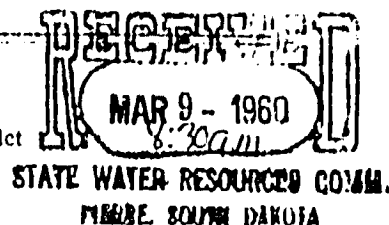


1. Considered 4-10, 1960 Appl. No. 703-3
2. Name of Applicant City of Gettysburg
3. Post Office Address \_\_\_\_\_
4. Amount of water claimed .28
5. Source of water supply Ground water (Dakota)
6. Water to be used for municipal use  
Acres to be irrigated \_\_\_\_\_
7. Water to be diverted and used in Dakota County about  
\_\_\_\_\_ miles \_\_\_\_\_ of Gettysburg.
8. Proof of Publication Received ✓  
Not Received \_\_\_\_\_ 1st
9. Application Approved ✓  
Subject to \_\_\_\_\_  
Not approved \_\_\_\_\_  
Action deferred \_\_\_\_\_
10. Remarks:

No. 103-3  
 Water Division No. 3 Missouri River District  
 (Blanks to be filled by the Engineer for the W. R. C.)



## APPLICATION FOR PERMIT

## To appropriate Water within the State of South Dakota

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

1. Name of applicant City of Gettysburg  
 Postoffice address Gettysburg, County Potter, State S. Dak.

I. If a 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 \_\_\_\_\_

(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)

Contract

(b) Cash on hand, \$ Adequate (c) Treasury stock, \$ \_\_\_\_\_

(d) Bonds to be issued, \$ \_\_\_\_\_ (e) Other resources, \$ \_\_\_\_\_

2. Name of diversion work City Well

3. Amount of water claimed ± 0.28 cubic feet per second

4. Source of water supply Ground Water (Dakota Formation)  
within the corporate limits of the City of Gettysburg

5. Location of point of diversion NE 1/4 Quarter Section 25 T 118 R 76

\_\_\_\_\_ on NE Potter County.

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

## 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 needs, fire protection and public recreation  
 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 \_\_\_\_\_

542-3  
Map

3. Estimated cost of work: Water Well and Well Screen

(a) Head Gates, \$..... (b) Pumping plant, \$.....  
 (c) Plumbing, \$..... (d) Canal-earth, \$..... Rock, \$.....  
 (e) Other structures ..... \$..... Total, \$ 70,000

9. Description of diversion works:

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

Municipal Well

II. Dimensions of works.

(a) Dam: Height.....feet; length at bottom ..... feet; length at top ..... feet; thickness at bottom ..... feet; thickness at top ..... feet; slope at front water face .....; slope at back face ..... material used in construction .....  
 (b) Reservoir: Capacity when filled .....acre feet. Surface area at ..... mark.....acres.

| DEPTH AT<br>OUTLET-Feet | SURFACE AREA AT EACH<br>DEPTH AT OUTLET—ACRES | ACRE-Feet<br>CAPACITY |
|-------------------------|-----------------------------------------------|-----------------------|
|                         |                                               |                       |
|                         |                                               |                       |
|                         |                                               |                       |
|                         |                                               |                       |
|                         |                                               |                       |
|                         |                                               |                       |
|                         |                                               |                       |
|                         |                                               |                       |
|                         |                                               |                       |

(c)\* Head gate: Width.....feet; height .....feet;  
 Material .....  
 (d) Canal: Total length .....miles.

| LOCATION BELOW<br>HEADGATE | DEPTH      | BOTTOM<br>WIDTH | WIDTH AT<br>WATER-LINE | GRADE<br>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 15 May 1960 ~~year~~  
 11. Time required for complete application of water to the proposed beneficial use ..... years.  
 12. Choice of newspaper for publication of notice of intention to appropriate .....  
 Potter County News, Gettysburg, South Dakota

STATE OF SOUTH DAKOTA

County of Potter } ss.

I, Carl Schietelbein, Mayor, City of Gettysburg, S.D., 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 *Carl Schietelbein*

Subscribed and sworn to before me this 8th day of March 1960.

*Notary Public*  
 Notary Public (or other qualified officer)

Form 2A — Wells (Supplement to Form 2)

9. (Continued)

III. Well Specifications

(a) Hole and casing

Size of drill hole or excavation 17-1/4" Dia., Depth ± 2000'

Type of casing Black, Seamless Steel Pipe  
(wood, concrete, steel, etc.)

Size of casing 12-3/4" O. D., Thickness of casing 0.375"

Length of casing ± 1850' If collection gallery, length, size and depth of gallery

(b) Screens

Type of perforated screen Stainless Steel, Type 304 (Continuous slot, shutter, or wire-wound)

Size of perforated screen 6", 150'  
(diameter) (length)

Thickness of gravel pack 10", length of gravel pack 150'

(c) Water Bearing Materials

Distance to water ± 1810' Character of water bearing materials Dakota Sandstone

Thickness of water bearing material ± 200'

(d) Pump and Motor

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

Name of pump size

Kind of motor Electric with auxiliary belt drive  
(gasoline, electric, diesel, etc.)

Horsepower 1, Name of Motor Electric

(e) Complete well

Capacity 1000 at drawdown of 10 Estimated cost 1000

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

Address

(g) Distance to nearest existing wells

On same owner's property 92 rods. On property owned by others 100 rods

Remaining information will be available after well has been drilled and tested.

1 9 6 0



WELL HOUSE LOCATION DETAIL

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, April 18, 1960

This is to certify that the foregoing application was received by the Commission at 8:30 o'clock  
A.m. upon the 9<sup>th</sup> day of March, 1960

State Water Resources Commission  
By: Burton Lyne  
for Chief Engineer, Executive Officer

Number of permit 703-3

Date of first receipt of application March 9, 1960

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 9, 1960

Approved April 8, 1960, Recorded in Book 6 Page 19

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 May 1, 1960

2nd. The whole of said work is to be completed on or before May 15, 1960

3rd. The limit of time for proof of beneficial use of water appropriated in accordance herewith is April 8, 1961

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 .28 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 needs.

and beneficially applied for irrigation on or before April 8, 1961; said water to be used during the following described annual period.

Continuously

Witness my hand this 18<sup>th</sup> day of April, 1960.

State Water Resources Commission

By: John H. Hines  
Chief Engineer, Executive Officer

Certificate of Construction issued July 10, 1962

Water License issued July 10, 1962

Permit No. 703-3

Water Division No. 3 Missouri River Water District

Certificate of Completion of Works

TO ALL WHOM IT MAY CONCERN:

This is to Certify, That the City of Gettysburg

of South Dakota, County of Potter, and State of

the holder of Permit No. 703-3 Issued upon Application No. 703-3, bearing date of priority of March 10, 1960, authorizing the diversion of

.28 cu. ft. per second of the waters of Artesian ground water

County of Potter, State of South Dakota, at a point within the corporate limits of the City of Gettysburg in the NE 1/4, Section 25, T 118N, R 76W

for Municipal

purposes, has fully 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 .28 cu. ft.

per second of water, and that the lands proposed to be irrigated by the use of said water are described as follows, to-wit: to be diverted through the City water system for municipal use.

Witness my hand this 10th day of July A. D. 1962.

State Water Resources Commission

By

Chief Engineer, Executive Officer  
J. W. GRIMES

## STATE OF SOUTH DAKOTA

## WATER LICENSE No. .... 703-3 ..

WHEREAS, On the 9th day of March A. D. 1960

the City of Gettysburg

~~xx~~ County of Potter and State of South Dakota duly made application (No. 703-3) to us for a permit to use .28 cubic feet per second of the waters of artesian ground water County of Potter, State of South Dakota, for municipal purposes; and

WHEREAS, On the 10th day of April A. D. 1960 Permit No. 703-3 was issued to said applicant for the diversion of said water, and providing for the completion of the works of diversion therein described on or before the 15th day of May A. D. 1960 and for the application to beneficial use of said water on or before the 8th day of April A. D. 1961 and,

WHEREAS, On the 8th day of June A. D. 1962 the holder of said permit duly made proof of the completion of adequate works for the diversion of .28 cubic feet per second of said waters, as evidenced by our Certificate No. 703-3 dated July 10, 1962 confirming the completion of works of sufficient capacity for diverting and conveying to the place of intended use .28 cubic feet per second of water, with date of priority of March 9, 1960 ~~xxx~~ and,

WHEREAS, On the 8th day of June A. D. 1962 proof was duly made of the application to beneficial use of .28 cubic feet per second of said water; for municipal purposes

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 Gettysburg  
~~xxx~~ the holder and owner of said permit No. 703-3  
a water right, dating from March 9, 1960 to the use of .28  
cubic feet per second of the waters of artesian ground water  
in the County of Potter and State of South Dakota, or so much thereof as may be  
necessary for the purposes hereinbelow mentioned, to be diverted at a point within the corporate  
limits of the City of Gettysburg, in the NE 1/4, Section 25, T 118N, R 76W.  
and conducted ~~work upon~~ through the city water system

for the purpose of municipal use

subject, however, to the laws of the State of South Dakota applicable to a license for the use of the waters of the State, and subject, also to the local or community customs, rules and regulations which have been or may be adopted from time to time by a majority of the users from a common source of supply, canal or lateral from which such water may be taken, when such rules and regulations have for their object the economical use of such water.

WITNESS, My hand and seal of our office at Pierre, South Dakota,  
this 10th day of July A. D. Nineteen  
Hundred and sixty-two

State Water Resources Commission  
By:

Chief Engineer, Executive Officer  
J.W. GRILES

STATE OF SOUTH DAKOTA

Water License No. \_\_\_\_\_

To \_\_\_\_\_

Source of Supply \_\_\_\_\_

County \_\_\_\_\_

Am't \_\_\_\_\_ c. f. s. \_\_\_\_\_

Point of Diversion \_\_\_\_\_

Place of Use \_\_\_\_\_

Purpose \_\_\_\_\_

Date of Priority \_\_\_\_\_

Recorded \_\_\_\_\_

In Book: \_\_\_\_\_ of \_\_\_\_\_ Page \_\_\_\_\_

(First Publication on or before March 17, 1960)

# APPROPRIATION OF WATER

Office of State Water Resources Commission,

Pierre, S. Dak., March-10, 1960

Notice is hereby given that the City of Gettysburg whose postoffice address is 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 .28 cubic feet of water per second of time from the ground-water (Dakota) through the a city well, the point of diversion of which is to be located on the bank of said stream in the NE 1/4 of the NE 1/4 of Section 25 Twp. 118N Range 76N. Said water to be used for the purpose of providing irrigation on the following described land:

necessary supplies for the municipal needs of the City of Gettysburg and for

This application will be taken up by the State Water Resources Commission at their office at Pierre for consideration upon the 7th day of April, 1960 at 10-A.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.

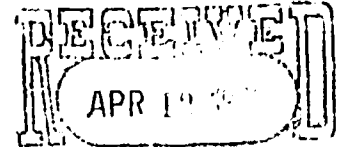
State Water Resources Commission

cc: W.R. Owens-Publisher  
Potter County News  
Gettysburg, South Dakota

By:  
Chief Engineer, Executive Officer  
Burton F. Jones  
Water Right Specialist

## PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA }  
 County Potter } ss.



STATE WATER RESOURCES COM.  
 PIERRE, SOUTH DAKOTA

William R. Owens being duly sworn, deposes and says the annexed printed copy of Notice of Intention to Appropriate Water was taken from the \_\_\_\_\_

Potter County News a newspaper which during the whole itme of publication of said notice herein after stated, has been and is printed and published in the city \_\_\_\_\_ of Gettysburg County of

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

March 17, 1960

March 24, 1960

March 31, 1960

April 7, 1960

in each and every issue of the full number thereof, the first publication being made on the 17th day of March

1960 and the last publication on the 7th day of

April 1960, upon which days or times of publication aforesaid the newspaper was regularly published, and that during the whole time of said publication he was editor & publisher the printer and publisher of the said newspaper.

William R. Owens

Form 8—Notice of Intention to Appropriate Water No. 703-3 (First Publication on or before March 17, 1960)

APPROPRIATION OF WATER  
 Office of State Water Resources Commission,  
 Pierre, S. Dak.,  
 March 10, 1960

Notice is hereby given that the City of Gettysburg, 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 .28 cubic feet of water per second of time from ground water (Dakota) through a city well, the point of diversion of which is to be located in the NE $\frac{1}{4}$  of the NE $\frac{1}{4}$  of Section 25, Twp. 118N, Range 76W. Said water to be used for the purpose of providing necessary supplies for the municipal needs of the City of Gettysburg.

This application will be taken up by the State Water Resources Commission at their office at Pierre for consideration upon the 8th day of April, 1960, at 10 A. 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  
 (Mar. 17, 24, 31, Apr. 7)

Subscribed and sworn to before me this 7th day of April A. D. 19 60

Aug. B. Quinn  
 Notary Public Potter County, S. D.

BEST IMAGE POSSIBLE  
FROM POOR ORIGINAL

History of Drilling Operations  
Gettysburg, South Dakota



The drilling rig and drill pipe was moved onto the site on  
April 19, 1960.

The site was not adequate for the drilling operation and it was  
necessary to obtain an easement from the east property owner in order  
to carry on the drilling operation. This was obtained on May 4.

The drilling rig was set up during the days of May 4 and May 5  
and was ready to start drilling by 6 PM on May 6.

The initial hole was drilled with an 11 inch bit followed by two  
drill collars and approximately 500 ft. of 6 inch T9 drill pipe. This  
heavy drill pipe was used to insure a good straight hole. Two twelve-  
hour shifts of drilling was employed and the drilling actually started  
at 6 AM on May 6 and was continued and completed to a depth of 1951' 9"  
by 1:45 AM on May 12.

The drill rod was pulled and Mr. Bruce Fetsch and Mr. Al Hong of  
the South Dakota Geological Survey ran an electric log to 1600 ft. The  
limiting depth was caused by a shortage of logging cable.

The men from the State Geological Survey collected samples of the  
formation for laboratory study.

The hole was then reamed to 16 inches in diameter. This reaming  
was started at 5:10 PM on May 12 the same day that the 12 inch pipe  
arrived at Gettysburg. The reaming was completed to 1956 ft. at 6:20 AM  
on May 13 at which time an attempt was made to re-log the well. It was  
not possible to get the logging probe down through the hole due to  
lumps of sand and clay that had peeled off from the drill bit during the  
pulling of the drill rod.

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

The 12 inch casing was run in the hole under bit 12 inches  
and the hole was then cemented. The schedule of the casing  
is included as part of the report. All of the joints were  
welded using the three-pass method of welding to insure that the  
welds were complete and gave full strength at the well joint.

The Drilling and Cementing Company arrived at Dakota on May 19  
and cementing and grouting work was started at 2:00 P.M. on May 20. It  
required a total of 1000 bags of cement in order to fill the annulus  
between the hole and the pipe. This amount of cement gave some coverage  
which allowed for a wash of the hole and a cleaning of the hole to  
insure that a good complete cementation was done.

Spacing bars were placed at each section of pipe to insure that  
the pipe would not set as tight against the well and thus no cement  
would be cemented around the pipe. These casing bars were  
placed such that they held the casing a minimum of 1 1/2 inch from the well  
hole wall.

