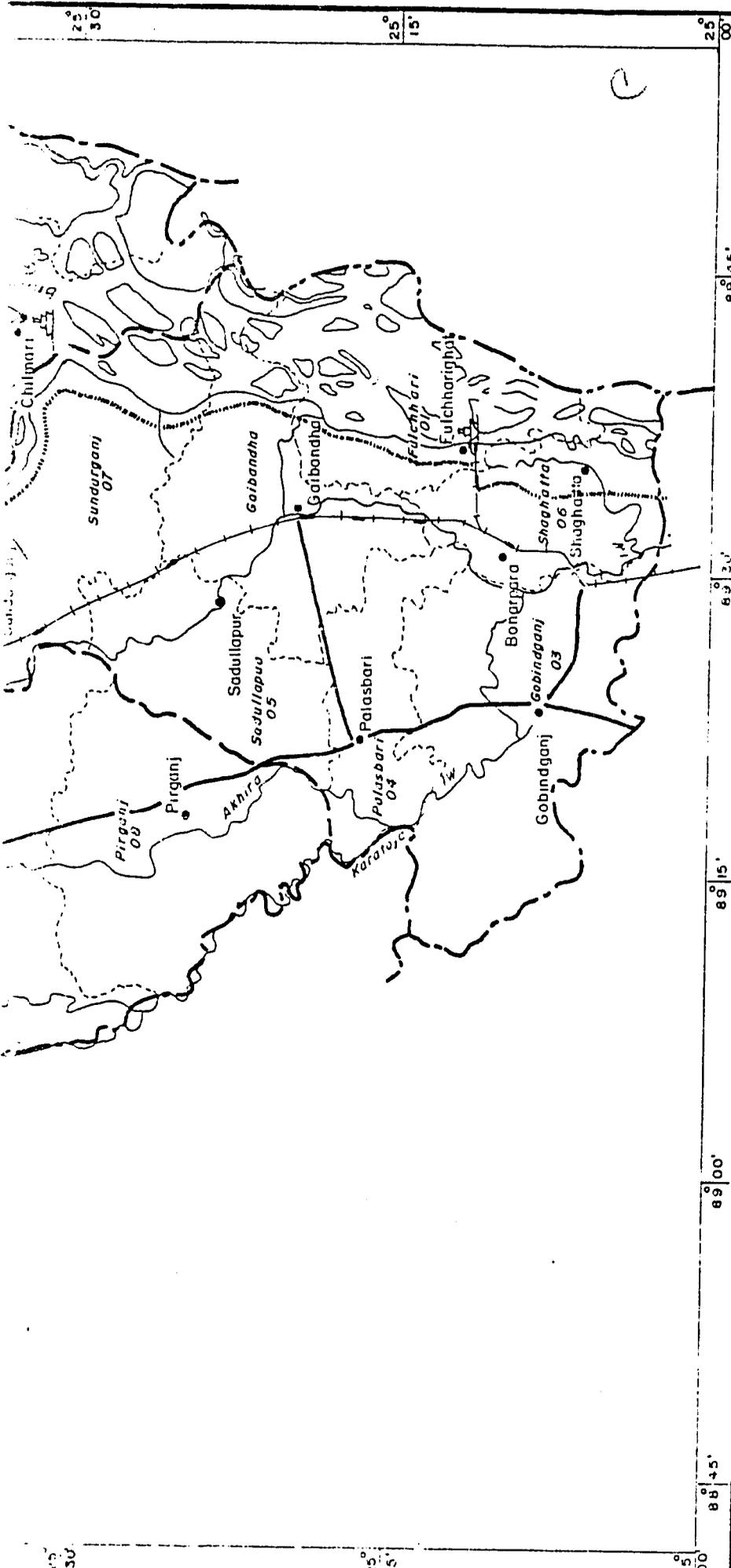
B. Internal Communication.

Transport connections within Rangpur District are fairly good. The subdivision headquarters, Gaibandha, Rangpur and Nilphamari are connected by paved roads, while Kurigram is linked by a herring bone brick road that utilizes the railroad bridge over Testa River.





DIST. RANGPUR



LEGEND :

- ROADS(R & H Paved)
- RAILROADS
- WATERWAYS
- MAJOR AIRPORT
- PROPOSED ROADS(R & H).
- LAUCH GHAT

Scale 1 inch = 8 Miles (Approx.)



GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH	
RURAL ROADS STUDY	
TRANSPORTATION	
LOUIS BERGER INTERNATIONAL INC. AND RAHMAN & ASSOCIATES LTD.	
PREPARED: Z. Abedin	RECOMMENDED
CHECKED	APPROVED
DATE	588 NO

A detailed transport profile of each thana in Rangpur District is presented in Table 2. An abbreviated subdivision summary is given in Table 1.

TABLE 1
SUBDIVISION TRANSPORTATION SUMMARY

Sub-Division	Area Sq. Mile	Approximate miles of all weather road	# of Rail Stations
Nilphamari	633	39	9
Sadar Rangpur	1,235	107	18
Kurigram	970	75	16
Gaibandha	833	61	13
Total	3,671	282	56

Additionally, seasonal launch services operate between Kurigram and Bhurungamari and also connect the isolated thana of Raumari with Chilmari.

Despite the good existing road connections to the subdivision headquarters, the roads from these administrative centers to the thana agricultural centers are poor. This seriously hampers the agricultural development and the marketing of commodities in Rangpur. This is especially true for thanas like Domar, Dimla, Patgram, Pirgacha, Fulbari, Nageswari and Raumari.

TABLE 2
THANA TRANSPORT PROFILE
NILPHAMARI SUBDIVISION

THANA	APPROX MILES OF ALL WEATHER ROAD (HBB & PUCCA)	VEHICLE ACCESS FROM THANA H.Q. TO R&H NETWORK	NUMBER OF REGULAR LAUNCH OR STEAMER ROUTES	NUMBER OF RAIL ROAD STATIONS	MODE OF TRANSPORT TO SUBDIV. H.Q.	MODE OF TRANSPORT TO DISTRICT HEADQUARTERS
DOMAR	2	None	0	3	Train (45 min)	Train - 4½ hrs Train/Bus 2½ hrs
NILPHAMARI	16	Through Saidpur on Dinajpur-Dacca R&H Road	0	5	-	Train - 3½ hrs Bus & or Jeep - 1½ hrs
SAIDPUR	21	Dinajpur-Dacca R&H Road	0	1	Train (45 min) or Jeep (30 min)	Train - 2½ hrs or Bus - 1 hr.
KISHORE-GANJ	0	Kutchra road to Dinajpur-Dacca R&H Road.	0	0	On foot 3½ hrs	Jeep - 1½ hrs
JALDHAKA	0	Kutchra road to Dinajpur-Dacca R&H road	0	0	On foot 3½ hrs	Jeep - 2½ hrs
DIMLA	0	None	0	0	On foot and train 3 hours	On foot, train and bus - 4½ hours

Table continued on next page

TABLE 2
THANA TRANSPORT PROFILE (CONTINUED)
SADAR SUBDIVISION

THANA	APPROX MILES OF ALL WEATHER ROAD (HBB & PUGGA)	VEHICLE ACCESS FROM THANA H.Q. TO R&H NETWORK	NUMBER OF REGULAR LAUNCH OR STEAMER ROUTES	NUMBER OF RAIL ROAD STATIONS	MODE OF TRANSPORT TO SUBDIV. H.Q.	MODE OF TRANSPORT TO DIST. H.Q.
PATGRAM	2	None	0	3	Train 4½ hrs.	Train - 4½ hours
HATIBANDHA	2	None	0	2	Train 3½ hrs	Train 3½ hrs.
KALIGANJ	6	None	0	4	Train 2 ¾ hrs.	Train 2 ¾ hrs.
GANGACHARA	5	Kutchha road to Rangpur-Dacca R&H road.	0	0	On foot 2½ hrs, Rickshaw 1½ hrs	On foot 2½ hrs, Rickshaw 1½ hrs.
KAUNIA	12	Through Kuri-gram-Rangpur R&H road	0	2	Jeep 20 min., Train 45 min.	Jeep 20 min. or Train 45 min.

Table continued on next page

- 5 -

TABLE 2
THANA TRANSPORT PROFILE (CONTINUED)
SADAR SUBDIVISION

THANA	APPROX MILES OF ALL WEATHER ROAD (HEB & PUCCA)	VEHICLE ACCESS FROM THANA H.Q. TO R&H NETWORK	NUMBER OF REGULAR LAUNCH OR STEAMER ROUTES	NUMBER OF RAIL ROAD STATIONS	MODE OF TRANSPORT TO SUBDIVISION H.Q.	MODE OF TRANSPORT TO DISTRICT H.Q.
PIRGACHA	3	None	0	3	Train 1½ hours	Train 1½ hours
KOTWALI	33	Rangpur-Dacca R&H road	0	1	-	-
BADARGANJ	13	None	0	3	Train 1 hr.	Train 1 hour
MITHAPUKUR	14	Dinajpur-Dacca R&H road	0	0	Bus 30 min.	Bus 30 min
PIRGANJ	17	Dinajpur-Dacca R&H road	0	0	Bus 1 hr.	Bus 1 hr.

Table continued on next page

TABLE 2
THANA TRANSPORT PROFILE (CONTINUED)
GAIBANDHA SUBDIVISION

THANA	APPROX MILES OF ALL WEATHER ROAD (HEB & PUCCA)	VEHICLE ACCESS FROM THANA HQ TO R&H NETWORK	NUMBER OF REGULAR LAUNCH OR STEAMER ROUTES	NUMBER OF RAIL ROAD STATIONS	MODE OF TRANSPORT TO SUBDIVISION HQ.	MODE OF TRANSPORT TO DISTRICT HQ.
SADULLAHPUR	6	None	0	2	On foot 2 hrs or Rickshaw 1 hr	Train 4 hours or Bus 3 hours
PALASHBARI	14	Dinajpur-Dacca R&H road	0	0	Bus or Taxi 20 minutes	Bus 1 hour
GOBINDAGANJ	21	Dinajpur-Dacca R&H road	0	0	Bus 1 hour	Bus 1 3/4 hrs.
SHAGHATTA	0	Kutchra road to Dinajpur-Dacca R&H road via Gaibandha	2	3	Train 1 hr.	Train 4 hours.
FULCHHARI	0	None	3	3	Train 2 hrs	Train 5 hours
GAIBANDHA	18	Dinajpur-Dacca R&H road via Palashbari	2	4	-	Train 3 hrs or Bus 1 3/4 hrs.
SUNDARGANJ	2	None	2	1	On foot & Train 3 1/2 hrs.	On foot & train 4 1/2 hours.

Table continued on next page

TABLE 2
THANA TRANSPORT PROFILE (CONTINUED)
KURIGRAM SUBDIVISION

THANA	APPROX MILES OF ALL WEATHER ROAD (HBE & PUCCL)	VEHICLE ACCESS FROM THANA HQ TO R&H NETWORK	NUMBER OF REGULAR LAUNCH OR STEAMER ROUTES	NUMBER OF RAIL ROAD STATIONS	MODE OF TRANSPORT TO SUBDIV. HQ.	MODE OF TRANSPORT TO DISTRICT HQ.
BHURUNGAMARI	7	Paved road to Kurigram-Rangpur R&H road	1	3	Rickshaw, Motor, Ferry and on foot 2½ hours.	Jeep 4½ hrs or Train 8 hrs
NAGESWARI	13	Kurigram-Rangpur R&H road	1	0	Rickshaw, Motor, Ferry & on foot 2 hrs.	Rickshaw, Motor, ferry & on foot & Train 7 hrs or Jeep 4 "
FULBARI	0	None	0	0	On foot 5 hours	On foot & Train 6 hrs
LALMONIRHAT	20	Kutch road to Kurigram-Rangpur R&H road	0	5	Jeep 1 hr. or Train 3 hrs	Jeep 1 hr or Train 2 hrs
KURIGRAM	14	Kutch road to Kurigram-Rangpur R&H road	1	4	-	Jeep 2 hrs or Train 4 hrs
ULIPUR	14	Kutch road Kurigram-Rangpur R&H road	0	2	Train 1 hr	Train 5 hrs or Jeep 3 hrs
CHILMARI	7	Kutch road to Kurigram-Rangpur R&H road	1	2	Train & Rickshaw 2 hrs	Train 6 hrs or Jeep 4 hrs
RAUFARI	0	None	2	0	Cart, boat train & Rickshaw 10 hours	Cart, Boat and Train 15 hrs.

C. Roads.

1. Number and Type

Rangpur has approximately 110 miles of paved (metalled or herring-bone) roads under the Roads & Highways Directorate. An additional 80 miles, is currently under construction. The District Council has approximately 2,485 miles under its jurisdiction, of which only about 90 miles have some type of paved surface.

The R&H roads have a nominal 12 foot wide carriageway with one shoulder about 5 feet wide and the other shoulder about 10 feet wide. The extra wide shoulder provides space for the many bullock carts used in this district, and thus avoids damage to the pavement. The District Council Roads, if surfaced, have a crest width of 20 feet, while the unsurfaced roads are approximately 12 feet wide.

The local thanas and union councils administer earthen roads typically on embankments about 13 feet wide and 3 feet high. However, many of these roads are flooded during the monsoon season making road access impossible. In addition, there are many existing gaps on these roads which require new culverts or bridges for all-year access.

Currently, the World Bank has plans to undertake an integrated rural development scheme, including construction of necessary rural roads in the thanas of Mithapukur, Pirganj and Gobindaganj.

Rangpur has 7.8 miles of paved road per 100 square miles and only 5.1 miles of paved road per 100,000 population. In comparison, the district average for the rest of Bangladesh is 9.2 miles of paved road per 100 square miles and 7.3 miles per 100,000 population. In both cases Rangpur ranks below the national average.

2. Major Routes

The principal road route in Rangpur District approaches from Bogra District in the south and proceeds northerly linking the centers of Gobindaganj, Palasbari, Pirganj, Mithapukur and Rangpur before going west through Saidpur to Dinajpur District.

Typical distances along this arterial route are:

Gobindaganj	-	Palasbari	12 miles
Palasbari	-	Rangpur	35 miles
Rangpur	-	Saidpur	25 miles

A major eastern route from Rangpur to Kurigram is under construction and totals about 31 miles in length. This road connects with the existing Kurigram-Bhurungamari road, which is 24 miles long and provides access to the north-eastern portion of the district.

3. Ferry System

In Rangpur District, the only ferry operated by the Roads and Highways Directorate is across the Testa River on the Kurigram-Bhurungamari road.

4. Source of Traffic

The total number of motor vehicles registered in Rangpur during 1976-77 was 3,707, 67% of which were motor cycles. The composition of the vehicle fleet is shown in Table 3 below:

TABLE 3
NUMBER OF REGISTERED VEHICLE (1976-77)

Bus	Truck	Jeep	Car	Auto Rickshaw	Motor Cycle	Truck/Tractor	Truck Trailer
289	512	314	4	37	2,457	81	9

The major traffic movement by road is to Dinajpur District in the west and from Rangpur Town south to Bogra District. Based upon traffic data in the 1977 Bangladesh Transport Survey there are 906 vehicles daily travelling on the Rangpur-Bogra road, 50% of which are trucks and buses. On the Rangpur-Dinajpur road there are 266 daily vehicles, 78% of which are trucks and buses.

The major daily movement of goods by road were 34 tons to Rangpur from Bogra and 61 tons from Rangpur to Bogra. From Dinajpur the tonnage to Rangpur was 281 while from Rangpur to Dinajpur the amount was 25 tons.

D. Rail

1. Mileage and Routes

The district is well-provided with rail transportation. There are approximately 225 miles of railway line , 33 miles of which are is broad-gauge track.(See Figure 1)

The main railway line is meter gauged and it enters at Kholahati from Dinajpur and passes through Badarganj and Shampur before entering Rangpur Town. The main line then continues east to Kaunia, before heading south through Pirgacha, Ruptala, Gaibandha and Bonarpara Junction. At this junction the main line splits the southern branch continues toward Bogra and the eastern branch goes via Fulchhari and railway ferry to Bahadurabadghat in Nymensingh District.

Two important branch lines connect to the main line at Testa Junction near Kaunia. The first goes east to Kurigram and then south to Ulipur and Chilmari. The second goes north to Lalmanirhat and then northwest through Kaliganj, Hatibandha and Patgram before stopping at Burimari, on the Indian border. A third short line leads from Lalmanirhat north to the Indian border at Gualdahat.

The broad guage line is part of the main north-south line from Khulna to the Incaian border at Chilahati. This passes along the northwest edge of Rangpur and connects Saidpur Nilphamari,Dom r and Chilahati.

2. Railway Services

There are four trains daily on the main line from Rangpur to Bonapara Junction serving 19 stations along the way and in addition 5 daily trains connecting Rangpur to Lalmanirhat.

The branch lines from Testa Junction to Chilmari has three trains daily in each direction and serves nine stations. The line from Lalmanirhat to Burimari also has three trains daily each way and serves ten stations.

3. Sources of Traffic

The railway system provides for transfer of passengers and freight only at the railway stations. Consequently, freight movement is generally restricted to the area near these stations.

The stations where transfers of goods and commodities occur are near agricultural centers. The main agricultural goods shipped by rail are jute, which is sent to Dacca, Chittagong and Khulna and foodgrains, which are shipped on the broad-gauge railway to Kushtia, Faridpur and Khulna.

E. Water

1. Waterway Network

Water transportation is not very important in Rangpur because of the many silted rivers and shoal areas. Steamer services does connect Chilmari to Mymensingh, however, and seasonal launch services run between Kurigram and Bhurungamari and from Raumari to Chilmari and Bahadurabadghat in Mymensingh District. In addition, a railroad operated steamer also connects Fulcharighat with Bahadurabadghat.

2. Launch Ghat

The principal launch ghats on the Kurigram route are Kurigram, Barabari, Jatrapur, Nookbharva, Mathuganj, Hularhat, Subulpahar, Heludanga, Pateswari, Paikuchara and Bhurungamari.

Between Raumari and Bahadurabadghat the launch ghats are Raumari, Chilmari, Nawsbala, Shidkai and Kamarzam.

F. Air

There is no existing commereial air service to or from Rangpur District. Moreover, an airport is currently under construction in the Saidpur area which will serve the district in the future.

II. GENERAL BACKGROUND

A. Historical Background

Rangpur was originally a part of the Kingdom of Kamrup (which included Assam, Manipur, Jaintia, Cachar, parts of Mymensingh and Sylhet). In those days, the Karatoya river constituted the border between the Kamrup domain and Bengal. The earliest record of Muslim invasion east of the Karatoya is of Bakhtiar Khilji the Afghan General (1203 A.D.) who after overthrowing the Sen King of Bengal, proceeded to earn further laurels of conquest in the unknown regions of the North. His adventures were repulsed by the Kamrup Kingdom. Subsequently, during the Muslim rule in the subcontinent under Rukunuddin Barbak Shah (1459-1474 A.D.), Shah Ismail Gazi was sent on a mission to conquer and he succeeded in securing the submission of the King of Kamrup. In 1662, Mir Jumla, a Mughal General, penetrated into Assam. Later in 1687, during the reign of Aurangzeb, the Moghuls advanced and occupied six chaklas (or former administrative units) of Rangpur proper. More Chaklas were ceded by local rulers. The acquisition of the Diwani or financial administration of the country by the East India Co. followed the practices of revenue collection established by the Moghuls. During the years of early British dominion, Rangpur was a frontier district bordering on Nepal, Bhutan, Cooh Bihar and Assam. The large area of the district and the weakness of administration rendered maintenance of law and order extremely difficult in the remote regions. Gangs of dacoits organised by legendary characters like Bhawami Pathak and Debi Chowdhurani held many regions under their control. Since Lieutenant Brennan's onslaughts and Bhawami Pathak's death in 1787, the situation of law and order improved.

Through time, the composition of the district changed considerably with reduction in area. The regions of Rangamati and Dhubri, treated as North Rangpur, were detached to form a new district of Goalpara for inclusion in Assam. Gabalinjanj thana was transferred to Bogra on the creation of this latter district in 1821, but the greater portion of the same was re-transferred to Rangpur in 1871. Four thanas, viz Fakirganj, Bada, Sanysikata and Patgram were transferred to the newly created district of Jalpaiguri in 1869 and 1870. On the introduction of the subdivision system, the southern areas were formed into Bhowaniganj subdivision in 1857. Subsequently Bhowaniganj was converted into Gaibandha Subdivision and the two new Subdivisions viz. Nilphamari and Kurigram, were carved out of the Rangpur Salar subdivision. When partition of the subcontinent came in 1947, the Rangpur District did not lose any land area through the Radcliffe Award but in fact received additional land transfer from Jalpaiguri. The entire thana of Patgram was thus added to Rangpur.

B. Administration

The Deputy Commissioner, as in other districts, is the head of the civil administration. He combines the functions of the District Magistrate, Collector of Land Revenue, maintenance of laws and orders and overall coordination of all developmental activities. He is assisted by Additional Deputy Commissioners at the district level and a number of subdivisional officers who work in the subdivisions. The subdivisions are the middle level administrative units supported by thana administration at lower level. The thana administration is also under the control of Subdivisional Officers; but local attention to maintenance of law and order and supervision and execution of

Development activities at local levels is organised through thana-based officials. Developmental activities are supervised and coordinated at that level by the Circle Officer (Development) on behalf of the Subdivisional Officer. Beyond the thanas, unions and villages can be treated as local administrative units.

The Rangpur District has 4 subdivisions: Rangpur Sadar, Gaibandha, Kurigram and Nilphamari, and the number of thanas in the district is 31. Each subdivision has more than five thanas, ranging between six (Nilphamari) and ten (Rangpur Sadar). The district has 339 unions and 3,713 villages.

C. Demography

Amongst the four selected districts for the Project, Rangpur has the largest population estimated by the Census (1974) at 5.45 million. Nationally, Rangpur occupies the fourth place among all districts in terms of the size of total population. The density is 1,472 per square mile next to Fariapur's 1,521 per sq. mile. In terms of total labour force, Rangpur has again the largest size, estimated at 2.97 million (which is 54.5% of total population). Between 1961 and 1974 urban population has grown 64.6% and rural population 42.6%. This growth of rural population is also highest among the four selected districts. Tribal population in the district is estimated at 5,834 in 1977 and the tribes are known to be Santhal, Kocha, Rajbanshi and Hajang.

Among subdivisions, Ranapur Salar (with 10 thanas, 113 unions and 1448 villages) has the largest population at 1.835 million; and Nilphamari (with 6 thanas, 63 unions and 394 villages) has the smallest population at 0.963 million. Gaibandha and Kurigram subdivisions (with 759 villages and 1,112 villages respectively) have closely similar sizes of population at 1.291 million and 1.358 million respectively. By thana, population density is quite high for Saidpur (3,3348 per square mile) and Kotwali (2,327 per square mile); the density of 13 other thanas is moderate (between 1,000 and 2,000 per square mile); and the density of 16 remaining thanas is quite low (ranging between 209 for Ulipur and 63 for Fulhari).

III. PHYSICAL AND ENVIRONMENTAL FEATURE

A. Physical Geography

1. Location

Rangpur District is located in the northwest portion of the country. Comprising an area of 3,704 sq. miles, the second largest of the four districts, it is bounded by Jalpaiguri and Cooch Behar districts of West Bengal (India) on the north, the Garo Hills of Assam (India), the Brahmaputra River and Mymensingh District on the east, on the south by Bogra District and on the west by Dinajpur District. The district lies between $25^{\circ} 02'$ and $26^{\circ} 27'$ north latitude and $88^{\circ} 44'$ and $89^{\circ} 54'$ east longitude.

2. Topography

Being an alluvial plain, there is little natural relief in the district. General inclination in the district follows that of the rivers from the relatively high sandy plains in the north and northwest to the lowlands of the southeastern portion. A limited area of higher elevation formed from older alluvium (Barind Tract) is evident in the western portion of the district. Rivers pose a constraint to road development only in the eastern portion of the district.

3. Geology and Soils

a. District Geology

The district is essentially one large alluvial deposit of sand and clay brought down by rivers from the Himalayan Range, especially the Tista, Dharla, Karatoya and Brahmaputra. The only exception to this description is the older alluvial deposits which form the Barind Tract in the extreme west of the district. These are generally known to be underlain with Madhupur clay. The most recent deposits of alluvium are the chars which form along the banks of the Tista and Brahmaputra rivers.

Rangpur District, like Sylhet, is considered to be within Seismic Zone 1 (likely to be subject to earthquakes of highest intensity). The earliest recorded earthquake was in 1885 and a second was recorded in 1897. General effects were upheaval in some places and subsidence in others, with the overall effect being to generally raise the level of the district. In addition, significant changes in some drainage patterns resulted.

b. Soils

The largest soil unit in the district is Grey Floodplain Soils and Noncalcareous Brown Floodplain Soils occupying the north, northwest and part of the central portions of the district. Along much of the eastern bank of the Brahmaputra and in the central portion the soils are largely Grey Floodplain Soils (Nonsaline Phase). Along a small portion of the Brahmaputra and in the southeastern portion of the district Grey Floodplain Soils and Noncalcareous Dark Grey Floodplain Soils are

evident. In the small Barind Tract area Grey Terrace Soils and Deep Red-Brown Soils are predominant. Figure 2 illustrates district soil unit boundaries.

B. Hydrology

1. Climate

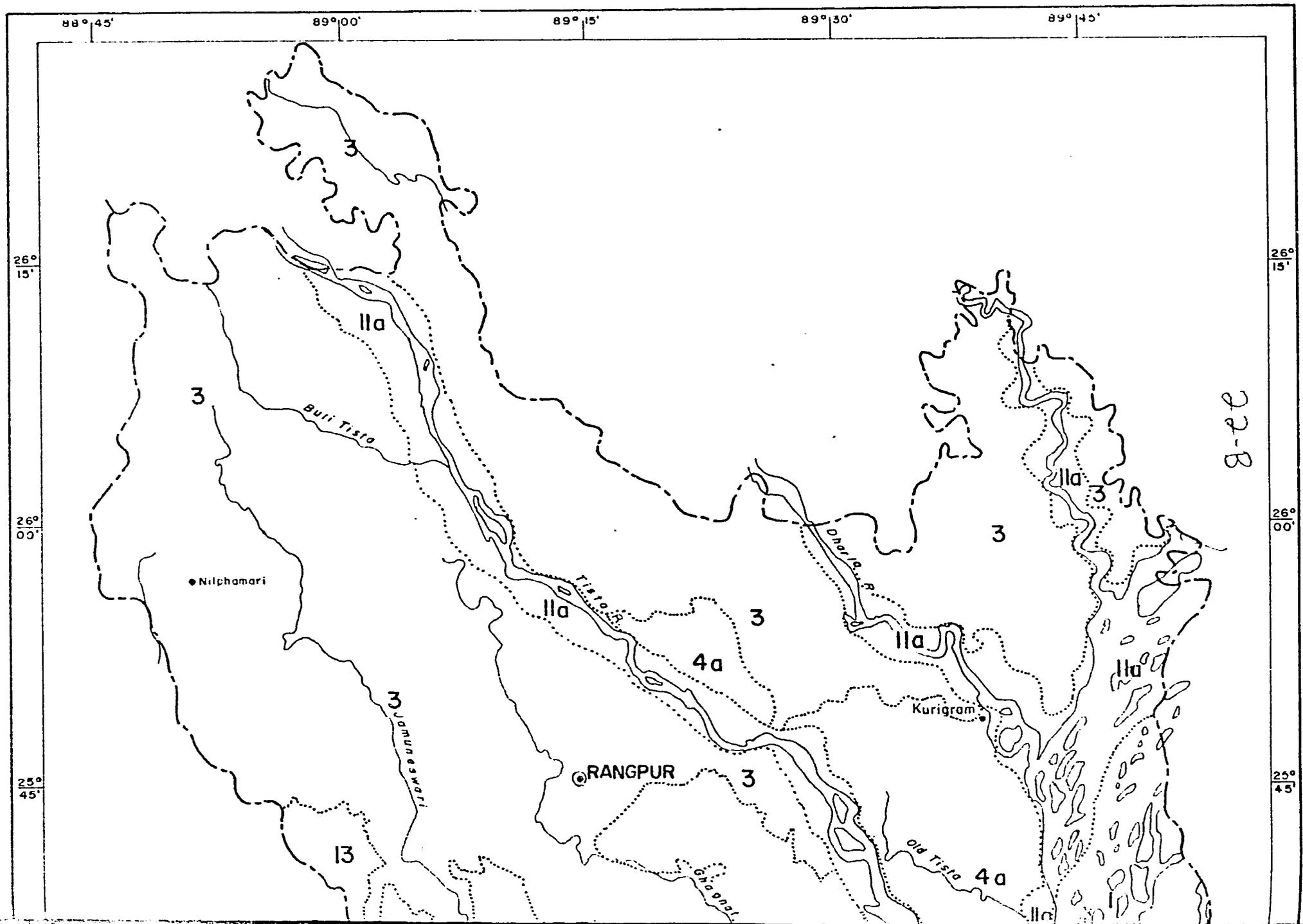
Rangpur District, because of its location, has a sub-tropical climate which is unique among the four districts. Temperatures are lowest in January, rise to a maximum in April or May, and remain slightly lower but steady through the monsoon season until October when temperatures gradually fall to the January minimum. The annual mean daily temperature range in the district is about 16° F. Moderating breezes from the Himalayas and the Bay of Bengal influence daily temperatures to a large extent.

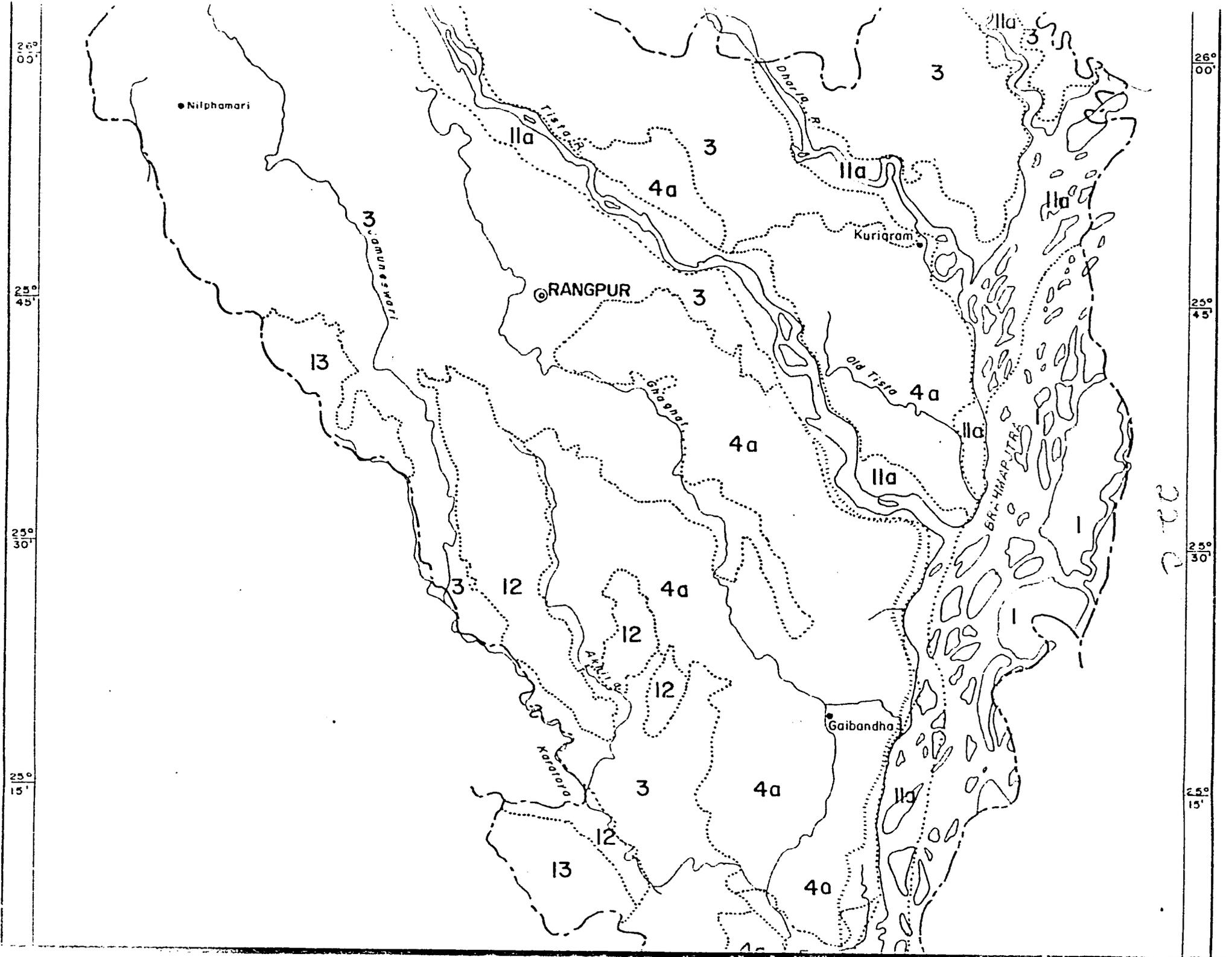
Average annual rainfall is fairly constant throughout the district, although those areas closest to the Himalayas or Garo Hills receive more than the 86 inches which the district averages annually. The trend seems to be toward slightly higher rainfall. Highest rainfall is in June and most of the annual rainfall occurs between May and October. Violent thunderstorms occur from March through May, but do not account for substantial rainfall.

FIGURE

MAP INDEX

<u>SOIL UNIT NUMBER</u>	<u>DESCRIPTION</u>
1	Mixed sands and silts. Some silty grey floodplain soils.
3	Brown loamy soils occupy about 25% on ridges. Some lower areas have grey silty soils. Brown soils are impermeable. Grey soils mainly have a ploughpan impeding internal drainage.
4	Grey and dark grey silty soils with a ploughpan. Permeable brown ridge soils locally.
11a	Mixed sands and silts
12	Deep red-brown mottled and grey terrace soils. Permeability probably moderate, exception brown mottled and grey terrace soils with compact ploughpans.
13	Grey terrace soils with an impervious ploughpan and a slowly permeable substratum.





