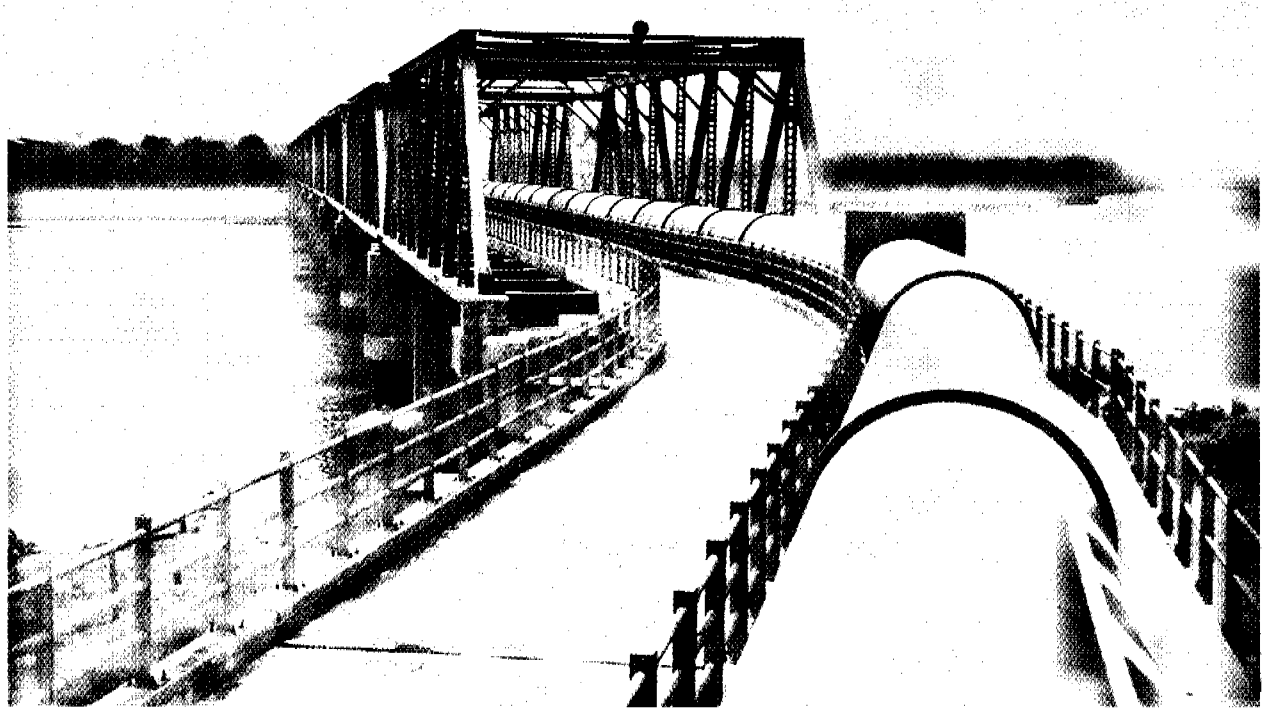
MAHARASHTRA JEEVAN PRADHIKARAN



CONSTITUTION OF MAHARASHTRA JEEVAN PRADHIKARAN

Maharashtra Jeevan Pradhikaran (MJP – Water Authority) has been constituted under Act No. XLVIII of 1976.

Present structure vide notification dated 16th June, 1997 is as under:-

- Hon'ble Minister for Water Supply & Sanitation Department ..... Chairman
- Hon'ble Minister for Urban Dev. Dept. ..... Co-Chairman
- Hon'ble Minister for Rural Dev. Dept.. ..... Co-Chairman
- Hon'ble Minister of State for Water Supply and Sanitation Dept.. ..... Vice-Chairman
- Hon'ble Minister of State for Urban Development Dept.. ..... Vice-Chairman
- Additional Chief Secretary, W.S. & S. Dept.. ..... Member
- Principal Secretary, Urban Development Dept.. ..... Member
- Principal Secretary, Finance Dept.. ..... Member
- Secretary, Industries & Energy Dept.. ..... Member
- Secretary, Public Health Dept.. ..... Member
- Secretary, Rural Development Dept.. ..... Member
- **Non Official members one from either Mayors or Presidents of Local Bodies and one from Zilla Parishad** ..... 2 Nos.

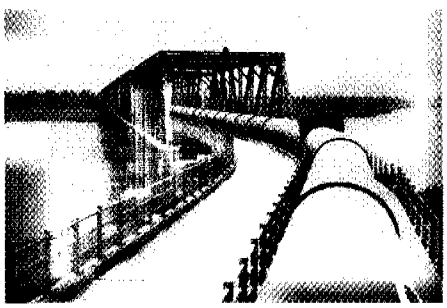
  1. Shri Devendra Phadanvis, Mayor, Nagpur Municipal Corporation.
  2. Shri Rajan Teli, President, Sindhudurg Zilla Parishad.

- **Technical Members** ..... **6 Nos.**

  1. Shri S.S. Patwardhan
  2. Shri Madhav Kulkarni
  3. Shri Bhanudas Padalkar
  4. Shri Ashish Kulkarni
  5. Shri Adinath Navale Patil
  6. Shri Rajiv Sardeshpande

- **Member Secretary**

Cover Photograph



Pipeline Bridge across river Ulhas under - MWSSP-I

STATE OF MAHARASHTRA AT A GLANCE

Third Largest State in India

Geographical coverage – 0.3 Million Sq. KM of which 60% Agriculture, 20% Forest and 720 KM Coastal line

1991 Population – 78.9 million – 38.7% Urban and 61.3% Rural

Rate of urbanisation higher than All India average

Population density 257 persons per Sq. km.

State is divided in 6 Revenue Divisions (i) Aurangabad (ii) Nagpur, (iii) Amravati, (iv) Konkan, (v) Pune, (vi) Nashik.

Revenue Districts – 31

Urban Local Bodies – 245 of which 15 are Corporations

Rural Areas – 40412 villages having habitation

Rainfall – Range varies between 250 to 2500 mm + per annum – 1/3rd area of State is having scanty and erratic rainfall

Irrigation Area – 3.3 million Hectares (16% of the crop area)

Storages developed – 46 Major – 188 medium and 1933 minor dams constructed - 14 Major – 75 medium and 120 minor dams in progress

Annual Per Capita Income Rs. 13112/-

Present power generation in the State 48000 Million KWH

Private Sector participation encouraged to cope up with the additional demand for power generation

JAUNDICE INDICATES CONTAMINATION OF WATER WITH HUMAN WASTE

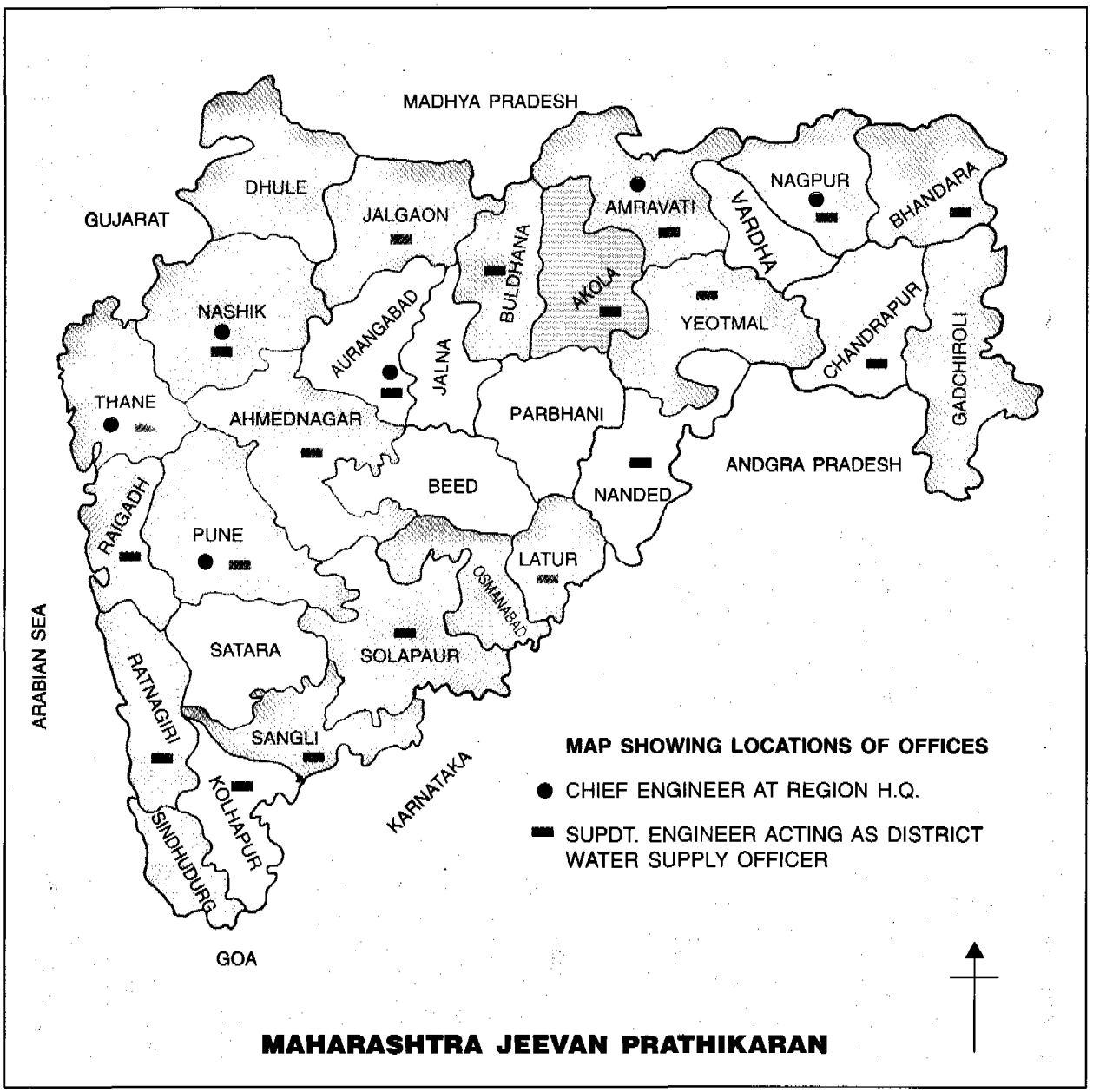
MERE FILTRATION IS NOT ADEQUATE

WHEN IN DOUBT, SHUT WATER WORKS OUT

BOILING OF WATER RECOMMENDED

ENSURE YOUR HOUSE CONNECTION PIPE DOES NOT PASS THROUGH GUTTERS

REPLACE OLD G.I. PIPES IMMEDIATELY



SHOULD WATER BE FREE ?

Water is free even today, if one is ready to tap water from the source.

Efforts and costs are involved to abstract water from source, treat it and convey to the doorsteps of consumers.

Organisations like MJP responsible for supplying water, charge only for the services so rendered.

