

1. Considered 5-26, 19 77

2. Name of Applicant FALK FARMS

3. Post Office Address SOUTH SHORE

4. Amount of water claimed 2.28

5. Source of water supply 150' DEEP WELL

6. Water to be used for IRRIGATION

Acres to be irrigated 160

7. Water to be diverted and used in COPINGTON county
about 15 1/4, 2 1/2 W miles _____ of WATERTOWN.

8. Proof of Publication

Received 4-15-77

Not received.

9. Application

Approved 1-31-79

Subject to

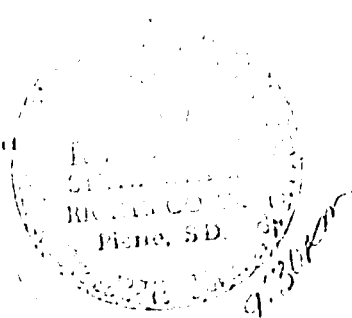
Not Approved

Action deferred

10. Remarks:

[Handwritten notes:]

- Will send him [unclear]
- [unclear] [unclear]
- [unclear] [unclear]

No. 3227-3Map No. 2489-3 Water Division No. 3 BIG SIOUX RIVER District _____
(Blanks to be filled by the Engineer for the V. H. C.)

APPLICATION FOR PERMIT

To Appropriate Water within the State of South Dakota

(NOTE - Draw a line through items not applicable)

1. Name of Applicant Falk Farms, Inc.
 Postoffice address RR South Shore, State SD
 If a corporation show date and place of incorporation July 2, 1971 - South Shore, SD
2. Method of accomplishing work (contract, employment of others, or by direct labor) Contract
3. Name of diversion work Falk Irrigation Project #2
4. Amount of water claimed (cubic feet per second) 2.3
5. Source of water supply Ground - Well
6. Location of point of diversion Center of SE 1/4 - 27-120N-52W

County Codington

7. Annual period or periods during which water is to be used April - November
8. Use to be made of water, (irrigation, industrial, municipal, commercial, recreation, etc.) Irrigation
9. For irrigation use, Total number of acres to be irrigated 160

List below each forty acre subdivision, or lot, or fraction thereof and show number of acres to be irrigated in each.

Land Description	No. Acres Irr.	Land Description	No. Acres Irr.
<u>SE 1/4 - 27-120N-52W</u>	<u>160</u>		

Attach sheet if more space is needed

10. Time required to complete construction of water supply system .5 years. Additional time required to complete application of water to the proposed beneficial use 3 years.
11. Choice of newspaper for Notice of Intent to Appropriate Water publication Watertown Public Opinion
12. Principal Features of the Proposed Water Supply System.

A. Works proposed to divert water from its natural source.

Irrigation Well

B. Works proposed to transport water to place of use.

Pump & Al. or PVC pipeline

C. Works proposed to apply water to beneficial use.

Center pivotEstimated Total Cost \$ 50,000Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed. Attach map.
(See instructions concerning preparation.)

STATE OF SOUTH DAKOTA

County of CodingtonI, Charles T. Falk, the applicant, certify that I have read the foregoing application and have examined the attached map and that the matters therein stated are true and that I intend and am able to complete the necessary construction.

Signed

Charles T. Falk

Subscribed and sworn to before me this

21

day of

Sept1976

Notary Public (or other qualified officer)

WATER RIGHT APPLICATION APPROVAL

The Water Rights Commission hereby approves Water Right Application No. 3227-3FALK FARMS, INC.
(Applicant)R.R. SOUTH SHORE
(Post Office Address)SOUTH DAKOTA 57263
(State)

With the following modifications:

The irrigation well (s) approved under this permit will be located near domestic wells and other irrigation wells which may obtain water from the same aquifer. The irrigation well owner, under this permit, shall control his irrigation withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in irrigation wells having prior water rights.

The specific capacity of the well (s) shall be determined by test pumping the well (s) prior to connecting the well (s) to the irrigation system and a record of the specific capacity filed with the Commission office.

Date of first receipt of application OCTOBER 5, 19 76

Date of return to applicant for correction, amendments or changes required _____, 19 _____

Date of receipt of corrected application OCTOBER 8, 19 76Approved JANUARY 31, 19 79, Recorded in Book 20 Page 141WATER RIGHT PERMIT NO. 3227-3

The Water Rights Commission hereby grants and issues this Water Right Permit No. 3227-3 authorizing the construction of the water use system and the putting of water to beneficial use as stated in the Application and as modified in the Water Right Application approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is OCTOBER 5, 19 76
2. The equivalent of at least one-fifth of the work above specified is to be completed on or before JULY 31, 19 81
3. The whole of said work is to be completed on or before JANUARY 31, 19 84
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is JANUARY 31, 19 87
5. The water appropriated shall be used for the purpose of IRRIGATION
6. The prior right of all persons who, by compliance with the laws of the State of South Dakota, have acquired a right to the use of water must not be injuriously affected by this appropriation.
7. The amount of the appropriation herein granted shall not exceed 2.3 cubic feet per second; neither shall it exceed the capacity of the above described water supply system, nor shall it exceed the amount of water needed for beneficial uses served, and if for the irrigation purposes said appropriation must be limited to not more than 3 acre feet per acre per year and be limited to not more than one-seventieth (1/70) of one cubic foot of water per second of time for each acre of land to which water is actually and beneficially applied for irrigation on or before JANUARY 31, 19 79; said water to be used during the following described annual period: APRIL - NOVEMBER

Witness my hand this 16th day of FEBRUARY, 19 79

WATER RIGHTS COMMISSION

By:

John K. H. H.
Chief Engineer, Executive Officer

Certificate of Construction Issued _____, 19 _____

Water License Issued _____, 19 _____

12 Principal Features of the Proposed Water Supply System (continued.)

D. Well Information or Estimates

- (1) Drill Hole, Diameter 2'-1"-2.8", Depth 1.52'
 (2) Casing, Type Fiberglass Diameter 1.8" Thickness Approx 3/8"
 (wood, concrete, steel, etc)
 (3) Perforated Screen.
 Type Fiberglass, Diameter 1.5", Length 30'
 (4) Gravel Pack, Thickness 4'-8", Length of gravel pack 100'

E. Dugout information or Estimates

- (1) Surface dimensions _____, Depth _____

F. Fill out for Either a Well or a Dugout.

- (1) Water Bearing Materials. (Please attach a copy to test well log if available.)

Character of Water bearing materials _____
0-2' top soil, 2'-3.5' yellow clay
2.5'-90' gravel till, 90'-14.5' sand & gravel

Depth to top of water bearing material 90'

Depth to bottom of water bearing material 14.5'

Thickness of water bearing material 5.5'

Depth to water (ground surface to water level) 40'

- (2) Distance to nearest existing household or livestock watering wells.

On same owner's property 8.5 rds. On property owned by others 1.53 rds.

G. Water Storage Dams.

If the proposed water use system contains one or more water storage dams, please show in the space below, the height, maximum water depth, surface area and storage capacity of each storage dam. The location of each water storage dam should be shown on the water right map.

Charles F. Felt

Signature of Applicant

STATE CONSERVATION COMMISSION
SUPPORTING INFORMATION
FOR APPROPRIATION OF GROUND WATER IN ACCORDANCE
WITH SDCL 46-6-3 AS AMENDED
(THIS FORM REQUIRED FOR PROPOSED GROUND WATER IRRIGATION ONLY)

NAME Falk Farms, Inc.
ADDRESS RR South Shore
COUNTY Codington

LEGAL DESCRIPTION

1. WELL LOCATION Center of SE 1/4 - 27 - 120N - 52W
2. LOCATION OF AREA TO BE IRRIGATED SE 1/4 - 27 - 120N - 52W

TYPE OF IRRIGATION

3. GRAVITY _____ TOWLINE _____ CENTER PIVOT ☒ GUN _____
4. CROPS TO BE IRRIGATED Corn & Alfalfa

WATER QUALITY

5. SAMPLE NUMBER 76-1416
6. SALINITY (EC X 10⁶) 802 (med-hi)
7. SODIUM (SAR) 0.41 (Low)
8. RESIDUAL SODIUM CARBONATE (meq/l.) 0

I do hereby certify that a chemical analysis of the ground water representative of that used to irrigate shall be acquired from South Dakota State University and: the soils information has been acquired from Codington Co. Conservation District, County Extension office or Soil Conservation Service.

and:
that the legal description for the location of the well and land to be irrigated is true and correct.

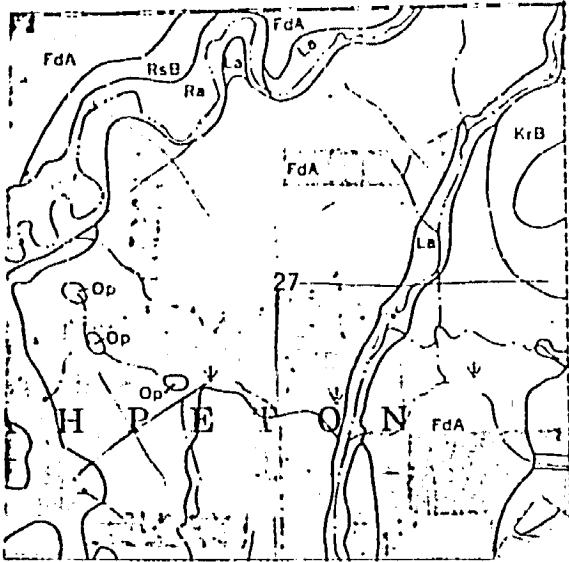
Charles E. Falk
APPLICANT'S SIGNATURE

SUBSCRIBED AND SWORN BEFORE ME THIS
21 DAY OF April 19 86.

[Signature]
(TITLE OR SEAL)

[Signature]
APPROVED/DENIED
(SOILS INFORMATION ON REVERSE SIDE)

MWP



NARRATIVE

Fda - Forbids silt loam on 3/4 slope

La - Laminate - thin near summit

REPORT OF ANALYSIS
Water Quality Laboratory
Water Resources Research Institute
South Dakota State University
Brookings, South Dakota 57006

Submitted by: Falk Farms, Inc.
Address: RR
South Shore, SD 57263

Date Rec'd September 21, 1976
Sample No. 76-1416
Identification Well-150'
SE 1/4, Sec. 27, T 120N, R 52W

WATER ANALYSIS

Calcium (Ca)	89	ppm*	4.45	me/l**
Magnesium (Mg)	44	ppm	3.61	me/l
Sodium (Na)	19	ppm	0.83	me/l
Potassium (K)	2	ppm	0.05	me/l
Sulfate (SO ₄)	64	ppm	1.33	me/l
Nitrate (as N)		ppm		me/l
Chloride (Cl)	3	ppm	0.08	me/l
Bicarbonate (HCO ₃)	464	ppm	7.60	me/l
Carbonate (CO ₃)		ppm		me/l
Iron (Fe)		ppm		me/l
Fluoride (F)		ppm		me/l
Hardness (EDTA as CaCO ₃)		ppm		g.p.g.***
Alkalinity (Methyl Orange)	380	ppm (as CaCO ₃)		
Alkalinity (Phenolphthalein)	0	ppm (as CaCO ₃)		
Electrical Conductivity	802	micromhos per cm at 25° C.		
Sodium Adsorption Ratio	0.41			
Sodium	9.28	% of cations		
Residual sodium carbonate	0.00	me/l		
pH	7.29			

Others:

*ppm=parts per million

**me/l=millequivalents per liter

***g.p.g.=grains per gallon

COMMENTS: Total cations 8.94 me/l
Total anions 9.01 me/l

By: Shirley Witten

Service Performed

Amount Due

Irrigation analysis

\$9.00 PAID

Make checks payable to: Water Quality Laboratory

Cut along dotted line and return the lower portion with payment

Sample No. 76-1416

Amount Enclosed \$

Signed



October 5, 1976

Falk Farms, Inc.
R.R.
South Shore, SD 57263

Dear Mr. Falk:

Your water sample (Lab. No. 76-1416) has been analyzed and the results are reported on the accompanying sheet, which is your copy to keep.

I am also enclosing a copy of AES pamphlet #13 for your use. The quality of your water for irrigation use is plotted approximately by means of the red cross in the chart on the outside back cover.

Your water, as indicated by this analysis, is satisfactory for use on the soils you indicate will be irrigated. If a salt problem or a water table problem should develop, contact extension personnel for assistance.

The WI-1, soils information, and a copy of the water analysis are being forwarded to the State Conservation Commission for their action.

Sincerely yours,

L. O. Fine

L. O. Fine
Water Quality Lab

LOF:ckb
Enclosures
cc: State Conservation Commission

No. 3225-3

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County Codington) ss.

I, John R. Howrie hereby

certify that the annexed printed copy of Notice of Intent to Appropriate

Water was taken from the Watertown Public Opinion

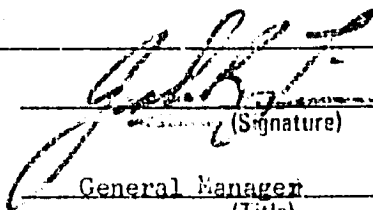
A newspaper which during the whole time of publication of said notice
herein after stated, has been and is printed and published in the

city of Watertown

County of Codington and State of South Dakota;
that the said notice was published in said newspaper on the following
two dates:

April 7th, 1977

April 14th, 1977


(Signature)
General Manager
(Title)

April 14th, 1977

(Date Signed)

PUBLIC NOTICE
NOTICE
INTENT TO
APPROPRIATE WATER
Pierre, South Dakota
57501
April 1, 1977
Notice is hereby given that Falk
Farms, Inc. whose post office ad-
dress is South Shore, South Dakota,
has made an application in ac-
cordance with the provisions of the
water laws of South Dakota for a
permit to appropriate for beneficial
use 2.28 cubic feet of water per
second of time from ground water
through the Falk Irr. Proj. No. 2, the
point of diversion of which is to be
located in the center of SE 1/4 of
Section 27, Twp. 126N, Range 52W.
Said water to be used for the purpose
of providing irrigation on portions of
the following described land: SE 1/4,
Section 27, T126N, R52W.
This application No. 3225-3 will be
considered by the Water Rights
Commission at their office at Pierre
upon the 26th day of May 1977 at
11:00 A.M. All interested persons
may appear and be heard.
WATER RIGHTS
COMMISSION
By: James Wintertown
Water Rights
Specialist
(April 14, 1977)
314056072-1792



No. 3227-3

Publish first publication, on or before May 12, 1977

NOTICE
INTENT TO APPROPRIATE WATER

Pierre, South Dakota 57501

April 1, 1977

Notice is hereby given that Falk Farms, Inc.
whose post office address is South Shore, South Dakota, has made an application in accordance
with the provisions of the water laws of South Dakota for a permit to appropriate for beneficial use
2.28 cubic feet of water per second of time from the ground water through the
Falk Irr. Proj. # 2, the point of diversion of which is to be located in the
center of SE $\frac{1}{4}$

of Section 27, Twp. 120N, Range 52W. Said water to be used for the purpose
of providing irrigation on portions of the following described land:

SE $\frac{1}{4}$, Section 27, T120N, R52W

This application No. 3227-3 will be considered by the Water Rights Commission at their office at
Pierre upon the 26th day of May, 1977, at 11:00 A.M. All interested
persons may appear and be heard.

WATER RIGHTS COMMISSION

By

JAMES WINTERTON
Water Rights Specialist

BFE/bw

Falk Farms, Inc., P.R., South Shore, SD 57263

Technical Report On
Aquifer Pump Test Southwest Grant County
Using Falk Irrigation Well

December, 1978

Location: The irrigation well is located in the center of the NE1/4 Section 23, T120N, R52W reservation.

General

Comments: The source of water is a buried glacial outwash deposit of sand and gravel under artesian conditions.

The hydraulic gradient (direction of water movement) is toward the southwest at approximately 5 feet per mile in the vicinity of the production well.

The thickness and lateral extent are variable although test holes indicate an areal extent of at least 66 square miles at an average thickness of 20-30'. The thickness can vary dramatically in a few miles, from more than 45 feet at observation well GT-76C to only 3 feet at CD-77A. The artesian head is 100 feet or more at nearly any location. Flowing wells may be obtained below a land surface elevation of 1800.0 feet. Observation wells have been located into the aquifer over a great distance from north to south but not east to west. The eastern boundary can be established with some reliability but not the western boundary. Drilling was confined to areas where a flow would not be obtained. Any widening of the aquifer to the west increases its size tremendously.

See sketches I, II, III, IV
Also relevant well log data is included.

Purpose: The purpose of the aquifer test was to determine the hydrogeological characteristics of the aquifer.

Test: Pumping began Monday, April 24, 1978 at 3:00 p.m. and continued for 72 hours. During this period 13 observation wells and 4 domestic wells were monitored after shutdown recovery data was obtained from these sources as well. The primary wells were:

- 1). Irrigation well #2
- 2). Service well
- 3). Temporary observation well
- 4). GT-76B
- 5). Falk domestic

A 6" flow meter borrowed from the USGS was used to measure the rate of discharge. The discharge remained constant over the entire test averaging 1010 gpm. Six Water Rights Commission Staff were present to monitor the test.

Data: All data was plotted in a conventional manner. Time-drawdown curves were constructed for each primary observation using the type-curve

(Theis) method and the modified non-equilibrium formula (Jacob) method. Recovery data was also plotted using the Jacob method. These methods should define the aquifer characteristics transmissivity (T) and storage coefficient (S). Also distance - drawdown plots were constructed for different time intervals and these T and S values calculated. (See figures 1 thru 17)

Table listing T and S values

	T	S	(A) Recovery
Irrigation well	1) 32,150 2) 43,000	can not be calculated	
Service well	1) 54,600 2) 45,600	1) 6.26×10^{-5} 2) 2.70×10^{-4}	T) 43,000 S) 3.87×10^{-4}
Temporary Observation well	1) 46,700 2) 42,300	1) $.93 \times 10^{-5}$ 2) 1.98×10^{-5}	T) 39,800 S) 2.19×10^{-5}
GT-76B	1) 53,800 2) 54,700	1) 4.77×10^{-5} 2) 4.08×10^{-5}	T) 49,200 S) 6.12×10^{-5}
Falk domestic	1) 57,900 2) 54,300	1) 1.36×10^{-4} 2) 1.10×10^{-4}	did not plot

- 1) Theis method
2) Jacob method

A) recovery data handled using Jacob method only

T and S values determined by distance-drawdown

Time	T	S	r_D
1 hour	61,300	2.95×10^{-5}	5,100
10 hours	53,300	5.5×10^{-5}	11,000
24 hours	53,300	5.7×10^{-5}	16,600
67 hours	46,400	1.20×10^{-4}	18,500

This is that amount of time passed since the beginning of pumping.

r_D is the distance in feet from the production well that the cone of depression extends to at the given time.

Distance from to	Service	Temp Obs. Well	GT-76B	Falk domestic	GT-77A	CD-76D	GT-76C
Production Well	30	700	1,920	4,800	9,100	10,000	14,100

Discussion of Data
and Procedures:

Was the Testing Period long enough? This can be shown to true by
the following calculation.

$$t_{SL} = 1.35 \times 10^5 r^2 S/T$$

t_{SL} = Time needed to Elapse

r = Distance from Production
Well to Observation Well

For Temp Obs. Well $t_{SL} = (1.35 \times 10^5) (700^2) (1.43 \times 10^{-5}) / 43,700$

$$t_{SL700} = 15.14 \text{ minutes}$$

For GT-768 $t_{SL1920} = (1.35 \times 10^5) (1920^2) (4.86 \times 10^{-5}) / 53,800$

$$t_{SL1920} = 449.56 \text{ minutes} \\ 7.49 \text{ hours}$$

For Falk Domestic $t_{SL4800} = (1.35 \times 10^5) (4800^2) (1.36 \times 10^{-4}) / 57,900$

$$t_{SL4800} = 7305.95 \text{ minutes} \\ 121.77 \text{ hours} \\ 5.07 \text{ days}$$

Calculations of T and S are valid for wells out through GT-768 using the Jacob Method. Calculations for the Falk Domestic well may not be accurate because the test should have been run 5 days in order to evaluate T and S at that distance.