25° 00'

25° 45'

25° 30'

25° 15'

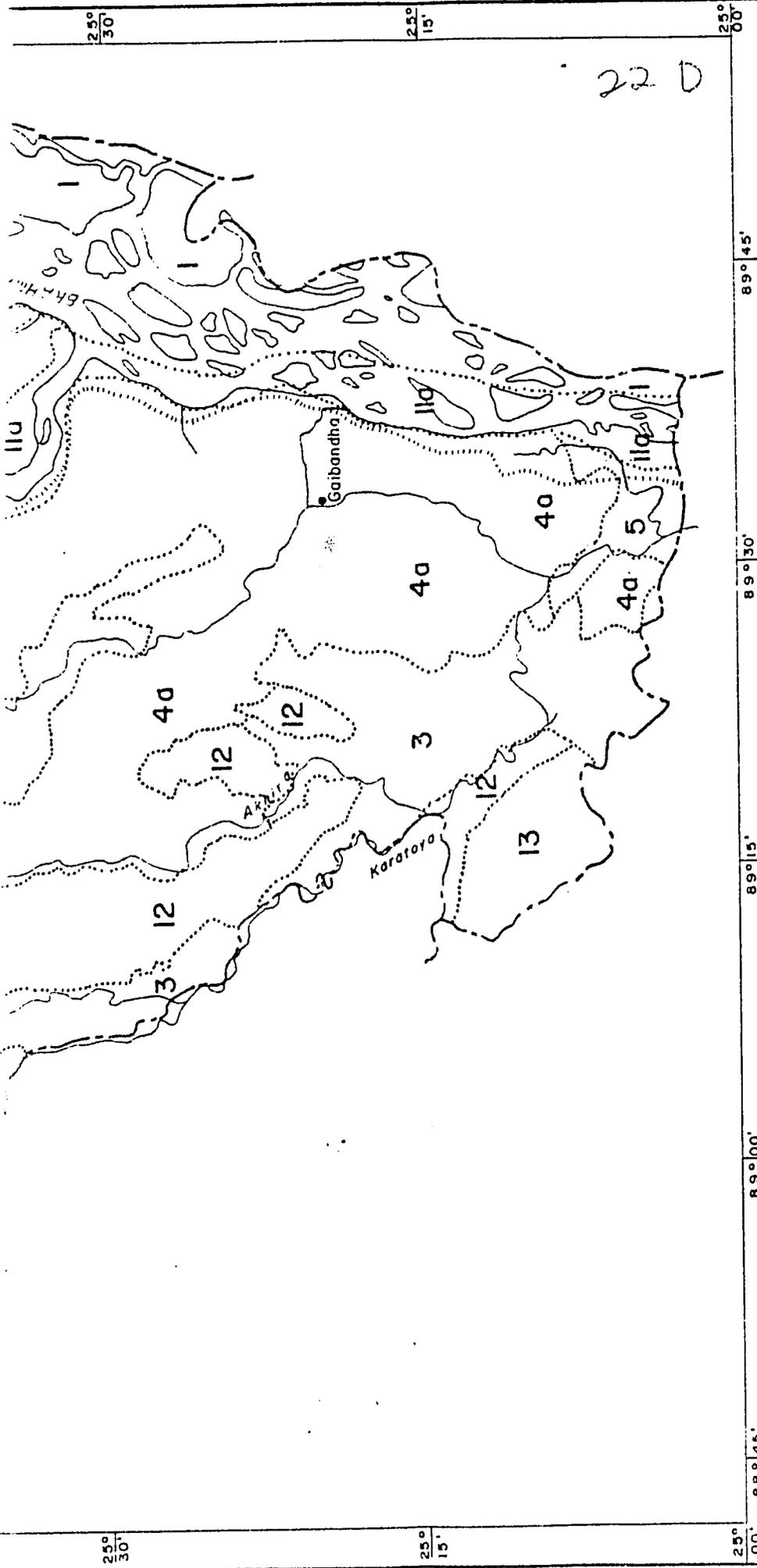
26° 00'

25° 45'

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25° 15'

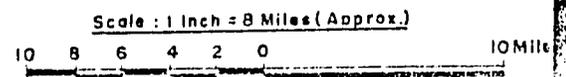
DIST. RANGPUR



LEGEND:

- Division Boundary - - - - -
- Dist. Boundary - - - - -
- Dist. Head Quarter ⊙
- Sub-Division Head Quarter •
- Rivers
- Embankment
- Soil Unit Boundary - - - - -
- Soil Unit Number 3

Sources : IBRD , 1972
UNDP , 1971



GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH	
RURAL ROADS STUDY	
SOILS	
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DATE	DRG 42

2. Surface Water

The major rivers of influence in Rangpur District are the Brahmaputra, the Tista and the Dharla. The Brahmaputra, which one flowed mainly through Mymensingh District, now flows southerly and forms part of the eastern district boundary of Rnaspur. The Tista enters in northwest Rangpur and flows southeasterly to its confluence with the Brahmaputra near Chilmari. The Dharla parallels the Tista approximately 10 miles to the northeast. The Dudkhumar flows through the district for a short length in the northeast corner. The combined flows of these three rivers comprise the Jamuna River which forms the southeast border of the district with Mymensingh.

Tributaries in the district include the Jamuneswari, Gaghat, and old Tista Rivers. The mean maximum, mean minimum and mean annual flows of the Brahmaputra at Bahadurabad are 2,290, 136 and 676 mcfs, respectively. The Brahmaputra and Tista are navigable year-round.

Rangpur District contains a large number of marshes or beels many of which, especially in the northeast and near the Tista River, are old river beds in the process of drying up. While large in number, the beels are not exceptionally large in area and, being shallow, a large area in every beel dries up in the hot weather. The largest beel, Berabila, lies just south of Pirganj Thana and covers over three square miles.

Flooding normally affects 2,407 sq. miles (45%) of the district although severe flooding has occurred in 1954, 1964, 1968 and 1974 when the Brahmaputra, Dharla and Tista rivers shifted their channels, inundating much of the countryside. The following 17 thanas of the 31 total in the district are normally affected by flooding:

Bhurungamari, Kurigram, Lalmonirhat, Ulipur, Sundarganj, Chilmeri, Gobindaganj, Pulchari, Gaibandha, Hatibandha, Kaliganj, Kaunia, Pirgachha, Pirganj, Mithapukur, Dimala and Roumari.

Most of the district consists of mainly seasonally wet or shallowly flooded land. Some areas in the north and northwest have well drained floodplain ridges while along the rivers the land is mainly deeply flooded. The Barind Tract areas are mainly level highland, part well drained or part seasonally wet or shallowly flood. Figure 3 shows district drainage patterns.

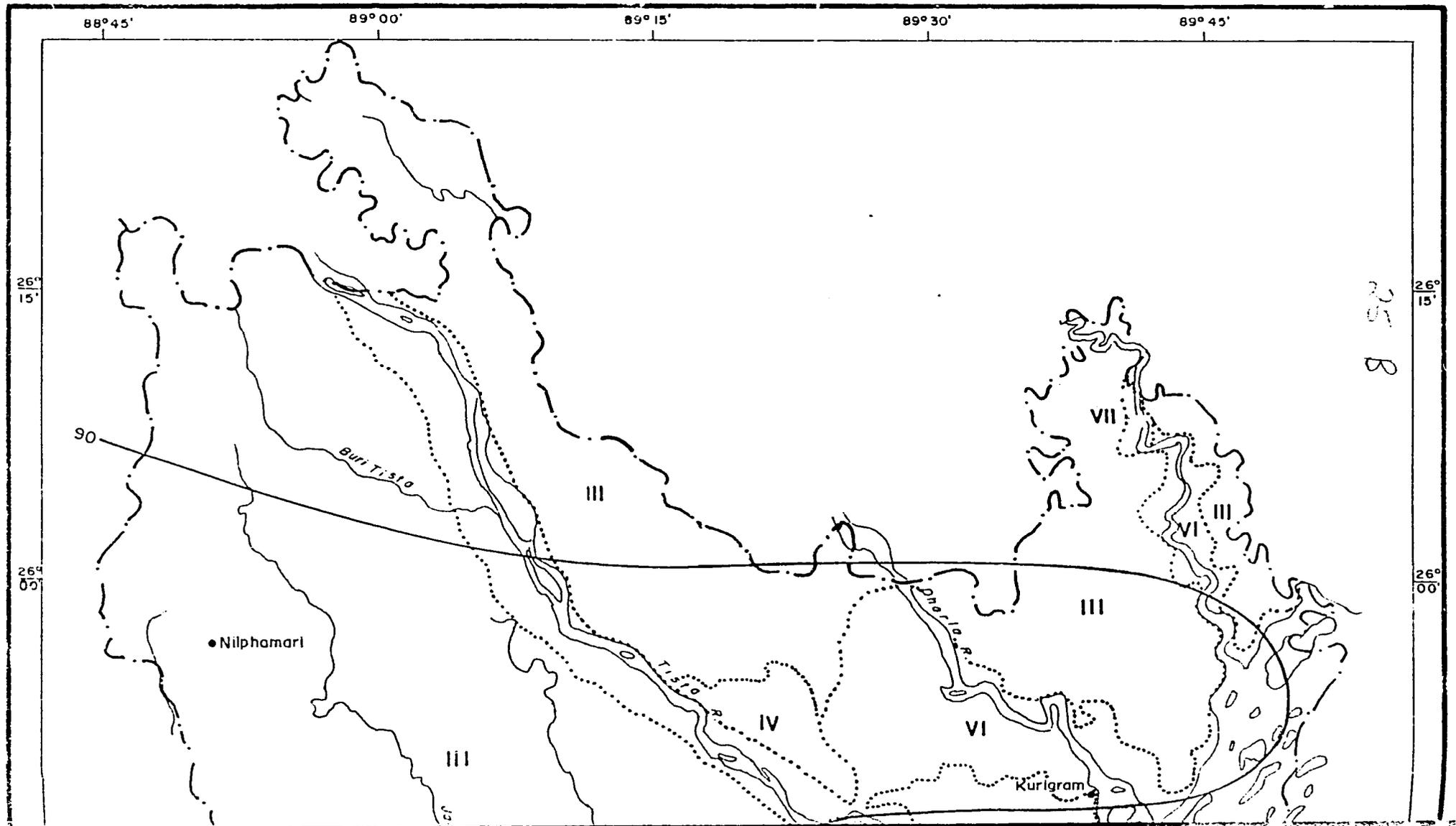
3. Ground Water

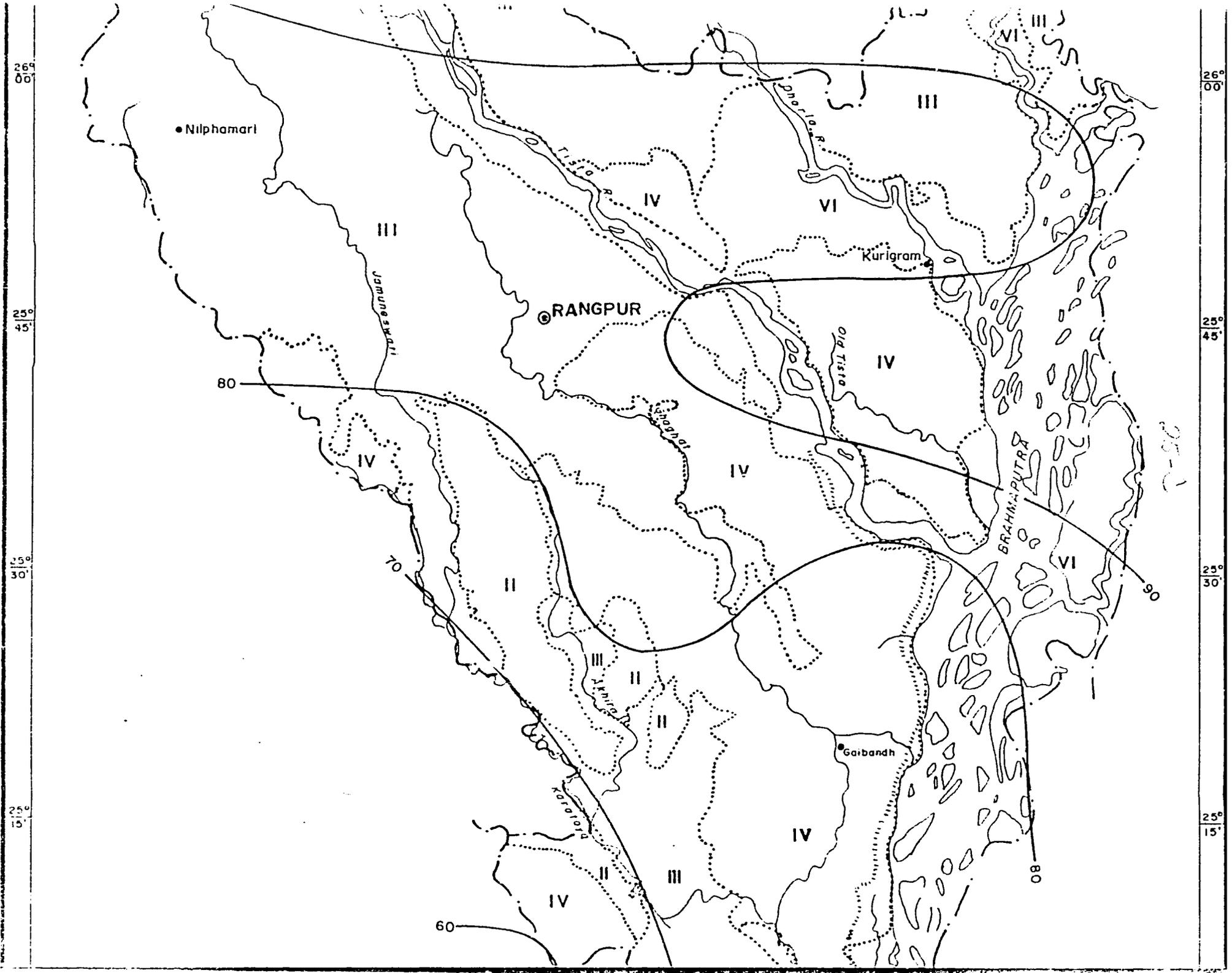
Most of Rangpur District lies in the Tista River Fan hydrogeologic region. A small area in the eastern portion is within the Older Alluvium (East of Bogra) hydrogeologic region and a strip lying along the east side of the Brahmaputra-Jamuna River is within the Upper Old Brahmaputra and Middle Meghna Floodplain hydrogeologic regions. The Tista River Fan area requires an estimated well depth (4" dia) of from 150 to 200 feet for a flow of 2 to 4 cfs. Suitability for

FIGURE

MAP INDEX

<u>DRAINAGE UNIT NUMBER</u>	<u>DESCRIPTION OF LAND LEVELS IN RELATION TO FLOODING</u>
II	Mainly level highland, part well drained, part seasonally wet or shallowly flooded.
III	Mainly seasonally wet or shallowly flooded land with some well drained floodplain ridges
IV	Mainly seasonally wet or shallowly flooded land
VI	Mainly deeply flooded land





26° 00'

26° 00'

25° 45'

25° 45'

25° 30'

25° 30'

25° 15'

25° 15'

• Nilphamari

• RANGPUR

• Kurigram

• Gaibandha

TISTA R

Phoriga R

Old Tista

Phoriga R

Karatola

BRAHM-PUTRA

III

III

IV

VI

IV

IV

IV

II

90

III

II

II

VI

IV

IV

III

II

60

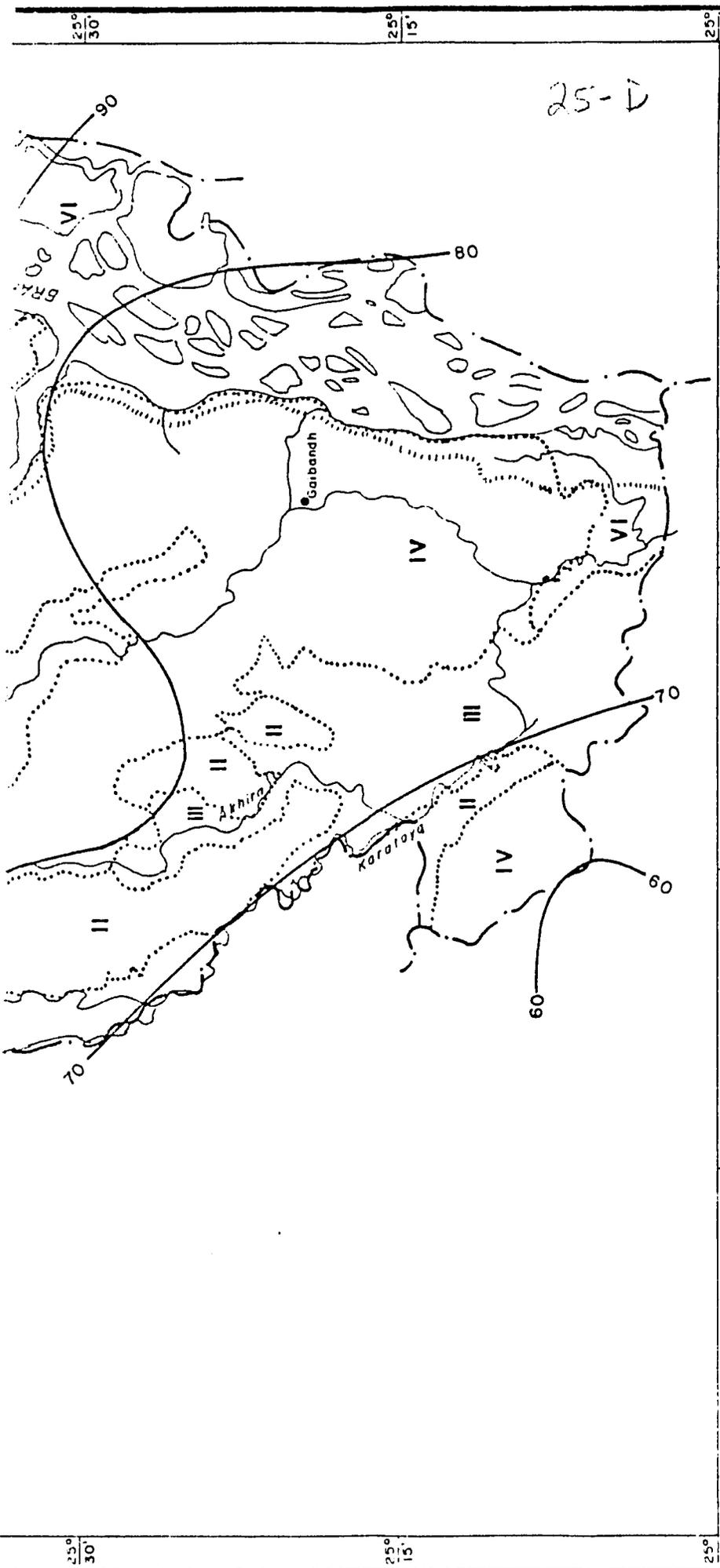
80

80

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80-90

DIST. RANGPUR

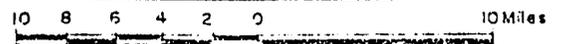


LEGEND

- Division Boundary - - - - -
- Dist. Boundary - - - - -
- Dist. Head Quarter ⊙
- Sub-Division Head Quarter ●
- Rivers
- Embankment
- Drainage Unit Boundary
- Drainage Unit Number III
- Rainfall Isohyet in Mean Annual Inches 80 — 80

Source : IBRD , 1972

Scale 1 Inch = 8 Miles (Approx.)



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CHECKED	RECOMMENDED
DATE	APPROVED
	DRG NO

tubewell development is considered best in the country. In the eastern (Older Alluvium) area, required well depth is estimated at 100 to 150 feet (4" dia) for a potential flow of 2 to 3 cfs. In the eastern (Brahmaputra and Middle Meghna Floodplain) area required well depth (4" dia) is estimated to range from 200 to 300 feet for a potential flow of 2 to 3 cfs. Potential for tubewell development is considered good in both of these latter areas (IBRD,1972). A considerable number of shallow and deep tubewells have been sunk in Rangpur and many more are planned. Although the groundwater resource is generally considered excellent, the extent of the resource is not known at this time. A study to determine this has only recently begun and will not be complete for some time.

C. Environmental Features

1. Flora

Rangpur District contains plains, swamps and limited submontane forests and, as a result, exhibits a considerable diversification of flora and fauna. Although forested area in the district is low (5.50 sq. miles total), trees abound in the district. Common varieties include banyan, pipal, jack, sisoo, karai, sal, babul, jarul, jum, nim, teak, date palm and others.

A number of varieties of bamboo are present as are reeds, grasses and aquatic plants. A plant list is given in the summary Volume Annex

Birds abound in the district with 645 species listed as resident, visitor or likely (Rashid, 1967). Common varieties include ducks, geese, rails, coots, stork, herons, cranes, cormorants, gulls, terns, snipe, partridge, quail, hawks, eagles, owls, buzzards, drongos, orioles, bulbuls, sandpipers and many others. A complete list of district birds is given in the Summary Volume Annex.

Reptiles and amphibians abound in the district as well and include numerous frogs, lizards such as the gecko and bloodsucker; snakes like the cobra, krait and python; and two kinds of crocodiles, bancha and gharial.

The mammals of the district were once considerably more numerous than today due to habitat reduction through clearing and cultivation. Several species of bats and rodents are present. Some wild cats are in evidence as are mongooses, jackals and wild boars. A mammal list is included in the Annex.

A number of fish species are present in the district including carp, air, baccha, rita, tengra, hilsa, chital, khalishe and many others. Eels and prawns are also abundant. A complete list of fish is presented in the Summary Volume Annex.

IV. AGRICULTURE

A. Land Utilization

Approximately 1,845,000 acres of land in Rangpur are cultivable of which 1,698,000 acres were used to raise crops in 1976. The ratio of cultivated land to cultivable land (cultivation intensity ratio) in Rangpur is 92%, which is higher than the national average of 88.9%. The cropping intensity ratio, which is an indicator of the average number of crops grown annually per acre is 178.7, and this is the highest of any district in Bangladesh.

Rangpur is relatively free from severe flooding and as a result is able to grow three crops on approximately 10% of the cultivated acreage, two crops on 60% and one crop on only 30% of the cultivated acreage. This is quite different from most of the other district in Bangladesh.

Most of the district is planted in Aus or jute followed by Transplanted Aman. Secondary cropping patterns on the higher lands are Aus and rabi crops or sugarcane followed by vegetables.

The average farm size in Rangpur, based on the 1960 Agricultural Census was 2.5 acres, which was smaller than the national average of 3.5 acres per farm. Though the latest Agricultural Census data are not yet available, the average farm size in Rangpur has undoubtedly decreased since 1960 as a result of the rapid growth in population. A more detailed analysis of 1960 district and national farm size data is given in Table 4.

TABLE 4
NUMBER AND PERCENT OF FARMS BY SIZE, 1960
(Acres)

		0 - 0.5	0.5-2.4	2.5-4.9	Over 5	Total
Rangpur	#	23,690	181,060	165,880	126,380	497,010
	%	6	36	33	25	100
Bangladesh	#	802,630	2,367,250	1,615,020	1,354,580	6,139,480
	%	13	39	26	22	100

B. Major Crops

The agriculture of Rangpur is more diversified than that of many other districts, but as in every district in Bangladesh, rice is both the most important and the major subsistence crop in Rangpur. In 1975-76 rice was grown on 2,417,000 acres or 80% of the total cropped acreage. The rice crop in Rangpur consists of three main groups typical of Bangladesh i.e. Aus (autum rice), Aman (winter rice) and Boro (spring rice). In reality however, as shown in Table 5, there is very little Boro grown in Rangpur. The small amount of Boro that is grown, is planted in beal areas and river beds.

The Aman and the Aus crops account for roughly 98% of the planted rice acreage in Rangpur. Two types of Aman are grown: Broadcast and Transplanted. (See Table 5). Because there is little deep or long flooding, the B. Aman is grown in relatively few parts of the district, mainly in the char areas of the Brahmaputra and Tista Rivers in Kurigram Subdivision.

TABLE 5
RANGPUR DISTRICT ACREAGE AND PRODUCTION OF RICE
1975-76 AND 1976-77

Crop	No. of Acres sown(000)		Production tons(000)		% of District rice Production	
	1975-76	1976-77	1975-76	1976-77	1975-76	1975-77
Local	1,012	948	292	294	27	28
Aus						
HYV	33	47	36	40	3	4
Total	1,045	995	328	334	30	32
Local	1,089	1,126	522	561	49	54
Trans- planted						
Aman						
HYV	147	95	144	87	14	9
Total	1,236	1,221	666	648	63	63
Local	81	81	36	36	3	3
Broad- cast Aman						
HYV	0	0	0	0	0	0
Total	81	81	36	36	3	3
Local	14	12	5	4	1	0
Boro						
HYV	41	19	36	15	3	2
Total	55	31	41	19	4	2
Total	2,417	2,328	1,071	1,037	100	100

Source: Bangladesh Bureau of Statistics

The J. Aman is usually sown with the Aus crop in March and April and harvested in November and December, while the Aus is harvested earlier.

Transplanted Aman is sown on 1,236,000 acres throughout all thanas of the district but it is particularly important in Mithanukur, Kauria, Sundarganj, Sadullapur and Domar thanas.

T. Aman has two distinct advantages over B. Aman in this district: (1) the yield per acre is higher; and (2) on most lands it can be grown immediately after another crop (Aus or jute) has been reaped.

The crop is cultivated in the traditional way with the seeds being broadcast in a seed bed in May and June, transplanted during the rainy season in July and August, and then, harvested in December and January.

Aus is the second most important rice crop planted in Rangpur and it was grown on approximately 1,045,000 acres in 1975-76. It is planted on higher lands away from possible flood areas and is sown in April and generally harvested from June to August. Aus is grown throughout the district and is usually planted in rotation with one or even two other crops, for example a rabi crop and T. Aman.

Rangpur has a very low utilization of High Yielding Varieties and only 9% of the total rice acreage is planted in HYV. Rangpur ranks among the lowest districts in HYV adoption even though it has the highest percentage of land suitable for HYV crops. The yields of the main varieties of rice grown in the district are shown in Table 6.

TABLE 6
YIELD PER ACRE OF RICE (IN MAUNDS)

Year	Aus			Transplanted Aman			Broadcast Aman			Boro		
	Local	HYV	Total	Local	HYV	Total	Local	HYV	Total	Local	HYV	Total
1975-76	7.94	29.81	8.61	13.10	26.8	14.71	12.11	0	12.11	9.8	24.0	20.13
1976-77	8.50	23.34	9.29	13.60	25.0	14.51	12.11	0	12.11	9.15	21.60	16.70

Jute is the most important cash crop grown in the district and it is planted on roughly 10% of the cropped acreage. Nationally the district ranks second to Mymensingh in jute production. (See Table 7). The crop is grown in all thanas of the district but it is most popular in Sadullapur, Gaibandha and Sundarganj thanas.

TABLE 7
JUTE PRODUCTION

Jute Crop	No. of Acres sown(000)		Production bales(000)		% of National Production	
	1975-76	1976-77	1975-76	1976-77	1975-76	1976-77
Rangpur	273	315	764	942	21	22
Bangladesh	1187	1458	3639	4344	100	100

In Rangpur 90% of the jute acreage is planted in White jute (*Cansularis*) and only 10% is planted in Tossa jute (*Olitorius*). The White jute can tolerate some flooding and is therefore planted in the lowlands during April and harvested from July to August. The Tossa jute is planted on higher lands from April to May and harvested between August and September. There are wide variations in the per acre jute yields in Rangpur but generally yields are between 12 and 18 maunds per acre,

except for the char areas which can be much higher.

The growing season of jute directly competes with the Aus crop in Rangpur. Since jute is grown as a cash crop, the relative prices of rice and jute are the major determinant of the acreage planted in each crop. In general, the farmer produces enough rice for his family needs; whether he plants jute or rice on the remaining area depends upon the price ratio.

Rangpur ranks third among the districts of Bangladesh in the production of sugarcane and in 1974-75 produced over 570,000 tons. (See Table 8). Sugarcane is another money crop and is grown on small plots throughout the district but it is concentrated around Badarganj; Palasbari, Gobindaganj and Lalmonirhat thanas.

There are two sugar mills in Rangpur: one in the center of the district at Railway Station Symour, between Rangpur and Badarganj and the other in the south at Romihnaganj near Gobindaganj. In addition, there is a large sugar mill on the railway line at Setabganj in Dinajpur, which is accessible to Rangpur Thanas. Sugarcane has about a twelve month growing period, generally February to February. Since it takes up the land of two or more other crops the selling price must be attractive to induce the farmer to plant it. The farmer, however, has two options for his crop. He can either sell it to the sugar mills or make gur (indigenous sugar).

Most of the sugarcane around the mill areas is refined and shipped to other districts. The cane that is grown on small plots is usually locally crushed and made into gur.

Tobacco is the third cash crop grown in Rangpur and the district has approximately 58,000 acres under cultivation. Rangpur is the major tobacco growing district in Bangladesh and it produces more than 60% of the country's total crop. The main centers of commercial tobacco cultivation are around the Tista River especially Kaliganj, Gangachara and Patgram thanas. Tobacco cultivation requires constant attention, as the seeds are broadcast in beds during August and September, transplanted in October and November, finally harvested in February or March and set out to dry after that. Despite the work necessary to grow tobacco the crop is profitable and it is increasing in popularity in Rangpur.

TABLE - 8
RANGPUR DISTRICT ACREAGE AND PRODUCTION OF CROPS
1974-75

Crops	No. of Acres sown(000)	Production tons(000)
Food grains	2,346	1,045
Jute	249	550*
Sugarcane	330	570
Oil Seeds	49	12
Tobacco	58	25
Pulse	36	10
Potato	26	118
Fruits	24	97

* Jute production in bales

Mustard is the main oilseed grown in Rangpur and it accounts for most of the 49,000 acres planted in oilseeds. It is grown as a rabi crop and planted in November and December and harvested in February and March. This allows it to be grown in conjunction with the Aus crop. The main areas of mustard cultivation are in Kurigram Subdivision particularly the thanas of Nageswari, Bhurungamari and Rahumari.

A variety of other crops are grown throughout the district and have significant commercial influence. Wheat is increasingly grown in Rangpur and it has become an important crop in the thanas of Fulchari, Saidpur, Chilmari and Shaghatta, Rangpur ranks fourth nationally in the production of potatoes and these are cultivated on 26,000 acres. Pulses cover 36,000 acres of generally inferior land, but still the district ranks eight nationally in their production. Betel vine (Pan) is an important crop in the north-south R&H corridor between Rangpur Town and Palasbari. Ginger is a very profitable crop in Nilphamari subdivision, particularly in Jaldhaka and Kishorganj. Fruits are plentiful in Rangpur but are not of the best quality. Jack fruits, mangoes, guavas and lemons are the most abundant. The total fruit production in Rangpur is about 100,000 tons.

C. Marketing

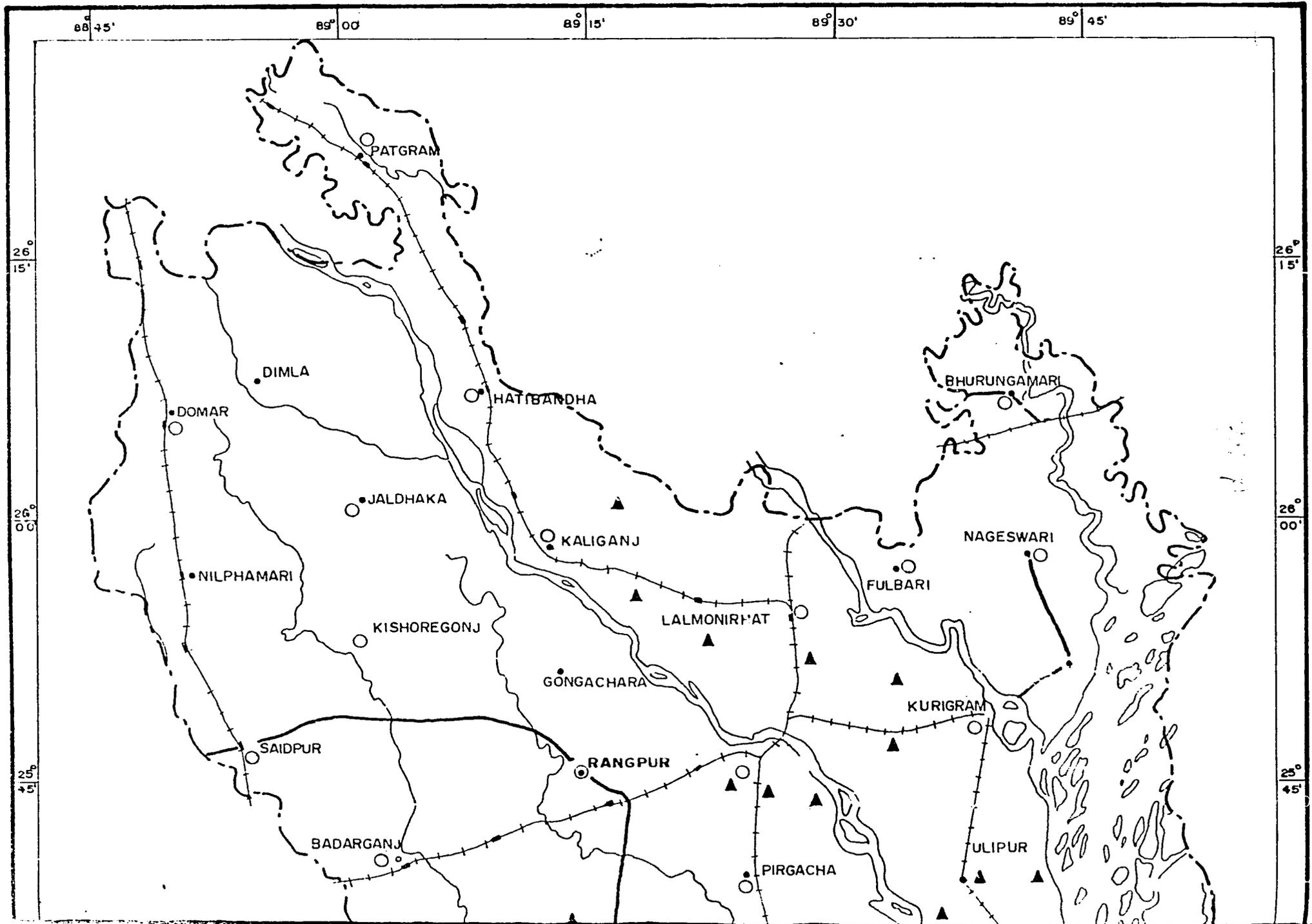
The hats and bazars in Bangladesh are probably the most important institutions in the country. They are the main and often only source of consumer goods, agricultural inputs and outside information for the farmer. In addition, they are the main centers of local, commercial and social interaction.

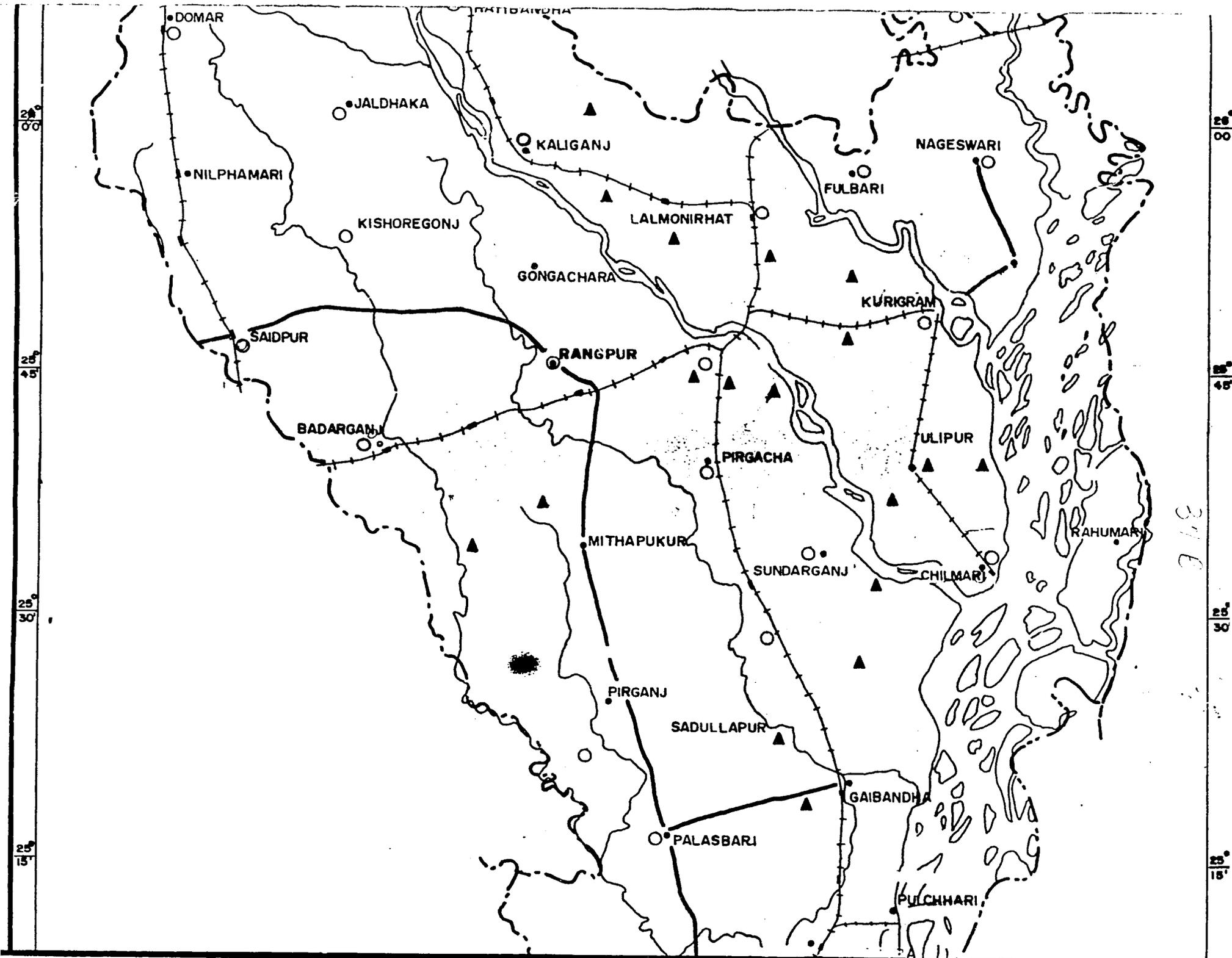
In Rangpur there are approximately 469 hats and bazars. These are categorized into three classes and summarized by subdivision in Table 9. The two major market classes (A&B) are shown on the map in Figure 4. The many smaller hats and bazars(Class C) have been omitted from this map.

