HYDROGEOLOGY AND SIMULATION OF GROUND-WATER FLOW AT SUPERFUND-SITE WELLS G AND H, WOBURN, MASSACHUSETTS

By Virginia de Lima and Julio C. Olimpio

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MANUEL LUJAN, JR., *Secretary*

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, *Director*

For additional information, write to:

District Chief
U.S. Geological Survey
Water Resources Division
Thomas P. O'Neill Jr. Federal Building
10 Causeway Street, Suite 926
Boston, MA 02222-1040

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CONVERSION FACTORS AND ABBREVIATIONS

For the convenience of readers who may prefer to use metric (International System) units rather than the inch-pound units used in this report, values may be converted by using the following factors.

Multiply inch-pound unit	By	To obtain metric unit
	Length	
inch (in.)	25.4	millimeter (mm)
	2.54	centimeter (cm)
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer (km)
	Area	
square foot (ft^2)	0.0929	square meter (m^2)
square mile (mi^2)	2.590	square kilometer (km^2)
	Flow	
inch per year (in/yr)	25.4	millimeter per year (mm/yr)
cubic foot per second (ft^3/s)	0.0283	cubic meter per second (m^3/s)
cubic foot per second per square mile [$(ft^3/s)/mi^2$]	0.0109	cubic meter per second per square kilometer [$(m^3/s)/km^2$]
foot per mile (ft/mi)	0.1894	meter per kilometer (m/km)
gallon per minute (gal/min)	0.0631	liter per second (l/s)
million gallons per day (Mgal/d)	0.0438	cubic meters per second (m^3/s)
	Hydraulic Conductivity	
foot per day (ft/d)	0.3048	meter per day (m/d)
	Transmissivity	
foot squared per day (ft^2/d)	0.0929	meter squared per day (m^2/d)

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)–a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Mean Sea Level of 1929."

Hydrogeology and Simulation of Ground-Water Flow at Superfund-Site Wells G and H, Woburn, Massachusetts

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ABSTRACT

The area around wells G and H, two former public-supply wells for the city of Woburn, Massachusetts and currently designated as a U.S. Environmental Protection Agency "Superfund" site, was the focus of intensive hydrogeologic investigations from 1983 to 1988. The U.S. Geological Survey has provided assistance to the U.S. Environmental Protection Agency for the site since 1985. This report includes hydrogeologic information and describes a three-dimensional, digital ground-water-flow model that was designed and calibrated by the U.S. Geological Survey for use by the U.S. Environmental Protection Agency to evaluate alternative pumping scenarios in developing an aquifer cleanup strategy.

Wells G and H and two nearby industrial-supply wells were constructed in a stratified-drift aquifer ranging in width from 0.5 to 1 mile and as much as 90 feet thick. The transmissivity of the aquifer in the vicinity of wells G and H ranges from 11,500 to 14,000 feet squared per day, and the aquifer can sustain well yields of as much as 700 gallons per minute. Recharge to the aquifer is from precipitation. Under normal conditions, with only the industrial-supply wells pumping, ground-water discharges to the stream in most of the study area, and the river is a gaining stream throughout the year. When wells G and H and the industrial-supply wells are pumped simultaneously, infiltration of surface water significantly decreases streamflow in the area.

A three-dimensional, digital ground-water-flow model of the stratified-drift aquifer in the vicinity of wells G and H was designed and calibrated. The model represents a 0.8-square-mile area and consists of nearly 5,000 active nodes in three model layers. Model grid-spacing ranges from 20 x 20 feet to 200 x 200 feet. The model was calibrated to steady-state and transient conditions for December 1985 and January 1986. Throughout all model layers in the center of the model area, simulated hydraulic heads matched observed and estimated hydraulic heads to within 1 foot. Throughout the remainder of the model area, hydraulic heads matched within 5 feet except in some corners and sides of the active model area near till-bedrock boundaries. Under steady-state conditions, the simulated gain in streamflow in the model area was 0.27 cubic feet per second, which is within the range of observed gains in streamflow (0.10 to 0.62 cubic feet per second) measured during 1985 low-flow conditions. Under transient conditions, simulated streamflow losses in the Aberjona River were 1.25 cubic feet per second compared to a measured loss of 1.26 cubic feet per second at the end of a 30-day aquifer test during which withdrawals averaged 3.05 cubic feet per second.

Sensitivity tests of the calibrated model were conducted to determine if the differences between simulated and observed/estimated data values could be attributed to the range of uncertainty in the values of input data and boundary conditions. Test results indicate that the model is least sensitive to variations in

model boundary conditions, river stage, and recharge, and most sensitive to variations in storage coefficients, and order-of-magnitude changes in transmissivity and streambed conductance.

INTRODUCTION

In May 1979, 1,1,1-trichloroethane, 1,2-trans-dichlorethylene, tetrachloroethylene, chloroform, trichlorotrifluoroethane, and trichloroethene were detected at concentrations ranging from 1 to 400 parts per billion by the Massachusetts Department of Environmental Quality Engineering (MDEQE) in the Woburn, Massachusetts public-supply wells G and H (fig. 1). The wells were shut down and, in December 1982, the U.S. Environmental Protection Agency (USEPA) designated the well site, the aquifer, and the adjacent wetland along the Aberjona River as a "Superfund" site. As a result of investigations by USEPA and MDEQE, three orders (under Section 3013 of the Resource Conservation and Recovery Act) were issued to operators of a plastics firm in the northeastern part of the area, to an industrial dry-cleaner in the northern section of the area, and to the owners of a tannery and surrounding lands near the river in the southwestern part of the area. The orders required submission of plans for ground-water-quality monitoring pertaining to possible contamination either on or emanating from their properties. This area of Woburn, which also contains other industries including metal cleaning and automobile salvage yards, has been known since 1880 as the "chemical district of Woburn".

Between 1985 and 1988, the U.S. Geological Survey has provided technical assistance to USEPA, including measurements of streamflow, surface-geophysical surveys, design and supervision of a 30-day aquifer test, and analysis of aquifer-test data, at the wells G and H site.

Purpose and Scope

This report describes the hydrogeology and the simulation of ground-water flow in the stratified-drift aquifer at Superfund-site wells G and H, Woburn, Massachusetts. This is the second of two reports describing the results of hydrogeologic investigations that were conducted in 1985-86 and authorized under an Interagency Agreement between the Survey and the USEPA. The first report, "Area of Influence and Zone of Contribution to Superfund-Site Wells G and H, Woburn, Massachusetts", by Charles F. Myette, Julio C. Olimpio, and David G. Johnson, (1987) describes the hydrogeology of the site and the results of a 30-day aquifer test used to determine aquifer properties, the area of influence, and the zone of contribution to wells G and H. The results of the hydrogeologic study were used to design and calibrate a three-dimensional ground-water-flow model of the stratified drift of the Aberjona River valley in the vicinity of the wells. In addition to describing the ground-water-flow model, this report updates and revises hydrogeologic information presented by Myette and others (1987).

The study area is located in east-central Massachusetts in the City of Woburn, an industrialized suburb 10 miles north of Boston. The study area covers approximately 1.5 mi^2 (square miles) and consists of the stratified-drift aquifer underlying the lowlands of the Aberjona River, where wells G and H are located, and the surrounding till and bedrock uplands. The three-dimensional, digital ground-water-flow model simulates the stratified-drift aquifer, which is traversed by the Aberjona River (fig. 1). The calibrated model was designed as a tool for predicting the steady-state and transient effects of pumpage in the vicinity of wells G and H.

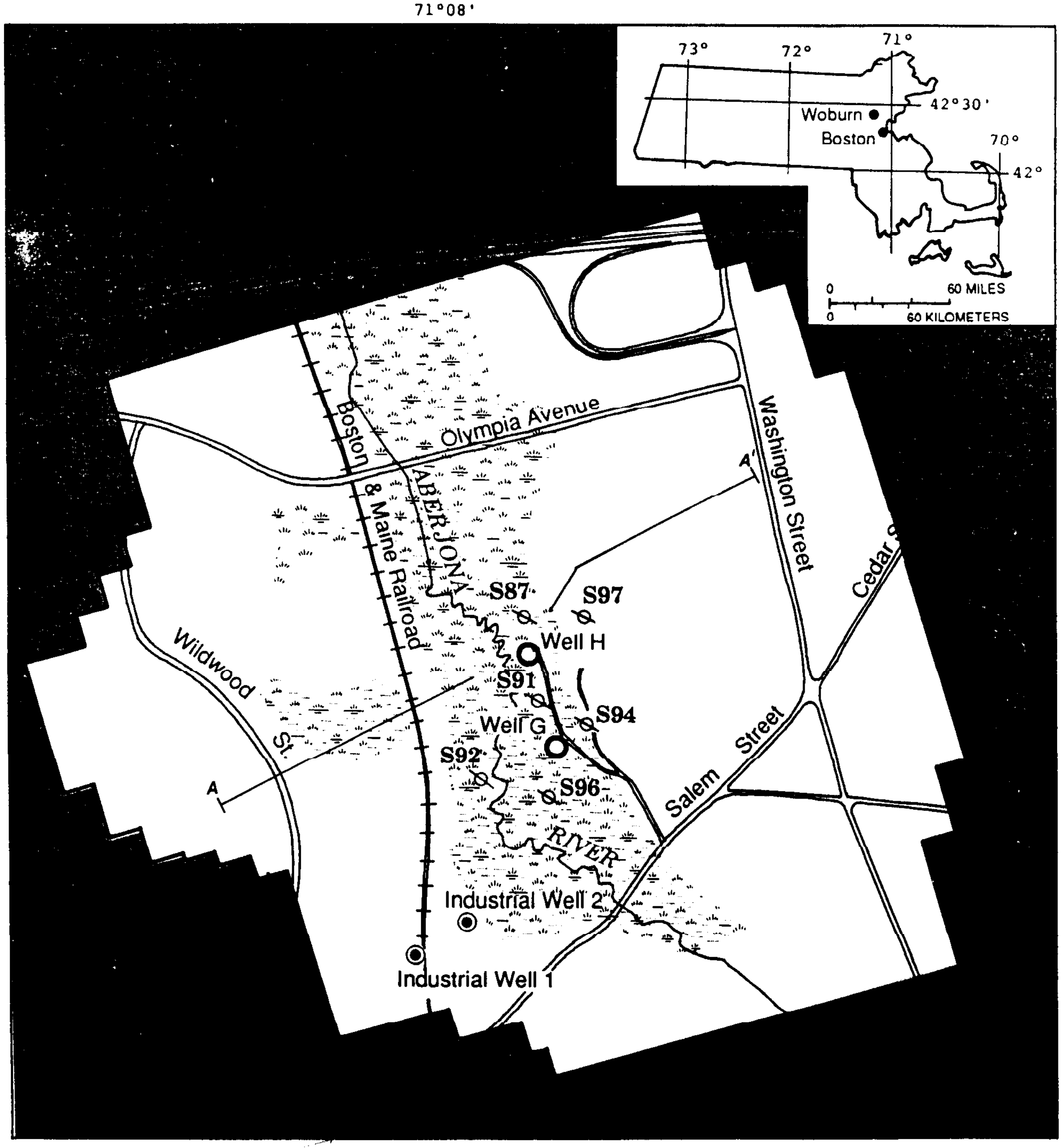
Acknowledgments

The authors would like to thank Barbara Newman and David Delaney of USEPA, Region I, for their support and assistance throughout the study. Special thanks are given to C. F. Myette, formally of the Survey, who conducted the 1985-86 field effort and made a major contribution to the initial modeling effort.

HYDROGEOLOGY

Generalized Framework

The general hydrogeologic features of the study area are typical of glaciated New England river valleys: a small river meanders through a wetland in a gentle valley that overlies a bedrock channel filled with sand and gravel. Large-capacity wells constructed in the sand and gravel pump water for public supply. In the



BASE MAP MODIFIED FROM TOPOGRAPHICAL MAPS T-12, 13, 16, 17, 21, 22, CITY OF WOBURN, MASSACHUSETTS

EXPLANATION

Wetland

Active model boundary.

A—A' Geologic section

Industrial supply well

Observation well

Public supply well

Figure 1.--Location of the study area and areal extent of the ground-water model area.

study area, wells G and H are located on the eastern side of the Aberjona River next to a wetland, which extends from Olympia Avenue to Salem Street (fig. 1) and two industrial wells, tannery wells 1 and 2, are located on the western side of the river.

Ground water in the Aberjona River valley in the vicinity of wells G and H is present mainly in a 0.5- to 1.0-mile wide stratified-drift aquifer that fills a deep, narrow bedrock channel. A deposit of glacial till, which is exposed at land surface in the northeastern and southwestern parts of the study area, is between the aquifer and the bedrock. At the northern end of the valley near Olympia Avenue and at the southern end of the valley near Salem Street, the stratified-drift deposit thins and narrows (fig. 1). A peat deposit of variable thickness and extent overlies the stratified drift throughout most of the wetland in the center of the valley.

Ground water in the stratified drift generally is unconfined, and water levels in the aquifer fluctuate continuously in response to changes in recharge and discharge. Recharge to stratified drift is from precipitation, and the general direction of ground-water flow is from upland areas east and west of the valley to discharge areas in the wetland and along the Aberjona River. Bedrock in the area is known to yield small quantities of water to pumped wells (Delaney and Gay, 1980) and may provide additional leakage to the stratified drift. However, no quantitative data on bedrock leakage rates are available. Under nonpumping conditions, all the ground water discharges to the wetland and river. Under pumping conditions, ground water discharges partly to the wetland and river and partly to pumped wells. Depending on the amount of pumping, vertical hydraulic head gradients beneath the stream may reverse inducing the infiltration of stream water through the streambed into the aquifer.

Stratified-drift Aquifer

Lithology and Stratigraphy

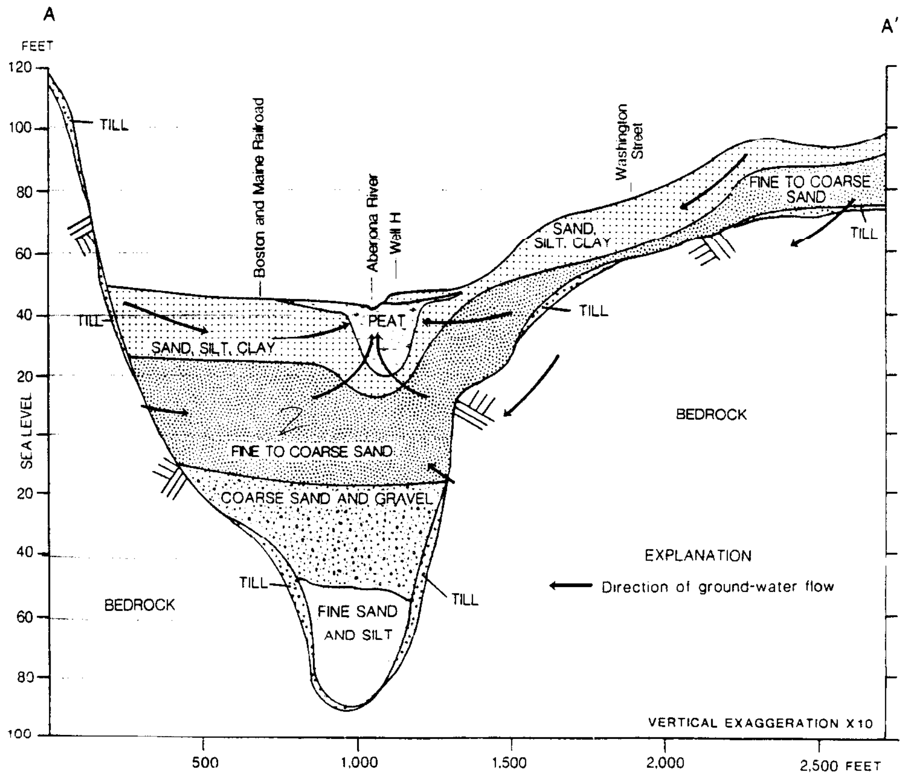
The thickness of the stratified drift ranges from zero along parts of the eastern and western sides of the valley to approximately 140 feet in the central part of the valley west and south of well G. Relatively coarse-grained stratified drift underlies the wetland in the vicinity of wells G and H, and is, in turn, underlain by fine-grained deposits in the deepest part of the bedrock channel.

Although the lithology of the stratified drift differs locally horizontally and vertically, it can be separated into four stratigraphic layers on the basis of the predominant lithology in each layer (fig. 2A). Only the top three layers are considered to be the aquifer. The uppermost layer consists of sand, silt, clay, and deposits of peat, and has a thickness of 0 to 30 feet. It is underlain by an intermediate layer of fine-to-coarse sand that has a thickness of 10 to 50 feet. The lowermost aquifer layer, where wells G and H are screened, consists of coarse sand and gravel that has a thickness of 20 to 50 feet. Reanalysis of geologic information confirms that a layer of fine-grained sand and silt as much as 60 feet thick underlies the coarse aquifer material in the deepest part of the buried bedrock channel. Because this fine-grained layer is limited in areal extent and has a low transmissivity, it was not simulated as part of the aquifer in the ground-water-flow model.

A peat deposit overlies the stratified drift throughout a large area of the Aberjona river valley. The peat deposit underlies most of the wetland and forms a nearly continuous layer on top of the stratified drift in this area. In most of the area, the thickness of the peat ranges from 2 to 7 feet. However, test drilling just west of well H encountered 26 feet of peat. Core samples of peat material and streambed sediments indicate that the peat layer beneath the streambed is up to 7 feet thick and that the streambed sediments are composed of silt and sand from 0.5 to 2 feet thick. There are no data on the hydraulic properties of the peat deposits in the valley; however, core samples collected during drilling, together with the relatively low velocities obtained from seismic-refraction tests, indicate that the peat is a relatively loose, fibrous, nearly saturated material that transmits water readily, either as ground-water discharge to the river under normal conditions or as induced infiltration of stream-water under pumping conditions. Field observations during the aquifer test in 1985-86 confirm that the peat does not impede ground-water flow.

Water Table

A map of the altitude of the water table on December 4, 1985 is shown in figure 3. The water-table gradients are relatively steep near Washington Street and along the steep hillslopes that form the eastern



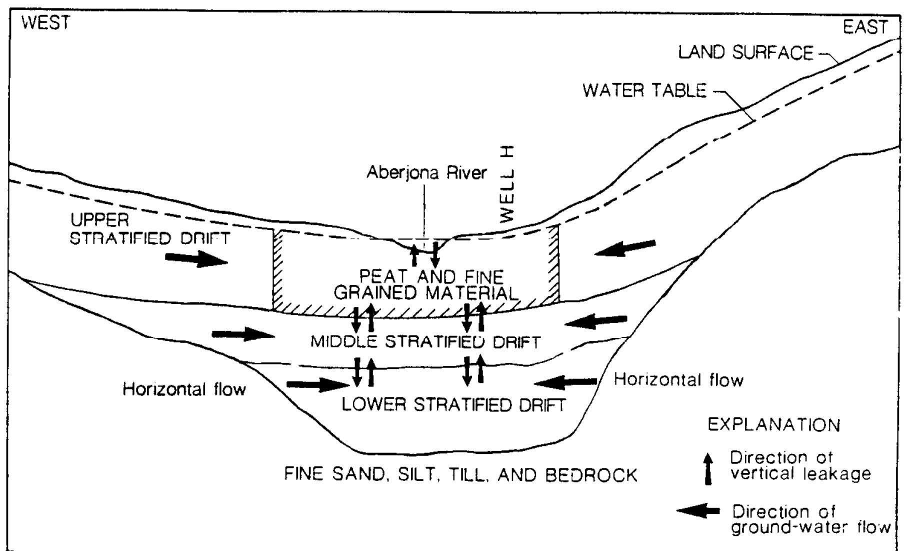
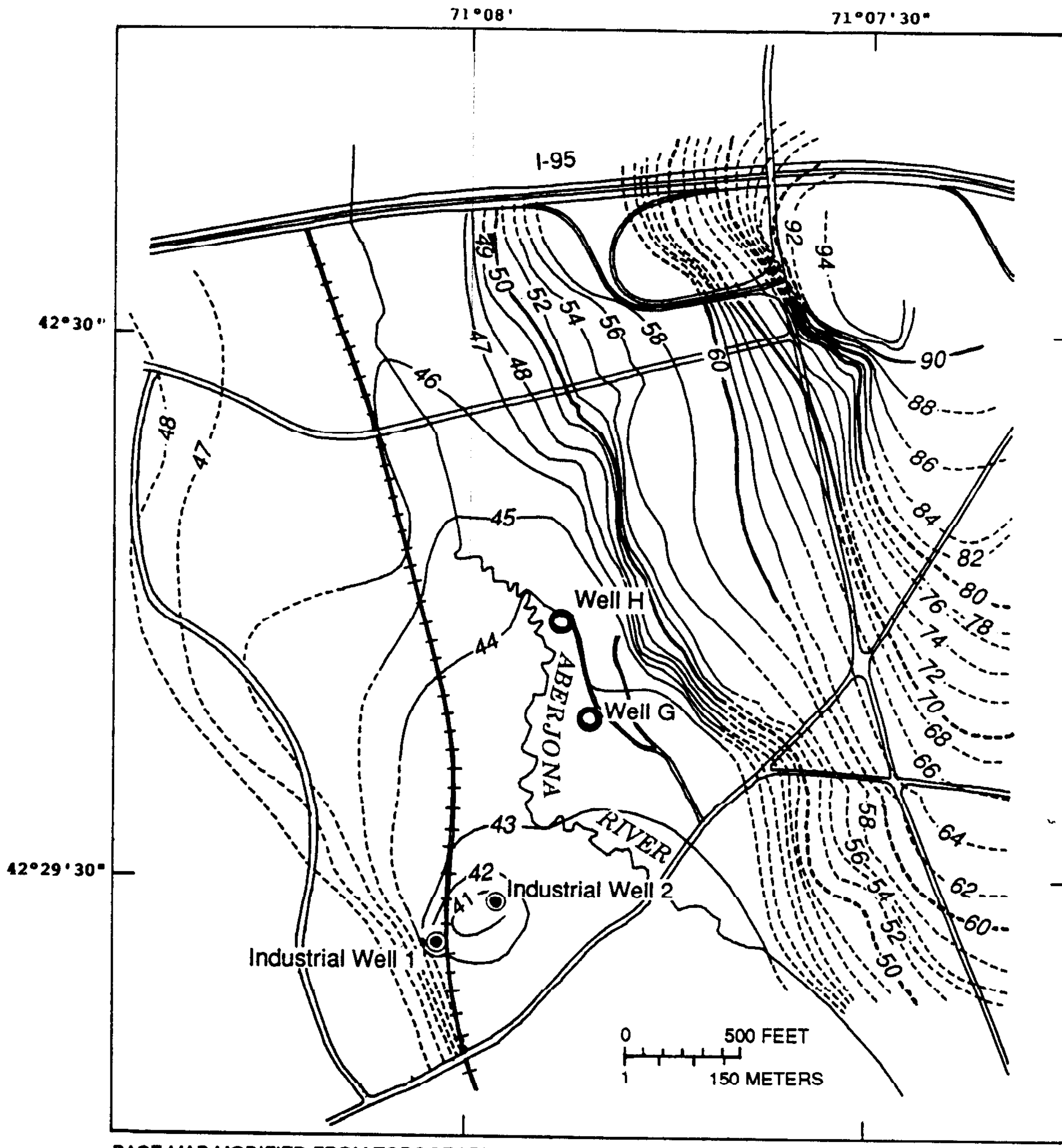


Figure 2.--Representative geologic section showing direction of ground-water flow (modified from Myette and others, 1987, fig. 4), (A) and conceptual model of the ground-water flow system, (B) along line of section A-A'.



BASE MAP MODIFIED FROM TOPOGRAPHICAL MAPS T-12, 13, 16, 17, 21, 22, CITY OF WOBURN, MASSACHUSETTS

EXPLANATION

—42— Altitude of the water table, December 4,1985. Contour interval 1 and 2 feet, dashed where estimated. Datum is sea level.

O Public supply well

◉ Industrial well

Figure 3.--Altitude of the water table in the vicinity of wells G and H, December 4, 1985. (Modified from Myette and others, 1987, plate 1.)

and western sides of the valley. The gradients across the wetland are relatively gentle. The water table commonly is at or near land surface in most of the low-lying areas and 10 to 15 feet below land surface in hilly areas on the eastern and western sides of the study area. Along the western and southeastern boundaries, the water-table altitudes were estimated because few field data are available for those areas.

Long-term pumpage from the two wells owned by the tannery (fig. 1) has produced a cone of depression in the southwestern part of the river valley that has resulted in a local change in the ground-water-flow direction. Pumpage of the tannery wells intercepts ground water that discharges from the stratified drift west of the study area and causes flow toward the wells (Myette and others, 1987; p. 11). As a result, ground water in the southern part of the study area discharges in two directions under normal conditions --toward the river and toward the tannery wells. A ground-water divide that coincides with a surface-water divide is present in the northeastern part of the study area east of Washington Street.

Ground-Water Withdrawals

This study focussed on ground-water withdrawals from four wells located in the Aberjona River valley: public-supply wells G and H located on the eastern side of the valley, and industrial-supply (tannery) wells 1 and 2 located on the western side of the valley. Well G was constructed in October 1964 and is completed to approximately 85 feet below land surface. Well H was constructed in July 1967 and is completed to approximately 88 feet below land surface. Until they were closed in May 1979, both of these wells, which are gravel packed, were pumped continuously during the summer months at a rate of 700 to 800 gal/min (gallons per minute) for well G and 400 gal/min for well H (T. J. Merin, City Engineer, Woburn, Mass., written commun., 1980). Shortly after the conclusion of the aquifer test on January 3, 1986, the wellheads were destroyed by the City of Woburn. Tannery well 1 has operated since 1945 and tannery well 2 since 1958. Therefore they were operated in the 1960s and 1970s when wells G and H were pumped for water supply. A foreman of the tannery estimated that the tannery wells were pumped together at a rate of just under 400,000 gal/d (gallons per day) or about 270 gal/min during the 1985-86 aquifer test (David Delaney, U.S. Environmental Protection Agency, oral commun., 1988). Unfortunately, data on the exact pumpage and pumping schedule were unavailable for use in developing the ground-water-flow model. Currently (1989), the wells continue to be pumped for industrial water supply.

SIMULATION OF GROUND-WATER FLOW AT SUPERFUND-SITE WELLS G AND H

Description of Conceptual and Digital Models

A three-dimensional, digital ground-water-flow model was designed and calibrated for use in computing hydraulic head (hereafter referred to as head) in the stratified-drift aquifer and ground-water discharge to the Aberjona River in response to simulated pumping stress. The model, which will be used by USEPA to simulate alternative remedial-action pumpage scenarios, was developed using the computer program described by McDonald and Harbaugh (1988).

The first step toward preparation of a digital model of the stratified-drift aquifer in the Aberjona River valley was the development of a conceptual model to describe the physical properties of the ground-water-flow system (fig. 2B). A conceptual model, which is based on all available data, is an accurate, but simplified representation of the complex hydrologic and geologic environment of the real system. Furthermore, a conceptual model is useful for selecting and organizing the hydrogeologic data used as input to the computer model.

Subsequent steps in the computer-modeling process include simplification of the conceptual model through the use of mathematical equations that are assumed to govern the physical characteristics of ground-water flow. Additional simplifications of the real system occur when the mathematical equations are solved using a digital computer.

The effect of the simplifications imposed by the modeling process on the ground-water-flow model developed in this study was to place several limitations on how the digital model simulates ground-water flow in the real system. In the following discussion, the characteristics of the real flow system and the constraints imposed on these characteristics by the simplifications of the digital modeling process are explained.

1. *Horizontal ground-water flow.* In the stratified-drift aquifer in the Aberjona River valley, ground water moves both horizontally and vertically from recharge areas in the uplands to discharge areas in the lowlands. An assumption that water only moves horizontally applies reasonably well throughout the model area except in areas near pumped wells and directly beneath recharge and discharge areas. In recharge areas, water moves vertically downward into the aquifer; in discharge areas, water moves vertically upward to the land surface. In the vicinity of pumped wells, water moves vertically either upward or downward toward the well.

In the digital model, simulated ground-water flow is horizontal within the model layers representing the aquifer; vertical flow occurs between layers. This is an inherent limitation in the digital computer model, and the effect of this limitation is to permit only two-dimensional flow within each aquifer layer and one-dimensional flow between layers. In terms of the accuracy of the model results, the significance of this model constraint is that simulated heads may not match observed heads very closely in areas either next to wells where pumpage is large or in areas where significant ground-water recharge or discharge takes place.

2. *No leakage from till and bedrock.* Steep-sided, bedrock-valley walls, in places overlain by till, are located beneath the stratified drift on the eastern and western sides of the Aberjona River valley. In recent years, the continued development of bedrock wells for industrial supply in the area confirms earlier U.S. Geological Survey information (Delaney and Gay, 1980) that the bedrock in the study area contains moderate quantities of water sufficient for small supply. Although leakage from till and bedrock is suggested by the vertical and horizontal head gradients near the sand-and-gravel/till-bedrock boundaries in the study area (Myette and others, 1987; pp. 9-11), there are no quantitative measurements of bedrock leakage rates.

Although leakage from the till and bedrock to the aquifer is likely, the model boundaries that correspond to the till-bedrock/aquifer boundary are set as no-flow boundaries. This modeling approach was taken because head changes at the boundary were small for the simulated pumpage scenarios and because bedrock-till leakage data were unavailable. The significance of this modeling constraint is that simulated pumpage scenarios must be limited to the center of the active model area where head changes do not extend to the till-bedrock/aquifer boundary. If this model is used to simulate pumpage which causes head changes at the till-bedrock boundary, model results are likely to be unreliable. To obtain reliable simulations under such pumpage conditions, the model will have to be modified to include bedrock leakage.

3. *No flow either into or out of the northern and southern boundaries of the study area.* Although the stratified-drift deposit "pinches out" north of Olympia Avenue and south of Salem Street and flow lines are nearly perpendicular to the stream, a small amount of ground water may flow into the study area from the north and out of the study area toward the south.

In the digital model, the northern and southern model boundaries are set to no-flow boundaries on the assumption that flow rates across these boundaries are very small. The boundaries nearly coincide with flow lines and are located at a relatively large distance from pumping centers; this characteristic of the model is considered to have no effect on model results.

4. *Uniform physical properties of peat and streambed deposits.* Ground-water discharge to the Aberjona River is through the peat layer underlying the wetland and through a leaky streambed. Physical properties such as area, thickness, and the vertical and horizontal hydraulic conductivity of the streambed and peat deposits are variable over the study area.

In the model, the areas representing the streambed are assigned a single value of vertical hydraulic conductivity and peat deposits are assigned a single value of horizontal hydraulic conductivity and of vertical hydraulic conductivity. This model feature is required to generalize the small-scale vertical and horizontal variations in the hydrogeological properties of these deposits rather than to simulate the detailed characteristics through the use of more model nodes and layers.

5. *Pumped wells are efficient and fully screened.* Although recent, quantitative data are not available, it is unlikely that wells G and H and the tannery wells are 100 percent efficient in withdrawing water from the stratified-drift aquifer in the study area. Also, the 10-foot long well screens are shorter than the thickness of the model layer in which they are located.

In the model, the wells are simulated as 100 percent efficient and the length of the well screens are equal to the thickness of the layer in which the wells are simulated. This is a model limitation related to the choice of simulating the aquifer with three layers.

The most significant effect of these modeling constraints is that simulated water-level drawdowns in nodes in the vicinity of pumped wells are not as large as drawdowns observed in the field. The difference between simulated and observed drawdowns decreases rapidly with increasing distance from the pumped well. Therefore, this constraint is not considered to have a substantial effect on model results beyond several model nodes from simulated wells.

Model Grid

A rectangular finite-difference grid was superimposed on a map of the river valley (fig. 4) to simulate the hydrologic conditions of the conceptual model. Block sizes in the model grid range from 20 x 20 feet to 200 x 200 feet. This variable grid spacing was designed to increase detail in areas of special interest, particularly in the vicinity of wells G and H and along the Aberjona River. The node in the center of each block is designated by row and column number; for example, well H is located at row 19, column 30. The model grid was oriented north-northwest to south-southeast parallel to the orientation of the river valley. The active model area centers on the river valley around wells G and H and includes the broadest, deepest, and coarsest part of the stratified drift in the area; it is this area where remedial action alternatives to be considered by the USEPA will most likely be tested with the model. The active model area covers approximately 0.8 mi^2 and consists of nearly 5,000 active nodes in three model layers. The active model area in layers 2 (middle layer) and 3 (bottom layer) are narrower than in layer 1 (top layer) reflecting the bedrock channel in which the deeper parts of the aquifer are located (fig. 5).

Layer 1 of the digital model corresponds to the top 20 to 30 feet of sand, silt, and clay in the stratified drift and includes the peat deposits in the center of the wetland and the stream channel of the Aberjona River (fig. 2). Layer 1 forms a thin blanket of stratified-drift on the bedrock along the eastern and western sides of the valley. Layer 2 is partly covered by the peat and represents the 30-foot-thick deposit of fine-to-coarse sand in the middle part of the stratified drift along the center of the valley. Layer 3 corresponds to the 10- to 50-foot thick coarse sand and gravel deposits at the bottom of the stratified-drift aquifer. The fine-grained stratified drift that fills a narrow channel in the deepest part of the bedrock valley was not simulated because it is not areally extensive and does not increase the transmissivity significantly.

The physical properties representing each node are assumed to be constant and represent an average value over the volume of the node block. The initial and simulated heads in each block are assumed to equal the head at the center of the node. Wells G and H and tannery well 2 are simulated in layer 3, and tannery well 1 in layer 2.

Selection of Input Parameters

The digital model was developed by using geologic and hydrologic data gathered before and during the 30-day aquifer test in December 1985 and January 1986. Initial conditions used in the model were those on December 4, 1985, immediately before the start of the aquifer test. Hydrologic conditions in the region (precipitation, ground-water levels, and streamflows) during fall 1985 were near normal; therefore, the water-table and potentiometric-surface maps for this date were used to estimate the steady-state head at each node. Where no observation-well data were available, the water table was estimated to be at or near land surface in the wetland and up to 15 feet below land surface in the upland areas to the east, north, and west. Input parameters to the model included measured and estimated values of recharge, head, aquifer hydraulic conductivity, bedrock altitude, peat thickness, and well withdrawal. The model grid was overlain on maps of each parameter, such as water-table altitude (fig. 3), and average numerical values were selected for each node in the active model area.

Horizontal hydraulic-conductivity values of the top layer of the model ranged from 1 to 200 ft/d (fig. 6). The low values of hydraulic conductivity in the central part of the valley reflect the deposits of fine-grained material and peat. The thickness and lateral extent of the peat layer bed was defined by lithologic-log data from test wells. In areas where the peat comprises at least 10 feet of the 30-foot-thick layer, hydraulic conductivity was set to 21 ft/d. Where the peat comprises only a small part of the layer, hydraulic conductivity was set at 50 or 80 ft/d depending on the thickness of the peat. The area of high hydraulic conductivity near the western boundary of the model represents the location of a gravel-bearing glacial esker.

The estimates of transmissivity for layers 2 and 3 (figs. 7 and 8) were based on lithologic data for each of

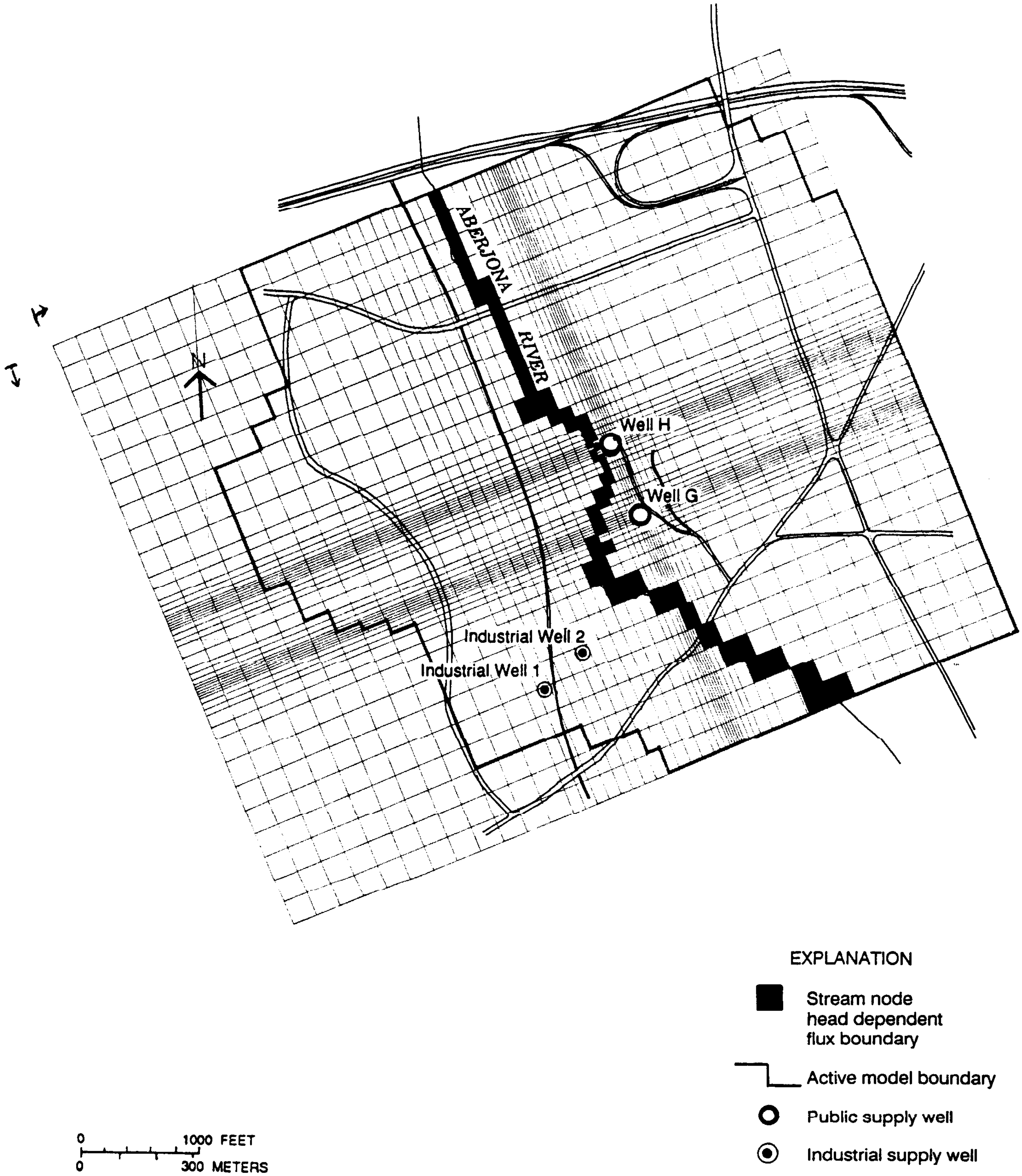


Figure 4.--Ground-water-model grid for the Aberjona River valley in the vicinity of wells G and H.

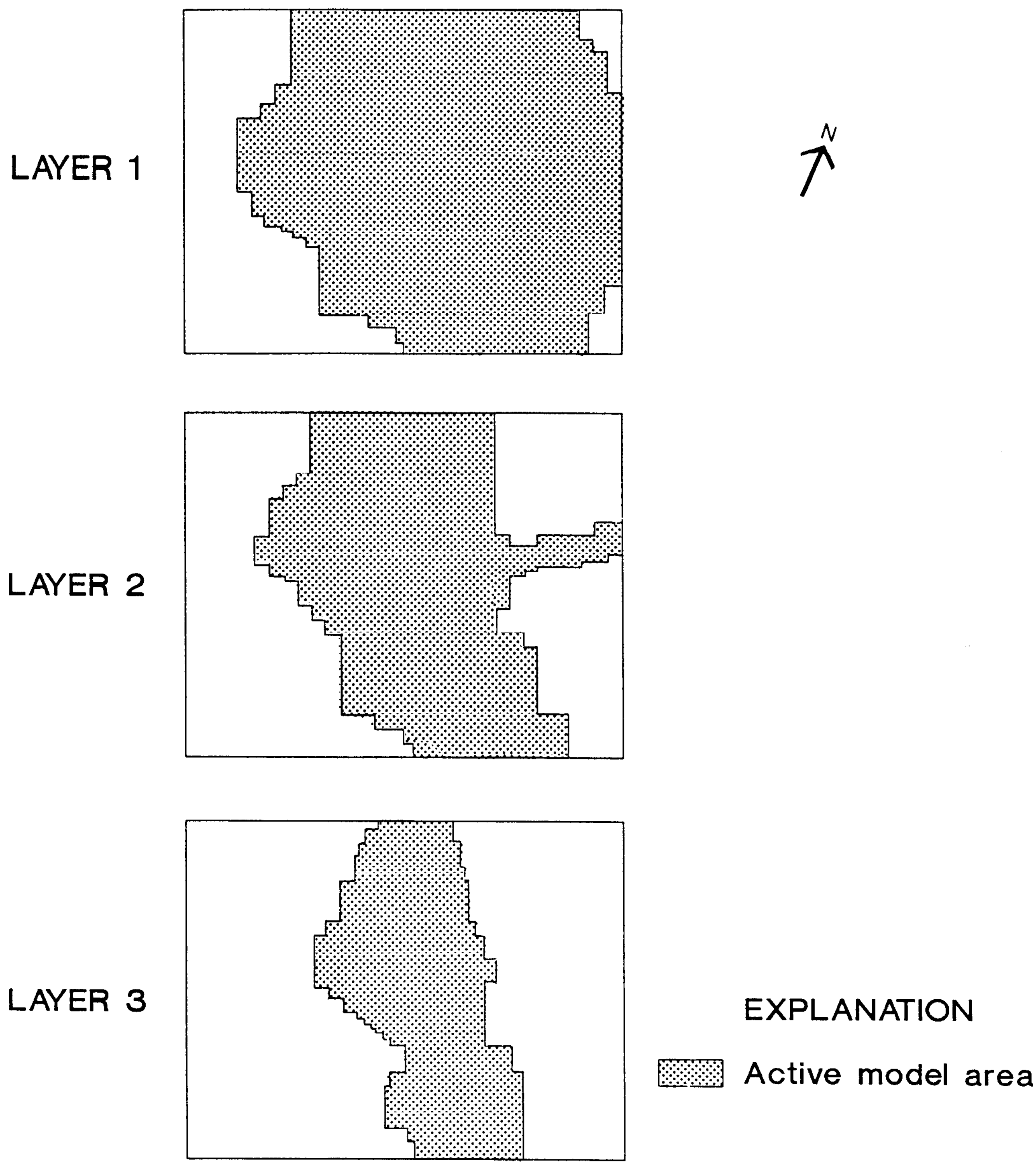


Figure 5.–Location of grid boundaries in layers 1-3 of the three-dimensional ground-water-flow model.

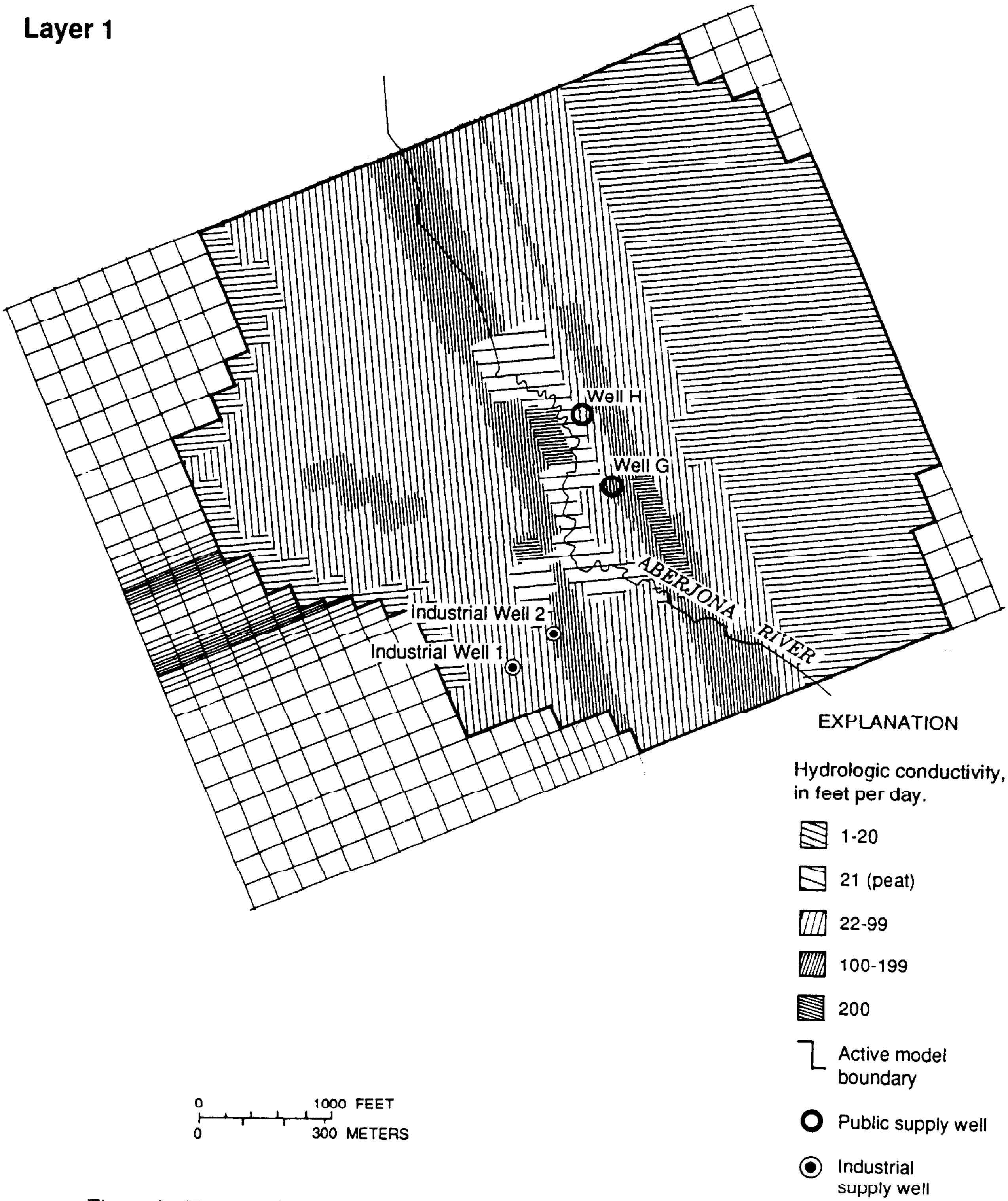


Figure 6.--Horizontal hydraulic conductivity of the stratified-drift aquifer as used in layer 1 of the ground-water-flow model.

the boreholes and on aquifer-test data for wells G and H. Myette and others (1987) presented aquifer-characteristic data on the basis of their analysis of step-drawdown data gathered during preliminary tests of wells G and H. These data and data from the 30-day aquifer test were reanalyzed using Neuman's (1975) method, incorporating both delayed yield from the unconfined aquifer and partial penetration of the wells. The new analysis indicates that the transmissivity of the stratified drift at well G is approximately 14,000 ft^2/d and at well H, 11,500 ft^2/d. These values are within the range reported by Myette and others (1987, p. 15). Figure 7 shows the distribution of transmissivity in the 30-ft thick layer 2 as well as a bedrock channel that extends to the east. Fine material with a horizontal hydraulic conductivity of 67 ft/d (transmissivity 2000 ft^2/d) is located on the sides of the valley surrounding coarser material with a horizontal hydraulic conductivity of 133 ft/d (transmissivity 4000 ft^2/d). Figure 8 clearly illustrates the basin-shaped bedrock valley in which the stratified drift was deposited. The coarse sands and gravel of layer 3 were assigned a horizontal hydraulic conductivity of 160 ft/d and the distribution of transmissivity was caused by the variable thickness of the layer. The vertical hydraulic conductivity between layers was assumed to equal one-fifth the horizontal hydraulic conductivity of the layer.

The storage coefficient of layers 2 and 3 was set at a constant value of 0.0005 as determined from aquifer-test analysis and model calibration. The specific yield of layer 1 was set at 0.45 in the areas where peat is thickest and at 0.3 in the rest of the layer.

For steady-state model simulations, a recharge rate of approximately 20 in/yr (inches per year) was used. This rate, which includes the effect of ground-water evapotranspiration, is within the range of recharge values reported for eastern Massachusetts (Knott and Olimpio, 1986), and, when recalculated in terms of ground-water discharge, is well within the range of ground-water discharge measured in the Aberjona River between Olympia Avenue and Salem Street during periods of low flow (Myette and others, 1987; table 1).

For transient-model simulations, the recharge rate was set to the actual conditions of the 30-day aquifer test in 1985-86. During most of the test, there was no rain and recharge was set to 0. During a 3-day period in the middle of the test, precipitation was 0.79 in. The total amount of precipitation was added to the simulation as recharge because evapotranspiration was assumed to be negligible during December and January. Ground-water withdrawal rates of tannery wells 1 and 2 were set at 70 and 200 gal/min, respectively. These rates represent the average pumping rate of the wells; no data were available on the intermittent pumping cycles. Ground-water withdrawal rates of wells G and H were set at the actual pumping rates of 700 gal/min and 400 gal/min, respectively. The simulation included a 2-hr well failure at well G after 31 hours of pumping and a 3- to 4-minute failure at well H after 14 days of pumping.

