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WATER QUALITY ASSESSMENT OF CHAVDAR TALAO, RAIGAD, MAHARASHTRA

Dr. Gangotri S. Nirbhavane*

Associate Professor, Environmental Studies Department, Dr. Ambedkar College of Commerce and Economics, Wadala, Mumbai, India – 400 031.

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***Corresponding Author**
Dr. Gangotri S. Nirbhavane
Associate Professor, Environmental Studies Department, Dr. Ambedkar College of Commerce and Economics, Wadala, Mumbai, India – 400 031.

ABSTRACT

Water is a very important resource, which is used for number of uses, like domestic use, agricultural use, industrial use etc. It is very important for sustenance of life. Conservation and management of water is necessary for the general well-being of all life. Chavdar Talao from Mahad selected for study purpose. Water sample collected from November 2013 to February 2014.Water samples were collected from selected sampling sites during the study period and analysed for different physicochemical parameters like Temperature, pH, Electrical Conductivity, Total Hardness and Turbidity. Obtained results were compared with WHO and BIS standards. All parameters were found within the permissible limits given by BIS and WHO indicates water has good quality and not affected by manmade activities.

KEYWORDS: resource, physicochemical, conservation, manmade activities.

INTRODUCTION

Water is present only on planet earth. This source, therefore, needs to be protected. However, in the world scenario, the picture is different. With rapid Urbanisation, industrialization pressure on available resources also increases. Man is not only using natural resources, but he is also discharging the different types of solid, liquid waste material into the same resources, which day-by-day degrading the quality of this vital resources. Under the name of development, these vital sources get polluted by man-made activities. The physical and

chemical properties of water make it a reliable source throughout the world. Demand for clean water increases continuously with world population growth. Pollution of water is the natural, physical and chemical change due to human activity, so that water is not fit for use; for which it had previously been suitable. Assessment of water quality determines the suitability of water for different purposes.

Chavdar Talao situated in Raigad district, having a historical background. It is manmade lake. Purpose of this study to assess the water quality of Chavdar Talao. Water samples were collected from November 2013 to February 2014.

METHODOLOGY

Water samples were collected from selected area of Chavdar Talao from November 2013 to February 2014. Sample was collected in 2 lit. Capacity of clean polythene bottles. The bottle was rinsed with the water to be taken for analysis. Tightly sealed after collection and labelled in the field area. Collected sample was analysed for following parameters Temperature, pH, Electrical Conductivity, Total Hardness and Turbidity. The temperatures, pH of the water sample was determined on the spot using a Thermometer and Portable pH meter respectively. Conductivity measured by Conductivity meter. Total hardness was measured by EDTA titrimetric method using EBT indicator. Turbidity measured by Turbidometer. (APHA 2005; Trivedi and Goel1986) The quality of water has been assessed by comparing each parameter with the standard desirable limits prescribed by BIS and WHO.

RESULTS & DISCUSSION

After analysis obtained results are shown in table no.1 and further it was compared with the BIS and WHO standards from table no.2.

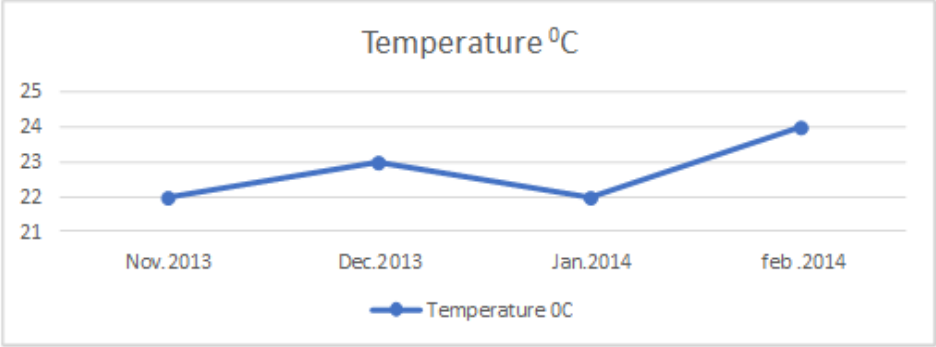
Table No. 1: Water sample collected from November 2013- February 2014.

Month	Temperature (^{0}C)	pH	Electrical Conductivity (µS/cm)	Total Hardness (mg/l)	Turbidity (NTU)
Nov-2013	22	7.4	182.2	212	0.4
Dec-2013	23	7.4	196.5	204	0.3
Jan-2014	22	7.5	214.2	218	0.3
Feb-2014	24	7.6	216.6	206	0.2

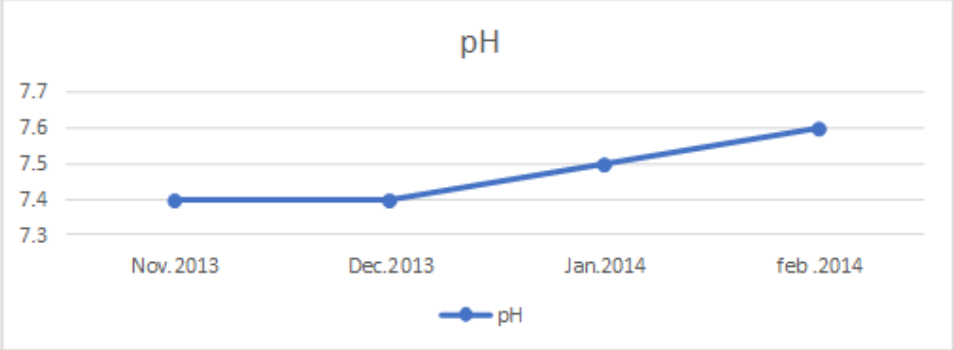
Table No. 2: Drinking water standards.

