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Water Quality Assessment of physicochemical parameters of Godavari river at Nanded District with respect to pollution.

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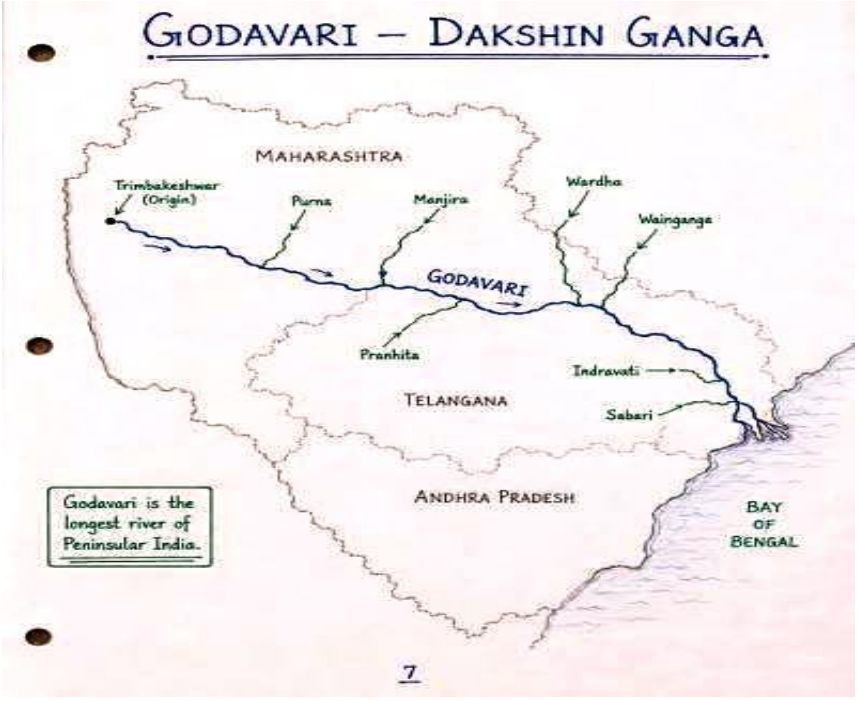
Abstract
The present study was carried out to assess the water Quality of Godavari river at Nanded District during September 2025 to August 2026. Three Stations were selected. Degloor Naka (MIDC Area), Govardhan Ghat and Wajegaon. Water Samples were analyzed for PH, Temperature, Total Dissolved Solids (TDS), Turbidity, Total Hardness, Total Alkalinity, Chloride, Electrical Conductivity (EC), Dissolved oxygen (DO), Biological oxygen Demand (BOD) etc. Hence present work was undertaken to assess pollution load.
Keywords: *Godavri River, Nanded, Physico-chemical parameters, BOD, DO, Pollution.*

Introduction

The Godavari River is India's Second longest River after the Ganges River, and drains the third largest basin in India. Covering about 10% of the total geographical area. Its source is in Trimbakeshwar Nashik Maharashtra. It flows east for 1,465 Kilometers (910 mi) draining the states of Maharashtra (48.6%), Telangana (18.8%), Andhra Pradesh (4.5%), Chattisgarh (10.9%) and Odisha (5.7%) the river ultimately empties into the Bay of Bengal Through an extensive network of distributaries. The Godavari is the largest in peninsular. India had been dubbed as the Dakshina Ganga (Southern Gangas).

Its then exists into the neighbouring district of Nanded where 10 km (6.2 mi) before reaching the town Nanded.

It is impounded by the Vishnupuri Dam and thus with it bringing Asia's largest lift irrigation project to life. A little down stream from Nanded the river receives Asna a small stream on its left bank.



Water is a source of life water quality is an important factor for preservation of human life as well as aquatic ecosystem. Water Pollution is caused by human activities like domestic waste recreational as well as environmental activities. In this assessment the physico-chemical

parameters like PH, Temperature, TDS, EC, Chloride, Turbidity, Total Hardness, Total Alkalinity, Do, BOD etc. are the important indicators of water pollution. Do and BOD are critical for fish survival very little work is done on nutritional aspect with pollution in Nanded stretch. Hence present work was undertaken to assess pollution load.

