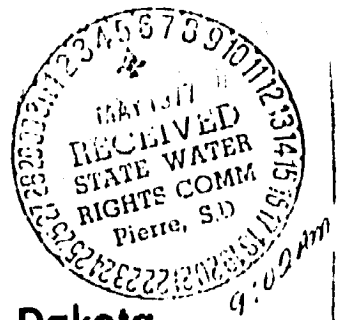


Water Right Number 3954-3

1. Considered 5-26, 1977
2. Name of Applicant ROGER MC CULLOUGH
3. Post Office Address BIG STONE CITY
4. Amount of Water claimed 3.0
5. Source of Water supply 150' DEEP WELL
6. Water to be used for IRRIGATION
- Acres to be irrigated 225
7. Water to be diverted and used in GRANT County
- about 2E, 4N miles of MILBANK
8. Proof of Publication Received ✓ 5-27-77
- Not Received _____
- Approved _____
- Subject to _____
- Not Approved _____
- Action Deferred _____

10. Remarks:

Map No. 3205-3 Water Division No. 3 WHITE STONE CREEK 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 Roger McCulloch
Postoffice address R.R. # 1, Big Stone City, State South Dakota 57216
If a corporation show date and place of incorporation -----
2. Method of accomplishing work (contract, employment of others, or by direct labor) Direct Labor
3. Name of diversion work Roger McCulloch - Unit # 1
4. Amount of water claimed (cubic feet per second) 3.0 C.F.S.
5. Source of water supply Ground Water
6. Location of point of diversion E 1/2 of SW quarter of section 20-121-47
County Grant
7. Annual period or periods during which water is to be used March - November
8. Use to be made of water, (irrigation, industrial, municipal, commercial, recreation, etc.) Irrigation
9. For irrigation use, Total number of acres to be irrigated 225

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.
Same as listed in PERMIT #	3135-3		

Attach sheet if more space is needed

10. Time required to complete construction of water supply system 5 years. Additional time required to complete application of water to the proposed beneficial use 2 years.
11. Choice of newspaper for Notice of Intent to Appropriate Water publication Watertown Public Opinion, Watertown, SD
12. Principal Features of the Proposed Water Supply System.

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

Pump Bowl

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

Main Line

C. Works proposed to apply water to beneficial use.

Center Pivot

Estimated Total Cost \$ -----

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)

County of Grant)

I, Roger McCulloch 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 Roger McCulloch

Subscribed and sworn to before me this 3 day of May, 1977

Donna C. O'Leary
Notary Public (or other qualified officer)

WATER RIGHT APPLICATION APPROVAL

The Water Rights Commission hereby approves Water Right Application No. 3954.3
ROGER McCULLOUGH P.O. #1, BIG STONE CITY
 (Applicant) (Post Office Address)
SOUTH DAKOTA 57216 With the following modifications:
 (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.

LANDS COVERED UNDER THIS PERMIT ARE ALSO COVERED UNDER PERMIT NO 3135-B. COMBINATION OF DIVERSIONS UNDER THE TWO PERMITS SHALL NOT EXCEED THE STATUTORY LIMIT OF 1 CFS FOR EACH 70 ACRES IRRIGATED.

Date of first receipt of application MAY 5, 19 77
 Date of return to applicant for correction, amendments or changes required _____, 19 ____
 Date of receipt of corrected application _____, 19 ____
 Approved MAY 26, 19 77, Recorded in Book 18 Page 338

WATER RIGHT PERMIT NO. 3954.3

The Water Rights Commission hereby grants and issues this Water Right Permit No. 3954.3 authorizing the construction of the water use system and the putting of water to beneficial use as stated in the Application and as modified in the Water Right Application approval, subject, however, to the following limitations and conditions:

1. The date from which applicant may claim right is MAY 5, 19 77
2. The equivalent of at least one-fifth of the work above specified is to be completed on or before NOVEMBER 26, 19 79
3. The whole of said work is to be completed on or before MAY 26, 19 82
4. The limit of time from proof of beneficial use of water appropriated in accordance herewith is MAY 26, 19 84
5. The water appropriated shall be used for the purpose of IRRIGATION
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 3.0 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 the irrigation purposes said appropriation must be limited to not more than 3 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 for irrigation on or before MAY 26, 19 84; said water to be used during the following described annual period: MARCH - NOVEMBER

Witness my hand this 3RD day of AUGUST, 19 77

WATER RIGHTS COMMISSION

By:

John H. Hahn
 Chief Engineer, Executive Officer

Certificate of Construction Issued _____, 19 ____

Water License Issued _____, 19 ____

SECTION OF LAND TO BE IRRIGATED

NE $\frac{1}{4}$ of Sw $\frac{1}{4}$	20-121-47	30
N $\frac{1}{2}$ of SE $\frac{1}{4}$ of Sw $\frac{1}{4}$	20-121-47	18

NW $\frac{1}{4}$ of NE $\frac{1}{4}$	20-121-47	25
NE $\frac{1}{4}$ of NE $\frac{1}{4}$	20-121-47	40
SE $\frac{1}{4}$ of NE $\frac{1}{4}$	20-121-47	35
SW $\frac{1}{4}$ of NE $\frac{1}{4}$	20-121-47	35

NE $\frac{1}{4}$ of NW $\frac{1}{4}$	20-121-47	20
SE $\frac{1}{4}$ of NW $\frac{1}{4}$	20-121-47	22
		225

PAGE NO.

SW 1/4 20-121-47

4-27-77

10

Everett Loime1

JOB NAME

LOCATION

DATE _____

RIC NO.

