



To Study The Lakes Water Quality In The Daund Taluka

Asst.Prof. Nikhil Trimbak Hole

Popatrao Kisanrao Thorat College,
Khutbav, Pune, Maharashtra.

Abstract: It is important to know the quality of water resources for drinking, domestic and irrigation in the rural area. Because, in recent times, there has been increased demand for water due to population growth and intense agricultural activities, so, hydro geochemical investigations come into prominence for the groundwater use. The purpose of constructing lakes is to supply water to agricultural land and drinking purpose. The quality of water is fall down day by day. In this study, it has been determined whether the water quality from some of the lakes in specific region of Daund taluka is suitable for drinking and agriculture purposes or not. Five samples were collected from different Lakes from different regions and each sample was examined for Physiochemical parameters. The Physiochemical analysis of the water was carried out as per the guidelines of WHO (World Health Organization), CWC (Central Water Commission) and CPCB (Central Pollution Control Board of India). Standards of water quality and various parameters were assessed, such as pH, Dissolved Oxygen (DO), Chemical Oxygen Demand (COD), Temperature, Specific conductivity, and total dissolved solid. In all the samples, the pH was almost neutral to slightly acidic. The TDS, Temperature, pH and conductivity varied from sample to sample, but they were all within the permissible range.

Keywords: TDS, conductivity, water samples, physical parameters, CWC, CPCB.

Introduction: A multitude of factors and seasonal variations affect the chemistry, geochemical processes, quality, categorization, and long-term viability of groundwater. Hydrochemical studies are now in charge of managing and controlling critical groundwater supplies. Because of the importance of the aquifer system in the regional and national economy, fundamental hydrogeological patterns such as groundwater hydrodynamics, hydrochemical properties, sources, and migration pathways of water masses must be investigated. Various studies have been conducted to determine the quality of groundwater for irrigation. In Daund taluka many lakes are available in the study area as groundwater resources. These lakes form the major water supply sources for drinking and irrigation purposes in Daund Taluka. Also, lakes are essential for agricultural purposes in the region. In this study, hydrochemical processes, drinking, and Irrigation water chemistry, classified for agrarian purposes lakes, were evaluated to determine the water quality.

Materials & Methods:

Collection of Sample

Five samples were collected from different Lakes from different regions in Daund taluka. The water samples were collected in triplicate in plastic containers and promptly transported to the laboratory for further physiochemical parameter evaluation using American Public Health Association (1995). The parameters chosen for the examination are outlined in full in (Table 1). For the month of April 2022, water analysis was conducted for five lakes in different areas of Daund taluka, with the findings given in (Table 2), correspondingly.

table 1.chemical evaluation of water samples: parameters and methods

Sr. No.	Parameter of water analysis	Methods
1.	pH	pH Metry
2.	DO	Azide modification
3.	COD	Dichromate reflux
4.	Hardness	Titrimetric
5.	Alkalinity	Titrimetric
6.	Conductivity	Conductivity meter
7.	Hardness	Titrimetric

table 2. physicochemical characteristics of five lake samples in daund taluka:

Sr. No.	Parameter of water analysis	Units	Daund Lake (S1)	Kasurdi Lake (S2)	Nandur Lake (S3)	Natahchi-wadi lake (S4)	Varvand Lake (S5)
1.	pH	-	7.61	7.55	8.30	7.25	8.18
2.	Temperature	°C	29	28	29	28	28
3.	DO	Mg/l	4.25	4.15	5.08	4.55	4.75
4.	COD	Mg/l	45	35	28	36	80
5.	Hardness	Mg/l	120	135	85	112	160
6.	Alkalinity	Mg/l	128	142	158	162	186
7.	Conductivity	µmhos/cm	251	670	182	786	218
8.	TDS	Mg/l	288	225	251	470	550

