

Considered: _____

Future Use

WATER PERMIT NO. 5063-3

MAP No. Same

Name of Applicant City of Dell Rapids

Post Office Address P.O. Box 10 Dell Rapids

Amount of Water Claimed 1.65 cfs Future Use Total Acres _____

Source of Water Supply Big Sioux - Sioux Falls aquifer

Water to be used for MUN County Minnehaha

About 1 1/2 miles W of Dell Rapids

PROOF OF PUBLICATION: Received IN 9-13-85 Not Received _____

APPLICATION: Approved 10-16-85 Subject to _____

F.F. & C.L. Adopted _____ Not Approved _____ Deferred _____

PRIORITY _____ Date Received 6-24-85 Fee \$42.50 Remarks _____

6-24-85

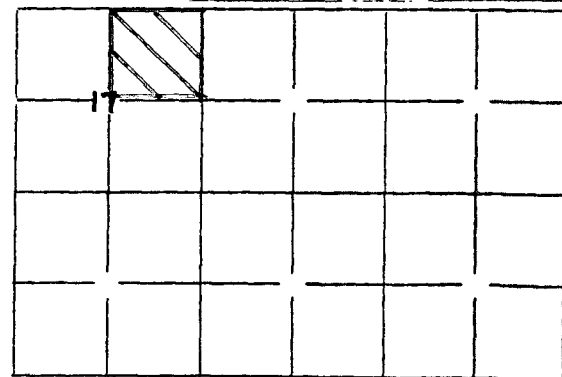
Corrected Application Received _____ Period of Annual Use 1-1 to 12-31

WATER QUALITY APPROVAL RECEIVED N.A. APPROVED/CONDITIONAL (Circle one)

WI-1 Description same as Application YES _____ NO _____ REMARKS _____

Diversion Point NE 1/4 sec. 17 T 104N-R49W

Land to be Irrigated _____



Well Log: Driller Jarey Well Drlg. Licensed YES X NO _____

Depth of Well ~ 70 feet REMARKS 10 test hole logs submitted with application

Type of Map Topo PREPARED BY Dave Holman Reviewed and the Number

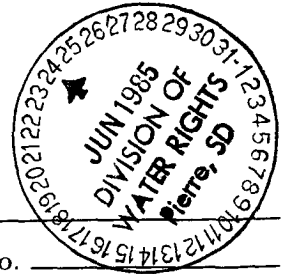
assigned on 6-25-85 By Kevin C. Larson

No. <u>5063-3</u>	Hydrologic Unit <u>10170203</u>
Map No. <u>Same</u>	Basin <u>Sioux River</u>
Newspaper <u>Dell Rapids Tribune</u>	<u>Box 99 (Wed)</u>

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use of water: Industrial ☐ Commercial ☐ Municipal ☒ Other Common Distribution System ☐
 Rural Water System ☐ Suburban Housing ☐ Geothermal Heat ☐ Institutional ☐ Recreational ☐
 Domestic ☐ (above 18gpm) Other ☐

Type of Application: Check one or more of the following



New ☐ Vested Right ☐ Future Use ☒ Change Use ☐

☐ Amend Permit No. _____ with old priority date retained

Change diversion point(s) ☐ Add diversion point(s) ☐ Other ☐ _____

☐ Application to: Change diversion point(s) ☐ Add diversion point(s) ☐ on Permit No. _____

☐ Construction to use water reserved by Future Use Permit No. _____

1. Name of Applicant City of Dell Rapids Phone No. 605-428-3595

Post Office Address P.O. Box No 10 State SD Zip Code 57022
(Street, RR or Box)

2. Amount of water claimed (c.f.s.) 1.65 cfs.

3. Source of water supply Big Sioux Aquifer

4. Location of point of diversion NE 1/4 of Sec 17, T104N, R49W.

_____ County Minnehaha

5. Counties where water will be used Minnehaha

6. Annual period during which water is to be used 12 months/yr

7. Give a brief description of proposed project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

A future water right is desired to provide the City of Dell Rapids an ample supply of water when needed.

Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed. Attach map (see instruction)

STATE OF SOUTH DAKOTA)
County of Minnehaha)^{ss}

I, C.V. Graham the applicant, certify that I have read the foregoing application, 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 C.V. Graham

Subscribed and sworn to before me this 12 day of Nov 1985

Arnold Wildermuth

Notary Public (or other qualified officer)

WATER PERMIT

The Water Management Board hereby approves Water Permit Application No. 5063-3
City of Dell Rapids P.O. Box 10 Dell Rapids
(Applicant) (Post Office Address)
South Dakota 57022 With the following qualifications.
(State) (Zip Code)

That Future Use Permit No. ~~4979-3~~ 5063-3 is approved with the stipulation that the Permit to appropriate water is subject to review by the Water Management Board as to accomplishment thereunder upon expiration of seven (7) years.

At such time as definite plans are made to construct works and put the water reserved by this permit to beneficial use, specific application for all or any part of the reserved water must be submitted prior to construction of facilities pursuant to SDCL 46-5-38.1.

This permit is approved for groundwater less than 70 feet deep.

Date of first receipt of application June 24, 1985.
 Date of return to applicant for correction, amendments or changes required —, 19—.
 Date of receipt of corrected application —, 19—. Approved October 16, 1985.

The Water Management Board hereby approves this Water Permit No. 5063-3 authorizing the construction of the water use system and the placing of water to beneficial use as stated in the Application and as qualified in the Water Permit approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is June 24, 1985.
2. The equivalent of at least one-fifth of the specified work is to be completed on or before N.A., 19—.
3. The whole of said work is to be completed on or before N.A., 19—.
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is N.A., 19—.
5. The water appropriated shall be used for the purpose of Future municipal water supply for Dell Rapids
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 unlawfully impaired by this appropriation.
7. The amount of the appropriation herein granted shall not exceed 1.65 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 to which water is actually and beneficially applied for — on or before —, 19—; said water to be used during the following described annual period: January 1 to December 31

WATER MANAGEMENT BOARD
 By: John Hatch
Chief Engineer
 Division of Water Rights
 Dept. of Water and Natural Resources
NOV 15 1985
 , 19—

Test Hole Number	Observation Well Number	Ground Elevation	T/Pipe Elevation	Static Water Elevation	Depth of Bore Feet	Elevation Top S & F	Elevation Bottom Bore	"Basement Formation"	Observation Wells: Radius from Pumping Well
1	Well 1	1097.9	1097.97	1087.64	60'	1074.9	1057.9	Sioux Quartzite (SQ)	Point
2	51	1097.9	1098.35	1087.59	60'	1074.9	1057.9	SQ	S1
3		1097.5			60'	1070.5	1057.5	SQ	S2
4		1096.5			27'	1082.5	1070.5	SQ (overlaid w/7' hard clay)	S3
5		1097.7			57'	1071.7	1040.7	SQ	S4
6		1097.6			29'	1079.6	1068.6	SQ (overlaid w/6' blue clay)	W1
7		1101.2			23'	1085.2	1076.2	SQ (overlaid w/5' clay)	W2
8		1099.7			8'	---	1091.7	SQ	E
9		1103.3			8'	---	1095.3	SQ	N
10		1096.5			25'	---	1075.9	SQ (overlaid w/5' hard clay)	City 4
11		1098.5			48'	1070.5	1050.5	SQ	City 5
12		1098.8			42'	1074.8	1056.8	SQ	
13	N	1098.2	1098.60	1087.66	41'	1073.2	1057.2	SQ	
14	S2	1096.9	1097.77	1087.56	61'	1071.9	1053.6	SQ	
15	S3	1096.4	1097.09	1087.56	60'	1072.4	1056.4	SQ	
16	W2	1097.5	1097.97	1087.67	60'	1070.5	1057.5	SQ	
17	W1	1096.2	1098.66	1087.65	62'	1076.2	1058.2	SQ	
18	E	1097.7	1098.78	1087.65	57'	1071.7	1040.7	SQ	
19	S4	1095.5	1095.72	(1087.5)	70'	073.5	1025.5	Blue clay (BL C.)	
20		1094.6			75'	1084.6	1019.6	BL CL	
21		1092.1			50'	1067.1	1042.1	SQ	
22		1095.6			22'	1086.6	1073.6	SQ	
23		1099.3			34'	---	1065.3	SQ	
24		1098.8			53'	1070.8	1045.8	SQ (overlaid w/13' hard clay)	
25	(1091)				45'	(1079)	---	Did not fully penetrate formation	
26	(1091)				35'	(1080)	---	Did not fully penetrate formation	
City 4		1100.3	1103.54	1087.29	(54')	?	(1046.3)	(SQ)	
City 5		1099.1	1101.85	1087.53	(54')	?	(1045.1)	(SQ)	
River Ice (12-27-84)		1087.4							

- #1. 0-2 Topsoil
9-23 Muddy Clay
23-40 Fine Sand
40-60 Good Sand
60 Red Rock

#2. 0-4 Topsoil
4-15 Muddy Clay
15-22 Sand & Mud
22-27 Hard Blue Clay
27-37 Gravel
37-50 Sand
50-60 Gravel
60 Red Rock
- #3. 0-4 Topsoil
4-12 Muddy Clay
12-15 Hard Blue Clay
15-20 Sand
20-27 Hard Clay
27 Red Rock

#4. 0-4 Topsoil
4-20 Muddy Clay
20-25 Gravel
25-26 Clay
26-57 Fine Gravel
57 Red Rock
- #5. 0-4 Topsoil
4-10 Clay
10-13 6" Sand
13 6"-18 Clay
18-23 Gravel
23-29 Blue Clay
29 Red Rock

#6. 0-2 Topsoil
2-15 Hard Clay
15-20 Fine Sand
20-25 Clay
25 Red Rock
- #7. 0-8 Topsoil
8 Rock

#8. 0-8 Topsoil
8 Rock
- #9. 0-8 Topsoil
8 Rock

#10. 0-2 Topsoil
2-15 Hard Clay
5-15 Yellow Clay
15-20 Mud
20-25 Hard Clay
25 Red Rock
- #11. 0-2 Topsoil
2-7 Yellow Clay
7-28 Mud
28-48 Uniform Sand
48 Red Rock

#12. 0-2 Topsoil
2-11 Clay
11-22 Mud
22-24 Hard Clay
24-42 Gravel
42 Red Rock
- #13. 0-2 Topsoil
2-4 Clay
4-11 Brown Sand
11-17 Brown Mud
17-25 Clay
25-42 Gravel
42 Red Rock

#14. 0-2 Topsoil
2-11 Yellow Clay
11-22 Mud
22-25 Hard Clay
25-33 Sand
33-63 Uniform Sand
63 Red Rock
- #15. 0-5 Topsoil
5-19 Sand
19-24 Mud
24-60 Sand
60 Red Rock

#16. 0-4 Topsoil
4-15 Muddy Clay
15-22 Sand & Mud
22-27 Hard Blue Clay
27-37 Gravel
37-50 Sand
50-60 Gravel
60 Red Rock
- #17. 0-4 Topsoil
4-11 Yellow Clay
11-14 Mud
14-22 Clay
22-30 Sand
30-60 Gravel
60 Red Rock

#18. 0-4 Topsoil
4-20 Muddy Clay
20-25 Gravel
25-26 Clay
26-57 Fine Gravel
57 Red Rock
- #19. 0-7 Black Topsoil
7-10 Sand
10-12 Mud
12-20 Sand
20-22 Mud
22-39 Gravel
39-44 Tight Sand
44-55 Fine Sand
55-70 Sand
70 Blue Clay

#20. 0-4 Topsoil
4-10 Yellow Clay
10-25 Sand
25-55 Gravel
55-57 Fine Sand
57-62 Good Sand
62-75 Sand
75 Blue Clay
- #21. 0-4 Topsoil
4-7 Mud
7-11 Sand
11-25 Clay
25-30 Gravel
30-35 Fine Sand
35-50 Good Sand
50 Red Rock

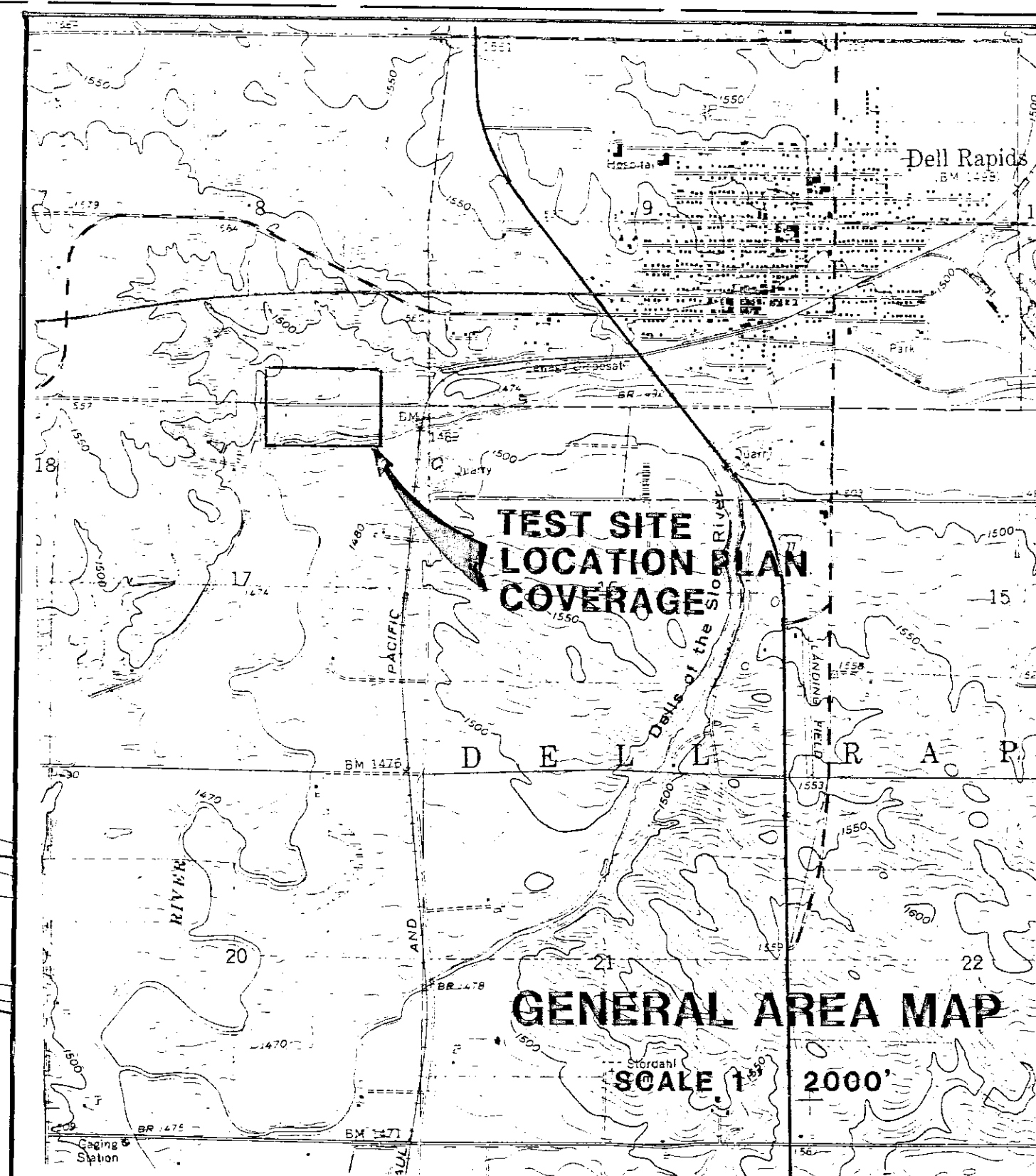
#22. 0-4 Topsoil
4-9 Clay
9-22 Sand
22 Red Rock
- #23. 0-4 Topsoil
4-10 Yellow Clay
10-34 Muddy Clay
34 Red Rock

#24. 0-10 Black Gumbo
10-25 Brown Clay
28-40 Fine Sand
40-53 Hard Clay
53 Red Rock
- #25. 0-8 Mud
8-11 Sand
11-12 Muddy Clay
12-43 Clean Sand

#26. 0-3 Topsoil
3-11 Mud
11-18 Sand
18-25 Gravel
25-37 Sand
37-47 Fine Sand

GRID SPACE 100'
WELL AT X 2000
Y 3500

STANDARD PLAN 64593



Supplemental Information

(type or print in ink)

1. Well Information - Proposed construction (based upon Test Hole 4-A)

- a) Drill Hole Diameter 20 inches Depth 70 feet.
- b) Casing Type Steel Diameter 12 inches Thickness 0.375 inches
- c) Screen Type Stainless steel Diameter 12 inches Thickness 7 gauge (3/16 inch)
- d) Gravel Pack Thickness 4 inches Length of Gravel Pack 36 feet
- e) Depth to Top of Water Bearing Material 44 feet
- f) Depth of Water (ground surface to water level) 7 feet
- g) Distance to nearest existing domestic well:

On applicants property Approx 1/4 mile On property owned by others Approx 1/4 mile on other side of river.

2. Dugout Information Estimates Not Applicable

- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

3. Water Storage Dams Not Applicable

If the proposed water use system contains one or more storage dams, please furnish the information requested below. The locations of each dam should be shown on the map submitted with the application.

- a) If a private engineering firm or government agency was involved in the design of this dam please give their name and address

b) Freeboard _____

c) Crest Width _____

Crest Length _____

d) Height _____

e) Outlet Dimensions:
Pipe diameter _____

Spillway width _____

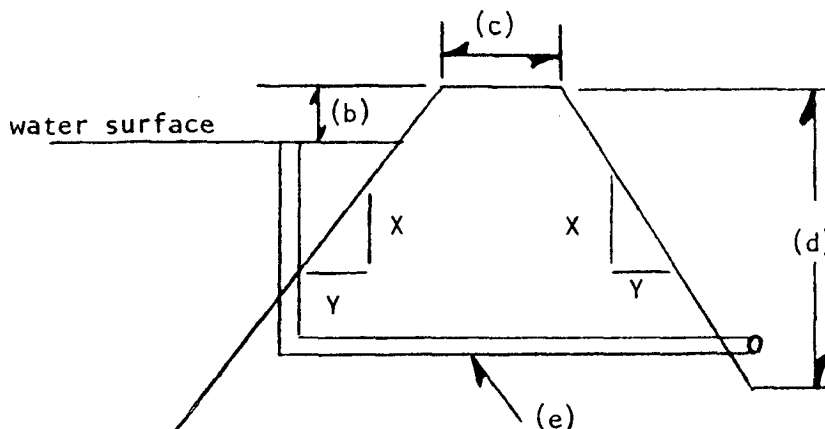
f) X & Y Slope
Upstream _____

Downstream _____

Surface Area of Impoundment _____

Storage _____ acre feet

Drainage area above dam _____



C. V. Graham
Signature of Applicant

DRILLING LOGS FOR L. G. EVERIST PROPERTY
COMPLETED BY LACEY WELL DRILLING
JUNE 1985

Location of holes referenced to a prominent rock on the northeast corner of the grid.

1-A 0-3 Topsoil
 3-5 Sand
 5-7 Mud
 7 Red Rock
Location: 672' west of Rock

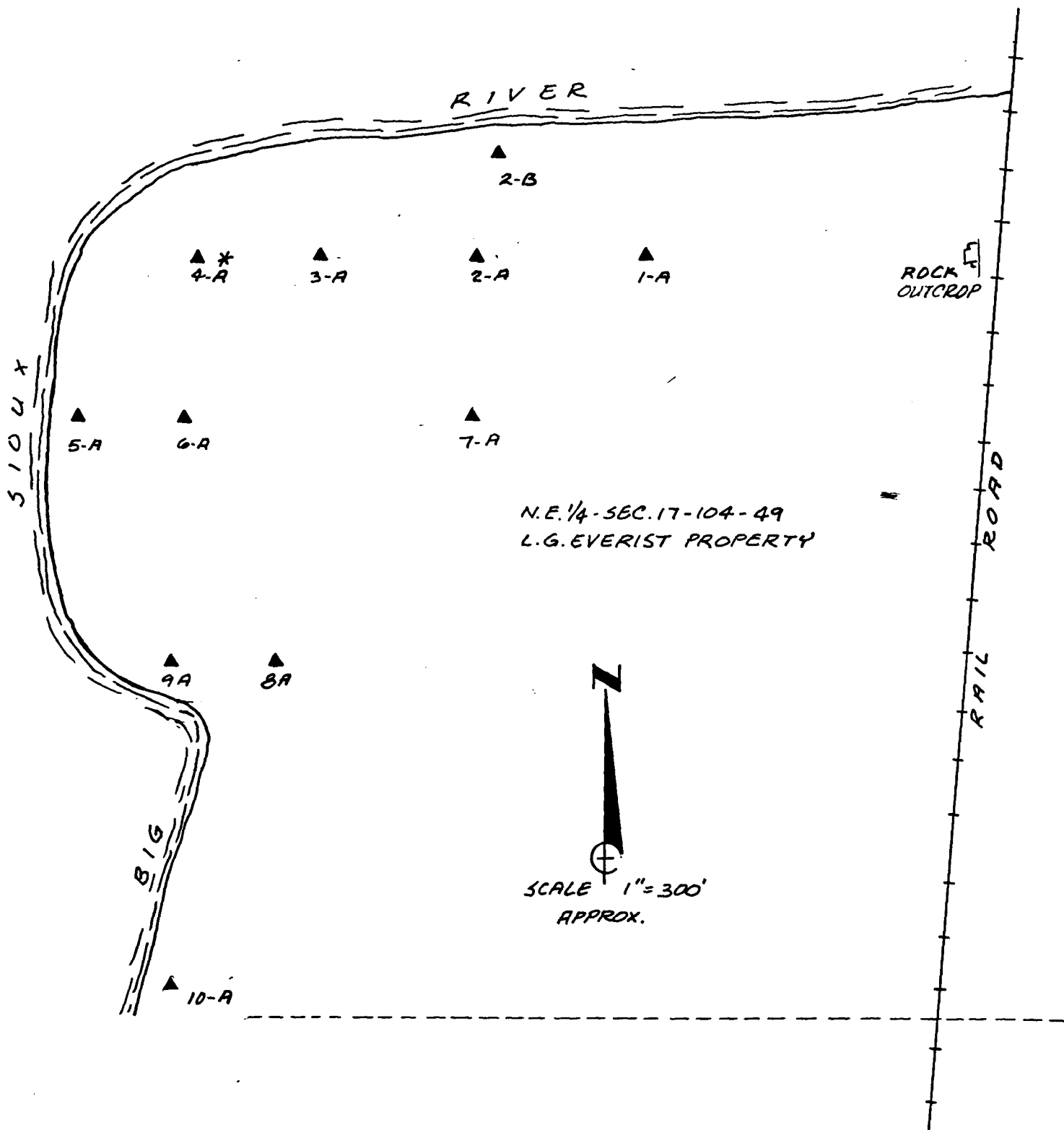
2-A 0-3 Topsoil
 3-5 Sand
 5-6 Rocks
 6-14 Sand & Rocks
 14-15 Clay
 15-20 Sand
 21 Red Rock
 SWL @ 7'
Location: 1047' west of Rock

2-B 0-5 Mud
 5-45 Coarse Gravel
Location: 1047' west of Rock and north on riverbank

3-A 0-3 Topsoil
 3-10 Gumbo
 10-20 Gravel
 20-45 Coarse Gravel
 45 Mud Lens
 45-62 Fine Sand
 62 Red Rock
 SWL @ 7'
Location: 1372' west of Rock

4-A 0-2 Topsoil
 2-5 Gravel
 5-10 Clay Mud
 10-14 Sand
 14-23 Fine Sand & Mud
 23-42 Gravel
 42-44 Clay
 44-57 Gravel
 57-65 Uniform Sand
 65-70 Coarse Good Sand
 70-72 Clay
 SWL @ 7'
Location: 1647' west of Rock

5-A	0-3	Topsoil
	3-20	Clay
	20-50	Sand
	50	Red Rock
	SWL @ 7'	
	Location: East of 6A beyond trees and 457' south of Rock	
6-A	0-3	Topsoil
	3-6	Clay
	6-11	Sand
	11-20	Mud
	20-40	Sand
	40-44	Clay
	44-46	Gravel
	46	Red Rock
	SWL @ 7'	
	Location: 1647' west and 457' south of Rock	
7-A	0-3	Topsoil
	3-15	Clay
	15-28	Sand
	28	Red Rock
	SWL @ 7'	
	Location: 1047' west and 465' south of Rock	
8-A	0-3	Topsoil
	3-5	Clay
	5-12	Mud
	12'	Red Rock
	Location: 1412' west and 1009' south of Rock	
9-A	0-3	Topsoil
	3-8	Black Gumbo
	8-13	Sand & Mud
	13	Red Rock
	SWL @ 7'	
	Location: 1647' west and 1009' south of Rock	
10-A	0-3	Topsoil
	3-9	Mud
	9	Red Rock
	Location: 1647' west and 1781' south of Rock	



TEST HOLE LOCATION MAP

* - CASED WITH WATER SAMPLE COLLECTED



DeWild Grant Reckert & Associates Co.
Denver, Colorado
Rock Rapids, Iowa
Sioux City, Iowa
Sioux Falls, South Dakota

Date 6-14-85
Drawn By WBR
Approved
Revised

CITY OF DELL RAPIDS

SOUTH DAKOTA DEPARTMENT OF WATER AND NATURAL RESOURCES

OFFICE OF DRINKING WATER

CHEMICAL ANALYTICAL DATA

Water Supply: City of Dell Rapids
 Town, County: Dell Rapids, Minnehaha
 Source of Supply: Big Sioux Aquifer
 Sampling Point: Discharge Pipe ~ 300' From well
 Sample: Raw ☒ Treated ☐ Composite ☐
 Treatment Process: _____

Date Collected: 1-2-1985
 Collected By: D. Kuriath
 Mail Report To: Assad Barani
S.D. Geological Survey
Science Center (USD)
Vermillion, SD 57069

Comments: Water clean, no odors.