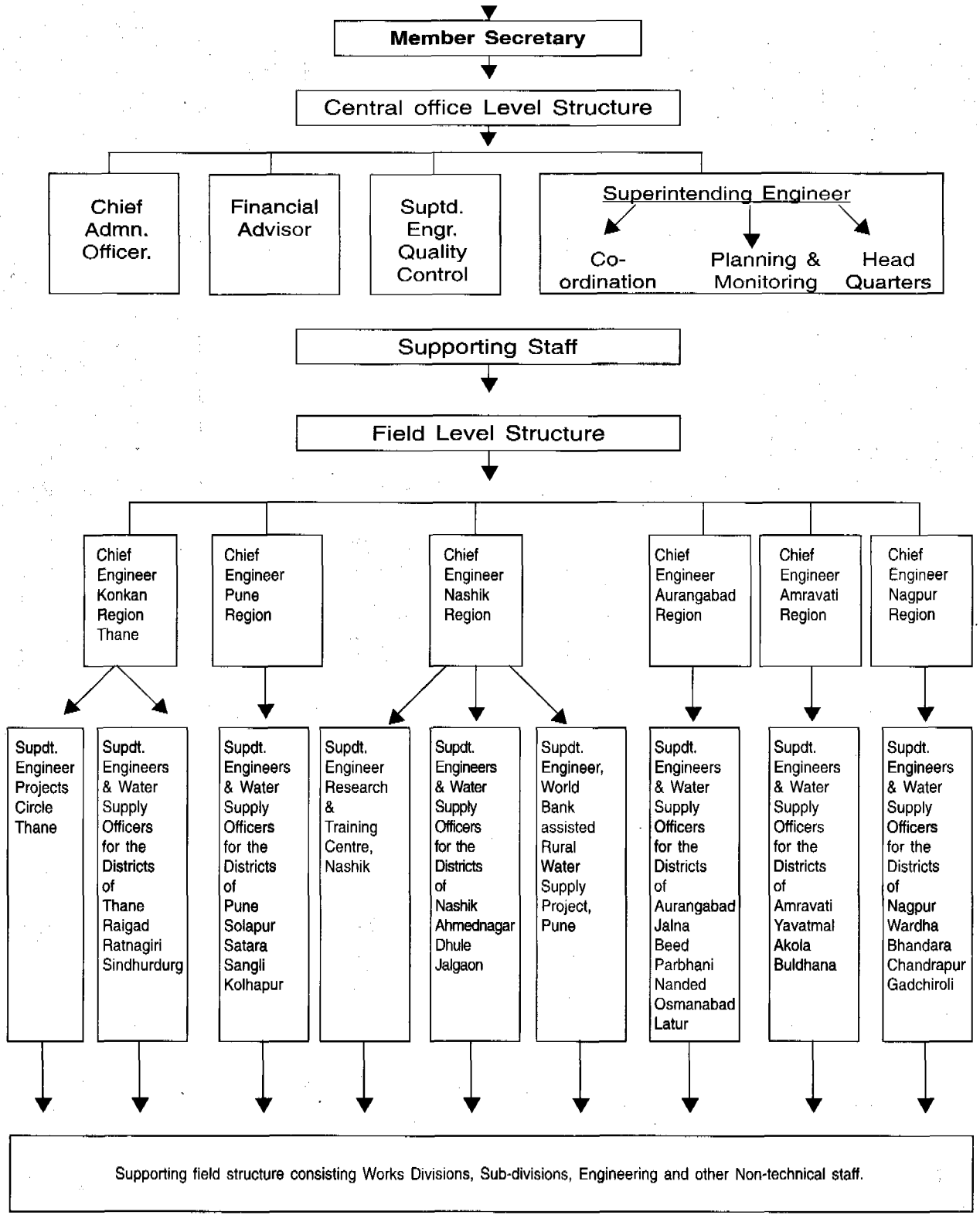
MAHARASHTRA JEEVAN PRADHIKARAN

- Always at your service, to provide basic need of wholesome potable drinking water.
- MWSSB was established under Act of 1976 - started functioning as full-fledged implementing organisation in 1979.
- After functioning for about 17 years, MWSSB was restructured and renamed as Maharashtra Jeevan Pradhikaran.
- Also acts as Advisor to Government in respect of planning, operation, training etc.
- Jurisdiction extends all over the State except Greater Mumbai.
- MJP charged with responsibility of conceiving, preparing and implementing water supply and sewerage schemes both in urban and rural areas.
- In rural area, schemes based on bore wells are handled by GSDA. Piped water supply schemes costing less than Rs. 1.5 million are executed by ZP and other schemes implemented by MJP.
- At field level, Chief Engineers are responsible for execution, in each of the six Revenue Divisions.

  At District level, Water Supply Committees are formed headed by parent Minister with other elected representatives and officers of concerned Govt. Depts., as Members. Superintending Engineer of MJP functions as Member Secretary of this Committee.
- The Committee can accord administrative approval to the rural schemes costing upto Rs. 10 million.

Members discussing during meeting held on 30 July 1997.

MAHARASHTRA JEEVAN PARDHIKARAN



DESIGN NORMS -

LPCD Norms for supply of water -

Net supply (excluding losses) - LPCD

Urban Area	Supply through stand posts (30% of population served)	Supply through House connections
Towns having population upto 20,000	50	70
Towns having population 20,001 to 60,000	50	100
Towns having population 60,001 to 0.1 Million	50	125
Towns, having population above 0.1 Million.	50	150
Rural areas	55 (30% house connections presumed)	

Surface sources to be adopted are so selected that in 95 out of 100 years, adequate water supply is ensured.

- Sources have to be pollution free.
- Least cost solutions both in capital cost, as well as operation cost, are worked out.
- The system is designed for normal 20 hour working.
- Selection of type of pipes depends on considerations such as length, diameter, pressure to which it is subjected and site conditions, as applicable.
- Computer aided design is adopted for selection of size of pipeline.
- Normal storage capacity of distribution reservoirs is 8 hours.
- Minimum terminal pressure in the distribution system shall be 7 M with addition of 5 M. for next storey.

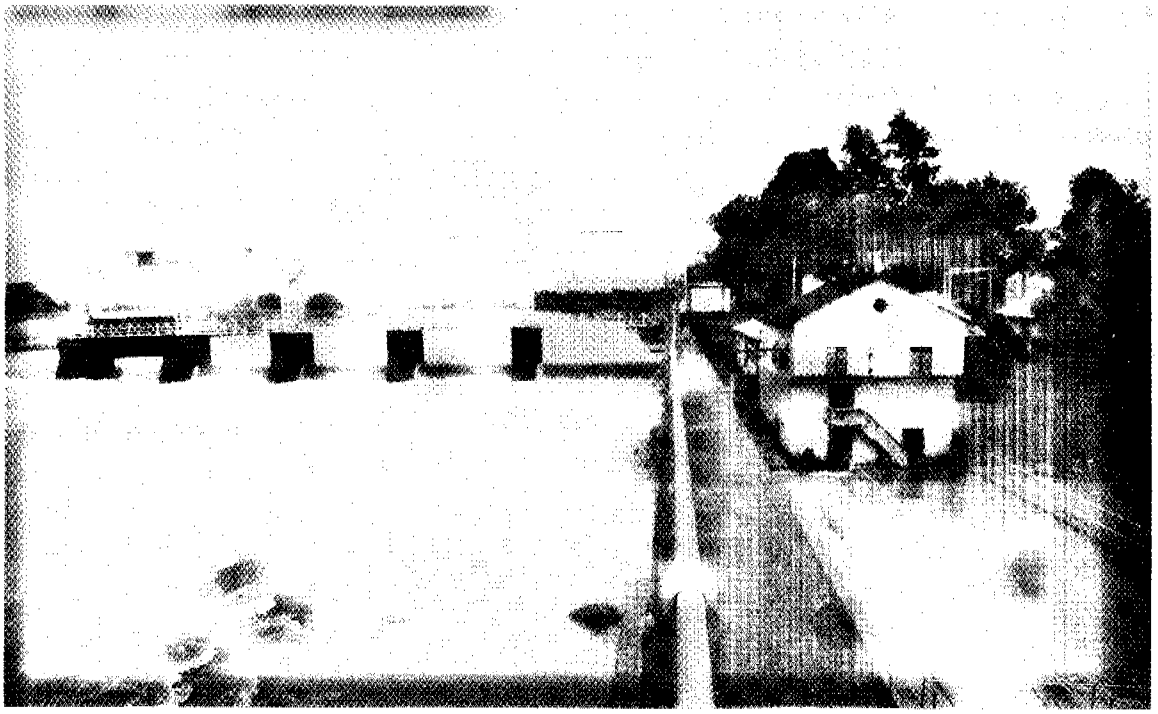
INITIAL MAJOR PROJECT CONSTRUCTED BY PARENT ORGANISATION

Badlapur water works :

- Second oldest Water Works constructed in the State in 1923.
- Unique feature is that pretreatment units were required to be located below the bed level of river Ulhas.
- The river is barraged for diversion of flow and some storage during summer.
- The Water Works is sandwiched between river Ulhas and Central Railway.

Installed Capacity : 52 MLD.

- The Water Works was constructed basically for Ordnance Factory. However, as at present water supply is made available to Ambernath, Kulgaon-Badlapur Municipal Council and Industries in and around the towns covered.



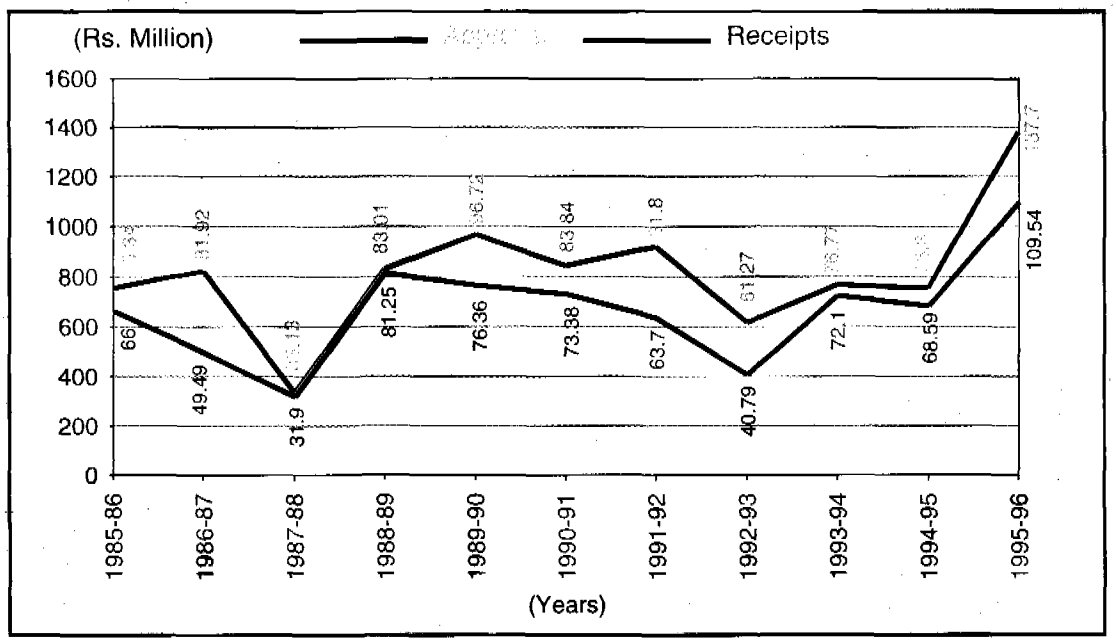
View of Settling Tank (Badlapur) situated below river bed

MAJOR PROJECTS EXECUTED BY MJP (MWSSB)

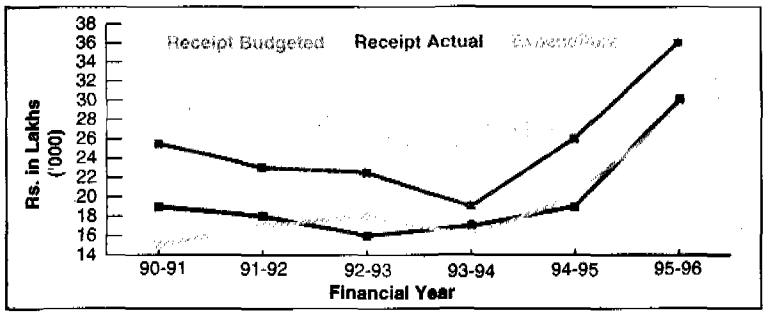
M.W.S. & S.P. STAGE I : (CREDIT IDA899 IN)

- The Project for 6 towns & 104 villages in Thane District of Mumbai Metropolitan Region was successfully completed in stages from 1985.
- Cost of the Project - Rs. 1620 Million.
- Installed capacity of the Water-Works is 404 MLD.
- Sewerage component for 6 towns is also included.
- Major financial assistance was from World Bank.
- Through sustained efforts, the Project of such large magnitude could be completed in a record time of five years.
- Reimbursement of claims from the Bank was also achieved in given time schedule.
- The world Bank has complimented for successful planning and implementation of the Project.
- M.J.P. has thus emerged as an able and experienced agency to execute projects of such kind and size.