Examination of the values of T and S show good correlation. Predictions using this data can be made. However care must be taken when calculating theoretical drawdowns over long periods of time in this case. In all instances the predicted water levels will be lower than the actual measured level. This is the effect of recharge to the system. Predictions assume no recharge. This accounts for the discrepancies in water level measurements and predictions. Since this problem shows up in 3 days, imagine what is happening after 60 days or longer. (See Figures A,B,C,D)

What is the specific capacity of the irrigation well?

$$\text{Actual } Q/s = 1010/46.49 = 20.83 \text{ gallons/foot}$$

$$\text{Calculated } T = 54,600 \quad S = 6.26 \times 10^{-5} \quad t = 4310 \quad (\text{Service Well}) \quad r_w = 36$$

$$Q/s = T / [2.64 \text{ LOG } (Tt / 2693 r_w^2 S) - 65.5]$$

$$Q/s = 22.37 \text{ gal/ft}$$

What is the permeability of the aquifer?

$$T = kb$$

b = saturated thickness
k = permeability

$$k = T/b = 54,600/20 = 2730 \text{ gpd/ft}^2$$

This indicates an apparent velocity of approximately .25 feet per day.

Is there any vertical leakage?

Examination of figures 1 thru 17 do not indicate any significant leakage problem.

A possible value for leakage (maximum) can be calculated:

$$P' = \frac{Tm' (r/b)^2}{r^2} = \frac{(50,000)(110')(.001^2)}{36^2} = .004 \text{ gpd/ft}^2$$

This shows there is very little leakage at the well site.

Was there a pronounced barometric effect?

No.

How much water is there?

To evaluate this question I decided to simplify this system. A 16 square mile area was chosen with the production well near the center. (See Figure 18)

The amount of water moving through this area and that amount in storage can be calculated.

Volume moving through under natural conditions:

$$Q = TIL \quad (\text{Darcy Equation}) \quad \begin{array}{l} Q = \text{Discharge} \\ T = \text{Transmissivity} \\ I = \text{Hydraulic Gradient} \\ L = \text{Width of Aquifer} \end{array}$$

$$Q = (50,000)(5 \text{ ft/mile})(4 \text{ mile})$$

$$Q = 1,000,000 \text{ gpd}$$

$$3.07 \text{ A.F./Day} \quad \text{or} \quad 1120 \text{ A.F./Year}$$

Notice: A change in the hydraulic gradient of 1 ft/mile increases or decreases the amount of water movement by 200,000 gpd. (.61 AF/Day)

Inducing a one foot increase in gradient by pumping would supply 1/7 of the daily withdrawal of a single irrigation well.

Volume in storage:

To calculate this quantity of water the entire aquifer under 16 square miles was dewatered.

First, consider storage in artesian head or V_{SA}

$$V_{SA} = S (\text{Surface Area})(\text{Thickness})$$

$$V_{SA} = (5.0 \times 10^{-5})(16)(5280^2)(100)$$

$$V_{SA} = 2,230,000 \text{ Ft}^3, 16,684,000 \text{ gallons, } 51.20 \text{ A.F.}$$

Second, consider storage remaining in gravel or V_{SWT}

$$V_{SWT} = S (\text{Surface Area})(\text{Thickness})$$

$$\left[\begin{array}{l} \text{Very conservative} \\ \text{Could be .2} \end{array} \right] V_{SWT} = (.1)(16)(5280^2)(25)$$

$$\left[\begin{array}{l} * \text{ used .2 for } S \end{array} \right] V_{SWT} = 1,115,136,000 \text{ Ft}^3, 8,340,000,000 \text{ gallons, } 25,600 \text{ A.F.}$$

$$\quad \quad \quad *51,200 \text{ A.F.}$$

$$T = V_{SA} + V_{SWT} = \underline{\underline{25,650 \text{ A.F.}}} \quad \text{or} \quad \underline{\underline{*51,250 \text{ A.F.}}}$$

Notice that the amount of water tied up as artesian pressure is not significant when compared to the total amount.

How do present withdrawals compare to the amount of water available?

There are 4 irrigation wells within the boundaries of the study area which can pump about 3300 gpm.

$$\text{Pumping 1 well for 60 days at 1000 gpm yields } 265 \text{ A.F.}$$

$$\text{Pumping 3 wells for 60 days at 1000 gpm yields } 795 \text{ A.F.}$$

$$\text{Pumping 1 well for 60 days at 300 gpm yields } 79 \text{ A.F.}$$

$$\text{Total 4 wells } 874 \text{ A.F.}$$

Actual pumpage-

$$1977 \text{ } 535 \text{ A.F.}$$

$$1978 \text{ } 270 \text{ A.F.}$$

Note: If no recharge occurred then the entire volume of water tied up as artesian head would be removed in 3.5 days at 3300 gpm. Of course this doesn't happen. In fact, the recharge under normal conditions is significant.

It has been shown that 1120 A.F. move through this area during 1 year under normal gradient. Simple arithmetic shows that 1 more irrigation well may be allowed inside this area without changing any water levels. (See Figure 19) Also, it has been shown that increasing the gradient simply increases the amount of water drawn in. Pumping stimulates the recharge. To allow a decrease of water levels in this portion of the aquifer could be a good management tool. Also, the amount of water appropriated is much larger than the amount being put to use.

How should individual wells be spaced?

The time for the drawdown to reach equilibrium at any distance from a well can be calculated.

$$T_E = a^2 S / [112 T_E \text{ Log } (2a/r)^2]$$

a = Distance to recharge area

For r = 36' $T_E = 26$ days

r = Any distance from well
E = Constant

For r = 1900' $T_E = 52$ days

These figures indicate stability would never occur during any one irrigation season.

Figure 20 is an attempt to contour drawdowns inside the present well field after 30 days continuous pumping at 3300 gpm. Notice that the further away from the well the more predictable the configuration.

This solution ignores recharge, boundary conditions and other geo-hydrologic factors, therefore care must be used when analyzing this figure. Drawdowns inside the well field should theoretically exceed 55' at GT-76B. Looking at the hydrograph of GT-76B this never happens under field conditions. Actually 20' during this 30 day period may be realistic. The difference between these two values can be attributed to the increase in the rate of recharge due to increasing the hydraulic gradient by the increase in drawdowns.

This is important to consider when spacing wells. The distance between 2 wells is not as important as the total number of wells allowed. A 10,000 feet spacing between individual wells would maintain the pumping level at least 10' from the top of the aquifer. This assumes no recharge and a 90 day pumping period at 1000 gpm for each well.

10,000 feet is 1.89 miles. Geometrically this allows 4 wells inside this area under no recharge conditions.

Remember in order to maintain a pumping level in an irrigation well there must be an allowance of 60 feet within the pumped well and then allow for the affect the other wells will have on the one being pumped. (From time-drawdown curve of production well-Figure 1) The natural recharge during 90 days is 270 A.F. and certainly is greater than this under heavy pumping.

Conclusions:

- 1). Predictions of water levels can be made especially in the vicinity of the production wells. These predictions can be checked against the historical observation well hydrographs.
- 2). Estimates of quantities of water in storage and moving through the area can be made.
- 3). Spacing of individual is not as important as considering the entire aquifer system in relation to total withdrawals. Spacings of less than 1.89 miles could begin to cause a decline in the water level which will be permanent when these withdrawals exceed the induced inflow. This may be the proper approach because a decline such as this simply increases the recharge.
- 4). For every mile increase in width (4 miles) in the aquifer the amount of water moving through increases by .75 A.F./Day or 274 A.F./Yr. Each successive increase in the aquifer width by 1 mile would supply an irrigation well, 1000 gpm for 60 days with only pumping season effects upon the water level.
- 5). All predictions are conservative

Suggestions:

- 1). Further delineate aquifer boundaries to west by drilling more test holes.
- 2). Locate recharge area.
- 3). Stress aquifer by locating more large capacity wells.
- 4). Provide more observation wells in order to further develop contour maps.
- 5). Attempt to duplicate field conditions in a working model.

JAMES A. GOODMAN, Hydrologist

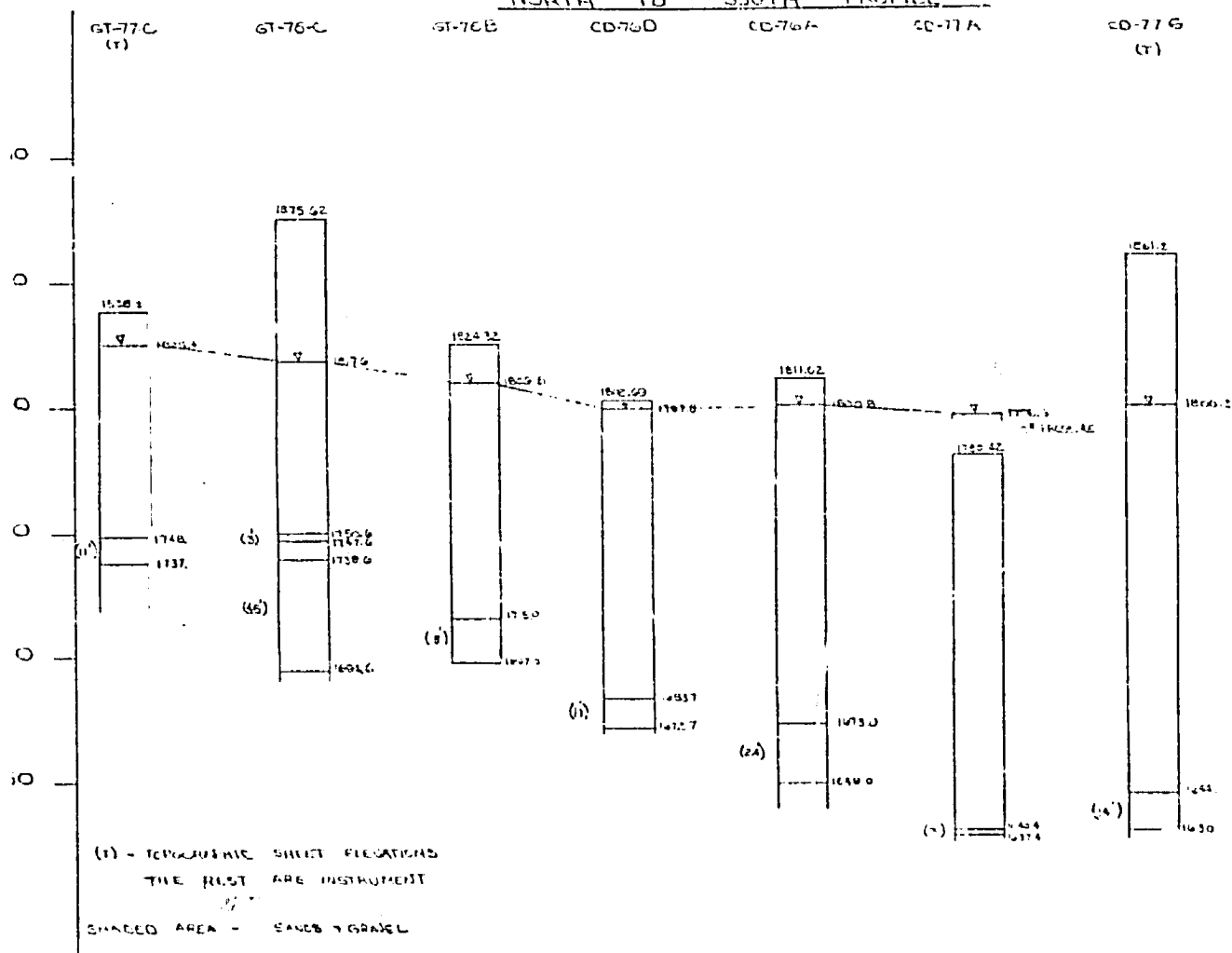
The image is a geological map of the Grant-Cochise section. It features a grid system with various geological units and features. The map includes labels for 'DAY', 'GRANT', 'COCHISE', and 'TIC'. A prominent diagonal line runs from the bottom left towards the top right. The map is divided into several rectangular blocks, some of which are shaded with different patterns (dots, diagonal lines, etc.).

- 0 IRRADIATION WELLS
- 1 PERMEATION WELLS
- 2 TEMPERATURE WELLS
- 3 FLOWING TEMPERATURE WELLS

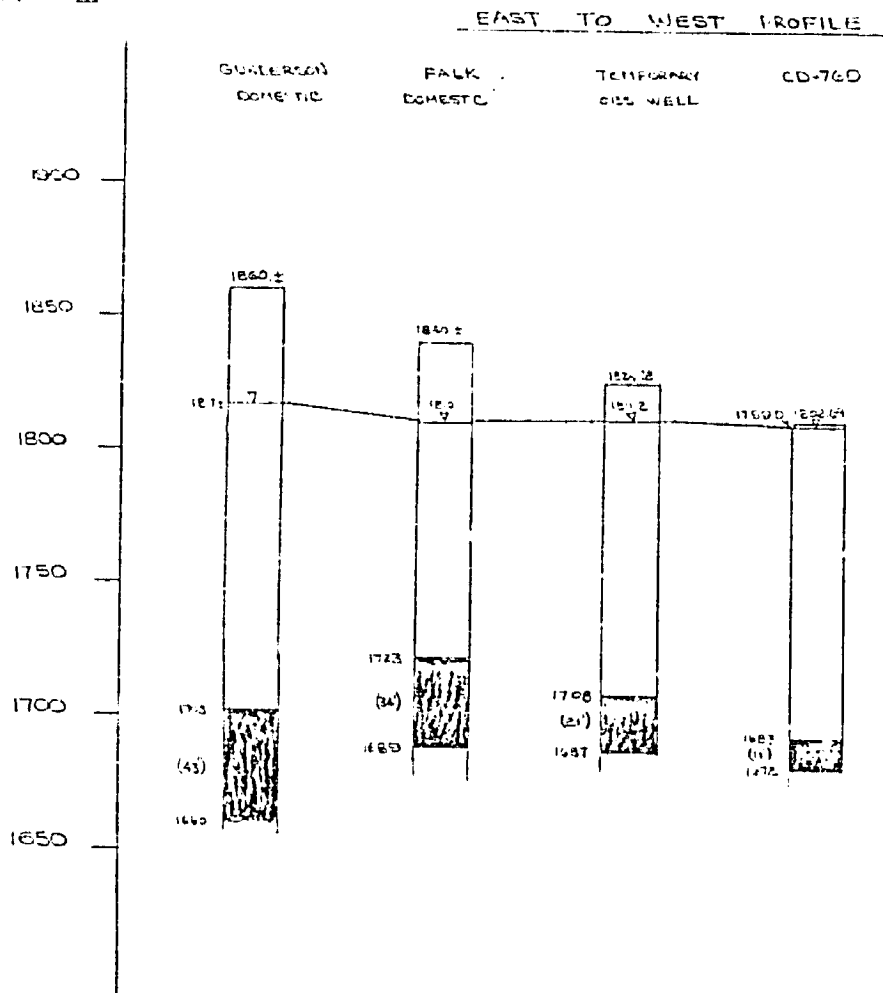
□ 6096 DA WAC 707 HALL
LOG AVAILABLE

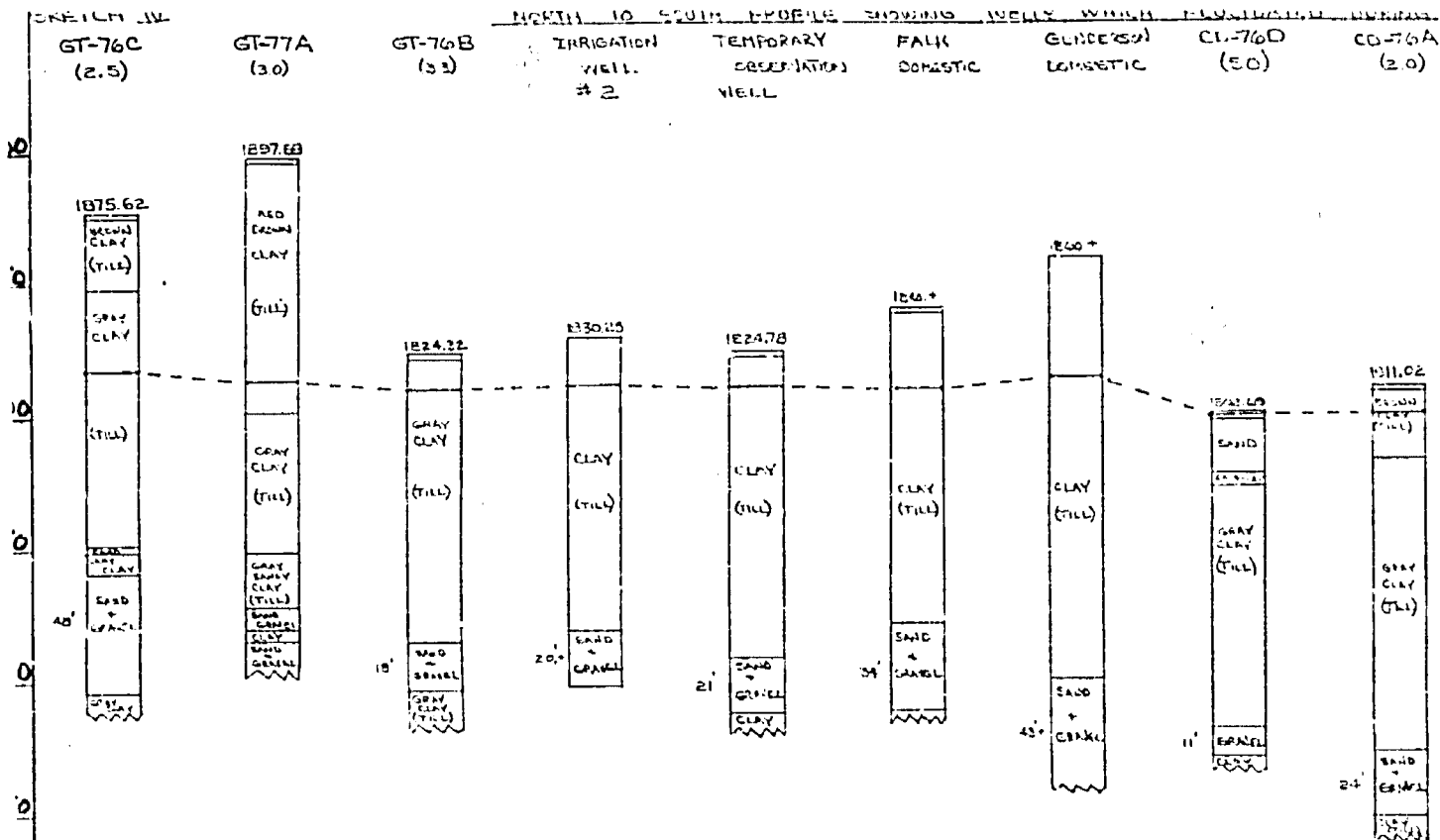
Fig. 4. Δ and Δ vs. Δ .

