

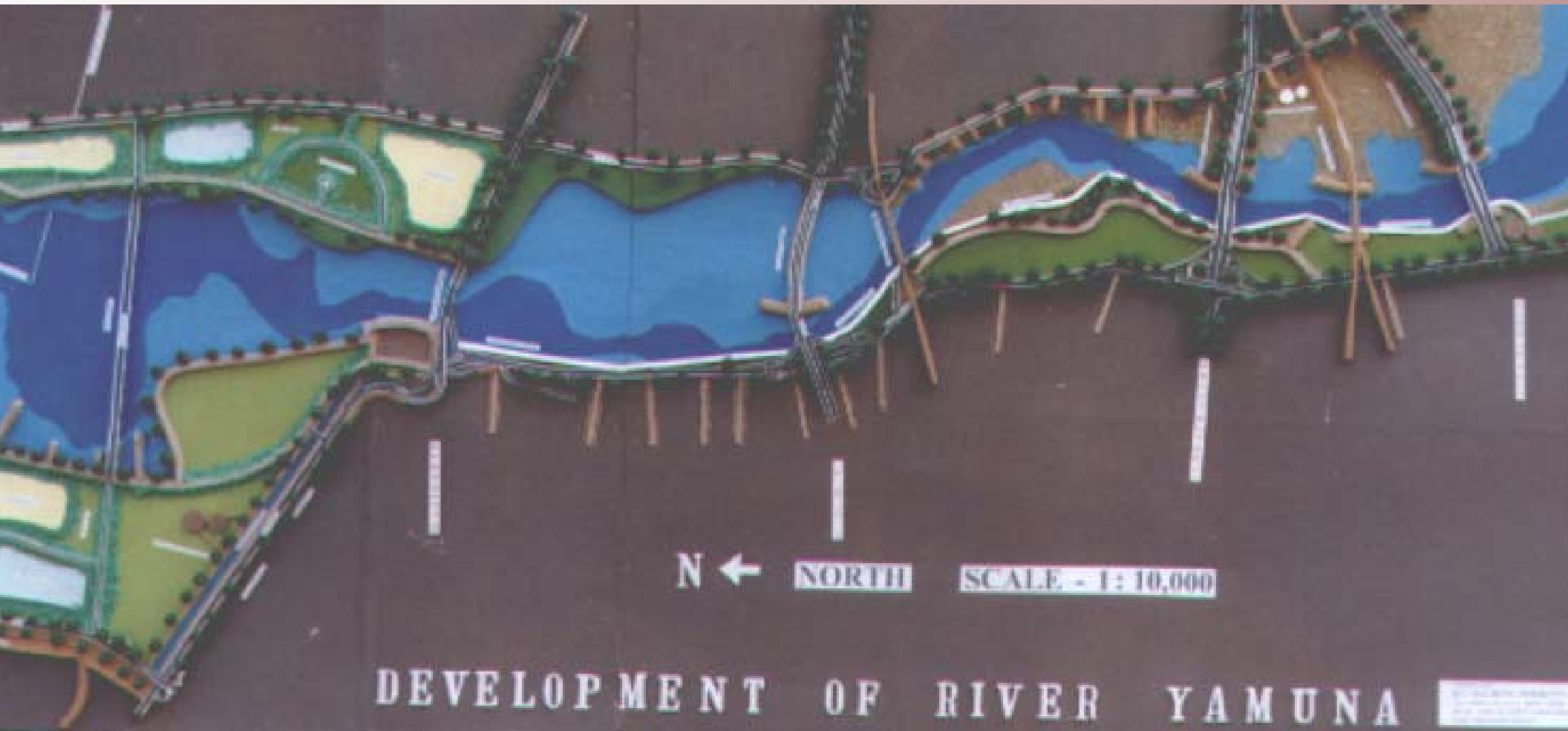
DEVELOPMENT OF RIVER YAMUNA

TECHNICAL PROPOSAL



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Dimension of Delhi

Delhi is a super Metropolitan city, present 50 million population exported to be with 369 villages with a breakup of 50% urban & balance rural villages.

By 2011 AD Delhi would require 1250 MGD water, sewerage disposal 1000 MGD power requirement 5000 MW, Passengers trips per day 37 million with rate of Mobility 1.5.

These dimensions are huge therefore needs proper planning.