Review of literature

Godavari is one of the major rivers of Maharashtra so many workers have studied water quality of rivers in India. Water quality assessment is an important aspect of environmental monitoring because the quality of river water is directly influenced by domestic sewage, industrial effluents, agricultural activities, urbanization and other anthropogenic activities.

1) Ashali Chandrakant Kharake[1] et.al (2021). Godavari River in Nashik City also used a water quality Index (WQI) to summarize the status of several Water Quality parameters. The study found deterioration in Water quality as the river passed through urban areas and associated this pattern with domestic, industrial and religious activities, parameters including PH, BOD, DO, turbidity, TDS, and faecal coliform were useful for evaluating the pollution status.

2) Abhijit Kandlikar (2022) assessed the physic-chemical parameters of water near sudha Dam, Bhokar, Nanded. The study highlighted the importance of regular monitoring of water quality and proper management of surface water resources in Nanded region.

3) Jeet K. Ganeshkar et.al (2024) studied the physicochemical characteristics of the Godavari River around Nashik city. Water samples were collected from January 21 to February 7. The study provided information on the relationship between the physicochemical characteristics of river water around Nashik City.

4) Manjush Bhor et.al (2013) assessed the water quality of the Godavari river at Ramkund Nashik, Maharashtra. The study focused on various physic-chemical parameters.

Study Area

The study area is Bank of Godavari River in Nanded District Maharashtra. Nanded District in between 18^{O} 15' N to 19^{O} 55' N latitude and 77^{O} 7' E to 78^{O} 15' E longitude covering an area, of about 10,502 km^2. There sampling stations were selected on the basis of pollution load.

Station I (S1) is degloor Naka (MIDC Area)

The Station I (S1) is degloor Naka (MIDC Area) located near Nanded south industrial belt. It receives untreated effluents from small scale industries, garages, oil mills and surface runoff from Degloor Naka Area. Water is blackish and oily appearance this station was selected to asses industrial pollution.

Station II Govardhan Ghat, Nanded.(S2)

This is main point of municipal sewage discharge point of Nanded city. Nanded waghala municipal corporation (NWCMC) drainage, domestic sewage, open defecation waste, clothes washing, religious waste including cremation residues ash directly enters here at this ghat. This Station was selected to assess domestic and religious pollution.

Station III Wajegaon (S3)

This station is about 5.3 km downstream of Nanded city. It is surrounded by agricultural fields od wajegaon village Agricultural runoff containing fertilizers pesticides and village sewage is the main source of pollution. This station was selected to assess agricultural runoff and recovery capacity of river.

Material and Methods

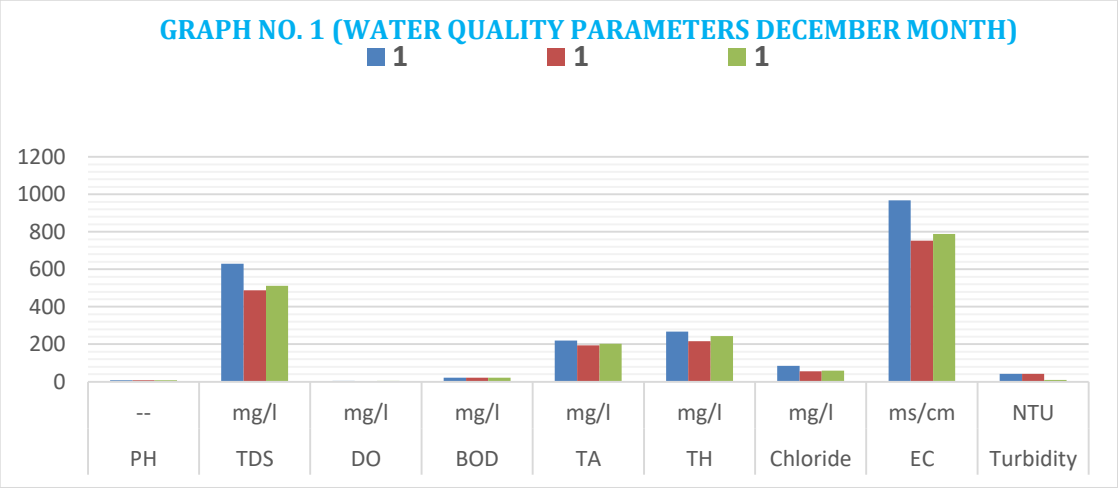
The study was carried out in the vicinity of Nanded city on Godavari River water the Three sites chosen were Degloor Naka (MIDC area)(S1), Govardhan Ghat (S2) and Wajegaon Village (S3) from where the river passes. The study was done for the period September 2025 to August 2026. The samples were collected; on monthly basis from three sites, in sterilized bottles and analyzed in the laboratory for the selected physical and chemical parameters, Temperature (^{o}C), PH, Dissolved oxygen (mg/l) and TDS (mg/l) were analyzed at the respective sites and the other physic-chemical parameters such as Turbidity (NTU), Electrical conductivity (ms/l), Total Alkalinity (mg/l), total Hardness (mg/l), BOD (mg/l) were analyzed in the laboratory by following the standard method given in APHA (24th edition) Temperature was measured using thermometer and Turbidity was measured by using saccchidisc. Conductivity measured