TABLE 9
SYNOPSIS OF HATS AND BAZARS IN RANGPUR DISTRICT

Name of Subdivision	Total No. of "A" Class hats	Total No. of "B" Class hats	Total No. of "C" Class hats	District Total
1. Rangpur Sadar	8	9	119	136
2. Nilphamari	6	2	98	106
3. Gaibandha	6	4	107	117
4. Kurigram	6	5	99	110
Total	26	20	423	469

However, as indicated in Table , there are numerous local markets in the district. In Rangpur, farmers of almost every village can reach at least one hat each day by a walk of less than 6 miles. Generally these hats are small and sit twice a week on the bank of a river or under a tree by the roadside, but some local hats are much larger. The population served by these local markets is limited usually within a radius of a few miles and the small amount of goods are carried by head load, bullock cart or boat. The available marketable surplus of the farmers is bought by regional traders (beparis and faris) who bring the commodities to a major market (Class A or B) by bullock cart, country boat or shoulder sling.





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25°
30'

25°
15'

88°
00'

88°
45'

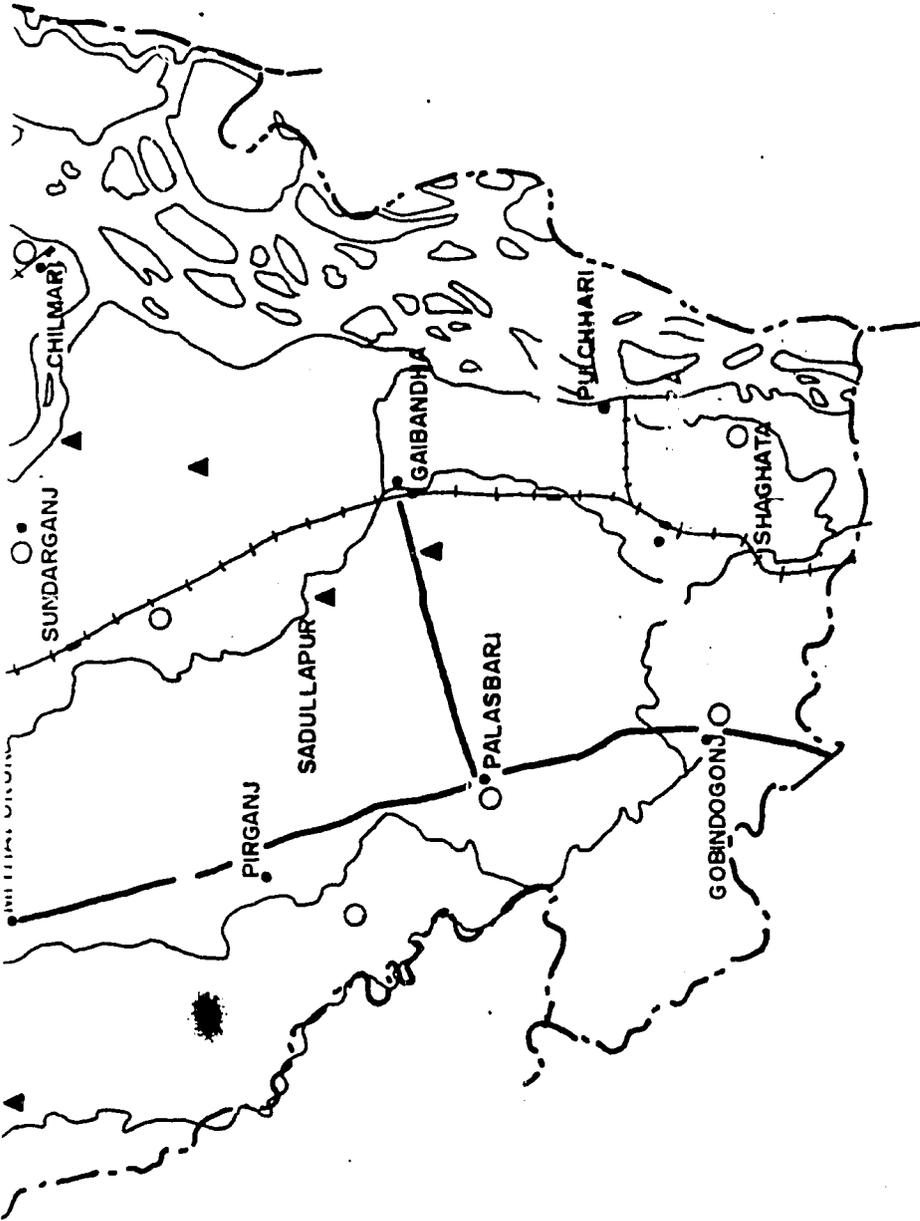
88°
30'

88°
15'

37 E

DIST. RANGPUR

37 C



LEGEND

ROADS (R&H)

RAILROADS

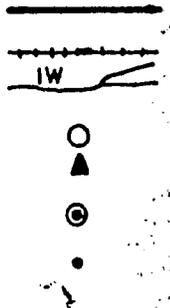
WATERWAYS

PRIMARY MARKET (A)

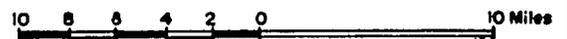
SECONDARY MARKET (B)

DIST. HEAD QUARTER

THANA HEAD QUARTER



SCALE 1 Inch = 8 Miles



GOVERNMENT OF
THE PEOPLE'S REPUBLIC OF BANGLADESH

RURAL ROADS STUDY

PRIM. & SEC. MARKETS

LOUIS BERGER INTERNATIONAL INC. AND
RAHMAN & ASSOCIATES LTD.

PREPARED S. ISLAM

RECOMMENDED

CHECKED

APPROVED

DATE

DRG. NO.

These major markets are owned by the Government Revenue Department and leased out to Ijaradars, who collect market tolls. These markets vary in size but can cover up to 15 acres of land and include permanent stalls, godowns and often a rice mill. Other institutional facilities such as Post Office, Bank, Police Station and Telephone & Telegraph are also generally available.

The bulk of the commodities in the major markets are sold to wholesalers but in addition, these markets operate as small retail markets. On hot days as many as 25 thousand or more people may visit the market to sell their produce and buy agricultural inputs and consumer goods.

From these markets, wholesalers arrange to transport the commodities to other districts in Bangladesh. The three most important commodities sent from Rangpur are jute, grain and tobacco and these mainly go to either Dacca or Khulna. As shown in Table 10 most of the tonnage is shipped by either rail or country boat with only a small percentage sent by road.

The marketing of jute is basically the same as for the other agricultural crops but the process is more structured and consists of three distinct stages:

- (1) collection by beparis and farins at the farmgate or in local hats;
- (2) transport to a baling center or secondary market;
- (3) transport from the secondary market to the jute mill or shipping point.

As can be seen in Table 10, most of the raw jute from Rangpur is sent to the jute mill in Dacca, Chittagong and Khulna for processing. A smaller proportion is baled in Rangpur and sent by rail to Chittagong and Chalna for export.

Transportation or the lack of it is an important factor in the marketing system of Rangpur. Currently only 16% of the district's major markets (Class A & B) are served by an all-weather road. (See Figure 4). Some of these have direct railway or river connection but most have to rely on bullock carts or headloads to transport their commodities.

TABLE 10
COMMODITIES SHIPPED FROM RANGPUR (1972-73)

Commodity	Destination	Transport Mode
Raw Jute	Chittagong	Rail
Raw Jute	Khulna	Road
Raw Jute	Khulna	Rail
Raw Jute	Dacca	Road
Raw Jute	Dacca	Rail
Raw Jute	Dacca	Country boat
Jute Bales	Chalna	Rail
Jute Bales	Chittagong	Rail
Food Grain	Dacca	Road
Food Grain	Dacca	Rail
Food Grain	Faridpur	Rail
Food Grain	Khulna	Rail
Food Grain	Khustia	Rail
Food Grain	Pabna	Road
Tobacco	Dacca	Road

Source: Bangladesh Transport Survey, 1974

D. Agricultural Inputs

1. Irrigation and Flood Protection

Water control for flood protection, drainage and irrigation is a major problem in Rangpur, especially in Kurigram subdivision. Currently there are two major on-going water control projects in Rangpur and these are identified in Figure 5.

The Kurigram Flood Control and Irrigation Project is a comprehensive flood control, irrigation and drainage scheme affecting 261,000 acres of land. The project began in 1973 and has been funded annually. The project is divided into two units (North and South). The embankment on the southern unit is 50% completed but no work has begun as yet on the northern unit and external aid will be necessary to finish it.

The Tista Project is another large flood protection, irrigation and drainage project in northern Rangpur. Except for a 50,000 acre scheme in Kaliganj and Lalmonirhat thanas, however, the project has been delayed. There is also a major flood embankment that has been constructed in Gaibandha Subdivision.

Despite the major projects the main thrust of irrigation development in Rangpur has been the use of low lift pumps, deep tubewells and shallow tubewells. Table 11 gives the thana distribution of these irrigation methods.

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89° 30'

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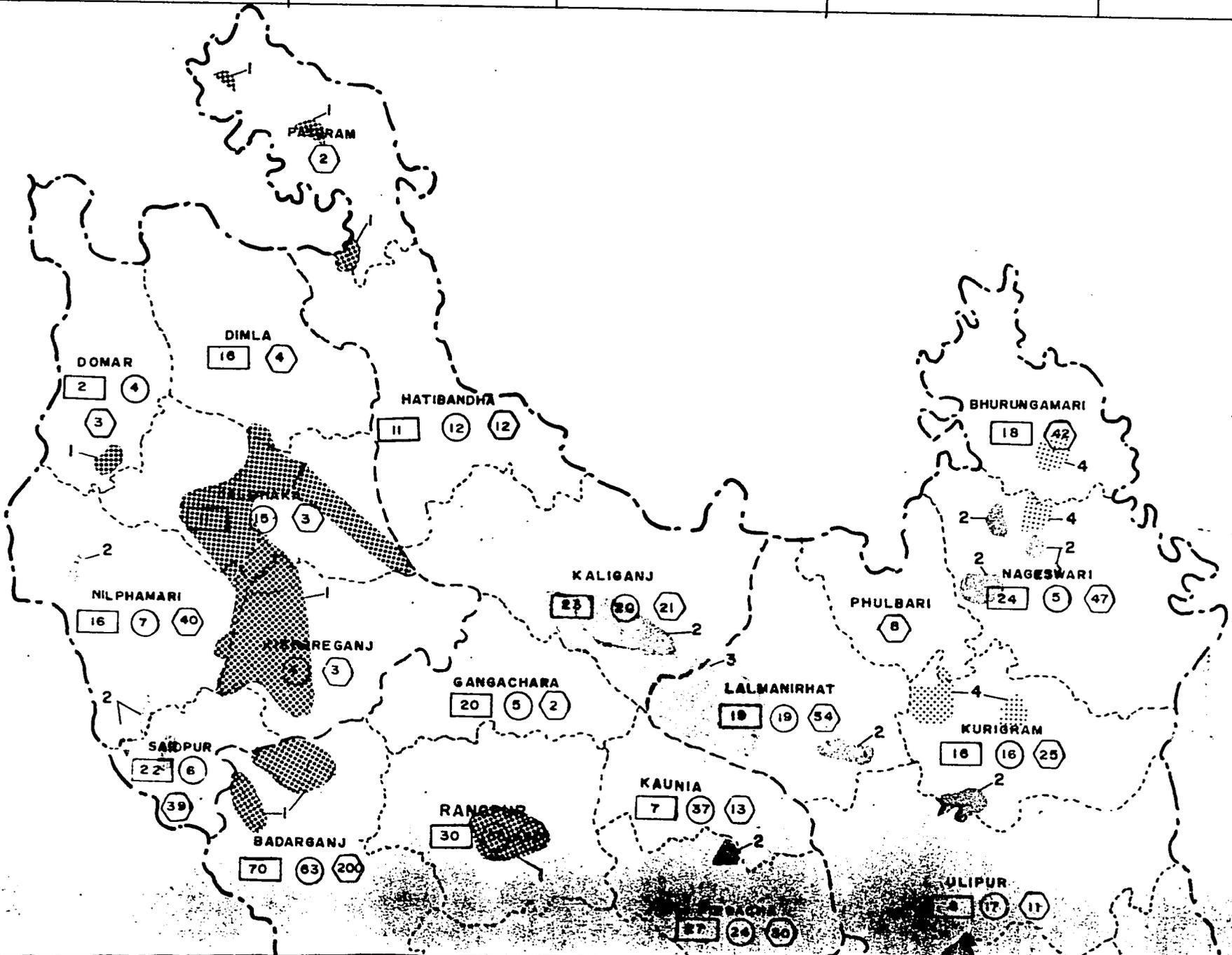
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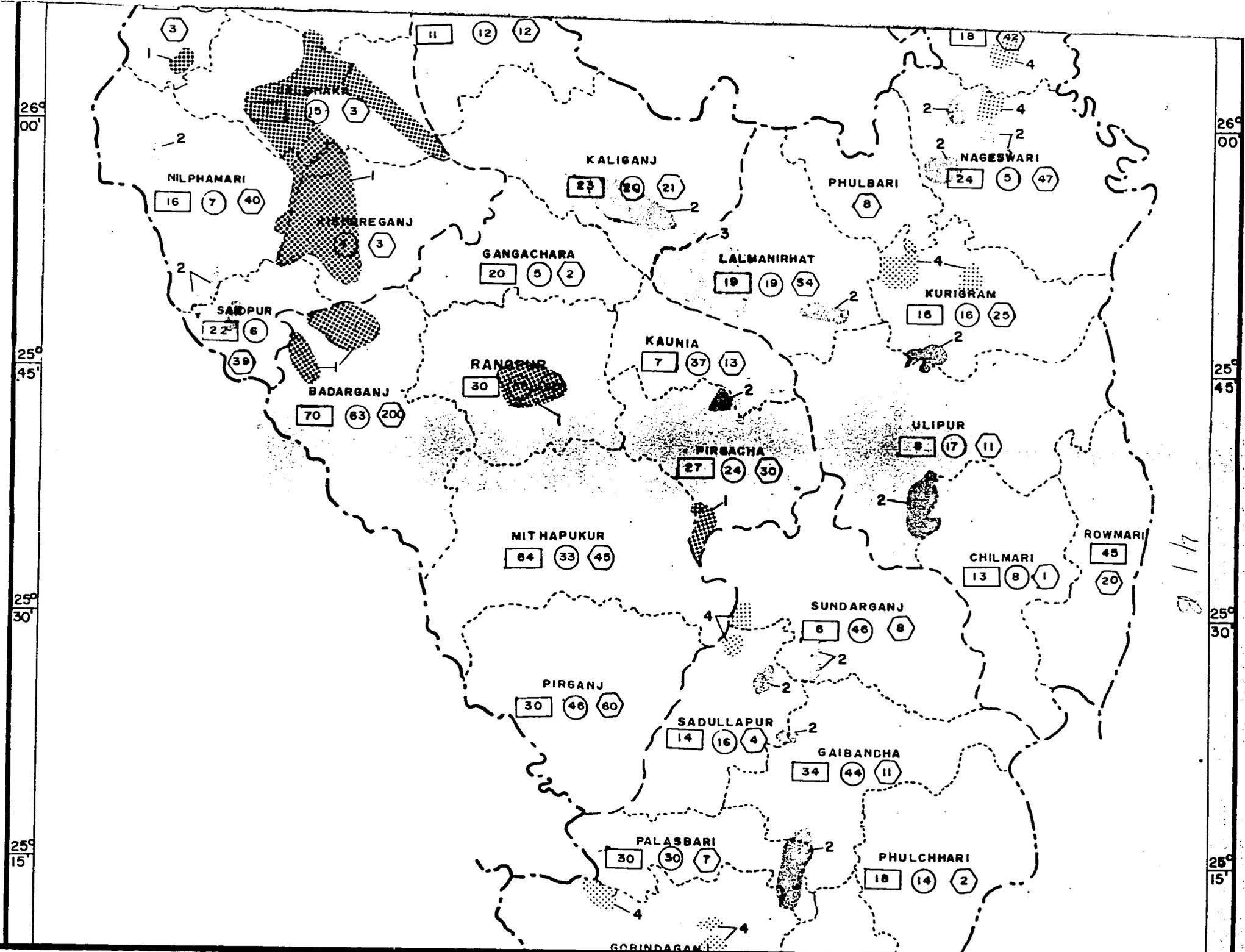
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117

3 11 12 12

18 42

NILPHAMARI
16 7 40

KALIGANJ
23 20 21

PHULBARI
8

NAGESWARI
24 5 47

REGANJ
3

GANGACHARA
20 5 2

LALMANIRHAT
19 19 54

SADPUR
2 2 6

KURIGRAM
16 16 25

BADARGANJ
70 63 200

RANGPUR
30

KAUNIA
7 37 13

PURBACHA
27 24 30

ULIPUR
9 17 11

MITHAPUKUR
64 33 48

CHILMARI
13 8 1

ROWMARI
45 20

SUNDARGANJ
8 48 8

PIRGANJ
30 48 80

SADULLAPUR
14 16 4

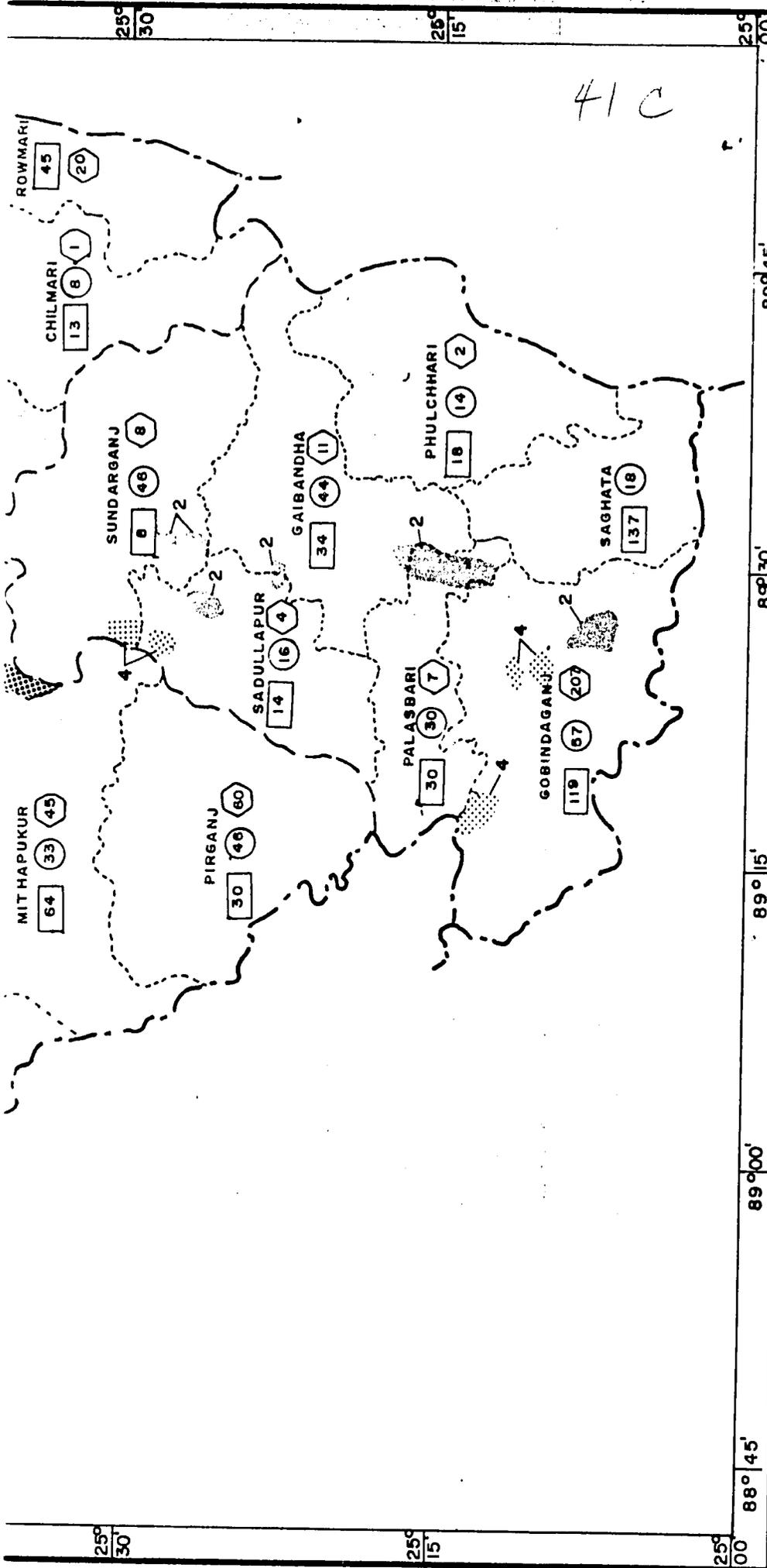
GAIBANCHA
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PALASBARI
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PHULCHHARI
18 14 2

GOBINDAGANJ

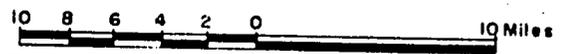
DIST. RANGPUR



LEGEND :

- Division Boundary
- Dist. Boundary
- Sub-Division Boundary
- Thano Boundary
- Deep Tubewell
- Shallow Tubewell
- Power Pump
- Lowlift Scheme (Completed)
- Small Scheme (Completed)
- Suti River Scheme (Proposed)
- Commanded Area

SCALE: 1 Inch = 8 Miles



GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH	
RURAL ROADS STUDY	
IRRIGATION & FLOOD CONTROL PROJECTS	
LOUIS BERGER INTERNATIONAL INC. AND RAHMAN & ASSOCIATES LTD.	
PREPARED: Rajhan	RECOMMENDED:
CHECKED:	APPROVED:
DATE:	DRG. NO.

TABLE - 11
INSTALLATION OF POWER PUMPS, DEEP TUBEWELLS AND
SHALLOW TUBEWELLS
(1977-78)

Thana	Power Pumps Allotted	Power Pumps in use	Deep Tubewells	Shallow Tubewells
<u>Subdiv: Sadar</u>				
Kotwali	30	30	55	20
Pirganj	36	36	46	60
Hatibandha	11	11	12	12
Badaryanj	78	70	63	200
Kaunia	7	7	37	13
Pirgacha	27	27	24	30
Mithapukur	65	64	33	45
Kaliganj	23	23	20	21
Gangachara	29	20	5	21
Pataram	0	0	0	2
Sub-total:	297	288	295	424
<u>Subdiv:</u>				
<u>Nilphamari</u>				
Nilphamari	30	16	7	40
Dimla	0	16	0	4
Domar	6	2	4	3
Saidpur	30	22	6	39
Jaldhaka	11	11	15	3
Kishorganj	-	0	4	3
Sub-total:	77	67	36	92
<u>Subdivision</u>				
<u>Gaibandha</u>				
Gaibandha	30	34	44	11
Palasbari	30	30	30	7
Sadullahpur	22	14	16	4
Sundarganj	9	8	46	8
Gabindoganj	130	119	57	207
Shaghata	137	137	18	-
Fulchhari	25	18	14	2
Sub-total:	383	360	225	239
<u>Subdivision</u>				
<u>Kurigram</u>				
Chilmeri	13	13	8	1
Ulipur	10	8	17	11
Fulbari	10	0	0	8
Bhurungamari	24	18	0	42
Lalmonirhat	19	19	19	34
Nagoswar	32	24	5	47
Kurigram	15	16	16	25
Rowmari	36	45	0	20
Sub-total:	159	143	65	88
District Total	916	858	621	943

Source: Thana Agricultural Officers

In 1977-78 there were 858 low lift power pumps fielded in Rangpur, 360 (42%) of these were placed in Gaibandha subdivision and 256 of these are in Gobindaganj and Shaghatta thanas. Other thanas with substantial number of low lift pumps are Badarganj (70) and Mithanukur (64). The thanas of Fulbari, Kishorganj and Patgram have no pumps.

District officials estimate that 28,000 acres are irrigated by low lift pumps in Rangpur or an average of 32.6 acres per pump. However, based upon local enquiries there is reason to believe that this figure may be overstated.

There are 943 shallow tubewells in Rangpur, 45% of which are in Sadar Subdivision and 25% in Gaibandha Subdivision. Gobindaganj and Badarganj thanas combined, have 43% of the shallow tubewells in the district. Each well is designed to irrigate 10-16 acres but it is doubtful that these figures are reached.

Under a World Bank program, there are plans to provide 1,256 deep tubewells in Rangpur by 1979. Currently, 1,150 have been sunk and 621 are ready to operate. Unfortunately only 371 of these are actually being used because either the farmers think they are too expensive to operate or there are organizational problems in the farmer's society. The deep tubewells are designed to irrigate 40 acres but in Rangpur the actual acreage irrigated is much lower.

Transportation is a major constraint in the fielding of low lift pumps and the sinking of tubewells in Rangpur. Movement to Pirgacha, Jaldhaka, Dimla, Badarganj and Ruhamari is very difficult. In addition transport of tubewell and power pump equipment is not allowed across the railroad bridge on the Rangpur-Kurigram road. This makes distribution in Kurigram Subdivision even more difficult than it already is because

of the poor condition of its earth roads. As a result, Kurigram has only 17% of the districts low lift pumps, 10% of the deep tubewells and 20% of the shallow tubewells.

2. Fertilizer

Rangpur ranks among the leaders in the total amount of fertilizers used per district but it ranks among the lowest in actual intensity of use, which is 17 lbs per acre. This compares unfavorably with the national district average of 36 lbs per acre.

Since there is no fertilizer factory in Rangpur, all of the district's fertilizer requirements must be imported. Rangpur receives almost all of its fertilizer by rail from Chittagong, Fenchuganj, Ghorasal and Narayanganj. The fertilizer is stored in intermediate godowns in Gaibandha, Kurigram, Rangpur, Lalmonirhat and Saidpur before being distributed to the thanas. Table 12 shows the distribution of fertilizer in 1976-77 and 1977-78.

TABLE 12
THANA DISTRIBUTION OF FERTILIZER 1976-77 & 1977-78

Name of Thana	1976-77 (in tons)	1977-78 (in tons) (upto 7.6.78)
Kotwali	4,538.91	4383.69
Badarganj	1,566.95	1442.98
Kaunia	502.83	596.70
Gangachara	1,801.83	1298.42
Mithapukur	1,489.28	2657.81
Pirganj	1,676.12	2557.21
Pirgacha	516.52	645.36
Kaligonj	552.47	822.23
Hatibandha	449	579.99
Patgram	476.87	340.28
Gaibandha	757.71	1990.03
Polasbari	486.10	1035.77
Gobindagonj	2,276.96	2412.38
Sundargonj	864.93	825.82
Sadullapur	657.62	1081.37
Saghata	941.22	1103.59
Fulchhari	156.52	342.21
Nilphamari	1,406	2079.46
Saidpur	505.69	1906.98
Dimla	329.91	474.86
Domar	264.00	740.62
Jaldhaka	770.41	881.69
Kishorigonj	1,364.72	1531.50
Kurigram	500.87	772.74
Lalmoharhat	1,578.45	1353.32
Ulipur	385.75	668.61
Chilmari	174.19	269.63
Rowmari	354.24	771.04
Bhurungamari	144.71	365.02
Nageswari	259.12	660.32
Fulbari	113.46	248.07
Total:	27,814.00	36,639.71

Transportation is a problem in distributing fertilizer from the intermediate godowns to thanas like Ruhamari, Dimla, Chilmari and Gangachara, especially during the rainy season.

The cropping pattern in Rangpur also constrains fertilizer use as there is little HYV usage. Farmers are reluctant to purchase fertilizer for the Aus crop because of possible flooding and the T. Aman crop is predominantly a local variety and does not need much fertilizer.

3. Credit

Agricultural Credit is available to farmers in Rangpur from official and non-official sources. The non-official sources are the local money lenders, who often give credit at exorbitant rates. The official sources are: (1) the Bangladesh Jatiya Samabaya Bank (BJSB); (2) the Bangladesh Krishi Bank (BKB); (3) the Integrated Rural Development Program (IRDP); and recently (4) the Nationalized Commercial Banks (NCBs).

The government has made a strong effort to provide institutional credit to farmers. The BJSB and its affiliated cooperative organizations including Sugarcane Societies, Thana Central Cooperative Associations and Fishermen's Societies. No district disbursement figures are available for Rangpur but the bank is an important source of credit.

The Bangladesh Krishi Bank has ten branch offices located in: Rangpur, Pirganj, Nilphamari, Domar, Gaibandha, Kurigram, Nageswar, Lalmonirhat, Hatiabanda and Gobindaganj (See Figure 6). Half of these branches are unprofitable and cannot even cover their operating expenses. A summary of their loan activity for 1973-74 and 1974-75 is given in Table 13 .

TABLE 13
LOANS DISBURSED BY BANGLADESH KRISHI BANK

(Amount in thousand Taka)

Branch	1973-74			1974-75		
	No. of Loan	Amount	Amount out-standing	No. of Loan	Amount	Amount out-standing
Rangpur	1,499	1,485	6,696	974	4,132	8 720
Pirganj	809	479	963	492	1,046	1,829
Nilohamari	600	695	7,011	540	566	6.860
Domar	-	-	-	435	374	0
Gaibandha	133	1,167	6,260	550	561	6,733
Kurigram	310	269	2,476	607	542	2,807
Nageswar	116	79	10	429	372	0
Lalmonirhat	360	222	2,770	285	196	540
Hatibandha	-	-	-	96	88	0
Gobindoganj	-	-	-	509	1,572	0
Total	3,827	4,396	26,186	4,917	9,449	27,484

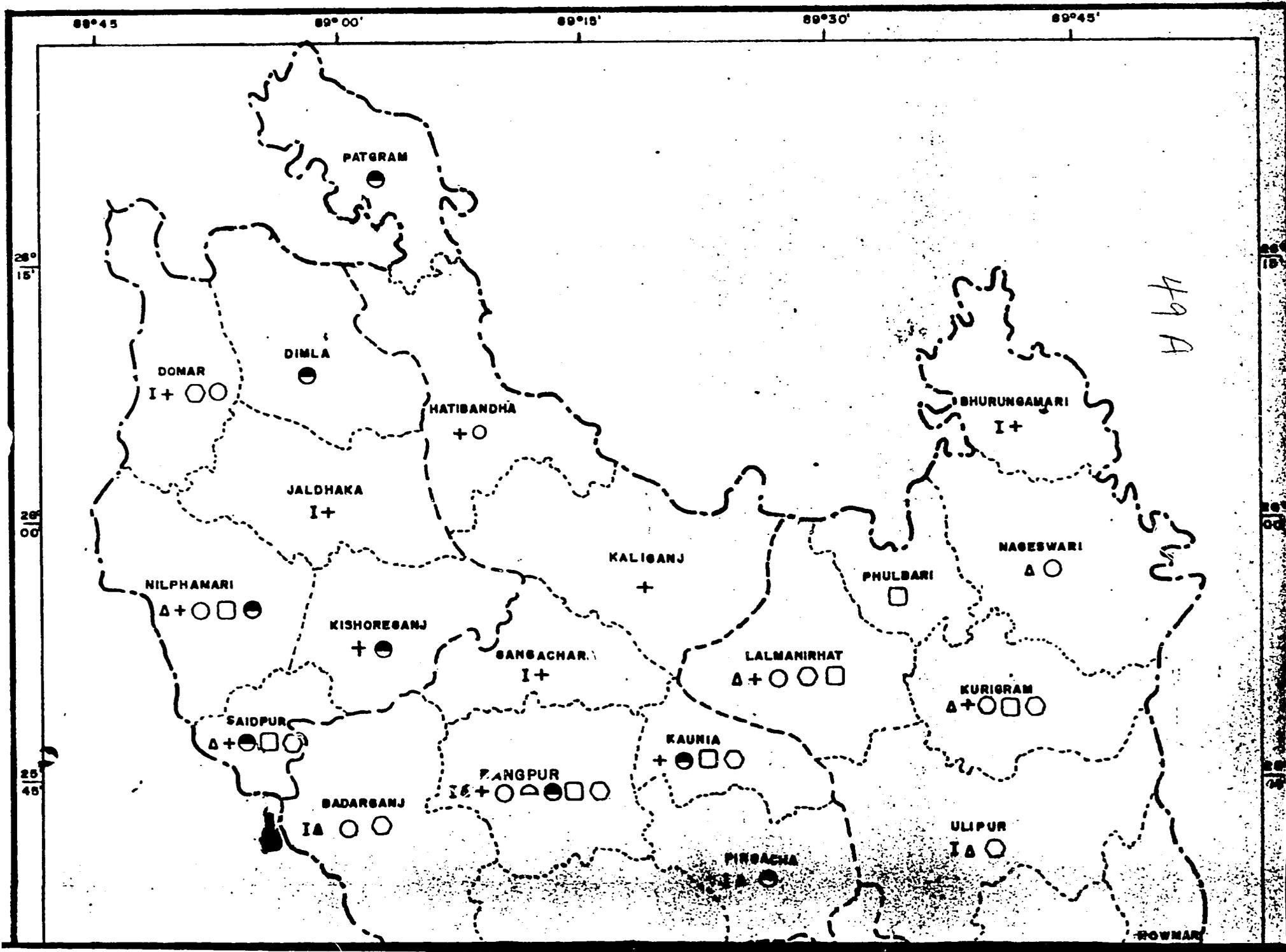
Source: Bangladesh Krishi Bank

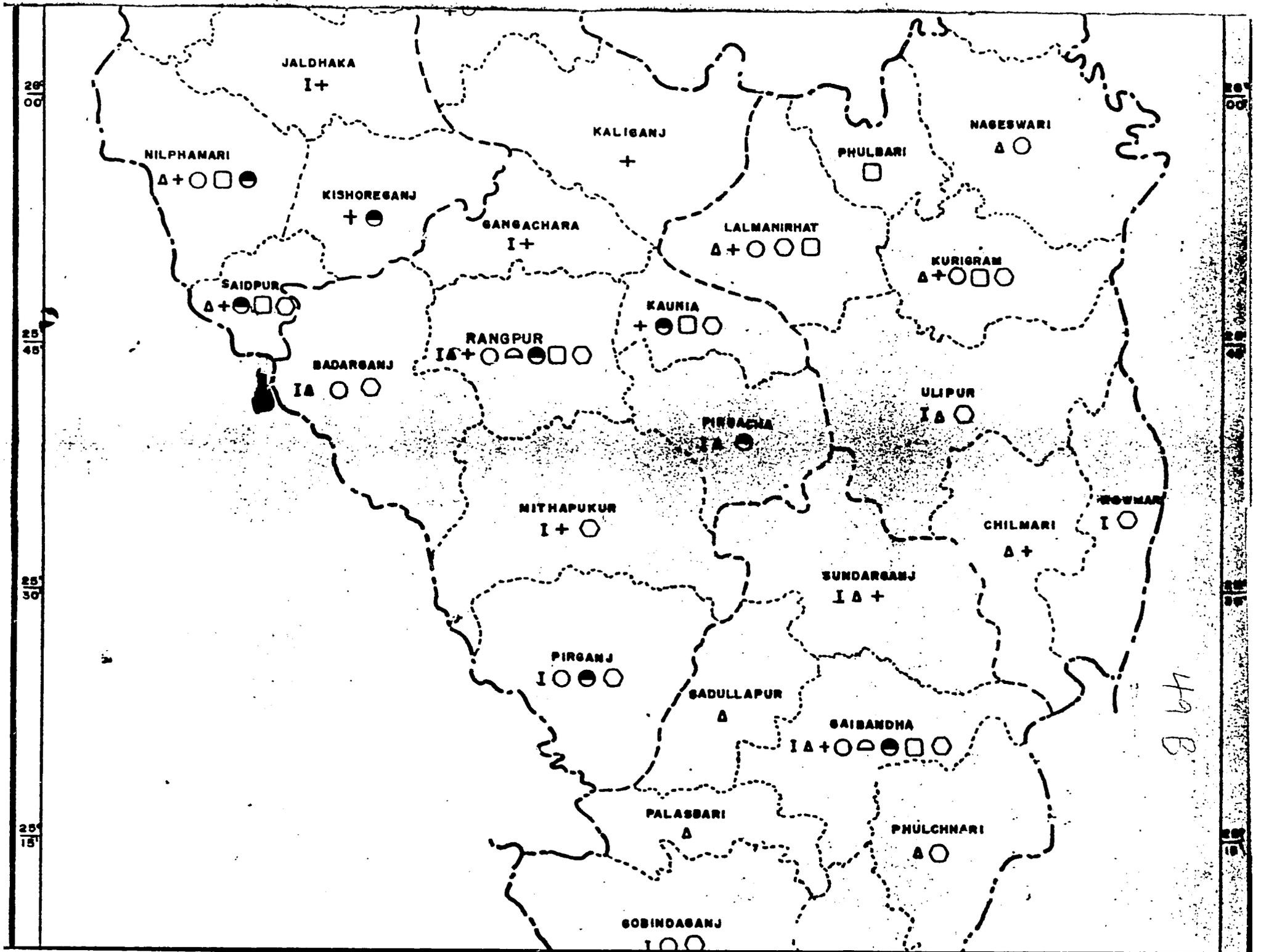
The EKB traditionally has given medium and long term investment loans to larger farmers and although no specific information is available, it is assumed that most of the above loans were to large farmers. The information in the table seems to support this assumption, as it can be observed that the number of loans increased by 28% but the amount loaned increased by 115%. This assumption is also reinforced by the fact that about 45% of the money was loaned through the main branch in Rangpur.

