



Water Quality Assessment of Mula-Mutha River in Pune City

Kate Tanmay R	Department Of Civil Engineering, Genba Sopanrao Moze College of Engineering, Balewadi, Pune(45), University Of Pune, Maharashtra, India
Mithe Omkar U	Department Of Civil Engineering, Genba Sopanrao Moze College of Engineering, Balewadi, Pune(45), University Of Pune, Maharashtra, India
Dingorkar Mayuresh N	Department Of Civil Engineering, Genba Sopanrao Moze College of Engineering, Balewadi, Pune(45), University Of Pune, Maharashtra, India
Nalawade Pooja R	Department Of Civil Engineering, Genba Sopanrao Moze College of Engineering, Balewadi, Pune(45), University Of Pune, Maharashtra, India
Urankar Ashwini B	Department Of Civil Engineering, Genba Sopanrao Moze College of Engineering, Balewadi, Pune(45), University Of Pune, Maharashtra, India
Pisal Archana S	Department Of Civil Engineering, Genba Sopanrao Moze College of Engineering, Balewadi, Pune(45), University Of Pune, Maharashtra, India

ABSTRACT

Water pollution is a major global problem which requires ongoing evaluation and revision of water resource policy at all levels. It has been proved that water pollution is the leading worldwide cause of deaths and diseases. The project study highlights pollution status and impact on Mula-Mutha River and dams on it. The river Mula-Mutha is flowing through city area and is one of the important sources of water body because of seven dams on it and its importance in agricultural, industrial and development of Pune city. This project emphasize on Pune river water analysis. The purpose of the project is to highlight the present condition of the MULA-MUTHA river and state possible control measures to improve the water quality of the river.

KEYWORDS : Mula-Mutha River, Sewage discharge, DO, BOD, COD, TS, Remedial measures

INTRODUCTION

The availability and the quality of the fresh water resources is the most pressing of the many environmental challenges on the national horizon in India. The stress on water resources is from multiple sources and the impacts can take diverse forms. Geometric increase in population coupled with rapid urbanization, industrialization and agricultural development has resulted in high impact on quality and quantity of water in India. Pune city, the second largest metropolitan city in Maharashtra and ninth largest in India. Pune city has great historical importance. Also from the last decade Pune city, and surrounding area has undergone various educational, commercial and industrial development. Pune city also known as educational hub Pune city is grooming in automobile and IT sector. This leads to migration of various peoples from India as well as from foreign countries, due to which it has been causing stress on environment. It is the need of hour to protect natural resources due to increasing population it should be our aim to precisely manage potable water and optimum use of wastewater. Pune is crossed by many rivers and streams, which rise near the Sahyadris. The major rivers within the city limits include Mutha River, Mula River and Mula-Mutha River. Mula originates from Mulshi Dam. It passes through Paud, Wakad, Balewadi, Baner, Aundh, Khadki, Vishrantwadi and ends at Sangamwadi. Whereas MUTHA river origin from Khadakwasla dam. It passes through Dhayri, Shivram Mhatre bridge, Z-Bridge, Juna-Bazaar, Pune RTO and ends at Sangamwadi. Both MULA and MUTHA River merge at Sangamwadi. The total length of Mutha river within the city limits is approximately 10.40 km, Mula River is 22.37km and Mula-Mutha River is 11.75km.

