COMPILATION AND ANALYSES OF AQUIFER PERFORMANCE TESTS IN EASTERN KANSAS

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U.S. GEOLOGICAL SURVEY

Open-File Report 85-200

Prepared in cooperation with the

KANSAS GEOLOGICAL SURVEY

Lawrence, Kansas

1985

UNITED STATES DEPARTMENT OF THE INTERIOR

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CONVERSION TABLE

Inch-pound units used in this report may be converted to the International system of Units (SI) by the following factors:

Multiply inch-pound unit	By	To obtain SI unit
Length		
foot (ft)	0.3048	meter (m)
Volume		
gallon (gal)	3.785	liter (L)
Flow		
cubic foot per day (ft^3/d)	0.02832	cubic meter per day (m^3/d)
gallon per minute (gal/min)	0.06308	liter per second
Hydraulic conductivity		
foot per day (ft/d)	0.3048	meter per day (m/d)
Transmissivity		
square foot per day (ft^2/d)	0.09290	square meter per day (m^2/d)
Specific capacity		
gallon per minute per foot [(gal/min)/ft]	0.2070	liter per second per meter [(L/s)/m]

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ABSTRACT

Selected aquifer-test data from 36 counties in eastern Kansas were collected from numerous sources and publications in order to produce a documented compilation of aquifer tests in one report. Reported data were obtained chiefly from private consulting firms and from government agencies.

Hydraulic properties determined included estimates of transmissivity, storage coefficient (where one or more observation wells were available), and in some cases hydraulic properties of a confining layer. The aquifers tested comprised three main types of aquifers--consolidated rock, glacial, and alluvial aquifers including the Equus Beds aquifer, an extensive alluvial aquifer in south-central Kansas.

The Theis recovery equation and the Cooper-Jacob modified nonequilibrium equation were the two principal solution methods used. Other methods used included the Theis nonequilibrium equation, the Hantush-Jacob equation for a leaky confined aquifer, Hantush's modified leaky equation in which storage from a confining layer was considered, and Boulton's delayed-yield equation. Additionally, a specific-capacity method of estimating transmissivity was used when only a single drawdown value was available.

INTRODUCTION

Aquifer tests are a common method used to determine the hydraulic characteristics of water-bearing formations. Large quantities of reported data are available from consulting engineering firms, from files of government agencies, and from publications. The purpose of this study was to collect all of the reported information available from aquifer tests in eastern Kansas, to analyze the information using various formulas and techniques that are available, and to provide a compilation of selected data and the analyses. The results from reported data are only as valid as the data upon which the results are based. In some instances, the results may be only estimated values. The study, made by the U.S. Geological Survey in cooperation with the Kansas Geological Survey, should provide a summary of aquifer-test information to various groups studying ground-water related problems within the area.

The area included in the study comprises 36 counties in the eastern one-half of Kansas, as shown in figure 1. Data from aquifer tests in these counties have been evaluated and presented in this report, with consideration of the most recent information available on the geologic framework of the aquifers tested. Lithologic logs of wells, where available, also were included to permit evaluation and interpretation by others.

The aquifers tested in eastern Kansas were divided into three types. These were consolidated-rock, glacial, and alluvial aquifers that include the Equus Beds aquifer, an extensive alluvial aquifer in south-central Kansas (fig. 1).

In this report, wells from which aquifer-test data were obtained are located by county and by well number. The numbering system used, as shown in figure 2, gives the location of the well according to the U.S. Bureau of Land Management's system of land subdivision. In this system, the first set of digits of a well number indicates the township; the second set, the range east or west of the Sixth Principal Meridian; and the third set, the section. The first letter after the section number denotes the quarter section or 160-acre tract; the second letter, the quarter-quarter section or 40-acre tract; the third letter, the quarter-quarter-quarter section or 10-acre tract as shown in figure 2. The 160-acre tract, the 40-acre tract, and the 10-acre tract are designated by A, B, C, and D in a counterclockwise manner, beginning in the northeast quadrant. Where more than one well or observation well are located in a 10-acre tract, consecutive numbers are added in accordance with the sequence established in the initial test. Thus, a well numbered 29-7W-36ABD indicates that the well is in the SE1/4 NW1/4 NE1/4 sec. 36, T. 29 S., R. 7 W.

Appreciation is expressed to several organizations and individuals who aided in this study. D. D. Hook of the Layne-Western Co. in Wichita, Kans., and D. B. Higgins of the Layne-Western Co. in Kansas City, Mo., provided much aquifer-test data for the study. Gerald Hilmes of the Division of Water Resources, Kansas State Board of Agriculture, also provided aquifer-test data. Additional appreciation is expressed to the city of Wichita, Kans., and the Kansas Power and Light Co. for their well data.

HYDRAULIC PROPERTIES OF AN AQUIFER

The hydraulic properties of an aquifer provide important information in the evaluation of ground-water problems. They provide an indication of well yield in a particular aquifer and are part of the necessary data for ground-water modeling. Hydraulic conductivity (K) of an isotropic aquifer is the volume of water at the existing kinematic viscosity that will move in unit time under a unit hydraulic gradient through a unit area measured at a right angle to the direction of flow. Hydraulic conductivity can have any unit of length (L) divided by time (t). Transmissivity (T) is the rate of flow of water through a unit width of the entire section of

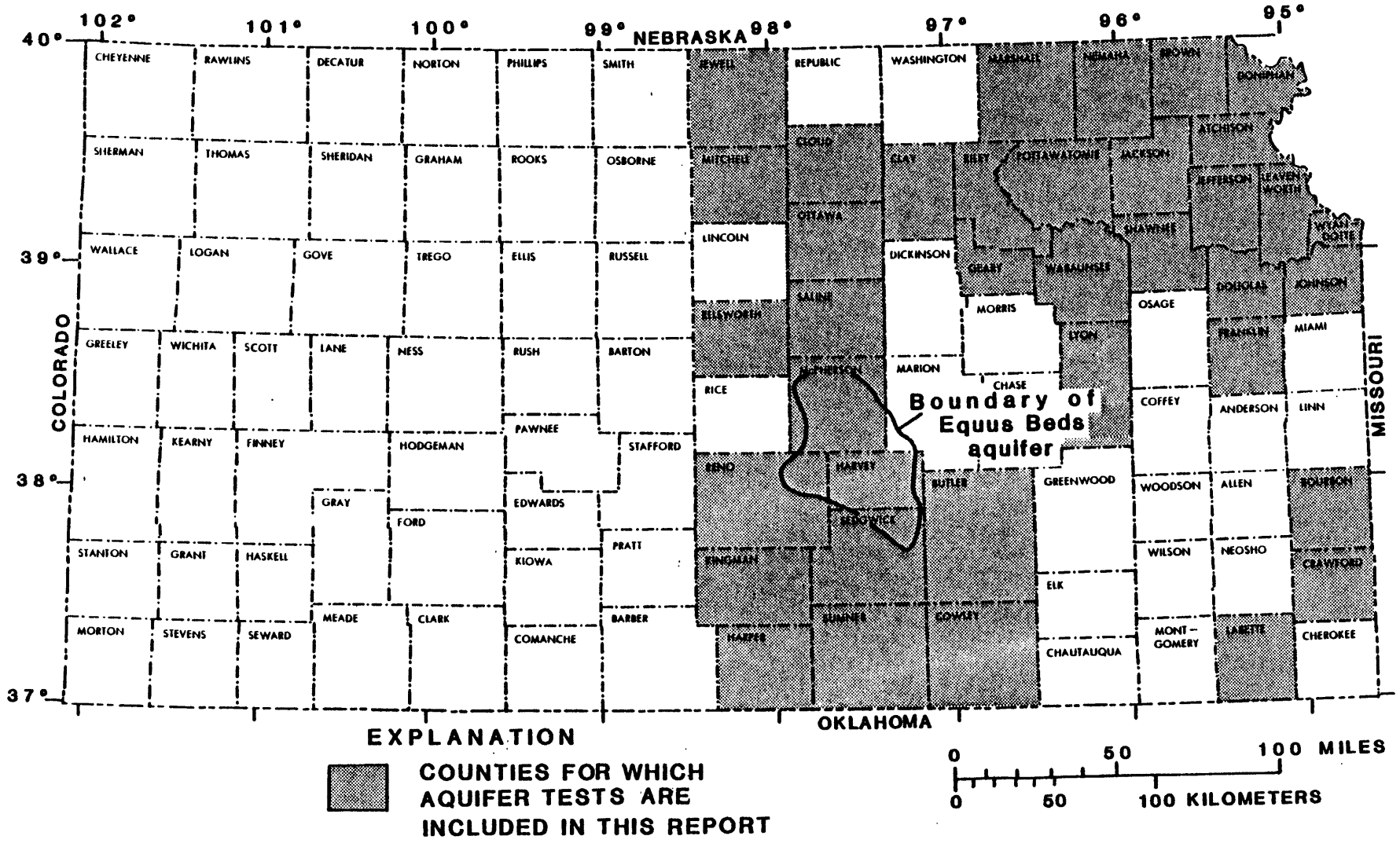

Figure 1.--Location of study area.

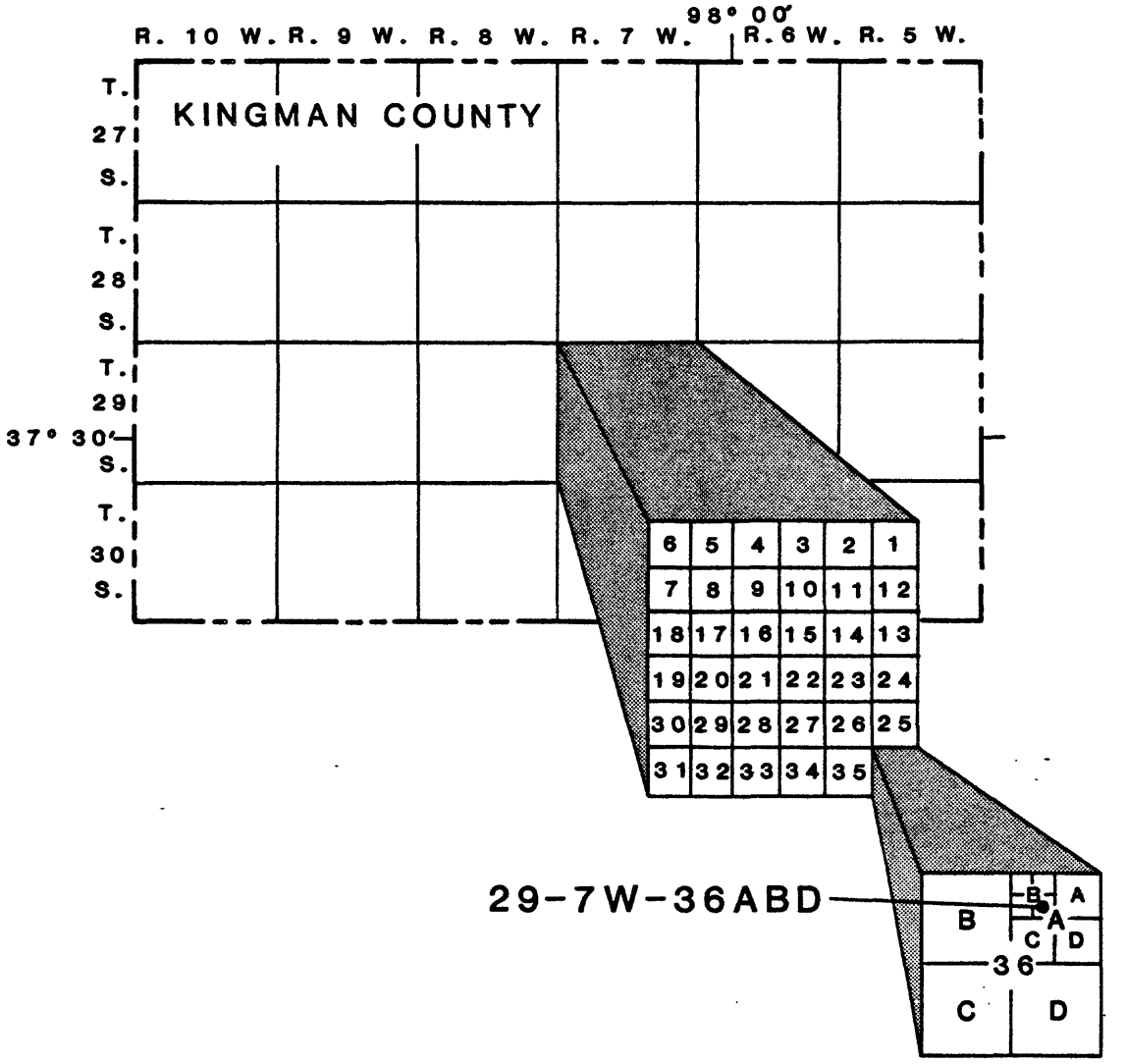

Figure 2.--Well-numbering system.

aquifer under a unit hydraulic gradient and is equal to the hydraulic conductivity of the aquifer in the saturated zone multiplied by the corresponding thickness (b). Transmissivity is measured in units of area (L^2) divided by time, L^2/t. The storage coefficient (S) of an aquifer is the volume of water released by or taken into storage per unit surface area per unit change in hydraulic head normal to that surface. Specific yield (Sy) is the ratio of the volume of water that a saturated aquifer will release by gravity to the volume of aquifer drained. Under unconfined conditions the storage coefficient and the specific yield are virtually equal. Both the storage coefficient and the specific yield are dimensionless.

For confined aquifers, hydraulic properties of the confining bed may be determined if sufficient information is available. Properties of the confining bed include leakance (K'/b'), a ratio of the vertical hydraulic conductivity (K') of the confining layer to the thickness (b') of the confining layer, and the storage coefficient (S') of the confining layer.

METHODS OF AQUIFER-TEST ANALYSES

The study utilized seven different methods of analyzing aquifer-performance tests to determine estimates of hydraulic conductivity (K), transmissivity (T), and storage coefficient (S). For artesian aquifers, additional properties of vertical hydraulic conductivity (K') and thickness (b') of the confining layer were determined where possible. In addition to the material presented here, the reader is referred to published reports, as listed for each method, for further detailed discussion of the equations and techniques.

Formulas and techniques used to analyze aquifer-test data presented in this report include the following:

(1) Theis nonequilibrium equation (Lohman, 1979, p. 15):

$$T = \frac{Q}{4\pi s} W(u) \text{ and } S = \frac{4Ttu}{r^2}, \quad (1)$$

where

$W(u)$ = the well function of u, mathematically it is known as the exponential integral function;

$u = \frac{r^2 S}{4Tt}$;

Q = discharge rate, L^3t^{-1} ;

s = drawdown, L, the difference between static water level and the water level at a given time during pumping;

T = transmissivity, L^2t^{-1} ;

S = storage coefficient, dimensionless;

r = pumping well radius or distance between pumping well and observation well, L; and

t = time since pumping started, t.

The Theis nonequilibrium equation (1) was developed by Theis (1935) using the assumptions that the aquifer is homogeneous, isotropic, infinite in areal extent and is fully penetrated by the well, that the well has an infinitesimal diameter, and that water is instantaneously removed from storage with decline in head. Although these assumptions are restrictive and should be taken into account, equation (1) usually can be applied successfully to many problems of ground-water flow.

Analysis is made by plotting drawdown (s) versus time (t) on logarithmic paper. A type curve with W(u) plotted against 1/u is overlayed, and a "best fit" between the two curves is determined. A matchpoint (+), usually where W(u) and 1/u both equal one, is chosen. The corresponding drawdown (s) and time (t) permit calculation of transmissivity (T) using equation (1). If the observation well is of known distance (r) from the pumping well, the storage coefficient (S) also may be determined. Type curves used with the Theis nonequilibrium equation (1) are shown in figure 3.

(2) Cooper-Jacob modified nonequilibrium equation (Lohman, 1979, p. 21):

$$T = \frac{2.30\,Q}{4\pi\Delta s/\Delta \log_{10} t} \quad \text{and} \quad S = \frac{2.25Tt_o}{r^2} \quad , \qquad (2)$$

where, in addition to the previous definitions,

$\Delta s/\Delta \log_{10} t$ = the change in drawdown over one log cycle of time on on semilogarithmic paper; and

t_o = extrapolated time of zero drawdown.

Equation (1) of the Theis nonequilibrium method may be simplified to equation (2) when the u in equation (1) is equal to or less than about 0.01. To use the Cooper-Jacob modified nonequilibrium equation (2), drawdown (s) is plotted on the arithmetic coordinates against time (t) on the logarithmic coordinates on semilogarithmic paper. A straight line then is drawn through the data points. During the early part of the test, the value of u is greater than 0.01, and the equation is not applicable at this time. The points representing this period of the test do not lie on the straight line of best fit. The changes in drawdown (Δs) over one logarithmic cycle of time can be determined and used in the equation to determine transmissivity (T). If the well is an observation well and the distance (r) from the pumping well is known, the storage coefficient (S) may be determined by extending the straight line to the zero drawdown intercept of the time coordinate (t_o) and then using equation (2) to calculate S.

The advantage of the Cooper-Jacob modified nonequilibrium method over the Theis nonequilibrium method is that it may allow analysis of data where there are few or no data during the first few minutes of the test. When only later data are available, the curves drawn on logarithmic paper may be too flat to allow a matchpoint to be easily selected, but the data plotted on semilogarithmic paper still may show a clear slope over a logarithmic cycle, although boundary conditions or violations of the initial assumptions still may render the analysis invalid. Conversely, if only water-level data are available for the first few minutes, this method may not be able to make use of the data because the validity of the method is dependent on the value of u being less than or equal to about 0.01.

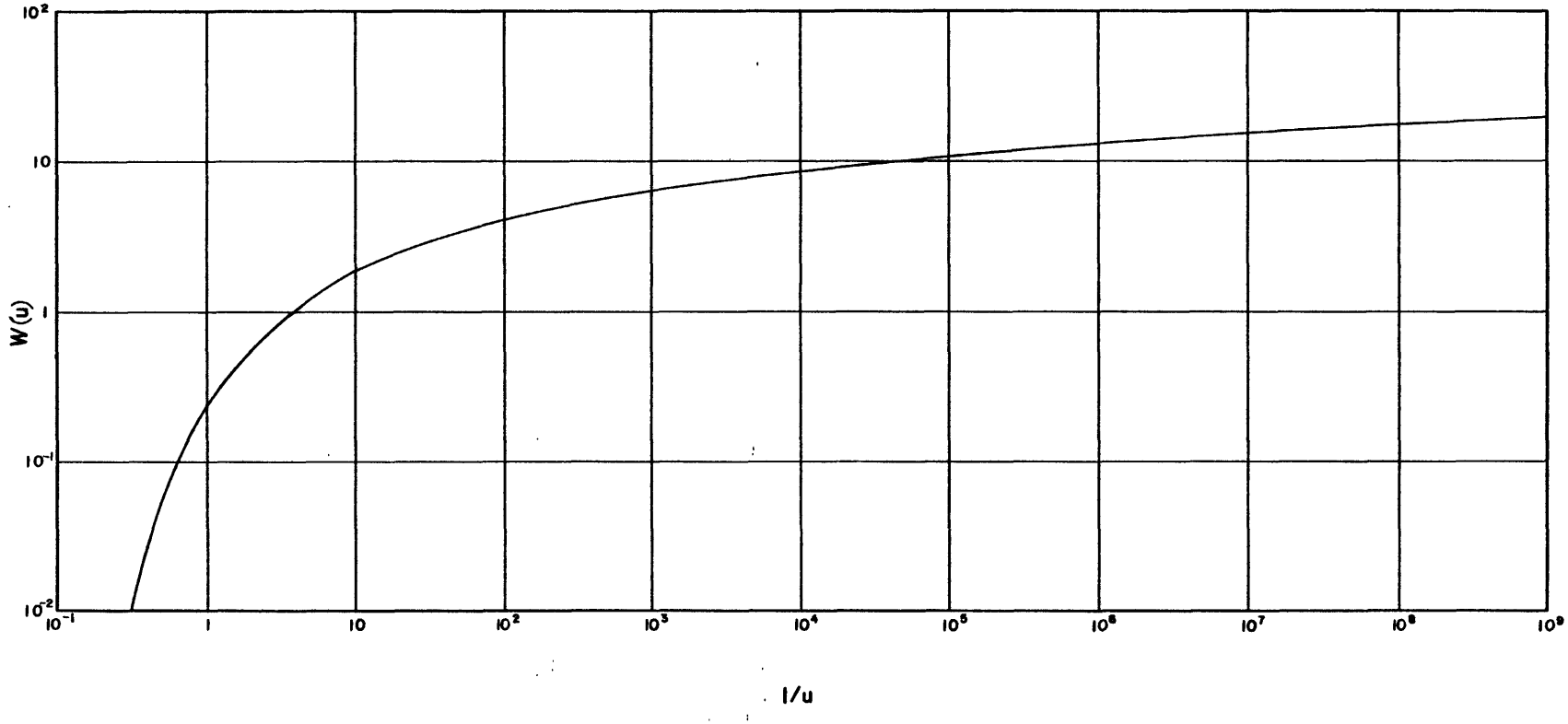

Figure 3.--Type curve for Theis nonequilibrium equation (modified from Lohman, 1979, plate 3).

(3) Theis recovery equation (Ferris and others, 1962, p. 100), in consistent units, forms:

$$T = \frac{2.30\ Q}{4\pi \Delta s'}, \qquad (3)$$

where, along with previously mentioned units,

$\Delta s'$ = change in s' over one logarithmic cycle of t/t';

s' = residual drawdown, L, the difference between static water level and the water level at a given time during recovery;

t = time since pumping started; and

t' = time since pumping stopped.

The Theis recovery equation (3) is applied in much the same manner as the Cooper-Jacob modified nonequilibrium equation (2) and is likewise based on the same assumptions. Residual drawdown (s') is plotted against the ratio of time since pumping started versus time elapsed since pumping stopped (t/t') on semilogarithmic paper. After the value of t' becomes sufficiently large, the observed data should fall on a straight line. The linear change of residual drawdown ($\Delta s'$) over one logarithmic cycle is used with the equation to calculate transmissivity (T). The projected straight line should pass through zero drawdown at a t/t' of 1. Note that time during the recovery period increases toward the left in this method of plotting.

The advantage and disadvantages of the Theis recovery method with regard to the Theis nonequilibrium method and similar methods are the same as for the Cooper-Jacob modified nonequilibrium method. The recovery curve of the pumped well is considered to be more accurate than the time-drawdown curve because the residual-drawdown measurements can be made without interference from pumping vibrations or momentary variations in the pumping rate. The rate of discharge (Q) is considered to be constant in this method and is equal to the mean of the discharge (Q) during the pumping period. The validity of the resulting transmissivity depends largely on how well this assumption was met.

(4) Hantush-Jacob equation for nonsteady radial flow in an infinite leaky confined aquifer (Reed, 1980, p. 22):

$$T = \frac{Q\ L(u,v)}{4\pi s}\ ;\ S = 4T\left(\frac{t/r^2}{1/u}\right);\ \text{and}\ K'/b' = 4\ T\ v^2/r^2 = S\ (v^2/u)/t; \qquad (4)$$

where, in addition to the aforementioned definitions,

L (u,v) = well function for leaky confined aquifers with fully penetrating wells without water released from storage;

K' = vertical hydraulic conductivity of the confining layer, Lt^{-1};

b' = thickness of confining layer; and

$$v = \frac{r}{2} \quad \frac{K'}{T\,b'} .$$

The Hantush-Jacob equation (4) for leaky artesian aquifers assumes that the aquifer is homogeneous, isotropic, and infinite in areal extent. In contrast to the Theis nonequilibrium equation (1), the Hantush-Jacob equation (4) for leaky aquifers assumes that the aquifer being tested is either overlain or underlain by a semiconfining bed that "leaks" water from a source bed to the aquifer being tested. The hydraulic head of the source bed is assumed to remain constant with time. The rate of vertical leakage is directly proportional to the difference in hydraulic head between the source bed and the top of the aquifer at any given point in time. The analysis of data is performed by plotting the data on logarithmic paper and matching a type curve of L(u,v) and 1/u to the data. The matchpoint values are used in the appropriate equations similar to the Theis nonequilibrium method. Type curves for this method are found in figure 4. As with the Theis nonequilibrium method, early data may be used.

This method is used when knowledge of the aquifer suggests a leaky artesian condition. Also, this method can be used to determine the hydraulic conductivity (K') of the confining layer when the observation well is of known distance (r), in feet, from the pumping well and when the thickness (b') of the confining layer is known.

(5) Hantush modified equation for leaky confined aquifers with storage in the semipervious confining bed (Lohman, 1979, p. 32):

$$T = \frac{Q}{4\pi s} \; H(u,\beta), \qquad \text{and } S = \frac{4Ttu}{r^2} , \qquad (5)$$

where, in addition to the aforementioned definitions,

$H(u,\beta)$ = well function for leaky confined aquifers with fully penetrating wells with water released from storage in the confining layer(s);

$$= \frac{r}{4b} \quad \frac{K'\,S_s'}{KS_s} + \frac{K''Ss''}{KSs} \; ;$$

S_s, S_s', S_s'' = specific storage (storage coefficient per vertical unit of thickness) of the main aquifer and the confining layers, respectively;

K', K" = hydraulic conductivity of the confining layers (Lt^{-1}); and

b, b', b" = thickness of main aquifer and confining layers (L), respectively.

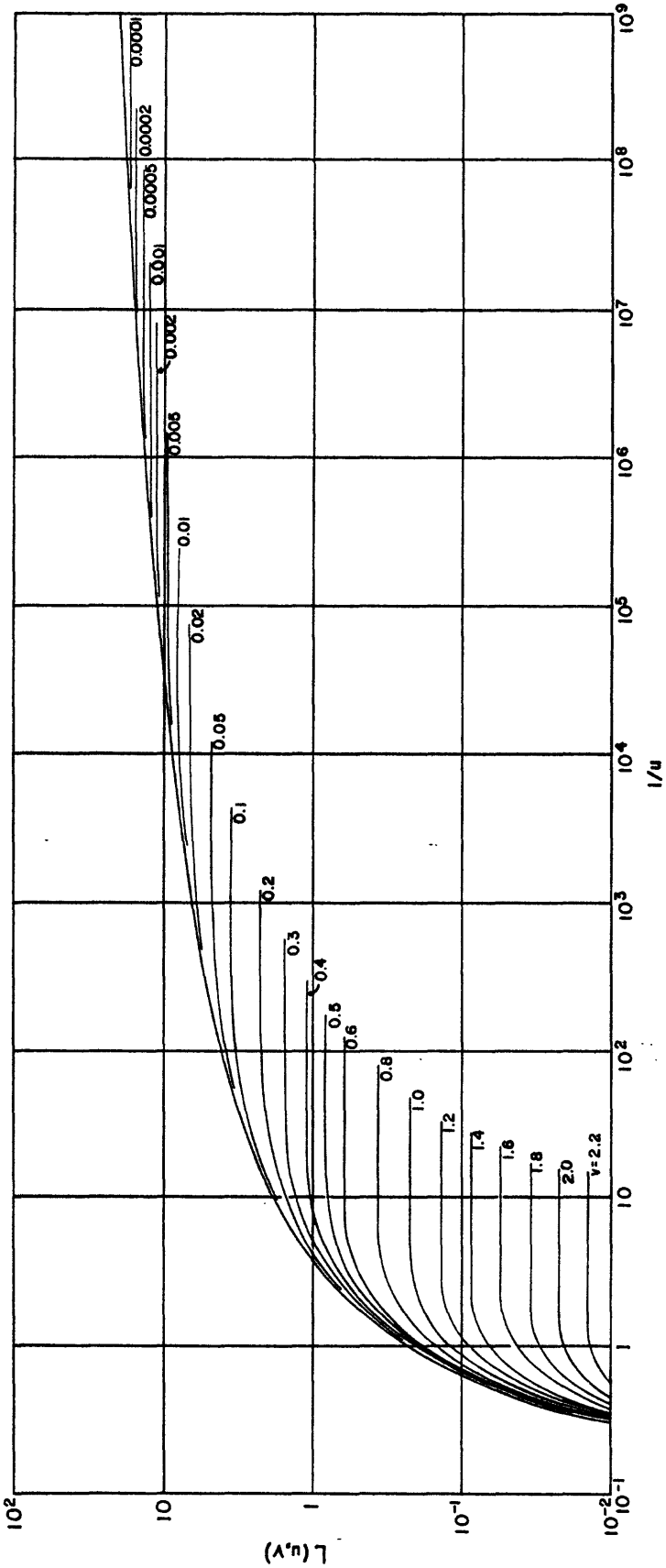

Figure 4.--Type curves for Hantush-Jacob equation (modified from Lohman, 1979, plate 3).

In addition to the assumptions made in the development of the Hantush-Jacob equation (4) for leaky artesian aquifers, Hantush's modified equation (5) for leaky artesian aquifers takes into account conditions in which the aquifer being tested is either overlain or underlain or both by a confining layer or layers that supplies water to the aquifer from storage within the confining layer and as a conductor of water from the source bed.

As with the Theis nonequilibrium method, drawdown (s) is plotted against time (t) on logarithmic paper, and type curves of H (u,β), 1/u, and β on an overlay are fitted to the data points, and a matchpoint is determined. Type curves for Hantush modified equation (5) are found in figure 5. The relevant data are obtained from the matchpoint and used with the equations to determine transmissivity (T) and storage coefficient (S). If sufficient information about the confining layer's thickness (b') and aquifer thickness (b) can be found from well logs, and the well is an observation well, the product of the vertical hydraulic conductivity (K') and specific storage of confining layer (S_s') can be determined.

As with the previous method, the Hantush modified equation (5) allows the use of early-time data. This solution is applied when the known conditions suggest a confined aquifer with water coming from storage in the confining layer.

(6) Boulton's delayed-yield equation (Kruseman and Ridder, p. 97-104):

$$T = \frac{Q}{4\pi s} W(u_A \text{ or } u_y, \frac{r}{B}), \qquad (6)$$

where, in addition to the aforementioned definitions,

$W(u_A \text{ or } u_y, r/B)$ = unconfined aquifer well function;

$S_A = \frac{4\,Tt\,u_A}{r^2}$ = early time-apparent specific yield;

$S_y = \frac{4\,Tt\,u_y}{r^2}$ = late time-specific yield;

$B = \sqrt{\frac{T}{\alpha S_y}}$, L; and

$\frac{1}{\alpha}$ = Boulton's delay index, t.

Assumptions for use of Boulton's delayed-yield equation (6) are: the aquifer is homogeneous, isotropic, infinite in areal extent, that the transmissivity and storage-coefficient values are constant in space where the aquifer is being influenced by the pumping, and that the aquifer is unconfined. The equation describes an initial aquifer response immediately after the aquifer is stressed in the same way as does a confined aquifer, wherein water is released instantaneously from storage by compaction of the aquifer and by the expansion of the water [equivalent to Theis non-

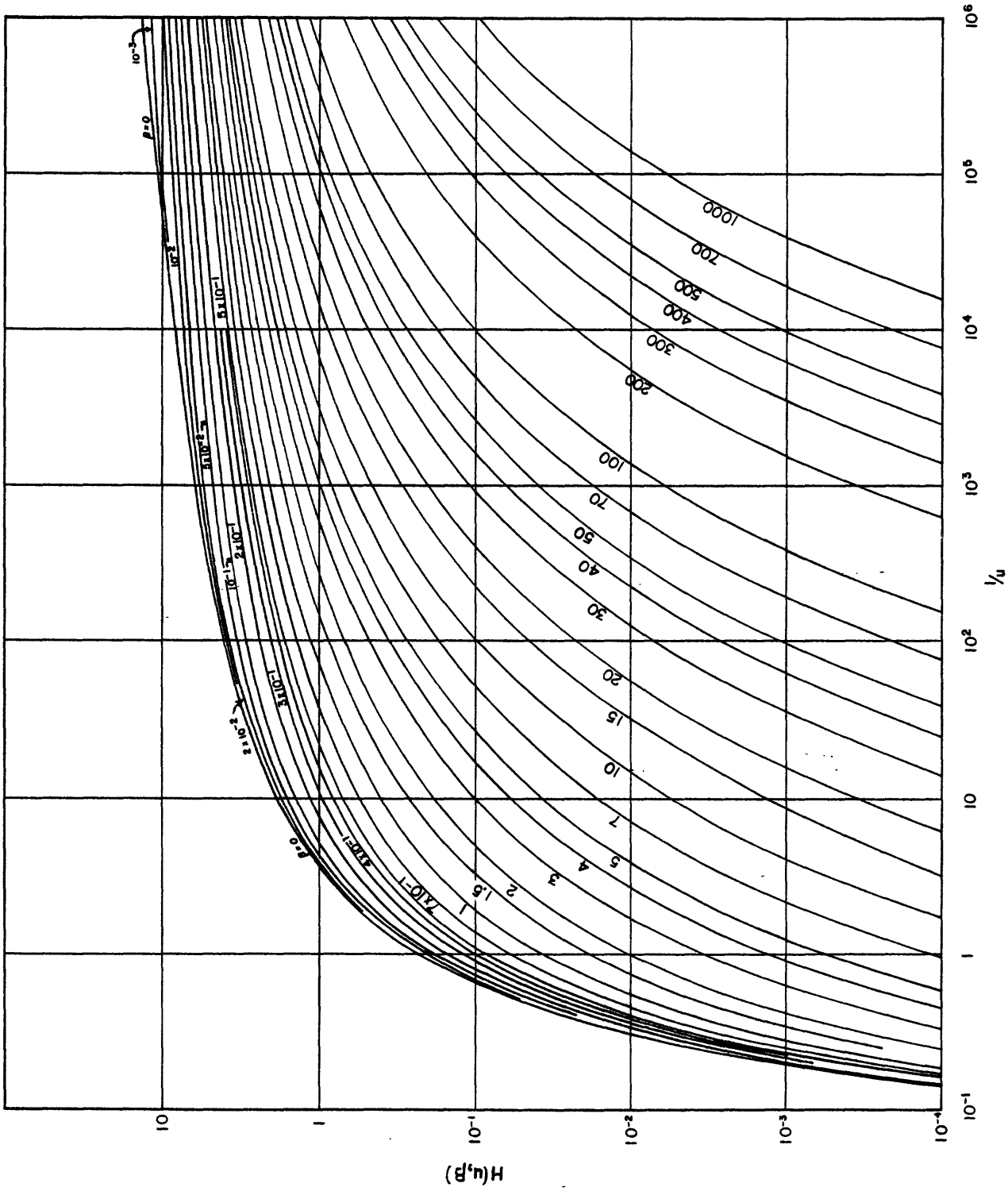

Figure 5.--Type curves for Hantush modified equation (modified from Lohman, 1979, plate 4).

equilibrium equation (1)]. A second time response follows wherein water comes from gravity drainage of the aquifer, and there is a marked discrepancy between the observed data curve and the Theis type curve for unsteady-state flow. In the third response segment, gravity drainage and the rate of fall of the water table are in equilibrium, and the observed data are again in agreement with the theoretical Theis equation.

As with some of the previous methods, the data are plotted on logarithmic paper with drawdown (s) plotted against time (t). The type curves for the Boulton delayed-yield equation (6) are found in figure 6. Type curves on overlays are used to locate match points, and the resulting values are used to calculate transmissivity (T) and the early specific yield (S_A) and/or late specific yield (S_y). As with some of the previous methods, early data may be used.

(7) Specific-capacity method of estimating transmissivity (Lohman, 1979, p. 52 and Walton, 1970, p. 315):

$$T \approx \frac{2.30Q \log_{10} 2.25\ Tt/r^2S}{4\pi s}, \qquad (7)$$

where

Q = discharge rate, L^3t^{-1};

s = drawdown in the well, L;

T = transmissivity, L^2t^{-1};

S = storage coefficient, dimensionless;

r = nominal radius of well, L; and

t = time at which drawdown value was taken after pumping started, t.

Where only specific-capacity test results are available, an approximate value of transmissivity can be calculated if a reasonable storage coefficient can be estimated.

Equation (7) assumes that the well is 100-percent efficient, water is discharged instantaneously from storage with decline in hydraulic head, and the appropriate storage coefficient and nominal well-radii values are known. It also assumes constant discharge, a fully penetrating well, and an aquifer infinite in areal extent with homogeneous and isotropic hydraulic properties. To use equation 7, an approximate storage coefficient has to be assumed. For this study a storage coefficient of 0.15 was assumed for water-table conditions, and a value of 8.0×10^{-4} was assumed for confined conditions when equation 7 was applied. Nominal radius was assumed to be the actual radius of the pumping well when available; otherwise, it was assumed to be 0.50 foot. Since transmissivity is present on both sides of equation (7), a "trial-and-error" or iterative approach was taken in computing transmissivity.

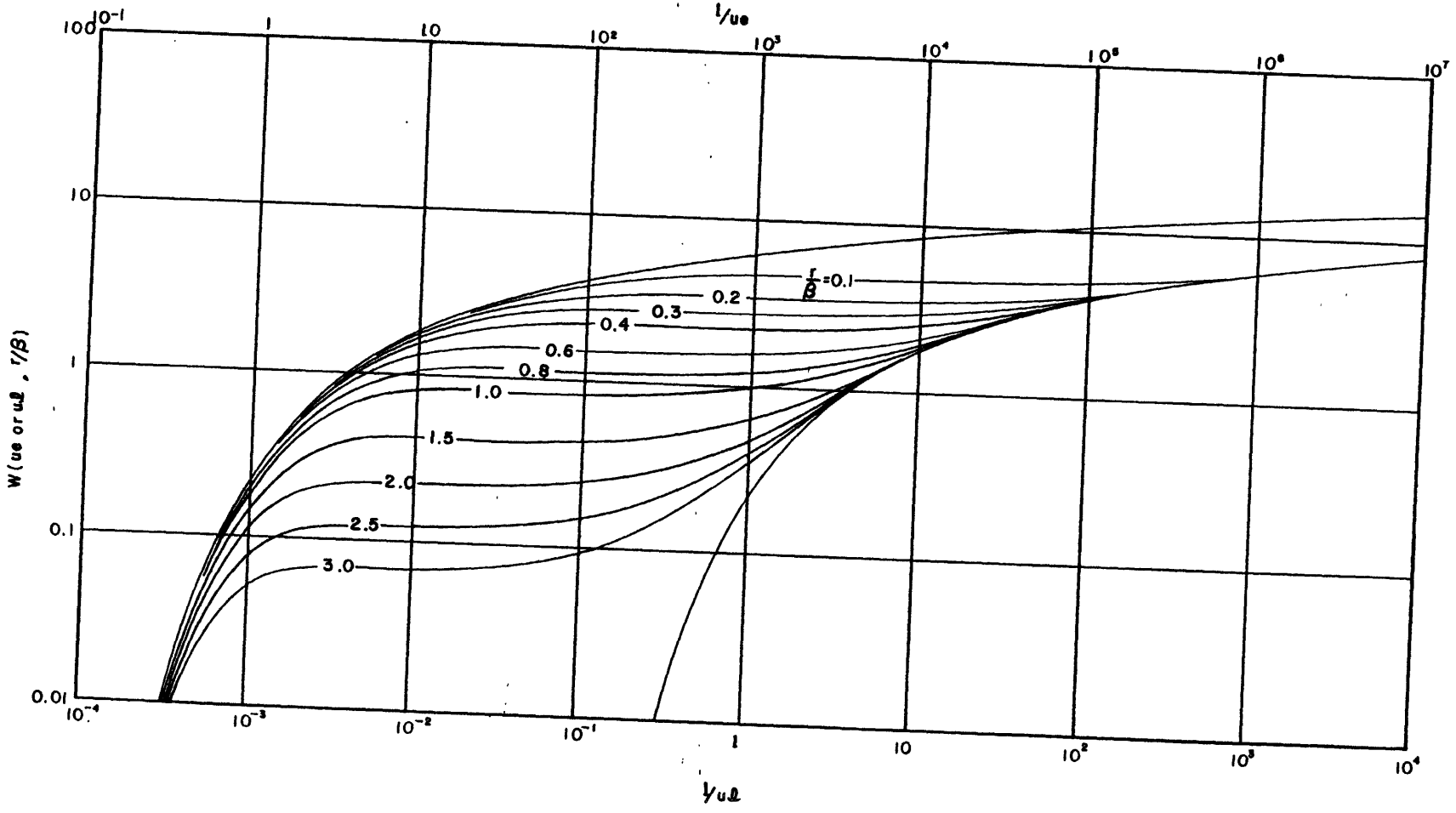

Figure 6.--Type curves for Boulton delayed-yield equation (modified from Lohman, 1979, plate 8).

RESULTS OF AQUIFER TESTS

The results of analyses of aquifer tests conducted in consolidated-rock, glacial, and alluvial aquifers, including the Equus beds aquifer, using the specific-capacity method of estimating transmissivity are given in tables 1-4 at the end of this report. The results are arranged by aquifer type, county, and location. Additional results of analyses of aquifer-performance tests in eastern Kansas and supplemental data, including driller's logs, are given in table 5. These results are arranged by county and well location. Graphs in table 5 show aquifer-test data plotted on semilogarithmic or logarithmic graph paper.

The test results are indicators of the properties associated with the particular well and aquifer at that location. In many areas of the State, these tests may be the only available onsite information about the hydraulic characteristics of the aquifer of interest. However, when using the results, some consideration should be given to factors that may have influenced the values obtained. Many of the tests are of the "short-duration" type, and it should be recognized that the values from these tests represent only that part of the aquifer within the area of the "cone of influence" of the pumping well. Where possible, the time of pumping was indicated for each test or can be determined from the graph scale depending on the type of plot presented for the test. For most tests, the data available indicated that static water levels were measured after sufficient time had passed following the installation of the well. However, data were not available to verify this factor for some tests. Other factors that may have influenced the results of a test, but which were not determined from this study are: pre-test water-level trends, well development, partial penetration of the aquifer, relative position of the pumping well screen, or intake, to the position of the screen on the observation well, and possible interference from operation of nearby production wells. Although not noted on each test, most observation-well screens were located at approximately the same elevation as the screens for the pumping well.

Partial penetration of the aquifer by the pumping well or the observation well can result in calculated transmissivity values that are too small. The calculated value could easily be as much as one-half of its true value. If the observation well is located at a distance equal to or greater than 1.5 times the thickness of the aquifer from the pumping well, then partial penetration of an isotropic aquifer will not affect the results. However, in the case of anisotropic aquifers, this factor would need to be larger. Therefore, the reader should be aware that the calculated values of transmissivity, as presented in this report, are to be considered as minimum values.

In many of the graphs some of the data points may not fall on the curve used to compute the aquifer properties. In these cases, weighting of the data points was necessary to account for various factors. These factors include: (1) restrictions imposed by the theoretical equations used for analysis of the tests, (2) distinctive changes in the slope of the curves, which may indicate that boundary effects are present, and (3) possible variations in pumping rates that may alter the smooth transition of the data points but which, in the investigator's judgement, may still not be

of a magnitude to cause the test to be disregarded. Also, if the discharge may be in error and thus give erroneous results.

Violations of the assumptions used in the development of the theoretical equations result in differences between observed and predicted data. For example, the Theis equation is based on the assumptions that pumpage remains constant and that water is released from storage immediately and is directly proportional to the rate of decline of the pressure head. However, there is considered to be a time lag between the pressure decline and the release of stored water. Also, the pumping rate initially may vary as the pump adjusts itself to the change in head. In application of the semilog plots, the data points will not fall on the curve until the value of u is less than about 0.01. When boundary effects were apparent, the curve was matched to the data before these effects influenced the results. However, if boundary effects were incurred in the pumping period, these effects still would be present in the analysis of a recovery test.

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Table 1.--Results of analyses using specific-capacity data from wells located in consolidated-rock aquifers

County	Well number	Date of test	Well radius (feet)	Well depth (feet)	Static water level (feet)	Discharge (cubic feet per day)	Pumping time (days)	Drawdown (feet)	Assumed storage coefficient (dimensionless)	Estimated transmissivity (square feet per day)	Source of information
Butler	27-3E-18ADB	03-13-69	0.25	120	53.2	6,400	1.04×10^{-2}	23.2	0.0008	300	Layne Western Co.
Crawford	30-23E-12DBD	04-13-76	.42	1,165	24.0	7,100	6.25×10^{-2}	4.0	.0008	1,700	Do.
Ellsworth	14-9W-7AD	02-27-63	--	140	66.0	19,000	1.04×10^{-2}	18.0	.15	500	Do.
Do.	17-9W-32ADD	08-29-60	.33	197	48.0	48,000	2.08×10^{-2}	53.2	.0008	900	Do.
Do.	17-9W-32BD	08-10-60	--	160	56.0	48,000	3.47×10^{-3}	32.4	.15	600	Do.
Wabaunsee	14-9E-7ADD	05-08-63	.33	143	66.0	19,000	1.04×10^{-2}	18.0	.15	600	Do.

Table 2.--Results of analyses using specific-capacity data from wells located in glacial aquifers

Doniphan	4-19E-10ADA	09-19-67	0.33	43	30.3	9,600	6.94×10^{-3}	11.5	0.15	400	Layne Western Co.
Jackson	5-15E-9DCC	08-19-60	--	40	26.1	5,800	3.47×10^{-3}	3.2	.15	700	Do.
Jefferson	8-20W-6AAD	04-19-61	.50	29	19.8	3,900	6.94×10^{-3}	2.0	.15	900	Do.
Do.	9-20W-31DDC	04-19-67	.50	36	28.5	5,800	1.74×10^{-2}	5.9	.0008	900	Do.
Do.	9-20W-32CDD	04-06-67	--	40	19.8	3,300	2.78×10^{-3}	5.3	.0008	500	Do.
Nemaha	2-14E-1DBCA	10-01-56	--	304	85.0	1,900	2.08×10^{-2}	6.0	.15	100	Do.

Table 3.--Results of analyses using specific-capacity data from wells located in alluvial aquifers

County	Well number	Date of test	Well radius (feet)	Well depth (feet)	Static water level (feet)	Discharge (gallons per minute)	Pumping time (minutes)	Drawdown (feet)	Assumed storage coefficient (dimensionless)	Estimated transmissivity (square feet per day)	Source of information
Jefferson	11-17E-29DBA	07-17-67	0.17	50	15.6	5,800	6.94×10^{-3}	2.3	0.15	1,800	Layne-Western Co.
Leavenworth	12-21E-13CCA	11-19-68	.42	44	20.0	5,800	6.94×10^{-3}	2.2	.15	1,400	Do.
Sedgwick	28-1W-22BAA	03-03-58	--	111	36.2	117,000	6.94×10^{-3}	14.2	.15	5,000	Kansas Gas and Electric Co.
Do.	28-1W-22BAB	03-04-58	--	108	37.8	116,000	6.94×10^{-3}	13.9	.15	5,100	Do.
Do.	28-1W-22BDC	--	--	115	46.3	116,000	6.25×10^{-3}	9.8	.15	7,500	Do.
Do.	28-1W-28BAA	--	--	105	43.3	118,000	6.94×10^{-3}	16.4	.15	4,300	Do.
Wyandotte	10-23E-12DBD	09-11-59	.33	89	16.0	19,000	1.04×10^{-2}	7.0	.15	1,700	Layne-Western Co.
Do.	11-23-31DABB	03-20-71	.67	59	30.0	135,000	3.47×10^{-3}	9.5	.15	7,700	Do.

Table 4.--Results of analyses using specific-capacity data from wells located in the Equus Beds aquifer

County	Well number	Date of test	Well radius (feet)	Well depth (feet)	Static water level (feet)	Discharge (cubic feet per day)	Pumping time (days)	Drawdown (feet)	Assumed storage coefficient (dimensionless)	Estimated transmissivity (square feet per day)	Source of information
Harvey	24-2W-6ADD	04-25-39	0.75	122	14.3	391,000	2.08×10^{-2}	13.1	0.0008	34,000	City of Wichita
Do.	24-2W-8DBB	06-13-59	.75	226	9.7	387,000	2.08×10^{-2}	33.2	.0008	13,000	Do.
Do.	24-2W-16DAA	08-05-39	.75	156	11.1	348,000	2.08×10^{-2}	39.7	.0008	9,700	Do.
Do.	24-2W-22CDD	06-09-39	.75	147	14.1	262,000	2.08×10^{-2}	35.5	.0008	8,000	Do.
Do.	24-2W-35ADD	06-12-39	.75	243	13.2	387,000	2.08×10^{-2}	57.1	.0008	7,300	Do.
Do.	24-2W-35DDD	06-02-39	.75	96	15.7	279,000	2.08×10^{-2}	24.4	.15	7,600	Do.
Do.	24-2W-36DCC	05-26-39	.75	186	10.5	389,000	2.08×10^{-2}	36.5	.0008	12,000	Do.
McPherson	19-3W-31DC	06-26-78	--	200	58.2	235,000	6.94×10^{-3}	30.1	.0008	8,300	Layne-Western Co.
Reno	23-6W-2DDC	05-29-55	1.58	83	17.1	385,000	4.17×10^{-2}	11.6	.15	23,000	Do.
Do.	23-6W-3AAA	08-24-65	.75	54	17.3	117,000	4.17×10^{-2}	4.9	.15	19,000	Do.
Do.	23-6W-3AAA	02-11-80	.75	82	16.9	289,000	6.94×10^{-2}	22.6	.15	10,000	Do.
Do.	23-6W-6AAB	05-25-66	0.75	65	20.8	117,000	2.08×10^{-2}	6.3	.15	13,000	Do.
Do.	23-6W-7ACD	05-31-57	1.58	64	24.0	194,000	3.33×10^{-1}	24.0	.15	6,100	Do.
Do.	23-6W-12BB	02-18-70	.83	79	19.7	233,000	2.08×10^{-2}	18.0	.15	8,500	Do.
Do.	23-6W-26DDD	07-02-70	.75	70	15.4	233,000	6.94×10^{-3}	9.8	.15	15,000	Do.
Do.	24-6W-11BAB	10-22-78	.67	132	22.1	135,000	4.17×10^{-2}	23.2	.0008	6,700	Do.
Do.	24-6W-11BBB	10-22-78	.67	138	21.5	135,000	4.17×10^{-2}	29.1	.0008	5,200	Do.
Do.	24-6W-11BBC	11-02-78	.67	136	22.8	145,000	4.17×10^{-2}	33.2	.0008	4,900	Do.
Sedgwick	25-3W-17AA	06-06-74	.42	103	17.2	65,000	6.94×10^{-3}	6.5	.0008	11,000	Do.

Table 5.--Results of analyses of aquifer tests in eastern Kansas and driller's logs

County Atchison

Location 5-18E-6ACC

Date tested December 10, 1968

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 60

Static water level (feet) 22

Discharge (cubic feet per day) 58,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 27,000

Storage coefficient ---

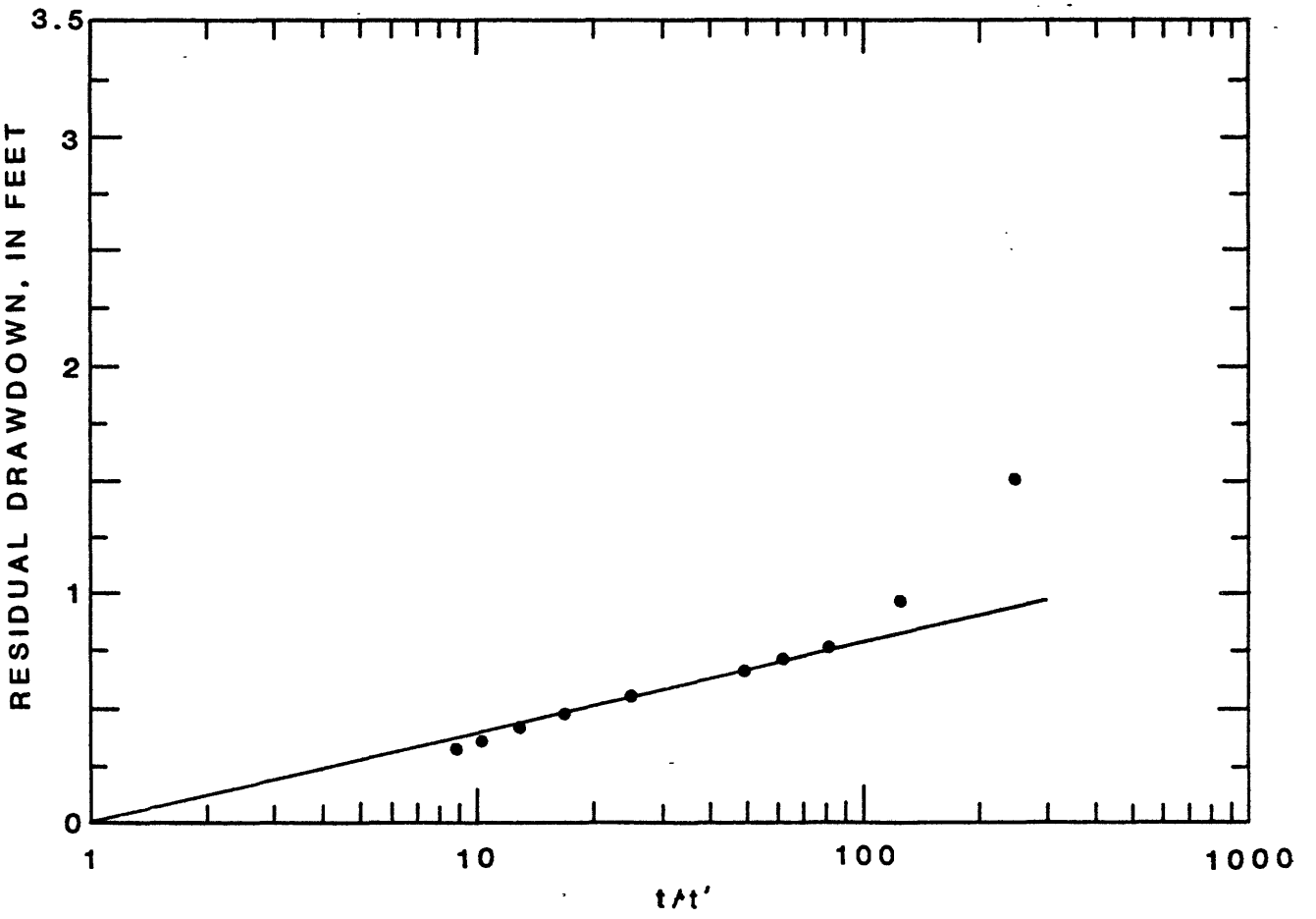
Source Layne-Western Co.

Remarks Glacial deposits

Pumping well, pumping time 4 hours, 15 feet of screen, gravel pack

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown, silty	2-7
Clay, brown, sandy, some gravel	7-10
Sand, brown, medium to coarse, with trace of fine sand and gravel	10-37
Sand, gray brown, fine to medium, with some coarse sand	37-40
Sand, gray brown, medium to coarse, with traces of fine sand and gravel	40-55
Sand, brown, medium to coarse, with traces of fine sand and gravel	55-58
Shale, gray	58-60



County Atchison

Location 5-18E-6CDC

Date tested May 26, 1978

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) ---

Static water level (feet) 1.3

Discharge (cubic feet per day) 16,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 1,000

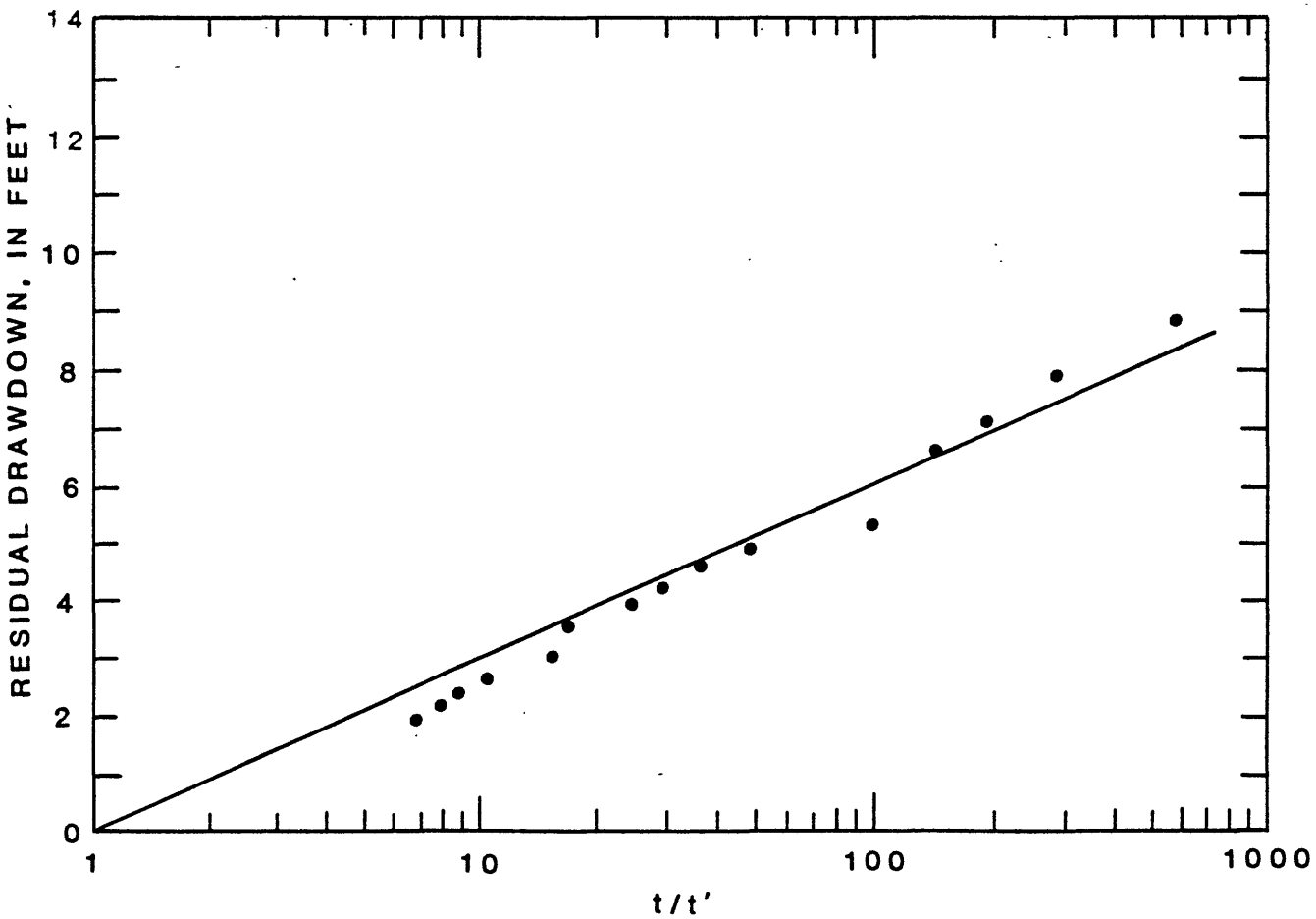
Storage coefficient ---

Source Layne-Western Co.