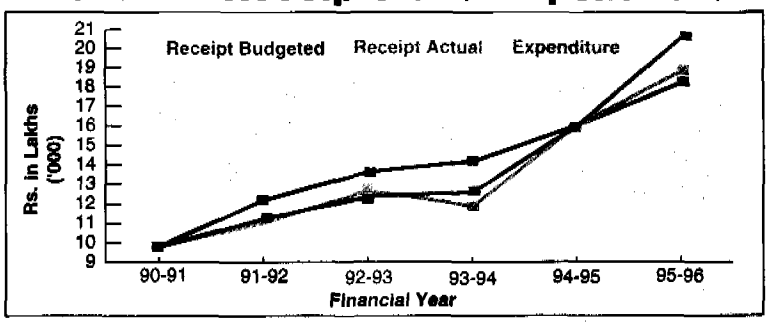
Approved outlay and actual receipts of funds for Urban Scheme



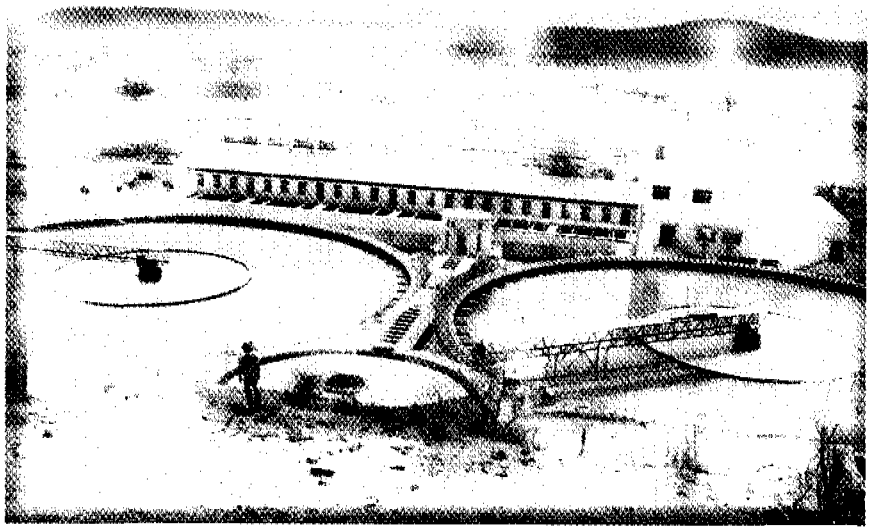
Capital Receipts and Expenditure



Revenue Receipts and Expenditure



AMARAVATI WATER SUPPLY PROJECT



View of Treatment Plant at Amaravti

- Water Supply Project with Upper Wardha Dam as source commissioned in 1995.
- Source is located 50 KM. away.
- Installed capacity of the water works - 95 MLD.
- Cost of the Project - Rs. 780 Million.
- The Project components include Prestressed Concrete Gravity transmission system with Break Pressure Tank, Treatment Plant, Pure Water transmission system and storage reservoirs.

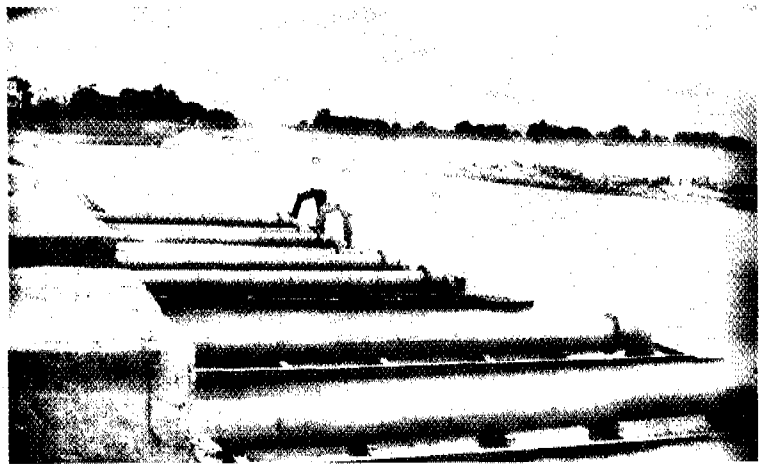
DHULE WATER SUPPLY PROJECT

- Water Supply Augmentation Project with Tapi river as source is completed and commissioned in 1993.
- Cost of the Project - Rs. 440 Million.
- Source is located 40 KM. away from the town.
- Installed capacity of the Project - 47 MLD.
- Components include Pumping Machinery, Treatment Units, M.S./Prestressed Transmission Main etc.

Aeration Fountain at Amaravati Water Treatment Plant

AURANGABAD WATER SUPPLY PROJECT

- Water Supply Augmentation Project based on Jayakwadi storage as source was completed and commissioned in 1993. It is almost duplication of the existing system.

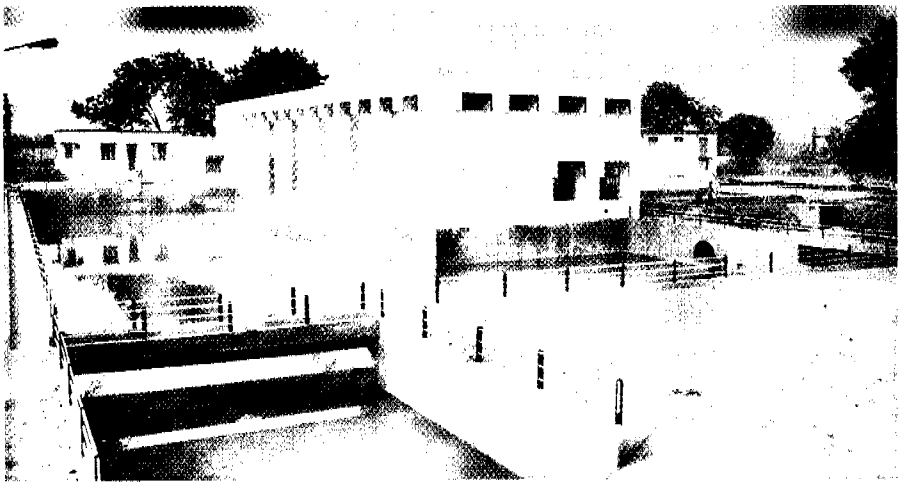


Scheme completed for Aurangabad during summer of 1996 when water had to be pumped from dead storage

- It covers major city population of 0.59 Million (1991).
- Installed capacity of the Project - 100 MLD.
- Cost of the Project - Rs. 334 Million.
- The Augmentation Project consists of Head Works, Pumping machinery, treatment works and 27 Km. long M.S/Prestressed concrete transmission pipeline.

NAGPUR WATER SUPPLY PROJECT (PENCH - I & II)

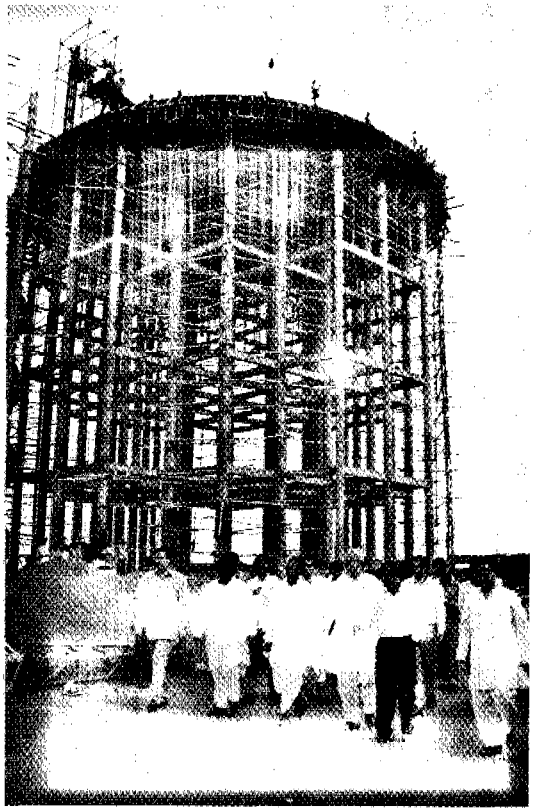
- Nagpur is the 2nd largest city as well as the 2nd Capital of the State of Maharashtra.
- Water Supply Augmentation Projects were undertaken and executed in stages catering to the needs.
- Ist Augmentation Project -Pench - I was executed in 1991 costing Rs. 72 Million to include Head Works, Pumping Machinery, M.S. Pipelines & Treatment Works etc.
- IInd Augmentation Project - Pench - II was executed and completed in 1995 costing Rs. 321 Million.
- Installed capacity of the Pench - II is 135 MLD.
- The Pench Augmentation Project II amounts to duplication of components of Nagpur Pench - I Project.



Battery of Filters at Nagpur

SOLAPUR WATER SUPPLY PROJECT

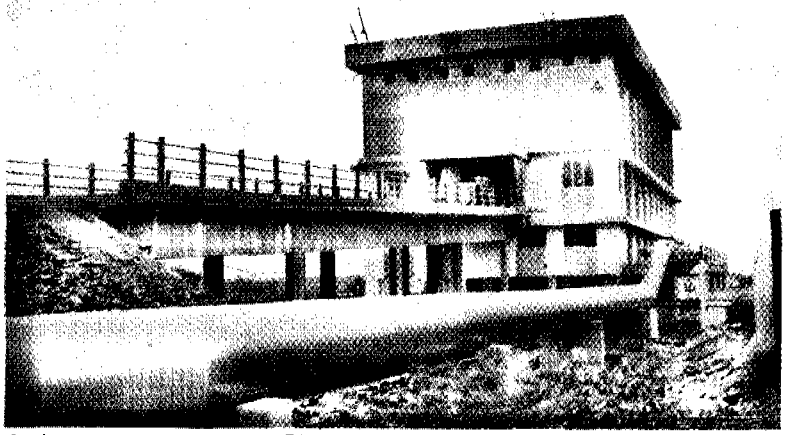
- Execution of Water Supply Project for Solapur Municipal Corporation is nearing completion.
- Installed Capacity would be 80 MLD.
- Water is being conveyed from Bhima river over a distance of 100 KM.
- Cost of the Project is Rs. 820 Million.
- The financial assistance was from OECF, Japan, through HUDCO.



Shri Anna Dange, Minister (Water Supply) & Chairman MJP inspecting works at Solapur.

KALYAN DOMBIVALI CORPORATION'S WATER SUPPLY PROJECT

- Water Supply Project for Kalyan-Dombivli Municipal Corporation was successfully completed in 1992.
- Installed capacity of the Project - 90 MLD.
- Cost of the Project - Rs. 69 Million.
- The financial assistance was from World Bank through MMRDA.