FOREMAN:

Jt No.	DEPTH	TIME	REMARKS	DESCRIPTION
1	0-20		0-3 Topsoil	
2	20-40		3-20 Coarse yellow sand and gravel	
3	40-60		20-30 Coarse yellowish gravel	N
4	60-80		30-40 Good gravel	
5	80-100		40-50 Good gravel	
6	100-120		50-51 Blue clay	
7	120-140		51-52 Gravel N	X
8	140-150		52-78 Blue clay, gravel streak	
			78-80 Possible sand	
			80-150 Very light fine sand	S

Form 2A - Wells, Dugouts or Water Storage Dams (Supplement to form 2)

12. Principal Features of the Proposed Water Supply System (continued.)

D. Well Information or Estimates

- (1) Drill Hole, Diameter _____, Depth _____
- (2) Casing, Type _____ Diameter _____ Thickness _____
(wood, concrete, steel, etc)
- (3) Perforated Screen.
Type _____, Diameter _____, Length _____
- (4) Gravel Pack. Thickness _____, Length of gravel pack _____

E. Dugout Information or Estimates.

- (1) Surface dimensions _____, Depth _____

F. Fill out for Either a Well or a Dugout. *Log will be furnished by driller

- (1) Water Bearing Materials. (Please attach a copy to test well log if available.)

Character of Water bearing materials _____

Depth to top of water bearing material _____

Depth to bottom of water bearing material _____

Thickness of water bearing material _____

Depth to water (ground surface to water level) _____

- (2) Distance to nearest existing household or livestock watering wells.

On same owner's property: 100 rds. On property owned by others: 195 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, maximum water depth, surface area and storage capacity of each storage dam. The location of each water storage dam should be shown on the water right map.

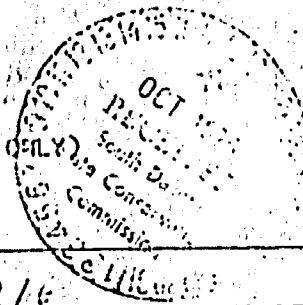
Roger M. Cullum
Signature of Applicant

SEE PERMIT NO 3135-3

FOR WATER QUALITY DATA

CONSERVATION
COMMISSION
FORM W1 #1

STATE CONSERVATION COMMISSION
SUPPORTING INFORMATION
FOR APPROPRIATION OF GROUND WATER IN ACCORDANCE
WITH SDCL 46-6-3 AS AMENDED
(THIS FORM REQUIRED FOR PROPOSED GROUND WATER IRRIGATION)



NAME Roger McCulloch
ADDRESS Big Stone City, S.D. 57216
COUNTY DeWitt

LEGAL DESCRIPTION

1. WELL LOCATION SE $\frac{1}{4}$ of NW $\frac{1}{4}$ of 20-121-47
2. LOCATION OF AREA TO BE IRRIGATED SE $\frac{1}{4}$ of NW $\frac{1}{4}$ - NE $\frac{1}{4}$ of SW $\frac{1}{4}$ of 20-121-47
N $\frac{1}{2}$ of SE $\frac{1}{4}$ of SW $\frac{1}{4}$ - SW $\frac{1}{4}$ of NE $\frac{1}{4}$ of 20-121-47

TYPE OF IRRIGATION

3. GRAVITY TOWLINE CENTER PIVOT X GUN X
4. CROPS TO BE IRRIGATED Corn, wheat, alfalfa

WATER QUALITY

5. SAMPLE NUMBER 2 - 76-129
6. SALINITY (EC X 10⁶) 6.36 (meq/L)
7. SODIUM (SAR) 0.17 (meq/L)
8. RESIDUAL SODIUM CARBONATE (meq/L) 0.33

I do hereby certify that a chemical analysis of the ground water representative of that used to irrigate shall be acquired from South Dakota State University and: the soils information has been acquired from DeWitt County Conservation District, County Extension Office or Soil Conservation Service.
and: Map was sent to Roger McCulloch
that the legal description for the location of the well and land to be irrigated is true and correct.

SUBSCRIBED AND SHOWN BEFORE ME THIS
5th DAY OF OCTOBER 19 76.

William C. Hooper
(TITLE OR SEAL)

WILLIAM C. HOOPER
County Clerk, South Dakota
My Commission Expires Sept. 24, 1985

Roger McCulloch
APPLICANT'S SIGNATURE

Approval does not imply that this project can be carried out without the full circumstantial. Individual man-
agement is required to determine the relative
benefits.

APPROVED/DISAPPROVED X

(SOILS INFORMATION ON REVERSE SIDE)

REPORT OF ANALYSIS
Water Quality Laboratory
Water Resources Research Institute
South Dakota State University
Brookings, South Dakota 57006

Submitted by: Date Rec'd:
 Address: 16 Sample No.:
 Identification:

WATER ANALYSIS

Calcium (Ca)	ppm*	7 me/l**
Magnesium (Mg)	ppm	6 me/l
Sodium (Na)	ppm	9 me/l
Potassium (K)	ppm	8 me/l
Sulfate (SO ₄)	ppm	9 me/l
Nitrate (as N)	ppm	me/l
Chloride (Cl)	ppm	6 me/l
Bicarbonate (HCO ₃)	ppm	8 me/l
Carbonate (CO ₃)	ppm	me/l
Iron (Fe)	ppm	me/l
Fluoride (F)	ppm	me/l
Hardness (EDTA as CaCO ₃)	ppm	g.p.g.***
Alkalinity (Methyl Orange)	ppm (as CaCO ₃)	
Alkalinity (Phenolphthalein)	ppm (as CaCO ₃)	
Electrical Conductivity	micromhos per cm at 25° C.	
Sodium Adsorption Ratio	% of cations	
Sodium	me/l	
Residual sodium carbonate		
pH		
Others:		

