DOCUMENTATION OF MODEL INPUT AND OUTPUT VALUES FOR THE GROUND-WATER RESOURCES OF HONEY LAKE VALLEY, LASSEN COUNTY, CALIFORNIA, AND WASHOE COUNTY, NEVADA

By Hugh T. Mitten *and* Clark J. Londquist

Supplement to Water-Resources Investigations Report 90-4050

U.S. GEOLOGICAL SURVEY

Open-File Report 91-68

7215-05

Sacramento, California
1991

U.S. DEPARTMENT OF THE INTERIOR
MANUEL LUJAN, JR, *Secretary*

U.S. GEOLOGICAL SURVEY
Dallas L. Peck, *Director*

For sale by the Books and
Open-File Reports Section,
U.S. Geological Survey
Federal Center, Box 25425
Denver, CO 80225

For additional information write to:
District Chief
U.S. Geological Survey
Federal Building, Room W-2234
2800 Cottage Way
Sacramento, CA 95825

CONTENTS

TABLES

DOCUMENTATION OF MODEL INPUT AND OUTPUT VALUES FOR THE GROUND-WATER RESOURCES OF HONEY LAKE VALLEY, LASSEN COUNTY, CALIFORNIA, AND WASHOE COUNTY, NEVADA

By Hugh T. Mitten *and* Clark J. Londquist

Abstract

Documentation of model input and sample output values for the ground-water flow system of the eastern part of the Honey Lake Valley, Lassen County, California, and Washoe County, Nevada, has not been published previously. In this report, the documentation is contained on a 5 1/4-inch diskette in files presented according to the American International Standard Code for Information Interchange. These files require approximately 1.05 megabytes of disk space on an IBM-compatible microcomputer using the MS-DOS operating system.

INTRODUCTION

For a study of the ground-water resources of Honey Lake Valley, Lassen County, California, and Washoe County, Nevada, a four-layer digital model was developed for the eastern part of the basin, using the computational algorithm of McDonald and Harbaugh (1988). Results of the Honey Lake Valley study are given by Handman and others (1990).

Although the report by Handman and others (1990) summarizes the data input to the model, detailed documentation of grid location, model input, and sample output has not been published previously. The purpose of this report, which is a supplement to the report by Handman and others (1990), is to provide detailed, electronic documentation of the model.

MODEL GRID

Organization of the model grid was based on a composite of U.S. Geological Survey topographic maps. The model-grid lines are oriented north-south, parallel to the northern part of the California-Nevada State boundary (Handman and others, 1990). The left edge of column 13 is about 1,000 feet east of the State boundary which is 120 degrees west longitude; the bottom edge of row 17 is about 2,200 feet south of the line at 40 degrees 15 minutes north latitude.

INPUT AND OUTPUT FILES

The original input and output for the Honey Lake model were developed on a Prime computer and transferred to an IBM-compatible microcomputer (operating under MS-DOS version 3.3). Files on the diskette are the same as the original Prime computer files and are presented according to the American International Standard Code for Information Interchange (ASCII).

Although the model program runs on a variety of computers, the input data might have to be reorganized depending on the specific computer and compiler being used. There is no way to anticipate the type of system which may be used to run the Honey Lake model or which compiler will be used for the model program, which is written in Fortran 77.

The model simulated three pumping conditions: predevelopment, current (1988), and proposed. Input files for BASXXX and WLSTXXX packages (table 1) and output files (table 2) are listed for each of the three pumping conditions.

Files for the Honey Lake model are on a high-density, double-sided, soft-sectored diskette with a

Table 1. Model-input files, Fortran units, maximum record length, size, and descriptions

[IBOUND is a variable showing status of model cell; VCONT is a variable expressing both vertical hydraulic conductivity and vertical grid spacing. Note that the well package is used to simulate pumpage, recharge from streams, and irrigation return]