Remarks Glacial deposits

Pumping well,

Pumping time 24 hours



County Atchison

Location 5-18E-6CDD

Date tested May 26, 1978

Pumping well radius (feet) or distance from pumping well (feet) 94.2

Well depth (feet) ---

Static water level (feet) 0.29

Discharge (cubic feet per day) 16,000

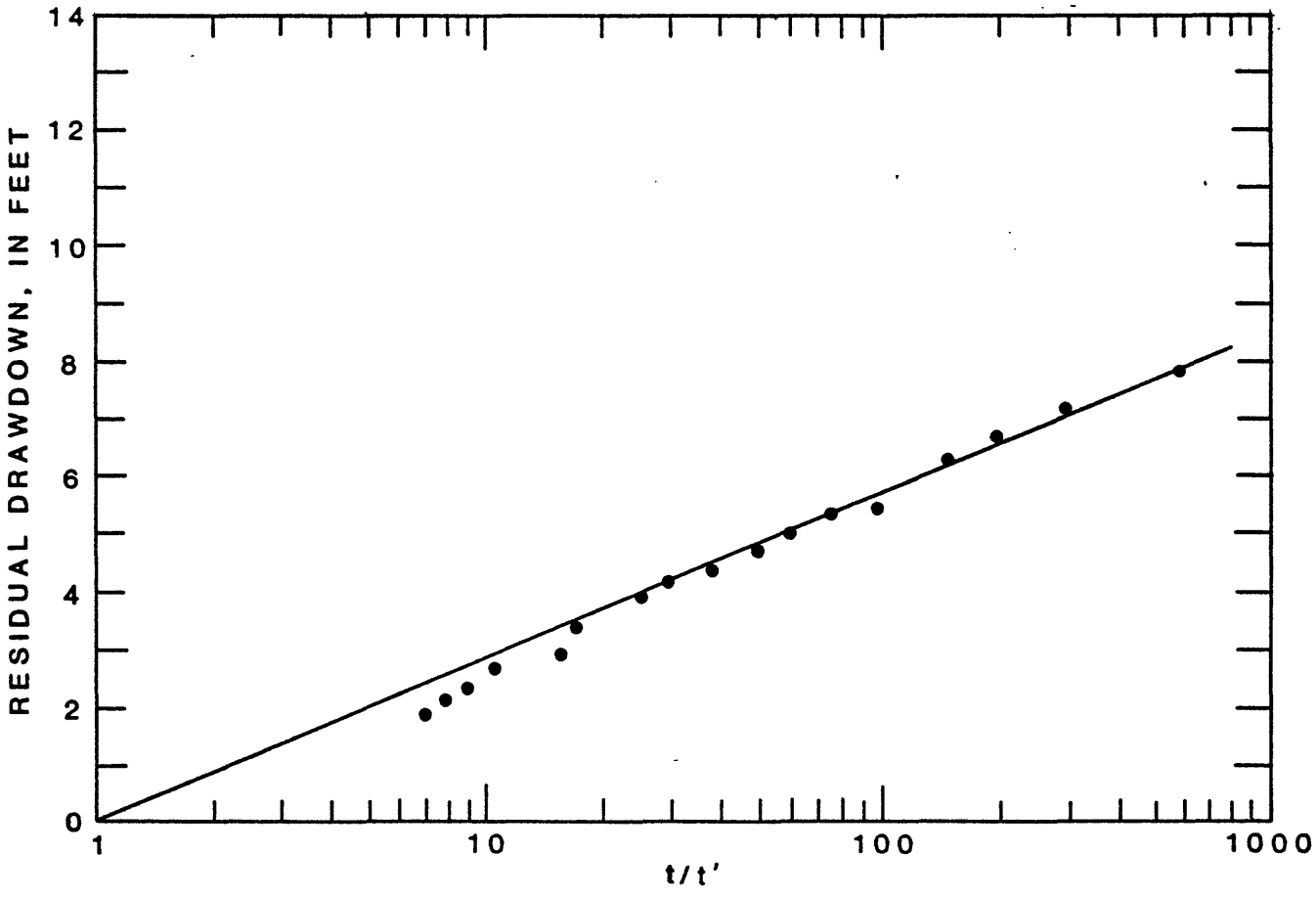
Method of analysis Theis Recovery

Transmissivity (square feet per day) 1,000

Storage coefficient ---

Source Layne-Western Co.

Remarks Glacial deposits , Observation well , Pumping time 24 hours



County Atchison

Location 5-21E-29BAA

Date tested May 13, 1967

Pumping well radius (feet) or distance from pumping well (feet) 25

Well depth (feet) 100*

Static water level (feet) 10.7

Discharge (cubic feet per day) 251,000

Method of analysis Theis Recovery

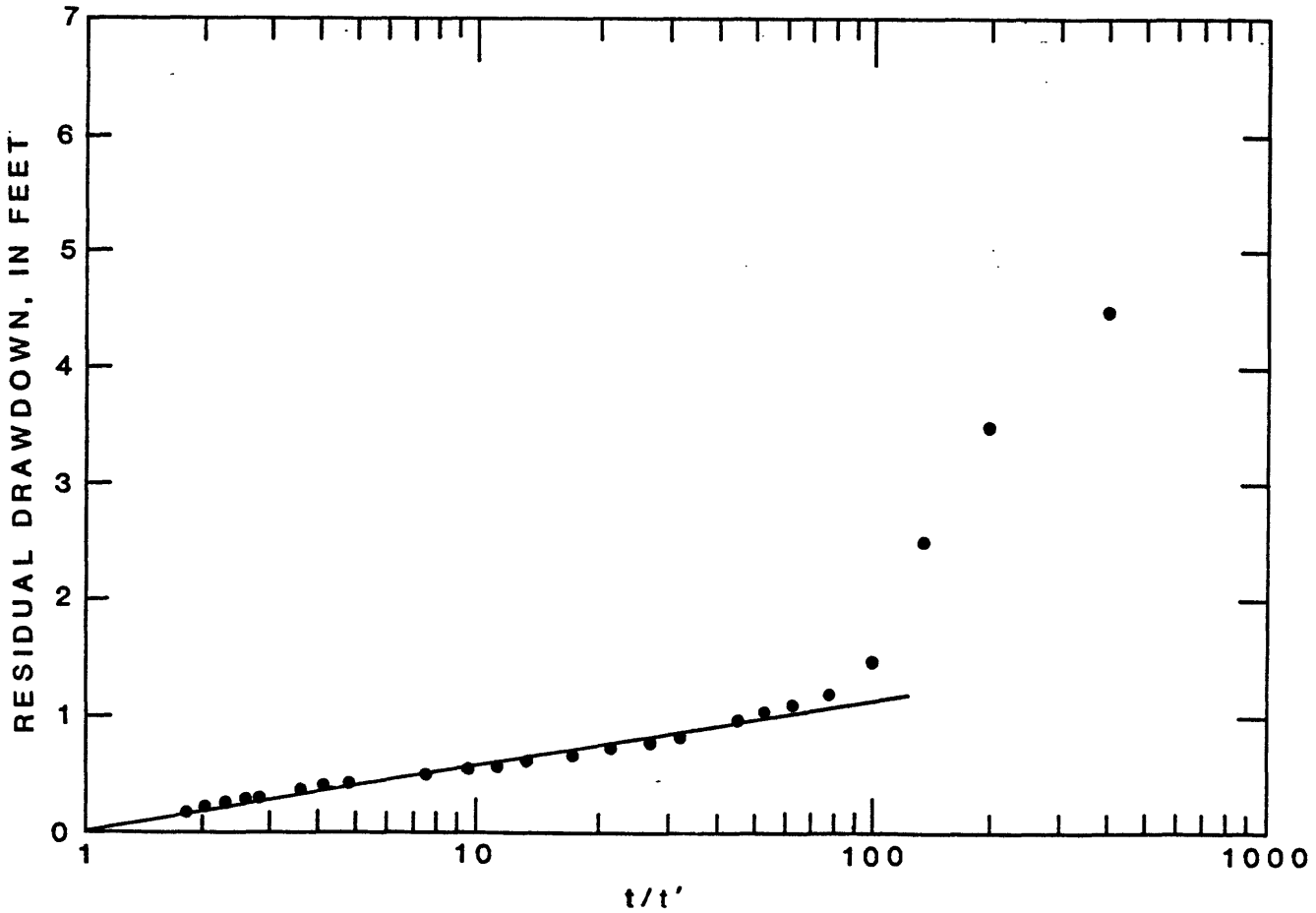
Transmissivity (square feet per day) 84,000

Storage coefficient ---

Source U.S. Geological Survey

Remarks *Log and depth are that of pumping well, pumping time 2.5 hours
Glacial deposits, observation well

Driller's Log	Depth (feet)
Soil, black	0-5
Clay, brown and gray, calcareous	5-7
Sand, fine to coarse	7-40
Gravel, fine, and medium to coarse sand	40-50
Gravel, fine to coarse	50-54
Clay, gray, calcareous	54-57
Gravel, fine to coarse	57-64
Gravel, fine to coarse, and medium to coarse sand	64-84
Gravel, fine to coarse	-84-100



County Bourbon

Location 23-24E-36

Date tested November 12, 1962

Pumping well radius (feet) or distance from pumping well (feet) 0.33

Well depth (feet) 46.7

Static water level (feet) 13.1

Discharge (cubic feet per day) 1,500

Method of analysis Jacob Modified

Transmissivity (square feet per day) 70

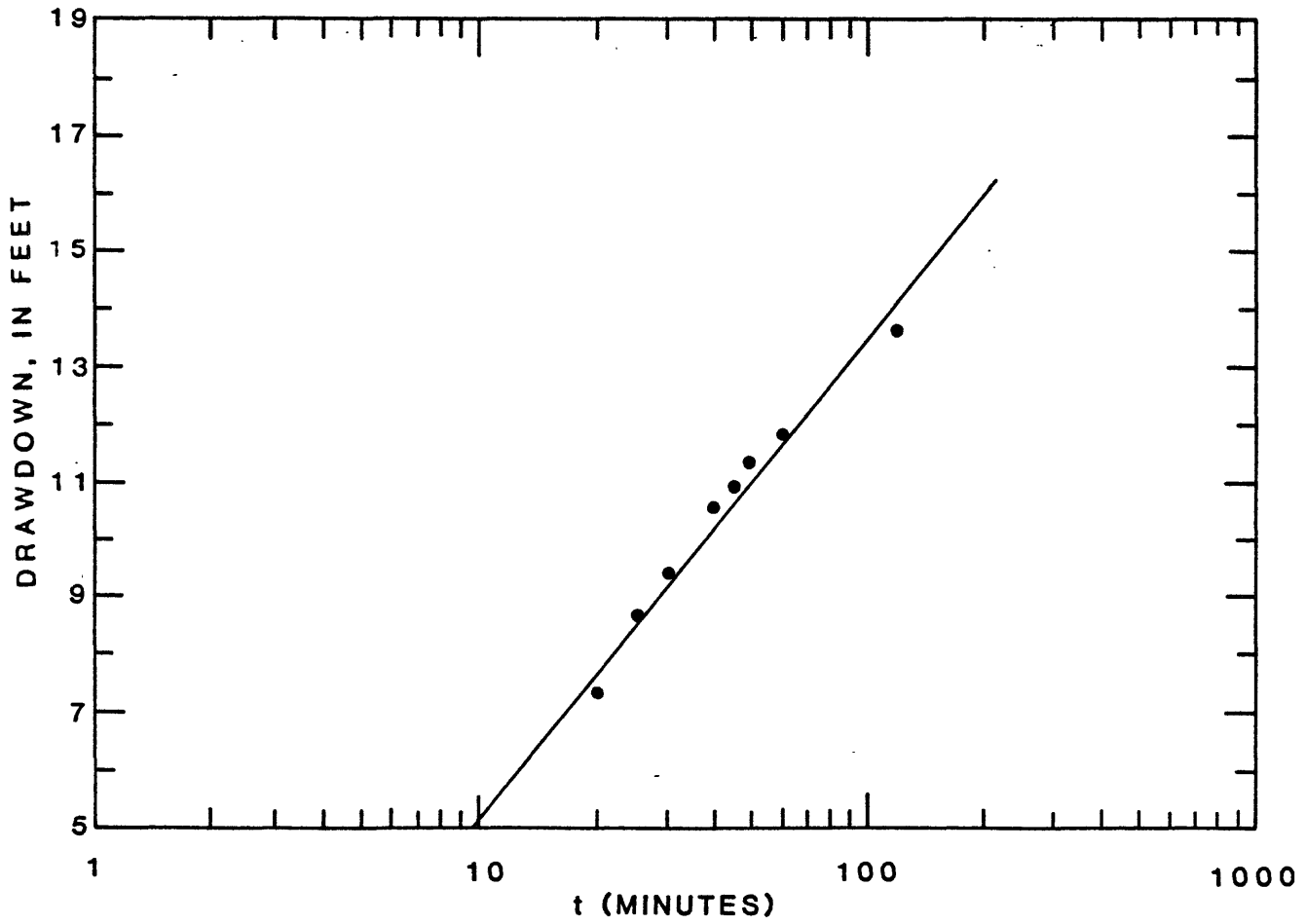
Storage coefficient ---

Source Layne-Western Co.

Remarks Consolidated rocks, confined conditions, screened 39 to 44 feet, 8-inch stainless steel, pumping well, gravel pack

Driller's Log

	Depth (feet)
Topsoil	0-3
Clay, tan and green	3-10
Clay, cream-colored	10-15
Clay, tan	15-32
Clay, blue	32-38
Limestone fragments, some clay	38-43
Limestone	43-46
Shale, blue	46-47



County Brown

Location 3-15E-28DDDD

Date tested March 8, 1968

Pumping well radius (feet) or distance from pumping well (feet) 0.25

Well depth (feet) 97

Static water level (feet) 70.42

Discharge (cubic feet per day) 1,500

Method of analysis Hantush-Jacob

Transmissivity (square feet per day) 4

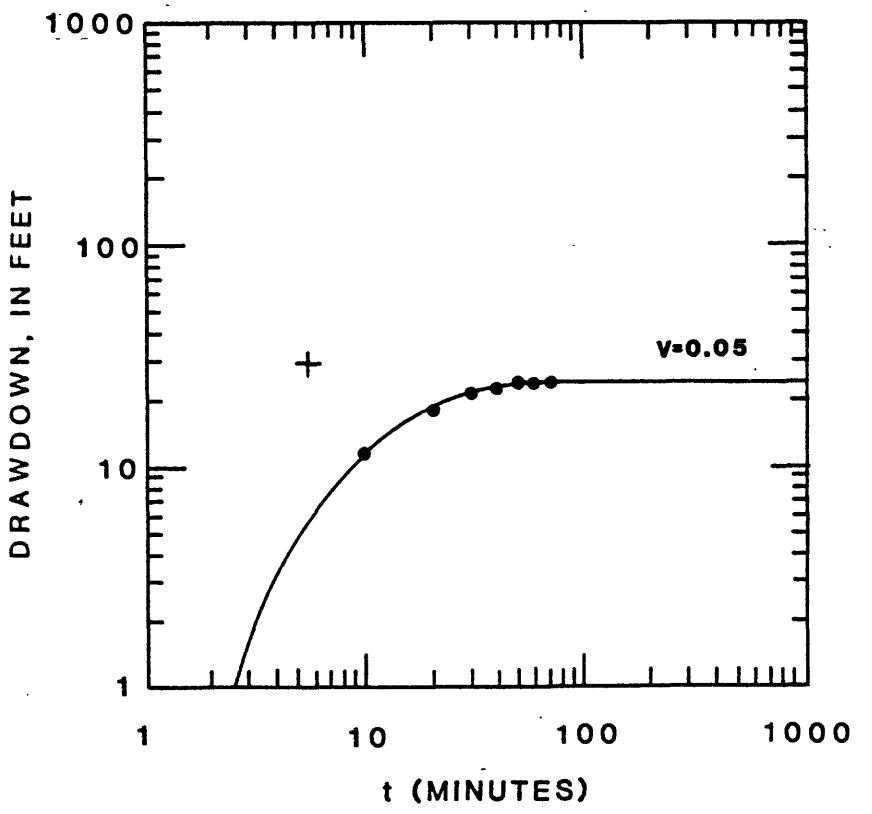
Storage coefficient ---

Source Layne-Western Co.

Remarks Consolidated rocks, pumping well, confined conditions, gravel pack, screened from 92 to 97 feet

Driller's Log

	Depth (feet)
Topsoil	0-1
Clay, brown, silty	1-14
Clay, brown, sandy	14-21
Limestone	21-24
Shale, yellow-brown	24-30
Limestone	30-32
Shale, yellow-brown	32-36
Limestone	-36-36.5
Shale, gray	-36.5-37.5
Limestone	-37.5-38
Shale, gray	38-46
Shale, green	46-50
Shale, gray	-50-54.5
Shale, red	-54.5-55.5
Limestone	-55.5-61
Shale, gray	61-64
Shale, black	64-72
Limestone	72-73
Shale, gray	73-91
Limestone, fracture zone, water source	91-106



County Butler

Location 26-3E-9DBC

Date tested June 17, 1952

Pumping well radius (feet) or distance from pumping well (feet) 0.33

Well depth (feet) 32

Static water level (feet) 11

Discharge (cubic feet per day) 28,900

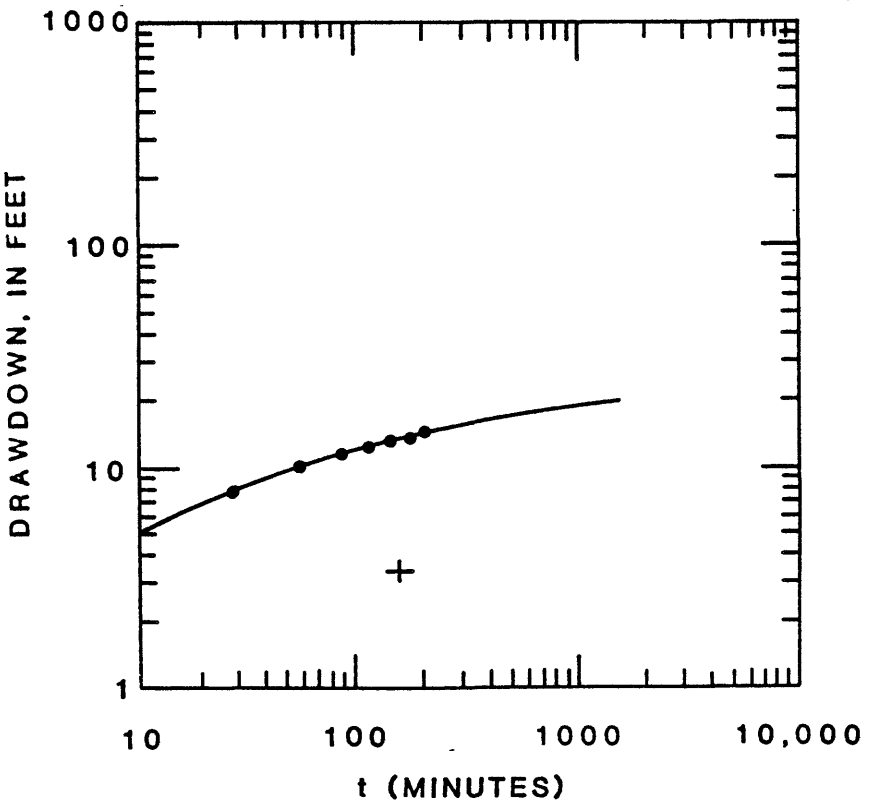
Method of analysis Theis Nonequilibrium

Transmissivity (square feet per day) 700

Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, pumping well



County Butler

Location 27-6E-22BAB

Date tested February 14, 1978

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) ---

Static water level (feet) 22

Discharge (cubic feet per day) 5,600

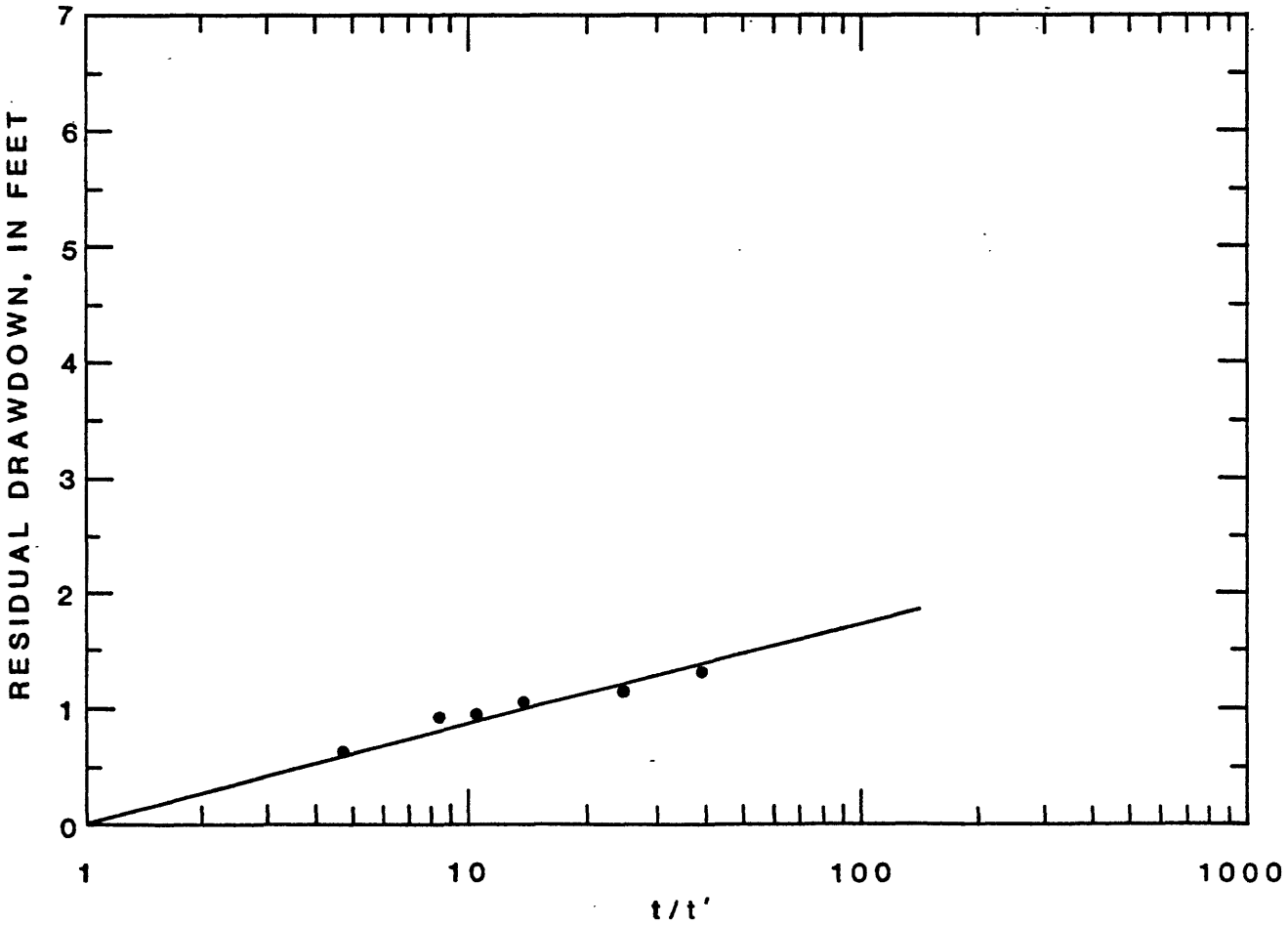
Method of analysis Theis Recovery

Transmissivity (square feet per day) 1,200

Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, pumping well, pumping time 39 minutes



County Clay

Location 6-1E-2AC

Date tested Fall 1955

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 70

Static water level (feet) 22.21

Discharge (cubic feet per day) 154,000

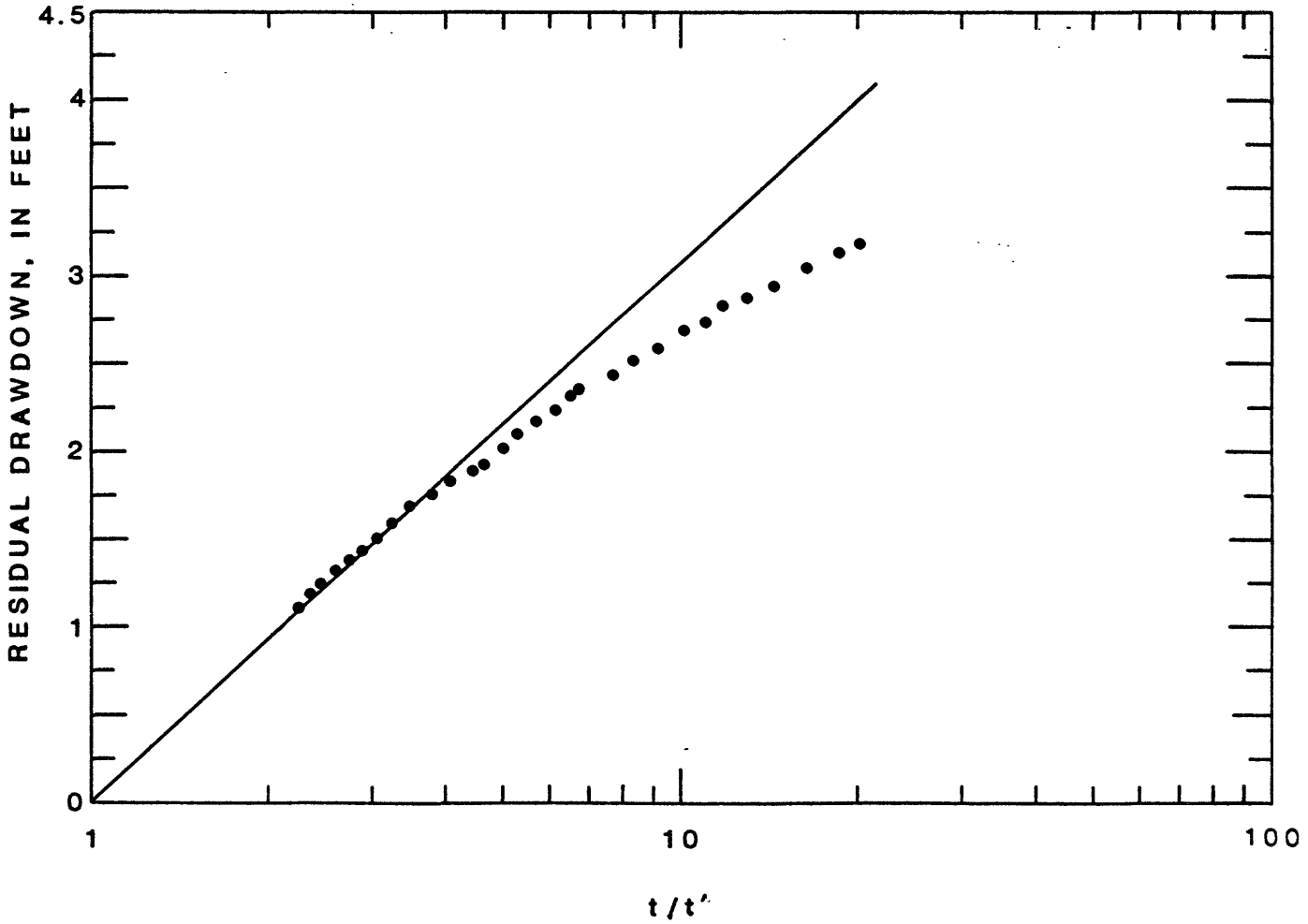
Method of analysis Theis Recovery

Transmissivity (square feet per day) 7,000

Storage coefficient ---

Source Kansas Geological Survey

Remarks Alluvial deposits, pumping well, gravel pack, pumping time 3 hours



County Clay

Location 8-3E-8ADA

Date tested June 8, 1962

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 48

Static water level (feet) 16.06

Discharge (cubic feet per day) 140,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 45,000

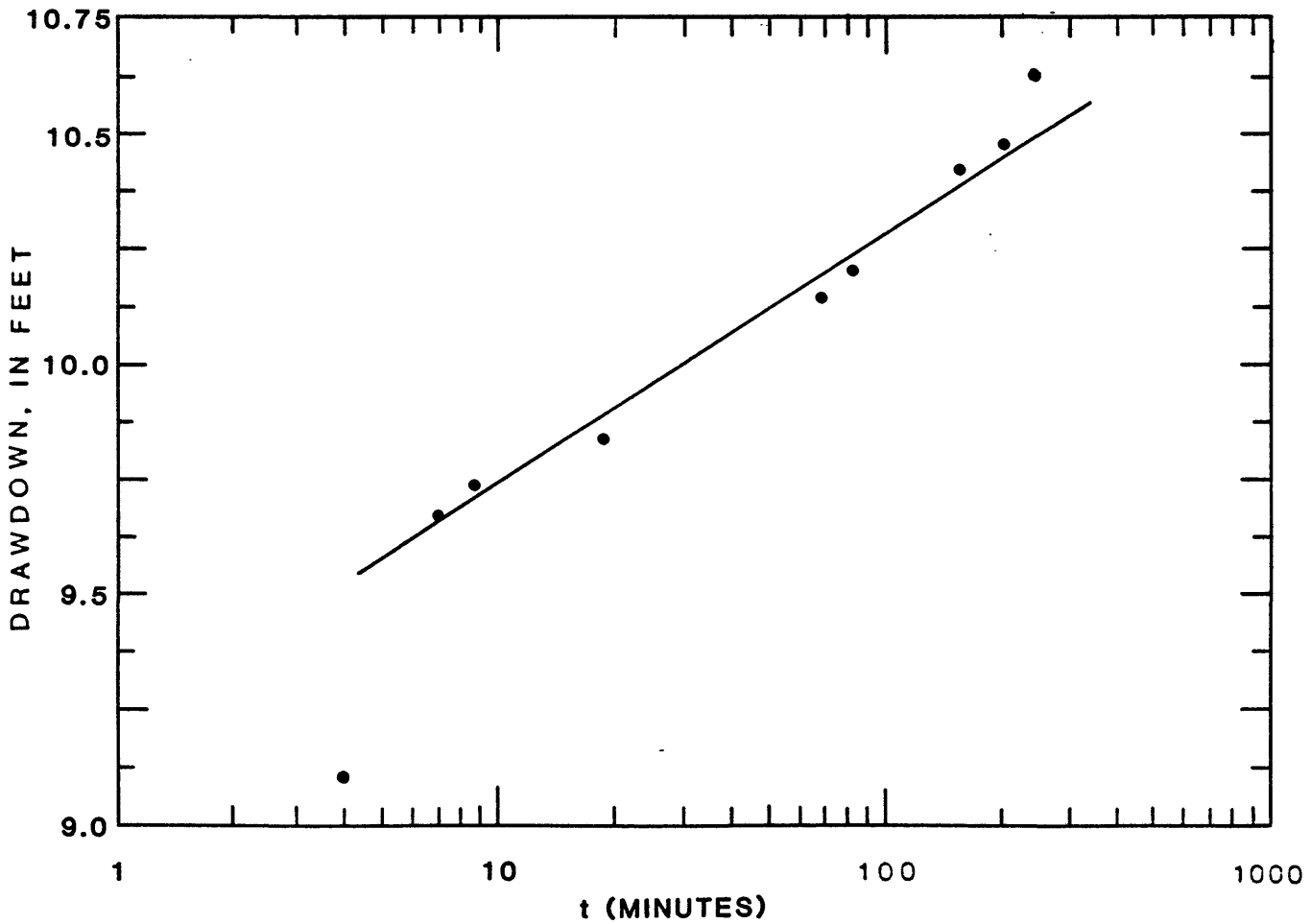
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, pumping well, gravel pack, screened from 33 to 48 feet

Driller's Log

	Depth (feet)
Topsoil	0-5
Sand, medium to coarse, and gravel, with few thin clay lenses	5-15
Sand, medium to coarse, and medium to coarse gravel; very loose	15-42
Clay, brown	42-44
Sand, medium to coarse, and medium to coarse gravel; lots of sandstone fragments	44-48



County Cloud

Location 5-2W-1BAC

Date tested August 13, 1968

Pumping well radius (feet) or distance from pumping well (feet) 2,000

Well depth (feet) 250

Static water level (feet) 48.85

Discharge (cubic feet per day) 96,300

Method of analysis Theis Nonequilibrium

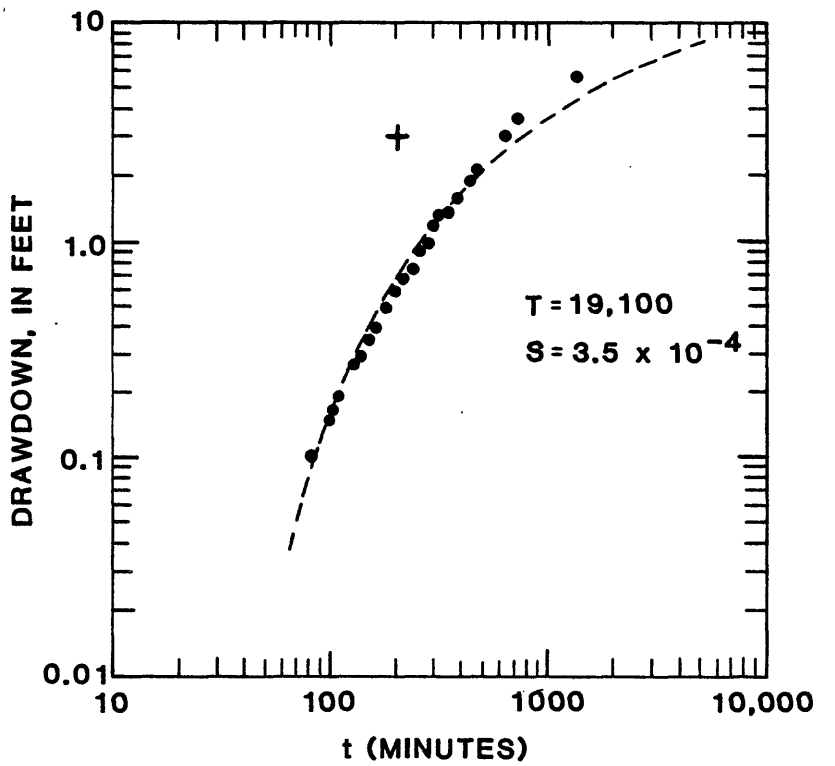
Transmissivity (square feet per day) 2,560

Storage coefficient 3.5×10^{-4}

Source U.S. Geological Survey

Remarks Consolidated rocks

Observation well, pumping time 23 hours, pumping rate varied from 620 to 480 gal/min



County Cloud

Location 5-2W-25CC

Date tested October 11, 1955

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) 72.0

Static water level (feet) 22.42

Discharge (cubic feet per day) 193,000

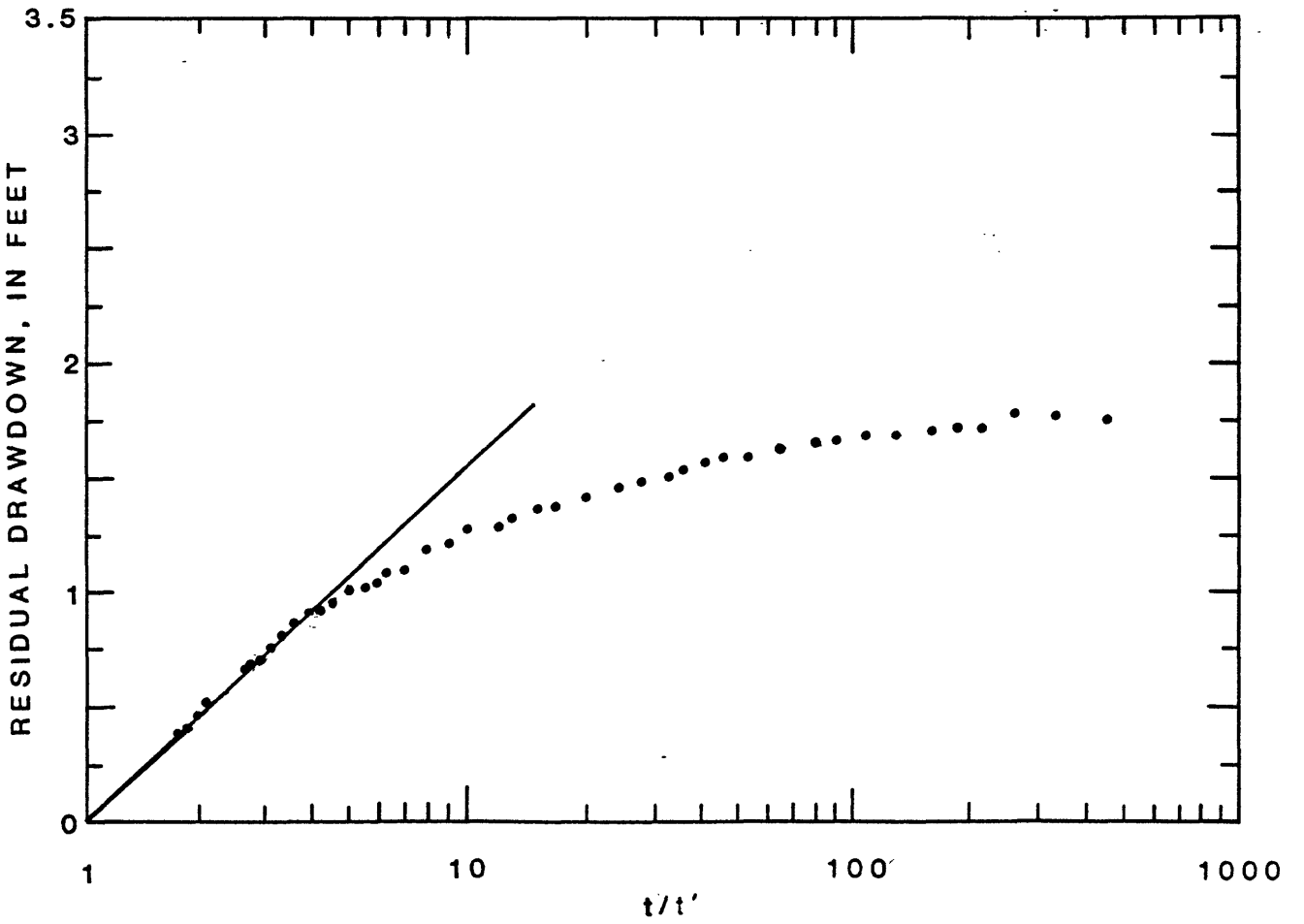
Method of analysis Theis Recovery

Transmissivity (square feet per day) 25,000

Storage coefficient ---

Source Kansas Geological Survey

Remarks Alluvial deposits, pumping well, pumping time 5.3 hours



County Cloud

Location 5-2W-25CC

Date tested October 11, 1955

Pumping well radius (feet) or distance from pumping well (feet) 20.4, 51, 100, 150

Well depth (feet) ---

Static water level (feet) 24.87, 25.04, 23.95, 23.95

Discharge (cubic feet per day) 193,000

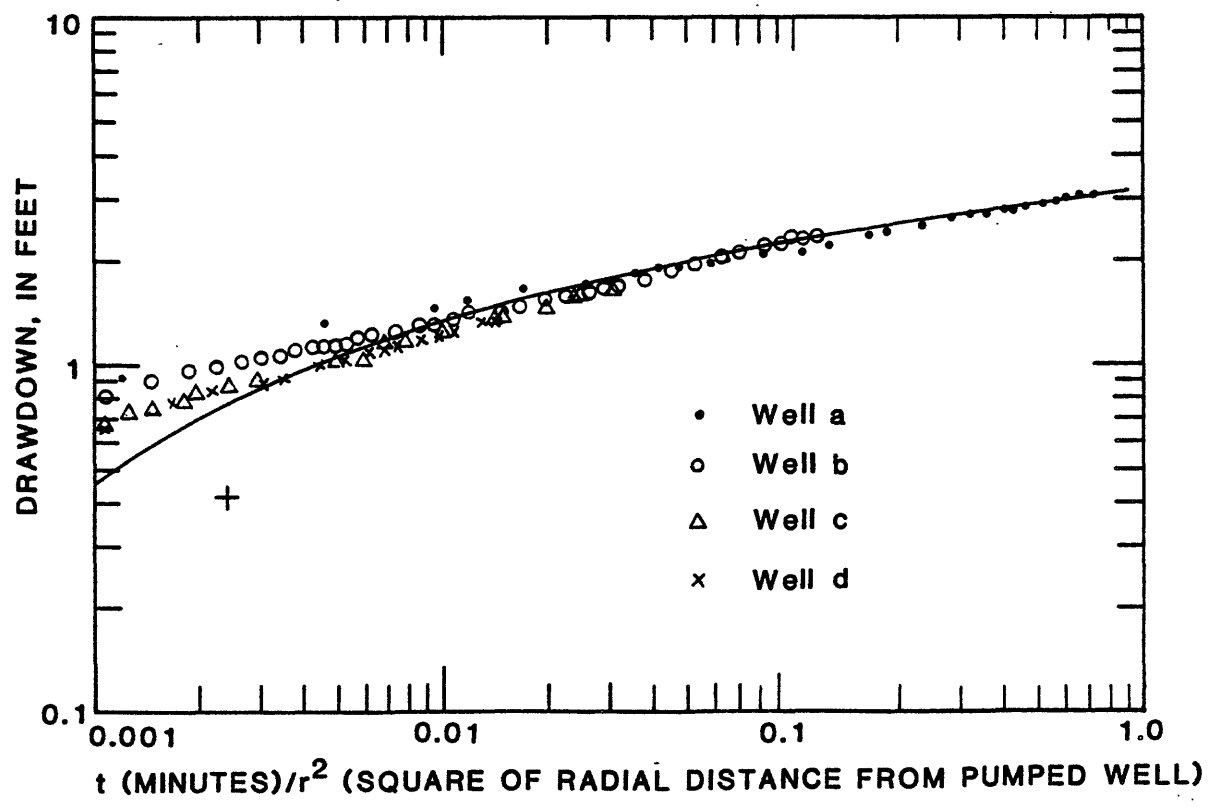
Method of analysis Theis Nonequilibrium (composite plot of data for wells a-d)

Transmissivity (square feet per day) 36,500

Storage coefficient 0.0064

Source Kansas Geological Survey

Remarks Alluvial deposits
Observation wells,
Pumping time 5.3 hours



County Cloud

Location 5-3W-31BC

Date tested August 26, 1942

Pumping well radius (feet) or distance from pumping well (feet) 0.33

Well depth (feet) 54

Static water level (feet) 23.05

Discharge (cubic feet per day) 9,000

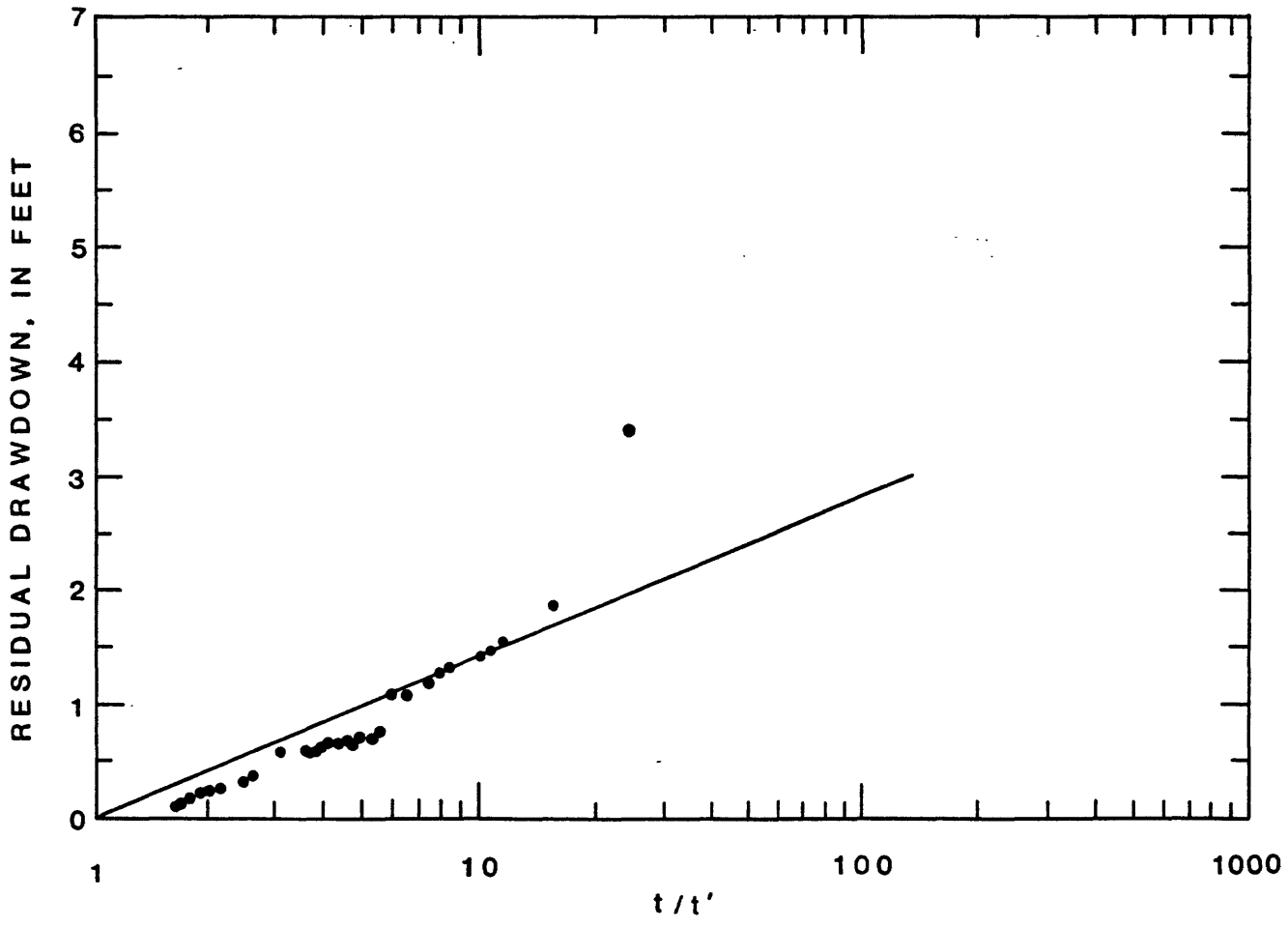
Method of analysis Theis Recovery

Transmissivity (square feet per day) 1,200

Storage coefficient ---

Source Kansas Geological Survey

Remarks Consolidated rocks, pumped well, pumping time 2 hours



County Cloud

Location 6-1W-4BBC

Date tested October 12, 1955

Pumping well radius (feet) or distance from pumping well (feet) 48

Well depth (feet) ---

Static water level (feet) 26.66

Discharge (cubic feet per day) 104,000

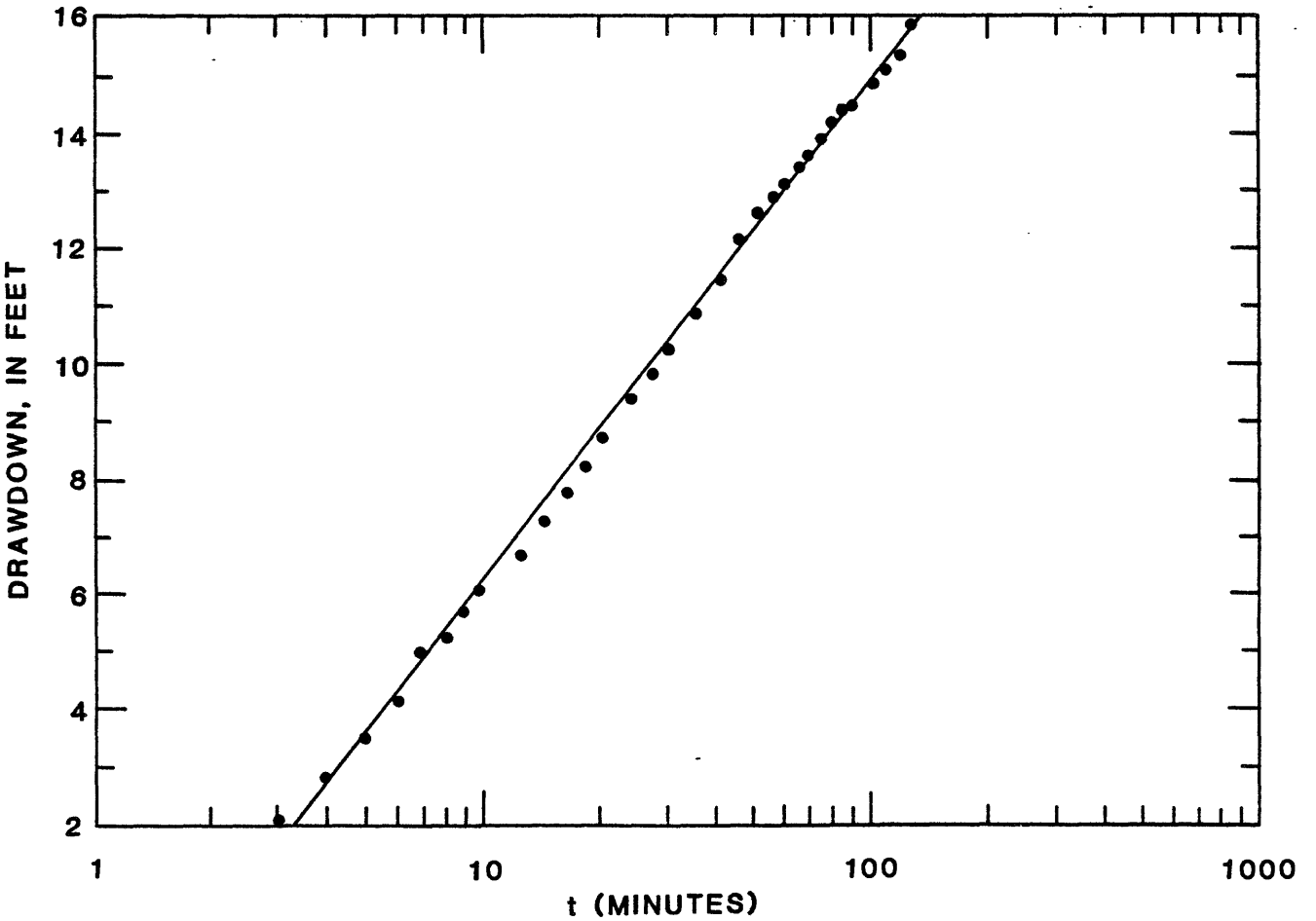
Method of analysis Jacob Modified

Transmissivity (square feet per day) 2,200

Storage coefficient 3×10^{-3}

Source Kansas Geological Survey

Remarks Consolidated rocks, observation well



County Cowley

Location 31-7E-32DDB

Date tested March 8, 1982

Pumping well radius (feet) or distance from pumping well (feet) 0.42

Well depth (feet) 34

Static water level (feet) 22.19

Discharge (cubic feet per day) 19,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 6,600

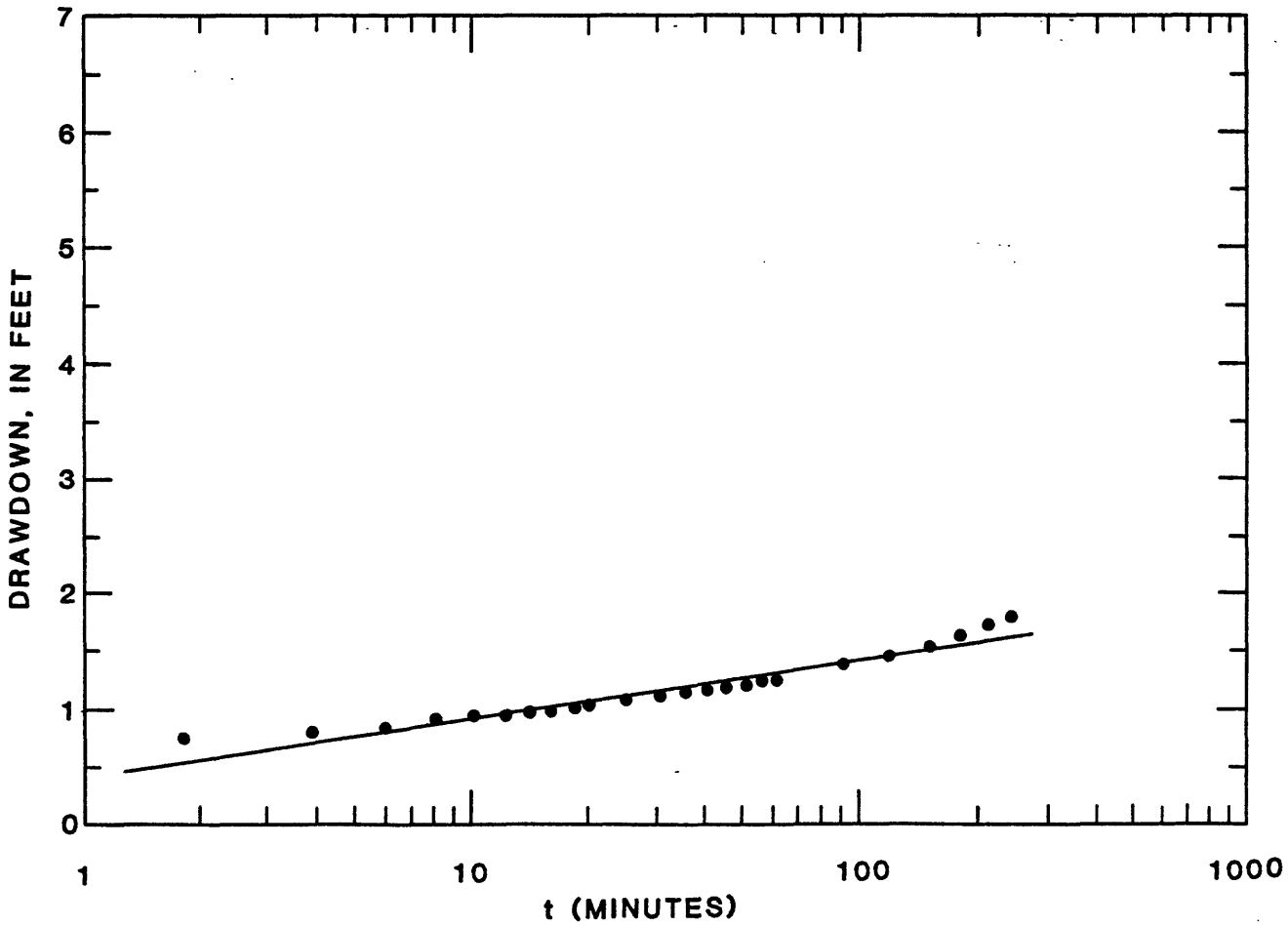
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, pumping well, gravel pack, screened from 29 to 34 feet

Driller's Log

	Depth (feet)
Topsoil	0-3
Clay, brown	3-21
Clay and gravel	21-23
Gravel, medium to very coarse	23-33
Shale, blue	33-34



County Crawford

Location 30-25E-19DDA

Date tested March 20, 1954

Pumping well radius (feet) or distance from pumping well (feet) 86

Well depth (feet) 1,233

Static water level (feet) 236.7

Discharge (cubic feet per day) 135,000

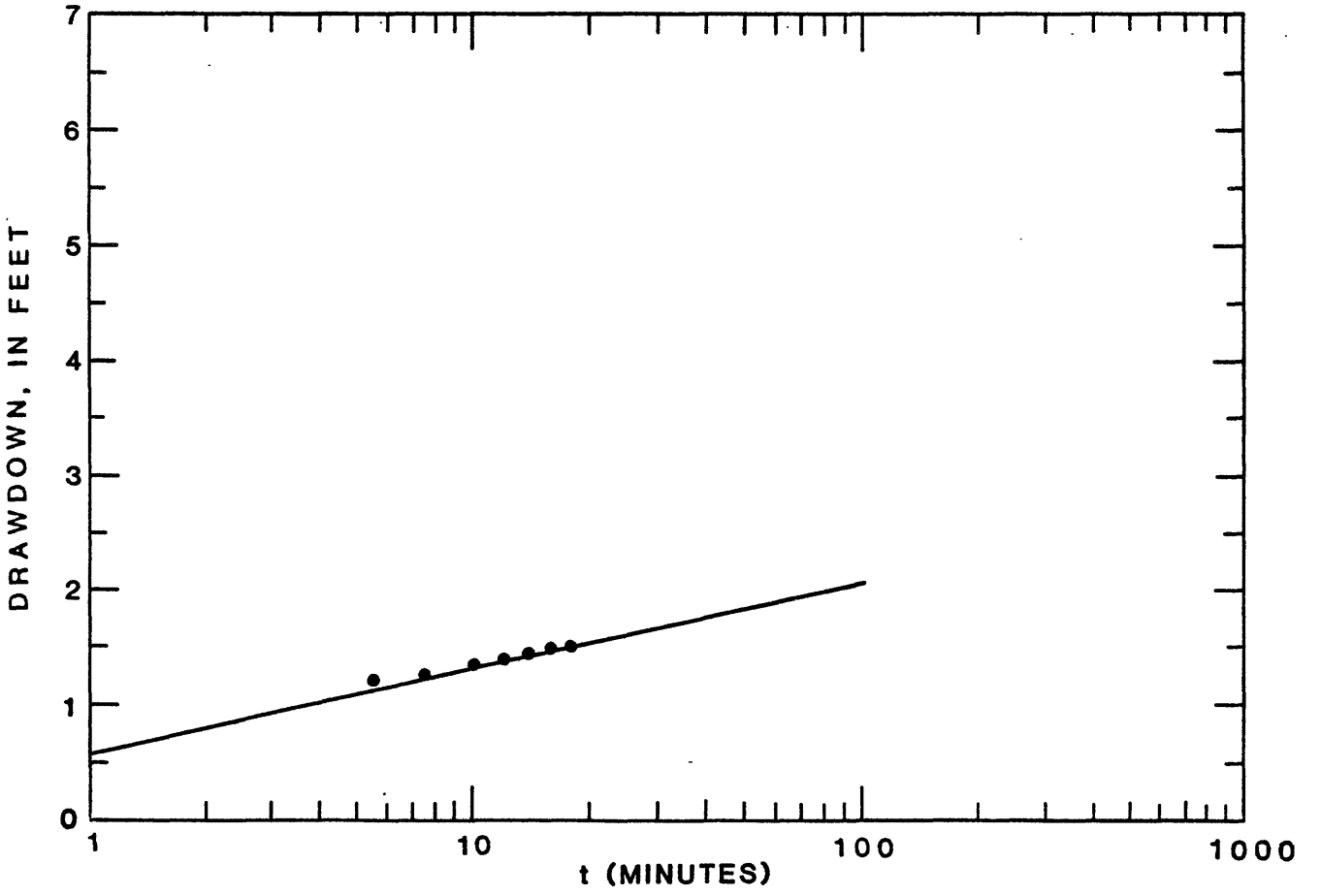
Method of analysis Jacob Modified

Transmissivity (square feet per day) 35,000

Storage coefficient 1.1×10^{-3}

Source Kansas Geological Survey

Remarks Cased to 293 feet, Consolidated rocks, observation well



County Crawford

Location 30-25E-19DDA

Date tested March 3, 1955

Pumping well radius (feet) or distance from pumping well (feet) 137

Well depth (feet) 1,233

Static water level (feet) 246

Discharge (cubic feet per day) 89,000

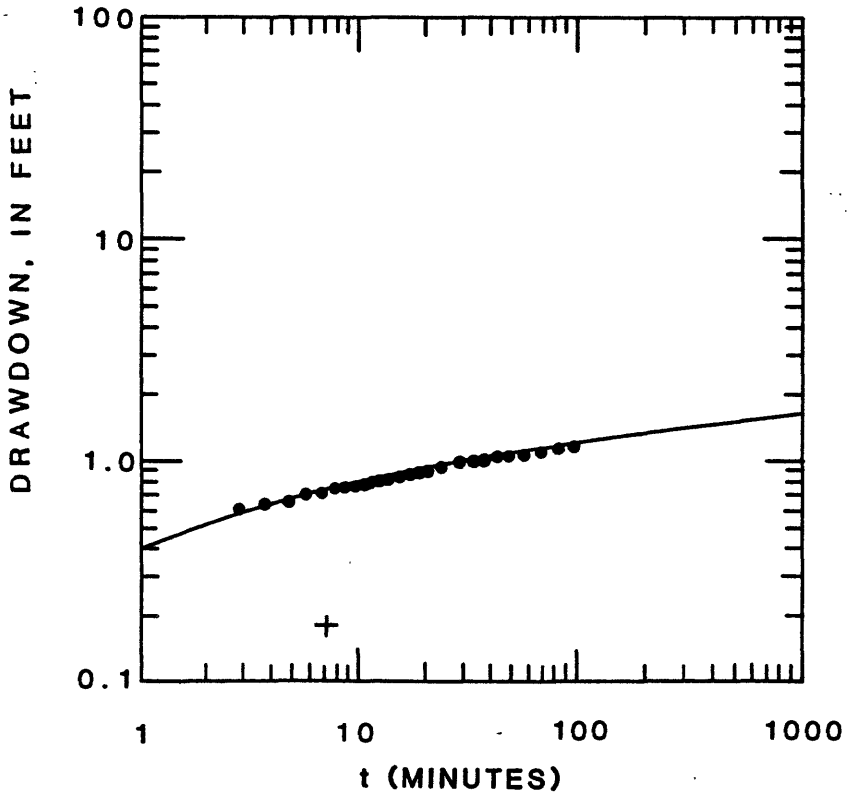
Method of analysis Theis Nonequilibrium

Transmissivity (square feet per day) 38,000

Storage coefficient 4.0×10^{-4}

Source Kansas Geological Survey

Remarks Cased to 584 feet, Consolidated rocks, observation well



Driller's Log

	Depth (feet)
Soil and fill	0-5
Clay, yellow	5-25
Shale, gray, trace of coal	25-40
Shale, gray, trace of coal, pyrite	40-50
Shale, gray, trace of coal	50-100
Shale, gray	100-110
Shale, gray, trace of coal	110-120
Shale, gray	120-135
Shale, trace of coal	135-140
Shale, gray	140-185
Shale, gray, pyrite	185-190
Shale, gray	190-240
Shale, gray, cherty	240-250
Limestone, gray, gray shale, and chert	250-270
Limestone, gray	270-280
Limestone, gray, cherty	280-290
Limestone, gray; contains pyrite and glauconite	290-370
Limestone, gray, cherty	370-375
Dolomite, gray, cherty	375-400
Dolomite, gray; contains pyrite and glauconite	400-425
Dolomite, gray, cherty	425-430
Limestone, gray, and gray dolomite, cherty	430-440
Limestone, gray, and gray dolomite	440-450
Limestone	450-460
Limestone, cherty	460-545
Limestone, gray	545-555
Shale, gray, calcareous	555-575
Limestone, gray	575-590
Limestone, gray; contains pyrite and limonite	590-600
Dolomite, gray; contains limonite	600-615
Dolomite, gray, cherty	615-635
Dolomite, gray; limonite	635-670
Dolomite, gray, cherty	670-805
Dolomite, gray	805-830
Dolomite, gray, cherty	830-915
Dolomite, gray	915-925
Dolomite, gray, sandy	925-935
Dolomite, gray	935-965
Dolomite, gray, cherty	965-975
Dolomite, gray, sandy	975-985
Sand, medium, white	985-1,000
Shale, dark-gray	1,000-1,005
Dolomite, gray	1,005-1,035
Dolomite, gray, sandy	1,035-1,045
Dolomite, gray, sandy, cherty	1,045-1,050
Dolomite, gray	1,050-1,075
Dolomite, gray, cherty	1,075-1,223

