

Considered: _____

WATER PERMIT NO. 5235-3

HAP No. same 339-7025

Name of Applicant City of Sioux Falls

Post Office Address 224 West Ninth Street, Sioux Falls SD 57102

Amount of Water Claimed 6.45 cfs Total Acres NA

Source of Water Supply 6 wells - Big Sioux Aquifer

Water to be used for municipal use County MA & LN

About — miles — of Sioux Falls

PROOF OF PUBLICATION: Received _____ Not Received _____

APPLICATION: Approved 3/2/89 Subject to _____

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

PRIORITY _____ Date Received Jan 4, 1989 Fee \$1150⁰⁰ Remarks _____

1/4/89

Corrected Application Received _____ Period of Annual Use Jan 1 - Dec 31

WATER QUALITY APPROVAL RECEIVED NA APPROVED/CONDITIONAL (Circle one)

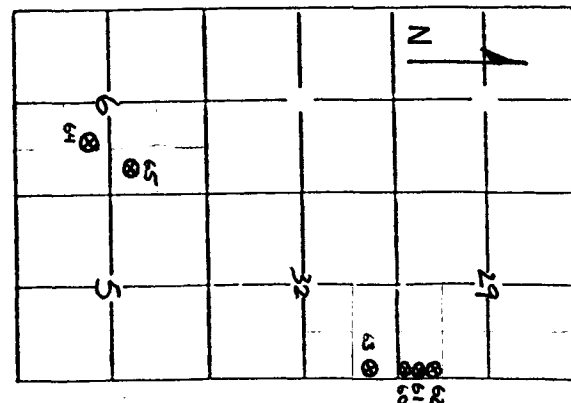
WI-1 Description same as Application YES NO REMARKS NA

Diversion Points SE $\frac{1}{4}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$ section 6 - T101N-

R49W, SE $\frac{1}{4}$ SE $\frac{1}{4}$ section 29; NE $\frac{1}{4}$ NE $\frac{1}{4}$ section

32; all in T102N-R49W

Land to be Irrigated _____



Well Log: Driller Lacey Licensed YES NO

Depth of Wells 37 to 44 feet deep REMARKS _____

Type of Map topo PREPARED BY Lyle D Johnson Reviewed and the Number

assigned on January 5, 1989 By Ron Duval

FORM 2: Application for uses other than irrigation (type or print)

Mail to: Water Rights Div.
DWNRR, Foss Bldg.
Pierre, SD 57501
(605) 773-3352

No. <u>5235-3</u>	Hydrologic Unit <u>10170203</u>
Map No. <u>same</u>	Basin <u>Big Sioux River</u>
Newspaper <u>Argus Leader, P.O. Box 5034, Allen, La. Dept.</u> <u>Sioux Valley News, Box 258 (rhne)</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

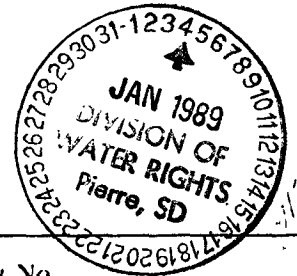
New ☒ Vested Right ☐ Future Use ☐ Change Use ☐

☐ 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. 448-3



1. Name of Applicant CITY OF SIOUX FALLS Phone No. 605-339-7025

Post Office Address 224 West Ninth Street Sioux Falls State SD 57102
(Street, RR or Box) (City) Zip Code

2. Amount of water claimed (c.f.s) 6.45 cfs

3. Source of water supply Groundwater - Big Sioux Aquifer

4. Location of point of diversion Wells #60, 61, 62, 63, 64 and 65 (See Attached for
Legal Descriptions). SE $\frac{1}{4}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 6-T101N-R49W: SE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 29;

NE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 32; in T102N-R49W.

County Minnehaha

5. Counties where water will be used Minnehaha

6. Annual period during which water is to be used January 1 through December 31; as needed

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)

The project consists of six (6) temporary wells to supplement the existing water supply during drought conditions.

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, Jack White, Mayor

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

Signed Jack White

Subscribed and sworn to before me this 28th day of December 19 88

Dianne Mathi

Notary Public

Division of Water Rights, Pierre, SD

My Comm. Expires Dec. 3, 1992

NOT TO SCALE

NOT TO SCALE

T102-A1
30 29
31 32
R 29 W

N

Don Durrell
Natural Resources Engineer
1/16/91
1" = 754'

License No. 5235-3

T102-A1
30 29
31 32
R 29 W

NOT TO SCALE

5710-3

BIG SIOUX AQUIFER - 1988

APPLICATION FOR PERMIT TO APPROPRIATE WATER WITHIN THE STATE OF SOUTH DAKOTA:

4. Location of Point of Diversion:

Well #60: SE 1/4, SE 1/4, Section 29, Township 102N, Range 49-W.

Well #61: SE 1/4, SE 1/4, Section 29, Township 102N, Range 49-W.

Well #62: SE 1/4, SE 1/4, Section 29, Township 102N, Range 49-W.

Well #63: NE 1/4, NE 1/4, Section 32, Township 102N, Range 49-W.

Well #64: NW 1/4, SE 1/4, Section 6, Township 101N, Range 49-W.

Well #65: SE 1/4, NE 1/4, Section 6, Township 101N, Range 49-W.

City of Sioux Falls
South Dakota

City Water Department

**SOUTH DAKOTA
WATER PERMIT No. 5235-3**

Date of first receipt of application August 30, 1988.

Date of return of applicant for correction, amendments or changes required September 15, 1988.

Date of receipt of corrected application January 4, 1989.

The Water Management Board approved Water Permit Application No. 5235-3 on March 2, 1989 for the City of Sioux Falls, 224 W. 9th Street, Sioux Falls, SD 57102 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 5235-3 appropriates 6.45 cfs from 6 existing wells, 37 to 44 feet deep, located within SE1/4 NE1/4 (1 well), NW1/4 SE1/4 (1 well), Section 6-T101N-R49W and the SE1/4 SE1/4 (3 wells) Section 29; NE1/4 NE1/4 (1 well) Section 32; all in T102N-R49W.
2. The water appropriated shall be used for the purpose of supplying water to the City of Sioux Falls and may not exceed the amount of water needed for beneficial use for municipal purposes.
3. The water is to be used during the following described annual period: January 1 - December 31.
4. The date from which applicant may claim right is January 4, 1989.
5. One-fifth of the construction is completed.
6. All construction is completed.
7. Water is put to beneficial use.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

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

WATER MANAGEMENT BOARD

By: 
Chief Engineer, Water Rights Division
Department of Water and Natural Resources

JUN 13 1989

(date)

LACEY WELL DRILLING

TRENT, SOUTH DAKOTA

TEST DRILLING LOG SHEET

JOB NO. _____

NAME _____

Sioux Falls

TEST HOLE NO. _____

DATE DRILLED _____

DRILLING CO. _____

OWNER'S NAME _____

#1 & #2

Sept 1, 1988

Lacey Well Drilling

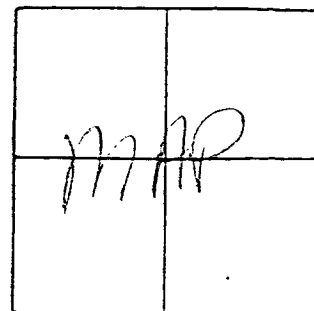
Joan Redden

SECTION _____

T _____ N _____

R _____ W _____

MARK LOCATION
WITHIN SECTION



OCT 1988
RECEIVED
WATER
PURIFICATION
PLANT

DEPTH

FORMATION
DESCRIPTION

DEPTH

FORMATION
DESCRIPTION

FEET FEET

0 TO 2

2 6

6 10

10 18

18 39

39

20'

Topsoil

Sea mud

Yellow Sand

Brown Sand

Grey Sand

Blue Clay

Static

FEET FEET

0 TO 2

2 20

20 38

38 40

20'

Topsoil

Yellow Sand

Fin Grey Sand

Blue Clay

Static

STATIC WATER LEVEL (MEASURED FROM TOP OF GROUND) _____

WATER SAMPLE TAKEN ? (YES) (NO) IF YES, WHAT ACTION TAKEN ? _____

ESTIMATE OF PUMPING CAPACITY 200 GPM

REMARKS: _____

LACEY WELL DRILLING

TRENT, SOUTH DAKOTA

TEST DRILLING LOG SHEET

JOB NO. _____
NAME Sims Field

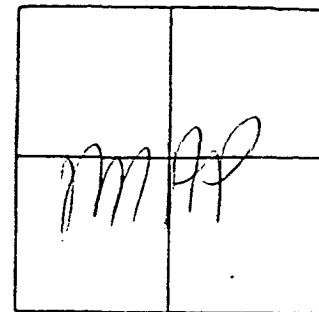
TEST HOLE NO. #3 & #4
DATE DRILLED Sept. 1, 1988
DRILLING CO. Lacey Well Drilling
DRILLER'S NAME Joan Redden

SECTION _____

T _____ N

R _____ W

MARK LOCATION
WITHIN SECTION



#3

LOG

#4

DEPTH		FORMATION DESCRIPTION
FEET	FEET	
<u>0</u>	<u>2</u>	<u>Topsoil</u>
<u>2</u>	<u>4</u>	<u>Clay</u>
<u>4</u>	<u>10</u>	<u>yellow Sand</u>
<u>10</u>	<u>18</u>	<u>Grey Sand</u>
<u>18</u>	<u>31</u>	<u>Grey Sand & gravel</u>
—	<u>31</u>	<u>Blue Clay</u>
—	—	—
—	—	—
—	<u>10'</u>	<u>Static</u>

DEPTH		FORMATION DESCRIPTION
FEET	FEET	
<u>0</u>	<u>1</u>	<u>Topsoil</u>
<u>1</u>	<u>20</u>	<u>Fine Sand</u>
<u>20</u>	<u>38</u>	<u>Grey Sand</u>
—	<u>38</u>	<u>Blue Clay</u>
—	—	—
—	—	—
—	—	—
—	<u>20'</u>	<u>Static</u>

STATIC WATER LEVEL (MEASURED FROM TOP OF GROUND) _____

WATER SAMPLE TAKEN ? (YES) (NO) IF YES, WHAT ACTION TAKEN ? _____

ESTIMATE OF PUMPING CAPACITY 200 GPM

REMARKS: _____

LACEY WELL DRILLING

TRENT, SOUTH DAKOTA

TEST DRILLING LOG SHEET

JOB NO. _____
NAME Singer Falls

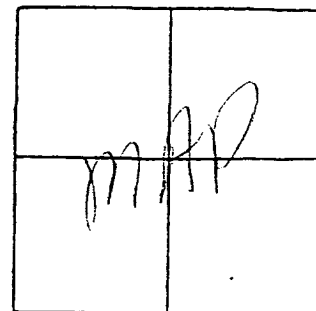
TEST HOLE NO. #5 & #6
DATE DRILLED Sept. 1, 1958
DRILLING CO. Lacey Well Drilling
DRILLER'S NAME Joan Redder

SECTION _____

T _____ N

R _____ W

MARK LOCATION
WITHIN SECTION



#5

LOG

#6

DEPTH

FORMATION
DESCRIPTION

DEPTH

FORMATION
DESCRIPTION

FEET FEET

FEET FEET

<u>0</u>	TO	<u>1</u>	<u>Topsoil</u>
<u>1</u>		<u>20</u>	<u>Fine Sand</u>
<u>20</u>		<u>38</u>	<u>Grey Sand</u>
<u>—</u>		<u>38</u>	<u>Blue Clay</u>
<u>—</u>		<u>—</u>	<u>—</u>
<u>—</u>		<u>—</u>	<u>—</u>
<u>—</u>		<u>—</u>	<u>—</u>
<u>—</u>		<u>—</u>	<u>—</u>
<u>—</u>		<u>20'</u>	<u>Station</u>

<u>0</u>	TO	<u>1</u>	<u>Topsoil</u>
<u>1</u>		<u>10</u>	<u>yellow Sand</u>
<u>10</u>		<u>20</u>	<u>Fine Sand</u>
<u>20</u>		<u>30</u>	<u>Grey Sand</u>
<u>—</u>		<u>30</u>	<u>Blue Clay</u>
<u>—</u>		<u>—</u>	<u>—</u>
<u>—</u>		<u>—</u>	<u>—</u>
<u>—</u>		<u>—</u>	<u>—</u>
<u>—</u>		<u>16'</u>	<u>Station</u>

STATIC WATER LEVEL (MEASURED FROM TOP OF GROUND) _____

WATER SAMPLE TAKEN ? (YES) (NO) IF YES, WHAT ACTION TAKEN ? _____

ESTIMATE OF PUMPING CAPACITY 200 GPM

REMARKS: _____

LACEY WELL DRILLING

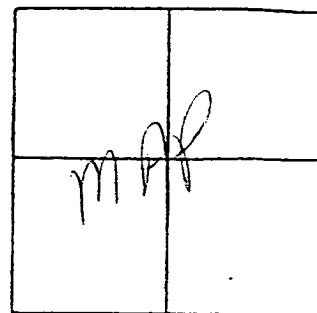
TRENT, SOUTH DAKOTA

TEST DRILLING LOG SHEET

JOB NO. _____
NAME Snow Falls

TEST HOLE NO. #7 & #8
DATE DRILLED Sept. 1, 1988
DRILLING CO. Lacey Well Drilling
DRILLER'S NAME Joan Redder

SECTION _____
T _____ N
R _____ W
MARK LOCATION
WITHIN SECTION



#7

LOG

#8

DEPTH		FORMATION DESCRIPTION	DEPTH		FORMATION DESCRIPTION
FEET	FEET		FEET	FEET	
<u>0</u>	<u>TO</u>	<u>Topsoil</u>	<u>0</u>	<u>TO</u>	<u>Topsoil</u>
<u>1</u>	<u>10</u>	<u>yellow Sand</u>	<u>1</u>	<u>10</u>	<u>yellow Sand</u>
<u>10</u>	<u>33</u>	<u>Fine Grey Sand</u>	<u>10</u>	<u>32</u>	<u>Fine Grey Sand</u>
<u>—</u>	<u>32</u>	<u>Blue Clay</u>	<u>—</u>	<u>32</u>	<u>Blue Clay</u>
<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
<u>—</u>	<u>5'</u>	<u>Static</u>	<u>—</u>	<u>20'</u>	<u>static</u>

