

The Study of Physico-Chemical Characteristics Of Pravara River

Soniya Sonkar¹, Deepak Janardhan Gadekar², Vijay Ranjendra Sonawane³

¹Department of Geography, Institute of Science, Banaras Hindu University, Varanasi, India

²Department of Geography, Padmashri Vikhe Patil College, of Arts Science & Commerce, Pravaranagar, Loni, Tal- Rahata, Dist – Ahmednagar, , 413713, M.S. India. Affiliated Savitribai Phule Pune University Pune (Corresponding Author)
deepak.gadekar007@gmail.com

³Asst. Prof. Department of Geography, S N Arts, D J M Commerce and B N S Science College Sangamner, Tal- Sangamner, Dist – Ahmednagar. Affiliated Savitribai Phule Pune University Pune

Abstract- The present investigations of the comparative study of physico chemical parameters of Pravara River water in Ahmednagar district of Maharashtra. The samples were collected in sterilized polythene bottles of one litter capacity monitoring were done during January 2019. There are 12 Physico-chemical parameters having test observed in four sampling sites along the course of Pravara River. The sampling collection from Wilson dam, Nilwande, Kalas and Ashwi in Pravara River with the water samples collected at morning periods. Physical parameters include, pH and chemical parameters are tested Conductivity, Calcium, Magnesium, Sodium, Palash, Carbonate, Bio -carbonate, Chloride, Sulfate, Sodium Stable Ratio, Residual Sodium Carbene.

Keywords: - Physical and Chemical Characteristic, Pravara River, Water analysis, Resources.

I. INTRODUCTION

There are many sources of drinking water, mainly river, lakes, wells and dams. Humans should have access to potable water, but in modern times large quantities of drinking water are being polluted, mainly due to industrial water conditions. The water is being polluted by chemical fertilizers and pesticides produced from agriculture. It requires water analysis and water testing as well as the study of water parameters [30, 31].

Man uses water for various purposes, mainly for drinking water, for industry, agriculture and various reasons. As the population grows, so does the use of water, which is causing massive pollution. Humans are responsible for water pollution [27, 28].

Human socio-economic status depends on water. In short, human economic development and social development depends on the availability of water. Where water is available, human existence and population density is high and economic development is high [23, 24, 25].

The quality of water is of main role for man since it is directly linked to human health [2]. Topography affects the river system as well as the nature of the river depending on the geological structure and rainfall [3, 4].

The present investigations of the comparative study of physico chemical parameters of Pravara River water in Ahmednagar district of Maharashtra. Four samples were collected in the month of January 2019. Physical and chemical parameters. The result indicates that there is marked variation in physico chemical parameters of that dam water and sites of Pravara River.

II. STUDY AREA

The Pravara River originates in the Western Ghats of Akole taluka. The Pravara River is a sub- tributary of the Godavari River. The river Pravara flows westwards and joins the Godavari River. Four samples of water from Pravara River have been taken and the chemical components of this apple have been studied. Four water samples are collected from the following

places Nilwande, Kalas and Ashwi Map no and Table no 01.

Tale 1. Location of sampling site.

Sr.no	Sampling Site	Location
01	Bhandardara	19°53' 72" N Latitude to 73° 76' 52" E longitude
02	Nilwande	19°54' 62" N Latitude to 73° 90' 27" E longitude
03	Kalas	19°52' 92" N Latitude to 74° 07' 11" E longitude
04	Ashwi	19°52' 05" N Latitude to 74° 36' 65" E longitude

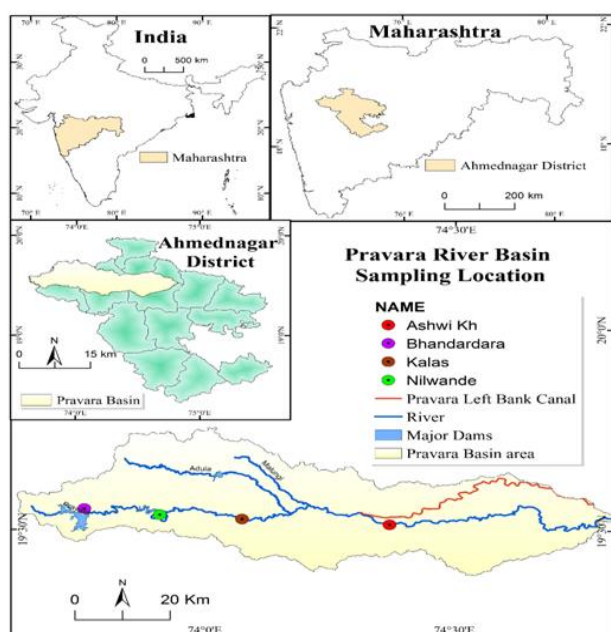


Fig 1. Map: Location map and Sampling map.