NORTH TO SOUTH PROFILE



SKETCH III





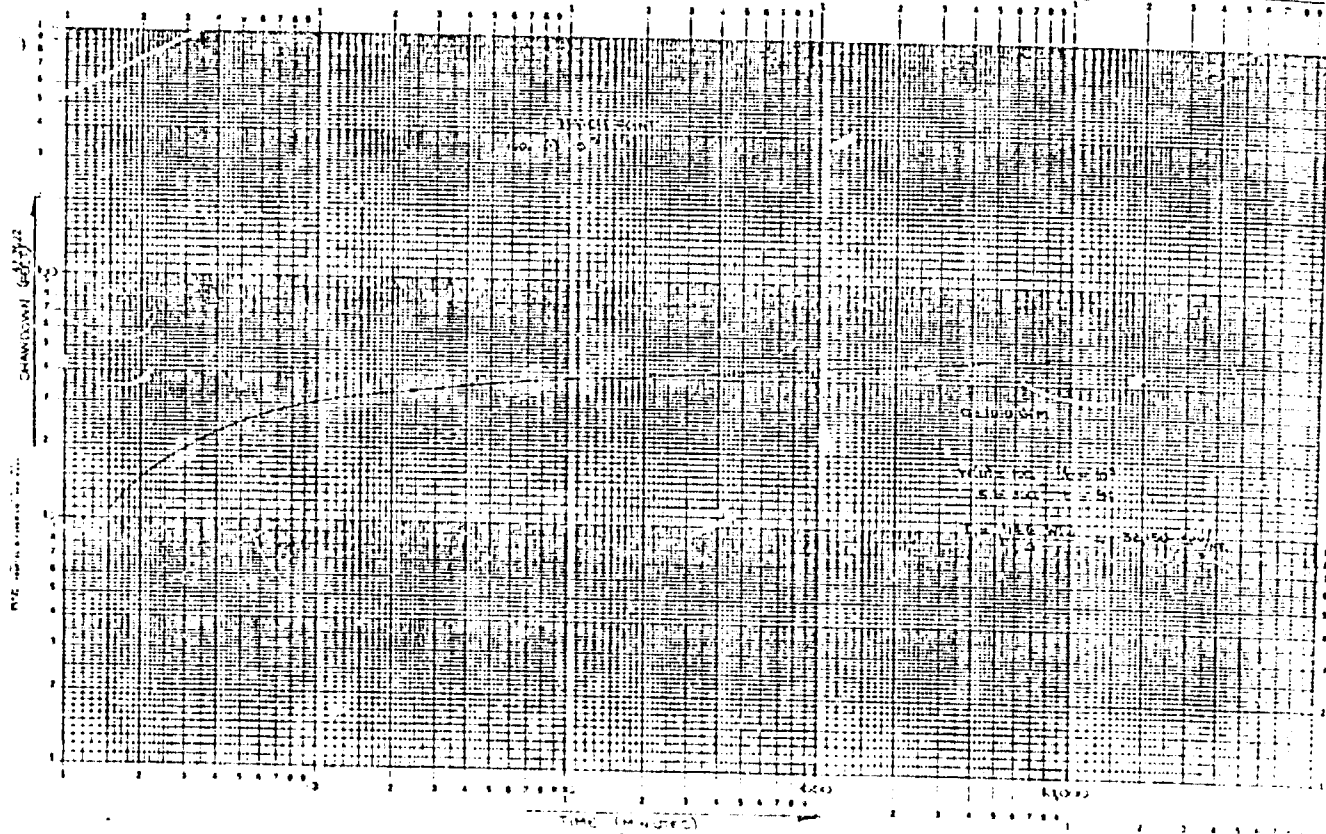
ALL WATER LEVELS TAKEN 4-24-78
FRE - PUMP TEST

TIME - DRAWDOWN

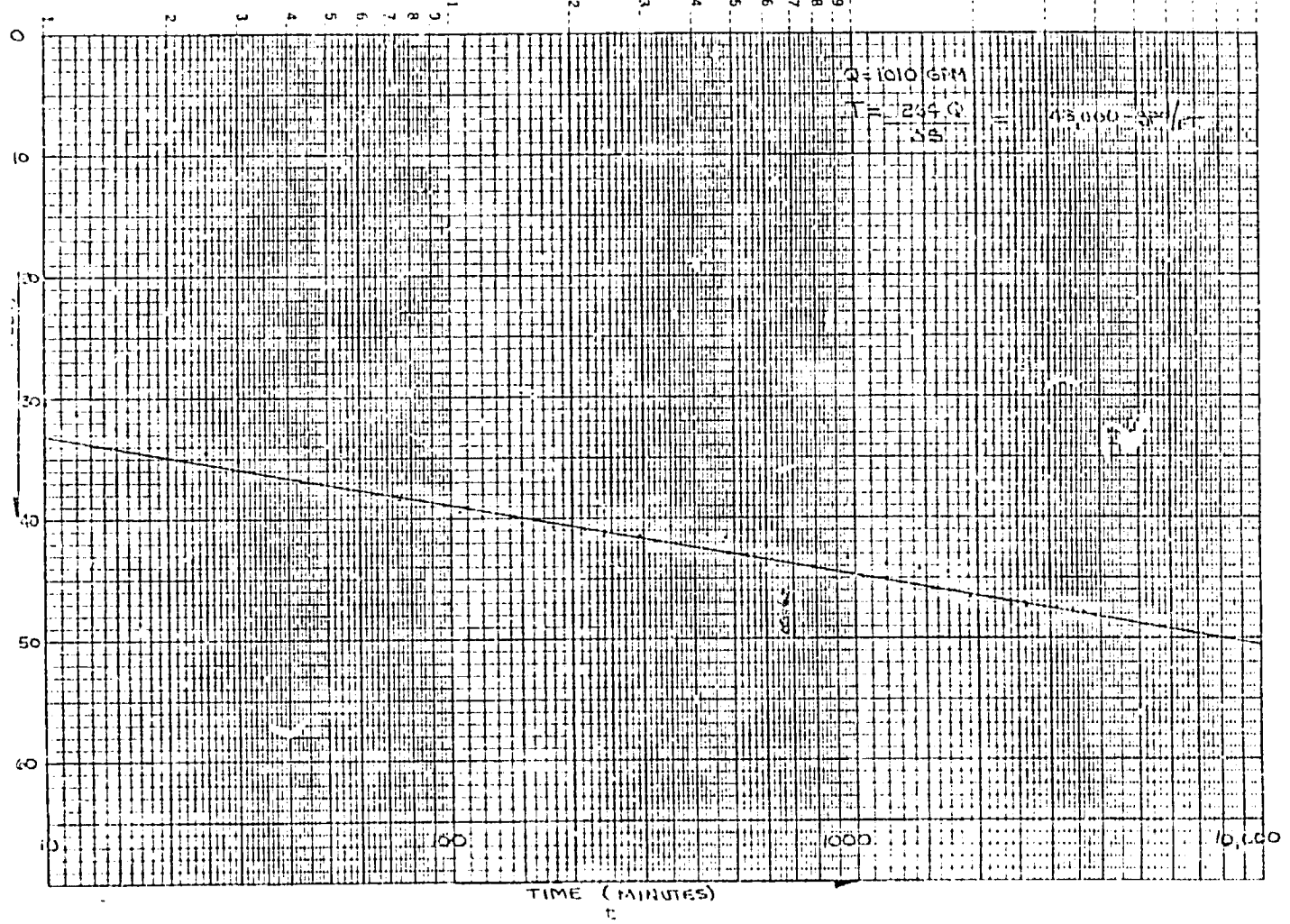
PRODUCTION WELL

PAK-AQUIFER TEST

FIGURE 1

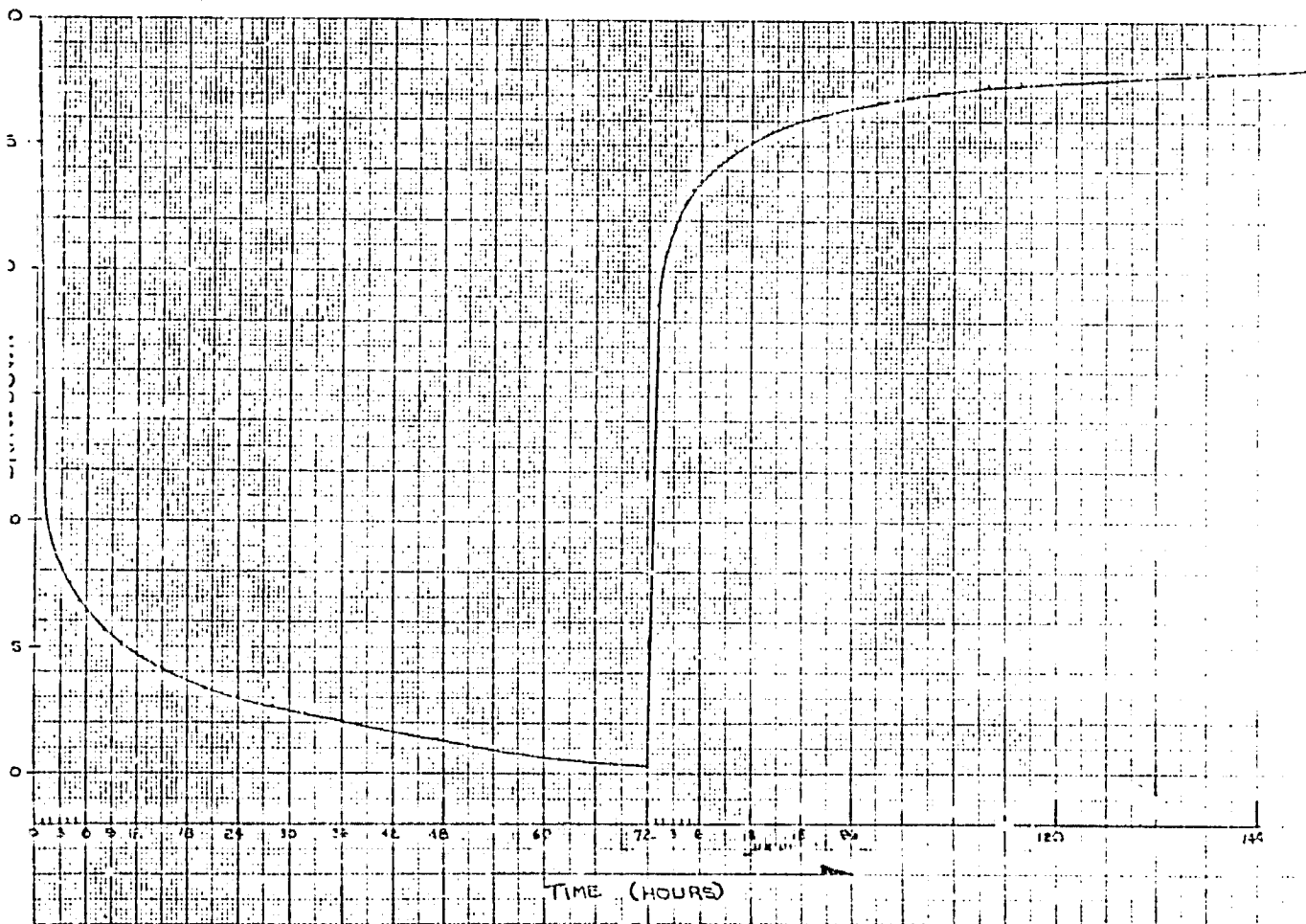


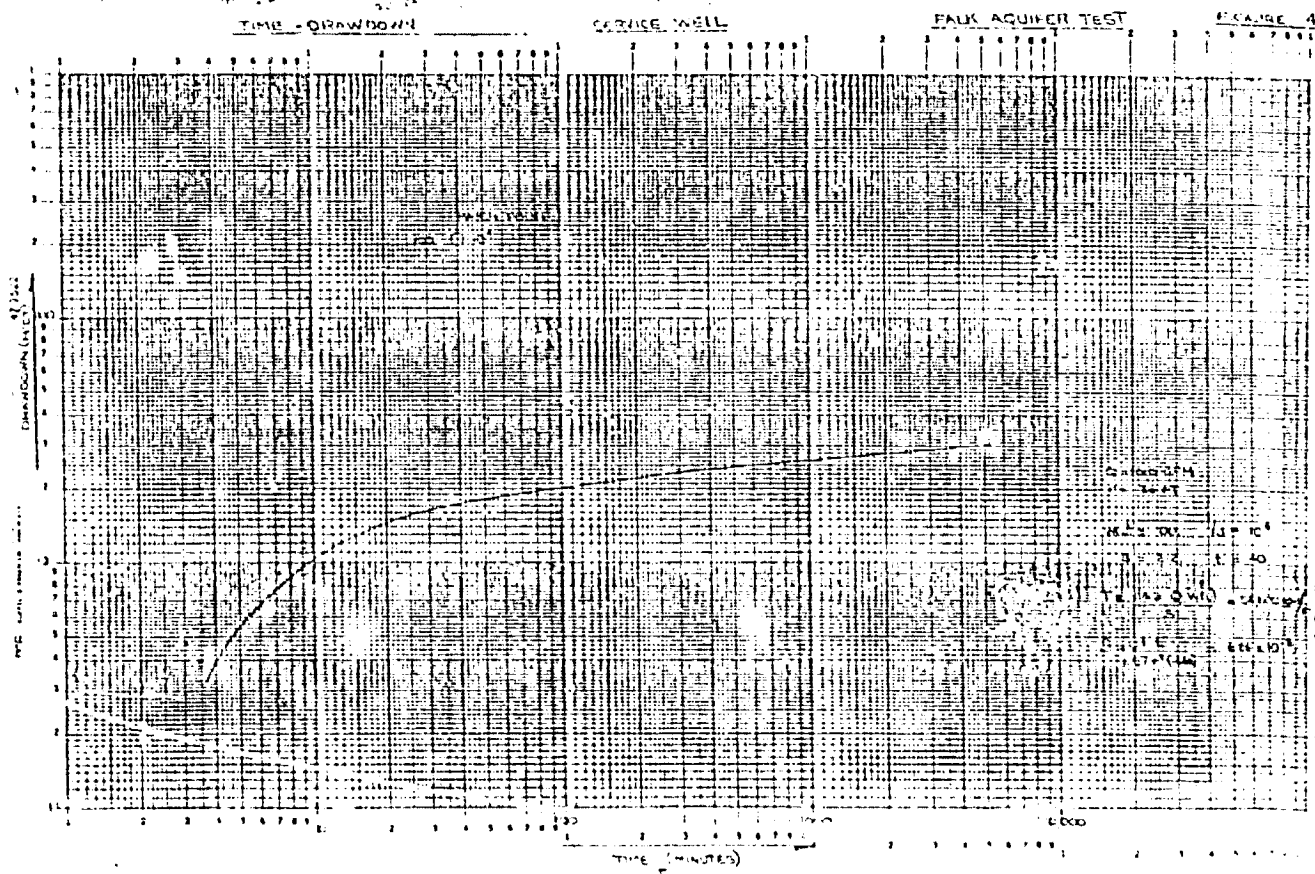
K-E SEMI-LOGARITHMIC TYPE CYCLES & DIVISIONS
 REUFEL & ESSER CO. 214-4111
 46 5493
 TIME - DRAW DOWN PRODUCTION WELL FAULT AQUIFER TEST FIGURE 2



