

1. Considered: JUNE 9, 1982 Water Right No. 4883-3
2. Name of Applicant CITY OF HARRISBURG
3. Post Office Address Box 26
4. Amount of Water Claimed 0.22 maximum acre feet
5. Source of Water Supply 33' WELL (ADD'L DIVERSION)
6. Water to be used for MUN acres to be irrigated
7. County LINCOLN about 6 E 1/2 miles EAST of HARRISBURG
8. PROOF OF PUBLICATION: Received 1/5 5-17-82 Not Received
- APPLICATION: Approved 6/9/82 Subject to WI
- Not Approved Action Deferred

PRIORITY 4-13-82 Dated Received 4-13-82 Application complete-yes / no FEE N/A

Remarks # 539-3 (v/r) E 1754-3

Corrected Application received Period of Annual Use CONTINUOUSLY
9/1/81 To 12/31

Received yes no APPROVED/CONDITIONAL (Circle one)

WI-1 Description same as application-yes no Remarks

Disapproved Returned

Diversion Point

Land to be irrigated

WELL LOG Driller DON GRAVES DRL. Licensed - yes / no

Depth 33' DEEP

Remarks

MAP Map No. 4087-3 Map located in Water Right X Map file _____
 Type of Map AERIAL Prepared by Jones/WRS

+++++

REVIEWED This Application was received within 30 days of the date received, accepted as complete, Number assigned and written up for advertisement before the Board on:

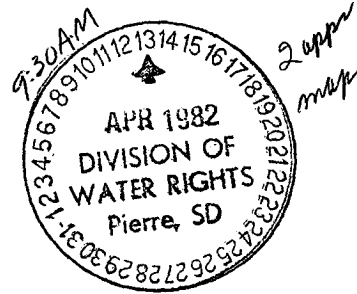
4/22/82

Darryl Westlund
 (Signed)

+++++

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

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



No. 4883-3
 Map No. 4087-3 Water Division No. 3 BIG SIOUX RIVER District
 Above for Office Use 10170203

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

Check one of the following:

New _____ Vested Right _____ Future Use _____

Change in Diversion _____ Additional Diversion X

Change in Acreage _____ Additional Acreage _____

1. Name of Applicant City of Harrisburg Phone No. 743-2520
 Post Office Address Box 26 Harrisburg State South Dakota 57032
 (Street, RR, or Box) (Town) (Zip Code)
 If a corporation show date and place of incorporation _____

2. Method of accomplishing work (contract, employment of others, or by direct labor) contract3. Name of diversion work Municipal well # 2, drilled November 19814. Amount of water claimed (cubic feet per second) approximately 100 gpm (.22 CFS)5. Source of water supply Big Sioux Aquifer

6. Location of point of diversion SE 1/4, Sec. 1, T99N-R49W - 1100' W & 150' N. OF THE
E 1/4 CORNER, SEC. 1 - T99N - R49W (SE 1/4 NE 1/4)

County Lincoln7. Annual period or periods during which water is to be used continuously8. Use to be made of water, (irrigation, industrial, municipal, commercial, recreation, etc.) Municipal

9. For irrigation use, Total number of acres to be irrigated _____

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

Land Description	No. Acres Irr.

Land Description	No. Acres Irr.

Attach sheet if more space is needed

10. Time required to complete construction of water supply system completed years. Additional time required to complete application of water to the proposed beneficial use _____ years.

11. Choice of county newspaper for publication of Notice of Intent to Appropriate Water Sioux Valley News12. Principal Features of the Proposed Water Supply System. Canton

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

Well pump & motor

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

Approximately 1000' - 6" Sched. 200 plastic to water treatment plant

C. Works proposed to apply water to beneficial use.

Approximately 250 Service Connections
Serving 550 people

\$ 20,000Estimated Total Cost \$ 20,000

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

STATE OF SOUTH DAKOTA)
) ss.
 County of Lincoln

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

Signed Russell Abbott
Mary M. Jackson
 Notary Public (or other qualified officer)

Subscribed and sworn to before me this 9th day of April, 1982

WATER RIGHT APPLICATION APPROVAL

The Water Management Board hereby approves Water Right Application No. 4883-3

CITY OF HARRISBURG Box 26
(Applicant) (Post Office Address)
SOUTH DAKOTA 57032 With the following qualifications.
(State)

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

Date of first receipt of application April 13, 1982
 Date of return to applicant for correction, amendments or changes required _____, 19____
 Date of receipt of corrected application _____, 19____
 Approved June 9, 1982, Recorded in Book _____ Page _____

WATER RIGHT PERMIT NO. 4883-3

The Water Management Board hereby grants and issues this Water Right Permit No. 4883-3 authorizing the construction of the water use system and the putting of water to beneficial use as stated in the Application and as qualified in the Water Right Application approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is April 13, 1982
2. The equivalent of at least one-fifth of the work above specified is ~~to be~~ completed ~~on or before~~ completed
3. The whole of said work is ~~to be~~ completed ~~on or before~~ completed
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is Completed
5. The water appropriated shall be used for the purpose of municipal use
6. The prior right of all persons who, by compliance with the laws of the State of South Dakota, have acquired a right to the use of water must not be injuriously affected by this appropriation.
7. The amount of the appropriation herein granted shall not exceed 0.22 cubic feet per second; neither shall it exceed the capacity of the above described water supply system, nor shall it exceed the amount of water needed for beneficial uses served, and if for irrigation purposes said appropriation must be limited to not more than 2 acre feet per acre per year and be limited to not more than one-seventieth (1/70) of one cubic foot of water per second of time for each acre of land to which water is actually and beneficially applied used for municipal purposes
 for irrigation on or before this date; said water to be used during the following described annual period: Continuously

Witness my hand this 24th day of JUNE, 1982

THE WATER MANAGEMENT BOARD

By: John H. Hark
 Chief Engineer, Water Rights

Certificate of Construction Issued _____, 19____

Water License Issued _____, 19____

D. Well Information

- (1) Drill Hole, Diameter 24 in., Depth 33 ft.
- (2) Casing, Type plastic, Diameter 16 in., Thickness _____
(wood, concrete, steel, etc.)
- (3) Screen, Type plastic, Diameter 16 in., Length 13 ft.
- (4) Gravel Pack, Thickness 4 in., Length of gravel pack 17 ft.

E. Dugout Information or Estimates

- (1) Surface dimensions, _____, Depth _____

F. Fill out for Either a Well or a Dugout.

- (1) Water Bearing Materials. (Attach a copy of test well log)

Depth to top of water bearing material 14.5 ft.

Depth to bottom of water bearing material 33 ft.

Depth to water (ground surface to water level) 14.5 ft.

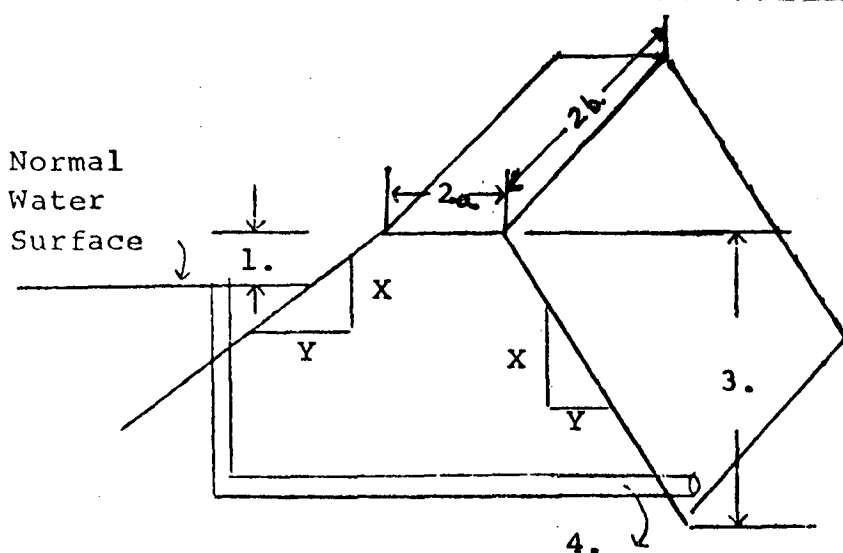
- (2) Distance to nearest existing household or livestock watering well. Nearest farmer uses city water from well # 1. Well # 1 and well # 2 are 900 ft. apart.

On same owner's property _____ rds.

On property owned by others _____ rds.