STATIC WATER LEVEL (MEASURED FROM TOP OF GROUND) _____

WATER SAMPLE TAKEN ? (YES) (NO) IF YES, WHAT ACTION TAKEN ? _____

ESTIMATE OF PUMPING CAPACITY 200 GPM

REMARKS: _____

LACEY WELL DRILLING

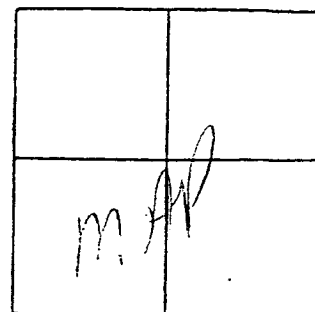
TRENT, SOUTH DAKOTA

TEST DRILLING LOG SHEET

JOB NO. _____
NAME Siouy Falls

TEST HOLE NO. #9 & 10
DATE DRILLED Sept 1, 1988
DRILLING CO. Lacey Well Drilling
DRILLER'S NAME Jean Redden

SECTION _____
T _____ N
R _____ W
MARK LOCATION
WITHIN SECTION



#9

LOG

#10

DEPTH		FORMATION DESCRIPTION	DEPTH		FORMATION DESCRIPTION
FEET	FEET		FEET	FEET	
<u>0</u>	<u>TO</u> <u>1</u>	<u>Topsoil</u>	<u>0</u>	<u>TO</u> <u>2</u>	<u>Topsoil</u>
<u>1</u>	<u>10</u>	<u>yellow sand</u>	<u>2</u>	<u>6</u>	<u>clay</u>
<u>10</u>	<u>30</u>	<u>Fine Grey Sand</u>	<u>6</u>	<u>32</u>	<u>Grey Sand</u>
	<u>32</u>	<u>Blue Clay</u>		<u>32</u>	<u>Blue Clay</u>
	<u>20'</u>	<u>static</u>		<u>19'</u>	<u>static</u>

STATIC WATER LEVEL (MEASURED FROM TOP OF GROUND) _____

WATER SAMPLE TAKEN? (YES) (NO) IF YES, WHAT ACTION TAKEN? _____

ESTIMATE OF PUMPING CAPACITY 200 GPM

REMARKS: _____

LACEY WELL DRILLING

TRENT, SOUTH DAKOTA

TEST DRILLING LOG SHEET

JOB NO. _____
NAME S. Du. Faller

TEST HOLE NO. #17A + 17B

DATE DRILLED Sept. 2, 1958

DRILLING CO. Lacey Well Drilling

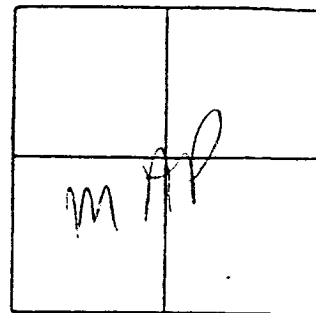
DRILLER'S NAME James Lacey

SECTION _____

T _____ N

R _____ W

MARK LOCATION
WITHIN SECTION



~~#17A-T~~

LOG

~~#17B-T~~

DEPTH

FORMATION
DESCRIPTION

DEPTH

FORMATION
DESCRIPTION

FEET

FEET

FEET

FEET

<u>0</u>	TO	<u>1</u>	<u>Topsoil</u>
<u>1</u>		<u>6</u>	<u>yellow Sand</u>
<u>6</u>		<u>36</u>	<u>Grey Gravel</u>
<u>36</u>		<u>38</u>	<u>Grey Sand</u>
<u>38</u>		<u>40</u>	<u>Blue Clay</u>
_____		_____	_____
_____		_____	_____
_____		_____	_____
_____		<u>1"</u>	<u>static</u>

<u>0</u>	TO	<u>3</u>	<u>Topsoil</u>
<u>3</u>		<u>6</u>	<u>Sea mud</u>
<u>6</u>		<u>10</u>	<u>yellow Sand</u>
<u>10</u>		<u>32</u>	<u>Grey Sand</u>
_____		<u>32</u>	<u>Blue Clay</u>
_____		_____	_____
_____		_____	_____
_____		_____	_____
_____		<u>8'</u>	<u>static</u>

STATIC WATER LEVEL (MEASURED FROM TOP OF GROUND) _____

WATER SAMPLE TAKEN ? (YES) (NO) IF YES, WHAT ACTION TAKEN ? _____

ESTIMATE OF PUMPING CAPACITY 600-800 GPM

REMARKS: _____

LACEY WELL DRILLING
TRENT, SOUTH DAKOTA

TEST DRILLING LOG SHEET

JOB NO. _____
NAME Snow Falls

TEST HOLE NO. 17c ^(OK)

DATE DRILLED Sept 2, 1958

DRILLING CO. Lacey Well Drilling

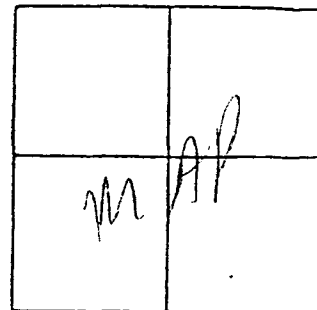
DRILLER'S NAME John Lacey

SECTION _____

T _____ N

R _____ W

MARK LOCATION
WITHIN SECTION



#17c-T ^(OK)

LOG

<u>DEPTH</u>		<u>FORMATION</u> <u>DESCRIPTION</u>	<u>DEPTH</u>		<u>FORMATION</u> <u>DESCRIPTION</u>
FEET	FEET		FEET	FEET	
<u>0</u>	TO <u>2</u>	<u>Topsoil</u>	_____	TO _____	_____
<u>2</u>	<u>10</u>	<u>Black Sea mud</u>	_____	_____	_____
<u>10</u>	<u>20</u>	<u>Sand</u>	_____	_____	_____
<u>20</u>	<u>38</u>	<u>Good gravel</u>	_____	_____	_____
_____	<u>38</u>	<u>Blue Clay</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	<u>10'</u>	<u>static</u>	_____	_____	_____

STATIC WATER LEVEL (MEASURED FROM TOP OF GROUND) _____

WATER SAMPLE TAKEN ? (YES) (NO) IF YES, WHAT ACTION TAKEN ? _____

ESTIMATE OF PUMPING CAPACITY 600-800 GPM

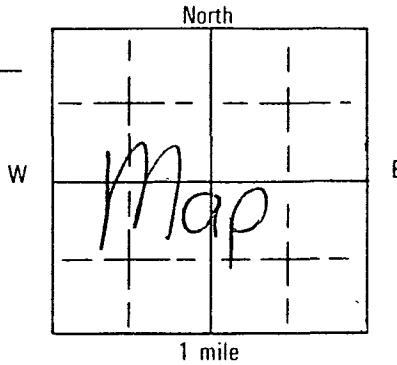
REMARKS: _____

SOUTH DAKOTA WELL AND TEST HOLE PLUGGING REPORT

10-85

Location $\frac{1}{4}$ $\frac{1}{4}$ Sec _____ Twp _____ Rg _____

County

MinnehahaPlease mark well
location with
an "X"Sioux Falls
City Limits

Well Owner:

Name Sioux Falls UtilitiesAddress 224 W 9th St. Sioux Falls, S.D.
57102Plugging completion Date Sept 2, 1988

CHECK APPROPRIATE BOX

EXISTING WELL

☐

TEST HOLE

☒

Well depth

Casing material

Casing size(s)

Casing condition

Hole depth

Hole size

Well #

Test holes ~~1705~~ 60,61,62,63

Drilled Sept 1st & 2nd, 1988

@ See Test Drilling Log Sheets

Describe plugging procedure:

Test hole material to station - thenBentonite to ground level

Describe grout or plugging material:

Type of non-slip plug:

This well or test hole was plugged under license # 111 And this report is true and accurate.

Drilling firm

Lacey Well Drilling

Signature of Licensed Representative

Jean Redden

Signature of Well Owner

Lytle D. Johnson

Date

12-1-88

10-85

A

Date 11-30-88

SOUTH DAKOTA WATER WELL COMPLETION REPORT

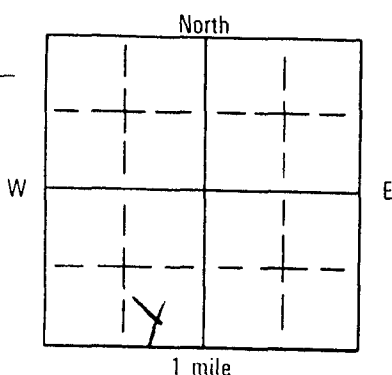
10-85

(B)

Location SE 1/4 SE 1/4 Sec 29 Twp 102-N Rg 49-WCounty Minnehaha

Please mark well location with an "X"

61

Well Completion Date 9-11-88

PROPOSED USE:

☐ Domestic ☒ Municipal ☐ Test Holes
☐ Irrigation ☐ Industrial ☐ Stock

Method of Drilling:

Bucket

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN

GROUT:

Was the well grouted? ☒ YES ☐ NOTo what depth? 0-10' FEETWhat is grouting material? Cement

If cement, number of sacks? _____

Describe grouting procedure _____

What was grout weight? _____ LB/GAL

SCREEN: ☐ Perforated pipe ☒ ManufacturedDiameter 12" IN Length 10' FEETMaterial Hand SlottedSlot Size _____ Set From 27 Feet To 37 Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Other information _____

Was a packer or seal used? ☐ YES ☒ NO

If so, what material? _____

Describe packer(s) and location? _____

Was well disinfected upon completion? ☒ YES ☐ NO

Explain _____

Bacteriological analysis ☒ YES ☐ NOLaboratory sent to Sioux Falls

Well Owner:

Name City of Sioux Falls

Address _____

Well Log:

Depth

Formation

From

To

Topsoil03Sandy Clay310Sand1012mud1214Good Gravel1430Good Sand3032Good Gravel3237STATIC WATER LEVEL 10' Feet

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

If other; specify _____

Can well be completely shut in? _____

WELL TEST DATA:

☒ Pumped☐ Bailed

Describe: _____

☐ Other

Pumping Level Below Land Surface

25' ft. After 6 Hrs. pumped 600 GPM

_____ ft. After _____ Hrs. pumped _____ GPM

_____ ft. After _____ Hrs. pumped _____ GPM

REMARKS:

This well was drilled under license # 111

And this report is true and accurate.

Drilling firm Lacey Well Drilling

Signature of License Representative

Jana Lacey

Signature of Well Owner

Lytle D. JohnsonDate 11-30-88

©

Date 11-30-88

SOUTH DAKOTA WATER WELL COMPLETION REPORT

10-85

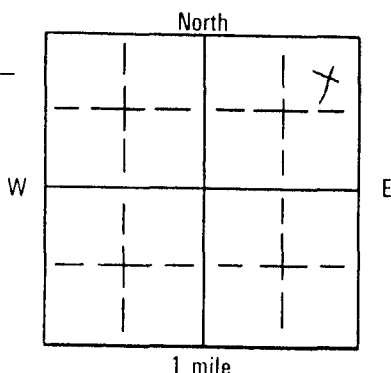
①

Location NE 1/4 NE 1/4 Sec 32 Twp 102N Rg 49W

County

MinnehahaPlease mark well
location with
an "X"

63

Well Completion Date 11-3-88

PROPOSED USE:

☐ Domestic ☒ Municipal ☐ Test Holes
☐ Irrigation ☐ Industrial ☐ Stock

Method of Drilling:

Bucket

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN

GROUT:

Was the well grouted? ☒ YES ☐ NOTo what depth? 0-6 FEETWhat is grouting material? Cement

If cement, number of sacks? _____

Describe grouting procedure _____

What was grout weight? _____ LB/GAL

SCREEN: ☐ Perforated pipe ☒ ManufacturedDiameter 12" IN Length 10' FEETMaterial Hand SlottedSlot Size _____ Set From 28 Feet To 38 Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Other information _____

Was a packer or seal used? ☐ YES ☒ NO

If so, what material? _____

Describe packer(s) and location? _____

Was well disinfected upon completion? ☒ YES ☐ NO

Explain _____

Bacteriological analysis ☒ YES ☐ NOLaboratory sent to Sioux Falls

Well Owner:

Name City of Sioux Falls

Address _____

Well Log: _____

Formation _____

Depth

From

To

<u>Topsoil</u>	<u>0</u>	<u>2</u>
<u>Clean Sand</u>	<u>2</u>	<u>6</u>
<u>Clean Gravel</u>	<u>6</u>	<u>35</u>
<u>Rocks + Gravel</u>	<u>35</u>	<u>38</u>

STATIC WATER LEVEL 7' Feet

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

If other; specify _____

Can well be completely shut in? _____

WELL TEST DATA:

☒ Pumped _____☐ Bailed Describe: _____☐ Other _____

Pumping Level Below Land Surface

25' ft. After 6 Hrs. pumped 500 GPM

_____ ft. After _____ Hrs. pumped _____ GPM

_____ ft. After _____ Hrs. pumped _____ GPM

REMARKS:

This well was drilled under license # 111

And this report is true and accurate.

Drilling firm Lacey Well Drilling

Signature of License Representative:

Joan Redden

Signature of Well Owner:

[Signature]Date 11-30-88

8/30/88

RE: Application for Permit
Big Sioux Aquifer

Susan: *for John Hatch!*

Attached are the test hole logs for the area
near Wells #11 and 12.

If you have any questions, please do not
hesitate to call.

Thank you.

Shannon Hulzebos
City Water Dept.
Sioux Falls, SD 339-7025

Please attach these to the above referenced
application.



