

WATER PERMIT NO. 8616-3

Name of Applicant: Michael Schultz

Address: 43721 281st St, Freeman SD 57029

Phone: 605 999-4431

Amount of Water Claimed: no add'l

Total Acres: 21 acres

Source of Water Supply: 3 existing wells & holding pond

Water to be used for: irrigation

County: Hutchinson

Type of Waste Disposal System:

Location: 2 miles southwest of Freeman

PRIORITY Date Received: 3-23-22

Application/License Fee: \$ 500

Corrected Application Received:

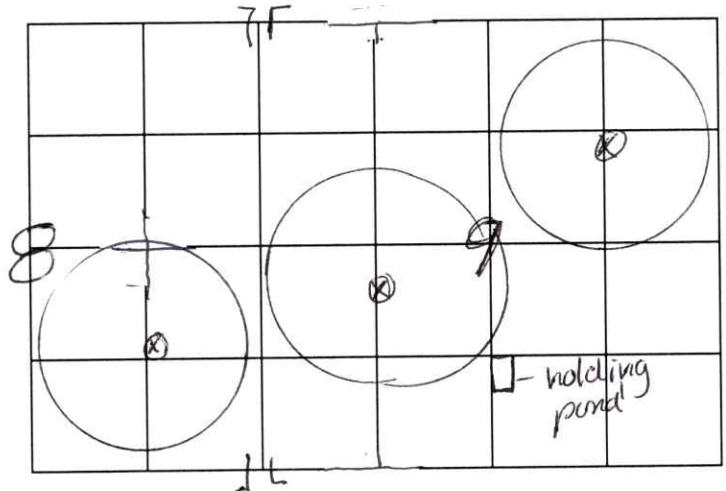
Period of Annual Use: April 1 – October 31

Remarks: Additional acres based on inspection of Permit No. 7344-3 by Keith DeJong

Diversion Point: NW 1/4 SE 1/4, NE 1/4 SW 1/4,

SE 1/4 NE 1/4 Sec 9-T98N-R56W

Land to be Irrigated: SE 1/4, S 1/2 NE 1/4 Sec 8;
SW 1/4, S 1/2 NW 1/4, NE 1/4, N 1/2 SE 1/4 Sec 9;
all in T98N-R56W



Depth of Well: 163, 180, 360 feet deep

Well Driller:

Remarks:

Type of Map: aerial

Prepared by: Keith DeJong

Reviewed and the Number Assigned on: 3-23-22

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

SOUTH DAKOTA
WATER PERMIT NO. 8616-3

Date of first receipt of application March 23, 2022.

The Water Management Board approved Water Permit No. 8616-3 on October 2, 2024 for Michael Schultz, 43721 281st Street, Freeman SD 57029, authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 8616-3 authorizes irrigation of an additional 21 acres. Water Permit No. 7344-3 appropriates 5.33 cubic feet of water per second (cfs) from three wells completed into the Niobrara Aquifer (163, 180, and 209 feet deep) located near the center of the SE 1/4 Section 8; NE 1/4 SW 1/4, SE 1/4 NE 1/4 Section 9; all in T98N-R56W for irrigation of 399 acres. Permit No. 7344-3 also authorized a storage pond/reservoir which is located in the W 1/2 SE 1/4 Section 9-T98N-R56W. An inspection of Permit No. 7344-3 found the system capable of diverting 2.56 cfs from the existing wells and irrigating an additional 21 acres. The irrigated acreage, including the 21 additional acres, is located in the SE 1/4, S 1/2 NE 1/4 Section 8; SW 1/4, S 1/2 NW 1/4, NE 1/4, N 1/2 SE 1/4 Section 9; all in T98N-R56W. Water can be pumped from the three wells to the storage pond and then applied to the acreage. This permit, and Water Permit No. 7344-3 will authorize a total diversion rate of 2.56 cfs for irrigation of 420 acres. This site is located approximately 2 miles southwest of Freeman SD.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: April 1 – October 31.
3. The date from which applicant may claim right is March 23, 2022.
4. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. The wells approved under Water Permit Nos. 7344-3 and 8616-3 are located near domestic wells and other wells which may obtain water from the same aquifer. Water withdrawals must be controlled so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

By: Eric Gronlund
Eric Gronlund, Chief Engineer
Water Rights Program
Department of Agriculture and Natural Resources

OCT 11 2024
date



MAR 23 2022

PAID

MAR 23 2022

Ck# 2071

Rec't#

Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8616-3</u>	(office use only) Hydrologic Unit <u>10160011</u>	WATER RIGHTS PROGRAM
	Basin <u>James R</u>		
	Newspaper <u>Freeman Courier</u>		
	<u>Daily Press & Dakotan</u>		

Application For Permit To Appropriate Water For Irrigation

Type of Application: ☒ New ☐ Vested Right ☐ Amendment/Correction to Permit No. _____
(Use predates Mar 2, 1955)

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

Additional acres to Water Permit No. 7344-3

1. Name to Appear on Irrigation Permit Michael Schultz

Note: The "Name to Appear on Irrigation Permit" must be the name in which the property to be irrigated is held in.

Mailing Address 43721 281st St Freeman SD 57029

Phone 605 925-7307 Mobile 605 999-4431 Email X

2. Amount of water claimed no add'l *CFS or **GPM ***AF Total Acreage 21 add'l
(*Cubic Feet per Second) (**Gallons per Minute) (**Acre Feet - storage capacity of dam/dugout or annual use if applicable)

3. Source of water supply groundwater - 3 existing wells (Niobrara Aquifer)

4. Location of point of diversion NW 1/4 SE 1/4; NE 1/4 SW 1/4, SE 1/4 NE 1/4 Sec 9-T98N-R56W
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)

Holding Pond - SW 1/4 SE 1/4 Sec 9-T98N-R56W County Hutchinson

5. County or counties where water will be used Hutchinson

6. Annual period during which water is to be used April 1 - October 31

7. List below each forty acre division, or lot, or fraction thereof and show number of acres to be irrigated in each.
(Attach sheet if more space is needed)

Land Description	Acres	Land Description	Acres
SE 1/4 Sec 8	134	SW 1/4 Sec 9	116
S 1/2 NE 1/4 Sec 8	2	S 1/2 NW 1/4 Sec 9	28
		NE 1/4 Sec 9	133
all in T98N-R56W		N 1/2 SE 1/4 Sec 9	7

8. Give a description of the project. (Attach sheet if more space is needed)

X I, Michael Schultz, the applicant, certify under
Name of Person Title (if applicable)

penalty of perjury that I have read this application, examined the attached map, and that the matters stated are true. I further certify, if acting on behalf of an entity or individual other than myself, that I am authorized to submit this application.

SOUTH DAKOTA WATER WELL COMPLETION REPORT

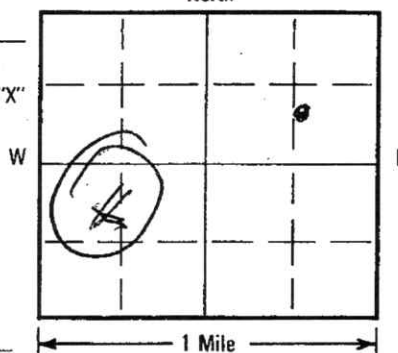
7344-3

07-92

Location NW 1/4 SW 9 Twp 98 Rg 56

County HOTCHINSON

Please mark well location with an "X"



Well-Completion Date

10-1-12

LOCATION:

Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? 1660 ft. from LA GARD (identify source).

PROPOSED USE:

- ☐ Domestic/Stock ☐ Municipal ☐ Business ☐ Test Holes
☒ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well

METHOD OF DRILLING:

ROTARY

CASING DATA:

- ☐ Steel ☒ Plastic ☐ Other

If other describe _____

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT <u>12</u> IN	<u>0</u> FT	<u>210</u> FT	<u>18</u> IN	
LB/FT _____ IN	<u>210</u> FT	<u>360</u> FT	<u>10</u> IN	
LB/FT _____ IN	_____ FT	_____ FT	_____ IN	

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
<u>AF</u>	<u>30</u>	lb./gal _____	<u>0</u> ft	<u>200</u> ft
		lb./gal _____	_____ ft	_____ ft

Describe grouting procedure TRIMME LINE
PRESSURE GROUTED

SCREEN:

- ☐ Perforated pipe ☐ Manufactured

NONE

Diameter _____ IN Length _____ FEET

Material _____

Slot Size _____ Set From _____ Feet to _____ Feet

Other information _____

WAS A PACKER OR SEAL USED? ☐ YES ☒ NO

If so, what material? _____

Describe packer(s) and location? _____

DISINFECTION: Was well disinfected upon completion?

☒ YES, How: CHLORINATED
☐ NO, Why Not? _____

Laboratory sent to for water quality analysis _____

Well Owner: MIKE SCHULTZ

Business Name: _____

Address: 43721 281st ST
FREEMAN S.D. 57079

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
SANDY Yellow Clay	0	20
Brown Yellow Clay	20	58
SILT SAND	58	70
BLUE Clay	70	100
BLACK CHALK w/WHIR	100	140
BLUE Clay	140	209
WHITE CHALK	209	

STATIC WATER LEVEL 115 Feet

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

Reduced Flowrate _____ GPM

Can well be completely shut in? _____

WELL TEST DATA:

- ☒ Pumped Describe: PUMPED ACIDIZED
☐ Bailed & AIR LIFTED
☐ Other _____

Pumping Level Below Land Surface
210 ft. After 96 Hrs. pumped 300 GPM

_____ ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate 300 GPM

REMARKS SPENT A LOT OF TIME
DEVELOPING ACIDIZED & SERGED
AIR LIFTED & PUMPED

This well was drilled under license # 515

And this report is true and accurate.

Drilling firm MARION Well DRILLING

Signature of License Representative: _____

Signature of Well Owner or Equitable Property Holder:

Michael Schultz

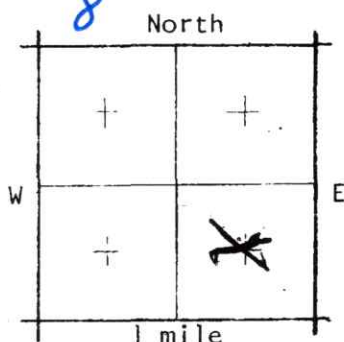
Date: OCT. 18-12

STATE OF SOUTH DAKOTA WELL DRILLERS REPORT

7344-3

Location SE 1/4 SE 1/4 Sec 9 Twp 98 Rg 56

County

HOTCHINSON

Please mark well location with an "X"

Well Completion Date 8-10-12

PROPOSED USE:

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

Method of Drilling:

ROTARY

WELL CONSTRUCTION:

Diameter of hole 20 inches Depth 71 feetCasing: ☐ Steel ☒ Plastic ☐ Other
Specify 12"Pipe Weight Diameter From To
lb/ft 12 inches 0 feet 68 feet
lb/ft inches feet feetWas a well screen used? ☐ Yes ☒ No

If Not Specify _____

Screen Type _____ Slot Size _____

Length _____ Diameter _____

Was Casing left open end? ☒ Yes ☐ NoWas a Packer or seal used? ☐ Yes ☒ No

If so what material? _____

Was well gravel packed? ☐ Yes ☒ NoWas well grouted? ☒ Yes ☐ NoDescribe grouting procedure TREMILine Pumped DF FRONTTo what depth? 20 Feet

What was grouting material? _____

If cement, how many sacks? _____

Location of packer(s) and screen or perforated pipe _____

WAS WELL PLUGGED OR ABANDONED ☐ Yes ☒ No

If so how and with what material? _____

Well Owner

Name

MIKE SCHULTZAddress 43721 281ST STWell Log FREEMAN, S.D Depth 57029

Formation

From

To

<u>0-2 TOP SOIL</u>	<u>0</u>	<u>2</u>
<u>Yellow CLAY</u>	<u>2</u>	<u>26</u>
<u>BLUE CLAY</u>	<u>26</u>	<u>68</u>
<u>CHALK</u>	<u>68</u>	<u>163</u>

STATIC WATER LEVEL 51 Feet

If flowing: closed in pressure _____ PSI

GPM flow _____ through _____ inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

If other; specify _____

Can well be completely shut off? ☒

WELL TEST DATA:

☒ Pumped☐ Bailed

Describe: _____

☐ Other

Pumping Level Below Land Surface

77 ft. After 96 Hrs. pumped 200 GPM

_____ ft. After _____ Hrs. pumped _____ GPM

_____ ft. After _____ Hrs. pumped _____ GPM

Remarks:

RECEIVED

SEP 12 2012

WATER RIGHTS
PROGRAMThis well was drilled under license # 515

and this report is true and accurate.

Marion Wall Drilling

Drilling Firm

Signed by

9-4-12

Date

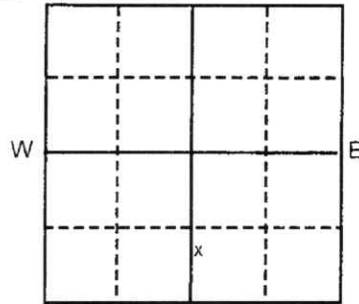
SOUTH DAKOTA WATER WELL COMPLETION REPORT

11-02

Location SW ¼ SE ¼ Sec 9 Twp 98N Rg 56W

County Hutchinson

North

Please mark well
location with an "X"

Well Completion Date

March 29, 2013

← 1 Mile →

Distance to nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)?

550.0 ft. from Feed Lot (identify source)

PROPOSED USE:

☐ Domestic/Stock ☐ Municipal ☐ Business ☐ Test holes
☒ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well

METHOD OF DRILLING:

Reverse Rotary

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
LB/FT	12.00 IN	0.0 FT	120.0 FT	18.00 IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA:

Grout Type	No. of Sacks	Grout Weight	From	To
Bentonite	25	9.5 Lb/gal	0.0 Ft	120.0 Ft
		Lb/gal	Ft	Ft

Describe grouting procedure
Tremie Method

SCREEN:

☐ Perforated pipe ☒ Manufactured

Diameter 12.00 Inches Length 60.0 Feet

Material PVC

Slot Size .080 Set From 120.0 Feet to 180.0 Feet

Other information

WAS A PACKER OR SEAL USED?

☐ Yes ☒ No

If so, what material?

Describe packer(s) and location

DISINFECTION: Was well disinfected upon completion?

☐ Yes, How? ☒ No, Why Not? Not Required
 Lab to which water quality sample sent for analysis

Well Owner: Michael Schultz

Business Name:

Address: 43650 281st St

City, State, Zip: Freeman SD 57029

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
Top Soil	0	2
Yellow Clay	2	29
Blue Clay	29	71
Chalk	71	180

STATIC WATER LEVEL

FEET

If flowing: closed in pressure

PSI

GPM flow

through

Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

Reduced flow rate

GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe:☐ Bailed☐ Other

Pumping Level Below Land Surface

Ft. After Hrs. pumped GPM

Ft. After Hrs. pumped GPM

If pump installed, pump rate:

RECEIVED

REMARKS

JUN 12 2013

WATER RIGHTS
PROGRAM

This well was drilled under license # 666 and this report is true and accurate.

Drilling firm: Hammond-Wetmore Drilling, LLC

Signature of License Representative:

Signature of Well Owner or Equitable Property Holder:

Date: 5/23/13

RECEIVED

APR - 9 2012

WATER RIGHTS
PROGRAM

Mail to: PMB 2020 DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>73443</u> (office use only) Hydrologic Unit <u>10160011</u>
	Basin <u>James River</u>
	Newspaper <u>Freeman Courier PO Box 950</u>
	<u>605-925-7033</u> <u>57029</u>

Application For Permit To Appropriate Water For Irrigation

Type of Application: ☒ New ☐ Vested Right ☐ Amendment/Correction to Permit No. _____
(Use predates Mar 2, 1955)

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

1. Name of Applicant Michael Schultz cell 999-4431
(check one) ☒ Owner ☐ Tenant/lessee Phone 605-925-7307
Mailing Address 43721 281st ST Freeman S.D. 57029
(Address) (City) (State) (Zip Code)
2. Amount of water claimed 5.33 *CFS or 2400 **GPM ***AF Total Acreage 399
(*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use if applicable)
3. Source of water supply 3 wells approx center
4. Location of point of diversion (example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W) County Hutchinson
SE 1/4 sec. 8-98N-56W (well #5) NE 1/4 sec. 9-98N-56W (well #4)
NE 1/4 SW 1/4 sec. 9-98N-56W (well #3)
5. County or counties where water will be used Hutchinson
6. Annual period during which water is to be used April - Oct. 31 growing season
7. List below each forty acre division, or lot, or fraction thereof and show number of acres to be irrigated in each.
(Attach sheet if more space is needed)

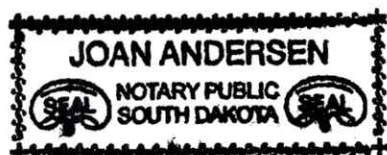
Land Description	Acres	Land Description	Acres
<u>SE 1/4 sec. 8-98N-56W</u>	<u>133</u>		
<u>SW 1/4 sec. 9-98N-56W</u> →	<u>133</u>	<u>SW 1/4 NW 1/4 Sec 9</u>	
<u>NE 1/4 sec. 9-98N-56W</u>	<u>133</u>		

8. Give a description of the project. (Attach sheet if more space is needed)
3 wells in the center of 3 qts to feed center pivots

STATE OF SOUTH DAKOTA)
County of Hutchinson) SS

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Also, attach map and any other technical information. (see instructions)

I, Michael Schultz, the applicant, certify that I have read this application, have examined the attached map and that the matters stated are true and that I intend, and am able to complete the necessary construction.

Applicant's signature Michael SchultzSubscribed and sworn to before me this 6th day of April 20 12

Joan Andersen
my commission expires 7-14-16

**SOUTH DAKOTA
WATER PERMIT NO. 7344-3**

Date of first receipt of application April 9, 2012.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 7344-3 to Michael Schultz, 43721 281st St, Freeman SD 57029 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 7344-3 appropriateS 5.33 cubic feet of water per second from three wells to be completed into the Niobrara Aquifer (261 feet deep) located in the approximate center of the SE 1/4 Section 8; approximate center of NE 1/4, and the NE 1/4 SW 1/4 Section 9 for irrigation of 399 acres located in the SE 1/4 Section 8 and NE 1/4, SW 1/4, S 1/2 NW 1/4 Section 9; all in T98N-R56W. The permit holder is authorized to construct a 37 acre foot storage pond/reservoir if the wells do not produce at a sufficient rate to irrigate directly. This clean water regulating pond may be used in conjunction with lagoons as part of an animal confinement facility to fertilize and water crops at the same time.
2. The amount of the appropriation may not exceed 2 acre feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: April 1 – October 31.
3. The date from which applicant may claim right is April 9, 2012.
4. The date of approval of Permit No. 7344-3 is July 2, 2012.
5. One-fifth of the construction is to be completed on or before January 2, 2015.
6. All construction is to be completed on or before July 2, 2017.
7. Water is to be put to beneficial use on or before July 2, 2021.
8. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. 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.
2. The wells authorized by Permit No. 7344-3 shall be constructed by a licensed well driller and construction of the well and installation of the pump shall comply with Water Management Board Well Construction Rules, Chapter 74:02:04 with the well casing pressure grouted (bottom to top) pursuant to Section 74:02:04:28.
3. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

WATER MANAGEMENT BOARD

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

JUL 16 2012
date



RECEIPT

WATER RIGHTS PROGRAM South Dakota Department of Agriculture and Natural Resources

Date March 23, 2022

RECEIVED OF Mike/Vicki Schultz 43721 281st St., Freeman SD 57029

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

Fee for Application for Permit No. <u>8616-3</u> to Appropriate Water, to construct and to put water to beneficial use	\$ <u>500.00</u>
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. _____	\$ _____
Fee for Filing Transfer Form _____	\$ _____
Fee for _____	\$ _____
Fee for Issuing New Well Driller's License No. _____	\$ _____
Fee for Renewal of Well Driller's License No. _____	\$ _____
Fee for Issuing Well Pump Installer's License No. _____	\$ _____
Fee for Renewal of Well Pump Installer's License No. _____	\$ _____
(Any Other Work Provided by Law) TOTAL	\$ <u>500.00</u>

By Eric Gronlund
Chief Engineer
zm

Water Rights Program - DANR
File Documentation

NAME OF PERSON OR FILE: Niobrara domestic well issue

ADDRESS: COUNTY: Hutchinson

DATE: January 10, 2023 TELEPHONE:

Roger Guthmiller called in response to my January 4, 2023, letter regarding irrigators efforts to find a solution to their pumping impacting the Twyla Melhlaf and Dale Melhlaf two domestic wells. Mr. Guthmiller stated that those two wells are now hooked up to B-Y Rural Water.

I contacted Dale Mehlhaf (605 661-1701). He indicated that both farmsteads are now hooked up to rural water. He explained that B-Y required them to pay for installation of a four inch line which cost them \$40,000. He did not believe that large of a line was necessary. He said their domestic water use needs are now met by the rural water system.

He indicated that other domestic well users in the area remain concerned about the impact of the irrigators pumping on their wells.

I indicated that there are three applications pending in this area seeking to appropriate water from the Niobrara aquifer.

- Brent Guthmiller's application for 40 acres.
- Michael Schultz's application for additional acres to reflect what was developed under a prior water permit.
- Schultz's dairy application (existing dairy that wasn't permitted).

Mr. Mehlhaf indicated that while his domestic use needs are now met that it is likely that opposition will be received to these applications.

NAME: Eve Lundberg

Permit No. 7344-3 and Application No. 8616-3

Water Rights Program - DANR
File Documentation

NAME OF PERSON OR FILE: Michael Schultz

ADDRESS: 43721 281st St, Freeman SD 57029

COUNTY: Hutchinson

DATE: April 14, 2022 TELEPHONE: 605 999-4431

I called Michael Schultz regarding the domestic well complaint from last fall regarding the Niobrara aquifer in his area, the inspection of Water Permit No. 7344-3, and the application (8616-3) he filed for additional 21 acres as a result of what was found to be developed.

Stated that I sent him a letter on February 8, 2022, regarding the issue.

Mr. Schultz stated that his three wells produce 250 gpm, 350 gpm and 550 gpm respectively. The wells do not individually produce sufficient water to supply a center pivot. Therefore water is pumped into his wastewater pond that collects water from his dairy operation. He indicated according to his consultant his wastewater holding pond is capable of holding 36 million gallons (110 acre feet). His dairy used a manure separator, so the hold pond is primarily liquid. He estimates that one-third of wastewater pond capacity is filled by the dairy facility and run-off.

Mr. Schultz indicated that last fall when the domestic well complaint occurred he was not pumping from any of the wells. Instead he was irrigating from the wastewater pond. It is his goal each fall to pump the pond down to two feet in depth. Generally, this time of year he pumps from the wells to bring the water level back up in the pond. When asked whether he normally pumps from the wells during the irrigation season, Mr. Schultz responded that he generally will pump some in July but does not pump into the ponds in August. Instead he begins to empty the pond again prior to winter.

