

RESERVOIR OPERATION

Reservoirs are one of the most important components of water resources development. India has a monsoon climate in which about 85 to 90 % of the annual flow takes place during four months of monsoon. In view of this, it is necessary to store water when its availability far exceeds the demand so that the requirements during dry season can be met. In India, more than 4000 major and medium reservoirs have been constructed for utilization of river flows.

During recent times, construction of new projects is becoming increasingly difficult since the availability of suitable sites is becoming less, there are environmental and resettlement issues which are an obstruction to new projects and because

of financial reasons. However, the demands for water for various uses are increasing and every year some available storage capacity is lost to sedimentation. In view of these reasons, it is important that the existing reservoirs are operated in the most efficient manner.

TECHNOLOGY

A software package named, "Software for Reservoir Analysis (SRA)" has been developed at NIH that contains modules for various kinds of reservoir analysis. The main modules include storage yield analysis, hydropower analysis, reservoir routing, and simulation of a multi-reservoir system for conservation operation and for flood control operation. The package is menu - driven so that a



Figure - 1 A view of Dharoi dam in Sabarmati basin, Gujarat

user who is not skilled in computer usage can easily use it. The analytical procedures are those that are followed in field organizations and results are presented in a form that can be readily used by field engineers. In addition to tabular output, graphs are also generated for easier visualization.

Studies have shown that improvement in operation of reservoirs, by a few percentage points, translates into large sum of money. The SRA software is being used by field organizations such as Central Water Commission, National Water Development Agency, Central Design Organizations of a few states, Narmada Control Authority etc. It is also being used in academic organizations such as IIT, Chennai and IIT, Roorkee as a teaching aid. Wider use of such indigenously used software will definitely help in better management of water resources in India, higher economic benefits, poverty alleviations and improvement of environment.

This software has been developed, validated and used at NIH for the analysis of a number of reservoirs.

ENVIRONMENTAL IMPACT

It does not involve any adverse impact on the environment.

ECONOMICS

It will have intangible benefits.

BENEFICIARIES

In addition to the general public, the beneficiaries from this work include various Central and State Government Organizations, such as the Central Water Commission, Irrigation and Water Resources Departments, and various research and academic organisations.

INTELLECTUAL PROPERTY RIGHTS

Since the software has been developed at the National Institute of Hydrology, Roorkee, the Intellectual Property Rights in respect of the software wholly lies with the Institute.