

WATER PERMIT NO. 8670-3

Name of Applicant: Spring Valley Hutterian Brethren Inc.

Address: 23064 365th Ave, Wessington Springs SD 57382

Phone: 605 412-6282

Amount of Water Claimed: 0.42 cfs

Total Acres: NA

Source of Water Supply: groundwater (two existing wells)

Water to be used for: commercial & domestic use

County: Jerauld/Buffalo

Type of Waste Disposal System:

Location: 16 miles west of Wessington Springs SD

PRIORITY

Date Received: 10-20-22

Application/License Fee: \$95-

Corrected Application Received:

Period of Annual Use: January 1 – December 31

Remarks:

Diversion Point: NE 1/4 NW 1/4 Sec 30 and SW
1/4 SE 1/4 Sec 29; all in 107N-R67W

Land to be Irrigated: NA

Depth of Well: 83 and 1060 feet deep

Well Driller:

Remarks:

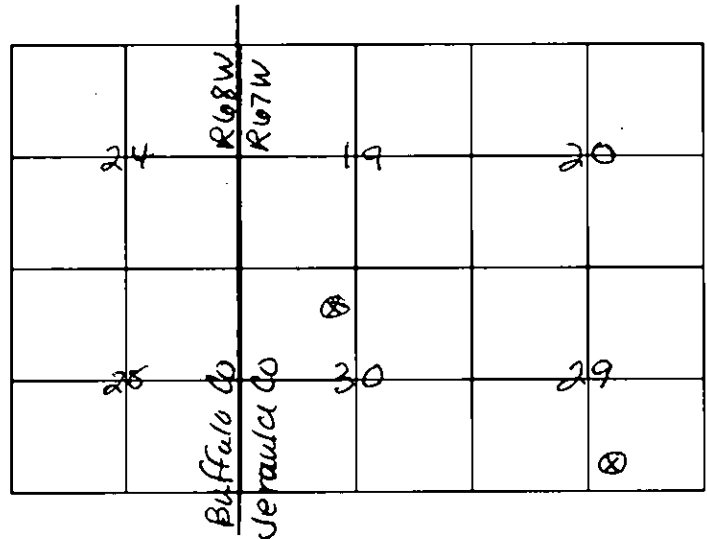
Type of Map: aerial

Prepared by:

Reviewed and the Number Assigned on: 10-20-22

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____



**SOUTH DAKOTA
WATER PERMIT NO. 8670-3**

Date of first receipt of application October 20, 2022.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8670-3 to Spring Valley Hutterian Brethren Inc, c/o Joel Waldner, 23064 365th Ave, Wessington Springs SD 57382 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. 8670-3 appropriates 194 acre-feet of water annually at a maximum pump rate of 0.33 cubic feet of water per second (cfs) from an existing one well completed into the Crow Creek Aquifer (83 feet deep) located in the NE 1/4 NW 1/4 Section 30 and to appropriate 16 acre-feet of water annually at a maximum pump rate of 0.09 cfs from an existing well completed into the Dakota Aquifer (1,090 feet deep) located in the SW 1/4 SE 1/4 Section 29; all in T107N-R67W for commercial and domestic use purposes. The areas of use include the S 1/2 Section 28, S 1/2 Section 29, E 1/2 Section 32, SW 1/4 Section 19; all in T107N-R67W (Jerauld County) and E 1/2 Section 25, SE 1/4 Section 36; all in T107N-R68W (Buffalo County). This permit authorizes a combined total of 210 acre-feet of water annually and a maximum pump rate of 0.42 cfs from the two wells. This site is located approximately 16 miles west of Wessington Springs SD.
2. The water appropriated shall be used for the purpose of commercial and domestic use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date of approval of Permit No. 8670-3 is December 26, 2022.
5. The date from which applicant may claim right is October 20, 2022.
6. 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 No. 8670-3 will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner, under these Permits shall control withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. Water Permit No. 8670-3 is subject to compliance with requirements of the Department's Water Pollution Control Permit issued pursuant to SDCL 34A-2-36 or 34A-2-36.2 or 34A-2-112 or 34A-2-124 for concentrated animal feeding operations.
3. Water Permit No. 8670-3 is subject to compliance with all existing and applicable Water Management Board Rules including but not limited to:

(continued)

- a) Chapter 74:54:01 Ground Water Quality Standards,
 - b) Chapter 74:54:02 Ground Water Discharge Permit,
 - c) Chapter 74:51:01 Surface Water Quality Standards,
 - d) Chapter 74:51:02 Uses Assigned to Lakes,
 - e) Chapter 74:51:03 Uses Assigned to Streams, and
 - f) Chapter 74:52:01 through 74:52:11 Surface Water Discharge Provisions
4. The Permit holder shall separately report to the Chief Engineer annually the amount of water withdrawn from the Crow Creek aquifer and the Dakota aquifer.
 5. Water Permit No. 8670-3 authorizes a total annual diversion of 194 acre-feet of water from the Crow Creek aquifer and 16 acre-feet from the Dakota aquifer.
 6. Any future replacement wells shall meet the adequate well construction standard as defined in Administrative Rule of South Dakota (ARSD) 74:02:04:20. Replacement wells into the Dakota aquifer may not be constructed using the alternative construction requirements that are allowed for domestic use wells outlined in ARSD 74:02:04:35.

WATER MANAGEMENT BOARD

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

JAN 19 2023
date



RECEIVED
OCT 20 22OFFICE OF
WATER

PAID

OCT 20 2022

Ck# 019765

Rec't#

Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8670-3</u> (office use only) Hydrologic Unit <u>10140105</u> Basin <u>Missouri River</u> Newspaper <u>True Dakotan, Central Dakota Times</u> <u>Plainsman</u>
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Application For Permit To Appropriate Water Within The State Of South Dakota

Check use(s) of water:

☐ Municipal	☐ Water Distribution System	☐ Recreational	☐ Institutional
☐ Rural Water System	☒ Commercial	☐ Fish & Wildlife	☐ Geothermal
☒ Domestic (over 18 gpm)	☐ Industrial	☐ Other	

Type of Application:
(check one)

☒ New	☐ Vested Right (Use predates Mar 2, 1955)	☐ Future Use Reservation
☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____		
☐ Amendment/Correction to Permit No. _____		

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

- Name to Appear on Water Permit SPRING VALLEY HUTTERIAN BROTHERS, INC.
Mailing Address 23064 365TH AVENUE WESINGTON SPRINGS SD 57382
(Address) (City) (State) (Zip Code)
Phone (605) 539-1361 Mobile (605) 412-6292 Email joel@svcolony.com
- Amount of water claimed 0.42 *CFS or 210 **GPM and 210 ***AF or _____ Gallons
Flow rate and volume are both required. (*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use
- Source of water supply CROW LAKE AQUIFER (WELL 1), DAKOTA AQUIFER (WELL 2)
- Location of point of diversion 1 WELL IN NW 1/4 OF NW 1/4 SECTION 30, T107N R67W (WELL 1)
1 WELL IN SW 1/4 OF SE 1/4 SECTION 29, T107N R67W (WELL 2) County JERAULD
(example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W)
If not a public water supply (e.g. municipal), will water be used outside of the area described above? ☒ Yes ☐ No
If "Yes," where will water be used? S 1/2 28, S 1/2 29, E 1/2 32, SW 1/4 19, T107N R67W, JERAULD, E 1/2 25, SE 1/4 36,
T107N R67W, BUFFALO (WELL 1), S 1/2 29 T107N R67W, JERAULD (WELL 2)
(example - NW 1/4 section 12-T104N-R53W)
- County or counties where water will be used JERAULD, BUFFALO
- Annual period during which water is to be used JANUARY 1 - DECEMBER 31
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

SEE ATTACHED LETTER

Well #1 0.33 cfs 194 AF
Well #2 0.09 cfs 16 AF

I, Joel Miller, 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.

Supplemental Information

(Type or print)

WELL 1

1. Well Information

(check one or both as applicable) ☐ Drilling new well(s) ☒ Using existing well(s)

a) If new wells, how many ____ Have test holes been drilled ☐ Yes ☐ No Drilled by ____
(if yes, please provide copies of logs)

b) If existing wells, how many 1 Provide copy of log(s), if available. Drilled by PULLMAN WELL DRILLING Co

For either Existing or Proposed Wells:

c) Well Depth (required) 83 Depth to Top of Water Bearing Material 45 Depth to Water from Surface 0

d) Distance to nearest domestic well on applicant's property 7300' (WELL 2) Property owned by others 400' (UNVERIFIED)

2. Wastewater Disposal System Information

a) Type of System (i.e. septic tank, drain field) SEE ATTACHED LETTER

b) System Capacity (gallons) _____ Year Constructed _____

c) Connected to the City of _____ Sanitary System

3. Dugout Information

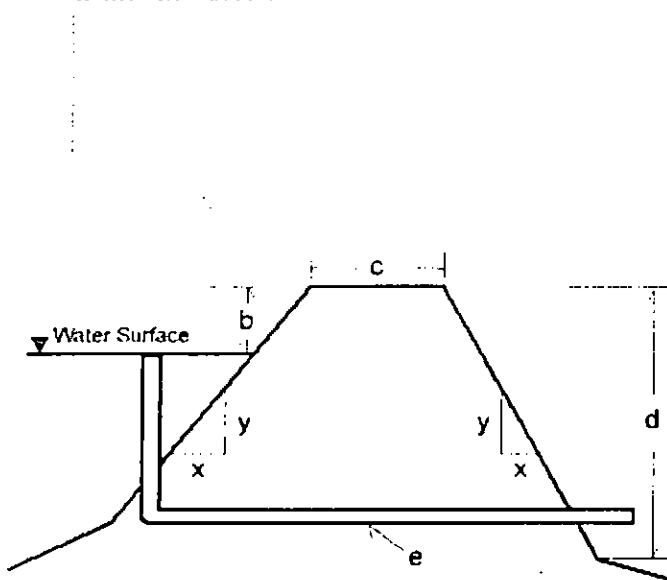
a) Surface Dimensions _____ Depth _____

b) Depth to water (ground surface to water level) _____

4. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address:



b) Freeboard _____

c) Crest Width _____

Crest Length _____

d) Height _____

e) Primary Outlet Capacity _____

If pipe, diameter _____

f) Secondary Spillway Capacity _____

Spillway Width _____

g) X & Y Slope (e.g. 3 to 1 is a typical slope)

Upstream _____

Downstream _____

h) Surface Area of Impoundment _____

i) Storage _____ Acre Feet

j) Drainage Area Above Dam _____ Acres

Supplemental Information

(type or print)

WELL 2

1. Well Information (check one or both as applicable) ☐ Drilling new well(s) ☒ Using existing well(s)a) If new wells, how many ____ Have test holes been drilled: ☐ Yes ☐ No Drilled by ____
(if yes, please provide copies of logs)b) If existing wells, how many 1 Provide copy of log(s), if available Drilled by HUREN DRILLING

For either Existing or Proposed Wells:

c) Well Depth (required) 1090 Depth to Top of Water Bearing Material 1000 Depth to Water from Surface 190d) Distance to nearest domestic well on applicant's property 2000' (unused) Property owned by others 2500' (unused)

2. Wastewater Disposal System Information

a) Type of System (i.e. septic tank, drain field) SEE ATTACHED LETTER

b) System Capacity (gallons) _____ Year Constructed _____

c) Connected to the City of _____ Sanitary System

3. Dugout Information

a) Surface Dimensions _____ Depth _____

b) Depth to water (ground surface to water level) _____

4. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address: _____

b) Freeboard _____

c) Crest Width _____

Crest Length: _____

d) Height _____

e) Primary Outlet Capacity _____

If pipe, diameter _____

f) Secondary Spillway Capacity _____

Spillway Width: _____

g) X & Y Slope (e.g. 3 to 1 is a typical slope)

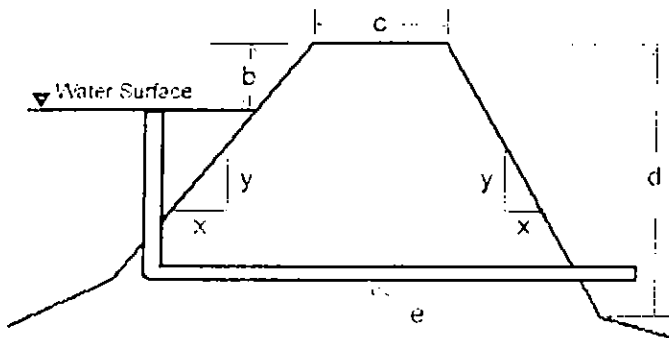
Upstream _____

Downstream _____

h) Surface Area of Impoundment _____

i) Storage _____ Acre Feet

j) Drainage Area Above Dam _____ Acres



(WELL)

Bulwer SOUTH DAKOTA WATER WELL COMPLETION REPORT

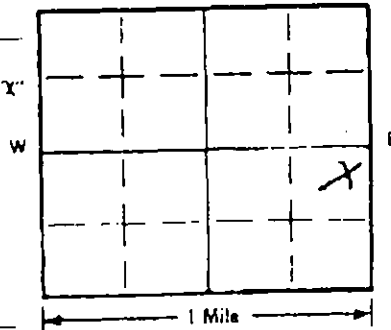
07-92

 Location NE 1/4 SE 1/4 Sec 28 Twp 107 Rg 67

County

Jerome

Please mark well location with an "X"



Well Completion Date

9/13/99

LOCATION

 Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.) in feet from in Bacteria (identify source)

PROPOSED USE

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

METHOD OF DRILLING

RotaryCASING DATA: ☐ Steel ☒ Plastic ☐ Other

If other describe

PIPEWEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
<u>LB/FT</u>	<u>8 IN</u>	<u>0 FT</u>	<u>63 FT</u>	<u>15 IN</u>
<u>LB/FT</u>	<u>IN</u>	<u>FT</u>	<u>FT</u>	<u>IN</u>
<u>LB/FT</u>	<u>IN</u>	<u>FT</u>	<u>FT</u>	<u>IN</u>

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
<u>Cement</u>	<u>5</u>	<u>lb./gal</u>	<u>0 ft</u>	<u>20 ft</u>
<u>Sand</u>	<u>5</u>	<u>lb./gal</u>	<u>20 ft</u>	<u>55 ft</u>

Describe grouting procedure

55 ftSCREEN: ☐ Perforated pipe ☒ ManufacturedDiameter 8 IN Length 20 FEETMaterial QVCSlot Size 225 Set from 63 Feet to 83 Feet

Other information

Gravel packedWAS A PACKER OR SEAL USED? ☐ YES ☐ NO

If so, what material?

Describe packer(s) and location?

DISINFECTION: Was well disinfected upon completion?

YES HowNO Why Not?

Laboratory sent to for water quality analysis

Well Owner

Business Name

Address

Spring Valley Colony
23044 3144 Ave
Wesley Springs

WELL LOG:

DEPTH

FORMATION

FROM

TO

<u>yellow clay</u>	<u>0</u>	<u>15</u>
<u>blue clay</u>	<u>15</u>	<u>35</u>
<u>med sand</u>	<u>35</u>	<u>40</u>
<u>blue clay</u>	<u>40</u>	<u>45</u>
<u>med sand</u>	<u>45</u>	<u>83</u>

STATIC WATER LEVEL

surface

If flowing: closed in pressure

GPM flow through

Controlled by ☐ Valve ☐ Reducers ☐ Other

Reduced flow rate

Can well be completely shut in?