Q.1 Whether policy of large scale acquisition development & disposal of land is workable or it has created 1000's of problems. In June 1998 the Govt. modify the policy to covert it fro lease hold to free hold even then their remained many plus & minus and modified policy did not work.

Q.2 Day by day acquisition of lad has become difficult cumbersome & costly therefore needs changes & following modifications are suggested.

1. In case there is a case of acquisition of land for trunk, physical & circulation infrastructure then following steps are taken.

i. Section 4, 6 & 17 of Land Acquisition Act be applied simultaneously irrespective whether area is built up or vacant.

- ii. Entire process of acquisition, connecting surveys, demarcations, settling of compensation and taken possession should not take more than 6 months.**
- 2. Demarcate, land with the stone pillars.**
- 3. Due and wide publicity be made, so that public is aware & is not misguided.**
- 4. Alternate allotment to every one, whether owner or tenant be made in time.**
- 5. Amount of compensation to be paid, should be adjusted against the price to be charged from them of alternate allotment.**

Q.4 **Transfer of plots, conversion & preparation of Lease, disposal of plot takes too much time.**

Solution is to bring everything on computer with accessibility to the Govt. as well as to the Public at large.

Q.5 **Dealing with Nazule-I(I) & I(II) lands properly with proper records, government can earn crores of rupees. To day even proper records are not available.**

PERSPECTIVE PLAN OF WATER

1 QUANTITY AVAILABLE = 600 MGD

2 PROBABLE QUANTITY BY 2015 AD:

6.2.1 FROM GANGA = 200 MGD

6.2.2 BY STORING WATER IN RIVER = 250 MGD

6.2.3 ADDITIONAL WATER FROM HAR. = 150 MGD

6.2.4 RAINY WELL ETC. = 30 MGD

6.2.5 ON CHANNEL & OFF CHANNEL = 150 MGD

6.2.6 GROUND WATER = 200 MGD

6.3. STORAGES IN STORM WATER DRAINS

6.4. IN NORTH-WEST DELHI, THERE ARE MANY DRAINS MINORS & CHANNELS, WHICH CAN BE CHANNELISED USED.

THESE DRAINS & MINORS ARE NOT VERY MUCH POLLUTE AND CAN BE USEFUL IN PROVIDING WATER.

6.7. PONDS IN DELHI

373 PONDS WITH A VOLUME OF 2000 MGD WATER.

THIS CAN BE USEFUL SPECIALLY FOR VILLAGES.

