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ORIGINAL ARTICLE

Assessment of Water Temperature and Water Flow Conductivity in Chambal River at Dholpur District

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ABSTRACT

Chambal River is major source of potable water, the River is also ecologically very important as it harbors very rich biodiversity. Chambal River is only water source for Rajasthan and its water quality should be always checked at particulars interval. Present study revealed that water quality parameters temperature and water flow measurement of some sample site showed contamination and depletion in quality of Chambal River in pre monsoon. The water quality was maintained in certain sample site and all parameters were found under limit. We should maintain quality of water because Chambal River is major source of drinking water for districts of Rajasthan.

Key words: *temperature, water flow conductivity, water quality, Chambal River..*

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INTRODUCTION

Chambal River plays an important role in integrating and organizing the landscape, and moulding the ecological setting of a basin. it is the most significant water resource of the state of Rajasthan it full fill the water demands of a large number of cities and towns situated on its banks. Chambal River is major source of potable water, the River is also ecologically very important as it harbors very rich biodiversity. Some authors also revealed that the diversity and richness indices are an indication of moderate River health. The Chambal River is a tributary of the Yamuna River in central India, and forms part of the greater Gangetic drainage system. It is a legendary River and finds mention in ancient scriptures. The perennial Chambal originates from Mhow town, near Indore, MadhyaPradesh. The Chambal and its tributaries drain the Malwa region of north western Madhya Pradesh, while its tributary, the Banas, which rises in the Aravalli Range, drains south eastern Rajasthan. It ends a confluence of five Rivers, including the Chambal, Kwari, Yamuna, Sind, Pahuj, at Pachnadanear Bhareh in Uttar Pradesh state, at the border of Bhind and Etawah districts. People along the River use water for many purposes. Water is the basic element for the life to all living creatures on earth, In Rajasthan; Chambal Riversare the major sources of water where a large part of population of district and rural depends on them for their daily water requirement. Some researchers reported that Chambal River is considered pollution free and hosts an amazing Riverine faunal assemblage including two species of crocodilians; the Mugger and Gharial, 8 speciesof freshwater turtles, smoothcoated otters, gangetic River dolphins, skimmers, black-bellied terns,sarus cranes and black-necked storks, amongst others. In this paper, an attempt has been made to assess the water quality on physio-chemical to study the extent of pollution in River Chambal in dholpur district.

MATERIALS AND METHODS

TEMPERATURE: The parameter of temperature is basically important for its effects on the chemistry and biological in the organism in water. A rise in the temperature of the water leads to the speeding up the chemical reaction in water, reduces the solubility of gases and amplifies the taste and odours.Temperature of water sample was measured by a centigrade mercury thermometer having marks from 1-100^{0}C with division calibrated for 0.1^{0}C.