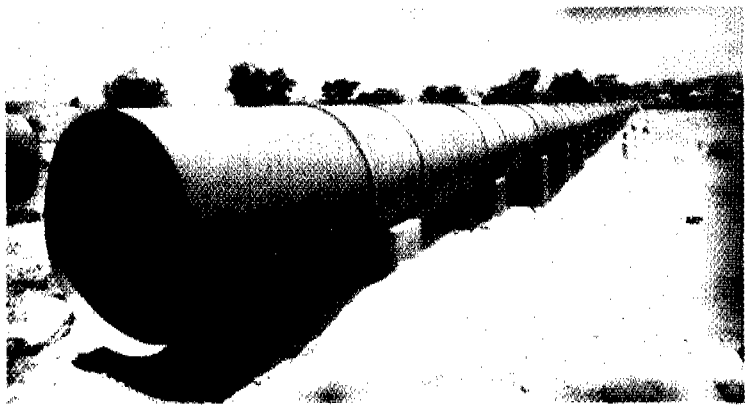


A view of intake works on Bhima Storage for Solapur Scheme

PROJECTS UNDER EXECUTION

MORBE DAM :

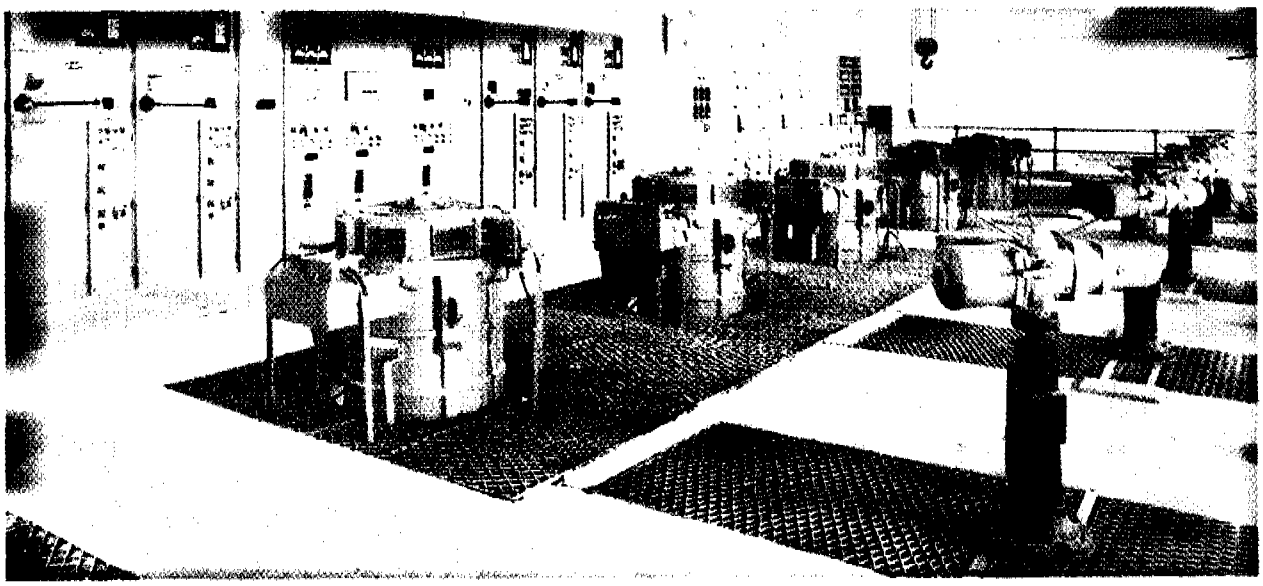
- Water supply project titled Nhava-Sheva Project Stage-II consists of construction of earthen dam at Morbe in Raigad district.
- Length of dam 3.0 Km - height 46.5 meters - Storage capacity - 143 MM^3.
- Possible supply for drinking purpose - 350 MLD.
- CIDCO area (Navi Mumbai, Jawaharlal Nehru Port & other areas) will be covered under this Project.
- Cost of the Project - Rs. 2000 Million.
- The Project is being financed by CIDCO.
- Project expected to be commissioned by year 1999.



A view of 2350 mm size pipeline from Morbe Dam to supply water in New Mumbai

NHAVA SHEVA WATER SUPPLY STAGE-III PROJECT

- A separate water supply project undertaken to supply water stored in Morbe dam.
- Project consists of conveyance, treatment and supplying water to Navi Mumbai-CIDCO Area and Jawaharlal Nehru Port - Cost of the Project - Rs. 1700 Million
- The Project consists of large dia. (Max. 2350 mm) M.S. Pipelines of about 27 Km., length, as Raw and Pure Water conveying mains, 300 MLD Treatment Plant and two MBRs of 10ml capacity.
- This Project is also expected to be completed by year 1999.



A Typical pumping installation

WATER SUPPLY ARRANGEMENTS FOR VASAI-VIRAR SUB REGION (SURYA RIVER AS SOURCE)

Project Profile

Project Area	.....	Sub Region I of Mumbai Metropolitan Region in Thane District covering 7 towns and 67 villages.
Population covered	.....	1.28 Million (2011)
Daily demand	.....	120 MLD
Capacity of the Project	.....	100 MLD
Cost of the project	.....	Rs. 2000 Million

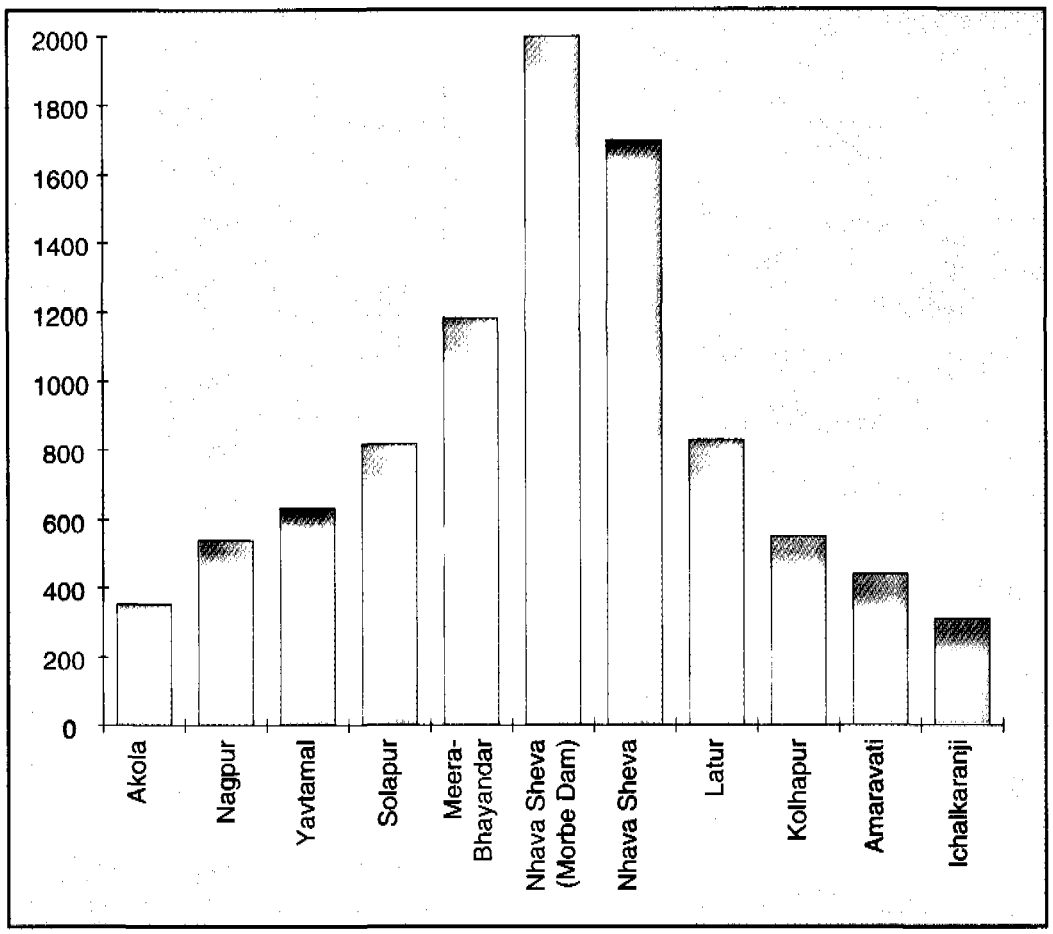
Brief Project Details

Part-I	.....	Lifting water at Maswan, treating and conveying to MBR near Virar.
Part-II	.....	Conveying water from MBR near Virar to various reservoirs in towns and villages along with distribution net work.
Financial Assistance	.....	MMRDA to provide assistance for entire project.
Executing Agency	.....	Part-I - MJP Part-II - CIDCO

Emergency water supply scheme commissioned immediately after earth quake in Latur District.

SOME IMPORTANT PROJECTS IN PROGRESS WITH MJP

(Rs. in Million)



REGIONAL RURAL WATER SUPPLY SCHEMES WILL FINANCIAL ASSISTANCE FROM ODA U.K.

Project Profile	
1. Project Area	2 Districts (Jalgaon and Nashik)
2. Piped W.S. Schemes	3
3. Coverage	187 villages + 1 towns
4. Cost of the project	Rs. 667 Million
5. Target Date of commissioning	June, 1998.
6. Partial commissioning achieved	38 villages in May 1997

MAHARASHTRA RURAL WATER SUPPLY AND ENVIRONMENTAL SANITATION PROJECT WITH WORLD BANK ASSISTANCE

(IDA-2234 IN)

Project Profile

1)	Date of agreement Date of Closing of project credit	- -	5th June, 1991 31st December, 1997
2)	Project Area	-	10 Districts
3)	Original Project Cost	-	Rs. 3196 Million
4)	Revised Project Cost	-	Rs. 5043 Million
5)	GOM Share - Original		Rs. 610 Million
	- Revised		Rs. 1250 Million
6)	No. of piped Water Supply Schemes handled by MJP		
	Regional		47 (563 villages + 2 towns)
	Individual		75
7)	Population Covered	-	1.13 Million
8)	Project Components		
	Piped Water Supply Schemes	-	122
	Bore well programme Schemes/ Hand Pumps	-	1700 + 1000/1300 Hand pumps
	Environmental Sanitation	-	50,000 Latrines
	Health Communication	-	Promotion of 6 HE Messages
	Community participation	-	Mainly Training
	Institutional/Infrastructure strengthening.	-	NRTC/GSDA Bldg., MWSSB Bldg.

PER CAPITA COST CONCEPT

- The present era is that of planning in scarcity.
- Situation therefore calls for prioritisation.
- Schemes where per capita cost does not exceed the given ceiling limit, could be quickly and easily approved.
- The idea is that within the funds available, more number of villages could be covered.
- Present ceiling limit is as under:
- Tribal area — Rs. 2120 to 2330
- Non tribal area involving
  - Static lift upto 30 M — Rs. 1390 to 1530
  - Static lift beyond 30 M — Rs. 1790 to 1970

RURAL WATER SUPPLY PROGRAMME

- State Government has been consistently providing increased allocations to solve the problem of scarcity of Water in Rural Areas. During 1980-1995, investment in Water Supply Sector in Rural Area is of order of Rs. 20 Billion. About 16000 piped water supply schemes were commissioned and there are around 1,20,000 successful bore wells.
- Inspite of these efforts, the problem of water could not be solved. Results of a survey carried out in 1991 as a part of Rajiv Gandhi Technology Mission, are as under :

Total number of villages/hamlets	..	43,020 /	40,000
Villages/Hamlets where no public source is available	..	2,768 /	8,390
Villages/Hamlets where sources are polluted	..	696 /	108
Villages/Hamlets where supply of water is inadequate	..	9,362 /	8,253
Villages/Hamlets where supply of water is not possible all around the year	..	3,964 /	1,675
Total Problem villages/Hamlets.	..	16,790 /	18,426

Technology Mission :

Government of India identified certain villages with specific problem and decided to finance these schemes to help State Government solve the problem. The achievements as on 31st March, 1997 are as follows :

Category	No. of villages/ hamlets to be tackled	No. of villages/ hamlets where work is completed	Expenditure incurred (Rs. Million)
Eradication of Guineaworm.	260/62	260/62	60.00
Desalination	209/10	209/9	72.30
Excess Fluorides	82/4	68/4	29.90
Excess .. Iron	74	38	00.30

CONSTRUCTION PROCEDURE

- MJP executes works costing more than Rs. 1.5 Million in rural areas and all urban works. The works are executed through the construction agencies registered with MJP.
- In many of the cases, system of prequalification is adopted.
- Supervision of the execution work is done by the Engineers of MJP.
- About 250 contractors have registered themselves in Class I and II at central office of MJP.
- In addition, a large number of contracting agencies have registered themselves with field officers in class II and below, depending upon their financial capabilities and other related factors.
- Competition is through advertisements in News Papers, as applicable.

ENSURING QUALITY OF MATERIAL

- Quality of materials used in Projects plays an important role in the sustainability of the project.
- To ensure quality of materials, being supplied either by MJP or by various contractors, MJP has introduced 3rd party inspection of the materials.
- 3 renowned agencies for carrying out inspection of all types of materials have been employed.
- Materials certified by the inspecting agencies are only accepted at the works site for use on various works.
- It is experienced by MJP that after introduction of 3rd party inspection, complaints regarding quality of works have reduced considerably.