G. Water Storage Dams

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



1. Freeboard _____
- 2a Crest width _____ b. length _____
3. Height of Dam _____
4. Outlet dimensions:
Pipe diameter _____
Spillway width _____
- X & Y slope:
Upstream _____
Downstream _____
- Surface area of impoundment _____
- Drainage area above dam _____

Russell Abbott
Signature of Applicant

Utility Manager

Please return
me. Thank you
Margaret Fetting,
Clark

AGREEMENT

THIS AGREEMENT, made this 3rd day of March, 1967, between the TOWN OF HARRISBURG, a municipal corporation of Lincoln County, South Dakota, hereinafter referred to as "Town", and ARNOLD PAULSON of Jasper, Minnesota, hereinafter referred to as "Paulson", WITNESSETH:

Recitals

That Paulson has heretofore drilled a well on Town premises, now at an approximate depth of 1420 feet; that such well has failed to produce water of sufficient quantity or quality. Paulson believes that further testing and pumping of said well will develop water of sufficient quantity and quality but is unwilling and unable to proceed further without financial assistance from the Town;

NOW THEREFORE, IT IS AGREED as follows, pursuant to an emergency resolution adopted by the Town Board:

1. That the Town will purchase from Paulson a 20-h.p., 20-stage Red Jacket pump, for the sum of \$2,384, to be paid in cash by the Town to Paulson on or before March 6, 1967. Paulson undertakes and agrees that such pump may be returned to him as a trade on the purchase of any other pump, and the Town credited on the purchase with the sum of ^{A.P.C.F.} \$145.60, at any time within one year from the date of this Agreement.

2. That the Town will allow Paulson to use said pump, without charge, therefor to Paulson, for the purpose of testing and pumping said well as hereinbefore described, and will pay for the electricity necessary to operate said pump for said purposes and for a period of time not to exceed thirty days from the commencement of such testing and pumping, which shall begin three days after the pump is delivered to Paulson at either Jasper or Pipestone, Minnesota; Paulson will telephone the pump order for the pump on the first

business day after the execution of this agreement. Should it be deemed practicable by the Town and Paulson to continue pumping after such thirty-day period, the pumping time may be extended by mutual agreement of the parties.

3. That Paulson will furnish cable, pipe and other necessary equipment for such testing and pumping, and the Town shall pay to Paulson within thirty days after the completion of such services, a sum equal to fifteen per cent of the cost of such additional equipment, such charge, nevertheless, not to exceed the sum of Six Hundred Dollars (\$600.00).

4. If Paulson shall develop a supply of water adequate as to quantity and quality, then there shall be owing to Paulson by the Town the additional sum of \$40,629.29, to be paid from funds for which application has and is being made by the Town through the Farmers Home Administration for the Town's Water and Sewer Project.

IN WITNESS WHEREOF, the parties have hereunto affixed their hands and seals.

TOWN OF HARRISBURG

By

Clayton Fink (Mayor)

Arnold Paulson

Arnold Paulson

March 23, 1967

WELL DRILLERS REPORT
SOUTH DAKOTA WATER RIGHTS COMMISSION

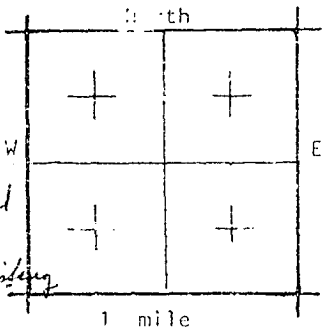
4-78

Well Owner:

Name City of Harrisburg

Address HARRISBURG, S.D.A.K.

Well Location:



Mark location with an "X"

approx 80 ft. south of existing well

4 miles west of Harrisburg

County Lincoln 49

Sec. 2 Twp. 99N Rg. 49

Proposed Use:

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

Method of Drilling:

☐ Forward Rotary ☒ Bored ☐ Jetted
☐ Reverse Rotary ☐ Cable ☐ Other

Well Construction:

Diameter of Hole 16 inch

Depth 33 FEET

Casing ☐ Steel ☐ Concrete

☒ Plastic ☐ Other

If other, specify _____

Was casing end left open NO

Was a well screen installed YES

Describe Well Screen

Diameter 16 inch Material PLASTIC

Slot size 1/8 inch

Was well gravel packed YES

Was well grouted NO

Was water sample taken YES

Remarks:

screen data - 13 ft. of 16" port plastic on bottom of casing with approx 1/8" slot gravel packed with 3/6 x 1/4" medium well pack. gravel packed to approx 16 ft from ground surface. top was filled with bentonite & clay pack. 3 test holes were made prior to well approx 60 ft radius

Water Level Information:

Static water level 14 1/2 ft below land surface

If flowing: closed in pressure _____ PSI

rate of flow _____ GPM

Controlled by:

☐ Valve ☐ Reducers ☐ Other

If other, specify _____

Well Test Data:

☒ Pumped

☐ Bailed

☐ Other

Describe:

pumped with centrifugal pump for 5 days off on

Pumping Level Below Land Surface

21 ft. After 1 Hrs. pumped 150 GPM

18 " " 1 " " 100 "

" " " " " "

Well Log:

Formation	Depth	
	From	To
Top Soil	0	3
Sandstone	3	8
Sand & Gravel	8	13
Blue Clay Layer	13	15
Gray Sand & Gravel	15	21
(Water Bearing)		
Blue Clay Layer	21	23
Greenish-gray	23	33
(Sand Water Bearing)		

(Use Back if Necessary)

Date Completed:

7-24-81

Driller:

