

WATER LOSS STUDIES IN MANDLESHWAR-RAJGHAT REACH OF NARMADA BASIN

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Narmada, the fifth largest west-flowing river of India, possesses some unique characteristics, one of them being the water loss in its lower reaches between Mandleshwar and Rajghat due to subterranean flow. This has been pointed out by the Geological Survey of India (GSI) while carrying out rim stability studies for the reservoir of the Sardar Sarovar Project under construction. The reservoir will submerge this reach and therefore it is necessary that the phenomenon of this water loss is studied in detail.

The paper deals with different studies carried out to ascertain the likely quantity of water loss, if any, during different periods of the year and the manner in which the loss takes place. The studies include analysis of observed stream flow data, simultaneous field measurement at upstream and downstream locations, hydrological studies, and tracer studies. A brief description of these studies is given below.

The recorded flow data of Central Water Commission of the Narmada river at Rajghat site from 1972-90 and for Mandleshwar site from 1971-92 were analysed on a monthly and yearly basis to ascertain whether there was any water loss.

Field measurements for estimating water loss were carried out for two different seasons, i.e. pre-monsoon and post-monsoon, for two reaches, one between Mandleshwar and Jalkoti and the other between Bhogaon and Ghatwara Dharampuri. Studies were carried out between 4th to 6th June 1993 and 6th to 15th February 1994.

Hydrogeological studies were carried out at selected locations of the Dharampuri and Talkoti sites, to identify geologically-weak features responsible for the water loss, if any.

The Tracer studies were undertaken at the Dharampuri site to estimate water loss, if any, from the river bed or banks, through the rim of the reservoir. The studies were divided into three groups: (1) water level measurement in the existing dugwells on the river banks; (2) river channel and borehole water-level measurements in the river bed; and (3) nuclear logging of boreholes in the river beds.

From the studies carried out, it was found that the quantity of water loss appeared to be confined to the basin and not out of the basin. However, further studies are being carried out for final confirmation.