COMPARATIVE STUDY OF WATER QUALITY IN LAKES OF SMART CITY (A CASE STUDY OF PUNE CITY)

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ABSTRACT: Urban lakes are closely related to the social and economic life. But urban lakes were polluted in different degrees. In this paper, we explore and process data about lake water pollution in different lake of Pune city. Our process includes measurement of several parameters such as pH, COD, Conductivity etc. The result showed that many lakes were polluted. Measures are suggested to improve the water quality. This paper can be used as a basic data for the pollution state and the further preservation of urban lakes in Pune city.

Keywords: **water quality, parameter, preservation, pollution.**

Introduction

In Pune city, Lake Story claims that "lakes with better water quality contribute to higher quality of life, local economic development and increased property values for people". However urbanization has introduce changes in climate condition such has higher temperature in the cities compared with their rural surrounding, hence creation of most urban lakes for relaxation recreational activities among other uses for the people. These activities conclude pollution in lakes water resulting in degradation of water quality of different lake in Pune city.

Causes of lake water pollution:

- Sources include contaminants that inter the water from soils and from the atmosphere via rainwater, fog.
- Atmospheric contaminants generated by human being such as gaseous emissions from automobiles,

  Factory, bakeries, etc.
- Presence of disease causing microorganism (bacteria).
- Effluent discharge of storm water drainage pipe.
- Effluent outfall from the nearby factory, community.

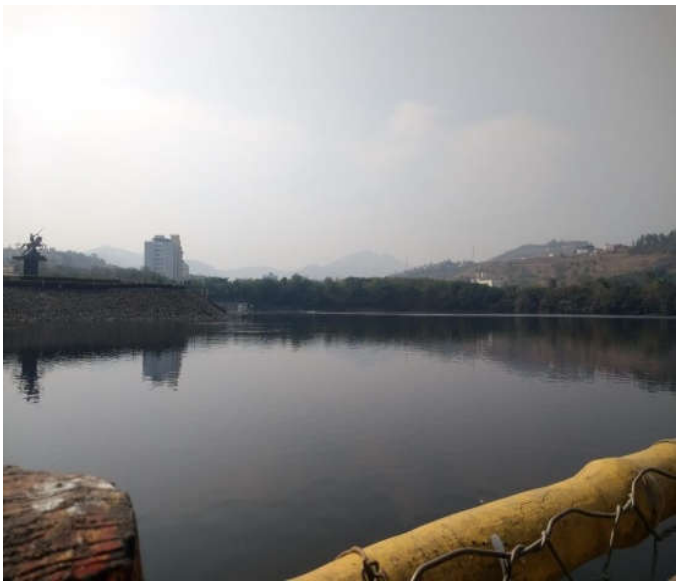


Fig. 1 Katraj Lake

Fig 2 Pashan Lake

Fig. 4Manas Lake

Fig.5 Jambhulwadi

Sampling And Determination Method:

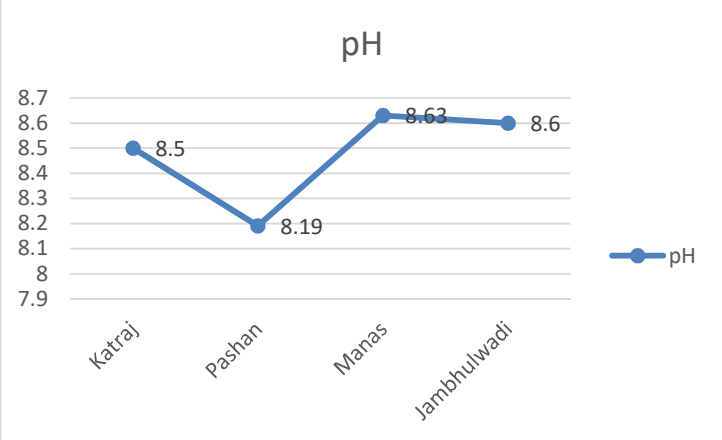
The water sample of the Four lakes (Katraj, Pashan, Manas, Jambulwadi) were collected from one station (near the edge point), for the physiochemical parameter analysis of the lake water. The Samples were collected in sterilized bottle using standard procedure in accordance with the standard method of American Public Health Association (1995) for the analysis. The parameter selected and method implemented for the same are prescribe in fig.

