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## Assessment of Physico-Chemical Parameter of Kolsure Reservoir, Dist. Dharashiv (M. S.) India

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### Abstract

The study was conducted to assess the physico-chemical parameters of Kolsure Reservoir, Dist. Dharashiv (M. S.) India, during June 2011 to May 2012. Analysis was performed on 8 different parameters were recorded during the study period. Most of the parameters, viz. Temperature, pH, Transparency, Turbidity, Total Dissolved Solid, Dissolved oxygen, Free CO<sub>2</sub>, Total Alkalinity, were studied. All parameters studied were found to be within normal limits and the water was found to be suitable for drinking, irrigation as well as different purposes. Some natural causes are biodegraded portion of animals and plants to fish siltation by erosion of soil etc.

**Keywords:** Kolsure, Reservoir, Physico-chemical parameter, water quality.

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### Introduction

The water is the best of all things, water is the mother liquor of all forms of life, It is vital essence miracle of nature and the great sustainer of life. The role of water in nature is unique not only from the point of human consideration even the numerous organism make aquatic medium their abode. Understanding such aquatic life requires a found knowledge not just for organism themselves but also of those of external influence of the medium that effect them. The variation in the physico-chemical parameters of the ponds above or below standard value has potential effects on the health and production of fish. The optimum fish production is totally dependent on the physical chemical and biological qualities of water to most of extend.

Water quality generally means the component of water which must be present for optimum growth of aquatic organisms. The determinant of good growth of water body included dissolved oxygen, turbidity, alkalinity, temperature, etc. In most of the water bodies various chemical parameters occur in low concentration. Several studies have been made on the limnology and aquatic system of fresh water bodies. Among animal species the fishes are inhabitants which can be highly affected by toxic pollutants. The domestic wastes and untreated industrial effluents, supplemented with pollutants like heavy metals,

pesticides and many organic compound have greatly contributed to massive fish death of aquatic ecosystems. These toxic chemicals and metals have changed the quality of water that affects the fish and other aquatic organisms.

### Study Area:

Kolsure reservoir is an earth fill project constructed on local River near Kolsure in village .Kolsure in Dharashiv district head quarter of Maharashtra. Basically this Dam was constructed for the irrigation purpose in and around Kolsure and Hipparga. In rest year this was also used for agriculture practises as well as domestic use. the fishing activity is also practised in this dam actively by local fishing society. For this aspect we are able to evaluated the degradation of Kolsure Reservoir in respect to assess the water quality to protect the water eco-biology. The present study was carried out to evaluate the physico-chemical parameters of Kolsure Reservoir.

### Materials & Methods:

The selected sampling sites were visited in Monthly early in the morning collected water sample for the study of various ecological parameters. The study was conducted from June 2011 to May 2012

The water sample were immediately brought in to laboratory for the estimation of various physico-chemical parameters. The physical parameters such as Temperature (Air & Water) recorded by using Standard

Thermometer and pH were recorded digital pH meter. The Transparency of water to light was measured by using secchi disc. The chemical parameter of water were determined in the laboratory as per the standard methods described by American Public Health Association (APHA)1980, Trievady et.al.(1998) & Kodarker et. al.(1998).

### **Result & Discussion:**

#### **Temperature:**

During the study period June 2011 to May 2012 Air Temperature value are Monthly recorded. The maximum air Temperature recorded in the Month of May 39 0c and minimum value recorded in the Month of Jan.21s 0c. The higher value of air temperature was recorded during the Summer season where as the lowest value was in the Winter season of the study period. The similar result are also found during investigative work in the field of limnology as well as hydrobiology. Study in various continents of world and such as evaluated by Verma & Tyagi & Dalella (1978), Pandya & Sharma (1999), Ravikumar et. al.(2005)

The water Temperature highest value recorded in the Month of May in 38.0c & lowest Value recorded in the Month of December.16 0c. The maximum water Temperature value recorded during Summer season where as the minimum value was in the Winter season. Jayabhaye et. al. (2005) & Salve & Hiware, (2006) observed that during Summer, water temperature was high due to low water level and clear atmosphere.

#### **pH:**

During the present investigation, the pH of water sample ranged, highest value recorded in the Month of December 7.8 & lowest value recorded in the Month of May 7.2. On observing the highest value of water pH was recorded during the winter season where as the lowest was in the summer season. Similar result are also found such cases evaluated by Shreenivasan (1974), Bohra (1975). This range indicate that the water is alkaline in nature.

