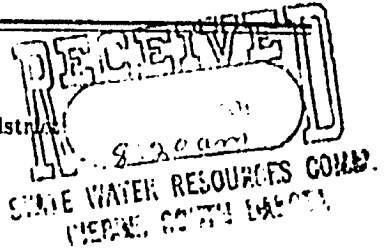


1056-3

1. Considered 9.5, 1963
2. Name of Applicant Wm. C. Ruppel
3. Post Office Address BERESFORD
4. Amount of water claimed 20
5. Source of water supply Artesian Water
6. Water to be used for IRRIGATION (FUTURE USE)
Acres to be irrigated ---
7. Water to be diverted and used in UNION County about
2 miles 5 of BERESFORD
8. Proof of Publication Received X
Not Received ---
9. Application Approved ---
Subject to ---
Not Approved ---
Action deferred ---
10. Remarks:

No. 1056-3
 Water Division No. 3 VERMILION RIVER District
 (Blanks to be Filled by the Engineer for the W. R. C.)



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

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

1. Name of applicant City of Beresford
 Postoffice address Beresford, County Union, State South Dakota

- I. If a corporation _____
 (a) Name of same City of Beresford
 (b) Date and place of incorporation _____
 (c) Amount of capital stock _____
 (d) Amount paid in _____
 (e) Names and addresses of directors Mayor and City Council

(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)

 (b) Cash on hand, \$ _____ (c) Treasury stock, \$ _____
 (d) Bonds to be issued, \$ _____ (e) Other resources, \$ _____

2. Name of diversion work Beresford Municipal Water Supply Facilities
 3. Amount of water claimed two (2) cubic feet per second future supply
 4. Source of water supply shallow underground aquifer
 5. Location of point of diversion Sections 1, 2 and 11, T 95N, R 50W and Sections 19 and 20, T 95N, R 49W on _____ bank Union County.
 6. Annual period or periods during which water is to be used January 1 to January 1
 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.) All municipal purposes for City of Beresford, South Dakota

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

- (a) Nature of use _____
 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 _____

MAP No 696-3

8. Estimated cost of work:

(a) Head Gates, \$.....

(b) Pumping plant, \$.....

(c) Fluming, \$.....

(d) Canal-earth, \$.....

Rock, \$.....

(e) Other structures\$.....

Total, \$.....

9. Description of diversion works:

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

II. Dimensions of works.

(a) Dam: Height.....feet; length at bottomfeet; length at topfeet; thickness at bottomfeet; thickness at topfeet; slope at front water face; slope at back face material used in construction

(b) Reservoir: Capacity when filledacre feet. Surface area at highwater mark.....acres.

DEPTH AT LET-OFF	SURFACE AREA AT EACH.....FEET DEPTH AT OUTLET--ACRES	ACRE-FOOT 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 work20.....years.

11. Time required for complete application of water to the proposed beneficial use20.....years.

12. Choice of newspaper for publication of notice of intention to appropriate

STATE OF SOUTH DAKOTA

County of

ss.

I, A. O. Steensland, Mayor

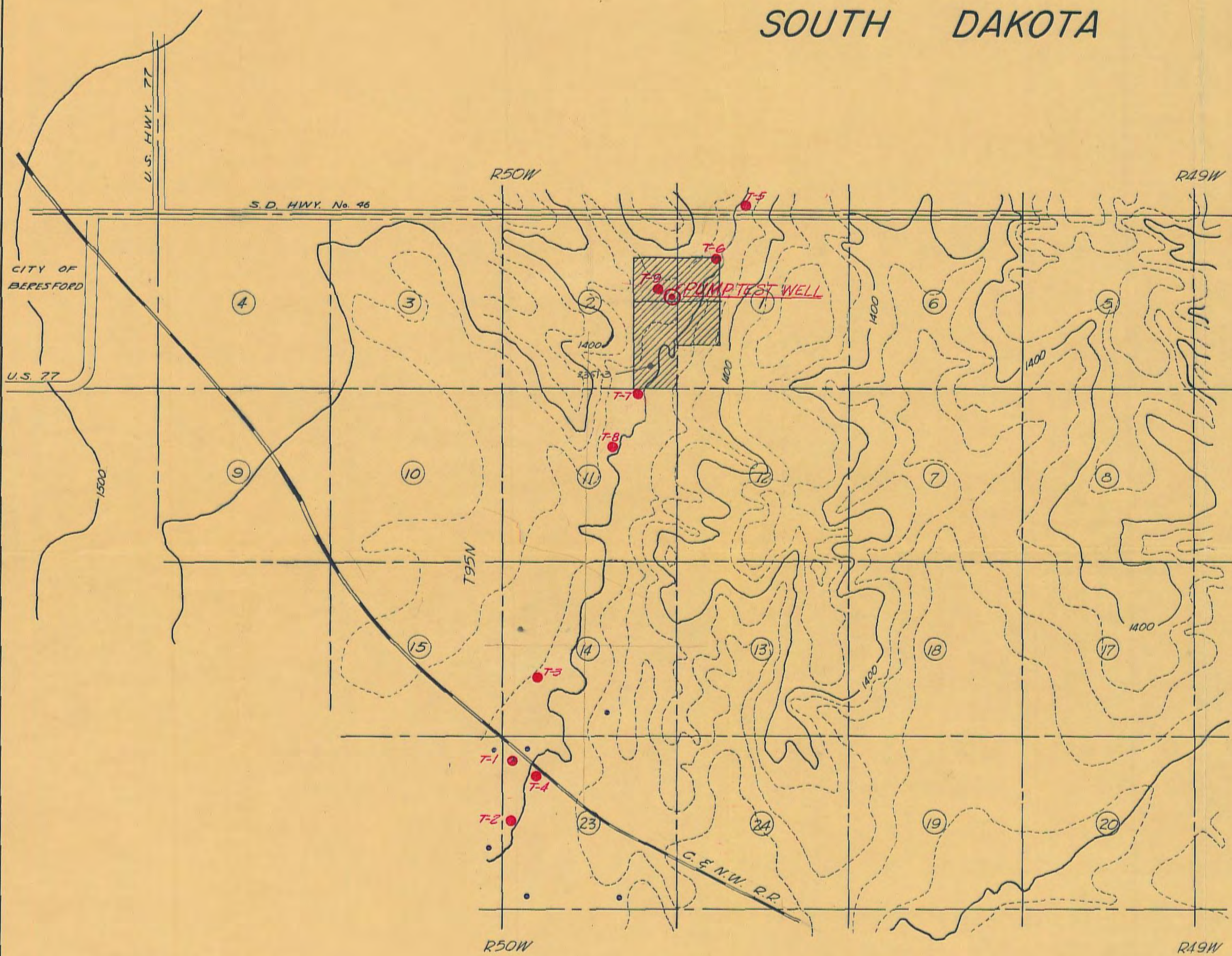
being first duly sworn on my oath depose and say: That my relation to the above described undertaking is that of owner, that I have read the above foregoing statement, examined the map accompanying the same, and that I know of my own personal knowledge that the matters therein stated and shown are true.

Signed

Subscribed and sworn to before me this14..... day ofMarch..... 1913.

Notary Public (or other qualified officer.)

UNION COUNTY
SOUTH DAKOTA



SCALE: 1" = 2000'

- TEST WELLS BY CITY OF BERESFORD
- TESTS BY SOUTH DAKOTA GEOLOGICAL SURVEY



AREA REQUESTED FOR FUTURE WATER RIGHTS INCLUDE:
SE 1/4, NE 1/4, S 2, THE E 1/4, SE 1/4, S 2, THE SW 1/4, NW 1/4, S 1,
AND THE NW 1/4, SW 1/4, S 1. ALL IN T95N, R50W, S 1 R.M.

SURVEYOR'S CERTIFICATE

STATE OF SOUTH DAKOTA
COUNTY OF BROOKINGS S.S.

I, Calvin Vaudray, a Registered Land Surveyor, in the State of South Dakota, do hereby certify that, at the request of the City of Beresford, South Dakota, I did prepare this plot on this sheet from existing information and that said plot is a true representative of the tract of land for which application for future water rights is made.

In witness whereof, I have hereunto set my hand and seal this 11th day of March, A.D. 1963.

Calvin Vaudray
Registered Land Surveyor

STATE OF SOUTH DAKOTA
COUNTY OF BROOKINGS S.S.

