



# PREMONSOON AND POST MONSOON WATER QUALITY ASSESSMENT OF GIRIJA DAM, TQ. KHULDABAD, DIST. AURANGABAD, MAHARASHTRA

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**Abstract:** The present study deals with the pre monsoon and post monsoon water quality assessment of water from Girija Dam, Tq. Khuldabad, Dist. Aurangabad, Maharashtra. The hydrochemical parameters studied are odour, temperature, pH, turbidity, total dissolved solids, total alkalinity, total hardness, calcium, magnesium, chloride, fluoride, nitrate, sulphate. The results observed are tabulated in the table 1 and are discussed in detail. Some suggestions are given on the basis of results.

**Keywords:** Hydrochemical, Water, Girija Dam, Parameters

## I. INTRODUCTION

The water resources are surface water and ground water. Both of these resources are playing important role in maintaining the water table of the earth. Surface water resources are rivers, lakes, dams, etc which are used to supply water for irrigation, drinking, hydropower, etc. Yesgaon village of Khuldabad Taluka of Aurangabad district, Maharashtra has Girija Dam on Girija river. It's height is 19.1m and length is 3060m. Its volume is 70km<sup>3</sup> and its total capacity is 21230 km<sup>3</sup>. Girija dam water is supplied to about twelve villages of Khuldabad taluka and Khuldabad city along with five villages of Phulambri taluka. The quality of water is an important aspect with respect to the health of living beings. As per World Health Organization the good quality drinking water is the human right. This is an attempt to study the pre monsoon and post monsoon water quality of Girija dam of Khuldabad taluka of Aurangabad district. Few important hydrochemical parameters of the Girija dam water is studied i.e. odour, temperature, pH, total dissolved salt (TDS), total alkalinity, total hardness (TH), calcium, magnesium, fluoride, nitrate, sulphate.



**Girija Dam at Yesgaon Taluka Khuldabad, Dist. Aurangabad, Maharashtra**

## II. MATERIALS & METHODS

To study pre monsoon and post monsoon water quality, Girija dam water is collected in the morning from 9 a.m. to 11 a.m. in the month of November 2021 and April 2022. The container bottle is washed and rinsed with the sample water twice before filling. The water sample is collected in 1000 ml low density polythene bottle, capped tightly and immediately taken to the laboratory for further assessment. Odour is examined through the smell. The temperature is measured with thermometer and pH with portable pocket pH meter. The parameters like total dissolved salt (TDS), alkalinity, total hardness (TH), calcium, magnesium, nitrate, sulphate were analyzed in the laboratory following titrimetric method given by APHA [1] and BIS [2]. The fluoride is measured through spectrophotometric method. All the chemicals and reagents were of analytical grade supplied by the local dealer.

## III. RESULTS & DISCUSSION

Pre monsoon and post monsoon water hydrochemical parameters assessed are noted in the table 1. Odour of the water is agreeable in both pre monsoon and post monsoon water samples. The temperature of the sample is found to be 22°C pre monsoon and 27.6°C in post monsoon water samples whereas pH is about 7.14 in pre monsoon and 7.8 in post monsoon. The pH is slightly alkaline may be due to the rain water flow towards the dam and it is somewhat high in post monsoon season may be due to long dry spell with more evaporation of surface water i.e. due to summer. Similar results were recorded by Samrat et al [3]. Total dissolved solids (TDS) is 1160 mg/L in pre monsoon and 975mg/L in post monsoon season which indicates it has high amount of salts in dissolved state in post monsoon due excess flow of rain water in the dam. Though the water is clear in appearance turbidity is slightly higher than the permissible limit suggested by World Health Organization (WHO) in both pre monsoon and post monsoon season.

**Table 1. Premonsoon hydrochemical parameters of Girija Dam water**

Hydrochemical Parameter	April 2021	November 2021	Permissible Limit (BIS)	Permissible Limit (WHO)
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Temperature (°C)	27.6	22	-	40
pH	7.85	7.14	6.5 – 8.5	6.5 – 8.5
TDS mg/L	975	1160	500	500
Turbidity (NTU)	7.6	8.6	1	5
Total Alkalinity (CaCO <sub>3</sub> ) mg/L	122	95	20-200	30
Total Hardness mg/L	587	620	200	200
Calcium mg/L	92	118	75	75
Magnesium mg/L	45	62	30	150
Chloride mg/L	242	290	250	200
Fluoride mg/L	1.0	1.1	1.0	1.5
Nitrate mg/L	22	25.5	45	45
Sulphate mg/L	130	142	200	200

Total alkalinity is 122 mg/L in pre monsoon and 95 mg/L in post monsoon season. Total hardness is 587 mg/L in pre monsoon and 620 mg/L in post monsoon. It is much higher than the permissible limit indicating various types of salts are dissolved in the water increasing its hardness. Calcium as CaCO<sub>3</sub> estimates about 92mg/L in pre monsoon and 118 mg/L in post monsoon whereas magnesium is about 45 mg/L in pre monsoon and 62 mg/L in post monsoon season in the given water sample. The chloride value observed is 242 mg/L in pre monsoon and 290 mg/L in post monsoon and fluoride is 1 mg/L in pre monsoon and 1.1 mg/L in post monsoon season. Nitrate is 22 mg/L in pre monsoon and 25.5 mg/L in post monsoon season and Sulphate is about 130 mg/L in pre monsoon and 142 mg/L in post monsoon season. Similar results were obtained by Dinesh Kumar Sharma (2015) [4], B. R. Agarwal et al. (2013) [5].

## IV. CONCLUSION

From the present study it is observed that most of the parameters are showing slightly higher values than the permissible limits given by the world health organization (WHO) and Bureau of Indian Standards in both pre monsoon and post monsoon season. The variation in values of most of the parameters tend to be due to in flow of fresh rain water through the Girija river. It is suggested to water supplying agencies i.e. to municipal council authorities to give proper treatment to the water before supplying for drinking to city and villages. It is also suggested to make aware the people living in neighboring area of the Girija river not to release the sewage water from their daily use and not to wash animals, cloth, etc in the river water.

## V. ACKNOWLEDGEMENT

I am very much thankful to Principal, Kohinoor Arts, Commerce & Science College Khuldabad, Dist. Aurangabad, Maharashtra for permitting to carry out research in the laboratory and providing all required facilities including library and laboratory facility.

## VI. REFERENCES

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