County Doniphan

Location 3-23E-30DBC

Date tested April 22, 1963

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 81

Static water level (feet) 18.08

Discharge (cubic feet per day) 39,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 47,000

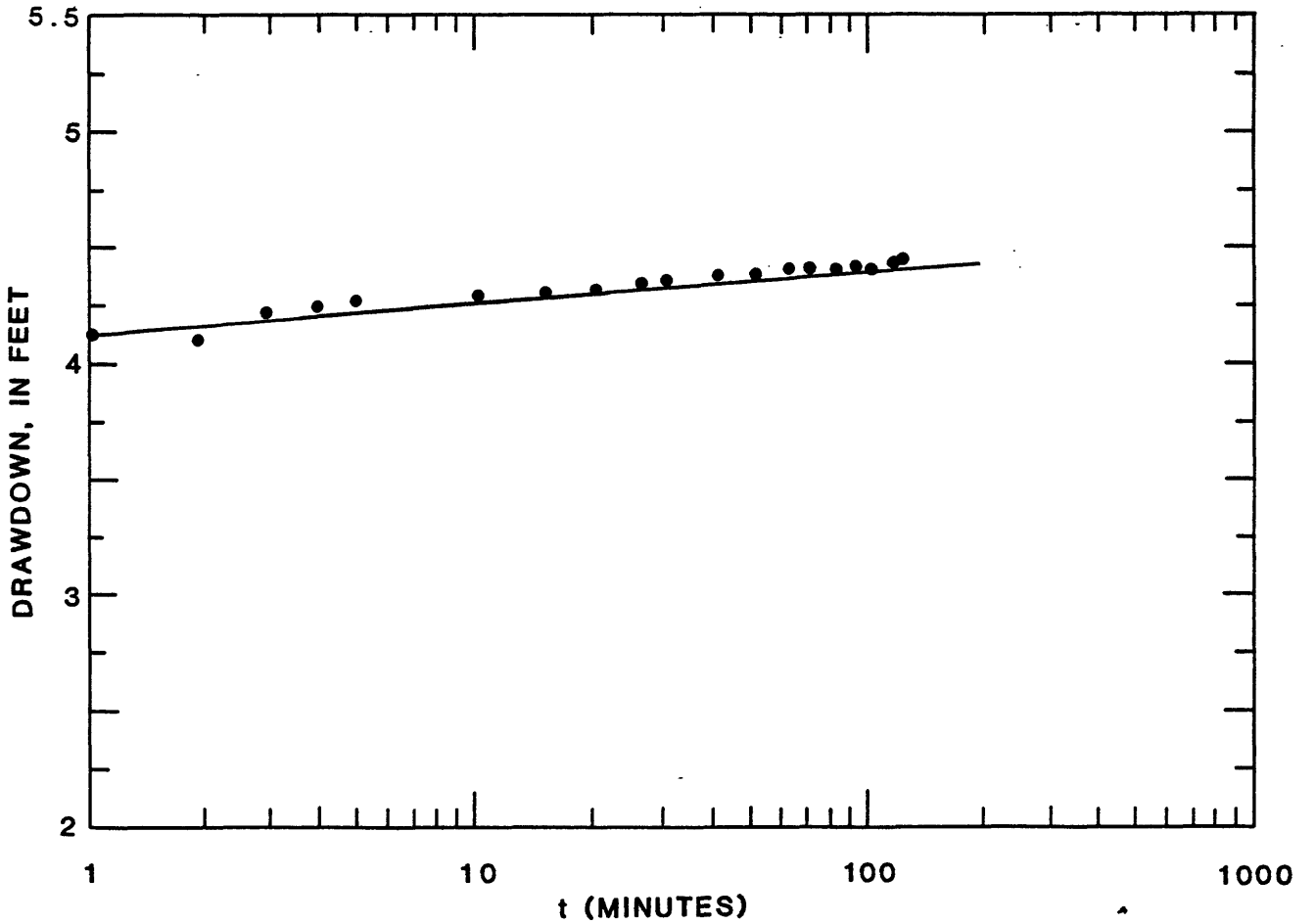
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits
Pumping well, gravel pack,
screened from 66 to 81 feet

Driller's Log

	Depth (feet)
Clay, brown, silty	0-5
Sand, brown, fine to very fine	5-15
Sand, gray, fine to medium	15-30
Sand, gray, medium to coarse	30-50
Sand, gray, fine to medium	50-60
Sand, gray, medium to coarse, with some gravel	60-65
Sand, gray, medium to coarse, and gravel	65-70
Sand, gray, fine to medium	70-81



County Douglas

Location 13-21E-5DB

Date tested July 29, 1974

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 61

Static water level (feet) 30.4

Discharge (cubic feet per day) 88,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 18,000

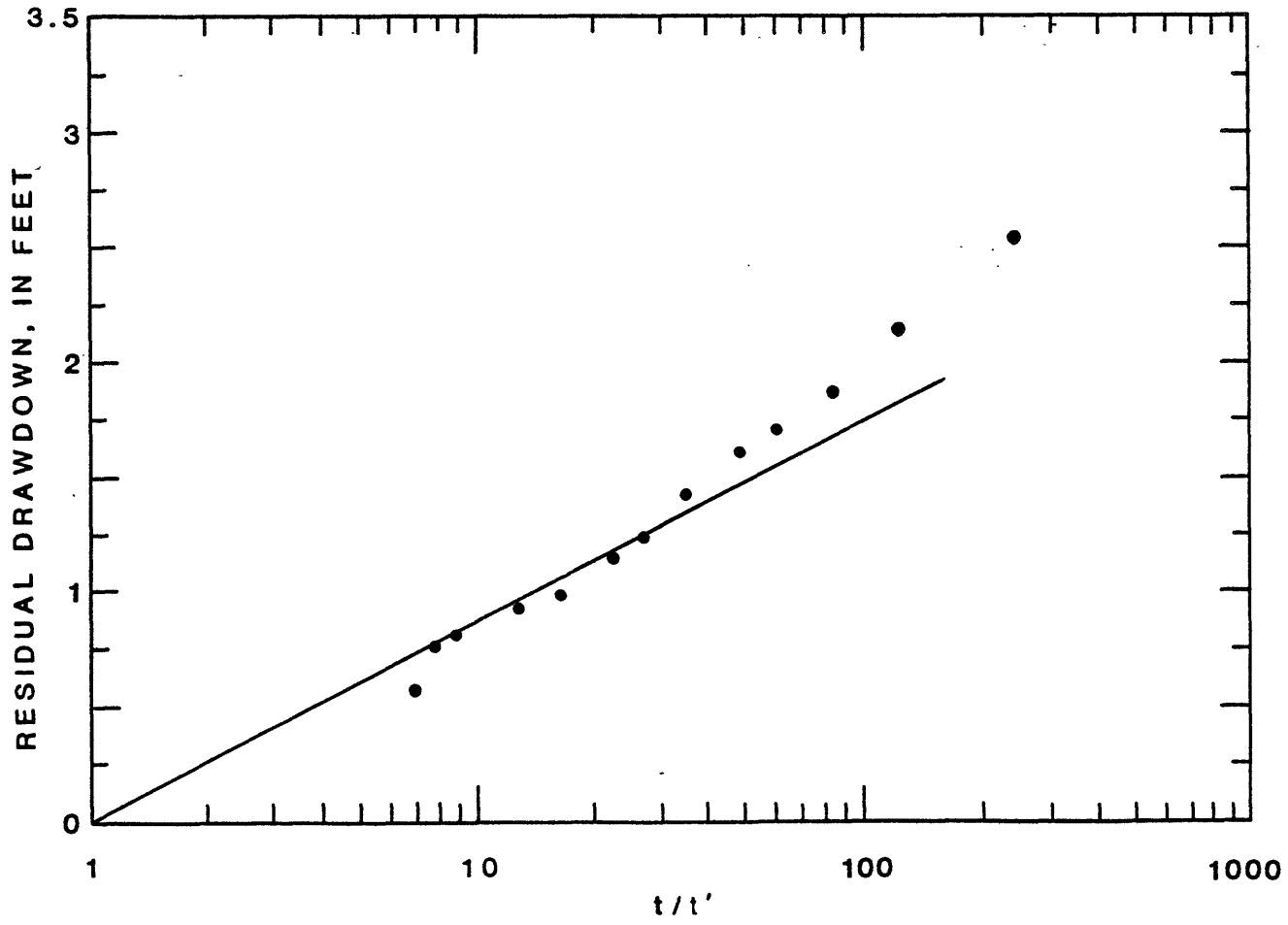
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, pumping well, gravel pack, screened from 51 to 61 feet, pumping time 4 hours

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown, silty	2-18
Clay, gray-brown, silty	18-30
Clay, gray, silty and sandy	30-38
Sand, gray, fine to very fine	38-48
Sand, gray, medium to coarse, with some boulders	48-61



County Ellsworth

Location 17-9W-28CBB

Date tested June 6, 1967

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) 207

Static water level (feet) 85.11

Discharge (cubic feet per day) 173,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 7,100

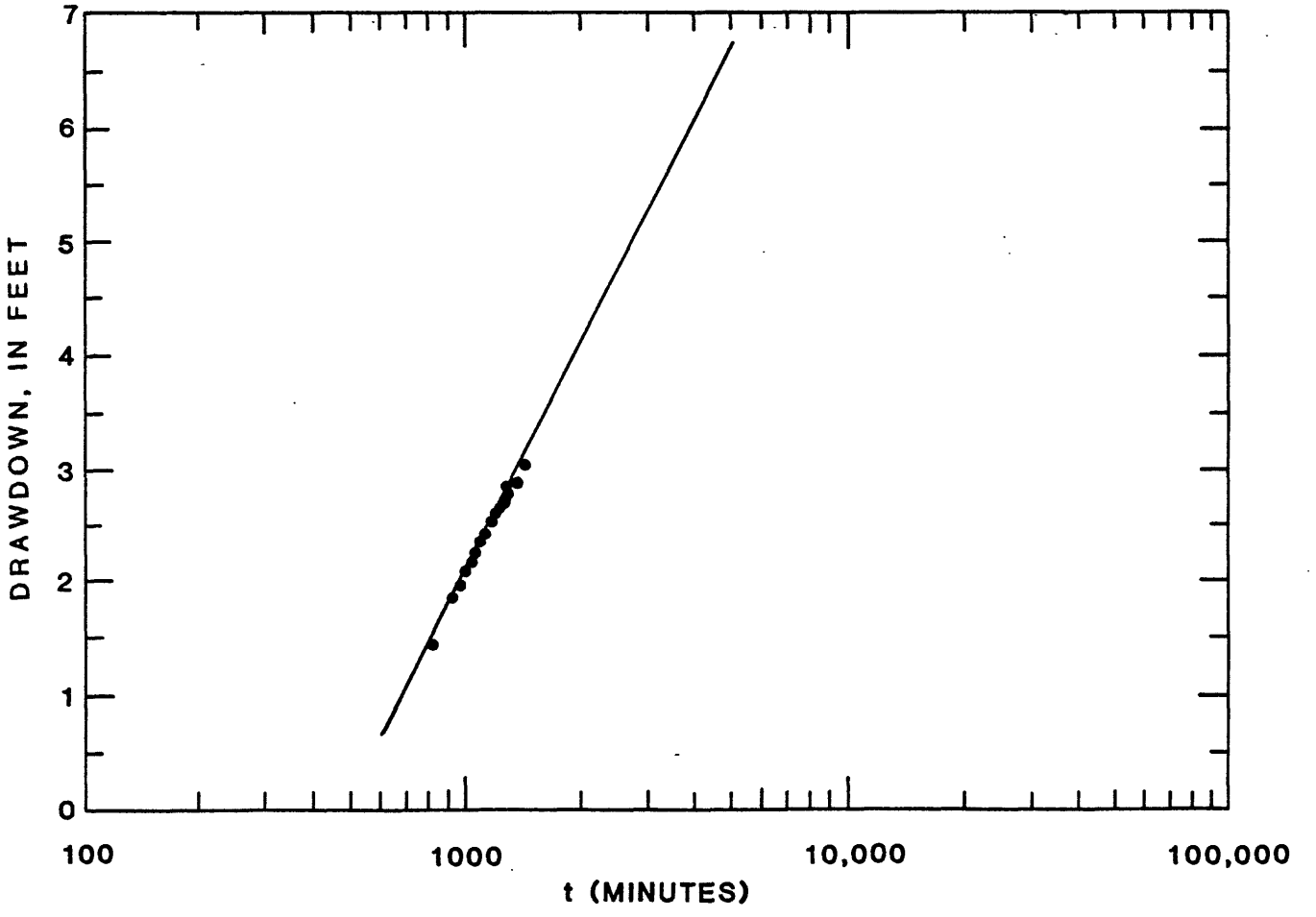
Storage coefficient ---

Source U.S. Geological Survey

Remarks Consolidated rocks, Observation well

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown	2-10
Clay, brown and tan	10-70
Sand, fine agrillaceous, and some gravel and tan clay	70-82
Shale, red and gray, and some sandstone	82-104
Shale, gray and blue	-104-120
Shale, blue and black	-120-130
Sandstone, and some red and blue shale	-130-165
Sandstone and shale	-165-172
Shale, blue	-172-177
Sandstone and shale	-177-194
Shale, blue, and some sandstone	-194-201
Sandstone and blue shale	-201-210
Shale, blue, and some sandstone	-210-220



County Ellsworth

Location 17-9W-31ACBD

Date tested June 7, 1967

Pumping well radius (feet) or distance from pumping well (feet) (est.) 0.25

Well depth (feet) (est.) 200

Static water level (feet) 81.28

Discharge (cubic feet per day) 48,100

Method of analysis Jacob Modified

Transmissivity (square feet per day) 5,700

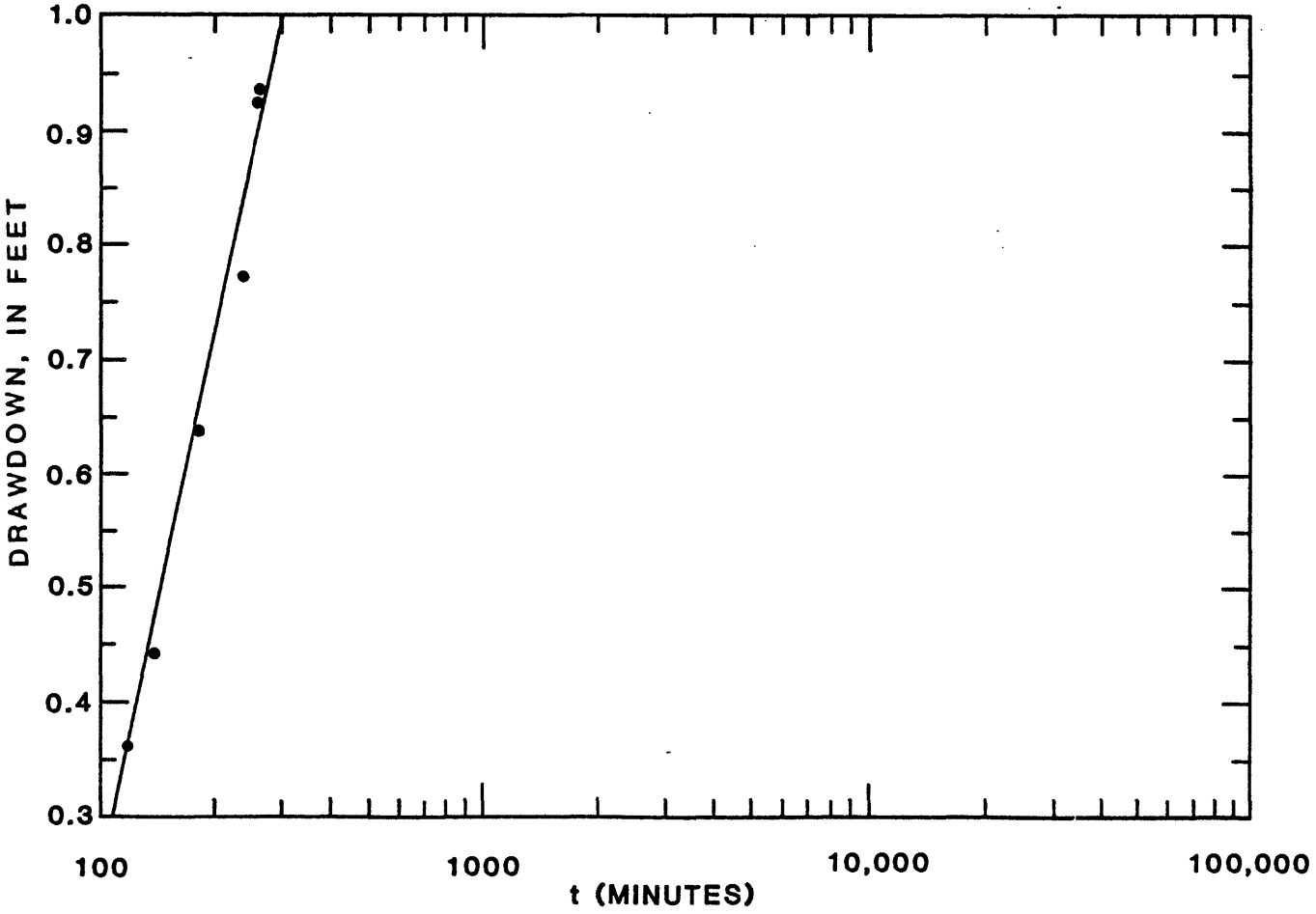
Storage coefficient ---

Source U.S. Geological Survey

Remarks Consolidated rocks, Pumped well

Driller's Log

	Depth (feet)
Topsoil	0-1
Clay, brown	1-8
Clay, tan and brown	8-73
Clay, green	73-85
Clay, tan, sandy	85-90
Clay, blue, and fine sand	90-95
Sand, fine, and tan clay	95-105
Clay, brown	-105-115
Sandstone, tan	-115-138
Shale, blue	-138-144
Sandstone, tan	-144-173
Shale, blue	-173-177
Sandstone, tan, fine to medium	-177-200
Shale, blue, and sandstone	-200-205
Shale, blue	-205-220



County Ellsworth

Location 17-9W-32CBA

Date tested June 7, 1967

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) ---

Static water level (feet) 82.85

Discharge (cubic feet per day) 48,000

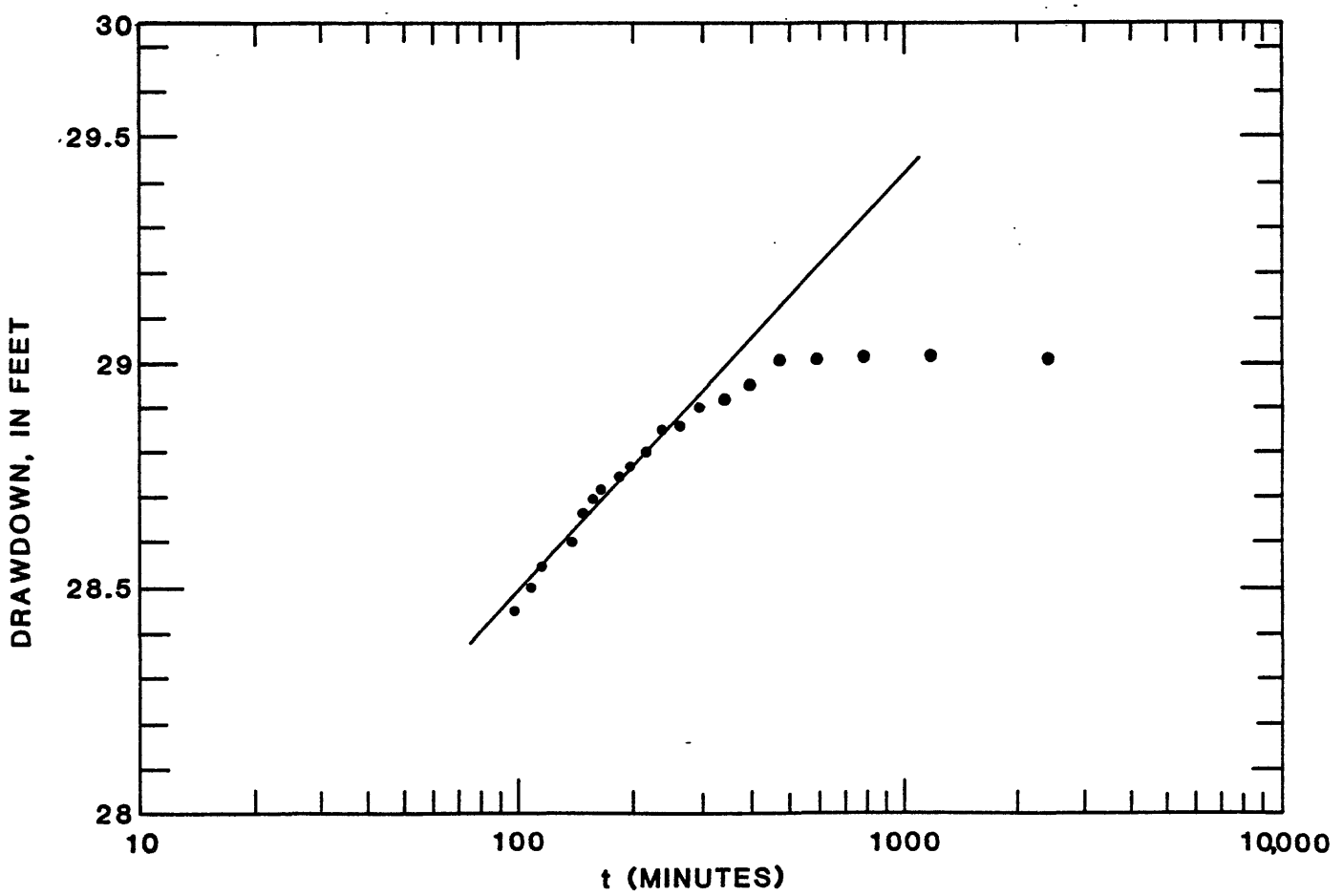
Method of analysis Jacob Modified

Transmissivity (square feet per day) 9,900

Storage coefficient ---

Source U.S. Geological Survey

Remarks Consolidated rocks, Pumping well



County Franklin

Location 17-21E-21CBB

Date tested October 26, 1967

Pumping well radius (feet) or distance from pumping well (feet) 25

Well depth (feet) 30

Static water level (feet) 7.64

Discharge (cubic feet per day) 7,600

Method of analysis Theis Recovery

Transmissivity (square feet per day) 470

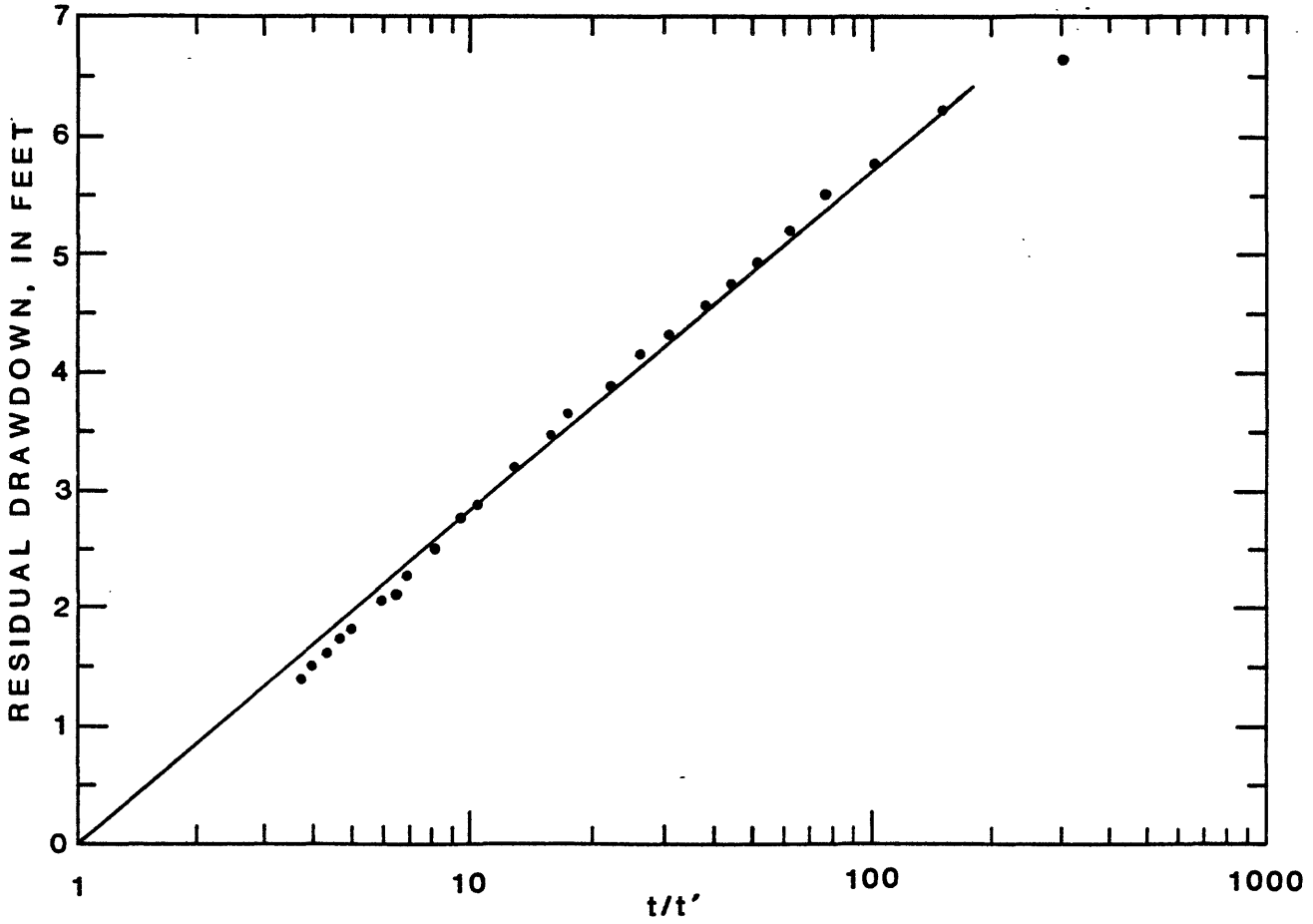
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits
Observation well,
pumping time 5 hours

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, gray, stiff	2-6
Clay, silty, gray and brown, stiff	6-11
Clay, gray, very stiff	11-17
Clay, sandy, gray and brown, very soft	-17-24.5
Gravel, coarse to medium, brown	24.5-27.5
Limestone, gray and brown, broken	27.5-28.6
Limestone, gray, solid	28.6-30.0



County Geary

Location 11-6E-29ACA

Date tested July 8, 1977

Pumping well radius (feet) or distance from pumping well (feet) 0.67

Well depth (feet) 52

Static water level (feet) 12.5

Discharge (cubic feet per day) 154,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 83,000

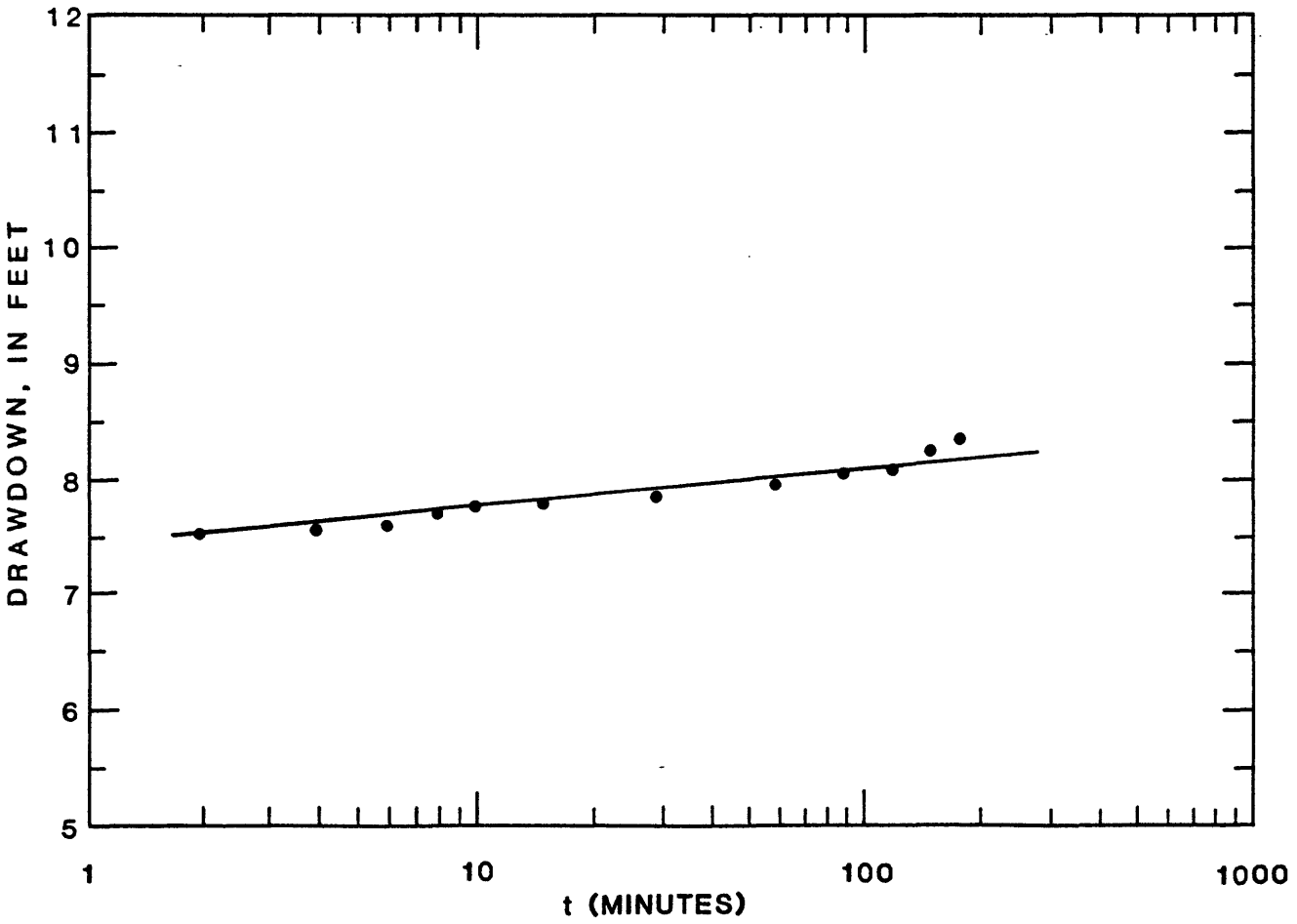
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, gravel pack 24 feet of screen

Driller's Log

	Depth (feet)
Sand, very fine	0-2
Clay, dark brown	2-15
Gravel, coarse	15-45
Gravel, coarse, with large flat rock	45-55



County Harper

Location 32-7W-14BBA

Date tested April 4, 1965

Pumping well radius (feet) or distance from pumping well (feet) 0.67

Well depth (feet) 89

Static water level (feet) 30.5

Discharge (cubic feet per day) 97,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 4,700

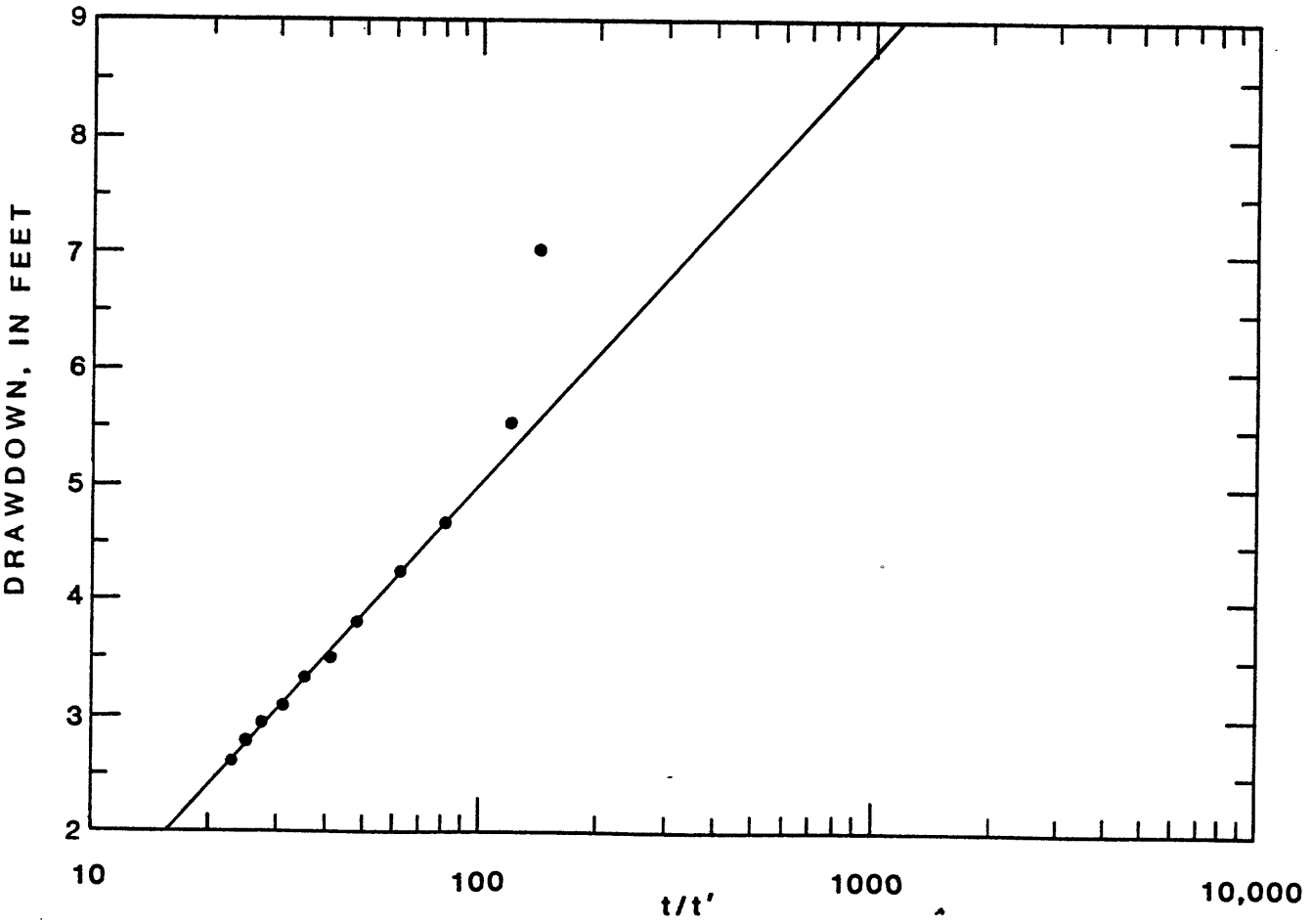
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits
Pumping well, gravel pack,
20 feet of screen

Driller's Log

	Depth (feet)
Soil	0-2
Clay, red	2-6
Clay, gray	6-10
Clay, red	10-48
Sand, fine to coarse	48-55
Sand, medium to coarse, and gravel	55-72
Clay, brown	72-79
Sand, medium to coarse, and gravel	79-89
Shale, red, hard	89-



County Harper

Location 32-7W-14BBC

Date tested April 9, 1965

Pumping well radius (feet) or distance from pumping well (feet) 0.67

Well depth (feet) 85

Static water level (feet) 31.95

Discharge (cubic feet per day) 97,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 10,000

Storage coefficient ---

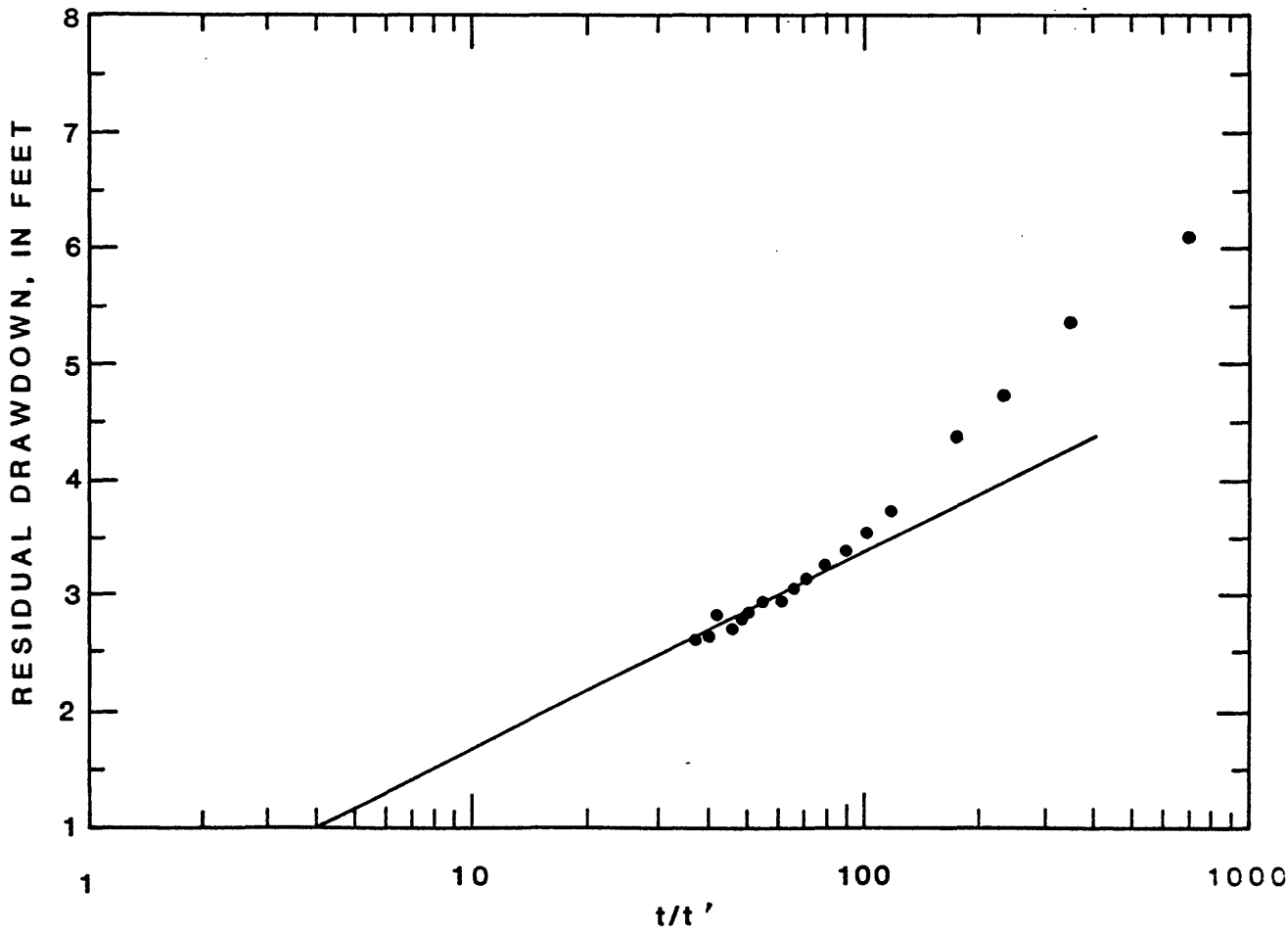
Source Layne-Western Co.

Remarks Alluvial deposits

Pumping well, gravel pack, 20 feet of screen, pumping time 12 hours

Driller's Log

	Depth (feet)
Sand, medium	0-12
Clay, gray	12-16
Clay, red	16-50
Sand and gravel, medium to coarse, some clay	50-60
Sand and gravel, medium to coarse, clean	60-65
Sand and gravel, coarse	65-70
Sand, medium to coarse, some gravel	70-75
Sand and gravel, coarse to very coarse	75-85
Red bed, hard	85-



County Harvey

Location 23-2W-29BBB

Date tested September 1, 1961

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 169

Static water level (feet) 29.7

Discharge (cubic feet per day) 258,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 5,900

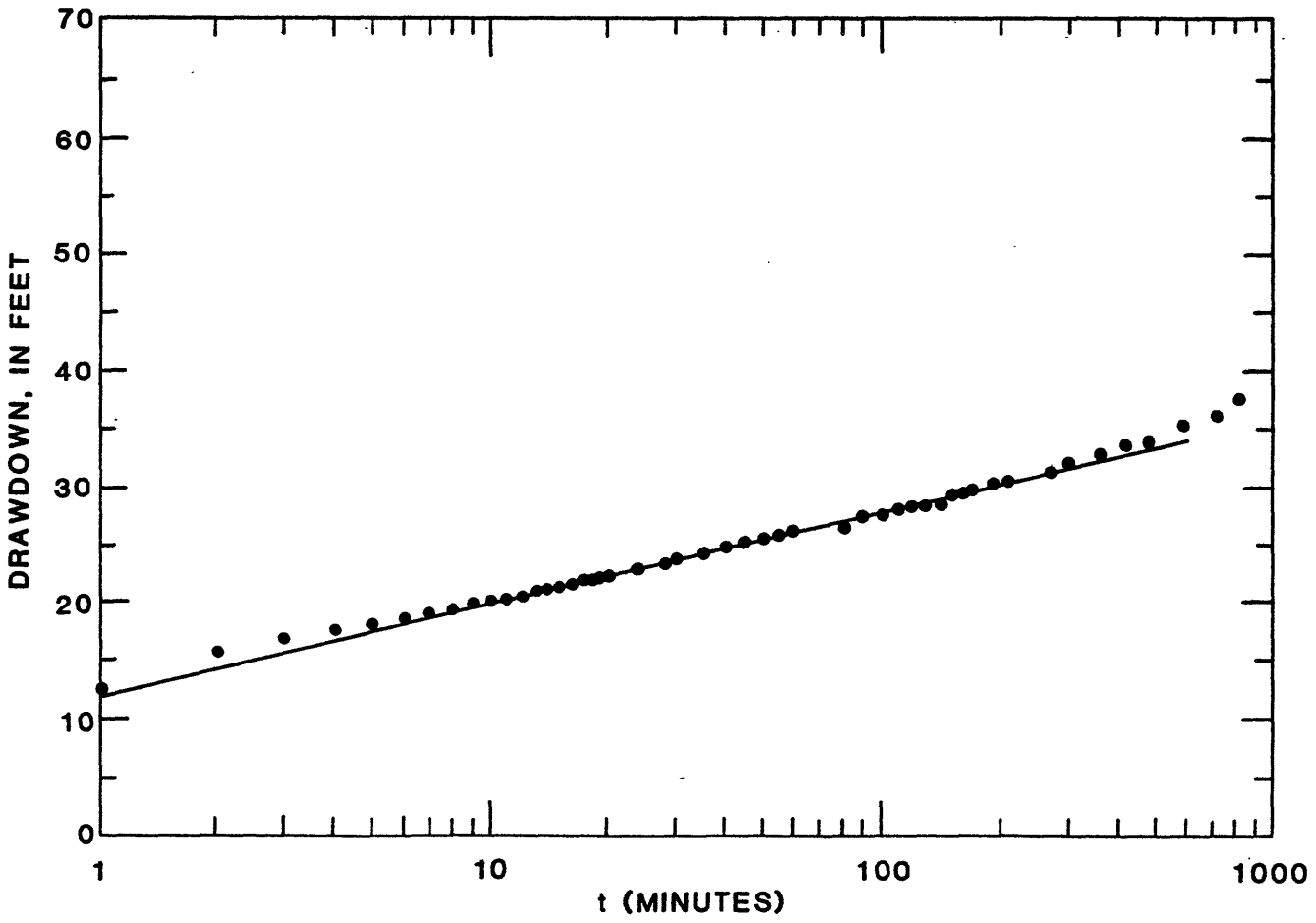
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer
Pumping well,
screened from 106 to 166 feet

Driller's Log

	Depth (feet)
Silt and clay	0-13
Sand and gravel	13-27
Clay	27-57
Sand and gravel	57-73
Clay	73-81
Sand, fine	-81-81.5
Clay, sandy	-81.5-84
Sand, fine, and gravel	84-154
Clay	-154-156
Sand, fine, to fine gravel	-156-169



County Harvey

Location 23-2W-29BBB

Date tested September 1, 1961

Pumping well radius (feet) or distance from pumping well (feet) 102, 202, 425

Well depth (feet) 163, 162, 168

Static water level (feet) 29.64, 29.62, 29.40

Discharge (cubic feet per day) 258,000

Method of analysis Theis Nonequilibrium

Transmissivity (square feet per day) 6,800

Storage coefficient 4.0×10^{-4}

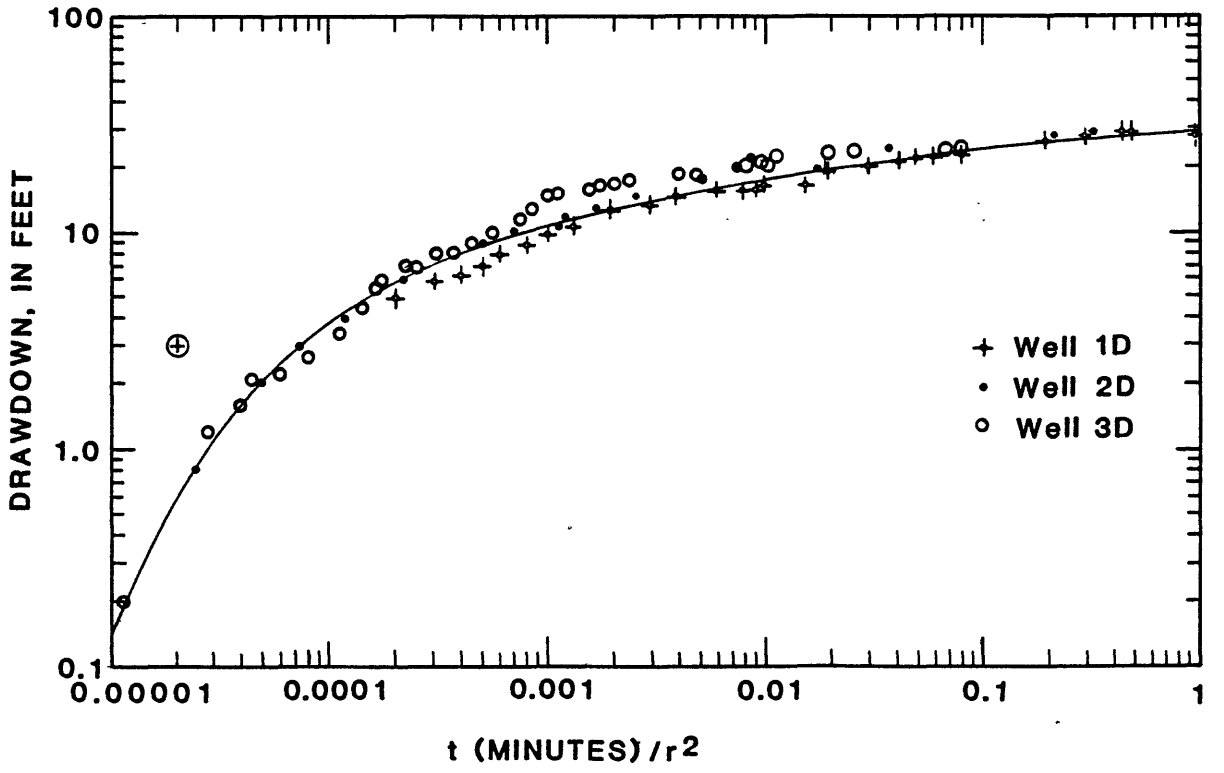
Source City of Wichita

Remarks Equus Beds aquifer

Observation wells, alternate blanks and screens from 112 to 168 feet

Driller's Log

	Depth (feet)
Soil	0-1
Clay, red-brown	1-7
Clay, red-brown, sandy	7-11
Sand, red-tan	11-27
Clay, blue-black	27-33
Clay, blue-green	33-36
Clay, gray, brown, soft	36-43
Sand, tan, fine	43-45
Clay, dark-gray	45-48
Clay, blue	48-55
Sand, gray-white	55-69
Clay, green-blue	69-75
Clay and sand layers	75-81
Sand, white-yellow	81-97
Clay, green	97-101
Sand, white-yellow	101-162



County Harvey

Location 23-2W-29CBB

Date tested March 28, 1960

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 245

Static water level (feet) 39.33

Discharge (cubic feet per day) 167,500

Method of analysis Theis Recovery

Transmissivity (square feet per day) 4,700

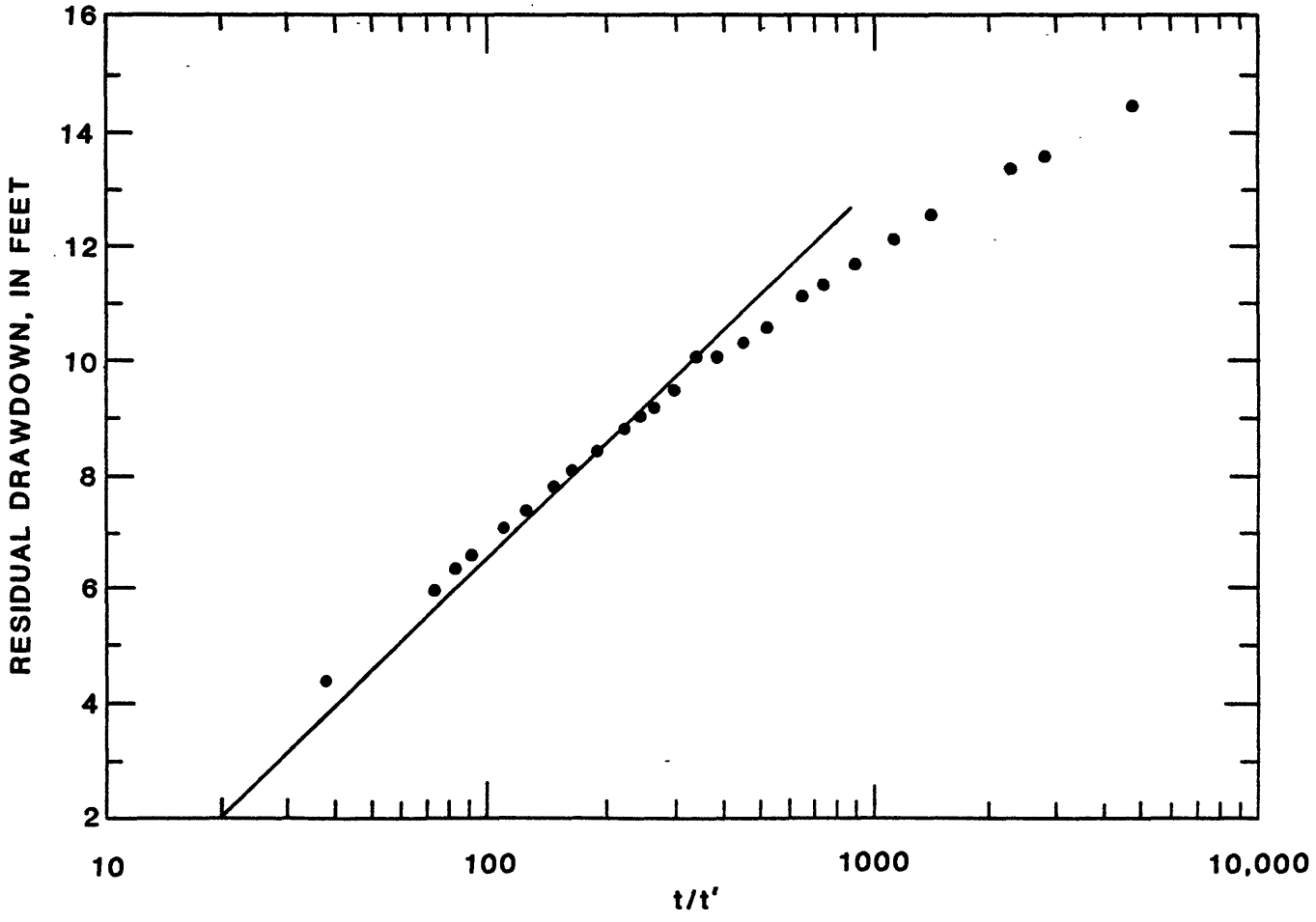
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer
Pumping well, screened,
Pumping time 9.17 hours

Driller's Log

	Depth (feet)
Soil, black to tan, clayey	0-5
Silt and clay, tan, sandy	5-9
Sand to coarse gravel	9-22
Silt and clay, blue-gray, and layers of fine to coarse sand	22-69
Sand and fine gravel, with layers of gray-green clay	69-84
Sand, coarse, and medium gravel	84-92
Silt and clay, blue to tan, sandy	92-119
Silt and clay, blue to black	119-181
Sand and fine to medium gravel, gray to white	181-232
Shale, yellow-green, limy	232-245



County Harvey

Location 23-2W-29CDD

Date tested May 13, 1939

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 235

Static water level (feet) 23.18

Discharge (cubic feet per day) 177,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 4,500

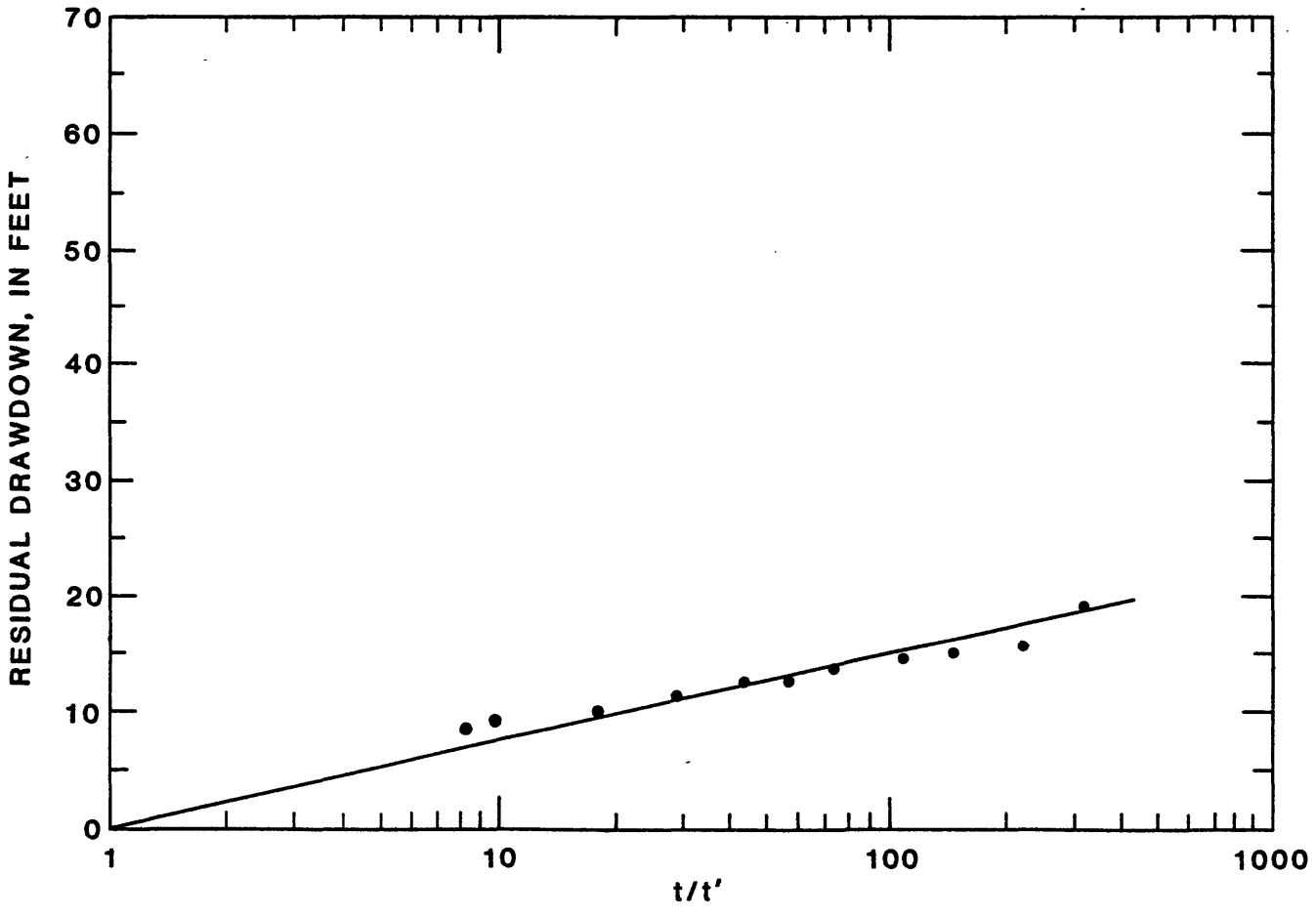
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer
Pumping well, screened,
Pumping time 36 hours

Driller's Log

	Depth (feet)
Topsoil	0-2
Sand, brown, coarse	2-27
Clay, yellow	27-32
Clay, yellow, and sand streaks	32-47
Sand, medium-coarse	47-127
Sand, coarse	127-167
Clay, blue, hard	167-176
Sand, coarse	176-201
Clay, blue	201-204
Sand, coarse	204-235
Shale	235-238