On this day, before me, the undersigned, a Notary Public within and for said State and County, personally appeared Calvin Vaudray, known to me to be the person who executed the foregoing Surveyor's Certificate and acknowledged to me that he executed the same.

Witness My Hand and seal this 11 day of March, A.D. 1963

John L. Smith
Notary Public

My Commission Expires _____

WATER RIGHTS MAP	
CITY OF BERESFORD SOUTH DAKOTA	
SHOWING LOCATION FOR FUTURE WATER RIGHTS	
J. T. BANNER & ASSOCIATES, INC., ENGINEERS, BROOKINGS, SOUTH DAKOTA	
APPROVED _____	FOR _____
DATE _____	
APPROVED _____	FOR J. T. BANNER & ASSOCIATES
DATE _____	
CHECKED BY _____	DRAWN BY _____
DATE _____	SHEET _____ OF _____

Map # 696-3 (w/ 1054-3)

Remarks by State Water Resources Commission:

This well is located near domestic wells which may obtain water from the same aquifer. If the well covered by this permit to appropriate water depletes the domestic water supply, restrictions, to the extent necessary, of the capacity of this well or periods of operation or other arrangements may be required to protect the domestic water supply.

STATE OF SOUTH DAKOTA
County of Hughes ss.

Pierre, South Dakota, May 8, 1964

This is to certify that the foregoing application was received by the Commission at 8:20 o'clock a m. upon the 15th day of March, 1963

State Water Resources Commission

By:

Durston J. Jones
for Chief Engineer, Executive Officer

Number of permit 1056-3

Date of first receipt of application March 15, 1963

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 March 15, 1963

Approved May 6, 1964, Recorded in Book 8, 183

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 _____

November 6, 1966

2nd. The whole of said work is to be completed on or before May 6, 1969

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

May 6, 1969

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

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 1.8 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 May 6, 1969; said water to be used during the following described annual period:

continuous

Witness my hand this 8th day of May, 1964

State Water Resources Commission

By:

George G. Grier

Chief Engineer, Executive Officer

Certificate of Construction is to NOVEMBER 9, 1970

Water License issued NOVEMBER 9, 1970

STATE OF SOUTH DAKOTA

WATER LICENSE NO. 1056-3

(1) WHEREAS, On the 15th day of March A. D. 19 63
the City of Beresford

made Water Right Application No. 1056-3 for a permit to use 1.8 cubic feet per second of the waters
 of ground water
 County of Union, State of South Dakota, for Municipal
 purposes; and

(2) WHEREAS, On the 8th day of May A. D. 19 64
 Permit No. 1056-3, with a date of priority of March 15, 1963
 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 6th day of May A. D. 19 69 and for the
 application to beneficial use of said water on or before the 6th day of May A. D. 19 69

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 1.12 cubic feet
 per second of water for beneficial use.

(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 Beresford

(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 Pierre~~ the City of Baresford

the holder and owner of said permit No. 1056-3 water right, dating from March 15, 1963

to use of 1.12 cubic feet per second of the waters of ground water

in the County of Union and State of South Dakota, or so much thereof as may be necessary for the purposes hereinbelow mentioned, to be diverted at points 90 feet North 64° 10' West and 490 feet North 83° West, both from the the E½ Corner, Section 2, T95N, R50W

and conduct to and from ~~through the City water distribution system~~

for the purpose of municipal use

Subject to any limitations listed in Water Right Permit No. 1056-3 and subject to the laws of the State of South Dakota.

WITNESS, My hand and seal of our office at Pierre, South Dakota
this 9th day of November A. D.
Nineteen Hundred and Seventy

WATER RESOURCES COMMISSION

By: Chief Engineer, Executive Officer, J.W. GRIMES

Permit No. 1056-3

Water Diversion No. 3 Big Sioux River Water District

CERTIFICATE OF CONSTRUCTION

This is to Certify, That the City of Beresford

_____ the holder _____ of
Permit No. 1056-3, issued upon Application No. 1056-3, bearing date of priority of March 15,
1963 authorizing the diversion of 1.8 cu. ft. per second of the waters of _____
ground water _____ County of Union, State of South Dakota at _____
points 90 feet, North 64° 10' West, and 490 feet North 83° West, both from
the E½ Corner, Section 2, T95N, R50W
_____, for municipal

purposes, has _____ 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 1.12 cu. ft. per second of water.

Date November 9, 1970

WATER RESOURCES COMMISSION

By:

JUN. GRIMES, Executive Officer

Affidavit of Publication

STATE OF SOUTH DAKOTA }
COUNTY OF UNION } ss.

Edward W. Stearns of said county being first duly sworn, on oath says that he is the publisher of THE BERESFORD REPUBLIC, a weekly newspaper printed and published in Beresford, S. Dak., said County of Union and has full and personal knowledge of all facts herein stated; that said newspaper is a legal newspaper and has a bona-fide circulation of at least two hundred copies weekly, and has been published within said County for fifty-two successive weeks next prior to the publication of the notice herein mentioned, and was and is printed wholly or in part in an office maintained at said place of publication; that the Notice of Intention to
Appropriate Water No. 1056-3

....., a printed copy of which, taken from the paper in which the same was published, is attached to this sheet, and is made a part of this Affidavit, was published in said newspaper at least once in each week for successive weeks, on the day of each week on which said newspaper was regularly published, to wit:

<u>Aug 8</u>	19 <u>63</u>		19.....
<u>Aug 15</u>	19 <u>63</u>		19.....
<u>Aug 22</u>	19 <u>63</u>		19.....
<u>Aug 29</u>	19 <u>63</u>		19.....
.....	19.....		19.....

that the full amount of the fees for the publication of the annexed notice is \$ 10.47

Edward W. Stearns

Subscribed and sworn to before me this 29

day of August, 1963

Conrad J. Smith
Notary Public
County of Union, South Dakota

Notice of Intention to Appropriate Water No. 1056-3 APPROPRIATION OF WATER

Office of State Water
Resources Commission,
Pierre, S. Dak.,
August 2, 1963

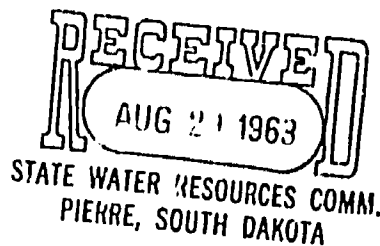
Notice is hereby given that the City of Beresford whose post-office address is Beresford has made an application in accordance with the provisions of the water laws of South Dakota for a permit to appropriate for future use 2.00 cubic feet of water per second of time from ground water through the Beresford Municipal Water facilities area diversion of which is to be located in the SW1 NW1 and NW1 SW1, Section 1; E1 SE1 and SE1 NE1, Section 2, Twp. 95N, Range 50W, Union County.

Said water to be used for the purpose of providing future supplies for municipal purposes by the City of Beresford.

This application will be taken by the State Water Resources Commission at their office at Pierre, for consideration upon the 5th day of September, 1963, 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 received.

Water Resources
Commission
BUREN F. JONES
Water Right Specialist
(August 8, 15, 22, 29, 1963) 44



on or before August 8, 1963
(First Publication August 8, 1963)

APPROPRIATION OF WATER

Office of State Water Resources Commission,

Pierre, S. Dak., August 2, 1963

Notice is hereby given that the City of Beresford whose postoffice address is Beresford S. Dak., has made an application in accordance with the provisions of the water laws of South Dakota for a permit to appropriate for future use 2.00 cubic feet of water per second of time from the ground water through the Beresford Municipal Water facilities, area of diversion of which is to be located on the SE $\frac{1}{4}$ NW $\frac{1}{4}$ and NW $\frac{1}{4}$ SW $\frac{1}{4}$, Section 1; E $\frac{1}{4}$ SE $\frac{1}{4}$ and SE $\frac{1}{4}$ NE $\frac{1}{4}$, Section 2, XXXXX Section in the Twp. 26N 45W Range 49W 50W. Said water to be used for the purpose of providing future supplies for municipal purposes by the City of Beresford.

XXXXX purposes

This application will be taken up by the State Water Resources Commission at their office at Pierre for consideration upon the 5th day of September, 1963, 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:

CC: Mr. E. W. Stearns, Publisher
Beresford Republic
Beresford, South Dakota

BURTON F. JONES
Water Right Specialist

2340 SIXTH AVE., JE
DES MOINES, IOWA

Date 1-17-67

Project No.