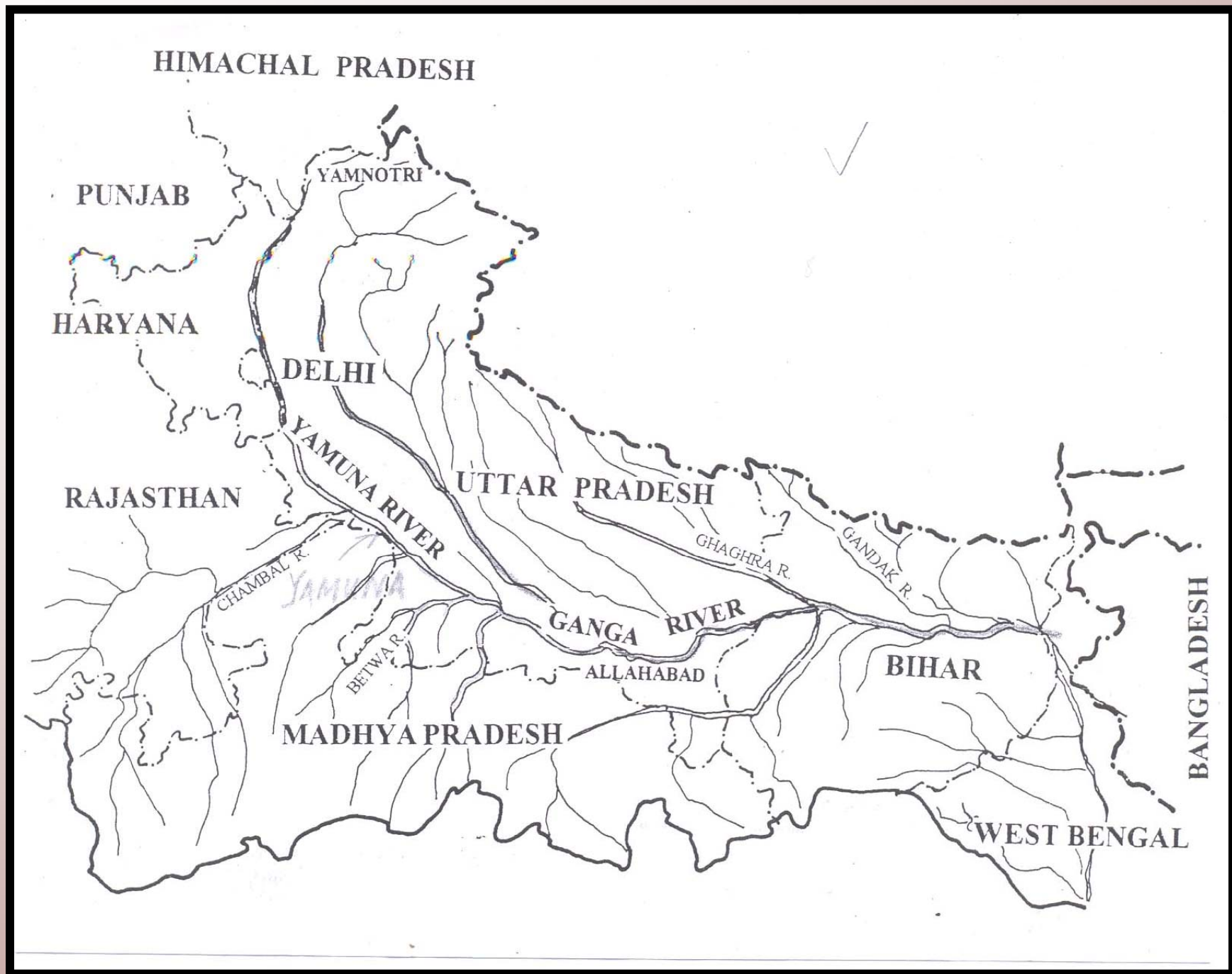
6.8. RECYCLING WATER

**HARDLY 10% OF THE WATER IS USED FOR DRINKING PURPOSES
OUT OF THE BALANCE