III. AIMS AND OBJECT

The main objective of this study is to study the chemical properties of water in the four places of Bhandardara, Nilwande,, Kalas and Ashwi in the field pH, Conductivity, Calcium, Magnesium, Sodium, Palash, Carbonate, Bio carbonate, Chloride, Sulfate, Sodium Stable ratio, Residual Sodium Carbone etc., these all components of the water here have been studied.

IV. METHODOLOGY

There are four different sites were selected for collection of samples in Pravara River. Water samples from the study area were collected at two-day

intervals. The samples were collected in sterilized polythene bottles of one litter capacity monitoring were done during January 2018. Samples were analysis of physico chemical parameters in laboratory (Krusi Vidnyan Kendra, Babhaleshwar).

There are 12 Physico-chemical parameters having test.Four samples of water from Pravara River have been taken in these study areas. It mainly collects four water samples from Bhandara Dam, Nilwande Dam, Kalas and Ashwi villages. Its main objective is to study the physiochemical components of water. The Physical parameters include, pH and chemical parameters are tested Conductivity, Calcium, Magnesium, Sodium, Palash, Carbonate, Bio-carbonate, Chloride, Sulfate, Sodium Stable Ratio, Residual Sodium Carbone.GPS is considered to be the most important method for fieldwork so that you can get the locations of the perfect places[8,17,20]. So in this research GPS is used to find and remark the sampling side.

V. RESULT AND ANALYSES

Water is supplied locally through various schemes so that human beings have the first duty to get clean water. Although the source of water is rain, it is available to human beings in many ways, mainly through various means such as rivers, streams, lakes, well, tube well. Humans use water for a variety of purposes, mainly for domestic use, for industrial purposes, and for agriculture and other businesses. Although water is a natural resource, human beings are a resource. Human resources are causing a lot of pollution, mainly water pollution in modern times, air pollution, noise pollution, waste pollution. Water quality is manipulated by human as well as natural and various factories, mainly polluted water coming out of agriculture, large amount of contaminated water is obtained from factories and domestic use, which degrades water quality.

Rain is the main source of drinking water or rain is the source of water availability [7]. In addition to the growth of plants depends on the growth of plants depends on the water or on the water availability is much higher density of plants there is water where there is a shortage of water, whereas low density of plants will be in this place[4].. We are selecting four site of Pravara River in Ahmednagar district for the case study of water content analysis. The especially we selected these four village near the bank of

Pravara river. For this purpose we selected purposive random sampling survey method and collected the water sample of the Pravara River from namely in Bhandardara, Nilwande, Kalas and Ashwi sites respectively.

Table 2. Water Analyses with Sample Sites.

Sr. No	Elements	Sampling Sites				Scale
		Bhandardara	Nilwande	Kalas	Ashwi	
1	pH	7.28	7.62	7.8	8.18	6.50-7.50
2	Conductivity	0.43	0.51	0.6	0.87	0.00-0.25
3	Calcium	0.8	1.9	1.4	3.6	0.00-1.50
4	Magnesium	3	3.6	3.8	4.4	0.00-5.00
5	Sodium	1.4	2.4	2.5	4.4	0.00-4.00
6	Palash	0	0	0.05	0.05	0.00-0.00
7	Carbonate	0	0	0	0	0.00-1.50
8	Bio carbonate	4.8	5.6	6.4	7.2	0.00-1.50
9	Chloride	5.2	6	6.8	7.6	0.00-2.00
10	Sulfate	1	1.2	1.5	1.7	0.00-2.00
11	Sodium Stable Ratio	1.0157	1.5492	1.5504	2.2	0.00-10.00
12	Water Classification	Medium	Medium	Medium	Low	-
13	Residual Sodium Carbene	1	0.8	1.2	0	0.00-1.25

Water Sample Analysis from Krusi Vidnyan Kendra, Babhaleshwar.