On May 21 the sand and formation samples were taken to the  
Geological Company of St. Paul, Minnesota, for analysis and for their  
recommendation. These findings and recommendations were transmitted to  
the engineers by phone and upon their approval the screen was ordered and  
the required gravel pack material ordered for delivery. The screen  
chosen was 20 mesh and the gravel pack material was what is known as the  
No. 10 or 15 millimeter filler sand.

On May 22 the drilling operations were started to drill out the cement  
plug and get ready for the underreaming operation. Due to mechanical  
difficulties with the equipment and bad weather the drilling out of the  
cement plug was not completed until May 27.

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

The underreamer arrived at 11:30 AM on May 23 and underreaming operations were started at 7:00 AM May 29. The actual underreamer diameter was 27 inches. On May 25 a second electric log was run from the bottom of the casing to 1945 ft. On May 26 we were informed that the decision had been reached to bottom the screen at 1930 ft.

The State Geological Survey men had informed us that material identified as the fossil formation had been identified at 1920 ft. or possibly above. At approximately 1835 ft. from the top of the well the drill pipe twisted off leaving the underreamer, the adapter sub, and the bottom coupling of the 6 inch drill pipe. Various types of fishing tools were employed with an effort of removing the underreamer from the hole. As a last resort the Acme Fishing Tool Co. was called in to the job and succeeded in getting hold of the underreamer and removing it from the well on June 6.

The underreaming was then continued to a depth of 1935 ft. on June

Following the underreaming the fresh water was added at the top and circulated until all of the drilling mud was circulated out of the well leaving practically clear water in the well.

The well screen and its extension were set in the well and bottomed at 1930 ft. The total assembly was 171'9" made up of 121 ft. of screen and 50'9" of flush tube extension and fittings. The well screen was set up fastening it to a special adapter at the end of the 4 inch drill pipe. In addition to the 4 inch drill pipe, 2 inch pipe was extended down to within one foot of the bottom of the screen. This pipe was fastened directly to the 4 inch drill pipe such that water could be pumped up through the entire assembly. On June 7, 2 inch pipe was installed in the 4 inch drill pipe such that it could be used as an air-lift pump, and fresh water was run into the top of the well and the water was then pumped out from inside of the 4 inch allowing the removal of all the heavier materials that had not been pumped out during the circulation.

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

After the underdrainage at 4:20 sufficient circulation was obtained to place that very little solids remained in the water that was being pumped out and thus the Contractor felt that gravel packing operation should begin.

During the circulation period the screen assembly was set down so that the entire hole to a depth of 1201 ft. could be pumped clean. Following the pumping 12 cubic feet of filter gravel was placed in the hole to make a seat so that the valve in the bottom of the well would be closed when the screen was lifted slightly and then released. All of the equipment was set up and everything was ready to start placing the gravel at 4:42 PM on June 7. The Engineer, Mr. John Gaston, had some question in his mind regarding the closing of the valve bottom of the screen and thus ordered the work of placing the gravel stopped until such time as the level could be measured with a sounding line. He was informed of the dangers that this could involve, namely, that the walls of the hole could slough out and crush the screen or possibly require the pulling of the screen and re-drilling of the hole. This period from the time when the weight of the drilling fluid is removed until the gravel is in place is the most critical time during the construction of any well. The thing which made it doubly precarious was that 100 lbs. sodium polyphos had been placed in the well in order to assist in the development of the well later on. In spite of this warning by the Contractor and by the Contractor's Engineer, the Engineer insisted on delaying the placing of the gravel until the depth to the bottom could be sounded.

The sounding equipment from Halliburton Well Service Co. had previously been ordered for to be taken the next morning to be used in conjunction with the location of the gravel level during the filling operation. The work was then delayed until such time as the level of the gravel at the bottom could be sounded to the satisfaction of the Engineer.

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

In order to give the best possible protection of the hole, water was run continuously into the well to keep the hole open to surface until the gravel could be placed.

It required until approximately 1 P. M. June 8 before the screen could be worked down to the 1300 ft. level. This difficulty in getting the screen down to the 1300 ft. level was no doubt due to the great depth of sounding and the centering guides on both the sounding and the riser tube extension. These centering guides necessitated the screen plate to shake back and forth and thus made a lot of friction on the line and prevented the probe from moving down easily to the 1300 ft. level. During the process of raising the screen and setting it at its final elevation the resident engineer insisted on raising the screen 6 feet and then setting it back down 6 feet rather than merely raising it up the two feet required to bring it up to the final setting location. It is not known whether this action of moving the screen up and down after it had set for better than 12 hours did any damage to the screen. It is not to be noted, however, that it did cause any damage to the screen.

At approximately 1:10 the gravel placing operation was begun and was completed at about 7 P. M. June 8.

Approximately 17 feet of gravel was placed in the well. Too much gravel was placed in the well and thus entered up above the flush tube position of the screen. This was noticed by the fact that the sounding line never stuck in the hole and could not be removed.

At last until June 29 to work out the excess gravel pack and to remove the 2 inch pipe that had been broken off inside of the screen and to pull out the gravel pack that had found its way into the screen itself.

During this operation considerable burning and chauling took place and no doubt a good rate of developing action also resulted from it.

During the period of time from the time that the gravel pack was

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

been placed up until June 20, only one shift of crew was used on the work.

On June 20, 750 ft. of 4 inch drill pipe and 600 ft. of 1 inch air line were installed in the well to pump and surge the well. The well was pumped and surged from the afternoon of June 20 until 6 PM on June 21. During most of the pumping the average pumping rate was approximately 50 gpm. The pumping was alternated with surging by turning off the air and allowing the water column to drop back into the well. At 6 PM. another 2 sacks of sodium polyphosphate were added to the well and approximately 1000 gallons of water run into the well in order to wash it out into the formation. The well was then sit until 3 AM the next morning at which time the air compressor was started and the well was alternately pumped and surged, until the afternoon of June 23 at which time an additional 200 lbs. of sodium polyphosphate was placed into the well and additional water run in to push it out into the formation.

The drill pipe was then pulled out of the hole and the lead packer wedged by use of a wire line and two lengths of 2 inch pipe.

During the process of wedging the lead packer the depth to the top of the lead packer was again measured by order of the Engineer. This measurement required an additional 2 hours of time and the measurement is correct to within 7 inches of that determined by the measurements of the drill pipe.

On July 2nd, 3rd, and 4th a turbine pump was set in the well down to a depth of 600 ft. On the fourth of July an attempt was made to pump the well but the power unit failed almost immediately after starting. On July 6 a second power unit was obtained and set up. The pumping test was started at 6:45 PM on July 6. The pumping rate was set at approximately 200 gallons per minute. This pumping rate was carried on until 6:00 on July 7 at which time the rate was increased to approximately 300 gpm.

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

however, as a difficulty was encountered operating the unit at 11:00 before the motor could be started again. The pumping rate of 200 gpm was continued up until 11:30 when difficulty was encountered in maintaining a steady, even pumping rate and for better results in the seeping test the rate of pumping was reduced to 20 gpm. The pumping was carried on until 2:20 at which time the power unit picked out a bearing.

Recovery data was taken until 7 PM the next evening. This motor was then repaired and pumping again started at 11:25 on July 8 and continued until 4:30 when the timing gear of the power unit failed. The motor was again repaired and pumping started at 1:20 on July 10 but this lasted only until 2:15 at which time the exhaust valve again the motor broke and knocked a hole in the piston.

It was felt that part of the difficulty in maintaining the power units was that they were overloaded and could thus be responsible for some of the difficulties that were occurring. In order to eliminate this a second power unit was obtained and the first one was repaired. Then the two units were set up in tandem so that the power requirements would not be as large.

The last and final pumping test was started at 1:35 on July 11 and was continued on until 4:15 on July 12. This pumping rate was 200 gpm.

The water temperature in the well settled out each time at approximately 60°.

Following the pumping tests, recovery data was taken on the well for 24 hours.

Following the pumping test, the turbine pump was removed from the well and the well was sterilized using 1 lbm. of calcium hypochloride. The drilling rig was moved off and the casing extended to 210" above the ground level and a satisfactory cover placed on the well to prevent any contamination.

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

## Records of Casing Operations

Gallatin, D.D.  
5/12/66

Slack = 13"

|     |             |              |     |             |               |
|-----|-------------|--------------|-----|-------------|---------------|
| 1.  | 42' 1"      |              | 23. | 43' 3"      | 1061' 2 1/2"  |
| 2.  | 42' 10"     | 63' 11"      | 24. | 42' 9 1/2"  | 970' 1 1/2"   |
| 3.  | 42' 1/2"    | 127' 11 1/2" | 25. | 41' 2 1/2"  | 1038' 4"      |
| 4.  | 40' 1 1/2"  | 153' 1"      | 26. | 42' 3"      | 1080' 3"      |
| 5.  | 36' 4 1/2"  | 208' 5 1/2"  | 27. | 41' 5"      | 1122' 3"      |
| 6.  | 42' 3"      | 243' 1 1/2"  | 28. | 43' 3 1/2"  | 1163' 3 1/2"  |
| 7.  | 35' 1 1/2"  | 264' 2 3/4"  | 29. | 40' 2"      | 1205' 4 1/2"  |
| 8.  | 42' 2"      | 326' 4 1/4"  | 30. | 42' 9"      | 1251' 7 1/2"  |
| 9.  | 41' 1/2"    | 366' 3 1/2"  | 31. | 36' 9 1/2"  | 1280' 4 3/4"  |
| 10. | 26' 6"      | 408' 6 1/2"  | 32. | 39' 1 1/2"  | 1330' 2 3/4"  |
| 11. | 40' 9 1/2"  | 470' 5 3/4"  | 33. | 42' 10 1/2" | 1372' 1 1/2"  |
| 12. | 40' 6 1/2"  | 460'         | 34. | 42' 7 3/4"  | 1415' 2"      |
| 13. | 41' 2 1/2"  | 523' 2 1/2"  | 35. | 39' 3"      | 1449' 5"      |
| 14. | 45' 0"      | 573' 2 1/2"  | 36. | 42' 3 1/2"  | 1492' 2 1/2"  |
| 15. | 42' 5 3/4"  | 614' 3"      | 37. | 35' 10 1/2" | 1523' 3"      |
| 16. | 42' 1 1/2"  | 651' 1 1/2"  | 38. | 40' 1/2"    | 1560' 2 1/2"  |
| 17. | 41' 12 3/4" | 689' 1/2"    | 39. | 41' 6 1/2"  | 1601' 3"      |
| 18. | 40' 0"      | 723' 1/2"    | 40. | 37' 3"      | 1643' 1"      |
| 19. | 40' 3"      | 763' 3 1/2"  | 41. | 39' 1/2"    | 1680' 2 1/2"  |
| 20. | 41' 2 1/2"  | 827' 10 1/2" | 42. | 39' 1 1/2"  | 1711' 2 3/4"  |
| 21. | 40' 3 1/2"  | 860' 2 1/2"  | 43. | 42' 5 1/2"  | 1753' 11 1/2" |
| 22. | 42' 6"      | 890' 1 1/2"  | 44. | 39' 6 1/2"  | 1783' 5 1/2"  |

Note: The bottom of the string or casing was set at 1737'. The joints or pipe were all welded together using three passes of the machine in order to insure development of full strength of the joint. In accordance with the state regulations, spacers were placed at each joint to insure that the casing would not touch the side of the hole and would thus allow cement to be forced around on all sides of the casing. These spacers were placed so that they gave 1" of clearance on all sides of the casing.

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

## Record of Cementing and Sealing Operations

The cementing operation was performed by the Halliburton Well Service Company of Duncan, Oklahoma.

The cementing and sealing operations were performed in the following manner; the top of the 12 inch casing was pushed down to 2 inches such that a connection to a high-pressure pump could be made. Then fresh water was pumped into the top of the well in order to displace the mud from the casing and clean up the annulus between the 16 inch hole and the 12 inch casing. The next step consisted of mixing the bulk cement by the Halliburton jet method and then pumping it into the top of the casing until the calculated quantity of cement had been pumped into the top of the casing. This requires a total of 15.0 sacks of cement. After the cement had been pumped into the casing, a separator float was placed inside of the casing and the cement from inside of the casing was displaced by pumping mud into the casing. This requires that all of the cement must go down to the bottom of the casing and then be pumped up to the surface and thus the cementing operation was continuous and was always under pressure. Following the displacement of the cement the top of the casing was valved off to prevent a backflow of fluid from outside of the casing into the casing. The amount of the cement was controlled by the quantity of water used in the mixing process.

Following the placement of the cement which required from 2 P.M. to 4 P.M. until 4:30 P.M. that same day, and following the sealing the well was allowed to set for 72 hours for the cement to set up before the cement plug in the bottom of the well was drilled out.

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

## Methods and Results of Development

Methods used in the development of this well are somewhat unusual in that they employ the use of phosphates prior to the installation of the gravel treatment material and that the drilling fluids were completely diluted previous to the installation of any gravel. Normally with gravel treatment wells it is considered that about the only development that can really be done is just to pump the wells until they either produce the desired quantity or until the maximum production of the well is realized in the pumping process.

The drilling fluid was replaced with clean water after the uncasing had been completed. The screen was equipped with a bottom which would not be closed until some gravel had been introduced into the bottom of the hole. A 2 inch pipe was also installed inside of the screen so that the water could be pumped from inside of the string of screen and lifting pipe to allow a removal of those materials which would be normally too heavy to circulate out of the 7 1/2 inch diameter uncasing hole. The screen assembly was set lower than its contemplated final installation level and an air-lift pump arrangement was set up in the drilling pipe used for setting the screen such that water could be entered in the well at the top and pumped out at the inside of the screen and the 2 inch pipe such that circulation through the casing less than the well could be realized and that sufficient upward velocity could be maintained within the 2 inch pipe to pump out the heavier solids than normally would be left in the hole. This pumping and circulation was carried on for a period of approximately a hour in order to insure as clean an possible a condition of the hole. Following this reverse circulation of the water in the hole, 100 lbs. of sodium polyphosphate was placed in the well and circulated until it was calculated the polyphosphate had come into the production formation. Then this polyphosphate was allowed to set in the well to come into the drilling mud on the side

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

the reason for this.

Since the gravel was all uniform and would not suffer the  
excessive segregation that occurs when material is placed in a  
pipe it was possible to place this gravel directly into the open end  
and let it fall through the underscreened pipe. This air could not move  
around the walls and helped somewhat to clean them out. During this  
time that the gravel was being placed, the well was being constantly  
pumped from the inside to cause a circulation of the water from the  
outside of the screen through the inside to eliminate the buildup  
of any excess amount of clays and silts within the gravel pack itself.

Following the installation of the gravel pack, the well was pumped  
again until the water cleaned up. After the water started to clean  
up, the well was surged by turning the air pressure on and off. This  
alternately turning the air on and off would produce a violent surge  
within the well since the air line was placed approximately 10 feet  
below the water level. Each time the well was surged the well would  
pull silt and colloidal materials which further evidenced the additional  
material was being removed from the formation.

After the surging no longer seemed to loosen any additional  
material, silts or colloids, an additional 200 lbs. of phosphate  
was placed in the well and mixed into the formation with water from the  
well. This phosphate was allowed to set for approximately 12 hours  
and then was surged by turning on and off the air. After surging with  
air the well was again pumped and surged until very little additional  
material could be removed by the surging with the air.

