

# Water Quality Analysis of a Water Reservoir at Lamana District Ajmer (Rajasthan)

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**Abstract:** Lamana is the village of Ajmer district of the Rajasthan state. It is situated on National Highway No. - 8 and in the near by area of Aravali mountain range. It is situated at at latitude 26.2399 N and longitude 74.4784 E at an elevation on 479.48 meters above mean sea level on north east region of the Globe. Aquatic ecosystems are historically the sources of life on earth. Global aquatic ecosystems consist of two broad classes - the fresh water ecosystem and marine ecosystem. The study of fresh water ecosystems from the view point of limnological aspects is one of the fascinating areas in the field of aquatic ecosystem. In a fresh water ecosystem, the water is subjected to the influence of wide array of physical and chemical factors, the rise and fall of which directly affect the flora and fauna altering their number and diversity. There is single outlet for the pond water and the only way of water loss from pond appears to be evaporation, which has resulted in accumulation of salts in the pond water. Since, the water of this water body is used for domestic and anthropogenic purposes in the area; therefore attempts were made to calculate the water quality index of the collected samples to explore the utility for livestock, agricultural and other household purposes.

**Keywords :** Water Quality, Analysis

## Introduction

Water is one of the most priceless gifts of nature on the Earth. It can be safely stated that water is the life line of our planet. The evolution of life on the Earth and the development of human civilization could have not been possible without water. Since the dawn of civilization, man had intimate relationships with water bodies. All the great civilizations of the world were centred on the water bodies. This is evident from the past civilizations like Nile valley civilization, Indus valley civilization, Mohan-jo-daro etc., which developed near the banks of perennial water bodies like lakes, rivers etc. Aquatic ecosystems are historically the sources of life on earth. Global aquatic ecosystems consist of two broad classes - the fresh water ecosystem and marine ecosystem. The study of fresh water ecosystems from the view point of limnological aspects is one of the fascinating areas in the field of aquatic ecosystem. The present study has been designed with the following objectives to evaluate the water quality of the chosen water body:

1. Assessment of various physico - chemical characteristics of the water body.
2. Relationship between different physical, chemical and biological parameters.

## MATERIAL AND METHODS

S. no.	Parameters	Methods
1	pH	Direct pH meter
2	Alkalinity	By titration
3	Chloride	By titration
4	Nitrate	Rubbing method
5	Fluoride	Ion selective electrode
6	Total dissolve solid	Conductivity bridge
7	Colour	By vision
8	Turbidity	Direct turbidity meter

## Study Area

Lamana is the village of Ajmer district of the Rajasthan state. It is situated on National Highway No. - 8 and in the nearby area of Aravali mountain range. It is situated at at latitude 26.2399 N and longitude 74.4784 E at an elevation on 479.48 meters above mean sea level on north east region of the Globe. The satellite view of the water reservoir (Mataji ki nadi) is shown in the figure- 01.

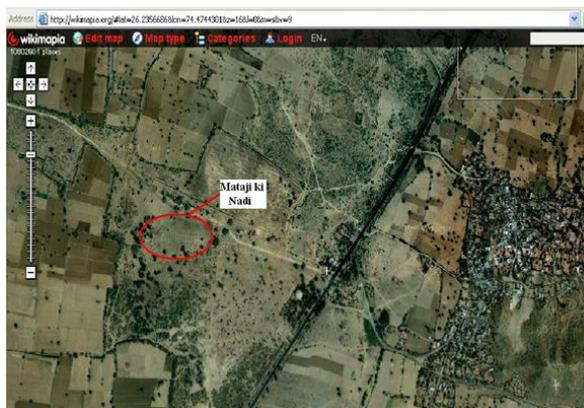


Figure-1. Satellite View of water reservoir (Mataji ki nadi) at Lamana.

▪ **Result And Discussion**

Six water samples were collected from different locations of the water reservoir. All samples were collected as per protocol of APHA 1989. The collected water samples were analyzed as per APHA 1989 norms for physico-chemical parameters. Results are listed in table 01 and figure -02

Table-1. Physical Parameters of Water Samples from Water Reservoir at Lamana

Sample No	Colour	Odo ur	Tem perature oC	pH	Al ka lin ity m g/L	TD S m g /L	Chl ori de m g /L	Ni tra te m g/L
S1	LB G	LM	26	7.08	112	512	148.2	3.62
S2	LB G	LM	26.4	7.86	142	512	68.2	0.8
S3	LB G	LM	27.9	7.52	138	512	88.8	4.68
S4	LB G	LM	27.4	7.22	116	448	58	1.02
S5	LB G	LM	26	7.45	122	512	102.4	1.85
S6	LB G	LM	27.5	7.51	146	768	118.6	3.82

LBG (Light Blue Green)  
LM (Light Murky)

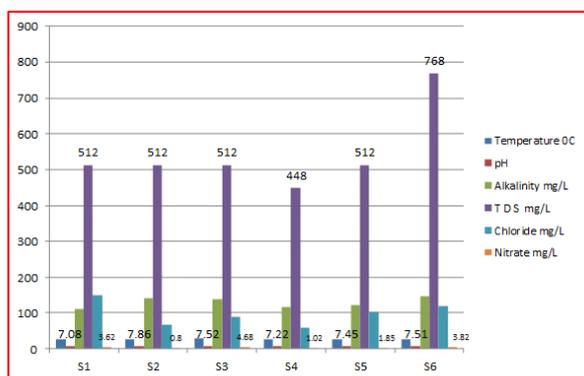


Figure-2 Physical Parameters of Water Samples from Water Reservoir at Lamana

The water was observed to be blue-green in colour due to dominance of algal bloom in the reservoir. The temperature of water ranged from 26 to 28oC, which is marginally higher than other surface water bodies in the area. The algal bloom in water reservoir is responsible for absorption of light and heat from sunlight due to its coloured pigments leading to

slightly higher temperature of water reservoir. The water samples emanated light murky odour..

In the present study, pH values of the water were found in the range of 7.08 to 7.86. All the water samples were slightly alkaline in nature.(Siroya, A.K. 2001) The constituents of alkalinity in natural water mainly include carbonate, bicarbonate and hydroxide which are resultants of dissolved mineral substances in soil and atmosphere. In the study area, alkalinity in water samples range between 112 to 146 mg/L and these are below the acceptable limit.

However the chloride content which varied from 58 to 148.2 mg/L in all the samples was below the limit.

The concentration of nitrate in this water body ranges from 0.8 to 4.68 mg/L.(Panwar Nisha 2009) Nitrates are essential nutrients for plant growth. Excessive concentrations of nitrate in drinking water may cause methaemoglobinaemia in small children and also damaged the fetus of pregnant ladies. Nitrate reacts with haemoglobin of blood which carries oxygen in the blood to form methaemoglobin. Methaemoglobin cannot carry oxygen therefore, the affected baby suffers oxygen deficiency. Such a condition is referred to as methaemoglobinaemia and is commonly called as “Blue baby syndrome”. The concentration in excess of 10 mg/L as N, equivalent to 44 mg/L of NO<sub>3</sub> evidently present this hazard (Hem, 1985).

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