

## **XXI WATER SUPPLY & SANITATION**

Schemes providing water supply and sewerage facilities, Anti flood works and storm water drainage, desilting of nallahs and sewers in Delhi are included under this sector. The Delhi Jal Board of Govt. of Delhi is entrusted with the responsibility of production and distribution of water and treatment and disposal of sewage in Delhi. It provides water in bulk to NDMC and Cantonment Board for redistribution in their respective areas. Similarly the sewage is received in bulk from these two authorities for final, conveyance and disposal by Delhi Jal Board. In the areas under the jurisdiction of MCD, Delhi Jal Board is responsible for distribution of water and collection and disposal of sewage.

NDMC is implementing water supply & sewerage, Anti flood work and covering of Nallah Schemes in its area.

The agency wise financial position under this sector during the 9<sup>th</sup> Five Year Plan 1997-02 and approved for 10<sup>th</sup> Plan (2002-2007) is indicated below :

(Rs. In lakh)

S. No.	Name of Agency	9 <sup>th</sup> Five Year Plan 1997-02 Approved Outlay	Exp. 1997-2001	Annual Plan 2001-02 Approved outlay		10 <sup>th</sup> Five Year Plan 2002-07 Approved outlay	Annual Plan 2002-03 Approved outlay
					R.E.		
1.	Delhi Jal Board	238200.00	131588.03	50000.00	46434.00	365150.00	57087.00
2.	TYADB(DJB)	15000.00	7110.00	2200.00	2200.00	10000.00	2000.00
3.	NDMC	800.00	705.18	200.00	160.00	1000.00	125.00
4.	Urban Dev. Deptt.	---	---	15.00	30.00	450.00	75.00
	<b>Total</b>	<b>254000.00</b>	<b>139403.21</b>	<b>52415.00</b>	<b>48824.00</b>	<b>376600.00</b>	<b>59287.00</b>

### **DELHI JAL BOARD**

Delhi Jal Board is responsible for production of water in Delhi and its distribution in the area under the control of Municipal Corporation of Delhi. The Board also supplies water in bulk to N.D.M.C. and Delhi Cantonment. Besides, the Board is responsible for collection, treatment and disposal of sewage in Delhi.

Although Delhi is situated on the banks of the river Yamuna, it is unable to draw water from the river as their entire flow is diverted into the Canals upstream of Tajewala for Uttar Pradesh and Haryana. To finalize Delhi's share in the Yamuna waters an MOU was signed on 12.5.1994 between the basin states of Haryana, Uttar Pradesh, Himachal,

Rajasthan and Delhi. The allocation for Delhi has not been sufficient to meet the raw water requirements.

As such, Delhi shall have to take recourse to a number of schemes like recycling of waste water at Water Treatment Plants, optimization of water production, exploitation of ground water in the Flood Plains of the river Yamuna, rain water harvesting and conservation of water.

During 9th Five Year Plan, DJB had taken new initiatives to augment the supply of potable water in Delhi. Some of these steps and new steps to be taken during 10<sup>th</sup> Five Year Plan are describe below:

**Modernization of DJB: World Bank Study**

- (i) To update and streamline the water supply system, the World Bank was approached and has agreed for a grant of 2.5 million U.,S. Dollars to fund the cost of preparation of Delhi Water Supply & Sewerage Project from the Project Preparation Facility of the Bank. The consultant has been finalised and the work started in January, 2002. The consultancy work involves institutional development and financial management, Water Supply & Sewage Rehabilitation etc. The consultant will replace the existing Financial system with a computerized double entry system and train DJB staff for the same.

**Raw Water Availability and Augmentation/Modernization of Water Treatment**

- (ii) The installed capacity of water production at the end of the 7<sup>th</sup> five year plan (1985-90) was 437 MGD. During the year 1990-1991 and 1991 –1992 it was augmented to 469 MGD and 472 MGD respectively. By the end of the 8<sup>th</sup> five year plan i.e. 1992 – 97, water production was augmented to 580 MGD. During the 9<sup>th</sup> five-year plan period, the water treatment capacity was proposed to be augmented to 945 MGD, but due to raw water constraints the achievement was 650 MGD.

- (iii) To provide connectivity of the two existing water treatment plants at Haiderpur & Wazirabad and in the case of breakdown of Western Yamuna Canal, it has been decided to lay 2000 mm dia water main in a length of 11 km from Wazirabad to Haiderpur so as to have alternative raw water arrangement. The work will be done on Design Build basis. Tenders have been invited and the work is proposed to be completed in the 10<sup>th</sup> five year plan.
- (iv) For the first time, 140 MGD water treatment plant at Sonia Vihar is being executed on Design, Build, Operate basis with state of the art technology. The work has been awarded. On commissioning, the operation & maintenance period will be 10 years. The work has three components:
1. Const. of 3250 mm dia conduit from Murad Nagar to Sonia Vihar
  2. Const. of 140 MGD W.T.P. at Sonia Vihar.
  3. P/L/Jointing of Transmission mains from Water Treatment Plants to different areas of Delhi.

Raw water is to be drawn from the storage of Tehri Dam where 300 cusecs water has been reserved for Delhi. The work has been started and will be completed by Sept.2003.

- (v) Phase II (of 50 MGD), Haiderpur Plant was automated in the 9<sup>th</sup> five year plan at a cost of Rs. 9 crores in collaboration with D.O.E. & I.L. Kota and American Concern.
- (vi) Automation of Haiderpur Phase-1 shall be taken up in the Xth Plan. It is proposed to renovate Chandrawal Water Works – I which was constructed in 1934 with settling tanks. The renovation involves provision of Rapid gravity Sand Filters & Clarifiers etc.
- (vii) It is proposed to construct 100 Tubewells, along Right Marginal Embankment in Alipur Block in Palla/Burari areas. 17 Tubewells have already been commissioned and another 23 bore holes have been completed. These have also been commissioned in March 2002 and yield about 15 MGD water. About 30-32 MGD

water shall be available after commissioning all 100 Tubewells. The total No. of Tubewells was 1130 in March 1997 which has increased to 2279 up to March 2002.

### **Strengthening of Distribution Network**

- (viii) A comprehensive proposal has been prepared for purchase, Installation & Commissioning of bulk meters at water works and in the Distribution Wing to assess the production of water, distribution of water measurement, leakage measurement & loss of water in the process of treatment etc.
- (ix) D.J.B. proposes to construct no. of U.G.R.s & Booster Pumping stations all over Delhi area for better distribution of water. For this purpose study has been assigned to M/S TCE Consulting Engineers.
- (x) Total length of water distribution lines has been increased from 7780 to 8322.150 kms. Additional lines will be laid during the year 2002-2003.
- (xi) The water distribution system in Delhi is more than a century old. Since some of the mains are very old, replacement of water mains, particularly in the walled city area, has been taken up. In the 9th Plan period 573 kms of such mains were replaced upto March 2002. In the 10th five year plan it is proposed to replace such lines in a length of 1500kms.
- (xii) To provide drinking water in unauthorized colonies where piped water supply has not been provided, to supplement water supply in J.J. Cluster & Resettlement colonies, to serve areas of short supply existing at the tail end of distribution system and to check water borne diseases, the Delhi Jal Board is supplying water through tankers. At present about 1050 trucks/tankers which include departmental as well as hired ones have been deployed in different parts of the city. The number of departmental Mounted tankers/trailer tankers is about 600 and hired tankers is about 450 at present. The number of hired tankers is reduced from 450 to about 200 in winter season in a phased manner. On availability of water from Sonia Vihar W.T.P., hired tankers will be reduced in a phased manner.
- (xiii) Piped water supply has been provided from 193 unauthorised colonies in March 1997 to 333 un-authorized colonies upto the end of March 2002. Water has been provided in 556 colonies out of total 567 unauthorized/regularized colonies upto March 2002. Piped water supply is existing in all the 135 Urban villages and

augmentation works have been/are being done to cope up with the growing population and falling ground water table. Piped water supply is existing in all the 44 Resettlement Colonies and augmentation works have been/are being done. 820 J.J. Clusters, have been covered with water supply and augmentation works are being done.

### **Water Conservation**

- (xiv) It has been planned to recycle the waste water generated at the existing plants. It is well known that in an conventional plant, about 8% water goes waste in filter back washing and clarifier waste. This waste water will be utilized and raw water will be recovered by use of Gravity Thickeners and centrifuges etc. Raw water thus recovered will be mixed in the inlet of the existing plant and further treated in conventional plant. Estimates have already been approved for these plants. Prequalification of contractor/firms have been done. Tenders have already been invited for Haiderpur Plant in the first instance.
- (xv) To give additional water by reducing the losses, UP government has agreed to carry out study, through Roorkee University, of existing canal system .
- (xvi) As a part of World Bank Study, a complete analysis and break up of Unaccounted for Water (UFW) will be carried out. The study will also suggest the measures to reduce UFW.
- (xvii) As a part of DJB's strategy to educate people about the importance and need of Water Conservation, DJB will intensify its SAVE WATER campaign.

### **WATER ARRANGEMENTS FOR 10<sup>TH</sup> FIVE-YEAR PLAN**

The population of Delhi as per 2001 census was 138 lakh and was around 110 lac by the end of 8<sup>th</sup> five year plan. The population of Delhi by the end of 10<sup>th</sup> five year plan is estimated to be 176 Lac respectively.

The per capita rate of water supply, for working out the total requirement, was adopted as 70 GPCD at the production point, inclusive of all uses i.e. domestic, commercial, industrial and institutional while framing the 9<sup>th</sup> five year plan. The CPHEEO have published a new water supply manual and as per latest manual, water requirement for domestic purposes have been recommended as 150 lpcd + 15 % losses =

172 lpcd and considering demand for other uses total works out to 274 lpcd (60 gpcd), and are as under:-

i) Domestic	1072 lpcd
ii) Industrial, commercial and community requirement based on 45000 lit.h.d.	407 lpcd
iii) Fire protection based on 1% of the total demand	330 lpcd
iv) Floating population and special use like hotels and embassies	520 lpcd
<b>TOTAL DEMAND 274 lpcd (60 gpcd)</b>	

Based on the above norms, the total water requirement for the 10<sup>th</sup> five year plan works out to 1050 MGD. Haryana Govt. has been requested to construct a parallel Lined channel from Munak to Haiderpur Water Treatment Plant in a length of 102 Km. .About 80 MGD water is expected to be saved in the new channel which is presently being lost. Out of these savings, and other means it is proposed to augment the water supply capacity by 300 MGD by the end of 10<sup>th</sup> five year plan by commissioning the following Water Treatment Plants and thus there shall be still a shortfall of 100 MGD which could be considered on the availability of raw water by augmentation of treatment capacity at Okhla, Dwarka.

i) Sonia Vihar WTP	140 MGD
ii) Dwarka' Papankalan	40 MGD
iii) Okhla WTP	120 MGD
iv) Recycling of waste water at Wazirabad, Chandrawal, Haiderpur & Bhagirathi	41 MGD
v) By commissioning New Ranneywells & Tubewells	39 MGD
Vi) Bawana Water Treatment Plant	20 MGD
<b>TOTAL 300 MGD</b>	

#### **DELHI'S SHARE IN YAMUNA WATER**

Although Delhi is situated on the banks of the river Yamuna, it is unable to draw water from the river as the Govt. of U.P. & Haryana divert the entire flow into their canals upstream of Tajewala, except regeneration. To finalize Delhi's share in Yamuna Water

the matter was taken by the Union Minister for Water Resources with the Chief Ministers of basin states viz.U.P. Haryana Rajasthan, Delhi & Himachal Pradesh.. This issue was discussed on several occasions and an MOU was signed on 12.5.94 for sharing of Yamuna waters. Delhi's share of Yamuna waters was decided as under:-

Haryana	5.730 BCM
Uttar Pradesh	4.032 BCM
Rajasthan	1.119 BCM
Himachal Pradesh	0.378 BCM
Delhi	0.724 BCM
<b>Total</b>	<b>11.983 BCM</b>

The availability of raw water according to the above allocation shall be feasible after construction of storage dams in Upper reaches of the River Yamuna.