SOME QUANTITY CAN BE RECYCLED.**

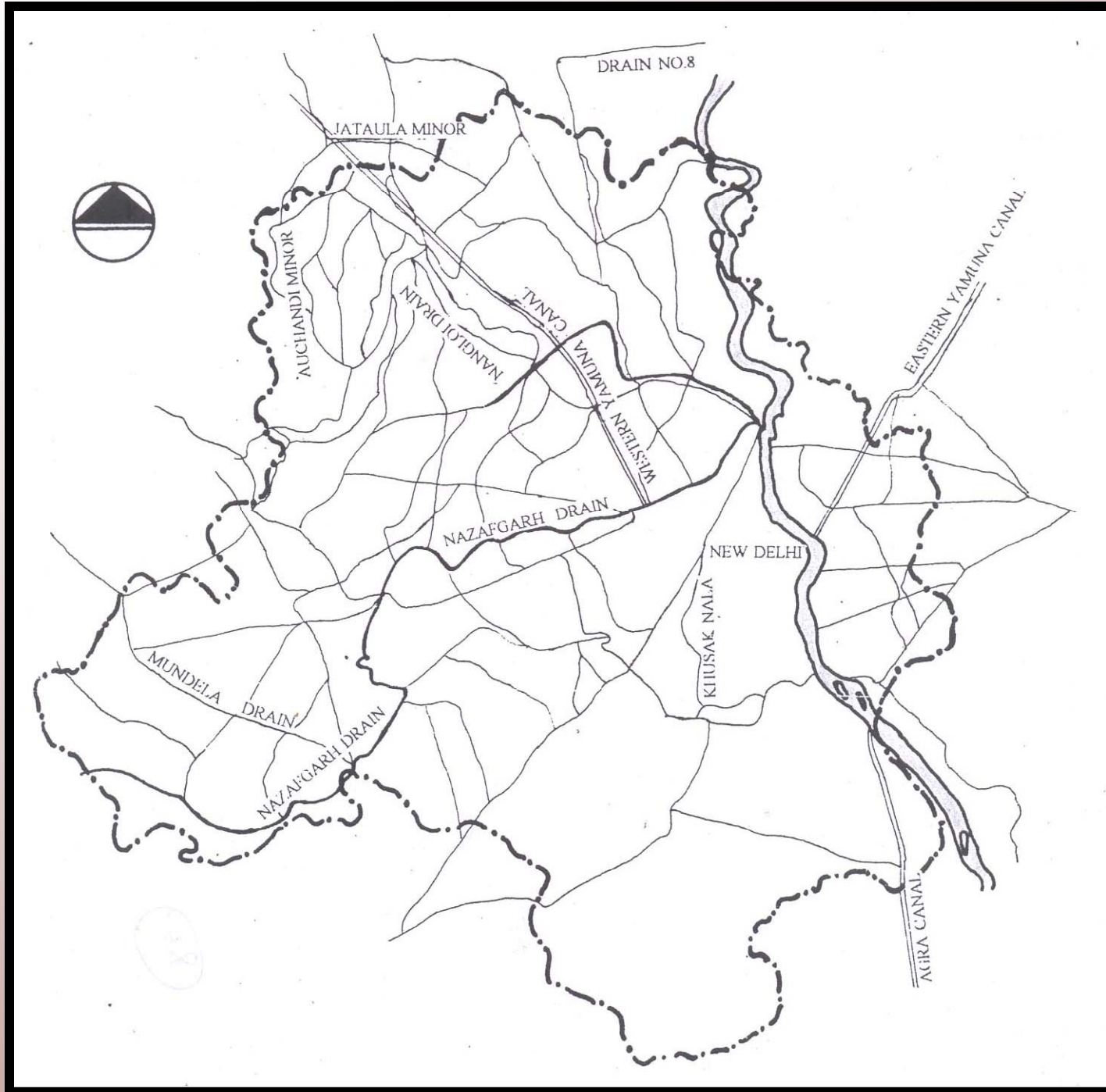
6.9 GROUND WATER

WATER TO THE EXTENT OF 200 MGD CAN BE EXPLORED.