SERVICE WELL HYDROGRAPH

FIGURE 3





K-E SEMI-LOGARITHMIC 3 CYCLES X 70 DIVISIONS
PETER J. KESLER CO. NEW YORK

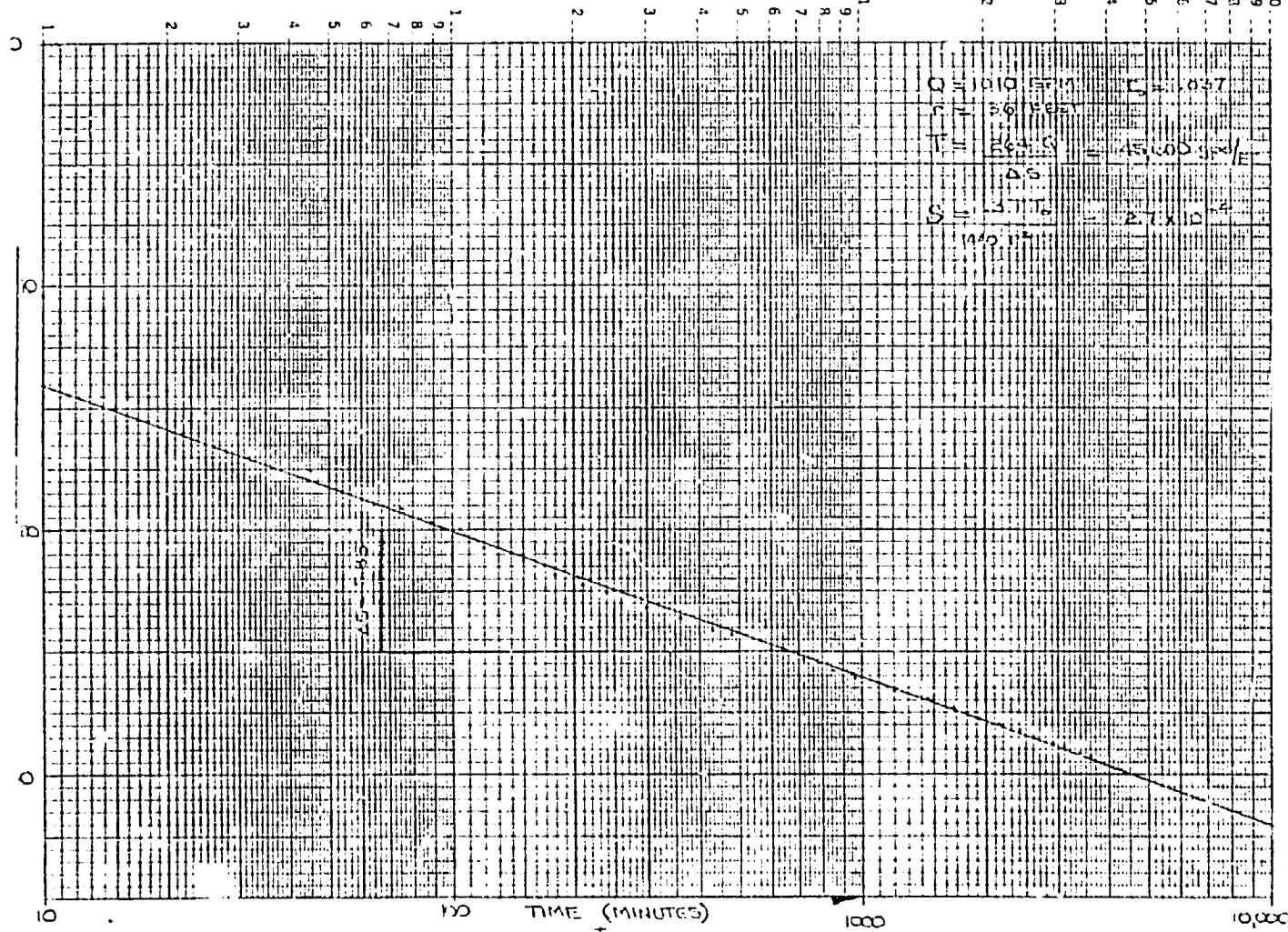
46 5493

TIME - DRAWDOWN

SERVICE WELL

FAULK AQUIFER TEST

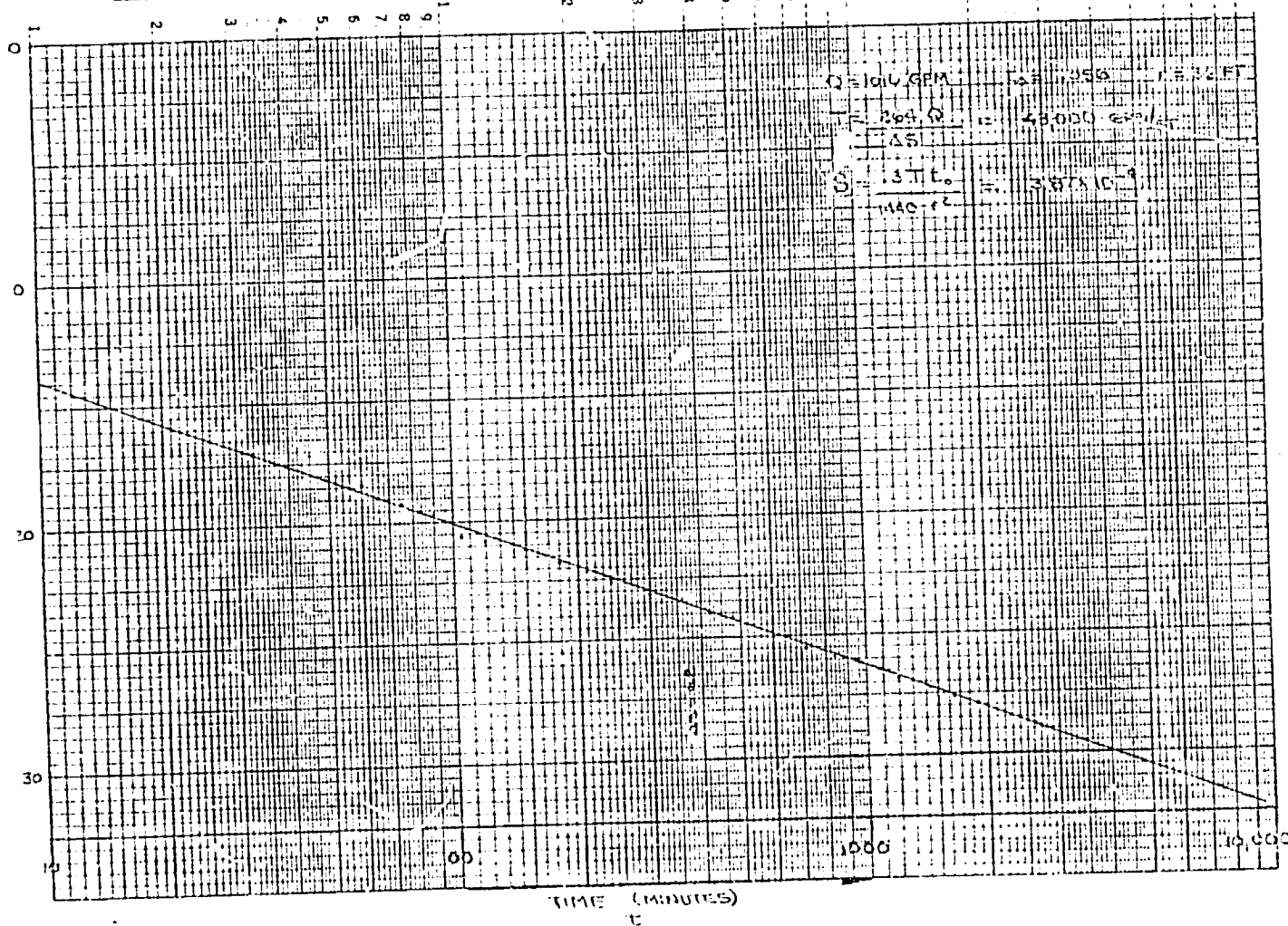
FIGURE 5



RECOVERY SERVICE WELL

46 5493
FALK AQUIFER TEST

FIGURE 6



K-E 25 X 20 TO THE DEPT. OF THE ARMY
ENGINEER & SURVEYOR

46 1242

TEMPORARY OBSERVATION WELL

HYDROGRAPH

FIGURE 7

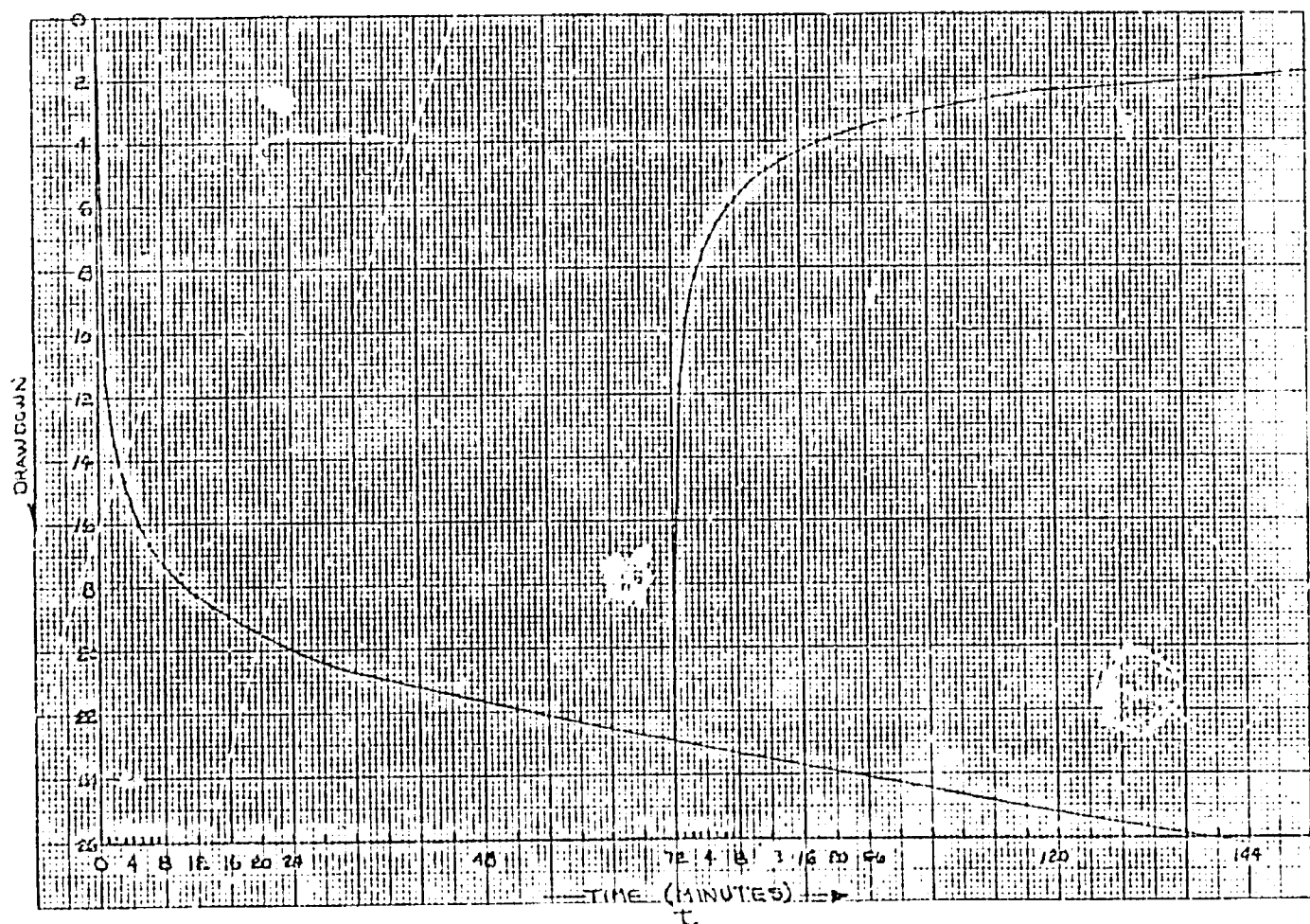
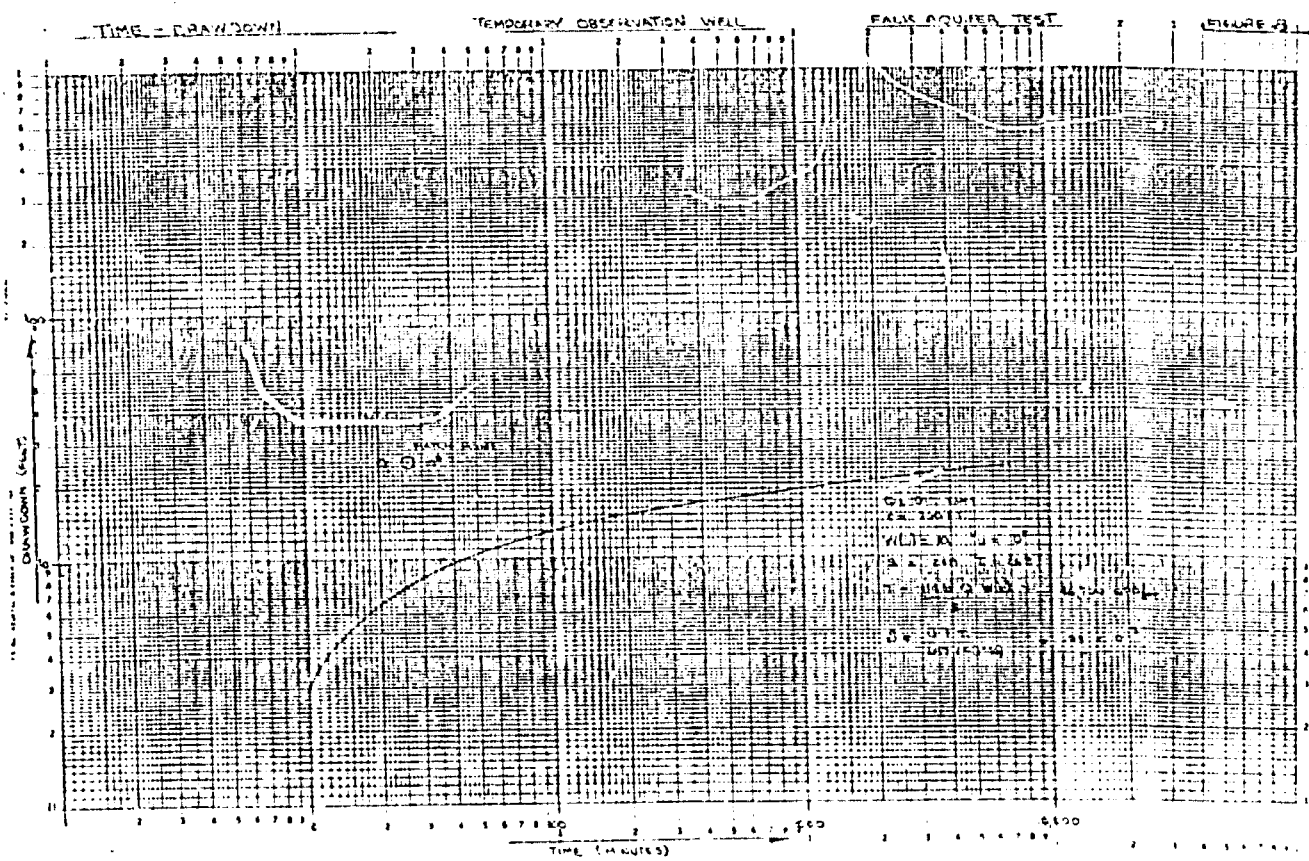


FIG 7



K-E SEMI-LOGARITHMIC CYCLES X 10 DIVISIONS

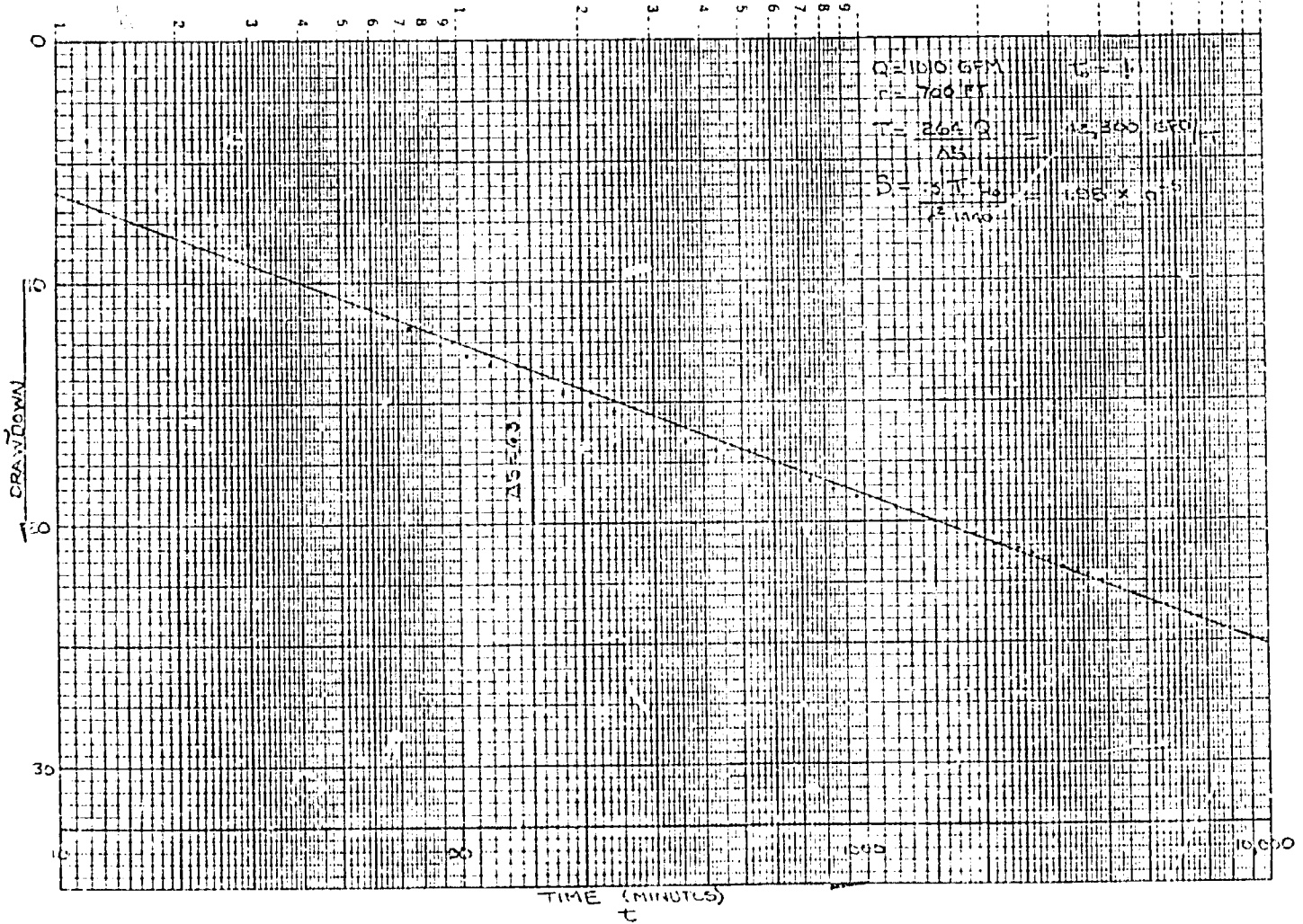
RECEIVED BY ORDER OF NLM-1984

46 5493

FALKS AQUIFER TEST

FIGURE 9

TIME-DRAWDOWN TEMPORARY OBSERVATION WELL



K&E SEMI-LOGARITHMIC CYCLES & DIVISIONS
JUPITER & ESSEX CO. MADE IN U.S.A.

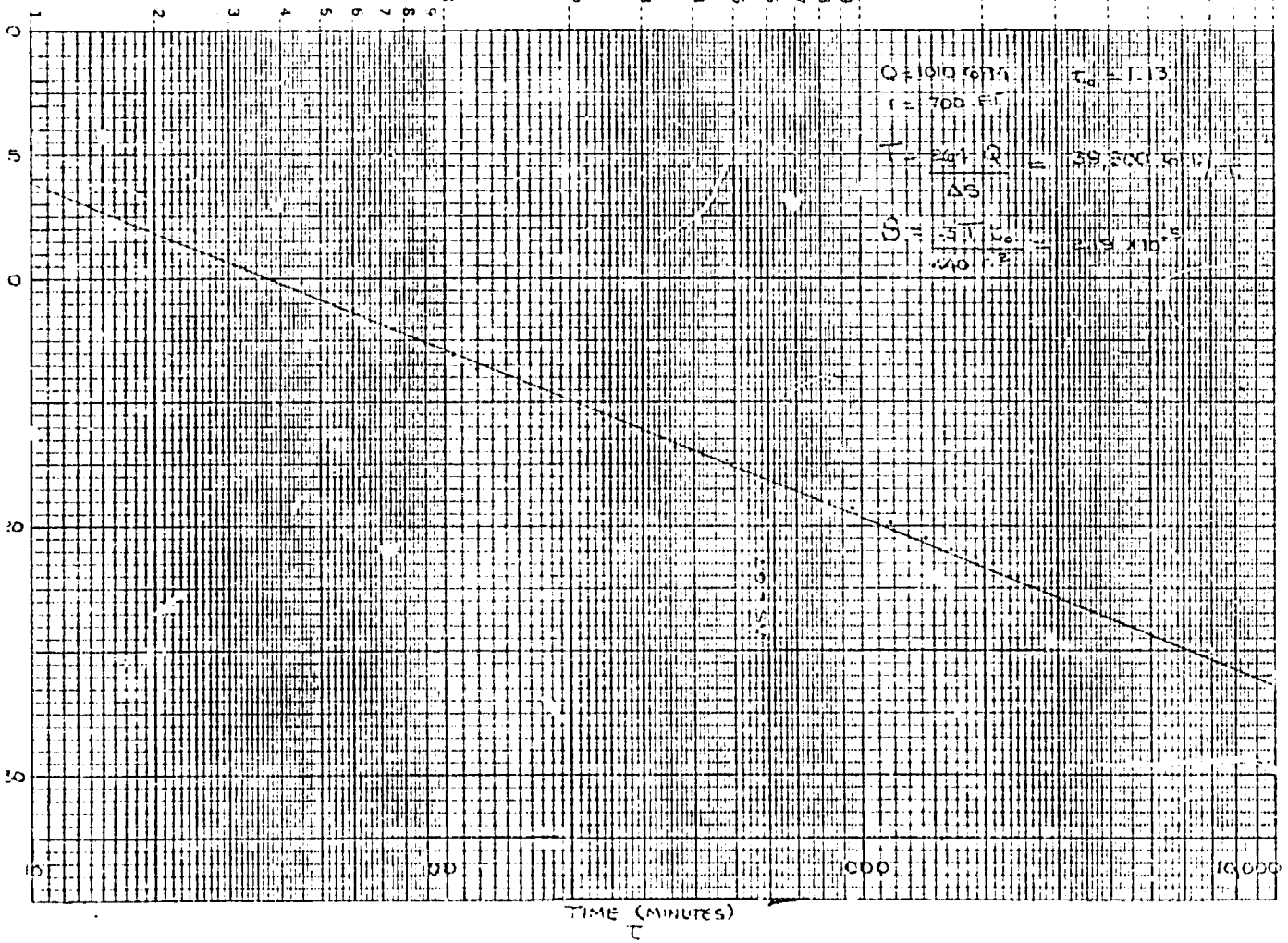
46 5-193

FIGURE 10

RECOVERY

TEMPORARY OBSERVATION WELL

FAULT AQUIFER TEST



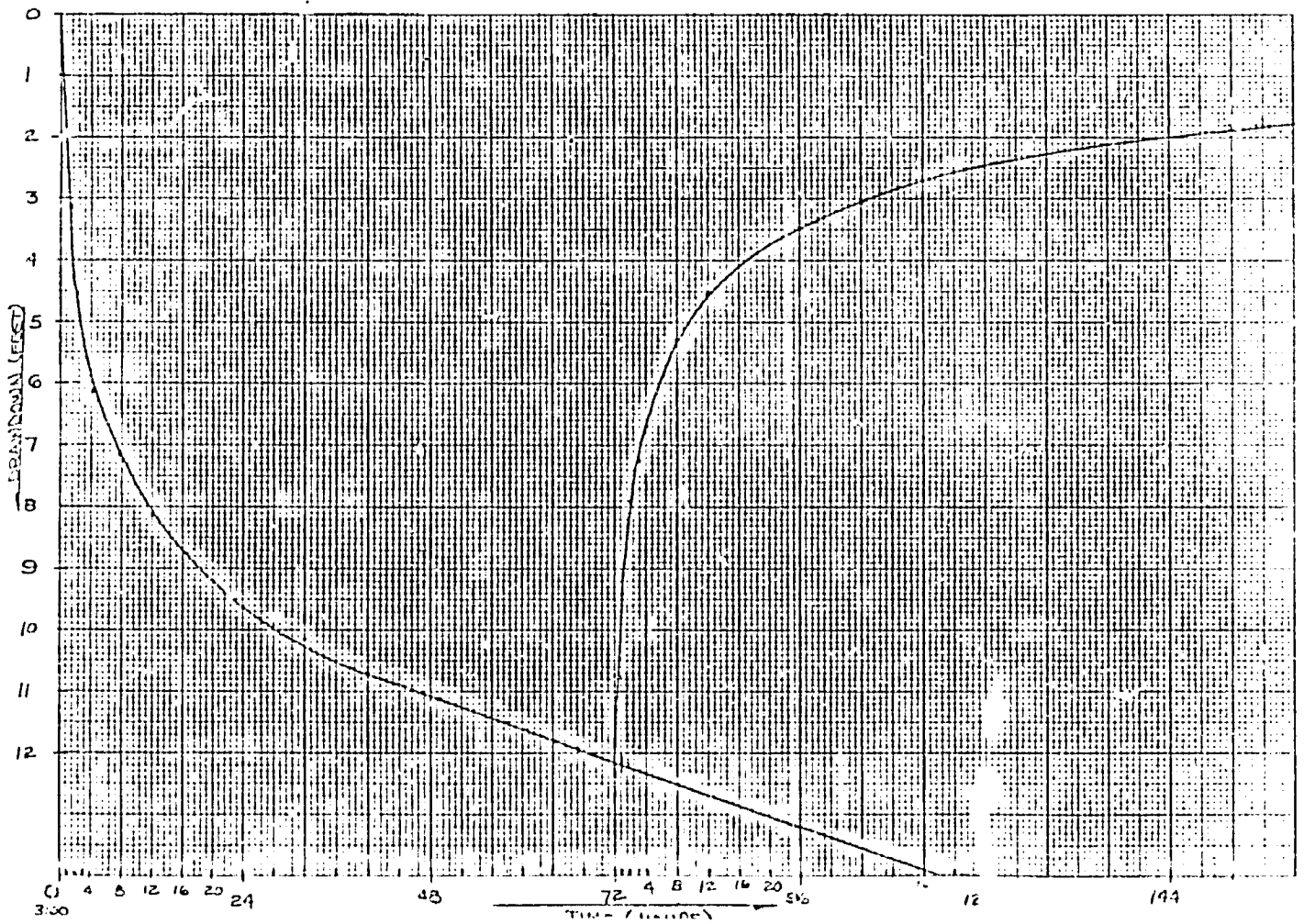
K-E 20 X 20 TO THE INCH 1 X 15 INCHES
PT. TYPE & EXTERIOR CO. 11-1-1944

