

Evaluation of Water Quality of Religious Tanks : A Case Study of Ghodawadi Tank

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ABSTRACT

Wetlands are regarded as direct or indirect life supporting systems for millions of living beings. Human civilizations have started on the bank of major rivers. Based on the need, many lakes and tanks have been made by rulers at different points of time to fulfill cultural heritage. But due to increased population and anthropogenic pressures, the conditions of most of the religious tanks have already deteriorated and will dilapidate further.

In the present study, an attempt has been made to study different parameters of anthropogenic pressure and blind faith of people related with religious tank of Ghodawadi (presently village is called Ghodawadi Sharif) in Bidar district of Karnataka State. Ghodawadi tank is situated at 25 km distance in North West of Humnabad Taluka head quarter and at 22 km in South West of Bhalki in the western part of Bidar district. The tank was built by Nizam to fulfill water demand for various religious activities of pilgrims visiting the 538 years old Dargah of famous Sufi Sant "Ismail Shah Quadri". The Ghodawadi tank is spread in large area of about 200 acres just nearby Dargah. About 5000 pilgrims are visiting everyday and specially on each Thursday more than 20000 pilgrims visit for various religious rituals. Water quality of tank has been affected badly and deteriorated to unimaginable conditions.

Survey for water quality of this tank has been made during January 2007 to December 2007. The sources of main pollutants are bathing of pilgrims and goats, dumping of pooja waste, washing of utensils and clothes, bathing of cattles, washing of vehicles and mainly by remains of sacrificed goats washed and dumped in large quantity. Now dilapidated conditions of water quality are directly affecting the pilgrims visiting this area and village inhabitants.

The physiochemical characteristics of water show the presence of mud, phosphates (PO₄), Nitrates (NO₃), Chlorides and Sulphates etc. The biological analysis shows presence of large number of pathogens and bacterial population. In spite of this, pilgrims are using this water for drinking, preparation of food and for various religious rituals & customs. The blind faith persists among people that

if they don't use this water, god will become angry. Under prevailing circumstances there is urgent need of protection and conservation of this tank by the Govt. and private agencies for protection of pilgrims' health and hygienic conditions. Public awareness is also necessary to protect the general public and villagers from various water borne infectious diseases and hence authors are of firm opinion to have timely study for evaluation of water quality of various religious tanks in the country leading to various social, cultural and health welfare measures.

INTRODUCTION

Water is the basic necessity for survival of life and prosperity of civilization. Human civilizations have started on the banks of major rivers. Based on requirements of all the people concerned, many tanks and lakes have been made by the rulers of different times to fulfill the basic needs and cultural heritage. With the passage of time, as the anthropogenic pressure has been increasing due to population growth, urbanisation, neglect from various governments etc., the quality of water of most of the religious tanks have deteriorated and are going to deteriorate. Most of the religious tanks either have become dry or are found in severe polluted condition. These are continuously affecting the health of pilgrims and producing very large number of infectious bacteria. In this connection, the present study has been undertaken to evaluate water quality of famous religious Ghodawadi tank situated in Bidar District of Karnataka State. The main purpose of study is to highlight the dilapidated condition of water and blind beliefs persisting among people which are effecting the pilgrims' health.

GHODAWADI TANK

This tank is situated in the village Ghodawadi presently known as Ghodawadi Sharif which is located at 22 km distance in South West of Bhalki (Bhalki taluka Headquarter) and at 25 km distance in North West of Humnabad (Humnabad taluka Headquarter) in the western part of Bidar district of Karnataka State. The tank had been built by the Nizam of that time to fulfil water demand of pilgrims for their various religious activities and rituals who have been visiting the 538 years old Dargah of famous Sufi Saint "Ismail Shah Quadri". This Dargah is situated at Ghodawadi village. This Ghodawadi tank is spread in large area of about 200 acres just nearby Dargah. About 5000 pilgrims are visiting everyday and on each Thursday more than 20,000 pilgrims visit for various religious rituals and activities.

Threatening factors effecting Ghodawadi Tank

As per detailed survey and study carried out by authors, various threatening factors effecting Ghodawadi tank are as follows:

1. Almost all the pilgrims before visiting the Dargah take bath in the tank resulting in the contribution of many pollutants to tank water.

2. Villagers of Ghodawadi as well as visiting pilgrims wash their clothes and contribute large amount of soaps and detergents to the tank water.
3. Villagers also bring their cattles for bathing and drinking water which again contribute many pollutants to water.
4. Many vehicles which come to Ghodawadi tank daily are washed by their owners resulting in contribution of petroleum pollutants into water.
5. All the pilgrims wash their utensils after cooking food or after eating which in turn contribute large amount of organic wastes into tank water.
6. About 1000 to 2000 goats are being scarified by pilgrims every day which contribute large amount of blood, skins and bones etc. to the pond.
7. Pilgrims also throw pooja wastage such as flowers, spoiled coconut etc. in the tank. Newly wed couples throw garland etc. either in the tank water or in nearby the tank resulting into spoiling of water quality leading to production of different types of infectious bacteria.