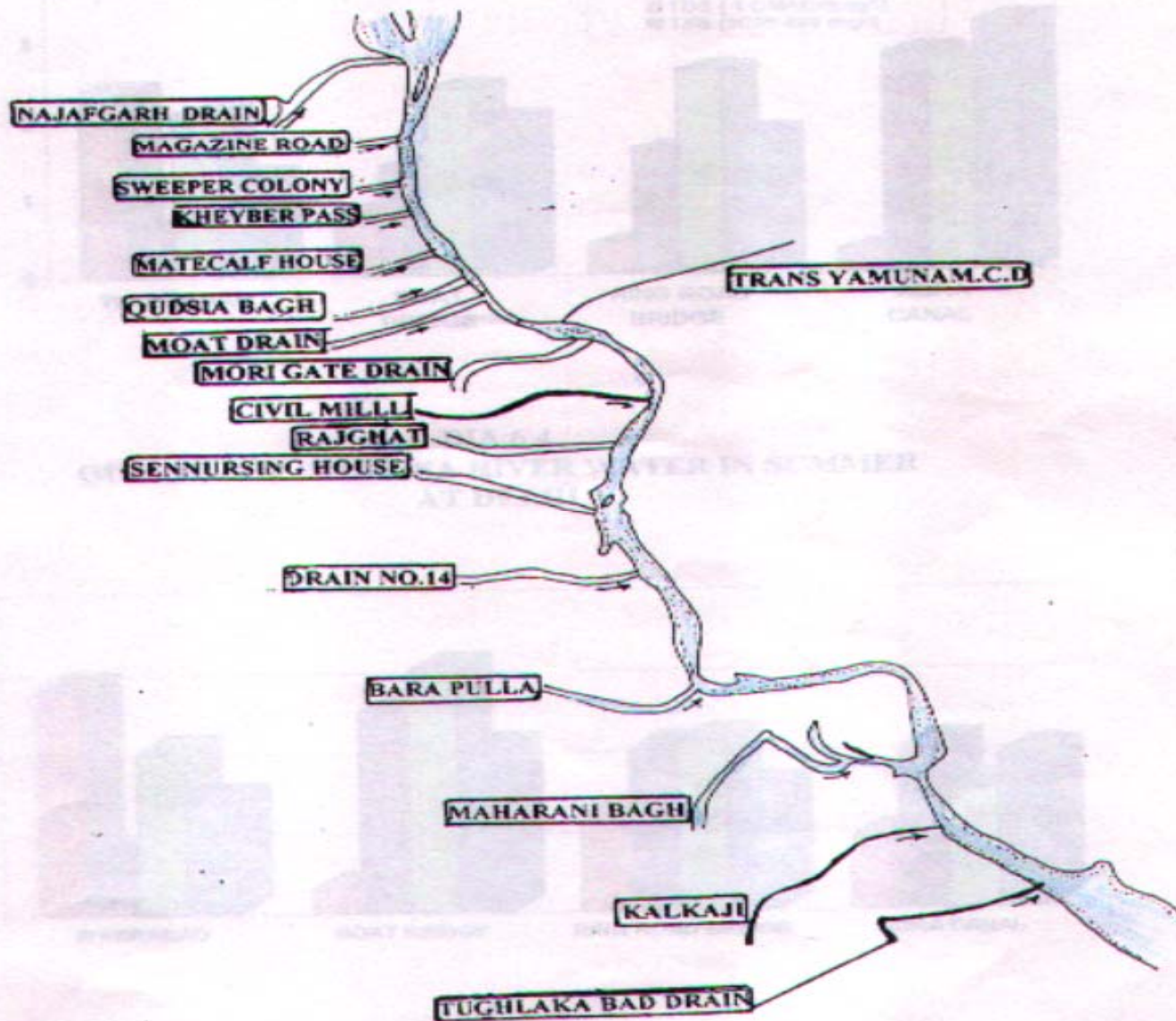
RIVER YAMUNA IN REGIONAL CONTEXT



DRAINAGE PATTERN IN NCT OF DELHI



MAJOR DRAINS FALLING IN RIVER YAMUNA



OBJECTIVES & METHODOLOGY

1. TO CREATE MORE STORAGE FOR DRINKING WATER BY TAPPING THE MONSOON WATER IN THE RIVER

Acute shortage of water in Delhi.

In the north there is one barrage at Wazirabad with limited capacity.

It is proposed to have another bridge-cum-barrage across the river Yamuna in the north of Wazirabad barrage between 5-6 km.

It would create additional pondage and there would be additional dredging the river.

With this system pondage capacity of the river would be at least 100 times as shown in the map.

2. TO PROVIDE CLEAN RIVER WATER NOT ONLY ADJACENT TO THE NUMEROUS RELIGIOUS BATHING GHATS INCLUDING NIGAM BODH GHAT BUT ALSO IN THE ENTIRE RIVER IN NCTD

There are many bathing ghats and temples between Wazirabad bridge and railway bridge.

If all polluted drains falling in this reach are put in a covered duct / conveyance sewer then fresh & clean water can be made available near all bathing ghats and religious structures.

In this system a conveyance sewer has to be across for which details can be worked out.

3. DRY WEATHER DISCHARGE OF 17 DRAINS CAN BE CARRIED THROUGH A CONVEYANCE SEWER / DUCT.

Arrangements of disilting of conveyance sewer has to be made.

Discharge of Najafgarh Drain and its supplementary drain is very heavy and cannot be managed in conveyance sewer. Therefore, construct independent Sewage Treatment Plant for these two drains in the north of Road No.50.

During Monsoon conveyance sewer shall be closed so that it is not silted upon.

4. ATTRACTIVE RIVER FRONT WITH LAND SCAPPING AND DECORATIVE VARIETIES OF TREES

It is also proposed to acquire huge land beyond the Right Marginal Bund of upstream of Wazirabad barrage up to Palla to make amusement parks in the shape of dizney land, musical fountains and other tourists attraction parts.

5. TO PROVIDE ADDITIONAL TRAFFIC CORRIDORS ALONG BOTH BANKS OF THE RIVER FOR MOVEMENT OF FAST TRAFFIC WHICH WILL PROVIDE SUBSTANTIAL RELIEFE TO THE TRAFFIC CONGESTION ON THE EXISTING CIRCULATION SYSTEM IN THE VICINITY AND IN THE CITY.

Wide the existing Marginal Bund of both the sides to make it of 90 R/W.

Construct a new bridge across the river in the extension of Palla / Peripheral Expressway.

In this way dredge material would be used in the raising the heights of circulation system.

6. TO REMOVE THE EXISTING JHUGGIES CLUSTERS AND SUB STANDARD AREAS IN THE BED OF RIVER FOR ECO-FRIENDLY & ENVIRONMENT FRIENDLY DEVELOPMENT OF RIVER FRONT.

Cost of rehabilitation was worked out as Rs. 75 Crores.

There was a proposal to make a 18 sq.mt. Plots as well as 4 storied multi storeyes flats of these persons in four locations of Delhi.