Received By Lab: 1/3/85
 Report Sent By Lab: _____

Parameter	Maximum Limit	Results	Parameter	Suggested Limit	Results
✓ Arsenic	50 ug/l	1.6	✓ Chloride (Cl)	250 mg/l	21.6
✓ Barium	1000 ug/l	60	✓ Copper (Cu)	1 mg/l	—
✓ Cadmium	10 ug/l	<1.0	✓ Iron (Fe)	0.3 mg/l	0.17
✓ Chromium	50 ug/l	<1.0	✓ Manganese (Mn)	0.05 mg/l	0.37
✓ Lead	50 ug/l	1.6	✓ Sulfate (SO ₄)	250 mg/l	126
✓ Mercury	2 ug/l	<0.20	✓ Zinc (Zn)	5 mg/l	—
✓ Nitrate (as N)	10 mg/l	0.6	✓ Tot. Diss. Solids (TDS)	500 mg/l	464
✓ Selenium	10 ug/l	1.8	✓ pH	6.5-8.5	7.35
✓ Silver	50 ug/l	<1.0	✓ Alkalinity(m) (CaCO ₃)	mg/l	262
✓ Fluoride	2.4 mg/l	0.32	✓ Alkalinity(p) (CaCO ₃)	mg/l	—
✓ Gross alpha	15 pCi/l	—	✓ Bicarbonate (HCO ₃)	mg/l	320
✓ Radium 226-228	5 pCi/l	—	✓ Carbonate (CO ₃)	mg/l	0
✓ Turbidity	1 NTU	—	✓ Spec. Cond. @ 25 °C umhos/cm	—	762
OTHER PARAMETERS			✓ Calcium (Ca)	mg/l	93.8
Gross Radium Alpha R/c	0.2 ± 0.2	—	✓ Magnesium (Mg)	mg/l	34.9
			✓ Hardness (CaCO ₃) ^{ppm} mg/l	—	378
			✓ Langelier Index @ 50 °F	—	-0.08
			✓ Sodium (Na)	mg/l	21.1
			✓ Potassium (K)	mg/l	1.8
			✓ Nitrite (NO ₂) (as N)	mg/l	—

LAB COMMENTS:

OPW

mg/l = milligrams/liter = parts/million (ppm)

ug/l = micrograms/liter = parts/billion (ppb)

Percentage of Error: 0.1 / 3.8

NR - 606 - 10/79

LAB. NO.

850010



PROPOSED WELL FIELD

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly Registered Professional Engineer under the laws of the State of SOUTH DAKOTA and that I am competent to prepare this document.
 Registration No. 3473 Date 6-14-85
 By David Holman

NOTE: ACTUAL
 LOCATION AND NUMBER
 OF WELLS TO BE FIELD
 VERIFIED WITH PILOT
 HOLES PRIOR TO WELL
 CONSTRUCTION.



DeWild Grant Reckert & Associates Co.
 Denver, Colorado
 Rock Rapids, Iowa
 Sioux City, Iowa
 Sioux Falls, South Dakota

Date 6-14-85
 Drawn By WBR
 Approved
 Revised

CITY OF DELL RAPIDS

RECEIPT

Division of Water Rights

Nº 410090

South Dakota Department of Water and Natural Resources

Pierre, June 24, 19 85

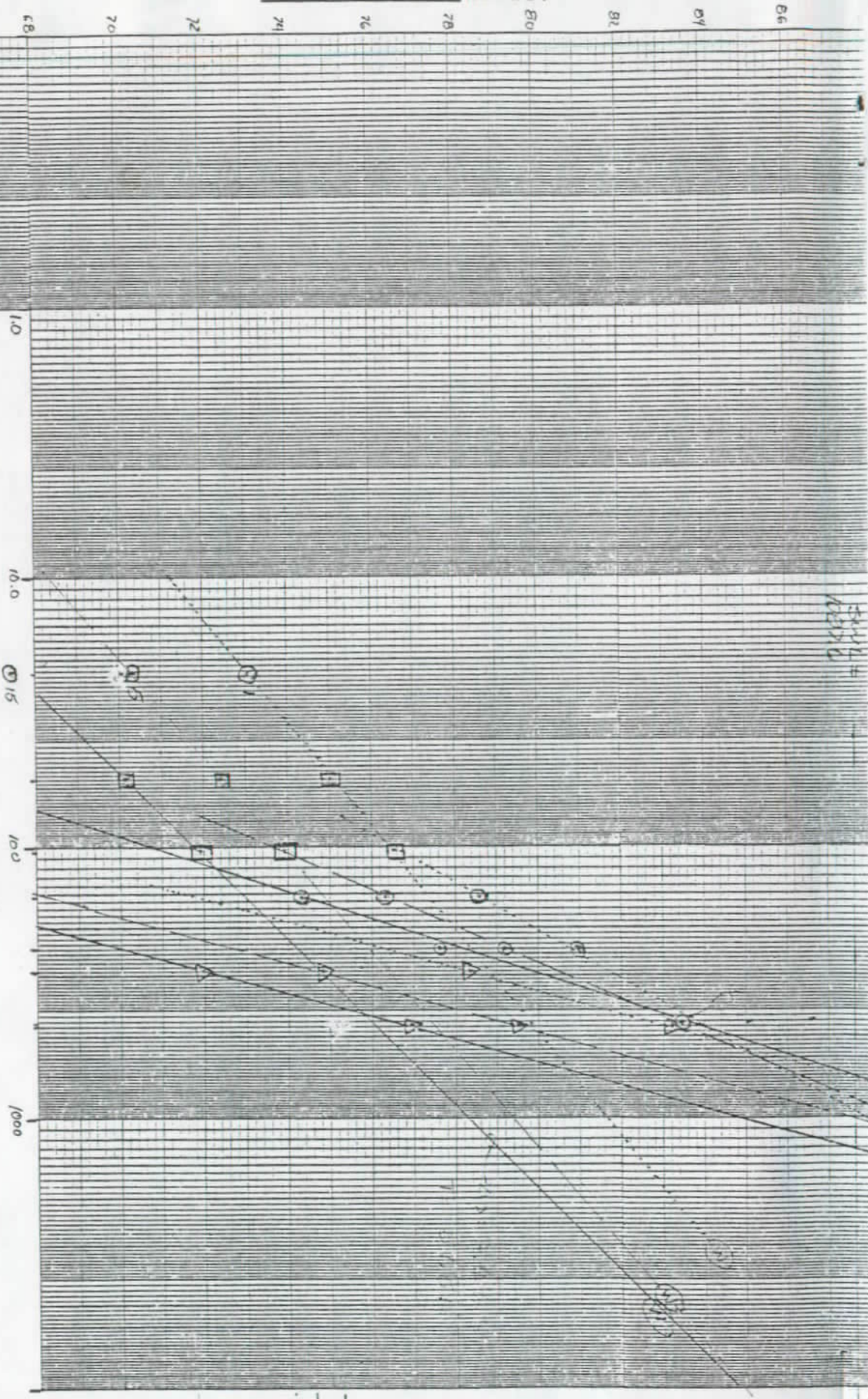
RECEIVED OF City of Dell Rapids, PO Box 10, Dell Rapids, SD 57022

the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. _____ to Appropriate Water, to construct works and to put water to beneficial use _____	42	50
Fee for Application for Permit No. _____ to Appropriate Water for Future Use _____		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____		
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for Certified Copy of _____		
Fee for Print Copy of Map _____		
Fee for Certifying _____		
Fee for _____		
(Any Other Work Provided by Law)	Total	42 50

By John Hatch
Chief Engineer JOHN+HATCH/ms

WATER SURF. ELEV IN FEET



$$S = \frac{0.3 T_0}{r^2}$$

$$= \frac{0.3 \times}{()^2}$$

$$=$$

TIME SINCE PUMP ON OFF
- IN MINUTES -

$$T = \frac{264(Q)}{\Delta s}$$

$$T = \frac{g/\text{DAY}/\text{FT}}{g/\text{DAY}/\text{FT}}$$

WELL NO. _____

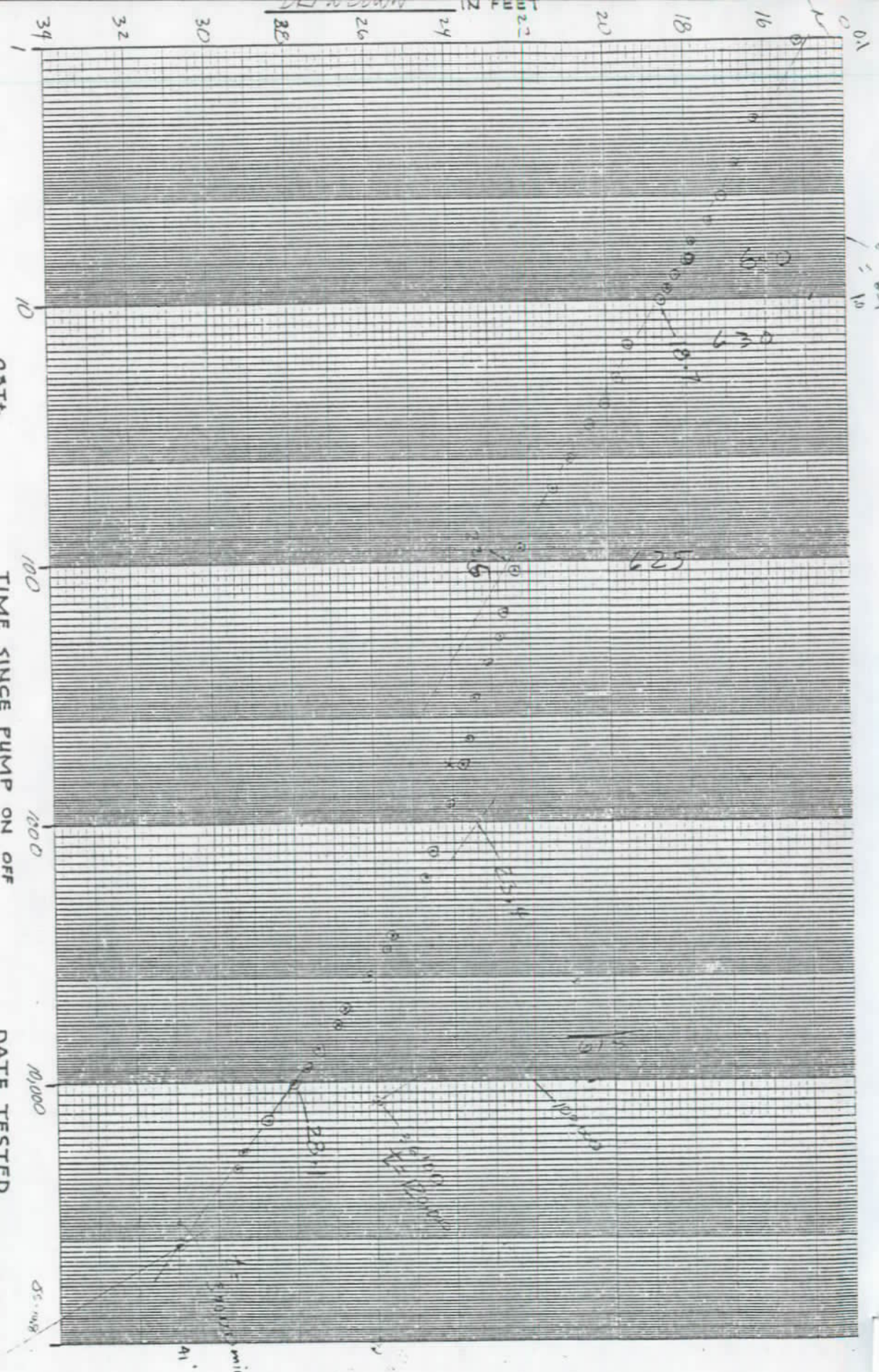
DISTANCE
VS. PUMP DOWN

DATE TESTED _____
PUMPING RATE (Q) _____
DISTANCE FROM PUMPED WELL (r) _____
 Δs_1 _____ Δs_2 _____

WELL #
SOUTH POINTS
WEST POINTS
NORTH POINTS

15 DAY
5 DAY
1 DAY

6.25 x 10⁻⁶
 10



$$S = \frac{0.5716}{r^2}$$

$$= \frac{0.3 \times}{(.85)^2}$$

$$=$$

TIME SINCE PUMP ON OFF
 - IN MINUTES -

$$T = \frac{264(Q)}{\Delta s}$$

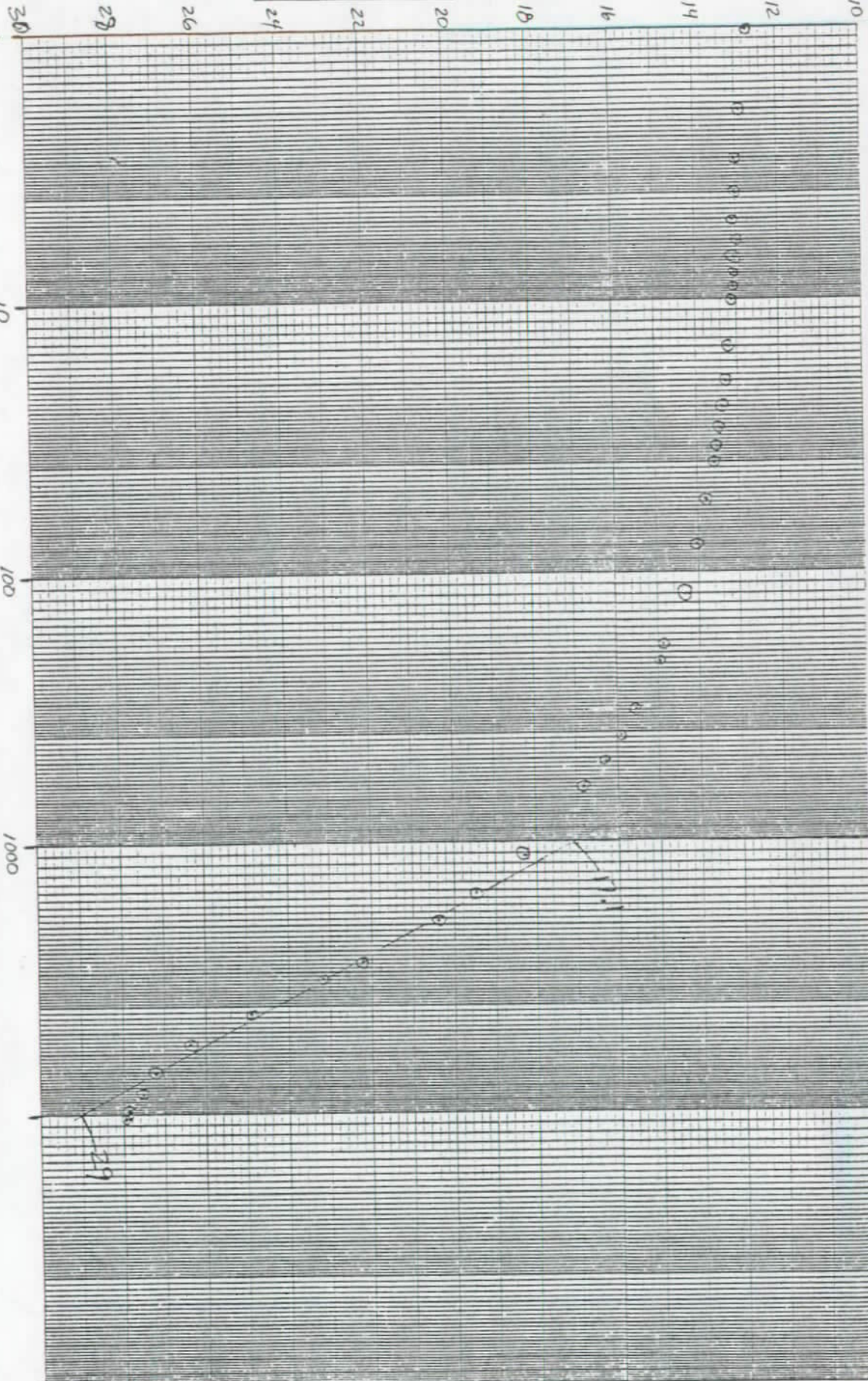
$$T = \frac{43,768}{34,545} \text{ g/day/ft}$$

DATE TESTED
 PUMPING RATE (Q) 632 ~ 615
 DISTANCE FROM PUMPCD WELL (r) .85
 Δs₁ 3.8 Δs₂ 4.7

TEST WELL NO. 1

TIME VS. DRAWDOWN

RECOVERY IN FEET



$$S = \frac{0.5 T_0}{r^2}$$

$$= \frac{0.3 \times}{()^2}$$

TIME SINCE PUMP ON OFF
- IN MINUTES -

$$T = \frac{264(Q)}{\Delta s} \quad T = \frac{13644}{g/DAY/FT}$$

DATE TESTED

PUMPING RATE (Q) 1615

DISTANCE FROM PUMPED WELL (r) .82

Δs_1 11.9 Δs_2

TEST

WELL NO. 1

TIME VS. Recovery

WELL TEST DATA REDUCTION PROGRAM * VISI-CALC

DATA SET-UP SECTION

CITY OF WELL RAPIDS TEST START
WATER EXPLORATION DATE 12/18/84

PARAMETER	TEST WELL 1	PARAMETER
ITEMS	DATA/UNITS	ELEVATION /LOCATION

EL EV. OF

GROUND >> 97.9 FEET

TOP CASING >> 97.90 CASING

TO GROUND >> .07 FEET

WELL DEPTH >> 97.97 CASING

TOTAL >> 60 FEET

SCREEN >> 37.90 BOTTOM

LENGTH >> 9 FEET

SCREEN >> 46.901/SCREEN

DIM >> 1.17 FEET

SCREEN >> .07 INCH

WELL BORE >> 1.67 FEET

DIST. FROM >> 0.58 FEET

PURGED >> 10.33 FEET

WELL >> 87.69H2O SURF

LEVEL >> -.05 FEET

MEASUREMENT >> 39.94 FEET

TO H2O >> 615 GPM/MIN

TEST FLOW >> 1345 HRS. MM. MM

TIME OF >> 13.75 HRS. HRS

START >> 11.42 HRS. HRS

STOP >> 11.42 HRS. HRS

WATER >> 20.77 GPM/FT DD

AVAILABLE >> ERROR

PROBATION >> ERROR

AVAILABLE >> ERROR

AT MAX DD

20.77 GPM/FT DD

NOTE: SHOW A CORRECTION OF -.05 FT.

: TIME TO SYNTHETIC ERRORS IN

: WATER SURFACE MEASUREMENTS.

FROM IN

WATER SURF

ELEVATION

WELL

1316.00	1.00	25.50	15.17	72.52
1347.00	2.00	26.58	16.25	71.44
1348.00	3.00	27.08	16.75	70.94
1349.00	4.00	27.50	17.17	70.52
1350.00	5.00	27.75	17.42	70.27
1351.00	6.00	28.17	17.84	69.85
1352.00	7.00	28.28	18.05	69.64
1353.00	8.00	28.58	18.25	69.44
1354.00	9.00	28.79	18.46	69.23
1355.00	10.00	28.92	18.59	69.10
1400.00	15.00	29.79	19.46	68.23
1405.00	20.00	30.08	19.75	67.94
1410.00	25.00	30.46	20.13	67.56
1415.00	30.00	30.79	20.46	67.23
1420.00	35.00	31.04	20.71	66.98
1425.00	40.00	31.29	20.96	66.73
1430.00	45.00	31.50	21.17	66.52
1437.00	52.00	31.73	21.40	66.29
1451.00	66.00	32.15	21.82	65.87
1513.00	88.00	32.60	22.27	65.42
1534.00	109.00	32.71	22.38	65.31
1553.00	128.00	32.88	22.55	65.14
1623.00	158.00	33.00	22.67	65.02
1640.00	175.00	33.08	22.75	64.94
1703.00	198.00	33.12	22.79	64.90
1754.00	249.00	33.39	23.06	64.63
1901.00	316.00	33.54	23.21	64.48
2001.00	376.00	33.67	23.34	64.35
2100.00	435.00	33.79	23.46	64.23
2155.00	490.00	33.94	23.61	64.08
2351.00	606.00	34.08	23.75	63.94
1.00	416.00	34.42	24.09	63.60
1.00	850.00	34.77	24.44	63.25
1.00	1124.00	34.89	24.56	63.13
1.00	1352.00	34.96	24.63	63.06
1.00	1655.00	35.10	24.77	62.92
1.00	2103.00	35.25	24.92	62.77
1.00	458.00	35.76	25.43	62.26
1.00	836.00	35.84	25.50	62.19
2.00	1183.00	35.92	25.59	62.10
2.00	1412.00	36.00	25.67	62.02
2.00	1643.00	36.10	25.77	61.92
2.00	2155.00	36.27	25.94	61.75
3.00	420.00	36.45	26.12	61.57
3.00	820.00	36.56	26.23	61.46
3.00	1458.00	36.72	26.39	61.30
3.00	2225.00	36.94	26.61	61.08
4.00	620.00	37.12	26.79	60.90
4.00	931.00	37.17	26.84	60.85
4.00	1512.00	37.24	26.91	60.78
4.00	1900.00	37.27	26.94	60.75
5.00	645.00	37.37	27.04	60.65
5.00	1213.00	37.59	27.26	60.43
5.00	1846.00	37.79	27.46	60.23
6.00	635.00	37.96	27.63	60.06
6.00	1744.00	38.03	27.70	59.99
7.00	728.00	38.17	27.84	59.85
7.00	1834.00	38.42	28.09	59.60
8.00	735.00	38.74	28.42	59.27
8.00	1980.00	38.92	28.59	59.10
9.00	748.00	39.00	28.57	59.03
9.00	1730.00	39.02	28.59	59.10
10.00	900.00	39.17	28.67	59.02
10.00	1730.00	39.17	28.67	59.02
11.00	730.00	39.50	29.17	58.52
11.00	2030.00	39.42	29.09	58.60

12.00	900.00	16995.00	39.67	29.34	58.35
12.00	2100.00	17715.00	39.67	29.34	58.35
13.00	900.00	18435.00	39.75	29.42	58.27
14.00	900.00	19155.00	39.75	29.42	58.27
15.00	900.00	21315.00	39.92	29.54	58.10
15.00	1125.00	21460.00	39.94	29.56	58.08

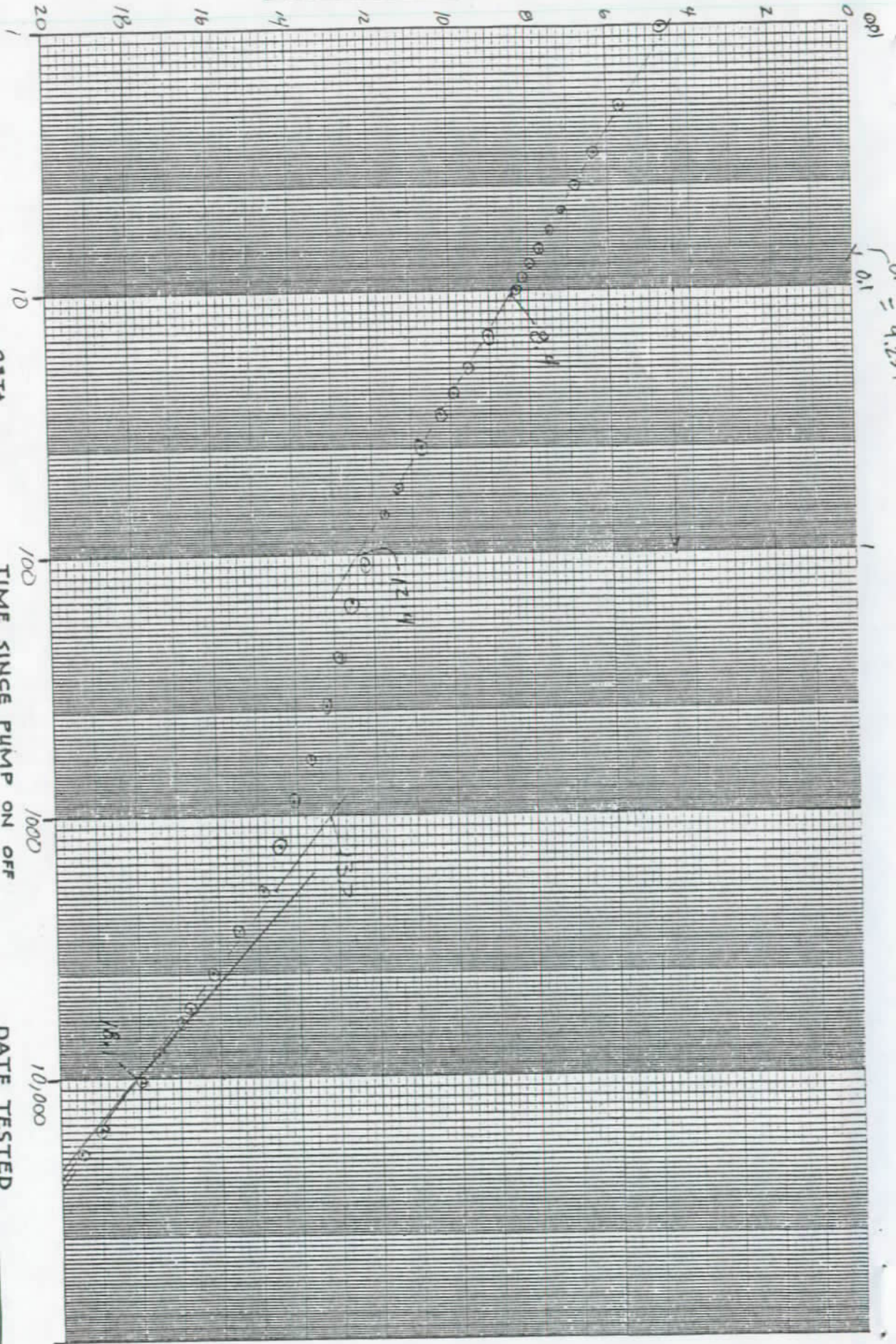
***** ALL WATER SURFACE ELEVATIONS
 : SHOW A CORRECTION OF -.05 FT.
 : DUE TO SYSTEMATIC ERRORS
 : IN MEASUREMENT.

