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By Dr. T.Ramachar, K.Mahammad Rafi, Lakshmi Prasanna
& Dr. M.Umamahesh

College (Autonomous)

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Investigation on Physicochemical Parameters of Mylavaram Reservoir in YSR Kadapa District, A.P (India)

Dr. T. Ramachar^α, K.Mahammad Rafi^σ, Lakshmi Prasanna^ρ & Dr. M. Umamahesh^ω

Abstract - Mylavaram reservoir is mainly constructed for irrigation purposes but water is also reserved for drinking. In the present study the physico-chemical parameters of Mylavaram dam water analyzed for a period of one year (January 2012 to December 2012) to check the pot ability of water. The parameters such as Temperature, pH, Dissolved oxygen, Total dissolved solids, Total hardness and Nitrates were used. Almost all the parameters analyzed with standard methods & compared with the WHO & BIS standard and presented statistically then concluded.

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I. INTRODUCTION

The importance of water can't be overstated when it comes to life on Earth. Safe drinking water and basic sanitation will bring a payback worth many times the investment involved. It will also bring health, dignity and transformed lives to many millions of the world's poorest people. The humanitarian case for action is blindingly apparent¹. Drinking water must be 'wholesome' and this is defined in law by standards for a wide range of substances, organisms and properties of water in regulations. The standards are set to be protective of public health and the definition of wholesome reflects the importance of ensuring that water quality is acceptable to consumers. There is good agreement amongst worldwide on the science behind the setting of health based standards for drinking water and this expert evidence is documented by the world health organization in the guidelines for drinking water quality.

The reservoir serves as a rich source of water supply for irrigation, drinking to nearest villages & fish culture. The quality of water is getting polluted due to the industrialization, Urbanization and indiscriminate use of pesticides in agriculture which runoff with water and

contaminate the water bodies. This dam provides water supply for Veparala, Dommaranandyal, etc and nearby villages. It is 15 km away from Jammalamadugu town and 90 km from YSR Kadapa city. It is constructed basically for agricultural purpose. But water is supplying for drinking purposes also, hence the quality of water for pot ability is assessed on the basis of physico-chemical parameters in order to provide the information.



Fig. 1 : Mylavaram Reservoir North side



Fig. 2 : Mylavaram Reservoir Gates

Author α : Assco. Professor, GPR Engg. College (Autonomous), Kurnool.

Author σ : Asst.Professor of Chemistry, R.G.M. College of Engg. & Tech. (Autonomous) Nandyal-518501.

Author ρ : Assistant Professor in Engineering Chemistry, Vignan Institute of Technology & Science, Vignan hills, Deshmukhi (Village), Nalgonda (District), Near Ramoji Film City, Hyderabad-508284.

Author ω : Professor of Chemistry, R.G.M. College of Engg. & Tech. (autonomous), Nandyal-518501.

E-mail : shaikmahammadrafi25786@gmail.com



Fig. 3 : Top view of reservoir water source through hills

II. EXPERIMENTAL

Water samples were collected at monthly interval from the selected spots (where from the water is pumping for supply). For the collection of sample used a clean polythene bottles usually; between 8:00 am to 10: 00 am. Throughout the period of study from January- 2012 to December-2012. The water temperature and pH was measured at the spot with Mercury thermometer & Hand pH meter and rest of the parameters were analyzed on same day in laboratory by using standard methods suggested BIS,ISO & WHO .Preservatives were used while carrying the sample at laboratory.

III. RESULTS AND DISCUSSION

The physico-chemical parameters of Mylavaram reservoir water during January 2012- December 2012 are given in table . Water temperature is one of the most important physical parameter. It is also determining factor for seasonal distribution of organisms, solubility of gases & salts in water .No other factor has so much influence as temperature. In the present study the water temperature ranges from 22.5 to 38.0oc recorded at the spot. The season wise analysis showed that the highest values recorded in summer, moderate in rainy season & lowest in winter season. Narayana *et. al*

(2005) reported the water temperature varies from 24.75 to 30.25c in Aujanapra reservoir. Similar finding were observed in the present study. pH plays an important role in the aquatic situations for the growth of flora & fauna. The most of the aquatic organisms are adapted to a average pH & do not withstand abrupt changes. Dhanora reservoir ranges from 7.1 to 8.9 at the spot in the present study the alkaline trends of the pH was observed. Similar alkaline pH was reported by Khan *et.al* (2005). The high pH was observed in summer season it is due to aquatic plants use carbon dioxide in their photosynthetic activity and its removal is responsible for such a high pH.

Dissolved oxygen is very important parameter of water quality and is an index of physical & biochemical processes occurs in water. The dissolved oxygen values are ranges from 7.6 to 12.4 mg/l. The highest value of DO was observed in the early summer months and it may be due to high photosynthetic activity by plants and low values in summer which is due to high atmospheric temperature. Similar results were reported by Devidas (2006) and Lokhande (2009) . The Total Dissolved Solids (TDS) are the amounts of particles that are dissolved formed in the water. It may also include all suspended impurities (solids) that may or may not pass through the filter. In the present study the TDS values ranges from 108 to 276 mg/l. The lowest values were observed in the months of December and January in winter season while highest values in August and September in rainy season similar observation were made by Lokhande (2004) while working on Dhanegaon reservoir Naturally the Total Dissolved Solid content in this reservoir were well below the permissible limit.In the present investigation the total hardness ranges from 85 to 130 mg/L. the minimum values of hardness were observed in the summer season & maximum in the rainy season. Highest values may be due to rainwater carries the surface runoff The similar results were observed by Hosmani (1999). Pendse (2000) also reported law value of hardness in summer season.

Table 1 : Physicochemical parameters of Mylavaram reservoir During the year January to December 2012

Parameters_ Months	Temperature (°C)	pH	Dissolved Oxygen (Mg/L)	Total Dissolved solids(Mg/L)	Total Hardness (Mg/L)
January	22.6	7.5	11.9	125	119
February	25.4	7.9	10.2	118	105
March	29.5	8.2	8.9	228	89
April	38.6	8.4	9.2	256	82
May	35.2	7.9	11.6	274	107
June	31.2	7.6	9.8	112	121
July	29.6	7.4	12.4	258	130
August	25.7	8.2	9.3	241	128
September	26.7	8.3	9.2	195	95
October	23.6	7.4	12.1	162	123
November	22.3	8.4	8.9	136	96
December	23.8	8.6	12.3	158	89

IV. CONCLUSION

From the above study it can be concluded that almost all the parameters are within the prescribed limit of WHO & BIS standards. The Mylavaram reservoir water is suitable for drinking purposes. It is also useful for irrigation and Fish culture activities because the physico-chemical parameters are in suitable range for the growth of fishes zooplankton, phytoplankton. Over all the mylavaram reservoir water is suitable for

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