

1. Considered 11-27 19 79
2. Name of Applicant JOHN L. KAPFER
3. Post Office Address VANCOUVER, WASH.
4. Amount of Water Claimed 4.5 2.2 CFS
5. Source of Water Supply 315' WELL
6. Water to be used for IRRIGATION
7. Acres to be irrigated 320 maximum acre feet
8. Water to be diverted and used in CAMPBELL County about 2E, 6 miles SOUTH of MOUND CITY
9. **PROOF OF PUBLICATION** Received 11-26-79

Not Received _____

APPLICATION

Approved 3-26-80

Subject to limit to 2.2; WI & send in wq questionnaire every year

Not Approved _____

Action deferred 11-27-79 3-26-80

Priority

Date

Received 1-11-79 Application Complete yes / no X FEE 325⁰⁰

Remarks Need fee - logs

WQ received

Date information and/or

fee or corrected Application received 10-10-79 logs

Period of Annual use March - November

WATER
QUALITY

Received yes 11/9/79 no _____ APPROVED CONDITIONAL (Circle one)

WI-1 Description same as application yes no _____ Remarks _____

Disapproved _____

Returned _____

///					
x	s				
///	+				

Diversion Point approx. Center

W 1/2, Sec. 15-T125N-
R 76W

Lands to be irrigated _____

W 1/2, Sec 15-T125N-
R 76W

WELL
LOG

Remarks _____

Driller Huron Del. Licensed yes no _____

Depth 315' deep

MAP Map No. 3677-3 Map located in Water Right X Map file _____
Type of Map Aerial Prepared by SCS

+++++

REVIEWED This Application was reviewed within 30 days of date received, accepted as complete, Number assigned and written up for advertisement before the Board on 11-27-79.

Bjoreslund
(Signed)

+++++

PROTESTS Letters/Petitions in File - yes no _____ Remarks _____

REMARKS Date
F.F. & C Final Decision, including F.F. & C of Law were adopted _____
OF LAW, Date
FINAL Final Decision mailed to parties and/or parties notified that Final Decision
DECISIONS
ETC. was adopted _____
Remarks _____

No. 4448-3Map No. 3677-3 Water Division No. 3 MISSOURI RIVER District
(Blanks to be Filled by the Engineer for the W. R. C.)

APPLICATION FOR PERMIT

To Appropriate Water within the State of South Dakota

(NOTE--Draw a line through items not applicable)

1. Name of Applicant John L. Kapfer
Postoffice address 8914 NW 15th Ave., Vancouver, State Washington 98665
If a corporation show date and place of incorporation -----
2. Method of accomplishing work (contract, employment of others, or by direct labor) Direct Labor
3. Name of diversion work John L. Kapfer Unit # 1
4. Amount of water claimed (cubic feet per second) ~~2.2~~ 2.2 MAXIMUM ALLOWED By WMB 3/26/80
5. Source of water supply Ground Water
6. Location of point of diversion Center of the West 1/2 of 15-125-76

- County Campbell
7. Annual period or periods during which water is to be used March - November
8. Use to be made of water, (irrigation, industrial, municipal, commercial, recreation, etc.) Irrigation
9. For irrigation use, Total number of acres to be irrigated 320

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

Land Description	No. Acres Irr.	Land Description	No. Acres Irr.
NW 1/4 of 15-125-76	160	<u>Permit # 4448-3A</u>	
SW 1/4 of 15-125-76	160	<u>J. Timothy Lee Vander Vorst</u>	
		<u>Permit # 4602-3</u>	
		<u>Kenneth Brockel</u>	

Attach sheet if more space is needed

10. Time required to complete construction of water supply system 5 years. Additional time required to complete application of water to the proposed beneficial use 2 years.
11. Choice of newspaper for Notice of Intent to Appropriate Water publication W.R. BOMMERSBACH - PRAIRIE PICAYUNE
Aberdeen American News, Aberdeen, SD
HERREID 57632
12. Principal Features of the Proposed Water Supply System.

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

Pump Bowl

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

Main Line

C. Works proposed to apply water to beneficial use.

Center PivotEstimated Total Cost \$ -----

Attachments: Attach Form 2A if diversion from a well or dugout, or if storage of water, is proposed. Attach map.
(See instructions concerning preparation.)

STATE OF SOUTH DAKOTA)
) ss.
County of Campbell)

I, John L. Kapfer the applicant, certify that I have read the foregoing application and have examined the attached map and that the matters therein stated are true and that I intend, and am able to complete the necessary construction.

Signed John L. Kapfer (Big Judy Kalkhau)Subscribed and sworn to before me this 10th day of January 19 79Jerome A. Osberg
Notary Public (or other qualified officer)

WATER RIGHT APPLICATION APPROVAL

Water Rights Commission hereby approves Water Right Application No. 4448-3

JOHN L. KAPFER
(Applicant)

8914 NW 15th AVE, VANCOUVER
(Post Office Address)

WASHINGTON 98665
(State) With the following modifications:

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

This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

PERMIT NO.

THIS PERMIT NO. 4448-3 IS APPROVED AUTHORIZING 2.2 C.F.S. 4448-3A
ONLY. 4602-3

Date of first receipt of application JANUARY 11, 19 79
Date of return to applicant for correction, amendments or changes required JANUARY 16, 19 79
Date of receipt of corrected application NOVEMBER 9, 19 79
Approved MARCH 26, 19 80, Recorded in Book 21 Page 140

WATER RIGHT PERMIT NO. 4448-3

The Water Rights Commission hereby grants and issues this Water Right Permit No. 4448-3 authorizing the construction of the water use system and the putting of water to beneficial use as stated in the Application and as modified in the Water Right Application approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is NOVEMBER 9, 19 79
2. The equivalent of at least one-fifth of the work above specified is to be completed on or before SEPTEMBER 26, 19 82
3. The whole of said work is to be completed on or before MARCH 26, 19 85
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is MARCH 26, 19 87
5. The water appropriated shall be used for the purpose of IRRIGATION

6. The prior right of all persons who, by compliance with the laws of the State of South Dakota, have acquired a right to the use of water must not be injuriously affected by this appropriation.

7. The amount of the appropriation herein granted shall not exceed 2.2 cubic feet per second; neither shall it exceed the capacity of the above described water supply system, nor shall it exceed the amount of water needed for beneficial uses served, and if for the irrigation purposes said appropriation must be limited to not more than 3 acre feet per acre per year and be limited to not more than one-seventieth (1/70) of one cubic foot of water per second of time for each acre of land to which water is

actually and beneficially applied for irrigation on or before MARCH 26, 19 87; said water to be used during the following described annual period: MARCH - NOVEMBER

Witness my hand this 1ST day of APRIL, 19 80

WATER RIGHTS COMMISSION

By:

John Hatch
Chief Engineer, Executive Officer

Certificate of Construction Issued _____, 19 _____

Water License Issued _____, 19 _____

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

D. Well Information or Estimates

(1) Drill Hole, Diameter _____, Depth _____

(2) Casing, Type _____ Diameter _____ Thickness _____
(wood, concrete, steel, etc)

(3) Perforated Screen.

Type _____, Diameter _____, Length _____

(4) Gravel Pack. Thickness _____, Length of gravel pack _____

E. Dugout Information or Estimates.

(1) Surface dimensions _____, Depth _____

F. Fill out for Either a Well or a Dugout. Log to be furnished by driller

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

Character of Water bearing materials _____

Depth to top of water bearing material _____

Depth to bottom of water bearing material _____

Thickness of water bearing material _____

Depth to water (ground surface to water level) _____

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

On same owner's property None rds. On property owned by others 160 rds.

G. Water Storage Dams.

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

John L. Kapper
Signature of Applicant
By Judy Kalochar

RESULTS DEEP-GLACIAL AQUIFER SIMULATION (cont.)

