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ASSESSMENT OF WATER QUALITY OF MAJALGAON DAM, MAJALGAON, DIST. BEED-431144 (M.S.) INDIA

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Abstract: -

The present investigation was carried out to study the assessment water quality from Majalgaon dam during period of January to December 2017.The purpose ofassessment water qualityis to transform the complex water quality data into information that is easilyunderstandable and useable by the general public. All parameters were analyzed as per standard methodologies (APHA 1995) (kodarkar,M.S.1992) Water quality parameters such asatmospheric temperature, water temperature, pH, Total dissolved solids (TDS), biological oxygen demand (BOD), chemical oxygen demand (COD), Free co^2, Total Alkalinity, Sulphate (SO4), Phosphate (PO4).were analyzed.

Variations in atmospheric temperature ranged from 25 to 38.7° C and Water temperature ranged from 23 to 31.4°C. p^{H}values varied from 6.6 to 8.5 are suitable for aquatic organisms. Total dissolved solid ranged from 185 to 266 mg/l maximum of 266 mg/l was recorded in the month of august and minimum185 mg/l in the month of April, Biochemical oxygen demand values ranged from 2.9 to 5.43 mg/l. Minimum biochemical oxygen demand 2.9mg/l was recorded in April and maximum 5.43mg/l was recorded in October. Chemical oxygen demand values ranged from 5.10 to 7.51mg/l. Minimum 5.10mg/l. was recorded in January. Free co2 ranged from 5.2 to11.7 mg/l,Total alkalinity values ranged from 100mEq/l to 251mEq/l . Sulphate content ranged from 3 to 9 mg/l. Phosphate concentration ranged from 0.1 to0.7 mg/l during January to December 2017 Water samples were collected from selected three sites (S1, S2 and S3).

Key words: *water quality, Sindhaphana River, Majalgaon dam, physico-chemical parameters.*

Introduction

Majalgaon dam is constructed on the Sindhaphana river at Majalgaon Dist.Beed M.S. (india) located between latitude 19015 N and 76018 E .the assessment of water quality it is prime consideration to assess the quality of water for drinking, irrigation, fisheries and industrial purpose. Water is the prime requirement for the existence of life and thus it has been man's endeavor to utilize the available resources(*Mahesh Kumar.Akkaraboyina , Prof B.S.N.Raju July 2012)*. Water is universal solvent that dissolve many substancesincluding organic and inorganic compounds.Unregulated Growth of industries particularly over two decades without providing any services of transportation ,collection ,treatment ,and disposal of waste, that increase to pollution. Each and every component of ecosystem related to health of reservoirs and biological diversity (Ramesh etal,. 2007).Sample collecting points are established in and around MajalgaonDamregion. The samples are collected from following point's .a. S1.b. S2c. S3.

The objectives of present study are;

(1) To investigate the quality of water of sindhaphana river at Mjalgaon Dist Beed. MH Inida

(2) To compare the future water quality of the River at MajalgaonDam.

(3) To evaluate the variations of water quality at all collecting points.

(4) Checking quality of water and its pollution extent on basis of following parametersa. Temperatureb. TDS c. BODd. COD e. pH **f.** Total alkalinity g.Free co2 h.Sulphate. i. Phosphate.

Materials And Method

The water samples for physico chemical analysis were collected from three sampling stations (S1,S2, and S3) established in Majalgaon dam early in the morning between 8 am to 11am. WaterSamples were collected from selected stations during first week of every month from January2017 to December 2017. The samples were collected in wide mouthed screw capped, airtightand opaque polythene containers. Each samples was comprised of five liters collected from 15cm below surface water. Air and water temperature recorded by standard centigrade thermometer, pH recorded by standard pH meter on field and rest of the parameters were analyzed immediately on returned to the laboratory by titrimetric method. The analysis of physico-chemical characteristics is carried out by the standard methodologies for water analysis (APHA 1995) *(Kodarkar, M. S. (1992), Trivedy R. K and Goel P.K. (1984)*. All data were statistically analyzed (standard deviation). Method used for the determination of DO, COD and BOD were Winkler's, Five day BOD and Reflux method for the COD as per the American Public Health Association manual (*R.K.Narkhede et al* Nov.08-Jan.09). The values of the parameters obtained were used for the calculation of the WQI values. The analysis of the water quality data for estimation of quality parameters and WQI values was made based on season wise. All data were statistically analyzed.