Don Brown Drilling
Driller's or Firm's Name

154
License NO.

Harrisburg
Address

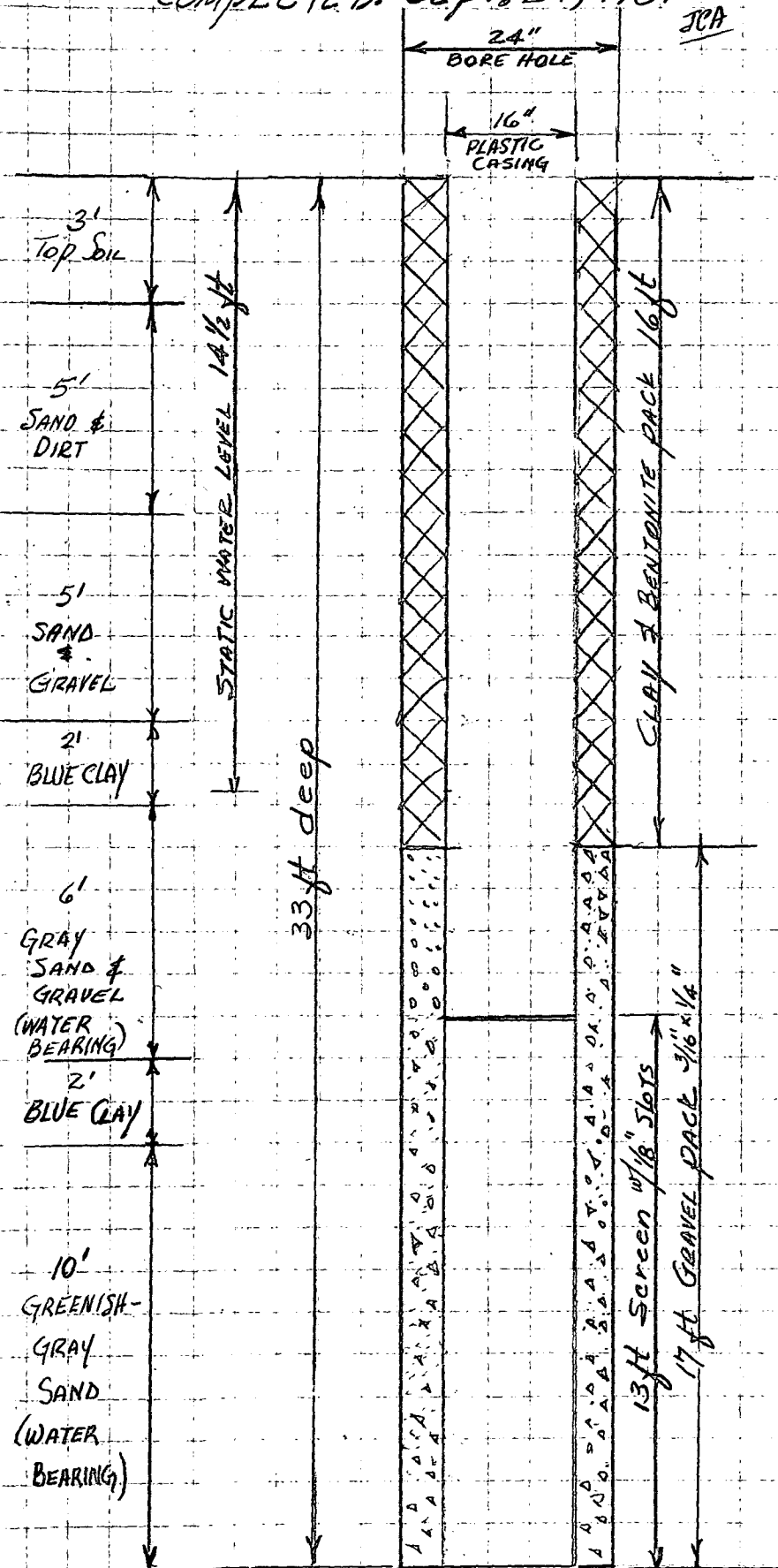
Donald Brown
Signed By

11-2-81
Date

ORIGINAL RECORD AND WAS MICROFILMED IN THE REGULAR COURSE OF BUSINESS OF THE NATIONAL BUREAU OF STANDARDS FOR PERMANENT MICROPHOTODUPLICATION. IT IS FURTHER CERTIFIED THAT THE PHOTOGRAPHIC PROCESS USED FOR MICROFILMING OF THE ABOVE RECORDS WAS IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL BUREAU OF STANDARDS FOR PERMANENT MICROPHOTODUPLICATION. AND ON MICROFILM WHICH MEET THE REQUIREMENTS OF THE NATIONAL BUREAU OF STANDARDS FOR PERMANENT MICROPHOTODUPLICATION. REPRODUCTIONS. REDUCTION 35% ROLL NO. 1

HARRISBURG -
NEW WELL
COMPLETED: SEPT. 24, 1981

JCA



Form 8 - Proof of Publication - Notice of
Intent to Appropriate Water

NOTICE OF HEARING ON
APPLICATION TO
APPROPRIATE WATER
Pierre, South Dakota 57501
April 27, 1982

No. Notice is hereby given the City of Harrisburg whose post office address is Box 26, Harrisburg, South Dakota, has made an application in accordance with the provisions of SDCL 46-1-1 thru 46-1-9; 46-1-12 thru 46-1-14; 46-2-9 thru 46-2-11, 46-2-13; 46-5-1 thru 46-5-8, 46-5-10 thru 46-5-22, 46-5-25, 46-5-41 46-6-3 thru 46-6-5, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, and Board Rules ARSD 74:02:01:01 thru 74:02:01:15, for a permit to appropriate for beneficial use 0.22 cubic feet of water per second of time from groundwater (one well) through the Municipal Well No. 2 to add a point of diversion on existing permits which is located in the SE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 1, Twp. 99N, Range 49W Said water to be used for purpose of providing water for municipal use. This Application No. 4883-3 will be considered by the Water Management Board at Meeting Room No. 1, Kneip Bldg. Church & Illinois, Pierre, S.D. upon the 9th day of June, 1982 at 10 a.m. The Board is authorized to make a determination on this application at the hearing. All interested persons may appear and be heard. Any person who may be affected

by a Board decision who desires to present evidence or cross-examine witnesses according to SDCL 1-26 may notify the Board in writing prior to the hearing or orally at the hearing.

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

Any handicapped person wishing to attend this hearing can contact the Water Rights Division, DWR, Joe Foss Building, Pierre, S.D., prior to the hearing date for assistance to assure access to the hearing.

For the Water
Management Board
Betty Westlund,
Water Rights Specialist

(5-6, 13)

67

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)
County Lincoln) ss.

I, Sheila Mathison hereby

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

Water was taken from the Sioux Valley News

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

City of Canton

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

May 6, 1982

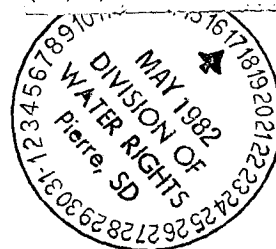
May 13, 1982

Sheila Mathison
(Signature)

Bookkeeper
(Title)

May 14, 1982
(Date Signed)

Cost of Printing: 67 lines times 17.3c
per line for the first week plus 80%
of total for second week.
8 point type - two weeks





Stockwell Engineers, Inc.

211 East 14th Street • Suite 200 • Sioux Falls, South Dakota 57102
Telephone (605) 338-6668

June 5, 1989

City of Harrisburg
P.O. Box 26
Harrisburg, South Dakota 57032

Re: Harrisburg Well Field Redevelopment
Project No. 4888

Dear Mayor and Council:

LTP Enterprises, Inc. of Fargo, North Dakota has completed the redevelopment of your existing wells in accordance with their proposal dated March 23, 1989. This letter will summarize the results of the redevelopment.

Work on the wells began on April 3, 1989 and was completed on April 13, 1989. The first well worked on was well no. 2. This well was originally constructed in 1981 and is a 16 inch pitless unit. The well was checked for it's specific capacity prior to treatment. The well capacity prior to treatment was 90.6 G.P.M. at 9.0 feet of drawdown for a specific capacity of 10.1 G.P.M. per foot of drawdown.

Well no. 2 was initially worked by water jetting and surging during which a tremendous amount of sand was discharged. This well was acidized once to remove precipitates of dissolved minerals such as iron, calcium and magnanese.

It was also noted that large stones would be discharged from this well during redevelopment. Subsequent conversations with the original driller indicates the bottom of the well casing was left unplugged and is likely the source of the course rocks and gravel.

Following redevelopment of well no. 2, it's capacity was again checked. The well capacity after treatment was 122 G.P.M. at 6.3 feet of drawdown or 19.4 G.P.M. per foot of drawdown. This was a 48 percent increase over the capacity prior to treatment.

Well no. 1 is also a 16 inch pitless unit that was constructed in 1971. The specific capacity of well no. 1 prior to treatment was 105 G.P.M. at 11.6 feet of drawdown or 9.05 G.P.M. per foot of drawdown. This well also discharged large amounts of sand during redevelopment. An 8 inch perforated PVC casing had been inserted into the original casing of this well. We were unsure of its

Page Two
City of Harrisburg
June 5, 1989

purpose and since it was loose in the well, it was pulled out. The bottom of the PVC casing was broken off and it appeared to be serving no purpose, so it was discarded. The original casing appears OK. There was no information on the type of material for the screen installed in this well. Therefore, it was not acidized due to the risk of damage if it were not stainless steel or other inert materials.

Well no. 1 was redeveloped by chemical addition and surging. After redevelopment, the well's specific capacity was determined to be 128 G.P.M. at 8.6 feet of drawdown or 14.8 G.P.M. per foot of drawdown. The specific capacity after treatment was 40 percent greater than before treatment.

The following table is a summary of each well's specific capacity before and after redevelopment:

Before Treatment

	<u>Pumping Rate, GPM</u>	<u>Drawdown Feet</u>	<u>Specific Capacity GPM/Foot of Drawdown</u>
Well No. 1	105	11.6	9.05
Well No. 2	90.6	9.0	10.05

After Treatment

Well No. 1	128	8.6	14.88
Well No. 2	122	6.3	19.36

As the data indicates, both wells recovered very well. For comparison, recent redevelopment of similar wells in Brandon's system yield specific capacity after treatment ranging from 8.3 to 11.2 G.P.M. per foot of drawdown. Based upon the well driller's reports and findings, both wells are generally in good condition. The only apparent problem is that both wells tend to pump sand. It appears this was caused during construction by using sand packing that was too coarse for the aquifer formation.

Copies of the Contractor's pumping and drawdown test records, data observed by the Contractor regarding well performance, recommendations of the Contractor and well and pump construction data are attached to the back of this letter.

The work recently completed on your wells is a very important maintenance function. For a well to provide trouble-free service, an operator must have a thorough working knowledge of the well and pump and keep complete up to date records of their operation. If accurate records are kept, the time to perform a

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City of Harrisburg
June 5, 1989

preventative maintenance measure can be determined. Normally, a well maintenance measure needs to be applied when the well's specific capacity has dropped 15 to 20 percent. In order for an operator to keep records of well operation, he needs to be able to measure the drawdown and discharge rate of the well. Several devices are available for quick and accurate measurement of drawdown. A good device is a cable and reel with attached probe that is lowered into the well. A flashlight battery supplies a current into the cable and when the probe contacts the water, the circuit is closed as indicated by a light or gauge at the reel. The length of cable to the probe is then measured to record the drawdown. It is suggested the City obtain this type of instrument.