1. LOCATION OF WELL
County Name _____

STATE OF MINNESOTA

DEPARTMENT OF HEALTH

WATER WELL RECORD

MINNESOTA UNIQUE WELL NO. _____

for Water Sample

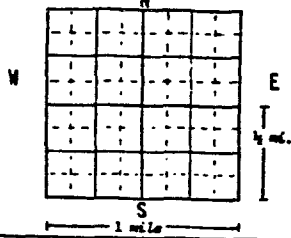
Minnesota Statutes 136A 01-10

Township Name _____ Township Number _____ Range Number _____ Section No. _____ Fraction _____

Distance and Direction from Road Intersections or Street Address and City of Well Location _____

Show exact location of well on section grid with "X."

Sketch map of well location.



Additional Name _____
Block Number _____
Lot Number _____

43

FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
top soil	black		0	2
clay	brown		2	6
sand M-C	colored		6	12
sand C-MC	"		12	20
sand C-MC	"		20	25
sand C-MC	"		25	30
sand M-MF			30	39
clay	grey		39	45
Fluid lost.				
20 to 30'	30 to 45 gals			
30 to 39	25 to 35 gals			

3. PROPERTY OWNER'S NAME airport
Address city of Sioux Falls.

4. WELL DEPTH (completed) 39 ft. Date of Completion _____

5. ☐ Cable tool ☐ Reverse ☐ Drive ☐ Dig
☐ Hollow rod ☐ Air ☐ Bored ☐ _____
☐ Rotary ☐ Jetted ☐ Power Auger

6. USE
☐ Domestic ☐ Public Supply ☐ Industry
☐ Irrigation ☐ Municipal ☐ Commercial
☐ Test Well ☐ Air Conditioning ☐ _____

7. CASING
☐ Black ☐ Threaded ☐ HEAVY: Above/Below _____
☐ Galv. ☐ Welded Surface _____ ft.
☐ Plastic ☐ _____ Drive Shoe? Yes _____ No _____
2 in. to 29 ft. Weight _____ lbs./ft. _____ in. to _____ ft.
_____ in. to _____ ft. Weight _____ lbs./ft. _____ in. to _____ ft.
_____ in. to _____ ft. Weight _____ lbs./ft. _____ in. to _____ ft.

8. SCREEN
Make _____ Or open hole from _____ ft. to _____ ft.
Type plastic Dia. 2"
Slot/Gauge 0.20 Length 70'
Set between 29 ft. and 39 ft. FITTINGS: _____
_____ ft. and _____ ft.

9. STATIC WATER LEVEL
9' ft. ☐ below ☐ above land surface Date Measured _____

10. PUMPING LEVEL (below land surface)
_____ ft. after _____ hrs. pumping _____ p.m.
_____ ft. after _____ hrs. pumping _____ p.m.

11. WELL HEAD COMPLETION
☐ Pitless adapter, manufacturer _____ model _____
☐ Basement offset ☐ At least 12" above grade

12. WELL GROUTED?
☐ Yes ☐ No
☐ Neat Cement ☒ Bentonite ☐ _____
Grout material _____ from _____ to _____ ft. Cu. Yds. _____

13. NEAREST SOURCES OF POSSIBLE CONTAMINATION
_____ feet _____ direction _____ type
Well disinfected upon completion? Yes ☐ No ☐

14. PUMP
Date installed _____ ☐ Not installed
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of drop pipe _____ ft. capacity _____ p.m.
Material of drop pipe _____
Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating
☐ Jet ☐ Centrifugal ☐ _____

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Sioux Well Drilling
Licensee Business Name License No. _____

Address _____

Signed _____ Date _____

Authorized Representative

WORK COPY

Date

WATER WELL RECORD

Minnesota Statutes 15A.01, 15A.02

(for Water Sample)

Well Name 		Township Number 		Range Number 		Section No. 		Fraction 		3. PROPERTY OWNER'S NAME airport	
Address city of Sioux Falls.										Date of Completion 	
4. WELL DEPTH (completed) 38										Date of Completion 	
5. ☐ Cable tool ☐ Reverse ☐ Driven ☐ Dig ☐ Hand-dug ☐ Air ☐ Bored ☐ _____ ☒ Rotary ☐ Jetted ☐ Power Auger											
6. USE ☐ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Municipal ☐ Commercial ☒ Test Well ☐ Air Conditioning ☐ _____											
7. CASING ☐ Black ☐ Threaded HEIGHT: Above/Below _____ ft. ☐ Galv. ☐ Welded Surface _____ ft. ☒ Plastic ☐ _____ Drive Shaft? Yes _____ No _____ _____ in. to _____ ft. Weight _____ lbs./ft. _____ in. to _____ ft. Weight _____ lbs./ft. _____ in. to _____ ft. Weight _____ lbs./ft. _____ in. to _____ ft. Weight _____ lbs./ft.											
8. SCREEN Make _____ Or open hole from _____ ft. to _____ ft. Type <u>plastic</u> Dia. <u>2</u> Slot/Gauge <u>0.020</u> Length <u>10'</u> Set between <u>28</u> ft. and <u>38</u> ft. _____ ft. and _____ ft.											
9. STATIC WATER LEVEL <u>9'-1</u> ☐ below land surface ☐ above land surface Date Measured _____											
10. PUMPING LEVEL (below land surface) _____ ft. after _____ hrs. pumping _____ p.p.m. _____ ft. after _____ hrs. pumping _____ p.p.m.											
11. WELL HEAD COMPLETION ☐ Pitless adapter, manufacturer _____ model _____ ☐ Basement offset ☐ At least 12" above grade											
12. WELL GROUTED? ☐ Yes ☐ No ☐ Neat Cement ☐ Bentonite ☐ _____ Grout material _____ from _____ to _____ ft. Co. Yes _____											
13. NEAREST SOURCES OF POSSIBLE CONTAMINATION _____ feet direction _____ type _____ Well disinfected upon completion? Yes ☐ No ☐											
14. PUMP Date installed _____ ☐ Not installed Manufacturer's Name _____ Model Number _____ HP _____ Volts _____ Length of drop pipe _____ ft. capacity _____ p.p.m. Material of drop pipe _____ Type: ☐ Submersible ☐ L.S. Turbine ☐ Rectifier pump ☐ Jet ☐ Centrifugal ☐ _____											
15. WATER WELL CONTRACTOR'S CERTIFICATION This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Sioux Falls Drilling Licensee Business Name License No. _____ Address _____ Signed _____ Date _____ Authorized Representative Name of Driller _____ Date _____											

Sketch map of well location.

Additional Name
 Block Number
 Lot Number

44

1. FORMATION LOG

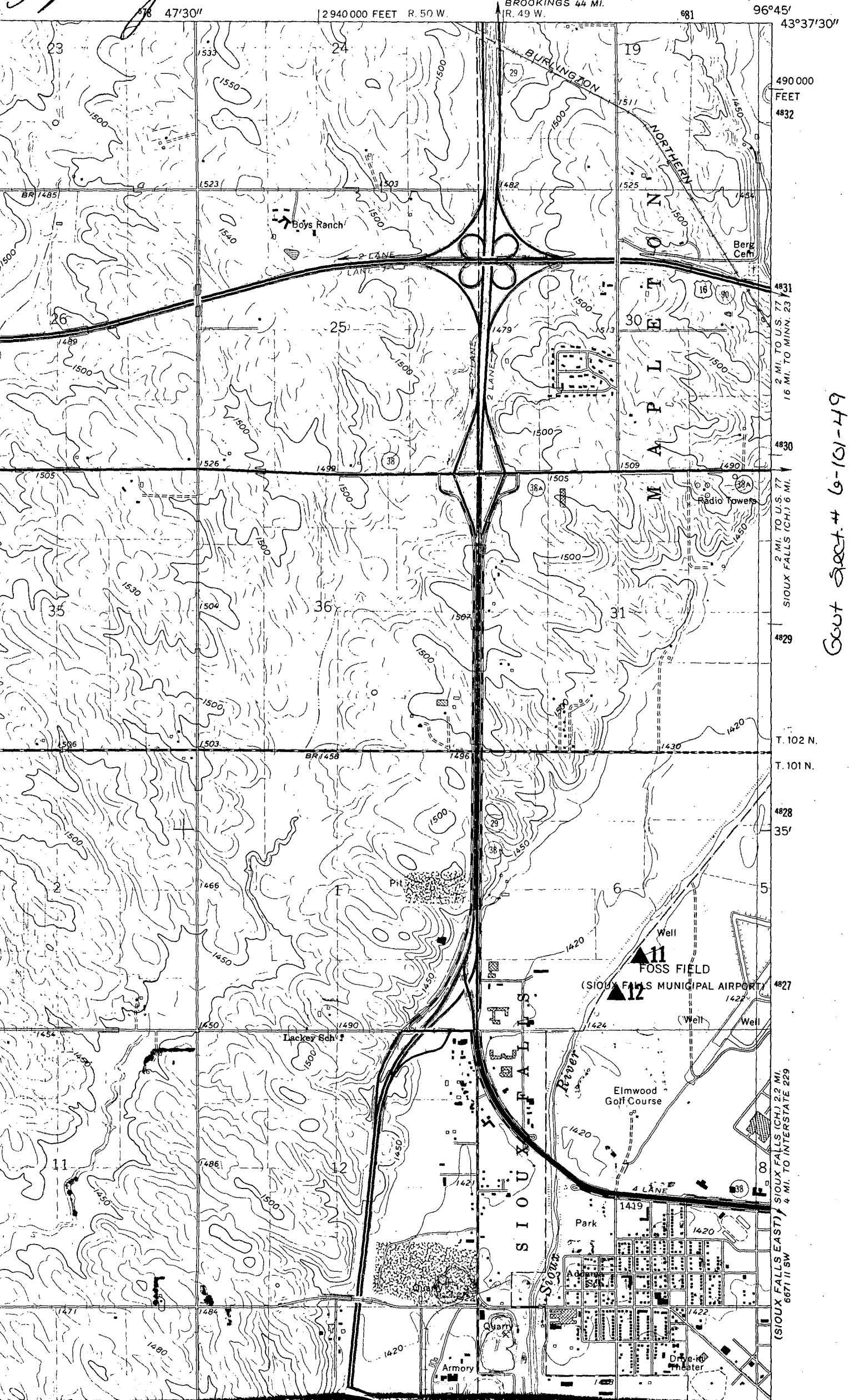
FORMATION LOG	COLOR	HARDNESS OF FORMATION	FROM	TO
top soil	black		0	2
clay	brown		2	5
sand M	colored		5	11
sand C-MC	"		11	20
sand C	"		20	25
sand C to MC	"		25	30
sand M to MF	"		30	38
clay	grey		38	43
fluid lost.				
20 to 30	35 to 45 gals.			
30 to 38	30 to 40 gals.			

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

Big Sioux Aquifer App.

WORK COPY

6671 11 NW
(RENNER)



In Water Since 1946

LACEY WELL DRILLING

Wells
Test Drilling
Irrigation Supplies

Box 796
Trent, South Dakota 57065
Telephone 428-5686 or 428-5979

Pumps
Water Specialists
Water Source Heat Pumps

Test holes for the City of Sioux Falls
Drilled by Joan Redder of Lacey Well Drilling of Trent, S.D.

#1 0-2 Topsoil
2-6 Sea mud
6-10 yellow Sand
10-18 Brown Sand
18-39 Grey Sand
39 Blue Clay
20' static

#2 0-2 Topsoil
2-20' yellow Sand
20-38 Fine Grey Sand
38-40 Blue clay
20' static

#3 0-2 Topsoil
2-4 clay
4-10 yellow sand
10-18 Grey Sand
18-31 Grey Sand
Gravel
31 Blue clay
10' static

#4 0-1 Topsoil
1-20 Fine Sand
20-38 Grey Sand
38' Blue clay
20' static

#5 0-1 Topsoil
1-20 Fine Sand
20-38 Grey Sand
38 Blue clay
20' static

#6 0-1 Topsoil
1-10 yellow Sand
10-20 Fine Sand
20-30 Grey Sand
30' Blue clay
16' static

#7 0-1 Topsoil
1-10 yellow Sand
10-33 Fine Grey Sand
33 Blue clay
15' static

#8 0-1 Topsoil
1-10 yellow Sand
10-32 Fine Grey Sand
32' Blue Clay
20' static

#9 0-1 Topsoil
1-10 yellow Sand
10-30 Fine Grey Sand
30 Blue clay
20' static

#10 0-2 Topsoil
2-6 clay
6-32 Grey Sand
32' Blue clay
19' static

17A. 0-1 Topsoil
1-6 yellow Sand
6-36 Grey Gravel
36-38 Grey Sand
38-40 Blue clay
11' static

17B 0-3 Topsoil
3-6 Sea mud
6-10 yellow Sand
10-32 Grey Sand
32 Blue clay
8' static

17C 0-2 Topsoil
2-10 Sea Black mud
10-20 Sand
20-38 Good Gravel
38 Blue clay
10' static