There are Integrated Rural Development Programs in fourteen thanas in Rangpur (See Figure 6). In addition to their education and training activities, they also provide short term crop loans to their members. The loans are given at 17.5% interest and are to be used to purchase or rent agricultural inputs such as HYV seeds, fertilizer, pesticides and pumps. A summary of their lending is given in Table 14. The table shows that 20% of the loans to members are overdue. This high rate is not peculiar to Rangpur or to the IRDP but are reflection of the long standing default problem that has plagued institutional lending throughout Bangladesh.

TABLE 14
INFORMATION ON IRDP THANAS IN RANGPUR DISTRICT UPTO
MAY, 1978

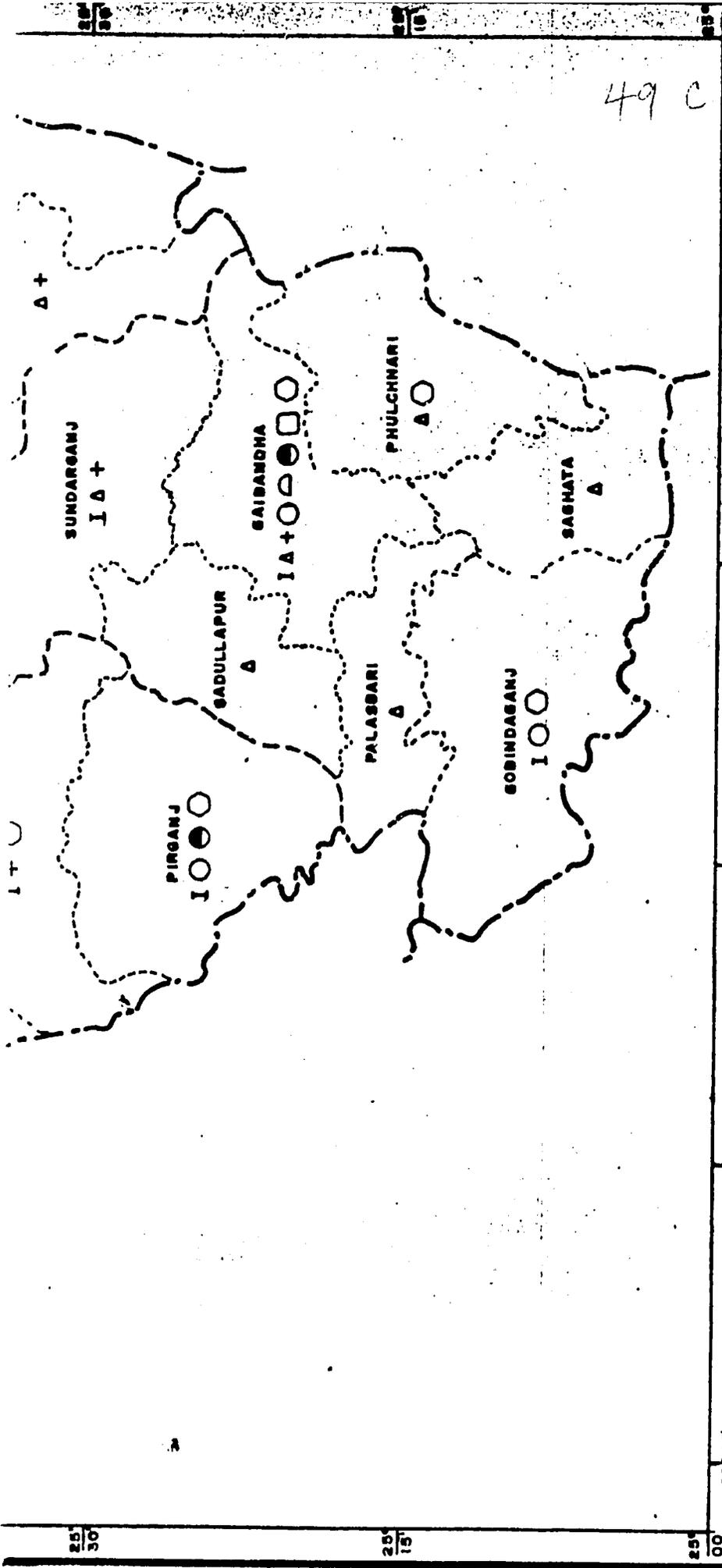
Name of the Thana	Date of starting the project	No. of members enrolled	Amount of credit given	Amount of over-due loan
Gobindaganj	8/1/74	2,356	42,950	8,550
Kishorganj	8/1/74	2,711	6,56,115	61,250
Sundarganj	13/2/74	4,563	8,25,065	3,07,408
Badarganj	14/5/73	3,652	4,91,200	1,25,630
Pirganj	7/1/74	2,362	6,52,760	97,114
Pirgacha	7/1/74	2,874	5,51,125	25,421
Gaibandha	31/10/73	6,788	8,16,968	2,14,925
Bhurungamari	8/1/74	3,130	8,01,870	71,773
Jaldhaka	8/1/74	2,649	5,79,495	48,500
Ulinur	13/2/74	3,024	3,95,290	1,67,927
Bawmari	3/10/72	4,064	3,09,600	88,481
Mithapukur	8/2/77	2,018	1,66,900	18,227
Gongachora	19/7/77	1,564	2,05,000	Nil
Kotwali	5/7/77	1,407	1,26,100	-
Total		43,162	62,20,438	12,28,206





DIST. RANGPUR

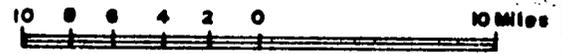
49 C



LEGEND:

- Division Boundary
- Dist. Boundary
- Sub-Division Boundary
- Thana Boundary
- I.R.D.P. 1
- Sonali Bank ○
- Agrani Bank △
- Janata Bank +
- Rupali Bank □
- Uttara Bank ◐
- Pubali Bank ●
- Krisi Bank ○

Scale: 1 inch = 8 Miles (Approx.)



GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH	
RURAL ROADS STUDY	
CREDIT OUTLETS	
LOUIS BERGER INTERNATIONAL INC. AND RAHMAN & ASSOCIATES LTD.	
PREPARED: S.I/Raihan	RECOMMENDED:
CHECKED:	APPROVED:
DATE:	ORG. NO.

The latest government push to make credit available to the small farmer is the 100 Crore Agricultural Credit Program, which was established in February 1977. The Bangladesh Krishi Bank and the Nationalized Commercial Banks were assigned specific unions in each district and were requested to disburse short term loans to small farmers at 11% interest.

No official results have been made available yet but unofficial reports indicate that there are tremendous organizational problems in actually lending the money to the small farmers. Part of this stems from the excessive documentation that is required of the farmer and the rest is the result of an over-extended and undertrained bank staff.

In spite of these problems the government has decided to increase the program to 150 Crore annually. Unless these constraints are removed, though, only a small percentage of these funds will ever reach the small farmers.

E. Agricultural Potential

A district's potential for increasing agricultural production is largely a function of:

- (1) increasing the area under cultivation;
- (2) increasing the intensity of cropping; that is, the number of crops per year; and
- (3) increasing crop yields through the use of inputs such as fertilizer, irrigation, HYV seeds and credit.

As noted earlier the cultivation intensity ratio in Rangpur is 92% and is one of the highest in Bangladesh. Therefore, there is little possibility of improving agricultural production by increasing the acreage under cultivation. The cropping

intensity ratio of the district is 178.7 which is the highest in Bangladesh, but still there is some potential for improving this performance.

According to the 1972 soil survey project sponsored by FAO there is great potential for improving the cropping patterns and the crop yields in Rangpur. Without major irrigation much of Rangpur's higher area could grow kharif and rabi groundnuts, kharif pulses, ginger and vegetables. On medium level ground IRRI Aman could be substituted for local T. Aman varieties, except in areas where flooding exceeds one foot in July to September.

With a major emphasis on irrigation i.e. getting the pumps and tubewells to function properly, Aus followed by tobacco, rabi cotton, potatoes, vegetables and oilseeds could be grown on the higher lands, with sugarcane, pineapples (with drainage) and wheat on deeper soils. IRRI Boro/Aus could be substituted for Broadcast Aus on the lower lands.

Rangpur has tremendous development possibilities for increased agricultural production but there are serious constraints. Farmer acceptances of new seeds and cropping patterns has been slow, often retarded by large landowners. Irrigation projects, major schemes, tubewells and pumps, have not come close to operating at their designed capacity. Agricultural extension services have lagged, sometimes hindered by organizational problems and often stymied by transportation difficulties in reaching backward areas.

V. OTHER ECONOMIC ACTIVITIES

A. Fisheries

Rangpur has a number of important sources of fish resources, especially in the riverine regions. The Brahmaputra and the Teesta provide the main sources in these regions. There are certain beel areas in the west which are also productive. The Brahmaputra fisheries constitute the largest source of supply for the district markets and also for markets outside including Dacca. Fisheries in the Gaibandha subdivision can supply fish to the shipping point at Fulchharighat for onward shipment to Dacca by steamer. The supplies from the northern fisheries of the Brahmaputra, especially around the cluster of islands feed the markets of Kurigram from where transshipment to Rangpur is effected by train. Fish is also considerably marketed by train from the Brahmaputra sources to Dacca via Bahadurabad (Mymensingh District). The surplus fish of the beel areas of Pirganj thana is known to be marketed in Rangpur and partly in the neighbouring district town of Bogra.

Although the Rangpur District's transport system is composed of all the three modes (road, rail and waterways), the system is inadequate from the point of view of an optimum development of the fish resources and speedy marketing of fish (when caught). Long distances are to be covered quickly for reaching the urban markets and trade centers. The problem becomes really acute in the absence of ice-plants and temporary storage facilities in the important places of fish production. Speedy transportation becomes a key determinant

of resource-development and resource-exploitation in such a situation.

The existing important centers of production, their means of transportation and markets are shown in the Table below.

TABLE 15
FISHERIES OF RANGPUR DISTRICT

Sl. No.	Name of Fisheries	Thana	Communication facilities	Where the fishes are sold
1.	Dhum Nadi	Kaunia	Connected by Road	Haragacha & Rangpur Town
2.	Daria Beel	Pirganj	-do-	Pirganj
3.	Digdhar Brahmaputra	Fulchari & Sahghatta	Connected by Rail, Road & River	Gaibandha, Mymensingh, Dacca and Rangpur.
4.	Konai Brahmaputra	- do -	-do-	- do -
5.	Brahmaputra Nadi	Gaibandha	-do-	- do -
6.	Teesta Brahmaputra	Chilmari Rowmari Ulipur & Sundarganj	-do-	Chilmari, Kurigram, Ulipur, Rowmari, Gaibandha Sundarganj
7.	Zinziram, Dharnigal Kar	Rowmari	Connected by River and Road	Rowmari, Mymensingh

Among Government activities, the consultant's field survey has identified the following:

- (a) Fish Seed Multiplication Farms - There are six farms of this nature located at Tajhat (Kotwali thana), Syedpur, Nilphamari, Gaibandha, Lalmonirhat and Satibari (Mithapukur thana).
- (b) Development and Management of Derelict Tanks - One unit of about 106 acres of water area is known to be operating in Kurigram.

Three Extension Officers are working at 3 Fish Seed Farms - Syedpur Kurigram and Gaibandha, while two Farm Managers are posted at Gaibandha and Satibari. Little is known about the progress of the above project - activities and also about the effective contribution by the local officials to them. The district has many relatively inaccessible areas like Rahumari, Sundarganj, Jaldaka, Damer, Fulbari and Dimla. Visits to thanas by the ADC concerned is only once-in-a month. The main task is to sell the lease-licence for markets; and the licence-holder controls a large number of hats (or village markets). Many of these are connected with roads of poor quality. Such roads are not suitable for onward connections with distant bigger markets.

Much is not known about organizing the fishermen under cooperatives. At the important fishing points on the Brahmaputra and the Teesta, fish is sold by auction and often sold to fishermen cooperatives for the latter's marketing. The position of reliance of fishermen on private credit from mahajans and on government credit is also not known. When relevant problems are solved and development activities are well-organized, the potential sources of expansion in economic activity unfold themselves. Road transportation provides the

means for solution of number of problems and for inducing activities towards exploitation of the potential.

B. Livestock and Animal Husbandry

In the absence of Agricultural Census data, the district situation on livestock and animal husbandry cannot be examined statistically. For Rangpur, the examination is all the more difficult because of the deficiencies of information available with the district officials. Our field survey staff could not obtain any estimates of cattle, buffaloes, goats, sheep etc. as well as of poultry for Rangpur.

Subdivisional and thana veterinary services have been maintained with 34 dispensaries in the district. They are responsible for treatment of diseases for cattle and poultry, both curative and preventive; but usually such services are of curative nature. Vaccinations against epidemic diseases for cattle and poultry are provided, as the subdivisional livestock officer estimates, to 30,000 to 40,000 per month (for poultry) and 20,000 to 30,000 per month (for cattle).

Artificial Insemination activities have been undertaken in the district with one district center and 11 sub-centers, 4 stud bulls from Savar Dairy Farm providing the semen for insemination.

A District Poultry Farm is in operation, mainly for hatching eggs and selling roosters; 800 hens are laying eggs. Poultry farms have been planned for each subdivision; these are yet to be sanctioned.

Transportation problems stand in the way of proper management and supervision of whatever activities, under livestock, animal husbandry and poultry, are existing. Vaccinators are known to visit a Thana once every 3 months; this is because of both transportation difficulties and inadequacy of vaccinators. Rural Development emphasis will require extension of work upto unions. The road network suggested by the consultant will help reach Thanas and Unions in extensive areas of the district.

C. Natural Resources

Rangpur's natural resources relate mainly to the types and qualities of soil, types of forest trees and products and the sources of fish in the wide regions of the river-system (Brahmanutra, Teesta, Karatoya and others) as well as in the beel areas. The land is alluvial plain, appropriate for high agricultural productivity. In the north, the soil has some blending with elementary stone and rock formation but with no minerals. But the stones, sand and clay available in many places have industrial uses.

The district has about 5,000 acres of forest land, mostly limited to 4 thanas as: Mithapukur (2,100 acres); Pirganj (1,450 acres); Badarganj (200 acres) and Hatibandha (300 acres). The trees that qualify for good timber in these forests are mainly sal and koroi. In addition, cane and bamboo are quite common in all thanas.

Fish resources are vast; and these are all of sweet water varieties. The river-system, providing natural breeding grounds, is both wide and extensive, mainly in the east. The Teesta in the west along with the beel areas, provide again, productive sources of natural fish breeding.

D. Industry

The industry sector of the Rangpur District is not as barren as that of Patuakhali. The modern manufacturing processes are represented by a small number of large and medium industrial enterprises like cigarette-making and oil mill.

The district can, however, claim an extensive development of small and cottage industries. One Survey Report has indicated the existence of 776 small industry units and 10,768 cottage industry units. The principal small industry groups are: jute-pressing for bales (165); rice mill (100); other foodgrain processing (103); bakeries (83); wooden furniture-making (26); printing press (26); weaving looms (29) etc. Among cottage industries, notable groups are: oil-crushing ghanis (2,784); cane and bamboo workshop (1,400); smithies (864); tobacco processing (62); handloom (1,237); dryfish making (57).

In fact, the resources of the district can be a promising base for an expanding structure of industrial development. Government policy and development of infrastructure facilities including road transportation and electricity can lead to the establishment of many more large and medium industrial units. There is already a foundation for stimulating small and medium industry in the project of an Industrial Town which is in progress. This Industrial Town is planned on an area of 21 acres; in it, 82 plots have been developed for allotment to industrial entrepreneurs while only 48 plots have been so far allotted to them. At present, 6 units are known to be in operation and a number of them under construction.

The potential for development of small and cottage industries is acknowledged to be great. An appraisal made by the Bangladesh Small and Cottage Industries Corporation shows that there are immense possibilities in the following types of industrial activity:

1. Fruit processing and canning;
2. Automatic rice-milling;
3. Tobacco processing;
4. Light engineering workshop;
5. Ginger processing;
6. Cold storage;
7. Clothing factory;
8. Spices processing;
9. Rug making (sattranji); and
10. Handicrafts.

That the possibilities are realizable is demonstrated in the existing pattern of growth of small and cottage industry and the environment of entrepreneurship as well as use of skills. Our field survey could obtain a pretty good idea of the local distribution of such industrial activity. It is noticeable that supply of electricity has been covering a large number of thanas, rendering the prospects of expansion of industrial activity brighter than in districts like Patuakhali and Faridpur. The existing situation as observed by our field team is shown, by thana, in Table 15

TABLE 16

EXISTING PATTERN OF DISTRIBUTION OF
SMALL AND COTTAGE INDUSTRIES BY THANA
(INCLUDING MECHANICAL WORKSHOP & ELECTRICITY)

Name of the Thana	Mechanical Repair Shop	Industry or Craft	Electricity
Kotwali	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Jute Baling 4. Weaving	Thana HQ. & Haridepur, Uttam, Rajendrapur, Dashana
Kaunia	-do-	1. Bamboo Works 2. Rice Husking	Thana HQ. & Sarai Market Haragacha Market
Pingacha	-do-	1. Rice Mill 2. Wheat Mill 3. Jute Baling 4. Pottery 5. Weaving	Thana HQ. & Anandanagar Bazar
Balarganj	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Oil Seed Press 4. Jute Baling 5. Weaving 6. Pottery	Thana HQ. & Damoderpur Malhupur Khursha
Gangachara	-do-	1. Rice Mill 2. Wheat Mill 3. Bellmetal 4. Weaving 5. Pottery 6. Biri Factory	Thana HQ. & Kidloya Gajochanth Mornia
Kaliganj	BADC Workshop (under construction)	1. Rice Mill 2. Wheat Mill 3. Jute Baling 4. Weaving 5. Pottery	Nil
Hatibanda	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Jute Baling 4. Bamboo Industry 5. Bellmetal 6. Weaving 7. Pottery	Nil

Table continued on the next page.

TABLE (Continued)

Name of the Thana	Mechanical Repair Shop	Industry or Craft	Electricity
Patgram	Bicycle	1. Rice Husking 2. Pottery	Nil
Pirganj	BADC Workshop	1. Rice Mill 2. Wheat Mill	Thana HQ. & Motherganj Chotomirjanur Kishore Gari
Mithapukur	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Pottery 4. Weaving	Thana HQ. & Sathibari Hat Batasandagonpur, Mirzapur village
Nilphamari	Nil	1. Rice Mill 2. Wheat Mill 3. Oil Seed Press 4. Jute Baling 5. Pottery 6. Carpenting	Thana HQ. & Darwani Market
Jalchaka	Nil	Carpenting	Nil
Dimla	Nil	1. Rice Mill 2. Wheat Mill 3. Weaving 4. Pottery	Nil
Domar	Nil	1. Rice Mill 2. Oil Seed Press 3. Jute Baling 4. Weaving	Thana Headquarters
Saidpur	Electrical Mechanical Repair Shop	1. Rice Mill 2. Wheat Mill 3. Oil Seed Press 4. Jute Baling 5. Weaving 6. Pottery	Thana HQ. & Kazipur, Kamarpukur
Kishoreganj	Nil	Weaving	Nil

Table continued on the next page.

TABLE (Continued)

Name of the Thana	Mechanical Repair Shop	Industry or Craft	Electricity
Kurigram	BADC Workshop Electrical Workshop Motor Repair Shop	1. Rice Mill 2. Wheat Mill 3. Jute Baling 4. Ice Factory 5. Biri Factory 6. Weaving & 7. Pottery	Thana HQ. only
Rowmari	BADC Workshop	1. Rice Mill 2. Weaving	Thana HQ. only
Ulipur	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Jute Baling 4. Pottery 5. Weaving	Thana Headquarters
Lalmonirhat	BADC Workshop & Bangladesh Rly.R.D.R.S.	1. Rice Mill 2. Jute Baling 3. Pottery 4. Weaving 5. Black Smith 6. Gold Smith 7. Saw Mill	Thana Headquarters & Teesta Mahendra Nagar
Nageswari	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Pottery 4. Weaving 5. Jute Baling	Nil
Fulchari	1. BADC Workshop 2. Tipwork Shop	1. Rice Mill 2. Wheat Mill	Thana HQ. & Fulchari Bazar
Gaibandha	1. BADC Workshop 2. Electrical Workshop 3. Motor Garage & Repairing Shop	1. Rice Mill 2. Oil Seed Press 3. Jute Baling 4. Pottery 5. Weaving	Thana Headquarters

Table continued on the next page.

TABLE (Continued)

Name of the Thana	Mechanical Repair Shop	Industry or Craft	Electricity
Shaghatta	BADC Workshop	1. Rice Mill 2. Weaving 3. Bellmetal 4. Jute Baling	Thana Headquarters & Saghata Bharatkali
Gobindaganj	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Pottery 4. Weaving	Thana Headquarters & Mohimaganj
Sundarganj	Nil	1. Rice Mill 2. Pottery 3. Weaving	Thana HQ. & Mirganj
Palasbari	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Jute Baling	Thana Headquarters
Sadullapur	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Jute Baling	Thana HQ. & Dhanerhat
Bhurungamari	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Jute Baling 4. Weaving	Nil
Fulbari	BADC Workshop	1. Rice Mill 2. Wheat Mill 3. Jute Baling 4. Pottery	Nil
Chilmari	BADC Workshop	1. Wheat Mill 2. Pottery 3. Jute Baling	Thana HQ & Thanerhat Bazar

E. Development Programs

Since the country's development planning is continuing to be predominantly centralized in character, it is not possible to identify the Rangpur District picture of planned development by programs and projects. Subdivisional and thana-level development patterns are, accordingly, not at all identifiable for the purpose of analyzing the impact of development, as it is evolving, in the regions of the road network suggested by the consultant for the district. With the new emphasis of government policy on rural development and the consequent shift in priorities, institutional changes may eventually make it possible for each district to organize district planning with participation by the lower level local institutions. In that case, programs of development will not only be identifiable by levels but also be adequately supervised for implementation; and the programs could also be systematically evaluated in terms of economic and social benefit.

At the moment, one can mention only a few identifiable activities - some under general national programs and others under specific district projects. Under the general national programs (mentioned in the Two Year Plan), for instance, some of the thanas of Rangpur may be in the process of receiving development benefits in regard to: thana veterinary services, thana level poultry farms, artificial insemination centers, construction of thana food storage facilities, IRDP activities, some activities under Rural Development Project-I, rural development expansion program, thana health complexes etc. Power and irrigation facilities also constitute an important area of activity included in the general programs which are likely to benefit some subdivisions and thanas of this district.

Some of the identifiable important developmental activities in the district are shown, by project, in the Table 17

TABLE 17
PROJECTS UNDER THE TEN-YEAR PLAN

Project	Year of Commencement	Expected Year of Completion
Kurigram flood control and irrigation	1973	1986
Teesta Project	1960	1991
Kurigram town protection	1970	1983
Feasibility study for the Keratoya river system	1979	1981
Installation of high-capacity M/W line	1974	1982
Broadcasting House for Rangpur	1974	1982
Wind finding Radar Station	1972	1979
Multi-storied flats for low income groups in Saidpur	1978	1980
Development of Rangpur College, and Medical College (including nurses training)		1980

VI. SOCIOECONOMIC CHARACTERISTICS

A. Occupational Distribution.

The population of Rangpur, as for most of Bangladesh, is predominantly rural (95%). And even larger proportion of the employed population of the district is engaged in agriculture than the country as a whole.

Of the employed persons over age 10 (both males and females) 90% are employed in agriculture, according to the 1974 Census. This category was followed by "production and transport", "sales", and "Services", which respectively employed 4.5%, 1.8% and 1.6% of the population. The remaining census ("categories ("professional/technical, "clerical", and administrative/managment") all employed even smaller percentages of the population.

This occupational distribution for Rangpur is similar to that of the nation as a whole. However the larger percentage of persons in agriculture than in all of Bangladesh (79.1%) is counterbalanced by Rangpur's lower percentages in production/transport and sales. This slight difference from the national occupational distribution probably reflects several factors: First, Rangpur's agriculture is more intensive than the nation's as a whole, with a high cropping intensity and an emphasis on some cash crops (e.g., tobacco) that have high labor requirements. Second, although the district has some factories, manufacturing is only a small part of the part of the economy. And third, much of the trade with other parts of the country in agricultural produce (in tobacco, jute, and goodgrains) is carried but by traders and in vessels based in other district.

These occupational distribution statistics include only persons employed for pay, and thus the percentage of women included is small (3.3%).

B. Agricultural Employment

The 1974 Census further breaks down the agriculturally employed population. These are shown in Table which compares Rangpur with the rest of Bangladesh.

TABLE 18
DISTRIBUTION OF AGRICULTURALLY EMPLOYED
PERSONS OVER AGE 10

	Rangpur	Bangladesh
Owner Cultivators	29.3%	31.1%
Owner Share-Croppers	12.4%	13.2%
Share-croppers	4.1%	3.5%
Agricultural Labor	25.1%	24.8%
Unpaid Family Helpers	29.0%	27.4%

It can be seen that the district-wide distribution in agricultural employment categories is very similar to the national distribution.

However, when the statistics are further broken down by subdivision, there is considerable variation (see Table 19). Gaibandha's percentage of owner-cultivators (36%) is substantially larger than the other three subdivisions. It also has a lower percent in the two sharecropping categories (12%) than Nilphamari (21%) and Rangpur Sedar subdivisions (19%).

Kurigram has a larger percentage of persons in the last two employment categories (58%) than the other subdivisions.

TABLE 19
DISTRIBUTION OF AGRICULTURALLY EMPLOYED
PERSONS OVER AGE 10 BY SUBDIVISIONS

Agricultural Employment Categories	Sadar Rangpur	Kurigram	Gaibandha	Nilphamari
Owner-Cultivators	119,513	97,218	122,651	68,786
Percent	26	28	36	28
Owner-Sharecropper	66,181	40,619	29,002	37,369
Percent	14	12	9	15
Share-croppers	22,634	16,172	9,612	14,863
Percent	5	3	3	6
Agricultural Labor	124,213	86,108	81,136	59,031
Percent	27	25	24	24
Unpaid Family Helpers	126,662	113,340	95,160	69,326
Percent	28	33	28	28
Total	459,203	347,457	337,561	249,375
Percent	100	100	100	100

C. Level of Unemployment

The 1974 Census published a statistical category showing those "looking for work". To construct an unemployment indicator, this figure was converted into a percentage of the total employed persons.

The result was an incredibly low 1.8% of persons unemployed in Rangpur, compared with 2.5% in Bangladesh as a whole, also an unbelievably low estimate.

The unpublished statistics for the four subdivisions showed considerably variation. Nilphamari Subdivision showed the highest percentage (4.1%) unemployed and Rangpur Sadar the lowest (0.9%). The other two subdivisions, Kurigram (1.3%) and Gaibandha (1.9%) were below the national average. (It should be noted that the census was taken before the 1974 floods and famine which badly affected Kurigram Subdivision, where unemployment became very high).

Unfortunately these statistics have such serious problems of definition that they cannot be taken as a reliable indicators of unemployment. The census was taken at a time of great economic distress in Bangladesh, when much higher unemployment level would have been expected. Probably the main problem with the statistics is that they do not reflect the great under-employment and seasonality of demand which characterize rural employment. A very large portion of the agricultural labor force may be seasonally employed, working only 40%, 50% or 60% of the days of the year. Some land owners or sharecroppers till their land, but try to sell their labor on a daily basis when it is not required for their own crops. The number of rural "full-time jobs" is few.

It is possible that the small differences in the statistics, and particularly the differences between Nilphamari and the other subdivisions, indicate some relative differences in unemployment. However, the magnitude of unemployment is certainly much greater than these statistics suggest.

D. Land Ownership Patterns

A recent national survey, Report on the Hierarchy of Interests in Land in Bangladesh, has given the most reliable national picture to date of landholding and tenancy distribution. It shows a high degree of land polarization in the country. About 60% of the cultivable land area is owned by only 20% of the rural population. As much as 60-90% of the land is worked by persons other than the owner; many families are landless or near landless.

Unfortunately, such data are not now available for Rangpur District. Within several months, however, the first district level reports of the national Agricultural Census of 1977 will be published giving land distribution information for the district. Until it is available the informal observations of district and thana officials on landholding must be relied on.

It is clear that the same national trends (increasing fragmentation, decreasing farm size for the large majority of families, increasing landlessness, and increasing concentration of land in a rather small percentage of hands) are occurring in Rangpur.

In much of Nilphamari Subdivision, the degree of land polarization is apparently high. District Officials noted Jaldhaka as one thana which has a concentration of large landowners. Nilphamari, Dimla, and Domar thana officials also reported many over 30 acre landowners.

In Rangpur Sadar Subdivision, four thanas reported having many over 30 acre landowners: Patgram and Hatibandha in the far north, and Mithapukur and Badarganj in the center of the district.

In Kurigram Subdivision, and particularly Ghilmari, Ulipur, Raumari, and Kurigram Thanas, many small landowners became landless after the floods of 1974, which severely affected that area. In the crisis, their land was often purchased by middle or large landowners at greatly deflated prices. Raumari, Ulipur Kurigram, and Fulbari thana officials all estimate that there are over thirty land owners in their thanas owning thirty acres or more.

In Gaibandha Subdivision in the south of Rangpur land apparently is more equally distributed than in other parts of the district. The average farm size is smaller than elsewhere, but this is partly compensated for by the high quality of land and the high cropping intensity of that area. Only one thana, Palashbari, reported a substantial number of over 30 acre landowners.

Six thanas reported a substantial amount of absentee land ownership. Except for one thana, these are also in the northern part of the district. The thanas are Patgram, Hatibandha, Pirganj, Pirgacha, Nilphamari, and Ulipur.

The distribution of landholdings is a matter of considerable importance in assessing the distribution of benefits from different rural development programs. Though the range of landholding sizes is rather low in Bangladesh as compared with other countries, there are growing indications that a disproportionate share of the benefits of many government promoted development programs have gone to farmers that are relatively well-off. These middle farmers may own only four to ten acres, a small area by Asian standards, but enough to produce a surplus and place them socially and economically in a position

of local power. This phenomenon has been noted with the operation of the Thana Irrigation Program, fertilizer distribution, cooperative loans, and other programs.

The increasing number of rural landless is one of the major rural development problems in Bangladesh. Few solid programs have been developed, other than the Rural Works Program and Food for Works Program, which open economic opportunities specifically for this group. To develop effective programs, it will increasingly become important to know not only the national or district trends, but also to locate the specific places (thanas, unions, and even villages) where the problem is most acute.

E. Famine Prone Areas.

Rangpur is one of the districts of Bangladesh which experienced severe famine following the floods of 1974. The famine was concentrated in Kurigram Subdivision in the areas affected by the flooding of the Brahmaputra, the Tista, and the Dharla Rivers. Thanas most severely affected were Chilmari, Ulipur, Kurigram, and Raumarī, the latter being virtually cutoff from the rest of the district by the Brahmaputra.

Difficult transportation was a factor in that famine although the area is not far from Rangpur Town. Kurigram Subdivision as a whole had almost no transport links across the Tista River connecting with the main transportation system of the district. The chief exception was the railroad connection with a long bridge over the Tista at Kaunia, but even railway travel was slow.

Road transportation to and within the subdivision was nearly impossible at that time. However, it has been somewhat improved since 1974 by the construction of a brick-surfaced road to Kurigram from the railroad bridge; and the railroad bridge has recently been opened to road traffic. An R&H road north from Kurigram to Bhurungamari via Nageswari is now usable, and a road south from Kurigram to Chilmari via Ulipur is under construction.

During the floods, some were made homeless by shifting rivers. Others whose Aus and Aman crops were destroyed by flood were forced to sell their meagre holdings to repay crop loans or purchase food for family consumption. Land sales were unusually high. Work was not available locally. Though apparently there was grain available on the local markets and some was even exported from the subdivision during the famine, the poor and newly landless had no means to purchase it. There were many deaths related to malnutrition in the period beginning two to three months after the flood. Many migrated or fled to Rangpur Town in search of work or relief, and some eventually moved on to Dacca. Any national or international response was little and late. The extent of the crisis situation was not fully realized because of the remoteness of the area from Dacca and the difficulty of moving to the interior of the subdivision.

If this situation were to recur in the future, outside response might be facilitated by the construction of the roads mentioned above and ^{by} the lower level roads proposed under this project reaching into the interior portions of several thanas.