RESULTS DEEP-GLACIAL AQUIFER SIMULATION (cont.)												
Permit Number	Diversion Rate (cfs)	Drawdown in Feet								Comments		
		Number of Wells										
		9	15	16	17	18	19	20	(cfs)	20		
3881-3	2.0	111	117	122	122	124	133	146		135	Approved Permits Developed	
3368-3	2.0	64	71	78	78	80	92	110		95		
2119-3	2.1	50	57	66	67	69	80	95		82		
3882-3	2.0	102	107	112	112	113	122	135		124		
3367-3	2.0	65	71	79	79	80	92	112		95		
1990-3	2.0	55	61	69	69	71	81	98		84		
3684-3	3.0		84	84	87	87	87	87		87	Approved Permits Not Developed	
3684-3	3.0		85	85	89	89	89	89		89		
3684-3	3.0		104	104	109	109	109	109		109		
2355-3	1.95		100	102	102	102	105	108		105		
3879-3	2.0		42	46	46	50	53	56		53		
2225-3	2.0		45	53	53	56	63	72		63		
3993-3	3.2			70	70	72	83	94		83	Deferred Appli.	
4012-3	2.0				145	145	145	145		145		
4080-3	2.1					35	38	41		38		
4310-3	3.55						94	109	2.0	87		
4448-3	4.57							133	11.0	96		

TABLE 2

Permit Number	Drawdown (feet) Authorized Permits	Additional Drawdown If All Permits Approved (feet)	Static Water Level (feet)	Depth (feet) to Aquifer	Pumping Level All Permits Operating
3684-3	90	2			
4144-3	71	8	62	220	154
3170-3	96	39			
3881-3	117	29	50	265	185
3368-3	71	39	37	260	183
2119-3	57	38	50	220	160
3882-3	107	28	50	220	145
3367-3	71	41	30	260	165
1990-3	61	37	50	235	162
3684-3	84	3	50	235	148
3684-3	85	4			
3684-3	104	5			
2355-3	100	8			
3879-3	42	14		220	
2225-3	45	27	65	250	121
3993-3					
4012-3			20	263	
4080-3					
4310-3			65	250	
4448-3			51	273	

Table 1 shows the drawdown (feet) within each well which could be expected from a 60% efficient well.

Table 2 shows that in all cases the pumping water level would still be above the top of the aquifer. This means that all permits (if their wells are 60% efficient) would still be withdrawing water from head pressure and not dewatering the aquifer.

From a water availability and well spacing standpoint the applications can be approved. There will be problems for prior permit holders who do not have their pumps into the aquifer. As the head declines the pumps will have to be lowered and additional power costs will be encountered due to the increased lift.

An estimate of the additional electrical energy cost due to 30 feet of additional lift is as follows:

Pumping rate = 900 gpm (2.0 cfs)

Cost of electrical energy = \$0.04/kw-hr

Wire to water efficiency = 50 percent

Present head = 90 feet

\$ per month = $1.88 \times 10^{-4} Q, h_t/E_o$
= $1.88 \times 10^{-4} (900 \text{ gpm}) (90 \text{ ft}) (744 \text{ hrs}) / 50$ \$0.04/kw hr.
= \$906.37

Additional 30 feet

\$ per month = $1.88 \times 10^{-4} (900) (110) (744 \text{ hrs}) / 50$ \$0.04/kw hr.
= \$1107.79

The above calculations were based on formulas presented in the March 1979 issue of Water Well Journal.

CONCLUSIONS

1. Unappropriated water is available. If all permits pump at authorized withdrawal rates for 90 days, less than 1/10 of 1% of the estimated water in storage would be utilized.
2. Additional costs will be encountered due to increased lifts and in some cases replacement of pumps and motors will be necessary.
3. Observation wells are installed to monitor water level fluctuations (see pages 5-10 for water levels).

RECOMMENDATIONS

1. Application No. 3993-3, Donald M. Grad be approved for 3.2 cfs.
2. Application No. 4012-3, Ernest & Lenore Fjeldheim be denied due to applicants letter stating that if application is approved applicant would not develop the permit.
3. Application No. 4080-3, Marvin Volske be approved for 2.1 cfs.
4. Application No. 4310-3, Edwin Dale VanderVorst be approved for 3.55 cfs.
5. Application No. 4448-3, John L. Kapfer be approved for 4.57 cfs.

GALE N. SELKEN
Hydrologist III

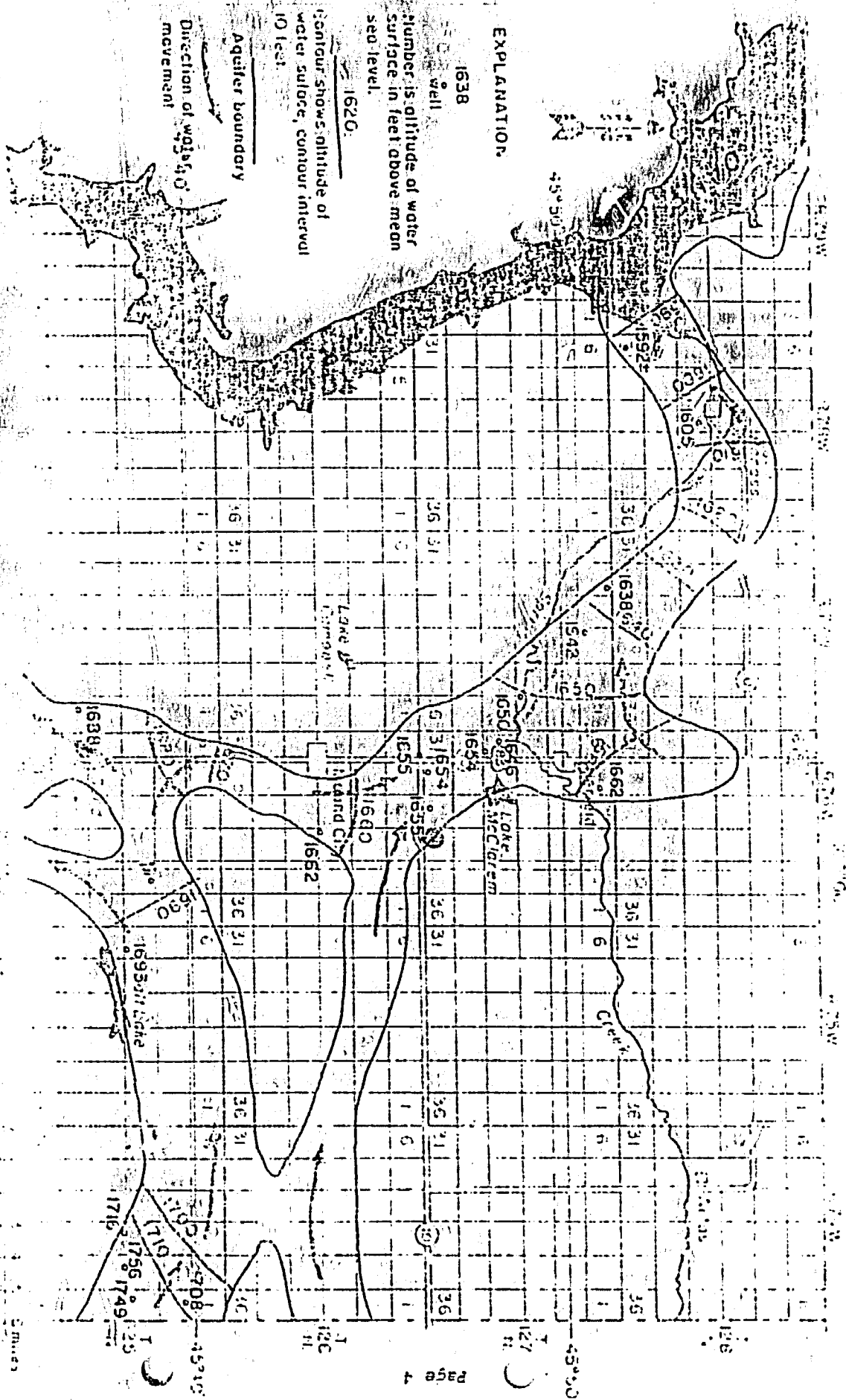
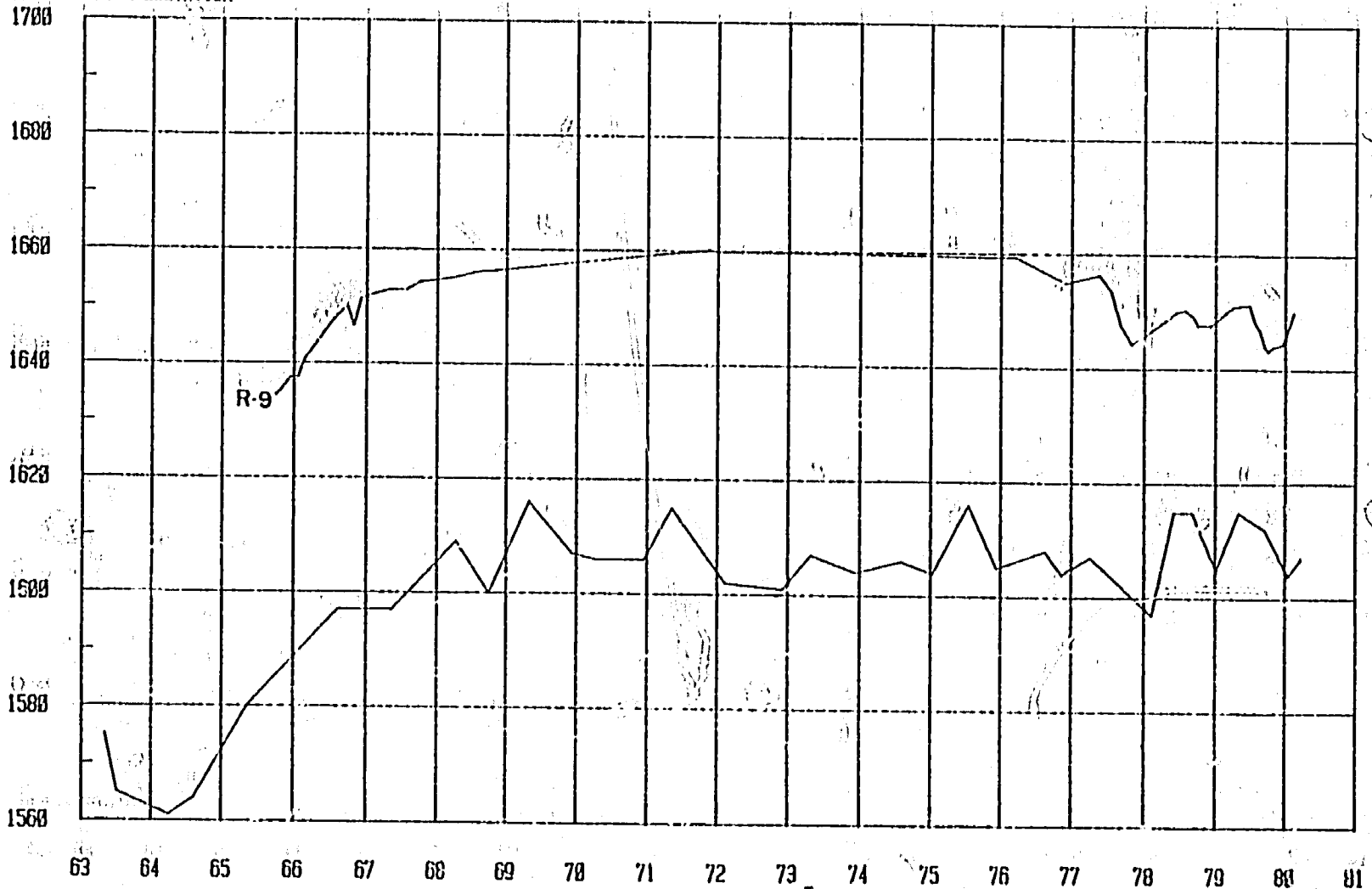