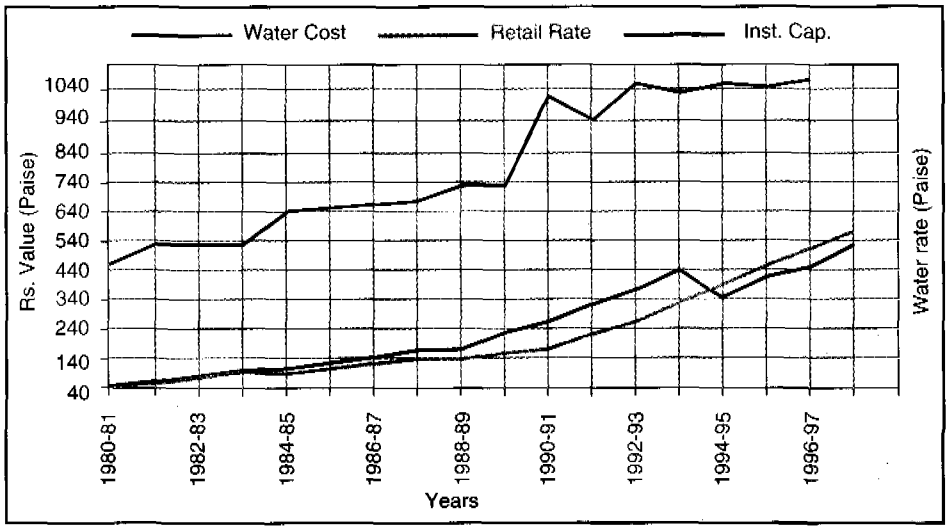
OPERATION & MAINTENANCE

- MJP's responsibility is to conceive, plan, prepare and execute the water supply and sewerage projects in the state.
- Operation and maintenance of water works is the responsibility of the local bodies, since it is their prime responsibility.
- The local bodies in Rural areas are unable to shoulder this responsibility.
- In urban areas 52 water works are maintained by the MJP on ownership basis.
- 20 water works are also maintained by MJP on behalf of the local bodies.

EXPERIENCE WITH SEWERAGE SCHEMES

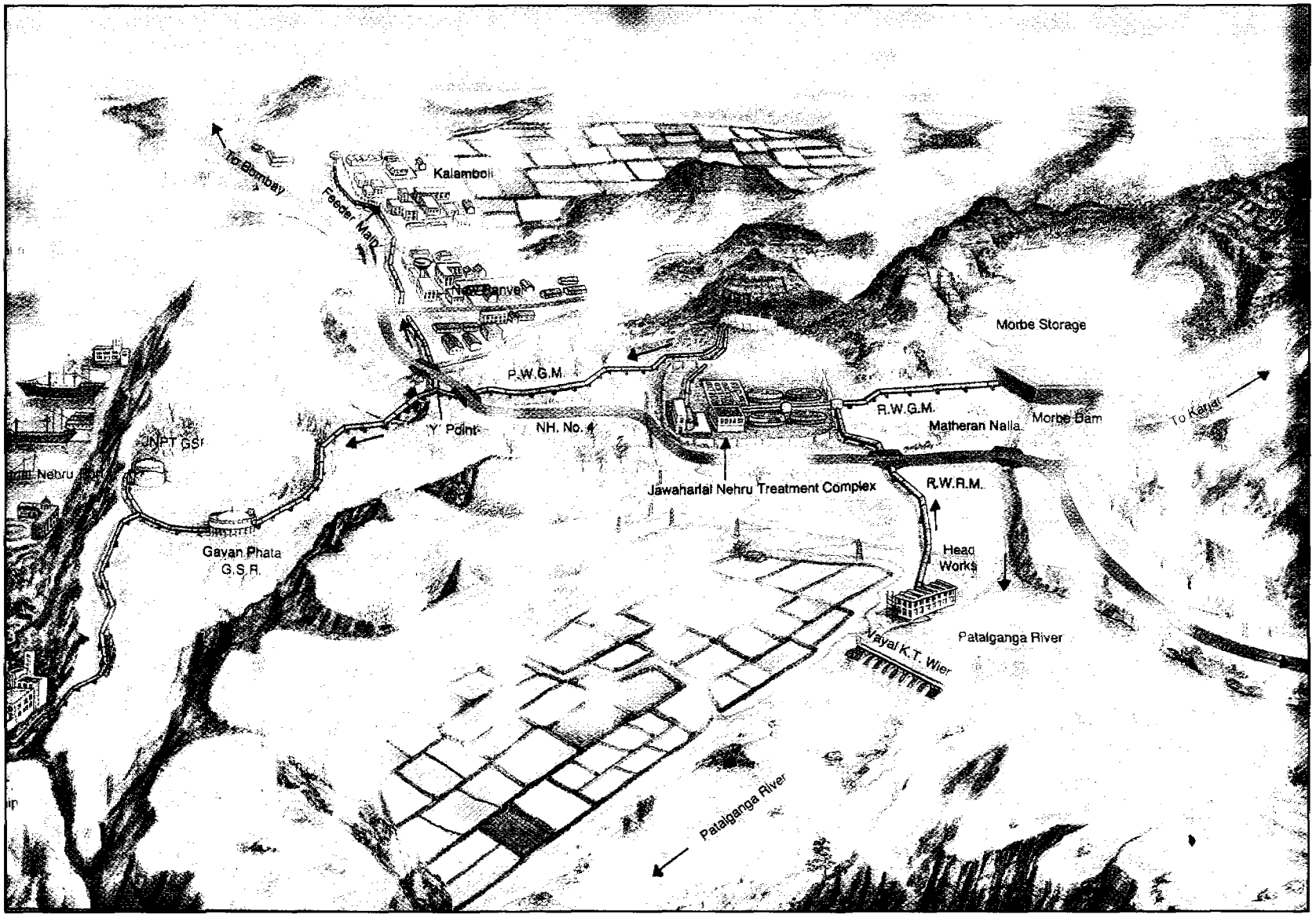
- Sewerage Schemes existing only in 23 towns (excluding Mumbai).
- Coverage is partial.
- Sewerage Schemes under execution in 7 towns.
- Nature of Sewerage Schemes – Complex and Complicated.
- Accurate designing, estimation is required.
- Construction is difficult and costly.
- Very few experienced contractors are available.
- Very difficult to maintain progress, in view of narrow road width and deep excavation of sewers involved.
- Operation of sewerage schemes is also difficult and costly.
- Trained Personnel required to operate the system.
- By & large, apathy on the part of local bodies is noticed to operate schemes efficiently.
- MJP's view – Conscious decision is required before taking up sewerage schemes.
- Hence only those towns having population more than 3 lakh are proposed to be covered with sewerage schemes.

GRAPH SHOWING RELATION BETWEEN INSTALLED CAPACITY, COST OF WATER AND ACTUAL RETAIL DOMESTIC RATE CHARGED

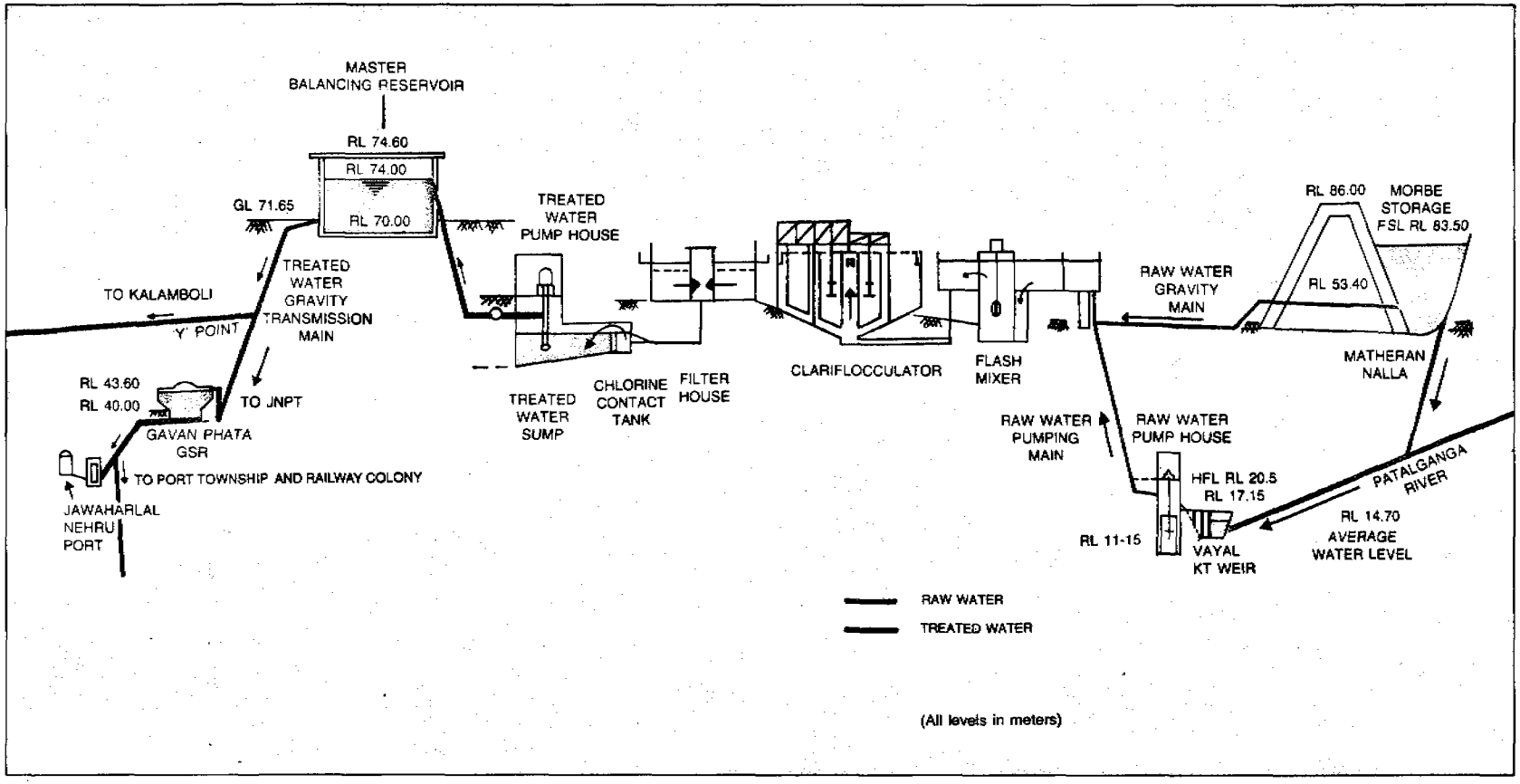


DETAILS OF PHYSICAL AND FINANCIAL ACHIEVEMENTS FROM 1979-80 TO 1996-97 IN RESPECT OF RURAL PIPED WATER SUPPLY SCHEMES

Year	Villages		Expenditure Incurred (Rs. in Million)
	To be tackled	Achievement	
1979 - 80	98	111	158.10
1980 - 81	325	352	163.40
1981 - 82	617	549	385.10
1982 - 83	682	707	462.50
1983 - 84	525	545	408.60
1984 - 85	427	1799	579.50
1985 - 86	548	878	592.50
1986 - 87	875	1031	709.30
1987 - 88	1059	1601	721.10
1988 - 89	1107	992	782.60
1989 - 90	874	974	816.90
1990 - 91	800	820	1004.00
1991 - 92	477	434	960.70
1992 - 93	344	307	1160.60
1993 - 94	166	184	932.00
1994 - 95	228	231	1005.30
1995 - 96	446	506	1876.70
1996 - 97	609	612	1901.00
Total	**10207**	**12633**	**14618.90**



Artistic panoramic view of the scheme



A Typical Flow Diagram of a Water Supply Scheme

WATER BILLING, RECOVERY AND COMPUTERISATION

- MJP is attempting to improve billing and timely recovery. Wherever MJP supplies water directly to the consumers, the recovery is around 85%.
- Where water is supplied in bulk, local bodies are reluctant to pay.
- Practically, water supply cannot be stopped – It would amount to punishing the innocent.
- Computerised billing has already been practiced in 3 towns of Ambarnath, Amaravati and Yeotmal.
- The system has not been extended to other towns so far, since water works are to be handed over to the local bodies.