46 1242

GT-765 HYDROGRAPH

FALK AQUIFER TEST

FIGURE 11

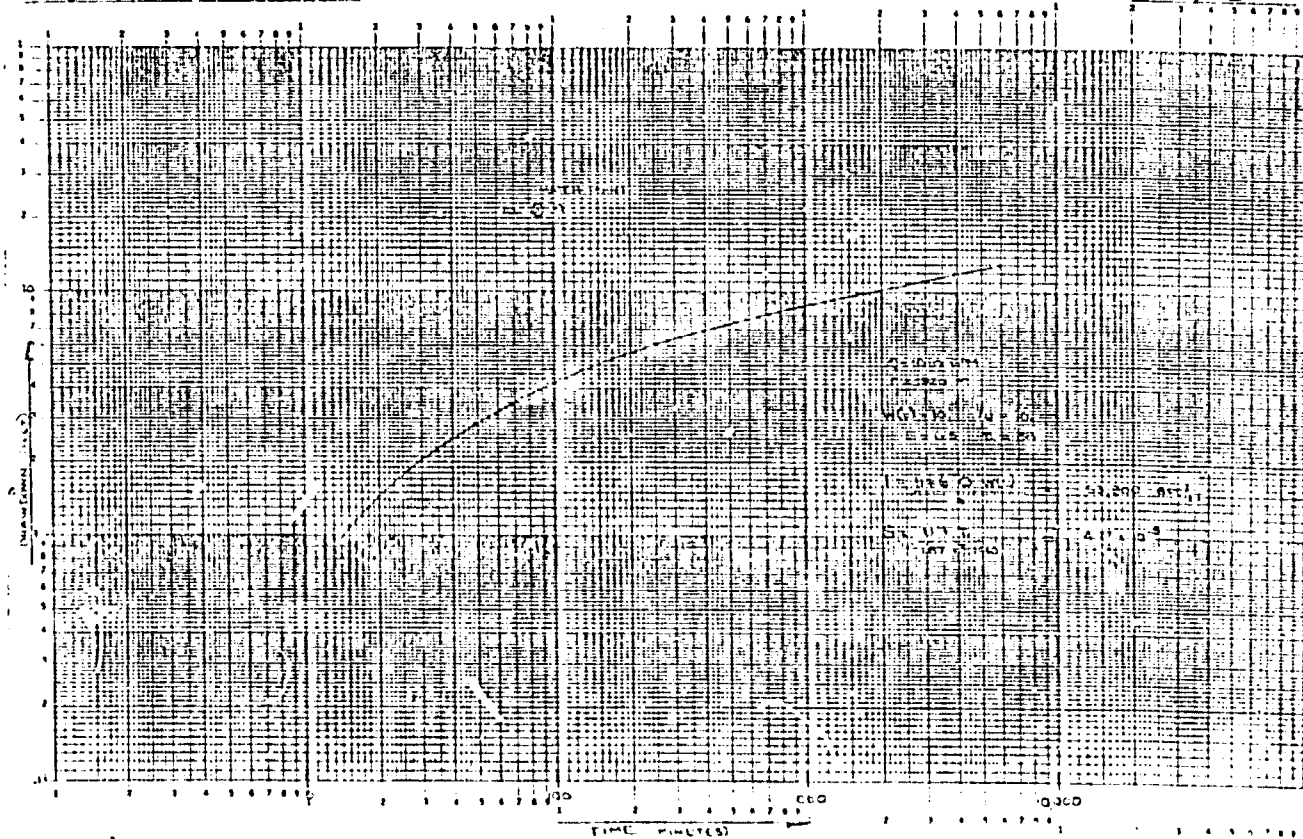


11 91-1

TIME - GRAYDOWN GT-70B

WALK PUMP TEST

FIGURE 12



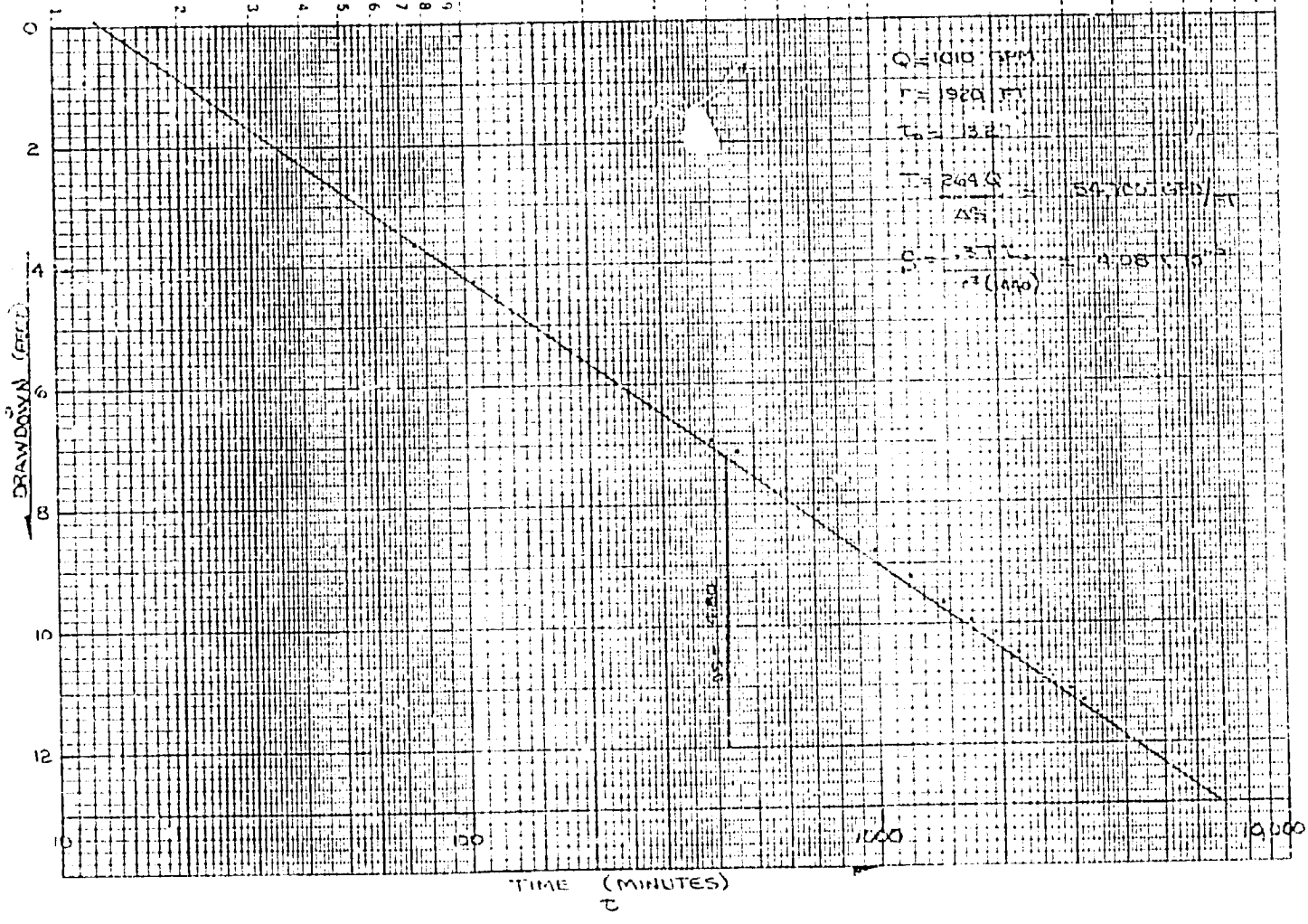
K-E SEMI-LOGARITHMIC CYCLES & DIVISIONS
EQUIPMENT & SERVICE CO. J.W. 1951

46 5493

FIGURE 13

TIME - DRAWDOWN ST-70B

FALK AQUIFER TEST



K-E SEMI-LOGARITHMIC CYCLES & DIVISIONS
REDFIELD & ERSER CO. NEW YORK

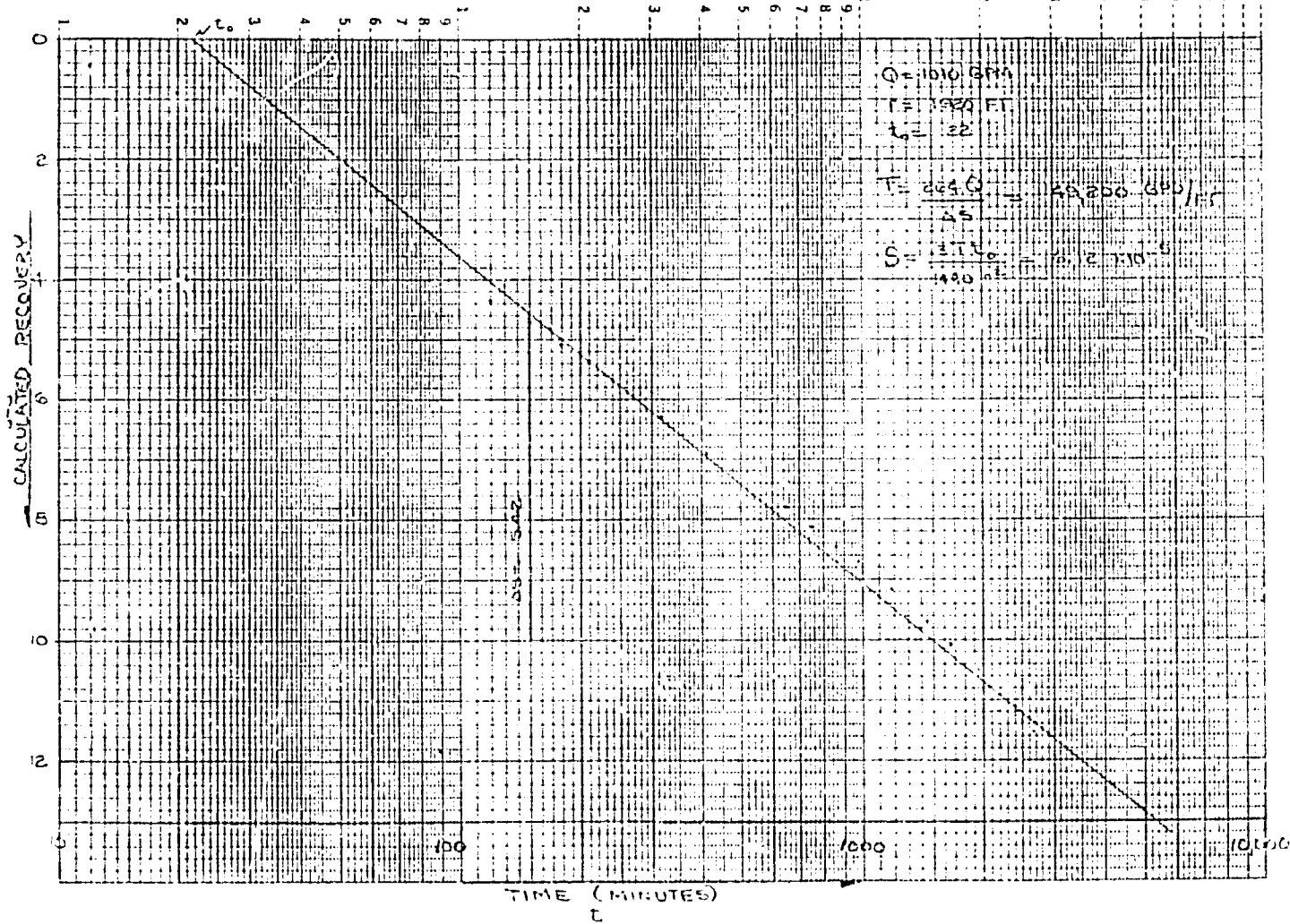
46 5493

FIGURE 14

RECOVERY

GT-76B

FALK AQUIFER TEST



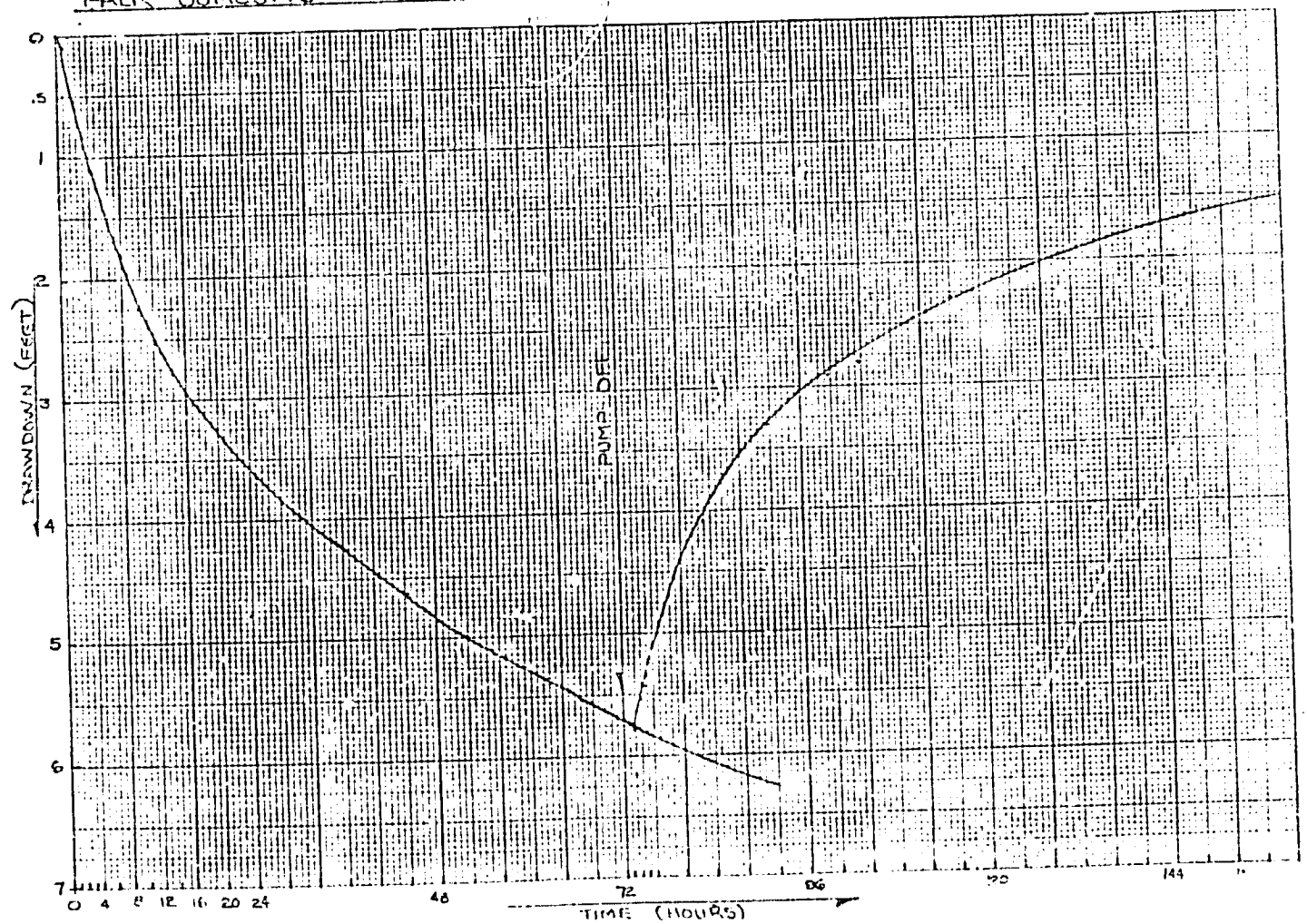
K-E 22 X 22 TO 1/4 INCH 1/2 INCHES
MULTIPLE WESSER CO. ST. LOUIS

46 1242

FALK AQUIFER TEST

FIGURE 15

FALK DOMESTIC HYDROGRAPH



TIME (MINUTES)

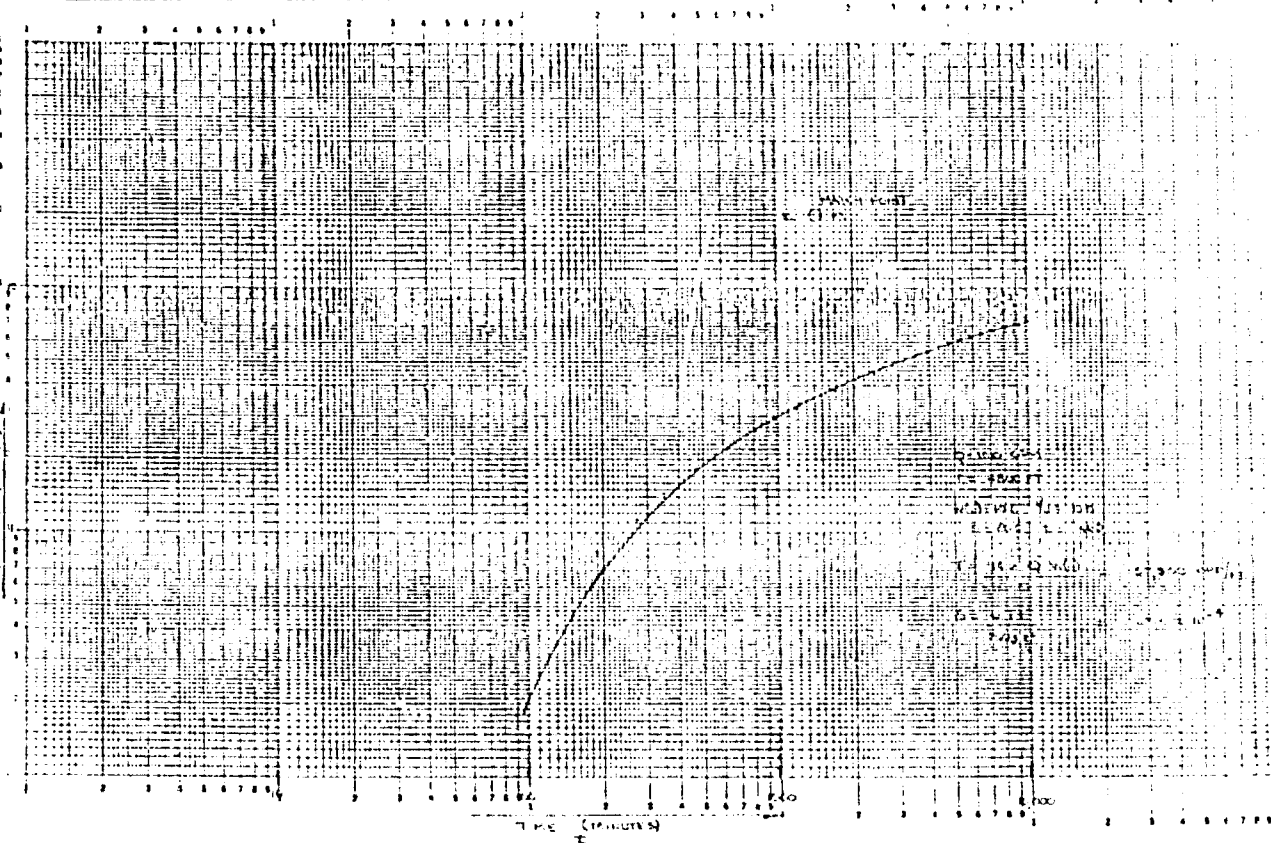
TEMPERATURE (°C)

WATER VAPOR (g/g)

47722

ME (g)

(WATER VAPOR (g/g))