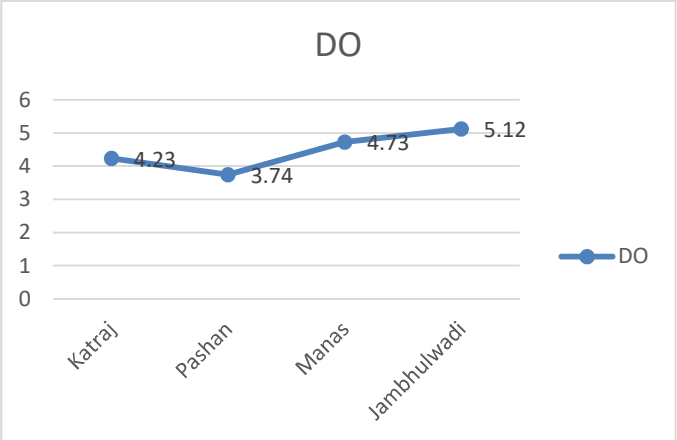
Table 1 Parameter and Methods:

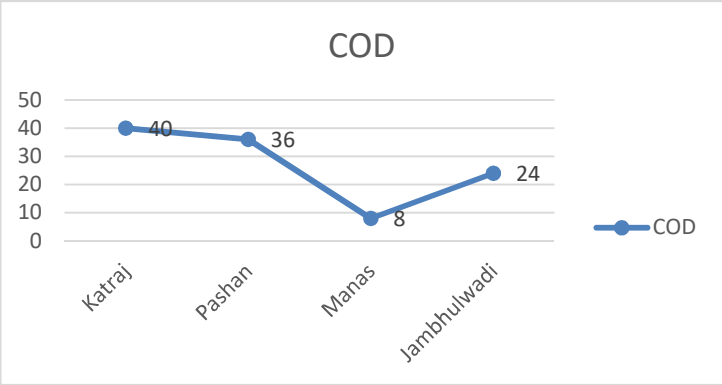
Sr. No.	Parameter	Method
1	pH	Electrode
2	DO	Azide modification
3	COD	Titrimetric
4	Hardness	Titrimetric
5	Alkalinity	Titrimetric
6	Phosphate	Calorimeter
7	Conductivity	Conductivity meter

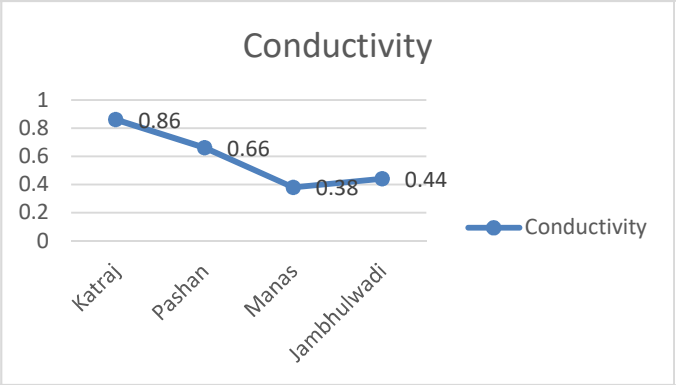
Table 2 Summary of the Physiochemical parameter of four lakes in Pune city:

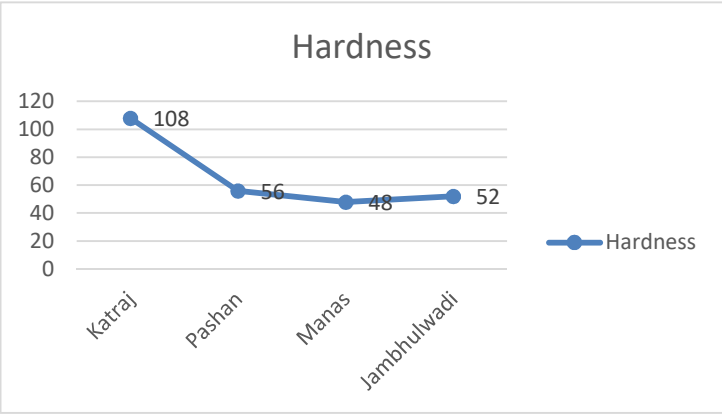
Sr. No.	**Parameter**	**Unit**	**Observed value(first week of feb.2018)**			
			Katraj	**Pashan**	**Manas**	**Jambhulwadi**
1.	**P^H**	--	8.5	8.19	8.63	8.6
2.	**D.O.**	Mg/l	4.23	3.74	4.73	5.12
3.	**C.O.D.**	Mg/l	40	36	8	24
4.	**Conductivity**	Mg/l	0.86	0.66	0.38	0.44
5.	**Total Hardness**	Mg/l	108	56	48	52
6.	**Total Alkalinity**	Mg/l	488	524	696	320
7.	**Phosphate**	Mg/l	0.4	0.38	0.45	0.42
8.	**Total Dissolved Solids**	Mg/l	490	320	395	340