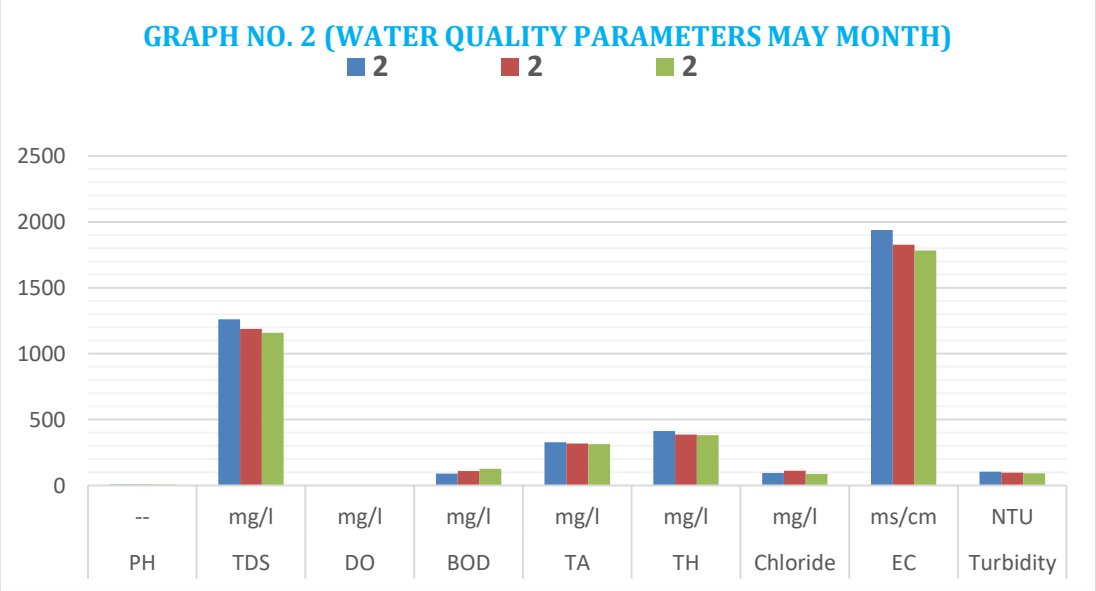
conductivity meter and PH by digital PH meter total Dissolve solids were measured by gravimetric analysis BOD, Do total Alkalinity, Total Hardness and chloride were analyzed by Titration method.