WELL TEST DATA

☒ Pumped

Describe

☐ Bailed☐ Other

Pumping Level Below Land Surface

ft. After Hrs. pumpedft. After Hrs. pumped

If pump installed, pump rate

REMARKS

RECEIVED

FEB 19 2002

This well was drilled under license # 74

And this report is true and accurate

Drilling firm

Signature of License Representative

Signature of Well Owner or Equitable Property Holder

Date

WATER RIGHTS PROGRAM

Pullman Well DrillingRS Smith

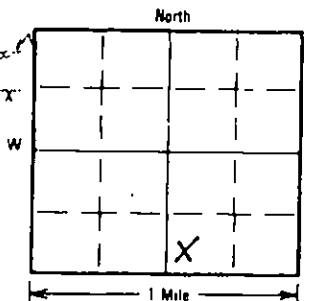
WELL 2

SOUTH DAKOTA WATER WELL COMPLETION REPORT

07-92

Location SE 1/4 SW 1/4 Sec 28 Twp 107 N Rg 67County Butte
Jerard

Please mark well location with an "X"

Well Completion Date 10-21-93

LOCATION:

Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.) 500 ft from Septic (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
#17 LB/FT	5 IN	0 FT	1000 FT	7 7/8 IN
#80 LB/FT	2 1/2 IN	1000 FT	1090 FT	4 1/2 IN
_____ LB/FT	_____ IN	_____ FT	_____ FT	_____ IN

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
<u>Portland</u>	<u>140</u>	_____ lb/gal	<u>0</u> ft	<u>1000</u> ft
_____	_____	_____ lb/gal	_____ ft	_____ ft

Describe grouting procedure _____

SCREEN: ☐ Perforated pipe ☒ ManufacturedDiameter 2 1/2 IN Length 90 FEETMaterial PVCSlot Size 2.5 Set From 1000 feet to 1090 feet

Other information _____

WAS A PACKER OR SEAL USED? ☒ YES ☐ NOIf so, what material? RubberDescribe packer(s) and location? Arboreal

DISINFECTION:

Was well disinfected upon completion? ☒ YES, How HTH

____ NO, Why Not? _____

Laboratory sent to for water quality analysis _____

Well Owner Spring Valley ColonyBusiness Name RR #2Address Box 440
Westington Springs, S.D. 57382

WELL LOG:

FORMATION	DEPTH	
	FROM	TO
<u>Top Soil</u>	<u>0</u>	<u>5</u>
<u>Yellow Clay</u>	<u>5</u>	<u>20</u>
<u>SHALE</u>	<u>20</u>	<u>480</u>
<u>Gravel</u>	<u>480</u>	<u>500</u>
<u>SHALE</u>	<u>500</u>	<u>1000</u>
<u>Dakota Sand</u>	<u>1000</u>	<u>1090</u>

STATIC WATER LEVEL 140 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 Compressed Air
☐ Bailed
☐ Other

Pumping Level Below Land Surface

175 ft. After 12 Hrs. pumped 40 GPM

_____ ft. After _____ Hrs. pumped _____ GPM

If pump installed, pump rate _____ GPM

REMARKS

This well was drilled under license # 94

And this report is true and accurate

Drilling firm _____

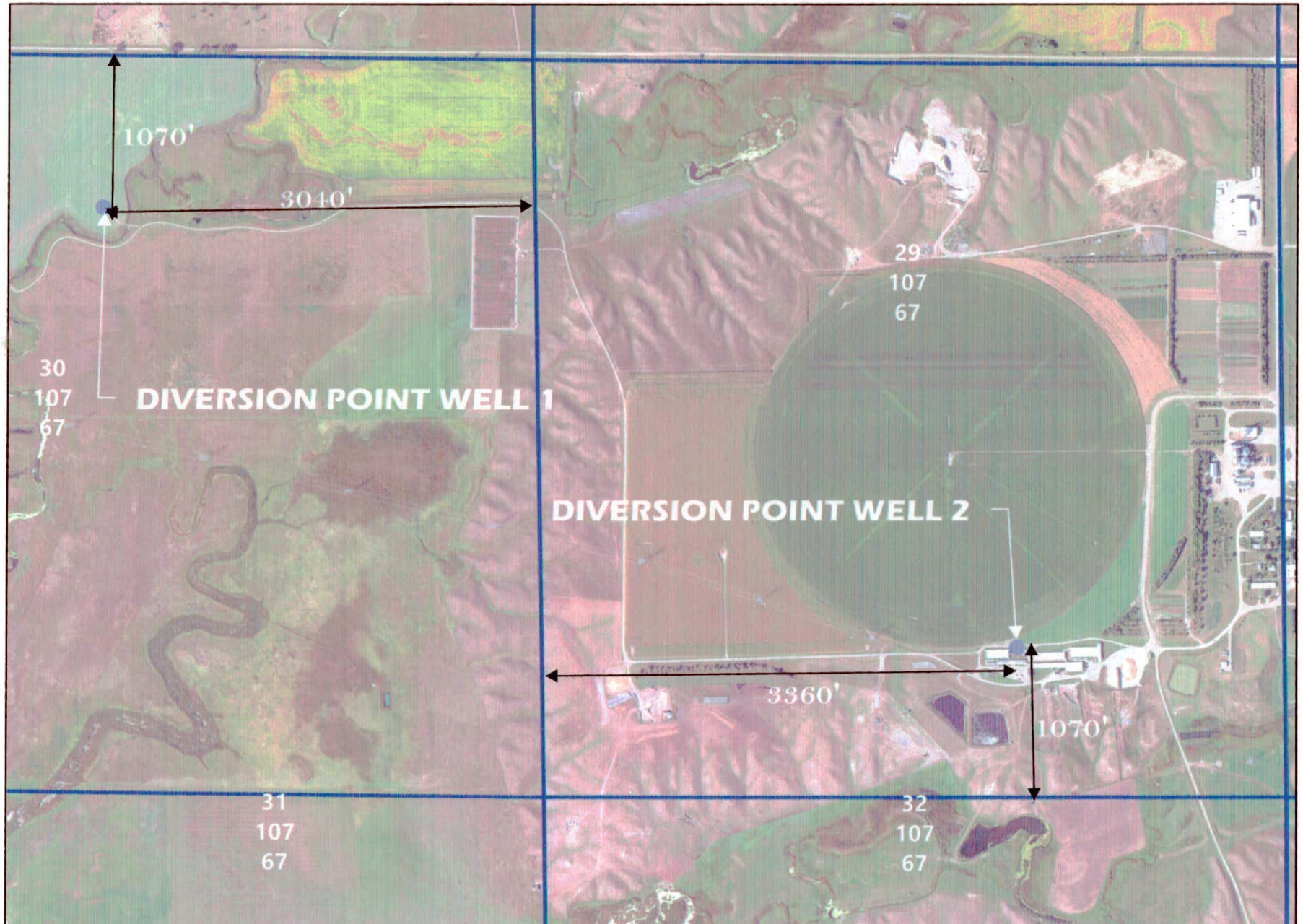
Signature of License Representative

Signature of Well Owner or Equitable Property Holder

Date 10-29-93

12/17/92

SPRING VALLEY HBI DIVERSION POINT WELLS



1 inch = 1,000 feet



DAKOTA ENVIRONMENTAL, INC.

Engineers...Hydrogeologists...Geologists...Remedial Specialists

September 13, 2022

Eric Gronlund
South Dakota DENR Water Rights
523 East Capitol
Pierre, SD 57501

RECEIVED

OCT 20 2022

Re: Spring Valley HBI, Jerauld County, SD
DEC Project No. 22019

**OFFICE OF
WATER**

Dear Mr. Gronlund:

The following is provided as a description of the proposed application.

Spring Valley HBI proposes to obtain a Water Rights Permit for two existing wells used to supply various existing uses on their property, at the locations described on the application form.

The main well (noted on the application as well 1) is located in the northeast quarter of the northwest quarter of section 30, T107N R67W in Jerauld County. This well is used to supply drinking water to swine, poultry and cattle confinements in the south half of section 28, the south half of section 29, and the southeast quarter of section 32, T107N R67W, non-potable domestic use water for the housing development in the south halves of sections 28 and 29, and cattle pasture tanks located in the southwest quarter of section 19 and the northeast quarter of section 32, T107N R67W in Jerauld County. This well also supplies cattle pasture tanks in the east half of section 25 and the southeast quarter of section 36, T107N R68W in Buffalo county.

This well is equipped with a 150 gpm capacity pump, and average use has been monitored at 120 gallons per minute. A well log has been located, which does not list the correct legal location. However, discussion with the applicant has indicated no other similar well drilled in the timeframe listed on the log, leading us to conclude it represents the well in question. The location and depth of this well leads us to conclude it is completed in the Crow Creek Aquifer. The application therefore includes a maximum pump rate of 150 gpm (0.33 cfs), and an estimated annual use of 194 acre-feet.

Well 2 is located in the southwest quarter of the southeast quarter of section 29, T107N R67W in Jerauld County. The log for this well also includes an incorrect legal description, but was also determined to be representative of the well by discussion with the applicant. This well is used to supply water to flush pits in the swine confinement in the same legal location, as well as to supply cattle pasture tanks in the southwest quarter of section 29. This well has a pump capacity of 40 gallons per minute (0.09 cfs), with an estimated annual use of 16 acre-feet.

These wells are included as one application, as a portion of the water used from both wells reports to the swine confinement holding pond system. Application is made for a combined pump rate of 0.42 cfs and an annual use of 210 acre-feet. Separate copies of Form 2A are included for each well.

The wastewater disposal systems for water utilized from the wells are numerous. Water used from both wells in the section 29 swine confinement reports to an earthen holding pond system in the southeast corner of section 29, which is believed to be the only disposal system utilized by both wells.

Water utilized from well 1 also reports to a separate concrete pit beneath the swine confinement in the southeast quarter of section 32, to a earthen holding pond containment system at the beef confinement in the southwest quarter of section 28, and to a domestic wastewater treatment lagoon in the southeast quarter of section 29. All animal confinement containments are covered under the General CAFO Permit.

We hope you will find the enclosed information adequate for review of this application. As always, please feel free to contact us if you have any questions or require additional information.

Sincerely,

A handwritten signature in cursive script, appearing to read "Brian Friedrichsen".

Brian Friedrichsen, PE
Senior Engineer



531386872

ANNUAL REPORT

Secretary of State
500 E. Capitol Ave
Pierre, SD 57501-5070
(605) 773-4845

Domestic Nonprofit Corporation
SDCL 47-24-6, 59-11-24

2022
FILING YEAR

Please Type or Print Clearly in Ink
Please submit one Original
Make payable to the SECRETARY OF STATE

Filing Fee: \$10

Total Fee: \$10

1. Business ID and Name:

NS007070
BUSINESS ID

SPRING VALLEY HUTTERIAN BRETHREN, INC.
BUSINESS NAME

2. The jurisdiction under whose law it is formed **SOUTH DAKOTA**

3. The address of the principal executive office (business address):

Actual Street Address

23064 365TH AVENUE
WESSINGTON SPRINGS, SD 57382

Mailing Address

23064 365TH AVENUE
WESSINGTON SPRINGS, SD 57382

4. The South Dakota Registered Agent's Name:

South Dakota law permits the registered agent to be either (a) a noncommercial registered agent, (b) a commercial registered agent, or (c) an office holder.

(a) The South Dakota Noncommercial Registered Agent's name

Name **JEFFREY T. SVEEN**

Actual Street Address in this State

415 S MAIN ST 400 CAPITOL BLDG
ABERDEEN, SD 57401-4364

Mailing Address in this State

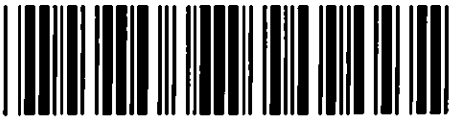
PO BOX 490
ABERDEEN, SD 57402-0490

5. The names and addresses of its principal officers.

Title	Name	Address
President	GEORGE STAHL	23064 365TH AVENUE, WESSINGTON SPRINGS, SD, 57382
Vice President	TIMOTHY STAHL	23064 365TH AVENUE, WESSINGTON SPRINGS, SD, 57382
Secretary	JOEL WALDNER	23064 365TH AVENUE, WESSINGTON SPRINGS, SD, 57382
Treasurer	JOEL WALDNER	23064 365TH AVENUE, WESSINGTON SPRINGS, SD, 57382

6. The names and addresses of its directors (governors).

Name	Address
LEVI WALDNER	23064 365TH AVENUE, WESSINGTON SPRINGS, SD, 57382
MARVIN STAHL	23064 365TH AVENUE, WESSINGTON SPRINGS, SD, 57382
GEORGE STAHL	23064 365TH AVENUE, WESSINGTON SPRINGS, SD, 57382
JOEL WALDNER	23064 365TH AVENUE, WESSINGTON SPRINGS, SD, 57382
MELVIN STAHL	23064 365TH AVENUE, WESSINGTON SPRINGS, SD, 57382



TIMOTHY STAHL

23064 365TH AVENUE, WESSINGTON SPRINGS, SD, 57382

7. Beneficial Owners (optional). A beneficial owner is a person who has or in some manner controls an equity security. Please consult an attorney for legal advice if you have any questions concerning this entry. Any question under this heading is considered a request for legal advice and the secretary of state's office is, by statute, not permitted, to provide legal advice.

No person may execute this report knowing it is false in any material respect. Any violation may be subject to a civil and/or criminal penalty (SDCL 47-1A-129; 22-39-36).

01/14/2022

Dated

Email (Optional)

JOEL WALDNER

Signature of an Authorized Person

JOEL WALDNER

Printed Name

30205-3782 01/14/2022 10:25AM Rec'd by SD SOS

RECEIPT

WATER RIGHTS PROGRAM South Dakota Department of Agriculture and Natural Resources

Date October 20, 2022

RECEIVED OF Spring Valley Hutterian Brethren Inc. 23064 365th Avenue Wessington Springs SD 57382

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

Fee for Application for Permit No. <u>8760-3</u> to Appropriate Water, to construct and to put water to beneficial use	\$ <u>750.00</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. <u>8760-3</u>	\$ <u>200.00</u>
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>950.00</u>

By *Eric Gronlund*
Chief Engineer
zm

Mathiowetz, Adam (DENR)

From: Brian Friedrichsen <brian@dakotaenv.com>
Sent: Friday, November 4, 2022 10:05 AM
To: Mathiowetz, Adam (DENR)
Subject: Re: [EXT] Water Permit App. No. 8670-3 for Spring Valley HBI

Adam,

yes, please go ahead and correct this reference, it was in error.

Thank you,

Brian

On Fri, Nov 4, 2022 at 10:00 AM Mathiowetz, Adam (DENR) <Adam.Mathiowetz@state.sd.us> wrote:

Brian,

Per our November 4, 2022 phone call, there is a discrepancy regarding aquifer assignment for the shallow (83 feet deep) well what is listed on the application, what is stated in your letter , and our own designation of aquifer. The application lists the Crow Lake aquifer. Your letter and our own designation, which I checked while reviewing this application, states the shallow well is completed into the Crow Creek aquifer.

On behalf of your client, can we amend the application to state Crow Creek aquifer instead of the Crow Lake aquifer?



Adam Mathiowetz, PE

Engineer, Water Rights Program

Department of Agriculture and Natural Resources

523 E. Capitol Ave. Pierre SD, 57501

605.773.3352

danr.sd.gov



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8670-3, Spring Valley Hutterian Brethren, Inc.**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Environment and Natural Resources concerning Water Permit Application No. 8670-3, Spring Valley Hutterian Brethren, Inc., 23064 365th Avenue, Wessington Springs SD 57382.

The Chief Engineer is recommending APPROVAL of Application No. 8670-3 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 No. 8670-3 will be located near domestic wells and other wells which may obtain water from the same aquifer. The well owner, under these Permits shall control withdrawals so there is not a reduction of needed water supplies in adequate domestic wells or in adequate wells having prior water rights.
2. Water Permit No. 8670-3 is subject to compliance with requirements of the Department's Water Pollution Control Permit issued pursuant to SDCL 34A-2-36 or 34A-2-36.2 or 34A-2-112 or 34A-2-124 for concentrated animal feeding operations.
3. Water Permit No. 8670-3 is subject to compliance with all existing and applicable Water Management Board Rules including but not limited to:
 - a) Chapter 74:54:01 Ground Water Quality Standards,
 - b) Chapter 74:54:02 Ground Water Discharge Permit,
 - c) Chapter 74:51:01 Surface Water Quality Standards,
 - d) Chapter 74:51:02 Uses Assigned to Lakes,
 - e) Chapter 74:51:03 Uses Assigned to Streams, and
 - f) Chapter 74:52:01 through 74:52:11 Surface Water Discharge Provisions

(continued)

4. The Permit holder shall separately report to the Chief Engineer annually the amount of water withdrawn from the Crow Creek aquifer and the Dakota aquifer.
5. Water Permit No. 8670-3 authorizes a total annual diversion of 194 acre-feet of water from the Crow Creek aquifer and 16 acre-feet from the Dakota aquifer.
6. Any future replacement wells shall meet the adequate well construction standard as defined in Administrative Rule of South Dakota (ARSD) 74:02:04:20. Replacement wells into the Dakota aquifer may not be constructed using the alternative construction requirements that are allowed for domestic use wells outlined in ARSD 74:02:04:35.