General Location: In the N¹ 1/4 N² 1/4 Section 23 Township 14 Range T35N 45W

Exact Location: _____ ft. _____ and _____ ft. _____

In Union County, Approx. 4 M s E.E. of Bensonford

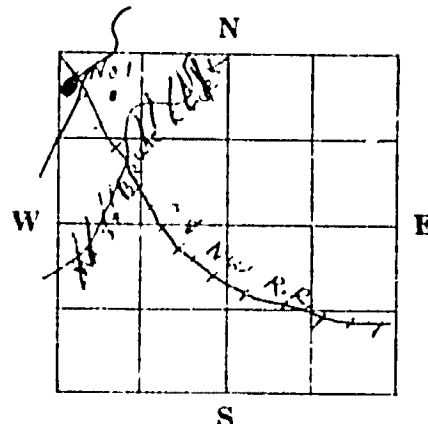
Surface Elevation:

84 ft. of 2 in. Piezometer pipe was placed
at 78 ft.

Static Water level $27\frac{1}{2}$ ft. from ground level.

Remarks:

219' S. and 42' S. of gate to
test field



LOG

2 x 4 ft. X 2 x 4 ft. Mud Pit

Thickness	Description of Formation	Total	Mud Loss	Wt.	Vis.	Feet of Core Att. Rec.
1	Black top soil	1				
2	yellow clay with iron	3				
37	Coarse sand & gravel	40				
38	Med. - coarse sand & gravel	78				
7	Blue clay	85				
				37"		Coal & iron streaks fine sand
	0.6 FE					
	1.5 FE					
	PH - 6.7 TO 6.9					
	THICKNESS 70 GN.					

T. ORPE WELL CO. 'PAN

2340 SIXTH AVENUE
DES MOINES, IOWA

Test No. # 2

Date 1-30-63

Project No. _____

Drilled For: City Water Works At: Beresford, South Dakota
General Location: In the SW 1/4 NW 1/4 Section 23 Township T 95N Range R 50W
Exact Location: _____ ft. _____ and _____ ft. _____
In Union County, Approx. 4 Miles S.E. of Beresford, S.D.
Surface Elevation: _____

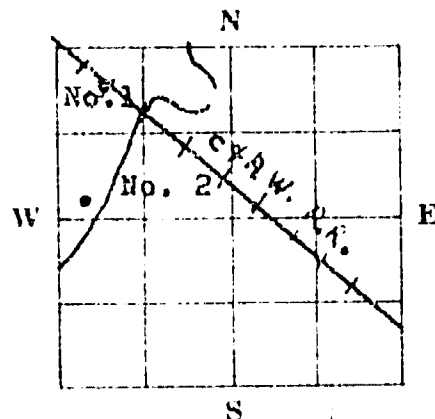
_____ ft. of _____ in. Piezometer pipe was placed
at _____ ft.

Static Water level 3 1/2' ft. from ground level.

Remarks: _____

2000' S. of No. 1

put 2" pipe in to test water sample
pumped approx 4 hrs.



LOG

2 x 4 ft. x 2 x 4 ft. Mud Pit

Thickness	Description of Formation	Total	Mud Loss	Wt.	Vis.	Feet of Core Att.	Feet of Core Rec.
2	Black top soil	2					
3	Gray clay	5					
3	Sandy gray clay	8					
27	Coarse sand & gravel	35					
36	Med. coarse sand & gravel boulders	71					
7	Gray clay	78					
	<u>0.8 - FE</u>						
	<u>2.0 - FE</u>						
	<u>SPGR - HARDNESS</u>						

fine sand
coal streaks

26"

THORPE WELL COMPANY

2340 SIXTH AVENUE
DES MOINES, IOWA

Test No. # 3

Date 1-31-63

Project No.

Drilled For: City Water Works At: Beresford, South Dakota

General Location: In the NW 1/4, SE 1/4 Section 14 Township T95N Range R 50W

Exact Location: ft. and ft.

In Union County, Approx. 4 Miles S.E. of Beresford

Surface Elevation:

ft. of in. Piezometer pipe was placed

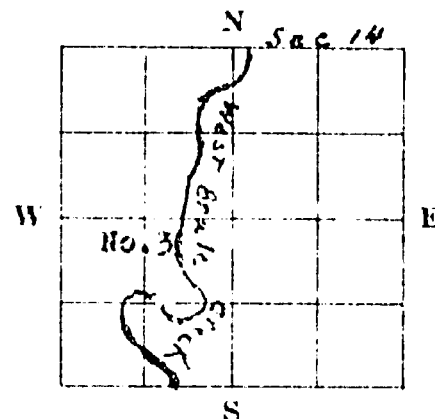
at ft.

Static Water level 2.2 ft. from ground level.

Remarks:

2500' N. and 800' E. of No. 1

Test Well



LOG

2 x 4 ft. X 2 x 4 ft. Mud Pit

Thickness	Description of Formation	Total	Mud Loss	Wt	Vis.	Feet of Core Att.	Feet of Core Rec.
1	Black top soil	1					
2	Brown clay	3					
37	Coarse sand & gravel	40		fine sand			
36	Med. to coarse sand & gravel	76		21" coal streaks			
4	Gray - green clay	80					

1.5 FE
2.2 MN
2.2 MN
1.5 FE

3340 SIXTH AVENUE
DES MOINES, IOWA

Date .." ..,

Project No.

A1

General Location: In the 34 1 34 1 Section 25 Township

Exact location: _____ ft. _____ and _____

In Union County Approved 4 Miles

Surface Elevation:

65 ft. of 2 in. Piezometer pipe was placed

at 65 ft

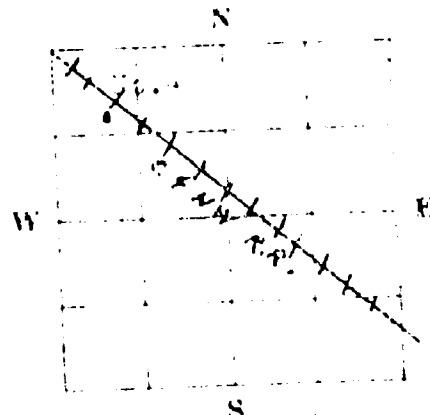
Static Water level 51.2" ft. from ground level

Remarks:

1213. of national interest

531. ... of

for use in water samples.



LOG

2 ft. X 2 ft. 4 in. Mud Pit

Thickness	Description of Formation	Total	Mud Loss	Wt	Via	Feet of Core All Rec
2	black top soil	2				
2	gray clay	4				
16	Course sand & gravel	20			coll. at 16 ft	
55	med. coarse sand & gravel & pebbles	52			35" - fine sand	
3	shale	55				

THOMAS WELL COMPANY

8000 2107th Avenue
 DEAN 10000000, 10000000

Test No. 45

Date 2-20-61

Project No. _____

Drilled For: City Water Works At: Barnesford, South Dakota

Location: In the 1/4 1/4 Section Township _____ Range _____

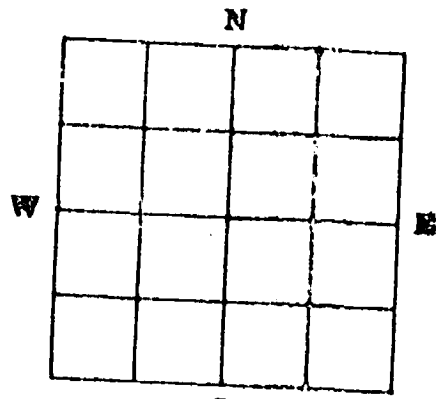
Exact Location: _____ ft. _____ and _____ ft.

In Union _____ County, Approx. _____ Miles _____ of Barnesford, South Dakota

Surface Elevation: _____ ft. of _____ in Pinnacle/air pipe was placed at _____ ft.

Static Water level _____ ft. from ground level.

Remarks: 236' E of Bridge and
105' W of 16 Highway



LOG

2 x 4 12 x 2 x 4 10 Mud Pit

Thickness	Description of Formation	Total	Mud Loss	Wt.	Via	W.S. of Core
						ft. Rec.
3	Black Top Soil	3				
11	Brown Clay	10				
8	Medium to Coarse Sand and Gravel	21	15"		Coal streaks	
2	Gray Clay	23				
2	Limestone ledge or Boulders	24				
24	Gray Clay	40				

THORPE WELL COMPANY

8840 SIXTH AVENUE
EAS MONROE, IOWA

Test No. #6

Date 2-22-55

Project No.