He indicated the location of the domestic wells in question are in bad locations within the aquifer. There were a number of dry holes drilled prior to them getting wells that produced water. This is evidenced by the fact the wells are not at the farmyard but instead out in pasture areas. Mr. Schultz went on to indicate there are flowing wells he believes to be in the chalk rock (Niobrara) between his irrigation wells and the domestic wells in question. Therefore, he does not believe he is impacting them.

I explained that the licensing investigation of Water Permit No. 7344-3 found 421 acres being irrigation when the permit only authorized 399 acres. He has filed an application for the additional 21 acres. He indicated when he applied for the irrigation permit the irrigation supply company indicated each of the three pivots would irrigate 133 acres so that is how he initially arrived at

requesting 399 acres. I indicated that we had another application filed for new irrigation development prior to his application for additional acres being filed. The recommendation on that application is for deferral as current a determination can not be made on whether there may be unlawful impairment of domestic use. That other application will come before the Board on May 4, 2022.

In an effort to address the issue SD Geological Survey will be drilling three observation wells in the area in May of this year. These observation wells are intended to provide information on how or if irrigation pumping is affecting water levels in the aquifer so a determination can be made on whether irrigation pumping is adversely affecting the domestic wells.

Mr. Schultz stated he was supportive of the installation of the observation wells.

NAME: Eric Hummel

Permit No. 7344-3 and Application No. 8616-3

Water Rights Program - DANR
File Documentation

NAME OF PERSON OR FILE: Michael Schultz

ADDRESS: 43721 281st St, Freeman SD 57029

COUNTY: Hutchinson

DATE: April 14, 2022 TELEPHONE: 605 999-4431

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Mr. Schultz stated that his three wells produce 250 gpm, 350 gpm and 550 gpm respectively. The wells do not individually produce sufficient water to supply a center pivot. Therefore water is pumped into his wastewater pond that collects water from his dairy operation. He indicated according to his consultant his wastewater holding pond is capable of holding 36 million gallons (110 acre feet). His dairy used a manure separator, so the hold pond is primarily liquid. He estimates that one-third of wastewater pond capacity is filled by the dairy facility and run-off.

Mr. Schultz indicated that last fall when the domestic well complaint occurred he was not pumping from any of the wells. Instead he was irrigating from the wastewater pond. It is his goal each fall to pump the pond down to two feet in depth. Generally, this time of year he pumps from the wells to bring the water level back up in the pond. When asked whether he normally pumps from the wells during the irrigation season, Mr. Schultz responded that he generally will pump some in July but does not pump into the ponds in August. Instead he begins to empty the pond again prior to winter.

He indicated the location of the domestic wells in question are in bad locations within the aquifer. There were a number of dry holes drilled prior to them getting wells that produced water. This is evidenced by the fact the wells are not at the farmyard but instead out in pasture areas. Mr. Schultz went on to indicate there are flowing wells he believes to be in the chalk rock (Niobrara) between his irrigation wells and the domestic wells in question. Therefore, he does not believe he is impacting them.

I explained that the licensing investigation of Water Permit No. 7344-3 found 421 acres being irrigation when the permit only authorized 399 acres. He has filed an application for the additional 21 acres. He indicated when he applied for the irrigation permit the irrigation supply company indicated each of the three pivots would irrigate 133 acres so that is how he initially arrived at

requesting 399 acres. I indicated that we had another application filed for new irrigation development prior to his application for additional acres being filed. The recommendation on that application is for deferral as current a determination can not be made on whether there may be unlawful impairment of domestic use. That other application will come before the Board on May 4, 2022.

In an effort to address the issue SD Geological Survey will be drilling three observation wells in the area in May of this year. These observation wells are intended to provide information on how or if irrigation pumping is affecting water levels in the aquifer so a determination can be made on whether irrigation pumping is adversely affecting the domestic wells.

Mr. Schultz stated he was supportive of the installation of the observation wells.

May 5, 2022

Contacted Mr. Schultz to discuss the Bard meeting and the deferral of the Brett Guthmiller's application from the Niobrara aquifer. I had a couple follow-up questions.

Mr. Schultz told me the water in the "fresh water pond" originates from runoff from the dairy operation. It is supplemented by pumping the wells into the pond for use later.

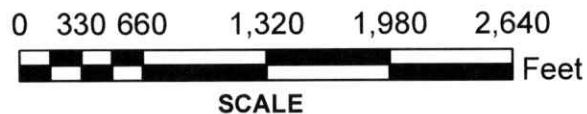
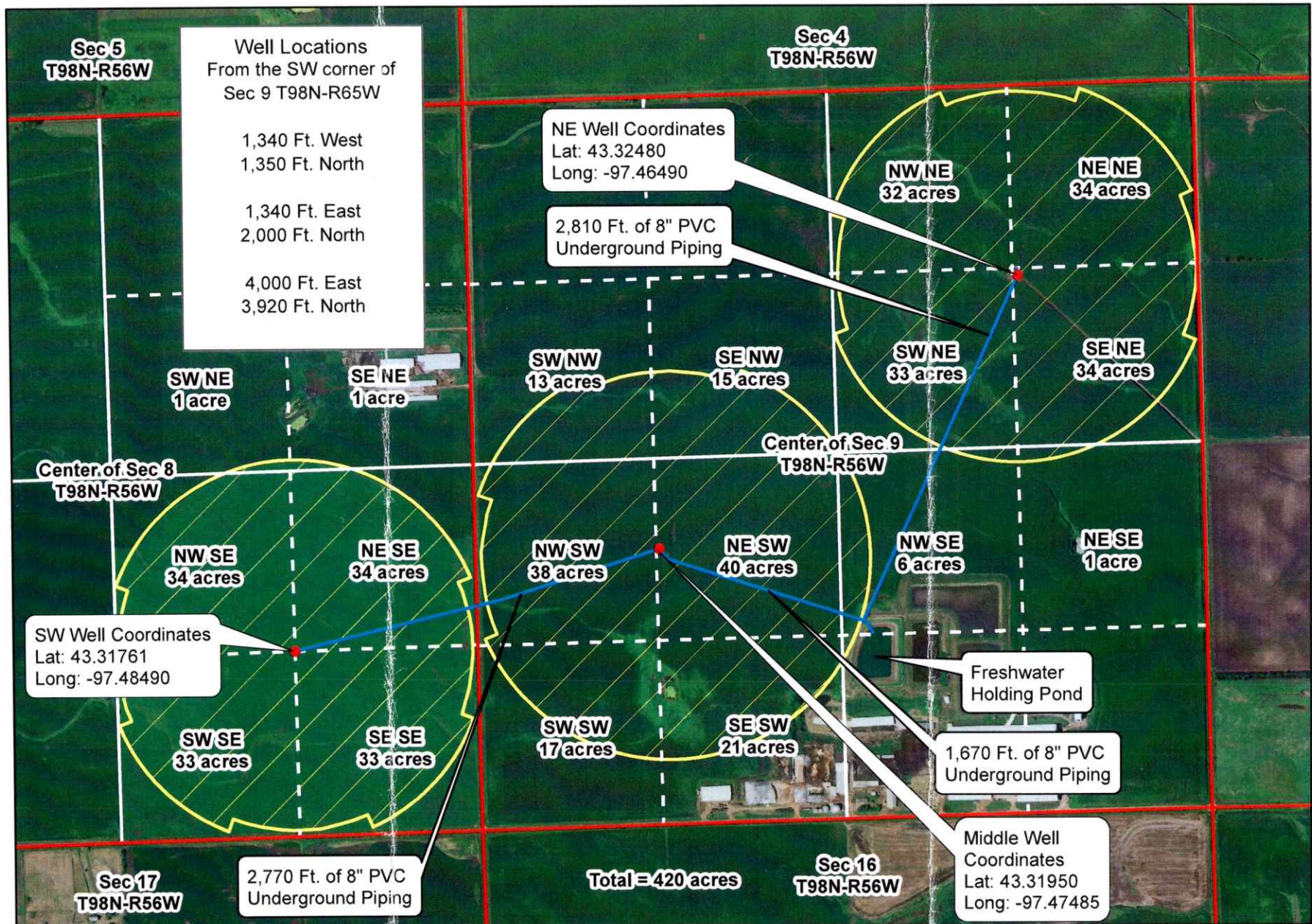
I indicated that the water right inspector indicated that the center pivots could be supplied by the wells, the fresh water pond or both. I indicated the two western most wells only produce 350 gpm and 250 gpm. He said that is correct and nozzling down the center pivot that much doesn't work well. He indicated that last year he irrigated solely from the fresh water pond which were supplemented from the wells. In August he does not pump well water to the ponds as he tries to draw the pond down. He also has the ability to pump from the wastewater pond but doesn't do that very often because if any solids get in the system it plugs the nozzles on the pivot.

Then asked if the dairy is supplied by a rural water system. He said no that there are 7 Niobrara wells on the property. Five are used on an alternating basis for redundancy purposes for the dairy which is owned and operated by his two sons. The other two wells are for his operation where he runs has cattle (dry cows or heifers) that will ultimately go to the dairy. He said water is pumped to two 10,000 tanks and from there can be used to meet peaking demands at the dairy. He said that he is connected to B-Y Rural Water that is only used in the case of an emergency.

I explained the reasonable domestic use criteria and the possibility for needing a water permit. He thought livestock watering is a domestic use that does not require a water permit. I explained when it involves an animal confinement facility if the reasonable domestic use criteria is exceeded the use is considered a commercial use requiring a water permit. Mr. Schultz did not know the total diversion rate that the wells produce. He asked if each well was afforded to divert at the reasonable domestic use rate. I said that it is a combination (cumulative) of the maximum pump rate at any given time from the wells. He planned to have his sons contact me regarding obtaining a water permit.

NAME: Eric Thumlund

Water Right No. 7344-3



Keith DeJong
Keith DeJong, PE Ret.
March 15, 2022



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

March 17, 2022

Michael Schultz
43721 281st St
Freeman SD 57029

Dear Mr. Schultz:

Enclosed is an *Application for a Permit to Appropriate Water* for irrigation. This partially completed form is being sent based on the inspection of your water permit conducted by Keith DeJong, staff engineer.

Water Permit No. 7344-3 authorizes 5.33 cubic feet of water per second from three wells to irrigate 399 acres. The inspection found the systems irrigating a total of 420 acres. Since you are irrigating more than the permitted 399 acres, a water permit will be required for the additional 21 acres.

Please review the enclosed form, make any necessary corrections, list an email address if available, and sign at the bottom of the form. Enclosed is a map prepared by Mr. DeJong of the irrigation system as developed.

Return the signed application and the application fee of \$500.00. You should be aware that you will be responsible for payment of the public notice once a staff report and the Chief Engineer's recommendation are complete. We will contact you at that time.

If you have any questions, please contact me.

Sincerely,

Karen Schlaak
Water Rights Program
Phone: (605) 773-3352
karen.schlaak@state.sd.us

enclosures

**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov



February 8, 2022

Michael Schultz
43721 281st Street
Freeman SD 57029

Dear Mr. Schultz:

Last September the Water Rights Program received a complaint that two domestic wells were being adversely impacted by irrigation pumping. These wells are located southwest of Freeman in Hutchinson County where you hold a water right for irrigation. The water source for the domestic wells and area irrigators is the Niobrara aquifer.

At that time, the Water Rights Program contacted several irrigators who willingly cooperated to shut off their irrigation system for a week in an effort to assess whether that provided relief for the domestic well owners. You were not one of the irrigators that we contacted. Timely rains and the end of the irrigation season meant many irrigation systems were not operated again.

As we approach another irrigation season, I want to make you aware of water rights law regarding impairment of adequate domestic wells and steps being taken to monitor the aquifer in your area.

Water Rights law states that the use of water for domestic purposes is the highest use of water and takes precedence over all appropriative rights. As such, water rights from groundwater, including yours, are issued with the following qualification.

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

The Water Management Board in prior rulings has stated that if pumping from a water source appropriated by a water right/permit results in adverse impairment of adequate domestic wells or adequate wells having prior rights, reduction of withdrawals or mitigation may be necessary. The Board has found that state law in giving preference to domestic use over appropriative rights does so without regard to 1) whether lowered ground water levels are due to drought, 2) the location of the domestic wells in the aquifer, or 3) the thickness of the water bearing material; subject to compliance with the minimum requirements for an adequate well as defined by the South Dakota well construction standards.

Based on the well completion reports, the two domestic wells in question meet the adequate well definition. Therefore, if water levels decline in the Niobrara aquifer such that the domestic wells cannot attain their needed water supply, appropriative water right holders may need to limit or cease their withdrawals.

To monitor the Niobrara aquifer's water levels in this area, the Water Rights Program is working in conjunction with the South Dakota Geological Survey to drill additional observation wells into the Niobrara aquifer in your area. Once in place, these observation wells will provide water level readings on how the aquifer fluctuates in response to pumping and climatic conditions.

In addition, your existing Water Permit No. 7344-3 is due for a site visit for the purpose of licensing the permit to reflect the level of development. This spring you may be contacted by Water Rights Program staff to schedule this site visit.

While I am unable to predict the precipitation this upcoming year, we are currently dry in South Dakota. Therefore, I am reaching out to make you aware of this potential situation if the drought continues and the steps being taken to monitor the aquifer.

Please feel free to contact me if you have questions.

Sincerely,



Eric Gronlund, Chief Engineer
Water Rights Program, DANR
605 773-3352
eric.gronlund@state.sd.us



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
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**REVISED RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT APPLICATION
NO. 8616-3, Michael Schultz**

Pursuant to SDCL 46-2A-2, the following is the revised recommendation of the Chief Engineer, Water Rights Program, Department of Agriculture and Natural Resources concerning Water Permit Application No. 8616-3, Michael Schultz, 43721 281st Street, Freeman SD 57029.

Based on impacts to adequate domestic wells being mitigated by the domestic well owners connecting to rural water and installation of observation wells, the Chief Engineer is recommending APPROVAL of Application No. 8616-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing domestic water uses and water rights, 3) the proposed use is a beneficial use and 4) it is in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board with the following qualifications:

1. The wells approved under Water Permit Nos. 7344-3 and 8616-3 are located near domestic wells and other wells which may obtain water from the same aquifer. Water withdrawals must be controlled so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

See report on application for additional information.

Eric Gronlund, Chief Engineer
August 14, 2024

NOTE: This Permit is in an area with a history of adequate domestic wells being impaired by pumping of high-capacity wells. Enforcement of Qualification No. 1 may result in a shutoff order being issued to prevent impairment of adequate domestic wells or prior rights with adequate wells.



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
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**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8616-3, Michael Schultz**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Agriculture and Natural Resources concerning Water Permit Application No. 8616-3, Michael Schultz, 43721 281st Street, Freeman, SD 57029.

The Chief Engineer is recommending DEFERRAL of Application No. 8616-3 for further study because additional investigation is needed to determine if existing high capacity irrigation wells from the Niobrara aquifer in this area may unlawfully impair adequate domestic wells. The Water Rights Program is working in conjunction with the South Dakota Geological Survey to complete observation wells completed into the Niobrara aquifer in the spring of 2022. This will allow monitoring of water levels in the aquifer to aid in determining the effects pumping has on area domestic wells.

See report on application for additional information.

Eric Gronlund, Chief Engineer
May 9, 2022

Report to the Chief Engineer
Water Permit Application 8616-3
Michael Schultz
August 20, 2024

Water Permit Application No. 8616-3 proposes the irrigation of an additional 21 acres with no additional diversion rate from the wells authorized by Water Permit No. 7344-3. Water Permit No. 7344-3 appropriates 5.33 cubic feet per second (cfs) from three wells completed into the Niobrara Aquifer (163, 180, and 209 feet deep) located near the center of the SE ¼ Section 8; NE ¼ SW ¼, SE ¼ NE ¼ Section 9; all in T98N-R56W for the irrigation 399 acres. A storage pond/reservoir is in the W ½ SE ¼ Section 9-T98N-R56W. An investigation of the permit found the systems capable of diverting 2.56 cfs from the existing wells and irrigating an additional 21 acres. The irrigated acreage, including the 21 additional acres for this application, is in the SE ¼, S ½ NE ¼ Section 8; SW ¼, S ½ NW ¼, NE ¼, N ½ SE ¼ Section 9; all in T98N-R56W. Water can be pumped from the three wells to the storage pond and then applied to the acreage. Combined this application, if approved, and Water Permit No. 7344-3 will authorize a total diversion rate of 2.56 cfs for irrigation of 420 acres. This site is located in Hutchinson County approximately two miles southwest of Freeman, SD.

This application is the result of a licensing inspection that found additional acres beyond what was previously permitted for irrigation. This application was initially received March 23, 2022. The application was then placed in abeyance on May 9, 2022, after the Chief Engineer issued a recommendation for deferral due to this portion of the Niobrara aquifer being evaluated for unlawful impairment of two adequate domestic wells. On January 10th, 2023, the Water Rights Program was notified that water supplied from the impacted adequate domestic wells in question had been replaced with connections to a rural water system. Therefore, this application is being brought out of abeyance for evaluation.

There are several applications related to this portion of the Niobrara aquifer, which are summarized in Table 1 with locations shown in Figure 1. The test holes for Application No. 8587-3 suggested that the target aquifer is a sand and gravel deposit that overlies this portion of the Niobrara aquifer, and the application was held for further investigation. In June 2024, the target aquifer for Application No. 8587-3 was updated to this portion of the Niobrara aquifer.

Table 1: Applications Related to this Portion of the Niobrara Aquifer (Water Rights, 2024b)					
Application Number	Diversion Rate (cfs)	Acres	Purpose	Priority Date	Status
8579-3	0.89	32	irrigation	01/10/2022	deferred by Board-unlawful impairment review
8587-3	1.78	134	irrigation	01/25/2022	2022-deferral recommendation-for aquifer determination June 2024-test hole received for Niobrara aquifer
8616-3	no additional	21	irrigation	03/23/2022	abeyance-deferral recommendation due to 8579-3, adding additional acres to Water Permit No. 7344-3

Aquifer: Niobrara aquifer

Hydrogeology

Aquifer Information

Geology and Basic Hydrogeology

The Niobrara Formation is a bedrock formation that underlies most of eastern and western South Dakota (Hedges et al, 1982; Allen et al, 1985). The Niobrara Formation is a Late Cretaceous age white to dark grey argillaceous (clay containing) chalk, marl, and shale that can contain thin bentonite beds, minor sand, and chalky carbonaceous shale (Tomhave, and Schulz, 2004). Locally, the Niobrara Formation is also known as “chalk rock” and is extensive throughout South Dakota; however, characteristics of the Niobrara aquifer vary greatly across the state (Hedges et al., 1982).

The Niobrara aquifer is contained within portions of the Niobrara Formation where sufficient permeability exists to allow for the transmission of groundwater and where the permeable portions of the formation are sufficiently saturated to yield quantities of groundwater to wells. Both Hedges et al. (1982) and Stephens (1967) identified fractures and solution cavities as the main means of water movement through the Niobrara aquifer. Hedges et al. (1982) noted these features are partially controlled by flexures and faults. Where these secondary porosity features are absent, the Niobrara Formation is generally a low-permeability or almost a no-permeability formation that transmits little to no water (Hedges et al., 1982; Stephens, 1967). Weathering and glacial activity may also contribute to higher productive zones in the Niobrara aquifer (Hedges et al., 1982), with greater amounts of weathering and glacial activity generally having occurred where the Niobrara Formation is exposed at ground surface or directly overlain by glacial deposits and generally less where the Niobrara Formation is overlain by the Pierre Shale.

In southeastern South Dakota, there are several areas where portions of the Niobrara Formation were isolated from the main body of the Niobrara through erosional forces (Tomhave and Schulz, 2004). The well sites are located within the extent of one of these isolated portions of the Niobrara Formation. The initial mapping of this extent of this portion of the Niobrara Formation was done by Tomhave and Schulz (2004) and is shown in Figure 1. Holmes and Filipovic (2015) as part of a study of the Upper Vermillion aquifer updated a section of the eastern boundary of this portion of the Niobrara aquifer shown in Figure 2. This portion of the Niobrara Formation underlies approximately 338,130 acres (Figure 2 extent-Niobrara Portion (2015)) of portions of Hutchinson, Clay, Turner, Yankton, and McCook Counties. In general, this portion of the Niobrara generally directly underlies either the Pierre Shale (shown in Figure 1) or glacial deposits (in areas not underlying the Pierre Shale) and overlies the Carlile Shale (Tomhave and Schulz, 2004). Well completion reports on file with the Water Rights Program report encountering water throughout this portion of the Niobrara Formation indicating aquifer potential throughout this portion of the formation (Water Rights, 2023a; 2023b; 2023c). Since this portion of the Niobrara aquifer is isolated from the main body, the remainder of this report will focus solely on this portion of the Niobrara aquifer.

The three wells for this application are existing wells 163, 180, and 209 feet deep completed into the Niobrara aquifer (Water Rights, 2023b). The Niobrara aquifer is under confined conditions at the well locations for this application (Water Rights, 2022a).