Figure 11. Altitude of water-surface and direction of ground-water movement in the deep-glacial aquifer, August 1966.
by Neil C. Koch MS65

WATER LEVELS IN WELL AND OAHU RESERVOIR

CAMPBELL COUNTY WELL R-9

WATER ELEVATION



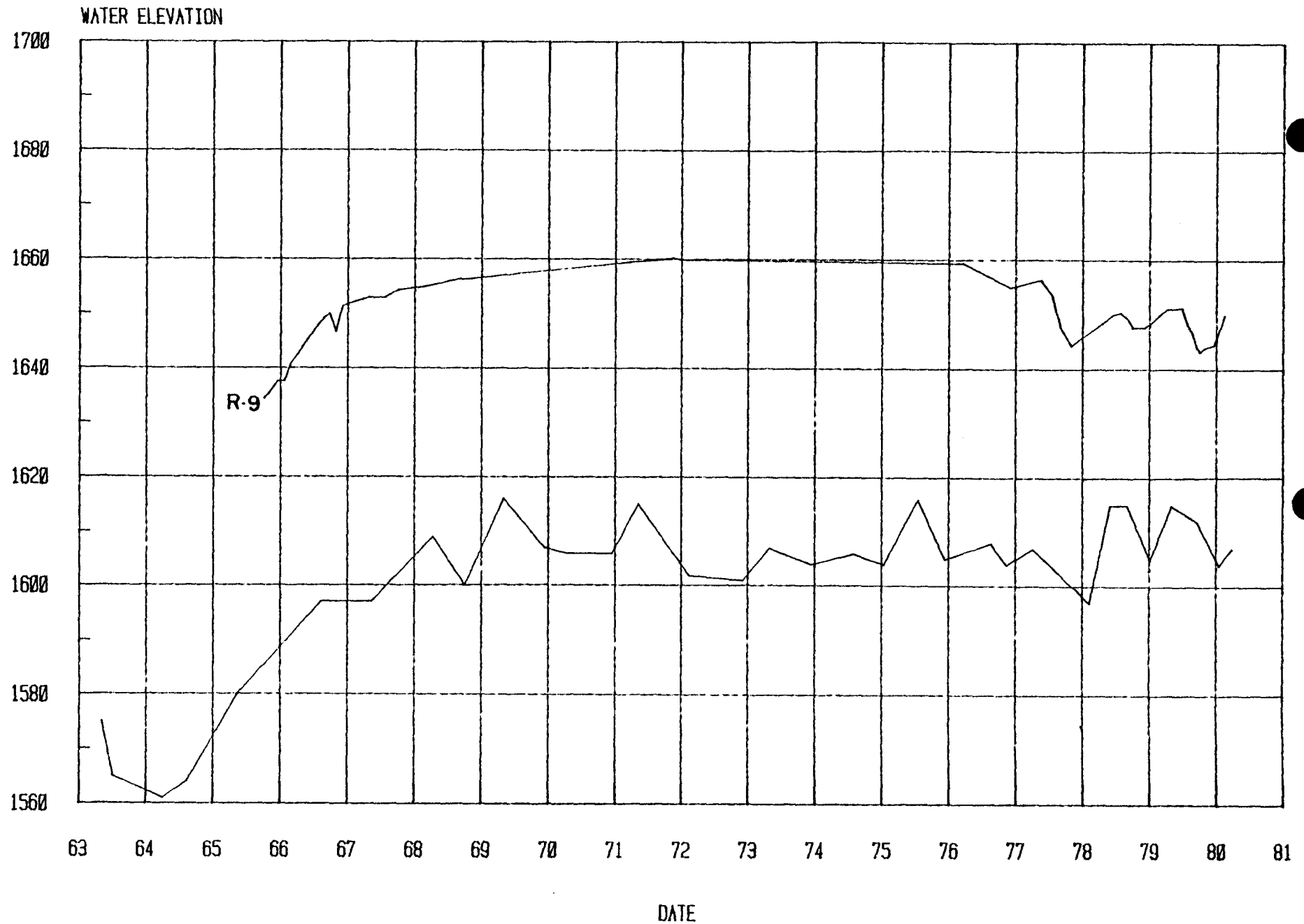
DATE

DATE MICROFILMED

UNIVERSITY OF CALIFORNIA
CAMPAIGN OPERATOR

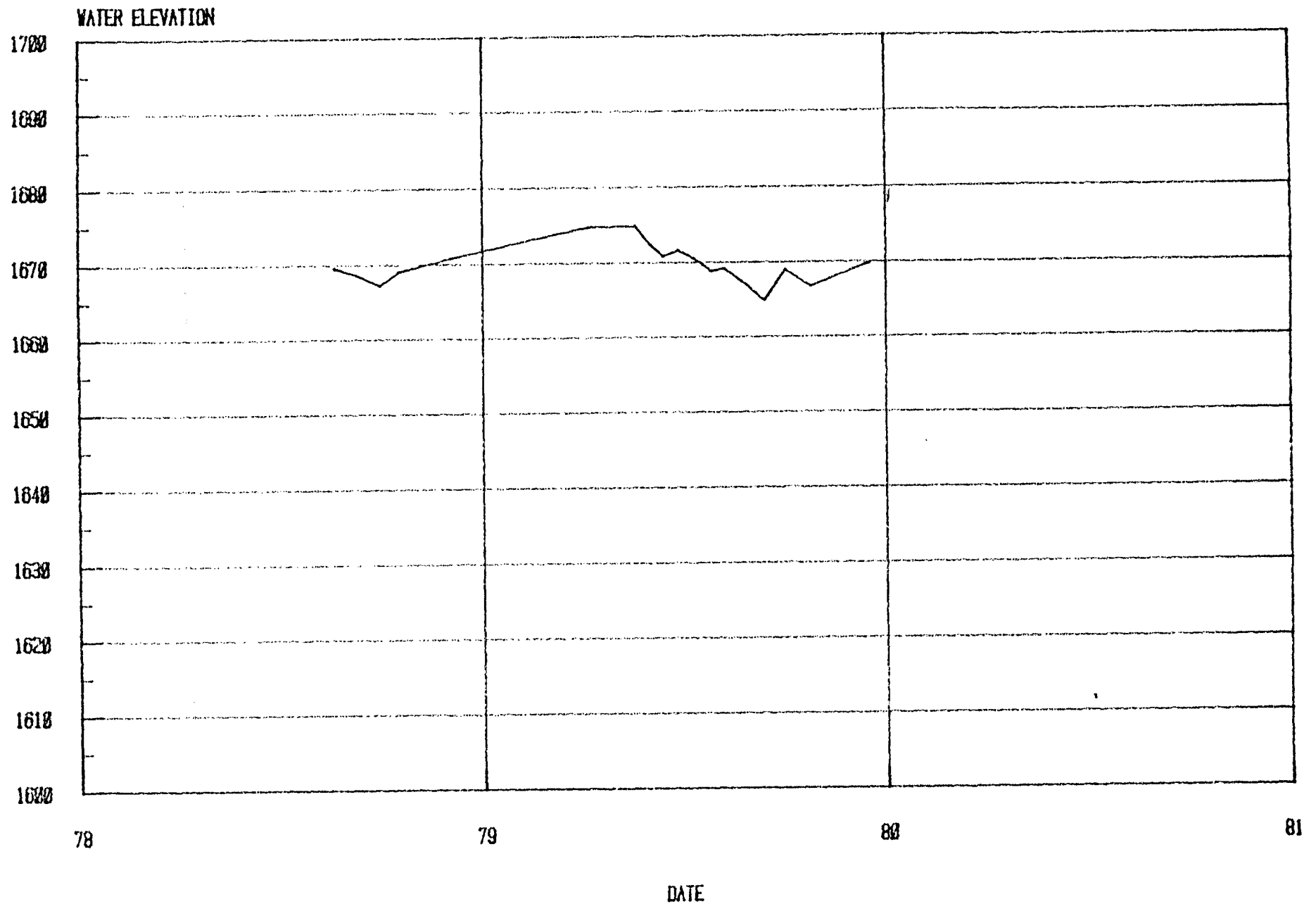
WATER LEVELS IN WELL AND OAHÉ RESERVOIR

CAMPBELL COUNTY WELL R-9



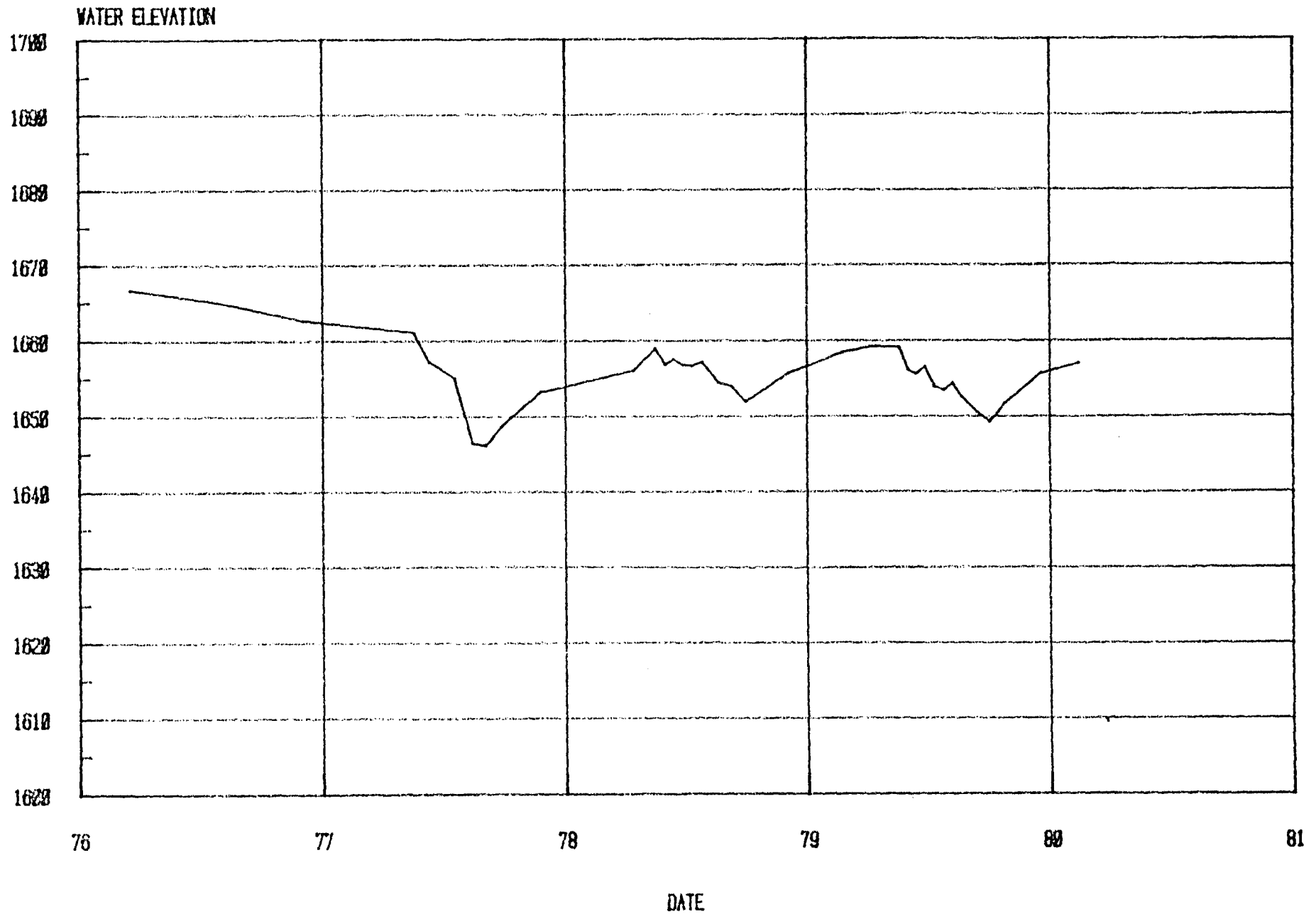
CAMPBELL COUNTY OBSERVATION WELLS

DEEP-GLACIAL WELL CA78-E



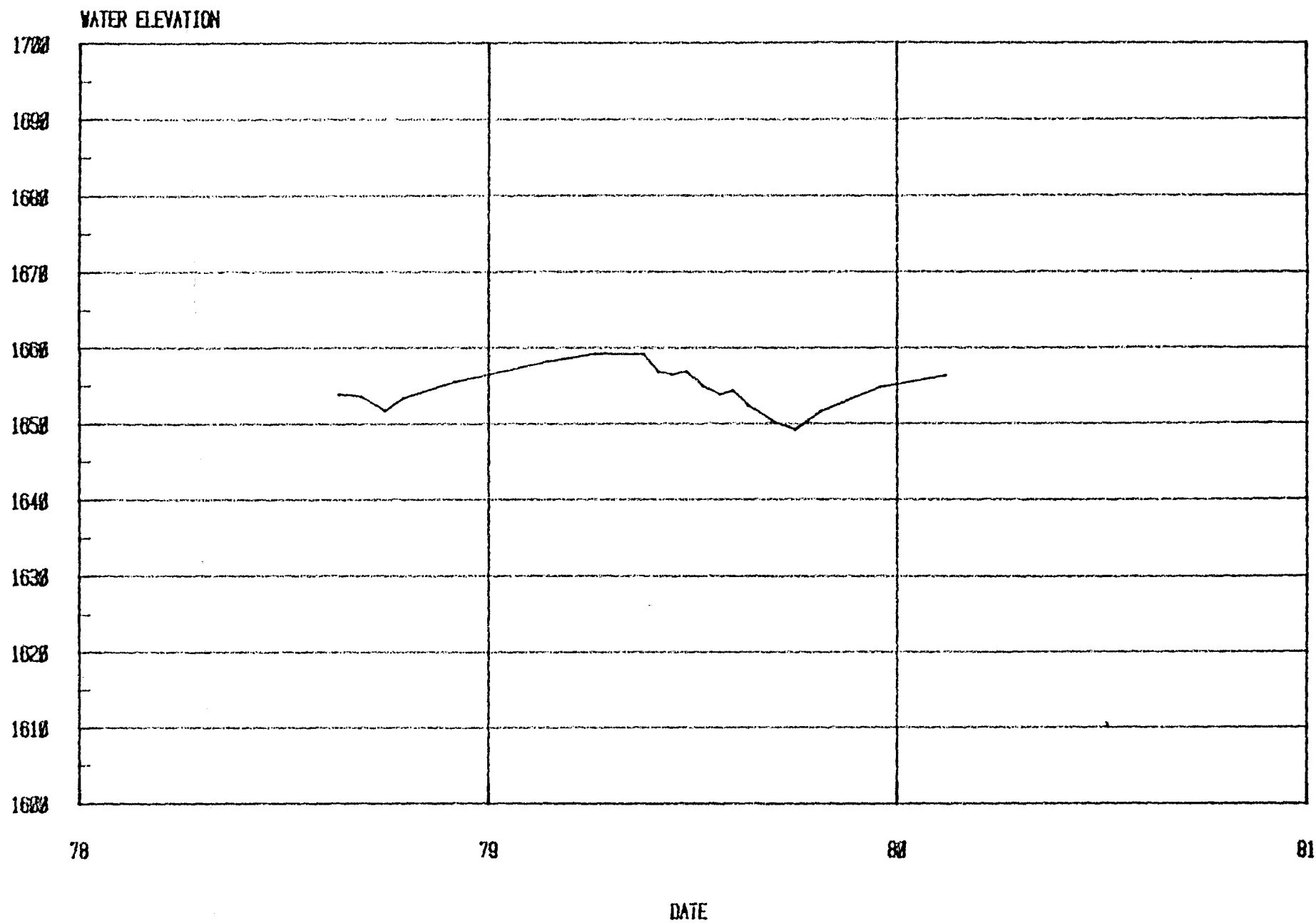
CAMPBELL COUNTY OBSERVATION WELLS

DEEP-GLACIAL WELL R-83