Written by Joan Redder
Lacey Well Drilling
L.N. 111

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

John D. Johnson, PE

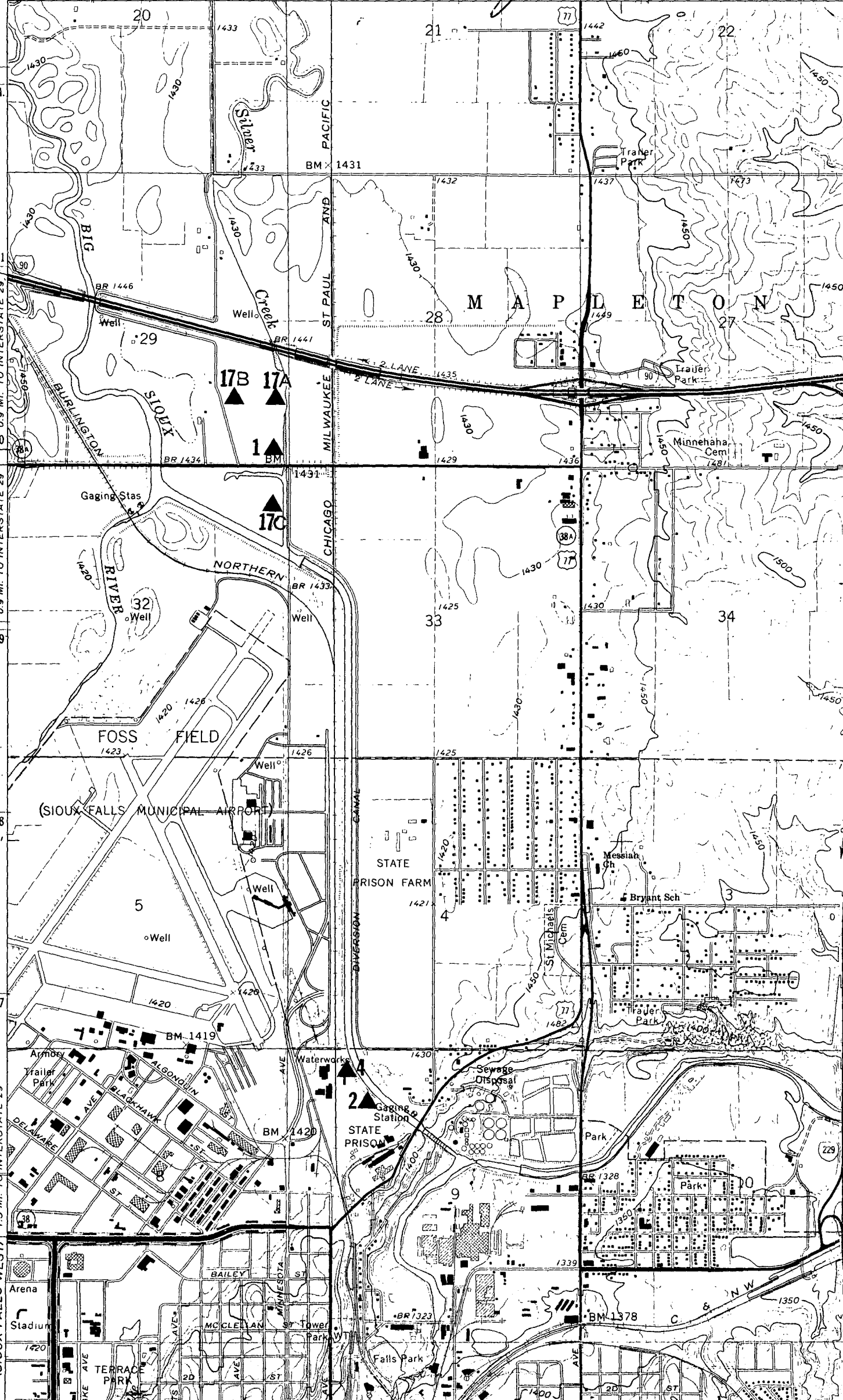
6671 III NE
(CROOKS)
96°45'
43°37'30"

BROOKINGS 52 MI.
DELL RAPIDS 14 MI.
42°30'

686

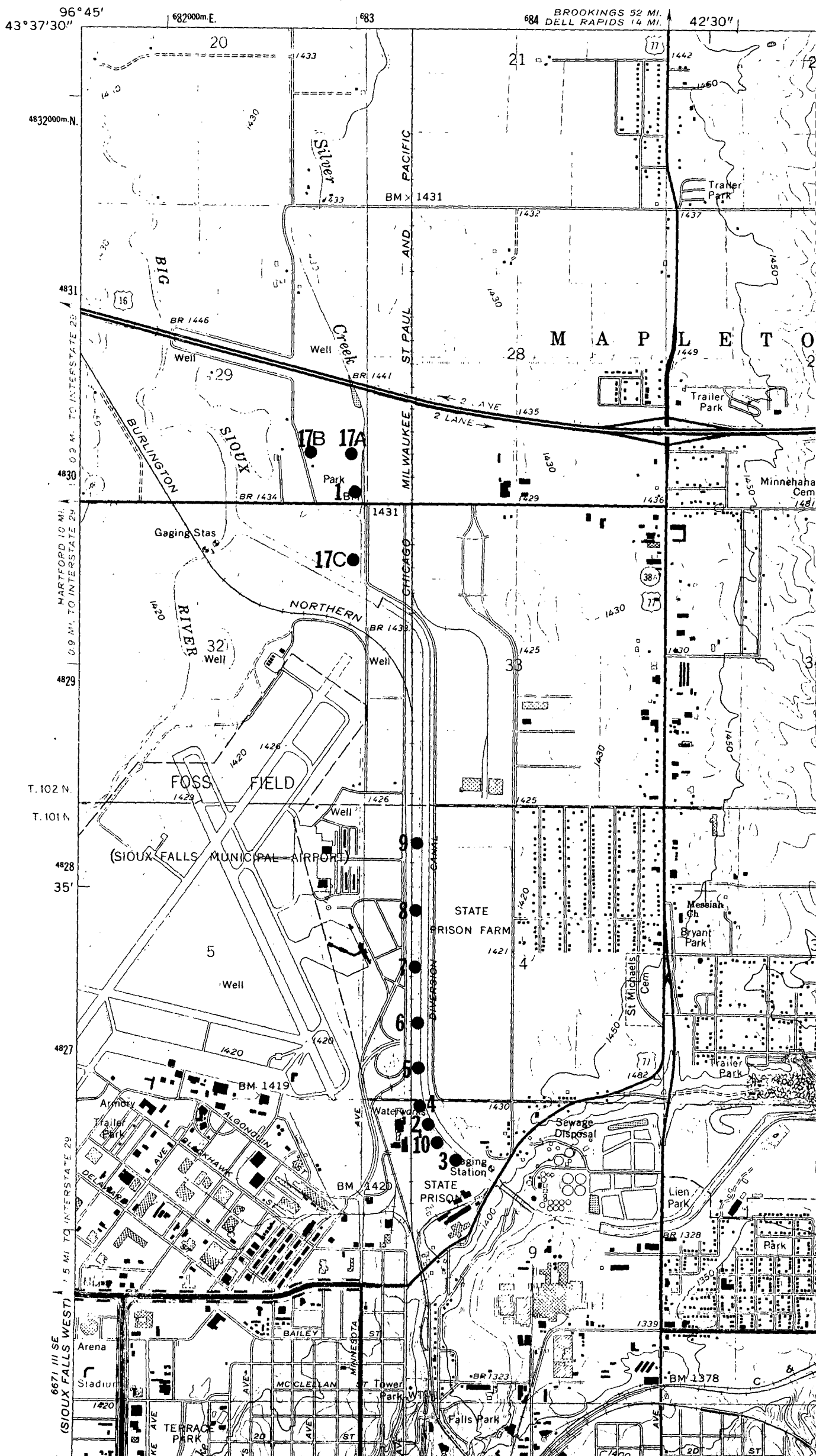
Cont. Sect + 29-102-49;
32-102-49;
9-101-49;

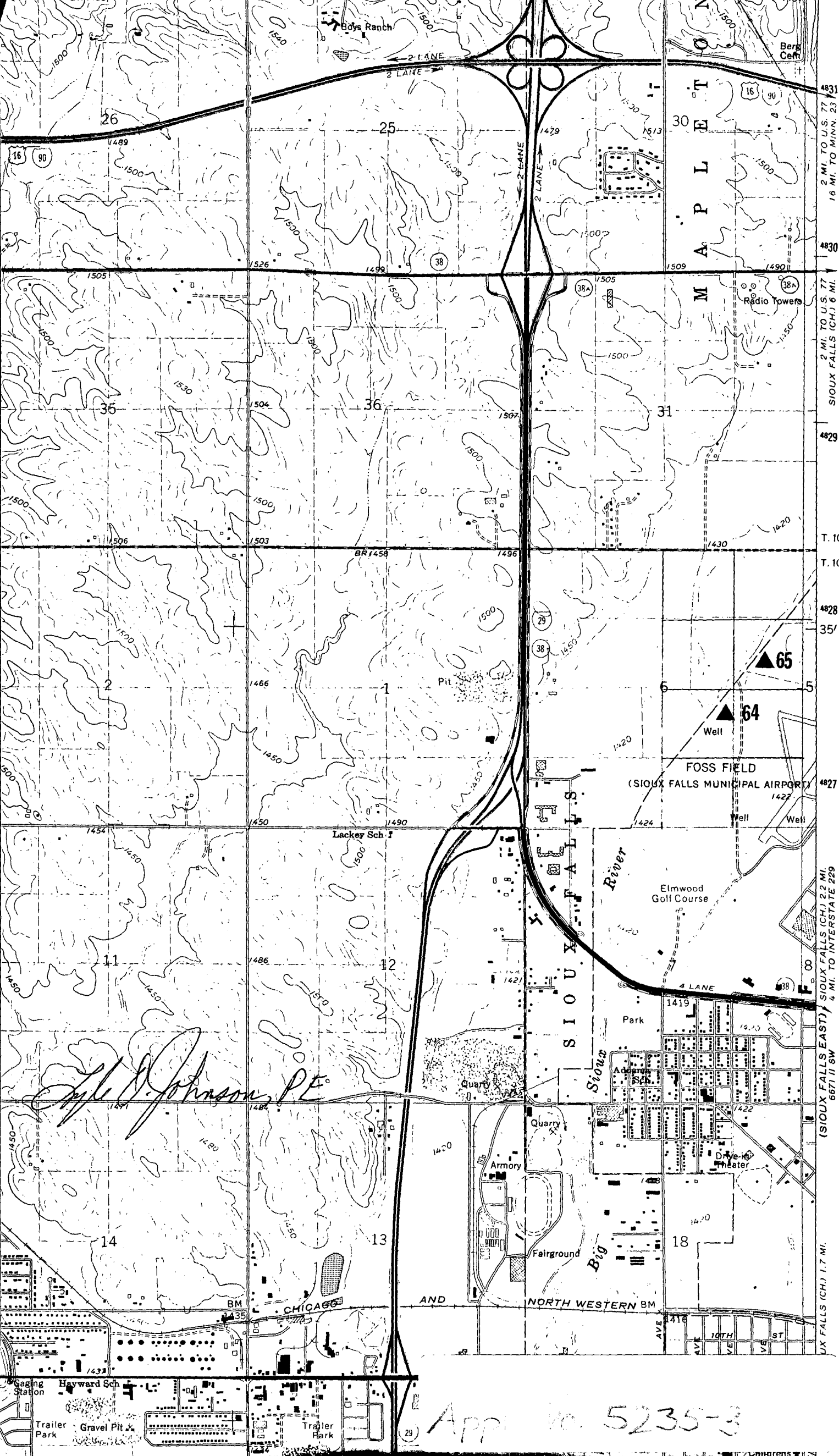
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35'
4827
1.5 MI. TO INTERSTATE 29
6671 III SE
(SIOUX FALLS WEST)



6671 III NE
(CROOKS)

96° 45'
43° 37' 30" ☐





App. No. 5235-3

BIG SIOUX AQUIFER - 1988

APPLICATION FOR PERMIT TO APPROPRIATE WATER WITHIN THE STATE OF SOUTH DAKOTA:

4. Location of Point of Diversion:

Well #60: SE 1/4, SE 1/4, Section 29, Township 102N, Range 49-W.

Well #61: SE 1/4, SE 1/4, Section 29, Township 102N, Range 49-W.

Well #62: SE 1/4, SE 1/4, Section 29, Township 102N, Range 49-W.

Well #63: NE 1/4, NE 1/4, Section 32, Township 102N, Range 49-W.

Well #64: NW 1/4, SE 1/4, Section 6, Township 101N, Range 49-W.

Well #65: SE 1/4, NE 1/4, Section 6, Township 101N, Range 49-W.

City of Sioux Falls
South Dakota

City Water Department

6671 III NE
(CROOKS)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Lytle D. Johnson, PE

96°45'
43°37'30"

682000m E.

683

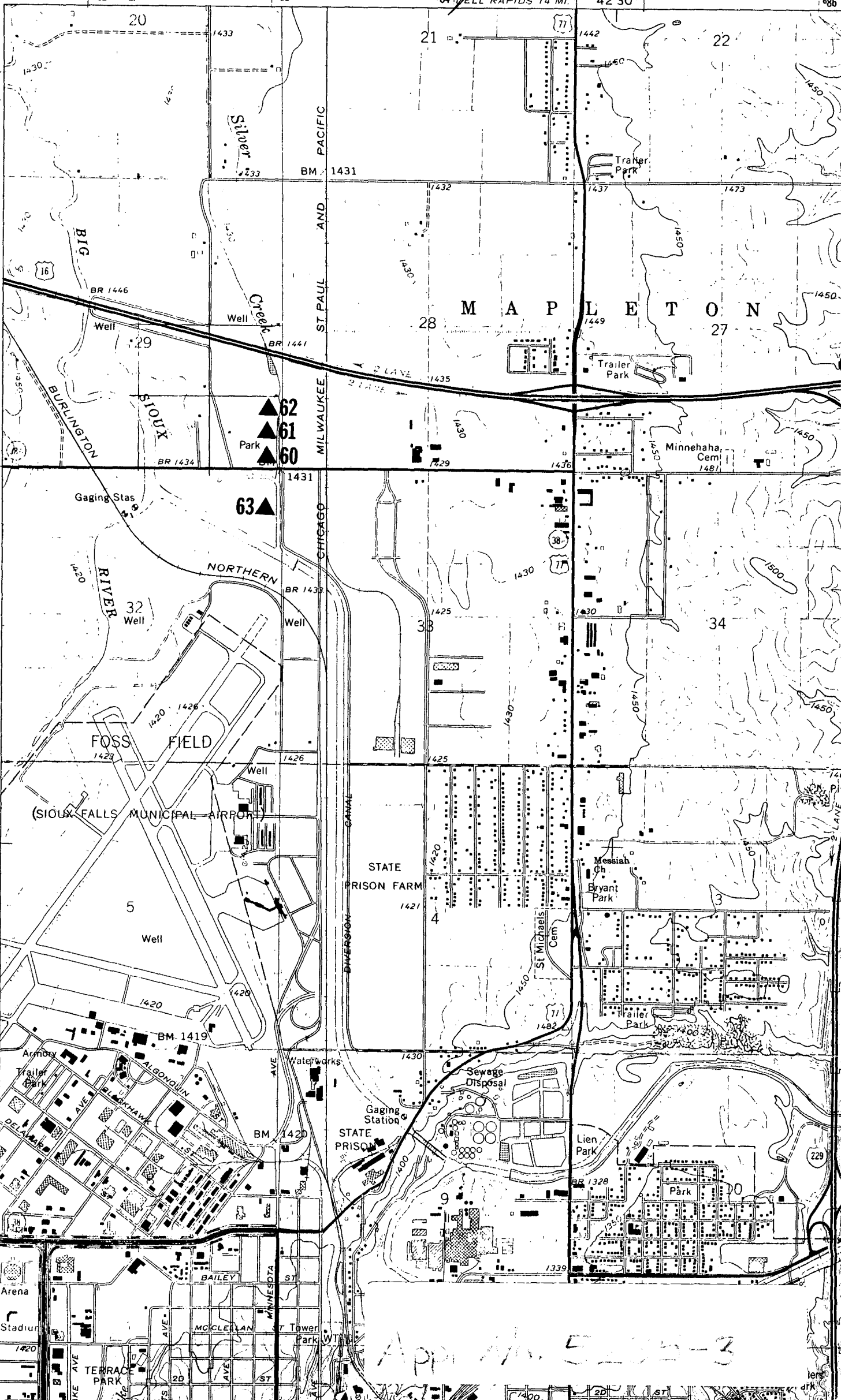
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BROOKINGS 52 MI.
SHELL RAPIDS 14 MI.

