

1. Considered Nov 9, 1966
2. Name of Applicant City of Sioux Falls
3. Post Office Address Sioux Falls
4. Amount of water claimed 1.80
5. Source of water supply Ground water
6. Water to be used for Municipal
- Acres to be irrigated —
7. Water to diverted and used in Minnehaha County
about — miles in City limits of —
8. Proof of Publication Received ✓
Not Received —
9. Application Approved —
Subject to —
Not Approved —
Action deferred —
10. Remarks:

No. 1305-3
 Water Division No. 3 Big Sioux River District
 (Blanks to be Filled by the Engineer for the W. H. C.)

SEP 1966

APPLICATION FOR PERMIT To Appropriate Water within the State of South Dakota

(NOTE—Draw a line through items not applicable.)

1. Name of applicant City of Sioux Falls, South Dakota
 Postoffice address Sioux Falls, County Minnehaha, State So. Dakota

I. If a corporation Municipal Corporation

(a) Name of same -----

(b) Date and place of Incorporation -----

(c) Amount of capital stock -----

(d) Amount paid in -----

(e) Names and addresses of directors V. L. Crusinberry, Mayor

Earl McCart, Commissioner

D. A. Witte, Commissioner

(NOTE—A certified copy of articles of incorporation must accompany the application.)

II. Method of accomplishing the work and financial resources of the applicant:

(a) Method of accomplishing work (Whether by contract, employment of others, or by direct labor)

Employment of others

(b) Cash on hand, \$ 200,000.00

(c) Treasury stock, \$ -----

(d) Bonds to be issued, \$ -----

(e) Other resources, \$ -----

2. Name of diversion work Well No. 34

3. Amount of water claimed 1.80 cubic feet per second

4. Source of water supply Ground Water

5. Location of point of diversion SE 1/4 of the NE 1/4 of Section 6; T10N, R19W and located
on the East side of the Big Sioux River on ----- bank Minnehaha County.

6. Annual period or periods during which water is to be used Continuous

7. To be used for:

I. Irrigation or domestic use: Gravity, overhead sprinkling or combination system? ---

(a) Number of acres to be irrigated ----- acres.

(b) Legal subdivisions to be irrigated -----

(NOTE—A list of lands to be irrigated, giving each subdivision and fraction with acreage thereof, should be written here, or may be appended as a part of this application. Same must also be shown on accompanying map.)

(c) Statement as to domestic use (giving location, etc.) -----

II. Stockwatering, mining, milling, power, fish culture, fire protection and public recreation:

(a) Nature of use Municipal Water Supply

Name any of the above uses claimed

(b) Amount of power to be generated ----- horse power.

Amount claimed for engine cooling -----

(c) Location of plant -----

(d) Method of developing power -----

(e) Point where water will be returned to stream Sioux Falls Sewage Treatment Plant

SEE MAP 299-3

8. Estimated cost of work:

(To be shown on Form 2A)
 (a) Head Gates, \$..... (b) Pumping plant, \$.....
 (c) Fluming, \$..... (d) Canalearth \$..... Rock, \$.....
 (e) Other structures \$..... Total, \$.....

9. Description of diversion works.

(To be shown on Form 2A)

I. Nature of works: (Reservoir, dam, ditch, flume, pumping plant, etc.)

II. Dimensions of works:

(a) Dam. Height.....feet; length at bottom feet; length at topfeet; thickness at bottomfeet; thickness at topfeet; slope at front water face; slope at back facematerial used in construction
 (b) Reservoir: Capacity when filledacre feet. Surface area at highwater mark.....acres.

DEPTH AT OUTLET- FEET	SURFACE AREA AT EACH DEPTH AT OUTLET—ACRES	FEET	ACRE- FEET CAPACITY

(c)* Head gate: Width.....feet; heightfeet;
 Material
 (d) Canal: Total lengthmiles.

LOCATION BELOW HEADGATE	DEPTH	BOTTOM WIDTH	WIDTH AT WATER-LINE	GRADE PER MILE
At Mile	 feet	 feet	 feet	 feet
At Mile	 feet	 feet	 feet	 feet
At Mile	 feet	 feet	 feet	 feet
At Mile	 feet	 feet	 feet	 feet
At Mile	 feet	 feet	 feet	 feet
At Mile	 feet	 feet	 feet	 feet

(Give dimensions where reductions in size are made.)

10. Time required for completion of work 4 to 6 month ~~xxx~~
 11. Time required for complete application of water to the proposed beneficial use one years.
 12. Choice of newspaper for publication of notice of intention to appropriate
Argus Leader

STATE OF SOUTH DAKOTA }
 County of Minnehaha } ss.

I, V. L. Crusinberry, Mayor, being first duly sworn on my oath depose and say: That my relation to the above described undertaking is that of owner, that I have read the above foregoing statement, examined the map accompanying the same, and that I know of my own personal knowledge that the matters therein stated and shown are true.

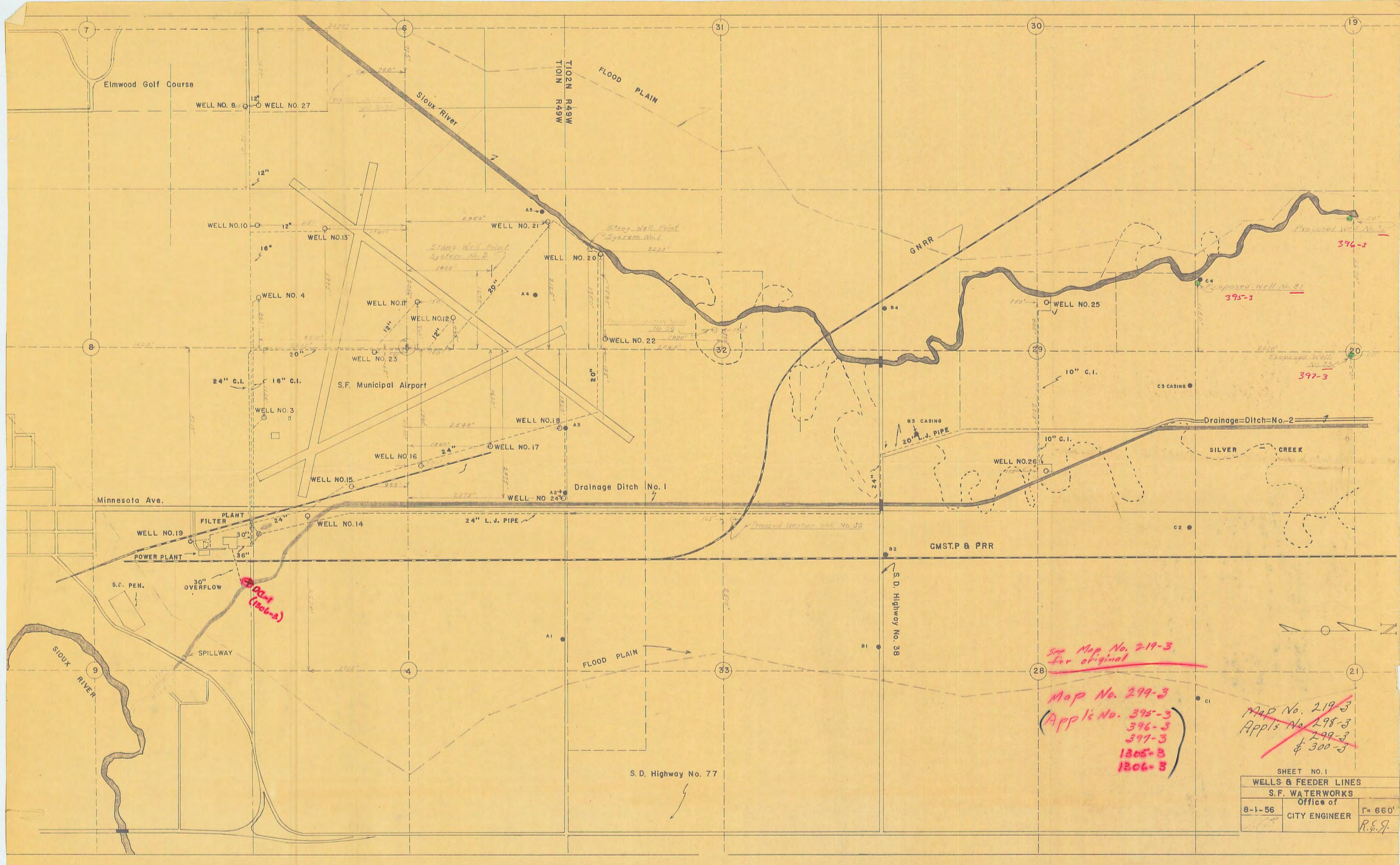
Attest
W. J. Sutton, att. and sec.