Sr. No.	Parameters	BIS (IS 10500-91)		WHO
		Desirable Limit	Max. permissible Limits in the absence of alternate source	
1	Temperature (^{0}C)	-	-	-
2	pH	6.5 to8.5	No relaxation	6.5 – 8.5
3	Electrical Conductivity (µS/cm)	-	300	-
4	Total hardness as $CaCO_3$(mg/l)	200	600	500
5	Turbidity (NTU)	-	5	5

Temperature-Temperature ranges from 22^{0}C to 24^{0}C during study period. Highest temperature was observed in February2014. Temperature of water changes seasonally with air temperature (Carr, 2006).

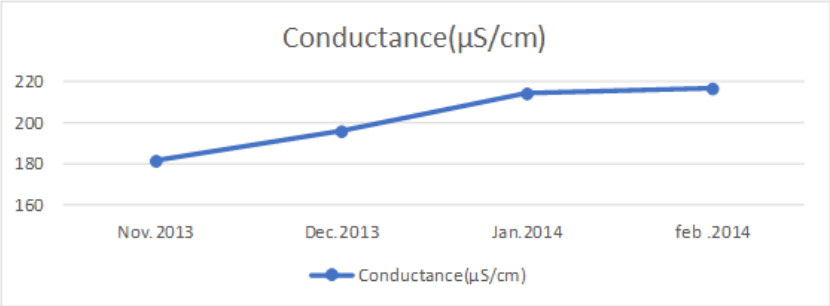


pH- pH ranges from 7.4 to 7.6 during study period. All the samples were found within the desirable limit given by BIS and WHO. In the month of February 2014 highest pH was observed. pH of water is influenced by geology of catchments area and buffering capacity of water (Shyamala *et.al.*,2008).

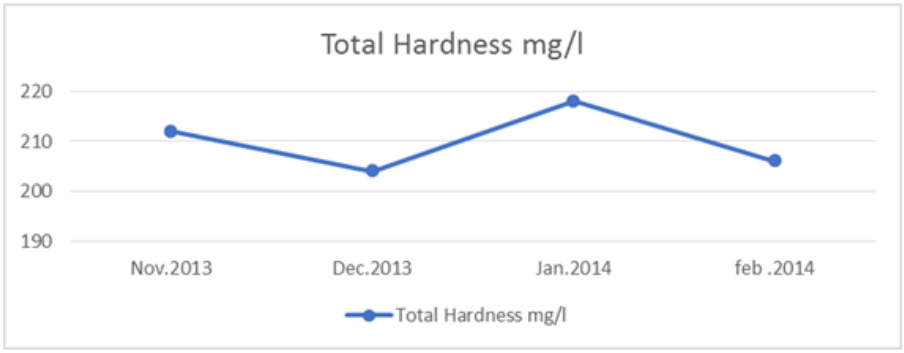


Conductance-Conductance was ranged from 182.2 to216.6 µS/cm during study period. Highest conductance was observed in the month of February 2014 i.e.216.6 All samples were found within the permissible limits given by BIS. Completely pure water is a poor conductor

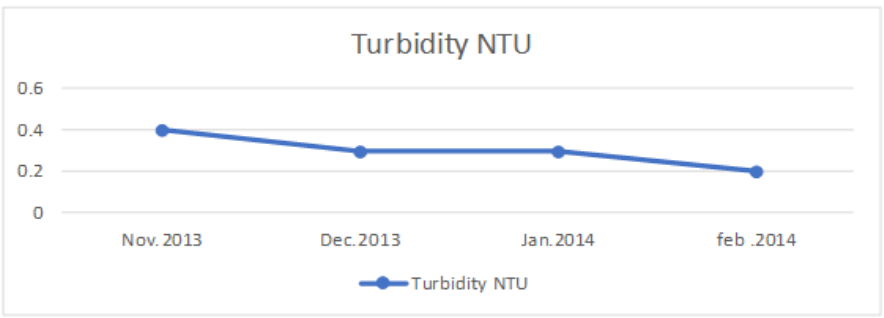
of electricity. The conductivity is proportional to the amount of salts dissolved in water (Jameel, 2002).



Total Hardness- Total hardness ranges from 204 to 218 mg/l during study period. Highest hardness observed in the month of January. During study period all samples were found above the desirable limit given by BIS, i.e.200mg/l, but all the samples were found within the permissible limit given by BIS and WHO i.e.600 and 500 respectively. Hardness is the result of geological formations of the water sources (Kataria, 2009).



Turbidity- Turbidity in study area ranges from 0.2 to 0.4 NTU during study period. Highest turbidity observed in the month of November 2013 and lowest turbidity observed in the month of February 2014.Turbidity in water may be due to suspended particles, which imparts Turbidity to water. (Sawyer *et.al.*, 2000).



CONCLUSION

Water samples collected from Chavdar Talao was found within the permissible limit given by BIS and WHO for different parameters. Total Hardness in water body was observed above desirable limit given by BIS but it is within permissible limits given by BIS and WHO. Waterbody has good water quality which is maintained by Municipal Corporation of Mahad. Human interference in lake water is avoided which helps in prevention of water pollution as well as regular check up of water quality, cleanliness around talao as well as chlorination of water body helps to maintain water quality.

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