Rate of discharge are normally recorded by a raw water flow meter or by attaching a calibrated orifice. The City currently doesn't have a flow meter in the raw water line; however, this would be a useful improvement. The meter would likely need to be installed in a meter pit adjacent to the water treatment plant for convenience. As a temporary means of recording flow measurement, it is suggested a depth gauge be installed in the clearwell reservoir and by recording the time increment to pump a known quantity of water to the reservoir, the discharge rate can be determined.

It should be noted that flow measurements taken at the water treatment plant will differ significantly from those recently recorded at the wells. The flow measurements at the water treatment plant would be lower due to the system head which the pumps are pumping against. For example, well no. 1 pumped 128 G.P.M. at the well site; however, based on the pump curve and estimated system head, it could only deliver 73 G.P.M. at the water treatment plant. Drawing 1 of 1, attached to this letter, shows the pump curve plotted with the system head for both wells pumped individually and combined in parallel. Copies of the manufacturer's pump curves are also attached hereto.

It is likely if our current drought continues that the static water level of the aquifer will drop causing the wells to produce water at a lower rate. Therefore, the City should initiate a plan of water restrictions that would include a watering ban between the hours of noon to 6:00 pm.

The February 6, 1989 study completed by our firm indicated a minimum well field capacity of 111 G.P.M. to satisfy peak demands and that this capacity should be met with one well out of operation. The City's combined well capacity would exceed this amount as indicated by the plotted pump curves versus system head; however, only well no. 2 could meet this demand on an individual basis. For conditions existing at the time of well

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City of Harrisburg
June 5, 1989

redevelopment, well no. 2 could pump an estimated 108 G.P.M. to the system while well no. 1 can pump 73 G.P.M.

The City should continue to pursue an additional source of water supply. At the present time the Big Sioux Aquifer in the vicinity of the existing wells appears to offer the best source of supply. As mentioned in our February 6, 1989 report to the City, other aquifers in this area are generally of poor quality and not considered as alternatives. The Dakota Sandstone Aquifer offers good quality water; however, this aquifer is fairly limited in the vicinity of Harrisburg. Recent exploratory work by the Lincoln County Rural Water System was not encouraging towards development of a water supply and at the present time this source will be abandoned by the District.

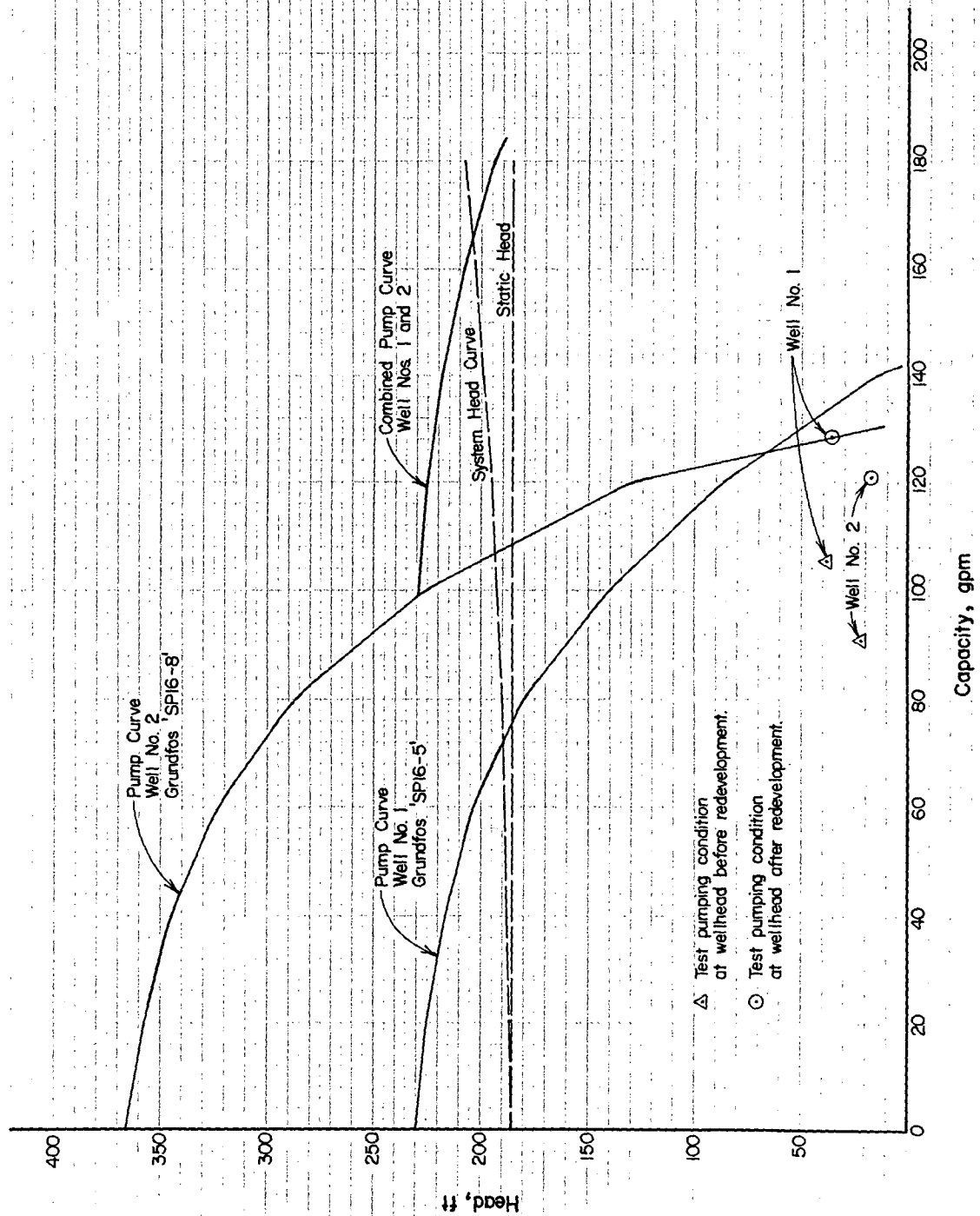
We feel the recent well development has been successful in improving the well's performance. It has also provided data for evaluation of the well field's capacity which was needed to determine Harrisburg's future water needs. We look forward to working with the City to develop additional sources of supply and request you contact our office should you have questions on the well development and operations.

Very Truly Yours,

STOCKWELL ENGINEERS, INC.

Steve W. Brockmueller
Steve W. Brockmueller, P.E.

pk



△ Test pumping condition at wellhead before redevelopment.
 ○ Test pumping condition at wellhead after redevelopment.

City of Harrisburg

Head Capacity Curves
 Well Nos. 1 and 2

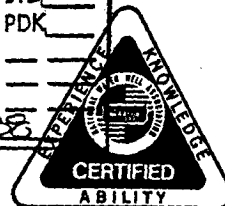
May 1989

Dwg. 1 of 1



Box 9035
Fargo, ND 58106

REC'D	5/8/89
RWS	JTD
SWB	PDK
RBA	
RBL	
JDB	
FILE	1888



Phone (701) 232-8928

WELL DRILLING
PUMPSALES & SERVICE

Stockwell Engineers Inc.
211 East 14th St. - Suite 200
Sioux Falls, S.D. 57102

RE: City of Harrisburg, S.D.
Est. No.1 (Final)
Well Field Redevelopment
Work as Completed

Item:

1.	Determine current Spec. of Wells 1 & 2 @ \$290.00 ea.	\$580.00
2.	Verify well construction Wells 1 & 2 @ \$340.00 ea.	680.00
3.	Development of Wells 1 & 2 @ \$500.00 ea.	1000.00
4.	Acidize Wells	
A.	Labor & Equipment	
	Well #2 4-5-89 8 1/2 Hrs.	
	4-6-89 8 Hrs.	
	Well #1 4-11-89 4 Hrs.	
	4-12-89 11 Hrs.	
	4-13-89 5 Hrs.	
	36 1/2 Hrs. @ \$92.00 Per Hr.	\$3358.00
B.	Acid 195 Gals. @ \$2.40 Per Gal.	468.00

Due to sand pumping on Well #2 and not knowing what material the screen was on #1 we only used 195 gallons of acid. We used chlorine, phosphate, and welltone to clean the screens. The 8" PVC liner was removed from Well #1, the bottom of it was broke off. It really served no purpose that we could determine, liner was left out and well was rejuvenated without it. We had planned on using 15 lbs. of chlorine per well on Items 2 & 5, total of 30 lbs. The rest of the chlorine was used during acidizing or rejuvenation.