Boundary Conditions

No-flow-boundary conditions were set around all sides of all three model layers (fig. 5). In layer 1, the no-flow boundaries of the active model area were selected to coincide with the natural till-bedrock/stratified-drift boundaries on the eastern and western sides of the aquifer. In the northeastern and southwestern corners of the valley, the model boundary coincides with ground-water divides underlying the highest points of land. The northern boundary corresponds closely to the location of Interstate 95, where the aquifer is narrow and thin and flow lines are perpendicular to the river. The southern model boundary crosses the narrow end of the river valley south of Salem Street, about 2,000 feet downgradient from well G. In layers 2 and 3, no flow boundaries on all sides of the model correspond with narrow stratified drift areas and the stratified-drift/till and bedrock boundaries.

The Aberjona River was modeled as a head-dependent flux boundary. The width, length, and altitude of the streambed in each node of the upper layer were determined from a detailed topographic map (contour interval, 2 feet) and from field surveys. Thickness of the streambed sediments was assumed to be 1 foot and vertical hydraulic conductivity of the streambed was assumed to be 2 ft/d, on the basis of field investigations of other small streams in eastern Massachusetts (Virginia de Lima, U.S. Geological Survey, written commun., 1988). Using these values, the streambed conductance for each model node was calculated from the width and length of stream channel located within the node.

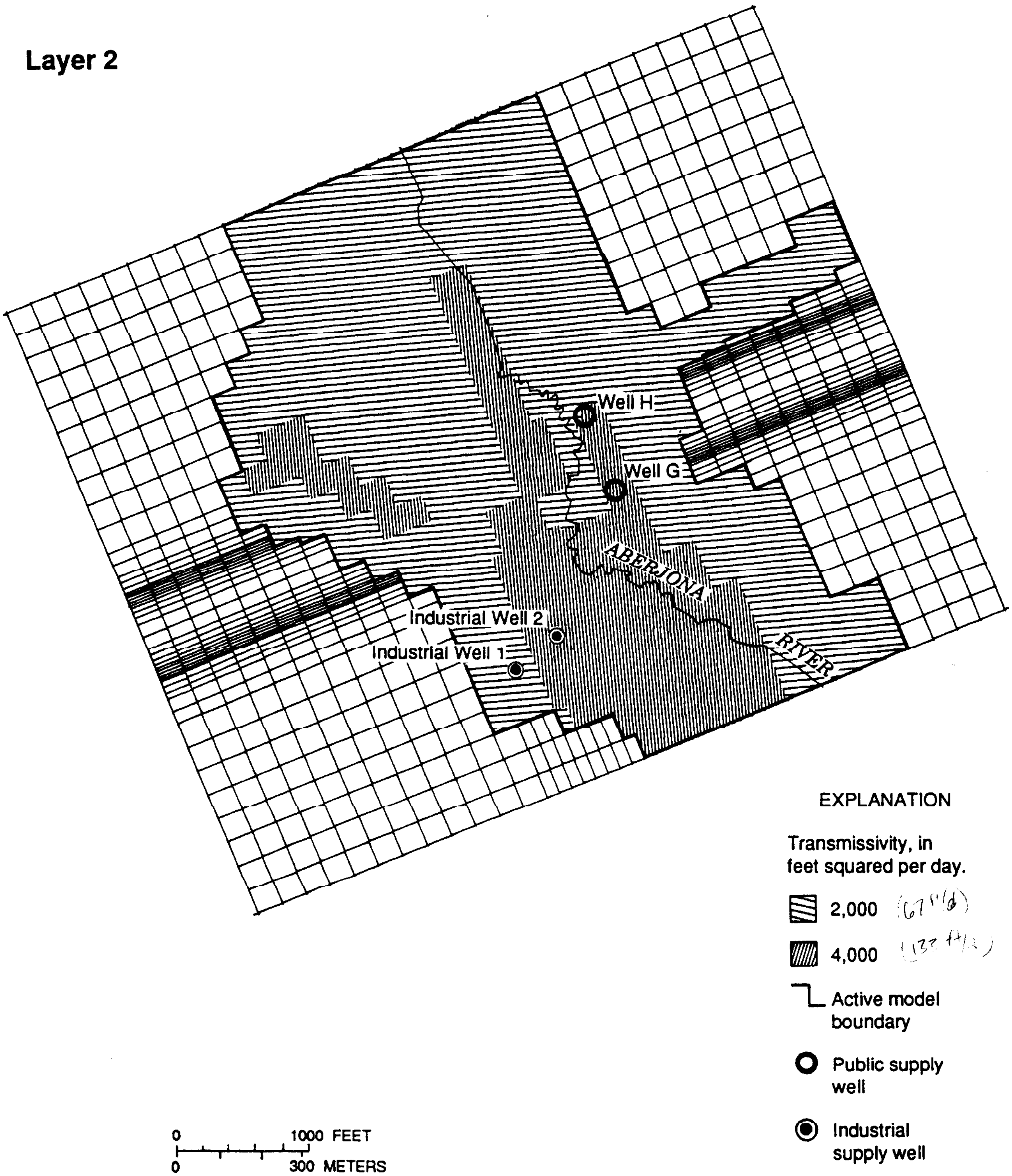


Figure 7.–Transmissivity of the stratified-drift aquifer as used in layer 2 of the ground-water-flow model.

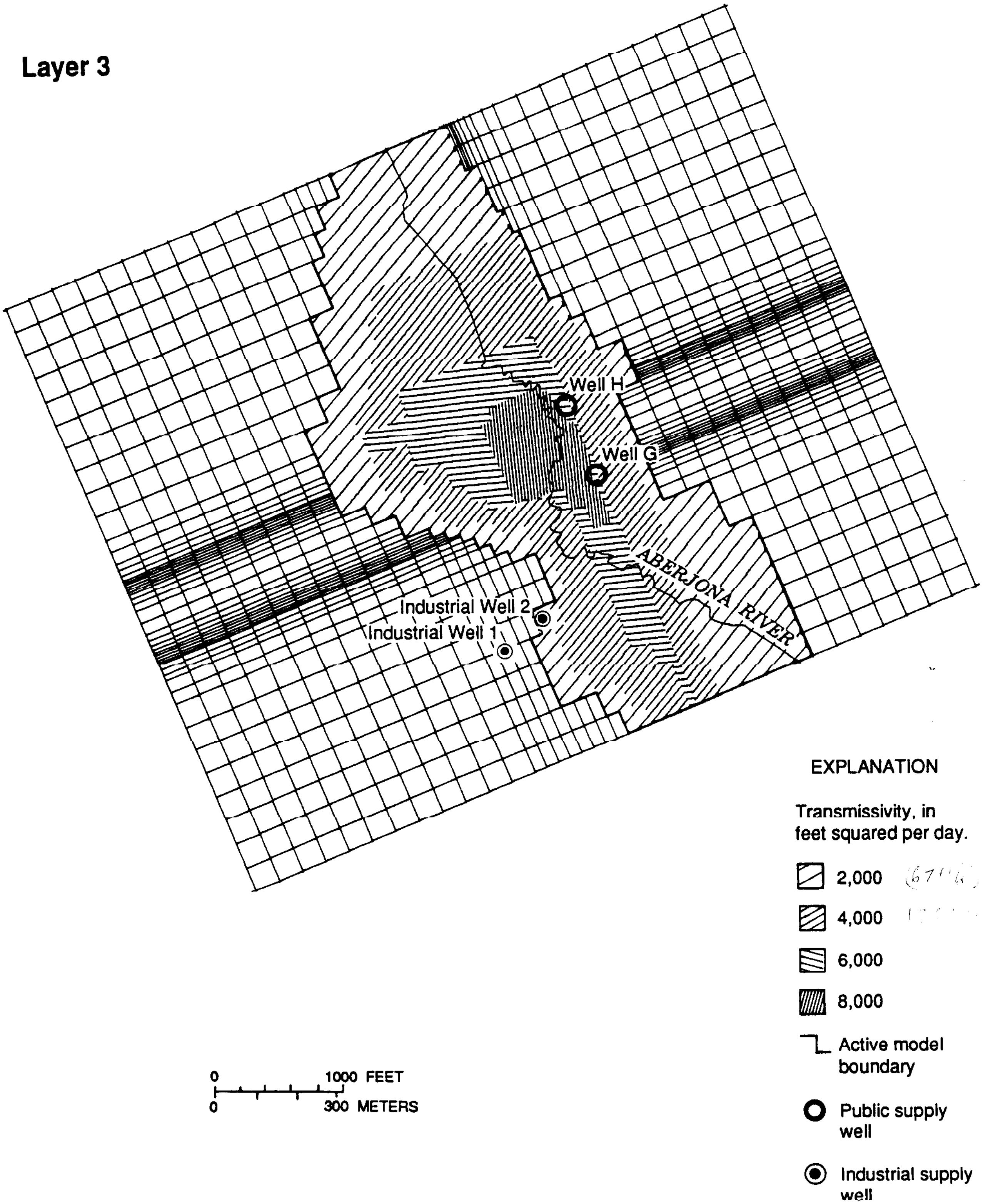


Figure 8.--Transmissivity of the stratified-drift aquifer as used in layer 3 of the ground-water-flow model.

Calibration

The ground-water-flow model was calibrated under steady-state and transient conditions using the data collected before and during the 30-day aquifer test of 1985-86. Calibration is the process of adjusting input hydrologic parameters until differences between model results and field observations are within acceptable limits, which are discussed in the following sections. Acceptability of model results was determined by comparing simulated and observed heads in each model layer, magnitude and direction of horizontal and vertical head gradients, ground-water discharge to the Aberjona River, and basin water balance. The calibration procedure was a successive process of adjustment and readjustment of selected model input parameters followed by a determination of acceptability of model results. Changes were made only to those parameters for which a range of values were known; principally, aquifer horizontal hydraulic conductivity, transmissivity, and vertical hydraulic conductance of the streambed. Changes were made that represent hydrologic properties over an area or group of nodes rather than on a node-by-node basis and made within a reasonable range of parameter values. Appendix A contains the input data for the calibrated steady-state ground-water-flow model.

In the descriptions of the steady-state and transient model calibration results that follow, comparison of simulated and observed data for layers 1 and 3 are illustrated and used as examples of accepted model results. Layer 2 results closely resemble those for layer 1; therefore, for brevity, descriptions of layer 2 results are not included in this report.

Steady-State-Model Calibration

Simulated heads were compared with heads observed on December 4, 1985, prior to the start of the aquifer test to calibrate the steady-state model. The steady-state model included pumping of the two tannery wells but did not include pumping of wells G and H. The simulated steady-state water table in layer 1 is illustrated in figure 9; the water levels measured in the observation wells on December 4, 1985, are shown for comparison. Observed and simulated water levels in layer 3 are shown in figure 10.

Throughout most of the central part of the model area corresponding with the center of the river valley, simulated heads matched observed heads (estimated in areas with no data) to within 1 foot in layers 1 and 3 (figs. 11 and 12). Over the remainder of the model area, model results were within 5 feet of field or estimated observations with few exceptions. In layer 1, exceptions included areas along the western, southeastern, and northeastern model boundaries where the differences between simulated and estimated starting heads (no field data available) were greater than 5 feet. A relatively poor match between simulated and observed or estimated heads was also obtained where relatively steep hillslopes and water-table gradients occur. In layer 3, the match of simulated and observed or estimated heads is less than 1 foot over the entire layer except for those nodes at the southern end and northeastern edge of the model. South of Salem Street, the difference between simulated heads and estimated starting heads (no field data available) ranged from 1 to 5 feet in all but two nodes.

Figure 13 illustrates the comparison of observed and simulated heads at steady state for 84 wells in the three model layers. The large cluster of values between 40 and 50 feet represent wells in the center of the valley where simulated heads match observed heads very closely. The larger discrepancy between simulated and observed heads at head values greater than 50 feet represent wells in the upland area surrounding the river valley where the assumption of horizontal flow may not be strictly valid. The overall water balance of model inflows and outflows at steady state is listed in table 1.

Streamflow data collected before and during the aquifer test upstream and downstream from the wetland were used to calibrate the model. The total simulated streamflow gain to the Aberjona River in the model area was 0.56 ft^3/s (cubic feet per second). The simulated gain in that part of the model area between the upstream gaging station at Olympia Avenue and the downstream gaging station at Salem Street was 0.27 ft^3/s, which falls well within the observed gains in streamflow (0.10 to 0.62 ft^3/s) measured during low-flow conditions (Myette and others, 1987; table 1). The observed gain in streamflow between Olympia Avenue and Salem Street on December 4, 1985, was 1.70 ft^3/s. The difference between observed and simulated streamflow was anticipated because streamflow measurements at the start of the 30-day aquifer test included a relatively large proportion of surface-water runoff from a rain

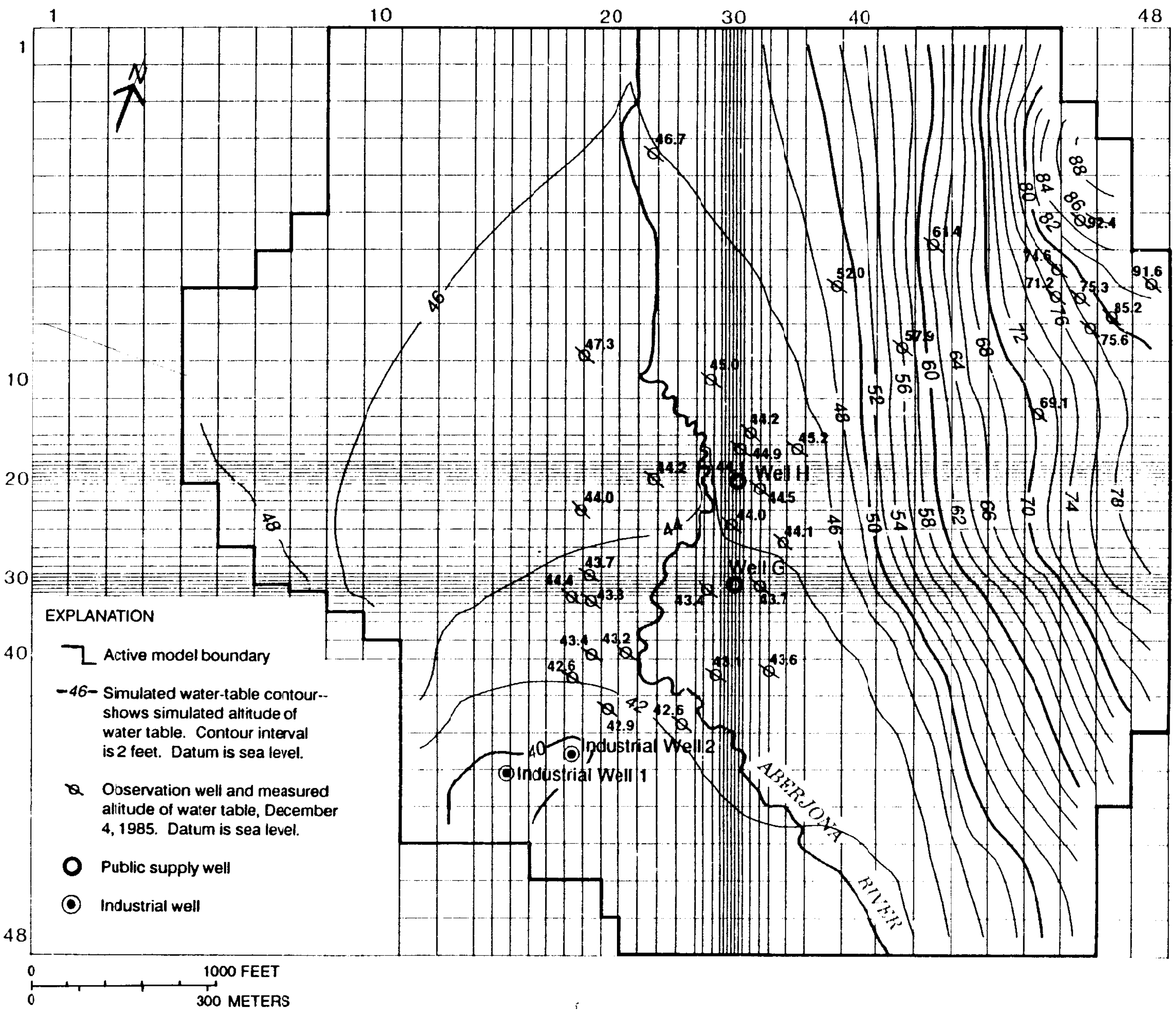


Figure 9.--Observed and simulated water table in layer 1 for the steady-state ground-water-flow system, December 4, 1985.

Page 17: Well H should be centered at the crossing of the fi d area.

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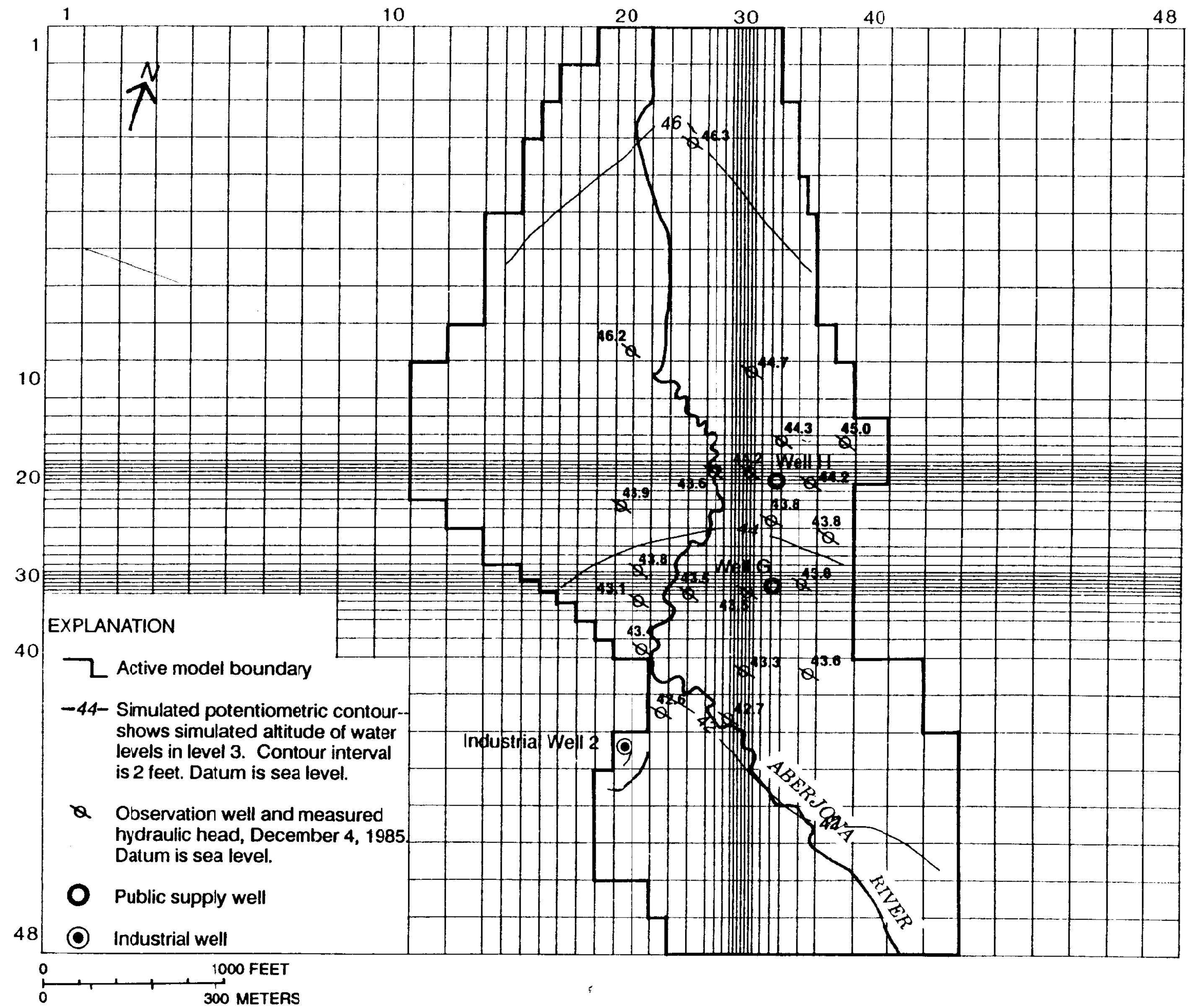

Figure 10.--Observed and simulated hydraulic heads in layer 3 for the steady-state ground-water-flow system, December 4, 1985.

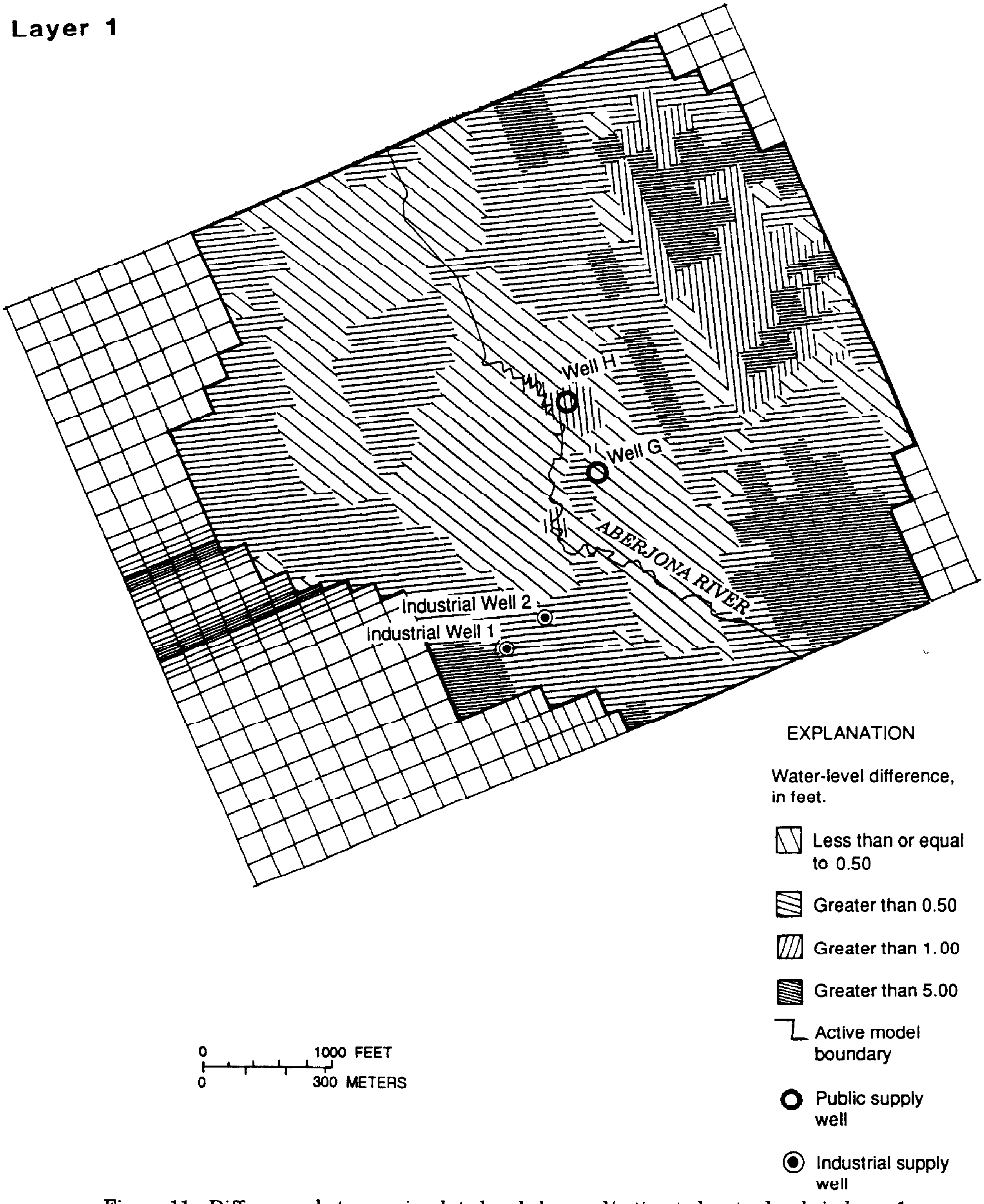

Figure 11.–Differences between simulated and observed/estimated water levels in layer 1 under steady-state conditions.

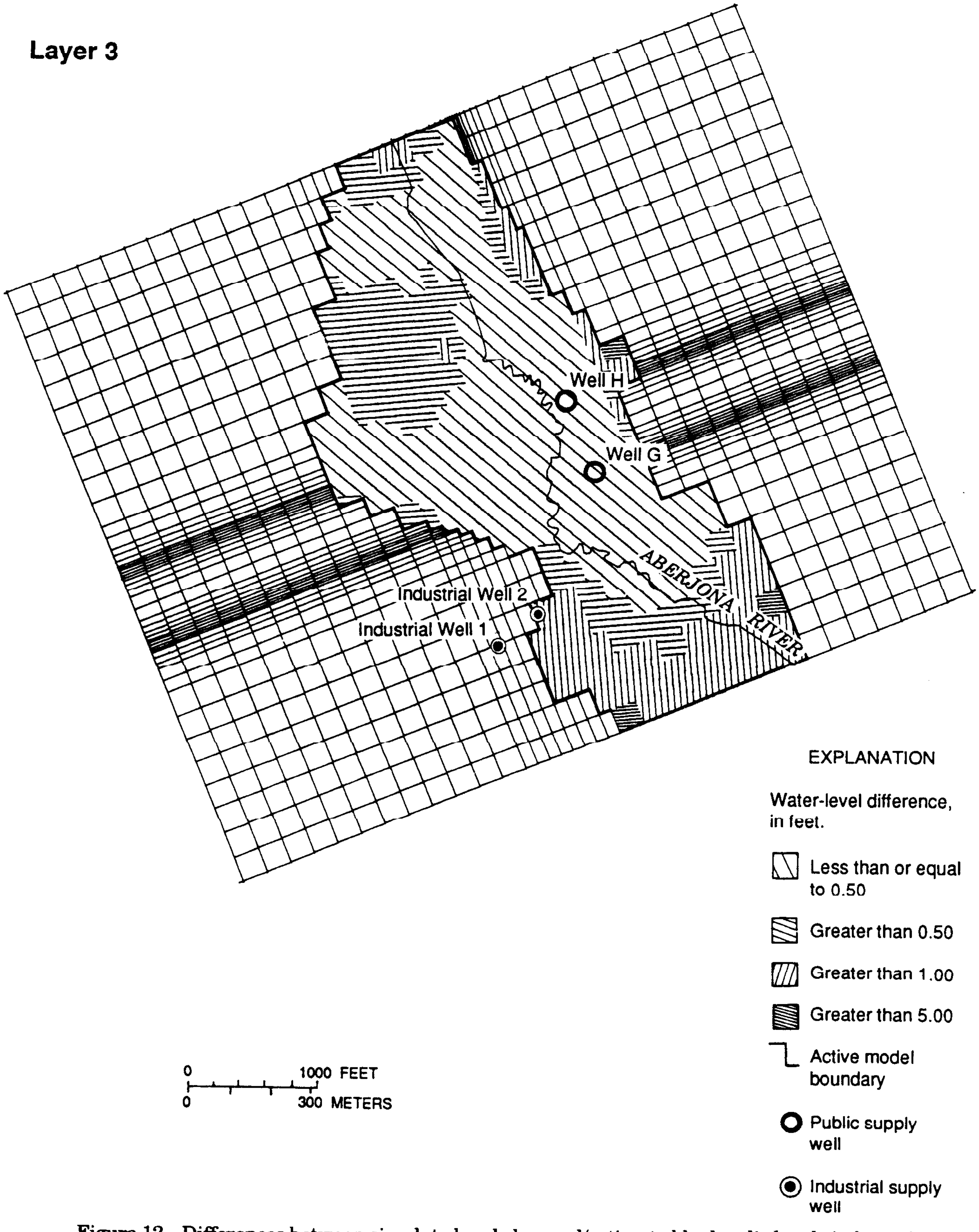

Figure 12.–Differences between simulated and observed/estimated hydraulic heads in layer 3 under steady-state conditions.

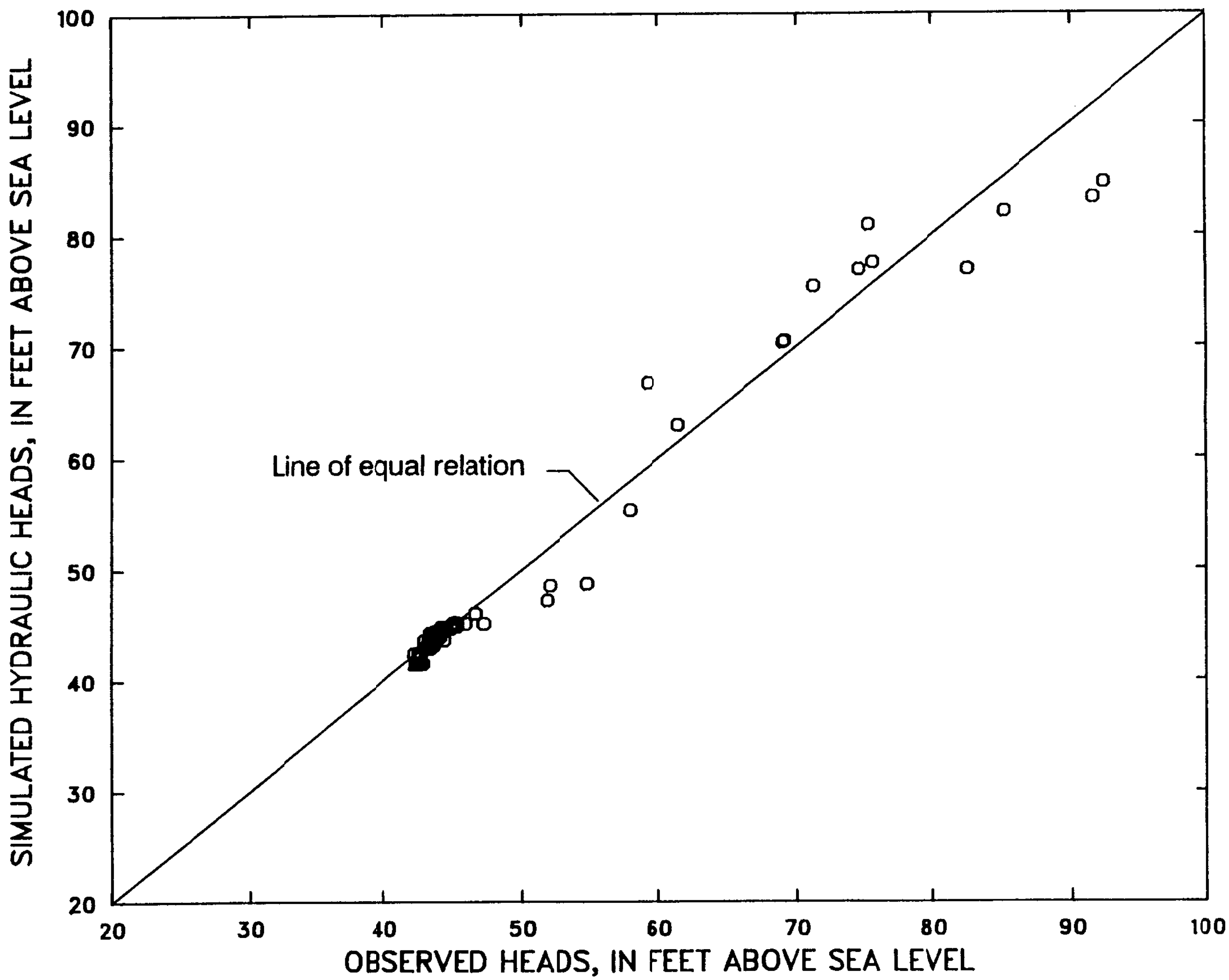

Figure 13.--Comparison of observed and simulated hydraulic heads in all wells for all model layers, under steady-state conditions.

Table 1.--*Steady-state ground-water budget for the stratified-drift aquifer, December 4, 1985*
[Rates are in cubic feet per second]

Inflow rate		Outflow rate	
Leakage from river	0.08	Discharge to river	0.64
Recharge	1.17	Pumpage from tannery wells	.61
Total inflow	1.25	Total outflow	1.25

and snowstorm that occurred prior to the start of the aquifer test.

Transient-Model Calibration

Model calibration was extended to transient-flow conditions of the 30-day aquifer test by including storage coefficients in the model and changing recharge and pumping conditions. Following a successive adjustment procedure similar to that used in the steady-state model, the simulated heads in the stratified-drift aquifer, and streamflow and induced infiltration from the Aberjona River were compared with the observations made January 3, 1986, at the end of the aquifer test. The calculated steady-state heads in layers 1-3 were used as starting heads for the transient simulation, and 20 pumping periods were used to simulate recharge and well failures. Figure 14 shows the water-table contours simulated by the model and the observed water-table altitudes measured in observation wells in layer 1 at the end of the test. Observed and simulated heads in layer 3 are shown in figure 15.

Figures 16 and 17 illustrate the difference between simulated and observed (estimated in areas with no data) water levels in layer 1 and heads in layer 3, respectively, at the end of the 30-day aquifer test. As in the steady-state simulation, the simulated water levels in layer 1 throughout the central part of the valley matched observed or estimated levels within 1 foot. Water levels in a few observation wells were not simulated very closely because the wells are located either on hill slopes or on the edges or corners of grid blocks.

Figure 18 illustrates the comparison of observed and simulated hydraulic heads at the end of the 30-day aquifer test for 87 well points in the three model layers. As in the steady-state model, the large cluster of values between 40 and 50 feet represent wells in the center of the valley where simulated heads match observed heads very closely, and the wider discrepancy at values greater than 50 feet represent wells in the upland areas. The two values at the low end of the graph represent simulated versus measured head in wells G and H. As noted in an earlier discussion in this report on modeling constraints, the simulated heads in the nodes representing the pumped wells are higher than the observed heads because the finite-difference model cannot simulate accurately the real drawdowns within and adjacent to the well casings.

As an additional calibration step, water levels calculated during simulation of the 30-day aquifer test were compared with hydrographs constructed from field data collected at selected deep and shallow wells (fig. 19). The overall match of simulated and observed water levels in the wells was considered reasonably close and acceptable; however, several characteristics of the simulated hydrographs over the 30-day period were noted. For example, the early-time water-level declines and the well failures later in the field test were not simulated precisely by the model. The simulated results indicate that the model is not discretized finely enough in the vertical direction to simulate head changes caused by compressive storage effects. Another discrepancy is the inaccurate simulation of recharge events late in the field test. The explanation for why the model does not simulate the "spikes" in the observed hydrographs is not clear but appears to be related to a water-accumulation effect and above-average recharge process that occurs in the wetland following significant precipitation.

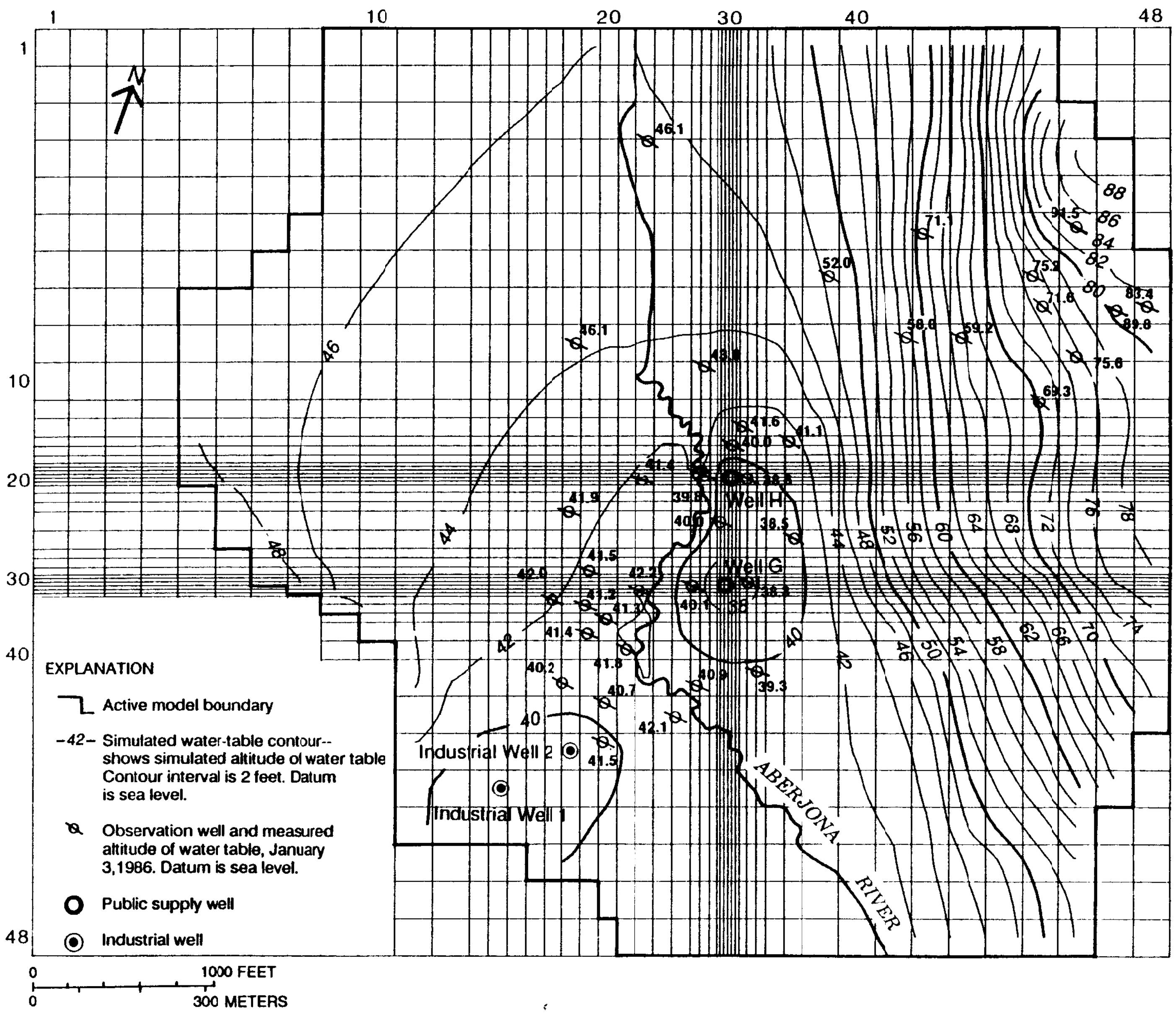

Figure 14.--Observed and simulated water table in layer 1 in the vicinity of wells G and H, representing conditions at the end of the 30-day aquifer test, January 3, 1986.

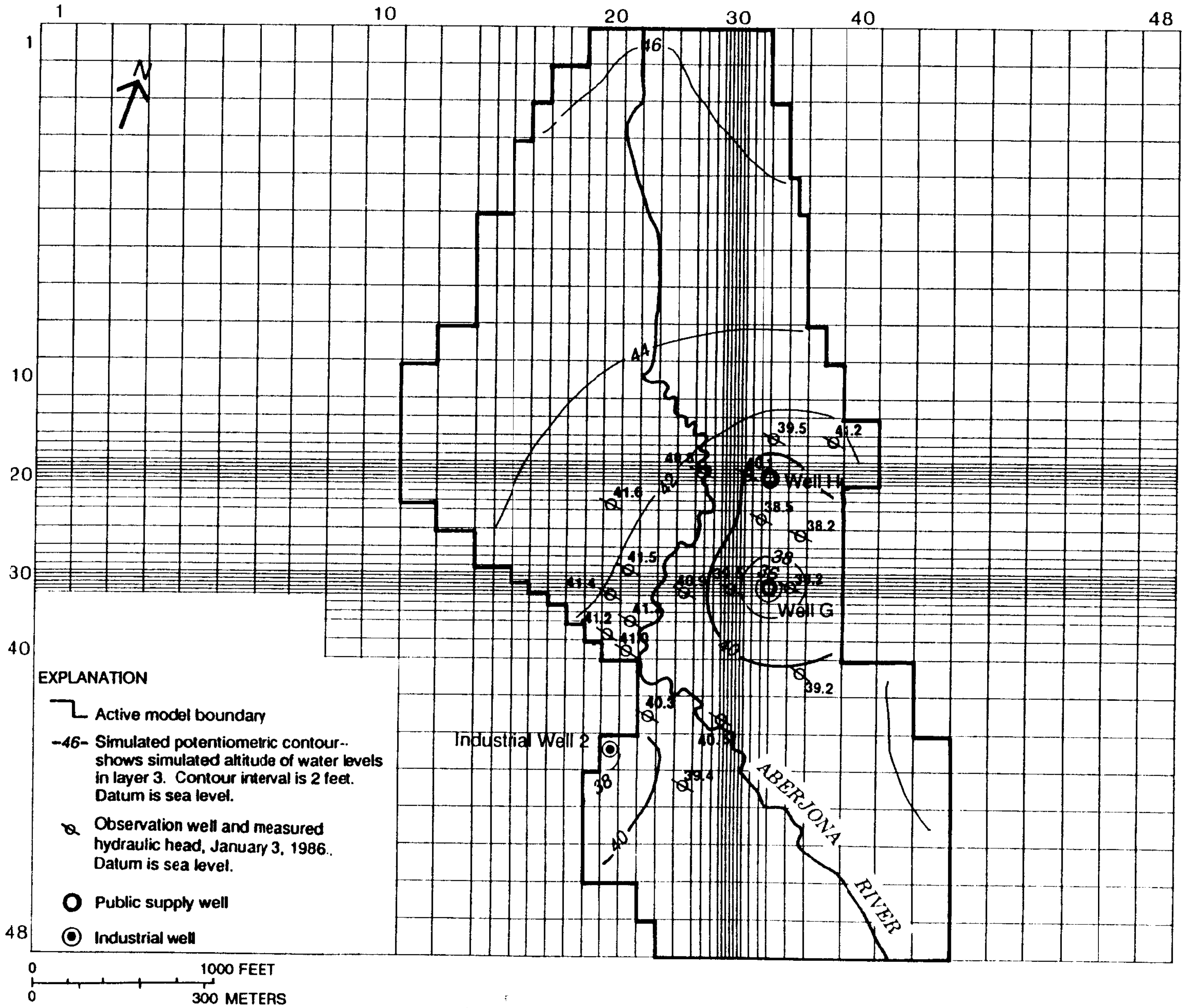

Figure 15.--Observed and simulated hydraulic heads in layer 3 in the vicinity of wells G and H, representing conditions at the end of the 30-day aquifer test, January 3, 1986.

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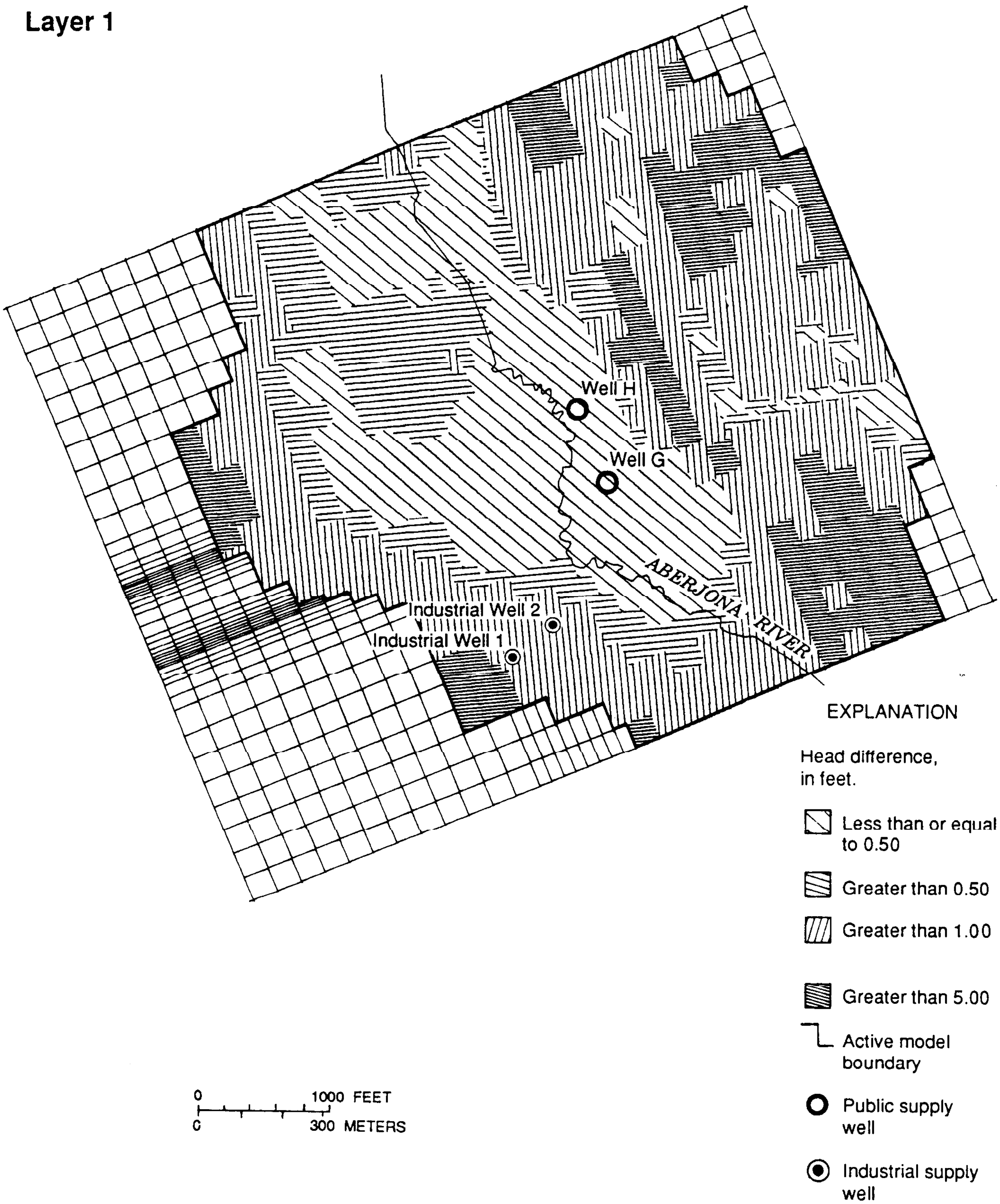


Figure 16.–Differences between simulated and observed/estimated water levels in layer 1 under transient conditions.

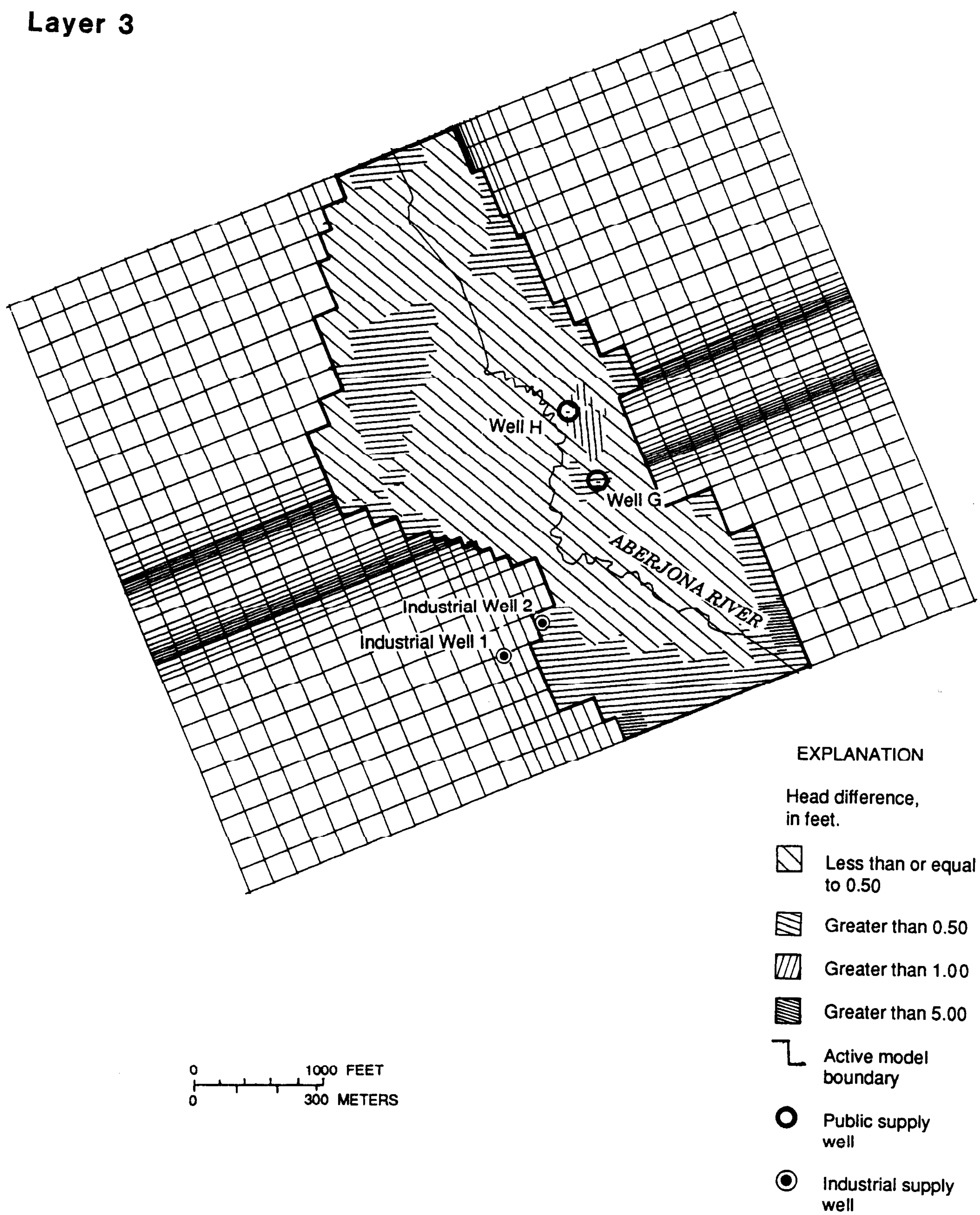


Figure 17.–Differences between simulated and observed/estimated hydraulic heads in layer 3 under transient conditions.