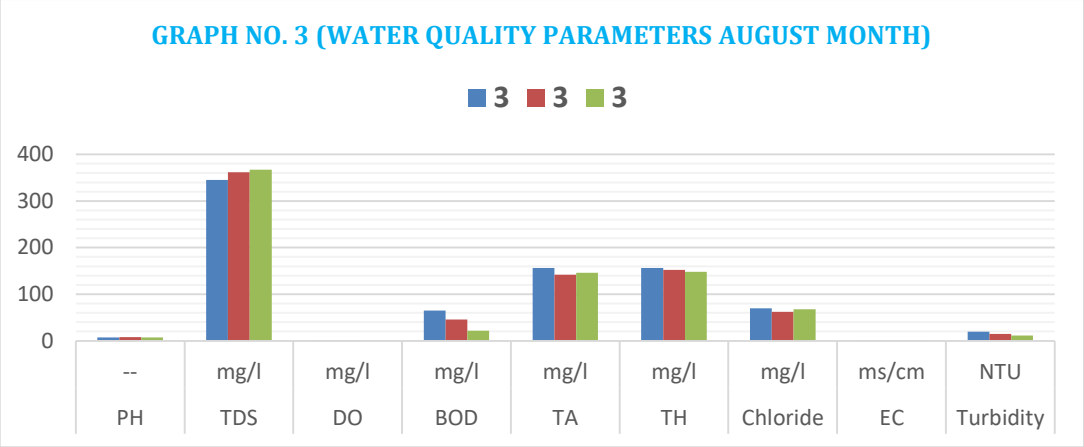
Result and Discussion

Table 1 Water Quality Parameters of Samples

Sr. No.	Parameters Months	Sampling Points	Temp	PH	TDS	DO	BOD	TA	TH	Chloride	EC	Turbidity
1	December		0°C	--	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	ms/cm	NTU
		S1	25°	7.61	629	4.36	22.01	220	268	84	968	41.8
		S2	25°	7.42	487	3.29	21.08	194	216	55	752	42.7
		S3	25°	7.39	511	4.28	20.76	202	244	59	788	9.34
2	May	S1	27.3°	6.53	1260	0.00	90.23	328	412	94	1,938	105
		S2	27.2°	7.89	1188	1.0	110	318	386	112	1,827	97
		S3	27.5°	6.79	1159	0.00	125	314	382	87	1,783	91
3	August	S1	25.4°	7.50	345	0.8	65	156	156	69.46	0.908	19.8
		S2	25.5°	7.85	362	0.7	46	142	152	62.42	0.994	14.5
		S3	25.2°	7.26	367	0.7	22	146	148	67.45	1.025	11.6







Discussion

The study shows that all stations are slightly alkaline S2 highest due to sewage. Dissolved oxygen in S1 station was o mg/l in sample. It means complete depletion of oxygen an Degloor Naka (MIDC area) BOD in may month highest indicating heavy organic load. Turbidity was increases more than limit due to suspended solids. Hardness, Alkalinity and chloride were above limit indicating anthropogenic pollution. This study related (Pravin M. Nalawade et.al) and (manjusha Bhor et. al).

These studies accentuated the fact that, greater losses will be there to aquatic ecosystem, in future than to terrestrial ecosystem due to the loss of biodiversity and its effect (Pravin M. Nalawade et.al).

Conclusion

The present investigation on Godavari River at three different stations of Nanded district revealted that water quality is significantly deteriorating due to domestic various human activities industrial effluents and Agricultural runoff. The study showed clear spatial variation in pollution load.

S1 station Degloor Naka (MIDC area) water quality was affected by industrial effluents, oil and surface runoff which increased TDS, Hardness and chloride content.

S2 station (Govardhan Ghat) was the most polluted stretch. The lowest Dissolved oxygen and highes BOD and Alkalinity were recorded. The deterioration is due to direct discharge of domestic sewage of washing activities and continuous addition of religious waste including cremation reduce (ash), floral offering and other anthropogenic waste from crematorium and Ghat Rituals.

S3 station (Wajegaon) showed that Agricultural runoff containing fertilizers and pesticides from near by fields. Conclusion the water of Godavari river at Nanded district is not suitable for direct drinking, domestic use and even for bathing purpose at Govardhan Ghat.

The river facing domestic, industrial and religious pollution. Hence Raw municipal or industrial waste should not be allowed to be directly discharged to the river without prior effective treatment.

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