ACCOUNTING SYSTEM

- MJP is maintaining its accounts on commercial accounting basis. Basic accounts are maintained by field officers in Public Works Accounting System (Government) and these details are converted into commercial accounting at central office level and a consolidated income expenditure account and a balance-sheet report is generated which indicates the annual performance of MJP. It is further mentioned that MJP already has experience of executing World Bank assisted Project and as per covenants of World Bank agreement, separate income expenditure account and balance-sheet of this Project is maintained, which is finally incorporated in the overall account of MJP. On request of GOM these accounts are audited by CAG and are then presented to the State legislature after acceptance of MJP. Established system of accounting in commercial organisations has thus been adopted.
- In order to streamline the various activities related to the Finance and Accounting, various operations have been already computerised. Special software has been developed to meet the requirements of MJP and computerised system has been adopted in respect of maintenance of accounts for capital expenditure, loan servicing, disbursement of salary to the staff, General Provident Fund Accounts etc.

LOW COST SANITATION PROGRAMME

Conversion of Dry Latrines

Target	1,10,697 Units.
Completion ... (March, 1997).	1,03,542 Units. (94%)

Liberation of Scavengers :

Target ...	3688
Achievement	3609

New Construction Programme (1993)

Target ...	63933 Units
Completion ...	9815

New Proposals (1997)

Proposals for 51 towns to construct 64882 Units under consideration for approval.

Financial Assistance :

Grant ...	Government of India	Through HUDCO
Loan .... (optional)	Government of India	Through HUDCO

Grant – Government of Maharashtra at Rs. 1500 per Unit.

Role of MJP - Acts as Nodal agency.

FUTURE MISSION OF PRADHIKARAN

- GOM has taken up ambitious programme to supply water to all towns and villages by the year 2000.
- Accordingly "White Paper" was presented to the Legislature.
- Thereafter GOM decided to take the people into confidence to assess the requirement, both in terms of magnitude of work and requirement of funds. Thus Planning for future has been initiated at district level and final shape has been given ultimately at GOM level.
- MJP has been charged with responsibility of implementing this programme.
- MJP would endeavour to complete the task and meet the expectations of GOM as well as public at large, so that the basic needs in terms of availability of adequate safe drinking water are fulfilled.

FUTURE STRATEGIES

- Stress would be to continue to depend on subsoil water source for Rural areas except for large size villages (Population around 1000).
- Surface sources will be proposed for urban areas without any exception.
- Surrounding villages within a radius of 5 km of large size Municipal Council to be covered in the project for the town, to avoid any problems in future if the limits of the town are extended so as to cover these villages. Water to be drawn from the source (storage) directly through a pipeline (in stages) as far as possible, so as to avoid possible pollution, water losses and unauthorised on-way lifting.
- Balancing tanks would be proposed to store water for requirement of 4 Months in cases where canal is to be adopted as source.

PUBLIC PARTICIPATION

- This new concept has been practised successfully in case of Regional Rural Water Supply Project for 81 villages in Jalgaon District .
- The project was financed by ODA of UK.
- Even though technically sustainable schemes are conceived and implemented, the local bodies are reluctant to take over for O&M.
- Reasons putforth are

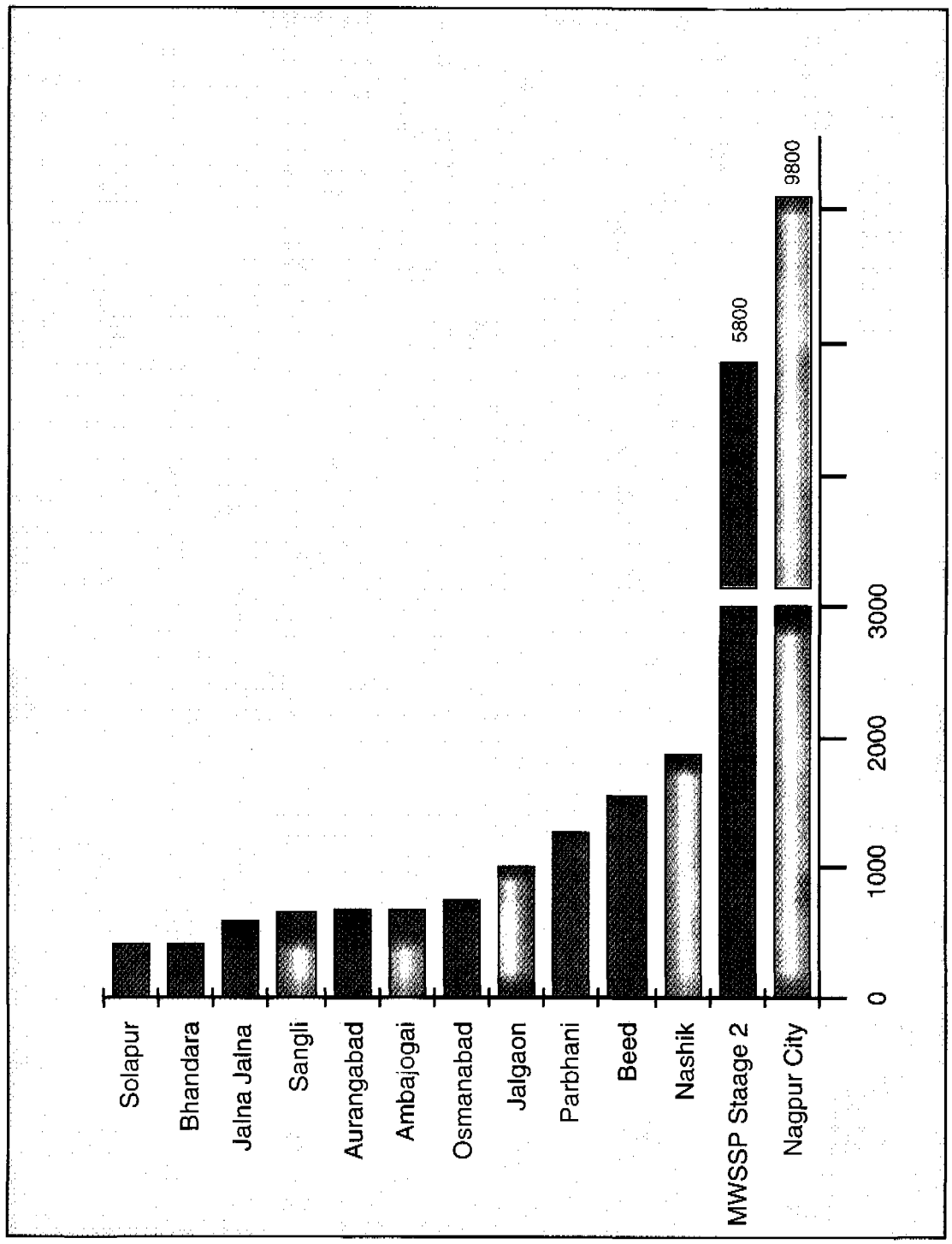
  Non-availability of skilled operating staff;

  Operating staff is not trained;

  Non-availability of required finance;

  People are not charged adequately and recoveries are nominal.
- Govt. came forward to create all required posts for successful and effective as well as efficient operation of the system.
- Concurrently assistance of Tata Institute of Social Sciences (TISS) was obtained to change the attitude of the people so as to develop sense of ownership of the system as well as awareness for efficient operation.
- From the beginning, people participated at every stage of implementation unlike indifferent attitude experienced elsewhere.
- Government Departments, staff of MJP, representatives of TISS and the people worked together as an integrated team to develop total commitment to the society.
- These efforts are yielding positive results and it is soon expected that operation would be financially sustainable.

SOME AMBITIOUS PROJECTS PROPOSED TO BE TAKEN UP BY MJP
(RS. IN MILLION)



PRIORITY FOR UNDERTAKING SCHEMES IN RURAL AREAS

1. Villages remaining to be covered by end of VIIIth Five Year Plan.
2. Villages where No public source available as per survey carried out in 1991-92 or thereafter.
3. Villages where per capita availability is less than 10 litres.
4. Villages where sources are polluted.
5. Villages where per capita availability is in a range of 11 to 20 litres.
6. Villages where per capita availability is in a range of 21 to 40 litres.
7. Villages where per capita availability is more than 40 litres but is to be increased to 55 litres as per revised norms.

ALLOCATION OF WATER

Government of Maharashtra have taken a policy decision to accord first priority for reserving a water source for drinking purposes. Nation as a whole, the present scenario as regards Demand of Water for various usages and expected projections is as follows:-

YEARWISE DEMANDS – UNITS IN BILLION CUBIC METRES.

Type of Use	1990		2000		2025	
	Demand	% Share of Total demand	Demand	% Share of Total demand	Demand	% Share of Total demand
Drinking	25	4.5	33	4.4	52	5.0
Agriculture	460	83.3	630	84.0	770	73.3
Hydropower Generation	19	3.5	27	3.6	71	6.8
Industrial use.	15	2.7	30	4.0	120	11.4
Other Misc. usages	33	6.0	30	4.0	37	3.5
Total	**552**	**100.00**	**750**	**100.00**	**1050**	**100.00**

AVAILABILITY OF WATER RESOURCES

- The share of allocation of water for drinking purposes is going to marginally increase from present 4.5% to 5%.
- Thus at Macro level, there appears to be adequate availability of water, and no serious problem is anticipated.
- However, at the Microlevel there is large variation of rainfall in the State.
- Particularly there are some drought prone areas, which need to be tackled on priority. Presently reservation of water in the storages has been agreed upto 15% of net storage. In case of drought prone areas, higher reservations would be necessary.

WATER RESOURCES DEVELOPMENT AUTHORITY

- As consumption of water for drinking purpose continues to increase, inter-user conflict would be a natural phenomenon. To overcome this problem water Resources Development Authority, presided over by the Chief Minister has been constituted by the State Government. High level policy decisions are expected to sort out the disputes.

SOURCE OF FINANCE

Usually the sources of finance are

Contribution by Government as grant.

Raising of loan from

1. Life Insurance Corporation of India.
2. Open Market Borrowings.
3. HUDCO, the financing Institution.

Some of the schemes, both Rural and Urban, are eligible for grants from the Govt. of India.

Attempts are made to pose projects to the external financial Institutions for financial assistance.

REQUIREMENT OF FUNDS

- Govt. of Maharashtra has accorded top priority to the water supply sector.
- By year 2000 almost all Urban and Rural areas will be provided with drinking water supply systems.
- However, some Rural, as well as many urban water supply schemes are likely to spill-over beyond year 2000.
- Estimated requirement of funds at current prices - Rs. 170 Billion.
- Likely IXth FYP provisions are Rs. 19 Billion.
- Apart from approaching external funding agencies, Govt. of Maharashtra is launching a drive to mobilise funds to the tune of Rs. 100 Billion through small savings drive to commemorate 50th year of independence of the country, major portion of which, would be reserved for completing water supply programme.

TECHNOLOGICAL DEVELOPMENTS AND IMPROVEMENTS

- New Cell, headed by an officer of appropriate rank, to deal with this issue is being set up.
- Cell would collect information on Modern Trends in the W.S. & Sanitation Sector, new methods of treatment, from within the country and abroad.
- Cell would also study suitability of new trends/approaches, in Indian situations and suggest adoption.
- Young Officers would be deputed abroad to get a feel of these developments.

THIRD PARTY INSPECTION

- Implementation of Projects/schemes, both in Urban and Rural areas in the state is mostly with MJP.
- Senior officers keep on visiting the works to inspect and guide wherever necessary, so that effective control is exercised and quality of works is maintained.
- As a part of the covenant of agreement with the World Bank, in connection with the Project in Rural area, covering 10 Districts financed by World Bank, the concept of third party inspection is introduced.
- Considering the experience gained it is now widely accepted that third party inspection could be compared with medical check-up.
- Prevention is better than cure.
- This concept is now proposed to be extended to other projects and beginning is being made to introduce it in selected Rural areas on experimental basis.

ENSURING WATER QUALITY

- MJP has testing facilities at each water works maintained by it.
- Alum and Coagulant Aids doses are fixed by conducting Jar Tests.
- Water samples are collected and tested for residual chlorine at regular intervals.
- Water samples are also got tested from Government Laboratories for Bacteriological Test to ensure safe drinking water supply.
- Simple Gravity Feed Type Modified Gas Chlorinators are being used at various water works.
- New Chemical like "Chloritard", which releases chlorine at a pre-decided rate, only when it comes in contact with water, is being used in Rural Water Supply Schemes where trained staff is not available to operate complicated Gas Chlorinators.
- New equipments which produce Chlorine Gas from "common salt" are also tried at a couple of locations.