60 Lbs. of chlorine used, extra charge on 30 lbs. @ \$2.86 Lb.	\$ 85.80
100 Lbs. of welltone used in lieu of acid @ \$3.11 Lb.	311.00

C. Chemicals for Dilution	None	N.C.
---------------------------	------	------

5. Reset pump & motor and disfection @ \$300.00 ea.	600.00
6. Determine new specific capacity Wells 1 & 2 @ \$235.00 ea.	470.00

Total Complete	\$7552.80
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Well #2 was acidized once, would move a tremendous amount of sand when surging with surge block. Decided not to acidize second time, did not want to dissolve too much of the native formation to cause pack sand to settle past top of screen. Used chlorine, phosphate, and welltone to further develop well.

Well #1 was not acidized at all. No one seems to know what the screen material is. Did not want to take a chance on ruining screen if it was not stainless steel. There was an 8" P.V.C. liner with perforations in it. It was just loose in the 16" well. It was pulled out. The bottom of the P.V.C. was broke off, it really served no purpose as it was. We redeveloped the well using chlorine, phosphate, and welltone and surging with the surge block. We could not find anything wrong with the 16" casing or screen other than the pipe isn't very straight and that the well pumps sand just like No.2. I do not think developing the well longer than to get the yield back would do any good. We feel that the sand pumping is due to improper construction. Evidently the pack sand is too coarse for the formation. If it were mine, I would leave the wells as is for now and if they slow down again try to clean them again as we just did. However you will not know when the pack sand will settle to the point where the well will pump sand continuously and be useless. It could happen anytime they are worked on, you just never know when.

Well #2: Worked on 4-3-89 to 4-6-89.

Size of Well: 16" P.V.C.

Depth of Well: 33' Top of Pitless.

Screen: Couldn't tell what or how much.

Static Level: 13 Ft.

Specific Yield before treatment:

(90.6 G.P.M. @ 9' Draw Down) 10 G.P.M. Per Ft.

Specific Yield after treatment:

(122 G.P.M. @ 6.3 Ft. Draw Down) 19.36 G.P.M. Per Ft.

Well #1: Worked on 4-10-89 to 4-13-89.

Size of Well: 16" Steel (Had 8" P.V.C. liner, this was removed)

Depth of Well: 44 Ft.

Screen: From 26 Ft. to 44 Ft. (13" I.D.) Could not tell for sure.
Water jetting pressure change indicates 10 Ft. of screen
and 16 Ft. of leader.

Static Level: 27.8 Ft.

Specific Yield before treatment:

(105 G.P.M. @ 11.6' Draw Down) 9.05 G.P.M. Per Ft.

Specific Yield after treatment:

(128 G.P.M. @ 8.6' Draw Down) 14.88 G.P.M. Per Ft.

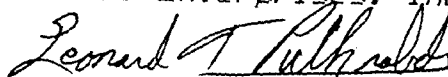
Well No.2 increased 48%

Well No.1 increased 40%

The wells recovered very well, if it wasn't for the sand pumping they should be in good condition.

Sincerely,

L.T.P. Enterprises, Inc.



Leonard T. Pulkrabek
President



Box 9035
Fargo, ND 58106

Phone (701) 232-8928



WELL DRILLING
PUMP SALES & SERVICE

Work done by Fargo office Job No. S3349CB Commitment date April, 89 Call taken by L.T.P.

Owner City of Harrisburg Telephone 605-743-5872 Date March 27, 1989

City Harrisburg County Lincoln State South Dakota

Well No. 1 Location Sec. 1 Dayton Township

Well diameter 16" Well depth 44' Year Constructed 1971 Did we drill No

Screen Diameter 13" I.D. Screen Length 10'? Screen Material ? Screen Slot ? Leader 16'? 13" ID

Static Level 27.8' Pumping Level 36.4' G.P.M. Tested 128 With what? Pump

Specific yield 14.88 G.P.M. per foot of D.D. after 2 hours of pumping

Type of well-Filter wall X Naturally developed ? Filter Sand Size ?

Additional information pertaining to well Well was worked over with surge block and water jetting using chlorine, welltone, & phosphates. Well pumps quite a lot of sand when developing on it. Was relined with 8" P.V.C. this was left out. Casing is not straight.

Driller Frank Schroeder Date completed 4-13-89

PUMP AND SYSTEM DATA

Type of Pump-Turbine ? Submersible X Make Grundfos Model SP16-5 Pump Serial No B8443WO-1

Size Motor 5 HP Voltage 230 Phase 1 Motor Serial No. ?

Type of Column? Turbine ? Submersible X Length of Column 36.7' Size of Column 2" Material Galv.

Size of Line-Shaft ? Material of Shaft ? Replacement No. of line shaft bearings ?

What type of System? Pressure ? Elevated Tank ? House X Pitless Unit ?

Size Pitless Unit ? Bury depth of Pitless Unit ? Total pump setting from intake 37.5

Air line length ? Size ? Material ?

Amperage under operating conditions - Line 1 ? Line 2 ? Line 3 ?

Additional information pertaining to pump and system ?

Date installed 4-13-89 By Company L.T.P. Enterprises, Inc. Operator Frank Schroeder



Box 9035
Fargo, ND 58108

7

Phone (701) 232-8928



WELL DRILLING
PUMP SALES & SERVICE

Work done by Fargo office Job No. S3349CB Commitment date April 89 Call taken by L.T.P.

Owner City of Harrisburg Telephone 605-743-5872 Date March 27, 1989

City Harrisburg County Lincoln State South Dakota

Well No. 2 Location Sec. 1 Dayton Township

Well diameter 16" P.V.C. Well depth 33' Top of pitless Year Constructed 1981 Did we drill No

Screen Diameter 16" PVC Screen Length 13' Screen Material PVC Screen Slot 1/8" Leader None

Static Level _____ Pumping Level _____ G.P.M. Tested _____ With what? _____

Specific yield, _____ G.P.M. per foot of D.D. after _____ hours of pumping _____

Type of well - Filter wall _____ Naturally developed _____ Filter Sand Size _____

Additional information pertaining to well Screen information is from driller report, don't know how accurate it is, couldn't tell from working on it. Records also said it had a bottom on it. We found open bottom, very coarse rocks & gravel in bottom. Acidized & water jetted screen. Well pumps a lot of sand when developing on it.

Driller Frank Schroeder Date completed 4-6-89

PUMP AND SYSTEM DATA

Type of Pump - Turbine _____ Submersible X Make Grundfos Model SP16-8 Pump Serial No. B8651M0-2

Size Motor 7 1/2 HP Voltage 230 Phase 1 Motor Serial No. _____

Type of Column? Turbine _____ Submersible X Length of Column 14' Size of Column 3" Material Galv.

Size of Line - Shaft _____ Material of Shaft _____ Replacement No. of line shaft bearings _____

What type of System? Pressure _____ Elevated Tank _____ House _____ Pitless Unit Monitor

Size Pitless Unit 18" Bury depth of Pitless Unit 6' Total pump setting from intake 22'

Air line length _____ Size _____ Material _____

Amperage under operating conditions - Line 1 _____ Line 2 _____ Line 3 _____

Additional information pertaining to pump and system _____

Date installed 4-6-89 By Company L.T.P. Enterprises, Inc. Operator Frank Schroeder

January 17, 2001

2000 South Dakota Water Use Questionnaire

To:

CITY OF HARRISBURG
MAYOR, PO BOX 26
HARRISBURG SD 57032

Address correction requested:

One questionnaire is being provided for each permitted water source. The following information is based on Water Permit\Right No. 4883-3. If you have other permits\rights in the same water source, also include water use under those permits\rights on this questionnaire.

Water Source: GROUNDWATER

County: LINCOLN

Aquifer: BIG SIOUX

Pumping Pt. Legal: SEC 01-T099N-R49W

Management Unit: SOUTH

Type of Water Use: MUNICIPAL

1) Please estimate your year 2000 water use from the above water source: 500,000 gallons

2) If no water use in 2000, please list the reason(s) why in the comments section.

Comments: Harrisburg went to Lincoln Co Rural Water
in Oct. 1999 because our wells were going
dry. The wells are still used as a
back up and stand by

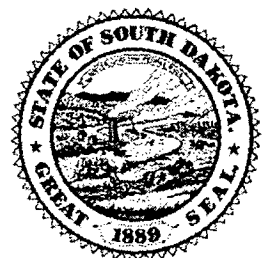
Contact Person: Dan Fink

Telephone No: 605 743-5872

Questions? Please call Mark Rath or Ron Duvall at 605 773-3352 for assistance.