RECOVERY			
RECOVERY		WATER SURF	
FROM MAX	WATER SURF	ELEVATION	
IN FEET	IN FEET		
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6.00	1617.00	6932.00	12.24	27.70	85.73
7.00	833.00	9908.00	12.07	27.87	85.90
7.00	1540.00	10235.00	12.00	27.94	85.97

DRAWDOWN IN FEET



0.00 min
= 9.23 x 10⁻¹ min

$$S = \frac{0.5T_0}{r^2}$$

$$= \frac{0.3 \times 41.58 \times 9.23 \times 10^{-1}}{(22.5)^2}$$

$$= 2.27 \times 10^{-5}$$

TIME SINCE PUMP ON OFF
- IN MINUTES -

$$T = \frac{264(Q)}{\Delta s}$$

$$T = \frac{41,580}{33,135} \text{ g/day/ft}$$

$$26,731$$

$$29,567$$

DATE TESTED

PUMPING RATE (Q) 630 ~ 615

DISTANCE FROM PUMPED WELL (r) 22.5

Δs_1 4 Δs_2 4.9

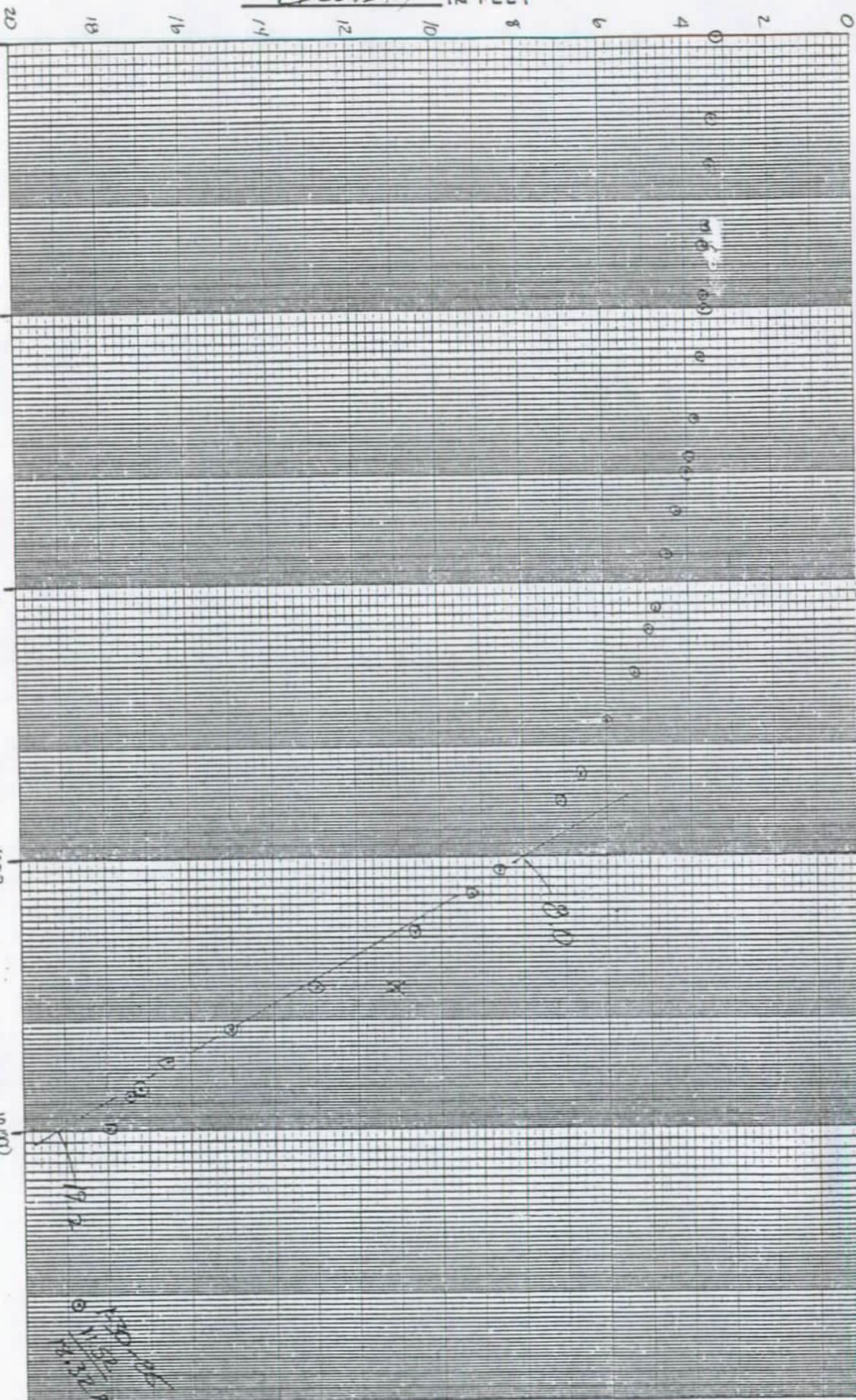
$$4.42$$

$$5.49$$

WELL NO. 51

TIME VS. D. DOWN

RECOVERY IN FEET



$$S = \frac{0.5 T h_0}{r^2}$$

$$= \frac{0.5 \times}{()^2} \times$$

=

TIME SINCE PUMP ON OFF
- IN MINUTES -

T. $\frac{264(Q)}{\Delta S}$ T. $\frac{14996}{g/day/ft}$ g/day/ft

T. $\frac{14996}{g/day/ft}$ g/day/ft

DATE TESTED

PUMPING RATE (Q)

DISTANCE FROM PUMPED WELL (r) 22.5

ΔS_1 11.2 ΔS_2

OB5 WELL NO. 51

TIME VS. RECOVERY

WELL TEST DATA REDUCTION PROGRAM * V151-CALC

DATA SET-UP SECTION

CITY OF WELL ID# _____ TEST START DATE 12/18/84
WATER EXPLORATION

PARAMETER	DATA/UNITS	PARAMETER	ELEVATION /LOCATION
ITEMS			

ELEV. OF _____

GROUND >> 97.90 FEET

TOP CASING >> 97.90 CASING

TO GROUND >> 0.45 FEET

WELL DEPTH >> 98.35 CASING

TOTAL >> 57.00 FEET

SCREEN >> 40.90 BOTTOM

SCREEN >> 3.00 FEET

SCREEN >> 0.13 FEET

SCREEN >> 0.20 INCH

WELL BORE >> 0.50 FEET

DIAM. >> 0.50 FEET

WELL >> 22.50 FEET

STATIC H2O >> 10.21 FEET

MEASUREMENT >> 87.59 H2O SURF

FACTOR >> 0.55 FEET

MAX DEPTH >> 29.64 FEET

TEST FLOW >> 615.00 GAL/MIN

(AVG) >> 615.00 GAL/MIN

TIME OF >> 1345.00 HRS. MM. PM

START >> 13.75 HRS. LBS

STOP >> 1125.00 HRS. MM. PM

TIME OF >> 11.42 HRS. LBS

STOP >> 11.42 HRS. LBS

WATER AVAILABLE >> ERROR SPECIFIC CAPACITY AT MAX PDS 21.33 GPM/FT TD

DRAW DOWN DATA SECTION
NOTE: ALL WATER SURFACE ELEVATIONS
: SHOW A CORRECTION OF .55 FT.
: DUE TO SYSTEMATIC ERRORS IN
: WATER SURFACE MEASUREMENTS.

NO	DAYS	TIME IN	LAP	HEAD/FT	FROM	WATER GAGE
1	24	HR	TIME	TO WATER	STATIC	ELEVATION
2	FOR	MINUTES	IN FEET	IN FEET	ELEVATION	

51

1	1345.00	0.00	10.21	0.00	82.59
2	1346.00	1.00	14.87	4.66	82.93
3	1347.00	2.00	15.89	5.68	81.91
4	1348.00	3.00	16.57	6.36	81.23
5	1349.00	4.00	17.00	6.79	80.80
6	1350.00	5.00	17.35	7.14	80.45
7	1351.00	6.00	17.66	7.45	80.14
8	1352.00	7.00	17.92	7.71	79.88
9	1353.00	8.00	18.15	7.94	79.65
10	1354.00	9.00	18.35	8.14	79.45
11	1355.00	10.00	18.54	8.33	79.26
12	1356.00	11.00	18.72	8.51	79.05
13	1357.00	12.00	18.89	8.68	78.84
14	1358.00	13.00	19.05	8.84	78.63
15	1359.00	14.00	19.20	8.99	78.42
16	1360.00	15.00	19.35	9.14	78.21
17	1361.00	16.00	19.49	9.28	78.01
18	1362.00	17.00	19.62	9.41	77.81
19	1363.00	18.00	19.75	9.54	77.62
20	1364.00	19.00	19.87	9.66	77.43
21	1365.00	20.00	19.99	9.78	77.25
22	1366.00	21.00	20.10	9.89	77.07
23	1367.00	22.00	20.21	10.00	76.89
24	1368.00	23.00	20.31	10.11	76.71
25	1369.00	24.00	20.41	10.21	76.53
26	1370.00	25.00	20.51	10.31	76.35
27	1371.00	26.00	20.61	10.41	76.17
28	1372.00	27.00	20.71	10.51	75.99
29	1373.00	28.00	20.81	10.61	75.81
30	1374.00	29.00	20.91	10.71	75.63
31	1375.00	30.00	21.01	10.81	75.45
32	1376.00	31.00	21.11	10.91	75.27
33	1377.00	32.00	21.21	11.01	75.09
34	1378.00	33.00	21.31	11.11	74.91
35	1379.00	34.00	21.41	11.21	74.73
36	1380.00	35.00	21.51	11.31	74.55
37	1381.00	36.00	21.61	11.41	74.37
38	1382.00	37.00	21.71	11.51	74.19
39	1383.00	38.00	21.81	11.61	74.01
40	1384.00	39.00	21.91	11.71	73.83
41	1385.00	40.00	22.01	11.81	73.65
42	1386.00	41.00	22.11	11.91	73.47
43	1387.00	42.00	22.21	12.01	73.29
44	1388.00	43.00	22.31	12.11	73.11
45	1389.00	44.00	22.41	12.21	72.93
46	1390.00	45.00	22.51	12.31	72.75
47	1391.00	46.00	22.61	12.41	72.57
48	1392.00	47.00	22.71	12.51	72.39
49	1393.00	48.00	22.81	12.61	72.21
50	1394.00	49.00	22.91	12.71	72.03
51	1395.00	50.00	23.01	12.81	71.85
52	1396.00	51.00	23.11	12.91	71.67
53	1397.00	52.00	23.21	13.01	71.49
54	1398.00	53.00	23.31	13.11	71.31
55	1399.00	54.00	23.41	13.21	71.13
56	1400.00	55.00	23.51	13.31	70.95
57	1401.00	56.00	23.61	13.41	70.77
58	1402.00	57.00	23.71	13.51	70.59
59	1403.00	58.00	23.81	13.61	70.41
60	1404.00	59.00	23.91	13.71	70.23
61	1405.00	60.00	24.01	13.81	70.05
62	1406.00	61.00	24.11	13.91	69.87
63	1407.00	62.00	24.21	14.01	69.69
64	1408.00	63.00	24.31	14.11	69.51
65	1409.00	64.00	24.41	14.21	69.33
66	1410.00	65.00	24.51	14.31	69.15
67	1411.00	66.00	24.61	14.41	68.97
68	1412.00	67.00	24.71	14.51	68.79
69	1413.00	68.00	24.81	14.61	68.61
70	1414.00	69.00	24.91	14.71	68.43
71	1415.00	70.00	25.01	14.81	68.25
72	1416.00	71.00	25.11	14.91	68.07
73	1417.00	72.00	25.21	15.01	67.89
74	1418.00	73.00	25.31	15.11	67.71
75	1419.00	74.00	25.41	15.21	67.53
76	1420.00	75.00	25.51	15.31	67.35
77	1421.00	76.00	25.61	15.41	67.17
78	1422.00	77.00	25.71	15.51	66.99
79	1423.00	78.00	25.81	15.61	66.81
80	1424.00	79.00	25.91	15.71	66.63
81	1425.00	80.00	26.01	15.81	66.45
82	1426.00	81.00	26.11	15.91	66.27
83	1427.00	82.00	26.21	16.01	66.09
84	1428.00	83.00	26.31	16.11	65.91
85	1429.00	84.00	26.41	16.21	65.73
86	1430.00	85.00	26.51	16.31	65.55
87	1431.00	86.00	26.61	16.41	65.37
88	1432.00	87.00	26.71	16.51	65.19
89	1433.00	88.00	26.81	16.61	65.01
90	1434.00	89.00	26.91	16.71	64.83
91	1435.00	90.00	27.01	16.81	64.65
92	1436.00	91.00	27.11	16.91	64.47
93	1437.00	92.00	27.21	17.01	64.29
94	1438.00	93.00	27.31	17.11	64.11
95	1439.00	94.00	27.41	17.21	63.93
96	1440.00	95.00	27.51	17.31	63.75
97	1441.00	96.00	27.61	17.41	63.57
98	1442.00	97.00	27.71	17.51	63.39
99	1443.00	98.00	27.81	17.61	63.21
100	1444.00	99.00	27.91	17.71	63.03

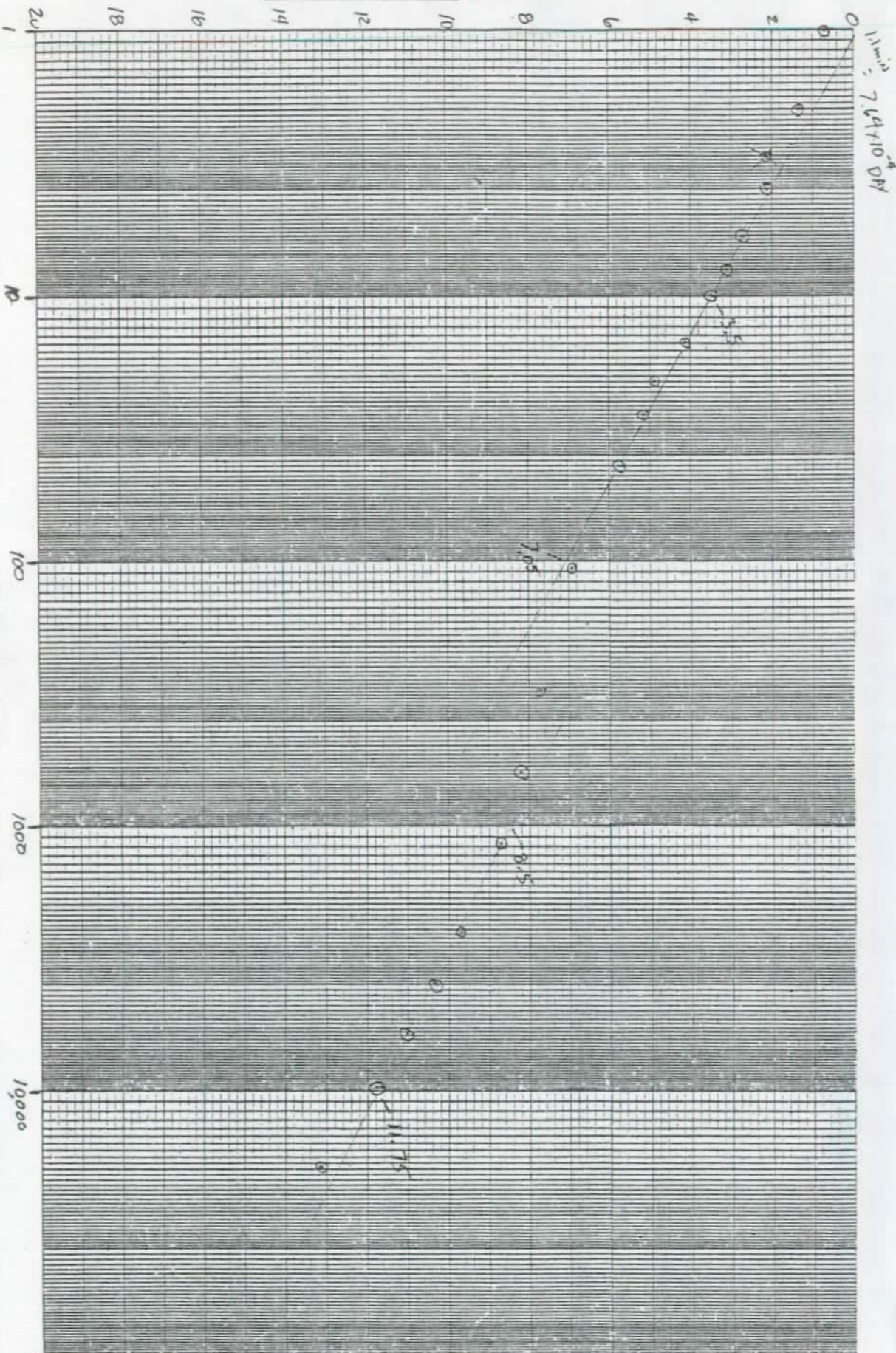
12.00	2009.00	16995.00	29.42	19.21	69.38
12.00	2100.00	17715.00	29.42	19.21	68.38
13.00	900.00	18435.00	29.50	19.29	68.30
14.00	900.00	19875.00	29.76	19.55	68.04
15.00	900.00	21315.00	29.83	20.17	67.97
15.00	1125.00	21460.00	29.84	20.18	67.96

ALL WATER SURFACE ELEVATIONS
SHOWN A CORRECTION OF .55
FT.
DUE TO SYSTEMATIC ERRORS
IN MEASUREMENT.

RECOVERY DATA SECTION	RECOVERY	NOTE	RECOVERY	WATER SURF
DAYS FROM STOP	TIME IN 24 HR FORMAT	LAP TIME MINUTES	MEASUREMENT TO WATER BROW IN IN FEET	ELEVATION
1126.00	1.00	26.67	3.17	71.68
1127.00	2.00	26.53	3.31	71.82
1128.00	3.00	26.48	3.36	71.87
1129.00	4.00	26.42	3.42	71.92
1130.00	5.00	26.35	3.49	72.00
1131.00	6.00	26.33	3.51	72.02
1132.00	7.00	26.31	3.53	72.04
1133.00	8.00	26.29	3.55	72.06
1134.00	9.00	26.27	3.57	72.08
1135.00	10.00	26.25	3.59	72.10
1140.00	15.00	26.17	3.67	72.18
1145.00	20.00	26.05	3.79	72.30
1150.00	25.00	25.96	3.88	72.39
1155.00	30.00	25.92	3.92	72.43
1200.00	35.00	25.87	3.97	72.48
1205.00	40.00	25.79	4.05	72.56
1210.00	45.00	25.74	4.10	72.61
1220.00	55.00	25.61	4.23	72.74
1230.00	65.00	25.56	4.28	72.79
1245.00	80.00	25.39	4.45	72.96
1300.00	95.00	25.26	4.58	73.09
1320.00	125.00	25.06	4.78	73.29
1354.00	149.00	24.89	4.95	73.46
1430.00	195.00	24.68	5.16	73.67
1509.00	215.00	24.51	5.33	73.84
1555.00	270.00	24.18	5.66	74.17
1659.00	324.00	23.89	5.95	74.46
1815.00	410.00	23.58	6.26	74.77
1859.00	454.00	23.40	6.41	74.95
1957.00	512.00	23.21	6.63	75.14
2103.00	578.00	22.96	6.88	75.39
2210.00	645.00	22.77	7.07	75.59
2402.00	1117.00	21.25	8.59	77.10
2413.00	1248.00	20.87	8.97	77.48
2414.00	1369.00	20.53	9.31	77.82
2415.00	1547.00	20.08	9.76	78.27
2416.00	1757.00	19.58	10.26	78.77
2417.00	1928.00	19.17	10.67	79.18
2418.00	2722.00	17.39	12.45	80.96
2419.00	3050.00	16.77	13.07	81.58
2420.00	3200.00	16.50	13.24	81.95
2421.00	4280.00	14.77	15.07	83.58
2422.00	4670.00	14.23	15.61	84.12
2423.00	5460.00	13.27	16.57	85.08
2424.00	6125.00	13.04	16.90	85.31
2425.00	6925.00	12.62	17.22	85.71
2426.00	7490.00	12.39	17.45	85.96

6.00	830.00	8965.00	12.19	17.65	56.16
6.00	1616.00	8931.00	12.03	17.81	56.32
7.00	832.00	8907.00	11.85	17.99	56.50
7.00	1541.00	10336.00	11.83	18.01	56.52
9.00	830.00	12785.00	11.25	18.59	57.10

DRAW DOWN IN FEET



$$S = \frac{0.5T_0}{r^2}$$

$$= \frac{0.3 \times 47 \times 7.64 \times 10^{-4}}{(157)^2}$$

$$= 4.37 \times 10^{-4}$$

TIME SINCE PUMP ON - IN MINUTES

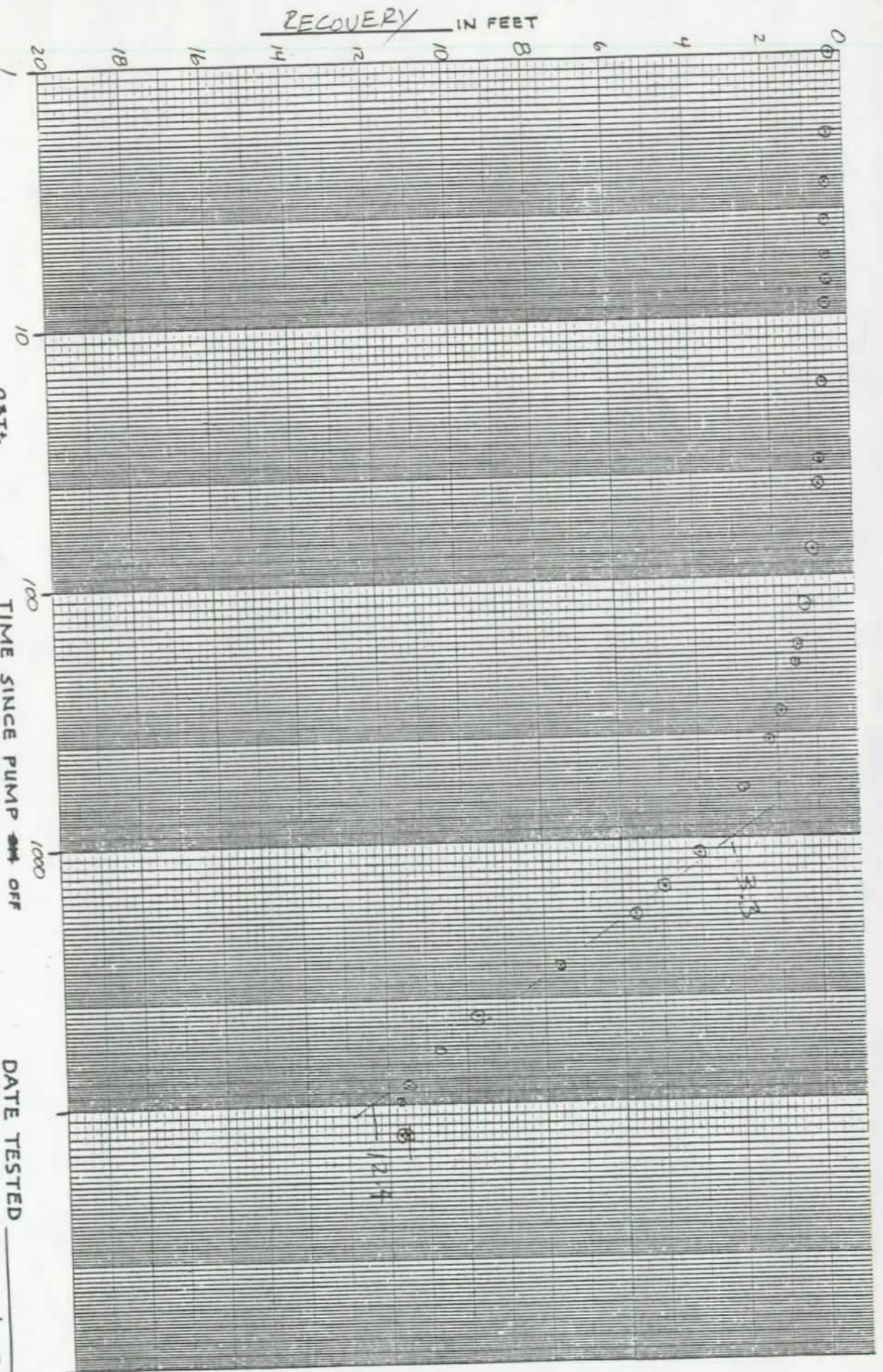
$$T = \frac{264(Q)}{\Delta S}$$

$$T = \frac{49,951}{49,951} \text{ g/day/ft}$$

DATE TESTED _____
PUMPING RATE (Q) 6.30 ~ 6.15
DISTANCE FROM PUMPED WELL (r) 157
 ΔS_1 3.55 ΔS_2 3.25

035 WELL NO. 52

TIME VS. DRAW DOWN



$$S = \frac{0.5 T t_0}{r^2}$$

$$= \frac{0.3x}{x}$$

TIME SINCE PUMP ~~SH~~ OFF
-IN MINUTES-

$$T_s = \frac{264(g)}{\Delta s} \quad T_s = \frac{17,842}{g/day/ft} \quad T_s = \frac{17,842}{g/day/ft}$$

$$T_s \frac{264(q)}{\Delta s} \quad T_s = \frac{17892}{g/DAT/rT}$$

DATE TESTED

PUMPING RATE (Q) 6.15

DISTANCE FROM PUMPED WELL (r) ~~ft~~
$$\Delta S_1 \quad \underline{7.1} \quad \Delta S_2$$

DBS WELL NO. 52

TIME VS. RECOVERY

WELL TEST DATA REDUCTION PROGRAM * VSI-CALC

DATA SET-UP SECTION

CITY OF DELL RAPIDS TEST START DATE 12/18/84
WATER EXPLORATION

PARAMETER OBS WELL \$2 PUMP/ETER ELEVATION /LOCATION
ITEMS DATA/UNITS

ELEV. OF BORE OF
GROUND >> 96.90 FEET
TOP CASTING 96.90 CASTING
TO GROUND > 0.87 FEET 97.77 CASTING
WELL DEPTH
TOTAL >> 57.00 FEET 39.20 BOTTOM
SCREEN
LENGTH >> 3.00 FEET 42.901/SCREEN
SCREEN
DIAM >> 0.13 FEET
SCREEN
SLOT # >> 0.20 INCH
WELL BORE
DIAM. >> 0.50 FEET
DIST. FROM
PUMPED
WELL >> 157.00 FEET
STATIC H2O
LEVEL >> 10.21 FEET 87.56420 SURF
PENS MENT
CORRECT
FACTOR >> 0.00 FEET
MAX DEPTH
TO H2O >> 23.45 FEET 74.32
TEST FLOW
(AVG) >> 615.00 GAL/MIN
TIME OF
START >> 1345.00 HRS. MIN. SEC 13.75 HRS. HRS
TIME OF
STOP >> 1125.00 HRS. MIN. SEC 11.42 HRS. HRS

WATER
AVAILABLE >> ERROR
DISAPPEAR >> ERROR
SPECIFIC
CAPACITY
AT 100 FT DD 46.45 GPM/FT DD

: ALL WATER SURFACE ELEVATIONS
: SHOW A CORRECTION OF 0
: FT.
: WATER SURFACE MEASUREMENTS.