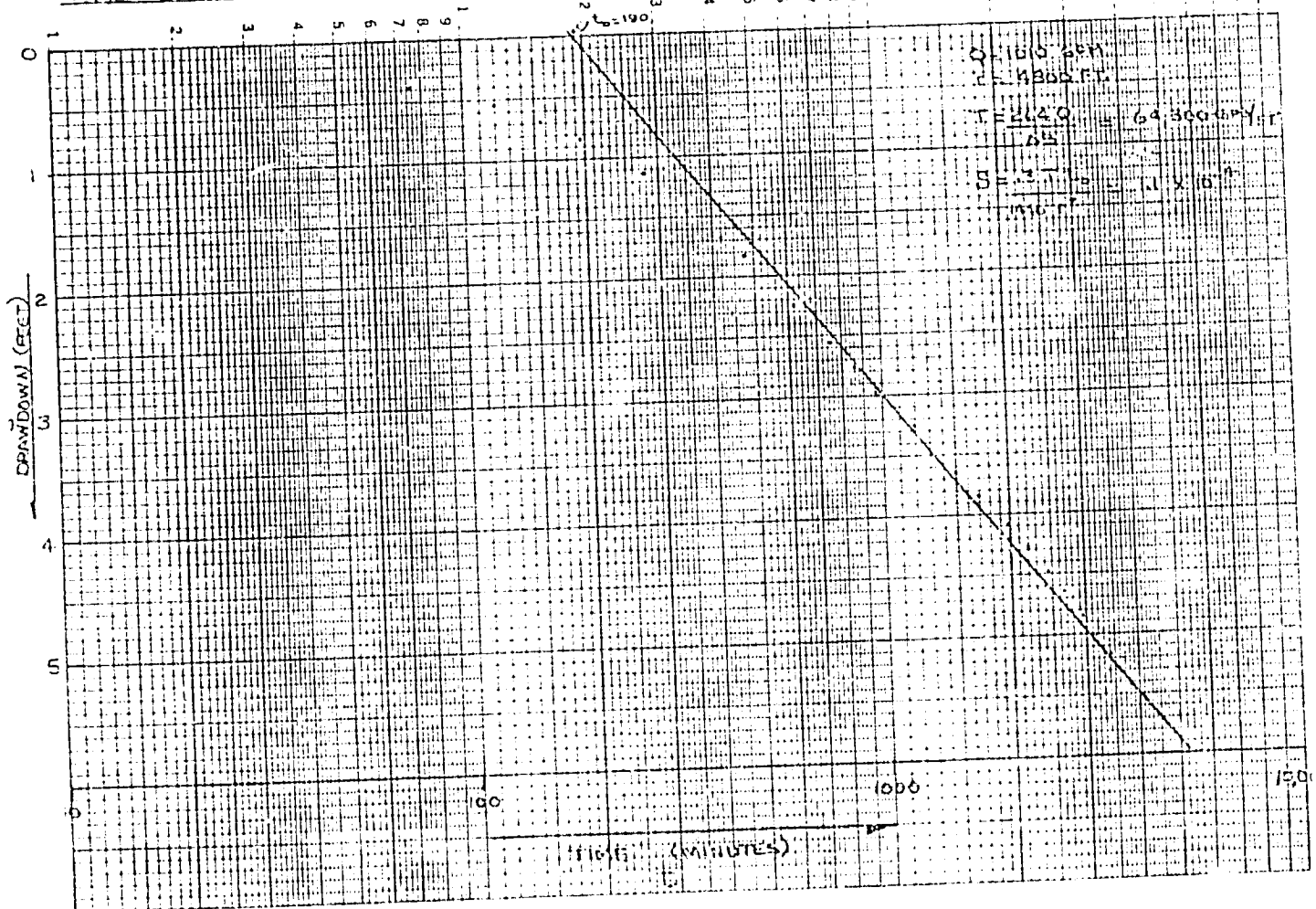
K.E. SEMI-LOGARITHMIC • 3 CYCLES • 100 • 500 • 1000
KEUFFEL & ESSER CO. MADE IN U.S.A.

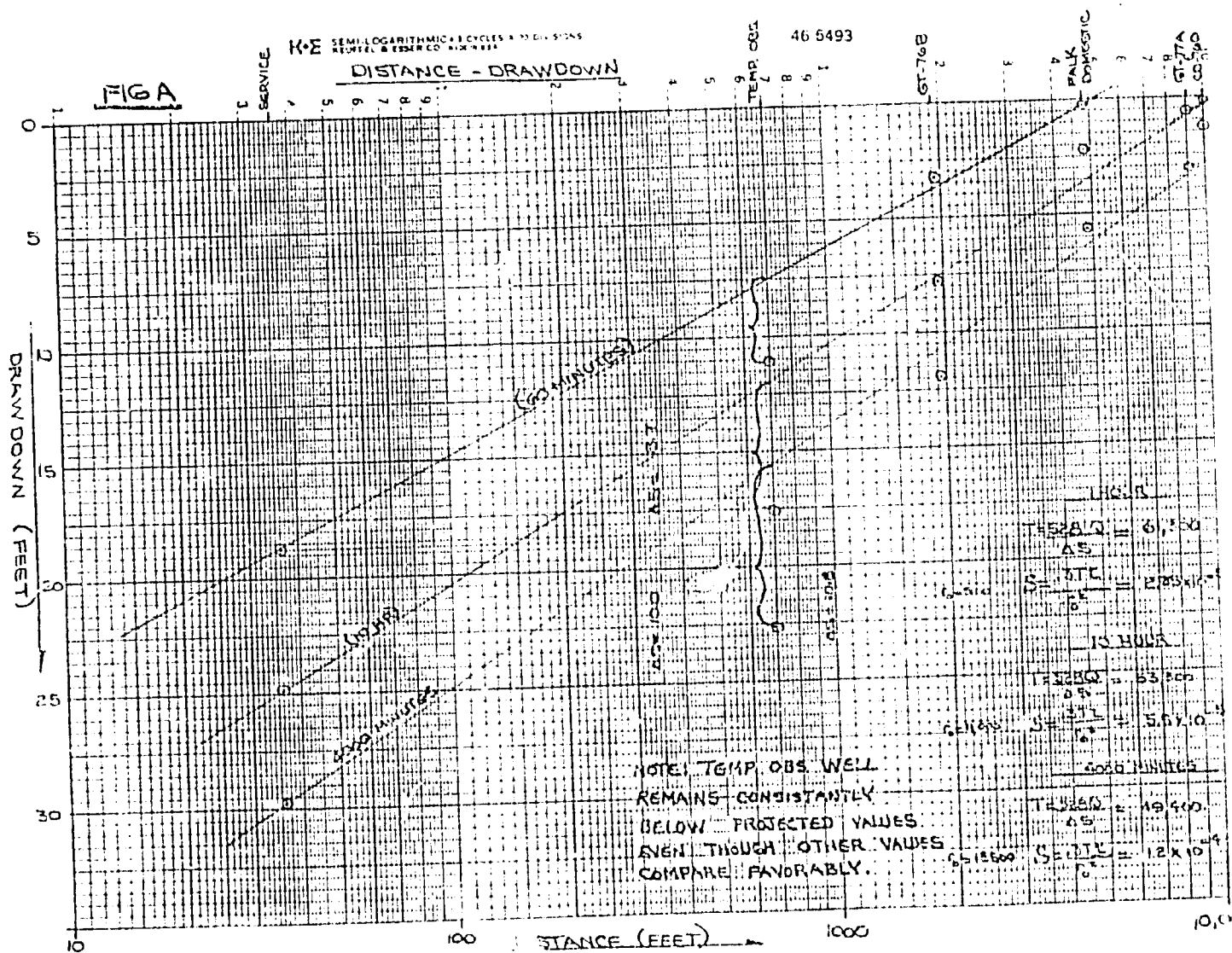
46 5493

FIGURE 17
~~FIGURE 17~~

TIME - DRAWDOWN EALC DOMESTIC

40 3455
TALK AQUIFER TEST





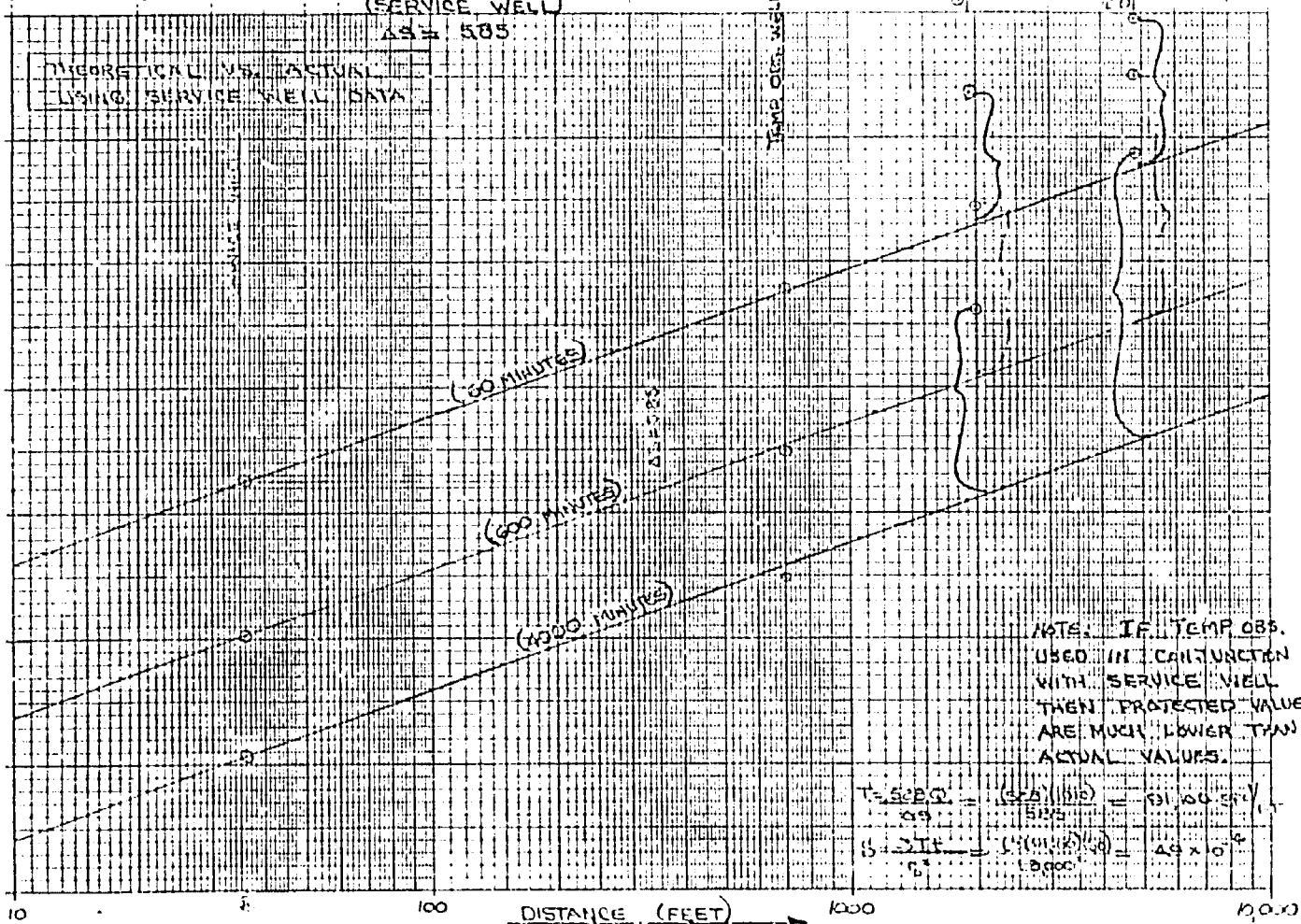
FIGB

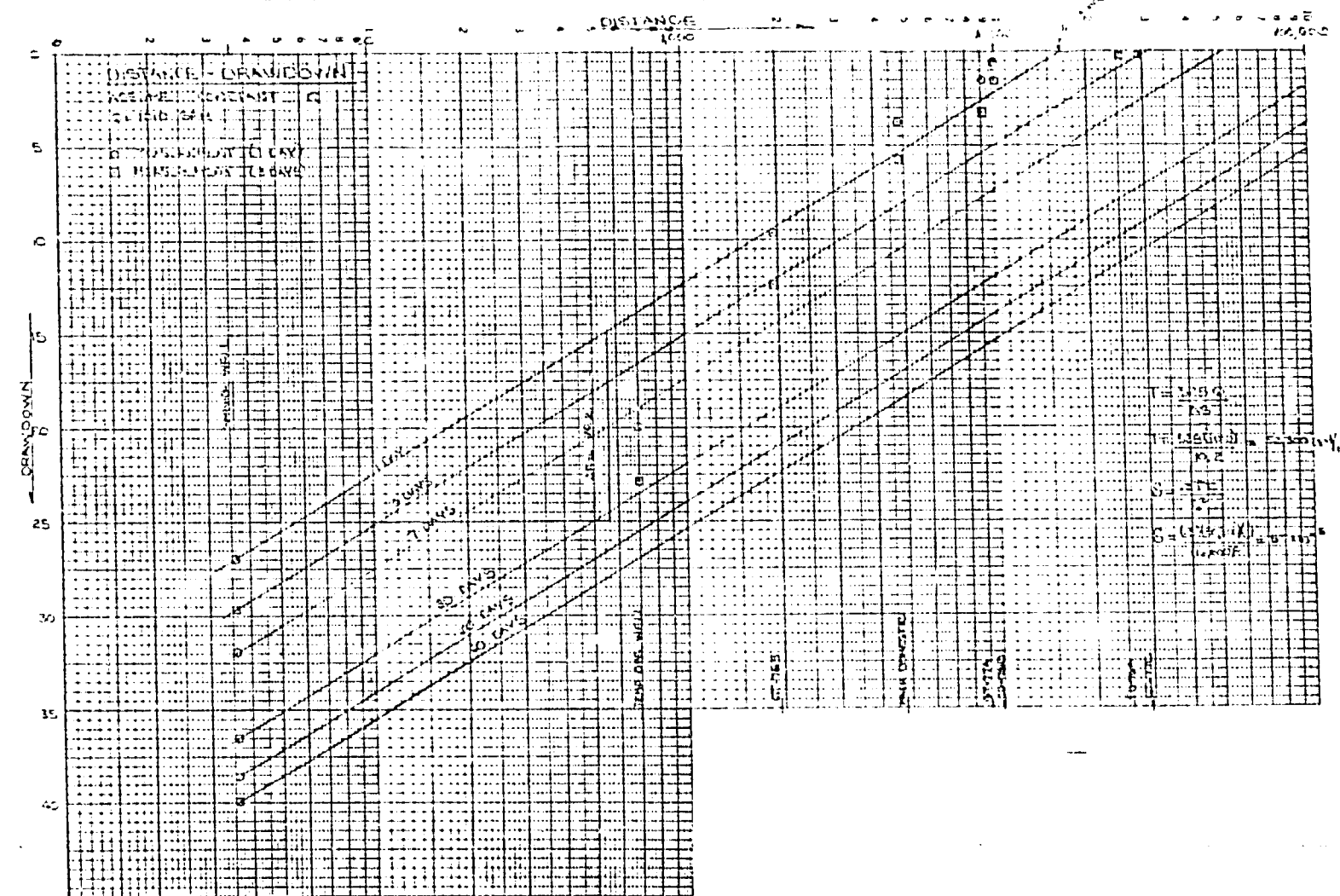
DISTANCE - DRAWDOWN

(SERVICE WELL)

AS 585

THEORETICAL VS. ACTUAL
USING SERVICE WELL DATA





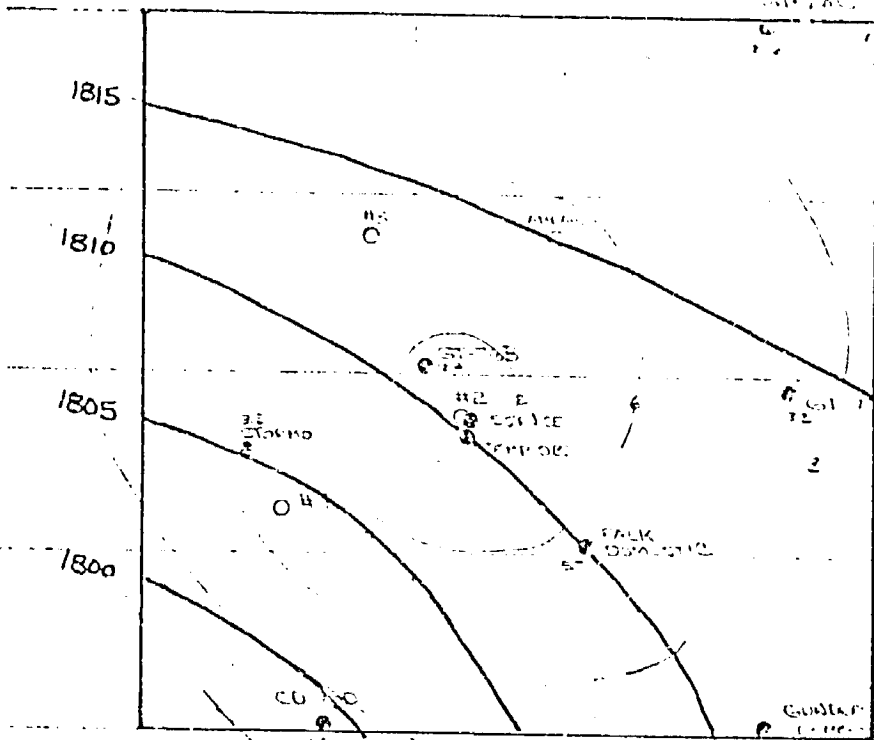
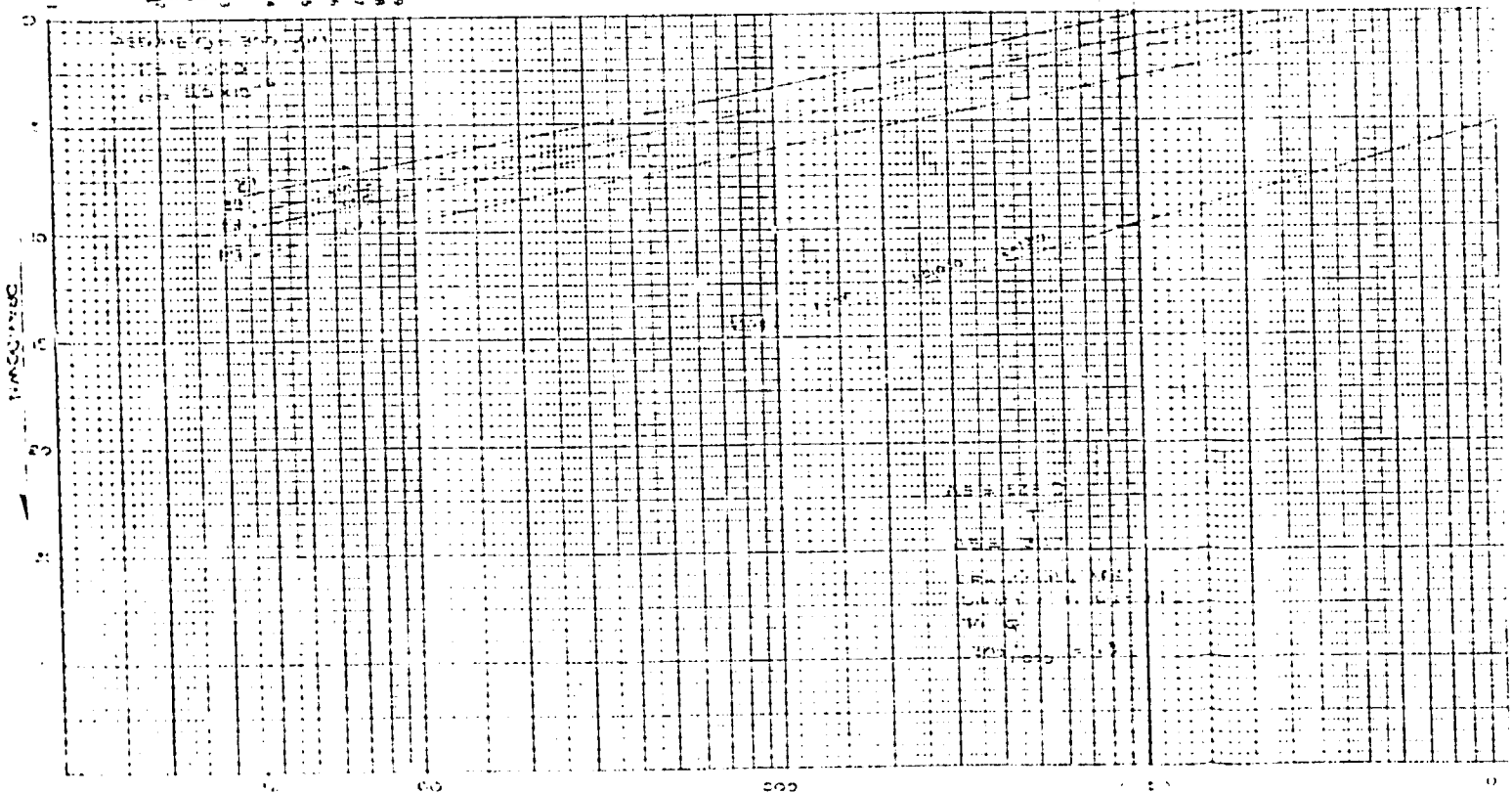
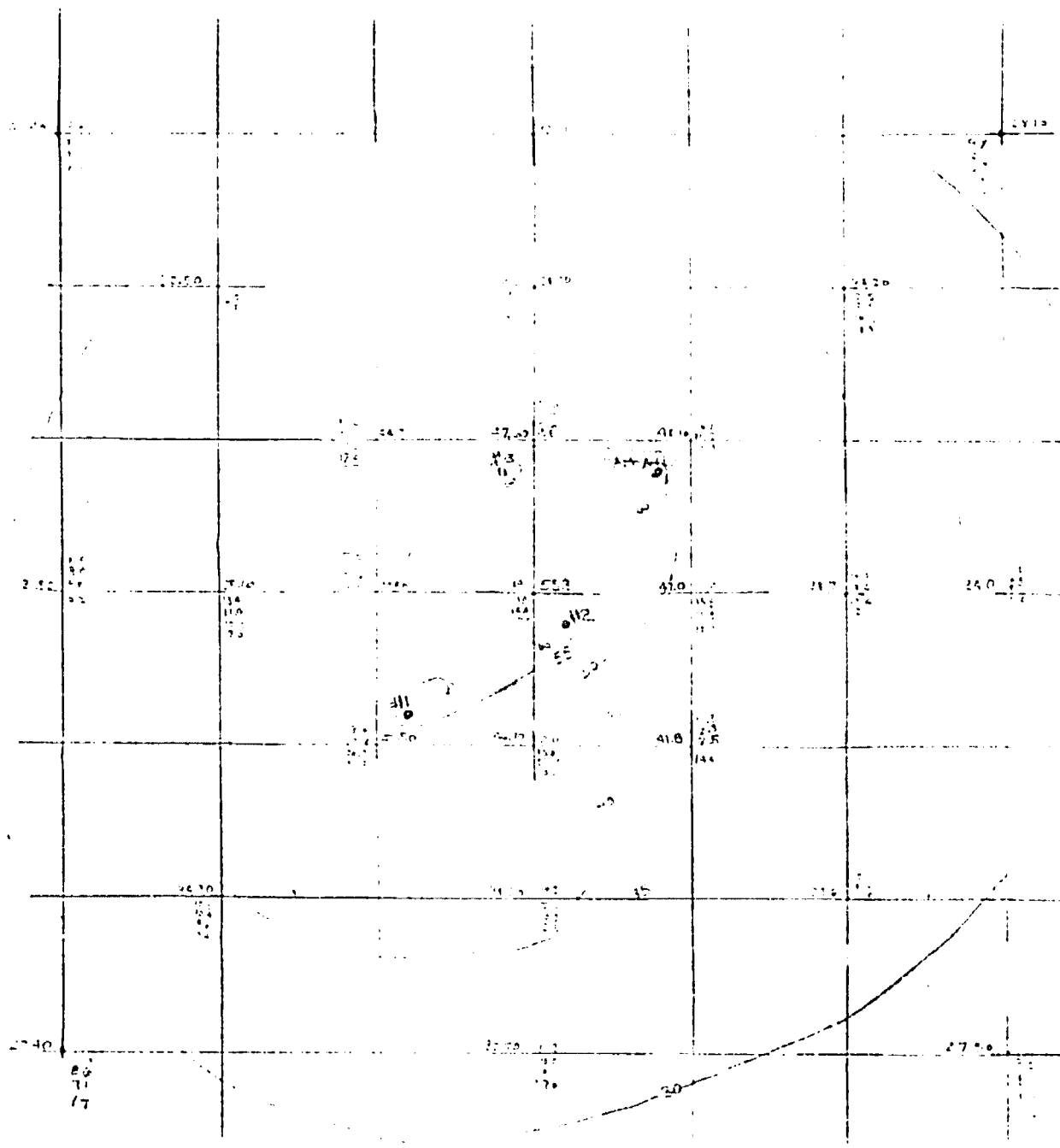