See report on application for additional information.



Eric Gronlund, Chief Engineer

December 5, 2022

Report to the Chief Engineer
On Water Permit Application No. 8670-3
Spring Valley Hutterian Brethren, Inc.

c/o Joel Waldner

December 5, 2022

Water Permit Application No. 8670-3 proposes to appropriate an amount of water not to exceed 194 acre-feet annually at a maximum instantaneous diversion rate of 0.33 cubic feet per second (cfs) from one existing well completed into the Crow Creek aquifer (83 feet deep) located in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 30, and to appropriate an amount of water not to exceed 16 acre-feet annually at a maximum instantaneous diversion rate of 0.09 cfs from one existing well completed into the Dakota aquifer (1,090 feet deep) located in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 29; all in T107N-R67W for commercial and domestic use purposes.

The areas of use include the S $\frac{1}{2}$ of Section 28, S $\frac{1}{2}$ of Section 29, E $\frac{1}{2}$ of Section 32, and the SW $\frac{1}{4}$ of Section 19; all in T107N-R67W (Jerauld County) and E $\frac{1}{2}$ of Section 25; SE $\frac{1}{4}$ of Section 36; all in T107N-R68W (Buffalo County).

If approved, Water Permit Application No. 8670-3 will authorize a collective total of 210 acre-feet of water annually and a maximum instantaneous diversion rate of 0.42 cfs from two existing wells. The site of interest is located in Buffalo and Jerauld Counties approximately sixteen miles west of Wessington Springs, SD.

AQUIFERS: Crow Creek (CC) and Dakota (DKOT)

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 the Crow Creek and Dakota aquifers.

WATER AVAILABILITY:

Water Permit Application No. 8670-3 proposes to appropriate water from the Crow Creek and Dakota aquifers. The probability of unappropriated water being available from the 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. An application may be approved, however, for withdrawals of groundwater from any groundwater

formation older than or stratigraphically lower than the greenhorn formation in excess of the average estimated annual recharge for use by water distribution systems.” The Crow Creek aquifer is not older than or stratigraphically lower than the Greenhorn Formation (Fahrenbach et al., 2010); while, the Dakota aquifer is older than and stratigraphically lower than the Greenhorn Formation (Fahrenbach et al., 2010). However, the applicant’s proposed use is not for use in a water distribution system as defined by SDCL 46-1-6(17). Therefore, the average annual recharge and average annual withdrawal rates to and from the Crow Creek and Dakota aquifers must be considered.

CROW CREEK AQUIFER

CROW CREEK AQUIFER – HYDROGEOLOGY:

The Crow Creek aquifer consists of permeable, well-sorted glacial outwash deposits that range from medium to very coarse sand and gravel (Hamilton, 1985). Generally, the Crow Creek aquifer is present in the valley that Crow Creek flows through (Hamilton, 1985); however, the aquifer is not limited to the creek valley (SDGS, 2022; Water Rights, 2022b, 2022c, and 2022d).

In Jerauld County, Hamilton (1985) estimated the Crow Creek aquifer to underly approximately 70 square miles, or 44,800 acres, and contain an estimated 270,000 acre-feet of recoverable water in storage. In Jerauld County, the Crow Creek aquifer averages 30 feet thick (Hamilton, 1985). The first occurrence of aquifer materials map constructed by Jensen (2005) supports Hamilton’s (1985) estimated areal extent of the Crow Creek aquifer.

In Hand and Jerauld Counties, Hedges and others (1982) estimated the Crow Creek aquifer to underly approximately 41,500 acres and contain an estimated 153,700 acre-feet of recoverable water in storage. The Crow Creek aquifer extends into Brule and Buffalo Counties (SDGS, 2022; Water Rights, 2022b, 2022c, and 2022d); however, the extent of the aquifer in these counties has not been delineated at this time due to limited data.

A water well completion report was submitted with Water Permit Application No. 8670-3 for the existing well completed into the Crow Creek aquifer proposed to be used. The report lists, “yellow clay” from 0 to 15 feet below the ground surface, “blue clay” from 15 to 35 feet, “medium sand” from 35 to 40 feet, “blue clay” from 41 to 45 feet, and “medium sand” from 45 to 83 feet below the ground surface (Water Rights, 2022d). The well was screened in “medium sand” from 63 to 83 feet and was flowing at the time of well completion (September 13, 1999). Based on the submitted well completion report, the Crow Creek aquifer is confined at the existing well site.

The Crow Creek aquifer has been encountered under confined and unconfined aquifer conditions (Hamilton, 1985; SDGS, 2022; Water Rights, 2022b and 2022d). Groundwater movement within the Crow Creek aquifer is generally from the east-northeast to the west-southwest towards the Missouri River. Figure 1 displays a map of the Crow Creek aquifer water rights/permits (Water Rights, 2022c), observation wells (Water Rights, 2022b), and location of the existing well site proposed to be used.

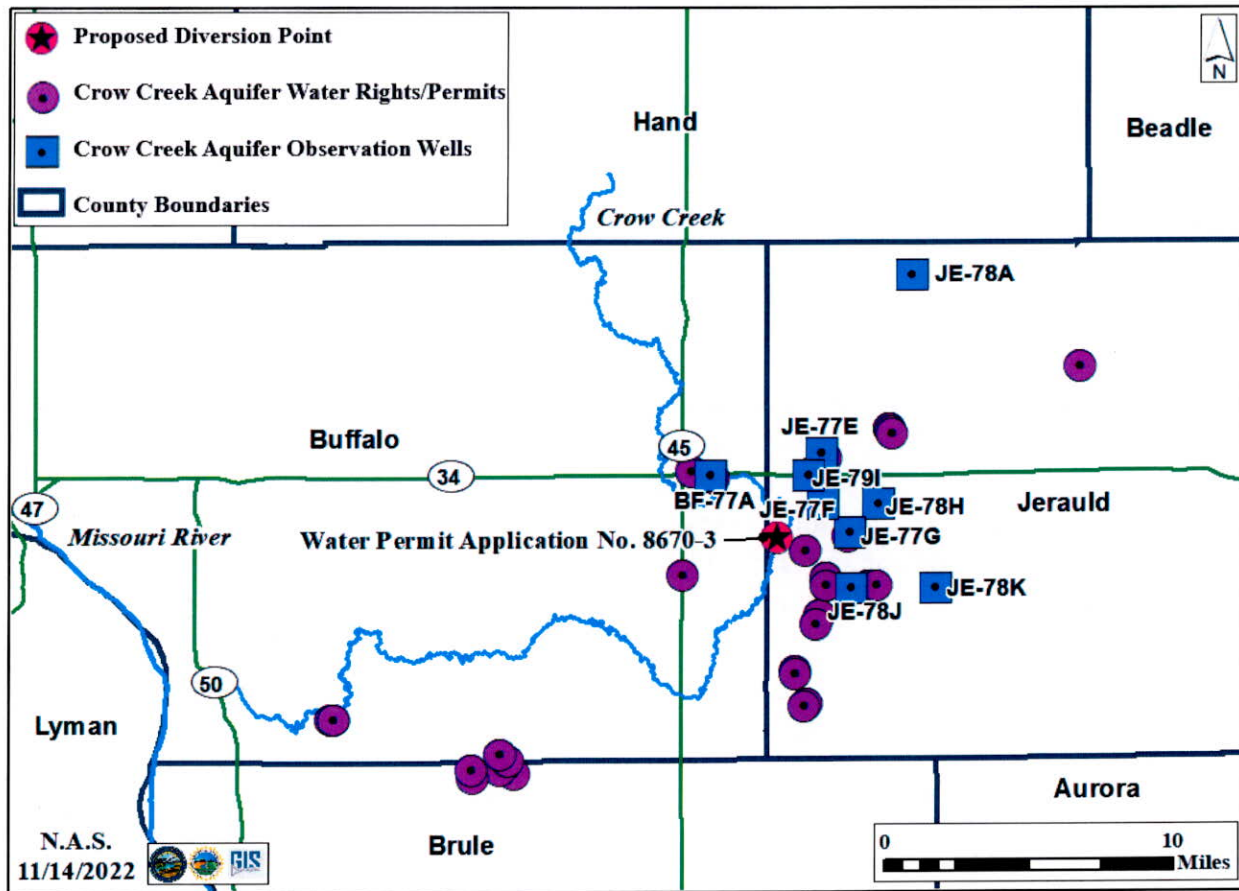


Figure 1. Crow Creek aquifer water rights/permits (Water Rights, 2022c), observation wells (Water Rights, 2022b), and the location of the existing well proposed to be used by Water Permit Application No. 8670-3

CROW CREEK AQUIFER - HYDROLOGIC BUDGET:

Recharge

Recharge to the Crow Creek aquifer is primarily through direct infiltration of precipitation through overlying deposits of sandy alluvium, outwash, and till. Some recharge occurs through lateral seeps from adjacent till (Hamilton, 1985). The rate of recharge to the Crow Creek aquifer is greater than some other glacial outwash deposits due to the high permeability of the sandy deposits overlying the aquifer (Hamilton, 1985).

In Jerauld County, Hamilton (1985) estimated the average annual recharge to the Crow Creek aquifer to be approximately 9,100 acre-feet per year, or 2.4 inches per year. Utilizing observation well analysis, Hedges and others (1985) estimated the average annual recharge rate to the Crow Creek aquifer to be approximately 3.8 inches per year, or 14,190 acre-feet per year using the same areal extent as Hamilton (1985). The observation well analysis method used by Hedges and others (1985) assumed a rise in water level in the aquifer as the only product of recharge to the aquifer. A rise in water level in the aquifer is the result of recharge to the aquifer exceeding discharge from the aquifer, indicating the observation well analysis method may be conservative when estimating a recharge rate because it does not necessarily account for recharge that occurs

when discharge from the aquifer exceeds recharge. Overall, the estimated average annual recharge rate to the Crow Creek aquifer is expected to range between approximately 9,100 to 14,190 acre-feet per year.

Discharge

Discharge from the Crow Creek aquifer is primarily through well withdrawals (Water Rights, 2022d), evapotranspiration where the aquifer is near or at the ground surface, and flow from springs and seeps into Crow Creek (Hamilton, 1985).

Currently, there are 24 water rights/permits authorized to appropriate water from the Crow Creek aquifer (Water Rights, 2022c). One of these water rights/permits is authorized for non-irrigation use - Water Right No. 6748-3 (Water Rights, 2022c). Water Right No. 6748-3 is authorized to withdraw water from the Crow Creek aquifer at a maximum instantaneous diversion rate of 0.12 cfs from one well for commercial and domestic use (Water Rights, 2022c). Historically, average water use by non-irrigation appropriations limited by an instantaneous diversion rate have been assumed to be pumping 60% of full time at the respective permitted diversion rate. Water rights/permits limited by an annual volume are assumed to withdraw their entire respective annual volume limitation. This is a standard method used by the DNR-Water Rights Program for estimating annual withdrawals by non-irrigation appropriations from an aquifer (Water Rights, 2022c). Therefore, the estimated average annual withdrawal rate for Water Right No. 6748-3 is approximately 52.1 acre-feet per year.

Currently, there are 23 irrigation water rights/permits authorized to appropriate water from the Crow Creek aquifer (Water Rights, 2022c). Irrigation water rights/permits have been typically required to report their annual usage on an irrigation questionnaire since 1979. The estimated average annual withdrawal rate for the Crow Creek aquifer irrigation water rights/permits that have reported over the period of record (1979 to 2021) is approximately 1,774 acre-feet per year (Table 1) (Water Rights, 2022a).

Table 1. Reported historic irrigation use from Crow Creek aquifer (Water Rights, 2022a)

Year	No. of Water Rights/Permits Reporting	Reported Pumpage (acre-feet)
1979	22	1,343
1980	22	2,353
1981	23	2,370
1982	15	1,144.64
1983	15	1,705.25
1984	17	1,481
1985	17	2,055
1986	17	966
1987	17	1,605
1988	23	3,954.3
1989	23	2,858.7
1990	23	1,699
1991	21	2,049
1992	18	827
1993	17	842
1994	17	1,162.99
1995	16	858.65
1996	16	1,031
1997	15	246
1998	15	262.07
1999	15	793.47
2000	15	1,163.43
2001	15	571.49
2002	15	1,974.5
2003	15	1,461.01
2004	15	859.72
2005	14	1,103.91
2006	13	1,756.10
2007	16	1,275.02
2008	21	1,874.96
2009	22	853.55
2010	22	551.42
2011	22	1,127.04
2012	27	4,004.14
2013	28	3,115.76
2014	27	2,162.27
2015	23	3,363.64
2016	21	2,773.61
2017	22	4,533.35
2018	24	3,392
2019	24	424.16
2020	23	2,357.22
2021	23	3,992.52
Min	13	246
Max	28	4,533
Avg	19	1,774

There are domestic wells completed into the Crow Creek aquifer that do not require a water right/permit, so the withdrawal amount from those wells is unknown (Water Rights, 2022d). Due to their relatively low diversion rates, withdrawals from domestic wells are generally not considered to be a significant portion of the hydrologic budget. Additionally, with the development of rural water systems in areas where the Crow Creek aquifer is the uppermost aquifer available; it is likely some domestic users may have transitioned to rural water. Therefore, the quantity of water withdrawn by domestic wells is estimated to be negligible to the hydrologic budget for the Crow Creek aquifer.

Hydrologic Budget Summary (Crow Creek Aquifer)

The estimated average annual recharge rate to the Crow Creek aquifer is expected to range between approximately 9,100 to 14,190 acre-feet per year. The estimated average annual withdrawal rate from the Crow Creek aquifer is approximately 2,020 acre-feet per year (including the estimated use for Water Permit Application No. 8670-3, if approved) (listed on Table 2). Based on the hydrologic budget, there is a reasonable probability unappropriated water is available from the Crow Creek aquifer for the proposed appropriation.

Table 2. Estimated use from this outwash deposit of the Crow Creek aquifer (Water Rights, 2022a and 2022c)

Type of Water Right/Permit	Estimated Use (acre-feet/year)
Non-Irrigation (Water Right No. 6748-3)	52.1
Irrigation (Avg 1979 to 2021)	1,774
Water Permit Application No. 8670-3 (<i>if approved, assuming full volume</i>)	194
TOTAL:	2,020

CROW CREEK AQUIFER - OBSERVATION WELL DATA:

Administrative Rule of South Dakota (ARSD) 74:02:05:07 requires that the Water Management Board shall rely upon 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 average annual recharge of the aquifer.

Observation wells provide data on how the aquifer reacts to regional climatic conditions and local pumping. The DNR-Water Rights Program monitors nine observation wells completed into the Crow Creek aquifer (Water Rights, 2022b). The four closest observation wells to the well the applicant proposes to use are JE-77F (approximately 2 miles northeast), JE-79I (approximately 2.4 miles northeast), JE-77G (approximately 2.6 miles northeast), and BF-77A (approximately 3.2 miles northwest) (as shown in Figures 1 and 6) (Water Rights, 2022b). The hydrographs for these observation wells are displayed in Figures 2 to 5 (Water Rights, 2022b). The data points utilized to construct the hydrographs are measurements of the static water level in the observation wells from the top of the well casing. It is worth noting the hydrograph titles display DENR Water Rights Observation Well on the hydrographs when the titles should display DNR Water Rights Observation Well on the hydrographs.

The hydrographs displayed in Figures 2 to 5 are generally representative of the Crow Creek aquifer and were compared to other Crow Creek aquifer observation well hydrographs, and each displayed a similar trend (Water Rights, 2022b). The hydrographs for the observation wells display stable to slightly increasing water levels over their respective periods of record. The hydrographs for the Crow Creek aquifer indicate that the aquifer responds well to climatic conditions because water levels are rising during wetter periods and declining to a stable water level during drier periods. Additionally, the water levels in the observation wells display that the amount of recharge to and natural discharge from the aquifer exceeds pumping with the aquifer returning to pre-pumping conditions between irrigation seasons (specifically on the hydrograph for observation well BF-77A). Aquifer recovery indicates that climatic conditions and therefore, the effects of recharge to and natural discharges from the aquifer govern the long-term fluctuations of water levels in the aquifer rather than the impacts of pumping from the Crow Creek aquifer. By recognizing that both recharge to and natural discharge from an aquifer can be captured for pumping, the observation well hydrographs demonstrate unappropriated water is available for the proposed appropriation.