County Harvey

Location 23-2W-29CDD

Date tested May 13, 1939

Pumping well radius (feet) or distance from pumping well (feet) 100

Well depth (feet) 69

Static water level (feet) 23.95

Discharge (cubic feet per day) 177,000

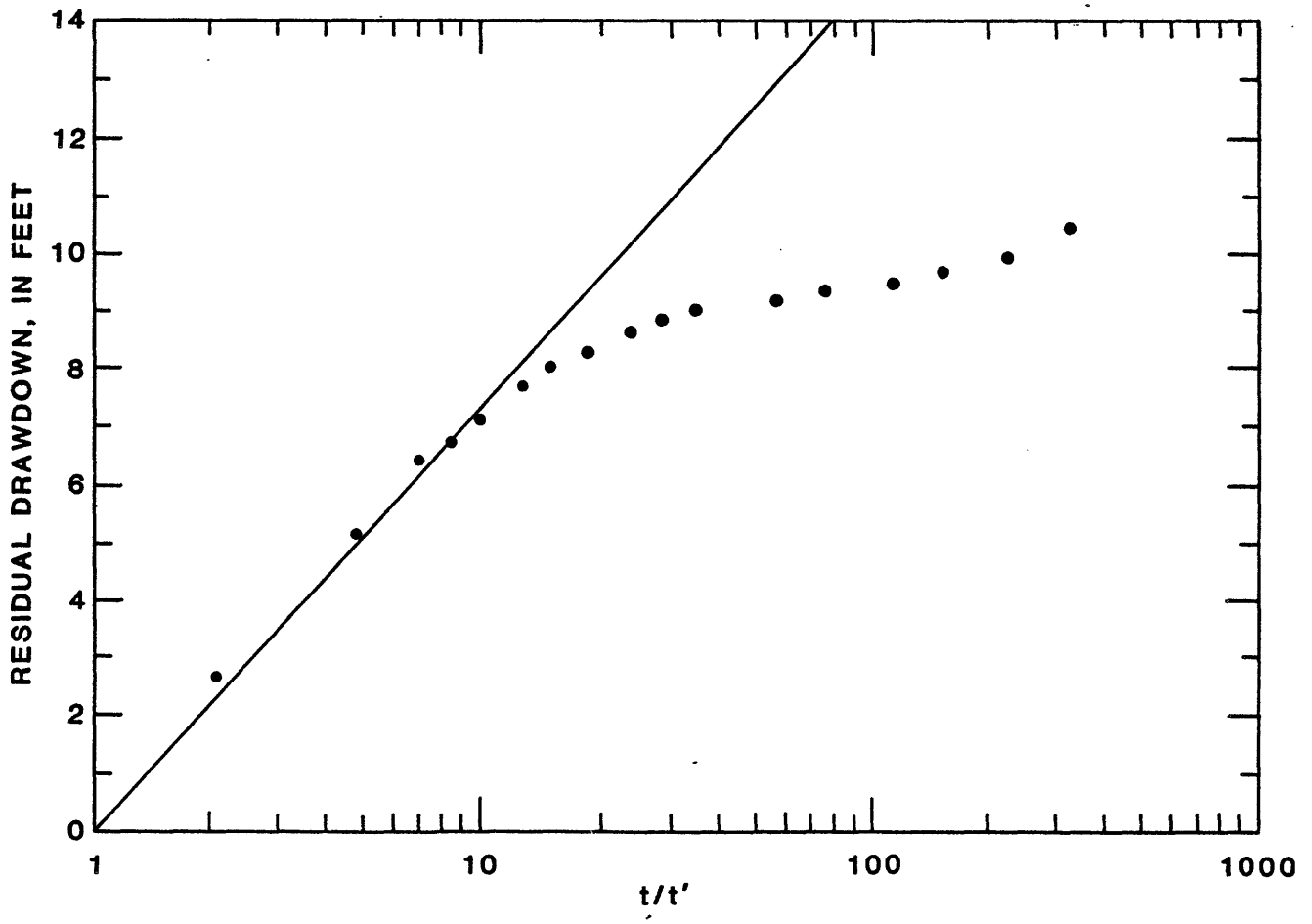
Method of analysis Theis Recovery

Transmissivity (square feet per day) 4,300

Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer
Observation well, well point at
70 feet, pumping time 36 hours



County Harvey

Location 23-2W-30CCC

Date tested May 8, 1939

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 234

Static water level (feet) 23.2

Discharge (cubic feet per day) 387,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 6,700

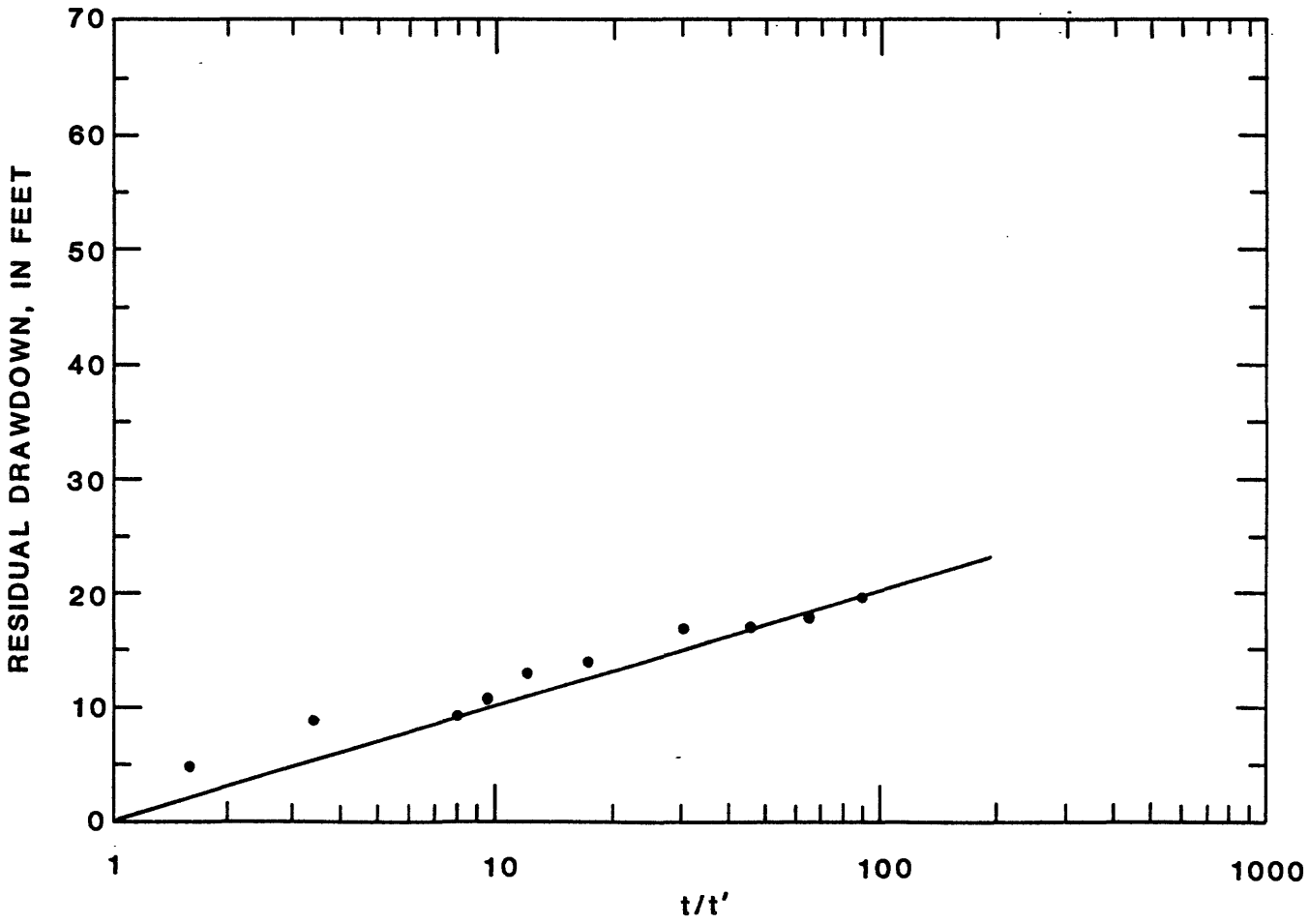
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer
Pumping well, pumping time 36 hours,
alternate blanks and screen from 98 to 238 feet

Driller's Log

	Depth (feet)
Topsoil	0-7
Sand, brown, coarse	7-29
Sand, coarse, and blue clay	29-42
Clay, blue	42-52
Sand, coarse	52-77
Sand, fine	77-87
Sand, coarse	87-104
Sand and clay streaks	-104-118
Clay, blue	-118-119
Sand, coarse	-119-217
Clay, blue	-217-221
Sand and gravel	-221-226
Sand and clay streaks	-226-234
Shale	-234-



County Harvey

Location 23-2W-32CBB

Date tested May 23, 1939

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 236

Static water level (feet) 18.36

Discharge (cubic feet per day) 273,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 4,600

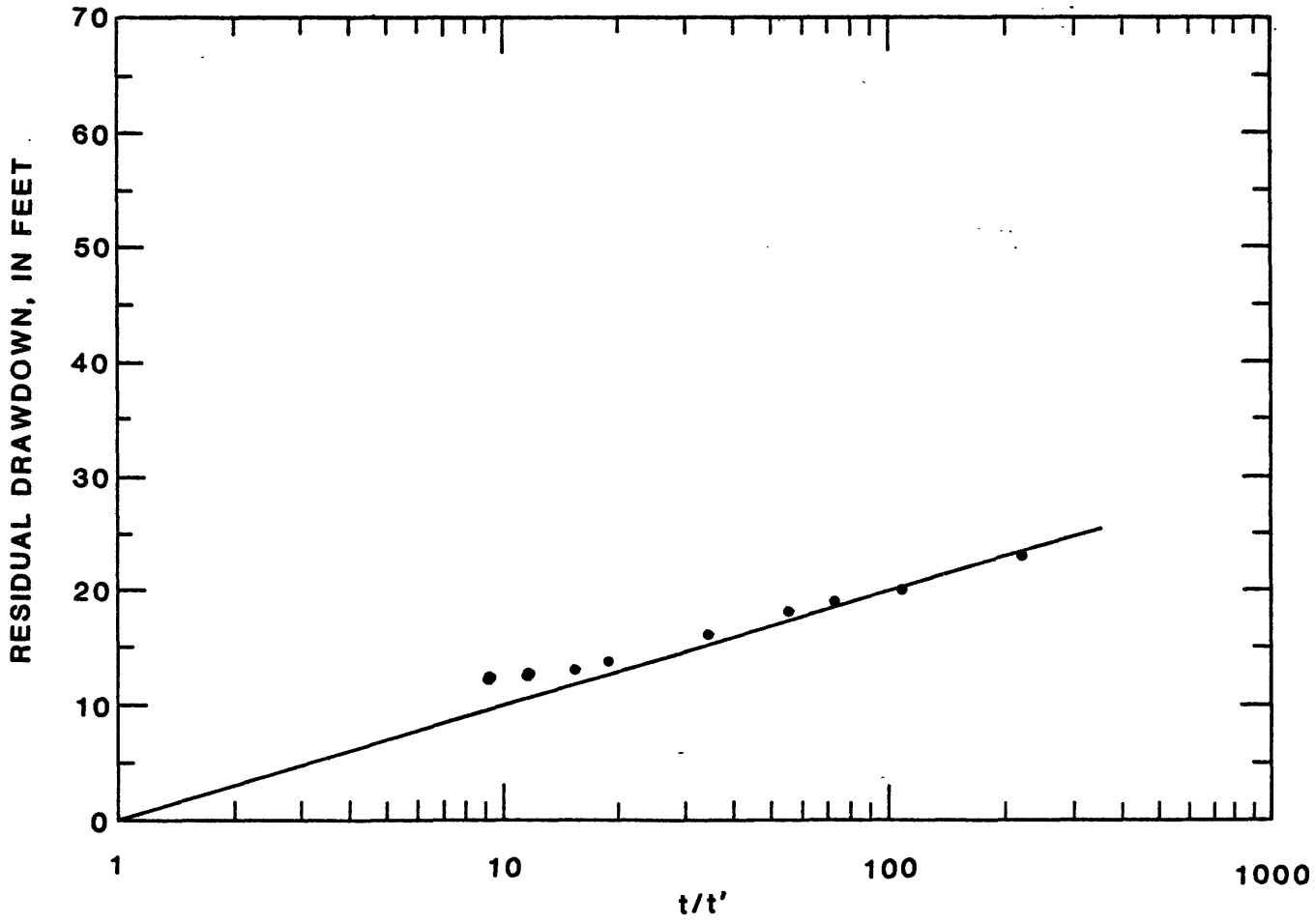
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer, gravel pack, Pumping well, pumping time 36 hours, alternate blanks and screen from 93 to 238 feet

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay	2-15
Sand, fine	15-20
Clay	20-21
Sand, coarse	21-37
Clay and sand	37-92
Sand	92-107
Clay	-107-112
Clay and sand streaks	-112-126
Sand, fine, and clay	-126-154
Clay, blue	-154-166
Sand, coarse	-166-202
Clay, blue	-202-205
Sand, coarse	-205-236
Shale	-236



County Harvey

Location 24-1W-5ACD

Date tested March 5, 1974

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 121

Static water level (feet) 18

Discharge (cubic feet per day) 77,200

Method of analysis Jacob Modified

Transmissivity (square feet per day) 4,300

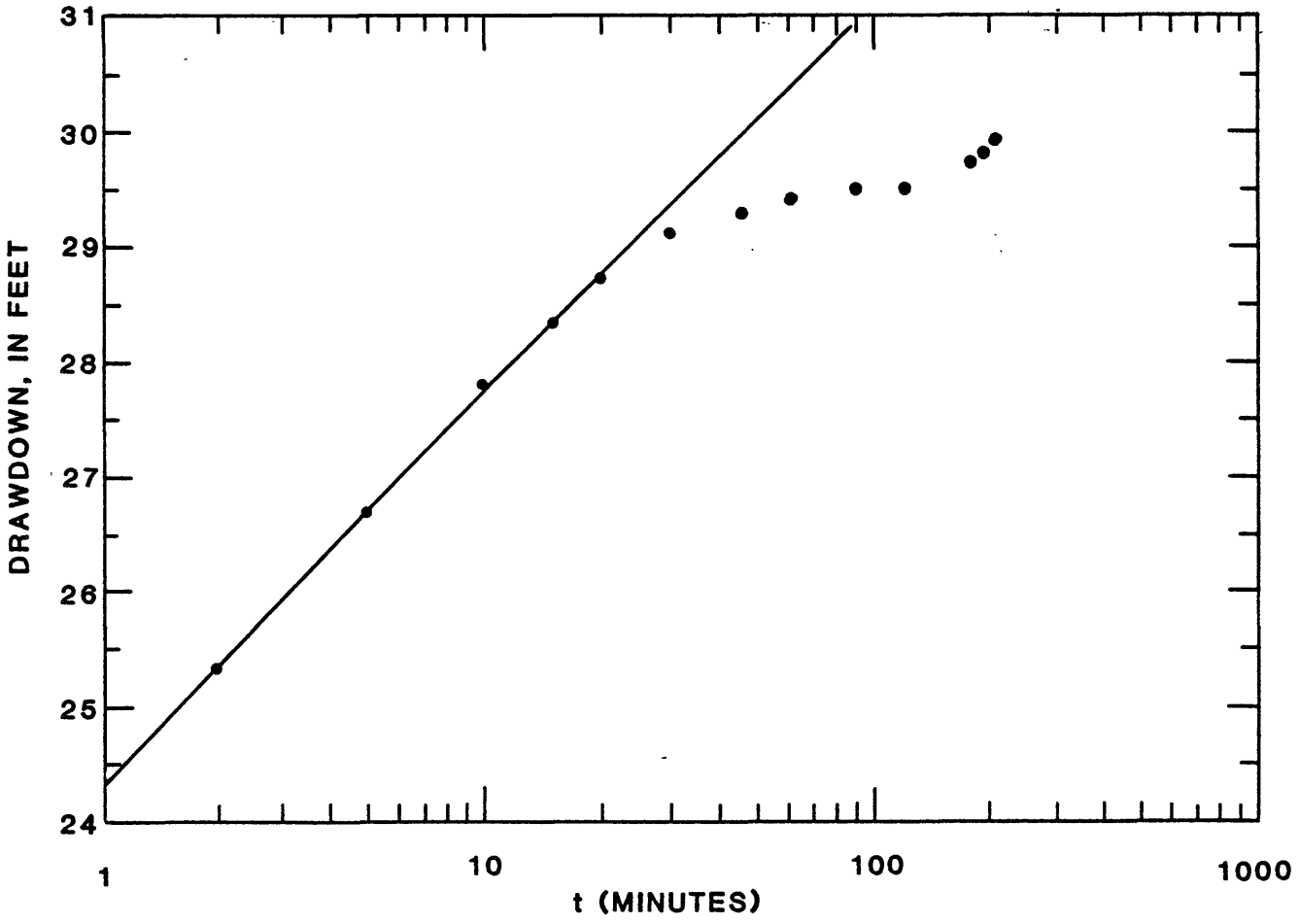
Storage coefficient ---

Source Layne-Western Co.

Remarks Equus Beds aquifer, Pumping well, screened, Pumping time 2.75 hours

Driller's Log

	Depth (feet)
Clay	0-22
Sand, white, fine to medium, with some clay	22-55
Clay	55-68
Sand, fine to coarse, and medium gravel	68-96
Clay	96-99
Sand, fine to medium, and gravel	-99-103
Clay	103-106
Sand, fine to medium, and gravel	106-118
Shale	118-121



County Harvey

Location 24-2W-8DAA

Date tested June 7, 1939

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 245

Static water level (feet) 11.5

Discharge (cubic feet per day) 387,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 32,000

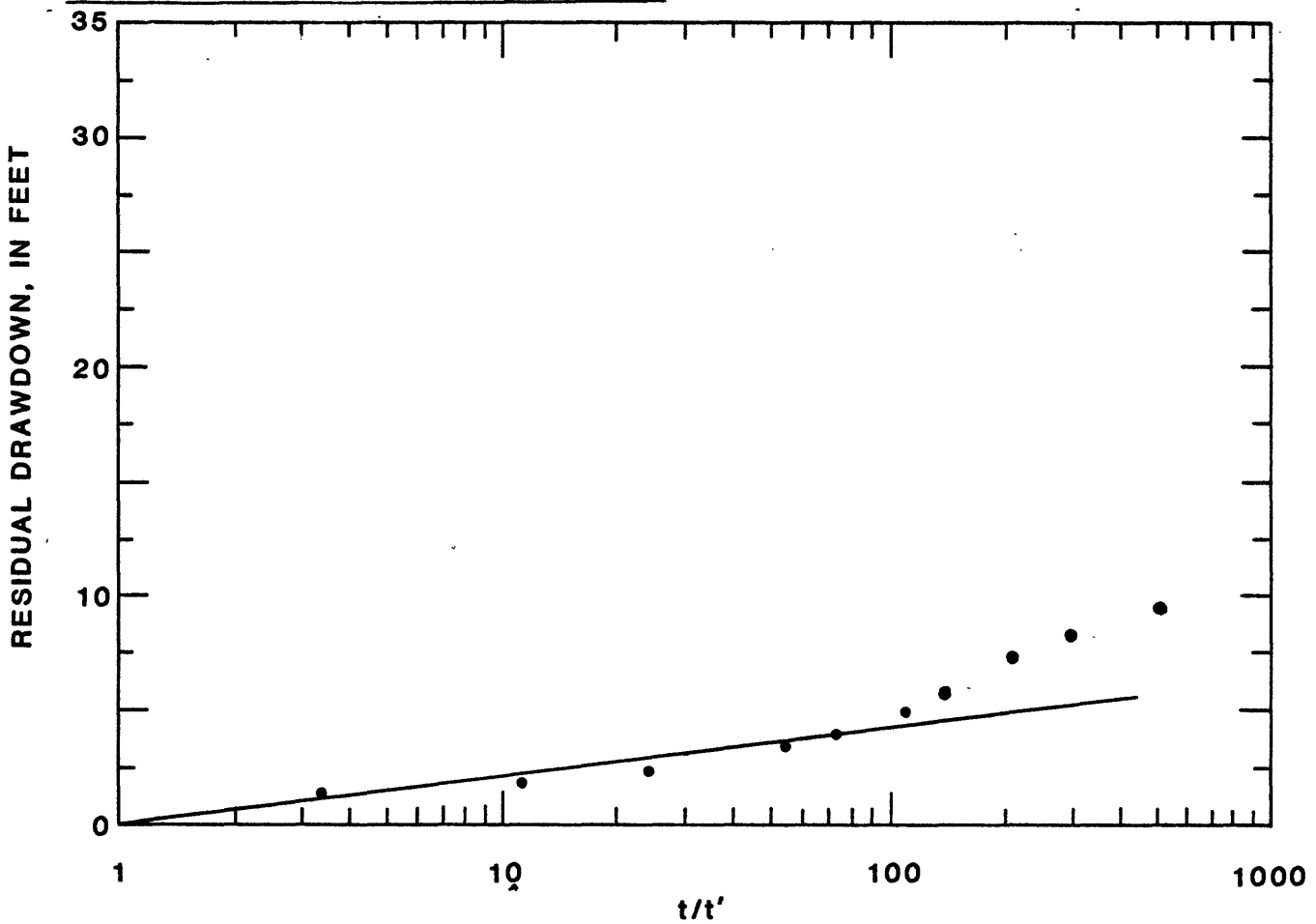
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer, Pumping well, alternate blanks and screen from 94 to 244 feet, pumping time 36 hours, gravel packed

Driller's Log

	Depth (feet)
Topsoil	0-3
Sand and clay, brown	3-32
Sand, medium-coarse	32-47
Clay, sandy	47-57
Sand, coarse	57-103
Sand, coarse, and clay streaks	-103-108
Sand, coarse	-108-113
Sand, fine	-113-116
Sand, coarse, and clay streaks	-116-120
Clay, yellow	-120-123
Sand, coarse, and clay streaks	-123-140
Sand, medium-coarse	-140-162
Sand and gravel	-162-168
Sand and clay streaks	-168-174
Sand, medium-coarse	-174-203
Sand, coarse, and clay streaks	-203-230
Sand and gravel	-230-234
Sand	-234-245
Shale and clay	-245-256



County Harvey

Location 24-2W-9CBB

Date tested June 27, 1939

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 237

Static water level (feet) 13.15

Discharge (cubic feet per day) 379,200

Method of analysis Theis Recovery

Transmissivity (square feet per day) 11,000

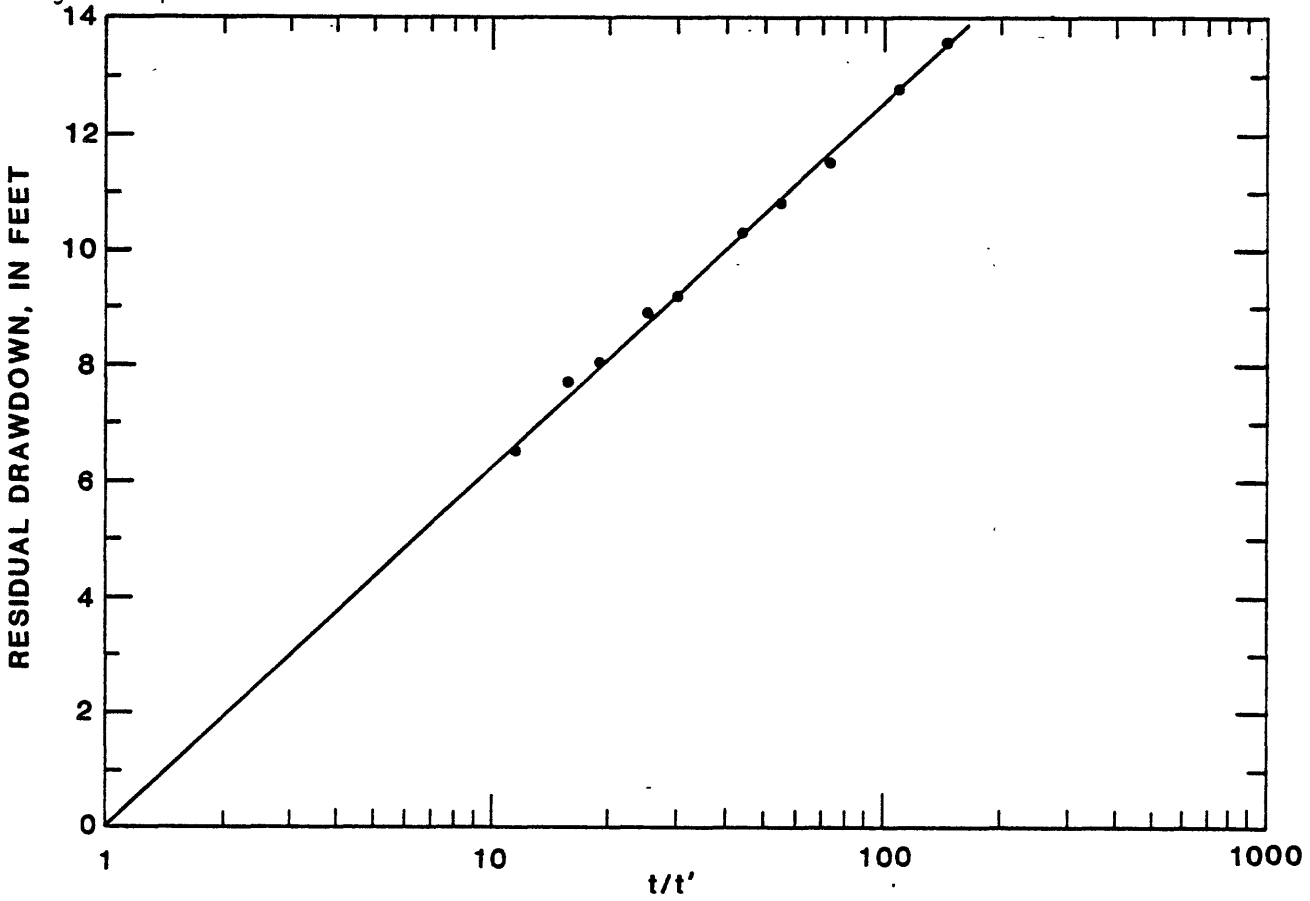
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer, Pumping well, pumping time 36 hours, alternate blanks and screen from 101 to 226 feet, gravel packed

Driller's Log

	Depth (feet)
Topsoil	0-3
Sand, brown	3-15
Clay, sandy	15-25
Clay, yellow	25-37
Clay, sandy	37-62
Sand, loose	62-87
Sand, with streaks of blue clay	87-112
Sand, coarse	112-127
Sand, fine, and clay streaks	127-141
Clay	141-143
Sand, coarse	143-153
Clay, blue and yellow	153-163
Sand, coarse	163-169
Clay, blue	169-173
Sand, coarse	173-190
Clay	190-195
Sand, coarse	195-229
Clay, blue and yellow	229-234
Sand, coarse, and gravel	234-237
Shale, blue	237-



County Harvey

Location 24-2W-9DDD

Date tested May 8, 1939

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 185

Static water level (feet) 7.3

Discharge (cubic feet per day) 383,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 37,000

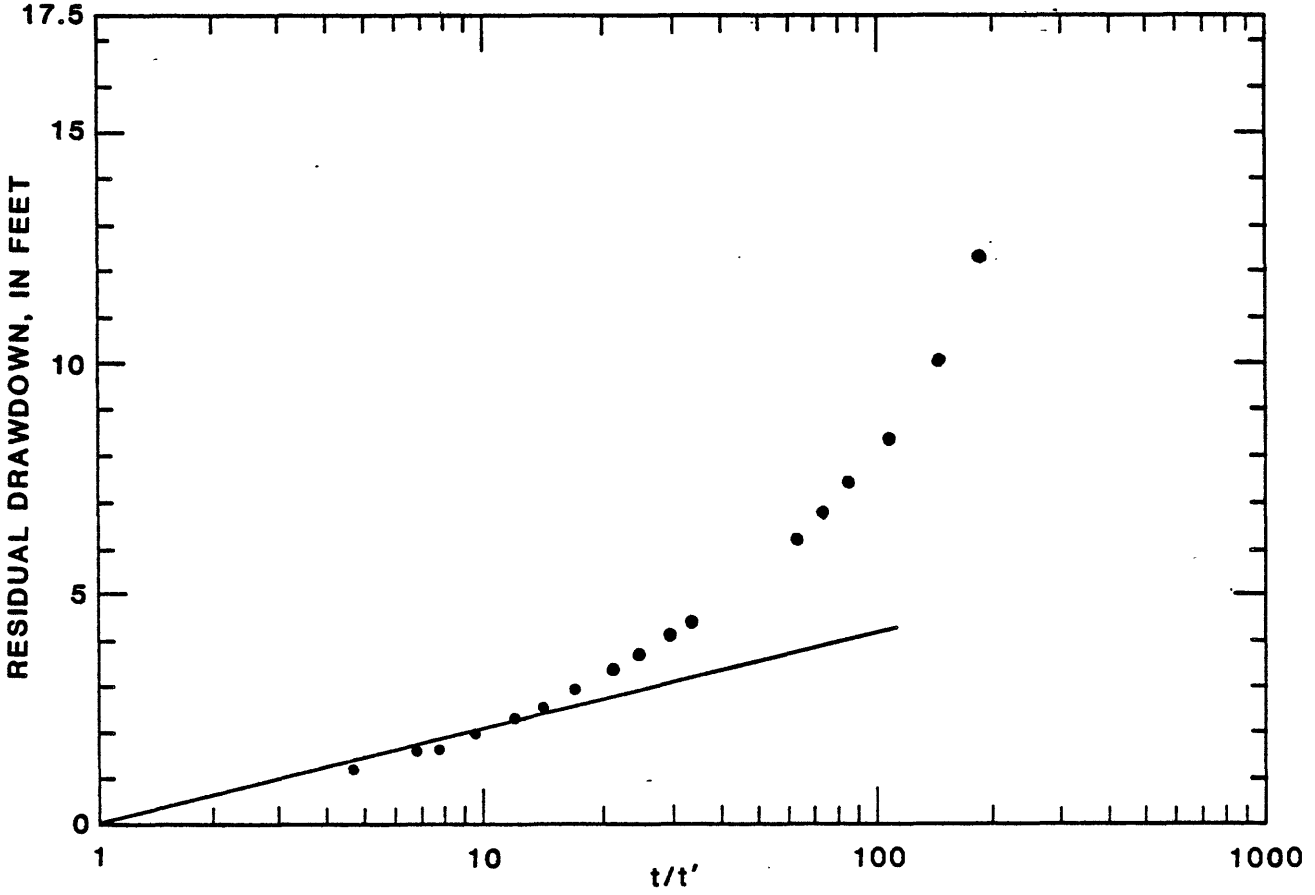
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer, Pumping well, pumping time 37 hours, alternate blanks and screen from 64 to 184 feet, gravel packed

Driller's Log

	Depth (feet)
Soil, sandy	0-1
Clay, black and yellow, sandy	1-4
Sand, medium to coarse	4-15
Sand, coarse, and gravel	15-48
Clay and gravel	48-50
Sand, coarse, and gravel	50-75
Clay, yellow	75-88
Sand, fine	88-105
Sand, fine to medium	-105-118
Sand and gravel, with clay	-118-124
Sand, fine to medium	-124-131
Clay, white	-131-139
Sand, fine to medium	-139-145
Sand, medium to coarse	-145-159
Sand, coarse, and gravel and clay	-159-165
Sand, coarse, and gravel	-165-185
Shale	-185



County Harvey

Location 24-2W-16BCC

Date tested April 19, 1939

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 194

Static water level (feet) 12.92

Discharge (cubic feet per day) 385,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 15,000

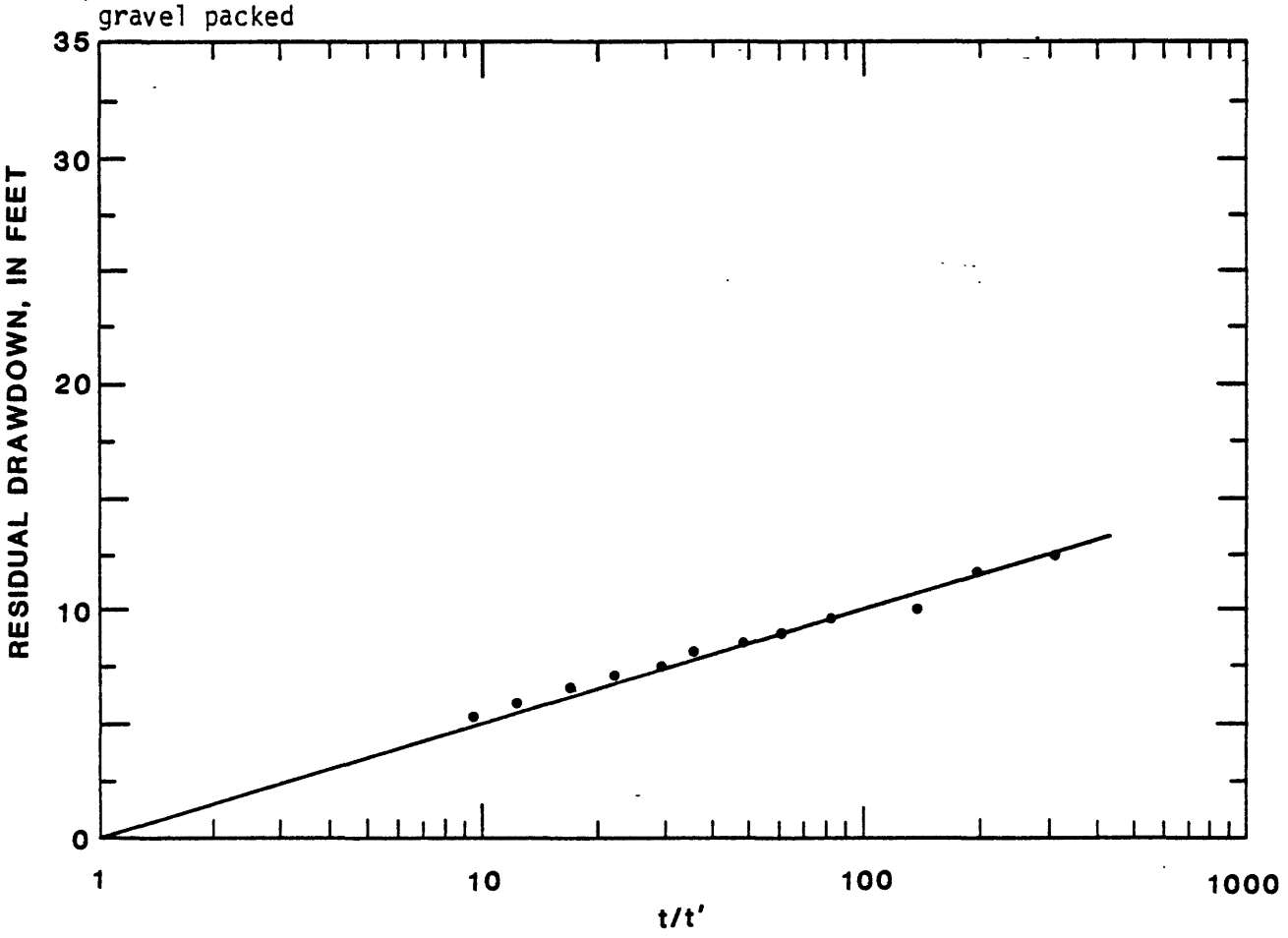
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer, Pumping well, pumping time 36 hours, alternate blanks and screen from 79 to 194 feet, gravel packed

Driller's Log

	Depth (feet)
Clay, black	0-5
Clay, yellow	5-9
Sand and gravel	9-29
Clay, soft blue	29-44
Sand	44-46
Clay, blue	46-52
Sand, medium-blue	52-60
Sand, coarse, and gravel	60-92
Clay, sandy	92-98
Sand	98-108
Clay, with gravel	-108-129
Sand, coarse	-129-156
Clay, hard	-156-161
Sand and clay	-161-176
Sand, coarse	-176-193
Boulders	-193-194
Shale	-194



County Harvey

Location 24-2W-16BCC

Date tested March 30, 1960

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 255

Static water level (feet) 29.46

Discharge (cubic feet per day) 343,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 31,000

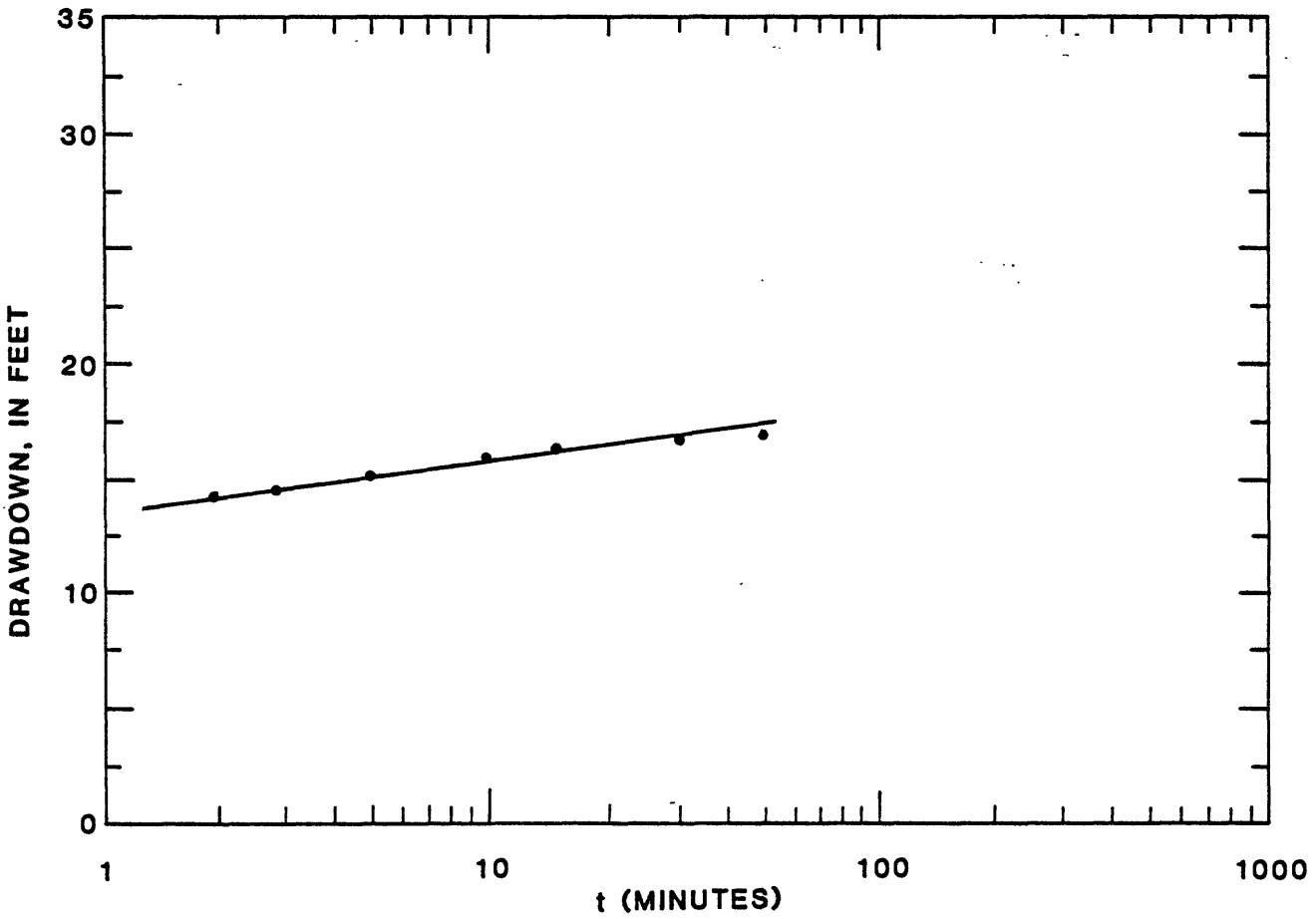
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer, Pumping well, alternate blanks and screen from 71 to 244 feet, gravel packed

Driller's Log

	Depth (feet)
Soil, tan	0-5
Silt, tan, sandy	5-15
Sand to coarse gravel, tan to gray	15-93
Sand to fine gravel, white, and layers of yellow-gray clay	93-116
Silt and clay, gray-green, and layers of fine to coarse sand	-116-146
Sand to fine gravel, white, and layers of silty tan clay	-146-194
Sand to medium gravel, white, and layers of silty tan clay	-194-247
Shale, green to black, hard	-247-255



County Harvey

Location 24-2W-26DCC

Date tested May 17, 1939

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 80

Static water level (feet) 14.34

Discharge (cubic feet per day) 137,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 30,000

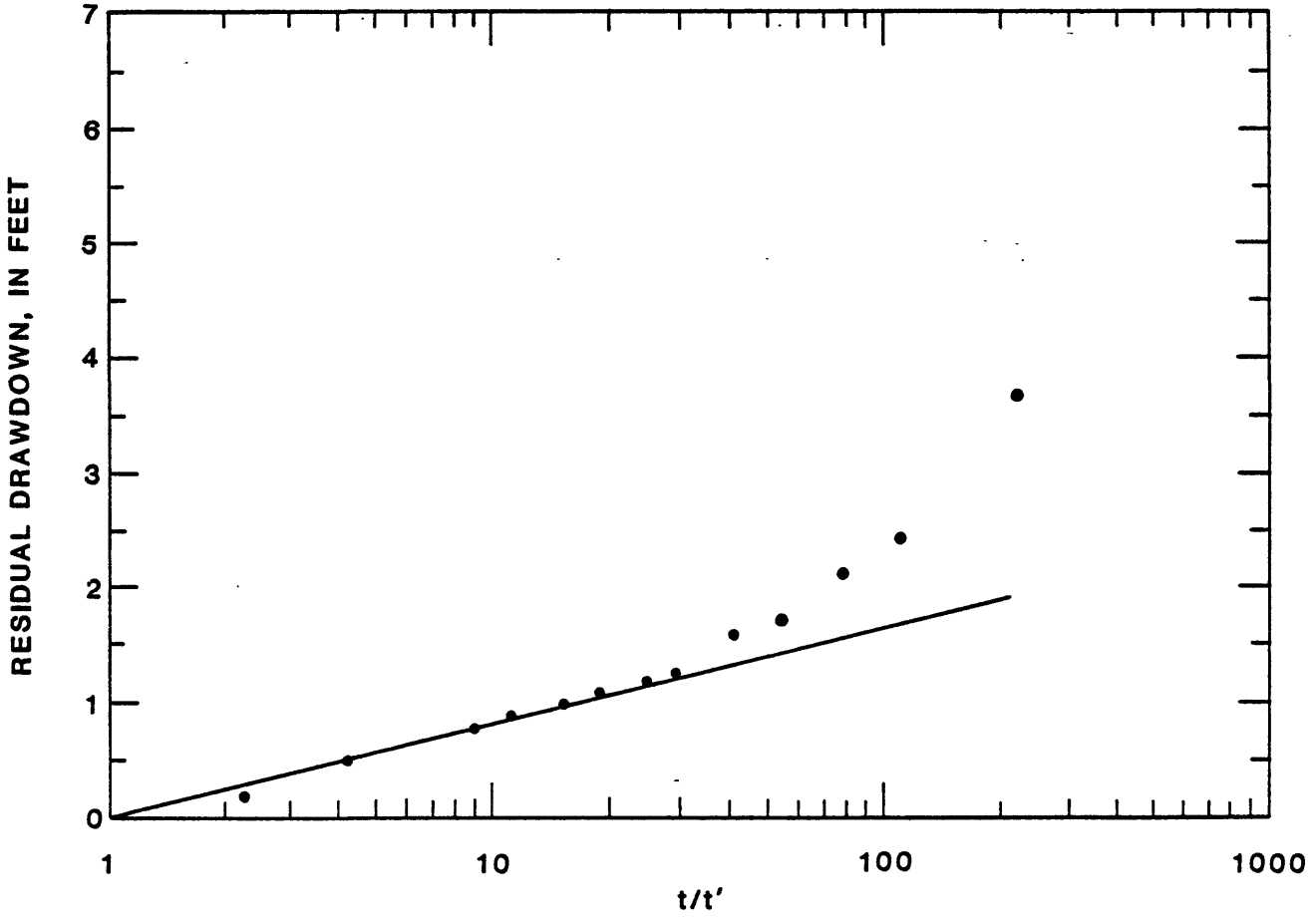
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer, Pumping well, pumping time 36 hours, alternate blanks and screen from 50 to 80 feet, gravel packed

Driller's Log

	Depth (feet)
Soil, sandy	0-3
Clay	3-15
Sand, coarse, and clay	15-20
Sand, coarse	20-25
Sand, coarse, and gravel	25-35
Sand, coarse, and clay balls	35-41
Clay, sandy, and clay streaks	41-45
Sand, packed	45-49
Sand, fine	49-52
Sand and gravel	52-55
Clay, sandy	55-58
Sand and gravel	58-76
Clay, sandy	76-77
Sand, coarse, and clay	77-80
Clay, sandy	80



County Harvey

Location 24-2W-26DCC

Date tested May 17, 1939

Pumping well radius (feet) or distance from pumping well (feet) 100, 500

Well depth (feet) 50, 48

Static water level (feet) 12.14, 12.83

Discharge (cubic feet per day) 137,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 26,000

Storage coefficient ---

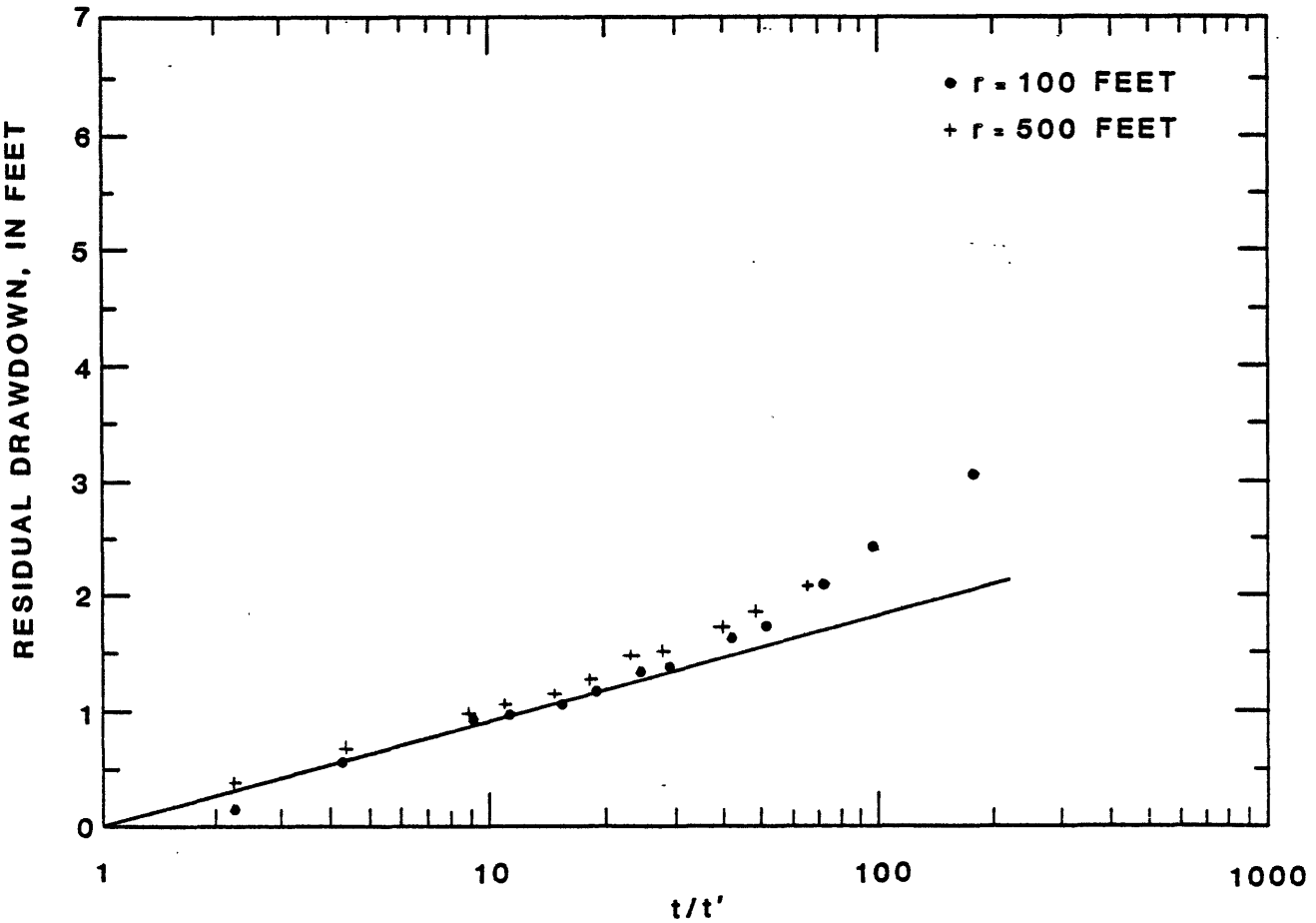
Source City of Wichita

Remarks Equus Beds aquifer

Observation wells, well points set at 51 and 50 feet, pumping time 36 hours

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay	2-14
Sand, fine	14-20
Sand and gravel	20-40
Sand, fine, and clay	40-45
Sand, fine	45-48
Sand, medium-coarse	48-50



County Harvey

Location 24-2W-28DDD

Date tested April 6, 1959

Pumping well radius (feet) or distance from pumping well (feet) 215

Well depth (feet) 246

Static water level (feet) 24.75

Discharge (cubic feet per day) 331,000

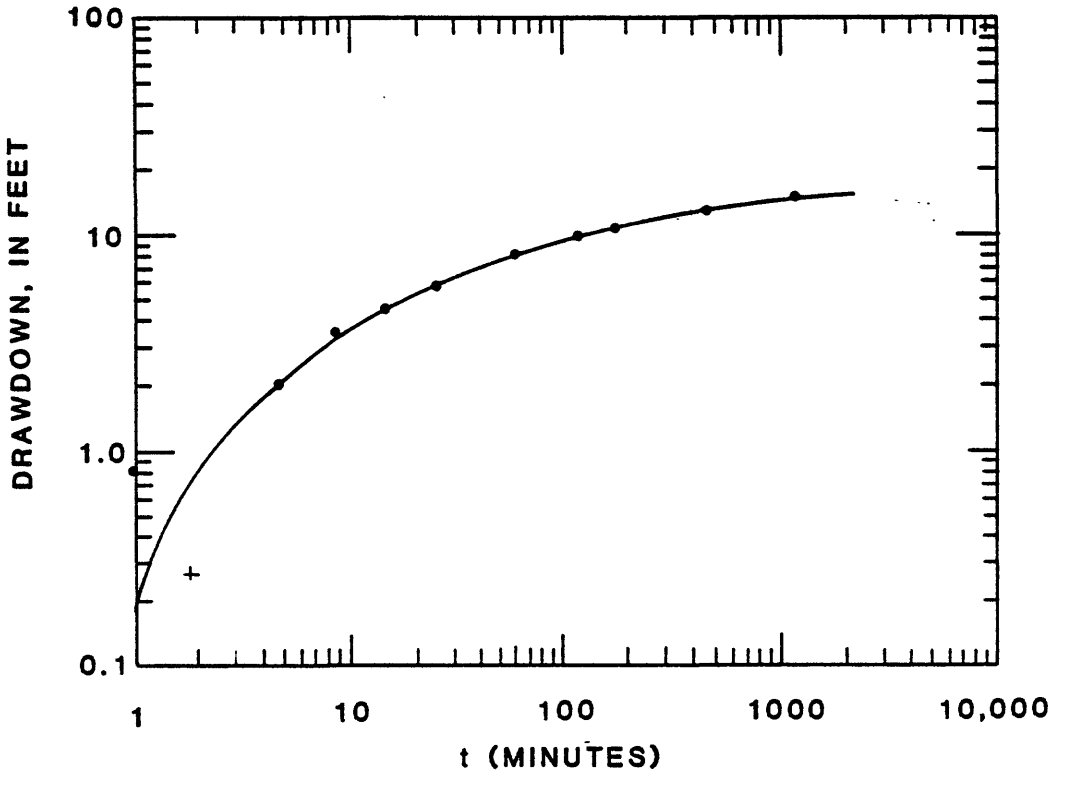
Method of analysis Theis Nonequilibrium

Transmissivity (square feet per day) 10,000

Storage coefficient 1.2×10^{-3}

Source City of Wichita

Remarks Equus Beds aquifer, Observation well, alternate blanks and screen from 188 to 246 feet



County Harvey

Location 24-2W-35ADD

Date tested May 3, 1939

Pumping well radius (feet) or distance from pumping well (feet) 100

Well depth (feet) 48

Static water level (feet) ---

Discharge (cubic feet per day) 366,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 67,000

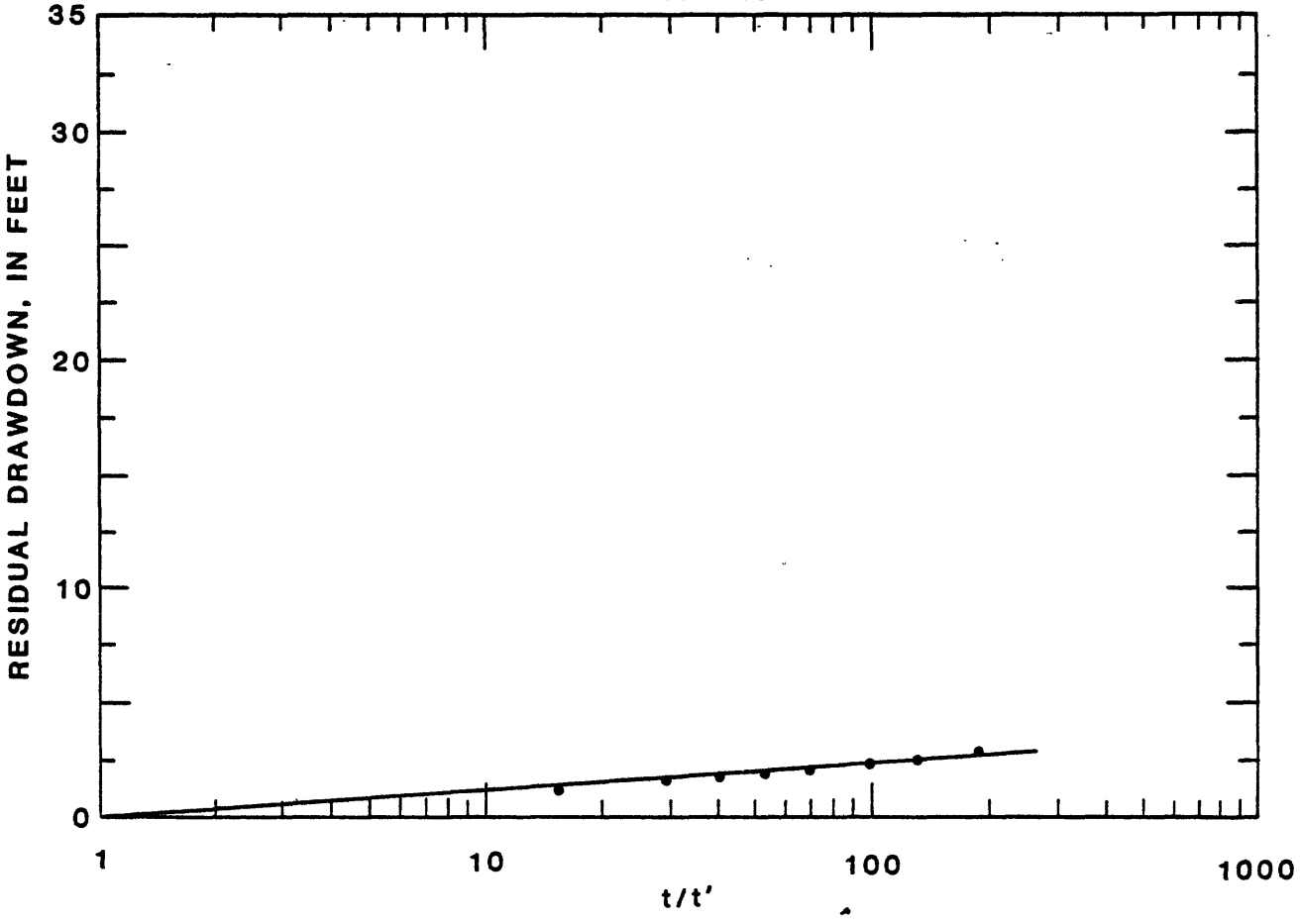
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer, Observation well, pumping time 60 hours, well point set at 50 feet, pumping well has alternate blanks and screen from 78 to 203 feet

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay	2-14
Sand, coarse	14-18
Sand and gravel	18-27
Clay	27-29
Sand, coarse, and gravel	29-48



County Harvey

Location 24-3W-11DDD

Date tested March 25, 1959

Pumping well radius (feet) or distance from pumping well (feet) 170

Well depth (feet) 244

Static water level (feet) 15.57

Discharge (cubic feet per day) 262,000

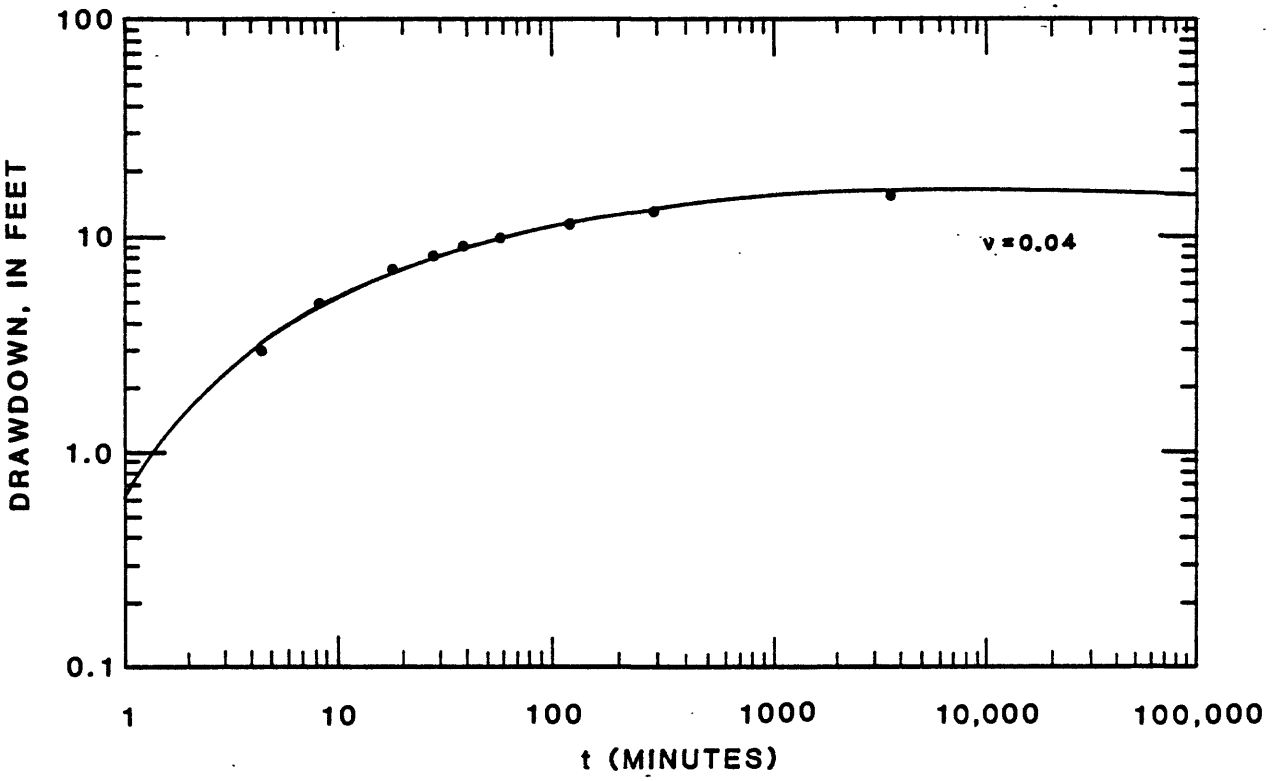
Method of analysis Hantush-Jacob

Transmissivity (square feet per day) 6,700

Storage coefficient 8.0×10^{-4}

Source City of Wichita

Remarks $K'/b' = 1.5 \times 10^{-3}$ (1/day)
Equus Beds aquifer,
Observation well, well point set at 232 feet
Pumping well has alternate blanks and screen from 88 to 241 feet



County Harvey

Location 24-3W-23AD

Date tested May 13, 1958

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) 200

Static water level (feet) ---

Discharge (cubic feet per day) 219,400

Method of analysis Jacob Modified

Transmissivity (square feet per day) 8,700

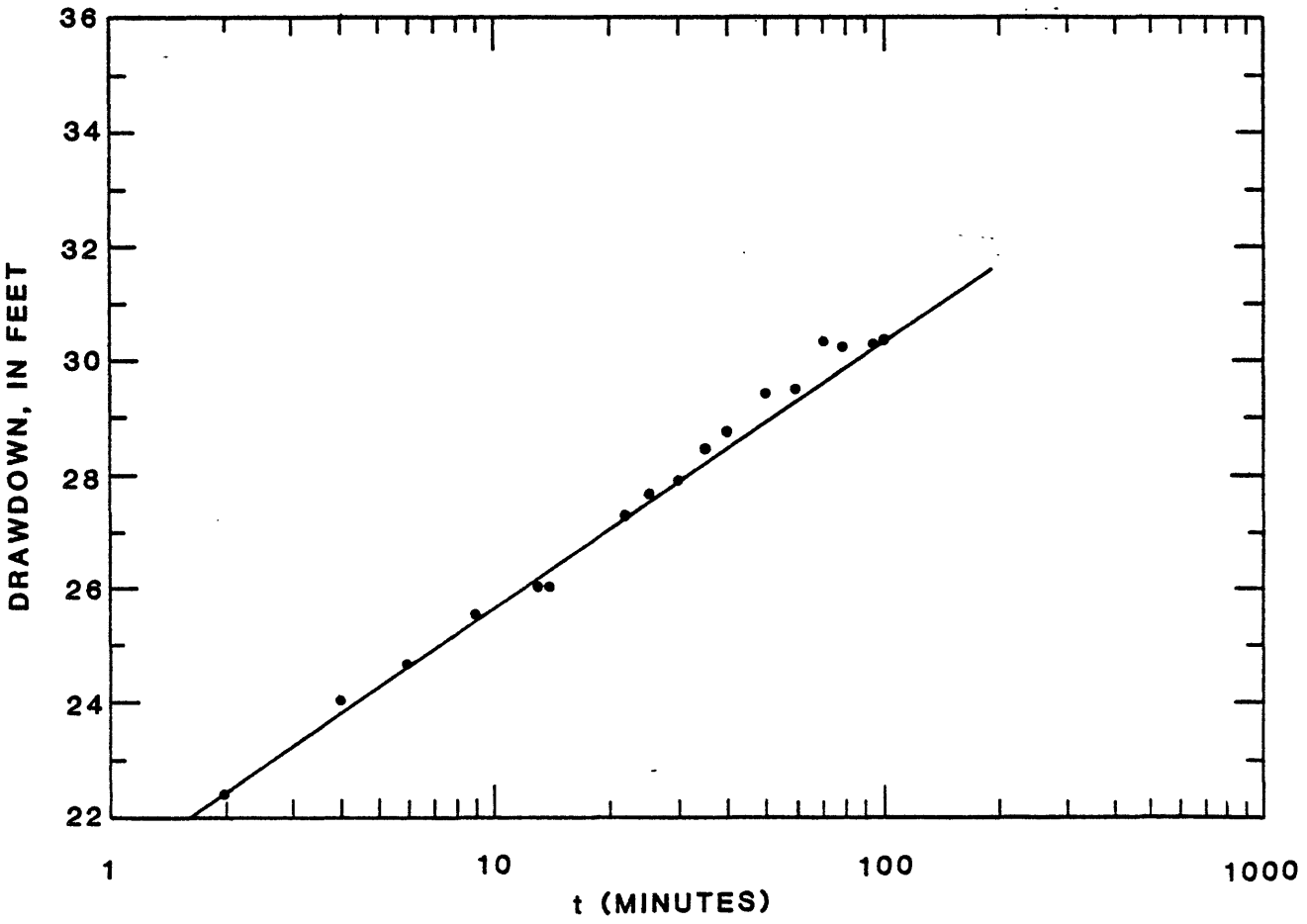
Storage coefficient ---

Source City of Wichita

Remarks Equus Beds aquifer, Pumping well, alternate blanks and screen from 78 to 167 feet

Driller's Log

	Depth (feet)
Silt and clay, tan, sandy	0-5
Sand to coarse gravel, orange to gray, and thin clay lenses	5-40
Clay, blue, and layers of fine to coarse sand	40-57
Sand to medium gravel, red to gray, and thin clay lenses	57-90
Clay, gray	90-96
Sand to coarse gravel, gray-green	96-104
Sand, red-gray, fine to coarse, and layers of silty gray clay	-104-125
Sand, yellow-gray, fine to coarse	-125-150
Sand to coarse gravel, yellow-gray	-150-167
Clay, tan to gray	-167-185
Shale, greenish-gray, hard	-186-200



County Jefferson

Location 8-19E-5CBB

Date tested June 15, 1973

Pumping well radius (feet) or distance from pumping well (feet) 100

Well depth (feet) 164

Static water level (feet) 109.67

Discharge (cubic feet per day) 3,500

Method of analysis Theis Nonequilibrium

Transmissivity (square feet per day) 175

Storage coefficient 3.0×10^{-4}

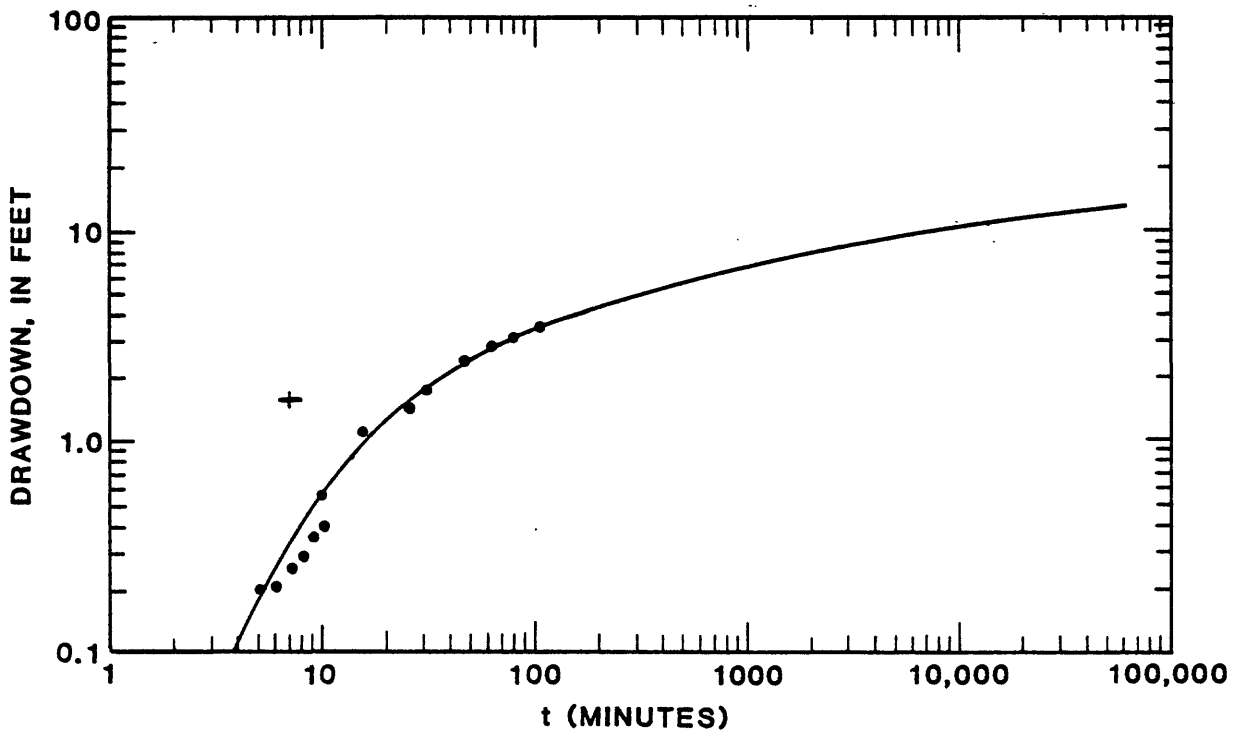
Source Layne-Western Co.