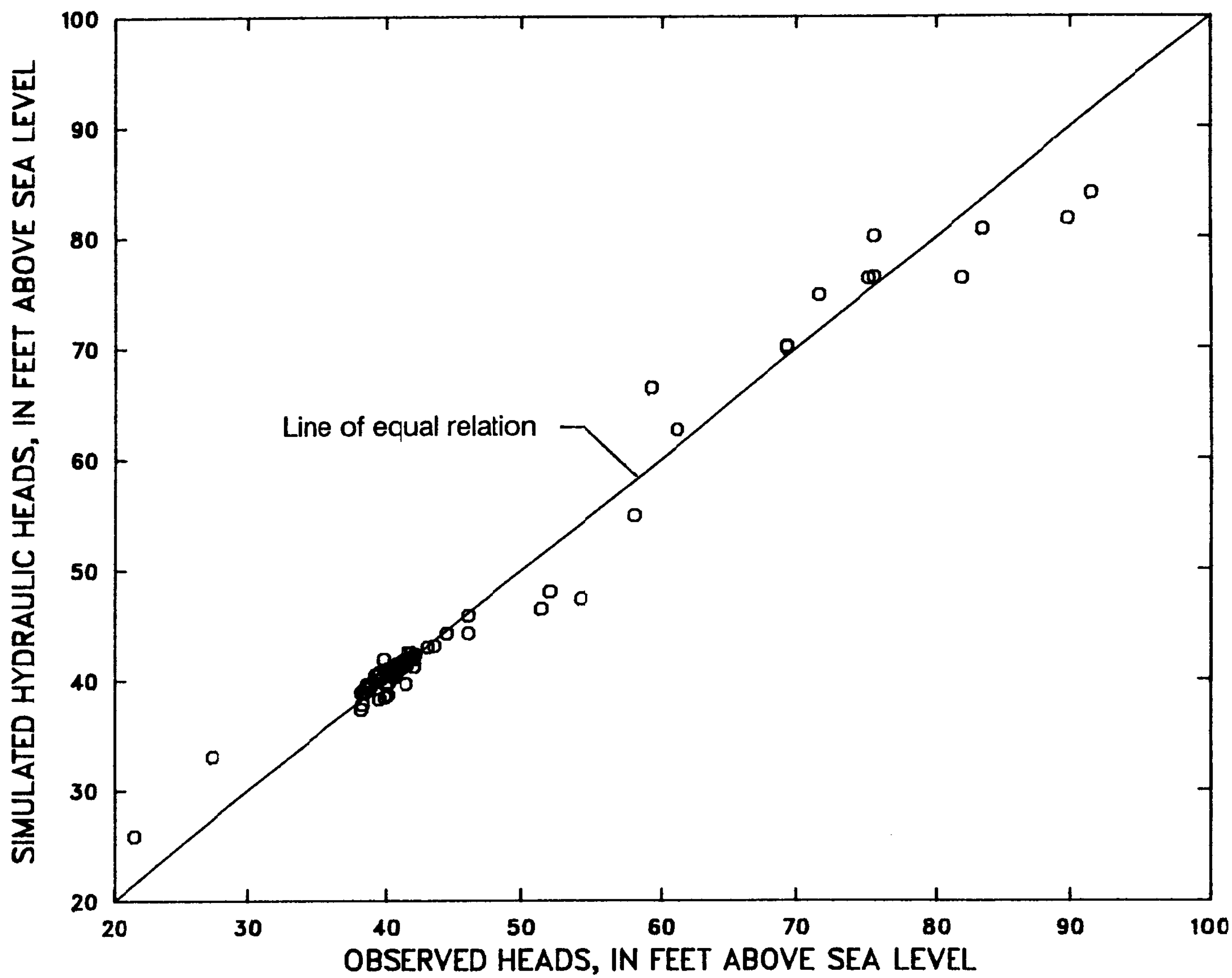
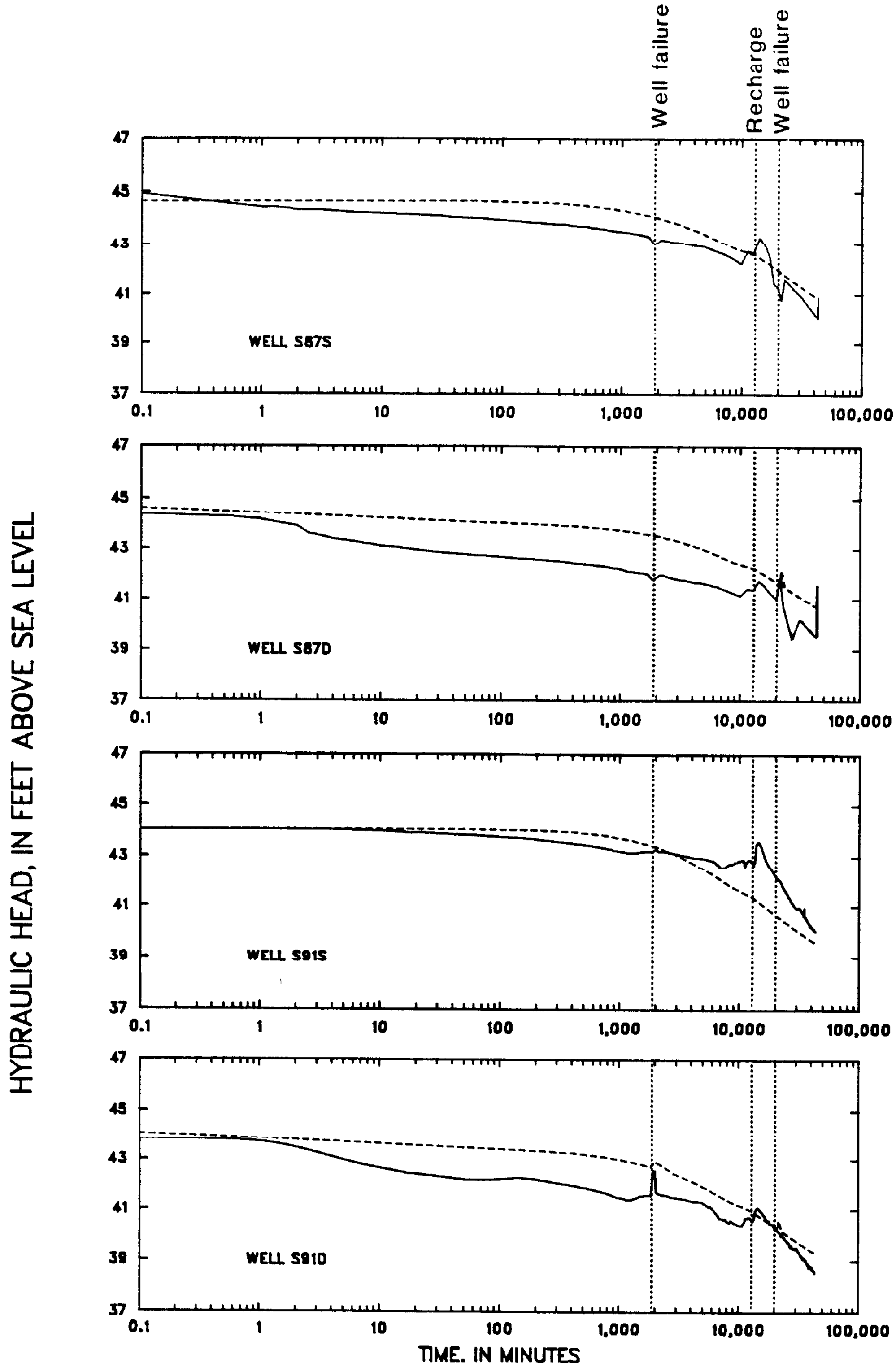


Figure 18.--Comparison of the observed and simulated heads in all wells for all model layers, under transient conditions.



EXPLANATION -------- Simulated ———— Observed

Figure 19.--Observed and simulated hydraulic heads for the 30-day aquifer test at selected deep and shallow wells, December 4, 1985 - January 3, 1986.

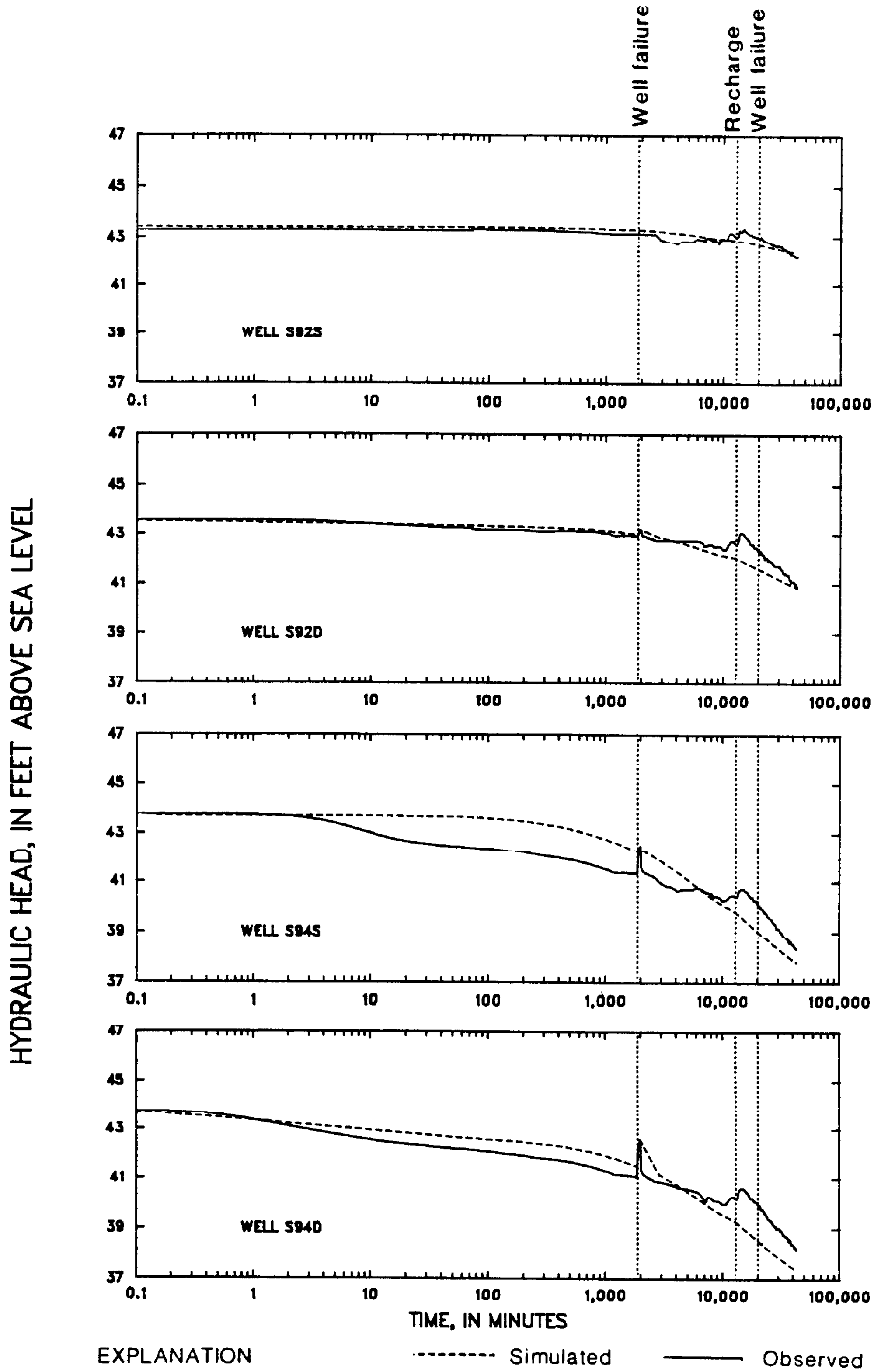


Figure 19.--Observed and simulated hydraulic heads for the 30-day aquifer test at selected deep and shallow wells, December 4, 1985 - January 3, 1986--Continued.

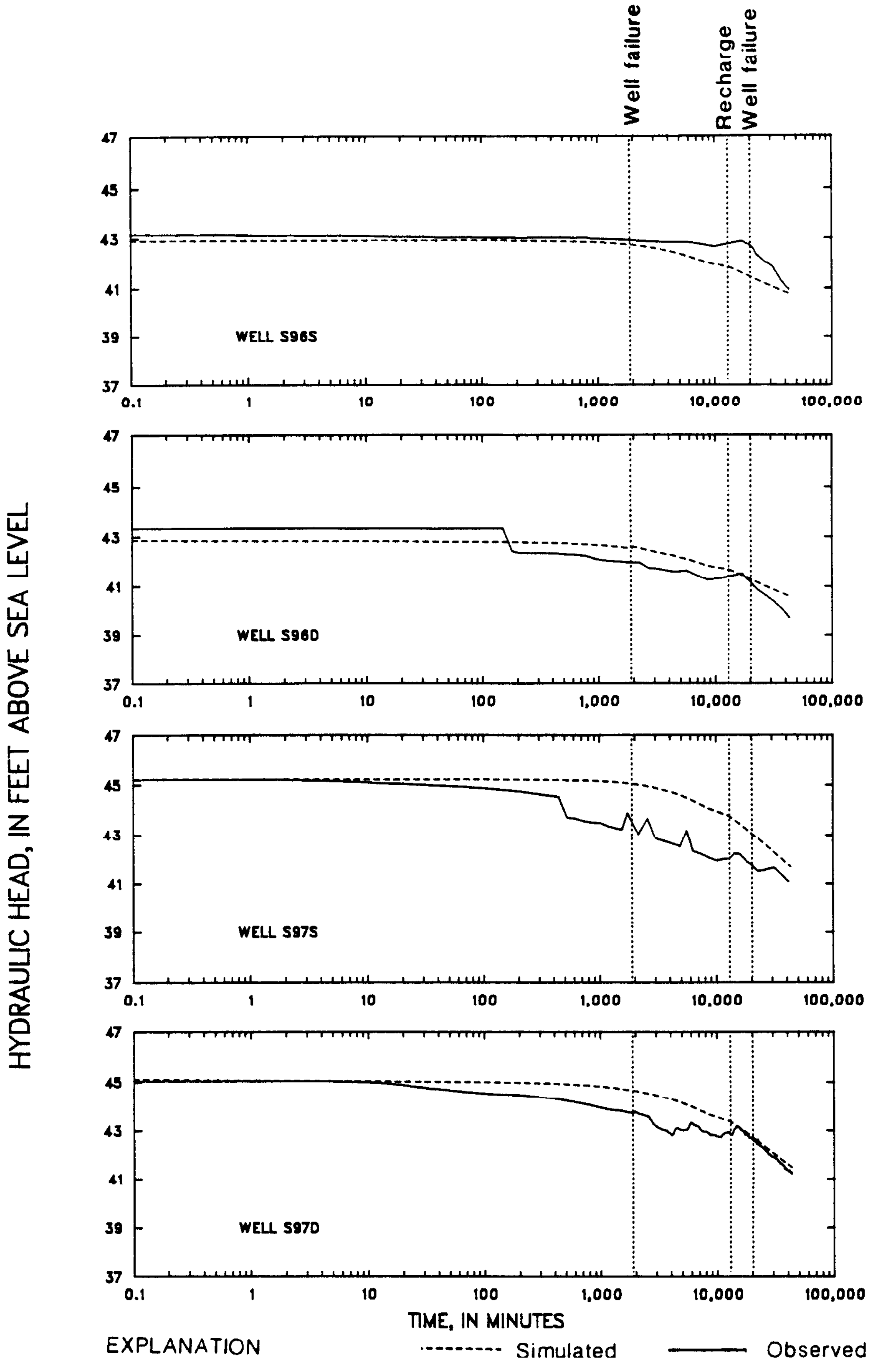


Figure 19.--Observed and simulated hydraulic heads for the 30-day aquifer test at selected deep and shallow wells, December 4, 1985 - January 3, 1986--Continued.

The water balance for basin inflows and outflows for the transient model after 30 days of simulating pumping is listed in table 2. Simulated streamflow loss for the entire length of the Aberjona River in the active model area was 0.50 ft^3/s. Simulated streamflow losses for that reach of river between Olympia Avenue and Salem Street were 1.25 ft^3/s as compared to an observed loss of 1.26 ft^3/s at the end of the test. This loss in streamflow indicates that as much as 40 percent of the total withdrawal rate was derived from intercepted ground-water discharge and infiltration of surface water from the wetland and river (Myette and others, 1987; p. 15-16).

Sensitivity Analysis

A sensitivity analysis of the transient model was conducted to assess both the relative importance of the flow components in the conceptual model and the uncertainty in the selection of input-data values and boundary conditions. The analysis was used to determine whether the differences between simulated and observed data values could be accounted for by the range of uncertainty in the values of input data and boundary conditions. The analysis provided a measure of the sensitivity of the model results to changes in the values of key parameters and, thus, it provided a check on the reasonableness of the calibrated model.

Throughout the model area, the principal input parameters were independently increased and decreased by a constant factor, while other parameters were left unchanged. Differences between simulated and observed values of head and ground-water discharge were used to evaluate model sensitivity. The amount of adjustment of each parameter differed according to its known variability (table 3). Some parameters, such as bedrock altitude and well withdrawal rates were not adjusted because their value was either known exactly or the range of values was relatively small.

After each sensitivity-test model simulation, residuals were computed by subtracting the simulated head at each of the nodes representing observation wells from the head measured in the field at the end of the 30-day aquifer test. A statistical analysis was performed on these residuals, and the variation was displayed graphically in a series of boxplots (fig. 20). These plots show the range of the central 50 percent of the data (in this case, the difference between measured and simulated heads) and also indicate the more extreme values. As shown in figure 18, changes in boundary conditions and in most input parameters and storage terms caused very little change in simulated heads, with the following exceptions:

1. Specific yield equals 0.45: In this test, where the stratified-drift aquifer was simulated as if all of layer 1 was composed of peat, the simulated heads were higher than the observed heads because the top layer acted as a source of water to the model (fig. 21). The water-level contours are similar to those shown in figure 13; however, model results indicated a much larger increase in ground-water discharge than indicated by the field data. In addition, field reconnaissance shows that peat does not cover the entire study area; thus, it would be difficult to justify a specific yield as high as 0.45 throughout the area.

2. Transmissivity divided by 10: A very low transmissivity in all model layers significantly reduced the flow

Table 2.--*Transient ground-water budget for the stratified-drift aquifer, January 3, 1986*

[Rates are in cubic feet per second]

	Inflow rate		Outflow rate
Leakage from river	0.87	Discharge to river	0.37
Storage	2.32	Storage	.34
Recharge	.57	Pumpage from wells	3.05
Total inflow	3.76	Total outflow	3.76

Table 3.--*Parameters changed during sensitivity analysis for the transient-condition simulation*

Sensitivity Test	Name of simulation[1]
CALIBRATED MODEL:	
1) No flow boundaries, all sides Streambed conductance based on vertical hydraulic conductivity = 2 ft/d Storage coefficient equal to 0.0005 Specific yield equal to 0.45 in peat and 0.30 in rest of layer 1	FINAL
BOUNDARY CONDITIONS:	
2) No flow changed to constant head	CH
3) River stage lowered by 0.5 ft	STAGE - .5
4) River stage raised by 0.5 ft	STAGE+.5
5) Streambed conductance divided by 10	RIV/10
6) Streambed conductance multiplied by 10	RIVx10
STORAGE TERMS:	
7) Storage coefficient divided by 10	SC=SC/10
8) Storage coefficient multiplied by 10	SC=SCx10
9) Specific yield equal to 0.3 in all of layer 1	NO PEAT
10) Specific yield equal to 0.45 in peat and 0.1 in rest of layer 1	SY=.1
11) Specific yield equal to 0.1 in all of layer 1	SY=.1, NO PEAT
12) Specific yield equal to 0.45 in all of layer 1	SY=.45
HORIZONTAL HYDRAULIC CONDUCTIVITY AND TRANSMISSIVITY:	
13) All layers divided by 10	T/10
14) All layers multiplied by 10	Tx10
VERTICAL CONDUCTANCE, between all layers:	
15) Divided by 10	VC/10
16) Multiplied by 10	VCx10

[1] Use this name in referring to figure 20.

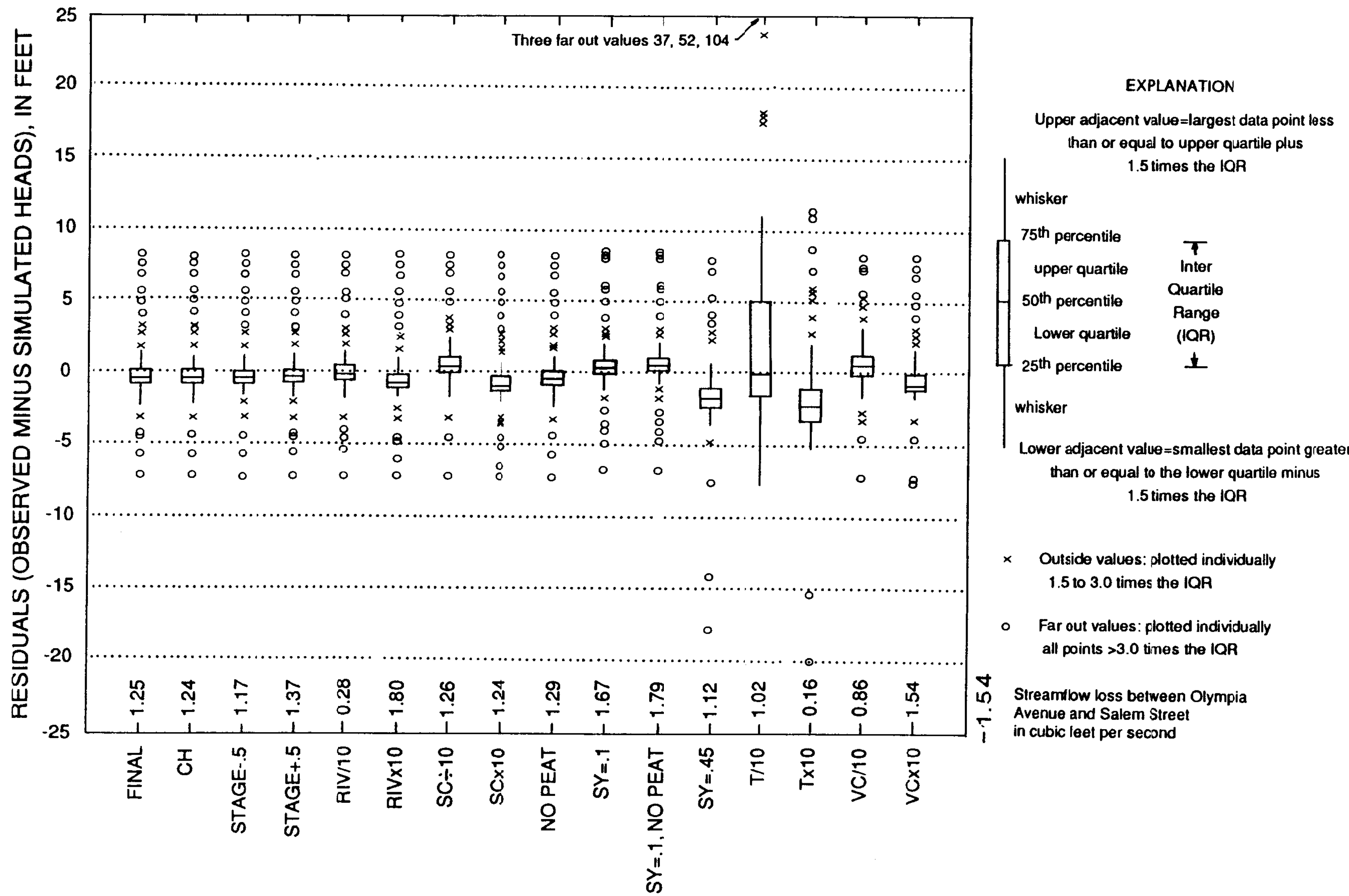


Figure 20.--Statistical distribution of the difference between measured and simulated heads for sensitivity tests of the transient-flow model.

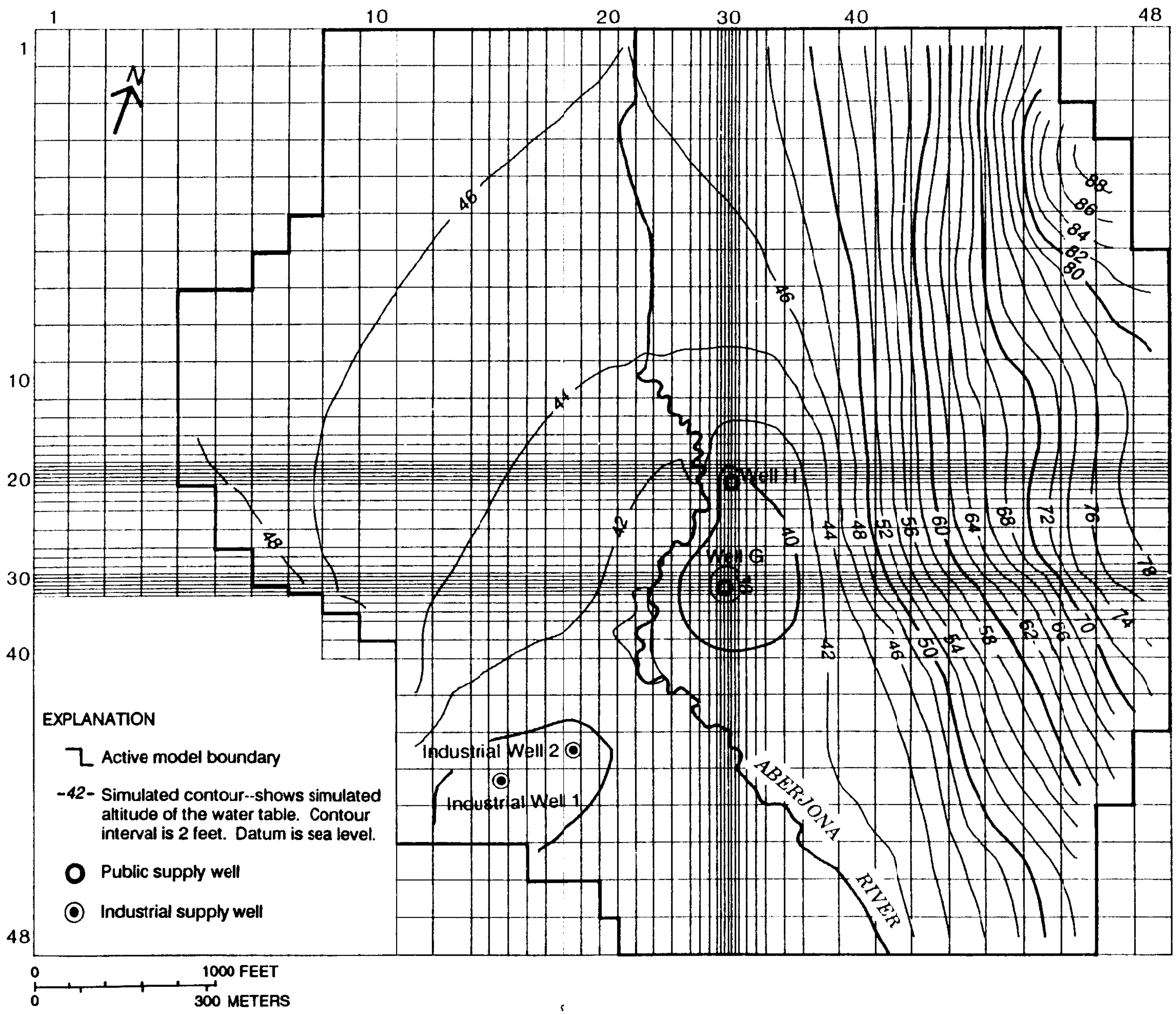


Figure 21.--Simulated altitude of the water table in a sensitivity test of the ground-water-flow model: Specific yield in layer 1 equals 0.45.

Page 34- Well H should be centered at the crossing of the fine gr as. Heavy contour line at Industrial well 2 should be labelled 40.

of water through the simulated system and caused a dramatic increase in the range of heads throughout the model area. Three extreme values of residuals are not shown on the boxplot. The head distribution from this simulation showed extreme drawdowns at the pumped wells (fig. 22) as compared with observed drawdown data.

3. Transmissivity multiplied by 10: Increasing transmissivity in all layers caused a flattening of the water table in the model area. Because of the high transmissivity, water was permitted to pass through the aquifer without restriction and there was little or no simulated drawdown around the pumping wells (fig. 23). This was not representative of actual field conditions observed during the aquifer test and, thus, does not support setting model transmissivity values in this range.

The simulated streamflow losses between Olympia Avenue and Salem Street for each sensitivity test are also shown on figure 20. The range in calculated streamflow loss is greater than one order of magnitude indicating that simulated ground-water discharge to the river is a much more sensitive indicator than hydraulic head. The sensitivity tests in which the simulated streamflow loss differed from the observed loss by more than 20 percent were as follows:

1. Streambed conductance divided by 10: A very low value of vertical streambed hydraulic conductivity greatly inhibited flow from the river to the aquifer, and very little streamflow was lost to induced infiltration from the river to the aquifer.

2. Streambed conductance multiplied by 10: A high value of vertical streambed hydraulic conductivity allowed a significant amount of flow from the river to the aquifer.

3. Specific yield equal to 0.1, both with and without a peat layer: Reducing the amount of water available from storage in layer 1 of the ground-water-flow model resulted in a significant increase in leakage from the river to the aquifer to satisfy the pumping demand.

4. Transmissivity multiplied by 10: Increasing the transmissivity of layers 2 and 3 permitted water to move unrestricted through the aquifer. Because there was little or no drawdown near the pumping wells, head was not lowered near the stream and very little stream water was drawn into the aquifer.

5. Vertical hydraulic conductivity divided by 10: Decreasing the conductivity between layers 1 and 2 and 2 and 3 inhibited the vertical flow of water from layer 1 to layer 3. Relatively large drawdowns were simulated in all three aquifers as more water was removed from aquifer storage to compensate for reduced infiltration of surface water.

6. Vertical hydraulic conductivity multiplied by 10: Increasing the conductivity between all layers significantly increased the flow of water between the river and the wells. Too much water was permitted to infiltrate from the stream and wetland into the aquifer causing increases in head in all model layers and decreases in vertical gradients.

The results of the sensitivity tests also indicate that neither the location and type of the model boundaries nor the variation in recharge affect the results of the calibrated model. In summary, model results are most sensitive to increases in storage coefficients and decreases in aquifer transmissivity. The transient model underestimates the response of the ground-water flow system to pumping stress, particularly in the first few minutes of simulated pumping (see early-time data in hydrographs, fig. 17). However, the effects of underestimation decrease rapidly after the first few minutes of simulated pumping.

Model Appraisal

The ground-water-flow model, which predicts the effects of pumpage on a local scale, is based on a relatively large amount of information on the geologic and hydrologic properties of the stratified drift, including the data gathered during a unique 30-day aquifer test. The model integrates all the geologic and hydrologic data available as of March 1988. Precise simulation of hydrologic conditions on a regional scale was not attempted because the USEPA is concentrating remedial measures in the river valley near wells G and H. Also, the decrease in amount and distribution of field data with increasing distance from wells G and H precluded design and calibration of a regional model. The model results are most accurate in the center of the wetland and least accurate near the no flow boundaries of the model area.

It is important to note that the sensitivity of the model to variations in recharge could not be thoroughly checked in the steady-state model. Generally, streamflow data are used to help check the accuracy of the recharge value used in the model; however, the precipitation shortly before the start of the aquifer test made it impossible to match measured

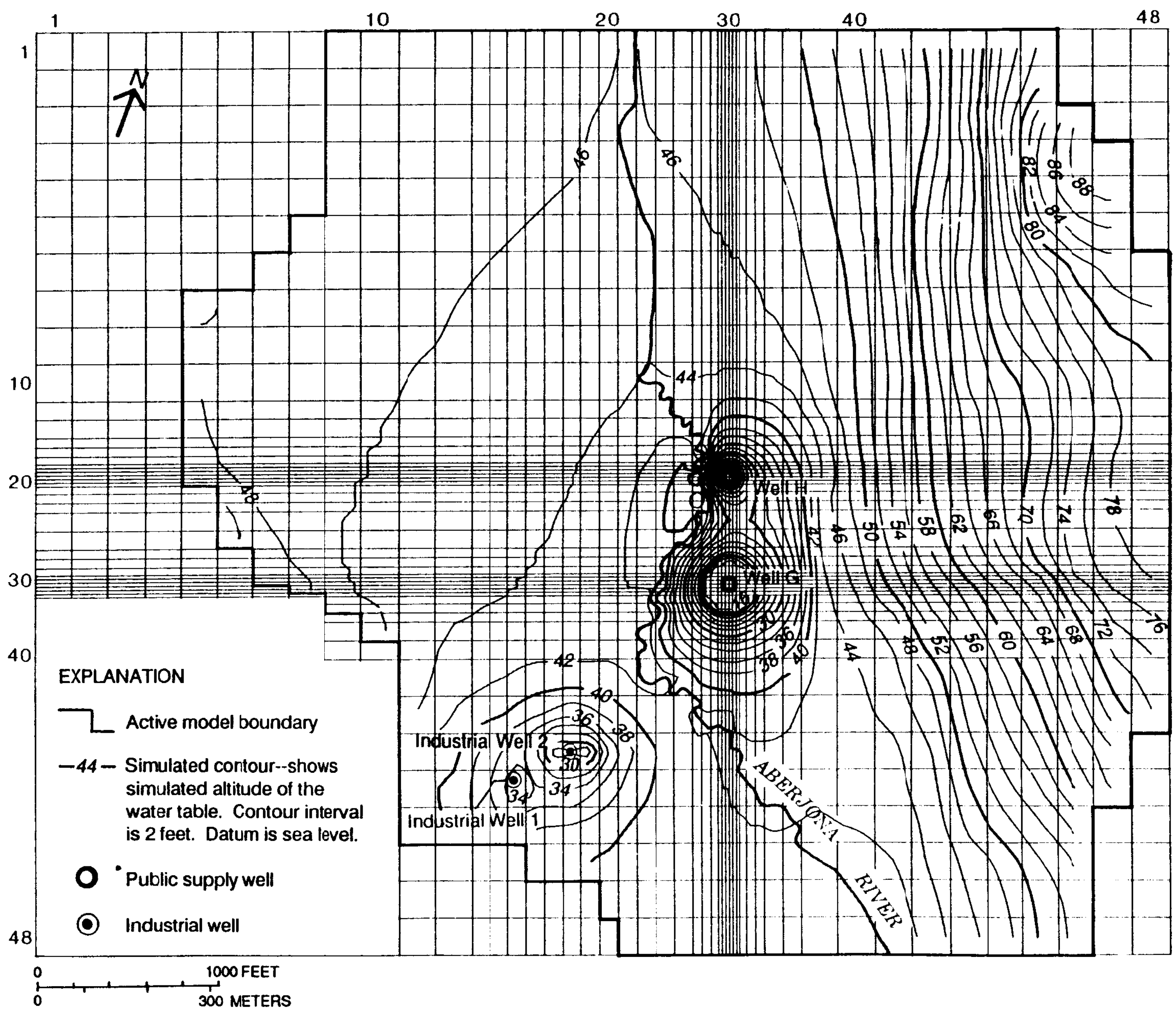


Figure 22.--Simulated altitude of the water table in a sensitivity test of the ground-water-flow model: Transmissivity in all layers divided by 10.

…ge 36. Industrial well 1 should be moved one node to the left and …ntour 34 sho… enlarged to surround the well. There should be more contour lin… around each well; water level at well G is -32 ft; at …

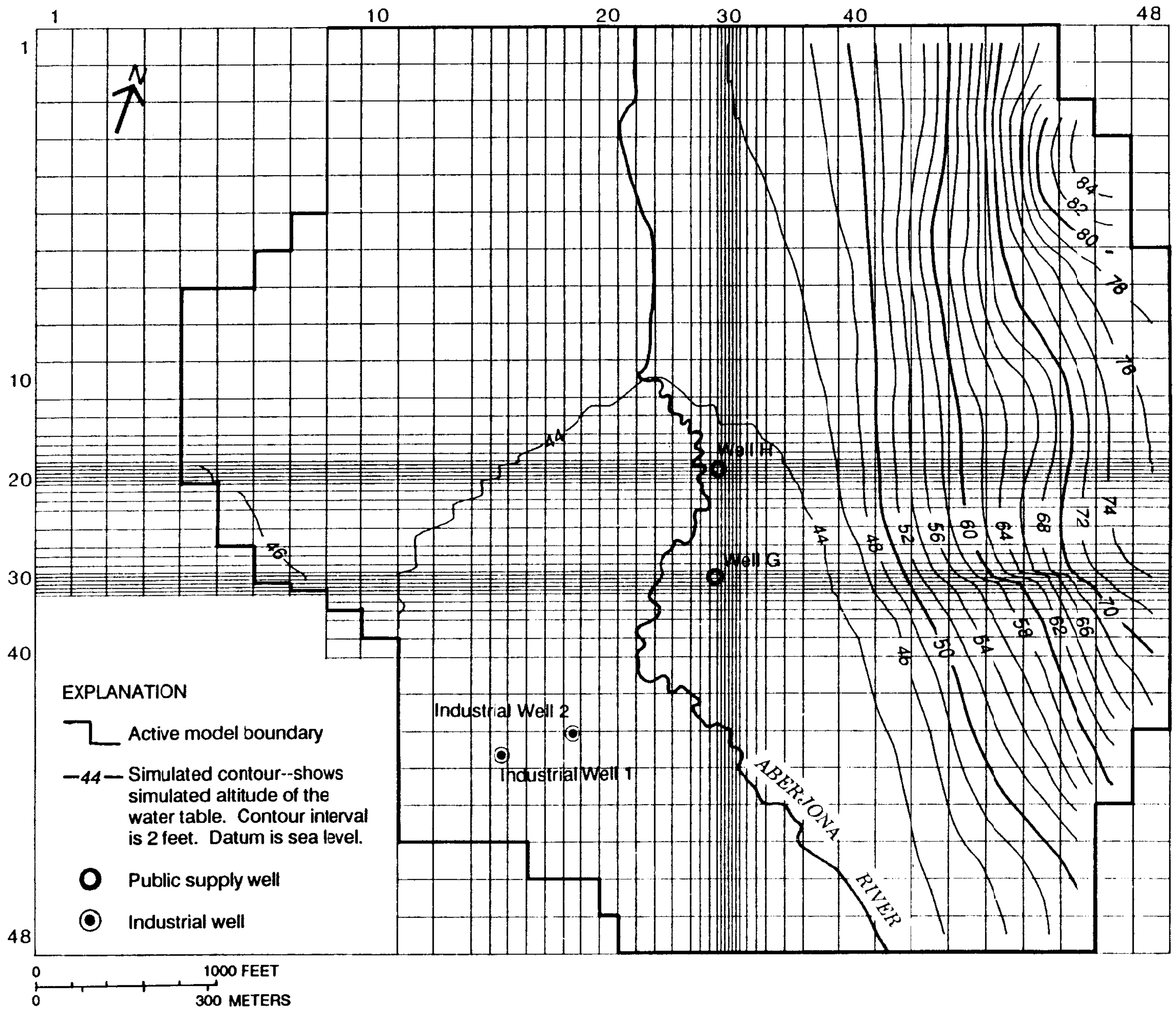


Figure 23.--Simulated altitude of the water table in a sensitivity test of the ground-water-flow model: Transmissivity in all layers multiplied by 10.

Page 37: Wells G and H should be centered at the crossing of the fine grid areas; industrial wells 1 and 2 should be approximately 0.1 inch lower. (Well 1 will be in next lower node.)

streamflow to simulated ground-water discharge. Routine variation of recharge during steady-state model calibration and sensitivity testing only caused changes in the simulated ground-water discharge to the Aberjona River. Because all simulated discharges were within the acceptable range as indicated by baseflow data (Myette and others, 1987; table 1), no single value of recharge produced a significantly better result than did any another. A value of 20 in/yr was chosen on the basis of U.S. Geological Survey work completed in similar aquifers elsewhere in New England. The model user may need to test different recharge terms in future simulations to assess the effect of different recharge values on the results of pumping scenarios and on the sensitivity of the other model parameters. If the model user decides to use recharge values that differ significantly from those used in this model, then a new sensitivity analysis will be required to determine optimum values of input conditions such as transmissivity and leakage coefficients.

Pumpage of wells G and H and the tannery wells was assumed to be constant during each simulated pumping period of the test. The short-duration well failures that occurred at wells G and H were simulated using separate pumping periods, but no attempt was made to simulate the real, intermittent pumping cycles of the tannery wells.

The model design was centered on the wetland area in the vicinity of wells G and H and the Aberjona River. The tannery area in the southwestern corner of the model area presented some problems during the calibration, mostly because of sparse observation-well data, no data on pumping rates and cycles, and few data on the position, extent, and hydraulic effect of the bedrock-valley wall located southwest of the wells. Despite the problems with the available data, the pumping of the tannery wells plays an important role in the local ground-water flow system and an effort was made to match simulated results with field observations in that area.

SUMMARY AND CONCLUSIONS

Wells G and H are constructed in a small, but productive, stratified-drift aquifer in the Aberjona River valley. The stratified drift in which wells G and H, and two nearby industrial supply wells--tannery 1 and 2--are constructed, fills a narrow bedrock channel beneath the Aberjona River. The stratified drift is composed chiefly of sand and gravel and is underlain by bedrock or a thin discontinuous layer of glacial till and overlain by a discontinuous deposit of peat. The deposit of stratified drift is approximately 1 mile long, 0.75 mile wide, and up to 140 feet thick. Analysis of aquifer-test data indicates that the transmissivity of the stratified drift in the vicinity of wells G and H ranges from 11,500 to 14,000 ft^2/d, and large-diameter wells can pump as much as 700 gal/min.

Recharge to the aquifer is from precipitation. Ground water moves from upland areas to discharge areas in the wetland and along the Aberjona River. When the tannery wells are pumping an average of 270 gal/min, ground-water discharges to the stream in most of the study area and the river is a gaining stream throughout the year. When wells G and H and the tannery wells were pumped simultaneously (a total of 1370 gal/min), as much as 40 percent of the total withdrawal rate is derived from intercepted ground-water discharge and infiltration of surface water from the wetland and river significantly decreasing streamflow in the area.

A three-dimensional, digital ground-water-flow model of the stratified-drift aquifer in the vicinity of wells G and H was designed on the basis of existing and updated hydrogeologic information. The model was calibrated under steady-state and transient conditions by using the hydraulic properties and observed responses of the aquifer determined before and during the 30-day aquifer test in 1985-86. The model area is 0.8 mi^2, consisting of nearly 5,000 active nodes in three model layers, and model grid-spacing ranges from 20 x 20 feet to 200 x 200 feet.

The peat deposit and the river streambed are modeled explicitly and vertical leakage into and out of the aquifer is permitted. Boundary conditions in the uppermost layer are set to no-flow, corresponding with known hydrogeologic boundaries. In the lower two layers, boundary conditions corresponding with the stratified-drift/till-bedrock boundary also were set to no-flow. The stream was modeled as a head-dependent flux boundary. Pumping at the tannery wells was set to known average rates (270 gal/min), and that at wells G and H were set to the historical rates (700 gal/min and 400 gal/min, respectively).

The ground-water-flow model was calibrated to steady-state conditions in December 1985 when only the tannery wells were pumping. Hydraulic-head data either from 84 observation wells or estimated where no water-level data were available were compared with simulated heads. Throughout the center of the model area, simulated hydraulic heads matched observed/estimated hydraulic heads within 1 foot in all model layers. Hydraulic heads matched within 5 feet throughout the remainder of the model area except in some corners and sides of the active model area near till-bedrock boundaries. The simulated gain in streamflow of 0.27 ft^3/s is within the range of observed streamflow gain (0.10-0.62 ft^3/s) measured during 1985 low-flow conditions.

Model calibration was extended to transient conditions by using the aquifer-test data. The specific yield of the upper model layer was set to 0.30 for most areas and 0.45 in the area of peat. The storage coefficients of the middle and lower layers was set at 0.0005. Pumping and recharge conditions were set to those of the aquifer test, when the tannery wells and wells G and H were pumping. Twenty pumping periods were used to calculate hydraulic heads and to simulate recharge events and well failures. Hydraulic heads at the end of the simulated aquifer test matched those in 87 observation wells within 1 foot in all model layers within the center of the valley. As in the steady-state simulation, a match between observed/estimated hydraulic heads and simulated hydraulic heads of 5 feet or more was obtained in a few corners and sides of the active model area near till-bedrock boundaries. Simulated streamflow losses in the Aberjona River were 1.25 ft^3/s compared to a measured loss of 1.26 ft^3/s at the end of the aquifer test.

A sensitivity analysis of the calibrated model was conducted to determine if the differences between simulated values and observed data could be accounted for by the range of uncertainty in the values of input data and boundary conditions. Input conditions, including streambed parameters, recharge, storage coefficients, aquifer hydraulic conductivity and transmissivity, and vertical conductance between layers were increased and decreased by constant amounts within their respective known range. Test results of hydraulic-head data and ground-water discharge rates show that the model is least sensitive to variations in boundary conditions and the values of river stage and recharge, and most sensitive to variations in storage coefficients, and order-of-magnitude changes in transmissivity and streambed conductance.

Aquifer hydraulic parameters are known with the most confidence and boundary conditions in the lower aquifer layers are known with the least confidence. The uncertainty in recharge-rate values is relatively large because of the lack of quantitative data. Despite the uncertainty in the recharge data, the model calculates hydraulic-head values that are reasonable and ground-water discharge rates that fall within the range of measured low-flows under a wide range of recharge values.