Thank you for completing the 2000 water use questionnaire.

Water Rights on the Web: www.state.sd.us/denr/wr





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

November 13, 2003

4883-3

City of Harrisburg
Dan Fink, Utility Superintendent
PO Box 26
Harrisburg SD 57032

Dear Mr. Fink:

On October 15, 2003 the investigation of the water use system, including the extent of application of water to beneficial use, as developed under Water Permit No. 4883-3, was completed by Lynn Beck, a staff engineer with our program. The final water right document, the water license, can now be issued.

State law requires that we charge a \$50.00 fee for the investigation and issuance of the water license. Upon receipt of the \$50.00 fee, we will complete processing the water license. The check or money order for the fee should be made payable to the "Water Rights Program".

A licensed water right will be similar to a property right that can not be lost as long as the water use continues and you abide by the permit requirements.

If you have any questions regarding the water permit, investigation of the city's water use system or payment of the fee, please contact Genny McMath with our program at (605) 773-3352.

Sincerely,

Karen Schlaak
Water Rights Program
(605) 773-3352

RECEIPT

WATER RIGHTS PROGRAM

South Dakota Department of Environment and Natural Resources

Date December 5, 20 03

RECEIVED OF City of Harrisburg, PO Box 26, Harrisburg SD 57032

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

Fee for Application for Permit No. _____ to Appropriate Water, to construct and to put water to beneficial use	50	00
Fee for Application for Permit No. _____ to Appropriate Water for Future use		
Fee to retain Future Use Permit No. _____ after period of seven years.		
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>4883-3</u>		
Fee for Filing Transfer Form _____		
Fee for _____		
Fee for Issuing New Well Driller's License No. _____ for C.Y. _____		
Fee for Renewal of Well Driller's License No. _____ for C.Y. _____		
Fee for Issuing Well Pump Installer's License No. _____ for C.Y. _____		
Fee for Renewal of Well Pump Installer's License No. _____ for C.Y. _____		
(Any Other Work Provided by Law)	TOTAL	50.00

No.

000942

By

Darland Ebele

Chief Engineer

gm

Permit Nos. 1754-3 and 4883-3**Big Sioux River - Water District****Report of Examination of Works and/or Application of Water to Beneficial Use**

TO: Chief Engineer, Water Rights Program, DENR, Foss Bldg., Pierre, SD 57501

I have this day, October 15, 2003, made a thorough examination of the water use system constructed by City of Harrisburg of Box 26, Harrisburg SD 57032 holder of Permit Nos. 1754-3 and 4883-3, bearing the priority of May 13, 1970 and April 13, 1982 authorizing the diversion of 2.0 and 0.22 cu. ft. per second of the waters of Big Sioux Aquifer for back-up municipal water source purposes, in Lincoln County.

Inspection contact & relationship to permit holder, if applicable: **Dan Fink, Utility Superintendent for the City of Harrisburg**

A. Works used to divert the water:**Well Information: well #1**

- 1) Well Drilling Firm:
- 2) No. of Wells 1
- 3) Depth(s) 44 feet
- 4) Well log is available no
- 5) Comment:

Casing:

- 1) Diameter 16 inches
- 2) Length 26 feet
- 3) Type steel

Screen:

- 1) Type
- 2) Length 18 feet
- 3) Static water level 27.8 feet

Pump:

- 1) Make Grunfos subm.
- 2) Model
- 3) Size
- 4) Capacity 128 GPM

Motor:

- 1) Make Grunfos
- 2) Model No. SP16-5
- 3) Horsepower rating 5 hp

Well Information: well #2

- 6) Well Drilling Firm: Graves Well Drilling
- 7) No. of Wells 1
- 8) Depth(s) 33 feet
- 9) Well log is available yes
- 10) Comment:

Casing:

- 4) Diameter 16 inches
- 5) Length 20 feet
- 6) Type pvc

Screen:

- 4) Type pvc
- 5) Length 13 feet
- 6) Static water level 14.5 feet

Pump:

- 5) Make Grunfos subm.
- 6) Model
- 7) Size
- 8) Capacity 122 GPM

Motor:

- 4) Make Grunfos
- 5) Model No. SP16-8
- 6) Horsepower rating 7.5 hp

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

- 1) Type pvc 2) Size 6 inches 3) Length 6.9 miles

C. Works used to apply water to beneficial use:

Water treatment plant with 30,000 gal. overhead storage and 144,000 gal ground storage. Plant can pump at 180 gpm to Harrisburg.

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by yes
2) Exceptions to compliance are: none

The system is in good/fair condition with the point(s) of diversion located as follows: well #1 is 3200' E and 4875' N; well #2 is 3700' E and 2800' N all from the SW corner Section 1, T99N, R49W. The works are capable of diverting and conveying to the place of use 0.56 cu. ft. per second of water which is to be used for back-up municipal water supply. Water has been put to beneficial use to the maximum extent as follows:

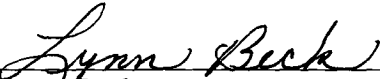
Facilities in place as a back-up municipal water supply.

The license should be issued for 0.28 cfs under 1754-3 and 0.22 cfs under 4883-3 for a combined 0.50 cfs.

All structures, wells and lands on map yes

Comments or other permit(s) associated with the project:

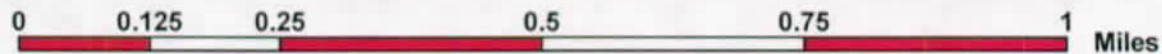
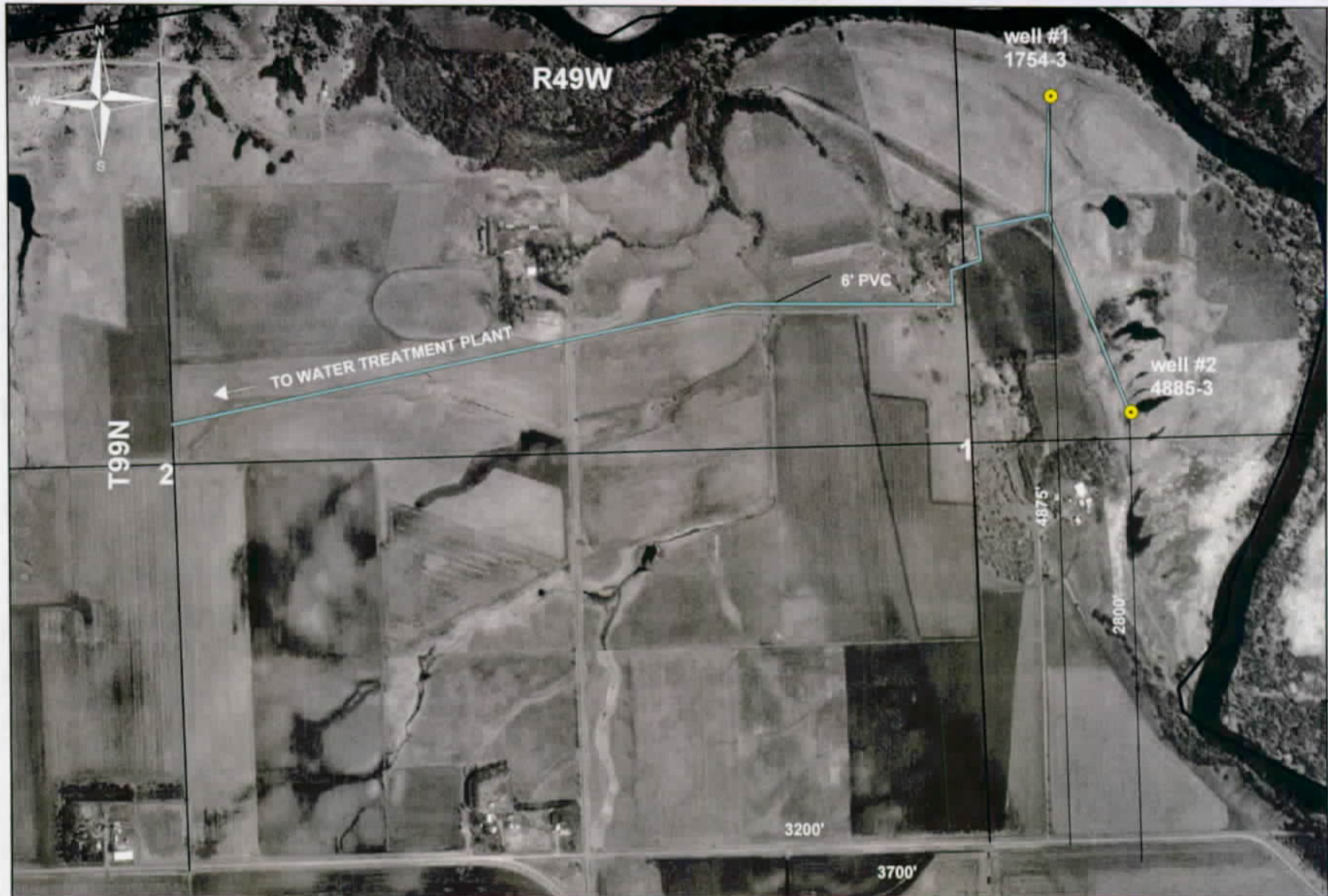
The wells, water treatment plant and pipeline are in place as a back-up municipal water supply. Municipal water for Harrisburg is supplied by the Lincoln County RWS.