Signed V. L. Crusinberry Mayor

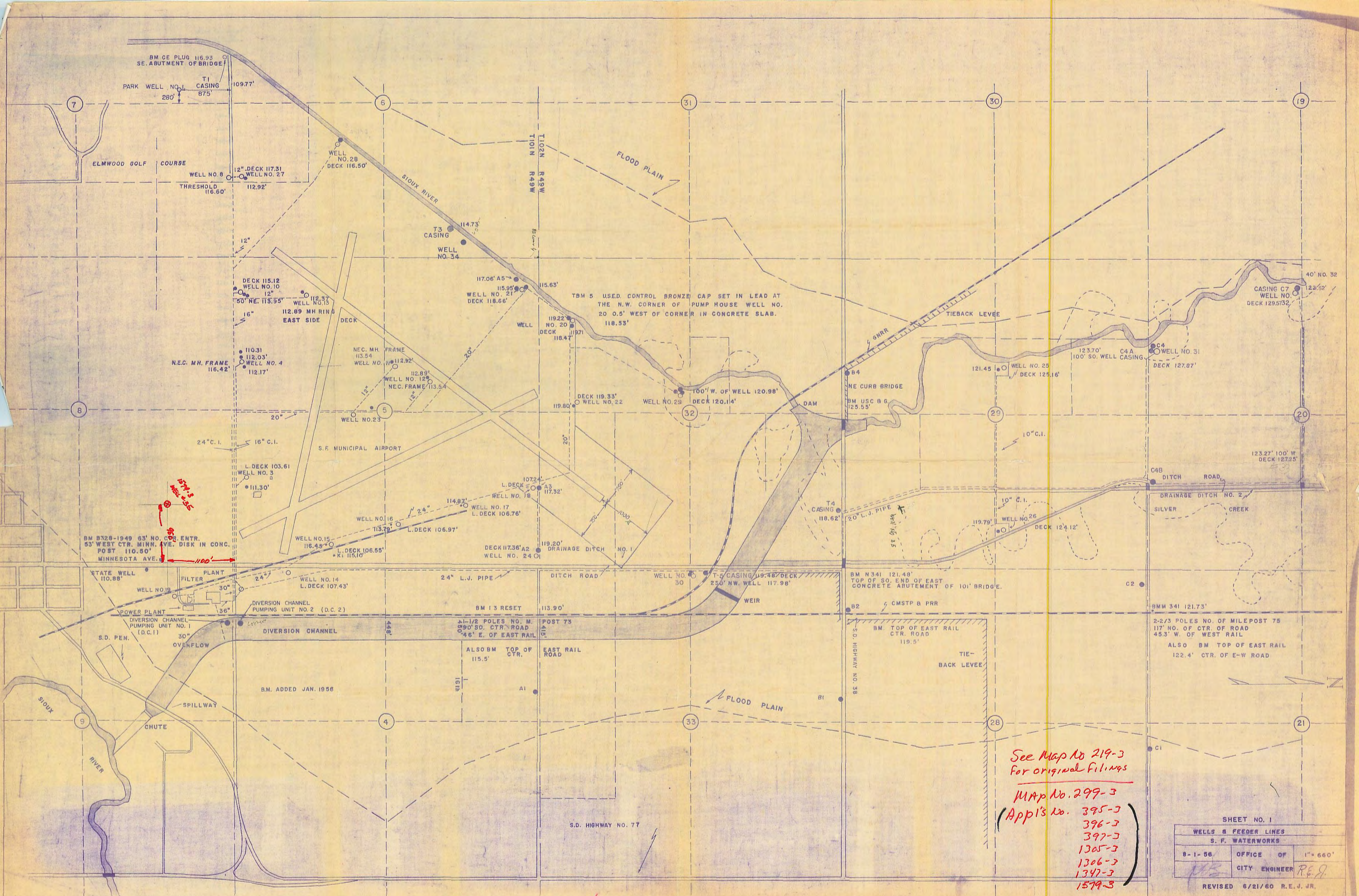
Subscribed and sworn to before me this 6th day of September 1966

Florayne Timmer
 Notary Public (or other qualified officer.)

*Each diversion must have a headgate or measuring device.



SHEET NO. 1		
WELLS & FEEDER LINES		
S.F. WATERWORKS		
Office of		
8-1-56	CITY ENGINEER	Γ= 660'
		R.E.J.



SHEET NO. 1		
WELLS & FEEDER LINES		
S. F. WATERWORKS		
8-1-56	OFFICE OF	1"=660'
	CITY ENGINEER	R.E.J.
REVISED 6/21/60 R.E.J. JR.		

Remarks by State Water Resources Commission:

STATE OF SOUTH DAKOTA
County of Hughes } ss.

Pierre, South Dakota, November 10, 1966

This is to certify that the foregoing application was received by the Commission at 10:15 o'clock
a.m. upon the 8th day of September, 1966.

State Water Resources Commission

By: Richard D Schroyer
for Chief Engineer, Executive Officer

Number of permit 1305-3

Date of first receipt of application September 8, 1966

Date of return to applicant for correction, amendments or changes required as follows: —, 19—

Date of receipt of corrected application —, 19—

Date from which applicant may claim right September 8, 1966

Approved November 9, 1966, Recorded in Book 9 Page 126

This is to certify that we have examined the foregoing application for a permit to appropriate water of the State of South Dakota, and we hereby grant the same as stated herein, subject, however, to the following limitations and conditions:

1st. The equivalent of at least one-fifth of the work above specified is to be completed on or before February 9, 1967

2nd. The whole of said work is to be completed on or before MAY 9, 1967

3rd. The limit of time for proof of beneficial use of water appropriated in accordance herewith is November 9, 1967

4th. The water appropriated shall be used for the purpose of municipal water supply

5th. The prior right of all persons who, by compliance with the laws of the State of South Dakota, have acquired a right to the use of water must not be injuriously affected by this appropriation.

6th. The amount of the appropriation herein granted shall not exceed 1.80 cubic feet per second; neither shall it exceed the capacity of the above described system of diversion works, nor the least amount of water that experience may hereafter indicate as necessary ~~for the production of crops in the exercise of the best husbandry; and further, said appropriation must be limited to not more than one-seventieth (1/70) of one cubic foot of water per second of time for each acre of land to which water is actually used for municipal purposes~~ and beneficially applied for irrigation on or before November 9, 1967; said water to be used during the following described annual period:

Continuous

Witness my hand this 10th day of November, 1966.