42'30"

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T. 102 N.

T. 101 N.

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BIG SIOUX AQUIFER - 1988

APPLICATION FOR PERMIT TO APPROPRIATE WATER WITHIN THE STATE OF SOUTH DAKOTA:

4. Location of Point of Diversion:

Well #60: SE 1/4, SE 1/4, Section 29, Township 102N, Range 49-W.

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Well #63: NE 1/4, NE 1/4, Section 32, Township 102N, Range 49-W.

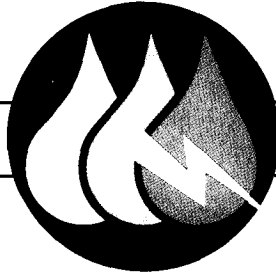
Well #64: NW 1/4, SE 1/4, Section 6, Township 101N, Range 49-W.

Well #65: SE 1/4, NE 1/4, Section 6, Township 101N, Range 49-W.

City of Sioux Falls
South Dakota

City Water Department

Sioux Falls UTILITIES



WATER • (605) 339-7031
WASTEWATER • (605) 339-7088

LIGHTS • (605) 339-7150
STORM DRAINAGE • (605) 339-7023

August 24, 1988

Mr. John Hatch
DWNR - Water Rights Division
Joe Foss Building
Pierre, SD 57501



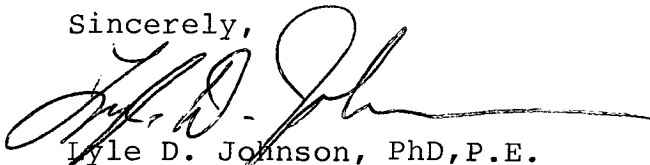
Re: Permit Application for Big Sioux Aquifer

Dear Sir:

Enclosed, please find the application for a permit for eight (8) temporary wells in the Big Sioux Aquifer. It is the intent of the City of Sioux Falls to use these wells only during drought conditions to supplement the existing water supply.

I have also enclosed a copy of the purchase order in the amount of \$1250.00 to cover the cost of the permit. If you have any questions, please contact me.

Sincerely,



Lyle D. Johnson, PhD, P.E.
Acting Water Superintendent

cc Commissioner Hanson
Richard Willer

Enclosure

CITY OF SIOUX FALLS — PURCHASE ORDER

P. O.
NO.

69139

This Number Must Appear On
All Invoices.

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

DEPARTMENT	NUMBER	VENDOR NO.	DATE		
			MO.	DAY	YR.
Water	75	19311	8	18	88

BASIC ACCOUNT	EXPENSE CLASS	PROJECT DIVISION	QTY	DESCRIPTION	UNIT PRICE	AMOUNT
	2205	7925/30		OTHER PROF. FEES & SERVICES		\$1250.00
			1	Fee for application for permit to appropriate water within the State of South Dakota		
					\$1250.00	
				7.1 cfs		
				Ground water - Big Sioux Aquifer		

Agreement # 429.88

8-22-88 agenda;
item 24.

TOTAL ►

\$1250.00

Gannon J. O'Brien
AUTHORIZED SIGNATURE

DUPLICATE COPY

429-88
 Mail to: Water Rights Div.
 DWNR, Foss Bldg.
 Pierre, SD 57501
 (605) 773-3352

PG. 69139

No. _____ Hydrologic Unit _____
 Map No. _____ Basin _____
 Newspaper _____

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

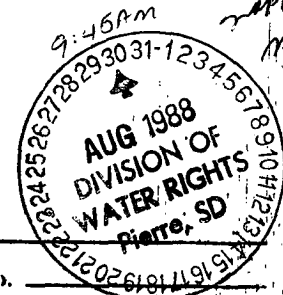
New ☒ Vested Right ☐ Future Use ☐ Change Use ☐

☐ 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. 448-3



1. Name of Applicant City of Sioux Falls Phone No. 605-339-7025

Post Office Address 224 West Ninth Street, Sioux Falls State S.D. 57102
(Street, RR or Box) (City) Zip Code

2. Amount of water claimed (c.f.s) 7.1 cfs

3. Source of water supply Ground Water - Big Sioux Aquifer

4. Location of point of diversion (1,17A,17B) SE 1/4 Section 29, Township 102N,
Range 49W; (17C) NE 1/4 Section 32, Township 102N, Range 49W; (2,4) NW 1/4
Section 9, Township 101N, Range 49W; (11,12) S 1/2 Section
6, Township 101N, Range 49W. County Minnehaha

5. Counties where water will be used Minnehaha

6. Annual period during which water is to be used January 1 - December 31 (as needed)

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)

The project consists of 8 temporary wells to supplement the City of Sioux Falls' water supply during the existing drought conditions.

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, Jack White Mayor the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Signed Jack White

Subscribed and sworn to before me this AUG 22 1988 day of 19

DIANNE METLI, Notary Public
 My Commission Expires Dec. 3, 1992

Dianne Metli
 Notary Public

Supplemental Information

(type or print in ink)

1. Well Information - Proposed construction Typical for All 8 Wells

- a) Drill Hole Diameter 20 inch, Depth 32-38 ft.
- b) Casing Type Plastic (PVC) Diameter 12 inch Thickness 0.49 inches
- c) Screen Type Plastic (PVC) Diameter 12 inch Thickness 0.49 inches
- d) Gravel Pack Thickness 4 inch Length of Gravel Pack 10-18 feet
- e) Depth to Top of Water Bearing Material 6-20 ft.
- f) Depth to Water (ground surface to water level) 8-20 ft.
- g) Distance to nearest existing domestic well:
On applicants property 800' (municipal well) On property owned by others Greater than 1000 ft.

2. Dugout Information Estimates

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

3. Water Storage Dams

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) Primary Outlet Capacity _____
If Pipe, diameter _____

f) Secondary Spillway Capacity _____
Spillway width _____

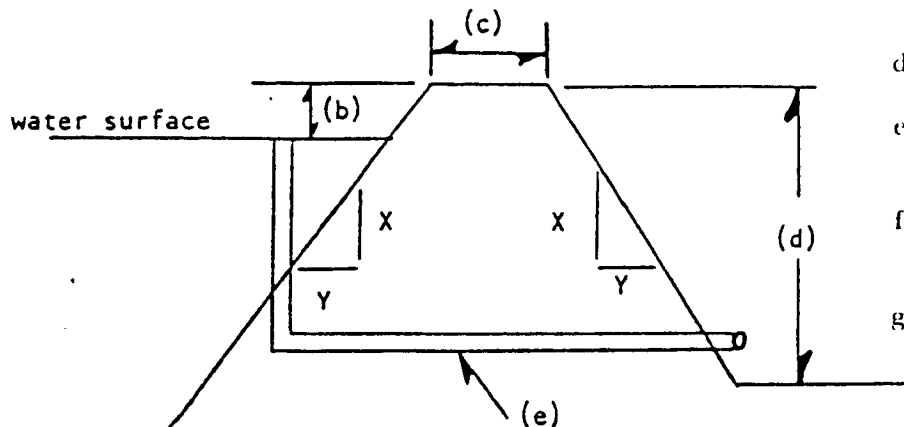
g) X & Y Slope
Upstream _____

Downstream _____

Surface Area of Impoundment _____

Storage _____ acre feet

Drainage area above dam _____



Signature of Applicant



Department of Water & Natural Resources

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

September 15, 1988

Lyle D Johnson, Acting Water Superintendent
City of Sioux Falls
224 West Ninth Street
Sioux Falls SD 57102

Dear Mr. Johnson:

This letter is in response to the water permit application received on August 30, 1988 for 8 wells from the Big Sioux Aquifer. The following information and changes are needed to complete the application:

- 1) The enclosed well logs completed by Sioux Well Drilling need to be transferred to forms supplied by the Chief Engineer, need to be signed by the license representative, and need to specify the legal description of the wells.
- 2) The test hole information completed by Lacey Well Drilling also needs to be transferred to forms supplied by the Chief Engineer (South Dakota Well Completion Report) and again be signed by the license representative. Plugging reports also need to be submitted for these test holes.
- 3) The application specifies that 7.1 cfs is to be appropriated from Future Use Permit No. 448-3. Permit No. 448-3 has only 6.45 cfs left in reserve with a total annual volume of 10,909 acre-feet of water. The volume of water is larger than the volume of 6.45 cfs (4670 acre-feet), if pumped continuously, because Permit Nos. 5115-3 and 5127-3 have acre-feet limitations which left some acre-feet in reserve on Permit No. 448-3. Therefore, the City can only make an application to appropriate the remaining 6.45 cfs in Future Use Permit No. 448-3. The remaining 0.65 cfs (7.1 - 6.45) needs to be considered as a new appropriation of water. I will make the necessary changes to the application with your written permission.

The water permit application can not be considered by the Water Management Board until the application is complete and the application fee has been received. Please complete the application as described above and contact me if you have any questions. The \$1200.00 application fee for Water Permit Application No. 5213-3 for 3 wells in the Split Rock Creek Aquifer has not been received. The water permit application can not be considered by the Water Management Board at the October 5, 1988 Board meeting unless the application fee is received prior to the hearing time.

Sincerely,

A handwritten signature in cursive script that reads "Ron Duvall".

Ron Duvall
Natural Resources Engineer
605 773-3352
enc.

Conversation or File Documentation

NAME OF PERSON OR FILE: City of Sioux FallsADDRESS: 224 W 9th Street, Sioux Falls COUNTY MADATE: Dec 1, 1988 TELEPHONE 339-7025RE: Application for Big Sioux Aquifer

COMMENTS:

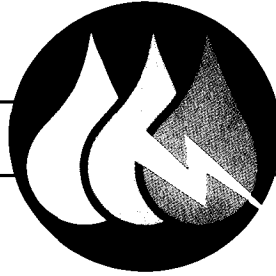
Spoke to Shannon via phone regarding the status of
the application to appropriate 7.1 cfs from 8 wells.

Shannon indicated that revised applications were
to be submitted for 6.45 cfs for 6 wells already
constructed by Lacey Drilling. The application
and voucher for \$1150⁰⁰ were to be sent in
the next few days

File in Permit or other file as necessary. Use to document conversations and what the other party was told; why action or decision was made.

NAME: Ron Duval

Sioux Falls UTILITIES



WATER • (605) 339-7031
WASTEWATER • (605) 339-7088

LIGHTS • (605) 339-7150
STORM DRAINAGE • (605) 339-7023



December 8, 1988

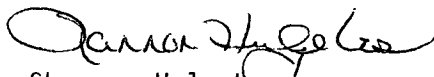
Ron Duvall
DWNR
Water Rights Division
Joe Foss Building
Pierre, SD 57501

Dear Ron:

In order for me to make a request for payment for the application fee for the permit to appropriate water from the Big Sioux Aquifer, I will need an invoice from the State listing the description of the item being billed for and also the dollar amount of \$1150.00 for the 6.45 cfs of water.

If you have any questions, please do not hesitate to call.

Sincerely,


Shannon Hulzebos
Adm. Asst.



Department of Water & Natural Resources

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

December 13, 1988

Shannon Hulzebos
224 W 9th Street
Sioux Falls, SD 57102

Dear Shannon:

This is in response to your letter of December 8, 1988 to Ron Duvall concerning the water permit application fee to appropriate 6.45 cfs from the Big Sioux Aquifer.

According to South Dakota Water Law, SDCL 46-2-13, fees for water permit applications must be received prior to the issuance of a permit to appropriate water.

I am enclosing an instruction sheet that contains the fee schedule for water permit applications. As you can see from this sheet, the correct fee for a permit to appropriate 6.45 cfs (approx. 2895 gpm) is:

\$	-----	150
\$	-----	75
\$	-----37 X 25 =	<u>925</u>
TOTAL		1150

Feel free to contact us if you have further questions.

Sincerely,

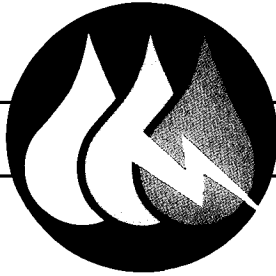
Susan A. Bowar

Susan A. Bowar
Natural Resources Engineer
Water Rights Division

enclosure



Sioux Falls UTILITIES



WATER • (605) 339-7031
WASTEWATER • (605) 339-7088

LIGHTS • (605) 339-7150
STORM DRAINAGE • (605) 339-7023

December 27, 1988

South Dakota Department of
Water and Natural Resources
Water Rights Division
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181



Re: Water Rights - Big Sioux Aquifer

Attn: Mr. Ron Duvall

Dear Ron:

On August 30, 1988, the City of Sioux Falls requested an additional withdrawal of 7.1 cubic feet of water per second from eight temporary wells in the Big Sioux Aquifer.

Based on your letter of September 15, 1988, we would like to amend the permit application to 6.45 cfs from six temporary wells. We have rejected Well Sites #2 and #4 due to low potential yields. The six remaining temporary wells will only be used as needed during dry conditions and will not be operated on a continuous basis. These wells have been renumbered and are shown on the attached map. A map has also been attached showing the locations of the test holes.