Result And Discussion

The results obtained from analysis of water samples are shown in table –I.The atmospheric temperature ranged from 25°C to 38.7° C. minimum 25°C temperature was in the month of November and maximum in the month of May. Water temperature ranged from 23°C to 31.4° C. Seasonal analysis showed that it was highest (31.4°C) in summer and relatively lowers in winter (23°C).Change in water temperature wasdirectly proportional to the change in the atmospheric temperature.The pHvalue ranged from 6.6to 8.5. The maximum pHvalue 8.5 was recorded in Month of May and minimum innovember. Similar observation was also observed inHusain Sagar Lake of Hyderabad *(Prapurna N. and K. Shashikant (2002), Total dissolved solids ranged from 185 to 266mg/l. maximum value were recorded August and minimum value were recorded in April. Seasonal variation shows that low total dissolved solids recorded in winter season while maximum value in monsoon. Biochemical oxygen demand is an indicator parameter to know the presence of biodegradable matter in the waste and express degree of contamination. Biochemical oxygen demand values varies from 2.9 to 5.43 mg/l. Minimum biochemical oxygen demand 2.9mg/l was recorded in April and maximum 5.43mg/l was recorded in October. Chemical oxygen demand values ranged from 5.10 to 7.52mg/l. Minimum 5.10mg/l. COD was recorded in January while maximum 7.52 COD was recorded in moth of June. Higher values in monsoon may be due to inflow of dead organic dead matter. Minimum COD in winter is due to settlement and dilution effect. Similar results were observed by (Puri et al,.2010).* Free carbon dioxide content in Majalgaon dam varied from 5.2mg/l to 11.7mg/l minimum 5.2mg/l value was recorded in the month of October and maximum 11.7mg/l in the month of May.

Total alkalinity values provide guidance inapplying proper doses of chemicals in water andwastewater treatment process. Total alkalinity values rangedfrom 100 to 251 mEq/l. Sulphate content ranged from 3 to 9 mg/l. Minimum value was recorded in the month of May and maximum value in the month of November. Phosphate concentration ranged from 0.1 to0.7 mg/l during January to December 2017 Water samples were collected from selected both sites (A and B). The water quality of River Kundalika at Kundalika Dam varied from Fair to good.

Table I- Monthly variation in Physico- chemical parameters of water samples from Majalgaondam (Jan 2017 - Dec. 2017)

Monthly Value Of Atmospheric Temp (^{0}c) Of Majalgaon Dam

Month	Jan 2017-Dec 2017	
	Station 'A'	Station 'B'
January	28.5	28.8
February	30	30.8
March	33.4	33.9
April	36	35.5
May	38.3	38.7
June	32	32.5
July	29.2	29.6
August	27.4	27.8
September	28	28.5
October	26.8	27
November	25	25.5
December	25.5	26

Monthly Value Of Water Temp (^{0}c) Of Majalgaon Dam

Month	Jan 2017-Dec 20167	
	Station 'A'	Station 'B'
January	25.4	25.6
February	25.1	25.4
March	27.5	27.6
April	28.5	28.7
May	31.1	31.4
June	27	27.4
July	27.8	27
August	27	27.1
September	26	26.4
October	27	26.9
November	23	23.5
December	24.4	24

Monthly Value Of Ph Of Majalgaon Dam

Month	Jan 2017-Dec 2017	
	Station 'A'	Station 'B'
January	8	8.1
February	7.9	8
March	8.2	8.1
April	8.3	8.4
May	8.4	8.5
June	7.6	7.9
July	7.7	7.5
August	7	7.1
September	7.2	7.3
October	6.9	7
November	6.6	6.8
December	7.6	7.9