State Water Resources Commission

By: Richard D Schroyer
Chief Engineer, Executive Officer

Certificate of Construction issued JANUARY 5, 1971

Water License issued JANUARY 5, 1971

Form 2A — Wells (Supplement to Form 2)

Well No. 34

9. (Continued)

III. Well Specifications

(a) Hole and casing

Size of drill hole or excavation 3 ft. Depth 55 ft.

Type of casing Concrete
(wood, concrete, steel, etc.)

Size of casing 24 in. Thickness of casing 2 in.

Length of casing 20 ft. If collection gallery, length, size and depth of gallery

(b) Screens

Type of perforated screen Johnson Concrete Well Screen

Size of perforated screen 24 in. XX 35 ft.
(diameter) (length)

Thickness of gravel pack 6 in. length of gravel pack 35 ft.

(c) Water Bearing Materials

Distance to water 12 ft. Character of water bearing materials
fine to coarse sand

Thickness of water bearing material 35 ft.

(d) Pump and Motor

Type of pump Layne Turbine
(centrifugal, propeller, mixed flow, etc.)

Name of pump Layne size 800 gpm

Kind of motor Electric
(gasoline, electric, diesel, etc.)

Horsepower 20 Name of Motor G. E.

(e) Complete well

Capacity 700 at drawdown of 15 to 20 Estimated cost \$10,000.00

(f) Owner of land upon which well is located City of Sioux Falls
Name

Sioux Falls, South Dakota
Address

(g) Distance to nearest existing wells

On same owner's property 220 rods. On property owned by others 320 rods

Form 15.

Permit No. 1305-3

Water Diversion No. 3 BIG SIOUX RIVER Water District

CERTIFICATE OF CONSTRUCTION

This is to Certify, That the City of Sioux Falls

_____ the holder _____ of
Permit No. 1305-3, issued upon Application No. 1305-3, bearing date of priority of September 8,
1966 authorizing the diversion of 1.80 cu. ft. per second of the waters of _____
ground water County of Minnehaha, State of South Dakota at _____
a point 1290 ft. South and 264 ft. West of the NE Corner, Section 6, T101N, R49W

_____, for municipal

purposes, has 8 complied with the provisions of the laws of the State of South Dakota relating to proof of
completion of the works of diversion set out and described in said Permit; that said works are found in satisfactory
condition for diverting and conveying to the place of intended use 1.57 cu. ft. per second of water.

Date January 5, 1971

WATER RESOURCES COMMISSION

By:

J.W. GRIMES, Executive Officer

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 1305-3

(1) WHEREAS, On the 8th day of September A. D. 19 66
the City of Sioux Falls

made Water Right Application No. 1305-3 for a permit to use 1.80 cubic feet per second of the waters
of ground water

County of Minnehaha, State of South Dakota, for municipal

purposes; and
(2) WHEREAS, On the 10th day of November A. D. 19 66
Permit No. 1305-3 with a date of priority of September 8, 1966

was issued to said applicant for the diversion of said water, and provided for the completion of construction of the water
supply system therein described on or before the 9th day of May A. D. 19 67 and for the
application to beneficial use of said water on or before the 9th day of November A. D. 19 67

and:

(3) WHEREAS, It is hereby certified that the applicant has complied with the provisions of the laws of the State of South Dakota
relating to completion of the construction of the water supply system and is entitled to divert 1.57 cubic feet
per second of water for beneficial use and,

(4) WHEREAS, It is hereby certified that the applicant has complied with the provisions of the laws of the State of South Dakota
relating to the application of water to beneficial use of the following extent,

water is used for municipal purposes by the City of Sioux Falls

(5) NOW, THEREFORE, By the virtue of the authority vested in us by the laws of the State of South Dakota, We hereby grant and confirm to the City of Sioux Falls

as:
the holder _____ and owner _____ of said permit No. 1305-3 a water right, dating from September 8, 1966
to use of 1.57 cubic feet per second of the waters
of ground water

in the County of Minnehaha and State of South Dakota, or so much thereof as may be necessary for the
purposes hereinbelow mentioned, to be diverted at a point 1290 ft. South and 264 ft. West of the NE
Corner, Section 6, T. 51N, R. 49W

and ~~conducted through the City water distribution system~~

for the purpose of municipal use

Subject to any limitations listed in Water Right Permit No. 1305-3 and subject to the laws of the State of South Dakota.

WITNESS, My hand and seal of our office at Pierre, South Dakota
this 5th day of January A. D.
Nineteen Hundred and Seventy-one

WATER RESOURCES COMMISSION

By:

Chief Engineer, Executive Officer, J.W. GRIMES

on or before
(First Publication October 13, 1966)

APPROPRIATION OF WATER

Office of State Water Resources Commission,

Pierre, S. Dak., September 27, 1966

Notice is hereby given that the City of Sioux Falls

~~XXXXXX~~

~~XXXXXX~~ S. Dak., has made an application in accordance with the provisions of the water laws of South Dakota for a permit to appropriate for beneficial use 1.80

cubic feet of water per second of time from the ~~XXXXXX~~ ground water through the Well #34

~~XXXXXX~~, the point of diversion of which is to be located ~~XXXXXX~~

~~XXXXXX~~ in the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 6

Twp. 101N Range 49W. Said water to be used for the purpose of providing ~~XXXXXX~~

~~XXXXXX~~

municipal supplies for the City of Sioux Falls

~~XXXXXX~~

~~XXXXXX~~

This application will be taken up by the State Water Resources Commission at their office at Pierre for consideration upon the 9th day of November, 1966, at 2 P. M. All interested persons may appear and be heard.

Appropriate action will be taken by the Water Resources Commission after suitable time has elapsed for the consideration of any or all information presented.

State Water Resources Commission

By:

BURTON F. JONES
Water Right Specialist

CC: Mr. W. H. Leopard, Publisher
Argus Leader
Sioux Falls, S.D.

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA }
 County Minnehaha } ss.

W. T. Haggard being duly sworn, deposes and says the annexed printed copy of Notice of Intention to Appropriate Water was taken from the Sioux Falls 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 dates:

Monday October 3, 1966

Monday October 10, 1966

Monday October 17, 1966

Monday October 24, 1966

in each and every issue of the full number thereof, the first publication being made on the 3rd day of October 1966 and the last publication on the 24th day of October 1966, upon which days or times of publication aforesaid the newspaper was regularly published, and that during the whole time of said publication he was comptroller the printer and publisher of the said newspaper.

Subscribed and sworn to before me this 24th day of October A. D. 1966

Notary Public Minnehaha County, S. D.

APPROPRIATION OF WATER
 Office of State Water Resources Commission, Pierre, S. Dak., September 27, 1966.
 Notice is hereby given that the city of Sioux Falls, S. Dak., has made an application in accordance with the provisions of the water laws of South Dakota for a permit to appropriate for beneficial use 1.80 cubic feet of water per second of time from ground water through Well No. 34, the point of diversion of which is to be located in the SE1/4 of the NE1/4 of Section 6 Twp. 101N Range 49W. Said water to be used for the purpose of providing municipal supplies for the City of Sioux Falls.
 This application will be taken up by the State Water Resources Commission at their office at Pierre for consideration upon the 9th day of November, 1966, at 2 P.M. All interested persons may appear and be heard.
 Appropriate action will be taken by the Water Resources Commission after suitable time has elapsed for the consideration of any or all information presented.
 State Water Resources Commission
 BY: BURTON F. JONES
 Water Right Specialist
 CC: Mr. W. H. Leopold, Publisher
 Argus Leader
 Sioux Falls, S.D.
 Oct. 10, 17, 24

Witness my hand and seal
 at Pierre, S. Dak.
 June 30, 1974

Tabulation of applications on application for Water Rights submitted by the City of Sioux Falls during the period August 10, 1956 to January 26, 1957 inclusive.