I have also enclosed the well driller's logs for the wells and test holes for your review. If you have any questions concerning this information, please contact me.

We appreciate your assistance in this matter.

Sincerely,

Lyle D. Johnson, PhD, P.E.
Acting Water Superintendent

Enclosures

seh

RECEIPT

Division of Water Rights

South Dakota Department of Water and Natural Resources

411578

Pierre, January 5, 1989

RECEIVED OF City of Sioux Falls, 224 W 9th St, Sioux Falls SD 57102

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

Fee for Application for Permit No. <u>5235-3</u> to Appropriate Water, to construct works and to put water to beneficial use _____	1150	00
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	1150 00

By John Hatch
Chief Engineer

1/5

Conversation or File Documentation

NAME OF PERSON OR FILE: Lyle D. Johnson, PhD, PE, Acting Water Supt.ADDRESS: 224 W 9th Street, Sioux Falls COUNTY MinnehahaDATE: Jan 5, 1989 TELEPHONE _____RE: Development of water reserved by F.U. Permit No. 448-3

COMMENTS:

Contacted Lyle Johnson to inform him the 6 wells
specified on Application No. 5235-3 are not located within
the area specified on Future Use Permit No. 448-3. I
told Mr. Johnson that the new application could not be
used to develop the future use reserves. Mr. Johnson
then instructed me to delete the reference to the
future use permit and proceed with the application

File in Permit or other file as necessary. Use to document conversations and what the other party was told; why action or decision was made.

NAME: Ron D. Swall

Report on Application 5235-3
City of Sioux Falls
January 17, 1989

Water Permit Application No. 5235-3 was submitted by the City of Sioux Falls to appropriate 6.45 cubic feet of water per second (cfs) from 6 existing wells ranging from 37 to 44 feet deep. Two of the wells are located in the SE1/4 NE1/4 and the NW1/4 SE1/4 of Section 6, T101N, R49W. The other 4 wells are located in the SE1/4 SE1/4 (3 wells) of Section 29, and the NE1/4 NE1/4 (1 well) of Section 32, all in T102N, R49W. These wells are not located in the Sioux Falls future use area. The water is to be used by the City of Sioux Falls for municipal purposes. The wells will be used to supplement the existing water supply during drought conditions and will not be operated on a continual basis.

Aquifer Characteristics

The permit application is located in the Coteau des Prairie portion of the Central Lowland physiographic province. The region is covered by Pleistocene glacial material including moraines, stagnant ice features, till and outwash. The wells have been drilled into the Big Sioux Aquifer-Sioux Falls Management Unit. It is a surficial aquifer found predominately under water table conditions (Hedges, 1982).

This surficial aquifer is an alluvium-mantled outwash consisting of silt, fine to coarse sand, and gravel. It is located near the surface and has no confining layer above it. Aquifer thickness commonly ranges from 20 to 50 feet with relatively impermeable glacial till underlying it (Koch, 1982).

The Big Sioux-Sioux Falls Aquifer covers 36 square miles extending from Dell Rapids in the north to the city of Sioux Falls in the south. The aquifer is hydrologically separated from other units in the Big Sioux Aquifer by quartzite ridges at both ends (Koch, 1982). Recharge to the Big Sioux-Sioux Falls Aquifer, which has been estimated by most analyses to range from 5 to 7 inches per year (Hedges, 1983), results from direct infiltration of precipitation and the aquifer's hydraulic connection with the Big Sioux River (Koch, 1982).

Water Availability

Water Permit Application No. 5235-3 authorizes the diversion of 6.45 cfs from the aquifer. The Sioux Falls Management Unit has an estimated volume of recoverable water of 103,050 acre-feet (Hedges, 1982). A 1983 report by the South Dakota Geological Survey revealed that over 118,000 acre-feet of water had been appropriated and approximately 17,400 acre-feet per year were used (Hedges, 1983). The data indicate that the aquifer is

heavily appropriated, but the average annual use is less than 15% of what is appropriated.

A computer modeling study was conducted to determine the response of the Big Sioux-Sioux Falls Aquifer to extreme drought conditions. The simulation revealed that with no aquifer recharge, a dry river, and a pumpage rate of 25 million gpd, it would require 248 days to deplete the storage at a particular model node (Koch, 1983).

The longest recorded drought on the river (35 years of record) was a period of 54 consecutive days of zero streamflow in the summer of 1976. It is estimated that this 1976-1977 drought was a 100 year or greater low-flow condition (Koch, 1983).

One Water Rights Division Observation Well, MA-57H, located in the aquifer approximately 1.5 to 2.5 miles from the application wells, does not indicate any significant long term water level changes related to the well pumping in the area. Other observation wells not measured by the Water Rights Division are located in the vicinity of the applicant's wells. Records from 1963-1980 show no long term trend in water levels caused by the withdrawals (Bradford, 1981). The wells show seasonal fluctuations related to yearly variations in precipitation (WRD Observation Well Files, 1989).

A recharge rate of 6 inches per year over the entire aquifer would yield 11,500 acre-feet of water, which is less than the present use out of the aquifer. Despite this, the water level records do not indicate any sustained downward trend in water elevations. The Big Sioux River, which is hydrologically connected to the aquifer, interacts with it to supply the aquifer with water when levels are low and receives infiltration from it when aquifer levels are high. At the Sioux Falls Cliff Avenue gaging station the average discharge of the Big Sioux River is 571 cfs or 413,000 acre-feet/year (Hoffman, 1988). The aquifer "borrows" from this flow when ground-water levels are low. Essentially, the aquifer's potential is limited by the flow in the Big Sioux River.

Available water use information, modeling estimates and water level records indicate that unappropriated water is available for Permit Application No. 5235-3.

Existing Water Rights

The wells are located within the well field operated by the city of Sioux Falls. A number of city wells are found in the vicinity. Other permitted wells are located in the area, the closest being approximately 3/4 mile away. No interference is expected from this well spacing. Interference problems that may occur will be between the city wells if adequate well spacing is not maintained (WRD Permit Files, 1989).

Well Construction

The wells to be utilized under Permit Application No. 5235-3 have been drilled prior to permit approval. The Wells for Permit No. 5235-3 must meet the South Dakota Well Construction Standards pursuant to General Rule 74:02:04:30 which requires public water supply wells to be pressure grouted with neat cement from the top of the producing aquifer to the ground surface or to the bottom of the pitless adapter or pitless unit if used. Based on the well completion reports supplied and communication with the driller, the wells do meet the Well Construction Standards pursuant to the above rule and no variance is required.

South Dakota Drinking Water Standards, Chapter 74:03:07:02, requires that plans and specifications for design of public water supply wells be submitted prior to construction of the systems. To date no plans for this construction have been submitted for approval (contact with Drinking Water Personnel, 1989).

Conclusions

1. Water for this application will be withdrawn from the Big Sioux Aquifer-Sioux Falls Management Unit.
2. These application wells will be used to supplement existing city wells, and are to be used primarily under drought conditions and will not be pumped continually.
3. This aquifer is heavily appropriated, but modeling simulations indicate unappropriated water is available for Permit Application No. 5235-3.
4. Observation well recordings in the area do not reveal any long term trends in water levels due to aquifer withdrawals.
5. Because of the large aquifer capacity and adequate well spacing, the Water Rights Division does not expect the application to adversely affect other existing water permit holders.
6. The wells to be utilized under Permit Application No. 5235-3 have been drilled prior to permit approval. No plans and specifications concerning well construction for the public water supply have been submitted to the Office of Drinking Water for approval.



Thomas M. Brandner
Natural Resources Engineer

References

- Bradford, Wendell L., 1981, Water Level Records for the Big Sioux Aquifer, Minnehaha County, South Dakota, USGS Open File Report 81-222, Huron, SD.
- Hedges, L.S., S.L. Burch, D.L. Iles, R.A. Barari, and R.A. Schoon, 1982, Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River, South Dakota and Iowa, Prepared for U.S. Army Corps of Engineers Planning Division by DWNR Geological Survey, Vermillion, SD.
- Hedges, L.S., S.L. Burch, and D.L. Iles, 1983, Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River South Dakota and Iowa, Task 6: Average Annual Water Use by Aquifer, Prepared for U.S. Army Corps of Engineers Planning Division by DWNR Geological Survey, Vermillion, SD.
- Hedges, L.S., J. Allen, and D.E. Holly, 1983, Evaluation of Ground-Water Resources Eastern South Dakota and Upper Big Sioux River South Dakota and Iowa, Task 7: Ground Water Recharge, Prepared for U.S. Army Corps of Engineers Planning Division by DWNR Geological Survey, Vermillion, SD.
- Hoffman, E.B., R.D. Benson, and S.L. Lawrence, 1988, Water Resources Data South Dakota: Water Year 1987, USGS Water Data Report SD 87-1, Prepared in cooperation with the State of South Dakota and other Agencies, Huron, SD.
- Koch, Neil C., 1982, A Digital-Computer Model of the Big Sioux Aquifer in Minnehaha County, South Dakota, USGS Water-Resources Investigations Report 82-4064, Huron, SD.
- Koch, Neil C., 1983, Evaluation of the Response of the Big Sioux Aquifer to Extreme Drought Conditions in Minnehaha County, South Dakota, USGS Water-Resources Investigations Report 83-4234, Huron, SD.
- Office of Drinking Water, 1989, Personal Contact, DWNR, Joe Foss Bldg., Pierre, SD.
- Water Rights Division, 1989, Observation Well Files, DWNR, Joe Foss Bldg., Pierre, SD.
- Water Rights Division, 1989, Permit Files, DWNR, Joe Foss Bldg., Pierre, SD.

RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 5235-3, City of Sioux Falls

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Division, Department of Water and Natural Resources concerning Water Permit Application No. 5235-3, City of Sioux Falls, 224 West Ninth Street, Sioux Falls SD.

The Chief Engineer is recommending APPROVAL of Application No. 5235-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing rights, 3) the proposed use is a beneficial use and 4) in the public interest with the following qualification:

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

See the attached report for additional information.


JOHN HATCH, Chief Engineer
January 25, 1989



Department of Water & Natural Resources

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

January 26, 1989

NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPERS RIGHT AWAY.

Jack White, Mayor
City of Sioux Falls
224 W Ninth St
Sioux Falls SD 57102

Dear Mayor White:

Application No. 5235-3 for a permit to appropriate water for municipal use has been examined and found to comply with the South Dakota Water Laws and applicable rules. Notice of your intent to appropriate water has been sent to the Publisher of the Argus Leader printed at Sioux Falls and the Sioux Valley News printed at Canton SD. For your information, a copy of the notice, the recommendation of the Chief Engineer and a report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspapers to authorize publication of your Notice of Intent to Appropriate Water and to arrange for payment. Early contact with the papers can eliminate delays. The publishers have been instructed to publish your notice once each week for two consecutive weeks with the last publication to occur twenty days before the board meeting. We must receive Proof of Publication before the application can be considered by the Water Management Board.

Sincerely,



Ron Duvall
Natural Resources Engineer
605 773-3352

enclosures





Department of Water & Natural Resources

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

January 26, 1989

Sioux Valley News
Box 255
Canton SD 57013

Dear Sir:

Enclosed is a Notice of Hearing on Application No. 5235-3 to be published twice. Please publish the first notice on or before February 2, 1989 with the second publication 7 days later.

The APPLICANT MUST VERIFY TO YOU THAT THE NOTICE IS TO BE PUBLISHED, before you make the first publication. Please BILL the APPLICANT for the cost of publication. The APPLICANT is the City of Sioux Falls, 224 West Ninth St, Sioux Falls SD 57102.

A copy of BOTH publications must be SENT to the WATER RIGHTS DIVISION. IMMEDIATELY return the FIRST publication with the FIRST Transmittal form on the bottom of this page. The first copy is needed to check the publication for errors so any corrections can be made in the second publication. Publication errors can invalidate the public notice and cause the applicant costly delays.

Please be sure the SECOND publication is returned IMMEDIATELY with the enclosed Proof of Publication form. DO NOT WAIT until the end of the month or the billing cycle. The permit application cannot be considered by the Water Management Board until proof of publication has been received.

Sincerely,

Ron Duvall
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

FIRST TRANSMITTAL NOTICE

TO: Ron Duvall
Water Rights Division
Joe Foss Building
Pierre SD 57501-3181

No. _____

Date _____

We are in receipt of your letter of _____ enclosing Notice of Hearing to
Appropriate Water by Application No. _____ which was first published in our issue
of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper





Department of Water & Natural Resources

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

January 26, 1989

Argus Leader
ATTN: Legal Dept
PO Box 5034
Sioux Falls SD 57101

Dear Sir:

Enclosed is a Notice of Hearing on Application No. 5235-3 to be published twice. Please publish the first notice on or before February 2, 1989 with the second publication 7 days later.

The APPLICANT MUST VERIFY TO YOU THAT THE NOTICE IS TO BE PUBLISHED, before you make the first publication. Please BILL the APPLICANT for the cost of publication. The APPLICANT is the City of Sioux Falls, 224 West Ninth St, Sioux Falls SD 57102.

A copy of BOTH publications must be SENT to the WATER RIGHTS DIVISION. IMMEDIATELY return the FIRST publication with the FIRST Transmittal form on the bottom of this page. The first copy is needed to check the publication for errors so any corrections can be made in the second publication. Publication errors can invalidate the public notice and cause the applicant costly delays.

Please be sure the SECOND publication is returned IMMEDIATELY with the enclosed Proof of Publication form. DO NOT WAIT until the end of the month or the billing cycle. The permit application cannot be considered by the Water Management Board until proof of publication has been received.

Sincerely,

Ron Duvall
Natural Resources Engineer
605 773-3352

enclosures

-----CUT HERE-----

FIRST TRANSMITTAL NOTICE

TO: Ron Duvall
Water Rights Division
Joe Foss Building
Pierre SD 57501-3181

No. _____

Date _____

We are in receipt of your letter of _____ enclosing Notice of Hearing to
Appropriate Water by Application No. _____ which was first published in our issue
of _____. ENCLOSED IS A COPY OF THIS FIRST PUBLICATION.