FIG D



[illegible]

FORMER:-		THEORETICAL		W/L		AT GT-76B		-		69.3		SEE' LOG DRAINAGE	
						AT GT-76C		-		92.2			
						AT GT-77A		-		21.7			
ACTUAL MEASUREMENT		AT		GT-76B		AFTER		30 DAYS		(SEE WELL HYDROGRAPH)			
INDICATE 15' DRAINAGE		THE		12' IN		3 DAYS		DURING		AQUIFER TEST.			

LOGS OF OBSERVATION WELLS, TEST HOLES, DOMESTIC WELLS, IRRIGATION WELLS

TEST HOLE C

DRILLER SOGS

LOCATION 0000 SEC 12 T 120N R 53W RES.

- 0-4 TOPSOIL
- 4-18 TILL, YELLOW CLAY, GRAVELLY
- 18-25 TILL, GRAY CLAY
- 25-27 TILL, YELLOW CLAY
- 27-30 GRAVEL COARSE
- 30-46 TILL, YELLOW CLAY
- 46-58 GRAVEL, COARSE
- 58-75 TILL, YELLOW CLAY
- 75-130 TILL, GRAY CLAY
- 130-140 TILL, GRAY, VERY GRAVELLY
- * 140-170 GRAVEL, WITH LIGHT GRAY CLAY
- 170-257 TILL, GRAY CLAY
- 257-284 GRAVEL, TIGHT
- 284-385 TILL, GRAY
- 385-395 TILL, GRAY, WITH HARD BROWN CLAY
- 395-433 TILL, GRAY
- 433-490 GRAVEL, HIGH SHALE PEGGOLITE CONTENT
- 490-700 SHALE, BLACK, BLOCKY
- 700-720 SHALE, LIGHT GRAY, CALCAREOUS

TEST HOLE A

DRILLER SOGS

LOCATION 8888 SEC 18 T 121N R 52W RES.

- 0-27 TILL, BROWN
- 27-39 TILL, GRAY
- 39-63 TILL, TAN TO LIGHT GRAY, VERY SILTY
- 63-65 GRAVEL
- 65-96 TILL, YELLOW BROWN
- * 96-124 GRAVEL AND SILT LAYERS
- 124-128 TILL, GRAY, SILTY
- 128-245 TILL, GRAY TO BROWN
- 245-288 TILL, LIGHT BROWN
- 288-312 SAND AND GRAVEL, ROCKS
- 312-497 TILL, BROWN AND GRAY
- 497-505 GRAVEL
- 505-530 SHALE

GT-77E - OBSERVATION WELL

DRILLER - EDS

LOCATION - BBBB SEC. 28, T121N R51W R&B.

WATER LEVEL - 77.

0-5 TILL, YELLOW CLAY, OXIDIZED

5-10 TILL, OXIDIZED, GRAVELLY

10-17 TILL, YELLOW CLAY

17-28 TILL, GRAY, VERY SILTY (LACUSTRINE?)

28-110 TILL, YELLOW CLAY, OXIDIZED

110-132 TILL, GRAY CLAY, GRAVELLY

132-137 GRAVEL, COARSE

137-220 TILL GRAY CLAY, GRAVELLY IN SPOTS

* 220-227 GRAVEL, COARSE

227-245 TILL, GRAY CLAY

APPLICATION 3342-3 TEST HOLES

DRILLER - EMPIRE

LOCATION - E 1/2 SEC. 33, T121N R52W

WATER LEVEL - 43' (REPORTED)

NE 1/4

0-08 TILL

08-119 SAND WITH CLAY

119-130 SAND

130-134 CLAY

* 140-155 SAND MEDIUM

155-168 CLAY

* 168-170 SAND MEDIUM

170-174 CLAY

* 174-177 SAND COARSE

177 CLAY

SE 1/4

0-2 TOPSOIL, BLACK

2-14 GRAVEL

14-119 TILL

* 119-150 SAND MEDIUM

150-160 CLAY

LOGS CONTINUED

GT-76C OBSERVATION WELL

DRILLER SDGS

LOCATION AAAA SEC.12 T120N R52W RES

WATER LEVEL 13.0

- 0-5 TOPSOIL, BLACK
- .5-122 TILL, OXIDIZED CLAY
- 122-125 SAND, MEDIUM TO COARSE
- 125-133 TILL, GRAY CLAY
- * 133-178 SAND AND GRAVEL, MEDIUM TO COARSE
- 178-185 TILL, GRAY CLAY

GT-76B OBSERVATION WELL

DRILLER SDGS

LOCATION BBBB SEC.23 T120N R52W RES

WATER LEVEL 13.1

- 0-1 TOPSOIL, BLACK
- 1-30 TILL, YELLOW OXIDIZED CLAY
- 30-106 TILL, GRAY CLAY
- * 106-124 SAND AND GRAVEL, MEDIUM TO COARSE
- 124-140 TILL, GRAY CLAY

TEST HOLE B

DRILLER SDGS

LOCATION CCCC SEC.20 T121N R52W RES

- 0-2 TILL, YELLOW CLAY
- 2-5 GRAVEL, COARSE
- 5-22 TILL, YELLOW OXIDIZED CLAY
- 22-27 TILL, YELLOW GRAVELLY
- 27-85 TILL, LIGHT GRAY
- 85-146 TILL, GRAY CLAY
- 146-154 SAND, WITH CLAY
- 154-165 TILL, GRAY CLAY
- 165-200 TILL, GRAY SHALEY CLAY, HARD DRILLING, ROCKS AT 195

FALK #3

DRILLER EMPIRE

LOCATION CENTER NE $\frac{1}{4}$ SEC 15 T12N R20W RES

0-2 TOPSOIL

2-57 SAND AND GRAVEL

57-70 TILL, GRAY CLAY

70-114 TILL, YELLOW CLAY

* 114-130 SAND AND GRAVEL

6" CASING

130 TILL, GRAY CLAY

TEST HOLE - APPLICATION 3225-3

DRILLER STADHIEM

LOCATION NEAR CENTER NE $\frac{1}{4}$ SW $\frac{1}{4}$ SEC. 15 T12N R52W RES

0-1 TOPSOIL

1-22 GRAVEL

22-105 TILL

* 105-125 GRAVEL

125-140 TILL

AMDAHL IRRIGATION

DRILLER

LOCATION CENTER NE $\frac{1}{4}$ SEC. 14 T12N R52W RES

0-2 TOPSOIL, BLACK

2-37 TILL, YELLOW CLAY

37-122 TILL, GRAY CLAY

* 122-182 GRAVEL

182 TILL

TEMPORARY OBSERVATION WELL

DRILLER STADHIEM

LOCATION 700' SOUTH OF CENTER NE $\frac{1}{4}$ SEC 23 T12N R52W RES

WATER LEVEL 13'

0-114 TILL CONTACT AND GRAVEL THICKNESS OK.

* 114-135 GRAVEL

FALK #2 (ALSO SAME FOR SERVICE WELL)

WATER LEVEL 12'

DRILLER EMPIRE

LOCATION CENTER OF NE $\frac{1}{4}$ SEC 23 T12N R52W RES.

0-2 TOPSOIL

2-5 TILL, SANDY

5-15 SAND AND GRAVEL

15-35 TILL, YELLOW CLAY

35-115 TILL, GRAY CLAY

* 115-134(?) SAND AND GRAVEL (DO NOT COMPLETELY PENETRATE)

LOCATION CCCD SEC. 27 T120N R512W N5S
WATER LEVEL - 4'

0-2 TOP SOIL, BLACK

2-20 SAND

20-25 SAND WITH CLAY

25-114 TILL, GRAY CLAY

* 114-125 GRAVEL, WHITE COARSE

125-128.5 TILL, GRAY CLAY

CD-77A OBSERVATION WELL

DRILLER STADHIEM

LOCATION R22B SEC. 18, T118N R52W

WATER LEVEL - FLOWING 7-8"

0-2 TOPSOIL, BLACK

2-8 GRAVEL, BROWN COARSE

8-19 TILL, BROWN CLAY

19-140 TILL, GRAY CLAY

* 140-143 GRAVEL, MEDIUM

143-178 TILL, GRAY CLAY, GRAVELLY

178-180 TILL, BROWN-OLIVE CLAY

TEST HOLE F

DRILLER STADHIEM

LOCATION B22B SEC 35 T118N R52W RES.

0-1 TOPSOIL (BLACK)

1-18 TILL, YELLOW-BROWN - VERY SILTY, LOESS (?)

18-21 TILL, BROWN, GRAVELLY

21-91 TILL, GRAY

91-132 TILL, BROWN - SANDY

132-176 TILL, GRAY

176-178 TILL, BROWN - CARBONACEOUS - OILY

178-200 TILL, GRAY - HARD

DRILLER : SOGS
LOCATION B3B3C SEC 5 T115N R52W

0-2 TOPSOIL , BLACK
2-42 TILL , YELLOW CLAY , OXIDIZED
42-84 TILL , GRAY CLAY , WOOD AT 63'
84-92 TILL , YELLOW CLAY , OXIDIZED
92-108 TILL , GRAY CLAY
108-170 TILL , GRAY CLAY , LOTS OF WOOD AT 115'

CD-76A OBSERVATION WELL

DRILLER SOGS
LOCATION B3B3C SEC. 13 T119N R51W RES.
WATER LEVEL 10'

0-1 TOPSOIL , BLACK
1-25 TILL , YELLOW OXIDIZED CLAY
25-86 TILL , GRAY CLAY
* 136-160 GRAVEL , MEDIUM TO COARSE
160-170 TILL , GRAY CLAY

GT-77F OBSERVATION WELL

DRILLER SOGS
LOCATION B3B3C SEC 26 T120N R52W
WATER LEVEL - 52'

0-2 TOPSOIL , BLACK
2-3 GRAVEL
3-16 TILL , YELLOW CLAY
16-32 SAND AND GRAVEL , WITH CLAY
32-104 TILL , GRAY CLAY
104-124 TILL , GRAY CLAY , HARD
124-131 TILL , BROWN CLAY
131-137 TILL , GRAY CLAY , VERY SILTY , HARD
137-179 TILL , BROWN CLAY
179-182 SAND AND GRAVEL , WITH CLAY
182-197 TILL , GRAY CLAY , GRAVELLY
* 197-201 GRAVEL , COARSE
201-230 TILL , GRAY CLAY

LOG CONTINUED

OBSERVATION WELL CO-77G

DRILLER S.D.G.S

LOCATION CCCC SEC 26 T 18N R 52W

WATER LEVEL 61'