*ppm=parts per million
 **me/l=milliequivalents per liter
 ***g.p.g.=grains per gallon



COMMENTS:

By:

Service Performed

Amount Due

11/1/70

1.00

Make checks payable to: Water Quality Laboratory

Cut along dotted line and return the lower portion with payment

Sample No. 16-1000

Amount Enclosed

Signed

STATE CONSERVATION COMMISSION
SUPPORTING INFORMATION
FOR APPROPRIATION OF GROUND WATER IN ACCORDANCE
WITH SDCL 46-6-3 AS AMENDED
(THIS FORM REQUIRED FOR PROPOSED GROUND WATER IRRIGATION)



NAME Roger Mc Culloch
ADDRESS Big Stone City, S. Dak. 57216
COUNTY DeWitt

LEGAL DESCRIPTION

- 1. WELL LOCATION NE 1/4 of NE 1/4 of 20-121-47
- 2. LOCATION OF AREA TO BE IRRIGATED NE 1/4 of NW 1/4 - NW 1/4 of NE 1/4 - NE 1/4 of NE 1/4
SE 1/4 of NE 1/4 - 20-121-47

TYPE OF IRRIGATION

- 3. GRAVITY ☐ TOWLINE ☐ CENTER PIVOT ☒ GUN ☒
- 4. CROPS TO BE IRRIGATED Corn, alfalfa, wheat

WATER QUALITY

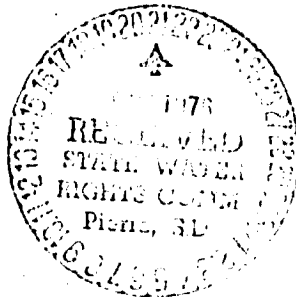
- 5. SAMPLE NUMBER 76-1290
- 6. SALINITY (EC X 10⁶) 488 (medium)
- 7. SODIUM (SAR) 0.22 (low)
- 8. RESIDUAL SODIUM CARBONATE (meq/l.)

I do hereby certify that a chemical analysis of the ground water representative of that used to irrigate shall be acquired from South Dakota State University and; the soils information has been acquired from DeWitt County Conservation District, County Extension office or Soil Conservation Service. Map has been sent to Brackings callier and; that the legal description for the location of the well and land to be irrigated is true and correct.

Roger Mc Culloch
APPLICANT'S SIGNATURE (this project can be carried out successfully in all circumstances. Individual management will, to a large degree, determine the relative success of this venture.)
William E. Hooper
APPROVED/DISAPPROVED

SUBSCRIBED AND SWORN BEFORE ME THIS
24 DAY OF DECEMBER 19 76
William E. Hooper
(TITLE OR SEAL)
Notary Public, South Dakota
My Commission Expires Sept. 24, 1983

(SOILS INFORMATION ON REVERSE SIDE)



October 13, 1976

Mr. Roger McCullough
Big Stone City, SD 57216

Dear Mr. McCullough:

You earlier were sent reports of analysis on water samples #76-1290 and 76-1291. I am returning herewith the original copies of the reports which are yours to keep. I am also sending a copy of AES pamphlet #13 with some information on soil-water reaction.

Both these water samples are quite good water and there should be no chemical difficulties arising from the use of these waters on any normal soil.

There are some soils, however, in the SW quarter of the NW quarter of section 20, in the SW corner of the SW quarter of the NE quarter of 20, and in the very northeastern corner of the NE quarter of the SW quarter of 20 which should not be irrigated. All of these soils are units 18D or 19 and you should avoid them somehow in the set-up of your irrigation. With a center pivot system, I can see it would be easy to set up a pivot in the center of the NE quarter and avoid practically everything except a small bit of 18d soil in the SW corner of that quarter. However, you would have to irrigate the northeast quarter of the SW quarter by means of a very small pivot system, or by means of a gun system. Likewise, the 80 in the SW quarter would have to be irrigated by a gun or tow system because there is small area of soil 8c in the very southern end which is not irrigable.

A copy of this letter is accompanying your application materials and a copy of the water analyses to the State Conservation Commission for their action.

Sincerely yours,

L. O. Fina

L. O. Fina
Water Quality Lab

LOF:ckb
Enclosures
cc: State Conservation Commission

WATER LICENSE NO. 3954-3

(1) WHEREAS, On the 5th day of May A. D. 19 77
Roger McCullough

made Water Right Application No. 3954-3 for a permit to use 3.0 cubic feet per second of the waters
 of groundwater (one well)
 County of Grant State of South Dakota, for irrigation
 purposes; and

(2) WHEREAS, On the 26th day of May A. D. 19 77
 Permit No. 3954-3, with a date of priority of October 14, 1976 *

was issued to said applicant for the diversion of said water, and provided for the completion of construction of the water
 supply system therein described on or before the 26th day of May A. D. 19 82 and for the
 application to beneficial use of said water on or before the 26th day of May A. D. 19 84

and:

(3) WHEREAS, It is hereby certified that the applicant has complied with the provisions of the laws of the State of South Dakota
 relating to completion of the construction of the water supply system and is entitled to divert 2.11 cubic feet
 per second of water for beneficial use and,