Lynn Beck

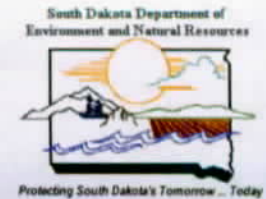
Natural Resources Engineer Specialist
DENR, Water Rights Program

Date report completed: November 5, 2003

WATER RIGHT NO. 1754-3 and 4883-3 CITY OF HARRISBURG



Lynn Beck
Natural Resource Engineering Specialist
DENR, Water Rights Program
November 5, 2003



STATE OF SOUTH DAKOTA

WATER LICENSE NO. 4883-3

(1) City of Harrisburg, PO Box 26, Harrisburg SD 57032 made Application No. 4883-3, April 13, 1982 for a water permit to divert 0.22 cubic feet of water per second (cfs) from groundwater (one well), Lincoln County, South Dakota for municipal purposes. Permit No. 4883-3, with a priority date of April 13, 1982 was approved June 9, 1982 and issued to the applicant for diversion of water with construction of the described water supply system and the application to beneficial use of water completed.

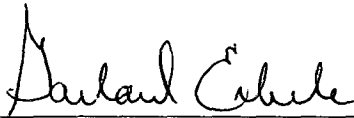
Water Permit No. 1754-3, with a priority date of May 13, 1970 authorized 2.0 cfs from one well for municipal use. The applicable portions of No. 1754-3 are incorporated into No. 4883-3.

(2) The water supply system has been completed and water applied to beneficial use in accordance with South Dakota State Law. Pursuant to South Dakota Codified Law 46-5-30.1, the holder and/or owner of Incorporated Water Right No. 4883-3 is issued a license, bearing priority dates of May 13, 1970 (0.28 cfs) and April 13, 1982 (0.22 cfs) to appropriate 0.50 cubic feet of water per second from groundwater (two wells) for municipal purposes. Lincoln County Rural Water System supplies the city. These two wells serve as a back-up municipal water supply.

The diversion points are located: Well #1 – 3,200 feet east and 4,875 feet north (NW ¼ NE ¼) and Well #2 – 3,700 feet east and 2,800 feet north (SE ¼ NE ¼); all from the southwest corner of Section 1-T99N-R49W.

(3) This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Permit No. 4883-3 including the following now applicable qualification:

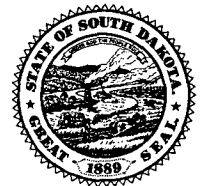
- The wells approved under this Permit will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner under this Permit shall control his withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells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



Garland Erbele, Chief Engineer
Water Rights Program
Department of Environment and Natural Resources

MAY 10 2004

date





**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

MAY 10 2004

4883-3

City of Harrisburg
Dan Fink Utility Superintendent
PO Box 26
Harrisburg SD 57032

Dear Mr. Fink:

Enclosed is Water License No. 4883-3. This is the final water right document completing your process of obtaining a Water Right. Enclosed is Receipt No. 000942 in the amount of \$50.00 which you paid for the investigation and issuance of the Water License.

As long as you use the water beneficially, as stated in the Water License, State Water Laws provide that you have a continuing right to use the water.

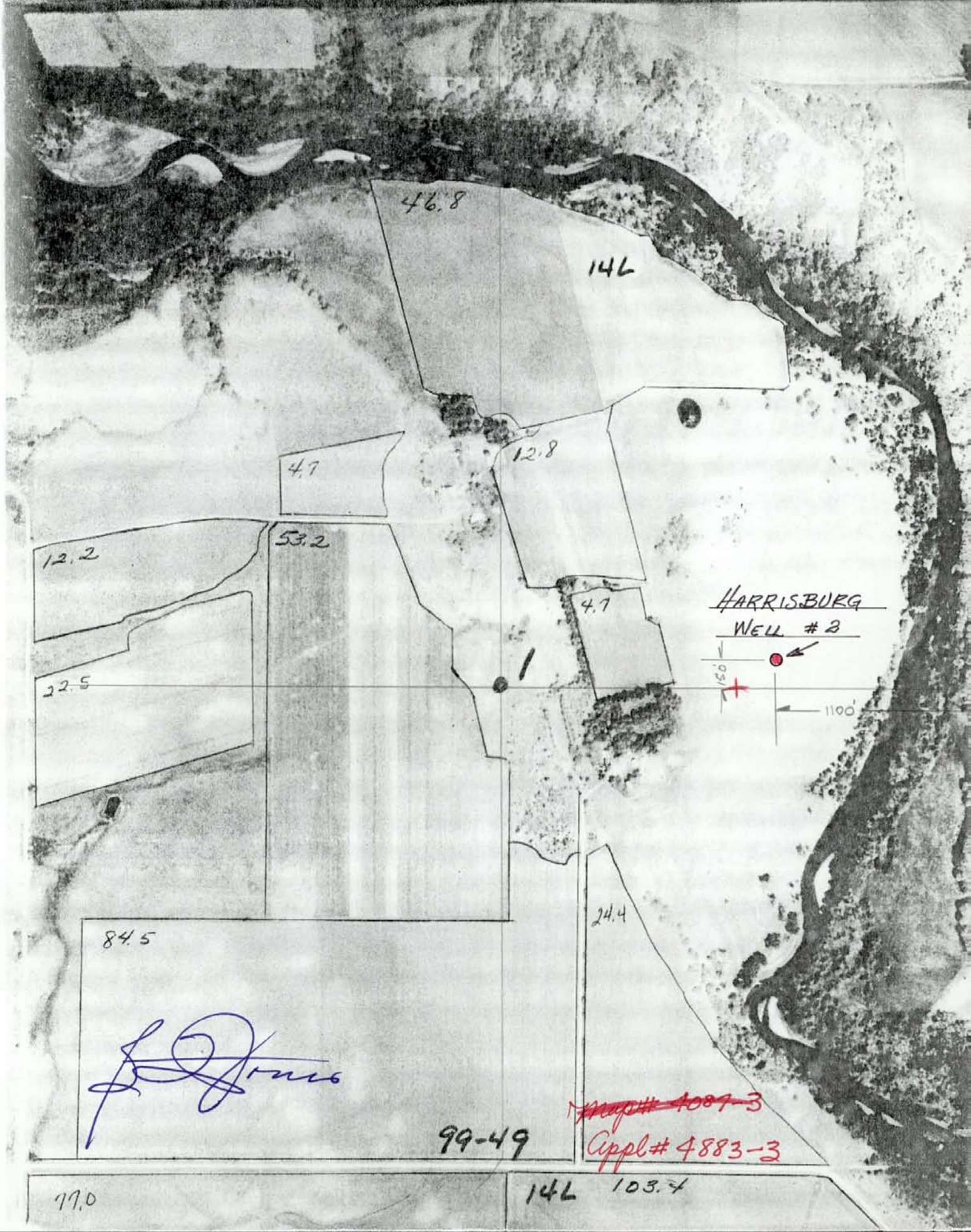
Sincerely,

Garland Erbele, Chief Engineer
Water Rights Program
(605) 773-3352

NOTE: The applicable portions of No. 1754-3 are incorporated into Water License No.4883-3