Shri Ravindra Mane, Minister of State for Water Supply & Vice Chairman, MJP, visiting Chemical Laboratory at Nhava Sheva Water Works.

PUBLIC HEALTH ASPECTS

- Usually the Operation and Maintenance is with the Local Body and it has to take steps to test samples of water to ensure quality. The Public Health Department checks the samples only when epidemics are reported.
- It is now proposed that the Public Health Department would be associated even during operation stage.
- It is proposed to constitute committees at different levels to include representatives of the local body, MJP and a representative of the Public Health Department, who would visit the works and inspect the operation including effective arrangements as regards disinfection.

ENVIRONMENTAL IMPACT ASSESSMENT: (EIA)

- Government of India guidelines require that infrastructure projects do not disturb the environment beyond the specified limits.
- Usual water supply schemes are not subjected to any of the rigorous provisions of Environment Act.
- These considerations are applicable only where construction of a dam is involved.
- Such an EIA study is presently being carried out as per G.O.I. Guidelines in respect of proposed M.W.S.S. P-II where construction of Poshir Dam is contemplated.

SOLID WASTE MANAGEMENT (SWM)

- Generation of Solid Waste and its management has become a threat to the inhabitation.
- Problem getting aggravated in the context of population rise and changing life style as well as standard of living.
- Cities, towns and villages – Every where problem has to be faced.
- Role of MJP would be restricted to guide the Local Bodies.
- MJP would develop expertise in Management of Solid Waste – Engineers will be trained abroad.
- They will get themselves conversant with latest technical knowhow and economical as well as Environment friendly ways of processing and disposal.
- MJP would act as catalyst to help local bodies to prepare projects in respect of SWM and approach Government for financial assistance.

PRIVATISATION

- Possibility of Private Sector Participation is being explored by the State Government
- There is no much progress in this respect, mainly because of :-

  Sustainable Tariff is not affordable to common man (present level of taxation is very low).

  No scope for cross subsidy in water tariff by charging higher rates for Industrial consumption, since Industrial Water Supply is not with MJP.
- Partial privatisation is being tried by MJP in the form of entrusting O&M of water works to Private Organisations/Contractors.

WORKSHOP FOR CONTRACTORS

- Appreciating the need for joint venture attitude (WIN-WIN) between MJP officers and contractors for achieving the goal, MJP had arranged a two day workshop for contractors, at MJP's Research and Training Centre at Nashik.
- Open discussions were held between Member Secretary, all Chief Engineers, some senior Engineers and the contractors, to understand anxiety of GOM to maintain speed, progress and quality as well as to sort out problems and difficulties.

TRAINING FOR VILLAGE WATER PERSONS

- Government of Maharashtra, recognising the need to ensure proper O & M of schemes, has set up Village Level Committees to deal with the issue of water supply.
- Training for Operating Staff is regularly arranged at MJP's Research and Training Centre at Nashik.
- Apart from Operating Staff, 80000 village water persons from 40,000 villages are being trained.
- Training programmes for these village water persons have already started from 16th August, 1996, through Govt./Semi Govt. Engineering Colleges as well as Non Governmental Organisations in close association with MJP and its Research and Training Centre.

NEW AND LOW COST TECHNOLOGY

Introduction by MJP in field works

- Need for introduction of New and Low Cost Technology in view of increasing costs of schemes has been duly noted by MJP.
- Following New and Low Cost Technology based works have been carried out.
- Consruction of under ground bandharas (diaphragm walls) to improve yield from Production wells.
- Construction of Low Height Gaibian Badharas for impounding storages near jack wells.

Horizontal Roughening filters at Head Works of Pandharkawda W.S.S. District Yavatmal

- Horizontal Roughening Filters to reduce raw water turbidity load on Filters.
- Modified Hopper Bottom settling tanks for improved efficiency.
- Duel Media Filters with coconut shell media for achieving Higher Rates of Filtration.
- Recirculation of Filter Wash Water back into the system after plain sedimentation.
- Use of Coagulant Aids to improve efficiency of clariflocculators and economise on cost of Alum.

LEAKAGE AND UNACCOUNTED WATER

- MJP is aware of the fact that leakages in the system are ranging from 10 to 25%.
- Leak detection surveys are proposed to be launched in towns where heavy leakages are reported.
- Drive to rectify leakages, replace old pipelines etc. will also be taken up after Leak Detection Survey results are available.
- Workshop on "Leak Detection and Control" is planned in September, 1997, to build up awareness amongst Engineers of MJP and Muncipal bodies.
- Hyderabad Metro Water Supply and Sewerage Board, which has conducted Leak Detection Surveys and achieved control, is being consulted.

NEW APPROACHES TO BE FOLLOWED

- Since Government have taken up an ambitious programme to cover all the towns and villages for supplying water and that the implementing organisation has also been restructured, the situation calls for new approaches to be adopted.
- Initially concentrated efforts would be to design and estimate the schemes accurately, exercise effective control on the contractors and make increasing use of machinery to accelerate the progress of works.
- Such new approaches are difficult to conceive, still difficult to understand, appreciate and adopt while further difficult to act upon.
- Some of such new approaches to be followed are summarised hereafter.

TRAINING AND HUMAN RESOURCES DEVELOPMENT

- Need to train inservice staff, widely accepted.
- Maharashtra Jeevan Pradhikaran has a well established Training Centre at Nashik, functioning since 1984.
- In-service training imparted to staff of MJP, Municipal Councils and Zilla Parishads at Technical, Non Technical & Operating level.
- 2 courses are sponsored by Govt. of India.
- Till end of 1996, in all 6543 trainees have been benefited.
- During 1997, it is proposed to conduct 76 courses benefiting 248 trainees.
- A 3 week course on "Substainability of water supply schemes" is conducted with assistance from International Reference Centre, Hague, The Netherlands.
- Engineers encouraged to complete postgraduation, during service.

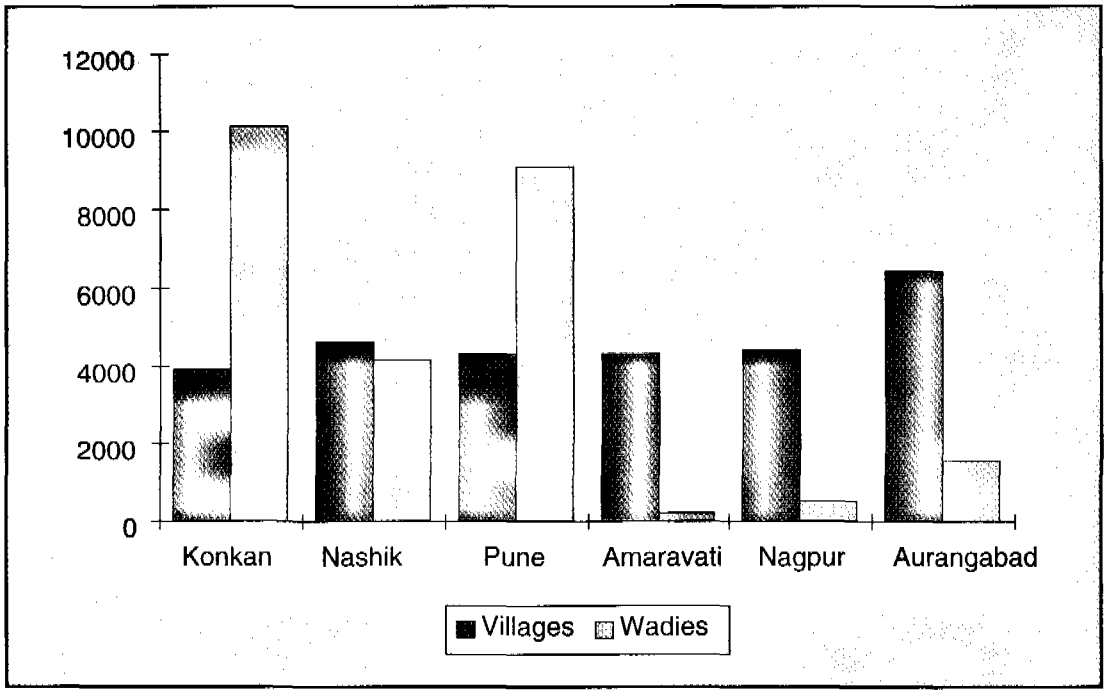
  Postgraduation at IIT Pawai, VJTI-Mumbai, VRCE, Nagpur, All India Institute of P.H., Calcutta etc.

  So far 91 Engineers have completed their postgraduation. One has acquired PhD. About 10 Engineers have also obtained degree in Law.
- Engineers sent abroad to have them exposure regarding present water supply systems and trend of development in developed countries.

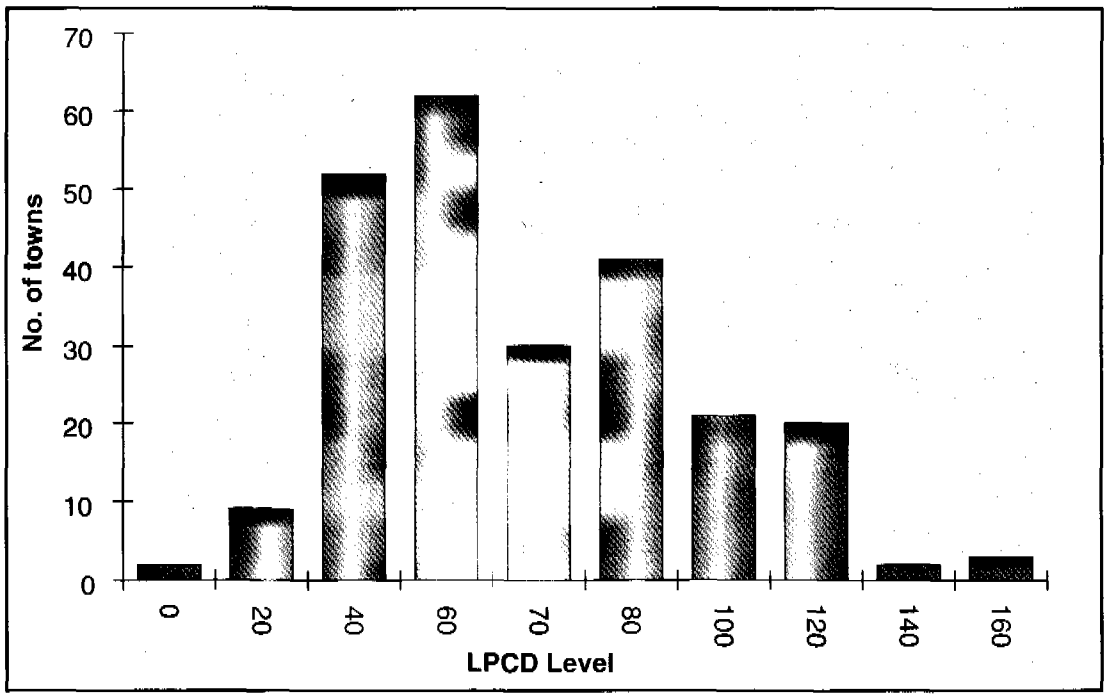
  7 Chief Engineers, 19 Sup. Engineers, 18 Ex. Engineers and 6 Deputy Engineers thus benefited.

  Countries visited – U.K, Netherlands, France, Sweden, U.S.A., Japan, Italy etc.
- Assistance being obtained from Prof. Laxmipathy, Hyderabad who has to his credit success story at Hyderabad Metro Water Supply and Sewerage Board.