7. TO ENSURE BAN ON ANY SORT OF UNAUTHORISED ACTIVITY IN THE BED OF RIVER YAMUNA

It is proposed to have a River Yamuna Authority with statutory powers to have complete check on all activities in bed of river Yamuna. Details can be as under:

8. TO MAKE THE RIVER NAVIGABLE TO THE EXTENT POSSIBLE.

It was proposed to provide Navigational & Hover Crafts facilities in the river as a tourists attraction.

INFERENCES AT A GLANCE

- 1. CW&PRS Pune established that channelisation of river is possible and feasible, but in phased manner.**
- 2. All the authorities stressed from time to time that pollution of the river should be removed / controlled.**
- 3. Biggest reason to pollute river Yamuna is falling of 17 storm water drains full with sullage.**
- 4. Following are three technologies to reduce pollution in river Yamuna.**
 - i. Construction of a conveyance sewer**
 - ii. Construction of individual treatment plants at the mouths of each storm water drains, individually or by combining two or more than two drains.**

***QUALITY OF WATER - NORTH OF WB. IS A - (GOOD);
IN THE SOUTH OF WAZIRA BAD IS - E.
AREA OF R.BED IS 97 SQ.KM. WITH 16.45
SQ.KM. UNDER WATER & 80.55 SQ.KM. AS
DRY.***

17 POLLUTED DRAINS (SWD) (A PROBLEM)

**POLLUTION LOAD OF 580,473 KG/DAY IN 1991, IN
RIVER**

**SOURCES:- OF POLLUTION TREATED,
UNTREATED, SEMI TREATED, DOMESTIC &
INDUSTRIAL WASTES & FROM SUB-STANDARD
AREAS,**

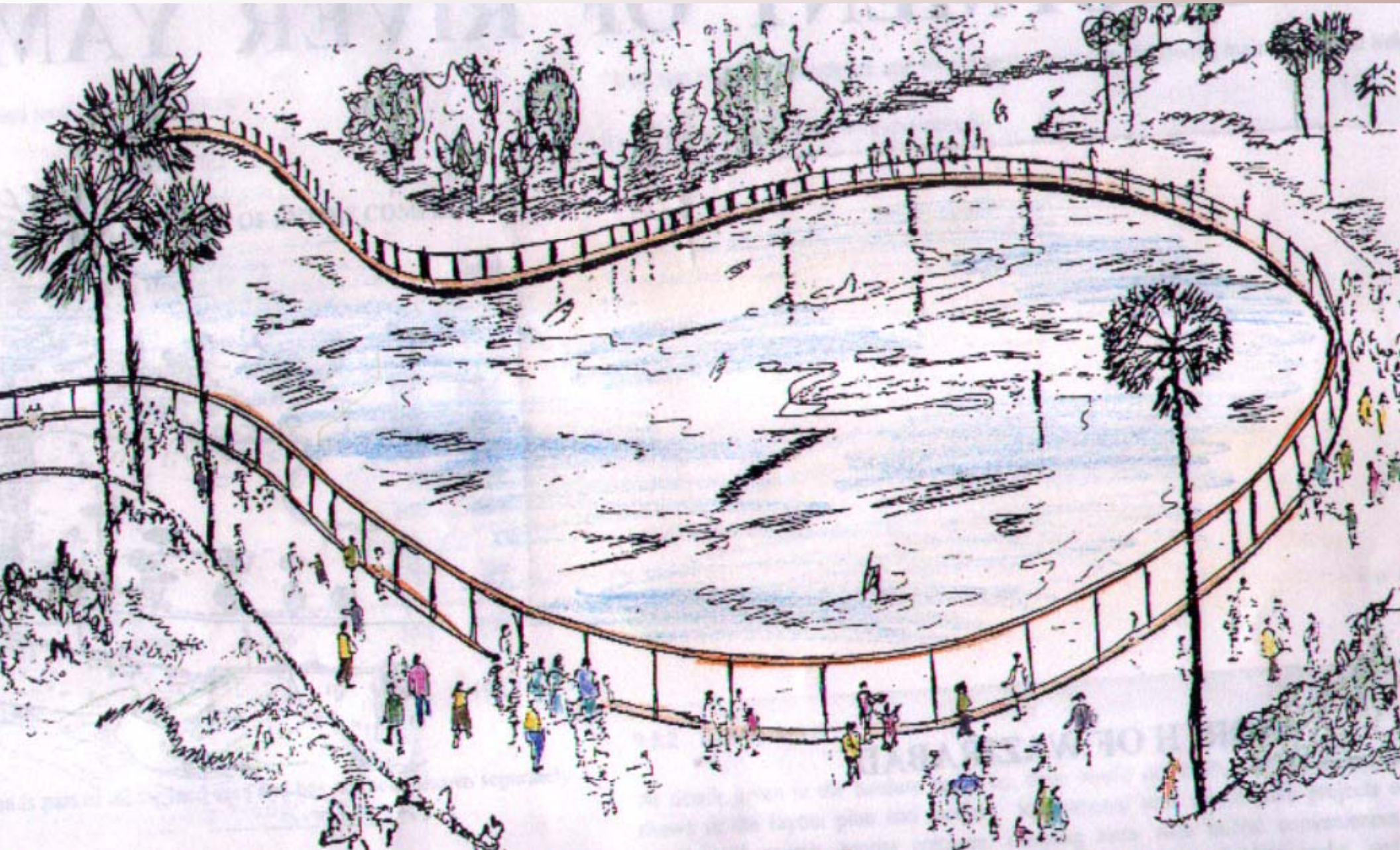
PROJECT OF RIVER YAMUNA.