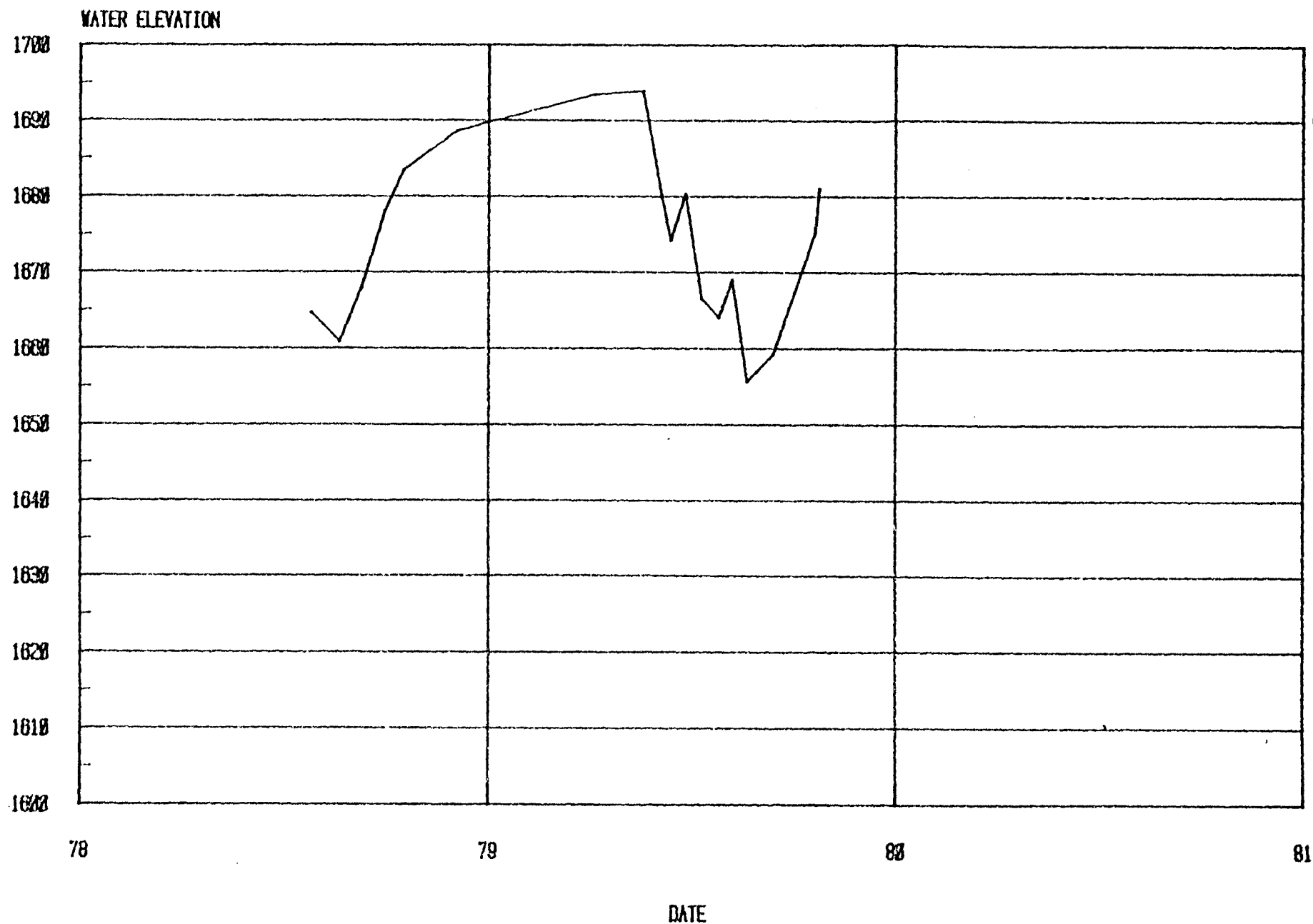
CAMPBELL COUNTY OBSERVATION WELLS

DEEP-GLACIAL WELL CA78-B



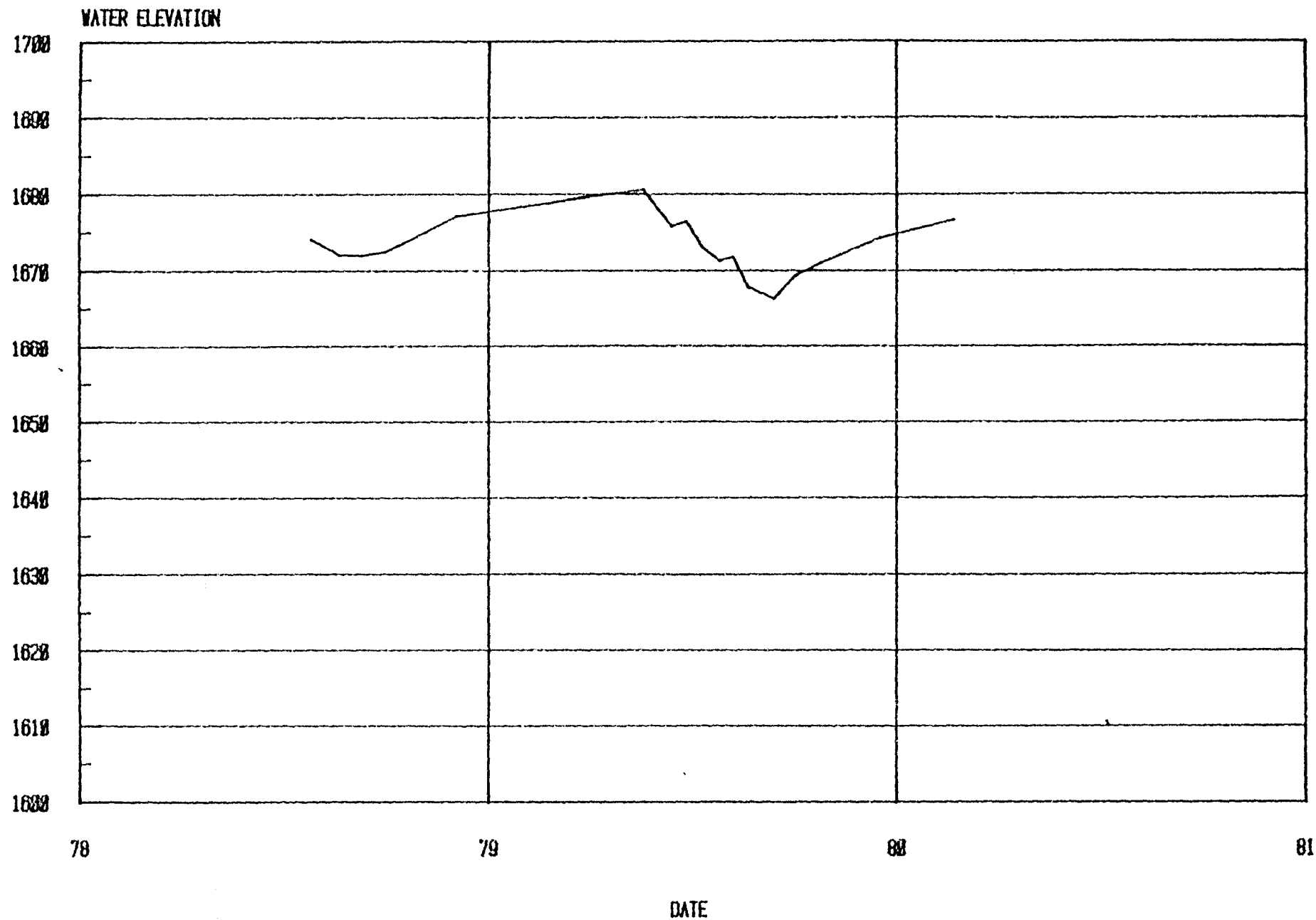
CAMPBELL COUNTY OBSERVATION WELLS

DEEP-GLACIAL WELL CA78-1

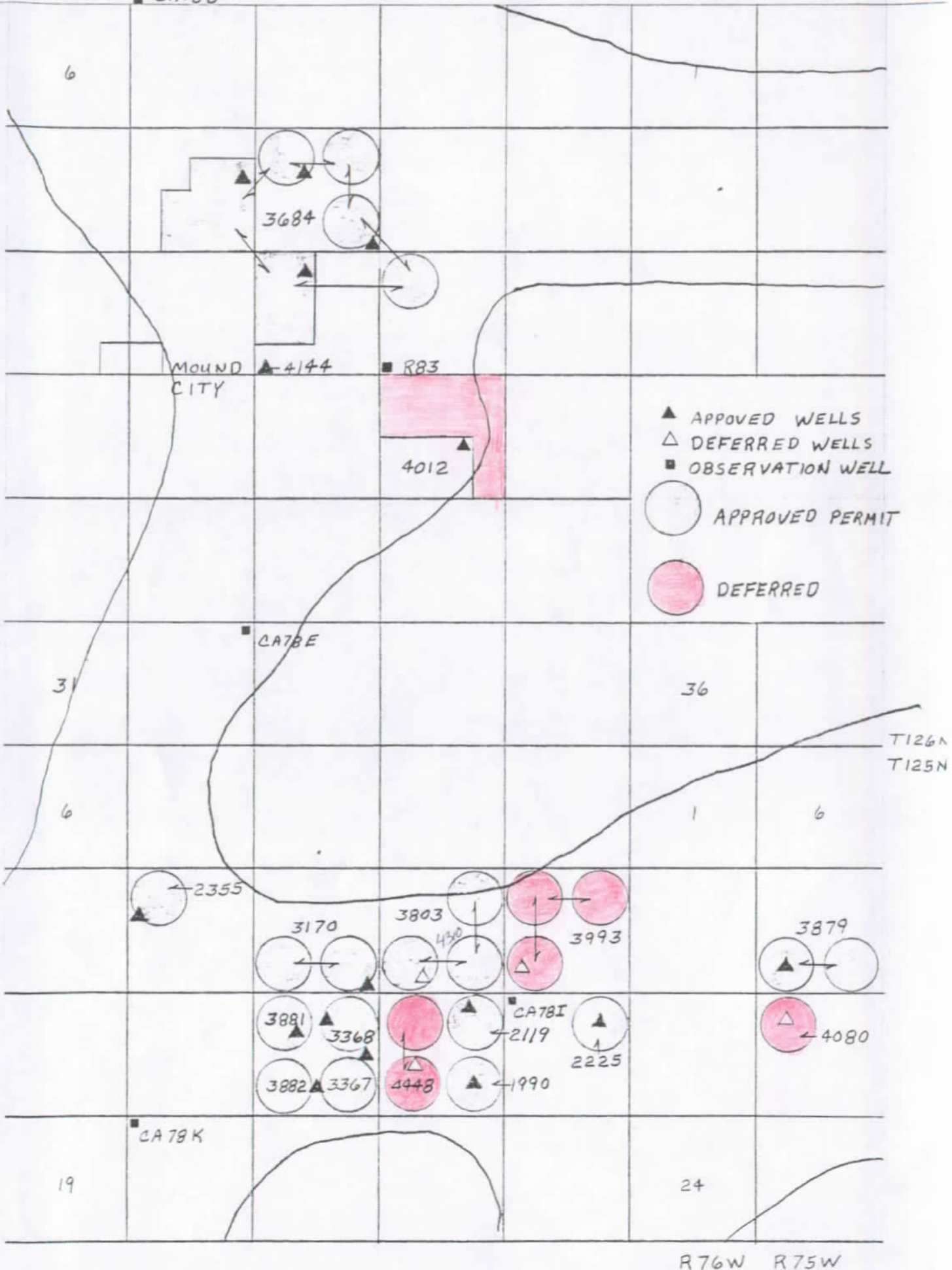


CAMPBELL COUNTY OBSERVATION WELLS

DEEP-GLACIAL WELL CA70-K



CAMPBELL COUNTY DEEP-~~WATER~~ AQUIFER
CA78B



Publish the following application notice on November 15 and
~~Publication of this notice on November 15 and~~ 21, 1979

NOTICE OF HEARING ON
 APPLICATION TO APPROPRIATE WATER

Pierre, South Dakota 57501

November 9, 1979

Notice is hereby given that John L. Kapfer whose post office