Remarks Glacial deposits

Observation well

Driller's Log

	Depth (feet)
Topsoil	0-5
Clay, yellow	5-69
Clay, yellow, and sand	69-102
Clay, blue	102-106
Sand, fine	106-108
Clay, sandy	108-123
Sand, fine	123-135
Clay and coarse sand	135-139
Gravel, with some clay	139-141
Sand, fine	141-164



County Jefferson

Location 9-18E-29BC

Date tested November 15, 1968

Pumping well radius (feet) or distance from pumping well (feet) 0.17

Well depth (feet) 64

Static water level (feet) 15.55

Discharge (cubic feet per day) 3,800

Method of analysis Jacob Modified

Transmissivity (square feet per day) 1,000

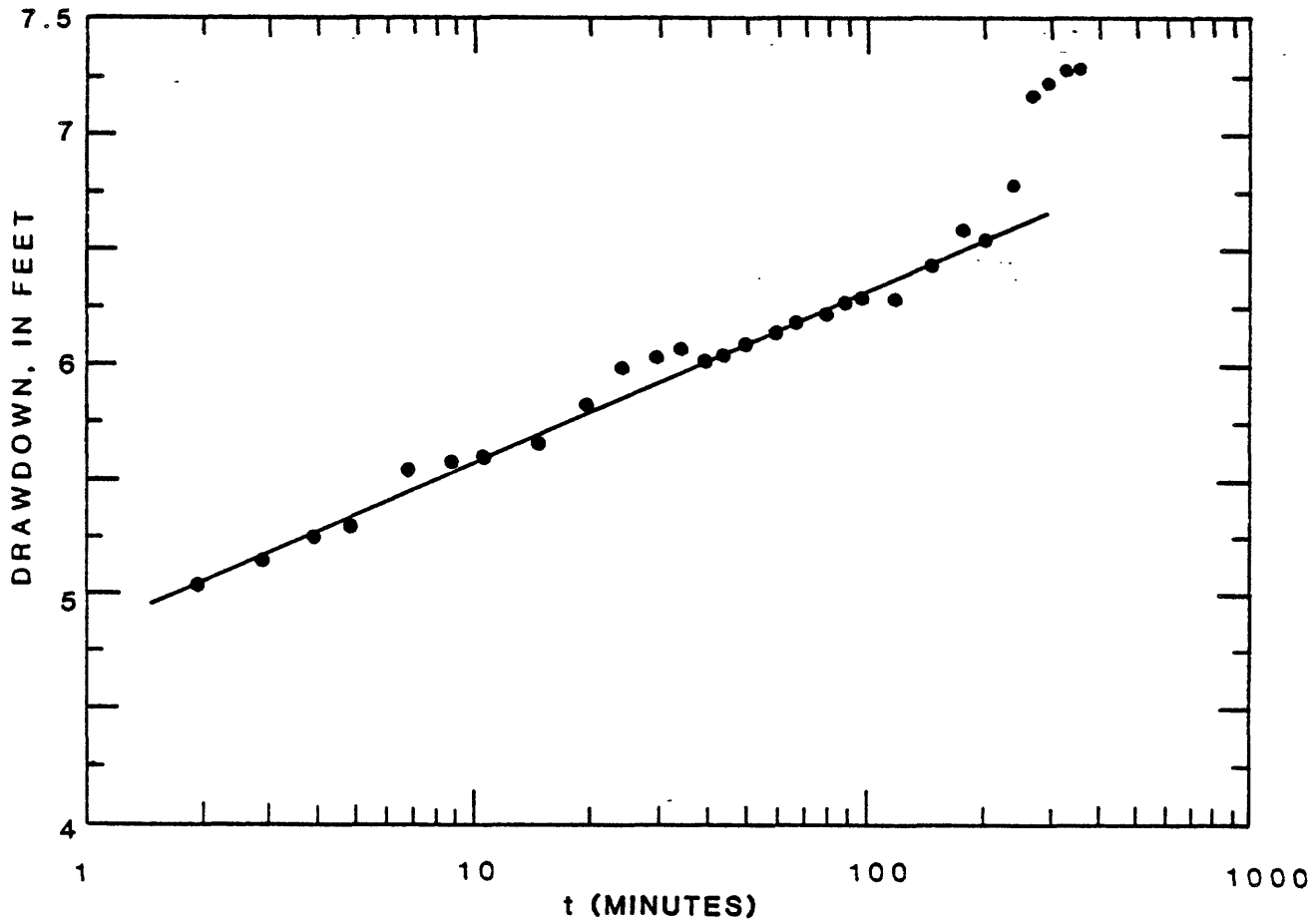
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, 10 feet of screen, no gravel pack

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown, silty	2-34
Clay, brown, gravelly	34-37
Clay, gray, silty	37-44
Sand, gray, fine to medium, with trace of clay	44-46
Clay, gray and brown, gravelly	46-53
Sand, gray and brown, medium to coarse, and gravel and boulders	53-58
Sand, gray and brown, medium to coarse, with gravel and trace of fine sand	58-60
Shale, brown, limy	60-63
Limestone, gray	63-64



County Jefferson

Location 9-18E-31BDA

Date tested May 11, 1967

Pumping well radius (feet) or distance from pumping well (feet) 30

Well depth (feet) 45

Static water level (feet) 15.35

Discharge (cubic feet per day) 5,800

Method of analysis Hantush Modified

Transmissivity (square feet per day) 400

Storage coefficient 2.2×10^{-4}

Source Layne-Western Co.

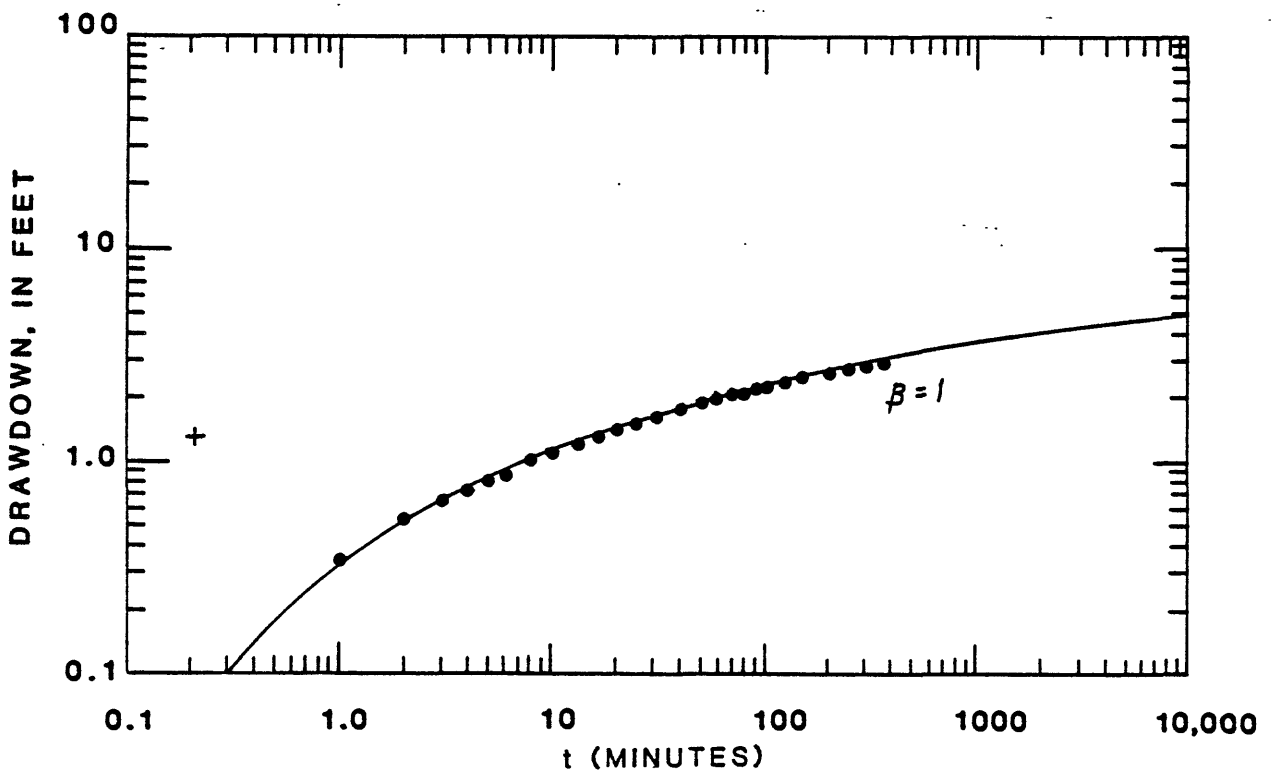
Remarks $\beta = 1$, $K's'/b' = 1.0 \times 10^{-3}$ (1/day)

Alluvial deposits

Observation well

Driller's Log

	Depth (feet)
Clay, dark-gray	0-6
Clay, brown, silty	6-21
Clay, gray, sandy	21-26
Sand, gray, fine to very fine	26-31
Sand, gray, medium to coarse, and gravel	31-38
Sand, gray, fine to medium, and boulders and clay	38-41
Shale, gray	41-45



County Jefferson

Location 9-18E-31BDA

Date tested May 11, 1967

Pumping well radius (feet) or distance from pumping well (feet) 300

Well depth (feet) 46

Static water level (feet) 16.9

Discharge (cubic feet per day) 5,800

Method of analysis Jacob Modified

Transmissivity (square feet per day) 1,300

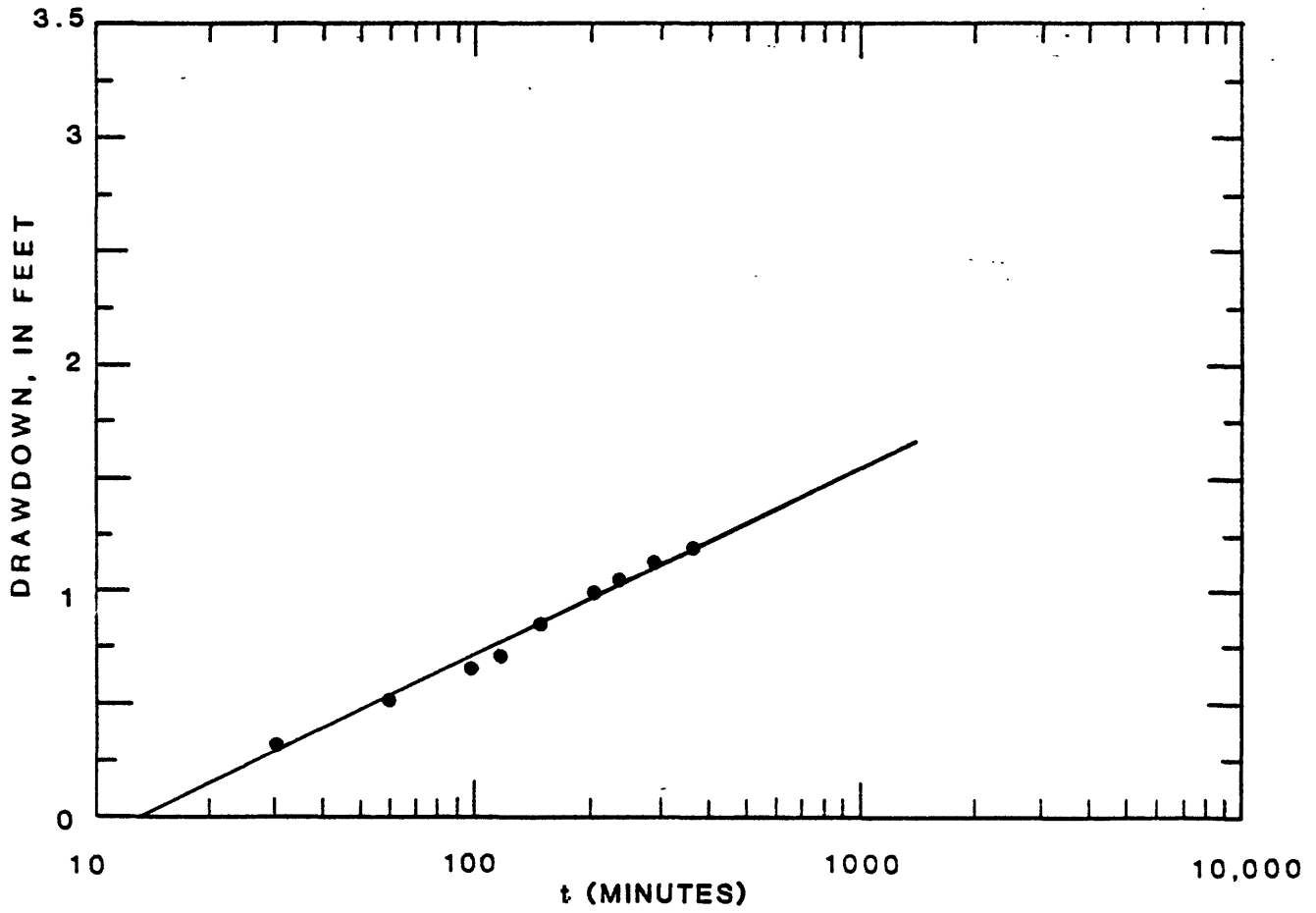
Storage coefficient 3.1×10^{-4}

Source Layne-Western Co.

Remarks Alluvial deposits, Observation well, No screen data available

Driller's Log

	Depth (feet)
Clay, dark-gray	0-10
Clay, gray	10-17
Clay, brown, silty	17-22
Silt, gray, clayey	22-31
Sand, gray, fine to medium	31-33
Sand and gravel, gray, medium to coarse	33-40
Sand and gravel, gray, medium to coarse, with few clay balls	40-45
Sand and gravel, gray, medium to coarse, with trace of clay and boulders	45-46
Shale, gray, hard	46-50



County Jefferson

Location 10-17E-27AAA

Date tested April 25, 1969

Pumping well radius (feet) or distance from pumping well (feet) 0.33

Well depth (feet) 58

Static water level (feet) 10.25

Discharge (cubic feet per day) 5,800

Method of analysis Jacob Modified

Transmissivity (square feet per day) 3,700

Storage coefficient ---

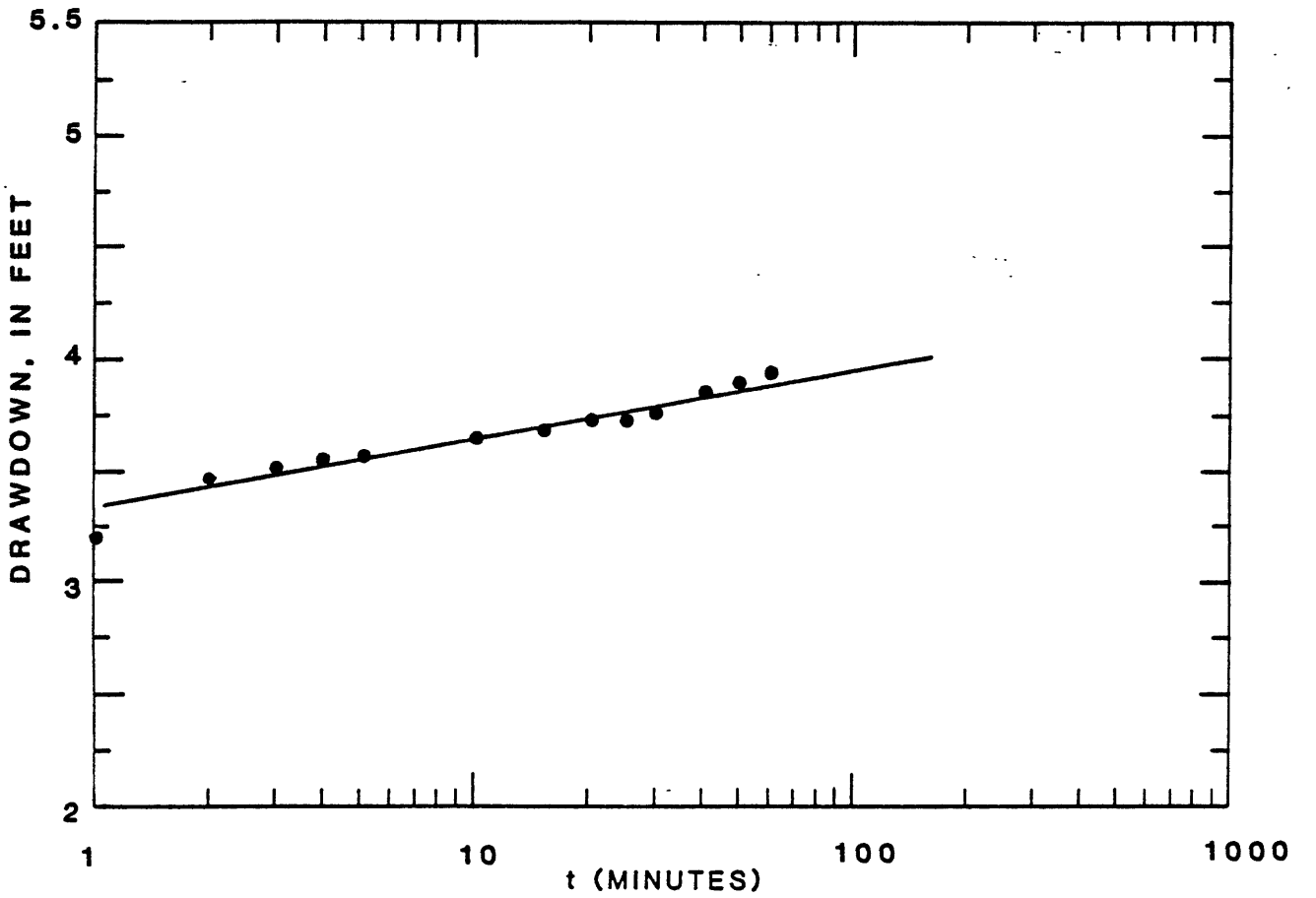
Source Layne-Western Co.

Remarks Alluvial deposits

Pumping well, 10 feet of screen, Gravel packed

Driller's Log

	Depth (feet)
Topsoil	0-15
Clay, brown	15-19
Sand, brown and gray, medium to coarse, with trace of gravel	19-45
Clay, gray, sandy	45-48
Clay, gray, sandy, with trace of gravel	48-



County Jewell

Location 1-6W-18DDA

Date tested March 29, 1978

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 154

Static water level (feet) 105.25

Discharge (cubic feet per day) 96,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 59,000

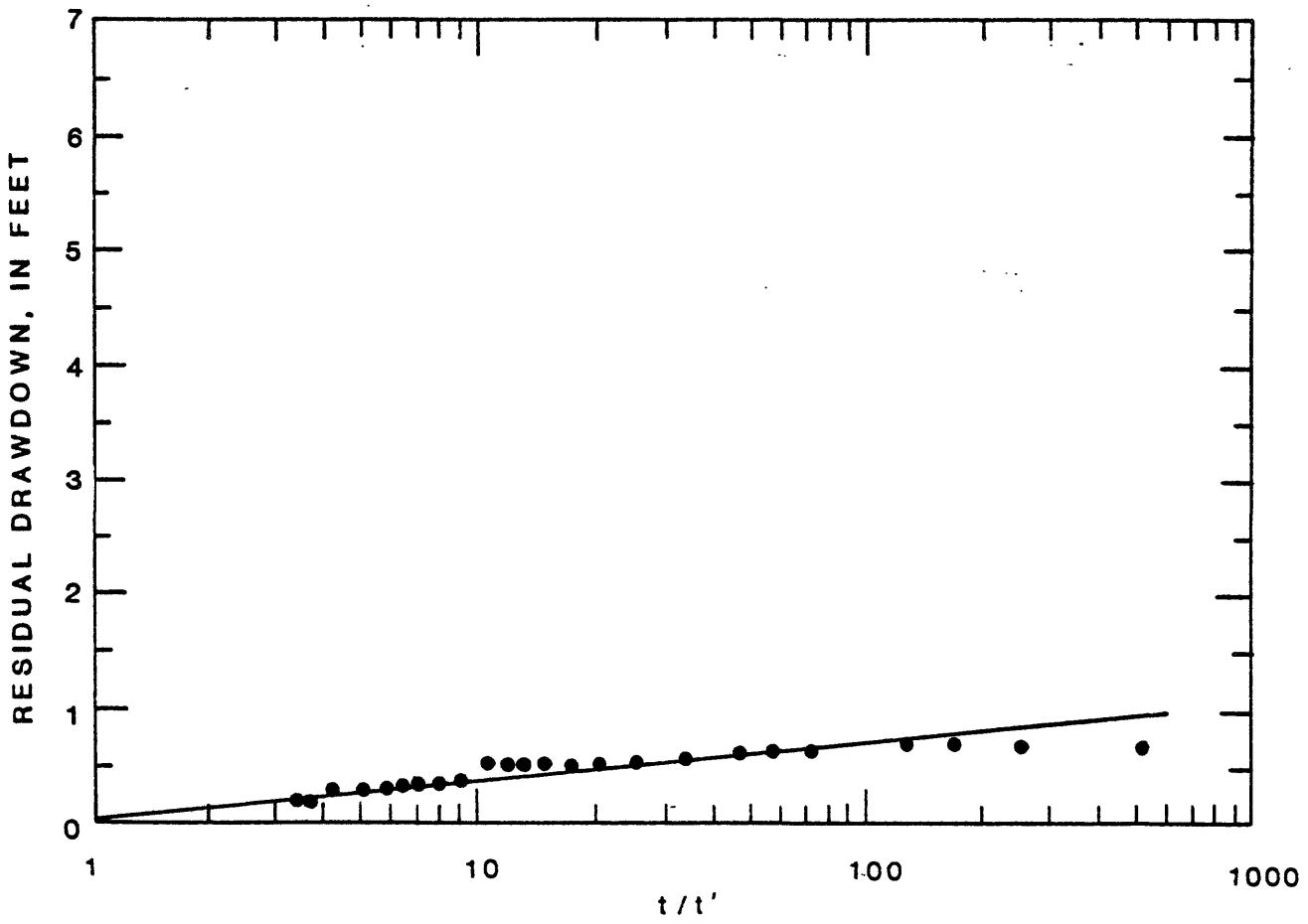
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, pumping time 8 hours, 25 feet of screen, gravel packed

Driller's Log

	Depth (feet)
Soil	0-2
Clay, brown	2-39
Sand, fine to coarse, and medium gravel	39-60
Sand and gravel, medium to coarse	60-70
Clay, brown	70-84
Sand and gravel, medium to coarse	84-152
Shale, blue-gray	152-154



County Jewell

Location 1-6W-18DDA

Date tested March 29, 1978

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) ---

Static water level (feet) 104.4

Discharge (cubic feet per day) 96,000

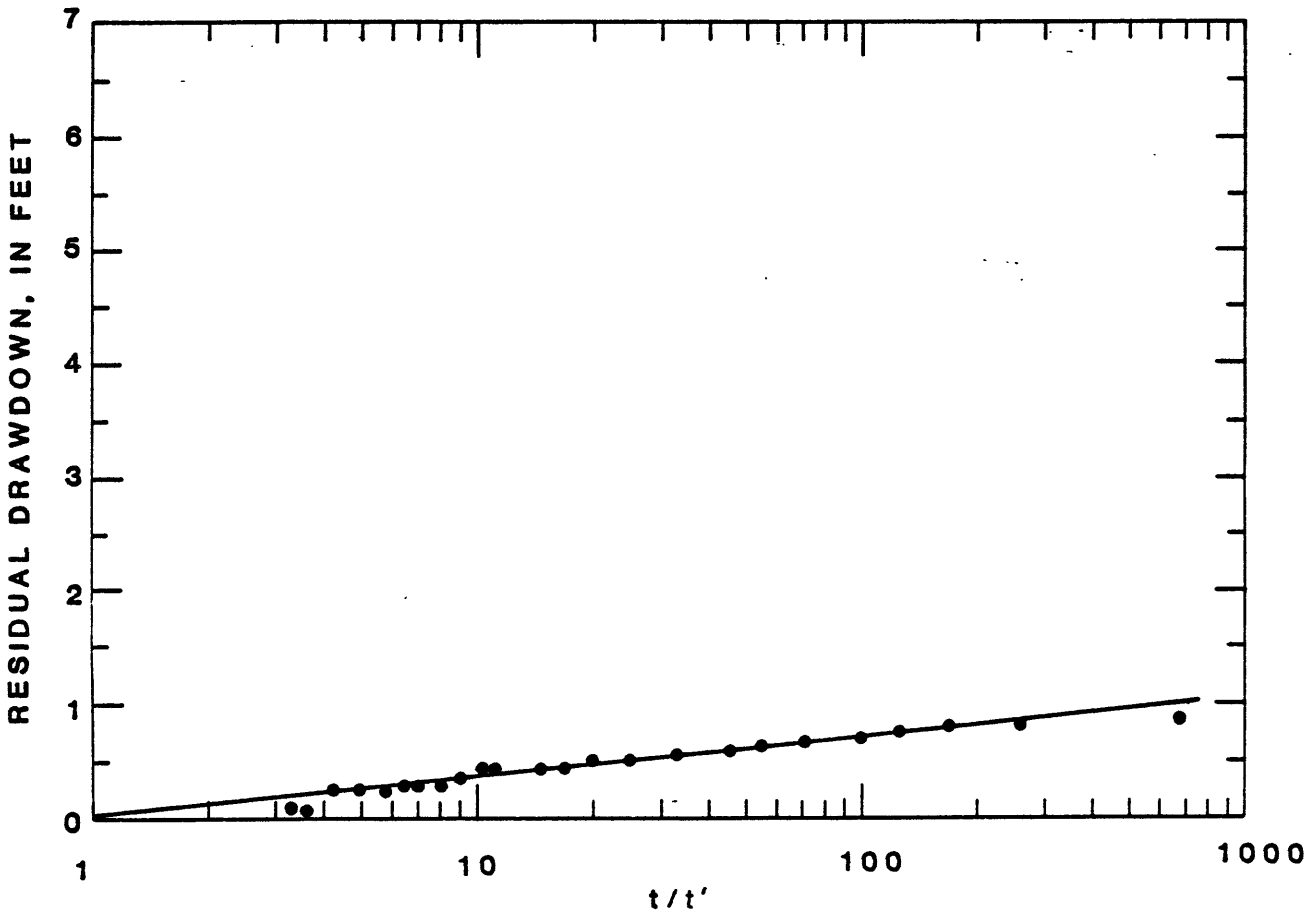
Method of analysis Theis Recovery

Transmissivity (square feet per day) 55,000

Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Observation well, Pumping time 8 hours



County Johnson

Location 12-23E-25BBA

Date tested August 12, 1976

Pumping well radius (feet) or distance from pumping well (feet) 1.08

Well depth (feet) 64

Static water level (feet) 25.58

Discharge (cubic feet per day) 233,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 85,000

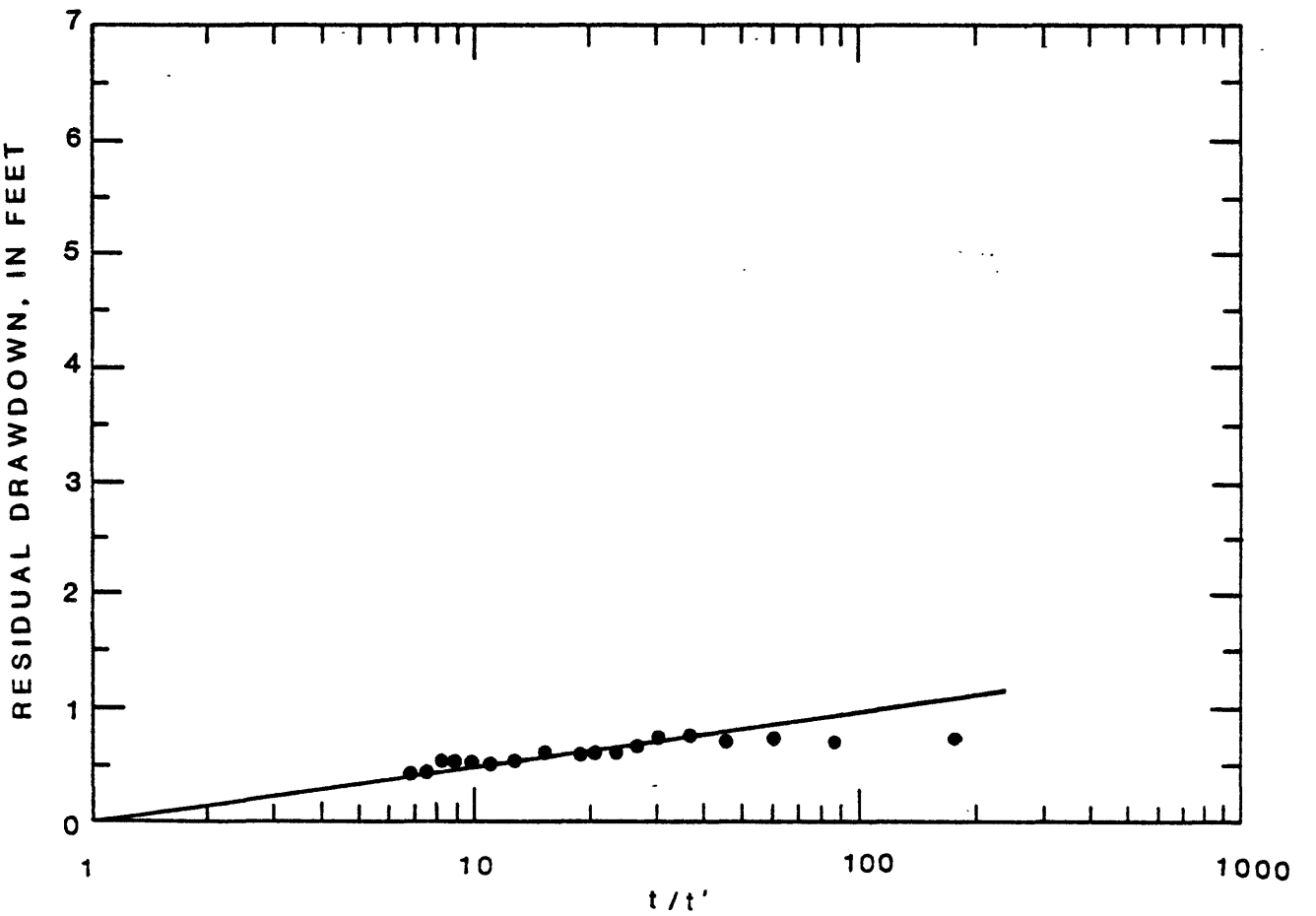
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, pumping time 6 hours, 25 feet of screen, gravel packed

Driller's Log

	Depth (feet)
Topsoil	0-1
Clay, brown, silty	1-8
Sand, brown, very fine	8-15
Sand, brown, fine to medium, and clay balls	15-35
Clay balls, fine to medium	35-42
Sand and gravel, medium to coarse	42-64
Shale	64-



County Johnson

Location 14-22E-23D

Date tested May 31, 1944

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) ---

Static water level (feet) ---

Discharge (cubic feet per day) 700

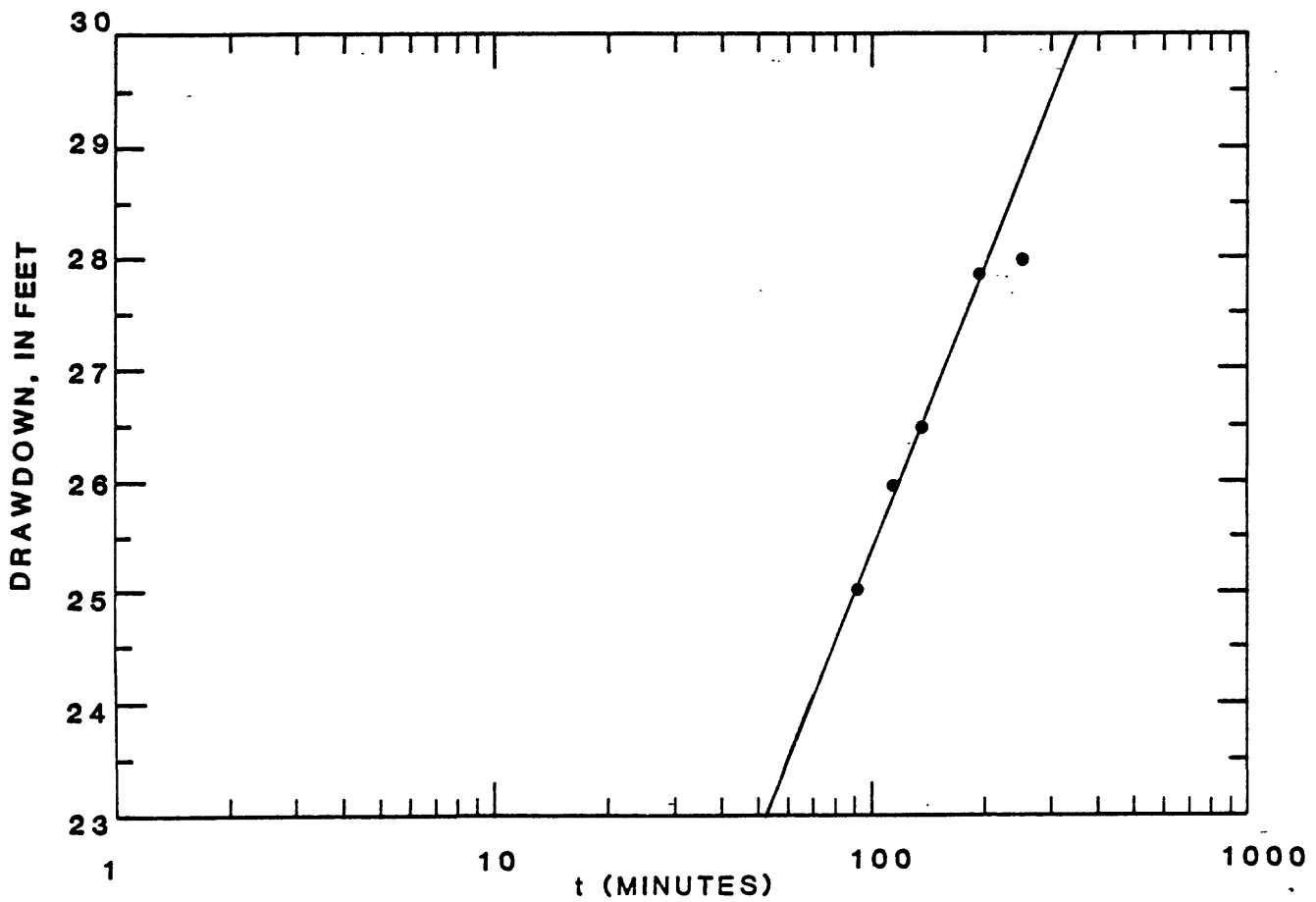
Method of analysis Jacob Modified

Transmissivity (square feet per day) 20

Storage coefficient ---

Source U.S. Geological Survey

Remarks Consolidated rocks, Pumping well



County Kingman

Location 27-6W-16CAC

Date tested August 27, 1971

Pumping well radius (feet) or distance from pumping well (feet) 0.33

Well depth (feet) 41

Static water level (feet) 9.25

Discharge (cubic feet per day) 14,700

Method of analysis Theis Recovery

Transmissivity (square feet per day) 1,400

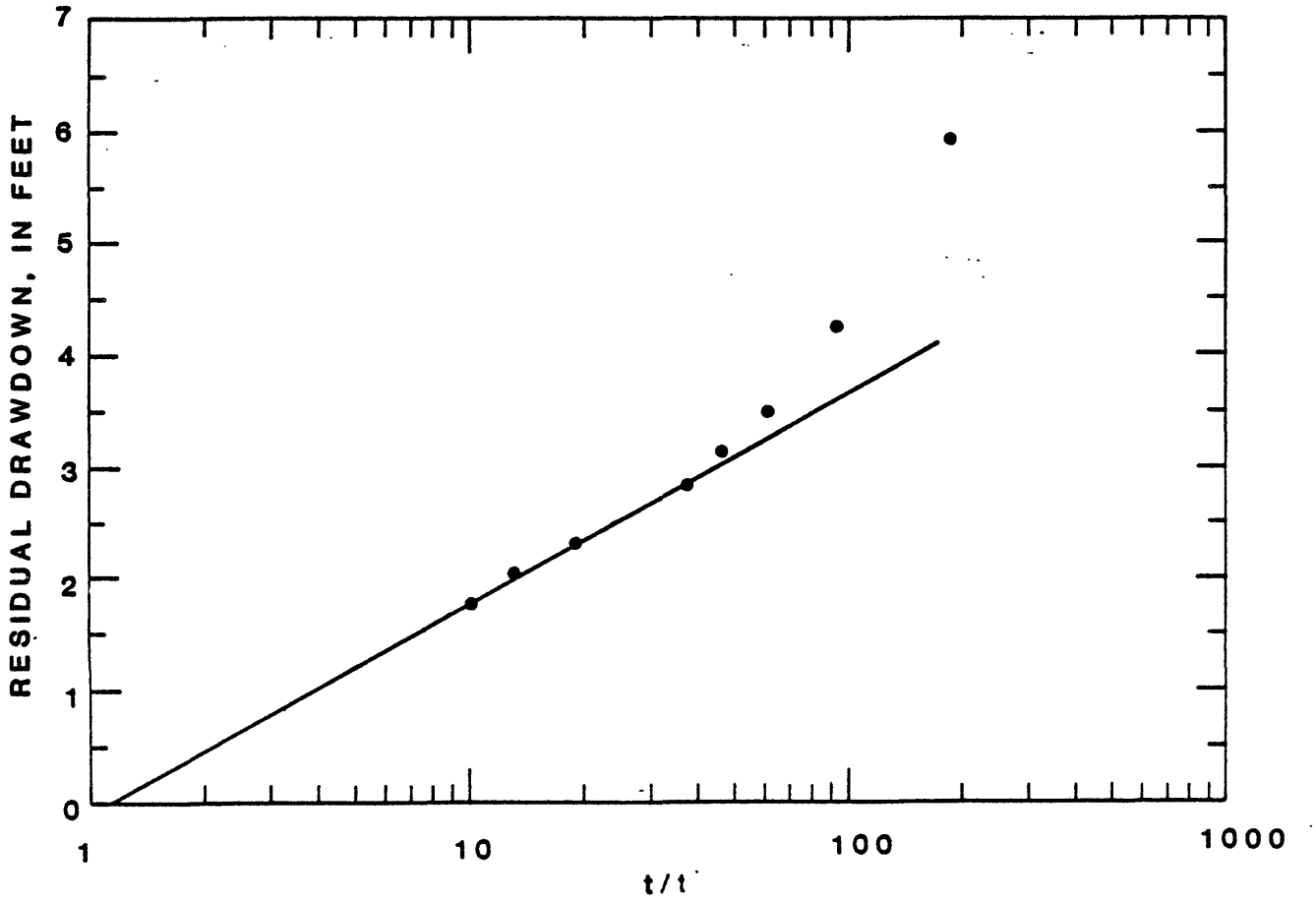
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, pumping time 3 hours, 8 feet of screen, gravel packed

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, red, with some sand	2-10
Clay, red	10-15
Silt, black	15-20
Sand, fine, and gravel	20-30
Silt, black	30-35
Clay, blue	35-40
Shale, limy	40-41



County Kingman

Location 28-9W-1BBD

Date tested August 13, 1968

Pumping well radius (feet) or distance from pumping well (feet) 0.67

Well depth (feet) 65

Static water level (feet) 10.65

Discharge (cubic feet per day) 156,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 19,000

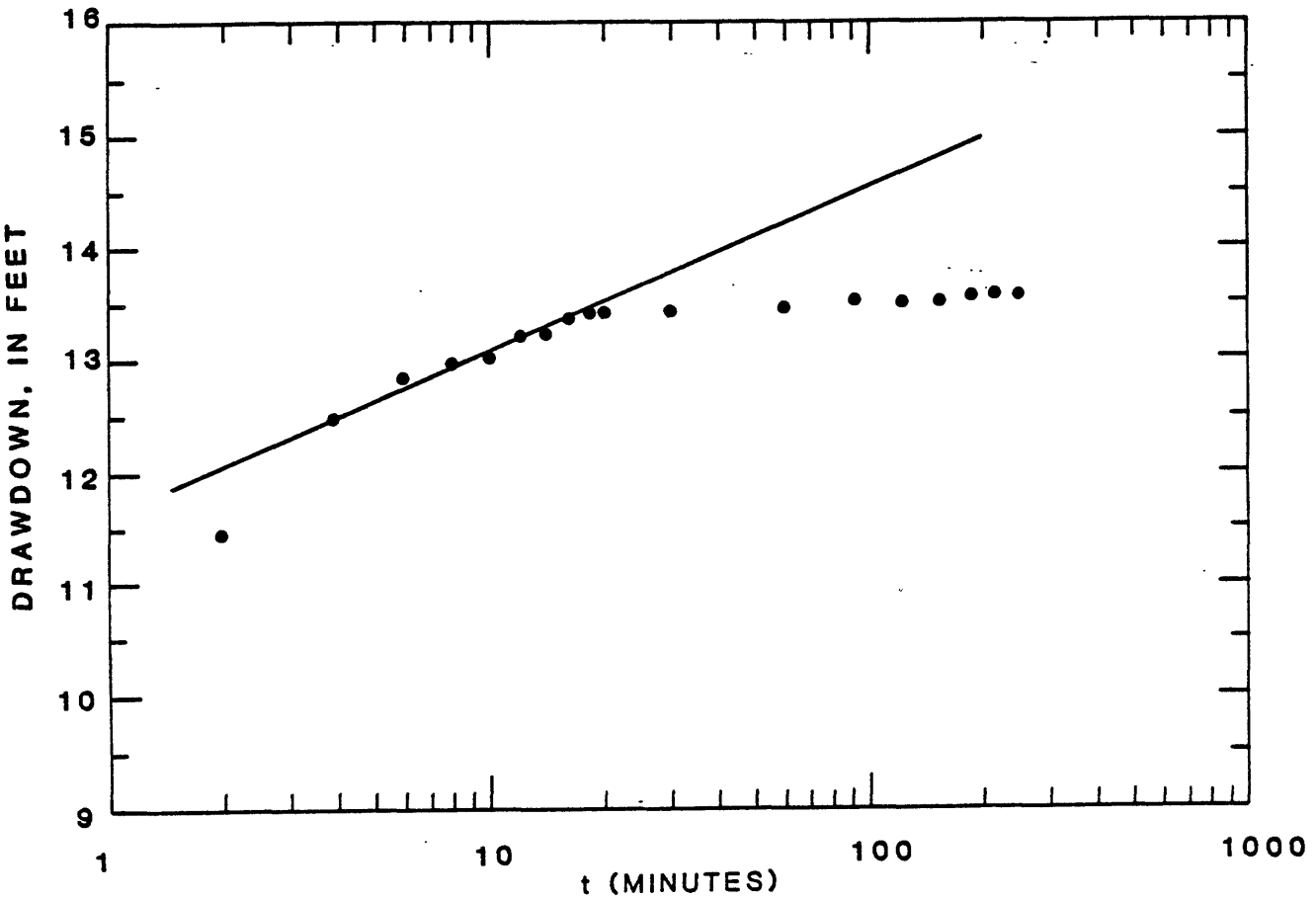
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, 24 feet of screen, gravel packed

Driller's Log

	Depth (feet)
Clay fill	0-5
Silt	5-9
Sand and gravel, silty	9-18
Sand, medium to coarse, and medium gravel	18-24
Gravel, medium to very coarse	24-38
Sand, fine to medium	38-40
Sand and gravel, medium to coarse, with clay layers	40-54
Sand, medium to coarse, with some medium gravel	54-65
Shale, red	65-



County Kingman

Location 30-10W-9BCC

Date tested September 4, 1973

Pumping well radius (feet) or distance from pumping well (feet) 0.67

Well depth (feet) 160

Static water level (feet) 48.75

Discharge (cubic feet per day) 154,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 43,000

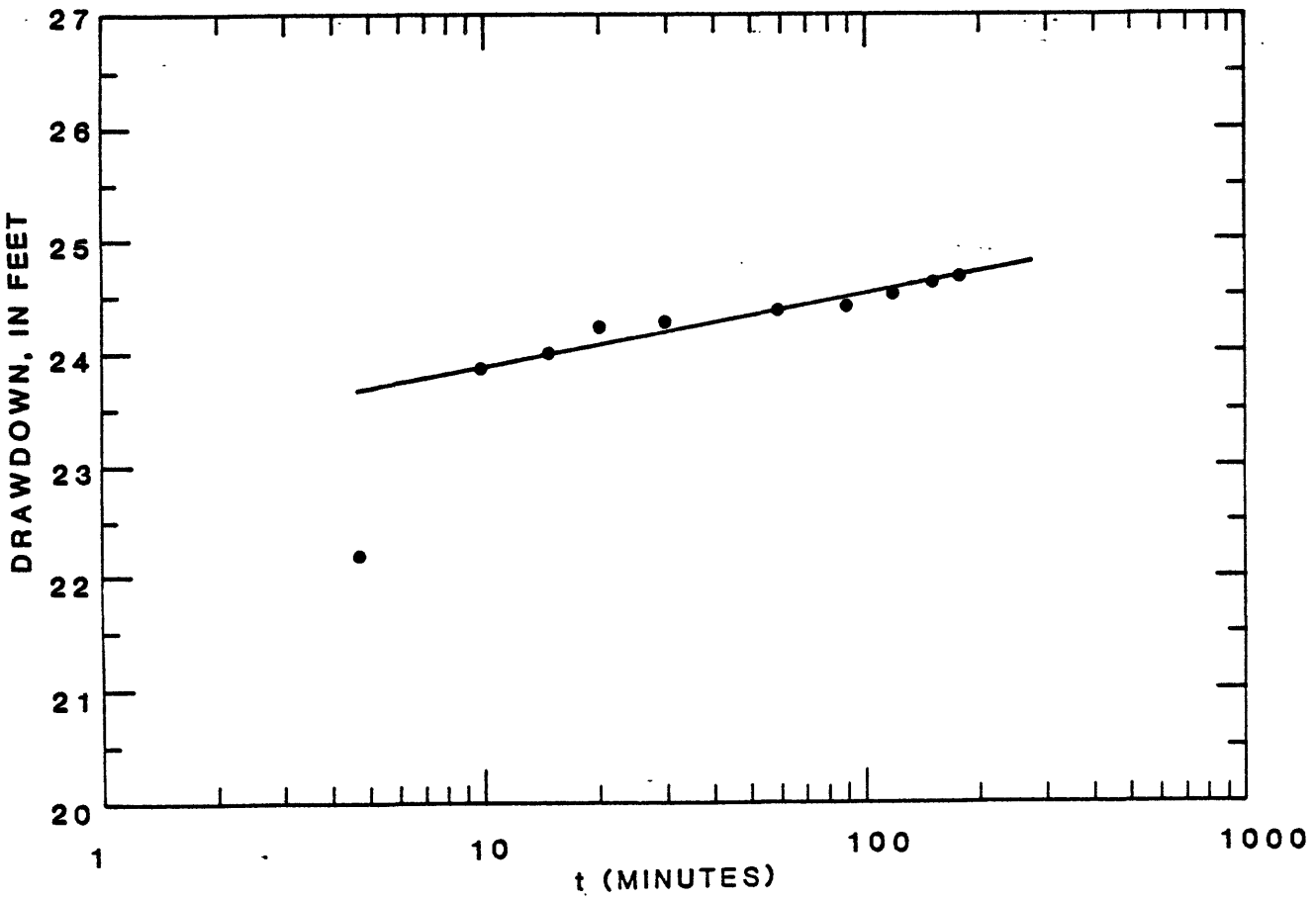
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, 40 feet of screen, gravel packed

Driller's Log

	Depth (feet)
Soil	0-2
Clay, tan, with gypsum	2-43
Sand and gravel, fine to coarse	43-77
Clay, brown	77-98
Sand, fine to coarse, and medium gravel	98-150
Sand and gravel, medium to coarse, with some clay stringers	150-160
Shale, red	160-



County Labette

Location 31-21E-9DAC

Date tested May 29, 1969

Pumping well radius (feet) or distance from pumping well (feet) 110

Well depth (feet) ---

Static water level (feet) 11.94

Discharge (cubic feet per day) 5,800

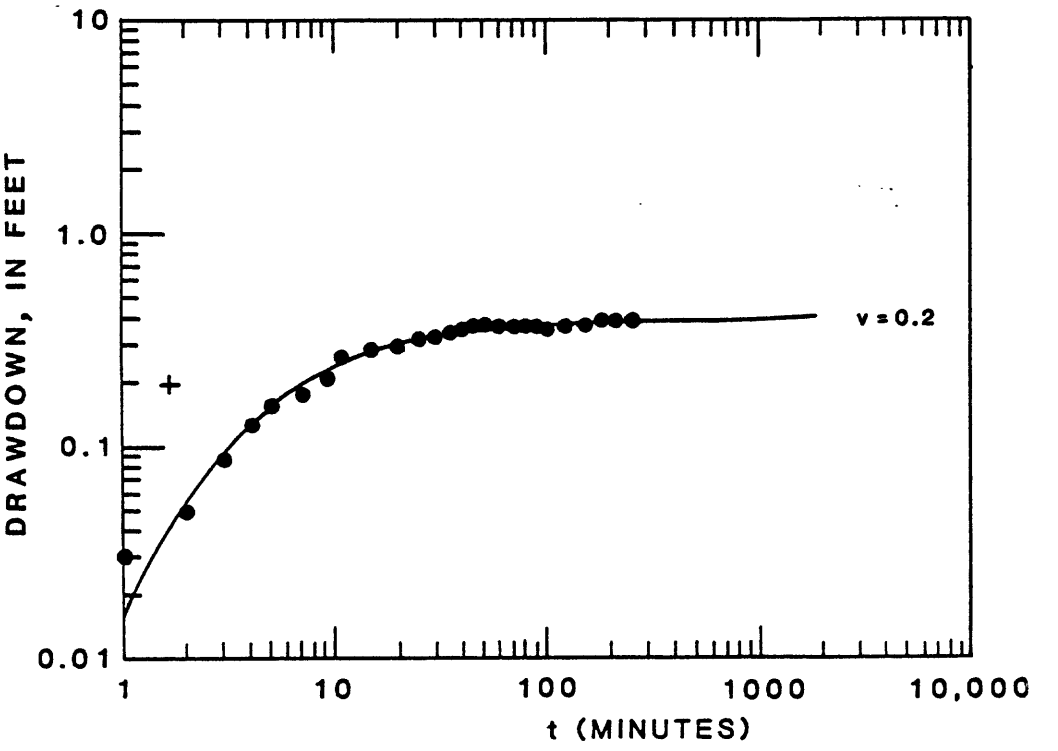
Method of analysis Hantush-Jacob

Transmissivity (square feet per day) 2,300

Storage coefficient 9.0×10^{-3}

Source Layne-Western Co.