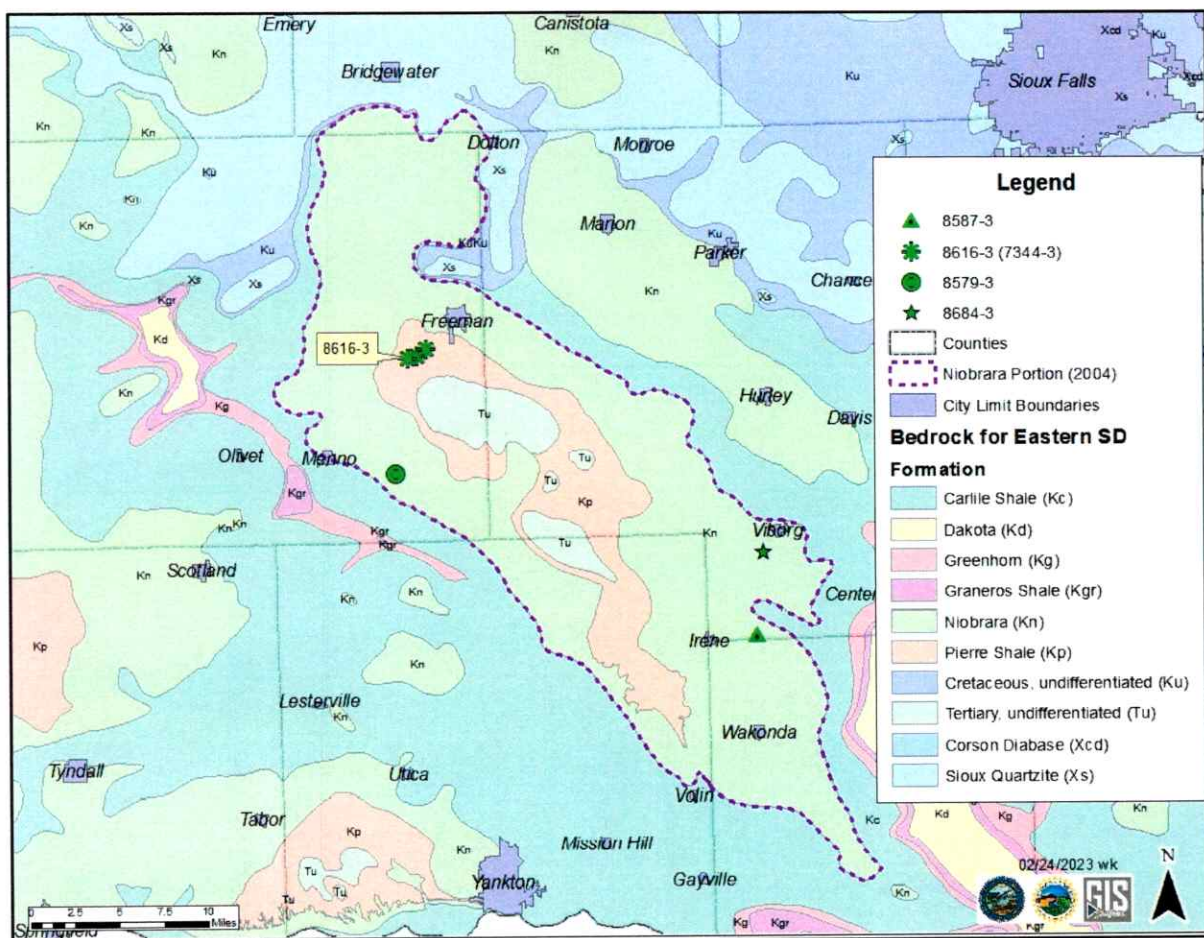


Figure 1: Map showing the first occurrence of bedrock material with the erosional remnant of the Niobrara Formation this application proposes to use (modified from Tomhave and Schulz, 2004)

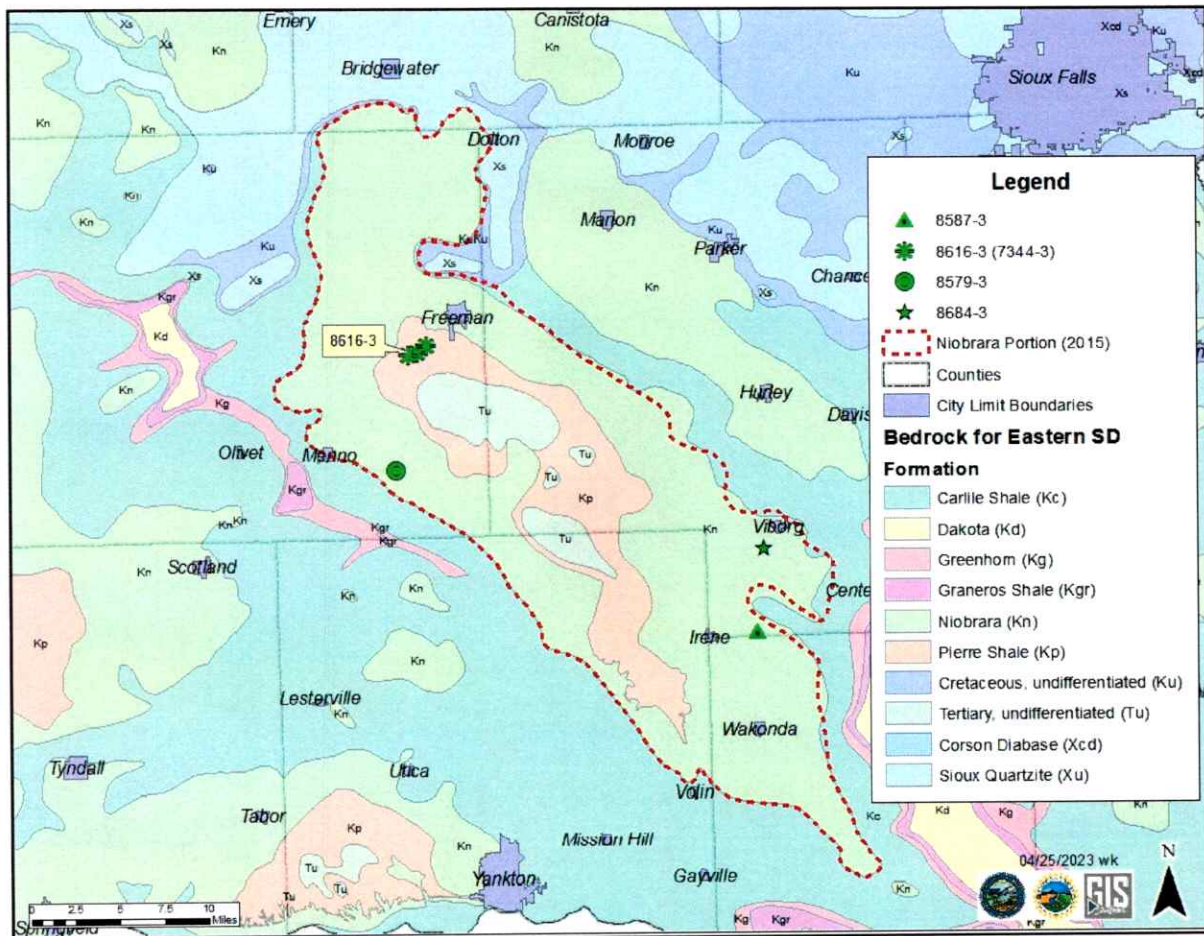


Figure 2: Map showing the approximate extent of the erosional remnant of the Niobrara Formation this application proposes to use and the 2004 first occurrence of bedrock material (modified from Tomhave and Schulz, 2004 and Holmes and Filipovic, 2015)

Potentiometric Surface Mapping

A potentiometric surface map is a spatial mapping of groundwater levels in an aquifer at a given period of time, which can yield several insights into aquifer behavior. Potentiometric surface maps are created by plotting elevations of the static water level and then generating contours or lines of equal elevation. Initial potentiometric surface mapping was of part of this portion of the Niobrara aquifer was done by Lindgren and Hansen (1990) shown in Figure 3. Mathiowetz (2016) also examined the potentiometric surface for May 2016 as shown in Figure 4. Further potentiometric surface mapping was generated for this portion of the Niobrara aquifer for May 2013 (Figure 5), May 2018 (Appendix B), and May 2022 (Figure 6). Information on inputs to generate these maps is summarized in Table 2. Some of the differences between the potentiometric surface maps is due to the differences in locations of water level measurements used to generate the contours.

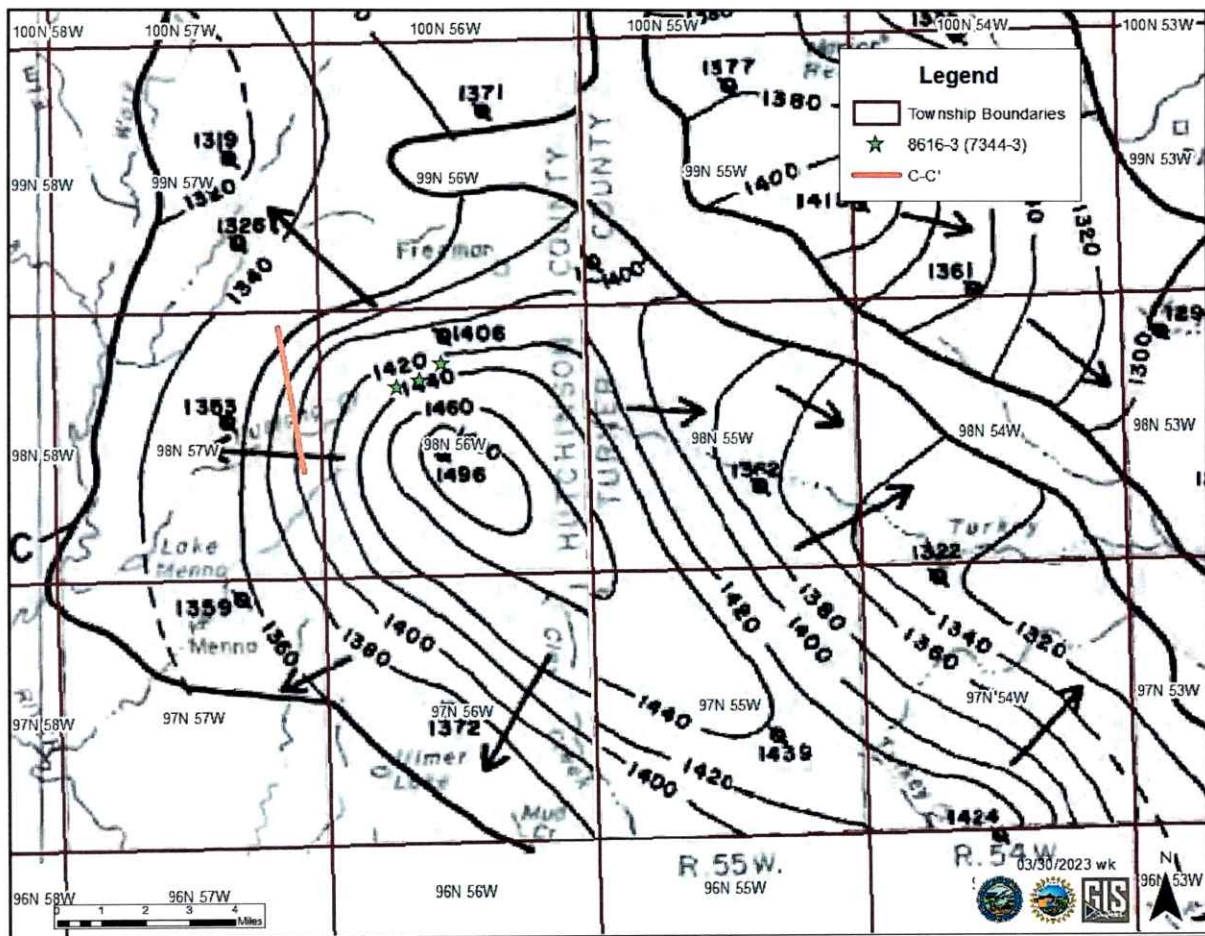


Figure 3: Potentiometric surface contours from 1986 (modified from Lindgren and Hansen, 1990). Elevation reference NGVD29.

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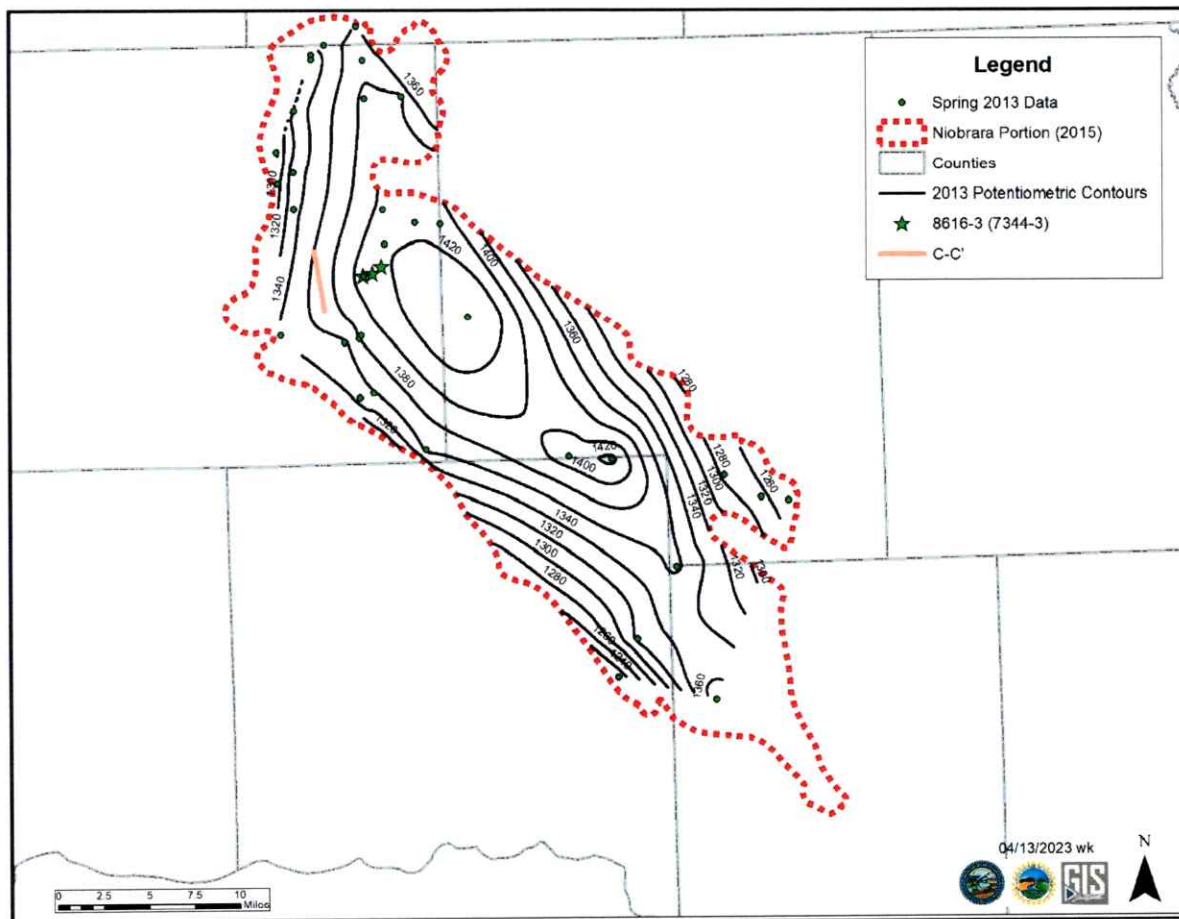


Figure 5: Potentiometric surface contours from May 2013 (Water Rights, 2023a). Elevation reference NAVD88.

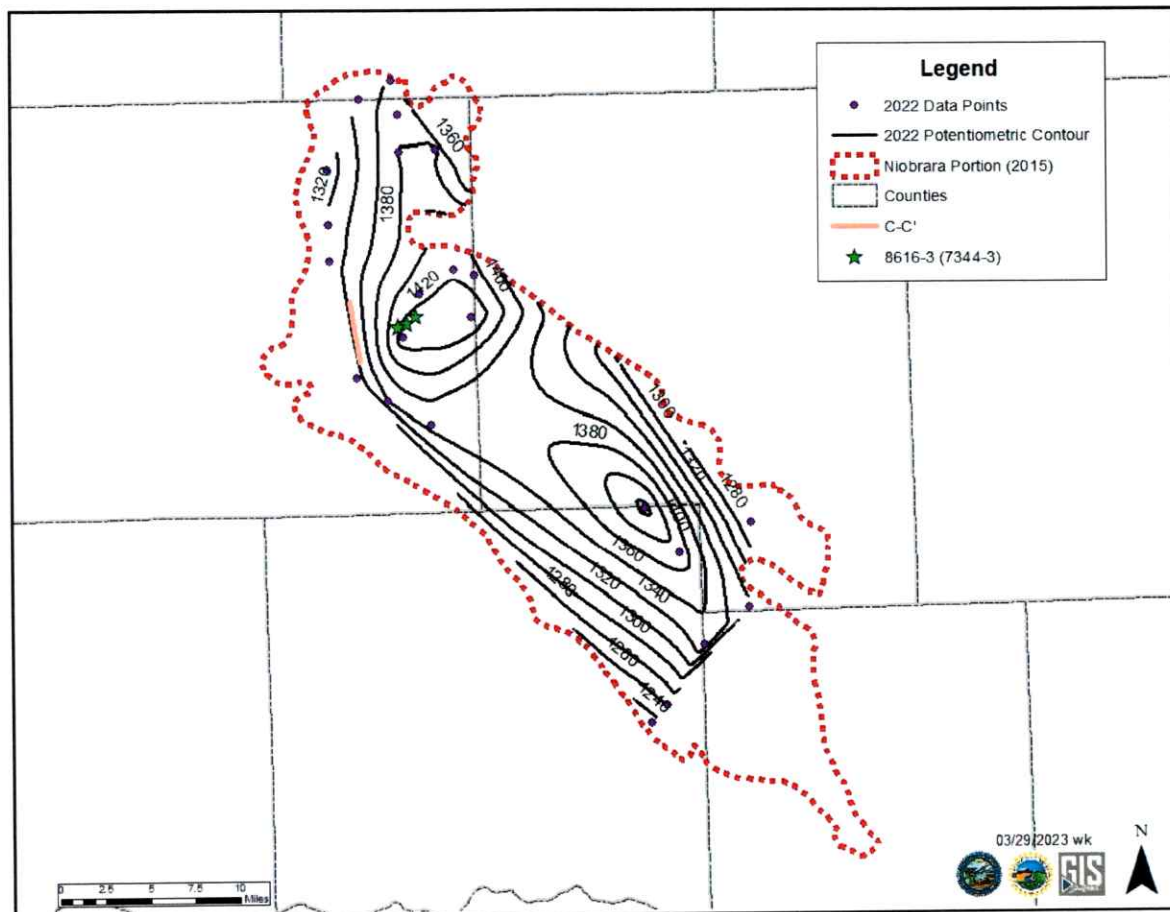


Figure 6: Potentiometric surface contours from May 2022 (Water Rights, 2023a). Elevation reference NAVD88.

Table 2: Summary of Potentiometric Surface Mapping			
Time Period	Figure	Data Points	Sources
November 1986	Figure 3	16	Lindgren and Hansen (1990)
May 2016	Figure 4	41	Mathiowetz (2016)
May 2013	Figure 5	34	Water Rights, 2023a and 2023c
May 2018	Appendix B	17	Water Rights, 2023a and 2023c
May 2022	Figure 6	23	Water Rights, 2023a and 2023c

The springtime period is typically chosen by the Water Rights Program for potentiometric surface mapping to map conditions as close to natural as possible. Natural groundwater flow goes from areas of recharge to areas of discharge. In Figures 3-6, the general direction of groundwater movement is from the central area of this portion of the Niobrara aquifer to the edges. This indicates two things this portion of the Niobrara aquifer is likely discharging to aquifers located within the bedrock valleys surrounding this portion of the Niobrara aquifer and second, there is likely a higher rate of recharge near the edges of the overlying Pierre Shale.

In the northern part of this portion of the Niobrara aquifer, the most likely possibility for a recharge source to the Niobrara aquifer is the Turkey Ridge aquifer (Lindgren and Hansen, 1990 and Kilts, 2023a). The Turkey Ridge aquifer is made up of Tertiary undifferentiated sands overlaying portions of the Pierre Shale overlaying the central portion of the aquifer (Kilts, 2023a). Near the peripheries of the Turkey Ridge aquifer there are areas where the aquifer is in direct contact with the Niobrara aquifer or separated from the Niobrara aquifer by a relatively thin layer of weathered Pierre Shale (Kilts, 2023a; SDGS, 2023; and Water Rights, 2024a). Additionally, water level comparisons by Kilts (2023a) support the Turkey Ridge aquifer as a potential source of recharge to this portion of the Niobrara aquifer, since water level elevations in the Turkey Ridge aquifer are higher than in the Niobrara aquifer. Further sources of recharge to this portion of the Niobrara aquifer are likely infiltration of precipitation through overlaying glacial deposits, especially where those deposits have a higher amount of more transmissive materials like sands and gravels (Lindgren and Hansen, 1990).

This portion of the Niobrara aquifer is surrounded by valleys in the bedrock where the Niobrara Formation has been eroded, which contain glacial outwash aquifers. Where these glacial outwash aquifers are in contact with this portion of the Niobrara (either overlaying or are adjacent to), there is potential for leakage between the aquifers based on hydraulic head. The Lower James Missouri aquifer lies in the bedrock valley to the west of this portion of the Niobrara and in some locations extends far enough east to be in contact with this portion of the Niobrara (Tomhave and Schulz, 2004; Hedges et al., 1982) as shown in Figure 7. To further illustrate the nature of this connection, select cross sections from Lindgren and Hansen (1990) are provided in Appendix A. Although these cross sections would likely have slight changes if updated to reflect additional drilling since Lindgren and Hansen (1990), they still illustrate the general nature of the connection. The Upper Vermillion Missouri aquifer lies in the bedrock valley to the east of this portion of the Niobrara aquifer and can also be hydrologically connected (Lindgren and Hansen, 1990). Stephens (1967) indicated the presence of a glacial outwash aquifer (named the Wakonda aquifer) directly overlaying and with a strong hydrologic connection to this portion of the Niobrara in portions of Clay County. However, the first occurrence of aquifer materials mapping by Jensen (2000) indicates that the Wakonda aquifer is unlikely to be as extensive as was mapped by Hedges et al. (1982). Lindgren and Hansen (1990) also indicate seepage into Wolf Creek in the very north part of the aquifer is possible.