Pending construction of storage's in the Upper reaches of the river there is an interim seasonal allocation made as under: -

S.No.	States	July to Oct.	Nov. to Feb.	March to June	Total
1.	Haryana	4.103	0.668	0.917	5.730
2.	Uttar Pradesh	3.217	0.363	0.437	4.032
3.	Rajasthan	0.964	0.070	0.826	1.119
4.	Himachal Pradesh	0.191	0.198	0.810	0.378
5.	Delhi	0.589	0.168	0.716	0.724

#### **LONG TERM MEASURES FOR SUPPLY OF RAW WATER**

In its endeavour to get additional raw water, dialouge has been initiated with UP Govt. Study has been commissioned through Roorkee University to know the quantum of seepage losses in the existing canal system in UP and to propose the measures to save these losses. Delhi Jal Board intends to fund these schemes to get additional raw water thus saved.

Apart from above, Delhi Jal Board will share the cost of following storage dams in UP and Himachal Pradesh to get water allocation in lean period under Yamuna water accord.

**1. KISHAU DAM**

372 MGD (0.5 MAF) of raw water has been earmarked for Delhi's use in the storage of this dam. This dam is to be constructed on the river (TONS) in Uttar Pradesh. The Kishau Dam Project has been examined in CWC for broad technical and economic aspects and found techno-economically viable and recommended for consideration of Advisory Committee at an estimated cost of Rs.3166.23 crores (December 1998 price level). The Kishau Dam Project was taken up in 72<sup>nd</sup> meeting of Advisory Committee on Irrigation, Flood Control and Multipurpose Projects held on 18.01,2000. After discussion it was decided that consideration of the project be deferred for working out economic viability and apportionment project cost among irrigation, power and water supply components

**2. RENUKA DAM**

2175 MGD (0.37 MAF) of raw water has been earmarked for Delhi's use in the Renuka Dam project in Himachal Pradesh. The revised project report of this dam was again discussed in the 72<sup>nd</sup> meeting of the Advisory Committee on Irrigation Flood Control and Multi purpose Projects on 18.1.2000, where it was decided that Project of Renuka Dam is being approved by the Committee with condition that clearance of Ministry of Environment and Forest be obtained separately and sharing of cost between Govt. of NCT of Delhi and Govt. of Himachal Pradesh.

**3. LAKHWAR VYASI DAM**

This dam is to be constructed on the River Yamuna in UP and will provide 0.33 BCM storage and 420 MW power. The Govt. of Uttar Pradesh has submitted an updated estimate amounting to Rs. 1441 crores in April 1998 to Central Water Commission for Techno economic clearance.

Govt. of Uttar Pradesh has to send compliance of the comments of cost aspect and compliance to the comments of CEA.

The deficit between demand and supply of water is proposed to be bridged by constructing additional 400-MGD Water Treatment facilities.

As per the latest development, the Ministry of Environment & Forest has already turned down the project due to submergence of 49 Hct. Of wild life sanctuary. The Delhi Govt. alongwith H.8 Govt. is likely to file a joint petition in the Apex Court for review.

The following table indicate the plant-wise position of water treatment capacity:-

**Figures in million gallon daily ( MGD ):**

S. No.	Plants	Existing capacity in 1997	Proposed Cap. at the end of 9 <sup>th</sup> Plan 1997-2002	Cap. Achievement at the end of 9 <sup>th</sup> Plan	Proposed Cap.at the end of 10 <sup>th</sup> Plan 2002-07	Annual Plan Targets 2002-2003
1.	Chandrawal Water Works No.I & II	90	90	90	90	90
2.	Wazirabad I, II, III	122	122	122	122	122
3.	Haiderpur	200	200	200	200	200
4.	North Shahdara ( Bhagirathi Plant )	100	100	100	100	100
5	140 MGD Plant at Sonia Vihar	-	140	---	140	---
6.	Dwarka / Papankalan	-	60	---	40	---
7.	20 MGD WTP at Bawana	-	20+20	20	20	20
8.	40 MGD WTP at Nangloi	-	40	40	40	40
9.	Addl. 40 MGD WTP at Okhla	-	40	--	20	---
10.	Recycling wastewater at Wazirabad, Chandrawal, Haiderpur & Bhagirathi	-	----	---	41	10
11.	Plant for Iron content removal from Rainy wells water at Okhla.	12	12	12	12	12
12.	Rainy wells & Tube wells	38	60.5	53	87	78
13.	By optimization of W.T.P.	20	42.5	40	40	40
	<b>TOTAL</b>	<b>580</b>	<b>945</b>	<b>675</b>	<b>950</b>	<b>710</b>

The scheme-wise details are given below for 10<sup>th</sup> Five-Year Plan 2002-2007 and for the Annual Plan 2002-2003

**A. WATER SUPPLY SCHEME**

**1. Providing Water Supply in unauthorized Colonies (Rs. 15000.00 lakh)**

To save the people from Water borne diseases, Delhi Jal Board in 1998 decided to provide drinking water supply to these colonies through tube-wells, or deep bore hand pumps and through trucks and tankers.

Piped water supply exists in 333 unauthorized colonies. To provide drinking water in the remaining unauthorised colonies where piped water supply does not exist, besides departmental tankers additional mounted tankers and trucks have to be hired and the average fleet strength during the year to provide drinking water is above 1000.

250 Nos. tube wells will be installed in unauthorized colonies subject to availability of potable ground water and permissions from Central Ground Water Authority, land and electrified area. Also 500 nos. deep bore hand pumps are proposed to be installed during the 10th Five year plan 2002-2007.

Replacement of departmental vehicles of over 15 years age is also needed and new trailer tankers are required to be added. With the increase in cost of P.O.L. and maintenance expenses of vehicles an amount of Rs.15000.00 lacs has been approved for 10th Five Year Plan and Rs 3000.00 lacs for Annual Plan 2002-2003.

**2. Replacement of old distribution system and Strengthening of trunk transmission net work (Rs. 25000.00 lakh)**

For equitable distribution of water, underground reservoirs and booster pumping stations are being constructed in phases. 21 such GR &BPS has already been completed.

For further improvements, consultants have been engaged who have carried out the study of transmission system in whole of Delhi. As per draft final report, underground reservoir capacity of 170 million gallon is required by the year 2006. These will be constructed at 50 different locations. This will include strengthening of existing

transmission system also. Fifty percent of this scheme is proposed to be carried out with the loan from World Bank.

**A. The following works will be taken up:**

1. Purchase of 1,20,000 water meters(domestic) for the year 2002-2003 and 3,00,000 water meters (domestic) for the year 2003-2007.
2. Replacement of old worn out pumps and motors at water pumping stations at.
  - i. Underground reservoir-cum-booster pumping station at Burari.
  - ii. Underground reservoir-cum-booster pumping station at Jhangirpur.
  - iii. Strengthening of Trunk Transmission Network.
  - iv. Supply, Installation & Commissioning of pump set at Kanti Nagar.
  - v. Supply, Installation & Commissioning of pump set at Geeta Colony.
  - vi. Supply, Installation & Commissioning of pump set at Chitra Vihar.
  - vii. Supply, Installation & Commissioning of pump set at Tahirpur.
  - viii. Supply, Installation & Commissioning of pump set at Kondli.
3. A proposal to replace 600 Kms. of old/damaged pipes and to scrub and clean 425 Kms. of pipelines in various parts of Delhi at an estimated cost of Rs.99.50 crore has been approved by DJB. Upto March 2001, 208 Kms of pipe line has been replaced and the works are to be taken in the following area in about 1500 km. Length in the 10<sup>th</sup> five year plan.
  - i. Mahrouli Zone
  - ii. Central Zone
  - iii. South Zone
  - iv. Shahdara Zone(North)
  - v. Shahdara Zone(South)
  - vi. Civil Lines Zone
  - vii. Rohini Zone
  - viii. Karol Bagh Zone
  - ix. West Zone
  - x. Najafgarh Zone
  - xi. S.P. & City Zone
  - xii. RWS (North)

**B. The construction of underground reservoir and booster pumping station at following places is in hand:**

1. Srinivaspuri
2. Malviya Nagar
3. Baljit Nagar
4. Nand Nagri
5. Kondli Gharoli
6. Mongolpuri
7. Brahampuri.

An amount of Rs.25000.00 lac has been approved for 10<sup>th</sup> Five Year Plan 2002-07 and Rs.4000 lac for the Annual Plan 2002-2003.

**3. Improvement of existing water works (Rs.10000.00lakh)**

Recycling plants totaling 41 MGD are proposed to be constructed at four existing plants namely Wazirabad, Haiderpur, Bhagirathi and Chandrawal. Process waste water will be collected and further treated to required standards. Process of tendering etc has been taken up and works are proposed to be completed during 10<sup>th</sup> plan period. There is a proposal to renovate filters and coagulation system at Chandrawal.

**The following works are proposed to be taken up during the 10<sup>th</sup> Plan & A.P. 2002-03**

1. 750 kms. new water main is proposed to be laid for improving water supply.
2. Construction of about 100 nos. small under ground reservoirs and booster pumping stations at various places to rationalize water pressures.
3. Renovation and increasing the capacity of pumps and motors at various booster pumping stations.
4. 10 MGD Recycling waste water treatment plant at Wazirabad.
5. 10 MGD Recycling waste water treatment plant at Gokulpuri.
6. 16 MGD Recycling waste water treatment plant at Haiderpur.
7. 5 MGD Recycling waste water treatment plant at Chandrawal.
8. Renovation of Chandrawal water works No.1.
9. Conversions of 6.6 kV electric supply system to 11 kV supply system.
10. Rehabilitation of clear water at Haiderpur, Phase I.
11. Replacement of Chlorination units at water treatment plants.
12. Renovation old defective clarifiers.
13. Replacement of rotating assembly of pumps.
14. Providing and installation of meters.
15. Procurement of spares.
16. Construction of Boundary wall.
17. Renovation of penstock gates at reservoirs and biofilters.
18. Replacement / topping of filter media at water treatment plants.
19. Renovation of treatment section at Bhagirathi Water Treatment Plant.

20. Replacement of old switch gears, Transformers, Pumps, Compressors etc. at water treatment plants.

An amount of Rs 10000.00 lac has been approved in the 10<sup>th</sup> Plan and Rs. 2000.000 lac for the Annual Plan 2002-2003.

**4. Ranney wells and Tube wells (Rs. 6000.00 lakh)**

- (i) 362 tubewells has been installed in Ixth year plan in regularized colonies, JJ clusters, resettlement colonies, Urban Villages and in unauthorized colonies.

(ii) 1000 new tube wells/allied works are proposed to be constructed/done during 10<sup>th</sup> five-year plan. 200 new tubewells are proposed to be provided in 2002-03 and 800 in 2003-07 subject to the feasibility and grant of permission from Central Ground Water Board.

(iii) Work of boring of 60 Nos. additional tube wells in Burari and Palla area including construction of UGR/BPS, rising mains and pump sets etc., (complete work) are in progress.

- (iv) Replacement of old pumping equipment i/c motors, starters, chlorinators etc.

An amount of Rs.6000.00 lac has been approved for the 10<sup>th</sup> five-year plan and Rs. 1500.00 lac for the Annual Plan 2002-2003.

**5. Staff Quarters & Office Accommodation (Rs.1000.00 lakh)**

- (i) Construction of new revenue collection centers and renovation of old staff quarters and office buildings and pump houses.
- (ii) Const. of Lab Building at Wazirabad.
- (iii) Const. of Addl. Staff Quarters at Varun Niketan.
- (iv) The old quarters in dilapidated condition shall be replaced with new multistoreyed quarters at Chandrawal Water Works No.1.
- (v) It is proposed to construct an office complex to Chief Engineer and SE's of Chandrawal Water Works No.1 as the present office is inadequate.
- (vi) Type V quarters shall be constructed at Jal Vihar to accommodate senior staff.
- (vii) About 4000 quarters are presently available for about 25000 employees. Additional staff quarters shall be constructed to accommodate more employees.

An amount of Rs.1000.00 lac has been approved for the 10<sup>th</sup> five year plan and Rs. 200 lac for the Annual Plan 2002-2003.