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APPENDIX A - Input data to the Woburn **steady-state** ground-water-flow-model
Data are in the specific format outlined in McDonald and Harbaugh (1988).

```
Basic Package
Aberjona River basin near woburn 3d modular model - expanded to west and east
Virginia de Lima
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 17 32  0 31  0  0 00 14 15  0  0 18
        0         1
        5         1   (2014)                1    IBOUND ARRAY, LAYER 1
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Basic Package - (Continued)
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Basic Package - (Continued)
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Basic Package - (Continued)
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APPENDIX A - (Continued)

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Basic Package - (Continued)
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 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2 2 2 2 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2 2 2 2 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2 2 2 2 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 2 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2 2 2 2 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 2 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2 2 2 2 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 2 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2 2 2 2 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 2 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2 2 2 2 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 2 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 2 2 2 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 2 2 2 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 2 2 2 0 0 0 0
```

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Basic Package - (Continued)
      5         1    (20I4)                     1        IBOUND ARRAY, LAYER 3
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 0 0 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 0 0 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0 0 0 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0 0 0 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0 0 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0
 0 0 0 0 0 0 0 0
 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0
 0 0 0 0 0 0 0 0
```

APPENDIX A - (Continued)

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Basic Package - (Continued)
0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
```

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Basic Package - (Continued)
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 0
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 0 0 0 0 0 0 0
    0.0
      5         1  (16F5.1)                   1          LAYER 1 - FIELD HEADS
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.5 47.0 46.9 46.9 46.9 46.9
47.0 47.0 47.1 47.2 47.2 47.2 47.2 47.1 47.1 47.0 47.0 47.0 47.0 47.0 47.0 47.0
47.0 47.1 48.1 48.9 50.1 53.3 57.9 58.9 59.4 62.1 69.8 75.5 82.0 84.6 86.7 87.0
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.5 47.1 46.9 46.7 46.8 46.7
46.7 46.7 46.7 46.7 46.7 46.7 46.7 46.7 46.7 46.6 46.7 46.4 46.6 46.9 47.0 47.2
47.5 48.1 48.9 49.5 50.7 53.0 57.8 58.8 59.4 62.5 70.6 76.4 85.0 88.4 90.0 90.0
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.5 47.0 46.8 46.7 46.6 46.5
46.4 46.4 46.4 46.3 46.3 46.3 46.3 46.4 46.5 46.7 46.8 46.8 46.9 47.0 47.3 47.6
47.9 48.4 49.0 49.4 50.2 51.8 55.3 58.6 59.1 60.0 69.4 74.7 85.0 92.0 93.5 91.9
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.2 48.0 47.3 46.9 46.7 46.6 46.5 46.4
46.3 46.2 46.1 46.0 46.0 46.1 46.2 46.3 46.5 46.7 46.8 46.9 47.0 47.1 47.3 47.5
47.8 48.0 48.3 48.6 49.1 50.9 53.3 55.9 58.4 59.3 62.4 72.3 81.0 92.2 94.0 93.3
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.2 47.7 47.0 46.8 46.6 46.5 46.4 46.3
46.2 46.2 46.0 46.0 45.9 45.9 46.0 46.2 46.4 46.5 46.7 46.8 46.9 47.0 47.1 47.2
47.3 47.6 47.9 48.2 48.7 49.8 53.0 55.1 57.5 58.8 60.0 70.4 75.2 92.8 94.0 94.0
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.9 47.1 46.8 46.6 46.5 46.4 46.4 46.3
46.2 46.1 46.0 46.0 45.9 45.9 45.9 46.0 46.1 46.2 46.5 46.6 46.8 46.9 47.0 47.1
47.2 47.4 47.6 48.0 48.5 49.3 53.1 55.0 56.9 58.5 59.8 67.0 73.4 91.0 94.0 94.0
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.3 46.7 46.6 46.5 46.4 46.3 46.3 46.2
46.1 46.1 46.0 46.0 46.0 45.9 45.8 45.8 45.8 45.9 46.1 46.3 46.4 46.5 46.7 46.8
46.9 47.1 47.4 47.7 48.2 49.1 51.6 54.8 56.8 58.4 60.3 66.2 72.1 77.4 91.0 94.0
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.8 47.1 46.6 46.5 46.4 46.3 46.3 46.2 46.1
46.0 46.0 46.0 45.9 45.6 45.5 45.4 45.5 45.5 45.6 45.7 45.7 45.8 45.9 46.0 46.0
46.1 46.2 46.6 47.0 47.3 47.9 49.2 56.3 57.2 58.4 60.5 65.8 69.6 75.7 82.1 89.9
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.7 46.9 46.6 46.3 46.3 46.2 46.2 46.1 46.1
46.1 46.1 46.1 45.6 45.2 44.9 45.0 45.1 45.2 45.2 45.3 45.3 45.3 45.3 45.3 45.4
45.4 45.5 45.6 45.7 46.0 47.1 48.7 56.5 57.4 58.7 60.9 65.6 69.3 74.5 84.8 88.2
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.7 46.8 46.4 46.1 46.0 46.0 46.0 46.0 46.0
46.0 45.9 45.4 44.9 44.7 44.6 44.6 44.6 44.7 44.7 44.7 44.7 44.7 44.8 44.8 44.8
44.8 44.8 44.9 45.1 45.6 47.1 51.3 56.4 57.7 59.1 61.9 65.5 68.9 77.0 84.7 87.0
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.7 46.7 46.2 46.0 45.8 45.8 45.8 45.7 45.6
```

Basic Package - (Continued)

```
45.5 45.3 45.0 44.8 44.7 44.4 44.3 44.3 44.3 44.3 44.4 44.4 44.4 44.4 44.4 44.5
44.5 44.5 44.7 44.9 45.6 46.9 53.0 56.0 58.0 59.4 62.2 65.1 68.5 78.2 84.5 86.3
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.8 46.7 46.1 45.8 45.7 45.6 45.6 45.5 45.4
45.3 45.1 44.8 44.7 44.6 44.4 44.3 44.1 44.1 44.1 44.2 44.2 44.3 44.3 44.4 44.4
44.5 44.6 44.7 44.8 45.2 46.6 51.9 56.0 58.0 59.4 62.1 64.9 68.4 78.1 84.1 85.7
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.8 46.6 46.0 45.7 45.6 45.5 45.5 45.4 45.3
45.1 44.9 44.7 44.5 44.4 44.3 44.2 44.1 44.0 44.0 44.1 44.1 44.2 44.2 44.3 44.3
44.4 44.5 44.5 44.6 44.9 46.3 51.3 56.4 58.1 59.6 62.3 65.1 68.9 78.8 84.0 85.4
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.9 46.6 46.0 45.7 45.6 45.5 45.4 45.3 45.2
45.0 44.8 44.6 44.4 44.3 44.3 44.2 44.0 44.0 44.0 44.0 44.1 44.1 44.2 44.2 44.2
44.3 44.3 44.4 44.6 44.8 46.2 50.0 56.3 58.1 59.5 62.1 64.9 68.7 78.1 83.8 85.1
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.6 46.0 45.7 45.5 45.4 45.3 45.3 45.1
44.9 44.6 44.5 44.4 44.3 44.1 44.1 44.0 44.0 44.0 44.0 44.0 44.0 44.0 44.1 44.1
44.2 44.3 44.4 44.5 44.8 46.0 49.9 56.2 58.0 59.5 62.0 64.8 68.5 77.7 83.3 85.0
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.6 46.0 45.7 45.5 45.4 45.2 45.2 45.0
44.8 44.6 44.4 44.3 44.2 44.1 44.1 44.0 43.9 43.9 43.9 43.9 44.0 44.0 44.1 44.1
44.1 44.2 44.3 44.5 44.8 46.0 49.6 56.1 57.9 59.5 62.0 64.7 68.5 77.5 83.1 84.9
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.7 46.0 45.7 45.5 45.3 45.2 45.2 44.9
44.7 44.5 44.3 44.2 44.1 44.1 44.0 44.0 44.0 43.9 43.9 43.9 44.0 44.0 44.0 44.1
44.1 44.2 44.3 44.5 44.8 46.0 49.6 56.0 57.9 59.4 62.0 64.6 68.4 77.2 82.9 84.9
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.7 46.0 45.7 45.5 45.3 45.2 45.1 44.9
44.7 44.5 44.3 44.1 44.1 44.1 44.0 44.0 44.0 43.9 43.9 43.9 43.9 43.9 44.0 44.0
44.1 44.2 44.3 44.5 44.8 45.9 49.6 56.0 57.8 59.4 62.0 64.6 68.5 77.1 82.7 84.8
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.7 46.0 45.6 45.4 45.3 45.2 45.0 44.8
44.6 44.4 44.3 44.1 44.1 44.0 44.0 44.0 44.0 43.9 43.9 43.9 43.9 43.9 43.9 44.0
44.0 44.1 44.3 44.5 44.8 45.8 49.5 55   57.7 59.3 61.9 64.5 68.4 76.8 82.5 84.8
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.  46.7 46.1 45.6 45.4 45.3 45.2 45.0 44.8
44.6 44.3 44.2 44.1 44.0 44.0 43.9 44.0 44.0 43.9 43.9 43.9 43.9 43.9 43.9 44.0
44.0 44.1 44.3 44.5 44.7 45.7 49.6 55.8 57.7 59.3 61.9 64.5 68.3 76.5 82.4 84.7
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.8 46.1 45.7 45.4 45.3 45.1 45.0 44.7
44.5 44.2 44.1 44.0 44.0 44.0 44.0 44.0 44.0 43.9 43.9 43.9 43.9 43.9 43.9 44.0
44.0 44.1 44.3 44.4 44.7 45.7 49.7 55.7 57.6 59.2 61.9 64.4 68.2 76.3 82.2 84.6
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.8 46.1 45.6 45.4 45.2 45.1 44.9 44.7
44.4 44.2 44.1 44.0 43.9 43.9 44.0 43.9 43.9 44.0 43.9 43.9 43.9 43.9 43.9 44.0
44.0 44.1 44.3 44.4 44.7 45.6 49.8 55.5 57.6 59.2 61.9 64.4 68.6 76.0 82.0 84.4
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.9 46.1 45.7 45.4 45.2 45.0 44.9 44.6
44.3 44.1 44.0 43.9 43.9 43.9 43.9 44.0 43.9 43.9 44.0 43.9 43.9 43.9 43.9 43.9
44.0 44.1 44.2 44.4 44.6 45.5 49.9 55.3 57.4 59.1 61.9 64.4 68.6 75.6 81.5 84.2
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.0 46.2 45.6 45.4 45.1 45.0 44.8 44.4
44.1 44.0 43.9 43.8 43.8 43.9 43.9 43.9 43.9 43.9 43.9 43.8 43.9 43.9 44.0 44.0
44.0 44.1 44.2 44.4 44.7 45.6 49.7 55.0 57.1 58.9 61.8 64.3 68.5 75.1 80.4 83.8
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.5 46.4 45.7 45.4 45.1 44.9 44.6 44.3
44.0 43.9 43.8 43.7 43.7 43.8 43.8 43.9 44.0 43.9 43.9 43.9 44.0 44.0 44.0 44.0
44.0 44.1 44.2 44.4 44.7 45.7 49.4 54.2 56.5 58.5 61.4 64.0 67.8 74.5 79.1 82.5
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.6 45.8 45.4 45.0 44.7 44.3 44.0
43.8 43.7 43.6 43.6 43.6 43.7 43.7 43.8 43.9 43.9 44.0 44.0 44.0 43.9 44.0 44.0
44.0 44.1 44.2 44.4 44.6 45.0 48.6 53.7 56.0 58.0 60.8 63.9 67.5 73.9 78.1 81.0
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.1 46.8 45.8 45.3 45.0 44.6 44.2 43.9
43.7 43.6 43.6 43.6 43.6 43.6 43.7 43.8 43.8 43.9 43.9 43.9 43.9 44.0 44.0 44.0
44.0 44.0 44.1 44.2 44.4 44.7 47.0 53.9 55.8 57.8 60.8 64.1 67.9 73.7 77.2 80.4
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.2 47.0 45.9 45.3 44.9 44.5 44.1 43.9
43.7 43.6 43.6 43.5 43.5 43.6 43.7 43.8 43.8 43.8 43.9 43.9 43.9 43.9 43.9 43.9
44.0 44.0 44.0 44.0 44.2 44.5 46.3 53.5 55.6 57.6 60.6 64.1 67.8 73.5 76.2 80.0
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.2 45.9 45.3 44.9 44.4 44.1 43.8
43.6 43.6 43.5 43.5 43.5 43.6 43.6 43.7 43.8 43.8 43.8 43.9 43.9 43.9 43.9 43.9
43.9 43.9 44.0 44.0 44.0 44.1 45.7 53.1 55.4 57.4 60.5 64.0 67.7 73.2 75.6 79.6
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.3 46.0 45.3 44.8 44.4 44.0 43.7
43.6 43.5 43.5 43.5 43.5 43.5 43.6 43.7 43.8 43.8 43.8 43.8 43.8 43.8 43.8 43.9
43.9 43.8 43.9 43.9 43.9 43.9 45.1 52.8 55.4 57.2 60.4 63.8 67.4 72.9 75.3 79.3
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.4 46.1 45.3 44.8 44.3 43.9 43.7
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Basic Package - (Continued)

```
43.5 43.5 43.5 43.5 43.5 43.5 43.6 43.7 43.7 43.8 43.8 43.8 43.8 43.8 43.8 43.8
43.8 43.8 43.8 43.9 43.9 44.0 44.8 52.2 55.5 57.0 60.4 63.8 67.4 72.7 75.3 79.1
60.0 60.0 60.0 60.0 60.0 58.0 56.0 52.0 48.0 47.5 46.1 45.3 44.7 44.3 43.9 43.7
43.5 43.5 43.5 43.4 43.5 43.5 43.6 43.7 43.7 43.8 43.7 43.8 43.8 43.8 43.8 43.8
43.8 43.8 43.8 43.9 43.8 44.0 44.6 51.6 55.3 56.9 60.3 63.7 67.3 72.6 75.1 79.0
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.6 46.2 45.3 44.7 44.3 43.9 43.7
43.6 43.5 43.5 43.4 43.5 43.5 43.6 43.7 43.7 43.7 43.7 43.7 43.7 43.8 43.8 43.8
43.7 43.8 43.8 43.9 43.8 43.9 44.4 50.9 55.1 56.8 60.3 63.7 67.2 72.4 75.0 78.7
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.6 46.3 45.3 44.7 44.2 43.9 43.7
43.6 43.4 43.5 43.4 43.4 43.5 43.6 43.7 43.7 43.7 43.7 43.7 43.7 43.7 43.7 43.7
43.7 43.8 43.7 43.8 43.8 43.9 44.2 50.4 54.9 56.7 60.2 63.6 67.1 72.3 74.8 78.5
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.7 46.4 45.3 44.7 44.2 43.8 43.6
43.6 43.4 43.5 43.4 43.4 43.5 43.6 43.6 43.7 43.7 43.7 43.7 43.7 43.7 43.7 43.7
43.7 43.7 43.7 43.8 43.8 43.9 44.1 50.0 54.8 56.6 60.2 63.6 67.0 72.3 74.7 78.3
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.7 46.4 45.3 44.7 44.3 43.9 43.6
43.6 43.4 43.5 43.4 43.4 43.5 43.5 43.6 43.6 43.6 43.7 43.6 43.7 43.7 43.7 43.6
43.7 43.7 43.7 43.7 43.7 43.8 44.0 49.6 54.7 56.6 60.3 63.6 66.9 72.2 74.5 77.9
60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 51.5 47.8 46.6 45.3 44.6 44.1 43.9 43.6
43.5 43.4 43.4 43.4 43.4 43.4 43.5 43.6 43.6 43.6 43.6 43.6 43.6 43.6 43.6 43.6
43.6 43.6 43.6 43.7 43.7 43.8 43.9 48.9 54.4 56.5 60.2 63.6 66.9 72.0 74.3 76.8
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.9 46.7 45.3 44.6 44.1 43.8 43.6
43.5 43.3 43.4 43.3 43.3 43.4 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5 43.5
43.5 43.5 43.6 43.6 43.7 43.8 43.8 48.1 53.6 56.2 59.9 63.6 66.6 71.7 73.9 75.8
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.1 47.0 45.3 44.4 44.0 43.7 43.6
43.4 43.3 43.3 43.3 43.3 43.4 43.4 43.4 43.4 43.4 43.4 43.4 43.4 43.4 43.4 43.4
43.4 43.5 43.5 43.5 43.7 43.8 43.8 46.7 51.8 55.6 58.6 63.3 66.1 71.0 73.3 74.9
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.1 47.1 45.3 44.2 43.8 43.6 43.5
43.3 43.2 43.2 43.2 43.2 43.3 43.3 43.3 43.3 43.3 43.3 43.3 43.3 43.3 43.3 43.3
43.3 43.3 43.4 43.5 43.6 43.6 43.7 44.6 49.2 54.4 58.1 63.2 66.0 70.4 72.6 74.2
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.3 45.4 44.0 43.6 43.4 43.2
43.0 42.9 42.9 43.0 43.0 43.1 43.1 43.1 43.0 43.1 43.1 43.1 43.1 43.1 43.1 43.1
43.1 43.2 43.2 43.3 43.4 43.4 43.7 43.8 46.7 51.2 57.5 63.0 65.7 69.2 71.5 72.7
60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.3 45.9 44.0 43.5 43.0 42.4
42.0 42.0 42.2 42.4 42.6 42.6 42.7 42.7 42.8 42.8 42.8 42.8 42.8 42.8 42.8 42.9
42.9 42.9 42.9 43.0 43.1 43.2 43.4 43.8 46.1 50.1 56.6 62.2 65.3 67.5 70.1 70.9
60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.1 47.2 44.4 43.0 41.6 41.0
41.0 41.0 41.3 42.1 42.2 42.3 42.4 42.5 42.5 42.5 42.6 42.6 42.6 42.6 42.6 42.6
42.6 42.7 42.7 42.8 42.8 43.0 43.2 43.8 46.5 51.2 56.1 59.9 64.4 66.3 67.6 68.0
60.0 60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.7 45.0 42.4 41.7 41.3
41.3 41.5 41.9 42.1 42.1 42.2 42.3 42.4 42.4 42.4 42.5 42.5 42.5 42.5 42.5 42.5
42.6 42.6 42.6 42.6 42.7 42.8 43.0 43.9 47.2 51.9 57.0 60.3 63.6 65.1 65.8 66.0
60.0 60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.9 45.5 42.9 42.4 42.3
42.2 42.3 42.4 42.3 42.4 42.5 42.4 42.6 42.5 42.5 42.6 42.7 42.7 42.8 42.8 42.8
42.9 42.8 42.7 42.6 42.6 42.8 42.9 44.2 47.4 51.3 55.0 60.0 62.8 64.0 64.6 65.0
60.0 60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 45.9 42.9 42.6 42.6
42.8 42.9 43.1 43.1 43.1 43.1 43.0 42.9 42.8 42.7 42.7 42.7 42.7 42.7 42.7 42.7
42.6 42.6 42.7 42.8 42.8 42.7 42.7 44.3 47.2 49.4 51.5 58.6 61.6 62.8 63.2 63.0
60.0 60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.5 43.1 41.6 42.8
43.1 43.3 43.4 43.6 43.7 43.8 43.8 43.7 43.7 43.6 43.5 43.5 43.5 43.4 43.4 43.4
43.3 43.3 43.2 43.1 43.0 42.9 42.9 43.6 46.6 49.1 50.9 56.7 59.7 61.1 62.0 63.0
60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0
58.0 56.0 54.0 52.0 50.0 48.0 45.8 44.3 45.5 44.9 44.5 44.3 44.1 44.0 43.9 43.8
43.7 43.6 43.4 43.3 43.1 43.0 43.0 43.1 45.3 48.2 50.2 54.7 57.9 59.3 60.0 61.0
        5         1  (16F5.1)                     1         LAYER 2 - FIELD HEADS
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.5 47.0 46.9 46.9 46.9 46.9
47.0 47.0 47.1 47.2 47.2 47.2 47.2 47.1 47.1 47.0 47.0 47.0 47.0 47.0 47.0 47.0
47.0 47.1 48.1 48.9 50.1 53.3 57.9 58.9 59.4 62.1 69.8 75.5 82.0 84.6 86.7 87.0
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.5 47.1 46.9 46.7 46.8 46.7
46.7 46.7 46.7 46.7 46.7 46.7 46.7 46.7 46.7 46.6 46.7 46.4 46.6 46.9 47.0 47.2
47.5 48.1 48.9 49.5 50.7 53.0 57.8 58.8 59.4 62.5 70.6 76.4 85.0 88.4 90.0 90.0
```

APPENDIX A - (Continued)

Basic Package - (Continued)

60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	47.5	47.0	46.8	46.7	46.6	46.5
46.4	46.4	46.4	46.3	46.3	46.3	46.3	46.4	46.5	46.7	46.8	46.8	46.9	47.0	47.3	47.6
47.9	48.4	49.0	49.4	50.2	51.8	55.3	58.6	59.1	60.0	69.4	74.7	85.0	92.0	93.5	91.9
60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.2	48.0	47.3	46.9	46.7	46.6	46.5	46.4
46.3	46.2	46.1	46.0	46.0	46.1	46.2	46.3	46.5	46.7	46.8	46.9	47.0	47.1	47.3	47.5
47.8	48.0	48.3	48.6	49.1	50.9	53.3	55.9	58.4	59.3	62.4	72.3	81.0	92.2	94.0	93.3
60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.2	47.7	47.0	46.8	46.6	46.5	46.4	46.3
46.2	46.2	46.0	46.0	45.9	45.9	46.0	46.2	46.4	46.5	46.7	46.8	46.9	47.0	47.1	47.2
47.3	47.6	47.9	48.2	48.7	49.8	53.0	55.1	57.5	58.8	60.0	70.4	75.2	92.8	94.0	94.0
60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.9	47.1	46.8	46.6	46.5	46.4	46.4	46.3
46.2	46.1	46.0	46.0	45.9	45.9	45.9	46.0	46.1	46.2	46.5	46.6	46.8	46.9	47.0	47.1
47.2	47.4	47.6	48.0	48.5	49.3	53.1	55.0	56.9	58.5	59.8	67.0	73.4	91.0	94.0	94.0
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	47.3	46.7	46.6	46.5	46.4	46.3	46.3	46.2
46.1	46.1	46.0	46.0	46.0	45.9	45.8	45.8	45.8	45.9	46.1	46.3	46.4	46.5	46.7	46.8
46.9	47.1	47.4	47.7	48.2	49.1	51.6	54.3	56.8	58.4	60.3	66.2	72.1	77.4	91.0	94.0
60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.8	47.1	46.6	46.5	46.4	46.3	46.3	46.2	46.1
46.0	46.0	46.0	45.9	45.6	45.5	45.4	45.5	45.5	45.6	45.7	45.7	45.8	45.9	46.0	46.0
46.1	46.2	46.6	47.0	47.3	47.9	49.2	56.3	57.2	58.4	60.5	65.8	69.6	75.7	82.1	89.9
60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.7	46.9	46.6	46.3	46.3	46.2	46.2	46.1	46.1
46.1	46.1	46.1	45.6	45.2	44.9	45.0	45.1	45.2	45.2	45.3	45.3	45.3	45.3	45.3	45.4
45.4	45.5	45.6	45.7	46.0	47.1	48.7	56.5	57.4	58.7	60.9	65.6	69.3	74.5	84.8	88.2
60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.7	46.8	46.4	46.1	46.0	46.0	46.0	46.0	46.0
46.0	45.9	45.4	44.9	44.7	44.6	44.6	44.6	44.7	44.7	44.7	44.7	44.7	44.8	44.8	44.8
44.8	44.8	44.9	45.1	45.6	47.1	51.3	56.4	57.7	59.1	61.9	65.5	68.9	77.0	84.7	87.0
60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.7	46.7	46.2	46.0	45.8	45.8	45.8	45.7	45.6
45.5	45.3	45.0	44.8	44.7	44.4	44.3	44.3	44.3	44.3	44.4	44.4	44.4	44.4	44.4	44.5
44.5	44.5	44.7	44.9	45.6	46.9	53.0	56.0	58.0	59.4	62.2	65.1	68.5	78.2	84.5	86.3
60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.8	46.7	46.1	45.8	45.7	45.6	45.6	45.5	45.4
45.3	45.1	44.8	44.7	44.6	44.4	44.3	44.1	44.1	44.1	44.2	44.2	44.3	44.3	44.4	44.4
44.5	44.6	44.7	44.8	45.2	46.6	51.9	56.0	58.0	59.4	62.1	64.9	68.4	78.1	84.1	85.7
60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.8	46.6	46.0	45.7	45.6	45.5	45.5	45.4	45.3
45.1	44.9	44.7	44.5	44.4	44.3	44.2	44.1	44.0	44.0	44.1	44.1	44.2	44.2	44.3	44.3
44.4	44.5	44.5	44.6	44.9	46.3	51.3	56.4	58.1	59.6	62.3	65.1	68.9	78.8	84.0	85.4
60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.9	46.6	46.0	45.7	45.6	45.5	45.4	45.3	45.2
45.0	44.8	44.6	44.4	44.3	44.3	44.2	44.0	44.0	44.0	44.0	44.1	44.1	44.2	44.2	44.2
44.3	44.3	44.4	44.6	44.8	46.2	50.0	56.3	58.1	59.5	62.1	64.9	68.7	78.1	83.8	85.1
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.6	46.0	45.7	45.5	45.4	45.3	45.3	45.1
44.9	44.6	44.5	44.4	44.3	44.1	44.1	44.0	44.0	44.0	44.0	44.0	44.0	44.0	44.1	44.1
44.2	44.3	44.4	44.5	44.8	46.0	49.9	56.2	58.0	59.5	62.0	64.8	68.5	77.7	83.3	85.0
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.6	46.0	45.7	45.5	45.4	45.2	45.2	45.0
44.8	44.6	44.4	44.3	44.2	44.1	44.1	44.0	43.9	43.9	43.9	43.9	44.0	44.0	44.1	44.1
44.1	44.2	44.3	44.5	44.8	46.0	49.6	56.1	57.9	59.5	62.0	64.7	68.5	77.5	83.1	84.9
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.7	46.0	45.7	45.5	45.3	45.2	45.2	44.9
44.7	44.5	44.3	44.2	44.1	44.1	44.0	44.0	44.0	43.9	43.9	43.9	44.0	44.0	44.0	44.1
44.1	44.2	44.3	44.5	44.8	46.0	49.6	56.0	57.9	59.4	62.0	64.6	68.4	77.2	82.9	84.9
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.7	46.0	45.7	45.5	45.3	45.2	45.1	44.9
44.7	44.5	44.3	44.1	44.1	44.1	44.0	44.0	44.0	43.9	43.9	43.9	43.9	43.9	44.0	44.0
44.1	44.2	44.3	44.5	44.8	45.9	49.6	56.0	57.8	59.4	62.0	64.6	68.5	77.1	82.7	84.3
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.7	46.0	45.6	45.4	45.3	45.2	45.0	44.8
44.6	44.4	44.3	44.1	44.1	44.0	44.0	44.0	44.0	43.9	43.9	43.9	43.9	43.9	43.9	44.0
44.0	44.1	44.3	44.5	44.8	45.8	49.5	55.9	57.7	59.3	61.9	64.5	68.4	76.8	82.5	84.3
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.7	46.1	45.6	45.4	45.3	45.2	45.0	44.8
44.6	44.3	44.2	44.1	44.0	44.0	43.9	44.0	44.0	43.9	43.9	43.9	43.9	43.9	43.9	44.0
44.0	44.1	44.3	44.5	44.7	45.7	49.6	55.8	57.7	59.3	61.9	64.5	68.3	76.5	82.4	84.7
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.8	46.1	45.7	45.4	45.3	45.1	45.0	44.7
44.5	44.2	44.1	44.0	44.0	44.0	44.0	44.0	44.0	43.9	43.9	43.9	43.9	43.9	43.9	44.0
44.0	44.1	44.3	44.4	44.7	45.7	49.7	55.7	57.6	59.2	61.9	64.4	68.2	76.3	82.2	84.6
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.8	46.1	45.6	45.4	45.2	45.1	44.9	44.7
44.4	44.2	44.1	44.0	43.9	43.9	44.0	43.9	43.9	44.0	43.9	43.9	43.9	43.9	43.9	44.0
44.0	44.1	44.3	44.4	44.7	45.6	49.8	55.5	57.6	59.2	61.9	64.4	68.6	76.0	82.0	84.4

Basic Package - (Continued)

60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.9	46.1	45.7	45.4	45.2	45.0	44.9	44.6
44.3	44.1	44.0	43.9	43.9	43.9	43.9	44.0	43.9	43.9	44.0	43.9	43.9	43.9	43.9	43.9
44.0	44.1	44.2	44.4	44.6	45.5	49.9	55.3	57.4	59.1	61.9	64.4	68.6	75.6	81.5	84.2
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	47.0	46.2	45.6	45.4	45.1	45.0	44.8	44.4
44.1	44.0	43.9	43.8	43.8	43.9	43.9	43.9	43.9	43.9	43.9	43.8	43.9	43.9	44.0	44.0
44.0	44.1	44.2	44.4	44.7	45.6	49.7	55.0	57.1	58.9	61.8	64.3	68.5	75.1	80.4	83.8
60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	47.5	46.4	45.7	45.4	45.1	44.9	44.6	44.3
44.0	43.9	43.8	43.7	43.7	43.8	43.8	43.9	44.0	43.9	43.9	43.9	44.0	44.0	44.0	44.0
44.0	44.1	44.2	44.4	44.7	45.7	49.4	54.2	56.5	58.5	61.4	64.0	67.8	74.5	79.1	82.5
60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.6	45.8	45.4	45.0	44.7	44.3	44.0
43.8	43.7	43.6	43.6	43.6	43.7	43.7	43.8	43.9	43.9	44.0	44.0	44.0	43.9	44.0	44.0
44.0	44.1	44.2	44.4	44.6	45.0	48.6	53.7	56.0	58.0	60.8	63.9	67.5	73.9	78.1	81.0
60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.1	46.8	45.8	45.3	45.0	44.6	44.2	43.9
43.7	43.6	43.6	43.6	43.6	43.6	43.7	43.8	43.8	43.9	43.9	43.9	43.9	44.0	44.0	44.0
44.0	44.0	44.1	44.2	44.4	44.7	47.0	53.9	55.8	57.8	60.8	64.1	67.9	73.7	77.2	80.4
60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.2	47.0	45.9	45.3	44.9	44.5	44.1	43.9
43.7	43.6	43.6	43.5	43.5	43.6	43.7	43.8	43.8	43.8	43.9	43.9	43.9	43.9	43.9	43.9
44.0	44.0	44.0	44.0	44.2	44.5	46.3	53.5	55.6	57.6	60.8	64.1	67.8	73.5	76.2	80.0
60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	47.2	45.9	45.3	44.9	44.4	44.1	43.8
43.6	43.6	43.5	43.5	43.5	43.6	43.6	43.7	43.8	43.8	43.8	43.9	43.9	43.9	43.9	43.9
43.9	43.9	44.0	44.0	44.0	44.1	45.7	53.1	55.4	57.4	60.5	64.0	67.7	73.2	75.6	79.6
60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	47.3	46.0	45.3	44.8	44.4	44.0	43.7
43.6	43.5	43.5	43.5	43.5	43.5	43.6	43.7	43.8	43.8	43.8	43.8	43.8	43.8	43.8	43.9
43.9	43.8	43.9	43.9	43.9	43.9	45.1	52.8	55.4	57.2	60.4	63.8	67.4	72.9	75.3	79.3
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.4	46.1	45.3	44.8	44.3	43.9	43.7
43.5	43.5	43.5	43.5	43.5	43.5	43.6	43.7	43.7	43.8	43.8	43.8	43.8	43.8	43.8	43.8
43.8	43.8	43.8	43.9	43.9	44.0	44.8	52.2	55.5	57.0	60.4	63.8	67.4	72.7	75.3	79.1
60.0	60.0	60.0	60.0	60.0	58.0	56.0	52.0	48.0	47.5	46.1	45.3	44.7	44.3	43.9	43.7
43.5	43.5	43.5	43.4	43.5	43.5	43.6	43.7	43.7	43.8	43.7	43.8	43.8	43.8	43.8	43.8
43.8	43.8	43.8	43.9	43.8	44.0	44.6	51.6	55.3	56.9	60.3	63.7	67.3	72.6	75.1	79.0
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.6	46.2	45.3	44.7	44.3	43.9	43.7
43.6	43.5	43.5	43.4	43.5	43.5	43.6	43.7	43.7	43.7	43.7	43.7	43.7	43.8	43.8	43.8
43.7	43.8	43.8	43.9	43.8	43.9	44.4	50.9	55.1	56.8	60.3	63.7	67.2	72.4	75.0	78.7
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.6	46.3	45.3	44.7	44.2	43.9	43.7
43.6	43.4	43.5	43.4	43.4	43.5	43.6	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7
43.7	43.8	43.7	43.8	43.8	43.9	44.2	50.4	54.9	56.7	60.2	63.6	67.1	72.3	74.8	78.5
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.7	46.4	45.3	44.7	44.2	43.8	43.6
43.6	43.4	43.5	43.4	43.4	43.5	43.6	43.6	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7
43.7	43.7	43.7	43.8	43.8	43.9	44.1	50.0	54.8	56.6	60.2	63.6	67.0	72.3	74.7	78.3
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.7	46.4	45.3	44.7	44.3	43.9	43.6
43.6	43.4	43.5	43.4	43.4	43.5	43.5	43.6	43.6	43.6	43.7	43.6	43.7	43.7	43.7	43.6
43.7	43.7	43.7	43.7	43.7	43.8	44.0	49.6	54.7	56.6	60.3	63.6	66.9	72.2	74.5	77.9
60.0	60.0	60.0	60.0	60.0	58.0	56.0	54.0	51.5	47.8	46.5	45.3	44.6	44.1	43.9	43.6
43.5	43.4	43.4	43.4	43.4	43.4	43.5	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6
43.6	43.6	43.6	43.7	43.7	43.8	43.9	46.9	54.4	56.5	60.2	63.6	66.9	72.0	74.3	76.8
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.9	46.7	45.3	44.6	44.1	43.8	43.6
43.5	43.3	43.4	43.3	43.3	43.4	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
43.5	43.5	43.6	43.6	43.7	43.8	43.8	48.1	53.6	56.2	59.9	63.6	66.6	71.7	73.9	75.8
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.1	47.0	45.3	44.4	44.0	43.7	43.6
43.4	43.3	43.3	43.3	43.3	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
43.4	43.5	43.5	43.5	43.7	43.8	43.8	46.7	51.8	55.6	58.6	63.3	66.1	71.0	73.3	74.9
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.1	47.1	45.3	44.2	43.8	43.6	43.5
43.3	43.2	43.2	43.2	43.2	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
43.3	43.3	43.4	43.5	43.6	43.6	43.7	44.6	49.2	54.4	58.1	63.2	66.0	70.4	72.6	74.2
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	47.3	45.4	44.0	43.6	43.4	43.2
43.0	42.9	42.9	43.0	43.0	43.1	43.1	43.1	43.0	43.1	43.1	43.1	43.1	43.1	43.1	43.1
43.1	43.2	43.2	43.3	43.4	43.4	43.7	43.8	46.7	51.2	57.5	63.0	65.7	69.2	71.5	72.7
60.0	60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.3	45.9	44.0	43.5	43.0	42.4
42.0	42.0	42.2	42.4	42.6	42.6	42.7	42.7	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.9
42.9	42.9	42.9	43.0	43.1	43.2	43.4	43.8	46.1	50.1	56.6	62.2	65.3	67.5	70.1	70.9

APPENDIX A - (Continued)

```
Basic Package - (Continued)
60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.1 47.2 44.4 43.0 41.6 41.0
41.0 41.0 41.3 42.1 42.2 42.3 42.4 42.5 42.5 42.5 42.6 42.6 42.6 42.6 42.6 42.6
42.6 42.7 42.7 42.8 42.8 43.0 43.2 43.8 46.5 51.2 56.1 59.9 64.4 66.3 67.6 68.0
60.0 60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.7 45.0 42.4 41.7 41.3
41.3 41.5 41.9 42.1 42.1 42.2 42.3 42.4 42.4 42.4 42.5 42.5 42.5 42.5 42.5 42.5
42.6 42.6 42.6 42.6 42.7 42.8 43.0 43.9 47.2 51.9 57.0 60.3 63.6 65.1 65.8 66.0
60.0 60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.9 45.5 42.9 42.4 42.3
42.2 42.3 42.4 42.3 42.4 42.5 42.4 42.6 42.5 42.5 42.6 42.7 42.7 42.8 42.8 42.8
42.9 42.8 42.7 42.6 42.6 42.8 42.9 44.2 47.4 51.3 55.0 60.0 62.8 64.0 64.6 65.0
60.0 60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 45.9 42.9 42.6 42.6
42.8 42.9 43.1 43.1 43.1 43.1 43.0 42.9 42.8 42.7 42.7 42.7 42.7 42.7 42.7 42.7
42.6 42.6 42.7 42.8 42.8 42.7 42.7 44.3 47.2 49.4 51.5 58.6 61.6 62.8 63.2 63.0
60.0 60.0 60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.5 43.1 41.6 42.8
43.1 43.3 43.4 43.6 43.7 43.8 43.8 43.7 43.7 43.6 43.5 43.5 43.5 43.4 43.4 43.4
43.3 43.3 43.2 43.1 43.0 42.9 42.9 43.6 46.6 49.1 50.9 56.7 59.7 61.1 62.0 63.0
60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60.0
58.0 56.0 54.0 52.0 50.0 48.0 45.8 44.3 45.5 44.9 44.5 44.3 44.1 44.0 43.9 43.8
43.7 43.6 43.4 43.3 43.1 43.0 43.0 43.1 45.3 48.2 50.2 54.7 57.9 59.3 60.0 61.0
        5       1   (16F5.1)                  1        LAYER 3 - FIELD HEADS
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.5 47.0 46.9 46.9 46.9 46.9
47.0 47.0 47.1 47.2 47.2 47.2 47.2 47.1 47.1 47.0 47.0 47.0 47.0 47.0 47.0 47.0
47.0 47.1 48.1 48.9 50.1 53.3 57.9 58.9 59.4 62.1 69.8 75.5 82.0 84.6 86.7 87.0
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.5 47.1 46.9 46.7 46.3 46.7
46.7 46.7 46.7 46.7 46.7 46.7 46.7 46.7 46.7 46.6 46.7 46.4 46.6 46.9 47.0 47.2
47.5 48.1 48.9 49.5 50.7 53.0 57.8 58.8 59.4 62.5 70.6 76.4 85.0 88.4 90.0 90.0
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.5 47.0 46.8 46.7 46.6 46.5
46.4 46.4 46.4 46.3 46.3 46.3 46.3 46.4 46.5 46.7 46.8 46.8 46.9 47.0 47.3 47.6
47.9 48.4 49.0 49.4 50.2 51.8 55.3 58.6 59.1 60.0 69.4 74.7 85.0 92.0 93.5 91.9
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.2 48.0 47.3 46.9 46.7 46.6 46.5 46.4
46.3 46.2 46.1 46.0 46.0 46.1 46.2 46.3 46.5 46.7 46.8 46.9 47.0 47.1 47.3 47.5
47.8 48.0 48.3 48.6 49.1 50.9 53.3 55.9 58.4 59.3 62.4 72.3 81.0 92.2 94.0 93.3
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.2 47.7 47.0 46.8 46.6 46.5 46.4 46.3
46.2 46.2 46.0 46.0 45.9 45.9 46.0 46.2 46.4 46.5 46.7 46.8 46.9 47.0 47.1 47.2
47.3 47.6 47.9 48.2 48.7 49.8 53.0 55.1 57.5 58.8 60.0 70.4 75.2 92.8 94.0 94.0
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.9 47.1 46.8 46.6 46.5 46.4 46.4 46.3
46.2 46.1 46.0 46.0 45.9 45.9 45.9 46.0 46.1 46.2 46.5 46.6 46.8 46.9 47.0 47.1
47.2 47.4 47.6 48.0 48.5 49.3 53.1 55.0 56.9 58.5 59.8 67.0 73.4 91.0 94.0 94.0
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.3 46.7 46.6 46.5 46.4 46.3 46.3 46.2
46.1 46.1 46.0 46.0 46.0 45.9 45.8 45.8 45.8 45.9 46.1 46.3 46.4 46.5 46.7 46.8
46.9 47.1 47.4 47.7 48.2 49.1 51.6 54.8 56.8 58.4 60.3 66.2 72.1 77.4 91.0 94.0
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.8 47.1 46.6 46.5 46.4 46.3 46.3 46.2 46.1
46.0 46.0 46.0 45.9 45.6 45.5 45.4 45.5 45.5 45.6 45.7 45.7 45.8 45.9 46.0 46.0
46.1 46.2 46.6 47.0 47.3 47.9 49.2 56.3 57.2 58.4 60.5 65.8 69.6 75.7 82.1 89.9
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.7 46.9 46.6 46.3 46.3 46.2 46.2 46.1 46.1
46.1 46.1 46.1 45.6 45.2 44.9 45.0 45.1 45.2 45.2 45.3 45.3 45.3 45.3 45.3 45.4
45.4 45.5 45.6 45.7 46.0 47.1 48.7 56.5 57.4 58.7 60.9 65.6 69.3 74.5 84.8 88.2
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.7 46.8 46.4 46.1 46.0 46.0 46.0 46.0 46.0
46.0 45.9 45.4 44.9 44.7 44.6 44.6 44.6 44.7 44.7 44.7 44.7 44.7 44.8 44.8 44.8
44.8 44.8 44.9 45.1 45.6 47.1 51.3 56.4 57.7 59.1 61.9 65.5 68.9 77.0 84.7 87.0
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.7 46.7 46.2 46.0 45.8 45.8 45.8 45.7 45.6
45.5 45.3 45.0 44.8 44.7 44.4 44.3 44.3 44.3 44.3 44.4 44.4 44.4 44.4 44.4 44.5
44.5 44.5 44.7 44.9 45.6 46.9 53.0 56.0 58.0 59.4 62.2 65.1 68.5 78.2 84.5 86.3
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.8 46.7 46.1 45.8 45.7 45.6 45.6 45.5 45.4
45.3 45.1 44.8 44.7 44.6 44.4 44.3 44.1 44.1 44.1 44.2 44.2 44.3 44.3 44.4 44.4
44.5 44.6 44.7 44.8 45.2 46.6 51.9 56.0 58.0 59.4 62.1 64.9 68.4 78.1 84.1 85.7
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.8 46.6 46.0 45.7 45.6 45.5 45.5 45.4 45.3
45.1 44.9 44.7 44.5 44.4 44.3 44.2 44.1 44.0 44.0 44.1 44.1 44.2 44.2 44.3 44.3
44.4 44.5 44.5 44.6 44.9 46.3 51.3 56.4 58.1 59.6 62.3 65.1 66.9 78.8 84.0 85.4
60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.9 46.6 46.0 45.7 45.6 45.5 45.4 45.3 45.2
45.0 44.8 44.6 44.4 44.3 44.3 44.2 44.0 44.0 44.0 44.0 44.1 44.1 44.2 44.2 44.2
```

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Basic Package - (Continued)
44.3 44.3 44.4 44.6 44.8 46.2 50.0 56.3 58.1 59.5 62.1 64.9 68.7 73.1 83.8 85.1
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.6 46.0 45.7 45.5 45.4 45.3 45.3 45.1
44.9 44.6 44.5 44.4 44.3 44.1 44.1 44.0 44.0 44.0 44.0 44.0 44.0 44.0 44.1 44.1
44.2 44.3 44.4 44.5 44.8 46.0 49.9 56.2 58.0 59.5 62.0 64.8 68.5 77.7 83.3 85.0
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.6 46.0 45.7 45.5 45.4 45.2 45.2 45.0
44.8 44.6 44.4 44.3 44.2 44.1 44.1 44.0 43.9 43.9 43.9 43.9 44.0 44.0 44.1 44.1
44.1 44.2 44.3 44.5 44.8 46.0 49.6 56.1 57.9 59.5 62.0 64.7 68.5 77.5 83.1 84.9
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.7 46.0 45.7 45.5 45.3 45.2 45.2 44.9
44.7 44.5 44.3 44.2 44.1 44.1 44.0 44.0 44.0 43.9 43.9 43.9 44.0 44.0 44.0 44.1
44.1 44.2 44.3 44.5 44.8 46.0 49.6 56.0 57.9 59.4 62.0 64.6 68.4 77.2 82.9 84.9
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.7 46.0 45.7 45.5 45.3 45.2 45.1 44.9
44.7 44.5 44.3 44.1 44.1 44.1 44.0 44.0 44.0 43.9 43.9 43.9 43.9 43.9 44.0 44.0
44.1 44.2 44.3 44.5 44.8 45.9 49.6 56.0 57.8 59.4 62.0 64.6 68.5 77.1 82.7 84.8
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.7 46.0 45.6 45.4 45.3 45.2 45.0 44.8
44.6 44.4 44.3 44.1 44.1 44.0 44.0 44.0 44.0 43.9 43.9 43.9 43.9 43.9 43.9 44.0
44.0 44.1 44.3 44.5 44.8 45.8 49.5 55.9 57.7 59.3 61.9 64.5 68.4 76.8 82.5 84.8
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.7 46.1 45.6 45.4 45.3 45.2 45.0 44.8
44.6 44.3 44.2 44.1 44.0 44.0 43.9 44.0 44.0 43.9 43.9 43.9 43.9 43.9 43.9 44.0
44.0 44.1 44.3 44.5 44.7 45.7 49.6 55.8 57.7 59.3 61.9 64.5 68.3 76.5 82.4 84.7
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.8 46.1 45.7 45.4 45.3 45.1 45.0 44.7
44.5 44.2 44.1 44.0 44.0 44.0 44.0 44.0 44.0 43.9 43.9 43.9 43.9 43.9 43.9 44.0
44.0 44.1 44.3 44.4 44.7 45.7 49.7 55.7 57.6 59.2 61.9 64.4 68.2 76.3 82.2 84.6
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.8 46.1 45.6 45.4 45.2 45.1 44.9 44.7
44.4 44.2 44.1 44.0 43.9 43.9 44.0 43.9 43.9 44.0 43.9 43.9 43.9 43.9 43.9 44.0
44.0 44.1 44.3 44.4 44.7 45.6 49.8 55.5 57.6 59.2 61.9 64.4 68.6 76.0 82.0 84.4
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.9 46.1 45.7 45.4 45.2 45.0 44.9 44.6
44.3 44.1 44.0 43.9 43.9 43.9 43.9 44.0 43.9 43.9 44.0 43.9 43.9 43.9 43.9 43.9
44.0 44.1 44.2 44.4 44.6 45.5 49.9 55.3 57.4 59.1 61.9 64.4 68.6 75.6 81.5 84.2
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.0 46.2 45.6 45.4 45.1 45.0 44.8 44.4
44.1 44.0 43.9 43.8 43.8 43.9 43.9 43.9 43.9 43.9 43.9 43.8 43.9 43.9 44.0 44.0
44.0 44.1 44.2 44.4 44.7 45.6 49.7 55.0 57.1 58.9 61.8 64.3 68.5 75.1 80.4 83.8
60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.5 46.4 45.7 45.4 45.1 44.9 44.6 44.3
44.0 43.9 43.8 43.7 43.7 43.8 43.8 43.9 44.0 43.9 43.9 43.9 44.0 44.0 44.0 44.0
44.0 44.1 44.2 44.4 44.7 45.7 49.4 54.2 56.5 58.5 61.4 64.0 67.8 74.5 79.1 82.5
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 46.6 45.8 45.4 45.0 44.7 44.3 44.0
43.8 43.7 43.6 43.6 43.6 43.7 43.7 43.8 43.9 43.9 44.0 44.0 44.0 43.9 44.0 44.0
44.0 44.1 44.2 44.4 44.6 45.0 48.6 53.7 56.0 58.0 60.8 63.9 67.5 73.9 78.1 81.0
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.1 46.8 45.8 45.3 45.0 44.6 44.2 43.9
43.7 43.6 43.6 43.6 43.6 43.6 43.7 43.8 43.8 43.9 43.9 43.9 43.9 44.0 44.0 44.0
44.0 44.0 44.1 44.2 44.4 44.7 47.0 53.9 55.8 57.8 60.8 64.1 67.9 73.7 77.2 80.4
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.2 47.0 45.9 45.3 44.9 44.5 44.1 43.9
43.7 43.6 43.6 43.5 43.5 43.6 43.7 43.8 43.8 43.8 43.9 43.9 43.9 43.9 43.9 43.9
44.0 44.0 44.0 44.0 44.2 44.5 46.3 53.5 55.6 57.6 60.8 64.1 67.8 73.5 76.2 80.0
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.2 45.9 45.3 44.9 44.4 44.1 43.8
43.6 43.6 43.5 43.5 43.5 43.6 43.6 43.7 43.8 43.8 43.8 43.9 43.9 43.9 43.9 43.9
43.9 43.9 44.0 44.0 44.0 44.1 45.7 53.1 55.4 57.4 60.5 64.0 67.7 73.2 75.6 73.6
60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 48.0 47.3 46.0 45.3 44.8 44.4 44.0 43.7
43.6 43.5 43.5 43.5 43.5 43.5 43.6 43.7 43.8 43.8 43.8 43.8 43.8 43.8 43.8 43.9
43.9 43.8 43.9 43.9 43.9 43.9 45.1 52.8 55.4 57.2 60.4 63.8 67.4 72.9 75.3 79.3
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.4 46.1 45.3 44.8 44.3 43.9 43.7
43.5 43.5 43.5 43.5 43.5 43.5 43.6 43.7 43.7 43.8 43.8 43.8 43.8 43.8 43.8 43.8
43.8 43.8 43.8 43.9 43.9 44.0 44.8 52.2 55.5 57.0 60.4 63.8 67.4 72.7 75.3 79.1
60.0 60.0 60.0 60.0 60.0 58.0 56.0 52.0 48.0 47.5 46.1 45.3 44.7 44.3 43.9 43.7
43.5 43.5 43.5 43.4 43.5 43.5 43.6 43.7 43.7 43.8 43.7 43.8 43.8 43.8 43.8 43.8
43.8 43.8 43.8 43.9 43.8 44.0 44.6 51.6 55.3 56.9 60.3 63.7 67.3 72.6 75.1 79.0
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.6 46.2 45.3 44.7 44.3 43.9 43.7
43.6 43.5 43.5 43.4 43.5 43.5 43.6 43.7 43.7 43.7 43.7 43.7 43.7 43.8 43.8 43.8
43.7 43.8 43.8 43.9 43.8 43.9 44.4 50.9 55.1 56.8 60.3 63.7 67.2 72.4 75.0 78.7
60.0 60.0 60.0 60.0 58.0 56.0 54.0 52.0 50.0 47.6 46.3 45.3 44.7 44.2 43.9 43.7
43.6 43.4 43.5 43.4 43.4 43.5 43.6 43.7 43.7 43.7 43.7 43.7 43.7 43.7 43.7 43.7
```

Basic Package - (Continued)

43.7	43.8	43.7	43.8	43.8	43.9	44.2	50.4	54.9	56.7	60.2	63.6	67.1	72.3	74.8	78.5
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.7	46.4	45.3	44.7	44.2	43.8	43.6
43.6	43.4	43.5	43.4	43.4	43.5	43.6	43.6	43.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7
43.7	43.7	43.7	43.8	43.8	43.9	44.1	50.0	54.8	56.6	60.2	63.6	67.0	72.3	74.7	78.3
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.7	46.4	45.3	44.7	44.3	43.9	43.6
43.6	43.4	43.5	43.4	43.4	43.5	43.5	43.6	43.6	43.6	43.7	43.6	43.7	43.7	43.7	43.6
43.7	43.7	43.7	43.7	43.7	43.8	44.0	49.6	54.7	56.6	60.3	63.6	66.9	72.2	74.5	77.9
60.0	60.0	60.0	60.0	60.0	58.0	56.0	54.0	51.5	47.8	46.6	45.3	44.6	44.1	43.9	43.6
43.5	43.4	43.4	43.4	43.4	43.4	43.5	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6
43.6	43.6	43.6	43.7	43.7	43.8	43.9	48.9	54.4	56.5	60.2	63.6	66.9	72.0	74.3	76.8
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.9	46.7	45.3	44.6	44.1	43.8	43.6
43.5	43.3	43.4	43.3	43.3	43.4	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
43.5	43.5	43.6	43.6	43.7	43.8	43.8	48.1	53.6	56.2	59.3	63.6	66.6	71.7	73.9	75.8
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.1	47.0	45.3	44.4	44.0	43.7	43.6
43.4	43.3	43.3	43.3	43.3	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
43.4	43.5	43.5	43.5	43.7	43.8	43.8	46.7	51.8	55.6	58.6	63.3	66.1	71.0	73.3	74.9
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.1	47.1	45.3	44.2	43.8	43.6	43.5
43.3	43.2	43.2	43.2	43.2	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
43.3	43.3	43.4	43.5	43.6	43.6	43.7	44.6	49.2	54.4	58.1	63.2	66.0	70.4	72.6	74.2
60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	47.3	45.4	44.0	43.6	43.4	43.2
43.0	42.9	42.9	43.0	43.0	43.1	43.1	43.1	43.0	43.1	43.1	43.1	43.1	43.1	43.1	43.1
43.1	43.2	43.2	43.3	43.4	43.4	43.7	43.8	46.7	51.2	57.5	63.0	65.7	69.2	71.5	72.7
60.0	60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.3	45.9	44.0	43.5	43.0	42.4
42.0	42.0	42.2	42.4	42.6	42.6	42.7	42.7	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.9
42.9	42.9	42.9	43.0	43.1	43.2	43.4	43.8	46.1	50.1	56.6	62.2	65.3	67.5	70.1	70.9
60.0	60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.1	47.2	44.4	43.0	41.6	41.0
41.0	41.0	41.3	42.1	42.2	42.3	42.4	42.5	42.5	42.5	42.6	42.6	42.6	42.6	42.6	42.6
42.6	42.7	42.7	42.8	42.8	43.0	43.2	43.8	46.5	51.2	56.1	59.9	64.4	66.3	67.6	68.0
60.0	60.0	60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.7	45.0	42.4	41.7	41.3
41.3	41.5	41.9	42.1	42.1	42.2	42.3	42.4	42.4	42.4	42.5	42.5	42.5	42.5	42.5	42.5
42.6	42.6	42.6	42.6	42.7	42.8	43.0	43.9	47.2	51.9	57.0	60.3	63.6	65.1	65.8	66.0
60.0	60.0	60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	47.9	45.5	42.9	42.4	42.3
42.2	42.3	42.4	42.3	42.4	42.5	42.4	42.6	42.5	42.5	42.6	42.7	42.7	42.8	42.8	42.8
42.9	42.8	42.7	42.6	42.6	42.8	42.9	44.2	47.4	51.3	55.0	60.0	62.8	64.0	64.6	65.0
60.0	60.0	60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	45.9	42.9	42.6	42.6
42.8	42.9	43.1	43.1	43.1	43.1	43.0	42.9	42.8	42.7	42.7	42.7	42.7	42.7	42.7	42.7
42.6	42.6	42.7	42.8	42.8	42.7	42.7	44.3	47.2	49.4	51.5	58.6	61.6	62.8	63.2	63.0
60.0	60.0	60.0	60.0	60.0	60.0	58.0	56.0	54.0	52.0	50.0	48.0	46.5	43.1	41.6	42.8
43.1	43.3	43.4	43.6	43.7	43.8	43.8	43.7	43.7	43.6	43.5	43.5	43.5	43.4	43.4	43.4
43.3	43.3	43.2	43.1	43.0	42.9	42.9	43.6	46.6	49.1	50.9	56.7	59.7	61.1	62.0	63.0
60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
58.0	56.0	54.0	52.0	50.0	48.0	45.8	44.3	45.5	44.9	44.5	44.3	44.1	44.0	43.9	43.8
43.7	43.6	43.4	43.3	43.1	43.0	43.0	43.1	45.3	48.2	50.2	54.7	57.9	59.3	60.0	61.0
	1		1		1.0										