File	Fortran unit	Maximum record length	Size (bytes)	Description
BAS1988.PAC	5	(1)	848	Basic package using well package WLSTIRRC.PAC
BASPRE.PAC	5	(1)	848	Basic package using well package WLSTRC.PAC
BASPROP.PAC	5	(1)	848	Basic package using well package WLST.PAC
BCF.PAC	10	(1)	1099	Block-centered-flow package
BOTTOM1.DAT	105	120	6244	Bottom altitude, layer 1 (shallowest layer)
BOTTOM2.DAT	106	120	5914	Bottom altitude, layer 2
BOTTOM3.DAT	107	120	5684	Bottom altitude, layer 3
BOTTOM4.DAT	108	120	4924	Bottom altitude, layer 4 (deepest layer)
ETEXDP.DAT	53	120	8784	Evapotranspiration extinction depth
ET.PAC	50	(1)	228	Evapotranspiration package
ETSURF.DAT	51	120	6364	Evapotranspiration surface altitude
GHB.PAC	70	(1)	3986	General-head-boundary package
HEAD1.DAT	35	125	7416	Starting heads, layer 1 (shallowest layer)
HEAD2.DAT	36	125	7416	Starting heads, layer 2
HEAD3.DAT	37	125	7416	Starting heads, layer 3
HEAD4.DAT	38	125	7416	Starting heads, layer 4 (deepest layer)
HYCON1.DAT	101	120	8784	Hydraulic conductivity, layer 1
HYCON2.DAT	102	120	8784	Hydraulic conductivity, layer 2
HYCON3.DAT	103	120	8784	Hydraulic conductivity, layer 3
HYCON4.DAT	104	120	8784	Hydraulic conductivity, layer 4
IBOUND1.DAT	31	(1)	2118	Boundary, layer 1
IBOUND2.DAT	32	(1)	1947	Boundary, layer 2
IBOUND3.DAT	33	(1)	1878	Boundary, layer 3
IBOUND4.DAT	34	(1)	1725	Boundary, layer 4
OUTCON.PAC	120	(1)	378	Output control package

Table 1. Model-input files, Fortran units, maximum record length, size, and descriptions—*Continued*

File	Fortran unit	Maximum record length	Size (bytes)	Description
RECH.DAT	81	96	2800	Recharge data (areal recharge)
RECH.PAC	80	([1])	86	Recharge package (areal recharge), in acre-feet per year, converted in package to cubic feet per day
SIP.PAC	90	([1])	148	Strongly implicit procedure package
TOP2.DAT	112	120	6244	Altitude, top of layer 2
TOP3.DAT	113	120	5914	Altitude, top of layer 3
TOP4.DAT	114	120	5684	Altitude, top of layer 4
VCONT1.DAT	109	120	8652	VCONT, layer 1
VCONT2.DAT	110	120	8644	VCONT, layer 2
VCONT3.DAT	111	120	8620	VCONT, layer 3
WLST.PAC	22	([1])	5158	Well package used with basic package BASPROP.PAC to represent recharge from streams and discharge from existing and proposed wells
WLSTIRRC.PAC	20	([1])	4440	Well package used with basic package BAS1988.PAC to represent recharge from streams and irrigation return and discharge from existing wells
WLSTRC.PAC	21	([1])	3652	Well package used with basic package BASPRE.PAC to represent recharge from streams only
TOTAL			178659	

[1]Record length is 80 characters or less

Table 2. Model-output files assigned to Fortran unit 6, size, and descriptions

File	Size (bytes)	Description
SSCAL.OUT	281109	Output for steady-state simulation with pumpage from existing production wells calibrated to potentiometric heads during spring 1988, using BAS1988.PAC and WLSTIRRC.PAC (table 1)
SSNOPMP.OUT	279725	Output for steady-state simulation with no pumpage from production wells (predevelopment conditions), using BASPRE.PAC and WLSTRC.PAC (table 1)
SSPMP.OUT	283225	Output for steady-state simulation with proposed pumpage, using BASPROP.PAC and WLST.PAC (table 1)
TOTAL	844059	

capacity of 1.2 megabytes. The root directory on the diskette contains one file (README.DOC, which is a copy of the text of this report) and two subdirectories (INPUT and OUTPUT). Tables 1 and 2 show the contents of the subdirectories INPUT and OUTPUT and descriptions of the files. Data contained in the files are in units of feet and days, except as noted. Each record on the output file contains 132 or fewer characters. Record lengths of the input files are shown in table 1.

REFERENCES CITED

Handman, E.H., Londquist, C.J., and Maurer, D.K., 1990, Ground-water resources of Honey Lake Valley, Lassen County, California, and Washoe County, Nevada: U.S. Geological Survey Water-Resources Investigations Report 90-4050, 112 p.

McDonald, M.G., and Harbaugh, A.W., 1988, A modular three-dimensional finite-difference ground-water flow model: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 6, Chapter A1, 586 p.