

TABLE OF CONTENTS

1. A GENERAL DESCRIPTION OF DESERT 1.0

1.1 THE RIVERINE SYSTEM AND ITS CHARACTERISTICS AS TREATED BY DESERT 1.0

1.2 A GENERAL OVERVIEW OF THE ORGANIZATION OF DESERT 1.0

- 1.2.1 Data management unit
- 1.2.2 Display unit
- 1.2.3 Hydraulic unit
- 1.2.4 Water quality simulation unit
- 1.2.5 Data transfer unit
- 1.2.6 Calibration unit
- 1.2.7 Optimization unit

2. SOFTWARE AND HARDWARE REQUIREMENTS: INSTALLATION PROCEDURE

3. WORKING WITH DESERT 1.0

3.1 A GENERAL DESCRIPTION OF THE STEPS INVOLVED IN WORKING WITH DESERT

3.2 THE EXAMPLE USED IN THE MANUAL

3.3 THE INPUT DATA FILES

- 3.3.1 The Universe file (.UNV)
- 3.3.2 The MasterTable file
- 3.3.3 The MapTable file
- 3.3.4 The ProfileTable files
- 3.3.5 The InfoTable files
- 3.3.6 The AlternativeTable files

3.4 PREPARATION OF THE LINKING FOR EXPORTING THE DATA

3.5 WORKING ON THE UNIVERSE FILE REPRESENTATION

3.6 DEFINING A RIVERNET FILE

3.7 DEFINING THE WATER QUALITY MODEL AND RUNNING THE SIMULATION

3.8 PLOTTING RESULTS

3.9 OPTIMIZATION PROCESS

4. THE DESERT WINDOW: MENUS, COMMANDS, AND TOOLS

4.1 THE DESERT WINDOW

4.2 THE FILE MENU

4.3 THE EEDIT MENU

4.4 THE VIEW MENU

4.5 THE WINDOW MENU

4.6 THE HELP MENU

4.7 DESCRIPTION OF TOOLS

5. THE SIMULATION LANGUAGE MODUS

5.1 THE OPERANDS OF THE “MODUS” SIMULATION LANGUAGE

5.2 LEXICAL ELEMENTS OF MODUS

5.3 LANGUAGE STRUCTURE

5.4 EXECUTION COMMANDS

6. INDEX

LIST OF FIGURES

- FIGURE 1.1.1 ADMISSIBILITY OF RIVERINE SYSTEM SCHEMES.
- FIGURE 1.1.2 REPRESENTATION OF A RIVERINE SYSTEM AS A BINARY TREE.
- FIGURE 1.2.3 OUTLINE OF THE DESERT 1.0 SOFTWARE.
- FIGURE 1.2.4 THE AUTOMATIC REPRESENTATION OF A RIVERINE SYSTEM.
- FIGURE 1.2.5 THE REPRESENTATION OF A RIVERINE SYSTEM BASED ON A MAPVIEWER (TM) FILE.
- FIGURE 1.2.6 REQUIREMENTS FOR THE APPLICATION OF STEADY STATE AND DIFFUSION WAVE APPROXIMATIONS.
- FIGURE 1.2.7 CONVENTIONAL MODELING APPROACH (RIGHT) VERSUS DESERT APPROACH (LEFT, IN THE DASHED BOX).
- FIGURE 3.2.1 DESCRIPTION OF THE RIVERINE SYSTEM USED AS EXAMPLE.
- FIGURE 3.3.1 THE UNIVERSE FILE USED IN THE EXAMPLE (EXAMPLE.UNV).
- FIGURE 3.3.2 THE MAPEXE.BNA FILE.
- FIGURE 3.5.1 OPENING THE EXAMPLE.UNV.
- FIGURE 3.5.2 THE DIALOGUE BOX ILLUSTRATING THE CROSS-SECTION MAIN0003 OF THE EXAMPLE.UNV.
- FIGURE 3.5.3 THE DIALOGUE BOX USED FOR DETERMINING THE METHOD FOR CARRYING OUT THE HYDRAULIC AND WATER QUALITY SIMULATION