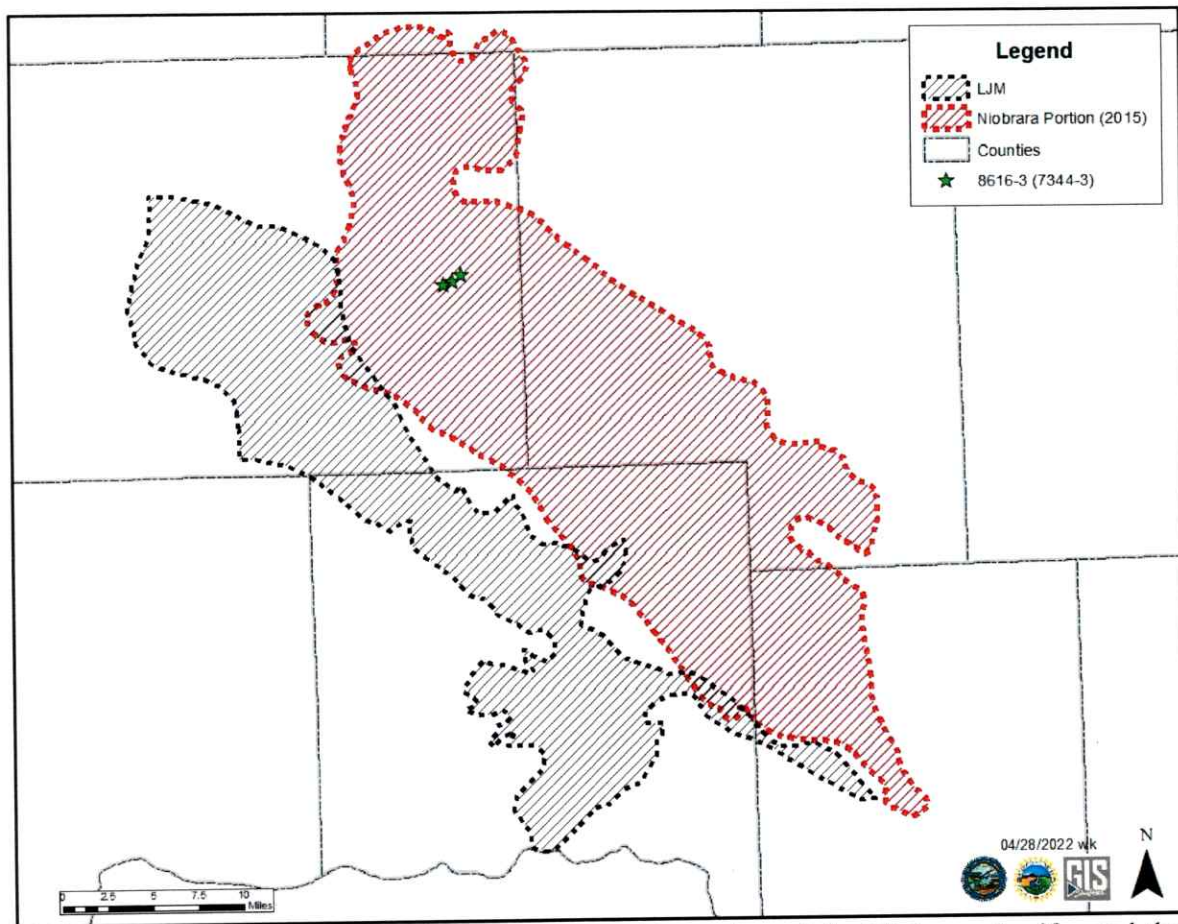


Figure 7: Approximate areas of contact between this portion of the Niobrara Aquifer and the Lower James Missouri aquifer (modified from Hedges et al., 1982; Tomhave and Schulz, 2004 and Holmes and Filipovic, 2015)

Natural Discharge

The natural discharge from this portion of the Niobrara aquifer can be estimated using information from potentiometric surface mapping in addition to other data. The flow rate for natural discharge is estimated using equation 1.

$$\text{Equation 1: } Q = T * I * L * c$$

Where:

Q=flow rate, units: acre-feet per year

T= Transmissivity (hydraulic conductivity times aquifer thickness), units: gallons per day per foot (gpd/ft)

I=Gradient of the Potentiometric surface, units: feet per mile (ft/mi)

L=Length of aquifer contact, units: miles

c=conversion factor equal to 365 days per year divided by 325,851.429 gallons per acre-feet=0.00112

The green C-C' line in Figures 3-6 is 3.2 miles long. It is the approximate length of the Niobrara aquifer and Lower James Missouri aquifer connection downgradient of the proposed wellsite for this application. Due to limited data availability along the edge of the aquifer, for analysis the discharge line had to be shifted slightly upgradient of the actual area of connection between the two aquifers. This length, 3.2 miles, is used for "L" in equation 1. Pumping data from both domestic and appropriative wells were used to calculate specific capacity, which was then used to estimate transmissivity and hydraulic conductivity. This information is summarized in Table C1 of Appendix C. Table C1 is split into three section data within one mile of the B-B' line (Section 1), data from the rest of the aquifer (Section 2), and outlier data. The calculation of hydraulic conductivity was used as a check of calculated transmissivity values, Appendix C includes further discussion of data points tagged as outliers. Appendix C estimates an average transmissivity for this portion of the Niobrara aquifer of 4,293.2 gallon per day per foot, a review of the data points used in Appendix C indicated there was not a sufficient concentration of non-outlier transmissivity data within one mile of line C-C' for the calculation of a localized transmissivity estimate. The average gradient of the potentiometric surface, I, across line C-C' for each time period is shown in Table 3. The estimated flow across C-C' for each time period is summarized in Table 3. Average estimated discharge across C-C' is 346 acre-feet per year.

Table 3: Estimated Discharge Across C-C'				
Year	Gradient (ft/mi)	Transmissivity (T) (gpd/ft)	Length (mi)	Discharge (acre-feet/yr)
1986	30	4,293.2	3.2	461.60
2016	15	4,293.2	3.2	230.80
2013	15	4,293.2	3.2	230.80
2018	insufficient data coverage			n/a
2022	30	4,293.2	3.2	461.60
Average				346

Kilts (2024) estimated flow through the discharge area to the Lower James Missouri aquifer directly south of this discharge area (shown in Figure 8 as the green B-B' line) to be 173 acre-feet per year. Kilts (2023b) estimated discharge from this portion of the Niobrara aquifer to the Upper Vermillion Missouri: West aquifer downgradient of the well site for Water Permit No. 8684-3 to range between 685 to 890 acre-feet per year. Kilts (2023b) also noted there was likely additional natural discharge potential to the Upper Vermillion Missouri: South aquifer and other adjacent aquifers along the eastern edge of this portion of the Niobrara aquifer that have not yet been quantified.

Rather than estimate discharge to the Lower James Missouri aquifer utilizing local discharge area estimates (as done above and in Kilts (2023b and 2024)), Mathiowetz (2016) used a single line (the yellow A-A' line in Figure 4) with a total length equal to the various areas of connection between this portion of the Niobrara aquifer and the Lower James Missouri aquifer to estimate total natural discharge to the Lower James Missouri aquifer. Mathiowetz (2016) used equation 1 with a L of 17.5 miles, a I of 20 ft/mi, and a T of 25,092 gpd/ft to estimate a total natural discharge to the Lower James Missouri aquifer from this portion of the Niobrara aquifer of approximately 9,837 acre-feet per year. Mathiowetz (2016) estimated transmissivity using data

from 27 high-capacity wells (primarily for irrigation use) authorized by water rights/permits, several of the data points used by Mathiowetz (2016) were tagged as outliers in Table C1. Given that water movement in the Niobrara aquifer is dominated by secondary porosity features, the average transmissivity of Mathiowetz (2016) only represented areas of higher transmissivity within the aquifer that are capable of supporting high capacity well yields and only captured an average of the very high end of transmissivity within the aquifer. The non-outlier average transmissivity (4,293.2 gpd/ft) presented in Table C1 (which includes domestic well data) is a transmissivity that is more representative of average conditions in the aquifer than the transmissivity estimate of Mathiowetz (2016). Recalculation of the total natural discharge to the Lower James Missouri aquifer for May 2016 using the more representative value for transmissivity for this aquifer results in an estimated total natural discharge to the Lower James Missouri aquifer from this portion of the Niobrara aquifer of 1,803 acre-feet. Given that this discharge estimate uses a more representative value for transmissivity for this aquifer, 1,803 acre-feet per year is a closer estimate of the magnitude of natural discharge occurring from this aquifer to the Lower James Missouri aquifer. In looking at Table 3, Kilts (2024), and Kilts (2023b) found the localized natural discharge estimates for May 2016 are consistently at the lower end of the range for the time periods examined, so this estimate could be considered slightly conservative.

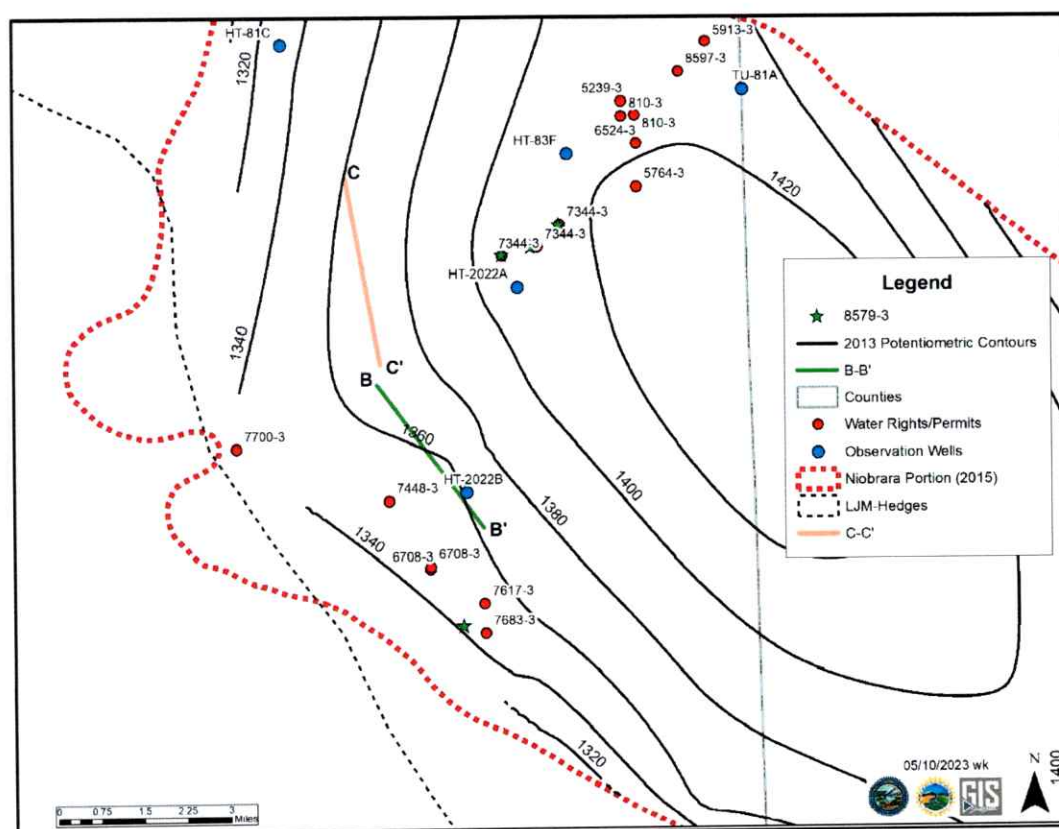


Figure 8: Location of reference lines used to estimate localized natural discharge for this application and Kilts (2024). Also shown for reference is the approximately boundary of the Lower James Missouri (LJM) aquifer (Hedges et al., 1982) and the May 2013 potentiometric surface contours.

South Dakota Codified Law (SDCL) 46-2A-9

Pursuant to SDCL 46-2A-9, “A permit to appropriate water may be issued only if there is a reasonable probability that there is unappropriated water available for the applicant’s proposed use, that the diversion point can be developed without unlawful impairment of existing domestic water uses and water rights, and that the proposed use is a beneficial use and in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board as defined by SDCL 46-2-9 and 46-2-11.” This report will address the availability of unappropriated water and the potential for unlawful impairment of existing domestic water uses and water rights within this portion of the Niobrara aquifer.

Water Availability

Water Permit Application No. 8616-3 proposes to appropriate water from the Niobrara aquifer for irrigation use. The probability of unappropriated water being available from an aquifer can be evaluated by considering SDCL 46-6-3.1 which requires, “No application to appropriate groundwater may be approved if, according to the best information reasonably available, it is probable that the quantity of water withdrawn annually from a groundwater source will exceed the quantity of the average estimated annual recharge of water to the groundwater source.” If the source of the water is older or lower than the Greenhorn Formation and the application is for a water distribution system defined in SDCL 46-1-6 (17), the Board need not consider the recharge/withdrawal issue. The Niobrara Formation is neither older or stratigraphically lower than the Greenhorn Formation and this application is not for a water distribution system as defined in SDCL 46-1-6 (17); therefore, the withdrawal/recharge issue must be considered.

Observation Well Data

In determining the availability of unappropriated water for a permit application, Administrative Rule 74:02:05:07 requires the Water Management Board to rely on the record of observation well measurements, in addition to other data, to determine that the quantity of water withdrawn annually from the aquifer does not exceed the estimated annual recharge.

The DANR Water Rights Program monitors 13 observation wells completed into this portion of the Niobrara aquifer locations shown in Figure 12 (Water Rights, 2024c). Two of those observation wells (HT-2022A and HT-2022B) were installed in 2022 and have a limited period of record, so their data is of limited usefulness in evaluating long term water availability. During the winter of 2022 and early spring of 2023, a programming error in the dataloggers resulted in no data collection during that time. The hydrographs for these two wells also include both data logger data and manual readings. The nearest observation well to the well locations for this application is observation well HT-2022A located approximately 0.7 miles to the south of the well locations for this application. The next nearest observation well is HT-2022A located approximately 5.9 miles to the north of the proposed well site for this application. The hydrographs for these observation wells are shown in Figure 9.

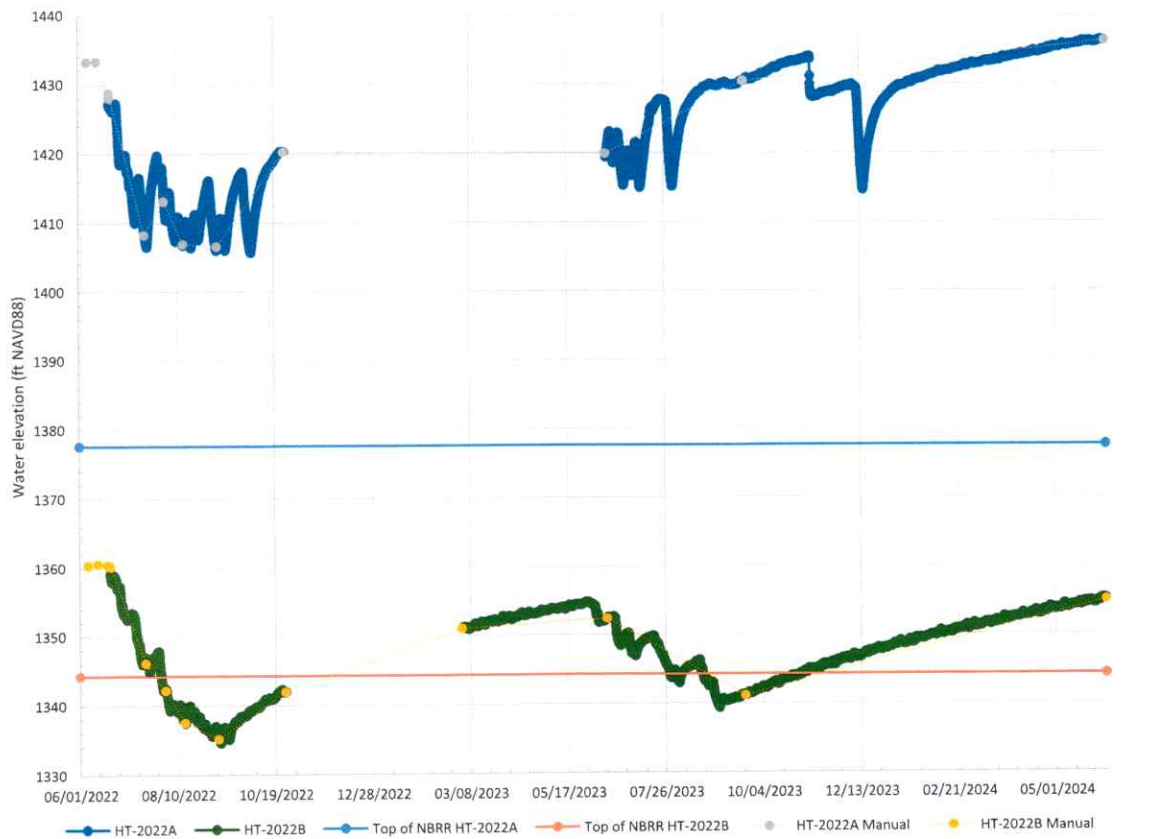


Figure 9: Hydrograph of Observation Wells HT-2022A and HT-2022B (Mathiowetz, 2024 and Water Rights, 2024c).

Of note in the hydrograph for observation well HT-2022A, is what appears to be a response in the water levels to a nearby high capacity well operating in November of 2023. In talking to the holder of the closest permit (Water Permit No. 7344-3 held by Michael Schultz), Mr. Schultz indicated he likely operated the Niobrara wells associated with Permit No. 7344-3 around that time (Schultz, 2024). The system for Permit No. 7344-3 includes a storage pond and typically irrigation is done out of the storage pond. Depending on the pond level, water is sometimes added to the storage pond outside of the irrigation season in preparation for the next season (Schultz, 2024 and Water Rights, 2024b). Mr. Schultz indicated he does not track when he runs his wells for the annual irrigation questionnaire to the Water Rights Program, just when he irrigates, but believed he ran the wells last winter to partially refill the pond (Schultz, 2024). This response is not seen in the hydrograph for HT-2022B either the pumping did not go on for a long enough period of time to reach the observation well or some hydrogeologic property of the aquifer limits the impacts of pumping of the wells for Water Permit No. 7344-3 from reaching HT-2022A.

In looking at the hydrograph for HT-2022B during both the 2022 and 2023 irrigation seasons, the water level drops below the top of the Niobrara Formation. Although the period of record is limited for HT-2022B, the hydrograph indicates that during periods of dry climatic

conditions and higher than average pumping (Table 7) water levels likely do not fully recover from the previous year's irrigation seasons prior to the start of the next irrigation season. However, the period of record is not long enough to determine if, long-term, the combination of wetter climatic periods with less irrigation and dry climatic periods with increased irrigation will result in stable, increasing, or decreasing water levels in this area of the aquifer. Also, in looking at the hydrograph for HT-2022B, response to a single pumping well cannot be distinguished from the cumulative pumping in the area.

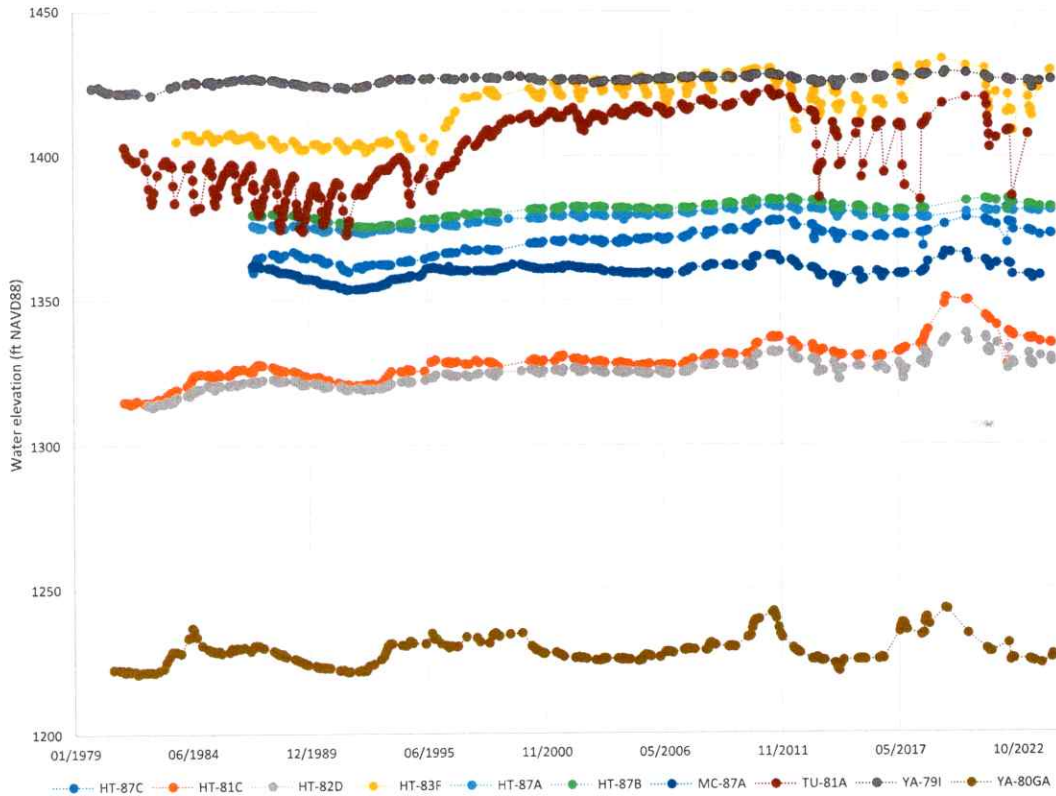


Figure 10: Hydrographs for observation wells monitoring this portion of the Niobrara aquifer with over 20 years of data (Water Rights, 2024c)

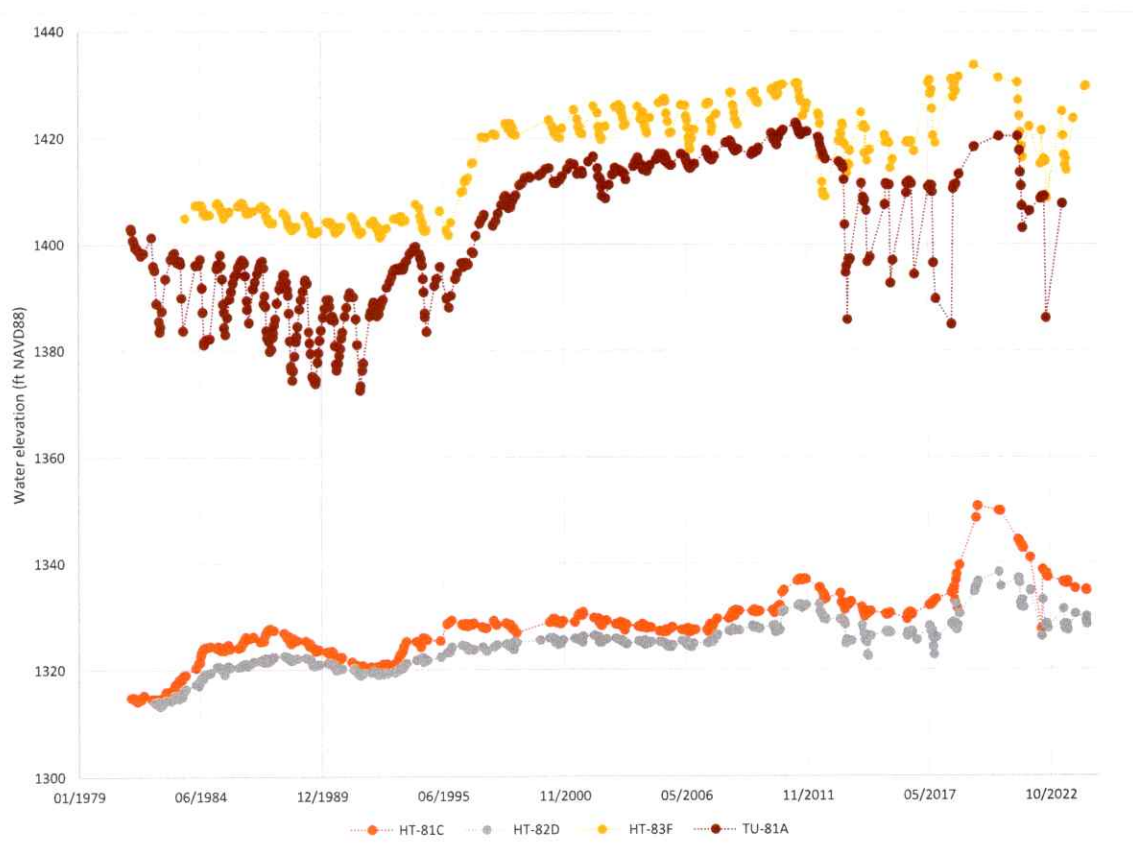


Figure 11: Hydrographs for the observation wells within approximately 10 miles of the well site for this application monitoring this portion of the Niobrara aquifer with over 20 years of data (Water Rights, 2024c). Note these wells are also shown in Figure 10. The top of the Niobrara elevation (NAVD88) is approximately 1,281 ft at HT-81C, 1,292 ft at HT-82D, 1,403 ft at HT-83F, and 1,284 ft at TU-81A (Water Rights, 2024c).