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

to irrigate the following lands all in Section 20, T121N, R47W

	acres	
NE $\frac{1}{2}$ NW $\frac{1}{2}$	19	
SE $\frac{1}{2}$ NW $\frac{1}{2}$	22	
NW $\frac{1}{4}$ NE $\frac{1}{4}$	33	* The applicable portions of Permit No. 3135-3 have been incorporated into this Water License.
NE $\frac{1}{4}$ NE $\frac{1}{4}$	28	
SW $\frac{1}{2}$ NE $\frac{1}{4}$	30	
SE $\frac{1}{2}$ NE $\frac{1}{4}$	10	
NE $\frac{1}{4}$ SW $\frac{1}{4}$	23	
SE $\frac{1}{4}$ SW $\frac{1}{4}$	11	
TOTAL	176	

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

_____ of Pic Stone City, South Dakota

the holder _____ and owner _____ of said permit No. 3954-3 a water right, dating from October 14, 1978

_____ to use of 2.11 cubic feet per second of the waters

of groundwater (oro well)

in the County of Grant and State of South Dakota, or so much thereof as may be necessary for the

purposes hereinbelow mentioned, to be diverted at a point 1360 feet east and 2150 feet north of the

SW corner, Section 20, T121N, R47W

and conducted to and upon portions of land in Section 20, T121N, R47W more fully

described on the face of this license.

for the purpose of irrigation

Subject to any limitations listed in Water Right Permit No. 3954-3 and subject to the laws of the State of South Dakota.

WITNESS, My hand and seal of our office at Pierre, South Dakota
this 10th day of November A. D.
Nineteen Hundred and Eighty-one

WATER MANAGEMENT BOARD

By:

John Hatch
Chief Engineer, Executive Officer
JOHN HATCH

Permit No. 3854-3

Water Diversion No. 3 Minnesota River Water District

CERTIFICATE OF CONSTRUCTION

This is to Certify, that Roger McCullough

the holder _____ of
Permit No. 3954-3, issued upon Application No. 3054-3, bearing date of priority of October 14,
1976 authorizing the diversion of 3.0 cu. ft. per second of the waters of _____
groundwater (one well) County of Grant, State of South Dakota at _____
a point 1360 feet east and 2150 ft north of SW corner, Section 20, T121N,
R47W
_____, for irrigation

purposes, has 5 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 2.11 cu. ft. per second of water.

Date November 10, 1981

John Hatch
JOHN HATCH, Chief Engineer
Water Rights Division

Form 6 - Notice of Intent to Appropriate Water

No. 3954-3

Publish first publication, on or before May 16, 19 77

**NOTICE
INTENT TO APPROPRIATE WATER**

Pierre, South Dakota 57501

May 12, 19 77

Notice is hereby given that Roger McCullough

whose post office address is Big Stone City, South Dakota, has made an application in accordance with the provisions of the water laws of South Dakota for a permit to appropriate for beneficial use

3.0 cubic feet of water per second of time from the ground water through the

McCullough Well, the point of diversion of which is to be located in the _____

NW $\frac{1}{4}$ SW $\frac{1}{4}$

of Section 20, Twp. 121N, Range 47W. Said water to be used for the purpose of providing irrigation on the following described land:

NE $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, Section 20, T121N, R47W

This application No. 3954-3 will be considered by the Water Rights Commission at their office at Pierre upon the 26th day of May, 19 77, at 11:00 A.M. All interested persons may appear and be heard.

WATER RIGHTS COMMISSION

By:

**BURTON F. JONES
Water Rights Specialist**

BFJ/bw

cc: Roger McCullough, R.R. # 1, Big Stone City, SD 57216

RECEIPT

WATER RIGHTS COMMISSION

State of South Dakota

No 4 8513

October 8, 1981

PIERRE,

RECEIVED OF Roger McCulloch, R.R. 1, Box 235, Big Stone City, SD 57216
the following amount in fees for services rendered as provided for by law:

Fee for Application for Permit to Appropriate Water No. (examination, processing, recording and filing)	3954-3	50.00
Fee for inspecting Construction, and issuing Cert. of Construction No.	3954-3	
Fee for inspecting Beneficial Use, and issuing Water License No.	3954-3	
Fee for issuing Location Certificate-Dry Draw, No.		
Fee for filing		
Fee for certified copy of		
Fee for Print copy of map		
Fee for Certifying		
Fee for		
(any other work as provided by law)		

TOTAL 50.00

WATER RIGHTS COMMISSION

By *(John Hatch)*
Chief Engineer, Executive Officer
JOHN HATCH / CE

Form 12.

Permit No. 3954-3

Water Division 3 MINNESOTA RIVER Water District

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

TO: WATER RIGHTS, WATER MANAGEMENT BOARD / FOSS BLDG., PIERRE, SOUTH DAKOTA 57501

have this day made a thorough examination of the water use system constructed by ROGER

McCULLOUGH of BIG STONE CITY holder.

of Permit No. 3954-3, bearing date of priority of OCTOBER 14, 1976 & MAY 5, 1977 *

authorizing the diversion of 3.0 cu. ft. per second of the waters of GROUNDWATER

for IRRIGATION purposes, in GRANT County.

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

The Water Use System consists of:

A. Works used to divert the water:
50' DEEP WELL WITH 16" STEEL CASING - 20' SS SCREEN
BYRON JACKSON 8" PUMP - SER # 771H7466, POWERED BY
100 HP GE ELECTRIC MOTOR.

