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ANALYSIS OF WATER QUALITY USING PHYSICO-CHEMICAL PARAMETERS OF BELAPUR RESERVOIR IN AKOLE TEHSIL, MAHARASHTRA.



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ABSTRACT:

This Paper Present to study of the Physico-chemical Parameters of Belapur Reservoir in Akole Tehsil, Maharashtra . situated at 74.04 longitude and 19.17 latitude. They Changes In Physical and Chemical Parameters Such as pH, Electrical Conductivity, Calcium, Magnesium, Total Hardness, Carbonate, Bicarbonate, Chloride, Total Dissolved Solid, Sodium, sodium absorption ratio. Were analyzed for a periods of post monsoon and pre-monsoon. Also all parameters were compared with WHO standards of

water quality. The results indicate that the Reservoir is Non-polluted and can be used for Domestic, Irrigation and Agriculture .

KEYWORDS

Perennial Reservoir, Physic -Chemical Parameters, monsoon variation.

INTRODUCTION

Water is one of the most important compound to the ecosystem. Better quality of water described by its Physical, Chemical and Biological characteristics. Due to increased human population, use of fertilizers in agriculture and Man-made activity. The natural aquatic resources are causing Heavy and varied pollution in aquatic environment leading to water quality . It is therefore necessary that the quality of drinking water should be checked at regular time interval because due to use of contaminated drinking water, human population suffers from a variety of water borne diseases. It is difficult to understand The biological phenomena fully because the chemistry of water reveals much about the metabolism of the ecosystem and explain the general hydro biological relationship. The physico-chemical parameters of water and the dependence of all life process of these factors make it desirable to take as an environ In present study involves the analysis of water quality in terms of Physico-chemical parameter of Belapur Reservoir in Akole Tehsil, Maharashtra. It is located in 74.10 longitude and 19.48 latitude. The area of Reservoir water is basically used for Domestic, Agriculture Purpose and Fisheries activity.

METHODS AND MATERIALS

The water samples were collected in polythene bottles .which were cleaned with acid water, followed by rinsing twice with distilled water. The water samples are chemically analyzed [5].

Then above sources of water are safe .they do not effect of human body. The pH and EC was measured by using digital PH meter and EC meter [6]. Total hardness, calcium, magnesium were measured by EDTA titration methods[7]. Total alkalinity was determined by volumetrically by silver nitrate titrimetric methods using potassium chromate as indicator [8]. Sulphate was determined nephthalometrically using ELICO-52 Nephthalometer [9]. The Physico -chemical analysis was carried out according to standards methods. [10,11, 12] Turbidity and TDS were observed with the help of digital water kit [13]. Nitrate was determined by Phenol Disulfonic method [14].