Inspite of these threatening pressures, people use tank water for their bathing, cooking and drinking purpose also. The misbelief persists that if they don't use the tank water for drinking and cooking purposes then God will become angry and give sorrow. Hence all activities due to these misbeliefs lead to occurrence of number of water borne infectious diseases like cholera, diarrhoea, dysentery and jaundice etc. and many other problems.

METHODOLOGY

In order to evaluate present condition of tank, water quality testings have been done on monthly basis and summarised as per seasonal basis from January 2007 to December 2007.

Physiochemical as well as biological analysis were done to assess direct and indirect effects on the health of thousand of pilgrims and villagers.

Water samples have been taken from three (03) different locations comprising inlet and outlet of tank. Sample analysis was carried out as per process prescribed by American Public Health Association (APHA). Physiochemical analysis was done in Chemical Engineering Department of Rural Engineering College, Bhalki and biological analysis was carried out in Zoology Department of C.B. College, Bhalki.

Physical, chemical and biological parameters were considered to represent physiochemical and livingbeing status of the tank. In order to quantify various potentiality like number of visitors on all days and on special occasions and no. of goats sacrificed each day, local people were consulted and enquired. Collected data have been tabulated in Table-1 to Table 3.

Table 1 : Physical Analysis

Sl. No.	Physical parameter	Rainy season	Winter season	Summer season	As per ISO
1	Transparency (cm)	4	4.2	5	
2	Temperature in centigrade	23	24	28	
3	TDS (mg/l)	480	500	551	80-100
4	Total suspended solid (mg/l)	240	250	251	
5	Colour	Brown	Brown	Brown	
6	Turbidity (NTU)	55.9	56.8	57.9	5.0

Table 2 : Chemical Analysis

Sl. No.	Chemical parameter	Rainy season	Winter season	Summer season	As per ISO
1	pH	7.4	7.6	7.8	6.5 to 8.5
2	Alkalinity (mg/ltr)	Alkalinity	Alkalinity	Alkalinity	-
3	Acidity (mg/ltr)	-	-	-	-
4	Total hardness (mg/ltr)	100	110	110	300
5	Dissolved oxygen (mg/ltr)	4.6	4.6	4.7	5.6 to 8.5
6	Chlorides (mg/ltr)	280	300	320	250
7	Calcium (mg/ltr)	57	58.5	59	75
8	Sodium (mg/ltr)	78	80	83	75
9	Taste	Tasteless	Tasteless	Tasteless	Sweet

Table 3 : Biological Analysis

Sl. No.	Biological parameter	Rainy season	Winter season	Summer season	As per ISO
1	Phytoplanktons	Nil	Nil	Nil	
2	Bacterial population	High	High	High	
3	Protozoans	06	06	06	
4	Molluscans	Nil	Nil	Nil	
5	Fishes	--	--	--	
6	Amphibians	--	--	--	
7	Birds	--	--	--	
8	Aquatic insects	06	06	08	

DISCUSSIONS

1. High value of pH indicates nature of saline water which is high in summer season in comparison to rainy and winter seasons. It is due to high rate of evaporation in summer.
2. Total dissolved solid (TDS) value is high in summer compared to rainy and winter seasons. It is due to dilution taking place with rain water. In Ghodawadi tank, TDS value increases upto 551 mg/litre in the summer, indicating the presence of higher concentration of chlorides and nitrates. TDS value is directly related to conductivity.
3. Calcium level is low which indicates that molluscans can't be survived.
4. High concentrations of chlorides such as 300 mg/litre indicate heavy pollution due to organic constituent discharged by cattles.
5. Colour of water is brown in all the seasons which indicates that continuous pollution and addition of dust take place due to pilgrims activities.
6. Dissolved oxygen level is as low as 4.0 to 4.7 mg/litre. It is directly related with regulating life inside water and is inversely proportional to temperature. It is also directly proportional to amount of organic load in water.
7. Alkaline nature of water is due to high pH and total hardness. Here hardness is caused by high salt concentration particularly due to high level of sulphates and chlorides. It is also high due to presence of extra CO₂ as a result of decomposition of organic matters. Blood coming from sacrificing goats also add to hardness and alkaline nature to water.

8. As per biological analysis, aquatic phytoplanktons are completely absent from the pond. It means higher level of intervention of people as well as pollution present in higher concentration in water is not suitable for plant growth.
9. No major insect population have been observed during field visits. Only small insect population like Cyclops and Daphnia have been observed.
10. High bacterial population have been reported. It is mainly due to degradation of organic wastage like garlands, pooja waste and animal wastes etc.
11. Protozoans population are moderate. About 5-6 different species of protozoans have been reported. Protozoans population are directly related to large number of infectious diseases.
12. Molluscs, fishes, amphibians and bird populations are completely nil. It indicates that the pond is in highly dilapidated condition.

CONCLUSION

Based on observations under prevalent circumstances, it is concluded that water quality of Ghodawadi tank is very harmful for drinking, cooking and even for bathing also which in turn directly and indirectly affects human population, animal population and water quality. Accordingly there is urgent need of protection and conservation of this tank by the Government and private agencies for protection of pilgrims' health and hygienic conditions. Public awareness is also necessary to protect the general public and villagers from various water borne infectious diseases and hence authors are of firm opinion to have periodical studies for evaluation of water quality of various religious tanks in the country leading to various social, cultural and health welfare measures.

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