B. Works used to transport water to place of use.
1/2 MILE 6" ALUMINUM PIPE
750' OF 6" BURIED PVC TO 4 TOWER PIVOT.
1485' OF 6" BURIED PVC BETWEEN PIVOT PAYS 1112

C. Works used to apply water to beneficial use.
4 TOWER ZIMMATIC CENTER PIVOT WITH NELSON #100 END GUN
5 TOWER PRINGLE CENTER PIVOT WITH NELSON #100 END GUN
TRAILER MOUNTED NELSON #200 USED ON ISOLATED AREAS

The system is in the following condition: GOOD

The point of diversion is located 1360' E & 2150' N OF THE SW CORNER,

SECTION 20, T12N, R47W

The works are capable of diverting and conveying to the place of use 2.11 (500 GPM ON 5 TOWER PIVOT
450 GPM ON 4 TOWER PIVOT)

cu. ft. per second of water which is to be used for IRRIGATION

Water has been put to beneficial use to the maximum extent as follows: ALL IN SECTION 20, T12N, R47W

<u>NE¹ NW⁴</u>	<u>19 AC -</u>	<u>SW⁴ NE⁴</u>	<u>30 AC</u>
<u>SE¹ NW⁴</u>	<u>22 AC -</u>	<u>SE⁴ NE⁴</u>	<u>10 AC</u>
<u>NW⁴ NE⁴</u>	<u>33 AC -</u>	<u>NE⁴ SW⁴</u>	<u>23 AC</u>
<u>NE⁴ NE⁴</u>	<u>28 AC -</u>	<u>SE⁴ SW⁴</u>	<u>11 AC</u>

comprising a total of 176 acres of land.

* THE APPLICABLE PORTIONS OF PERMIT NO 3135-3 HAVE
BEEN INCORPORATED INTO THIS WATER LICENSE

Date AUGUST 25, 1981
[Signature]
(Signature)

3154-3

 **Department of
Water & Natural Resources**

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

February 17, 1989

Roger McMulloch
Rt 1, Box 235
Big Stone City, SD 57216

Dear Mr. McMulloch:

On October 6, 1988, the Water Management Board adopted rules to implement a 1988 law for application of chemicals through irrigation systems. The rules establish equipment standards, performance standards and installation requirements for irrigation systems that apply chemicals (fertilizers, insecticides, or herbicides) with irrigation water.

You have indicated on your 1988 Water Management Board Irrigation Questionnaire that you do apply chemicals with irrigation water. A copy of the new rules for chemigation are enclosed for your information.

The new standards include:

- * a check valve between the irrigation pump and the point of chemical injection;
- * a vacuum relief valve on top of the pipeline between the irrigation pump and the irrigation pipeline check valve;
- * a low-pressure drain on the bottom of the pipeline between the irrigation pump and the irrigation pipeline check valve;
- * a chemical injection line check valve between the chemical injection pump and the point at which the chemical is injected into the irrigation line; a second check valve is required if the chemical injection pump is not a positive displacement pump;
- * an interlock system which ensures that the chemical injection pump will stop whenever the irrigation pump stops;
- * an inspection port between the irrigation pump and the check valve on the irrigation line;

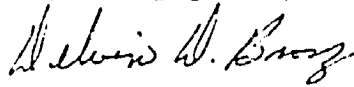


Each of these equipment requirements are discussed more thoroughly in Sections 74:02:09:05 through 74:02:09:10 of the enclosed rules. Appendix A contains diagrams of the arrangements of these anti-pollution devices.

The equipment must be installed according to the manufacturer's specifications, calibrated, and maintained in good working condition. All chemical product labels must be followed and warning signs must be posted. These rules also require reporting of all spills, accidents, and system malfunctions. A 24-hour telephone number is provided.

The chemigation rules contain notification and record keeping requirements. Prior to using chemigation, notification must be given to the Chief Engineer on the enclosed Form 1C. Information that must be provided in this notification includes the water permit or right number, the name, address, and telephone number of the water permit or right holder and of the system operator, and the legal description of the lands on which the system is located. A record of the name, quantity, dates and hours of each chemical applied must be provided to the Chief Engineer on Form 2C. A copy of this form is also enclosed for your information. It will be mailed with the annual irrigation questionnaire and must be returned with the questionnaire by the date specified. If you have any questions regarding these rules or need additional copies of the forms, please contact Susan Bower, Water Rights Engineer (605-773-3352).