```
Block Centered Flow Package
       1         19
1 2 0
       0         1
      17         1      (20I4)                                   1                       DELR
200 200 200 200 200 200 200 200 200 200 200 200 100 100 100 100 100 100 100 100
100 100 100 100  50  50  40  20  20  20  20  20  20  40  50  50 100 100 200 200
200 200 200 200 200 200 200 200
      17         1      (20I4)                                   1                       DELC
200 200 200 200 200 200 200 200 200 200 100 100  50  50  40  20  20  20  20  20
 20  40  50  50 100 100  50  50  40  20  20  20  20  20  20  40  50  50 100 100
200 200 200 2-00 200 200 200 200
      17 1.1574E-5  (20F4.0)                                     1                 K, LAYER 1
  1   1   1   1  10  10  10  10  10  50  80  80  80  80  80  80  80  80 100 100
100 100 100  50  50  50  50  50  50  50  50  80  80  80 100  50  50  50  50  30
 15  15   3   3   3   3   3   3
  1   1   1   1   1   1   1   1  10  50  80  80  80  80  80  80  80  80 100 100
100 100 100  50  50  50  50  50  50  50  50  80  80  80 100  50  50  50  50  30
 15  15   3   3   3   3   3   3
  1   1  10  10   1   1   1   1  10  10  50  80  80  80  80  80  80  80 100 100
100 100 100  50  50  50  50  50  50  50  50  80  80  80 100  50  50  50  50  30
 15  15   3   3   3   3   3   3
  1  10  10  10   1   1   1   1  10  10  50  80  80  80  80  80  80  80 100 100
100 100 100  50  50  50  50  50  50  50  50  80  80  80 100  80  50  50  50  30
 15  15  15   3   3   3   3   3
  1  10  10   1   1   1   1   1  10  50  80  80  80  80  80  80  80  80 100 100
100 100 100  50  50  50  50  50  50  50  50  80  80  80 100  80  50  50  50  30
 15  15  15   3   3   3   3   3
 10  10  10  10   1   1   1  10  50  80  80  80  80  80  80  80  80  80 100 100
100 100 100  50  50  50  50  50  50  50  50  80  80  80 100  80  50  50  50  30
 15  15  15   3   3   3   3   3
  1  10  10  10   1   1  10  50  80  80  80  80  80  80  80  80  80  80 100 100
100 100 100  50  50  50  50  50  50  50  50  80  80  80 100  80  50  50  50  30
 15  15  15  15  15   5   5   5
  1  10  10  10  10  10  50  80  80  80  80  80  80  80  80  80  80  80 100 100
100 100 100  50  50  50  50  50  50  50  50  80  80  80 100  80  80  50  50  30
 15  15  15  15  15   5   5   5
  1   1  10  50  50  80  80  80  80  80  80  80  80  80  80  80  80  80  80 100
 21  21  21  21  21  21  21  21  50  50  50  80  80  80 100 100 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1  10  10  10  50  80  80  80  80  80  80  80  80  80  80  80  80  80 100
 21  21  21  21  21  21  21  21  50  50  50  80  80  80 100 100 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1  10  10  50  80  80 100 100  80  80  80  80  80  80  80  80  80 100
 21  21  21  21  21  21  21  21  50  50  50  80  80  80 100 100 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1  10  50  80  80 100 100  80  80  80  80  80  80  80  80  80 100
100 100  21  21  21  21  21  21  50  50  50  80  80  80 100 100 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1  10  50  80  80  80 100  50  50  50  50  50  50  50  50  80 100
100 100 200  21  21  21  21  21  50  50  50  50  80  80 100 100 100  50  50  30
 15  15  15  15  15   5   5   5
```

```
Block Centered Flow Package - (Continued)
  1   1   1   1  10  50  80  80  80 100 100  50  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  80  80  80 170 170 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1  10  50  80  80  80 100 100  50  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  80  80  80 170 170 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1  10  10  50  80  80 100 100  50  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  80  80  80 170 170 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1  10  10  50  80  80 100 100  50  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  50  80  80 170 170 100  50  50  30
 15  15  15  15  15   5   5  .5
  1   1   1   1  10  10  50  80  80 100 100  50  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  50  80  80 170 170 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1  10  10  50  80  80 100 100  50  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  50  80  80 170 170 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1  10  10  50  80  80 100 100  50  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  50  80  80 170 170 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1  10  10  50  80  80  80 100  50  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  50  80  80 170 170 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1  10  50  80  80  80 100  50  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  80  80  80 170 170 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1  10  50  80  80  80 100 100  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  80  80  80 170 170 100  50  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1  10  50  80  80  80 100 100  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  80  80  80 170 170 100  50  50  30
 15  15  15  15  10  10  10  10
  1   1   1   1   1  10  10  50  80  80 100 100  50  50  50  50  50  50  80 100
100 100 200 200  21  21  21  21  50  50  50  80  80  80 170 170 100  50  50  50
 15  15  15  15  10  10  10  10
  1   1   1   1   1  10  10  50  80  80  80  80  80  80  50  50  50  80  80 100
100  21  21  21  21  21  21  21  50  50  50  80  80  80 170 170 100  50  50  20
 15  15  15  15  10  10  10  10
  1   1   1   1   1   1  10  50  50  80  80  80  80  80  50  50  50  80  80 100
100  21  21  21  21  21  21  21  50  50  50  80  80  80 170 170 100  50  50  20
 15  15  15  15  10  10  10  10
  1   1   1   1   1   1  10  10  50  80  80  80  80  80  80  80  80  80  80 100
100  21  21  21  21  21  21  50  50  50  50  80  80  80 170 170 100  50  50  20
 15  15  15  15  10  10  10  10
  1   1   1   1   1   1  10  10  50  50  80  80  80  80  80  80  80  80  80 100
100  21  21  21  21  21  21  50  50  50  50  80  80  80 170 170 100  50  50  20
 15  15  15  15  10  10  10  10
  1   1   1   1   1   1  10  10  50  50  80  80  80  80  80  80  80  80  80 100
100  21  21  21  21  21  21  50 120 120 120 120  80 120 170 170 100  50  50  20
 15  15  15  15  15   5   5   5
```

APPENDIX A - (Continued)

Block Centered Flow Package - (Continued)

```
  1   1   1   1   1   1  10  10  50  50  80  80  80  80  80  80  80  80  80 130
100  21  21  50  50  50  50  50 120 120 120 120  80 120 170 170 200  80  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1  10  10  50  50  80  80  80  80  80  80  80  80  80 130
100  21  21  50  50  50  50  50 120 120 120 120  80 120 170 170 200  80  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1  10  50  50  80  80  80  80  80  80  80  80  80 130
100  21  21  50  50  50  50 120 120 120 120 120  80 120 170 170 200  80  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1  10  50  50  80  80  80  80  80  80  80  80  80 130
100  21  21  50  50  50  50 120 120 120 120 120 120 120 170 200 200  80  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1   1  10  50  80  80  80  80  80  80  80  80  80 100
100  21  21  50  50  50  50 120 120 120 120 170 170 170 170 200 200  80  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1   1   5  10  50  80  80  80  80  80  80  80  80 130
100  21  21  50  50  50  50 120 120 120 120 170 170 170 170 200 200  80  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1   1   5  10  50  80  80  80  80  80  80 100 100 130
100  21  21  50  50  50  50  80  80 120 120 170 170 170 170 200 200  80  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1   1   1   5  10  50  80  80  80  80  80 200 200 100
100  21  21  50  50  50  50  80  80 120 120 170 170 170 170 200 200  80  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1   1   1  10  50  80  80  80  80  80  80 200 200 130
 21  21  21  50  50  50  50  80  80  80 120 170 170 170 170 200 200  80  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1   1   1   1  10  50  80  80  80  80  21  21  21  21
 21  21  21  50  50  50  50  80  80  80 120 120 120 120 170 200 200  80  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1   1   1   1  10  50  80  80  80  80  21  21  21 130
 21  21  21  21  50  50  50  80  80  80  80  80 120 120 170 200 200 150  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1   1   1   1  10  50  80  80  80  80  21  21 100 130
 50  21  21  21  21  21  21  21  21  21  21  80 120 120 170 200 200 150  50  30
 15  15  15  15  15   5   5   5
  1   1   1   1   1   1   1   1   1   1  10  50  80  80  80  80  80 100 100 130
 50  50  50  50  50  50  50  80  80  21  21  21 120 120 170 200 200 150  50  30
 15  15  15  15  15   5   5   1
  1   1   1   1   1   1   1   1   1  10  50  80  80  80  80  80  80 100 100 130
 50  50  50  50  50  50  50  80  80  80  80  80  80  80 170 170 170 150  50  30
 15  15  15  15  15   5   5   1
  1   1   1   1   1   1   1   1   1  10  50  80  80  80  80  80  80 100 100 130
 80  80  80  80  80  80  80  80  80  80  80  80  80  80 170 170 170 150  50  30
 15  15  15  15  15   5   1   1
  1   1   1   1   1   1   1   1   1  10  50  80  80  80  80  80  80 100 100 130
 80  80  80  80  80  80  80  80  80  80  80  80  80  80 170 170 170 150 150  30
 15  15  15  15  15   5   1   1
  1   1   1   1   1   1   1   1   1  10  50  80  80  80  80  80  80 100 200 130
 80  80  80  80  80  80  80  80  80  80  80  80  80  80 170 170 170 150 150  30
 15  15  15  15  15   5   1   1
```

Block Centered Flow Package - (Continued)

```
  1   1   1   1   1   1   1   1   1  10  50  80  80  80  80  80  80 100 100 100
 80  80  80  80  80  80  80  80  80  80  80  80  80  80 170 170 170 150 150  50
 15  15  15  15  15   5   1   1
     17           1 (20F4.0)                    1                BOTTOM, LAYER 1
120 110 100  90  80  60  50  30  30  30  30  30  30  30  30  30  30  30  30  30
 30  30  30  30  30  30  30  30  30  30  30  30  35  35  35  35  35  40  40  40
 40  40  45  50  55  55  55  55
120 100  90  80  70  60  50  30  30  30  30  30  30  30  30  30  30  30  30  30
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110  90  80  70  60  50  40  30  30  30  30  30  30  30  30  30  30  30  30  30
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100  90  80  70  60  50  40  30  30  30  30  30  30  30  30  30  30  30  30  30
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 45  50  60  65  75  70  60  55
 90  80  70  60  50  45  35  30  30  30  30  30  30  30  30  30  30  30  30  30
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 45  55  55  65  75  70  60  55
 80  70  60  60  45  40  35  30  30  30  30  30  30  30  30  30  30  30  30  30
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 75  65  60  50  40  40  35  30  30  30  30  30  30  30  30  30  30  30  30  30
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 70  65  60  50  35  35  35  30  30  30  30  30  30  30  30  30  30  30  30  38
 35  37  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  35
 45  50  60  60  55  55  55  55
 70  60  50  40  35  35  35  30  30  30  30  30  30  30  30  30  30  30  30  17
 35  36  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  35
 45  50  55  60  55  55  55  55
 70  60  50  40  35  35  35  30  30  30  30  30  30  30  30  30  20  20  20  17
 20  20  20  20  20  20  20  26  26  26  26  26  26  26  26  36  36  38  38  30
 40  50  55  55  55  55  55  55
 75  65  60  50  35  35  35  30  30  30  30  30  30  30  30  30  18  18  18  16
 15  14  14  14  15  15  16  16  16  16  16  16  16  16  16  16  18  34  35  40
 45  45  50  50  55  55  55  55
 80  70  60  50  35  35  35  30  30  30  30  30  30  30  30  30  18  18  16  16
 14  14  14  14  15  15  15  16  16  16  16  16  16  16  16  16  18  30  35  40
 45  45  50  50  55  55  55  60
 80  70  60  50  40  35  35  30  30  30  30  30  30  30  16  16  16  16  16  16
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 45  45  50  50  55  55  60  60
 80  70  65  55  40  35  35  30  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  45  50  50  55  55  60  60
 80  70  65  55  40  35  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  45  50  50  55  60  60  60
 80  70  65  60  45  35  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  45  50  50  55  60  60  60
```

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Block Centered Flow Package - (Continued)
 90  75  65  60  45  40  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  16  30  35
 45  45  50  55  55  60  60  60
 90  75  65  60  45  40  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  30  30  30  35
 45  45  50  55  60  60  60  60
 90  80  70  60  45  40  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  30  35
 45  50  50  55  60  60  60  60
100  80  70  60  45  40  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  50  50  55  60  60  60  60
100  80  70  60  45  40  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  50  50  60  60  60  60  60
100  90  75  65  50  45  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  50  55  60  60  60  65  65
100  90  75  65  55  45  40  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  40  45
 45  50  55  60  60  60  65  56
110  90  80  70  60  45  40  30  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  40  45
 45  50  55  60  60  60  65  56
120 100  80  70  60  45  40  35  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  40  45
 45  50  55  60  60  65  65  65
120 100  80  70  60  45  40  35  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  50  55  60  60  65  65  65
120 100  80  70  65  55  45  40  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  50  55  60  65  65  65  65
120 100  90  75  70  60  45  40  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  55  60  65  65  65  65
120 110  90  75  70  60  45  45  35  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  55  60  65  65  65  65
120 120  90  80  70  60  45  45  40  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  55  60  65  65  65  65
120 120 100  80  70  60  45  45  40  30  30  30  30  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  55  60  60  65  65  65
120 120 100  80  75  60  45  45  40  30  30  30  30  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  55  60  60  65  65  65
120 120 110  90  75  60  55  45  40  30  30  30  30  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  50  55  60  65  65  65
```

```
Block Centered Flow Package - (Continued)
120 120 115 100  80  60  55  45  40  35  30  30  16  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  50  55  60  60  60  60
120 120 120 100  80  70  55  50  40  35  30  30  16  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  45  50  55  60  60  60  60
120 120 120 100  80  75  55  55  45  40  30  30  16  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  45  45  50  55  60  60  60
120 120 120 110  90  80  60  55  45  40  30  30  20  20  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 40  45  45  50  55  60  60  55
130 120 120 110  90  80  60  55  50  40  35  35  34  34  20  20  20  16  16  16
 14  14  14  13  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 40  45  45  50  50  55  60  55
130 120 120 120 100  80  60  60  50  40  35  35  35  35  30  30  20  20  18  14
 14  14  14  14  14  14  13  14  15  15  15  15  15  15  15  15  16  16  30  30
 30  40  40  45  50  55  55  55
130 120 120 120 100  90  65  65  50  45  35  35  35  35  30  30  20  20  20  15
 14  14  13  13  13  13  13  13  13  13  13  13  14  15  15  15  15  16  30  35
 35  40  40  45  45  50  55  50
130 120 120 120 100  90  70  70  55  50  40  35  35  35  22  22  20  20  20  20
 15  13  13  13  13  13  13  13  13  13  13  13  13  14  14  14  15  16  18  18
 30  30  30  40  45  50  50  50
130 120 120 120 100  90  75  65  60  50  40  35  35  35  25  25  20  15  15  16
 16  16  16  16  13  13  13  13  13  13  13  13  13  13  13  13  15  18  18  32
 33  35  35  40  45  45  50  50
130 120 120 120 100  90  80  60  60  40  35  35  35  35  20  20  20  16  16  16
 16  16  16  16  16  16  16  13  13  13  13  13  13  13  13  16  17  17  19  30
 32  35  35  40  45  45  45  50
125 120 110 100 100  80  80  50  50  40  35  35  35  35  20  20  16  16  16  16
 16  16  16  16  16  16  16  16  16  16  16  16  13  13  13  12  14  16  16  18
 32  32  35  40  40  45  45  45
120 110 100  90  85  70  75  40  40  40  35  35  30  30  20  20  16  16  16  16
 16  16  16  16  16  15  14  13  13  13  13  13  13  13  13  12  12  12  12  16
 30  33  35  35  40  45  45  45
120 100  90  80  70  60  60  40  40  40  35  35  30  30  30  20  16  16  16  16
 16  16  16  16  16  16  16  16  16  16  16  16  16  16  14  14  12  12  12  30
 30  33  35  35  40  40  45  45
110  90  85  70  60  40  40  40  40  40  35  35  30  30  30  30  30  30  30  20
 20  20  20  20  20  20  20  15  15  15  15  15  15  15  15  15  15  15  10  10
 10  30  35  35  35  40  40  45
100  90  80  60  60  40  40  40  40  40  35  35  30  30  30  30  30  30  30  30
 30  30  30  30  30  20  20  20  20  20  15  15  15  15  15  15  15  15  15  10
 10  12  30  35  40  40  40  40
        30 2.3148E-5  (20F4.0)                 1                VCONT, LAYER 1-2
        29 1.1574E-5  (20F4.0)                 1         TRANSMISSIVITY, LAYER 2
        30 2.3148E-5  (20F4.0)                 1                VCONT, LAYER 2-3
        17          1 (20F4.0)                 1                    TOP, LAYER 2
120 110 100  90  80  60  50  30  30  30  30  30  30  30  30  30  30  30  30  30
 30  30  30  30  30  30  30  30  30  30  30  30  35  35  35  35  35  40  40  40
 40  40  45  50  55  55  55  55
```

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Block Centered Flow Package - (Continued)
120 100  90  80  70  60  50  30  30  30  30  30  30  30  30  30  30  30  30  30
 30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  32  35  40
 40  40  50  55  60  65  60  55
110  90  80  70  60  50  40  30  30  30  30  30  30  30  30  30  30  30  30  30
 30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  32  34  40
 40  45  55  60  70  65  60  55
100  90  80  70  60  50  40  30  30  30  30  30  30  30  30  30  30  30  30  30
 30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  32  34  40
 45  50  60  65  75  70  60  55
 90  80  70  60  50  45  35  30  30  30  30  30  30  30  30  30  30  30  30  30
 30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  32  34  40
 45  55  55  65  75  70  60  55
 80  70  60  60  45  40  35  30  30  30  30  30  30  30  30  30  30  30  30  30
 30  30  30  30  30  31  32  32  32  32  32  32  32  32  32  32  32  35  38  40
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 75  65  60  50  40  40  35  30  30  30  30  30  30  30  30  30  30  30  30  30
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 70  65  60  50  35  35  35  30  30  30  30  30  30  30  30  30  30  30  30  38
 35  37  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  35
 45  50  60  60  55  55  55  55
 70  60  50  40  35  35  35  30  30  30  30  30  30  30  30  30  30  30  30  17
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 45  50  55  60  55  55  55  55
 70  60  50  40  35  35  35  30  30  30  30  30  30  30  30  30  20  20  20  17
 20  20  20  20  20  20  20  26  26  26  26  26  26  26  26  36  36  38  38  30
 40  50  55  55  55  55  55  55
 75  65  60  50  35  35  35  30  30  30  30  30  30  30  30  30  18  19  18  16
 15  14  14  14  15  15  16  16  16  16  16  16  16  16  16  16  18  34  35  40
 45  45  50  50  55  55  55  55
 80  70  60  50  35  35  35  30  30  30  30  30  30  30  30  30  18  18  16  16
 14  14  14  14  15  15  15  16  16  16  16  16  16  16  16  16  18  30  35  40
 45  45  50  50  55  55  55  60
 80  70  60  50  40  35  35  30  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  15  15  16  16  16  16  16  16  16  16  16  16  30  35  40
 45  45  50  50  55  55  60  60
 80  70  65  55  40  35  35  30  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  45  50  50  55  55  60  60
 80  70  65  55  40  35  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  45  50  50  55  60  60  60
 80  70  65  60  45  35  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  45  50  50  55  60  60  60
 90  75  65  60  45  40  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  16  30  35
 45  45  50  55  55  60  60  60
 90  75  65  60  45  40  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  30  30  30  35
 45  45  50  55  60  60  60  60
```

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Block Centered Flow Package - (Continued)
 90  80  70  60  45  40  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  30  35
 45  50  50  55  60  60  60  60
100  80  70  60  45  40  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  50  50  55  60  60  60  60
100  80  70  60  45  40  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  50  50  60  60  60  60  60
100  90  75  65  50  45  35  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  50  55  60  60  60  65  65
100  90  75  65  55  45  40  30  30  30  30  30  30  30  18  18  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  40  45
 45  50  55  60  60  60  65  56
110  90  80  70  60  45  40  30  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  40  45
 45  50  55  60  60  60  65  56
120 100  80  70  60  45  40  35  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  40  45
 45  50  55  60  60  65  65  65
120 100  80  70  60  45  40  35  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  50  55  60  60  65  65  65
120 100  80  70  65  55  45  40  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 45  50  55  60  65  65  65  65
120 100  90  75  70  60  45  40  30  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  55  60  65  65  65  65
120 110  90  75  70  60  45  45  35  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  55  60  65  65  65  65
120 120  90  80  70  60  45  45  40  30  30  30  30  30  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  55  60  65  65  65  65
120 120 100  80  70  60  45  45  40  30  30  30  30  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  55  60  60  65  65  65
120 120 100  80  75  60  45  45  40  30  30  30  30  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  55  60  60  65  65  65
120 120 110  90  75  60  55  45  40  30  30  30  30  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  50  55  60  65  65  65
120 120 115 100  80  60  55  45  40  35  30  30  16  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  50  50  55  60  60  60  60
120 120 120 100  80  70  55  50  40  35  30  30  16  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  45  50  55  60  60  60  60
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Block Centered Flow Package - (Continued)
120 120 120 100  80  75  55  55  45  40  30  30  16  16  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 45  45  45  50  55  60  60  60
120 120 120 110  90  80  60  55  45  40  30  30  20  20  16  16  16  16  16  16
 15  14  14  14  14  14  14  14  15  15  16  16  16  16  16  16  16  30  32  35
 40  45  45  50  55  60  60  55
130 120 120 110  90  80  60  55  50  40  35  35  34  34  20  20  20  16  16  16
 14  14  14  13  14  14  14  14  15  15  16  16  16  16  16  16  16  30  35  40
 40  45  45  50  50  55  60  55
130 120 120 120 100  80  60  60  50  40  35  35  35  35  30  30  20  20  18  14
 14  14  14  14  14  14  13  14  15  15  15  15  15  15  15  15  16  16  30  30
 30  40  40  45  50  55  55  55
130 120 120 120 100  90  65  65  50  45  35  35  35  35  30  30  20  20  20  15
 14  14  13  13  13  13  13  13  13  13  13  13  14  15  15  15  15  16  30  35
 35  40  40  45  45  50  55  50
130 120 120 120 100  90  70  70  55  50  40  35  35  35  22  22  20  20  20  20
 15  13  13  13  13  13  13  13  13  13  13  13  13  14  14  14  15  16  18  18
 30  30  30  40  45  50  50  50
130 120 120 120 100  90  75  65  60  50  40  35  35  35  25  25  20  15  15  16
 16  16  16  16  13  13  13  13  13  13  13  13  13  13  13  13  15  18  18  32
 33  35  35  40  45  45  50  50
130 120 120 120 100  90  80  60  60  40  35  35  35  35  20  20  20  16  16  16
 16  16  16  16  16  16  16  13  13  13  13  13  13  13  13  16  17  17  19  30
 32  35  35  40  45  45  45  50
125 120 110 100 100  80  80  50  50  40  35  35  35  35  20  20  16  16  16  16
 16  16  16  16  16  16  16  16  16  16  16  16  13  13  13  12  14  16  16  18
 32  32  35  40  40  45  45  45
120 110 100  90  85  70  75  40  40  40  35  35  30  30  20  20  16  16  16  16
 16  16  16  16  16  15  14  13  13  13  13  13  13  13  13  12  12  12  12  16
 30  33  35  35  40  45  45  45
120 100  90  80  70  60  60  40  40  40  35  35  30  30  30  20  16  16  16  16
 16  16  16  16  16  16  16  16  16  16  16  16  16  16  14  14  12  12  12  30
 30  33  35  35  40  40  45  45
110  90  85  70  60  40  40  40  40  40  35  35  30  30  30  30  30  30  30  20
 20  20  20  20  20  20  20  15  15  15  15  15  15  15  15  15  15  15  10  10
 10  30  35  35  35  40  40  45
100  90  80  60  60  40  40  40  40  40  35  35  30  30  30  30  30  30  30  30
 30  30  30  30  30  20  20  20  20  20  15  15  15  15  15  15  15  15  15  10
 10  12  30  35  40  40  40  40
        29 1.1574E-5   (20F4.0)                1         TRANSMISSIVITY, LAYER 3
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Vertical Conductance Array For BCF Package Layers 1-2 and 2-3

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0.000.000.000.000.000.000.000.000.000.180.230.230.230.230.230.230.230.230.250.25
0.250.250.250.180.120.120.120.120.120.120.120.150.150.080.090.080.080.080.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.180.230.230.230.230.230.230.230.230.250.25
0.250.250.250.180.120.120.120.120.120.120.120.150.150.080.090.080.080.080.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.060.180.230.230.230.230.230.230.230.250.25
0.250.250.250.180.120.120.120.120.120.120.120.150.150.080.090.080.080.080.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.060.180.230.230.230.230.230.230.230.250.25
0.250.250.250.180.120.120.120.120.120.120.120.150.150.080.090.080.080.080.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.040.180.230.230.230.230.230.230.230.230.250.25
0.250.250.250.180.120.120.120.180.180.180.180.230.230.080.090.080.080.080.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.060.180.230.230.230.230.230.230.230.230.230.250.38
0.380.380.250.180.120.120.120.180.180.180.180.230.230.080.090.080.080.080.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.060.180.230.230.230.230.230.230.230.230.230.230.250.38
0.380.380.250.180.120.120.120.180.180.180.180.230.230.080.090.080.080.080.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.180.230.230.230.230.230.230.230.230.230.230.230.250.38
0.380.380.250.180.120.120.120.180.180.180.180.230.230.080.090.080.080.080.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.230.330.330.230.230.230.230.230.230.230.230.230.230.38
0.100.100.090.090.070.070.070.090.180.180.180.230.230.230.250.250.250.080.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.080.330.330.330.230.230.230.230.230.230.230.230.230.230.38
0.100.100.090.090.070.070.070.090.180.180.180.230.230.230.250.250.250.080.080.00
0.000.000.050.050.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.080.230.230.380.380.230.230.230.230.230.230.230.230.230.38
0.100.100.090.090.070.070.070.090.180.180.180.230.230.230.250.250.250.080.080.07
0.050.050.050.050.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.080.230.230.380.380.230.230.230.230.230.230.230.230.230.38
0.380.380.090.090.070.070.070.090.180.180.180.230.230.230.250.250.250.080.080.07
0.050.050.050.050.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.080.230.230.230.380.180.180.180.180.180.180.180.180.230.38
0.380.380.310.090.070.070.070.090.180.180.180.230.230.230.250.250.250.080.080.07
0.050.050.050.050.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.230.230.230.380.380.180.180.180.180.180.180.180.230.38
0.380.380.310.310.090.090.090.090.180.180.180.230.230.230.300.300.250.060.080.07
0.050.050.050.050.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.230.230.230.380.380.180.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.090.090.180.180.180.230.230.230.300.300.250.080.080.07
0.050.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.180.230.230.380.380.180.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.090.090.240.240.240.330.330.230.300.300.250.120.080.07
0.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.180.230.230.380.380.180.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.090.090.240.240.240.240.330.330.300.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
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Vertical Conductance Array For BCF Package Layers 1-2 and 2-3 - (Continued)

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0.000.000.000.000.000.000.180.230.230.380.380.180.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.090.090.240.240.240.240.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.180.230.230.380.380.180.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.090.090.240.240.240.240.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.180.230.230.380.380.180.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.100.100.240.240.240.240.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.230.230.230.380.180.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.100.100.240.240.240.240.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.230.230.230.380.180.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.100.100.240.240.240.330.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.230.230.380.380.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.100.100.240.240.240.330.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.230.230.380.380.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.100.100.240.240.240.330.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.230.230.380.380.180.180.180.180.180.180.230.38
0.380.380.540.310.090.090.100.100.240.240.240.330.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.230.230.230.230.230.230.180.180.180.230.230.38
0.380.100.100.090.090.090.100.100.240.240.240.330.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.230.230.230.230.230.180.180.240.330.330.38
0.380.100.100.090.090.090.100.100.240.240.240.330.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.230.230.230.230.230.230.230.330.330.330.38
0.250.090.090.090.090.090.100.240.240.240.240.330.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.180.230.230.230.230.230.230.330.330.330.38
0.250.090.090.090.090.090.100.240.240.240.240.330.330.330.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.180.230.230.230.230.230.230.330.330.330.38
0.250.090.090.090.090.090.100.240.420.420.420.420.330.420.500.300.250.120.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.080.230.230.230.230.230.230.330.330.330.38
0.250.090.090.180.180.180.240.240.420.420.420.420.330.420.500.300.310.150.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.230.230.230.230.230.230.330.330.330.38
0.250.090.090.180.180.180.240.240.420.420.420.420.330.420.500.300.310.150.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.230.230.230.230.230.230.330.330.330.38
0.250.090.090.180.180.180.240.420.420.420.420.420.330.420.500.300.310.150.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.230.230.230.230.230.230.330.330.330.38
0.250.090.090.180.180.180.240.420.420.420.420.420.420.420.500.310.310.150.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
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APPENDIX A - (Continued)

Vertical Conductance Array For BCF Package Layers 1-2 and 2-3 - (Continued)

0.000.000.000.000.000.000.000.000.000.000.230.230.230.230.230.230.330.330.330.38
0.250.090.090.180.180.180.240.420.420.420.420.500.500.500.500.310.310.150.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.180.230.230.230.230.230.330.330.330.38
0.250.090.090.180.180.180.240.420.420.420.420.500.500.500.500.310.310.150.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.180.230.230.230.230.230.330.380.380.38
0.380.090.090.180.180.180.240.330.330.420.420.500.500.500.500.310.310.150.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.060.180.230.230.230.330.330.540.540.38
0.380.100.100.240.240.240.240.330.330.420.420.500.500.500.500.310.310.150.080.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.230.230.230.230.330.330.540.540.38
0.100.100.100.240.240.240.240.330.330.330.420.500.500.500.500.310.310.150.120.08
0.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.180.230.230.230.330.100.100.100.10
0.100.100.100.240.240.240.240.330.330.330.420.420.420.420.500.310.310.150.120.08
0.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.180.230.230.230.330.100.100.100.38
0.100.100.100.100.240.240.240.330.330.330.330.330.420.420.500.310.310.290.120.12
0.070.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.080.230.230.230.330.100.100.380.38
0.240.100.100.100.100.100.100.100.100.100.100.330.420.420.500.540.540.470.180.18
0.070.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.080.230.230.230.330.330.380.380.38
0.240.240.240.240.240.240.240.330.330.100.100.100.420.420.500.540.540.470.180.18
0.070.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.080.230.230.230.330.330.380.380.38
0.240.240.240.240.240.240.240.330.330.330.330.330.330.330.500.500.500.470.240.18
0.070.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.080.230.230.230.330.330.380.380.38
0.330.330.330.330.330.330.330.330.330.330.330.330.330.330.500.500.500.470.240.18
0.070.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.230.330.380.380.38
0.330.330.330.330.330.330.330.330.330.330.330.330.330.330.500.500.500.470.470.18
0.070.050.050.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.38
0.330.330.330.330.330.330.330.330.330.330.330.330.330.330.500.500.500.470.470.18
0.070.050.050.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.330.330.330.330.330.330.330.330.330.330.330.330.330.330.500.500.500.470.470.18
0.070.050.050.050.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.420.380.380.38
0.340.380.380.380.170.170.170.170.170.170.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.420.380.380.380.380.38
0.340.380.380.380.170.170.170.170.170.170.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.420.380.380.380.380.380.38
0.240.380.380.380.170.170.170.170.170.170.170.170.170.070.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.420.380.380.380.380.360.380.38

Vertical Conductance Array For BCF Package Layers 1-2 and 2-3 - (Continued)

0.340.380.380.380.170.170.170.170.170.170.170.170.170.070.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.420.380.380.380.380.380.380.38
0.340.380.380.380.170.170.170.380.380.380.380.380.380.070.070.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.420.380.380.380.340.340.340.340.56
0.560.560.340.340.160.160.160.340.340.340.340.340.340.070.070.070.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.420.380.380.340.340.340.340.340.56
0.560.560.340.340.160.160.160.340.340.340.340.340.340.070.070.070.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.420.380.340.340.340.340.340.340.56
0.560.560.340.340.160.160.160.340.340.340.340.340.340.070.070.070.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.420.380.340.340.340.340.340.340.340.56
0.560.560.340.340.160.160.160.340.340.340.340.340.340.340.340.340.380.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.420.380.340.340.340.310.310.310.310.310.47
0.470.470.310.310.150.150.150.310.340.340.340.340.340.340.340.340.340.070.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.800.380.310.310.310.310.310.310.310.310.47
0.470.470.310.310.150.150.150.310.310.310.340.340.340.340.340.340.340.070.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.800.380.310.310.310.310.310.310.310.310.47
0.470.470.310.310.150.150.150.310.310.310.310.340.340.340.340.340.340.070.070.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.800.380.340.340.310.310.310.310.310.310.47
0.390.390.270.270.140.150.150.310.310.310.310.340.340.340.340.340.340.070.070.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.800.690.340.340.310.310.310.310.310.310.47
0.390.390.270.270.270.270.310.310.310.310.310.340.340.340.340.340.340.070.070.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.800.690.340.340.310.310.310.310.310.310.39
0.390.390.390.270.270.270.310.310.310.310.310.340.340.340.340.340.340.070.070.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.800.690.340.340.310.310.310.310.310.310.39
0.390.390.390.270.270.270.310.310.470.470.470.560.560.340.340.340.340.160.070.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.800.690.340.340.310.310.310.310.310.310.39
0.390.390.390.270.270.270.270.310.470.470.470.560.560.560.340.340.340.160.070.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.800.690.340.340.310.310.310.310.310.310.39
0.390.390.390.270.270.270.270.310.470.470.470.560.560.560.560.340.340.160.070.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.800.690.340.340.310.310.310.310.310.310.39
0.390.390.390.270.270.270.270.310.470.470.470.560.560.560.560.340.340.160.070.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.800.690.340.340.310.310.310.310.310.310.39
0.390.390.390.270.270.270.390.470.470.470.470.560.560.560.560.340.340.160.070.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.420.690.340.340.310.310.310.310.310.310.39
0.390.390.390.270.270.270.390.470.470.470.470.560.560.560.560.340.340.160.07[illegible]

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Vertical Conductance Array For BCF Package Layers 1-2 and 2-3 - (Continued)
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.420.690.340.340.340.340.310.310.310.310.39
0.390.350.390.270.270.270.390.390.470.470.470.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.420.690.560.340.340.340.310.310.310.310.39
0.390.350.390.270.270.270.390.390.470.470.470.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.800.690.380.340.340.310.310.310.310.39
0.390.350.390.270.270.270.390.390.390.390.470.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.800.690.380.340.340.310.310.310.310.39
0.390.350.390.270.270.270.390.390.390.390.470.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.420.380.340.340.340.310.310.310.39
0.390.350.390.270.270.270.390.390.390.390.470.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.420.380.340.340.340.470.470.470.39
0.390.350.390.270.270.270.390.390.390.390.470.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.420.380.340.340.340.560.470.470.39
0.270.270.270.270.270.270.390.390.390.390.470.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.420.380.340.340.560.470.470.39
0.270.270.270.270.270.270.390.390.390.390.470.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.420.380.340.340.560.470.470.39
0.270.270.270.270.270.270.390.390.390.470.470.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.420.380.340.340.560.560.470.39
0.270.270.270.270.270.270.390.390.470.470.470.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.420.380.340.560.560.560.47
0.270.270.270.270.270.270.390.390.470.470.560.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.420.380.380.560.560.560.56
0.340.310.310.270.270.270.390.390.470.470.560.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.420.380.380.560.560.560.56
0.340.340.310.270.270.270.390.390.470.470.560.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.420.380.560.560.560.56
0.340.340.310.270.270.270.390.390.470.470.560.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.420.380.690.560.560.56
0.340.340.310.270.270.270.390.390.470.470.560.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.420.690.560.560.56
0.560.340.310.270.270.270.390.390.470.470.560.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.800.690.690.690.56
0.560.560.470.390.390.390.390.390.470.470.560.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
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Vertical Conductance Array For BCF Package Layers 1-2 and 2-3 - (Continued)
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.800.800.690.56
0.560.560.560.470.390.390.390.390.470.470.560.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.800.690.56
0.560.560.560.470.390.390.390.390.470.470.560.560.560.560.560.340.340.170.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.69
0.560.560.560.470.470.470.470.470.470.470.560.560.560.560.560.340.340.380.170.17
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.69
0.560.560.560.470.470.470.470.470.470.470.560.560.560.560.560.560.560.690.330.38
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.690.690.56
0.560.560.560.470.470.470.470.470.470.470.560.560.560.560.560.560.690.690.330.38
0.170.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.690.690.560.56
0.560.560.560.470.470.470.470.470.470.470.560.560.560.560.560.560.690.690.690.38
0.170.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.690.690.560.56
0.560.560.560.470.470.470.470.470.470.470.560.560.560.560.560.560.690.690.690.38
0.170.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.690.690.690.56
0.560.560.560.560.560.470.470.470.470.470.560.560.560.560.560.560.690.690.690.38
0.170.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.69
0.690.560.560.560.560.560.560.470.470.470.560.560.560.560.560.560.690.690.690.38
0.170.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
0.800.690.560.560.560.560.560.470.470.470.560.560.560.560.560.560.690.690.690.38
0.170.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.000.00
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Transmissivity Array For BCF Package Layers 2 and 3
   1   1   1   1   1   1   1   1   12000200020002000200020002000200020002000200020002000
2000200020002000 800 800 800 800 800 800 800 800 800 300 300 300 300 300 100   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   12000200020002000200020002000200020002000200020002000
2000200020002000 800 800 800 800 800 800 800 800 800 300 300 300 300 300 100   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   12000200020002000200020002000200020002000200020002000
2000200020002000 800 800 800 800 800 800 800 800 800 300 300 300 300 300 100   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   12000200020002000200020002000200020002000200020002000
2000200020002000 800 800 800 800 800 800 800 800 800 300 300 300 300 300 100   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1 30020002000200020002000200020002000200020002000200020002000
2000200020002000 800 800 800200020002000200020002000 300 300 300 300 300 100   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   12000200020002000200020002000200020002000200020002000200020004000
4000400020002000 800 800 800200020002000200020002000 300 300 300 300 300 100   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   120002000200020002000200020002000200020002000200020002000200020004000
4000400020002000 800 800 800200020002000200020002000 300 300 300 300 300 100   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   120002000200020002000200020002000200020002000200020002000200020004000
4000400020002000 800 800 800200020002000200020002000 300 300 300 300 300 100   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   120004000400020002000200020002000200020002000200020002000200020004000
4000400020002000 800 800 8002000200020002000200020002000200020002000200020002000 300 100   1
   1   1   1   1   1   1 100 100
   1   1   1   1   1 30040004000400020002000200020002000200020002000200020002000200020004000
4000400020002000 800 800 8002000200020002000200020002000200020002000200020002000 300 300 100
   1   1 300 300 300 100 100 100
   1   1   1   1   1 30020002000400040002000200020002000200020002000200020002000200020004000
4000400020002000 800 800 8002000200020002000200020002000200020002000200020002000 300 300 300
 300 300 300 300 300 100 100 100
   1   1   1   1   1 30020002000400040002000200020002000200020002000200020002000200020004000
4000400020002000 800 800 8002000200020002000200020002000200020002000200020002000 300 300 300
 300 300 300 300 300 100 100   1
   1   1   1   1   1 30020002000200040002000200020002000200020002000200020002000200020004000
4000400020002000 800 800 8002000200020002000200020002000200020002000200020002000 300 300 300
 300 300 300 300 300   1   1   1
   1   1   1   1   1   120002000200040004000200020002000200020002000200020002000200020004000
4000400020002000200020002000200020002000200020002000200020002000200020002000 300 300 300
 300 300 300 300 300   1   1   1
   1   1   1   1   1   120002000200040004000200020002000200020002000200020002000200020004000
4000400040002000200020002000200020002000200020002000200020002000200020002000 300 300 300
 300 300   1   1   1   1   1   1
   1   1   1   1   1   120002000200040004000200020002000200020002000200020002000200020004000
4000400040002000200020002000200040004000400040004000200020002000 2000 300 300 300
 300   1   1   1   1   1   1   1
   1   1   1   1   1   120002000200040004000200020002000200020002000200020002000200020004000
40004000400020002000200020002000400040004000400040004000200020002000 800 300 100
   1   1   1   1   1   1   1   1
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Transmissivity Array For BCF Package Layers 2 and 3 - (Continued)
   1   1   1   1   1   1200020002000400040002000200020002000200020002000200020004000
40004000400020002000200020002000400040004000400040004000400020002000 800 300 100
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1200020002000400040002000200020002000200020002000200020004000
40004000400020002000200020002000400040004000400040004000400020002000 800 300 100
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1200020002000400040002000200020002000200020002000200020004000
40004000400020002000200040004000400040004000400040004000400020002000 800 300 100
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   12000200020004000200020002000200020002000200020004000
40004000400020002000200040004000400040004000400040004000400020002000 800 300 100
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   12000200020004000200020002000200020002000200020004000
40004000400020002000200040004000400040004000400040004000400020002000 800 300 100
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   120002000400040002000200020002000200020002000200020004000
40004000400020002000200040004000400040004000400040004000400020002000 800 300 100
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   120002000400040002000200020002000200020002000200020004000
40004000400020002000200040004000400040004000400040004000400020002000 800 300 100
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   120002000400040002000200020002000200020002000200020004000
40004000400020002000200040004000400040004000400040004000400020002000 800 300 100
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   120002000200020002000200020002000200020002000200020004000
40004000400020002000200040004000400040004000400040004000400020002000 800 300 100
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1200020002000200020002000200040004000400040004000
40004000400020002000200040004000400040004000400040004000400020002000 800 300 100
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1200020002000200020002000200040004000400040004000
20002000200020002000200040004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1200020002000200020002000200040004000400040004000
20002000200020002000200040004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1200020002000200020002000200040004000400040004000
20002000200020002000200040004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1200020002000200020002000200040004000400040004000
20002000200020002000200040004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 30020002000200020002000200040004000400040004000
20002000200020002000200040004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   120002000200020002000200040004000400040004000
20002000200020002000200040004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   120002000200020002000200040004000400040004000
20002000200020002000200040004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   120002000200020002000200040004000400040004000
20002000200020002000200040004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
```

```
Transmissivity Array For BCF Package Layers 2 and 3 (Continued)
   1   1   1   1   1   1   1   1   1 1200200020002000200020004000400040004000
2000200020002000200020004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 1200200020002000200020004000400040004000
2000200020002000200020004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 1200200020002000200020004000400040004000
4000200020002000200020004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 1200200020002000200040004000400040004000
4000400040004000400040004000400040004000400040004000400020002000 800 300   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1 120020002000200040004000400040004000
4000400040004000400040004000400040004000400040004000400020002000 800 800 300
 300   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1 120020002000200040004000400040004000
4000400040004000400040004000400040004000400040004000400020002000 800 800 300
 300   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1 120020002000200040004000400040004000
40004000400040004000400040004000400040004000400040004000200020002000 800 800
 800 300   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1 30020002000200040004000400040004000
4000400040004000400040004000400040004000400040004000400040004000400040002000 2000
 800 300   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1 30020002000200040004000400040004000
4000400040004000400040004000400040004000400040004000400040004000400040002000 2000
 800 300   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1 30020002000200040004000400040004000
40004000400040004000400040004000400040004000400040004000400040004000400040002000
 800 300   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1 30020002000200040004000400040004000
40004000400040004000400040004000400040004000400040004000400040004000400040002000
 800 300   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   12004000400040004000
40004000400040004000400040004000400040004000400040004000400040004000400040002000
 800 300 300 300   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   14000
40004000400040004000400040004000400040004000400040004000400040004000400040002000
 800 300 300 300   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1
40004000400040004000400040004000400040004000400040004000400040004000400040002000
 800 300 300 300   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1 800200020002000
2000200020002000200020002000200020002000   1   1   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1 8002000200020002000
2000200020002000200020002000200020002000   1   1   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1 80020002000200020002000
20002000200020002000200020002000200020002000200020002000   1   1   1   1   1   1
   1   1   1   1   1   1   1   1
```

```
Transmissivity Array For BCF Package Layers 2 and 3 (Continued)
   1   1   1   1   1   1   1   1   1   1   1   1 8002000200020002000200020002000
20002000200020002000200020002000200020002000200020002000   1   1   1   1   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1 8002000200020002000200020002000
200020002000200020002000200020002000200020002000200020002000   1   1   1   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1 80020002000200040004000400040004000
4000400040004000400040004000400040004000400040004000400040004000400020002000   1   1   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1 80020002000400040004000400040004000
4000400040004000400040004000400040004000400040004000400040004000400020002000   1   1   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1 80020004000400040004000400040004000
4000400040004000400040004000400040004000400040004000400040004000400020002000   1   1   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1 800200040004000400040004000400040004000
40004000400040004000400040004000400040004000400040004000400040004000400020002000   1   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 8002000400040004000600060006000600060006000
6000600060006000600060006000600040004000400040004000400040004000400040002000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020006000600060006000600060006000600060006000
6000600060006000600060006000600060006000400040004000400040004000400020002000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020006000600060006000600060006000600060006000
60006000600060006000600060006000600060006000400040004000400040004000400020002000   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020004000400060006000600060006000600060006000
8000800080008000600060006000600060006000600040004000400040004000400040002000   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020004000400060006000600060006000600060006000
80008000800080008000600060006000600060006000400040004000400040004000400020002000   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020004000400060006000600060006000600060008000
80008000800080008000800060006000600060006000400040004000400040004000400020002000   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020004000400060006000600060006000600060008000
80008000800080008000800060006000600060006000400040004000400040004000400020002000   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020004000400060006000600060006000600060008000
80008000800080008000800060006000600060006000400040004000400040004000400020002000   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020004000400060006000600060006000600060008000
80008000800080008000800060006000600060006000400040004000400040004000400020002000   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020004000400060006000600060006000600060008000
80008000800080008000800060006000600060006000400040004000400040004000400020002000   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020004000400060006000600060006000600060008000
80008000800080008000800060006000600060006000400040004000400040004000400020002000   1
   1   1   1   1   1   1   1   1
```