#### **Transparency:**

Water transparency is dependent on turbidity which is directly proportional to the amount of suspended matter. The present investigation the highest value of transparency is recorded in the Month of May in 96 and lowest value recorded in the Month of August in 13. The highest seasonal

averages are observed in the Summer season and lowest was in Rainy season.

#### **Turbidity:**

The Turbidity and Transparency play an important role in the energy dynamics of an aquatic ecosystem. During present investigation the highest value of turbidity recorded in the Month of October 31 NTU and lowest value recorded in the Month of May 07 NTU The highest seasonal averages are observed in the winter season and lowest was in the Summer season. The similar result are also found during investigative work Shrinivasan (1974), Nasar (1977) & Book of APHA (1980), Chandrasheker & Kodarker (1995), Khiare (2002).

#### **Total Dissolved Solid:**

In the present study TDS value were found below the standard permissible limit which around for its palatability. The present study indicates that TDS ranged highest in the Month of July 290 mg/lit and lowest in month of May 200 mg/lit. The seasonal averages higher value in Rainy season. Where as the lowest value in the Summer season of the study period. TDS level of above 500 mg/lit is not suitable for Flora and tastes unpleasant to drink. Hence the Kolsure reservoir is suitable for drinking water as well as all aquatic flora & fauna species.

#### **Dissolved Oxygen:**

Dissolved oxygen plays an important role in aquatic environment and is essential for growth of fish production. The Dissolved oxygen of highest value recorded in Month of March 8.5 mg/lit and lowest value recorded in the Month of June 3.1 mg/lit. The highest value of seasonal averages observed in Summer season and lowest in Rainy season. The Dissolved oxygen affects the growth, survival, distribution, behaviour and physiology of all aquatic organisms. The principal source of oxygen in water is atmospheric air and photosynthetic planktons obtaining sufficient oxygen is a greater problem for aquatic organism than terrestrial ones due to low solubility of oxygen in water.

#### **Free Carbon Dioxide:**

The concentration of free carbon dioxide were depending upon the temperature and oxygen concentration. Free carbon dioxide contents and dissolved oxygen content have inverse relationship. (Parker 1902, Ganapati 1943, Gupta 1989, Shalini 1994).

The highest value of Co<sub>2</sub> recorded in the Month of July 3.6 mg/lit. The lowest value recorded in the Month of December 1.4mg/lit. The seasonal averages are observed in maximum Rainy season and minimum in the Winter season. The similar result are also found during investigative work in the field Goel, Trivedi & Bhave (1985), According to Agrawal (1990) the co<sub>2</sub> content of the water depend upon the temperature of water , depth of water, rate of respiration & decomposition of organic matter.

#### Total Alkalinity:

The ability to resist changes in pH is alkalinity which is due to the presence of carbonates, bicarbonates, hydroxide, phosphates and other compounds in water. The total alkalinity the highest value recorded in the Month of June 186mg/lit and lowest value recorded in the Month of November 80 mg/lit Seasonal averages during highest value recorded in Rainy season and lowest value in Winter season. Alkalinity shows fluctuation according to season

**Table No.1**  
**Monthly variation in Physico-chemical Parameters of Kolsure Reservoir during June 2011 to May2012**

Month	Air Temp 0c	Water Temp 0c	pH	Trans-Parecy cm.	Turbidity NTU	Total Dissolved Solid mg/l	Dissolved oxygen Mg/l	Free Co <sub>2</sub> mg/l	Total Alkalinity
June-2011	38	37	7.3	22	23	281	3.1	2.9	186
July-2011	35	28	7.4	15	26	290	3.6	3.6	161
Aug-2011	28	26	7.3	13	28	278	3.5	3.0	146
Sept-2011	30	28	7.7	24	24	280	4.8	2.8	110
Oct-2011	34	30	7.6	29	31	283	6.5	2.6	94
Nov-2011	27	25	7.3	35	24	266	6.2	1.8	80
Dec-2011	25	16	7.8	43	20	228	5.3	1.4	89
Jau-2012	21	17	7.5	52	12	225	4.3	2.2	96
Fab-2012	25	19	7.6	64	13	219	6.4	2.4	119
Mar-2012	33	22	7.4	74	15	212	8.5	2.6	138
Apri-2012	35	28	7.5	85	12	207	7.7	2.8	165
May-2012	39	38	7.2	96	07	200	7.9	2.9	179

#### Conclusion

Finally from above studies it can be concluded that the environmental factors and seasons are responsible for the variation of physico-chemical parameters of the Kolsure reservoir from the above work it is concluded that the water of the Kolsure reservoir satisfied the desirable limits given by ISI and ICMR so this water is safe for drinking purposes.

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