VII. SOCIAL SERVICES

A. Health Care/Medical Facilities

Rangpur was formerly known as one of the least healthy of the districts. One reason was high incidence of malaria. This was concentrated in the rural areas away from the main rivers, where receding flood waters left many small marshy areas suitable for breeding mosquitoes. However, the incidence of malaria is much reduced and malaria deaths are no longer common.

Rangpur has a decreasing trend of cholera deaths, but occasional small epidemics break out in the flood prone areas along the rivers. Small pox was once common in the district, and until very recently a large number of the rural health staff were involved in the small pox vaccination program. However, a concentrated program to eliminate the disease from the district and the country was successful in late 1975.

The most common diseases remaining are dysentery and other intestinal diseases. This is primarily due to the poor public health practices in rural areas, particularly in the disposal of human excreta, and the use of contaminated surface water sources for drinking.

There are two broad types of medical services found in Rangpur District and throughout most of Bangladesh. First, the medical treatment most commonly used in the rural areas consists of the services of many private practitioners scattered throughout the villages and markets. These are persons of very diverse education, training, skills, and medical traditions. They

include "quack doctors", homeopathic doctors, kabiraj and hakims (practioners of traditional medicine, compounder, and medicine shop owners. Many of them practise only part time. Relatively few of the doctors who have received the five year M.B.B.S. degree from the medical colleges of Bangladesh enter private practice in rural areas; most either enter salaried government service in one of the institutions discussed below or set up private practice in urban areas.

Second, there are various government medical facilities as detailed below.

The Civil Surgeon is the government officer posted to supervise the government medical services and facilities in the district. Although the number of employees and facilities under the Civil Surgeon is large and scattered, they are small compared to the population. The major facilities are centralized and outdated. The government has been trying simultaneously to decentralize the services to rural facilities and to upgrade the older centralized facilities found in the administrative towns.

The government medical facilities are primarily of three types: (1) Hospitals and specialized outdoor clinics located in the administrative headquarters towns; (2) thana level health facilities located near thana administrative centers; and (3) some subthana level family health centers. These are enumerated below for Rangpur District based on the information in the Rangpur District Gazetteer (1977).

The government hospitals are listed in Table 20

TABLE 20
GOVERNMENT HOSPITALS

<u>Location</u>	<u>Type of Facility</u>	<u>No. of Beds</u>
Rangpur Town	District Hospital	100
Nilphamari	Subdivision Hospital	25
Gaibandha	Subdivision Hospital	13
Kurigram	Subdivision Hospital	12
Rangpur	Police Hospital	36
Rangpur	Jail Hospital	52
Lalmonirhat	Railway Hospitals	30
Saidpur	Railway Hospital	N.A.
Nilphamari	Leprosy Hospital	20
Tajhat	Tuberculosis Hospital	20

The major thana level facilities which have been promoted since independence are the Thana Health Centers (THC). The Government aims to have one in every thana within a few years. Where the Rural Health Centers were established during the Pakistan period, these facilities and services are being expanded to those of the THC. In other thanas, new facilities are being constructed. Unfortunately, systematic information by thana was not available on the progress in establishing THCs. However, just before the liberation war, Rural Health Centers existed in eight thanas; Gaibandha (Ramchandrapur), Nageswari (Raiganj), Mithapukur, Kaliganj, Domar, Kishoreganj, Sadullapur, and Chilmari. The first four thanas listed had one to three subcenters within the thana; the last four had no subcenters.

The Rural Health Centers included the following staff: Medical Officer, Lady Health Visitor, Sanitary Inspector-cum-Malaria Inspector, Laboratory Technician, Mid-wife, and Health Assistant. The services provided included "immediate diagnosis, medical treatment, minorsurgery on an outdoor basis, maternity and child health Service, school health services, tuberculosis control, collection, consolidation and dissemination of vital statistics, family planning assistance, and public health education".

There were also 99 dispensaries in the district in 1970, of which 57 were managed by the District Council and 28 by Union Councils. Many of these have been taken over by the government since liberation. The summary of these dispensaries by thana is presented in Table 21

TABLE 21
DISPENSARIES IN RANGPUR DISTRICT

<u>Thana Name</u>	<u>No. of Dispensaries</u>	<u>Thana Name</u>	<u>No. of Dispensaries</u>
<u>RANGPUR SADAR SUBDIVISION:</u>		<u>NILPHAMARI SUBDIVISION:</u>	
Rangpur Kotwali	7	Domar	3
Patgram	3	Nilphamari	4
Hatibandha	1	Saidpur	2
Kaliganj	4	Kishoreganj	2
Gargachara	2	Jaldhaka	4
Badarganj	4	Dimla	6
Kaunia	1		
Pirgacha	4		
Mithapukur	4		
Pirganj	5		
<u>KURIGRAM SUBDIVISION:</u>		<u>GAIBANDHA SUBDIVISION:</u>	
Bhurungamari	1	Sundarganj	6
Nageswari	3	Badullapur	4
Fulbari	1	Palashbari	2
Lalmoirhat	3	Gobindaganj	10
Kurigram	1	Shaghatta	1
Ulipur	3	Fulchari	2
Chilmari	1	Gaibandha	4
Raumari	1		

The government is attempting to further decentralize health care service and better integrate them with family planning service. The Family Planning Directorate now has 8 Mother Child Health Care Centers (MCH), mostly based in Thana Health Centers. However, all 31 thanas have some family planning services. Work has recently started on 20 union level rural family welfare centers financed by the World Bank, and another 32 are planned.

Transportation problems affect the access to health and family planning services, not only at the district or subdivision level, but at the thana level as well. Kurigram Subdivision is the most difficult area for users to get access and for district officials to supervise programs. Of all thanas, Raunari, separated from the rest of the district by the Brahmaputra River, is clearly the most poorly connected.

B. Education.

The educational system of the district consists of "government schools" financially supported by the national government and "non-government schools" organized and supported locally. The non-government schools receive only small annual grants-in-aid from the government to subsidize teachers' salaries. The presumption generally is that the quality of the government schools is better than the non-government schools because of the greater reliability of financial support and closer supervision.

According to the Rangpur District Gazetteer, the number of educational institutions in the district was as follows in 1966:

Primary Schools	2,194
Middle Schools	3
Junior High Schools	155
High Schools	164
Colleges	11

Since that time the number of institutions in all categories has increased considerably. However, the detailed current breakdown was not available.

Of the 11 colleges in Rangpur District, the following are degree colleges having classes up to the B.A. or B.Sc.(Pass) examinations. They are Gaibandha College, Carmichael College (Rangpur), Quaid-e-Azam College (Rangpur), Nilphamari College, Kurigram College, and Rangpur College. Of these, Carmichael College is particularly known and respected as one of the best colleges in Bangladesh. It was established in 1916 and is the only one of the colleges which offers classes for the B.A. and B.Sc. (Honours) examinations.

The remaining five colleges teach only upto the Intermediate standard, that is in preparation for the Higher Secondary examination. These colleges include Ulipur B.D. College, Lalmonirhat College, Polashbari College, Gobindaganj College, and Rangpur Women's College.

In addition to the educational institutions mentioned above, there are a number of specialized institutions. There is a government Technical Institute in Rangpur, technical schools in Rangpur and Saidpur and weaving schools at Gaibandha and Bhogdanga. The district has primary teacher training institutes in each of the four subdivision headquarters, and a Junior Training College in Rangpur.

Literacy rates for persons of all ages in the Rangpur District 15.37% are somewhat below the national literacy rate of 20.17%, according to the 1974 Census. There has been a slight overall increase in the literacy rates since 1961, when comparable

figures were 13.15% for Rangpur District and 16.28% for the whole of the then East Pakistan. However, over that period, Rangpur's rank among the districts by literacy has dropped from 15th to 17th.

Table 22 breaks down the literacy rates by age groups and sex. By looking at the different age groups, we have a picture of how literacy rates in Rangpur are changing over time. Thus, among the men ^{or} age 55-64 who would have received most of their formal education during the years of 1914-34, 26% are literate. Those in the 15-19 year age group, who would have had a more recent education between the years of 1959-74, have a literacy rate of 41%.

TABLE 22

PERCENT OF LITERACY IN RANGPUR DISTRICT BY AGE AND SEX FOR ALL PERSONS OVER 5 YEARS (1974 CENSUS)

Age Group	Percent Literate	
	Male	Female
5 - 9 years	10%	7%
10-14 years	31%	20%
15-19 years	41%	17%
20-24 years	40%	12%
25-34 years	31%	8%
35-44 years	29%	6%
45-54 years	28%	4%
55 -64 years	26%	2%
65 years & over	26%	2%
Total Over 5 years	27%	10%

By comparing men and women within each of the age groups, it can also be seen that there is a substantially higher percent age of literate men than women in all age groups except the youngest, only some of whom had begun their formal education.

However, it can be noted that the relative difference in the literacy rates of men and women has been gradually declining, though the percentage size of the gap has remained about the same.

Among the 55-64 year age group, the literacy rate of men is about 13 times that of women. In the 15-19 year age group it is about 2.5 times as large.

An examination of the unpublished literacy rates by subdivision shows some minor variation in the rates of both men and women by subdivision. Kurigram definitely ranks lowest for both men and women. Nilphamari ranks highest for men, but not women (See Table 23).

TABLE 23.

MALE AND FEMALE LITERACY RATES FOR PERSONS OVER AGE 5 BY SUBDIVISION IN RANGPUR DISTRICT, 1974

SUBDIVISION	% of Literate Persons	
	Male	Female
RANGPUR SADAR	27.0	10.8
NILPHAMARI	32.2	10.7
KURIGRAM	23.4	6.8
GAIBANDHA	26.7	10.0

C. Food Procurement and Rationing.

The system of food distribution organized by the Food Ministry has two aspects : Procurement and Rationing.

The rationing system operates primarily to assure a steady supply of foodgrains and other basic foodstuffs (especially

salt and edible oils) to residents and certain categories of persons living in rural areas who are entitled to purchase rations at subsidized rates. One of the major categories includes government employees, including teachers in non-government schools. The other category includes 10-15% of very poor persons.

These eligible ^{people} purchase their rations monthly from designated union ration dealers. The dealers in turn lift their allotment from Local Storage Depots, or LSD's located in different parts of the district. Paddy is procured within the district. Other foodstuffs (oils, sugar, flour, and wheat) are usually brought from outside the district, in some instances having been imported from other countries.

The system of LSD's serve as the center for both the rationing and the procurement programs and the source of grain used in Food for Work Programs and distributed as relief in times of disaster. The district has no large Central Storage Depot (CSD). However, the CSD and large silos at Santahar (Bogra) can service both of the rail lines passing through Rangpur District.

The distribution by thana of the LSD's, new planned godowns with World Bank financing, and the Temporary Procurement Centers (TPC's) are shown in Table 24 . The TPC's consisted of temporary godowns, schools, training halls, or other pucca buildings used during the past year's attempt to increase and decentralize procurement.

TABLE 24

FOOD STORAGE GODOWNS BY THANA

<u>Name of the Thana</u>	<u>L S D</u>	<u>Temporary Procurement Centers.</u>	<u>Planned Godowns (World Bank)</u>
<u>RANGPUR SADAR SUBDIVISION</u>			
Patgram	1	-	-
Hatibandha	1	-	-
Kaliganj	-	1	-
Gangachara	-	1	1
Badarganj	1	-	-
Kauria	-	-	-
Pirgacha	-	1	1
Mithapukur	1	-	-
Pirganj	-	1	2
<u>NILPHAMARI SUBDIVISION</u>			
Domar	2	-	1
Nilphamari	1	-	-
Saidpur	1	-	1
Kishorganj	1	-	-
Jaldhaila	1	-	-
Dimla	-	1	1
<u>KURIGRAM SUBDIVISION:</u>			
Kurigram	1	-	-
Bhurungamari	1	-	-
Nageswari	1	-	-
Fulbari	-	1	1
Lalmonirhat	1	-	-
Ulipur	1	-	1
Chilmari	-	-	1
Raumari	-	1	-
<u>GAIBANDHA SUBDIVISION</u>			
Sundarganj	1	1	-
Sadullapur	-	-	-
Pqlashbari	1	-	1
Gobindoganj	1	2	2
Shaghatta	1	-	-
Fulchhari	-	-	-
Gaibandha	1	-	-
Totals:	21	10	13

According to the Foodgrain Storage Feasibility Study (1975) the total capacity of the 21 existing LSD's was 38,846 tons. The 13 godowns planned under the World Bank program would each be of 1000 ton capacity, adding 13000 tons to the total storage capacity.

Although in the past the procurement policies have primarily been determined by the urban needs of the rationing system, the government has recently begun to use the system to stabilize open market grain prices at a level which gives adequate incentive to farmers to maximize production and which discourages grain speculation. This may involve either the procurement from or release to the open market of foodgrains.

VIII. SOCIAL DEVELOPMENT CONSIDERATIONS

A. Character and Role of Local Leadership

The organizational structure of government development activity has, for many years, left only limited opportunities for the emergence of local leadership. The present government has been trying to reverse this trend and build up local institutions. According to present government policy, the thana (or Police Station) is the primary organizational and geographic unit for rural development efforts. But other development activity also exists or is planned for the lower level institutions, villages and unions.

At the village level, there are usually one or more informal councils, composed of several village leaders. The name and structure of these groups varies from place to place. They have no legal standing, but in many villages, they carry out important functions of a traditional nature. For example, they settle local disputes, including sensitive land disputes, enforce behavioural rules, build and care for the mosque or other religious institutions, and organize village defence committees. Generally they do not undertake the organization of development activities on their own initiative.

In some villages, the local leaders enjoy strong authority; in others the "traditional" institutions have become quite weak and unimportant. The leaders often inherit their position; but respected character, education and acquisition of wealth also influence the selection of accepted authority.

A new development oriented form of leadership at village level has emerged through agricultural cooperatives. Particularly in the thanas which have an Integrated Rural Development Program, there is an organizational structure designed for training that leadership and for providing contact with the thana-based officers representing different ministries and agencies. However, it has become a matter of national concern that the leaders of the village cooperatives are predominantly from the larger farmer groups. Subsidized benefits intended primarily for the small farmer appear to be diverted from that purpose.

Some experimentation is underway with an institution known as gram sarker (village government) as a vehicle for development at the village level.

In Rangpur, several villages have received national recognition for their self-reliant achievements and for experimentation with gram sarker. Under the system, village "Ministers" and "Ministries" are established to look after different aspects of village development. One village receiving attention is Batashan Durgapur.

The Union level is the only level which has a locally elected government, the union parishad (UP). The union parishads are under the supervision of the Circle Officer (Development).

In the early 1960's, the union parishads were responsible for a good deal of local infrastructure planning and implementation. Many of the existing union council roads were built

during that three or four year period. The resources for such development were allotted to the union (and thana) councils by the Government under the Rural Works Program; this was supported by the sale proceeds of foodgrains and other surplus agricultural commodities obtained from the USA under P.L. 480, Title I.

Since that time the responsibilities, resources and powers of the union councils have suffered from decay until the recent revitalisation. Even now they have only very minor powers to tax their residents and are dependent almost completely on the changing policies of the central government for their ability to engage in significant development work. Some such funds for earthwork now come through the Food for Works Program. The Ministry of Local Government, Rural Development, and Cooperatives is also trying to rebuilt the Rural Works Program. Unlike the Food for Works Program, it could also include some funds for bridges and structures, rather than only earthwork. Since the U.P. elections in 1977, the government has been trying to provide increasing financial support and training to the Union Farisha ds.

At the thana level, there is no elected local government body. However, the past few years, thana councils consisting of the elected Chairman of the union councils have often informally operated. The thana councils are to be formally reconstituted in July 1978 and may eventually be directly elected. The details of their new responsibility are not yet clear, but it is expected that they will again have responsibility for various types of public works, such as road construction. The implementation of of many roads in this Rural Roads Project

will involve dealing with such thana councils who will hold ultimate responsibility for many of the proposed roads (except the District Council Roads). Though the thana council will work closely with various government development officers at the thana level, it is unlikely that the local bodies will be given any real power over these central government officers.

One indicator of the degree of activity of the union and thana councils is whether or not they have prepared the thana and union plan books sent out last year by the Ministry of L.G., R.D. & Cooperative. This system of thana plans which was important in the early 1960's had fallen into disuse. The present government is trying to revive the plans as a part of its renewed emphasis on local government. The information received by the consultant from each of the Circle Officers on the status of the thana and union plans is shown in Table 25.

TABLE 25
STATUS OF THANA AND UNION PLANS

T H A N A	THANA PLAN	UNION PLAN
<u>SADAR SUBDIVISION</u>		
Kotwali	90% completed	9 Unions out of 11 Unions completed.
Hatibandha	Completed upto 90%	8 Unions out of 10 Unions completed.
Pirganj	25% completed	One Union completed.
Patgram	50% completed	None
Kaunia	40% completed	One Union completed.
Badarganj	50% completed	None
Mithapukur	50% completed	Most of the Unions have completed 50% of Union Plan Book.

Table continued on the next page

TABLE 25
STATUS OF THANA AND UNION PLANS (CONTINUED)

T H A N A	THANA PLAN	UNION PLAN
Kaliganj	None	None
Pirgachha	100% completed	Five Unions have completed Union Plan Book.
Gangachara	No information	8 unions partly complete.
<u>KURIGRAM SUBDIVISION</u>		
Fulbari	50% completed	Three Unions completed.
Kurigram	3 years Plan mapped	None.
Bhurungamari	80% completed	None.
Ulipur	100% completed	17 Unions completed out of 18 Unions.
Chilmari	50% completed	Not yet completed in full.
Nageswari	30% completed	None.
Raumari	50% completed	No information.
Lalmonirhat	completed	All 12 Unions completed.
<u>NILPHAMARI SUBDIVISION</u>		
Kishoreganj	Completed	Not yet completed.
Dimla	Completed & sent to District approving authority.	5 Unions completed.
Domar	No information	No information.
Nilphamari	In progress, 25% completed	In progress.

Table Continued on next page

TABLE 25
STATUS OF THANA AND UNION PLANS(CONTINUED)

T H A N A	THANA PLAN	UNION PLAN
* Saidpur	100% completed	2 out of 5 Unions completed.
Jaldaka	60% completed	3 Unions completed
<u>GAIBANDHA SUBDIVISION:</u>		
Sundarganj	75% completed	5 Unions have completed, 50%.
Palasbari	75% completed	Thre Unions completed.
Fulchhari	75% completed	Seven Unions completed.
Gabindganj	Yes, 100% completed	10 Unions completed
Gaibandha	75% completed	10 Unions completed.
Shaghatta	Yes, completed	3 Unions completed out of 10
Sadullahpur	50% completed	7 Unions completed.

At the thana level, primary development responsibilities are given to the varicus officers posted by different development ministries. These include the responsibilities for the development of agriculture, irrigation, education, health facilities, and cooperatives in the thana.

To a large degree, these officers are the powerful people in the thana as far as development activities are concerned. However, they are not local leaders in the sense that they are not permanent residents of the thana in which they serve. They are not selected by or accountable to the people of that thana. According to government policy, their tenure in any thana is limited to three years, and often they are transferred to another thana before that period ends. Their main responsibility and accountability are to the various government agencies which appoint and pay them, control their budgets and programs, and transfer them.

At the thana level, two other types of leadership should be noted. In the thanas where IKDP cooperatives are organized, the village cooperatives are federated at the thana level. Thus thana-wide annual elections are held for the three-year posts on the managing committee of the TCCA (Thana Central Cooperative Association).

In Rangpur 14 thanas have IRDP cooperating systems. All have been organized since 1971, except Gaibandha, which was one of the first thanas in the nation outside of Comilla Kotwali Thana to experiment with the Comilla system, these thanas have been listed previously in the agriculture section.

The second type of thana-wide leader that should be noted is the member of Parliament. At present Parliament is inactive and the M.P.'s are not a force to consider. But parliamentary elections are planned for December 1978. In their constituency, the M.P. and their associates are often very powerful people.

This is primarily because they are often the only local persons who have the power to intervene at higher levels of government in fluence decisions affecting the thana.

In summary, local leadership may now be in an important transition stage. The longstanding gaps in building institutions representing the people at different levels will not be quickly filled. Leaders of the new or revitalized institutions will not automatically have an awareness of development possibilities and needs. And it remains to be seen whether sufficient independent resources will be developed to make them important local forces for development. But the government has taken the first steps in this direction.

B. Role of Women

In rural Rangpur, the practice of purdah still restricts the social and economic roles of rural women, though the system is breaking down somewhat. Strict maintenance of purdah involves considerable expense. Thus it is practiced primarily by well-to-do households, for whom this becomes a matter of prestige. Poor or landless rural households usually can not afford the compound walls, separate guest rooms, household help, and other facilities required to maintain purdah.

Earlier, it was noted that the literacy rates for women are considerably lower than for men. In the past it was generally considered a poor investment for a family to send daughters to school, unless all the sons had been educated. It was thought that sending (Muslim) girls to the Madrasha or Mak'ab for Islamic religious education was a better preparation for marriage than the secular schools. But today, more girls are being sent to Primary schools and even high schools.

The economic role of the large majority of rural women has been primarily in or near the home. Except for destitute or very poor women, village women do not visit the hats and bazars. Few women have remunerative work outside the home. Very few were enumerated as seeking work or included in the census estimates of the economically active population or labor force.

However, in addition to child rearing, cooking, cleaning, finding fuel, and other household work, there are a number of productive economic activities carried out by women. Perhaps most significant is the processing of foodgrain, which is done in or near the compound by women of all rural classes. The processing of jute, especially separating the fibre after retting, is sometimes done by women even at some distance from the family compound. In some Rangpur villages, women have remunerative activities, such as growing vegetables, selling eggs, tending the cows and selling milk, weaving mats or baskets, and working in other household-based cottage industry. Among the very small landholding or tenant families who cannot practice purdah, women also work in the fields at the time of peak labor requirements.

During the past several years, there has been national movement to enlist the participation of women in rural development efforts. Expanded remunerative activities, such as making handicrafts, poultry farming and pisciculture have been actively promoted. Vegetable growing has been encouraged both to increase income and to improve the family diet. In some areas, women's cooperatives have been organized to achieve this.

In the past two years, women have also been actively recruited in some of the mass mobilization efforts under the Food for Work Program (FWP) and Swanirbhar (self-reliance) programs. Previously, the earthworks involved in those programs were almost totally done by men.

Regarding health, the life span is considerably shorter for women than men. This may reflect a number of cultural factors

1. Women often rise earlier and go to bed later than men;
2. Their diet is generally worse, because of the cultural tendency for women to wait to eat until their husband, children and dependents have been fed.
3. The average marriage age for women is very young, the youngest in Asian, and the first children are often born at an early age.
4. The method of cooking in rural areas means that women spend considerable time daily breathing smoke from chula fires.
5. The reluctance to take women far from the village implies that medical care for more serious illness or injury may not be sought or availed of as quickly as for men.

It is not expected that the construction of the proposed roads in Patuakhali District will have a major immediate impact on these aspects of the lives of women. But there are a number of areas where an impact will be felt over time.

New roads will increase the mobility of people into and out from the area. Even assuming that primarily the men travel at first, this movement of people involves the dissemination of ideas as well. One of the urban ideas which has been noted to accompany new roads in other countries is a more favorable attitude toward the education of women.

To the extent that new roads improve the local agricultural economy and particularly open up more marketing options for farmers, it may be expected that women will benefit along with their families. Roads will open up new opportunities for establishing women's organizations and economic activities. But such benefits will not be automatic. They will occur only if the opportunities are actually taken.

The construction of the proposed road network will make travel within the district considerably easier, as transportation services emerge. Though undoubtedly men will continue to use those facilities more than women for some time, the "inconveniences" that are now obstacles to women travelling in rural areas will have been considerably reduced.

Finally, the roads will not directly change most of the factors that affect the health of women. However, they will make many areas more accessible to the hospital facilities and family planning services of the district. And opportunities will be greater for women to use existing and expanding facilities for improved health and efficiency.

IX. DEVELOPMENT OF ROAD NETWORK

A. Introduction

The development of a road network in the rural areas of Rangpur, was carried out in five distinct steps:

1. establishing road and bridge design criteria;
2. soliciting road nominations from local officials;
3. preliminary screening of the nominated roads;
4. priority ranking of individual road segments; and
5. recommending integrated road networks for each district.

These steps are explained in detail in the Summary, Volume I of this report and only a brief synopsis is given in this volume.

B. Design Criteria

The design criteria for the class, section and geometric standards for the rural roads were adopted from the recommendations prepared by an ad hoc government committee for the Transport Survey Section of the Planning Commission of the Government. The road classes selected for rural road construction by the Planning Commission are Class IV and Class V. These are defined as follows:

Class IV - Paved roads connecting subdivisional and thana headquarters and other principal growth centers.

Class V - Earth roads connecting thana and union headquarters with secondary growth centers. Approximate two-way hourly traffic within 10 years of 20 passenger car equivalents.

C. Road Nominations by Local Officials

The consultant's team discussed rural road requirements of the district with local officials in Rangpur. A large meeting was held at the Circuit House in Rangpur Town with the Deputy Commissioner, Subdivision Officers and district officers of government ministries.

Subsequent meetings were held in Nilchhari, Gaibandha, Rangpur Sadar and Kurigram with the Subdivision Officers, thana Circle Officers for Development and Agricultural Extension Officer.

Based on these meetings and questionnaires prepared by the consultant and completed by local officials, road nominations were received from thana, subdivision and district officials. In Rangpur District 1,089 miles of roads were nominated for rural road construction. These are listed in Table 26 and shown in Figure 7.

D. Preliminary Road Screening

A screening process was applied to these roads to select the more important segments for final priority ranking.

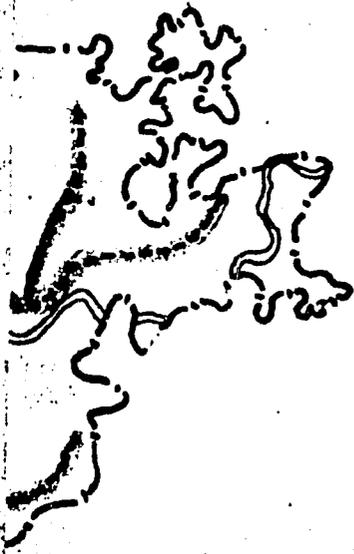
The screening process used four criteria which are outlined below:

1. Dual Nomination
2. Parallel Roads
3. Nonconnecting Roads
4. Economic or Social Benefit

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INDIA

KAMARHAT

KALIRHAT

DIABASUTI

PATGRAM

SHANDARDAHA

DAHABRAM

CHLIMATI R.S.

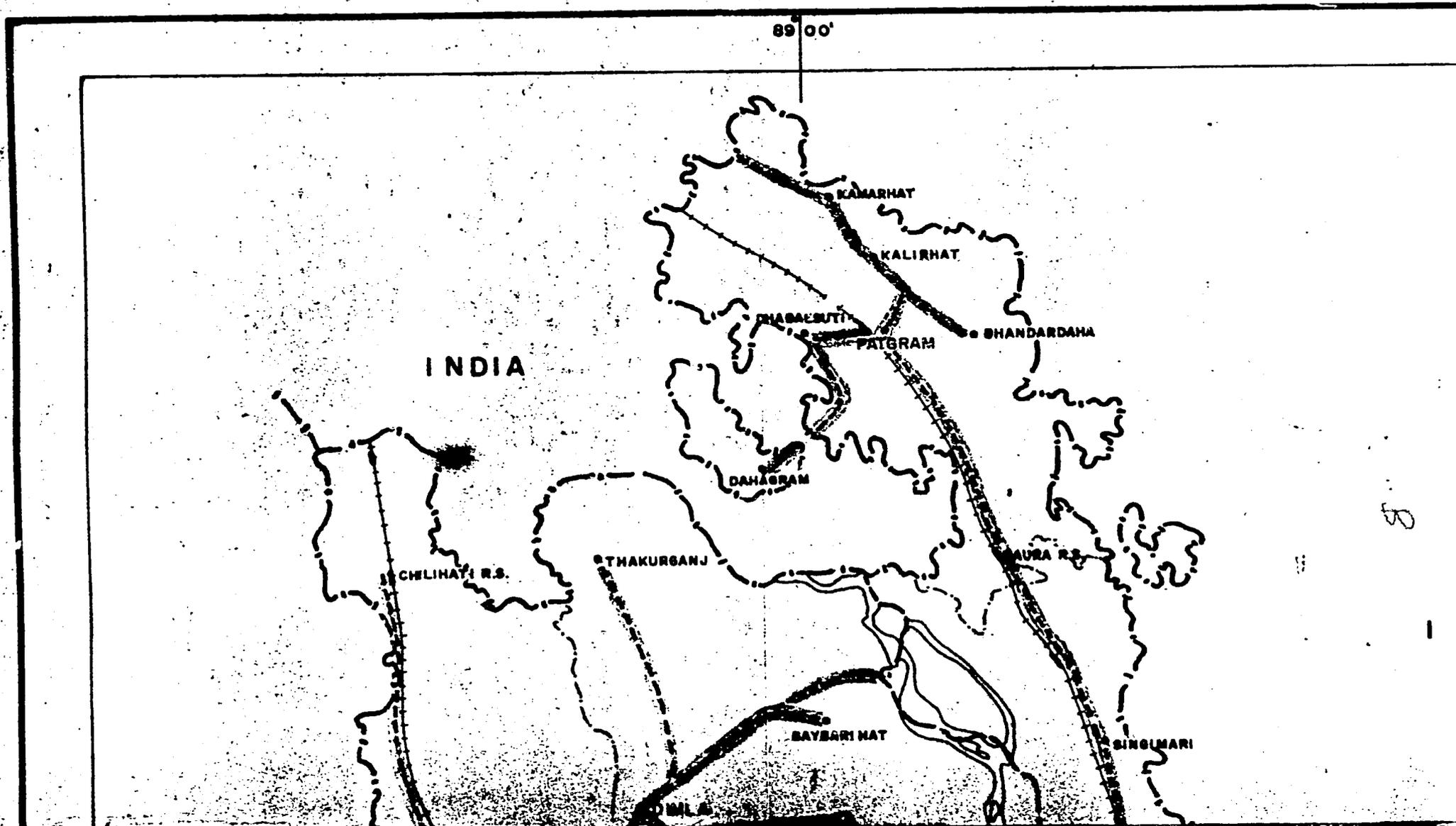
THAKURGANJ

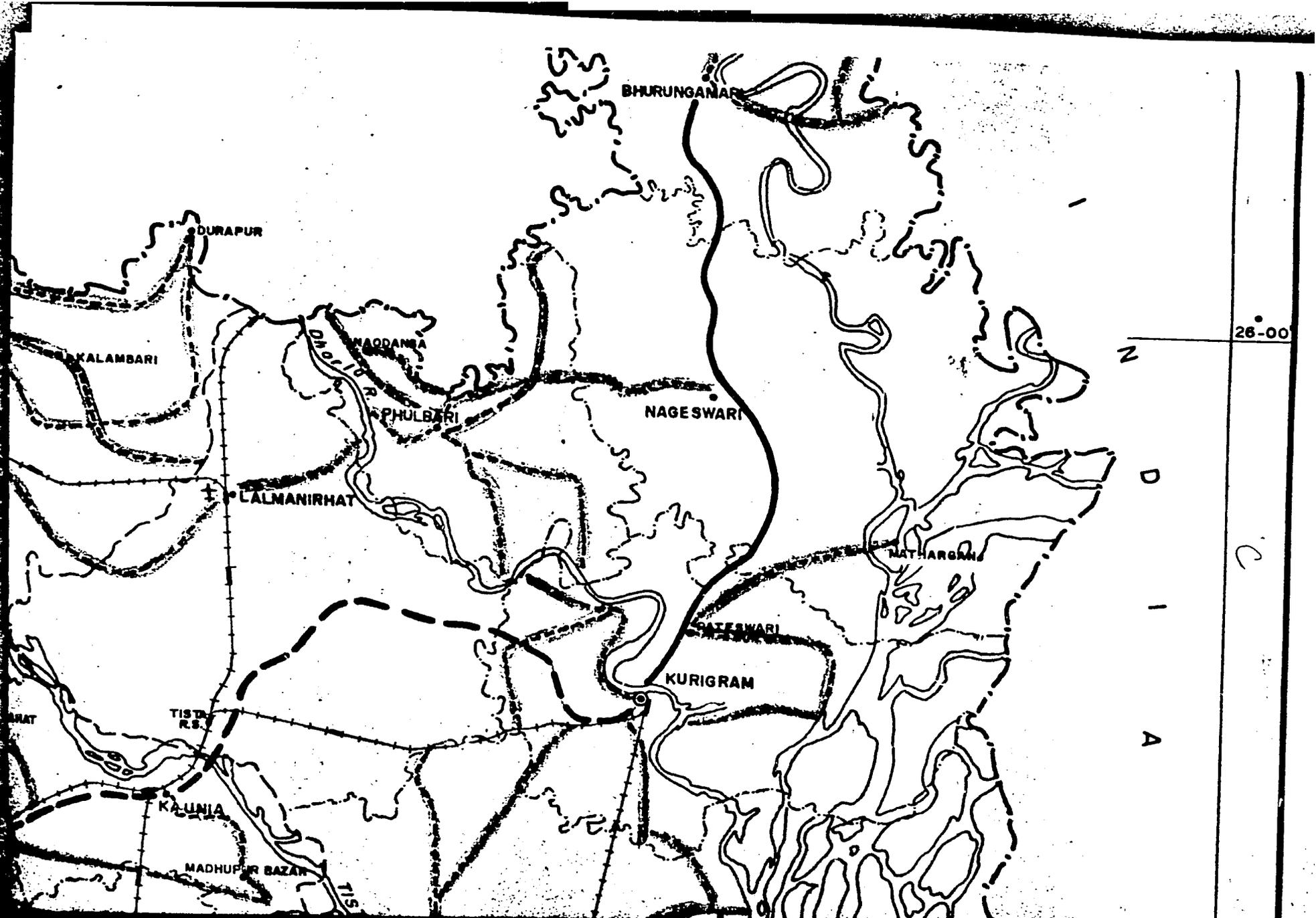
MAURA R.S.