Remarks $K'/b' = 3.0 \times 10^{-2}$ (1/day)
Alluvial deposits,
Observation well



County Leavenworth

Location 11-21E-10CAB

Date tested May 21, 1974

Pumping well radius (feet) or distance from pumping well (feet) 60

Well depth (feet) 92.6

Static water level (feet) 68.17

Discharge (cubic feet per day) 76,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 4,000

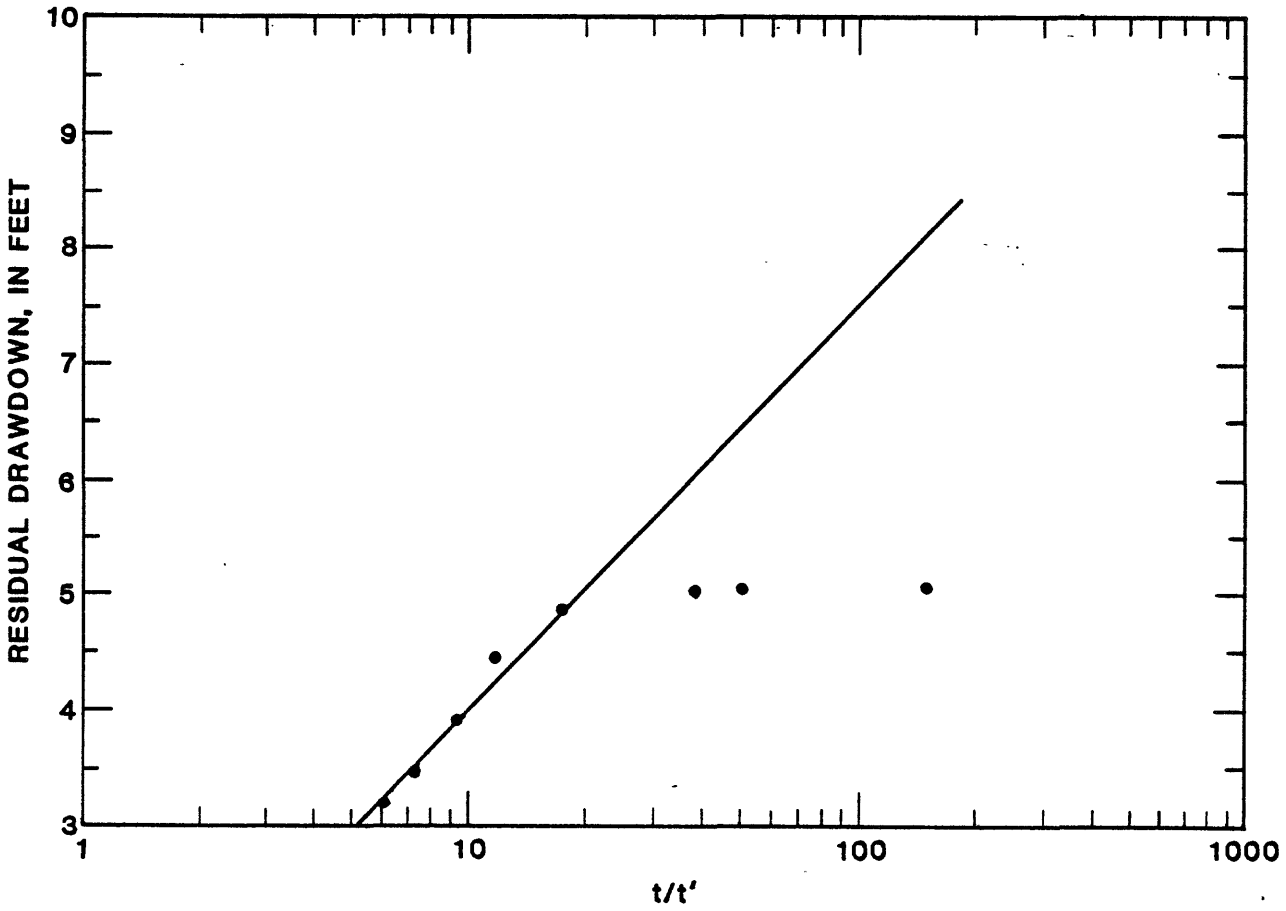
Storage coefficient ---

Source Layne-Western Co.

Remarks Consolidated rocks, Observation well, pumping time 25 hours, open hole

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown and gray, silty	2-4
Clay, brown and gray, sandy	4-40
Shale, gray	40-46
Sandstone, brown	46-55
Sandstone, gray	55-92
Limestone, gray	92-92.6



County Leavenworth

Location 11-21E-10CAB

Date tested May 21, 1974

Pumping well radius (feet) or distance from pumping well (feet) 136

Well depth (feet) ---

Static water level (feet) 66.55

Discharge (cubic feet per day) 76,000

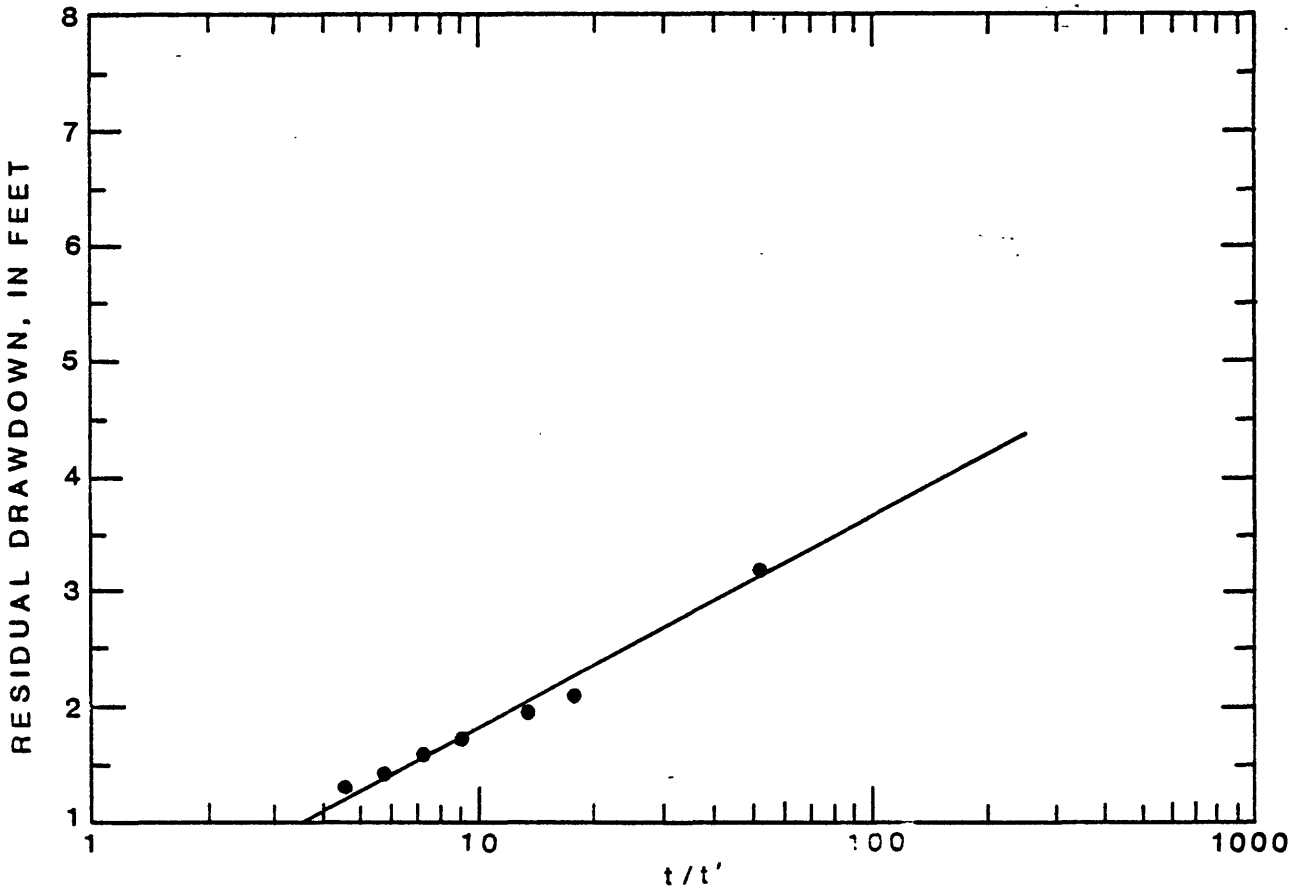
Method of analysis Theis Recovery

Transmissivity (square feet per day) 7,500

Storage coefficient ---

Source Layne-Western Co.

Remarks Consolidated rocks, Observation well, pumping time 25 hours, open hole



County Lyon

Location 18-10E-1CDC

Date tested November 12, 1968

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) 30

Static water level (feet) 8.4

Discharge (cubic feet per day) 19,200

Method of analysis Jacob Modified

Transmissivity (square feet per day) 3,200

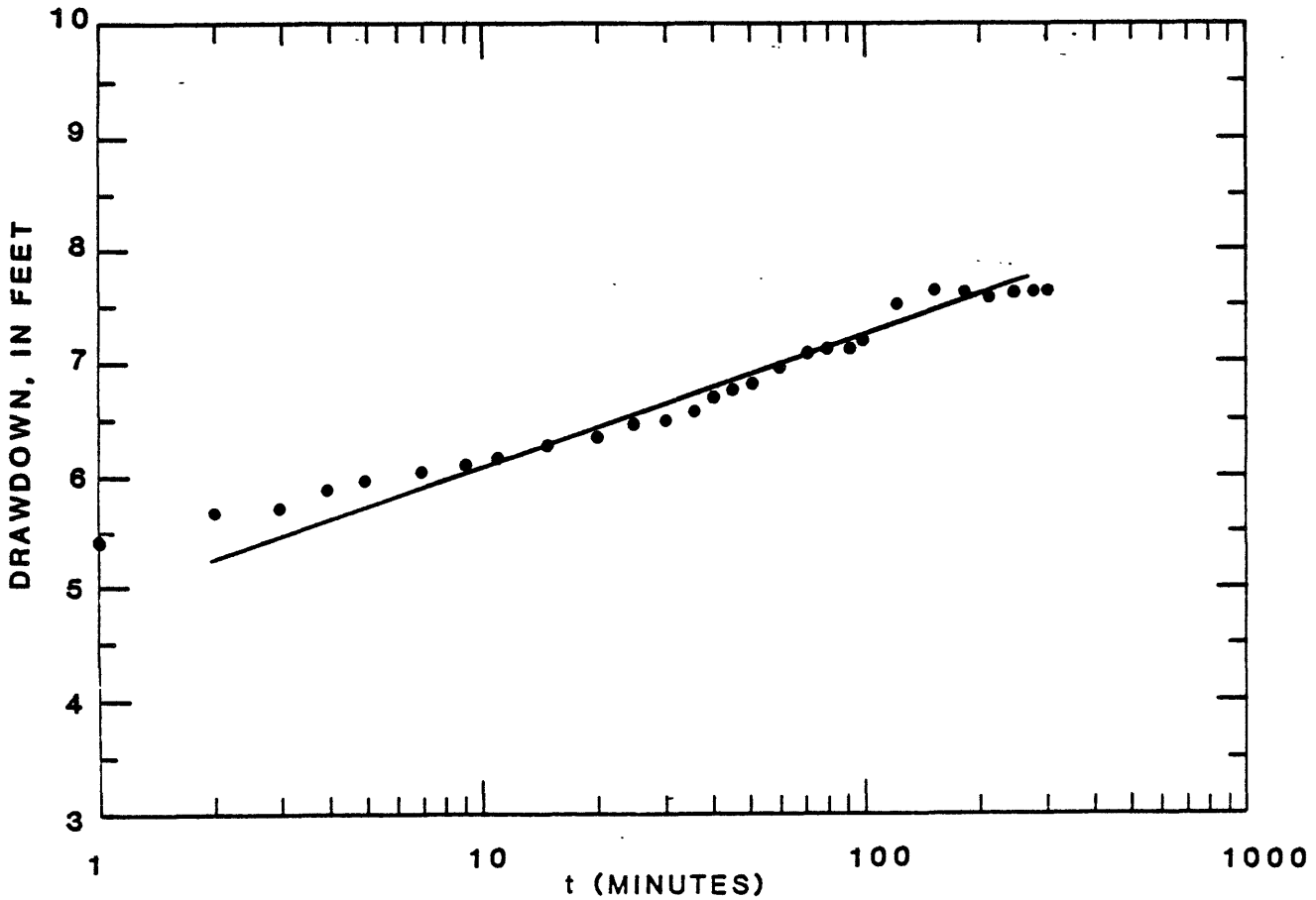
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, 20 feet of screen, No gravel pack

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown	2-6
Clay, gray-brown	6-14
Clay, brown, gravelly	14-16
Sand and gravel, gray-brown, medium to coarse	16-20
Gravel, brown, medium to coarse	20-26
Shale, gray and green	26-30



County Lyon

Location 18-10E-1CDC

Date tested November 12, 1968

Pumping well radius (feet) or distance from pumping well (feet) 50

Well depth (feet) 30

Static water level (feet) 7.6

Discharge (cubic feet per day) 19,200

Method of analysis Jacob Modified

Transmissivity (square feet per day) 2,900

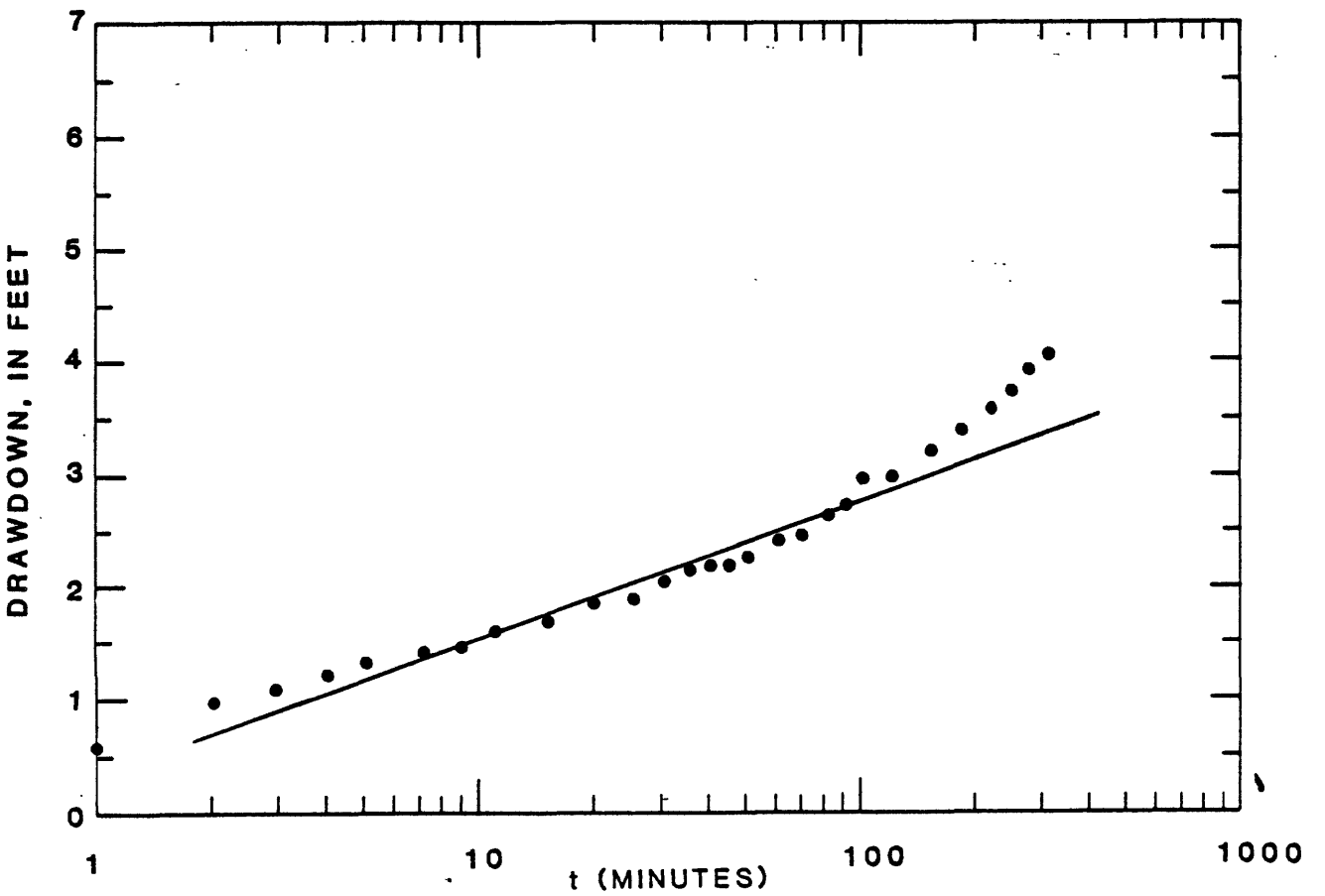
Storage coefficient 9.7×10^{-4}

Source Layne-Western Co.

Remarks Alluvial deposits,
Observation well, 3 feet of screen
No gravel pack

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown	2-5
Clay, gray-brown	5-13
Clay, gray-brown, gravelly	13-15
Sand and gravel, gray-brown, medium to coarse	15-20
Gravel, brown, medium to coarse	20-25
Shale, gray and green	25-30



County Lyon

Location 19-10E-11DDD

Date tested May 16, 1968

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) 43

Static water level (feet) 3.85

Discharge (cubic feet per day) 19,200

Method of analysis Jacob Modified

Transmissivity (square feet per day) 3,200

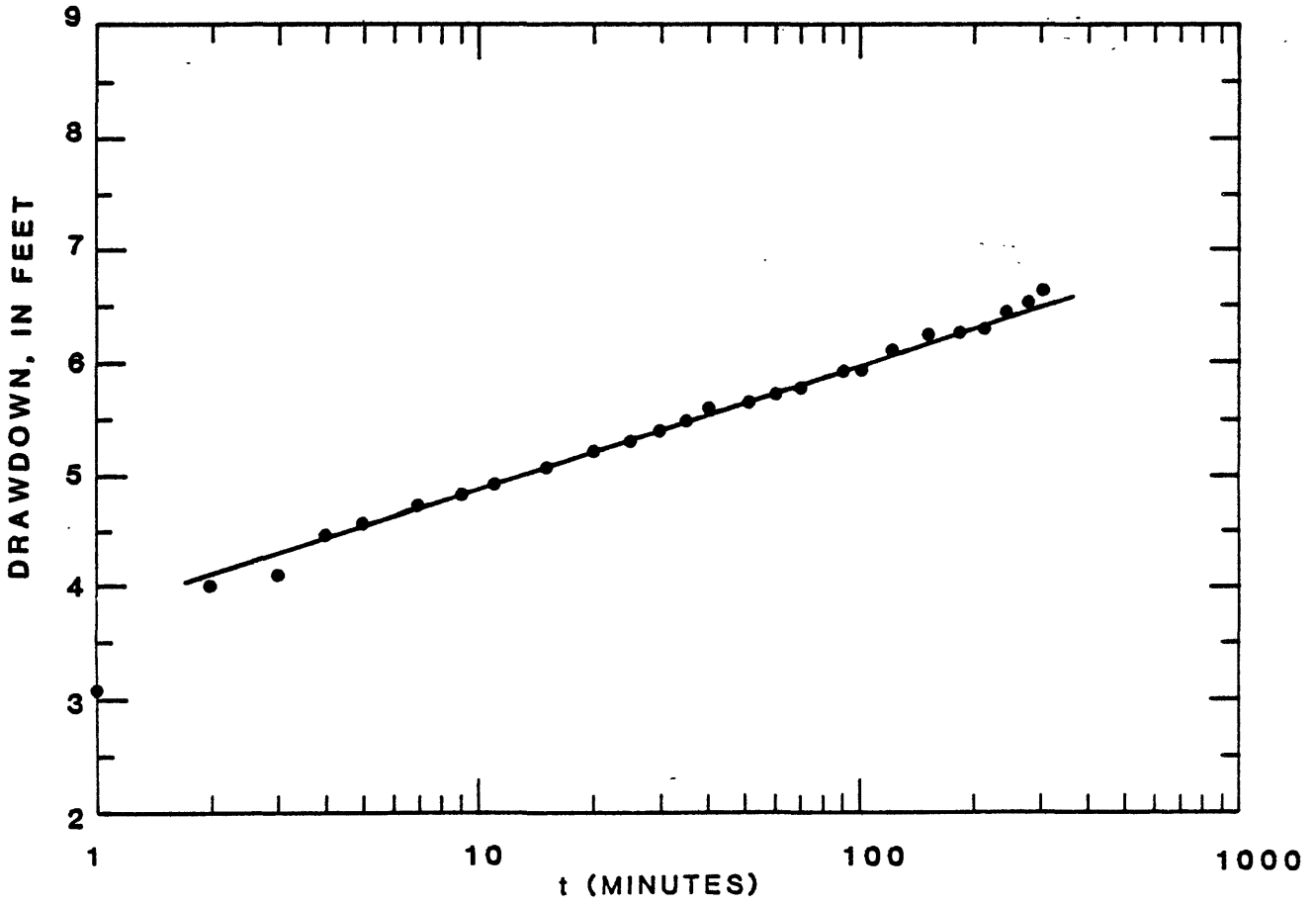
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well

Driller's Log

	Depth (feet)
Topsoil	0-1
Clay, gray	1-10
Clay, brown and gray	10-22
Clay, gray	22-29
Sand and gravel, gray, medium to coarse	29-33
Gravel, gray, medium to coarse, with trace of medium to coarse sand	33-41
Shale, gray	41-43



County Marshall

Location 2-7E-28ACA

Date tested November 3, 1972

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 28

Static water level (feet) 16.8

Discharge (cubic feet per day) 51,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 12,000

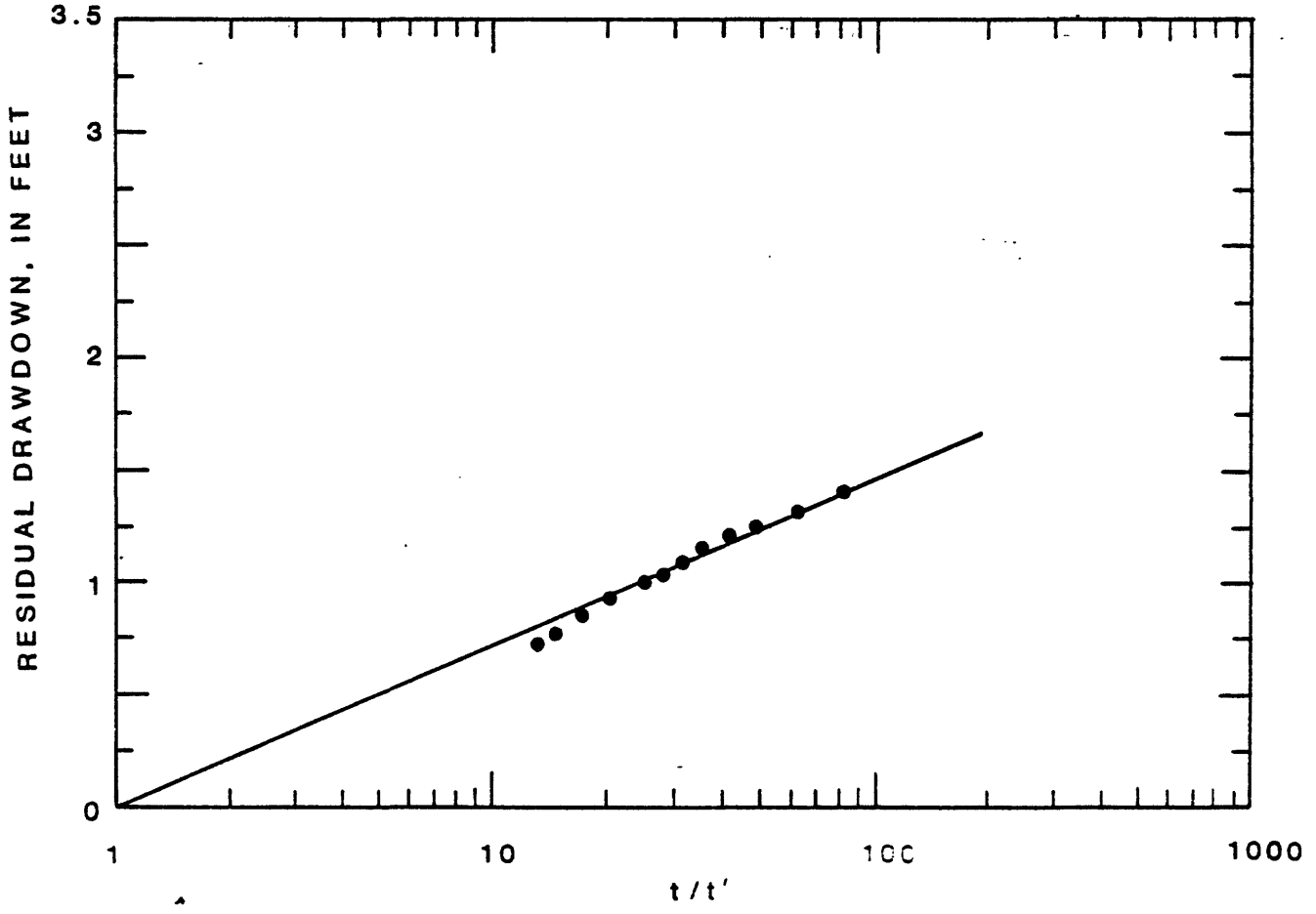
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, pumping time 8 hours, Screened at 29 feet, gravel packed

Driller's Log

	Depth (feet)
Soil	0-2
Clay, brown	2-6
Sand and gravel, medium to coarse, with some large rock	6-28
Shale, green	28-



County Marshall

Location 2-7E-28CAA

Date tested October 19, 1972

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 43

Static water level (feet) 21.65

Discharge (cubic feet per day) 40,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 7,700

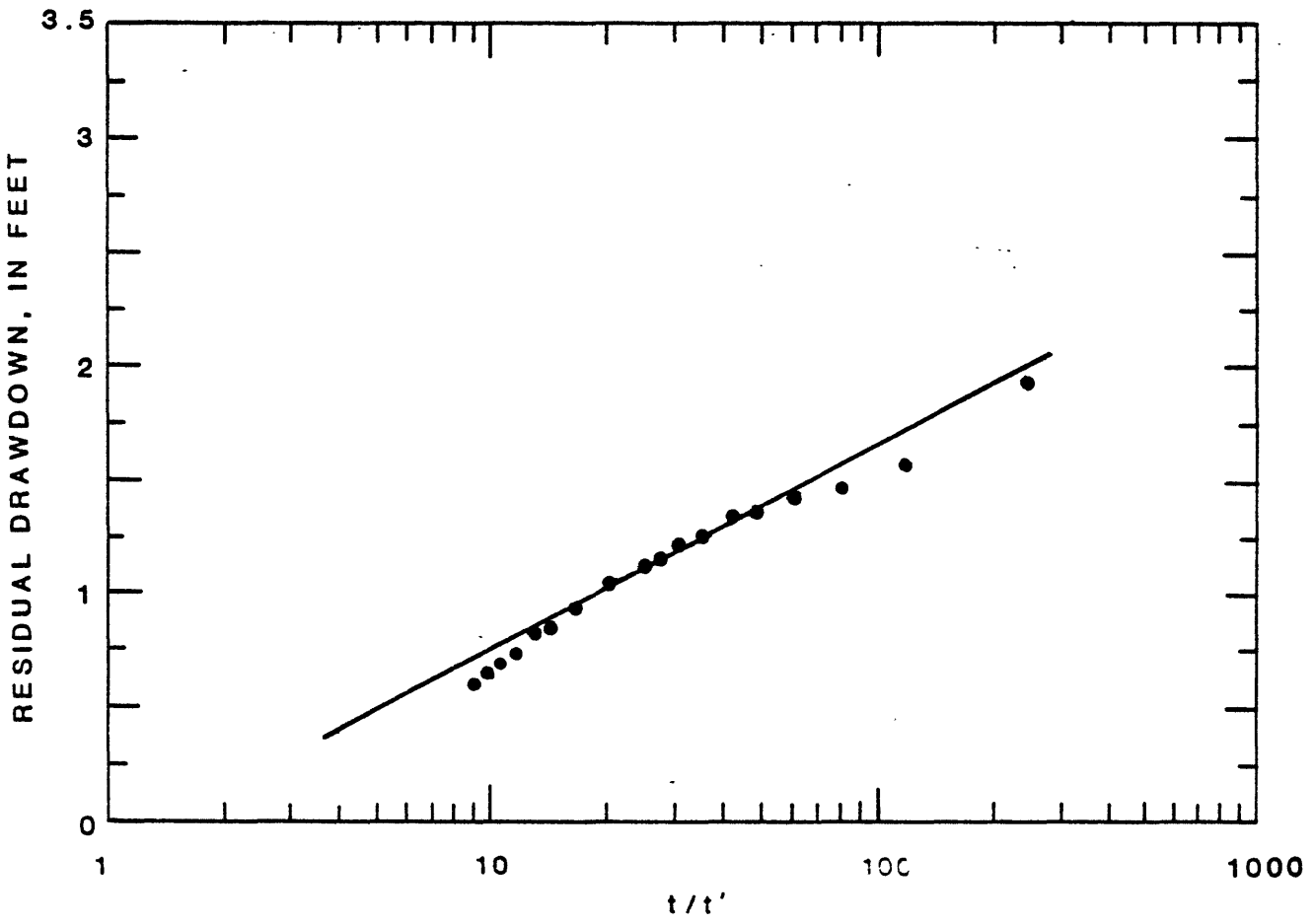
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, pumping time 8 hours, Screened at 31 feet, gravel packed

Driller's Log

	Depth (feet)
Soil	0-3
Clay, brown	3-22
Sand, medium to coarse, with clay	22-26
Sand and gravel, medium to coarse	26-35
Sand and gravel, medium to coarse, with large rock	35-41
Clay, brown	41-43



County Marshall

Location 2-7E-28CCAA

Date tested October 16, 1972

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 40

Static water level (feet) 23.94

Discharge (cubic feet per day) 34,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 6,700

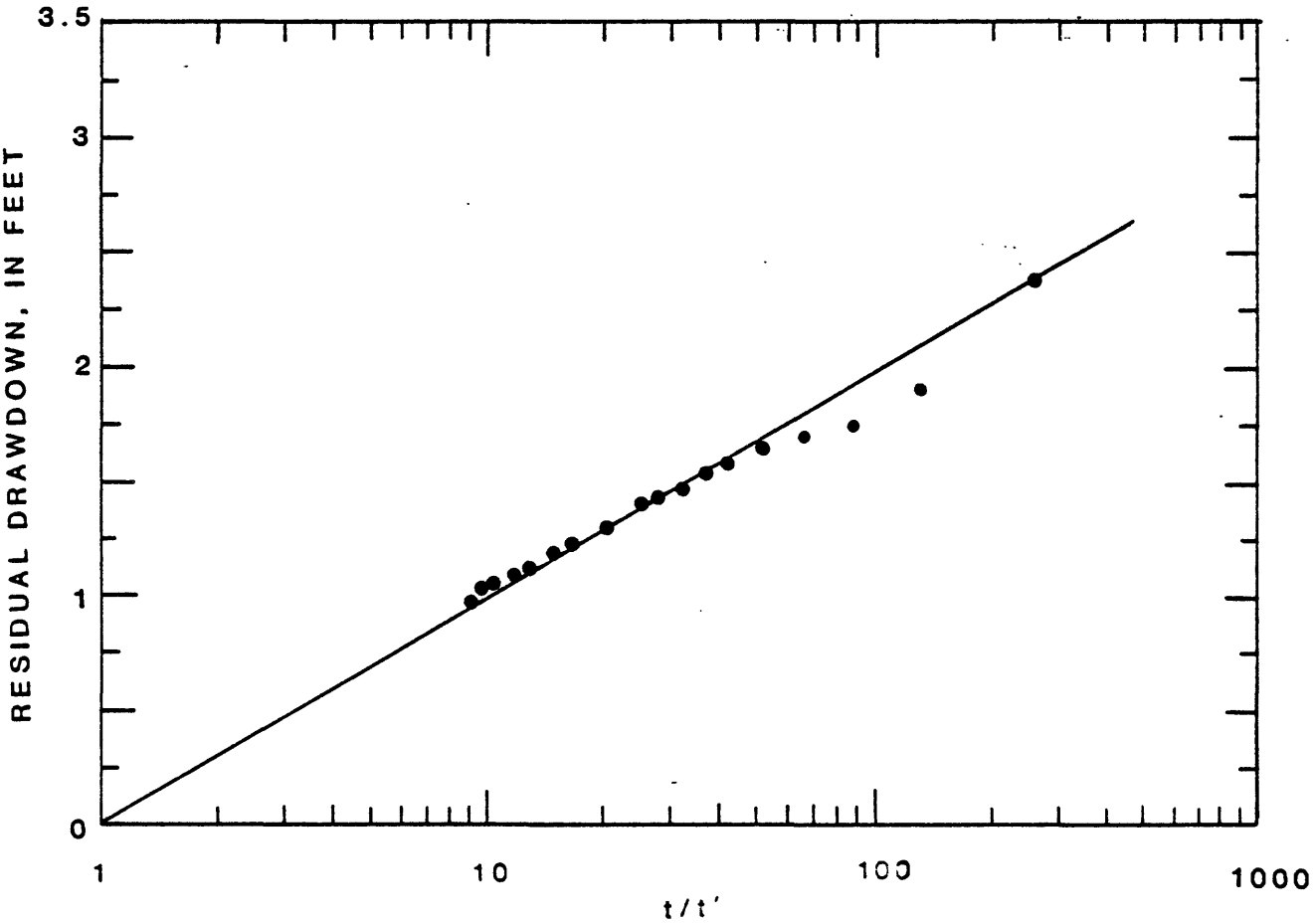
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits. Pumping well, pumping time 8 hours, Screened at 36 feet, gravel packed

Driller's Log

	Depth (feet)
Dirt fill	0-5
Clay, brown, and rock fragments	5-12
Clay, brown	12-30
Sand and gravel, medium to coarse	30-35
Sand and gravel, medium to coarse, with large rock fragments	35-40
Clay and shale, gray	40-



County Marshall

Location 2-7E-29ADC

Date tested October 27,. 1972

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 38

Static water level (feet) 15.9

Discharge (cubic feet per day) 49,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 11,000

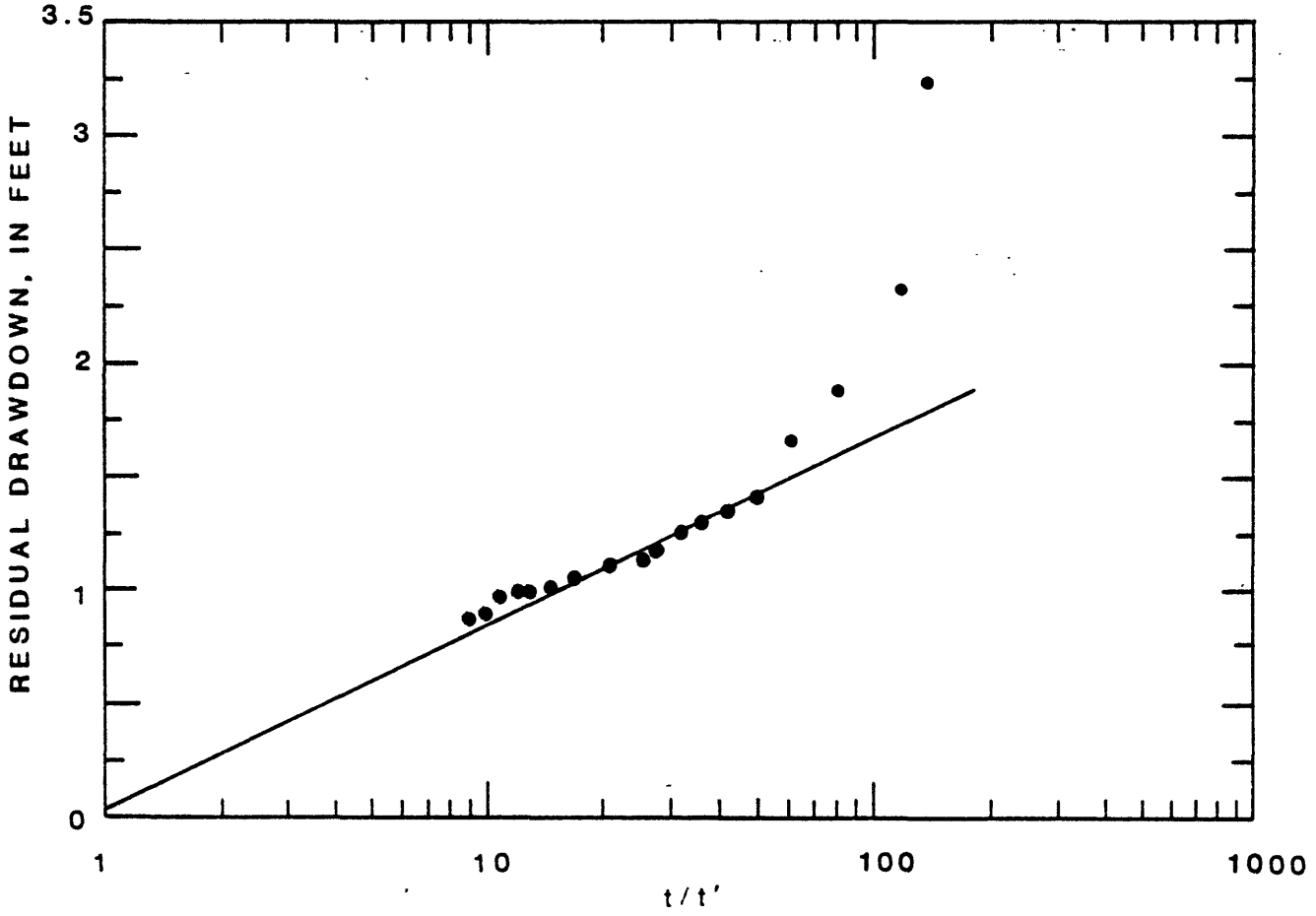
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, pumping time 8 hours, Screened at 29 feet, gravel packed

Driller's Log

	Depth (feet)
Soil	0-3
Clay, brown, silty	3-12
Sand and gravel, medium to coarse	12-34
Sand and gravel, medium to coarse, with large rock	34-38
Shale	38-



County Marshall

Location 2-7E-33BAAC

Date tested November 3, 1972

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 37.5

Static water level (feet) 24.46

Discharge (cubic feet per day) 39,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 8,100

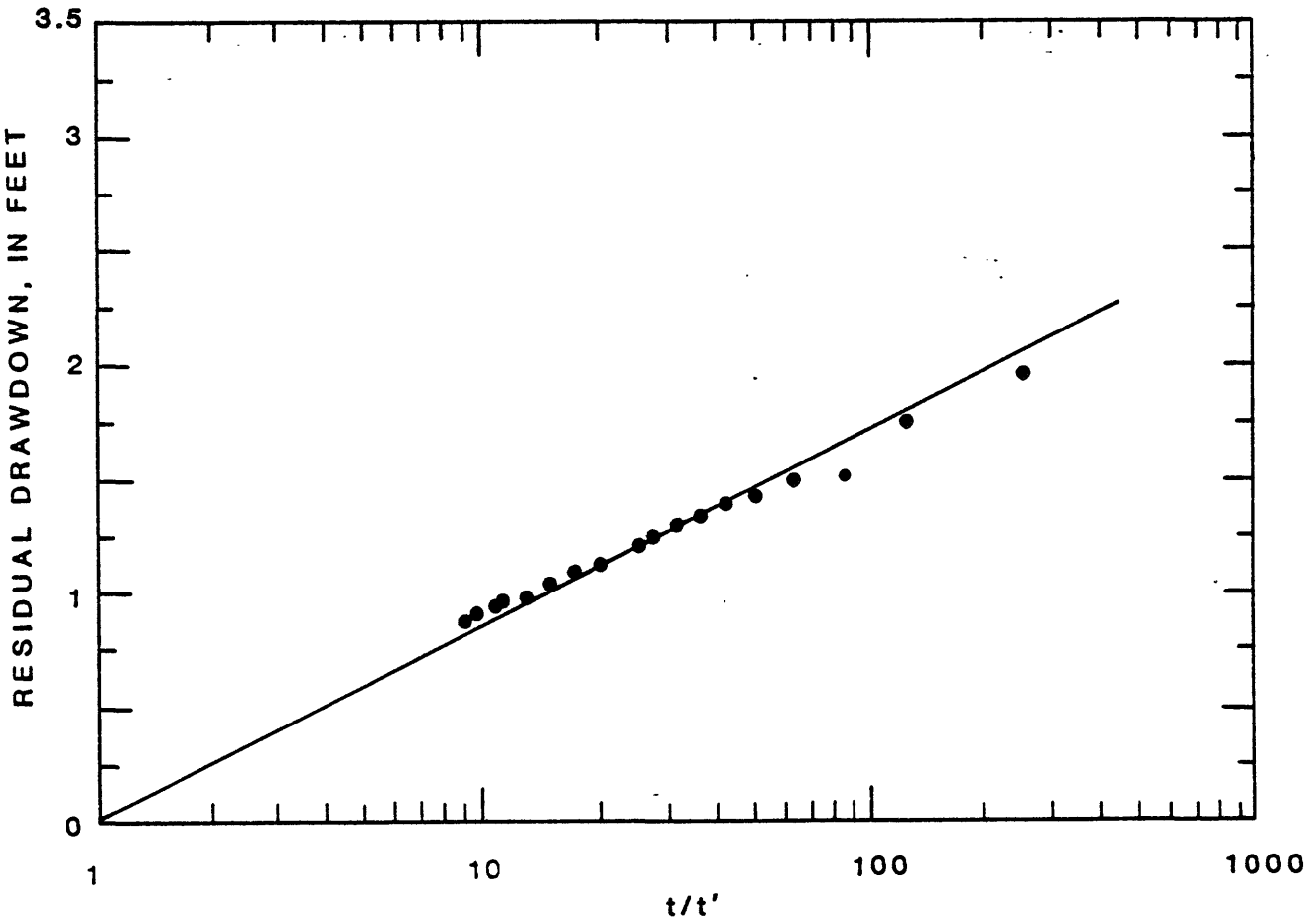
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, pumping time 8 hours, Screened at 33 feet, gravel packed

Driller's Log

	Depth (feet)
Dirt fill	0-3
Clay, brown	3-21
Sand and gravel, medium to coarse, with some large rock	31-37
Shale, green	-37-37.5



County Marshall

Location 4-9E-16AAA

Date tested January 26, 1972

Pumping well radius (feet) or distance from pumping well (feet) 0.67

Well depth (feet) 126

Static water level (feet) 38.8

Discharge (cubic feet per day) 48,100

Method of analysis Jacob Modified

Transmissivity (square feet per day) 200

Storage coefficient ---

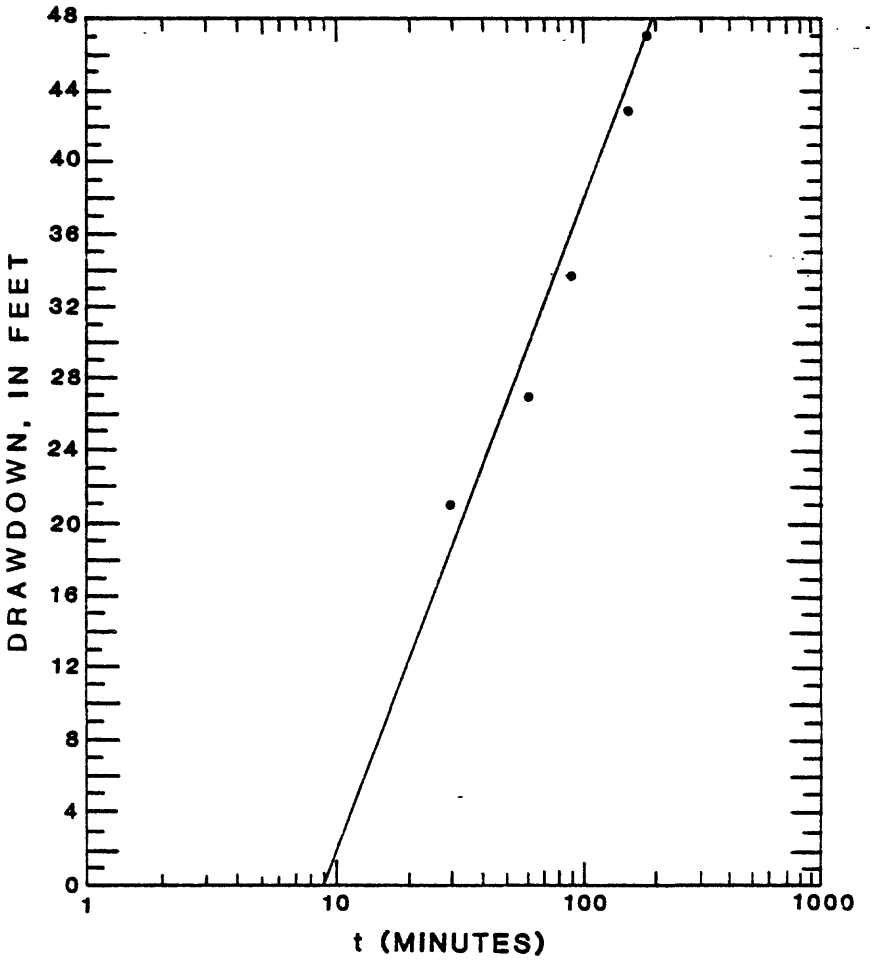
Source Layne-Western Co.

Remarks Alluvial deposits

Pumping well, screened at 111 feet, Gravel packed

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown	2-15
Clay, gray	15-23
Sand and gravel, medium to coarse, with clay lenses and some big rocks	23-41
Silt, brown	41-48
Clay, blue, and silt	48-111
Sand and gravel, medium to coarse, and broken rocks, with some big rocks	111-123
Shale, red	123-126



County McPherson

Location 17-3W-17CBD

Date tested November 6, 1964

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 100

Static water level (feet) 25

Discharge (cubic feet per day) 193,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 20,000

Storage coefficient ---

Source Layne-Western Co.

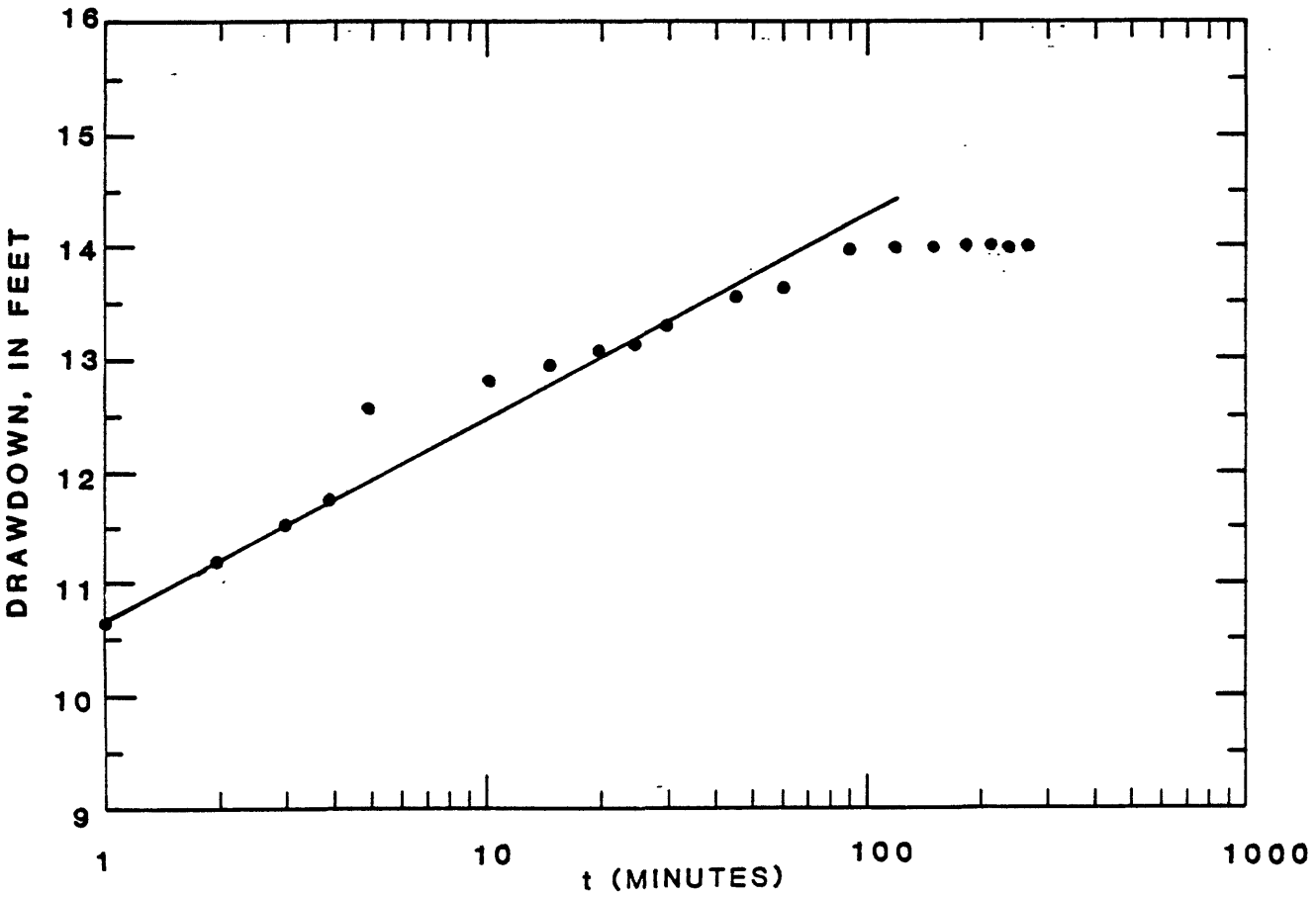
Remarks Alluvial deposits

Pumping well,

Screened at 56 feet, gravel packed

Driller's Log

	Depth (feet)
Soil	0-3
Clay, gray-brown	3-37
Clay, blue	37-50
Sand and gravel, tan, coarse	50-55
Sand and gravel, tan, medium to coarse	55-70
Sand and gravel, tan, coarse	70-83
Clay, brown	83-84
Sand and gravel, coarse, with a few clay lenses	84-92
Shale, blue	92-100



County Mitchell

Location 7-6W-20BDD

Date tested September 30, 1954

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) ---

Static water level (feet) 9.4

Discharge (cubic feet per day) 49,000

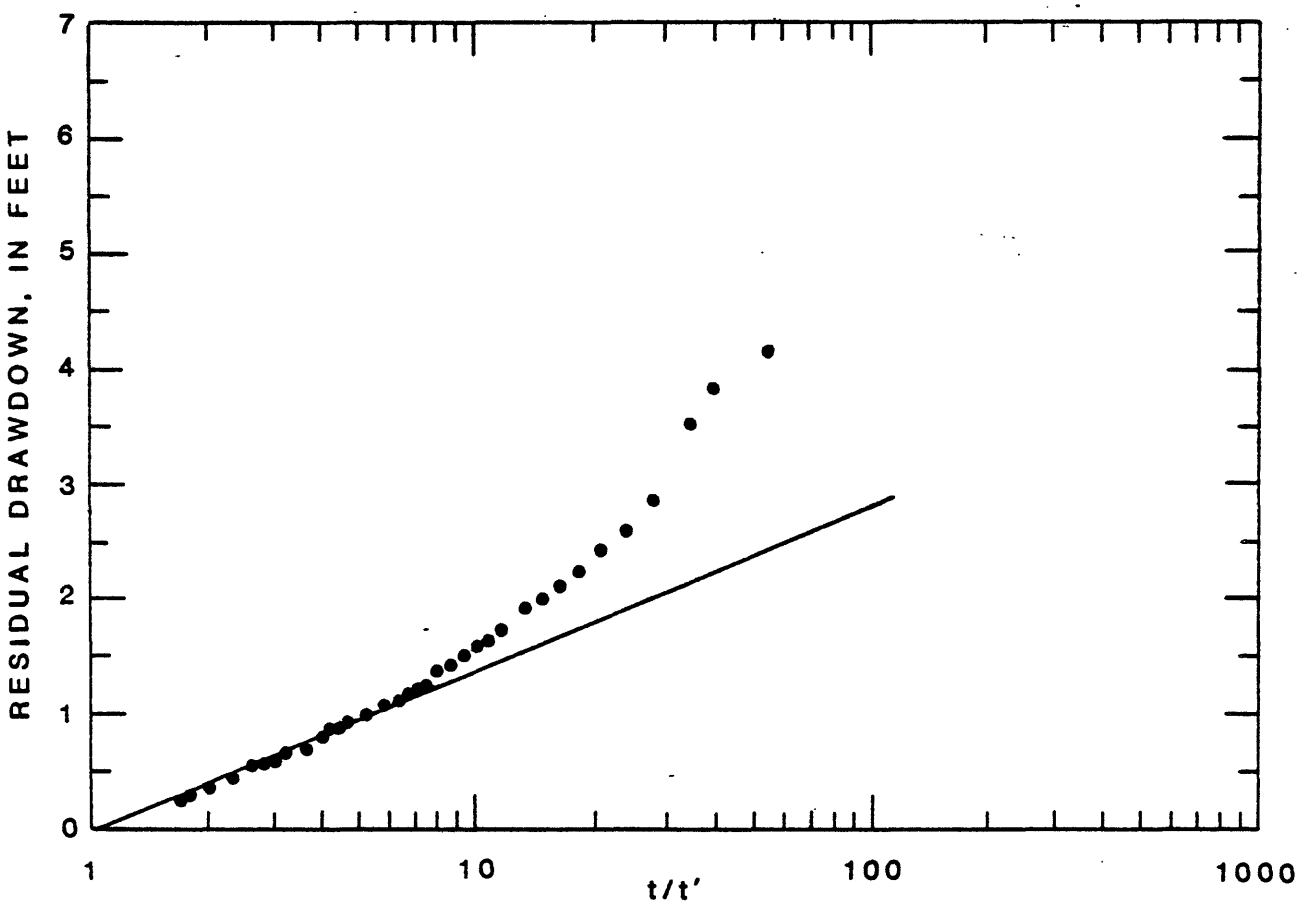
Method of analysis Theis Recovery

Transmissivity (square feet per day) 5,900

Storage coefficient ---

Source Kansas Geological Survey

Remarks Alluvial deposits,
Pumping well,
Pumping time 4.5 hours



County Nemaha

Location 4-13E-35A

Date tested November 9, 1961

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 121

Static water level (feet) 48.66

Discharge (cubic feet per day) 15,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 2,300

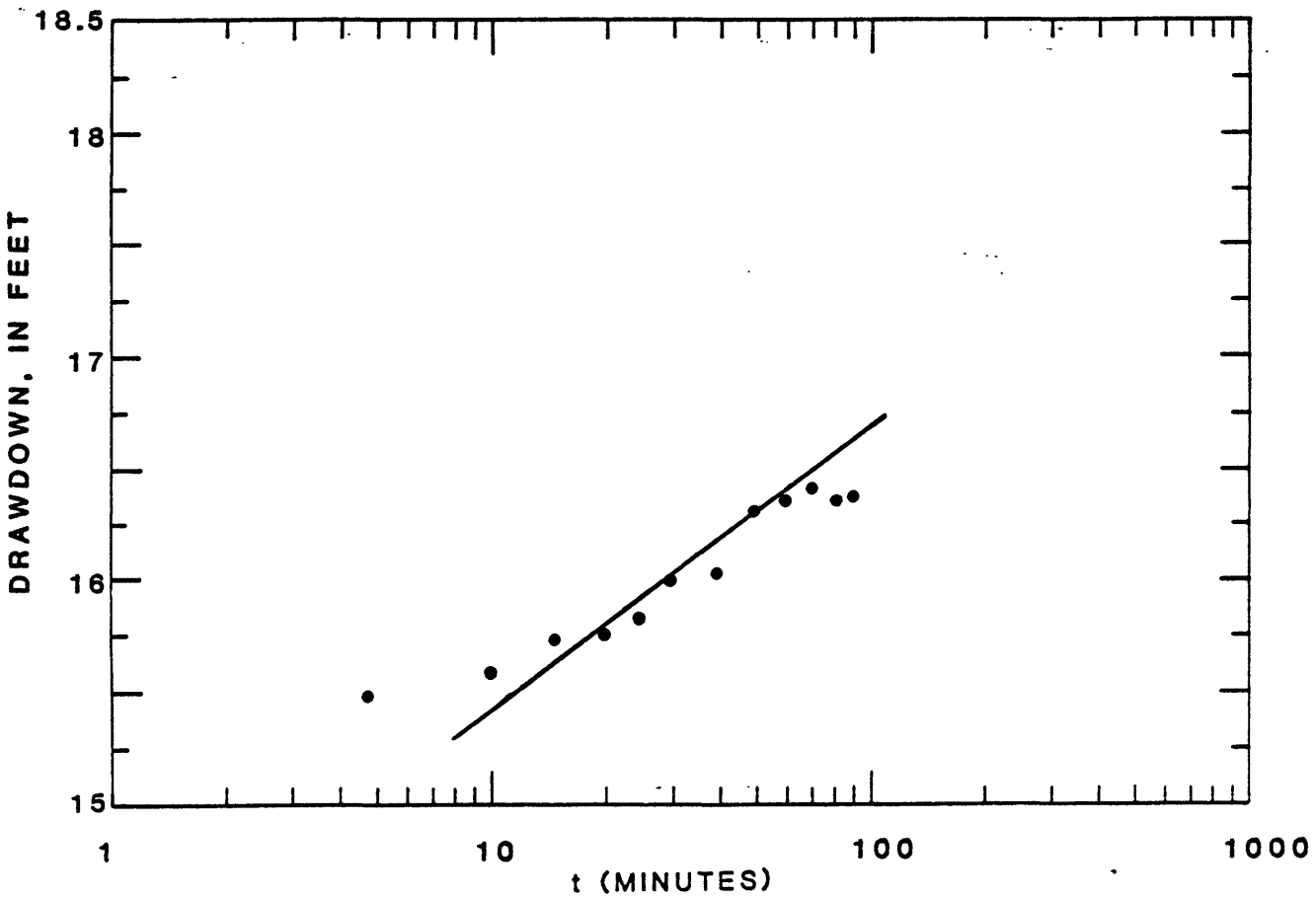
Storage coefficient ---

Source Layne-Western Co.

Remarks Glacial deposits
Pumping well
Screened at 106 feet, gravel packed

Driller's Log

	Depth (feet)
Topsoil	0-1
Clay, gray, sandy	1-8
Clay, brown, sandy	8-17
Clay, gray, sandy	17-39
Sand, fine to coarse	39-45
Sand and gravel, fine to coarse	45-50
Clay, gray, sandy	50-90
Sand, fine	90-100
Sand, fine to medium	-100-105
Sand, medium to coarse	-105-121



County Nemaha

Location 5-12E-1CBB

Date tested January 17, 1961

Pumping well radius (feet) or distance from pumping well (feet) 0.41

Well depth (feet) 51

Static water level (feet) 3.33

Discharge (cubic feet per day) 8,300

Method of analysis Theis Recovery

Transmissivity (square feet per day) 100

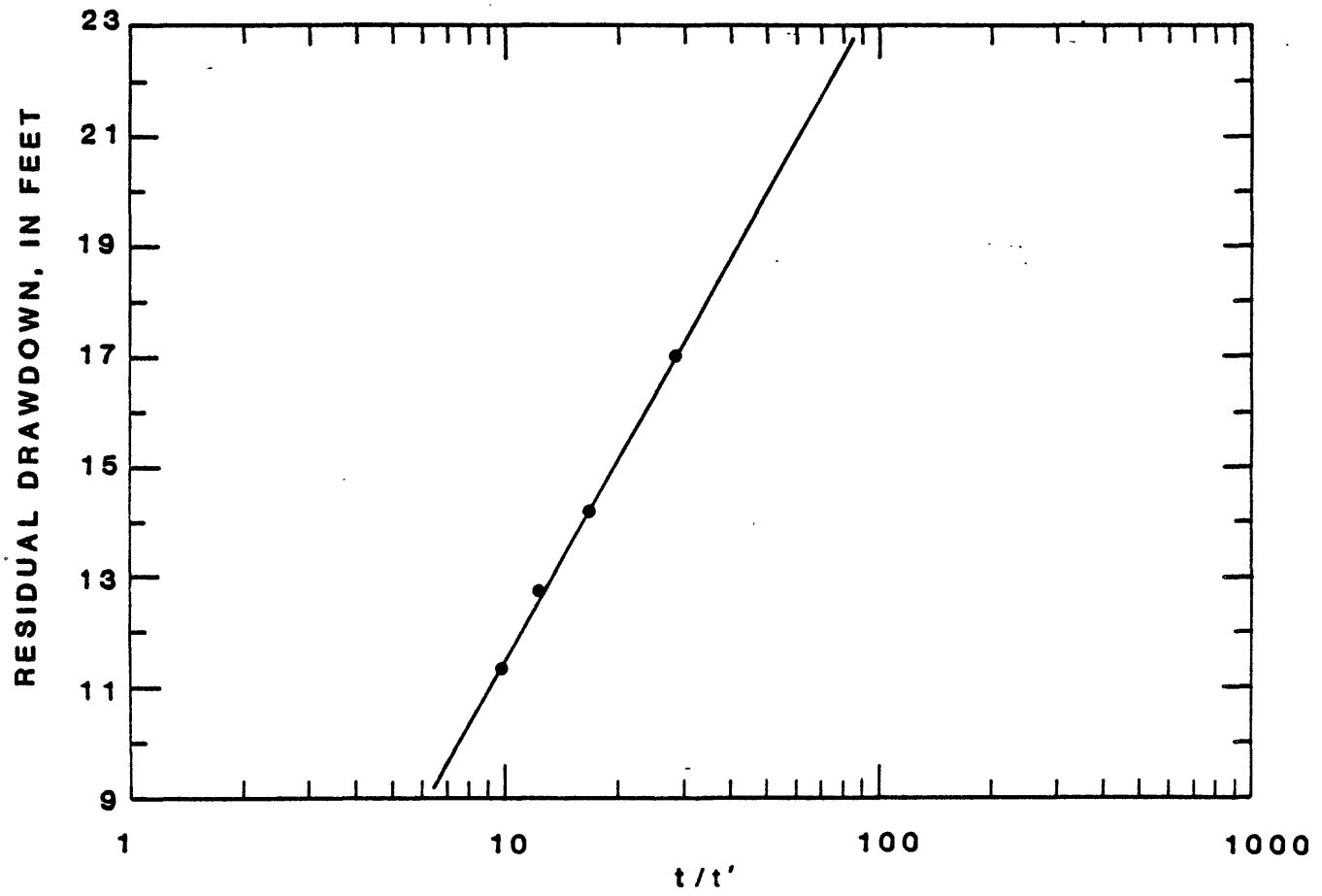
Storage coefficient ---

Source Layne-Western Co.