Monthly Value Of Free Co_2 (Mg/L) Of Majalgaon Dam

Month	Jan 2017-Dec 2017	
	Station 'A'	Station 'B'
January	8	8
February	8.7	8.7
March	9	9
April	10.6	10.6
May	11.7	11.7
June	7	7
July	6.8	6.8
August	7.2	7.2
September	7.5	7.5
October	5.2	5.2
November	6.3	6.3
December	7.9	7.9

Monthly Value Of Biological Oxygen Demand (Bod) (Mg/L) Of Majalgaon Dam

Month	Jan 2017-Dec 2017	
	Station 'A'	Station 'B'
January	3.25	3.30
February	3.52	3.57
March	3.2	3.10
April	2.9	3
May	3.10	3.55
June	4.10	4
July	4.11	4.35
August	4.72	4.63
September	4.75	4.92
October	5	5.43
November	5.10	5.24
December	4.15	4.20

Monthly Value Of Chemical Oxygen Demand (Cod) (Mg/L) Of Majalgaon Dam

Month	Jan 2017-Dec 2017	
	Station 'A'	Station 'B'
January	5.10	5.17
February	5.32	5.34
March	5.68	5.74
April	6.92	7.17
May	7.10	7.38
June	7.42	7.51
July	7.10	6.90
August	6.62	6.71
September	6.20	6.44
October	6.57	6.48
November	5.90	5.92
December	5.19	5.25

Monthly Value Of Alkalinity (Meq/L) Of Majalgaon Dam

Month	Jan 2017-Dec 2017	
	Station 'A'	Station 'B'
January	210	208
February	230	233
March	247	251
April	228	236
May	221	219
June	168	162
July	136	128
August	127	129
September	100	105
October	119	125
November	155	162
December	190	187

Monthly Value Of Sulphate (So_4) (Mg/L) Of Majalgaon Dam

Month	Jan 2017-Dec 2017	
	Station 'A'	Station 'B'
January	7	7.2
February	5	5.1
March	4.5	4.6
April	3.5	3.4
May	3	3
June	3.9	3.5
July	4.9	5
August	6.6	6.9
September	7	7.5
October	8.2	8.5
November	9	9
December	6.5	6.9

Monthly Value Of Phosphate (Po_4) (Mg/L) Of Majalgaon Dam

Month	Jan 2017-Dec 2017	
	Station 'A'	Station 'B'
January	0.5	0.5
February	0.5	0.5
March	0.2	0.2
April	0.1	0.1
May	0.2	0.2
June	0.2	0.2
July	0.3	0.3
August	0.2	0.2
September	0.4	0.4
October	0.6	0.6
November	0.7	0.7
December	0.4	0.4

References

1. **A.P.H.A (1995):** Standard methods for the examination of the water and wastewater. 19th. edition Newyork U.S.A.
2. **Kodarkar MS. (1992).** Methodology for water analysis, physico-chemical, biological and microbiological.Hyderabad, IndianAssociation of Aquatic Biologists (I.A.A.B.)Publ
3. **Ramesh, M., Saravanan, M., Pradeepa, G. (2007).** Studies on the physicochemical characteristics of the singanallur lake, Coimbatore, SouthIndia.Inproceedings of national seminar on limnology.Maharana pratap Uty.Agric. Tech., Udaipur, India..
4. **Trivedi, R.K. and Goel, P.K.(1984).** Chemical and biological methods for water pollution studies. Karad Environmental publication, pp1-251.4.
5. **Puri P.J., Yenkiem M.K.N. , Battalwar D.G., Gandhare N.V. and Dhanorkar D.B. (2010):** Study and interpretation of physic–chemical characteristics of lake water quality in Nagpur city (India).RASAYAN Journal chemistry, vol. 3(4):800-810.
6. **R K Narkhede Dr.J.M.Patwari Dr. V.S. Nagpurne,Mr. S.M. Dapkekar ,2009** Assesment of Godavari river water qualityin relation to biochemical oxygen demand at nanded Maharashtra.
7. **Mahesh kumar Akkaraboina and Prof B.S.N. Raju 2012.** Acomparative study of water.quality indices of Godavari riverat Rajahmundry.
8. **8.Prapurna N. and K. Shashikant (2002),** the limnological study of godavari river near nashik.

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