

WATER QUALITY ASSESSMENT OF KALAMMAVADIDAM

Miss. Aparna Vankore, Ph.D. Research Scholar, Yashwantrao Chavan Maharashtra Open University, Nashik


Dr. Jaydeep Nikam, Research Guide, Professor and Director, School of Continuing Education, Yashwantrao Chavan Maharashtra Open University, Nashik

- Most of our water bodies as ponds, lakes, streams, rivers, sea, oceans have become polluted due to four chief reasons,
- Geometric increase in population coupled with
- Rapid urbanization
- Industrialization
- Agricultural development
- Source of water pollutants
- Sewage and other waste
- Industrial effluent
- Agricultural discharge
- Industrial waste from chemical industries, fossil fuel plant (thermal power plants) and nuclear power plant

Each of these sources of pollution carries a variety of pollutants that enter out water bodies.

Location and information about research area

Location of Kalamawadi Dam in Maharashtra

 Location of Kalamawadi Dam in Maharashtra	
Official name	Dudhaganga Dam
Location	Radhanagari
Coordinates	16°21'00"N 74°01'00"E Coordinates: 16°21'00"N 74°01'00"E
Opening date	1983
Owner(s)	Government of Maharashtra, India

KalamawadiDam is a gravity dam on Dudhaganga river near Radhanagari in the State of Maharashtra,India. Kalamawadi dam is the biggest dam in KolhapurDistrict. The dam construction was initiated by the Government of Maharashtra in 1983 and was

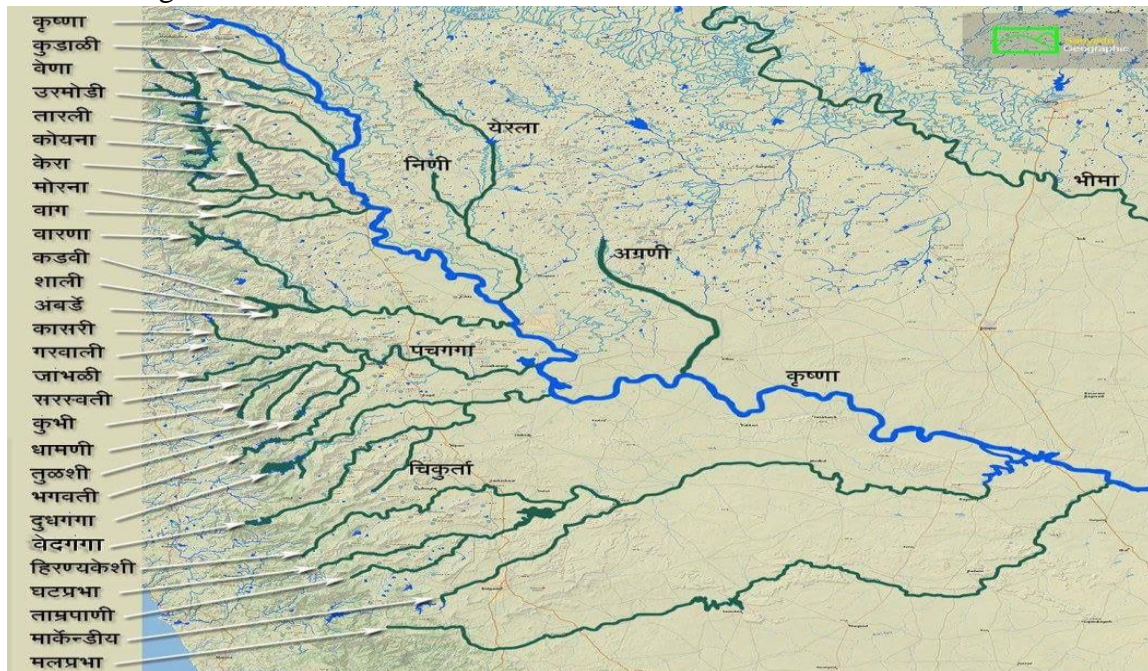
completed in 1999. It is being used for irrigation as well as hydroelectricity power generator. There are great locations for outings, listed on Kolhapurtourism.

The dam was built on Dudhaganga River, which is located in the south western part of Kolhapur district in Maharashtra; it was inaugurated by IndiraGandhi, the late prime minister of India. With a water storage capacity of 28 Thousand Million Cubic(TMC), the dam is located amidst a scenic surrounding with the backdrop of a thick forest cover. The surrounding dense forest has a large biodiversity. It is also home to India's endangered bison which is called the Gaur. The dam is situated at village Kalamawadi (Dudhaganga Nagar). It has left and right canals connected to carry water for irrigation purposes. The hydroelectric power generation house has three electric generators in good working conditions beneath the dam. There are many villages on bank of Dudhganga river which uses the dam water for domestic purposes. There is a temple of the goddess Kalamma Devi.