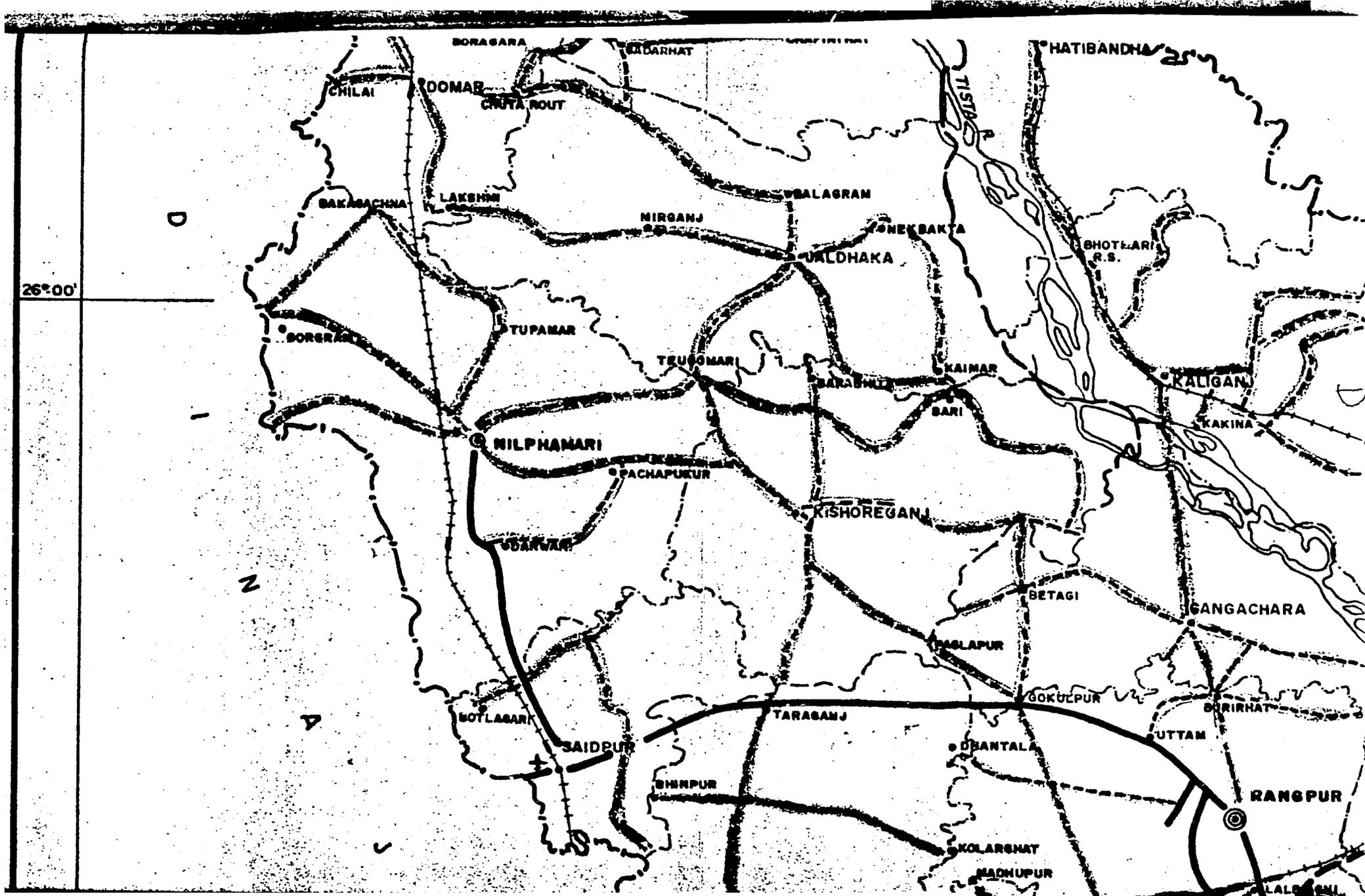
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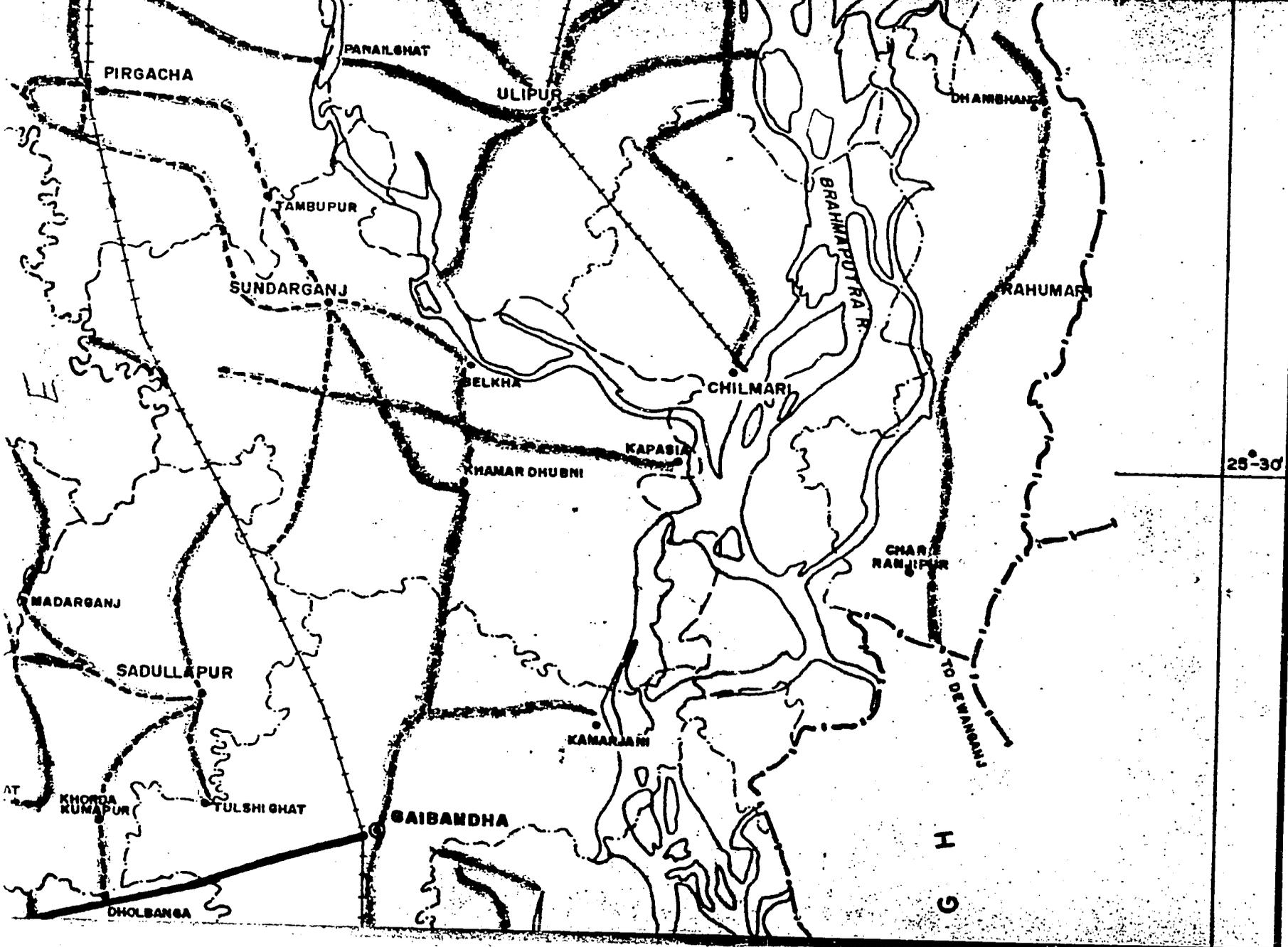
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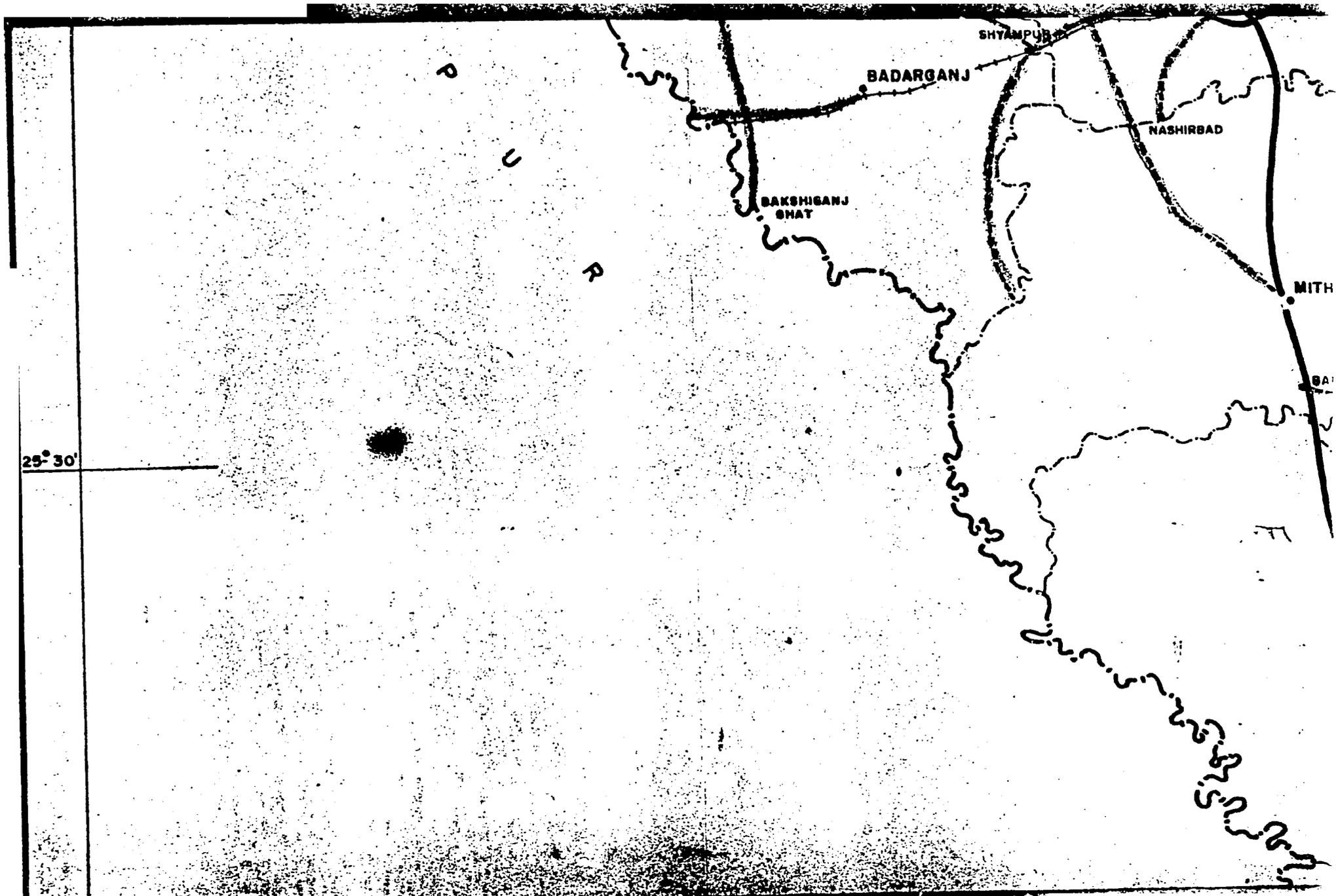


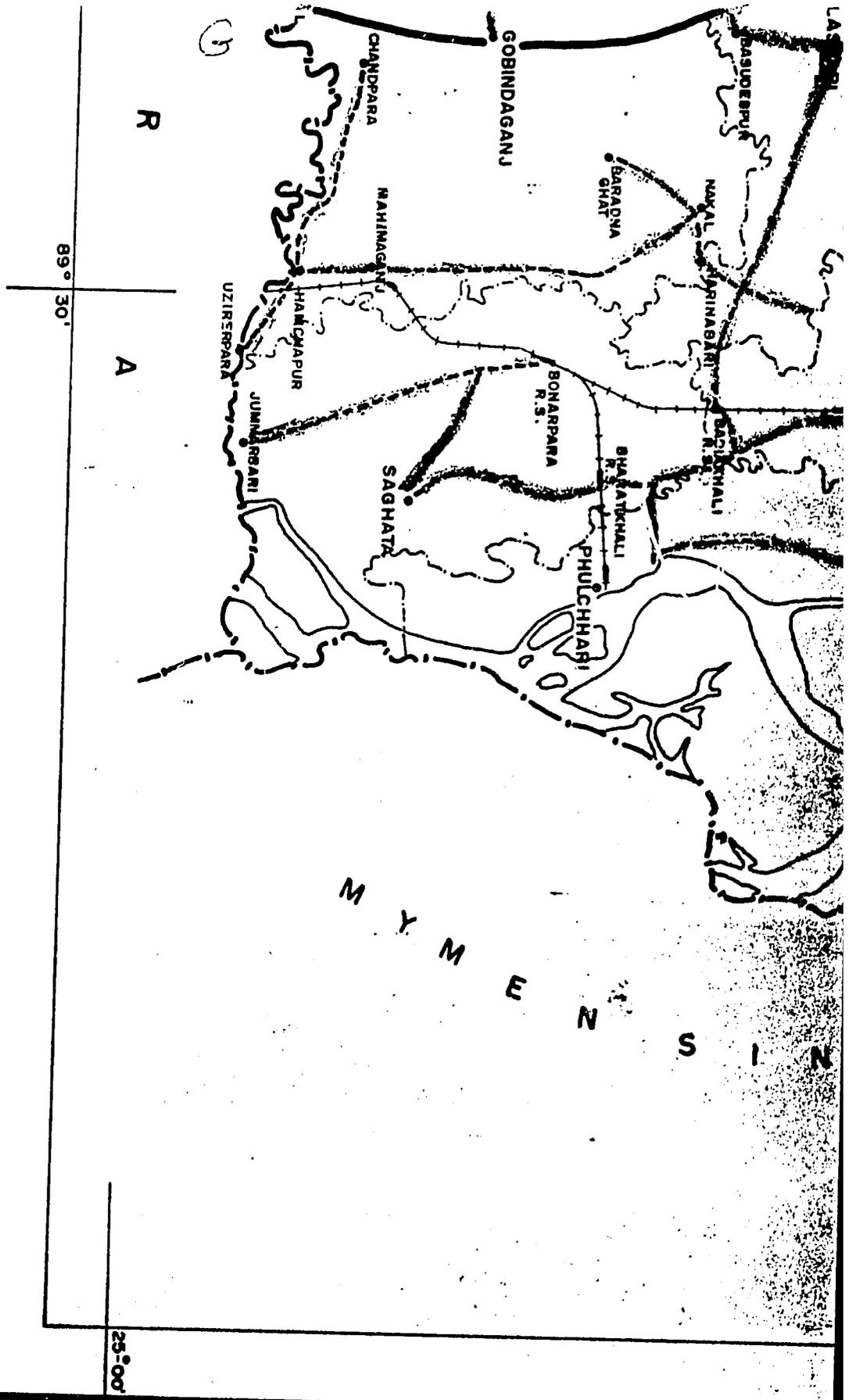


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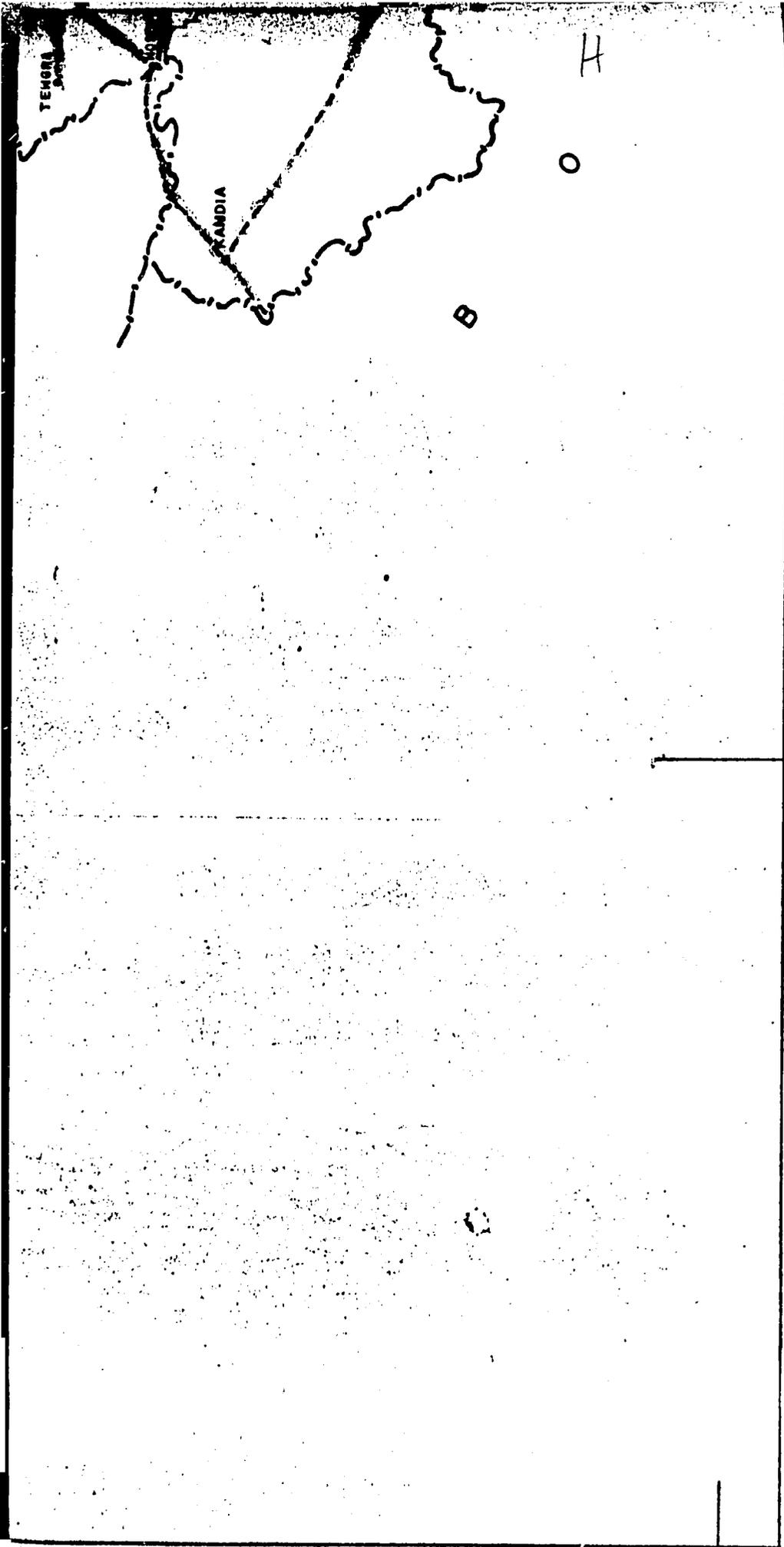
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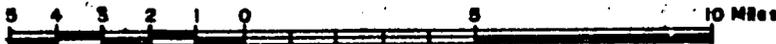
DIST. RANGPUR

LEGEND:

Roads (R & H)	
Rail Roads	
Waterways	
Major Airport	
Nominated Roads	

J

SCALE: 1 inch = 4 Miles



GOVERNMENT OF
THE PEOPLE'S REPUBLIC OF BANGLADESH

RURAL ROADS STUDY

PRIORITY ROAD NOMINATIONS

LOUIS BERGER INTERNATIONAL INC. AND
RAHMAN & ASSOCIATES LTD.

PREPARED BY : Z. Abedin, S. Islam

RECOMMENDED

H. H. H. H.

CHECKED

APPROVED

DATE :

DRG. NO.

TABLE 26
NOMINATED ROADS

SUB: NILPHAMARI

THANA	PRIORITY ROAD From To	MILES	NO. OF PROPOSED BRIDGES	INITIAL SELECTION
DIMLA	1. DOMAR BORDER - KALIGANJ CARRAGE **	7	1	Yes
	2. DIMLA - THAKURGANJ (GAYABARI) *	7	1	Yes
	3. DIMLA - SHATIBARI HAT	4	2	Yes
	4. SADARHAT - CHAPANI HAT	9	2	No
DOMAR	1. DOMAR - NILPHAMARI BORDER	5	3	Yes
	2. DOMAR - DIMLA *	5	1	Yes
	3. DOMAR - CHILAHATI	11	4	No
	4. DOMAR - DEBIGANJ	3	1	No
JALDHAKA	1. JHALDHAKA - TENGOMARI BRIDGE **	7	1	Yes
	2. PANGA -MATULPUR-CHATA ROUTA *	16	5	Yes 8 mi.
	3. JALDHAKA-NIL-DOMAR ROAD	16	2	Yes
	4. JALDHAKA - BAGNAGOR BR.	17	2	Yes 8 miles
KISHOREGANJ	1. TENGOMARI BRIDGE - PAGLAPUR **	18	6	Yes
	2. BAROVITA - TANGAMARI	10	4	No
	3. KISHOREGANJ - BARAIBARI	14	5	Yes
	4. KHOKAR BAZAR - BARAIBARI	20	5	Yes 9 miles

TABLE
NOMINATED ROADS

SUB-DIVISION: NILPHAMARI

THANA	PRIORITY ROADS		MILES	NO. OF PROPOSED BRIDGES	INITIAL SELECTION
	FROM	TO			
NILPHAMARI	1. KOTIGOMARI	GORGRAM**	17	2	Yes
	2. NILPHAMARI	BHOWANIGANJ	16	No	No
	3. NILPHAMARI	KHAN SHAMA PS	10	1	No
	4. NILPHAMARI	D. TEXTILE MILLS	15	2	No
SAIDPUR	1. PUBEJLI	KHAN SHAMA PS	18	2	No
	2. K&L ROAD	CHORAKHOLA UP	9	3	Yes
	3. R&H ROAD	BANDERGANJ PS	6	3	No
	4. HOUSE	DINAJPUR BRD	4		No
SUB:RANGPUR SADAR PHANA-KALIGANJ	1. KAKINA RRSTA	RATNAI BRDGE*** (DURGAPUR)	22	12	Yes
	2. KAKTIA BAZAR	SHAPTI BARI	20	4	No
	3. HOLHEREFARA	DURGAPUR	20	1	No
	4. BHUJLAR HAT	DAIKHLWA	10	3	No

Table continued on next page

SUB-DIVISION : RANGPUR SADAR

THANA	PRIORITY ROAD		MILES	NO. OF PROPOSED BRIDGE	INITIAL SELECTION
	FROM	TO			
GANGACHARA	1. KHILLOGANJ	HARAGACH BDR	16	10	Yes 6 Miles
	2. MATUKPUR	BURIRHAT *	10	4	Yes
	3. PALAJOIR BZR	SARAHARI HAT	9	3	
	4. BURIRHAT	HOOHAR	-	4	No
HATIBANDHA	1. MTDC	BHELAGANJ UP**	15	1	Yes
	2. FATIABANDA	GODDIRMARI	5		
	3. FATIABANDA	BUHANDAI	9		
	4. FATIAZANDA	GEUDUKIA	4		
BADARGANJ	1. BAKSHIGANJ GHAT	TARAGANJ BZIZ	20	2	Yes
	2. KOLARGHAT	BHIMPUR	18	1	Yes
	3. AMTALAGHAT	MADHUPUR	20	1	No
	4. KHORDA BAYBAR	DUBHAGIRHAT	12	5	Yes 4 Miles
KAUNIA	1. SARAI NARYA BZR	MIRLAG RRSTN	5	1	Yes
	2. KAUNIA	MODHUPUR BZR	4	No	No
	3. KAUNIA	R&H RD	0.5	No	No
	4. MODHUPUR BZR	R & H Road	10	4	Yes

SUB: RANGPUR SADAR

THANA	PRIORITY ROADS		MILES	NO. OF PROPOSED BRIDGES	INITIAL SELECTION
	FROM	TO			
MITHAPUKUR	NOT CONSIDERED			PROGRAM	
PATGRAM	1.	PATGRAM DAHOGRAM	8	1	No
	2.	PATGRAM BAURA RS **	8	10	Yes
	3.	PATGRAM JHALANGI	8	4	Yes
	4.	BANDARDAHA KALIRHAT	8	6	No
PIRGANJ	NOT CONSIDERED			PROGRAM	
RANGPUR KOTWALI	1.	LALBAG HAT NASHIR BAD *	6	-	No
	2.	RANGPUR CANTONMENT DHANTALA	10	1	No
	3.	LALBAG HAT SHYMPUR	8	4	No
	4.	UTTAM SHAIRAHAT	10	3	No
PIRGACHA	1.	KOTWALI BORDER SUNDARGANJ **	14	3	Yes
	2.	KOTWALI BORDER PANAILGHAT	13	3	Yes
	3.	RD PR #1 TAMBULPUR	10.3	3	No
	4.	RD R #1 RD PR #2	5.5	-	Yes

Table continued on next page

SUB: KURIGRAM

THANA	PRIORITY ROAD		MILES	NO. OF PROPOSED BRIDGES	INITIAL SELECTION
	FROM	TO			
BHURUNGAMARI	1. BHURUNGAMARI	SHILKHURI	8	0	Yes
	2. BONGOSONAHAT	CHAR BHURUNGAMARI	9	3	No
	3. ANDHARIJHAR	CHAR DHAWRUR KILI	6	1	No
	4. PAGLARHAT	MAIDAM	3	1	No
FULBARI	1. GAGLA	LALMONIRHAT BDR **	9	0	Yes
	2. GORAKINANDAL	KAWAHAGA GHAT**	12	2	Yes 6.5 mi.
	3. NONDANGACHARA	PAKHIRHAT	6.5	1	No
	4. PANI KHUTI BRIDGE-BERAKUTI		8.5	4	No
CHILMARI	1. CHILMARI	RAMIGANJ GHAT	7	2	Yes 4 miles
	2. RAMNA	RAMNA CAMP	4	0	No
	3. DARABUR GHAT	MYMENSINGH BDR	7	3	No
	4. NOTARKANDI	KHEURIAR CHAR	10	3	No
KURIGRAM	1. KURIGRAM	ATHARO KONIA GHAT *	4.5	1	Yes
	2. KURIGRAM	MALBHANGA *	4	0	No
	3. PATESNARI	PANCHGACHI GHAT	8	3	No
	4. HOLOKHANA	TOGRAI HAT	5	0	No

Table continued on next page

SUB: KURIGRAM

THANA	PRIORITY ROAD		MILES	NO. OF PROPOSED BRIDGES	INITIAL SELECTION
	FROM	TO			
LALMONIRHAT	1. MAHENDRANAGAR	R&H	3	1	Yes
	2. KULAGHAT	RAJAR HAT	10.6	1	Yes 4 miles
	3. MOGALHAT -	KALMATI	14	3	No
	4. MAHENDRANAGAR	SAFTIBARI	5.5	1	Yes
NAGESWARI	1. NAGESWARI -	NEWASHI BAZAR**	6	2	Yes
	2. MALBHANGA	NAKNARGANJ	8	0	0
	3. NAGESWARI -	HASNA BAD	8	3	No
	4. NAGESWARI	KACHAKATA	10	1	No
RAUMARI	1. DAT BHANGA	RAJIBPUR *	22	8	No
	2. RAUMARI	ALGARCHAR	7	3	No
	3. KARTIMARI	BORAIBARI	7	0	No
	4. BARAI BARI	DATBHANGA	7	0	No
ULIPUR	1. BAGNA	RAJAR HAT RS*	18	4	Yes
	2. THETRAI	RANIGANJ BAZAR	10	2	Yes
	3. ULIPUR	BAJRAGHAT	9	2	Yes
	4. ULIFUR	BURA BARI HAT	9	0	No

Table continued on next page

SUB: GAIBANDHA

THANA	PRIORITY ROADS		MILES	NO. OF PROPOSED BRIDGES	INITIAL SELECTION
	FROM	TO			
PALASHEARI	1. TENGRA	BADIAKHALI (RR)	18	1	
	2. MOHESHPUR	TRIMUHINI (BASHUDEPUR)	6	1	
	3. SADULIAPUR	KAUSARERARA (BASHUDEPUR)	5	1	
	4. GAIBANDHA	GOBINDAGANJ	3	0	
GAIBANDHA	1. GAIBANDHA	KAMARYANI	12	2	Yes 6 miles
	2. N.S.				
	3. N.S.				
	4. N.S.				
GOBINDAGANJ	1. BARADAHAT GHAT	NAKAIHAT	6	2	No
	2. NILKANTA PUR	NAKAIHAT	12	4	No
	3. BOGRA BORDER	GORAGHAT *	4	2	No
	4. CHANDPARA	UZIRER PARA	10	5	Yes
FULCHHARI	1. FULCHARI	BADIAKHALI	7	0	Yes 2 miles
	2. GAJARIA (WAPDA)	CHANDIA UP	9	3	No
	3. RATANPUR	BADIAKHALI			NO
	4. FULVERGHAT	FABIA BRIDGE	5	2	No

Table continued on next page

SUB: GAIBANDHA

THANA	PRIORITY ROADS FROM	TO	MILES	NO OF PROPOSED BRIDGES	INITIAL SELECTION
SADULLAPUR	1. SADULLAPUR	DHAPER HAT	12	3	Yes 3 miles
	2. SADULLAPUR	NALDANGA PS	6.5	1	Yes
	3. SADULLAPUR	DHOLBANGA	10	15	Yes
	4. SADULLAPUR	TULSHIGHAT	5	1	No
SHAGHATTA	1. BONARPARA	SHAGATTA	6.5	2	Yes
	2. SHAGATTA	BIHARATKHALI**	4	1	Yes
	3. CHORKATA	JUMARBARI	6.5	1	Yes 4 miles
	4. NOT SUBMITTED				
SUNDARGANJ	1. GAIBANDHA BORDER	TARAPUR KATANAD**	24	10	Yes 18 miles
	2. PACCA RD	KAPASIA EMBANK- MENT	15	4	Yes 7 miles
	3. MANIRAMKAZI	LUXMIFUR BOR.	19	10	No
	4. BAMANDANGA	M. BORDER	5	3	No

After the initial screening of all nominated roads and the adjustment of the road network, the mileage for the preliminary network was reduced to 546 miles. These roads are shown on the map in Figure 8 and listed in Table 25.

E. Priority Road Ranking

For ranking the screened roads the consultant devised a system that consisted of identifying and weighting selected benefit factors for each road and then comparing them to the estimated per mile cost for each road. This gives an artificial benefit/cost ratio that can easily be ranked, road by road. It should be stressed that this ratio does not give a true benefit/cost ratio and does not indicate feasibility.

Because many proposed roads are dependent upon the construction of other proposed roads, some additions and deletions of road segments were made. These adjustments were necessary to ensure accessibility and present an integrated rural road network.

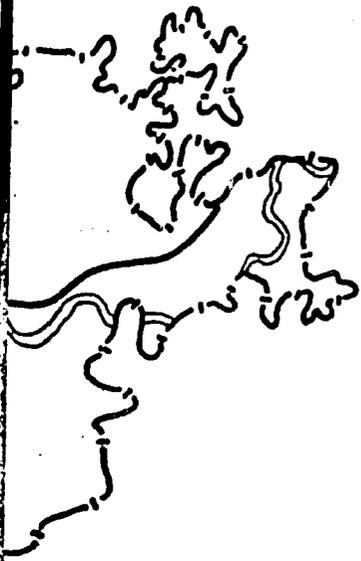
F. Data Problems

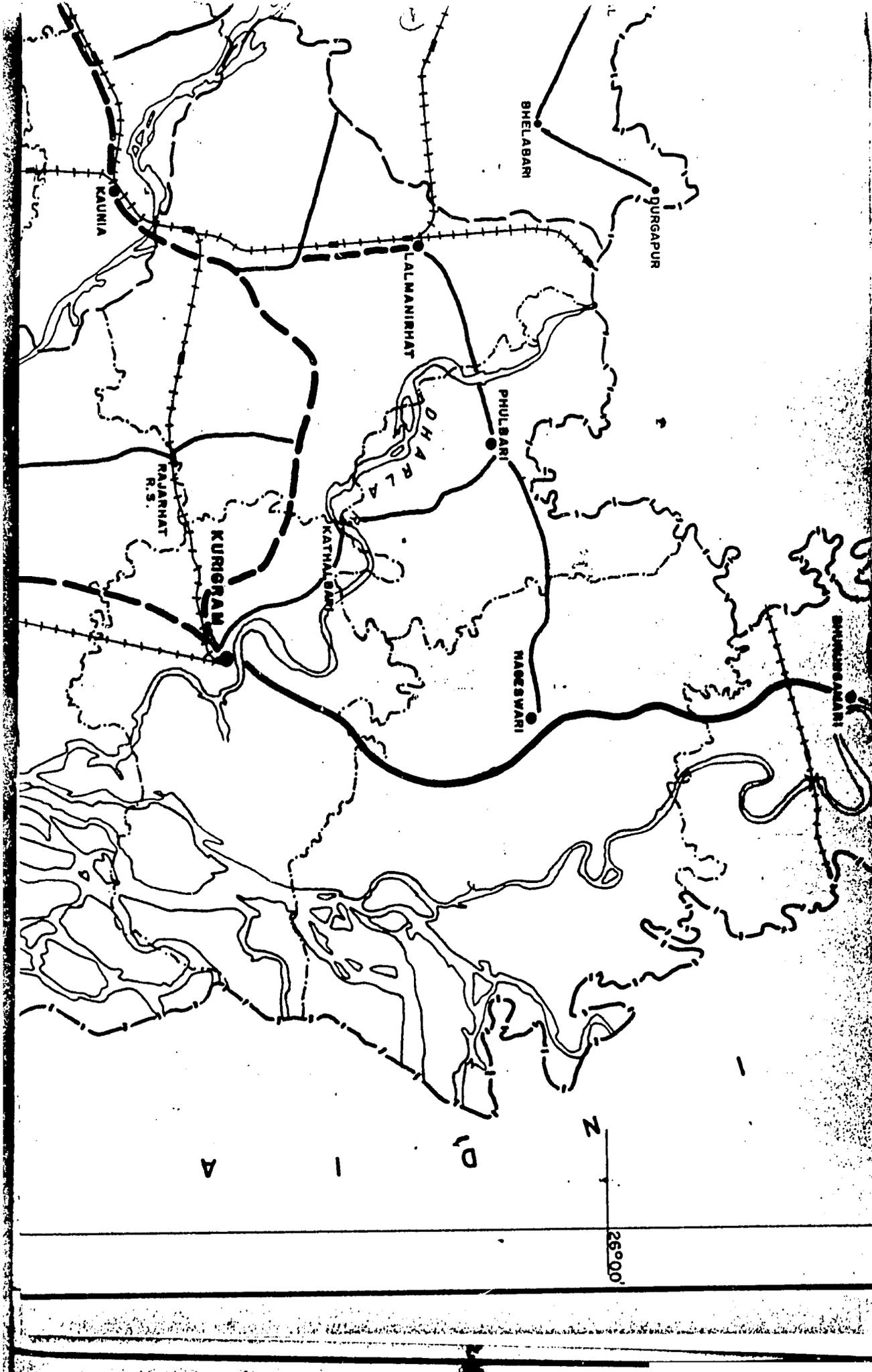
All of the basic data used in estimating costs and benefits for the road ranking system were supplied by district and thana officials. For some thanas the economic, agricultural and engineering data received by the consultant were either not carefully prepared or incomplete. In many instances data were available from alternate sources but in others they were not and unfortunately this adversely affected the priority ranking of individual roads.

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KAUNIA

RAJANNAT
R.S.