Name

Newspaper



Instruction to Newspaper - Publish first Notice on or before February 2, 1989 with 2nd publication 7 days later. The applicant is responsible for payment.

NOTICE OF HEARING on Application No. 5235-3 to Appropriate Water

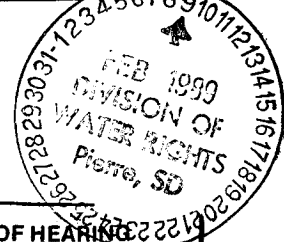
Notice is given that the City of Sioux Falls, 224 West Ninth St., Sioux Falls SD 57102 has filed an application for a water permit to appropriate 6.45 cubic feet of water per second from 6 existing wells (Big Sioux Aquifer) 37 to 44 feet deep. The 6 wells are located within the SE 1/4 NE 1/4 (1 well), NW 1/4 SE 1/4 (1 well) Section 6-T101N-R49W and the SE 1/4 SE 1/4 (3 wells) Section 29; NE 1/4 NE 1/4 (1 well) Section 32; all in T102N-R49W. Water is to be used for municipal purposes by the City of Sioux Falls.

Pursuant to SDCL 46-2A-2, the Chief Engineer of the Water Rights Division recommends APPROVAL of Application No. 5235-3 because 1) unappropriated water is available, 2) existing rights will not be unlawfully impaired, 3) it is a beneficial use of water and 4) it is in the public interest. This application will be considered by the Water Management Board at the Howard Johnson's, Roosevelt Room, 1-90 at LaCrosse, Rapid City SD on March 1, 1989 at 10:00 am. 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.

Any interested person that intends to participate in the hearing before the Board by presenting evidence or cross-examining witnesses according to SDCL 1-26, must file a written petition with BOTH the applicant and Chief Engineer by February 17, 1989. The Chief Engineer's address is "Water Rights Division, Foss Building, 523 E Capitol, Pierre SD 57501 (605 773-3352)". The petition may be informal, but must include a statement describing the petitioner's interest in the application, the petitioner's reasons for opposing or supporting the application and the signature and mailing address of the petitioner or legal counsel if legal counsel is obtained. The applicant need not file a petition. Contact the Water Rights Division to request information on this application or to assure access to the hearing by the handicapped.

This hearing is an adversary proceeding. Any person filing a petition and/or the applicant have the right to be represented by a lawyer. 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. The time of the hearing will also be automatically delayed for at least twenty days upon written request to the Chief Engineer from the applicant or a petitioner. The request for a delay must be received by February 17, 1989.

This application is made pursuant to 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, 46-5-30.4, 46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14; and Board Rules ARSD 74:02:01:01 thru 74:02:01:15.



PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) ss.
County Lincoln)

I, Sonia Oakland hereby

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

Water was taken from the Sioux Valley News

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 Canton

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

February 2, 1989

February 9, 1989

Sonia Oakland
(Signature)

Bookkeeper
(Title)

February 9, 1989
(Date Signed)

Cost of Printing: \$36.32

Board may be appealed to the
Circuit Court and State Supreme
Court as provided by Law. The
time of the hearing will also be
automatically delayed for at least
twenty days upon written request
to the Chief Engineer from the
applicant or a petitioner. The
request for a delay must be
received by February 17, 1989.

This application is made
pursuant to 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, 46-5-30.4, 46-5-31; 46-6-3, 46-
6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-
6-14; and Board Rules ARSD
74:02:01:01 thru 74:02:01:15.
(2-2, 9)

NOTICE OF HEARING
On Application No. 5235-3 to
Appropriate Water

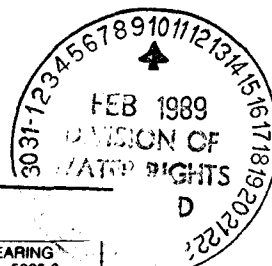
Notice is given that the City of
Sioux Falls, 224 West Ninth St.,
Sioux Falls, SD 57102 has filed an
application for a water permit to
appropriate 6.45 cubic feet of
water per second from 6 existing
wells (Big Sioux Aquifer) 37 to 44
feet deep. The 6 wells are located
within the SE $\frac{1}{4}$ NE $\frac{1}{4}$ (1 well),

NW $\frac{1}{4}$ SE $\frac{1}{4}$ (1 well), Section 6-
T101N-R49W and the SE $\frac{1}{4}$ SE $\frac{1}{4}$ (3
wells) Section 29; NE $\frac{1}{4}$ NE $\frac{1}{4}$ (1
well) Section 32; all in T102N-
R49W. Water is to be used for
municipal purposes by the City of
Sioux Falls.

Pursuant to SDCL 46-2A-2, the
Chief Engineer of the Water
Rights Division recommends
APPROVAL of Application No.
5235-3 because 1) unappropriated
water is available, 2) existing
rights will not be unlawfully
impaired, 3) it is a beneficial use
of water and 4) it is in the public
interest. This application will be
considered by the Water
Management Board at the Howard
Johnson's, Roosevelt Room, I-90
at LaCrosse, Rapid City, SD on
March 1, 1989 at 10:00 a.m. 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.

Any interested person that
intends to participate in the
hearing before the Board by
presenting evidence or cross-
examining witnesses according to
SDCL 1-26, must file a written
petition with BOTH the applicant
and Chief Engineer by February 17,
1989. The Chief Engineer's
address is "Water Rights Division,
Foss Building, 523 E. Capitol,
Pierre, SD 57501 (605 773-3352)".
The petition may be informal, but
must include a statement
describing the petitioner's
interest in the application, the
petitioner's reasons for opposing
or supporting the application and
the signature and mailing address
of the petitioner or legal counsel if
legal counsel is obtained. The
applicant need not file a petition.
Contact the Water Rights Division
to request information on this
application or to assure access to
the hearing by the handicapped.

This hearing is an adversary
proceeding. Any person filing a
petition and/or the applicant have
the right to be represented by a
lawyer. These and other due
process rights will be forfeited if
not exercised. ~~Decision, 1/2/90~~



PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
) ss.
County Minnehaha)

I, Mary Devish hereby

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

Water was taken from the Argus Leader

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 Sioux Falls

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

Thursday, February 2, 1989

Thursday, February 9, 1989

Mary Devish
(Signature)

Controller
(Title)

2/9/89
(Date Signed)

Cost of Printing: \$76.25

NOTICE OF HEARING
on Application No. 5235-3
to Appropriate Water

Notice is given that the City of
Sioux Falls, 224 West Ninth St.,
Sioux Falls, SD 57102 has filed an
application for a water permit to
appropriate 6.45 cubic feet of water
per second from 6 existing wells
(Big Sioux Aquifer) 37 to 44 feet
deep. The 6 wells are located within
the SE 1/4 NE 1/4 (1 well), NW 1/4
SE 1/4 (1 well) Section 6-T101N-
R49W and the SE 1/4 SE 1/4 (3
wells) Section 29; NE 1/4 NE 1/4 (1
well) Section 32; all in T102N-
R49W. Water is to be used for
municipal purposes by the City of
Sioux Falls.

Pursuant to SDCL 46-2A-2, the
Chief Engineer of the Water Rights
Division recommends APPROVAL
of Application No. 5235-3 because
1) unappropriated water is avail-
able, 2) existing rights will not be
unlawfully impaired, 3) it is a
beneficial use of water and 4) it is in
the public interest. This application
will be considered by the Water
Management Board at the Howard
Johnson's, Roosevelt Room, 1-90 at
LaCrosse, Rapid City, SD on March
1, 1989 at 10:00 am. The Chief
Engineer's recommendation is not
final or binding upon the Board.
The Board is authorized to 1)
approve, 2) approve with qualifica-
tions, 3) defer or 4) deny this
application based on the facts
presented at the public meeting.

Any interested person that in-
tends to participate in the hearing
before the Board by presenting
evidence or cross-examining wit-
ness according to SDCL 1-26, must
file a written petition with BOTH the
applicant and Chief Engineer by
February 17, 1989. The Chief Engi-
neer's address is "Water Rights
Division, Foss Building, 523 E.
Capitol, Pierre, SD 57501 (605
773-3352)". The petition may be
informal, but must include a state-
ment describing the petitioner's
interest in the application, the peti-
tioner's reasons for opposing or
supporting the application and the
signature and mailing address of
the petitioner or legal counsel if
legal counsel is obtained. The
applicant need not file a petition.
Contact the Water Rights Division
to request information on this appli-
cation or to assure access to the
hearing by the handicapped.

This hearing is an adversary
proceeding. Any person filing a
petition and/or the applicant have
the right to be represented by a
lawyer. These and other due pro-
cess 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. The time of the
hearing will also be automatically
delayed for at least twenty days
upon written request to the Chief
Engineer from the applicant or a
petitioner. The request for a delay
must be received by February 17,
1989.

This application is made pursuant
to 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, 46-5-30.4,
46-5-31; 46-6-3, 46-6-3.1, 46-6-6.1,
46-6-10, 46-6-13, 46-6-14; and
Board Rules ARSD 74:02-01:01
thru 74:02-01:15.

431 Feb. 2, 9, 1989

 **Department of
Water & Natural Resources**

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

JUN 13 1989

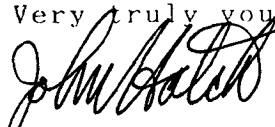
Jack White, Mayor
City of Sioux Falls
224 W 9th St
Sioux Falls SD 57102

Dear Mayor White:

Enclosed is Water Permit No. 5235-3 as approved by the Water Management Board authorizing construction of the water system and the application of water beneficial use, not exceeding the limits as specified in the Water Permit.

We will schedule an inspection so that the Water License may be issued to you, thus completing your acquisition of a Water Right.

Very truly yours,



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

enclosures



NOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USE



Date May 16, 1990

TO: Water Rights Division, DWR
Joe Foss Building
Pierre, SD 57501-3181

FROM: Keith DeJong, Water Purification Plant, 2100 N. Minnesota, Sioux
(Name) (Address) (City) Falls, SD 57104

I have completed the construction of the water diversion system and I have put the water to beneficial use to the maximum extent it is going to be used. I have not exceeded the amounts specified in Water Permit No. 5235-3.

Water Permit No. 5235-3 states that the diversion system is to be constructed by NA, and that the water will be put to beneficial use by NA.

The diversion system was completed on November 15, 1988.
Applying the water to beneficial use was completed on May 12, 1988.

You may schedule an inspection so that the Water License may be issued.

Keith DeJong
(Signature)

shl



DEPARTMENT OF WATER & NATURAL RESOURCES

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

February 7, 1991

Lyle D Johnson, Water/Wastewater Manager
Utilities Department
224 W 9th Street
Sioux Falls SD 57102

Dear Mr. Johnson:

This letter is in response to my inspection of the City's water permits/rights completed on January 16, 1991.

Several of the city's permits can be licensed after receipt of the following information:

- 1) Permit Nos. 5127-3 and 5127A-3 (Well Nos. 53 thru 58).
Permit No. 5115-3 (Well Nos. 48 thru 52).
Permit No. 5235-3 (Well Nos. 60 thru 65).
 - Sustained pump rate for each well under optimal operating conditions,
 - Type and horsepower of the submersible units in each of the wells, and
 - Brief description of the distribution system.
- I have located a well completion report (copy enclosed) for a well that appears to be north of well No. 58. A copy of the well completion report for well No. 58 is also enclosed. No well was noted north of No. 58 during my inspection. Please explain if the well exists as described on the enclosed report and if the well is being used by the city.
- 2) Permit No. 5202-3 for water impounded in Silver Creek by the Big Sioux diversion dam. Two units are used with a capacity of 700 gpm each.
 - Type and model no. of the motor and pump with the horsepower.
- 3) Permit No. 5334-3 for the Big Sioux River pump facility.
 - Brief description of the operation of the facility at peak operating capacity.

An application (forms enclosed) needs to be approved to increase the permitted pumping rate to 46.4 cfs and to increase the annual volume of water if you plan to exceed the current 10,000 acre-feet. If approved, No. 5334-3 and the new permit would be issued one water license.

(continued)

February 7, 1991
Lyle D Johnson
Page 2 of 3

The following changes are needed to correct errors on the current licenses:

- 1) The following licenses need to have R50W deleted and be reissued for R49W:
254-3, 255-3, 256-3, 257-3, ^{cancel RO 5/13/91} 258-3, 259-3, 260-3, 261-3, 262-3, 264-3, 266-3, 267-3, 269-3, 270-3, 272-3, 273-3, 275-3, 276-3, and 274-3 needs the same range correction plus should be T102N instead of T103N.

License No. 300-3 needs to have section 32 deleted and be reissued for section 33. The original notice of hearing and application are correct.

License No. 4101-3 needs to have T101N deleted and be reissued for T102N and 2,030 feet east rather than 2,030 feet west. The original notice of hearing is correct.

License Nos. 4098-3, 4099-3, 4100-3, and 4812-3 also need to be reissued to identify the correct location of the wells. The original notices of hearing are correct for each license.

- 2) The notice of hearing for 1306-3 needs to be readvertised to correct a diversion point error (should be NW1/4 NW1/4 instead of NE1/4 NE1/4).

The notice of hearing for 4811-3 needs to be readvertised to correct a diversion point error (should be T102N instead of T101N).

Each of these changes (Nos. 1 & 2) will be initiated by the Division of Water Rights. Item No. 2 will require publication of a notice of hearing. The city will be notified of the completion of the corrections.

Well Nos. 30, 31, 32, and 33 have been rehabilitated in the last two years. Revisions may also be needed to some of the water rights held by the city to reflect changes in the pumping capacity of the wells. If the sustained pump rate of these wells under optimal operating conditions is less than the permitted pump rate, then the licenses should be reissued for the reduced pump rate. If the sustained pump rate exceeds the permitted amount, then a new permit is needed for the increase in the pump rate. Please indicate what the sustained pump rates are for well Nos. 30, 31, 32, 33, and other wells as rehabilitation efforts and aquifer conditions allow.