address is Vancouver, Washington ~~South Dakota~~ has made an application in accordance with the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-14; 46-2-9 thru 46-2-11, 46-2-13; 46-5-1 thru 46-5-8; 46-5-10 thru 46-5-22, 46-5-41; 46-6-3, 46-6-3.1, 46-6-5, 46-6-6.1, 46-6-10, 46-6-14 and Board Rules ARSD 52:01:01:01 thru 52:01:01:13, for a permit to appropriate for beneficial use 4.57 cubic feet of water per second of time from groundwater

(one well) through the Kapfer Unit #1, the point ~~(X)~~ of diversion of which is ~~(XXXX)~~ to be located in the approximate center of W $\frac{1}{2}$

of Section 15, Twp. 125N, Range 76W. Said water to be used for the purpose of providing irrigation on portions of the following described land:

W $\frac{1}{2}$, Section 15, T125N, R76W

This Application No. 4448-3 will be considered by the Water Management Board ~~XX~~
 In Meeting Room #1, Knelp Building,
 Church & Illinois, Pierre SD upon the 27th day of November, 1979

at 10 A.M. The Board is authorized to make a determination on this application at the hearing. All interested persons may appear and be heard. Any person who may be affected by a Board decision who desires to present evidence or cross-examine witnesses according to SDCL 1-26 may notify the Board in writing prior to the hearing or orally at the hearing.