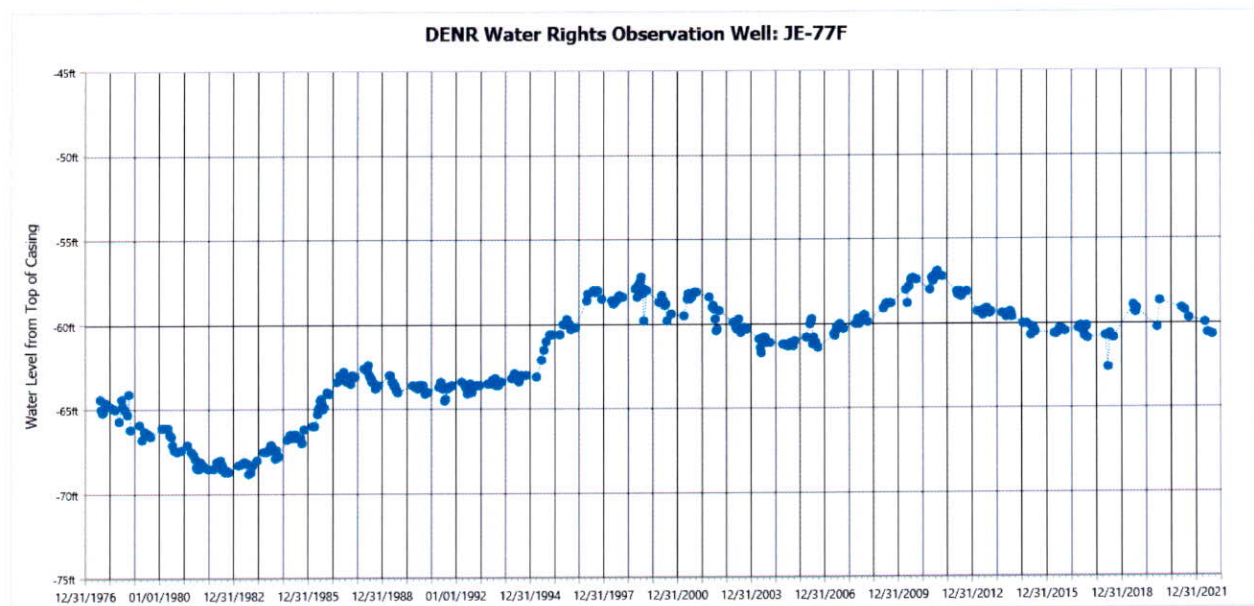


Figure 2. Hydrograph for observation well JE-77F (Water Rights, 2022b)

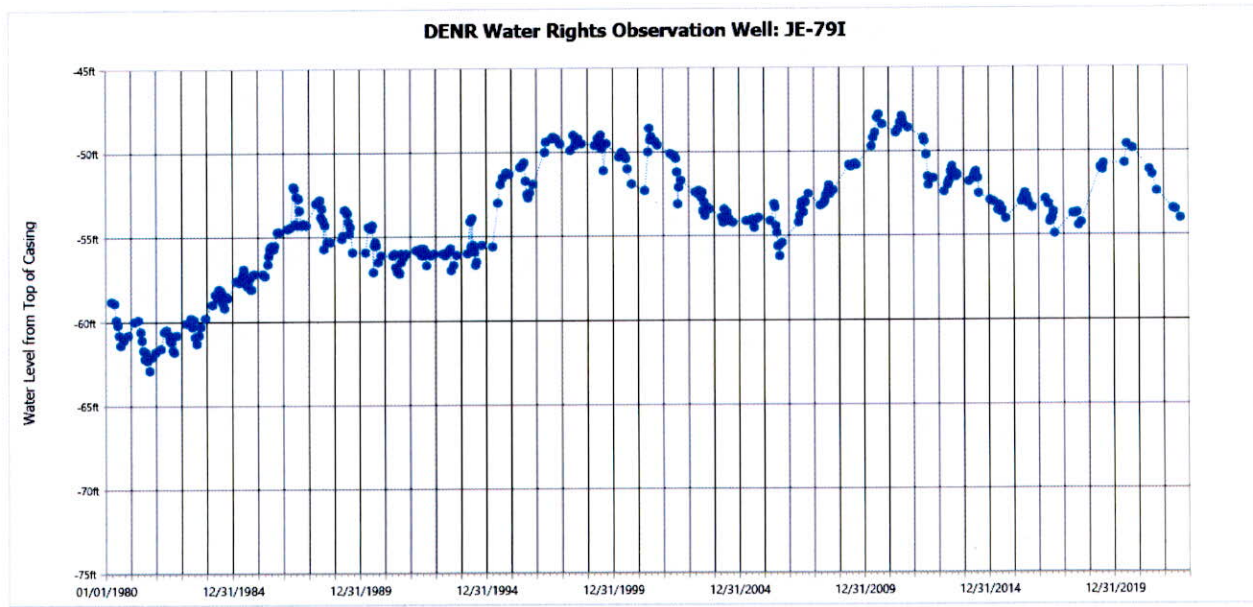


Figure 3. Hydrograph for observation well JE-79I (Water Rights, 2022b)

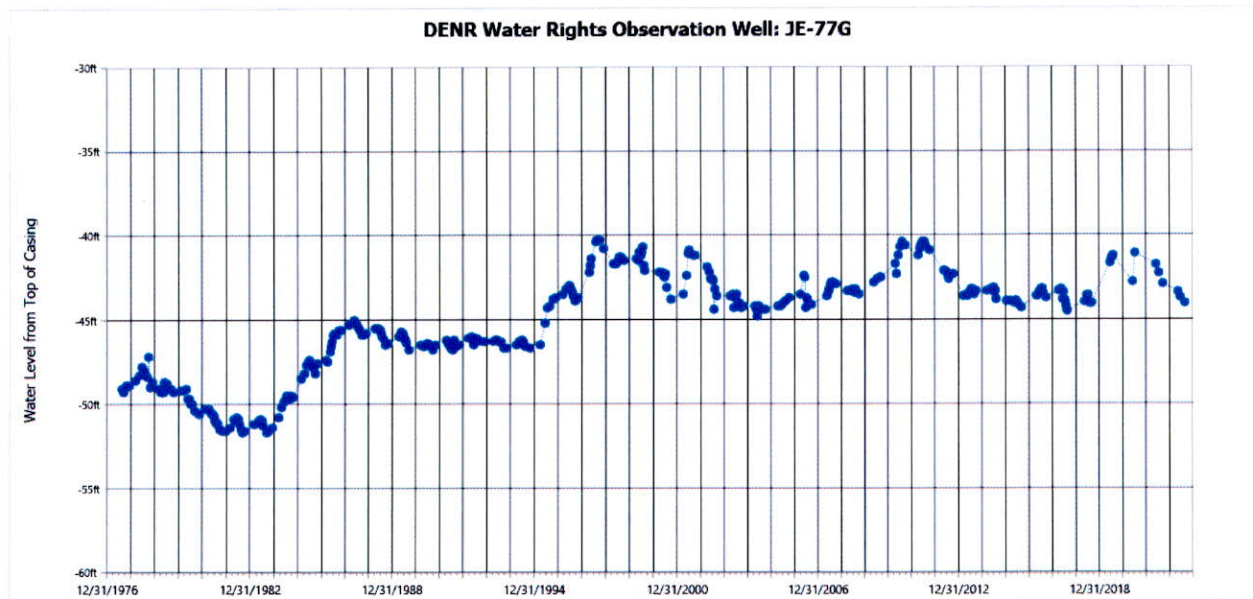


Figure 4. Hydrograph for observation well JE-77G (Water Rights, 2022b)

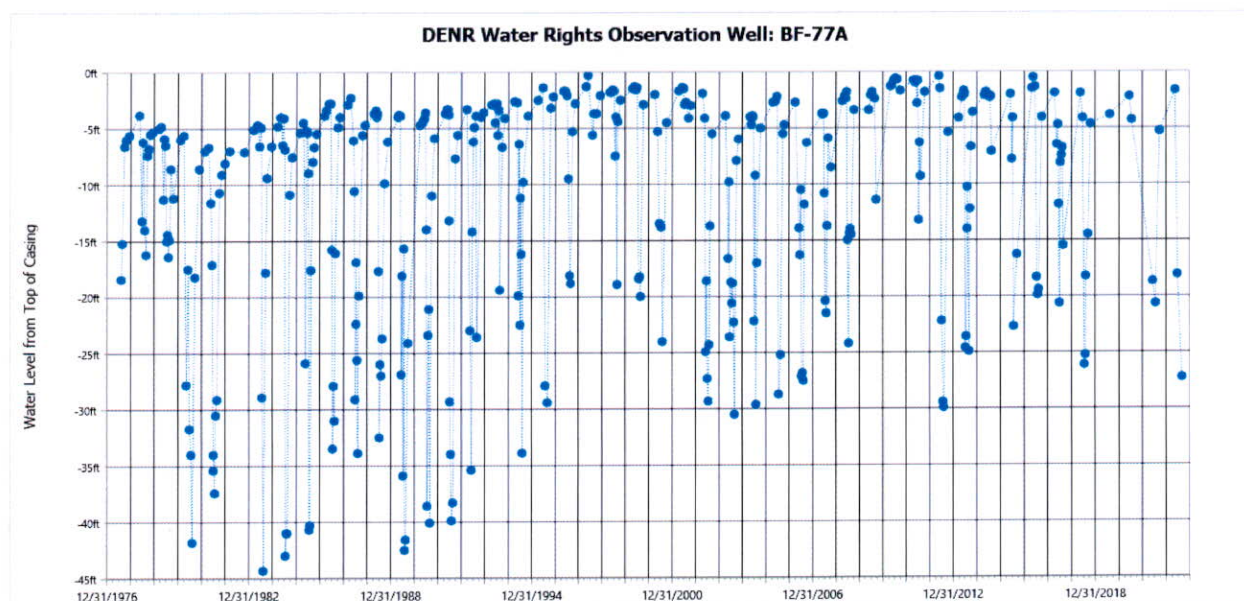


Figure 5. Hydrograph for observation well BF-77A (Water Rights, 2022b)

CROW CREEK AQUIFER - POTENTIAL FOR UNLAWFUL IMPAIRMENT OF EXISTING WATER RIGHTS:

Currently, there are 24 water rights/permits authorized to appropriate water from the Crow Creek aquifer (Water Rights, 2022c). The closest water right/permit (not held by the applicant) to the existing well site is Water Right No. 3395-3, which is held by Straw Hat Land & Cattle LLP (Water Rights, 2022c). The diversion point for Water Right No. 3395-3 is located approximately 2.5 miles northeast of the existing well proposed to be used for this application (Figure 6) (Table 3) (Water Rights, 2022c).

There are domestic wells on file with the DANR-Water Rights Program that are completed into the Crow Creek aquifer, with the closest domestic well on file (not held by the applicant) approximately 0.9 miles southwest of the existing well site (Water Rights, 2022d). There could potentially be other domestic wells completed into the Crow Creek aquifer near the well the applicant proposes to use that are not on file with the DANR-Water Rights Program.

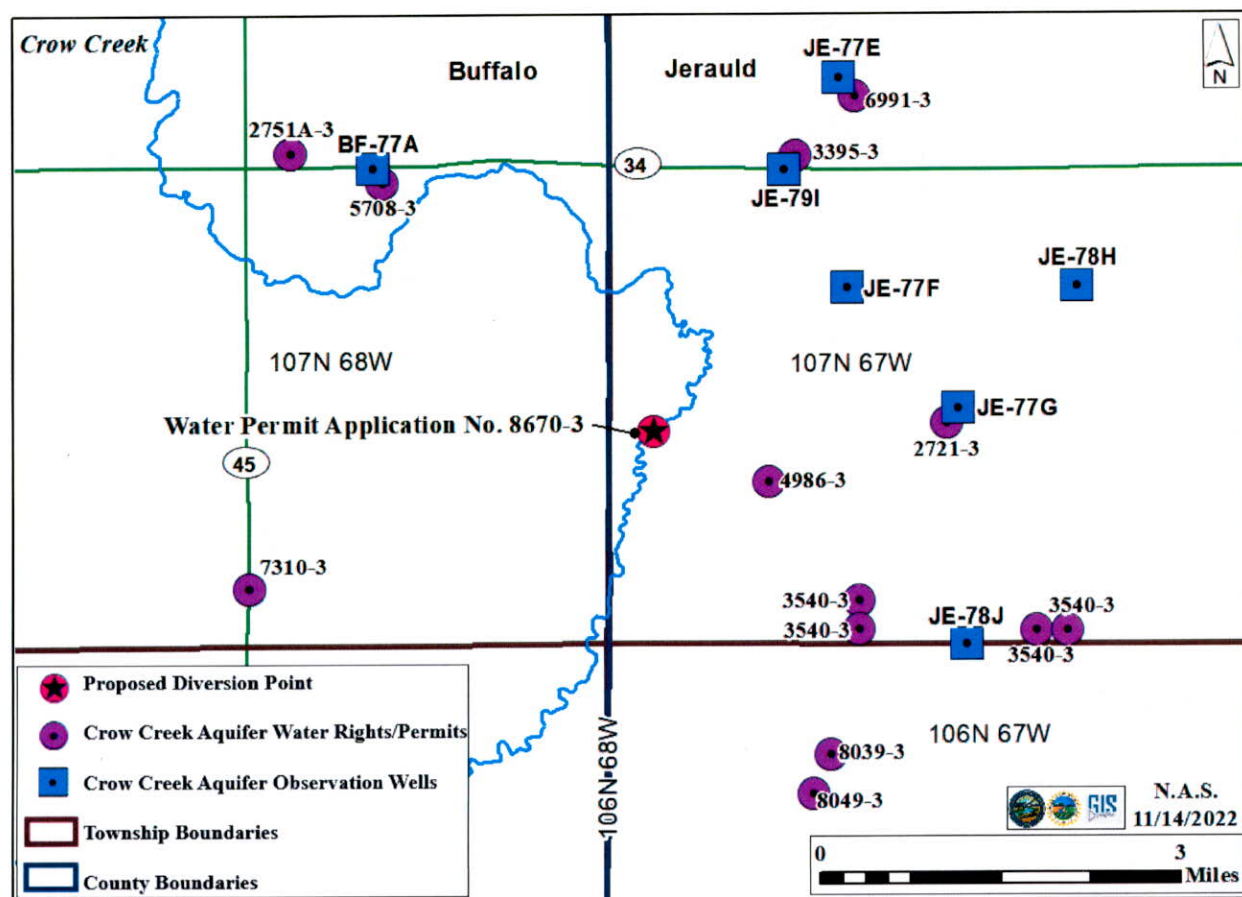


Figure 6. Location of the existing well completed into the Crow Creek aquifer proposed to be used by Water Permit Application No. 8670-3, with the Crow Creek aquifer water rights/permits and observation wells within approximately four miles (Water Rights, 2022b and 2022c)

Table 3. Water rights/permits authorized to withdraw water from the Crow Creek aquifer within approximately four miles of the existing well, as shown in Figure 6 (Water Rights, 2022c)

Permit No.	Name	Status	Use	Authorized Acres if IRR	Authorized Diversion Rate (cfs)
2721-3	Spring Valley Hutterian Brethren Inc	LC	IRR	132	1.55
2751A-3	Rex Zastrow	LC	IRR	132	1.66
3395-3	Straw Hat Land & Cattle LLC	LC	IRR	109	1.56
3540-3	Spring Valley Hutterian Brethren Inc	LC	IRR	268	1.66
4986-3	Spring Valley Hutterian Brethren Inc	LC	IRR	266	3.55
5708-3	Rex Zastrow	LC	IRR	205	2.44
6991-3	Straw Hat Land & Cattle LLC	PE	IRR	105	0.33
7310-3	Klein Land & Cattle	LC	IRR	130	1.67
8039-3	Grohs Farms Partnership	PE	IRR	320	4.0
8049-3	Spring Valley Colony	PE	IRR	313	4.47
LC: Licensed Water Right; PE: Water Permit; IRR: Irrigation					

The Crow Creek aquifer ranges from confined to unconfined aquifer conditions (Hamilton, 1985; Water Rights, 2022b and 2022d). The Crow Creek aquifer is confined at the existing well site based on the submitted well completion report and the well completion reports on file for nearby wells, and the lithologic logs on file for nearby observation wells (SDGS, 2022; Water Rights, 2022b and 2022d). Drawdown created by pumping a well generally does not extend far from the pumped well in an unconfined aquifer; however, in a confined aquifer, drawdown from pumping could extend a distance from the diversion point. The exact drawdown behavior of a well cannot be known without an aquifer performance test. Examination of the hydrographs for observation wells completed into the Crow Creek aquifer show no signs of being significantly impacted by drawdown caused by pumping, despite usually being located within a mile of high-yield wells (assumed to be a well with an authorized diversion rate greater than 0.2 cfs) (Water Rights, 2022b, 2022c, 2022d).