The hydrographs shown in Figures 10 and 11 are representative of the longer term (approximately 35 to 42 years) showing stable to slightly to moderately increasing water level trends in this portion of the Niobrara aquifer. The magnitude of shorter period fluctuations in response to wet and dry climatic cycles varies between observation wells. For example, see the variation in the hydrographs for observation wells YA-79I and YA-80GA. Several observation wells (for example HT-83F and TU-81A) in close proximity to irrigation wells show localized seasonal dips in measured water levels during the irrigation season in response to pumping (Water Rights, 2024b and 2024c). This is representative of the artesian head pressure of the aquifer in the area responding to seasonal irrigation pumping. However, water levels recover after the end of the irrigation season when pumping ends. Around 1996, behavior changes in both TU-81A and HT-83F is noticeable; this is approximately when The Town of Freeman began using rural water (Water Rights, 2024b). HT-83F is approximately 1 mile from the town's wells and TU-81A is approximately 2 miles away. TU-81A appears to start responding to seasonal pumping in 2013; this corresponds with Water Right No. 5913-3 located 1.1 miles to the north-northwest starting to consistently report a higher volume of water use during the irrigation season.

Water levels in the observation wells monitoring this aquifer generally rise during wet periods and decline to stable levels during drier periods. This type of behavior, along with aquifer recovery following the irrigation season, is indicative that climatic conditions, and therefore the effects of recharge to and natural discharge from the aquifer, govern the long-term fluctuations in water levels in the aquifer instead of pumping. Since recharge to and natural discharge from an aquifer can be captured for pumping, there is a reasonable probability that unappropriated water is available from this portion of the Niobrara aquifer for the proposed appropriation.

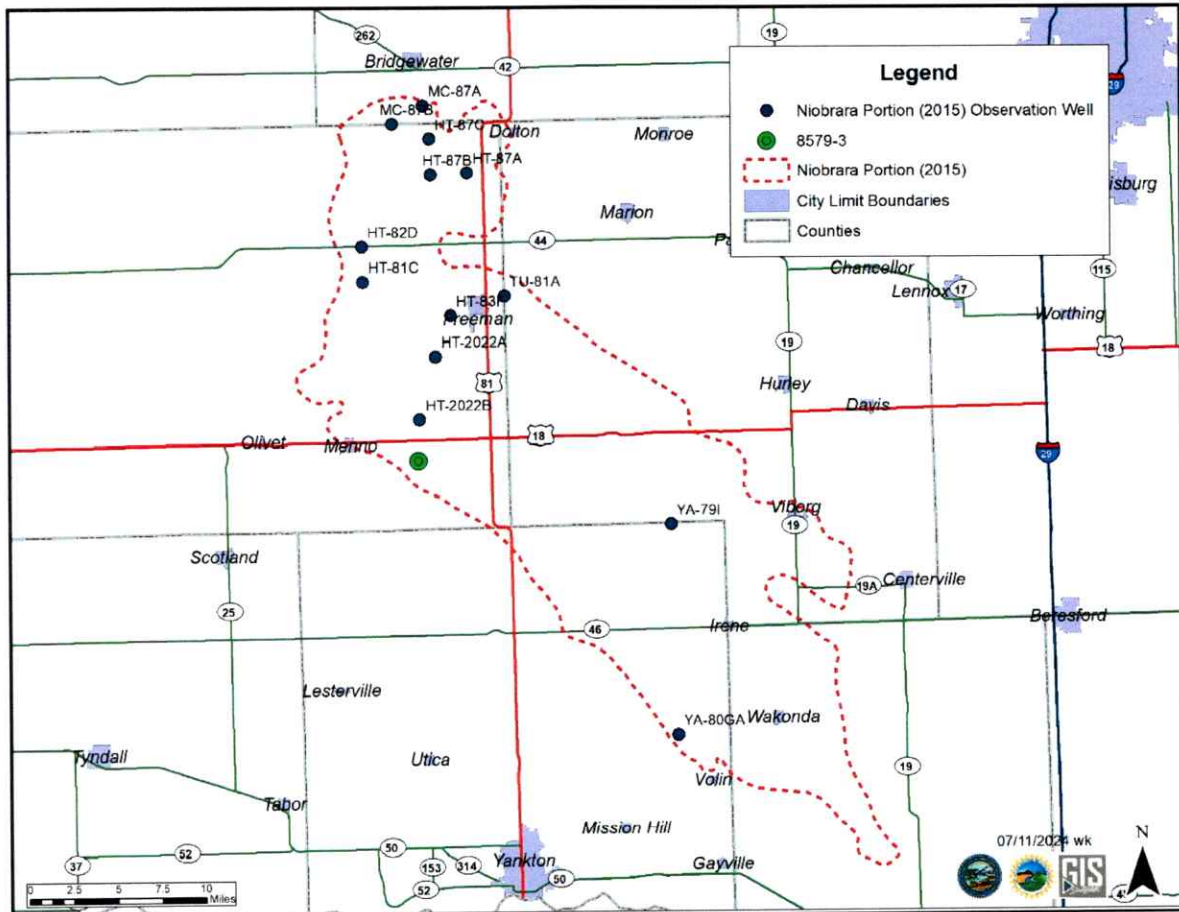


Figure 12: Location of observation wells monitoring this portion of the Niobrara aquifer (Water Rights, 2024c)

Hydrologic Budget

Direct comparison of average annual withdrawals to average annual recharge is statutorily required to determine whether water is available for appropriation from an aquifer. However, other components of an aquifer's budget can be used to examine the approximate status of water availability (or provide a general idea of the magnitude of recharge to an aquifer) in an aquifer or area of an aquifer. In general, for aquifers under natural conditions (no artificial withdrawals), the hydrologic budget of an aquifer can be represented by equation 2. When using equation 2 to look at the natural conditions of an aquifer, the change in storage is typically estimated to average out to zero over the longer term. However, the shorter-term recharge and discharge fluctuate from year to year based on climatic conditions. Thus, the shorter-term changes can be examined to estimate water movement through the aquifer.

$$\text{Equation 2: } \Delta S = R - D$$

Where:

ΔS = change in storage

R = recharge (water entering the aquifer)

D = discharge (water leaving the aquifer)

In general, once pumpage (artificial withdrawals) from the aquifer starts, the discharge component of the equation can be broken down into pumping withdrawals and natural discharges (i.e. seepage to other aquifers, evapotranspiration, seepage to surface water, etc.), shown in equation 3.

$$\text{Equation 3: } \Delta S = R - (W + D_{nat})$$

Where:

ΔS = change in storage

R = recharge (water entering the aquifer)

D_{nat} = natural discharge (water leaving the aquifer through natural means)

W = withdrawals (water leaving the aquifer through artificial means (e.g. pumpage))

Given the management requirements, that the quantity of water withdrawn from a groundwater source not exceed the quantity of the average estimated annual recharge to the groundwater source, the goal is long-term change in storage in the aquifer be zero or be positive. In order for this balance to be achieved, either additional recharge has to occur (e.g. by pumping the target aquifer in close proximity to a connected aquifer creating a gradient to allow flow from the connected aquifer into the target aquifer) or natural discharge to other connected water sources has to decrease (or a combination of the two). Ultimately, there is a limit to how much recharge can increase, and natural discharge can decrease to support increasing withdrawals; when this limit is exceeded, depletion of the water in storage in an aquifer begins. Equation 3 also illustrates how natural discharge estimates can be used as part of monitoring an aquifer's hydrologic budget, since groundwater tends to move from areas of recharge to areas of discharge (which can be seen in the potentiometric surface map of an aquifer). Ideally the location of the natural discharge estimate is at the location of the discharge; however, data limitations typically prevent this.

There are two approaches to dealing with data limitations when doing natural discharge estimates. Approach one is estimating water movement across a cross section between the recharge and pumping area of an aquifer and the discharge area of an aquifer (similar to the C-C' line in Figure 8). Approach two is estimating water movement across a cross section between the recharge area of an aquifer and the discharge and pumping area of an aquifer (similar to the B-B' line in Figure 8).

For natural discharge estimates, water levels from the late April to May time period are targeted to minimize the impact of local pumping (drawdown from an individual pumping well) on the estimate, since by late April to May water levels have typically recovered to the greatest extent possible at the current climatic conditions from the prior irrigation season and pumping on the next irrigation season has not yet begun. Additionally, critical to using natural discharge estimates from an aquifer to examine the status of the hydrologic budget is having observation well data to approximate the direction of storage changes in an aquifer over the long term (e.g. increasing, stable, or decreasing). While changes in the water level in an observation well under confined conditions is not a direct measurement of the change in storage of an aquifer, depending on aquifer characteristics in confined observation wells with limited artesian head pressure (less than 50 ft or so) changes in water level can still be indicative of changes in aquifer storage. Especially when water level can be seen to be dropping below the top of the formation during the year, for example HT-2022B. In the Niobrara aquifer where fractures and solution cavities are the main means of water movement and the compressibility of the aquifer material itself is limited, confined observation wells in this type of aquifer material with limited artesian head pressure can be indicative of changes in water storage in the aquifer.

Recharge

Recharge to this portion of the Niobrara aquifer is primarily from groundwater inflow from adjacent or overlying aquifers due to leakage from these hydrologically connected aquifers when the potentiometric gradients are favorable (a higher hydraulic head in the connected overlying or adjacent aquifer than in the Niobrara aquifer indicates potential for leakage into the Niobrara aquifer). Kilts (2023a) presents the support for the Turkey Ridge aquifer being a source of recharge to this portion of the Niobrara aquifer. Some recharge is also likely from infiltration from precipitation where the Niobrara is at or near ground surface, and leakage through till (Lindgren and Hansen, 1990).

There is no estimate of average annual recharge to this portion of the Niobrara aquifer or the Niobrara aquifer in general available for South Dakota (Hedges et al., 1985). However, of the Niobrara aquifer in South Dakota, Hedges, et al. (1985) noted the Niobrara aquifer had such high storage and low use it was unlikely that withdrawals are approaching or exceeding recharge and there was no evidence of significant head loss in the aquifer to suggest that use is exceeding recharge at that time. As documented in the observation well section of this report, the additional years of observation well data collected since Hedges, et al. (1985) still show no evidence of significant long term head loss across the entirety of the aquifer (Water Rights, 2024b).

Discharge

Discharge from this portion of the Niobrara aquifer is due to well withdrawals and leakage to hydrologically connected aquifers where the potentiometric gradients are favorable (a higher water level elevation in the Niobrara aquifer than in an overlying or adjacent aquifer would indicate potential for discharge from the Niobrara) and some limited seepage to surface water. There are currently 24 active water rights/permits in this portion of the Niobrara aquifer, and two pending irrigation applications with priority dates junior to this application for irrigation use (summarized in Table 1). The approximate location of the diversion point or points for these water rights/permits and pending applications is shown in Appendix B Figure B2. Of the water rights/permits, 16 are for irrigation use, 3 for municipal use, 4 for commercial use, and 1 for institutional use.

The eight non-irrigation water rights/permits are summarized in Table 4. The Town of Irene and the City of Freeman both purchase their water from a rural water system but keep their water rights on standby for emergency use, so their average annual withdrawal is estimated to be zero (Drinking Water, 2023). Historically, average water use by non-irrigation appropriations limited solely by instantaneous diversion rate have been estimated as pumping 60% of the time at the maximum permitted diversion rate. For water rights/permits limited to an annual volume, full use of that volume is assumed for estimation of average annual withdrawal. Appropriative non-irrigation water use is summarized in Table 4. The estimated average annual appropriative non-irrigation use from this portion of the Niobrara aquifer is 539.7 acre-ft per year. There are domestic wells completed into this portion of the Niobrara aquifer that do not require appropriative water permits or report annual pumpage. Due the development of rural water systems in the area and to their relatively limited diversion rates, it is assumed the volume pumped from domestic wells is negligible to the hydrologic budget for this aquifer.

Permit No.	Name of Permit Holder	Priority Date	Status	Use	Rate (cfs)	Annual Volume Limit (acre-ft)	Estimated Average Annual Use (acre-ft per yr.)
810-3	City of Freeman	01/01/1950	LC	MUN	1.26	n/a	0 (system on standby)
1229-3	Town of Irene	01/01/1915	LC	MUN	0.56	n/a	0 (system on standby)
5239-3	City of Freeman	10/17/1988	LC	MUN	0.33	n/a	0 (system on standby)
6524-3	Freeman Jr College & Freeman Academy	07/19/2004	LC	INS	0.07	n/a	30
6706-3	Pheasant Run Farm	02/21/2006	PE	COM	0.1	n/a	43
8216-3	B&K Dairy Farms LLC	02/01/2016	PE	COM	0.67	460	460
8597-3	CHS Farmers Alliance	02/22/2022	PE	COM	0.1	1.3	1.3
8626-3	Tri-Cross Renewable Energy	03/28/2022	PE	COM	0.1	4.6	4.6
Total							539.7

LC-water right, PE-water permit, MUN-municipal, INS-institutional, COM-commercial

The majority of water rights/permits for irrigation in South Dakota are required to report annual irrigation usage to the Water Rights Program. The 16 active irrigation water rights for this aquifer are summarized in Table 5. Reported use for 15 of the 16 active water rights/permits for irrigation from this portion of the Niobrara aquifer are summarized in Table 6. Water Permit No. 8684-3 is still in its five-year construction period and has not yet started irrigation. Water Right No. 5913-3 incorporated portions of another permit when licensed, so reported irrigation usage for the incorporated permit is also included in Table 6.

Report on Water Permit Application No. 8616-3

Table 5: Summary of Irrigation Water Rights/Permits (Water Rights, 2024b)						
Permit No.	Name of Permit Holder	Priority Date	Status	Rate (cfs)	Acres	Comments
5764-3	City of Freeman	03/15/1993	LC	0.24	27.5	irrigation reporting started in 2016
5913-3	Roger Schmidt	04/02/1981	LC	0.77	123	incorporates portions of 4679-3, starts being consistent in 2013
6708-3	David Huber	04/03/2006	LC	1.78	271	
7344-3	Michael Schultz	04/09/2012	PE	5.33	399	has been inspected, developed 21 extra acres
7448-3	Robert Heckenlaible	10/03/2012	LC	6.67	560	
7515-3	Greg Wirth	10/24/2012	PE	2.28	160	
7526-3	Derrick Walter	11/15/2012	PE	3.56	257	
7617-3	Brett Guthmiller	01/07/2013	LC	1.34	119	
7683-3	Roger Guthmiller	01/28/2013	LC	1.34	134	
7700-3	David Huber	02/14/2013	LC	2.22	160	
7893-3	Wayne or Trina Knutson	09/03/2013	LC	0.07	1.2	allows up to 3 acre-feet per year
8162-3	Don Schellpfeffer	05/28/2015	LC	1.78	122.65	
8260-3	Cameron Johnson	12/27/2016	LC	1.67	117.35	
8326-3	Jerry Nelsen	01/08/2018	PE	2.00	120	reported system destroyed in 2020 & no water available since
8416-3	Jerome Poeschl	12/02/2019	LC	1.56	116	
8684-3	Matthew Wirth	11/30/2022	PE	2.11	300	not yet irrigating
LC-license, PE-permit						

Average reported irrigation usage for the water rights/permits for irrigation from this portion of the Niobrara aquifer is 233 acre-ft per year over the entire period of record. Since the number of irrigation water rights/permits has continued to increase, the estimated average annual withdrawal rate for irrigation appropriations for the entire period of record may not accurately reflect the current level of development. The average annual withdrawal rate for irrigation appropriations from 2013 to 2023 better represents the current level of irrigation development in this portion of the Niobrara aquifer. Average reported irrigation usage from 2013 to 2023 for the water rights/permits in this portion of the Niobrara aquifer is 773 acre-ft per year. Water Permit Application No. 8616-3 is the result of a licensing inspection for Water Permit No. 7344-3, to reflect an additional 21 acres being irrigated by the irrigation systems authorized under Water Permit No. 7344-3. Since irrigation of these acres is being reported as part of water use under Water Permit No. 7344-3, the water use proposed by Application No. 8616-3 is assumed to be already reflected in the reported irrigation data. Typically, average irrigation rates in eastern South Dakota are less than 10 inches per acre per year (Water Rights, 2024b). Water Permit Nos. 8326-3 and 8684-3 have yet to report any use, so using this rate, average annual water usage is estimated at less than 350 acre-feet per year. Application No. 8779-3 and Application No. 8587-3 propose to irrigate a total of 166 new acres, estimated average annual water use for these applications is less than 138 acre-feet per year. Total estimated average annual irrigation use from this portion of the Niobrara aquifer is less than 1,261

Report on Water Permit Application No. 8616-3

Table 6: Reported Irrigation use (Water Rights, 2024e)

Year	No. Permits	Reported Pumping (acre-feet)
1981	1	0.0
1982	1	69.7
1983	1	35.6
1984	1	42.0
1985	1	50.0
1986	1	50.0
1987	1	120.0
1988	1	72.9
1989	1	136.6
1990	1	92.8
1991	1	106.1
1992	1	6.6
1993	1	0.0
1994	1	33.1
1995	1	29.4
1996	1	6.6
1997	1	9.0
1998	1	0.0
1999	1	0.0
2000	1	0.0
2001	1	0.0
2002	1	25.2
2003	1	7.7
2004	1	0.0
2005	1	0.0
2006	1	0.0
2007	2	23.1
2008	2	49.5
2009	2	28.3
2010	2	0.0
2011	2	141.4
2012	3	381.6
2013	13	999.1
2014	14	928.9
2015	15	724.6
2016	16	518.1
2017	17	616.8
2018	18	98.0
2019	18	20.5
2020	19	815.0
2021	19	1024.5
2022	19	1451.1
2023	15	1310.7
Max	19	1451.1
Min	1	0
1981-2023 Avg	5.2	233.1
2013-2023 Avg	16.6	773.4

Natural discharge from an aquifer can be used to gain understanding into the status of an aquifer's hydrologic budget when an estimated average annual recharge value is not available. The updated May 2016 estimate of natural discharge occurring from this aquifer to the Lower James Missouri aquifer is 1,803 acre-feet per year. Since this estimate is for a single point in time (May 2016), this value does not represent an average annual value for discharge from the aquifer but does offer insight into the magnitude of discharge from the western flank of the aquifer at the time the analysis was performed. Actual natural groundwater discharge from this aquifer (and therefore recharge to) is likely higher than indicated by this estimate. This is due to the direction of groundwater flow being generally from the center of the aquifer outward to the edges of the aquifer and this estimate is only for natural discharge from the western side of the aquifer. Additionally, Kilts (2023b) estimated discharge from this portion of the Niobrara aquifer to the Upper Vermillion Missouri: West aquifer downgradient of the well site for Water Permit No. 8684-3 to be 685 to 890 acre-feet per year. Kilts (2023b) also noted there was likely additional natural discharge potential to the Upper Vermillion Missouri: South aquifer and other adjacent aquifers that have not yet been quantified. Therefore, there is a reasonable probability that over the total extent of this portion of the Niobrara aquifer, water is available for this application and the other applications summarized in Table 1. However, since this natural discharge estimate only serves as an indicator of the magnitude of discharge from the aquifer at the point in time of the estimate, it is worth emphasizing the importance of observation well data as part of assessing water availability in this aquifer.

Balance

Estimated average appropriative withdrawals from this aquifer, including the applications summarized in Table 1, is less than 1,801 acre-feet per year (irrigation: 1,123 acre-feet, non-irrigation: 540 acre-feet, Application Nos. 8587-3 and 8779-3: 138 acre-feet). There is no recharge estimate for this portion of the Niobrara aquifer. However, natural discharge estimates can be used to gain an understanding of the approximate amount of recharge an aquifer is receiving. Estimated overall natural discharge from this portion of the Niobrara aquifer to the Lower James Missouri aquifer to approximately 1,803 acre-feet per year for May of 2016. Kilts (2023b) estimated natural discharge to the Upper Vermillion: West on the eastern side of the aquifer ranging between 685 to 890 acre-feet per year. This totals an estimated natural discharge ranging from 2,488 to 2,693 acre-feet per year based on the points in time the discharge was calculated. Kilts (2023b) also noted there is likely additional natural discharge occurring to the Upper Vermillion: South aquifer from this portion of the Niobrara aquifer. Based on these estimates of natural discharge from the aquifer, there is a reasonable probability that water is available from the overall extent of this portion of the Niobrara aquifer for the appropriation requested by this application.

Localized Budget

Localized budgets are utilized in subareas of aquifers where (based on the engineering judgment of Water Rights staff) a combination of significant hydrogeology characteristics and appropriative water use results in a locally distinct subarea of water availability from the overall water availability in an aquifer. Examples of where subareas are routinely utilized would be the Madison, Minnelusa, and Inyan Kara aquifers at locations in close proximity to the aquifer outcrop

areas in the Black Hills (Water Rights, 2024b). For this portion of the Niobrara aquifer the potentiometric surface mapping consistently indicates that water movement is generally from the central area of the aquifer to the outer edges of the aquifer indicates potential for differing water availability between the various flanks of the aquifer.

Figure 8 shows the water rights/permits in the vicinity of the localized natural discharge estimate summarized in Table 3 and in Kilts (2024). The water rights/permits associated with the localized natural discharge estimate shown in Table 3 (approximately 346 acre-feet per year) are Water Right Nos. 7344-3 and 7700-3. Given the close proximity of Water Right No. 7700-3 to the natural discharge area to the south (B-B' line) of the one represented by the C-C' line, Water Right No. 7700-3 is likely also utilizing some amount of natural discharge occurring to the south of the discharge area being examined in this localized budget. Water use for the water rights associated with the localized natural discharge estimate summarized in Table 3 is shown in Table 7. Water Right No. 7700-3 reported no pumping in 2022, due to the system having been damaged in a storm (Water Rights, 2023e).

Table 7: Reported Irrigation by Year in the Local Budget Area in Acre-Feet (Water Rights, 2024e)				
Permit No.	7344-3	7700-3	Total	Comments
Priority Date	04/09/2012	02/14/2013		
Permitted Acres	420	146	566.0	
Total Appropriation	840	292	1132.0	
2023	233.3	58.9	292.2	
2022	259.55	0.00	259.6	system for 7700-3 damaged in a storm
2021	155.6	15.5	171.1	
2020	227.0	51.6	278.6	
2019	0.0	0.0	0.0	
2018	51.7	0.0	51.7	
2017	168.8	42.4	211.2	
2016	205.1	28.3	233.3	
2015	316.9	56.6	373.4	
2014	181.4	120.2	301.6	
2013	228.0	141.4	369.4	
2012	109.4	n/a	109.4	
Average (2012-2023)			221.0	

This application is seeking to permit 21 acres for irrigation that have already been developed, water use for this application is already reflected in Table 7 under the use for Water Permit No. 7344-3. This results in a localized estimated average annual water use of 221 acre-feet per year. The estimated localized natural discharge in this area is 346 acre-feet per year (Table 3). Withdrawals exceeding recharge and groundwater movement into a localized area, can result in a localized long-term decreasing trend in local water levels (that does not eventually stabilize in relation to withdrawals) governing local water levels rather than climatic conditions. However, for this local budget, estimated local natural discharge exceeds withdrawals indicating that on the local scale water is available. Since this natural discharge estimate only serves as an indicator of the magnitude of recharge to a localized aquifer area at the points of time of the estimate, it is worth emphasizing the importance of observation wells as part of monitoring this aquifer. The only observation well in this localized area is HT-2022B for which limited data is available, depending

on the aquifer it takes five to ten years of data (depending on climatic conditions) before conclusions can be drawn on average water availability from observation well data.