Drilled For City Water Works At: Berensford, South Dakota

General Location: In the 1/4 Section Formation Range

Exact Location: ft. and ft.

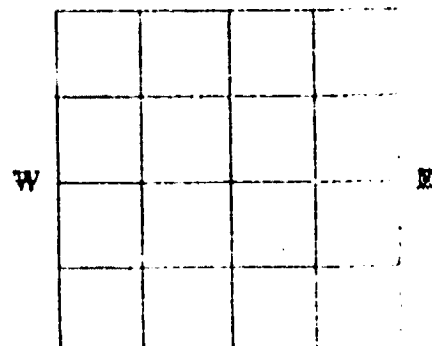
In Union County, Approx. 3 Miles E of Berensford, S.D.

Surface Elevation: N

ft. of in. Piezometer pipe was placed at ft.

Static Water level 10 ft. from ground level

Remarks: 1377 W river bridge
1425 S of highway 46



LOG

2x4 ft. X 2x4 ft. Hole Pit

Thickness	Description of Formation	Total	Mud Loss	Wt	Via	Feet of Core All Rec.
3	black top soil	3				
2	gray clay	5				
20	coarse sand and gravel	25				
3	boulders on ledge	28				
11	gray clay	39				
29	fine to medium sand cemented & gravel	68		27		
4	gray clay	72				

THORPE WELL COMPANY

3345 SIXTH AVENUE
DOER MONIE, IOWA

Test No. 17

Date 2-26-65

Project No.

Drilled For: City Water Works

At: Baresford, South Dakota

General

Location: In the 1/4 1/4 Section Township Range

Exact Location ft and ft

In Union County Approx. Miles SE of Baresford, S. D.

Surface Elevation

N

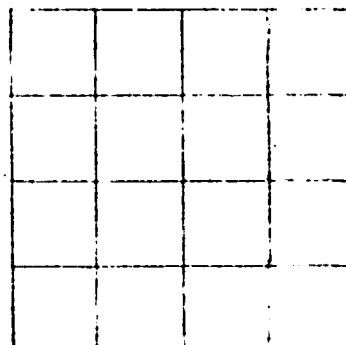
ft of in. Piezometer pipe was placed
at ft.

Static Water level 10.9 ft. from ground level.

Remarks 102 W and 81 S of river Bridge

W

E



S

LOG

2x4

ft. X

2x4

* Mud Pit

Thickness	Description of Formation	Total	And Loss	Wt	Via	Feet of Core Act Rec.
3	black top soil	3				
3	gray clay	6				
4	brown clay	10				
35	coarse sand and gravel	45				
3	medium sand and gravel	48				
39	medium to fine cemented sand	87				
5	gray shale	92				
			28'			
				coal streaks boulders clay streaks		

THORPE WELL COMPANY

2242 SIXTH AVENUE
DIX MOINIE, IOWA

Test No. 45

Date 2-25-63

Project No.

Drilled For: City Water Works At Beresford, South Dakota

General Location: In the 1/4 1/4 Section Township Range

Exact Location: ft. and ft.

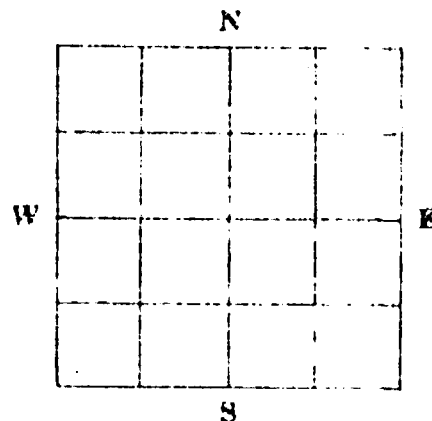
In Union County Approx. 4 Miles SE of Beresford, South Dakota

Surface Elevation:

ft. of in. Piezometer pipe was placed at ft.

Static Water level 9 ft. from ground level.

Remarks: 200 west and 1800 south of river bridge

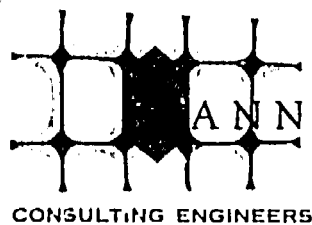


LOG

2x4 ft X 2x4 Mud Pit

Thickness	Description of Formation	Total	Mud Loss	Wt	Vin	Feet of Core Act Rec
3	black top soil	3				
3	gray clay	6				
14	coarse sand and gravel	20				
9	soft brown clay	25				
3	soft blue clay	28				
16	coarse sand and gravel	44				
8	coarse sand and gravel	52				
21	gray clay	73				
5	medium sand and gravel	78	21'			
4	fine cemented sand	82				
3	gray shale	85				

ENGINEERS
J. T. BANNER
CALVIN VAUDREY
G. C. HAROKOPIS
A. J. HULL, JR.
HARRY M. JOHN
T. A. PFISTERER
J. A. SHELDON



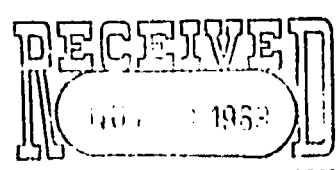
BANNER & ASSOCIATES, Inc.

CONSULTING ENGINEERS

6343

PHONE 692-XXXX
P. O. BOX 44
BROOKINGS, SOUTH DAKOTA

November 11, 1963



STATE WATER RESOURCES COMMISSION
PIERRE, SOUTH DAKOTA

Burton Jones, Engineer
Water Resources Commission
State Office Building
Pierre, South Dakota

Re: Water Supply System
Beresford, South Dakota

Dear Mr. Jones:

Enclosed herewith are various data relative to the test program conducted for the City of Beresford, South Dakota which is for your use and file.

This program was carried on to obtain a shallow water supply for the City of Beresford to replace their existing deep well supply which has been rapidly deteriorating and has proved very costly in the past few years. The City of Beresford requested the South Dakota Geological Survey to conduct an investigation in the area east of the city in an attempt to locate an adequate shallow water supply of an improved quality. As a result of their test program, the City retained us to do further testing in this area since the indication was that adequate and good quality water was available from a shallow supply. The results of these tests are enclosed herewith. They include:

1. A map showing the various rotary test wells which were constructed by the Thorpe Well Co. under our supervision. This map also shows some of the test holes which were developed by the South Dakota Geological Survey. Good quality water was not available until test well number 5 was constructed.
2. The logs of the various test wells are attached. The results of a pumping test which was developed near # 9 test well, the drawdown data and a report which was developed by the U. S. Geological Survey based on this pumping data available also are attached.

Burton Jones - Beresford Water

-2-

November 11, 1963

The State Geological Survey report relative to the test program at Beresford has not been published or released at this time. If further information is desired relative to the test conducted in this area, we will be happy to forward it to you. We are now in the process of preparing our final preliminary report for the City.

Sincerely yours,

Calvin Vaudrey

CV/dv

Encs.

THORPE WELL COMPANY

2340 SIXTH AVENUE
DES MOINES, IOWA

4-1-8

Drilled for City Water Works at Beresford, South Dakota
Well is located 3 miles E-S-W and 1/2 miles S-E-W from Beresford, South Dakota
in the 1/4 Section 1/4 Township 1/4 Range
Drilling started May 23, 19 63 Completed May 23, 19 63
Well No 1 Kind of Well gravel pack Depth 62' Size hole started 5 5/8 in
Finish 15 G. P. M. 252 Static Head 11' 10" Pumping level from surface 33'
Water was first encountered at 10' in gravel Approx. dist. 50°
Remarks

(GIVE DETAILS OF PERFORATED PIPE AND SEALS)

RECORD OF PERMANENT PIPE					TEMPORARY PIPE	
SIZE PIPE	AMOUNT OF PIPE	DEPTH TO BOTTOM OF PIPE	DEPTH TO TOP OF PIPE	MAKE OF PIPE	SIZE PIPE	AMOUNT
10"	20'	1/8" slot screen			8	42'

Driller Bob Wall From Surface to feet
Driller From feet to feet
Driller From feet to feet

AMOUNT IN FEET	KIND OF SOIL OR FORMATION (BE SPECIFIC)	TOTAL DEPTH FEET
7	old gravel pit	7
4	gray clay	11
24	coarse sand and gravel, boulders	35
1	soft brown clay, streaks	36
9	coarse sand and gravel	45
3	gray clay streaks	48
13	coarse sand and gravel	61

PUMP TEST RECORD

THORPE WELL COMPANY, BOX 1500, DEER CREEK, ILL.