At the existing well site, the Crow Creek aquifer has a saturated aquifer thickness of approximately 35 feet (Water Rights, 2022d). This thickness generally allows for a pump inlet to be placed 20 feet below the top of the aquifer, which is required for the well to be considered adequate under ARSD 74:02:04:20(6). Any drawdown as a result of the proposed diversion for this application is not expected to unlawfully impair nearby adequate wells. In Buffalo County, a complaint was filed in 1979 with the DANR-Water Rights Program regarding potential well interference for a well possibly completed into the Crow Creek aquifer and located approximately two miles southwest of the existing well site; however, investigation of this complaint by Water Rights Program staff engineers concluded that there was no unlawful impairment of adequate wells (Water Rights, 2022c). In Jerauld County, there are no substantiated complaints on file with the DANR-Water Rights Program regarding well interference for adequate wells completed into the Crow Creek aquifer (Water Rights, 2022e).

The Water Management Board recognizes that putting water to beneficial use requires a certain amount of drawdown to occur. The Board has developed rules to allow water to be placed to maximum beneficial use without the necessity of maintaining artesian head pressure for domestic use. The Water Management Board defined an “adversely impacted domestic well” in ARSD 74:02:04:20(7) as:

“A well in which the pump intake was set at least 20 feet below the top of the aquifer at the time of construction or, if the aquifer is less than 20 feet thick, is as near to the bottom of the aquifer as is practical and the water level of the aquifer has declined to a level that the pump will no longer deliver sufficient water for the well owner’s needs.”

The Water Management Board considered the delivery of water by artesian head pressure versus maximum beneficial use during the issuance of Water Right No. 2313-2 for Coca-Cola Bottling Company of the Black Hills. The Board adopted the Findings of Facts and Conclusions of Law that noted the reservation of artesian head pressure for delivery of water would be inconsistent with SDCL 46-1-4 which states, “general welfare requires that the water resources of the state be put to beneficial use to the fullest extent of which they are capable...” (Water Rights, 1995). Furthermore, the Water Management Board found if increased cost or decreased production as a

result of impacts on artesian head pressure by legitimate users is to be considered as an unlawful impairment, it would also conflict with SDCL 46-1-4 (Water Rights, 1995). With that in mind, some existing well owners may need to install or lower pumps depending on the specific characteristics of the Crow Creek aquifer at their location. However, when considering the statutes (SDCL 46-1-4 and 46-6-6.1), rules (ARSD 74:02:04:20(6) and (7)), the saturated thickness of the Crow Creek aquifer at the existing well site, and the lack of well interference complaints from the Crow Creek aquifer in the area, any drawdown created from the proposed diversion is not expected to cause an unlawful impairment on existing water right/permit holders or domestic users with adequate wells. Additionally, the well proposed to be used is an existing well that has been in place and is presumed to have been in use since roughly 1999 without any reported well interference complaints on file with the DANR-Water Rights Program (Water Rights, 2022c, 2022d and 2022e). Therefore, there is a reasonable probability that any interference from the proposed appropriation will not impose unlawful impairments on existing users with adequate wells.

DAKOTA AQUIFER

DAKOTA AQUIFER - HYDROGEOLOGY:

The Dakota Formation is defined as the first relatively continuous sandstone below the Greenhorn Limestone, and it extends downward to the top of the Skull Creek Shale in western and central South Dakota (Schoon, 1971). In eastern South Dakota, the Skull Creek Shale is not continuous and when absent, the Dakota Formation directly overlies Precambrian bedrock or the Inyan Kara Group (Schoon, 1971). In western South Dakota, a stratigraphically equivalent formation to the Dakota Formation is the Newcastle Formation, which has outcrops in the Black Hills (Bredehoeft, et al., 1983). In South Dakota, the Dakota Formation has been subdivided into three units (Schoon, 1971). The upper unit consists of light brown to reddish-brown, fine to medium grained, friable sandstone, interbedded with gray to dark gray shale. Thin, discontinuous beds of lignite are present in the lower part of the upper unit. The middle unit consists of a gray silty clay with small siderite pellets disseminated throughout. The lower unit consists of medium to coarse grained sandstone (Schoon, 1971).

The Dakota aquifer is comprised of the saturated and permeable portions of the Dakota Formation and is primarily a confined bedrock aquifer throughout most of South Dakota (Schoon, 1971; Water Rights 2022b and 2022d). Schoon (1971) estimated the Dakota Formation underlies 66,500 square miles of South Dakota and has an average thickness of 150 feet. The amount of water stored in the Dakota aquifer can be estimated by assuming 15% porosity for the Dakota Formation (Schoon, 1971), multiplied by the average thickness (150 feet) and the areal extent (66,500 square miles or 42.5 million acres) of the aquifer to calculate approximately 960 million acre-feet of stored water in South Dakota.

In Aurora and Jerauld Counties, Hamilton (1985) estimated the Dakota aquifer to underly approximately 1,230 square miles, or 787,200 acres, and contain an estimated 40,000,000 acre-feet of recoverable water in storage. In Aurora and Jerauld Counties, the Dakota aquifer averages approximately 250 feet thick (Hamilton, 1985). The Dakota aquifer is generally under confined

conditions, and the direction of groundwater movement in the aquifer is generally to the northeast (Hamilton, 1985).

A water well completion report was submitted with Water Permit Application No. 8670-3 for the existing well completed into the Dakota aquifer proposed to be used. The report lists, “top soil” from 0 to 5 feet below the ground surface, “yellow clay” from 5 to 20 feet, “shale” from 20 to 480 feet, “greenhorn” from 480 to 500 feet, “shale” from 500 to 1,000 feet, and “Dakota Sandstone” from 1,000 to 1,090 feet below the ground surface (Water Rights, 2022d). The well was screened in “Dakota Sandstone” from 1,000 to 1,090 feet and had a static water level of approximately 140 feet at the time of well completion (October 21, 1993). Based on the submitted well completion report, the Dakota aquifer is expected to be confined at the existing well site.

DAKOTA AQUIFER - OBSERVATION WELL DATA:

ARSD 74:02:05:07 requires that the Water Management Board shall rely upon 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 average annual recharge of the aquifer.

Observation wells provide data on how the aquifer reacts to regional climatic conditions and local pumping. The DNR-Water Rights Program monitors 46 observation wells completed into the Dakota aquifer (Water Rights, 2022b). The three closest observation wells to the well the applicant proposes to use are HD-87A (approximately 20 miles northeast), BL-83A (approximately 28 miles southwest), and AU-89A (approximately 35 miles southeast) (as shown in Figure 10) (Water Rights, 2022b). The hydrographs for these observation wells are displayed in Figures 7 to 9 (Water Rights, 2022b). The data points utilized to construct the hydrographs are measurements of the static water level in the observation wells from the top of the well casing.

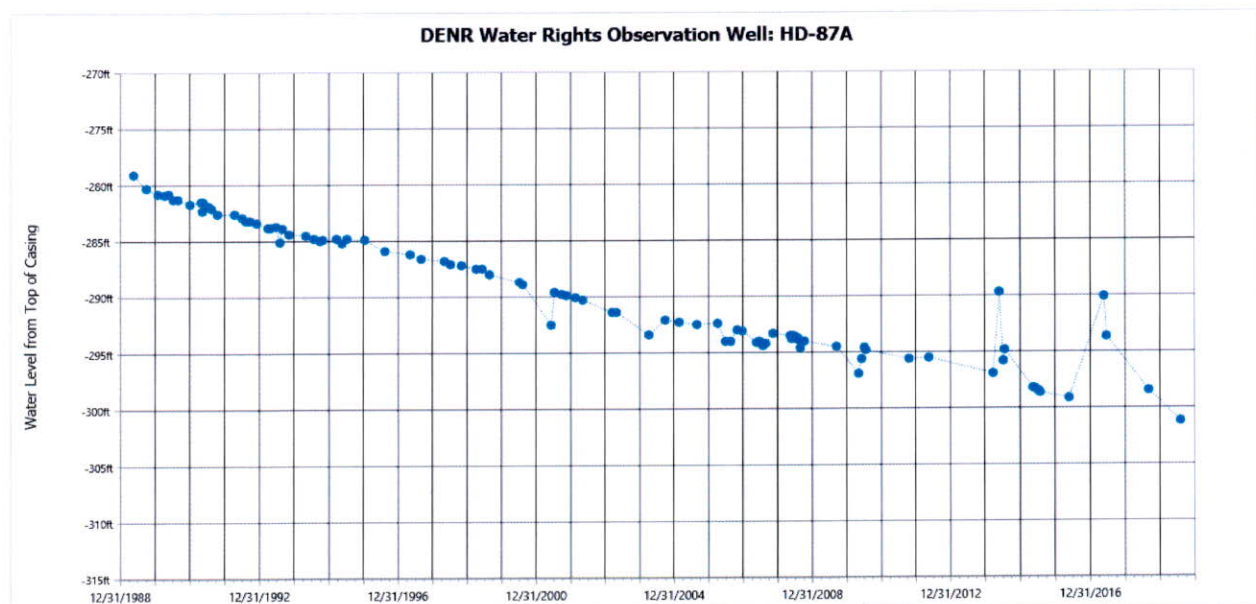


Figure 7. Hydrograph for observation well HD-87A (Water Rights, 2022b)

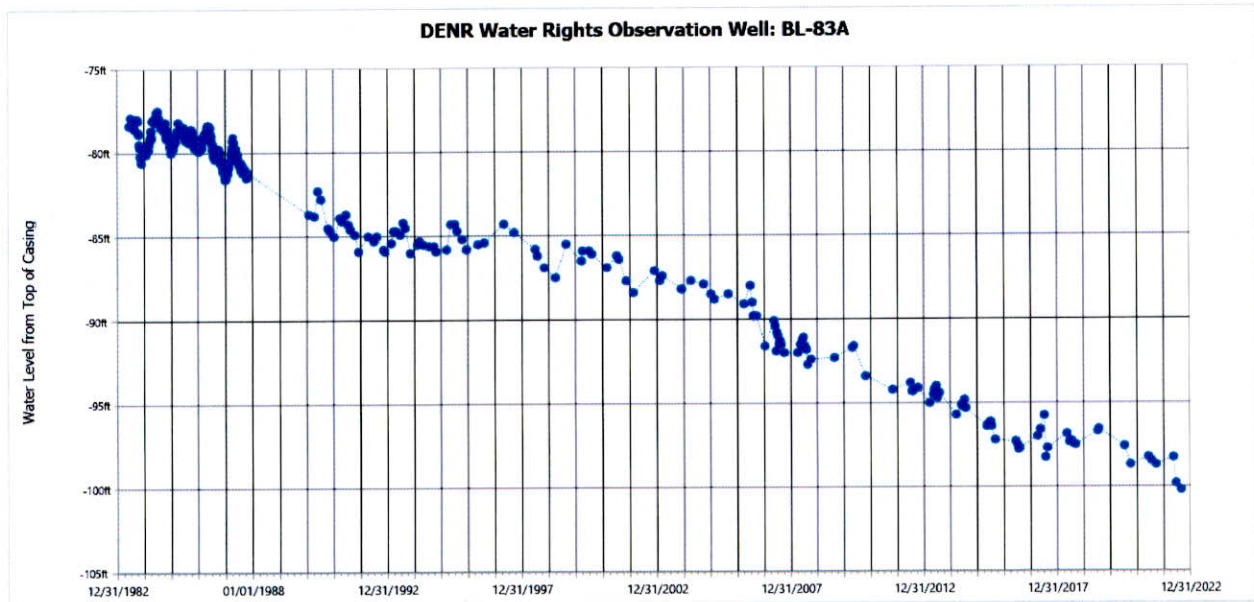


Figure 8. Hydrograph for observation well BL-83A (Water Rights, 2022b)

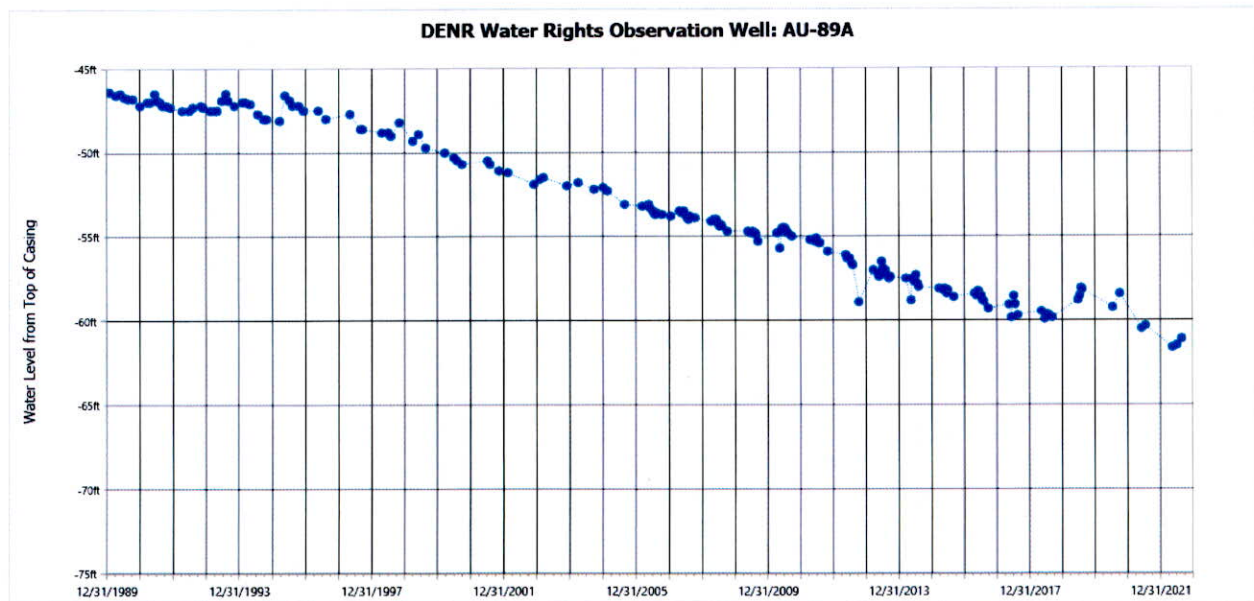


Figure 9. Hydrograph for observation well AU-89A (Water Rights, 2022b)

