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## Water quality assessment of Mora talab of Biharsharif using NSF-WQI

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**Abstract :** All life on earth depends on water. Fresh water is a critical, finite, vulnerable, renewable natural resource on the earth and plays an important role in our living environment. without it life is impossible. Standing water bodies have great importance as they are recharging resources for drinking domestic and agricultural use before the civilization. water quality of pond is important for health and economy of people. The present study is going to centralize on the Mora talab Biharsharif Nalanda district in Bihar. Physico-chemical analysis of the water does not provide the direct conclusions on the quality of water quality index calculates all the parameters and gives an easy decision making output to analyze the quality of water. A simple but useful index is the national sanitation foundation water quality index (NSF-WQI). This index can be calculated by determining only selected physico-chemical parameters change in water temperature, pH. Dissolved oxygen, biochemical oxygen demand, total phosphorus, nitrates, and turbidity were used for the calculation of the index from the listed data the quality of water was concluded.

**Keywords:** Mora talab, Physico-chemical characteristics, NSF-WQI, Water Quality.

### INTRODUCTION

Water is essential for all socioeconomic development and for maintaining healthy ecosystems. As pollution increases and development call for increased allocations of groundwater and surface water for the domestic agriculture and industrial sectors the pressure on water resources intensifies leading to tensions conflicts among user and excessive pressure on the environment . The inversing.Stress on fresh water resources brought about by ever rising demand and profligate use as well as by growing pollutions worldwide is of serious concern.

WQI is widely used tool in different parts of the world to solve the problems of data management and to evaluate success and failures in management strategies for improving water quality. The index is a numeric expression used to transform large quantities of water

characterization data into a single number, which represents the water quality level (Abbsai 2002)<sup>1</sup>. A number of indices have been developed to summarize water quality data for communication to the general public in an effective way. In general water quality indices incorporate data from multiple water quality parameters into mathematical equation that rates the health of water body with a single number. That number is placed on a relative scale to justify the water quality in categories ranging from very bad to excellent, this number can be easily interpreted and understood by political decision makers non- technical water manager and the general public.

The water quality index (WQI) has been considered as one criteria for drinking water classification based on the use of standard parameters for water characterization. A commonly used WQI was developed by the national sanitation founda-tion (NSF) in 1970 (Brown et. al. 1970)<sup>2</sup>. The WQI is one of the most widely used of all existing water quality procedures. WQI was the intent of providing data (Lieu et. al.2003)<sup>3</sup>. The index ranges from 0 to 100, where 100 represent an excellent water quality condition.

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Mora talab is a pond of Biharsharif of Nalanda district in Bihar aims to weigh up the suitability of water for recreational values and for the protection of aquatic life based on NSF –WQI.

**MATERIALS AND METHOD:**

Study Site:- Study was carried out at Mora talab Biharsharif in Nalanda district (Bihar) India. Bihār Sharīf, it lies in Nalanda, Bihar, India and its geographical coordinates are 25° 11' 0" North, 85° 31' 0" East. The big talab of this area is Mora talab (Mora Pachasa) the water from this pond is mainly used for the cattle washing, clothes washing, irrigation and other domestic purposes. Sampling and analysis of composite surface water sampling methods was followed for the collection of samples between 8 to 10 am on second week of every month throughout the year (July 2012 to May 2013). White plastic gallons of one liter capacity were used for collecting the samples. Temperature and pH were analyzed on the spot and winkelerization was done in separate 300 mL bottles for the estimation of Biochemical Oxygen demand. For transportation of samples to laboratory dark colored ice box was used in order to avoid the exposure of samples to sunlight variations in temperature. Samples were analyzed for physico-chemical variables following methods (APHA. 1998)<sup>3</sup>.

**RESULT AND DISCUSSION:**

There are several reports on standing water body

water quality assessment using physico chemical parameters (Hosmani et. al., 1980<sup>4</sup> Ravi kumar et.al. , 2011, Giriappanavar et. al. 2013)<sup>5</sup>. The water quality index (WQI) integrates complex analytical raw data and generates a single number that expresses subjectively the water quality. Such a rating scale allows for simplicity and consumer comprehensibility. The water quality index approach has many variant in the literature, and comparative evaluation have been undertaken (Dunnette 1979, Miller et. al., 1986)<sup>6</sup>. A water quality index can be of different types depending on its final intended purpose. It can be highly specific for different water bodies or could be a general one for all types of water meant for human consumption. A WQI can also be used not just on reading at a single point of time but also on data collected over a period of time. The water quality index was calculated using NSF information software ( Ramakrishnaiah 2009) and compared with standard water quality rating (Table no.1).

**Table No. 1: Water quality Index Rating of the standing water.**

WATER QUALITY INDEX (WQI)	RATING
90-100	Excellent (E)
70-90	Good (G)
50-70	Medium
25-50	Bad (B0)
0-25	Very Bad (VB)

**Table No. 2: Monthly variations In physico-chemical parameters and WQI of the Mora Talab.**

Parameters	July	Aug	Sept	Oct.	Nov	Dec.	Jan.	Feb.	Mar.	Apr.	May
pH	8.0	7.3	8.4	7.8	7.6	8.3	8.5	8.2	7.9	7.4	7.3
Temp <sup>o</sup> c	29.8	26.5	26.8	25.2	5.5	21.5	20.5	22.4	23.4	26.0	29.5
DOmg/L	4.8	4.1	6.3	3.4	6.2	6.0	7.2	4.12	4.4	2.8	2.6
BODmg/L	4.4	3.7	6.4	3.4	6.2	5.5	7.2	4.1	4.2	2.8	4.2
Turbidity NTU	15.6	16.8	12.0	8.8	9.8	3.6	4.6	6.3	5.2	6.6	4.3
Phosphate mg/L	2.54	0.25	0.19	0.40	0.57	0.16	0.18	0.21	0.24	0.22	0.18
Nitrate mg/L	0.12	0.53	0.45	0.25	0.24	0.8	0.28	0.15	0.14	0.19	0.14
WQI	55.25	55.5	60.12	59.65	66.75	59.20	59.4	58.55	59.70	62.80	61.56
Rating	M	M	M	M	M	M	M	M	M	M	M

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The index values ranged from a minimum of 55.25 during the month of July and reached a maximum of 66.75 during November. The water quality of Mora Talab is rated medium during the all the month of study ( table no.2). The conditions in it often stray from the normal levels. It is evident from the results that water quality in the pond under study is degraded considerably due to contamination of water by sewage from the surrounding. In the present study it is observed that the stress of the pond under study is largely due to interference of human activities.

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