Another 200 lbs. of phosphate was again placed in the well and  
allowed to set after being mixed into the formation until the first pump  
was turned on the well. This additional phosphate was again allowed to  
set for 12 hours and was then surging and the well was pumped  
until the surging test of the well.

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

Results of Wind Testing of the Shell for  
Pettysburg, South Dakota

July 7, 1900

Static water level at 6:30 AM 210

| Time    | Depth to water<br>in feet | Barometric pressure | Temperature |
|---------|---------------------------|---------------------|-------------|
| 6:30 AM | 316                       |                     |             |
| 6:35    | 336                       | 107 mm              |             |
| 6:40    | 405                       | 107                 | 72.9        |
| 6:45    | 419                       | 107                 |             |
| 6:50    | 425                       | 107                 |             |
| 6:55    | 417                       | 107                 |             |
| 7:00    | 418.5                     | 107                 | 71          |
| 7:05    | 418.5                     | 107                 |             |
| 7:10    | 420.1                     | 105                 |             |
| 7:15    | 422.9                     | 105                 | 70          |
| 7:20    | 424.7                     | 105                 |             |
| 7:25    | 424                       | 103                 |             |
| 7:30    | 424.4                     | 101                 |             |
| 7:35    | 424.5                     | 101                 |             |
| 7:40    | 424.6                     | 107                 |             |
| 7:45    | 423.7                     | 105                 |             |
| 7:50    | 423.8                     | 105                 |             |
| 7:55    | 423.2                     | 105                 |             |
| 8:00    | 423.7                     | 102                 |             |
| 8:05    | 423.1                     | 100                 |             |
| 8:10    | 423.9                     | 102                 | 69          |
| 8:15    | 423.7                     | 100                 | 69          |
| 8:20    | 423.2                     | 100                 | 69          |
| 8:25    | 423.6                     | 102                 | 69          |
| 8:30    | 427                       | 102                 | 69          |
| 8:35    | 427                       | 100                 | 69          |
| 8:40    | 426                       | 105                 | 69          |
| 8:45    | 425.6                     | 105                 | 69          |
| 8:50    | 425                       | 102                 | 69          |
| 8:55    | 425.2                     | 100                 | 69          |
| 9:00    | 425.6                     | 100                 | 69          |
| 9:05    | 425.1                     | 107                 | 69          |
| 9:10    | 425                       | 102                 | 69          |
| 9:15    | 425                       | 107                 | 69          |
| 9:20    | 425                       | 102                 | 69          |
| 9:25    | 425                       | 107                 | 69          |
| 9:30    | 425                       | 107                 | 69          |
| 9:35    | 425                       | 107                 | 69          |
| 9:40    | 425                       | 107                 | 69          |
| 9:45    | 425                       | 107                 | 69          |
| 9:50    | 425                       | 107                 | 69          |
| 9:55    | 425                       | 107                 | 69          |
| 10:00   | 425                       | 107                 | 69          |
| 10:05   | 425                       | 107                 | 69          |
| 10:10   | 425                       | 107                 | 69          |
| 10:15   | 425                       | 107                 | 69          |
| 10:20   | 425                       | 107                 | 69          |
| 10:25   | 425                       | 107                 | 69          |
| 10:30   | 425                       | 107                 | 69          |
| 10:35   | 425                       | 107                 | 69          |
| 10:40   | 425                       | 107                 | 69          |
| 10:45   | 425                       | 107                 | 69          |
| 10:50   | 425                       | 107                 | 69          |
| 10:55   | 425                       | 107                 | 69          |
| 11:00   | 425                       | 107                 | 69          |
| 11:05   | 425                       | 107                 | 69          |
| 11:10   | 425                       | 107                 | 69          |
| 11:15   | 425                       | 107                 | 69          |
| 11:20   | 425                       | 107                 | 69          |
| 11:25   | 425                       | 107                 | 69          |
| 11:30   | 425                       | 107                 | 69          |
| 11:35   | 425                       | 107                 | 69          |
| 11:40   | 425                       | 107                 | 69          |
| 11:45   | 425                       | 107                 | 69          |
| 11:50   | 425                       | 107                 | 69          |
| 11:55   | 425                       | 107                 | 69          |
| 12:00   | 425                       | 107                 | 69          |

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

| Time                                                                                                 | Depth to water<br>in feet | Pumping Rate | Temperature |
|------------------------------------------------------------------------------------------------------|---------------------------|--------------|-------------|
| Motor speed cut down at 7:00 to 2170 RPM - stopped completely and<br>couldn't start until 11:00 AM   |                           |              |             |
| 11:00                                                                                                | 458                       | 300          |             |
| 11:10                                                                                                | 435                       | 300          | 61          |
| 11:15                                                                                                | 430                       | 300          |             |
| 11:20                                                                                                | 515                       | 300          |             |
| 11:30                                                                                                | 322                       | 300          | 61          |
|                                                                                                      |                           | 300          | 61          |
| Reduced yield to 200 gpm for best pumping results, most even yield at 611.                           |                           |              |             |
| 11:45                                                                                                | 485                       | 201          |             |
| 11:45                                                                                                | 455                       | 201          | 61          |
| 12:00                                                                                                | 435                       | 201          | 60          |
| 12:15                                                                                                | 445                       | 201          | 61          |
| 12:30                                                                                                | 428                       | 201          | 61          |
| 1:00                                                                                                 | 412.2                     | 210          | 62          |
| 1:00                                                                                                 | 409.6                     | 210          | 61          |
| 2:00 PM                                                                                              | 457.1                     | 210          | 61          |
| 2:30                                                                                                 | 450.0                     | 207          | 61          |
| 3:00                                                                                                 | 451.1                     | 210          | 61          |
| 3:30                                                                                                 | 451.7                     | 210          | 61          |
|                                                                                                      |                           | 210          | 61          |
| Motor started making lots of noise at 3:45, sounded like bearing going bad.<br>Shut pump off at 3:45 |                           |              |             |

## Recovery Data

|      |                |         |                |
|------|----------------|---------|----------------|
| Time | Depth to water | Time    | Depth to water |
| 4:15 | 505            | 4:15    | 511            |
| 4:15 | 558            | 4:20    | 565            |
| 4:15 | 551            | 4:25    | 570            |
| 4:20 | 532            | 4:30    | 566.5          |
| 4:25 | 531            | 4:35    | 567.5          |
| 4:30 | 500            | 4:40    | 560.5          |
| 4:35 | 525            | 4:45    | 538            |
| 4:40 | 535            | 4:50    | 535            |
| 4:45 | 577.5          | 4:55    | 534            |
| 4:50 | 567            | 5:00    | 535            |
| 4:55 | 570.5          | 5:05    | 532.5          |
| 5:00 | 578            | 5:10    | 530.5          |
| 5:05 | 560.2          | 5:15    | 528            |
| 5:10 | 555            | 5:20    | 526            |
| 5:15 | 554            | 5:25 AM | 522            |
| 5:20 | 542            | 5:30 AM | 510.5          |

Pumping Unit cont. July 2, 1966

| Time     | Depth to water | Pumping Rate | Temperature |
|----------|----------------|--------------|-------------|
| 11:25 AM | 323.4          |              |             |
| 11:27    | 349.5          |              |             |
| 11:28    | 25.7           |              |             |
| 11:31    | 350.9          |              |             |
| 11:39    | 426.2          |              |             |
| 11:42    | 429.1          |              |             |

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

| Time  | Depth to Water in Ft. | Running Rate | Temperature |
|-------|-----------------------|--------------|-------------|
| 11:47 | 425.3                 | 201          | 75          |
| 11:50 | 425.7                 | 201          | 75          |
| 11:51 | 425.6                 | 201          | 75          |
| 11:52 | 427.0                 | 201          | 75          |
| 11:55 | 427.5                 | 201          | 75          |
| 12:00 | 425                   | 201          | 75          |
| 12:05 | 429                   | 201          | 75          |
| 12:10 | 429.1                 | 201          | 75          |
| 12:12 | 429.1                 | 201          | 75          |
| 12:13 | 429.3                 | 201          | 75          |
| 12:14 | 431.1                 | 201          | 75          |
| 12:25 | 431.2                 | 201          | 75          |
| 12:30 | 431.0                 | 201          | 75          |
| 12:35 | 433.1                 | 201          | 75          |
| 12:40 | 433.7                 | 201          | 75          |
| 12:50 | 435.2                 | 201          | 75          |
| 1:00  | 435.1                 | 201          | 75          |
| 1:10  | 436.0                 | 201          | 75          |
| 1:20  | 436.5                 | 201          | 75          |
| 1:25  | 435.9                 | 201          | 75          |
| 1:30  | 435.5                 | 201          | 75          |
| 1:35  | 435.1                 | 201          | 75          |
| 1:40  | 435.5                 | 201          | 75          |
| 1:45  | 435.1                 | 201          | 75          |
| 1:50  | 435.1                 | 201          | 75          |
| 1:55  | 435.7                 | 201          | 75          |
| 2:00  | 436.3                 | 201          | 75          |
| 2:05  | 437.0                 | 201          | 75          |
| 2:10  | 438.1                 | 201          | 75          |

2:10 engine stopped suddenly; broken chain, shaft or gear.

Jan. 11, 1960

|       |       |   |    |
|-------|-------|---|----|
| 2:20  | 432.0 | " |    |
| 2:25  | 431.0 |   |    |
| 2:30  | 431.5 |   | 75 |
| 2:35  | 430.5 |   | 75 |
| 2:40  | 431.4 |   | 75 |
| 2:45  | 430.7 |   | 75 |
| 2:50  | 431.5 |   | 75 |
| 2:55  | 430.1 |   | 75 |
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| 17:35 | 425.1 |   | 75 |
| 17:40 | 425.1 |   | 75 |
| 17:45 | 425.1 |   | 75 |
| 17:50 | 425.1 |   | 75 |
| 17:55 | 425.1 |   | 75 |
| 18:00 | 425.1 |   | 75 |
| 18:05 | 425.1 |   | 75 |
| 18:10 | 425.1 |   | 75 |
| 18:15 | 425.1 |   | 75 |
| 18:20 | 425.1 |   | 75 |
| 18:25 | 425.1 |   | 75 |
| 18:30 | 425.1 |   | 75 |
| 18:35 | 425.1 |   | 75 |
| 18:40 | 425.1 |   | 75 |
| 18:45 | 425.1 |   | 75 |
| 18:50 | 425.1 |   | 75 |
| 18:55 | 425.1 |   | 75 |
| 19:00 | 425.1 |   | 75 |
| 19:05 | 425.1 |   | 75 |
| 19:10 | 425.1 |   | 75 |
| 19:15 | 425.1 |   | 75 |
| 19:20 | 425.1 |   | 75 |
| 19:25 | 425.1 |   | 75 |
| 19:30 | 425.1 |   | 75 |
| 19:35 | 425.1 |   | 75 |
| 19:40 | 425.1 |   | 75 |
| 19:45 | 425.1 |   | 75 |
| 19:50 | 425.1 |   | 75 |
| 19:55 | 425.1 |   | 75 |
| 20:00 | 425.1 |   | 75 |
| 20:05 | 425.1 |   | 75 |
| 20:10 | 425.1 |   | 75 |
| 20:15 | 425.1 |   | 75 |
| 20:20 | 425.1 |   | 75 |
| 20:25 | 425.1 |   | 75 |
| 20:30 | 425.1 |   | 75 |
| 20:35 | 425.1 |   | 75 |
| 20:40 | 425.1 |   | 75 |
| 20:45 | 425.1 |   | 75 |
| 20:50 | 425.1 |   | 75 |
| 20:55 | 425.1 |   | 75 |
| 21:00 | 425.1 |   | 75 |
| 21:05 | 425.1 |   | 75 |
| 21:10 | 425.1 |   | 75 |
| 21:15 | 425.1 |   | 75 |
| 21:20 | 425.1 |   | 75 |
| 21:25 | 425.1 |   | 75 |
| 21:30 | 425.1 |   | 75 |
| 21:35 | 425.1 |   | 75 |
| 21:40 | 425.1 |   | 75 |
| 21:45 | 425.1 |   | 75 |
| 21:50 | 425.1 |   | 75 |
| 21:55 | 425.1 |   | 75 |
| 22:00 | 425.1 |   | 75 |
| 22:05 | 425.1 |   | 75 |
| 22:10 | 425.1 |   | 75 |
| 22:15 | 425.1 |   | 75 |
| 22:20 | 425.1 |   | 75 |
| 22:25 | 425.1 |   | 75 |
| 22:30 | 425.1 |   | 75 |
| 22:35 | 425.1 |   | 75 |
| 22:40 | 425.1 |   | 75 |
| 22:45 | 425.1 |   | 75 |
| 22:50 | 425.1 |   | 75 |
| 22:55 | 425.1 |   | 75 |
| 23:00 | 425.1 |   | 75 |
| 23:05 | 425.1 |   | 75 |
| 23:10 | 425.1 |   | 75 |
| 23:15 | 425.1 |   | 75 |
| 23:20 | 425.1 |   | 75 |
| 23:25 | 425.1 |   | 75 |
| 23:30 | 425.1 |   | 75 |
| 23:35 | 425.1 |   | 75 |
| 23:40 | 425.1 |   | 75 |
| 23:45 | 425.1 |   | 75 |
| 23:50 | 425.1 |   | 75 |
| 23:55 | 425.1 |   | 75 |
| 24:00 | 425.1 |   | 75 |

1:10 water broke valve and ran down piston

Jan. 11, 1960 Static water level 21.0 22.1.0

|      |       |     |    |
|------|-------|-----|----|
| 2:00 | 425.1 | 201 |    |
| 2:05 | 425.1 | 201 | 75 |
| 2:10 | 425.1 | 201 |    |
| 2:15 | 425.1 | 201 |    |
| 2:20 | 425.1 | 201 | 72 |
| 2:25 | 425.1 | 201 | 75 |
| 2:30 | 425.1 | 201 | 71 |