**6. Laying of water mains in regularized/unauthorized colonies (Rs.5000.00 Lakh)**

For providing water supply in regularized/unauthorized colonies, where Development charges as per revised policy are to be deposited by the beneficiaries and for works of augmentation of water supply to these colonies. Achievements under this head are dependent on the public response to deposit the development charges. 1071 unauthorized colonies which are under the consideration of Central Govt. for regularization will have to be provided water supply in phased manner. During the year 2002-07 new water mains are proposed to be laid in the left out portions of the colonies.

An amount of Rs 5000.00 lac has been approved for the 10<sup>th</sup> five year plan and Rs 600.00 lac for Annual Plan 2002-2003.

**7. Raw Water arrangement for additional needs including alternative arrangement of raw water for Haiderpur Treatment Plant (Rs.59850.00 lakh)**

- i. For making raw water arrangements for Sonia Vihar Water Treatment Plant a 3250 mm conduit is being laid from Murad Nagar to Sonia Vihar which is likely to be revised to Rs. 11000 lacs. The work is being executed by M/s. NBCC through UP Jal Nigam. Present progress is about 10% The work awarded to M/s. UP Jal Nigam Rs. 8700 lacs likely to be revised to Rs. 11000 lacs.
- ii. The water table in NCT of Delhi has gone down considerably with the result the quality of water has deteriorated and the discharge has reduced. To recharge ground water table, water-harvesting projects have been taken up in the area of various installations of Delhi Jal Board. Besides this M/s. INTECH is preparing the detailed project report for storage of floodwater in Jahagirpuri Marshy ground, Balashwa and Najafgarh Drain.
- iii. On the request of Delhi Govt., Govt. of Haryana has agreed to construct a parallel line channel from Munak to Haiderpur Water Treatment Plant at a total cost of Rs. 38018 lacs. The progress of land acquisition has been started by Haryana Irrigation Department. The work is likely to complete in next three years.

Haryana Govt. has requested DJB to make this amount available in next three years. Immediately Rs. 20 crore has been deposited with them in March, 2002. The seepage losses in the lined channel to the extent of 80 mgd will be saved. Against these saving, water treatment plant at Dawarka, Okhla and Bawana are to be constructed/being constructed.

- iv. DJB shall be required to pay the proportionate cost towards the construction of Tehri Dam, Renuka Dam, Kishau Dam and Lakhwar Vyasi Dam. The detail of share cost proportionally to be paid is given here as under:

(Rs. in Crores)

S.No.	Name of the Dam	Total Project cost	Share cost payable by DJB
1.	Tehri Dam	--	65
2.	Renuka Dam	1224.64	1058.64
3.	Kishau Dam	3566.23	Not yet finalized
4.	Lakhwar Vyasi Dam	1446.00	Not yet finalized

Discussions at various stages are in progress and during the plan period DJB shall have to deposit the share cost which is to be decided by CWC Rs. 10000 lacs is estimated for this work.

- v. MoU for supply of 200 cusec of raw water for Bhagirathi Water Treatment Plant is under finalization with UP Govt., although water is supplied since 1983. In terms of draft M.O.U. rates of water are to be revised every five years. Therefore, DJB has to release about Rs.18 crores for this. In addition, for maintenance of the existing conduit @ Rs. 140 lacs per year is payable. Accordingly, total provision of Rs. 2500 lacs is required under this head.
- vi. An estimate amounting to Rs.29 crores towards augmentation of Upper Ganga Canal from Haridwar to Murad Nagar for carrying additional 300 cusec of raw water from Tehri Dam have been received from UP Irrigation Department. Rs. 24 crores has been released by the DJB against demand of Rs.29 crores. An amount of Rs.5 crore is yet to be released to UP Irrigation Department.
- vii. UP Govt. has been requested to additional raw water for which UP Govt. is getting a study conducted at Roorkee University to reduce seepage losses in the existing canal system in UP. The study report was to be submitted in March 2002. Thereafter, payments will have to be made to UP govt. for the improvements. In

lieu UP Govt. will give additional raw water. Rs. 5000 lacs is estimated for this purpose.

- viii. Providing & laying 2000mm dia raw water main from Haiderpur WTP to Wazirabad WTP, the scheme includes construction of intake works, out fall structures, river training works, raw water pumping stations including pumps & allied works. Which shall also be executed in 10<sup>th</sup> five year plan with a cost of Rs. 4800 lacs.

An amount of Rs. 59850.00 lac has been approved for the 10<sup>th</sup> five year plan and Rs. 5800.00 lacs for the Annual Plan 2002-2003.

**8. Rural Water Supply (General) Rural Water Supply (MNP)&(SCP)  
(Rs. 6000.00 lakh)**

Delhi Jal Board has been providing potable drinking water to all the 219 rural villages. However these villages are extending vertically as well as horizontally thereby creating additional demand of water every year. Under the special component plan, all the 413 Harijan Basties have also been covered. Under this scheme water supply is also provided to land less laborers (House sites) allotted by Delhi Administration and to extended abadies under MNP. Under 20 Point Program, out of 57 such colonies 20 nos. have been provided with water supply and the remaining are being provided. Water supply is also being provided to extended Lal Dora of the villages. Provision has been made for improving, stabilizing and strengthening the rural water supply distribution system besides providing more filtered water in Kanjawala and Najafgarh Blocks where ground water is increasingly becoming saline.

To overcome the problem of low voltage at tubewells, voltage stabilizer and transformers are proposed to be provided, presently, tubewells provided in rural areas have been drilled to about 50-60 meters depth. It is seen that the yield of these tubewells is declining. There is need to explore the possibility of deeper tubewells. In case of success in establishing a dependable source of water at that depth it will substantially meet the needs of rural area. Small underground reservoir and booster pumping stations are being constructed to rationalize and improve water pressure.

An amount of Rs.6000.00 lac has been approved for the 10<sup>th</sup> Five-Year Plan and Rs.1200.00 lac for Annual Plan 2002-2003.

**9. Rural Water Supply under Basic Minimum Services/PMGY (Rs. 1100.00 lakh)**

All the 219 rural villages within the jurisdiction of MCD have already been covered with the potable water supply. However these villages are extending vertically as well as horizontally thereby creating additional demand of water every year. Under the special component plan, all the 413 Harijan basties have also been covered. During summer months, the villages located at the tail end of the distribution system face scarcity of water. To meet the shortage of water in these rural villages, water supply is further supplemented through tankers and sintex tanks mounted on truck. To overcome the problem of low voltage at tube wells, voltage stabilizer are proposed to be provided. Previously, tube wells provided in rural areas had been drilled to about 50-60 meters depth. It is seen that the yield of these tube wells is declining. There is need to explore the possibility of deeper tube wells. In case of success in establishing a dependable source of water at that depth, it will substantially meet the needs of rural area.

An amount of Rs.1100.00 lac has been approved for the 10<sup>th</sup> Five Year Plan and Rs. 300 lac for the Annual Plan 2002-2003.

**10. Distribution Mains and Reservoir for 2<sup>nd</sup> 100 MGD WTP at Haiderpur and peripheral mains for Dwarka (Rs. 2500.00 lakh)**

The work of P/L/J peripheral water mains for built up areas in the command of reservoirs in Dwarka for CT1 & CT2 have been taken up as under;

An amount of Rs.2500.00 lac has been approved for the 10<sup>th</sup> Five Year Plan and Rs.300.00 lac for the Annual Plan 2002-2003.

**11. Const. of 140 MGD Water Treatment Plant at Sonia Vihar and distribution mains and reservoirs (Rs. 33000.00 lakh)**

The work of construction of 140 MGD WTP at Sonia Vihar with O&M period have been allotted and is in progress The cost of construction of plant including civil & E&M installation is Rs 188.80 crore and the annual operation cost of Ist year is Rs. 7.76 crores further to be increased every year on the basis of indices given in the contract.

The work of distribution mains for Trans Yamuna Area` Phase-I from this plant have also been awarded to M/S L & T at a cost of Rs 111.28 crores and targeted for completion by May 2003. The work of transmission mains for Phase-II is under the process of approval and the same shall also be completed in 10<sup>th</sup> five year plan with an approximate cost of about Rs. 70 crores. The whole scheme is proposed to be completed by September 2003. Present status is that 20% of the work is completed. Around 50 crores shall be spent upto March 2002 (9<sup>th</sup> five year plan against the total cost of scheme Rs. 400 crores).

An amount of Rs.33000.00 lac has been approved for the 10<sup>th</sup> Five Year Plan and Rs. 15142.00 lac for the Annual Plan 2002-2003.

**12. Const of 40 MGD Water Treatment Plant at Nangloi (Rs.100.00 lakh)**

A 40-MGD WTP at Nangloi has been completed and commissioned. However, the plant is presently treating only 20 MGD raw water due to raw water constraints for which the matter is pending in the Hon'ble Supreme Court of India.

Construction of staff quarters and works of resectioning of effluent drain and construction of sump for recycling of clarifier/filterback wash are to be taken up during the 10 th Five Year Plan.

A provision of Rs. 100.00 lac has been made for the 10<sup>th</sup> Five-Year Plan and Rs, 20.00 lac for the Annual Plan 2002-2003.

**13. Const. of 20 MGD Water Treatment Plant at Bawana (Rs.1000.00 lakh)**

A 20-MGD, WTP at Bawana is being constructed at a cost of Rs 1391 lac. Major components of the work are as under:

1. Const. of Raw Water Pump House at Bawana..
2. Const. of Staff Quarters at Bawana Treatment Plant (Tenders invited)
3. Shifting of off take point for withdrawal of raw water from WJC.
4. Peripheral services for the 32 villages which comes in the command of 20 mgd water treatment plant at Bawana are to be laid in the 10<sup>th</sup> five year plan. Besides shifting 1300 mm dia existing water mains.

An amount of Rs.1000.00 lac has been approved for the 10<sup>th</sup> five year plan and Rs.200.00 lac for the Annual Plan 2002-2003.

**14. Interlinking of conveyance mains system from various plants (Rs. 200.00 lakh)**

For providing linkages between the conveyance main from various treatment plants it is proposed to lay water mains and make no. of interconnections.

An amount of Rs.200.00 lac has been approved for the 10<sup>th</sup> five-year plan and Rs.70.00 lac for the Annual Plan 2002-2003.

**15. Public Participation and Awareness for Conservation of Water (Rs. 1500.00 lakh)**

In view of the shortage of water being faced in Delhi, there is a need to educate the public and create awareness about conservation of this precious commodity. For this purpose publicity is proposed to be carried out through various audiovisual media like Television, Radio and Press advertisement and holding seminars etc.

A provision of Rs 1500.00 lacs has been made in the 10<sup>th</sup> five year plan and Rs. 300.00 lac in the Annual Plan 2002-2003.

**16. Large Scale Testing of Water Samples Including Water Supply to the weaker section (Rs. 300.00 lakh)**

The Delhi Water Board is presently having 6 well-equipped and modern laboratories having facilities to test physical, chemical and bacteriological parameters and are lifting on an average 300 samples per day. Besides this, samples are also being lifted by Junior Engineers of the DJB who have been provided with 'Test Kits' to determine on the spot presence of residual chlorine in drinking water. It is proposed to purchase mobile laboratories as well as equipments to detect heavy metals and pesticides etc. It is also proposed to intensify lifting of water samples and test about 500 samples a day to ensure water quality.

A provision of Rs. 300.00 lac has been made in the 10<sup>th</sup> five-year plan and Rs 45 lac in the Annual Plan 2002-2003 ..

**17. Const. of 60 MGD WTP at Dwarka (Rs. 4000.00 lakh)**

For Dawarka sub city it is proposed to construct 100 mgd water treatment plant. Since, presently the availability of raw water for this plant would be only 40 mgd after the completion of parallel lined channel (Which is being done by Haryana Irrigation Department). Simultaneous action is proposed to be taken for this scheme so that completion of plant matches with availability of raw water in the year 2006. Actual construction of the plant is proposed to be taken in the year 2004 to be completed in two years.

A block estimate amounting to Rs.6400 lacs has been prepared for this work. An amount of Rs. 4000.00 lac has been kept in the 10<sup>th</sup> five year plan and Rs.100.00 lac in the Annual Plan 2002-2003.