V. WATER PHAND SALINITY

The natural and man-made sources of water pollution, man-made water pollution has the highest intensity[5,7]. Therefore, various water tests have been done in this research as follows. pH is a measurement of electrically charged particles in a substance. It indicates how acidic or alkaline (basic) that substance is. Table no 1 show the physical water elements of Bhandardara, Nilwande, Kalas and Ashwi sites. The scale of PH elements of the water is 0.50 to 7.50, We find highest PH water element in Ashwi site (8.18PH) and lowest ph water elements in Kalas (7.8PH) village and in Bhandardara and Nilwande site having 7.28 and 7.62 PH water elements respectively.

The Ashwi site pravara river Ph was more than 8 thus this water is alkaline water. Calcium Carbonate is the most important ingredient in the formation of salinity. The most important form of this element is its formation from a rock like limestone. Salts that degrade water quality or make water heavy or unfit for human consumption or have adverse effects on human health. The source of high PH in Ashwi site agricultural fertilizers, waste water of Sagmaner city ect. In short these site not good conditions of water for drinking propose. The scale or range of water salinity 0.00 to 0.25, we find highest salinity water element in Ashwi Village (0.87mg/l) and lowest salinity water elements in kalas (0.6 mg/l) village. The Bhandardara and Nilwande this two site having 0.43 and 0.51 mg/l salinity water elements respectively. The ashwi site Pravara River water has not suitable for drinking and irrigation proposes but careful used of water in drinking proposes.

The water elements of Bhandardara, Nilwande, Kalas and Ashwi sites. According to WHO, the scale of Calcium elements of the water is 0.00 to 1.50, We find highest calcium water element in Ashwi site (3.6) and lowest calcium water elements in Bhandardara (0.8) site. And in Kalas and Nilwande village having 1.4 and 1.2 calcium water elements respectively. The scale of Magnesium elements of the water is 0.00 to 5. We find highest magnesium water element in Ashwi site (4.4) and lowest magnesium water elements in Bhandardara (3) village. And in Kalas and Nilwande sites having 3.8 and 3.6 magnesium water elements respectively. The scale of sodium elements of the water is 0.00 to 4.00. We find highest calcium water element in Ashwi site (4.4) and lowest calcium water elements in Bhandardara (1.4) site. And in

Kalas and Nilwande sites having 2.5 and 2.4 sodium water elements respectively.

The scale of potash elements of the water is 0.00 to 0.00. We find highest potash water element in Ashwi and Kalas sites is same (0.05). Lowest calcium water elements in Bhandardara and Nilwande site (0) is the two lowest water elements Bhandardara and Nilwande site respectively.

The scale of carbonate elements of the water are 0.00-1.50. We find highest magnesium water element in Ashwi site (4.4) and lowest magnesium water elements in Bhandardara (3) site and in Kalas and Nilwande site having 3.8 and 3.6 magnesium water elements respectively. The scale of bicarbonate elements of water is 0.00-1.50 we find the highest bicarbonate water elements in Ashwi site (7.2) and lowest bicarbonate water elements in Bhandardara village (4.8) and Kalas and Nilwande (6.4) and (5.6) bicarbonate water elements respectively. The scale of chlorides elements of water is 0.00-2.00 we find the highest chlorides water elements in Ashwi site (7.6) lowest water elements in Nilwande site is (2.6) in Bhandardara and Kalas site having 5.2 and 6.8 chlorides water elements respectively. The scale of sulfate elements of the water is 0.00 to 2.00. We find highest sulfate water element in Ashwi site (1.7) and lowest sulfate water elements in Bhandardara (1) site and in Kalas and Nilwande site having 1.5 and 1.2 sulfate water elements respectively.

The water elements of Bhandardara, Nilwande, Kalas and Ashwi sites. According to WHO, the scale of sodium stable ratio elements of the water is 0.00 to 10.00. We find highest sodium stable ratio water element in Ashwi site (2.2) and lowest sodium stable ratio water elements in Bhandardara (1.01) site and in Kalas and Nilwande sites having 1.54 and 1.55 Sodium Stable Ratio water elements respectively. The residual sodium carbonate (RSC) Index is used to check the quality of water or soil, which has a higher sodium content than calcium and magnesium, which degrades water quality and reduces soil quality due to these factors. The scale Residual Sodium Carbonate elements of the water is 0.00 to 1.25. We find highest Residual Sodium Carbonate water element in Kalas site (1.2) and lowest Residual Sodium Carbonate water elements in Ashwi (0) site and in Bhandardara and Nilwande sites having 1 and 0.8 Residual Sodium Carbonate water elements respectively.