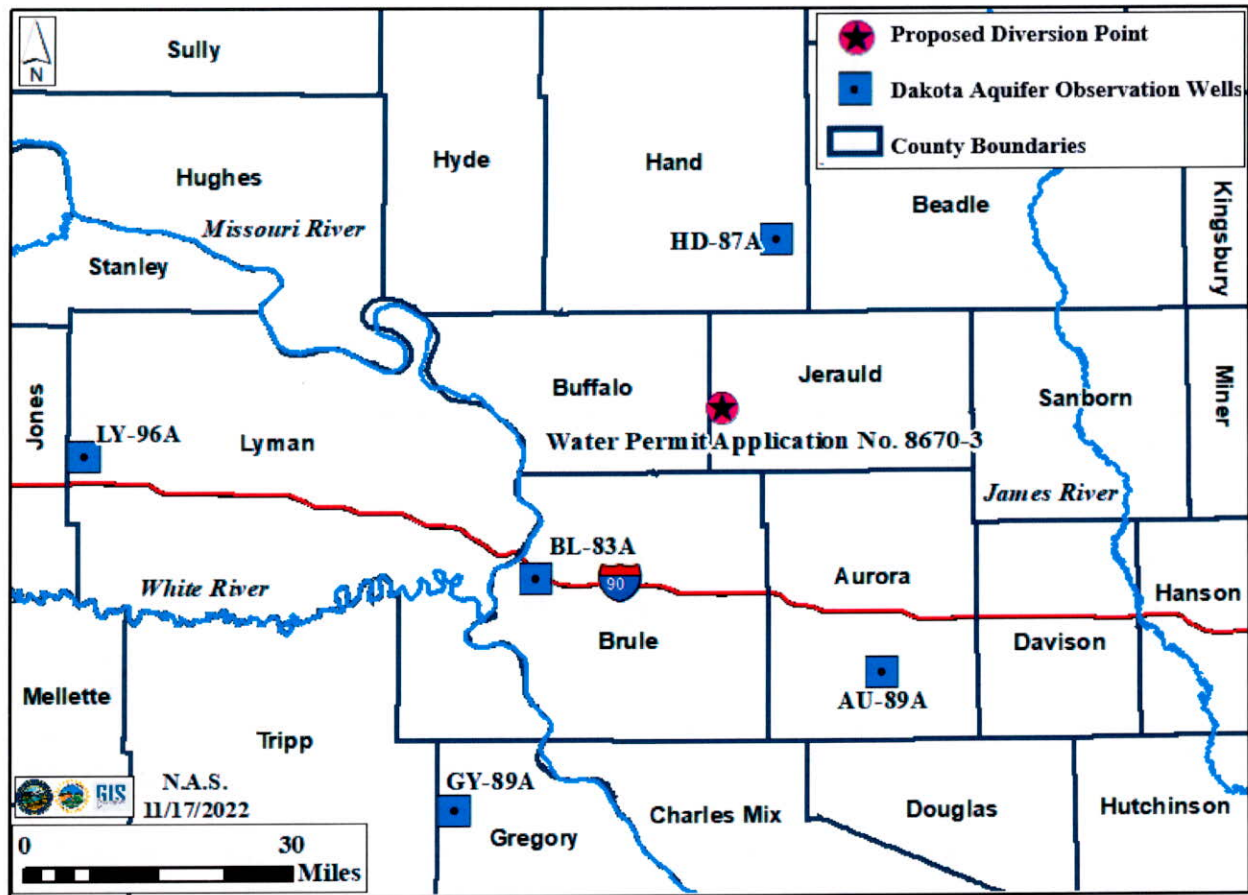


Figure 10. Location of the existing well site for Water Permit Application No. 8670-3 with the nearby Dakota aquifer observation wells (Water Rights, 2022b)

While the overall trend in these historical measurements is downward, observation well ED-85A (approximately 97 miles north of the existing well) completed into the Dakota aquifer has recorded a trend that has been stable to slightly increasing from 1991 to 2017 (Figure 11) (Water Rights, 2022b). An aquifer performance test at the observation well was the cause for the drawdown in hydraulic head that occurred in 2018 (Figure 11) (Water Rights, 2022b).

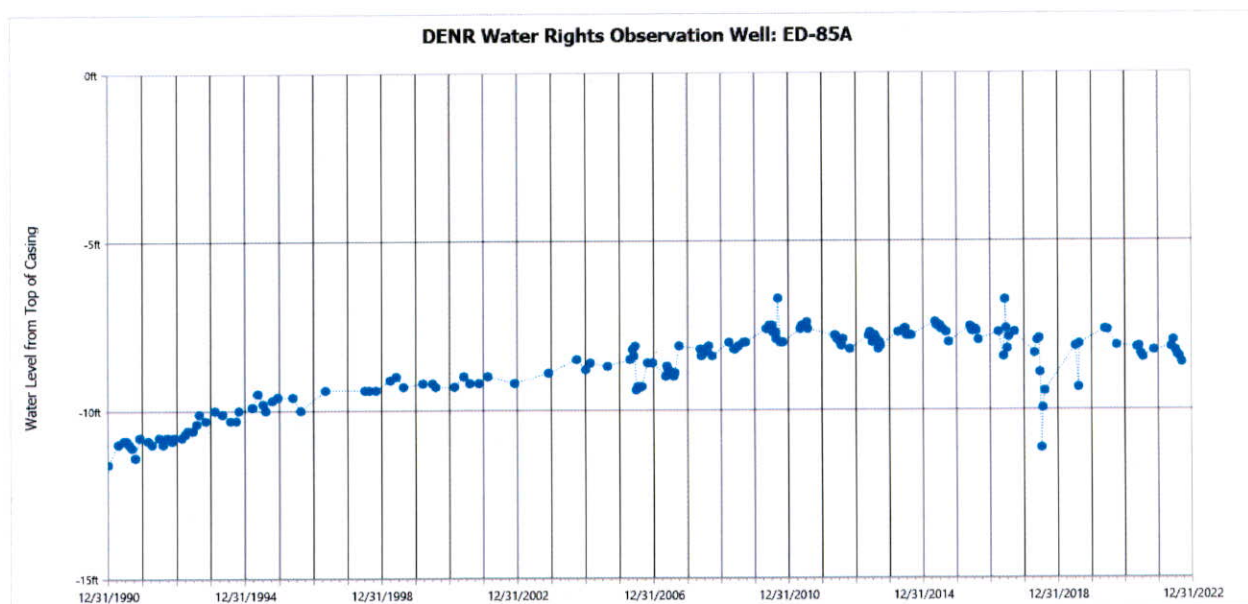


Figure 11. Hydrograph for observation well ED-85A (Water Rights, 2022b)

In addition to the observation well hydrographs, a record of the potentiometric surface is shown through historical accounts. Schoon (1971) developed maps of the potentiometric surface of the Dakota aquifer using data modified from Darton (1909), from the State Engineer's office for the period 1914 to 1915, and from a compilation of many reports over the period of 1936 to 1953. Wells that have been completed into the Dakota aquifer within roughly the past 35 years and within approximately six miles of the existing well site were used to approximate the current potentiometric surface conditions (Table 4) (Water Rights, 2022d).

Table 4. Historic and current approximate water level elevations near the existing well site (Schoon, 1971; Water Rights, 2022d)

Data Source	Year(s)	<i>Approximate</i> potentiometric surface within ten miles of proposed diversion point (feet)
Schoon (1971), after Darton	1909	1,815-1,840
Schoon (1971), State Engineer's Office	1914-1915	1,700-1,725
Schoon (1971)	1936-1953	1,650-1,675
Well Logs Database	1986-Present	1,400-1,545

A decline in water levels (as shown on the hydrographs in Figures 7 to 9) in a confined aquifer does not necessarily indicate a significant decrease in water stored in the aquifer, as water levels above the top of the aquifer materials are representative of the hydraulic head (water pressure) inside the aquifer. Additionally, there are uncontrolled, flowing wells discharging water from the Dakota aquifer at ground surface, and it is expected water from the aquifer is also being discharged to other aquifers if wells completed into the Dakota aquifer have experienced casing failure. Concerns have developed over time about the decline in artesian head pressure of the Dakota aquifer. Schoon (1971) stated, "The fact that withdrawal from the artesian system exceeds recharge is clearly demonstrated by declining pressures." However, the Water

Management Board has found that past declines of the potentiometric surface (as shown on Table 4) do not automatically constitute that withdrawals have exceeded recharge (Water Rights, 1987). The Board has concluded that withdrawals exceeding the average annual recharge cannot be determined based solely upon a decline in head pressure, and in theory the Dakota aquifer head pressure is stabilizing relative to withdrawals and discharges (Water Rights, 1987). Since discharge from uncontrolled flowing wells is likely to continue until water levels in the aquifer decline to being at or below the ground surface and continuing to allow beneficial pumping to occur reduces the amount of water being discharged to waste, the Water Management Board's decision to optimize development of the Dakota aquifer is favorable. Therefore, there is a reasonable probability unappropriated water from the Dakota aquifer is available for the proposed appropriation.

DAKOTA AQUIFER - HYDROLOGIC BUDGET:

Recharge

Recharge to the Dakota aquifer in South Dakota occurs through upward leakage from underlying aquifers with higher artesian pressure than the Dakota aquifer, downward seepage from overlying confining layers, and the through infiltration of precipitation on the Newcastle Formation outcrops in the Black Hills (Bredhoeft, et al., 1983). Using computer modeling, Bredhoeft, et al. (1983) attempted to match Darton's (1909) potentiometric surface map of the Dakota aquifer to develop a recharge estimate of approximately 79.4 cfs (57,500 acre-feet per year) before well development began. However, many assumptions used in Bredhoeft, et al.'s (1983) recharge estimate were incorrect and outdated. For example, assuming steady-state flow conditions between aquifers is unrealistic of real-world conditions and the recharge estimates used for the Madison and Inyan Kara aquifers in Bredhoeft, et al.'s (1983) analysis are much lower than estimates measured by more recent research (Carter, et al., 2002). While Bredhoeft, et al.'s (1983) estimate can provide a scale of the Dakota aquifer's recharge rate, it cannot be used as an exact value for water management purposes. As the physical properties of aquifers and the locations where adjacent aquifers are in contact with each other are relatively undefined among many other factors, it is unknown whether the true recharge rate of the Dakota aquifer is higher or lower than Bredhoeft et al.'s (1983) estimate.

Discharge

Discharge from the Dakota aquifer in South Dakota occurs through well withdrawals, uncontrolled flowing wells and outflow through corroded well casings, and outflow to overlying adjacent aquifers because of higher artesian pressure in the Dakota aquifer (Bredhoeft, et al., 1983; Kume; 1977; Water Rights, 2022b and 2022c).

Currently, there are 255 water rights/permits appropriating water from the Dakota aquifer within South Dakota, plus two pending applications - Water Permit Application No. 8666-3 requesting up to 92 acre-feet per year for commercial use, and Water Permit Application No. 8676-3 requesting up to 155 acre-feet per year for commercial use (Water Rights, 2022c). Water Permit Application No. 8676-3, if approved, will have a priority date junior to Water Permit Application No. 8670-3, and will not be included in this hydrologic budget analysis.

The estimated average annual withdrawal rate for the pending permits is included with the non-irrigation commercial permit analysis in this report. Additionally, there are seven future use permits reserving water from the Dakota aquifer (Water Rights, 2022c). For the purpose of estimating average annual withdrawals, the seven future use permits are assumed to be fully developable for a total of 4,237 acre-feet per year (Table 5).

Table 5. Future use permits reserving water from the Dakota aquifer

Future Use Permit Holder	Amount of Reserved Water (acre-ft)
City of Canton (1262C-3, 5219-3)	1,849
City of Lennox (5101-3, 5101A-3)	0*
South Lincoln RWS (4817-3)	1,448
Lincoln RWS (5155-3)	440
City of Harrisburg (8400-3)	500
Total:	4,237
RWS: Rural Water System, *The City of Lennox has allocated the water they had reserved	

Of the 256 Dakota aquifer water rights/permits (including the pending application), 20 are for irrigation use and 236 are for non-irrigation use. Table 6 summarizes the 236 non-irrigation water rights/permits authorized to appropriate water from the Dakota aquifer with the estimated annual use for each water right/permit as determined by their limiting diversion rate or annual volume. The use type determined for each water right/permit was based on the primary use categorized for each water right/permit as some permits have multiple use types (Water Rights, 2022c). Historically, average water use by non-irrigation appropriations limited by an instantaneous diversion rate have been assumed to be pumping 60% of full time at the respective permitted diversion rate. Water rights/permits limited by an annual volume are assumed to withdraw their entire respective annual volume limitation. This is a standard method used by the DNR-Water Rights Program for estimating annual withdrawals by non-irrigation appropriations from an aquifer (Water Rights, 2022c).

It is worth noting, 13 non-irrigation water rights/permits shown on Table 6 are authorized to withdraw from one or more aquifers, in addition to the Dakota aquifer. Two of these non-irrigation water permits (Permit Nos. 2804-3 and 8464-3) have a specified volume out of their entire appropriated volume that was authorized only for their Dakota aquifer well. For the purpose of estimated average annual withdrawals, these water permits are assumed to withdraw their full specified volume permitted only for their Dakota aquifer well. The remaining ten water rights/permits do not have a certain diversion rate or volume designated for what each well from each aquifer is authorized to divert. For the purpose of estimating average annual withdrawals, these water rights/permits are assumed to be withdrawing their full amount from the Dakota aquifer.

Additionally, the municipal water rights/permits that are authorized to appropriate water from the Dakota aquifer, that are identified as being connected to a rural water system (RWS) likely maintain their wells for standby purposes (Drinking Water Program, 2022; Water Rights, 2022c); as such, the average annual water use for these water rights has been estimated to be zero acre-

feet per year on Table 6. Overall, the estimated average annual withdrawal rate for the Dakota aquifer non-irrigation water rights/permits is approximately 23,357 acre-feet per year (Table 6) (Water Rights, 2022c).

Table 6. Summary of the non-irrigation water rights/permits authorized to appropriate from the Dakota aquifer with estimated annual use determined by their respective authorized diversion rate or annual volume (Drinking Water Program, 2022; Water Rights, 2022c)

Use Type	No. of Water Rights/Permits	Appropriation for Water Rights/Permits limited by Volume (acre-feet/year)	Appropriation for Water Rights/Permits limited by Diversion Rate (cfs)	Total Estimated Use (acre-feet/year)
RWS	6	2,005	2.2	2,961
SHD	7		3.33	1,447
REC	3	3.1	0.45	199
COM	106	1,788	11.74	6,887
DOM	11		1.753	762
FWP	4		2.73	1,186
GEO	2		2.33	1,012
INS	2		1.34	582
IND	6	160	0.84	525
MUN	89	3,274	10.41	7,798
TOTAL:	236	7,230	37.125	23,357
RWS: Rural Water System, SHD: Suburban Housing Development, REC: Recreation,				
COM: Commercial, DOM: Domestic, FWP: Fish & Wildlife Propagation, GEO: Geothermal,				
INS: Institutional, IND: Industrial, MUN: Municipal				

As development of the Dakota aquifer has increased over time, some of the appropriations have been made by rural water systems that are required to report their annual withdrawal rate (Water Rights, 2022c). The withdrawals that are annually reported from the Dakota aquifer by some appropriative users (South Lincoln RWS, Clay RWS, and Lincoln County RWS) are shown on Table 7 (Water Rights, 2022c and 2022f). From the Drinking Water Program Water System Database, Lincoln County RWS appears to purchase their groundwater from another rural water system and may maintain the well authorized under Water Permit No. 5156-3 for backup use (Drinking Water Program, 2022; Water Rights, 2022c). The reported withdrawals by the RWS users listed on Table 7 are for comparison purposes only to show historically the average annual use has been less than the volume that is estimated on Table 6 (Water Rights, 2022c and 2022f). The estimated use for RWS users calculated on Table 6 will be used in the analysis.

Table 7. Non-irrigation rural water system water rights/permits required to report their respective annual use from the Dakota aquifer (Water Rights, 2022c and 2022f)

	South Lincoln RWS	Clay RWS	Lincoln County RWS
	5647-3, 6300-3, 6490-3, 6778A-3	5997B-3	5156-3
2003	725		
2004	904		
2005	769		
2006	863	72	
2007	860	126	
2008	863	124	0
2009	773	119	0
2010	775	122	0
2011	785	116	0
2012	865	186	0
2013	765	155	0
2014	739	148	0
2015	711.5	141	0
2016	640	163	0
2017	643	201	0
2018	503	170	0
2019	562	162	0
2020	530	197	0
2021	588	195	0
Max	904	201	0
Min	503	72	0
Avg	730	150	0
RWS: Rural Water System			

Currently, there are 20 irrigation water rights/permits authorized to appropriate water from the Dakota aquifer (Water Rights, 2022c). Irrigation water rights/permits have been typically required to report their annual usage on an irrigation questionnaire since 1979.

Table 8 lists only 16 water rights/permits that reported as appropriating water for irrigation use from the Dakota aquifer in 2021 as Water Right Nos. 394-3 and 762-3 are not required to submit an irrigation questionnaire and two water permit applications (Nos. 8510-3 and 8560-3) were approved in 2021 and have not submitted an irrigation questionnaire to date (Water Rights, 2022c).