**18. Const. of Addl. 40 MGD Water Treatment Plant at Okhla (Rs. 2000.00 lakh)**

The treatment plant is also to be taken up out of raw water savings with the construction of parallel lined channel. Scheme amounting to Rs. 137 crores for 40 mgd plant has been approved by DJB, but it is proposed to construct only 20 mgd plant due to

constraints of raw water. The scheme is yet to be cleared by CPHEEO technically. The scheme will be taken up in such a way that its completion matches with the availability of raw water and is proposed to be taken up at site in the year 2004 and completed by 2006.

An amount of Rs.2000.00 lac has been approved for the 10<sup>th</sup> five-year plan.

**19. Captive power plants at water treatment plants / installations(Rs.300.00 lakh)**

DJB is maintaining more than 400 under ground reservoir and booster pumping station and. is planning to provide diesel-generating sets where problem of low voltage/electric failure is chronic.

An amount of Rs.300.00 lac has been approved for the 10<sup>th</sup> five-year plan and Rs.50.00 lac for the Annual Plan 2002-2003.

**20. Construction of additional Barrage down-stream of existing Wazirabad Barrage(Rs.100.00 lakh)**

The present storage capacity of raw water is hardly for 7 days. To increase the storage capacity, it is proposed to construct additional Barrage down- stream of existing Barrage at Wazirabad. Preliminary investigation/feasibility report and appointment of Consultants shall be taken up shortly. An amount of Rs. 100.00 lac has been approved for the 10<sup>th</sup> five year plan and Rs.20.00 lac for the Annual Plan 2002-003.

**21. Grant in aid for augmentation of water supply for Urban Villages (Rs.2000.00 lakh)**

Delhi Jal Board is providing water supply in all the 135 urban villages. These villages are expanding vertically and also commercialization is taking place which causes extra burden on the water supply system. For improvement and strengthening of water supply system in these villages, more tube wells, deep bore hand pumps, laying of water mains and construction of under ground reservoir, booster pumping station are being done. In the 9<sup>th</sup> five year plan 91DBHP, 51 tubewells were provided in urban villages and 35 km new water lines has been laid besides 34 km old mains were replaced.

An amount of Rs.2000.00 lac has been approved for the 10<sup>th</sup> five year plan and Rs.400.00 lac for the Annual Plan 2002-2003.

**22. Grant in Aid for Augmentation of water supply in resettlement colonies (Rs.2000.00 lakh)**

Delhi Jal Board is providing water in all the 44-resettlement colonies. These colonies are expanding vertically as well as horizontally. For augmentation of water supply system in resettlement colonies more tubewells, underground tank, booster pumping station, deep bore hand pumps and water mains are to be provided. In the 9<sup>th</sup> five year plan 150DBHP, 80 tube wells has been provided. 27 km new water lines has been laid besides 25 km old mains were replaced.

An amount of Rs.2000.00 lac has been approved for the 10<sup>th</sup> five year plan and Rs.400.00 lac for the Annual Plan 2002-2003.

**23. Grant in aid for augmentation of water supply for JJ clusters (Rs. 5000.00 lakh)**

The water supply services in JJ Clusters were handed over to the then Delhi Water Supply & Sewage Disposal Undertaking now Delhi Jal Board in June 1992. Water supply services are being provided in these clusters.

Population in these clusters is increasing day by day. Re-allocation of many JJ cluster is being done. Besides maintenance of existing water supply system to meet the increasing demand Delhi Jal Board is carrying out augmentation works like providing addl. Tube wells, deep bore hand pumps and public water hydrants in these clusters and is also supplying water through departmental as well as additional tankers on hire. Purchase of additional trailer tankers is also proposed to be made

With the increase in cost of P.O.L and maintenance expenses of vehicles an amount of Rs.5000.00 lac has been approved in the 10<sup>th</sup> five year plan and Rs.1000.00 lac for the Annual Plan 2002-2003.

**24. TRANS YAMUNA DEVELOPMENT BOARD (Rs.6000.00 lakh)**

For rationalization of distribution system in Trans Yamuna Area, it is proposed to construct UGR/BPS at 13 nos. of places in Trans Yamuna Area out of these works is in progress at 5 locations, rest will be taken in new plan period and proposed to be completed by year 2006. The work at following places will be completed by the end of year 2003.

- 1 Gazipur
- 2 Mandawali Fazalpur
- 3 Nand Nagri
- 4 Shastri Park
- 5 Surajmal Vihar

The following works are to be taken up during the 10<sup>th</sup> five year plan:

- A. Replacement of old water mains & laying of new water mains in Shahdara area.
- B. P/L/J 900x700 mm dia water mains from Jagatpuri BPS to booster up the pressure in E-9, E-10 & E-11 Master Plan Sub Zones.

An amount of Rs.6000 lacs has been approved for the 10<sup>th</sup> five year plan and Rs.1200 lacs for the Annual Plan 2002-2003.

**B. SEWERAGE AND DRAINAGE SCHEMES**

1. The Delhi Water Board is responsible for providing sewerage facilities in the areas under the command of MCD. In the areas under the command of NDMC, Cantonment Board and DDA Development areas, internal, peripheral and outfall sewers are provided by the respective agencies. However, the Board provides trunk sewers and sewage treatment plants for the entire area of Delhi. It is also carrying out ongoing works of storm water drainage and certain anti flood works, which are now the responsibility of the MCD/ Irrigation & Flood Control Deptt. The Board has constructed sewage treatment plants at Okhla, Keshopur, Coronation Pillar, Kondli, Rithala, Vasant Kunj, Yamuna Vihar, Ghitorni, Narela, Pappan Kalan, Najafgarh, Delhi gate nallah, Sen Nursing Home nallah etc. Plants are also under construction at Rohini, Yamuna Vihar, Nilothi, Rithala & Mehrauli. Oxidation ponds have also been made at Timarpur.

2. Delhi is not only a metropolitan city but also National Capital. It must have a proper sewerage system for collection, pumping, treatment and disposal of domestic effluent to check environmental pollution. Supply of drinking water is being augmented to meet the increasing demand due to rise in population. It is therefore necessary that sewerage facilities also keep pace with the water supply arrangements.

3. The Task Force under the Chairmanship of Shri Vivek Rae, then Secretary, Govt. of NCT of Delhi has estimated the total waste water generation as 610 MGD out of which 480 MGD is from the water supplied by the DJB and 130 MGD from the ground water being extracted through tube-well, hand pumps etc. This includes industrial effluents as well which are estimated to be of the order of 50 MGD.

4. During the IX<sup>th</sup> five year plan period , the water supply was proposed to be augmented to 945 MGD from 591 MGD , but due to raw water constraints the achievement was 650 MGD.

5. The CPHEEO have published a new water supply manual & as per the latest manual , water requirement for domestic purposes have been recommended @ 150 litre per capita per day + 15% losses = 172 lpcd and considering demand for other uses total works out to 274 lpcd (60 gpcd), they are as under:-

- a) Domestic----- 172 lpcd.
- b) Industrial, commercial and community requirement ----- 47 lpcd.
- c) Fire protection based on 1% of the total demand---- 3 lpcd.
- d) Floating population and special use like hotel & embassies – 52 lpcd.

The total demanded 274 lpcd (60 gpcd).

Based on the above norms, the total water requirement for the X<sup>th</sup> five year plan works out to 1050 MGD. It is planned to augment the water supply to 950 MGD by the end of X<sup>th</sup> Plan. Balance requirement of about 130 MGD is even now met from private sources of extracting the ground water. Deducting 15% losses & around 80% of the balance water supplied, the estimated wastewater generation would be for a capacity of 760 MGD. Out of this DSIDC is setting up CETPs of 40 MGD to treat industrial wastewater. Balance domestic waste water works out to 720 MGD.

6. Ministry of Urban Development and Poverty Alleviation in their affidavit filed in the Hon'ble Supreme Court in CWP No 725 of 1994 has given an outline of an integrated Action Plan for pollution abatement of the Yamuna. The details of Action Plan are as under :-

- (i) All the riparian states must contribute their share in the 10 cumecs of minimum flow as decided by the High Powered Committee headed by Member, Planning Commission.
- (ii) Work of refurbishing of the entire Trunk Sewerage System of Delhi should be taken up on top priority so that it is completed by Dec-2003 without any slippage as committed by GNCTD/DJB.
- (iii) DJB alongwith other agencies like DDA, NDMC and MCD should ensure that all the appurtenant works like additional sewerage system, pumping stations, pumping mains etc. relating to STPs at Najafgarh, Narela, Ghitorni, Kondli, Papan Kalan and Timar Pur are completed expeditiously so that these plants can be utilized to their full capacity.
- (iv) DJB is to ensure that the work of 5 STPs under construction namely; Nilothi, Rohini, Rithala, Mehrauli and Yamuna Vihar is completed according to the present schedule.
- (v) DJB should explore the possibility of constructing additional STPs on the drains itself wherever feasible.
- (vi) All the STPs should be designed for BOD and SS levels of 10 mg/l and 15 mg/l respectively. All the STPs, both existing and future ones should have adequate disinfection facilities to tackle in the pollution on account of fecal coliform.
- (vii) An Action Plan is necessary to shift 62,000 odd Jhuggies from the river bed/drains.
- (viii) The feasibility of segregating treated sewage from untreated waste water from answered areas and slums flowing in the storm water drains including the possibility of construction of surface drains should be examined quickly in consultation with the Ministry of Environment and Forests. The first attempt should be to re-use treated sewage for Irrigation/horticulture or any other use wherever feasible.
- (ix) All the surface drains outfalling into Najafgarh drain should be trapped into the Trunk Sewerage System and taken for treatment to the nearest STPs. All other

- storm water drains directly outfalling into Yamuna should be trapped into the nearest Trunk Sewerage System.
- (x) Construction schedule of 15 CETPs should be strictly monitored to avoid slippages. GNCTD is to ensure that the pollution from other water polluting Industries of Delhi is tackled under the existing Environment Laws.
  - (xi) DJB should start planning of additional STPs as well as land for these STPs wherever not available so that work on construction of the additional STP capacity is completed at the earliest.

In response to further order of Hon'ble Supreme Court, the GNCTD have agreed to advance action on certain components.

The DJB has entrusted a study on the upgradation of sewerage system of NCT of Delhi to cater to the requirements in 2006 and 2011. As per their interim report treatment capacity of 726.4 MGD will be required by 2006 and 806.4 MGD in 2011. Thus additional capacity of 214 MGD will be required to be created by 2005. The DJB plans to create an additional capacity of  $726.4 - 512.4 = 214$  MGD by 2005.

The existing plants have been designed to achieve BOD of 20 mg/l and TSS of 30 mg/l in treated effluent. There is no facility of Coliform reduction. As per component at S.No. (VI) of the Action Plan described in para 6 above, new plants are required to be designed for achieving BOD of 10 mg/l and TSS of 15 mg/l in the treated effluent. Besides above, disinfection facilities are also to be provided to tackle pollution on account of Coliform.

