

**U.G.C. Sponsored  
Minor Research Project**

**- Submitted To -  
University Grant Commission  
Ganeshkhind, Pune**

**“Water Supply Remediation: Approach through Water Resources  
Management by the Nagpur Municipal Corporation, Nagpur”**

**Faculty of Commerce**

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**Through  
Principal  
P.W.S Arts & Commerce College  
Nagpur  
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## 10. Objectives of the Project:

Objectives of "Water Supply Remediation: Approach through Water Resources Management by the Nagpur Municipal Corporation, Nagpur:

- Provide consumers with un-interrupted water supply at desired pressure.
- Reduction of an Un-account for Water (UFW) to within 15% by reducing leakages and unmeasured supply.
- 100% metering with good quality meters having long life spans
- Improved billing mechanism (Reading, bills generation & distribution) to reduce time & cost per bill including spot billing.
- Better services to Urban poor by implementation of slum policy.
- Attending consumer complaint within short time.
- Improved satisfaction for stake holders.
- Implement good engineering practices to upgrade existing network.
- Implement the lessons learnt from pilot zone to other parts of city.

**11. Whether Objectives were Achieved:** Yes, The Implementation of Un-interrupted water supply in a Nagpur city by Nagpur municipal corporation following Achievements are made.

- Rehabilitate and upgraded the system with reduced water losses.
- A private Operator is appointed by NMC to operate, maintain, commission/de-commission and refurbish NMC related infrastructure and equipments as required to operate efficiently water supply infrastructure for a period of 25 years.
- 24x 7 uninterrupted water supplies are implemented in the entire city of Nagpur before April 2012 without exceptional tariff increase.
- All population of slum areas in Nagpur city can access water supply services from the municipal network.
- NMC does not required to allocate municipal budget resources to cover eligible water supply service costs, including debt service, for infrastructure's expansion.
- All investment projects committed under JNNURM arrangements for water supply improvement in Nagpur City are fully implemented in accordance with the corresponding Financing Memoranda.

**12. Achievements from Project:** Based on the suggestions made in the project following achievements are made.

Service performance targets aim at achieving 24/7 water supply to 100% of potential customers in the whole city since 1st of April 2012. Uninterrupted water supply services should be metered, which ever the applicable tariff setting establishes, and comply with applicable Regulations.

Full uninterrupted 24x7 open accesses to drinking water supply through legal metered connections.

Uninterrupted 24x7 accesses to drinking water supply through legal slum connections billed on a lump sum basis for not less than 70 litre per capita per day.

Bulk water supply to communities outside the jurisdiction of NMC through community metered connections located in the right of way of the transmission mains.

Technical Efficiency (TE), which represents the volume of water billed to eligible customers expressed as a percentage of the volume of water supplied to the distribution systems: is expected to increase from 62% to 75% while the hours of service increase from 5 hours per day to 24 hours per day. Commercial Efficiency (CE), which represents the amounts collected from eligible customers expressed as a percentage of the amounts billed to these customers, is expected to increase from 76% to 95

### **13. Summery Of the Project:**

The study of "Water Supply Remediation: Approach through Water Resources Management by the Nagpur Municipal Corporation, Nagpur" is comprises in Six Chapters.

First Chapter gives the introduction of Nagpur city. It includes the geographical status of Nagpur city. Th s chapter provides the information of the availability of water and the sources of water from where the water supplied to the city. It also provides the information about the present water supply scheme of NMC.

Second chapter covers base line information in terms of users coverage & access. This chapter includes the details of population served, area covered and quantity supplied in water dist. Zone.



ZONE	POPULATION	AREA	QTY. SUPPLIED
	2004	Ha.	IN MLD
I DHARAMPETH	281688	4084.63	78.55
II LAXMI NAGAR	257980	3516.31	54.05
III HANUMAN NAGAR	185717	2181.52	27.91
IV DHANTOLI	238701	615.37	36.18
V NEHARU NAGAR	188411	1423.69	27.22
VI SOKTA BHAWAN	280076	556.07	61.03
VII SATRANJIPURA	336287	744.48	91.98
VIII LAKHADGANJ	178716	2406.16	16.04
IX ASHI NAGAR	225881	3225.02	23.14
X MANGALWARI	204806	2109.06	44.26
PUMPING/FEEDER MAIN			29.65
Total	2354001	21062	490.00

In the third chapter initiative measures of 24x7 water supply project are studied.

In this chapter the four phases of water control programs implemented by NMC being studied.

- **Phase one:** Water audit and leak detection study, assessment of economic optimum volume of water losses, and performance indicators as done through water and energy audit study.
- **Phase two:** Pilot study at Dharampeth zone for 15000 connection and leak detection in Test zone.
- **Phase three:** Full city intervention using apparent (Commercial) and real (Technical) loss reduction methods based on outcome of first two phases.
- **Phase four :** Ongoing maintenance of the loss control mechanism by Implementation of 24x7 water supply program through long term performance based Rehabilitate, Finance, Operations and Maintenance contract by Public Private Partnership mode for sustainability.

The forth chapter comprises the study of environmental compliance / protection measures / improvement measures. An environmental and social impact assessment report is required for any infrastructure project to identity and assesses the environmental and social issues involved in the proposed project and ensures that they are taken care of adequately in the formulation and execution of the project and its day to-day operation.

The fifth chapter studies the operational performance of the 24x7 water supply project implemented by NMC. It also focuses on financial performance on new tariff plan given by NMC.

The conclusion and recommendations are mentioned in chapter no. six.

The outcome of the 24x7 water supply project by NMC is:

- a private Operator is appointed by NMC to operate, maintain, commission/decommission and refurbish NMC related infrastructure and equipments as required to operate efficiently i water supply infrastructure for a period of 25 years.
- 24x 7 uninterrupted water supplies is implemented in the entire city of Nagpur before April 2012 without exceptional tariff increase.
- All population of slum areas in Nagpur city can access water supply services from the municipal network.
- The reliable water supply to slum will save productive man hours to poor slum dwellers.


**The few recommendations are:**

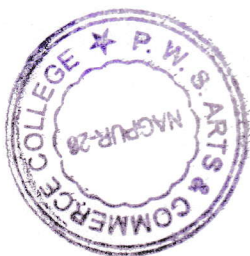
- To reduce the number of points of supply to the slum areas and install a flow meter to all inlets/outlets in order to record the amount of water distributed.
- To abandon all conservancy lines and pipes below 80 mm.
- To replace old and defective CI pipes with new DI/ HDPE pipes in areas other than slums.

#### 14. Contribution to the Society:

The Minor Research Project named "Water Supply Remediation: Approach through Water Resources Management by the Nagpur Municipal Corporation, Nagpur" is studied to provide the best solution to big problems of the society i.e. lack of water supply. Water is supplied to the city by Master Balancing Reservoirs at Seminary Hills (SH) & Govt. House (GH). From Seminary hills and Govt. house master balancing reservoirs water is supplied to other reservoirs. These two MBR's also supply water to its command area.

This project is the part of water sector project and outcome of Water audit, leak detection program undertaken by NMC with support of JNNURM. This project as a part strengthening of water supply system. The project is most important to achievement of CDP vision on water supply "Water for all and 24X7 supplies with focus on safety, equity, and reliability".

  
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