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INTRODUCTION

This manual has been designed to explain the use of the software DESERT version 1.0. This software has been designed at the International Institute for Applied System Analysis in cooperation with the Institute for Water and Environmental Problems, Barnaul, Russia. DESERT is available on a basis of cooperation and decision making applications.
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The purpose of this software is to supply a flexible and easy-to-use integrated MS-DOS PC-based software package for decision support in water quality management on a river basin scale. The software incorporates a number of useful tools, including easy-to-use data handling module with a dBase style database engine, simulation and calibration of hydraulics and water quality, display of computed data with the help of external spreadsheet software, and optimization based on dynamic programming algorithm. The main utility of the package is in providing a useful and powerful instrument for water quality assessment and decision making in emission control, including selection of wastewater treatment alternatives, standard setting and enforcement.
This manual is structured in the following way:

- In Chapter one some backgrounds on the features of DESERT are given. Most of the attention is devoted to illustrate the way DESERT represents the river basins, the objects that can be part of the model structure, the solution methods of hydraulic and mass transport equations governing the riverine system, the calibration methods available for the water quality model, and the optimization technique.

- Chapter two points out the software and hardware requirements of DESERT.

- Chapter three is the core of the manual. Here, working DESERT is explained in a step by step fashion from setting the input data files to display and plot results. After a general overview of the process involved with working with DESERT, a detailed description is given of every step. Through all the chapter the explanation of the use of DESERT is supported also by constructing a simple illustrative example of riverine basin modeling.

- The menus, commands, and tools available in the DESERT window are extensively explained in Chapter four.

- Chapter five illustrates the language used for defining the Water quality models and governing the simulation, calibration, and optimization procedure.

- Appendix one contains the list of the function supported by DESERT.

- Appendix two contains a bibliography of the text cited in the manual.