The water storage in Radhanagari taluka which is known as the taluka of lakes in the entire state is satisfactory. There are two reservoirs in the taluka namely Radhanagari, and Kalamawadi. The average rainfall in the taluka is twenty five hundred millimeters. Apart from that, due to more rainfall in the dam area, all the two reservoirs fill up to their full capacity. The water of Radhanagari reservoir flows through Bhogavati riverbed to Kolhapur, Ichalkaranji, Shirol. Water is used for agricultural irrigation and drinking. RajarshiShahuSagar Reservoir at Kalamawadi, which is a boon to agriculture in the border areas with Kolhapur, has stored twenty-five TMC of water this year. The water in this reservoir is released for irrigation from DudhgangaRiver, left canal and right canal and is released into Bhogavati river basin through Gaibi tunnel.

Left canal Edit Length : 200 km. Capacity : 73.63 cubic meters / second

Area under irrigation: Maharashtra : 73340 hectares Karnataka : 19869 hectares Agricultural land under irrigation : 81092 hectares



Dam and spillways	
Type of dam	Gravity
Impounds	Dudhganga river
Height	73.08 m (239.8 ft.)
Length	1,280 m (4,200 ft.)
Spillway capacity	1940 m ³ /sec
Reservoir	
Total capacity	719,120,000 m ³ (2.5395×10 ¹⁰ cu ft)
Surface area	25360 m ²

Several shortage of clean drinking water is being felt by billions of people around the world. Therefore, a clean and efficient use of water resources seems to be a very important issue. Increasing population, rapid depletion of resources and pollution makes it difficult to have clean and health water resources. Province of drinking water requirement in kolhapur region is supplied from kalamavadi dam on the dudhaganga River. Kalamavadi andradhanagari Dam were built to supply drinking, agricultural water and for generation of electricity.

Average value of monthly variation in physicochemical characteristics of kalamavadi dam

	Feb	March	April	May	June
PH	7.7±0.37	7.8±0.22	8.1±0.35	8.3±0.15	8.5±0.15
Tem P	18.7±0.50	20.04±1.14	21.1±0.78	24.9±0.54	29.5±0.65
EC	338.4±7.43	366.4±23.84	422.8±80.80	397.2±25.93	429.2±13.10
TDS	275± 12.40	295.4± 9.65	320.4± 14.08	328.8± 7.82	349.2± 7.79

RESULTS

1. Total fifty water samples were collected since February 2022 to June 2022 to identify the four physicochemical parameters.
2. Overall average values of these parameters at kalmavadi dam during the study period were observed as
3. pH(8.08±0.24)and(8.1±0.42),
4. Temperature (22.8±0.720C)and(22.8±0.720C),
5. Electrical conductivity (390.8±30.22 µs/cm) and (356.2±5.22 µs/cm),
6. Total dissolved solid (313.76±10.34 mg/l) and (279.3±14.17 mg/l),

CONCLUSION FOR MONTHLY VARIATION OF PARAMETER

Total fifty water samples were collected since February 2022 to June 2022 to identify the four physicochemical parameters.

1. Temperature of all sites progressive increases with advance of summer season.
2. The pH of dam is slightly alkaline. dam water having the highest electrical conductivity.
3. It indicates the richness of electrolytes. TDS and Total Hardness value of all sites of Dam is progressively increases in advance of summer season.
4. It was also found that upstream water is more polluted than downstream because of stagnancy of water in upstream in kalamvadi dam.

The data indicates that kalamvadi dam water is slightly polluted . However, pH, alkalinity, hardness, calcium, magnesium and chloride of both dams were found to be within the WHO and BIS permissible limits for drinking water.