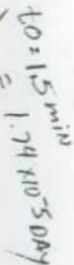
: DRAW DOWN
: DATA SECTION

: DAYS TIME IN LAP HEAD/WT FROM WATER SURF
: FROM 24 HR TIME TO WATER STATIC IN FEET ELEVATION
: START FORWRT MINUTES IN FEET IN FEET ELEVATION

1345.00	0.00	10.21	0.00	87.56
1346.00	1.00	10.98	0.77	86.79
1347.00	2.00	11.53	1.34	86.22
1348.00	4.00	12.35	2.14	85.42
1349.00	6.00	12.89	2.68	84.88
1350.00	8.00	13.32	3.11	84.45
1351.00	10.00	13.68	3.47	84.09
1352.00	15.00	14.34	4.13	83.43
1353.00	21.00	15.09	4.88	82.68
1354.00	26.00	15.22	5.01	82.55
1355.00	28.00	15.35	5.14	82.42
1356.00	33.00	15.53	5.32	82.24
1357.00	38.00	15.95	5.74	81.82
1358.00	44.00	16.30	6.09	81.47
1359.00	54.00	16.53	6.32	81.24
1360.00	61.00	16.73	6.52	81.04
1361.00	72.00	17.00	6.79	80.77
1362.00	91.00	17.15	6.94	80.62
1363.00	107.00	17.28	7.07	80.49
1364.00	130.00	17.41	7.20	80.36
1365.00	159.00	17.60	7.39	80.17
1366.00	207.00	17.79	7.56	79.98
1367.00	268.00	17.90	7.69	79.87
1368.00	311.00	18.05	7.84	79.72
1369.00	390.00	18.14	7.93	79.63
1370.00	447.00	18.21	8.00	79.56
1371.00	506.00	18.41	8.20	79.36
1372.00	631.00	18.70	8.49	79.07
1373.00	887.00	18.95	8.74	78.82
1374.00	1163.00	19.06	8.85	78.71
1375.00	1301.00	19.19	8.98	78.58
1376.00	1452.00	19.31	9.10	78.46
1377.00	1635.00	19.49	9.28	78.23
1378.00	1883.00	19.76	9.55	78.01
1379.00	2282.00	19.90	9.69	77.87
1380.00	2567.00	19.98	9.77	77.79
1381.00	2749.00	20.06	9.85	77.71
1382.00	2912.00	20.14	9.93	77.63
1383.00	3058.00	20.28	10.07	77.49
1384.00	3374.00	20.50	10.29	77.27
1385.00	3775.00	20.55	10.34	77.22
1386.00	4002.00	20.70	10.49	77.07
1387.00	4394.00	20.91	10.70	76.86
1388.00	4865.00	20.95	10.74	76.82
1389.00	5325.00	21.06	10.85	76.71
1390.00	5513.00	21.15	10.94	76.62
1391.00	5667.00	21.22	11.01	76.55
1392.00	6084.00	21.40	11.19	76.37
1393.00	6788.00	21.50	11.29	76.27
1394.00	7131.00	21.68	11.47	76.09
1395.00	7510.00	21.86	11.65	75.91
1396.00	8220.00	22.00	11.79	75.77
1397.00	8896.00	22.15	11.94	75.62
1398.00	9710.00	22.32	12.11	75.45
1399.00	10388.00	22.37	12.15	75.40
1400.00	11155.00	22.47	12.26	75.30
1401.00	11865.00	22.60	12.39	75.17
1402.00	12610.00	22.67	12.46	75.10
1403.00	13305.00	22.70	12.49	75.07
1404.00	14055.00	22.84	12.63	74.93
1405.00	14625.00	22.91	12.70	74.86
1406.00	16975.00	23.07	12.81	74.75
1407.00	17715.00	23.10	12.89	74.67
1408.00	18435.00	23.15	12.94	74.52
1409.00	19275.00	23.20	13.09	74.47

15.00	900.00	21315.00	23.42	13.21	74.39
15.00	1125.00	21460.00	23.45	13.24	74.32
					97.77
					97.77
***** ALL WATER SURFACE ELEVATIONS SHOW A CORRECTION OF 0 FOE TO SYSTEMATIC ERRORS IN MEASUREMENT. *****					
RECOVERY	NOTE:				
DATA SECTION					
DAYS	TIME IN	LAP	MEAS-MINT	FROM MAX	WATER SURF
FROM	24 HR	TIME	TO WATER	IN IN	ELEVATION
STOP	FORMAT	MINUTES	IN FEET	IN FEET	
	1126.00	1.00	23.12	0.33	74.65
	1127.05	2.05	23.06	0.39	74.71
	1128.15	3.15	23.01	0.44	74.76
	1129.40	4.40	22.98	0.47	74.79
	1131.00	6.00	22.94	0.51	74.83
	1132.30	7.30	22.94	0.51	74.83
	1134.00	9.00	22.89	0.56	74.88
	1135.20	10.20	22.88	0.57	74.89
	1138.00	13.00	22.83	0.62	74.94
	1143.00	18.00	22.79	0.67	74.99
	1202.00	37.00	22.66	0.79	75.11
	1210.30	45.30	22.60	0.85	75.17
	1231.00	66.00	22.50	0.95	75.27
	1245.00	80.00	22.45	1.00	75.32
	1334.00	129.00	22.22	1.23	75.55
	1430.00	185.00	22.02	1.43	75.75
	1438.00	193.00	22.00	1.45	75.77
	1500.00	215.00	21.92	1.53	75.85
	1558.00	273.00	21.71	1.74	76.06
	1658.00	333.00	21.52	1.93	76.25
	1820.00	423.00	21.24	2.21	76.53
	1907.00	462.00	21.12	2.33	76.65
	2014.00	529.00	20.92	2.53	76.85
	2114.00	589.00	20.75	2.70	77.02
	2223.00	658.00	20.58	2.87	77.19
	618.00	1133.00	19.42	4.03	78.35
	820.00	1255.00	19.12	4.33	78.65
	1019.00	1374.00	18.88	4.57	78.89
	1320.00	1555.00	18.50	4.95	79.27
	1637.00	1752.00	18.10	5.35	79.67
	1928.00	1923.00	17.75	5.70	80.02
	2000.00	2000.00	16.39	7.06	81.28
	2000.00	2000.00	15.84	7.61	81.93
	2000.00	2000.00	15.64	7.81	82.13
	2000.00	2000.00	14.15	9.30	83.62
	2000.00	2000.00	14.15	9.30	83.62
	2000.00	2000.00	13.70	9.75	84.07
	2000.00	2000.00	12.90	10.55	84.87
	2000.00	2000.00	12.69	10.76	85.08
	2000.00	2000.00	12.30	11.15	85.47
	2000.00	2000.00	12.16	11.29	85.61
	2000.00	2000.00	11.98	11.47	85.79
	2000.00	2000.00	11.85	11.60	85.92
	2000.00	2000.00	11.70	11.75	86.07
	2000.00	2000.00	11.70	11.75	86.07

IN FEET



$$S = \frac{0.5710}{1.2}$$

$$T = \frac{56,379}{\Delta S}$$

G/DAY/FT

PUMPING RATE (Q) $\frac{630 - 615}{2}$

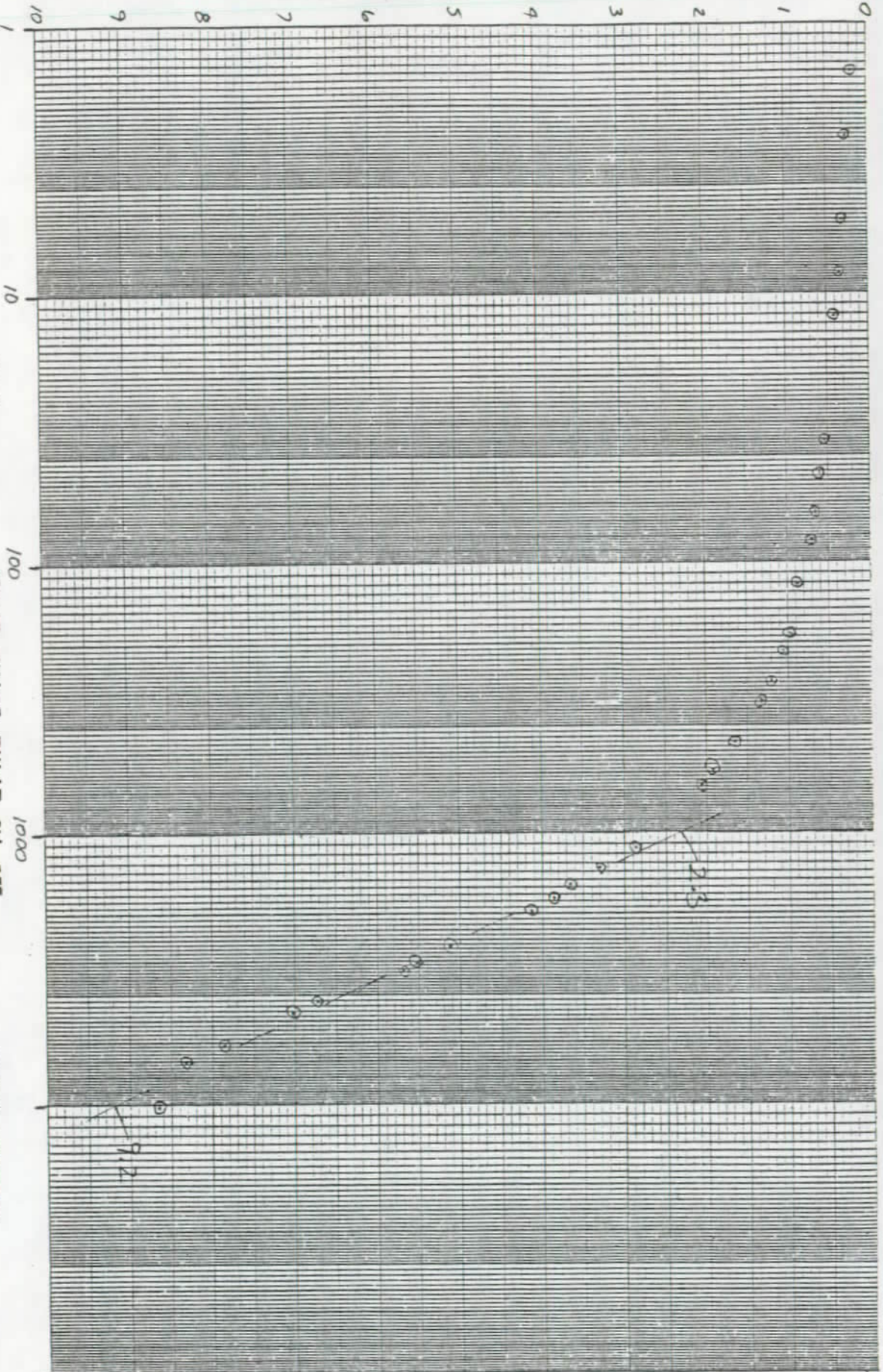
240

3.2

CSW

Down

RECOVERY IN FEET



$$S = \frac{0.5T_0}{r^2}$$

$$= \frac{0.5 \times}{()^2}$$

TIME SINCE PUMP ON OFF
- IN MINUTES -

$$T = \frac{264(Q)}{\Delta s}$$

$$T = 23.194$$

$$Q/DAY/FT$$

$$T = \frac{Q/DAY/FT}{\Delta s}$$

DATE TESTED

PUMPING RATE (Q) 615

DISTANCE FROM PUMPED WELL (r) 240

Δs_1 7 Δs_2

OBS WELL NO. 53

TIME VS. Recovery

1345.00	0.00	9.53	0.00	87.56
1350.00	3.00	10.50	0.97	86.59
1355.00	5.00	10.99	1.46	86.10
1360.00	7.00	11.40	1.87	85.69
1365.00	9.00	11.71	2.19	85.38
1370.00	16.00	12.52	2.99	84.57
1375.00	22.00	12.94	3.41	84.15
1380.00	27.00	13.21	3.68	83.88
1385.00	34.00	13.44	3.91	83.65
1390.00	42.00	13.70	4.17	83.39
1395.00	53.00	13.96	4.43	83.13
1400.00	62.00	14.18	4.65	82.91
1405.00	73.00	14.35	4.82	82.74
1410.00	92.00	14.60	5.07	82.49
1415.00	108.00	14.68	5.15	82.41
1420.00	121.00	14.73	5.25	82.31
1425.00	157.00	14.99	5.37	82.19
1430.00	208.00	15.00	5.47	82.09
1435.00	269.00	15.19	5.65	81.91
1440.00	312.00	15.20	5.67	81.89
1445.00	391.00	15.38	5.85	81.71
1450.00	449.00	15.44	5.91	81.65
1455.00	508.00	15.51	5.98	81.58
1460.00	632.00	15.67	6.14	81.42
1465.00	891.00	15.84	6.31	81.25
1470.00	1164.00	16.05	6.52	81.04
1475.00	1303.00	16.14	6.61	80.95
1480.00	1453.00	16.22	6.69	80.87
1485.00	1636.00	16.32	6.79	80.77
1490.00	1864.00	16.46	6.93	80.63
1495.00	2365.00	16.67	7.14	80.42
1500.00	2568.00	16.74	7.21	80.35
1505.00	2750.00	16.80	7.27	80.29
1510.00	2913.00	16.86	7.33	80.23
1515.00	3060.00	16.92	7.39	80.17
1520.00	3375.00	17.03	7.50	80.06
1525.00	3776.00	17.20	7.67	79.89
1530.00	4004.00	17.23	7.70	79.86
1535.00	4396.00	17.34	7.81	79.75
1540.00	4867.00	17.47	7.94	79.62
1545.00	5327.00	17.55	8.02	79.54
1550.00	5915.00	17.62	8.09	79.47
1555.00	5849.00	17.70	8.17	79.39
1560.00	6065.00	17.72	8.19	79.37
1565.00	6789.00	17.88	8.35	79.21
1570.00	7133.00	17.91	8.38	79.18
1575.00	7515.00	18.00	8.47	79.09
1580.00	8222.00	18.12	8.59	78.97
1585.00	8899.00	18.22	8.69	78.87
1590.00	9711.00	18.34	8.81	78.75
1595.00	10389.00	18.47	8.94	78.62
1600.00	11155.00	18.55	9.02	78.54
1605.00	11965.00	18.65	9.12	78.41
1610.00	12610.00	18.72	9.19	78.37
1615.00	13305.00	18.78	9.25	78.31
1620.00	14055.00	18.85	9.32	78.24
1625.00	14625.00	18.88	9.35	78.21
1630.00	15465.00	18.90	9.47	78.09
1635.00	16245.00	18.10	9.57	77.99
1640.00	16995.00	18.14	9.61	77.95
1645.00	17715.00	18.15	9.62	77.94
1650.00	18435.00	19.23	9.70	77.86
1655.00	19075.00	19.35	9.82	77.74
1660.00	21315.00	19.45	9.93	77.64
1665.00	21460.00	19.46	9.93	77.63

$t = 10 \text{ m}$
 $\gamma = 2.96$
 $\omega(\gamma) = 1.56$
 $\gamma = 7.4$
 $\gamma = 4.1 \times 10^4$
 $T = 0.7323$

RECOVERY
DATA SECTION

ALL WATER SURFACE ELEVATIONS
SHOULD BE CORRECTED TO 0
NOTE: DUE TO SYSTEMATIC ERRORS
IN MEASUREMENT. FT.

DAYS FROM STOP	TIME IN 24 HR FORMAT	LAP TIME MINUTES	MEAS./MILE TO WATER IN FEET	FROM MAX BROW IN IN FEET	WATER SURF ELEVATION
1.00	1126.30	1.30	19.30	0.19	77.79
1.00	1127.40	2.40	19.23	0.25	77.86
1.00	1129.00	4.00	19.25	0.23	77.84
1.00	1130.30	5.30	19.18	0.30	77.91
1.00	1131.50	6.50	19.14	0.34	77.95
1.00	1133.30	8.30	19.14	0.34	77.95
1.00	1134.45	9.45	19.13	0.35	77.96
1.00	1137.15	12.15	19.08	0.40	78.01
1.00	1144.00	19.00	19.03	0.45	78.06
1.00	1146.30	21.30	19.00	0.48	78.09
1.00	1200.00	35.00	18.95	0.53	78.14
1.00	1211.30	46.30	18.88	0.60	78.21
1.00	1232.00	67.00	18.92	0.66	78.27
1.00	1248.00	83.00	18.77	0.71	78.32
1.00	1326.00	121.00	18.61	0.87	78.48
1.00	1433.00	188.00	18.53	0.95	78.56
1.00	1500.00	215.00	18.44	1.04	78.65
1.00	1559.00	274.00	18.28	1.20	78.81
1.00	1700.00	335.00	18.14	1.34	78.95
1.00	1836.00	421.00	17.94	1.54	79.15
1.00	1907.00	462.00	17.84	1.64	79.25
1.00	2016.00	531.00	17.70	1.78	79.39
1.00	2116.00	591.00	17.58	1.90	79.51
1.00	2224.00	659.00	17.44	2.04	79.65
1.00	620.00	1135.00	16.60	2.88	80.49
1.00	822.00	1257.00	16.37	3.11	80.72
1.00	1020.00	1375.00	16.17	3.31	80.92
1.00	1322.00	1557.00	15.91	3.57	81.18
1.00	1635.00	1750.00	15.63	3.85	81.46
1.00	1949.00	1941.00	15.35	4.13	81.74
2.00	858.00	2733.00	14.34	5.14	82.75
2.00	1421.00	3056.00	13.97	5.51	83.12
2.00	1645.00	3200.00	13.80	5.68	83.29
3.00	1045.00	4280.00	12.75	6.73	84.34
3.00	1719.00	4674.00	12.46	7.02	84.63
4.00	945.00	5660.00	11.80	7.68	85.29
4.00	1745.00	6140.00	11.53	7.85	85.46
5.00	800.00	6925.00	11.16	8.32	85.93
5.00	1615.00	7490.00	11.21	8.27	85.88
6.00	830.00	8465.00	11.09	8.39	86.00
6.00	1624.00	8939.00	10.96	8.52	86.13
7.00	840.00	9915.00	10.85	8.63	86.24
7.00	1543.00	10343.00	10.83	8.65	86.26

WELL TEST DATA REDUCTION PROGRAM * V181-CALC

DATA SET-UP SECTION

CITY OF BELL RAPIDS TEST START
WATER EXPLORATION DATE 12/28/84

PARAMETER DATA/UNITS PARAMETER ELEVATION /LOCATION
ITEMS

FL.EV. OF BASE OF

GROUND >> 95.50 FEET 95.50 CASING
TOP CASING >> 0.22 FEET 95.72 CASING

WELL DEPTH >> 57.00 FEET 38.50 BOTTOM

SCREEN LENGTH >> 3.00 FEET 41.501/SCREEN

SCREEN DIAM >> 0.13 FEET

SLOT # >> 0.20 INCH

WELL BORE DIAM. >> 0.50 FEET

PUMPED FROM

WELL >> 446.00 FEET

STATIC H2O LEVEL >> 8.22 FEET 87.50120 SURF

MEASUREMENT CORRECT

FACTOR >> 0.00 FEET

MAX DEPTH TO H2O >> 13.66 FEET 82.06

TEST FLOW (GVS) >> 615.00 GAL/MIN

TIME OF START >> 1345.00 HRS.MM.MM 13.75 HRS.HRS

TIME OF STOP >> 1125.00 HRS.MM.MM 11.42 HRS.HRS

WATER AVAILABLE >> ERROR

PROGRAM AVAILABLE >> ERROR

SPECIFIC CAPACITY AT MAX PD 113.05 GPM/FT PD

***** ALL WATER SURFACE ELEVATIONS
***** SHOW A CORRECTION OF 0 FT.
***** DUE TO SYSTEMATIC ERRORS IN
***** WATER SURFACE MEASUREMENTS.

10	9.00	1530.00	13065.00	13.25	5.03	82.47
11	9.00	1530.00	13305.00	13.29	4.98	82.52
12	10.00	800.00	14055.00	13.25	5.03	82.47
13	10.00	1730.00	14625.00	13.29	5.07	82.43
14	11.00	730.00	15465.00	13.37	5.15	82.35
15	11.00	2030.00	16245.00	13.42	5.20	82.30
16	12.00	900.00	16995.00	13.47	5.25	82.25
17	12.00	2100.00	17715.00	13.45	5.23	82.27
18	13.00	900.00	18435.00	13.53	5.31	82.19
19	14.00	900.00	19675.00	13.60	5.38	82.12
20	15.00	900.00	21315.00	13.65	5.43	82.07
21	15.00	1125.00	21460.00	13.66	5.44	82.06

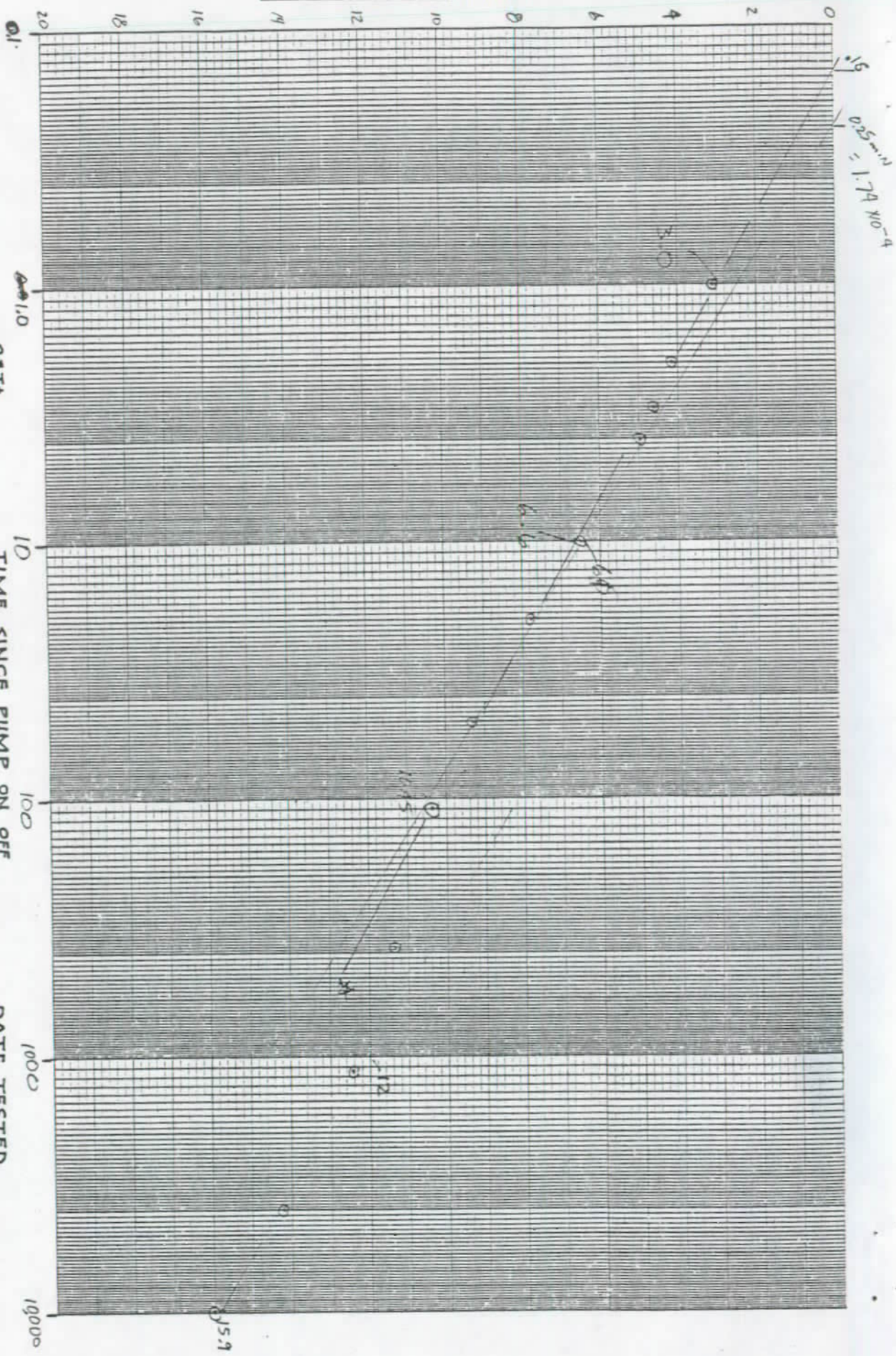
1
2
2.47
1.1
D_s = 2.24

***** ALL WATER SURFACE ELEVATIONS
SHOW A CORRECTION OF 0
FT. IN MEASUREMENT. *****

RECOVERY DATA SECTION	RECOVERY	TIME IN	LAP	MEAS/INT	FROM MAX	WATER SURF
FROM STOP	24 HR	MINUTES	IN FEET	IN FEET	ELEVATION	
1	1141.00	16.00	13.57	0.09	82.15	
2	1151.00	26.00	13.50	0.16	82.22	
3	1213.00	48.00	13.46	0.20	82.26	
4	1234.00	69.00	13.42	0.24	82.30	
5	1502.00	217.00	13.31	0.35	82.41	
6	1600.00	275.00	13.21	0.45	82.51	
7	1912.00	467.00	13.03	0.63	82.69	
8	2019.00	534.00	12.96	0.70	82.76	
9	2119.00	594.00	12.90	0.76	82.82	
10	2227.00	662.00	12.84	0.82	82.88	
11	630.00	1145.00	12.40	1.26	83.32	
12	825.00	1260.00	12.35	1.31	83.37	
13	1022.00	1377.00	12.24	1.42	83.48	
14	1324.00	1559.00	12.09	1.57	83.63	
15	1634.00	1749.00	11.95	1.71	83.77	
16	1952.00	1947.00	11.84	1.82	83.88	
17	200.00	2735.00	11.28	2.39	84.44	
18	1420.00	3055.00	11.09	2.57	84.63	
19	1600.00	3155.00	10.99	2.67	84.73	
20	1100.00	4295.00	10.37	3.29	85.35	
21	3.00	1721.00	4676.00	10.17	3.49	85.55
22	4.00	945.00	5660.00	9.81	3.85	85.91
23	4.00	1745.00	6140.00	9.71	3.95	86.01
24	5.00	800.00	6995.00	9.60	4.06	86.12
25	6.00	1630.00	7705.00	9.41	4.22	86.29
26	6.00	830.00	8445.00	9.37	4.29	86.35
27	6.00	1627.00	8942.00	9.29	4.37	86.43
28	7.00	842.00	9917.00	9.20	4.46	86.52
29	7.00	1559.00	10345.00	9.29	4.46	86.52