Vested Rights Completed:

Number	Name of Diversion	Location	Amount of Water claimed c.f.s.
254-3	Stang Well Point System #1.	SW 1/4 SW 1/4 Sec 32 T 102N R 49W	1.55
255-3	Stang Well Point System #2.	NE 1/4 NW 1/4 Sec 5 T 101N R 49W	1.55
256-3	Well No. 3	SW 1/4 SW 1/4 Sec 5 T 101N R 49W	1.11
257-3	Well No. 4	SE 1/4 SW 1/4 Sec 5 T 101N R 49W	2.67
258-3	Well No. 8	NW 1/4 NE 1/4 Sec 7 T 101N R 49W	0.44
259-3	Well No. 10	SW 1/4 SW 1/4 Sec 5 T 101N R 49W	1.33
260-3	Well No. 11	SE 1/4 NW 1/4 Sec 5 T 101N R 49W	1.33
261-3	Well No. 12	SE 1/4 NW 1/4 Sec 5 T 101N R 49W	1.33
262-3	Well No. 13	SW 1/4 SW 1/4 Sec 5 T 101N R 49W	1.55
263-3	Well No. 14	SW 1/4 SW 1/4 Sec 4 T 101N R 49W	1.55
264-3	Well No. 15	NE 1/4 SE 1/4 Sec 5 T 101N R 49W	1.55
265-3	Well No. 16	SE 1/4 NE 1/4 Sec 5 T 101N R 49W	1.55
266-3	Well No. 17	NE 1/4 NE 1/4 Sec 5 T 101N R 49W	1.55
267-3	Well No. 18	NW 1/4 NE 1/4 Sec 5 T 101N R 49W	1.55
268-3	Well No. 19 (Lane)	NW 1/4 NW 1/4 Sec 9 T 101N R 49W	1.00
269-3	Well No. 20	SW 1/4 SW 1/4 Sec 32 T 102N R 49W	1.78
270-3	Well No. 21	NW 1/4 NW 1/4 Sec 5 T 101N R 49W	1.67
271-3	Well No. 22	SE 1/4 SW 1/4 Sec 32 T 102N R 49W	1.67
272-3	Well No. 23	NW 1/4 SE 1/4 Sec 5 T 101N R 49W	1.44
273-3	Well No. 24	NE 1/4 NE 1/4 Sec 5 T 101N R 49W	1.67
274-3	Well No. 25	SE 1/4 NW 1/4 Sec 29 T 102N R 49W	2.00
275-3	Well No. 26	SE 1/4 NE 1/4 Sec 29 T 102N R 49W	1.76
276-3	Well No. 27	SW 1/4 SE 1/4 Sec 6 T 101N R 49W	1.78
			35.40

New Applications on which Permits were granted on November 14, 1956.

Number	Name of Diversion	Location	Amount of Water Claimed
298-3	Well No. 28	NW 1/4 SE 1/4 Sec 6 T 101N R 49W	1.78
299-3	Well No. 29	NE 1/4 SW 1/4 Sec 32 T 102N R 49W	3.12
300-3	Well No. 30	SW 1/4 NW 1/4 Sec 33 T 102N R 49W	3.21
			8.11

New Applications for Permits which are to be considered by the
Water Resources Commission on March 12, 1957.

<u>Number</u>	<u>Name of Diversion</u>	<u>Location</u>	<u>Amount of</u> <u>Water Claimed</u>	
395-3	Well No. 31	SE ¹ SW ¹ Sec 20 T 102N, R 49W	3.12	
396-3	Well No. 32	NW ¹ SW ¹ Sec 20 T 102N, R 49W	3.12	
297-3	Well No. 33	NW ¹ SE ¹ Sec 20 T 102N, R 49W	3.12	9.36
TOTAL				52.87 c.f.s.

**REPORT OF EXAMINATION OF WORKS
AND/OR APPLICATION OF WATER TO BENEFICIAL USE**

(Signature)
DONALD DRISCOLL, Deputy Chief Engineer, W.R.C.



CITY OF SIOUX FALLS UTILITIES



March 25, 1993

Mr. Ron Duvall
South Dakota Dept. of Environment and Natural Resources
Water Rights Division
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

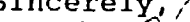
Dear Mr. Luvall

In response to your letter of February 22, 1993, the City of Sioux Falls abandoned Well #34 and replaced that well with one located approximately 15 feet south of Well #34. Sioux Well Drilling installed the new well and abandoned Well #34. I have enclosed information from our files on the new well construction and the abandonment of the old well. Based on the information contained in your letter of February 22, 1993, I believe the City has complied with the requirements for a well owner and I do not believe a water permit is needed for the replacement well.

If you have any questions or need further information,
please contact me.

Sincerely,

Sincerely,



Lyle D. Johnson, PhD, PE
Water/Wastewater Manager

gls;
Enclosure

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

Water Purification
2100 N. Minnesota Ave.
Stouffville, SD 57104
(605) 339-7023

Fax
(605) 338-7801

Water Reclamation
4500 N. Sycamore Ave.
Sioux Falls, SD 57104
(605) 339-7068

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

Hearing Impaired
(605) 339-7039

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

AN EQUAL OPPORTUNITY EMPLOYER

1305-3

DeWild Grant Reckert & Associates Co.
Architecture Engineering and Planning

715 First Avenue
Rock Rapids, Iowa 51246
(712) 472-2531

August 25, 1988

Lyle Johnson
Utilities Department
City Hall
224 W. 9th St.
Sioux Falls, SD 57102

Re: 1987 Well Field Expansion
DGR File No. 3726

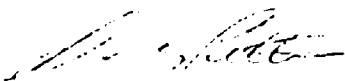
Dear Lyle:

Per my telephone conversation with Doug Holden yesterday, we enclose logs for the three test holes by Sioux Well Drilling near Well 34. The production well was completed at a depth of 39 feet. Twelve feet of 12" dia. screen with 0.120" slots was installed. The bore hole diameter was 20" and the annulus was gravel packed with Eau Clair No. 15. The static water level was at 9 feet below grade and the design pumping rate is 630 gpm.

Please contact me if you need any further information on this well.

Sincerely,

DEWILD GRANT RECKERT
& ASSOCIATES COMPANY


Gary Patton, P.E.

GR:jkv

Enclosure

cc: Doug Holden

1100 West 30th Avenue
Council Bluffs, Iowa 51501
(319) 333-1111

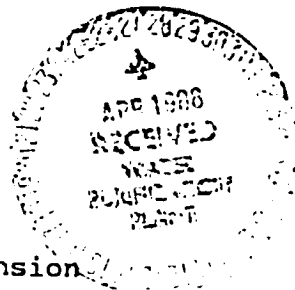
1051 Office Park Road
West Des Moines, Iowa 50265
(515) 275-0116

600 Sioux City Federal Plaza Bldg
Sioux City, Iowa 51101
(712) 277-3049

1113 East 14th Street
Sioux Falls, South Dakota 57104
(605) 339-4157

1305-3

MEMO TO: File 3726.6, 3726.123
FROM: Gary Patton
DATE: 4/22/88
RE: 1987 Sioux Falls Well Field Expansion
Schedule 3 - Well Construction



This summarizes my conversations with Wayne Wagner on April 20 and 21.