MAP WITH PROPOSED STATION



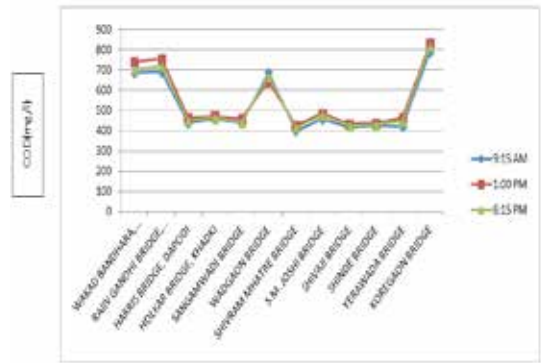
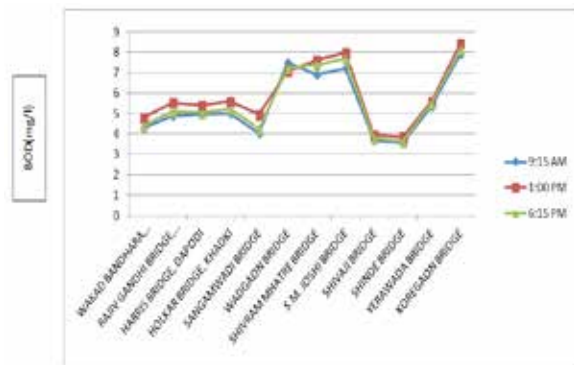
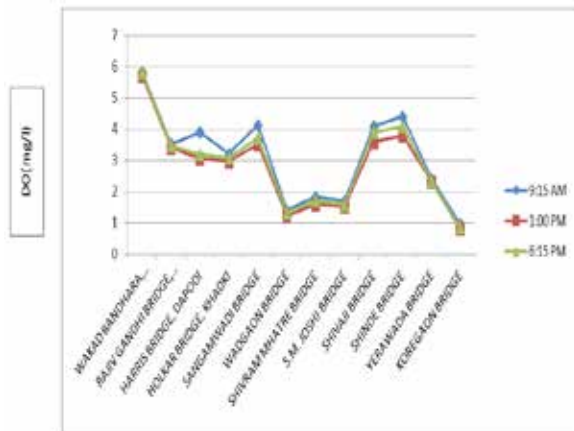
Proposed station number	Proposed station name	River
PS1	Wakad bandhara, Vishalnagar	Mula
PS2	Rajiv Gandhi bridge, Aundh	Mula
PS3	Harris bridge, Dapodi	Mula
PS4	Holkar bridge, Khadki	Mula
PS5	Sangamwadi bridge	Mula
PS6	Vadgaon bridge	Mutha
PS7	Shivram Mhatre bridge	Mutha

PS8	S.M. joshi bridge	Mutha
PS9	Maharshi Shinde bridge	Mutha
PS10	Shivaji bridge	Mutha
PS11	Yerawada bridge	Mula-Mutha
PS12	Koregaon park bridge	Mula-Mutha

METHODOLOGY

Water sample from surface of river are collected from different stations mentioned in the above table . Water samples were collected in the BOD bottle and fixation of DO is done on the site . In laboratory , we have performed tests of pH , Temperature , DO , BOD , COD and TS . Temperature was measured using Mercury in glass thermometer accurate to 0.1 °C. pH was measured

using portable pH meter and Dissolved oxygen was determined by modified Winkler azide method. Biochemical oxygen demand (with duration of 3 days of incubation at 27 °C) and chemical oxygen demand (by open reflux method) were also estimated. Three sampling were done in a day in a course to know the effect on water due to variation in temperature. All test are carried out with full concentration to obtain the correct result. All test are conducted by CPCB guidelines under supervision.



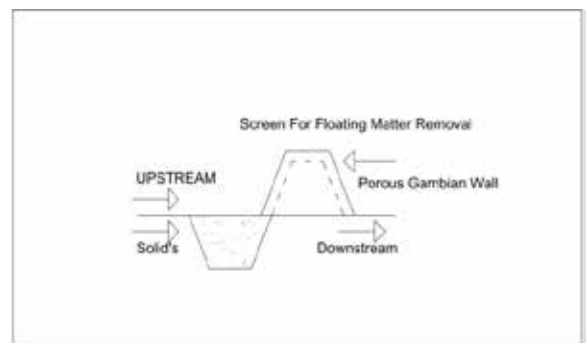
RECLAMATION METHODS

1) Public awareness- Public can be made aware about the present status of the river through local news papers, hoardings, social networking sites, campaigns etc. But these methods do not work since people violate the rules. The river can be restored for the people and only with help of people.

2) By increasing STP's- Currently Pune city has 10 STP's running with an efficiency less than 60% which are proving insufficient for proper treatment of the sewage. Thus to tackle this situation PMC has proposed 11 new STP's in the city.

3)Root Zone Technology- Root zone is based on ecological principle, it is a natural process of treating waste water. Root zone encompasses a life interaction between the bacteria, roots of the plants, soils, sun and waste water. In this system the plant conduct oxygen through their stem to the roots which helps in decomposing the waste water by the bacteria present in rhizosphere in the roots on the plants. the water flows vertically or horizontally through a filter media. the filter media selected for this process must carefully be selected for providing favourable conditions for both plants and growth of bacteria, and avoid clogging of the filter media. Base on Root Zone Technology "Artificial Floating Island Technique" and "Phytorid technology" can be successfully be used for the waste water treatment .

4)Solid waste removal channel- These channels can be implemented on three to four places along a stretch the river as shown in this diagram :



As shown, across the width, the accumulated solids can be removed every fifteen days and taken to MSW landfill sites. The screen with a gabion wall will allow water to flow through but will capture all floating matter.

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