Very truly yours,

for 
JOHN HATCH, Chief Engineer
Water Rights Division

HURON DRILLING INC.
WELL LOCATION MAP

NAME Roger McCulloch

DATE May 2 19 77

WELL NO. # 1

SW

QUARTER, SECTION 20

TWP. 121

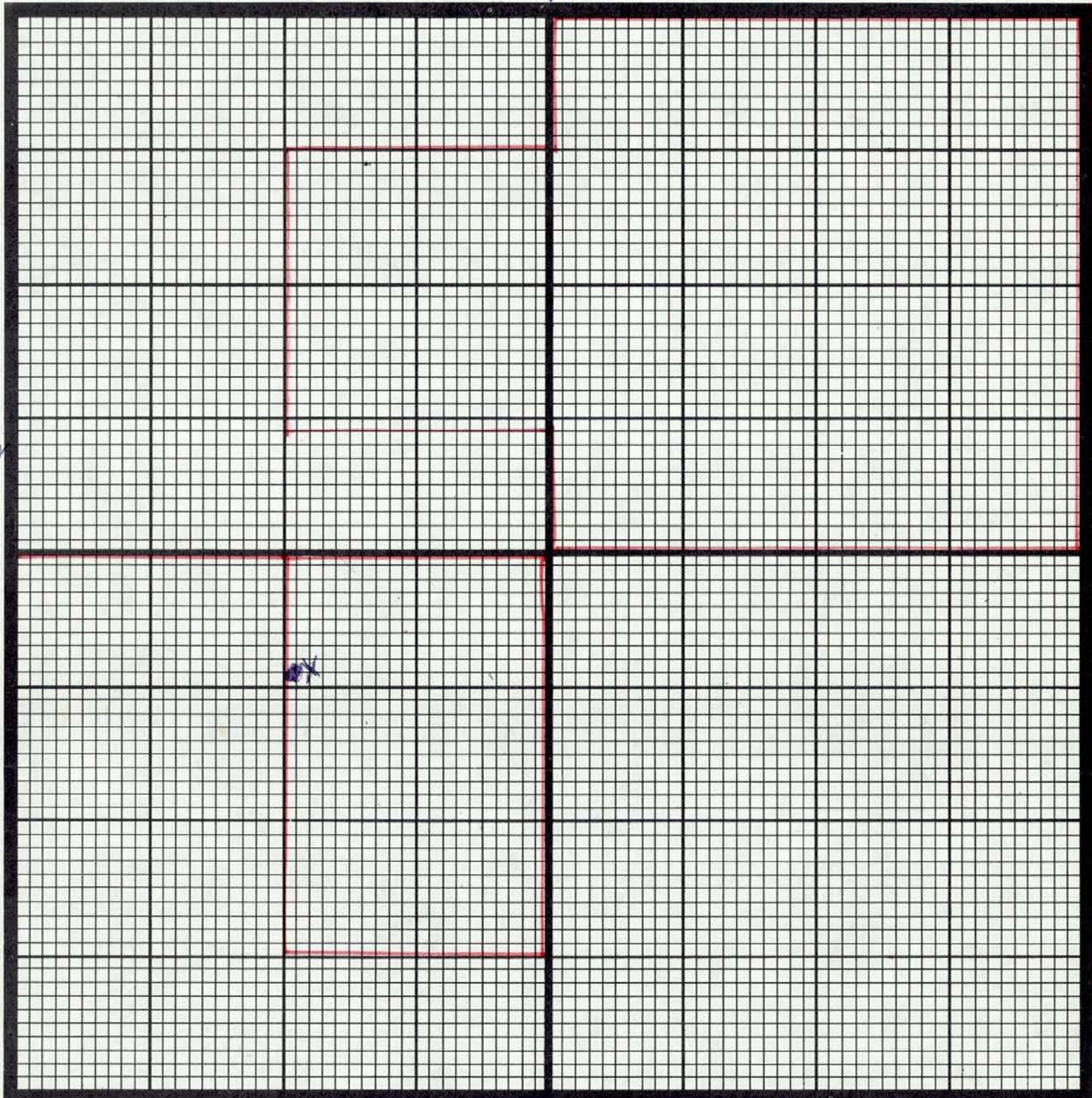
RANGE

47

IN

Grant

COUNTY



X — PROPOSED LOCATION

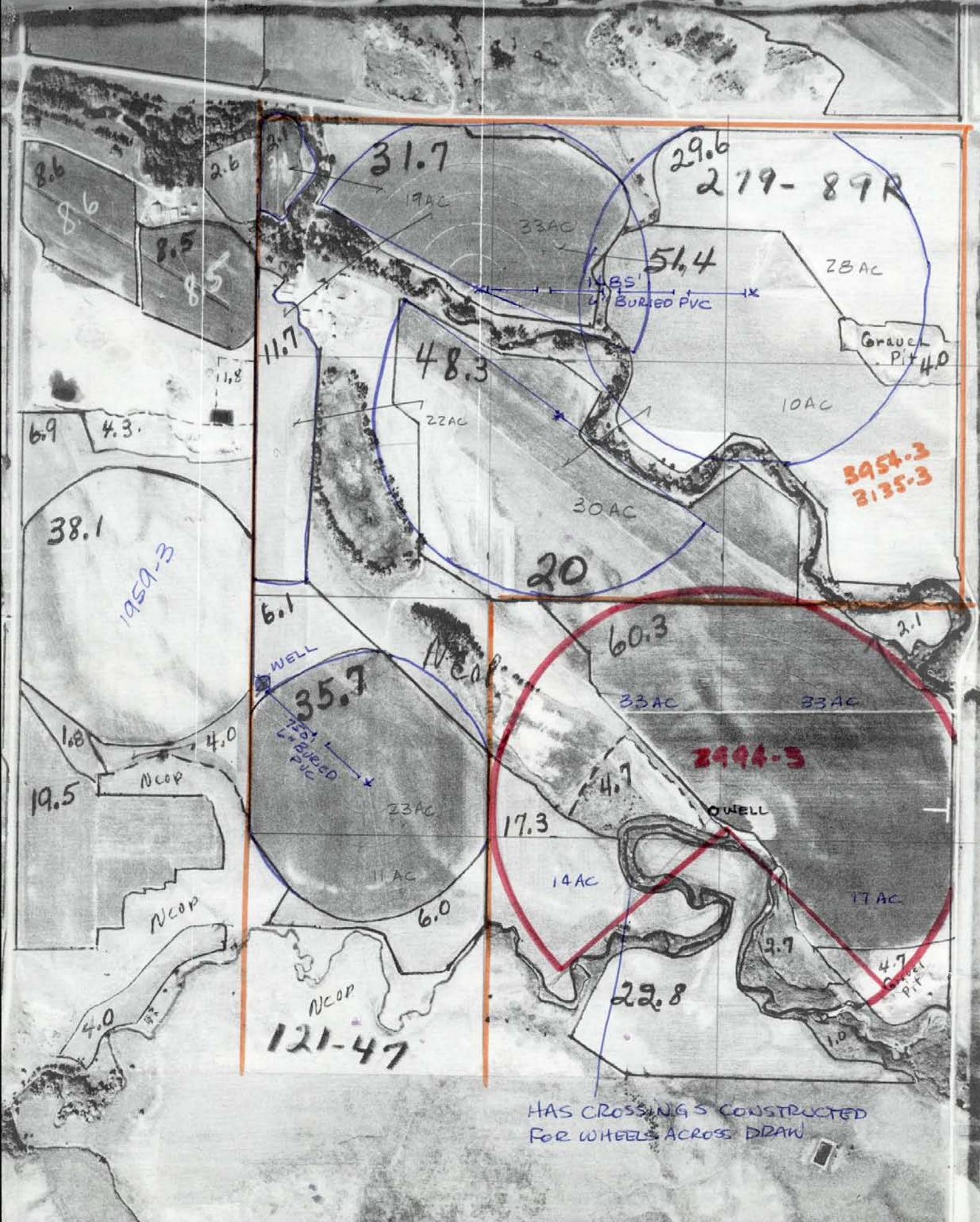
Prepared By

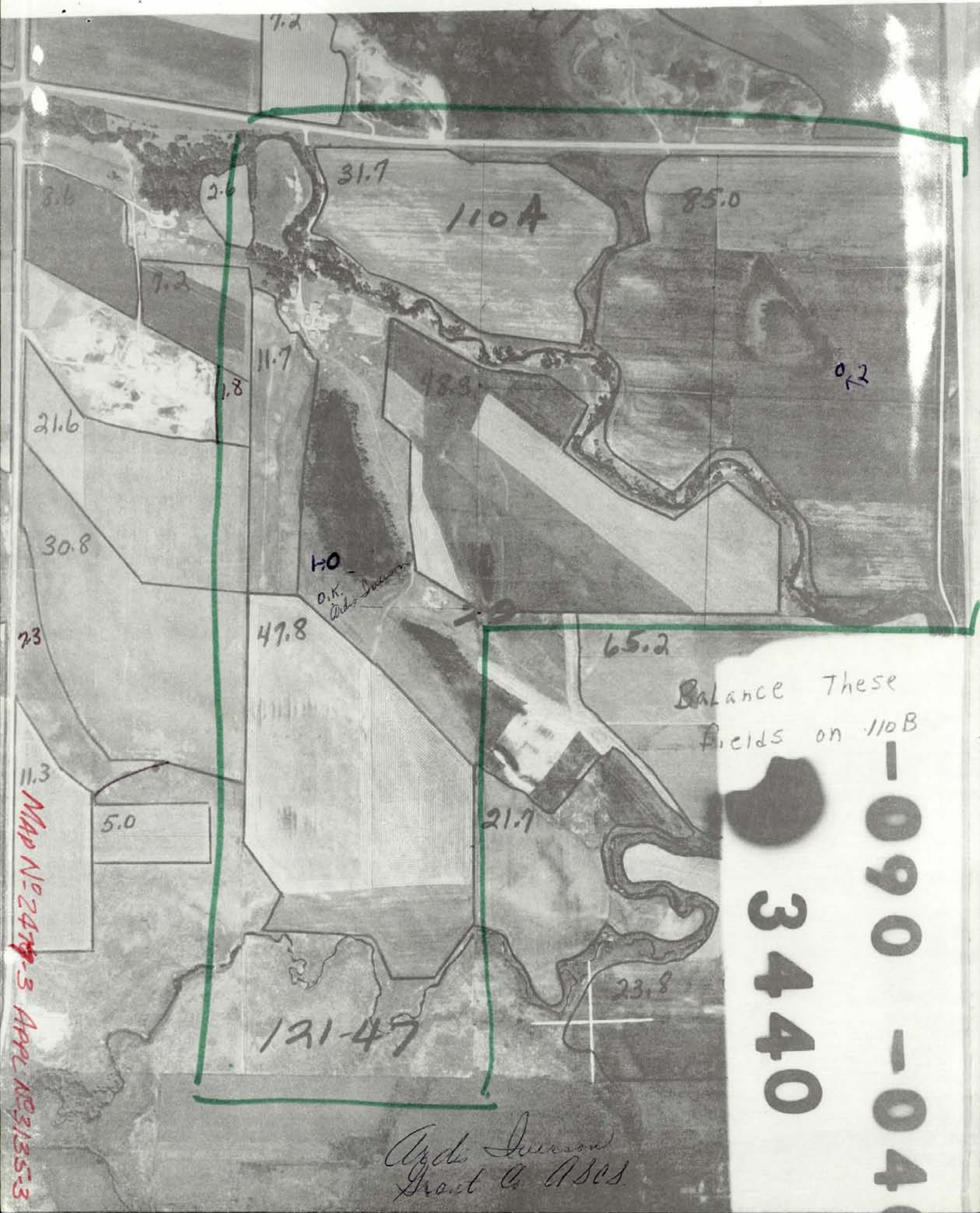
Dick Fadgen
Dick Fadgen

Beadle County Extension Agent

NOT TO SCALE

3135-3
3954-3
2994-3

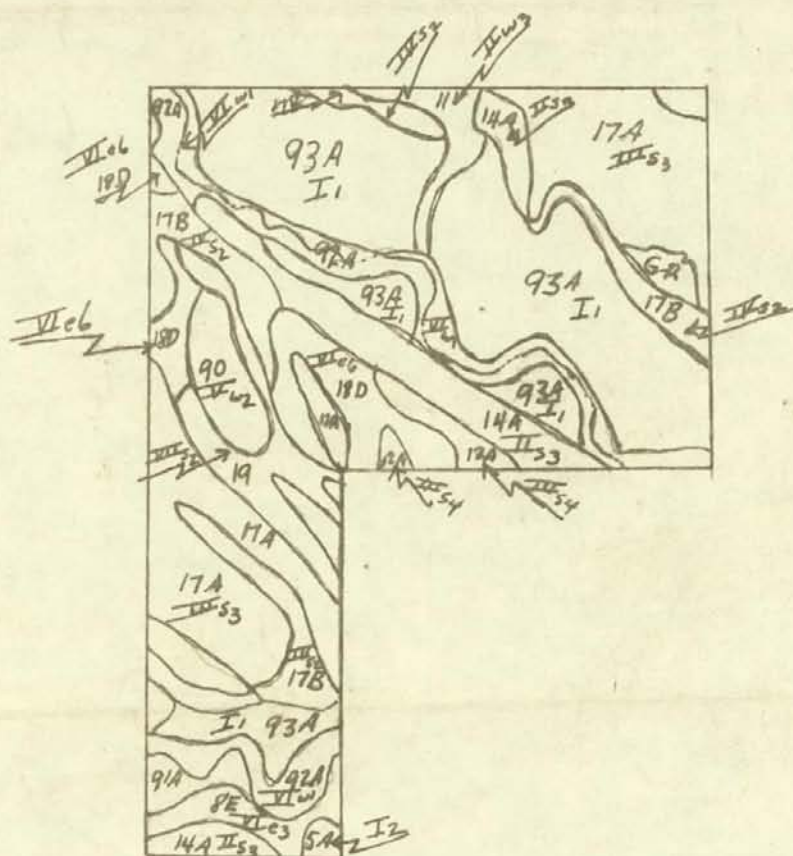




*Appl. Survey
Grant A. ASOS*

SOIL AND CAPABILITY MAP

GRANT COUNTY Conservation District and
 Rodger Mc Culloch Cooperating
 Owner Rodger Mc Culloch Operator SAME
 County GRANT State S. Dak Photo No.
 Date prepared 9-21-76 Scale: 4" = 1 mile Acreage 320
 Approximate Approximate



IRRIGATION SURVEY REPORT - Roger McCulloch

Location: Grant County

Mapping unit 5A - This unit consists of Heimdal-Svea loams, 0 to 2 percent slopes. Heimdal soils are deep, well drained, moderately permeable soils formed in calcareous loamy and silty glacial till. Available water capacity is high. Heimdal soils are in the 1.0 intake family and have a moderate water intake rate. Svea soils are deep, moderately well drained soils formed in loamy glacial till. They have moderate permeability in the surface layer and subsoil and moderately slow permeability in the underlying material. Available water capacity is high. They have a moderately slow water intake rate and are in the 0.5 intake family.