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

Stopped at 4:55 to put new plugs in front motor and take it up to run better. Started pump at 4:36

| Time | Depth to Water | Pumping Rate | Temperature |
|------|----------------|--------------|-------------|
| 4:36 | 416.1          | 230          | 76°         |
| 4:37 | 420.7          | 230          |             |
| 4:38 | 418.5          | 230          |             |
| 4:39 | 412.6          | 230          | 72          |
| 4:40 | 411.9          | 230          | 73          |
| 4:41 | 411.5          | 230          | 74          |
| 4:42 | 415            | 230          | 75          |
| 4:43 | 418.2          | 230          | 75          |
| 4:44 | 419.5          | 230          | 75          |
| 4:45 | 420.0          | 230          | 75          |
| 4:46 | 428.6          | 230          | 80          |
| 4:47 | 430.3          | 230          | 80          |
| 4:48 | 436.0          | 230          | 80          |
| 4:49 | 441.2          | 230          | 80          |
| 4:50 | 451.5          | 230          | 80          |
| 4:51 | 451.5          | 230          | 80          |
| 4:52 | 451.5          | 230          | 80          |
| 4:53 | 451.5          | 230          | 80          |
| 4:54 | 451.5          | 230          | 80          |
| 4:55 | 451.5          | 230          | 80          |
| 4:56 | 451.5          | 230          | 80          |
| 4:57 | 451.5          | 230          | 80          |
| 4:58 | 451.5          | 230          | 80          |
| 4:59 | 451.5          | 230          | 80          |
| 5:00 | 451.5          | 230          | 80          |
| 5:01 | 451.5          | 230          | 80          |
| 5:02 | 451.5          | 230          | 80          |
| 5:03 | 451.5          | 230          | 80          |
| 5:04 | 451.5          | 230          | 80          |
| 5:05 | 451.5          | 230          | 80          |
| 5:06 | 451.5          | 230          | 80          |
| 5:07 | 451.5          | 230          | 80          |
| 5:08 | 451.5          | 230          | 80          |
| 5:09 | 451.5          | 230          | 80          |
| 5:10 | 451.5          | 230          | 80          |
| 5:11 | 451.5          | 230          | 80          |
| 5:12 | 451.5          | 230          | 80          |
| 5:13 | 451.5          | 230          | 80          |
| 5:14 | 451.5          | 230          | 80          |
| 5:15 | 451.5          | 230          | 80          |
| 5:16 | 451.5          | 230          | 80          |
| 5:17 | 451.5          | 230          | 80          |
| 5:18 | 451.5          | 230          | 80          |
| 5:19 | 451.5          | 230          | 80          |
| 5:20 | 451.5          | 230          | 80          |
| 5:21 | 451.5          | 230          | 80          |
| 5:22 | 451.5          | 230          | 80          |
| 5:23 | 451.5          | 230          | 80          |
| 5:24 | 451.5          | 230          | 80          |
| 5:25 | 451.5          | 230          | 80          |
| 5:26 | 451.5          | 230          | 80          |
| 5:27 | 451.5          | 230          | 80          |
| 5:28 | 451.5          | 230          | 80          |
| 5:29 | 451.5          | 230          | 80          |
| 5:30 | 451.5          | 230          | 80          |
| 5:31 | 451.5          | 230          | 80          |
| 5:32 | 451.5          | 230          | 80          |
| 5:33 | 451.5          | 230          | 80          |
| 5:34 | 451.5          | 230          | 80          |
| 5:35 | 451.5          | 230          | 80          |
| 5:36 | 451.5          | 230          | 80          |
| 5:37 | 451.5          | 230          | 80          |
| 5:38 | 451.5          | 230          | 80          |
| 5:39 | 451.5          | 230          | 80          |
| 5:40 | 451.5          | 230          | 80          |
| 5:41 | 451.5          | 230          | 80          |
| 5:42 | 451.5          | 230          | 80          |
| 5:43 | 451.5          | 230          | 80          |
| 5:44 | 451.5          | 230          | 80          |
| 5:45 | 451.5          | 230          | 80          |
| 5:46 | 451.5          | 230          | 80          |
| 5:47 | 451.5          | 230          | 80          |
| 5:48 | 451.5          | 230          | 80          |
| 5:49 | 451.5          | 230          | 80          |
| 5:50 | 451.5          | 230          | 80          |
| 5:51 | 451.5          | 230          | 80          |
| 5:52 | 451.5          | 230          | 80          |
| 5:53 | 451.5          | 230          | 80          |
| 5:54 | 451.5          | 230          | 80          |
| 5:55 | 451.5          | 230          | 80          |
| 5:56 | 451.5          | 230          | 80          |
| 5:57 | 451.5          | 230          | 80          |
| 5:58 | 451.5          | 230          | 80          |
| 5:59 | 451.5          | 230          | 80          |
| 6:00 | 451.5          | 230          | 80          |

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

| Time | Depth to Water<br>in Feet | Temperature | Log Pressure |
|------|---------------------------|-------------|--------------|
| 2:30 | 456.1                     | 57.5        | 60           |
| 2:35 | 454.7                     | 58.0        | 60           |
| 2:40 | 453.7                     | 58.0        | 60           |
| 2:45 | 453.9                     | 57.9        | 60           |
| 2:50 | 457.6                     | 57.9        |              |
| 2:55 | 457.0                     | 58.0        |              |
| 3:00 | 456.9                     | 58.0        |              |
| 3:05 | 455.5                     | 58.0        |              |
| 3:10 | 455.7                     | 58.0        | 60           |
| 3:15 | 453.3                     | 58.0        |              |

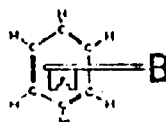
Recovery - with engine idling at a speed just high enough to keep water running out of pipe.

| Time                      | Depth to Water | Time    | Depth to Water |
|---------------------------|----------------|---------|----------------|
| 4:04                      | 341.7          | 6:20    | 350.4          |
| 4:10                      | 339.5          | 6:30    |                |
| 4:15                      | 338.5          | 6:40    |                |
| 4:20                      | 338.5          | 6:50    |                |
| 4:25                      | 331.7          | 7:00    | 337.3          |
| 4:30                      | 337.2          | 7:10    | 336.7          |
| 4:35                      | 331.1          | 7:20    | 335.1          |
| 4:40                      | 331.5          | 7:30    |                |
| 4:50                      | 330.5          | 7:40    | 333.7          |
| 5:00                      | 330            | 7:50    | 333.7          |
| at 5:00 at 4:52           |                | 8:00    | 333.7          |
| at 5:00 the log gauge was |                | 8:10    | 333.7          |
| stopped on a comparison.  |                | 8:20    | 333.7          |
| 5:05                      | 330.5          | 8:30 AM | 332.5          |
| 5:10                      | 331.5          | 8:40    | 332.5          |
| 5:15                      | 331.5          | 8:50    | 332.5          |
| 5:20                      | 330.5          | 9:00    | 332.5          |
| 5:25                      | 330.5          | 9:10    | 331.75         |
| 5:30                      | 331.7          | 9:20    | 331.5          |
| 5:35                      | 331.7          | 9:30    | 331.5          |
| 5:40                      | 332.5          | 9:40    | 331.5          |
| 5:45                      | 332.5          | 9:50    | 331.5          |
| 5:50                      | 332.5          | 10:00   | 330.57         |
| 5:55                      | 332.5          | 10:10   |                |
| 6:00                      | 332.5          | 10:20   | 330.5          |
| 6:05                      | 332.5          | 10:30   | 330.5          |
| 6:10                      | 332.5          | 10:40   | 329.5          |
| 6:15                      | 332.5          | 10:50   | 329.5          |
| 6:20                      | 332.5          | 11:00   | 329.5          |
| 6:25                      | 332.5          | 11:10   | 329.5          |
| 6:30                      | 332.5          | 11:20   | 329.5          |
| 6:35                      | 332.5          | 11:30   | 329.5          |
| 6:40                      | 332.5          | 11:40   | 329.5          |
| 6:45                      | 332.5          | 11:50   | 329.5          |
| 6:50                      | 332.5          | 12:00   | 329.5          |

Calibrated well using 4 lbs. of CaCO<sub>3</sub>.

BEST IMAGE POSSIBLE  
FROM POOR ORIGINAL

"The Key To Analysis"



# Goodwin Joss Laboratories

Federal 5-719



Member  
American Chemical Society  
Fellow American Institute  
of Chemists  
Minnesota Industrial  
Chemists Forum  
American Council of  
Independent Laboratories

INCORPORATED  
Analytical and Consulting Chemists  
ANALYTICAL & RESEARCH - TOXICOLOGY - ALCOHOL IN BLOOD  
CONSULTING BACTERIOLOGY OF WATERS AND FOOD  
CHEMISTS ANALYSIS OF INSECTICIDES, CHEMICALS  
DRUGS, FOODS AND WATERS

529 SEVENTH STREET SOUTH, MINNEAPOLIS 15, MINNESOTA

August 3, 1960

Frederickson, Inc.  
Rt. 73  
Hutchinson, Minn.

Gentlemen:

Report on complete mineral analysis of sample of water from Gettysburg,  
So. Dak. Sample received on July 22, 1960. Lab. 544507.

## ANALYSIS OF DI SOLVED SOLIDS

|                                                  | Grains/U.S.Gal. | Parts/ Million. |
|--------------------------------------------------|-----------------|-----------------|
| Silica (SiO <sub>2</sub> )                       | 0.95            | 16.2            |
| Iron as Fe - 0.3 P.P.M.                          |                 |                 |
| Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )     | 0.024           | 0.4             |
| Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> ) | 0.626           | 10.7            |
| Calcium (Ca)                                     | 0.53            | 9.1             |
| Magnesium (Mg)                                   | 0.72            | 12.3            |
| Sodium & Potassium (Na)                          | 45.8            | 783.2           |
| Sulphate (SO <sub>4</sub> )                      | 10.76           | 184.0           |
| Chloride (Cl)                                    | 39.78           | 680.2           |
| Carbonate (CO <sub>3</sub> )                     | 0.00            | 0.00            |
| Bicarbonate (HCO <sub>3</sub> )                  | 44.63           | 762.2           |
| Total Solids                                     | 123.82          | 2159.3          |
| Half Bound CO <sub>2</sub>                       | 21.67           | 387.7           |
| Total Dissolved Solids                           | 121.15          | 2121.5          |
| Total Alkalinity                                 | 36.52           | 646.5           |
| Total Hardness as CaCO <sub>3</sub>              | 6.17            | 105.3           |
| pH - 8.0 Manganese - None                        |                 |                 |
| Free CO <sub>2</sub> - none                      |                 |                 |

## HYPOTHEtical CALCULATIONS

|                                                             |        |        |
|-------------------------------------------------------------|--------|--------|
| Silica (SiO <sub>2</sub> )                                  | 0.95   | 16.2   |
| Iron Oxide (Fe <sub>2</sub> O <sub>3</sub> )                | 0.024  | 0.4    |
| Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> )            | 0.626  | 10.7   |
| Calcium Bicarbonate (Ca(HCO <sub>3</sub> ) <sub>2</sub> )   | 1.17   | 37.1   |
| Magnesium Bicarbonate (Mg(HCO <sub>3</sub> ) <sub>2</sub> ) | 4.36   | 74.6   |
| Sodium Bicarbonate (NaHCO <sub>3</sub> )                    | 51.20  | 926.8  |
| Sodium Sulphate (Na <sub>2</sub> SO <sub>4</sub> )          | 15.92  | 275.1  |
| Sodium Chloride (NaCl)                                      | 65.53  | 1121.4 |
| Total Solids                                                | 143.92 | 2452.3 |

s/c

GOODWIN JOSS LABORATORIES, INC.

*Frederickson, Inc.  
Hutchinson, Minn.*

# BEST IMAGE POSSIBLE FROM POOR ORIGINAL

## Recommendations for installation of pumps are Allowable Daily Loading

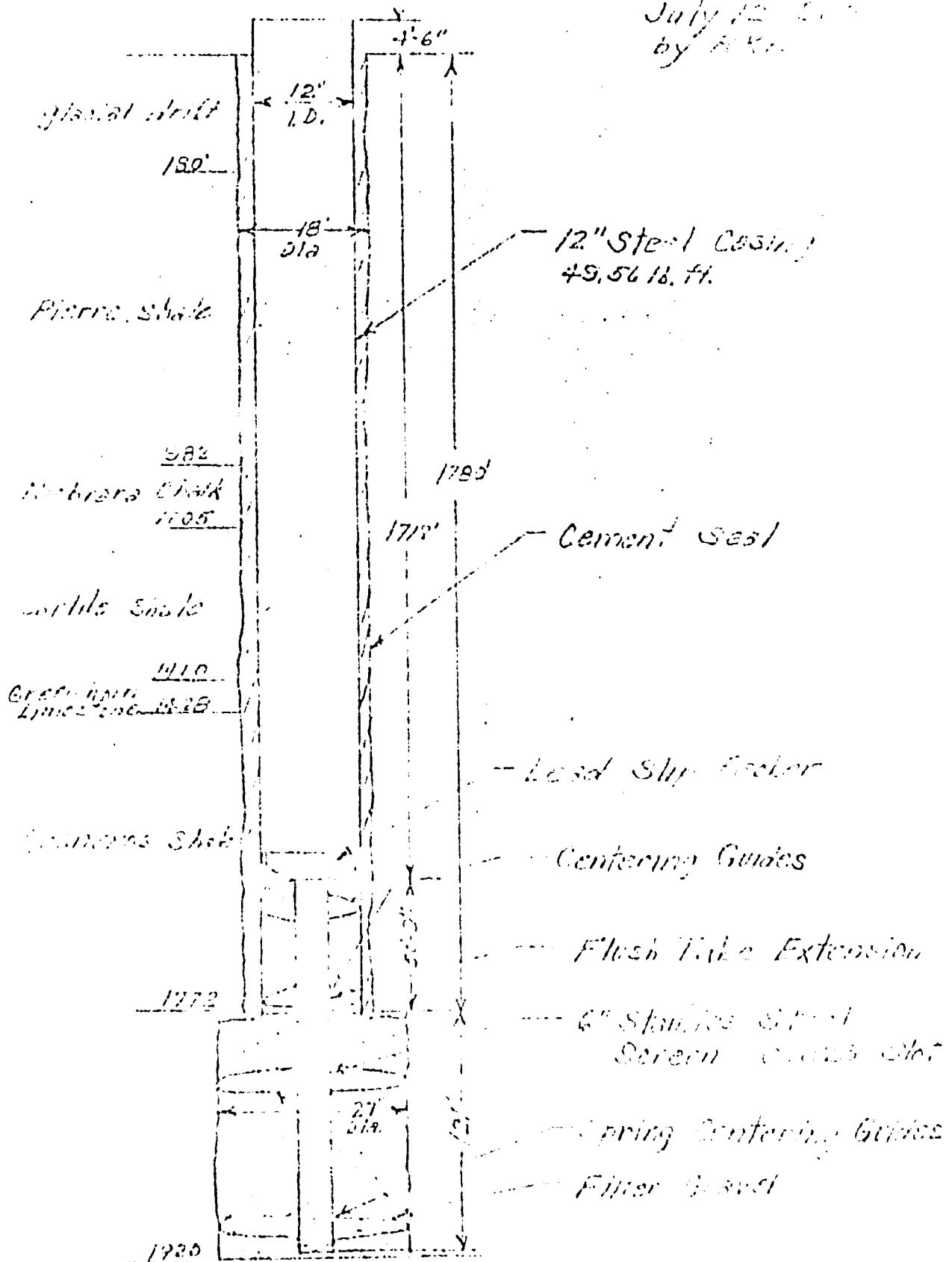
After a careful study of the data obtained in the test  
of the well for the City of Gettysburg, it is our opinion that the  
pump chosen for this job should be set at approximately 60 feet from  
the surface and it would be practical to pump 200 gallons per minute  
from this well. It is our belief that a submersible pump would be the  
most satisfactory due to the deep setting. However, if a turbine pump  
is used, then the pump should be built special for the well because  
of the deep setting. In addition to the use of a submersible we would  
recommend that at least one additional backflow valve be placed within  
the discharge line of the pump and that a non-slam type check valve  
be placed on the surface of the ground in the discharge in order to  
prevent the shock upon the pump column. If a turbine type pump is  
utilized, the foot valve should be used and a non-slam check valve  
be placed in order to maintain the shock to the discharge column at  
minimum.

Our analysis and recommendations are based on our determination of the  
characteristics of the formation and on the extension of the  
pump curve to a series of curves of continuous pumping at a rate of  
200 gpm. We believe that it would be within good design to take an  
average of 200 gpm per cap from this well.