KURIGAM

KATNALBAR

LALMANIRHAT

DHARLA

PHULBARI

NAGESWARI

BHELABARI

GURGAPUR

BHUNESWAR

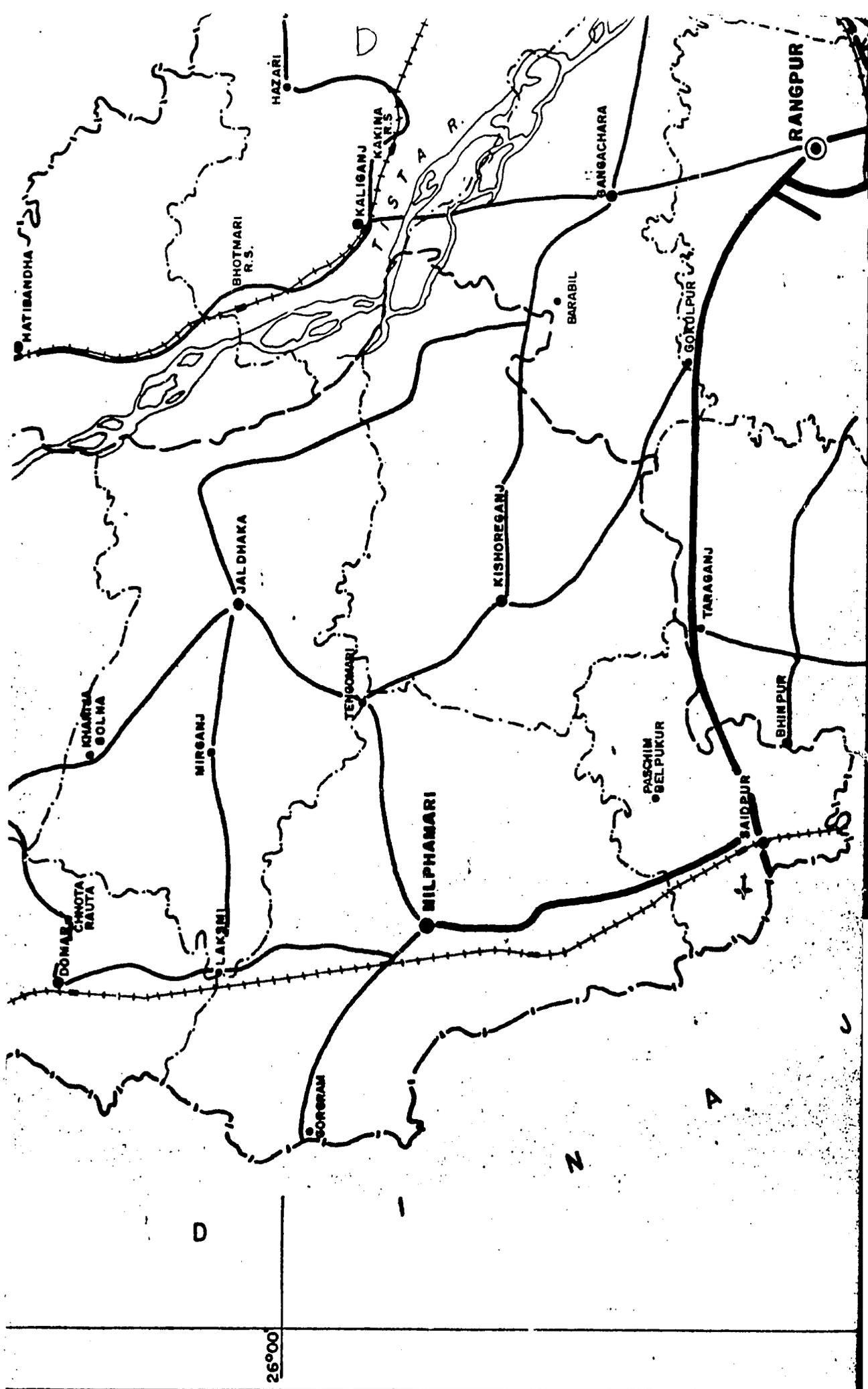
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SAIDPUR

PASCHIM BELPUKUR

TARAGANJ

GORULPUR

BARABIL

KISHOREGANJ

BANGACHARA

RANGPUR

HAZARI

KALIGANJ
KAKINA
R.S.

BHOTMARI
R.S.

MATIBANDHA

JALDHAKA

MIRGANJ

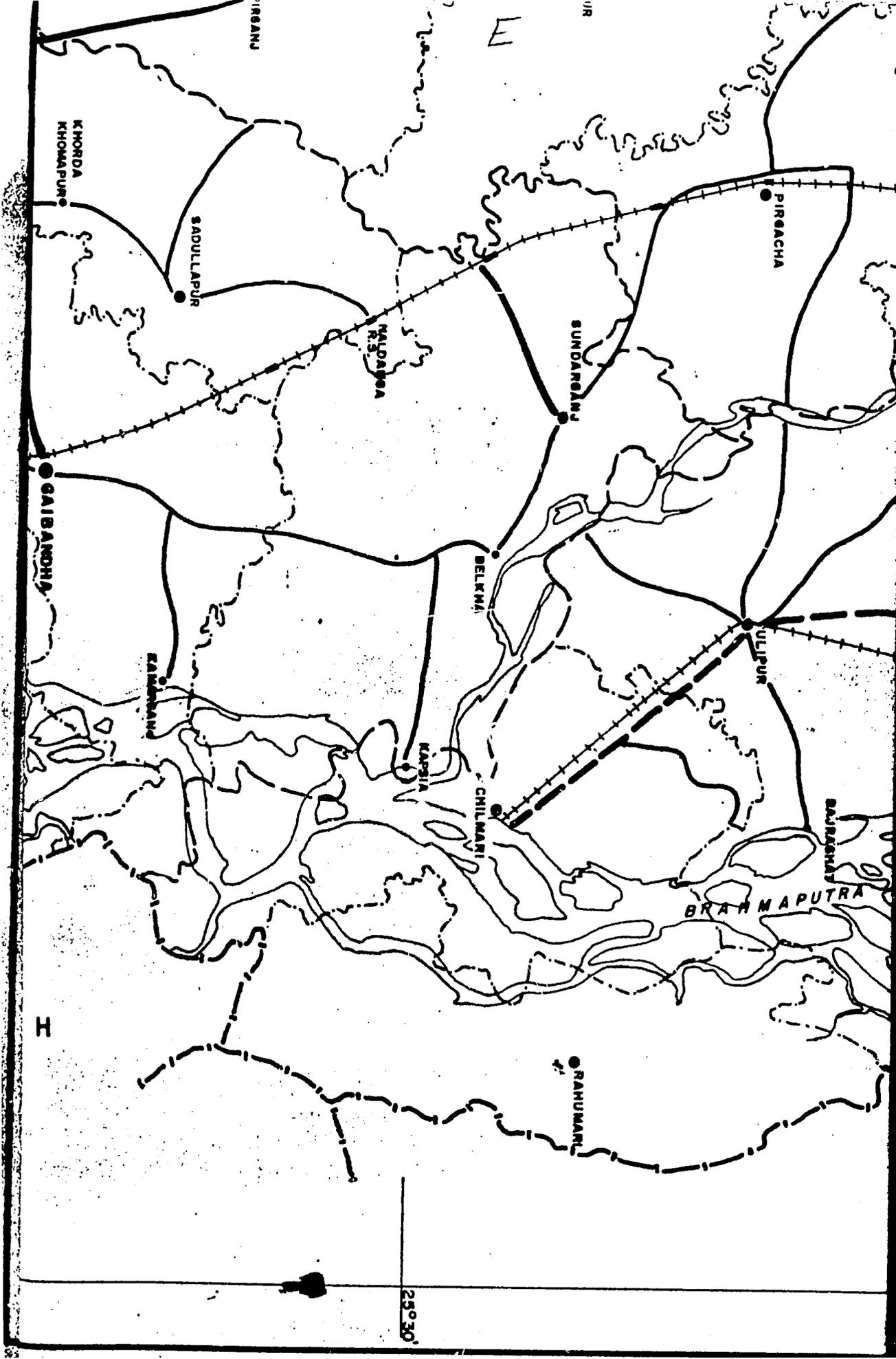
TENGOMARI

KHARATA
BOLNA

DOMAR
CHHOTA
NAUTA

LAKMI

GORSEAM



KHORDA
KHOMAPUR

SADULLAPUR

NADAPASA
R.S.

SUNDRANAGUR

PIRBACHA

GAIBANDHA

BELKMA

ULIPUR

KARIMNAGUR

KAPASIA

CHILMANI

BAIRAGHAT

BRAHMAPUTRA

RAHUMANI

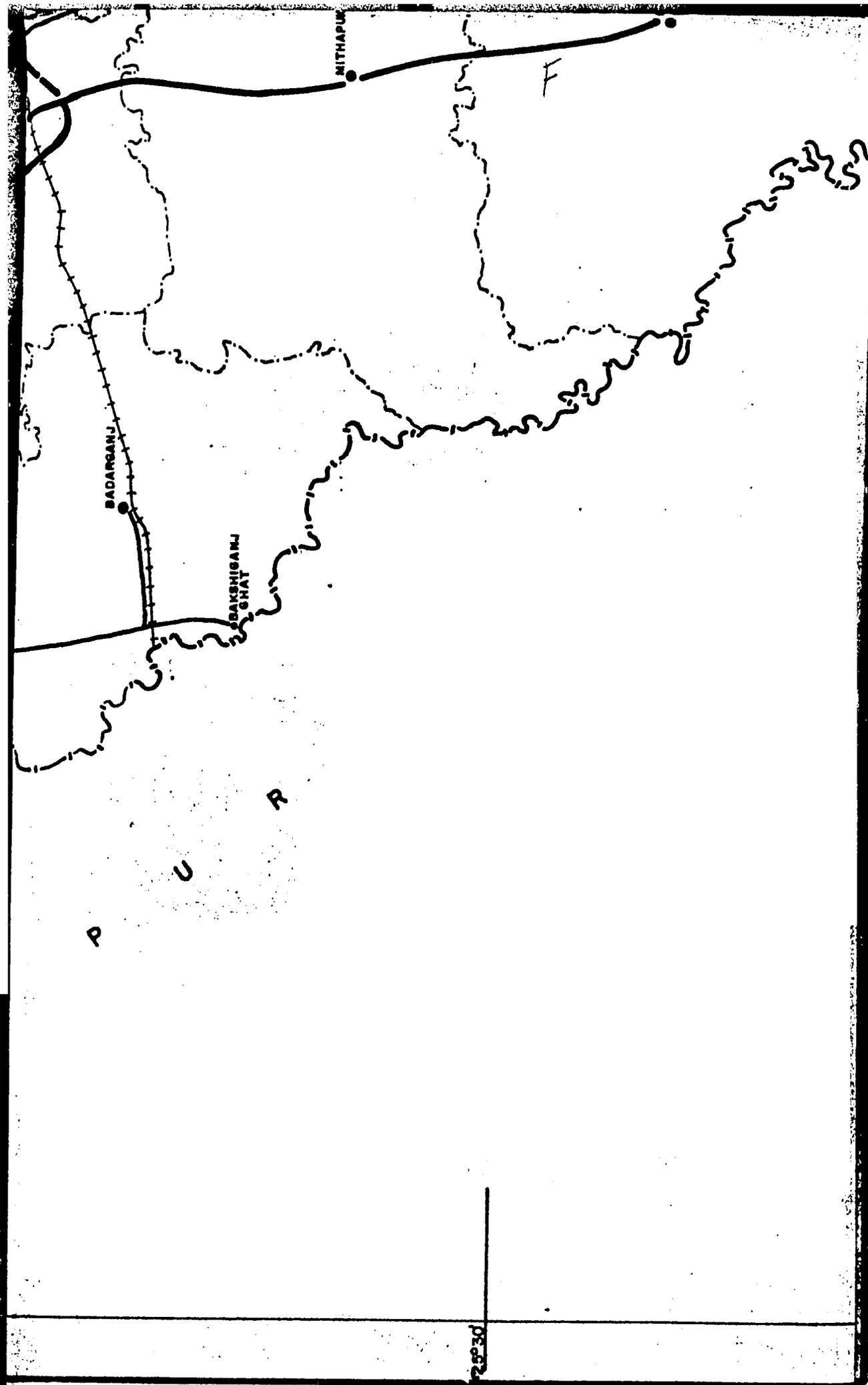
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NITHAPUR

BADARGANJ

BAKSHIGANJ
GHAT

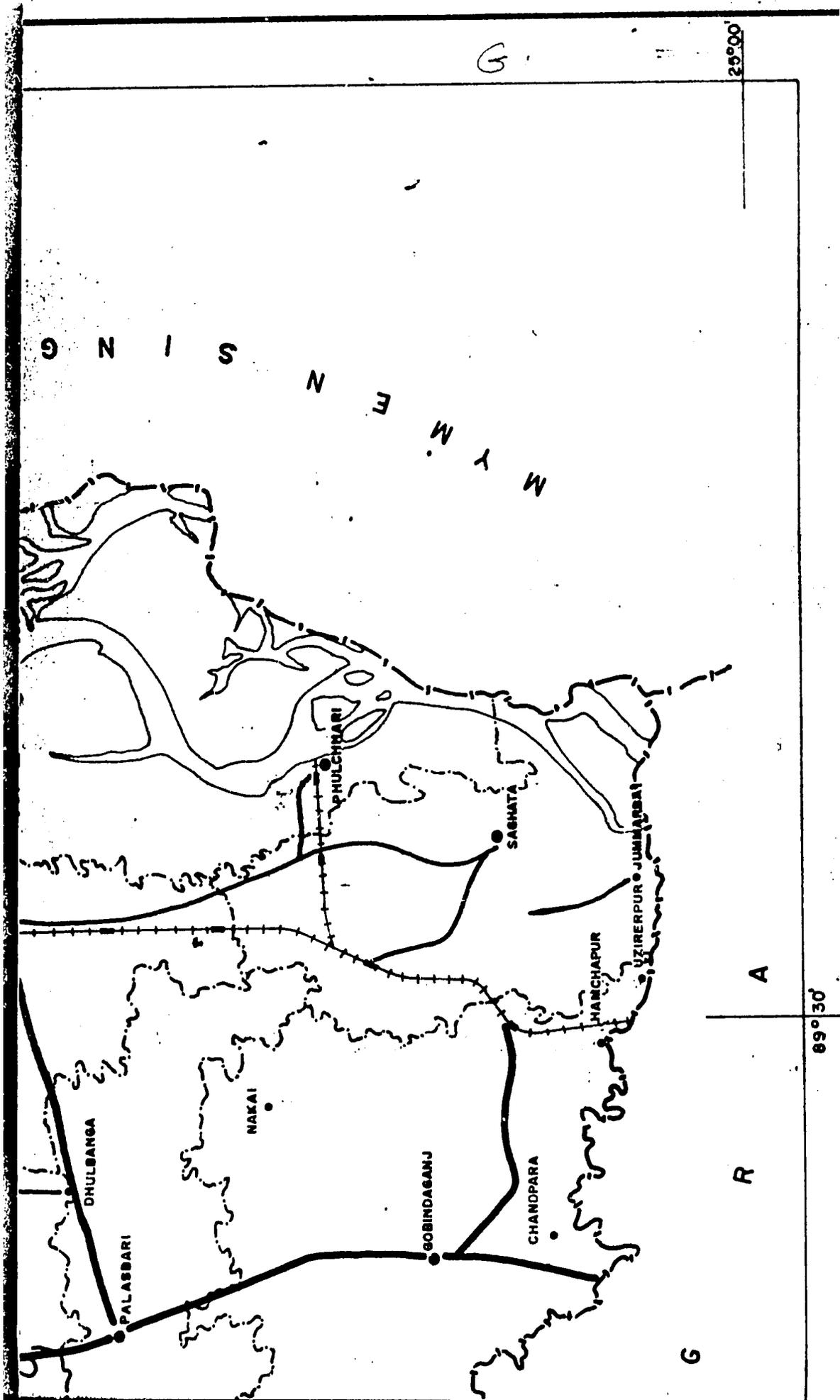
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PALASSARI

DHULBANGA

NAKAI

GOBINDASANJ

CHANDPARA

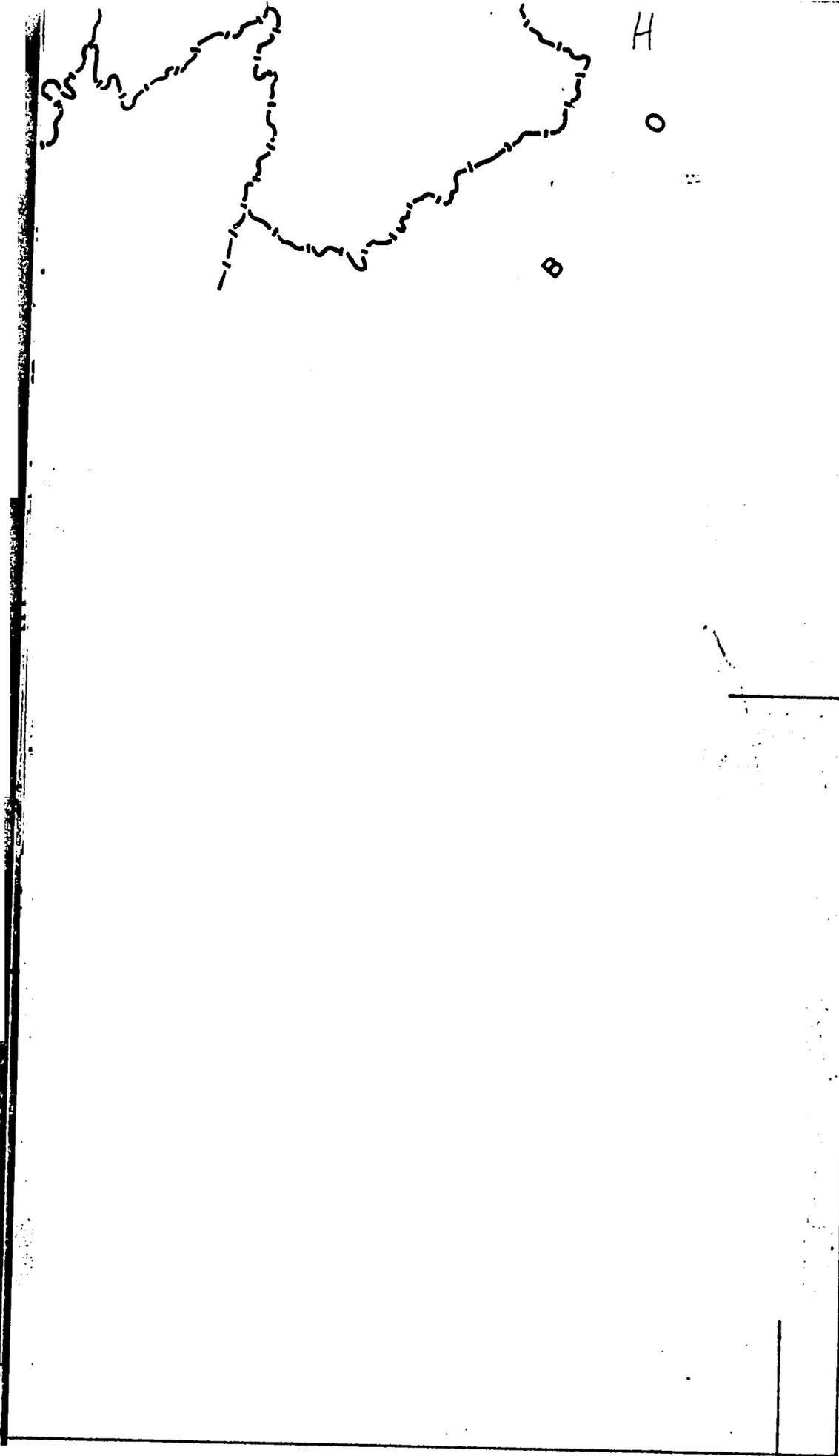
PHULCHIBARI

SAKHATA

HANCHAPUR

UZIRPUR

JUMBARSAI



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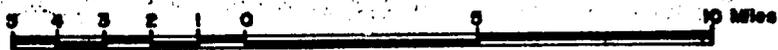
DIST. RANGPUR

LEGEND:

Roads (R & H)	
Roll Roads	
Water ways	
Major Airport	
Proposed Roads (R & H)	
Preliminary Road Network	

J

SCALE : 1 Inch = 4 Miles



GOVERNMENT OF
THE PEOPLE'S REPUBLIC OF BANGLADESH

RURAL ROADS STUDY

SCREENED ROAD NETWORK

LOUIS BERGER INTERNATIONAL INC. AND
RAHMAN & ASSOCIATES LTD.

PREPARED BY : Z. Abedin, Rahman	RECOMMENDED :
CHECKED :	APPROVED :
DATE :	DRG. NO.

X. RECOMMENDED ROAD NETWORK

A. Network

As shown on the map in Figure 9 the rural road network recommended for Rangpur consists of 28 roads totalling approximately 239 miles. Twelve of these roads are Class IV roads with a total length of 114 miles. The remaining are Class V roads and total 125 miles. The total estimated network cost is 20.6 million, which averages \$ 86 thousand per mile.

The roads and mileage of the recommended network are distributed by subdivision as shown in Table 27

TABLE 27
RANGPUR: ROADS BY SUBDIVISION

Subdivision	Class	No. of Roads	Total Mileage
Sadar	IV	2	26
	V	3	29
Total:		5	55
Nilphamari	IV	6	52
	V	4	28
Total:		10	80
Kurigram	IV	3	18
	V	5	45.5
Total:		8	63.5
Gaibandha	IV	1	18
	V	4	22.5
Total:		5	40.5

As reflected in the table, the largest number of roads in the recommended network are in Nilphamari Subdivision. This subdivision now has virtually no rural roads and the recommended network will interlink the thanas of Dimla, Domar, Jaldhak and Kishoreganj with subdivision headquarters in Nilphamari.

A large number of roads is also included in Kurigram Subdivision. Among these are important connections from Kurigram Town to Phulbari and Nageswari. Some significant road segments could not be considered because of insufficient data: these are indicated on the map in Figure 9.

In Rangpur Sadar the recommended road network includes five of eleven thanas in the subdivision. What is particularly noticeable is that the thanas north of the Tista River have been omitted. However, the local road nominations for this area ranked very low in the road ratings. Furthermore, the key roads that were proposed were close to or parallel to the existing railway. Time did not permit more than one visit to this district and alternatives could not be fully explored with local officials.

In Gaibandha Subdivision roads are recommended in the thanas of Gaibandha, Sadullapur and Sundarganj. In addition, one road in Shaghatta is deemed worthy of further study. The recommended roads in Sundarganj and Gaibandha thanas would open up a large rural area not currently served by the existing transport network and would link many markets with the railroad and the road network. It would also join the northern portion of Gaibandha with Kurigram Subdivision via ferry near Belkha Market connecting Ulinur and Sundarganj Thanas.

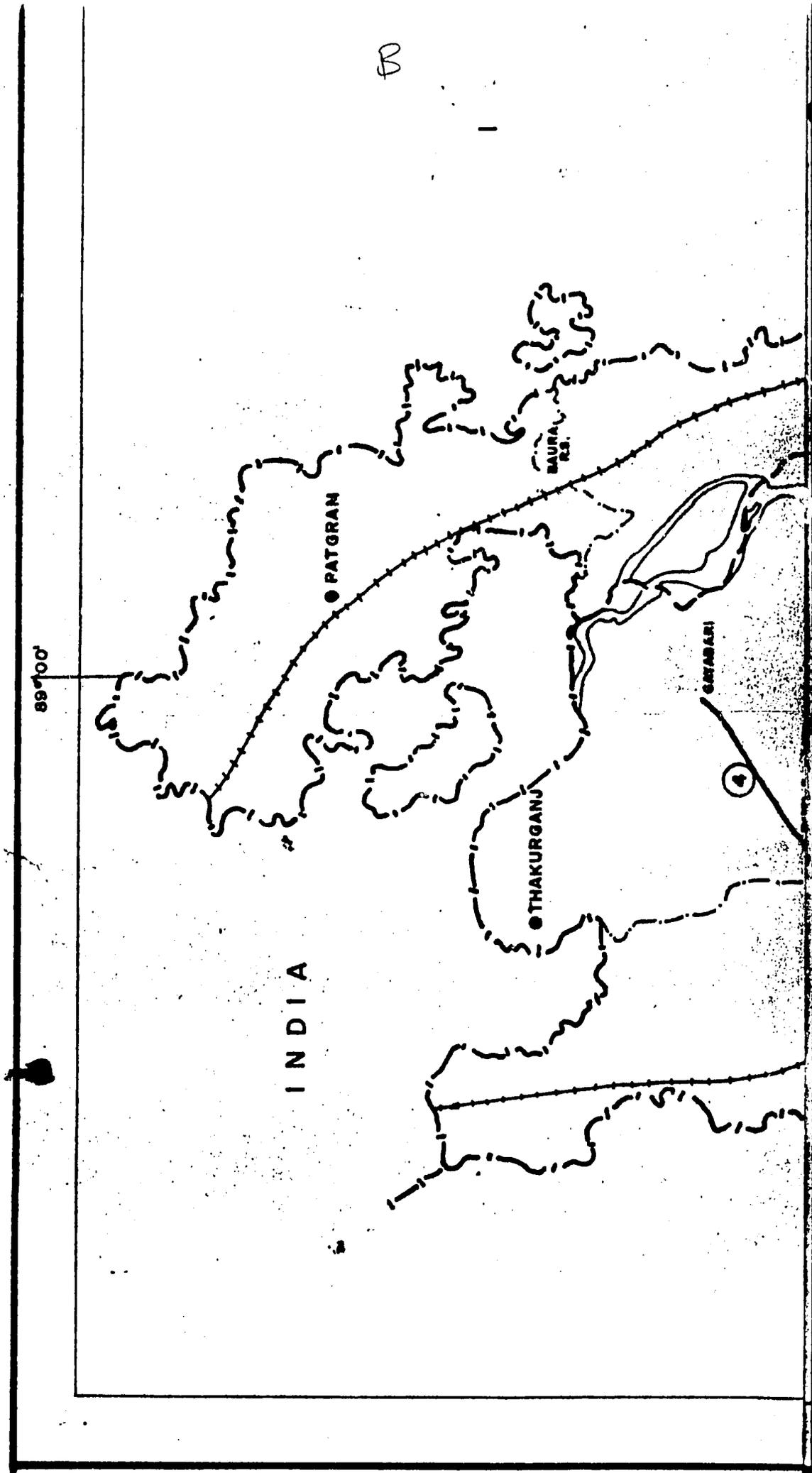
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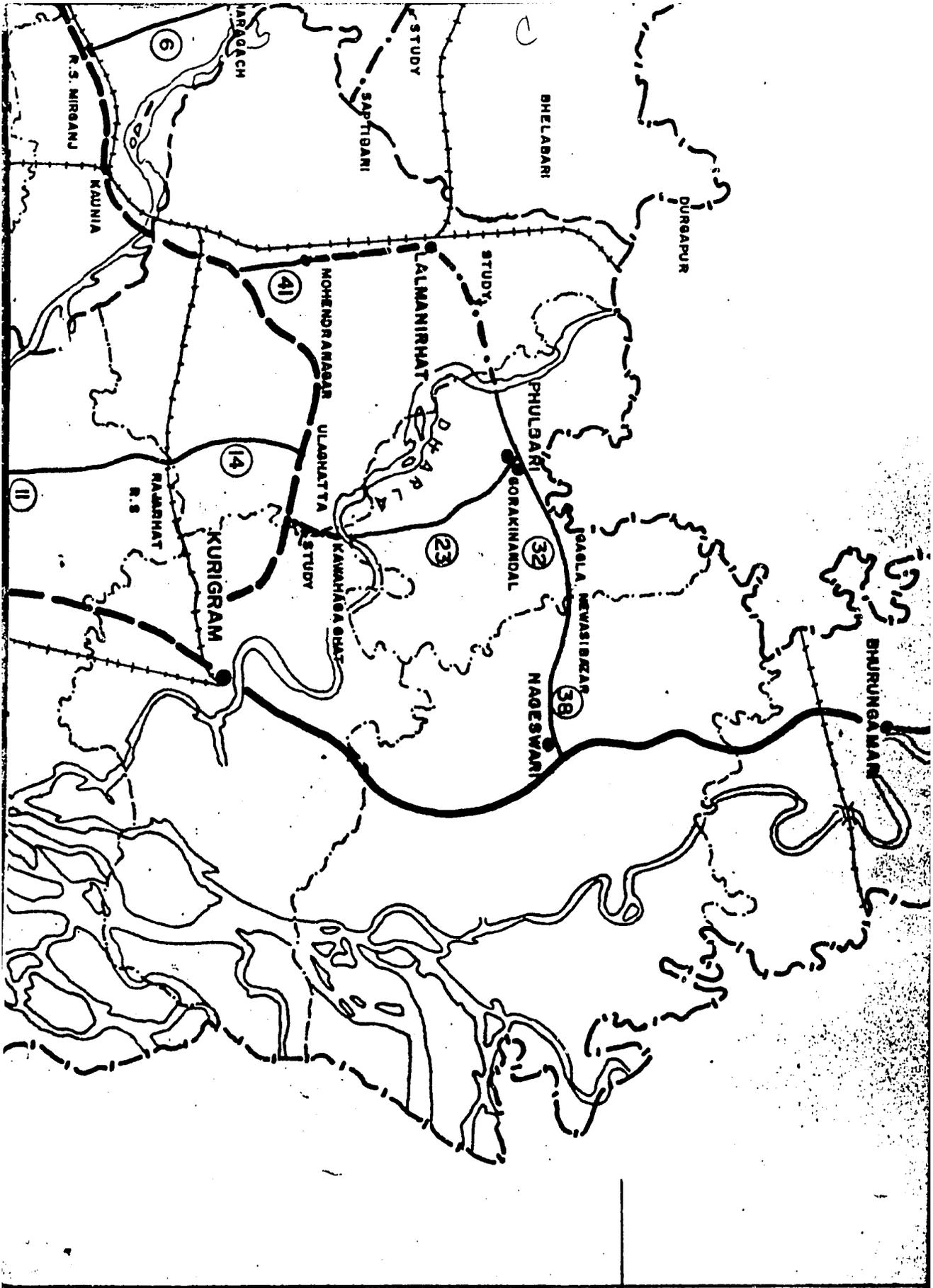
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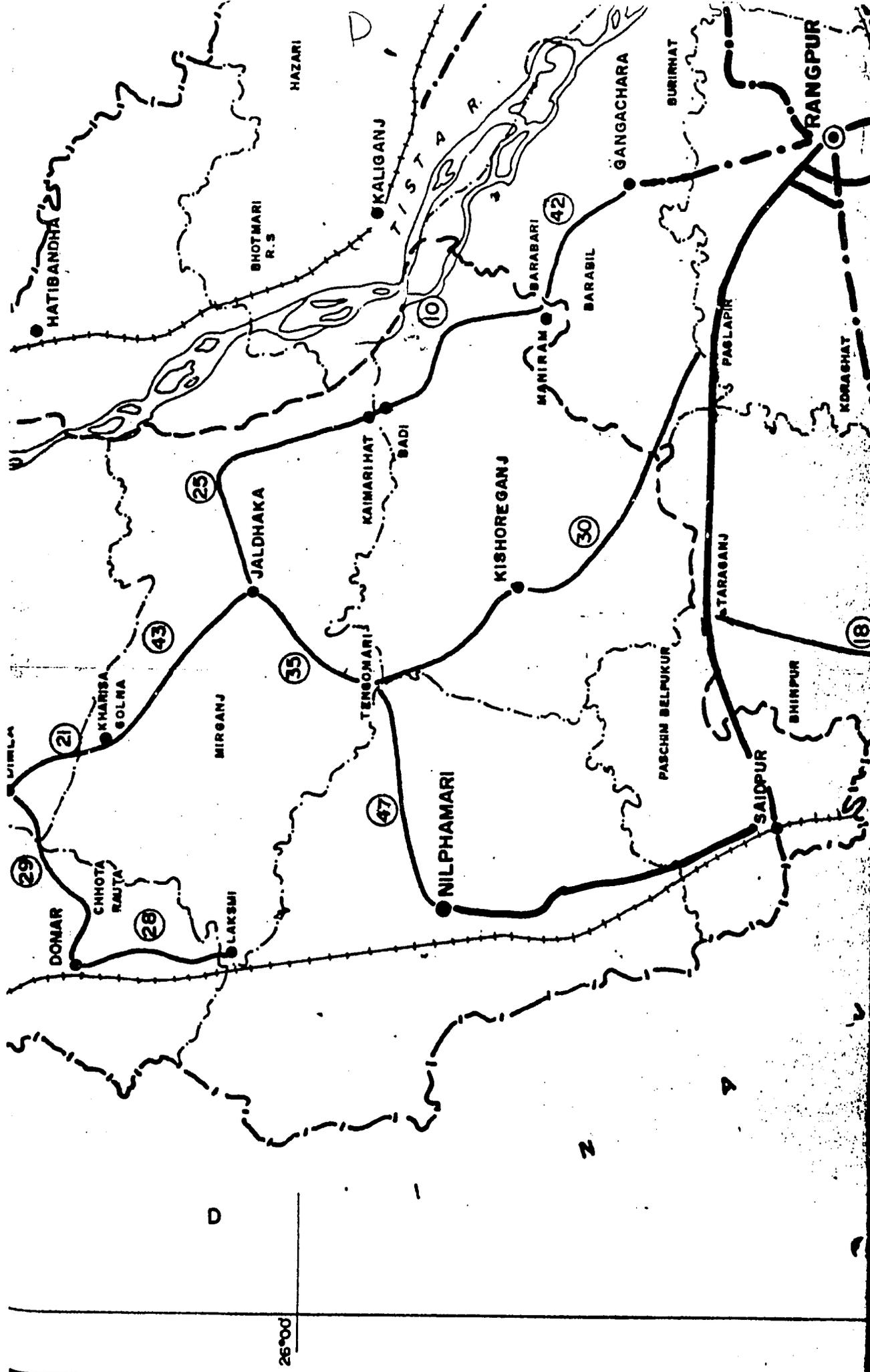
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HATIBANDHA

HAZARI

BHOTMARI
R.S.