- FIGURE 3.5.4 THE TRANSPORT MODEL SPECIFICATION DIALOGUE BOX AS IT APPEARS WHEN STEADY STATE OR DYNAMIC WAVE APPROACH IS CHOSEN.
- FIGURE 3.5.5 SELECTING ALL THE NETWORK OF THE EXAMPLE.UNV FILE.
- FIGURE 3.7.1 THE MODEL DESCRIBED USED AS EXAMPLE (BODNSOD.MOD).
- FIGURE 3.8.1 THE LINK TO TABLE DIALOGUE BOX.
- FIGURE 3.8.2 THE INSERT OBJECT DIALOGUE BOX.
- FIGURE 3.9.1 THE BNSODOPT.MOD FILE.
- FIGURE 4.1.1 THE APPLICATION WINDOW OF DESERT 1.0 AND THE TERMINAL WINDOW AS THEY MAY APPEAR JUST AFTER LAUNCHING DESERT 1.0.
- FIGURE 4.2.1 THE FILE MENU OPENED FROM THE TERMINAL WINDOW.
- FIGURE 4.2.2 THE OPEN FILE DIALOGUE BOX.
- FIGURE 4.2.3 THE IMPORT FILE DIALOGUE BOX.
- FIGURE 4.2.4 THE SAVE AS FILE DIALOGUE BOX WHEN ACTIVATED FROM A RIVERNET FILE WINDOW.
- FIGURE 4.3.1 THE EDIT MENU WHEN INVOKED FROM A UNIVERSE FILE WINDOW.
- FIGURE 4.3.2 THE SELECTION OF A RIVERINE SUBSYSTEM FROM THE EXAMPLE BY USING THE SELECT RIVERNET COMMAND.
- FIGURE 4.4.1 THE VIEW MENU.
- FIGURE 4.4.2 THE ZOOM RECTANGLE POINTER.
- FIGURE 4.4.3 THE VISIBILITY DIALOGUE BOX AS IT APPEAR WHEN INVOKED FOR THE FIRST TIME.
- FIGURE 4.5.1 THE WINDOWS MENU. DESERT WINDOWS ARE TILED VERTICALLY.
- FIGURE 5.4.1 THE RESULT OF PLOTTING THE COMPONENTS L AND N.
- FIGURE 5.4.2 THE PRINTING THE L COMPONENT WHEN ONLY THE UPPER MAIN REACH AND THE SECONDB REACH ARE SELECTED.

LIST OF TABLES

TABLE 3.2.1 WATER STAGE ELEVATION-DISCHARGE RELATIONSHIP FOR WEIR0001.

TABLE 3.2.2 INITIAL BOUNDARY CONDITIONS FOR THE EXAMPLE (NO TREATMENT ON EFFL0001 AND EFFL0002).

TABLE 3.2.3 MEASUREMENTS GENERATED BY THE MODEL USED.

TABLE 3.2.4 WASTE WATER TREATMENT ALTERNATIVES FOR THE POLLUTION SOURCES EFFL0001 AND EFFL0002.

TABLE 3.3.1 THE ORGANIZATION OF THE MASTERTABLE FILE USED FOR THE EXAMPLE (MASTEREX.DBF).

TABLE 3.3.2 THE PROFILETABLE USED IN THE EXAMPLE (PROFEXE1.DBF).

TABLE 3.3.3 THE INFOTABLE USED IN THE EXAMPLE FOR BOUNDARY CONDITIONS AND WATER QUALITY CONSTRAINTS AND MEASUREMENTS (INFOEXE1.DBF).

TABLE 3.3.4 THE INFOTABLE USED IN THE EXAMPLE FOR THE WATER QUALITY OF THE DIFFERENT WASTE WATER TREATMENT ALTERNATIVES OF THE TWO WATER TREATMENT PLANTS (INFOEXE2.DBF).

TABLE 3.3.5 THE ALTERNATIVETABLE USED IN THE EXAMPLE (ALTEREX1.DBF).

TABLE 5.3.1 OPERATORS ALLOWED IN THE MODUS LANGUAGE.

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.