The plant-wise sewerage treatment capacity's as targeted for the IX plan i. e. 1997-2002, achievement till 2000 - 01, target for the year 2001- 02 & proposals for X plan (2002 - 2007) & annual plan 2002-2003 are given as under:-

(All the figures are cumulative & in MGD)

S.NO	Plant's	9 <sup>th</sup> Plan Target's 1997-02	Ach.upto March 2001	Achievement upto March 2002.	10 <sup>th</sup> Plan Target 2002-07	Annual Plan Targets 2002-03
1.	Okhla	140	140	140	165	140
2.	Keshopur	72	72	72	72	72
3.	Coronation Pillar	40	40	40	50	40
4.	Rithala	80	40	80	110	80
5.	Kondli (Ph.I,II,III&IV)	60	45	45	90	45
6.	Yamuna Vihar(Ph.I&II)	45	10	10	45	20
7.	Vasant Kunj	5	5	5	5	5
8.	Ghitorni	5	5	5	5	5
9.	Pappankalan	40	20	20	40	20
10.	Narela	35	10	10	20	10
11.	Najafgarh	5	5	5	5	5
12.	Mehrauli	5	--	--	5	5
13.	Delhi Gate	2.2	2.2	2.2	2.2	2.2
14.	Sen Nursing Home	2.2	2.2	2.2	2.2	2.2
15.	Rohini	15	--		15	15
16.	Timarpur	10	6	6	6	6
17.	Nilothi	40	--	40	40	40
18.	Burapulla Nalla	--	--	--	20	--
19.	Delhi Cantonment	--	--	--	8	-
20.	Decentralized Capacity for outer Delhi	--	--	--	21	--
<b>Total</b>		<b>601.4</b>	<b>402.4</b>	<b>482.4</b>	<b>726.4</b>	<b>512.4</b>

In the IXth Five Year Plan ending 2002. The targeted capacity of STPs were 601.4 MGD against which the achievement till March-2002 was 482.4 MGD. The short fall is mainly due to constraints of cement, steel & cash flow experienced during the period. Regarding laying of sewer line in unauthorized/regularized colonies all the 567 colonies were targeted to be provided with sewerage facilities. Out of which sewer lines have been laid in 418 colonies up to March 2002. Balance colonies are proposed to be covered in Xth Five Year Plan.

Regarding Urban Villages there was a proposal to complete sewer lines in all the 135 Urban Villages. 93 Urban Villages have been seweraged so far. Sewerage facilities in all the remaining Urbanized villages are to be provided in Xth Five Year Plan except where it is not technically feasible to lay sewer lines.

Similarly, out of 44 Resettlement Colonies, sewer lines have been laid in 40. Sewer lines in remaining four colonies will be completed in 2002-03.

In view of the directions of the Hon'ble Supreme Court, in addition to construction of new STPs, to achieve better parameters, it is proposed to upgrade the existing STPs to the parameters laid down by DPCC, extend sewerage facilities in remaining unauthorized/regularized colonies, Urban Villages, Rural Villages, Resettlement Colonies subject to technical feasibility and availability of water, Replacement of unauthorized sewers, laying of new Trunk Sewers, construction of new sewage pumping stations, desilting and rehabilitation of Trunk Sewers, trapping of the storm water drains to prevent flow of untreated waste water to river Yamuna etc. In compliance of the directions of the Hon'ble Supreme Court and as per commitments made by the GNCTD in their affidavit filed by GNCTD in the Hon'ble Supreme Court. It is also proposed to utilize the bio-gas generated on various STPs for production of power. However, this activity is proposed to be entrusted to Private Enterprises on own, build and operate basis.

To update and streamline the drainage system, the World Bank was approached and has agreed for a grant of 2.5 million U.S. Dollars to fund the cost of preparation of Delhi Water Supply & Sewerage Project from the Project preparation facility of the Bank. The Delhi Jal Board has invited proposals from the consultants for the same. The consultant has been finalized and the work may commence soon. The consultancy work

involves institutional development and financial management, Water Supply & Sewerage Rehabilitation etc.

## **DRAINAGE & SEWERAGE SCHEMES.**

### **1. TRUNK SEWERS (Rs. 30800.00 lacs)**

An amount of Rs. 30800.00 Lacs has been made in 10<sup>th</sup> five year plan & Rs. 4500.00 Lacs for the annual plan 2002 – 2003 for rehabilitation of existing trunk sewers & laying of new trunk sewers. Details are as under :-

#### **(a) Desilting & Rehabilitation of existing Trunk Sewers :**

The existing sewerage conveyance system is a large network of branch, peripheral and trunk sewers of around 5600 Kms. in length.

There are 28 main trunk sewers with sizes ranging from 700mm dia to 2400mm dia with a total length of about 130 KM. The balance length of the sewerage conveyance system comprises the peripheral sewers and internal sewers of smaller sizes.

The trunk sewers have been laid over the years at different stages,. Some of these trunk sewers are as old as 40-60 years, where as other trunk sewers are comparatively younger. The condition of the trunk sewers especially the older ones, has deteriorated as a result of silting and settlements. The level of siltation in these sewers varies between 30-70%.

Rapid urbanization in Delhi has further compounded the pressure on the sewerage system, besides the constraints being experienced in maintenance of these trunk sewers due to widening of carriage way of a number of roads due to which large trunk sewers have come under the main carriage way. This phenomenon has accelerated the degradation of sewer lines.

In view of the above to give relief to local areas substantial quantity of the sewage, which is otherwise required to be conveyed to the respective STPs, is discharged into the open drains. It is estimated that about 91 K.Ms. of Trunk Sewers need desilting and rehabilitation including repair of settlement. Some of the important sewers in this category are Ring Road Trunk Sewer, Indian Express Sewer, Sita Ram Bazar Sewer,

University Trunk Sewer, North Trunk Sewer, Harsh Vihar – Haider Puri Sewer, West Delhi Sewer, Outfall sewer from Q Point to Kilokari SPS, Sewer along Arbindo Marg, Cross Connection No. 2,3 & 4, Karol Bagh Sewer, Bela Road Sewer. To minimize flow of sewerage in storm water drains and pollution of river Yamuna, an Action Plan has been prepared for desilting and rehabilitation of Trunk Sewers at an estimated cost of Rs. 275 Crores to be implemented by Sept-2003. Repair of settlements of Ring Road Trunk Sewer, UTS, rehabilitation of Karol Bagh Sewer have already been taken up.

(b) **New Trunk Sewers** :

New Trunk Sewers are also required to be laid to extend sewerage facilities to new areas (Unauthorized/Regularized Colonies, Urban Villages etc.) and cope up the increased waste water generation due to increase in population and water supply. Some of these are Dabri Trunk Sewer, Sagar Pur Trunk Sewer, Trunk Sewer along Wazirabad Road in East Delhi, East Punjabi Bagh, Jail Road Trunk Sewer, Uttam Nagar Trunk Sewer, Najafgarh Trunk Sewer etc. Provision has also been made for procurement of suction – cum-jetting Machines and Super Suckers etc. for maintaining the Trunk Sewer silt free.

**TRUNK SEWERS**

<b>S No.</b>	<b>Name of Scheme</b>
1.	Gravity Duct from Road No. 41 to New Rithla SPS,1600/1800mm dia.
2.	Augmentation of peripheral sewer in the command area of Bharat Nagar SPS.
3.	P/L additional peripheral system for the proposed new SPS in Karol Bagh.
4.	Augmentation of existing peripheral system in the command area of Shalimar Bagh SPS.
5.	Augmentation of existing peripheral system in the command area of Rithala SPS.
6.	Augmentation of existing peripheral system in the command area of Haiderpuri SPS.
7.	Augmentation of existing peripheral system in the command area of Sector 17 SPS.
8.	Augmentation of existing peripheral system in the command area of Rohini Sector-19 SPS.
9.	Rehabilitation of 33” dia peripheral sewer line from Tri Nagar to Bharat Nagar Bridge 1500m.

10.	Revival of siphon under Najafgarh Drain near Bharat Nagar Bridge.
11.	Repair of settled sewer in Saraswati Vihar, Pitampura Shalimar Bagh.
12.	Shifting of services, construction of bridges, across drains, canals, railway tracks, siphon under Najafgarh drain R/R charges.
13.	Rehabilitation of 1600mm dia Haiderpuri Trunk Sewer.
14.	Replacing 1200mm dia UTS near DRDO Complex, Timarpur.
15.	P/L 450mm dia outfall sewer in Indra Vikas Colony.
16.	Desilting of N.T.S. from Bharat Nagar to Patel Chest Bridge.
17.	P/L additional trunk sewer on Chhatra Marg, Lucknow Road.
18.	Desilting of UTS.
19.	Repair to sewer near Model Town Pump House.
20.	P/L peripheral sewer on Zonal Road at Narela.
21.	Restoration of settlement of Ring Road Trunk Sewer and desilting from Red Fort to Ring Road Pumping Station.
22.	Bela Road sewer restoration work.
23.	L/J sewer system for filling up gaps of Sarai Rohilla trunk sewer.
24.	Desilting/raising of manholes of Bela Road sewer from ISBT to Nigambodh Pumping Station.
25.	P/L additional trunk sewer or replacing UTS with higher dia trunk sewer
26.	Supply of 1600mm dia NP3 Class S&S RCC pipes (ISI mark) alongwith rubber ring for twin trunk sewer from N.G. drain outer Ring Road crossing to Sayeed Nangloi SPS.
27.	L/J 1600mm dia NP3 Class RCC pipes for twin trunk sewer from Najafgarh drain outer Ring Road Crossing to Sayeed Nangloi SPS.
28.	Rehabilitation of West Delhi trunk sewer brick barrel and other trunk sewers.
29.	Desilting of relieving trunk sewer with super sucker.
30.	Desilting of trunk sewer in Punjabi Bagh & Jail Road.
31.	P/L & jointing 450-500-1400-1600-2000 & 2200mm dia trunk sewer from East Punjabi Bagh upto Ist manhole of twin trunk sewer near crossing of N.G.drain and outer ring road in West Zone.
32.	P/L & Jointing 1400-1600-1800mm dia supplementroy Jail Road trunk sewer from District Center Janakpuri to Keshopur STP.

33.	P/L/J Uttam Nagar trunk sewer at Najafgarh Road.
34.	P/L Najafgarh trunk sewer by trenchless technology.
35.	P/L Sagarpur/Dabri trunk sewer in Najafgarh Zone.
36.	Replacement of old brick barrel by P/L 900mm dia RCC NP3 Class pipe for improvement of sewerage system of Bazar Lal Kuan from Katra Bariyan Chock upto Hauz Quazi Chowk.
37.	Replacement of old brick barrel of Ballimaran by P/L 600/900mm dia RCC pipe from Charkhewalan to Chandni Chowk.
38.	Rehabilitation of 1200mm dia trunk sewer cross connection No.4 by ferrocement lining.
39.	Rehabilitation/Renovation of 1600-1900mm dia brick barrel trunk sewer from Delhi Gate to College Lane.
40	Rehabilitation of 950x1425mm dia Egg Shaped Bazar Sita Ram sewer from turk Man Gate to Ajmeri Gate (via Hauz – Quazi)
41	Restoration of settled 900mm dia MaharaniBagh peripheral sewer line opposite A – 4 Maharani Bagh.
42	Rehabilitation of 66” dia old Brick barrel from Lodhi Road to Kilokri
43	Replacement of 900mm dia sewer line from Seikh Sarai to Madan Gir
44	Replacement of 1100mm dia MS pipe at Kilokri SPS for Pump Set 1, 2, 3
45	P/L relieving sewer from IIT gate to South Ex. Part I, Phase I
46	P/L relieving sewer from Ring Road South Ex. To Kidwai Nagar School Ph. II
47	P/L relieving sewer from kidwai Nagar to JE s Store (MCD) works Kotla Sewa Nagar Ph. III
48	Restoration of settled portion of 1200mm dia cross connection No.3 Zoological park
49	Laying 1000 mm dia sewer along Khel Gaon Road
50.	P/L 1200mm dia sewer along Din Dayal Upadhaya Marg.
51	P/L 1200mm dia sewer line along Bahadur Shah Jaffar Marg.
52	Repair of Ring Road T/Sewer.
53	P/L peripheral sewer line in North West of Wazirabad Road.
54	P/L Peripheral sewer line on Loni Road and 100ft. wide Road.
55	P/L 600 mm dia Peripheral sewer line in Naveen Shahdara.
56	P/L peripheral sewer on Choudhary Fateh Singh Road.
57	Additional T/Peripheral sewer in Trans Yamuna Area as per recommendation of M/s. T.C.E.

An amount of Rs. 30800.00 lakh is approved for 10<sup>th</sup> plan which includes Rs. 4500.00 lakh for Annual plan 2002-03.

2. **SEWAGE TREATMENT PLANTS AND ANCILLIARY WORKS :**

**(Rs.93900.00 lakh)**

(a) **On-going STPS :**

Out of 17 STPs taken up in IX plan the work of 10 STPs at Najafgarh, Sen Nursing Home , Delhi Gate, Yamuna Vihar Ph. Ii, Kondli Ph. II, Kondli Ph. III, Vasant Kunj Ph. Ii & Pappankalan, Coronation Pillar, Ghitorni had been completed.