1. Test Hole 43 was drilled about 25 feet south of Well 34. The depth was 40', with a static water level of 9'. The sieve analysis indicated a 70% retained size of approximately 0.030" in the zone to be screened, with similar or coarser material above.
2. Eau Clair #15 gravel pack will be used with 12' of 120-slot Johnson Hi-Q screen. The screen should be available by Tuesday, 4/26.
3. The well location will be about 10' north of T.H. 43 (about 15' south of old Well 34). I will review this location with Larry Doss and Doug Holden on Monday, 4/25.
4. A standard-length pitless unit (6' bury) will be used, since the well site is protected from a 100-year flood. The pump and motor will be selected and ordered as soon as the pumping test is completed.
5. I told Wayne that at least four material samples should be taken at each test hole and that sieve analyses should be provided for each sample. I also indicated that he should pull water samples from the 2 observation wells installed near old Well 34 and deliver them to the water purification plant lab.
6. Wayne said he had not yet pulled Test Well I and had not started the test holes on the 30-acre City property. He had equipment problems and other work scheduled earlier this week. He anticipated getting T.W. I pulled and started on the test holes late this week. I informed him that the renter (Brian Peterson) on the City property would disc the field but leave a 50' strip around the perimeter, 100' inside the property line.

Respectfully submitted,

By _____
Gary Patton, Project Engineer

cc: Larry Doss
Richard Willer

1305-3

MEMO TO: File 3726.12
FROM: Gary Patton
DATE: April 13, 1988
RE: 1987 Sioux Falls Well Field Expansion
4/7/88 Field Trip and Follow-Up

I met Doug Holden and Wayne Wagner at the City well and control building property acquired from Maurice Oien.

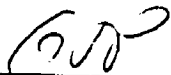
1. I indicated that I would flag a number of locations for test holes on the site, concentrating on the east side. I later returned to the site and flagged the locations shown on the attached map.
2. Doug took us to Well 34.
 - a. The well was constructed of precast concrete screen and casing. A below-grade meter/valve vault was constructed, with the edge of the well casing exposed at the south side of the vault. A lineshaft turbine pump was installed with below-grade discharge into the vault, through an opening in the casing. The pump and meter were removed several years ago when the well was taken out of service.
 - b. The cement block well house was constructed with a larger floor area than the vault, with the north, west and east walls three to four feet outside the vault walls. Electrical and telephone (telemetry) service is still in place.
 - c. With some improvements, the well house and vault appear to be usable to house the electrical, control and metering equipment for the replacement well. The old well casing should be properly filled and sealed. The discharge line from the new well could be run through the old well casing at the north side of the vault. A connection could be made to the existing 10 inch or 12 inch discharge piping exiting the south side of the vault.
 - d. Two test hole locations adjacent to Well No. 34 were identified, about 25 feet and 100 feet north of the well house. Wayne anticipated he could drill them as early as Saturday, 4/9. Wayne will first contact utilities with underground lines in the area, including Minnegasco, City Light and Power (Jim Mergan) and NW Bell.

1305-3

- e. Existing 5 inch steel observation wells are available within about 300 feet north and south of Well 34. A 2 inch PVC observation well with USGS markings is available several hundred feet farther ~~north~~, on top of the dike.

I called Wayne Wagner today for a progress report. He has completed the two test holes near Well 34. Depth was about 40 feet on both and the material looked good, with good fluid loss. Samples have been sent to Johnson for sieve analysis. Wayne will contact me with screen and gravel pack selection as soon as gradations are available.

Test hole abandonment has been completed, except for O.W. 12 and T.W. "I" on the Swartz property. Wayne said these would be completed today. He will then move to the City property in Section 4 to drill the 10 flagged locations.

By 
Gary Patton, P.E.

GP:jkv

cc: Richard Willer
Larry Doss

1305-3

MEMO TO: File 3726.6, 3726.44
FROM: Gary Patton
DATE: May 4, 1988
RE: 1987 Sioux Falls Well Field Expansion
Schedule 4 - Control Building

Following are our notes and follow-up recommendations regarding the final plan review meeting for the above-referenced project, held on April 29, 1988. Dick Willer and Doug Holden met with John Madden, Bruce Jennings and me.

1. Four copies of preliminary draft Contract Documents were provided: 1 review set each for Dick, Larry and Doug and 1 set for the Finance Department for a bid request number. It was noted that the updated architectural divisions (3 thru 9) were not included, but would be substantially the same as for the 1986 project.
2. Alternatives to orifice plates for flow control under low-head conditions were discussed. With potential energy savings of only about \$1,000 per year, the \$30,000 to \$40,000 cost of automatic valves or variable speed drives could not be justified economically.

Manual throttling valves were suggested. It was agreed, however, that the need for frequent throttling changes would be reduced if the 1987 wells are designed to pump at closer to sustained-yield rates than the 1986 wells.

3. The potential use of 6-inch well collector lines was discussed. DGR will determine whether probable well pumping rates can economically be handled with 6-inch lines. The header line may also be made smaller than 16-inch.
4. At Doug Holden's suggestion, it was agreed that the following building modifications would be made:
 - a. A low-range thermostat will be provided for the heat pump so the upper level temperature can be maintained as low as 45°.
 - b. Larger recessed handles on the exterior doors will be specified for ease of operation.
 - c. A restroom will be provided in the upper level behind the stairwell. Waste will be collected in an exterior holding tank of approximately 500 to 1000 gallon capacity. The access hole for pump-out will be at least 12-inch diameter. The driveway will extend to the holding tank area.

1305-3

5. It was agreed that riprap would be used on the berm slopes around the building, with smaller stone sizes than used at the 1986 site.
6. Dick indicated that he would send us sample specifications for dedication plaques. Two plaques each will be specified for the 1986 and 1987 buildings; one listing City officials and one pertaining to the financing authority.
7. The exploratory work on the 30-acre parcel in Section 4 has not begun, so the control building site was selected on the basis of anticipated well locations. The attached map shows the locations of the two existing and three anticipated wells and the chosen location for the control building. No provision will be made in the Contract Documents for an access road to the site. DGR will schedule the topographic survey and foundation drilling at the earliest possible date.
8. Dick will send us an updated set of the City's General Provisions and any other City front-end documents which may have been updated in the past 12 months.
9. Paragraph SI-6 on page SI-2 of the Special Information section will be deleted.
10. The fiber optic telephone cable adjacent to the site is believed to be owned by Sprint. This will be confirmed and the appropriate listing will be added in Section 01095 under utility contacts.
11. Craig Overfield will be contacted by DGR to confirm Light Department power supply to the proposed control building, as well as construction-period service. Ultimate installed well pump horsepower is not expected to exceed 160 h.p. for an eventual 8 wells (5 initial).
12. The possible replacement of the access hatch with removable grating was discussed. It was decided to use a hatch and separate return air grilles to the lower level, as done in the 1986 building.
13. The additive-rate controller for the chlorination system will be cabinet-mounted in the control room.
14. The well control and power system will include equipment similar to the 1986 building. The motor control center will be designed with five wells present and three wells future. Present wells will be bid as 20 hp pending further definition of well locations and flow rates.