In the instance of this localized budget for a subarea of this portion of the Niobrara aquifer, the localized area presented is not considered a separate groundwater source pursuant to SDCL 46-6-3.1. The localized budget is presented in the water availability section of this report for general information. The review of this localized budget serves more as a check of potential for cumulative appropriative use in a localized area to result in unlawful impairment of existing domestic water users and water rights over a longer-term time scale than is typically reviewed as part of the potential for unlawful impairment. The potential for unlawful impairment review generally focuses more on the potential for direct impact and unlawful impairment of existing users as a result of drawdown created from pumping by just the proposed appropriation.

Potential for Unlawful Impairment

Area water rights/permits completed into this portion of the Niobrara aquifer are shown in Figure 8 and summarized in Tables 4 and 5. The nearest water right/permit to the well site for this application is Water Permit No. 5764-3 for irrigation of 27.5 acres located approximately 1.5 miles to the northeast. The nearest domestic well on file with the Water Rights Program not under the last name of Schultz is for O. Stahl drilled in 2017 located approximately 0.7 miles to the west based on the location information provided by the well driller (Water Rights, 2023a). There could potentially be other domestic wells completed into the Niobrara aquifer near the diversion point that are not on file with the DANR-Water Rights Program. Since this application is in response to a licensing inspection that found an additional 21 acres have been developed and are being irrigation, no additional impacts from pumping are expected if this application is approved.

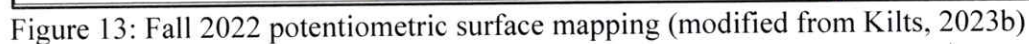
In 2013, the Water Rights Program received a complaint of a domestic well being impacted in this portion of the Niobrara aquifer in the general area of Application No. 8579-3; however, when investigated, it was determined that the well had likely collapsed and was not an adequate well as defined by Administrative Rules of South Dakota (ARSD) 74:02:04:20(6) (Water Rights, 2023d). ARSD 74:02:04:20(6) defines an adequate well as, “a well constructed or rehabilitated to allow various withdrawal methods to be used, to allow the inlet to the pump to be placed not less than 20 feet into the saturated aquifer or formation material when the well is constructed, or to allow the pump to be placed as near to the bottom of the aquifer as is practical if the aquifer thickness is less than 20 feet”. In 2015, a complaint was received that Water Permit No. 7526-3 (near the northern edge of this portion of the Niobrara aquifer) was impacting springs; however, the springs were identified as artesian in nature and artesian head pressure is not protected as a means of delivery. Therefore, it was concluded that no unlawful impairment was occurring (Water Rights, 2023d), since in the case of Water Permit Application No. 2313-2 for the Coca-Cola Bottling Company of the Black Hills the Water Management Board adopted findings that noted that if the increased costs or decreased production as a result of the impacts of legitimate users on artesian head pressure could be considered an adverse impact, it would conflict with SDCL 46-1-4 (Water Rights, 1995). SDCL 46-1-4 requires the water resources of the state be put to beneficial use to the maximum extent of which they are capable (Water Rights, 1995).

On May 4th, 2022, the South Dakota Water Management Board took action to defer Application No. 8579-3 for up to two years to allow for study to determine if existing irrigation in the area was unlawfully impairing two adequate domestic wells located approximately 3.2 miles to the south of the well site for this application (Water Rights, 2023b). As a result, Application No. 8616-3 (this application) was given a deferral recommendation based on its proximity to the domestic wells (Mehlhaf wells) and held in abeyance. On January 10th, 2023, the Water Rights Program was notified that the water supply from the adequate domestic wells in question had been replaced with connections to a rural water system. Kilts (2023b) included extended discussion on the potential for unlawful impairment if new acres were to be permitted for irrigation under Application No. 8579-3. Kilts (2023b) concluded that development in the area of Application No. 8579-3 in this portion of the Niobrara aquifer is reaching the point where potential for unlawful impairment of existing adequate domestic wells (beyond the domestic users who have connected to rural water) is starting to become possible. This is due to a combination of a dry climatic period and the cumulative effects of heavy irrigation pumping in this area of the aquifer. Kilts (2023b) also noted a more in-depth analysis requires a combination of further information and an extensive groundwater modeling effort using specialized groundwater modeling software to account for the locally complex hydrogeologic conditions in this area and cumulative impacts from the multiple appropriative wells in the area.

The initial complaint of unlawful impairment of two domestic wells was made in Fall of 2021. Water Permit No. 7344-3 was not included as part of the Fall 2021 shut down based on the available hydrogeologic information indicating the most likely irrigation wells causing an impact were those located downgradient (based on the 1986 and May 2016 potentiometric surface mapping) of the domestic wells. Water Permit No. 7344-3 was only added to the complaint after the domestic well owner indicated that domestic well recovery was notable after the irrigation system to the north shut down. Later information from the permit holder for Water Permit No. 7344-3 indicated that in Fall of 2021, he was pumping from the storage pond and not the Niobrara wells.

To look at the potentiometric surface of the aquifer in this area under a combination of a dry climatic periods and the cumulative effects of heavy irrigation pumping Kilts (2023b) generated potentiometric surface mapping for Fall 2022. This mapping is shown in Figure 13. While the Fall 2022 potentiometric surface mapping does not exclude Water Permit No. 7344-3 from contributing to cumulative drawdown in the area of the domestic wells, it does suggest that the water right/permits downgradient of the domestic wells and in closer proximity to the domestic wells than Permit No. 7344-3 have a larger contribution to cumulative pumping impacts in the area of the domestic wells.

There are also several other indicators that, while not conclusive, are suggestive of Water Permit No. 7344-3 having limited contribution to the cumulative drawdown in the area of the domestic wells. In considering observation wells HT-2022A and HT-2022B, HT-2022A (Figure 9) appears to be responding more to a single well or wells pumping and shutting down on the same schedule. HT-2022B (Figure 10) appears to be responding to cumulative impacts of multiple irrigation wells operating on different schedules. Distinctive recovery behavior in HT-2022B is only seen after the shut off order (July 20, 2022, to July 27, 2022) and at the end of the irrigation season. But HT-2022A has clear distinctive recovery behavior showing up multiple times during



While it cannot be relied upon to make an official decision, anecdotal information (Huber, 2023) suggests that to the immediate north of the Mehlhaf domestic wells there is an area of the Niobrara Formation that does not have sufficient transmissivity to act as an aquifer. Additionally, the more northern of the two Mehlhaf domestic wells has a very low estimated transmissivity value (Appendix C) and the initial attempt to drill this well slightly to the north resulted in a dry hole into the Niobrara Formation (Water Rights, 2023a). If an area exists where the Niobrara Formation does not have sufficient transmissivity to act as an aquifer between the wells for this application and the domestic wells, the area would act as a boundary (or partial boundary depending on the exact extent of the area) limiting pumping impacts from the wells for this application on the Mehlhaf domestic wells. Additionally, if this area exists where the Niobrara Formation does not have sufficient transmissivity to act as an aquifer, it could exacerbate pumping impacts from high-capacity wells to wells between the high-capacity wells and the area where the Niobrara Formation does not have sufficient transmissivity to act as an aquifer. This is typically referred to as a negative boundary condition. In the case of a negative boundary condition, drawdown is greater between

the negative boundary condition and the pumping well than if the negative boundary condition was not present.

During the 2022 irrigation season appropriate pumping was shut down in the area of observation wells HT-2022A and HT-2022B. Water Rights/Permit Nos. 7244-3, 7700-3, 7448-3, 7682-3, 7617-3 were issued shutoff orders from July 20, 2022, to July 27, 2022 (Water Rights, 2024b). The location of these water rights/permits and observation wells in relation to each other is shown in Figure 8. The water level data collected by datalogger for 2022 for these two observation wells is shown in Figure 13 along with the date period of the shutoff order. The water levels in HT-2022A can be seen to make faster recovery with the cessation of pumping than in HT-2022B. There are couple of things this response can be indicative of. The magnitude of the seasonal response of water levels in the aquifer due to pumping near HT-2022A may be affected more by the pumping of a single permit rather than cumulative drawdown caused by several permits. Another possibility is that HT-2022A could be closer to a recharge source than HT-2022B. Figure 13 and Figure 9 also point to water levels in the aquifer at HT-2022A making a quicker and more complete recovery with the cession of pumping at the end of the irrigation season than HT-2022B.

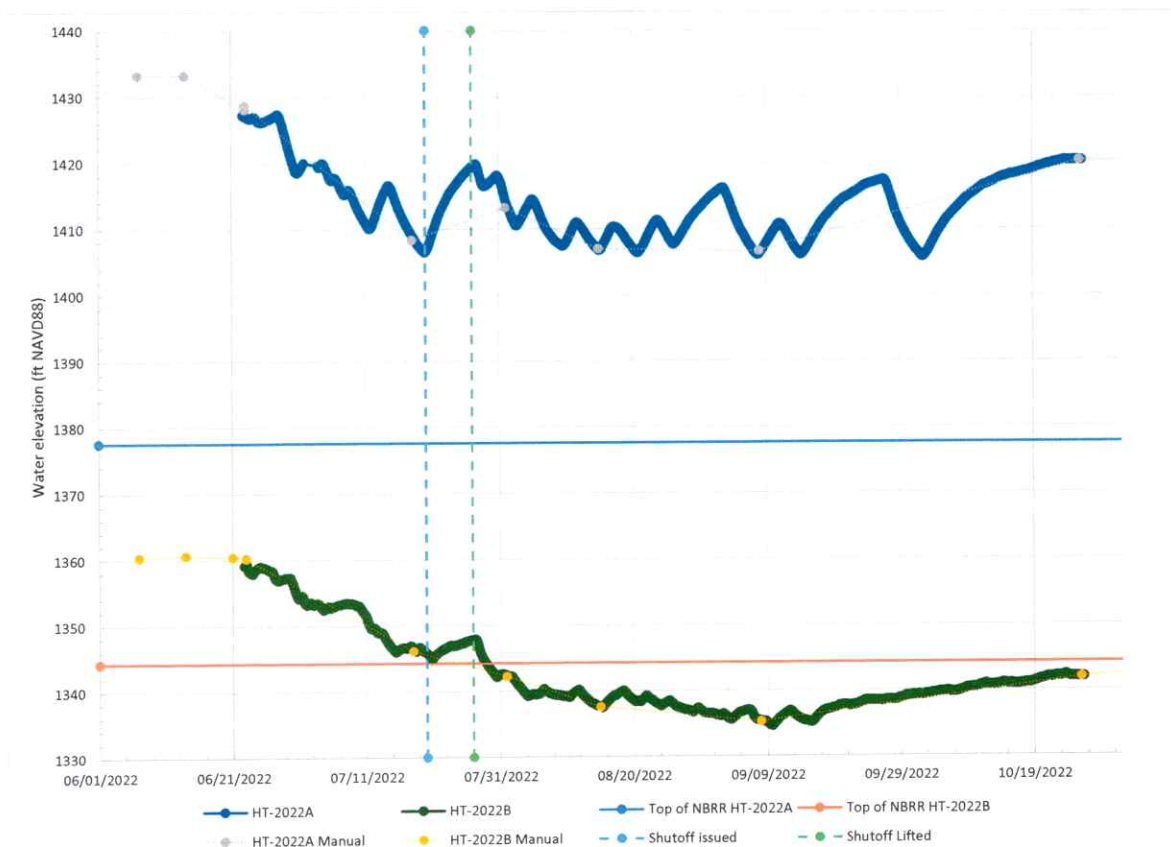


Figure 13: Water level data collected by datalogger for June 2022 to November 2022 for observation wells HT-2022A and HT-2022B (Mathiowetz, 2024 and Water Rights, 2024c).

A more in-depth analysis would require a combination of further information and an extensive groundwater modeling effort using specialized groundwater modeling software to account for the locally complex hydrogeologic conditions and cumulative impacts from the multiple appropriative wells in the area.

Conclusions

1. Water Permit Application No. 8616-3 proposes the irrigation of an additional 21 acres with no additional diversion rate from the wells authorized by Water Permit No. 7344-3 completed into the Niobrara aquifer.
2. Water Permit No. 7344-3 appropriates 5.33 cfs for three wells completed into the Niobrara Aquifer located near the center of the SE $\frac{1}{4}$ Section 8; NE $\frac{1}{4}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$ Section 9; all in T98N-R56W for the irrigation 399 acres. A storage pond/reservoir is in the W1/2 SE1/4 section 9-T98N-R56W. An investigation of the permit found the system capable of diverting 2.56 cfs from the existing wells and irrigating an additional 21 acres. The irrigated acreage, including the 21 additional acres for this application, is in the SE $\frac{1}{4}$, S $\frac{1}{2}$ NE $\frac{1}{4}$ Section 8; SW $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$ Section 9; all in T98N-R56W. Combined this application, if approved, and Water Permit No. 7344-3 will authorize a total diversion rate of 2.56 cfs for irrigation of 420 acres.
3. On an aquifer wide scale, based on the hydrologic budget and observation well data, there is a reasonable probability that water is available in the aquifer to meet the water use proposed by this application.
4. Based on a localized hydrologic budget, there is a reasonable probability that water is available in the aquifer to meet the water use proposed by this application.
5. This application is in response to a licensing inspection that found an additional 21 acres being irrigated. Therefore, no additional impacts beyond what already exists is expected to domestic uses or existing water right/permits with adequate wells.


Whitney Kilts
Natural Resources Engineer III
SDDANR-Water Rights Program

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Appendix A: Select Geologic Cross Sections from Lindgren and Hansen, (1990)

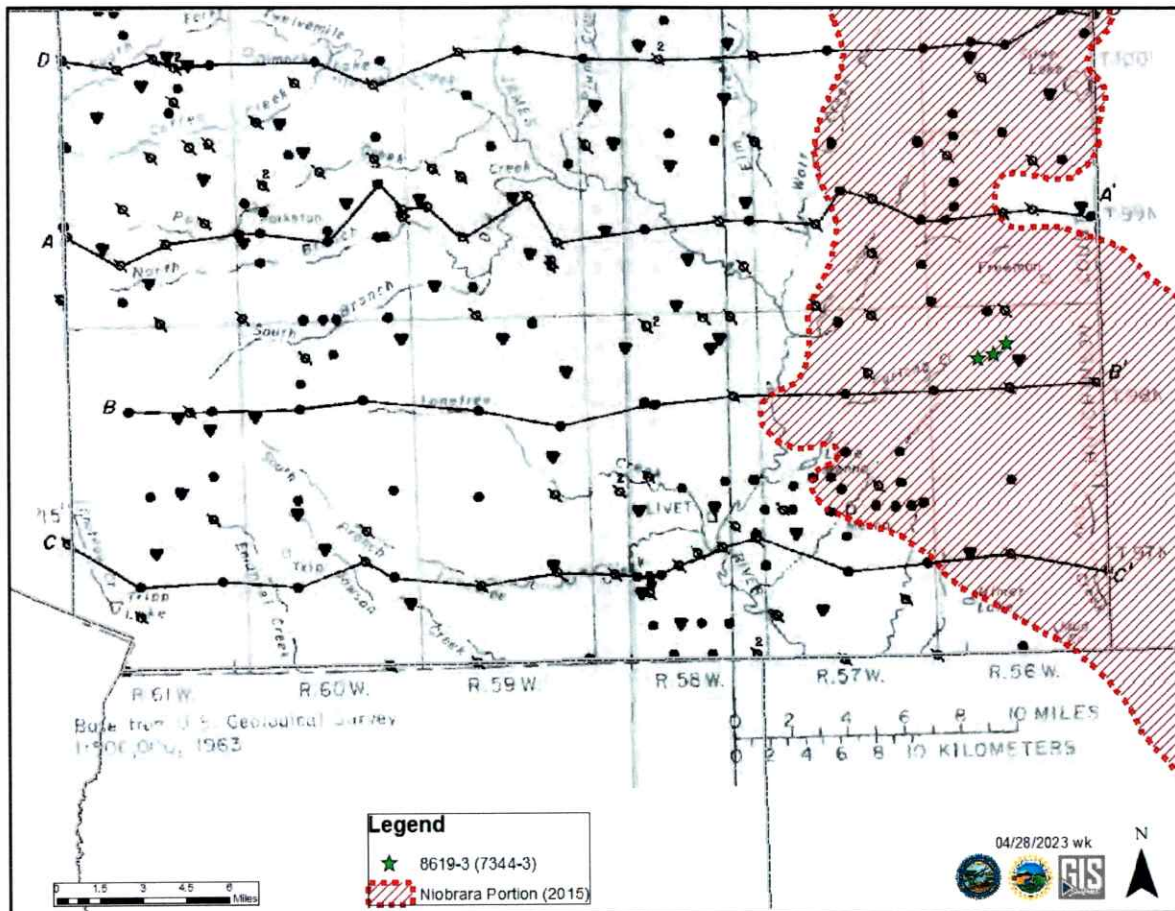


Figure A1: Location of Geologic Cross Sections from Lindgren and Hansen, (1990) (modified from Lindgren and Hansen, 1990).

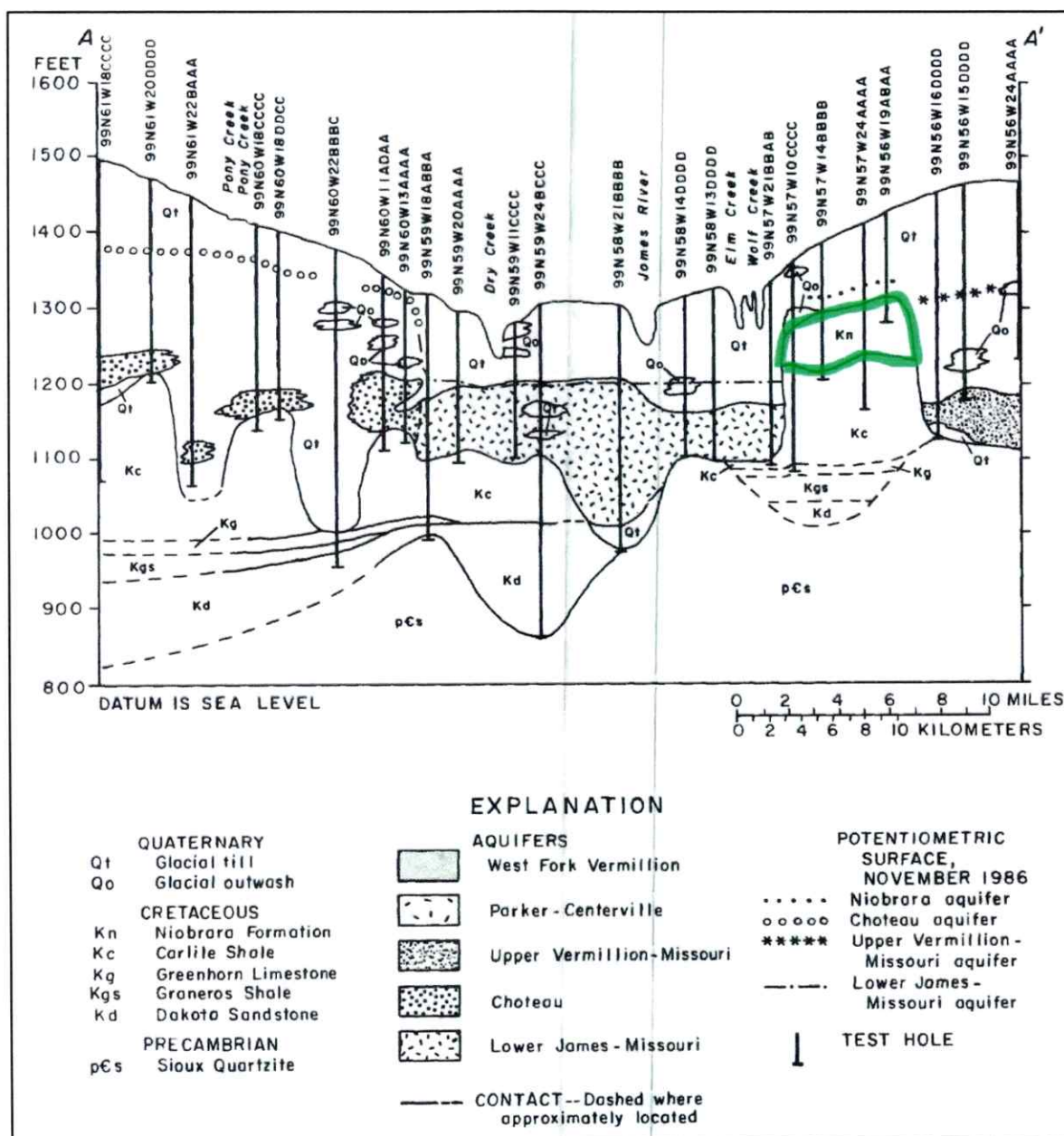


Figure A2: Geologic Cross Section A-A' with portion of Niobrara of interest indicated with green highlight (modified from Lindgren and Hansen, 1990). Elevation reference NGVD29.

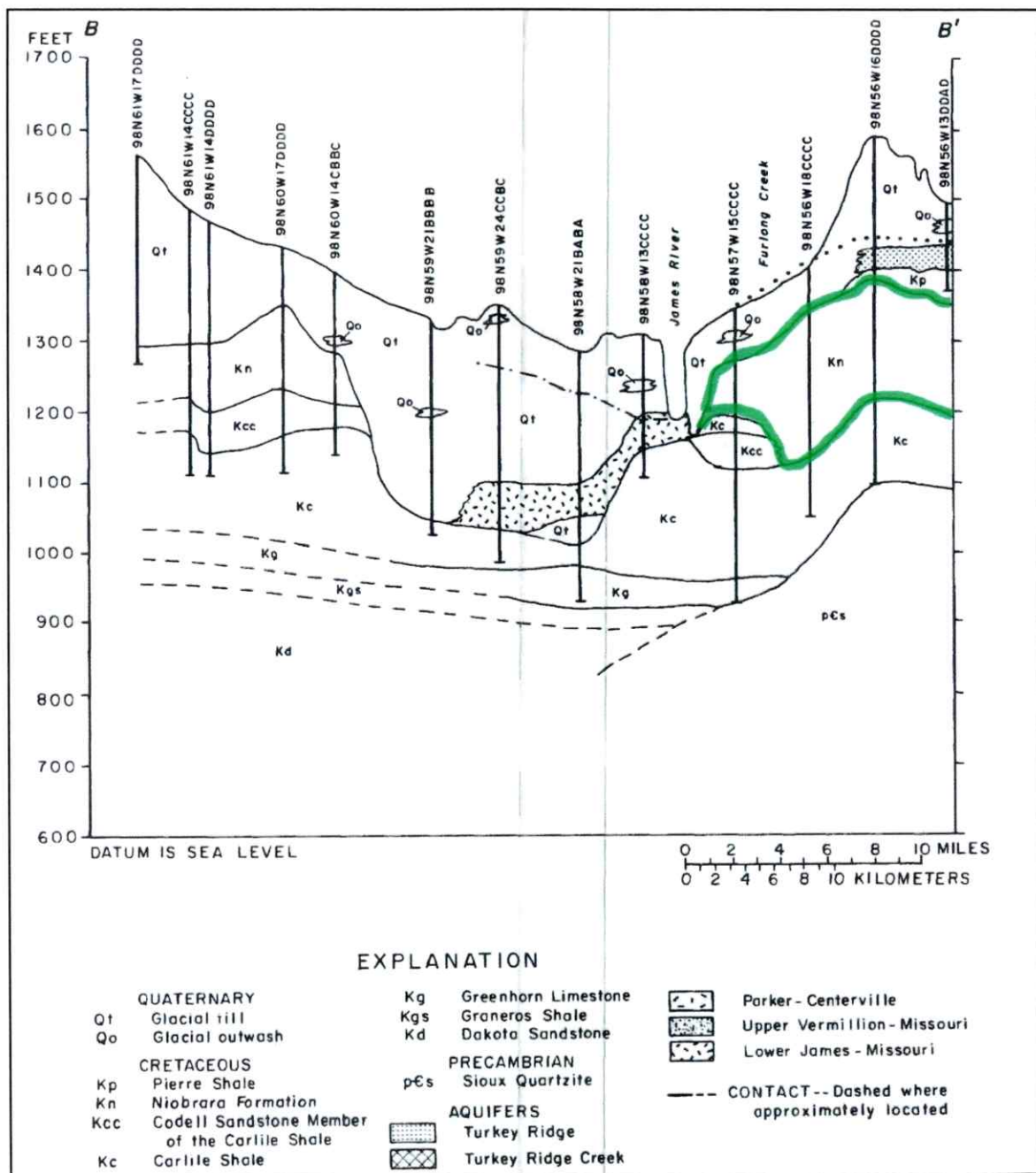


Figure A3: Geologic Cross Section B-B' with portion of Niobrara of interest indicated with green highlight (modified from Lindgren and Hansen, 1990). Elevation reference NGVD29.