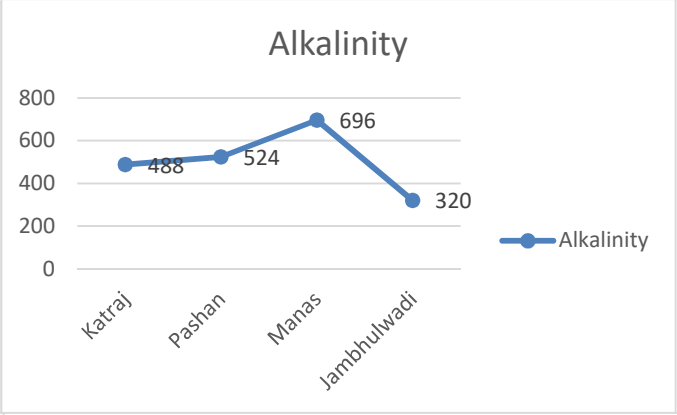

pH
8.7
8.6
8.5
8.4
8.3
8.2
8.1
8
7.9
8.5
8.19
8.63
8.6
Katraj
Pashan
Manas
Jambhulwadi
pH

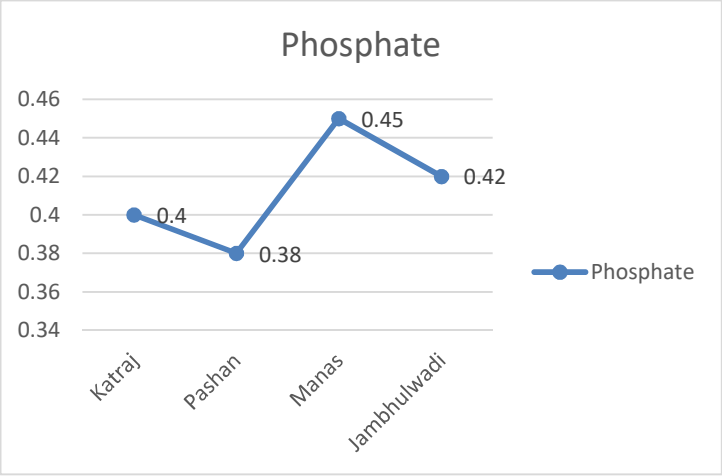

DO
6
5
4
3
2
1
0
4.23
3.74
4.73
5.12
Katraj
Pashan
Manas
Jambhulwadi
DO

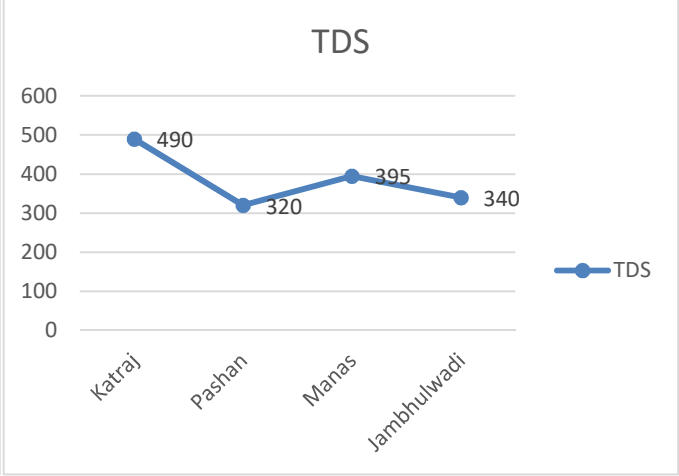

COD
50
40
30
20
10
0
40
36
8
24
Katraj
Pashan
Manas
Jambhulwadi
COD


Conductivity
1
0.8
0.6
0.4
0.2
0
0.86
0.66
0.38
0.44
Katraj
Pashan
Manas
Jambhulwadi
Conductivity


Hardness
120
100
80
60
40
20
0
108
56
48
52
Katraj
Pashan
Manas
Jambhulwadi
Hardness


Alkalinity
800
600
400
200
0
488
524
696
320
Katraj
Pashan
Manas
Jambhulwadi
Alkalinity


Phosphate
0.46
0.44
0.42
0.4
0.38
0.36
0.34
0.4
0.38
0.45
0.42
Katraj
Pashan
Manas
Jambhulwadi
Phosphate


TDS
600
500
400
300
200
100
0
490
320
395
340
Katraj
Pashan
Manas
Jambhulwadi
TDS

Conclusion

From above computed study of four lakes, it is summarise that water quality in a lake near by area of pune city is highly polluted and needs to restoration of lakes. Lakes restoration can be take place by number of ways.Preventive measures at source can improved water quality in lake.

References

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