Figure 1 - Location of Maharashtra in India

Figure 2- Location of Ahmednagar in maharashtra

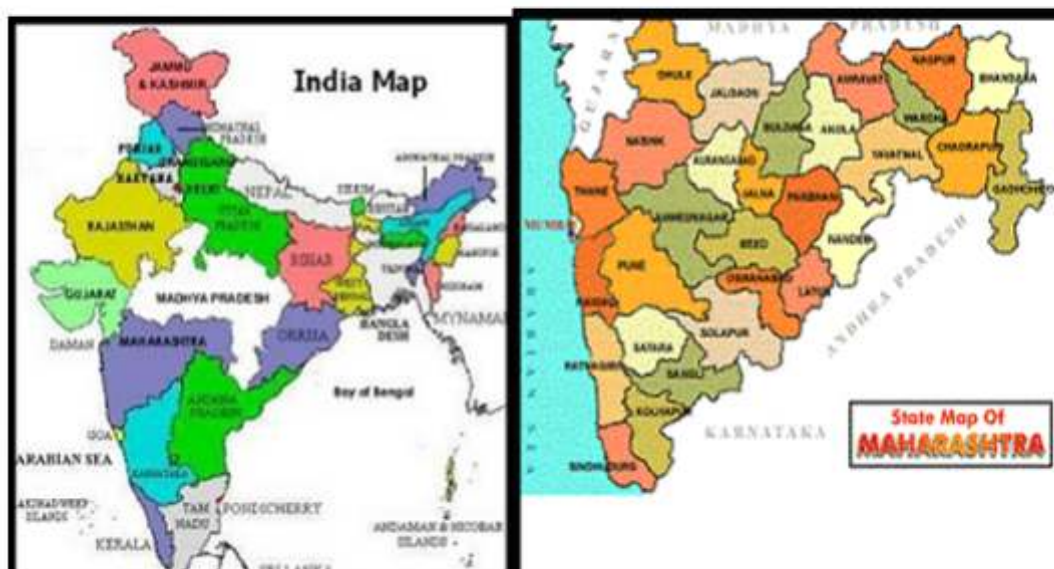


Figure 3-Location of akole in Reservoir in Figure 4- Image of Belapur

Reservoir in Akole Tehsil



RESULTS AND DISCUSSION

ANALYSIS OF WATER USING PHYSICO-CHEMICAL PARAMETERS

post monsoon

Table No. 1

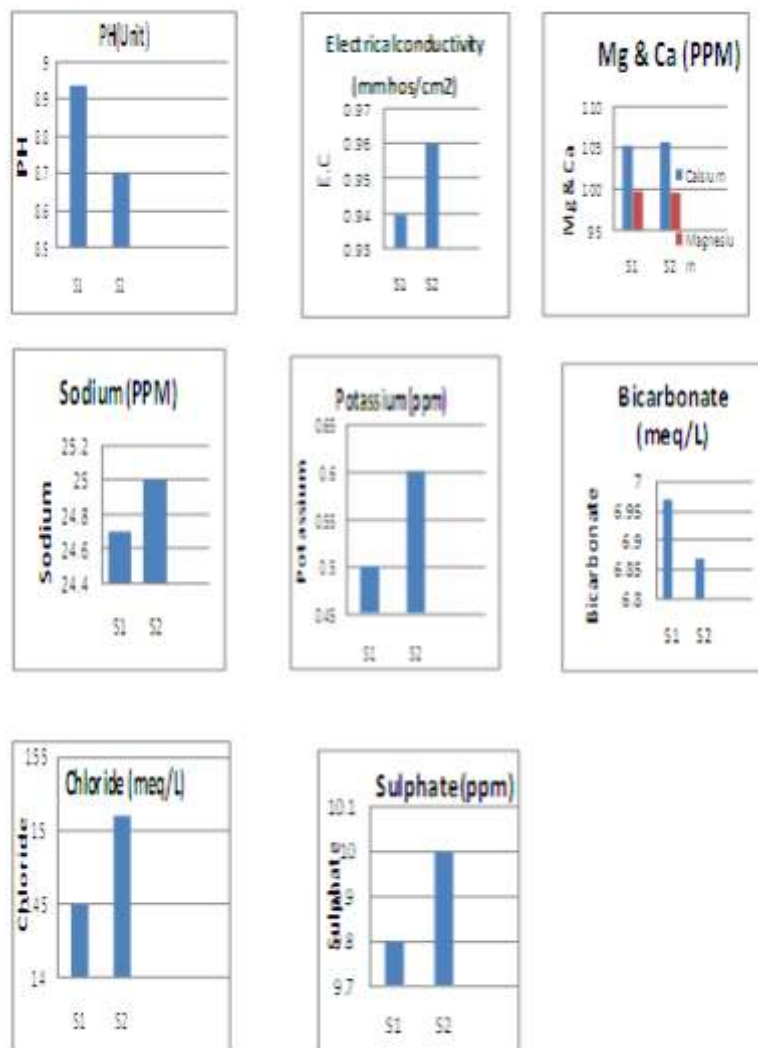
Parameters	Test Values/Unit
PH	8.94 unit
E.C	0.94 mmhos/cm ²
Calcium	105.4 ppm
Magnesium	99.8 ppm
Sodium	24.7 ppm
Potassium	0.5 meq/L
Bi-carbonate	6.87 meq/L
Chloride	1.45 meq/L
Sulphate	9.8 ppm
S.A.R	4.12 ---

pre monsoon

Table No. 2

Parameters	Test Values/Unit
PH	8.70 unit
E.C	0.96 mmhos/cm ²
Calcium	105.8 ppm
Magnesium	99.6 ppm
Sodium	25.0 ppm
Potassium	0.6 meq/L
Bi-carbonate	6.97 meq/L
Chloride	1.51 meq/L
Sulphate	10 ppm
S.A.R	4.35 ---