15. One three-phase power monitor on the service entrance will be used to replace the individual "subtrol" power monitors on each well. The subtrol monitors have not been reliable in the 1986 building. The power monitor on the service entrance, interlocked to each pump control circuit, will provide low voltage, phase unbalance and phase reversal protection equal to that of the subtrol units. Quick trip starter overload elements will be provided to protect the submersible motors against overheating and overcurrent. The flow switch in the individual well lines in the control building will protect against operation with pump malfunction such as a broken shaft.
16. Telemetry equipment with limited present capability and greater future capability will be provided as a part of the project. Initial telemetry capability will be to start individual wells from the water treatment plant and to receive back an individual run signal for each well. This remote capability will be wired to the existing well control panel at the water plant.

The existing Healy-Ruff or Dynamic Systems reservoir telemetry master will be used at the water plant for communication. Cards will be added to one of these masters if required, to accomplish the well start and well run telemetry operations.

Provision will be made for future telemetry of alarms, flow rates and well levels. This information will not be displayed at the water plant at this time. A terminal strip will be provided for future connection of well operation information to a future master display. The analog addressing system will be provided with this contract to the extent necessary to provide simplified future coordination. Telemetry will be bid as add alternates, with telemetry provided at the 1987 building only or at both the 1987 and 1986 buildings.

Dynamic Systems will be bid as the base control system for the 1987 building in order to provide maximum operation and maintenance standardization between the buildings. Healy-Ruff will be invited to submit a proposal for approval as equal supplier. As a minimum, Healy-Ruff will be required to provide operational equivalence to the 1986 building and in accordance with design drawings and specifications. To the maximum extent possible, similarity of components to the 1986 building will be required in order to minimize spare parts inventories. In any case, it will be important to have spare parts commonality between this project and the other city Healy-Ruff equipment.

1305-3

17. The following schedule was established for Schedule 4:

Delivery of Contract Documents	- May 18
to Dick Willer	- May 27 and June 3
Publish	- June 13
Open Bids	- January 27, 1989
Completion Date	

18. Well No. 34 replacement was discussed. Sioux Well Drilling will abandon the old well for the \$1,200 unit price established in Change Order No. 2. They will also stub cut 20' of 6" PVC from the pitless unit in accordance with the contract documents. City crews will furnish and install the pipe and fittings between the stub-out and the old well pit and will install the piping and appurtenances in the pit. Doug plans on pigging the 12" line from Well 21 to the pit before completing the pit piping. It was decided that any additional wells south of No. 34 would have individual meter pits and be tied in to collector lines individually.

DEWILD GRANT RECKERT
& ASSOCIATES COMPANY

By GJP
Gary J. Patton, P.E.

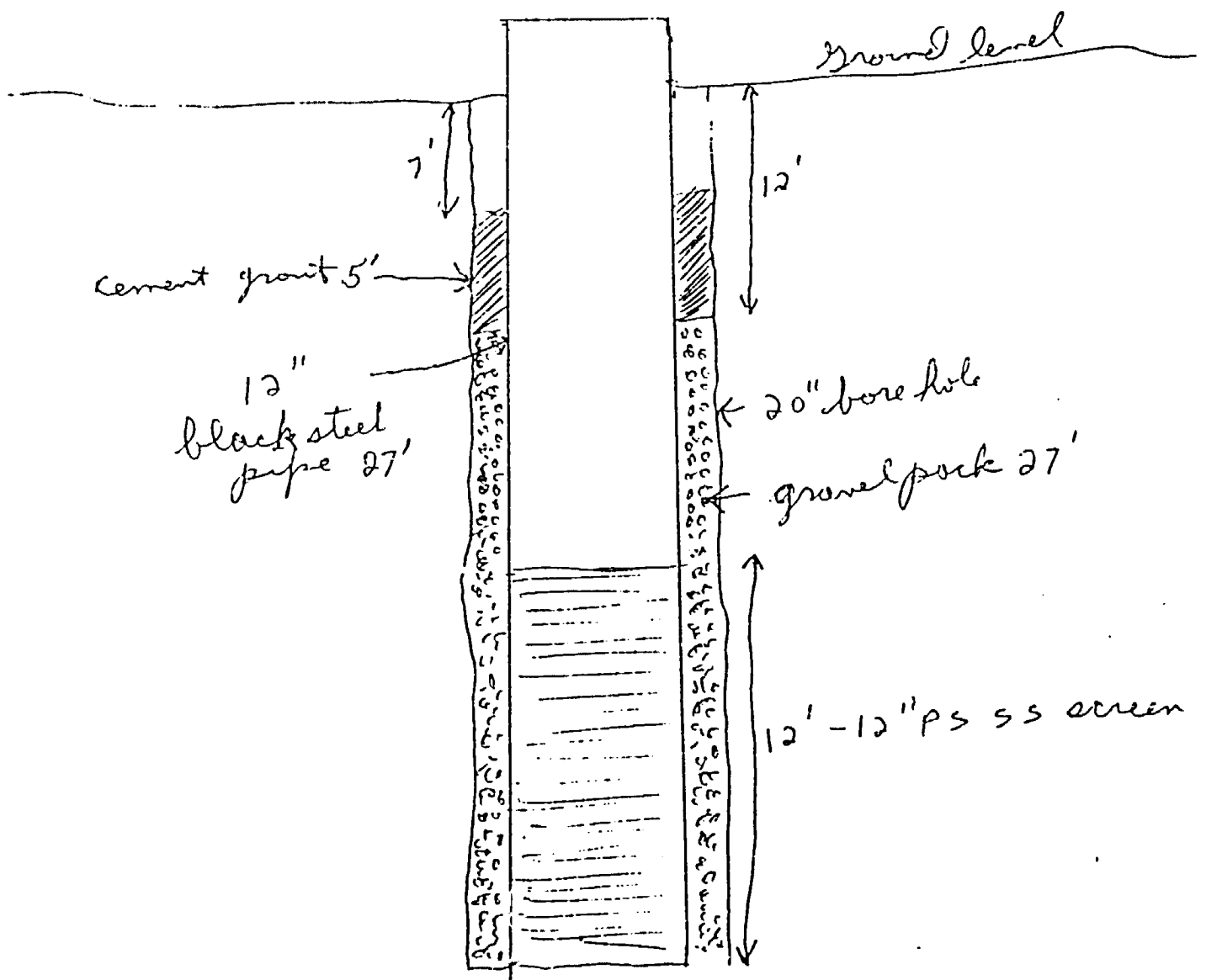
GJP:kld

cc: Richard A. Willer
Larry Doss
Doug Holden
Craig Overfield
Gary Meyer

2/20/11 5:41

1305-3

WELL DRILLING CO.
1401 E. 13th St. N.
DENVER, CO. 80202



Depth of well 39'
from ground level

1951 10-11-51 34 Well

1305-3
FBI IN SUMMER 1188

STATE OF MINNESOTA
DEPARTMENT OF HEALTH
WATER WELL RECORD
Minnesota Form No. 1-6-61-100

MINNESOTA SINGLE WELL NO.
For Water Supply

1. PROPERTY OWNER'S NAME
Address
airport
City of Sioux Falls.

2. WELL DEPTH (feet)
39

3. USE
☐ Domestic ☐ Public Supply ☐ Industry
☐ Irrigation ☐ Municipal ☐ Unimproved
☐ Feed Water ☐ Air Conditioning ☐

4. CASING
☐ Steel ☐ Threaded ☐ Cast Iron ☐ Concrete
☐ Galv. ☐ Fiberglass ☐ Plastic
Height: Above Ground _____ ft.
Below Ground _____ ft.
Date Installed _____
Type _____
Size _____
Length _____
Fittings: _____

5. STATIC WATER LEVEL
9' _____
Date Measured _____

6. PUMPING LEVEL (under load surface)
_____ ft. after _____ hrs. pumping _____ g.p.m.
_____ ft. after _____ hrs. pumping _____ g.p.m.