Mapping unit 8E - This unit consists of Sisseton loam, 15 to 40 percent slopes. Sisseton soils are deep, well drained calcareous soils formed in loamy and silty glacial drift. Permeability is moderate and available water capacity is moderate or high. Sisseton soils are in the 1.0 intake family and have a moderate water intake rate. This unit would have a severe erosion hazard.

M

Mapping unit 11 - This mapping unit consists of Marysland loam and are poorly drained nearly level soils on glacial outwash plains. Permeability is moderately rapid, the available water capacity is low to moderate. A fluctuating water table is at depths of 1 to 4 feet. Surface runoff is slow.

Mapping unit 14A - This unit consists of Fordville loam, 0 to 2 percent slopes. These are moderately deep, well drained soils formed in loamy alluvium underlain by sand and gravel at depths of 20 to 40 inches. Permeability is moderate in the soil and rapid in the underlying sand and gravel. The available water capacity is moderate to high depending on depth to the underlying sand and gravel. Fordville soils are in the 1.0 intake family and have a moderate water intake rate. This soil is well suited for irrigation in regard to available water capacity and internal drainage.

Mapping unit 17A - This unit consists of Renshaw loam, 0 to 2 percent slopes. These are shallow, somewhat excessively drained soils formed in loamy alluvium underlain by sand and gravel at depths of 10 to 20 inches. Renshaw soils have moderately rapid permeability in the upper part and rapid permeability in the sand and gravel. Available water capacity is low, averaging between 4.50 to 5.50 in the 5 foot depth with the majority being in the portion above the sand and gravel. These soils have a fast water intake rate and are in the 2.0 intake family. Renshaw soils are suited to irrigation, but are considered droughty and normally require frequent periods of irrigation to realize the maximum benefit.