0-2 TOPSOIL, BLACK

2-30 TILL, BROWN CLAY

30-48 TILL, GRAY CLAY

48-56 TILL, BROWN TO GRAY CLAY

56-85 TILL, GRAY CLAY

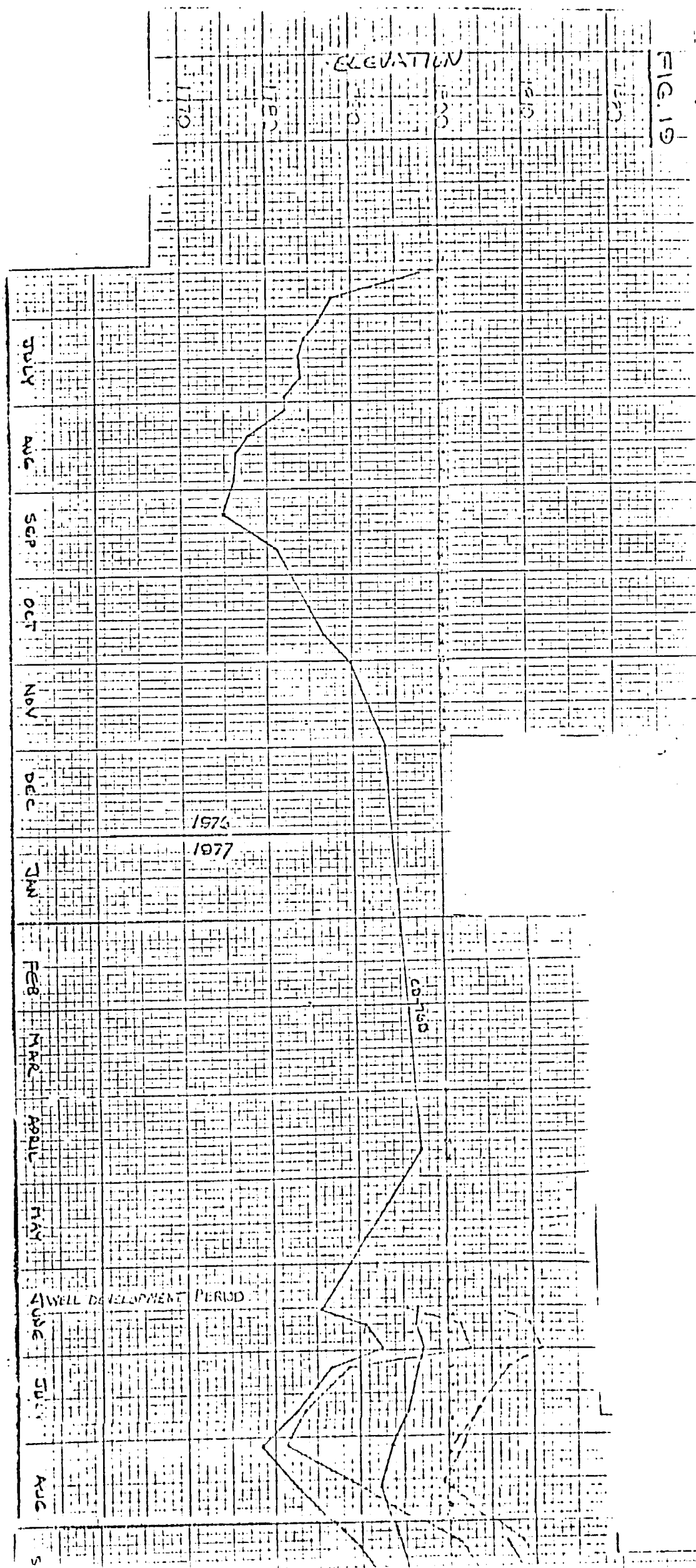
85-92 TILL, GRAY CLAY, HARD

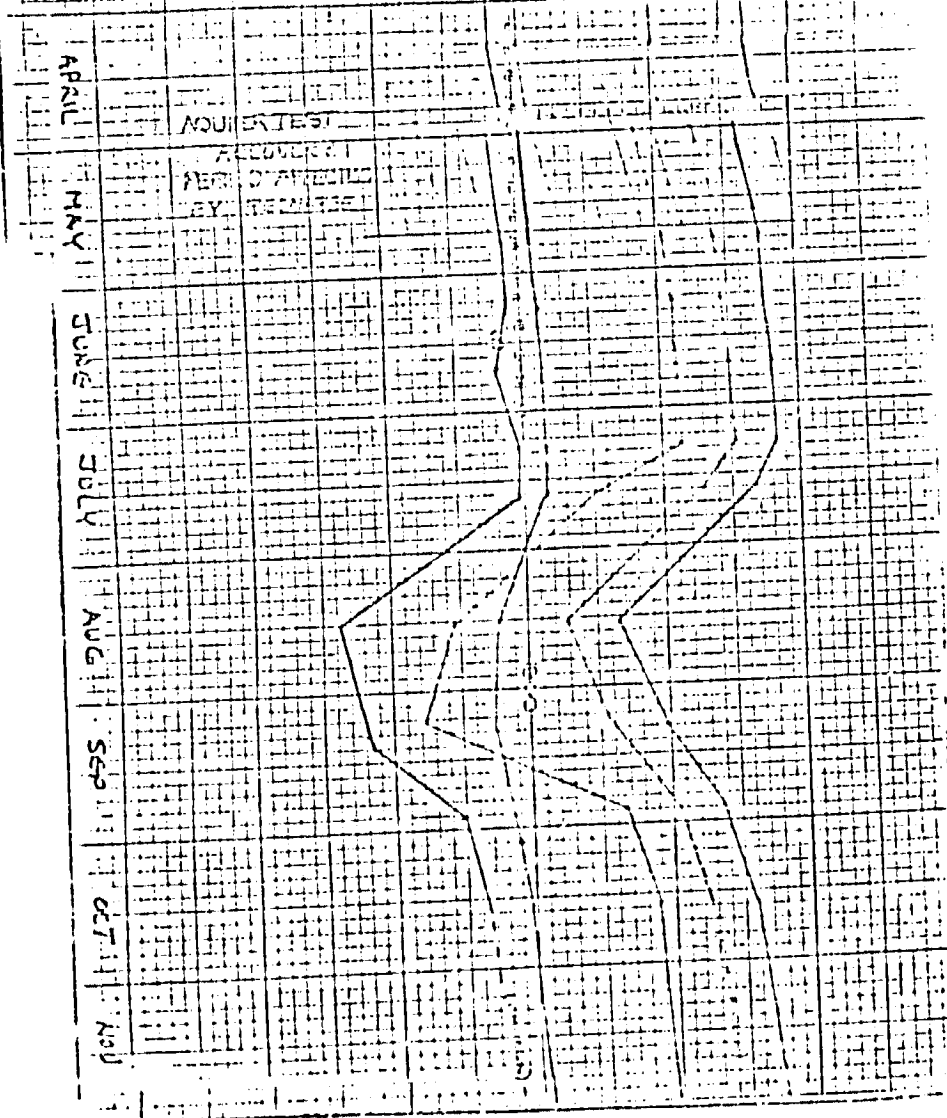
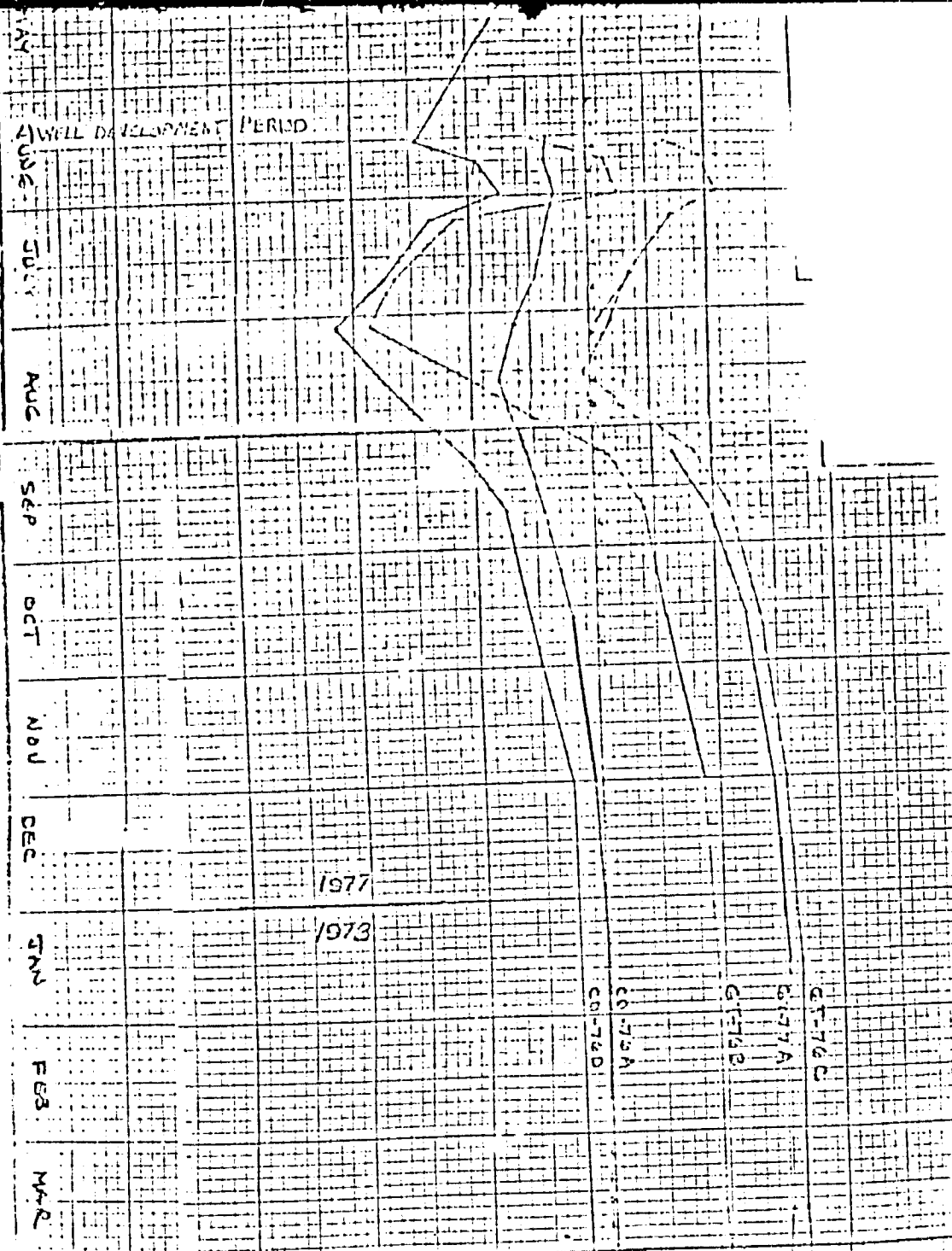
92-217 TILL, GRAY CLAY

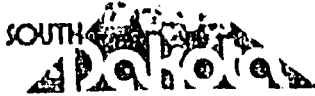
* 217-231 SAND, MEDIUM TO COARSE

231-245 TILL, GRAY CLAY

FIG. 19







No. 5227-3

Department of Natural Resource Development

WATER RIGHTS COMMISSION

Joe Foss Building, Pierre, South Dakota 57501
Phone 605/224-3151

June 6, 1977

Pell Farms, Inc.
R.F.
South Shore, S.D. 57263

Dear Sirs:

The Water Rights Commission deferred action on your Application No. 5227-3 at the May 25-26, 1977 Commission meeting, pending investigation by the Commission Staff.

Although your Application has been deferred, it does retain the original priority date established when the Application was received. You will be notified when the Application will be reconsidered by the Commission.

If you have any questions, feel free to contact this Office.

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Commission

JH/bw

Water Rights Commission Meeting
January 31 - February 1, 1979

AGENDA

Wednesday, January 31, 1979

PLACE: South Dakota Education Association Auditorium, 411 E.
Capitol, Pierre, South Dakota

8:30 a.m. Call to Order

Approval of: November 15 - 16, 1978 Minutes
December 12, 1978 Minutes

Set May, 1979 Meeting Dates and Place

Elvern Varilek's Report on Groundwater Recharge Meeting

Report from Robert Timm on Marts and Pankratz Cases

1979 Legislation and Proposed Water Agency Reorganization

Cancellation Considerations

Extension of Time Requests

Other Business

9:45 a.m. Break

10:00 a.m. Administer Oath to Staff

Introductions

Requirements Before Applications Can Be Advertised

Requirements at Time of Hearing

Water Right Hearings

12:00 noon Recess for Lunch

1:00 p.m. Reconvene

Make Findings of Fact and Conclusions of Law for South Lincoln
County Rural Water System Permit No. 4300-3

Water Right Hearings Continued

Reconsideration of Deferred Applications

1:30 p.m. Applications West of South Shore in Codington and Grant
Counties

AGENDA cont.

2:30 p.m. No. 3561-3 Wilfred Wiese

2:45 p.m. Break

Reconsiderations Continued

3:00 p.m. Yankton County
No. 3069-3 James Kribell
No. 3995-3 Janesville Colony
No. 4091-3 John Gunderson

3:30 p.m. Applications above Angostura Reservoir
No. 1593-2 Mason M. Miller
No. 1614-2 Edwin H. Anderson

4:00 p.m. Applications in Certain Aquifers in Spink, Hand and
Beadle Counties

Tulare Aquifer (Artesian Conditions)

(Spink)

3269-3 Para Docs Acres	3379-3 Max Neitzel
3270-3 Para Docs Acres	3380-3 Gary Neitzel
3282-3 Floyd H. Peterson	3852-3 Willis Boyd
3321-3 Rose S. Brooker	3936-3 Max Neitzel
3339-3 Douglas Henze	4260-3 Roger Chaplin
3376-3 Floyd H. Peterson	

(Beadle)

4134-3 Richard Boomsma	4308-3 Melvin Wieting
4194-3 Verlin Tollefson	4335-3 Leland Kleinsasser
4237-3 Robert Kohnen	4336-3 Herman Gruhn
4249-3 Lynn Walter	

(Hand)

4009-3 Larry Hurd
4167-3 John Clement

Hitchcock Aquifer (Water Table Conditions)

(Spink)

3382-3 Lee Gatzke	3861-3 Blain St. Clair
3383-3 Lee Gatzke	4138-3 Clifford Nowell
3603-3 Allen Gatzke	4161-3 City of Redfield
3752-3 Raymond Watson	4171-3 Gordon Blume
3360-3 Blain St. Clair	

(Beadle)

3331-3 Eldon Anderson	3877-3 John A. Lovett
-----------------------	-----------------------

East James (Water Table Conditions)

(Spink)

3325-3 Phillip Hill	4094-3 David Mendel
3170-3 Donald Starr	4158-3 William St. Clair
3190-3 Stanley Filipek	4236-3 Hillside Colony

AGENDA cont.

East James (Artesian Conditions)

(Spink)

3391-3 Albert J. Wipf	4057-3 Waldo C. Hofer
3467-3 Spink Colony	4131-3 Willard Wipf
3474-3 Lavina Alleman	4195-3 Spink Colony
3733-3 Alan G. Johnson	4196-3 Craig Wollman
3748-3 Clarence Wipf	4203-3 Craig Wollman
3856-3 Vohn Decker	

5:00 p.m. Recess for Day

Thursday, February 1, 1979

PLACE: South Dakota Education Association Auditorium

8:30 a.m. Reconvene

Other Business

9:00 a.m. Hearing Application No. 1651-2 Thomas Marts

Conclusions of Law Motion

Adjourn

Committee on Water
Jan. 18, 1979

Water Rights Commission
John Hatch Chief Engineer



Dear Sirs:

I received notice of deferred water
Right application Hearing in Codington
and Grant Counties. to be held Jan 31 1979

I would interest me to know
which application of permits are to
be acted on at that time.

I had hoped a Memorandum
on future ground water permits
would be call for until under-
ground aquifer could be documented
and that total permits not exceed
the annual recharge rate of the aquifer
be approved.

Sincerely
A. H. Redlin

January 24, 1979

A.W. Redlin
Summit, SD 57266

Dear Mr. Redlin:

Per your letter of January 18, we are enclosing a list of the applications to be reconsidered in Codington and Grant counties.

It should be pointed out that considerable work has been done in the area since these applications were deferred, and additional data is now available to the Commission.

If you have further questions, feel free to contact this office.

Sincerely,

BURTON F. JONES
Water Rights Specialist

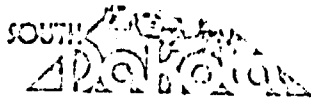
BFJ/gy

encl

DEFERRED APPLICATIONS CADBINGTON - GRANT COUNTIES
(In Order of Priority)

<u>Application No.</u>	<u>Applicant</u>	<u>Address</u>	
3227-3 ✓ 10-5-76	Falk Farms, Inc. ✓	South Shore	57
3225-3 ✓ 10-5-76	Clifford Grinols ✓	South Shore	70
3226-3 ✓ 10-5-76	Clifford Grinols ✓	South Shore	70
3342-3 ✓ 12-7-76	Joseph P. Ahmdahl ✓	Summit	117
3745-3 ✓ 12-27-76	Owen Thacker ✓	Watertown	122
3502-3 ✓ 12-27-76	Bernard L. Lee ✓	Summit	127
3503-3 ✓ 12-27-76	John La Barr ✓	Ortley	128
4153-3 12-27-76	Falk Farms, Inc.	South Shore	26
4164-3 10-27-77	R.E. Ina & Scott Kahnke	Watertown	127

2208



Department of Natural Resource Development

WATER RIGHTS COMMISSION
Joe Foss Building, Pierre, South Dakota 57501
Phone 605/773-3151

January 16, 1979

TO: Persons interested in Deferred Water Right Applications West of South Shore in Codington and Grant Counties

FROM: John Hatch, Chief Engineer, Water Rights Commission

SUBJECT: Reconsideration of Deferred Applications

The Water Rights Commission will reconsider deferred Water Right Applications in the area west of South Shore in Codington and Grant counties at 1:30 p.m., January 31, 1979 at the South Dakota Education Association Building, 411 E. Capitol, Pierre, South Dakota.

This reconsideration hearing will be conducted in accordance with the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-14; 46-2-9 thru 46-2-11, 46-2-13; 46-5-1 thru 46-5-8, 46-5-10 thru 46-5-22, 46-5-41; 46-6-3, 46-6-3.1, 46-6-5, 46-6-6.1, 46-6-10, 46-6-14 and Commission Rules ARSD 52:01:01:01 thru 52:01:01:13.

These applications were deferred by the Water Rights Commission during 1977 and 1978, pending Staff investigation.

After reconsideration of the deferred applications, the Commission can approve, defer or deny all or part of any of these applications.

This hearing is an adversary proceeding. Any person has the right to be present or to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised at the hearing. Decisions of the Commission may be appealed to the courts as provided by law.

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Commission

JH/gy



Department of Natural Resource Development

WATER RIGHTS COMMISSION

Joe Foss Building, Pierre, South Dakota 57501

Phone 605/224-3151

February 13, 1979

TO: Persons from Codington & Grant Counties in attendance at Water Rights Commission Meeting, January 31, 1979.

The Water Rights Commission at its meeting January 31, 1979 approved the following applications:

3327-3 Falk Farms, Inc.
3225-3 Clifford Grinols
3226-3 Clifford Grinols
3342-3 Joseph P. Ahmdahl

3745-3 Owen Thacker
3502-3 Bernard L. Lee
3503-3 John La Barr

The above applications were approved with the following qualifications:

The irrigation well(s) approved under this permit will be located near domestic wells and other irrigation wells which may obtain water from the same aquifer. The irrigation well owner, under this permit, shall control his irrigation withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in irrigation wells having prior water rights.

The specific capacity of the well(s) shall be determined by test pumping the well(s) prior to connecting the well(s) to the irrigation system and a record of the specific capacity filed with the Commission office.

At the January 31, 1979 meeting the Water Rights Commission also deferred action on the following applications:

4135-3 Falk Farms, Inc.

4184-3 R. E. Ina & Scott Kahnke

South Dakota Statutes provide that the decision by the Commission may be appealed to the courts.

Very truly yours,

A handwritten signature in cursive script, appearing to read "John Hatch".

JOHN HATCH, Chief Engineer
Water Rights Commission

JH:kjw

SOUTH DAKOTA
Department of
Water & Natural Resources

Joe Foss Building Water Rights Division
Pierre, South Dakota 57501

(605) 773-3352

May 20, 1982

Falk Farms, Incorporated
Warren Falk
South Shore, South Dakota 57263

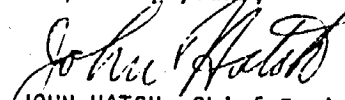
Gentlemen:

Enclosed herewith are, Water License No. 4417-3 and Certificate of Construction.

Water License No. 4417-3 * is the final water right document completing your process of obtaining a water right.

As long as you use the water beneficially, as stated in the Water License, the State Water Laws provide that you have a continuing right to use the water.

Very truly yours,


JOHN HATCH, Chief Engineer
Water Rights Division

JH:ms

enclosures

*The applicable portions of Permit Nos.
2285-3 and 3227-3 have been incorporated
into this Water License.

**South Dakota Department of
Water & Natural Resources**

Joe Foss Building
33 East Capitol
Pierre, South Dakota 57501-3181

July 19, 1988

4417-3
4153-3
3227-3

Falk Farms, Inc.
RR 1, Box 59
South Shore SD 57263

Dear Sirs:

During the week of July 12-15 an investigation of domestic well complaints was conducted in Codington and Grant Counties. In all instances, the domestic wells were completed into the Prairie Coteau Aquifer (artesian aquifer) and the water levels were being affected by irrigation withdrawals. One of the complaints was that irrigation systems were wasting water by spraying on county roads and highways. This is not necessary and needs to be prevented. Not only is this a hazard to motorists with potential liability for the irrigator, but it is poor public relations.

I am requesting that you prevent the end guns from spraying on the county roads and highways. Technically, spraying roads is a waste of water and legislation could be introduced and passed by the Legislature that could be difficult to live with.

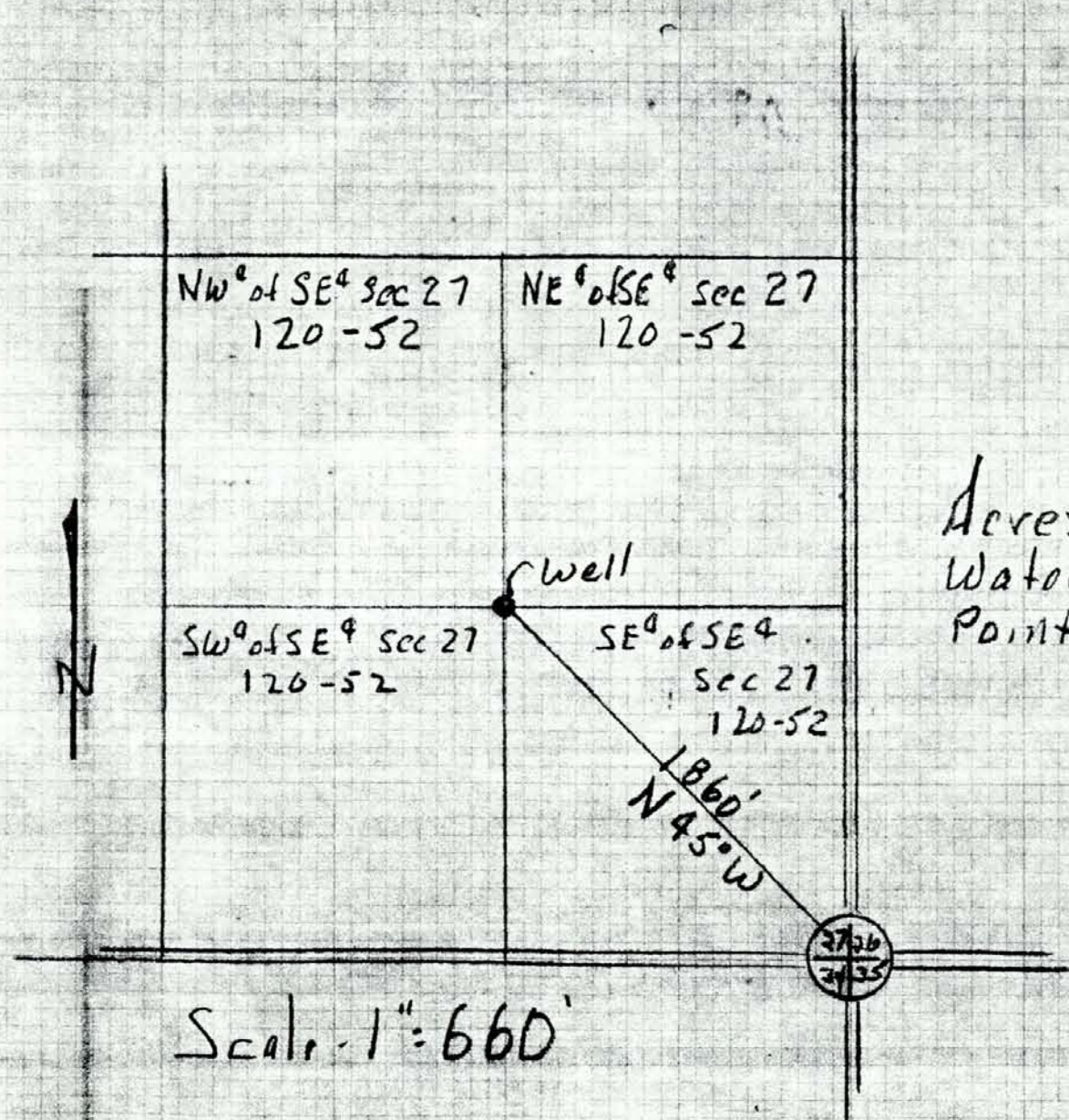
Very truly yours,

FOR

Jan A. Hatch

JOHN HATCH, Chief Engineer
Water Rights Division
605 773-3352





FALK FARMS INC.

Charles T. Falk - V. Pres.
RR South Shore
Coddington County

Acres Irrigated - 160
Water claimed 2.3 cfs
Point of Diversion - 1860' N 45° W
of SE corner Sec 27-120-52

Surveyor's Certificate

I do hereby certify that this is a
reasonably accurate record of the
land of Falk Farms Inc.
9-21-76

Drawn by H. W.

John J. Williams

MADE IN U.S.A. APRIL 3227-2