Collectively, Water Right Nos. 394-3 and 762-3 are authorized to irrigate 31.2 acres (Water Rights, 2022c). Generally, irrigators in eastern South Dakota apply less than one foot of water per acre per year. However, to account for the fluctuation in wet and dry cycles from year to year, the one foot of water per acre per year application rate will be used to somewhat overestimate the annual withdrawal rate for these irrigation water rights. Therefore, Water Right Nos. 394-3 and 762-3 are estimated to collectively withdraw approximately 31.2 acre-feet per year (Water Rights, 2022c).

Additionally, Water Permit Nos. 8510-3 and 8560-3 (approved in 2021) collectively authorize 95 acres of golf courses to be irrigated and are limited to an annual appropriation that may not exceed two-acre feet annually for each acre of land authorized to be irrigated (Water Rights, 2022c). Therefore, the estimated average annual withdrawal rate for Water Permit Nos. 8510-3 and 8560-3 is approximately 190 acre-feet per year. The maximum allowable appropriation for irrigation use was used as the estimated average annual withdrawal rate because golf courses typically apply more water to irrigable acres than crop irrigators (Water Rights, 2022a and 2022c).

To give a better representation of the current development of the Dakota aquifer, the average annual withdrawal rate for the irrigation water rights/permits that have reported over the last ten years was estimated. On average, the last ten years (2012 to 2021) of Dakota aquifer irrigation water rights/permits pumped 214.5 acre-feet annually (Table 8) (Water Rights, 2022a).

By combining the calculated withdrawal rate for the four irrigation water rights/permits that are not accounted for on Table 8, and the estimated average annual withdrawal rate based on the development of the Dakota aquifer over the last ten years, the estimated average annual withdrawal rate for the 20 Dakota aquifer irrigation water rights/permits is approximately 435.7 acre-feet per year (Water Rights, 2022a and 2022c).

Table 8. Reported historic irrigation use from Dakota aquifer (Water Rights, 2022a)

Year	No. of Permits Reporting	Reported Pumpage (acre-feet)
1979	2	38
1980	2	110
1981	4	45
1982	5	33.2
1983	5	64.4
1984	4	0
1985	5	8.1
1986	5	238.9
1987	5	1.3
1988	4	452.8
1989	4	265.4
1990	4	234
1991	5	165.4
1992	5	40.4
1993	7	112.4
1994	7	51.9
1995	8	30.8
1996	8	34.4
1997	9	48
1998	9	175.8
1999	10	101.6
2000	10	172.8
2001	11	160.9
2002	10	178.9
2003	10	205
2004	10	154
2005	12	146.5
2006	13	232.3
2007	14	200
2008	14	196.4
2009	15	130.8
2010	17	171.7
2011	18	174.6
2012	18	298.3
2013	18	256.5
2014	17	162.9
2015	17	236.1
2016	16	196
2017	16	229.1
2018	16	156.7
2019	15	107.5
2020	16	245.6
2021	16	255.9
Min	2	0
Max	18	453
Avg (1979 to 2020)	10	152
Avg (2012 to 2021)	17	214.5

There are domestic wells completed into the Dakota aquifer that do not require a water right/permit, so the withdrawal amount for domestic use is unknown (Water Rights, 2022d). Since the introduction of rural water systems, many domestic wells are likely no longer in use or are not being used as primary water sources. Due to their relatively low diversion rates and the availability of rural water, withdrawals from domestic wells are not considered to be a significant portion of the hydrologic budget for the Dakota aquifer. It is currently unknown how much water is being discharged from the Dakota aquifer through uncontrolled flowing wells. The Water Management Board has previously determined water being discharged through uncontrolled flowing wells is not a beneficial use and does not constitute appropriation pursuant to SDCL 46-6-3.1 (Water Rights, 1987).

Hydrologic Budget Summary (Dakota Aquifer)

The estimated average annual recharge to the Dakota aquifer has not been accurately quantified. Bredehoeft et al. (1983) estimated a recharge rate of approximately 57,500 acre-feet per year, but several factors make it uncertain if that is a high or low estimate. The average annual withdrawal rate for the water rights/permits authorized to appropriate water from the Dakota aquifer totals approximately 28,046 acre-feet per year (including the estimated use for Water Permit Application No. 8670-3, if approved, and the pending application) (listed on Table 9). Based on the hydrologic budget, there is a reasonable probability unappropriated water is available from the Dakota aquifer for the proposed appropriation.

Table 9. Estimated use from Dakota aquifer (Water Rights, 2022a and 2022c)

Type of Water Right/Permit	Estimated Use (acre-feet/year)
Future Use Reservations	4,237
Non-Irrigation (including pending application)	23,357
Irrigation (average reported from 2012 to 2021, plus four permits that do not have to report/have not reported)	435.7
Water Permit Application No. 8670-3 (if approved, assuming full volume)	16
TOTAL:	28,046

DAKOTA AQUIFER - POTENTIAL FOR UNLAWFUL IMPAIRMENT OF EXISTING WATER RIGHTS:

Currently, there are 256 (including the pending application) water rights/permits authorized to appropriate water from the Dakota aquifer, and seven future use permits reserving water in the Dakota aquifer (Water Rights, 2022c). The closest water right/permit to the existing well site is Water Right No. 2846-3 - held by Gann Valley Water Association (Water Rights, 2022c). The

diversion point for Water Right No. 2846-3 is located approximately five miles southwest of the existing well site for this application (Figure 12) (Table 10) (Water Rights, 2022c).

There are domestic wells on file with the DNR-Water Rights Program that are completed into the Dakota aquifer, with the closest domestic well on file (not held by the applicant) approximately 2.8 miles northeast of the existing well site (Water Rights, 2022d). There could potentially be other domestic wells completed into the Dakota aquifer near the existing well site that are not on file with the DNR-Water Rights Program.

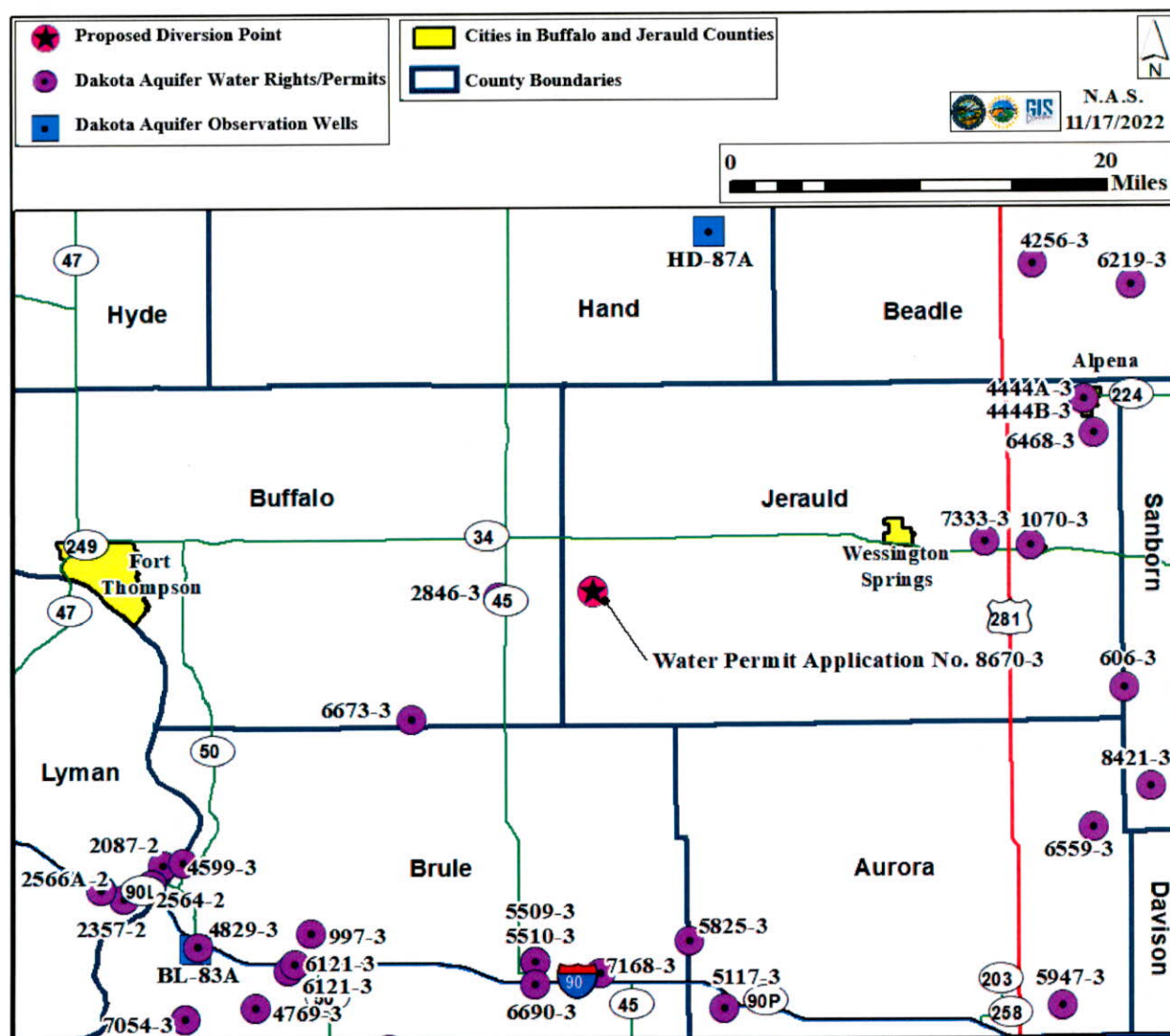


Figure 12. Location of the existing well site for Water Permit Application No. 8670-3 with the Dakota aquifer water rights/permits and observation wells within approximately 20 to 30 miles (Water Rights, 2022b and 2022c)

Table 10. Water rights/permits authorized to withdraw water from the Dakota aquifer within approximately 20 to 30 miles of the existing well site, as shown in Figure 12 (Water Rights, 2022c)

Permit No.	Name	Status	Use	Authorized Diversion Rate (cfs)	Authorized Annual Volume (acre-feet)	Acres if IRR
606-3	Dept of Game Fish & Parks	LC	FWP	0.22		
997-3	Town of Pukwana	LC	MUN	0.5		
1070-3	Town of Lane	LC	MUN	0.44		
2087-2	Kelly Inns LTD	LC	COM, DOM	0.18		
2357-2	Vak Pact Properties, LLC	LC	GEO	0.11		
2564-2	James K or Carol Hutmacher	LC	COM, GEO	0.167		
2566A-2	Chamberlain Country Club	LC	IRR	0.33		63
2846-3	Gann Valley Water Association	LC	MUN	0.2		
4256-3	Town of Virgil	LC	MUN	0.17		
4599-3	St Joseph's Indian School	LC	GEO	2.22		
4769-3	James Leheska	LC	IRR	0.66		130
4829-3	KOA Campground	LC	COM	0.02		
5117-3	New Fashion Pork L.L.P	LC	COM	0.07		
5509-3	City of Kimball	LC	MUN	0.45		
5510-3	City of Kimball	LC	MUN	0.45		
5825-3	Mielitz Bros	LC	IRR	1.78		140
5947-3	Fish Lake Country Club	LC	IRR	0.24		33
4444A-3	Town of Alpena	LC	MUN	0.11		
4444B-3	Town of Alpena	LC	MUN	0.5		
6121-3	John A Swanson	LC	COM	0.167		
6219-3	Heartland Pork L.L.C	LC	COM	0.17		
6468-3	Town of Alpena	PE	MUN	0.22		
6559-3	Dwight Scott	LC	COM	0.1		
6673-3	Rodney L. Larsen	LC	COM	0.1		
6690-3	Kevin Heath	PE	COM	0.1		
7054-3	Ryan Randall	LC	COM	0.222		
7168-3	Jon Deal	LC	COM	0.08		
7333-3	Firesteel Ranch Corp	PE	COM	0.155		
8421-3	Selland & Sons Feedlot	PE	COM	0.48	78.5	
LC: Licensed Water Right, PE: Water Permit, COM: Commercial, DOM: Domestic,						
FWP: Fish & Wildlife Propagation; GEO: Geothermal; IRR: Irrigation; MUN: Municipal						

The Dakota aquifer is expected to be under confined conditions near the existing well site based on the submitted well completion report and the well completion reports and lithologic logs on file with the DANR-Water Rights Program (SDGS, 2022; Water Rights, 2022b and 2022d). Since the Dakota aquifer is expected to be confined near the existing well site, drawdown can extend some distance but the exact drawdown behavior of a well cannot be known without an aquifer performance test. However, observation wells completed into the Dakota aquifer near permitted/licensed diversion points can provide some insight on how the aquifer responds to pumping.

Observation well BL-83A (approximately 28 miles southwest of the existing well site) has 12 high-yield wells (assumed to be a well with an authorized diversion rate greater than 0.2 cfs) within approximately six miles of it (as shown on Figure 12) (Water Rights, 2022b and 2022c). The lithologic log on file for BL-83A noted the well was drilled 942 feet deep below the ground

surface with the top of aquifer at approximately 878 feet below the ground surface, and had a casing stick up height of zero feet (SDGS, 2022; Water Rights, 2022b). The lowest recorded static water level on the hydrograph (displayed in Figure 8) is approximately 100 feet below the top of casing, which indicates there was still approximately 778 feet of artesian head pressure in BL-83A even during drier periods when high-yield wells are expected to be pumping more water and when water levels are generally naturally lower in response to drier conditions (Water Rights, 2022b).

Within approximately one mile of the existing well site, the Dakota aquifer has a saturated aquifer thickness ranging from approximately 50 to 90 feet (Water Rights, 2022d). This thickness generally allows for a pump inlet to be placed 20 feet below the top of the aquifer, which is required for the well to be considered adequate under ARSD 74:02:04:20(6). Any drawdown as a result of the proposed diversion is not expected to unlawfully impair nearby adequate wells. In Buffalo and Jerauld Counties, there have been no substantiated complaints submitted to the DANR-Water Rights Program regarding well interference for adequate wells completed into the Dakota aquifer (Water Rights, 2022e).

The Water Management Board recognizes that putting water to beneficial use requires a certain amount of drawdown to occur. The Board has developed rules to allow water to be placed to maximum beneficial use without the necessity of maintaining artesian head pressure for domestic use. The Water Management Board defined an “adversely impacted domestic well” in ARSD 74:02:04:20(7) as:

“A well in which the pump intake was set at least 20 feet below the top of the aquifer at the time of construction or, if the aquifer is less than 20 feet thick, is as near to the bottom of the aquifer as is practical and the water level of the aquifer has declined to a level that the pump will no longer deliver sufficient water for the well owner’s needs.”

The Water Management Board considered the delivery of water by artesian head pressure versus maximum beneficial use during the issuance of Water Right No. 2313-2 for Coca-Cola Bottling Company of the Black Hills. The Board adopted the Findings of Facts and Conclusions of Law that noted the reservation of artesian head pressure for delivery of water would be inconsistent with SDCL 46-1-4 which states, “general welfare requires that the water resources of the state be put to beneficial use to the fullest extent of which they are capable...” (Water Rights, 1995). Furthermore, the Water Management Board found if increased cost or decreased production as a result of impacts on artesian head pressure by legitimate users is to be considered as an unlawful impairment, it would also conflict with SDCL 46-1-4 (Water Rights, 1995). With that in mind, some existing well owners may need to install or lower pumps depending on the specific characteristics of the Dakota aquifer at their location. However, when considering the statutes (SDCL 46-1-4 and 46-6-6.1), rules (ARSD 74:02:04:20(6) and (7)), the saturated thickness of the Dakota aquifer near the existing well site, the artesian head pressure in observation wells and appropriative user’s wells completed into the Dakota aquifer near the existing well site, and the lack of well interference complaints from the Dakota aquifer in the area, any drawdown created from the proposed diversion is not expected to cause an unlawful impairment on existing water

right/permit holders or domestic users with adequate wells. Additionally, the well proposed to be used is an existing well that has been in place and is presumed to have been in use since roughly 1993 without any reported well interference complaints on file with the DANR-Water Rights Program (Water Rights, 2022c, 2022d and 2022e). Therefore, there is a reasonable probability that any interference from the proposed appropriation will not impose unlawful impairments on existing users with adequate wells.