Mapping unit 17B - This unit consists of Renshaw loam, 2 to 6 percent slopes. The soils in this unit are like those described in mapping unit 17A except for slopes. This unit would have a moderate water erosion hazard.

Mapping unit 18D - This unit consists of Renshaw-Sioux loams, 6 to 15 percent slopes. The Renshaw soils, except for slope are like those described in the 17B mapping unit. The Sioux soils are excessively drained soils that are underlain by sand and gravel at depths of 10 inches or less. The available water capacity is very low. Permeability is rapid. The Sioux soil is not suited for cultivation.

Mapping unit 91A - This unit consists of Playmoor silty clay loam with slopes from 0 to 2 percent. This is deep, nearly level, poorly drained soils on flat bottomlands and flood plains. Permeability is moderately slow, surface runoff is very slow and available water capacity is high. This soil is subject to flooding and a water table is at depths of 1 to 3 feet during part of the growing season.

Mapping unit 92A - This unit consists of LaDelle soils, channeled.

Mapping unit 93A - This unit consists of LaDelle silt loam, 0 to 2 percent slope. Available water capacity is high and permeability is moderate. It is subject to periods of wetness because of flooding by heavy runoff and a water table is at a depth of 4 to 5 feet during part of the growing season. It is in the O.5 intake family.