GRAPHICAL REPRESENTATION OF ANALYSIS OF WATER USING PHYSICO-CHEMICAL PARAMETERS



pH - Definition of pH = $-\log(H^+)$. As $pH > 7$ the water becomes alkaline. The pH is alkaline due to presence of any alkaline earth metal such as Sodium Potassium etc. along with carbonates and bicarbonates with sodium resulting in the increase of alkalinity. So pH increases above 7. The pH of post monsoon is 8.94 and pH of pre monsoon is 8.70. The pH is alkaline in pre-monsoon due to run off water carries mineral form soil during monsoon. . These values are within the permissible limit as per prescribed by WHO.

Electrical Conductivity – The source of E.C. is in abundance of dissolved salts due to poor irrigation, minerals from rain water, run off, other discharger. It is the property of substance. The higher the conc. of salt, the greater is the conductivity. Most of salts are water soluble and capable of conductivity current. E.C. is a measure of water capacity to convey electric current. In pre - monsoon E.C. was 0.96 mmhos/cm² and in post monsoon E.C. was 0.94 mmhos/cm². E.C. increases with increase in TDS. In present investigation E.C. was maximum in pre - monsoon season. These values are within the permissible limit as per prescribed by WHO.

Calcium and magnesium - Calcium and magnesium are both essential to human health. Calcium and magnesium are very common elements. Calcium is the fifth most abundant natural element and magnesium the eighth. Both elements are present in all natural waters. The most common source of

calcium and magnesium in groundwater is through the erosion of rocks, such as limestone and dolomite, and minerals, such as calcite and magnesium. Magnesium in drinking water may have a laxative effect, particularly with magnesium sulphate concentrations above 700 mg/L. However, the human body tends to adapt to this laxative effect with time. The maximum Calcium value 105.8 ppm (pre- monsoon) are record and minimum 105.4 ppm (post- monsoon)are record and The maximum Magnesium value 99.6 ppm (post monsoon) are record and minimum 99.4 ppm (pre- monsoon) are record.

Sodium - In present investigation, the values of sodium present in surface water become 24.7 ppm and 25.0 ppm These values are within the permissible limit as per prescribed by WHO. Sodium is gradually released from rocks to water when there is run off. Sodium belongs to a group of chemicals called "alkali earth metals". Sodium helps us maintain blood pressure, control fluid levels, as well as keep normal nerve and muscle function..

Potassium - Potassium is an essential nutrient for humans. The most common source of potassium in drinking water are water treatment systems, such as ion exchangers (water softeners) that use potassium chloride. In present investigation, the values of sodium present in water become 0.5 meq/L (post monsoon) and 0.6 meq/L (post monsoon) was determine. These values are within the permissible limit as per prescribed by WHO. Potassium is a dietary fluid for human. Potassium plays a critical role in many vital cell functions, such as metabolism, growth, repair and volume regulation. Higher concentration of potassium may cause kidney disease,

Bicarbonates –Bicarbonate is present in all body fluids and organs. It plays a major role in the acid-base balances in the human body. The bicarbonates in pre-monsoon season were 6.97 meq/L and in post monsoon season were 6.87 meq / L. These values are within the permissible limit as per prescribed by WHO

Chloride – Chloride is highest in organic wastes and domestic sewages. In present investigation the chloride values were 1.45 meq/L during post monsoon and 1.51meq/L in pre-monsoon These values are within the permissible limit as per prescribed by WHO(200Mg/L). Then above sources of water are safe .they do not effect of human body.

S.A.R. - In present investigation the SAR values were in post monsoon 4.12 meq/L and in pre monsoon 4.135 meq/L. Slightly increased in pre-monsoon season to 4.35 meq/L. These values are within the permissible limit as per prescribed by WHO.

CONCLUSION –

It is found that the water of Belapur Reservoir in Akole Tehsil, are permissible limits prescribed by WHO. It is pure; it can be used for drinking purpose, domestic use and agriculture purpose. This water no any effect on human body.

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