GRAPH SHOWING NUMBER OF VILLAGES/WADIES TO BE TACKLED IN MAHARASHTRA IN VARIOUS REGIONS



NUMBER OF TOWNS IN MAHARASHTRA AND THEIR PRESENT WATER SUPLY IN LPCD

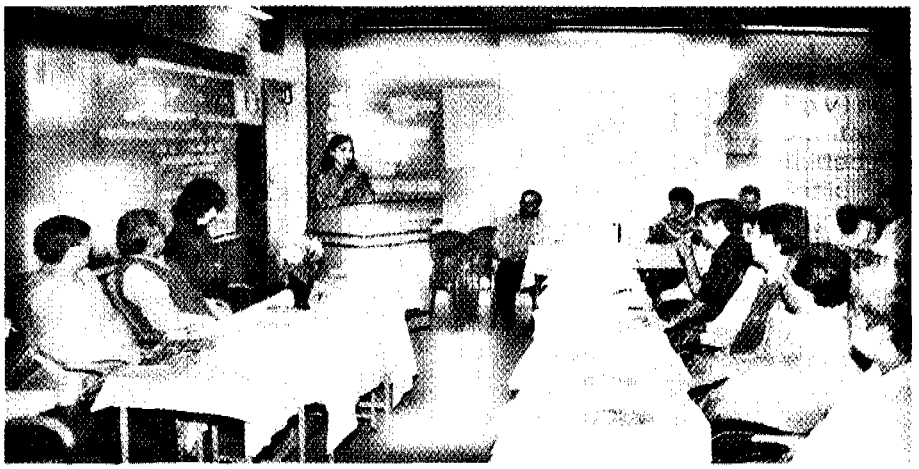


CONSUMER ORIENTED APPROACH

- Maharashtra Jeevan Pradhikaran aware - consumer oriented approach necessary.
- Effective tool of Management.
- Aspect rather neglected. Care of consumers taken individually at Local Level.
- Approach now proposed to be adopted at Organisational Level.
- Modest beginning made with consumer survey at Yavatmal Water Works.

STRENGTHENING OF TRAINING CENTRE AT NASHIK

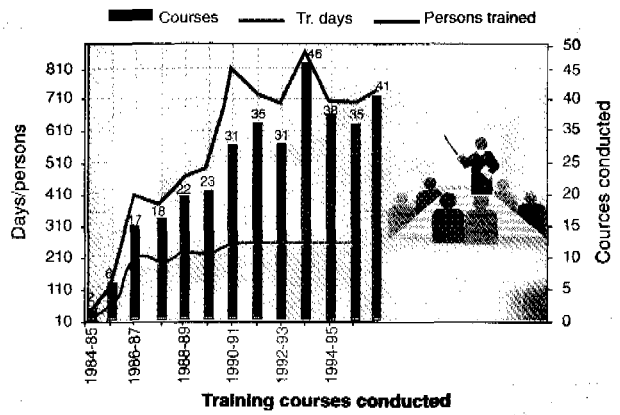
- Above work is taken up under Maharashtra Rural Water Supply and Environmental Sanitation Project funded by the World Bank.
- Estimated expenditure Rs. 21.4 million.
- Civil works include expansion of main building, hostel, hydraulic laboratory-cum-sump, pipes and valves shop, Distribution grid etc.



Course in progress on "sustainability of water supply schemes" supported by International Reference Centre, Netherlands

- Other ancillary facilities include provision of a Dining Hall, residential quarters etc.
- A mobile van and mini bus as well as equipments such as water hammer control devices, pump motor shop, water meter shop, pipe and valve shop, chlorination shop also proposed.
- Public Health Laboratory with sample kit equipments, apparatus etc.
- Additional audio visual aids.
- Strengthening of Library and computer section.
- Present status - 85% work completed.

TRAINING COURSES CONDUCTED AT TRAINING CENTRE, NASHIK



Training courses conducted

ABBREVATIONS

GOI	:	GOVERNMENT OF INDIA
GOM	:	GOVERNMENT OF MAHARASHTRA
MJP	:	MAHARASHTRA JEEVAN PRADHIKARAN
MWSSB	:	MAHARASHTRA WATER SUPPLY & SEWERAGE BOARD
GSDA	:	GROUND WATER SURVEY & DEVELOPMENT AGENCY
ZP	:	ZILLA PARISHAD (DISTRICT COUNCIL)
MWSSP-I	:	MAHARASHTRA WATER SUPPLY & SEWERAGE PROJECT STAGE-I
OECF	:	OVERSEAS ECONOMIC CORPORATION FUND
CIDCO	:	CITY AND INDUSTRIAL DEVELOPMENT CORPORATION
MMRDA	:	MUMBAI METROPOLITAN REGION DEVELOPMENT AUTHORITY
IDA	:	INTERNATIONAL DEVELOPMENT ASSOCIATION
NRTC	:	NASHIK RESEARCH & TRAINING CENTRE
ODA	:	OVERSEAS DEVELOPMENT ADMINISTRATION
UK	:	UNITED KINGDOM
HUDCO	:	HOUSING AND URBAN DEVELOPMENT CORPORATION (GOVERNMENT OF INDIA UNDERTAKING)
CAG	:	COMPTROLLER & AUDITOR GENERAL
IIT	:	INDIAN INSTITUTE OF TECHNOLOGY
VJTI	:	VEERMATA JEEJABAI TECHNICAL INSTITUTE
VRCE	:	VISHWESHWARAYYA REGIONAL COLLEGE OF ENGINEERING
TISS	:	TATA INSTITUTE OF SOCIAL SCIENCE
KM	:	KILOMETERS
MLD	:	MILLION LITRES PER DAY
ML	:	MILLION LITRES
MS	:	MILDSTEEL
LPCD	:	LITRES PER CAPITA PER DAY
M	:	METRE
MM	:	MILLIMETRE
MM3	:	MILLION CUBIC METRE
MBR	:	MASTER BALANCING RESERVOIR
FYP	:	FIVE YEAR PLAN
EIA	:	ENVIRONMENTAL IMPACT ASSESSMENT
MWSSP II	:	MAHARASHTRA WATER SUPPLY & SEWERAGE PROJECT STAGE-II
SWM	:	SOLID WASTE MANAGEMENT
O & M	:	OPERATION & MAINTENANCE
WS	:	WATER SUPPLY

FOR FURTHER DETAILS, OR INFORMATION YOU ARE WELCOME TO CONTACT FOLLOWING PERSONS :

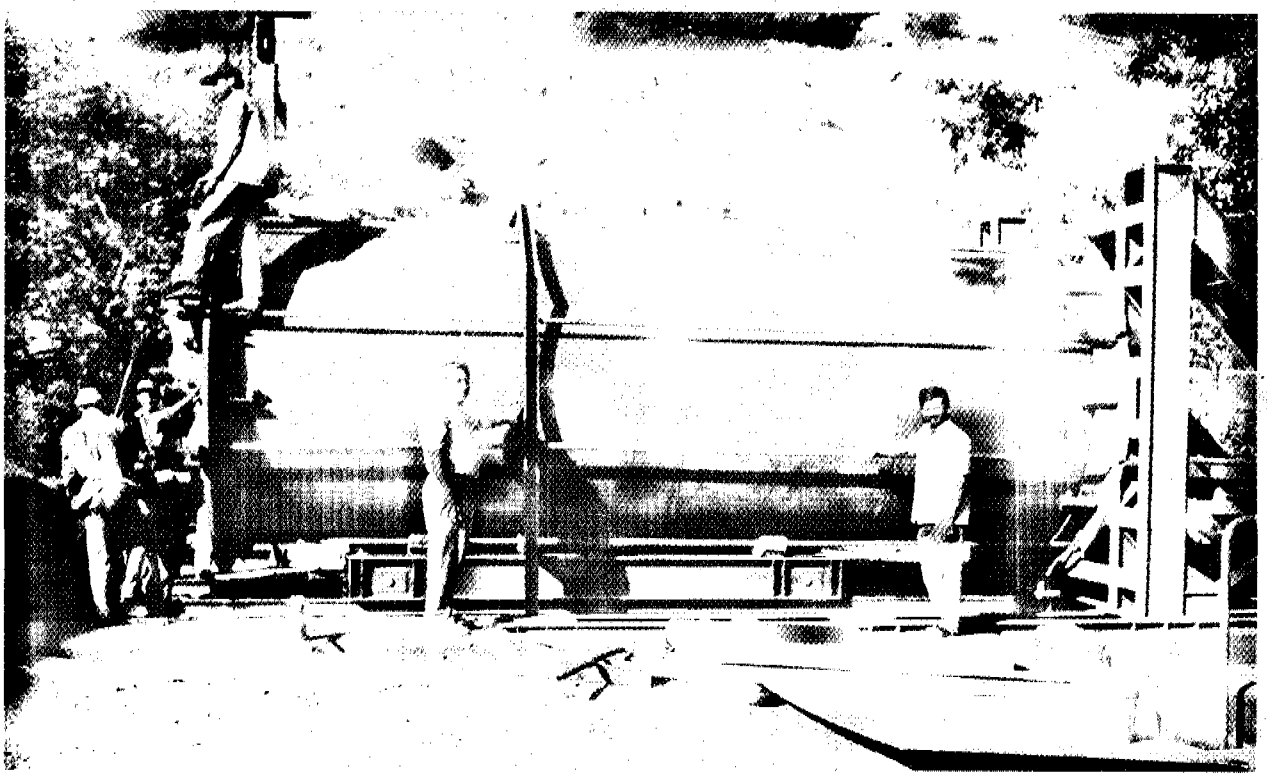
Name of Officer	Phone Number	Fax Number
Shri R.M. Sagane, Member Secretary M.J.P., 4th floor, Express Towers, Nariman Point, Mumbai-400 021 (India)	+ 91 (022) 202 53 54 / 202 62 49	+ 91 (022) 202 93 48
Shri S.D.Armal, Chief Engineer, Kokan Region, New Administrative Building, Kanhaiya Nagar, Kopri, Thane, India - 400 603.	+ 91 (022) 536 72 77 / 536 02 32	+ 91 (022) 542 57 54
Shri D.K. Bhasale, Chief Engineer, MJP Nagpur Region, Nagpur.	+ 91 (0712) 537456	+ 91 (0712) 533312
Shri S.V. Shelkikar, Chief Engineer, MJP Pune Region, Pune.	+ 91 (0212) 627866 /	+ 91 (0212) 626596
Shri S.K. Patil Chief Enginer, MJP Nashik Region, Nashik	+ 91 (0253) 560049	+ 91 (0253) 564436
Shri A.P. Chourasia, Chief Enginer, MJP Amravati Region, Amravati	+ 91 (0721) 663332	+ 91 (0721) 663332
Shri M.V. Domkondwar, Chief Engineer, MJP, Aurangabad.	+ 91 (0240) 331531 / 331532	+ 91 (0240) 331126
Shri A.N. Alawni, Superintending Engineer, Planning & Monitoring, MJP, Mumbai.	+ 91 (022) 262 51 27 / 2622436	+ 91 (022) 265 08 46
Shri M.D. Kelkar, Supdt. Engineer, Co-ordination, MJP, Mumbai.	+ 91 (022) 282 89 96 / 202 53 54	+ 91 (022) 202 93 48

EXPECTATIONS FROM MUNICIPAL COUNCILS

MJP would expect the Councils to ensure the following:

- In case of problems, difficulties and suggestions (in respect of water supply) approach local officers of MJP and consult them.
- Please reconcile that augmentation of and improvement in water supply services, is a difficult and time consuming job.
- Considering this, it is better not to give assurances to the people, which cannot be fulfilled. For some more time at least, 24 hour water supply would only be a dream.
- When Development Plans for the city/town are approved, reserve lands for reservoirs, pumping stations, treatment plants etc. to be taken up in near future.
- Seriously consider to keep aside certain amount from your revenue every year, which could be lateron utilised for improving the services, or to that extent the loan liability could reduce.
- As soon as the rainy season is over, take a review of the probable availability of storage/ water and plan the monthly supply schedule accordingly.
- Get yourselves associated with the hydraulic tests of the structures, before the system is handed over by MJP.
- Ensure security measures at water supply installations. Check up that the system is being operated efficiently.
- Request a senior engineer of MJP to visit your water works, at least once a year.
- Send your operating staff for training at MJP's Training Centre at Nashik.
- Keep on revising the water tariff regularly and adequately so that the system becomes financially sustainable.
- Try to detect the water losses and leakages and take steps to reduce unaccounted water, in consultation with Engineers of MJP.
- Ensure water quality as per guidelines of MJP. Also take steps to replace old G.I. house connections which are vulnerable for contamination.

Member Secretary inspecting large size pipe installation



Hydraulic Testing of 2354 mm dia, 12 mm thick M.S. Pipeline - Nhava Sheva W.S. Scheme-Stage-III