For City Water Works Location, State and Co.

Make, Kind and Size of Power Minneapolis 5 Valve

Bowl No. Size 8" Stages 12

Column Setting 47 ft. Size 5" Shaft size 1 3/16" and

Static Level Before Pumping 11'-10" After Pumping 11'-10" Temperature 50°

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per. Min.	Temp. Discharge Description	Sand P.P.M. Volume
5-23-63					210	50°	very little sand
	6.50			29'	210	"	
	6.51			29	210	"	
	6.52			29	210	"	
	6.53			29.5	210	"	
	6.54			29.6	210	"	
	6.55			29.7	210	"	
	6.56			29.8	210	"	
	6.57			29.9	210	"	
	6.58			29.10	210	"	
	6.59			29.10	210	"	
	7.01			29.10	210	"	
	7.02			29.11	210	"	
	7.03			29.11	210	"	
	7.04			29.11	210	"	
	7.05			29.11	210	"	
	7.08			29.11	210	"	
	7.09			29.11	210	"	
	7.10			29.11	210	"	
	7.11			29.11	210	"	
	7.12			29.11	210	"	
	7.13			29.11	210	"	

PUMP TEST RECORD (continued)

Page 2

For City Water Works

Located at Boresford, South Dakota

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per. Min.	Temp. Discharge Description	Sand P.P.M. Volume
28-63	7.14			29.11	210	50°	
	7.15			29.11	210	"	
	7.16			29.11	210	"	
	7.18			29.11	210	"	
	7.19			29.11	210	"	
	7.20			29.11	210	"	
	7.30			29.11	210	"	
	7.40			29.11	210	"	
	7.50			29.115	210	"	
	8.00			29.115	210	"	
	8.10			29.115	210	"	
	8.20			29.115	210	"	
	8.30			29.115	210	"	
	8.40			29.115	210	"	
	8.50			29.115	210	"	
	9.0			29.115	210	"	
	9.5			30.0	210	"	
	10.0			30.0	210	"	
	10.5			30.0	210	"	
	11.0			30.0	210	"	
	11.5			30.5	210	"	
	12.0			30.5	210	"	
	12.5			30.5	210	"	
	1.0			30.5	210	"	
	1.5			30.5	210	"	
	2.0			30.5	210	"	
	2.5			33.7	150	"	
	3.0			33.8	250	"	

PUMP TEST RECORD (continued)

Page ... 3

For City Water Works

Located at Beresford, South Dakota

[illegible]

PUMP TEST REC RD

THORPE WELL COMPANY, BOX 1376, DES MOINES, IOWA

For City Water Works Located at Beresford, South Dakota

Make, Kind and Size of Power Minneapolis Moline

Bowl No. Size 8" Stages 12

Column Setting 47 ft. Size 5" Shaft size 1 3/16" and

Static Level Before Pumping 11'-10" After Pumping 11'-10" Temperature 50°

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per. Min.	Temp. Discharge Description	Sand P.P.M. Volume
	Readings every minute, next 30 minutes						
	1	Momentary surge of pump and discharge line which ran up hill					
	2	10'					
	3	11'					
	4	12.4'	well stabilized and started steady recovery				
	5	12.4					
	6	"					
	7	"					
	8	"					
	9	"					
	10	"					
	11	"					
	12	"					
	13	"					
	14	"					
	15	12.4'					
	16	"					
	17	"					
	18	"					
	19	12.3					
	20	"					
	21	"					

PUMP TEST RECORD (continued)

Page _____

For _____ Located at _____

Date	Time	Engine R.P.M.	Pump R.P.M.	Pumping Level	Gallons Per .Min.	Temp. Discharge Description	Sand P.P.M. Volume
	22	12.3					
	23	"					
	24	12.2					
	25	"					
	26	"					
	27	"					
	28	"					
	29	"					
	30	"					
	Readings taken every 10 minutes						
	40	12.2					
	Readings taken every 10 minutes						
	8.0	12.1					
	8.10	12.1					
	8.20	12.1					
	8.30	12.1					
	8.40	12.5					
	8.50	12.5					
	9.0	12.5					
	Readings taken every 30 minutes						
	9.5	12.0					
	10	12.0					
	10.5	11.11					
	11.0	11.10					



IN REPLY REFER TO

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Water Resources Division
Ground Water Branch
P. O. Box 1412
Huron, South Dakota
October 14, 1963

AQUIFER TEST - BERRSFORD, S. DAK.
May 28, 1963

On May 28, 1963, Mr. Cal Vaudrey of Banner and Associates, Consulting Engineers, Brookings, South Dakota made a pumping test of a proposed new city well at Baresford, South Dakota. He requested help from the South Dakota State Geological Survey in interpreting the results of the test. The following summary was prepared by the U. S. Geological Survey in response to a request by M. J. Tipton, Assistant State Geologist, South Dakota State Geological Survey.

The pump was started at 6:45 a. m. on May 28th and the well was pumped at a rate that varied from 110 gpm to 252 gpm until 7:00 p. m. on May 28th. Drawdown and recovery measurements were made in the pumped well and in 3 observation wells until 11:00 p. m. on May 28th.

The tabulation below lists some of the basic information gathered during the test:

	Distance from pump (ft.)	Static Water level (ft.)	Total Drawdown (ft.)
Pumped well	0	11.83	21.92
Obs. well No. 1	28	13.00	1.50
" 2	94	8.88	0.88
" 3	192	8.83	0.17

In plotting the data, we found that most points had erratic locations on the time vs. drawdown and recovery scales. As a result, it was not possible to draw smooth curves between the points.

Calculations based upon the available data gave the following average values:

Coefficient of Transmissibility - 130,000 gallons per day
per foot

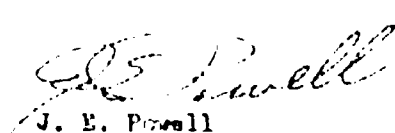
Coefficient of Permeability - 2,600 gallons per day
per square foot

Coefficient of Storage - 0.10

The values probably are unreliable due to one or more of the following factors: (1) observation wells partially plugged; (2) varying rate of discharge; (3) wells not pumped for a sufficient time to allow time vs. drawdown curves to assume a straight line.

The magnitude of the Coefficient of Storage indicates that water in the aquifer is under water table conditions. The geologic evidence and the behavior of the water level in the pumped well, however, indicate that the water in the aquifer is under artesian or leaky artesian conditions. The discrepancy is probably due to the above-mentioned factors.

Physical evidence such as the thickness, area extent, and composition of the aquifer and the return of the water level in the pumped well to static level after 4 hours indicates that a considerable amount of water is available. However, the test itself must be considered to be inconclusive because of the three factors listed above.


J. E. Powell
District Engineer (GW)

324 Dakota Avenue
Fredericks, South Dakota
June 6, 1963

Mr. J. W. Hinkle
J. W. Hinkle Associates
Fredericks, South Dakota

Re: Beresford Water Analysis

Dear Sir:

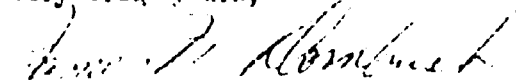
The following laboratory results were obtained for the sample of water collected during the probe for pumping test at Beresford, South Dakota. This sample was designated as having been collected after 12 hours of pumping.

<u>Beresford H₂O</u>		
<u>Determination</u>	<u>mg/l</u> <u>as</u>	<u>mg/l</u>
pH	units	7.35
Alkalinity	CaCO ₃	339
Hardness		
Total	CaCO ₃	404
Calcium	CaCO ₃	280
Magnesium	CaCO ₃	124
Manganese	Mn	0.0
Iron	Fe	0.1
Sulfate	SO ₄	160
Chlorides	Cl	5
Fluoride	F	0.45
Total Residue	Residue	696

This water appears to be of considerably better chemical quality than the other wells at Beresford based upon the results of previous analyses performed by the State Department of Health in 1957 and 1959. It is to be noted that iron and manganese were essentially absent in this sample. Sulfate content was found to be only about 44% and total residue about 73% of the concentrations reported in 1959 for the #1 well at Beresford. Fluoride content was found to be 0.45 mg/l as compared to about 3.0 mg/l; however, hardness of the water was about the same. The low chlorides content may also be indicative of a low sodium content although this determination was not made.