VI. CONCLUSION

Excessive application of chemical fertilizers and pesticides for high yielding crop as well as over irrigation are said major causes of high level salinity. It has long tradition of over irrigation and use of fertilizers for mainly sugarcane. Increasing pH and salinity towards in eastern side.

The Ashwai side high pH, salinity and other chemical parameters having high. PH values shows, slightly alkaline nature of river water. It is within the limit of drinking purpose. Gradual increase in alkalinity and hardness was found from upstream to downstream.

Increase in chloride concentration towards downstream may be due to increase in sewage contamination. Calcium, Magnesium, Phosphate and Nitrate shows fluctuation along different station due to addition of sewage contamination. The wider human activity and the domestic waste cause the eutrophication. The wider human activity and domestic waste cause the eutrophication.

REFERENCES

- [1] Arangale K. B et.al (2018) Physico-chemical Parameters Assessments of dam water in different sites of Ahmednagar district of Maharashtra, International Journal of Researches in Biosciences, Agriculture and Technology, Vol. VI (Special Issue 2), PP 7-9.
- [2] Deepak Janardhan Gadekar and Soniya Sonkar (2021) The Study of Physico-Chemical Characteristics of Drinking Water: A Case Study of Nimgaon Jali Village International Advanced Research Journal in Science, Engineering and Technology, 8(1) 61-66. DOI: 10.17148/ IARJSET. 2021.8112
- [3] Deshmukh, B.S. and Sathe, S.D (2014) Physico-Chemical Characteristic of Pravara River, Journal of Aquatic Biology and Fisheries Vol.2, Pp101-105.
- [4] Gadekar Deepak J (2018) Level of Human Resources Development in the Akole Tahsil District Ahmednagra, Maharashtra unpublished Ph.D Thesis Savitribai Phule Pune University.
- [5] Gadekar Deepak Janardhan (2016) A Hybrid Land Cover Classification of Landsat-7 & 8 (OLI) ETM+ Data for Resourceful Vegetation Mapping- Akole Thasil Dist- Ahmednagar, M.S, India, American