We believe that the depth of depression will enlarge and the depth  
of water will continue to increase with time, however, with a 60 foot  
extension we see nothing against taking the quantity of water as above  
recommended.

# GETTYSBURG CITY WELL (As Centered)

July 12, 1905  
by A.R.



March 21, 1960

Mr. J. A. Lake  
P. O. Box 218  
Gettysburg, South Dakota

Dear Mr. Lake:

In your letter of March 18 you ask about the possible effect that the new municipal well at Gettysburg may have on your well which taps the same water supply.

It is not likely that withdrawal of 125 gallons per minute by the City well will be noticeable as far away as your well. I must add, however, that characteristics of the aquifer vary in considerable degree from one well location to another. Also, too many wells in the same locality have a tendency to lower the artesian pressure somewhat.

So, I don't think that you will be affected but there is always an outside chance that the water in your well will be lowered. If lowering of the water in your well does occur, it should be a small amount only.

I am sorry that I do not have a better answer for you.

Sincerely,

J. W. GRIMES  
Chief Engineer

JWJ:ls  
cc: Carl Cronin  
Water Resources Commissioner  
Gettysburg, South Dakota



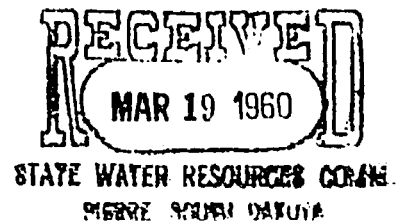
*Jay Lake & Sons*

P. O. BOX 218  
GETTYSBURG, SOUTH DAKOTA

*Breeders of Top Commercial Herefords*

March 18, 1960

Mr. Burton F. Jones  
Office of State Water Resources Commission  
Pierre, South Dakota



Dear Sir;

I read in the Potter County News that the City of Gettysburg, S. Dak. has made application for a permit to drill a well to the artesian basin. The location of this well will be approximately three city blocks from my artesian well which is the same depth. I would like to know if this large city well will affect the output of water from my well. I have had my well for several years and it is a real good well. I lift the water with air, (with an air compressor) and the output is thirty gallons per minute.

Please let me know if the City well will have any effect on the output of my well.

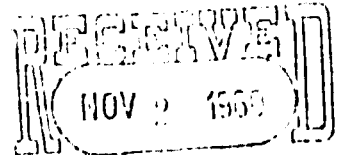
Yours very truly,

*Jay A. Lake*

Jay A. Lake

Permit No. 703-3

Water Division No. High Water District

STATE WATER RESOURCES COMM.  
PIERRE, SOUTH DAKOTA

## Notice of Application of Water to Beneficial Use

(This blank must be filled out by holder of permit and forwarded to the State Water Resources Commission at least sixty days before the time set for application of water.)

(P. O.) Gettysburg, South Dakota

October

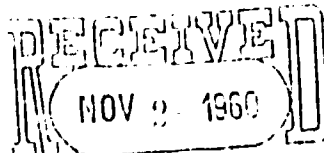
(Date)

TO THE STATE WATER RESOURCES COMMISSION OF SOUTH DAKOTA, PIERRE:

DEAR SIR: Notice is hereby given that on the \_\_\_\_\_ day of \_\_\_\_\_  
19\_\_\_\_, at \_\_\_\_\_ County of \_\_\_\_\_ State of South Dakota,  
before \_\_\_\_\_ proof will be submitted of the application to beneficial use  
(Examining Engineer or Officer)  
of 0.28 cubic feet per second of the waters of Dakota Formation  
\_\_\_\_\_ In accordance with the terms and conditions of Permit No. 703-3  
heretofore issued by the Water Resources Commission of South Dakota.

- The name and postoffice address of the person or corporation holding said permit are \_\_\_\_\_  
City of Gettysburg,  
Gettysburg, S. Dak.
- The use to which said water has been applied is \_\_\_\_\_  
municipal needs, fire protection and public recreation.
- The amount applied to beneficial use is \_\_\_\_\_
- The place where said water is used is (if for irrigation, give full and accurate description of the lands irrigated) \_\_\_\_\_  
NE 1/4 Quarter Section 25 T 118 R 76
- The name of the canal or ditch or other works by which said water is conducted to such place of use is \_\_\_\_\_
- The right to take the water from such works is based upon permit No. 703-3
- The source of supply from which such water is diverted is \_\_\_\_\_
- The date of priority which said user is prepared to establish is \_\_\_\_\_

(Sign)

Permit No. 703-3Water Division No. 3Missouri River DistrictSTATE WATER RESOURCES COMM.  
PIERRE, SOUTH DAKOTA

## NOTICE OF COMPLETION OF WORKS

This blank must be filled out by the holder of permit and forwarded to the Executive Officer at least 60 days before the time set for completion of works

(P. O.) Gettysburg, South Dakota(Date) October 31, 1960

TO THE STATE WATER RESOURCES COMMISSION  
OF SOUTH DAKOTA, PIERRE:

DEAR SIR: Notice is hereby given of the completion of the works for the diversion of \_\_\_\_\_  
\_\_\_\_\_ 0.28 \_\_\_\_\_ cu. ft. per second of the waters of the state from \_\_\_\_\_  
through the \_\_\_\_\_ Dakota Formation \_\_\_\_\_  
for municipal needs, fire protection and public recreation \_\_\_\_\_ purposes  
\_\_\_\_\_ In accordance with the terms and con-  
ditions of a certain permit heretofore issued by the Water Resources Commission of the State of South Dakota.

1. The name of the person or corporation holding said permit is City of Gettysburg
2. The postoffice address of such person or the place of business of such corporation is Gettysburg,  
County of Potter State of South Dakota
3. The number of such permit is 703-3 and the date set for the completion of such work is  
November 1, 1960
4. Said water to be used for municipal purposes.
5. Said works of diversion will be fully completed on the date set for such completion, and the amount of water which said works are capable of conducting to the place of intended use, in accordance with the plans accompanying the application for such permit, is 0.28 cubic feet per second.
6. The amount of land for which said water is available is 1140 acres,  
particularly described as follows: City of Gettysburg

I hereby certify that the facts set forth in the above notice are true.

Tom J. J. J.  
Mayor, City of Gettysburg

(Signature of Owners) \_\_\_\_\_

Permit No. 702-5Water Division No. 3 W. Pierre Water District**Certificate of Examination of Works****Report of Examining Engineer**

To the State Water Resources Commission, Pierre, South Dakota:

Dear Sirs: I hereby certify that in accordance with your letter of authorization dated \_\_\_\_\_  
 19\_\_\_\_, I have this day made a thorough examination of the diversion works constructed by City of  
Gallatin of \_\_\_\_\_  
Potter County, South Dakota, holder of Permit No. 702-5, issued  
 upon Application No. 702-5, bearing date of priority of 3-9-60, 1960, authorizing the  
 diversion of 0.28 cu. ft. per second of the waters of Gallatin for Municipal  
 purposes. I have to report on the condition of the same as follows:

The diversion works comprise: One well, 195' deep, 12" casing to 1172'  
w/ a 24" 2 rowel pump, 121' w/ a 1" perforated steel casing, 1172' to 1172'  
Logan Pump, 8" head w/ 1 1/2" shaft, 500' B. 1172'.  
Pump motor is 115 H.P. Electric, 75 H.P., Variable - Control  
1800 R.P.M. Ser. #. 1226358  
 and the system is in the following condition: Excellent.

The point of diversion is located 1 1/4 miles south of the 1172'

The works are capable of diverting and conveying to the place of use 2.25 cu. ft. per second of water,  
 which is to be used for Municipal use.

The legal sub-divisions to be irrigated are: \_\_\_\_\_

\_\_\_\_\_ comprising a total of \_\_\_\_\_ acres of land.  
 The domestic use intended comprises Municipal use, Fire protection and  
public recreation.

The utilization for power, mining, or other beneficial uses comprises: \_\_\_\_\_

Witness my hand, this 8 day of June, A. D. 1962

—SEAL—

Examining Engineer.

WATER WELL  
GETTYSBURG, SOUTH DAKOTA

STATEMENT OF WORK  
INSTRUCTIONS TO BIDDERS  
GENERAL CONDITIONS  
SPECIAL CONDITIONS  
SPECIFICATIONS  
PROPOSAL FORM  
CONTRACT  
CONTRACT BOND

KIRKHAM, MICHAEL & ASSOCIATES  
110-1/2 BROADWAY  
FARGO, NORTH DAKOTA

## STATEMENT OF WORK

A. Work to be Done. The work consists of furnishing all plant, labor, materials and equipment, and performing all work in strict accordance with these specifications, schedules, and drawings forming a part thereof for:

Drilling, casing, cementing, gravel packing, and developing water well, approximately 1900 feet deep.

B. Location. The site of the proposed well is in the City of Gettysburg, South Dakota.

C. Principal Features. The work to be done includes the construction of a water well, complete and capped 4 feet above the ground. Included shall be:

1. Stainless steel screen, approximately 200 feet long.
2. Drilling and casing, approximately 1900 feet of hole, grouting with cement.
3. Gravel packing, approximately 200 feet of hole.
4. Electric Logging.
5. Developing the well.

The general outline of principal features above does not in any way limit the responsibility of the Contractor to perform all work and furnish all plant, labor and materials required by the specifications and the plans and drawings, and referred to therein.

## INSTRUCTIONS TO BIDDERS

### 1. DATE AND PLACE FOR OPENING PROPOSALS.

Pursuant to the Notice to Contractors, sealed proposals for performing the work will be received by the City Council of Gettysburg, South Dakota, hereinafter called the Owner.

At the place and time set forth in said notice, they will be publicly opened by the Owner and read. The awarding of the Contract, if awarded, will be made by the Owner within ten (10) days.

Any bid may be withdrawn by letter or by communication or in person, prior to the opening of bids, but no bid made shall be changed or altered by any telegraphic communication or by telephone.

### 2. PRINTED FORM FOR PROPOSALS.

All proposals must be made upon the blank form of proposal attached hereto, and should give the lump sum price and unit prices for the work, both in words and in figures, and must be signed and acknowledged by the bidder, in accordance with the directions in the FORM OF PROPOSAL. In order to insure consideration, the proposal should be enclosed in an envelope marked "Proposal" and addressed to the City Auditor, City of Gettysburg, South Dakota.

### 3. OMISSIONS AND DISCREPANCIES.

Should a bidder find discrepancies in, or omissions from, the drawings or other Contract Documents, or should he be in doubt as to their meaning, he should at once notify the Engineer who may send a written instruction to all bidders.

### 4. ACCEPTANCE OR REJECTION OF PROPOSALS.

The Owner reserves the right to reject any or all proposals. Without limiting the generality of the foregoing, any proposal which is incomplete, obscure, or irregular, may be rejected; any proposal having erasures or corrections in the price sheet may be rejected; and a proposal which omits a bid on any one or more items in the price sheet may be rejected; any proposal in which unit prices are obviously unbalanced may be rejected; any proposal accompanied by an insufficient or irregular bidder's check may be rejected.

5. EVIDENCE OF GOOD FAITH.

Each bid must be accompanied by a certified check, cashier's check or draft for five per cent (5%) of the amount of the bid including all add alternates, such check to be certified or issued by either a solvent state or national bank domiciled within the State of South Dakota and payable to the Treasurer of the City of Gettysburg, South Dakota, as evidence of good faith of the bidder, and as agreed liquidated damages to the City of Gettysburg, South Dakota, in case the bidder whose proposal is accepted by the Mayor and City Council fails to enter into contract within ten (10) days from the Notice of the Award and to furnish acceptable bond to complete the work and pay for all labor and materials used, said bond to be in the amount of 100% of the total bid price.

All such checks will be returned to the respective unsuccessful bidders within ten days after the award is made, except those the Owner elects to hold until the successful bidder has executed the contract. Thereafter all remaining checks will be returned within ten (10) days.

6. ACCEPTANCE OF PROPOSALS AND ITS EFFECT.

Within ten (10) days after the opening of the proposals, the Owner will act upon them. The acceptance of a proposal will be a notice in writing signed by a duly authorized representative of the Owner, and no other act of the Owner shall constitute the acceptance of a proposal. The acceptance of a proposal shall bind the successful bidder to execute the Contract and to be responsible for liquidated damages as provided in Paragraph 7. The rights and obligations provided for in the contract shall become effective and binding upon the parties only with its formal execution by both parties thereto.

7. TIME FOR EXECUTING CONTRACT AND DAMAGES FOR FAILURE TO EXECUTE.

Any bidder whose proposal shall be accepted will be required to appear at the office of the Owner in person, or if a firm or corporation, a duly authorized representative shall so appear, and to execute the Contract and furnish Bond within ten (10) days after notice that the Contract has been awarded to him. Failure or neglect so to do shall constitute a breach of the Agreement effected by the acceptance of the proposal.

The damages to the Owner for such breach will include loss from interference with his construction program and other items whose accurate amount will be difficult or impossible to compute. The amount of the bidder's check accompanying the proposal for such bidder shall be retained by the Owner as liquidated

damages for such breach. In the event any bidder whose proposal shall be accepted shall fail or refuse to execute the Contract as hereinbefore provided, the Owner may, at his option, determine that such bidder has abandoned the Contract and thereupon his proposal and the acceptance thereof shall be null and void and the Owner shall be entitled to liquidated damages as above provided.

#### 8. DETERMINATION OF LOW BIDDER.

Except where the Owner exercises the right reserved herein to act otherwise, the Contract will be awarded by the Owner to the lowest responsible resident bidder, provided that a resident bidder may be allowed a preference on any such contract as against the bid of any bidder from any other state enforcing or having a preference for resident bidders equal to such preference. The lowest bid shall be determined by the sum of the unit price work based on quantities given in the schedule.

#### 9. TIME FOR BEGINNING AND COMPLETING THE WORK.

The Contractor shall complete the work within the time specified in the Contract.

#### 10. PRICES.

In the event of discrepancy between the prices quoted in the proposal in words and those quoted in figures, the words shall control. The prices are to include the furnishing of all materials, plant, equipment, tools and all other facilities and the performance of all labor and services necessary or proper for the completion of the work.

#### 11. INTERPRETATIONS AND ADDENDA.

No oral interpretations shall be made to any bidder as to the meaning of any of the Contract Documents, or be effective to modify any of the provisions of the Contract Documents. Every request for an interpretation shall be made in writing and addressed and forwarded to KIRKHAM, MICHAEL & ASSOCIATES, 110-1/2 BROADWAY, FARGO, NORTH DAKOTA.

## GENERAL CONDITIONS

### ARTICLE 1. Definitions.

a. The Contract Documents consist of the Contract, the General Conditions of the Contract, the Drawings and Specifications, including all modifications thereof incorporated in the documents before their execution. These form the Contract.

b. The Owner, the Contractor and the Engineer are those mentioned as such in the Contract. They are treated throughout the Contract Documents as if each were of the singular number and masculine gender.

c. Wherever in this contract the word Engineer is used, it shall be understood as referring to the Engineer of the Owner, acting personally or through an assistant duly authorized in writing for such act by the Engineer.

d. Written notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

e. The term Subcontractor, as employed herein, includes only one having a direct contract with the Contractor and it includes one who furnishes materials worked to a special design according to the plans or specifications of this work, but does not include one who merely furnishes material not so worked.

f. The term "work" of the Contractor or Subcontractor includes labor or materials or both, equipment, transportation, or other facilities necessary to complete the Contract.

g. All time limits stated in the Contract Documents are of the essence of the Contract.

h. A.S.T.M. - American Society for Testing Materials.

i. A.A.S.H.O. - American Association of State Highway Officials.