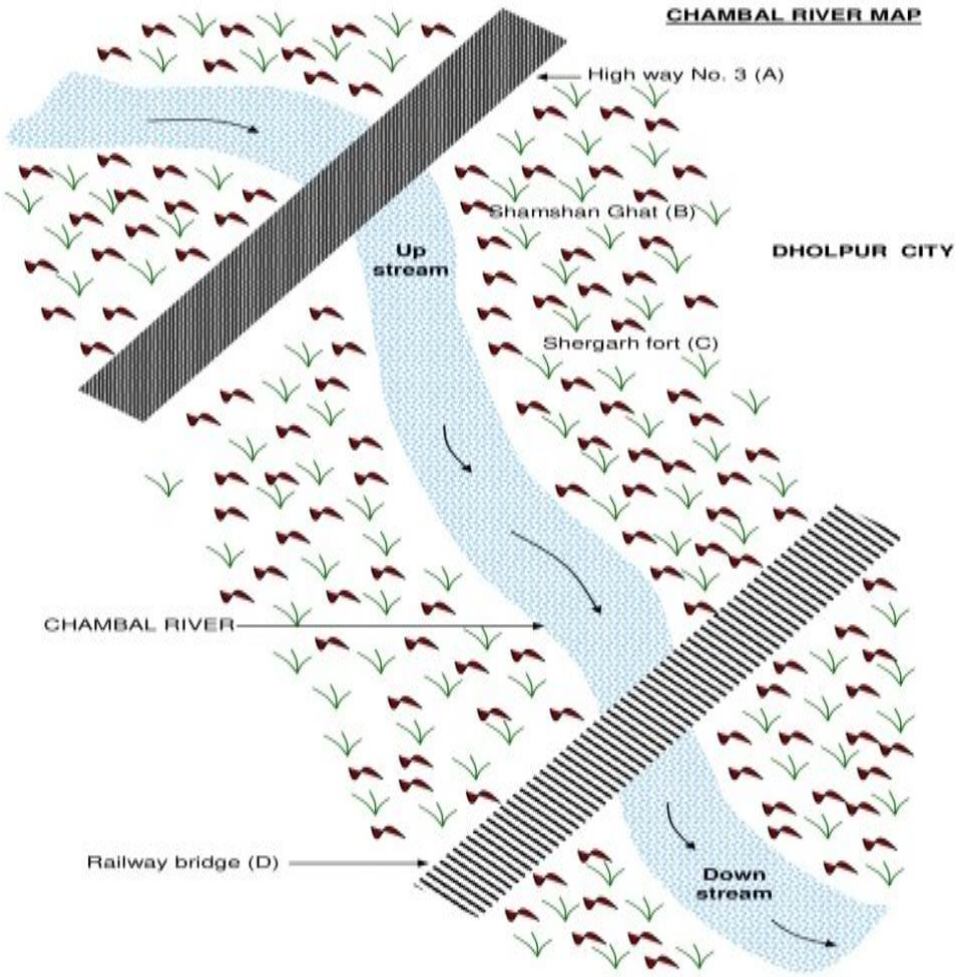

Fig. 1: outline map showing position of Chambal River at dholpur

WATER FLOW MEASUREMENT

A number of methods may be used through measuring flow of streams but the choice of method depend mostly on the affordabilidy but the type of local also influences. I used surface flow method.

Process: It simple approach in which a float (plastic ball) used. The time required for a float to travel (t), a known distance (S), average speed is obtained by

$$|V| = \rightarrow \frac{S}{1.2t}$$

The constant 1.2 accounts for the fact that surface speed are normally about 1.2 time greater.

RESULTS AND DISCUSSION

TEMPERATURE: The temperature of water sample has been observed in degree centigrade with the help of calcium thermometer in different four stations. However the temperature of Chambal water varies significantly after each three months interval.

Table 1: average temperature

Month	Temperature (^{0}C)			
	Site A	Site B	Site C	Site D
Oct-04	21	21.8	21.5	21.0
Jan-05	15	17.0	17.4	17.6
April-05	27	27.5	28.0	28.5
July-05	30	31.6	31.6	32.0

Site A= High way, Site B= Shamshan Ghat, Site C= Shergarh Fort, Site D= Near railway bridge

WATER FLOW MEASUREMENT

Table 2: water flow measurement

Month	Water flow measurement (m/sec)			
	Site A	Site B	Site C	Site D
Oct-04	0.81	0.84	0.80	0.86
Jan-05	0.75	0.80	0.81	0.81
April-05	0.86	0.82	0.81	0.80
July-05	0.90	0.95	0.83	0.83

Site A= High way, Site B= Shamshan Ghat, Site C= Shergarh Fort, Site D= Near railway bridge

The temperature of Chambal water slightly varies at upstream site (A) and downstream site (D) during sampling of water. Minimum temperature is recorded in the end of Jan-2005 while maximum in the month of July-2005, However, variation in the temp. has been recorded in three months intervals in the present investigation. Such variation may be attributed to a lot of chemical composition due to discharge of major portion of the city sewage in to the River which exerts influence on the River temperature. The sewage and other waste when mixed with the River water, raise the temp. of the water as it is fact that on mixing the acidic or alkaline waste in a water body the temp. of water gets elevated. The mean temp. for each session, shows little variation from one sampling point to another. The basis of three session water temp. varies during rainy, winter and summer respectively. During summer temp. increase and in winter temp. decline indicate that there is a reciprocal relationship between air and surface water temp. in the River. The water temp. is generally higher during the dry session. This may be due to the surface evoparatior requiring heat from the water body. The above findings are in affirmation to Pandey (1989), P. Gandheswary *et al*. (1990), Hasnain*et al*. (1992), and Verma R.K., Kapoor Suman *et al*. (2005) in River Ganga, Yamuna, River Chambal and other polluted Rivers respectively. It becomes quite clear that water quality of upstream site (A) and downstream site (D) is different with regards to temp. parameter. Water flow was maximum in July-05 at site (A) while it was minimum in Jan-05 at site (A). It may be due to hardness and turbidity of water. Turbidity is very much responsible for the disturbed speed of water flow and weather condition.

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