

TO STUDY THE EFFECT OF DISSOLVED OXYGEN ON PHYSICOCHEMICAL PARAMETERS AND TO STUDY THE CORRELATION BETWEEN DISSOLVED OXYGEN AND TOTAL DISSOLVED SOLIDS

Pravin T. Bhoknal,

Student, department of civil engineering, met bkc ioe nashik india

Vivek S. Wagh,

Assistant prof. department of civil engineering, met bkc ioe nashik india

Rakesh M. Birari,

Student, department of civil engineering, met bkc ioe nashik, india

Yogeshwari S. pawar,

Student, department of civil engineering, met bkc ioe, nashik india

Jyoti V. Sanap,

Student, department of civil engineering, met bkc ioe, nashik india.

ABSTRACT: Godavari River is the second largest river in India. In the present work some physicochemical parameter was studied for the analysis of Godavari River. The attempt has been made by selecting the six sampling locations along the stretch of 18Km long of Godavari River in Nashik City. Through the analysis and study it has been found that for the restricted study area, the positive correlation exists between dissolved oxygen and Total Dissolved Solids ($R^2=0.3828$)

This results will be applicable for monitoring and maintaining the quality of river water as well as for forecasting the status of Pollution due to various causes. The above relationship will be helpful for the real time prediction of dissolved oxygen and total dissolved solids. This results will be widely applicable for textile and sugar industries.

KEYWORDS: correlation, Dissolved Solids ,Godavari River, Total solids, Total Dissolved Solids, Total suspended solids, Turbidity

1. INTRODUCTION:

Water is vital to the existence of all living organisms but now a days demand of high quality of water is increases. Unregulated growth of urban areas, particularly over two decades, without providing infrastructure services for proper collection, transportation, treatment and disposal of domestic waste led to increased pollution and health hazards. The municipal and local authorities are unable to control the pollution of Godavari river due to various points of discharge along the river which has an alarming situations and needs to be focused for the necessary actions. In India all 15 major rivers have become polluted. *Ganga*, *Godavari*, *Gomati*, *Knavery*, *Narmada* and *Mahi* all are facing pollution problems. The Ganga from *Haridwar* to *Kolkata* is infect an unending sever fit only to carry urban liquid waste, half burnt dead bodies, pesticides and other waste. The chief sources of water pollution are sewage and other waste, Industrial effluents, Agricultural discharges and Industrial waste from chemical industries, fossil fuel plants

2. OBJECTIVES:

1. To find out correlation between dissolve oxygen and total dissolve solids of water sample taken from Godavari river.
2. To perform the physico-chemical analysis on the collected samples for various parameters.
3. To check the dissolve oxygen concentration with total dissolve solids concentration, to predict total solids concentration within short period in Godavari River at Nasik.

3. MATERIAL AND METHODS:

For the completion of this project within stipulated time following methodology has been adopted during the project standard procedures and precaution have been Implemented as per, IS 3205(part 15) – reaffirmed 2003 for determination of TS, IS 3025(Part 10) 2002 for determination of turbidity, IS 3025 (Part 21) for determination of hardness.

Table 3.1: Temperature of water and dissolve oxygen relationship

Sr. No.	Dissolved oxygen (Mg/L)	Temperature of water (°c)
1.	14.6	0°C
2.	11.3	10°C
3.	9.1	20°C
4.	7.6	30°C

4. METHODOLOGY:

1. Fixed the sampling location along the main stream of river by considering different location as per development like agriculture, industrial, commercial, residential and public area and their sanitary outlet points.
2. Coded the sampling points as A1, A2, A3, A4, A5, and A6 along main stream starting from Balaji Mandir to Pushapk Nagar.
3. planned the sampling date and considering sampling locations.

4. Tagged the sampled at location with GPS for accuracy and uniformity in sampling seasonal variation.
5. Lab tested for collected samples as per standard procedure and by following standard precaution for pH, Turbidity, stream flow, Total solid, Total dissolved solid, Total suspended solid, Dissolved oxygen and temperature .as per planned dates and schedule.
6. Interpretation of physical observation and graph along with correlation.



Fig: 4.1 Map Of Locations

Above map shows the various sampling location within the study area for analysis of Godavari river in Nashik city. Main stream sample along the river design by letter A1, A2, A3.... A6. In the study area sample collection carried out following region respectively

Table 4.1 GPS Coordinate of sampling locations

Sampl e	Location	Latitud e	Longitud e
A1	BALAJI MANDIR	20° 01' 45.89" N	73° 43' 25.17" E
A2	SOMESHWAR	20° 1' 23.04" N	73° 43' 42.59" E
A3	BAPU PULL	20° 1' 16.73" N	73° 45' 16.64" E
A4	RAMWADI	20° 00' 32.24" N	73° 46' 56.26" E

A5	TAPOWAN	19° 59' 59.72" N	73° 48' 46.64" E
A6	PUSHAPK NAGAR	19° 59' 24.02" N	73° 49' 20.2" E

5. RESULTS

During the sampling and testing following results were obtained.