- International Journal of Research in Humanities Arts and Social Sciences,13(3) 217-221.
- [6] Gadekar Deepak Janardhan (2016) Regional Disparities of Agricultural Development in Ahmednagar District, MS, India, International Journal of Research in Social Sciences, 6(8), 389-403.
- [7] Gadekar Deepak Janardhan (2020) A Study of Chemical Characteristic of Pravara River, In Different Sites–Ahmednagar District, Maharashtra, India, Our Heritage, 68(1) Pp 4977-4988.
- [8] Gadekar Deepak Janardhan and Soniya Sonkar (2020) Statistical Analysis of Seasonal Rainfall Variability and Characteristics in Ahmednagar District of Maharashtra, India, International Journal of Scientific Research in Science and Technology, 7(5) 125-136. doi: <https://doi.org/10.32628/IJSRST207525>
- [9] Gadekar Deepak Janardhan and Mhaske P. H (2018) A Study of Rainfall Characteristics in Ahmednagar District (Ms), Shodhankan International Journal, 1 (15) 35-39.
- [10] Hussain, Iqbal and Husain Jakir. (2004). Evaluation of Drinking water quality of the Villages situated near river Kothari, Rajasthan (India). Poll Res. 23 (3) 555-559.
- [11] Jayaraman P. R., T. Ganga Devi, and T. Vasudevan Nayar. (2003). Water quality studies on Karamana river Thiruvananthapuram District, South Kerala, India. Poll Res. 22(1): 89-100.
- [12] Karthick S et.al, (2015) A studies on Assessment of Physico chemical properties of water and wastewater, International Journal of Engineering Science and Innovative Technology (IJESIT), 4(2) 173-177.
- [13] Manna, R. K. and Das, A. K. (2004). Impact of the river Moosi on river Krishna I. Limno-chemistry. Poll. Res. 23 (2) 117-124.
- [14] Mitra A. K. (1995). Water quality of some tributaries of Mahanadi. Indian J. Envi. Helth. 37(1) 26- 36.
- [15] Nandan, S. N. and More, Y. S. (2000). Assessment of water quality of Panzara river by saprobity system. Oiko assay, 14(1&2) 7-9.
- [16] P. R. Bhagat (2008) Study of Physico-Chemical Characteristics of The Accumulated Water of Pond of Lohara, At Yavatmal(M.S.) Rasāyan Journal of Chemistry, 1(1) 195-197
- [17] P.H Mhaske et al.(2011), Land Use & Economic Activity in Shirdi. Rahata Taluka, District Ahmednagar M.H, International Referred Research Journal, Research analysis and Evaluation, 2(18) 75-76,
- [18] Pramod, A.F (2011), A Study on Physico-Chemical Characteristics of Water in Wetlands of Hebbe Range in Bhadra Wildlife Sanctuary, Mid Westernghat Region, India, Journal of Experimental Sciences 2(10) 9-15
- [19] Prithwish Roy (2007) Economic geography, a study of resources, New central Book Agency (P) Ltd. Kolkata, 13,14,57, 119-122.
- [20] S.D Gulave (2020) Use of Landsat ETM+ Data for Delineation of Vegetation Cover Area in Akole Thasil, International Research Journal of Engineering and Technology, Volume 7, (2) 57-61.
- [21] Sangita Dandwate (2020) Physico-chemical Analysis of Pravara River water and its Impact on Human Health in Sangamner Tahashil (Maharashtra), International Journal of Scientific Research in Science and Technology, 7(6) 358-365, <https://doi.org/10.32628/IJSRST207656>.
- [22] Shastri Yogesh and D. C. Pendse. (2001). Hydriobiological study of Dahikuta reservoir. Journal of Environmental Biology. 22 (1) 67- 70.
- [23] Shastri, Y.C. (1999). Hydrobiological study of river Mousam, Malegaon, Maharashtra. Geobios 26 (4) 217-218.
- [24] Shejul Meena Eknath (2020) Level of Human Resources Development-A Conceptual and Review Exposition, International Journal for Research in Applied Science & Engineering Technology, 8 (03), 687-691. doi.org/10.22214/ijraset.2020.3130.
- [25] Shejul Meena Eknath et.al, (2020) A Geographical Study of Human Resources Development in Ahmednagar District, Maharashtra, India. EPRA International Journal of Multidisciplinary Research 6 (03) 86-93. <https://doi.org/10.36713/epra4116>.
- [26] Shilpa Saxena and Ritesh Saxena. (2004). Water quality Index for Ram Ganga river water at Moradabad. Poll Res. 23(3) 527- 531.
- [27] Singh Manvir and Gupta K. C. (2004). Physico-chemical studies of water of river Yamuna at Mathura. Ecol. Envi. And Cons. 10(2) 193-196.
- [28] Sonawane V. R. et.,al.(2020), A Geographical Study of Crop Combination in Tribal Area of Nashik District, Maharashtra, India. Studies in Indian Place Names, 40(3) 3915-3940.
- [29] Sonawane V. R. et.,al.(2020), Analysis of Chemical Properties of Soil under Sugarcane Crop: A Case

Study of Khandala, Shrirampur, Ahmednagar District, Maharashtra State, India. Our Heritage 68(30) 6522-6547.

- [30] Soniya Sonkar (2021), Physico-Chemical Characteristics of Ground Water in Rahuri Tahsil of Ahmednagar District, M.S. India. International Journal of Scientific Research in Chemical Sciences 8(1) 4-8
- [31] Thitame S. N. and Pondhe G. M. (2010), Assessment of Seasonal Variation in Physico-chemical Characteristics and Quality of Pravara River water for Irrigation use in Sangamner, Dist Ahmednagar, Maharashtra, J. Chem. Pharm. Res., 2(2) 316-Tupe B.K (2010), Agricultural land use and Crop Pattern in Rahata Tahsil of Ahmadnagar District in Maharashtra State, Maharashtra Bhugolshastra Sanshodhan Patrika 27(01).30-37.
- [32] Yousif Algarnal (2015) Assessment and statistical study of physico-chemical properties of water quality in some local water treatment plants in Jeddah, Kingdom of Saudi Arabia, Pelagia Research Library, 6(7) 49-56.