1000' 0.54
4.54
D_s 3.58

DRAW DOWN IN FEET



$$S = \frac{0.5T_0}{r^2}$$

$$= \frac{0.3 \times 41.58 \times 1.74 \times 10^{-4}}{(1.74)^2}$$

$$= \frac{2.48067 \times 10^{-4}}{6.92 \times 10^{-4}}$$

TIME SINCE PUMP ON OFF
- IN MINUTES -

$$T = \frac{264(Q)}{\Delta s} \quad T = \frac{41580}{6104/ft}$$

$$T = \frac{41651}{6104/ft}$$

DATE TESTED

PUMPING RATE (Q) 6.80 ~ 6.15

DISTANCE FROM PUMPED WELL (r) 10456

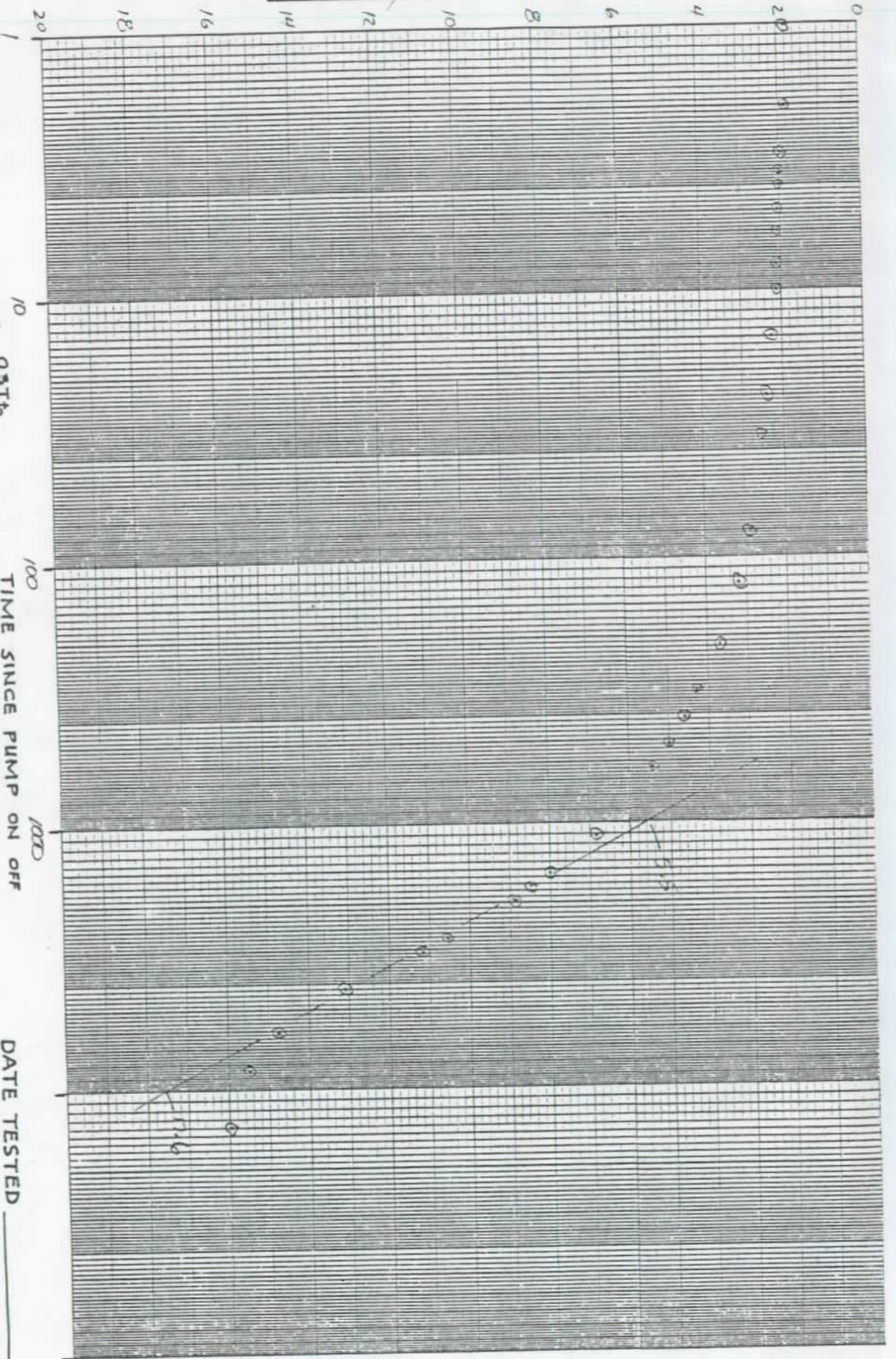
Δs_1 9 Δs_2 3.9

3.6

OBS WELL NO. W1

TIME VS. D.D.

RECOVERY IN FEET



$$S = \frac{0.3T_0}{r^2}$$

$$= \frac{0.3 \times}{()^2}$$

=

TIME SINCE PUMP ON OFF
- IN MINUTES -

$$T = \frac{264(Q)}{\Delta s} \quad T = \frac{13,418}{\Delta s} \quad \frac{g/day/ft}{g/day/ft}$$

T =

DATE TESTED

PUMPING RATE (Q) 645

DISTANCE FROM PUMPCD WELL (r) 56

Δs_1 12.1 Δs_2

OBS WELL NO. 41

TIME VS. RECOVERY

B
WELL TEST DATA REDUCTION PROGRAM - VSI-CALC

DATA SET-UP SECTION

ACTY OF WELL RPTDTS TEST START
WATER EXPLORATION DATE 12/15/64

PARAMETER	DATA/UNITS	PARAMETER	ELEVATION / LOCATION
ELEV. OF			
GROUND >>	98.29 FEET	BASE OF	
TOP CASTING	0.46 FEET	98.29 CASTING	
TO GROUND		98.66 CASTING	
WELL DEPTH	97.09 FEET	41.20 BOTTOM	
TOTAL >>	97.09 FEET	44.201 / SCREEN	
SCREEN	3.00 FEET		
SCREEN	0.13 FEET		
SCREEN	0.20 INCH		
SCREEN	0.50 FEET		
SCREEN	56.00 FEET		
SCREEN	11.01 FEET		
SCREEN	0.00 FEET		
SCREEN	28.56 FEET		
SCREEN	615.00 GAL/MIN		
SCREEN	1345.00 HRS./M4.M4		
SCREEN	1125.00 HRS./M4.M4		

WATER
AVAILABLE >> 46.45
PRODUCTION >> 42.45
AVAILABLE >> 42.45
SETBACK
CAPACITY
AT MAX PDS 35.04 CPM/FT MD

NOTE: 1. ALL WATER SURFACE ELEVATIONS
2. SHOWN A CORRECTION OF 0
3. FOR TO SYSTEMATIC ERRORS IN
4. WATER SURFACE MEASUREMENTS.

27	1345.00	0.00	11.01	0.00	87.65
28	1346.00	1.00	14.18	3.17	84.48
29	1347.00	2.00	15.19	4.19	83.47
30	1348.00	3.00	15.65	4.64	83.01
31	1349.00	4.00	16.00	4.99	82.66
32	1350.00	5.00	16.39	5.28	82.27
33	1351.00	6.00	16.65	5.64	82.01
34	1352.00	7.00	16.75	5.95	81.76
35	1353.00	8.00	17.17	6.16	81.49
36	1354.00	9.00	17.35	6.34	81.31
37	1355.00	10.00	17.55	6.44	81.11
38	1356.00	11.00	17.70	6.69	80.96
39	1357.00	12.00	17.97	7.25	80.79
40	1358.00	15.00	18.26	7.25	80.40
41	1359.00	20.00	19.81	7.80	79.85
42	1360.00	25.00	19.15	8.14	79.51
43	1361.00	30.00	19.47	8.46	79.19
44	1362.00	35.00	19.73	8.72	78.93
45	1363.00	40.00	19.95	9.04	78.71
46	1364.00	45.00	20.16	9.15	78.50
47	1365.00	50.00	20.33	9.32	78.33
48	1366.00	55.00	20.76	9.75	77.90
49	1367.00	59.00	21.25	10.21	77.41
50	1368.00	109.00	21.39	10.33	77.27
51	1369.00	130.00	21.55	10.54	77.11
52	1370.00	159.00	21.65	10.64	77.01
53	1371.00	252.00	21.87	10.86	76.79
54	1372.00	318.00	22.04	11.03	76.62
55	1373.00	384.00	22.22	11.21	76.44
56	1374.00	441.00	22.37	11.36	76.29
57	1375.00	495.00	22.56	11.55	76.10
58	1376.00	549.00	22.59	11.58	76.07
59	1377.00	604.00	22.80	11.79	75.86
60	1378.00	677.00	23.18	12.17	75.48
61	1379.00	855.00	23.44	12.43	75.22
62	1380.00	1150.00	23.58	12.57	75.08
63	1381.00	1449.00	23.70	12.69	74.96
64	1382.00	1632.00	23.85	12.84	74.81
65	1383.00	1830.00	24.05	13.05	74.69
66	1384.00	2009.00	24.42	13.41	74.24
67	1385.00	2268.00	24.51	13.50	74.15
68	1386.00	2563.00	24.61	13.60	74.05
69	1387.00	2750.00	24.79	13.69	73.96
70	1388.00	2909.00	24.78	13.77	73.88
71	1389.00	3060.00	24.95	13.94	73.71
72	1390.00	3272.00	25.15	14.14	73.51
73	1391.00	3368.00	25.24	14.23	73.42
74	1392.00	3509.00	25.43	14.47	73.22
75	1393.00	4385.00	25.57	14.56	73.09
76	1394.00	4847.00	25.60	14.79	72.86
77	1395.00	5320.00	25.79	14.78	72.87
78	1396.00	5809.00	25.90	14.89	72.76
79	1397.00	6079.00	25.95	14.94	72.71
80	1398.00	6784.00	26.15	15.14	72.51
81	1399.00	7112.00	26.20	15.19	72.46
82	1400.00	7505.00	26.32	15.21	72.34
83	1401.00	8214.00	26.55	15.54	72.11
84	1402.00	8801.00	26.67	15.66	71.99
85	1403.00	9709.00	26.96	15.05	71.60
86	1404.00	10976.00	27.02	15.01	71.64
87	1405.00	11152.00	27.24	15.23	71.42
88	1406.00	11825.00	27.24	16.23	71.42
89	1407.00	12047.00	27.47	16.46	71.19
90	1408.00	13305.00	27.50	16.40	71.16
91	1409.00	14075.00	27.69	16.64	71.01
92	1410.00	14625.00	27.75	16.64	71.01

11.00	730.00	15445.00	27.04	16.83	70.32
11.00	2030.00	16245.00	27.92	16.91	70.74
12.00	900.00	16995.00	28.05	17.04	70.61
12.00	2100.00	17715.00	28.15	17.14	70.51
13.00	900.00	18435.00	28.20	17.19	70.46
14.00	900.00	19155.00	28.25	17.24	70.31
15.00	900.00	21515.00	28.55	17.54	70.11
15.00	1123.00	21458.00	28.56	17.55	70.10
15.00	1123.00	21460.00	28.56	17.55	70.10

***** ALL WATER SURFACE ELEVATIONS *****

SHOW A CORRECTION OF 0 FT.
DUE TO SYSTEMATIC ERRORS

RECOVERY
NOTE: IN MEASUREMENT.

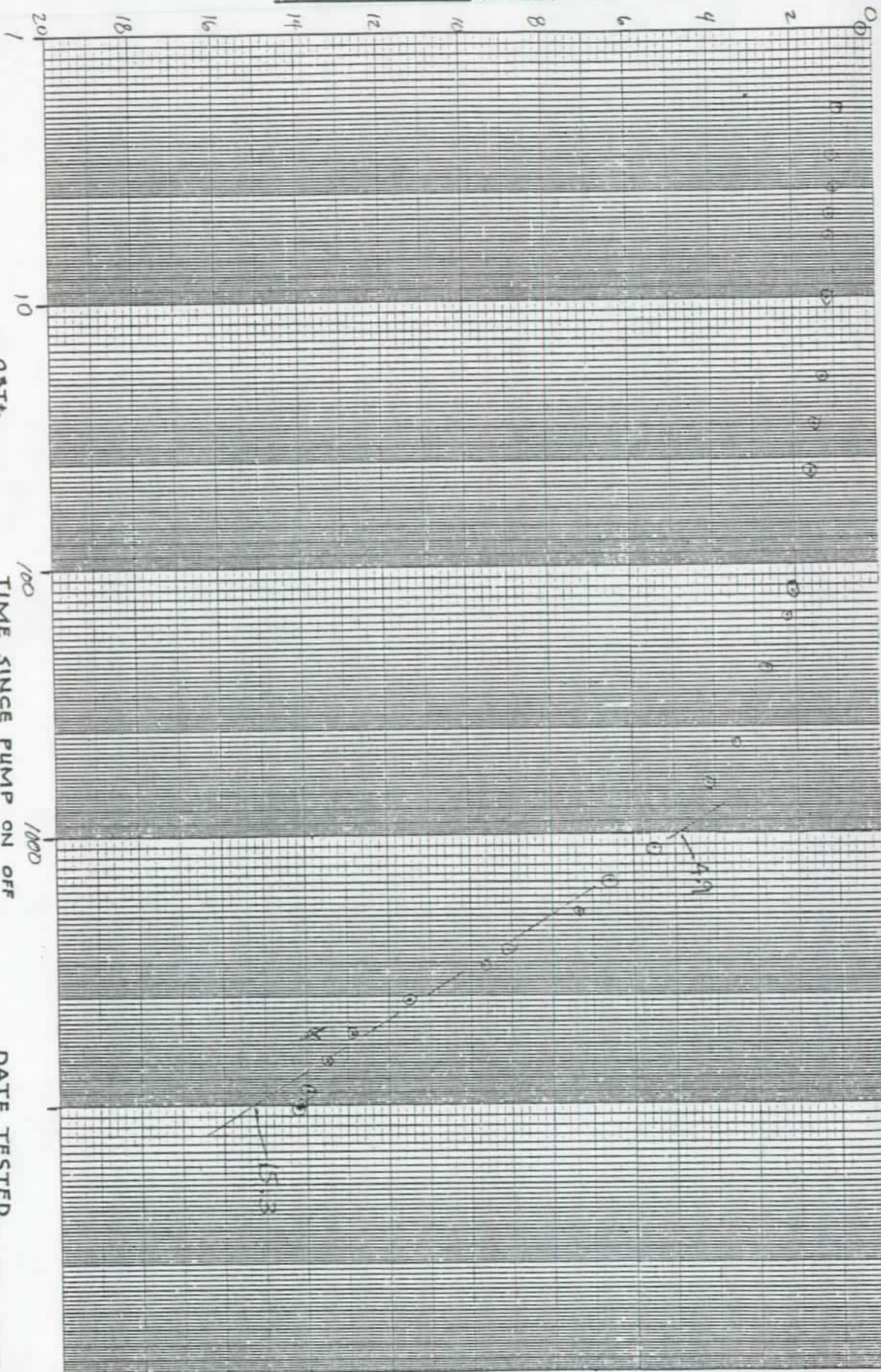
RECOVERY	TIME IN	LAP	MEASUREMENT	FROM BOX	WATER SURF
FROM	24 HR	TIME	TO WATER	FROM BOX	ELEVATION
STOP	FORWARD	MINUTES	IN FEET	IN FEET	
1125.30	0.50	26.83	1.73	71.83	
1126.00	1.00	26.74	1.82	71.92	
1126.30	1.50	26.71	1.85	71.95	
1127.00	2.00	26.66	1.90	72.00	
1127.30	2.50	26.61	1.95	72.05	
1128.00	3.00	26.59	1.97	72.07	
1128.30	3.50	26.57	1.99	72.09	
1129.00	4.00	26.55	2.01	72.11	
1129.30	4.50	26.53	2.03	72.13	
1130.00	5.00	26.51	2.05	72.15	
1130.30	5.50	26.50	2.06	72.16	
1131.00	6.00	26.48	2.08	72.18	
1132.00	7.00	26.43	2.09	72.18	
1133.00	8.00	26.44	2.12	72.22	
1134.00	9.00	26.43	2.13	72.23	
1135.00	10.00	26.41	2.15	72.25	
1140.00	15.00	26.30	2.26	72.35	
1145.00	20.00	26.21	2.35	72.45	
1150.00	25.00	26.15	2.41	72.51	
1155.00	30.00	26.10	2.46	72.56	
1200.00	35.00	26.01	2.55	72.65	
1205.00	40.00	25.98	2.58	72.68	
1210.00	45.00	25.93	2.63	72.73	
1220.00	55.00	25.83	2.73	72.83	
1230.00	65.00	25.78	2.78	72.88	
1245.00	80.00	25.64	2.92	73.02	
1300.00	95.00	25.53	3.03	73.13	
1321.00	126.00	25.03	3.22	73.33	
1359.00	154.00	25.18	3.34	73.48	
1430.00	185.00	24.98	3.50	73.68	
1500.00	215.00	24.85	3.71	73.81	
1535.00	270.00	24.53	4.03	74.13	
1700.00	335.00	24.29	4.27	74.37	
1916.00	411.00	23.98	4.58	74.68	
1900.00	495.00	23.82	4.71	74.84	
2000.00	595.00	23.57	4.99	75.09	
2107.00	682.00	23.35	5.21	75.31	
2211.00	646.00	23.16	5.40	75.50	
607.00	1122.00	21.70	6.88	76.96	
614.00	1249.00	21.27	7.19	77.29	
1013.00	1368.00	21.00	7.16	77.66	
1313.00	1548.00	20.56	6.00	78.10	
1643.00	1758.00	20.07	8.49	79.59	

81	1.00	1941.00	1736.00	17.68	11.88	75.98
82	2.00	338.00	2723.00	17.99	10.58	60.69
83	2.00	1415.00	2050.00	17.36	11.20	71.30
84	2.00	1744.00	3133.00	17.11	11.45	81.57
85	3.00	1005.00	4330.00	15.45	12.11	83.21
86	2.00	1715.00	4670.00	14.95	12.61	83.71
87	4.00	945.00	5660.00	14.04	14.52	84.62
88	4.00	1730.00	6125.00	13.80	14.76	84.96
89	5.00	800.00	6895.00	13.35	15.21	85.31
90	5.00	1615.00	7490.00	12.18	15.39	85.48
91	6.00	830.00	8165.00	12.00	15.56	85.66
92	6.00	1618.00	8933.00	12.84	15.72	85.82
93	7.00	834.00	9909.00	12.65	15.85	85.98
94	7.00	1543.00	10381.00		15.91	86.01

RECOVERY

~~STAND BY~~

IN FEET



$$S = \frac{0.5 T_0}{r^2}$$

$$= \frac{0.3 \times}{()^2}$$

TIME SINCE PUMP ON OFF
- IN MINUTES

$$T = \frac{264(Q)}{\Delta s} \quad T = \frac{15612}{\Delta s} \quad \Delta s \text{ (ft)} \quad \Delta s \text{ (ft)}$$

$$= \frac{0.3 \times}{()^2} \quad T = \frac{15612}{\Delta s} \quad \Delta s \text{ (ft)} \quad \Delta s \text{ (ft)}$$

DATE TESTED

PUMPING RATE (Q) 645

DISTANCE FROM PUMPED WELL (r) 104

Δs_1 10.4 Δs_2

OBS WELL NO. W2

TIME VS. Recovery

WELL TEST DATA REDUCTION PROGRAM - VSI-ITALC

DATA SET-UP SECTION

CITY OF BELL RAPIDS TEST START
WATER EXPLORATION DATE 12/18/94

PARAMETER OBS WELL W2 PARAMETER
TERM DATA/UNITS ELEVATION /LOCATION

ELEV. OF 97.50 FEET 97.50 CASING

TO CASING 0.47 FEET 97.97 CASING

WELL DEPTH 57.00 FEET 40.50 BOTTOM

SCREEN 3.00 FEET 43.501/SCREEN

SCREEN 0.13 FEET

SCREEN 0.20 INCH

WELL BORE 0.50 FEET

WELL BORE 104.00 FEET

WELL BORE 10.30 FEET

WELL BORE 0.00 FEET

WELL BORE 26.12 FEET

WELL BORE 615.00 GAL/MIN

WELL BORE 1245.00 HRS, MIN, PM

WELL BORE 11.42 HRS, MIN

WELL BORE 11.42 HRS, MIN

WELL BORE 11.42 HRS, MIN

WELL BORE 11.42 HRS, MIN

WELL BORE 11.42 HRS, MIN

WELL BORE 11.42 HRS, MIN

WELL BORE 11.42 HRS, MIN

WELL BORE 11.42 HRS, MIN

WELL BORE 11.42 HRS, MIN

WELL BORE 11.42 HRS, MIN

WELL BORE 11.42 HRS, MIN

NOTE: ALL WATER SURFACE ELEVATIONS
STRAIGHT CORRECTION OF 0
FOOT TO SYSTEMATIC ERRORS IN
WATER SURFACE MEASUREMENTS.

FROM IN

TIME IN LAP TIME HRS/MIN FROM TIME TO WATER SURF
ELEVATION

W2

1345.00	0.00	10.30	0.00	97.67
1346.00	1.75	12.00	2.50	85.17
1347.00	2.75	13.40	3.10	84.57
1348.00	4.75	14.21	3.91	83.76
1349.00	6.83	14.85	4.55	83.12
1350.00	7.75	15.05	4.75	82.92
1351.00	8.75	15.26	4.96	82.71
1352.00	9.58	15.43	5.13	82.54
1353.00	10.58	15.62	5.32	82.35
1354.00	13.00	15.98	5.68	81.99
1355.00	16.00	16.37	6.07	81.60
1356.00	21.00	16.87	6.57	81.10
1357.00	27.00	17.25	6.95	80.72
1358.00	31.00	17.51	7.21	80.46
1359.00	36.00	17.76	7.46	80.21
1360.00	41.00	17.95	7.65	80.02
1361.00	46.00	18.15	7.85	79.82
1362.00	51.00	18.32	8.02	79.65
1363.00	66.00	18.75	8.45	79.22
1364.00	89.50	19.14	8.84	78.83
1365.00	110.00	19.33	9.03	78.64
1366.00	130.00	19.47	9.17	78.50
1367.00	161.00	19.68	9.38	78.29
1368.00	200.00	19.82	9.52	78.15
1369.00	254.00	20.13	9.67	78.00
1370.00	319.00	20.42	9.82	77.84
1371.00	388.00	20.48	10.12	77.55
1372.00	442.00	20.50	10.18	77.49
1373.00	497.00	20.69	10.20	77.47
1374.00	610.00	21.15	10.39	77.28
1375.00	561.00	21.30	10.85	76.82
1376.00	1152.00	21.45	11.00	76.67
1377.00	1302.00	21.85	11.15	76.52
1378.00	1450.00	21.71	11.27	76.40
1379.00	1681.00	21.89	11.59	76.26
1380.00	919.00	22.31	12.01	75.66
1381.00	1124.00	22.33	12.03	75.64
1382.00	2751.00	22.51	12.13	75.54
1383.00	2910.00	22.59	12.29	75.46
1384.00	3061.00	23.03	12.45	75.33
1385.00	3373.00	23.13	12.79	74.88
1386.00	4060.00	23.35	12.88	74.79
1387.00	4396.00	23.51	13.05	74.62
1388.00	4849.00	23.55	13.21	74.45
1389.00	5322.00	23.58	13.25	74.42
1390.00	5845.00	23.64	13.34	74.33
1391.00	6400.00	23.71	13.41	74.26
1392.00	6788.00	23.94	13.60	74.07
1393.00	7114.00	24.08	13.64	74.03
1394.00	7507.00	24.21	13.78	73.89
1395.00	8216.00	24.36	13.91	73.76
1396.00	8887.00	24.55	14.06	73.61
1397.00	9709.00	24.70	14.25	73.42
1398.00	10377.00	24.83	14.53	73.27
1399.00	11153.00	24.91	14.61	73.14
1400.00	11930.00	25.05	14.75	72.92
1401.00	12705.00	25.22	15.02	72.65
1402.00	13000.00	25.45	15.15	72.52
1403.00	14625.00	25.61	15.36	72.33
1404.00	15445.00	25.66		72.31
1405.00	16245.00			
1406.00	16995.00			
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1499.00				
1500.00				

$$\begin{array}{r} 60 \overline{) 35000} \\ 30000 \\ \hline 5000 \\ 4800 \\ \hline 200 \end{array}$$

12.00 2100.00 12715.00 25.00 15.50 72.17
 13.00 900.00 10425.00 25.81 15.51 72.16
 14.00 900.00 10875.00 25.95 15.65 72.02
 15.00 900.00 21315.00 26.10 15.80 71.87
 15.00 1125.00 21470.00 26.12 15.82 71.85

***** ALL WATER CAPFACE ELEVATIONS ****

RECOVERY NOTE: SHOW A CORRECTION OF 0
 DATA SECTION DUE TO SYSTEMATIC ERRORS FT.
 IN MEASUREMENT.