Table 5.1 Test Results of sampling

SAMPLE NO.	Sampl e.	pH	TURBIDITY (NTU)	DO (Mg/lit)	T.S. (Mg/lit)	T.D.S. (Mg/lit)	
A1	A1	8.0	0.1	6.2	300	120	136
A2	A2	7.7	8.1	6.8	290	120	164
A3	A3	7.83	2.2	6.5	310	80	208
A4	A4	7.90	8.9	6.9	140	40	284
A5	A5	8.1	35.4	6.7	220	80	292
A6	A6	8.41	17.2	6.4	250	120	308

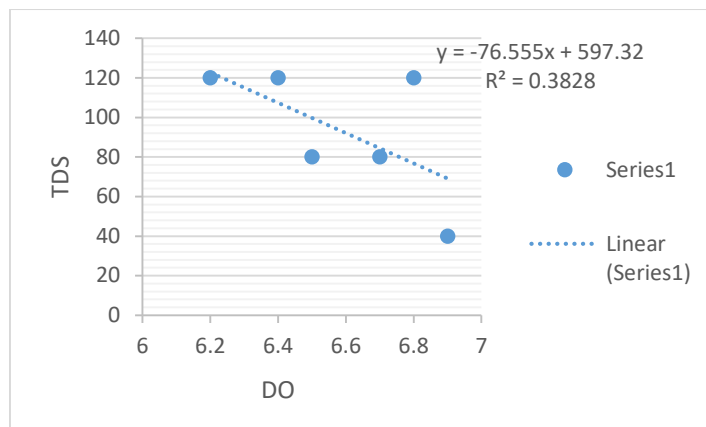


Fig. 5.1 Correlation Between Dissolve oxygen and total dissolve solids

6. RESULT ANALYSIS:

From the test results in table no.5.1 it has been found that Do over on increasing TDS level ($R^2=0.3828$) the above results are applicable in predicting probable Do within permissible limit laid down by BIS, and also this results will be applicable for industrial application where the accuracy in determination of Do is not expected. Although the established correlation will be applicable only for the sample stream and need to be enhanced further for more detailed prediction of TDS or many factors will be affect's to results like pH, Temperature, addition of stream and eutrophication. Also the sampling knowing the Do result will be able to predict possible TDS which is an indication of enrichment of water bodies with nutrient which further leads to eutrophication. So if we know the Do we will able to predict possible TDS and possible occurrence of eutrophication effects.

7. CONCLUSION:

From this study the strong relation was established between Dissolve oxygen (Do) and Total dissolved solids (TDS) which can be enhanced with maximum number of sampling and can be studied over seasonal variation.

8. ACKNOELEDGEMENT:

We would like to express our sincerely knowledge, Thanks to the principle MET BKC IOE, Dr. V.P. Wani sir, Prof. K.S. Chobe sir HOD Civil, Prof. V.S. Wagh sir for their valuable guidance and co-ordination.

9. REFERENCES:

1. P.G.Mugai, P.M. Shiundu S, F.B.Mwaura, G.N.Kamau, "Correlation between dissolved oxygen and total dissolved solids. And there role in Eutrophication of Nairobi Dam, Kenya, . "International journal of Bio-physicochemical, vol. 18, 'March 2010.
2. Dr.L.G. Patil, "Assessment of water quality of Godavari river at Nashik, Maharashtra, India, International journal of civil engineering and technology (IJCET), vol.- 7, issue 1 Jan-Feb 2016.
3. Vivek S. Wagh, "Effect of Seasonal Variation on correlation between total suspended solids and turbidity in Godavari river at Nashik", International journal of latest trends in engineering and technology (IJLTET), vol.-7, issue 3 Jun 2016.
4. Prakash kadave, "Water Quality Assessment of the River Godavari, At Ramkund," International Journal of Engineering and Science, [SSN:2278-4721, vol2, Issue2, pp.64-68, January 2013.
5. BawaKalpana V, "Water Quality Assessment of the Godavari River at Nashik, India: Impact of Sewage and Industrial Waste Water", Universal journal of Environmental Research and Technology, ISSN-2249 – 0256, vol-3, Issue4, pp.452-457.2013.
6. Sharma P.D., Ecology and Environment, Rastogi Publication, Meerut, 2014, 12th revised edition, pp.330-343.
7. Christopher A. Ellison, "Correlating stream flow. turbidity, and suspended-sediment concentration in

Minnesota's wild rice river", 2nd joint federal Interagency Conference, Las Vegas, N V, pp 1-10 June 27-july 1, 2010.

8. C.P. Holiday," Establishing the relation between turbidity and total suspended sediment concentration". Georgia Water Resources Conference, Institute of Ecology, The university of Georgia, Athens. Georgia. pp 1-3. April 23-24,2003.
9. Ajay D. Chavan, "Water quality Assessment of the Godavari River", Hydro Nepal, ISSUE NO.5, pp.31-34. JULY,2009
10. K.N. Irvine, "Turbidity, suspended solids, and bacteria in the buffalo river watershed", Middle States Geographer,2002,35: pp.42-51,2002.
11. Central Pollution Control Board, Delhi, India Report on Sewage generation and available treatment capacity: Need for Compliance File No. A-19014/43/06-MON dated 21.04.2015 URL. www.cpcb.nic.in
12. Gholami Siamak, S. Srikantaswamy, Multivariate analysis in the assessments of river water quality in vicinity of KRS dam, Karnataka, India, Springer, natural resources research,2009, September Vol.18, no.3, pp.235-247
13. De A.K., Environmental Chemistry ,2003,5th edi.pp.190,215, new Delhi: New Age International publisher