### ARTICLE 2. Execution, Correlation and Intent of Documents.

The Contract Documents shall be executed in triplicate by the Owner and the Contractor; one copy being retained by

the Owner, one to be delivered to the Contractor and one to the Engineer.

The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all. The intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of the work. It is not intended, however, that materials or work not covered by or properly inferable from any heading, branch, class or trade of the specifications shall be supplied unless distinctly so noted on the drawings. Materials or work described in words which so applied have a well-known, technical or trade meaning shall be held to refer to such recognized standards. Figured dimensions shall govern over scaled dimensions. The plans shall govern over the specifications,

#### ARTICLE 3. Detail Drawings and Instructions.

The Engineer shall furnish with reasonable promptness additional instructions, by means of drawings or otherwise, necessary for the proper execution of the work. All such drawings and instructions shall be consistent with the Contract Documents, true developments thereof, and reasonably inferable therefrom.

#### ARTICLE 4. Deviation from Plans.

No deviation from the plans or approved shop and working drawings will be permitted without the written order of the Engineer.

#### ARTICLE 5. Copies of Drawings Furnished.

The Engineer will furnish to the Contractor, free of charge, four copies of drawings and specifications reasonably necessary for the execution of the work. All additional copies will be furnished at reproduction cost.

#### ARTICLE 6. Drawings and Specifications on the Work.

The Contractor shall keep one copy of all drawings and specifications on the work, in good order, available to the Engineer and to his representatives.

The Owner shall keep one copy of all drawings and specifications on the work in the Office of the City Auditor at all times until the completion of the work.

#### ARTICLE 7. Ownership of Drawings.

All drawings, specifications and copies thereof furnished by the Engineer are his property. They are not to be used on

other work, and, with the exception of the signed contract set, are to be returned to him upon request, at the completion of the work.

ARTICLE 8. Contractor's Understanding.

It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during prosecution of the work, the general and local conditions, and all other matters, which can in any way effect the work under this contract. No verbal agreement or conversation with any officer, agent, or employee of the Owner, either before or after the execution of this Contract, shall effect or modify any of the terms or obligations herein contained.

ARTICLE 9. Materials, Appliances, Employees.

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation and other facilities necessary for the execution and completion of the work.

All materials shall be new and both workmanship and materials shall be of good quality. The Contractor shall furnish satisfactory evidence as to the kind and quality of materials.

The acceptance at any time of any material shall not be a bar to future rejection if it is subsequently found to be defective or inferior in quality or uniformity to the material specified.

The Contractor shall, at all times, enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or any one not skilled in the work assigned to him.

ARTICLE 10. Royalties and Patents.

The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement or any patent rights and shall save Owner harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has

information that the process or article specified is an infringement on a patent, he shall be responsible for such loss unless he promptly gives such information to the Engineer.

ARTICLE 11. Permits and Regulations.

Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the drawings and specifications are at variance therewith, he shall promptly notify the Engineer in writing, and any changes shall be adjusted as provided in the Contract for changes in the work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice from the Engineer, he shall bear all costs arising therefrom.

ARTICLE 12. Protection of Work and Property.

The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the Owner's property from injury or loss arising in connection with this Contract. He shall make good any such damage, injury or loss, except such as may be directly due to errors in the Contract Documents or caused by agents or employees of the Owner. He shall adequately protect adjacent property as provided by law and the Contract Documents. He shall provide and maintain all passageways, guard fences, lights and other facilities for protection required by public authority or local conditions.

In an emergency affecting the safety of life or of the work or of adjoining property, the Contractor, without special instructions or authorization from the Engineer, is hereby permitted to act, at his discretion, to prevent such threatened loss or injury, and he shall so act, without appeal, if so instructed or authorized. Any compensation claimed by the Contractor on account of emergency work, shall be determined by agreement or arbitration.

ARTICLE 13. Engineer's Status.

The Engineer shall have general supervision and direction of the work, and shall be the authorized representative of the Owner.

ARTICLE 14. Inspection of Work.

The Engineer and his representative shall at all times have access to all or any part of the work. Inspection by the Engineer or members of his staff, shall in no way relieve the Contractor from any obligation to furnish acceptable materials, or to provide completed construction that is satisfactory in every particular.

Re-examination of questioned work may be ordered by the Owner and if so ordered, the work must be uncovered by the Contractor. If such work be found in accordance with the Contract Documents the Owner shall pay the cost of re-examination and replacement.

If such work be found not in accordance with the Contract Documents, the Contractor shall pay such costs.

ARTICLE 15. Superintendence: Supervision.

The Contractor shall keep on his work during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Owner. The superintendent shall not be changed except with the consent of the Owner, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his employ. The Superintendent shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor. Important directions shall be confirmed in writing to the Contractor. Other directions shall be so confirmed on written request in each case. The Contractor shall give efficient supervision to the work, using his best skill and attention.

If the Contractor in the course of the work, finds any discrepancy between the drawings and the physical conditions of the locality or omissions in drawings or in the layout as given by points and instruction, it shall be his duty to immediately inform the Engineer in writing, and the Engineer shall promptly verify the same. Any work done after such discovery, until authorized will be done at the Contractor's risk.

Neither party shall employ or hire any employee of the other party without his consent.

ARTICLE 16. Changes in the Work.

The Owner, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the work, the Contract sum being adjusted accordingly. All such work shall be executed under the Conditions of the Original Contract, except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.

The value of such extra work or change shall be determined by unit prices named in the Contract. If such additional work is not covered by contract prices, such extra work shall be covered by a supplemental agreement. The Contractor shall not start work on any work to be covered by a supplemental agreement until such agreement has been signed by all parties signing the Original Contract.

ARTICLE 17. Force Account Work.

When work orders fail to provide other stipulations for methods of payment or when mutually agreed between the parties to the contract, work may be done on a "force account" basis. Before any force account work is started a schedule of unit prices, rental prices and wage rates must have been agreed to in writing.

For all labor, equipment rental, material costs and workmen's compensation insurance, the Contractor shall be paid actual cost plus fifteen percent (15%) of the sum thereof.

For small tools, oils and lubricants used the Contractor shall be paid a lump sum agreed upon to which no additional percentage is to be added.

ARTICLE 18. Claims for Extra Costs.

If the Contractor claims that any instructions by drawings or otherwise involve extra cost under this Contract, he shall give the Engineer written notice thereof within a reasonable time after the receipt of such instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property and the procedure shall then be as provided for changes in the work. No such claim shall be valid unless so made.

ARTICLE 19. Deductions for Uncorrected Work.

If the Engineer deems it inexpedient to correct work injured or not done in accordance with the contract, an

equitable deduction from the contract price shall be made therefore.

ARTICLE 20. Work in Freezing Weather.

Work may not continue in freezing weather except by permission of the Engineer in writing.

ARTICLE 21. Correction of Work before Final Payment.

The Contractor shall promptly remove from the premises all materials condemned by the Engineer as failing to conform to the Contract, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

ARTICLE 22. The Owner's Right to do Work.

If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this Contract, the Owner, after three (3) days' written notice to the Contractor may, without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.

ARTICLE 23. The Owner's Right to Terminate Contract.

In case the Contractor shall abandon the work and fail or refuse to commence it again within fifteen days after notification from the Owner, or if he should fail to comply with the orders of the Engineer or with this agreement or with the specifications hereto attached, then, and in that case, the sureties on the bond shall be notified and directed to complete the same. In case the sureties fail to comply with the notice, the Owner may, within fifteen days after serving notice, carry on the work at the expense of the Contractor and the sureties.

If the work to be done under this contract shall be abandoned by the Contractor, or if this contract shall be assigned or placed in bankruptcy, or the work sublet to him, or otherwise then herein specified, or if at any time the Engineer shall be of the opinion and shall so certify in writing to the Governing Board of Owner that the performance of the contract is unnecessarily or unreasonably delayed, or that the Contractor is violating any of the conditions or agreements of this contract, or is executing

the same in bad faith or not in accordance with the terms thereof, or is not making such progress in the execution of the work as to indicate its completion within the time specified in this contract or within the time to which the completion of the contract may have been extended by the Owner, the Owner may notify the Contractor to discontinue all work or any part thereof, under this contract, by a written notice to be served upon the Contractor as hereinbefore provided, and a copy of which notice shall be given to his Surety or the authorized agent for the latter; thereupon the Contractor shall discontinue work, or such part thereof as the Owner may designate and thereupon the Surety may, at its option, assume this contract, or that portion on which the Owner has ordered the Contractor to discontinue work, and proceed to perform same, and may, with the written consent of the Owner sublet the work or portions of the work so taken over; provided, however, that the Surety shall exercise its option, if at all, within two weeks after the written notice of the Owner has been served on the Contractor to discontinue work and upon the Surety or its authorized agent. The surety, in such event, shall take the Contractor's place in all respects and shall be paid for all work performed by it in accordance with the terms of this contract; and if the Surety under the provisions hereof shall assume said entire contract, all monies remaining due the Contractor at the time of his default, shall thereupon become due and payable to the Surety as the work progresses, subject to all the terms of this contract.

In case the Surety does not, within the hereinbefore specified time, exercise its rights and option to assume this contract or that portion thereof on which the Owner has ordered the Contractor to discontinue work, then the Owner shall have the power to complete by contract or otherwise as it may determine, the work herein described, or such part thereof as it may deem necessary; and the Contractor agrees that the Owner shall have the right to take possession of and use any of the materials, plant, tools, equipment, supplies, and property of every kind provided by the Contractor for the purpose of his work, and to procure other tools, equipment, and materials for the completion of the work, and to charge to the Contractor the expense of said contracts, labor, materials, tools, equipment, and expense thereto. The expense so charged shall be deducted by the Owner out of such monies as may be due or may at any time thereafter become due the Contractor under and by virtue of this contract or any part thereof. The Owner shall not be required to obtain the lowest figure for the work of completing the contract or any part thereof; but such expense to be deducted shall be the actual cost of such work. In case the expense is less than that sum which would have been payable under this contract, if the same had been completed by the Contractor; then the Contractor shall pay the amount of such excess to the Owner on notice from the Owner of the excess so due, but such excess shall not exceed the amount due under this contract

at the time the Contractor is notified to discontinue said work, or any part thereof, plus the amount of bonds executed by the Contractor for the performance of this contract. When any particular part of the work is being carried out by the Owner by contract or otherwise, under the provisions of this section, the Contractor shall continue the remainder of the work in conformity with the terms of this contract, and in such a manner as in no way to hinder or interfere with the persons or workmen employed, as above provided by the Owner.

ARTICLE 24. Removal of Equipment.

In the case of annulment of the Contract before completion from any cause whatever, the Contractor, if notified to do so by the Owner, shall promptly remove any part or all of his equipment and supplies from the property of the Owner, failing which the Owner shall have the right to remove such equipment and supplies at the expense of the Contractor.

ARTICLE 25. Use of Completed Portions.

The Owner shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the time for completing the entire work or such portions may not have expired, but taking possession and use shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents. If such prior use increases the cost of, or delays the work, the Contractor shall be entitled to such extra compensation or extension of time, or both, as the Engineer may determine.

ARTICLE 26. Payments Withheld.

The Owner may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any payment to such an extent as may be necessary to protect himself from loss on account of:

- a. Defective work not remedied.
- b. Claims filed or reasonable evidence indicating probable filing of claims.
- c. Failure of the Contractor to make payments properly to sub-contractors or for material or labor.
- d. A reasonable doubt that the Contract can be completed for the balance then unpaid.

e. Damage to another contractor.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

ARTICLE 27. Contractor's Liability Insurance.

The Contractor shall maintain such insurance as will protect him from claims under workmen's compensation acts and from any other claims for damages for personal injury, including death, which may arise from operations under this Contract, whether such operations be by himself, or by any sub-contractor or anyone directly or indirectly employed by either of them. Certificates of such insurance shall be filed with the Engineer, and shall be subject to his approval for adequacy of protection.

ARTICLE 28. Indemnity.

The Contractor shall indemnify and save harmless the Owner from and against all losses and all claims, demands, payments, suits, actions, recoveries and judgments of every nature and description brought or recovered against him, by reason of any act or omission of the said Contractor, his agents, or employees, in the execution of the work or in the guarding of it.

The Contractor shall, and is hereby authorized to maintain and pay for such insurance, issued in the name of the Owner, as will protect the Owner from his contingent liability under this Contract, and the Owner's right to enforce against the Contractor any provision of this article shall be contingent upon the full compliance by the Owner with the terms of such insurance policy or policies, a copy of which shall be deposited with the Owner.

ARTICLE 29. Performance Bond.

The Contractor shall be required before commencing the work, to furnish surety, satisfactory to the Owner, in an amount not less than the contract price, for the faithful performance of the contract, with the additional obligation that such contractor shall promptly pay all persons supplying him with labor or material in the prosecution of the work provided for in the contract. Such performance bond shall be furnished to the Owner or his authorized agent within ten days after the date of the award. Failure on the part of the bidder to furnish such bond in the time stated shall be cause for consideration by the Owner of awarding the contract to the second low bidder and the retention of the bid deposit.

In case of a partnership contract, each partner must sign the bond.

ARTICLE 30. Damages.

Any claim for damage arising under this contract shall be made in writing to the party liable within a reasonable time of the first observance of such damage and not later than the time of final payment, except as expressly stipulated otherwise in the case of faulty work or materials, and shall be adjusted by agreement or arbitration.

ARTICLE 31. Liens.

Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the Owner a complete release of all liens arising out of this contract, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as he had knowledge or information, the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any sub-contractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Engineer, to indemnify the Owner against any lien. If any lien remains unsatisfied after all the payments are made, the Contractor shall refund the Owner all monies that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

ARTICLE 32. Assignment.

Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any monies due or to become due to him hereunder without the previous written consent of the Engineer.

ARTICLE 33. Rights of Various Interests.

Wherever work being done by the Owner's forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Engineer to secure the completion of the various portions of the work in general harmony.

ARTICLE 34. Separate Contracts.

The Owner reserves the right to let other contracts in connection with the work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution

of their work, and shall properly connect and coordinate his work with theirs.

If any part of the Contractor's work depends for proper execution of results upon the work of any other contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such work that render it unsuitable for proper execution and results. His failure so to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of his work except as to defects which may develop in the other contractor's work after the execution of his work.

To insure the proper execution of his subsequent work, the Contractor shall measure work already in place and shall at once report to the Engineer any discrepancy between the executed work and the drawing.

#### ARTICLE 35. Subcontracts.

The Contractor shall, as soon as practicable after the signature of the Contract, notify the Engineer in writing of the names of sub-contractors proposed for the work and shall not employ any that the Engineer may, within a reasonable time, object to as incompetent or unfit.

The Contractor agrees that he is as fully responsible to the Owner for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

Nothing contained in the Contract Documents shall create any contractual relation between any subcontractor and the Owner.

#### ARTICLE 36. Accidents.

The Contractor shall provide, at the site, such equipment and medical facilities as are necessary to supply first-aid service to anyone who may be injured in connection with the work.