Appendix B: Additional Maps

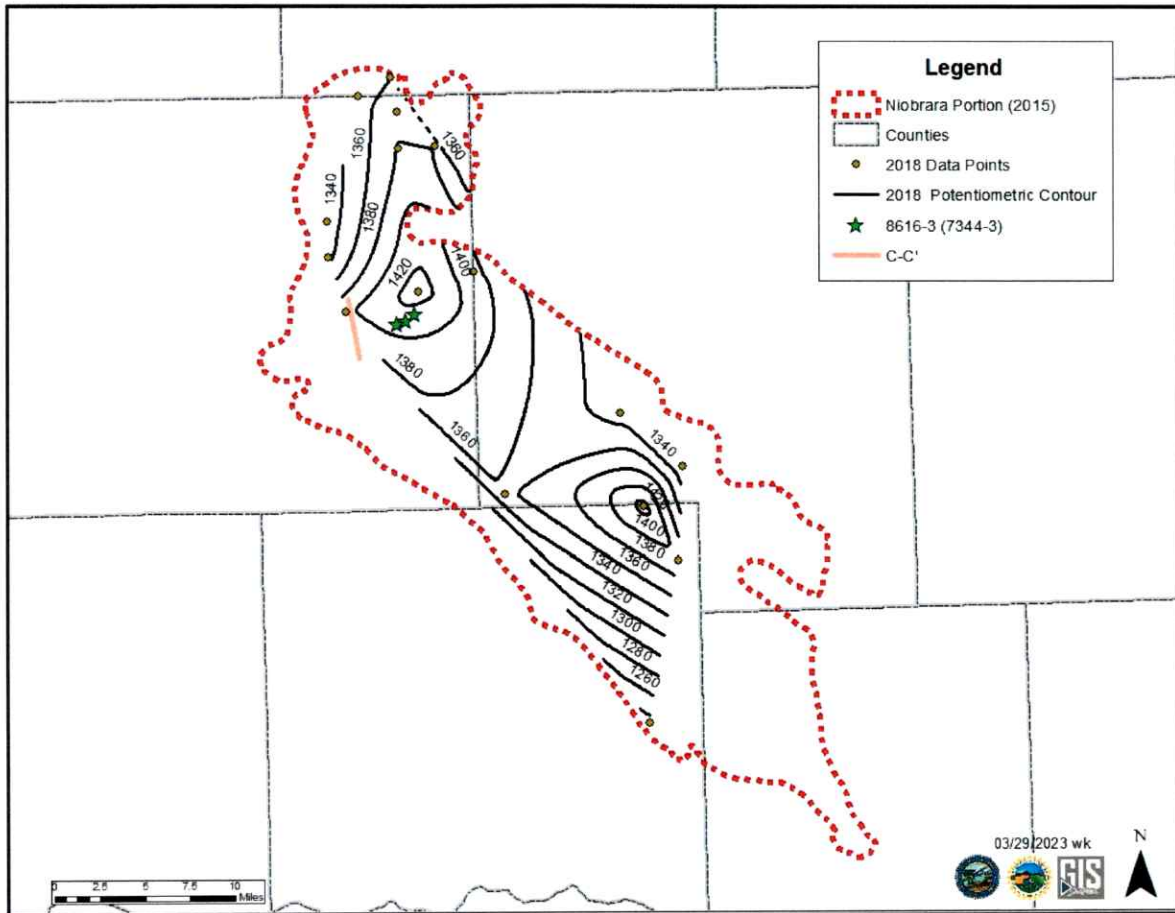


Figure B1: Potentiometric surface contours from May 2018 (Water Rights, 2023a and Water Rights, 2023c). Elevation reference NAVD88.

Report on Water Permit Application No. 8616-3

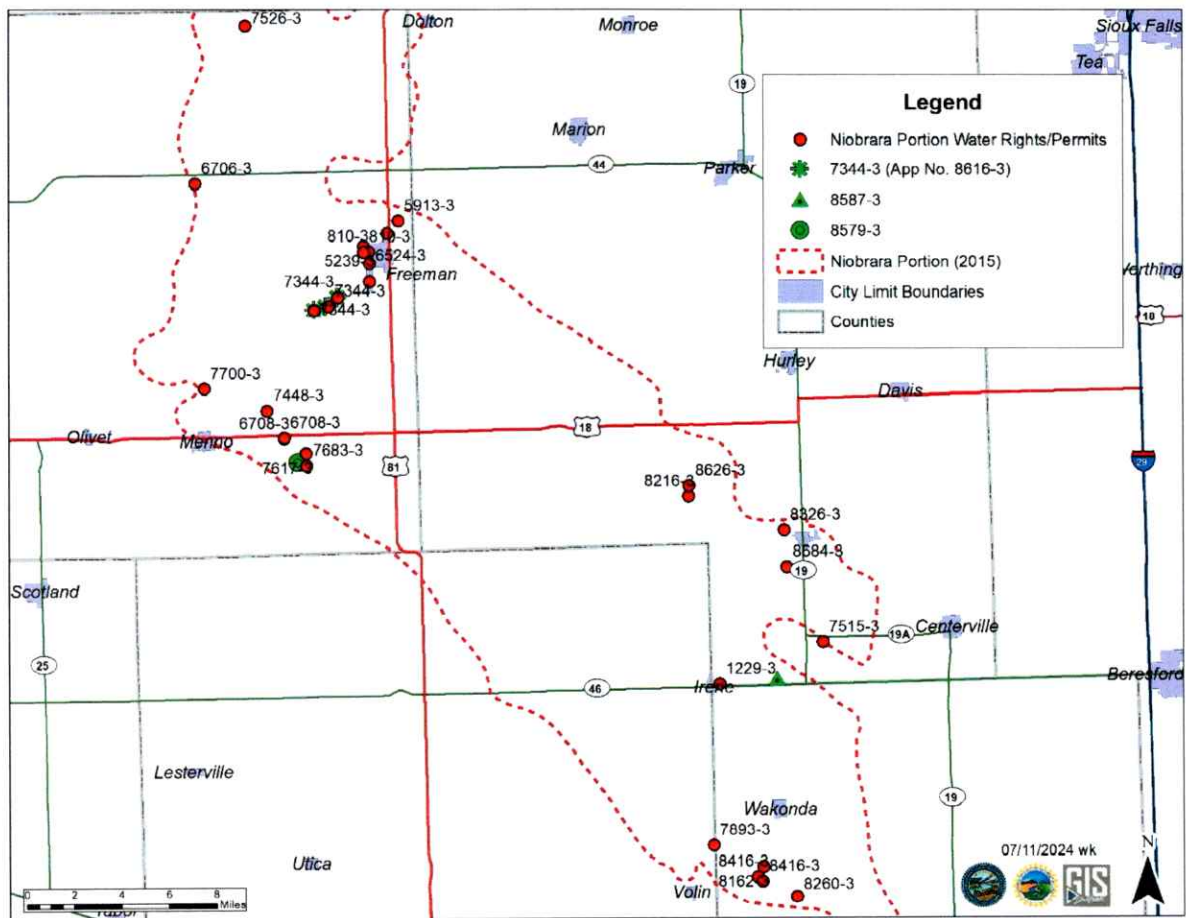


Figure B2: Location of active water rights/permits and pending applications from this portion of the Niobrara aquifer (Water Rights, 2024a and Water Rights, 2024c).

Appendix C: Estimated Transmissivity from Specific Capacity

Pumping data from both domestic and appropriative wells were used to calculate specific capacity, which was then used to estimate transmissivity and hydraulic conductivity. This data is summarized in Table C1. All well completion reports on file with the Water Rights Program for this portion of the Niobrara (Water Rights, 2023a) for sufficient pumping data to calculate specific capacity. The Aqtesolv online conversion tool was then used to estimate transmissivity from specific capacity (Aqtesolv, 2023). Aquifer thickness and/or screened interval was then used to calculate hydraulic conductivity from transmissivity. Typical values for hydraulic conductivity for different geologic materials are shown in Figure C1.

Tomhave and Schulz (2004) define the Niobrara Formation as “White to dark-gray argillaceous chalk, marl, and shale. Weathers yellow to orange. Contains thin, laterally continuous bentonite beds, chalky carbonaceous shale, minor sand, and small concretions.” Chalk is a carbonate rock and the well completion reports, along with other available information suggest that this portion of the Niobrara aquifer is much more fractured than cavernous (Water Rights, 2023a). Therefore, values for hydraulic conductivity would be expected to be on the lower end of the range for carbonate rocks (0.001 to 10 ft/d), especially since the Niobrara Formation can contain shale which has an even low range for hydraulic conductivity. In looking at Table C1, the middle well for No. 7526-3 appeared to have a non-typical amount of sand in the screened interval compared to other wells in this portion of the Niobrara aquifer, based on all of this information, the transmissivity estimate for the middle well for No. 7526-3 and the other higher value estimates were categorized as outliers and not included in the calculation of average transmissivity values for this portion of the Niobrara aquifer.

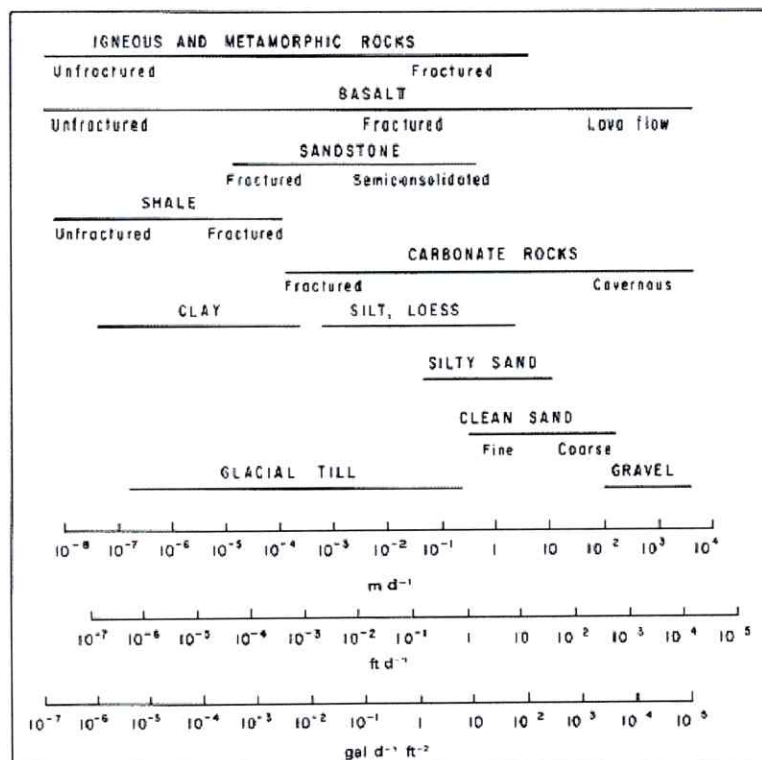


Figure C1: Typical values for hydraulic conductivity for different geologic material (Aqtesolv, 2019)

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Table C1: Table of Estimate Transmissivity and Hydraulic Conductivity from Specific Capacity Data (Aqtesolv, 2023; Water Rights, 2023a)

Well*	Construction Year	Specific Capacity (gpm/ft drawdown)	Transmissivity (square ft per day)	Hydraulic Conductivity (ft/d)	Comment
Section 1: Data for wells within 1 mile of C-C'					
Melhaf	2019	0.50	133.69	6.68	
Bradley	2018	4.29	1145.91	11.94	
Section 1 Average		2.39	639.80	9.31	
Section 2: Data for other wells					
Taylor	1994	0.05	13.83	0.13	
Kramer	1981	0.08	21.39	0.31	
Berberich	1991	0.15	40.11	0.50	
Pekron	2010	0.11	28.14	0.55	
Waltner	2002	0.09	22.92	0.62	
Swenson	2009	0.09	24.95	0.71	
Graber-well 2	2018	0.18	48.91	0.80	
Ryken	2009	0.18	48.61	0.81	
6706-3	2005	0.30	81.41	0.93	
Hofer	1983	0.11	28.15	0.94	
Houser	2022	0.14	38.20	0.95	
D. Melhalf	2012	0.22	59.42	0.97	
Hofer	1986	0.24	64.54	1.09	
Langeland	2013	0.28	73.59	1.34	
Boars	2019	0.31	81.85	1.44	
Aman	2014	0.33	87.51	1.51	
Graber-well 1	2018	0.37	97.82	1.60	
stahl	2017	0.29	77.13	1.84	
Gross	1981	0.23	60.16	2.15	
Eisenbeis	2008	0.50	133.69	2.30	
Mehlhaff	2013	0.43	114.59	2.34	
Hanson	1993	0.40	106.95	2.43	
Plate	2015	0.56	148.54	2.97	
Olsen	2021	0.35	92.84	3.09	
Highland 2	2015	0.70	188.16	3.14	
7654-3	2013	0.71	190.99	3.18	
T. Nelson	2021	0.50	133.69	3.34	
Koerner	1980	0.50	133.69	3.61	
6524-3	2005	0.90	240.64	3.82	
Highland 1	2015	0.50	133.69	4.46	
Deckert	2002	0.60	160.43	4.58	
Madsen	1999	1.03	276.60	4.69	
8626-3	2017	2.62	699.74	5.00	
Zimmarmen	1991	0.80	213.90	5.35	
8162-3 North	2014	1.54	410.16	5.47	
7344-3 well 2	2012	3.16	844.34	5.59	
Streyle	2012	0.94	250.67	5.97	
Hofer	1982	1.00	267.38	6.08	
5764-3	1992	2.50	668.45	6.68	
Kleinsasser	1987	0.55	147.06	9.19	
Schultz	2008	0.78	208.89	9.95	
5239-3	1988	2.17	581.28	10.57	
Streyle	2016	2.50	668.45	11.14	
Gross	1982	1.00	267.38	12.15	
7526-3 north	2013	4.59	1227.76	12.28	
Vandewalle	2022	2.14	572.95	15.49	
Booth	2013	3.60	962.57	16.04	
7893-3	2013	2.50	668.45	16.71	
Rang	1982	1.00	267.38	16.71	
8067-3 well2	2015	6.98	1399.06	17.94	
T. Melhalf	2012	2.14	572.96	18.48	
Glanzer	2015	3.75	1002.67	18.92	
L. Hofer	1984	1.88	501.34	20.05	
7344-3 well 1	2012	7.69	2056.68	21.65	
Waltner	2013	5.00	1336.90	22.28	
H. Waltner	1988	3.75	1002.67	22.79	
8067-3 well 1	2015	5.45	1458.42	24.31	
7617-3	2013	13.27	3546.87	24.46	
8162-3 south	2012	7.14	1909.85	27.28	
Schrag	2013	1.06	283.11	28.31	
T. Waltner	1988	2.25	601.60	28.65	
Fliginger	1986	2.00	534.76	35.65	
8260-3	2016	11.17	2986.69	37.81	
Olsen	2018	3.00	802.14	40.11	
Stone	2015	3.00	802.14	40.11	
Waltner	1998	4.50	1203.21	57.30	"well fractured chalk"
Perterson-north	2007	4.50	1203.21	60.16	siltstone
Perterson-south	2007	4.50	1203.21	63.33	siltstone
Massey	2018	11.54	3085.15	81.19	
W. Waltner	1984	2.14	572.96	95.49	
Section 2 Average		2.16	572.08	14.57	
Section 1 & 2 Average		2.17	573.96	14.42	
Section 3: Outlier well data based on Hydraulic Conductivity and well log information					
7526-3 middle	2014	41.67	11140.78	139.26	sand in screened interval
7683-3	2013	81.25	21724.60	192.25	
Wirth	2014	25.00	6684.49	222.82	

*Well name based on either permit number or last name on well completion report (no attempt was made to verify spellings)



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

**NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPERS RIGHT AWAY.**

August 21, 2024

Michael Schultz
43721 281st Street
Freeman SD 57029

Dear Mr. Schultz:

Water Permit Application No. 8616-3 for irrigation use has been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Freeman Courier printed in Freeman SD (Ph # 605 925-7033) and the Daily Press & Dakotan printed in Yankton SD (Ph # 605 665-7811). You will need to contact the newspapers and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspapers to authorize publication of your Notice and to arrange for payment. Early contact with the papers can eliminate delays. Upon receiving authorization from you, the publishers have been instructed to publish your notice. The newspapers have also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Rachel Rodriguez

Rachel Rodriguez
Water Rights Program
(605) 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

NOTICE OF HEARING on Application No. **8616-3** to Appropriate Water

Notice is given that Michael Schultz, 43721 281st St, Freeman SD 57029 has filed an application for a water permit to irrigate an additional 21 acres. Water Permit No. 7344-3 appropriates 5.33 cubic feet of water per second (cfs) from three wells completed into the Niobrara Aquifer (163, 180, and 209 feet deep) located near the center of the SE 1/4 Section 8; NE 1/4 SW 1/4, SE 1/4 NE 1/4 Section 9; all in T98N-R56W for irrigation of 399 acres. The permit also authorized a storage pond/reservoir which is located in the W 1/2 SE 1/4 Section 9-T98N-R56W. An investigation of the permit found the system capable of diverting 2.56 cfs from the existing wells and irrigating an additional 21 acres. The irrigated acreage, including the 21 additional acres, is located in the SE 1/4, S 1/2 NE 1/4 Section 8; SW 1/4, S 1/2 NW 1/4, NE 1/4, N 1/2 SE 1/4 Section 9; all in T98N-R56W. Water can be pumped from the three wells to the storage pond and then applied to the acreage. This application, if approved, and Water Permit No. 7344-3 will authorize a total diversion rate of 2.56 cfs for irrigation of 420 acres. This site is located approximately 2 miles southwest of Freeman SD.

South Dakota Codified Law (SDCL) 46-2A-4(10) provides that “if the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the Chief Engineer’s recommendation and no hearing may be held before the board, unless the Chief Engineer makes a finding that an application, even if uncontested, presents important issues of public policy or public interest that should be heard by the board.” In this case, the Chief Engineer finds that this application presents important issues of public interest that should be heard by the Water Management Board.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8616-3 with qualifications because 1) there is reasonable probability that there is unappropriated water available for the applicant’s proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing domestic water uses and water rights, 3) the proposed use is a beneficial use and 4) it is in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board. The Chief Engineer’s recommendation with qualifications, the application, and staff report are available at <https://danr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

The Water Management Board will consider this application at **10:00 AM** (Central Time) on **October 2, 2024**, in the Matthew Training Center, Joe Foss Bldg, 523 E. Capitol Ave., Pierre SD. The Chief Engineer’s recommendation is not final or binding upon the Board. The Board is authorized to 1) approve, 2) approve with qualifications, 3) defer, or 4) deny this application based on the facts presented at the public hearing.

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The petition shall be in writing and shall include a statement describing the unique injury upon approval of the application on the petitioner, the petitioner's reasons for opposing the application, and the name and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained. The hearing is an adversary proceeding and any party has the right to be present at the hearing and to be represented by a lawyer. These and other due process rights will be forfeited if they are not exercised at the hearing and decisions of the Board may be appealed to the Circuit Court and State Supreme Court as provided by law.

The **October** hearing date will be automatically delayed for at least 20 days upon written request to the Chief Engineer from the applicant or any person who has filed a petition to oppose the application. The request for an automatic delay must be filed by **September 9, 2024**. If an automatic delay is requested, the hearing will be rescheduled for a future Board meeting and personal notice will be provided to the applicant and all petitioners regarding the time, date, and location.

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Under SDCL 1-26-17(7) notices must state that "if the amount in controversy exceeds \$2,500.00 or if a property right may be terminated, any party to the contested case may require the agency to use the Office of Hearing Examiners by giving notice of the request to the agency no later than ten days after service of a notice of hearing issued pursuant to SDCL 1-26-17." This is a Notice of Hearing, service is being provided by publication, and the applicable date to give notice to the Chief Engineer is **September 9, 2024**. However, since this particular matter is a water permit application and not a monetary controversy in excess of \$2,500.00 or termination of a property right the Chief Engineer disputes the applicability of this provision and maintains that the hearing must be conducted by the Board.

As applicable, the following provides the legal authority and jurisdiction under which the hearing will be held and the particular statutes and rules pertaining to this application: SDCL 1-26-16 thru 1-26-28; SDCL 46-1-1 thru 46-1-9, 46-1-13 thru 46-1-16; 46-2-3.1, 46-2-9, 46-2-11, 46-2-17; 46-2A-1 thru 46-2A-12, 46-2A-14, 46-2A-15, 46-2A-20, 46-2A-21, 46-2A-23; 46-5-1.1, 46-5-2 thru 46-5-26, 46-5-30.2 thru 46-5-30.4, 46-5-31, 46-5-32 thru 46-5-34.1, 46-5-38 thru 46-5-39, 46-5-46, 46-5-47, 46-5-49; 46-6-1 thru 46-6-3.1, 46-6-6.1, 46-6-10, 46-6-13, 46-6-14, 46-6-21, 46-6-26; and Board Rules ARSD 74:02:01:01 thru 74:02:01:25.02; 74:02:01:35.01.

Published once at an approximate cost of _____.