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

WATER MANAGEMENT BOARD

BETTY WESTLUND,
 Water Rights Specialist

cc: John L. Kapfer
 8914 NW 15th Ave
 Vancouver, Washington 98665

No. 4448-3

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County Campbell) ss.

I, JAMES E. Mackay hereby

certify that the annexed printed copy of Notice of Intent to Appropriate
Water was taken from the Prairie Pioneer

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

Town of Pollock

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

Nov. 15, 1979

Nov 22, 1979

James E. Mackay
(Signature)

Publisher
(Title)

Nov 23, 1979
(Date Signed)



NOTICE OF HEARING
ON APPLICATION TO
APPROPRIATE WATER
Pierre, South Dakota 57501
November 9, 1979

No. 4448-3

Notice is hereby given that John L. Kapfer whose post office address is Vancouver, Washington, has made an application in accordance with the provisions of SDCL 46-1-1 thru 46-1-9, 46-1-14; 46-2-9 thru 46-2-11, 46-2-13; 46-5-1 thru 46-5-8; 46-5-10 thru 46-5-22, 46-5-41; 46-6-3, 46-6-3.1, 46-6-5, 46-6-6.1, 46-6-10, 46-6-14 and Board Rules ARSD 52:01:01:01 thru 52:01:01:13, for a permit to appropriate for beneficial use 4.57 cubic feet of water per second of time from groundwater (one well) through the Kapfer Unit No. 1, the point of diversion of which is to be located in the approximate center of W $\frac{1}{2}$ of Section 15, Twp. 125N, Range 76W. Said water to be used for the purpose of providing irrigation on portions of the following described land: W $\frac{1}{2}$, Section 15, T125N, R76W.

This Application No. 4448-3 will be considered by the Water Management Board in Meeting Room No. 1, Kneip Building, Church & Illinois, Pierre, SD upon the 27th day of November, 1979 at 10 a.m. The Board is authorized to make a determination on this application at the hearing. All interested persons may appear and be heard. Any person who may be affected by a Board decision who desires to present evidence or cross-examine witnesses according to SDCL 1-26 may notify the Board in writing prior to the hearing or orally at the hearing.

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

WATER MANAGEMENT
BOARD

Betty Westlund,
Water Rights Specialist

cc:

John L. Kapfer
8914 NW 15th Ave.
Vancouver, Washington 98665

- | | |
|--|---|
| ☐ ACTION | ☐ NOTE AND RETURN |
| ☐ APPROVAL | ☐ PER PHONE CALL |
| ☐ AS REQUESTED | ☐ RECOMMENDATION |
| ☐ FOR COMMENT | ☐ REPLY FOR SIGNATURE OF |
| ☐ FOR INFORMATION | ☐ RETURNED |
| ☐ INITIALS | ☐ SEE ME |
| ☐ NOTE AND FILE | ☐ YOUR SIGNATURE |

REMARKS

copy of soils map
for John Kupfer



FROM

Wald S. Stroup
J. H. Howard, S. D. Dept.

GPO (10-10-84) 1

FORM AD-314 (E 64)

REPORT OF ANALYSIS
Water Quality Laboratory
Water Resources Research Institute
South Dakota State University
Brookings, South Dakota 57007

Submitted by: John L. Kapfer
Address: 8214 NW 15th Ave.
Vancouver, Washington 98665
cc: Huron Drilling, Inc.
Huron, SD 57350
Date Rec'd: October 17, 1979
Sample No.: 79-662
Identification: 1 611-315'
Wt, Sec. 15, T 125N, R 76E

WATER ANALYSIS

Calcium (Ca)	88	ppm*	4.40	me/l**
Magnesium (Mg)	36	ppm	2.95	me/l
Sodium (Na)	127	ppm	5.52	me/l
Potassium (K)	11	ppm	0.29	me/l
Sulfate (SO ₄)	290	ppm	6.03	me/l
Nitrate (as N)		ppm		me/l
Chloride (Cl)	6	ppm	0.17	me/l
Bicarbonate (HCO ₃)	444	ppm	7.28	me/l
Carbonate (CO ₃)		ppm		me/l
Iron (Fe)		ppm		me/l
Fluoride (F)		ppm		me/l
Hardness (EDTA as CaCO ₃)		ppm		g.p.g.***
Alkalinity (Methyl Orange)	364	ppm (as CaCO ₃)		
Alkalinity (Phenolphthalein)	0	ppm (as CaCO ₃)		
Electrical Conductivity	1120	micromhos per cm at 25° C.		
Sodium Adsorption Ratio	2.90	Adjusted SAR	7.30	5.11
Sodium	41.95	% of cations		
Residual sodium carbonate	0.00	me/l		
pH	7.31			

Others:

*ppm=parts per million

**me/l=millequivalents per liter

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

COMMENTS: Total cations 13.16 me/l
Total anions 13.48 me/l



By: Shirley Litten

Service Performed

Amount Due

Irrigation analysis

\$15.00 PAID

Make checks payable to: Water Quality Laboratory

Cut along dotted line and return the lower portion with payment

Sample No. 79-662

Amount Enclosed \$

Signed

SOUTH DAKOTA DEPARTMENT OF AGRICULTURE
DIVISION OF CONSERVATION

NAME OF APPLICANT John L. Kapfer, Vancouver, Washington.

SOIL RESTRICTIONS:

THE SOIL(S) LISTED BELOW CANNOT BE IRRIGATED:

RECOMMENDED MANAGEMENT:

1. Water should not be applied more than NA times during the irrigation season.
2. Each uninterrupted application (one rotation of center pivot) should be of at least NA inches of water.
3. (☒) Yes () No Surface drainage suggested on any flat slope that may tend to pond water.
4. () Yes () No Subsurface drainage suggested on _____.
5. () Deep tillage (for the purpose of aiding movement of water through dense subsoils.

COMMENTS:

6. () Heavy fall application of irrigation water.
7. Type of irrigation system recommended for use on this application Pivot.

GENERAL COMMENTS:

The West 1/3 of the SW $\frac{1}{4}$ -15 has some areas that may exceed the 6% slope requirements for row crops. They are also subject to wind erosion unless kept in grass cover or legumes.

Depending upon the extent of your flat area adjacent to the sandy slopes, it may be justifiable, economically to move soil from the wheel tracks on the steeper areas to make surface drainage slope on the flatter areas.