Remarks Glacial deposits, Pumping well, pumping time 3.25 hours, Screened, gravel packed

Driller's Log

	Depth (feet)
Topsoil	0-5
Clay, brown	5-15
Clay, blue and gray	15-36
Sand, fine, silty	36-41
Sand, fine to coarse, and very large boulders	41-48
Clay, blue	48-51



County Ottawa

Location 11-2W-8DBB

Date tested August 8, 1958

Pumping well radius (feet) or distance from pumping well (feet) 40

Well depth (feet) 48.2*

Static water level (feet) 17.76

Discharge (cubic feet per day) 11,000

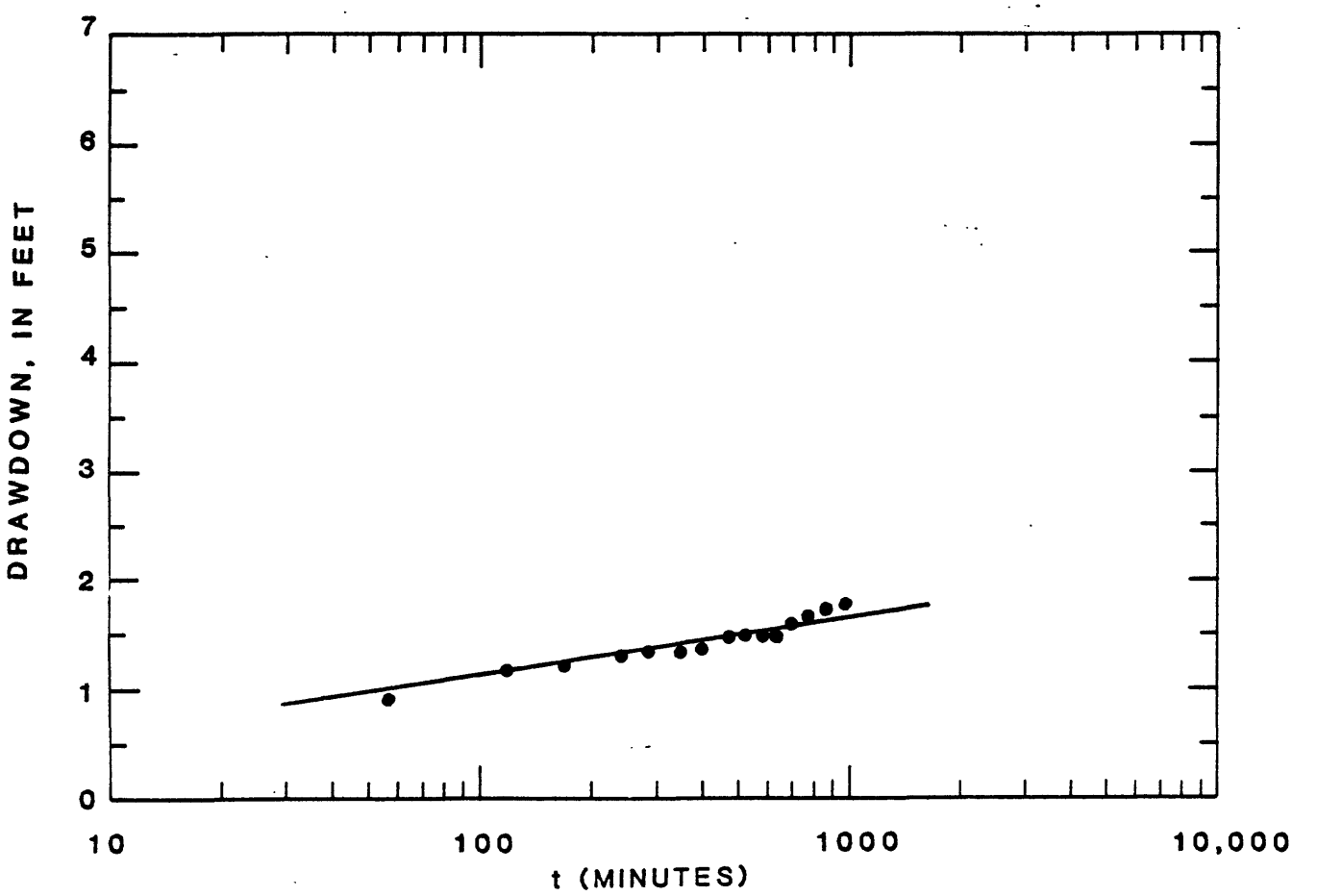
Method of analysis Jacob Modified

Transmissivity (square feet per day) 3,800

Storage coefficient 2.4×10^{-3}

Source Kansas Geological Survey

Remarks *Depth of pumping well. After 1,000 minutes, pumping increases to 16,000 cubic feet per day. Consolidated rocks, Observation well



County Ottawa

Location 11-2W-8DBB

Date tested August 8, 1958

Pumping well radius (feet) or distance from pumping well (feet) 40

Well depth (feet) 48.2*

Static water level (feet) 14.15

Discharge (cubic feet per day) 11,000

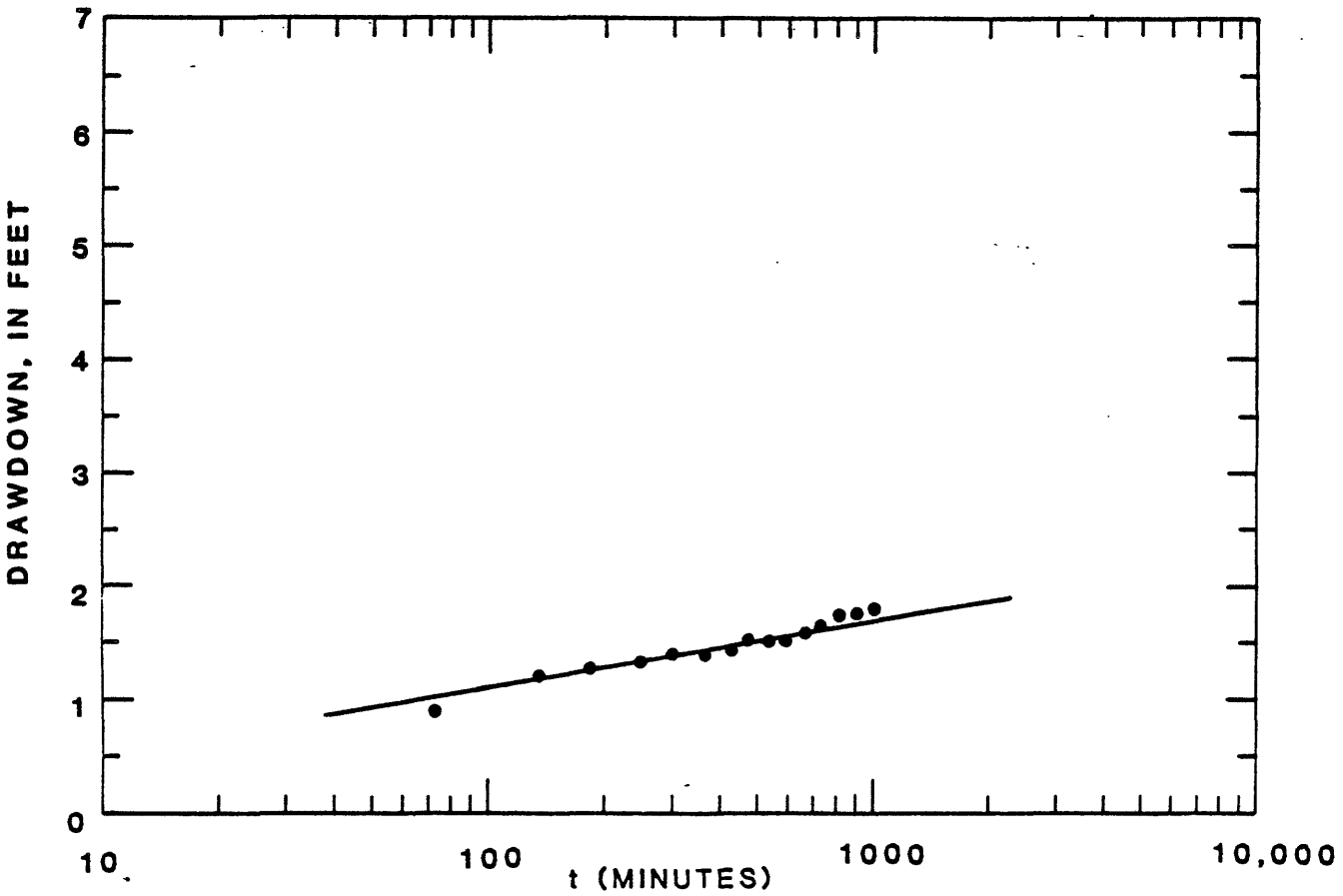
Method of analysis Jacob Modified

Transmissivity (square feet per day) 2,800

Storage coefficient 9.4×10^{-3}

Source Kansas Geological Survey

Remarks *Depth of pumping well.
Consolidated rocks,
Observation well



County Ottawa

Location 11-3W-21BDD

Date tested October 14, 1958

Pumping well radius (feet) or distance from pumping well (feet) 10

Well depth (feet) 31.3

Static water level (feet) 16.64

Discharge (cubic feet per day) 91,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 5,100

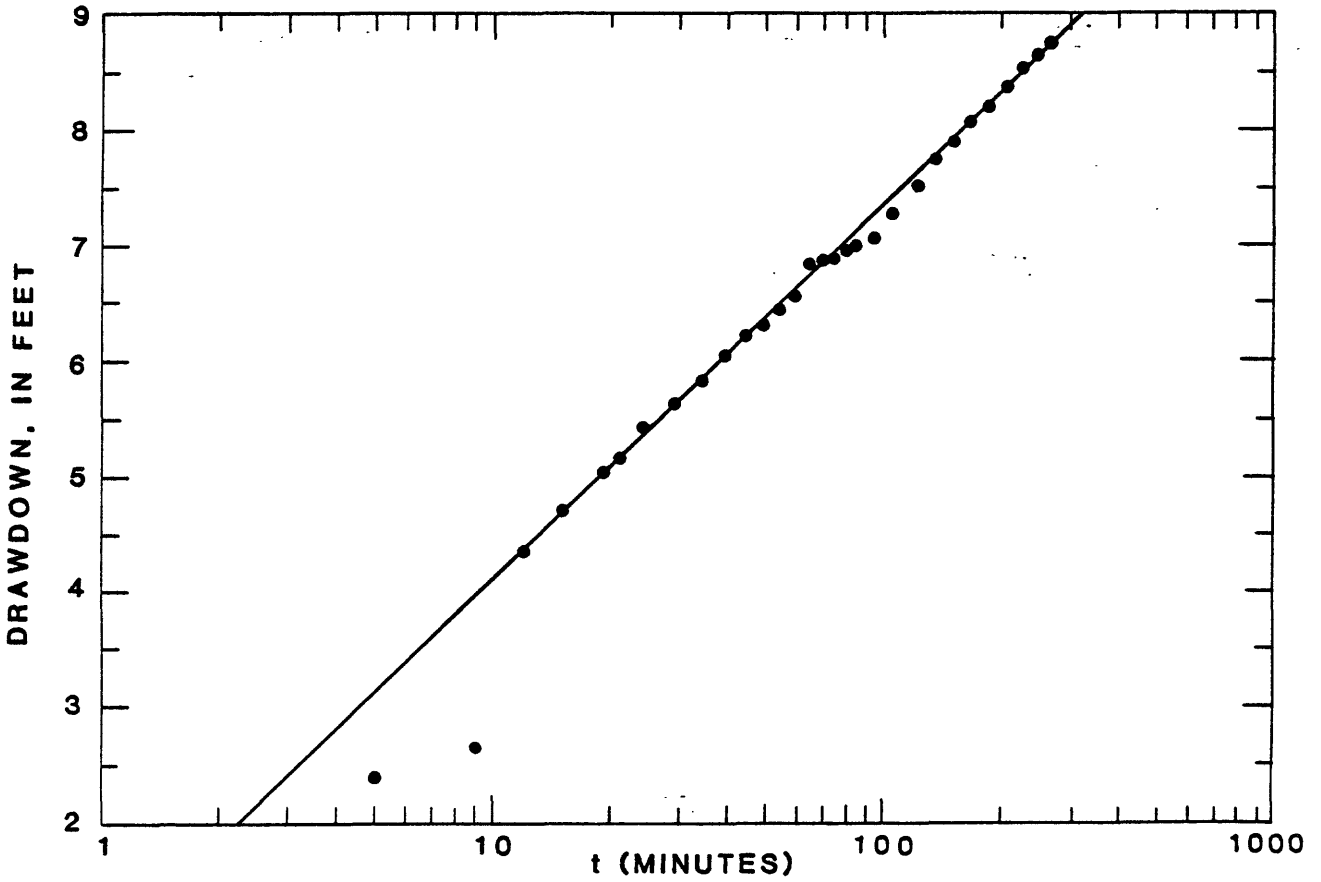
Storage coefficient 0.16

Source Kansas Geological Survey

Remarks Alluvial deposits
Observation well
(probably water table)

Driller's Log

	Depth (feet)
Silt, dark-brown, clayey	0-2
Silt, brown	2-5
Silt, brown, clayey	5-7
Silt, light-brown	7-13
Silt, brown	13-20
Sand, light-brown, clayey, silty, fine	20-30
Sand, fine to medium	30-35
Sand, medium	35-45
Sand, medium to coarse	45-50
Sand, coarse, and fine gravel	50-55
Gravel, coarse	55-56



County Ottawa

Location 11-3W-21BDD

Date tested October 14, 1958

Pumping well radius (feet) or distance from pumping well (feet) 50

Well depth (feet) 38.4

Static water level (feet) 16.45

Discharge (cubic feet per day) 91,000

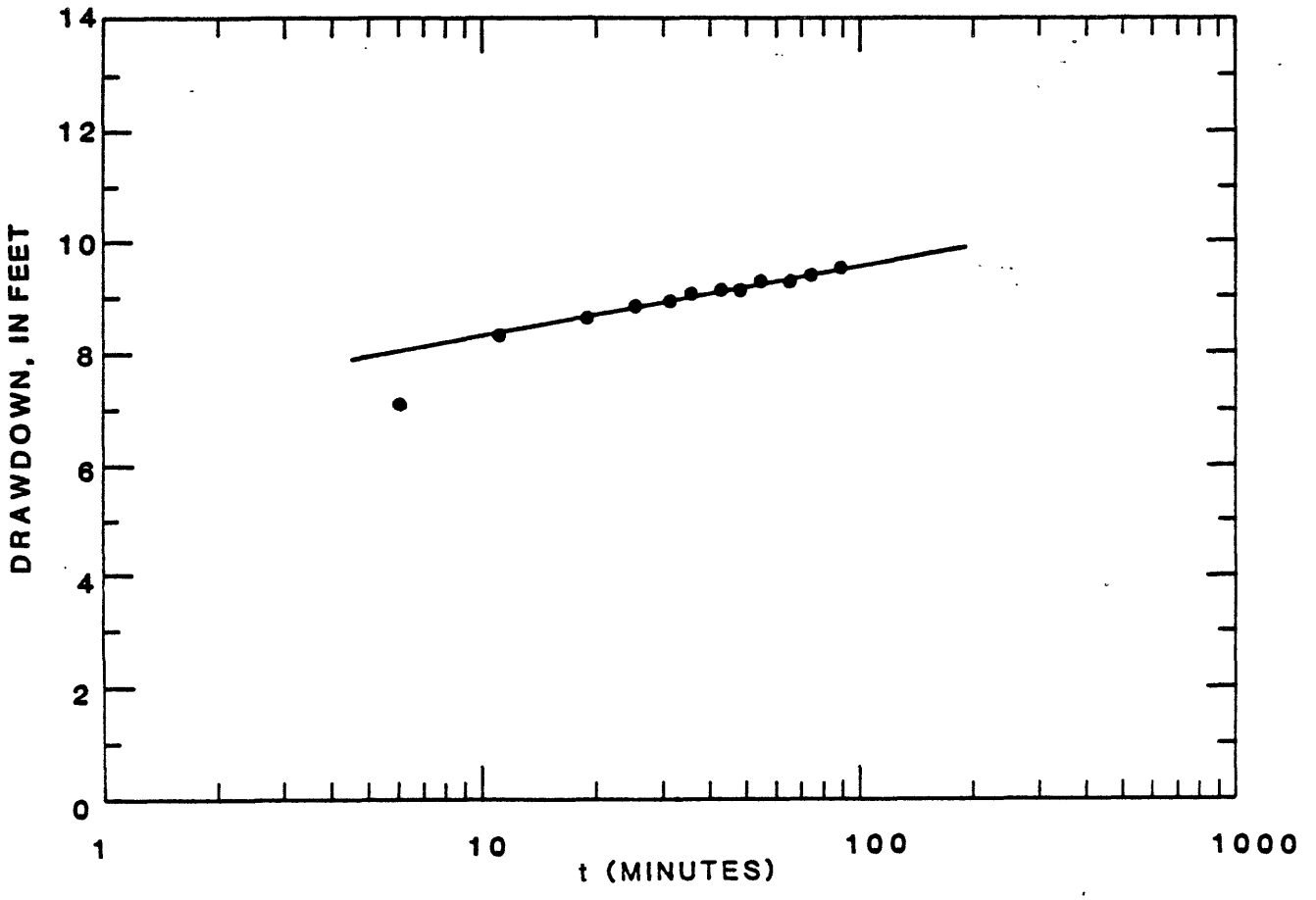
Method of analysis Jacob Modified

Transmissivity (square feet per day) 15,000

Storage coefficient ---

Source Kansas Geological Survey

Remarks Alluvial deposits, Observation well



County Pottawatomie

Location 7-9E-34CDC

Date tested May 22, 1975

Pumping well radius (feet) or distance from pumping well (feet) 25, 125

Well depth (feet) 45, 44

Static water level (feet) 21, 19.22

Discharge (cubic feet per day) 19,000

Method of analysis Theis Nonequilibrium

Transmissivity (square feet per day) 4,100

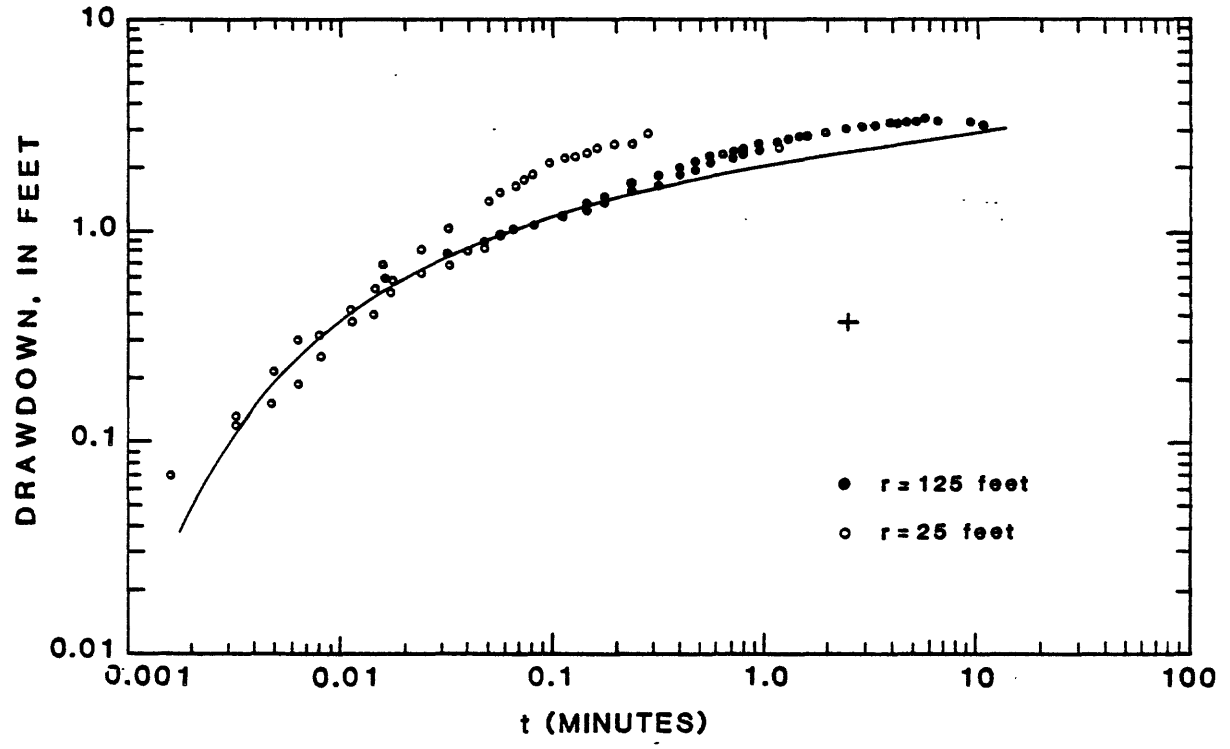
Storage coefficient 2.0×10^{-3}

Source Layne-Western Co.

Remarks Alluvial deposits, Observation wells

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown	2-12
Silt, brown and blue	12-38
Rock, coarse, with boulders and gravel	38-41
Shale, blue, limy	41-44



County Pottawatomie

Location 10-10E-3CDA

Date tested August 8, 1972

Pumping well radius (feet) or distance from pumping well (feet) 156

Well depth (feet) 94

Static water level (feet) 30.99

Discharge (cubic feet per day) 154,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 40,000

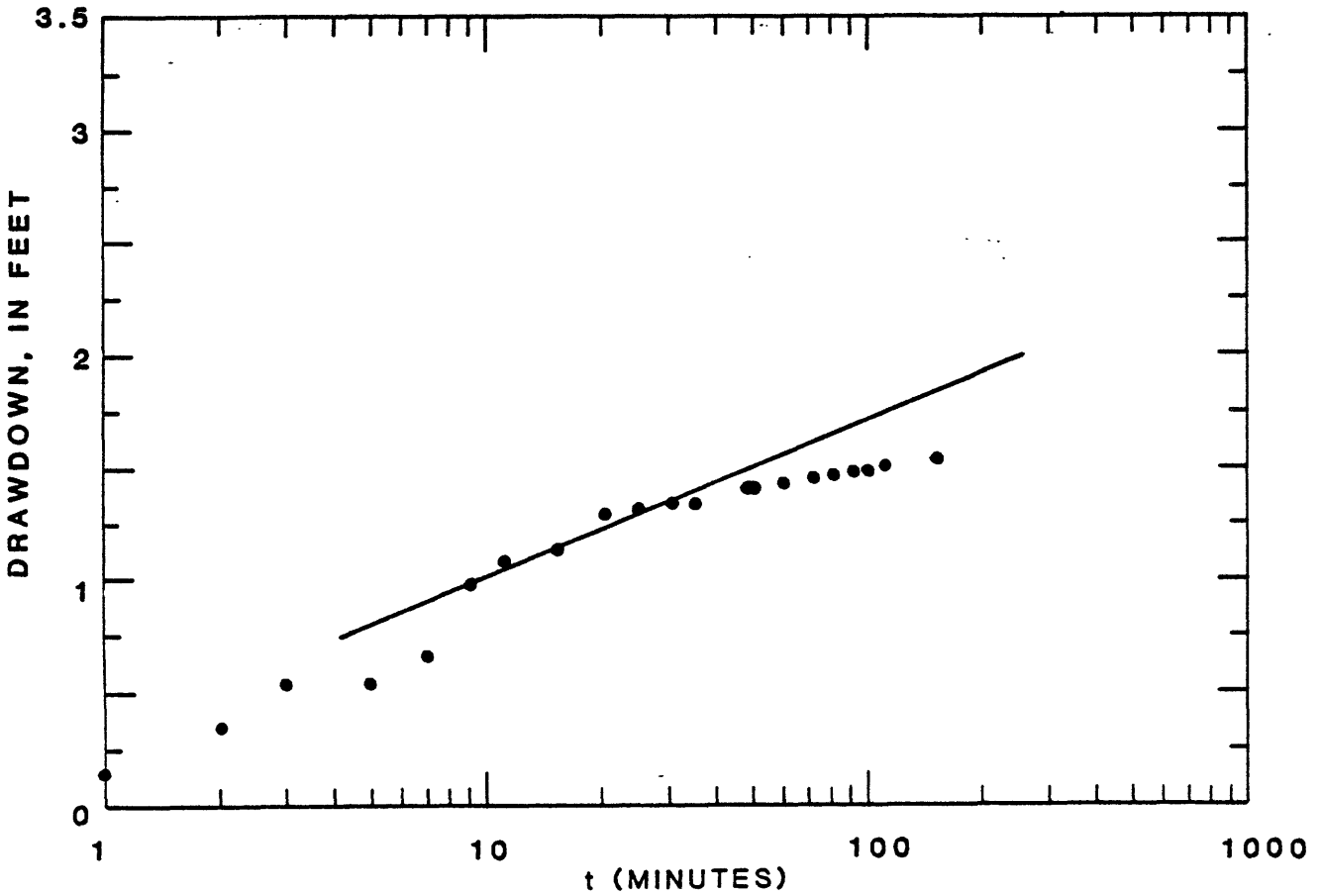
Storage coefficient 1.0×10^{-3}

Source Layne-Western Co.

Remarks Alluvial deposits, Observation well

Driller's Log

	Depth (feet)
Topsoil	0-2
Sand, fine, silty	2-26
Sand and gravel, tan, medium to coarse	26-53
Sand and gravel, tan, medium to very coarse	53-70
Sand and gravel, blue-green, medium to very coarse	70-88
Shale, blue-gray	88-94



County Reno

Location 23-5W-4CCA

Date tested January 29, 1965

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 54

Static water level (feet) 25.2

Discharge (cubic feet per day) 193,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 13,000

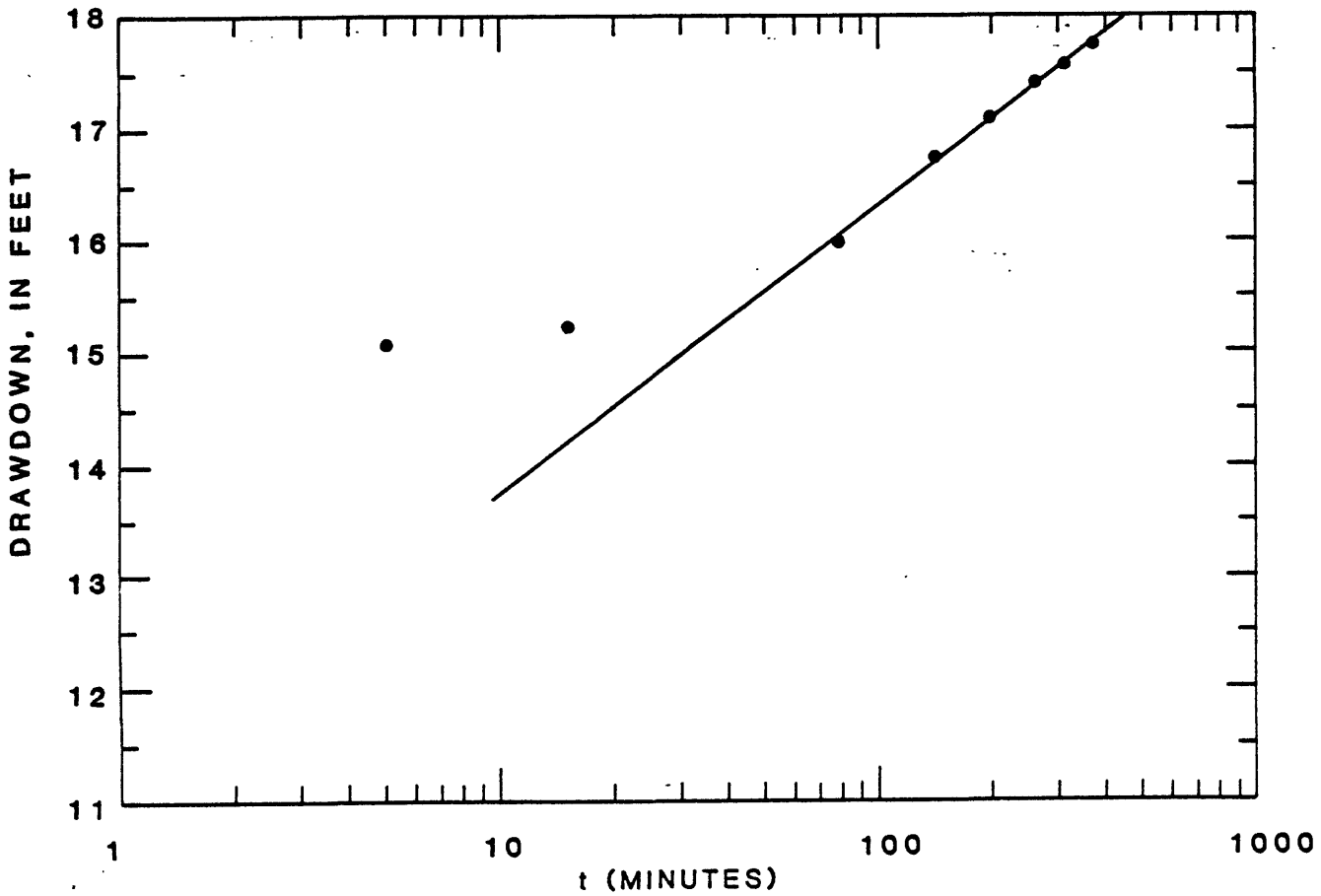
Storage coefficient ---

Source Layne-Western Co.

Remarks Equus Beds aquifer, Pumping well, alternate blank and screen from 36 to 54 feet, gravel packed

Driller's Log

	Depth (feet)
Soil	0-2
Clay, brown	2-7
Sand and gravel, coarse	7-10
Sand and gravel, very coarse	10-20
Sand and gravel, coarse to very coarse	20-42
Clay, green	42-43
Sand and gravel, coarse	43-54



County Reno

Location 23-5W-10DC

Date tested May 7, 1966

Pumping well radius (feet) or distance from pumping well (feet) 50

Well depth (feet) ---

Static water level (feet) 13.91

Discharge (cubic feet per day) 200,000

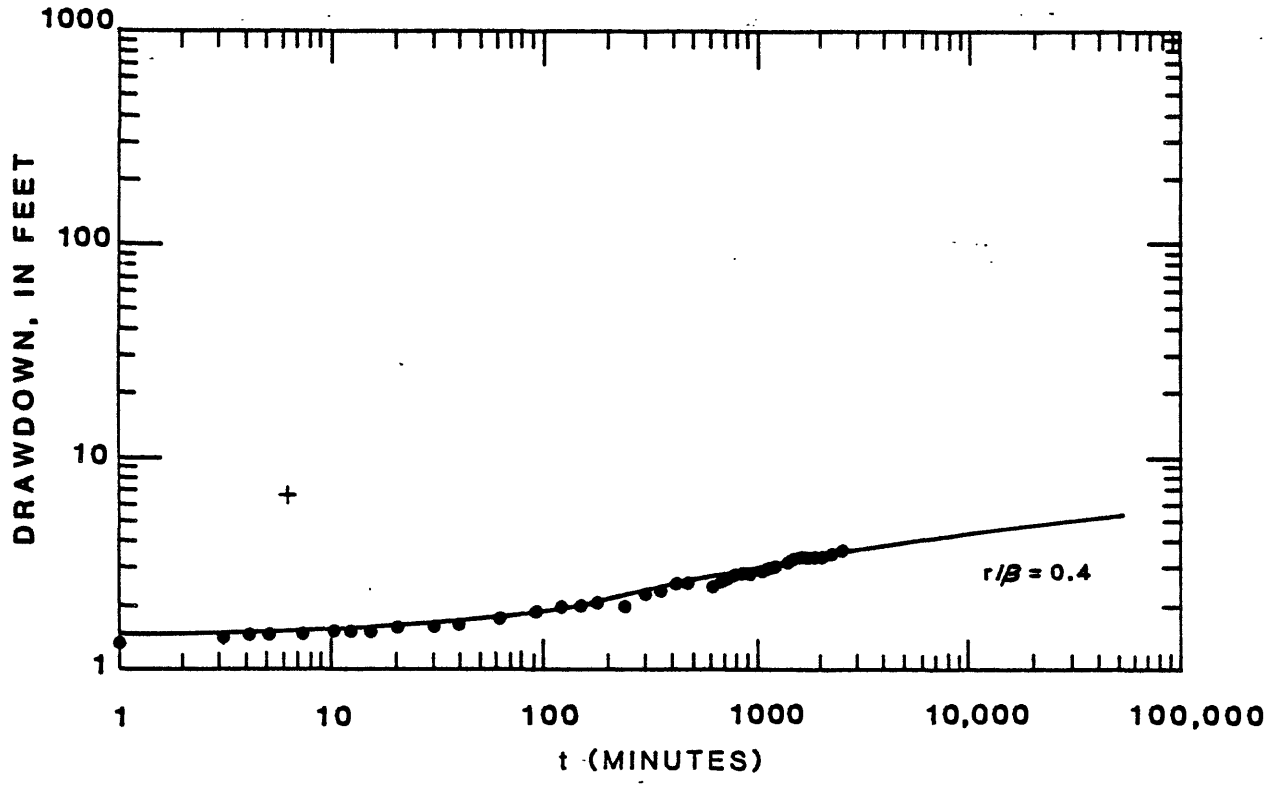
Method of analysis Boulton Delayed-Yield

Transmissivity (square feet per day) 25,000

Storage coefficient Sy = 1.6 x 10^{-1}

Source Layne-Western Co.

Remarks Equus Beds aquifer, Observation well



County Reno

Location 25-4W-5DAA

Date tested January 13, 1976

Pumping well radius (feet) or distance from pumping well (feet) 0.67

Well depth (feet) 49

Static water level (feet) 15.25

Discharge (cubic feet per day) 67,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 7,000

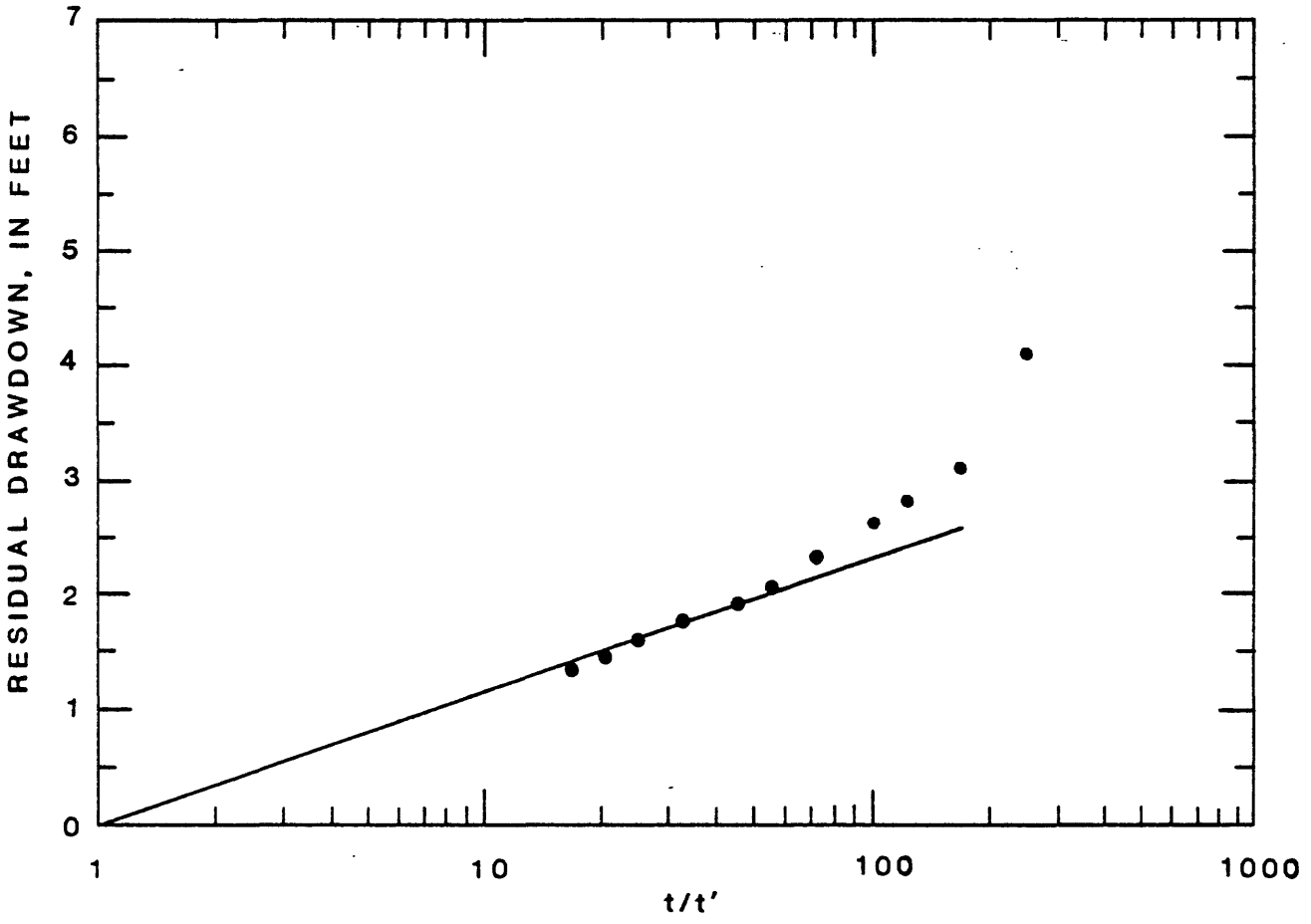
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, pumping time 8 hours, Screened from 33 to 49 feet, gravel packed

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown	2-23
Clay, brown, with some sand	23-31
Sand, fine to coarse, and medium gravel, with clay stringers	31-36
Sand, fine to coarse, and medium gravel	36-40
Clay, brown	40-42
Sand and gravel, medium to coarse	42-49
Clay, blue, with sand lenses	49-56
Clay, brown	56-80



County Riley

Location 10-8E-9CCA

Date tested March 3, 1970

Pumping well radius (feet) or distance from pumping well (feet) 0.83

Well depth (feet) 55

Static water level (feet) 18.1

Discharge (cubic feet per day) 196,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 69,000

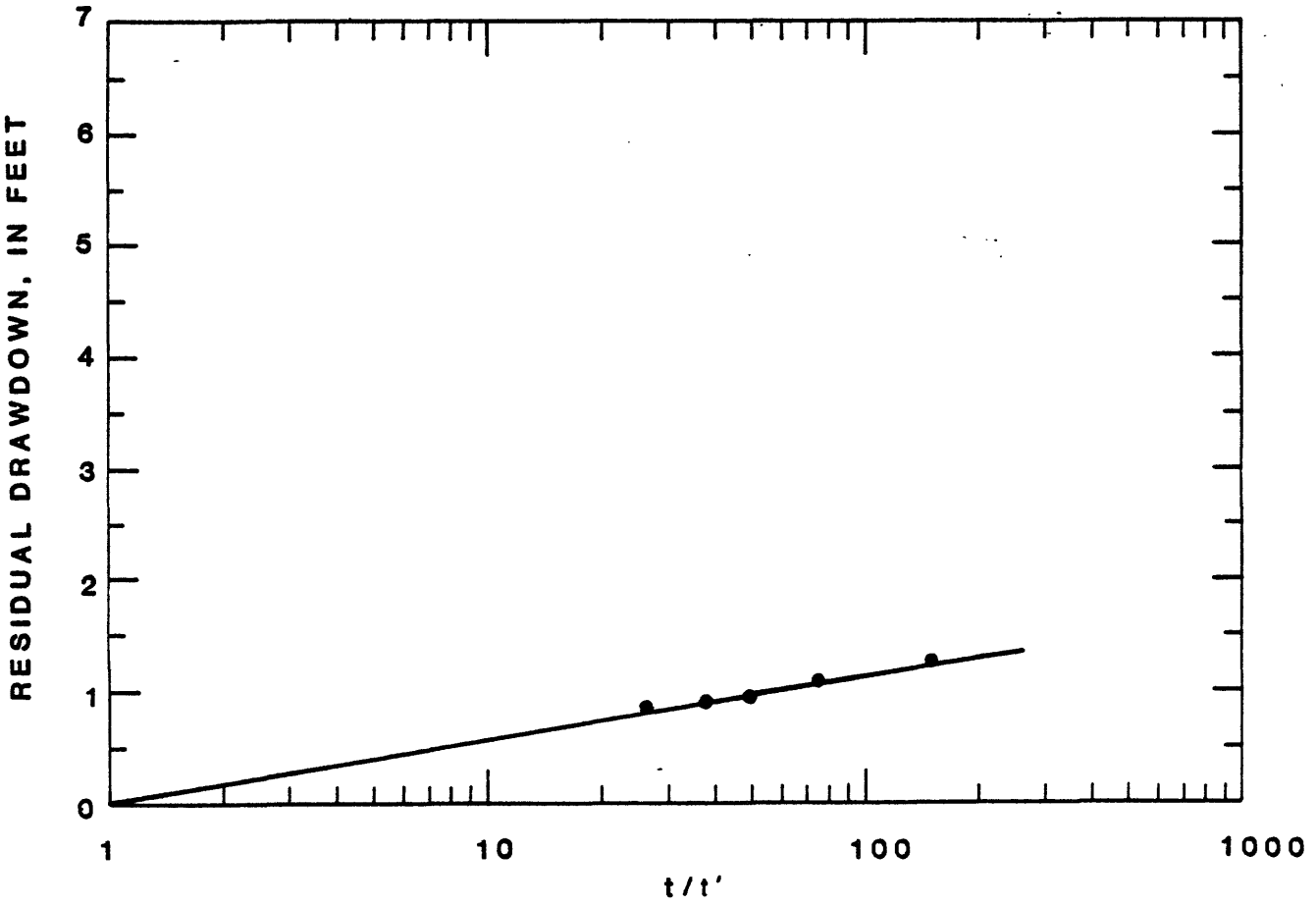
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, pumping time 12 hours, 20 feet of screen, gravel packed

Driller's Log

	Depth (feet)
Soil	0-1
Clay, brown, silty	1-20
Sand and gravel, medium to coarse	20-30
Clay, blue, with some sand	30-34
Sand and gravel, coarse, with some boulders	34-54
Shale	54-55



County Riley

Location 10-8E-9CCA

Date tested March 3, 1970

Pumping well radius (feet) or distance from pumping well (feet) 30

Well depth (feet) ---

Static water level (feet) 17.6

Discharge (cubic feet per day) 196,000

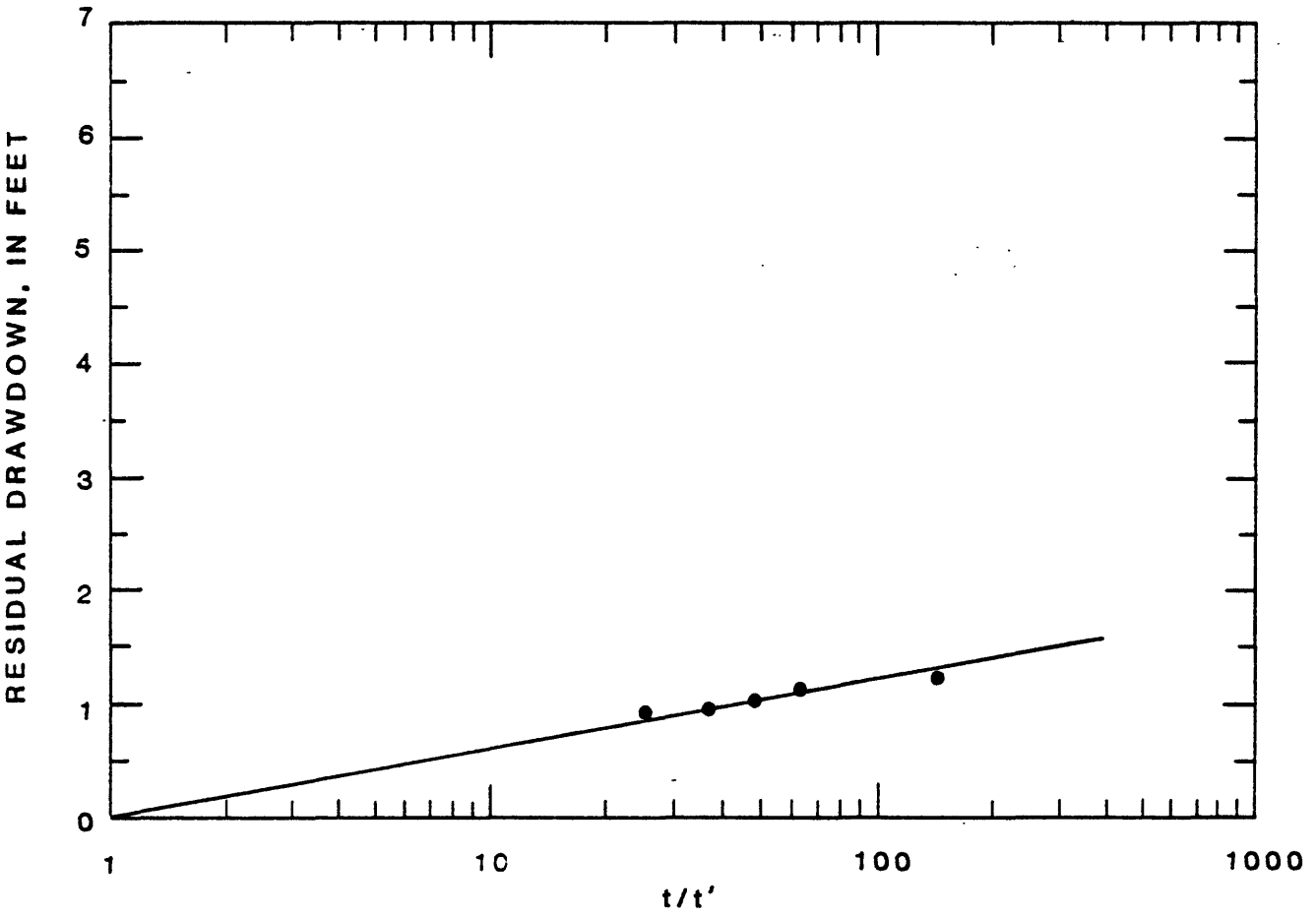
Method of analysis Theis Recovery

Transmissivity (square feet per day) 69,000

Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits,
Observation well
Pumping time 12 hours



County Saline

Location 13-3W-12ACC

Date tested December 12, 1951

Pumping well radius (feet) or distance from pumping well (feet) 50

Well depth (feet) 112

Static water level (feet) 49.1

Discharge (cubic feet per day) 69,000

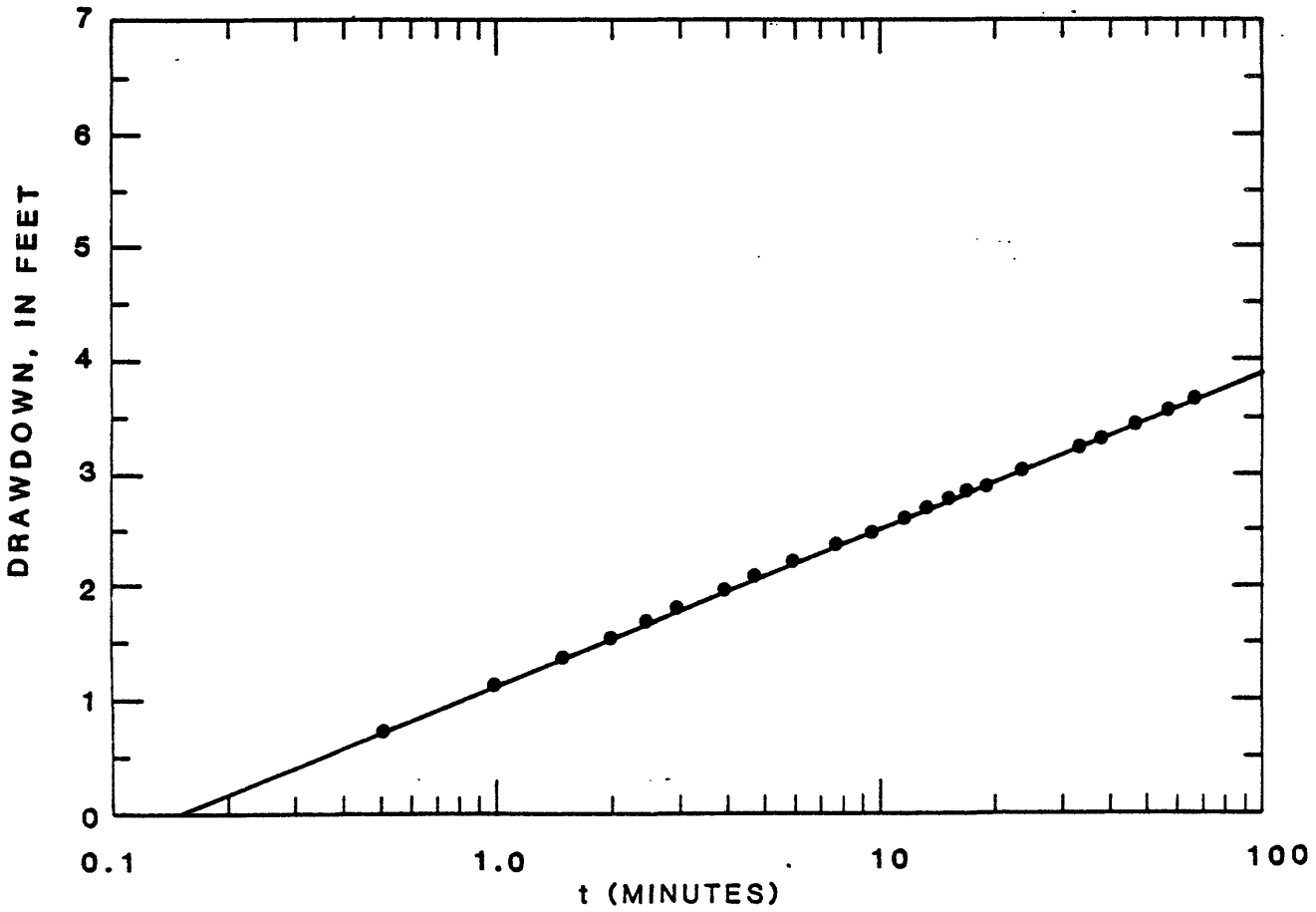
Method of analysis Jacob Modified

Transmissivity (square feet per day) 9,400

Storage coefficient 8.5×10^{-4}

Source City of Salina

Remarks Consolidated rocks, Observation well, open hole



County Sedgwick

Location 25-1W-17CBB

Date tested May 11, 1959

Pumping well radius (feet) or distance from pumping well (feet) 240

Well depth (feet) 154

Static water level (feet) 16.54

Discharge (cubic feet per day) 133,000

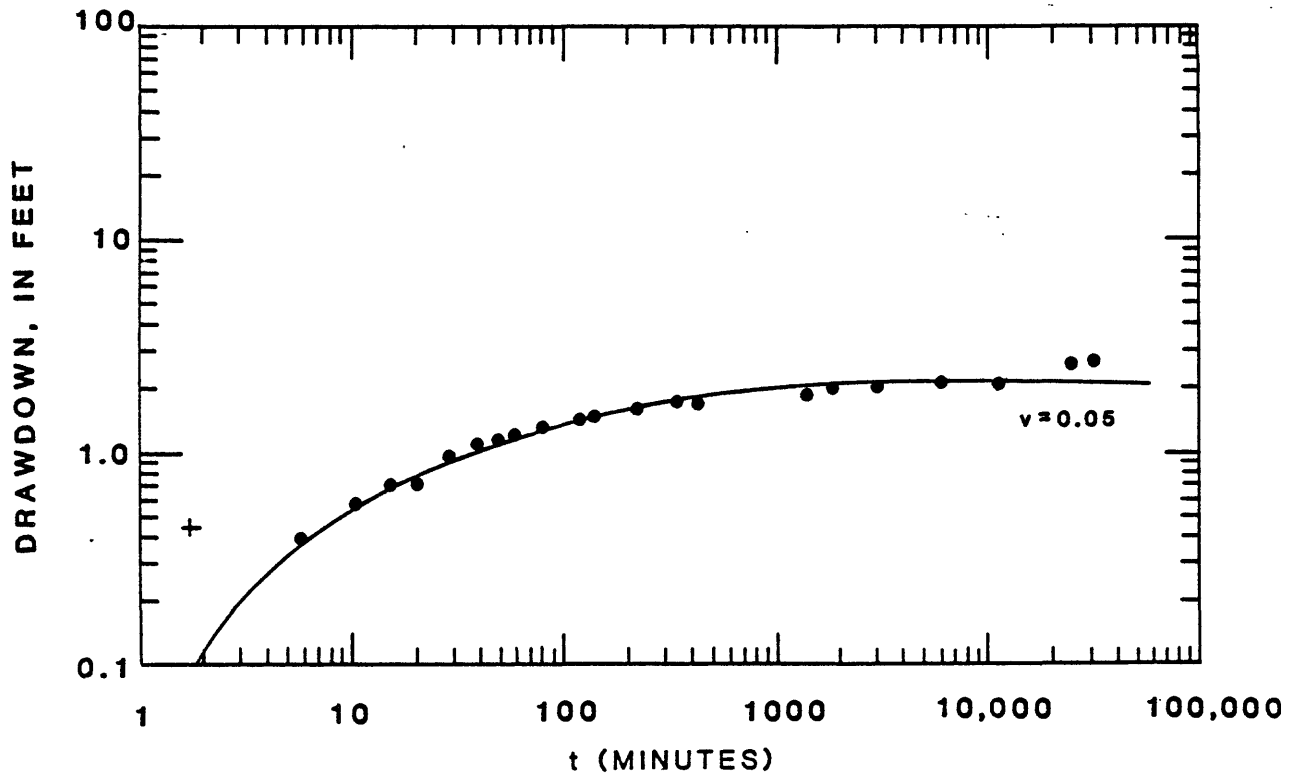
Method of analysis Hantush-Jacob

Transmissivity (square feet per day) 25,000

Storage coefficient 2.2×10^{-3}

Source City of Wichita

Remarks $K'/b' = 4.3 \times 10^{-3}$ (1/day)
Equus Beds aquifer,
Observation well, pumped well has alternating blanks and screenfrom 99 to 156 feet



County Sedgwick

Location 26-2W-15AB

Date tested July 6, 1959

Pumping well radius (feet) or distance from pumping well (feet) 200

Well depth (feet) 145

Static water level (feet) 18.95

Discharge (cubic feet per day) 164,000

Method of analysis Hantush-Jacob

Transmissivity (square feet per day) 18,100

Storage coefficient 7.9×10^{-4}

Source Layne-Western Co.

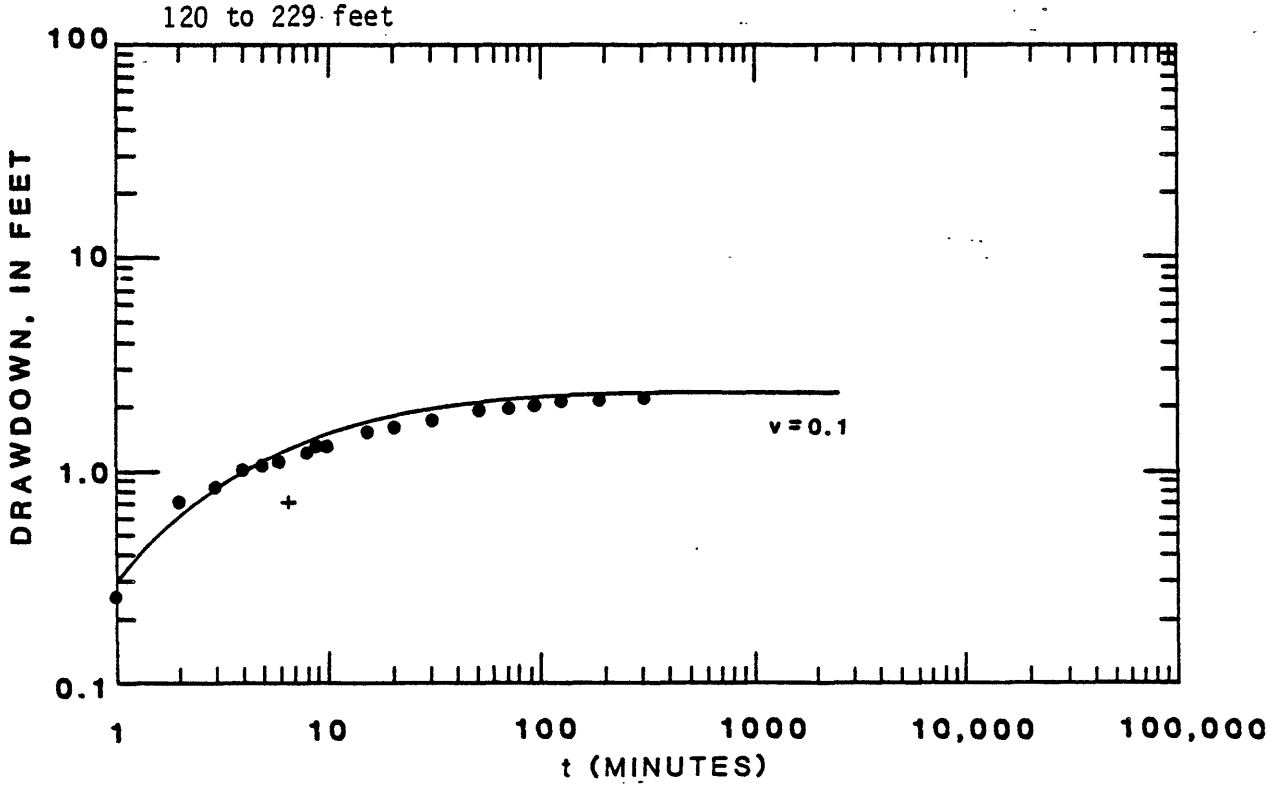
Remarks $K'/b' = 1.8 \times 10^{-2}$

Equus Beds aquifer,

Observation well, alternate blanks and screen from about 130 to 229 feet. Pumping well alternately screened from 120 to 229 feet

Driller's Log

	Depth (feet)
Clay, brown, sandy	0-15
Sand, fine to coarse	15-20
Sand to coarse gravel, and thin tan clay lenses	20-58
Sand to coarse gravel, and thin blue-gray clay lenses	58-136
Clay, gray to brown	136-142
Sand to coarse gravel, and thin gray clay lenses	142-170
Sand, fine to coarse	170-181
Clay, tan	181-195
Sand to coarse gravel	195-209
Clay, tan, and thin sand lenses	209-216
Sand to coarse gravel	216-232



County Sedgwick

Location 26-2W-15CCC

Date tested January 12, 1965

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 151

Static water level (feet) 20.11

Discharge (cubic feet per day) 193,000

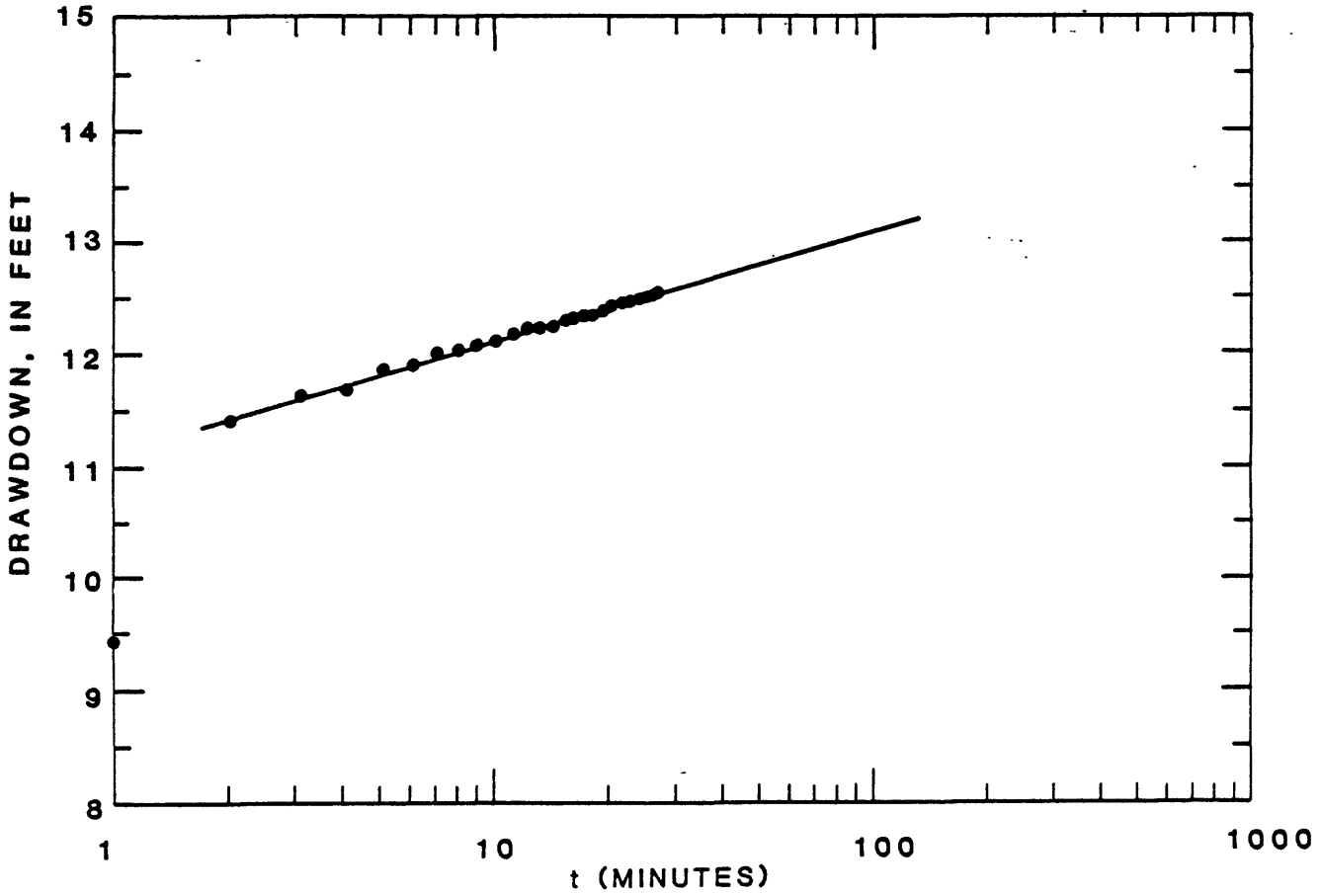
Method of analysis Jacob Modified

Transmissivity (square feet per day) 36,000

Storage coefficient ---

Source Layne-Western Co.