DAYS	TIME IN	LAP	MEAS/PNT	FROM MAX	WATER SURF
FROM	24 HR	TIME	TO WATER	FROM IN	ELEVATION
STOP	FORMAT	MINUTES	IN FEET	IN FEET	
01	1126.00	1.00	25.80	0.32	72.17
02	1127.00	2.00	25.30	0.82	72.67
03	1128.00	3.00	25.15	0.97	72.82
04	1129.00	4.00	25.13	0.99	72.84
05	1130.00	5.00	25.03	1.04	72.89
06	1131.00	6.00	25.02	1.10	72.95
07	1132.00	7.00	24.99	1.14	72.99
08	1133.00	8.00	24.96	1.16	73.01
09	1134.00	9.00	24.95	1.17	73.02
10	1135.00	10.00	24.94	1.18	73.03
11	1136.00	11.00	24.92	1.20	73.05
12	1140.00	15.00	24.83	1.29	73.14
13	1145.00	20.00	24.76	1.36	73.25
14	1150.00	25.00	24.72	1.40	73.30
15	1155.00	30.00	24.67	1.45	73.37
16	1160.00	35.00	24.60	1.52	73.41
17	1205.00	40.00	24.56	1.56	73.45
18	1210.00	45.00	24.52	1.60	73.48
19	1220.00	55.00	24.47	1.65	73.58
20	1230.00	65.00	24.39	1.73	73.94
21	1332.00	127.00	24.03	2.09	74.08
22	1400.00	155.00	23.89	2.23	74.20
23	1430.00	185.00	23.77	2.35	74.33
24	1500.00	215.00	23.64	2.46	74.62
25	1556.00	271.00	23.53	2.77	74.88
26	1701.00	336.00	23.09	3.03	75.15
27	1917.00	412.00	22.82	3.39	75.32
28	1901.00	456.00	22.65	3.47	75.54
29	2003.00	518.00	22.43	3.69	75.76
30	2108.00	593.00	22.21	3.91	75.96
31	2212.00	647.00	22.01	4.11	77.42
32	608.00	1123.00	20.95	5.87	77.79
33	1.00	815.00	20.25	5.87	77.79
34	1.00	1014.00	19.94	6.15	78.03
35	1.00	1314.00	19.53	6.59	78.44
36	1.00	1643.00	19.07	7.05	78.90
37	1.00	1942.00	18.79	7.33	79.18
38	2.00	3900.00	17.03	9.09	80.94
39	2.00	1415.00	16.45	9.67	81.52
40	2.00	1645.00	16.20	9.95	81.77
41	3.00	1643.00	14.62	11.50	83.35
42	3.00	1715.00	14.11	12.01	83.86
43	4.00	2415.00	13.21	12.83	84.73
44	4.00	1720.00	13.64	13.09	84.93
45	5.00	3900.00	13.05	13.47	85.39
46	5.00	1645.00	12.44	13.68	85.53
47	6.00	3900.00	12.27	13.95	85.70
48	6.00	1415.00	12.12	14.00	85.75
49	7.00	1545.00	11.92	14.92	86.01
50	7.00	1545.00	11.92	14.92	86.01

WELL TEST DATA REDUCTION PROGRAM * VEST-CALC

DATA SET-UP SECTION

CITY OF ILL. RAPIDS TEST START
WATER EXPLORATION DATE 12/19/84

OPS WELL F
PARAMETER DATA/UNITS PARAMETER ELEVATION /LOCATION

ELFV. OF
GROUND >> 97.70 FEET
TOP CASING >> 97.70 CASING
TO GROUND >> 1.08 FEET
WELL DEPTH >> 98.78 CASING
TOTAL >> 57.00 FEET 8/8 0/640.70 BOTTOM
SCREEN
LENGTH >> 3.00 FEET 92043.701 /SCREEN
DIAM >> 0.13 FEET
CLUT # >> 0.20 INCH
WELL POSE
DIAM. >> 0.50 FEET
DIST. FROM
PUMPED
WELL >> 104.00 FEET
STATIC H2O
LEVEL >> 10.42 FEET 831 87.65420 SURF
WELL DEPTH
CORRECT >> 0.71 FEET
TO H2O >> 27.63 FEET
TEST FLOW
(GPM) >> 615.00 GAL/MIN 70.44
TIME OF
START >> 1345.00 HRS. MIN. SEC 13.75 HRS. HRS
TIME OF
STOP >> 1125.00 HRS. MIN. SEC 11.42 HRS. HRS

WATER
AVAILABLE >> ERROR
WATER
AVAILABLE >> ERROR
SPECIFIC
CAPACITY
AT 100 FPD 35.74 GPM/FT DP

: ALL WATER SURFACE ELEVATIONS
: SHOWN A CORRECTION OF .71
: FOR TO SYSTEMATIC ERRORS IN
: WATER SURFACE MEASUREMENTS.

: ALL WATER SURFACE ELEVATIONS
: SHOWN A CORRECTION OF .71
: FOR TO SYSTEMATIC ERRORS IN
: WATER SURFACE MEASUREMENTS.

DAYS TIME IN LAP DEVS/HR FROM
FROM 24 HR TIME TO WATER ELEV. SURF
START POINT MINUTES IN FEET ELEVATION

1345.00	0.00	10.42	9.00	87.65
1346.00	1.00	12.08	1.66	85.99
1347.00	2.00	12.75	2.83	85.22
1348.00	3.00	13.25	2.83	84.82
1349.00	4.00	13.75	3.33	84.32
1350.00	5.00	14.04	3.62	84.03
1351.00	6.00	14.33	3.91	83.74
1352.00	7.00	14.50	4.00	83.57
1353.00	8.00	14.75	4.33	83.37
1354.00	9.00	14.95	4.54	83.11
1355.00	10.00	15.17	4.75	82.90
1400.00	15.00	15.83	5.41	82.24
1405.00	20.00	16.42	6.00	81.65
1410.00	25.00	16.83	6.41	81.24
1415.00	30.00	17.13	6.71	80.94
1420.00	35.00	17.42	7.00	80.65
1425.00	40.00	17.67	7.25	80.40
1430.00	45.00	17.92	7.50	80.15
1440.00	55.00	18.27	7.85	79.83
1453.00	60.00	18.48	8.26	79.39
1513.00	80.00	19.04	8.62	79.03
1522.00	107.00	19.25	8.83	78.82
1554.00	129.00	19.46	9.04	78.61
1706.00	201.00	19.83	9.41	78.24
1756.00	251.00	20.00	9.59	78.07
1906.00	321.00	20.17	9.75	77.90
2006.00	381.00	20.38	9.95	77.69
2104.00	478.00	20.60	10.06	77.57
2204.00	499.00	20.61	10.19	77.48
2287.00	612.00	20.83	10.41	77.24
420.00	875.00	21.23	10.81	76.84
1.00	959.00	21.54	11.12	76.53
1.00	1128.00	21.69	11.27	76.38
1.00	1400.00	21.84	11.42	76.23
1.00	1706.00	22.02	11.60	76.05
1.00	2111.00	22.25	11.83	75.82
1.00	2501.00	22.67	12.25	75.40
1.00	2936.00	22.82	12.40	75.25
1.00	3337.00	22.93	12.51	75.14
2.00	3720.00	23.04	12.62	75.03
2.00	4148.00	23.14	12.72	74.93
2.00	4520.00	23.39	12.97	74.68
3.00	4932.00	23.53	13.16	74.49
3.00	531.00	23.73	13.31	74.34
3.00	5730.00	23.93	13.51	74.14
4.00	624.00	24.15	13.73	73.92
4.00	676.00	24.38	13.96	73.69
4.00	727.00	24.51	14.09	73.56
4.00	779.00	24.67	14.25	73.40
5.00	847.00	24.81	14.39	73.26
5.00	921.00	24.93	14.51	73.14
5.00	1009.00	25.08	14.66	72.99
6.00	1097.00	25.25	14.83	72.82
6.00	1187.00	25.44	15.03	72.62
7.00	1272.00	25.69	15.27	72.39
7.00	1364.00	25.83	15.41	72.24
8.00	1453.00	26.06	15.61	72.01
8.00	1530.00	26.17	15.75	71.90
9.00	1605.00	26.29	15.87	71.79
9.00	1676.00	26.46	16.04	71.61
10.00	1730.00	26.61	16.19	71.46
10.00	1790.00	26.63	16.31	71.41
11.00	1830.00	26.83	16.41	71.24
11.00	1875.00	26.95	16.54	71.11
12.00	1900.00	27.00	16.59	71.07
12.00	1945.00	27.17	16.75	70.90

10-15.51
D₁₁ = 0.01

10-4.75
10-8.86
D₅ = 4.11

13.00	900.00	10425.00	27.23	16.94	79.84
14.00	900.00	19875.00	27.42	17.00	79.65
15.00	900.00	21315.00	27.61	17.19	79.46
15.00	1125.00	21460.00	27.63	17.21	79.41

98.07
98.07

ALL WATER SURFACE ELEVATIONS
SHOW A EXPECTATION OF .71 FT.
DUE TO SYSTEMATIC ERRORS
IN MEASUREMENT.

RECOVERY
DATA SECTION

NOTE:

IN MEASUREMENT.

NOVS	TIME IN	LOP	HEAD/HMT	FROM MAX	WATER SURF
FROM	24 HRC	TIME	TO WATER	FROM IN	ELEVATION
STOP	FORWOT	MINUTES	IN FEET	IN FEET	
1126.00	1.00	27.08	0.55	71.70	
1127.00	2.00	27.02	0.41	71.76	
1128.00	3.00	27.01	0.62	71.77	
1129.00	4.00	26.96	0.67	71.82	
1130.00	5.00	26.94	0.69	71.81	
1131.00	6.00	26.87	0.76	71.91	
1132.00	7.00	26.85	0.78	71.93	
1133.00	8.00	26.84	0.79	71.94	
1134.00	9.00	26.84	0.79	71.94	
1135.00	10.00	26.84	0.79	71.94	
1140.00	15.00	26.77	0.86	72.01	
1145.00	20.00	26.68	0.95	72.10	
1150.00	25.00	26.67	0.96	72.11	
1155.00	30.00	26.67	0.96	72.11	
1200.00	35.00	26.58	1.05	72.20	
1205.00	40.00	26.50	1.13	72.26	
1210.00	45.00	26.46	1.17	72.32	
1221.00	55.00	26.37	1.26	72.41	
1239.00	65.00	26.33	1.30	72.45	
1245.00	80.00	26.27	1.36	72.51	
1300.00	95.00	26.15	1.48	72.63	
1430.00	185.00	25.65	1.98	73.13	
1500.00	215.00	25.50	2.13	73.28	
1529.00	124.00	24.02	1.61	72.76	
1534.00	149.00	25.83	1.80	72.95	
1556.00	271.00	25.24	2.38	73.54	
1658.00	333.00	25.01	2.62	73.77	
1819.00	414.00	24.68	2.95	74.10	
1903.00	538.00	24.54	3.09	74.21	
2008.00	523.00	24.29	3.84	74.49	
2105.00	590.00	24.11	3.52	74.67	
2213.00	648.00	23.91	3.72	74.87	
2405.00	1120.00	22.46	5.17	76.32	
2417.00	1252.00	22.08	5.95	76.70	
1015.00	1370.00	21.74	5.89	77.04	
1315.00	1550.00	21.26	6.37	77.52	
1644.00	1759.00	20.71	6.92	78.07	
1943.00	1928.00	20.25	7.39	78.52	
2053.00	2728.00	18.77	9.26	80.41	
1415.00	3050.00	17.63	9.95	81.10	
1615.00	3200.00	17.27	10.26	81.41	
1715.00	4380.00	15.45	12.18	83.33	
1730.00	4640.00	13.75	13.81	85.03	
1730.00	6195.00	13.49	14.14	85.29	
1730.00	6395.00	12.96	14.67	85.82	
1615.00	7480.00	12.77	14.66	86.01	
1630.00	8465.00	12.54	15.07	86.24	
1610.00	8834.00	12.35	15.23	86.43	

4.31
16.14

DS = 11.75

7.00 826.00 9911.00 12.21 15.42 86.57
7.00 1392.00 10337.00 12.10 15.53 86.63

$\textcircled{N}$
 d_2

② d_2

$\textcircled{N}$
 d_2

② d_2

② d_2

2

② h_2

③ h_2

② h_2

③
Dr

③
Dr

③
Dr

1345.00	0.00	10.79	0.00	117.66
1346.00	1.00	11.08	0.29	87.37
1347.00	2.00	11.45	0.67	86.99
1348.00	3.00	11.83	1.04	86.62
1349.00	4.00	12.12	1.33	86.33
1350.00	5.00	12.29	1.50	86.16
1351.00	6.00	12.69	1.81	85.85
1352.00	7.00	12.87	2.08	85.58
1353.00	8.00	13.08	2.29	85.37
1354.00	9.00	13.29	2.50	85.16
1355.00	10.00	13.41	2.62	85.04
1400.00	15.00	14.00	3.21	84.45
1405.00	20.00	14.54	3.75	83.91
1410.00	25.00	15.00	4.21	83.45
1415.00	30.00	15.27	4.48	83.18
1420.00	35.00	15.51	4.75	82.91
1425.00	40.00	15.78	4.99	82.67
1430.00	45.00	15.99	5.20	82.46
1445.00	60.00	16.54	5.75	81.91
1500.00	75.00	16.94	6.15	81.51
1515.00	90.00	17.23	6.48	81.17
1530.00	105.00	17.42	6.63	81.03
1554.00	129.00	17.71	6.92	80.74
1625.00	160.00	17.92	7.13	80.53
1710.00	205.00	18.25	7.47	80.19
1801.00	256.00	18.26	7.71	79.95
1907.00	322.00	18.59	7.88	79.78
2014.00	399.00	18.67	8.00	79.66
2108.00	443.00	18.79	8.17	79.49
2207.00	500.00	18.96	8.40	79.26
2410.00	625.00	19.19	8.83	78.83
428.00	883.00	19.62	8.83	78.83
1.00	905.00	19.94	9.15	78.51
1.00	1130.00	20.10	9.21	78.35
1.00	1402.00	20.25	9.46	78.20
1.00	1704.00	20.43	9.64	78.02
1.00	2113.00	20.67	9.88	77.78
2.00	2505.00	21.00	10.21	77.45
2.00	2840.00	21.17	10.38	77.28
2.00	3138.00	21.26	10.47	77.19
2.00	3422.00	21.35	10.56	77.10
2.00	3682.00	21.48	10.69	76.97
2.00	3920.00	21.64	10.85	76.81
3.00	4154.00	21.87	11.08	76.58
3.00	4386.00	21.99	11.20	76.46
3.00	4604.00	22.26	11.47	76.19
3.00	4899.00	23.41	11.62	76.04
4.00	5229.00	23.58	11.79	75.87
4.00	5530.00	23.67	11.88	75.78
4.00	5839.00	23.78	11.99	75.67
4.00	6107.00	23.92	12.13	75.53
5.00	6524.00	24.10	12.31	75.25
5.00	6909.00	24.16	12.37	75.29
5.00	7309.00	24.25	12.46	75.20
5.00	7713.00	24.38	12.69	74.97
6.00	8130.00	24.67	12.88	74.78
7.00	8572.00	24.85	13.06	74.69
7.00	8999.00	24.94	13.25	74.41
8.00	9451.00	25.17	13.38	74.29
8.00	9930.00	25.25	13.56	74.10
9.00	10403.00	25.54	13.75	73.91
9.00	10905.00	25.71	13.92	73.74
10.00	11405.00	26.03	14.04	73.62
11.00	11945.00	26.09	14.29	73.42
11.00	12530.00	26.19	14.40	73.26

10-2.62
100-6.99
Δ5 = 3.97

1000-8.76
1000-13.12
Δ5 = 4.35

12.00	200.00	16995.00	25.29	14.50	73.16
12.00	2100.00	17715.00	25.46	14.67	72.99
13.00	2600.00	18435.00	25.46	14.67	72.99
14.00	3000.00	19275.00	25.78	15.00	72.66
15.00	3000.00	21315.00	26.00	15.36	72.45
15.00	4125.00	21460.00	26.02	15.38	72.43

98.45

RECOVERY DATA SECTION
 NOTE: ALL WATER SURFACE ELEVATIONS SHOULD A CORRECTION OF .15 FT. BE TO SYSTEMATIC ERRORS IN MEASUREMENT.

RECOVERY DATA SECTION	TIME IN	LAP	MEAS	WATER	FROM	WATER
FROM STOP	24 HR	TIME	TO WATER	IN FEET	BOX IN	SURF ELEVATION
STOP	FORMAT	MINUTES	IN FEET	IN FEET	IN FEET	ELEVATION
1126.00	1.00	25.92	0.03	72.61		
1127.00	2.00	25.92	0.10	72.68		
1128.00	3.00	25.92	0.10	72.68		
1129.00	4.00	25.92	0.10	72.68		
1130.00	5.00	25.92	0.10	72.68		
1131.00	6.00	25.91	0.11	72.69		
1132.00	7.00	25.91	0.11	72.69		
1133.00	8.00	25.90	0.12	72.70		
1134.00	9.00	25.90	0.12	72.70		
1135.00	10.00	25.88	0.14	72.72		
1136.00	20.00	25.85	0.17	72.75		
1137.00	25.00	25.83	0.19	72.77		
1138.00	30.00	25.82	0.20	72.78		
1139.00	40.00	25.79	0.23	72.81		
1140.00	46.00	25.78	0.24	72.82		
1141.00	52.00	25.76	0.26	72.84		
1142.00	63.00	25.73	0.29	72.87		
1143.00	80.00	25.72	0.30	72.88		
1144.00	99.00	25.68	0.34	72.92		
1145.00	123.00	25.62	0.40	72.98		
1146.00	143.00	25.54	0.48	73.05		
1147.00	150.00	25.50	0.52	73.10		
1148.00	272.00	25.33	0.69	73.27		
1149.00	330.00	25.28	0.74	73.32		
1150.00	408.00	25.01	1.01	73.59		
1151.00	458.00	24.99	1.03	73.61		
1152.00	521.00	24.92	1.10	73.68		
1153.00	585.00	24.83	1.19	73.77		
1154.00	651.00	24.76	1.25	73.81		
1155.00	73.96	23.77	2.06	74.64		
1156.00	123.77	23.52	2.50	75.00		
1157.00	1376.00	23.12	2.90	75.49		
1158.00	1581.00	22.62	3.40	75.98		
1159.00	1940.00	22.12	3.90	76.48		
1160.00	2730.00	19.92	6.10	78.68		
1161.00	3036.00	19.10	4.92	79.50		
1162.00	3645.00	18.76	7.27	80.88		
1163.00	4265.00	18.42	9.60	82.19		
1164.00	4770.00	18.22	10.30	84.07		
1165.00	5651.00	14.79	11.11	84.28		
1166.00	6126.00	14.22	11.70	84.77		
1167.00	6905.00	13.83	12.19	85.00		
1168.00	7525.00	13.60	12.63	85.21		
1169.00	8145.00	13.19	12.83	85.41		
1170.00	8765.00	12.91	13.09	85.65		

-11.56
 1.06
 DS = 12.62

88 7.00 1537.00 10532.00 12.83 13.19 68.77

WELL TEST DATA REDUCTION PROGRAM - VIST-C/MC

DATA SET-UP SECTION

CITY OF BELL RAPIDS TEST START
WATER EXPLORATION DATE 12/18/84

GPS CITY 4

PARAMETERS DATA/UNITS PARAMETER ELEVATION /LOCATION
FEET

ELEV. OF GROUND >> 100.3 FEET
TOP CASING TO GROUND > 3.51 FEET
WELL DEPTH >> 54 FEET
TOTAL SCREEN >> 46.30 FEET
SCREEN DEPTH >> 46.30 FEET
SCREEN DIAM >> FEET
SCREEN SLOT # >> INCH
WELL BORE DIAM. >> FEET
DIST. FROM PUMPED >> FEET
WELL 458 FEET
STATIC H2O LEVEL >> 16.25 FEET
HEAD/HEAT CORRECT >> FEET
MAX DEPTH TO H2O >> 27.24 FEET
TEST FLOW (GPM) >> 615 GPM/MIN
TIME OF START >> 1345 HRS. PM, PM
TIME OF STOP >> 1125 HRS. PM, PM
11.42 HRS. HRS

WATER AVAILABLE >> ERROR
PARAMETER AVAILABLE >> ERROR
SATELLITE CAPACITY AT MAX PDS 55.04 GPM/FT MD

* ALL WATER SURFACE ELEVATIONS *
* SHOW A CORRECTION OF 0 *
* FEET TO SURFACE ELEVATIONS *
* WATER SURFACE MEASUREMENTS *

* DATES TIME IN LAP MEAN TIME FROM WATER CURF *
* FROM 24 HR TIME TO WATER STATIC IN FEET ELEVATION *
* START FLOW MINUTES IN FEET IN FEET ELEVATION *

CITY 4

1	1471.00	35.00	15.68	0.43	87.13
2	1458.00	70.00	17.16	0.81	86.43
3	1549.00	124.00	17.62	1.44	86.13
4	1629.00	164.00	17.56	1.71	85.85
5	1716.00	211.00	18.21	1.96	85.60
6	1806.00	261.00	18.50	2.25	85.31
7	1910.00	323.00	18.83	2.59	84.98
8	2016.00	391.00	19.15	2.90	84.66
9	2113.00	448.00	19.15	2.90	84.66
10	2217.00	512.00	19.20	2.95	84.61
11	2307.00	622.00	19.42	3.17	84.29
12	2407.00	694.00	20.00	3.75	83.81
13	1.00	915.00	20.46	4.21	83.35
14	1.00	1133.00	20.41	4.26	83.20
15	1.00	1406.00	20.63	4.38	83.13
16	1.00	1709.00	20.96	4.71	82.85
17	1.00	2117.00	21.25	5.00	82.56
18	2.00	519.00	21.67	5.42	82.14
19	2.00	845.00	21.77	5.52	82.04
20	2.00	1142.00	21.83	5.58	81.98
21	2.00	1426.00	21.91	5.66	81.90
22	2.00	1652.00	21.93	5.68	81.88
23	2.00	2209.00	22.17	5.92	81.61
24	3.00	446.00	22.38	6.13	81.43
25	3.00	840.00	22.51	6.26	81.30
26	3.00	1511.00	22.89	6.44	80.92
27	3.00	2241.00	23.32	7.07	80.49
28	4.00	434.00	23.50	7.25	80.31
29	4.00	951.00	23.53	7.28	80.28
30	4.00	1546.00	23.65	7.40	80.16
31	4.00	1911.00	23.67	7.42	80.14
32	5.00	656.00	23.96	7.71	79.85
33	5.00	1228.00	24.13	7.88	79.68
34	5.00	1902.00	24.33	8.08	79.48
35	6.00	649.00	24.63	8.38	79.19
36	6.00	1806.00	24.79	8.54	79.02
37	7.00	741.00	24.92	8.67	78.89
38	7.00	1844.00	25.08	8.83	78.73
39	8.00	743.00	25.40	9.15	78.41
40	8.00	1930.00	25.40	9.15	78.41
41	9.00	757.00	25.51	9.29	78.27
42	9.00	1930.00	25.69	9.44	78.12
43	10.00	800.00	25.90	9.65	77.91
44	10.00	1730.00	26.00	9.75	77.81
45	11.00	730.00	26.33	10.08	77.48
46	11.00	2030.00	26.38	10.13	77.43
47	12.00	900.00	26.58	10.33	77.23
48	12.00	2100.00	26.67	10.42	77.14
49	13.00	900.00	26.71	10.46	77.10
50	14.00	900.00	27.11	10.86	76.70
51	15.00	900.00	27.23	10.89	76.58
52	15.00	1125.00	27.24	10.99	76.57

ALL WATER SURFACE ELEVATIONS
 SHOWN A CORRECTION OF 0
 FEET TO SYSTEMATIC ERRORS
 IN MEASUREMENT.