Special Consideration: Declining Hydraulic Head

As the Dakota aquifer is a confined aquifer, the hydraulic head causes the water within the aquifer to rise above the top of the aquifer. In the late 1800's, wells began being completed into the Dakota aquifer and a decline in the aquifer's hydraulic head occurred whenever a flowing well was drilled and not properly controlled. These uncontrolled wells create a release of pressure contained within the aquifer. The decline has caused some concern on whether the Dakota aquifer withdrawals have exceeded the recharge to the aquifer. The Water Management Board has previously and carefully considered the declining hydraulic head in the Dakota aquifer. In the deliberation and approval of Water Permit No. 5136-3, for Farmland Industries Inc., the Water Management Board approved the findings of facts and conclusions of law containing the following summarized points (Water Rights, 1987):

- The estimated average annual recharge to the Dakota aquifer is not likely to be quantified in the near future;
- Determination of whether the withdrawals exceed the estimated average annual recharge cannot be determined solely by a decline in the hydraulic head;
- SDCL 46-6-6.1 does not require the artesian head to be protected; however, the Board must consider the effect of a limitation or loss of artesian head as one of the factors under the public interest determination;
- The decline in the hydraulic head in the Dakota aquifer has been primarily due to water being discharged through uncontrolled flowing wells;
- "Water discharged from uncontrollable flowing wells does not constitute withdrawal (appropriation) pursuant to SDCL 46-6-3.1;"
- That it is in the public interest to appropriate water rather than allow the water to be discharged to waste by uncontrolled flowing wells;
- That it is not in the public interest to deny a water permit application when the effects of the withdrawal will not be measurable and will not have a significant effect upon the decline or stabilization of the hydraulic head in the Dakota aquifer.

Special Consideration: Well Construction

The well completion report submitted for the existing well the applicant proposes to use meets adequate well construction standards as defined in ARSD 74:02:04:20.

An adequate well has been defined in ARSD 74:02:04:20(6) 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.”

The alternative well construction requirements for certain Dakota aquifer wells (74:02:04:35) are not permitted for commercial uses. Any future replacement wells shall meet the adequate well construction standard as defined in ARSD 74:02:04:20. Replacement wells may not be constructed using the alternative construction requirements that are allowed for domestic use wells outlined in ARSD 74:02:04:35.

CROW CREEK AND DAKOTA AQUIFERS - CONCLUSIONS:

1. Water Permit Application No. 8670-3 proposes to appropriate an amount of water not to exceed 194 acre-feet annually at a maximum instantaneous diversion rate of 0.33 cfs from one existing well completed into the Crow Creek aquifer (83 feet deep), and to appropriate an amount of water not to exceed 16 acre-feet annually at a maximum instantaneous diversion rate of 0.09 cfs from one existing well completed into the Dakota aquifer (1,090 feet deep) for commercial and domestic use purposes.
2. If approved, Water Permit Application No. 8670-3 will authorize a collective total of 210 acre-feet of water annually and a maximum instantaneous diversion rate of 0.42 cfs from two existing wells. The site of interest is located in Buffalo and Jerauld Counties approximately sixteen miles west of Wessington Springs, SD.
3. Based on observation well data and the hydrologic budget, there is a reasonable probability that unappropriated water is available from the Crow Creek and Dakota aquifers to supply the proposed appropriation.
4. There is a reasonable probability that the proposed diversion by Water Permit Application No. 8670-3 will not unlawfully impair adequate wells for existing water rights/permits and domestic users.

Nakaila Steen

Nakaila Steen
Natural Resources Engineer II
SD DANR - Water Rights Program

Reviewed by:

Adam Mathiowetz

Adam Mathiowetz, PE
Natural Resources Engineer IV
SD DANR - Water Rights Program

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Water Rights, 1995. Findings of Fact, Conclusions of Law, and Final Decision in the Matter of Water Permit Application No. 2313-2, Coca-Cola Bottling Company of the Black Hills. DANR-Water Rights Program file for Water Right No. 2313-2. Pierre, SD.

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Water Rights, 2022c. Water Right/Permit Files, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2022d. Well Completion Reports, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2022e. County Files, SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Water Rights, 2022f. "1994-2021 Non-Irrigation Yearly Reports", SD DANR-Water Rights Program, Joe Foss Bldg, Pierre, SD.

Schlaak, Karen

From: Schlaak, Karen
Sent: Thursday, December 8, 2022 8:01 AM
To: Joel Waldner
Subject: RE: [EXT] Water Permit Application No. 8670-3

Joel,
Our administrative rule 46-2A-4 requires the notice shall be published in each county where the water will be diverted or used or where project works will be located (Jerauld County - True Dakotan) (Buffalo County – Central Dakota Times). The notice shall also be published in the nearest daily newspaper (The Plainsman).

Let me know if you have more questions.
Karen

From: Joel Waldner <joel@svcolony.com>
Sent: Wednesday, December 7, 2022 6:51 AM
To: Schlaak, Karen <Karen.Schlaak@state.sd.us>
Cc: Brian Friedrichsen <brian@dakotaenv.com>
Subject: Re: [EXT] Water Permit Application No. 8670-3

Why is it published in all those papers

On Dec 6, 2022, at 9:01 AM, Schlaak, Karen <Karen.Schlaak@state.sd.us> wrote:

Attached is a copy of the report, chief engineer recommendation and information regarding the public notice for your water permit application. As stated in the letter, please contact the three papers as soon as possible to authorize publication and arrange for payment. This information is being mailed to you today.

Karen Schlaak
DANR - Water Rights Program
(605) 773-3352
Website:
<https://danr.sd.gov>
<image001.png>

<4501.pdf>

RECEIVED

Proof Of Publication

JAN 03 2023

Huron Plainsman
49 3rd Street SE
Huron, SD 57350
605-353-7402

OFFICE OF
WATER

Legal Notice Number: 1735

I, Cadee Schelske, being duly sworn on oath say that the Plainsman is a daily paper published at Huron, Beadle County South Dakota, and that said newspaper has a bona fide circulation of at least 250 copies daily; that said newspaper has been published within said county for fifty-two consecutive weeks immediately prior to this date, that said newspaper is printed in whole or in part, in an office maintained at said place of publication; that I am a Legal Advertising Coordinator of said newspaper and know that facts herein state. The annexed notice headed: Spring Valley Hutterian Brethren – Water No. 8670-3 was published for one day, in said newspaper and not in any supplement of the said newspaper; the publication was on - 12/14/2022. That the full amount of the fee charged for the publishing \$24.46 insures to the benefit of the publisher of said newspaper; that no agreement or 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 whom so ever.

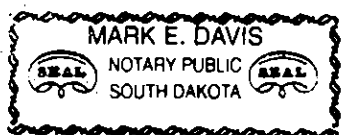
Cadée Schelske

Subscribed and sworn to me before this date 12/29/22.

[Signature]

Notary Public, South Dakota

My Term Expires 12/27/2024



F. P. 12-14-22

**NOTICE OF
APPLICATION
NO. 8670-3 to**

Appropriate Water

Notice is given that Spring Valley Hutterian Brethren, Inc., c/o Joel Waldner, 23064 365th Ave, Wessington Springs SD 57382 has filed an application for a water permit to appropriate 194 acre-feet of water annually at a maximum pump rate of 0.33 cubic feet of water per second (cfs) from an existing one well completed into the Crow Creek Aquifer (83 feet deep) located in the NE 1/4 NW 1/4 Section 30 and to appropriate 16 acre-feet of water annually at a maximum pump rate of 0.09 cfs from an existing well completed into the Dakota Aquifer (1,090 feet deep) located in the SW 1/4 SE 1/4 Section 29; all in T107N-R67W for commercial and domestic use purposes. The areas of use include the S 1/2 Section 28, S 1/2 Section 29, E 1/2 Section 32, SW 1/4 Section 19; all in T107N-R67W (Jerauld County) and E 1/2 Section 25, SE 1/4 Section 36; all in T107N-R68W (Buffalo County). This application, if approved, will authorize a combined total of 210 acre-feet of water annually and a maximum pump rate of 0.42 cfs from the two wells. This site is located approximately 16 miles west of Wessington Springs SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8670-3 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters 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.

Any person interested in opposing this application or recommendation shall allege that the application, upon approval, will cause injury to the person that is unique from any injury suffered by the public in general. The injury must concern a matter either within the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the

regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11, or both. Any person meeting the petitioner requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov/public> or by contacting the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501" or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation, the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by December 26, 2022.

The petition 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.

Any interested person may file a comment on the application with the Chief Engineer. The comment shall be filed on a form provided by the Chief Engineer and is available online at <https://danr.sd.gov/public> or by calling (605) 773-3352 or writing the Chief Engineer at the address provided above. Filing a comment does not make the commenter a party of record or a participant in any hearing that may be held. Any comment must be filed by December 26, 2022.

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 recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

No. 1735 (adv.)
Published one time at the total approximate cost of \$50.96 and may be viewed free of charge at www.sdpublicnotices.com.

PROOF OF PUBLICATION

STATE OF SOUTH DAKOTA)

County of Jerauld) SSI, Delia Atkinson

certify that the attached printed Notice was taken

from the True Dakotanprinted and published in Wessington SpringsCounty of Jerauld and

state of South Dakota. The notice was published

in the newspaper on the following date:

12/14/2022Cost of Printing \$53.25Delia Atkinson
(Signature)Office manager
(Title)12/27/2022
(Date Signed)**NOTICE OF APPLICATION NO. 8670-3
TO APPROPRIATE WATER**

Notice is given that Spring Valley Hutterian Brethren, Inc., c/o Joel Waldner, 23084 365th Ave, Wessington Springs SD 57382 has filed an application for a water permit to appropriate 194 acre-feet of water annually at a maximum pump rate of 0.33 cubic feet of water per second (cfs) from an existing one well completed into the Crow Creek Aquifer (83 feet deep) located in the NE 1/4 NW 1/4 Section 30 and to appropriate 16 acre-feet of water annually at a maximum pump rate of 0.09 cfs from an existing well completed into the Dakota Aquifer (1,090 feet deep) located in the SW 1/4 SE 1/4 Section 29; all in T107N-R67W for commercial and domestic use purposes. The areas of use include the S 1/2 Section 28, S 1/2 Section 29, E 1/2 Section 32, SW 1/4 Section 19; all in T107N-R67W (Jerauld County) and E 1/2 Section 25, SE 1/4 Section 36; all in T107N-R68W (Buffalo County). This application, if approved, will authorize a combined total of 210 acre-feet of water annually and a maximum pump rate of 0.42 cfs from the two wells. This site is located approximately 16 miles west of Wessington Springs SD.

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Published once at the total approximate cost of \$53.25 and can be viewed for free online at www.sdpublicnotices.com

RECEIVED**DEC 30 2022****OFFICE OF
WATER**

AFFIDAVIT OF PUBLICATION

RECEIVED

State of South Dakota

ss.

DEC 27 2022

County of Brule

OFFICE OF
WATER

Debi Ruiz of said county, being first duly sworn, on oath, says: That she is the publisher of *Central Dakota Times*, a weekly newspaper, published in the City of Chamberlain, in said County of Brule and State of South Dakota; that she has full and personal knowledge of the facts herein stated; that said newspaper is a legal newspaper as defined in SDCL 17-2-2.1 through 17-2-2.4 inclusive; that said newspaper has been published within the said County of Brule and State of South Dakota, for at least one year next prior to the first publication of the attached public notice and that the

Notice of Application No 8670-3
To Appropriate Water

a printed copy of which, taken from the paper in which the same was published and which is hereto attached and made a part of this affidavit, was published in said newspaper for

one successive week(s) to wit:
December 14, 2022; _____, 20____;
_____, 20____; _____, 20____;
_____, 20____; _____, 20____;

That the full amount of the fee charged for the publication of the attached public notice inures to the sole benefit of the publisher or publishers; that no agreement or 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; that the fees charged for the publication thereof are (and may be viewed free of charge at www.sdpublicnotices.com):

\$ 42.⁰⁰

Signed: Debi Ruiz

Subscribed and sworn to before me this 23rd day

of December, 2022

Janet L. Petrak

Notary Public In and For The County of Brule,
South Dakota

JANET L. PETRAK
Notary Public
SEAL
South Dakota

NOTICE OF APPLICATION NO. 8670-3 TO APPROPRIATE WATER

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(Published one week, December 14, 2022, at a total approximate cost of \$42.69 and may be viewed free of charge at www.sdpublicnotices.com.)

(December 14)

NOTICE OF APPLICATION NO. 8670-3 to Appropriate Water

Notice is given that Spring Valley Hutterian Brethren, Inc., c/o Joel Waldner, 23064 365th Ave, Wessington Springs SD 57382 has filed an application for a water permit to appropriate 194 acre-feet of water annually at a maximum pump rate of 0.33 cubic feet of water per second (cfs) from an existing one well completed into the Crow Creek Aquifer (83 feet deep) located in the NE 1/4 NW 1/4 Section 30 and to appropriate 16 acre-feet of water annually at a maximum pump rate of 0.09 cfs from an existing well completed into the Dakota Aquifer (1,090 feet deep) located in the SW 1/4 SE 1/4 Section 29; all in T107N-R67W for commercial and domestic use purposes. The areas of use include the S 1/2 Section 28, S 1/2 Section 29, E 1/2 Section 32, SW 1/4 Section 19; all in T107N-R67W (Jerauld County) and E 1/2 Section 25, SE 1/4 Section 36; all in T107N-R68W (Buffalo County). This application, if approved, will authorize a combined total of 210 acre-feet of water annually and a maximum pump rate of 0.42 cfs from the two wells. This site is located approximately 16 miles west of Wessington Springs SD.

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Published once at the total approximate cost of_

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, December 6, 2022 8:55 AM
To: 'rcrandall@plainsman.com'
Subject: 8670-3, Spring Valley Hutterian Brethren Inc
Attachments: 8670-3public.short_final.docx; FORM8.FRM.doc

Attached is a notice to be published on December 14, 2022.

Spring Valley Hutterian Brethren Inc., c/o Joel Waldner, 23064 365th Ave, Wessington Springs SD 57382 (605 412-6292) 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, Pierre SD 57501.

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

Karen Schlaak

DANR - Water Rights Program
(605) 773-3352
Website: <https://danr.sd.gov>



Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, December 6, 2022 8:55 AM
To: 'cdt@midstatesd.net'
Subject: 8670-3, Spring Valley Hutterian Brethren Inc
Attachments: 8670-3public.short_final.docx; FORM8.FRM.doc

Attached is a notice to be published on December 14, 2022.

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Karen Schlaak

DANR - Water Rights Program

(605) 773-3352

Website: <https://danr.sd.gov>



Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, December 6, 2022 8:54 AM
To: 'news@truedakotan.com'
Subject: 8670-3, Spring Valley Hutterian Brethren Inc
Attachments: 8670-3public.short_final.docx; FORM8.FRM.doc

Attached is a notice to be published on December 14, 2022.

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Karen Schlaak

DANR - Water Rights Program

(605) 773-3352

Website: <https://danr.sd.gov>





**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.**

December 6, 2022

Spring Valley Hutterian Brethren, Inc
c/o Joel Waldner
23064 365th Ave
Wessington Springs SD 57382

Dear Mr. Waldner:

Water Permit Application No. 8670-3 for commercial and domestic use have been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the following papers:

True Dakotan, Wessington Springs 605 539-1281
Central Dakota Times, Chamberlain 605 234-0266
The Plainsman, Huron 605 353-7414

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,

Karen Schlaak

Karen Schlaak
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.



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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

JAN 19 2023

Spring Valley Hutterian Brethren Inc.
c/o Joel Waldner
23064 365th Ave
Wessington Springs SD 57382

Dear Mr. Waldner:

Enclosed is Water Permit No. 8670-3 authorizing your water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

We will schedule an inspection so that the Water License may be issued to you, thus completing your acquisition of a Water Right.

Sincerely,

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

enclosures



**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
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.: 8670-3

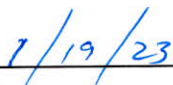
Name of Applicant: Spring Valley Hutterian Brethren, Inc., Joel Waldner

Date of Posting: 12/12/2022

Date of Removal: 1/19/2023



Ron Duvall, Water Rights Permitting Administrator



Date

Subscribed and sworn to before me, a notary public, this 19th day of Jan, 2023.



Notary Public - South Dakota
My commission expires: 4/1/2025