Two STPs namely Okhla (16 MGD) and Narela (10 MGD) have been completed in Oct-2000. The work of 3 STPs namely Rithala (40 MGD) , Rohini (15 MGD) & Nilothi (40 MGD) is at advanced stage of completion. The work on remaining two STPs namely Mehrauli (5 MGD) & Yamuna Vihar (10 MGD) are in initial stages of completion.

(b) **New STPs**

M/s TCE Consulting Engineers Ltd. have been entrusted with the study of up gradation of sewerage system for Delhi. The consultant have submitted interim report, according to which a sewage treatment capacity of 726.4MGD would be required by the year 2006.

The DJB plans to augment sewage treatment capacity from 402.4 MGD (Oct,2000) to 726.4 MGD & complete required ancillary works by 2005. New STPs in addition to on going STPs to be completed during Xth Five Year Plan are at Kondli (45 MGD), Yamuna Vihar (25 MGD), Rithala (30 MGD), Coronation Pillar (10 MGD), Okhla (30 MGD), Barapulla Nalla (15 MGD), Pappan Kalan (20MGD), Narela (10 MGD), Delhi Contonment (8 MGD), Decentralised System (21 MGD). The existing plants have been designed to achieve BOD of 20 mg/l and TSS of 30 mg/l in treated effluent. There is no facility of Coliform reduction. As per component at S.No. (VI) of the Action Plan described in para 6 above, new plants are required to be desined for achieving BOD of 10 mg/l and TSS of 15 mg/l in the treated effluent. Besides above, disinfection facilities are also to be provided to tackle pollution on account of Coliform. Action has already

been taken to finalise prequalification tender documents for appointment of consultants and short listing of the firms for construction of 45 MGD STP at Kondli and 20 MGD STP at Yamuna Vihar.

(c) **Ancillary Works :**

With the setting up of the new sewage treatment plants of additional capacity of 214 M.G.D. , additional Pumping Stations at various places will also be required to be set up as per the reports of the consultant. Some of the Pumping Stations proposed to be set up are at Chilla (80 MGD), Yamuna Vihar (90 MGD) and Pahari Dhiraj (21.5 MGD) and Karol Bagh (36 MGD).

There are 3 Nos. of Gravity Ducts leading to Okhla STP from Kilokri/Ring Road Pumping Station. One of the Gravity Ducts does not function in full capacity. It is planned to take improvement works and also fencing to avoid encroachment of land.

**SEWAGE TREATMENT PLANTS AND ANCILLIARIES WORKS**

<b>S No.</b>	<b>Name of Scheme</b>
1.	Const. of Staff Quarters at Rithala
2.	Const. of Staff Quarters at Rohini STP
3.	Const. of SPS rising main etc for utilizing effluent for irrigation purposes at Rithala STP
4.	Const. of mini STP/Eco Park system
5.	Const. of 20 MGD STP at Coronation Pillar-Phase-I-S.H-B
6.	Const. of Addl. 10 MGD STP at Coronation Pillar Ph-II.S.H.-B
7	Design, execution and constn. of 10 MGD STP at Coronation Pillar-Ph-III.
8	Const. of Boundary Wall of DJB land at Coronation Pillar.
9	Const. of staff quarters at Narela STP.
10	Const. of staff quarters at Nilothi STP.
11	Const. of Mini STP/ Eco Park system in rural villages in Narela Zone.
12	Const. of boundary wall at Nilothi.
13	Const. of addl. 5MGD STP at Narela Ph-I.
14	Const. of brick masonry wall at 20MGD STP at Pappankalan.
15	Const. of staff quarters at STP Pappankalan.
16	Const. of 8 MGD STP at Delhi Cantonment.
17	Improving parameters of treated effluent of Pappankalan and Najafgarh STPs.
18	5MGD STP at Mehrauli.
19	Const. of 16 MGD STP at Okhla.
20	Repair of Digesters & Gas Holders of 10 MGD STP at Kondli
21	Constn. of new STP for additional capacity 311 MGD are as under :-

A	Kondli(45 MGD)
B	Yamuna Vihar(25 MGD)
C	Rithala(30 MGD)
D	Coronation Pillar.(10 MGD)
E	Okhla.(30 MGD)
F	Barapulla Nalla(15 MGD)
G	Pappankalan(20 MGD)
H	Najafgarh(10 MGD)
I	Narela(30 MGD)
J	Delhi Cantt.(8 MGD)
K	Decentralise capacity (88 MGD)
22.	Const. of 36 MGD SPS at Karol Bagh i/c const. of rising main E&M etc.36 MGD @ Rs 80 Lacs MGD including cost of civil work E&M , rising Main .R/R charges and land cost.
23.	Const. of 22 MGD SPS at New Rithala .
24.	Const. of 18 MGD SPS at Anand Vihar.
25.	Const. of 5 MGD SPS near D,P Block Pitampura.
26.	L/S duplicate rising main for existing SPS. i) Haiderpuri SPS to Rithala STP 1050 mm dia (2.80 km) ii) Sect.17 SPS to Rithala STP 900 mm dia (3.50km) iii) Rithala SPS to Rithala STP 1050 mm dia (2.0 km) iv) Sect.19 SPS to Rithala STP 700 mm dia (5.50km)
27.	Constn. Of 4.27 SPS at Adarsh Nagar.
28.	Repairs of rising main on Sanjay Gandhi Transport Nagar.
29.	Constn. Of proposed SPS on Lucknow Road
30.	P/L rising main of the proposed SPS on Lucknow Road.
31.	Inter connection of old & new SPS Adarsh Nagar.
32.	Renovation of SPS Mukherji Nagar.
33.	Constn. o f SPS for Burari & adjoining areas.
34.	Rising main of SPS-Burari.
35.	Constn. of pumping station for Swatantra Nagar and adjoining areas
36.	Constn. of SPS for rural villages in Narela Zone.
37.	P/L/J 1200 mm dia twin rising main from Nangloi Sayaad to Nilothi STP.
38.	Constn. of SPS No. 1 of 22 MGD capacity opposite Delhi Milk Scheme near Shadi Pur Depot.
39.	Constn. of SPS-2 of 26 MGD capacity near Raja Garden crossing .
40.	Constn. of SPS-3 of 11 MGD capacity at Possangipur in Janakpuri.
41.	Constn. of SPS-4 of 7 MGD capacity at Punjabi Bagh.
42.	Constn. of SPS-5 of 17 MGD capacity at Delhi Cantt.
43.	Augmentation of Parsad Nagar SPS by 2 MGD.
44.	Constn. of various small lift SPS alongwith their rising main in Patel Nagar & adjoining areas.
45.	Constn. of 20 MGD SPS at Hastsal, Uttam Nagar.
46.	Constn. of 12.50 MGD SPS at Jeevan Park.
47.	Constn. of 14 MGD SPS at G-Block Dakshin Puri.
48.	Replacement of old existing 30" dia rising main by 800 mm dia D.I.Pipe from Nigam Bodh SPS to master chamber of Ring Road Trunk Sewer at Shantivan.

49.	12.5 MGD SPS at Mehrauli.
50.	SPS at Khel Gaon.
51.	Rising main for SPS Khel Gaon.
52.	SPS at Pahari Dheeraj (21.5 MGD).
53.	Rising main for Pahari Dheeraj.
54.	Constn. of 90 MGD SPS alongwith rising main at Yamuna Vihar.
55.	Constn. of 80 MGD pumping station at Chilla Regulator alongwith rising main.
56.	Constn of addnl SPS at various places as per the report of consultant
57.	Constn. addl. rising mains as per the report of consultant.
58.	Providing Boundary Wall /Fancing along the Gravity Duct from Kilokri SPS to Okhla STP
59.	Desilting of Gravity Duct from Kilokri SPS to Okhla STP.

An amount of Rs. 93900.00 lakh has been approved for 10<sup>th</sup> FYP 2002-07 which includes an amount of Rs. 10,000.00 lakh for Annual Plan 2002-03.

**4. RESIDENTIAL ACCOMMODATION, STORES, LAB , GO DOWN ,ETC.  
(RS 1000.00 LAKH)**

Many staff quarters are quite old and require rehabilitation and renovation besides construction of new offices, godowns, stores & laboratories at Okhla, Keshopur , Kilokri STP, and Coronation Pillar.

An amount of Rs. 1000.00 lakh is approved for 10<sup>th</sup> FYP and Rs. 200.00 lakh for Annual plan 2002-03.

**4. STORM WATER DRAINAGE & ANTI FLOOD WORKS : (Rs. 100.00 lakh)**

In the 9<sup>th</sup> Five Year Plan the work of construction of major drains was with the Delhi Jal Board. But the works of storm water drains have been transferred to MCD (General Wing).

However the continued work/balance work and SW Drains of Model Town and Adarsh Nagar are to be carried out by the DJB for which a provision of Rs.100.00 lacs has been made in the 10<sup>th</sup> Five Year Plan and Rs.100.00 lacs in the Annual Plan 2002-2003.

**5. RENOVATION OF EXISTING PLANTS AND PUMPING STATIONS :**

Sewage Treatment Plants at Keshopur (12, 20 & 40 mgd), Okhla Old (30 + 12 + 45 + 37 MGD) , Kondli (10 MGD), Coronation Pillar (10 + 20 MGD), Rithala (40 MGD)

are quiet old. Similarly, the Sewage Pumping Stations at Kilokri, Ring Road, Keshopur, Haiderpuri, Jagriti and Preet Vihar, etc. are quiet old and require renovation. The buildings of these Sewage Pumping Stations and Sewage Treatment Plants as well as their staff quarters are very old and require renovation and refurbishment. These are to be taken up in 10<sup>th</sup> Five Year Plant.

The existing Sewage Treatment Plants of 512.4 capacity also require up- gradation as per the new norms laid by Ministry of Environment and Forest/C.P. C. B./D.P.C.C. The existing Plants are designed for achieveing treated effluent parameters of BOD 20 mg/l and TSS of 30 mg/l. New norms laid down by DPCC are BOD 10 mg/l, TSS of 15 mg/l and coliform count of < 10,000 MPN per 100 ml. The cost of upgradation of existing STP is of the order of Rs. 80 lacs per MGD. Therefore, this particular head will require sufficient budget provision.

#### **RENOVATION OF EXISTING PLANTS AND PUMPING STATIONS**

<b>S No.</b>	<b>Name of Scheme</b>
1.	Renovation of existing 12, 20 & 40 MGD STP at Keshopur.
2.	Renovation of 124 MGD STP at Okhla.
3	Renovation of 10 MGD & 25 MGD , STP at Kondli
4	Renovation of 10 & 20 MGD STP at Coronation Pillar
5	Renovation of 40 MGD STP at Rithala
6	Renovation of SPS at Kilokri, Ring Road, Keshopur, Haiderpuri, Jagriti & Preet Vihar etc.
7	Up gradation of existing S.T.Ps.of 512.4 MGD as per new norms laid by CPCB/DPCC.
8.	Improvement of parameters of treated effluent of 40 MGD STP at Rithalla Ph-I

An amount of Rs. 30,000.00 Lacs has been approved for the 10<sup>th</sup> Five Year Plan and Rs. 1000.00 Lacs for the Annual Plan 2002-2003.

#### **6. LAYING OF INTERNAL SEWERS IN UNAUTHORIZED/REGULARIZED COLONIES :**

The sewerage services as per present policy are not being provided in unauthorized colonies and JJ Clusters. The present status of sewerage services in unauthorized/regularized colonies, are as under:

Out of 567 unauthorized/regularized colonies water supply system exists in 548 colonies and sewer lines have been laid in 402 colonies and made functional in 366

colonies. Internal sewers in 28 more colonies could not be made functional, as outfall sewers are not available. It is not technically feasible to lay sewer lines in 6 colonies. Balance 140 colonies are there in which sewer lines are to be laid. DJB has taken up a programme for laying of sewer lines in these colonies in a phased manner and the programme is likely to be completed by March 2004. It is also proposed to replace undersized sewers in various colonies of Delhi during Xth Plan.