If there are further questions concerning these results, please contact me.

Very truly yours,


James H. Dornbush

cc:mfd

VERMILION, S. D.

.....

St. Louis, Mo.

Date 3/12/63

We have examined the sample of Water - Test Hole #6 Barroford

submitted by _____
taken by Inspector _____ You _____ on 2/20, 1963

Inspector's No. _____, Lab. No. 12-4110 Seller _____

Manufacturer _____ Distributor _____

and we find as follows:

INDEX.

g/gal.

Total Solids	730	42.6
Sulfate	247	14.4
Chloride	6	0.5
Calcium	157	9.2
Magnesium	.7	

Alkalinity as CaCO_3		
phenolphthalein	"	0.5
Methyl Orange	245	14.3

Hardness as CaCO_3	395.	
Iron	1.1	23.1
Manganese	0.2	0.1
Fluoride	0.6	
Sodium	66	
Nitrate Nitrogen	.2	3.3

D. J. MITCHELL
State Chemist.
SCL-600

STATE CHEMICAL LABORATORY
VERMILION, S. D.

_____ Date 3/12/63

We have examined the sample of _____
submitted by _____
taken by Inspector You on 2/20, 19 63

Inspector's No. _____, Lab. No. 88-1011 Seller _____

Manufacturer _____ Distributor _____

and we find as follows:

	<u>ppm.</u>	<u>g/gal.</u>
Total Solids	776	45.3
Calcium	137	22.0
Chloride	80	4.3
Calcium	47	3.9
Magnesium	4	.2
Alkalinity as CaCO_3		
Phenolphthalein	4	0.2
Methyl Orange	59	3.4
Hardness as CaCO_3	184	10.7
Iron	0.6	
Manganese	NONE FOUND	
Fluoride	1.6	.1
Sodium	160	9.3
Nitrate Nitrogen	.1	

D. J. MITCHELL
State Chemist.
SCL-600

VERMILLION, S. D.

P. A. : 2

Date 3/2/51

131

Seller

~~UNCLASSIFIED~~ Puzos: 31 hrs. before sample

ג'ק

0/gal.

574

33.5

4

0.5

3462

22.2

104

C.1

Trace:

0.6

34

3.0

C.5

D. J. MITCHELL

State Chemist.

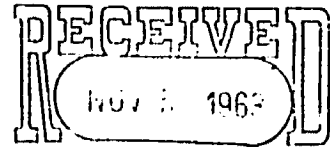
SCL-600



UNITED STATES
DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY
Water Resources Division
Ground Water Branch
P. O. Box 1412
Huron, South Dakota
November 4, 1963

IN REPLY REFER TO:



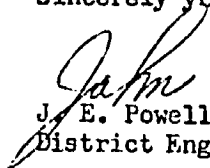
STATE WATER RESOURCES COMM.
PIERRE, SOUTH DAKOTA

Mr. Don Driscoll
3. Dak. State Water Resources Commission
State Office Building
Pierre, S. Dak.

Dear Don:

The enclosed thermofax copy of a summary of an aquifer
test at Beresford, South Dakota is being sent in response
to your telephone request of October 31, 1963.

Sincerely yours,


J. E. Powell
District Engineer

Encl.

Water Resources Division
Ground Water Branch
P. O. Box 1412
Huron, South Dakota
October 14, 1963

AQUIFER TEST - BERESFORD, S. DAK.
May 28, 1963

On May 23, 1963, Mr. Cal Vaudrey of Hunter and Associates,
Consulting Engineers, Brookings, South Dakota made a preliminary study of
a proposed new city well at Beresford, South Dakota. He requested help
from the South Dakota State Geological Survey in interpreting the results
of the test. The following summary was prepared by the S. D. Geological
Survey in response to a request by H. J. Tipton, Assistant State Geologist,
South Dakota State Geological Survey.

The pump was started at 6:45 a. m. on May 28th and the well was
pumped at a rate that varied from 210 gpm to 252 gpm until 7:00 p. m.
on May 28th. Drawdown and recovery measurements were made in the pumped
well and in 3 observation wells until 11:00 p. m. on May 28th.

The tabulation below lists some of the basic information gathered during the tests:

	Distance from pump (ft.)	Static Water Level (ft.)	Total Drawdown (ft.)
Repaired well	0	11.83	21.00
Obs. well No. 1	28	13.09	1.50
"	94	8.08	0.05
"	292	8.83	0.17

In plotting the data, we found that most points had erratic locations on the time vs. drawdown and recovery scales. As a result, it was not possible to draw smooth curves between the points.

Calculations based upon the available data gave the following average values:

Coefficient of Transmissibility = 130,000 gallons per day
per foot

Coefficient of Permeability = 2,600 gallons per day
per square foot

Coefficient of Storage = 0.10

The values probably are unreliable due to one or more of the following factors: (1) observation wells partially plugged; (2) varying rate of discharge; (3) wells not pumped for a sufficient time to allow time vs. drawdown curve to assume a straight line.

The magnitude of the Coefficient of Storage indicates that water in the aquifer is under water table conditions. The physical evidence and the behavior of the water level in the pumped well, however, indicate that the water in the aquifer is under artesian or locally artesian conditions. The discrepancy is probably due to the above-mentioned factors.

Physical evidence such as the thickness, area extent, and composition of the aquifer and the return of the water level in the pumped well to static level after 4 hours indicates that a considerable amount of water is available. However, the test itself must be considered to be inconclusive because of the three factors listed above.

J. R. Powell
District Engineer (R)

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 1

DATE 5-4-62 EE

22-1-1-1

31638

15762

Observation Number	Time Since Pump Test Started t Min	Time Since Pump Test Stopped t' Min	Depth to Water H	Residual Drawdown s ft.
	0		13'0"	
	1		13'0"	
	2		13'0"	
	3		13'0"	
	4		13'0"	
	5		13'0"	
	6		13'0"	
	7		13'0"	
	8		13'0"	
	9		13'0"	
	10			
	11			
	12			
	13			
	14			
	15			
	16			
	17			
	18			
	19			
	20			
	21			
	22			
	23			

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 1

DATE 28 Apr 65

Barrow

Observation Number	Time Since Pump Test Started min	Time Since Pump Test Stopped min	Depth to Water ft	Residual Drawdown ft
	0		13.0	
	10			
	20			
	30			
	40			
	50			
	60			
	70			
	80			
	90			
	100			
	110			
	120			
	130			
	140			
	150			
	160			
	170			
	180			
	190			
	200		14.0	
	210			
	220			
	230			
	240			

13.0
13.0

14.0

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 7

DATE 29 Nov 63

[illegible]

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 5

DATE 25/12/65

Drawdown

Observation Number	Time Since Pump Test Started t Min	Time Since Pump Test Stopped t ¹ Min	Depth to Water H	Residual Drawdown s ft.
210900	0		8' 11 1/2"	
	1		8' 10 1/2"	
	2		8' 11 1/2"	
	3		9' 0"	
	4		9' 0"	
	5		9' 10"	
	6		9' 11 1/2"	
	7		9' 11 1/2"	
	8		9' 11 1/2"	
	9		9' 11 1/2"	
	10		9' 11 1/2"	
	11		9' 11 1/2"	
	12		9' 11 1/2"	
	13		9' 11 1/2"	
	14		9' 11 1/2"	
	15		9' 11 1/2"	
	16		9' 11 1/2"	
	17		9' 11 1/2"	
	18		9' 11 1/2"	
	19		9' 11 1/2"	
	20		9' 11 1/2"	
	21		9' 11 1/2"	
	22		9' 11 1/2"	
	23		9' 11 1/2"	
	24		9' 11 1/2"	
	25		9' 11 1/2"	
	26		9' 11 1/2"	
	27		9' 11 1/2"	
	28		9' 11 1/2"	
	29		9' 11 1/2"	
	30		9' 11 1/2"	