APPENDIX A - (Continued)

```
Transmissivity Array For BCF Package Layers 2 and 3 (Continued)
   1   1   1   1   1   1   1   1   1 80020004000400060006000600060006000600060008000
80008000800080008000800080008000600060006000600040004000400040004000400040002000   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020004000400040004000600060006000600060008000
800080008000800080008000800080008000600060006000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1 80020004000400040004000600060006000600060008000
800080008000800080008000800080008000600060006000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1 8002000200040004000600060006000600060008000
800080008000800080008000800080008000800080006000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1 8002000200040004000600060006000600060008000
800080008000800080008000800080008000800080006000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1 800200040004000400060006000600060008000
800080008000800080008000800080008000800080006000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1 800200040004000400040006000600060008000
800080008000800080008000800080008000800080006000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1 8002000400040004000600060008000
800080008000800080008000800080008000800080006000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1 8002000400040004000600060008000
800080008000800080008000800080008000800080006000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1 8002000400040004000600060008000
800080008000800080008000800080008000800060006000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1 8002000400040004000400060006000
800080008000800080008000800080008000600060006000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1 800200040004000400040006000
800080008000800080008000800080008000600060004000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1 800200020004000400040004000
400060006000800080008000800080006000600040004000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1 800200020004000400040004000
400040006000800080008000800080006000600040004000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1 80020004000400040004000
400040006000800080008000800080006000600040004000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1 80020002000400040004000
400040006000800080008000800080006000600040004000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1 8002000400040004000
400040006000800080008000800080006000600040004000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
```

```
Transmissivity Array For BCF Package Layers 2 and 3 (Continued)
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1 8002000200020004000
400040006000800080008000800080006000600040004000400040004000400040004000 2000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1 800 80020004000
400040004000600080008000800060006000400040004000400040004000400040002000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1 80020004000
400040004000600080008000800060006000400040004000400040004000400040002000   1   1
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   12000
40004000400060006000600060006000600060004000400040004000400040004000200020002000
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   12000
40004000400060006000600060006000600060004000400040004000400040004000200020002000
   1   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1200020004000
40004000400060006000600060006000600060004000400040004000400040002000200020002000
2000   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   12000200040004000
40004000400060006000600060006000600060004000400040004000400040002000200020002000
2000   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   12000200040004000
40004000400060006000600060006000600060004000400040004000400040002000200020002000
2000   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   12000200020004000
40004000400040004000600060006000600060004000400040004000400040002000200020002000
2000   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   12000
20004000400040004000400040006000600060004000400040004000400040002000200020002000
2000   1   1   1   1   1   1   1
   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1
 80020004000400040004000400060006000600040004000400040004000400020002000200020002000
2000   1   1   1   1   1   1   1
```

```
Strongly Implicit Procedure Package
200         5
1.0     .0005         0    0.0006


Recharge Package
3         19
1
0  5.285E-8


Well Package
4         19
4
3         19         30     -0.00        Well H
3         33         30     -0.00        Well G
3         43         18     -0.46     Tannery 2
2         44         14     - .15     Tannery 1


Output Control Package
4          4         12         11
0          1          1         19
```

River Package

87	-19				
87					
1	1	21	45.9	0.12	43.3
1	2	21	45.8	0.12	43.3
1	3	21	45.7	0.15	43.2
1	4	21	45.6	0.07	43.2
1	5	21	45.4	0.03	43.2
1	5	22	45.0	0.03	43.2
1	6	22	44.8	0.07	42.9
1	7	22	44.7	0.07	42.6
1	8	22	44.4	0.07	42.3
1	9	22	44.0	0.05	42.0
1	10	21	44.0	0.03	41.8
1	10	22	43.9	0.07	41.6
1	10	23	43.9	0.07	41.4
1	11	23	43.9	0.04	41.2
1	11	24	43.8	0.01	41.2
1	12	24	43.8	0.06	41.2
1	12	25	43.8	0.01	41.0
1	12	26	43.8	.005	41.0
1	13	26	43.7	.002	41.0
1	13	25	43.7	0.01	41.0
1	14	25	43.7	0.02	41.0
1	14	26	43.7	0.02	41.0
1	15	26	43.6	.007	41.0
1	15	25	43.6	0.01	40.9
1	16	25	43.6	.005	40.9
1	17	25	43.6	0.02	40.9
1	17	26	43.5	.006	40.9
1	18	26	43.5	.005	40.9
1	19	26	43.5	.006	40.9
1	19	25	43.5	.005	40.9
1	20	25	43.5	.007	40.9
1	21	25	43.4	.005	40.8
1	22	25	43.4	.003	40.8
1	22	26	43.4	0.01	40.8
1	23	26	43.4	0.01	40.8
1	24	26	43.4	0.01	40.8
1	25	26	43.4	0.01	40.8
1	25	25	43.4	0.03	40.7
1	26	25	43.4	0.01	40.7
1	26	24	43.3	0.03	40.7
1	27	24	43.3	.005	40.7
1	27	23	43.3	0.01	40.6
1	28	23	43.3	0.02	40.6

River Package -(Continued)

1	29	23	43.3	.009	40.6
1	30	23	43.3	.005	40.6
1	31	23	43.3	.005	40.6
1	32	23	43.3	.005	40.6
1	33	23	43.3	.005	40.6
1	34	23	43.3	.003	40.5
1	34	22	43.3	0.01	40.5
1	35	22	43.3	0.02	40.5
1	36	22	43.3	.009	40.5
1	37	22	43.2	.007	40.5
1	37	23	43.2	0.01	40.5
1	38	23	43.2	0.01	40.5
1	38	22	43.2	0.03	40.5
1	39	22	43.2	0.06	40.5
1	39	21	43.2	0.07	40.5
1	40	22	43.2	0.05	40.4
1	40	21	43.2	.006	40.4
1	41	22	43.1	0.05	40.2
1	41	23	43.1	0.05	40.0
1	41	24	43.1	0.03	40.0
1	42	25	42.9	0.04	40.0
1	42	26	42.8	0.01	40.0
1	42	27	42.8	0.02	39.9
1	42	28	42.8	0.01	39.9
1	42	29	42.8	.009	39.8
1	42	30	42.8	0.02	39.8
1	42	31	42.7	0.02	39.7
1	43	30	42.6	0.03	39.7
1	43	31	42.5	.005	39.6
1	43	32	42.5	.005	39.6
1	43	33	42.5	.009	39.5
1	43	34	42.5	0.02	39.5
1	44	33	42.4	.009	39.4
1	44	34	42.4	0.03	39.4
1	44	35	42.3	0.03	39.3
1	44	36	42.3	0.05	39.3
1	45	36	42.2	0.01	39.2
1	45	37	42.2	0.03	39.2
1	45	38	42.1	0.07	39.1
1	46	38	41.0	.005	38.3
1	46	39	40.0	0.06	37.5
1	47	40	39.9	0.06	37.3
1	48	40	39.9	0.02	37.1
1	48	41	39.8	0.03	37.0

APPENDIX A - Selected input data to the **transient** ground-water-flow model. Data are in the specific format outlined in McDonald and Harbaugh (1988).

```
Basic Package, Stress Periods
   3600          1       1.0     stress period 1
   7200          1       1.0                   2
  14400          1       1.0                   3
  21600          1       1.0                   4
  28800          1       1.0                   5
  36000          1       1.0                   6
   7200          1       1.0                   7,   G  Failure
  54000          1       1.0                   8
  86400          1       1.0                   9
  86400          1       1.0                  10
 172800          1       1.0                  11
 259200          1       1.0                  12,   3 Days Rain
 259200          1       1.0                  13
 259200          1       1.0                  14
   3600          1       1.0                  15,   H  Failure
  82800          1       1.0                  16
 259200          1       1.0                  17
 259200          1       1.0                  18
 345600          1       1.0                  19
 345600          1       1.0                  20
```

APPENDIX A - (Continued)

```
Block Centered Flow Package, Storage Factors
        0        19
1 2 0
        0         1
       17         1     (20I4)                   1                         DELR
200 200 200 200 200 200 200 200 200 200 200 200 100 100 100 100 100 100 100 100
100 100 100 100  50  50  40  20  20  20  20  20  20  40  50  50 100 100 200 200
200 200 200 200 200 200 200 200
       17         1     (20I4)                   1                         DELC
200 200 200 200 200 200 200 200 200 200 100 100  50  50  40  20  20  20  20  20
 20  40  50  50 100 100  50  50  40  20  20  20  20  20  20  40  50  50 100 100
200 200 200 200 200 200 200 200
       17         1    (20F4.1)                  1 PRIMARY STORAGE, LAYER 1
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.45 .45 .45 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.45 .45 .45 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.45 .45 .45 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .45 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
```

```
Block Centered Flow Package, Storage Factors - (Continued)
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
```

```
Block Centered Flow Package, Storage Factors - (Continued)
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .45 .45 .45 .45
.45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .45 .45 .45 .30
.45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .45 .45 .30 .30
.30 .45 .45 .45 .45 .45 .45 .45 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .45 .45 .45 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
```

```
Block Centered Flow Package, Storage Factors - (Continued)
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30 .30
.30 .30 .30 .30 .30 .30 .30 .30
      17 1.1574E-5  (20F4.0)              1                K, LAYER 1
```

(Hydraulic conductivity of layer 1 is the same as the steady state simulation.)

```
      17        1  (20F4.0)              1            BOTTOM, LAYER 1
```

(Bottom of layer one is the same as the steady state simulation.)

```
      30 2.3148E-5  (20F4.0)             1             VCONT, LAYER 1-2
       0     .0005                          PRIMARY STORAGE, LAYER 2
      29 1.1574E-5  (20F4.0)             1     TRANSMISSIVITY, LAYER 2
      30 2.3148E-5  (20F4.0)             1             VCONT, LAYER 2-3
       0       .30                        SECONDARY STORAGE, LAYER 2
      17        1  (20F4.0)              1                TOP, LAYER 2
```

(Top of layer 2 is the same as in steady-state simulation.)

```
       0     .0005                          PRIMARY STORAGE, LAYER 3
      29 1.1574E-5  (20F4.0)             1     TRANSMISSIVITY, LAYER 3
```

```
Recharge Package
 3        19
 1                              SP  1, No Recharge
 0         0
-1                              SP  2
-1                              SP  3
-1                              SP  4
-1                              SP  5
-1                              SP  6
-1                              SP  7
-1                              SP  8
-1                              SP  9
-1                              SP 10
-1                              SP 11
 1                              SP 12, Recharge During 3-Day Stress Period
 0   2.57E-7
 1                              SP 13, No Recharge
 0         0
-1                              SP 14
-1                              SP 15
-1                              SP 16
-1                              SP 17
-1                              SP 18
-1                              SP 19
-1                              SP 20
```

```
Well Package
  4      19
  4                              stress period  1, all pumping
  3      19      30    -0.89
  3      33      30    -1.56
  3      43      18    -0.46
  2      44      14     -.15
 -1                              stress period  2
 -1                              stress period  3
 -1                              stress period  4
 -1                              stress period  5
 -1                              stress period  6
  4                              stress period  7, G failure
  3      19      30    -0.89
  3      33      30    -0.00
  3      43      18    -0.46
  2      44      14     -.15
  4                              stress period  8, all pumping
  3      19      30    -0.89
  3      33      30    -1.56
  3      43      18    -0.46
  2      44      14     -.15
 -1                              stress period  9
 -1                              stress period 10
 -1                              stress period 11
 -1                              stress period 12
 -1                              stress period 13
 -1                              stress period 14
  4                              stress period 15, H failure
  3      19      30    -0.00
  3      33      30    -1.56
  3      43      18    -0.46
  2      44      14     -.15
  4                              stress period 16, all pumping
  3      19      30    -0.89
  3      33      30    -1.56
  3      43      18    -0.46
  2      44      14     -.15
 -1                              stress period 17
 -1                              stress period 18
 -1                              stress period 19
 -1                              stress period 20
```