**LAYING OF INTERNAL SEWERS IN UNAUTHORIZED/REGULARIZED COLONIES.**

S No.	Name of Scheme
1.	P/L Internal sewer in Nangloi Ext. and Dharana Colony.
2.	P/L sewer line in Yadav Nagar Temple Colony, Teachers Colony.
3.	P/L sewer line in Friends Enclave II, Rajendea Park, Tyagi Colony ,Rattan Park
4.	Improvement of sewerage system Rishi Nagar Rani Bagh.
5.	Repair of settled sewer in Shalimar Bagh, Pitampura ,Rohini.
6.	L/J 900 mm dia Loop sewer line to replace settled sewer in front of Ram Bagh & B.W. block Shalimar Bagh.
7.	L/J 900 mm dia loop sewer line to replace settled sewer in B.A. block Shalimar Bagh.
8.	Restoration of sewerage system of C-D, S-D block, Pitampura.
9.	P/L internal sewers in Indira Vikas Colony.
10.	P/L internal sewers in Sanjay Nagar & Mahendra Park.
11.	P/L internal sewers in Burari & other areas nearby.
12.	Replacing under seized sewers in Timarpur .
13.	Replacing under seized sewers in Kamla Nagar.
14.	Replacing under seized sewers in Roop Nagar.
15.	P/L, internal sewers in Vijay Nagar Master Col., Punjabi Bagh , G- block Indira Nagar & Shivaji Nagar in Narela.
16.	P/L internal sewer in Narela Mandi Extn.(Part) at Narela.
17.	P/L internal sewer Swatantra Nagar at Narela.
18.	P/L internal sewer in rural Villages in Narela.
19.	P/L internal sewer in Narela Town.
20.	P/L 500 mm dia sewer line for Subhadhra Colony on the Service Road of Road No. 40.
21.	P/L 1200 mm dia sewer line from Maya Puri X- ing to Raja Garden at Ring Road.
22.	P/L/Additional peripheral Branch in Keshopur drainage Zone.
23.	Replacement of existing sewer lines of under sizes in West Zone.
24.	L/J sewer lines in various unauthorized/regularized colonies in Najafgarh Zone
25.	P/L Peripheral sewer in Najafgarh Zone.
26.	Internal sewer in U/A regularized colonies in New Patal Nagar in K.B.Zone.
27.	P/L internal sewer line in left out portion of Tuglakabad Ext.

28.	Internal sewer for Urban Village. Jarolla , Begumpur & Mahipal pur .
29.	Peripheral and internal sewer for Chattarpur , Raj pur, Khurad ,Jaitpur, Nebsarai,Asola , Sutpari, Chandar Holla, Maidan Gari, Dera Mandi, Bhatti Kallan.
30.	Replacement of internal sewer in K.B. Zone.
31.	P/L internal sewer in Unauthorized / Regularized colonies in Trans Yamuna Area.
32.	Replacement of under seized sewer as per action plan

An amount of Rs. 20000.00 Lacs has been approved in the 10<sup>th</sup> Five Year Plan and Rs. 3900.00 Lacs for the Annual Plan 2002-2003.

**7. NON-CONVENTIONAL SOURCE OF ENERGY (UTILIZATION OF GAS AT VARIOUS PLANTS) : (Rs. 400.00 lakh)**

Vaish committee has recommended for utilization of Bio-Gas at various Sewage Treatment Plants for generation of electricity which can be utilized for operating the STPs. It is proposed to appoint Consultant to prepare feasibility on the subject. Thereafter, the Bio-Gas engines for generation of electricity at various Plants would be taken up. The tenders for appointing Consultant have been invited and the same is under scrutiny. It is proposed to award the schemes of power generation on build, own & operate basis. The DJB will also explore the possibility of utilization of Bio gas produced at our various treatment plant for captive power generation which would result into generation of Revenue from such power plant by way of sale of Bio gas and viz-a-viz purchase of electricity from the DVB.

An amount of Rs. 400 Lacs has been approved for the 10<sup>th</sup> Five Year Plan and Rs. 40.00 Lacs for the Annual Plan 2002-2003.

**8. GIA FOR SEWERAGE FACILITIES IN URBAN VILLAGES (Rs. 5000.00 lakh)**

There are 135 urban villages and water supply exists in all of them. Sewer lines have been laid in 93 urban villages. It is not technically feasible to lay sewer lines in 32 Urban villages and laying of sewer lines in the remaining 10 urban villages is being implemented by DJB in a phased manner by March 2004. In case of village where it is not technically feasible to lay sewer lines, decentralized system such as Mini STPs, bio-digesters are proposed to be provided in Xth Plan.

### GIA FOR SEWERAGE FACILITY IN URBAN VILLAGES

S No.	Name of Scheme
1.	P/L internal sewer system in Bhalswa Village.
2.	P/L internal sewer system in Samapur Village.
3.	P/L internal sewer system in Mangolpur Kalan
4.	P/L sewer line in rural villages of Pooth Kalan, Begumpur, Shah Bagh, Bawana, Karala, Pooth Khurd, Prahlad pur , Barwala etc
5.	Replacement of sewer line in Wazirpur Village.
6.	P/L internal sewer system in Wazirabad
7.	P/L internal sewer system in Gopalpur.
8.	P/L internal sewer system in urban villages of Najafgarh zone and adjoining area.
9.	P/L internal sewer system in Trans Yamuna Area.

An amount of Rs. 5000.00 Lacs has been approved for the 10<sup>th</sup> Five Year Plan and Rs. 500.00 Lacs for the Annual Plan 2002-2003.

#### 8. GIA FOR SEWERAGE FACILITIES IN RESETTLEMENT COLONIES (Rs. 1000.00 lakh)

There are 44 Resettlement colonies in Delhi and water supply exists in all of them. Sewer lines have been laid in 39 colonies. Sewers are to be laid in the remaining 5 colonies in a phased manner by March 2004.

### GIA FOR SEWERAGE FACILITY IN RESETTLEMENT COLONIES

S No.	Name of Scheme
1.	Improvement of sewerage system in Wazirpur.
2.	Improvement of sewerage system in Shakur basti JJR
3.	Laying of sewer line in left out pocket of Jahangir Puri, Mangolpuri, Sultanpur.
4.	Laying of balance peripheral sewer in Jahangir Puri.
5.	Constn. of Storm water drain in Jahangir Puri.
6.	Laying of sewer line in Trans Yamuna Area.

An amount of Rs. 1000.00 Lacs has been approved for the 10<sup>th</sup> Five Year Plan and Rs. 200.00 Lacs for the Annual Plan 2002-2003.

#### 9. TRANS YAMUNA DEVELOPMENT AREA BOARD (TYDAB) (Rs. 4000.00 lakh)

Govt. of NCT of Delhi vide notification dated 4.3.94 constituted trans yamuna development Board to monitor the progress of work in Trans Yamuna Area. For execution of development works.

An amount of Rs. 4000.00 Lacs has been approved for the 10<sup>th</sup> Five Year Plan and Rs. 800.00 Lacs for the Annual Plan 2002-2003.

## **NDMC**

Union Territory of Delhi occupies an area of about 1500 Sq.Km. out of which Urban area of about 42.7 Sq.Kms. (Centrally located) comes under NDMC. Area of NDMC houses Rashtrapati Bhawan, PM House, M.P.flats, Foreign diplomats other VIP's including Central Secretariat, Central/State Government Offices, residential colonies and a few private colonies with a permanent population of about 3.00 lacs. People coming from adjoining area for working in offices and commercial complexes in this area and floating population of commuters is also to be taken into account.

### **1. Water Supply**

#### **1. Strengthening of water supply system in NDMC Area. (Rs. 300.00 lakh)**

NDMC is responsible for supplying potable drinking water to all its residents its per day requirement based on CPHEEO Manual about 200 MLD out of which 120 MLD is supplied by Delhi Jal Board and about 20 MLD is being generated about 130 Nos. tube wells developed in NDMC. Thus besides completing ongoing schemes of Ninth Five Year Plan. NDMC proposes to take up the following schemes to make up the deficiency in supply of water during Tenth Five Year Plan period:-

#### **i) Development of tube wells near Yamuna river and carriage of water to NDMC area.**

It is proposed to develop 10 Nos. deep tube wells in the belt of river Yamuna and carry water to NDMC area by laying lines with chlorination arrangement.

#### **ii) Dual Water Supply.**

It is proposed to provide two types of water viz. For drinking and for other than drinking purposes for which separate underground tanks and net work of pipe lines will be laid.

iii) **Construction of new underground water tanks, boosting stations and laying of lines.**

It is proposed to construct new water boosting stations and increase the capacity of existing underground water tank in some VIP area.

iv) **Rain Water Harvesting and Recharging of Tube wells.**

It is proposed to go in for rain water/roof top harvesting and recharging of tube wells as per advice of CGWB.

v) **Replacement of old corroded GI/distribution pipelines.**

It is proposed to replace the rusted and corroded 20-30 years old pipes.

vi) **Replacement of old water meters.**

It is proposed to replace 15-20 years old water meters with new good quality water meters.

vii) **Modernized Water Supply Control Room.**

Water Supply Control Room is proposed to be modernized by way of installation of computers, purchase of new water tankers and trollies.

viii) **Separate unfiltered water lines in NDMC area.**

It is proposed to lay separate water lines for NDMC area for unfiltered water for irrigation purposes to be supplied by Delhi Jal Board.

ix) **Shifting of waterlines passing through covered drainage/sewerage system.**

It is proposed to shift the water lines passing through covered drains/sewer manholes or just by the side of sewer lines to avoid contamination of water.

x) **Formation of Grid System of existing CI Water Mains.**

It is proposed to remove all dead ends of existing waterlines and to form grids to make the system effective to give a uniform and equitable pressure.

An outlay of Rs. 300.00 lacs is approved for the Tenth Five Year Plan 2002-07.

## **2. SEWERAGE SCHEMES**

### **1. Augmentation of Sewerage System in NDMC area. (Rs. 300.00 lakh)**

The existing sewerage system is 50 to 70 years old and is grossly inadequate to cater the present day demands of water and population besides the system has outlived its life.

Sewerage system in NDMC area is an integral part of Delhi State, Entire sewerage generated within and flowing to NDMC area is discharged to MCD sewers. Delhi Jal Board carries out bulk disposal of sewerage and its treatment including NDMC area.

M/s. Tata Consulting Engineers were appointed as consultant with the objective to assess the existing sewerage system and to suggest improvements that are required to maintain an effective system and to identify the proposals by which such improvements can be implemented most economically. A study report on sewerage system carried out by M/s. Tata Consulting Engineers was received during 1995 and the same has been technically accepted. The various schemes for augmentation of sewerage system in NDMC area undertaken by the department are based on the recommendations given in the study report of M/s. Tata Consulting Engineers.

#### **Achievements during 9<sup>th</sup> Five Year Plan – 1997-2002.**

The following schemes have been executed: -

- i) Aug. of sewerage system in Moti Bagh, Netaji Nagar and Sarojini Nagar.
- ii) Aug. of sewerage system from Satya Marg to Africa Avenue and Khushak Nallah to Brig. Hoshiar Singh Marg
- iii) Aug. of trunk sewer line at K.G.Marg.

#### **Tenth Five Year Plan 2002-07.**

Three ongoing schemes of the 9<sup>th</sup> Five Year Plan have spilled over in the Tenth Five Year Plan, for completion of the balance works such as shifting of connections,

commissioning of already augmented trunk sewer lines/branch sewer lines and laying of a portion of trunk sewer line under the railway track upto Brig. Hoshiar Singh Marg.

**New Schemes.**

It has been planned to execute the various major/branch sewer lines, their commissioning, shifting of connections, desilting of trunk/branch sewer lines and mechanization of upkeep of sewer lines. It has also been planned to execute the laying of sewer line through trench less technology i.e. Lazer Guided tunneling and Pipe Jacking Methodology. The foreign technology is not indigenously available in the country and so far so 1<sup>st</sup> project through trench less technology has been taken up at Mumbai by Municipal Corporation of Greater Mumbai. Being a foreign technology and high cost of equipments a consultant for designing, documentation and invitation of tenders on global basis had already been approved. Initially the tenders for carrying out the work of laying of sewer lines in a length of 5 Kms through trench less technology likely to be commenced during 2002-03. Particularly in NDMC area due to high volume of traffic, existence of various under ground utilities, VVIP movements and security reasons, the open cut and re-built method have become absolutely difficult except in the lanes and by lanes.