8.0
 3.5
 5.3

2.9
 1.4
 1.5

1.2
 .06

1	1.00	1221.00	56.00	27.15	0.09	76.66
2	1.00	1263.00	58.00	27.15	0.09	76.66
3	1.00	1331.00	126.00	27.13	0.11	76.63
4	1.00	1420.00	175.00	27.11	0.13	76.70
5	1.00	1500.00	215.00	27.12	0.14	76.68
6	1.00	1604.00	279.00	27.05	0.19	76.76
7	1.00	1655.00	330.00	27.04	0.20	76.77
8	1.00	1789.00	394.00	27.04	0.20	76.77
9	1.00	1917.00	472.00	27.00	0.24	76.81
10	1.00	2024.00	539.00	26.94	0.30	76.87
11	1.00	2123.00	598.00	26.87	0.37	76.94
12	1.00	2204.00	639.00	26.71	0.53	77.10
13	1.00	613.00	1128.00	26.46	0.78	77.35
14	1.00	840.00	1278.00	26.35	0.89	77.46
15	1.00	1027.00	1382.00	26.25	0.99	77.56
16	1.00	1330.00	1575.00	26.02	1.22	77.79
17	1.00	1449.00	1761.00	25.81	1.43	78.00
18	1.00	1595.00	1930.00	25.57	1.67	78.24
19	2.00	838.00	2713.00	24.49	2.76	79.33
20	2.00	1400.00	3035.00	24.08	3.16	79.73
21	2.00	1700.00	3215.00	23.92	3.32	79.89
22	3.00	1030.00	4745.00	23.58	4.46	81.22
23	3.00	1700.00	4655.00	22.15	5.03	81.65
24	4.00	930.00	5605.00	21.39	5.05	82.42
25	4.00	1720.00	6125.00	21.21	6.03	82.60
26	5.00	745.00	6980.00	20.68	6.56	83.13
27	5.00	1630.00	7705.00	20.48	6.76	83.33
28	6.00	845.00	8490.00	20.29	6.95	83.52
29	6.00	1632.00	8947.00	20.06	7.18	83.75
30	7.00	848.00	9923.00	19.80	7.44	84.01
31	7.00	1533.00	10328.00	19.71	7.53	84.10

7.54
- .60
Dg. 8.114

WELL TEST DATA REDUCTION PROGRAM - VTSI-CALC

DATA SET-UP SECTION

CITY OF BELL RAPIDS TEST START
WATER EXPLORATION DATE

CITY WELL 5
PARAMETER DATA/UNITS PARAMETER ELEVATION /LOCATION
FTHS

ELEV. OF
GROUND >> 99.10 FEET BASE OF
TOP CASTING >> 99.10 CASTING
TO GROUND >> 2.75 FEET TOP OF
WELL MOUTH >> 101.85 CASTING
TOTAL >> 59.00 FEET 45.10 BOTTOM
SCREEN >> FEET 45.10 / SCREEN
MESH >> FEET
SCREEN >> FEET
SLOT # >> INCH
WELL BORE >> FEET
DIST. FROM >> FEET
PIPERED >> FEET
WELL >> 290.00 FEET
STATIC W20 >> 14.32 FEET 87.53 H2O SURF
HEAD-HEAT
CORRECT
FACTOR >> FEET
H2O DEPTH >> 29.89 FEET 71.96
TO H2O >>
TEST FLOW >> GAL/MIN
TIME OF >>
START >> 1305.00 HRS. PM. PM 13.75 HRS. HRS
TIME OF >>
STOP >> 1125.00 HRS. PM. PM 11.42 HRS. HRS

WATER
AVAILABLE >> ERROR SPECIFIC
WELLBORE >> ERROR CAPACITY
AVAILABLE >> ERROR AT MAX MD 0.00 GPM/FT MD

***** ALL WATER SURFACE ELEVATIONS
***** FROM BOUND
***** ARE TO SYSTEMATIC ERRORS IN
***** WATER SURFACE MEASUREMENTS.

***** FROM MD
***** TIME IN LOS BEG. TIME FROM
***** FROM 24 HR TIME TO WATER STATION WATER SURF
***** START FLOW IN FEET IN FEET ELEVATION
***** 1119.00 83.00 19.60 4.23 82.25

cmv 6

1156.00	33.00	29.67	0.22	72.18
1225.00	60.00	29.58	0.31	72.27
1249.00	64.00	29.54	0.35	72.31
1335.00	130.00	29.40	0.49	72.45
1415.00	170.00	29.34	0.55	72.51
1505.00	221.00	29.29	0.60	72.56
1602.00	277.00	29.12	0.77	72.73
1653.00	328.00	29.01	0.88	72.84
1803.00	398.00	28.87	1.02	72.98
1920.00	475.00	28.60	1.29	73.25
2028.00	543.00	28.62	1.27	73.23
2127.00	602.00	28.50	1.39	73.35
2220.00	655.00	28.35	1.54	73.50
615.00	1130.00	27.42	2.46	74.42
844.00	1279.00	27.02	2.87	74.83
1029.00	1384.00	26.79	3.10	75.06
1332.00	1567.00	26.27	3.62	75.58
1652.00	1767.00	25.70	4.19	76.15
1956.00	1951.00	25.23	4.66	76.62
840.00	2715.00	23.26	6.63	78.59
1400.00	3035.00	22.50	7.39	79.35
1700.00	3215.00	22.83	7.06	79.02
1030.00	4265.00	22.13	7.76	79.72
1700.00	4655.00	19.47	10.42	82.38
930.00	5645.00	18.25	11.64	83.60
1730.00	6125.00	17.75	12.14	84.10
745.00	6990.00	17.37	12.52	84.48
1630.00	7505.00	17.13	12.76	84.72
845.00	8480.00	16.90	12.99	84.95
1634.00	8949.00	16.01	13.88	85.84
851.00	9926.00	16.48	13.41	85.37
1536.00	10331.00	16.40	13.49	85.45

$$\begin{array}{r} 13.86 \\ 1.83 \\ \hline 15.69 \end{array}$$

DeWild Grant Reckert & Associates Co.

Architecture Engineering Planning

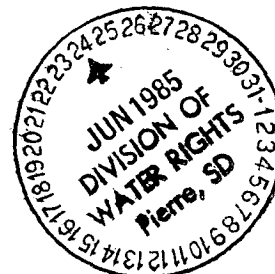
315 First Avenue
Rock Rapids, IA 51246
Telephone 712 472 2531

June 17, 1985

Department of Water and Natural Resources
Water Rights Division
Joe Foss Building
Pierre, SD 57501

Attention: John Hatch

Re: City of Dell Rapids
DGR Project No. 34206



Dear John:

On behalf of the City of Dell Rapids, find enclosed two (2) copies of the Application for Permit to Appropriate Water within the State of South Dakota. In addition to the application, find enclosed the following information:

1. Map showing the general location of the proposed diversion points, 2 copies.
2. Form 2A, 2 copies.
3. Drillers log for the area under consideration and General Location Map of Test Hole Locations.
4. In addition, find attached a Test Hole Location Map, Test Pumping Data and Water Quality Information associated with a finger of sands and gravel directly north of the property under consideration and across the river.
5. A filing fee based upon the requested volume of water.

Should you have questions or desire additional information, please contact either myself at 712-472-2531 or Vic Graham (Utility Committee Chairman) at 605-339-8348.

Very truly yours,

DEWILD GRANT RECKERT & ASSOCIATES COMPANY

Dave Holman

Dave Holman, P.E.

DH:kld

cc: City of Dell Rapids (w/attachments)

REPORT ON CITY OF DELL RAPIDS
APPLICATION NO. 5063-3

August 1, 1985

This application proposes to appropriate for future use 1.65 cfs (approximately 70 feet deep) with the future use area to be located in the NE $\frac{1}{4}$ Section 17, T104N-R49W. Ground Water is being reserved to provide future water supplies for Dell Rapids. This is not an application for construction of works or to put water to beneficial use.

Aquifer - Pliestocene unknown, possible Big Sioux: Sioux Falls (BS-SF)

The Pliestocene unknown is a mostly buried glacial outwash (sand and gravel) aquifer either overlying the Sioux Quartzite or clay in this area. The Pliestocene unknown aquifer is mentioned in an early city study for Dell Rapids (Barari, 1967), but is not mapped. Later studies by the USGS (Koch, 1982) and SDGS (Hedges, 1982) do not map the unknown unit but do show the Big Sioux: Sioux Falls unit as being very thin in this area. The BS:SF Aquifer is an alluvium mantled outwash overlying relatively impermeable glacial till and the Sioux Quartzite. Extensive test hole drilling for the City of Dell Rapids by a consultant (DGR) indicates outwash (up to 60 feet thick) bounded by Sioux Quartzite highs on the east and south and the Big Sioux River on the west. This test hole drilling and subsequent aquifer testing would tend to enforce the idea that the aquifer is not part of the BS:SF unit. This is not to say the unknown unit is not connected with the Big Sioux River or the Sioux Quartzite but that all factors considered, the hydraulic connection with the BS:SF is obscure. Observation well MA-80B is located in the same section as the proposed application into the buried aquifer and the water levels are higher than in the BS:SF unit. The unusually large drawdowns associated with the aquifer test indicate boundary conditions are present (obvious from driller's logs, which indicate a thick narrow aquifer). The driller's logs also indicate that the Big Sioux River is hydraulically connected. This permit application would put the river between the existing city wells and any new wells, helping alleviate any interference concerns. No estimates of aquifer storage or recharge have been made.

Review of Existing Water Permits

The only existing ground water permits in the area of this application are for the City of Dell Rapids. Permit No. 4398-3 authorizes 2 wells which are approximately 1/4 mile northeast of this application and on the other side of the river.

Conclusions

1. Water is available from this aquifer. The city is already using this source and aquifer testing indicates water is available.
2. Additional testing at actual drill site will be necessary to determine an actual sustainable well yield.
3. The Pliestocene unknown aquifer is apparently in hydraulic connection with the Sioux Quartzite, the Big Sioux River and to a less extent the BS:SF Unit.
4. Moving the well site south of the river should minimize the effect of drawdowns (interference) on existing city wells.

James A. Goodman *KEC*
James A. Goodman
Hydrologist

Bibliography

Barari, A., 1967, Ground Water Supply for the City of Dell Rapids, Special Rpt. 39, DWNr, SDGS, Vermillion, South Dakota 57069.

Hedges, L.S., S.L. Birch, D.L. Illes, R.A. Barari, R.A. Schoon, 1982, Evaluation of Ground Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa, for U.S. Army Corps of Engineers, DWNr, SDGS, Vermillion, South Dakota 57069.

Koch, H.C., 1982, A Digital - Computer Model of the Big Sioux Aquifer in Minnehaha County, South Dakota, USGS, Water Resources Investigations 82-4064, Huron, SD

RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT

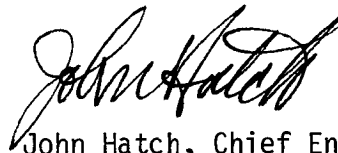
APPLICATION NO. 5063-3

Pursuant to SDCL 56-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Water and Natural Resources, concerning Water Permit Application No. 5063-3, City of Dell Rapids, P.O. Box No. 10, Dell Rapids, South Dakota.

The Chief Engineer is recommending APPROVAL of Application No. 5063-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the quantity of water reserved will be needed by the City of Dell Rapids, 3) the proposed use will be a beneficial use and 4) in the public interest with the following qualifications:

1. That Future Use Permit No. ⁵⁰⁶³~~4979~~-3 is approved with the stipulation that the Permit to appropriate water is subject to review by the Water Management Board as to accomplishment thereunder upon expiration of seven (7) years. gk
2. At such time as definite plans are made to construct works and put the water reserved by this permit to beneficial use, specific application for all or any part of the reserved water must be submitted prior to construction of facilities pursuant to SDCL 46-5-38.1.
3. This permit is approved for groundwater less than 70 feet deep.

See attached report for additional information.



John Hatch, Chief Engineer

August 7, 1985

No. 5063-3

Instruction to Newspaper - Publish first publication of the following Notice on or before September 4, 1985 with 2nd publication 1 week later. The applicant is responsible for payment.

NOTICE OF HEARING on Application No. 5063-3 to Appropriate Water
~~and/or to Amend Water Permit or Water Right No. _____~~

Notice is hereby given that City of Dell Rapids whose mailing address is
PB.O. Box 10, Dell Rapids, South Dakota has made an application for a permit

to appropriate for future use 1.65 cubic feet per second of groundwater (wells will be approximately 70 feet deep). The future use area will be located in the NE $\frac{1}{4}$, Section 17, T104N-R49W. The water will be reserved to provide future water supplies for Dell Rapids. This application is not for construction of works or to put water to beneficial use.

Pursuant to SDCL 46-2A-2 the Chief Engineer of the Water Rights Division recommends **APPROVAL** of Application No. 5063-3 because 1) unappropriated water is available, 2) will be no unlawful impairment of existing rights, 3) is beneficial use of water and 4) is in the public interest.

This application will be considered by the Water Management Board at Howard Johnson,
Nebraska Room, 3300 W. Russell, Sioux Falls, SD, October 16 1985 at 10:00 am.

The recommendation of the Chief Engineer is not final or binding upon the Board and the Board is authorized to make a determination on this application after it reaches a conclusion based upon facts presented at the public hearing. Any interested person who may be affected by a Board decision and who intends to participate in the hearing before the Board and present evidence or cross-examine witnesses according to SDCL 1-26, must file a written petition with BOTH the Applicant and the Chief Engineer by October 4, 1985. The petition may be informal, but it must include a statement describing the petitioners interest in the application, the reason for the petitioner's opposition to or support of the application, and the signature and mailing address of the petitioner or his legal counsel if legal counsel is obtained. The applicant need not file a petition.

This application is made pursuant to the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-15; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-31; ~~(ground)~~ 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14; ~~(future use)~~ 46-5-38 thru 46-5-40; ~~(transfer lands)~~ 46-5-30.4, 46-5-33 thru 46-5-35; ~~(10,000 AFA)~~ 46-5-20.1, 46-5-8.1; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15; ~~(future use)~~ 74:02:01:24 thru 74:02:01:25; ~~(10,000 AFA) 74:02:01:15:02 thru 74:02:01:15:05.~~

This hearing is an adversary proceeding. The applicant or any person, after filing a petition, 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. Decisions of the Board may be appealed to the Circuit Court and the State Supreme Court as provided by law.

Any person wishing a copy of the Chief Engineer's recommendation, further information on this application or to assure access to the hearing by the handicapped can contact the Water Rights Division, DWNR, Joe Foss Bldg, Pierre SD (605 773-3352) for assistance prior to the hearing date. The time of the hearing will be automatically extended for at least twenty days upon written request of the applicant or any person who has filed a petition to oppose or support the application. The request for extension must be filed with the Chief Engineer by October 4, 1985.

No. 5063-3

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County Minnehaha) ss.

I, Lane Wieseler hereby

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

Water was taken from the Dell Rapids Tribune

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 Dell Rapids

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

September 4, 1985

September 11, 1985

Lane Wieseler
(Signature)

Office Manager
(Title)

9-11-85
(Date Signed)

Cost of Printing: \$ 42.07

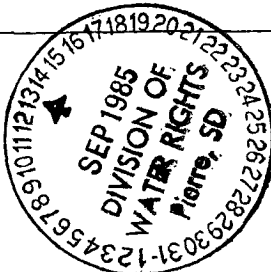
NOTICE OF HEARING
on Application
No. 5063-3
to Appropriate Water

Notice is hereby given that City of Dell Rapids whose mailing address is P.O. Box 10, Dell Rapids, South Dakota has made an application for a permit to appropriate for future use 1.65 cubic feet per second of groundwater (wells will be approximately 70 feet deep). The future use area will be located in the NE 1/4, Section 17, T104N-R49W. The water will be reserved to provide future water supplies for Dell Rapids. This application is not for construction of works or to put water to beneficial use.

Pursuant to SDCL 46-2A-2 the Chief Engineer of the Water Rights Division recommends APPROVAL of Application No. 5063-3 because 1) unappropriated water is available, 2) will be no unlawful impairment of existing rights, 3) is beneficial use of water and 4) is in the public interest.

This application will be considered by the Water Management Board at Howard Johnson, Nebraska Room, 3300 W. Russell, Sioux Falls, SD, October 16, 1985 at 10:00 a.m.

The recommendation of the Chief Engineer is not final or binding upon the Board and the Board is authorized to make a determination on this application after it reaches a conclusion based upon facts presented at the public hearing. Any interested person, who may be affected by a Board decision and who intends to participate in the hearing before the Board and present evidence or cross-examine witnesses according to SDCL 1-26, must file a written petition with BOTH the Applicant and the Chief Engineer by October 4, 1985. The petition may be informal, but it must include a statement describing the petitioner's interest in the application, the reason for the petitioner's opposition to or support of the application, and the signature and mailing address of the petitioner or his legal counsel if legal counsel is obtained. The applicant need not file a petition.



This application is made pursuant to the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-15; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14; 46-5-38 thru 46-6-38. Board Rules ARS 74:02:01:01 thru 74:02:01:15; 74:02:01:24 thru 74:02:01:25.

This hearing is an adversary proceeding. The applicant or any person, after filing a petition, 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. Decisions of the Board may be appealed to the Circuit Court and the State Supreme Court as provided by law.

Any person wishing a copy of the Chief Engineer's recommendation, further information on this application or to assure access to the hearing by the handicapped can contact the Water Rights Division, DWR, Joe F. Bldg., Pierre, (605-773-3352) for assistance prior to the hearing date. The time of the hearing will be automatically extended for at least twenty days upon written request of the applicant or any person who has filed a petition to oppose or support the application. The request for extension must be filed with the Chief Engineer by October 4, 1985.

T-September 4, 11

Water Rights Division
605 773-3352

November 15, 1985

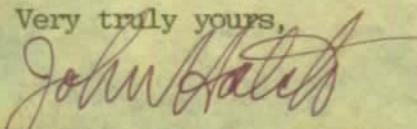
City of Dell Rapids
C. V. Graham
PO Box 10
Dell Rapids SD 57022

Dear Mr. Graham:

Enclosed is you Future Use Withdrawal Permit No. 5063-3, as approved by the Water Management Board.

When plans for facilities are prepared to put any portion of the water granted in this future use permit to beneficial use, an application covering such facilities and water use should be submitted to this office before construction is initiated.

Very truly yours,


JOHN HATCH, Chief Engineer
Water Rights Division

JH:ks

enclosures



Department of Water & Natural Resources

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

December 22, 1988

Ron Buskerud, Attorney
PO Box 66
Dell Rapids SD 57022

Dear Mr. Buskerud:

The city of Dell Rapids has water permits and future use permits as follows:

Permit No. 562-3

- (1) Well #1, located in the SE 1/4 SE 1/4 of Section 9, T104N, R49W. This well has a priority date of 1938 for a diversion rate of 0.444 cubic feet per second (cfs).
- (2) Well #2, located in the SE 1/4 SE 1/4 of Section 9, T104N, R49W. This well has a priority date of 1943 for a diversion rate of 0.444 cfs.
- (3) Well #3, located in the SE 1/4 NE 1/4 of Section 9, T104N, R49W. This well has a priority date of January 2, 1959 for a diversion rate of 0.557 cfs.

Permit No. 562-3 is also a future use permit with a priority date of January 2, 1959. The future use permit has 1.667 cfs remaining for which water permit applications can be submitted to develop groundwater within the city limits area. The Water Management Board reviewed this future use permit on February 15, 1984 and allowed it to remain in effect. The next review will be in 1991.

Permit No. 4398-3

Well #4 and Well #6, located in the SW 1/4 SE 1/4 of Section 8, T104N, R49W. These wells have a priority date of January 2, 1959 for a combined diversion rate of 1.00 cfs.

Permit No. 5063-3

This is a future use permit with a priority date of January 24, 1985. The permit is for 1.65 cfs for which water permit applications can be submitted to develop groundwater from the Big Sioux Aquifer in the NE 1/4 of Section 17, T104N, R49W. The Water Management Board will review this permit in 1992.

If I can answer any questions, please contact me.

Sincerely,

DELVIN D. BROSZ, P.E.
Hydrologist
605 773-3352





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

May 22, 1992

City of Dell Rapids
Thomas Earley, Mayor
PO Box 10
Dell Rapids SD 57022-0010

Dear Mr. Earley:

I am writing in regard to the seven year review of Future Use Water Permit No. 5063-3 from groundwater which is held by the City of Dell Rapids. Currently, our records show that 1.65 cubic feet of water per second remain in reserve under this future use permit which was issued in 1985.

Permit No. 5063-3 will be scheduled for review by the Water Management Board on September 30, 1992 pursuant to SDCL 46-5-38.1. Notice will be given of the hearing time and place at a future date. The purpose of this review is to determine if a reasonable need exists for retaining the permit. A fee will be charged if the Board allows the permit to remain in effect after the hearing. The fee to be assessed will be dependent upon the amount of water allowed to remain in reserve on Permit No. 5063-3.

Please respond in writing by July 15, 1992, regarding the City of Dell Rapids intention for the future use permit. If the City does plan to retain the permit, then your response should outline a reasonable need for retaining the future use permit, including an estimate of future needs and any annual pumping records for the past three years.

Please contact Eric Gronlund, if you have any questions.

Sincerely,

Karen Schlaak

KAREN SCHLAACK
Natural Resources Analyst
605 773-3352

cc: Marie Skelly, Finance Officer

NOTICE OF TRANSFER OF OWNERSHIP

No. _____

TO: Chief Engineer
Water Rights Division, DWR
523 East Capitol
Pierre, SD 57501-3181

Date: August 6, 1992

I, We request that Water Permit/Right No. 5063-3formerly owned by: City of Dell Rapidsbe transferred to: (name & address) Minnehaha Community Water, Corp.RR 2, Box 26A Dell Rapids, SD 57022(telephone No.) 428-3374

Title to the following described land(s)/property has been transferred as described above:

Request Water Rights Transfer and Renewal from the Northeast Quarter of Section 17, ofT-104-N, R-49-W to the Southeast Quarter of Section 29 and the Northeast Quarter ofSection 32, in T-104-N, R-49-W, Minnehaha County, South Dakota. SEE ATTACHED MAP

I/We understand that the validity of Water Permit/Right No. 5063-3 has not been determined by this transfer action. If I/We have any questions on validity, I/We understand that only the Water Management Board has the authority to determine if a water permit/right is valid (see note).

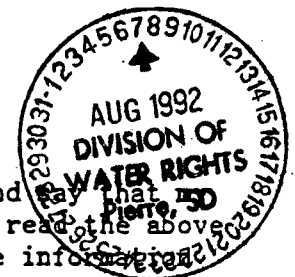
You are requested to file this "Notice of Transfer" in the appropriate file at the Division of Water Rights, as evidence of the change of ownership.

A fee of Two Dollars and Fifty Cents (\$2.50) is attached to cover the filing fees as required under SDCL 46-2-13.

STATE OF SOUTH DAKOTA)

County of Minnehaha)

I/We John Buss being first duly sworn on my oath depose and say that in relation to the above described undertaking is that of Owner, that I have read the foregoing statement, and that I know of my own personal knowledge that the information herein stated is true.



John Buss
(Signed)

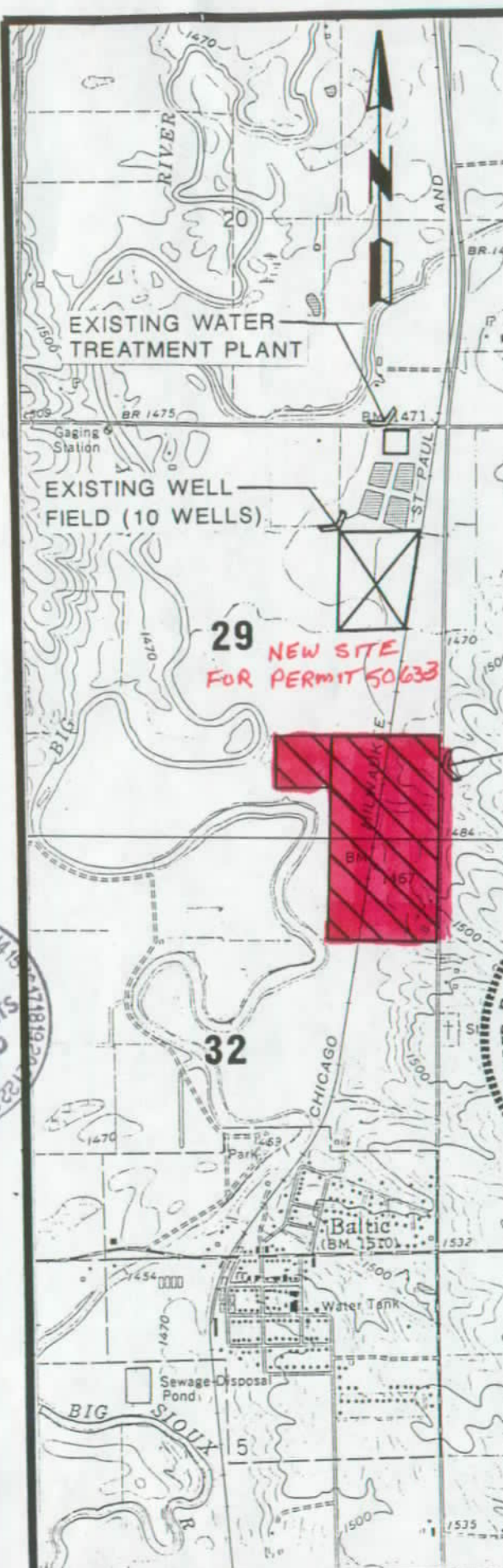
Subscribed and sworn to before me this 6th day of August, 1992.