The Contractor must promptly report in writing to the Engineer all accidents whatsoever arising out of, or in connection with, the performance of the work, whether on or adjacent to the site, which caused death, personal injury, or property damages, giving full details and statements or witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Engineer

and the Owner.

If any claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Engineer, giving full details of the claim.

ARTICLE 37. Surveys, Lines and Grades.

The location of the centerlines and grades will be determined and staked by the Engineer, but the Contractor shall assume full responsibility for construction in accordance with the established lines and grades.

The Contractor shall exercise proper care in the preservation of stakes set for his use by the Engineer. If such stakes are injured, lost or removed by the Contractor's operations, they shall be re-set at his expense.

ARTICLE 38. Sanitary Facilities.

The Contractor shall arrange for, at the site of the work, such sanitary facilities as are necessary to adequately protect the health and safety of the construction forces and residents of the area surrounding the work. All such facilities shall be subject to the approval of the Engineer.

ARTICLE 39. Measurement of Quantities.

The quantities of work performed will be computed by the Engineer on the basis of measurements taken by the Engineer, or his assistants, and these measurements shall be final and binding.

All work computed under the Contract shall be measured by the Engineer according to the United States Standard Measurements and Weights. Measurements for the various items will be made as provided in the specifications.

ARTICLE 40. Storage of Material.

The Contractor shall be held responsible for the care and storage of materials delivered on the work or purchased for use thereon. Should any material that has been delivered on the work become damaged before actual incorporation in the work, such material may be rejected by the Engineer even though it may have been previously accepted. Stored materials shall be located so as to facilitate inspection. Storage of materials shall conform to the detailed requirements of these specifications for each type of material.

ARTICLE 41. Surplus Material and Rubbish.

All materials remaining as surplus at the completion of the work shall be removed from the premises by the Contractor and shall be disposed of by him. Dumping of surplus materials and rubbish shall be accomplished at a location and in a manner approved by the Engineer.

ARTICLE 42. Cleaning up and Restoration of Site.

The Contractor shall, as directed by the Engineer, remove from the Owner's property and from all public and private property, at his own expense, all temporary structures, rubbish, and waste materials resulting from his operation.

The Contractor shall, upon completion of the work, restore all portions of the site, including the material, and plant yards and access roads to the original condition.

ARTICLE 43. Laws to be Observed.

The Contractor is assumed to be familiar with all Federal and State laws and with all local laws, codes and ordinances which may in any way affect those engaged or employed in the work or the material or equipment used in or upon the site, or in any way affect the conduct of the work.

The Contractor, at all times, shall observe and comply with all the Federal and State laws and with all local laws, codes and ordinances in any manner affecting the conduct of the work, and the Contractor and his surety shall indemnify and save harmless the Owner and all his officers, agents, and servants against any claims or liability arising from or based on the violation of any of the aforesaid, whether by the Contractor, his employees, or his Sub-contractors.

ARTICLE 44. Progress Payments.

So long as the work herein contracted for is carried on in accordance with the provisions of the Contract, the Engineer will, on or before the tenth day of each month, make an approximate estimate of the value of the work performed during the previous month. Progress payments in the amount of 80% of the estimate will be made to the Contractor in cash within approximately thirty (30) days after preparation of the partial estimate by the Engineer and approval of the same by the Owner. The Owner may at all times reserve and retain out of said payment all sums it may be authorized to reserve or retain. None of such payments, however, shall be held to constitute an

acceptance in full completion of the contract.

ARTICLE 45. Guarantee.

The Contractor shall guarantee all work constructed under the Contract for a period of one (1) year from the date of final acceptance, against defects in material or workmanship. He shall bear the entire cost and expense of all repairs which may, from any imperfection in work or material, become necessary within that time.

If at any time within the period of guarantee, any of the work included in the guarantee shall, in the judgment of the Engineer, require any repair or reconstruction, he shall notify the Contractor to make the repairs required. Upon receipt of such notice, the Contractor shall proceed with such repairs and shall complete the same within a reasonable time.

If the Contractor shall neglect or fail to proceed with the repairs within twenty (20) days or if, in the opinion of the Engineer, the repairs do not admit of sufficient delay to issue said notice and to await the action of the Contractor, then the Owner shall have the right to cause such repairs to be made and the cost shall be paid by the Contractor. The liability of the bond given to secure the faithful performance of the Contract shall continue during the full guarantee period.

At the expiration of the guarantee period, the Contractor and his surety shall be released from further obligation under this Contract, provided the Engineer will certify to the Owner that the work performed under this Contract is in good and proper condition at the time; and provided further it shall be the duty of the Contractor to notify the Owner in writing within thirty (30) days prior to the expiration of the guarantee period to make the final inspection of the work. Unless the Contractor shall furnish such notice, the obligation to maintain the work shall continue in force until such notice shall have been furnished; however, such final inspection will not be made between December first and March thirty-first.

ARTICLE 46. Final Payment.

The Engineer will, as soon as practicable after completion of and final acceptance of the work, make a final estimate of the amount of work done under the Contract. This final estimate shall be based on "as-built" measurements made by the Engineer and based on prices in the proposal and supplemental agreements, if any, and shall contain an amount to cover in full all force account work

done, if any. From the total of this final estimate shall be deducted the sum of all previous payments made the Contractor and this difference is the sum due the Contractor under the Contract.

When the final estimate shall have been approved by the Owner, the Owner will pay to the Contractor in cash or City Warrants, the sum due the Contractor. This final payment shall be made within thirty (30) days after the completion and final acceptance of the work.

From the final payment there shall be deducted a retainer of three per cent (3%) to cover the guarantee outlined in Article 44. The three per cent (3%) retained shall be invested in bonds to the approval of the Owner. Such securities shall be deposited with the City Treasurer during the guarantee period as security to the Owner for the faithful fulfillment of the conditions of the Contract. The interest upon said securities will be paid to the Contractor when received by the Owner, provided that all requirements of the Contract are carried out. At the expiration of the guarantee period, if the Contractor shall have complied with all the conditions of the Contract, the whole sum retained shall be paid the Contractor, or such part thereof as shall remain after the expense of making repairs in the manner aforesaid shall have been paid therefrom.

#### ARTICLE 47. South Dakota Products.

By virtue of statutory authority preference will be given to material, products, and supplies found or produced within the State of South Dakota.

## SPECIAL CONDITIONS

### A. Commencement.

The Contractor will be required to commence work under this Contract within ten (10) calendar days after the date of receipt by him of notice to proceed to prosecute said work with faithfulness and energy and to complete the entire work, ready for use not later than the number of calendar days after receipt of notice to proceed as set out in the completion schedule below. The time stated for completion shall include final clean-up of the premises.

### B. Completion Schedule.

It will be necessary for the well to be drilled, completed, cemented, gravel packed, developed, and capped by May 15, 1960, in order that the City might advertise for additional construction which must be in service not later than July 1, 1960.

With this in mind, its Contractor is asked to include in his bid the time he will need after receipt of notice to proceed to complete the project.

### C. Water Damage.

As this well is being drilled within the city limits of the City of Gettysburg, it will be necessary for the Contractor to adequately control the flow of water from the well to avoid damage to city streets and adjacent property.

It will be the responsibility of the Contractor to safeguard the Owner against any liabilities arising from damage due to flowing water or ice, and the Contractor shall pay the cost of all damage resulting from this construction.

### D. Water Supply.

The City of Gettysburg has an adequate water supply system to supply all water needed during the construction period and this will be supplied without charge as long as it is not used in a wasteful manner. The Contractor will make the necessary connections to the City's supply at no cost to the Owner.

Before final acceptance, temporary connection and piping installed by the Contractor shall be removed in a satisfactory manner.

E. Electricity.

All electric current required by the Contractor shall be furnished at his own expense. All temporary lines will be furnished, installed, connected, and maintained by the Contractor, in a workmanlike and satisfactory manner, and shall be removed by the Contractor in like manner at his expense prior to completion of the construction.

GETTYSBURG, SOUTH DAKOTA

(Lump Sum Basis)

SECTION I

INDEX

|      |                         |      |                       |
|------|-------------------------|------|-----------------------|
| 1-01 | Scope                   | 1-09 | Gravel Packing        |
| 1-02 | Applicable Publications | 1-10 | Cementing and Sealing |
| 1-03 | General                 | 1-11 | Development           |
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| 1-05 | Records and Logs        | 1-13 | Disinfection          |
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1-01. SCOPE. The work covered by this section of the specifications consists in furnishing all materials and performing all operations in connection with construction and testing of one sand free water well to deliver a minimum of 125 gallons per minute in strict accordance with this section of the specifications and the applicable drawings and subject to the terms and conditions of the contract.

1-02. APPLICABLE PUBLICATIONS.

a. A.S.T.M.

C 150-56 Portland Cement

b. AWWA SPECIFICATIONS

A 100-58 Standard Specifications for Deep Wells

c. SOUTH DAKOTA STATE WATER RESOURCES COMMISSION

Chapter 430, 431, 432 - "Minimum Specifications for Artesian Wells"

1-03. GENERAL. The well construction shall be in strict accordance with American Water Works Association "Standard Specifications for Deep Wells" except as modified herein. Exact location of the well will be established and staked by the Engineer.

1-04. MATERIALS.

a. CASING. Casing shall be new, black, seamless steel pipe with standard threads and couplings or welded ends all

conforming to the requirements of AWWA Specifications A 100-58. Casings shall be of the outside diameters specified or shown on the drawings and shall be of the minimum weights shown below:

| <u>Pipe Size</u> | <u>Minimum Weight Pounds Per Linear Foot</u> |
|------------------|----------------------------------------------|
| 12 3/4" O.D.     | 49.56                                        |

b. CEMENT. Cement for well sealing shall be Portland cement conforming to ASTM Specifications C 150-56, Type I or Type II. Cement shall be mixed with water (not to exceed 6 gallons per bag of cement) to form a suitable grout for pressure sealing operations. Mixture, method of mixing and consistency of grout shall be approved by the Engineer.

1-05. RECORDS AND LOGS. Prior to the acceptance of any well, the contractor shall furnish to the Engineer ten (10) copies of a complete log of operations. The log shall contain complete information as to whether or not artesian flow conditions will occur; and any additional pertinent information obtained during the construction of the well;

- a. A history of drilling operation.
- b. Locations of all strata encountered.
- c. Record of Electric logs.
- d. Record of casing operations.
- e. Record of cementing and sealing operations.
- f. Description of methods and results of development of wells.
- g. Results of final testing.
- h. Results of chemical analyses of water.
- i. Recommendations for installation of pumps.
- j. Recommendations on allowable daily pumping.
- k. Drawings showing "As constructed" conditions for the completed well.

1-06. EQUIPMENT.

a. DRILLING EQUIPMENT. Drilling equipment shall be suitable for construction of deep wells of the diameter and method specified, shall be capable of drilling to depths up to 2500 feet if required, and shall be subject to the approval of the Engineer.

b. TEST EQUIPMENT. Test equipment to be furnished by the Contractor shall include all items normally used in maintaining and checking hole alignment, determining sub-surface strata and conducting flow tests and other tests specified herein.

1-07. DRILLING PROCEDURE. Hole for the well shall be drilled to a diameter sufficient to allow installation of the casing specified and 2-1/2" of cement grout. Cuttings and other waste material resulting from drilling operations shall be disposed of in a location selected by the Contractor and approved by the Engineer.

2. ALIGNMENT. Hole and casing shall be kept straight, plumb and concentric within limits that will permit satisfactory installation and operation of line shaft pumps to a depth of 600 feet. The Contractor shall lower a section of pipe 40 feet long and not more than 1/2 inch smaller in diameter than the inside diameter of the pipe being tested, or a suitable dummy constructed as specified in AWWA Specification A 100-58, for the full 600 foot depth through the cased well, or shall demonstrate to the satisfaction of the Engineer by other suitable methods that compliance with the above requirements has been obtained. Below the 600 foot depth, the maximum deviation from vertical alignment shall not exceed 3 degrees. The holes shall be satisfactorily straight, plumb, concentric, and free from kinks or cork-screws.

b. CASING. The well shall be fully cased. Casing of the size shown shall be set approximately to the depth indicated on the drawings and specified and as directed or approved by the Engineer. The surface casing shall extend 4 feet above existing ground surface to approximately 1910 feet below the existing ground surface. The exact final depth of the surface casing shall be determined while the drilling operation is in progress so that termination will be at the upper limit of the Dakota formation. A well screen of 6" nominal size shall be installed as specified herein under paragraph "Well Screen".

(1) JOINTING. Threads of casing joints shall be set up tight and leakproof. Welding for welded joints shall conform to the requirements of the American Welding Society Code for Arc and Gas Welding. If required by the Engineer, the Contractor shall furnish proof of the qualifications of welders employed on the work.

c. UNDERREAMING. The Dakota formation shall be underreamed as specified herein under Section 1-09, "Gravel Packing", of these specifications.

d. SAMPLING. Samples of material being drilled shall be taken every 25 feet from the ground surface to the Dakota formation, every 5 feet in the Dakota formation, and at every change in formation.

1-08. WELL SCREENS.

a. DIAMETER AND LENGTH. The screen shall be constructed entirely of stainless steel, Type 304.

b. TYPE. The screen shall be of the continuous slot, shutter or wire-wound type. Wire-wound type shall be the extra strong similar in construction to the Johnson extra strong well screen as manufactured by the Edward E. Johnson Company or approved equal. The Contractor shall demonstrate to the satisfaction of the Engineer that the well screen is centered within that portion of the well in which it is installed.

c. STRENGTH. The screen will have adequate strength to resist the external forces that will be applied after it is installed and during the installation. The screen must have no change of alignment at any of its joints after installation. If required by the Engineer, the Contractor shall submit for approval, drawings and other information showing the design and method of construction of the screen.

d. LENGTH AND SIZE OF OPENINGS. The length and screen opening size shall be determined after the samples of the water bearing strata have been analyzed. The screen openings shall be designed to operate satisfactorily with the final gravel pack. The shape of the openings shall be designed to prevent clogging and shall be free from jagged edges and irregularities.

e. FITTINGS. The screen shall be provided with such fittings as are necessary to seal tightly the top to the casing and to close the bottom. A 50-foot section of blank casing shall be extended into the 12-3/4" casing as indicated on the drawings. The top of the blank casing shall be centered in the 12-3/4" casing. All fittings except plugs and seals and including couplings, where required for joining sections of the screen, shall be constructed of the same material as the screen. Sections of casing over 5 feet in length used to connect sections of screen shall not be considered as fittings.

1-09. GRAVEL PACKING. After the 12-3/4" casing has been set and sealed, the hole shall be underreamed to a diameter which will allow approximately 10 inches of gravel pack around the well screen. The contractor shall demonstrate to the satisfaction of the Engineer that the water bearing formation has been underreamed to a constant diameter of not less than 28 inches. Gravel shall be placed through tubes inserted between the screen and 12-3/4" casing. Gravel shall be placed in such a manner as to fill the entire underreamed hole and shall extend into the annular space between the 12-3/4" casing and the 6" blank casing a distance of 50 vertical feet.

a. GRAVEL FOR GRAVEL PACK shall be of suitably graded, rounded particles, of durable quality, free from elongated or flat shale or other deleterious material. Prior to placing the gravel pack, a mechanical analysis of the actual water bearing formation shall be furnished the Engineer for approval of the gravel pack gradation. No gravel shall be placed without prior approval of the Engineer.