KALIGANJ

GANGACHARA

BURKHAT

RANGPUR

BARABARI

BARABIL

MANIRAM

10

42

JALDHAKA

KAIMARIHAT

BADI

KISHOREGANJ

30

25

MIRGANJ

35

TENSOMARI

TARANGANJ

PASCHIM BELPUKUR

KORASHAT

MIRLA

21

KHARSA
SOLNA

43

DOMAR

CHHOTI
KAUTA

28

LAKSMI

NILPHAMARI

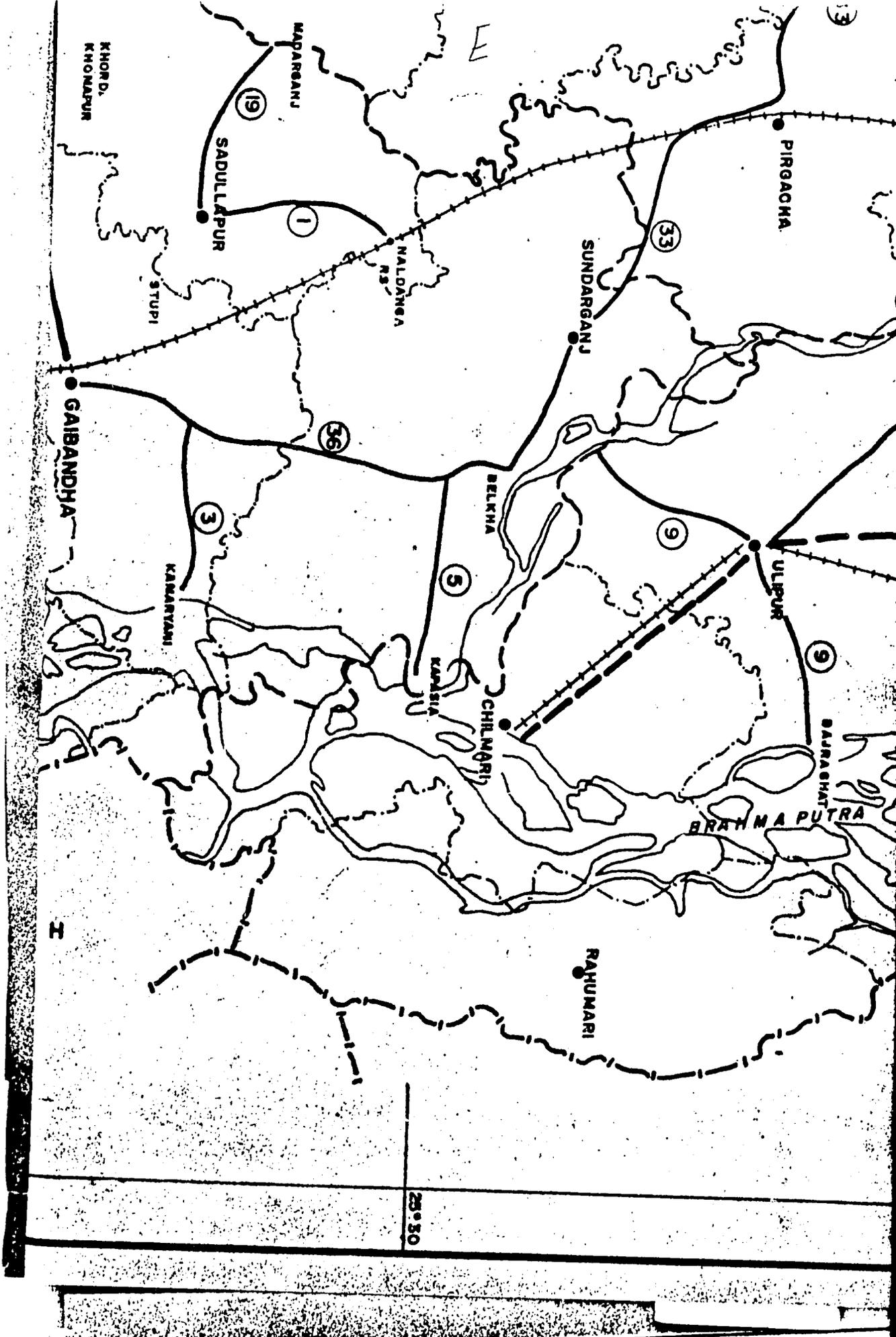
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SAIDPUR

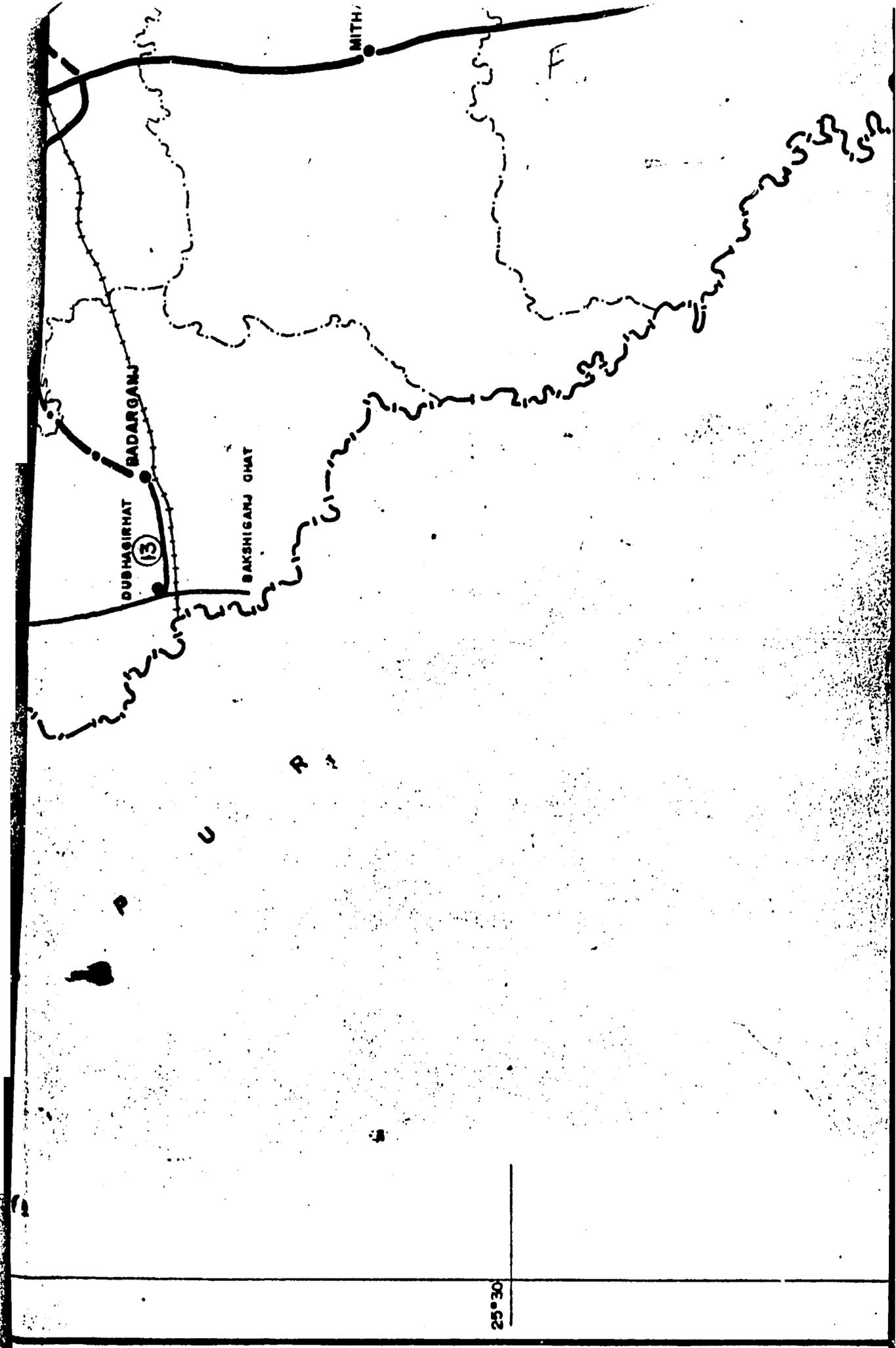
BHIRPUR

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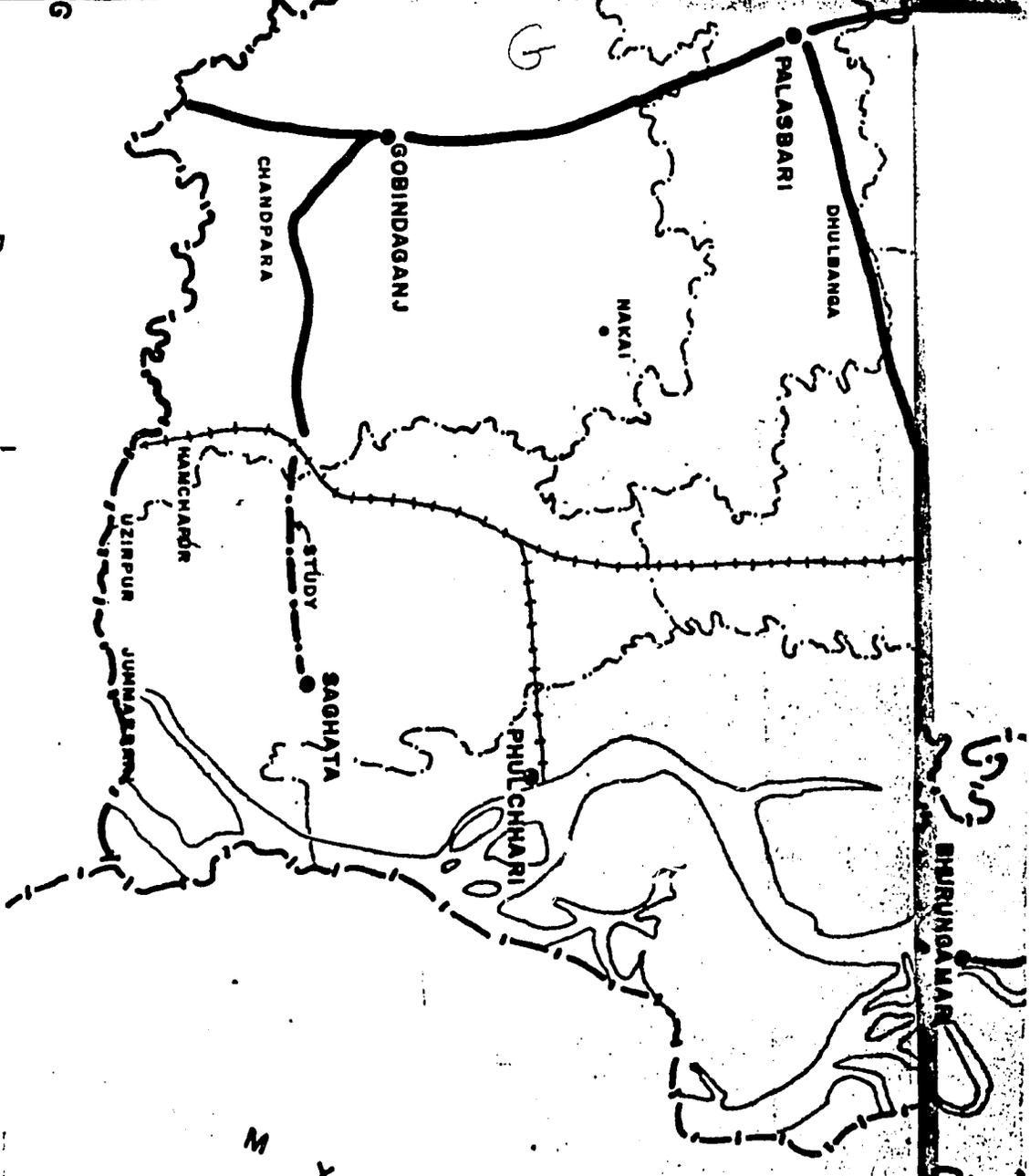
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DR. BIRUNGAMAR

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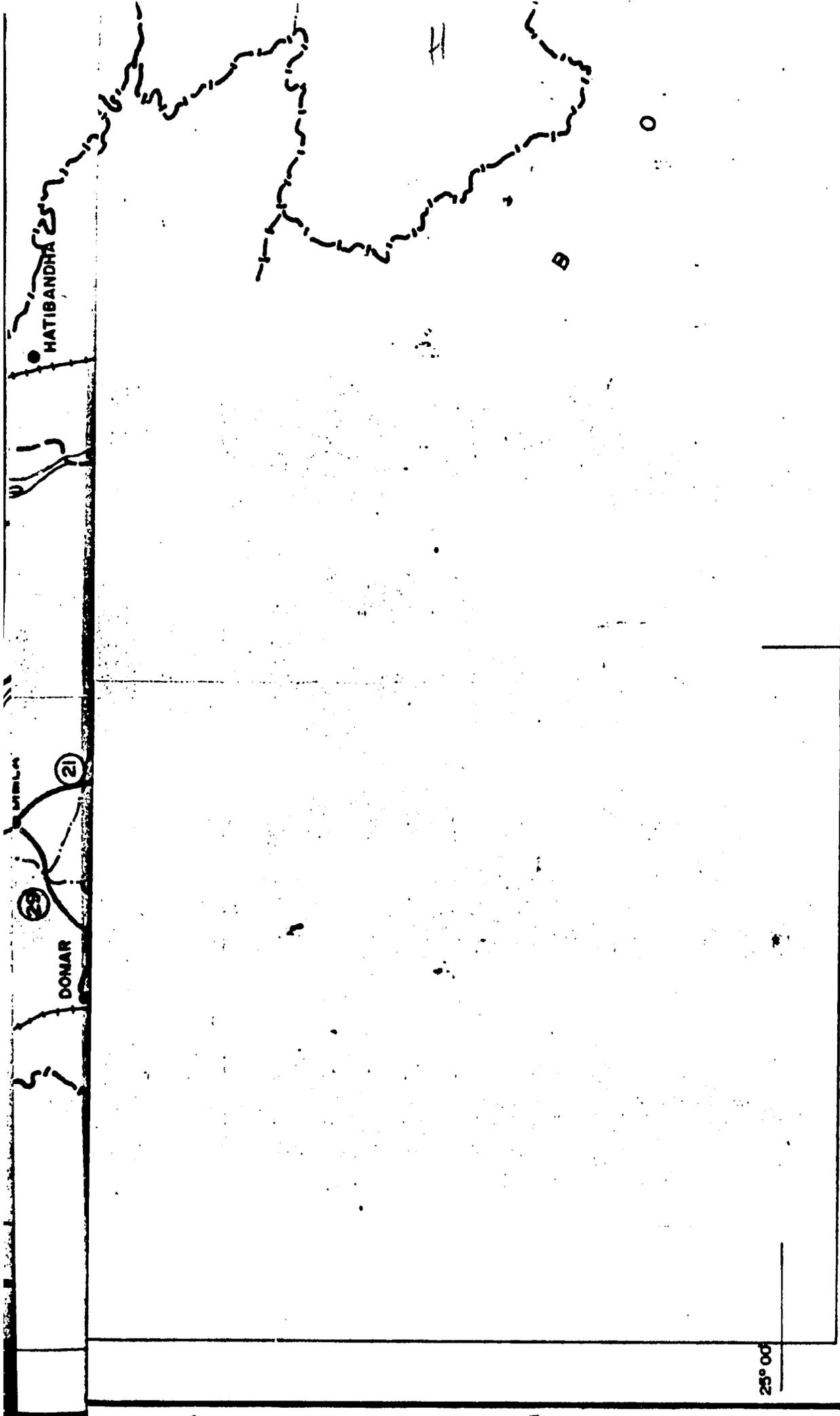
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HATIBANDHA

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DIST. RANGPUR

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LEGEND

ROADS (R & H)

PROPOSED ROADS (R & H)

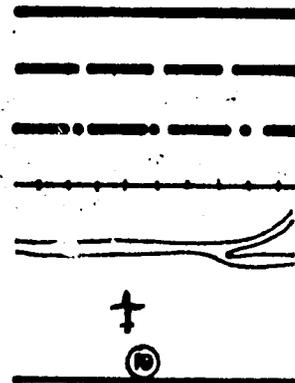
ROADS DIST.(COUNCIL)

RAIL ROADS

WATER WAYS

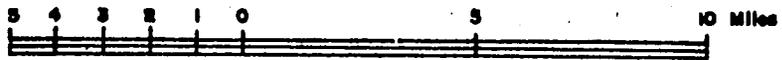
MAJOR AIRPORT

RECOMMENDED ROADS



J

SCALE 1 Inch = 4 Miles



GOVERNMENT OF THE PEOPLES REPUBLIC OF BANGLADESH	
RURAL ROADS STUDY	
RECOMMENDED ROAD NETWORK	
LOUIS BERGER INTERNATIONAL INC AND RAHMAN & ASSOCIATES LTD.	
PREPARED BY S. ISLAM	RECOMMENDED <i>W. Ward</i>
CHECKED <i>J. Rahman</i>	APPROVED <i>E. Prentice</i>
DATE	DRG. NO.

The consultant did not recommend any road segments for Mithapukur, Pirganj, Polashbari, and Gobindaganj Thanas, since some rural road construction is planned in these areas under the World Bank integrated area development projects.

A summary of the salient facts connecting the recommended network follows:

Mileage	239
Estimated network cost (US \$)	20.6 million
Number of all roads	28
Average per mile cost (US \$)	86.2 thousand
Number of Class IV Roads	12
Mileage of Class IV Roads	114
Number of Class V Roads	16
Mileage of Class V Roads	125
Shortest road segment	2 miles
Longest road segment	12 miles

Table 28 lists each road included in the recommended network by priority ranking together with the thanas and subdivisions served, class of road, length and estimated cost.

Table 29 gives the priority values and other data for the remainder of the 50 screened roads not included in the recommended network.

TABLE 28
RECOMMENDED ROAD NETWORK

ROAD	THANA	CLASS	MILES	COST (000 \$)	PRIORITY VALUE	RANK	REMARKS
SADULLAPUR-NALDANGA RR STA.	SADULLAPUR	V	6.5	70	4.18	1	
GAIBANDHA (R&H) ROAD - KUMARIANI	GAIBANDHA	V	6	184	2.59	3	
DIMLA - GAYABARI	DIMLA	V	7	128	2.52	4	
PACCA RD - KAPASIA EMBANK- MENT	SUNDARGANJ	V	7	186	2.33	5	
(HARAGACH) SARAINARIYA BAZAR - MIRGANJ R.R. STA.	KAUNIA	V	5	102	2.25	6	
BHURUNGAMARI - SHILKURI	BURUNGA- MARI	V	8	135	2.05	8	
ULIPUR - RAJARHAT	ULIPUR	V	9	260	1.86	9	
BADI - MANIRAM	KISHORE- GANJ	V	9	195	1.75	10	
ULIPUR-RAJARHAT RR STA	ULIPUR	V	18	590	1.56	11	
BADARGANJ-DUMNAGIR HAT	BADARGANJ	V	4	173	1.29	13	
ULAGHATTA - RAJARHAT	LALMONIRHAT	V	4	105	1.27	14	
BAKSHIGANJ GHAT - TARAGANJ	BADARGANJ	V	20	818	0.94	18	
SADULLAPUR-MADARGANJ	SADULLAPUR	V	3	192	0.91	19	
DIMLA-SHATIBARIHAT	DIMLA	V	4	253	0.75	21	
GORAKINANDAL - KAWAHAGA GHAT	FULBARI	V	6.5	542	0.63	23	
JALDHAKA-NEKBATA-KAIMARI	JALDHAKA	V	8	518	0.56	25	

ROAD	THANA	CLASS	MILES	COST (₹ \$)	PRIORITY VALUE	RANK	REMARKS
DOMAR-LAKSMI (NILPHAMARI BRDR)	DOMAR	IV	5	578	0.44	28	
DOMAR - DIMLA	DOMAR	IV	5	551	0.44	29	
TENGOMARI BRIDGE - PAGLAPIR	KISHOREGANJ	IV	18	2,086	0.42	30	
GAGLA -LALMANIRHAT BORDER	FULBARI	IV	9	1,079	0.39	32	
KOTWALI BORDER - SUNDER GANJ	PIRGACHA	IV	20	2,675	0.38	33	
JALDHAKA - TENGOMARI BRIDGE	JALDHAKA	IV	7	1,036	0.36	35	
GAIBANDHA - SUNDARGANJ	SUNDARGANJ	IV	18	2,546	0.32	36	
NAGESWARI-NEWASHI BAZAR	NAGESWARI	IV	6	1,037	0.29	38	
MOHENDRANAGAR-R&H ROAD	LALMONIRHAT	IV	3	560	0.27	41	
GANGACHARI - BARABARI	GANGACHARA	IV	6	1,468	0.26	42	
JALDHAKA - GOLNA	JALDHAKA	IV	8	1,368	0.26	43	
NILPHAMARI - TENGOMARI BRIDGE	NILPHAMARI	IV	9	1,664	0.22	47	

TABLE 29
PRIORITY VALUES FOR SCREENED ROADS
NOT INCLUDED IN NETWORK

ROADS	THANA	CLASS	MILES	COST(000\$)	PRIORITY VALUE	RANK	REMARKS
FULCHURI--SAGHATA-- GAIBANDA	FULCHURI	V	2	34	3.21	2	
KURIGRAM - ATHAR KAUMIA GHAT	KURIGRAM	V	4.5	104	2.07	7	
FATGRAM--JHALANGI	FATGRAM	V	8	164	1.39	12	
SUJALEUR - JUMAR BARI	SAGHATA	V	4	236	1.20	15	
KOLARGHAT--BUNIPUR	BADARGANJ	V	18	517	1.20	16	
SAGHATA--BONARFARA	SAGHATA	V	6.5	480	0.98	17	
MOHENDRANAGAR-- SAFIBARI	LALFONIRHAT	V	5.5	246	0.83	20	
D.C. ROAD - RANIGANJGHAT	CHILMARI	V	4	289	0.67	22	
SAGHATA--BHARAT KHALI	SAGHATA	IV	4	516	0.59	24	

ROADS	THANA	CLASS	MILES	COST(000\$)	PRIORITY VALUE	RANK	REMARKS
ROAD PRICRITY N ₁ - ROAD PRICRITY N ₂	PIRGACHA	IV	5.5	717	0.52	26	
KOTWALI BORDER - PANAIL GHAT	PIRGACHA	IV	8	1,218	0.47	27	
THETRAI-RANIGANJ BAZAR	ULIPUR	IV	10	1,310	0.39	31	
TTDC-BIBLAGANJ U.F	HATBANDHA	IV	15	1,530	0.37	34	
KISHOREGANJ- PARAIBARI	KISHORE GANJ	IV	14	1,591	0.32	37	
DOMAR BORDER - KALIGANJ	DIMLA	IV	7	958	0.29	39	
MUTUKPUR - BURIRHAT	GANGACHARA	IV	10	1,581	0.28	40	
GANGACHARA-HARAGACH	GANGACHARA	V	9	814	0.25	44	
JALDHAKA-MILPHAMARI- DCMAR ROAD	JALDHAKA	IV	16	2,580	0.25	45	
KAKINA STN.-RATNAI BRIDGE(DURGAPUR)	KALIGANJ	IV	22	4,396	0.23	46	
SADULLAPUR-DHULBHANGA	SADULLAPUR	IV	10	1,595	0.22	48	
PATGRAM - BAURA R.S	PATGRAM	IV	8	1,249	0.21	49	

B. Cost Estimate Constraints

The costs presented road by road in these tables are economic costs, that is, after all taxes and duties have been deducted. They do not include costs of any land acquisition for right-of-way. They are based upon estimates supplied by local and district officials for road mileages bridge lengths and have not been checked by the consultant. It should be noted that local officials do not have access to any distance measuring equipment, and the consultant has been faced with many data inconsistencies in the course of study.

Table 30 gives the estimated costs separated into local currency and foreign exchange components for each of the 28 road segments in the recommended network. US dollar equivalents for each segment are included in the table.

TABLE 30
 COSTS BY RECOMMENDED ROAD SEGMENTS

TAKA 16 = US \$ 1.00

RANK	ROAD	SUBDIVISION	MILES	CLASS	COSTS (000)		
					TAKA AND US \$ EQUIV.	US \$	TOTAL (US \$)
1	SRIULLA JR-WALDANGA	GAIBANDHA	6.5	V	Tk. 829 US 52	18	70
2	FULCHURI - GAIBANDA	GAIBANDHA	2	V	Tk. 406 US 25	9	34
3	GAIBANDHA-KUMARIYANI	GAIBANDHA	6	V	Tk. 2,113 US 132	52	184
4	BHILA - G. V. BARI	NILPHAMARI	7	V	Tk. 1,424 US 89	39	128
5	PACCA ROAD - KHELSIA LMPD	GAIBANDHA	7	V	Tk. 1,924 US 120	66	186
6	SAPAINARIA BAZAR (HARAGUCH) - MIRGANI RR STA.	SADAR RANGPUR	5	V	Tk. 1,113 US 70	32	102
8	BHURUNGAMARI - SHILKHURI	KURIGRAM	8	V	Tk. 1,519 US 95	40	135

TAKA 16 = US \$ 1.00

RANK	ROAD	SUBDIVISION	MILES	CLASS			
					TAKA	US \$	TOTAL (US \$)
9	ULIPUR - BAJRIGHAT	KURIGRAM	9	V	Tk. 2,989 US 187	74	260
10	BARSI - MALIPAM	NILPHAMARI	9	V	Tk. 2,060 US 129	66	195
11	ULIPUR - RAJDEHAT	KURIGRAM	18	V	Tk. 6,357 US 396	194	590
13	BADARGANJ - LUPHIGIRHAT	SADAR RINGPUR	4	V	Tk. 1,901 US 119	54	173
14	RAJDEHAT BS ULAGATTA	KURIGRAM	4	V	Tk. 1,144 US 72	33	105
18	BAISHUGANJ CHAT - TALIGANJ	SADAR RINGPUR	20	V	Tk. 9,277 US 580	238	818
19	SADULLAJUR - MADARGANJ	GRIHANDHA	3	V	Tk. 2,046 US 128	64	192

TAKA 16: US \$ 1.00

RANK	ROAD	SUBDIVISION	MILES	CLASS	COSTS (000)		
					TAKA	US \$	TOTAL (US \$)
21	DIMLA - SHATIBARI HAT	NILPHAMARI	4	V	Tk. 2,883 US 180	73	253
23	GORAKINANDAL - KAWAHAGA GHAT	KURIGRAM	6.5	V	Tk. 6,069 US 379	163	542
25	JALDHAKA-NEKBATA KAIMARI HAT	NILPHAMARI	8	V	Tk. 5,936 US 371	147	518
28	DOMAR-NILPHAMARI BDR	NILPHAMARI	5	IV	Tk. 5,857 US 366	212	578
29	DOMAR - DIMLA	NILPHAMARI	5	IV	Tk. 5,618 US 351	200	551
30	TEGONMARI BRIDGE FAGLAFIR	NILPHAMARI	18	IV	Tk. 21,369 US 1,336	750	2,086
32	GAGLA-LALMANIRHAT	KURIGRAM	9	IV	Tk. 11,131 US 696	383	1,079
33	KOTWALI BORDER SUNDERGANJ	SADAR RANGPUR	20	IV	Tk. 27,954 US 1,747	928	2,675

RANK	ROAD	SUBDIVISION	MILES	CLASS	COSTS (000)		
					TAKA AND US \$ EQUIV.	US \$	TOTAL (US \$)
35	JALDHAKA - TENGAMARI BRIDGE	NILPHAMARI	7	IV	Tk. 10,930 US 683	353	1,036
36	GAIBANDHA - SUNDARGANJ	GAIBANDHA	18	IV	Tk. 26,623 US 1,664	882	2,546
38	NAGESHWARI-NEVASHI BAZAR	KURIGRAM	6	IV	Tk. 11,207 US 701	336	1,037
41	MAHENDRANAGAR - R&H ROAD	KURIGRAM	3	IV	Tk. 6,102 US 381	179	560
42	GANGACHIRA - BARABARI	SADAR RANGPUR	6	IV	Tk. 15,907 US 994	474	1,468
43	JALDHAKA - PANGAGOLNA	NILPHAMARI	8	IV	Tk. 14,603 US 913	455	1,368
47	TENGAMARI- NILPHAMARI	NILPHAMARI	9	IV	Tk. 17,803 US 1,113	551	1,664

XI. ENGINEERING AND CONSTRUCTION PLANNING

A. Construction Season

The average annual rainfall for Rangpur District is about 82 inches of which some 80 inches falls during the monsoon period in March through October.

Therefore the optimum months for construction are November through February, a period of four months. Depending upon weather conditions early March could also be considered suitable.

B. Equipment and Material Availability

The Roads and Highway Division has limited construction equipment that are for its own use. Even then the equipment has an average 10 year age and is in poor to fair condition.

The District Council and subdivision offices reported no owned or leased equipment that could be utilized on the rural roads program.

Major construction materials are not readily available in the district. Reports from the district engineer indicate that all materials should be furnished to contractors for adequate performance.

C. Contracting and Labor Availability

Within the district there are several small road and bridge contractors with limited experience. Contracting equipment and training would be required to enhance their capabilities for this project.

As in other districts, substantial numbers of people in all areas are available to satisfy the unskilled labor requirements of the project. Limited numbers of masons and carpenters may be available depending on other works programs.

D. Network Construction Schedule

Table 31 presents detailed construction planning requirements for each road segment covering manpower, equipment and materials. It also gives an estimate of the construction time required to complete each road in the recommended network.

S - Stone (1000 C³)
 CE - Cement (Tons)
 ST - Steel (Cwt)
 BR - Bricks (1000)
 SA - Sand (1000 Cf)
 BI - Bitumen (Ton)

TABLE 31
 CONSTRUCTION PLANNING
 RECOMMENDED ROADS

S = Skilled
 L = Unskilled
 TS = Tractor/Sheepfoot
 Roller
 R = 3 wheel Roller

RANK	ROAD	CLASS	SUBDIVISION	MILES	PERIOD	REQUIREMENTS		
						Manpower	Equipment	Materials
1.	SADULLAFUR NALDANGA	V	GAIBANDHA	6.5	5	S - 0 L - 208	TS - 1 R - 1	None only earthwork
3	G IBANDHA KUMARYANI	V	GAIBANDHA	6	5	S - 20 L - 440	TS - 1 R - 1	CE - 52 ST - 880 SA - 3 S - 6
4.	DIMIA - GOYABARIO	V	NILPHAMARI	7	5	S - 30 L - 211	TS - 1 R - 1	CE - 78 ST - 1320 SA - 4 S - 8
5.	PACCA RD. KAPASIA EMBNT.	V	GAIBANDHA	7	5	S - 48 L - 371	TS - 1 R - 1	CE - 125 ST - 2112 BR - 0 SA - 6 BI - 0 S - 12
6	SARAIMARYA BAZAR (HARAGACH) NIRGANJ R.R.STA	V	SADAR RANGPUR	5	5	S - 30 L - 128	TS - 1 R - 1	CE - 78 ST - 1320 SA - 4 S - 8

123

30
(3)

S - Stone (1000 Cf)
 CE - Cement (Tons)
 ST - Steel (Cwt)
 BR - Bricks (1000)
 SA - Sand (1000 CF)
 BI - Bitumen (Ton)

CONSTRUCTION PLANNING

S = Skilled
 L = Unskilled
 TS = Tractor/Sheepfoot Roller
 R = 3 wheel Roller

RANK	ROAD	CLASS	SUB-DIVISION	MILES	PERIOD	PERIOD REQUIREMENTS		
						Manpower	Equipment	Materials
8	BHURUNGANARI SHILKURI	V	KURIGRAM	8	5	S - 16 L - 340	TS - 1 R - 1	CE - 42 ST - 704 SA - 2 S - 4
9	ULIFUR - BAJRAGHAT	V	KURIGRAM	9	.5	S - 36 L - 552	TS - 1 R - 1	CE - 94 ST - 1584 BR - 6120 SA - 635 BI - 255 S - 9
10	BADI KANIRAM	V	NILPHAMARI	9	5	S - 64 L - 238	TS - 1 R - 1	CE - 165 ST - 2816 SA - 8 S - 16
11	ULIFUR RAJAGHAT	V	KURIGRAM	18	2 ye- ars 10	S - 95 L - 402	TS - 2 R - 2	CE - 494 ST - 8360 SA - 24 S - 48
13	BADARGANJ DUBHGIRHAT	V	SADAR RANGPUR	4	5	S - 60 L - 146	TS - 1 R - 1	CE - 156 ST - 2640 SA - 8 S - 16

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90

Table continued

S - Stone(1000 Cf)
 CE - Cement (Tons)
 ST - Steel (Cwt)
 BR - Bricks (1000)
 SA - Sand (1000 Cf)
 BI - Bitumen (Ton)

CONSTRUCTION PLANNING

S = Skilled
 L = Unskilled
 TS = Tractor/Sheepfoot
 Roller
 R = 3 wheel Roller

RANK	ROAD	CLASS	SUB-DIVISION	MILES	PERIOD (Mos)	REQUIREMENTS		
						Manpower	Equipment	Material
14	RAJARHAT R&H ROAD	V	KURIGRAM	4	5	S - 24 L - 207	TS - 1 R - 1	CE - 693 ST - 1056 SA - 3 S - 6
18	BAKSHI GANJ GHAT - TARAGANJ	V	SAD R RANGPUR	20	2 years 10	S - 94 L - 254	TS - 2 R - 2	CE - 63 ST - 11350 SA - 33 S - 66
19	SADULLAPUR MADARGANJ	V	GAIBANDHA	3	3	S - 100 L - 492	TS - 1 R - 1	CE = 156 ST = 2640 SA = 8 S = 16
21	DIMLA SHATIBARI HAT	V	NILPHAMARI	4	5	S - 58 L - 157	TS - 1 R - 1	CE - 209 ST = 3432 SA = 11 S = 19
23	GORAKINANDA KAWAHAGAGHAT	V	KURIGRAM	6.5	5	S - 134 L - 409	TS - 1 R - 1	CE = 465 ST = 7656 SA = 22 S - 44

Table continued

S - Stone (1000 Cf)
 CE - Cement (Tons)
 ST - Steel (Cwt.)
 BR - Bricks (1000)
 SA - Sand (1000 Cf)
 BI - Bitumen (Ton)

CONSTRUCTION PLANNING

S = Skilled
 L = Unskilled
 TS = Tractor/Sheepfoot Roller
 R = 3 wheel Roller

RANK	ROAD	CLASS	SUB-DIVISION	MILES	PERIOD (Mos)	REQUIREMENTS		
						Manpower	Equipment	Materials
25	JALDHAKA - NEKBATA - KAPARIHAT	V	NILPHAMARI	8	5	S - 94 L - 512	TS - 1 R - 1	CE - 360 ST - 5875 SA - 17 S - 34
28	DOMAR NILPHAMARI BORDER	IV	NILPHAMARI	5	5	S - 83 L - 520	TS - 1 R - 1	CE = 68 ST = 1144 BR = 3400 SA - 354 BI - 142 S - 7
29	DOMAR - DIPLA	IV	NILPHAMARI	5	5	S - 62 L - 538	TS - 1 R - 1	CE - 13 ST - 211 BR - 3400 SA - 351 BI - 142 S - 2
30	TEGONMARI BRIDGE PAGLAPIR	IV	NILPHAMARI	18	2 years 10	S - 131 L - 958	TS - 2 R - 2	CE - 151 ST - 2550 BR - 12240 SA - 1270 BI - 510 S - 15

S - Stone (1000 Cf)
 CE - Cement (Tons)
 ST - Steel (Cwt)
 BR - Bricks (1000)
 SA - Sand (1000 CF)
 BI - Bitumen

CONSTRUCTION PLANNING

S = Skilled
 L = Unskilled
 TS = Tractor/Sheepfoot Roller
 R = 3 Wheel Roller

RANK	ROAD	CLASS	SUBDIVISION	MILES	PERIOD (Mos)	REQUIREMENTS		
						Manpower	Equipment	Materials
32	GAGLA LALPUR BHAI	IV	KURIGRAM	9	5	S- 108 L- 1252	TS - 1 R - 1	CE - 16 ST - 264 BR - 2520 SA - 631 BI - 255
33	KOTJALI BORDER SUNDARGANJ	IV	SADAR RANGPUR	20	2 yrs. 10	S- 135 L- 1715	TS - 2 R - 2	CE - 115 ST - 1936 BR - 13600 SA - 1406 BI - 566 S - 11
35	JALDIKA TENGAHARI BRIDGE	IV	NILPHANARI	7	5	S- 120 L- 1107	TS - 1 R - 1	CE - 162 ST - 2640 BR - 4760 SA - 503 BI - 198 S - 25
36	GAILANDHA BORDER- SUNDARGANJ	IV	GAIBANDHA	18	2 yrs. 10	S- 173 L- 1382	TS - 2 R - 2	CE - 370 ST - 6266 BR - 12240 SA - 1280 BI - 510 S - 36
38	NAGESHARI NEWASHI BAZAR (GAGLA)	IV	KURIGRAM	6	5	S- 92 L- 1592	TS - 1 R - 1	CE - 63 ST - 1056 SA - 423 BR - 4080 BI - 170 S - 6

Table continued

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127

S - Stone (1000 Cf)
 CE - Cement (Tons)
 ST - Steel (Cwt)
 BR - Bricks (1000)
 SA - Sand (1000Cf)
 BI - Bitumen (Ton)

CONSTRUCTION PLANNING

S = Skilled
 L = Unskilled
 TS = Tractor/Sheepfoot Roller
 R = 3 Wheel Roller

RANK	ROAD	CLASS	SUBDIVISION	MILES	PERIOD (Mos)	REQUIREMENTS		
						Manpower	Equipment	Materials
41	MAHENDRANAGAR R&H ROAD	IV	KURIGRAM	3	5	S - 50 L - 884	TS - 1 R - 1	CE - 42 ST - 704 BR - 2040 SA - 212 BI - 85 S - 4
42	BARISAPI GANGACHARI	IV	SADAR RANGPUR	6	5	S - 290 L - 925	TS - 1 R - 1	CE - 752 ST - 12410 BR - 4080 SA - 460 BI - 170 S - 70
43	JALDHAKA- PINGA- GOLNA	IV	NILPHAMARI	8	2 yrs. 10	S - 502 L - 2687	TS - 1 R - 1	CE - 312 ST - 5175 SA - 15 S - 30
47	BENGALURI NILPHAMARI	IV	NILPHAMARI	9	5	S - 262 L - 1096	TS - 1 R - 1	CE - 648 ST - 10560 BR - 6120 SA - 660 BI - 255 S - 60

Table continued