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 2

DATE 12/7/67

Dequena

Observation Number	Time Since Pump Test Started t Min	Time Since Pump Test Stopped t ¹ Min	Depth to Water H	Residual Drawdown s. ft.
	24		22.0	
	25		22.4	
	26		}	
	27			
	28			
	29			
	30			
	40		23.0	
	50		23.4	
	60		23.5	
	70		23.9	
	80		}	
	90			
	100			
	110		24.4	
	120		}	
	150			
	180			
	210		24.6	
	240		25.0	
	270		25.4	
	300		}	
	330			
	360			

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 2

DATE 25 Apr 63

Результаты

[illegible]

TIME TEST DATA SHEET

OBSERVATION WELL NO. 2

DATE 12/1/68

Observation Number	Time Since Pump Test Started Min	Time Since Pump Test Started Min	Depth to Water ft	Residual Drawdown ft.
20		0	30	
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		
		9		
		10		
		11		
		12		
		13		
		14		
		15		
		16		
		17		
		18		
		19		
		20		
		21		
		22		
		23		

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 3

DATE 8/17/68

Injection

Observation Number	Time Since Pump Test Started - 1 Min	Time Since Pump Test Started - 1 Min	Depth to Water ft.	Residual Drawdown s. ft.
		24	5' 4"	
		25	}	
		26		
		27	5' 10"	
		28	}	
		29		
		30		
		40	5' 11"	
		50	5' 11 1/2"	
		60	}	
		70		
		80		
		90		
		100		
		110	}	
		120		
		130		
		140		
		150	5' 11 1/4"	
		160	}	
		170		
		180		
		190		
		200		

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 5

DATE 28/10/2011

Lehrbuch

[illegible]

BY..... DATE..... SUBJECT PROPOSED WATER SUPPLY SHEET NO..... OF.....
 CHKD. BY..... DATE..... BERSEFORD, E. DAK. JOB NO.....

LOGS OF TEST HOLES - BY STATE GEOLOGICAL SURVEY

ALL IN T95N, R50W

NW 1/4 - NW 1/4 523

0-3 ALLUVIUM
 3-78 SAND - COARSE
 GRAVEL PER SIZE
 78-80 CHARLIE SHALE

SW 1/4 - SE 1/4 514

0-2 - TOP SOIL
 2-29 - SILT SANDY
 29-114 - SAND MEDIUM
 TO COARSE
 (NOT TO BOTTOM)

NE 1/4 - SE 1/4 522

0-2 TOP SOIL
 2-7 CLAY BLUE
 7-14 BLUE CLAY
 14-19 SILT V. SANDY
 19-53 SAND COARSE
 53-55 BLUE CLAY ?
 MAY BE SHALE

SW 1/4 523
 NEAR 50. SECT LINE
 0-6 TOP SOIL
 6-69 SAND COARSE
 69-89 - BLUE CLAY

NE 1/4 - NE 1/4 522

0-10 TOP SOIL
 10-19 SILT SANDY
 19-42 MEDIUM SAND
 TO COARSE
 42-50 GRAVEL
 50- CHARLIE SHALE
 ?

SE 1/4 523

0-7 TOP SOIL
 7-68 SAND VERY
 COARSE
 68-77 BLUE CLAY

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 7

DATE 8/14/83

Observation Number	Time Since Pump Test Started t Min	Time Since Pump Test Stopped t' Min	Depth to Water H	Residual Drawdown s ft.
		0		
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		
		9		
		10		
		11		
		12		
		13		
		14		
		15		
		16		
		17		
		18		
		19		
		20		
		21		
		22		
		23		
		24		

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 1

DATE 15 MAR 65

Observation Number	Time Since Pump Test Started Min	Time Since Pump Test Stopped Min	Depth to Water ft	Residual Drawdown ft.
		10		
		20		
		30		
		40		
		50		
		60		
		70		
		80		
		90		
		100		
		110		
		120		
		130		
		140		
		150		
		160		
		170		
		180		
		190		
		200		
		210		
		220		
		230		
		240		
		250		
		260		
		270		
		280		
		290		
		300		

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 2

DATE 22 Apr 63

Location

State E 106

Observation Number	Time Since Pump Test Started t Min	Time Since Pump Test Stopped t ¹ Min	Depth to Water H	Residual Drawdown s ft.
		0	7' 8"	
		1		
		2	7' 7 1/2"	
		3	7' 7"	
		4	7' 6"	
		5	7' 5 1/2"	
		6	7' 5 1/4"	
		7	7' 5"	
		8	7' 5"	
		9	7' 4 3/4"	
		10	7' 4 1/4"	
		11	7' 4 1/8"	
		12	7' 4 1/8"	
		13	7' 4 1/8"	
		14	7' 4 1/8"	
		15	7' 4 1/8"	
		16	7' 4 1/8"	
		17	7' 4 1/8"	
		18	7' 4 1/8"	
		19	7' 4 1/8"	
		20	7' 4"	
		21	7' 4"	
		22	7' 4"	
		23	7' 4"	
		24	7' 4"	

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 5

DATE 25 May 68

Recovery

Observation Number	Time Since Pump Test Started t Min	Time Since Pump Test Stopped t Min	Depth to Water H	Residual Drawdown s ft.
		---	---	---
		25	74'	
		26	74"	
		27	74"	
		28	74"	
		29	74"	
		30	74"	
		40	73 3/4'	
		50	73 1/2"	
		60	73 1/4'	
		70	73"	
		80	72 3/4"	
		90	72 1/2"	
		100	72 1/4"	
		110	72 1/8"	
		120	72 1/8"	
		130		
		140		
		150		
		160		
		170		
		180		
		190		
		200		
		210		
		220		
		230		
		240		

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 5

DATE 28/4/63

Flowing

Static 5'10"

Observation Number	Time Since Pump Test Started t Min	Time Since Pump Test Stopped t ¹ Min	Depth to Water H	Residual Drawdown s ft.
—		0	9'0"	
		1	8'11"	
		2	8'11"	
		3	8'11"	
		4	8'11"	
		5	8'10 1/2"	
		6	8'11"	
		7	8'11"	
		8	8'11"	
		9	8'11"	
		10		
		11		
		12		
		13		
		14		
		15		
		16		
		17		
		18		
		19		
		20		
		21		
		22		
		23		
		24		
		25		
		26		
		27		
		28		
		29		
		30		

PUMP TEST DATA SHEET

OBSERVATION WELL NO. 2

DATE _____

Barry

Observation Number	Time Since Pump Test Started t Min	Time Since Pump Test Stopped t' Min	Depth to Water H	Residual Drawdown s ft.
		14		
		15		
		16		
		17		
		18		
		19		
		20	8'10"	
		25	8'10"	
		30	8'10"	
		40	8'11"	
		50	8'11"	
		60	8'11"	
		70	8'11"	
		80	8'11"	
		90	8'11"	
		100	8'11"	
		110	8'11"	
		120 120	8'11"	
		130 130		
		140 140		
		150 150		
		160 160		
		170 170		
		180 180		
		190 190		
		200 200		
		210 210		
		220 220		
		230 230		
		240 240		
		250 250		
		260 260		
		270 270		
		280 280		
		290 290		
		300 300		
		310 310		
		320 320		
		330 330		
		340 340		
		350 350		
		360 360		



CONSULTING ENGINEERS

BANNER & ASSOCIATES, Inc.

ENGINEERS:

J. T. BANNER
CALVIN VAUDREY
G. C. HAROKOPIS
A. J. HULL, JR.
HARRY M. JOHN
T. R. PFISTERER
J. A. SHELDON

6343
PHONE 692-2342X
P. O. BOX 44
BROOKINGS, SOUTH DAKOTA
57000

April 27, 1964

Water Resources Commission
State of South Dakota
Pierre, South Dakota

Re: Water Rights Application
No. 1056-3
Beresford, South Dakota

Gentlemen:

In behalf of the City of Beresford, South Dakota, as their Consulting Engineers for proposed water supply development and facilities improvements, we request modification in water right application No. 1056-3 for the City of Beresford to include the following changes, provided such modification can be made without sacrifice of priority.

1. That the application be changed from future water right to current water right.

2. The quantity requested is 1.8 cubic feet per second.

3. The present development during 1964 shall consist of 2 wells, 30-inch diameter with 18" casing and screen, gravel packed, designed to obtain water from about 45 to 60 feet below ground surface at the well sites. The anticipated pumping rate of each well will be about 250 g.p.m. The pumps shall be vertical turbine-type. The water from the proposed wells shall be transported to the City through 3.5 miles of 10" supply line which will terminate at the existing treatment plant. The treatment plant is designed to remove iron, manganese and soften the water. Proper metering of the supply and automatic controls shall be included in the improvements. It is recommended that the third well be developed within five years.