(SEE 3 MAPS)

7.1. PROPOSED LAND USE

<i>Use</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>Total</i> <i>(Area in Hects.)</i>	<i>%age</i>
<i>Recreational</i>	<i>1274</i>	<i>4506</i>	<i>506</i>	<i>100</i>	<i>6296</i>	<i>86.6</i>
<i>Residential</i>	<i>140</i>	<i>-</i>	<i>-</i>	<i>100</i>	<i>240</i>	<i>3.3</i>
<i>Commercial</i>	<i>127</i>	<i>-</i>	<i>-</i>	<i>31</i>	<i>158</i>	<i>2.2</i>
<i>U & S</i>	<i>125</i>	<i>-</i>	<i>-</i>	<i>50</i>	<i>175</i>	<i>2.3</i>
<i>Institutional</i>	<i>155</i>	<i>-</i>	<i>-</i>	<i>150</i>	<i>305</i>	<i>4.3</i>
<i>High-tech area</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>100</i>	<i>100</i>	<i>1.3</i>
<hr/>						
<i>Total</i>	<i>1731</i>	<i>4506</i>	<i>506</i>	<i>531</i>	<i>7274</i>	<i>100</i>
<i>%age</i>	<i>23.8</i>	<i>61.9</i>		<i>6.9</i>	<i>7.4</i>	<i>100</i>

VIEW OF LAKE



2. CIRCULATION (NEW PROPOSALS)

- I. PERIPHERAL EXPRESSWAY.**
- II. TWO NORTH-SOUTH ROADS.**
- III. TWO 30M WIDE ROADS.**
- IV. ONE BRIDGE-CUM-BARRAGE 6 KM. NORTH OF WB.**
- V. NEW CLOVER-LEAF AT WAZIRABAD.**
- VI. RECONSTRUCTION OF EXISTING ROAD-CUM-RAIL BRIDGE.**
- VII. NEW RAIL LINES BRIDGE.**
- VIII. A NEW BRIDGE AT MAHARANI BAGH.**
- IX. EXTENSION OF P.E. TO NOIDA/GREATER NOIDA.**

7.3 RECREATIONAL

6296 HECTS. - 86.6% WOULD HAVE PROJECTS OF WATER PORTS, GOLF COURSE, TOURIST COTTAGES, CAMPING SITES, SMALL SHOPPING PIAZZAS, PLEASURE PARKS, CHILDREN PARKS, AUDITORIUMS, AMUSEMENT AND ANTIQUE HALL, BOAT CLUBS, SWIMMING POOLS, GYMNASTICS, SKATING, REST ROOMS, SCIENCE PARK, MINI-FORESTS ETC.

7.4 RESIDENTIAL

ONLY 3.3% I.e. 240 HECT. PARTLY FOR JHUGGI CLUSTERS.

7.5 COMMERCIAL

2.2% i.e. 158 HECT. TO GET SURPLUSES TO THE EXTENT OF 80% OF THE COST OF THE PROJECT.

7.6 UTILITIES & SERVICES

ONE LARGE SEWAGE TREATMENT PLANT IN PALLA-BURARI COMPLEX AND ANOTHER IN THE SOUTH OF NIZAMUDDIN BRIDGE & A BIG WATER TREAT PLANT OF 200 MGD IN THE SOUTH OF INDRAPRASTHA BARRAGE.