7. WELL HEAD COMPLETION
☐ Screen, adapter, manufacturer _____
☐ Screenless effort ☐ At least 10' above ground

8. WELL GROUNDED?
☐ Yes ☐ No
☐ No. of Cables _____
Ground material _____
Date _____
R. Co. Yes _____

9. NEAREST SOURCE OF POSSIBLE CONTAMINATION
_____ (well) _____ direction _____ type
Well constructed upon completion? Yes ☐ No ☐

10. PUMP
Date installed _____
Manufacturer's Name _____
Model Number _____ HP _____
Length of drop pipe _____ ft. (approx) _____
Material of drop pipe _____
Type: ☐ Submersible ☐ L.E. Turbine ☐ Surface pump
☐ Jet ☐ Windmill ☐

11. 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
License Number _____
Address _____
Signed _____ Date _____

1. FORMATION LOG
COLOR
HARDNESS OF
FORMATION
FEET
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			

Legal Description:
S 1/2, E 1/2, NE 1/4, ^{East} West of Big Sioux River, 6-101-49

SEP 30 1951
DIVISION OF
WATER RESOURCES
MINNESOTA

REMARKS, ELEVATION, SOURCE OF DATA, etc.
Big Sioux Agency App.

WORK COPY

100-44388-100

of 1000	Amount of 1000	of 1000	of 1000

[illegible]

S $\frac{1}{2}$, E $\frac{1}{2}$, NE $\frac{1}{2}$, ^{East} ~~West~~ of Big Sioux River, 6-101-49

Use a second sheet, if needed

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

SEP 19 1943

NATIONAL BUREAU OF STANDARDS

Big Sioux Agency

WORK COPY

13. NEAREST SOURCES OF POSSIBLE CONTAMINATION

_____ feet _____ on surface _____ 1000

Will steam be used to clean the equipment? Yes ☐ No ☐

14. PUMP

Is it installed _____ ☐ Not installed

Manufacturer's Name _____

Model number _____ HP _____ VPH _____

Length of drop pipe _____ ft. Capacity _____ gals/hr.

Material of drop pipe _____

Test: ☐ Submergible ☐ L & L Turbine ☐ Air pump going

☐ Not ☐ Connected ☐ _____

15. WATER WELL CONTRACTOR'S CERTIFICATION

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

George Shell Drilling

Contractor's Name

George Shell

License No.

* Address _____

* City _____

* State _____

Approved _____ Date _____

Authorized Representative

Date _____

1305-3

STATE OF MINNESOTA
 DEPARTMENT OF AGRICULTURE
WATER WELL RECORD
 Minnesota Form 1305-3 (1-6-60)

1. NAME OF WELL: _____

2. LOCATION OF WELL: _____

3. DATE OF INSTALLATION: _____

4. NAME OF INSTALLER: _____

5. NAME OF OWNER: _____

6. ADDRESS: _____

7. CITY: airport

8. COUNTY: city of Swain Falls

9. WELL DEPTH (in feet): 38

10. DATE OF COMPLETION: _____

11. USE: _____

12. Casing: _____

13. Static Water Level: _____

14. Pumping Level: _____

15. Well Head Completion: _____

16. Well Grouted: _____

17. EST. SOURCE OF POSSIBLE CONTAMINATION: _____

18. WATER WELL CONTRACTOR'S CERTIFICATION: _____

1. FORMATION LOG:

FORMATION LOG	COLOR	THICKNESS OF STRATA (ft.)	FROM	TO
top soil	black		0	2
clay	brown		2	7
sand M	colored		7	13
sand M to C	"		13	20
sand C	"		20	25
sand M to C	"		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.			
Correct Legal:				

2. REMARKS: ELEVATION SOURCE OF DATA, etc.

3. SIGNATURE: Don't Ciguy

4. WORK COPY

SEP 1968
 DIVISION OF
 WATER RIGHTS
 Pierre, SD

1305-3

SECTION 02675

DISINFECTION AND ABANDONMENT

PART 1 - GENERAL

1.01 SCOPE:

- A. The GENERAL, SUPPLEMENTAL and other CONDITIONS of the Contract and the GENERAL REQUIREMENTS (Division 1) are hereby made part of this Section.
- B. This Section includes all labor, materials, tools, equipment and related services necessary to disinfect and or abandon observation wells and production wells.
- C. Related requirements specified elsewhere:
 - 1. Test Hole Drilling and Observation Wells: Section 02671.
 - 2. Production Wells: Section 02672.

1.02 PAYMENT:

- A. Payment shall be at the Contract unit prices and lump sum prices as shown on the Bid Schedule.

PART 2 - PRODUCTS

- A. Disinfecting Agents:
 - 1. Calcium Hypochlorite- 70 percent chlorine.
 - 2. Liquid Sodium Hypochlorite - 12 percent chlorine.
 - 3. Purex, Clorox, etc. - 5.25 percent chlorine.

PART 3 - EXECUTION

3.01 TIME OF DISINFECTION:

- A. After each observation and production well has been completely constructed, it shall be thoroughly cleaned of all foreign substances, including tools, timbers, rope, debris of any kind, cement, oil, grease, joint dope and scum.
- B. The casing pipe shall be thoroughly swabbed, using alkalies if necessary, to remove oil, grease, or joint dope.

1305-3

- C. The well shall then be disinfected with a chlorine solution.
- D. Disinfection procedures are to be conducted for both the observation wells and the production wells.

3.02 CHLORINE SOLUTION:

- A. The chlorine solution used for disinfecting the well shall be of such volume and strength and shall be so applied that a concentration of at least 200 ppm of chlorine shall be obtained in all parts of the well.

- 1. Chlorine Compound Required to Dose 100 Feet of Water-Filled Well at 200 ppm

Nominal Casing diameter (inches)	Approx. Volume 100 ft. (gals)	Chlorine Compounds	
		70% HTH Perchloron, etc. (dry weight)*	5.25% Purex Clorox, etc. (liquid measure)
2	16	1 oz	8 ozs
4	65	4 ozs	2-1/4 pts
6	146	8 ozs	5 pts
8	261	12 ozs	8-1/2 pts
10	408	1 lb	1-3/4 gals
12	587	1-1/2 lbs	2-1/2 gals
16	1,044	2-1/2 lbs	4 gals
20	1,632	4 lbs	6-2/3 gals
24	2,350	6 lbs	9-1/3 gals

Note: Liquid sodium hypochlorite in a 12 percent solution is often sold for water and wastewater treatment plant use, as a commercial bleach, or for use with swimming pools. Utilizing a solution of this nature would call for a liquid measure equal to one-half the volumes for 5.25% Purex, Clorox, etc.

*Where a dry chemical is used, it shall be mixed with water to form a chlorine solution prior to placing it into the well, expecially when introduced into PVC casings.

- B. Chlorine solution shall be prepared and applied in accordance with the directions of, and to the satisfaction of, the Engineer, and shall remain in the production well for a minimum of 24 hours prior to removal by pumping. The chlorine solution need not be removed from observation wells.
- C. After the above specified chlorination the Contractor shall obtain bacteriological samples from the production wells for analysis. If satisfactory results are not obtained the Contractor will immediately re-chlorinate the well at his own expense and obtain additional bacteriological tests until satisfactory results are obtained.