WATER ANALYSIS

Calcium (Ca)	103	ppm*	5.15	me/l**
Magnesium (Mg)	19	ppm	1.56	me/l
Sodium (Na)	104	ppm	4.52	me/l
Potassium (K)	13	ppm	0.34	me/l
Sulfate (SO ₄)	174	ppm	3.62	me/l
Nitrate (as N)		ppm		me/l
Chloride (Cl)	6	ppm	0.17	me/l
Bicarbonate (HCO ₃)	456	ppm	7.48	me/l
Carbonate (CO ₃)		ppm		me/l
Iron (Fe)		ppm		me/l
Fluoride (F)		ppm		me/l
Hardness (EDTA as CaCO ₃)		ppm		g-p-g***
Alkalinity (Methyl Orange)	374	ppm (as CaCO ₃)		
Alkalinity (Phenolphthalein)	0	ppm (as CaCO ₃)		
Electrical Conductivity	985	micromhos per cm at 25° C.		
Sodium Adsorption Ratio	2.47			
Sodium	39.06	% of cations		
Residual sodium carbonate	0.77	me/l		
pH	7.81			
Other				

ppm = parts per million

me/l = milliequivalents per liter

***g-p-g = grams per gallon

COMMENTS: **Total cations**
Total anions

11.57 me/l
11.27 me/l

By: **Shirley Mittan**

Service Performed

Amount Due

Irrigation analysis

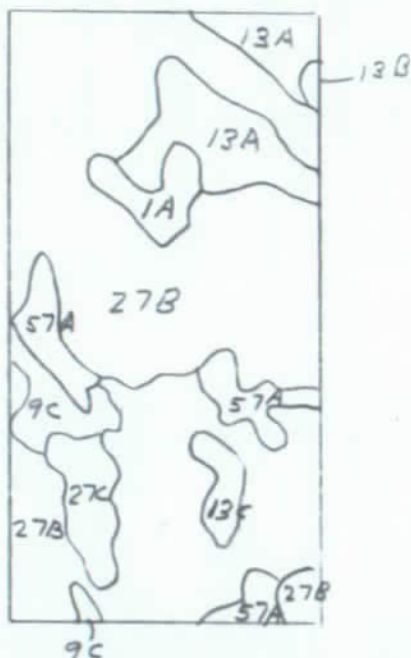
\$8.00 PAID

Make checks payable to: Water Quality Laboratory

Cut along dotted line and return the lower portion with payment

Herreid
John L. Kapfer
Herreid, S. Dak

W 1/2 15-125-76



3.2" = 1 mile

Map Symbol	Mapping Unit Name	Slope	Capability Unit	Inten
* 1C	Seroco loamy fine sand	2-15	VIc7	
13A	Tally fine sandy loam	2-3	IIIc7	1.5
13B	" "	3-6	IIIc8	1.5
13C	" "	6-9	IVc8	1.5
* 27B	Madlock loamy fine sand	0-6	IVc9	
* 27C	" " " "	6-9	VIc7	
57A	Williams-Bowbell loams	0-3	IIc2	0.5
1A	Bowbells loam	0-3	IIc3	1.3
* Generally not suited for surface irrigation				

John L. Kapfer

Soil Conservation Service
Herreid, S. Dak.

Map Symbol	Capability Unit	Description
9C	VIe7	Deep, sandy and very sandy soils on gently undulating to rolling (2 to 15%) uplands. These soils have very severe wind erosion hazards. They are not suited for cultivation.
13 A	III e7	Deep and moderately deep, moderately sandy soils on nearly level (0 to 2%) uplands. They have a severe wind erosion hazard.
13 B	IIIe8	Deep and moderately deep, moderately sandy soils on gently undulating (2 to 6%) uplands and eroded phases of these soils on nearly level (0 to 2%) uplands. They have a severe wind erosion hazard.
13 C	IVe8	Deep and moderately deep, moderately sandy soils on undulating or sloping (6 to 9%) uplands, and eroded soils on gently undulating or gently sloping (2 to 6%) uplands. These soils have severe wind and moderate water erosion hazards.
27 B	IVe9	Deep, sandy soils on nearly level and gently undulating (0 to 6%) uplands. They have very severe wind erosion hazards.
27 C	VIe7	Deep, sandy and very sandy soils on gently undulating to rolling (2 to 15%) uplands. These soils have very severe wind erosion hazards. They are not suited for cultivation.
57 A	IIc2	Deep, and moderately deep, loamy, well drained soils on nearly level (0 to 2%) uplands. Moisture is inadequate in most years and these soils have slight to moderate wind erosion hazard.
1 A	IIc3	Deep, loamy, well to moderately well drained soils in upland swales that receive beneficial moisture. However, moisture is still inadequate in most years.

well in N 1/2 15
app says W 2 15

Recd 10-10-79
From
Willis Sackreiter

MURON DRILLING INC. DRILLERS LOG

PAGE NO.

Willis Sackreiter JOB NAME	W 15-125-76-Campbell County LOCATION	9/24/79 DATE	10 RIG NO.	Robert Webster FOREMAN
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Jt No.	DEPTH	TIME	REMARKS
1	20		0-20 Yellow sand and gravel
2	30		20-40 Yellow sand and gravel
3	45		40-50 Yellow gravel
4	65		50-65 Blue clay
5	85		65-89 Blue clay
6	105		85-109 Blue clay
7	125		109-129 Blue clay
8	145		129-149 Blue clay
9	165		149-169 Blue clay
10	189		169-189 Blue clay
11	209		189-209 Blue clay, small sand streaks
12	225		209-225 Small sand streaks
13	245		225-245 Small sand streaks-blue clay
14	265		245-265 Blue clay, small sand streaks
15	285		265-275 Blue clay, better streaks
			275-285 Coarse sand, coal
16	305		285-305 Good coarse sand, coal streaks-water loss
17	325	TD	305-310 Good coarse sand, gravel
			310-325 Shale
			This test hole cased to 315 Ft. with 4" Plastic
			60 Ft. Perf.
			Pumps 75 GPM
			Waterhead 69 Ft.
			3,000# gravel

HURON DRILLING INC. DRILLERS LOG

PAGE NO.

Willis Sackreiter
JOB NAME

W-15-125-76-Campbell
w/z County
LOCATION

9/24/79
DATE

10
RIG NO.

Robert Webster
FOREMAN

Jt No.	DEPTH	TIME	REMARKS
1	20		0-20 Yellow sand and gravel
2	30		20-40 Yellow sand and gravel
3	45		40-50 Yellow gravel
4	65		50-65 Blue clay
5	85		65-89 Blue clay
6	105		85-109 Blue clay
7	125		109-129 Blue clay
8	145		129-149 Blue clay
9	165		149-169 Blue clay
10	189		169-189 Blue clay
11	209		189-209 Blue clay, small sand streaks
12	225		209-225 Small sand streaks
13	245		225-245 Small sand streaks-blue clay
14	265		245-265 Blue clay, small sand streaks
15	285		265-275 Blue clay, better streaks
			275-285 Coarse sand, coal
16	305		285-305 Good coarse sand, coal streaks-water loss
17	325	TD	305-310 Good coarse sand, gravel
			310-325 Shale
			This test hole cased to 315 Ft. with 4" Plastic
			60 Ft. Perf.
			Pumps 75 GPM
			Waterhead 69 Ft.
			3,000# gravel

*Send results of test to Copy to Submitter
Kapfer*

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

NAME John L. Kapfer
ADDRESS 8914 NW 15th Ave., Vancouver, Washington 98665
COUNTY Land to be irrigated is in Campbell County, South Dakota



LEGAL DESCRIPTION

1. WELL LOCATION Center of the West 1/2 of 15-125-76
2. LOCATION OF AREA TO BE IRRIGATED NW 1/4-15-125-76 & SW 1/4-15-125-76

TYPE OF IRRIGATION

3. GRAVITY TOWLINE CENTER PIVOT X GUN
4. CROPS TO BE IRRIGATED Corn, Alfalfa, Small Grain

WATER QUALITY

5. SAMPLE NUMBER 79-662
6. SALINITY (EC X 10⁶) 1120
7. SODIUM (SAR) 2.90 Adj. SAR = 7.30
8. RESIDUAL SODIUM CARBONATE (meq/l.) 0.0

I do hereby certify that a chemical analysis of the ground water representative of that used to irrigate shall be acquired from South Dakota State University and:
the soils information has been acquired from Campbell Co. Conservation District,
County Extension office or Soil Conservation Service.
and:
that the legal description for the location of the well and land to be irrigated is true
and correct.



X John L. Kapfer
APPLICANT'S SIGNATURE
By, William J. Sakiewicz

SUBSCRIBED AND SWORN BEFORE ME THIS
17th DAY OF October 19 79.

Paul Stork
(TITLE OR SEAL)

Keith L. Harner
APPROVED/

Conditional
(SOILS INFORMATION ON REVERSE SIDE)