7.7 INSTITUTIONAL USE

7.8 PHYSICAL PLANS-COMPLEX INTO TWO PHASES

PHASE 1 - FROM P.E. TO I.P. BRIDGE CUM BARRAGE

PHASE 2 - FROM I.P. BRIDGE CUM BARRAGE UP TO U.P. BOUNDARY NEAR JAIPUR.

PHAS 3 - IN THIS PROPOSAL ONLY PHASE ONE WITH A TOTAL AREA 7274 HECT. HAS BEEN DEALT WITH, LAND USE BREAK-UP AS GIVEN IN PARA NO. 7

9 DIVISION INTO SECTORS

FOR THE PURPOSE OF SIMPLICITY 7274 HECT. HAS BEEN DIVIDED INTO FOUR SECTORS.

SECTOR A - 1731 HECT.

SECTOR B - 4506 HECT.

SECTOR C - 506 HECT.

SECTOR D - 531 HECT.

SECTOR B, C & D ARE WITHIN EXISTING OR PROPOSED RIVER BED. WHILE SECTOR A IS IN ADJOINING AREA OF PALLABURARI.

THESE HAS BEEN EXPLAINED IN THE WRITE-UP IN 3 MAPS.

8. REHABILITATION OF JHUGGIS

8.1 DIMENSIONS OF THE PROBLEM

1994 SURVEYS - 29,923 JHUGGIS IN 20 LOCATIONS IN RYB.

NOW THERE MAY BE MORE JHUGGIS, ABOUT 32,000.

THESE WOULD BE REHABILITATED AT FOUR LOCATIONS EACH WITH 8,000 JHUGGIS OR 40,000 POPULATION. THESE SETTLEMENTS WOULD BE ON PERMANENT BASIS WITH COMPLETE PHYSICAL SOCIAL, ECONOMIC & ECOLOGICAL INFRASTRUCTURE DEV. & CONS. IN JOINT VENTURE.

**2. SOME LOCATIONS WOULD BE WITHIN RIVER
YAMUNA BED & OTHER IN NEAR BY AREAS.**

3.3.TWO MODELS :-

**1. WITH 21 SQM. FLOOR AREA IN 4 STOREY
BLOCKS AS IN BOMBAY, DESIGN SHOWN
IN DRWG. ON NEXT PAGE.**

**2. 18 SQM. PLOTS GROUPED WITH SERVICES ON
GROUP BASIS.**

9. FINANCIAL PLANS

COMPONENTS OF THE PROJECT BASED ON 1996 PRICE LEVEL:-

COST OF COMPONENTS OF THE PROJECT : (IN RS. LAKH)

<i>I.</i>	<i>COST OF ACQUISITION/TRANSFER OF LAND</i>	<i>=</i>	<i>29,100</i>
<i>II.</i>	<i>COST OF TRUNK CIRCULATION SYSTEM</i>	<i>=</i>	<i>15,375</i>
<i>III.</i>	<i>COST OF GENERAL FILLING IN THE GROUND</i>	<i>=</i>	<i>22,670</i>
<i>IV.</i>	<i>COST OF DEVELOPMENT OF LAND</i>	<i>=</i>	<i>52,010</i>
<i>V.</i>	<i>WATER PONDAGES & LAKES</i>	<i>=</i>	<i>15,000</i>
<i>VI.</i>	<i>RENOVATION OF GHATS</i>	<i>=</i>	<i>6,500</i>
	<i>A. NORTH OF WAZIRABAD</i>		<i>1000</i>
	<i>B. NIGAM BODH GHAT</i>		<i>500</i>
	<i>C. REDEVELOPMENT OF</i>		
	<i>EXISTING STRUCTURES</i>		
	<i>& GHATS</i>		<i>5000</i>

VII.	CONVEYANCE SYSTEM	=	25,000
VIII.	PUMPING & TREATMENT WORKS- SOUTH OF NIZAMUDDIN BRIDGE.	=	45,000
IX.	PUMPING & TREATMENT WORKS AT THE MOUTH OF STORM WATER DRAINS.	=	35,000
X.	WATER TREATMENT PLANT/PLANTS.	=	25,000
XI.	REHABILITATION OF JHUGGIES/SETTLEMENT	=	10,000

GRAND TOTAL = 280,595

OR RS. 2,806 CR.