PATTY L. HALL
Notary Public
My Commission Expires
July 2, 2000

Patty L. Hall
(Notary Public)

NOTE: Water permits may be cancelled for nonconstruction within the five year construction period. Once a water permit is developed and the water used, the permit becomes a water right. A water right may be lost for three reasons:

1. Abandonment - no intent to use water and use is abandoned.
2. Forfeiture - no use of water for three year period without legal excuse.
3. For a third violation of a condition of a water permit/right.



STATE OF SOUTH DAKOTA SS
COUNTY OF BROOKINGS

I, DARYL ENGLUND, A REGISTERED LAND SURVEYOR IN THE STATE OF SOUTH DAKOTA, DO HEREBY CERTIFY THAT AT THE REQUEST OF THE MINNEHAHA COMMUNITY WATER CORPORATION, DELL RAPIDS, SOUTH DAKOTA, I DID PREPARE THE MAP ON THIS SHEET FROM EXISTING INFORMATION AND THAT I DID SURVEY AND LOCATE THE SITES FOR WHICH APPLICATION FOR AN APPROPRIATE FUTURE WATER RIGHTS TO WITHDRAW UNDERGROUND WATERS FOR RURAL WATER SUPPLY PURPOSES IS MADE, AND THAT THIS MAP IS A TRUE REPRESENTATION THEREOF.

IN WITNESS WHEREOF, I HAVE SET MY HAND AND SEAL THIS 8th DAY OF June A.D. 19 92.

Daryl Englund
REGISTERED LAND SURVEYOR

STATE OF SOUTH DAKOTA SS
COUNTY OF BROOKINGS

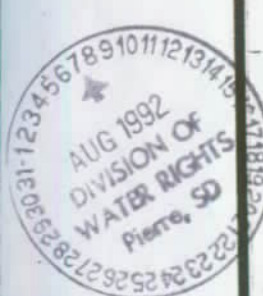
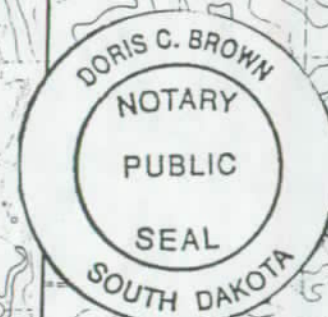
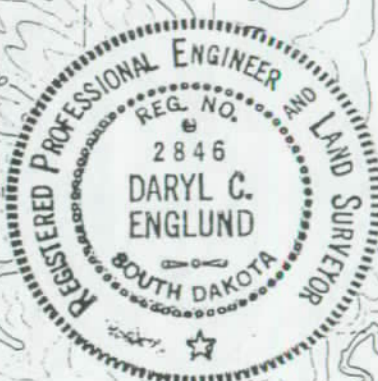
ON THIS DAY, BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC WITHIN AND FOR SAID STATE AND COUNTY, PERSONALLY APPEARED DARYL ENGLUND, KNOWN TO ME TO BE THE PERSON WHO EXECUTED THE FOREGOING SURVEYOR'S CERTIFICATE AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME.

WITNESS MY HAND AND SEAL THIS 9th DAY OF June A.D. 19 92.

Doris C. Brown
NOTARY PUBLIC

MY COMMISSION EXPIRES 12-9-97

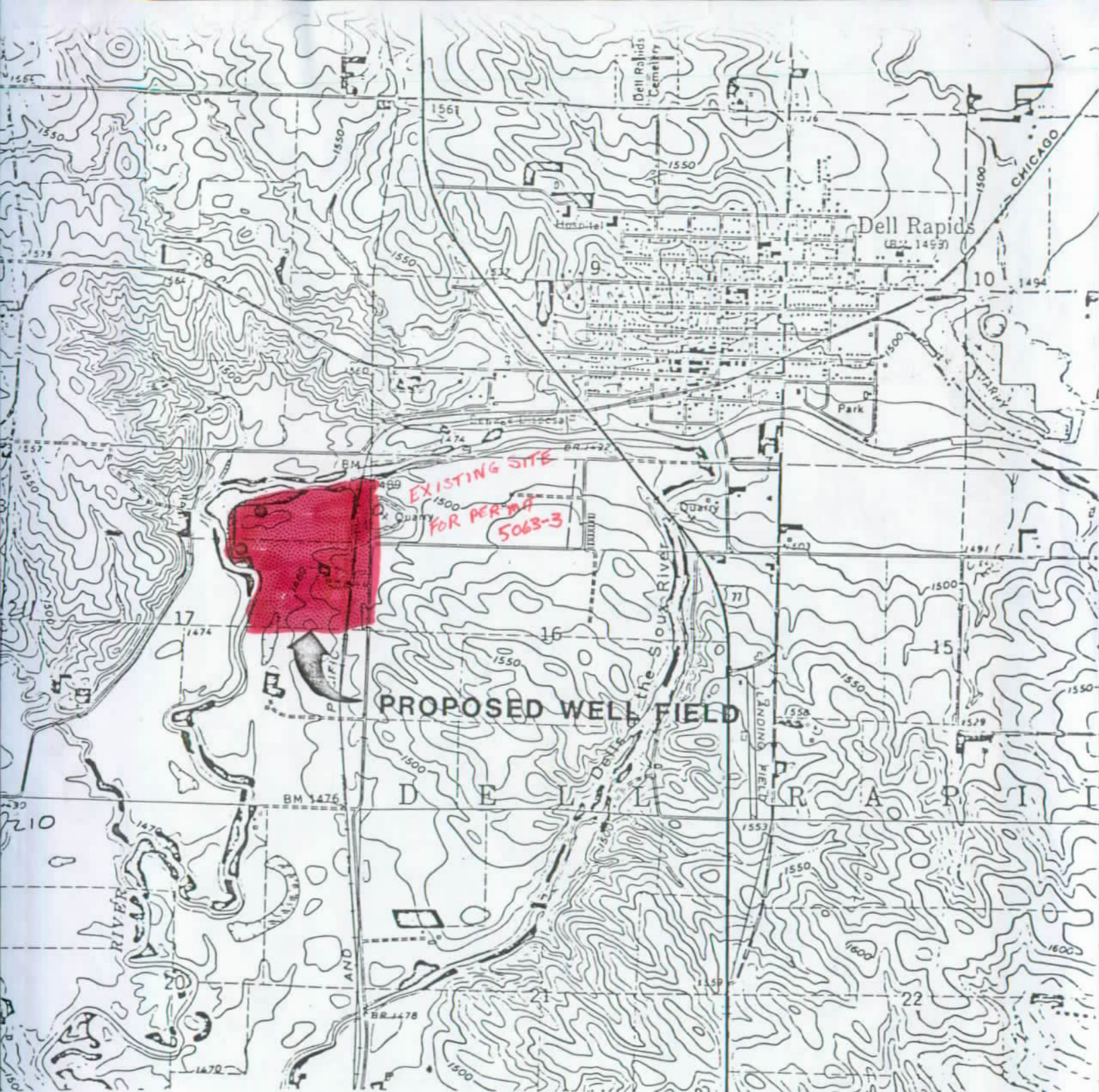
LOCATION OF SITES FOR
FUTURE WATER USE PERMIT



MINNEHAHA COMMUNITY WATER CORPORATION
RR2 BOX 26A
DELL RAPIDS, SOUTH DAKOTA

EXHIBIT 3
APPLICATION FOR FUTURE
USE WATER PERMIT

MINNEHAHA COUNTY, SOUTH DAKOTA
SE1/4 OF SE1/4 SEC. 29 AND
NE1/4 OF NE1/4 SEC. 32 T104N R49W



PROPOSED WELL FIELD

EXHIBIT #2

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly Registered Professional Engineer under the laws of the State of SOUTH DAKOTA and that I am competent to prepare this document.
 Registration No. 3473 Date 6-14-85
 By David Holman

NOTE: ACTUAL LOCATION AND NUMBER OF WELLS TO BE FIELD VERIFIED WITH PILOT HOLES PRIOR TO WELL CONSTRUCTION.



DeWild Grant Reckert & Associates Co.
 Denver, Colorado
 Rock Rapids, Iowa
 Sioux City, Iowa
 Sioux Falls, South Dakota

Date 6-14-85
 Drawn By WBR
 Approved
 Revised

CITY OF DELL RAPIDS

RECEIPT

413383

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, August 20 19 92

RECEIVED OF Minnehaha Community Water Corp., RR 2, Box 26A, Dell Rapids

the following amount in fees for services rendered as provided for by law:

57022

Fee for Application for Permit No. _____ to Appropriate Water, to construct and to put water to beneficial use _____		
Fee for Application for Permit No. _____ to Appropriate Water, for Future Use _____		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____		
Fee for Filing Transfer Form <u>Future Use Permit No. 5063-3</u>	2	50
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	2 50

By John Hatch
Chief Engineer

JOHN HATCH

RECOMMENDATION OF CHIEF ENGINEER FOR FUTURE USE WATER PERMIT
NO. 5063-3, Minnehaha Community Water Corporation

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Environment and Natural Resources concerning Future Use Water Permit No. 5063-3, Minnehaha Community Water Corporation, RR 2 Box 26A, Dell Rapids, SD 57022-9424.

The Chief Engineer is recommending that Future Use Permit No. 5063-3 REMAIN in EFFECT because 1) there is reasonable probability that there may be development of the water reserved under Permit No. 5063-3, 2) Minnehaha Community Water Corporation has demonstrated a reasonable need for the water reserved by Permit No. 5063-3, 3) the proposed use will be a beneficial use and 4) it is in the public interest with the following qualification:

That Permit No. 5063-3 reserves for future use a total of 717 acre-feet annually. The diversion rate of 1.65 cfs is deleted from Permit No. 5063-3.

And that maintaining the effectiveness of Future Use Permit No. is subject to payment of the \$ fee pursuant to SDCL 46-2-13(2) within 60 days of notice to the ^{32.50}



JOHN HATCH, Chief Engineer
November 19, 1992

NOTE: The maximum annual acre-feet of full-time pumping represented by 1.65 cubic feet of water per second (cfs) reserved by No. 5063-3 is 1,195 acre-feet. Assuming that the total amount pumped annually would equal 60% of 1,195 acre-feet, then expected developed pumping of water reserved under Permit No. 5063-3 would be about 717 acre-feet per year.

AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA, }
COUNTY OF MINNEHAHA } SS.

M. DEVISH

being duly sworn, says: That the Argus Leader is, and during all the times hereinafter mentioned was, a daily legal newspaper as defined by SDCL 17-2-21, as amended published at Sioux Falls, Minnehaha County, South Dakota, by Sioux Falls Newspapers, Inc.; that affiant is and during all of said times, was an employee of the publisher of such newspaper and has personal knowledge of the facts stated in this affidavit; that the notice, order or advertisement, a printed copy of which is hereto attached, was published in said newspaper upon

Thursday, the 7 day of January, 1993

Thursday, the 14 day of January, 1993

_____, the _____ day of _____, 19____

_____, the _____ day of _____, 19____

_____, the _____ day of _____, 19____

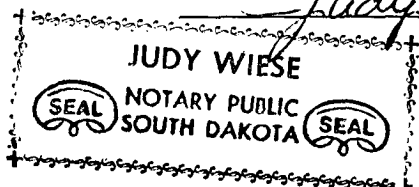
_____, the _____ day of _____, 19____

_____, the _____ day of _____, 19____

and that \$160.95 was charged for publishing the same including a \$2.00 affidavit fee.

M. Devish

Subscribed and sworn to before me January 25, 1993



Judy Wiese
Notary Public, South Dakota



NOTICE OF HEARING
on Application No. 5063A-3
to Amend Future Use Permit
No. 5063-3 and
NOTICE OF HEARING
to Review Future Use Permit
No. 5063-3

Notice is given that the Minnehaha Community Water Corporation, RR 2, Box 26A, Dell Rapids, SD 57022-9424 has filed an application for a water permit to amend Future Use Permit No. 5063-3. Future Use Permit No. 5063-3 which was issued to the City of Dell Rapids has been transferred to the Minnehaha Community Water Corporation. Permit No. 5063-3 reserves 1.65 cubic feet of water per second from groundwater (wells will be less than 70 feet deep) for municipal use. The area for future water use development is located in the NE 1/4 Section 17-T104N-R49W. This application proposes to change the water use from municipal use to rural water system use by Minnehaha Community Water Corporation. This application is not for construction of works of art put water to beneficial use. This application, if approved, would retain the June 24, 1985, priority date established by Future Use Permit No. 5063-3. This notice also serves to give notice of the review of Future Use Permit No. 5063-3 for progress made in the development of the water reserved by this Permit and future plans for development of reserved water.

Pursuant to SDCL 46-2A-2 the Chief Engineer of the Water Rights Division recommends that Permit No. 5063-3 REMAIN IN EFFECT for 717 acre-feet annually because 1) the quantity of water reserved will be needed by the Minnehaha Community Water Corporation, 2) the proposed use is a beneficial use, and 3) it is in the public interest. The recommendation of the Chief Engineer is not final or binding upon the Water Management Board and the Board is authorized to 1) allow the permit to remain in effect, 2) amend the permit by adding qualifications, 3) cancel the permit for no development or no planned future development, or 4) take no action after it reaches a conclusion based upon facts presented at the public hearing.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5063A-3 because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water, and 3) it is in the public interest. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. Even if not contested, a hearing will be held before the Board because the application presents important issues of public policy or public interest that should be heard by the Board.

Any person interested in opposing or supporting Application No. 5063A-3 or the review of Future Use Permit No. 5063-3 must file a written petition with BOTH the applicant and Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendations. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by February 19, 1993. The petition may be informal, but must include a statement describing the petitioner's interest in Application No. 5063A-3 or the review of Future Use Permit No. 5063-3, the petitioner's reasons for opposing or supporting Application No. 5063A-3 or the Future Use Review, and the signature and mailing address of the petitioner or the petitioner's legal counsel; if legal counsel is retained.

The Water Management Board will conduct a hearing on Application No. 5063A-3 and the review of Future Use Permit No. 5063-3 at 10:00 am on March 3, 1993, Floyd Matthew Training Center, Joe Foss Building, 523 East Capitol, Pierre, SD. Anyone not filing a petition, but interested in attending either hearing, may contact the Division of Water Rights to confirm a hearing date and location. The March 3, 1993, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing Application No. 5063A-3 or review of Future Use Permit No. 5063-3. The request for an automatic delay must be filed by February 19, 1993.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by February 19, 1993, at the above Water Rights Division address to request copies of information pertaining to this application or review of Future Use Permit No. 5063-3, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application and review are made pursuant to SDCL 46-1-1 thru 46-1-9; 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26; 46-5-38 thru 46-5-40; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15; 74:02:01:24 thru 74:02:01:25.

Robert E. Roberts, Secretary
Department of Environment and
Natural Resources
11307 Jan. 7, 14, 1993

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County of McCook) ss

I, Troy Schwans

certify that the attached printed Notice was
taken from the Salem Special

printed and published in Salem

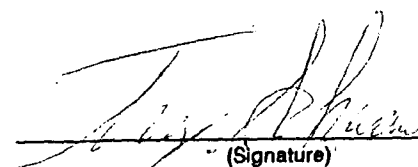
County of McCook and State of

South Dakota. The notice was published in
the newspaper on the following two dates:

January 7, 1993

January 14, 1993

Cost of Printing: \$83.00


(Signature)

Editor

(Title)

1/14/93

(Date Signed)



Public Notice

NOTICE OF HEARING
on Application No. 5063A-3
to Amend Future Use
Permit No. 5063-3
and

NOTICE OF HEARING
to Review Future Use
Permit No. 5063-3

Notice is given that the Minnehaha Community Water Corporation, RR2 Box 26A, Dell Rapids, SD 57022-9424 has filed an application for a water permit to amend Future Use Permit No. 5063-3. Future Use Permit No. 5063-3 which was issued to the City of Dell Rapids has been transferred to the Minnehaha Community Water Corporation. Permit No. 5063-3 reserves 1.65 cubic feet of water per second from groundwater (wells will be less than 70 feet deep) for municipal use. The area for future water use development is located in the NE 1/4 Section 17-T104N-R49W. This application proposes to change the water use from municipal use to rural water system use by Minnehaha Community Water Corporation. This application is not for construction of works or to put water to beneficial use. This application, if approved, would retain the June 24, 1985, priority date established by Future Use Permit No. 5063-3. This notice also serves to give notice of the review of Future Use Permit No. 5063-3 for progress made in the development of the water reserved by this Permit and future plans for development of reserved water.

Pursuant to SDCL 46-2A-2 the Chief Engineer of the Water Rights Division recommends that Permit No. 5063-3 REMAIN IN EFFECT for 717 acre-feet annually because 1) the quantity of water reserved will be needed by the Minnehaha Community Water Corporation, 2) the proposed use is a beneficial use, and 3) it is in the public interest. The recommendation of the Chief Engineer is not final or binding upon the Water Management Board and the Board is authorized to 1) allow the permit to remain in effect, 2) amend the permit by adding qualifications, 3) cancel the permit for no development or no planned future development, or 4) take no action after it reaches a conclusion based upon facts presented at the public hearing.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5063A-3 because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water, and 3) it is in the public interest. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. Even if not contested, a hearing will be held before the Board because the application presents important issues of public policy or public interest that should be heard by the Board.

Any person interested in opposing or supporting Application No. 5063A-3 or the review of Future Use Permit No. 5063-3 must file a written petition with BOTH the applicant and Chief Engineer.

The applicant must also file a petition if opposed, to the Chief Engineer's recommendations. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E. Capitol, Pierre, SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by February 19, 1993. The petition may be informal, but must include a statement describing the petitioner's interest in Application No. 5063A-3 or the review of Future Use Permit No. 5063-3, the petitioner's reasons for opposing or supporting Application No. 5063A-3 or the Future Use Review, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

The Water Management Board will conduct a hearing on Application No. 5063A-3 and the review of Future Use Permit No. 5063-3 at 10:00 a.m. on March 3, 1993, Floyd Matthew Training Center, Joe Foss Building, 523 East Capitol, Pierre, SD. Anyone not filing a petition, but interested in attending either hearing, may contact the Division of Water Rights to confirm a hearing date and location. The March 3, 1993, hearing date will be automatically delayed for at

least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing Application No. 5063A-3 or review of Future Use Permit No. 5063-3. The request for an automatic delay must be filed by February 19, 1993.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by February 19, 1993, at the above Water Rights Division address to request copies of information pertaining to this application or review of Future Use Permit No. 5063-3, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application and review are made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11, 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26; 46-5-38 thru 46-5-40; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15; 74:02:01:24 thru 74:02:01:25. Robert E. Roberts, Secretary, Department of Environment and Natural Resources.

1/7, 1/14

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County of Lincoln) ss

I, Sandra Lundstrom

certify that the attached printed Notice was

taken from the

SIOUX VALLEY NEWS

printed and published in Canton

County of Lincoln and State of

South Dakota. The notice was published in
the newspaper on the following two dates:

January 7, 1993

January 14, 1993

Cost of Printing: \$87.32

Sandra Lundstrom
(Signature)

Bookkeeper
(Title)

1-14-93
(Date Signed)



NOTICE OF HEARING on Application No. 5063A-3 to Amend Future Use Permit No. 5063-3

and NOTICE OF HEARING to Review Future Use Permit No. 5063-3

Notice is given that the Minnehaha Community Water Corporation, RR 2 Box 26A, Dell Rapids, SD 57022-9424 has filed an application for a water permit to amend Future Use Permit No. 5063-3. Future Use Permit No. 5063-3 which was issued to the City of Dell Rapids has been transferred to the Minnehaha Community Water Corporation. Permit No. 5063-3 reserves 1.65 cubic feet of water per second from groundwater (wells will be less than 70 feet deep) for municipal use. The area for future water use development is located in the NE 1/4 Section 17-T104N-R49W.

This application proposes to change the water use from municipal use to rural water system use by Minnehaha Community Water Corporation. This application is not for construction of works or to put water to beneficial use. This application, if approved, would retain the June 24, 1985, priority date established by Future Use Permit No. 5063-3. This notice also serves to give notice of the review of Future Use Permit No. 5063-3 for progress made in the development of the water reserved by this Permit and future plans for development of reserved water.

Pursuant to SDCL 46-2A-2 the Chief Engineer of the Water Rights Division recommends that Permit No. 5063-3 REMAIN IN EFFECT for 717 acre-feet annually because 1) the quantity of water reserved will be needed by the Minnehaha Community Water Corporation, 2) the proposed use is a beneficial use, and 3) it is in the public interest. The recommendation of the Chief Engineer is not final or binding upon the Water Management Board and the Board is authorized to 1) allow the permit to remain in effect, 2) amend the permit by adding qualifications, 3) cancel the permit for no development or no planned future development, or 4) take no action after it reaches a conclusion based upon facts presented at the public hearing.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 5063A-3 because 1) existing rights will not be unlawfully impaired, 2) it is a beneficial use of water, and 3) it is in the public interest. The Chief Engineer's recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing. Even if not contested, a hearing will be held before the Board because the application presents important issues of public policy or public interest that should be heard by the Board.

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Chief Engineer. The applicant must also file a petition if opposed to the Chief Engineer's recommendations. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E. Capitol, Pierre SD 57501 (605 773-3352)" and the applicant's mailing address is given above. A petition filed by either an interested person or the applicant must be filed by February 19, 1993. The petition may be informal, but must include a statement describing the petitioner's interest in Application No. 5063A-3 or the review of Future Use Permit No. 5063-3, the petitioner's reasons for opposing or supporting Application No. 5063A-3 or the Future Use Review, and the signature and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

The Water Management Board will conduct a hearing on application No. 5063A-3 and the review of Future Use Permit No. 5063-3 at 10:00 am on March 3, 1993, Floyd Matthew Training Center, Joe Foss Building, 523 East Capitol, Pierre, SD. Anyone not filing a petition, but interested in attending either hearing, may contact the Division of Water Rights to confirm a hearing date and location. The March 3, 1993, hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any interested person opposing Application No. 5063A-3 or review of Future Use Permit No. 5063-3. The request for an automatic delay must be filed by February 19, 1993.

Any hearing will be an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer and may present evidence or cross-examine witnesses according to SDCL 1-26. These and other due process rights will be forfeited if not exercised. Decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law. Contact Eric Gronlund by February 19, 1993, at the above Water Rights Division address to request copies of information pertaining to this application or review of Future Use Permit No. 5063-3, to assure access to the hearing by the handicapped or to obtain an interpreter for the hearing impaired.

This application and review are made pursuant to SDCL 46-1-1 thru 46-1-9, 46-1-12 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-13, 46-2-17; 46-2A-1 thru 46-2A-10, 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21; 46-5-1 thru 46-5-11; 46-5-13 thru 46-5-15, 46-5-24, 46-5-25, 46-5-30.2, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-26; 46-5-38 thru 46-5-40; and Board Rules ARSD, 74:02:01:01 thru 74:02:01:15; 74:02:01:24 thru 74:02:01:25. Robert E. Roberts, Secretary, Department of Environment and Natural Resources.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3181

March 5, 1993

NOTICE

John Buss
Minnehaha Community Water Corporation
RR 2, Box 26A
Dell Rapids SD 57022-9424

Dear Mr. Buss:

I am writing in response to action taken by the Water Management Board at the hearing on March 3, 1993 to review Future Use Permit No. 5063-3. The Board allowed the permit to remain in effect and amended Permit No. 5063-3 by adding the qualification on the enclosed "Amendment". The "Amendment" should be placed with the permit. Future Use Permit No. 5063-3 is again subject to review in seven years.

The fee for maintaining the effectiveness of Future Use Permit No. 5063-3 is \$32.50 pursuant to SDCL 46-2-13(2). Please remit the fee within 60 days.

Enclosed is the Receipt for \$2.50 which was paid to transfer this future use permit from the City of Dell Rapids to your Corporation.

Please contact Eric Gronlund, Water Rights Staff Engineer, if you have any questions.

Very truly yours,

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

enclosures

AMENDMENT TO FUTURE USE PERMIT NO. 5063-3

MINNEHAHA COMMUNITY WATER CORPORATION

Pursuant to the March 3, 1993 Water Management Board hearing, Future Use Permit No. 5063-3 was allowed to remain in effect and amended by adding the following qualification:

That Permit No. 5063-3 reserves for future use a total of 717 acre-feet annually. The diversion rate of 1.65 cfs is deleted from Permit No. 5063-3.

CERTIFICATION

I hereby certify that on March 5, 1993, I have personally deposited with the United States Mail at Pierre, South Dakota, first class postage, prepaid envelopes containing a Notice dated March 5, 1993, regarding action taken by the Water Management Board at the hearing on March 3, 1993, to review Future Use Permit No. 5063-3, a copy of the "Amendment", and the receipt which was paid for "Notice of Transfer of Ownership" addressed as stated below:

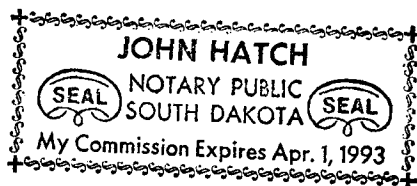
John Buss, Minnehaha Community Water Corporation, RR 2, Box 26A,
Dell Rapids, SD 57022-9424.

Cheryl F. Frost

Cheryl F. Frost
Secretary

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

Sworn to, before me, this 10th day of March, 1993.



John B. [Signature]
Notary Public

RECEIPT

413671

Division of Water Rights

South Dakota Department of Environment and Natural Resources

Pierre, March 11, 19 93

RECEIVED OF Minnehaha Community Water Corp., RR 2 Box 26A, Dell Rapids, SD 57022

the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. _____ to Appropriate Water, to construct and to put water to beneficial use _____		
Fee for Application for Permit No. _____ to Appropriate Water, for Future Use _____		
Fee to retain Future Use Permit No. <u>5063-3</u> after period of seven years.	32	50
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. _____		
Fee for Filing Transfer Form _____		
Fee for Filing Extension Request _____		
Fee for _____		

(Any Other Work Provided by Law)	Total	32 50

By John Hatch
Chief Engineer