After the inner casing is in position and before the gravel wall is placed, wash lines shall be lowered into the annular space between the inner and outer casing of the well. These wash lines shall be provided with suitable nozzles and provision shall be made for supplying an adequate quantity of clear water under pressure of not less than 75 psi. A pump of sufficient capacity to remove the quantity of water added during washing operations shall also be provided. Beginning at the bottom of the well, all mud, sand and other fine material shall be thoroughly washed from the sides of the well and shall be continuously removed. The wash lines shall be withdrawn as gravel of suitable size is placed. Sufficient labor and equipment shall be provided so that the washing of the walls of the hole, the withdrawing of the material thus washed off the walls and the graveling process will be continuous.

If the Contractor chooses to employ methods other than stipulated above, he shall submit them to the Engineer for approval.

#### 1-10. CEMENTING AND SEALING.

a. SURFACE CASING. The annular space around the entire length of 12-3/4" casing from approximately the top of the Dakota sandstone to the surface will be sealed with cement grout applied under pressure, mixed, as hereinbefore specified. The Contractor shall provide adequate means to assure that the cement grout is being applied completely around the entire casing.

b. METHOD OF PLACING. The grout shall be applied in one continuous operation and be entirely placed before the occurrence of the initial set. The grout shall always be introduced at the bottom of the space to be grouted. The contractor shall assure himself that the space to be grouted is open and shall remove any foreign material.

c. CURING AND TESTING. No drilling or other operation shall be permitted until the grout has set at least 72 hours.

1-11. DEVELOPMENT. The Contractor shall obtain approval of the Engineer for methods he proposes to use before proceeding with development of the well. Development pumping shall proceed until mud-free and sand-free water is obtained at the ground surface. Methods of development shall be such as to obtain the maximum yield of water from the well per foot of drawdown, and determination of the transmissability and recharge rate of the aquifer.

1-12. FINAL TEST.

a. DESCRIPTION. After the well is completed in accordance with these specifications, the Contractor shall furnish, install, and operate the test pumping and auxiliary equipment necessary to completely test the well. Test pumping equipment must be capable of operating at rates varying from 50 to 300 gallons per minute. The Contractor shall furnish an orifice meter or other approved equipment for measuring the water being pumped.

b. PROCEDURE. Prior to starting the pumping test, the static water level in the well shall be determined. The pump intake shall be set at the depth below the ground surface that will adequately determine the capacity of the well. The pump shall be started and operated for such period, that, for each successive rate specified, the water level in the well shall become stable. The test pumping shall approach the extreme drawdown condition cautiously and slowly to avoid collapsing the walls of the well or damage to the water bearing formation. Water level and time for stabilization in the well shall be recorded for each test rate specified. The well shall be test pumped at rates starting at 50 gpm and continuing at 25-gallon increments to stability at each rate until directed to stop the test. During the progress of the test, readings shall be taken at at least 30 minute intervals to determine water level in the well and rate of pumping, as well as points of stability at the various rates. Water temperatures shall be taken and recorded at the beginning and end of each pumping rate increment of the test and all temperatures including minimum and maximum temperatures tabulated in the completed well log. All pumping tests shall be made in the presence of the Engineer or his duly authorized representative. A minimum of 24 hours test pumping will be required. Authorization for additional pumping, if required, shall be obtained from the Engineer.

c. WATER SAMPLES AND CHEMICAL ANALYSIS. At the termination of the final test, a water sample of a size as directed by the Engineer shall be taken from the well and a complete chemical analysis made showing the following required information:

(1) WATER ANALYSIS

PARTS PER MILLION

- (a) Total dissolved solids
- (b) Total solids
- (c) Calcium as Ca
- (d) Magnesium as Mg
- (e) Sodium and potassium as Na
- (f) Sulfates as  $\text{SO}_4$
- (g) Chlorides as  $\text{Cl}$
- (h) Bicarbonates as  $\text{HCO}_3$
- (i) Carbonates as  $\text{CO}_3$
- (j) Nitrates as  $\text{NO}_3$
- (k) Alkalinity (Phenolphthalein) as  $\text{CaCO}_3$  (methyl-orange) as  $\text{CaCO}_3$
- (l) Iron as Fe (dissolved)
- (m) Iron as Fe (total)
- (n) Silica as  $\text{SiO}_2$
- (o) Fluoride as F
- (p) Manganese as Mn (dissolved)
- (q) Manganese as Mn (total)
- (r) Total hardness as  $\text{CaCO}_3$
- (s) Carbonate hardness as  $\text{CaCO}_3$
- (t) Noncarbonate hardness as  $\text{CaCO}_3$
- (u) Free carbon dioxide as  $\text{CO}_2$
- (v) Resistivity in ohms per cubic centimeter  
ohm/cm<sup>3</sup> @ 25° C \_\_\_\_\_ ohm/cm<sup>3</sup>.
- (w) pH value \_\_\_\_\_

The cost of the above sample shall be included in the lump sum bid. If required, the contractor shall take additional samples and furnish additional chemical analyses as directed by the Engineer. The cost of additional water samples shall be paid for at the unit price bid for "Additional Water Samples". The complete reports of all analyses shall be included in the final log of the well.

1-13. DISINFECTION.

a. TIME FOR DISINFECTION. After the 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. The casing pipe shall be thoroughly swabbed, using alkali, if necessary, to remove all oil, grease, or joint dope. The well shall then be disinfected with a chlorine solution.

b. CHLORINE SOLUTION. 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 50

ppm shall be obtained in all parts of the well. Chlorine solution shall be allowed to remain in the well for a period of at least 24 hours. Chlorine solution shall be prepared and applied in accordance with the directions of, and to the satisfaction of the Engineer.

c. DISINFECTION OF TEST PUMP. In the event that the test pump is installed after the well has been disinfected, all exterior parts of the test pump coming in contact with the water shall be dusted with a chlorine compound as directed by the Engineer.

1-14 CAPPING AND MARKING. Completed well shall be capped with a suitable screw cap, a slip cap or flanged cap fastened in a manner that will prevent contamination and unauthorized opening of the well. Well shall be capped 4 feet above the ground.

1-15. DEFECTIVE WELLS. Should the well be unsatisfactory by reason of inaccurate alignment, or which through fault or negligence of the Contractor become unsatisfactory for further drilling, shall be backfilled to the satisfaction of the Engineer and a new well completed at a nearby location designated by the Engineer and at no additional cost to the Owner.

1-16. CLEANUP. After completion of all work, the Contractor shall remove all tools, appliances, surplus materials, temporary piping and electric work, temporary structures, rubbish and debris incidental to the work. All excavations, trenches and holes shall be filled.

PROPOSAL FORM

(To Be Submitted in Duplicate Signed Copies)

\_\_\_\_\_, 1960

Mayor and City Council  
City of Gettysburg,  
Gettysburg, South Dakota

Gentlemen:

We have carefully examined the plans and specifications for the work contemplated in this proposal, and we have made a personal examination of the site and have inquired into the local conditions affecting the work. We propose to furnish all the materials to complete the work in accordance with the plans and specifications on file for the schedule of prices set forth below.

Schedule of Prices Bid for Work Contemplated

| <u>Item</u> | <u>Description</u>        | <u>Quantity</u> | <u>Unit</u> | <u>Unit Price</u> | <u>Amount</u> |
|-------------|---------------------------|-----------------|-------------|-------------------|---------------|
| 1.          | Water Well Complete       | 1               | L.S.        | **                | _____         |
| 2.          | Well Screen               |                 |             |                   |               |
|             | (a) 0 to 150 feet         | 150             | V.F.        | _____             | _____         |
|             | (b) 150 to 300 feet       | 150             | V.F.        | _____             | _____         |
| 3.          | Additional Water Analysis | L.S.            | Ea.         | _____             | _____         |
| TOTAL       |                           |                 |             | _____             | _____         |

The only persons or parties interested in this proposal as principal are those named herein, and this proposal is made without collusion with any persons, firms or corporations.

We propose to furnish a bond, as required by the specifications, in the amount of the contract awarded to us.

As an evidence of good faith in submitting this proposal, we enclose herewith a certified check for \$ \_\_\_\_\_ payable to the Treasurer of the City of Gettysburg, which, in case we should refuse or fail to accept an award made to us and to enter into contract and file a bond within ten (10) days of such award, shall be forfeited to the City as liquidated damages.

If awarded a contract for the work contemplated, we agree to complete that work prior to the expiration of a period of \_\_\_\_\_ calendar days.

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_, 1960

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|-------------|---------------------------|-----------------|-------------|-------------------|---------------|
| 1.          | Water Well Complete       | 1               | L.S.        | **                | _____         |
| 2.          | Well Screen               |                 |             |                   |               |
|             | (a) 0 to 150 feet         | 150             | V.F.        | _____             | _____         |
|             | (b) 150 to 300 feet       | 150             | V.F.        | _____             | _____         |
| 3.          | Additional Water Analysis | L.S.            | Ea.         | _____             | _____         |
| TOTAL       |                           |                 |             |                   | _____         |

The only persons or parties interested in this proposal as principal are those named herein, and this proposal is made without collusion with any persons, firms or corporations.

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If awarded a contract for the work contemplated, we agree to complete that work prior to the expiration of a period of \_\_\_\_\_ calendar days.

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

C O N T R A C T

THIS CONTRACT AND AGREEMENT, made and entered into this  
day of \_\_\_\_\_, 19\_\_\_\_, by and between  
the City of Gettysburg, South Dakota, Owner, and \_\_\_\_\_  
\_\_\_\_\_, Contractor.

WITNESSETH: That the Contractor, for and in consideration  
of the sum of \_\_\_\_\_ Dollars  
payable as set forth in the specifications constituting a  
part of this Contract, hereby agrees to construct a water well,  
complete, within the City limits of Gettysburg, South Dakota,  
in accordance with the plans, specifications and general condi-  
tions therefor, and in the location designated, the various  
items of work awarded said Contractor by the acceptance of  
proposal therefor on the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_,  
as follows: Being

Items 1 to 3 Inclusive

as shown in schedule of prices bid in the proposal which is  
made a part of this Contract.

That it is mutually understood and agreed by parties  
hereto that the general and detailed plans, the Contractors  
bond, the proposal, all project specifications and all sup-  
plemental written agreements are a part of this Contract.

The Contractor expressly warrants that he has employed  
no third person to solicit or obtain this contract in his  
behalf, or to cause or procure the same to be obtained upon  
compensation in any way contingent in whole or in part, upon  
such procurement, and that he has not paid, or promised or  
agreed to pay, to any third person in consideration of such  
procurement, or in compensation for services in connection  
herewith, any brokerage, commission, or percentage upon the  
amount to be received by him hereunder, and that he has not,  
in estimating the contract price demanded by him, included  
any sum by reason of any such brokerage, commission, or per-  
centage; and that all monies payable to him hereunder are  
free from obligation of any other person for services rendered,  
or supposed to have been rendered, in the procurement of this  
contract. He further agrees that any breach of this warrant  
shall constitute adequate cause for the annulment of this  
contract by the Owner, and that the said Owner may retain for  
its own use, from any sums due or to become due hereunder, an  
amount equal to any brokerage, commission, or percentage, so  
paid or agreed to be paid.

All work required in carrying out this contract shall be performed in compliance with the laws of the State of South Dakota.

The Contractor states that he is complying with and will continue to comply with fair labor standards in pursuit of his business, and in the execution of the contract pursuant to this bid.

That the Contractor further agrees to pay all just claims for material, supplies, tools, fuels, lubricants, equipment, equipment rental, machinery, insurance premiums, and services used or consumed in the construction of the work by him or any of his subcontractors, and for the payment of all laborers and mechanics for all labor performed in the work by him or any of his subcontractors and for all other just claims filed against him or any of his subcontractors in carrying out the provisions of this contract and further agrees that the Contractor's bond shall be held to cover all such claims.

That in consideration of the foregoing the Owner hereby agrees to pay the Contractor promptly the amounts set forth herein, subject to the conditions set forth in this contract or any part thereof as herein described.

It is further understood and agreed that the Contractor shall not do any work or furnish any materials not covered and authorized by this contract unless ordered in writing by the Engineer. Any such work which may be done or any such materials which may be furnished by the Contractor without such written order first being given, shall be at his own cost, risk and expense; and the Contractor hereby covenants and agrees that he shall make no claim for compensation for any work so done or any materials so furnished.

IN WITNESS WHEREOF, the parties hereto have set their hands for the purpose herein expressed, to this and three (3) other instruments of like tenor, this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

OWNER

CONTRACTOR

CITY OF GETTYSBURG, SOUTH DAKOTA

By \_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

\_\_\_\_\_

Address \_\_\_\_\_

C O N T R A C T    B O N D

KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_ as  
Principal, and \_\_\_\_\_ as  
sureties, are held and firmly bound unto the City of Gettysburg,  
South Dakota, in the penal sum of \_\_\_\_\_  
\_\_\_\_\_ Dollars and for the payment of  
which we do hereby bind ourselves, our heirs, executors, and  
administrators, jointly, severally, and firmly by these presents.

Date \_\_\_\_\_, A.D. 19\_\_\_\_.

The condition of the obligation is such that whereas, the  
above bounden \_\_\_\_\_ of  
\_\_\_\_\_ has been awarded by the City  
of Gettysburg, South Dakota, the contract for construction of  
the water well, complete, consisting of Items 1 to 3 inclusive,  
copy of which contract together with all of its terms, covenants,  
conditions and stipulations is incorporated herein and made a  
part hereof as fully and amply as if said contract were recited  
at length herein.

NOW THEREFORE, if said  
as principal shall in all respects fulfill this said contract  
according to the terms and the tenor thereof, and shall  
faithfully discharge the duties and obligations therein  
assumed, then the above obligation is to be void, otherwise,  
to be and remain in full force and virtue.

It is expressly understood and agreed that this bond  
is given to secure and does secure not only the faithful  
performance by the principal herein named of said contract  
for the construction work as specified in said contract  
and in strict accordance with the terms of said contract  
and the plans and specifications made a part thereof; and  
shall also well and truly perform and fulfill all the  
undertakings, covenants, terms, conditions, and agreements  
of any and all duly authorized modifications of said con-  
tract that may hereafter be made, notice of which modifi-  
cation to the surety being hereby waived, but that it is  
given to secure and does secure also payment by the said  
bounden \_\_\_\_\_ of all just claims for  
materials, supplies, tools, fuel, lubricants, equipment,  
equipment rental, machinery, insurance premiums, and services  
used or consumed in the construction of the work by him or any  
of his subcontractors, and for the payment of all laborers  
and mechanics for all labor performed in the work by him  
or any of his subcontractors, and for all other just claims  
filed against him or any of his subcontractors in carrying  
out the provisions of this contract, and if such payment be

made then this obligation shall be null and void. Otherwise, it shall remain in full force and effect.

No contract shall be valid which seeks to limit the time to less than five years in which an action may be brought upon the bond covering the construction work, and this bond is made, executed and delivered with such understanding.

SIGNED THIS \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Surety

By \_\_\_\_\_

\_\_\_\_\_  
Surety

\_\_\_\_\_  
Attorney-in-Fact

\_\_\_\_\_