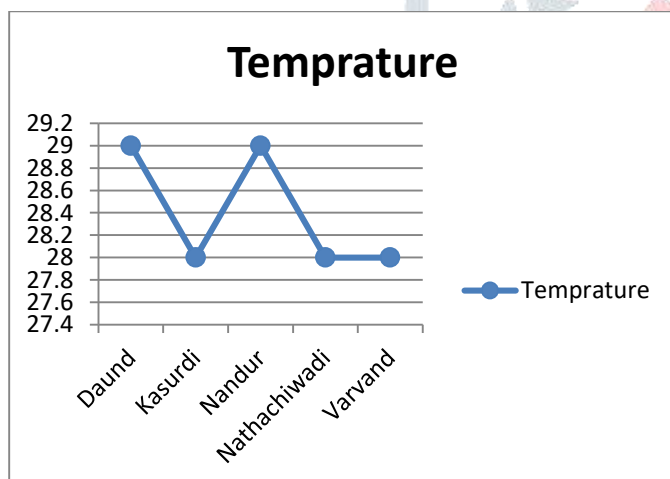


figure 1

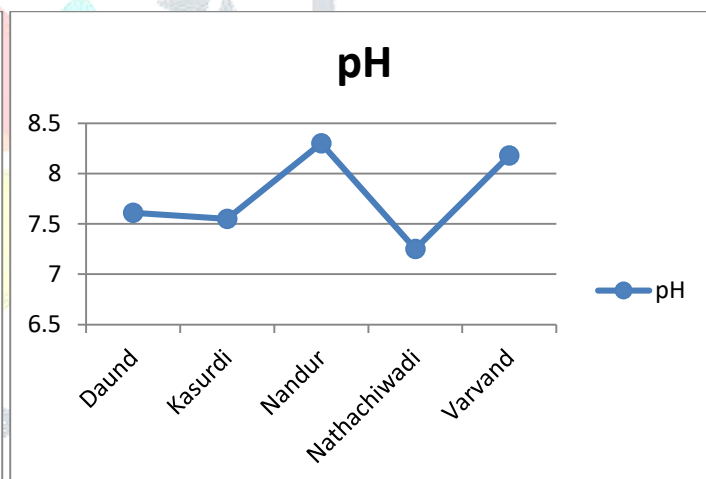


figure 2

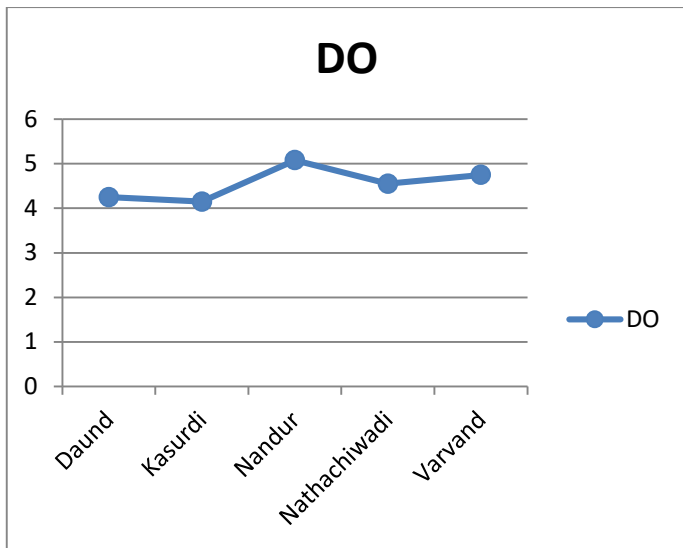


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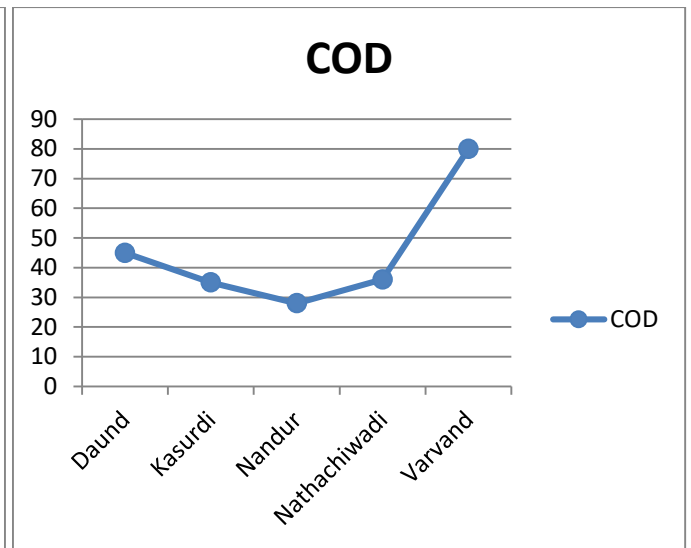


figure 4

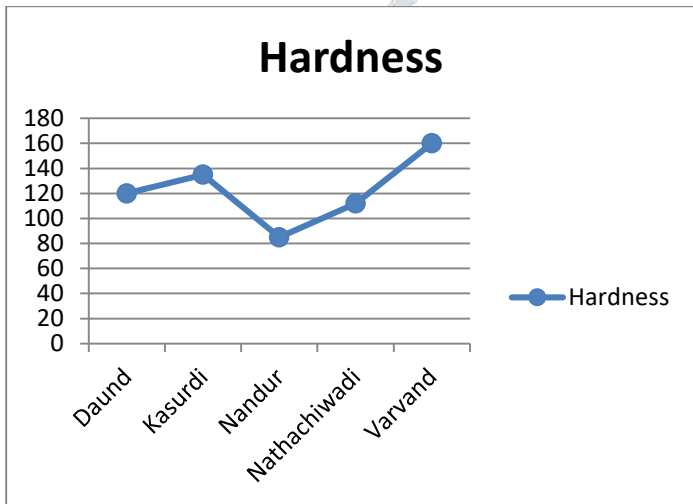


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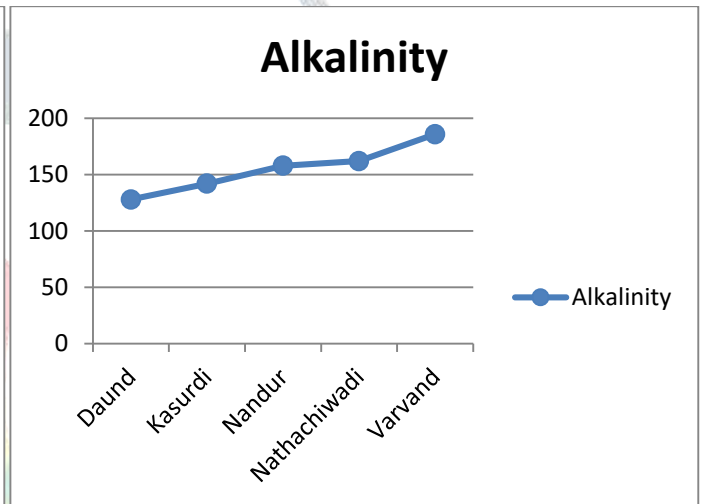