^{258-3 RO 5/13/91}
Water Right Nos. 254-3, 255-3, 265-3, 268-3, 271-3, and 1579-3 will be scheduled for a hearing to allow the Water Management Board to consider cancellation of the water rights due to abandonment and/or forfeiture. Notice will be given of the time and place of hearing. If the Parks and Recreation Department is using of the well authorized by No. 1579-3, please inform me.

February 7, 1991
Lyle D Johnson
Page 3 of 3

In response to your questions during our meeting on January 17, 1991, the city can plug abandoned wells if the work is completed according to the Well Construction Standards. A copy of the standards and some plugging report forms are enclosed for the city's use.

Water Permit No. 1790-3 held by the Lincoln County Rural Water System is for supplying the rural water system from the city's well field. Enclosed is a copy of Permit No. 1790-3, including the affected city permits and a resolution signed by the mayor of Sioux Falls.

Thank you and your staff for the assistance we received concerning these inspections. I appreciate Mr. Holden taking the time to show us around. If you have any questions regarding any of this information, please contact me.

Sincerely,



Ron Duvall
Natural Resources Engineer
605 773-3352

enc.

cc: Glenn Dostal, HDR Engineering, Inc.



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

June 17, 1992

Lyle D Johnson, Water/Wastewater Manager
Utilities Department
224 W 9th Street
Sioux Falls SD 57102

Dear Mr. Johnson:

This letter is in reference to inspections of the city's water permits. On May 28, 1992, I met with Keith DeJong and Doug Holden to collect information to license Water Permit Nos. 5127-3, 5127A-3, 5115-3, 5235-3, and 5242-3.

Several discussions have occurred concerning the proper amount of water to place on the water licenses. The various pump rates discussed have been average pump rates, peak pump rates, design pump rates, and maximum sustainable pump rate under ideal operating conditions. Historically, the amount of water a permit is licensed for is the peak pump rate. Due to the unique nature of some of the city's wells (Bragstad and Ranney wells) licensing for the peak pump rate does not accurately reflect actual well production.

Aside from the Bragstad and Ranney wells, I believe the city's permits should be licensed considering both the peak pump rate (highest one day average) and design pump rate figures. Average pump rates over a year's time are not applicable. Enclosed is a copy of the 1991 pump records for well Nos. 48 thru 65. Well No. 48 produced a maximum flow of 400 gpm during 1991. If, for example, the design pump rate for the well was 425 gpm and you believe the well could produce this amount under more favorable aquifer conditions, then the well should be licensed for 425 gpm. If the design pump rate is 375 gpm and the well produces 400 gpm, then the well should be licensed for 400 gpm rather than the design rate. According to Jim Goodman, staff engineer, the water levels in your wells likely stabilize after a few hours of pumping without a substantial variance in the pump rate. Some informed estimating on your part may be needed to determine the proper pump rates. Keep in mind that the best time to determine what the wells produce is when the wells are relatively new and aquifer conditions are good.

I would appreciate your input before licensing Permit Nos. 5127-3, 5127A-3, 5115-3, 5235-3, and 5242-3. Please refer to the above narrative when commenting on the proposed pump rates for the licenses. Another important consideration is the annual volume of water diverted. Some of the following permits placed water to beneficial use that was originally reserved by a future use permit. Upon licensing, the portion of the annual volume not developed, if any, is reinstated to the future use permit. It is important to note that reinstatement of undeveloped water may only occur at the time of licensing. Reduced usage in the future may not be reinstated.

- 1) Water Permit Nos. 5127-3 and 5127A-3 place to beneficial use up to 2,160 acre-feet of water annually reserved by Future Use Permit No. 448-3 from as many as 8 wells with a maximum diversion rate of 8.0 cfs. The wells developed under these permits are well Nos. 53 thru 58. According to the 1991 pump records, the 6 developed wells produced a maximum of 2,315 gpm (5.16 cfs) and may be licensed 5.16 cfs with an annual volume of 2,160 acre-feet.
- 2) Water Permit No. 5115-3 places to beneficial use up to 2,244 acre-feet of water annually reserved by Future Use Permit No. 448-3 from as many as 5 wells with a maximum diversion rate of 6.70 cfs. The wells developed are well Nos. 48 thru 52. According to the 1991 pump records, the 5 developed wells produced a maximum of 1,850 gpm (4.12 cfs) and may be licensed for 4.12 cfs with an annual volume of 2,244 acre-feet.

June 17, 1992
Lyle D Johnson
Page 2 of 2

- 3) Water Permit No. 5235-3 authorizes construction of 6 wells to divert up to 6.45 cfs. The wells developed are well Nos. 60 thru 65. According to the 1991 pump records, the 6 developed wells produced a maximum of 3,670 gpm (8.17 cfs) which exceeds the permitted pump rate by 1.72 cfs. Any increase over the permitted amount will need to be covered by a new permit application. No future use permit is involved with this water permit.
- 4) Water Permit No. 5242-3 authorizes diversion of 1.56 cfs (700 gpm) from an abandoned quarry to be discharged to the Big Sioux River. I looked at the motor and pump but did not get the pump rate. Please confirm whether or not the pump rate is 700 gpm. No future use permit is involved with this water permit.

An inspection was also made of the one well developed in the Big Sioux: Southern Skunk Creek aquifer as authorized by Permit No. 5214-3. This permit will remain unlicensed since time is available until October 5, 1993, to complete construction of 2 additional wells. I was also informed that changes may be made to the pumping equipment used to recharge the Big Sioux Aquifer as authorized by Permit No. 5431-3. Licensing of this permit can also wait until the permanent equipment is in place.

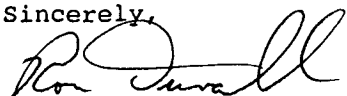
Mr. DeJong informed me that Nos. 1947-3 and 5202-3 can be cancelled. Water Right No. 1947-3 authorized the city to supply water to the EROS complex. According to Mr. DeJong, the complex has been supplied by the Minnehaha Rural Water System for the last couple of years. Permit No. 5202-3 appropriates 4.6 cfs from Silver Creek near the confluence with the Big Sioux River diversion canal. These pump stations provided an emergency water supply and are no longer needed due to well field expansions and construction of the Big Sioux River pump station.

The Bragstad and Ranney wells were licensed several years ago. Whether or not the licensed amount of water is currently accurate may be questionable. In the case of these types of wells, I believe the licensed amount of water should correspond with the maximum sustained pump rate under optimal operating conditions (i.e. wells rehabilitated and favorable aquifer conditions.) The initial peak pump rate would be artificially high for these types of wells due to the reservoir in the wells. The maximum sustained pump rate would occur after the reservoir level has stabilized. As noted on page 2 of my February 7, 1991 letter, the accuracy of the licenses can be reviewed as your well rehabilitation program allows. Well Nos. 30 thru 33 have been rehabilitated within the last few years.

Please comment on the amount of water you want placed on your water licenses. Several of the wells were constructed prior to 1991 and pump records from prior years may be more favorable for purposes of licensing. Especially important is your input on the annual water volume for those permits placing water to beneficial use reserved by Future Use Permit No. 448-3.

If you have any questions, please contact me.

Sincerely,



Ron Duvall
Natural Resources Engineer
605 773-3352

enc.

Well No	GPM		Pump	Motor	Horse power
	Max.	1991 AVG.			
48	400	386	Aurora 8RL 1 stage	Franklin	15 Submersible
49	550	410	Aurora 8RL 1 stage	Franklin	15 Submersible
50	400	363	Aurora 6RM 1 stage	Franklin	10 Submersible
51	275	249	Aurora 8RXL 1 stage	Franklin	15 Submersible
52	225	142	Aurora 6RL 2 stage	Franklin	10 Submersible
53	480	434	Aurora 8RXL 1 stage	Franklin	15 Submersible
54	400	392	Aurora 6RH 2 stage	Franklin	10 Submersible
55	330	294	Aurora 6RM 2 stage	Franklin	7.5 Submersible
56	325	290	Aurora 6RH 2 stage	Franklin	10 Submersible
57	390	276	Aurora 6RH 2 stage	Franklin	10 Submersible
58	390	354	Aurora 6RH 2 stage	Franklin	10 Submersible
60	700	590	Grundfos 600S150-1		15 Submersible
61	500	311	Western Land Roller 8KKH		20 Submersible
62	600	501	Western Land Roller 8KKH		20 Submersible
63	550	349	Western Land Roller 8KKH		15 Submersible
64	620	569	Western Land Roller 8KKH		20 Submersible
65	700	675	Western Land Roller 8KKH		20 Submersible



CITY OF SIOUX FALLS UTILITIES

August 24, 1992



Mr. Ron Duvall
DENR - Water Rights
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

Dear Mr. Duvall:

On the attached sheet, I have outlined the information concerning the three well permits that are addressed in your June 17, 1992 letter. This information shows the peak flow rate that we have seen for each well since the wells were put into use; the most water used from each well in any one year; and the percentage of the year that the wells were actually in use. The information also shows the peak flow rate and the maximum yearly flow rate for each permit.

I have also included our recommended peak flow and annual acre-foot limits on this sheet. I reviewed our records and found that in 1989, the wells in Permit #5127A-3 were used an average of 5565 hours each or 63.5 percent of the hours in the year. Based on this information, I projected a maximum well usage of 65 percent of the hours in the year. I then increased the acre-foot quantity for the highest usage year to reflect the wells running 65 percent of the time. This is the number that I have used for the recommended permit acre-foot quantity. The recommended permit cfs quantity is the rounded off sum of the peak rates from the individual wells.

Based on the above information, Permits #5115-3 and 5127A-3 will have a licensed cfs rate and acre-foot rate that is lower than what was requested in the permit application. It is our understanding that this reduced rate will go back into our future use permit and that there is a licensing fee, but no additional permit fee to reduce these quantities.

Utility Office
224 West Ninth Street
Sioux Falls, SD 57102
(605) 339-7031

Water Purification
2100 N. Minnesota Ave.
Sioux Falls, SD 57104
(605) 339-7025

Water Reclamation
4500 N. Sycamore Ave.
Sioux Falls, SD 57104
(605) 339-7088

Lights
2000 N. Minnesota Ave.
Sioux Falls, SD 57104
(605) 339-7150

Maint./Svc. Division
668 Algonquin Avenue
Sioux Falls, SD 57104
(605) 339-7020

Fax
(605) 338-7801

AN EQUAL OPPORTUNITY EMPLOYER

Hearing Impaired
(605) 339-7039

Permit #5235-3 would require an increase of 2.05 cfs to be licensed for the wells that were built. The quantity of 3220 acre-feet would also be on the license. However, we are requesting that only wells 60 through 63 be kept on Permit #5235-3, and that wells 64 and 65 be placed in a new permit. This will reduce the licensing quantities for Permit #5235-3 to 5.45 cfs and 2010 acre-feet. The new permit application for wells 64 and 65 would be for 3.02 cfs and 1210 acre-feet.

Your letter also questioned the flow rate for the pump used at the abandoned quarry. As we discussed in our phone conversation, 700 gpm is an appropriate quantity for licensing this permit.

We are currently in the process of rehabilitating Well #29. This is the last horizontal collector well slated for new laterals. The work should be completed by May 1993 and after we have had a chance to evaluate the well performance, we would like to meet with Water Rights staff to discuss the appropriate method of updating the licenses. If that schedule is not satisfactory, please let us know.

Also, we are preparing a new application for wells 64 and 65 and will be sending that to you in the near future. If you have any questions about any of these items, please contact me.

Sincerely,



Keith DeJong, P.E.
Water Superintendent

Enclosures

KD:seh

1992 WELL PERMIT LICENSING INFORMATION

<u>WELL #</u>	<u>PERMIT #</u>	<u>WATER RIGHT APPLICATION (cfs) (acre-ft/yr)</u>	<u>ACTUAL PEAK FLOW (cfs)</u>	<u>MAX 1 YEAR USE (acre-ft)</u>	<u>PERCENT HOURS in MAX, YEAR</u>	<u>RECOMMENDED PERMIT LICENSE (cfs) (acre-ft/yr)</u>
48-52	5115-3	6.7 2244	5.00	955.4	54.4	5.0 1140
48			1.15	307.1	61.2	
49			1.22	176.8	54.3	
50			0.86	182.1	58.1	
51			0.86	152.0	51.0	
52			0.91	137.4	47.2	
53-58	5127A-3	8.0 2160	5.49	1556.7	63.5	5.5 1600
53			1.41	385.5	68.1	
54			0.87	267.5	66.3	
55			0.75	178.7	59.4	
56			0.72	207.3	61.8	
57			0.87	249.3	58.0	
58			0.87	268.4	67.5	
60-65	5235-3	6.45 ---	8.47	1837.9	37.1	8.47 3220
60			1.56	319.5	31.1	(5.45) (2010)
61			1.11	239.8	34.5	
62			1.67	291.6	34.3	
63			1.11	296.2	53.7	
64			1.40	315.5	34.4	(3.02) (1210)
65			1.62	375.3	34.5	





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

JUL 2 1996

5115-3
5127A-3
5242-3
5710-3

Lyle Johnson, Utility Manager
City of Sioux Falls
224 West 9th St.
Sioux Falls, SD 57102

Dear Mr. Johnson:

Enclosed are Water License Nos. 5115-3, 5127A-3, 5242-3 and 5710-3. These are the final water right documents completing your process of obtaining a Water Right. Enclosed are Receipt Nos. 413806, 414971, 414972 and 414973 in the amount of \$50.00 each which you paid for the investigation and issuance of the Water Licenses.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the well authorized by Water Right Nos. 5115-3, 5127A-3, 5242-3 and 5710-3, constructs replacement wells and does not plan to use the old wells, the old wells are considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

As long as you use the water beneficially, as stated in the Water Licenses, the State Water Laws provide that you have a continuing right to use the water. If you have any questions, please contact our office.

Very truly yours,

JOHN HATCH, Chief Engineer
Water Rights Program
(605) 773-3352

ks
enclosures

NOTE: The applicable portions of Water Permit No. 5127 have been incorporated into this Water License No. 5127A-3, and the applicable portions of Water Permit No. 5235-3 have been incorporated into this Water License No. 5710-3.