APPENDIX B - Output from the Woburn steady-state ground-water-flow model
Input data have been eliminated from this printout.

```
U.S. GEOLOGICAL SURVEY MODULAR FINITE-DIFFERENCE GROUND-WATER MODEL

ABERJONA RIVER BASIN NEAR WOBURN 3D MODULAR MODEL - expanded to west and east   Virginia de Lima

    3 LAYERS        48 ROWS        48 COLUMNS
    1 STRESS PERIOD(S) IN SIMULATION
    MODEL TIME UNIT IS SECONDS

I/O UNITS:

ELEMENT OF IUNIT:  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
        I/O UNIT: 17 32  0 31  0  0  0 14 15  0  0 18  0  0  0  0  0  0  0  0  0  0  0  0

BAS1 -- BASIC MODEL PACKAGE, VERSION 1, 12/08/83 INPUT READ FROM UNIT  5
ARRAYS RHS AND BUFF WILL SHARE MEMORY.
START HEAD WILL BE SAVED
        66924 ELEMENTS IN X ARRAY ARE USED BY BAS
        66924 ELEMENTS OF X ARRAY USED OUT OF 250000
BCF1 -- BLOCK-CENTERED FLOW PACKAGE, VERSION 1, 12/08/83 INPUT READ FROM UNIT 17
STEADY-STATE SIMULATION
CELL-BY-CELL FLOWS WILL BE RECORDED ON UNIT 19

      LAYER  AQUIFER TYPE

         1         1
         2         2
         3         0

        6915 ELEMENTS IN X ARRAY ARE USED BY BCF
       73839 ELEMENTS OF X ARRAY USED OUT OF 250000
WEL1 -- WELL PACKAGE, VERSION 1, 12/08/83 INPUT READ FRON 32
MAXIMUN OF     4 WELLS
CELL-BY-CELL FLOWS WILL BE RECORDED ON UNIT 19

          16 ELEMENTS IN X ARRAY ARE USED FOR WELLS
       73855 ELEMENTS OF X ARRAY USED OUT OF 250000

RCH1 -- RECHARGE PACKAGE, VERSION 1, 12/08/83 INPUT READ FROM UNIT 14
OPTION 3 -- RECHARGE TO HIGHEST ACTIVE NODE IN EACH VERTICAL COLUMN
CELL-BY-CELL FLOW TERMS WILL BE RECORDED ON UNIT 19

        2304 ELEMENTS OF X ARRAY USED FOR RECHARGE
       76159 ELEMENTS OF X ARRAY USED OUT OF 250000

RIV1 -- RIVER PACKAGE, VERSION 1,  12/08/83 INPUT READ FROM UNIT 31
MAXIMUN OF    87 RIVER NODES
CELL-BY-CELL FLOWS WILL BE PRINTED

         522 ELEMENTS IN X ARRAY ARE USED FOR RIVERS
       76681 ELEMENTS OF X ARRAY USED OUT OF 250000

SIP1 -- STRONGLY IMPLICIT PROCEDURE SOLUTION PACKAGE, VERSION 1, 12/08/83 INPUT READ FROM UNIT 15
```

```
MAXIMUM OF 200 ITERATIONS ALLOWED FOR CLOSURE
         5  ITERATION PARAMETERS
     28453  ELEMENTS IN X ARRAY ARE USED BY SIP
    105134  ELEMENTS OF X ARRAY USED OUT OF 250000

ABERJONA RIVER BASIN NEAR WOBURN 3D MODULAR MODEL - expanded to west and east   Virginia de Lima

BOUNDARY ARRAY FOR LAYER  1 WILL BE READ ON UNIT  5 USING FORMAT:            (20I4)
-----------------------------------------------------------------------------------
    (see Appendix A - Input data - BASIC PACKAGE)

BOUNDARY ARRAY FOR LAYER  2 WILL BE READ ON UNIT  5 USING FORMAT:            (20I4)
-----------------------------------------------------------------------------------
    (see Appendix A - Input data - BASIC PACKAGE)

BOUNDARY ARRAY FOR LAYER  3 WILL BE READ ON UNIT  5 USING FORMAT:            (20I4)
-----------------------------------------------------------------------------------
    (see Appendix A - Input data - BASIC PACKAGE)

AQUIFER HEAD WILL BE SET TO 0.00000     AT ALL NO-FLOW NODES (IBOUND=0).

INITIAL HEAD FOR LAYER  1 WILL BE READ ON UNIT  5 USING FORMAT:            (16F5.1)
-----------------------------------------------------------------------------------
    (see Appendix A - Input data - BASIC PACKAGE)

INITIAL HEAD FOR LAYER  2 WILL BE READ ON UNIT  5 USING FORMAT:            (16F5.1)
-----------------------------------------------------------------------------------
    (see Appendix A - Input data - BASIC PACKAGE)

INITIAL HEAD FOR LAYER  3 WILL BE READ ON UNIT  5 USING FORMAT:            (16F5.1)
-----------------------------------------------------------------------------------
    (see Appendix A - Input data - BASIC PACKAGE)

HEAD PRINT FORMAT IS FORMAT NUMBER   4    DRAWDOWN PRINT FORMAT IS FORMAT NUMBER   4
HEADS WILL BE SAVED ON UNIT 12    DRAWDOWNS WILL BE SAVED ON UNIT 11
OUTPUT CONTROL IS SPECIFIED EVERY TIME STEP
COLUMN TO ROW ANISOTROPY =    1.000000

DELR WILL BE READ ON UNIT 17 USING FORMAT:                                   (20I4)
-----------------------------------------------------------------------------------
    (see Appendix A - Input data - BLOCK-CENTERED FLOW PACKAGE)

DELC WILL BE READ ON UNIT 17 USING FORMAT:                                   (20I4)
-----------------------------------------------------------------------------------
    (see Appendix A - Input data - BLOCK-CENTERED FLOW PACKAGE)
```

```
HYD. COND. ALONG ROWS FOR LAYER  1 WILL BE READ ON UNIT 17 USING FORMAT:     (20F4.0)
-------------------------------------------------------------------------------------
     (see Appendix A - Input data - BLOCK-CENTERED FLOW PACKAGE)

BOTTOM FOR LAYER  1 WILL BE READ ON UNIT 17 USING FORMAT:                    (20F4.0)
-------------------------------------------------------------------------------------
     (see Appendix A - Input data - BLOCK-CENTERED FLOW PACKAGE)

VERT HYD COND /THICKNESS FOR LAYER  1 WILL BE READ ON UNIT 30 USING FORMAT: (20F4.0)
-------------------------------------------------------------------------------------
     (see Appendix A - Input data - VERTICAL CONDUCTANCE FOR BCF PACKAGE)

TRANSMIS. ALONG ROWS FOR LAYER  2 WILL BE READ ON UNIT 29 USING FORMAT:      (20F4.0)
-------------------------------------------------------------------------------------
     (See Appendix A - Input data - TRANSMISSIVITY ARRAY FOR BCF PACKAGE)

VERT HYD COND /THICKNESS FOR LAYER  2 WILL BE READ ON UNIT 30 USING FORMAT: (20F4.0)
-------------------------------------------------------------------------------------
     (See Appendix A - Input data -VERTICAL CONDUCTANCE ARRAY FOR BCF PACKAGE)

TOP FOR LAYER  2 WILL BE READ ON UNIT 17 USING FORMAT:                       (20F4.0)
-------------------------------------------------------------------------------------
     (see Appendix A - Input data - BLOCK-CENTERED FLOW PACKAGE)

TRANSMIS. ALONG ROWS FOR LAYER  3 WILL BE READ ON UNIT 29 USING FORMAT:      (20F4.0)
-------------------------------------------------------------------------------------
     (See Appendix A - Input data - TRANSMISSIVITY ARRAY FOR BCF PACKAGE)

                          SOLUTION BY THE STRONGLY IMPLICIT PROCEDURE

                          MAXIMUM ITERATIONS ALLOWED FOR CLOSURE =   200
                          ACCELERATION PARAMETER                 =     1.0000
                          HEAD CHANGE CRITERION FOR CLOSURE      =     0.50000E-03

                          SIP HEAD CHANGE PRINTOUT INTERVAL      =   999
    5 ITERATION PARAMETERS CALCULATED FROM SPECIFIED WSEED       =     0.00200000 :
          0.0000000E+00  0.7885257E+00  0.9552786E+00  0.9905425E+00  0.9979999E+00

                          STRESS PERIOD NO.   1, LENGTH =   1.000000

                          NUMBER OF TIME STEPS   =   1
                          MULTIPLIER FOR DELT    =   1.000
                          INITIAL TIME STEP SIZE =   1.000000
```

```
4 WELLS   LAYER     ROW     COL     STRESS RATE    WELL NO.

             3       19      30       0.00000          1
             3       33      30       0.00000          2
             3       43      18      -0.46000          3
             2       44      14      -0.15000          4

          RECHARGE =  0.5285000E-07
87 RIVER REACHES

LAYER     ROW      COL      STAGE     CONDUCTANCE   BOTTOM ELEVATION    RIVER REACH
___________________________________________________________________________________

    (See Appendix A - Input data - RIVER PACKAGE)
83 ITERATIONS FOR TIME STEP   1 IN STRESS PERIOD  1
MAXIMUM HEAD CHANGE FOR EACH ITERATION:
HEAD CHANGE LAYER,ROW,COL HEAD CHANGE LAYER,ROW,COL HEAD CHANGE LAYER,ROW,COL
___________________________________________________________________________________
      49.44      (  1,  5, 45)-36.86      (  1,  5, 45) -3.758      (  1,  6, 46) -4.370      (  1, 47, 45) -1.263      (  2, 46, 17)
      1.895      (  1,  4, 44) -1.094     (  2,  9, 47) -0.3767     (  1, 48, 45) -0.5334     (  2, 10, 47)  0.6721     (  1, 11, 47)
     -0.4845     (  2, 12, 47) -0.4719    (  2,  9, 48) -0.3531     (  2,  9, 47) -0.1334     (  1, 17, 47) -0.1952     (  2, 10, 47)
     -0.2080     (  2, 11, 48) -0.1479    (  2,  9, 47) -0.5638E-01 (  1, 15, 45) -0.8663E-01 (  2, 10, 47) -0.1285     (  1, 33, 10)
     -0.7162E-01 (  2, 12, 47) -0.7976E-01 (  2,  9, 48) -0.5873E-01 (  2,  9, 47) -0.4052E-01 (  1, 23,  8) -0.6697E-01 (  2,  9,  7)
     -0.4212E-01 (  1, 14,  6) -0.2816E-01 (  2,  9, 47) -0.2475E-01 (  1, 27,  9) -0.1552E-01 (  2, 16,  7) -0.5761E-01 (  1, 33, 10)
      0.2343E-01 (  1, 37,  9) -0.1454E-01 (  2,  9, 48) -0.1054E-01 (  2,  9, 47) -0.1823E-01 (  1, 23,  8) -0.3003E-01 (  2,  9,  7)
     -0.1894E-01 (  1, 14,  6) -0.5537E-02 (  1, 25, 10) -0.1096E-01 (  1, 27,  9) -0.6940E-02 (  2, 16,  7) -0.2552E-01 (  1, 33, 10)
      0.1088E-01 (  1, 37,  9) -0.5102E-02 (  1, 37,  9) -0.2616E-02 (  2, 41, 13) -0.8089E-02 (  1, 23,  8) -0.1325E-01 (  2,  9,  7)
     -0.8370E-02 (  1, 14,  6) -0.2432E-02 (  1, 25, 10) -0.4809E-02 (  1, 27,  9) -0.3059E-02 (  2, 16,  7) -0.1119E-01 (  1, 33, 10)
      0.4872E-02 (  1, 37,  9) -0.2309E-02 (  1, 37,  9) -0.1144E-02 (  1,  8,  5) -0.3550E-02 (  1, 23,  8) -0.5795E-02 (  2,  9,  7)
     -0.3665E-02 (  1, 14,  6) -0.1063E-02 (  1, 25, 10) -0.2100E-02 (  1, 27,  9) -0.1338E-02 (  2, 16,  7) -0.4887E-02 (  1, 33, 10)
      0.2145E-02 (  1, 37,  9) -0.1019E-02 (  1, 37,  9) -0.5003E-03 (  1,  8,  5) -0.1550E-02 (  1, 23,  8) -0.2526E-02 (  2,  9,  7)
     -0.1599E-02 (  1, 14,  6) -0.4630E-03 (  1, 25, 10) -0.9151E-03 (  1, 27,  9) -0.5833E-03 (  2, 16,  7) -0.2129E-02 (  1, 33, 10)
      0.9388E-03 (  1, 37,  9) -0.4464E-03 (  1, 37,  9) -0.2177E-03 (  1,  8,  5) -0.6750E-03 (  1, 23,  8) -0.1100E-02 (  2,  9,  7)
     -0.6961E-03 (  1, 14,  6) -0.2015E-03 (  1, 25, 10) -0.3983E-03 (  1, 27,  9) -0.2540E-03 (  2, 16,  7) -0.9264E-03 (  1, 33, 10)
      0.4090E-03 (  1, 37,  9) -0.1931E-03 (  1, 37,  9) -0.9490E-04 (  1,  8,  5)
HEAD/DRAWDOWN PRINT FLAG = 1      TOTAL BUDGET PRINT FLAG = 1      CELL-BY-CELL FLOW TERM FLAG =19

OUTPUT FLAGS FOR ALL LAYERS ARE THE SAME:
      HEAD    DRAWDOWN  HEAD  DRAWDOWN
    PRINTOUT  PRINTOUT  SAVE    SAVE
    ________________________________
       1         1        1       1
    " CONSTANT HEAD " BUDGET VALUES WILL BE SAVED ON UNIT 19 AT END OF TIME STEP  1, STRESS PERIOD  1
    "FLOW RIGHT FACE " BUDGET VALUES WILL BE SAVED ON UNIT 19 AT END OF TIME STEP  1, STRESS PERIOD  1
    "FLOW FRONT FACE " BUDGET VALUES WILL BE SAVED ON UNIT 19 AT END OF TIME STEP  1, STRESS PERIOD  1
    "FLOW LOWER FACE " BUDGET VALUES WILL BE SAVED ON UNIT 19 AT END OF TIME STEP  1, STRESS PERIOD  1
    "           WELLS" BUDGET VALUES WILL BE SAVED ON UNIT 19 AT END OF TIME STEP  1, STRESS PERIOD  1
    "        RECHARGE" BUDGET VALUES WILL BE SAVED ON UNIT 19 AT END OF TIME STEP  1, STRESS PERIOD  1

      RIVER LEAKAGE   PERIOD  1   STEP  1   REACH   1   LAYER  1   ROW   1   COL  21   RATE -0.1570038E-01
      RIVER LEAKAGE   PERIOD  1   STEP  1   REACH   2   LAYER  1   ROW   2   COL  21   RATE -0.1875916E-01
      RIVER LEAKAGE   PERIOD  1   STEP  1   REACH   3   LAYER  1   ROW   3   COL  21   RATE -0.2162132E-01
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APPENDIX B - (Continued)

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RIVER LEAKAGE   PERIOD  1   STEP  1   REACH   4   LAYER  1   ROW   4   COL  21   RATE -0.1208946E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH   5   LAYER  1   ROW   5   COL  21   RATE -0.5882035E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH   6   LAYER  1   ROW   5   COL  22   RATE -0.1673401E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH   7   LAYER  1   ROW   6   COL  22   RATE -0.3386834E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH   8   LAYER  1   ROW   7   COL  22   RATE -0.2993446E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH   9   LAYER  1   ROW   8   COL  22   RATE -0.3424965E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  10   LAYER  1   ROW   9   COL  22   RATE -0.2272110E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  11   LAYER  1   ROW  10   COL  21   RATE -0.1418038E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  12   LAYER  1   ROW  10   COL  22   RATE -0.2285874E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  13   LAYER  1   ROW  10   COL  23   RATE -0.2293350E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  14   LAYER  1   ROW  11   COL  23   RATE -0.1121094E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  15   LAYER  1   ROW  11   COL  24   RATE -0.5156402E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  16   LAYER  1   ROW  12   COL  24   RATE -0.1479538E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  17   LAYER  1   ROW  12   COL  25   RATE -0.3805390E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  18   LAYER  1   ROW  12   COL  26   RATE -0.2701340E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  19   LAYER  1   ROW  13   COL  26   RATE -0.9696350E-03
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  20   LAYER  1   ROW  13   COL  25   RATE -0.3399887E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  21   LAYER  1   ROW  14   COL  25   RATE -0.5414124E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  22   LAYER  1   ROW  14   COL  26   RATE -0.5786286E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  23   LAYER  1   ROW  15   COL  26   RATE -0.2763428E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  24   LAYER  1   ROW  15   COL  25   RATE -0.3593750E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  25   LAYER  1   ROW  16   COL  25   RATE -0.1594048E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  26   LAYER  1   ROW  17   COL  25   RATE -0.5097657E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  27   LAYER  1   ROW  17   COL  26   RATE -0.2514130E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  28   LAYER  1   ROW  18   COL  26   RATE -0.2024727E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  29   LAYER  1   ROW  19   COL  26   RATE -0.2444413E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  30   LAYER  1   ROW  19   COL  25   RATE -0.2023697E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  31   LAYER  1   ROW  20   COL  25   RATE -0.2705376E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  32   LAYER  1   ROW  21   COL  25   RATE -0.2488289E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  33   LAYER  1   ROW  22   COL  25   RATE -0.1672234E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  34   LAYER  1   ROW  22   COL  26   RATE -0.4608842E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  35   LAYER  1   ROW  23   COL  26   RATE -0.4498749E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  36   LAYER  1   ROW  24   COL  26   RATE -0.4283677E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  37   LAYER  1   ROW  25   COL  26   RATE -0.4186326E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  38   LAYER  1   ROW  25   COL  25   RATE -0.1057572E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  39   LAYER  1   ROW  26   COL  25   RATE -0.3335037E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  40   LAYER  1   ROW  26   COL  24   RATE -0.1117012E-01
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  41   LAYER  1   ROW  27   COL  24   RATE -0.1893425E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  42   LAYER  1   ROW  27   COL  23   RATE -0.3558350E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  43   LAYER  1   ROW  28   COL  23   RATE -0.4942628E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  44   LAYER  1   ROW  29   COL  23   RATE -0.2074768E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  45   LAYER  1   ROW  30   COL  23   RATE -0.1046601E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  46   LAYER  1   ROW  31   COL  23   RATE -0.9801483E-03
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  47   LAYER  1   ROW  32   COL  23   RATE -0.9147645E-03
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  48   LAYER  1   ROW  33   COL  23   RATE -0.8560562E-03
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  49   LAYER  1   ROW  34   COL  23   RATE -0.4890747E-03
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  50   LAYER  1   ROW  34   COL  22   RATE -0.1513138E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  51   LAYER  1   ROW  35   COL  22   RATE -0.2113037E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  52   LAYER  1   ROW  36   COL  22   RATE -0.7931442E-03
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  53   LAYER  1   ROW  37   COL  22   RATE -0.9167634E-03
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  54   LAYER  1   ROW  37   COL  23   RATE -0.1418686E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  55   LAYER  1   ROW  38   COL  23   RATE -0.8300019E-03
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  56   LAYER  1   ROW  38   COL  22   RATE -0.1645889E-02
RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  57   LAYER  1   ROW  39   COL  22   RATE  0.2636719E-03
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    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  58   LAYER  1   ROW  39   COL  21   RATE  0.3957366E-03
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  59   LAYER  1   ROW  40   COL  22   RATE  0.4630661E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  60   LAYER  1   ROW  40   COL  21   RATE  0.1366012E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  61   LAYER  1   ROW  41   COL  22   RATE  0.1361580E-01
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  62   LAYER  1   ROW  41   COL  23   RATE  0.9573745E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  63   LAYER  1   ROW  41   COL  24   RATE  0.5189667E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  64   LAYER  1   ROW  42   COL  25   RATE  0.8921813E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  65   LAYER  1   ROW  42   COL  26   RATE  0.1341552E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  66   LAYER  1   ROW  42   COL  27   RATE  0.2077636E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  67   LAYER  1   ROW  42   COL  28   RATE  0.8895111E-03
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  68   LAYER  1   ROW  42   COL  29   RATE  0.7202224E-03
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  69   LAYER  1   ROW  42   COL  30   RATE  0.1419220E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  70   LAYER  1   ROW  42   COL  31   RATE -0.4994202E-03
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  71   LAYER  1   ROW  43   COL  30   RATE  0.5890732E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  72   LAYER  1   ROW  43   COL  31   RATE  0.3854370E-03
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  73   LAYER  1   ROW  43   COL  32   RATE  0.2823257E-03
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  74   LAYER  1   ROW  43   COL  33   RATE  0.3934478E-03
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  75   LAYER  1   ROW  43   COL  34   RATE  0.6706237E-03
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  76   LAYER  1   ROW  44   COL  33   RATE  0.1963943E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  77   LAYER  1   ROW  44   COL  34   RATE  0.5495452E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  78   LAYER  1   ROW  44   COL  35   RATE  0.1964493E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  79   LAYER  1   ROW  44   COL  36   RATE  0.2407074E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  80   LAYER  1   ROW  45   COL  36   RATE  0.2039108E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  81   LAYER  1   ROW  45   COL  37   RATE  0.5441207E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  82   LAYER  1   ROW  45   COL  38   RATE  0.5087966E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  83   LAYER  1   ROW  46   COL  38   RATE -0.3359528E-02
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  84   LAYER  1   ROW  46   COL  39   RATE -0.8637041E-01
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  85   LAYER  1   ROW  47   COL  40   RATE -0.6811525E-01
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  86   LAYER  1   ROW  48   COL  40   RATE -0.2450592E-01
    RIVER LEAKAGE   PERIOD  1   STEP  1   REACH  87   LAYER  1   ROW  48   COL  41   RATE -0.3623543E-01
HEAD IN LAYER  1 AT END OF TIME STEP  1 IN STRESS PERIOD  1
--------------------------------------------------------------------------------------------------------------
             1       2       3       4       5       6       7       8       9      10      11      12      13      14      15
            16      17      18      19      20      21      22      23      24      25      26      27      28      29      30
            31      32      33      34      35      36      37      38      39      40      41      42      43      44      45
            46      47      48
--------------------------------------------------------------------------------------------------------------
  0  1     0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00   47.43   46.79   46.68   46.58   46.48   46.42   46.36
          46.29   46.23   46.18   46.14   46.10   46.03   46.18   46.29   46.42   46.56   46.67   46.77   46.86   46.92   46.99
          47.06   47.13   47.20   47.33   47.51   47.76   48.23   48.93   50.54   52.99   56.41   59.71   66.56   74.18   78.07
           0.00    0.00    0.00
  0  2     0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00   47.43   46.76   46.65   46.54   46.44   46.37   46.30
          46.24   46.19   46.14   46.10   46.05   45.96   46.12   46.23   46.37   46.51   46.62   46.73   46.82   46.88   46.96
          47.04   47.12   47.18   47.29   47.46   47.70   48.17   48.82   50.19   52.68   56.28   59.62   66.96   75.14   79.54
           0.00    0.00    0.00
  0  3     0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00   47.51   46.73   46.58   46.45   46.35   46.28   46.22
          46.16   46.11   46.06   46.01   45.96   45.84   46.01   46.13   46.27   46.40   46.50   46.61   46.68   46.74   46.80
          46.87   46.93   46.99   47.10   47.27   47.51   47.98   48.62   49.92   52.38   56.12   59.81   67.52   76.46   83.17
          87.84    0.00    0.00
  0  4     0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00   47.30   46.63   46.48   46.35   46.23   46.17   46.11
          46.06   46.00   45.95   45.90   45.85   45.77   45.88   45.97   46.10   46.23   46.33   46.42   46.49   46.54   46.60
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APPENDIX B - (Continued)

	46.66	46.72	46.78	46.89	47.05	47.25	47.58	48.33	49.61	52.00	56.20	61.01	66.68	75.87	84.63
	88.68	89.83	0.00												
0 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.69	46.48	46.37	46.23	46.11	46.04	45.98
	45.91	45.85	45.79	45.73	45.67	45.60	45.56	45.72	45.87	46.00	46.09	46.17	46.23	46.26	46.31
	46.36	46.40	46.46	46.56	46.71	46.90	47.34	48.00	49.31	51.69	56.15	62.10	66.89	75.16	83.91
	87.67	88.64	0.00												
0 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.56	46.49	46.39	46.26	46.09	45.96	45.89	45.82
	45.75	45.69	45.63	45.56	45.50	45.43	45.28	45.48	45.63	45.75	45.84	45.91	45.96	45.99	46.03
	46.07	46.11	46.15	46.23	46.36	46.53	46.95	47.59	48.98	51.22	56.55	62.93	67.18	74.37	80.95
	84.65	86.16	0.00												
0 7	0.00	0.00	0.00	0.00	0.00	0.00	46.62	46.52	46.43	46.31	46.14	45.95	45.82	45.74	45.67
	45.60	45.54	45.47	45.40	45.34	45.27	45.13	45.30	45.44	45.55	45.63	45.70	45.74	45.77	45.80
	45.84	45.87	45.91	45.98	46.10	46.27	46.68	47.32	48.57	50.66	56.45	62.82	68.07	73.24	76.87
	80.91	83.53	84.05												
0 8	0.00	0.00	0.00	0.00	48.02	47.45	46.59	46.47	46.36	46.20	46.01	45.79	45.66	45.58	45.51
	45.44	45.37	45.30	45.23	45.16	45.09	44.89	45.12	45.24	45.35	45.42	45.48	45.52	45.55	45.57
	45.61	45.64	45.67	45.74	45.84	45.99	46.29	46.90	48.21	50.49	55.74	61.97	67.65	72.52	75.38
	79.03	82.10	83.30												
0 9	0.00	0.00	0.00	0.00	47.51	47.08	46.58	46.42	46.28	46.09	45.84	45.63	45.50	45.42	45.35
	45.27	45.19	45.11	45.03	44.96	44.88	44.45	44.87	45.01	45.11	45.18	45.25	45.29	45.31	45.33
	45.35	45.37	45.39	45.42	45.48	45.56	45.71	46.36	47.83	50.24	55.30	61.54	66.71	70.84	73.72
	77.50	80.91	82.40												
0 10	0.00	0.00	0.00	0.00	47.71	46.91	46.53	46.37	46.18	45.95	45.70	45.49	45.35	45.27	45.18
	45.09	45.01	44.93	44.84	44.76	44.47	44.23	44.23	44.65	44.80	44.88	44.95	45.00	45.03	45.05
	45.07	45.09	45.11	45.13	45.17	45.23	45.35	45.84	47.38	50.23	54.73	60.69	66.05	68.81	71.10
	75.98	79.91	81.60												
0 11	0.00	0.00	0.00	0.00	47.86	46.91	46.52	46.32	46.10	45.85	45.61	45.39	45.25	45.16	45.07
	44.98	44.89	44.81	44.73	44.66	44.57	44.46	44.18	44.32	44.51	44.63	44.73	44.79	44.82	44.85
	44.87	44.89	44.91	44.94	44.98	45.03	45.11	45.52	46.83	49.99	54.97	60.31	65.02	68.17	70.50
	75.39	79.42	81.19												
0 12	0.00	0.00	0.00	0.00	48.00	46.93	46.51	46.29	46.05	45.80	45.55	45.33	45.18	45.08	44.99
	44.90	44.81	44.73	44.65	44.57	44.50	44.45	44.34	44.05	44.18	44.34	44.53	44.64	44.68	44.71
	44.74	44.76	44.78	44.82	44.86	44.91	45.01	45.33	46.35	49.82	54.92	60.15	64.64	67.93	70.29
	75.15	79.17	80.97												
0 13	0.00	0.00	0.00	0.00	48.20	46.98	46.51	46.27	46.02	45.75	45.50	45.29	45.13	45.02	44.92
	44.83	44.75	44.67	44.58	44.51	44.45	44.39	44.32	44.21	44.04	44.18	44.40	44.52	44.57	44.60
	44.63	44.66	44.68	44.72	44.76	44.81	44.91	45.21	46.14	49.64	54.81	60.02	64.49	67.85	70.28
	75.07	79.07	80.82												

APPENDIX B - (Continued)

0 14	0.00	0.00	0.00	0.00	48.37	47.04	46.50	46.26	45.99	45.71	45.47	45.25	45.09	44.98	44.88
	44.79	44.71	44.62	44.54	44.47	44.42	44.36	44.29	44.22	43.97	43.99	44.30	44.44	44.50	44.53
	44.57	44.59	44.62	44.65	44.69	44.74	44.84	45.13	46.04	49.50	54.72	59.94	64.43	67.84	70.36
	75.07	79.01	80.71												
0 15	0.00	0.00	0.00	0.00	48.52	47.09	46.50	46.25	45.97	45.69	45.44	45.22	45.05	44.94	44.84
	44.75	44.66	44.58	44.49	44.43	44.38	44.33	44.27	44.21	43.96	43.99	44.26	44.38	44.44	44.47
	44.51	44.54	44.56	44.60	44.64	44.68	44.78	45.06	45.95	49.34	54.64	59.89	64.39	67.88	70.56
	75.13	78.97	80.61												
0 16	0.00	0.00	0.00	0.00	48.69	47.18	46.50	46.24	45.95	45.67	45.42	45.20	45.02	44.91	44.81
	44.72	44.63	44.55	44.47	44.40	44.36	44.31	44.25	44.19	43.92	43.99	44.23	44.35	44.40	44.44
	44.47	44.50	44.52	44.56	44.60	44.64	44.74	45.01	45.90	49.24	54.58	59.91	64.37	67.90	70.69
	75.18	78.94	80.54												
0 17	0.00	0.00	0.00	0.00	48.84	47.34	46.51	46.24	45.94	45.66	45.41	45.18	45.01	44.89	44.79
	44.70	44.61	44.53	44.45	44.39	44.34	44.29	44.24	44.18	43.85	43.92	44.20	44.33	44.38	44.41
	44.44	44.47	44.50	44.53	44.57	44.62	44.72	44.98	45.87	49.19	54.55	59.92	64.34	67.92	70.77
	75.22	78.92	80.48												
0 18	0.00	0.00	0.00	0.00	48.95	47.52	46.51	46.24	45.93	45.65	45.40	45.16	44.99	44.87	44.77
	44.68	44.59	44.51	44.43	44.37	44.32	44.28	44.23	44.18	43.93	43.90	44.18	44.31	44.36	44.39
	44.42	44.45	44.47	44.50	44.55	44.59	44.68	44.96	45.85	49.17	54.52	59.92	64.33	67.94	70.87
	75.26	78.89	80.43												
0 19	0.00	0.00	0.00	0.00	49.04	47.67	46.53	46.23	45.92	45.64	45.38	45.15	44.97	44.85	44.75
	44.66	44.57	44.49	44.41	44.35	44.31	44.26	44.22	44.16	43.90	43.91	44.17	44.29	44.34	44.37
	44.39	44.42	44.45	44.48	44.52	44.56	44.64	44.92	45.83	49.16	54.49	59.91	64.31	67.95	70.98
	75.30	78.87	80.37												
0 20	0.00	0.00	0.00	0.00	49.10	47.81	46.55	46.23	45.91	45.63	45.37	45.13	44.96	44.83	44.73
	44.64	44.55	44.46	44.39	44.33	44.29	44.24	44.20	44.15	43.89	43.96	44.16	44.27	44.32	44.34
	44.37	44.40	44.42	44.45	44.49	44.53	44.61	44.88	45.80	49.16	54.48	59.88	64.29	67.97	71.08
	75.33	78.83	80.31												
0 21	0.00	0.00	0.00	0.00	49.12	47.93	46.58	46.23	45.90	45.62	45.35	45.11	44.94	44.82	44.70
	44.61	44.53	44.44	44.37	44.31	44.27	44.23	44.19	44.14	43.90	43.95	44.14	44.25	44.29	44.32
	44.35	44.37	44.40	44.43	44.47	44.50	44.58	44.84	45.77	49.16	54.46	59.84	64.26	68.00	71.18
	75.36	78.80	80.24												
0 22	0.00	0.00	0.00	0.00	0.00	48.27	46.63	46.23	45.89	45.60	45.33	45.08	44.91	44.78	44.67
	44.58	44.49	44.41	44.34	44.28	44.24	44.20	44.17	44.13	43.96	43.86	44.11	44.22	44.26	44.29
	44.32	44.34	44.36	44.39	44.43	44.46	44.54	44.78	45.74	49.16	54.45	59.76	64.19	68.04	71.31
	75.39	78.73	80.11												
0 23	0.00	0.00	0.00	0.00	0.00	48.76	46.74	46.24	45.86	45.57	45.30	45.04	44.88	44.74	44.62
	44.53	44.44	44.36	44.29	44.24	44.20	44.17	44.13	44.10	44.01	43.85	44.07	44.17	44.22	44.24
	44.27	44.29	44.30	44.33	44.37	44.40	44.47	44.68	45.64	49.20	54.43	59.62	64.07	68.04	71.46
	75.45	78.59	79.90												
0 24	0.00	0.00	0.00	0.00	0.00	49.17	46.87	46.26	45.84	45.54	45.26	45.01	44.82	44.67	44.56
	44.47	44.38	44.30	44.24	44.19	44.15	44.13	44.10	44.06	43.97	43.83	44.03	44.12	44.16	44.19
	44.21	44.23	44.24	44.27	44.30	44.33	44.39	44.58	45.53	49.12	54.32	59.44	63.91	67.96	71.61
	75.50	78.42	79.73												
0 25	0.00	0.00	0.00	0.00	0.00	49.69	47.52	46.30	45.80	45.49	45.21	44.94	44.73	44.57	44.46
	44.37	44.29	44.21	44.15	44.11	44.08	44.07	44.04	44.00	43.75	43.82	43.98	44.05	44.09	44.10
	44.12	44.14	44.15	44.17	44.20	44.23	44.28	44.45	45.37	48.88	53.98	59.11	63.59	67.75	71.67
	75.51	78.25	79.52												

APPENDIX B - (Continued)

0 26	0.00	0.00	0.00	0.00	0.00	50.04	48.19	46.40	45.78	45.43	45.12	44.81	44.57	44.43	44.32
	44.23	44.14	44.07	44.02	43.99	43.97	43.96	43.88	43.67	43.73	43.86	43.93	43.97	43.98	43.99
	44.01	44.02	44.03	44.04	44.06	44.09	44.13	44.31	45.09	48.30	53.39	58.49	62.95	67.18	71.42
	75.32	77.96	79.17												
0 27	0.00	0.00	0.00	0.00	0.00	0.00	48.72	46.52	45.81	45.38	45.03	44.70	44.46	44.32	44.20
	44.10	44.02	43.96	43.92	43.90	43.88	43.84	43.66	43.68	43.77	43.82	43.86	43.88	43.89	43.90
	43.91	43.92	43.93	43.94	43.96	43.98	44.02	44.18	44.90	47.69	52.77	57.87	62.25	66.40	70.87
	75.06	77.68	78.89												
0 28	0.00	0.00	0.00	0.00	0.00	0.00	49.19	46.82	45.82	45.35	44.96	44.62	44.38	44.24	44.11
	44.02	43.94	43.90	43.86	43.83	43.81	43.77	43.55	43.69	43.74	43.78	43.80	43.81	43.82	43.83
	43.84	43.85	43.86	43.87	43.89	43.91	43.94	44.11	44.78	47.28	52.26	57.38	61.67	65.75	70.11
	74.78	77.46	78.68												
0 29	0.00	0.00	0.00	0.00	0.00	0.00	49.50	47.38	45.85	45.33	44.89	44.54	44.30	44.16	44.05
	43.96	43.88	43.83	43.79	43.77	43.75	43.70	43.53	43.65	43.70	43.72	43.74	43.75	43.76	43.76
	43.77	43.78	43.79	43.80	43.82	43.84	43.87	44.02	44.67	46.98	51.78	56.87	61.03	65.03	69.01
	74.42	77.24	78.48												
0 30	0.00	0.00	0.00	0.00	0.00	0.00	49.62	47.73	45.88	45.33	44.84	44.48	44.24	44.09	44.00
	43.91	43.83	43.78	43.74	43.72	43.70	43.65	43.51	43.62	43.65	43.67	43.69	43.71	43.71	43.72
	43.72	43.73	43.75	43.76	43.78	43.80	43.81	43.96	44.60	46.77	51.43	56.48	60.53	64.47	68.01
	74.01	77.03	78.29												
0 31	0.00	0.00	0.00	0.00	0.00	0.00	49.67	47.88	45.91	45.33	44.81	44.44	44.19	44.05	43.96
	43.87	43.80	43.75	43.71	43.69	43.67	43.61	43.50	43.59	43.63	43.65	43.67	43.68	43.69	43.69
	43.70	43.71	43.72	43.73	43.75	43.77	43.78	43.92	44.55	46.63	51.18	56.21	60.16	64.03	67.54
	73.56	76.79	78.09												
0 32	0.00	0.00	0.00	0.00	0.00	0.00	49.69	47.97	45.94	45.34	44.78	44.40	44.14	44.02	43.93
	43.84	43.77	43.71	43.68	43.66	43.63	43.57	43.48	43.58	43.61	43.63	43.65	43.66	43.67	43.67
	43.68	43.68	43.69	43.71	43.72	43.74	43.76	43.89	44.50	46.48	50.92	55.92	59.73	63.50	67.24
	73.10	76.53	77.87												
0 33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.02	45.97	45.34	44.76	44.36	44.09	43.98	43.89
	43.80	43.73	43.68	43.64	43.62	43.60	43.52	43.47	43.56	43.59	43.61	43.62	43.63	43.64	43.65
	43.65	43.66	43.66	43.68	43.70	43.71	43.74	43.86	44.44	46.32	50.64	55.60	59.39	63.06	66.90
	72.61	76.25	77.62												
0 34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.04	46.00	45.35	44.73	44.31	44.05	43.95	43.85
	43.76	43.69	43.64	43.61	43.59	43.57	43.45	43.46	43.54	43.57	43.58	43.60	43.61	43.62	43.62
	43.63	43.63	43.64	43.65	43.67	43.69	43.71	43.83	44.39	46.15	50.33	55.25	59.13	62.78	66.54
	72.19	75.99	77.40												
0 35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.08	45.37	44.70	44.27	44.01	43.91	43.81
	43.72	43.65	43.60	43.57	43.55	43.53	43.41	43.45	43.51	43.54	43.56	43.58	43.59	43.59	43.60
	43.60	43.61	43.61	43.62	43.64	43.66	43.69	43.80	44.34	45.98	49.99	54.95	58.86	62.47	66.14
	71.87	75.77	77.20												
0 36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.57	45.52	44.66	44.20	43.96	43.86	43.75
	43.65	43.59	43.53	43.50	43.50	43.48	43.39	43.42	43.48	43.50	43.52	43.54	43.56	43.56	43.56
	43.57	43.57	43.58	43.59	43.60	43.62	43.65	43.75	44.27	45.71	49.37	54.61	58.52	62.12	65.66
	71.34	75.43	76.88												
0 37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.02	45.75	44.61	44.10	43.88	43.76	43.64
	43.55	43.49	43.43	43.41	43.41	43.41	43.33	43.34	43.41	43.44	43.46	43.48	43.50	43.50	43.51
	43.51	43.52	43.52	43.53	43.54	43.56	43.59	43.68	44.17	45.43	48.52	53.96	58.04	61.64	65.05
	70.53	74.88	76.43												

0 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.89	44.56	43.93	43.73	43.61	43.50
	43.42	43.38	43.34	43.32	43.32	43.34	43.25	43.28	43.34	43.37	43.39	43.41	43.43	43.43	43.44
	43.45	43.45	43.46	43.46	43.48	43.49	43.52	43.58	44.03	45.11	47.68	53.11	57.42	61.06	64.44
	69.71	74.20	75.96												
0 39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.97	44.47	43.67	43.45	43.32	43.22
	43.16	43.19	43.21	43.21	43.19	43.19	43.20	43.21	43.25	43.27	43.29	43.31	43.32	43.33	43.34
	43.35	43.35	43.36	43.37	43.38	43.39	43.42	43.48	43.85	44.70	46.61	51.96	56.54	60.25	63.60
	68.73	73.30	75.18												
0 40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.48	43.30	43.06	42.92	42.79
	42.74	42.81	42.86	42.89	42.87	42.97	43.11	43.08	43.11	43.13	43.15	43.17	43.18	43.19	43.20
	43.21	43.22	43.22	43.23	43.24	43.26	43.28	43.32	43.63	44.28	45.98	50.52	55.32	59.23	62.60
	67.50	72.16	74.22												
0 41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.54	42.76	42.43	42.26	42.13
	42.08	42.09	42.13	42.21	42.32	42.49	42.83	42.91	42.93	42.92	42.93	42.95	42.97	42.98	42.99
	42.99	43.00	43.01	43.02	43.04	43.05	43.08	43.13	43.34	43.77	45.31	48.27	53.69	57.68	61.17
	66.04	70.65	72.93												
0 42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.70	41.77	41.31	41.19	41.08
	41.01	40.94	40.95	41.19	41.47	41.72	42.00	42.24	42.44	42.68	42.67	42.70	42.71	42.72	42.73
	42.72	42.73	42.73	42.74	42.76	42.78	42.81	42.86	43.03	43.36	44.47	46.99	52.46	56.25	59.60
	64.07	68.52	71.71												
0 43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.88	40.64	40.12	40.00	40.00
	39.90	39.60	39.22	39.98	40.62	41.11	41.50	41.79	42.01	42.13	42.21	42.28	42.32	42.34	42.40
	42.42	42.44	42.46	42.47	42.48	42.51	42.54	42.59	42.73	42.99	43.52	45.87	51.11	54.70	57.80
	62.09	65.52	0.00												
0 44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.67	39.83	38.89	38.30	39.40
	39.77	39.96	40.10	40.40	40.71	41.04	41.34	41.58	41.77	41.89	41.96	42.02	42.06	42.08	42.10
	42.13	42.15	42.18	42.22	42.23	42.25	42.27	42.31	42.39	42.60	43.08	45.10	49.65	53.03	55.80
	59.92	63.96	0.00												
0 45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.52	39.83	39.48	39.54	39.82
	40.11	40.33	40.51	40.70	40.90	41.11	41.32	41.49	41.64	41.73	41.78	41.82	41.85	41.86	41.88
	41.90	41.91	41.93	41.95	41.98	42.00	42.02	42.03	42.01	42.22	42.65	44.46	48.36	51.09	53.59
	56.46	0.00	0.00												
0 46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40.53	40.61	40.73	40.88	41.06	41.21	41.35	41.47	41.58	41.64	41.67	41.70	41.71	41.72	41.73
	41.74	41.74	41.75	41.76	41.76	41.76	41.75	41.67	41.44	41.74	42.21	44.13	46.57	48.56	51.62
	54.10	0.00	0.00												
0 47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	41.31	41.37	41.44	41.50	41.56	41.60	41.62	41.63	41.64	41.65	41.65
	41.65	41.65	41.65	41.66	41.65	41.65	41.63	41.57	41.46	41.04	41.69	43.54	45.86	47.75	50.48
	52.85	0.00	0.00												
0 48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	41.49	41.51	41.54	41.57	41.59	41.60	41.61	41.61	41.61	41.62
	41.62	41.62	41.62	41.61	41.61	41.60	41.58	41.54	41.44	41.13	41.01	43.11	45.33	47.20	50.05
	52.43	0.00	0.00												

APPENDIX B - (Continued)

HEAD IN LAYER 2 AT END OF TIME STEP 1 IN STRESS PERIOD 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
	46	47	48												
0 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.77	46.68	46.57	46.48	46.41	46.35
	46.29	46.22	46.18	46.14	46.11	46.09	46.18	46.29	46.41	46.53	46.63	46.72	46.79	46.84	46.90
	46.98	47.05	47.11	47.27	47.51	47.78	48.22	48.81	48.75	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.74	46.64	46.53	46.43	46.36	46.29
	46.23	46.18	46.14	46.09	46.06	46.03	46.13	46.24	46.36	46.48	46.58	46.68	46.75	46.80	46.86
	46.95	47.02	47.08	47.23	47.46	47.72	48.16	48.71	48.65	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.68	46.57	46.45	46.34	46.26	46.20
	46.15	46.11	46.06	46.01	45.96	45.93	46.02	46.13	46.26	46.37	46.48	46.57	46.63	46.67	46.71
	46.75	46.80	46.84	46.36	47.24	47.52	47.96	48.51	48.46	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.58	46.47	46.34	46.22	46.16	46.10
	46.05	45.99	45.94	45.89	45.85	45.82	45.88	45.98	46.09	46.20	46.30	46.39	46.44	46.48	46.52
	46.56	46.60	46.64	46.75	47.01	47.26	47.68	48.22	48.19	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.64	46.47	46.37	46.22	46.09	46.03	45.97
	45.91	45.85	45.79	45.73	45.67	45.62	45.63	45.74	45.86	45.97	46.07	46.15	46.21	46.23	46.25
	46.28	46.30	46.32	46.42	46.59	46.89	47.33	47.89	47.87	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.53	46.48	46.39	46.26	46.07	45.95	45.88	45.81
	45.74	45.68	45.62	45.55	45.49	45.44	45.39	45.50	45.63	45.73	45.82	45.90	45.94	45.96	45.98
	46.00	46.03	46.04	46.12	46.24	46.41	46.93	47.49	47.52	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 7	0.00	0.00	0.00	0.00	0.00	0.00	46.58	46.51	46.42	46.30	46.14	45.94	45.80	45.73	45.65
	45.59	45.53	45.46	45.39	45.33	45.28	45.23	45.32	45.44	45.53	45.61	45.68	45.73	45.74	45.76
	45.78	45.80	45.82	45.89	46.00	46.16	46.66	47.21	47.21	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 8	0.00	0.00	0.00	0.00	0.00	0.00	46.58	46.47	46.35	46.20	46.00	45.78	45.64	45.57	45.50
	45.43	45.36	45.29	45.22	45.15	45.09	45.02	45.12	45.23	45.32	45.40	45.46	45.50	45.52	45.54
	45.56	45.57	45.59	45.65	45.75	45.87	46.26	46.80	46.90	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 9	0.00	0.00	0.00	0.00	0.00	0.00	46.55	46.41	46.27	46.08	45.83	45.62	45.49	45.41	45.34
	45.26	45.18	45.11	45.03	44.95	44.89	44.83	44.90	44.99	45.07	45.15	45.22	45.26	45.28	45.30
	45.32	45.34	45.36	45.39	45.44	45.50	45.61	46.20	46.75	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	70.60	70.60												
0 10	0.00	0.00	0.00	0.00	0.00	46.88	46.51	46.36	46.18	45.93	45.69	45.48	45.34	45.26	45.17
	45.09	45.01	44.92	44.84	44.76	44.67	44.61	44.60	44.71	44.79	44.87	44.94	44.98	45.00	45.02
	45.04	45.07	45.09	45.12	45.17	45.23	45.31	45.68	47.28	48.72	0.00	0.00	66.13	68.72	70.88
	70.68	70.61	70.60												

APPENDIX B - (Continued)

0 11	0.00	0.00	0.00	0.00	0.00	46.88	46.51	46.31	46.09	45.84	45.60	45.37	45.24	45.15	45.06
	44.97	44.89	44.81	44.72	44.65	44.58	44.53	44.48	44.52	44.59	44.66	44.74	44.78	44.80	44.82
	44.84	44.87	44.89	44.92	44.97	45.03	45.11	45.43	46.82	49.98	54.97	60.23	65.00	68.14	70.38
	70.51	70.56	70.59												
0 12	0.00	0.00	0.00	0.00	0.00	46.90	46.50	46.28	46.05	45.79	45.54	45.32	45.17	45.07	44.98
	44.89	44.81	44.73	44.64	44.57	44.51	44.46	44.42	44.39	44.43	44.51	44.59	44.65	44.67	44.69
	44.71	44.74	44.76	44.80	44.85	44.91	45.00	45.28	46.16	49.87	54.91	60.09	64.61	67.90	70.18
	70.44	70.54	0.00												
0 13	0.00	0.00	0.00	0.00	0.00	46.93	46.49	46.27	46.01	45.74	45.49	45.27	45.11	45.01	44.92
	44.83	44.74	44.66	44.58	44.51	44.45	44.41	44.36	44.34	44.34	44.39	44.48	44.54	44.56	44.59
	44.61	44.64	44.66	44.70	44.75	44.81	44.91	45.17	45.99	49.69	54.79	59.95	64.46	67.81	70.15
	0.00	0.00	0.00												
0 14	0.00	0.00	0.00	0.00	0.00	0.00	46.49	46.26	45.99	45.71	45.46	45.24	45.07	44.97	44.87
	44.78	44.70	44.61	44.53	44.46	44.41	44.37	44.32	44.29	44.30	44.34	44.41	44.46	44.49	44.52
	44.54	44.57	44.59	44.63	44.69	44.75	44.84	45.10	45.90	49.53	54.70	59.85	64.41	67.79	70.16
	0.00	0.00	0.00												
0 15	0.00	0.00	0.00	0.00	0.00	0.00	46.48	46.25	45.96	45.68	45.43	45.20	45.04	44.93	44.83
	44.74	44.65	44.57	44.49	44.42	44.38	44.33	44.29	44.26	44.27	44.30	44.36	44.41	44.43	44.46
	44.48	44.50	44.53	44.57	44.63	44.69	44.78	45.02	45.82	49.35	54.61	59.72	0.00	0.00	0.00
	0.00	0.00	0.00												
0 16	0.00	0.00	0.00	0.00	0.00	0.00	46.48	46.24	45.95	45.66	45.41	45.18	45.01	44.90	44.80
	44.71	44.62	44.54	44.46	44.40	44.35	44.31	44.27	44.24	44.24	44.28	44.33	44.38	44.40	44.42
	44.44	44.46	44.48	44.52	44.58	44.65	44.75	44.96	45.76	49.18	54.54	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 17	0.00	0.00	0.00	0.00	0.00	0.00	46.48	46.24	45.94	45.65	45.40	45.17	44.99	44.88	44.78
	44.69	44.60	44.52	44.44	44.38	44.34	44.29	44.26	44.23	44.23	44.26	44.31	44.36	44.38	44.40
	44.42	44.44	44.46	44.49	44.55	44.62	44.72	44.94	45.73	48.89	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 18	0.00	0.00	0.00	0.00	0.00	0.00	46.48	46.23	45.93	45.64	45.39	45.15	44.98	44.87	44.76
	44.67	44.58	44.50	44.42	44.36	44.32	44.28	44.24	44.22	44.21	44.24	44.29	44.34	44.36	44.38
	44.40	44.42	44.44	44.47	44.52	44.59	44.59	44.91	45.69	48.50	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 19	0.00	0.00	0.00	0.00	0.00	0.00	46.49	46.23	45.92	45.63	45.37	45.13	44.96	44.85	44.74
	44.65	44.56	44.48	44.40	44.34	44.30	44.26	44.23	44.20	44.20	44.23	44.27	44.31	44.34	44.36
	44.38	44.40	44.42	44.45	44.50	44.56	44.56	44.88	45.67	48.16	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 20	0.00	0.00	0.00	0.00	0.00	0.00	46.49	46.22	45.91	45.62	45.36	45.12	44.94	44.83	44.72
	44.63	44.54	44.46	44.38	44.33	44.28	44.25	44.21	44.19	44.18	44.21	44.26	44.29	44.31	44.34
	44.36	44.38	44.40	44.43	44.47	44.53	44.63	44.84	45.65	47.86	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.22	45.89	45.61	45.35	45.10	44.93	44.81	44.70
	44.61	44.52	44.44	44.36	44.31	44.27	44.23	44.20	44.17	44.17	44.20	44.24	44.27	44.29	44.31
	44.33	44.35	44.37	44.41	44.45	44.50	44.60	44.81	45.64	47.58	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.21	45.88	45.59	45.32	45.07	44.90	44.78	44.67
	44.57	44.49	44.41	44.33	44.28	44.24	44.21	44.18	44.15	44.15	44.17	44.22	44.24	44.26	44.28
	44.30	44.32	44.34	44.37	44.41	44.46	44.55	44.75	45.64	47.22	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

APPENDIX B - (Continued)

0 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.84	45.56	45.29	45.04	44.86	44.73	44.62
	44.52	44.43	44.36	44.29	44.23	44.20	44.17	44.14	44.12	44.12	44.13	44.18	44.20	44.22	44.23
	44.25	44.27	44.29	44.31	44.35	44.40	44.47	44.65	45.57	46.77	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.81	45.53	45.25	45.00	44.81	44.67	44.55
	44.46	44.37	44.30	44.23	44.18	44.15	44.12	44.10	44.08	44.07	44.09	44.13	44.15	44.16	44.18
	44.19	44.21	44.23	44.25	44.28	44.32	44.39	44.55	45.47	46.39	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.78	45.49	45.20	44.94	44.72	44.57	44.46
	44.36	44.28	44.20	44.14	44.10	44.07	44.05	44.03	44.00	43.99	44.02	44.05	44.07	44.08	44.09
	44.11	44.12	44.14	44.16	44.18	44.22	44.28	44.41	45.30	45.96	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.75	45.43	45.11	44.81	44.56	44.43	44.32
	44.22	44.13	44.07	44.02	43.99	43.96	43.94	43.91	43.87	43.89	43.92	43.95	43.96	43.97	43.98
	43.99	44.00	44.01	44.03	44.05	44.08	44.13	44.25	45.04	45.62	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.36	45.02	44.69	44.45	44.32	44.21
	44.11	44.01	43.95	43.91	43.89	43.88	43.86	43.82	43.80	43.82	43.84	43.86	43.87	43.88	43.89
	43.90	43.91	43.91	43.93	43.95	43.97	44.02	44.13	44.86	45.52	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.33	44.95	44.62	44.37	44.24	44.13
	44.03	43.95	43.89	43.85	43.83	43.82	43.79	43.75	43.74	43.76	43.78	43.80	43.81	43.82	43.82
	43.83	43.84	43.85	43.86	43.88	43.90	43.94	44.05	44.73	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.31	44.88	44.53	44.30	44.17	44.06
	43.96	43.88	43.83	43.79	43.77	43.75	43.72	43.68	43.69	43.71	43.73	43.74	43.75	43.76	43.77
	43.77	43.78	43.79	43.80	43.82	43.84	43.87	43.98	44.62	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.31	44.83	44.47	44.24	44.12	44.01
	43.91	43.83	43.78	43.75	43.72	43.70	43.68	43.64	43.65	43.67	43.69	43.70	43.71	43.72	43.73
	43.73	43.74	43.75	43.76	43.78	43.80	43.83	43.93	44.55	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.30	44.80	44.43	44.20	44.08	43.98
	43.88	43.80	43.75	43.71	43.69	43.67	43.64	43.62	43.63	43.65	43.66	43.68	43.69	43.69	43.70
	43.71	43.71	43.72	43.73	43.75	43.77	43.80	43.90	44.50	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.76	44.39	44.16	44.04	43.94
	43.84	43.76	43.72	43.68	43.66	43.64	43.61	43.59	43.60	43.62	43.64	43.65	43.66	43.67	43.67
	43.68	43.69	43.69	43.70	43.72	43.74	43.77	43.86	44.45	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.73	44.35	44.11	44.00	43.91
	43.81	43.73	43.68	43.65	43.63	43.61	43.58	43.56	43.57	43.59	43.61	43.63	43.63	43.64	43.65
	43.65	43.66	43.67	43.68	43.69	43.71	43.74	43.83	44.40	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.70	44.31	44.07	43.96	43.87
	43.76	43.69	43.64	43.61	43.59	43.57	43.55	43.53	43.55	43.57	43.59	43.60	43.61	43.61	43.62
	43.63	43.63	43.64	43.65	43.67	43.68	43.71	43.80	44.35	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

0 35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.67	44.26	44.03	43.92	43.82
	43.72	43.65	43.61	43.57	43.55	43.53	43.51	43.50	43.52	43.54	43.56	43.57	43.58	43.59	43.59
	43.60	43.61	43.61	43.62	43.64	43.66	43.69	43.77	44.30	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.63	44.19	43.96	43.84	43.75
	43.65	43.59	43.55	43.52	43.50	43.47	43.45	43.46	43.48	43.50	43.52	43.53	43.54	43.55	43.55
	43.56	43.57	43.57	43.58	43.60	43.62	43.65	43.73	44.23	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.58	44.07	43.85	43.73	43.62
	43.52	43.49	43.46	43.43	43.41	43.38	43.37	43.38	43.40	43.43	43.45	43.47	43.48	43.49	43.49
	43.50	43.51	43.51	43.52	43.54	43.56	43.58	43.66	44.12	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.54	43.92	43.70	43.58	43.47
	43.38	43.37	43.35	43.33	43.31	43.30	43.28	43.30	43.33	43.36	43.38	43.40	43.41	43.42	43.43
	43.43	43.44	43.45	43.46	43.47	43.49	43.52	43.58	43.97	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.64	43.44	43.31	43.20
	43.14	43.16	43.17	43.16	43.15	43.14	43.16	43.19	43.23	43.26	43.28	43.30	43.31	43.32	43.32
	43.33	43.34	43.35	43.36	43.37	43.39	43.41	43.48	43.83	44.65	46.33	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.27	43.05	42.91	42.79
	42.74	42.76	42.81	42.85	42.87	42.91	42.97	43.02	43.08	43.11	43.14	43.15	43.17	43.18	43.18
	43.19	43.20	43.21	43.22	43.23	43.25	43.28	43.32	43.62	44.27	45.82	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.76	42.42	42.26	42.13
	42.08	42.07	42.11	42.21	42.34	42.48	42.62	42.73	42.82	42.87	42.90	42.93	42.94	42.95	42.96
	42.97	42.98	42.99	43.00	43.02	43.04	43.07	43.13	43.32	43.72	45.25	47.90	0.00	0.00	0.00
	0.00	0.00	0.00												
0 42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.76	41.29	41.18	41.08
	41.00	40.94	40.94	41.19	41.50	41.77	42.01	42.22	42.39	42.49	42.55	42.59	42.62	42.63	42.65
	42.67	42.68	42.70	42.72	42.74	42.77	42.81	42.86	43.03	43.34	44.42	46.74	0.00	0.00	0.00
	0.00	0.00	0.00												
0 43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.61	40.10	39.98	39.98
	39.89	39.57	38.77	39.87	40.64	41.14	41.51	41.79	42.01	42.13	42.20	42.26	42.29	42.32	42.34
	42.36	42.38	42.40	42.43	42.46	42.49	42.54	42.59	42.72	42.99	43.43	45.65	0.00	0.00	0.00
	0.00	0.00	0.00												
0 44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.78	38.83	38.09	39.29
	39.77	39.96	40.08	40.40	40.73	41.05	41.33	41.58	41.77	41.88	41.95	42.00	42.04	42.06	42.08
	42.10	42.12	42.14	42.17	42.20	42.23	42.27	42.31	42.38	42.60	43.01	44.90	0.00	0.00	0.00
	0.00	0.00	0.00												
0 45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.80	39.45	39.50	39.80
	40.11	40.33	40.50	40.70	40.91	41.11	41.31	41.49	41.64	41.72	41.77	41.81	41.84	41.85	41.87
	41.88	41.90	41.91	41.93	41.96	41.98	42.00	42.02	42.02	42.21	42.59	44.30	0.00	0.00	0.00
	0.00	0.00	0.00												
0 46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40.52	40.61	40.72	40.88	41.06	41.21	41.35	41.47	41.57	41.63	41.67	41.69	41.71	41.72	41.72
	41.73	41.74	41.74	41.75	41.76	41.76	41.74	41.69	41.55	41.75	42.15	44.07	46.48	48.36	0.00
	0.00	0.00	0.00												

0 47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	41.30	41.36	41.43	41.50	41.56	41.59	41.61	41.63	41.64	41.64	41.64
	41.65	41.65	41.65	41.65	41.65	41.64	41.62	41.57	41.47	41.28	41.69	43.52	45.84	47.63	0.00
	0.00	0.00	0.00												
0 48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	41.48	41.50	41.53	41.56	41.58	41.60	41.60	41.61	41.61	41.61
	41.61	41.61	41.61	41.61	41.61	41.60	41.58	41.53	41.44	41.23	41.29	43.11	45.33	47.11	0.00
	0.00	0.00	0.00												

HEAD IN LAYER 3 AT END OF TIME STEP 1 IN STRESS PERIOD 1

	1 16 31 46	2 17 32 47	3 18 33 48	4 19 34	5 20 35	6 21 36	7 22 37	8 23 38	9 24 39	10 25 40	11 26 41	12 27 42	13 28 43	14 29 44	15 30 45
0 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	46.22	46.17	46.14	46.11	46.11	46.19	46.29	46.42	46.53	46.61	46.67	46.71	46.73	46.74
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.28
	46.22	46.18	46.13	46.09	46.06	46.05	46.13	46.24	46.37	46.48	46.56	46.63	46.67	46.68	46.70
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.25	46.20
	46.15	46.10	46.05	46.01	45.97	45.95	46.03	46.13	46.26	46.38	46.46	46.54	46.59	46.62	46.65
	46.67	46.69	46.71	46.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.21	46.15	46.10
	46.05	45.99	45.94	45.89	45.85	45.83	45.89	45.98	46.10	46.21	46.29	46.37	46.41	46.44	46.47
	46.50	46.52	46.53	46.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.08	46.02	45.96
	45.90	45.84	45.78	45.73	45.67	45.63	45.64	45.74	45.86	45.97	46.05	46.13	46.17	46.20	46.23
	46.25	46.27	46.29	46.31	46.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.07	45.94	45.88	45.80
	45.73	45.67	45.61	45.55	45.49	45.45	45.43	45.52	45.63	45.73	45.80	45.87	45.91	45.93	45.95
	45.97	45.99	46.01	46.03	46.06	46.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.93	45.79	45.72	45.64
	45.59	45.52	45.46	45.39	45.33	45.28	45.26	45.34	45.44	45.54	45.60	45.66	45.70	45.72	45.74
	45.76	45.78	45.80	45.82	45.85	45.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

0 8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.77	45.63	45.55	45.49
	45.43	45.36	45.29	45.22	45.15	45.10	45.06	45.13	45.23	45.32	45.38	45.44	45.47	45.50	45.52
	45.53	45.55	45.57	45.59	45.62	45.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.82	45.61	45.47	45.41	45.33
	45.26	45.18	45.10	45.02	44.95	44.89	44.85	44.91	44.99	45.08	45.14	45.19	45.23	45.26	45.28
	45.30	45.32	45.35	45.38	45.42	45.46	45.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.92	45.68	45.46	45.34	45.25	45.16
	45.08	45.00	44.92	44.84	44.76	44.69	44.65	44.66	44.73	44.81	44.86	44.91	44.95	44.97	45.00
	45.03	45.05	45.08	45.11	45.16	45.22	45.29	45.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.84	45.59	45.36	45.23	45.14	45.05
	44.97	44.89	44.80	44.72	44.65	44.59	44.55	44.53	44.57	44.63	44.68	44.73	44.76	44.78	44.80
	44.82	44.85	44.88	44.92	44.97	45.03	45.11	45.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.78	45.53	45.30	45.16	45.07	44.98
	44.89	44.80	44.72	44.64	44.57	44.51	44.47	44.45	44.46	44.51	44.55	44.60	44.63	44.65	44.67
	44.69	44.72	44.75	44.79	44.85	44.91	45.01	45.19	45.72	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.73	45.48	45.26	45.11	45.00	44.91
	44.82	44.74	44.66	44.58	44.51	44.45	44.41	44.38	44.39	44.42	44.46	44.50	44.54	44.56	44.58
	44.60	44.62	44.65	44.69	44.75	44.82	44.93	45.12	45.65	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.70	45.45	45.23	45.06	44.96	44.87
	44.78	44.69	44.61	44.53	44.46	44.41	44.37	44.35	44.35	44.37	44.40	44.44	44.47	44.49	44.51
	44.53	44.56	44.59	44.63	44.69	44.75	44.86	45.06	45.59	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.67	45.42	45.19	45.03	44.92	44.83
	44.74	44.65	44.57	44.49	44.42	44.38	44.34	44.31	44.31	44.33	44.36	44.39	44.42	44.44	44.46
	44.48	44.50	44.53	44.57	44.63	44.69	44.81	45.01	45.54	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.66	45.41	45.17	45.00	44.89	44.80
	44.71	44.62	44.54	44.46	44.40	44.35	44.31	44.29	44.29	44.31	44.33	44.36	44.38	44.40	44.42
	44.44	44.46	44.49	44.53	44.59	44.65	44.76	44.96	45.51	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.65	45.39	45.15	44.99	44.88	44.78
	44.69	44.60	44.52	44.44	44.38	44.34	44.30	44.27	44.27	44.29	44.31	44.34	44.36	44.38	44.40
	44.42	44.44	44.46	44.50	44.56	44.63	44.74	44.94	45.49	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.64	45.38	45.14	44.97	44.86	44.76
	44.67	44.58	44.50	44.42	44.36	44.32	44.28	44.26	44.25	44.27	44.29	44.32	44.34	44.36	44.38
	44.39	44.42	44.44	44.48	44.53	44.60	44.71	44.91	45.48	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.62	45.37	45.12	44.95	44.84	44.74
	44.65	44.56	44.48	44.40	44.34	44.30	44.27	44.24	44.24	44.25	44.27	44.30	44.32	44.34	44.35
	44.37	44.39	44.42	44.45	44.50	44.57	44.67	44.88	45.47	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

0 20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.61	45.35	45.11	44.94	44.83	44.73
	44.62	44.54	44.46	44.38	44.32	44.28	44.25	44.23	44.22	44.24	44.25	44.28	44.30	44.31	44.33
	44.35	44.37	44.39	44.43	44.48	44.54	44.64	44.85	45.46	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.60	45.34	45.09	44.92	44.81	44.71
	44.60	44.52	44.44	44.36	44.31	44.27	44.23	44.21	44.20	44.22	44.24	44.26	44.28	44.29	44.31
	44.33	44.35	44.37	44.40	44.45	44.51	44.61	44.81	45.45	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.58	45.32	45.07	44.90	44.78	44.67
	44.57	44.48	44.40	44.33	44.28	44.24	44.21	44.18	44.18	44.19	44.21	44.23	44.25	44.26	44.28
	44.29	44.31	44.33	44.37	44.41	44.47	44.55	44.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.56	45.29	45.04	44.86	44.73	44.61
	44.51	44.43	44.35	44.29	44.23	44.20	44.17	44.14	44.14	44.15	44.16	44.18	44.20	44.21	44.23
	44.24	44.26	44.28	44.31	44.35	44.40	44.48	44.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.25	45.00	44.80	44.66	44.55
	44.45	44.37	44.30	44.23	44.18	44.15	44.12	44.10	44.09	44.10	44.12	44.13	44.15	44.16	44.17
	44.18	44.20	44.22	44.25	44.28	44.33	44.39	44.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.20	44.94	44.70	44.56	44.45
	44.36	44.28	44.21	44.14	44.10	44.07	44.05	44.03	44.02	44.03	44.04	44.06	44.07	44.08	44.09
	44.10	44.11	44.13	44.15	44.18	44.22	44.27	44.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.80	44.54	44.42	44.32
	44.23	44.14	44.07	44.02	43.98	43.96	43.93	43.91	43.91	43.92	43.93	43.95	43.96	43.96	43.97
	43.98	43.99	44.00	44.02	44.05	44.08	44.12	44.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.69	44.44	44.31	44.21
	44.11	44.03	43.97	43.92	43.89	43.87	43.85	43.83	43.82	43.83	43.84	43.86	43.87	43.87	43.88
	43.89	43.90	43.91	43.93	43.95	43.97	44.01	44.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.63	44.37	44.25	44.14
	44.04	43.96	43.90	43.86	43.83	43.81	43.78	43.76	43.76	43.77	43.78	43.80	43.81	43.81	43.82
	43.82	43.83	43.84	43.86	43.88	43.90	43.94	44.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.30	44.18	44.07
	43.97	43.89	43.84	43.80	43.77	43.75	43.73	43.71	43.70	43.72	43.73	43.74	43.75	43.76	43.76
	43.77	43.78	43.79	43.80	43.82	43.84	43.87	43.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.25	44.13	44.03
	43.93	43.84	43.80	43.76	43.73	43.71	43.69	43.67	43.67	43.68	43.69	43.70	43.71	43.72	43.73
	43.73	43.74	43.75	43.76	43.78	43.80	43.83	43.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.23	44.10	44.00
	43.90	43.81	43.76	43.73	43.71	43.69	43.67	43.64	43.64	43.65	43.66	43.68	43.69	43.69	43.70
	43.71	43.71	43.72	43.73	43.75	43.77	43.80	43.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

0 32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.07	43.97
	43.87	43.77	43.73	43.70	43.68	43.67	43.64	43.62	43.61	43.63	43.64	43.65	43.66	43.66	43.67
	43.68	43.69	43.69	43.70	43.72	43.74	43.77	43.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.03	43.93
	43.83	43.74	43.69	43.66	43.64	43.63	43.61	43.59	43.59	43.60	43.61	43.62	43.63	43.64	43.64
	43.65	43.66	43.67	43.68	43.69	43.71	43.74	43.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.00	43.90
	43.78	43.71	43.65	43.62	43.60	43.59	43.58	43.56	43.56	43.57	43.58	43.60	43.60	43.61	43.62
	43.62	43.63	43.64	43.65	43.67	43.69	43.71	43.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.85
	43.74	43.68	43.61	43.58	43.56	43.54	43.53	43.52	43.53	43.54	43.56	43.57	43.58	43.58	43.59
	43.60	43.60	43.61	43.62	43.64	43.66	43.69	43.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.79
	43.68	43.61	43.56	43.53	43.50	43.48	43.47	43.48	43.49	43.50	43.52	43.53	43.54	43.54	43.55
	43.56	43.56	43.57	43.58	43.60	43.62	43.64	43.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	43.54	43.50	43.48	43.45	43.41	43.39	43.39	43.40	43.42	43.44	43.45	43.47	43.47	43.48	43.49
	43.49	43.50	43.51	43.52	43.54	43.56	43.58	43.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	43.40	43.39	43.38	43.34	43.30	43.29	43.29	43.33	43.35	43.37	43.38	43.40	43.40	43.41	43.42
	43.43	43.43	43.44	43.45	43.47	43.49	43.51	43.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	43.17	43.17	43.16	43.14	43.14	43.16	43.20	43.24	43.26	43.28	43.29	43.30	43.31	43.31
	43.32	43.33	43.34	43.35	43.37	43.38	43.41	43.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	42.83	42.89	42.89	42.90	42.96	43.02	43.08	43.12	43.14	43.15	43.16	43.17	43.17
	43.18	43.19	43.20	43.21	43.23	43.25	43.27	43.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	42.36	42.48	42.60	42.72	42.81	42.86	42.89	42.92	42.93	42.94	42.95
	42.96	42.97	42.98	43.00	43.02	43.04	43.07	43.13	43.30	43.63	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	41.54	41.79	42.01	42.22	42.39	42.48	42.53	42.58	42.60	42.62	42.63
	42.65	42.67	42.68	42.71	42.74	42.77	42.81	42.87	43.03	43.32	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	37.71	39.77	40.66	41.14	41.51	41.80	42.01	42.13	42.20	42.25	42.28	42.30	42.32
	42.34	42.37	42.39	42.42	42.45	42.48	42.54	42.60	42.73	42.99	43.33	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

APPENDIX B - (Continued)

0 44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	39.99	40.06	40.42	40.74	41.05	41.33	41.58	41.78	41.88	41.94	42.00	42.03	42.05	42.07
	42.09	42.11	42.13	42.16	42.19	42.22	42.26	42.31	42.39	42.61	42.95	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	40.35	40.51	40.71	40.91	41.11	41.31	41.49	41.64	41.72	41.77	41.81	41.83	41.85	41.86
	41.88	41.89	41.91	41.93	41.95	41.97	42.00	42.01	42.03	42.22	42.54	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	40.62	40.72	40.88	41.07	41.21	41.35	41.47	41.57	41.64	41.67	41.69	41.70	41.71	41.72
	41.73	41.73	41.74	41.75	41.76	41.76	41.74	41.69	41.58	41.77	42.10	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	41.30	41.36	41.44	41.50	41.56	41.59	41.61	41.63	41.64	41.64	41.64
	41.64	41.65	41.65	41.65	41.65	41.65	41.63	41.57	41.47	41.33	41.66	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	41.48	41.50	41.53	41.56	41.58	41.59	41.60	41.61	41.61	41.61
	41.61	41.61	41.61	41.61	41.61	41.60	41.58	41.53	41.44	41.25	41.32	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

HEAD WILL BE SAVED ON UNIT 12 AT END OF TIME STEP 1, STRESS PERIOD 1

DRAWDOWN IN LAYER 1 AT END OF TIME STEP 1 IN STRESS PERIOD 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
	46	47	48												
0 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.57	1.21	0.82	0.42	0.42	0.48	0.54
	0.61	0.77	0.82	0.96	1.10	1.17	1.02	0.91	0.68	0.54	0.33	0.23	0.14	0.08	0.01
	-0.06	-0.13	-0.20	-0.23	0.59	1.14	1.87	4.37	7.36	5.91	2.99	2.39	3.24	1.32	3.93
	0.00	0.00	0.00												
0 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.57	1.24	0.85	0.56	0.46	0.33	0.50
	0.46	0.51	0.56	0.60	0.65	0.74	0.58	0.47	0.33	0.19	-0.02	-0.03	-0.42	-0.28	-0.06
	-0.04	0.08	0.32	0.81	1.44	1.80	2.53	4.18	7.61	6.12	3.12	2.88	3.64	1.26	5.46
	0.00	0.00	0.00												
0 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.49	1.27	0.92	0.55	0.45	0.42	0.38
	0.34	0.29	0.34	0.39	0.34	0.46	0.29	0.17	0.13	0.10	0.20	0.19	0.12	0.16	0.20
	0.43	0.67	0.91	1.30	1.73	1.89	2.22	3.18	5.38	6.22	2.98	0.19	1.88	-1.76	1.83
	4.16	0.00	0.00												
0 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	1.37	0.82	0.55	0.47	0.43	0.39
	0.34	0.30	0.25	0.20	0.15	0.23	0.22	0.23	0.20	0.27	0.37	0.38	0.41	0.46	0.50
	0.64	0.78	1.02	1.11	1.25	1.35	1.42	2.57	3.69	3.90	2.20	-1.71	-4.28	-3.57	-3.63
	3.52	4.17	0.00												

APPENDIX B - (Continued)

0 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.51	1.22	0.63	0.57	0.49	0.46	0.42
	0.39	0.35	0.41	0.27	0.33	0.30	0.34	0.28	0.33	0.40	0.41	0.53	0.57	0.64	0.69
	0.74	0.80	0.84	1.04	1.19	1.30	1.36	1.80	3.69	3.41	1.35	-3.30	-6.89	-4.76	-8.71
	5.13	5.36	0.00												
0 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.44	1.41	0.71	0.54	0.51	0.54	0.51	0.58
	0.55	0.51	0.47	0.44	0.50	0.47	0.62	0.42	0.37	0.35	0.36	0.59	0.64	0.81	0.87
	0.93	0.99	1.05	1.17	1.24	1.47	1.55	1.71	4.12	3.78	0.35	-4.43	-7.38	-7.37	-7.55
	6.35	7.84	0.00												
0 7	0.00	0.00	0.00	0.00	0.00	0.00	3.38	1.48	0.87	0.39	0.46	0.55	0.58	0.56	0.63
	0.60	0.56	0.63	0.60	0.66	0.73	0.77	0.50	0.36	0.25	0.27	0.40	0.56	0.63	0.70
	0.86	0.93	0.99	1.12	1.30	1.43	1.52	1.78	3.03	4.14	0.35	-4.42	-7.77	-7.04	-4.77
	-3.51	7.47	9.95												
0 8	0.00	0.00	0.00	0.00	5.98	4.55	3.41	1.33	0.74	0.40	0.49	0.61	0.64	0.72	0.69
	0.66	0.63	0.70	0.77	0.74	0.51	0.61	0.28	0.26	0.15	0.18	0.22	0.18	0.25	0.33
	0.39	0.36	0.43	0.46	0.76	1.01	1.01	1.00	0.99	5.81	1.46	-3.57	-7.15	-6.72	-5.78
	-3.33	0.00	6.60												
0 9	0.00	0.00	0.00	0.00	6.49	4.92	3.42	1.28	0.62	0.51	0.46	0.67	0.70	0.78	0.75
	0.83	0.91	0.99	1.07	0.64	0.32	0.45	0.13	0.09	0.09	0.02	0.05	0.01	-0.01	-0.03
	-0.05	0.03	0.01	0.08	0.12	0.14	0.29	0.74	0.87	6.26	2.10	-2.84	-5.81	-5.24	-4.42
	-3.00	3.89	5.80												
0 10	0.00	0.00	0.00	0.00	6.29	5.09	3.47	1.33	0.62	0.45	0.40	0.51	0.65	0.73	0.82
	0.91	0.99	0.97	0.56	0.14	0.23	0.37	0.37	-0.05	-0.10	-0.18	-0.25	-0.30	-0.33	-0.25
	-0.27	-0.29	-0.31	-0.33	-0.27	-0.13	0.25	1.26	3.92	6.17	2.97	-1.59	-4.15	-3.31	-2.20
	1.02	4.79	5.40												
0 11	0.00	0.00	0.00	0.00	6.14	5.09	3.48	1.38	0.60	0.35	0.39	0.41	0.55	0.64	0.63
	0.62	0.61	0.49	0.27	0.14	0.13	-0.06	0.12	-0.02	-0.21	-0.33	-0.33	-0.39	-0.42	-0.45
	-0.47	-0.39	-0.41	-0.44	-0.28	-0.13	0.49	1.38	6.17	6.01	3.03	-0.91	-2.82	-3.07	-2.00
	2.81	5.08	5.11												
0 12	0.00	0.00	0.00	0.00	6.00	5.07	3.49	1.51	0.65	0.30	0.25	0.37	0.42	0.52	0.51
	0.50	0.49	0.37	0.15	0.13	0.10	-0.05	-0.04	0.05	-0.08	-0.24	-0.33	-0.44	-0.38	-0.41
	-0.34	-0.36	-0.28	-0.22	-0.16	-0.11	0.19	1.27	5.55	6.18	3.08	-0.75	-2.54	-3.03	-1.89
	2.95	4.93	4.73												
0 13	0.00	0.00	0.00	0.00	5.80	5.02	3.49	1.53	0.58	0.25	0.20	0.31	0.37	0.48	0.48
	0.47	0.35	0.23	0.12	-0.01	-0.05	-0.09	-0.12	-0.11	-0.04	-0.18	-0.30	-0.42	-0.37	-0.40
	-0.33	-0.36	-0.28	-0.22	-0.26	-0.21	-0.01	1.09	5.16	6.76	3.29	-0.42	-2.19	-2.75	-1.38
	3.73	4.93	4.58												
0 14	0.00	0.00	0.00	0.00	5.63	4.96	3.50	1.64	0.61	0.29	0.23	0.35	0.41	0.42	0.42
	0.41	0.29	0.18	0.06	-0.07	-0.12	-0.06	-0.09	-0.22	0.03	0.01	-0.30	-0.34	-0.40	-0.33
	-0.37	-0.39	-0.32	-0.35	-0.29	-0.14	-0.04	1.07	3.96	6.80	3.38	-0.44	-2.33	-2.94	-1.66
	3.03	4.79	4.39												
0 15	0.00	0.00	0.00	0.00	5.48	4.91	3.50	1.75	0.63	0.31	0.26	0.28	0.35	0.36	0.46
	0.35	0.24	0.02	0.01	-0.03	-0.08	-0.23	-0.17	-0.21	0.04	0.01	-0.26	-0.38	-0.44	-0.47
	-0.41	-0.44	-0.36	-0.30	-0.24	-0.18	0.02	0.94	3.95	6.86	3.36	-0.39	-2.39	-3.08	-2.06
	2.57	4.33	4.39												
0 16	0.00	0.00	0.00	0.00	5.31	4.82	3.50	1.76	0.65	0.33	0.28	0.30	0.38	0.29	0.39
	0.28	0.17	0.05	-0.07	-0.10	-0.16	-0.21	-0.15	-0.19	-0.02	-0.09	-0.33	-0.45	-0.40	-0.44
	-0.37	-0.40	-0.42	-0.36	-0.30	-0.14	0.06	0.99	3.70	6.86	3.32	-0.41	-2.37	-3.20	-2.19
	2.32	4.16	4.36												

APPENDIX B - (Continued)

0 17	0.00	0.00	0.00	0.00	5.16	4.66	3.49	1.76	0.76	0.34	0.29	0.32	0.29	0.31	0.41
	0.20	0.09	-0.03	-0.15	-0.19	-0.24	-0.19	-0.24	-0.18	0.15	-0.02	-0.30	-0.43	-0.38	-0.41
	-0.44	-0.37	-0.40	-0.33	-0.27	-0.12	0.08	1.02	3.73	6.81	3.35	-0.52	-2.34	-3.32	-2.37
	1.98	3.98	4.42												
0 18	0.00	0.00	0.00	0.00	5.05	4.48	3.49	1.76	0.77	0.35	0.30	0.34	0.31	0.33	0.33
	0.22	0.11	-0.01	-0.13	-0.27	-0.22	-0.18	-0.23	-0.18	0.07	0.00	-0.28	-0.41	-0.46	-0.49
	-0.42	-0.45	-0.37	-0.30	-0.25	-0.09	0.12	0.94	3.75	6.83	3.28	-0.52	-2.33	-3.34	-2.37
	1.84	3.81	4.37												
0 19	0.00	0.00	0.00	0.00	4.96	4.33	3.47	1.77	0.78	0.36	0.22	0.25	0.33	0.35	0.25
	0.14	0.03	-0.09	-0.11	-0.25	-0.21	-0.26	-0.22	-0.16	0.10	-0.01	-0.27	-0.39	-0.44	-0.47
	-0.49	-0.42	-0.45	-0.38	-0.22	-0.06	0.16	0.88	3.67	6.74	3.21	-0.61	-2.41	-3.45	-2.58
	1.50	3.63	4.43												
0 20	0.00	0.00	0.00	0.00	4.90	4.19	3.45	1.77	0.79	0.47	0.23	0.27	0.34	0.37	0.27
	0.16	0.05	-0.16	-0.19	-0.23	-0.29	-0.24	-0.30	-0.15	0.11	-0.06	-0.26	-0.37	-0.42	-0.44
	-0.47	-0.40	-0.42	-0.35	-0.19	-0.03	0.09	0.82	3.80	6.64	3.22	-0.58	-2.39	-3.47	-2.78
	1.17	3.57	4.39												
0 21	0.00	0.00	0.00	0.00	4.88	4.07	3.42	1.77	0.90	0.48	0.35	0.29	0.36	0.28	0.30
	0.09	-0.03	-0.24	-0.27	-0.31	-0.27	-0.23	-0.19	-0.14	0.10	-0.05	-0.24	-0.35	-0.39	-0.42
	-0.45	-0.37	-0.40	-0.33	-0.17	-0.10	0.12	0.86	3.93	6.54	3.14	-0.64	-2.36	-3.60	-2.98
	0.94	3.40	4.36												
0 22	0.00	0.00	0.00	0.00	0.00	3.73	3.37	1.77	0.91	0.50	0.27	0.32	0.29	0.32	0.23
	0.12	-0.09	-0.21	-0.24	-0.28	-0.34	-0.30	-0.17	-0.23	-0.06	0.14	-0.21	-0.32	-0.36	-0.39
	-0.42	-0.34	-0.36	-0.29	-0.13	-0.06	0.16	0.82	4.06	6.34	3.15	-0.56	-2.29	-3.64	-2.71
	0.61	3.27	4.29												
0 23	0.00	0.00	0.00	0.00	0.00	3.24	3.26	1.76	1.04	0.53	0.40	0.36	0.32	0.26	0.28
	0.07	-0.14	-0.26	-0.29	-0.34	-0.30	-0.27	-0.23	-0.10	-0.11	0.05	-0.07	-0.27	-0.32	-0.34
	-0.37	-0.39	-0.30	-0.23	-0.17	0.00	0.13	0.82	4.26	6.10	2.97	-0.52	-2.17	-3.64	-2.86
	0.15	2.91	4.30												
0 24	0.00	0.00	0.00	0.00	0.00	2.83	3.13	1.74	1.16	0.66	0.34	0.39	0.28	0.33	0.24
	-0.07	-0.28	-0.30	-0.34	-0.39	-0.35	-0.23	-0.20	-0.16	-0.07	0.07	-0.13	-0.32	-0.26	-0.29
	-0.21	-0.23	-0.24	-0.17	-0.10	0.07	0.31	1.02	4.17	5.88	2.78	-0.54	-2.11	-3.66	-3.11
	-0.40	1.98	4.07												
0 25	0.00	0.00	0.00	0.00	0.00	2.31	2.48	1.70	1.70	0.91	0.49	0.46	0.37	0.33	0.14
	-0.07	-0.29	-0.31	-0.35	-0.41	-0.38	-0.27	-0.24	-0.10	0.25	0.08	-0.08	-0.15	-0.09	-0.10
	-0.12	-0.14	-0.15	-0.07	0.00	0.17	0.42	1.25	4.03	5.32	2.52	-0.61	-2.19	-3.75	-3.87
	-1.01	0.85	2.98												
0 26	0.00	0.00	0.00	0.00	0.00	3.96	3.81	3.60	2.22	1.17	0.68	0.59	0.43	0.27	-0.02
	-0.23	-0.34	-0.37	-0.42	-0.39	-0.37	-0.26	-0.18	0.13	0.17	0.04	0.07	0.03	0.02	-0.09
	-0.01	-0.02	-0.03	0.06	0.14	0.31	0.47	0.69	3.51	5.40	2.61	-0.49	-2.15	-3.28	-3.92
	-1.42	0.14	1.83												
0 27	0.00	0.00	0.00	0.00	0.00	0.00	3.28	3.48	2.29	1.42	0.77	0.60	0.54	0.28	0.00
	-0.20	-0.32	-0.36	-0.32	-0.30	-0.28	-0.24	0.04	0.12	0.03	0.08	0.04	0.02	0.01	0.10
	0.09	0.08	0.07	0.06	0.14	0.22	0.38	0.52	2.10	6.21	3.03	-0.07	-1.45	-2.30	-2.97
	-1.36	-0.48	1.51												
0 28	0.00	0.00	0.00	0.00	0.00	0.00	2.81	3.18	2.38	1.65	0.94	0.68	0.52	0.26	-0.01
	-0.12	-0.24	-0.30	-0.26	-0.33	-0.31	-0.17	0.15	0.11	0.06	0.02	0.10	0.09	0.08	0.07
	0.06	0.05	0.14	0.13	0.11	0.09	0.26	0.39	1.52	6.22	3.34	0.22	-0.87	-1.65	-2.31
	-1.28	-1.26	1.32												

APPENDIX B - (Continued)

0 29	0.00	0.00	0.00	0.00	0.00	0.00	2.50	2.62	2.15	1.87	1.01	0.76	0.60	0.24	0.05
	-0.16	-0.28	-0.23	-0.29	-0.27	-0.25	-0.10	0.07	0.05	0.10	0.08	0.06	0.15	0.14	0.14
	0.13	0.12	0.11	0.10	0.18	0.16	0.13	0.08	1.03	6.12	3.62	0.53	-0.53	-1.03	-1.31
	-1.22	-1.64	1.12												
0 30	0.00	0.00	0.00	0.00	0.00	0.00	2.38	2.27	2.12	1.97	1.16	0.82	0.56	0.31	0.00
	-0.21	-0.23	-0.28	-0.24	-0.22	-0.20	-0.15	0.09	0.08	0.15	0.13	0.11	0.09	0.09	0.08
	0.08	0.17	0.15	0.04	0.12	0.10	0.09	-0.06	0.50	6.03	3.97	0.72	-0.13	-0.67	-0.61
	-1.11	-1.73	1.01												
0 31	0.00	0.00	0.00	0.00	0.00	0.00	4.33	4.12	4.09	2.07	1.29	0.86	0.61	0.25	-0.06
	-0.17	-0.30	-0.25	-0.21	-0.19	-0.17	-0.11	0.10	0.11	0.07	0.15	0.13	0.12	0.11	0.11
	0.10	0.09	0.08	0.07	0.05	0.13	0.12	0.08	0.25	5.57	4.32	0.79	0.24	-0.23	-0.14
	-0.86	-1.49	1.01												
0 32	0.00	0.00	0.00	0.00	0.00	0.00	6.31	4.03	2.06	2.16	1.32	0.90	0.56	0.28	-0.03
	-0.14	-0.27	-0.21	-0.18	-0.26	-0.13	-0.07	0.12	0.12	0.09	0.17	0.05	0.14	0.13	0.13
	0.12	0.12	0.11	0.09	0.08	0.16	0.04	0.11	0.10	5.12	4.38	0.98	0.57	0.20	0.06
	-0.50	-1.43	1.13												
0 33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.98	4.03	2.26	1.44	0.94	0.61	0.32	0.01
	-0.10	-0.13	-0.18	-0.14	-0.22	-0.10	-0.02	0.13	0.14	0.11	0.09	0.08	0.07	0.06	0.15
	0.15	0.14	0.04	0.12	0.10	0.19	0.06	0.04	-0.04	4.58	4.46	1.20	0.91	0.64	0.30
	-0.21	-1.25	1.08												
0 34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.96	4.00	2.25	1.57	0.99	0.65	0.25	0.05
	-0.06	-0.09	-0.24	-0.11	-0.19	-0.17	0.05	0.14	0.16	0.13	0.12	0.10	0.09	0.08	0.08
	0.07	0.07	0.06	0.15	0.03	0.11	0.09	0.07	-0.19	4.25	4.57	1.45	1.07	0.82	0.56
	0.11	-1.19	1.10												
0 35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.92	2.33	1.70	1.03	0.69	0.29	-0.01
	-0.12	-0.05	-0.20	-0.07	-0.15	-0.13	0.09	0.15	0.09	0.16	0.14	0.12	0.11	0.11	0.10
	0.10	0.09	0.09	0.08	0.06	0.14	0.11	0.10	-0.24	4.02	4.81	1.65	1.34	1.13	0.86
	0.43	-1.07	1.10												
0 36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.43	2.18	1.74	1.10	0.74	0.44	0.15
	-0.05	0.01	-0.13	0.00	-0.10	-0.08	0.11	0.08	0.12	0.10	0.08	0.16	0.04	0.14	0.14
	0.13	0.03	0.12	0.11	0.10	0.08	0.05	0.05	-0.27	3.89	5.33	1.99	1.78	1.48	1.24
	0.86	-0.93	1.02												
0 37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.48	2.05	1.99	1.20	0.72	0.34	0.26
	0.05	0.01	-0.03	-0.01	-0.01	-0.01	0.07	0.16	0.19	0.16	0.14	0.12	0.10	0.10	0.09
	0.09	0.08	0.08	0.07	0.06	0.14	0.11	0.12	-0.27	3.47	5.88	2.54	2.16	1.96	1.85
	1.47	-0.58	0.37												
0 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.01	2.14	1.37	0.87	0.49	0.30
	0.18	0.12	-0.04	0.08	-0.02	-0.04	0.15	0.22	0.16	0.13	0.11	0.09	0.07	0.07	0.06
	0.05	0.05	0.04	0.04	0.12	0.11	0.18	0.22	-0.23	2.99	5.92	3.09	2.48	2.54	2.16
	1.99	-0.30	-0.16												
0 39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.13	2.53	1.63	0.95	0.68	0.48
	0.44	0.21	0.09	0.09	0.11	0.11	0.20	0.19	0.15	0.13	0.11	0.09	0.08	0.07	0.06
	0.05	0.05	0.04	0.13	0.12	0.11	0.28	0.32	-0.05	2.00	5.19	3.64	2.06	3.05	2.50
	2.27	0.00	-0.28												
0 40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.62	2.00	1.14	0.88	0.81
	0.76	0.49	0.34	0.31	0.33	0.23	0.19	0.22	0.19	0.17	0.15	0.13	0.12	0.11	0.10
	0.09	0.08	0.08	0.07	0.16	0.24	0.32	0.28	0.07	0.32	3.22	3.88	2.78	3.97	3.40
	2.90	0.44	-0.02												

0 41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76	2.64	1.57	1.34	1.27
	1.12	0.91	0.77	0.69	0.68	0.51	0.27	0.19	0.17	0.08	0.17	0.15	0.13	0.12	0.11
	0.11	0.10	0.09	0.18	0.16	0.25	0.32	0.27	0.36	0.03	1.39	2.93	3.81	5.32	4.53
	3.16	0.85	-0.23												
0 42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.60	4.13	2.69	2.31	1.92
	1.39	1.06	1.05	1.01	0.93	0.88	0.60	0.46	0.26	0.12	0.13	0.10	0.09	0.08	0.07
	0.08	0.17	0.17	0.16	0.14	0.22	0.29	0.34	0.37	0.44	1.63	3.11	4.14	5.95	5.70
	3.43	1.58	-0.81												
0 43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.22	6.56	4.28	3.00	1.60
	1.10	1.40	1.78	1.32	1.48	1.09	0.80	0.61	0.49	0.37	0.29	0.32	0.28	0.26	0.20
	0.18	0.16	0.14	0.23	0.22	0.29	0.26	0.41	0.47	0.81	2.98	5.33	4.99	5.20	6.60
	4.21	2.08	0.00												
0 44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.33	7.87	6.11	4.10	2.30
	1.53	1.34	1.40	1.50	1.39	1.06	0.86	0.72	0.63	0.51	0.44	0.48	0.44	0.42	0.40
	0.37	0.35	0.42	0.38	0.37	0.35	0.43	0.49	0.61	1.30	4.12	6.80	7.35	7.27	7.80
	5.18	1.84	0.00												
0 45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.48	8.07	6.02	3.36	2.53
	2.19	1.87	1.79	1.70	1.40	1.29	1.18	0.91	0.96	0.77	0.72	0.78	0.85	0.84	0.92
	0.90	0.89	0.97	0.85	0.72	0.60	0.58	0.77	0.89	1.98	4.75	6.84	6.64	8.91	9.21
	7.54	0.00	0.00												
0 46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.07	2.19	2.17	2.22	2.04	1.89	1.75	1.53	1.32	1.16	1.03	1.00	0.99	0.98	0.97
	0.96	0.96	0.85	0.84	0.94	1.04	1.05	1.03	1.26	2.56	4.99	5.27	4.93	10.04	9.98
	8.70	0.00	0.00												
0 47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	2.29	2.33	2.36	2.30	2.14	2.10	1.98	1.87	1.86	1.85	1.75
	1.75	1.75	1.65	1.64	1.55	1.45	1.37	1.33	1.44	2.56	4.91	5.56	5.04	8.95	9.22
	8.25	0.00	0.00												
0 48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	8.51	6.49	4.26	2.73	3.91	3.30	2.89	2.69	2.49	2.38
	2.28	2.18	2.08	1.99	1.79	1.70	1.52	1.46	1.56	1.97	4.29	5.09	4.87	7.50	7.85
	6.87	0.00	0.00												

DRAWDOWN IN LAYER 2 AT END OF TIME STEP 1 IN STRESS PERIOD 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
	46	47	48												
0 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.82	0.43	0.42	0.49	0.55
	0.61	0.78	0.82	0.96	1.09	1.11	1.02	0.91	0.69	0.57	0.37	0.28	0.21	0.16	0.10
	0.02	-0.05	-0.11	-0.17	0.59	1.12	1.88	4.49	9.15	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.26	0.86	0.57	0.47	0.34	0.51
	0.47	0.52	0.56	0.61	0.64	0.67	0.57	0.46	0.34	0.22	0.02	0.02	-0.35	-0.20	0.04
	0.05	0.18	0.42	0.87	1.44	1.78	2.54	4.29	9.15	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

0 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.32	0.93	0.55	0.46	0.44	0.40
	0.35	0.29	0.34	0.39	0.34	0.37	0.28	0.17	0.14	0.13	0.22	0.23	0.17	0.23	0.29
	0.55	0.80	1.06	1.44	1.76	1.88	2.24	3.29	6.84	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.42	0.83	0.56	0.48	0.44	0.40
	0.35	0.31	0.26	0.21	0.15	0.18	0.22	0.22	0.21	0.30	0.40	0.41	0.46	0.52	0.58
	0.74	0.90	1.16	1.25	1.29	1.34	1.42	2.68	5.11	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.56	1.23	0.63	0.58	0.51	0.47	0.43
	0.39	0.35	0.41	0.27	0.33	0.28	0.27	0.26	0.34	0.43	0.43	0.55	0.59	0.67	0.75
	0.82	0.90	0.98	1.18	1.31	1.31	1.37	1.91	5.13	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.47	1.42	0.71	0.54	0.53	0.55	0.52	0.59
	0.56	0.52	0.48	0.45	0.51	0.46	0.51	0.40	0.37	0.37	0.38	0.60	0.66	0.84	0.92
	1.00	1.07	1.16	1.28	1.36	1.59	1.57	1.81	5.58	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 7	0.00	0.00	0.00	0.00	0.00	0.00	3.42	1.49	0.88	0.40	0.46	0.56	0.60	0.57	0.65
	0.61	0.57	0.64	0.61	0.67	0.72	0.67	0.48	0.36	0.27	0.29	0.42	0.57	0.66	0.74
	0.92	1.00	1.08	1.21	1.40	1.54	1.54	1.89	4.39	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 8	0.00	0.00	0.00	0.00	0.00	0.00	3.42	1.33	0.75	0.40	0.50	0.62	0.66	0.73	0.70
	0.67	0.64	0.71	0.78	0.75	0.51	0.48	0.28	0.27	0.18	0.20	0.24	0.20	0.28	0.36
	0.44	0.43	0.51	0.55	0.85	1.13	1.04	1.10	2.30	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 9	0.00	0.00	0.00	0.00	0.00	0.00	3.45	1.29	0.63	0.52	0.47	0.68	0.71	0.79	0.76
	0.84	0.92	0.99	1.07	0.65	0.31	0.07	0.10	0.11	0.13	0.05	0.08	0.04	0.02	0.00
	-0.02	0.06	0.04	0.11	0.16	0.20	0.39	0.90	1.95	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	14.20	17.60												
0 10	0.00	0.00	0.00	0.00	0.00	5.12	3.49	1.34	0.62	0.47	0.41	0.52	0.66	0.74	0.83
	0.91	0.99	0.98	0.56	0.14	0.03	-0.01	0.00	-0.11	-0.09	-0.17	-0.24	-0.28	-0.30	-0.22
	-0.24	-0.27	-0.29	-0.32	-0.27	-0.13	0.29	1.42	4.02	7.68	0.00	0.00	-4.23	-3.22	-1.98
	6.32	14.09	16.40												
0 11	0.00	0.00	0.00	0.00	0.00	5.12	3.49	1.39	0.61	0.36	0.40	0.43	0.56	0.65	0.64
	0.63	0.61	0.49	0.28	0.15	0.12	-0.13	-0.18	-0.22	-0.29	-0.36	-0.34	-0.38	-0.40	-0.42
	-0.44	-0.37	-0.39	-0.42	-0.27	-0.13	0.49	1.47	6.18	6.02	3.03	-0.83	-2.80	-3.04	-1.88
	7.69	13.94	15.71												
0 12	0.00	0.00	0.00	0.00	0.00	5.10	3.50	1.52	0.65	0.31	0.26	0.38	0.43	0.53	0.52
	0.51	0.49	0.37	0.16	0.13	0.09	-0.06	-0.12	-0.29	-0.33	-0.41	-0.39	-0.45	-0.37	-0.39
	-0.31	-0.34	-0.26	-0.20	-0.15	-0.11	0.20	1.32	5.74	6.13	3.09	-0.69	-2.51	-3.00	-1.78
	7.66	13.56	0.00												
0 13	0.00	0.00	0.00	0.00	0.00	5.07	3.51	1.53	0.59	0.26	0.21	0.33	0.39	0.49	0.48
	0.47	0.36	0.24	0.12	-0.01	-0.05	-0.11	-0.16	-0.24	-0.34	-0.39	-0.38	-0.44	-0.36	-0.39
	-0.31	-0.34	-0.26	-0.20	-0.25	-0.21	-0.01	1.13	5.31	6.71	3.31	-0.35	-2.16	-2.71	-1.25
	0.00	0.00	0.00												
0 14	0.00	0.00	0.00	0.00	0.00	0.00	3.51	1.64	0.61	0.29	0.24	0.36	0.43	0.43	0.43
	0.42	0.30	0.19	0.07	-0.06	-0.11	-0.07	-0.12	-0.29	-0.30	-0.34	-0.41	-0.36	-0.39	-0.32
	-0.34	-0.37	-0.29	-0.33	-0.29	-0.15	-0.04	1.10	4.10	6.77	3.40	-0.35	-2.31	-2.89	-1.46
	0.00	0.00	0.00												

0 15	0.00	0.00	0.00	0.00	0.00	0.00	3.52	1.75	0.64	0.32	0.27	0.30	0.36	0.37	0.47
	0.36	0.25	0.03	0.01	-0.02	-0.38	-0.23	-0.19	-0.26	-0.27	-0.30	-0.36	-0.41	-0.43	-0.46
	-0.38	-0.40	-0.33	-0.27	-0.23	-0.19	0.02	0.98	4.08	6.85	3.39	-0.22	0.00	0.00	0.00
	0.00	0.00	0.00												
0 16	0.00	0.00	0.00	0.00	0.00	0.00	3.52	1.76	0.65	0.34	0.29	0.32	0.39	0.30	0.40
	0.29	0.18	0.06	-0.06	-0.10	-0.15	-0.21	-0.17	-0.24	-0.34	-0.38	-0.43	-0.48	-0.40	-0.42
	-0.34	-0.36	-0.38	-0.32	-0.28	-0.15	0.05	1.04	3.84	6.92	3.36	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 17	0.00	0.00	0.00	0.00	0.00	0.00	3.52	1.76	0.76	0.35	0.30	0.33	0.31	0.32	0.42
	0.21	0.10	-0.02	-0.14	-0.18	-0.24	-0.19	-0.26	-0.23	-0.23	-0.36	-0.41	-0.46	-0.38	-0.40
	-0.42	-0.34	-0.36	-0.29	-0.25	-0.12	0.08	1.06	3.87	7.11	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 18	0.00	0.00	0.00	0.00	0.00	0.00	3.52	1.77	0.77	0.36	0.31	0.35	0.32	0.33	0.34
	0.23	0.12	0.00	-0.12	-0.26	-0.22	-0.18	-0.24	-0.22	-0.21	-0.34	-0.39	-0.44	-0.46	-0.48
	-0.40	-0.42	-0.34	-0.27	-0.22	-0.09	0.11	0.99	3.91	7.50	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 19	0.00	0.00	0.00	0.00	0.00	0.00	3.51	1.77	0.78	0.37	0.23	0.27	0.34	0.35	0.26
	0.15	0.04	-0.08	-0.10	-0.24	-0.20	-0.26	-0.23	-0.20	-0.20	-0.33	-0.37	-0.41	-0.44	-0.46
	-0.48	-0.40	-0.42	-0.35	-0.20	-0.06	0.14	0.92	3.83	7.74	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 20	0.00	0.00	0.00	0.00	0.00	0.00	3.51	1.78	0.79	0.48	0.24	0.28	0.36	0.37	0.28
	0.17	0.06	-0.16	-0.18	-0.23	-0.28	-0.25	-0.31	-0.19	-0.18	-0.31	-0.36	-0.39	-0.41	-0.44
	-0.46	-0.38	-0.40	-0.33	-0.17	-0.03	0.07	0.86	3.95	7.94	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.78	0.91	0.49	0.35	0.30	0.37	0.29	0.30
	0.09	-0.02	-0.24	-0.26	-0.31	-0.27	-0.23	-0.20	-0.17	-0.17	-0.30	-0.34	-0.37	-0.39	-0.41
	-0.43	-0.35	-0.37	-0.31	-0.15	-0.10	0.10	0.89	4.06	8.12	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	0.92	0.51	0.28	0.33	0.30	0.32	0.23
	0.13	-0.09	-0.21	-0.23	-0.28	-0.34	-0.31	-0.18	-0.25	-0.25	-0.17	-0.32	-0.34	-0.36	-0.38
	-0.40	-0.32	-0.34	-0.27	-0.11	-0.06	0.15	0.85	4.16	8.28	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	0.54	0.41	0.36	0.34	0.27	0.28
	0.08	-0.13	-0.26	-0.29	-0.33	-0.30	-0.27	-0.24	-0.12	-0.22	-0.23	-0.18	-0.30	-0.32	-0.33
	-0.35	-0.37	-0.29	-0.21	-0.15	0.00	0.13	0.85	4.33	8.53	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19	0.67	0.35	0.40	0.29	0.33	0.25
	-0.06	-0.27	-0.30	-0.33	-0.38	-0.35	-0.22	-0.20	-0.18	-0.17	-0.19	-0.23	-0.35	-0.26	-0.28
	-0.19	-0.21	-0.23	-0.15	-0.08	0.08	0.31	1.05	4.23	8.61	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72	0.91	0.50	0.46	0.38	0.33	0.14
	-0.06	-0.28	-0.30	-0.34	-0.40	-0.37	-0.25	-0.23	-0.10	0.01	-0.12	-0.15	-0.17	-0.08	-0.09
	-0.11	-0.12	-0.14	-0.06	0.02	0.18	0.42	1.29	4.10	8.24	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	1.17	0.69	0.59	0.44	0.27	-0.02
	-0.22	-0.33	-0.37	-0.42	-0.39	-0.36	-0.24	-0.21	-0.07	0.01	-0.02	0.05	0.04	0.03	-0.08
	0.01	0.00	-0.01	0.07	0.15	0.32	0.47	0.75	3.56	8.08	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

APPENDIX B - (Continued)

0 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44	0.78	0.61	0.55	0.28	-0.01
	-0.21	-0.31	-0.35	-0.31	-0.29	-0.28	-0.26	-0.12	0.00	-0.02	0.06	0.04	0.03	0.02	0.11
	0.10	0.09	0.09	0.07	0.15	0.23	0.38	0.57	2.14	8.38	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.67	0.95	0.68	0.53	0.26	-0.03
	-0.13	-0.25	-0.29	-0.25	-0.33	-0.32	-0.19	-0.05	0.06	0.04	0.02	0.10	0.09	0.08	0.08
	0.07	0.06	0.15	0.14	0.12	0.10	0.26	0.45	1.57	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.89	1.02	0.77	0.60	0.23	0.04
	-0.16	-0.28	-0.23	-0.29	-0.27	-0.25	-0.12	-0.08	0.01	0.09	0.07	0.06	0.15	0.14	0.13
	0.13	0.12	0.11	0.10	0.18	0.16	0.13	0.12	1.08	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99	1.17	0.83	0.56	0.28	-0.01
	-0.21	-0.23	-0.28	-0.25	-0.22	-0.20	-0.18	-0.04	0.05	0.13	0.11	0.10	0.09	0.08	0.07
	0.07	0.16	0.15	0.04	0.12	0.10	0.07	-0.03	0.55	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.10	1.30	0.87	0.60	0.22	-0.08
	-0.18	-0.30	-0.25	-0.21	-0.19	-0.17	-0.14	-0.02	0.07	0.05	0.14	0.12	0.11	0.11	0.10
	0.09	0.09	0.08	0.07	0.05	0.13	0.10	0.10	0.30	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.34	0.91	0.54	0.26	-0.04
	-0.14	-0.26	-0.22	-0.18	-0.26	-0.14	-0.11	0.01	0.10	0.08	0.16	0.05	0.14	0.13	0.13
	0.12	0.11	0.11	0.10	0.08	0.16	0.03	0.14	0.15	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	0.95	0.59	0.30	-0.01
	-0.11	-0.13	-0.18	-0.15	-0.23	-0.11	-0.08	0.04	0.13	0.11	0.09	0.07	0.07	0.06	0.15
	0.15	0.14	0.03	0.12	0.11	0.19	0.06	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.60	0.99	0.63	0.24	0.03
	-0.06	-0.09	-0.24	-0.11	-0.19	-0.17	-0.05	0.07	0.15	0.13	0.11	0.10	0.09	0.09	0.08
	0.07	0.07	0.06	0.15	0.03	0.12	0.09	0.10	-0.15	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73	1.04	0.67	0.28	-0.02
	-0.12	-0.05	-0.21	-0.07	-0.15	-0.13	-0.01	0.10	0.08	0.16	0.14	0.13	0.12	0.11	0.11
	0.10	0.09	0.09	0.08	0.06	0.14	0.11	0.13	-0.20	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.77	1.11	0.74	0.46	0.15
	-0.05	0.01	-0.15	-0.02	-0.10	-0.07	0.05	0.04	0.12	0.10	0.08	0.17	0.06	0.15	0.15
	0.14	0.03	0.13	0.12	0.10	0.08	0.05	0.07	-0.23	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.02	1.23	0.75	0.37	0.28
	0.08	0.01	-0.06	-0.03	-0.01	0.02	0.03	0.12	0.20	0.17	0.15	0.13	0.12	0.11	0.11
	0.10	0.09	0.09	0.08	0.06	0.14	0.12	0.14	-0.22	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16	1.38	0.90	0.52	0.33
	0.22	0.13	-0.05	0.07	-0.01	0.00	0.12	0.20	0.17	0.14	0.12	0.10	0.09	0.08	0.07
	0.07	0.06	0.05	0.04	0.13	0.11	0.13	0.22	-0.17	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

APPENDIX B - (Continued)

0 39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	0.96	0.69	0.50
	0.46	0.24	0.13	0.14	0.15	0.16	0.24	0.21	0.17	0.14	0.12	0.10	0.09	0.08	0.08
	0.07	0.06	0.05	0.14	0.13	0.11	0.29	0.32	-0.03	2.05	5.47	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.03	1.15	0.89	0.81
	0.76	0.54	0.39	0.35	0.33	0.29	0.33	0.28	0.22	0.19	0.16	0.15	0.13	0.12	0.12
	0.11	0.10	0.09	0.08	0.17	0.25	0.32	0.28	0.08	0.33	3.38	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.64	1.58	1.34	1.27
	1.12	0.93	0.79	0.69	0.66	0.52	0.48	0.37	0.28	0.13	0.20	0.17	0.16	0.15	0.14
	0.13	0.12	0.11	0.20	0.18	0.26	0.33	0.27	0.38	0.08	1.45	3.30	0.00	0.00	0.00
	0.00	0.00	0.00												
0 42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.14	2.71	2.32	1.92
	1.40	1.06	1.06	1.01	0.90	0.83	0.59	0.48	0.31	0.31	0.25	0.21	0.18	0.17	0.15
	0.13	0.22	0.20	0.18	0.16	0.23	0.29	0.34	0.37	0.46	1.68	3.36	0.00	0.00	0.00
	0.00	0.00	0.00												
0 43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.59	4.30	3.02	1.62
	1.11	1.43	2.23	1.43	1.46	1.06	0.79	0.61	0.49	0.37	0.30	0.34	0.31	0.28	0.26
	0.24	0.22	0.20	0.27	0.24	0.31	0.26	0.41	0.48	0.81	3.07	5.55	0.00	0.00	0.00
	0.00	0.00	0.00												
0 44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.92	6.17	4.31	2.41
	1.53	1.34	1.42	1.50	1.37	1.05	0.87	0.72	0.63	0.52	0.45	0.50	0.46	0.44	0.42
	0.40	0.38	0.46	0.43	0.40	0.37	0.43	0.49	0.62	1.30	4.19	7.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.10	6.05	3.40	2.60
	2.19	1.87	1.80	1.70	1.39	1.29	1.19	0.91	0.96	0.78	0.73	0.79	0.86	0.85	0.93
	0.92	0.90	0.99	0.87	0.74	0.62	0.60	0.78	0.88	1.99	4.81	7.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.08	2.19	2.18	2.22	2.04	1.89	1.75	1.53	1.33	1.17	1.03	1.01	0.99	0.98	0.98
	0.97	0.96	0.86	0.85	0.94	1.04	1.06	1.01	1.15	2.55	5.05	5.33	5.02	10.24	0.00
	0.00	0.00	0.00												
0 47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	2.30	2.34	2.37	2.30	2.14	2.11	1.99	1.87	1.86	1.86	1.76
	1.75	1.75	1.65	1.65	1.55	1.46	1.38	1.33	1.43	2.32	4.91	5.58	5.06	9.07	0.00
	0.00	0.00	0.00												
0 48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	8.52	6.50	4.27	2.74	3.92	3.30	2.90	2.69	2.49	2.39
	2.29	2.19	2.09	1.99	1.79	1.70	1.52	1.47	1.56	1.87	4.01	5.09	4.87	7.59	0.00
	0.00	0.00	0.00												

APPENDIX B - (Continued)

DRAWDOWN IN LAYER 3 AT END OF TIME STEP 1 IN STRESS PERIOD 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
	46	47	48												
0 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.78	0.83	0.96	1.09	1.09	1.01	0.91	0.68	0.57	0.39	0.33	0.29	0.27	0.26
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
	0.48	0.52	0.57	0.61	0.64	0.65	0.57	0.46	0.33	0.22	0.04	0.07	-0.27	-0.08	0.20
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.40
	0.35	0.30	0.35	0.39	0.33	0.35	0.27	0.17	0.14	0.12	0.24	0.26	0.21	0.28	0.35
	0.63	0.91	1.19	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.45	0.40
	0.35	0.31	0.26	0.21	0.15	0.17	0.21	0.22	0.20	0.29	0.41	0.43	0.49	0.56	0.63
	0.80	0.98	1.27	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.48	0.44
	0.40	0.36	0.42	0.27	0.33	0.27	0.26	0.26	0.34	0.43	0.45	0.57	0.63	0.70	0.77
	0.85	0.93	1.01	1.29	1.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53	0.56	0.52	0.60
	0.57	0.53	0.49	0.45	0.51	0.45	0.47	0.38	0.37	0.37	0.40	0.63	0.69	0.87	0.95
	1.03	1.11	1.19	1.37	1.54	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.61	0.58	0.66
	0.61	0.58	0.64	0.61	0.67	0.72	0.64	0.46	0.36	0.26	0.30	0.44	0.60	0.68	0.76
	0.94	1.02	1.10	1.28	1.55	1.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.67	0.75	0.71
	0.67	0.64	0.71	0.78	0.75	0.50	0.44	0.27	0.27	0.18	0.22	0.26	0.23	0.30	0.38
	0.47	0.45	0.53	0.61	0.98	1.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.69	0.73	0.79	0.77
	0.84	0.92	1.00	1.08	0.65	0.31	0.05	0.09	0.11	0.12	0.06	0.11	0.07	0.04	0.02
	0.00	0.08	0.05	0.12	0.18	0.24	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.42	0.54	0.66	0.75	0.84
	0.92	1.00	0.98	0.56	0.14	0.01	-0.05	-0.06	-0.13	-0.11	-0.16	-0.21	-0.25	-0.27	-0.20
	-0.23	-0.25	-0.28	-0.31	-0.26	-0.12	0.31	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

APPENDIX B - (Continued)

0 11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.41	0.44	0.57	0.66	0.65
	0.63	0.61	0.50	0.28	0.15	0.11	-0.15	-0.23	-0.27	-0.33	-0.38	-0.33	-0.36	-0.38	-0.40
	-0.42	-0.35	-0.38	-0.42	-0.27	-0.13	0.49	1.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.27	0.40	0.44	0.53	0.52
	0.51	0.50	0.38	0.16	0.13	0.09	-0.07	-0.15	-0.36	-0.41	-0.45	-0.40	-0.43	-0.35	-0.37
	-0.29	-0.32	-0.25	-0.19	-0.15	-0.11	0.19	1.41	6.18	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.22	0.34	0.39	0.50	0.49
	0.48	0.36	0.24	0.12	-0.01	-0.05	-0.11	-0.18	-0.29	-0.42	-0.46	-0.40	-0.44	-0.36	-0.38
	-0.30	-0.32	-0.25	-0.19	-0.25	-0.22	-0.03	1.18	5.65	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.25	0.37	0.44	0.44	0.43
	0.42	0.31	0.19	0.07	-0.06	-0.11	-0.07	-0.15	-0.35	-0.37	-0.40	-0.44	-0.37	-0.39	-0.31
	-0.33	-0.36	-0.29	-0.33	-0.29	-0.15	-0.06	1.14	4.41	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.28	0.31	0.37	0.38	0.47
	0.36	0.25	0.03	0.01	-0.02	-0.08	-0.24	-0.21	-0.31	-0.33	-0.36	-0.39	-0.42	-0.44	-0.46
	-0.38	-0.40	-0.33	-0.27	-0.23	-0.19	-0.01	0.99	4.36	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.29	0.33	0.40	0.31	0.40
	0.29	0.18	0.06	-0.06	-0.10	-0.15	-0.21	-0.19	-0.29	-0.41	-0.43	-0.46	-0.48	-0.40	-0.42
	-0.34	-0.36	-0.39	-0.33	-0.29	-0.15	0.04	1.04	4.09	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.31	0.35	0.31	0.32	0.42
	0.21	0.10	-0.02	-0.14	-0.18	-0.24	-0.20	-0.27	-0.27	-0.29	-0.41	-0.44	-0.46	-0.38	-0.40
	-0.42	-0.34	-0.36	-0.30	-0.26	-0.13	0.05	1.06	4.11	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.32	0.36	0.33	0.34	0.34
	0.23	0.12	0.00	-0.12	-0.26	-0.22	-0.18	-0.26	-0.25	-0.27	-0.39	-0.42	-0.44	-0.46	-0.48
	-0.39	-0.42	-0.34	-0.28	-0.23	-0.10	0.09	0.99	4.12	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.23	0.28	0.35	0.36	0.26
	0.15	0.04	-0.08	-0.10	-0.24	-0.20	-0.27	-0.24	-0.24	-0.25	-0.37	-0.40	-0.42	-0.44	-0.45
	-0.47	-0.39	-0.42	-0.35	-0.20	-0.07	0.13	0.92	4.03	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.25	0.29	0.36	0.37	0.27
	0.18	0.06	-0.16	-0.18	-0.22	-0.28	-0.25	-0.33	-0.22	-0.24	-0.35	-0.38	-0.40	-0.41	-0.43
	-0.45	-0.37	-0.39	-0.33	-0.18	-0.04	0.06	0.85	4.14	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.36	0.31	0.38	0.29	0.29
	0.10	-0.02	-0.24	-0.26	-0.31	-0.27	-0.23	-0.21	-0.20	-0.22	-0.34	-0.36	-0.38	-0.39	-0.41
	-0.43	-0.35	-0.37	-0.30	-0.15	-0.11	0.09	0.89	4.25	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.28	0.33	0.30	0.32	0.23
	0.13	-0.08	-0.20	-0.23	-0.28	-0.34	-0.31	-0.18	-0.28	-0.29	-0.21	-0.33	-0.35	-0.36	-0.38
	-0.39	-0.31	-0.33	-0.27	-0.11	-0.07	0.15	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

0 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.41	0.36	0.34	0.27	0.29
	0.09	-0.13	-0.25	-0.29	-0.33	-0.30	-0.27	-0.24	-0.14	-0.25	-0.26	-0.18	-0.30	-0.31	-0.33
	-0.34	-0.36	-0.28	-0.21	-0.15	0.00	0.12	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.40	0.30	0.34	0.25
	-0.05	-0.27	-0.30	-0.33	-0.38	-0.35	-0.22	-0.20	-0.19	-0.20	-0.22	-0.23	-0.35	-0.26	-0.27
	-0.18	-0.20	-0.22	-0.15	-0.08	0.07	0.31	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.46	0.40	0.34	0.15
	-0.06	-0.28	-0.31	-0.34	-0.40	-0.37	-0.25	-0.23	-0.12	-0.03	-0.14	-0.16	-0.17	-0.08	-0.09
	-0.10	-0.11	-0.13	-0.05	0.02	0.18	0.43	1.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.46	0.28	-0.02
	-0.23	-0.34	-0.37	-0.42	-0.38	-0.36	-0.23	-0.21	-0.11	-0.02	-0.03	0.05	0.04	0.04	-0.07
	0.02	0.01	0.00	0.08	0.15	0.32	0.48	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.56	0.29	-0.01
	-0.21	-0.33	-0.37	-0.32	-0.29	-0.27	-0.25	-0.13	-0.02	-0.03	0.06	0.04	0.03	0.03	0.12
	0.11	0.10	0.09	0.07	0.15	0.23	0.39	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.53	0.25	-0.04
	-0.14	-0.26	-0.30	-0.26	-0.33	-0.31	-0.18	-0.06	0.04	0.03	0.02	0.10	0.09	0.09	0.08
	0.08	0.07	0.16	0.14	0.12	0.10	0.26	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.22	0.03
	-0.17	-0.29	-0.24	-0.30	-0.27	-0.25	-0.13	-0.11	0.00	0.08	0.07	0.06	0.15	0.14	0.14
	0.13	0.12	0.11	0.10	0.18	0.16	0.13	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.27	-0.03
	-0.23	-0.24	-0.30	-0.26	-0.23	-0.21	-0.19	-0.07	0.03	0.12	0.11	0.10	0.09	0.08	0.07
	0.07	0.16	0.15	0.04	0.12	0.10	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.20	-0.10
	-0.20	-0.31	-0.26	-0.23	-0.21	-0.19	-0.17	-0.04	0.06	0.05	0.14	0.12	0.11	0.11	0.10
	0.09	0.09	0.08	0.07	0.05	0.13	0.10	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	-0.07
	-0.17	-0.27	-0.23	-0.20	-0.28	-0.17	-0.14	-0.02	0.09	0.07	0.16	0.05	0.14	0.14	0.13
	0.12	0.11	0.11	0.10	0.08	0.16	0.03	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	-0.03
	-0.13	-0.14	-0.19	-0.16	-0.24	-0.13	-0.11	0.01	0.11	0.10	0.09	0.08	0.07	0.06	0.16
	0.15	0.14	0.03	0.12	0.11	0.19	0.06	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00
	-0.08	-0.11	-0.25	-0.12	-0.20	-0.19	-0.08	0.04	0.14	0.13	0.12	0.10	0.10	0.09	0.08
	0.08	0.07	0.06	0.15	0.03	0.11	0.09	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

0 35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
	-0.14	-0.08	-0.21	-0.08	-0.16	-0.14	-0.03	0.08	0.07	0.16	0.14	0.13	0.12	0.12	0.11
	0.10	0.10	0.09	0.08	0.06	0.14	0.11	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
	-0.08	-0.01	-0.16	-0.03	-0.10	-0.08	0.03	0.02	0.11	0.10	0.08	0.17	0.06	0.16	0.15
	0.14	0.04	0.13	0.12	0.10	0.08	0.06	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.06	0.00	-0.08	-0.05	-0.01	0.01	0.01	0.10	0.18	0.16	0.15	0.13	0.13	0.12	0.11
	0.11	0.10	0.09	0.08	0.06	0.14	0.12	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.20	0.11	-0.08	0.06	0.00	0.01	0.11	0.17	0.15	0.13	0.12	0.10	0.10	0.09	0.08
	0.07	0.07	0.06	0.05	0.13	0.11	0.19	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.23	0.13	0.14	0.16	0.15	0.24	0.20	0.16	0.14	0.12	0.11	0.10	0.09	0.09
	0.08	0.07	0.06	0.15	0.13	0.12	0.29	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.37	0.31	0.31	0.30	0.34	0.28	0.22	0.18	0.16	0.15	0.14	0.13	0.13
	0.12	0.11	0.10	0.09	0.17	0.25	0.33	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.64	0.52	0.50	0.38	0.29	0.14	0.21	0.18	0.17	0.16	0.15
	0.14	0.13	0.12	0.20	0.18	0.26	0.33	0.27	0.40	0.17	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.86	0.81	0.59	0.48	0.31	0.32	0.27	0.22	0.20	0.18	0.17
	0.15	0.23	0.22	0.19	0.15	0.23	0.29	0.33	0.37	0.48	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	3.29	1.53	1.41	1.06	0.79	0.60	0.49	0.37	0.30	0.35	0.32	0.30	0.28
	0.26	0.23	0.21	0.28	0.25	0.32	0.26	0.40	0.47	0.81	3.17	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	1.31	1.44	1.48	1.36	1.05	0.87	0.72	0.62	0.52	0.46	0.50	0.47	0.45	0.43
	0.41	0.39	0.47	0.44	0.41	0.38	0.44	0.49	0.61	1.29	4.25	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	1.85	1.79	1.69	1.39	1.29	1.19	0.91	0.96	0.78	0.73	0.79	0.87	0.85	0.94
	0.92	0.91	0.99	0.87	0.75	0.63	0.60	0.79	0.87	1.98	4.86	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												
0 46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	2.18	2.18	2.22	2.03	1.89	1.75	1.53	1.33	1.16	1.03	1.01	1.00	0.99	0.98
	0.97	0.97	0.86	0.85	0.94	1.04	1.06	1.01	1.12	2.53	5.10	0.00	0.00	0.00	0.00
	0.00	0.00	0.00												