Remarks Equus Beds aquifer, Pumping well, screened from 111 to 151 feet



County Sedgwick

Location 28-2W-28AAC

Date tested April 7, 1979

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) 47

Static water level (feet) 20.7

Discharge (cubic feet per day) 39,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 2,600

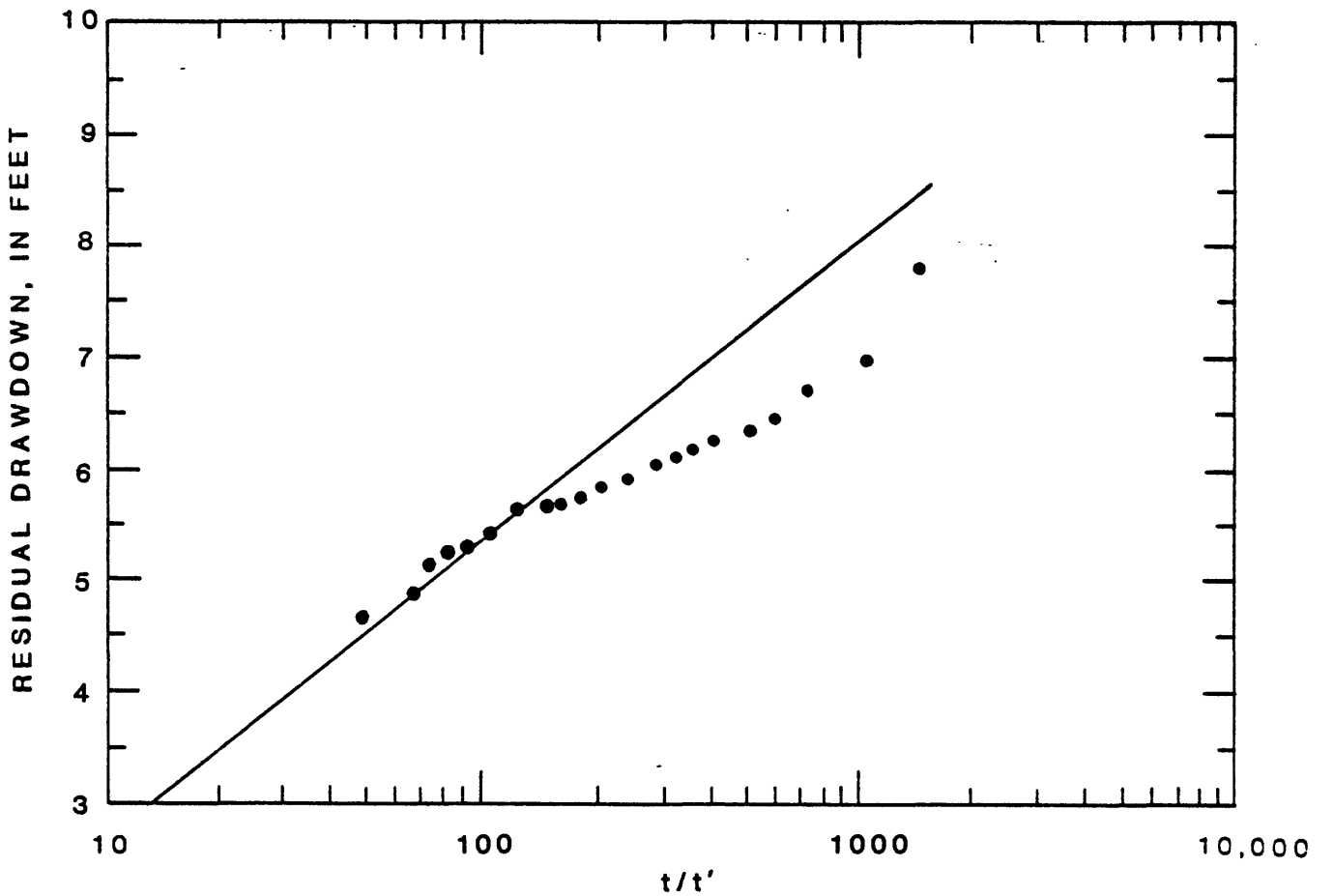
Storage coefficient ---

Source Kansas State Board of Agriculture

Remarks Alluvial deposits, Pumping well, screened from 37 to 47 feet, gravel packed, pumping time 24 hours

Driller's Log

	Depth (feet)
Clay	0-5
Clay, sandy	5-11
Sand, fine	11-16
Clay, sandy	16-18
Sand, medium to coarse, and medium gravel	18-47



County Sedgwick

Location 29-1E-14DCC

Date tested June 14, 1978

Pumping well radius (feet) or distance from pumping well (feet) 0.67

Well depth (feet) 37.5

Static water level (feet) 17.67

Discharge (cubic feet per day) 116,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 21,000

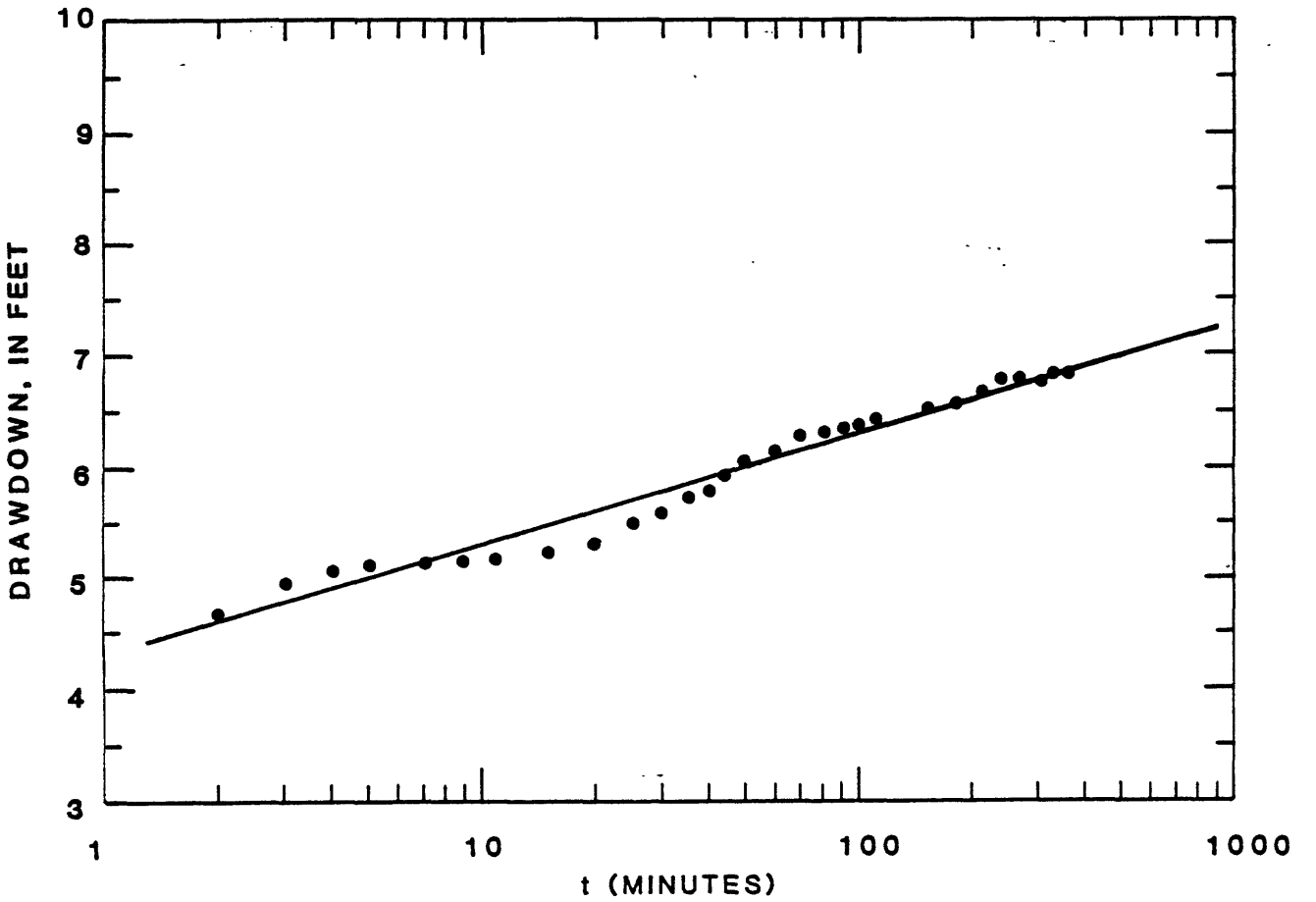
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, screened from 27.5 37.5 feet, gravel packed

Driller's Log

	Depth (feet)
Sand, fine, silty	0-6
Sand and gravel, medium to coarse	6-37.5
Shale, blue	37.5-



County Sedgwick

Location 29-1W-26BBBB

Date tested November 17, 1973

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 94

Static water level (feet) 17.1

Discharge (cubic feet per day) 83,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 4,100

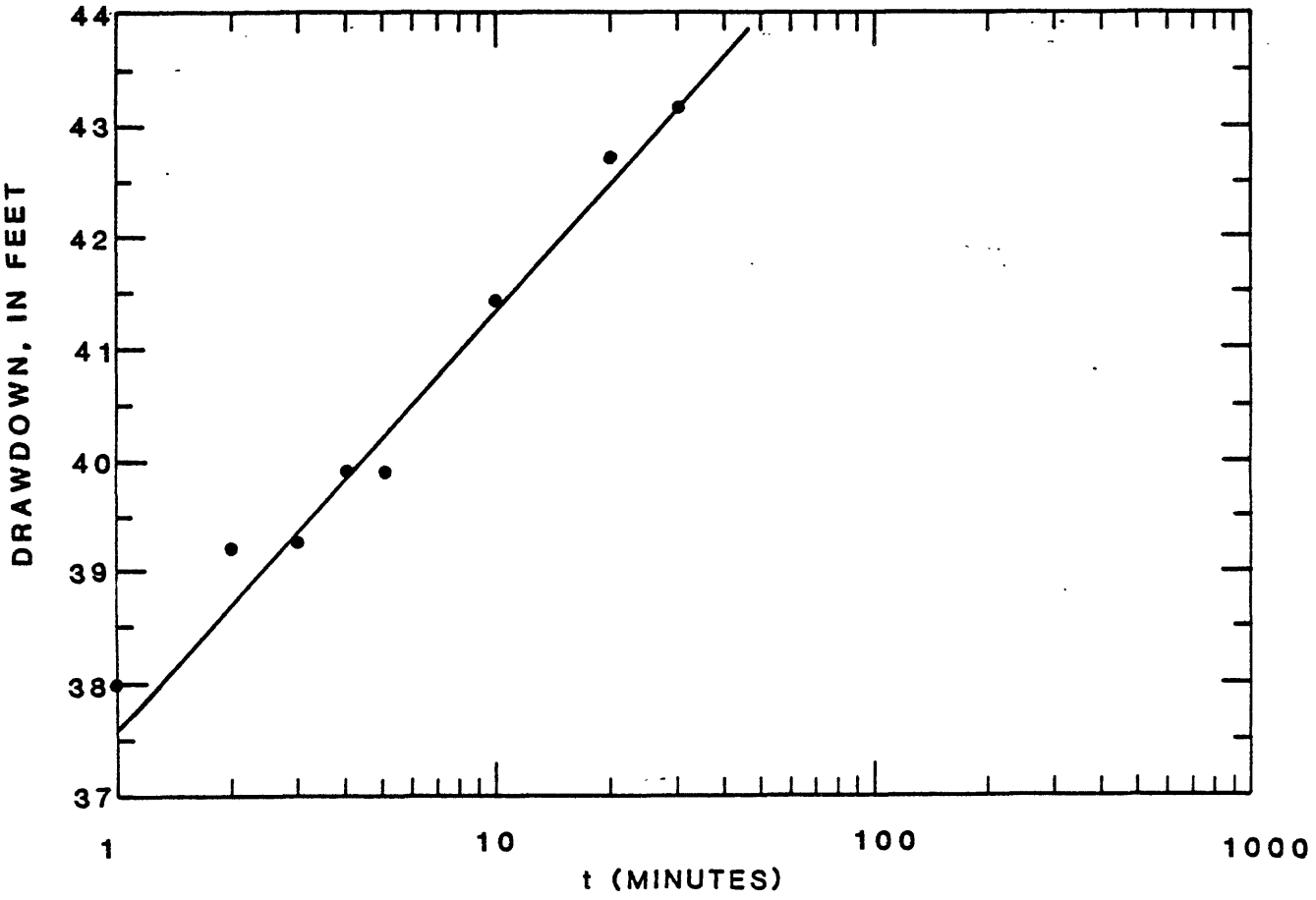
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, screened from 74 to 94 feet, gravel packed

Driller's Log

	Depth (feet)
Clay	0-28
Sand, fine, and clay	28-44
Clay	44-46
Sand, fine to coarse, and medium gravel	46-65
Clay	65-77
Sand, fine to medium	77-86
Sand, fine to coarse, and fine to medium gravel	86-94
Shale, blue	94-97



County Shawnee

Location 11-15E-13ACCC

Date tested September 18, 1944

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) 88.5

Static water level (feet) 24.66

Discharge (cubic feet per day) 142,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 65,000

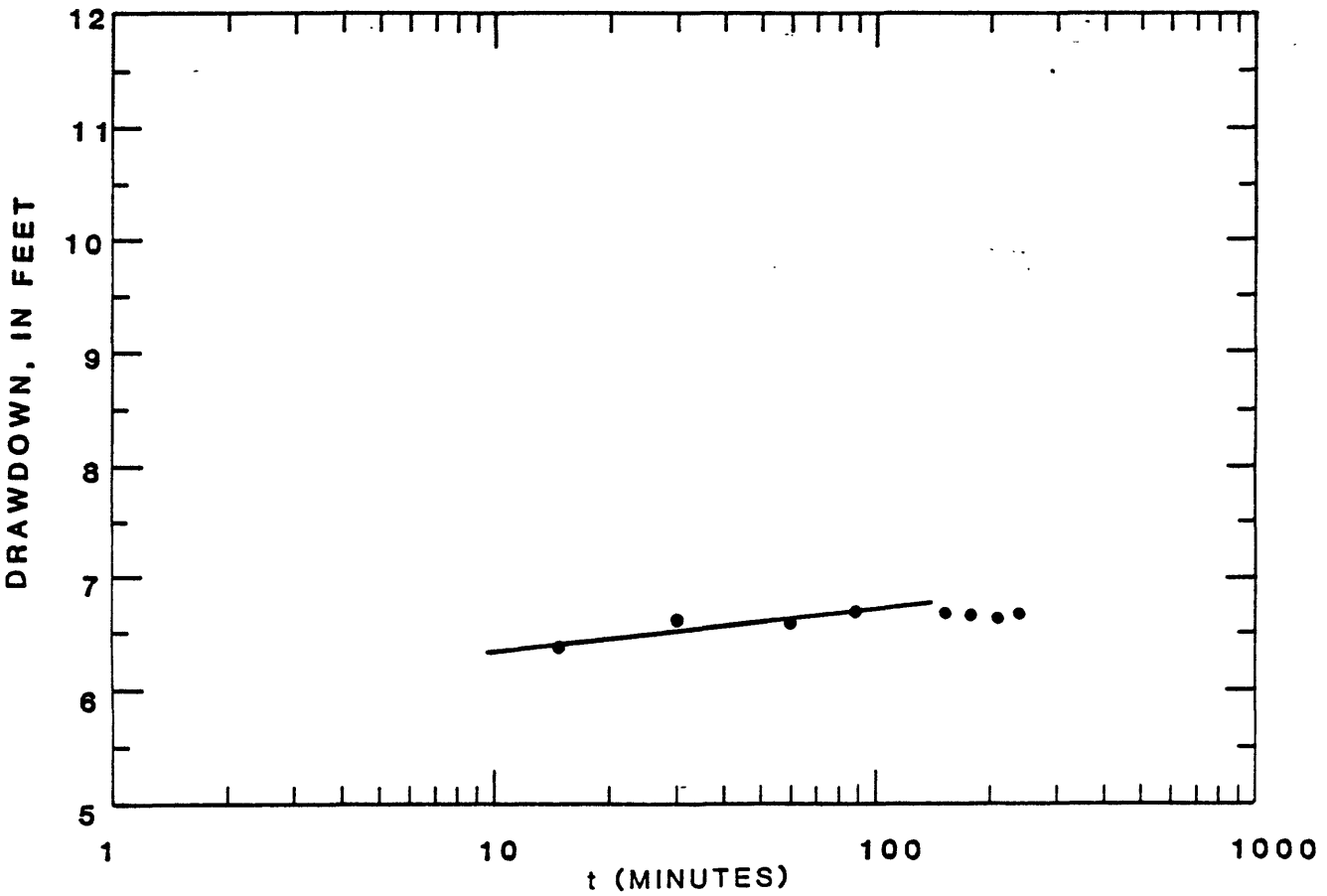
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits
Pumping well

Driller's Log

	Depth (feet)
Soil, black	0-3
Clay	3-27
Sand	27-38
Sand, coarse, and gravel	38-73
Sand, coarse, and gravel, with a few boulders	73-88.5



County Shawnee

Location 11-15E-13ACD

Date tested August 29, 1944

Pumping well radius (feet) or distance from pumping well (feet) ---

Well depth (feet) 80.5

Static water level (feet) 22.5

Discharge (cubic feet per day) 139,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 36,000

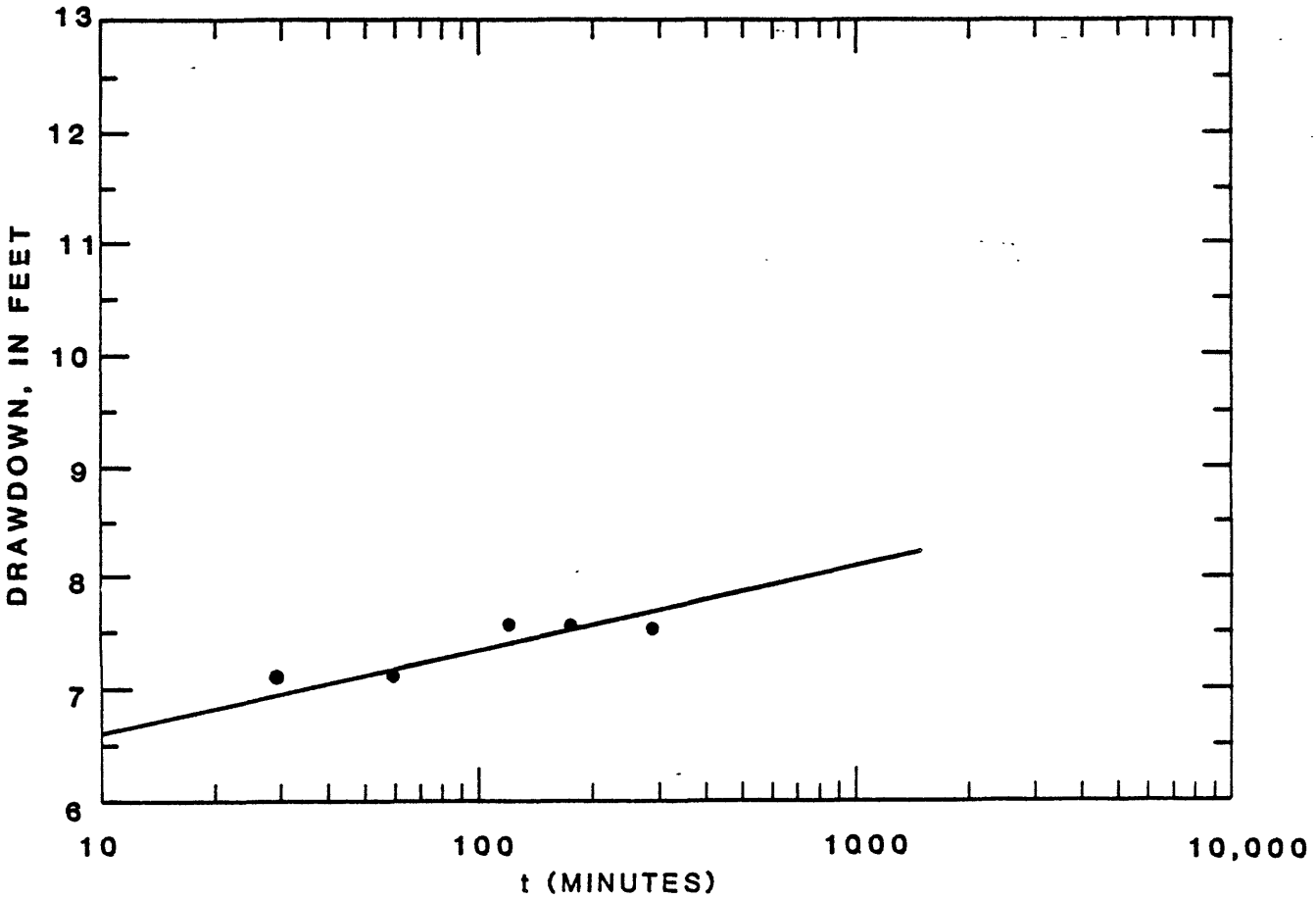
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well

Driller's Log

	Depth (feet)
Soil, black	0-4
Clay, gray	4-26
Sand	26-52
Sand, coarse, gravel, and a few boulders	52-80.5



County Shawnee

Location 11-15E-13DAA

Date tested August 9, 1965

Pumping well radius (feet) or distance from pumping well (feet) 0.75

Well depth (feet) 69.6

Static water level (feet) 30

Discharge (cubic feet per day) 97,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 51,000

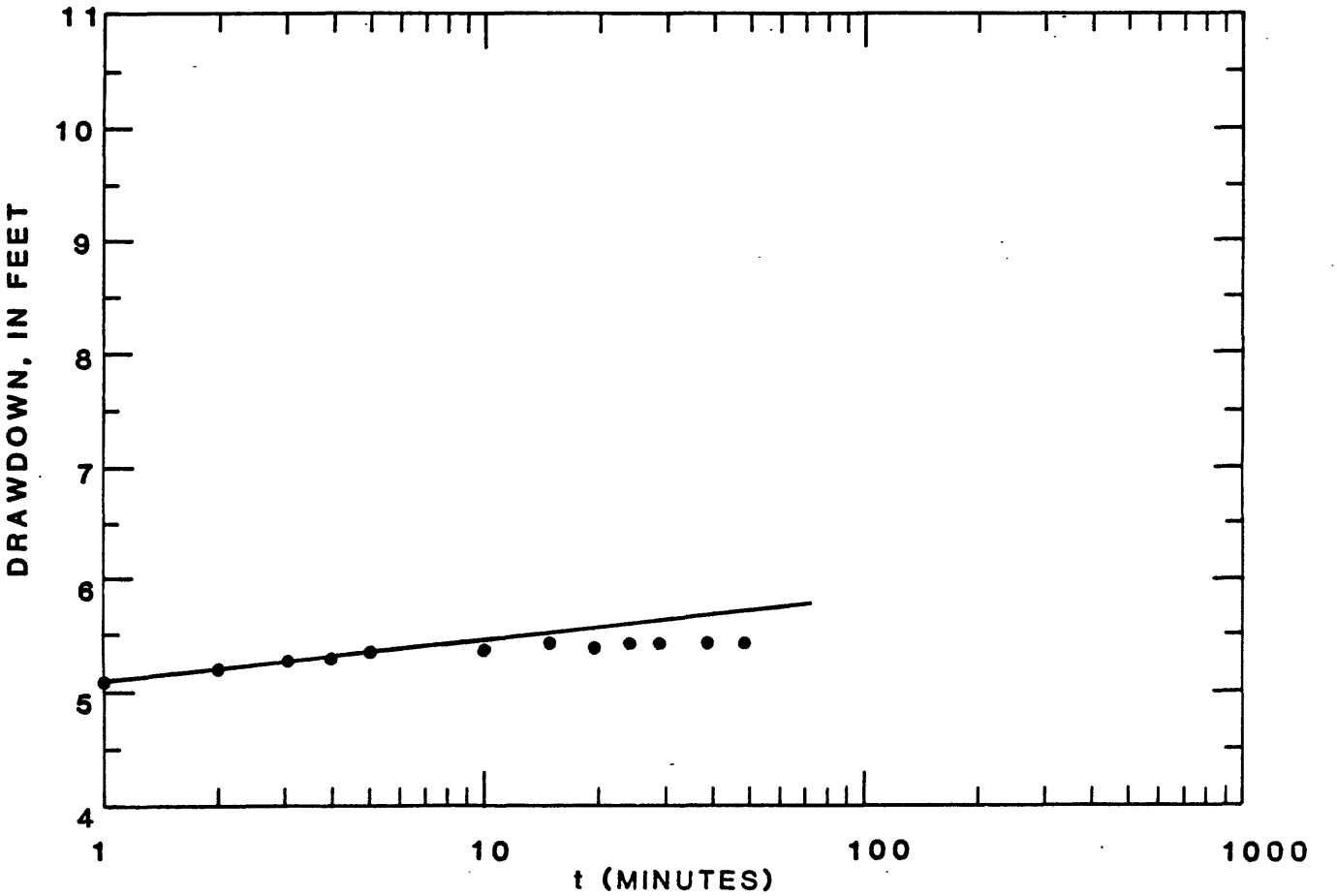
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, 20 feet of screen Gravel packed

Driller's Log

	Depth (feet)
Clay, brown, silty	0-20
Sand, brown, medium to coarse, with some very coarse sand	20-30
Sand, brown, medium to coarse, with some very coarse sand and gravel	30-55
Sand and gravel, brown, coarse to very coarse, with a few boulders	55-69



County Shawnee

Location 11-15E-13DACC

Date tested January 15, 1958

Pumping well radius (feet) or distance from pumping well (feet) 110

Well depth (feet) 76.6

Static water level (feet) 32.13

Discharge (cubic feet per day) 43,000

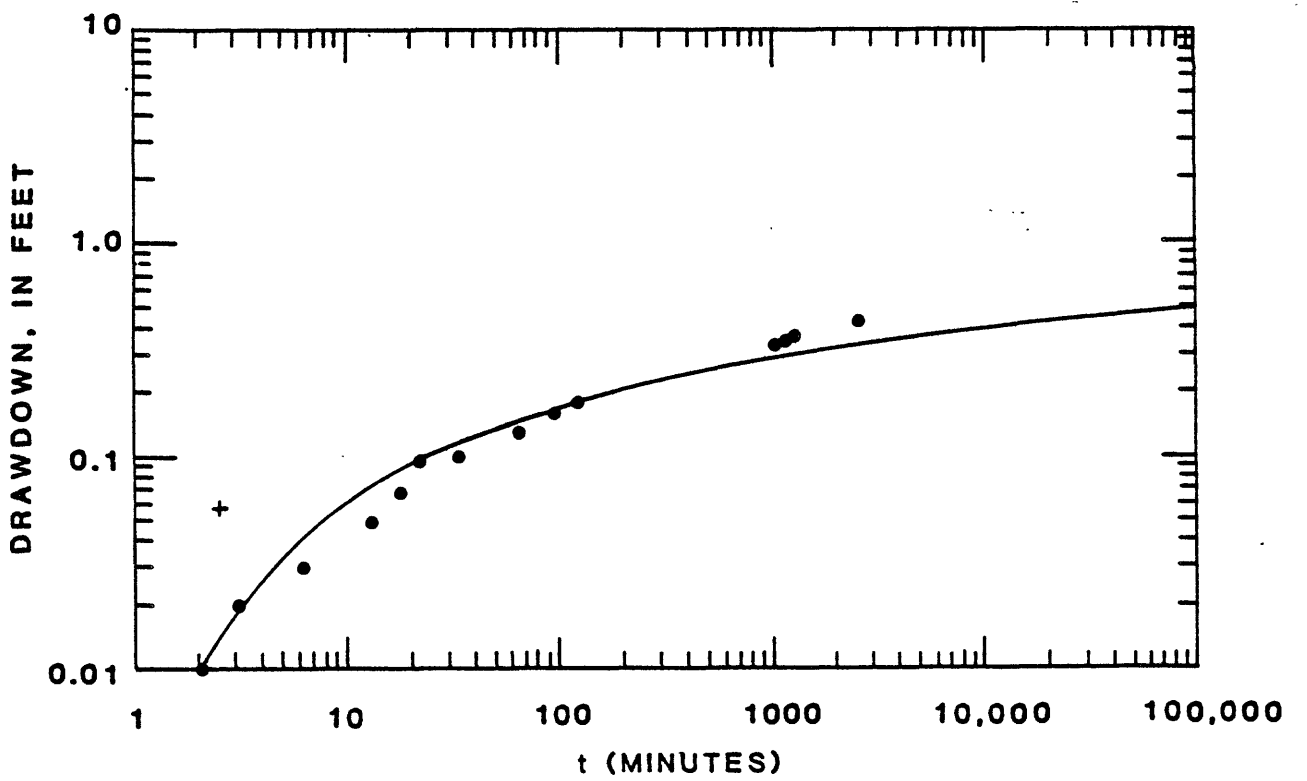
Method of analysis Theis Nonequilibrium

Transmissivity (square feet per day) 62,000

Storage coefficient 3.5×10^{-2}

Source Layne-Western Co.

Remarks Alluvial deposits, Observation well



County Shawnee

Location 11-15E-13DACC

Date tested January 15, 1958

Pumping well radius (feet) or distance from pumping well (feet) 30

Well depth (feet) 49

Static water level (feet) 30.45

Discharge (cubic feet per day) 43,000

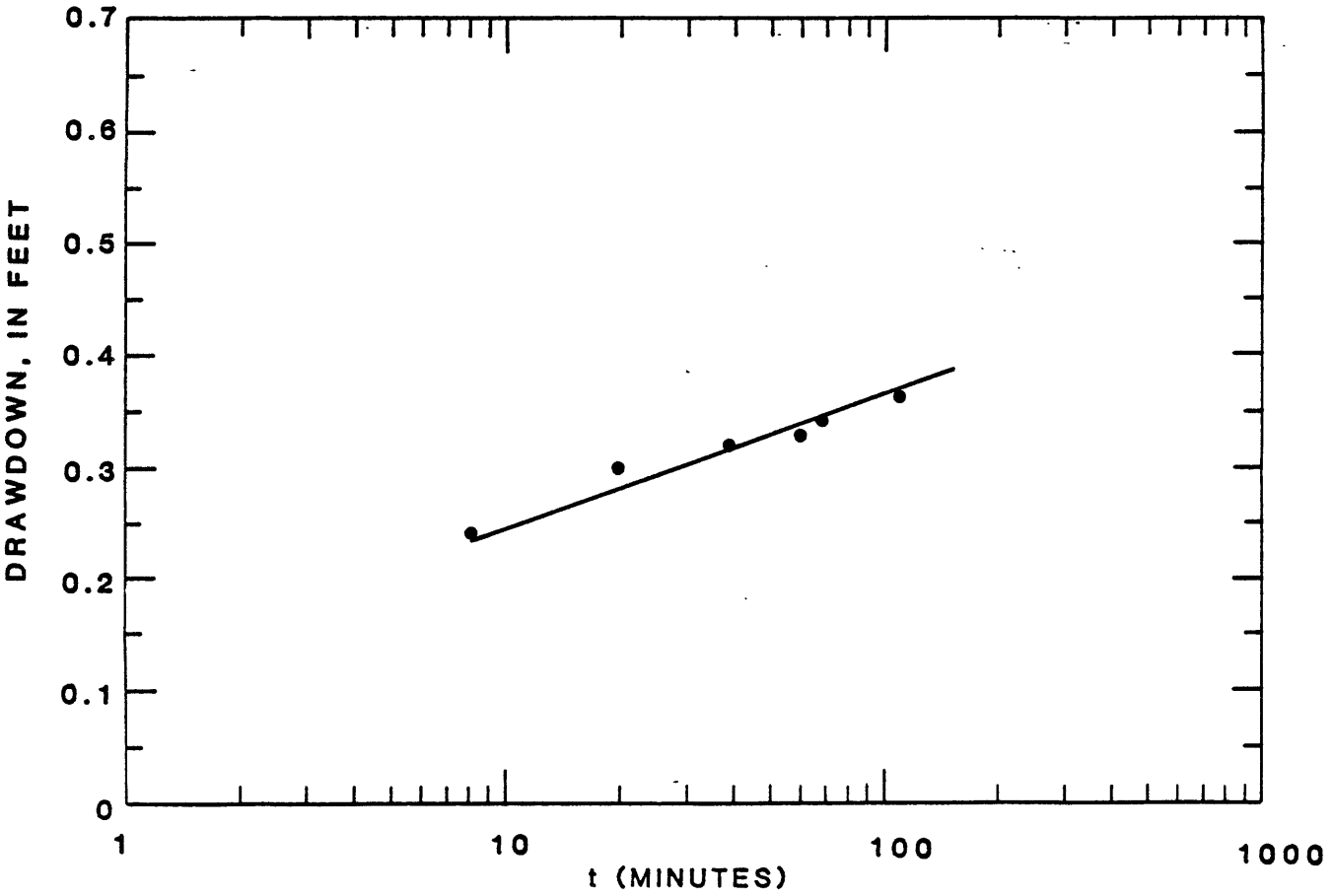
Method of analysis Jacob Modified

Transmissivity (square feet per day) 70,000

Storage coefficient 8.6×10^{-3}

Source Layne-Western Co.

Remarks Alluvial deposits, Observation well



County Shawnee

Location 11-15E-13DAD

Date tested April 13, 1960

Pumping well radius (feet) or distance from pumping well (feet) 100

Well depth (feet) 47.3

Static water level (feet) 31.53

Discharge (cubic feet per day) 183,000

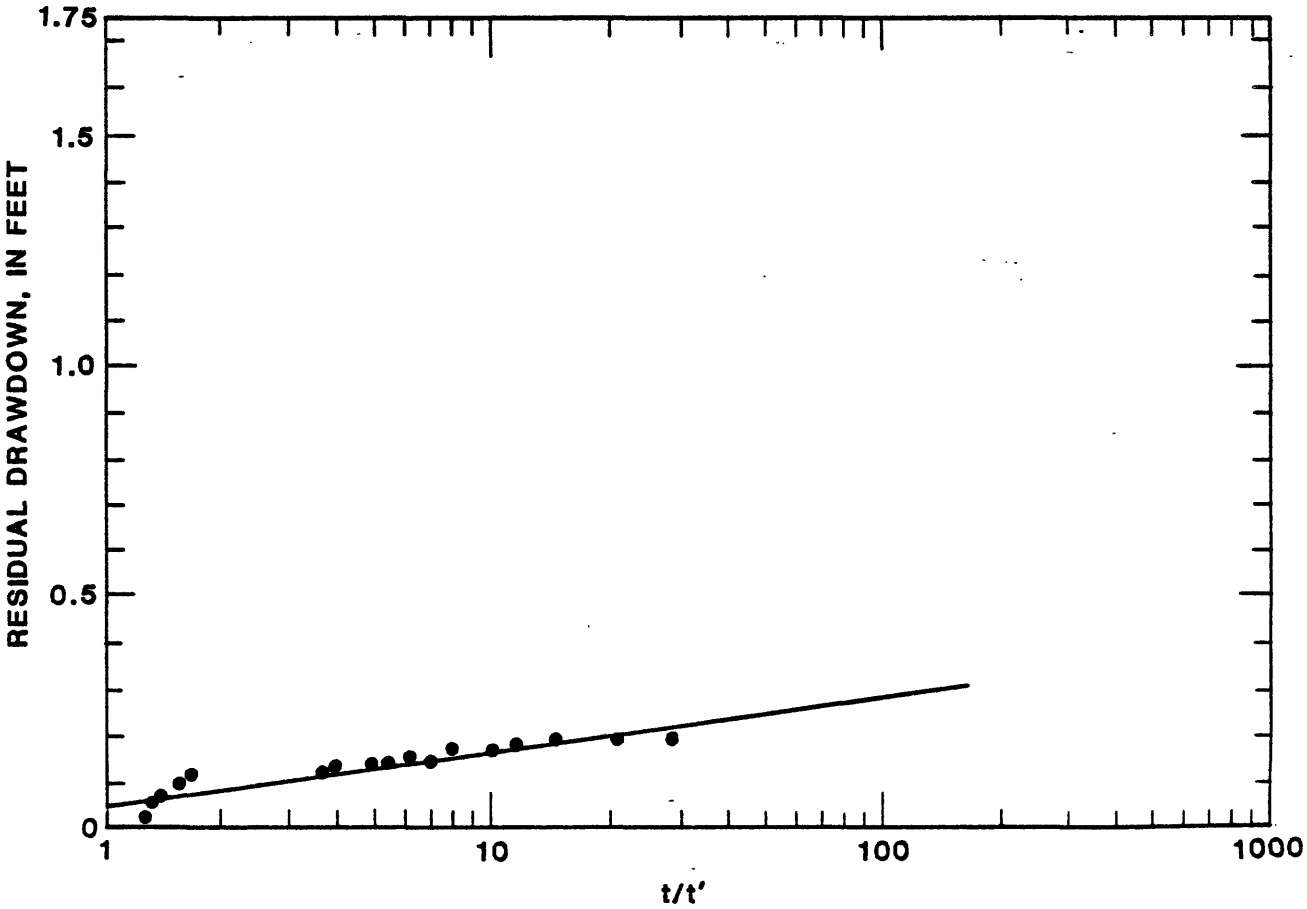
Method of analysis Theis Recovery

Transmissivity (square feet per day) 268,000

Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits
Observation well
Pumping time 2.5 hours



County Sumner

Location 31-3W-6CAB

Date tested September 13, 1973

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 49

Static water level (feet) 11.95

Discharge (cubic feet per day) 39,000

Method of analysis Theis Recovery

Transmissivity (square feet per day) 23,000

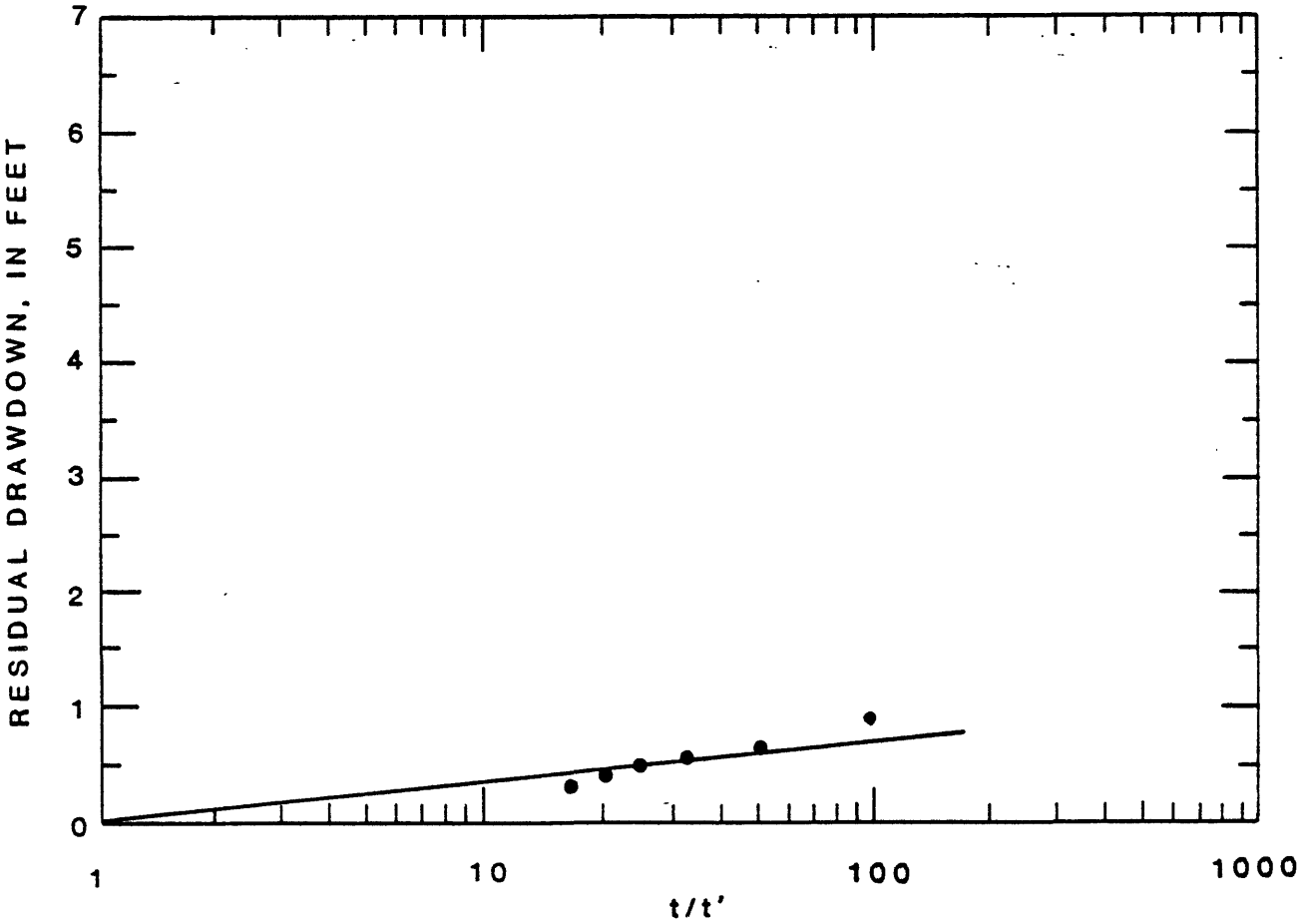
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits,
Pumping well, pumping time 8 hours
15 feet of screen, gravel packed

Driller's Log

	Depth (feet)
Soil	0-2
Sand, fine	2-10
Sand and gravel, medium to coarse, with clay	10-14
Sand, fine to coarse	14-18
Clay, tan	18-22
Sand, fine to coarse, with some medium gravel	22-51
Sand, fine to coarse, and medium gravel with shale particles	51-55
Shale, red	55-



County Sumner

Location 32-1W-15CDD

Date tested September 2, 1966

Pumping well radius (feet) or distance from pumping well (feet) 0.42

Well depth (feet) 31

Static water level (feet) 9.3

Discharge (cubic feet per day) 29,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 4,600

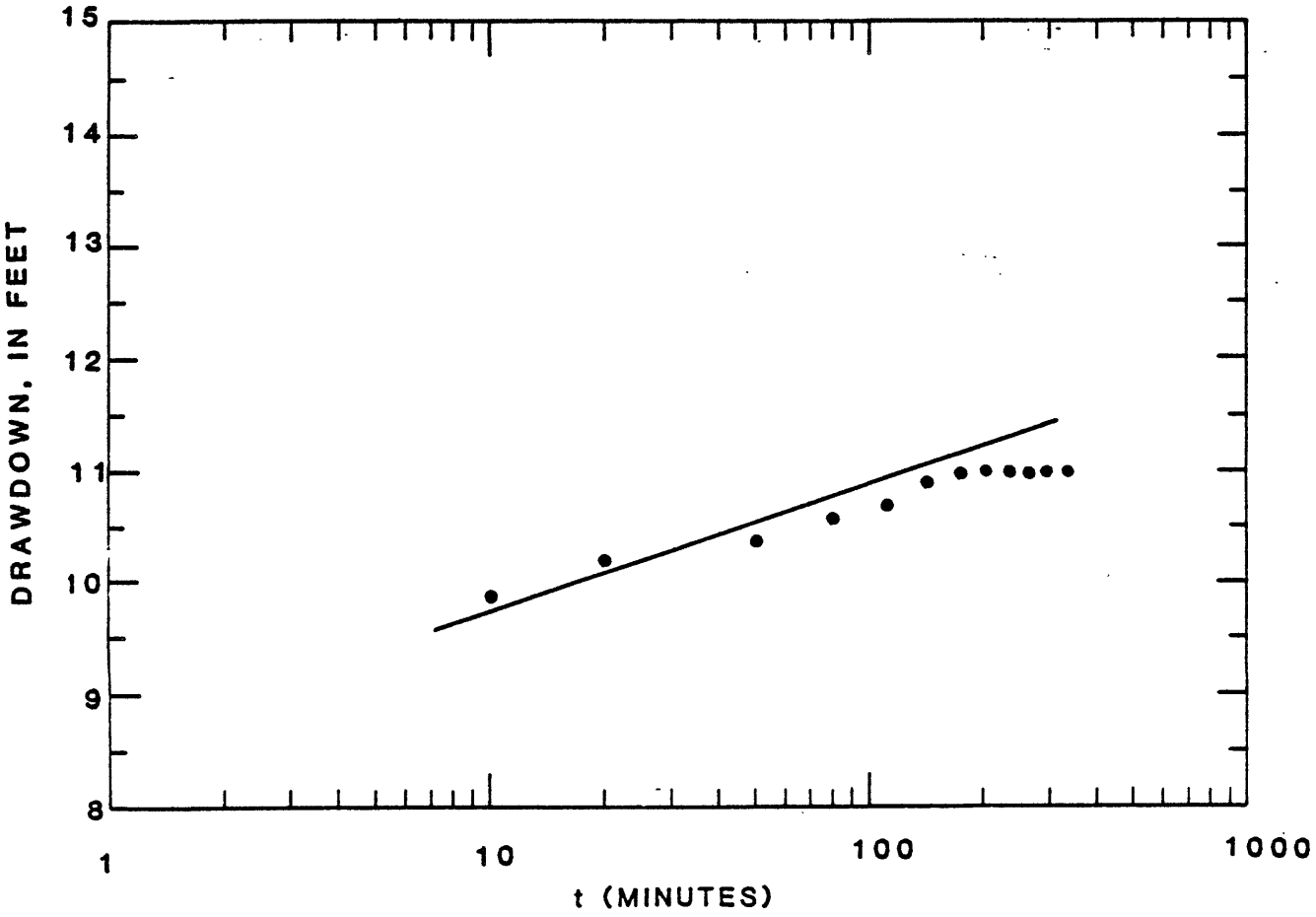
Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, 10 feet of screen Gravel packed

Driller's Log

	Depth (feet)
Soil	0-3
Clay, brown	3-11
Sand, fine to medium	11-14
Sand and gravel, fine to coarse, and some very coarse gravel	14-30
Shale, blue	30-31



County Wyandotte

Location 10-23E-33DAB

Date tested July 11, 1913

Pumping well radius (feet) or distance from pumping well (feet) 56

Well depth (feet) 41

Static water level (feet) 12.9

Discharge (cubic feet per day) 12,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 9,200

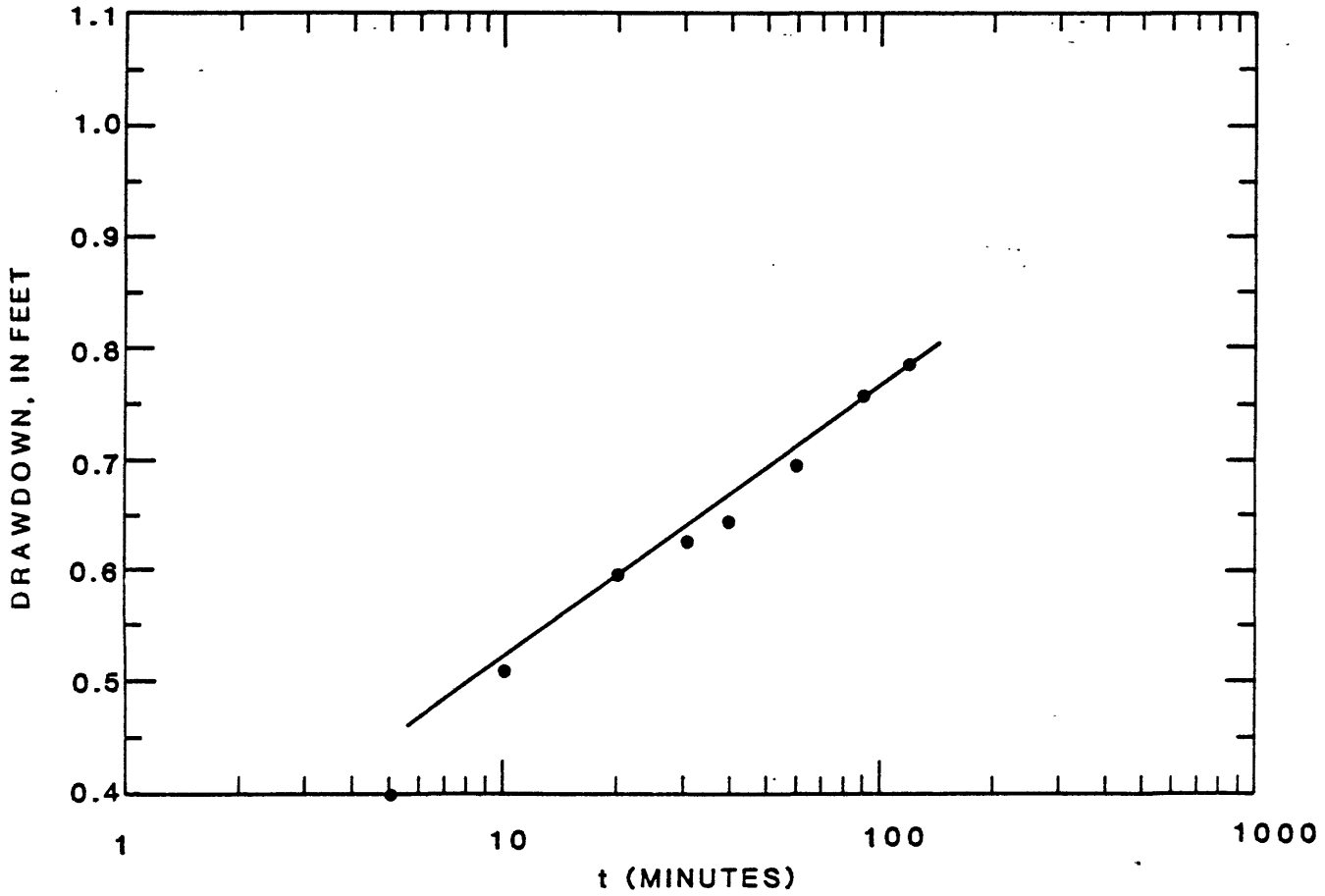
Storage coefficient 2.8×10^{-4}

Source Layne-Western Co.

Remarks Alluvial deposits.
Observation well, 15 feet of screen
No gravel pack

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown, silty	2-4
Clay, gray, sandy	4-12
Sand, brown, medium to coarse, with trace of very fine sand and gravel	12-20
Sand, gray, medium to coarse, with trace of fine sand and gravel	20-25
Sand, gray, coarse to very coarse, with trace of fine sand and gravel and boulders	25-31
Sand, brown, medium to coarse, with trace of fine sand and gravel, clay, and silt	31-39
Limestone, light-gray, shaly	39-41



County Wyandotte

Location 10-23E-33DAB

Date tested July 11, 1913

Pumping well radius (feet) or distance from pumping well (feet) 108

Well depth (feet) 45

Static water level (feet) 15.2

Discharge (cubic feet per day) 12,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 11,000

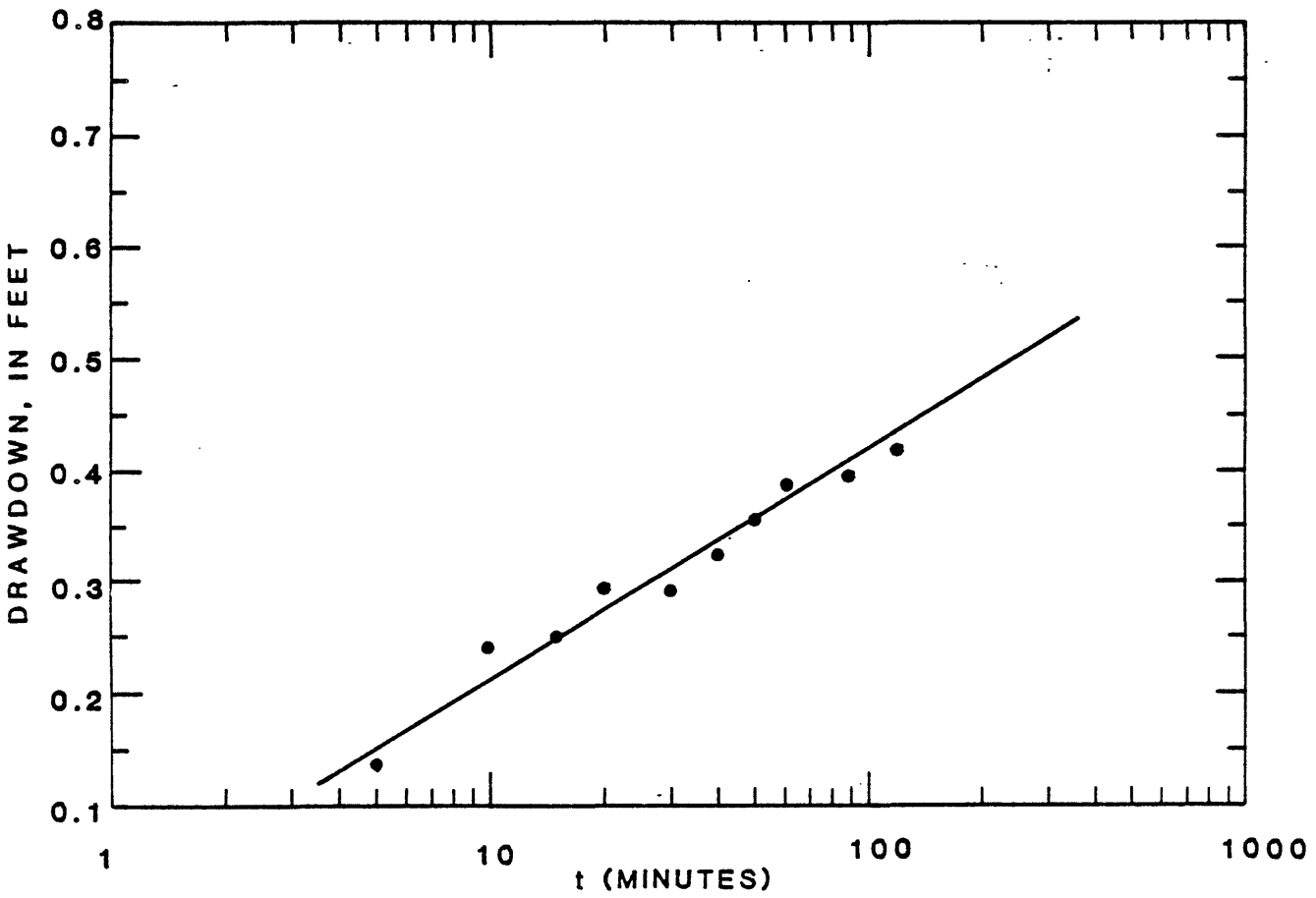
Storage coefficient 1.3×10^{-3}

Source Layne-Western Co.

Remarks Alluvial deposits, Observation well, 20 feet of screen, No gravel pack

Driller's Log

	Depth (feet)
Topsoil	0-2
Clay, brown, silty	2-5
Clay, gray, sandy	5-14
Sand, gray-brown, medium to coarse, with trace of fine sand and gravel	14-30
Sand, gray, coarse to very coarse, with trace of fine sand and gravel	30-35
Sand, gray, coarse to very coarse, with trace of fine sand and gravel, boulders, and some clay	35-43
Limestone, light-gray, shaly	43-45



County Wyandotte

Location 11-25E-3DDA

Date tested August 29, 1963

Pumping well radius (feet) or distance from pumping well (feet) 0.50

Well depth (feet) 90.5

Static water level (feet) 34.33

Discharge (cubic feet per day) 59,000

Method of analysis Jacob Modified

Transmissivity (square feet per day) 28,000

Storage coefficient ---

Source Layne-Western Co.

Remarks Alluvial deposits, Pumping well, 20 feet of screen Gravel packed

Driller's Log

	Depth (feet)
Sand, brown, fine	0-5
Sand, brown, medium to coarse, with trace of fine sand	5-10
Clay, gray, silty	10-35
Sand, gray, fine, with trace of clay	35-40
Sand, gray, medium to coarse	40-60
Sand and gravel, gray, medium to coarse, with some boulders	60-70
Sand, gray, fine to medium, with some boulders	70-75
Sand and gravel, gray, medium to coarse, with some boulders	75-90.5