PLANNED WORK FOR NEXT PERIOD

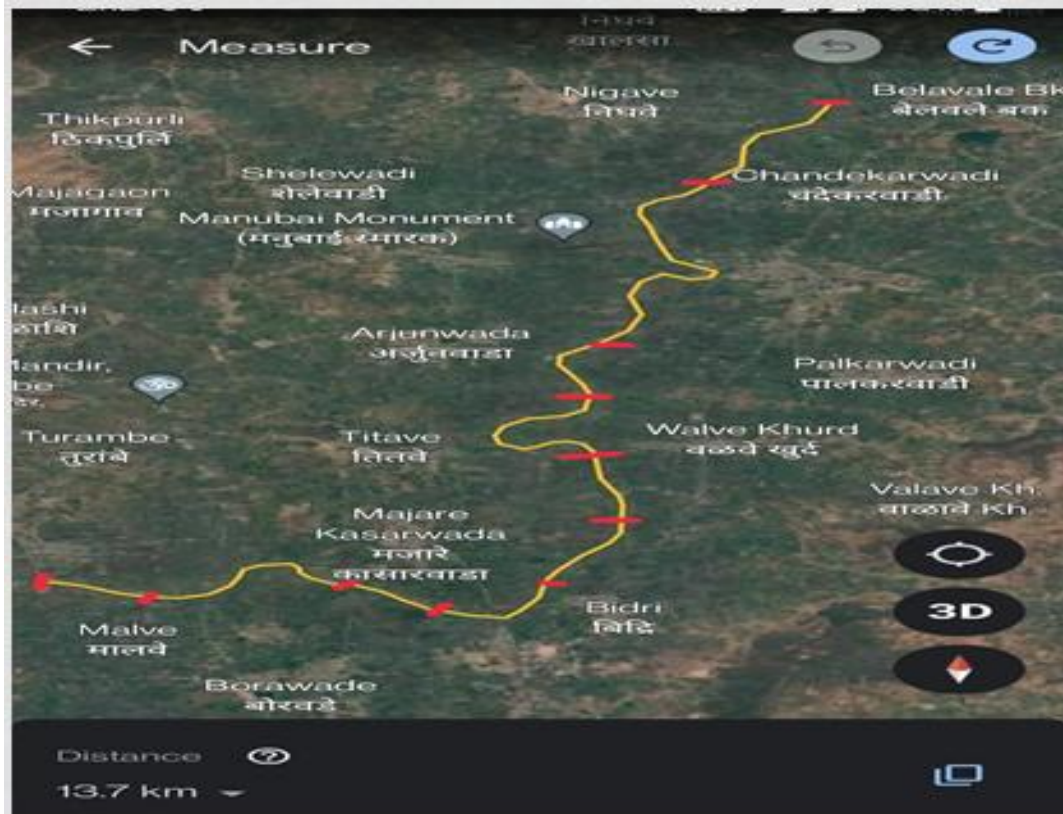
1. Search and download of research paper.
2. A thro' reading of the papers.
3. Considering the values of previous research and values.
4. Selection of sampling stations. Basin of dudhaganga river.
5. Collect samples.
6. Create a Survey report for soil and crop cultivation in river basin.(online , In person and government sites)
7. Create a survey report for water pollution
8. (Online, In person)
9. Collect data from (Internet, Newspapers, government sites)



Left canal Edit Length : 200 km. Capacity : 73.63 cubic meters / second Area under irrigation: Maharashtra : 73340 hectares Karnataka : 19869 hectares Agricultural land under irrigation : 81092 hectares

Sampling stations for next period [Jan 2023 to July 2023] of dudhaganga basin

1. Malave
2. Boravade
3. Kasarwada
4. Bidri
5. Walavekhurd
6. Titave
7. Arjunwada
8. Palakarwadi
9. Walave
10. Chandekarwadi
11. Belvale
12. Kembali
13. Bachani



Showing different 11 site of dudhaganga river

Reactive zone

1. Total distance 13.7 km.
2. No. of village's in the zone 13.
3. Sampling station's -distance between two station's not more than 1-1.5km.

Visits

1. Shri DudhagangaVedagangaSugar Factory Ltd. Bidri ,Tal :kagal,Dist :Kolhapur.(ETP plant)
2. SarSenapatiSantajiGhorpade Sugar Factory Ltd. Tal -Kagal, BelewadiKamma, Maharashtra.
3. Kammawadi Dam, Kammawadi
4. Laxmi Dam, Radhanagari

REFERENCES

1. ADB (Asian Development Bank). 1994. Training manual for environmental monitoring. USA: Engineering Science Inc., pp. 2-16.
2. De, A.K. 2005. Environmental chemistry. 5th edition, New Age International Publishers, India, pp. 242.
3. Ayers, R.S. and Westcot, D.W. 1976. Water Quality for Agriculture. FAO irrigation and drainage paper . pp.29.
4. Meade, J.W. 1998. Aquaculture management. India: CBS Publishers and Distributors, pp. 9.
5. Ahipathi, M.V. and Puttaiah, E.T. 2006. Ecological Characteristics of Vrishabhavathi River in Bangalore (India).Environmental Geology, 49: 1217-1222.
6. Hatje, V.E.D. and Bidone, J.L. 1998. Maddock, Estimation of the natural and anthropogenic components of heavy metal fluxes in fresh water Sinoriver, Rio Grande do Sul state, South Brazil. Environmental Technology, 19: 483–487.
7. Whitton, B.A.; Rott, E. and Friedrich, E. 1991. Methodological aspects and perspectives in the use of periphyton for monitoring and protecting rivers, Use of algae for monitoring rivers. Institute for Botanik, University of Innsbruck.
8. .EQS (Environmental Quality Standard). 1997. Bangladesh Gazette, registered nr. DA- 1, Ministry of Environment, Government of Bangladesh.
9. Su. S.X.; Kang, L.; Tong, P.; Shi, X.; Yang, Y. Abe. T.; Du. Q. and Shen, J. 2004.The impact of water related human activities on the water land environment of Shiyang River Basin, an arid region in Northwest China.
10. Hydro.Sci. des Sci. Hydro.J. 49 : 413-427.
11. Kudesia, V.P. 1990. Industrial Pollution. ProgatiProkashan. India.