As far as old trunk sewer lines which have partially outlived their life need to be rehabilitated by adopting new technologies for providing inside lining. Accordingly provision has also been considered in this plan.

Desilting of trunk/branch sewer lines through manual labour and indigenously technology are not producing tangible results and the same shall be got executed by adopting foreign technology as applicable in the case of inside lining. Desilting is essentially required so as to eliminate any spillage/over flow into the storm water drains/open nallahs.

For effecting and preventing maintenance of existing sewers, high pressure water jetting sewer cleaning machines and suction sewer cleaning machines along with other equipments have also been considered in order to make the maintenance risk free and to improve the working conditions of the work force.

The plan schemes for Augmentation of Sewage system in NDMC area is proposed for the Tenth Five Year Plan are as given below.

1. **Aug. of sewerage in NDMC area.**

Ongoing Schemes

New Schemes

- i) Through open cut & rebuilt
- ii) Through trench less technology
- iii) Rehabilitation of old sewers by providing inside lining.
- iv) Mechanisation of sewerage maintenance.

2. **Desilting of Sewers.**

An outlay of Rs. 300.00 lakh is approved for 10<sup>th</sup> FYP 2002-07.

3. **COVERING OF NALLAH & ANTI FLOOD WORKS (Rs. 400.00 lakh)**

The Drainage system of New Delhi Municipal Council's 42.78 Sq.Mt area is managed through 14 segments/systems divided with respect to the catchment area of each system and trunk drainage from system in each case carry the rain water discharge and all of sewer line through auxiliary drains up to the out fall through five outlets in MCD area for final disposal to the River Yamuna. The passing criteria for drainage system in New Delhi Municipal Council area is based on the recommendation contained in Reddy Committee's Report approved by the Govt. of India and quite substantial amount to this (upto 80%) and drainage have been augmented/covered. Therefore, a systematic programme to desilt, augmentation and improvement the SWD drains in New Delhi Municipal Council area is required to be taken up for which area/pocket have been identified and likely to be taken up in the Tenth Five Year Plan as detailed below: -

i) **Augmenting the capacity of SWD System No. 1&6 to 11 and covering thereof including Khushak Nallah (Rs. 150.00 lakh)**

For the work of Rain Water Harvesting in open area viz. DIZ colonies, gardens, parks, nallahs etc., in NDMC area in the Tenth Five Year Plan, the NDMC propose to

carry out the Rain Water Harvesting in open area for 25 sites and getting drawings from Central Ground Water Board, the same has already been processed. The Rain Water Harvesting work will be carried out in Tenth Five Year Plan at Lodhi Garden, Nehru Park, Talkatora Garden, Golf Link Colony, Jor Bagh Colony, Diplomatic Enclave, Kidwai Nagar, Laxmi Bai Nagar, Junction of Mathura Road opposite CM residence, Purana Quilla Road, Fire brigade Lane area, Central Park in Connaught Place, R.K.Ashram Marg near New Delhi Municipal Council Flats, Mandir Marg near Mandir Lane at T.Junction of Peshwa Road, all crossings of Panchsheel Marg, all crossings of Kautilya Marg, all crossings of Sardar Patel Marg, Satya Sadan area of Satya Marg, Sarojini Nagar near Pillanji Village, XY Block & Main Market, Netaji Nagar (Subhash Chander Bose Park), Africa Avenue near New Delhi Municipal Council Stores, Moti Bagh near Vety. Hospital, Pandara Park Colony, Kaka Nagar Colony and Bapa Nagar. Rain Water Harvesting and Recharge of Central Ridge Stream of Khushak Nallah from S.P.Marg to Satya Sadan will also to be taken up.

It is also proposed that Echo Friendly environment of nallah between AIIMS & behind Nauroji Nagar and Khushak Nallah behind PM House, and covering of Nauroji Nagar Nallah will also be taken up in Tenth Five year Plan.

An amount of Rs. 150.00 lakh is provided for 10<sup>th</sup> FYP which includes an amount of Rs. 50.00 lakh for Annual plan 2002-03.

**ii) Augmenting the capacity and Improvement to road side drains in NDMC area. (Rs. 50.00 lakh)**

It is proposed to repair/renew the existing open drain and provision of SFRC removable slabs all over in the area, Moti Bagh, Vinay Marg, Netaji Nagar, Kidwai Nagar, Sarojini Nagar, Jor Bagh etc. In the NDMC area, there is also necessity for augmenting the capacity and improvement to roadside drains from time to time in the next Tenth Five Year Plan. The work is likely to be taken up in Sansad Marg, Ashoka Road, B.K.S Road, S.B.S. road, Talkatora Road, North Avenue, Willingdon Crescent and roundabouts of Chanakyapuri, Fire Brigade lane, Barakhamba Lane surrounding area, alongwith Safdarjung area, Barakhamba road, Outer Circle from Connaught Place to Tolstoy Marg, Mandir Marg, Shankar Road, Peshwa Road, Moti Bagh, Netaji Nagar, Sarojini Nagar,

Laxmi Bai Nagar. The work of Improvement to SWD System and roadside drains will also be taken up with changing of old SWD pipes filled with silt in phases in the NDMC area. An outlay of Rs.50.00 lakh is approved for Tenth Five-Year Plan 2002-07 & an amount of Rs. 10.00 lakh for 2002-03.

**iii) Improvement to drainage system in NDMC Colonies(Rs. 50.00 lakh)**

The work of Improvement to Drainage in NDMC colonies at Tolstoy Marg between Janpath and K.G.Marg, Improvement to SWD Bhagat Singh market and Bangla Sahib Road, Harijan Basti, Mandir Marg, Aug. and Imp. to drainage system in Sector-I, II, III and IV DIZ area, Jor Bagh, Safdarjung Lane, Tuglak Crescent, Akbar Lane, Krishna Menon Marg, K.Kamraj Lane, Pandara Road, Sarojini Nagar, Netaji Nagar, Laxmi Bai Nagar, East Kidwai Nagar, Moti Bagh, Netaji Nagar, Nauroji Nagar and Open Surface drain at Moti Bagh etc. will also be taken up during Tenth Five year Plan (2002-07).

An amount of Rs.50.00 Lacs is approved for 10<sup>th</sup> FYP & an outlay of Rs. 10.00 lakh is approved for the Annual Plan 2002-03.

**iv) Technical Repair and Desilting of SWD System in NDMC area. (Rs. 150.00 lakh)**

During the passage of time, the nallah/system 1 & 6 to 11 and 14 in NDMC area have been silted heavily hence the desilting to above nallahs are required very urgently. Desilting and cleaning in whole NDMC area in phases is likely to be taken up in the Tenth Five Year Plan.

The very old barrel in the New Delhi Municipal Council area constructed in early 20<sup>th</sup> century have outlived their lives and have been broken/damaged at 3 places in between Q-Point and Lodhi Road [from DI-50 to DI-60, CPWD Nursery, Water Boosting Station, Bharti Nagar] which are being rehabilitated and work was to be completed during 2001-02. Further the work of restoration of barrels from Q-Point to Dayal Singh College to Lodhi Road, will be completed in phases during 2002-07 and the work of desilting and aeration of barrels from Q-Point to Dayal Singh College at Lodhi Road will be carried out in phases in Tenth Five Year Plan.

An amount of Rs. 150.00 lakh is approved for 10<sup>th</sup> FYP 2002-07 & an amount of Rs. 55.00 lakh is provided in the Annual Plan 2002-03.

#### **U.D. DEPARTMENT**

#### **1. SETTING UP OF WATER MISSION AND USE OF NEW TECHNOLOGIES FOR CONSERVATION HARVESTING AND RECYCLING OF WATER (Rs.200.00 Lakhs).**

(i). Although Delhi is situated on the banks of river Yamuna the availability of potables water is insufficient to meet growing requirements of Delhi. Delhi's water share is based on an agreement entered to in 1993 amongst the five basin States of Delhi Haryana, Himachal Pradesh, Rajasthan and Uttar Pradesh.

Based on the present population the water requirement of Delhi is 800 MGD (million gallons per day). Against this the total water supply from all sources is 650 MGD. A water Treatment Plant at Sonia Vihar is scheduled to be completed by September 2003 and would increase the Water treatment Capacity by 140 MGD.

(ii). To augment the water supply the U.P.govt. have been approached for release of additional water from the Upper Ganga Canal by savings in situated through relining and re-furbishing of the existing line channel. The Govt. of Delhi is also working in consultation with the Govt. of Himachal Pradesh to get Renuka Dam Project cleared by the Govt. of India. So and to ensure additional raw water supply for Delhi. Besides this the Lakhvar Vyasi and Kheshau Dam Projects are also under consideration of the Govt. of Delhi for bridging the gap between demand and supply of water.

(iii). Thus over the next 5-6 years, no addition in water availability is envisaged. This leaves water harvesting and water conservation as the only options for increasing the water supply. This is why the Govt. of Delhi has been attaching importance to water harvesting and water conservation measures.

Rainfall in Delhi is approximately 670.5mm per year. The ground level is depleting due to over utilisation in some areas, thereby affecting the whole of Delhi, there is an urgent need for rainwater harvesting and promoting water conservation in a big way.

(iv). The local bodies have been asked to adopt water harvesting through storage of rainwater run off. In Delhi rainwater harvesting structures have been made mandatory for new buildings having area above 100 sq. metres by amending the Building Bye-Laws. It has also been made mandatory for all non-residential buildings having discharge of 10,000 litres per day to incorporate a wastewater recycling system. The recycled wastewater can be used for horticultural purpose.

(v). Since water harvesting and water conservation appear to be the only option to bridge the gap between demand and supply, Govt.of Delhi propose to give incentives/grants to Institutes/agencies/NGOs/RWAs for adopting the above measures, conducting research studies adopting new technologies for conservation of water and so on.

(vi). Technical Assistance-Delhi Jal Board has been identified as the nodal agency to impart all technical assistance needed for water harvesting structures in consultation with Central Ground Water Board.

(vii). Besides this, the Govt.of Delhi also proposes to publicise the importance of water conservation, arrange for wide publicity through pamphlets and electronic media campaigns. School/college students are proposed to be enlisted for inculcating and spreading the message of water conservation. Incentives may also be given to the best achiever in the zone.

(viii). In the light of fore-going paras it is proposed that under this scheme (a) grant will be given to Institutes/agencies/and incentive to house-owners for adopting water harvesting measures and or incentives will be given for conducting research studies in the field of water harvesting and water conservation (b) financial incentives to best achiever in the field of water conservation from amongst school children of class VI onwards may also be considered. These incentives may be worked out at various levels depending upon the coverage e.g. zone-wise, Distt.-wise and state-wise (c) funds can also be utilised for publicity including the conduct of seminars, work-wise and distribution of pamphlets etc.

To achieve the above targets/objectives, the scope of the plan schemes should be suitably enlarged. An amount of Rs. 200 lakhs is approved for the Tenth Five Year Plan (2002-2007) and an amount of Rs.25 lakhs for the Annual Plan 2002-2003.

**2. YAMUAN RIVER AUTHORITY (Rs. 150.00 lakh)**

It is proposed to set up a Yamuna river Authority which could take care of development of river beds, reduce pollution in Yamuna, develop river banks as tourist spots etc. the detailed scheme in this regard is to be prepared by the U.D. Department. A provision of Rs. 150.00 lakh in 10<sup>th</sup> FYP and Rs. 25.00 lakh in Annual plan 2002-03 is approved.

**3. REFORMATIVE RESTRUCTURING OF DJB (RS. 100.00 LAKH)**

It is proposed to undertake reformative restructuring of DJB so that it could function as financially viable, technically sound and can meet the requirements of population of Delhi in a befitting manner. The details are to be worked out by U.D. Department. A Provision of Rs. 100.00 lakh for 10<sup>th</sup> FYP and Rs. 25.00 lakh for Annual Plan 2002-03 is approved.