Rodriguez, Rachel

From: Rodriguez, Rachel
Sent: Tuesday, August 20, 2024 3:07 PM
To: courier@gwtc.net
Subject: 8616-3 Michael Schultz - Public Notice
Attachments: 8616-3 public.wmb_final.docx; FORM8.FRM.doc

Attached is a notice to be published on August 29, 2024.

Michael Schultz, 43721 281st St, Freeman SD 57029, 605-925-7307, has been notified to contact you to authorize publication and arrange for payment.

Please send the affidavit or return the attached Proof of Publication form ASAP to the Water Rights Program, 523 E Capitol Ave, Pierre SD 57501.

Let me know if you have questions. **Please acknowledge receipt of this email.**

Thank you,

Rachel Rodriguez
DANR | Program Assistant
Rachel.Rodriguez@state.sd.us



Rodriguez, Rachel

From: Rodriguez, Rachel
Sent: Tuesday, August 20, 2024 3:09 PM
To: Kelly Kronaizl
Subject: 8616-3 Michael Schultz - Public Notice
Attachments: 8616-3 public.wmb_final.docx; FORM8.FRM.doc

Attached is a notice to be published on August 28, 2024 in the Daily Press & Dakotan.

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Let me know if you have questions. **Please acknowledge receipt of this email.**

Thank you,

Rachel Rodriguez
DANR | Program Assistant
Rachel.Rodriguez@state.sd.us



AFFIDAVIT OF PUBLICATION

YANKTON DAILY PRESS AND DAKOTAN

MICHAEL SCHULTZ
43721 281ST ST
FREEMAN SD 57029

STATE OF SOUTH DAKOTA
COUNTY OF YANKTON

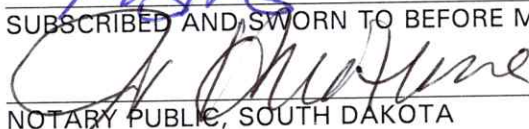
KELLY HERTZ, BEING FIRST DULY SWORN ON OATH DEPOSES
AND SAYS THAT (S)HE IS THE MANAGING EDITOR OF YANKTON
MEDIA INC, A CORPORATION, THE PRINTER AND THE PUBLISHER OF THE
YANKTON DAILY PRESS AND DAKOTAN, A LEGAL DAILY NEWSPAPER
PUBLISHED AND CIRCULATED IN THE CITY OF YANKTON, SAID COUNTY
AND STATE, AND ONE OF THE OFFICIAL NEWSPAPERS OF THE SAID
COUNTY OF FACTS STATED IN THIS AFFIDAVIT; THAT THE ANNEXED
NOTICE OF HEARING ON APPL

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE
NEWSPAPER ON THE 28th DAY OF August, 2024
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION
OF SAID NOTICE TO WIT \$80.32 ENSURES TO THE
BENEFITS OF THE PUBLISHER OF SAID NEWSPAPER AND THAT NO
AGREEMENT AND UNDERSTANDING FOR THE DIVISION THEREOF HAS
BEEN MADE WITH ANY OTHER PERSON, AND THAT NO PART THEREOF
HAS BEEN AGREED TO BE PAID TO ANY PERSON WHOMSOEVER.

PUBLISHED ON: 08/28/2024

FILED ON: 08/28/24


SUBSCRIBED AND SWORN TO BEFORE ME THIS 28th DAY OF August, 2024


NOTARY PUBLIC, SOUTH DAKOTA
MY COMMISSION EXPIRES 07/15/2028



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SEP 03 2024

OFFICE OF
WATER

Ad text :

NOTICE OF HEARING on Application No. 8616-3 to Appropriate Water

Notice is given that Michael Schultz, 43721 281st St, Freeman SD 57029 has filed an application for a water permit to irrigate an additional 21 acres. Water Permit No. 7344-3 appropriates 5.33 cubic feet of water per second (cfs) from three wells completed into the Niobrara Aquifer (163, 180, and 209 feet deep) located near the center of the SE 1/4 Section 8; NE 1/4 SW 1/4, SE 1/4 NE 1/4 Section 9; all in T98N-R56W for irrigation of 399 acres. The permit also authorized a storage pond/reservoir which is located in the W 1/2 SE 1/4 Section 9-T98N-R56W. An investigation of the permit found the system capable of diverting 2.56 cfs from the existing wells and irrigating an additional 21 acres. The irrigated acreage, including the 21 additional acres, is located in the SE 1/4, S 1/2 NE 1/4 Section 8; SW 1/4, S 1/2 NW 1/4, NE 1/4, N 1/2 SE 1/4 Section 9; all in T98N-R56W. Water can be pumped from the three wells to the storage pond and then applied to the acreage. This application, if approved, and Water Permit No. 7344-3 will authorize a total diversion rate of 2.56 cfs for irrigation of 420 acres. This site is located approximately 2 miles southwest of Freeman SD.

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SEP 03 2024

OFFICE OF
WATER

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Published once at the total approximate cost of \$80.32 and can be viewed free of charge at www.sdpublicnotices.com

Published August 28, 2024.

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OFFICE OF
WATER

AFFIDAVIT OF PUBLICATION

County of Hutchinson)

) ss.

State of South Dakota)

Jeremy Waltner, of said county and state, being duly sworn, on his oath, deposes and says: That The Courier is a weekly newspaper of general circulation and a legal newspaper as required by law, printed and published in the town of Freeman in said county and state by Jeremy Waltner, and has been such newspaper during the time hereinafter mentioned: That I, Jeremy Waltner, the undersigned, am publisher of said newspaper in charge of the advertising department thereof, and have personal knowledge of all the facts stated in this affidavit, and that the advertisement headed Application to appropriate water

a printed copy of which is hereto attached, was printed and published in the said newspaper for one successive issues to-wit:

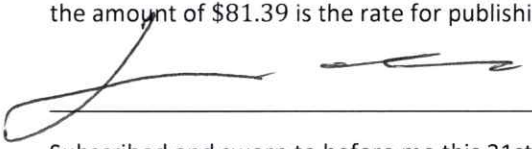
The first publication on:

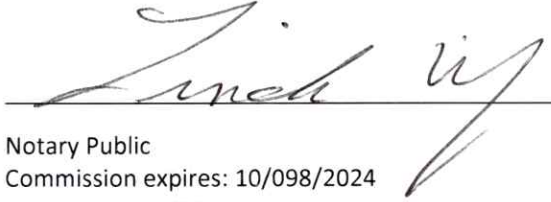
August 29, 2024

the second publication on:

and the third publication on:

That the full amount of the fees charged for publishing the same to-wit: The sum of \$81.39 insures solely to the benefit of the publisher of The Courier, that no agreement or understanding for any division thereof has been made with any other person whomsoever, and the amount of \$81.39 is the rate for publishing legal notices.


Subscribed and sworn to before me this 31st day of August 2024.


Notary Public

Commission expires: 10/098/2024

Publication fee: \$81.39

Notary fee:

Total: \$81.39

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SEP 30 2024

OFFICE OF
WATER

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Published once at an approximate cost of 81.39 and may be viewed for free at sdpublicnotices.com



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

OCT 11 2024

7344-3
8616-3

Michael Schultz
43721 281st St
Freeman SD 57029

Dear Mr. Shultz:

Enclosed is Water License No. 8616-3. This is the final water right document completing your process of obtaining a Water Right. Included with your license is a map prepared by the staff engineer who conducted the field investigation.

For your information SDCL 46-6-27 requires that if in the future, the owner of an existing well, constructs a replacement well and does not plan to use the old well, the old well is considered abandoned and must be plugged. Also, any well that is being used or is not considered abandoned must be valved and controlled, if flowing, or sealed and capped so that no leaking occurs either underground or at the surface.

So 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. If you have any questions, please contact our office.

Sincerely,

Eric Gronlund, Chief Engineer
Water Rights Program
(605) 773-3352

NOTES: Water Permit No. 7344-3 authorized construction of a 37 acre-foot storage pond which may be used in conjunction with lagoons as part of an animal confinement facility to fertilize and water crops at the same time. The applicable portions of Permit No. 7344-3 have been incorporated into Water Right No. 8616-3.

enclosures

STATE OF SOUTH DAKOTA
WATER LICENSE NO. 8616-3

(1) Michael Schultz, 43721 281st St, Freeman SD 57029, made Application No. 7344-3, April 9, 2012, for a water permit to divert 5.33 cubic feet of water per second from groundwater, three wells (Niobrara Aquifer), or a 37 acre-foot storage pond, Hutchinson County, South Dakota for irrigation purposes. Permit No. 8616-3, with a priority date of April 9, 2012, was approved July 2, 2012, and issued to the applicant for diversion of water with construction of the described water supply system to be completed on or before July 2, 2017, and for the application to beneficial use of water on or before July 2, 2021. The applicable portions of Water Permit No. 7344-3 have been incorporated into this license.

The permit holder made Application No. 8616-3, March 23, 2022, for a water permit to add an additional 21 acres to what is already authorized by Permit No. 7344-3. Permit No. 8616-3, with a priority date of March 23, 2022, was approved by the Water Management Board on October 2, 2024.

(2) It is certified that the permit holder has complied with the provisions of South Dakota State Law relating to completion of the construction of the water supply system and is entitled to divert 2.56 cubic feet of water per second for beneficial use. The locations of the diversion points are:

- SW Well: 1,340 ft W & 1,350 ft N of the SE corner Section 8, T98N, R56W (approx. center SE $\frac{1}{4}$) (Latitude 43.31761 & Longitude -97.48490)
- Middle Well: 1,340 ft E & 2,000 ft N of the SW corner Section 9, T98N, R56W (NE $\frac{1}{4}$ SW $\frac{1}{4}$) (Latitude 43.31950 & Longitude -97.47485)
- NE Well: 4,000 ft W & 3,920 ft N of the SW corner Section 9, T98N, R56W (approx. center NE $\frac{1}{4}$) (Latitude 43.32480 & Longitude -97.46490)
- Storage Pond: 2,800 ft E & 1,075 ft N of the SE corner Section 9, T98N, R56W (SW $\frac{1}{4}$ SE $\frac{1}{4}$) (Latitude 43.31690 & Longitude -97.46916)

(3) The amount of appropriation may not exceed 2 acre-feet annually for each acre of land to which water is actually and beneficially applied for irrigation. The water is to be used during the following described annual period: April 1 – October 31.

(4) The permit holder has complied with the provisions of South Dakota State Law relating to the application of water to beneficial use to irrigate to following land: *all in T98N-R56W*

Section 8					
SW $\frac{1}{4}$ NE $\frac{1}{4}$	1 acre	NE $\frac{1}{4}$ SE $\frac{1}{4}$	34 acres	SW $\frac{1}{4}$ SE $\frac{1}{4}$	33 acres
SE $\frac{1}{4}$ NE $\frac{1}{4}$	1 acre	NW $\frac{1}{4}$ SE $\frac{1}{4}$	34 acres	SE $\frac{1}{4}$ SE $\frac{1}{4}$	33 acres
Section 9					
NE $\frac{1}{4}$ NE $\frac{1}{4}$	34 acres	NE $\frac{1}{4}$ SW $\frac{1}{4}$	40 acres	SW $\frac{1}{4}$ NW $\frac{1}{4}$	13 acres
NW $\frac{1}{4}$ NE $\frac{1}{4}$	32 acres	NW $\frac{1}{4}$ SW $\frac{1}{4}$	38 acres	SE $\frac{1}{4}$ NW $\frac{1}{4}$	15 acres
SW $\frac{1}{4}$ NE $\frac{1}{4}$	33 acres	SW $\frac{1}{4}$ SW $\frac{1}{4}$	17 acres	NE $\frac{1}{4}$ SE $\frac{1}{4}$	1 acre
SE $\frac{1}{4}$ NE $\frac{1}{4}$	34 acres	SE $\frac{1}{4}$ SW $\frac{1}{4}$	21 acres	NW $\frac{1}{4}$ SE $\frac{1}{4}$	6 acres

TOTAL: 420 acres

continued

(5) Pursuant to South Dakota Water Law 46-5-30.1 Michael Schultz, the holder and/or owner of Water Right No. 8616-3 is issued a license to appropriate water, the right to use 2.56 cubic feet of water per second from groundwater, three wells (Niobrara Aquifer), or the 37 acre-foot storage pond with priority dates of April 9, 2012 (2.56 cfs & 399 acres) and March 23, 2022 (21 acres), from the locations specified in (2) of this license for irrigation purposes.

This license is subject to South Dakota Water Law, any limitations or conditions listed in Water Right No. 8616-3 and subject to the following qualifications:

1. The wells approved under Water Permit Nos. 7344-3 & 8616-3 are located near domestic wells and other wells which may obtain water from the same aquifer. Water withdrawals must be controlled so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. This Permit is approved subject to the irrigation water use questionnaire being submitted each year.

Eric Gronlund

Eric Gronlund, Chief Engineer
Water Rights Program
Department of Agriculture and Natural Resources

OCT 11 2024

date



**Report of Examination of Works and/or Application of Water to Beneficial Use
For Permit No. 7344-3**

I have this day, March 9, 2022, made a thorough examination of the water use system constructed by Michael Schultz, 43721 281st Street, Freeman, SD 57029, holder of Permit No. 7344-3, bearing the priority of April 9, 2012, authorizing the diversion of 5.33 cu. ft. per second of the waters of groundwater (Niobrara Aquifer) for the irrigation of 399 acres located in Hutchinson County.

Inspection contacts: Michael Schultz

A. Works used to divert the water:

Well Information: Southwest Well

- 1) Well Drilling Firm: Marion Well Drilling
- 2) No. of Wells: 1
- 3) Depth(s): 163 feet
- 4) Well log is available: Yes

Casing:

- 1) Diameter: 12 inches
- 2) Length: 68 feet
- 3) Type: Plastic

Screen:

- 1) Open Hole
- 2) Static water level: 51 feet

Pump:

- 1) Make: Grundfos
- 2) Model: 475S300-3
- 3) Capacity: 350 GPM

Motor:

- 1) Make: Unknown
- 2) Model No.: Unknown
- 3) Horsepower rating: 30 hp

Well Information: Northeast Well

- 1) Well Drilling Firm: Hammond-Wetmore Drilling, LLC
- 2) No. of Wells: 1
- 3) Depth(s): 180 feet
- 4) Well log is available: Yes

Casing:

- 1) Diameter: 12 inches
- 2) Length: 120 feet
- 3) Type: Plastic

Well Information: Middle Well

- 1) Well Drilling Firm: Marion Well Drilling
- 2) No. of Wells: 1
- 3) Depth(s): 209 feet
- 4) Well log is available: Yes

Casing:

- 1) Diameter: 12 inches
- 2) Length: 210 feet
- 3) Type: Plastic

Screen:

- 1) Open Hole
- 2) Static water level: 115 feet

Pump:

- 1) Make: Grundfos
- 2) Model: 300S300-7
- 3) Capacity: 250 GPM

Motor:

- 1) Make: Unknown
- 2) Model No.: Unknown
- 3) Horsepower rating: 30 hp

Screen:

- 1) Diameter: 12 inches
- 2) Length: 60 feet
- 3) Type: PVC
- 4) Static water level: Unknown feet

Pump:

- 1) Make: Grundfos
- 2) Model: 475S400-5B
- 3) Capacity: 550 GPM

Motor:

- 1) Make: Unknown
- 2) Model No.: Unknown
- 3) Horsepower rating: 40 hp

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

- | | | |
|--------------------------|--------------------------|--|
| 1) Type: <u>Aluminum</u> | 2) Size: <u>8</u> inches | 3) Length: <u>10</u> feet (<u>SW Pivot to the SW Well</u>) |
| 1) Type: <u>PVC</u> | 2) Size: <u>8</u> inches | 3) Length: <u>2,770</u> feet (<u>SW Well to the Middle Well</u>) |
| 1) Type: <u>PVC</u> | 2) Size: <u>8</u> inches | 3) Length: <u>100</u> feet (<u>Middle Well to the Middle Pivot</u>) |
| 1) Type: <u>PVC</u> | 2) Size: <u>8</u> inches | 3) Length: <u>1,570</u> feet (<u>Middle Pivot to the Fresh Water Pond</u>) |
| 1) Type: <u>PVC</u> | 2) Size: <u>8</u> inches | 3) Length: <u>2,760</u> feet (<u>Fresh Water Pond to the NE Well</u>) |
| 1) Type: <u>PVC</u> | 2) Size: <u>8</u> inches | 3) Length: <u>50</u> feet (<u>NE Well to the NE Pivot</u>) |

C. Works used to apply water to beneficial use:

Center Pivot: (Southwest)

- 1) Make: Zimmatic
- 2) Overall length: 1,301 feet
- 3) Number of towers: 7
- 4) End gun: Yes
- 5) Capacity: 800 GPM

Chemigation Equipment:

- 1) Does chemigate: No

Center Pivot: (Northeast)

- 1) Make: Zimmatic
- 2) Overall length: 1,301 feet
- 3) Number of towers: 7
- 4) End gun: Yes
- 5) Capacity: 800 GPM

Chemigation Equipment:

- 1) Does chemigate: No

Center Pivot: (Middle)

- 1) Make: Zimmatic
- 2) Overall length: 1,367 feet
- 3) Number of towers: 7
- 4) End gun: Yes
- 5) Capacity: 800 GPM

Chemigation Equipment:

- 1) Does chemigate: No

D. Compliance with Permit Requirements:

- 1) Permit qualifications being abided by: No
- 2) Irrigation Questionnaires checked to determine if permit owner started irrigation by the end of construction period: Yes
- 3) Exceptions to compliance are: 420 acres irrigated instead of 399 acres

E. Condition and Location:

- 1) The system is in good condition with the point(s) of diversion located as follows:
The southwest well is 1,340 feet west and 1,350 feet north of the southwest corner of Section 8-T98N-R56W (Latitude 43.31761, Longitude -97.48490 – NW1/4 of the SE1/4).
The middle well is 1,340 feet east and 2,000 feet north of the southwest corner of Section 9-T98N-R56W (Latitude 43.31950, Longitude -97.47485 – NE1/4 of the SW1/4).
The northeast well is 4,000 feet east and 3,920 feet north of the southwest corner of Section 9-T98N-R56W (Latitude 43.32480, Longitude -97.46490 – SE1/4 of the NE1/4).
- 2) The works are capable of diverting and conveying to the place of use 2.56 cu. ft. per second of water which is to be used for irrigation purposes. Water has been put to beneficial use to the maximum extent as follows:

<u>Section 8-T98N-R56W</u>		<u>Section 9-T98N-R56W</u>	
<u>SW1/4NE1/4</u>	<u>1 acre</u>	<u>SW1/4NW1/4</u>	<u>13 acres</u>
<u>SE1/4NE1/4</u>	<u>1 acre</u>	<u>SE1/4NW1/4</u>	<u>15 acres</u>
<u>NW1/4SE1/4</u>	<u>34 acres</u>	<u>NW1/4SW1/4</u>	<u>38 acres</u>
<u>NE1/4SE1/4</u>	<u>34 acres</u>	<u>NE1/4SW1/4</u>	<u>40 acres</u>
<u>SW1/4SE1/4</u>	<u>33 acres</u>	<u>SW1/4SW1/4</u>	<u>17 acres</u>
<u>SE1/4SE1/4</u>	<u>33 acres</u>	<u>SE1/4SW1/4</u>	<u>21 acres</u>
		<u>NW1/4NE1/4</u>	<u>32 acres</u>
		<u>NE1/4NE1/4</u>	<u>34 acres</u>
		<u>SW1/4NE1/4</u>	<u>33 acres</u>
		<u>SE1/4NE1/4</u>	<u>34 acres</u>
		<u>NW1/4SE1/4</u>	<u>6 acres</u>
		<u>NE1/4SE1/4</u>	<u>1 acre</u>

comprising a total of 420 acres of land and the license should be issued for 2.56 cfs.

- 3) All structures, wells and lands on map: Yes

F. Comments or other permit(s) associated with the project: The number of acres being irrigated is 420 acres which is more than the 399 acres authorized by the water right. The additional acres are owned by Mr. Schultz or his extended family and are adjacent to the permitted acres.

The irrigation systems can be operated in several different ways. All three wells are connected to the piping that goes to all three pivots. All three wells are also connected to piping that flows into the freshwater holding pond. The freshwater holding pond pump is connected to piping that goes to each pivot. Thus, each pivot can be operated directly from the wells, the freshwater holding pond, or from a combination of wells and the freshwater holding pond. Also, the wells can be operated to flow directly into the freshwater holding pond and not to any of the pivots.

The pivots are operated one at a time. Generally, the pivots are operated with all of the water coming from the freshwater holding pond pump since it produces the 800 gpm that the pivots are nozzled for. The wells usually only pump directly to the freshwater holding pond. The pivot systems can be operated

without the wells operating since they can be fed by water from the freshwater holding pond. The pivots can also be operated while simultaneously pumping from a well into the freshwater holding pond.

Mr. Schultz operates a dairy. Liquid from the top of the manure holding cell is occasionally pumped into the freshwater holding pond to be used in the irrigation system. He rarely does this since the liquid must be very clear so that it does not plug up the pivot nozzles.

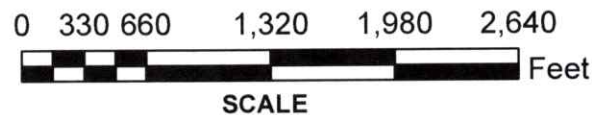
The pump and motor information was obtained from a combination of Mr. Schultz, Dakota Supply Group and Marion Well Drilling. The original pumps and motors were all replaced in 2020 and 2021.



Keith DeJong
Water Rights Inspector
DANR, Water Rights Program

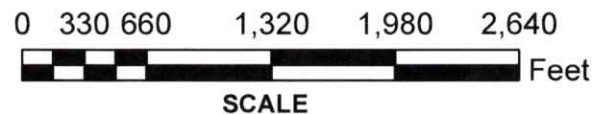
Date report completed: March 15, 2022

Water Right No. 7344-3



Keith DeJong
 Keith DeJong, PE Ret.
 March 15, 2022

Water Right No. 7344-3



Keith DeJong

Keith DeJong, PE Ret.
March 15, 2022



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

STATE OF SOUTH DAKOTA)
) SS
COUNTY OF HUGHES)

**Affidavit of Public Notice
Posting on DANR Website**

Pursuant to SDCL § 46-2A-4, public notice of the following application was posted on the DANR web site at <https://danr.sd.gov/public>. The posted public notice is the same notice as published in the pertinent newspaper(s) and a copy of the public notice is maintained in the application file. If the application is contested, the posting is moved to the DANR contested case website at <https://danr.sd.gov/public/ContestedCase.aspx> until final action is taken on the application pursuant to SDCL § 46-2A-4.

Application No.: 8616-3

Name of Applicant: Michael Schultz

Date of Posting: 8/26/2024

Date of Removal: 10/11/2024



Ron Duvall, Engineer III

10/11/2024

Date

Subscribed and sworn to before me, a notary public, this 11th day of Oct, 2024.



Notary Public - South Dakota

My commission expires:

**Rachel Rodriguez
My Commission Expires
May 16, 2029**

(SEAL)