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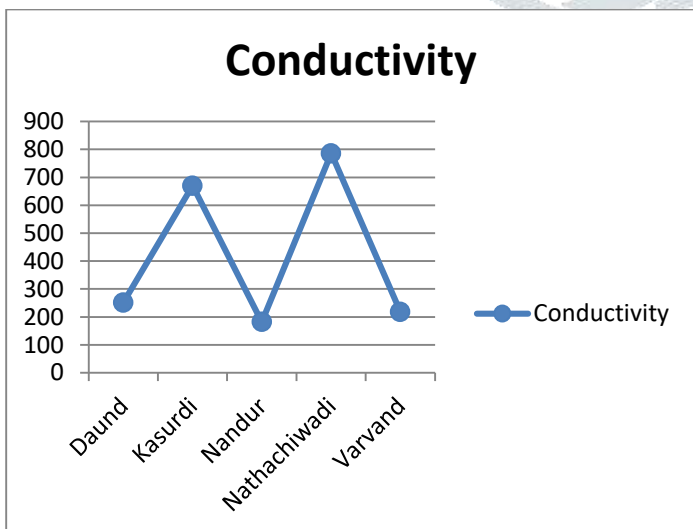


figure 7

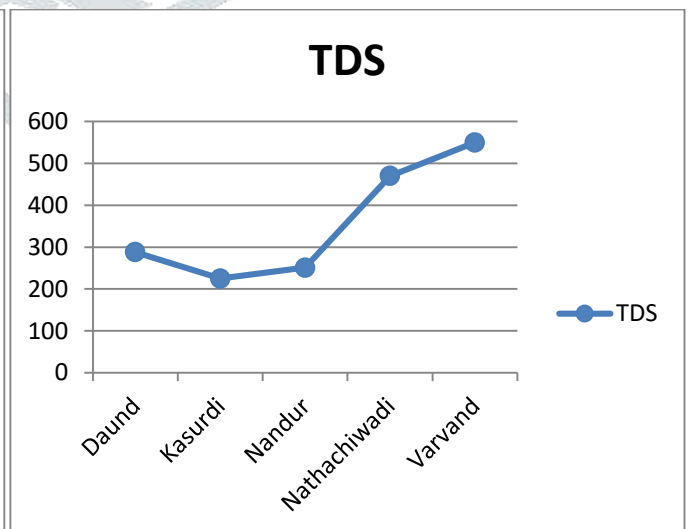


figure 8

Result and Discussion: pH of water is important for the biotic compound because most of the plant and animal species can survive in a narrow range of pH from slightly acidic to slightly alkaline condition. pH value is in the range of 7.25 to 8.30. The pH range except S4 all other was slightly basic and S2 was Neutral (Fig 1). The temperature of water was found to be in the range between 28°C to 29°C (Fig 2). The temperature of water is one important parameter which directly influences some chemical reaction in aquatic ecosystem. The dissolved oxygen varied from 4.25 to 5.08 mg/l (Fig 3) during the study. As it is required to all the plants and animals for respiration, the high temperature and low dissolved oxygen during summer create favorable condition for the development of green algae. The chemical oxygen requirement was found to be between 28 and 80 mg/l (Fig 4). Temperature influences factors in water such as dissolved oxygen and chemical oxygen demand.

The total hardness value is in the range of 85 to 160. Mg/l (Fig 5). Calcium and Magnesium compounds, as well as a number of other metals, cause hardness. The total alkalinity was between 128 and 186 mg/l (Fig 6). The elevated pH could be causing the alkalinity. Carbonates, bicarbonates, and hydroxide compounds may lead to the increased pH. The conductivity ranged from 182 to 786 mhos/cm (Fig 7). The maximum conductivity was found in S4. Conductivity in water is affected by the presence of inorganic dissolved solids such as chloride, nitrate, sulfate, and phosphate in addition to that sodium, magnesium, calcium, iron, and aluminum. 225 and 550 mg/l. is the range for total dissolved solids (Fig 8). The mobility is often harmed by high total dissolved solids. The TDS range of S1, S2, and S3 was in the range of 200 to 300 mg/liter so it is acceptable for both drinking and irrigation purpose. Sample 4 and 5 has the highest TDS as compare to the other samples and the conductivity is also high that means the Sample 4 and 5 are not suitable for the drinking purpose but they are useful in irrigation purpose.

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