3.03 REQUIREMENTS FOR DISINFECTION OF PUMPING EQUIPMENT:

- A. In the event that the test pump is to be installed after the well has been disinfected, all interior and exterior parts of the pump and discharge piping coming in contact with the water shall be thoroughly washed with a 10 percent chlorine solution using methods to be approved by the Engineer.

3.04 WELL ABANDONMENT:

- A. In the event that the Contractor fails to sink the well to the depth specified or to such depth as ordered by the Engineer, or should he abandon the well because of loss of tools, negligence, or for any other cause, he shall, if required and as directed by the Owner, and at his own expense, fill the abandoned hole and remove any casing and materials installed therein. Salvaged material furnished by the Contractor shall remain his property.
- B. Upon the request of the Owner, the Contractor shall properly abandon any and all associated observation wells and temporary test wells for the unit price quoted.

3.05 PERMANENT ABANDONMENT OF WELLS:

- A. A well that is to be permanently abandoned shall be filled to prevent contaminating materials from entering the water-bearing ground formations. Concrete or cement grout shall be used for sealing material; however, if the well is so large that the use of these materials is not practical, the filling materials should be selected so as to restore natural conditions as nearly as possible. Sand and heavy drilling fluid may be used in sand and gravel sections of wells.

- B. All materials debris and obstructions that may interfere with sealing operations shall be removed from the well. Liner pipe shall be removed or perforated when necessary to assure placement of an effective seal. The State agency which regulates well construction will be consulted for instruction in case of abandonment of a contaminated well or where there is a question of proper procedure.
- C. All casing and screen may be salvaged except casing that has been cemented in place. The well shall be filled with appropriate sealing materials.
- D. The top of the hole shall be filled with 10 feet of concrete grout to within 2 feet of the land surface. Casing remaining in the hole shall be cut off at least 2 feet below land surface. The remaining top 2 feet of hole shall be filled with native top soil.
- E. An abandoned well shall be filled and sealed by one of the following methods in accordance with the materials penetrated, in such a manner as to prevent it from acting as a channel for pollution:
 - 1. A well in unconsolidated deposits shall be filled with clean sand and puddled clay or concrete grout to provide a permeability no greater than the natural condition.
 - 2. The section of a well in a cavernous or creviced rock (such as cavernous limestone or basalt lava crack, creviced granite, etc.) shall be filled with concrete grout or alternate layers of concrete grout, gravel or stone aggregate. The filling shall be completed at the top by a layer of cement grout extending at least ten feet (10 ft.) into the above overlying formation.
 - 3. When concrete grout, puddled clay or heavy drilling fluid is used for sealing an abandoned well, it shall be inserted in the well through a grout pipe from the bottom of the well upward to the surface under pressure and in one continuous operation.
 - 4. Test wells shall be sealed to prevent the well from being a channel for the vertical movement of water and a source of contamination to the groundwater supply.
- F. Abandon observation wells installed under this contract, as well as existing observation wells installed by others, as directed by the Engineer.

3.06 CLEANUP:

1305-3

- A. The Contractor shall fill and level the mud pits and shall remove all debris and leave the site in a clean condition satisfactory to the City.
- B. Upon completion of the Work, the site shall be restored as nearly as possible to its original condition, including the replacement, at the Contractor's sole expense, of any facility or landscaping which has been damaged beyond restoration.

* * * END OF SECTION * * *



1305-3

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE SOUTH DAKOTA 57501-3121

February 22, 1993

Lyle D. Johnson, Water Manager
Utilities Department
224 W. 9TH Street
Sioux Falls, SD 57102

Dear Mr. Jonnson, Water Manager:

A well driller's report filed by Sioux Well Drilling indicates that you have a replacement well for well permit 1305-3 (well #34). The replacement well does not require obtaining another water permit if:

- 1) The replacement well is located within 660 feet of the existing well and does not increase the potential for interference with other diversions;
- 2) The replacement well is completed into the same water source with no increase over the developed diversion rate of the original well; and
- 3) The original well is no longer used for municipal purposes.

As a new well owner, you need to be aware of some of your responsibilities. Enclosed is a copy of "Well Owner Responsibilities". Please review these responsibilities to ensure you are complying with all of the requirements. The original well also needs to be plugged according to the SD Well Construction Standards if the well is abandoned. If the old well is not going to be abandoned, but will not be used, the well must be sealed or capped at the surface until such time that it is used.

Please use the enclosed postage free envelope or contact Barry McLaury (605-773-3352) by March 12, 1993 to inform us whether or not you believe you need a water permit for the replacement well.

Very truly yours,

RON DUVAL, Natural Resources Engineer
for JOHN HATCH, Chief Engineer
Water Rights Division
enclosure

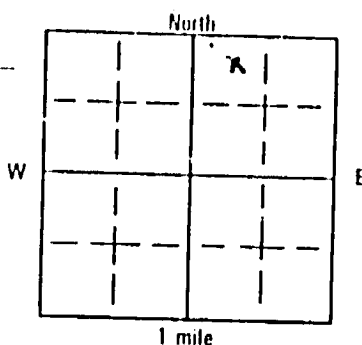
SOUTH DAKOTA WATER WELL COMPLETION REPORT

1305-3

10-85

Location 1/4 NE 1/4 Sec 17 Twp 102N Rg 49WCounty Minnehaha

Please mark well location with an "X"

Well Completion Date July 92

PROPOSED USE

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

Method of Drilling

False casing

CASING DATA

☐ Steel ☒ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u>200</u> LB/FT	<u>16</u> IN	<u>0</u> FT	<u>31.6</u> FT	<u>20</u> 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? 14 FEETWhat is grouting material? Cement

If cement, number of sacks? _____

Describe grouting procedure gravity feed thru
tee pipe

What was grout weight? _____ LB/GAL

SCREEN: ☐ Perforated pipe ☒ ManufacturedDiameter 16 IN Length 10 FEETMaterial PVCSlot Size 1/4" Set From 31.6 Feet To 41.6 Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Slot Size _____ Set From _____ Feet To _____ Feet

Other information 5' blank pipe below
screenWas a nacker or seal used? ☐ YES ☒ NO

If so, what material? _____

Describe packer(s) and location? _____

Was well disinfected upon completion? ☒ YES ☐ NOExplain chlorine solution thruout wellBacteriological analysis ☒ YES ☐ NOLaboratory sent to City of Sioux Falls

Well Owner

Name City of Sioux FallsAddress same

Well Log

Formation

Depth

Formation	From	To
<u>top soil</u>	<u>0</u>	<u>5</u>
<u>clay</u>	<u>5</u>	<u>14</u>
<u>sand</u>	<u>14</u>	<u>41.6</u>
<u>clay</u>	<u>41.6</u>	<u>46.6</u>

STATIC WATER LEVEL 14' 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 air lift 200 to☐ Bailed Describe: 250 GPM☒ Other _____

Pumping Level Below Land Surface

_____ ft. After _____ Hrs. pumped _____ GPM

_____ ft. After _____ Hrs. pumped _____ GPM

_____ ft. After _____ Hrs. pumped _____ GPM

REMARKS: replacement well for well
34This well was drilled under license # 109

And this report is true and accurate.

Drilling firm Sioux Well Drilling

Signature of License Representative:

Wayne H. Wagner

Signature of Well Owner:

Date _____