The location of the wells proposed for current development are shown on the attached sketch.

Water Resources Commission
Beresford Water Rights

-2-

April 27, 1964

The City has acquired ownership of the property on which the three wells are to be located.

Water rights for development of the proposed water supply is vital to the City of Beresford and your favorable consideration of this request and the water right is of utmost importance to the City.

If it is required that additional information is desired, we will be pleased to assist in obtaining it for the Commission.

Respectfully submitted,



Calvin Vaudrey
J. T. BANNER & ASSOCIATES, INC.

CV/dv

Enc.

May 1, 1964

Mr. Leo Jensen
Alcester, South Dakota

Dear Mr. Jensen:

After your phone call Friday, I reviewed the material in the City of Beresford's folder again. It looks like I was in error in stating there were 9 acres. The tract of land includes only 5 acres.

The area is a 466.7 foot square in the SE $\frac{1}{4}$ corner of the NE $\frac{1}{4}$ of Section 2, T95N, R50W.

Sorry for the error.

Sincerely,

BURTON F. JONES
Water Right Specialist

BFJ:mf

DATE MICROFILMED
CUBA OPERATOR

Permit No. 1056-3Water Division 3 SIOUX RIVER Water District

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

TO: Water Resources Commission, State Office Building No. 2, Pierre, South Dakota 57501

I have this day made a thorough examination of the water use system constructed by THE CITY OF
BERESFORD of Beresford, S.D. holder
of Permit No. 1056-3, bearing date of priority of March 15, 19 63
authorizing the diversion of 1.8 cu. ft. per second of the waters of ground water
for municipal purposes, in Union County.

I have to report on the condition of the same as follows:

The Water Use System consists of,

A. Works used to divert the water:

Two wells, each about 75 ft. deep and cased with 12 in. steel casing with bottom section containing Johnson screens.

Both wells have floway 8 inch pumps. SW Well Type JKL, SE Well Type MKAT, SW well has Hollow shaft 30 HP Electric Motor. SE well has Hollow shaft 15 HP electric motor.

B. Works used to transport water to place of use,

Three and one half miles of 10 inch transite buried pipe from well field to City storage system - storage system includes 300,000 gallon elevated tank and 120,000 gallon still well.

C. Works used to apply water to beneficial use.

City distribution system and 754 service connections.

The system is in the following condition: Very goodThe point of diversion is located from the E $\frac{1}{2}$ corner of Section 2, T95N, R50W, SE Well,
90 feet N. 64° 10' W. SW well, 490 feet, N. 83° 00' W.The works are capable of diverting and conveying to the place of use 1.12cu. ft. per second of water which is to be used for Municipal purposesWater has been put to beneficial use to the maximum extent as follows: water has been used for
municipal purposes as indicated.

XX

Send notice to Carroll Hanson, City Auditor

Date October 21, 1970

Donald Driscoll
(Signature)

DONALD DRISCOLL, Deputy Chief Engineer
Water Resources Commission



1056-3

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

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

JUL 17 1996

4909-3

Curtis Kludt, Finance Officer
City of Beresford
101 N. 3rd
Beresford, SD 57004-1796

Dear Mr. Kludt:

Enclosed is Water License No. 4909-3. This is the final water right document completing your process of obtaining a Water Right. Enclosed is Receipt No. 414729 in the amount of \$50.00 which you paid for the investigation and issuance of the Water License.

For your information SDCL 46-6-27 requires that if the owner of an existing well, such as the well authorized by Water Right No. 4909-3, constructs a replacement well and does not plan to use the old well, the old well is 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 License, the State Water Laws provide that you have a continuing right to use the water. If you have any questions, please contact our office.

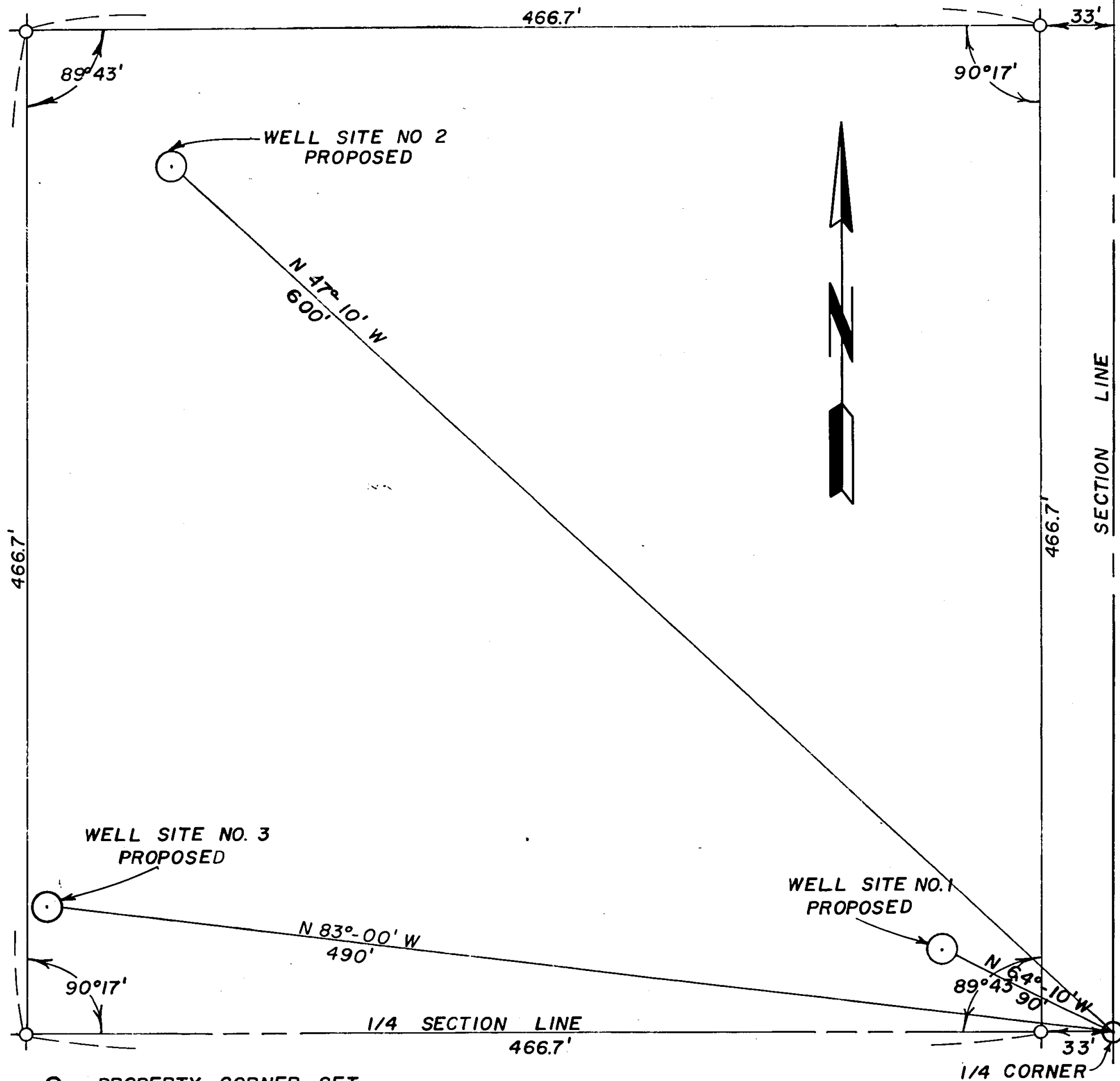
Very truly yours,

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

ks
enclosures

NOTE: The applicable portions of Water License No. 1056-3 have been incorporated into this Water License No. 4909-3.

NE CORNER OF
SEC 2, T 95, R 50



○ PROPERTY CORNER SET

SCALE: 1" = 50'

PORTION OF SE 1/4, NE 1/4
SECTION 2, T95N, R50W
5 $\pm$ ACRES

PREPARED BY
J. T. BANNER & ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA

WELL LOCATION MAP
CITY OF BERESFORD, SOUTH DAKOTA

Map # 696-3 (w/r 1056-3)