enclosures

NOT TO SCALE



Map# 4087-3

copy

LENNOX

NORTHING

HARRISBURG

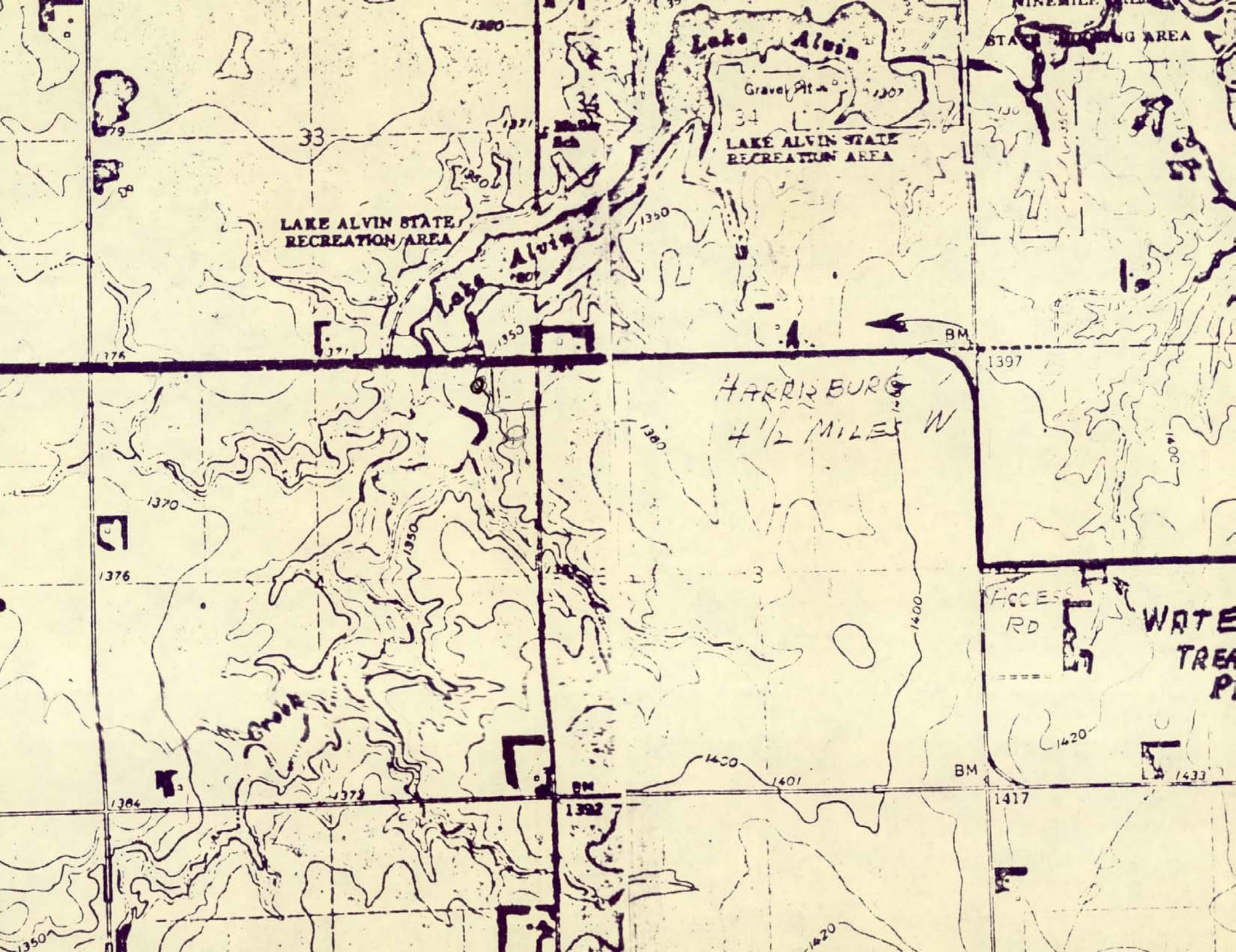
CANTON

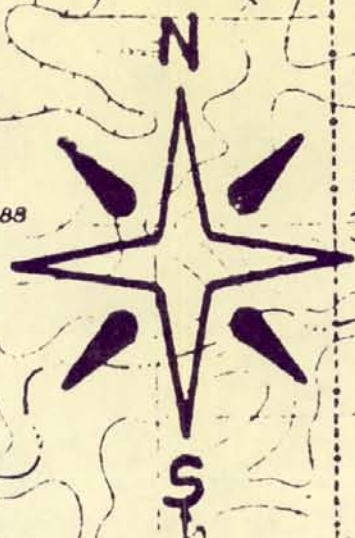
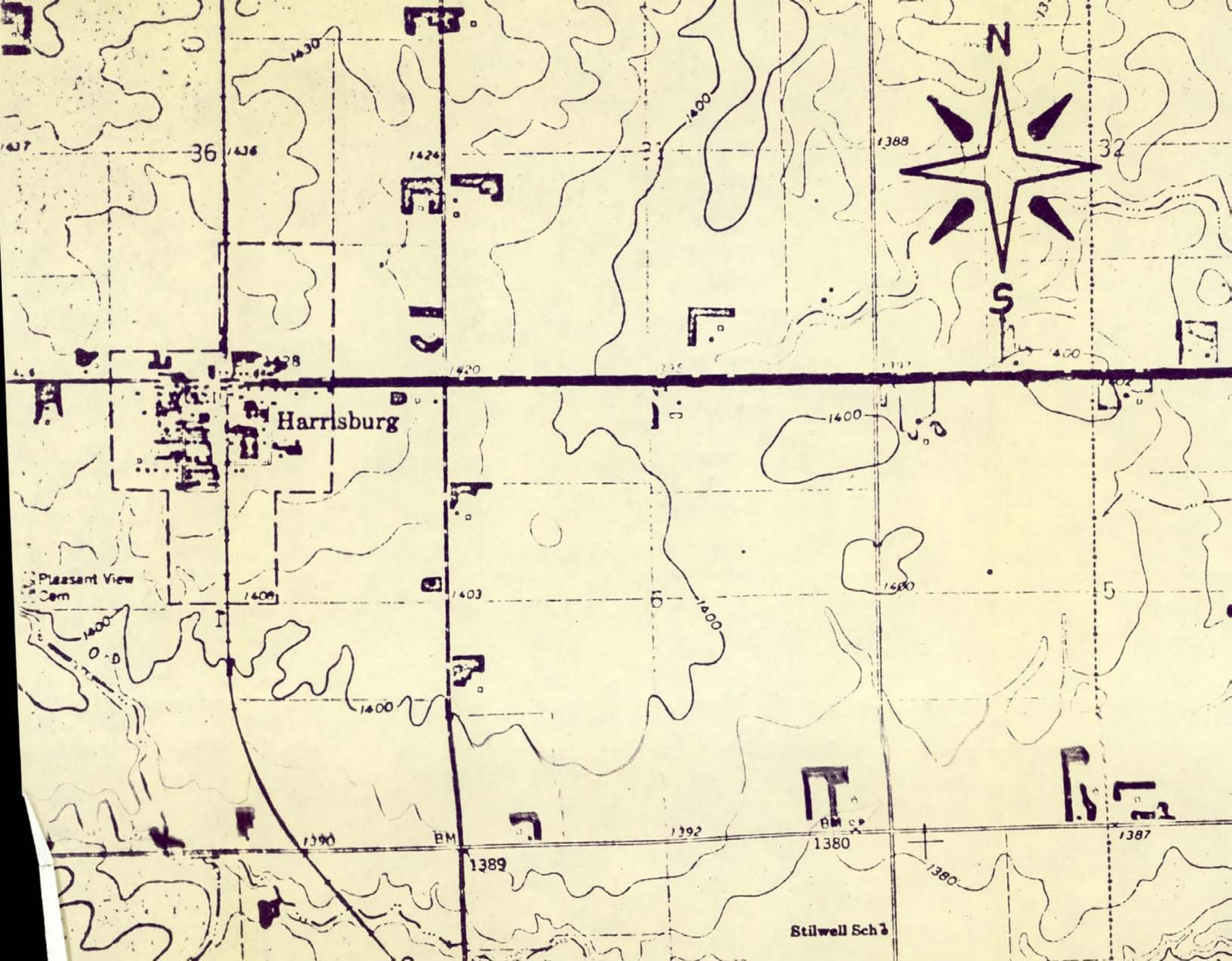
SIoux RIVER

wells

water plant







Harrisburg

Pleasant View
Cem

Stilwell Sch

BM

1380

1389

1392

1387

1380

36

32

5

1400

1403

1400

1400

1400

1400

1438

1420

1425

1400

1400

1430

1424

1400

1388

13

47

1436

4.8

14