```
 0 47    0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00
         0.00   0.00   0.00   0.00   2.30   2.34   2.36   2.30   2.14   2.11   1.99   1.87   1.86   1.86   1.76
         1.76   1.75   1.65   1.65   1.55   1.45   1.37   1.33   1.43   2.27   4.94   0.00   0.00   0.00   0.00
         0.00   0.00   0.00
 0 48    0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00
         0.00   0.00   0.00   0.00   0.00   8.52   6.50   4.27   2.74   3.92   3.31   2.90   2.69   2.49   2.39
         2.29   2.19   2.09   1.99   1.79   1.70   1.52   1.47   1.56   1.85   3.98   0.00   0.00   0.00   0.00
         0.00   0.00   0.00
DRAWDOWN WILL BE SAVED ON UNIT 11 AT END OF TIME STEP  1, STRESS PERIOD  1

              VOLUMETRIC BUDGET FOR ENTIRE MODEL AT END OF TIME STEP  1 IN STRESS PERIOD  1

     CUMULATIVE VOLUMES      L**3             RATES FOR THIS TIME STEP      L**3/T

       IN:                                           IN:

     STORAGE       =    0.00000                    STORAGE       =   0.00000
     CONSTANT HEAD =    0.00000                    CONSTANT HEAD =   0.00000
     WELLS         =    0.00000                    WELLS         =   0.00000
     RECHARGE      =    1.1684                     RECHARGE      =   1.1684
     RIVER LEAKAGE =    0.82427E-01                RIVER LEAKAGE =   0.82427E-01

     TOTAL IN      =    1.2508                     TOTAL IN      =   1.2508

      OUT:                                          OUT:

     STORAGE       =    0.00000                    STORAGE       =   0.00000
     CONSTANT HEAD =    0.00000                    CONSTANT HEAD =   0.00000
     WELLS         =    0.61000                    WELLS         =   0.61000
     RECHARGE      =    0.00000                    RECHARGE      =   0.00000
     RIVER LEAKAGE =    0.64142                    RIVER LEAKAGE =   0.64142

     TOTAL OUT     =    1.2514                     TOTAL OUT     =   1.2514

     IN - OUT      =   -0.59366E-03                IN - OUT      =  -0.59366E-03

PERCENT DISCREPANCY =  -0.05            PERCENT DISCREPANCY      =  -0.05

              TIME SUMMARY AT END OF TIME STEP  1 IN STRESS PERIOD  1

                    SECONDS      MINUTES        HOURS         DAYS          YEARS

   TIME STEP LENGTH  1.00000   0.166667E-01  0.277778E-03  0.115741E-04  0.316881E-07
 STRESS PERIOD TIME  1.00000   0.166667E-01  0.277778E-03  0.115741E-04  0.316881E-07
TOTAL SIMULATION TIME 1.00000  0.166667E-01  0.277778E-03  0.115741E-04  0.316881E-07
```

GLOSSARY

Active model area: That part of the area simulated by a computer model for which equations describing ground-water flow are solved. In this report, it is the area representing the aquifer.

Aquifer: A permeable geologic material (for example, sand or gravel) that will yield water in significant quantity to a well or spring.

Aquifer test: A controlled field experiment made to determine the hydraulic properties of water-bearing material. The test involves withdrawing a measured quantity of water from a well and measuring the resulting changes in water level in observation wells surrounding the pumped well.

Bedrock: Solid rock, locally called "ledge," that forms the earth's crust. It is exposed at the surface as an "outcrop" but more commonly is buried beneath unconsolidated deposits that range in thickness from a few inches to hundreds of feet.

Computer model (digital model): A computer program to solve a set of mathematical equations that simulate a given system. In this study, the model simulates the ground-water-flow system.

Cone of depression: The area of lowered water level around a pumped well caused by withdrawal of water from the well.

Contour line: A line on a map connecting points of equal value. A water-table contour line connects points of equal water-table altitude.

Cubic feet per second (ft^3/s): A unit of flow or discharge. For example, 1 ft^3/s is equal to the flow of a stream 1 foot wide and 1 foot deep flowing at an average velocity of 1 foot per second.

Digital model: See computer model.

Discharge: The rate of flow of water at a given moment in time. In this report, discharge is expressed in cubic feet per second. See also ground-water discharge.

Drawdown: The amount the water level is lowered either in a well or in the aquifer because of withdrawal of water by a well.

Evapotranspiration: Loss of water to the atmosphere by evaporation from water surfaces and moist soil, and by transpiration from plants.

Gage or gaging station: A site on a stream at which flow measurements are made.

Gravel-packed well: A large (1- to 2-foot diameter) well in which gravel surrounds the well screen. The gravel increases the effective diameter of the well screen and facilitates flow of water into the well.

Ground water: Water beneath the land surface. If the water moves to the land surface, it is then called surface water.

Ground-water discharge: Water that is released from the saturated zone in the ground. It includes leakage of water into stream channels, lakes, and oceans; evapotranspiration; and withdrawal from wells.

Ground-water-flow model: As used in this report, a computer program to solve a set of mathematical equations that are assumed to govern the physics of ground-water flow.

Hydraulic head: The height of the surface of a water column above a standard datum. A combination of elevation head and pressure head.

Hydraulic conductivity: The capacity of a cube of porous material to transmit water; expressed as a volume per area per day ($ft^3/ft^2/d$ or ft/d). A material has a hydraulic conductivity of 1/ft/d if, in 1 day, it transmits 1 cubic foot of water through a 1-square foot cross section measured at right angles to the direction of flow, where there is a 1-foot change in water level over a 1-foot flow path. In this report, hydraulic conductivity is used for horizontal flow unless it is specified as vertical hydraulic conductivity.

Hydrologic boundary: A physical feature that controls the flow of water through the ground. A hydrologic boundary limits or defines an aquifer.

Induced infiltration: Recharge to the ground water from a surface-water body caused by pumping of a nearby well and the resultant lowering of the ground-water level below the surface-water level.

Model: Physical, analytical, or mathematical representation of a natural system.

Model boundary: Boundary of the active model area in which ground-water flow is computed. Model boundaries generally coincide with hydrologic boundaries.

Node: In this report, the center point of a rectangular block of a computer-simulation model. Commonly used to refer to the entire block.

Observation well: A well used to measure the depth to the water table when it is not being pumped.

Permeable: A material is permeable if it has connected pores or other openings that can pass liquids.

Potentiometric surface: Altitude of hydraulic heads throughout an area.

Pumpage: Rate of water pumped from a well.

Recharge: Water that is added to the ground water in the saturated zone.

Screen: See well screen.

Seismic refraction: A geophysical method often useful for determining the depth to the water table and/or to bedrock. A seismograph is used to determine the time it takes sound energy created by a small explosion or other energy source to reach a series of sensors. Because sound travels at different velocities in different rock materials and is refracted (bent) at the boundary between these materials, it is possible to determine depths to different types of material.

Steady state: Average, unchanging conditions.

Stratified drift: A sorted and layered sediment deposited by meltwater from a glacier; may include separate layers of sand, gravel, silt, and clay.

Surface-water runoff: Water that flows over the land surface directly to streams or lakes. Surface runoff usually occurs shortly after rainfall or snowmelt.

Surface water: Water on the surface of the land in the form of lakes and rivers. If it seeps into the ground, it is called ground water.

Till: An unsorted, unstratified sediment deposited directly by a glacier. Till may consist of boulders, gravel, sand, silt, and clay.

Transmissivity: The product of the hydraulic conductivity and the saturated thickness. It is the rate at which water is transmitted through a section of aquifer 1-ft wide where there is a 1-ft change in water level over a 1-ft flow path.

Unconsolidated: Loose, not firmly cemented or interlocked; for example, sand in contrast to sandstone.

Water table: The upper surface of the saturated zone. The altitude of the water table is indicated by the altitude of the water level in an observation well that penetrates the material just far enough to hold standing water. The pressure at the water table is the same as atmospheric pressure.

Well screen: Slotted section of a well, usually at the bottom, through which water can enter the well.

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